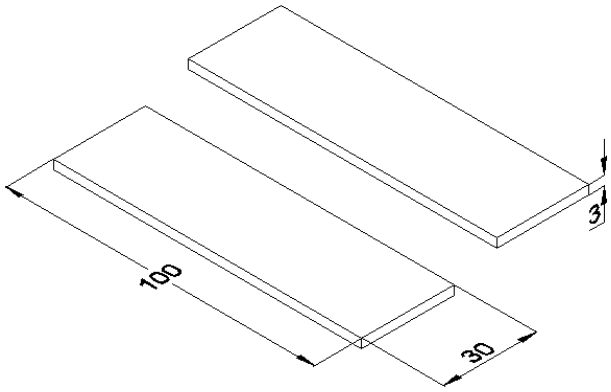
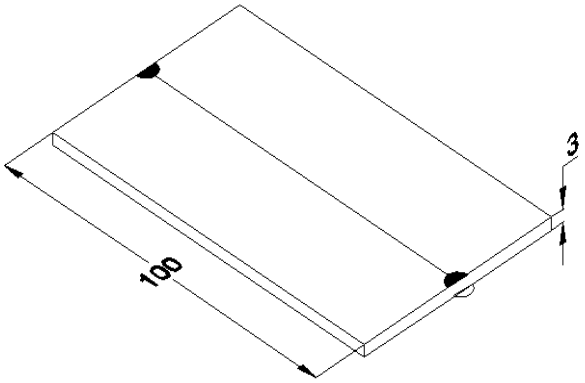
MOHIT K KUSHWAHA
RA2011028010010

# GAS WELDING

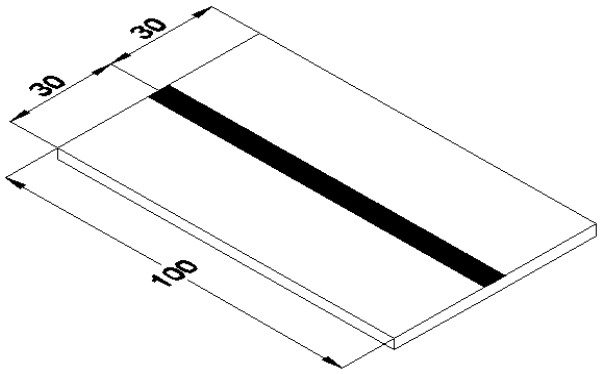
## BUTT JOINT




**PREPARATION**




**TACK WELD**




**FINAL WELD**

All Dimension are in mm (100 x 30 x 3)

# Gas Welding
# Butt Joint

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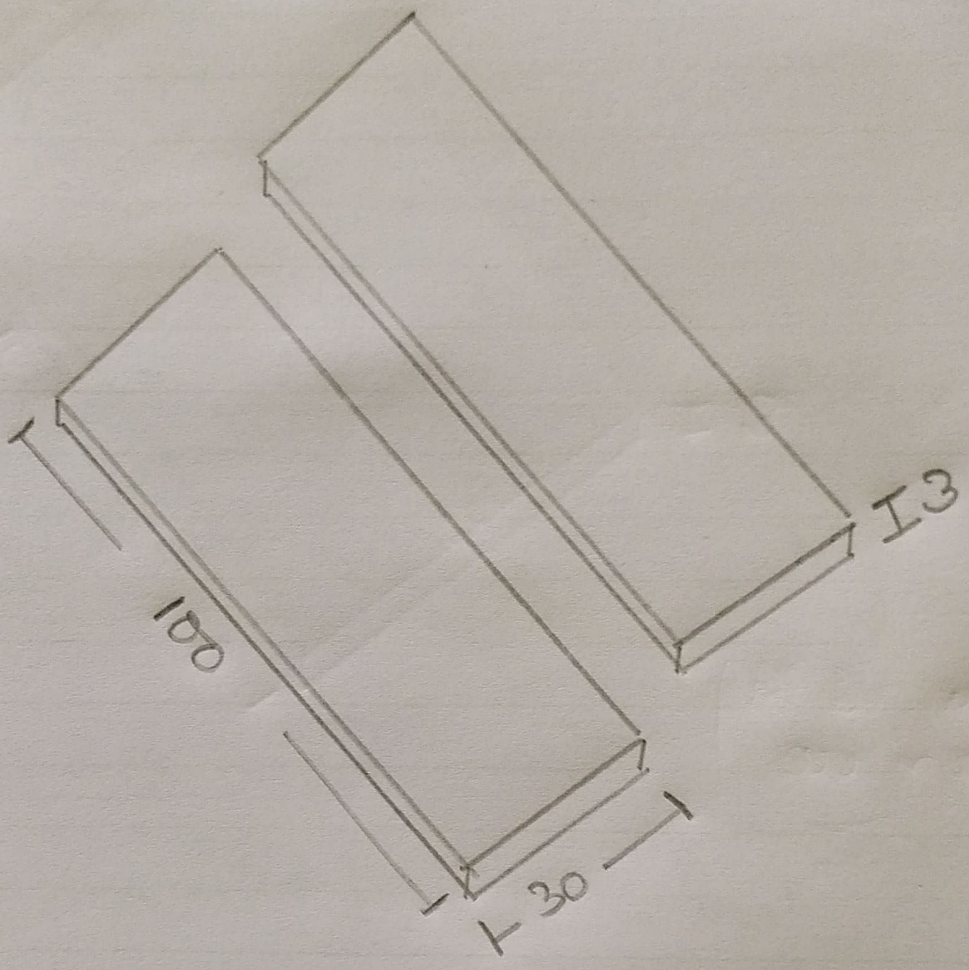
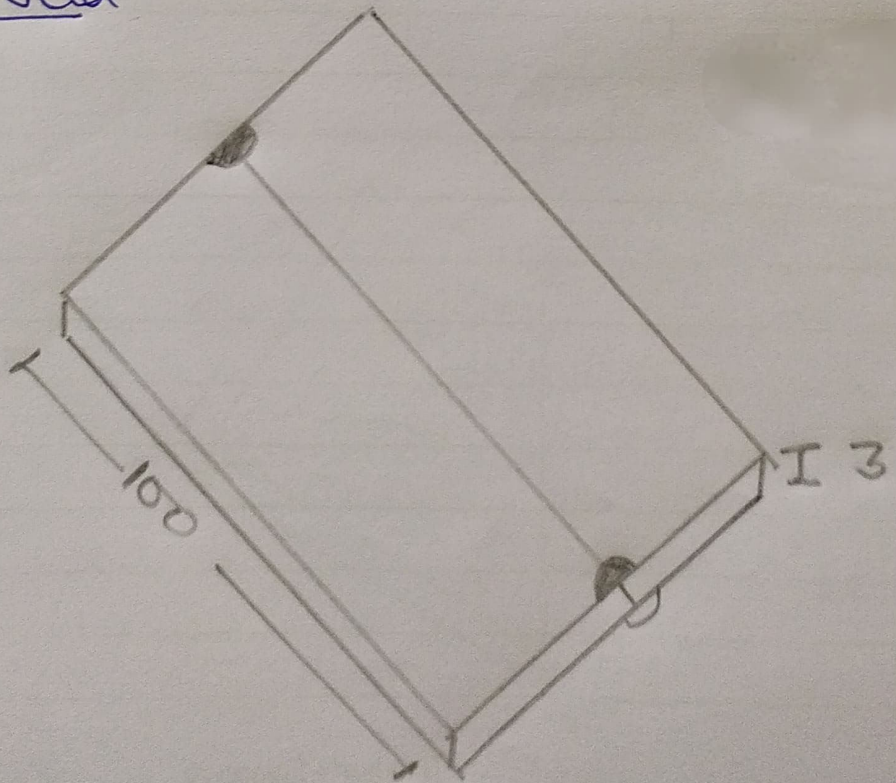
## Preparation




## Tack Weld



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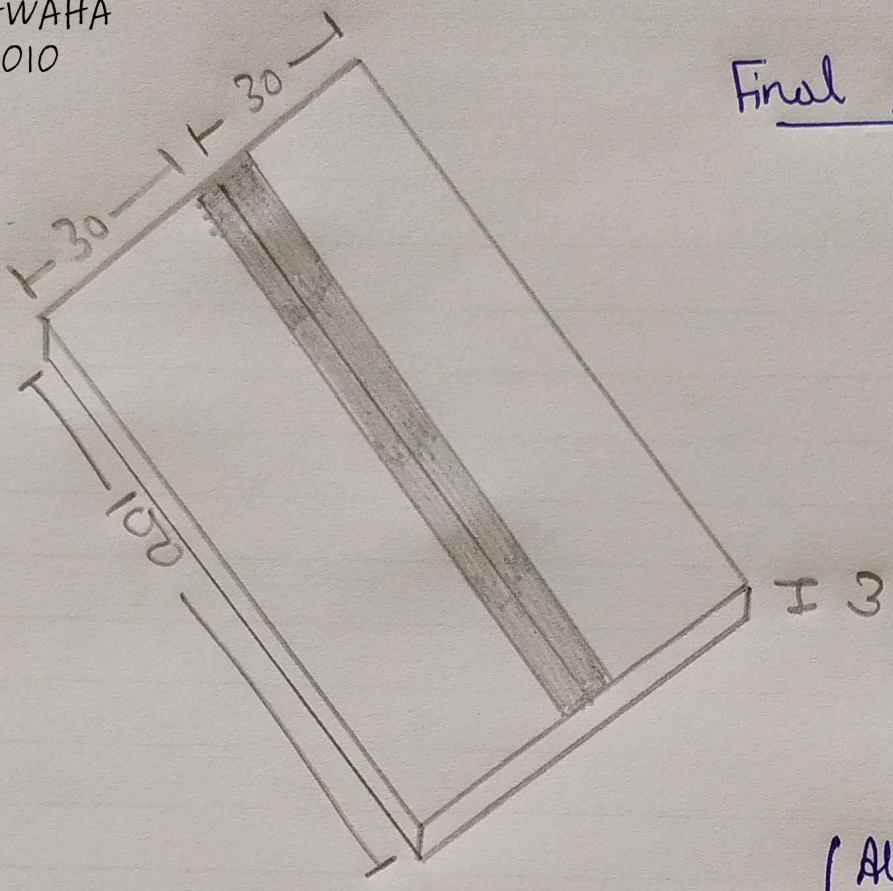
Final Weld




(All Dimensions are in mm)

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# GAS WELDING
# BUTT JOINT

**Ex no :** 5

**Date :** 28 MAY 2021

## 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.

## Material requirement:

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) Cleaning

## Working Steps:

## 1) Preparing:

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

## 2) Tack Welding:

1) Place the pieces as close as possible butting against each other over welding table.
2) Open the oxygen gas cylinder and acetylene gas cylinder, using the cylinder key.
3) Open the acetylene gas regulator valve and oxygen gas regulator valve slightly so that the output gas pressure is set at 0.25 kg/cm$^2$.

4) Open the Acetylene gas torch valve slightly on the gas torch and ignite the acetylene gas coming out of tip of the torch nozzle.
5) Then open oxygen gas torch valve gradually, until the flame separates out from the tip and then close the valve gradually just enough for the flame to join the tip.
6) 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.
(The instant that the feather disappears into the cone shows the oxy acetylene gas produces the required Neutral Flame for Gas Welding Purpose. This flame is make a hissing sound)

**Final Welding:**

1. Hold the gas torch nozzle by the right hand at an angle 60o 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 o.
2. First, heat the joint 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 a tack weld is made at one end of the joint.
3. 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.

**Chipping and cleaning:**

a) Allow the work piece to cool and dip it in the water using tongs.
b) With the help of chipping hammer gently tap the weld bead so that the slag coating is removing from the work pieces.
c) Clean the work piece with wire brush thoroughly.
d) Check for the dimensions

## Pre Lab Question:

**1. 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. A filler metal has suitable melting and flow properties to permit distribution by capillary attraction in properly prepared joints

**2. Which gasses are used for gas welding ?**

Ans: Following Gases are used in gas welding:

- Shielding gas like carbon dioxide, argon, helium
- Fuel gas like Acetylene gas, propane, butane

- Oxygen gas is used with fuel gases.

**3. Mention any 2 limitations of gas welding ?**

Ans:

- Not suitable for thick sections
- Slow rate of heating
- Cannot be used for high strength steel.

**4. Mention the types of gas used in welding process ?**

Ans: Types of gas used are Shielding gases, Fuel gases, Supporting gases (oxygen).

**5. How many types of Gas Welding technique are used ?**

Ans: 5 types of techniques are used in Gas Welding:

- Oxy-acetylene gas welding
- Oxy-gasoline gas welding
- MAPP gas welding
- Butane or propane welding
- Hydrogen gas welding

## Post Lab Question:

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

Ans: There are 3 types of flames in oxy-acetylene welding :

- Carburising or Reducing flame
- Neutral or balanced flame
- Oxidising flame

**2. Why is oxy acetylene flame used for welding process ?**

Ans: Oxyacetylene burns to produce a large amount of heat which is sufficient for melting metals. Therefore it is used for welding purposes. On heating Oxy acetylene produces a large amount of heat and a huge temperature about 5000-6000 degree Celsius which is enough to melt metals like iron etc

**3. Explain the following: neutral flame ?**

Ans: The neutral flame has nearly one-to-one ratio of acetylene and oxygen by volume. Such a flame makes a hissing sound and is the most used type of flame for welding of metals. It normally does not affect the chemistry of the weld metal and usually produces a clean looking weld having properties comparable to the base metal. It is most often used for welding of low carbon structural steels and aluminium.

**4. Which one of the following marking tool ?**

Ans: Marking tools are used for labelling and making points on the materials for reference.

**5. 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 2 given metal strips and the required butt joint is obtained.