I N D E X (12)

Name : Astha Dwivedi. Class & Section : EC (T1)

Subject : Mechanical workshop Roll No. : ~~10~~ (12)

Session : Semester :

S. No.	Description of the Project	Page No.	Date of Project	Date of Submission	Teacher's Sign./Remarks
01	FITTING SHOP				
A.	To perform the operation of making, filing & sawing on given metallic work piece.		19-08-19	19-08-18	(B+)
B.	To perform the operation of drilling of marking the hole on given metallic piece.		26-08-19	26-08-19	(A)
C.	To develop the operation of making external & internal thread.		02-09-19	02-Sep-19	(B+)
0.2	WELDING SHOP.				
A.	To study the different types of welding deffect and different type of hand tools used in welding		2-12-19	2-12-19	

List of Experiments.

1) To study different type of welding process and different types of hard tools used in welding shop.

2) To prepare a lap joint by the help of electric arc welding process.

3) To prepare a butt joint by the use of electric arc welding process.

WELDING JOINTS

1. **Butt Joint** :- In this type of joint the edges are welding is the same plane with each other V or U shapes are given to the edges to make the joints strong.

2. **Lap Joint** :- This type of joint is used in joing 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 effets lap joint.

3. **T- joint** :- when two surfaces are to be welded at right angles the joint is called T- joint angle between the surface is kept 90°.

4. **Corner Joint** :- In this joint the edges of two sheets are joined and their surface are kept at right angle to each other such points are made in frames steel boxes etc.

5. **Plug Joint** :- Plug joint are used in holes intead of rivets and bolts.

Tools Used In Welding Shop.

(a) **Welding Helmet :-** A welding helmet is a type of head gear used when performing certain types of welding to protect eyes, face and neck from flash burn.

b) **Welding Goaggle :-** Green glass goggle are used for welding and also have ANSI standards (American National Standards Institute). when viewing metal is visibily hot for longer periods protection is needed for the eyes.

c) **Chipping Hammer :-** It is used to remove welding slag from a weld & welding spatter from alongside welds.

d) **Electrode Holder :-** An electrode holder is a clamping device for holding a electrode safetly The design of electrode holder permits quick and easy exchange two general types of electrode holders are in use.

a) Insulated.
b) Non - Insulated.

EXPERIMENT - 1

Object :- To study the different type welding process welding defect and different type of hand tools used in welding shop.

Various types of welding.

1) Gas welding :- It is a process in which a gas flame is used to raise the temperature of the metals to be joined. The metal are heated up by the welding on welding the metals flows and on cooling it solidifies. Many combination of gases are used in gas welding but the most common of these is oxygen and acetylene.

2) Arc welding :- The welding in which electric arc is produced to give heat for the purpose of joining two surfaces is called electric arc welding.

3) forge welding :- This welding is done by block-smiths. In this process some metal places are heated upto the plastic stage in the furrance. There it is hammered so that a homogeneous mixture is formed at the joints.

Flux :- A substance that prevents the formation of oxides and other contaminants in welding or dissolves them and facilities removed.

→ Provides Protection atmosphere for welding.
→ stabilizers arc.
→ Reduces spattering.

Resistance Welding :-

It is a group of welding process where is produced by the heat obtained from resistance of the work to the flow of electric current in a circuit of which is the work is a part and by the application of pressure. No filler metal is needed.

Outcomes :-

On successful completion of this experiments the student will be able to understant the different type of welding process welding process .defects and different types of hand tools.

Experiment - 2

Object :- To prepare a lap joint by the use of electric arc welding.

Material Used :- MS plate of size (100 x 50 x 7) mm. two piece MS electrode 3.15 mm dia [SWG10] length 350 mm.

Tools & Experiments Required :-

Arc welding machine with all the accessories, electrode holder, earth clamp, trisquare, hacksaw, steel ruler, ~~hapf~~ hammer pair of tongs, chipping hammer, face, shield etc.

Produce :-

1) marking and cutting the MS flat.
2) start the welding transformer machine & then set the current to appeax 100 amps.
3) Tack both the side of joints keeping the flat position of the job complete the layer.
4) clean with a chipping hammer and wire brush and then check the welding layer.

Precautions :-

Never look at the welding arc without face shield.

Always wear flexible gloves and leather apparels.

Never touch the hot job with hands.

Use specified current and electrodes for arc welding.

Result :- Lap joint is successfully prepared by the use of electric arc welding process.

Outcomes :-

On successful completion of this experiment the students (we) will be able for fabrication work with the help of electric arc welding process.

Mr. Sarkar
02/12/2019

Experiment - 3

Object :- To prepare a butt joint by the use of electrode arc welding process.

material used :- MS plate of size (100x50x7)mm two piece MS electrode 3.15mm dia [SWG10] length 350mm.

Tools & Equipment Required :-

Arc welding machine with all the accessories, electrode, holder, earth damp, try square, steel ruler, hammer pair of tongs chipping hammer, face shield etc.

Procedure :-

1) Marking and cutting the MS flat.
2) start the welding transformer machine and the set the current to approx 100 amp.
3) Take both the sides of joints keeping the flat position complete the layer.
4) clean with a chipping hammer and a wire brush.

Precaution :-

(1) Never look at the welding arc without face shield.

2) Always wear flexible gloves and leather apparels.

3) Never touch the heat job with hands.

4) Use specified current and electrodes for arc welding.

Result :- Butt joint is successfully prepared the use of electric arc welding process.

Outcomes :- On successful completion of the experiment the student are will be able for fabrication work with the help of electric arc welding process.

07/12/2019

Different Types of Welding Defects :-

A weld defect is any physical characteristics in the completed weld that reduces the strength and affects the appearance of the weld.

Defects that are not visible can be detected by using destructive or non-destructive testing.

Incomplete Joint :- The depth of the joint is less than specifications.

Improper fusion :- The weld metal is not completed fused to base metal are passes are not completely fused.

Cold lap :- The weld metal is not completely fused.

Insufficient Penetration :- Weld bead does not extend to the desired depth.

Pits :- Small indentions in the surface of the weld.

Porosity :- Small voids throughout the weld material.

Vertical Cracks :- Usually visible cracks on the surface or through the weld.

Safety Precaution :-

1) Wear eye protection and cover bare skin.
Be aware that :-

- Arc flash can occure through the side of the eye.
- Arc flash can cause 'sun burn' on exposed skin.

2) If you can smell gas - don't light gas torches or use electric welding equipment. But don't rely wholly on your sense of smell to warn you.

3) Mark hot surface as such, better still, assume everthying is not.

4) Know how to use gas equipment safely.

5) Ensure the equipment has the correct current capacity.