

## SECTION B — PERFORMING OPERATIONS; TRANSPORTING

### B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR

**B23P OTHER WORKING OF METAL; COMBINED OPERATIONS; UNIVERSAL MACHINE TOOLS** (arrangements for copying or controlling B23Q)

#### Note(s) [2015.01]

1. This subclass covers:
  - combinations of work-modifying operations covered by different subclasses of classes B21-B24;
  - combinations of metal-working operations with non-mechanical treatments of metal not provided for elsewhere, for example in C21D, C22C, C22F or C23.
2. This subclass does not cover
  - non-mechanical operations on non-metallic materials unless such operations are explicitly mentioned in this subclass;
  - subsidiary operations performed in conjunction with main operations covered by a single subclass, e.g. assembling of parts as an essential feature of a following metal-working operation, since they are not regarded as operations per se.
3. Attention is drawn to the Notes following the title of class B23.

#### Subclass index

##### METAL-WORKING PROCESSES

Setting of diamonds.....	5/00
Reconditioning; finishing.....	6/00, 9/00
Connecting or disconnecting.....	11/00, 19/00, 21/00
Other processes.....	6/00, 13/00, 15/00, 17/00
Auxiliary treatments.....	25/00

##### COMBINED PROCESSES; MULTI-PURPOSE MACHINES

Reconditioning; finishing.....	6/00, 9/00
Other combined operations.....	6/00, 23/00
Auxiliary treatments.....	25/00

**5/00 Setting gems or the like on metal parts, e.g. diamonds on tools [1, 2006.01]**

**6/00 Restoring or reconditioning objects** (straightening or restoring form of sheet metal, metal rods, metal tubes, metal profiles, or specific articles made therefrom B21D 1/00, B21D 3/00; repairing defective or damaged objects by casting techniques B22D 19/10; procedures or apparatus covered by a single other subclass, see the relevant subclass) **[3, 2006.01]**

6/02 • Pistons or cylinders **[3, 2006.01]**

6/04 • Repairing fractures or cracked metal parts or products, e.g. castings **[3, 2006.01]**

**9/00 Treating or finishing surfaces mechanically, with or without calibrating, primarily to resist wear or impact, e.g. smoothing or roughening turbine blades or bearings** (treatment covered by a single other subclass, see the relevant subclass, e.g. B24C, C21D 7/00, C22F 1/00); **Features of such surfaces not otherwise provided for, their treatment being unspecified [1, 2006.01]**

9/02 • Treating or finishing by applying pressure, e.g. knurling (B23P 9/04 takes precedence) **[1, 2006.01]**

9/04 • Treating or finishing by hammering or applying repeated pressure **[1, 2006.01]**

**11/00 Connecting or disconnecting metal parts or objects by metal-working techniques, not otherwise provided for** (connecting sheet metal or metal tubes, rods or profiles B21D 39/00; riveting B21J; soldering, unsoldering, welding B23K; hand tools for connecting wire or strip B25B 25/00; connecting metal parts by adhesives F16B 11/00) **[1, 7, 2006.01]**

11/02 • by first expanding and then shrinking or vice versa, e.g. by using pressure fluids; by making force fits **[1, 2006.01]**

**13/00 Making metal objects by operations essentially involving machining but not covered by a single other subclass** (making specific objects B23P 15/00) **[1, 2006.01]**

13/02 • in which only the machining operations are important **[1, 2006.01]**

13/04 • involving slicing of profiled material **[1, 2006.01]**

**15/00 Making specific metal objects by operations not covered by a single other subclass or a group in this subclass [1, 2006.01]**

15/02 • turbine or like blades from one piece **[1, 2006.01]**

15/04 • turbine or like blades from several pieces **[1, 2006.01]**

15/06 • piston rings from one piece **[1, 2006.01]**

15/08 • piston rings from several pieces **[1, 2006.01]**

## B23P

- 15/10 • pistons [1, 2006.01]
- 15/12 • gratings [1, 2006.01]
- 15/14 • gear parts, e.g. gear wheels [1, 2006.01]
- 15/16 • plates with holes of very small diameter e.g. for spinning or burner nozzles [1, 2006.01]
- 15/18 • brake shoes [1, 2006.01]
- 15/20 • railroad requirements, e.g. buffers [1, 2006.01]
- 15/22 • cartridges or like shells [1, 2006.01]
- 15/24 • dies (B21C 3/18, B21C 25/10, B21D 37/20 take precedence) [1, 2006.01]
- 15/26 • heat exchangers [1, 2006.01]
- 15/28 • cutting tools (sawing tools B23D 63/00, B23D 65/00; files or rasps B23D 73/00) [1, 2006.01]
- 15/30 • • lathes or like tools [1, 2006.01]
- 15/32 • • twist-drills [1, 2006.01]
- 15/34 • • milling cutters [1, 2006.01]
- 15/36 • • • for thread cutting [1, 2006.01]
- 15/38 • • planing or slotting tools (B23P 15/30 takes precedence) [1, 2006.01]
- 15/40 • • shearing tools [1, 2006.01]
- 15/42 • • broaching tools [1, 2006.01]
- 15/44 • • scraping or shaving tools [1, 2006.01]
- 15/46 • • reaming tools [1, 2006.01]
- 15/48 • • threading tools (milling cutters for thread-cutting B23P 15/36) [1, 2006.01]
- 15/50 • • • dies [1, 2006.01]
- 15/52 • • • taps [1, 2006.01]
- 17/00 Metal-working operations, not covered by a single other subclass or another group in this subclass [1, 2006.01]**
- 17/02 • Single metal-working processes; Machines or apparatus therefor [1, 2006.01]
- 17/04 • characterised by the nature of the material involved or the kind of product independently of its shape [1, 2006.01]
- 17/06 • • Making steel wool or the like [1, 2006.01]
- 19/00 Machines for simply fitting together or separating metal parts or objects, or metal and non-metal parts, whether or not involving some deformation; Tools or devices therefor so far as not provided for in other classes (hand tools in general B25) [1, 3, 2006.01]**
- 19/02 • for connecting objects by press fit or for detaching same (B23P 19/10 takes precedence) [1, 7, 2006.01]
- 19/027 • • using hydraulic or pneumatic means (B23P 19/033 takes precedence) [7, 2006.01]
- 19/033 • • using vibration [7, 2006.01]
- 19/04 • for assembling or disassembling parts (B23P 19/10 takes precedence) [1, 7, 2006.01]
- 19/06 • • Screw or nut setting or loosening machines [1, 2006.01]
- 19/08 • • Machines for placing washers, circlips, or the like on bolts or other members [1, 2006.01]
- 19/10 • Aligning parts to be fitted together [7, 2006.01]
- 19/12 • • Alignment of parts for insertion into bores [7, 2006.01]
- 21/00 Machines for assembling a multiplicity of different parts to compose units, with or without preceding or subsequent working of such parts, e.g. with programme control [1, 2006.01]**
- 23/00 Machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass (combined horizontal boring and milling machines B23B 39/02; if the particular kinds of operation are not essential B23Q 37/00-B23Q 41/00; features relating to operations covered by a single subclass, see the relevant subclass for the operation) [1, 2006.01]**
- 23/02 • Machine tools for performing different machining operations (lathes, e.g. capstan lathes, B23B) [1, 2006.01]
- 23/04 • for both machining and other metal-working operations [1, 2006.01]
- 23/06 • Metal-working plant comprising a number of associated machines or apparatus [1, 2006.01]
- 25/00 Auxiliary treatment of workpieces, before or during machining operations, to facilitate the action of the tool or the attainment of a desired final condition of the work, e.g. relief of internal stress [1, 2006.01]**