

Experiment No. 15

Statement:

To prepare a lap joint with mild steel strip using shielded metal arc welding (SMAW) technique.

Apparatus:

1. Electric Arc Welding
2. Electrodes
3. Chipping Hammer
4. Welding Goggles
5. Safety Gloves
6. Try Square
7. Apron

Theory:

Two metals are joined by generating an electric arc between a covered metal electrode and the base metals. Heat is produced by the arc, which in turn, melts the metal and mixes the molten deposits of the coated electrode. The arc energy is provided by a power supply unit that furnishes direct or alternating current. The electrodes carry the current to form the arc, producing a gas that shields the arc from the atmosphere, and add metal to control the weld shape. When an arc is struck using a coated electrode, the intense heat melts the top of the electrode. The drops of metal from the electrode enter the arc stream and are deposited on the base metal. The equipment needed for electric arc welding is a power supply, electrode holder, ground clamp, protective shield and welder's protective clothing.

Lap Joint

This type of joint is used in joining two overlapping plates so that the corner of each plate is joined with the surface of other plate. Common types of lap joints are single lap, double lap or offset lap joint. Single welded lap joint does not develop full strength as compared to double welded lap.

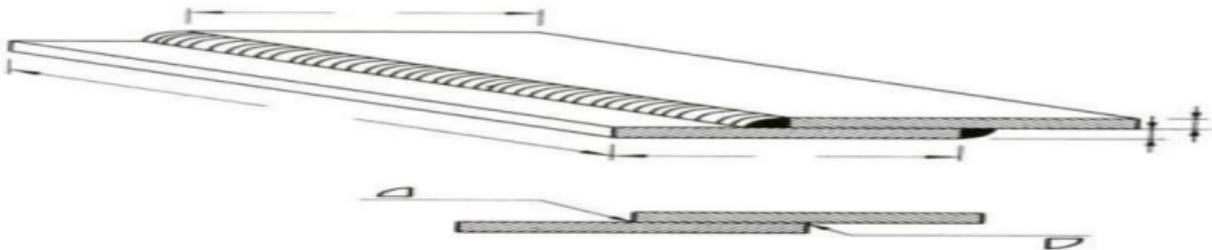


Figure: Lap joints and joggled joint

Procedure:

1. Mild steel flat is taken and it is filed using flat rough file.

2. After filing the right angles arc checked by using try square.
3. The above two steps are repeated on another work piece also.
4. The two pieces are kept one above the other in lap position.
5. Tags are made on either side of the work pieces, so that their positions are disturbed during welding.
6. Welding is carried out, first on one side of the work pieces, allowing sufficient amount of metal to fill the weld puddle by slowly moving the electrode in wavy fashion.
7. After the welding is over, the slag which is formed on the top of the weld head is removed by using chipping hammer.
8. The work pieces are reversed by holding them with tongs, and above two steps are repeated.
9. The joint thus obtained is a lap joint.



Precautions:

1. Check the right angles of the work pieces properly using try square.
2. Tags should be made so that work pieces are not disturbed from their position
3. Arc is struck by touching the work piece with the electrode and quick removing the electrode away from the work piece. The electrode should be kept at a distance of equal to electrode diameters for maintaining the arc.

