

## 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
for particular work.....	5/00
handling, adjusting.....	13/00, 15/00
component parts	
headstocks, tailstocks, chucks.....	19/00, 23/00, 31/00
tools, or holders therefor.....	27/00, 29/00
other parts.....	17/00, 21/00, 33/00
accessories.....	25/00

#### BORING, DRILLING

Methods.....	35/00, 37/00
Machines	
general-purpose machines.....	39/00
for particular work.....	41/00
hand-held machines.....	45/00
component parts.....	47/00, 49/00, 51/00

DEVICES FOR ATTACHMENT TO ANY MACHINE TOOL.....43/00

#### Turning

	3/14	• • Mountings or drives of faceplates [1, 2006.01]
	3/16	• Turret lathes for turning individually-chucked workpieces [1, 2006.01]
	3/18	• • with horizontal working-spindle [1, 2006.01]
	3/20	• • with vertical working-spindle [1, 2006.01]
	3/22	• Turning-machines or devices with rotary tool heads [1, 2006.01]
	3/24	• • the tools of which do not perform a radial movement; Rotary tool heads therefor [1, 2006.01]
	3/26	• • the tools of which perform a radial movement; Rotary tool heads thereof [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]
<b>1/00</b>		<b>Methods for turning or working essentially requiring the use of turning-machines; Use of auxiliary equipment in connection with such methods [1, 2006.01]</b>
<b>3/00</b>		<b>General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines [1, 2006.01]</b>
3/02		• Small lathes, e.g. for toolmakers (specially designed for watchmakers G04D 3/00) [1, 2006.01]
3/04		• Turning-machines in which the workpiece is rotated by means at a distance from the headstock [1, 2006.01]
3/06		• 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]
3/08		• Turning-machines characterised by the use of faceplates [1, 2006.01]
3/10		• • with the faceplate horizontal, i.e. vertical boring and turning machines [1, 2006.01]
3/12		• • with the faceplate vertical, i.e. face lathes [1, 2006.01]

5/00	<b>Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor [1, 2006.01]</b>	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	<b>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</b> (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	<b>Automatic or semi-automatic turning-machines incorporating equipment for performing other working procedures, e.g. slotting, milling, rolling [1, 2006.01]</b>
5/28	• for turning wheels or wheel sets or cranks thereon, i.e. wheel lathes [1, 2006.01]	13/00	<b>Arrangements for automatically conveying, chucking or guiding stock for turning machines [1, 2006.01]</b>
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	<b>Arrangements for conveying, loading, adjusting, reversing, chucking, or discharging workpieces specially designed for automatic or semi-automatic turning-machines [1, 2006.01]</b>
5/44	• • for turning polygonal or other non-circular surfaces controlled by gear or guide mechanisms, i.e. eccentric lathes [1, 2006.01]	<b>Components or accessories particularly for turning machines</b>	
5/46	• • for turning helical or spiral surfaces (thread cutting B23G) [1, 2006.01]	17/00	<b>Lathe beds</b> (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	<b>Headstocks; Equivalent parts of any machine tools [1, 2006.01]</b>
7/00	<b>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]</b>	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	<b>Lathe carriages; Cross-slides; Tool posts</b> (tool holders B23B 29/00); <b>Similar parts of any machine tools [1, 2006.01]</b>
7/04	• • Turret machines [1, 2006.01]	23/00	<b>Tailstocks; Centres [1, 2006.01]</b>
		23/02	• Dead centres [1, 2006.01]
		23/04	• Live centres [1, 2006.01]

25/00	<b>Accessories or auxiliary equipment for turning-machines</b> (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	<b>Tools for turning or boring machines</b> (for drilling machines B23B 51/00); <b>Tools of a similar kind in general; Accessories therefor</b> [1, 2006.01]	31/00	<b>Chucks; Expansion mandrels; Adaptations thereof for remote control</b> (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]		<b>Note(s) [5]</b>
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	<b>Holders for non-rotary cutting tools</b> (B23B 27/12 takes precedence); <b>Boring bars or boring heads; Accessories for tool holders</b> [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]