27/3/2012

4:- LATHE MACHINE

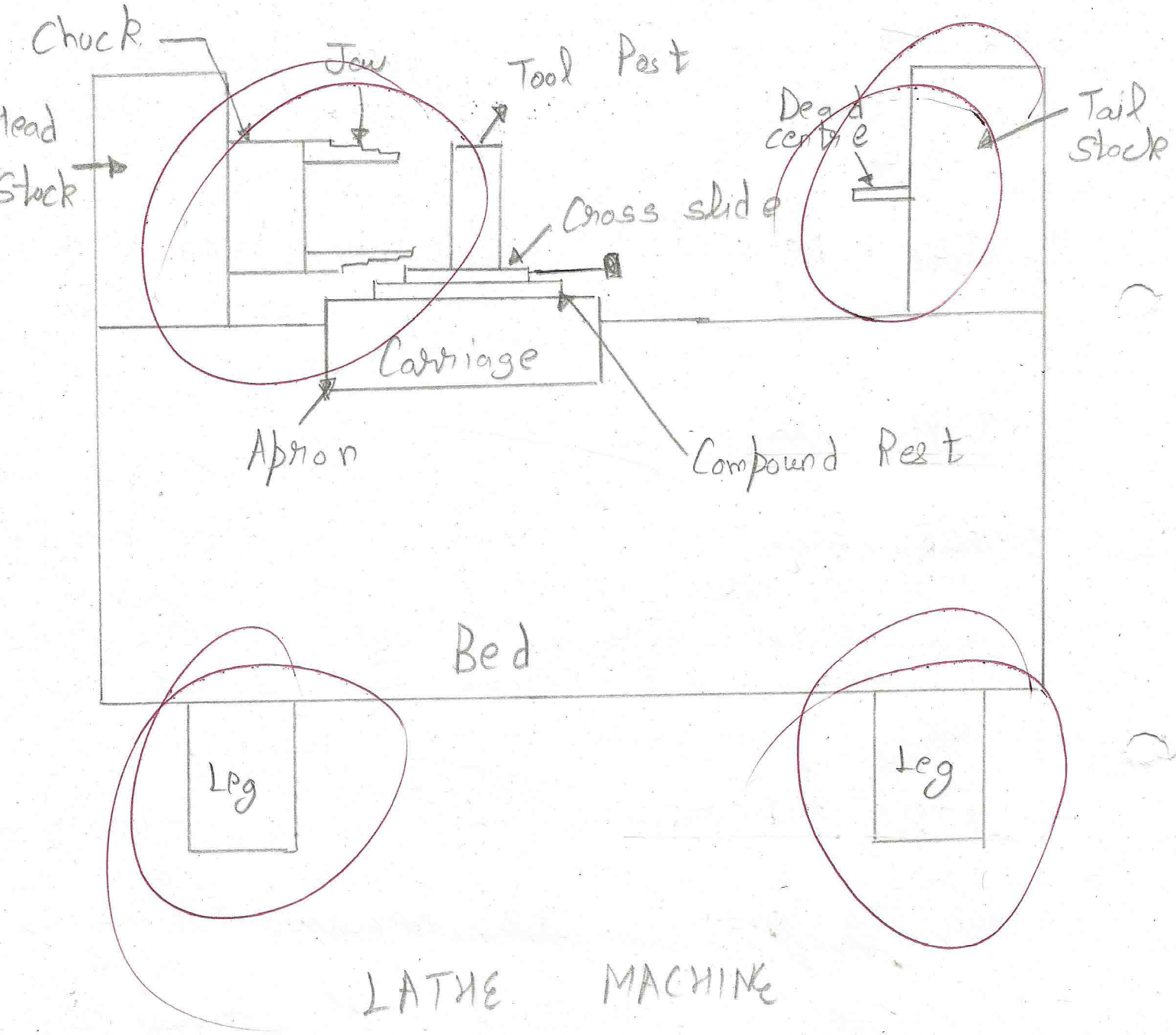
* Aim:- To make a job of given specifications by performing various operations on a lathe machine.

* Material Required:- Mild steel rod, hand hack saw, vernier calliper, Bench vice, lathe machine.

* Tools Used:-

→ Hack Saw → It consist of a wooden handle and an iron frame. A blade made of high carbon steel is attached to the frame by means of a screw. It is used for cutting mild steel rod.

→ LATHE MACHINE → The main function of a lathe is to remove metal from a job to give it the required shape & size. The job is securely and rigidly held in the chuck or in between centres of the lathe machine and then turn it against a single point cutting tool which will remove metal from the



LATHE MACHINE

job in the form of chips. Besides the simple turning operation, lathe can be used to carry out other operations also, such as drilling, reaming, boring, taper turning, knurling, screw thread cutting, grinding, etc.

* MAIN PARTS OF A LATHE MACHINE

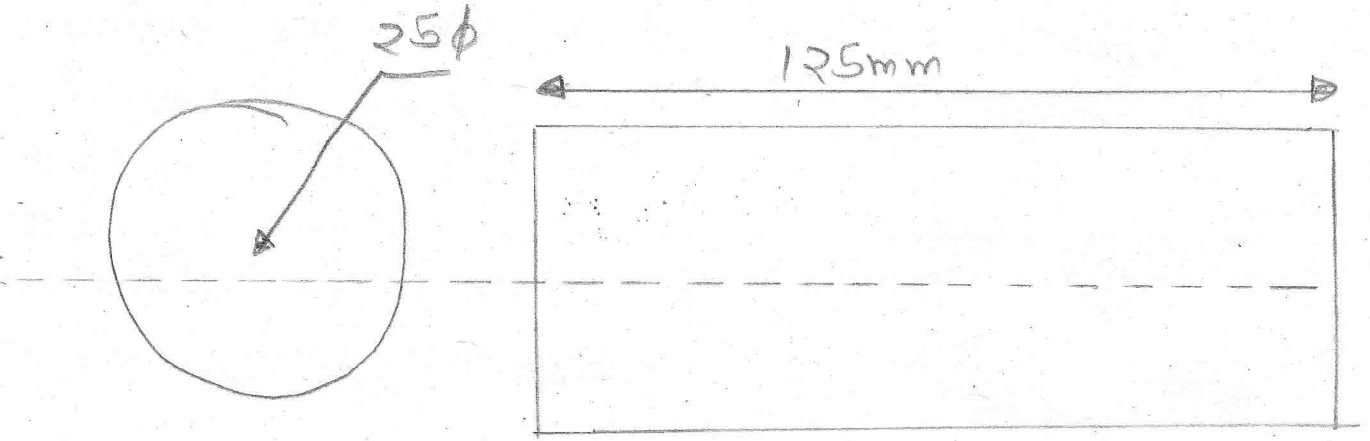
→ Bed → The bed of a lathe machine is the base on which all other parts of lathe are mounted. On the left end of the bed, headstock of lathe machine is located while on right side tailstock is located. The carrige of the bed machine rests over the bed and slides on it. Generally cast iron alloyed with nickel & chromium material is used for manufacturing of the lathe bed.

→ Head Stock:→ The main function of headstock is to transmit power to the different parts of lathe. It comprises of the headstock casting to accomodate all the parts within it including gear train arrangement. The main splindle is adjusted to it, which possesses live centre to which the work can be attached.

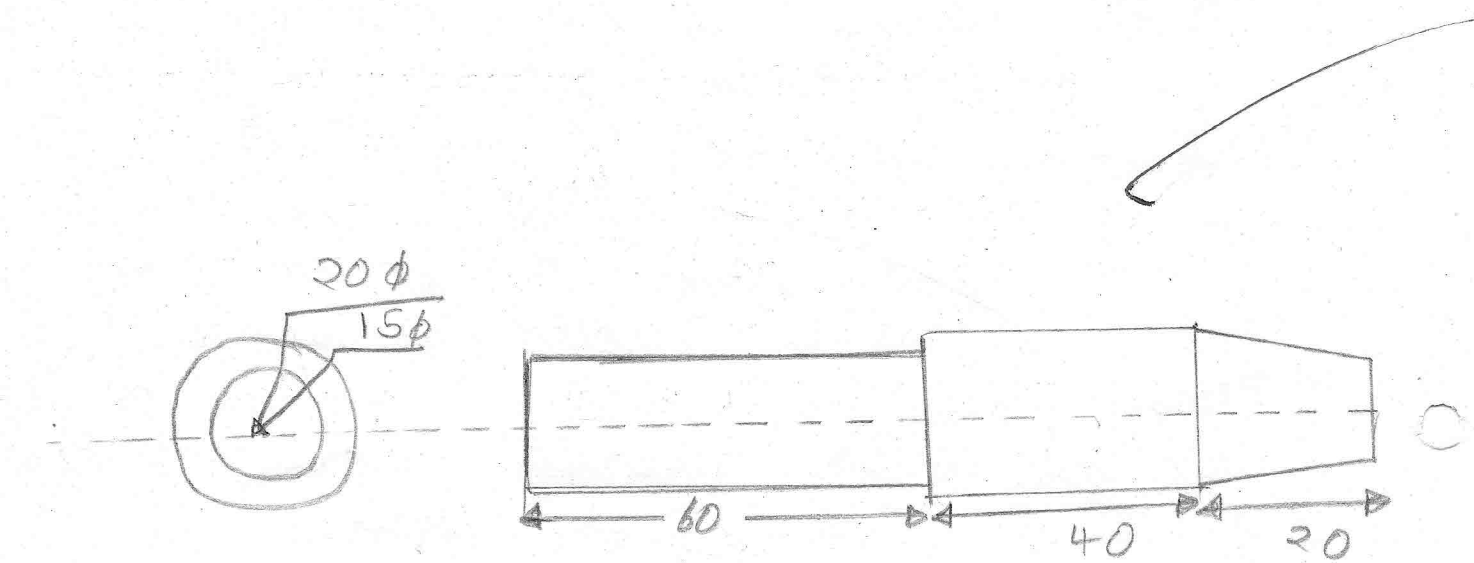
→ Tail Stock → It is used for primarily giving an outer bearing and support the circular job being turned on centers. Tail stock can be easily set or adjusted for alignment or non-alignment with respect to the spindle centre and carries a centre called dead centre for supporting one end of the work.

→ Carriage → Carriage is mounted on either outer guideways of lathe bed and it can move in a direction parallel to the spindle axis. It comprises of important parts such as apron, cross slide, saddle, compound rest & tool post. The lower part of the carriage is termed as apron. The cross slide is basically mounted on the carriage, which generally travels at right angles to the spindle axis.

→ Tool Post → It is located on the top of the compound rest to hold the tool & enable it to be adjusted to a convenient position.



RAW MATERIAL



Final Job

All Dimensions are in mm

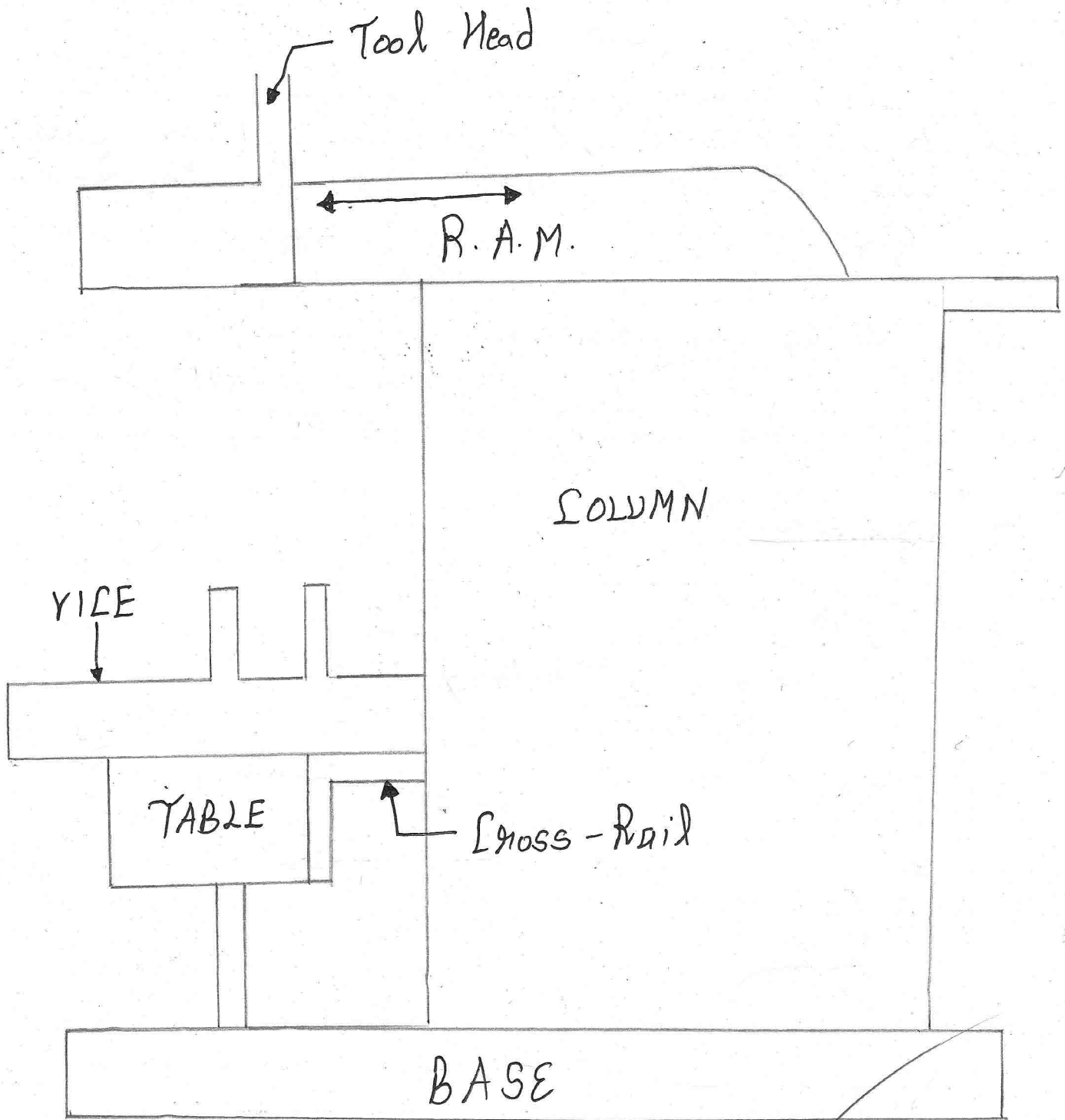
→ Cross slider → It comprises a casting machined on the undesigned attachment & the saddle.

✱ PROCEDURE

→ Hold the work piece in the chuck of the lathe machine.
→ Mark the dimensions of the workpiece.
→ Adjust the cutting tool
→ Now set up the machine to automatic movement.
→ Now move further & cut the workpiece into a diameter of 20mm and length 60mm.
→ & Now, facing the end of workpiece, ream the workpiece at angle 45°.
→ File the workpiece to get fine finishing of the workpiece.

✱ PRECAUTIONS:-

① Aprons must be worn tightly as metal chips may hit & cause harm to body parts.



BLOCK DIAGRAM OF SHAPER

② No lose clothes, ties should hang outside, else it can come into the machine operation & can cause severe harm.

③ Turning & threading should be slow & steady to give a better shape & lustre to the workpiece.

* References

Workshop Technology Vol. 2 by B.S. Raghuvanshy.