

Power transmission elements, Chain drive, Gears

Chain drive

Chains are used for high transmission of power and can impart as much as 5000 h.p. They are mostly used when the distance between centers is short. But they are also employed when the center distance is as much as 8meter.They are now in general use for the transmission of power in cycle, motor vehicles, agricultural machinery, road rollers etc. and for gearing in workshops and factories and are continuously being installed to displace belt or rope drive and wheel gearing.

7.4.3.Gear: A friction wheel with a teeth cut on its circumference is known as a friction wheel or a gear.

Types of gears

- **Spur gear:** Gears whose axes are parallel and whose teeth are parallel to the centre line of the gear are called spur gears. They are used to transmit power from one shaft to another in cases where those shafts have their axis parallel. Spur gearing is used over a wide range of machines.
- **Helical gear:** A helical gear has teeth in the form of helix around the gear. Two such gears may be used to connect two parallel shafts in place of spur gears. The helixes may be right handed on one gear and left handed on the other. The pitch surfaces are cylindrical as in spur gearing. But the teeth instead of being parallel to the axis wind around the cylinders helically like screw-threads. The teeth of helical gears with parallel axis have line contact as in spur gearing. This provides gradual engagement and continuous contact of the engaging teeth. Hence helical gears give smooth drive with a high efficiency of transmission. Helical gears may; be of single helical type or double helical type. In case of single helical gears there is some axial thrust between the teeth which is disadvantage. In order to eliminate this axial thrust double helical gears in which equal and opposite thrusts are provided on each gear and the resulting axial thrust is zero.
- **Rack and Pinion:** The function of rack and pinion is to transform circular motion to rectilinear motion. Small gears are called pinions and racks are a series of teeth on a straight line. They may be considered as spur gears of infinite radii. Lathe, Drill, planner etc. are fitted with Rack and Pinion to convert rotary motion to straight line motion.
- **Bevel gears:** The bevel gears are used for transmitting power at a constant velocity ratio between two shafts whose axis intersects at a certain angle. The pitch surfaces for the bevel gears are frustums of cones The elements of the cones intersect at the point of intersection of the axis of rotation. Since the radii of both the gears are proportional to their distances from the apex, therefore the cones may roll together without sliding.