

Experiment 3

PIN JOINTS

1. Description

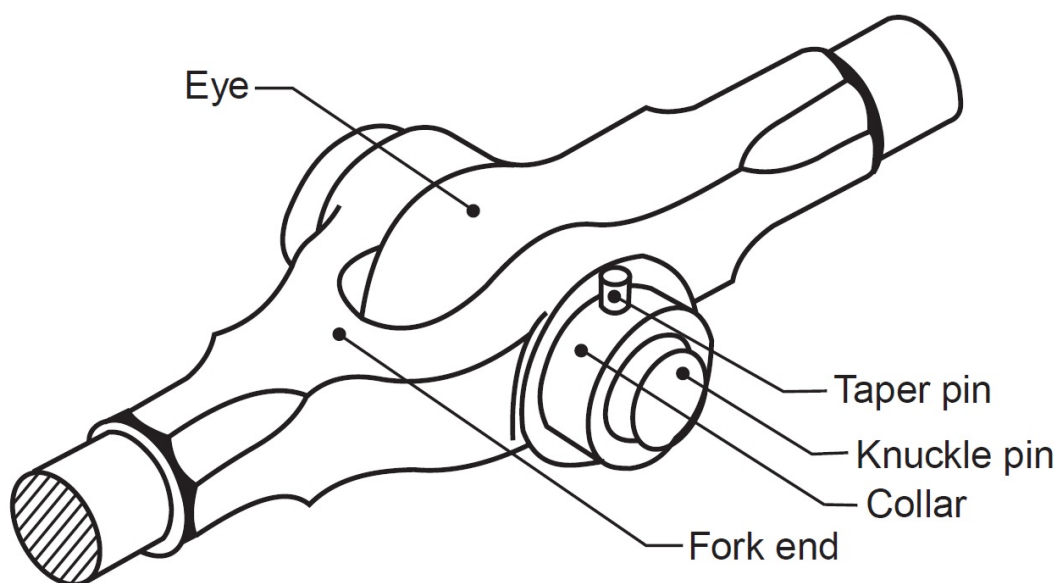
Overview

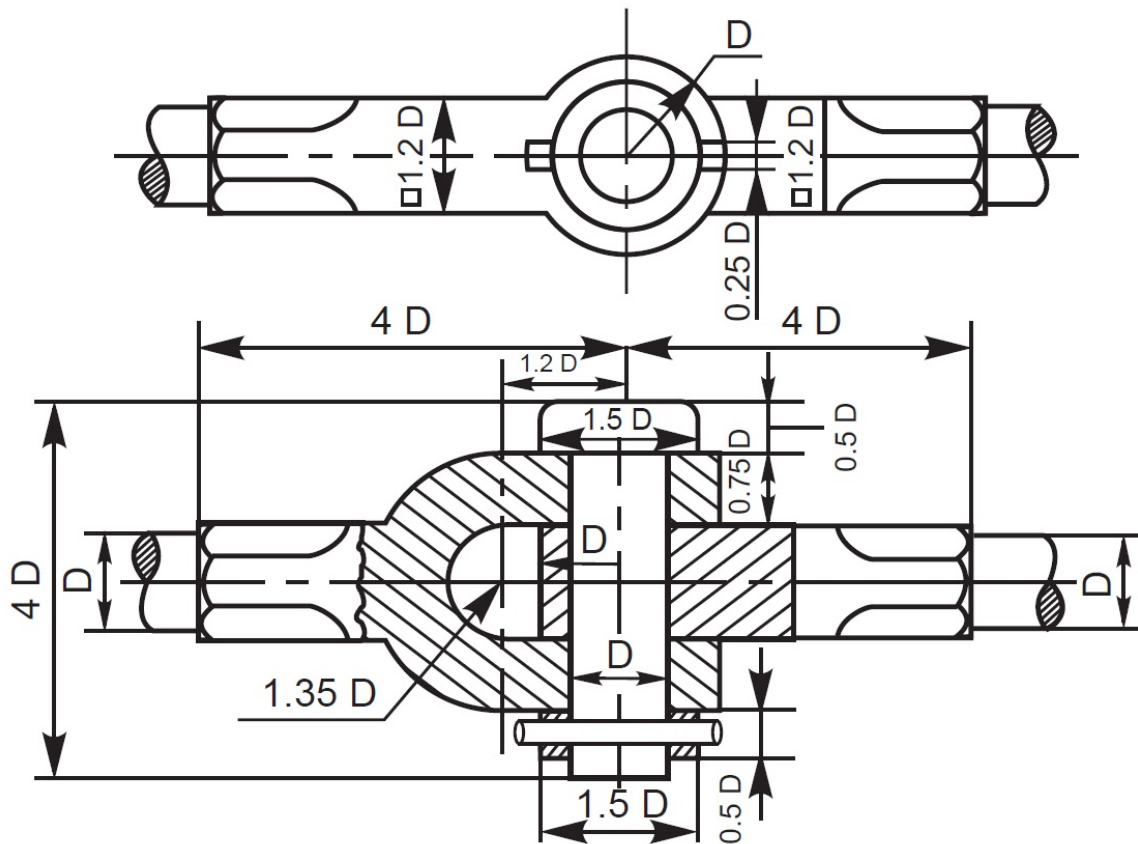
In a pin joint, a pin is used to fasten two rods that are under the action of a tensile force; although the rods may support a compressive force if the joint is guided. Some pin joints such as universal joints, use two pins and are used to transmit power from one rotating shaft to another. A pin joint permits a small amount of flexibility or one rod may be positioned at an angle (in the plane containing the rods) with respect to the other rod, after providing suitable guides.

Unlike in cotter joints, the pin in a pin joint is not driven-in with a force fit, but is inserted in the holes with a clearance fit. The pin is held in position, by means of a taper pin or a split pin provided at its end.

2. Knuckle Joint

A knuckle joint is a pin joint used to fasten two circular rods. In this joint, one end of the rod is formed into an eye and the other into a fork (double eye). For making the joint, the eye end of the rod is aligned into the fork end of the other and then the pin is inserted through the holes and held in position by means of a collar and a taper pin (Fig). Once the joint is made, the rods are free to swivel about the cylindrical pin. Knuckle joints are used in suspension links, air brake arrangement of locomotives, etc.

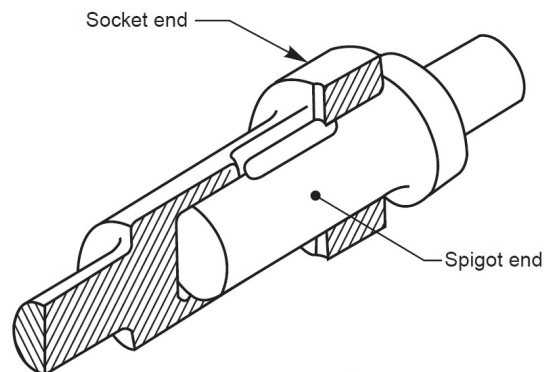


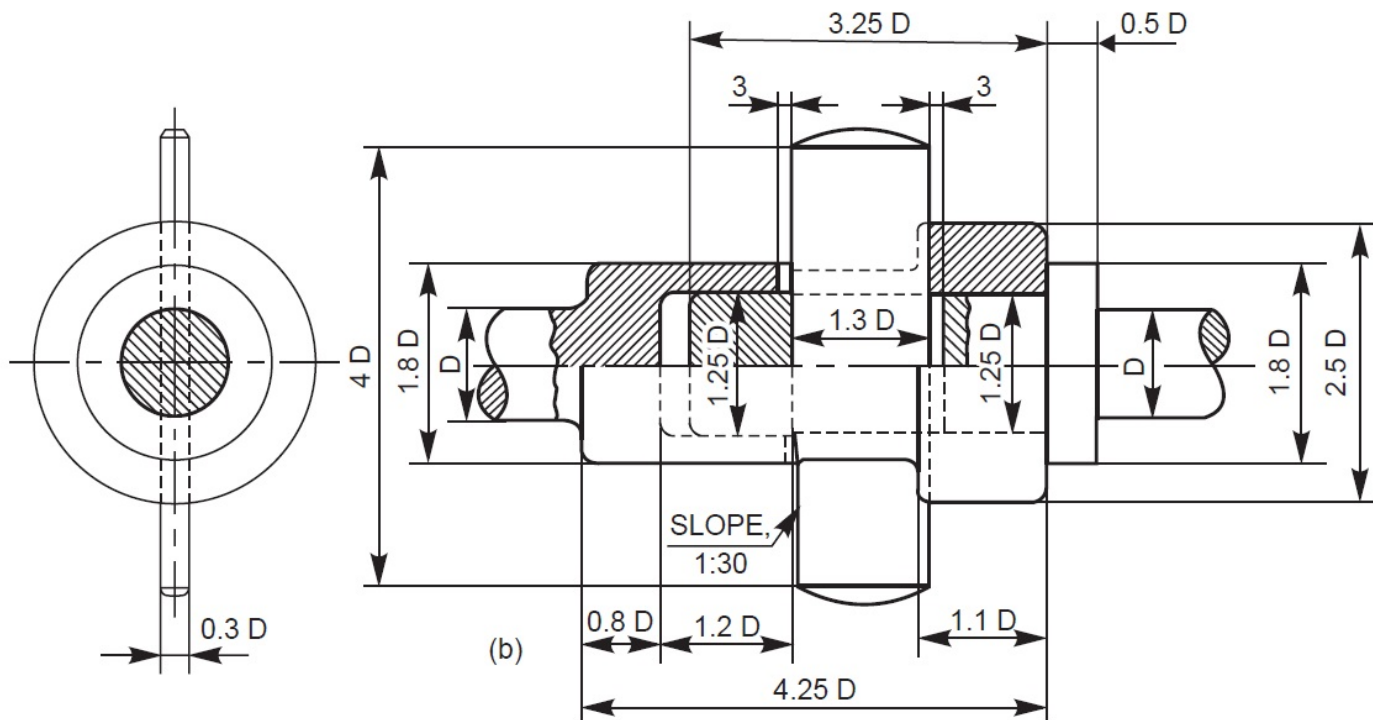


Knuckle joint

3. Cotter joint with socket and spigot ends

This joint is also used to fasten two circular rods. In this, the rod ends are modified instead of using a sleeve. One end of the rod is formed into a socket and the other into a spigot (Fig) and slots are cut. After aligning the socket and spigot ends, a cotter is driven-in through the slots, forming the joint.





Cotter joint with socket and spigot ends

4. VIVA QUESTIONS

1. What is a cotter and when is it used?
2. What is the purpose of using a gib along with a cotter in a cotter joint?
3. What is a knuckle joint and where is it used?
4. What is the difference between the eye end and fork end of a knuckle joint?
5. Why clearances are provided in cotter joints ?
6. Differentiate between cotter joint and pin joint?