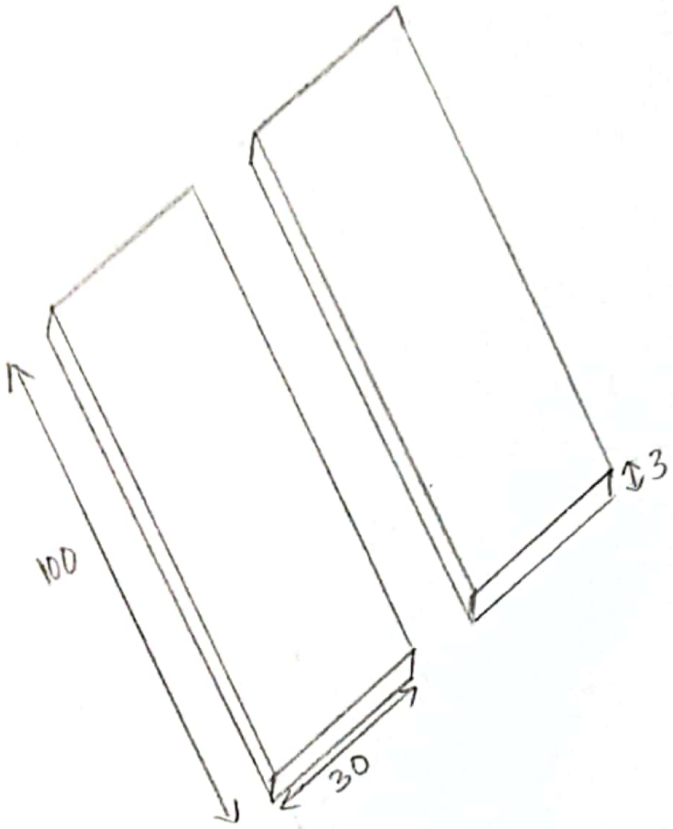
EXP: 6
DATE: 9.11.21

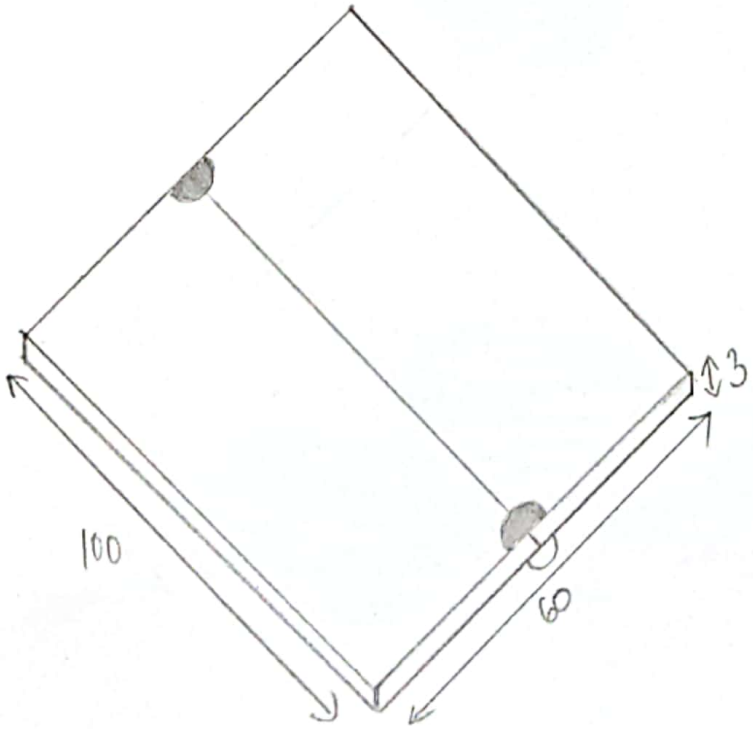
GAS WELDING

BUTT JOINT

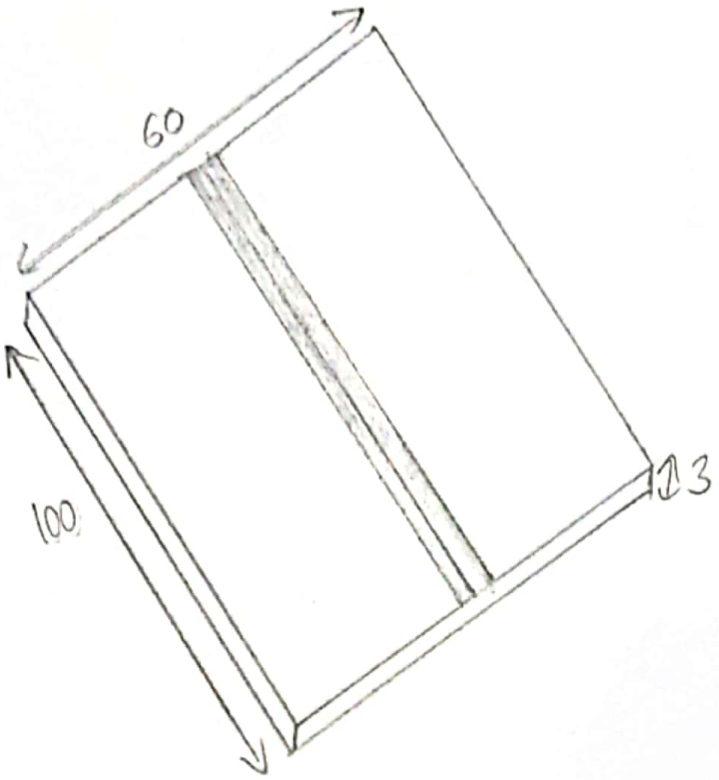
(1) Preparation:



(2) Tack Weld:



(3) Final Weld



ALL DIMENSIONS ARE IN MM.

★ **AIM:**

To make a butt joint of given two metal strips of size 100mm x 30mm x 3mm using oxygen acetylene gas welding process.

★ **APPLICATION:**

Gas welding is used in steel furniture and pipes and constructions.

★ **MATERIALS REQUIRED:**

(1) Mild Steel Metal Strips of size 100mm x 30mm x 3mm two pieces.
(2) C.C.M.S. (Copper Coated Mild Steel) filler rod 1.5mm dia.

★ **TOOLS REQUIRED:**

(1) Bench vice (2) Flat file (3) Try Square (4) Tongs (5) Wire Brush (6) Spark lighter (7) Cylinder opener Key.

★ SEQUENCE OF OPERATION:

(1) Preparing (2) Tack Weld (3) Final Weld (4) Clearing.

★ WORKING:

(1) Preparing:

→ Place the pieces as close as possible butting against each other over welding table.

→ Open the oxygen gas cylinder and acetylene gas cylinder, using the cylinder key.

→ Open the acetylene gas regular valve and oxygen gas regulator valve slightly so that the output gas pressure is set at 0.25 kg/cm².

→ Open the acetylene gas torch valve slightly on the gas torch and ignite the acetylene gas coming out of tip of the torch nozzle.

→ Then open oxygen gas torch valve gradually, untill the flame separates out from the tip and then close the valve gradually just enough for the flame to join the tip.

→ Further adjust the two valve of the gas torch until the immediate feather on the flame is drawn back into the inner core of the flame.

(2) Final Welding:

→ Hold the gas torch nozzle by the right hand at an angle 60° over the joint of the 2 strips (to be gas welded) and hold the filler welding rod by the left hand at an angle of 30°.

→ First, heat of the two base metals by the neutral gas flame up to red hot condition. Then bring the filler rod and heat its end till the fusion takes place and tack weld is made at one end of the joint.

→ Similarly make a tack weld at the other end. Then do the run welding by steadily moving the gas flame over the joint from right to left using the filler rod.

(3) Chipping and cleaning:

→ Allow the work piece to cool and dip it in the water using tongs.

→ With the help of chipping hammer gently tap the weld bead so that the slag coating is removing from the work pieces.

→ Clean the work piece with wire brush thoroughly.

→ Check for the dimensions.

★ PRE AND POST LAB QUESTIONS:

Q1. What is filler material?

Ans= Filler metals are alloys or unalloyed metals which, when heated, liquefy and melt to flow into the space between two close fitting parts, creating a brazed or soldered joint.

Q2. Which gases are used for gas welding?

Ans= Gases which are used are:

(1) Shielding gas like Carbon dioxide, argon, helium.

(2) Fuel gas like acetylene gas, propane, butane.

(3) Oxygen gas is used with fuel gases.

Q3. Mention any 2 limitations of gas welding?

Ans= (1) Not suitable for thick sections.

(2) Slow rate of heating

(3) Cannot be used for high strength steel.

Q4. Mention the type of gas used in welding process?

Ans= Types of gas used are shielding gases, Fuel gases, Supporting gases (oxygen).

P.T.O

Q5. How many types of gas welding techniques are used?

Ans= There are 5 types of gas welding techniques:
(1) Oxy-acetylene gas welding.
(2) Oxy-gasoline gas welding.
(3) MAPP gas welding
(4) Butane gas welding.
(5) Hydrogen gas welding.

Q6. What are the types of flames in oxy-acetylene welding?

Ans= There are 3 types of flames in oxy-acetylene welding:
(1) Carburising or Reducing flame.
(2) Neutral or Balanced flame.
(3) Oxidising flame.

Q7. Which material is best suitable for welding in neutral flame?

Ans= Best suitable materials are:
(1) Low Carbon Mild Steel
(2) Aluminium
(3) Stainless Steel
(4) Copper.

Q8. List out various marking tools in gas welding process.

Ans= Marking tools are: (1) Snapped chalk lines (2) Soapstone.
(3) Ball point marking pen (4) Center punch marks.

Q9. At what condition forward and backward welding are preferred?

Ans= Forehand welding is used for joining thin plates whereas backhand welding is preferred for joining thicker plates.

P.T.O

Q10. Write the function of regulator in gas welding.

Ans= The primary function of a gas regulator is to control gas pressure. It reduces the high pressure of the bottle-stored gas to the working pressure of the torch and this will be maintained during welding.

* RESULT:

→ Gas welding is done on the two given metal strips and the required butt joint is obtained.