

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 }

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 }

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

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 2200/32](#)
- 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

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 replaceable 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

- 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

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