

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, [B24B15/00](#))]
- 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 [B23B5/42](#))

- 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 [B23G1/32](#))
- 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 ([B23C3/28](#) takes precedence)

- B23C5/00** **Milling-cutters** (for cutting gear-teeth [B23F21/12](#))

- 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 (B23C5/22C2 , B23C5/22C3 , B23C5/22C4 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 (B23C5/22D2 , B23C5/22D3 , B23C5/22D4 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 (B23C5/24B2 , B23C5/24B3 , B23C5/24B4 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 (B23C5/24C2 , B23C5/24C3 , B23C5/24C4 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 (B23C5/24D2 , B23C5/24D3 , B23C5/24D4 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

 - B23C7/00** **Milling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool**

 - B23C7/02 to lathes

 - B23C7/04 to planing or slotting machines

 - B23C9/00** **Details or accessories so far as specially adapted to milling machines or cutter (drives, control devices, or accessories, in general [B23Q](#))**

 - B23C9/00B [N: milling heads]