B24 GRINDING, POLISHING

Note
In this class, the following term is used with the meaning indicated:
– “grinding” is used in its most general sense to mean machining and covers, in particular, “corrective” operations.

B24B MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING (grinding of gear teeth B23F, of screw threads B23G 1/36; by electro-erosion B23H; abrasive or related blasting B24C; tools for grinding, buffing or sharpening B24D; polishing compositions C09G 1/00; abrasives C09K 3/14; electrolytic etching or polishing C25F 3/00; grinding arrangements for use on assembled railway tracks E01B 31/17); DRESSING OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING, POLISHING, OR LAPPING AGENTS [2]

Notes
(1) In this subclass, the following term is used with the meaning indicated:
– “polishing” means the smoothing of a surface, i.e. a surface improvement but no improvement of the dimensional accuracy as would occur in a “grinding” operation. [4]
(2) Attention is drawn to Notes (1) and (2) following the title of subclass B23F. [4]

Subclass Index

GRINDING OR POLISHING PROCESSES
NOT PARTICULAR TO SPECIFIC MACHINES, DEVICES OR WORK .........................................................1/00
GRINDING; GENERAL FEATURES OF GRINDING, POLISHING, OR FINISHING
Grinding of surfaces with simple shapes .................................................................................. 5/00, 7/00, 9/00, 11/00
Grinding of surfaces of special shape ........................................................................ 3/00, 13/00 to 19/00
Grinding or polishing using abrasive belts ........................................................................ 21/00
Portable machines ............................................................................................... 23/00
Other machines ................................................................................................. 25/00, 27/00

Note
In groups B24B 1/00 to B24B 27/00, in connection with glass the terms “grinding” and “polishing” are treated as being equivalent. [4]

1/00 Processes of grinding or polishing; Use of auxiliary equipment in connection with such processes (processes characterised by the use of special machines or devices, see the relevant places for those machines or devices) [4]

1/04 . subjecting the grinding or polishing tools, the abrading or polishing medium or work to vibration, e.g. grinding with ultrasonic frequency (polishing or abrading surfaces on work by means of tumbling apparatus B24B 31/00, involving oscillating or vibrating containers B24B 31/06; superfinishing surfaces on work, e.g. by means of abrading blocks reciprocating with high frequency, B24B 35/00) [4]

3/00 Sharpening cutting edges, e.g. of tools; Accessories therefor, e.g. for holding the tools (non-abrasive sharpening devices for scythes, sickles, or the like A01D 3/00; sharpening devices designed as components of machines with cutters, see the relevant places for the machines, e.g. A01D 75/08, B26D 7/12; sharpening of saw teeth B23D 63/12; sharpening of files or rasps B23D 73/00; grinding of die-stocks or chasers B23G 1/36)

3/02 . of milling cutters
3/04 . of plain milling cutters
3/06 . of face or end milling cutters or cutter heads, e.g. of shank type
3/08 . of profile milling cutters, e.g. of disc type
3/10 . of routers or engraving needles
3/12 . of hobs
3/14 . of mortise chain cutters
3/16 . of broaches
3/18 . of taps or reamers
3/20 . Tapering or chamfering taps or reamers
3/22 . Relief cutting of taps or reamers
3/24 . of drills (by fluting the shank B24B 19/04)
3/26 . of the point of twist drills
3/28 . by swivelling the drill around an axis angularly to the drill axis
3/30 . and rotating the drill about its own axis
Grinding surfaces of particular forms

5/00 Machines or devices designed for grinding surfaces of revolution on work, including those which also grind adjacent plane surfaces; Accessories therefor (B24B 11/00 to B24B 21/00 takes precedence; honing machines or devices using abrading blocks performing axial and rotary movements superimposed on one another B24B 33/00) [2]

5/01 . . . for combined grinding of surfaces of revolution and of adjacent plane surfaces on work [4]
5/02 . . . involving centres or chucks for holding work
5/04 . . . for grinding cylindrical surfaces externally (grinding combined cylindrical and conical surfaces B24B 5/14)
5/06 . . . for grinding cylindrical surfaces internally (B24B 5/40 takes precedence)
5/08 . . . involving a vertical tool spindle
5/10 . . . involving a horizontal tool spindle
5/12 . . . for grinding cylindrical surfaces both externally and internally with several grinding wheels
5/14 . . . for grinding conical surfaces, e.g. of centres
5/16 . . . for grinding peculiarly profiled surfaces, e.g. bulged
5/18 . . . involving centreless means for supporting, guiding, floating or rotating work (centreless turning B23B 5/08; centreless grinding of threads B23G 1/42) [2]
5/20 . . . involving grooved abrading blocks
5/22 . . . for grinding cylindrical surfaces, e.g. on bolts
5/24 . . . for grinding conical surfaces
5/26 . . . for grinding peculiarly profiled surfaces, e.g. bulged
5/28 . . . for grinding outer surfaces concentrically to bores, involving additional centring means
5/30 . . . Regulating-wheels; Equipment therefor
5/313 . . . involving work-supporting means carrying several workpieces to be operated on in succession [3]
5/32 . . . the work-supporting means being indexable [3]
5/35 . . . Accessories [3]
5/36 . . . Single-purpose machines or devices
5/37 . . . for grinding rolls, e.g. barrel-shaped rolls [4]
5/38 . . . for externally grinding travelling elongated stock, e.g. wire

5/40 . . . for grinding tubes internally
5/42 . . . for grinding crankshafts or crankpins
5/44 . . . for grinding rims of vehicle wheels, e.g. for bicycles
5/46 . . . for grinding railway car wheels
5/48 . . . for grinding walls of very fine holes, e.g. in drawing-dies
5/50 . . . characterised by a special design with respect to properties of the material of non-metallic articles to be ground, e.g. strings (cutting profiles into the treads of tyres B29D 30/68)

7/00 Machines or devices designed for grinding plane surfaces on work, including polishing plane glass surfaces; Accessories therefor (B24B 21/00 takes precedence; honing of plane surfaces on work B24B 33/055) [4]

7/02 . . . involving a reciprocatingly moved work-table (involving a reciprocatingly moved grinding wheel in combination with a stationary work-table B24B 7/07) [4]
7/04 . . . involving a rotary work-table
7/06 . . . involving conveyer belts, a sequence of travelling work-tables or the like
7/07 . . . involving a stationary work-table [4]
7/08 . . . having an abrasive wheel built in
7/10 . . . Single-purpose machines or devices (grinding tools or machines specially adapted for use on assembled railway track E01B 31/17)
7/12 . . . for grinding travelling elongated stock, e.g. strip-shaped work [4]
7/13 . . . grinding while stock moves from coil to coil [4]
7/14 . . . for grinding slideways (portable grinding machines designed for fastening on workpieces B24B 23/08) [4]
7/16 . . . for grinding end faces, e.g. of gauges, rollers, nuts, piston rings (for combined grinding of surfaces of revolution and of adjacent plane surfaces on work B24B 5/01; for grinding edges or bevels on work B24B 9/00) [4]
7/17 . . . for simultaneously grinding opposite and parallel end faces, e.g. double disc grinders [4]
7/18 . . . for grinding floorings, walls, ceilings or the like (machines or devices for cleaning floorings A47L 11/00, A47L 13/00)
7/19 . . . for grinding plane decorative patterns [4]
7/20 . . . characterised by a special design with respect to properties of the material of non-metallic articles to be ground
7/22 . . . for grinding inorganic material, e.g. stone, ceramics, porcelain
7/24 . . . for grinding or polishing glass
7/26 . . . . . . for simultaneously grinding or polishing opposite faces of continuously travelling sheets or bands of glass
7/28 . . . for grinding wood
7/30 . . . for grinding plastics [4]

9/00 Machines or devices designed for grinding edges or bevels on work or for removing burrs; Accessories therefor (B24B 21/00 takes precedence; for sharpening cutting edges on tools B24B 3/00; removing burrs by loose abrasive material B24B 31/00)

9/02 . . . characterised by a special design with respect to properties of materials specific to articles to be ground
9/04 . . . of metal, e.g. skate blades
17/04 . involving optical auxiliary means, e.g. optical projection form grinding machines
17/06 . combined with electrical transmission means, e.g. controlled by photoelectric cells
17/08 . involving fluid transmission means only
17/10 . involving electrical transmission means only, e.g. controlled by magnetic tape

19/00 Single purpose machines or devices for particular grinding operations not covered by any other main group (tapering, chamfering or relief cutting of taps or reamers B24B 3/20, B24B 3/22; grinding screw threads B23G 1/36)
19/02 . for grinding grooves, e.g. on shafts, in casings, in tubes, homokinetic joint elements [4]
19/03 . for grinding grooves in glass workpieces, e.g. decorative grooves [4]
19/04 . for fluting drill shanks
19/06 . for grinding races, e.g. roller races
19/08 . for grinding non-circular cross-sections, e.g. shafts of elliptical or polygonal cross-section
19/09 . for grinding trochoidal surfaces, e.g. in rotor housings of Wankel engines [4]
19/10 . for grinding pistons
19/11 . for grinding the circumferential surface of rings, e.g. piston rings (grinding end faces B24B 7/16, B24B 7/17) [4]
19/12 . for grinding cams or camshafts
19/14 . for grinding turbine blades, propeller blades or the like (using grinding belts B24B 21/16) [4]
19/16 . for grinding sharp-pointed workpieces, e.g. needles, pens, fish hooks, tweezers, record player styli (grinding bevels on diamonds or sapphires B24B 9/16; polishing of needles B24B 29/08) [4]
19/18 . for grinding carding equipment, e.g. card-clothings (devices for sharpening card-clothings built in, or attachable to, carding machines D01G)
19/20 . for grinding dies (for grinding walls of very fine holes B24B 5/48)
19/22 . characterised by a special design with respect to properties of the material of non-metallic articles to be ground
19/24 . of wood, e.g. furniture
19/26 . for grinding workpieces with arcuate surfaces, e.g. parts of car bodies, bumpers, magnetic recording heads (grinding of spherical surfaces in general B24B 11/00, of optical surfaces on lenses or surfaces of similar shape on other work B24B 13/00) [4]
19/28 . for grinding shoes or linings of drum brakes (of brake drum hubs B24B 5/06; of brake discs B24B 7/17) [4]

21/00 Machines or devices using grinding or polishing belts (for sharpening cutting edges of tools B24B 3/00; portable belt-grinding machines B24B 23/06); Accessories therefor [4]
21/02 . for grinding rotationally symmetrical surfaces
21/04 . for grinding plane surfaces
21/06 . involving members with limited contact area pressing the belt against the work, e.g. shoes sweeping across the whole area to be ground (B24B 21/12 takes precedence)
21/08 . Pressure shoes; Backing belts
21/10 . involving a rigid member, e.g. pressure bar, table, pressing or supporting the belt over substantially its whole span
21/12 . involving a contact wheel or roller pressing the belt against the work

17/00 Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like (machines or devices so-controlled for grinding the edges of lenses B24B 9/14; for grinding or polishing optical lens surfaces B24B 13/06; for grinding non-circular cross-sections B24B 19/08; for grinding trochoidal surfaces B24B 19/09; for grinding cams B24B 19/12; for grinding turbine blades or the like B24B 19/14; such control means per se B23Q 33/00, B23Q 35/00, G05); Accessories therefor [4]
17/02 . involving mechanical transmission means only

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23/00 Portable grinding machines, e.g. hand-guided; Accessories thereafter (B24B 7/18 takes precedence; for grinding seat surfaces B24D 15/08; having a flexible shaft B24B 27/027; grinders for cutting-off B24B 27/08; dust extraction equipment B24B 55/10; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed B25F 5/00) [4]

23/02 . . . rotating grinding tools; Accessories thereafter [4]
23/03 . . . the tool being driven in a combined movement [4]
23/04 . . . oscillating grinding tools; Accessories thereafter [4]
23/06 . . . abrasive belts, e.g. with endless travelling belts; Accessories thereafter [4]
23/08 . . . Portable grinding machines designed for fastening on workpieces or other parts of particular section, e.g. for grinding commutators

25/00 Grinding machines of universal type

27/00 Other grinding machines or devices
27/02 . . . Bench grinders [4]
27/027 . . . having a flexible shaft [4]
27/033 . . . for grinding a surface for cleaning purposes, e.g. for descaling or for grinding off flaws in the surface [4]
27/04 . . . Grinding machines or devices in which the grinding tool is supported on a swinging arm
27/06 . . . Grinders for cutting-off
27/08 . . . being portable [4]

Polishing surfaces (machines or devices for grinding or polishing glass B24B 7/24, B24B 9/00, B24B 13/00; for grinding or polishing using belts B24B 21/00); Finishing surfaces (B24B 3/00 takes precedence)

29/00 Machines or devices for polishing surfaces on work by means of tools made of soft or flexible material with or without the application of solid or liquid polishing agents (polishing tools in general B24D 13/00) [4]

29/02 . . . designed for particular workpieces [4]
29/04 . . . for rotationally symmetrical workpieces, e.g. ball-, cylinder- or cone-shaped workpieces [4]
29/06 . . . for elongated workpieces having uniform cross-section in one main direction [4]
29/08 . . . the cross-section being circular, e.g. tubes, wires, needles [4]
29/10 . . . for table cutlery [4]

31/00 Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work or the abrasive material is loose. Accessories thereafter (abrasive blasting machines B24C 3/26)

31/02 . . . involving rotary barrels
31/023 . . . with tiltable axis [4]
31/027 . . . with additional oscillating movement [4]
31/03 . . . the workpieces being continuously-travelling [4]

31/033 . . . having several rotating or tumbling drums with parallel axes [4]
31/037 . . . having several rotating or tumbling drums with non-parallel axes [4]
31/05 . . . involving a container formed as a conveyer belt [4]
31/06 . . . involving oscillating or vibrating containers
31/067 . . . involving a bowl formed as a straight trough [4]
31/073 . . . involving a bowl being ring- or spiral-shaped [4]
31/10 . . . involving other means for tumbling of work [4]
31/104 . . . involving a rotating bowl, in which a ring zone of abrasive powder is formed by centrifugal force [4]
31/108 . . . involving a sectioned bowl, one part of which, e.g. its wall, is stationary and the other part of which is moved, e.g. rotated [4]
31/112 . . . using magnetically consolidated grinding powder, moved relatively to the workpiece under the influence of pressure [4]
31/116 . . . using plastically deformable grinding compound, moved relatively to the workpiece under the influence of pressure [4]
31/12 . . . Accessories; Protective equipment or safety devices; Installations for exhaustion of dust or for sound absorption specially designed for machines covered by group B24B 31/00 (in general B24B 55/00) [4]
31/14 . . . Abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls
31/16 . . . Means for separating the workpiece from the abrasive medium at the end of operation [4]

33/00 Honing machines or devices; Accessories thereafter
33/02 . . . designed for working internal surfaces of revolution, e.g. of cylindrical or conical shapes
33/04 . . . designed for working external surfaces of revolution
33/05 . . . designed for working grooves, e.g. in gun barrels
33/055 . . . designed for working plane surfaces [4]
33/06 . . . with controlling or gauging equipment (gauging in general G01B; controlling in general G05)
33/08 . . . Honing tools
33/10 . . . Accessories

35/00 Machines or devices designed for superfinishing surfaces on work, i.e. by means of abrading blocks reciprocating with high frequency

37/00 Lapping machines or devices, i.e. requiring pulverulent abrading substances inserted between a lap of relatively soft but rigid material and the surface to be lapped; Accessories thereafter (if applicable to other machine tools, B23Q takes precedence; if peculiar to a particular type of machine or device, see the relevant group thereafter)

37/02 . . . designed for working surfaces of revolution
37/04 . . . designed for working plane surfaces

39/00 Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone (modifying the physical properties or structure of metal by burnishing C21D 7/08, C22F 1/00); Accessories thereafter

39/02 . . . designed for working internal surfaces of revolution
39/04 . . . designed for working external surfaces of revolution
39/06 . . . designed for working plane surfaces [4]

Component parts of grinding machines or devices so far as specially adapted to grinding (if applicable to other machine tools, B23Q takes precedence; if peculiar to a particular type of machine or device, see the relevant group thereafter)

41/00 Component parts such as frames, beds, carriages, headstocks
41/02 . . . Frames; Beds; Carriages
50/00 Measuring or gauging equipment for controlling the feed movement of the grinding tool or work, Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation (B24B 33/06 takes precedence; if applicable to other machine tools, B23Q 15/00 to B23Q 17/00 take precedence; gauging instruments in general G01B)

49/00 Measuring or gauging equipment for controlling the feed movement of the grinding tool or work; Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation (B24B 33/06 takes precedence; if applicable to other machine tools, B23Q 15/00 to B23Q 17/00 take precedence; gauging instruments in general G01B)

49/02 . according to the instantaneous size and required size of the workpiece acted upon, the measuring or gauging being continuous or intermittent (B24B 49/12 takes precedence) [4]

49/03 . according to the final size of the previously ground workpiece [4]

49/04 . involving measurement of the workpiece at the place of grinding during grinding operation [4]

49/05 . including the measurement of a first workpiece already machined and of another workpiece being machined and to be matched with the first one [4]

49/06 . requiring comparison of the workpiece with standard gauging plugs, rings or the like

49/08 . involving liquid or pneumatic means

49/10 . involving electrical means (B24B 49/02, B24B 49/08 take precedence)

49/12 . involving optical means

49/14 . taking regard of the temperature during grinding

49/16 . taking regard of the load

49/18 . taking regard of the presence of dressing tools

51/00 Arrangements for automatic control of a series of individual steps in grinding a workpiece

53/00 Devices or means for dressing or conditioning abrasive surfaces (compensation for grinding wheel abrasion resulting from dressing B24B 47/25) [4]


53/02 . of plane surfaces on abrasive tools

53/04 . of cylindrical or conical surfaces on abrasive tools or wheels [4]

53/047 . equipped with one or more diamonds [4]

53/053 . using a rotary dressing tool [4]

53/06 . of profiled abrasive wheels

53/065 . having other than straight profiles, e.g. crowned (B24B 53/07 takes precedence) [4]

53/07 . by means of forming tools having a shape complementary to that to be produced, e.g. blocks, profile rolls [4]

53/075 . for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms (B24B 53/07 takes precedence) [4]

53/08 . controlled by information means, e.g. patterns, tempelts, punched tapes or the like

53/085 . for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms (B24B 53/09 takes precedence) [4]

53/09 . having transfer elements formed as pantograph mechanism [4]

53/095 . Cooling or lubricating during dressing operation (cooling the grinding surfaces B24B 55/02) [4]

53/10 . of travelling flexible backings coated with abrasives; Cleaning of abrasive belts [4]

53/12 . Dressing tools; Holders therefor [4]

53/14 . Dressing tools equipped with rotary rollers or cutters; Holders therefor [4]

55/00 Safety devices for grinding or polishing machines; Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition (of general applicability for machine tools B23Q 11/00; in general F16P)

55/02 . Equipment for cooling the grinding surfaces, including devices for feeding coolant (cooling or lubricating during dressing operation B24B 53/095; incorporated in grinding wheels B24D) [4]

55/03 . designed as a complete equipment for feeding or clarifying coolant [4]

55/04 . Protective covers for the grinding wheel

55/05 . specially designed for portable grinding machines [4]

55/06 . Dust extraction equipment on grinding or polishing machines (B24B 31/12 takes precedence)

55/08 . specially designed for belt grinding machines [4]

55/10 . specially designed for portable grinding machines, e.g. hand-guided [4]

55/12 . Devices for exhausting mist of oil or coolant; Devices for collecting or recovering materials resulting from grinding or polishing, e.g. of precious metals, precious stones, diamonds or the like [4]
B24B – B24D

57/00 Devices for feeding, applying, grading or recovering grinding, polishing or lapping agents (for abrasive blasting B24C 1/00, B24C 7/00) [4]  
57/02 for feeding of fluid, sprayed, pulverised, or liquefied grinding, polishing or lapping agents [4]  
57/04 for feeding of solid grinding, polishing or lapping agents [4]

B24C ABRASIVE OR RELATED BLASTING WITH PARTICULATE MATERIAL

Notes

(1) This subclass covers:
   – the use of a blast of any particles or pellets dispersed in air, gas, or liquid for the treatment of surfaces or cutting of materials, the particles usually being of abrasive material;
   – the equivalent use of a jet of particles or pellets projected or energised by means other than a stream of air.

(2) In this subclass, the following terms are used with the meanings indicated:
   – “abrasive” covers any material used in the manner mentioned in Note (1) above;
   – “blast” covers any equivalent jet of material mentioned in Note (1) above.

1/00 Methods for use of abrasive blasting for producing particular effects; Use of auxiliary equipment in connection with such methods

1/02 for sharpening or cleaning cutting tools, e.g. files
1/04 for treating only selected parts of a surface, e.g. for carving stone or glass
1/06 for producing matt surfaces, e.g. on plastic materials, on glass
1/08 for polishing surfaces, e.g. by making use of liquid-borne abrasives
1/10 for compacting surfaces, e.g. shot-peening (for deforming sheet metal, tubes or profiles B21D 31/06; as a metallurgical treatment C21D 7/00, C22F 1/00)

3/00 Abrasive blasting machines or devices; Plants

3/02 characterised by the arrangement of the component assemblies with respect to each other (B24C 3/08, B24C 3/18 take precedence)
3/04 . . . stationary
3/06 . . . movable; portable
3/08 essentially adapted for abrasive blasting of travelling stock or travelling workpieces
3/10 . . . for treating external surfaces
3/12 . . . Apparatus using nozzles
3/14 . . . Apparatus using impellers
3/16 . . . for treating internal surfaces
3/18 essentially provided with means for moving workpieces into different working positions (B24C 3/08 takes precedence)
3/20 . . . the work being supported by turntables
3/22 . . . Apparatus using nozzles

3/24 . . . Apparatus using impellers
3/26 . . . the work being supported by barrel cages, i.e. tumbler; Gimbal mountings therefor
3/28 . . . Apparatus using nozzles
3/30 . . . Apparatus using impellers
3/32 designed for abrasive blasting of particular work, e.g. the internal surfaces of cylinder blocks (B24C 3/08, B24C 3/18 take precedence)
3/34 . . . for cleaning sparking plugs

Accessories or equipment for abrasive blasting machines or devices

5/00 Devices or accessories for generating abrasive blasts

5/02 Blast guns, e.g. for generating high velocity abrasive fluid jets for cutting materials [5]
5/04 . . . Nozzles therefor (nozzles in general B05B)
5/06 Impeller wheels; Rotor blades therefor
5/08 Devices for generating abrasive blasts non-mechanically, e.g. of metallic abrasives by means of a magnetic field

7/00 Equipment for feeding abrasive material; Controlling the flowability, constitution, or other physical characteristics of abrasive blasts

9/00 Appurtenances of abrasive blasting machines or devices, e.g. working chambers, arrangements for handling used abrasive material

11/00 Selection of abrasive materials for abrasive blasts (polishing compositions C09G)

B24D TOOLS FOR GRINDING, BUFFING, OR SHARPENING (tools for grinding or polishing optical surfaces on lenses or surfaces of similar shape B24B 13/01; grinding heads B24B 41/00; manufacture of abrasive or friction articles or shaped materials containing macromolecular substances C08J 5/14; polishing compositions C09G 1/00; abrasives C09K 3/14)

Notes

(1) This subclass covers grinding tools for working on any material.

(2) Tools for grinding, buffing or sharpening, specially designed for a particular purpose, which purpose is provided for in a single other place, are classified in that place, e.g. B23F 21/02. [4]
**Subclass Index**

PHYSICAL FEATURES OR CONSTITUENTS OF ABRASIVE BODIES

ABRASIVE WHEELS .......................................................... 5/00, 7/00, 9/00, 13/00

Constituents of abrasive bodies

Physical features of abrasive bodies, or sheets, e.g. abrasive surfaces of special nature; Abrasive bodies or sheets characterised by their constituents

Bonded abrasive wheels

B24D 3/00 to B24D 15/00

7/16 . Bushings; Mountings
7/18 . Wheels of special form (if specially designed for a particular purpose provided for in a single other class, that class takes precedence)

9/00 Wheels or drums supporting in exchangeable arrangement a layer of flexible abrasive material, e.g. sandpaper (wheels or drums as machine elements F16)

9/02 . Expandable drums for carrying flexible material in tubular form, e.g. expanded by centrifugal force
9/04 . Rigid drums for carrying flexible material
9/06 . able to be stripped-off from a built-in delivery spool
9/08 . Circular back-plates for carrying flexible material
9/10 . with suction means for securing the material

11/00 Constructional features of flexible abrasive materials; Special features in the manufacture of such materials

11/02 . Backings, e.g. foils, webs, mesh fabrics
11/04 . Zonally-graded surfaces
11/06 . Connecting the ends of materials, e.g. for making abrasive belts
11/08 . Equipment for after-treatment of the coated backings, e.g. for flexing the coating

13/00 Wheels having flexibly-acting working parts, e.g. buffing wheels; Mountings therefor

13/02 . acting by their periphery
13/04 . comprising a plurality of flaps or strips arranged around the axis
13/06 . the flaps or strips being individually attached
13/08 . comprising annular or circular sheets packed side by side
13/10 . comprising assemblies of brushes
13/12 . comprising assemblies of felted or spongy material, e.g. felt, steel wool, foamed latex
13/14 . acting by the front face
13/16 . comprising pleated flaps or strips
13/18 . with cooling provisions
13/20 . Mountings for the wheels

15/00 Hand tools or other devices for non-rotary grinding, polishing, or stropping

15/02 . rigid; with rigidly-supported operative surface
15/04 . resilient; with resiliently-mounted operative surface
15/06 . specially designed for sharpening cutting edges
15/08 . of knives; of razors
15/10 . of safety-razor blades (devices with mechanically-operated parts B24B 3/50)

17/00 Abrasive or polishing tools not covered by groups B24D 3/00 to B24D 15/00

18/00 Manufacture of grinding tools, e.g. wheels, not otherwise provided for [4]

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