PRESSURE ANGLE—RADIAL CAM—TRANSLATING ROLLER FOLLOWER

The pressure angle is defined as shown in Figure 7-2 that depicts a radial or disk cam with a translating roller follower. Force can only be transmitted from cam to follower or vice versa along the common normal or axis of transmission which is perpendicular to the axis of slip, or common tangent as shown in Figure 7-2. The pressure angle $\phi$ is the angle between the direction of motion (velocity) of the follower and the direction of the axis of transmission. When $\phi = 0$, all the transmitted force goes into motion of the follower and none into slip velocity. When $\phi$ becomes 90° there will be no motion of the follower. As a rule of thumb, we would like the pressure angle to be between zero and about ±30° for translating followers to avoid excessive side load on the sliding follower. If the follower is oscillating on a pivoted arm, a pressure angle up to about ±35° is acceptable. Values of $\phi$ greater than these can increase the follower sliding or pivot friction to undesirable levels and may tend to jam a translating follower in its guides.

**FIGURE 7-2**
Cam pressure angle and forces in a radial cam with offset translating roller follower

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