Name - Ayush Jain
SAP ID - 60004200132
Branch - Computer Engineering

Workshop Term Work

Experiment No. 1 : T-LAP JOINT

Aim: To make a T-lap joint

Tools required:

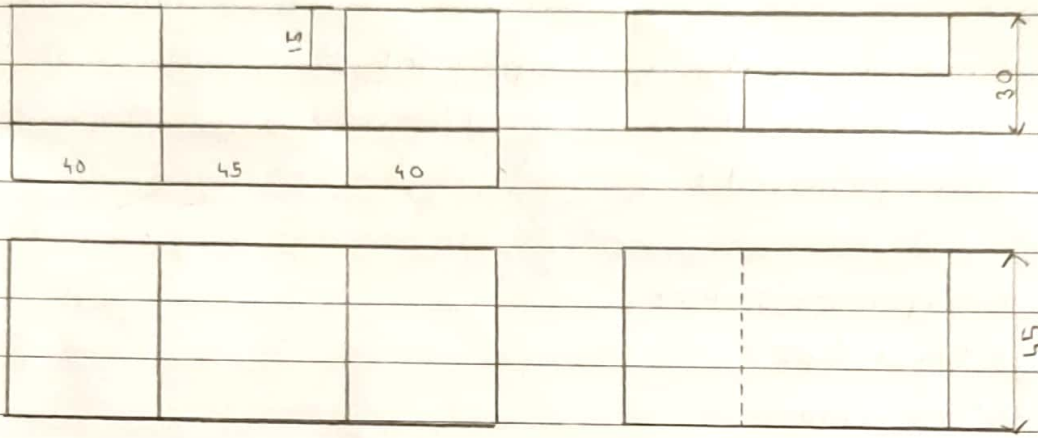
1) Carpenter's vice.
2) Steel Rule.
3) Try square.
4) Jack plane
5) Scriber
6) Cross cut saw
7) Marking guage
8) Firmer chisel
9) Mallet
10) Wood rasp file and smooth file.

Material required: Wooden pieces of size 50x35x250mm - 2 Nos.

Sequence of operations.

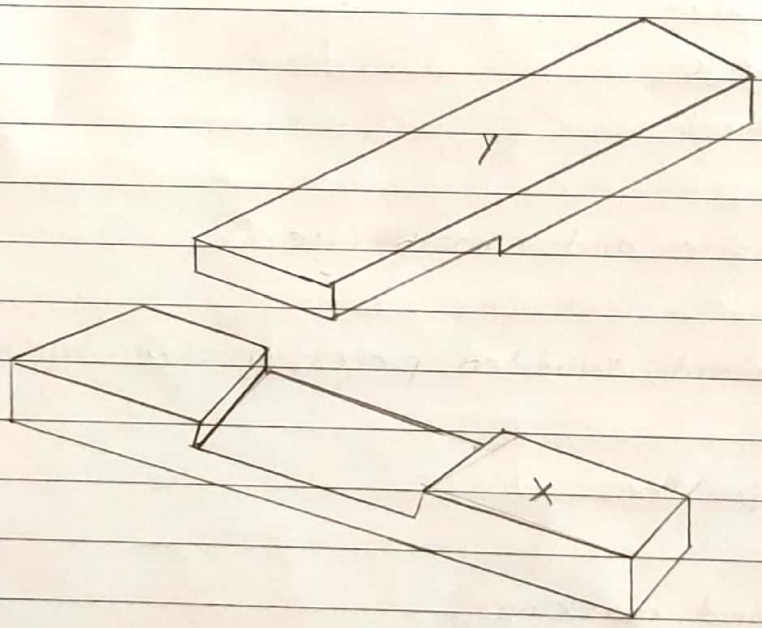
1) Measuring and marking.
2) Planning.
3) Check for squareness
4) Removal of extra material.
5) Sawing.
6) Chiseling.
7) Finishing.

600042001 32



T-LAP JOINT

All dimensions are in mm



T- Lap Joint

Procedure:

1) The given reaper is checked for dimensions.
2) They are planed with jack plane and checked for straightness.
3) The two surfaces are checked for squareness with a try square.
4) Marking guage is set and lines are marked at 30 and 45 mm to mark the thickness and width of the model respectively.
5) The excess material is first chiseled with firmer and then planned to correct size.
6) The mating dimensions of the parts X and Y are then marked using steel rule and marking gauge.
7) Using the crosscut saw, the portions to be removed are cut in both the pieces, followed by chiseling.
8) The ends of both the parts are chiseled to the exact lengths.
9) The fine finishing is given to the parts, if required so that; proper fitting is obtained.
10) The parts are fitted to obtain a slightly tight joint.

Safety precautions:

1) Loose cloths are to be avoided.
2) Tools to be placed at their proper placed.
3) Hands should not be placed in front of sharp edged tools.
4) Use only sharp tools.
5) Care should be taken, when thumb is used as a guide in cross cutting and ripping.
6) Handle while chiseling, sawing and planning with care.

Result :

T-lap joint is made as per the required dimensions.

Experiment No. 2 - V-Fitting

Aim: To make M.S plate into required model by V-fitting.
To make V-fitting from the given two M.S pieces.

Tools required:

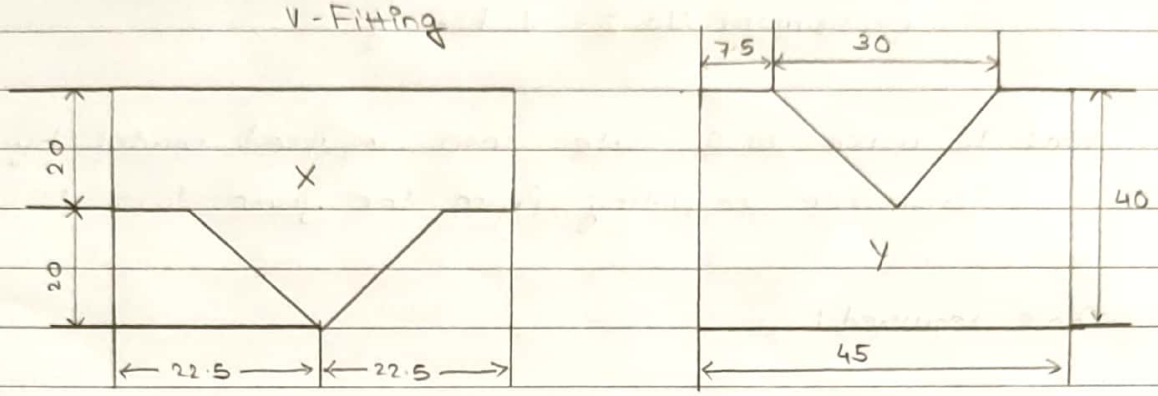
1) Bench vice
2) Steel rule
3) Try square
4) Ball peen hammer
5) Scriber
6) Hack saw with blade
7) Dot punch and Centre punch.
8) Surface plate.
9) Vernier height gauge
10) Rough and smooth flat files
11) Flat chisel and triangular file.

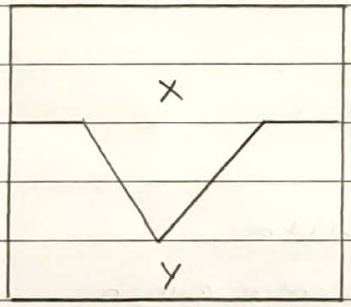
Material required: Mild steel (M.S) plate of size 48X34-2 Nos.

Sequence of Operations:

1) Filing.
2) Checking flatness and square ness
3) Marking and measuring.
4) Punching.
5) Sawing
6) Chipping
7) Finishing.

V-Fitting





All dimensions are in mm

Procedure :

1) The burrs in the pieces are removed and the dimensions are checked with a steel rule.
2) The pieces are clamped one after the other and the outer mating edges are filed by using rough and smooth files.
3) The flatness, straightness and square ness i.e. right angle between adjacent sides are checked with help of Try-square.
4) Chalk is then applied on the surfaces of the two pieces.
5) The given dimensions of the V-fitting are marked with help of vernier height gauge carefully.
6) Using the dot punch, dots are punched along the above scribed lines.
7) Using the hack saw, the unwanted portions are removed.

8) Using the flat chisel, the unwanted material in the pieces Y is removed.
9) The cut edges are filed by the half round file.
10) The corners of the stepped surfaces are filed by using a square or triangular file to get the sharp corners.
11) The pieces (X and Y) are fitted together and the mating is checked for the correctness of the fit.

Safety precautions:

1) Care is taken to see that the marking dots are not crossed, which is indicated by the half of the punch dots left on the pieces.
2) Apply pressure in forward direction during hack sawing.
3) Don't rub steel rule on the job.
4) Fix blade in hack saw frame with correct tension.
5) During hack sawing the coolant like water or lubricating oil is to be used.
6) Use precision instruments like vernier calipers and vernier height gauge carefully.
7) Files are to be cleaned properly after using.

Result:
V-fit is made as per the required dimensions.

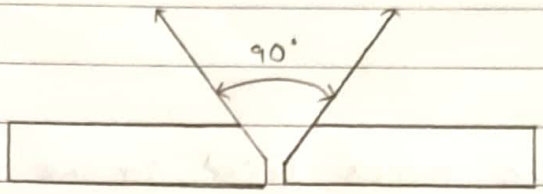
Experiment No. 3 : Butt Joint

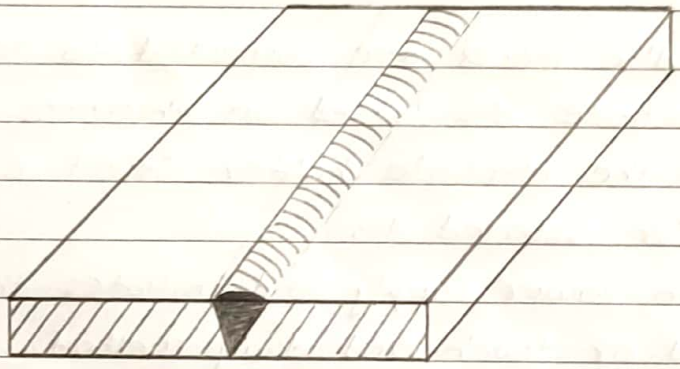
Aim: Preparation of single V-butt joint as show in figure using shielded metal arc welding process.

Material required: 2 mm flat pieces of given size.

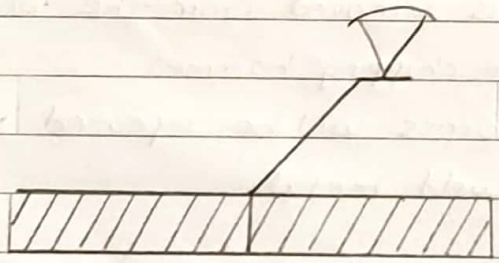
Tools required:

1) Welding transformer,
2.) connecting cables.
3) Electrode holder.
4) Ground clamp.
5) Electrodes.
6) Hipping Hamper.
7) Welding shield etc.





Representation of single V butt joint



Symbolic representation

V - butt joint

Procedure:

1) The given metallic pieces filled to the desired size.
2) On both pieces beveled in order to have V groove.
3) The metallic pieces are thoroughly cleaned from rust grease oil, etc.
4) The metallic pieces are connected to terminals of Transformer.
5) Select electrode dia based on thickness of work piece and hold it on the electrode holder. Select suitable range of current for selected dia.
6) Switch on power supply and initiates the arc by either striking arc method or touch and drag method.
7) Take welding to be done before full welding.
8) In full welding process, after completion one part before going to second part. Slag is removed from the weld bed. With the metal wire brush or chipping hammer.
9) Then the above process will be repeated until to fill the groove with weld bed or weld metal.

Precautions:

1) Use goggles, gloves in order to protect the human body.
2) Maintain the constant arc length.

Result: Butt joint is prepared as shown in figure by using arc - welding process.