

# 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; structural features of details, [see the relevant groups](#); 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 3/16](#); 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](#))}
- WARNING**  
Group [B23B 31/00](#) is impacted by reclassification into groups [B23B 2231/56](#), [B23B 2231/565](#), and [B23B 2231/58](#).  
All groups listed in this Warning should be considered in order to perform a complete search.
- 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
- WARNING**  
Group [B23B 31/02](#) is impacted by reclassification into groups [B23B 31/0261](#), [B23B 2231/56](#), [B23B 2231/565](#), and [B23B 2231/58](#).  
All groups listed in this Warning should be considered in order to perform a complete search.
- 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](#))}
- WARNING**  
Group [B23B 31/026](#) is impacted by reclassification into group [B23B 31/0261](#).  
Groups [B23B 31/026](#) and [B23B 31/0261](#) should be considered in order to perform a complete search.
- 31/0261 . . . . . {for centering the tool}
- WARNING**  
Group [B23B 31/0261](#) is incomplete pending reclassification of documents from groups [B23B 31/02](#) and [B23B 31/026](#).  
Groups [B23B 31/02](#), [B23B 31/026](#), and [B23B 31/0261](#) should be considered in order to perform a complete search.
- 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

**WARNING**

Group [B23B 31/107](#) is impacted by reclassification into group [B23B 31/1079](#). Groups [B23B 31/107](#) and [B23B 31/1079](#) should be considered in order to perform a complete search.

- 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 31/22](#))}

**WARNING**

Group [B23B 31/1072](#) is impacted by reclassification into groups [B23B 31/10741](#) and [B23B 31/1079](#).

Groups [B23B 31/1072](#), [B23B 31/10741](#), and [B23B 31/1079](#) should be considered in order to perform a complete search.

- 31/1073 . . . . {Retention by conical elements (conical elements acting as jaws [B23B 31/22](#))}
- 31/10741 . . . . {Retention by substantially radially oriented pins}

**WARNING**

Group [B23B 31/10741](#) is incomplete pending reclassification of documents from group [B23B 31/1072](#).

Groups [B23B 31/1072](#) and [B23B 31/10741](#) should be considered in order to perform a complete search.

- 31/1075 . . . . {Retention by screws}
- 31/1076 . . . . . {with conical ends}
- 31/1077 . . . . . {acting on a floating pin}

- 31/1078 . . . . {Retention by wedges}
- 31/1079 . . . . {Retention by spring or wire}

**WARNING**

Group [B23B 31/1079](#) is incomplete pending reclassification of documents from groups [B23B 31/107](#) and [B23B 31/1072](#).

Groups [B23B 31/107](#), [B23B 31/1072](#), and [B23B 31/1079](#) should be considered in order to perform a complete search.

- 31/11 . . . Retention by threaded connection
- 31/1107 . . . . {for conical parts}
- 31/1115 . . . . . {using conical threads}
- 31/1122 . . . . . {using cylindrical threads}
- 31/113 . . . Retention by bayonet connection
- 31/117 . . . Retention by friction only, e.g. using springs, resilient sleeves, tapers
- 31/1171 . . . . {not used, see subgroups and [B23B 31/117](#)}
- 31/1172 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/1173 . . . . . {using springs}
- 31/1174 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/1175 . . . . . {using elastomer rings or sleeves}
- 31/1176 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/1177 . . . . . {using resilient metallic rings or sleeves}
- 31/1178 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/1179 . . . . . {using heating and cooling}
- 31/12 . . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable
- 31/1207 . . . . . {moving obliquely to the axis of the chuck in a plane containing this axis}
- 31/1215 . . . . . {Details of the jaws}
- 31/1223 . . . . . {using fluid-pressure means in the chuck to actuate the gripping means}
- 31/123 . . . . . {with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving radially actuated by one or more spiral grooves [B23B 31/16041](#))}
- 31/1238 . . . . . {Jaws movement actuated by a nut with conical screw-thread}
- 31/1246 . . . . . {Jaws movement actuated by a bolt with conical screw-thread}
- 31/1253 . . . . . {Jaws movement actuated by an axially movable member}
- 31/1261 . . . . . {pivotally movable in a radial plane}
- 31/1269 . . . . . {Details of the jaws}
- 31/1276 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/1284 . . . . . {with a centre}
- 31/1292 . . . . . {using mechanical transmission through the spindle}

<p>31/14 . . . . involving the use of centrifugal force</p> <p><b>WARNING</b></p> <p>Group <a href="#">B23B 31/14</a> is impacted by reclassification into groups <a href="#">B23B 31/141</a> and <a href="#">B23B 31/142</a>.</p> <p>Groups <a href="#">B23B 31/14</a>, <a href="#">B23B 31/141</a> and <a href="#">B23B 31/142</a> should be considered in order to perform a complete search.</p> <p>31/141 . . . . . {To counterbalance the jaws}</p> <p><b>WARNING</b></p> <p>Group <a href="#">B23B 31/141</a> is incomplete pending reclassification of documents from group <a href="#">B23B 31/14</a>.</p> <p>Groups <a href="#">B23B 31/14</a> and <a href="#">B23B 31/141</a> should be considered in order to perform a complete search.</p> <p>31/142 . . . . . {To grip a tool or workpiece}</p> <p><b>WARNING</b></p> <p>Group <a href="#">B23B 31/142</a> is incomplete pending reclassification of documents from group <a href="#">B23B 31/14</a>.</p> <p>Groups <a href="#">B23B 31/14</a> and <a href="#">B23B 31/142</a> should be considered in order to perform a complete search.</p> <p>31/16 . . . . moving radially</p> <p>31/16004 . . . . . {Jaws movement actuated by one or more spiral grooves}</p> <p>31/16008 . . . . . {Details of the jaws}</p> <p>31/16012 . . . . . {Form of the jaws}</p> <p>31/16016 . . . . . {Fixation on the master jaw}</p> <p>31/1602 . . . . . {Individually adjustable jaws}</p> <p>31/16025 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/16029 . . . . . {using mechanical transmission through the spindle}</p> <p>31/16033 . . . . . {with a centre}</p> <p>31/16037 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/16029</a> takes precedence)}</p> <p>31/16041 . . . . . {with locking arrangements (locking arrangements for chucks with simultaneously-acting jaws moving obliquely to the axis of the chuck in a plane containing this axis <a href="#">B23B 31/123</a>)}</p> <p>31/16045 . . . . . {Jaws movement actuated by screws and nuts or oblique racks}</p> <p>31/1605 . . . . . {Details of the jaws}</p> <p>31/16054 . . . . . {Form of the jaws}</p> <p>31/16058 . . . . . {Fixation on the master jaw}</p> <p>31/16062 . . . . . {Individually adjustable jaws}</p> <p>31/16066 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/1607 . . . . . {using mechanical transmission through the spindle}</p> <p>31/16075 . . . . . {with a centre}</p> <p>31/16079 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/1607</a> takes precedence)}</p>	<p>31/16083 . . . . . {Jaws movement actuated by gears and racks}</p> <p>31/16087 . . . . . {Details of the jaws}</p> <p>31/16091 . . . . . {Form of the jaws}</p> <p>31/16095 . . . . . {Fixation on the master jaw}</p> <p>31/161 . . . . . {Individually adjustable jaws}</p> <p>31/16104 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/16108 . . . . . {using mechanical transmission through the spindle}</p> <p>31/16112 . . . . . {with a centre}</p> <p>31/16116 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/16108</a> takes precedence)}</p> <p>31/1612 . . . . . {Jaws movement actuated by cam surface in a radial plane}</p> <p>31/16125 . . . . . {Details of the jaws}</p> <p>31/16129 . . . . . {Form of the jaws}</p> <p>31/16133 . . . . . {Fixation on the master jaw}</p> <p>31/16137 . . . . . {Individually adjustable jaws}</p> <p>31/16141 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/16145 . . . . . {using mechanical transmission through the spindle}</p> <p>31/1615 . . . . . {with a centre}</p> <p>31/16154 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/16145</a> takes precedence)}</p> <p>31/16158 . . . . . {Jaws movement actuated by coaxial conical surfaces}</p> <p>31/16162 . . . . . {Details of the jaws}</p> <p>31/16166 . . . . . {Form of the jaws}</p> <p>31/1617 . . . . . {Fixation on the master jaw}</p> <p>31/16175 . . . . . {Individually adjustable jaws}</p> <p>31/16179 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/16183 . . . . . {using mechanical transmission through the spindle}</p> <p>31/16187 . . . . . {with a centre}</p> <p>31/16191 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/16183</a> takes precedence)}</p> <p>31/16195 . . . . . {Jaws movement actuated by levers moved by a coaxial control rod}</p> <p>31/162 . . . . . {Details of the jaws}</p> <p>31/16204 . . . . . {Form of the jaws}</p> <p>31/16208 . . . . . {Fixation on the master jaw}</p> <p>31/16212 . . . . . {Individually adjustable jaws}</p> <p>31/16216 . . . . . {using fluid-pressure means to actuate the gripping means}</p> <p>31/1622 . . . . . {using mechanical transmission through the spindle}</p> <p>31/16225 . . . . . {with a centre}</p> <p>31/16229 . . . . . {using mechanical transmission through the spindle (<a href="#">B23B 31/1622</a> takes precedence)}</p> <p>31/16233 . . . . . {Jaws movement actuated by oblique surfaces of a coaxial control rod}</p> <p>31/16237 . . . . . {Details of the jaws}</p> <p>31/16241 . . . . . {Form of the jaws}</p> <p>31/16245 . . . . . {Fixation on the master jaw}</p> <p>31/1625 . . . . . {Individually adjustable jaws}</p>
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- 31/16254 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/16258 . . . . . {using mechanical transmission through the spindle}
- 31/16262 . . . . . {with a centre}
- 31/16266 . . . . . {using mechanical transmission through the spindle ([B23B 31/16258](#) takes precedence)}
- 31/1627 . . . . . {Details of the jaws}
- 31/16275 . . . . . {Form of the jaws}
- 31/16279 . . . . . {Fixation on the master jaw}
- 31/16283 . . . . . {Individually adjustable jaws}
- 31/16287 . . . . . {using fluid-pressure means to actuate the gripping means}
- 31/16291 . . . . . {with a centre}
- 31/16295 . . . . . {with means preventing the ejection of the jaws}
- 31/18 . . . . . pivotally movable in planes containing the axis of the chuck
- 31/185 . . . . . {moving first parallel to the axis then pivotally in planes containing the axis of the chuck}
- 31/19 . . . . . moving parallel to the axis of the chuck {([B23B 31/185](#) takes precedence)}
- 31/20 . . . . . Longitudinally-split sleeves, e.g. collet chucks

**WARNING**

Group [B23B 31/20](#) is impacted by reclassification into groups [B23B 31/2012](#), [B23B 31/20125](#), [B23B 31/2025](#), [B23B 31/206](#), [B23B 31/2072](#), and [B23B 31/2073](#).

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

- 31/201 . . . . . {Characterized by features relating primarily to remote control of the gripping means}

**WARNING**

Group [B23B 31/201](#) is impacted by reclassification into groups [B23B 31/2012](#), [B23B 31/20125](#), [B23B 31/206](#), [B23B 31/2072](#), and [B23B 31/2073](#).

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

- 31/2012 . . . . . {Threaded cam actuator}

**WARNING**

Groups [B23B 31/2012](#) and [B23B 31/20125](#) are incomplete pending reclassification of documents from groups [B23B 31/20](#) and [B23B 31/201](#).

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

- 31/20125 . . . . . {Axially fixed cam, moving jaws}

- 31/202 . . . . . {Details of the jaws}

**WARNING**

Group [B23B 31/202](#) is impacted by reclassification into group [B23B 31/2025](#).

Groups [B23B 31/202](#) and [B23B 31/2025](#) should be considered in order to perform a complete search.

- 31/2025 . . . . . {Wherein the sleeve is split into two relatively movable parts}

**WARNING**

Group [B23B 31/2025](#) is incomplete pending reclassification of documents from groups [B23B 31/20](#) and [B23B 31/202](#).

Groups [B23B 31/20](#), [B23B 31/202](#), and [B23B 31/2025](#) should be considered in order to perform a complete search.

- 31/204 . . . . . {using fluid-pressure means to actuate the gripping means ([B23B 31/207](#) take precedence)}

- 31/206 . . . . . {Reciprocating cam actuator ([B23B 31/207](#) takes precedence)}

**WARNING**

Group [B23B 31/206](#) is incomplete pending reclassification of documents from groups [B23B 31/20](#) and [B23B 31/201](#).

Groups [B23B 31/20](#), [B23B 31/201](#), and [B23B 31/206](#) should be considered in order to perform a complete search.

- 31/207 . . . . . {using mechanical transmission through the spindle}

**WARNING**

Group [B23B 31/207](#) is impacted by reclassification into groups [B23B 31/2072](#), [B23B 31/2073](#), [B23B 2270/025](#), and [B23B 2270/027](#).

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

- 31/2072 . . . . . {Axially moving cam, fixed jaws}

**WARNING**

Group [B23B 31/2072](#) is incomplete pending reclassification of documents from groups [B23B 31/20](#), [B23B 31/201](#), and [B23B 31/207](#).

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



- 31/2073 . . . . . {Axially fixed cam, moving jaws  
([B23B 31/20125](#) takes precedence)}
- WARNING**
- Group [B23B 31/2073](#) is incomplete pending reclassification of documents from groups [B23B 31/20](#), [B23B 31/201](#), and [B23B 31/207](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 31/208 . . . . . {with a tool positioning stop (axial positioning of the tool being adjustable [B23B 31/028](#))}
- 31/22 . . . . . Jaws in the form of balls {(retention by balls [B23B 31/1071](#))}
- 31/223 . . . . . {Jaws in the form of cylindrical elements (retention by cylindrical elements [B23B 31/1072](#))}
- 31/226 . . . . . {Jaws in the form of conical elements (retention by conical elements [B23B 31/1073](#))}
- 31/24 . . characterised by features relating primarily to remote control of the gripping means {([B23B 31/201](#) takes precedence)}
- 31/26 . . . using mechanical transmission through the working-spindle {([B23B 31/16](#) and [B23B 31/40](#) take precedence)}
- 31/261 . . . . . {clamping the end of the toolholder shank}
- 31/263 . . . . . {by means of balls}
- 31/265 . . . . . {by means of collets}
- 31/266 . . . . . {using a threaded spindle}
- 31/268 . . . . . {using a bayonet connection}
- 31/28 . . . using electric or magnetic means in the chuck
- 31/30 . . . using fluid-pressure means in the chuck {([B23B 31/10](#) and [B23B 31/40](#) take precedence)}
- 31/302 . . . . . {Hydraulic equipment, e.g. pistons, valves, rotary joints}
- 31/305 . . . . . {the gripping means is a deformable sleeve}
- 31/307 . . . . . {Vacuum chucks}
- 31/32 . . with jaws carried by diaphragm
- 31/34 . . with means enabling the workpiece to be reversed or tilted
- 31/36 . . with means for adjusting the chuck with respect to the working-spindle
- 31/38 . . with overload clutches {([B23B 31/086](#) takes precedence)}
- 31/39 . . Jaw changers
- 31/40 . . Expansion mandrels
- 31/4006 . . {Gripping the work or tool by a split sleeve (collet chucks [B23B 31/20](#))}
- 31/4013 . . . {Details of the jaws}
- 31/402 . . . {using fluid-pressure means to actuate the gripping means}
- 31/4026 . . . . . {using mechanical transmission through the spindle}
- 31/4033 . . . {using mechanical transmission through the spindle ([B23B 31/4026](#) takes precedence)}
- 31/404 . . {Gripping the work or tool by jaws moving radially controlled by conical surfaces (see also [B23B 31/16158](#))}
- 31/4046 . . . {Details of the jaws}
- 31/4053 . . . {using fluid-pressure means to actuate the gripping means}
- 31/406 . . . . . {using mechanical transmission through the spindle}
- 31/4066 . . . {using mechanical transmission through the spindle ([B23B 31/406](#) takes precedence)}
- 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
- 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.

**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](#))

- 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

- 2200/166 . . 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 ([with projections on rake surface B23B 2200/081](#))  
 2200/323 . . by chip breaking depressions ([with one or more grooves on top surface for chip breaking B23B 2200/087, with multiple chip breaking grooves B23B 2200/325](#))  
 2200/325 . . by multiple chip-breaking grooves ([with one or more grooves on top surface for chip breaking B23B 2200/087, with chip breaking depression B23B 2200/323](#))  
 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 ([with grooves on bottom surfaces B23C 2200/165, with polygonal bottom surfaces B23B 2200/166, with star form bottom surfaces B23C 2200/167](#))  
 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 ([negative lands of variable width B23B 2200/3672](#))  
 2200/3663 . . . having negative cutting angles ([with bevelled cutting edge B23C 2200/243](#))  
 2200/3672 . . . . being variable ([lands with variable width B23B 2200/3654](#))  
 2200/3681 . . Split inserts, i.e. comprising two or more sections roughly equal in size and having similar or dissimilar cutting geometries  
 2200/369 . . Mounted tangentially, i.e. where the rake face is not the face with the largest area

**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  
 2200/048 . . Star form  
 2200/0485 . . Trapezium  
 2200/049 . . Triangular  
 2200/0495 . . . rounded  
 2200/08 . . Rake or top surfaces  
 2200/081 . . with projections ([chip breaking projections in general B23B 2200/321](#))  
 2200/082 . . with elevated clamping surface  
 2200/083 . . curved  
 2200/085 . . discontinuous  
 2200/086 . . with one or more grooves  
 2200/087 . . . for chip breaking ([chip breaking depressions in general B23B 2200/323, multiple chip breaking grooves B23B 2200/325](#))  
 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

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

- 2205/02 . . Fixation using an elastically deformable clamping member  
 2205/04 . . Fixation screws, bolts or pins of particular form  
 2205/045 . . orientated obliquely to the hole in the insert or to the seating surface  
 2205/08 . . using an eccentric

## B23B

- 2205/10 . using two or more fixation screws
- 2205/12 . Seats for cutting inserts
- 2205/125 . . One or more walls of the seat being elastically deformable
- 2205/16 . Shims
- 2205/18 . Systems for indexing the cutting insert automatically
- 2205/21 . Systems for changing the cutting insert automatically
- 2205/215 . . using a magazine
- 2210/00 Details of turning tools**
- 2210/02 . Tool holders having multiple cutting inserts
- 2210/022 . . Grooving tools
- 2210/025 . . . Grooving inserts arranged on a turret
- 2210/027 . . . Means for adjusting the grooving inserts
- 2210/04 . Self-sharpening tools
- 2210/06 . Chip breakers
- 2210/08 . Tools comprising intermediary toolholders
- 2210/12 . Tools comprising weakened spot on the tool at a preferred breakage location ([break points on shanks of tools B23B 2231/0212](#))
- 2215/00 Details of workpieces**
- 2215/04 . Aircraft components
- 2215/08 . Automobile wheels
- 2215/10 . Ammunition cartridge cases
- 2215/12 . Bearing races
- 2215/16 . Camshafts
- 2215/20 . Crankshafts
- 2215/24 . Components of internal combustion engines ([B23B 2215/16](#) and [B23B 2215/20](#) take precedence)
- 2215/242 . . Cylinder liners
- 2215/245 . . Pistons
- 2215/247 . . Piston rings
- 2215/28 . Firearms, guns
- 2215/32 . Railway tracks
- 2215/36 . Railway wheels
- 2215/40 . Spectacles
- 2215/56 . Springs
- 2215/60 . Steel wool
- 2215/64 . Thin walled components
- 2215/68 . Threaded components
- 2215/72 . Tubes, pipes
- 2215/76 . Components for turbines
- 2215/81 . . Turbine blades
- 2220/00 Details of turning, boring or drilling processes**
- 2220/04 . Chamferring ([B23B 2220/28](#) takes precedence)
- 2220/08 . Deburring
- 2220/12 . Grooving
- 2220/123 . . Producing internal grooves
- 2220/126 . . Producing ring grooves
- 2220/24 . Finishing ([roughing and finishing B23B 2220/445](#))
- 2220/28 . Parting off and chamferring simultaneously
- 2220/32 . Drilling holes from both sides
- 2220/36 . Turning, boring or drilling at high speeds
- 2220/40 . Peeling
- 2220/44 . Roughing
- 2220/445 . . and finishing
- 2220/52 . Whirling
- 2222/00 Materials of tools or workpieces composed of metals, alloys or metal matrices**
- 2222/04 . Aluminium
- 2222/12 . Brass
- 2222/14 . Cast iron ([iron B23B 2222/44](#))
- 2222/16 . Cermet
- 2222/21 . Copper
- 2222/24 . Gold
- 2222/28 . Details of hard metal, i.e. cemented carbide
- 2222/32 . Details of high speed steel ([stainless steel B23B 2222/80](#), [steel B23B 2222/84](#))
- 2222/36 . Nickel chrome alloys, e.g. Inconel®
- 2222/41 . Nickel steel alloys, e.g. invar®
- 2222/44 . Iron ([cast iron B23B 2222/14](#))
- 2222/48 . Lead
- 2222/52 . Magnesium
- 2222/56 . Non-specified metals
- 2222/61 . Metal matrices with non-metallic particles or fibres
- 2222/64 . Nickel
- 2222/68 . Palladium
- 2222/72 . Platinum
- 2222/76 . Silver
- 2222/80 . Stainless steel ([high speed steel B23B 2222/32](#), [steel B23B 2222/84](#))
- 2222/84 . Steel ([high speed steel B23B 2222/32](#), [stainless steel B23B 2222/80](#))
- 2222/88 . Titanium
- 2222/92 . Tungsten
- 2222/98 . Zinc
- 2224/00 Materials of tools or workpieces composed of a compound including a metal**
- 2224/04 . Aluminium oxide
- 2224/08 . Aluminium nitride
- 2224/12 . Chromium carbide
- 2224/16 . Molybdenum disulphide
- 2224/20 . Tantalum carbide
- 2224/24 . Titanium aluminium nitride
- 2224/28 . Titanium carbide
- 2224/32 . Titanium carbide nitride (TiCN)
- 2224/36 . Titanium nitride
- 2224/40 . Tungsten disulphide
- 2226/00 Materials of tools or workpieces not comprising a metal**
- 2226/04 . Aromatic polyamides
- 2226/09 . Asbestos
- 2226/12 . Boron nitride
- 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
- 2226/39 . Foam
- 2226/42 . Gem, i.e. precious stone
- 2226/45 . Glass ([turning glass B28D 1/16](#), [drilling glass B28D 1/14](#))
- 2226/48 . Ice
- 2226/54 . Paper
- 2226/57 . Plasterboard, i.e. sheetrock
- 2226/61 . Plastics not otherwise provided for, e.g. nylon

- 2226/63 . Polyurethane
- 2226/66 . Polytetrafluoroethylene
- 2226/69 . Sapphire
- 2226/72 . Silicon carbide
- 2226/75 . Stone, rock or concrete ([working of stone B28D](#))
- 2226/78 . Textile
- 2228/00 Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner**
- 2228/04 . applied by chemical vapour deposition [CVD]
- 2228/08 . applied by physical vapour deposition [PVD]
- 2228/10 . Coatings
- 2228/105 . . with specified thickness
- 2228/12 . Abrasive
- 2228/16 . Shape memory alloys
- 2228/21 . Cast, i.e. In the form of a casting
- 2228/24 . Hard, i.e. after being hardened
- 2228/28 . Soft
- 2228/32 . Explosive
- 2228/36 . Multi-layered
- 2228/41 . Highly conductive
- 2228/44 . Materials having grain size less than 1 micrometre, e.g. nanocrystalline
- 2228/48 . Self-luminous, i.e. light-emitting, e.g. fluorescent
- 2228/52 . Solid lubricants
- 2228/56 . Two phase materials
- 2228/61 . Materials comprising whiskers
- 2229/00 Details of boring bars or boring heads**
- 2229/04 . Guiding pads
- 2229/08 . Cutting edges of different lengths or at different axial positions
- 2229/12 . Cutting inserts located on different radii
- 2229/16 . Boring, facing or grooving heads with integral electric motor
- 2231/00 Details of chucks, toolholder shanks or tool shanks**
- 2231/02 . Features of shanks of tools not relating to the operation performed by the tool
- 2231/0204 . . Connection of shanks to working elements of tools
- 2231/0208 . . Bores
- 2231/0212 . . Shanks of tools having a reduced cross section at a position where breakage of the tool is preferred ([break points on tools not in shank area B23B 2210/12, shanks with reduced cross sections in general B23B 2231/0252](#))
- 2231/0216 . . Overall cross sectional shape of the shank
- 2231/022 . . . Triangular
- 2231/0224 . . . . Rounded triangular
- 2231/0228 . . . Square
- 2231/0232 . . . Hexagonal
- 2231/0236 . . . Octagonal
- 2231/024 . . . Star form
- 2231/0244 . . . Special forms not otherwise provided for
- 2231/0248 . . Codes for diameters
- 2231/0252 . . Shanks having a section of reduced diameter ([to provide a preferred breaking point B23B 2231/0212](#))
- 2231/0256 . . Flats
- 2231/026 . . Grooves ([keyways B23B 2231/0276](#))
- 2231/0264 . . . Axial grooves
- 2231/0268 . . . Radial grooves
- 2231/0272 . . . Grooves on conical clamping surfaces
- 2231/0276 . . Keyways ([axial grooves B23B 2231/0264](#))
- 2231/028 . . Lugs
- 2231/0284 . . Notches
- 2231/0288 . . Conical shanks of tools in which the cone is not formed as one continuous surface
- 2231/0292 . . Flanges of conical shanks
- 2231/0296 . . Ends of conical shanks, e.g. pull studs, tangs
- 2231/04 . Adapters
- 2231/06 . Chucks for handtools having means for opening and closing the jaws using the driving motor of the handtool
- 2231/08 . Chucks for shanks of tools having means for reducing the bending of the retained shanks
- 2231/10 . Chucks having data storage chips
- 2231/12 . Chucks having means to amplify the force produced by the actuating means to increase the clamping force
- 2231/14 . Chucks with clamping force limitation means
- 2231/20 . Collet chucks
- 2231/2002 . . Collets having blade-like jaws
- 2231/2005 . . Keys preventing rotation
- 2231/2008 . . Bores holding the collet having a slightly conical profile
- 2231/201 . . Operating surfaces of collets, i.e. the surface of the collet acted on by the operating means
- 2231/2013 . . . Non-cylindrical ([polygonal B23B 2231/2016](#))
- 2231/2016 . . . Polygonal
- 2231/2018 . . . with a saw-tooth profile
- 2231/2021 . . . comprising two different cones
- 2231/2024 . . Non-circular surfaces of collets for the transmission of torque
- 2231/2027 . . Gripping surfaces, i.e. the surface contacting the tool or workpiece
- 2231/2029 . . . Conical
- 2231/2032 . . . with non-cylindrical cross section
- 2231/2035 . . . Polygonal
- 2231/2037 . . . Roughened
- 2231/204 . . . with saw tooth profiles
- 2231/2043 . . . Discontinuous, interrupted or split
- 2231/2045 . . . comprising two or more diameters, e.g. stepped
- 2231/2048 . . Collets comprising inserts
- 2231/2051 . . . brazed in position
- 2231/2054 . . . glued in position
- 2231/2056 . . . where the insert forms part of the surface gripping the workpiece or tool
- 2231/2059 . . . Hard inserts
- 2231/2062 . . . Inserts mechanically clamped in the collet
- 2231/2064 . . . Inserts in the form of a roll
- 2231/2067 . . . Soft inserts
- 2231/207 . . . Inserts welded in position
- 2231/2072 . . Jaws of collets
- 2231/2075 . . . of special form
- 2231/2078 . . Jaw carriers, i.e. components retaining the collet itself
- 2231/2081 . . Keys, spanners or wrenches to operate the collet chuck
- 2231/2083 . . Collets comprising screw threads
- 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

## B23B

- 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 (in general [B23Q 17/006](#))
- 2231/28 . . Dust covers (nose pieces in chucks [B23B 2231/44](#), dust covers for turning, boring or drilling in general [B23B 2260/058](#))
- 2231/30 . . Chucks with four jaws
- 2231/32 . . Guideways for jaws
- 2231/34 . . Jaws

### **WARNING**

Group [B23B 2231/34](#) is impacted by reclassification into groups [B23B 2231/341](#) and [B23B 2231/342](#).

Groups [B23B 2231/34](#), [B23B 2231/341](#), and [B23B 2231/342](#) should be considered in order to perform a complete search.

- 2231/341 . . Jaws with hard inserts

### **WARNING**

Group [B23B 2231/341](#) is incomplete pending reclassification of documents from group [B23B 2231/34](#).

Groups [B23B 2231/34](#) and [B23B 2231/341](#) should be considered in order to perform a complete search.

- 2231/342 . . Padded or cushioned jaws

### **WARNING**

Group [B23B 2231/342](#) is incomplete pending reclassification of documents from group [B23B 2231/34](#).

Groups [B23B 2231/34](#) and [B23B 2231/342](#) should be considered in order to perform a complete search.

- 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 (dust covers in chucks [B23B 2231/28](#), dust covers for turning, boring or drilling in general [B23B 2260/058](#))
- 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

### **WARNING**

Groups [B23B 2231/56](#) and [B23B 2231/565](#) are incomplete pending reclassification of documents from groups [B23B 31/00](#) and [B23B 31/02](#).

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

- 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

### **WARNING**

Group [B23B 2231/58](#) is incomplete pending reclassification of documents from groups [B23B 31/00](#) and [B23B 31/02](#).

Groups [B23B 31/00](#), [B23B 31/02](#), and [B23B 2231/58](#) should be considered in order to perform a complete search.

## **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 ([shrink fits chucks B23B 31/1179](#))
- 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 ([machines for drilling spectacle lenses B28D 1/143](#))
- 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  
2260/0045 . . Two elements adjustable relative to each other in three mutually perpendicular directions  
2260/008 . Bearings  
2260/0082 . . Sliding contact bearings  
2260/0085 . . Needle roller bearings  
2260/0087 . . Preloading of bearings  
2260/016 . Bolts  
2260/018 . Brushes  
2260/02 . Cams  
2260/022 . Balls  
2260/024 . Batteries  
2260/026 . Bushings, e.g. adapter sleeves  
2260/028 . Chains

- 2260/03 . Clamps  
2260/032 . Diaphragms  
2260/034 . Drawbars  
2260/036 . Cables  
2260/038 . Cartridges  
2260/04 . Centre drills of known configuration, e.g. the provision of a centre drill in centres or chucks  
2260/042 . Collets of known configuration, i.e. devices using a collet  
2260/044 . Clutches  
2260/0445 . . Overload clutches  
2260/048 . Devices to regulate the depth of cut  
2260/0482 . . Depth controls, e.g. depth stops ([stops B23B 2260/12](#))  
2260/0485 . . Depth gauges  
2260/0487 . . Depth indicators ([indication scales B23B 2260/088](#))  
2260/056 . Differential screw threads  
2260/058 . Dust covers ([dust covers in chucks B23B 2231/28](#), [nose pieces in chucks B23B 2231/44](#))  
2260/062 . Electric motors  
2260/0625 . . Linear motors  
2260/066 . Electrostrictive elements  
2260/068 . Flexible members  
2260/07 . Gears  
2260/072 . Grooves  
2260/0725 . . Spiral  
2260/076 . Harmonic drive gearboxes, i.e. reduction gearing including wave generator, flex spline and a circular spline  
2260/078 . Hand tools used to operate chucks or to assemble, adjust or disassemble tools or equipment used for turning, boring or drilling  
2260/0785 . . for unclamping cutting inserts  
2260/082 . Holes  
2260/084 . Hirth couplings  
2260/088 . Indication scales  
2260/09 . Knurled surfaces  
2260/092 . Lasers  
2260/094 . Levels, e.g. spirit levels  
2260/096 . Levers  
2260/098 . Magazines  
2260/10 . Magnets  
2260/102 . Magnetostrictive elements  
2260/104 . Markings, i.e. symbols or other indicating marks  
2260/106 . Nuts  
2260/108 . Piezoelectric elements  
2260/11 . Planetary drives  
2260/112 . Projections  
2260/114 . Rings  
2260/116 . Rollers or rolls  
2260/118 . Suction pads or vacuum cups, e.g. for attachment of guides to workpieces  
2260/12 . Stops ([depth controls B23B 2260/0482](#))  
2260/122 . Safety devices  
2260/124 . Screws  
2260/126 . Seals  
2260/128 . Sensors  
2260/1285 . . Vibration sensors  
2260/132 . Serrations ([cutting inserts with serrated bottom surfaces B23B 2200/167](#))

## B23B

- 2260/134 . Spacers or shims ([shims for supporting cutting inserts B23B 2205/16](#))
- 2260/136 . Springs
- 2260/138 . Screw threads
- 2260/1381 . . Conical
- 2260/1383 . . with round thread profile
- 2260/1385 . . with square thread profile
- 2260/1386 . . with trapezoidal thread profile
- 2260/1388 . . with special profile not otherwise provided for
- 2260/142 . Valves
- 2260/144 . Wear indicators
- 2260/146 . Wedges
- 2260/158 . Worms and worm wheels
- 2265/00 Details of general geometric configurations**
- 2265/08 . Conical
- 2265/12 . Eccentric
- 2265/16 . Elliptical
- 2265/32 . Polygonal
- 2265/322 . . Square
- 2265/324 . . Pentagonal
- 2265/326 . . Hexagonal
- 2265/328 . . Octagonal
- 2265/34 . Round
- 2265/36 . Spherical
- 2270/00 Details of turning, boring or drilling machines, processes or tools not otherwise provided for**
- 2270/02 . Use of a particular power source
- 2270/022 . . Electricity
- 2270/025 . . Hydraulics
- WARNING**
- Group [B23B 2270/025](#) is incomplete pending reclassification of documents from group [B23B 31/207](#).
- Groups [B23B 31/207](#) and [B23B 2270/025](#) should be considered in order to perform a complete search.
- 2270/027 . . Pneumatics
- 2270/04 . Use of centrifugal force ([compensating centrifugal force B23B 2250/08](#))
- 2270/06 . Use of elastic deformation
- 2270/08 . Clamping mechanisms; Provisions for clamping ([B23B 2210/00 takes precedence](#))
- 2270/09 . Details relating to unclamping
- 2270/10 . Use of ultrasound
- 2270/12 . Centering of two components relative to one another
- 2270/14 . Constructions comprising exactly two similar components
- 2270/16 . Constructions comprising three or more similar components
- 2270/20 . Internally located features, machining or gripping of internal surfaces
- 2270/205 . . Machining or gripping both internal and external surfaces
- 2270/22 . Externally located features, machining or gripping of external surfaces ([machining or gripping of both internal and external surfaces B23B 2270/205](#))
- 2270/24 . Tool, chuck or other device activated by the coolant or lubrication system of the machine tool
- 2270/26 . Burnishing
- 2270/28 . Cleaning
- 2270/30 . Chip guiding or removal ([use of suction B23B 2270/62, drilling tools with provision for suction B23B 2251/68](#))
- 2270/32 . Use of electronics
- 2270/34 . Means for guiding
- 2270/36 . Identification of tooling or other equipment
- 2270/38 . Using magnetic fields ([magnets B23B 2260/10](#))
- 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 ([suction pads or vacuum cups B23B 2260/118, drilling tools with provision for suction B23B 2251/68, chip removal B23B 2270/30](#))