WELDING

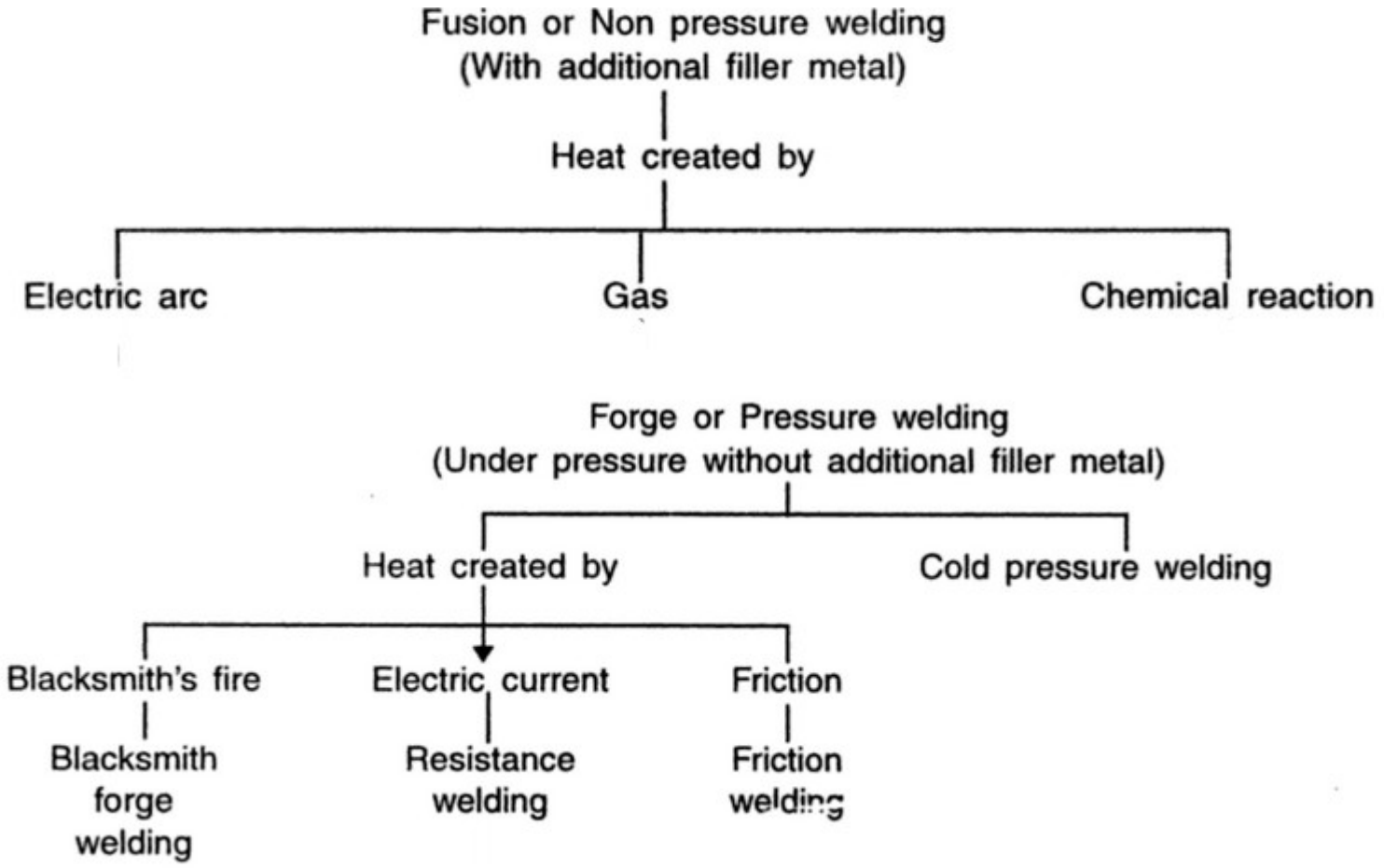
- Welding is defined as **a localised coalescence of metals, wherein coalescence is obtained by heating to a suitable temperature, with or without the application of pressure and with or without the use of filler metal.**

- Based on the use of pressure, welding can be mainly classified as

- **Plastic Welding –** Here parts being joined are heated to their plastic states and then joined together by applying external pressure.

- **Fusion Welding** - Here, the interface of the two parts to be joined is brought to a temperature above the melting point and then allowed to solidify so that joining takes place.

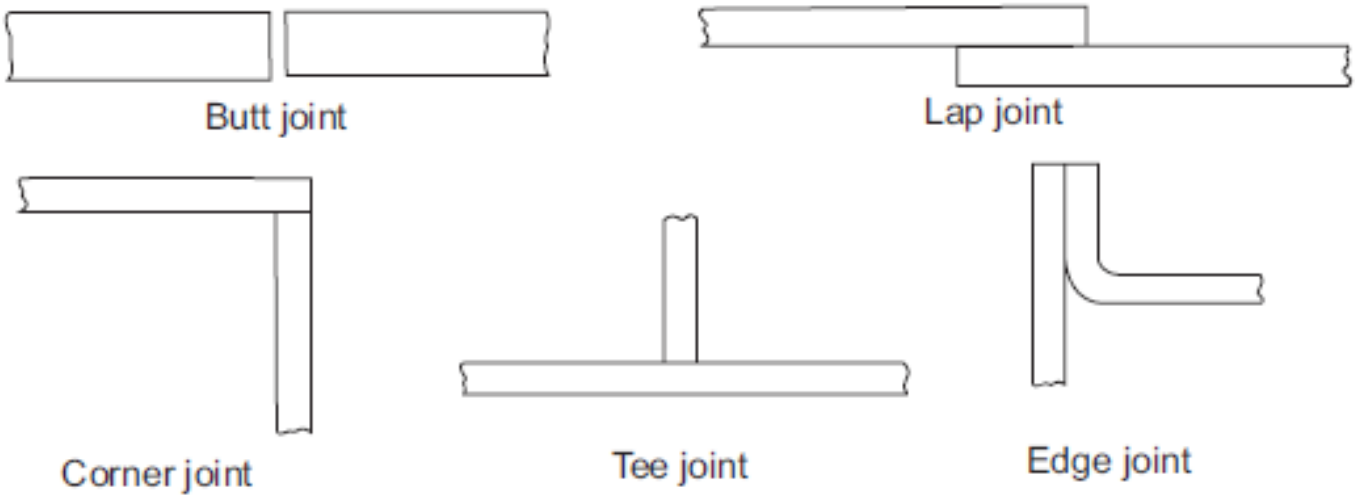
WELDING


Fusion or Non pressure welding
(With additional filler metal)
Heat created by
Electric arc
Gas
Chemical reaction
Forge or Pressure welding
(Under pressure without additional filler metal)
Heat created by
Cold pressure welding
Blacksmith's fire
Electric current
Friction
Blacksmith forge welding
Resistance welding
Friction welding

GENERAL CONSIDERATIONS

Types of Joints

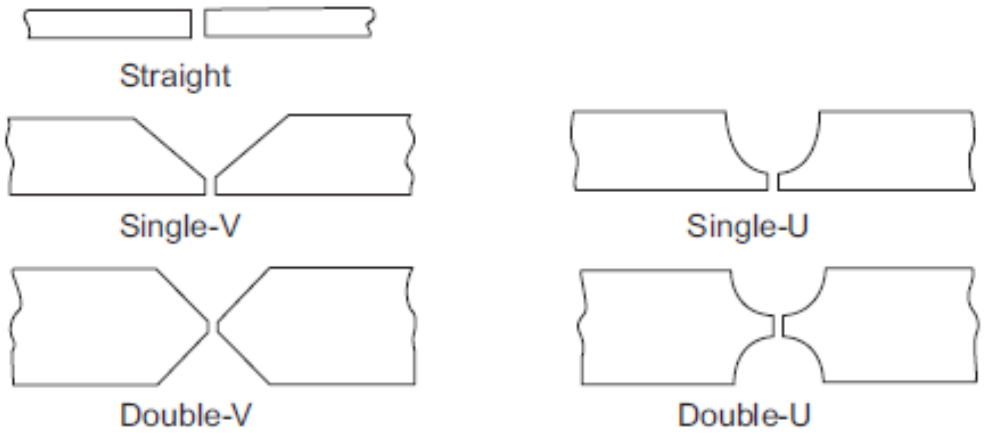
- Different types of welding joints are classified as **butt, lap, corner, tee and edge** joints. The choice of the type of joint depends on the weldment being made and the sheet thickness.



GENERAL CONSIDERATIONS

Edge Preparation

- The straight edges of the joint is used when the thickness of the two pieces to be joined is small, so that heat of welding penetrates the full depth of the joint.
- However, when the thickness increases it becomes necessary to prepare the edge in such a way that heat would be able to penetrate the entire depth.
- To facilitate this, the joint is widened. For very thick plates, the welding needs to be done from both sides. To provide the necessary access into the joint, it could be made as a V or U.



GENERAL CONSIDERATIONS

Cleaning

- By virtue of the metal being melted at the interface in a welded joint it is necessary that the interfaces are very clean.
- If the interfaces are not clean, with any oil, dirt, paint or grease residue left would interfere with the proper fusing of the metal and thus weaken the joint. Hence it is essential that the joint surfaces are thoroughly cleaned before the welding is attempted.
- To remove the oily substances from the surface, the organic solvents such as **acetone and carbon tetrachloride** may be used. The foreign substances may be removed by means of cleaning with a rag soaked in the solvent.
- The heavier oxide films may be removed by **acid pickling, wire brushing or emery**.