

Indian Institute of Technology Patna

ME | MECHANICAL ENGINEERING WORKSHOP
110

WELDING

Report

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JOB REPORT

Objective:

To prepare a V Butt joint by carving two ferrous metal pieces by Arc Welding Process.

Tools used:

1. Marking/Measuring Tools:

Steel rulers, Try-square, Bevel Protractor, Scriber

2. Cutting Tools:

File, Hacksaw

3. Power source:

Step-down transformer (stepping voltage upto 80 volts)

4. Welding Equipment:

Coated, consumable electrodes, Electrode holder

5. Cables and Cable connectors

6. Chipping Hammer

7. Wire Brush

8. Safety Equipment:

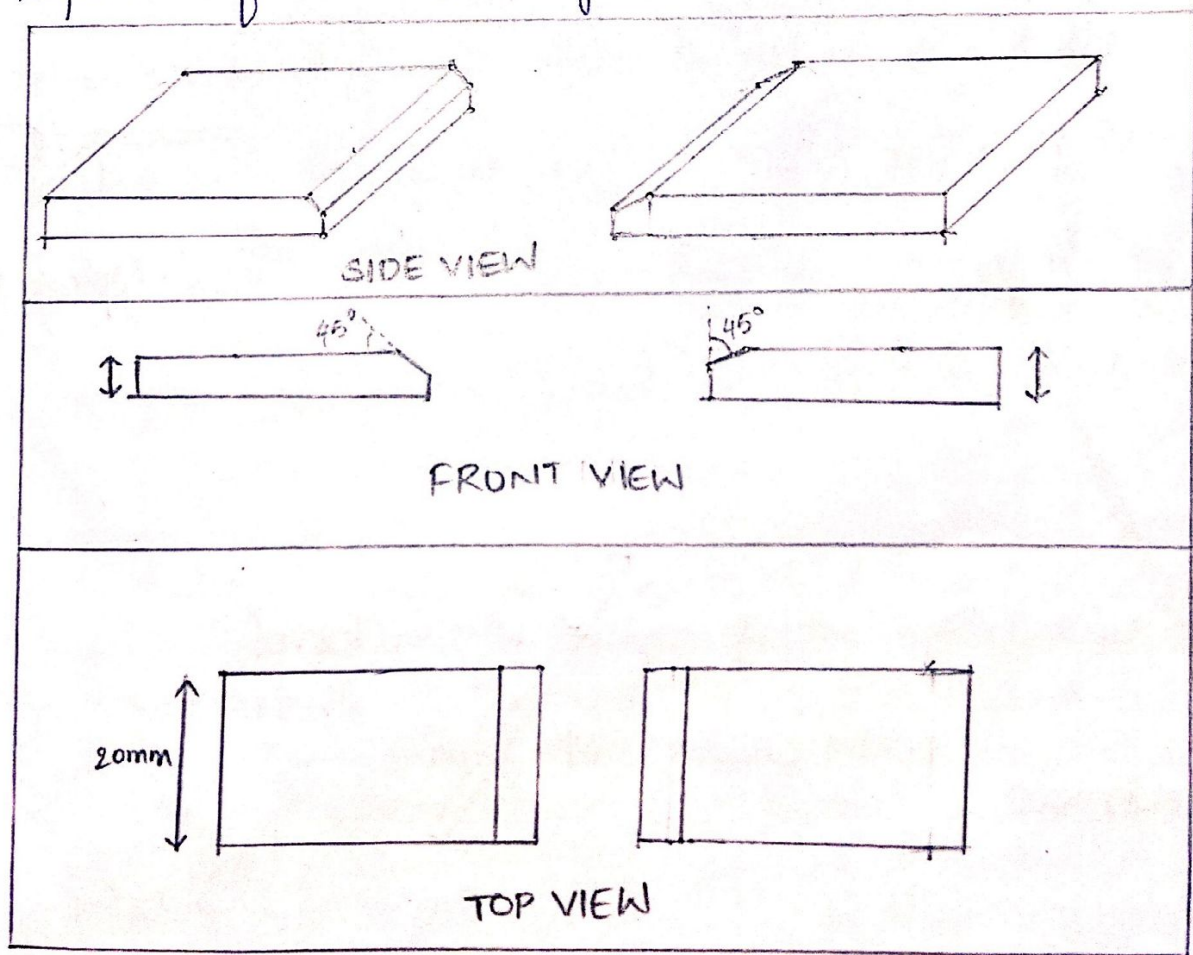
Helmet, Safety goggles, Hand gloves.

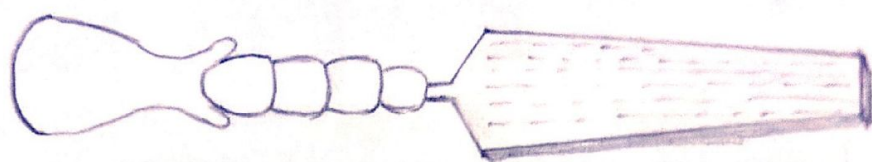
Operations Performed:

1. Marking
2. Filing
3. Edge Preparation
4. Joint Preparation
5. Surface Cleaning

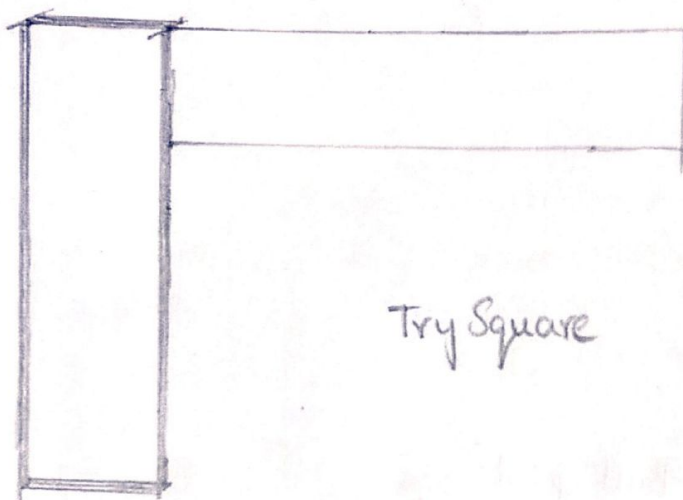
DIAGRAMS:

① Preparation of V-Butt joint/edge

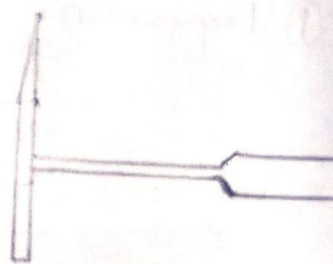




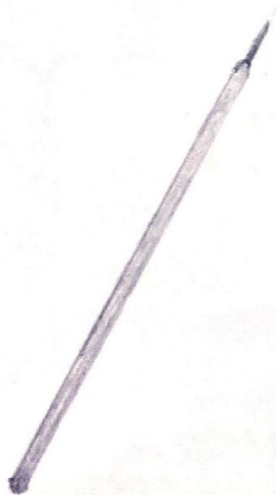
File



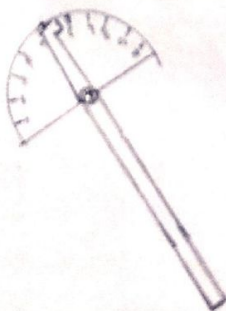
Try Square



Chipping Hammer



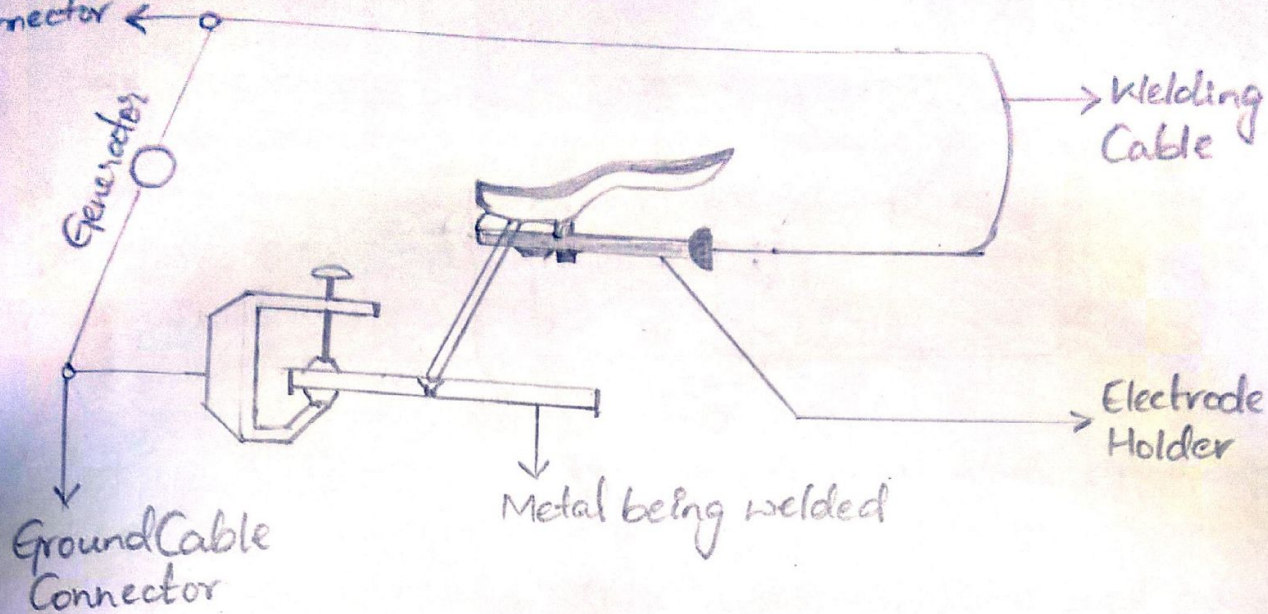
Electrode



Bevel
Protractor

ii) Welding Apparatus

Welding Cable
Connector



Procedure:

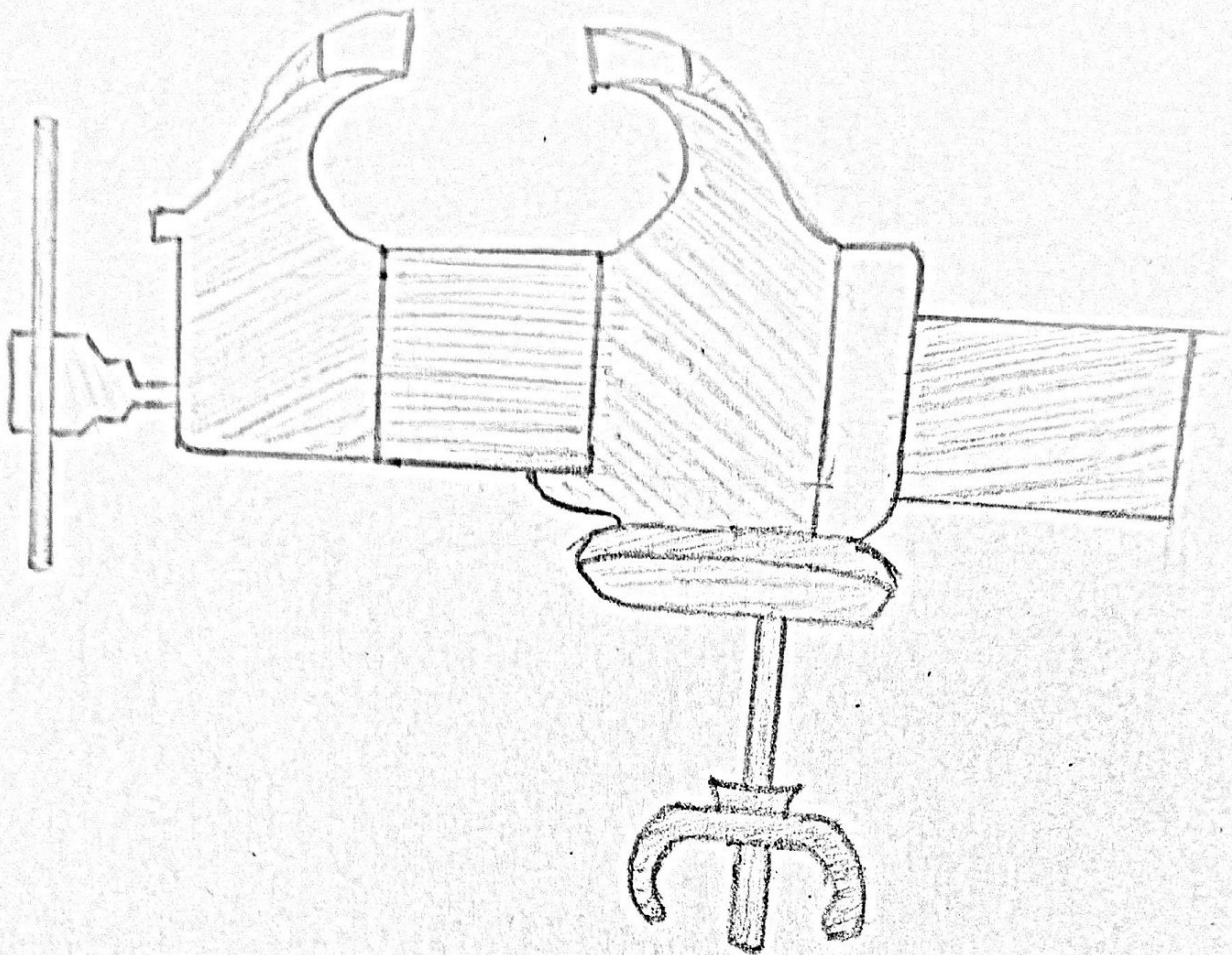
Preparing edges of test specimen

1. Marking:

When the workpiece is given to us, we should see whether all the edges are at right angles, if not, mark using the scriber. the new edges of the workpiece at which V-butt edge is to be made.

2. Filing:

Now, we shape the edge of the workpiece at which edge should be made, using the file.



BENCH VICE

3. Edge Preparation

Once the edge is making right angles with adjacent edges, we ~~mark~~^{divide} on the height of the workpiece into half so that we obtain a V-butt edge making an angle 45° with the remaining surface after performing the filing. Scriber is used to mark the edge and bevel protractor is used for marking the angle.

Preparation of joint for welding

4. Joint Preparation

- i The specimen is kept in such a way that both plates have contact with one electrode (CATHODE)
- ii The other electrode (ANODE) will be present in electrode holder.
- iii External Power Supply is switched on and electrode holder is slowly kept at one end of the two metal plates (they are kept such that edges to be welded are facing each other)

5. As the anode moves towards the cathode (V-butt edges) at a certain distance, electric arc is generated.

The arc melts the surrounding metal which fills the gap V-butt edges.

6. As we move down the joint, the electrode holder should be kept at the same distance from the joint as it was initially. This ensures that arc still exists.

5. Surface Cleaning

Any slag that is formed is chipped away using clipped hammer.

Result and Remarks

My experience in the Welding Workshop was informative. I was enlightened on how welding is done and also how risky it is, after looking at the precautionary measures. Our product was defective because of air gaps formed between layers of metal that was fused for welding.

Precautions:

- ① Wear protective clothing to cover all exposed areas of your body, so as to get protection from sparks, hot spatter and radiation.
- ② Wear flame proof gloves, specifically designed helmets with filter plates for protection from UV radiation.
- ③ Never look at the arc ~~fr~~ by naked eyes.
- ④ Gap should be maintained for the formation of arc such that the molten puddle is protected from contamination.