

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR

B23B TURNING; BORING (using an electrode which takes the place of a tool B23H, e.g. making holes B23H 9/14; working by laser beam B23K 26/00; arrangements for copying or controlling B23Q)

Subclass index

TURNING

| | |
|---|---------------------|
| Methods..... | 1/00 |
| Lathes | |
| general-purpose lathes..... | 3/00 |
| semi-automatic or automatic lathes..... | 7/00, 9/00, 11/00 |
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BORING, DRILLING

| | |
|-------------------------------|---------------------|
| Methods..... | 35/00, 37/00 |
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DEVICES FOR ATTACHMENT TO ANY MACHINE TOOL.....43/00

Turning

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|------|---|------|--|
| 1/00 | Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods [1, 2006.01] | 3/14 | • • Mountings or drives of faceplates [1, 2006.01] |
| 3/00 | General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines [1, 2006.01] | 3/16 | • Turret lathes for turning individually-chucked workpieces [1, 2006.01] |
| 3/02 | • Small lathes, e.g. for toolmakers (specially designed for watchmakers G04D 3/00) [1, 2006.01] | 3/18 | • • with horizontal working-spindle [1, 2006.01] |
| 3/04 | • Turning-machines in which the workpiece is rotated by means at a distance from the headstock [1, 2006.01] | 3/20 | • • with vertical working-spindle [1, 2006.01] |
| 3/06 | • Turning-machines or devices characterised only by the special arrangement of constructional units (B23Q 37/00 takes precedence; structural features of details, <u>see</u> the relevant groups; such features of general applicability B23Q) [1, 2006.01] | 3/22 | • Turning-machines or devices with rotary tool heads [1, 2006.01] |
| 3/08 | • Turning-machines characterised by the use of faceplates [1, 2006.01] | 3/24 | • • the tools of which do not perform a radial movement; Rotary tool heads therefor [1, 2006.01] |
| 3/10 | • • with the faceplate horizontal, i.e. vertical boring and turning machines [1, 2006.01] | 3/26 | • • the tools of which perform a radial movement; Rotary tool heads thereof [1, 2006.01] |
| 3/12 | • • with the faceplate vertical, i.e. face lathes [1, 2006.01] | 3/28 | • Turning-machines in which the feed is controlled by a copying device, i.e. copying lathes (features of copying devices B23Q 35/00) [1, 2006.01] |
| | | 3/30 | • Turning-machines with two or more working-spindles, e.g. in fixed arrangement [1, 2006.01] |
| | | 3/32 | • • for performing identical operations simultaneously on two or more workpieces [1, 2006.01] |
| | | 3/34 | • Short turning-machines with one or multiple working-spindles attended from the end (B23B 3/12 takes precedence) [1, 2006.01] |
| | | 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) [1, 2006.01] |

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| 5/00 | Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor [1, 2006.01] | 7/06 | • • with sliding headstock [1, 2006.01] |
| 5/02 | • for turning hubs or brake drums (B23B 5/04 takes precedence) [1, 2006.01] | 7/08 | • • with the working-spindle vertical [1, 2006.01] |
| 5/04 | • for reconditioning hubs or brake drums or axle spindles without removing same from the vehicle [1, 2006.01] | 7/10 | • • Accessories, e.g. guards [1, 2006.01] |
| 5/06 | • for turning valves or valve bodies [1, 2006.01] | 7/12 | • Automatic or semi-automatic machines for turning of workpieces [1, 2006.01] |
| 5/08 | • for turning axles, bars, rods, tubes, rolls, i.e. shaft-turning lathes, roll lathes; Centreless turning [1, 2006.01] | 7/14 | • • with the working-spindle horizontal [1, 2006.01] |
| 5/10 | • • for turning pilgrim rolls [1, 2006.01] | 7/16 | • • with the working-spindle vertical [1, 2006.01] |
| 5/12 | • • for peeling bars or tubes by making use of cutting bits arranged around the workpiece (making use of cutting bits arranged around the workpiece otherwise than by turning B23D 79/12) [1, 2, 2006.01] | 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 pre-determined positions; Equipment therefor (equipment applicable to single-spindle machines B23B 7/00) [1, 2006.01] |
| 5/14 | • Cutting-off lathes (shearing B23D) [1, 2006.01] | 9/02 | • Automatic or semi-automatic machines for turning of stock [1, 2006.01] |
| 5/16 | • for bevelling, chamfering, or deburring the ends of bars or tubes [1, 2006.01] | 9/04 | • • with the working-spindles horizontal [1, 2006.01] |
| 5/18 | • for turning crankshafts, eccentrics, or cams, e.g. crankpin lathes [1, 2006.01] | 9/06 | • • with the working-spindles vertical [1, 2006.01] |
| 5/20 | • • without removing same from the engine [1, 2006.01] | 9/08 | • Automatic or semi-automatic machines for turning of workpieces [1, 2006.01] |
| 5/22 | • • Holding the workpiece in the machine, e.g. chucking devices [1, 2006.01] | 9/10 | • • with the working-spindles horizontal [1, 2006.01] |
| 5/24 | • for turning pistons or other workpieces to a slightly non-circular cross-section [1, 2006.01] | 9/12 | • • with the working-spindles vertical [1, 2006.01] |
| 5/26 | • for simultaneously turning internal and external surfaces of a body [1, 2006.01] | 11/00 | Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling [1, 2006.01] |
| 5/28 | • for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes [1, 2006.01] | 13/00 | Arrangements for automatically conveying, chucking or guiding stock for turning machines [1, 2006.01] |
| 5/30 | • • Arrangements providing for tool control by templates [1, 2006.01] | 13/02 | • for turning-machines with a single working-spindle [1, 2006.01] |
| 5/32 | • • for reconditioning wheel sets without removing same from the vehicle; Underfloor wheel lathes for railway vehicles [1, 2006.01] | 13/04 | • for turning-machines with a plurality of working-spindles [1, 2006.01] |
| 5/34 | • • Holding the workpiece in the machine, e.g. chucking devices therefor; Drivers therefor [1, 2006.01] | 13/06 | • Arrangements for switching-off the drive of turning-machines after the stock has been completely machined [1, 2006.01] |
| 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 [1, 2006.01] | 13/08 | • Arrangements for reducing vibrations in feeding-passages or for damping noise (damping noise in general G10K) [1, 2006.01] |
| 5/38 | • • for turning conical surfaces inside or outside, e.g. taper pins [1, 2006.01] | 13/10 | • with magazines for stock [1, 2006.01] |
| 5/40 | • • for turning spherical surfaces inside or outside [1, 2006.01] | 13/12 | • Accessories, e.g. stops, grippers [1, 2006.01] |
| 5/42 | • • for turning relieving surfaces, i.e. relieving-lathes [1, 2006.01] | 15/00 | Arrangements for conveying, loading, adjusting, reversing, chucking, or discharging workpieces specially designed for automatic or semi-automatic turning-machines [1, 2006.01] |
| 5/44 | • • for turning polygonal or other non-circular surfaces controlled by gear or guide mechanisms, i.e. eccentric lathes [1, 2006.01] | Components or accessories particularly for turning machines | |
| 5/46 | • • for turning helical or spiral surfaces (thread cutting B23G) [1, 2006.01] | 17/00 | Lathe beds (foundation frames, carriage guides as such B23Q 1/00) [1, 2006.01] |
| 5/48 | • • • for cutting grooves, e.g. oil grooves of helicoidal shape [1, 2006.01] | 19/00 | Headstocks; Equivalent parts of any machine tools [1, 2006.01] |
| 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 [1, 2006.01] | 19/02 | • Working-spindles; Features relating thereto, e.g. supporting arrangements (B23B 13/00 takes precedence) [1, 2006.01] |
| 7/02 | • Automatic or semi-automatic machines for turning of stock [1, 2006.01] | 21/00 | Lathe carriages; Cross-slides; Tool posts (tool holders B23B 29/00); Similar parts of any machine tools [1, 2006.01] |
| 7/04 | • • Turret machines [1, 2006.01] | 23/00 | Tailstocks; Centres [1, 2006.01] |
| | | 23/02 | • Dead centres [1, 2006.01] |
| | | 23/04 | • Live centres [1, 2006.01] |

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| 25/00 | Accessories or auxiliary equipment for turning-machines (for machine tools in general B23Q; cooling or lubricating B23Q 11/12) [1, 2006.01] | 29/24 | • Tool holders for a plurality of cutting tools, e.g. turrets [1, 2006.01] |
| 25/02 | • Arrangements for chip-breaking in turning-machines (on cutting tools B23B 27/22) [1, 2006.01] | 29/26 | • • Tool holders in fixed position [1, 2006.01] |
| 25/04 | • Safety guards specially designed for turning-machines (in general F16P) [1, 2006.01] | 29/28 | • • Turrets manually adjustable about a vertical pivot [1, 2006.01] |
| 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) [1, 2006.01] | 29/30 | • • Turrets manually adjustable about a horizontal pivot [1, 2006.01] |
| | | 29/32 | • • Turrets adjustable by power drive, i.e. turret heads [1, 2006.01] |
| | | 29/34 | • • Turrets equipped with triggers for releasing the cutting tools [1, 2006.01] |
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| 27/00 | Tools for turning or boring machines (for drilling machines B23B 51/00); Tools of a similar kind in general; Accessories therefor [1, 2006.01] | 31/00 | Chucks; Expansion mandrels; Adaptations thereof for remote control (devices for securing work or tools to spindles in general B23Q 3/12; rotary devices holding by magnetic or electrical force acting directly on work B23Q 3/152) [1, 2006.01] |
| 27/02 | • Cutting tools with straight main part and cutting edge at an angle (B23B 27/04-B23B 27/08 take precedence) [1, 2006.01] | 31/02 | • Chucks [1, 2006.01] |
| 27/04 | • Cutting-off tools (B23B 27/08 takes precedence) [1, 2006.01] | 31/06 | • • Features relating to the removal of tools or work; Accessories therefor [1, 2006.01] |
| 27/06 | • Profile cutting tools, i.e. forming-tools [1, 2006.01] | 31/07 | • • • Ejector wedges [5, 2006.01] |
| 27/08 | • Cutting tools with blade- or disc-like main parts [1, 2006.01] | 31/08 | • • holding tools or work yieldably [1, 2006.01] |
| 27/10 | • Cutting tools with special provision for cooling [1, 2006.01] | 31/10 | • • characterised by the retaining or gripping devices or their immediate operating means [1, 2006.01] |
| 27/12 | • • with a continuously-rotated circular cutting edge; Holders therefor [1, 2006.01] | | Note(s) [5] |
| 27/14 | • Cutting tools of which the bits or tips are of special material [1, 2006.01] | | Group B23B 31/12 takes precedence over groups B23B 31/103-B23B 31/117. |
| 27/16 | • • with exchangeable cutting bits, e.g. able to be clamped [1, 2006.01] | 31/103 | • • • Retention by pivotal elements, e.g. catches, pawls [5, 2006.01] |
| 27/18 | • • with cutting bits or tips rigidly mounted, e.g. by brazing [1, 2006.01] | 31/107 | • • • Retention by laterally-acting detents, e.g. pins, screws, wedges; Retention by loose elements, e.g. balls [5, 2006.01] |
| 27/20 | • • with diamond bits [1, 2006.01] | 31/11 | • • • Retention by threaded connection [5, 2006.01] |
| 27/22 | • Cutting tools with chip-breaking equipment [1, 2006.01] | 31/113 | • • • Retention by bayonet connection [5, 2006.01] |
| 27/24 | • Knurling tools [1, 2006.01] | 31/117 | • • • Retention by friction only, e.g. using springs, resilient sleeves, tapers [5, 2006.01] |
| 29/00 | Holders for non-rotary cutting tools (B23B 27/12 takes precedence); Boring bars or boring heads; Accessories for tool holders [1, 2006.01] | 31/12 | • • • Chucks with simultaneously-acting jaws, whether or not also individually adjustable [1, 2006.01] |
| 29/02 | • Boring bars [1, 2006.01] | 31/14 | • • • • involving the use of centrifugal force [1, 2006.01] |
| 29/03 | • Boring heads [1, 2006.01] | 31/16 | • • • • moving radially [1, 2006.01] |
| 29/034 | • • with tools moving radially, e.g. for making chamfers or undercuttings [1, 4, 2006.01] | 31/163 | • • • • • actuated by one or more spiral grooves [5, 2006.01] |
| 29/04 | • Tool holders for a single cutting tool [1, 2006.01] | 31/165 | • • • • • actuated by screw-and-nut mechanisms [5, 2006.01] |
| 29/06 | • • Tool holders equipped with longitudinally-arranged grooves for setting the cutting tool [1, 2006.01] | 31/167 | • • • • • actuated by oblique racks [5, 2006.01] |
| 29/08 | • • Tool holders equipped with grooves arranged crosswise to the longitudinal direction for setting the cutting tool [1, 2006.01] | 31/169 | • • • • • actuated by toothed gearing (B23B 31/167 takes precedence) [5, 2006.01] |
| 29/10 | • • • with adjustable counterbase for the cutting tool [1, 2006.01] | 31/171 | • • • • • actuated by a cam surface in a radial plane [5, 2006.01] |
| 29/12 | • • Special arrangements on tool holders [1, 2006.01] | 31/173 | • • • • • actuated by coaxial conical surfaces (B23B 31/177 takes precedence) [5, 2006.01] |
| 29/14 | • • • affording a yielding support of the cutting tool, e.g. by spring clamping [1, 2006.01] | 31/175 | • • • • • actuated by levers moved by a coaxial control rod [5, 2006.01] |
| 29/16 | • • • for supporting the workpiece in a backrest [1, 2006.01] | 31/177 | • • • • • actuated by the oblique surfaces of a coaxial control rod (B23B 31/167 takes precedence) [5, 2006.01] |
| 29/18 | • • • for retracting the cutting tool [1, 2006.01] | 31/18 | • • • • • pivotally movable in planes containing the axis of the chuck [1, 2006.01] |
| 29/20 | • • • for placing same by shanks in sleeves of a turret [1, 2006.01] | 31/19 | • • • • • moving parallel to the axis of the chuck [1, 2006.01] |
| 29/22 | • • • for tool adjustment by means of shims or spacers [1, 2006.01] | 31/20 | • • • • • Longitudinally-split sleeves, e.g. collet chucks [1, 2006.01] |

- 31/22 • • • Jaws in the form of balls [1, 2006.01]
- 31/24 • • characterised by features relating primarily to remote control of the gripping means [1, 2006.01]
- 31/26 • • • using mechanical transmission through the working-spindle [1, 2006.01]
- 31/28 • • • using electric or magnetic means in the chuck [1, 2006.01]
- 31/30 • • • using fluid-pressure means in the chuck [1, 2006.01]
- 31/32 • • with jaws carried by diaphragm [1, 2006.01]
- 31/34 • • with means enabling the workpiece to be reversed or tilted [1, 2006.01]
- 31/36 • • with means for adjusting the chuck with respect to the working-spindle [1, 2006.01]
- 31/38 • • with overload clutches [1, 2006.01]
- 31/39 • • Jaw changers [5, 2006.01]
- 31/40 • Expansion mandrels [1, 2006.01]
- 31/42 • • characterised by features relating primarily to remote control of the gripping means [1, 2006.01]
- 33/00 **Drivers; Driving centres; Nose clutches, e.g. lathe dogs [1, 2006.01]**

Boring; Drilling [3]

- 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 [1, 2006.01]**
- 37/00 **Boring by making use of vibrations of ultrasonic frequency** (working materials by subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency, B24B 1/04) [1, 2006.01]
- 39/00 **General-purpose boring or drilling machines or devices; Sets of boring or drilling machines [1, 2006.01]**
- 39/02 • Boring machines; Combined horizontal boring and milling machines [1, 2006.01]
- 39/04 • Co-ordinate boring or drilling machines; Machines for making holes without previous marking [1, 2006.01]
- 39/06 • • Equipment for positioning work [1, 2006.01]
- 39/08 • • Devices for programme control [1, 2006.01]
- 39/10 • characterised by the drive, e.g. by fluid-pressure drive, pneumatic power drive [1, 2006.01]
- 39/12 • Radial drilling machines [1, 2006.01]
- 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 [1, 2006.01]
- 39/16 • Drilling machines with a plurality of working-spindles; Drilling automatons [1, 2006.01]
- 39/18 • • Setting work or tool carrier along a straight index line [1, 2006.01]
- 39/20 • • Setting work or tool carrier along a circular index line; Turret head drilling machines [1, 2006.01]
- 39/22 • • with working-spindles in opposite headstocks [1, 2006.01]
- 39/24 • • designed for programme control [1, 2006.01]
- 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) [1, 2006.01]

- 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) [1, 2006.01]
- 41/00 **Boring or drilling machines or devices specially adapted for particular work; Accessories specially adapted therefor [1, 2006.01]**
- 41/02 • for boring deep holes; Trepanning, e.g. of gun or rifle barrels [1, 2006.01]
- 41/04 • for boring polygonal or other non-circular holes [1, 2006.01]
- 41/06 • for boring conical holes [1, 2006.01]
- 41/08 • for boring, drilling, or tapping holes in tubes under fluid or gas pressure (sealing features or operations, combined with placing branch parts F16L 41/04) [1, 2006.01]
- 41/10 • for boring holes in steam boilers [1, 2006.01]
- 41/12 • for forming working surfaces of cylinders, of bearings, e.g. in heads of driving rods, or of other engine parts [1, 2006.01]
- 41/14 • for very small holes [1, 2006.01]
- 41/16 • for boring holes with high-quality surface [1, 2006.01]
- 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) [1, 2006.01]
- 43/02 • to the tailstock of a lathe [1, 2006.01]
- 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) [1, 4, 2006.01]
- 45/02 • driven by electric power [1, 2006.01]
- 45/04 • driven by fluid-pressure or pneumatic power [1, 2006.01]
- 45/06 • driven by man-power [1, 2006.01]
- 45/08 • • for drilling rails or profiled stock [1, 2006.01]
- 45/10 • • by using a fiddle bow or a belt [1, 2006.01]
- 45/12 • • by using a ratchet brace [1, 2006.01]
- 45/14 • Means for holding or guiding the drilling device or for securing it to the work (B23B 41/08 takes precedence); Thrust stands [1, 2006.01]
- 45/16 • with superimposed percussive action (portable percussive machines with superimposed rotation B25D 16/00) [3, 2006.01]

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 B23B 19/02; for machine tools in general B23Q) [1, 2006.01]
- 47/02 • Drives; Gearings (B23B 39/10 takes precedence) [1, 2006.01]
- 47/04 • • for rotating the working-spindle [1, 2006.01]
- 47/06 • • • driven essentially by electrical means [1, 2006.01]
- 47/08 • • • driven essentially by fluid-pressure or pneumatic power [1, 2006.01]
- 47/10 • • • equipped with turbines or other rotating machines [1, 2006.01]

- 47/12 • • • • equipped with oscillating pistons **[1, 2006.01]**
 - 47/14 • • • • Change-speed gearings; Reversing gearings **[1, 2006.01]**
 - 47/16 • • • • Belt or chain drives **[1, 2006.01]**
 - 47/18 • • • • for feeding or retracting tool or work **[1, 2006.01]**
 - 47/20 • • • • actuated essentially by electric power **[1, 2006.01]**
 - 47/22 • • • • actuated essentially by fluid-pressure or pneumatic power **[1, 2006.01]**
 - 47/24 • • • • Stops or feed interruption owing to fracture or overload of the boring or drilling tool **[1, 2006.01]**
 - 47/26 • • • • Liftable or lowerable drill heads or headstocks; Balancing arrangements therefor **[1, 2006.01]**
 - 47/28 • • • • Drill jigs for workpieces (equipment for setting or guiding the drill B23B 49/00) **[1, 2006.01]**
 - 47/30 • • • • Additional gear with one or more working-spindles attachable to the main working-spindle and mounting the additional gear **[1, 2006.01]**
 - 47/32 • • • • Arrangements for preventing the running-out of drills or fracture of drills when getting through **[1, 2006.01]**
 - 47/34 • • • • Arrangements for removing chips out of the holes made; Chip-breaking arrangements attached to the tool **[1, 2006.01]**
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- 49/00 Measuring or gauging equipment on boring machines for positioning or guiding the drill; Devices for indicating failure of drills during boring; Centring devices for holes to be bored** (marking-out equipment B25H 7/00; measuring devices, gauges G01B) **[1, 2006.01]**
 - 49/02 • • • • Boring templates or bushings **[1, 2006.01]**
 - 49/04 • • • • Devices for boring or drilling centre holes in workpieces **[1, 2006.01]**
 - 49/06 • • • • Devices for drilling holes in brake bands or brake linings **[1, 2006.01]**
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- 51/00 Tools for drilling machines [1, 2006.01]**
 - 51/02 • • • • Twist drills **[1, 2006.01]**
 - 51/04 • • • • for trepanning **[1, 2006.01]**
 - 51/05 • • • • for cutting discs from sheet **[4, 2006.01]**
 - 51/06 • • • • Drills with lubricating or cooling equipment **[1, 2006.01]**
 - 51/08 • • • • Drills combined with tool parts or tools for performing additional working **[1, 2006.01]**
 - 51/10 • • • • Bits for countersinking **[1, 2006.01]**
 - 51/12 • • • • Adapters for drills or chucks; Tapered sleeves **[1, 2006.01]**
 - 51/14 • • • • Adapters for broken drills **[1, 2006.01]**