

**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 }

<b>B23B 27/00</b>	<b>Tools for turning or boring machines (for drilling machines <a href="#">B23B 51/00</a>); Tools of a similar kind in general; Accessories therefor</b> { Note: all subgroups except <a href="#">B23B 27/12</a> relate to tools with a shank }
<a href="#">B23B 27/002</a>	. { with vibration damping means }
<a href="#">B23B 27/005</a>	. { Geometry of the chip-forming or the clearance planes, e.g. tool angles ( <a href="#">B23B 27/141</a> and <a href="#">B23B 27/22</a> take precedence)}
<a href="#">B23B 27/007</a>	. { for internal turning (boring bars <a href="#">B23B 29/02</a> , boring heads <a href="#">B23B 29/03</a> ; milling cutters <a href="#">B23C 5/00</a> ; reamers <a href="#">B23D 77/00</a> )}
<a href="#">B23B 27/02</a>	. Cutting tools with straight main part and cutting edge at an angle ( <a href="#">B23B 27/04</a> to <a href="#">B23B 27/08</a> take precedence)
<a href="#">B23B 27/04</a>	. Cutting-off tools ( <a href="#">B23B 27/08</a> takes precedence; { toolholders for cutting-off inserts <a href="#">B23B 29/043</a> })
<a href="#">B23B 27/045</a>	.. { with chip-breaking arrangements }
<a href="#">B23B 27/06</a>	. profile cutting tools, i.e. forming-tools
<a href="#">B23B 27/065</a>	.. { Thread-turning tools }
<a href="#">B23B 27/08</a>	. Cutting tools with blade- or disc-like main parts {(with disc-like main parts <a href="#">B23B 27/083</a> )}
<a href="#">B23B 27/083</a>	.. { Cutting tools with disc-like main parts }
<a href="#">B23B 27/086</a>	.. { with yieldable support for the cutting insert }
<a href="#">B23B 27/10</a>	. Cutting tools with special provision for cooling {(drills with lubricating or cooling equipment <a href="#">B23B 51/06</a> ; features relating to lubricating or cooling of milling cutters <a href="#">B23C 5/28</a> ; arrangements or devices for cooling or lubricating tools or work <a href="#">B23Q 11/10</a> )}
<a href="#">B23B 27/12</a>	.. with a continuously-rotated circular cutting edge; holders therefor
<a href="#">B23B 27/14</a>	. Cutting tools of which the bits or tips { or cutting inserts } are of special material
<a href="#">B23B 27/141</a>	.. { 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, <a href="#">B23B 27/1603</a> ; with removable plate-like milling cutting inserts of special shape <a href="#">B23C 5/202</a> )}
<a href="#">B23B 27/143</a>	... { characterised by having chip-breakers }
<a href="#">B23B 27/145</a>	... { characterised by having a special shape }
<a href="#">B23B 27/146</a>	.... { Means to improve the adhesion between the substrate and the coating }
<a href="#">B23B 27/148</a>	.. { Composition of the cutting inserts }
<a href="#">B23B 27/16</a>	.. with exchangeable cutting bits { or cutting inserts }, e.g. able to be clamped
<a href="#">B23B 27/1603</a>	... { with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove ( <a href="#">B23B 27/1614</a> to <a href="#">B23B 27/1655</a> take precedence)}
<a href="#">B23B 27/1607</a>	.... { 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 ( <a href="#">B23B 27/1644</a> 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 ( <a href="#">B23B 27/1644</a> 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 ( <a href="#">B23B 27/1662</a> to <a href="#">B23B 27/1681</a> 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 ( <a href="#">B23B 27/1677</a> takes precedence)}
B23B 27/1666	...	{ with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on chip-forming plane ( <a href="#">B23B 27/1677</a> 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 ( <a href="#">B23B 27/1655</a> and <a href="#">B23B 27/1681</a> 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 {( <a href="#">B23B 27/045</a> , <a href="#">B23B 27/143</a> , <a href="#">B23B 27/16</a> take precedence; arrangements for chip-breaking <a href="#">B23B 25/02</a> ; for milling tools <a href="#">B23C 5/165</a> )}

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 <a href="#">B23B 31/22</a> ) }
B23B 31/1072	....	{ Retention by cylindrical elements (cylindrical elements acting as jaws <a href="#">B23B 31/22</a> ) }
B23B 31/1073	....	{ Retention by conical elements (conical elements acting as jaws <a href="#">B23B 31/22</a> ) }
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 <a href="#">B23B 31/117</a> }
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 <a href="#">B23B 31/16041</a> ) }
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 ( <a href="#">B23B 31/16029</a> 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 <a href="#">B23B 31/123</a> )}
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 ( <a href="#">B23B 31/1607</a> 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 ( <a href="#">B23B 31/16108</a> 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 ( <a href="#">B23B 31/16145</a> 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 ( <a href="#">B23B 31/16183</a> 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 ( <a href="#">B23B 31/1622</a> 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 ( <a href="#">B23B 31/16258</a> 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 splitting }

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

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

- B23B 39/003 . { Drilling machine situated underneath the workpiece }
- B23B 39/006 . { Portal drilling machines }
- B23B 39/02 . Boring machines; Combined horizontal boring and milling machines
- B23B 39/04 . Co-ordinate boring or drilling machines; Machines for making holes without previous marking



- B23B 39/06 . . Equipment for positioning work
- B23B 39/08 . . Devices for programme control
- B23B 39/10 . characterised by the drive, e.g. by fluid-pressure drive pneumatic power drive
- B23B 39/12 . Radial drilling machines
- B23B 39/14 . with special provision to enable the machine or the drilling or boring head to be moved into any desired position, e.g. with respect to immovable work
- B23B 39/16 . Drilling machines with a plurality of working-spindles; Drilling automatons
- B23B 39/161 . . { with parallel work spindles }
- B23B 39/162 . . . { having gear transmissions }
- B23B 39/163 . . . { having crank pin transmissions }
- B23B 39/165 . . . { having universal joint transmissions }
- B23B 39/166 . . . { having flexible shaft transmissions }
- B23B 39/167 . . . { having belt and chain transmissions }
- B23B 39/168 . . { with the work spindles being oblique to each other }
- B23B 39/18 . . Setting work or tool carrier along a straight index line
- B23B 39/20 . . Setting work or tool carrier along a circular index line; Turret head drilling machines
- B23B 39/205 . . . { Turret head drilling machines }
- B23B 39/22 . . with working-spindles in opposite headstocks
- B23B 39/24 . . designed for programme control
- B23B 39/26 . in which the working position of tool or work is controlled by copying discrete points of a pattern ([features of copying devices B23Q 35/02](#))
- B23B 39/28 . Associations of only boring or drilling machines directed to a particular metal-working result ([if not producing a particular metal-working result B23Q 39/00](#))
- B23B 41/00 Boring or drilling machines or devices specially adapted for particular work {(surgical drilling machines [A61B 17/16](#))}; Accessories specially adapted therefor**
- B23B 41/003 . { for drilling elongated pieces, e.g. beams }
- B23B 41/006 . . { the machining device being moved along a fixed workpiece }
- B23B 41/02 . for boring deep holes; Trepanning, e.g. of gun or rifle barrels
- B23B 41/04 . for boring polygonal or other non-circular holes
- B23B 41/06 . for boring conical holes
- B23B 41/10 . for boring holes in steam boilers



- B23B 41/12 . for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts
- B23B 41/14 . for very small holes
- B23B 41/16 . for boring holes with high-quality surface
- B23B 43/00** **Boring or drilling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool** (if specially adapted for particular work [B23B 41/00](#))
- B23B 43/02 . to the tailstock of a lathe
- B23B 45/00** **Hand-held or like portable drilling machines, e.g. drill guns; Equipment therefor** (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))
- B23B 45/001 . { Housing of the drill, e.g. handgrip }
- B23B 45/003 . { Attachments }
- B23B 45/005 . . { Flexible shafts }
- B23B 45/006 . { Keys for operating the chucks }
- B23B 45/008 . { Gear boxes, clutches, bearings, feeding mechanisms or like equipment }
- B23B 45/02 . driven by electric power
- B23B 45/04 . driven by fluid-pressure or pneumatic power
- B23B 45/042 . . { Turbine motors }
- B23B 45/044 . . { Rotary vane type motors }
- B23B 45/046 . . { Piston engines }
- B23B 45/048 . . . { Internal combustion piston engines }
- B23B 45/06 . driven by man-power
- B23B 45/08 . . for drilling rails or profiled stock
- B23B 45/10 . . by using a fiddle bow or a belt
- B23B 45/12 . . by using a ratchet brace

**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

<b>B23B 51/00</b>	<b>Tools for drilling machines</b> {(for drilling wood <a href="#">B27G 15/00</a> ; for drilling stone or stone-like materials, e.g. brick, concrete, glass <a href="#">B28D 1/00</a> ; drill bits for earth or rock drilling <a href="#">E21B 10/00</a> )}
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 <a href="#">B28D 1/041</a> )}
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 ( <a href="#">B23B 51/0493</a> takes precedence)}
B23B 51/0486	.. { with lubricating or cooling equipment ( <a href="#">B23B 51/042</a> 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 {( <a href="#">B23B 51/042</a> and <a href="#">B23B 51/0486</a> 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

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**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

<a href="#">B23B 2200/08</a>	. Rake or top surfaces
<a href="#">B23B 2200/081</a>	.. with projections ( <a href="#">chip breaking projections in general B23B 2200/321</a> )
<a href="#">B23B 2200/082</a>	.. with elevated clamping surface
<a href="#">B23B 2200/083</a>	.. curved
<a href="#">B23B 2200/085</a>	.. discontinuous
<a href="#">B23B 2200/086</a>	.. with one or more grooves
<a href="#">B23B 2200/087</a>	... for chip breaking ( <a href="#">chip breaking depressions in general B23B 2200/323</a> , <a href="#">multiple chip breaking grooves B23B 2200/325</a> )
<a href="#">B23B 2200/088</a>	... for clamping
<a href="#">B23B 2200/12</a>	. Side or flank surfaces
<a href="#">B23B 2200/121</a>	.. with projections
<a href="#">B23B 2200/123</a>	.. curved
<a href="#">B23B 2200/125</a>	.. discontinuous
<a href="#">B23B 2200/126</a>	... stepped
<a href="#">B23B 2200/128</a>	.. with one or more grooves
<a href="#">B23B 2200/16</a>	. Supporting or bottom surfaces
<a href="#">B23B 2200/161</a>	.. with projections
<a href="#">B23B 2200/162</a>	.. curved
<a href="#">B23B 2200/163</a>	.. discontinuous
<a href="#">B23B 2200/164</a>	.. ground
<a href="#">B23B 2200/165</a>	.. with one or more grooves
<a href="#">B23B 2200/166</a>	.. polygonal
<a href="#">B23B 2200/167</a>	.. with serrations
<a href="#">B23B 2200/168</a>	.. star form
<a href="#">B23B 2200/20</a>	. Top or side views of the cutting edge
<a href="#">B23B 2200/201</a>	.. Details of the nose radius and immediately surrounding area
<a href="#">B23B 2200/202</a>	.. with curved cutting edge
<a href="#">B23B 2200/204</a>	.. with discontinuous cutting edge
<a href="#">B23B 2200/205</a>	.. with cutting edge having a wave form
<a href="#">B23B 2200/207</a>	.. for cutting a particular form corresponding to the form of the cutting edge
<a href="#">B23B 2200/208</a>	.. with wiper, i.e. an auxiliary cutting edge to improve surface finish
<a href="#">B23B 2200/24</a>	. Cross section of the cutting edge
<a href="#">B23B 2200/242</a>	.. bevelled or chamfered
<a href="#">B23B 2200/245</a>	.. rounded
<a href="#">B23B 2200/247</a>	.. sharp
<a href="#">B23B 2200/28</a>	. Angles
<a href="#">B23B 2200/283</a>	.. 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



<a href="#">B23B 2222/24</a>	. Gold
<a href="#">B23B 2222/28</a>	. Details of hard metal, i.e. cemented carbide
<a href="#">B23B 2222/32</a>	. Details of high speed steel ( <a href="#">stainless steel B23B 2222/80</a> , <a href="#">steel B23B 2222/84</a> )
<a href="#">B23B 2222/36</a>	. Nickel chrome alloys, e.g. Inconel®;
<a href="#">B23B 2222/41</a>	. Nickel steel alloys, e.g. invar®;
<a href="#">B23B 2222/44</a>	. Iron ( <a href="#">cast iron B23B 2222/14</a> )
<a href="#">B23B 2222/48</a>	. Lead
<a href="#">B23B 2222/52</a>	. Magnesium
<a href="#">B23B 2222/56</a>	. Non-specified metals
<a href="#">B23B 2222/61</a>	. Metal matrices with non-metallic particles or fibres
<a href="#">B23B 2222/64</a>	. Nickel
<a href="#">B23B 2222/68</a>	. Palladium
<a href="#">B23B 2222/72</a>	. Platinum
<a href="#">B23B 2222/76</a>	. Silver
<a href="#">B23B 2222/80</a>	. Stainless steel ( <a href="#">high speed steel B23B 2222/32</a> , <a href="#">steel B23B 2222/84</a> )
<a href="#">B23B 2222/84</a>	. Steel ( <a href="#">high speed steel B23B 2222/32</a> , <a href="#">stainless steel B23B 2222/80</a> )
<a href="#">B23B 2222/88</a>	. Titanium
<a href="#">B23B 2222/92</a>	. Tungsten
<a href="#">B23B 2222/98</a>	. Zinc
<b><a href="#">B23B 2224/00</a></b>	<b>Materials of tools or workpieces composed of a compound including a metal</b>
<a href="#">B23B 2224/04</a>	. Aluminium oxide
<a href="#">B23B 2224/08</a>	. Aluminium nitride
<a href="#">B23B 2224/12</a>	. Chromium carbide
<a href="#">B23B 2224/16</a>	. Molybdenum disulphide
<a href="#">B23B 2224/20</a>	. 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
<b>B23B 2226/00</b>	<b>Materials of tools or workpieces not comprising a metal</b>
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 ( <a href="#">turning glass B28D 1/16</a> , <a href="#">drilling glass B28D 1/14</a> )
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 ( <a href="#">working of stone B28D</a> )
B23B 2226/78	. Textile
<b>B23B 2228/00</b>	<b>Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner</b>
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
<b>B23B 2229/00</b>	<b>Details of boring bars or boring heads</b>

- 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

<a href="#">B23B 2260/0085</a>	. .	Needle roller bearings
<a href="#">B23B 2260/0087</a>	. .	Preloading of bearings
<a href="#">B23B 2260/016</a>	.	Bolts
<a href="#">B23B 2260/018</a>	.	Brushes
<a href="#">B23B 2260/02</a>	.	Cams
<a href="#">B23B 2260/022</a>	.	Balls
<a href="#">B23B 2260/024</a>	.	Batteries
<a href="#">B23B 2260/026</a>	.	Bushings, e.g. adapter sleeves
<a href="#">B23B 2260/028</a>	.	Chains
<a href="#">B23B 2260/03</a>	.	Clamps
<a href="#">B23B 2260/032</a>	.	Diaphragms
<a href="#">B23B 2260/034</a>	.	Drawbars
<a href="#">B23B 2260/036</a>	.	Cables
<a href="#">B23B 2260/038</a>	.	Cartridges
<a href="#">B23B 2260/04</a>	.	Centre drills of known configuration, e.g. the provision of a centre drill in centres or chucks
<a href="#">B23B 2260/042</a>	.	Collets of known configuration, i.e. devices using a collet
<a href="#">B23B 2260/044</a>	.	Clutches
<a href="#">B23B 2260/0445</a>	. .	Overload clutches
<a href="#">B23B 2260/048</a>	.	Devices to regulate the depth of cut
<a href="#">B23B 2260/0482</a>	. .	Depth controls, e.g. depth stops ( <a href="#">stops B23B 2260/12</a> )
<a href="#">B23B 2260/0485</a>	. .	Depth gauges
<a href="#">B23B 2260/0487</a>	. .	Depth indicators ( <a href="#">indication scales B23B 2260/088</a> )
<a href="#">B23B 2260/056</a>	.	Differential screw threads
<a href="#">B23B 2260/058</a>	.	Dust covers ( <a href="#">dust covers in chucks B23B 2231/28</a> , <a href="#">nose pieces in chucks L231/44</a> )
<a href="#">B23B 2260/062</a>	.	Electric motors
<a href="#">B23B 2260/0625</a>	. .	Linear motors
<a href="#">B23B 2260/066</a>	.	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

<a href="#">B23B 2260/12</a>	. Stops ( <a href="#">depth controls B23B 2260/0482</a> )
<a href="#">B23B 2260/122</a>	. Safety devices
<a href="#">B23B 2260/124</a>	. Screws
<a href="#">B23B 2260/126</a>	. Seals
<a href="#">B23B 2260/128</a>	. Sensors
<a href="#">B23B 2260/1285</a>	.. Vibration sensors
<a href="#">B23B 2260/132</a>	. Serrations ( <a href="#">cutting inserts with serrated bottom surfaces B23B 2200/167</a> )
<a href="#">B23B 2260/134</a>	. Spacers or shims ( <a href="#">shims for supporting cutting inserts B23B 2205/16</a> )
<a href="#">B23B 2260/136</a>	. Springs
<a href="#">B23B 2260/138</a>	. Screw threads
<a href="#">B23B 2260/1381</a>	.. Conical
<a href="#">B23B 2260/1383</a>	.. with round thread profile
<a href="#">B23B 2260/1385</a>	.. with square thread profile
<a href="#">B23B 2260/1386</a>	.. with trapezoidal thread profile
<a href="#">B23B 2260/1388</a>	.. with special profile not otherwise provided for
<a href="#">B23B 2260/142</a>	. Valves
<a href="#">B23B 2260/144</a>	. Wear indicators
<a href="#">B23B 2260/146</a>	. Wedges
<a href="#">B23B 2260/158</a>	. Worms and worm wheels
<b><a href="#">B23B 2265/00</a></b>	<b>Details of general geometric configurations</b>
<a href="#">B23B 2265/08</a>	. Conical
<a href="#">B23B 2265/12</a>	. Eccentric
<a href="#">B23B 2265/16</a>	. Elliptical
<a href="#">B23B 2265/32</a>	. Polygonal
<a href="#">B23B 2265/322</a>	.. Square
<a href="#">B23B 2265/324</a>	.. Pentagonal
<a href="#">B23B 2265/326</a>	.. Hexagonal
<a href="#">B23B 2265/328</a>	.. Octagonal

B23B 2265/34	. Round
B23B 2265/36	. Spherical
<b>B23B 2270/00</b>	<b>Details of turning, boring or drilling machines, processes or tools not otherwise provided for</b>
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 ( <a href="#">compensating centrifugal force B23B 2250/08</a> )
B23B 2270/06	. Use of elastic deformation
B23B 2270/08	. Clamping mechanisms; Provisions for clamping ( <a href="#">B23B 2210/00 takes precedence</a> )
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 ( <a href="#">machining or gripping of both internal and external surfaces B23B 2270/205</a> )
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 ( <a href="#">use of suction B23B 2270/62, drilling tools with provision for suction B23B 2251/68</a> )
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](#))