Shivamkumar
(20212028)

ASSIGNMENT-7

Date 26/02/2022
Page No.
Shivalal

"Fitting Shop"

Introduction :-

The term "Bench work" refers to production of components by hand on the bench, whereas fitting deals with the assembly of mating parts, through removal of metal, to obtain the required fit.

Both the bench work and fitting requires the use of number of simple hand tools and considerable manual effort. The operations in above work consist of filing, chipping, scraping, sawing, drilling, tapping etc.

Fitting Tools :-

① Bench vice :- It is a work holding device. It is fixed to the bench with bolts and nuts. The vice body consist of two main parts, fixed jaw and movable jaw. Jaws are made up of hardened steel. The vice body is made up of Cast iron. which is strong in Compression.

② V-Block with clamp :- The V-block is a rectangular or Square block with a V-groove on one or both sides, opposite to each other. The angle of the V is usually 90°. It is used to hold Cylindrical work securely.

Marking and Measuring Tools :-

① Surface plate :- The surface plate is machined to fine limits and is used for testing the flatness of work piece. Surface plate is made up of cast iron, hardened steel or granite stone.

② Angle plate :- It has 2 surfaces machined at 90° used to marked out upright faces. It is made of cast iron.

③ Scriber :- A scriber is a slender steel tool, used to scribe or mark lines on metal work pieces. It is made of hardened and tempered high carbon steel.

④ Try-square :- It is used for checking the trueness of an object and also for making. It has an angle of 90°.

⑤ Punches :- These are used for making indentations on the scribed lines.

ⓐ Dot Punch :- This is used to lightly indent along the layout lines. The angle of punch is 60°

ⓑ Centre Punch :- It is used to mark the location of the holes to be drilled. The angle of punch is 90°.

⑥ Calipers :- They are used to measure linear dimensions. Eg. vernier calipers.

Cutting Tools :-

① File :- A file is a hardened piece of steel containing a percentage of carbon. Fine teeth are cut on the surface in slanting rows.

② Chisel :- Removing of metal or chipping is done with the help of chisel.

③ Hacksaw :- Hacksaw is used to cut metal by hands. It's blade has number of teeth ranging from 5 to 15 per centimetre.

④ Twist Drill :- It is used for making holes. Cutting angle of the twist drill is 118°.

⑤ Taps :- A Tap is a hardened steel tool, used for cutting internal threads in a drilled hole.

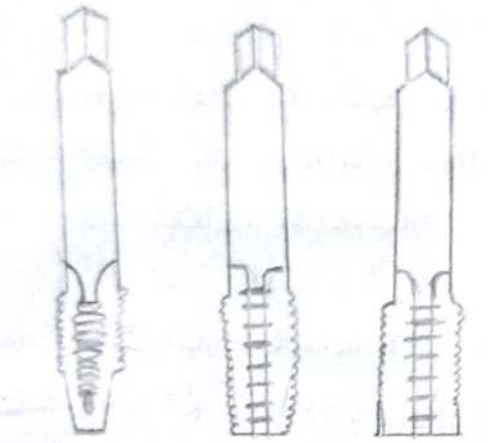
⑥ Dies :- Dies are used to cut external threads on round rods. The die is fitted inside a die holder called diestock.

⑦ Bench Drilling Machine :- Bench drill Machine is used for fastening parts with rivets, bolts or for producing internal threads.

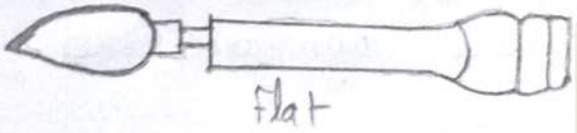
⑧ Hammers :- Hammers are used to strike on a tool fastener or workpiece.

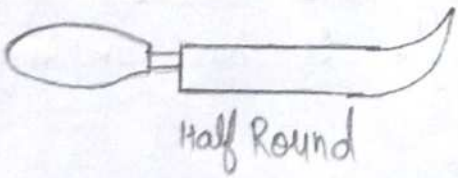
"Cutting Tools"

① Taps

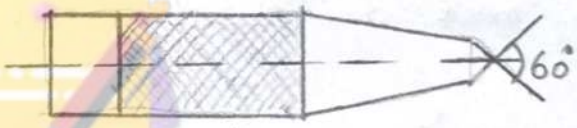


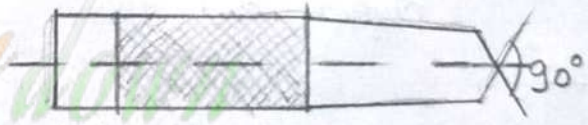
② Twist Drill



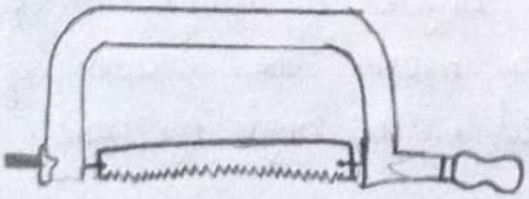


③ Scrapers





④ Punches



⑤ Hack saw

⑥ Cross Peen hammer

"cutting Tools"

Chisels

Flat

Crosscut

Various file cross sections -

Flat

Hand

square

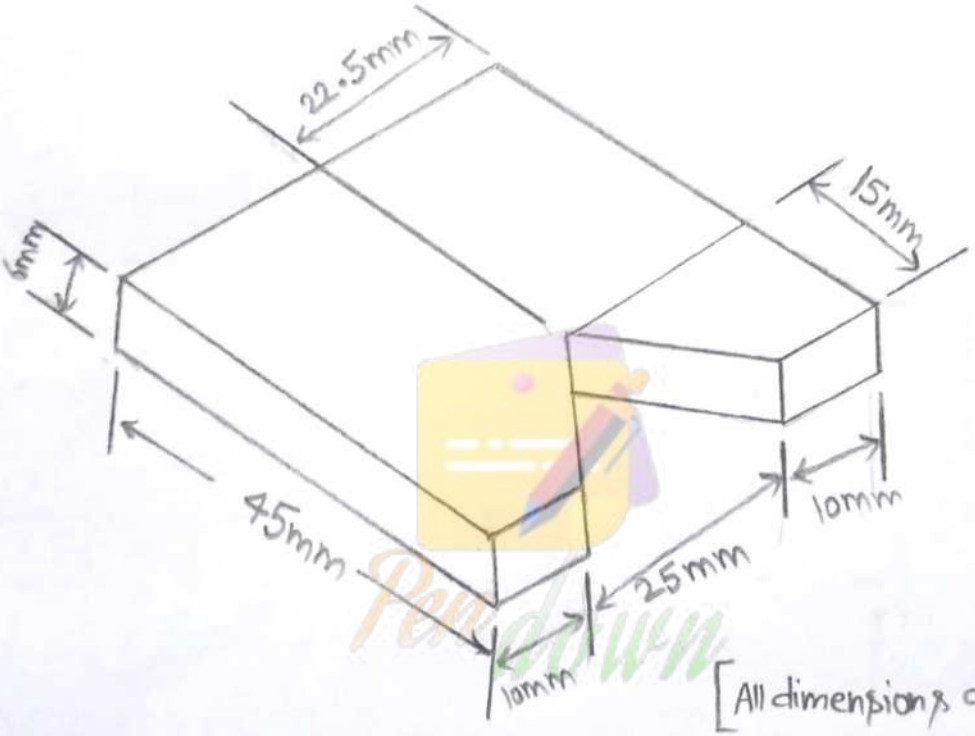
Round

Triangular

Half Round

Knife edge

"Model-1"



[All dimensions are in mm]

"V-Groove"

Model-1

"V- Groove"

Aim:- To make a V- Groove on a given M.S flat plate as in the dimensions shown in figure.

Material required:- Mild steel flat of 50 x 50 x 6 mm

Tools required:-

- steel rule
- Scriber
- centre punch
- Surface plate
- Vernier height gauge
- Hack saw
- Flat file
- Try square

List of operations:-

- Laying out and marking
- Punching
- Cutting
- Rough filing
- Smooth filing

Procedure:-

① Copy the drawing and do markings

② Mark out the layout on the workpiece then punch the required lines.

③ Cut unwanted material from the workpiece using hacksaw.

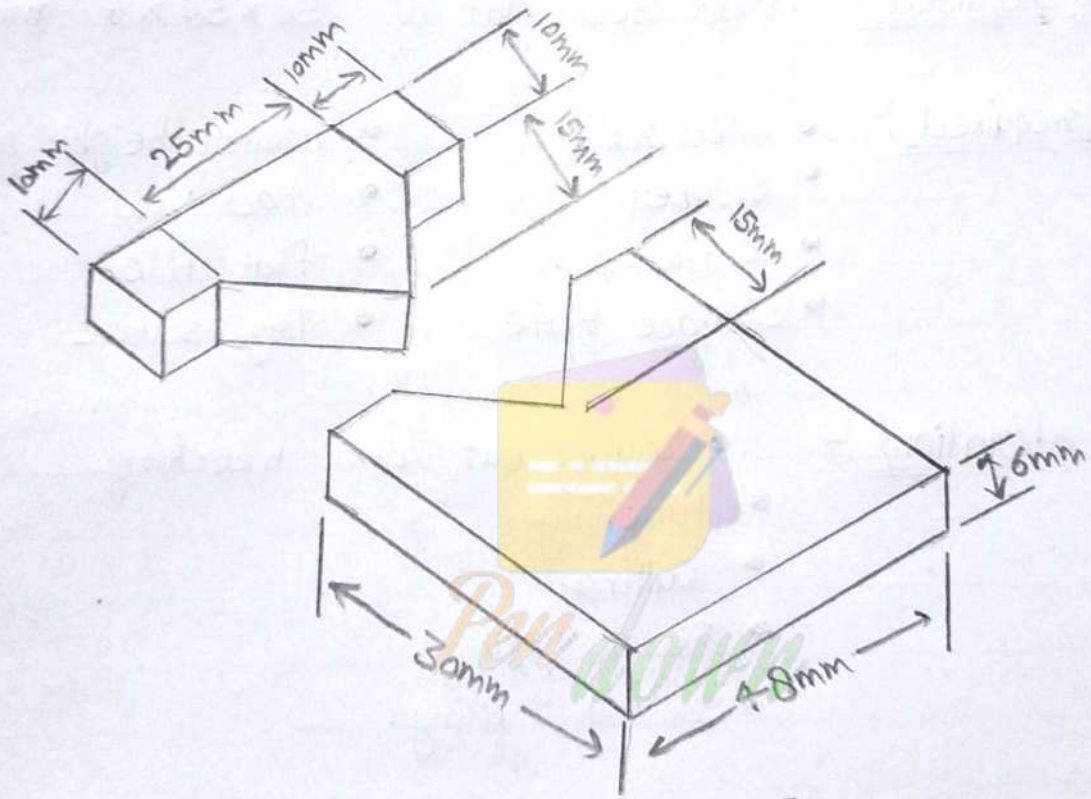
④ After Completing the square, cut the V-groove

⑤ File the V- groove to the exact angle

⑥ Check the angle of V-groove using try square

⑦ Finish the model with smooth file.

"Model-2"



[All the dimensions are in mm]

V-joint

"Model-2"

"V- Joint"

Aim :- To make a V-joint as per the given dimensions shown in figure.

Material required :- Mild steel flat of 50X50X6 mm and 30X50X6 mm.

Tools required :-

- steel rule
- Scriber
- centre punch
- surface plate
- Vernier Height gauge
- Hack saw
- Flat File
- Try square

List of operations :-

- Laying out and marking
- Punching
- Cutting
- Rough filing
- Smooth filing.

Procedure :-

1. Copy the given drawing.
2. Mark the layout on workpiece then punch the required lines.
3. Complete the cutting operation of two pieces with the help of hack saw.
4. Filed the two pieces together to form the joint.
5. check the joints for dimensional accuracy using try square.
6. Finish the workpiece using smooth filing.