

**ECLA****EUROPEAN CLASSIFICATION****B23C**

**MILLING (broaching B23D; broach-milling in making gears B23F; arrangement for copying or controlling B23Q)**

**B23C1/00**

**Milling machines not designed for particular work or special operations**

B23C1/00B

- . [N: Gantry-type milling machines]

B23C1/00C

- . [N: with a tool moving in a closed path around the workpiece]

B23C1/00D

- . [N: movable milling machines, e.g. on rails]

B23C1/02

- . with one horizontal working-spindle

B23C1/025

- . . with working-spindle movable in a fixed position

B23C1/027

- . . with working-spindle movable in a vertical direction

B23C1/04

- . with a plurality of horizontal working-spindles

B23C1/04B

- . . [N: Opposed - spindle machines]

B23C1/06

- . with one vertical working-spindle

B23C1/08

- . with a plurality of vertical working-spindles

B23C1/10

- . with both horizontal and vertical working-spindles

B23C1/12

- . with spindle adjustable to different angles, e.g. either horizontal or vertical

B23C1/14

- . (work tables for machine tools in general [B23Q1/00](#))

B23C1/16

- . specially designed for control by copying devices [N: not used; see [B23Q35/00](#)]

B23C1/18

- . . for milling while revolving the work

B23C1/20

- . Portable devices or machines (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F5/00](#)); Hand-driven devices or machines

**B23C3/00**

**Milling particular work; Special milling operations; Machines therefor (milling gear-teeth [B23F](#), [N: heat assisted machining [B23P25/00](#)] [C9904]**

B23C3/00B

- . [N: Milling elongated workpieces]

B23C3/00B1

- . . [N: Rails]

B23C3/00C

- . [N: Milling end surfaces of nuts or tubes]

B23C3/02

- . Milling surfaces of revolution ([B23C3/06](#), [B23C3/08](#) take precedence)

B23C3/02B

- . . [N: Milling spherical surfaces]

B23C3/02B2	. . . [N: Milling balls]
B23C3/04	. . while revolving the work
B23C3/05	. . Finishing valves or valve seats [N: (machines for grinding seat surfaces, e.g. in valve housings, <a href="#">B24B15/00</a> )]
B23C3/05B	. . . [N: Reconditioning of valve seats]
B23C3/05B1	. . . . [N: having means for guiding the tool carrying spindle]
B23C3/05B1B	. . . . . [N: for engines]
B23C3/05B1C	. . . . . [N: for taps or valves]
B23C3/05C	. . . [N: Reconditioning of valves]
B23C3/06	. Milling crankshafts
B23C3/08	. Milling cams, camshafts, or the like
B23C3/10	. Relief milling (lathes or turning devices for relieving <a href="#">B23B5/42</a> )
B23C3/12	. Trimming or finishing edges, e.g. deburring welded corners
B23C3/12B	. . [N: of pipes or cylinders]
B23C3/12B1	. . . [N: internally]
B23C3/12C	. . [N: Portable devices or machines for chamfering edges] [N9904]
B23C3/12D	. . [N: Trimming or finishing edges of doors and windows] [N9904]
B23C3/13	. Surface milling of plates, sheets or strips
B23C3/14	. Scrubbing or peeling ingots or similar work-pieces
B23C3/16	. Working surfaces curved in two directions
B23C3/18	. . for shaping screw-propellers, turbine blades, or impellers
B23C3/20	. . for shaping dies
B23C3/22	. Forming overlapped joints, e.g. of the ends of piston-rings
B23C3/24	. Making square or polygonal ends on work-pieces, e.g. key studs on tools
B23C3/26	. Making square or polygonal holes in work-pieces, e.g. key holes in tools
B23C3/28	. Grooving workpieces (tread-cutting by milling <a href="#">B23G1/32</a> )
B23C3/30	. . Milling straight grooves, e.g. keyways
B23C3/30B	. . . [N: in which more than one milling tool is used simultaneously, e.g. for sheet material]
B23C3/32	. . Milling helical grooves, e.g. in making twist-drills
B23C3/34	. . Milling grooves of other forms, e.g. circumferential
B23C3/35	. . Milling grooves in keys
B23C3/35B	. . . [N: Holders for the template keys]
B23C3/36	. Milling milling-cutters ( <a href="#">B23C3/28</a> takes precedence)
<b>B23C5/00</b>	<b>Milling-cutters</b> (for cutting gear-teeth <a href="#">B23F21/12</a> )

- B23C5/00B . [N: with vibration suppressing means]
- B23C5/00C . [N: Details of the milling cutter body]
- B23C5/02 . characterised by the shape of the cutter
- B23C5/04 . . Plain cutters, i.e. having essentially a cylindrical or tapered cutting surface of substantial length ([B23C5/10](#) takes precedence)
- B23C5/06 . . Face-milling cutters, i.e. having only or primarily a substantially flat cutting surface
- B23C5/08 . . Disc-type cutters
- B23C5/10 . . Shank-type cutters, i.e. with an integral shaft
- B23C5/10B . . . [N: Ball nose end mills]
- B23C5/10B1 . . . . [N: with permanently fixed cutting inserts] [N9904]
- B23C5/10B2 . . . . [N: with one or more removable cutting inserts] [N9904] [C1203]
- B23C5/10B2H . . . . . [N: having a single cutting insert, the cutting edges of which subtend 180 degrees] [N1203]
- B23C5/10B2N . . . . . [N: having a cutting insert, the cutting edge of which subtends substantially 90 degrees] [N1203]
- B23C5/10C . . . [N: T slot cutters]
- B23C5/10C1 . . . . [N: with permanently fixed cutting inserts] [N9904]
- B23C5/10C2 . . . . [N: with removable cutting inserts] [N9904]
- B23C5/10D . . . [N: with permanently fixed cutting inserts ([B23C5/10C](#) and [B23C5/10D](#) take precedence)] [N9904]
- B23C5/10F . . . [N: with removable cutting inserts] [N9904]
- B23C5/12 . . Cutters specially designed for producing particular profiles ([B23C5/10](#) takes precedence)
- B23C5/14 . . . essentially comprising curves [N: ([B23C5/10B](#) takes precedence)] [C9904]
- B23C5/16 . characterised by physical features other than shape
- B23C5/16B . . [N: with chipbreaking or chipdividing equipment (for turning machines [B23B25/02](#); turning tools [B23B27/00](#); drilling machines [B23B47/34](#))]
- B23C5/18 . . with permanently-fixed cutter-bits or teeth
- B23C5/20 . . with removable cutter bits or teeth [N: or cutting inserts] [C9904]
- B23C5/20B . . . [N: Special by shaped plate-like cutting inserts, i.e. length greater than or equal to width, width greater than or equal to thickness (with removable plate-like turning cutting inserts of special form [B23B27/14B](#))] [C9904]
- B23C5/20B3 . . . . [N: having chip-breakers] [N9904]
- B23C5/20B4 . . . . [N: having a special shape] [N9904]
- B23C5/22 . . . Securing arrangements for bits or teeth [N: or cutting inserts] [C9904]
- B23C5/22B . . . . [N: with 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 insert] [C9904]
- B23C5/22B1 . . . . . [N: for plate-like cutting inserts ([B23C5/22B2](#), [B23C5/22B3](#), [B23C5/22B4](#) take precedence)] [N9904]
- B23C5/22B1B . . . . . [N: Special by shaped cutting inserts] [N9904]
- B23C5/22B1B3 . . . . . {7 dots} [N: having chip-breakers] [N9904]
- B23C5/22B1B4 . . . . . {7 dots} [N: having a special shape] [N9904]
- B23C5/22B2 . . . . . [N: for plate-like cutting inserts fitted on an intermediate carrier] [C9904]

B23C5/22B3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [N9904] [C1203]
B23C5/22B4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [N9904]
B23C5/22C	. . . . .	[N: with cutting inserts clamped by a clamping member acting almost perpendicular on the cutting face] [C9904]
B23C5/22C1	. . . . .	[N: for plate-like cutting inserts ( <a href="#">B23C5/22C2</a> , <a href="#">B23C5/22C3</a> , <a href="#">B23C5/22C4</a> take precedence)] [N9904]
B23C5/22C1B	. . . . .	[N: having a special shape] [N9904]
B23C5/22C2	. . . . .	[N: for plate-like cutting inserts fitted on an intermediate carrier] [C9904]
B23C5/22C3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [N9904] [C1203]
B23C5/22C4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [N9904]
B23C5/22D	. . . . .	[N: by means of a wedge]
B23C5/22D1	. . . . .	[N: for plate-like cutting inserts ( <a href="#">B23C5/22D2</a> , <a href="#">B23C5/22D3</a> , <a href="#">B23C5/22D4</a> take precedence)] [N9904]
B23C5/22D1B	. . . . .	[N: having a special shape] [N9904]
B23C5/22D2	. . . . .	[N: for plate-like cutting inserts fitted on an intermediate carrier] [C9904]
B23C5/22D2B	. . . . .	[N: having a special shape] [C9904]
B23C5/22D3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [N9904] [C1203]
B23C5/22D4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [N9904]
B23C5/22F	. . . . .	[N: the cutting elements being clamped simultaneously]
B23C5/24	. . . . .	adjustable
B23C5/24B	. . . . .	[N: with 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 insert] [C1203]
B23C5/24B1	. . . . .	[N: for plate-like cutting inserts ( <a href="#">B23C5/24B2</a> , <a href="#">B23C5/24B3</a> , <a href="#">B23C5/24B4</a> take precedence)] [C9904]
B23C5/24B2	. . . . .	[N: for plate-like cutting inserts fitted on an intermediate carrier] [C9904]
B23C5/24B3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [C1203]
B23C5/24B4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [C9904]
B23C5/24C	. . . . .	[N: with cutting inserts clamped by a clamping member acting almost perpendicularly on the cutting face] [C1203]
B23C5/24C1	. . . . .	[N: for plate-like cutting inserts ( <a href="#">B23C5/24C2</a> , <a href="#">B23C5/24C3</a> , <a href="#">B23C5/24C4</a> take precedence)] [C9904]
B23C5/24C2	. . . . .	[N: for plate-like cutting inserts fitted on an intermediate carrier] [C9904]
B23C5/24C3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [C1203]
B23C5/24C4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [C9904]
B23C5/24D	. . . . .	[N: clamping by means of a wedge]
B23C5/24D1	. . . . .	[N: for plate-like cutting inserts ( <a href="#">B23C5/24D2</a> , <a href="#">B23C5/24D3</a> , <a href="#">B23C5/24D4</a> take precedence)] [C9904]
B23C5/24D2	. . . . .	[N: for plate-like cutting inserts fitted on an intermediate carrier]

		C9904]
B23C5/24D3	. . . . .	[N: for plate-like cutting inserts fitted on a shank, fixed in the cutter body] [C1203]
B23C5/24D4	. . . . .	[N: for plate-like cutting inserts fitted on a ring or ring segment] [C9904]
B23C5/24D5	. . . . .	[N: The adjusting means being serrated teeth on the cutter and the cutting insert] [C9904]
B23C5/24F	. . . . .	[N: the cutting elements being clamped or adjusted simultaneously]
B23C5/24G	. . . . .	[N: the adjusting means being oblique surfaces] [N9904]
B23C5/24H	. . . . .	[N: the adjusting means being notches] [N9904]
B23C5/24K	. . . . .	[N: the adjusting means being serrations] [N9904]
B23C5/24L	. . . . .	[N: the adjusting means being screws] [N9904]
B23C5/24M	. . . . .	[N: the adjusting means being distance elements, e.g. shims or washers] [N9904] [C1203]
B23C5/24N	. . . . .	[N: the adjusting means being eccentrics] [N9904]
B23C5/24P	. . . . .	[N: the adjusting means being hydraulic cylinders] [N9904]
B23C5/24R	. . . . .	[N: where the adjustment is made by balancing the toolholders] [N9904]
B23C5/24S	. . . . .	[N: where the adjustment is made by changing the inclination of the inserts] [N9904]
B23C5/24T	. . . . .	[N: where the adjustment is made by deforming the seating surfaces] [N9904]
B23C5/24V	. . . . .	[N: where the adjusting means are gears and racks] [N9904]
B23C5/26	. . . . .	Securing milling cutters to the driving spindle
B23C5/26B	. . . . .	[N: by fluid pressure means] [C1203]
B23C5/28	. . . . .	Features relating to lubricating or cooling
<b>B23C7/00</b>		<b>Milling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool</b>
B23C7/02	. . . . .	to lathes
B23C7/04	. . . . .	to planing or slotting machines
<b>B23C9/00</b>		<b>Details or accessories so far as specially adapted to milling machines or cutter (drives, control devices, or accessories, in general <a href="#">B23Q</a>)</b>
B23C9/00B	. . . . .	[N: milling heads]