Experiment 2

Aim – a) Sketch freehand all types of riveted heads and make table of welding joint symbols.

b) Draw orthographic views of double riveted zig zag lap joint and double riveted chain butt joint with two equal cover plates. Show its front view, full in section and top view in in first angle projection. Take t=12mm and D=20mm.

Theory –

Riveted Joints – Riveted joints are permanent fastenings and riveting is one of the commonly used method of producing rigid and permanent joints. Manufacture of boilers, storage tanks, etc., involve joining of steel sheets, by means of riveted joints. These joints are also used to fasten rolled steel sections in structural works, such as bridge and roof trusses.

Rivets and Riveting

Rivet –

A rivet is a round rod of circular cross-section. It consists of two parts, viz., head and shank. Mild steel, wrought iron, copper and aluminium alloys are some of the metals commonly used for rivets. The choice of a particular metal will depend upon the place of application.

Riveting –

Riveting is the process of forming a riveted joint. For this, a rivet is first placed in the hole drilled through the two parts to be joined. Then the shank end is made into a rivet head by applying pressure, when it is either in cold or hot condition.

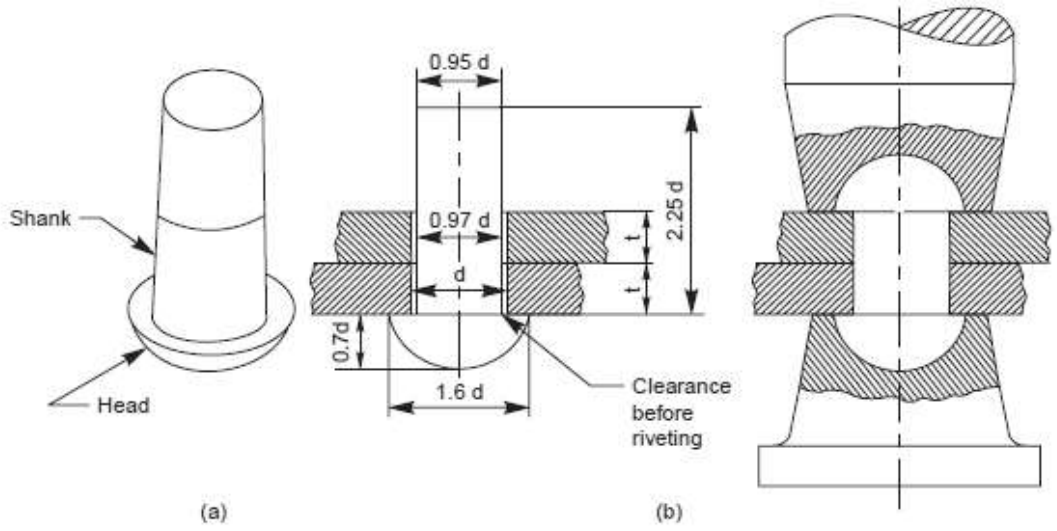

Fig. 10.1 (*a*) Rivet (*b*) Riveting

Pressure may be applied to form the second rivet head, either by direct hammering or through hydraulic or pneumatic means. While forming the rivet head, the shank will bulge uniformly. Hence, a certain amount of clearance between the hole and shank must be provided before riveting (Fig. 10.1 (*b*)). Hot riveting produces better results when compared to cold riveting. This is because, after hot riveting, the contraction in the shank length tends to pull the parts together, making a tight joint.

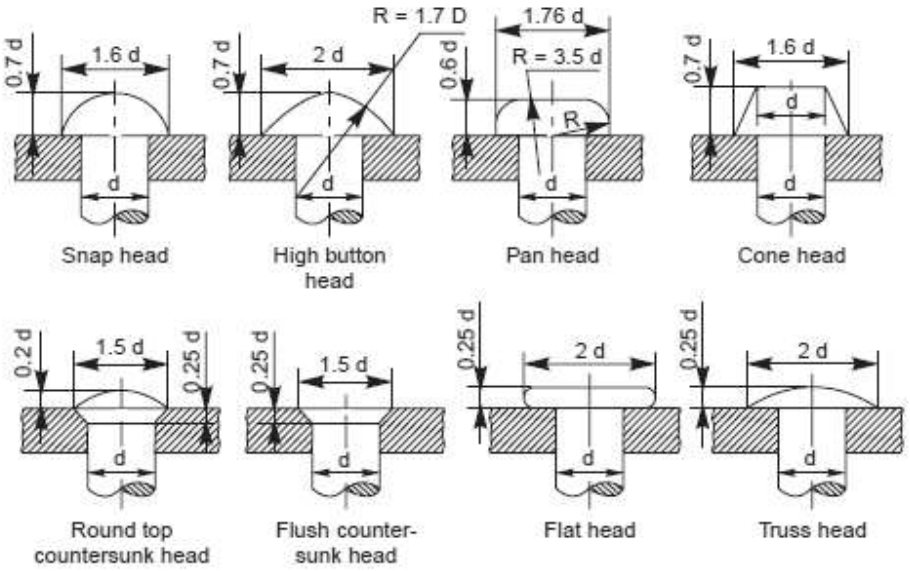

Fig. 10.3 Types of rivet heads

Fasteners –

A machine element used for holding or joining two or more parts of a machine or structure is known as a fastener. The process of joining the parts is called fastening. The fasteners are of two types:

Permanent
Removable (temporary)

Riveting and welding processes are used for fastening permanently. Screwed fasteners such as bolts, studs and nuts in combination, machine screws, set screws, etc., and keys, cotters, couplings, etc., are used for fastening components that require frequent assembly and disassembly.

Screwed fasteners occupy the most prominent place among the removable fasteners. In
general, screwed fasteners are used :

(i) to hold parts together
(ii) to adjust parts with reference to each other
(iii) to transmit power.

Procedure –

- Fire up Solid works 2012 and select the new file and then select the drawing option.
- Open the page and then select the sheet format.
- Select your custom sheet format if already present or create a custom sheet format.
- Select the scale from the bottom at the extreme right side of the software to MMGS.
- Click on sketch and start the drawing.
- To adjust the dimensions, go to the smart dimensions option.
- Various machining symbols surface finishing, welding symbols; geometric tolerance etc. can be given in the Annotations tab.
- Written notes can be inserted in the “Note” option in annotation tab.