

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 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](#)

Guidance heading: 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 . Small lathes, e.g. for toolmakers (specially designed for watchmakers [G04D 3/00](#))
- B23B 3/04 . Turning-machines in which the workpiece is rotated by means at a distance from the headstock
- B23B 3/06 . 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 . . { Arrangements for performing other machining operations, e.g. milling, drilling }
- B23B 3/08 . Turning-machines characterised by the use of faceplates
- B23B 3/10 . . with the faceplate horizontal, i.e. vertical boring and turning machines
- B23B 3/12 . . with the faceplate vertical, i.e. face lathes
- B23B 3/14 . . Mountings or drives of faceplates { (rotatable members, e.g. faceplates [B23Q 1/50](#)) }
- B23B 3/16 . Turret lathes for turning individually-chucked workpieces { (turrets [B23B 29/24](#)) }
- B23B 3/161 . . { lathe with one toolslide carrying one turret head }
- B23B 3/162 . . . { Arrangements for performing other machining operations, e.g. milling, drilling }
- B23B 3/164 . . { lathe with one toolslide carrying two or more turret heads }
- B23B 3/165 . . . { Arrangements for performing other machining operations, e.g. milling, drilling }
- B23B 3/167 . . { lathe with two or more toolslides carrying turrets }
- B23B 3/168 . . . { Arrangements for performing other machining operations, e.g. milling, drilling }
- B23B 3/22 . 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 (shearing [B23D](#)) { [B23D 21/00](#) takes precedence }
- 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 }

Guidance heading: 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 31/10B , B23B 31/10C , } 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	....	pivotally movable in planes containing the axis of the chuck
B23B 31/185	.....	{ moving first parallel to the axis then pivotally 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 }

Guidance heading: **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 splintering }

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

Guidance heading: **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 [L23C 200/16F](#), 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 L231/20H3)
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 L23B 260/58](#))

- 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 [L23B 260/58](#))

- 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 . Glued connections
- B23B 2240/24 . Connections using hollow screws, e.g. for the transmission of coolant
- B23B 2240/28 . Shrink-fitted connections, i.e. using heating and cooling to produce interference fits
([shrink fits chucks B23B 31/1179](#))
- B23B 2240/32 . Press fits
- B23B 2240/36 . Connections using a tongue and a hollow of corresponding prismatic form
- B23B 2247/00 Details of drilling jigs**
- B23B 2247/02 . Jigs for drilling spectacles ([machines for drilling spectacle lenses B28D 1/143](#))
- B23B 2247/04 . Jigs using one or more holes as datums for drilling further holes
- B23B 2247/06 . Jigs for drilling holes for lock sets for doors
- B23B 2247/08 . Jigs for drilling overlapping or interfering holes
- B23B 2247/10 . Jigs for drilling inclined holes
- B23B 2247/12 . Drilling jigs with means to affix the jig to the workpiece
- B23B 2247/14 . Jigs for drilling flanges
- B23B 2247/16 . Jigs for drilling stairs and associated components, e.g. banisters or handrails
- B23B 2247/18 . Jigs comprising V-blocks
- B23B 2247/20 . 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 . Balancing rotating components ([vibration damping B23B 2250/16](#))
- B23B 2250/08 . Compensation of centrifugal force ([use of centrifugal force B23B 2270/04](#))
- B23B 2250/12 . Cooling and lubrication
- B23B 2250/125 . . Improving heat transfer away from the working area of the tool by conduction
- B23B 2250/16 . Damping of vibrations ([balancing rotating components B23B 2250/04](#))
- B23B 2251/00 Details of tools for drilling machines**
- B23B 2251/02 . Connections between shanks and removable cutting heads

- B23B 2251/04 . Angles, e.g. cutting angles
- B23B 2251/043 . . Helix angles
- B23B 2251/046 . . . Variable
- B23B 2251/08 . Side or plan views of cutting edges
- B23B 2251/082 . . Curved cutting edges
- B23B 2251/085 . . Discontinuous or interrupted cutting edges
- B23B 2251/087 . . Cutting edges with a wave form
- B23B 2251/12 . Cross sectional views of the cutting edges
- B23B 2251/122 . . Bevelled cutting edges
- B23B 2251/125 . . Rounded cutting edges
- B23B 2251/127 . . Sharp cutting edges
- B23B 2251/14 . Configuration of the cutting part, i.e. the main cutting edges
- B23B 2251/18 . 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 [L23B 260/88](#))
- B23B 2260/056 . Differential screw threads
- B23B 2260/058 . Dust covers (dust covers in chucks [B23B 2231/28](#), nose pieces in chucks [L231/44](#))
- 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 <u>L23B 260/48C</u>)
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 <u>B23B 2200/167</u>)
B23B 2260/134	. Spacers or shims (shims for supporting cutting inserts <u>B23B 2205/16</u>)
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](#))