Instructions

• Oldham coupling and flange coupling are given below.
• Basic introduction is also given. Use the internet to understand the working fully.
• An introduction about shaft keys is also given. No need to model them.
• Create an assembly to demonstrate the workings.
• Follow the parametric relations given. Assume suitable dimensions where ever necessary.
• Do not discuss.

Marks

• Oldham coupling = 5 marks
• Flange Coupling = 5 marks
• Total = 10 marks
7.5.2 Oldham Coupling
It is used to connect two parallel shafts whose axes are at a small distance apart. Two flanges, each having a rectangular slot, are keyed, one on each shaft. The two flanges are positioned such that, the slot in one is at right angle to the slot in the other.

To make the coupling, a circular disc with two rectangular projections on either side and at right angle to each other, is placed between the two flanges. During motion, the central disc, while turning, slides in the slots of the flanges. Power transmission takes place between the shafts, because of the positive connection between the flanges and the central disc (Fig. 7.12).

Fig. 7.12 Oldham coupling
6.2 KEYS

Keys are machine elements used to prevent relative rotational movement between a shaft and the parts mounted on it, such as pulleys, gears, wheels, couplings, etc. Figure 6.1 shows the parts of a keyed joint and its assembly.

For making the joint, grooves or keyways are cut on the surface of the shaft and in the hub of the part to be mounted. After positioning the part on the shaft such that, both the keyways are properly aligned, the key is driven from the end, resulting in a firm joint.

For mounting a part at any intermediate location on the shaft, first the key is firmly placed in the keyway of the shaft and then the part to be mounted is slid from one end of the shaft, till it is fully engaged with the key.

Keys are classified into three types, viz., saddle keys, sunk keys and round keys.

6.2.1 Saddle Keys

These are taper keys, with uniform width but tapering in thickness on the upper side. The magnitude of the taper provided is 1:100. These are made in two forms:

7.2.2 Flanged Couplings

These are the standard forms of couplings, most extensively used. In a flanged coupling, flanges are either fitted or provided at the ends of shafts. The flanges are fastened together by means of a number of bolts and nuts. The number and size of the bolts depend upon the power to be transmitted and hence, the shaft diameter.

7.2.2.1 Flanged Coupling with Detachable Flanges

In this, two flanges are keyed, one at the end of each shaft, by means of sunk keys (Fig. 7.4). For ensuring correct alignment, a cylindrical projection may be provided on one flange which fits into the corresponding recess in the other.