STUDY of FITTING SHOP

Safety Precautions

1) Do not use a file without a handle
2) Do not use punches and hammer with mushroom head
3) Do not use hammer with a loose head
4) Keep your hands away from moving parts
5) Ensure that the work piece is clamped in the vice firmly and securely.
6) Keep the hand tools and vice clean
7) Always use a brush to remove any chips
8) Always roll up your selves or wear short selves
9) Tuck in your shirt before starting any operation
10) Remove wrist watches, rings, bracelets, bangles etc. since they can lead to injuries
11) Wear always safety shoes

FITTING SHOP
STEP FITTING

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Ex No: 4
Date:

AIM:
To construct step fitting using mild steel work piece

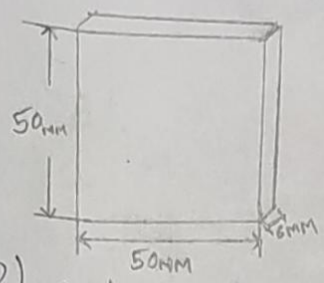
Application:
fabrication industries, Aircraft industries, Automobile industries

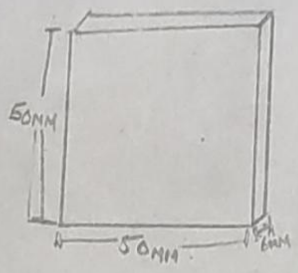
Material specification
Mild steel plates of dimension 50mm x 50mm x 6mm

Tool Required
1) Steel rule 2) Try square 3) Jenny caliper 4) 12" Flat rough file
5) 6" Flat smooth file 6) 6" Try angular file 7) Pot Punch 8) Ball pen hammer
9) Bench vice 10) Hacksaw frame with blade

Sequence of operation
1) Preparation 2) Marking 3) Cutting 4) Filling 5) Finishing 6) Fitting

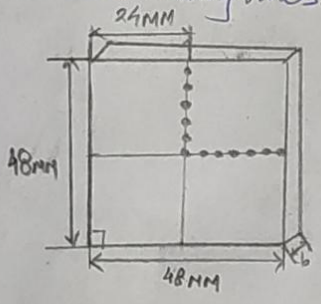
Working Steps:
1) Preparation
   1) Check the initial dimensions using steel rule
   2) fix the job on a bench vice and file the two adjacent sides using a flat file to form right angles
   3) Checking for the perpendicularity with try square

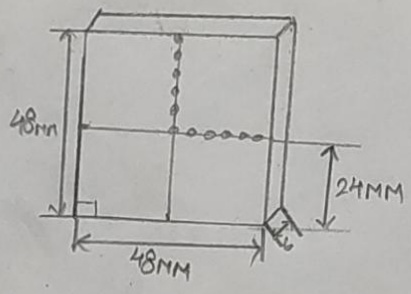




2) Marking

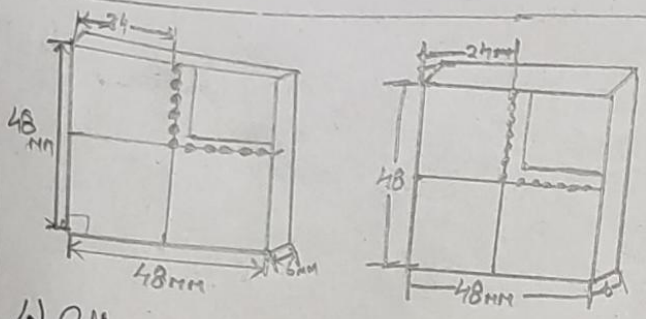
1) Apply chalk on the work surface
2) Measure the given dimension using jenny caliper from the steel plate
3) Transfer the measured dimension to work piece
4) Mark the dimensions on the work piece with right angle as reference edge
5) Repeat the above steps with the next right angle side as reference edge to mark the dimension.
6) Scribe line along the marked dimensions on the workpiece. Indicate the unwanted portion
7) Make dots along these lines using dot punch, which is called as punch lines.
8) Draw line parallel to these punch lines at a distance of 2 mm from them which are called cutting lines.





Cutting

1) fix the work piece in the bench vice in such a way that the cutting line is perpendicular to the jaws of vice
2) Cut along the cutting line
3) Repeat the step till cutting is finished along all the cutting line by arranging the work piece in the vice
4) Must ensure that cutting is carried out along all the cutting lines.



4) filling

a) fix the work piece in the bench vice in such a way that the cutting edges (punch lines) are parallel to the jaws

b) File the cut edges using flat rough file to a distance of 2mm. So that the punch lines are exposed

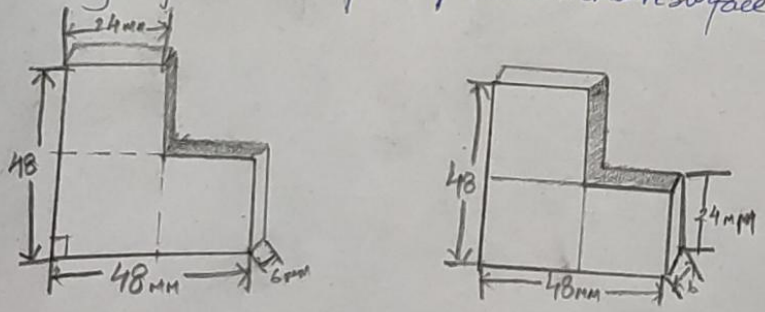
c) Remove and refit the work piece in the bench vice to make the next set of cut edges parallel to the jaws

d) File the cut edges using flat rough file to a distance of 2mm.

e) Must ensure that filling is carried out along all the cutting edge punch line

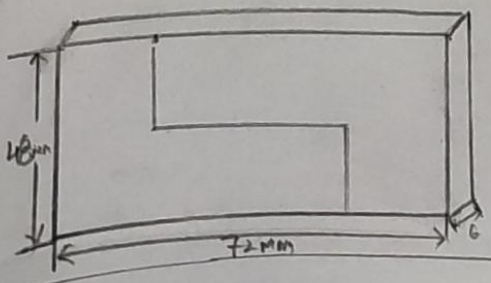
5) finishing

a) Using a flat smooth file to produce a smooth surface finish in all the filed edges



6) fitting

Check for true form with a mating gauge and for symmetry about the axis with a vernier caliper. The fitting accuracy is considered if both contours make without misalignment and clearances



Pre Lab Question

1) what is filting?
fitting is working a part to make it fit its mating part in a joint. This mating part should be completely finished

2) Mention process in the filting shop?
1) Preparation 2) marking 3) cutting 4) filling 5) finishing 6) fitting

3) List out the filting tools?
1) Calliper 2) Try square 3) steel rule 4) jenny calliper 5) Hammer etc.

4) Describe filling
filing is a material removing process in manufacturing

5) list out type of file
1) ~~Rough~~ flat Roughfile
2) flat Smoothfile

Post Lab Question

1) what is the angle of Dot Punch?
60°

2) How to check the perpendicular?
by using try square

3) Expansion of TPI
Teeth per inch

4) what is the ~~teeth~~ count of steel rule
1MM

5) How to fix the blade in the Hacksaw frame?
1) Loosen the wing nut near the hacksaw's handle. Loosen the nut by turning it counter-clockwise Ensure the wing nut is loose enough so you can enough so you can remove the old from the blade
2) Remove the old blade frame. Remove the table by lifting it off the blade retaining pins at each end of the frame

3) Install a new ~~blade~~ blade onto the blade retaining pins. Ensure the blade's teeth point away from the handle

4) Tighten the wing nut by rotating it clockwise until the blade is tight

5) Make a test cut on a piece of scrap metal held in a vise. Tighten the wing nut further if the blade binds or flexes during the cut.

Result

Thus a step filling is obtained out of the given work piece with specific dimensions shape, finish and accuracy with proper filling