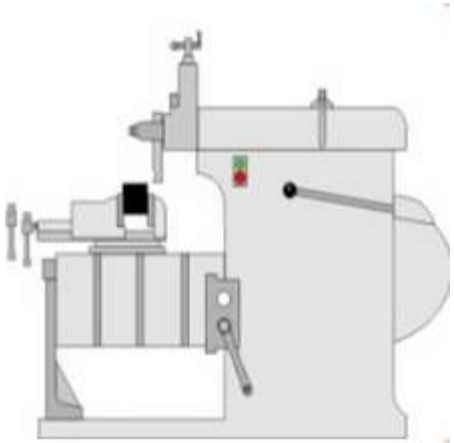
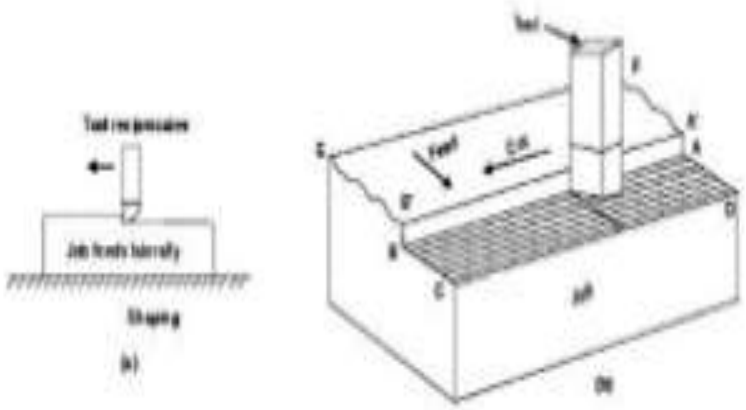
SHAPER

- The shaper is a relatively simple machine used for machining flat surfaces which may be horizontal, vertical or inclined with single point cutting tool.
- Here the tool reciprocates and the work is stationery. Tooling is simple, and shapers do not always require operator attention while cutting.



SHAPER – PRINCIPLE OF OPERATION

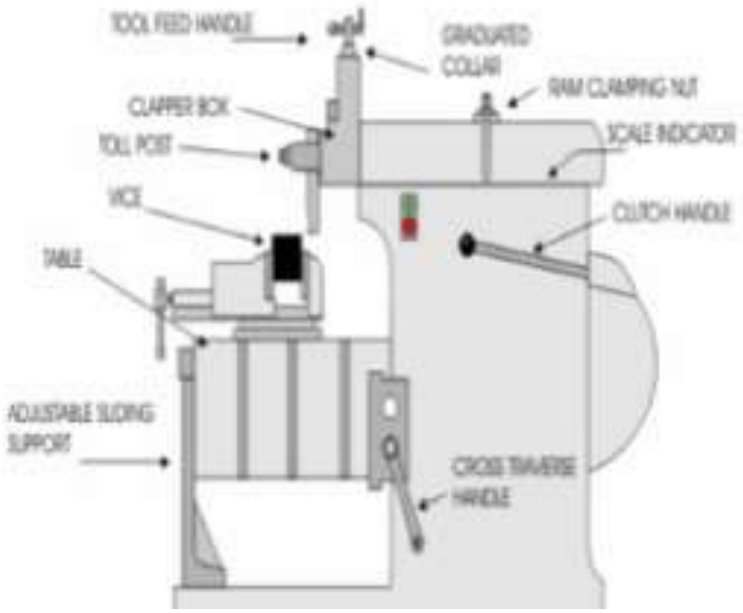
- The tool is fitted on the tool post on the front end of the ram. The ram reciprocates along with the tool to remove the metal in the forward stroke called as cutting stroke. The tool does not cut the metal in the return stroke called as idle stroke. There fore one pass is nothing but the combination of one cutting stroke and one idle stroke.



PARTS OF A SHAPER

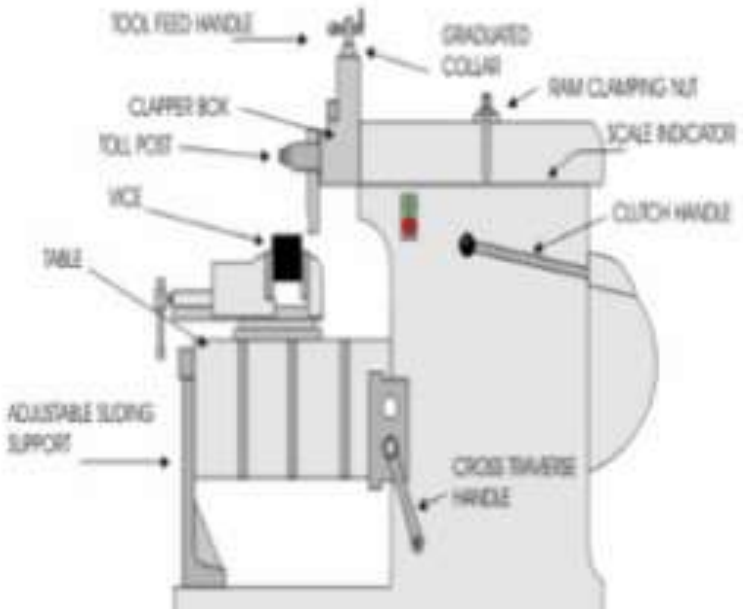
BASE:

- The base is a heavy and robust in construction which is made of cast iron by casting process. It should absorb vibration due to load and cutting forces while machining.



RAM:

- The ram slides back and forth in dovetail or square ways to transmit power to the cutter. The starting point and the length of the stroke can be adjusted.



CLAPPER BOX:

- The clapper box is needed because the cutter drags over the work on the return stroke. The clapper box is hinged so that the cutting tool will not dig in. Often this clapper box is automatically raised by mechanical, air, or hydraulic action.

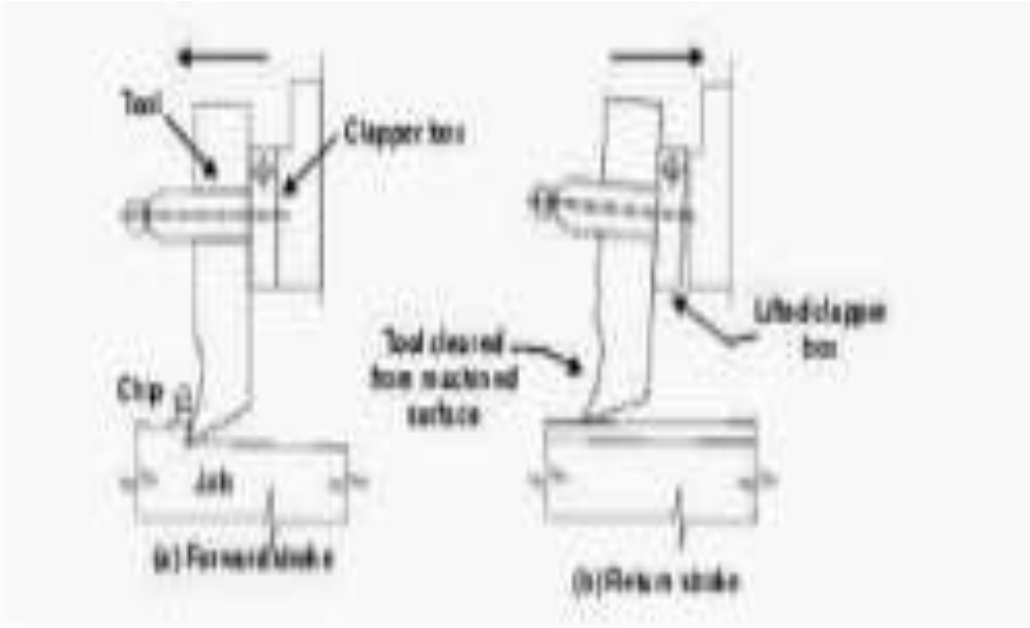
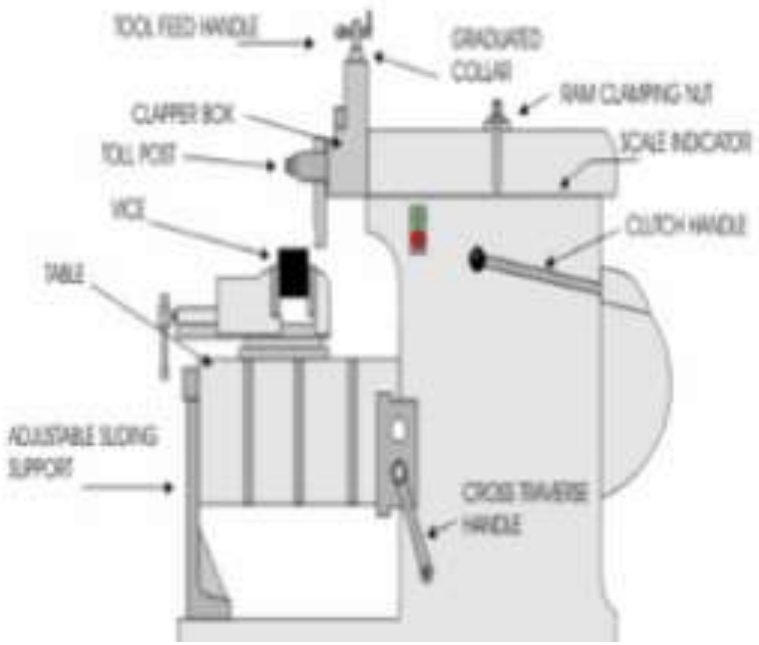


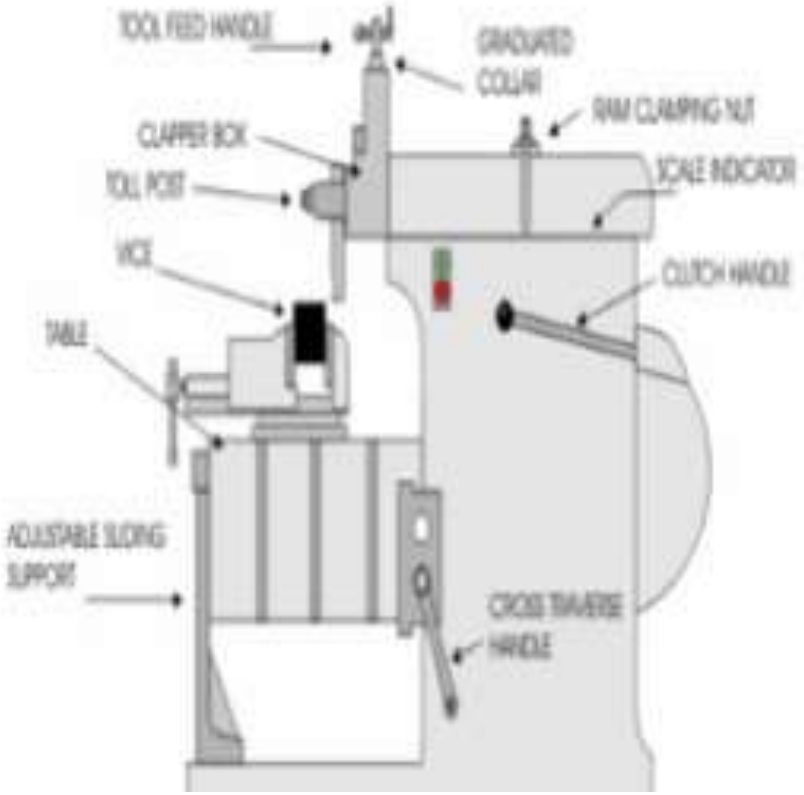
TABLE:

- The table is moved left and right, usually by hand, to position the work under the cutter when setting up. Then, either by hand or more often automatically, the table is moved sideways to feed the work under the cutter at the end or beginning of each stroke.



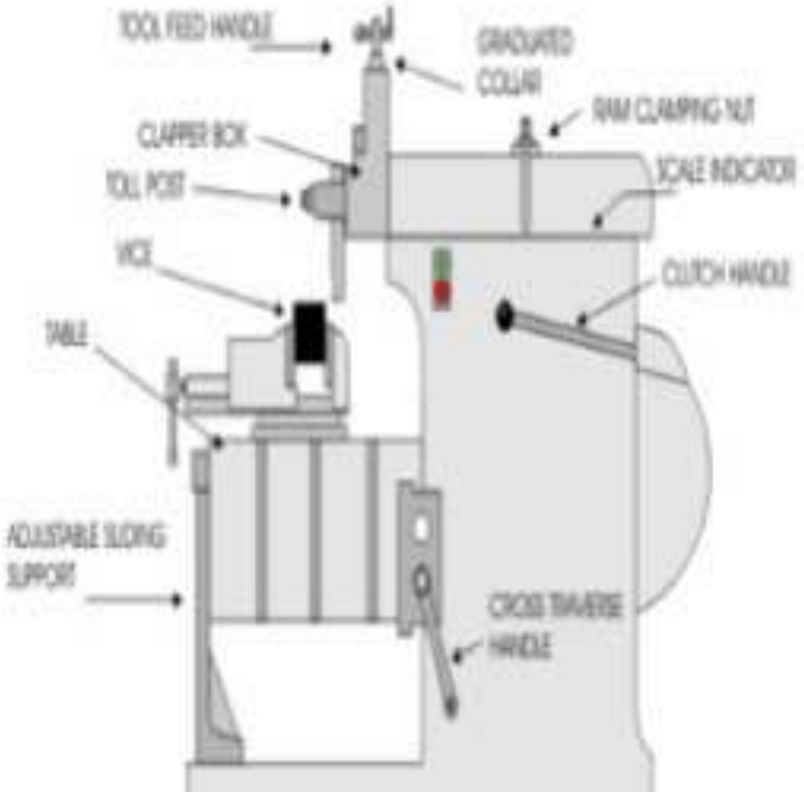
SADDLE:

- The saddle moves up and down (Y axis), usually manually, to set the rough position of the depth of cut. Final depth can be set by the hand crank on the tool head.



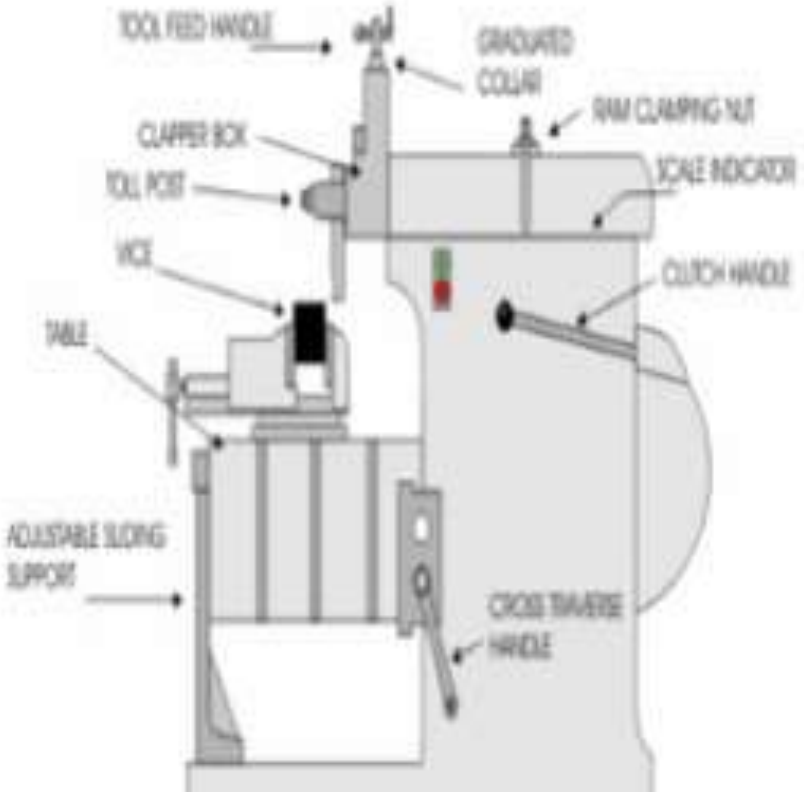
COLUMN:

- The column supports the ram and the rails for the saddle. The mechanism for moving the ram and table is housed inside the column.



TOOLHEAD:

- The toolhead is fastened to the ram on a circular plate so that it can be rotated for making angular cuts. The toolhead can also be moved up or down by its hand crank for precise depth adjustments.



SHAPING OPERATIONS

- The tool post has been turned at an angle so that side of the material can be machined
- Major Applications: Square edges, side machining of blocks, etc
- The top slide is slowly feed into the material so that a ‘rack’ can be machined for a rack and pinion gear system
- Major Applications: Teeth cutting in gears and other applications where teeth like structures are required.

JOB SURFACES GENERATED BY SHAPER