MTAI Tutorial-3

11411A0506
S. Keshavavarma

① General tools used in facing, planing, plain turning and step turning

→ lathe machine
→ three jaw chuck
→ chuck key / spanner
→ vernier callipers
→ H.S.S single point cutting tool
→ cleaning brush
→ steel ruler

general tools used in milling process:

→ bare pan hammer
→ cleaning brush
→ vernier height gauge & vernier callipers
→ milling cutter
→ horizontal milling machine
→ double ended spanner
→ spirit level

general tools used in drilling, broaching, reaming & tapping:

→ drill bit tool
→ tapping tool

→ vernier Callipers
→ pitch gauge
→ chuck key
→ tool post key
→ cleaning brush
→ drilling machine, broaching machine, reaming machine

Single point cutting tool :.

It is a cutting tool having only one main cutting edge that remains engaged with workpiece during machining operation in a single pass.

milling tool :.

These are cutting tools typically used in milling machines to perform milling operations.

drill bit :.

drill bits are cutting tools used to remove material to create holes, almost always of circular cross-section

Tapping tools :.

Taps and dies are tools used to create screw threads which is called threading. The process of cutting or forming threads using a tap is called tapping, whereas the process using a die is called threading. Both tools can be used to clean up a thread, which is called chasing

Reamer tool:-

The rotary cutting tool in reaming is known as a reamer. Like drill bits reamers also, remove material from the workpiece on which they are used. The primary purpose of reaming is simply to create smooth walls in an existing hole. Manufacturing companies perform reaming using a milling machine or drill press.

Broaching tool:-

Broaching is a machining process that uses a toothed tool, called a broach, to remove material. The principle of the rotary broach is to approach the work at a small angle. As the tool approaches the predrilled hole, it spins synchronously with the part creating a wobble effect that causes the leading cutting edge to rotate in and out of the cut like a cam.

2) Jig I :- operations:-

- → plain turning
- → taper turning
- → slotting
- → threading
- → boring
- → facing
- → Chamfering
- → sand blasting
- → water jet cutting

machine tools :-

→ Lathe
→ Sand blasting machine
→ milling machine
→ water jett cutter

cutting tools :-

→ single point cutting tool
→ boring tool
→ slotting cutter
→ threading tool

2) fig 2 :-> operations

→ facing
→ plain turning
→ taper turning
→ grinding
→ chamfering

machine tools :-

→ Lathe
→ grinding machine

cutting tools

→ single point cutting tool
→ grinding wheel.

3) fig 3 :- operations

→ plain turning
→ facing
→ taper turning
→ slotting
→ boring
→ Sand blasting
→ chamfering
→ surface contouring
→ water jett cutting

machine tools:.

→ Lathe

→ Sand blasting machine

→ milling machine

→ Water jett Cutter

Cutting tools:.

→ single point Cutting tool

→ Boring tool

→ slotted Cutter

4) fig 4 → operations..

→ CNC Milling

→ slotting

→ boring

→ CAD/CAM

machine tools:-

→ CNC Miller

→ Computer

5) fig 5 → operations:.

→ Sand blasting

→ Needle mill and using forming process.

machine tools:.

→ Sand blasting machine.

Boring needle machine by

6) Jig 6 :- operations

→ plain turning
→ facing
→ slotting
→ boring
→ Sand blasting
→ chamfering
→ surface contouring
→ reaming
→ drilling

machine tools :-

→ Lathe
→ Sand blasting machine
→ Milling machine
→ drilling machine

cutting tools :-

→ Single point cutting tool
→ boring tool
→ slotting cutter
→ reamer

7) Jig 7 :- operations :-

→ plain turning
→ facing
→ gear hobbing
→ boring
→ slotting
→ champhering

machine tools :-

→ Lathe
→ Milling cutter

cutting tools :-

→ Boring tool
→ slotting cutter

8) Jig 8 :- operations

→ plain turning
→ facing
→ slotting
→ boring
→ Sand blasting
→ champhering

Tools:-
→ Sand blasting machine
→ Lathe
→ milling cutter
→ single point cutting tool

9) fig-9 → operations
→ threading
→ taper turning
→ extrusion
→ champhering
→ slotting

Tools:-
→ Lathe (automatic / manual)
→ die extrusion
→ milling machine
→ single point cutting tool

10) fig 10 → operations:-
→ turning
→ threading
→ punching

tools:-
→ Lathe
→ punch

11) fig 11 → operations:-
→ milling (pocket)
→ reaming

tools:-
→ vertical milling machine
→ reamer

12) fig 12 → operations:-
→ deep drawing
→ drilling
→ extrusion

→ chamfering
→ turning

tools :-
- die drawing
→ drill bit
→ die extrusion
→ lathe

(3) fig 13 → operations

→ drawing
→ punching
→ extrusion
→ chamfering
→ turning

tools :-
→ lathe
→ die punching
→ drawing machine
→ extrusion die

(4) fig 14 → operations :-

→ blanking
→ milling
→ drawing
→ chamfering

tools :-
→ vertical milling machine
→ die blanking
→ die drawing

(5) fig 15 → operations

→ drilling
→ boring
→ reaming
→ chamfering

tools :-
→ drill bit
→ reamer
→ boring tool
→ single point cutting tool

16) Fig 16 → operations :-

→ slotting
→ extrusion
→ threading
→ taper turning
→ chamfering

tools :-

→ Lathe
→ milling machine
→ die extrusion
→ single point cutting tool .