

Shaper tools:-

- Shaper tools are single point tools similar to lathe tools and are frequently held in same way. The few differences between shaper and lathe tools are given below...
- The lathe tool is subjected to a uniform, practically constant cutting pressure, shaper tool has to withstand repeated shocks caused by cutting strokes...
- The shaper tools generally have larger nose compared to lathe tools to withstand the shock loading. In many cases the back rake angle is also made negative...

Shaper tools:-

- A shaper tool is more rigid and heavier than a lathe tool...
- A lathe tool has sufficient side clearance angles as it is to be continuously fed sideways. In a shaper feed is given only at the end of stroke hence a smaller clearance angle of the 2-3 degree is enough. Front clearance 4degree for cast iron and steel. Smaller clearance angles give strength to the tool...
- In a lathe the effective rake and clearance angles can be varied by raising or lowering the tip of the tool relative to work piece centre. In a shaper this is not possible because shaper tools are always clamped perpendicular to the work piece surface...

The available sharper tools can be classified into the following varieties:

- Roughing and finishing tools.
- Straight and cranked neck tools.
- Left hand and right hand tools.
- Round nose, straight nose and flat nose tools.
- Slot cutting, parting off and side-recessing tools.

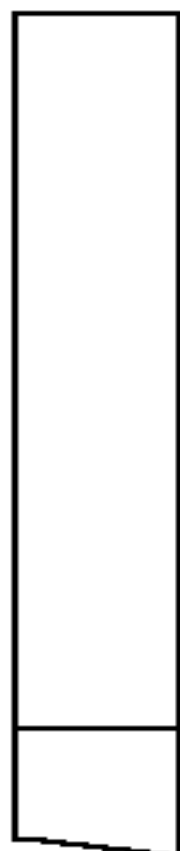
Top View of 3/8" Tool Bits



Round
Nose



Left
Knife



Right
Knife



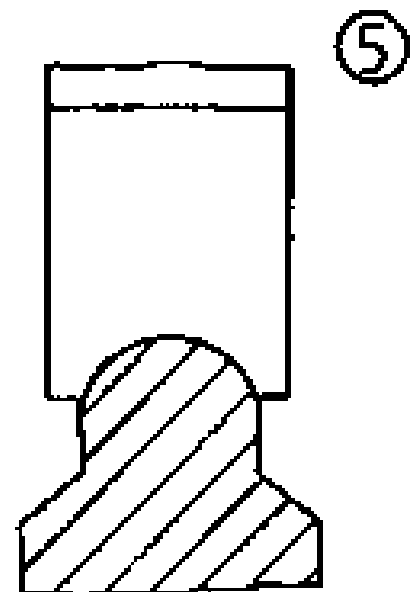
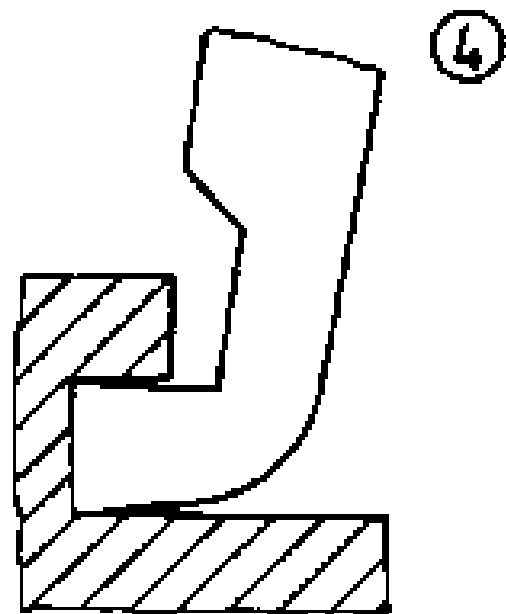
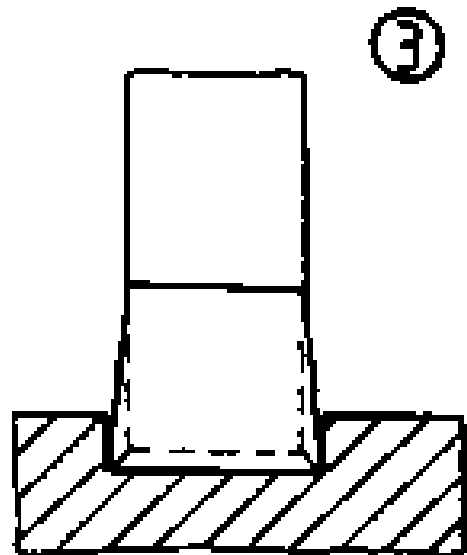
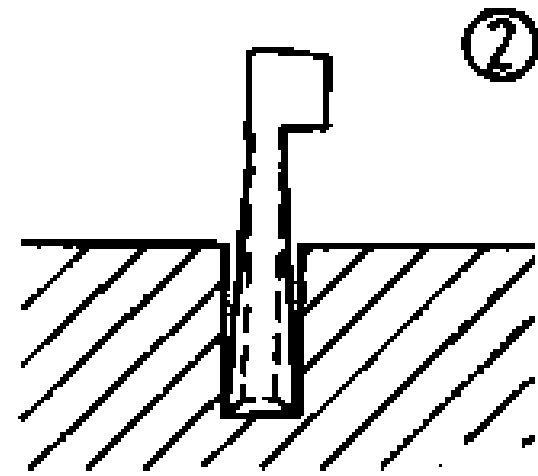
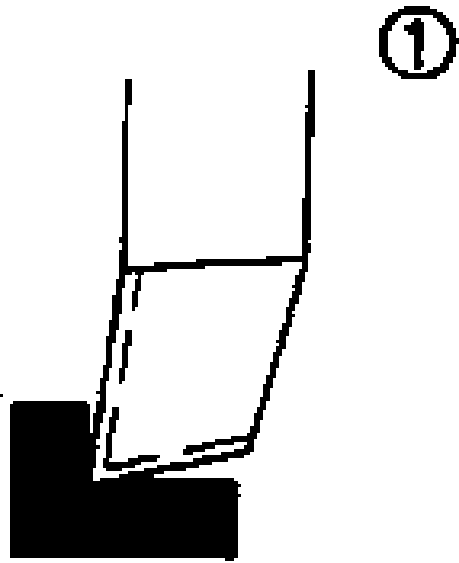
Left
Dovetail



Right
Dovetail



Keyway
Slotter



SHAPER

- Shaper is Machine tool which produces flat surfaces in horizontal, vertical or inclined planes depending upon the orientation of the cutting tool.

Features:

- Single point cutting tool is used for machining. Tool is clamped in the tool post mounted on the ram of the machine.
- The ram reciprocates to and fro, tool cuts the material **in the forward stroke**, No cutting during return stroke.
- Job is held rigidly in a vice.

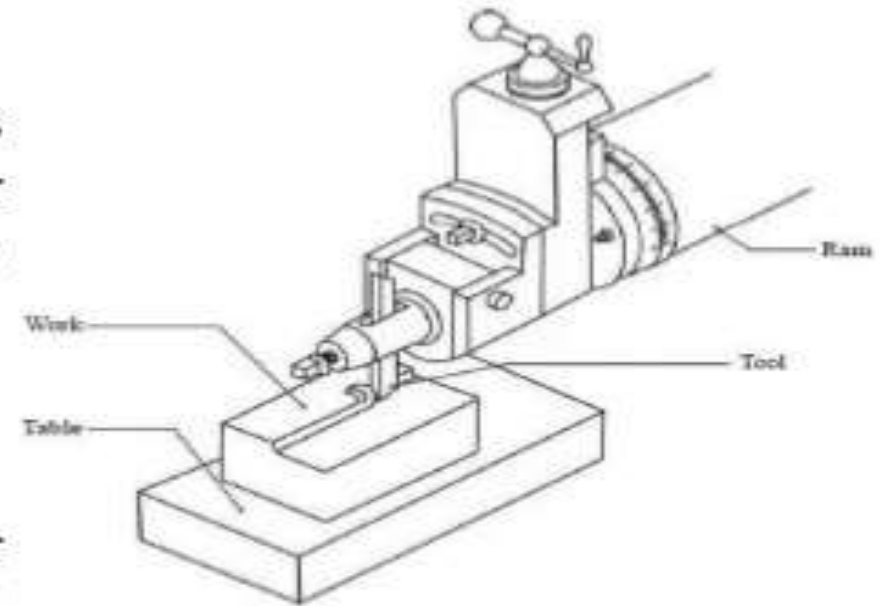


Fig 3.1 Shaping operation

Setting the Shaper for the Shaping operation

- ⦿ In the setting of a shaper m/c, setting of length of stroke, position of stroke, number of ram cycles, feed rate and position of tool head & clapper box is involved.
- ⦿ Usually the length of the stroke is adjusted more than the length of the work piece in case of removing of material from the whole length of work piece, as the shaper may achieve a good velocity through out the piece. But with a view to have the job done in less strokes and less time, the length of stroke is taken as low as possible.

Setting the Shaper for the Shaping operation

- ⦿ In addition to stroke length, the position of stroke is also important to achieve precise shape.
- ⦿ After completing every stroke, the position and length of stroke is changed, if needed.
- ⦿ Also the angle of stroke or the shaper tool is important. It is controlled by the angle of clapper box and its movement. The angle is set accordingly to the shape to be made on the work piece.

Setting the Shaper for the Shaping operation

- The tool head is set to cut the required surface of the work piece. The work pieces are usually held on a table or fitted in a vise, over the saddle.
- The forces exerted on the work piece during an operation, are directed against the fixed jaw of vise for rigidity. Here, the false jaws of copper, lead or brass are held tightly between the jaws of vise and the work piece to prevent the wear and tear due to the forces to the jaws.

Shaper size

- The size of shaper designates its longest nominal cutting stroke.
- Thus a 600mm shaper has a ram travel to drive a tool across a 600mm long surface.
- A 600mm shaper is able to machine a plane surface of (600x600)mm.
- The feasible size of overhanging ram limits the largest size of shaper.

Specifications

- Numerous other details are required to specify a shaper.
- Given below are complete specifications of a 450 mm :-

Specifications

- Length of stroke
 - Maximum vertical & horizontal travel of table
 - Maximum distance from table to ram
 - Power of motor
 - Approx. wt
 - Floor space required
 - Strokes per minute
- 450mm
 - 515mm & 500mm(respectively)
 - 15mm
 - 2.25kW / 3 HP
 - 1000kg
 - (1800x1200)mm
 - 15-90