

CPC**COOPERATIVE PATENT CLASSIFICATION****B23B****TURNING; BORING** ([arrangements for copying or controlling B23Q](#))**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:

B23B 3/18	covered by	B23B 3/16
B23B 3/20	covered by	B23B 3/16
B23B 3/28	covered by	B23B 3/00
B23B 5/22	covered by	B23B 31/00
B23B 5/24	covered by	B23Q 27/00 ; B23B 35/00
B23B 5/30	covered by	B23Q 35/00
B23B 5/34	covered by	B23B 31/00 ; B23B 33/00
B23B 5/42	covered by	B23Q 35/00
B23B 5/44	covered by	B23Q 27/00
B23B 7/08	covered by	B23B 7/04
B23B 7/14	covered by	B23B 7/12
B23B 7/16	covered by	B23B 7/12
B23B 9/04	covered by	B23B 9/02
B23B 9/06	covered by	B23B 9/02
B23B 9/10	covered by	B23B 9/08
B23B 9/12	covered by	B23B 9/08
B23B 15/00	covered by	B23Q 7/00
B23B 17/00	covered by	B23Q 1/01 ; B23Q 1/03 ; B23Q 1/25
B23B 19/00	covered by	B23Q 1/70
B23B 19/02	covered by	B23Q 1/70
B23B 21/00	covered by	B23Q 1/00
B23B 29/30	covered by	B23B 29/28
B23B 31/163	covered by	B23B 31/16004
B23B 31/165	covered by	B23B 31/16045
B23B 31/167	covered by	B23B 31/16045
B23B 31/169	covered by	B23B 31/16083
B23B 31/171	covered by	B23B 31/1612
B23B 31/173	covered by	B23B 31/16158
B23B 31/175	covered by	B23B 31/16195
B23B 31/177	covered by	B23B 31/16233
B23B 41/08	covered by	F16L 41/04
B23B 45/14	covered by	B25H 1/0021
B23B 45/16	covered by	B25D 16/00
B23B 47/02	covered by	B23Q 5/00
B23B 47/04	covered by	B23Q 5/00

B23B

(continued)

B23B 47/06	covered by	B23Q 5/00
B23B 47/08	covered by	B23Q 5/00
B23B 47/10	covered by	B23Q 5/00
B23B 47/12	covered by	B23Q 5/00
B23B 47/14	covered by	B23Q 5/00
B23B 47/16	covered by	B23Q 5/00
B23B 47/18	covered by	B23Q 5/00
B23B 47/20	covered by	B23Q 5/00
B23B 47/22	covered by	B23Q 5/00
B23B 47/24	covered by	B23Q 16/00

Turning

B23B 1/00	Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods
B23B 3/00	General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines
B23B 3/02	<ul style="list-style-type: none"> Small lathes, e.g. for toolmakers (specially designed for watchmakers G04D 3/00)
B23B 3/04	<ul style="list-style-type: none"> Turning-machines in which the workpiece is rotated by means at a distance from the headstock
B23B 3/06	<ul style="list-style-type: none"> Turning-machines or devices characterised only by the special arrangement of constructional units (B23Q 37/00 takes precedence; structural features of details, see the relevant groups; such features of general applicability B23Q)
B23B 3/065	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {Arrangements for performing other machining operations, e.g. milling, drilling}
B23B 3/08	<ul style="list-style-type: none"> Turning-machines characterised by the use of faceplates
B23B 3/10	<ul style="list-style-type: none"> <ul style="list-style-type: none"> with the faceplate horizontal, i.e. vertical boring and turning machines
B23B 3/12	<ul style="list-style-type: none"> <ul style="list-style-type: none"> with the faceplate vertical, i.e. face lathes
B23B 3/14	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Mountings or drives of faceplates {(rotatable members, e.g. faceplates B23Q 1/50)}
B23B 3/16	<ul style="list-style-type: none"> Turret lathes for turning individually-chucked workpieces {(turrets B23B 29/24)}
B23B 3/161	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {lathe with one toolslide carrying one turret head}
B23B 3/162	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {Arrangements for performing other machining operations, e.g. milling, drilling}
B23B 3/164	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {lathe with one toolslide carrying two or more turret heads}
B23B 3/165	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {Arrangements for performing other machining operations, e.g. milling, drilling}
B23B 3/167	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {lathe with two or more toolslides carrying turrets}
B23B 3/168	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {Arrangements for performing other machining operations, e.g. milling, drilling}
B23B 3/22	<ul style="list-style-type: none"> Turning-machines or devices with rotary tool heads {(B23B 5/08, B23B 5/14 and B23B 5/16 take precedence)}

- B23B 3/24
 - . the tools of which do not perform a radial movement; Rotary tool heads therefor
- B23B 3/26
 - . the tools of which perform a radial movement; Rotary tool heads thereof
- B23B 3/265
 - . . {Surfacing or grooving flanges}
- B23B 3/30
 - Turning-machines with two or more working-spindles, e.g. in fixed arrangement
- B23B 3/32
 - . for performing identical operations simultaneously on two or more workpieces
- B23B 3/34
 - Short turning-machines with one or multiple working-spindles attended from the end ([B23B 3/12 takes precedence](#))
- B23B 3/36
 - Associations of only turning-machines directed to a particular metal-working result ([if the metal-working result is not essential B23Q 39/00](#))
- B23B 5/00**
 - Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor**
- B23B 5/02
 - for turning hubs or brake drums ([B23B 5/04 takes precedence](#))
- B23B 5/04
 - for reconditioning hubs or brake drums or axle spindles without removing same from the vehicle
- B23B 5/06
 - for turning valves or valve bodies ({[turning conical surfaces in general B23B 5/38](#); tools for working valve seats [B23B 51/106](#)})
- B23B 5/08
 - for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning
- B23B 5/10
 - . for turning pilgrim rolls
- B23B 5/12
 - . for peeling bars or tubes by making use of cutting bits arranged around the workpiece ([otherwise than by turning B23D 79/12](#))
- B23B 5/14
 - Cutting-off lathes ({[B23D 21/00 takes precedence](#)} shearing [B23D](#))
- B23B 5/16
 - for bevelling, chamfering, or deburring the ends of bars or tubes
- B23B 5/161
 - . {Devices attached to the workpiece}
- B23B 5/162
 - . . {with an internal clamping device}
- B23B 5/163
 - . . {with an external clamping device}
- B23B 5/165
 - . {Workpieces clamped on a bench, e.g. a vice}
- B23B 5/166
 - . {Devices for working electrodes}
- B23B 5/167
 - . {Tools for chamfering the ends of bars or tubes}
- B23B 5/168
 - . . {with guiding devices}
- B23B 5/18
 - for turning crankshafts, eccentrics, or cams, e.g. crankpin lathes
- B23B 5/20
 - . without removing same from the engine
- B23B 5/26
 - for simultaneously turning internal and external surfaces of a body
- B23B 5/28
 - for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes
- B23B 5/32
 - . for reconditioning wheel sets without removing same from the vehicle; Underfloor wheel lathes for railway vehicles
- B23B 5/36
 - for turning specially-shaped surfaces by making use of relative movement of the tool and work produced by geometrical mechanisms, i.e. forming-lathes
- B23B 5/365
 - . {for toroidal surfaces}
- B23B 5/38
 - . for turning conical surfaces inside or outside, e.g. taper pins ({[for turning valves or valve bodies B23B 5/06](#)})

- B23B 5/40
 - . . for turning spherical surfaces inside or outside
- B23B 5/46
 - . . for turning helical or spiral surfaces ([thread cutting B23G](#))
- B23B 5/48
 - . . . for cutting grooves, e.g. oil grooves of helicoidal shape

- B23B 7/00**

Automatic or semi-automatic turning-machines with a single working-spindle, e.g. controlled by cams; Equipment therefor; Features common to automatic and semi-automatic turning-machines with one or more working-spindles ([{arrangements or accessories for enabling machine tools not specially designed only for thread cutting to be used for this purpose B23G 3/00}](#))
- B23B 7/02
 - Automatic or semi-automatic machines for turning of stock
- B23B 7/04
 - . . Turret machines
- B23B 7/06
 - . . with sliding headstock
- B23B 7/10
 - . . Accessories, e.g. guards ([{guards B23Q 11/08 takes precedence}](#))
- B23B 7/12
 - Automatic or semi-automatic machines for turning of workpieces

- B23B 9/00**

Automatic or semi-automatic turning-machines with a plurality of working-spindles, e.g. automatic multiple-spindle machines with spindles arranged in a drum carrier able to be moved into predetermined positions; Equipment therefor ([equipment applicable to single-spindle machines B23B 7/00](#))
- B23B 9/005
 - [{Spindle carriers: constructional details, drives for the spindles, or the like}](#)
- B23B 9/02
 - Automatic or semi-automatic machines for turning of stock
- B23B 9/08
 - Automatic or semi-automatic machines for turning of workpieces

- B23B 11/00**

Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling ([{\(B23B 3/065 and B23B 3/16 take precedence; machines incorporating a plurality of sub-assemblies, each capable of performing a metal-working operation, the sub-assemblies being arranged to operate simultaneously at different stations B23Q 39/04\)}](#))

- B23B 13/00**

Arrangements for automatically conveying or chucking or guiding stock
- B23B 13/02
 - for turning-machines with a single working-spindle
- B23B 13/021
 - . . [{Feeding device having intermittent movement}](#)
- B23B 13/022
 - . . . [{being placed in the spindle}](#)
- B23B 13/024
 - [{including two collets}](#)
- B23B 13/025
 - . . [{with stock drum}](#)
- B23B 13/027
 - . . [{Feeding by pistons under fluid-pressure}](#)
- B23B 13/028
 - . . [{the material being fed from a reel}](#)
- B23B 13/04
 - for turning-machines with a plurality of working-spindles
- B23B 13/06
 - Arrangements for switching-off the drive of turning-machines after the stock has been completely machined
- B23B 13/08
 - Arrangements for reducing vibrations in feeding-passages or for damping noise ([damping noise in general G10K](#))
- B23B 13/10
 - with magazines for stock
- B23B 13/12
 - Accessories, e.g. stops, grippers

- B23B 13/121 . . {Stops (stops for equipment for precise positioning of tool or work into particular locations not otherwise provided for [B23Q 16/00](#))}
- B23B 13/123 . . {Grippers, pushers or guiding tubes (arrangements for reducing vibrations in feeding-passages or for damping noise [B23B 13/08](#))}
- B23B 13/125 . . . {Feed collets (feeding device having intermittent movement being placed in the spindle including two collets [B23B 13/024](#); collet chucks [B23B 31/20](#))}
- B23B 13/126 . . {Supports}
- B23B 13/128 . . {Stock rest handling devices, e.g. ejectors}

Components or accessories particularly for turning machines

- B23B 23/00** **Tailstocks; Centres** {(for grinding machines [B24B 41/062](#))}
- B23B 23/005 . {the centres being adjustable}
- B23B 23/02 . Dead centres
- B23B 23/025 . . {the centres being adjustable}
- B23B 23/04 . Live centres
- B23B 23/045 . . {the centres being adjustable}
- B23B 25/00** **Accessories or auxiliary equipment for turning-machines** (for machine tools in general [B23Q](#); cooling or lubricating [B23Q 11/12](#))
- B23B 25/02 . Arrangements for chip-breaking in turning-machines (on cutting tools [B23B 27/22](#))
- B23B 25/04 . Safety guards specially designed for turning machines ({[B23Q 11/08](#) takes precedence;} in general [F16P](#))
- B23B 25/06 . Measuring, gauging, or adjusting equipment on turning-machines for setting-on, feeding, controlling, or monitoring the cutting tools or work (measuring devices or gauges [G01B](#))
- B23B 25/065 . . {Tool setting height gauges}
- B23B 27/00** **Tools for turning or boring machines** (for drilling machines [B23B 51/00](#)); Tools of a similar kind in general; Accessories therefor
- NOTE**
all subgroups except [B23B 27/12](#) relate to tools with a shank
- B23B 27/002 . {with vibration damping means}
- B23B 27/005 . {Geometry of the chip-forming or the clearance planes, e.g. tool angles ([B23B 27/141](#) and [B23B 27/22](#) take precedence)}
- B23B 27/007 . {for internal turning (boring bars [B23B 29/02](#), boring heads [B23B 29/03](#); milling cutters [B23C 5/00](#); reamers [B23D 77/00](#))}
- B23B 27/02 . Cutting tools with straight main part and cutting edge at an angle ([B23B 27/04](#) to [B23B 27/08](#) take precedence)
- B23B 27/04 . Cutting-off tools ([B23B 27/08](#) takes precedence; {toolholders for cutting-off inserts [B23B 29/043](#)})
- B23B 27/045 . . {with chip-breaking arrangements}

- B23B 27/06 . profile cutting tools, i.e. forming-tools
- B23B 27/065 . . {Thread-turning tools}
- B23B 27/08 . Cutting tools with blade- or disc-like main parts {(with disc-like main parts [B23B 27/083](#))}
- B23B 27/083 . . {Cutting tools with disc-like main parts}
- B23B 27/086 . . {with yieldable support for the cutting insert}
- B23B 27/10 . Cutting tools with special provision for cooling {(drills with lubricating or cooling equipment [B23B 51/06](#); features relating to lubricating or cooling of milling cutters [B23C 5/28](#); arrangements or devices for cooling or lubricating tools or work [B23Q 11/10](#))}
- B23B 27/12 . . with a continuously-rotated circular cutting edge; holders therefor
- B23B 27/14 . Cutting tools of which the bits or tips {or cutting inserts} are of special material
- B23B 27/141 . . {Specially shaped plate-like cutting inserts, i.e. length greater or equal to width, width greater than or equal to thickness (with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove, [B23B 27/1603](#); with removable plate-like milling cutting inserts of special shape [B23C 5/202](#))}
- B23B 27/143 . . . {characterised by having chip-breakers}
- B23B 27/145 . . . {characterised by having a special shape}
- B23B 27/146 {Means to improve the adhesion between the substrate and the coating}
- B23B 27/148 . . {Composition of the cutting inserts}
- B23B 27/16 . . with exchangeable cutting bits {or cutting inserts}, e.g. able to be clamped
- B23B 27/1603 . . . {with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove ([B23B 27/1614](#) to [B23B 27/1655](#) take precedence)}
- B23B 27/1607 {characterised by having chip-breakers}
- B23B 27/1611 {characterised by having a special shape}
- B23B 27/1614 . . . {with plate-like cutting inserts of special shape clamped against the walls of the recess in the shank by a clamping member acting upon the wall of a hole in the insert ([B23B 27/1644](#) takes precedence)}
- B23B 27/1618 {characterised by having chip-breakers}
- B23B 27/1622 {characterised by having a special shape}
- B23B 27/1625 . . . {with plate-like cutting inserts of special shape clamped by a clamping member acting almost perpendicularly on the chip-forming plane ([B23B 27/1644](#) takes precedence)}
- B23B 27/1629 {in which the clamping member breaks the chips}
- B23B 27/1633 {in which the chip-breaking clamping member is adjustable}
- B23B 27/1637 {characterised by having chip-breakers}
- B23B 27/164 {characterised by having a special shape}
- B23B 27/1644 . . . {with plate-like cutting inserts of special shape clamped by a clamping member acting almost perpendicularly on the chip-forming plane and at the same time upon the wall of a hole in the cutting insert}
- B23B 27/1648 {characterised by having chip-breakers}
- B23B 27/1651 {characterised by having a special shape}
- B23B 27/1655 . . . {Adjustable position of the plate-like cutting inserts of special form}

- B23B 27/1659 . . . {with plate-like exchangeable cutting inserts ([B23B 27/1662](#) to [B23B 27/1681](#) take precedence)}
- B23B 27/1662 . . . {with plate-like 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 cutting insert ([B23B 27/1677](#) takes precedence)}
- B23B 27/1666 . . . {with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on chip-forming plane ([B23B 27/1677](#) takes precedence)}
- B23B 27/167 {in which the clamping member breaks the chips}
- B23B 27/1674 {in which the chip-breaking clamping member is adjustable}
- B23B 27/1677 . . . {with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on the chip-forming plane and at the same time upon the wall of a hole in the insert}
- B23B 27/1681 . . . {Adjustable position of the plate-like cutting inserts}
- B23B 27/1685 . . . {Adjustable position of the cutting inserts ([B23B 27/1655](#) and [B23B 27/1681](#) take precedence)}
- B23B 27/1688 {Height of the cutting tip adjustable}
- B23B 27/1692 {Angular position of the cutting insert adjustable around an axis parallel to the chip-forming plane}
- B23B 27/1696 {Angular position of the cutting insert adjustable around an axis generally perpendicularly to the chip-forming plane}
- B23B 27/18 . . with cutting bits or tips {or cutting inserts} rigidly mounted, e.g. by brazing
- B23B 27/20 . . . with diamond bits {or cutting inserts}
- B23B 27/22 . Cutting tools with chip-breaking equipment {([B23B 27/045](#), [B23B 27/143](#), [B23B 27/16](#) take precedence; arrangements for chip-breaking [B23B 25/02](#); for milling tools [B23C 5/165](#))}
- B23B 27/24 . Knurling tools

- B23B 29/00** **Holders for non-rotary cutting tools ([B23B 27/12](#) takes precedence); Boring bars or boring heads; Accessories for tool holders**
- B23B 29/02 . Boring bars
- B23B 29/022 . . {with vibration reducing means}
- B23B 29/025 . . {Boring toolholders fixed on the boring bar}
- B23B 29/027 . . {Steadies for boring bars (auxiliary devices, e.g. steadies, rests [B23Q 1/76](#))}
- B23B 29/03 . Boring heads
- B23B 29/034 . . with tools moving radially, e.g. for making chamfers or undercuttings
- 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}

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}
B23B 29/04	. Tool holders for a single cutting tool
B23B 29/043	. . {with cutting-off, grooving or profile cutting tools, i.e. blade- or disc-like main cutting parts (B23B 29/14 takes precedence)}
B23B 29/046	. . {with an intermediary toolholder}
B23B 29/06	. . Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool
B23B 29/08	. . Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool
B23B 29/10	. . . with adjustable counterbase for the cutting tool
B23B 29/12	. . Special arrangements on tool holders
B23B 29/125	. . . {Vibratory toolholders}
B23B 29/14	. . . affording a yielding support of the cutting tool, e.g. by spring clamping {(cutting tools with yieldable support for the cutting insert B23B 27/086)}
B23B 29/16	. . . for supporting the workpiece in a backrest
B23B 29/18	. . . for retracting the cutting tool
B23B 29/20	. . . for placing same by shanks in sleeves of a turret
B23B 29/205	. . . . {the tools being adjustable}
B23B 29/22	. . . for tool adjustment by means of shims or spacers
B23B 29/24	. Tool holders for a plurality of cutting tools, e.g. turrets {(indexing devices B23Q 16/00)}

- B23B 29/242
 - • {Turrets, without description of the angular positioning device (turret lathes for turning individually-chucked workpieces [B23B 3/16](#); turrets with manually operated angular positioning devices [B23B 29/282](#); turrets with power operated angular positioning devices [B23B 29/323](#))}
- B23B 29/244
 - • {Toolposts, i.e. clamping quick-change toolholders, without description of the angular positioning device (toolposts with manually operated angular positioning devices [B23B 29/285](#); toolposts with power operated angular positioning devices [B23B 29/326](#))}
- B23B 29/246
 - • • {Quick-change tool holders}
- B23B 29/248
 - • {with individually adjustable toolholders}
- B23B 29/26
 - • Tool holders in fixed position
- B23B 29/28
 - • Turrets manually adjustable about a vertical {or horizontal} pivot {(indexing devices [B23Q 16/00](#))}
- B23B 29/282
 - • • {Turrets with manually operated angular positioning devices}
- B23B 29/285
 - • • {Toolposts with manually operated angular positioning devices}
- B23B 29/287
 - • • {Turret toolholder with manually operated angular positioning devices}
- B23B 29/32
 - • Turrets adjustable by power drive, i.e. turret heads {(indexing devices [B23Q 16/00](#))}
- B23B 29/323
 - • • {Turrets with power operated angular positioning devices}
- B23B 29/326
 - • • {Toolposts with power operated angular positioning devices}
- B23B 29/34
 - • Turrets equipped with triggers for releasing the cutting tools
- 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](#))
- B23B 31/001
 - {Protection against entering of chips or dust}
- B23B 31/003
 - {Work or tool ejection means}
- B23B 31/005
 - {Cylindrical shanks of tools}
- B23B 31/006
 - {Conical shanks of tools}
- B23B 31/008
 - {with arrangements for transmitting torque}
- B23B 31/02
 - Chucks
- B23B 31/021
 - • {Faceplates}
- B23B 31/023
 - • {for screw-threads}
- B23B 31/025
 - • {for gears}
- B23B 31/026
 - • {the radial or angular position of the tool being adjustable (boring heads with tools moving radially [B23B 29/034](#); holding tools yieldably [B23B 31/08](#); with means for adjusting the chuck with respect to the working spindle [B23B 31/36](#))}
- B23B 31/028
 - • {the axial positioning of the tool being adjustable ([B23B 31/208](#) takes precedence; with means for adjusting the chuck with respect to the working spindle [B23B 31/36](#))}
- B23B 31/06
 - • Features relating to the removal of tools; Accessories therefor
- B23B 31/07
 - • • Ejector wedges

- B23B 31/08 . . Holding tools yieldably
- B23B 31/083 . . . {axially}
- B23B 31/086 {having an overload clutch}
- 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](#)}

- B23B 31/101 . . . {Chucks with separately-acting jaws movable radially ([B23B 31/1602](#), [B23B 31/16062](#), [B23B 31/161](#), [B23B 31/16137](#), [B23B 31/16175](#), [B23B 31/16212](#), [B23B 31/1625](#) and [B23B 31/16283](#) take precedence; Chucks with simultaneously-acting jaws moving radially [B23B 31/16](#))}
- B23B 31/102 . . . {Jaws, accessories or adjustment means ([B23B 31/16008](#), [B23B 31/1605](#), [B23B 31/16087](#), [B23B 31/16125](#), [B23B 31/16162](#), [B23B 31/162](#), [B23B 31/16237](#), [B23B 31/1627](#) take precedence)}
- B23B 31/103 . . . Retention by pivotal elements, e.g. catches, pawls
- B23B 31/107 . . . Retention by laterally-acting detents, e.g. pins, screws, wedges; Retention by loose elements, e.g. balls
- B23B 31/1071 {Retention by balls (balls acting as jaws [B23B 31/22](#))}
- B23B 31/1072 {Retention by cylindrical elements (cylindrical elements acting as jaws [B23B 31/22](#))}
- B23B 31/1073 {Retention by conical elements (conical elements acting as jaws [B23B 31/22](#))}
- B23B 31/1074 {Retention by pins}
- B23B 31/1075 {Retention by screws}
- B23B 31/1076 {with conical ends}
- B23B 31/1077 {acting on a floating pin}
- B23B 31/1078 {Retention by wedges}
- B23B 31/11 . . . Retention by threaded connection
- B23B 31/1107 {for conical parts}
- B23B 31/1115 {using conical threads}
- B23B 31/1122 {using cylindrical threads}
- B23B 31/113 . . . Retention by bayonet connection
- B23B 31/117 . . . Retention by friction only, e.g. using springs, resilient sleeves, tapers
- B23B 31/1171 {not used, see subgroups and [B23B 31/117](#)}
- B23B 31/1172 {using fluid-pressure means to actuate the gripping means}
- B23B 31/1173 {using springs}
- B23B 31/1174 {using fluid-pressure means to actuate the gripping means}
- B23B 31/1175 {using elastomer rings or sleeves}
- B23B 31/1176 {using fluid-pressure means to actuate the gripping means}
- B23B 31/1177 {using resilient metallic rings or sleeves}
- B23B 31/1178 {using fluid-pressure means to actuate the gripping means}

B23B 31/1179	. . . . .	{using heating and cooling}
B23B 31/12	. . . . .	Chucks with simultaneously-acting jaws, whether or not also individually adjustable
B23B 31/1207	. . . . .	{moving obliquely to the axis of the chuck in a plane containing this axis}
B23B 31/1215	. . . . .	{Details of the jaws}
B23B 31/1223	. . . . .	{using fluid-pressure means in the chuck to actuate the gripping means}
B23B 31/123	. . . . .	{with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving radially actuated by one or more spiral grooves B23B 31/16041)}
B23B 31/1238	. . . . .	{Jaws movement actuated by a nut with conical screw-thread}
B23B 31/1246	. . . . .	{Jaws movement actuated by a bolt with conical screw-thread}
B23B 31/1253	. . . . .	{Jaws movement actuated by an axially movable member}
B23B 31/1261	. . . . .	{pivotally movable in a radial plane}
B23B 31/1269	. . . . .	{Details of the jaws}
B23B 31/1276	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/1284	. . . . .	{with a centre}
B23B 31/1292	. . . . .	{using mechanical transmission through the spindle}
B23B 31/14	. . . . .	involving the use of a centrifugal force
B23B 31/16	. . . . .	moving radially
B23B 31/16004	. . . . .	{Jaws movement actuated by one or more spiral grooves}
B23B 31/16008	. . . . .	{Details of the jaws}
B23B 31/16012	. . . . .	{Form of the jaws}
B23B 31/16016	. . . . .	{Fixation on the master jaw}
B23B 31/1602	. . . . .	{Individually adjustable jaws}
B23B 31/16025	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16029	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16033	. . . . .	{with a centre}
B23B 31/16037	. . . . .	{using mechanical transmission through the spindle (B23B 31/16029 takes precedence)}
B23B 31/16041	. . . . .	{with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving obliquely to the axis of the chuck in a plane containing this axis B23B 31/123)}
B23B 31/16045	. . . . .	{Jaws movement actuated by screws and nuts or oblique racks}
B23B 31/1605	. . . . .	{Details of the jaws}
B23B 31/16054	. . . . .	{Form of the jaws}
B23B 31/16058	. . . . .	{Fixation on the master jaw}
B23B 31/16062	. . . . .	{Individually adjustable jaws}
B23B 31/16066	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/1607	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16075	. . . . .	{with a centre}

B23B 31/16079	. . . . .	{using mechanical transmission through the spindle (B23B 31/1607 takes precedence)}
B23B 31/16083	. . . . .	{Jaws movement actuated by gears and racks}
B23B 31/16087	. . . . .	{Details of the jaws}
B23B 31/16091	. . . . .	{Form of the jaws}
B23B 31/16095	. . . . .	{Fixation on the master jaw}
B23B 31/161	. . . . .	{Individually adjustable jaws}
B23B 31/16104	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16108	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16112	. . . . .	{with a centre}
B23B 31/16116	. . . . .	{using mechanical transmission through the spindle (B23B 31/16108 takes precedence)}
B23B 31/1612	. . . . .	{Jaws movement actuated by cam surface in a radial plane}
B23B 31/16125	. . . . .	{Details of the jaws}
B23B 31/16129	. . . . .	{Form of the jaws}
B23B 31/16133	. . . . .	{Fixation on the master jaw}
B23B 31/16137	. . . . .	{Individually adjustable jaws}
B23B 31/16141	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16145	. . . . .	{using mechanical transmission through the spindle}
B23B 31/1615	. . . . .	{with a centre}
B23B 31/16154	. . . . .	{using mechanical transmission through the spindle (B23B 31/16145 takes precedence)}
B23B 31/16158	. . . . .	{Jaws movement actuated by coaxial conical surfaces}
B23B 31/16162	. . . . .	{Details of the jaws}
B23B 31/16166	. . . . .	{Form of the jaws}
B23B 31/1617	. . . . .	{Fixation on the master jaw}
B23B 31/16175	. . . . .	{Individually adjustable jaws}
B23B 31/16179	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16183	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16187	. . . . .	{with a centre}
B23B 31/16191	. . . . .	{using mechanical transmission through the spindle (B23B 31/16183 takes precedence)}
B23B 31/16195	. . . . .	{Jaws movement actuated by levers moved by a coaxial control rod}
B23B 31/162	. . . . .	{Details of the jaws}
B23B 31/16204	. . . . .	{Form of the jaws}
B23B 31/16208	. . . . .	{Fixation on the master jaw}
B23B 31/16212	. . . . .	{Individually adjustable jaws}
B23B 31/16216	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/1622	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16225	. . . . .	{with a centre}

B23B 31/16229	. . . . .	{using mechanical transmission through the spindle (B23B 31/1622 takes precedence)}
B23B 31/16233	. . . . .	{Jaws movement actuated by oblique surfaces of a coaxial control rod}
B23B 31/16237	. . . . .	{Details of the jaws}
B23B 31/16241	. . . . .	{Form of the jaws}
B23B 31/16245	. . . . .	{Fixation on the master jaw}
B23B 31/1625	. . . . .	{Individually adjustable jaws}
B23B 31/16254	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16258	. . . . .	{using mechanical transmission through the spindle}
B23B 31/16262	. . . . .	{with a centre}
B23B 31/16266	. . . . .	{using mechanical transmission through the spindle (B23B 31/16258 takes precedence)}
B23B 31/1627	. . . . .	{Details of the jaws}
B23B 31/16275	. . . . .	{Form of the jaws}
B23B 31/16279	. . . . .	{Fixation on the master jaw}
B23B 31/16283	. . . . .	{Individually adjustable jaws}
B23B 31/16287	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/16291	. . . . .	{with a centre}
B23B 31/16295	. . . . .	{with means preventing the ejection of the jaws}
B23B 31/18	. . . . .	pivotaly movable in planes containing the axis of the chuck
B23B 31/185	. . . . .	{moving first parallel to the axis then pivotaly in planes containing the axis of the chuck}
B23B 31/19	. . . . .	moving parallel to the axis of the chuck {(B23B 31/185 takes precedence)}
B23B 31/20	. . . . .	Longitudinally-split sleeves, e.g. collet chucks
B23B 31/201	. . . . .	{characterised by features relating primarily to remote control of the gripping means}
B23B 31/202	. . . . .	{Details of the jaws}
B23B 31/204	. . . . .	{using fluid-pressure means to actuate the gripping means}
B23B 31/205	. . . . .	{using mechanical transmission through the spindle}
B23B 31/207	. . . . .	{using mechanical transmission through the spindle (B23B 31/205 takes precedence)}
B23B 31/208	. . . . .	{with a tool positioning stop (axial positioning of the tool being adjustable B23B 31/028)}
B23B 31/22	. . . . .	Jaws in the form of balls {(retention by balls B23B 31/1071)}
B23B 31/223	. . . . .	{Jaws in the form of cylindrical elements (Retention by cylindrical elements B23B 31/1072)}
B23B 31/226	. . . . .	{Jaws in the form of conical elements (Retention by conical elements B23B 31/1073)}
B23B 31/24	. . . . .	characterised by features relating primarily to remote control of the gripping means {(B23B 31/201 takes precedence)}

- B23B 31/26 . . . using mechanical transmission through the working-spindle {(B23B 31/16 and B23B 31/40 take precedence)}
- B23B 31/261 {clamping the end of the toolholder shank}
- B23B 31/263 {by means of balls}
- B23B 31/265 {by means of collets}
- B23B 31/266 {using a threaded spindle}
- B23B 31/268 {using a bayonet connection}
- B23B 31/28 . . . using electric or magnetic means in the chuck
- B23B 31/30 . . . using fluid-pressure means in the chuck {(B23B 31/10 and B23B 31/40 take precedence)}
- B23B 31/302 {Hydraulic equipment, e.g. pistons, valves, rotary joints}
- B23B 31/305 {the gripping means is a deformable sleeve}
- B23B 31/307 {Vacuum chucks}
- B23B 31/32 . . with jaws carried by diaphragm
- B23B 31/34 . . with means enabling the workpiece to be reversed or tilted
- B23B 31/36 . . with means for adjusting the chuck with respect to the working-spindle
- B23B 31/38 . . with overload clutches {(B23B 31/086 takes precedence)}
- B23B 31/39 . . Jaw changers
- B23B 31/40 . Expansion mandrels
- B23B 31/4006 . . {Gripping the work or tool by a split sleeve (collet chucks B23B 31/20)}
- B23B 31/4013 . . . {Details of the jaws}
- B23B 31/402 . . . {using fluid-pressure means to actuate the gripping means}
- B23B 31/4026 {using mechanical transmission through the spindle}
- B23B 31/4033 . . . {using mechanical transmission through the spindle (B23B 31/4026 takes precedence)}
- B23B 31/404 . . {Gripping the work or tool by jaws moving radially controlled by conical surfaces (see also B23B 31/16158)}
- B23B 31/4046 . . . {Details of the jaws}
- B23B 31/4053 . . . {using fluid-pressure means to actuate the gripping means}
- B23B 31/406 {using mechanical transmission through the spindle}
- B23B 31/4066 . . . {using mechanical transmission through the spindle (B23B 31/406 takes precedence)}
- B23B 31/4073 . . {Gripping the work or tool between planes almost perpendicular to the axis}
- B23B 31/408 . . {Work or tool supported by two conical surfaces}
- B23B 31/4086 . . {Work or tool gripped by a roller movable on an inclined plane}
- B23B 31/4093 . . {Tube supporting means including a centerhole}
- B23B 31/42 . . characterised by features relating primarily to remote control of the gripping means
- B23B 33/00 Drivers; Driving centres, Nose clutches, e.g. lathe dogs**
- B23B 33/005 . {Drivers with driving pins or the like}

Boring; Drilling (for surgical purposes [A61B 17/16](#); in metal using electric current [B23H 9/14](#); by laser beam [B23K 26/00](#); earth or rock drilling [E21B](#))

B23B 35/00 **Methods for boring or drilling, or for working essentially requiring the use of boring or drilling machines; Use of auxiliary equipment in connection with such methods**

B23B 35/005 . {Measures for preventing splitting}

B23B 37/00 **Boring by making use of ultrasonic energy** (essentially using abrasive material [B24B](#), e.g. [B24B 1/04](#))

B23B 39/00 **General-purpose boring or drilling machines or devices; Sets of boring and/or drilling machines**

B23B 39/003 . {Drilling machine situated underneath the workpiece}

B23B 39/006 . {Portal drilling machines}

B23B 39/02 . Boring machines; Combined horizontal boring and milling machines

B23B 39/04 . Co-ordinate boring or drilling machines; Machines for making holes without previous marking

B23B 39/06 . . Equipment for positioning work

B23B 39/08 . . Devices for programme control

B23B 39/10 . characterised by the drive, e.g. by fluid-pressure drive pneumatic power drive

B23B 39/12 . Radial drilling machines

B23B 39/14 . with special provision to enable the machine or the drilling or boring head to be moved into any desired position, e.g. with respect to immovable work

B23B 39/16 . Drilling machines with a plurality of working-spindles; Drilling automatons

B23B 39/161 . . {with parallel work spindles}

B23B 39/162 . . . {having gear transmissions}

B23B 39/163 . . . {having crank pin transmissions}

B23B 39/165 . . . {having universal joint transmissions}

B23B 39/166 . . . {having flexible shaft transmissions}

B23B 39/167 . . . {having belt and chain transmissions}

B23B 39/168 . . {with the work spindles being oblique to each other}

B23B 39/18 . . Setting work or tool carrier along a straight index line

B23B 39/20 . . Setting work or tool carrier along a circular index line; Turret head drilling machines

B23B 39/205 . . . {Turret head drilling machines}

B23B 39/22 . . with working-spindles in opposite headstocks

B23B 39/24 . . designed for programme control

B23B 39/26 . in which the working position of tool or work is controlled by copying discrete points of a pattern ([features of copying devices B23Q 35/02](#))

B23B 39/28 . Associations of only boring or drilling machines directed to a particular metal-working result ([if not producing a particular metal-working result B23Q 39/00](#))

B23B 41/00 **Boring or drilling machines or devices specially adapted for particular work** [{\(surgical drilling machines A61B 17/16\)}](#); **Accessories specially adapted therefor**

- B23B 41/003 . {for drilling elongated pieces, e.g. beams}
- B23B 41/006 . . {the machining device being moved along a fixed workpiece}
- B23B 41/02 . for boring deep holes; Trepanning, e.g. of gun or rifle barrels
- B23B 41/04 . for boring polygonal or other non-circular holes
- B23B 41/06 . for boring conical holes
- B23B 41/10 . for boring holes in steam boilers
- B23B 41/12 . for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts
- B23B 41/14 . for very small holes
- B23B 41/16 . for boring holes with high-quality surface

B23B 43/00 **Boring or drilling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool** (if specially adapted for particular work [B23B 41/00](#))

- B23B 43/02 . to the tailstock of a lathe

B23B 45/00 **Hand-held or like portable drilling machines, e.g. drill guns; Equipment therefor** (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))

- B23B 45/001 . {Housing of the drill, e.g. handgrip}
- B23B 45/003 . {Attachments}
- B23B 45/005 . . {Flexible shafts}
- B23B 45/006 . {Keys for operating the chucks}
- B23B 45/008 . {Gear boxes, clutches, bearings, feeding mechanisms or like equipment}
- B23B 45/02 . driven by electric power
- B23B 45/04 . driven by fluid-pressure or pneumatic power
- B23B 45/042 . . {Turbine motors}
- B23B 45/044 . . {Rotary vane type motors}
- B23B 45/046 . . {Piston engines}
- B23B 45/048 . . . {Internal combustion piston engines}
- B23B 45/06 . driven by man-power
- B23B 45/08 . . for drilling rails or profiled stock
- B23B 45/10 . . by using a fiddle bow or a belt
- B23B 45/12 . . by using a ratchet brace

Components or accessories for boring or drilling machines

B23B 47/00 **Constructional features of components specially designed for boring or drilling machines; Accessories therefor** (working-spindles, bearing sleeves therefor [B23Q 1/70](#); for machine tools in general [B23Q](#))

- B23B 47/26
 - Lifiable or lowerable drill heads or headstocks; Balancing arrangements therefor [{\(weight and flexion compensation B23Q 11/001\)}](#)
- B23B 47/28
 - Drill jigs for workpieces [\(equipment for setting or guiding the drill B23B 49/00\)](#)
- B23B 47/281
 - • [{Jigs for drilling cylindrical parts}](#)
- B23B 47/282
 - • [{Jigs for drilling spherical parts}](#)
- B23B 47/284
 - • [{Jigs for drilling rivets or bolts}](#)
- B23B 47/285
 - • [{Jigs for drilling ski bindings}](#)
- B23B 47/287
 - • [{Jigs for drilling plate-like workpieces \(templates for marking the position of fittings on wings or frames E05D 11/0009\)}](#)
- B23B 47/288
 - • • [{involving dowelling}](#)
- B23B 47/30
 - Additional gear with one or more working-spindles attachable to the main working-spindle and mounting the additional gear [{\(multi-spindle drilling machines B23B 39/16\)}](#)
- B23B 47/32
 - Arrangements for preventing the running-out of drills or fracture of drills when getting through
- B23B 47/34
 - Arrangements for removing chips out of the holes made; Chip- breaking arrangements attached to the tool [{\(chip-breaking in turning machines B23B 25/02; in turning tools B23B 27/22\)}](#)
- B23B 49/00**

Measuring or gauging equipment on boring machines for positioning or guiding the drill; Devices for indicating failure of drills during boring; Centering devices for holes to be bored [\(marking-out equipment B25H 7/00; measuring devices, gauges G01B\)](#)
- B23B 49/001
 - [{Devices for detecting or indicating failure of drills}](#)
- B23B 49/003
 - [{Stops attached to drilling tools, tool holders or drilling machines \(B23B 51/104 takes precedence\)}](#)
- B23B 49/005
 - • [{Attached to the drill}](#)
- B23B 49/006
 - • [{Attached to drilling machines}](#)
- B23B 49/008
 - • • [{Attached to the nose of the drilling machines}](#)
- B23B 49/02
 - Boring templates or bushings
- B23B 49/023
 - • [{Bushings and their connection to the template}](#)
- B23B 49/026
 - • [{Boring bushing carriers attached to the workpiece by glue, magnets, suction devices or the like}](#)
- B23B 49/04
 - Devices for boring or drilling centre holes in workpieces
- B23B 49/06
 - Devices for drilling holes in brake bands or brake linings
- B23B 51/00**

Tools for drilling machines [{\(for drilling wood B27G 15/00; for drilling stone or stone-like materials, e.g. brick, concrete, glass B28D 1/00; drill bits for earth or rock drilling E21B 10/00\)}](#)
- B23B 51/0009
 - [{Spade drills}](#)
- B23B 51/0018
 - [{Drills for enlarging a hole}](#)
- B23B 51/0027
 - • [{by tool swivelling}](#)
- B23B 51/0036
 - • [{by a tool-carrying eccentric}](#)
- B23B 51/0045
 - • [{by expanding or tilting the toolhead}](#)
- B23B 51/0054
 - [{Drill guiding devices}](#)

B23B 51/0063	. {Centerdrills}
B23B 51/0072	. {Drills for making non-circular holes}
B23B 51/0081	. {Conical drills}
B23B 51/009	. {Stepped drills}
B23B 51/02	. Twist drills
B23B 51/04	. Drills for trepanning
B23B 51/0406	. . {Drills with a tubular body (saw cylinders, e.g. having their cutting rim equipped with abrasive particles, for working stone or glass B28D 1/041)}
B23B 51/0413	. . . {with core-cutting-off devices}
B23B 51/042	. . . {with lubricating or cooling equipment}
B23B 51/0426	. . . {with centering devices}
B23B 51/0433	. . . . {with exchangeable cutting inserts, e.g. able to be clamped}
B23B 51/044	. . . {with core holding devices}
B23B 51/0446	. . . . {with exchangeable cutting inserts, e.g. able to be clamped}
B23B 51/0453	. . . {with ejecting devices}
B23B 51/046	. . . . {with exchangeable cutting inserts, e.g. able to be clamped}
B23B 51/0466	. . . {with exchangeable cutting inserts, e.g. able to be clamped}
B23B 51/0473	. . . {details about the connection between the driven shaft and the tubular cutting part}
B23B 51/048	. . {with exchangeable cutting inserts, e.g. able to be clamped (B23B 51/0493 takes precedence)}
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}
B23B 51/05	. . for cutting discs from sheet
B23B 51/06	. Drills with lubricating or cooling equipment {(B23B 51/042 and B23B 51/0486 take precedence)}
B23B 51/08	. Drills combined with tool parts or tools for performing additional working {(B23G 5/20 takes precedence)}
B23B 51/10	. Bits for countersinking
B23B 51/101	. . {Deburring tools (B23B 51/103 takes precedence)}
B23B 51/102	. . {Back spot-facing or chamfering}
B23B 51/103	. . {Deburring or chamfering tools for the ends of tubes or rods}
B23B 51/104	. . {with stops}
B23B 51/105	. . {Deburring or countersinking of radial holes}
B23B 51/106	. . {with a toolholder moving along a direction oblique to the axis}
B23B 51/107	. . {having a pilot}
B23B 51/108	. . {having a centering twist drill}
B23B 51/12	. Adapters for drills or chucks; Tapered sleeves
B23B 51/123	. . {Conical reduction sleeves}
B23B 51/126	. . {Tool elongating devices}
B23B 51/14	. . Adapters for broken drills

B23B 2200/00**Details of cutting inserts**

- B23B 2200/04 . Overall shape
- B23B 2200/0404 . . Hexagonal
- B23B 2200/0409 . . . irregular
- B23B 2200/0414 . . . rounded
- B23B 2200/0419 . . . trigonal
- B23B 2200/0423 . . Irregular
- B23B 2200/0428 . . Lozenge
- B23B 2200/0433 . . . rounded
- B23B 2200/0438 . . Octagonal
- B23B 2200/0442 . . . rounded
- B23B 2200/0447 . . Parallelogram
- B23B 2200/0452 . . . rounded
- B23B 2200/0457 . . Pentagonal
- B23B 2200/0461 . . Round
- B23B 2200/0466 . . Segment or sector of a circle
- B23B 2200/0471 . . Square
- B23B 2200/0476 . . . rounded
- B23B 2200/048 . . Star form
- B23B 2200/0485 . . Trapezium
- B23B 2200/049 . . Triangular
- B23B 2200/0495 . . . rounded
- B23B 2200/08 . Rake or top surfaces
- B23B 2200/081 . . with projections ([chip breaking projections in general B23B 2200/321](#))
- B23B 2200/082 . . with elevated clamping surface
- B23B 2200/083 . . curved
- B23B 2200/085 . . discontinuous
- B23B 2200/086 . . with one or more grooves
- B23B 2200/087 . . . for chip breaking ([chip breaking depressions in general B23B 2200/323](#),
[multiple chip breaking grooves B23B 2200/325](#))
- B23B 2200/088 . . . for clamping
- B23B 2200/12 . Side or flank surfaces
- B23B 2200/121 . . with projections
- B23B 2200/123 . . curved
- B23B 2200/125 . . discontinuous
- B23B 2200/126 . . . stepped
- B23B 2200/128 . . with one or more grooves
- B23B 2200/16 . Supporting or bottom surfaces
- B23B 2200/161 . . with projections
- B23B 2200/162 . . curved

B23B 2200/163	. . discontinuous
B23B 2200/164	. . ground
B23B 2200/165	. . with one or more grooves
B23B 2200/166	. . polygonal
B23B 2200/167	. . with serrations
B23B 2200/168	. . star form
B23B 2200/20	. Top or side views of the cutting edge
B23B 2200/201	. . Details of the nose radius and immediately surrounding area
B23B 2200/202	. . with curved cutting edge
B23B 2200/204	. . with discontinuous cutting edge
B23B 2200/205	. . with cutting edge having a wave form
B23B 2200/207	. . for cutting a particular form corresponding to the form of the cutting edge
B23B 2200/208	. . with wiper, i.e. an auxiliary cutting edge to improve surface finish
B23B 2200/24	. Cross section of the cutting edge
B23B 2200/242	. . bevelled or chamfered
B23B 2200/245	. . rounded
B23B 2200/247	. . sharp
B23B 2200/28	. Angles
B23B 2200/283	. . Negative cutting angles
B23B 2200/286	. . Positive cutting angles
B23B 2200/32	. Chip breaking or chip evacuation
B23B 2200/321	. . by chip breaking projections (with projections on rake surface B23B 2200/081)
B23B 2200/323	. . by chip breaking depressions (with one or more grooves on top surface for chip breaking B23B 2200/087 , with multiple chip breaking grooves B23B 2200/325)
B23B 2200/325	. . by multiple chip-breaking grooves (with one or more grooves on top surface for chip breaking B23B 2200/087 , with chip breaking depression B23B 2200/323)
B23B 2200/326	. . by chip breaking-plates
B23B 2200/328	. . Details of chip evacuation
B23B 2200/36	. Other features of cutting inserts not covered by B23B 2200/04 to B23B 2200/32
B23B 2200/3609	. . Chamfers
B23B 2200/3618	. . Fixation holes
B23B 2200/3627	. . Indexing (with grooves on bottom surfaces B23C 2200/165 , with polygonal bottom surfaces B23B 2200/166 , with star form bottom surfaces B23C 2200/167)
B23B 2200/3636	. . . with cutting geometries differing according to the indexed position
B23B 2200/3645	. . Lands, i.e. the outer peripheral section of the rake face
B23B 2200/3654	. . . being variable (negative lands of variable width B23B 2200/3672)
B23B 2200/3663	. . . having negative cutting angles (with bevelled cutting edge B23C 2200/243)

- B23B 2200/3672 being variable ([lands with variable width B23B 2200/3654](#))
- B23B 2200/3681 . . Split inserts, i.e. comprising two or more sections roughly equal in size and having similar or dissimilar cutting geometries
- B23B 2200/369 . . Mounted tangentially, i.e. where the rake face is not the face with the largest area

B23B 2205/00**Fixation of cutting inserts in holders**

- B23B 2205/02 . Fixation using an elastically deformable clamping member
- B23B 2205/04 . Fixation screws, bolts or pins of particular form
- B23B 2205/045 . . orientated obliquely to the hole in the insert or to the seating surface
- B23B 2205/08 . using an eccentric
- B23B 2205/10 . using two or more fixation screws
- B23B 2205/12 . Seats for cutting inserts
- B23B 2205/125 . . One or more walls of the seat being elastically deformable
- B23B 2205/16 . Shims
- B23B 2205/18 . Systems for indexing the cutting insert automatically
- B23B 2205/21 . Systems for changing the cutting insert automatically
- B23B 2205/215 . . using a magazine

B23B 2210/00**Details of turning tools**

- B23B 2210/02 . Tool holders having multiple cutting inserts
- B23B 2210/022 . . Grooving tools
- B23B 2210/025 . . . Grooving inserts arranged on a turret
- B23B 2210/027 . . . Means for adjusting the grooving inserts
- B23B 2210/04 . Self-sharpening tools
- B23B 2210/06 . Chip breakers
- B23B 2210/08 . Tools comprising intermediary toolholders
- B23B 2210/12 . Tools comprising weakened spot on the tool at a preferred breakage location ([break points on shanks of tools B23B 2231/0212](#))

B23B 2215/00**Details of workpieces**

- B23B 2215/04 . Aircraft components
- B23B 2215/08 . Automobile wheels
- B23B 2215/10 . Ammunition cartridge cases
- B23B 2215/12 . Bearing races
- B23B 2215/16 . Camshafts
- B23B 2215/20 . Crankshafts
- B23B 2215/24 . Components of internal combustion engines ([B23B 2215/16 and B23B 2215/20 take precedence](#))
- B23B 2215/242 . . Cylinder liners
- B23B 2215/245 . . Pistons
- B23B 2215/247 . . Piston rings

- B23B 2215/28 . Firearms, guns
- B23B 2215/32 . Railway tracks
- B23B 2215/36 . Railway wheels
- B23B 2215/40 . Spectacles
- B23B 2215/56 . Springs
- B23B 2215/60 . Steel wool
- B23B 2215/64 . Thin walled components
- B23B 2215/68 . Threaded components
- B23B 2215/72 . Tubes, pipes
- B23B 2215/76 . Components for turbines
- B23B 2215/81 . . Turbine blades

B23B 2220/00 Details of turning, boring or drilling processes

- B23B 2220/04 . Chamferring ([B23B 2220/28 takes precedence](#))
- B23B 2220/08 . Deburring
- B23B 2220/12 . Grooving
- B23B 2220/123 . . Producing internal grooves
- B23B 2220/126 . . Producing ring grooves
- B23B 2220/24 . Finishing ([roughing and finishing B23B 2220/445](#))
- B23B 2220/28 . Parting off and chamferring simultaneously
- B23B 2220/32 . Drilling holes from both sides
- B23B 2220/36 . Turning, boring or drilling at high speeds
- B23B 2220/40 . Peeling
- B23B 2220/44 . Roughing
- B23B 2220/445 . . and finishing
- B23B 2220/52 . Whirling

B23B 2222/00 Materials of tools or workpieces composed of metals, alloys or metal matrices

- B23B 2222/04 . Aluminium
- B23B 2222/12 . Brass
- B23B 2222/14 . Cast iron ([iron B23B 2222/44](#))
- B23B 2222/16 . Cermet
- B23B 2222/21 . Copper
- B23B 2222/24 . Gold
- B23B 2222/28 . Details of hard metal, i.e. cemented carbide
- B23B 2222/32 . Details of high speed steel ([stainless steel B23B 2222/80](#), [steel B23B 2222/84](#))
- B23B 2222/36 . Nickel chrome alloys, e.g. Inconel®
- B23B 2222/41 . Nickel steel alloys, e.g. Invar®
- B23B 2222/44 . Iron ([cast iron B23B 2222/14](#))
- B23B 2222/48 . Lead

B23B 2222/52	• Magnesium
B23B 2222/56	• Non-specified metals
B23B 2222/61	• Metal matrices with non-metallic particles or fibres
B23B 2222/64	• Nickel
B23B 2222/68	• Palladium
B23B 2222/72	• Platinum
B23B 2222/76	• Silver
B23B 2222/80	• Stainless steel (high speed steel B23B 2222/32 , steel B23B 2222/84)
B23B 2222/84	• Steel (high speed steel B23B 2222/32 , stainless steel B23B 2222/80)
B23B 2222/88	• Titanium
B23B 2222/92	• Tungsten
B23B 2222/98	• Zinc

B23B 2224/00**Materials of tools or workpieces composed of a compound including a metal**

B23B 2224/04	• Aluminium oxide
B23B 2224/08	• Aluminium nitride
B23B 2224/12	• Chromium carbide
B23B 2224/16	• Molybdenum disulphide
B23B 2224/20	• Tantalum carbide
B23B 2224/24	• Titanium aluminium nitride
B23B 2224/28	• Titanium carbide
B23B 2224/32	• Titanium carbide nitride (TiCN)
B23B 2224/36	• Titanium nitride
B23B 2224/40	• Tungsten disulphide

B23B 2226/00**Materials of tools or workpieces not comprising a metal**

B23B 2226/04	• Aromatic polyamides
B23B 2226/09	• Asbestos
B23B 2226/12	• Boron nitride
B23B 2226/125	• . cubic [CBN]
B23B 2226/15	• Cardboard
B23B 2226/18	• Ceramic
B23B 2226/27	• Composites
B23B 2226/275	• . Carbon fibre reinforced carbon composites
B23B 2226/31	• Diamond
B23B 2226/315	• . polycrystalline [PCD]
B23B 2226/33	• Elastomers, e.g. rubber
B23B 2226/36	• Epoxy
B23B 2226/39	• Foam
B23B 2226/42	• Gem, i.e. precious stone
B23B 2226/45	• Glass (turning glass B28D 1/16 , drilling glass B28D 1/14)

- B23B 2226/48 . Ice
- B23B 2226/54 . Paper
- B23B 2226/57 . Plasterboard, i.e. sheetrock
- B23B 2226/61 . Plastics not otherwise provided for, e.g. nylon
- B23B 2226/63 . Polyurethane
- B23B 2226/66 . Polytetrafluoroethylene
- B23B 2226/69 . Sapphire
- B23B 2226/72 . Silicon carbide
- B23B 2226/75 . Stone, rock or concrete ([working of stone B28D](#))
- B23B 2226/78 . Textile

B23B 2228/00 Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner

- B23B 2228/04 . applied by chemical vapour deposition [CVD]
- B23B 2228/08 . applied by physical vapour deposition [PVD]
- B23B 2228/10 . Coatings
- B23B 2228/105 . . with specified thickness
- B23B 2228/12 . Abrasive
- B23B 2228/16 . Shape memory alloys
- B23B 2228/21 . Cast, i.e. In the form of a casting
- B23B 2228/24 . Hard, i.e. after being hardened
- B23B 2228/28 . Soft
- B23B 2228/32 . Explosive
- B23B 2228/36 . Multi-layered
- B23B 2228/41 . Highly conductive
- B23B 2228/44 . Materials having grain size less than 1 micrometre, e.g. nano-crystalline
- B23B 2228/48 . Self-luminous, i.e. light-emitting, e.g. fluorescent
- B23B 2228/52 . Solid lubricants
- B23B 2228/56 . Two phase materials
- B23B 2228/61 . Materials comprising whiskers

B23B 2229/00 Details of boring bars or boring heads

- B23B 2229/04 . Guiding pads
- B23B 2229/08 . Cutting edges of different lengths or at different axial positions
- B23B 2229/12 . Cutting inserts located on different radii
- B23B 2229/16 . Boring, facing or grooving heads with integral electric motor

B23B 2231/00 Details of chucks, toolholder shanks or tool shanks

- B23B 2231/02 . Features of shanks of tools not relating to the operation performed by the tool
- B23B 2231/0204 . . Connection of shanks to working elements of tools
- B23B 2231/0208 . . Bores

- B23B 2231/0212 . . Shanks of tools having a reduced cross section at a position where breakage of the tool is preferred ([break points on tools not in shank area B23B 2210/12](#), [shanks with reduced cross sections in general B23B 2231/0252](#))
- B23B 2231/0216 . . Overall cross sectional shape of the shank ([not used](#))
- B23B 2231/022 . . . Triangular
- B23B 2231/0224 Rounded triangular
- B23B 2231/0228 . . . Square
- B23B 2231/0232 . . . Hexagonal
- B23B 2231/0236 . . . Octagonal
- B23B 2231/024 . . . Star form
- B23B 2231/0244 . . . Special forms not otherwise provided for
- B23B 2231/0248 . . Codes for diameters
- B23B 2231/0252 . . Shanks having a section of reduced diameter ([to provide a preferred breaking point B23B 2231/0212](#))
- B23B 2231/0256 . . Flats
- B23B 2231/026 . . Grooves ([keyways B23B 2231/0276](#))
- B23B 2231/0264 . . . Axial grooves
- B23B 2231/0268 . . . Radial grooves
- B23B 2231/0272 . . . Grooves on conical clamping surfaces
- B23B 2231/0276 . . Keyways ([axial grooves B23B 2231/0264](#))
- B23B 2231/028 . . Lugs
- B23B 2231/0284 . . Notches
- B23B 2231/0288 . . Conical shanks of tools in which the cone is not formed as one continuous surface
- B23B 2231/0292 . . Flanges of conical shanks
- B23B 2231/0296 . . Ends of conical shanks, e.g. pull studs, tangs
- B23B 2231/04 . . Adapters
- B23B 2231/06 . Chucks for handtools having means for opening and closing the jaws using the driving motor of the handtool
- B23B 2231/08 . Chucks for shanks of tools having means for reducing the bending of the retained shanks
- B23B 2231/10 . Chucks having data storage chips
- B23B 2231/12 . Chucks having means to amplify the force produced by the actuating means to increase the clamping force
- B23B 2231/14 . Chucks with clamping force limitation means
- B23B 2231/20 . Collet chucks
- B23B 2231/2002 . . Collets having blade-like jaws
- B23B 2231/2005 . . Keys preventing rotation
- B23B 2231/2008 . . Bores holding the collet having a slightly conical profile
- B23B 2231/201 . . Operating surfaces of collets, i.e. the surface of the collet acted on by the operating means

B23B 2231/2013	. . . Non-cylindrical (polygonal B23B 2231/2016)
B23B 2231/2016	. . . Polygonal
B23B 2231/2018	. . . with a saw-tooth profile
B23B 2231/2021	. . . comprising two different cones
B23B 2231/2024	. . Non-circular surfaces of collets for the transmission of torque
B23B 2231/2027	. . Gripping surfaces, i.e. the surface contacting the tool or workpiece
B23B 2231/2029	. . . Conical
B23B 2231/2032	. . . with non-cylindrical cross section
B23B 2231/2035	. . . Polygonal
B23B 2231/2037	. . . Roughened
B23B 2231/204	. . . with saw tooth profiles
B23B 2231/2043	. . . Discontinuous, interrupted or split
B23B 2231/2045	. . . comprising two or more diameters, e.g. stepped
B23B 2231/2048	. . Collets comprising inserts
B23B 2231/2051	. . . brazed in position
B23B 2231/2054	. . . glued in position
B23B 2231/2056	. . . where the insert forms part of the surface gripping the workpiece or tool
B23B 2231/2059	. . . Hard inserts
B23B 2231/2062	. . . Inserts mechanically clamped in the collet
B23B 2231/2064	. . . Inserts in the form of a roll
B23B 2231/2067	. . . Soft inserts
B23B 2231/207	. . . Inserts welded in position
B23B 2231/2072	. . Jaws of collets
B23B 2231/2075	. . . of special form
B23B 2231/2078	. . Jaw carriers, i.e. components retaining the collet itself
B23B 2231/2081	. . Keys, spanners or wrenches to operate the collet chuck
B23B 2231/2083	. . Collets comprising screw threads
B23B 2231/2086	. . Collets in which the jaws are formed as separate elements, i.e. not joined together
B23B 2231/2089	. . Slits of collets
B23B 2231/2091	. . . extending from both axial ends of the collet
B23B 2231/2094	. . . Helical
B23B 2231/2097	. . . having a special form not otherwise provided for
B23B 2231/22	. Compensating chucks, i.e. with means for the compensation of irregularities of form or position
B23B 2231/24	. Cooling or lubrication means
B23B 2231/26	. Detection of clamping (in general B23Q 17/006)
B23B 2231/28	. Dust covers (nose pieces in chucks B23B 2231/44 , dust covers for turning, boring or drilling in general B23B 2260/058)
B23B 2231/30	. Chucks with four jaws
B23B 2231/32	. Guideways for jaws

- B23B 2231/34 . Jaws
- B23B 2231/345 . . Different jaws
- B23B 2231/36 . Sealed joints
- B23B 2231/365 . . using O-rings
- B23B 2231/38 . Keyless chucks for hand tools
- B23B 2231/40 . Chucks having a pivotal retention element in the form of a laterally acting cam
- B23B 2231/42 . Chucks operated by a motor which is movable to engage with, or disengage from, the chuck operating means
- B23B 2231/44 . Nose pieces ([dust covers in chucks B23B 2231/28](#), [dust covers for turning, boring or drilling in general B23B 2260/058](#))
- B23B 2231/46 . Pins
- B23B 2231/48 . Polygonal cross sections
- B23B 2231/50 . Devices to counteract clamping forces exerted within the spindle in order to release the tool or workpiece
- B23B 2231/52 . Chucks with means to loosely retain the tool or workpiece in the unclamped position
- B23B 2231/54 . Chucks for taps

B23B 2233/00**Details of centres or drivers**

- B23B 2233/04 . Means to allow the facing of the axial end of the workpiece near the axis of rotation
- B23B 2233/08 . Centres or drivers comprising a ball
- B23B 2233/12 . Centres or drivers with a special arrangement of bearings or with special bearings
- B23B 2233/16 . Centres or drivers comprising chucks
- B23B 2233/20 . Centres or drivers with convex surfaces
- B23B 2233/24 . Centres or drivers with inserts
- B23B 2233/28 . Centres or drivers supporting the workpiece at three points around the circumference
- B23B 2233/32 . Yieldable centres

B23B 2235/00**Turning of brake discs, drums or hubs**

- B23B 2235/04 . Machining of brake discs
- B23B 2235/045 . . Simultaneous machining of both sides of the brake disc
- B23B 2235/12 . Machining of brake drums
- B23B 2235/16 . Machining of hubs
- B23B 2235/21 . Compensation of run out

B23B 2240/00**Details of connections of tools or workpieces**

- B23B 2240/04 . Bayonet connections
- B23B 2240/08 . Brazed connections
- B23B 2240/11 . Soldered connections
- B23B 2240/16 . Welded connections

B23B 2240/21	<ul style="list-style-type: none"> • Glued connections
B23B 2240/24	<ul style="list-style-type: none"> • Connections using hollow screws, e.g. for the transmission of coolant
B23B 2240/28	<ul style="list-style-type: none"> • Shrink-fitted connections, i.e. using heating and cooling to produce interference fits (shrink fits chucks B23B 31/1179)
B23B 2240/32	<ul style="list-style-type: none"> • Press fits
B23B 2240/36	<ul style="list-style-type: none"> • Connections using a tongue and a hollow of corresponding prismatic form
B23B 2247/00	Details of drilling jigs
B23B 2247/02	<ul style="list-style-type: none"> • Jigs for drilling spectacles (machines for drilling spectacle lenses B28D 1/143)
B23B 2247/04	<ul style="list-style-type: none"> • Jigs using one or more holes as datums for drilling further holes
B23B 2247/06	<ul style="list-style-type: none"> • Jigs for drilling holes for lock sets for doors
B23B 2247/08	<ul style="list-style-type: none"> • Jigs for drilling overlapping or interfering holes
B23B 2247/10	<ul style="list-style-type: none"> • Jigs for drilling inclined holes
B23B 2247/12	<ul style="list-style-type: none"> • Drilling jigs with means to affix the jig to the workpiece
B23B 2247/14	<ul style="list-style-type: none"> • Jigs for drilling flanges
B23B 2247/16	<ul style="list-style-type: none"> • Jigs for drilling stairs and associated components, e.g. banisters or handrails
B23B 2247/18	<ul style="list-style-type: none"> • Jigs comprising V-blocks
B23B 2247/20	<ul style="list-style-type: none"> • Jigs for drilling holes for lock wires in bolts or nuts
B23B 2250/00	Compensating adverse effects during turning, boring or drilling
B23B 2250/04	<ul style="list-style-type: none"> • Balancing rotating components (vibration damping B23B 2250/16)
B23B 2250/08	<ul style="list-style-type: none"> • Compensation of centrifugal force (use of centrifugal force B23B 2270/04)
B23B 2250/12	<ul style="list-style-type: none"> • Cooling and lubrication
B23B 2250/125	<ul style="list-style-type: none"> • . Improving heat transfer away from the working area of the tool by conduction
B23B 2250/16	<ul style="list-style-type: none"> • Damping of vibrations (balancing rotating components B23B 2250/04)
B23B 2251/00	Details of tools for drilling machines
B23B 2251/02	<ul style="list-style-type: none"> • Connections between shanks and removable cutting heads
B23B 2251/04	<ul style="list-style-type: none"> • Angles, e.g. cutting angles
B23B 2251/043	<ul style="list-style-type: none"> • . Helix angles
B23B 2251/046	<ul style="list-style-type: none"> • . . Variable
B23B 2251/08	<ul style="list-style-type: none"> • Side or plan views of cutting edges
B23B 2251/082	<ul style="list-style-type: none"> • . Curved cutting edges
B23B 2251/085	<ul style="list-style-type: none"> • . Discontinuous or interrupted cutting edges
B23B 2251/087	<ul style="list-style-type: none"> • . Cutting edges with a wave form
B23B 2251/12	<ul style="list-style-type: none"> • Cross sectional views of the cutting edges
B23B 2251/122	<ul style="list-style-type: none"> • . Bevelled cutting edges
B23B 2251/125	<ul style="list-style-type: none"> • . Rounded cutting edges
B23B 2251/127	<ul style="list-style-type: none"> • . Sharp cutting edges
B23B 2251/14	<ul style="list-style-type: none"> • Configuration of the cutting part, i.e. the main cutting edges
B23B 2251/18	<ul style="list-style-type: none"> • Configuration of the drill point

- B23B 2251/20 . Number of cutting edges
- B23B 2251/201 . . Single cutting edge
- B23B 2251/202 . . Three cutting edges
- B23B 2251/204 . . Four cutting edges
- B23B 2251/205 . . Five cutting edges
- B23B 2251/207 . . Six cutting edges
- B23B 2251/208 . . Eight cutting edges
- B23B 2251/24 . Overall form of drilling tools
- B23B 2251/241 . . Cross sections of the diameter of the drill
- B23B 2251/242 . . . increasing in a direction towards the shank from the tool tip
- B23B 2251/244 . . . decreasing in a direction towards the shank from the tool tip
- B23B 2251/245 . . . Variable cross sections
- B23B 2251/247 . . Drilling tools having a working portion at both ends of the shank
- B23B 2251/248 . . Drills in which the outer surface is of special form
- B23B 2251/28 . Arrangement of teeth
- B23B 2251/282 . . Unequal spacing of cutting edges in the circumferential direction
- B23B 2251/285 . . Cutting teeth arranged at different heights
- B23B 2251/287 . . Cutting edges having different lengths
- B23B 2251/40 . Flutes, i.e. chip conveying grooves
- B23B 2251/402 . . with increasing depth in a direction towards the shank from the tool tip
- B23B 2251/404 . . with decreasing depth in a direction towards the shank from the tool tip
- B23B 2251/406 . . of special form not otherwise provided for
- B23B 2251/408 . . Spiral grooves
- B23B 2251/42 . Types of drill
- B23B 2251/422 . . Deep hole drills, e.g. ejector drills
- B23B 2251/424 . . . Gun drills
- B23B 2251/426 . . Micro-drills
- B23B 2251/428 . . Drills for cutting plugs of material
- B23B 2251/44 . Margins, i.e. the area of the circumference following the axial cutting edge in the direction of rotation
- B23B 2251/443 . . Double margin drills
- B23B 2251/446 . . Drills with variable margins
- B23B 2251/46 . Drills having a centre free from cutting edges or with recessed cutting edges
- B23B 2251/48 . Chip breakers
- B23B 2251/50 . Drilling tools comprising cutting inserts
- B23B 2251/505 . . set at different heights
- B23B 2251/52 . Depth indicators
- B23B 2251/54 . Drilling tools having provision for drilling different diameters
- B23B 2251/56 . Guiding pads
- B23B 2251/58 . Guiding rolls

- B23B 2251/60 . Drills with pilots
- B23B 2251/603 . . Detachable pilots, e.g. in the form of a drill
- B23B 2251/606 . . . being a twist drill
- B23B 2251/62 . Drilling tools having means to reinforce the shank, e.g. drills having small shanks being gripped by devices having a larger shank
- B23B 2251/64 . Drills operating in the reverse direction, i.e. in the unscrewing direction of a right-hand thread
- B23B 2251/66 . Drills with provision to be used as a screwdriver
- B23B 2251/68 . Drills with provision for suction ([use of suction in turning, boring or drilling in general B23B 2270/62](#))
- B23B 2251/70 . Drills with vibration suppressing means

B23B 2260/00 Details of constructional elements

- B23B 2260/002 . Accumulators
- B23B 2260/004 . Adjustable elements
- B23B 2260/0045 . . Two elements adjustable relative to each other in three mutually perpendicular directions
- B23B 2260/008 . Bearings
- B23B 2260/0082 . . Sliding contact bearings
- B23B 2260/0085 . . Needle roller bearings
- B23B 2260/0087 . . Preloading of bearings
- B23B 2260/016 . Bolts
- B23B 2260/018 . Brushes
- B23B 2260/02 . Cams
- B23B 2260/022 . Balls
- B23B 2260/024 . Batteries
- B23B 2260/026 . Bushings, e.g. adapter sleeves
- B23B 2260/028 . Chains
- B23B 2260/03 . Clamps
- B23B 2260/032 . Diaphragms
- B23B 2260/034 . Drawbars
- B23B 2260/036 . Cables
- B23B 2260/038 . Cartridges
- B23B 2260/04 . Centre drills of known configuration, e.g. the provision of a centre drill in centres or chucks
- B23B 2260/042 . Collets of known configuration, i.e. devices using a collet
- B23B 2260/044 . Clutches
- B23B 2260/0445 . . Overload clutches
- B23B 2260/048 . Devices to regulate the depth of cut
- B23B 2260/0482 . . Depth controls, e.g. depth stops ([stops B23B 2260/12](#))
- B23B 2260/0485 . . Depth gauges
- B23B 2260/0487 . . Depth indicators ([indication scales B23B 2260/088](#))

B23B 2260/056	. Differential screw threads
B23B 2260/058	. Dust covers (dust covers in chucks B23B 2231/28 , nose pieces in chucks B23B 2231/44)
B23B 2260/062	. Electric motors
B23B 2260/0625	. . Linear motors
B23B 2260/066	. Electrostrictive elements
B23B 2260/068	. Flexible members
B23B 2260/07	. Gears
B23B 2260/072	. Grooves
B23B 2260/0725	. . Spiral
B23B 2260/076	. Harmonic drive gearboxes, i.e. reduction gearing including wave generator, flex spline and a circular spline
B23B 2260/078	. Hand tools used to operate chucks or to assemble, adjust or disassemble tools or equipment used for turning, boring or drilling
B23B 2260/0785	. . for unclamping cutting inserts
B23B 2260/082	. Holes
B23B 2260/084	. Hirth couplings
B23B 2260/088	. Indication scales
B23B 2260/09	. Knurled surfaces
B23B 2260/092	. Lasers
B23B 2260/094	. Levels, e.g. spirit levels
B23B 2260/096	. Levers
B23B 2260/098	. Magazines
B23B 2260/10	. Magnets
B23B 2260/102	. Magnetostrictive elements
B23B 2260/104	. Markings, i.e. symbols or other indicating marks
B23B 2260/106	. Nuts
B23B 2260/108	. Piezoelectric elements
B23B 2260/11	. Planetary drives
B23B 2260/112	. Projections
B23B 2260/114	. Rings
B23B 2260/116	. Rollers or rolls
B23B 2260/118	. Suction pads or vacuum cups, e.g. for attachment of guides to workpieces
B23B 2260/12	. Stops (depth controls B23B 2260/0482)
B23B 2260/122	. Safety devices
B23B 2260/124	. Screws
B23B 2260/126	. Seals
B23B 2260/128	. Sensors
B23B 2260/1285	. . Vibration sensors
B23B 2260/132	. Serrations (cutting inserts with serrated bottom surfaces B23B 2200/167)
B23B 2260/134	. Spacers or shims (shims for supporting cutting inserts B23B 2205/16)

- B23B 2260/136 . Springs
- B23B 2260/138 . Screw threads
- B23B 2260/1381 . . Conical
- B23B 2260/1383 . . with round thread profile
- B23B 2260/1385 . . with square thread profile
- B23B 2260/1386 . . with trapezoidal thread profile
- B23B 2260/1388 . . with special profile not otherwise provided for
- B23B 2260/142 . Valves
- B23B 2260/144 . Wear indicators
- B23B 2260/146 . Wedges
- B23B 2260/158 . Worms and worm wheels

B23B 2265/00**Details of general geometric configurations**

- B23B 2265/08 . Conical
- B23B 2265/12 . Eccentric
- B23B 2265/16 . Elliptical
- B23B 2265/32 . Polygonal
- B23B 2265/322 . . Square
- B23B 2265/324 . . Pentagonal
- B23B 2265/326 . . Hexagonal
- B23B 2265/328 . . Octagonal
- B23B 2265/34 . Round
- B23B 2265/36 . Spherical

B23B 2270/00**Details of turning, boring or drilling machines, processes or tools not otherwise provided for**

- B23B 2270/02 . Use of a particular power source
- B23B 2270/022 . . Electricity
- B23B 2270/025 . . Hydraulics
- B23B 2270/027 . . Pneumatics
- B23B 2270/04 . Use of centrifugal force ([compensating centrifugal force B23B 2250/08](#))
- B23B 2270/06 . Use of elastic deformation
- B23B 2270/08 . Clamping mechanisms; Provisions for clamping ([B23B 2210/00 takes precedence](#))
- B23B 2270/09 . Details relating to unclamping
- B23B 2270/10 . Use of ultrasound
- B23B 2270/12 . Centering of two components relative to one another
- B23B 2270/14 . Constructions comprising exactly two similar components
- B23B 2270/16 . Constructions comprising three or more similar components
- B23B 2270/20 . Internally located features, machining or gripping of internal surfaces
- B23B 2270/205 . . Machining or gripping both internal and external surfaces

- B23B 2270/22 . Externally located features, machining or gripping of external surfaces
([machining or gripping of both internal and external surfaces B23B 2270/205](#))
- B23B 2270/24 . Tool, chuck or other device activated by the coolant or lubrication system of the machine tool
- B23B 2270/26 . Burnishing
- B23B 2270/28 . Cleaning
- B23B 2270/30 . Chip guiding or removal ([use of suction B23B 2270/62](#), [drilling tools with provision for suction B23B 2251/68](#))
- B23B 2270/32 . Use of electronics
- B23B 2270/34 . Means for guiding
- B23B 2270/36 . Identification of tooling or other equipment
- B23B 2270/38 . Using magnetic fields ([magnets B23B 2260/10](#))
- B23B 2270/48 . Measuring or detecting
- B23B 2270/483 . . Measurement of force
- B23B 2270/486 . . Measurement of rotational speed
- B23B 2270/54 . Methods of turning, boring or drilling not otherwise provided for
- B23B 2270/56 . Turning, boring or drilling tools or machines with provision for milling
- B23B 2270/58 . Oblique elements
- B23B 2270/60 . Prevention of rotation
- B23B 2270/62 . Use of suction ([suction pads or vacuum cups B23B 2260/118](#), [drilling tools with provision for suction B23B 2251/68](#), [chip removal B23B 2270/30](#))