WELDING SHOP

SAFETY PRECAUTIONS

1) Protecting clothing is most important in welding.
2) fire resistant gauntlet gloves should be worn for worst welding.
3) operations.
4) Do not touch the electrode or the electrode with bare hand.
5) Do not touch the welded piece with bare hand.
6) Do not lean over the welded booth or table.
7) Do not remove the used electrode from the Electrode hand with bare hand.
8) Do not use water to extinguish an electric fire.
9) Do not stand over electric cable.
10) Do not chip the welded work piece without tongs and goggles.
11) fumes and gases can be dangerous to health. Keep your head out of the fumes. Use enough ventilation
12) Do not touch live electrical parts

ELECTRICAL ARC WELDING
BUTT JOINT

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Experiment No. 2(a)
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AIM:
To make a butt joint of given two mild steel plate of size 100X30X6 mm using arc welding method

Application
Butt joint is used in heavy structures, construction and steel furniture using arc welding

Material specification
Mild steel plates of dimension 100mm X30mm X6mm – Two pieces

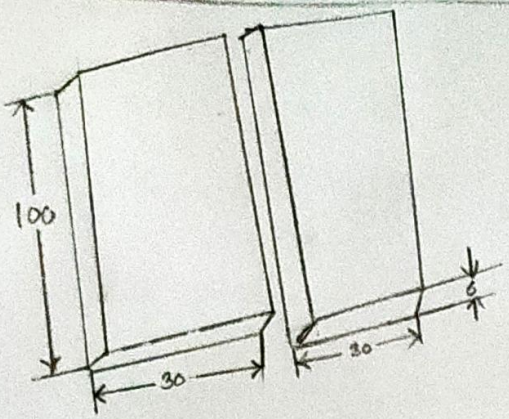
Tools Requirement
1) Bench vice 2) Try square 3) steel rule 4) Flat file 5) chipping hammer
6) Wire brush 7) Tongs 8) welding shield

Equipment Required
1) Electrical arc welding machine 2) Arc welding cables 3) Ground clamp

Safety Equipment
1) Leather apron 2) Hand gloves 3) Goggles

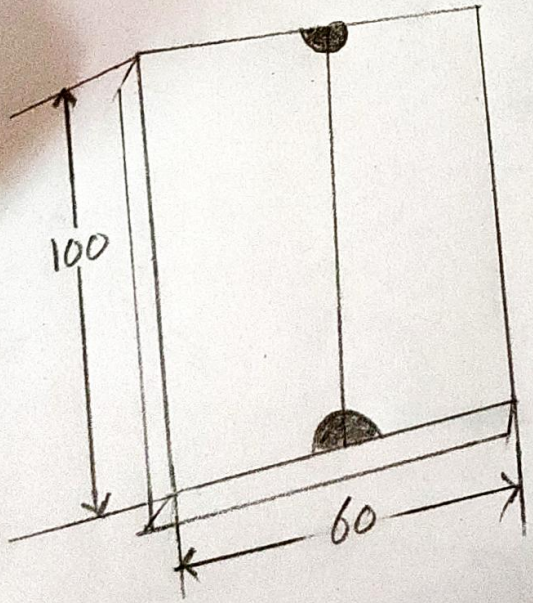
Sequence of operation
1) Preparing 2) Tack welding 3) Final welding 4) chipping & cleaning

WORKING STEPS
1) Preparing:
1) clean the edges of the work piece using wire brush to remove dust and rust
2) Check the dimensions using steel rule and also check the straightness of edges to be joined using try square
3) File those edges using flat file, make them straight and check with the try square



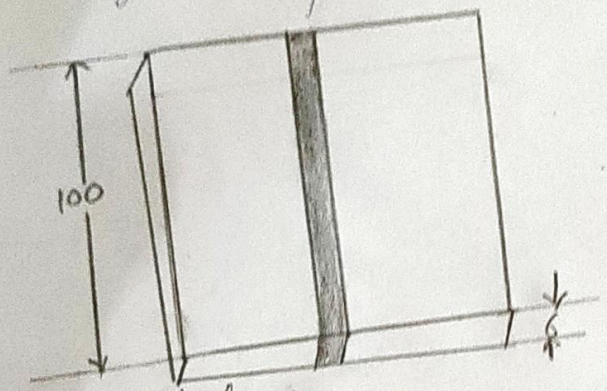
Tack welding

1) Place the pieces as close as possible butting against each other over welding table
2) Check the welding machine, cable, electrode and clamp for proper connection.
3) Select coated electrode (3.15 mm) and fix it in electrode holder, use gloves while fixing the electrode
4) 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.
5) 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.



Final Welding

1) Move the electrode to first tack and make a spark
2) Gradually move the electrode towards the second tack without shaking the electrode and maintain the gap between electrode tip and work piece.
3) This is called Back run (Back hand welding is preferred for thick plates)
4) 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.



Chipping And cleaning

1) Allow the work piece to cool down and dip it in water using tongs.
2) With the help chipping hammer gently tap the weld bead so that the slag coating is remove from the work piece
3) Clean the work piece with wire brush thoroughly.
4) Check for the dimensions

PRE-LAB Question

1) what is mean by welding?
   Welding is a process in two similar metals joined with using heat
2) Name of two important welding Process?
   1) MIG welding 2) TIG welding
3) How many types of Arc are there?
   1) Consumble electrode type 2) Non-consumble electrode type
4) Mention the other name for fusion welding?
   Non pressure welding

5) Arc welding is also known as?
Manual metal arc welding

Lab Questions

1) what is arc welding?
It is a process that is used to join similar metal pieces using electricity which is used create enough heat to melt the metal

2) which of the following is a measuring tool?
Steel rule

3) What purpose the bench vice is used for?
It is used to hold metal pieces to work on it

4) In arc blow, the deflection of the arc is?
It is due to magnetic field.

5) In plasma arc welding, the gas is?
It is mixture containing argon (80%) and hydrogen (20%)

RESULT

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