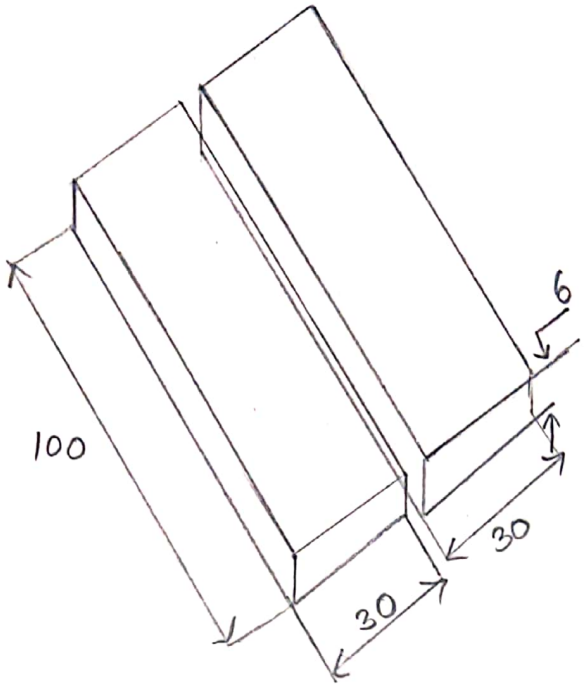
EXP: 2A
DATE: 29.09.21

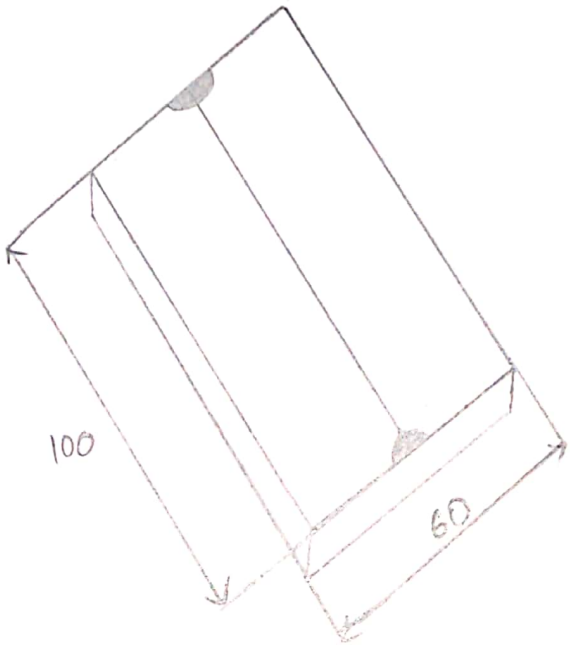
ELECTRICAL ARC WELDING

BUTT JOINT

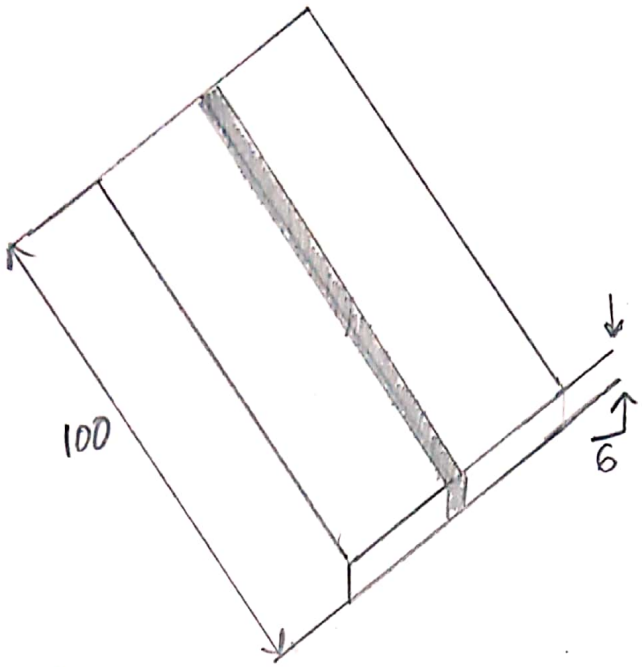
(1) Preparation



(2) Tack Weld



(3) Final Weld



ALL DIMENSIONS ARE IN MM (100 x 30 x 6)

★ **AIM:**

To make a butt joint of given two mild steel plate of size 100 x 30 x 6 mm using arc welding method.

★ **APPLICATION:**

Butt joint is used in very heavy structures, constructions and steel furniture using arc welding.

★ **MATERIAL SPECIFICATION:**

Mild steel plates of dimension 100 mm x 30 mm x 6 mm – two pieces.

★ **TOOLS REQUIRED:**

(1) Bench vice (2) Try square (3) Steel rule (4) Flat file (5) Chipping hammer (6) Wire brush (7) Tongs (8) Welding shield.

★ **EQUIPMENT REQUIRED:**

(1) Electrical arc welding machine (2) Arc welding cable (3) Ground clamp.

* **SAFETY EQUIPMENTS:**

(1) Leather apron (2) Hand gloves (3) Goggle.

* **SEQUENCE OF OPERATION:**

(1) Preparing (2) Tack welding (3) Final Welding (4) Chipping and Cleaning.

* **WORKING STEPS:**

(1) Preparing:

→ Clean the edges of the work piece using wire brush to remove dust and rust.

→ Check the dimensions using steel rule and also check the straightness of the edges to be joined using try square.

→ File those edges using flat file, make them straight and check with the try square.

(2) Tack Welding:

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

→ Check the welding, cable, electrode and clamp for proper connection.

→ Select correct electrode (3.15mm) and fix it in electrode holder, use gloves while fixing the electrode.

→ Switch on welding machine, adjust the current to 100 amps. Keep the shield closer to eyes and move the electrode nearer to one end of the work piece pair. Electrode should not touch the work piece. A critical distance should be maintained to produce spark. Make a spot over the work piece.

→ The same way make another spot at the next end of the work piece pair. This is to keep the pieces in place during welding.

(3) Final Welding:

→ Move the electrode to first tack and make a spark.

→ Gradually move the electrode towards the second tack without shaking the electrode and maintain the gap between electrode tip and work piece.

→ This is called as first run (Black hand welding id preferred for thick plates)

→ For the second run start from first tack and move towards second tack with uniform oscillation motion. This keeps the metal molten a little longer and allows the slag to the surface.

(4) 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 removed from the work pieces.

→ Clean the work piece with wire brush thoroughly.

→ Check for the dimensions.

☆ PRE LAB QUESTIONS:

Q1. What is meant by welding?

Ans:- Welding is a process of joining two metal pieces by the application of heat.

Q2. Name two important welding processes.

Ans:- Two important welding processes are:

(1) Gas Welding

(2) Arc Welding

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Q3. How many types of arc are there?

Ans= Different types of arc are as follows:

(1) Unshielded arc welding
(2) Shielded arc welding
(3) Carbon arc welding
(4) Metal arc welding
(5) Metallic inert-gas (MIG) arc welding
(6) Tungsten inert-gas (TIG) arc welding
(7) Atomic hydrogen welding
(8) Stud arc welding.
(9) Submerged arc welding.
(10) Thermit welding.

Q4. Mention the other name for fusion welding.

Ans= Another name for fusion welding is called heat fusion.

Q5. Arc welding is also known as?

Ans= It is also known as manual metal arc welding (MMAW).

Q6. What is arc welding?

Ans= Arc welding is a technique in which metals are welded using the heat generated by an electric arc.

Q7. Name measuring tools used in welding.

Ans= Measuring tape, calipers, framing squares or metal rulers are some measuring tools used in welding.

Q8. What purpose the bench vise is used for?

Ans= Bench vises make work such as sanding, finishing, chipping, sawing and welding easier by freeing the operator's hand to perform the needed task.

Q9. In arc blow, the deflection of the arc is ?

Ans= Arc deflection can be caused by distortion of the magnetic field produced by the arc current through the effect of welding past the current return cable.

Q10. In plasma arc, the gas is ?

Ans= In plasma arc, welding gas is ionized.

★ RESULT:

Thus the given two plates are joined by butt joint using arc welding method.

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