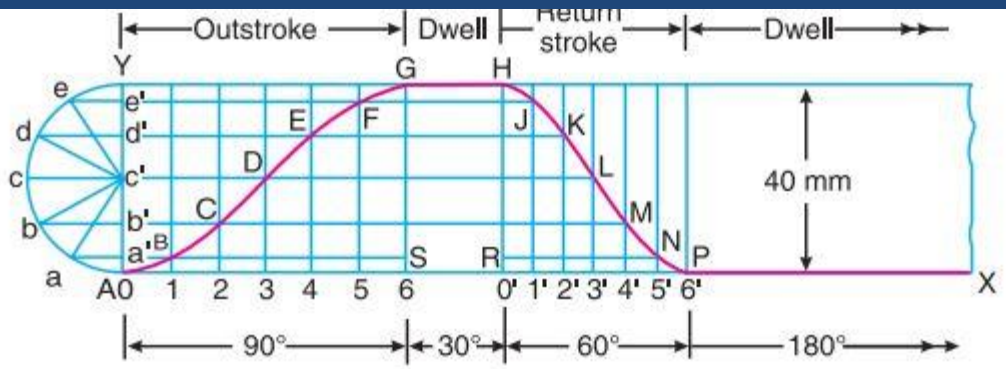
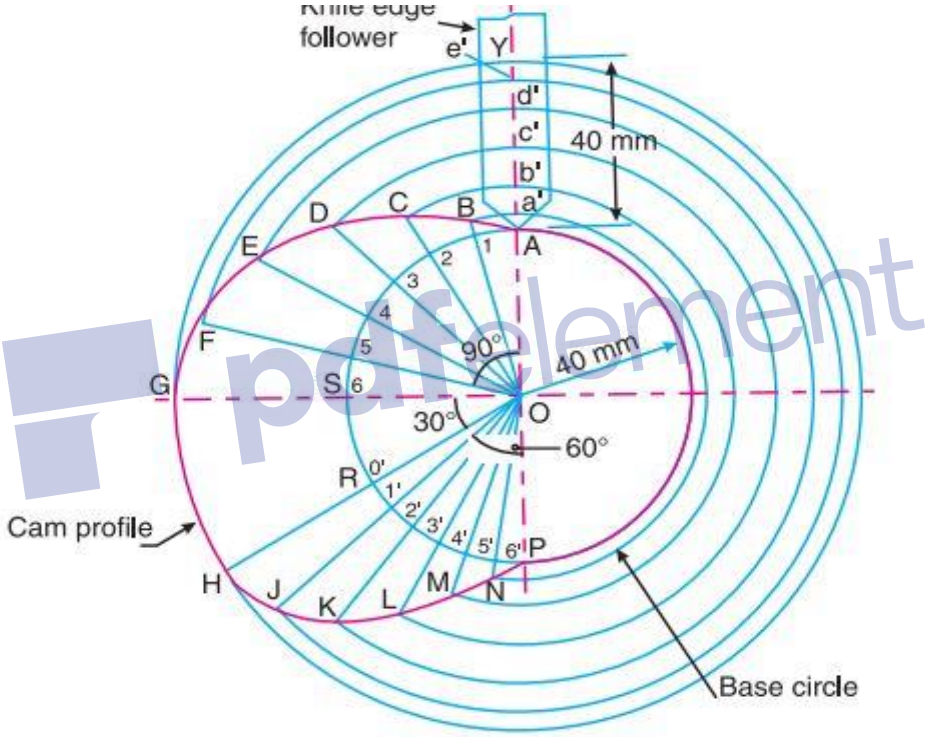


Fig. 20.13

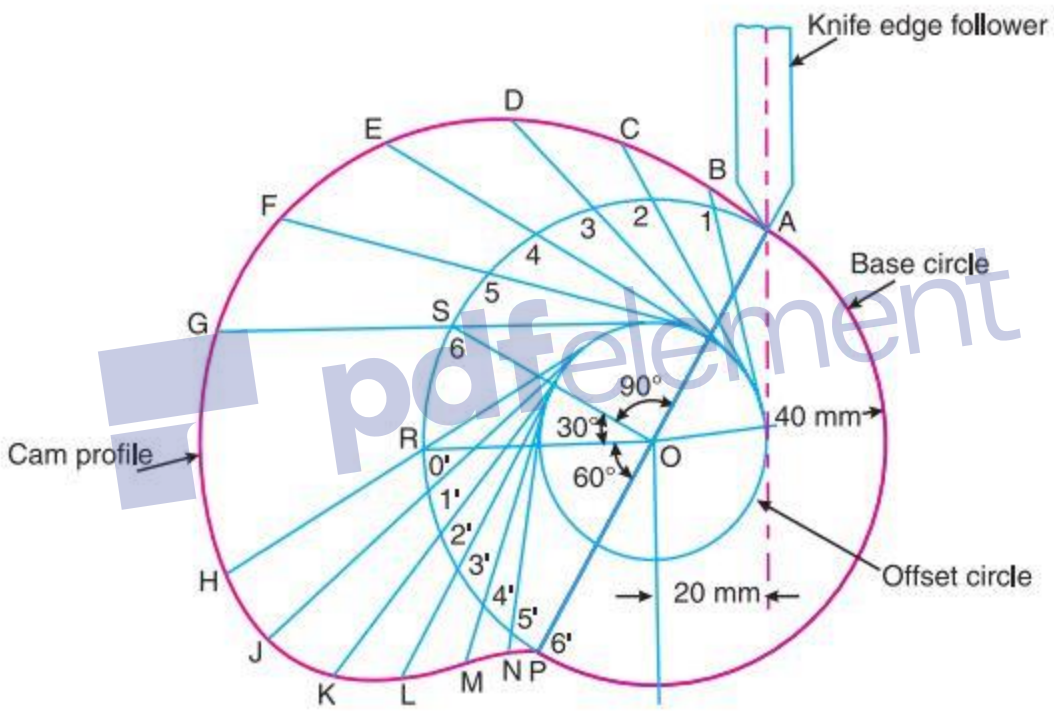
First of all, the displacement diagram, as shown in Fig 20.13, is drawn as discussed in the following steps :

1. Draw horizontal line $AX = 360°$ to some suitable scale. On this line, mark $AS = 90°$ to represent out stroke ; $SR = 30°$ to represent dwell ; $RP = 60°$ to represent return stroke and $PX = 180°$ to represent dwell.
2. Draw vertical line $AY = 40$ mm to represent the cam lift or stroke of the follower and complete the rectangle as shown in Fig. 20.13.
3. Divide the angular displacement during out stroke and return stroke into any equal number of even parts (say six) and draw vertical lines through each point.
4. Since the follower moves with simple harmonic motion, therefore draw a semicircle with AY as diameter and divide into six equal parts.
5. From points a, b, c ... etc. draw horizontal lines intersecting the vertical lines drawn through 1, 2, 3 ... etc. and $0'$, $1'$, $2'$ ...etc. at B, C, D ... M, N, P.
6. Join the points A, B, C ... etc. with a smooth curve as shown in Fig. 20.13. This is the required displacement diagram.

(a) Profile of the cam when the line of stroke of the follower passes through the axis of the cam shaft



b. Profile of the cam when the line of stroke of the follower is offset 20 mm from the axis of the cam shaft



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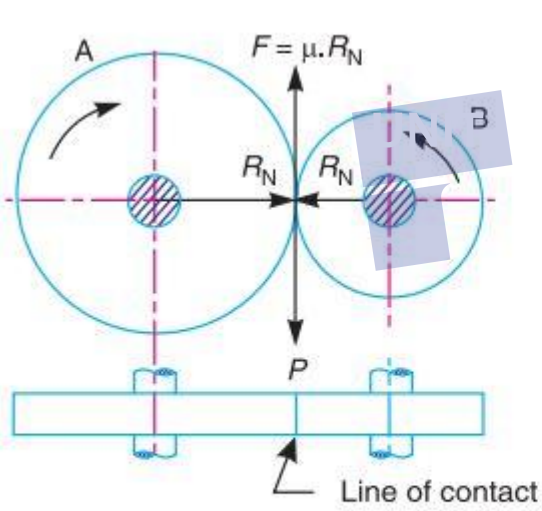
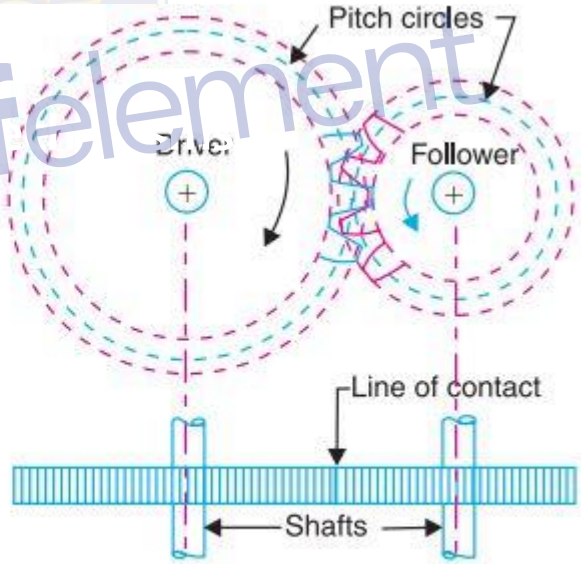
Gear Drive

The slipping of a belt or rope is a common phenomenon, in the transmission of motion or power between two shafts. The effect of slipping is to reduce the velocity ratio of the system. In precision machines, in which a definite velocity ratio is of importaance (as in watch mechanism), the only positive drive is by means of gears or toothed wheels.



(*a*) Friction wheels.



(*b*) Toothed wheels.