

CPC**COOPERATIVE PATENT CLASSIFICATION****B23C**

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

B23C 1/00

Milling machines not designed for particular work or special operations

[B23C 1/002](#)

. { Gantry-type milling machines }

[B23C 1/005](#)

. { with a tool moving in a closed path around the workpiece }

[B23C 1/007](#)

. { movable milling machines, e.g. on rails }

[B23C 1/02](#)

. with one horizontal working-spindle

[B23C 1/025](#)

.. with working-spindle movable in a fixed position

[B23C 1/027](#)

.. with working-spindle movable in a vertical direction

[B23C 1/04](#)

. with a plurality of horizontal working-spindles

[B23C 1/045](#)

.. { Opposed - spindle machines }

[B23C 1/06](#)

. with one vertical working-spindle

[B23C 1/08](#)

. with a plurality of vertical working-spindles

[B23C 1/10](#)

. with both horizontal and vertical working-spindles

[B23C 1/12](#)

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

[B23C 1/14](#)

. (work tables for machine tools in general [B23Q 1/00](#))

[B23C 1/16](#)

. specially designed for control by copying devices { not used; see [B23Q 35/00](#) }

[B23C 1/18](#)

.. for milling while revolving the work

[B23C 1/20](#)

. Portable devices or machines (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#)); Hand-driven devices or machines

B23C 3/00

Milling particular work; Special milling operations; Machines therefor (milling gear-teeth [B23F](#) , { heat assisted machining [B23P 25/00](#) })

[B23C 3/002](#)

. { Milling elongated workpieces }

[B23C 3/005](#)

.. { Rails }

[B23C 3/007](#)

. { Milling end surfaces of nuts or tubes }

[B23C 3/02](#)

. Milling surfaces of revolution ([B23C 3/06](#), [B23C 3/08](#) take precedence)

[B23C 3/023](#)

.. { Milling spherical surfaces }

- B23C 3/026 . . . { Milling balls }
- B23C 3/04 . . while revolving the work
- B23C 3/05 . . Finishing valves or valve seats { (machines for grinding seat surfaces, e.g. in valve housings, [B24B 15/00](#)) }
- B23C 3/051 . . . { Reconditioning of valve seats }
- B23C 3/053 { having means for guiding the tool carrying spindle }
- B23C 3/055 { for engines }
- B23C 3/056 { for taps or valves }
- B23C 3/058 . . . { Reconditioning of valves }

- B23C 3/06 . Milling crankshafts

- B23C 3/08 . Milling cams, camshafts, or the like

- B23C 3/10 . Relief milling (lathes or turning devices for relieving [B23B 5/42](#))

- B23C 3/12 . Trimming or finishing edges, e.g. deburring welded corners
- B23C 3/122 . . { of pipes or cylinders }
- B23C 3/124 . . . { internally }
- B23C 3/126 . . { Portable devices or machines for chamfering edges }
- B23C 3/128 . . { Trimming or finishing edges of doors and windows }

- B23C 3/13 . Surface milling of plates, sheets or strips

- B23C 3/14 . Scrubbing or peeling ingots or similar work-pieces

- B23C 3/16 . Working surfaces curved in two directions
- B23C 3/18 . . for shaping screw-propellers, turbine blades, or impellers
- B23C 3/20 . . for shaping dies

- B23C 3/22 . Forming overlapped joints, e.g. of the ends of piston-rings

- B23C 3/24 . Making square or polygonal ends on work-pieces, e.g. key studs on tools

- B23C 3/26 . Making square or polygonal holes in work-pieces, e.g. key holes in tools

- B23C 3/28 . Grooving workpieces (tread-cutting by milling [B23G 1/32](#))
- B23C 3/30 . . Milling straight grooves, e.g. keyways
- B23C 3/305 . . . { in which more than one milling tool is used simultaneously, e.g. for sheet material }
- B23C 3/32 . . Milling helical grooves, e.g. in making twist-drills
- B23C 3/34 . . Milling grooves of other forms, e.g. circumferential
- B23C 3/35 . . Milling grooves in keys
- B23C 3/355 . . . { Holders for the template keys }

- B23C 3/36 . Milling milling-cutters ([B23C 3/28](#) takes precedence)

- B23C 5/00** **Milling-cutters** (for cutting gear-teeth [B23F 21/12](#))

- B23C 5/003 . { with vibration suppressing means }
- B23C 5/006 . { Details of the milling cutter body }
- B23C 5/02 . characterised by the shape of the cutter
- B23C 5/04 . . Plain cutters, i.e. having essentially a cylindrical or tapered cutting surface of substantial length ([B23C 5/10](#) takes precedence)
- B23C 5/06 . . Face-milling cutters, i.e. having only or primarily a substantially flat cutting surface
- B23C 5/08 . . Disc-type cutters
- B23C 5/10 . . Shank-type cutters, i.e. with an integral shaft
- B23C 5/1009 . . . { Ball nose end mills }
- B23C 5/1018 { with permanently fixed cutting inserts }
- B23C 5/1027 { with one or more removable cutting inserts }
- B23C 5/1036 { having a single cutting insert, the cutting edges of which subtend 180 degrees }
- B23C 5/1045 { having a cutting insert, the cutting edge of which subtends substantially 90 degrees }
- B23C 5/1054 . . . { T slot cutters }
- B23C 5/1063 { with permanently fixed cutting inserts }
- B23C 5/1072 { with removable cutting inserts }
- B23C 5/1081 . . . { with permanently fixed cutting inserts ([B23C 5/1054](#) and [B23C 5/1081](#) take precedence) }
- B23C 5/109 . . . { with removable cutting inserts }
- B23C 5/12 . . Cutters specially designed for producing particular profiles ([B23C 5/10](#) takes precedence)
- B23C 5/14 . . . essentially comprising curves { ([B23C 5/1009](#) takes precedence) }
- B23C 5/16 . characterised by physical features other than shape
- B23C 5/165 . . { with chipbreaking or chipdividing equipment (for turning machines [B23B 25/02](#); turning tools [B23B 27/00](#); drilling machines [B23B 47/34](#)) }
- B23C 5/18 . . with permanently-fixed cutter-bits or teeth
- B23C 5/20 . . with removable cutter bits or teeth { or cutting inserts }
- B23C 5/202 . . . { 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 [B23B 27/141](#)) }
- B23C 5/205 { having chip-breakers }
- B23C 5/207 { having a special shape }
- B23C 5/22 . . . Securing arrangements for bits or teeth { or cutting inserts }
- B23C 5/2204 { 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 }
- B23C 5/2208 { for plate-like cutting inserts ([B23C 5/2226](#), [B23C 5/223](#), [B23C 5/2234](#) take precedence) }
- B23C 5/2213 { Special by shaped cutting inserts }
- B23C 5/2217 { having chip-breakers }
- B23C 5/2221 { having a special shape }
- B23C 5/2226 { for plate-like cutting inserts fitted on an intermediate carrier }

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| B23C 5/223 | | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/2234 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/2239 | .... | { with cutting inserts clamped by a clamping member acting almost perpendicular on the cutting face } |
| B23C 5/2243 | ..... | { for plate-like cutting inserts (B23C 5/2252 , B23C 5/2256 , B23C 5/226 take precedence) } |
| B23C 5/2247 | ..... | { having a special shape } |
| B23C 5/2252 | ..... | { for plate-like cutting inserts fitted on an intermediate carrier } |
| B23C 5/2256 | ..... | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/226 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/2265 | .... | { by means of a wedge } |
| B23C 5/2269 | ..... | { for plate-like cutting inserts (B23C 5/2278 , B23C 5/2286 , B23C 5/2291 take precedence) } |
| B23C 5/2273 | ..... | { having a special shape } |
| B23C 5/2278 | ..... | { for plate-like cutting inserts fitted on an intermediate carrier } |
| B23C 5/2282 | ..... | { having a special shape } |
| B23C 5/2286 | ..... | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/2291 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/2295 | .... | { the cutting elements being clamped simultaneously } |
| B23C 5/24 | .... | adjustable |
| B23C 5/2403 | ..... | { 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 } |
| B23C 5/2406 | ..... | { for plate-like cutting inserts (B23C 5/241 , B23C 5/2413 , B23C 5/2417 take precedence) } |
| B23C 5/241 | ..... | { for plate-like cutting inserts fitted on an intermediate carrier } |
| B23C 5/2413 | ..... | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/2417 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/242 | ..... | { with cutting inserts clamped by a clamping member acting almost perpendicularly on the cutting face } |
| B23C 5/2424 | ..... | { for plate-like cutting inserts (B23C 5/2427 , B23C 5/2431 , B23C 5/2434 take precedence) } |
| B23C 5/2427 | ..... | { for plate-like cutting inserts fitted on an intermediate carrier } |
| B23C 5/2431 | ..... | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/2434 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/2437 | ..... | { clamping by means of a wedge } |
| B23C 5/2441 | ..... | { for plate-like cutting inserts (B23C 5/2444 , B23C 5/2448 , B23C 5/2451 take precedence) } |
| B23C 5/2444 | ..... | { for plate-like cutting inserts fitted on an intermediate carrier } |
| B23C 5/2448 | ..... | { for plate-like cutting inserts fitted on a shank, fixed in the cutter body } |
| B23C 5/2451 | ..... | { for plate-like cutting inserts fitted on a ring or ring segment } |
| B23C 5/2455 | ..... | { The adjusting means being serrated teeth on the cutter and the cutting insert } |
| B23C 5/2458 | | { the cutting elements being clamped or adjusted simultaneously } |

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| B23C 5/2462 | | { the adjusting means being oblique surfaces } |
| B23C 5/2465 | | { the adjusting means being notches } |
| B23C 5/2468 | ..... | { the adjusting means being serrations } |
| B23C 5/2472 | ..... | { the adjusting means being screws } |
| B23C 5/2475 | ..... | { the adjusting means being distance elements, e.g. shims or washers } |
| B23C 5/2479 | ..... | { the adjusting means being eccentrics } |
| B23C 5/2482 | ..... | { the adjusting means being hydraulic cylinders } |
| B23C 5/2486 | ..... | { where the adjustment is made by balancing the toolholders } |
| B23C 5/2489 | ..... | { where the adjustment is made by changing the inclination of the inserts } |
| B23C 5/2493 | ..... | { where the adjustment is made by deforming the seating surfaces } |
| B23C 5/2496 | ..... | { where the adjusting means are gears and racks } |
| B23C 5/26 | . | Securing milling cutters to the driving spindle |
| B23C 5/265 | .. | { by fluid pressure means } |
| B23C 5/28 | . | Features relating to lubricating or cooling |
| B23C 7/00 | | Milling devices able to be attached to a machine tool, whether or not replacing an operative portion of the machine tool |
| B23C 7/02 | . | to lathes |
| B23C 7/04 | . | to planing or slotting machines |
| B23C 9/00 | | Details or accessories so far as specially adapted to milling machines or cutter (drives, control devices, or accessories, in general B23Q) |
| B23C 9/005 | . | { milling heads } |
| B23C 2200/00 | | Details of milling cutting inserts |
| B23C 2200/04 | . | Overall shape |
| B23C 2200/0405 | .. | Hexagonal |
| B23C 2200/0411 | ... | irregular |
| B23C 2200/0416 | .. | Irregular |
| B23C 2200/0422 | .. | Octagonal |
| B23C 2200/0427 | ... | rounded |
| B23C 2200/0433 | .. | Parallelogram |
| B23C 2200/0438 | ... | rounded |
| B23C 2200/0444 | .. | Pentagonal |
| B23C 2200/045 | .. | Round |
| B23C 2200/0455 | .. | Square |
| B23C 2200/0461 | ... | rounded |
| B23C 2200/0466 | .. | Star form |

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| B23C 2200/0472 | .. | Trapezium |
| B23C 2200/0477 | .. | Triangular |
| B23C 2200/0483 | ... | rounded |
| B23C 2200/0488 | .. | Heptagonal |
| B23C 2200/0494 | .. | Rectangular |
| B23C 2200/08 | . | Rake or top surfaces |
| B23C 2200/081 | .. | with projections (chip breaking projections in general B23C 2200/323) |
| B23C 2200/082 | .. | with an elevated clamping surface |
| B23C 2200/083 | .. | curved |
| B23C 2200/085 | .. | discontinuous |
| B23C 2200/086 | .. | with one or more grooves |
| B23C 2200/087 | ... | for chip-breaking (with chip-breaking grooves in general B23C 2200/326) |
| B23C 2200/088 | .. | spherical |
| B23C 2200/12 | . | Side or flank surfaces |
| B23C 2200/121 | .. | with projections |
| B23C 2200/123 | .. | curved |
| B23C 2200/125 | .. | discontinuous |
| B23C 2200/126 | ... | stepped |
| B23C 2200/128 | .. | with one or more grooves |
| B23C 2200/16 | . | Supporting or bottom surfaces |
| B23C 2200/161 | .. | with projections |
| B23C 2200/162 | .. | curved |
| B23C 2200/164 | .. | discontinuous |
| B23C 2200/165 | .. | with one or more grooves |
| B23C 2200/167 | .. | star form |
| B23C 2200/168 | .. | with features related to indexing (with lines to permit indexing of round inserts B23C 2200/363) |
| B23C 2200/20 | . | Top or side views of the cutting edge |
| B23C 2200/201 | .. | Details of the nose radius and immediately surrounding areas |
| B23C 2200/203 | .. | Curved cutting edges |
| B23C 2200/205 | .. | Discontinuous cutting edges |
| B23C 2200/206 | .. | Cutting edges having a wave-form |
| B23C 2200/208 | .. | Wiper, i.e. an auxiliary cutting edge to improve surface finish |
| B23C 2200/24 | . | Cross section of the cutting edge |
| B23C 2200/243 | .. | bevelled or chamfered |
| B23C 2200/246 | .. | rounded |
| B23C 2200/28 | . | Angles |
| B23C 2200/283 | .. | Negative cutting angles |
| B23C 2200/286 | .. | Positive cutting angles |

- B23C 2200/32 . Chip breaking or chip evacuation
- B23C 2200/323 .. by chip-breaking projections (with projection on top surface [B23C 2200/081](#))
- B23C 2200/326 .. by chip breaking grooves (with grooves on top surface for chip-breaking [B23C 2200/087](#))
- B23C 2200/36 . Other features of the milling insert not covered by [B23C 2200/04](#) to [B23C 200/32](#)
- B23C 2200/361 .. Fixation holes
- B23C 2200/362 ... Having two fixation holes
- B23C 2200/363 .. Lines to permit indexing of round insert (bottom surface with features relating to indexing [B23C 2200/168](#))
- B23C 2200/365 .. Lands, i.e. the outer peripheral section of rake faces
- B23C 2200/366 ... Variable
- B23C 2200/367 .. Mounted tangentially, i.e. where the rake face is not the face with largest area
- B23C 2200/368 .. Roughened surfaces

B23C 2210/00 Details of milling cutters

- B23C 2210/02 . Connections between the shanks and detachable cutting heads
- B23C 2210/03 . Cutting heads comprised of different material than the shank irrespective of whether the head is detachable from the shank
- B23C 2210/04 . Angles
- B23C 2210/0407 .. Cutting angles
- B23C 2210/0414 ... different
- B23C 2210/0421 ... negative
- B23C 2210/0428 axial rake angle
- B23C 2210/0435 radial rake angle
- B23C 2210/0442 ... positive
- B23C 2210/045 axial rake angle
- B23C 2210/0457 radial rake angle
- B23C 2210/0464 ... neutral
- B23C 2210/0471 axial rake angle
- B23C 2210/0478 radial rake angle
- B23C 2210/0485 .. Helix angles
- B23C 2210/0492 ... different
- B23C 2210/08 . Side or top views of the cutting edge
- B23C 2210/082 .. Details of the corner region between axial and radial cutting edges
- B23C 2210/084 .. Curved cutting edges
- B23C 2210/086 .. Discontinuous or interrupted cutting edges
- B23C 2210/088 .. Cutting edges with a wave form
- B23C 2210/12 . Cross section of the cutting edge

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| B23C 2210/123 | .. Bevelled cutting edges |
| B23C 2210/126 | .. Rounded cutting edges |
| B23C 2210/16 | . Fixation of inserts or cutting bits in the tool (details of connections B23C 2240/00) |
| B23C 2210/161 | .. Elastically deformable clamping members |
| B23C 2210/163 | .. Indexing |
| B23C 2210/165 | .. Fixation bolts |
| B23C 2210/166 | .. Shims |
| B23C 2210/168 | .. Seats for cutting inserts, supports for replacable cutting bits |
| B23C 2210/20 | . Number of cutting edges |
| B23C 2210/201 | .. one |
| B23C 2210/202 | .. three |
| B23C 2210/203 | .. four |
| B23C 2210/204 | .. five |
| B23C 2210/205 | .. six |
| B23C 2210/206 | .. seven |
| B23C 2210/207 | .. eight |
| B23C 2210/208 | .. ten |
| B23C 2210/209 | .. twelve |
| B23C 2210/24 | . Overall form of the milling cutter (angles B23C 2210/04 ; top or side views of cutting edges B23C 2210/08 ; cross sections of cutting edges B23C 2210/12) |
| B23C 2210/241 | .. Cross sections of the whole milling cutter |
| B23C 2210/242 | .. Form tools, i.e. cutting edges profiles to generate a particular form |
| B23C 2210/243 | .. Cutting parts at both ends |
| B23C 2210/244 | .. Milling cutters comprised of disc-shaped modules or multiple disc-like cutters |
| B23C 2210/245 | .. Milling cutters comprising a disc having a wave form |
| B23C 2210/246 | .. Milling cutters comprising a hole or hollow in the end face or between the cutting edges |
| B23C 2210/247 | .. Stepped milling cutters |
| B23C 2210/248 | ... with enlarged cutting heads |
| B23C 2210/28 | . Arrangement of teeth |
| B23C 2210/282 | .. Unequal angles between the cutting edges, i.e. cutting edges unequally spaced in the circumferential direction |
| B23C 2210/285 | .. Cutting edges arranged at different diameters |
| B23C 2210/287 | .. Cutting edges arranged at different axial positions or having different lengths in the axial direction |
| B23C 2210/32 | . Details of teeth |
| B23C 2210/321 | .. Lands, i.e. the area on the rake face in the immediate vicinity of the cutting edge |
| B23C 2210/323 | .. Separate teeth, i.e. discrete profiled teeth similar to those of a hob |
| B23C 2210/325 | .. Different teeth, i.e. one tooth having a different configuration to a tooth on the opposite side of the flute |

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| B23C 2210/326 | .. | File like cutting teeth, e.g. the teeth of cutting burrs |
| B23C 2210/328 | .. | Treated cutting edges |
| B23C 2210/40 | . | Flutes, i.e. chip conveying grooves |
| B23C 2210/402 | .. | of variable depth |
| B23C 2210/405 | ... | having decreasing depth in the direction of the shank from the tip of the tool |
| B23C 2210/407 | ... | having increasing depth in the direction of the shank from the tip of the tool |
| B23C 2210/44 | . | Margins, i.e. the part of the peripheral surface immediately adjacent the cutting edge |
| B23C 2210/445 | .. | variable |
| B23C 2210/48 | . | Chip breakers |
| B23C 2210/483 | .. | Chip breaking projections |
| B23C 2210/486 | .. | Chip breaking grooves or depressions |
| B23C 2210/50 | . | Cutting inserts |
| B23C 2210/503 | .. | mounted internally on the cutter |
| B23C 2210/506 | .. | mounted so as to be able to rotate freely |
| B23C 2210/52 | . | Bushings |
| B23C 2210/54 | . | Configuration of the cutting part |
| B23C 2210/56 | . | Supporting or guiding sections located on the periphery of the tool |
| B23C 2210/58 | . | Brushes |
| B23C 2210/60 | . | Axis of the cutter inclined with respect to the axis of rotation |
| B23C 2210/62 | . | Selectable cutting diameters |
| B23C 2210/64 | . | End milling cutters having a groove in the end cutting face, the groove not being present so as to provide a cutting edge |
| B23C 2210/66 | . | Markings, i.e. symbols or indicating marks |
| B23C 2210/68 | . | Reground to nominal diameter by removal of material from both the front of the insert and the back of insert carrier |
| B23C 2210/70 | . | Pilots |
| B23C 2210/72 | . | Rotatable in both directions |
| B23C 2210/74 | . | Slits |
| B23C 2215/00 | | Details of workpieces |
| B23C 2215/04 | . | Aircraft components |
| B23C 2215/045 | .. | Propellers |

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| B23C 2215/08 | . Automotive parts (B23C 2215/16 , B23C 2215/20 and B23C 2215/24 take precedence) |
| B23C 2215/085 | . . Wheels |
| B23C 2215/12 | . Propellers for boats |
| B23C 2215/16 | . Camshafts |
| B23C 2215/20 | . Crankshafts |
| B23C 2215/24 | . Components of internal combustion engines |
| B23C 2215/242 | . . Combustion chambers |
| B23C 2215/245 | . . Connecting rods |
| B23C 2215/247 | . . Components of diesel engines |
| B23C 2215/28 | . Nipples |
| B23C 2215/32 | . Railway tracks |
| B23C 2215/36 | . Railway wheels |
| B23C 2215/40 | . Spectacles |
| B23C 2215/44 | . Turbine blades |
| B23C 2215/48 | . Kaplan turbines |
| B23C 2215/52 | . Axial turbine wheels |
| B23C 2215/56 | . Radial turbine wheels |
| B23C 2215/60 | . Valve guides in combination with the neighbouring valve seat |
| B23C 2215/64 | . Well pipe windows, i.e. windows in tubings or casings for wells |
| B23C 2220/00 | Details of milling processes |
| B23C 2220/04 | . Milling with the axis of the cutter inclined to the surface being machined |
| B23C 2220/08 | . Milling with the axis of the tool perpendicular to the workpiece axis |
| B23C 2220/12 | . Cutting off, i.e. producing multiple discrete components from a single piece of material |
| B23C 2220/16 | . Chamferring |
| B23C 2220/20 | . Deburring |
| B23C 2220/24 | . Production of elliptical holes |
| B23C 2220/28 | . Finishing (roughing and finishing B23C 2220/605) |

- B23C 2220/32 . Five-axis
- B23C 2220/36 . Production of grooves
- B23C 2220/363 . . Spiral grooves
- B23C 2220/366 . . Turbine blade grooves
- B23C 2220/40 . Using guiding means
- B23C 2220/44 . High speed milling
- B23C 2220/48 . Methods of milling not otherwise provided for
- B23C 2220/52 . Orbital drilling, i.e. use of a milling cutter moved in a spiral path to produce a hole
- B23C 2220/56 . Plunge milling
- B23C 2220/60 . Roughing
- B23C 2220/605 . . Roughing and finishing
- B23C 2220/64 . Using an endmill, i.e. a shaft milling cutter, to generate profile of a crankshaft or camshaft
- B23C 2220/68 . Whirling
- B23C 2222/00 Materials of tools or workpieces composed of metals, alloys or metal matrices**
- B23C 2222/04 . Aluminium
- B23C 2222/06 . Babbitt metal
- B23C 2222/12 . Brass
- B23C 2222/14 . Cast iron
- B23C 2222/16 . Cermet
- B23C 2222/28 . Details of hard metal, i.e. cemented carbide
- B23C 2222/32 . Details of high speed steel ([steel B23C 2222/84](#))
- B23C 2222/52 . Magnesium
- B23C 2222/61 . Metal matrices with metallic or non-metallic particles or fibres
- B23C 2222/64 . Nickel
- B23C 2222/76 . Silver
- B23C 2222/78 . Sodium
- B23C 2222/84 . Steel ([details of high speed steel B23C 2222/32](#))

B23C 2222/88 . Titanium

B23C 2222/98 . Zinc

B23C 2224/00 Materials of tools or workpieces composed of a compound including a metal

B23C 2224/04 . Aluminium oxide

B23C 2224/13 . Chromium nitride

B23C 2224/14 . Chromium aluminium nitride (CrAlN)

B23C 2224/20 . Tantalum carbide

B23C 2224/22 . Titanium aluminium carbide nitride (TiAlCN)

B23C 2224/24 . Titanium aluminium nitride (TiAlN)

B23C 2224/28 . Titanium carbide

B23C 2224/32 . Titanium carbide nitride (TiCN)

B23C 2224/36 . Titanium nitride

B23C 2224/56 . Vanadium aluminium nitride (VAlN)

B23C 2226/00 Materials of tools or workpieces not comprising a metal

B23C 2226/12 . Boron nitride

B23C 2226/125 . . cubic (CBN)

B23C 2226/18 . Ceramic

B23C 2226/27 . Composites, e.g. fibre reinforced composites

B23C 2226/31 . Diamond

B23C 2226/315 . . polycrystalline (PCD)

B23C 2226/33 . Elastomers, e.g. rubber

B23C 2226/37 . Fibreglass

B23C 2226/41 . Gypsum

B23C 2226/42 . Gem, i.e. precious stone

B23C 2226/45 . Glass ([milling glass B28D 1/18](#))

B23C 2226/54 . Paper

[B23C 2226/61](#) . Plastics not otherwise provided for, e.g. nylon

[B23C 2226/62](#) . Polystyrene foam

[B23C 2226/72](#) . Silicon carbide

[B23C 2226/73](#) . Silicon nitride

[B23C 2226/75](#) . Stone, rock or concrete ([milling stone or like materials B28D 1/18](#))

[B23C 2228/00](#) Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner

[B23C 2228/04](#) . applied by chemical vapour deposition (CVD)

[B23C 2228/08](#) . applied by physical vapour deposition (PVD)

[B23C 2228/10](#) . Coating

[B23C 2228/12](#) . Cast, i.e. in the form of a casting

[B23C 2228/14](#) . Flexible

[B23C 2228/24](#) . Hard, i.e. after being hardened

[B23C 2228/25](#) . Honeycomb

[B23C 2228/26](#) . Hot

[B23C 2228/49](#) . Sintered

[B23C 2228/50](#) . Soft metal

[B23C 2230/00](#) Details of chip evacuation ([chip evacuation in cutting inserts B23C 2200/32](#))

[B23C 2230/04](#) . Transport of chips

[B23C 2230/045](#) . . to the middle of the cutter or in the middle of a hollow cutter

[B23C 2230/08](#) . Using suction

[B23C 2235/00](#) Details of milling keys

[B23C 2235/04](#) . Keys with blind holes

[B23C 2235/08](#) . Brushes

[B23C 2235/12](#) . Using a database to store details of the key, the information in the database being used for the generation of the profile of the key

[B23C 2235/16](#) . Dial indicators

- B23C 2235/21 . Calibration by electronic detection of position of probes and cutting wheels
- B23C 2235/24 . Electronic sensors
- B23C 2235/28 . Key blanks
- B23C 2235/32 . Measurement systems
- B23C 2235/36 . Ring keys
- B23C 2235/41 . Scanning systems
- B23C 2235/44 . Templates for the simulation of keys
- B23C 2235/48 . Tracers, probes or styli
- B23C 2240/00** **Details of connections of tools or workpieces (fixation of the cutting insert or bit in the tool [B23C 2210/16](#))**
- B23C 2240/04 . Bayonet connections
- B23C 2240/08 . Brazed connections
- B23C 2240/12 . Connections using captive nuts
- B23C 2240/16 . Welded connections
- B23C 2240/21 . Glued connections
- B23C 2240/24 . Connections using screws
- B23C 2240/245 . . hollow screws, e.g. for the transmission of coolant
- B23C 2240/32 . Connections using screw threads
- B23C 2245/00** **Details of adjusting inserts or bits in the milling cutter**
- B23C 2245/04 . Adjustable wedge surfaces
- B23C 2245/08 . Setting gauges
- B23C 2245/12 . Spiral discs
- B23C 2250/00** **Compensating adverse effects during milling**
- B23C 2250/04 . Balancing the cutter (vibration damping [B23C 2250/16](#))
- B23C 2250/08 . compensating centrifugal force
- B23C 2250/12 . Cooling and lubrication

[B23C 2250/16](#) . Damping vibrations ([balancing \[B23C 2250/04\]\(#\)](#))

[B23C 2250/21](#) . compensating wear of parts not designed to be exchanged as wear parts

[B23C 2255/00](#) Regulation of depth of cut

[B23C 2255/04](#) . Depth indicators

[B23C 2255/08](#) . Limitation of depth of cut

[B23C 2255/12](#) . Depth stops

[B23C 2260/00](#) Details of constructional elements

[B23C 2260/04](#) . Adjustable elements

[B23C 2260/08](#) . Bearings

[B23C 2260/12](#) . Cams

[B23C 2260/28](#) . Differential screw threads

[B23C 2260/40](#) . Harmonic gearboxes, i.e. reduction gearing including a wave generator, a flex spline or a circular spline

[B23C 2260/48](#) . Indication scales

[B23C 2260/52](#) . Keys, e.g. spanners or Allen keys, especially for assembling or disassembling tooling

[B23C 2260/56](#) . Lasers ([improving machinability with laser whilst milling \[B23P 25/003\]\(#\)](#))

[B23C 2260/68](#) . Rings

[B23C 2260/72](#) . Seals

[B23C 2260/76](#) . Sensors

[B23C 2260/80](#) . Serrations

[B23C 2260/84](#) . Springs

[B23C 2260/88](#) . Steadies

[B23C 2265/00](#) Details of general geometric configurations

[B23C 2265/08](#) . Conical

[B23C 2265/12](#) . Eccentric

[B23C 2265/16](#) . Elliptical

- B23C 2265/32 . Polygonal
- B23C 2265/36 . Spherical
- B23C 2265/40 . Spiral
- B23C 2270/00** **Details of milling machines, milling processes or milling tools not otherwise provided for**
- B23C 2270/02 . Use of a particular power source
- B23C 2270/022 . . Electricity
- B23C 2270/025 . . Hydraulics
- B23C 2270/027 . . Pneumatics
- B23C 2270/04 . Use of centrifugal force ([compensation of effect of centrifugal force B23C 2250/08](#))
- B23C 2270/06 . Use of elastic or plastic deformation ([B23C 2210/161](#) takes precedence)
- B23C 2270/08 . Clamping mechanisms or provision for clamping ([B23C 2210/16](#) takes precedence)
- B23C 2270/10 . Use of ultrasound
- B23C 2270/12 . Centering of two elements relative to one another
- B23C 2270/14 . Constructions comprising exactly two similar components
- B23C 2270/16 . Constructions comprising three or more similar components
- B23C 2270/18 . Milling internal areas of components
- B23C 2270/20 . Milling external areas of components