

**CPC COOPERATIVE PATENT CLASSIFICATION**

**B PERFORMING OPERATIONS; TRANSPORTING**  
(NOTES omitted)

**SHAPING**

**B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR**  
(NOTES omitted)

**B23B TURNING; BORING** (arrangements for copying or controlling [B23Q](#))

**WARNINGS**

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

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

- B23B  
(continued) 2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**Turning**

- 1/00** **Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods**
- 3/00** **General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines**
- 3/02 . Small lathes, e.g. for toolmakers ([specially designed for watchmakers G04D 3/00](#))
- 3/04 . Turning-machines in which the workpiece is rotated by means at a distance from the headstock
- 3/06 . Turning-machines or devices characterised only by the special arrangement of constructional units ([B23Q 37/00 takes precedence](#); such features of general applicability [B23Q](#))
- 3/065 . . {Arrangements for performing other machining operations, e.g. milling, drilling}
- 3/08 . Turning-machines characterised by the use of faceplates
- 3/10 . . with the faceplate horizontal, i.e. vertical boring and turning machines
- 3/12 . . with the faceplate vertical, i.e. face lathes
- 3/14 . . Mountings or drives of faceplates ({[rotatable members, e.g. faceplates B23Q 1/50](#)})
- 3/16 . Turret lathes for turning individually-chucked workpieces ({[turrets B23B 29/24](#)})
- 3/161 . . {lathe with one toolslide carrying one turret head}
- 3/162 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}
- 3/164 . . {lathe with one toolslide carrying two or more turret heads}
- 3/165 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}
- 3/167 . . {lathe with two or more toolslides carrying turrets}
- 3/168 . . . {Arrangements for performing other machining operations, e.g. milling, drilling}
- 3/22 . Turning-machines or devices with rotary tool heads ({[B23B 5/08](#), [B23B 5/14](#) and [B23B 5/16 take precedence](#)})
- 3/24 . . the tools of which do not perform a radial movement; Rotary tool heads therefor
- 3/26 . . the tools of which perform a radial movement; Rotary tool heads thereof
- 3/265 . . . {Surfacing or grooving flanges}
- 3/30 . Turning-machines with two or more working-spindles, e.g. in fixed arrangement
- 3/32 . . for performing identical operations simultaneously on two or more workpieces
- 3/34 . Short turning-machines with one or multiple working-spindles attended from the end ([B23B 3/12 takes precedence](#))
- 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](#))

**5/00****Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor**

- 5/02 . for turning hubs or brake drums ([B23B 5/04 takes precedence](#))
- 5/04 . for reconditioning hubs or brake drums or axle spindles without removing same from the vehicle
- 5/06 . for turning valves or valve bodies ({[turning conical surfaces in general B23B 5/38](#); tools for working valve seats [B23B 51/106](#)})
- 5/08 . for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning
- 5/10 . . for turning pilgrim rolls
- 5/12 . . for peeling bars or tubes by making use of cutting bits arranged around the workpiece ([otherwise than by turning B23D 79/12](#))
- 5/14 . Cutting-off lathes ({[B23D 21/00 takes precedence](#)} [shearing B23D](#))
- 5/16 . for bevelling, chamfering, or deburring the ends of bars or tubes
- 5/161 . . {Devices attached to the workpiece}
- 5/162 . . . {with an internal clamping device}
- 5/163 . . . {with an external clamping device}
- 5/165 . . {Workpieces clamped on a bench, e.g. a vice}
- 5/166 . . {Devices for working electrodes}
- 5/167 . . {Tools for chamfering the ends of bars or tubes}
- 5/168 . . . {with guiding devices}
- 5/18 . for turning crankshafts, eccentrics, or cams, e.g. crankpin lathes
- 5/20 . . without removing same from the engine
- 5/26 . for simultaneously turning internal and external surfaces of a body
- 5/28 . for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes
- 5/32 . . for reconditioning wheel sets without removing same from the vehicle; Underfloor wheel lathes for railway vehicles
- 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
- 5/365 . . {for toroidal surfaces}
- 5/38 . . for turning conical surfaces inside or outside, e.g. taper pins ({[for turning valves or valve bodies B23B 5/06](#)})
- 5/40 . . for turning spherical surfaces inside or outside
- 5/46 . . for turning helical or spiral surfaces ([thread cutting B23G](#))
- 5/48 . . . for cutting grooves, e.g. oil grooves of helicoidal shape
- 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})**
- 7/02 . Automatic or semi-automatic machines for turning of stock

- 7/04 . . Turret machines
- 7/06 . . with sliding headstock
- 7/10 . . Accessories, e.g. guards {(guards [B23Q 11/08](#) takes precedence)}
- 7/12 . Automatic or semi-automatic machines for turning of workpieces
- 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](#))**
- 9/005 . {Spindle carriers: constructional details, drives for the spindles, or the like}
- 9/02 . Automatic or semi-automatic machines for turning of stock
- 9/08 . Automatic or semi-automatic machines for turning of workpieces
- 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](#))}**
- 13/00 Arrangements for automatically conveying or chucking or guiding stock**
- 13/02 . for turning-machines with a single working-spindle
- 13/021 . . {Feeding device having intermittent movement}
- 13/022 . . . {being placed in the spindle}
- 13/024 . . . . {including two collets}
- 13/025 . . {with stock drum}
- 13/027 . . {Feeding by pistons under fluid-pressure}
- 13/028 . . {the material being fed from a reel}
- 13/04 . for turning-machines with a plurality of working-spindles
- 13/06 . Arrangements for switching-off the drive of turning-machines after the stock has been completely machined
- 13/08 . Arrangements for reducing vibrations in feeding-passages or for damping noise (damping noise in general [G10K](#))
- 13/10 . with magazines for stock
- 13/12 . Accessories, e.g. stops, grippers
- 13/121 . . {Stops (stops for equipment for precise positioning of tool or work into particular locations not otherwise provided for [B23Q 16/00](#))}
- 13/123 . . {Grippers, pushers or guiding tubes (arrangements for reducing vibrations in feeding-passages or for damping noise [B23B 13/08](#))}
- 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](#))}
- 13/126 . . {Supports}
- 13/128 . . {Stock rest handling devices, e.g. ejectors}

**Components or accessories particularly for turning machines**

- 23/00 Tailstocks; Centres {(for grinding machines [B24B 41/062](#))}**
- 23/005 . {the centres being adjustable}
- 23/02 . Dead centres
- 23/025 . . {the centres being adjustable}
- 23/04 . Live centres
- 23/045 . . {the centres being adjustable}
- 25/00 Accessories or auxiliary equipment for turning-machines (for machine tools in general [B23Q](#); cooling or lubricating [B23Q 11/12](#))**
- 25/02 . Arrangements for chip-breaking in turning-machines (on cutting tools [B23B 27/22](#))
- 25/04 . Safety guards specially designed for turning machines {(B23Q 11/08 takes precedence; in general [F16P](#))}
- 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](#))
- 25/065 . . {Tool setting height gauges}
- 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
- 27/002 . {with vibration damping means}
- 27/005 . {Geometry of the chip-forming or the clearance planes, e.g. tool angles ([B23B 27/141](#) and [B23B 27/22](#) take precedence)}
- 27/007 . {for internal turning (boring bars [B23B 29/02](#), boring heads [B23B 29/03](#); milling cutters [B23C 5/00](#); reamers [B23D 77/00](#))}
- 27/02 . Cutting tools with straight main part and cutting edge at an angle ([B23B 27/04](#) - [B23B 27/08](#) take precedence)
- 27/04 . Cutting-off tools ([B23B 27/08](#) takes precedence ; toolholders for cutting-off inserts [B23B 29/043](#))
- 27/045 . . {with chip-breaking arrangements}
- 27/06 . Profile cutting tools, i.e. forming-tools
- 27/065 . . {Thread-turning tools}
- 27/08 . Cutting tools with blade- or disc-like main parts {(with disc-like main parts [B23B 27/083](#))}
- 27/083 . . {Cutting tools with disc-like main parts}
- 27/086 . . {with yieldable support for the cutting insert}
- 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](#))}
- 27/12 . . with a continuously-rotated circular cutting edge; Holders therefor
- 27/14 . Cutting tools of which the bits or tips {or cutting inserts} are of special material

- 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)}
- 27/143 . . . {characterised by having chip-breakers}
- 27/145 . . . {characterised by having a special shape}
- 27/146 . . . . {Means to improve the adhesion between the substrate and the coating}
- 27/148 . . {Composition of the cutting inserts}
- 27/16 . . with exchangeable cutting bits {or cutting inserts}, e.g. able to be clamped
- 27/1603 . . . {with specially shaped plate-like exchangeable cutting inserts, e.g. chip-breaking groove (B23B 27/1614 - B23B 27/1655 take precedence)}
- 27/1607 . . . . {characterised by having chip-breakers}
- 27/1611 . . . . {characterised by having a special shape}
- 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)}
- 27/1618 . . . . {characterised by having chip-breakers}
- 27/1622 . . . . {characterised by having a special shape}
- 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)}
- 27/1629 . . . . {in which the clamping member breaks the chips}
- 27/1633 . . . . {in which the chip-breaking clamping member is adjustable}
- 27/1637 . . . . {characterised by having chip-breakers}
- 27/164 . . . . {characterised by having a special shape}
- 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}
- 27/1648 . . . . {characterised by having chip-breakers}
- 27/1651 . . . . {characterised by having a special shape}
- 27/1655 . . . {Adjustable position of the plate-like cutting inserts of special form}
- 27/1659 . . . {with plate-like exchangeable cutting inserts (B23B 27/1662 - B23B 27/1681 take precedence)}
- 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)}
- 27/1666 . . . {with plate-like cutting inserts clamped by a clamping member acting almost perpendicularly on chip-forming plane (B23B 27/1677 takes precedence)}
- 27/167 . . . . {in which the clamping member breaks the chips}
- 27/1674 . . . . {in which the chip-breaking clamping member is adjustable}
- 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}
- 27/1681 . . . . {Adjustable position of the plate-like cutting inserts}
- 27/1685 . . . . {Adjustable position of the cutting inserts (B23B 27/1655 and B23B 27/1681 take precedence)}
- 27/1688 . . . . {Height of the cutting tip adjustable}
- 27/1692 . . . . {Angular position of the cutting insert adjustable around an axis parallel to the chip-forming plane}
- 27/1696 . . . . {Angular position of the cutting insert adjustable around an axis generally perpendicularly to the chip-forming plane}
- 27/18 . . with cutting bits or tips {or cutting inserts} rigidly mounted, e.g. by brazing
- 27/20 . . . with diamond bits {or cutting inserts}
- 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)}
- 27/24 . Knurling tools
- 29/00 Holders for non-rotary cutting tools (B23B 27/12 takes precedence); Boring bars or boring heads; Accessories for tool holders**
- 29/02 . Boring bars
- 29/022 . . {with vibration reducing means}
- 29/025 . . {Boring toolholders fixed on the boring bar}
- 29/027 . . {Steadies for boring bars (auxiliary devices, e.g. steadies, rests B23Q 1/76)}
- 29/03 . Boring heads
- 29/034 . . with tools moving radially, e.g. for making chamfers or undercuttings
- 29/03403 . . . {radially adjustable before starting manufacturing}
- 29/03407 . . . . {by means of screws and nuts}
- 29/0341 . . . . {Cartridges}
- 29/03414 . . . . {adjustment of the tool placed in the hole being possible}
- 29/03417 . . . . {by means of inclined planes}
- 29/03421 . . . . {by pivoting the tool carriers or by elastic deformation}
- 29/03425 . . . . {by means of gears and racks}
- 29/03428 . . . . {by means of an eccentric}
- 29/03432 . . . {radially adjustable during manufacturing}
- 29/03435 . . . . {by means of screws and nuts}
- 29/03439 . . . . {Boring and facing heads}
- 29/03442 . . . . {Grooving tool}
- 29/03446 . . . . {by means of inclined planes}
- 29/0345 . . . . {Boring and facing heads}
- 29/03453 . . . . {Grooving tool}
- 29/03457 . . . . {by pivoting the tool carriers or by elastic deformation}
- 29/0346 . . . . {Boring and facing heads}
- 29/03464 . . . . {Grooving tool}
- 29/03467 . . . . {by means of gears and racks}
- 29/03471 . . . . {Boring and facing heads}
- 29/03475 . . . . {Grooving tool}
- 29/03478 . . . . {by means of an eccentric}
- 29/03482 . . . . {Boring and facing heads}

- 29/03485 . . . . . {Grooving tool}
- 29/03489 . . . . . {Adjustment means not specified or not covered by the groups [B23B 29/03435](#) - [B23B 29/03478](#)}
- 29/03492 . . . . . {Boring and facing heads}
- 29/03496 . . . . . {Grooving tool}
- 29/04 . . . Tool holders for a single cutting tool
- 29/043 . . . {with cutting-off, grooving or profile cutting tools, i.e. blade- or disc-like main cutting parts ([B23B 29/14](#) takes precedence)}
- 29/046 . . . {with an intermediary toolholder}
- 29/06 . . . Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool
- 29/08 . . . Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool
- 29/10 . . . with adjustable counterbase for the cutting tool
- 29/12 . . . Special arrangements on tool holders
- 29/125 . . . {Vibratory toolholders}
- 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](#))}
- 29/16 . . . for supporting the workpiece in a backrest
- 29/18 . . . for retracting the cutting tool
- 29/20 . . . for placing same by shanks in sleeves of a turret
- 29/205 . . . . . {the tools being adjustable}
- 29/22 . . . for tool adjustment by means of shims or spacers
- 29/24 . . . Tool holders for a plurality of cutting tools, e.g. turrets {(indexing devices [B23Q 16/00](#))}
- 29/242 . . . {Turrets, without description of the angular positioning device (turret lathes for turning individually-chucked workpieces [B23B 31/16](#); turrets with manually operated angular positioning devices [B23B 29/282](#); turrets with power operated angular positioning devices [B23B 29/323](#))}
- 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](#))}
- 29/246 . . . {Quick-change tool holders}
- 29/248 . . . {with individually adjustable toolholders}
- 29/26 . . . Tool holders in fixed position
- 29/28 . . . Turrets manually adjustable about a vertical {or horizontal} pivot {(indexing devices [B23Q 16/00](#))}
- 29/282 . . . {Turrets with manually operated angular positioning devices}
- 29/285 . . . {Toolposts with manually operated angular positioning devices}
- 29/287 . . . {Turret toolholder with manually operated angular positioning devices}
- 29/32 . . . Turrets adjustable by power drive, i.e. turret heads {(indexing devices [B23Q 16/00](#))}
- 29/323 . . . {Turrets with power operated angular positioning devices}
- 29/326 . . . {Toolposts with power operated angular positioning devices}

- 29/34 . . . Turrets equipped with triggers for releasing the cutting tools
- 31/00** **Chucks** {(allowing axial oscillation of percussion tool bits [B25D 17/08](#)); **Expansion mandrels; Adaptations thereof for remote control** (faceplates [B23Q 1/50](#); rotary devices holding by magnetic and/or electrical force acting directly on work [B23Q 3/152](#))}
- 31/001 . . . {Protection against entering of chips or dust}
- 31/003 . . . {Work or tool ejection means}
- 31/005 . . . {Cylindrical shanks of tools}
- 31/006 . . . {Conical shanks of tools}
- 31/008 . . . {with arrangements for transmitting torque}
- 31/02 . . . Chucks
- 31/021 . . . {Faceplates}
- 31/023 . . . {for screw-threads}
- 31/025 . . . {for gears}
- 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](#))}
- 31/0261 . . . {for centering the tool}
- 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](#))}
- 31/06 . . . Features relating to the removal of tools; Accessories therefor
- 31/07 . . . Ejector wedges
- 31/08 . . . holding tools yieldably
- 31/083 . . . {axially}
- 31/086 . . . . . {having an overload clutch}
- 31/10 . . . characterised by the retaining or gripping devices or their immediate operating means

**NOTE**

Group [B23B 31/12](#) takes precedence over groups {[B23B 31/101](#), [B23B 31/102](#), [B23B 31/103](#) - [B23B 31/117](#)}

- 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](#))}
- 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)}
- 31/103 . . . Retention by pivotal elements, e.g. catches, pawls
- 31/107 . . . Retention by laterally-acting detents, e.g. pins, screws, wedges; Retention by loose elements, e.g. balls
- 31/1071 . . . . . {Retention by balls (balls acting as jaws [B23B 31/22](#))}
- 31/1072 . . . . . {Retention by axially or circumferentially oriented cylindrical elements (cylindrical elements acting as jaws [B23B 31/223](#))}



|          |  |          |   |
|----------|--|----------|---|
| 31/1073  | . . . . {Retention by conical elements ( <a href="#">conical elements acting as jaws B23B 31/226</a> )}  | 31/1602  | . . . . . {Individually adjustable jaws}  |
| 31/10741 | . . . . {Retention by substantially radially oriented pins}  | 31/16025 | . . . . . {using fluid-pressure means to actuate the gripping means}  |
| 31/1075  | . . . . {Retention by screws}  | 31/16029 | . . . . . {using mechanical transmission through the spindle}   |
| 31/1076  | . . . . . {with conical ends}  | 31/16033 | . . . . . {with a centre}   |
| 31/1077  | . . . . . {acting on a floating pin}   | 31/16037 | . . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16029 takes precedence</a> )}  |
| 31/1078  | . . . . {Retention by wedges}  | 31/16041 | . . . . . {with locking arrangements ( <a href="#">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</a> )} |
| 31/1079  | . . . . {Retention by spring or wire}  | 31/16045 | . . . . . {Jaws movement actuated by screws and nuts or oblique racks}  |
| 31/11    | . . . Retention by threaded connection   | 31/1605  | . . . . . {Details of the jaws}   |
| 31/1107  | . . . . {for conical parts}  | 31/16054 | . . . . . {Form of the jaws}  |
| 31/1115  | . . . . . {using conical threads}  | 31/16058 | . . . . . {Fixation on the master jaw}  |
| 31/1122  | . . . . . {using cylindrical threads}  | 31/16062 | . . . . . {Individually adjustable jaws}  |
| 31/113   | . . . Retention by bayonet connection  | 31/16066 | . . . . . {using fluid-pressure means to actuate the gripping means}  |
| 31/117   | . . . Retention by friction only, e.g. using springs, resilient sleeves, tapers  | 31/1607  | . . . . . {using mechanical transmission through the spindle}   |
| 31/1171  | . . . . {not used, <a href="#">see</a> subgroups and <a href="#">B23B 31/117</a> }   | 31/16075 | . . . . . {with a centre}   |
| 31/1172  | . . . . . {using fluid-pressure means to actuate the gripping means}   | 31/16079 | . . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/1607 takes precedence</a> )}   |
| 31/1173  | . . . . {using springs}  | 31/16083 | . . . . . {Jaws movement actuated by gears and racks}   |
| 31/1174  | . . . . . {using fluid-pressure means to actuate the gripping means}   | 31/16087 | . . . . . {Details of the jaws}   |
| 31/1175  | . . . . {using elastomer rings or sleeves}   | 31/16091 | . . . . . {Form of the jaws}  |
| 31/1176  | . . . . . {using fluid-pressure means to actuate the gripping means}   | 31/16095 | . . . . . {Fixation on the master jaw}  |
| 31/1177  | . . . . {using resilient metallic rings or sleeves}  | 31/161   | . . . . . {Individually adjustable jaws}  |
| 31/1178  | . . . . . {using fluid-pressure means to actuate the gripping means}   | 31/16104 | . . . . . {using fluid-pressure means to actuate the gripping means}  |
| 31/1179  | . . . . {using heating and cooling}  | 31/16108 | . . . . . {using mechanical transmission through the spindle}   |
| 31/12    | . . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable  | 31/16112 | . . . . . {with a centre}   |
| 31/1207  | . . . . {moving obliquely to the axis of the chuck in a plane containing this axis}  | 31/16116 | . . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16108 takes precedence</a> )}  |
| 31/1215  | . . . . . {Details of the jaws}  | 31/1612  | . . . . . {Jaws movement actuated by cam surface in a radial plane}   |
| 31/1223  | . . . . . {using fluid-pressure means in the chuck to actuate the gripping means}  | 31/16125 | . . . . . {Details of the jaws}   |
| 31/123   | . . . . . {with locking arrangements ( <a href="#">locking arrangements for chucks with simultaneously-acting jaws moving radially actuated by one or more spiral grooves B23B 31/16041</a> )} | 31/16129 | . . . . . {Form of the jaws}  |
| 31/1238  | . . . . . {Jaws movement actuated by a nut with conical screw-thread}  | 31/16133 | . . . . . {Fixation on the master jaw}  |
| 31/1246  | . . . . . {Jaws movement actuated by a bolt with conical screw-thread}   | 31/16137 | . . . . . {Individually adjustable jaws}  |
| 31/1253  | . . . . . {Jaws movement actuated by an axially movable member}  | 31/16141 | . . . . . {using fluid-pressure means to actuate the gripping means}  |
| 31/1261  | . . . . {pivotally movable in a radial plane}  | 31/16145 | . . . . . {using mechanical transmission through the spindle}   |
| 31/1269  | . . . . . {Details of the jaws}  | 31/1615  | . . . . . {with a centre}   |
| 31/1276  | . . . . . {using fluid-pressure means to actuate the gripping means}   | 31/16154 | . . . . . {using mechanical transmission through the spindle ( <a href="#">B23B 31/16145 takes precedence</a> )}  |
| 31/1284  | . . . . . {with a centre}  | 31/16158 | . . . . . {Jaws movement actuated by coaxial conical surfaces}  |
| 31/1292  | . . . . . {using mechanical transmission through the spindle}  | 31/16162 | . . . . . {Details of the jaws}   |
| 31/14    | . . . . involving the use of centrifugal force   | 31/16166 | . . . . . {Form of the jaws}  |
| 31/141   | . . . . . {To counterbalance the jaws}   | 31/1617  | . . . . . {Fixation on the master jaw}  |
| 31/142   | . . . . . {To grip a tool or workpiece}  | 31/16175 | . . . . . {Individually adjustable jaws}  |
| 31/16    | . . . . moving radially  |          |   |
| 31/16004 | . . . . . {Jaws movement actuated by one or more spiral grooves}   |          |   |
| 31/16008 | . . . . . {Details of the jaws}  |          |   |
| 31/16012 | . . . . . {Form of the jaws}   |          |   |
| 31/16016 | . . . . . {Fixation on the master jaw}   |          |   |

|                    |   |                   |  |
|--------------------|---|-------------------|--|
| 31/16179 . . . . . | {using fluid-pressure means to actuate the gripping means}  | 31/204 . . . . .  | {using fluid-pressure means to actuate the gripping means ( <a href="#">B23B 31/207</a> take precedence)}                                |
| 31/16183 . . . . . | {using mechanical transmission through the spindle}   | 31/206 . . . . .  | {Reciprocating cam actuator ( <a href="#">B23B 31/207</a> takes precedence)}   |
| 31/16187 . . . . . | {with a centre}   | 31/207 . . . . .  | {using mechanical transmission through the spindle}  |
| 31/16191 . . . . . | {using mechanical transmission through the spindle ( <a href="#">B23B 31/16183</a> takes precedence)} | 31/2072 . . . . . | {Axially moving cam, fixed jaws}   |
| 31/16195 . . . . . | {Jaws movement actuated by levers moved by a coaxial control rod}                                     | 31/2073 . . . . . | {Axially fixed cam, moving jaws ( <a href="#">B23B 31/20125</a> takes precedence)}   |
| 31/162 . . . . .   | {Details of the jaws}   | 31/208 . . . . .  | {with a tool positioning stop (axial positioning of the tool being adjustable <a href="#">B23B 31/028</a> )}                             |
| 31/16204 . . . . . | {Form of the jaws}  | 31/22 . . . . .   | Jaws in the form of balls  |
| 31/16208 . . . . . | {Fixation on the master jaw}  | 31/223 . . . . .  | {Jaws in the form of cylindrical elements}   |
| 31/16212 . . . . . | {Individually adjustable jaws}  | 31/226 . . . . .  | {Jaws in the form of conical elements}   |
| 31/16216 . . . . . | {using fluid-pressure means to actuate the gripping means}  | 31/24 . . . . .   | characterised by features relating primarily to remote control of the gripping means {( <a href="#">B23B 31/201</a> takes precedence)}   |
| 31/1622 . . . . .  | {using mechanical transmission through the spindle}   | 31/26 . . . . .   | using mechanical transmission through the working-spindle {( <a href="#">B23B 31/16</a> and <a href="#">B23B 31/40</a> take precedence)} |
| 31/16225 . . . . . | {with a centre}   | 31/261 . . . . .  | {clamping the end of the toolholder shank}   |
| 31/16229 . . . . . | {using mechanical transmission through the spindle ( <a href="#">B23B 31/1622</a> takes precedence)}  | 31/263 . . . . .  | {by means of balls}  |
| 31/16233 . . . . . | {Jaws movement actuated by oblique surfaces of a coaxial control rod}                                 | 31/265 . . . . .  | {by means of collets}  |
| 31/16237 . . . . . | {Details of the jaws}   | 31/266 . . . . .  | {using a threaded spindle}   |
| 31/16241 . . . . . | {Form of the jaws}  | 31/268 . . . . .  | {using a bayonet connection}   |
| 31/16245 . . . . . | {Fixation on the master jaw}  | 31/28 . . . . .   | using electric or magnetic means in the chuck  |
| 31/1625 . . . . .  | {Individually adjustable jaws}  | 31/30 . . . . .   | using fluid-pressure means in the chuck {( <a href="#">B23B 31/10</a> and <a href="#">B23B 31/40</a> take precedence)}                   |
| 31/16254 . . . . . | {using fluid-pressure means to actuate the gripping means}  | 31/302 . . . . .  | {Hydraulic equipment, e.g. pistons, valves, rotary joints}   |
| 31/16258 . . . . . | {using mechanical transmission through the spindle}   | 31/305 . . . . .  | {the gripping means is a deformable sleeve}  |
| 31/16262 . . . . . | {with a centre}   | 31/307 . . . . .  | {Vacuum chucks}  |
| 31/16266 . . . . . | {using mechanical transmission through the spindle ( <a href="#">B23B 31/16258</a> takes precedence)} | 31/32 . . . . .   | with jaws carried by diaphragm   |
| 31/1627 . . . . .  | {Details of the jaws}   | 31/34 . . . . .   | with means enabling the workpiece to be reversed or tilted   |
| 31/16275 . . . . . | {Form of the jaws}  | 31/36 . . . . .   | with means for adjusting the chuck with respect to the working-spindle   |
| 31/16279 . . . . . | {Fixation on the master jaw}  | 31/38 . . . . .   | with overload clutches {( <a href="#">B23B 31/086</a> takes precedence)}   |
| 31/16283 . . . . . | {Individually adjustable jaws}  | 31/39 . . . . .   | Jaw changers   |
| 31/16287 . . . . . | {using fluid-pressure means to actuate the gripping means}  | 31/40 . . . . .   | Expansion mandrels   |
| 31/16291 . . . . . | {with a centre}   | 31/4006 . . . . . | {Gripping the work or tool by a split sleeve (collet chucks <a href="#">B23B 31/20</a> )}  |
| 31/16295 . . . . . | {with means preventing the ejection of the jaws}  | 31/4013 . . . . . | {Details of the jaws}  |
| 31/18 . . . . .    | pivotally movable in planes containing the axis of the chuck  | 31/402 . . . . .  | {using fluid-pressure means to actuate the gripping means}   |
| 31/185 . . . . .   | {moving first parallel to the axis then pivotally in planes containing the axis of the chuck}         | 31/4026 . . . . . | {using mechanical transmission through the spindle}  |
| 31/19 . . . . .    | moving parallel to the axis of the chuck {( <a href="#">B23B 31/185</a> takes precedence)}            | 31/4033 . . . . . | {using mechanical transmission through the spindle ( <a href="#">B23B 31/4026</a> takes precedence)}                                     |
| 31/20 . . . . .    | Longitudinally-split sleeves, e.g. collet chucks  | 31/404 . . . . .  | {Gripping the work or tool by jaws moving radially controlled by conical surfaces (see also <a href="#">B23B 31/16158</a> )}             |
| 31/201 . . . . .   | {Characterized by features relating primarily to remote control of the gripping means}                | 31/4046 . . . . . | {Details of the jaws}  |
| 31/2012 . . . . .  | {Threaded cam actuator}   | 31/4053 . . . . . | {using fluid-pressure means to actuate the gripping means}   |
| 31/20125 . . . . . | {Axially fixed cam, moving jaws}  | 31/406 . . . . .  | {using mechanical transmission through the spindle}  |
| 31/202 . . . . .   | {Details of the jaws}   | 31/4066 . . . . . | {using mechanical transmission through the spindle ( <a href="#">B23B 31/406</a> takes precedence)}                                      |
| 31/2025 . . . . .  | {Wherein the sleeve is split into two relatively movable parts}                                       |                   |  |

- 31/4073 . . {Gripping the work or tool between planes almost perpendicular to the axis}
- 31/408 . . {Work or tool supported by two conical surfaces}
- 31/4086 . . {Work or tool gripped by a roller movable on an inclined plane}
- 31/4093 . . {Tube supporting means including a centerhole}
- 31/42 . . characterised by features relating primarily to remote control of the gripping means
- 33/00 Drivers; Driving centres, Nose clutches, e.g. lathe dogs**
- 33/005 . {Drivers with driving pins or the like}

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

- 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**
- 35/005 . {Measures for preventing splintering}
- 37/00 Boring by making use of ultrasonic energy (essentially using abrasive material [B24B](#), e.g. [B24B 1/04](#))**
- 39/00 General-purpose boring or drilling machines or devices; Sets of boring and/or drilling machines**
- 39/003 . {Drilling machine situated underneath the workpiece}
- 39/006 . {Portal drilling machines}
- 39/02 . Boring machines; Combined horizontal boring and milling machines
- 39/04 . Co-ordinate boring or drilling machines; Machines for making holes without previous marking
- 39/06 . . Equipment for positioning work
- 39/08 . . Devices for programme control
- 39/10 . characterised by the drive, e.g. by fluid-pressure drive pneumatic power drive
- 39/12 . Radial drilling machines
- 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
- 39/16 . Drilling machines with a plurality of working-spindles; Drilling automatons
- 39/161 . . {with parallel work spindles}
- 39/162 . . . {having gear transmissions}
- 39/163 . . . {having crank pin transmissions}
- 39/165 . . . {having universal joint transmissions}
- 39/166 . . . {having flexible shaft transmissions}
- 39/167 . . . {having belt and chain transmissions}
- 39/168 . . {with the work spindles being oblique to each other}
- 39/18 . . Setting work or tool carrier along a straight index line
- 39/20 . . Setting work or tool carrier along a circular index line; Turret head drilling machines
- 39/205 . . . {Turret head drilling machines}
- 39/22 . . with working-spindles in opposite headstocks
- 39/24 . . designed for programme control
- 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](#))

- 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](#))
- 41/00 Boring or drilling machines or devices specially adapted for particular work {(surgical drilling machines [A61B 17/16](#))}; Accessories specially adapted therefor**
- 41/003 . {for drilling elongated pieces, e.g. beams}
- 41/006 . . {the machining device being moved along a fixed workpiece}
- 41/02 . for boring deep holes; Trepanning, e.g. of gun or rifle barrels
- 41/04 . for boring polygonal or other non-circular holes
- 41/06 . for boring conical holes
- 41/10 . for boring holes in steam boilers
- 41/12 . for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts
- 41/14 . for very small holes
- 41/16 . for boring holes with high-quality surface
- 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](#))**
- 43/02 . to the tailstock of a lathe
- 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](#))**
- 45/001 . {Housing of the drill, e.g. handgrip}
- 45/003 . {Attachments}
- 45/005 . . {Flexible shafts}
- 45/006 . {Keys for operating the chucks}
- 45/008 . {Gear boxes, clutches, bearings, feeding mechanisms or like equipment}
- 45/02 . driven by electric power
- 45/04 . driven by fluid-pressure or pneumatic power
- 45/042 . . {Turbine motors}
- 45/044 . . {Rotary vane type motors}
- 45/046 . . {Piston engines}
- 45/048 . . . {Internal combustion piston engines}
- 45/06 . driven by man-power
- 45/08 . . for drilling rails or profiled stock
- 45/10 . . by using a fiddle bow or a belt
- 45/12 . . by using a ratchet brace

#### **Components or accessories for boring or drilling machines**

- 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](#))**
- 47/26 . Liftable or lowerable drill heads or headstocks; Balancing arrangements therefor {(weight and flexion compensation [B23Q 11/001](#))}
- 47/28 . Drill jigs for workpieces (equipment for setting or guiding the drill [B23B 49/00](#))
- 47/281 . . {Jigs for drilling cylindrical parts}
- 47/282 . . {Jigs for drilling spherical parts}



- 47/284 . . {Jigs for drilling rivets or bolts}
- 47/285 . . {Jigs for drilling ski bindings}
- 47/287 . . {Jigs for drilling plate-like workpieces (templates for marking the position of fittings on wings or frames [E05D 11/0009](#))}
- 47/288 . . . {involving dowelling}
- 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](#))}
- 47/32 . Arrangements for preventing the running-out of drills or fracture of drills when getting through
- 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](#))}

**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](#))**

- 49/001 . {Devices for detecting or indicating failure of drills}
- 49/003 . {Stops attached to drilling tools, tool holders or drilling machines ([B23B 51/104](#) takes precedence)}
- 49/005 . . {Attached to the drill}
- 49/006 . . {Attached to drilling machines}
- 49/008 . . . {Attached to the nose of the drilling machines}
- 49/02 . Boring templates or bushings
- 49/023 . . {Bushings and their connection to the template}
- 49/026 . . {Boring bushing carriers attached to the workpiece by glue, magnets, suction devices or the like}
- 49/04 . Devices for boring or drilling centre holes in workpieces
- 49/06 . Devices for drilling holes in brake bands or brake linings

**51/00 Tools for drilling machines**

**WARNING**

Group [B23B 51/00](#) is impacted by reclassification into groups [B23B 51/0002](#), [B23B 51/0003](#), [B23B 51/00035](#), [B23B 51/0004](#), [B23B 51/0005](#), [B23B 51/0006](#), [B23B 51/0007](#), [B23B 51/0008](#), [B23B 51/0011](#), [B23B 51/0095](#), [B23B 51/011](#) and [B23B 2251/249](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0002 . {Drills with connected cutting heads, e.g. with non-exchangeable cutting heads; Drills with a single insert extending across the rotational axis and having at least two radially extending cutting edges in the working position}

**WARNING**

Group [B23B 51/0002](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0003 . . {with exchangeable heads or inserts}

**WARNING**

Groups [B23B 51/0003](#), [B23B 51/0004](#) and [B23B 51/0005](#) are incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#), [B23B 2251/02](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/00035 . . . {Spade drills}

**WARNING**

Group [B23B 51/00035](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0004 . . . {with cutting heads or inserts attached by screw means}
- 51/0005 . . . {with cutting heads or inserts attached by wedge means}
- 51/0006 . {Drills with cutting inserts ([B23B 51/0002](#) takes precedence)}

**WARNING**

Group [B23B 51/0006](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0007 . . {with exchangeable cutting insert}

**WARNING**

Groups [B23B 51/0007](#) and [B23B 51/0008](#) are incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#), [B23B 51/04](#), [B23B 51/0426](#), [B23B 51/044](#), [B23B 51/0453](#), [B23B 51/0466](#), [B23B 51/0493](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0008 . . . {with indexable or reversible cutting inserts}
- 51/0011 . . {with radially inner and outer cutting inserts}

**WARNING**

Group [B23B 51/0011](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#), [B23B 2251/50](#) and [B23B 2251/505](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0018 . {Drills for enlarging a hole}
- 51/0027 . . {by tool swivelling}

- 51/0036 . . {by a tool-carrying eccentric}
- 51/0045 . . {by expanding or tilting the toolhead}
- 51/0054 . {Drill guiding devices}
- 51/0063 . {Centerdrills}
- 51/0072 . {Drills for making non-circular holes}
- 51/0081 . {Conical drills}
- 51/009 . {Stepped drills}
- 51/0095 . {Spade drills ([B23B 51/00035](#) takes precedence)}

**WARNING**

Group [B23B 51/0095](#) is incomplete pending reclassification of documents from group [B23B 51/00](#).

Groups [B23B 51/00](#) and [B23B 51/0095](#) should be considered in order to perform a complete search.

- 51/011 . {Micro drills}

**WARNING**

Group [B23B 51/011](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#) and [B23B 51/02](#).

Groups [B23B 51/00](#), [B23B 51/02](#) and [B23B 51/011](#) should be considered in order to perform a complete search.

- 51/02 . Twist drills

**WARNING**

Group [B23B 51/02](#) is impacted by reclassification into groups [B23B 51/0002](#), [B23B 51/0003](#), [B23B 51/0004](#), [B23B 51/0005](#), [B23B 51/0006](#), [B23B 51/0007](#), [B23B 51/0008](#), [B23B 51/0011](#), [B23B 51/011](#) and [B23B 2251/249](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/04 . {Drills} for trepanning

**WARNING**

Group [B23B 51/04](#) is incomplete pending reclassification of documents from group [B23B 51/0466](#).

Group [B23B 51/04](#) is also impacted by reclassification into groups [B23B 51/0007](#), [B23B 51/0008](#), [B23B 51/0411](#), [B23B 51/0417](#), [B23B 51/0426](#), [B23B 51/044](#), [B23B 51/0461](#), [B23B 51/0467](#), [B23B 51/0468](#) and [B23B 51/0469](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0411 . . {with stepped tubular cutting bodies}

**WARNING**

Group [B23B 51/0411](#) is incomplete pending reclassification of documents from groups [B23B 51/04](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0413 . . {with core-cutting-off devices}
- 51/0417 . . {including chamfer or spot bore cutter}

**WARNING**

Group [B23B 51/0417](#) is incomplete pending reclassification of documents from groups [B23B 51/04](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/042 . . {with lubricating or cooling equipment}
- 51/0426 . . {with centering devices}

**WARNING**

Group [B23B 51/0426](#) is incomplete pending reclassification of documents from groups [B23B 51/04](#) and [B23B 51/0466](#).

Group [B23B 51/0426](#) is also impacted by reclassification into groups [B23B 51/0007](#), [B23B 51/0008](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/044 . . {with core holding devices}

**WARNING**

Group [B23B 51/044](#) is incomplete pending reclassification of documents from groups [B23B 51/04](#) and [B23B 51/0466](#).

Group [B23B 51/044](#) is also impacted by reclassification into groups [B23B 51/0007](#), [B23B 51/0008](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0453 . . {with ejecting devices}

**WARNING**

Group [B23B 51/0453](#) is impacted by reclassification into groups [B23B 51/0007](#), [B23B 51/0008](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0461 . . {with exchangeable cutting heads or crowns}

- 51/0466 . . {with exchangeable cutting inserts, e.g. able to be clamped}

**WARNING**

Group [B23B 51/0466](#) is incomplete pending reclassification of documents from groups [B23B 51/0426](#), [B23B 51/044](#) and [B23B 51/0453](#).

Group [B23B 51/0466](#) is also impacted by reclassification into groups [B23B 51/0007](#), [B23B 51/0008](#), [B23B 51/04](#), [B23B 51/0411](#), [B23B 51/0417](#), [B23B 51/0426](#), [B23B 51/044](#), [B23B 51/0467](#), [B23B 51/0468](#) and [B23B 51/0469](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0467 . . {Details of the tubular body sidewall}

**WARNING**

Groups [B23B 51/0467](#) - [B23B 51/0469](#) are incomplete pending reclassification of documents from groups [B23B 51/04](#) and [B23B 51/0466](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0468 . . . {Internal grooves}  
 51/0469 . . . {Eccentric or non-circular}  
 51/0473 . . {Details about the connection between the driven shaft and the tubular cutting part; Arbors}  
 51/0486 . . {with lubricating or cooling equipment (Frozen) [\(B23B 51/042 takes precedence\)](#)}

**WARNING**

Group [B23B 51/0486](#) is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups [B23B 51/063](#) and [B23B 51/066](#).

Groups [B23B 51/0486](#), [B23B 51/063](#) and [B23B 51/066](#) should be considered in order to perform a complete search.

- 51/0493 . . . {with exchangeable cutting inserts, e.g. able to be clamped} (Frozen)

**WARNING**

Group [B23B 51/0493](#) is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups [B23B 51/0007](#), [B23B 51/0008](#), [B23B 51/06](#), [B23B 51/063](#), [B23B 51/066](#), [B23B 51/068](#), [B23B 51/0682](#), [B23B 51/0684](#) and [B23B 51/0686](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/05 . . for cutting discs from sheet

- 51/06 . Drills with lubricating or cooling equipment {[\(B23B 51/042 takes precedence\)](#)}

**WARNING**

Group [B23B 51/06](#) is incomplete pending reclassification of documents from group [B23B 51/0493](#).

Group [B23B 51/06](#) is also impacted by reclassification into groups [B23B 51/063](#), [B23B 51/066](#), [B23B 51/068](#), [B23B 51/0682](#), [B23B 51/0684](#) and [B23B 51/0686](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/063 . . {Deep hole drills, e.g. ejector drills}

**WARNING**

Groups [B23B 51/063](#) and [B23B 51/066](#) are incomplete pending reclassification of documents from groups [B23B 51/0486](#), [B23B 51/0493](#) and [B23B 51/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/066 . . . {Gun drills}

- 51/068 . . {Details of the lubricating or cooling channel}

**WARNING**

Groups [B23B 51/068](#) - [B23B 51/0686](#) are incomplete pending reclassification of documents from groups [B23B 51/0493](#) and [B23B 51/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 51/0682 . . . {Coolant moves along outside of tool periphery toward cutting edges}

- 51/0684 . . . {Deflector or nozzle on drill to point the coolant in a desired direction}

- 51/0686 . . . {Cross-sectional shape of coolant hole}

- 51/08 . Drills combined with tool parts or tools for performing additional working {[\(B23G 5/20 takes precedence\)](#)}

- 51/10 . Bits for countersinking

**WARNING**

Group [B23B 51/10](#) is impacted by reclassification into group [B23B 51/109](#).

Groups [B23B 51/10](#) and [B23B 51/109](#) should be considered in order to perform a complete search.

- 51/101 . . {Deburring tools [\(B23B 51/103 takes precedence\)](#)}

- 51/102 . . {Back spot-facing or chamfering}

- 51/103 . . {Deburring or chamfering tools for the ends of tubes or rods}

- 51/104 . . {with stops}

- 51/105 . . {Deburring or countersinking of radial holes}

- 51/106 . . {with a cutting edge adjustable along a direction oblique to the axis}

51/107 . . {having a pilot}

**WARNING**

Group [B23B 51/107](#) is impacted by reclassification into group [B23B 51/109](#).

Groups [B23B 51/107](#) and [B23B 51/109](#) should be considered in order to perform a complete search.

51/108 . . {having a centering drill}

**WARNING**

Group [B23B 51/108](#) is impacted by reclassification into group [B23B 51/1085](#).

Groups [B23B 51/108](#) and [B23B 51/1085](#) should be considered in order to perform a complete search.

51/1085 . . . {countersink in the form of an attachment to the drill}

**WARNING**

Group [B23B 51/1085](#) is incomplete pending reclassification of documents from group [B23B 51/108](#).

Groups [B23B 51/108](#) and [B23B 51/1085](#) should be considered in order to perform a complete search.

51/109 . . {Counterboring tools ([B23B 51/102](#) takes precedence)}

**WARNING**

Group [B23B 51/109](#) is incomplete pending reclassification of documents from groups [B23B 51/10](#), [B23B 51/107](#) and [B23B 51/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

51/12 . Adapters for drills or chucks; Tapered sleeves

51/123 . . {Conical reduction sleeves}

51/126 . . {Tool elongating devices}

51/14 . . Adapters for broken drills

2200/048 . . Star form

2200/0485 . . Trapezium

2200/049 . . Triangular

2200/0495 . . . rounded

2200/08 . Rake or top surfaces

2200/081 . . with projections

2200/082 . . with elevated clamping surface

2200/083 . . curved

2200/085 . . discontinuous

2200/086 . . with one or more grooves

2200/087 . . . for chip breaking

2200/088 . . . for clamping

2200/12 . Side or flank surfaces

2200/121 . . with projections

2200/123 . . curved

2200/125 . . discontinuous

2200/126 . . . stepped

2200/128 . . with one or more grooves

2200/16 . Supporting or bottom surfaces

2200/161 . . with projections

2200/162 . . curved

2200/163 . . discontinuous

2200/164 . . ground

2200/165 . . with one or more grooves

2200/166 . . polygonal

2200/167 . . with serrations

2200/168 . . star form

2200/20 . Top or side views of the cutting edge

2200/201 . . Details of the nose radius and immediately surrounding area

2200/202 . . with curved cutting edge

2200/204 . . with discontinuous cutting edge

2200/205 . . with cutting edge having a wave form

2200/207 . . for cutting a particular form corresponding to the form of the cutting edge

2200/208 . . with wiper, i.e. an auxiliary cutting edge to improve surface finish

2200/24 . Cross section of the cutting edge

2200/242 . . bevelled or chamfered

2200/245 . . rounded

2200/247 . . sharp

2200/28 . Angles

2200/283 . . Negative cutting angles

2200/286 . . Positive cutting angles

2200/32 . Chip breaking or chip evacuation

2200/321 . . by chip breaking projections

2200/323 . . by chip breaking depressions

2200/325 . . by multiple chip-breaking grooves

2200/326 . . by chip breaking-plates

2200/328 . . Details of chip evacuation

2200/36 . Other features of cutting inserts not covered by [B23B 2200/04](#) - [B23B 2200/32](#)

2200/3609 . . Chamfers

2200/3618 . . Fixation holes

2200/3627 . . Indexing

2200/3636 . . . with cutting geometries differing according to the indexed position

2200/3645 . . Lands, i.e. the outer peripheral section of the rake face

2200/3654 . . . being variable

2200/3663 . . . having negative cutting angles

2200/3672 . . . . being variable

**2200/00 Details of cutting inserts**

2200/04 . Overall shape

2200/0404 . . Hexagonal

2200/0409 . . . irregular

2200/0414 . . . rounded

2200/0419 . . . trigonal

2200/0423 . . Irregular

2200/0428 . . Lozenge

2200/0433 . . . rounded

2200/0438 . . Octagonal

2200/0442 . . . rounded

2200/0447 . . Parallelogram

2200/0452 . . . rounded

2200/0457 . . Pentagonal

2200/0461 . . Round

2200/0466 . . Segment or sector of a circle

2200/0471 . . Square

2200/0476 . . . rounded



|                |   |                |  |
|----------------|---|----------------|--|
| 2200/3681      | . . Split inserts, i.e. comprising two or more sections roughly equal in size and having similar or dissimilar cutting geometries | 2220/126       | . . Producing ring grooves   |
| 2200/369       | . . Mounted tangentially, i.e. where the rake face is not the face with the largest area  | 2220/24        | . Finishing  |
| <b>2205/00</b> | <b>Fixation of cutting inserts in holders</b>   | 2220/28        | . Parting off and chamferring simultaneously   |
| 2205/02        | . Fixation using an elastically deformable clamping member  | 2220/32        | . Drilling holes from both sides   |
| 2205/04        | . Fixation screws, bolts or pins of particular form   | 2220/36        | . Turning, boring or drilling at high speeds   |
| 2205/045       | . . orientated obliquely to the hole in the insert or to the seating surface  | 2220/40        | . Peeling  |
| 2205/08        | . using an eccentric  | 2220/44        | . Roughing   |
| 2205/10        | . using two or more fixation screws   | 2220/445       | . . and finishing  |
| 2205/12        | . Seats for cutting inserts   | 2220/52        | . Whirling   |
| 2205/125       | . . One or more walls of the seat being elastically deformable  | <b>2222/00</b> | <b>Materials of tools or workpieces composed of metals, alloys or metal matrices</b> |
| 2205/16        | . Shims   | 2222/04        | . Aluminium  |
| 2205/18        | . Systems for indexing the cutting insert automatically   | 2222/12        | . Brass  |
| 2205/21        | . Systems for changing the cutting insert automatically   | 2222/14        | . Cast iron  |
| 2205/215       | . . using a magazine  | 2222/16        | . Cermet   |
| <b>2210/00</b> | <b>Details of turning tools</b>   | 2222/21        | . Copper   |
| 2210/02        | . Tool holders having multiple cutting inserts  | 2222/24        | . Gold   |
| 2210/022       | . . Grooving tools  | 2222/28        | . Details of hard metal, i.e. cemented carbide                                       |
| 2210/025       | . . . Grooving inserts arranged on a turret   | 2222/32        | . Details of high-speed steel  |
| 2210/027       | . . . Means for adjusting the grooving inserts  | 2222/36        | . Nickel chrome alloys, e.g. Inconel®  |
| 2210/04        | . Self-sharpening tools   | 2222/41        | . Nickel steel alloys, e.g. invar®   |
| 2210/06        | . Chip breakers   | 2222/44        | . Iron   |
| 2210/08        | . Tools comprising intermediary toolholders   | 2222/48        | . Lead   |
| 2210/12        | . Tools comprising weakened spot on the tool at a preferred breakage location   | 2222/52        | . Magnesium  |
| <b>2215/00</b> | <b>Details of workpieces</b>  | 2222/56        | . Non-specified metals   |
| 2215/04        | . Aircraft components   | 2222/61        | . Metal matrices with non-metallic particles or fibres                               |
| 2215/08        | . Automobile wheels   | 2222/64        | . Nickel   |
| 2215/10        | . Ammunition cartridge cases  | 2222/68        | . Palladium  |
| 2215/12        | . Bearing races   | 2222/72        | . Platinum   |
| 2215/16        | . Camshafts   | 2222/76        | . Silver   |
| 2215/20        | . Crankshafts   | 2222/80        | . Stainless steel  |
| 2215/24        | . Components of internal combustion engines<br>( <a href="#">B23B 2215/16</a> and <a href="#">B23B 2215/20</a> take precedence)   | 2222/84        | . Steel  |
| 2215/242       | . . Cylinder liners   | 2222/88        | . Titanium   |
| 2215/245       | . . Pistons   | 2222/92        | . Tungsten   |
| 2215/247       | . . Piston rings  | 2222/98        | . Zinc   |
| 2215/28        | . Firearms, guns  | <b>2224/00</b> | <b>Materials of tools or workpieces composed of a compound including a metal</b>     |
| 2215/32        | . Railway tracks  | 2224/04        | . Aluminium oxide  |
| 2215/36        | . Railway wheels  | 2224/08        | . Aluminium nitride  |
| 2215/40        | . Spectacles  | 2224/12        | . Chromium carbide   |
| 2215/56        | . Springs   | 2224/16        | . Molybdenum disulphide  |
| 2215/60        | . Steel wool  | 2224/20        | . Tantalum carbide   |
| 2215/64        | . Thin walled components  | 2224/24        | . Titanium aluminium nitride   |
| 2215/68        | . Threaded components   | 2224/28        | . Titanium carbide   |
| 2215/72        | . Tubes, pipes  | 2224/32        | . Titanium carbide nitride (TiCN)  |
| 2215/76        | . Components for turbines   | 2224/36        | . Titanium nitride   |
| 2215/81        | . . Turbine blades  | 2224/40        | . Tungsten disulphide  |
| <b>2220/00</b> | <b>Details of turning, boring or drilling processes</b>   | <b>2226/00</b> | <b>Materials of tools or workpieces not comprising a metal</b>                       |
| 2220/04        | . Chamferring ( <a href="#">B23B 2220/28</a> takes precedence)  | 2226/04        | . Aromatic polyamides  |
| 2220/08        | . Deburring   | 2226/09        | . Asbestos   |
| 2220/12        | . Grooving  | 2226/12        | . Boron nitride  |
| 2220/123       | . . Producing internal grooves  | 2226/125       | . . cubic [CBN]  |
|                |   | 2226/15        | . Cardboard  |
|                |   | 2226/18        | . Ceramic  |
|                |   | 2226/27        | . Composites   |
|                |   | 2226/275       | . . Carbon fibre reinforced carbon composites  |
|                |   | 2226/31        | . Diamond  |
|                |   | 2226/315       | . . polycrystalline [PCD]  |
|                |   | 2226/33        | . Elastomers, e.g. rubber  |

|                |  |           |  |
|----------------|--|-----------|--|
| 2226/36        | . Epoxy  | 2231/0256 | . . Flats  |
| 2226/39        | . Foam   | 2231/026  | . . Grooves  |
| 2226/42        | . Gem, i.e. precious stone   | 2231/0264 | . . . Axial grooves  |
| 2226/45        | . Glass  | 2231/0268 | . . . Radial grooves   |
| 2226/48        | . Ice  | 2231/0272 | . . . Grooves on conical clamping surfaces   |
| 2226/54        | . Paper  | 2231/0276 | . . Keyways  |
| 2226/57        | . Plasterboard, i.e. sheetrock   | 2231/028  | . . Lugs   |
| 2226/61        | . Plastics not otherwise provided for, e.g. nylon  | 2231/0284 | . . Notches  |
| 2226/63        | . Polyurethane   | 2231/0288 | . . Conical shanks of tools in which the cone is not formed as one continuous surface                        |
| 2226/66        | . Polytetrafluoroethylene  | 2231/0292 | . . Flanges of conical shanks  |
| 2226/69        | . Sapphire   | 2231/0296 | . . Ends of conical shanks, e.g. pull studs, tangs   |
| 2226/72        | . Silicon carbide  | 2231/04   | . Adapters   |
| 2226/75        | . Stone, rock or concrete  | 2231/06   | . Chucks for handtools having means for opening and closing the jaws using the driving motor of the handtool |
| 2226/78        | . Textile  | 2231/08   | . Chucks for shanks of tools having means for reducing the bending of the retained shanks                    |
| <b>2228/00</b> | <b>Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner</b> | 2231/10   | . Chucks having data storage chips   |
| 2228/04        | . applied by chemical vapour deposition [CVD]  | 2231/12   | . Chucks having means to amplify the force produced by the actuating means to increase the clamping force    |
| 2228/08        | . applied by physical vapour deposition [PVD]  | 2231/14   | . Chucks with clamping force limitation means  |
| 2228/10        | . Coatings   | 2231/20   | . Collet chucks  |
| 2228/105       | . . with specified thickness   | 2231/2002 | . . Collets having blade-like jaws   |
| 2228/12        | . Abrasive   | 2231/2005 | . . Keys preventing rotation   |
| 2228/16        | . Shape memory alloys  | 2231/2008 | . . Bores holding the collet having a slightly conical profile   |
| 2228/21        | . Cast, i.e. In the form of a casting  | 2231/201  | . . Operating surfaces of collets, i.e. the surface of the collet acted on by the operating means            |
| 2228/24        | . Hard, i.e. after being hardened  | 2231/2013 | . . . Non-cylindrical  |
| 2228/28        | . Soft   | 2231/2016 | . . . Polygonal  |
| 2228/32        | . Explosive  | 2231/2018 | . . . with a saw-tooth profile   |
| 2228/36        | . Multi-layered  | 2231/2021 | . . . comprising two different cones   |
| 2228/41        | . Highly conductive  | 2231/2024 | . . Non-circular surfaces of collets for the transmission of torque  |
| 2228/44        | . Materials having grain size less than 1 micrometre, e.g. nanocrystalline   | 2231/2027 | . . Gripping surfaces, i.e. the surface contacting the tool or workpiece                                     |
| 2228/48        | . Self-luminous, i.e. light-emitting, e.g. fluorescent   | 2231/2029 | . . . Conical  |
| 2228/52        | . Solid lubricants   | 2231/2032 | . . . with non-cylindrical cross section   |
| 2228/56        | . Two phase materials  | 2231/2035 | . . . Polygonal  |
| 2228/61        | . Materials comprising whiskers  | 2231/2037 | . . . Roughened  |
| <b>2229/00</b> | <b>Details of boring bars or boring heads</b>  | 2231/204  | . . . with saw tooth profiles  |
| 2229/04        | . Guiding pads   | 2231/2043 | . . . Discontinuous, interrupted or split  |
| 2229/08        | . Cutting edges of different lengths or at different axial positions   | 2231/2045 | . . . comprising two or more diameters, e.g. stepped   |
| 2229/12        | . Cutting inserts located on different radii   | 2231/2048 | . . Collets comprising inserts   |
| 2229/16        | . Boring, facing or grooving heads with integral electric motor  | 2231/2051 | . . . brazed in position   |
| <b>2231/00</b> | <b>Details of chucks, toolholder shanks or tool shanks</b>   | 2231/2054 | . . . glued in position  |
| 2231/02        | . Features of shanks of tools not relating to the operation performed by the tool                                    | 2231/2056 | . . . where the insert forms part of the surface gripping the workpiece or tool                              |
| 2231/0204      | . . Connection of shanks to working elements of tools  | 2231/2059 | . . . Hard inserts   |
| 2231/0208      | . . Bores  | 2231/2062 | . . . Inserts mechanically clamped in the collet   |
| 2231/0212      | . . Shanks of tools having a reduced cross section at a position where breakage of the tool is preferred             | 2231/2064 | . . . Inserts in the form of a roll  |
| 2231/0216      | . . Overall cross sectional shape of the shank   | 2231/2067 | . . . Soft inserts   |
| 2231/022       | . . . Triangular   | 2231/207  | . . . Inserts welded in position   |
| 2231/0224      | . . . . Rounded triangular   | 2231/2072 | . . Jaws of collets  |
| 2231/0228      | . . . Square   | 2231/2075 | . . . of special form  |
| 2231/0232      | . . . Hexagonal  | 2231/2078 | . . Jaw carriers, i.e. components retaining the collet itself  |
| 2231/0236      | . . . Octagonal  | 2231/2081 | . . Keys, spanners or wrenches to operate the collet chuck   |
| 2231/024       | . . . Star form  | 2231/2083 | . . Collets comprising screw threads   |
| 2231/0244      | . . . Special forms not otherwise provided for   |           |  |
| 2231/0248      | . . Codes for diameters  |           |  |
| 2231/0252      | . . Shanks having a section of reduced diameter  |           |  |

- 2231/2086 . . Collets in which the jaws are formed as separate elements, i.e. not joined together
- 2231/2089 . . Slits of collets
- 2231/2091 . . . extending from both axial ends of the collet
- 2231/2094 . . . Helical
- 2231/2097 . . . having a special form not otherwise provided for
- 2231/22 . Compensating chucks, i.e. with means for the compensation of irregularities of form or position
- 2231/24 . Cooling or lubrication means
- 2231/26 . Detection of clamping
- 2231/28 . Dust covers
- 2231/30 . Chucks with four jaws
- 2231/32 . Guideways for jaws
- 2231/34 . Jaws
- 2231/341 . . Jaws with hard inserts
- 2231/342 . . Padded or cushioned jaws
- 2231/345 . . Different jaws
- 2231/36 . Sealed joints
- 2231/365 . . using O-rings
- 2231/38 . Keyless chucks for hand tools
- 2231/40 . Chucks having a pivotal retention element in the form of a laterally acting cam
- 2231/42 . Chucks operated by a motor which is movable to engage with, or disengage from, the chuck operating means
- 2231/44 . Nose pieces
- 2231/46 . Pins
- 2231/48 . Polygonal cross sections
- 2231/50 . Devices to counteract clamping forces exerted within the spindle in order to release the tool or workpiece
- 2231/52 . Chucks with means to loosely retain the tool or workpiece in the unclamped position
- 2231/54 . Chucks for taps
- 2231/56 . Chucks with more than one set of gripping means
- 2231/565 . . Wherein only one means is usable at a time
- 2231/58 . Self-grasping, i.e., automatic grasping upon insertion of tool or workpiece
- 2233/00 Details of centres or drivers**
- 2233/04 . Means to allow the facing of the axial end of the workpiece near the axis of rotation
- 2233/08 . Centres or drivers comprising a ball
- 2233/12 . Centres or drivers with a special arrangement of bearings or with special bearings
- 2233/16 . Centres or drivers comprising chucks
- 2233/20 . Centres or drivers with convex surfaces
- 2233/24 . Centres or drivers with inserts
- 2233/28 . Centres or drivers supporting the workpiece at three points around the circumference
- 2233/32 . Yieldable centres
- 2235/00 Turning of brake discs, drums or hubs**
- 2235/04 . Machining of brake discs
- 2235/045 . . Simultaneous machining of both sides of the brake disc
- 2235/12 . Machining of brake drums
- 2235/16 . Machining of hubs
- 2235/21 . Compensation of run out
- 2240/00 Details of connections of tools or workpieces**
- 2240/04 . Bayonet connections
- 2240/08 . Brazed connections
- 2240/11 . Soldered connections
- 2240/16 . Welded connections
- 2240/21 . Glued connections
- 2240/24 . Connections using hollow screws, e.g. for the transmission of coolant
- 2240/28 . Shrink-fitted connections, i.e. using heating and cooling to produce interference fits
- 2240/32 . Press fits
- 2240/36 . Connections using a tongue and a hollow of corresponding prismatic form
- 2247/00 Details of drilling jigs**
- 2247/02 . Jigs for drilling spectacles
- 2247/04 . Jigs using one or more holes as datums for drilling further holes
- 2247/06 . Jigs for drilling holes for lock sets for doors
- 2247/08 . Jigs for drilling overlapping or interfering holes
- 2247/10 . Jigs for drilling inclined holes
- 2247/12 . Drilling jigs with means to affix the jig to the workpiece
- 2247/14 . Jigs for drilling flanges
- 2247/16 . Jigs for drilling stairs and associated components, e.g. banisters or handrails
- 2247/18 . Jigs comprising V-blocks
- 2247/20 . Jigs for drilling holes for lock wires in bolts or nuts
- 2250/00 Compensating adverse effects during turning, boring or drilling**
- WARNING**
- Group [B23B 2250/00](#) is impacted by reclassification into group [B23B 2250/18](#).
- Groups [B23B 2250/00](#) and [B23B 2250/18](#) should be considered in order to perform a complete search.
- 2250/04 . Balancing rotating components
- 2250/08 . Compensation of centrifugal force
- 2250/12 . Cooling and lubrication
- WARNING**
- Group [B23B 2250/12](#) is impacted by reclassification into groups [B23B 2250/121](#), [B23B 2250/122](#), [B23B 2250/123](#) and [B23B 2250/124](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 2250/121 . . Insert with coolant channels
- WARNING**
- Group [B23B 2250/121](#) is incomplete pending reclassification of documents from group [B23B 2250/12](#).
- Groups [B23B 2250/12](#) and [B23B 2250/121](#) should be considered in order to perform a complete search.

- 2250/122 . . Internal coolant reservoir

**WARNING**

Group [B23B 2250/122](#) is incomplete pending reclassification of documents from group [B23B 2250/12](#).

Groups [B23B 2250/12](#) and [B23B 2250/122](#) should be considered in order to perform a complete search.

- 2250/123 . . Meltable lubricant

**WARNING**

Group [B23B 2250/123](#) is incomplete pending reclassification of documents from group [B23B 2250/12](#).

Groups [B23B 2250/12](#) and [B23B 2250/123](#) should be considered in order to perform a complete search.

- 2250/124 . . Coolant trapping reservoir, e.g. recesses, pockets on external surface of tool

**WARNING**

Group [B23B 2250/124](#) is incomplete pending reclassification of documents from group [B23B 2250/12](#).

Groups [B23B 2250/12](#) and [B23B 2250/124](#) should be considered in order to perform a complete search.

- 2250/125 . . Improving heat transfer away from the working area of the tool by conduction

- 2250/16 . Damping of vibrations

- 2250/18 . Surface of tool modified by roughening, scratching, etc. to modify friction or other adverse effect

**WARNING**

Group [B23B 2250/18](#) is incomplete pending reclassification of documents from group [B23B 2250/00](#).

Groups [B23B 2250/00](#) and [B23B 2250/18](#) should be considered in order to perform a complete search.

**2251/00 Details of tools for drilling machines**

**WARNING**

Group [B23B 2251/00](#) is impacted by reclassification into groups [B23B 2251/16](#), [B23B 2251/51](#) and [B23B 2251/74](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/02 . Connections between shanks and removable cutting heads  
(Frozen)

**WARNING**

Group [B23B 2251/02](#) is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups [B23B 51/0003](#), [B23B 51/0004](#) and [B23B 51/0005](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/04 . Angles, e.g. cutting angles

**WARNING**

Group [B23B 2251/04](#) is impacted by reclassification into groups [B23B 2251/047](#) and [B23B 2251/048](#).

Groups [B23B 2251/04](#), [B23B 2251/047](#) and [B23B 2251/048](#) should be considered in order to perform a complete search.

- 2251/043 . . Helix angles

- 2251/046 . . . Variable

- 2251/047 . . Axial clearance angles

**WARNING**

Group [B23B 2251/047](#) is incomplete pending reclassification of documents from groups [B23B 2251/04](#) and [B23B 2251/14](#).

Groups [B23B 2251/04](#), [B23B 2251/14](#) and [B23B 2251/047](#) should be considered in order to perform a complete search.

- 2251/048 . . Radial clearance angles

**WARNING**

Group [B23B 2251/048](#) is incomplete pending reclassification of documents from groups [B23B 2251/04](#) and [B23B 2251/14](#).

Groups [B23B 2251/04](#), [B23B 2251/14](#) and [B23B 2251/048](#) should be considered in order to perform a complete search.

- 2251/08 . Side or plan views of cutting edges

- 2251/082 . . Curved cutting edges

**WARNING**

Group [B23B 2251/082](#) is impacted by reclassification into group [B23B 2251/0825](#).

Groups [B23B 2251/082](#) and [B23B 2251/0825](#) should be considered in order to perform a complete search.

- 2251/0825 . . . Curved in the axial direction

**WARNING**

Group [B23B 2251/0825](#) is incomplete pending reclassification of documents from group [B23B 2251/082](#).

Groups [B23B 2251/082](#) and [B23B 2251/0825](#) should be considered in order to perform a complete search.

- 2251/085 . . Discontinuous or interrupted cutting edges



- 2251/087 . . Cutting edges with a wave form
- 2251/12 . . Cross sectional views of the cutting edges
- 2251/122 . . Bevelled cutting edges
- 2251/125 . . Rounded cutting edges
- 2251/127 . . Sharp cutting edges
- 2251/14 . . Configuration of the cutting part, i.e. the main cutting edges

**WARNING**

Group [B23B 2251/14](#) is impacted by reclassification into groups [B23B 2251/047](#) and [B23B 2251/048](#).

Groups [B23B 2251/14](#), [B23B 2251/047](#) and [B23B 2251/048](#) should be considered in order to perform a complete search.

- 2251/16 . . New cutting edge by fracture, wear, or recycling

**WARNING**

Group [B23B 2251/16](#) is incomplete pending reclassification of documents from group [B23B 2251/00](#).

Groups [B23B 2251/00](#) and [B23B 2251/16](#) should be considered in order to perform a complete search.

- 2251/18 . . Configuration of the drill point

**WARNING**

Group [B23B 2251/18](#) is impacted by reclassification into groups [B23B 2251/182](#), [B23B 2251/185](#) and [B23B 2251/188](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/182 . . Web thinning

**WARNING**

Group [B23B 2251/182](#) is incomplete pending reclassification of documents from group [B23B 2251/18](#).

Groups [B23B 2251/18](#) and [B23B 2251/182](#) should be considered in order to perform a complete search.

- 2251/185 . . Point angles less than 90 degrees

**WARNING**

Group [B23B 2251/185](#) is incomplete pending reclassification of documents from group [B23B 2251/18](#).

Groups [B23B 2251/18](#) and [B23B 2251/185](#) should be considered in order to perform a complete search.

- 2251/188 . . Variable point angles

**WARNING**

Group [B23B 2251/188](#) is incomplete pending reclassification of documents from group [B23B 2251/18](#).

Groups [B23B 2251/18](#) and [B23B 2251/188](#) should be considered in order to perform a complete search.

- 2251/20 . . Number of cutting edges

- 2251/201 . . Single cutting edge
- 2251/202 . . Three cutting edges
- 2251/204 . . Four cutting edges
- 2251/205 . . Five cutting edges
- 2251/207 . . Six cutting edges
- 2251/208 . . Eight cutting edges
- 2251/24 . . Overall form of drilling tools

**WARNING**

Group [B23B 2251/24](#) is impacted by reclassification into group [B23B 2251/249](#).

Groups [B23B 2251/24](#) and [B23B 2251/249](#) should be considered in order to perform a complete search.

- 2251/241 . . Cross sections of the diameter of the drill
- 2251/242 . . increasing in a direction towards the shank from the tool tip
- 2251/244 . . decreasing in a direction towards the shank from the tool tip
- 2251/245 . . Variable cross sections
- 2251/247 . . Drilling tools having a working portion at both ends of the shank
- 2251/248 . . Drills in which the outer surface is of special form
- 2251/249 . . Drills in which the shank is flexible

**WARNING**

Group [B23B 2251/249](#) is incomplete pending reclassification of documents from groups [B23B 51/00](#), [B23B 51/02](#) and [B23B 2251/24](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/28 . . Arrangement of teeth
- 2251/282 . . Unequal spacing of cutting edges in the circumferential direction
- 2251/285 . . Cutting teeth arranged at different heights
- 2251/287 . . Cutting edges having different lengths
- 2251/40 . . Flutes, i.e. chip conveying grooves

**WARNING**

Group [B23B 2251/40](#) is impacted by reclassification into groups [B23B 2251/4011](#) and [B23B 2251/4012](#).

Groups [B23B 2251/40](#), [B23B 2251/4011](#) and [B23B 2251/4012](#) should be considered in order to perform a complete search.

- 2251/4011 . . Two flutes merge into one flute

**WARNING**

Group [B23B 2251/4011](#) is incomplete pending reclassification of documents from group [B23B 2251/40](#).

Groups [B23B 2251/40](#) and [B23B 2251/4011](#) should be considered in order to perform a complete search.

- 2251/4012 . . Flutes with sleeves

**WARNING**

Group [B23B 2251/4012](#) is incomplete pending reclassification of documents from group [B23B 2251/40](#).

Groups [B23B 2251/40](#) and [B23B 2251/4012](#) should be considered in order to perform a complete search.

- 2251/402 . . with increasing depth in a direction towards the shank from the tool tip

- 2251/404 . . with decreasing depth in a direction towards the shank from the tool tip

- 2251/406 . . of special form not otherwise provided for

**WARNING**

Group [B23B 2251/406](#) is impacted by reclassification into group [B23B 2251/4062](#).

Groups [B23B 2251/406](#) and [B23B 2251/4062](#) should be considered in order to perform a complete search.

- 2251/4062 . . . Reverse flutes

**WARNING**

Group [B23B 2251/4062](#) is incomplete pending reclassification of documents from group [B23B 2251/406](#).

Groups [B23B 2251/406](#) and [B23B 2251/4062](#) should be considered in order to perform a complete search.

- 2251/408 . . Spiral grooves

- 2251/44 . Margins, i.e. the narrow portion of the land which is not cut away to provide clearance on the circumferential surface

**WARNING**

Group [B23B 2251/44](#) is impacted by reclassification into group [B23B 2251/448](#).

Groups [B23B 2251/44](#) and [B23B 2251/448](#) should be considered in order to perform a complete search.

- 2251/443 . . Double margin drills

- 2251/446 . . Drills with variable margins

- 2251/448 . . Drills with axial cutting edge extending along margin

**WARNING**

Group [B23B 2251/448](#) is incomplete pending reclassification of documents from group [B23B 2251/44](#).

Groups [B23B 2251/44](#) and [B23B 2251/448](#) should be considered in order to perform a complete search.

- 2251/46 . Drills having a centre free from cutting edges or with recessed cutting edges

- 2251/48 . Chip breakers

- 2251/50 . Drilling tools comprising cutting inserts

(Frozen)

**WARNING**

Group [B23B 2251/50](#) is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups [B23B 51/0002](#), [B23B 51/0003](#), [B23B 51/00035](#), [B23B 51/0004](#), [B23B 51/0005](#), [B23B 51/0006](#), [B23B 51/0007](#), [B23B 51/0008](#) and [B23B 51/0011](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/505 . . set at different heights

(Frozen)

**WARNING**

Group [B23B 2251/505](#) is no longer used for the classification of documents as of January 1, 2022.

The content of this group is being reclassified into groups [B23B 51/0002](#), [B23B 51/0003](#), [B23B 51/00035](#), [B23B 51/0004](#), [B23B 51/0005](#), [B23B 51/0006](#), [B23B 51/0007](#), [B23B 51/0008](#) and [B23B 51/0011](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2251/51 . Drills with means for feeding cable

**WARNING**

Group [B23B 2251/51](#) is incomplete pending reclassification of documents from group [B23B 2251/00](#).

Groups [B23B 2251/00](#) and [B23B 2251/51](#) should be considered in order to perform a complete search.

- 2251/52 . Depth indicators

- 2251/56 . Guiding pads

- 2251/58 . Guiding rolls

- 2251/60 . Drills with pilots

- 2251/603 . . Detachable pilots, e.g. in the form of a drill

- 2251/606 . . . being a twist drill

- 2251/62 . Drilling tools having means to reinforce the shank, e.g. drills having small shanks being gripped by devices having a larger shank

- 2251/64 . Drills operating in the reverse direction, i.e. in the unscrewing direction of a right-hand thread

- 2251/66 . Drills with provision to be used as a screwdriver

- 2251/68 . Drills with provision for suction

- 2251/70 . Drills with vibration suppressing means

- 2251/74 . Drills for drilling a flat bottomed hole

**WARNING**

Group [B23B 2251/74](#) is incomplete pending reclassification of documents from group [B23B 2251/00](#).

Groups [B23B 2251/00](#) and [B23B 2251/74](#) should be considered in order to perform a complete search.

- 2260/00 Details of constructional elements

- 2260/002 . Accumulators

|           |   |                |   |
|-----------|---|----------------|---|
| 2260/004  | . Adjustable elements   | 2260/118       | . Suction pads or vacuum cups, e.g. for attachment of guides to workpieces                            |
| 2260/0045 | . . Two elements adjustable relative to each other in three mutually perpendicular directions                                     | 2260/12        | . Stops   |
| 2260/008  | . Bearings  | 2260/122       | . Safety devices  |
| 2260/0082 | . . Sliding contact bearings  | 2260/124       | . Screws  |
| 2260/0085 | . . Needle roller bearings  | 2260/126       | . Seals   |
| 2260/0087 | . . Preloading of bearings  | 2260/128       | . Sensors   |
| 2260/016  | . Bolts   | 2260/1285      | . . Vibration sensors   |
| 2260/018  | . Brushes   | 2260/132       | . Serrations  |
| 2260/02   | . Cams  | 2260/134       | . Spacers or shims  |
| 2260/022  | . Balls   | 2260/136       | . Springs   |
| 2260/024  | . Batteries   | 2260/138       | . Screw threads   |
| 2260/026  | . Bushings, e.g. adapter sleeves  | 2260/1381      | . . Conical   |
| 2260/028  | . Chains  | 2260/1383      | . . with round thread profile   |
| 2260/03   | . Clamps  | 2260/1385      | . . with square thread profile  |
| 2260/032  | . Diaphragms  | 2260/1386      | . . with trapezoidal thread profile   |
| 2260/034  | . Drawbars  | 2260/1388      | . . with special profile not otherwise provided for   |
| 2260/036  | . Cables  | 2260/142       | . Valves  |
| 2260/038  | . Cartridges  | 2260/144       | . Wear indicators   |
| 2260/04   | . Centre drills of known configuration, e.g. the provision of a centre drill in centres or chucks                                 | 2260/146       | . Wedges  |
| 2260/042  | . Collets of known configuration, i.e. devices using a collet   | 2260/158       | . Worms and worm wheels   |
| 2260/044  | . Clutches  | <b>2265/00</b> | <b>Details of general geometric configurations</b>  |
| 2260/0445 | . . Overload clutches   | 2265/08        | . Conical   |
| 2260/048  | . Devices to regulate the depth of cut  | 2265/12        | . Eccentric   |
| 2260/0482 | . . Depth controls, e.g. depth stops  | 2265/16        | . Elliptical  |
| 2260/0485 | . . Depth gauges  | 2265/32        | . Polygonal   |
| 2260/0487 | . . Depth indicators  | 2265/322       | . . Square  |
| 2260/056  | . Differential screw threads  | 2265/324       | . . Pentagonal  |
| 2260/058  | . Dust covers   | 2265/326       | . . Hexagonal   |
| 2260/062  | . Electric motors   | 2265/328       | . . Octagonal   |
| 2260/0625 | . . Linear motors   | 2265/34        | . Round   |
| 2260/066  | . Electrostrictive elements   | 2265/36        | . Spherical   |
| 2260/068  | . Flexible members  | <b>2270/00</b> | <b>Details of turning, boring or drilling machines, processes or tools not otherwise provided for</b> |
| 2260/07   | . Gears   | 2270/02        | . Use of a particular power source  |
| 2260/072  | . Grooves   | 2270/022       | . . Electricity   |
| 2260/0725 | . . Spiral  | 2270/025       | . . Hydraulics  |
| 2260/076  | . Harmonic drive gearboxes, i.e. reduction gearing including wave generator, flex spline and a circular spline                    | 2270/027       | . . Pneumatics  |
| 2260/078  | . Hand tools used to operate chucks or to assemble, adjust or disassemble tools or equipment used for turning, boring or drilling | 2270/04        | . Use of centrifugal force  |
| 2260/0785 | . . for unclamping cutting inserts  | 2270/06        | . Use of elastic deformation  |
| 2260/082  | . Holes   | 2270/08        | . Clamping mechanisms; Provisions for clamping ( <a href="#">B23B 2210/00</a> takes precedence)       |
| 2260/084  | . Hirth couplings   | 2270/09        | . Details relating to unclamping  |
| 2260/088  | . Indication scales   | 2270/10        | . Use of ultrasound   |
| 2260/09   | . Knurled surfaces  | 2270/12        | . Centering of two components relative to one another   |
| 2260/092  | . Lasers  | 2270/14        | . Constructions comprising exactly two similar components   |
| 2260/094  | . Levels, e.g. spirit levels  | 2270/16        | . Constructions comprising three or more similar components   |
| 2260/096  | . Levers  | 2270/20        | . Internally located features, machining or gripping of internal surfaces                             |
| 2260/098  | . Magazines   | 2270/205       | . . Machining or gripping both internal and external surfaces   |
| 2260/10   | . Magnets   | 2270/22        | . Externally located features, machining or gripping of external surfaces                             |
| 2260/102  | . Magnetostrictive elements   | 2270/24        | . Tool, chuck or other device activated by the coolant or lubrication system of the machine tool      |
| 2260/104  | . Markings, i.e. symbols or other indicating marks  | 2270/26        | . Burnishing  |
| 2260/106  | . Nuts  | 2270/28        | . Cleaning  |
| 2260/108  | . Piezoelectric elements  | 2270/30        | . Chip guiding or removal   |
| 2260/11   | . Planetary drives  | 2270/32        | . Use of electronics  |
| 2260/112  | . Projections   |                |   |
| 2260/114  | . Rings   |                |   |
| 2260/116  | . Rollers or rolls  |                |   |

## B23B

- 2270/34 . Means for guiding
- 2270/36 . Identification of tooling or other equipment
- 2270/38 . Using magnetic fields
- 2270/48 . Measuring or detecting
- 2270/483 . . Measurement of force
- 2270/486 . . Measurement of rotational speed
- 2270/54 . Methods of turning, boring or drilling not otherwise provided for
- 2270/56 . Turning, boring or drilling tools or machines with provision for milling
- 2270/58 . Oblique elements
- 2270/60 . Prevention of rotation
- 2270/62 . Use of suction