

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 indentical 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 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 [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 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 . 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 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 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 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](#))