



# **SNS COLLEGE OF TECHNOLOGY**

**(AN AUTONOMOUS INSTITUTION)**



**Department of Mechanical Engineering**

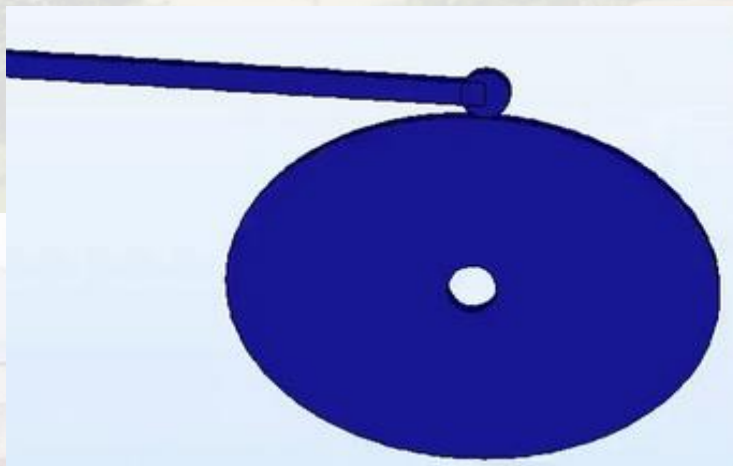
**Theory of Machines**

**UNIT – III**

**KINEMATICS OF CAM MECHANISMS**

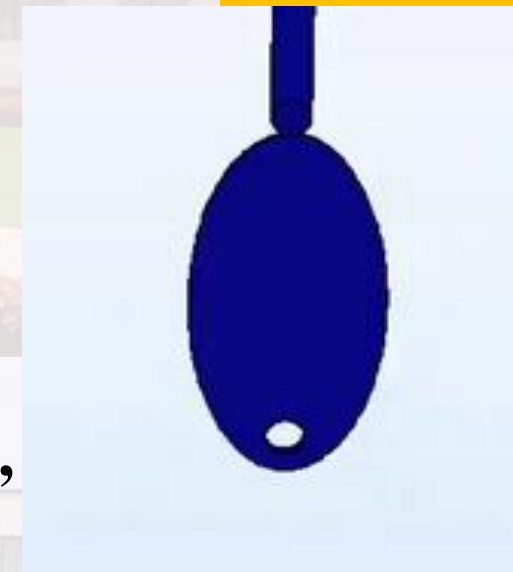
**TOPIC-1**

**TYPES OF FOLLOWER MOTION(TFM)**



SOURCE: COMSOL

**Prepared by**  
**V.S.Kaushik,**  
**Assistant Professor / Mechanical Engineering,**  
**SNS College of Technology, Coimbatore.**



SOURCE: COMSOL



## CLASSIFICATION OF FOLLOWERS

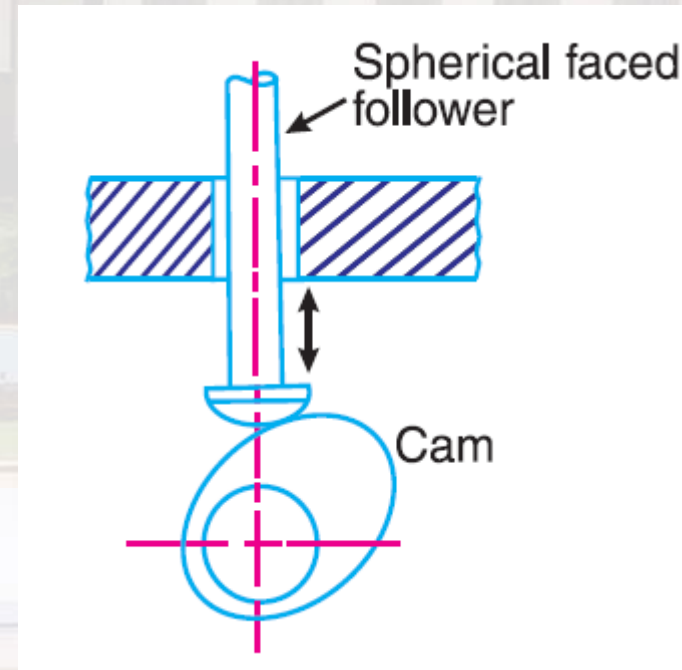
1. According to the surface in contact. The followers, according to the surface in contact, are as follows :

Knife edge follower

Roller follower

Flat faced or mushroom follower

Spherical faced follower

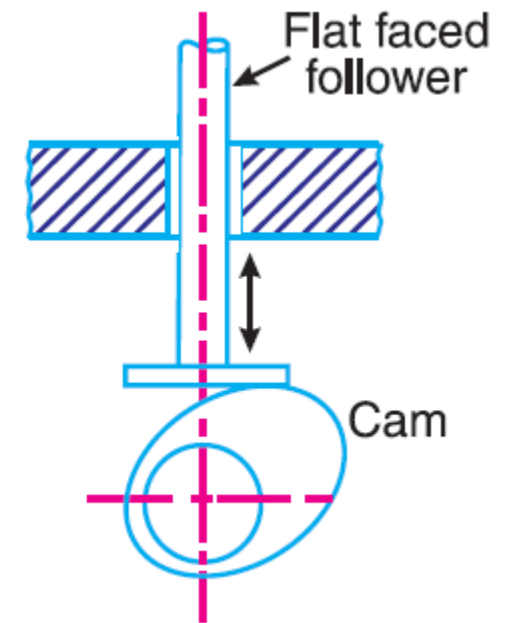
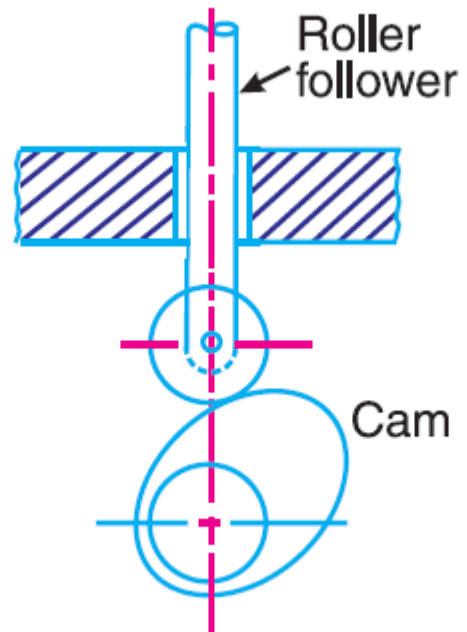
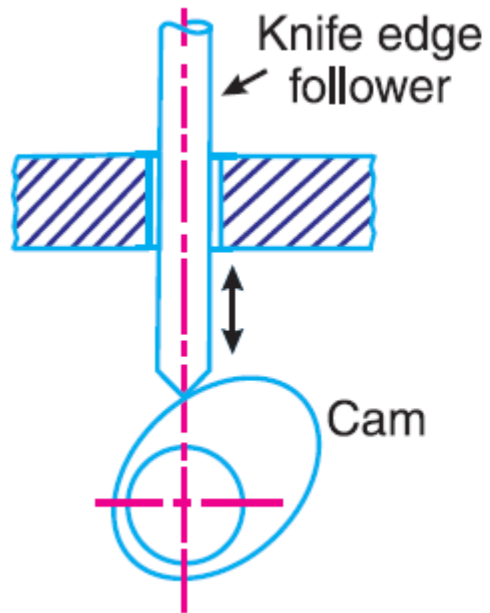


SOURCES: KHURMI R S

*BOARD USAGE ALSO*



# CLASSIFICATION OF FOLLOWERS



SOURCES:  
KHURMI R S





## CLASSIFICATION OF FOLLOWERS

2. According to the motion of the follower. The followers, according to its motion, are of the following two types:

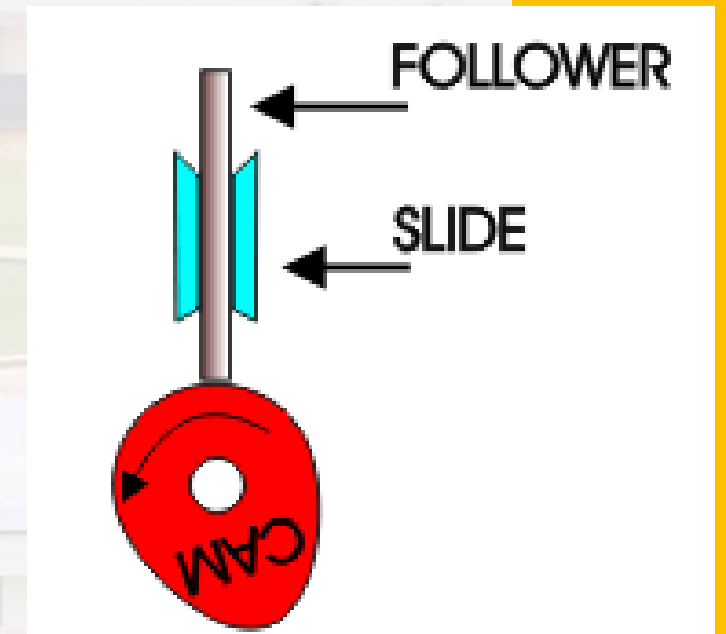
Reciprocating or translating follower

Oscillating or rotating follower

3. According to the path of motion of the follower

Radial follower

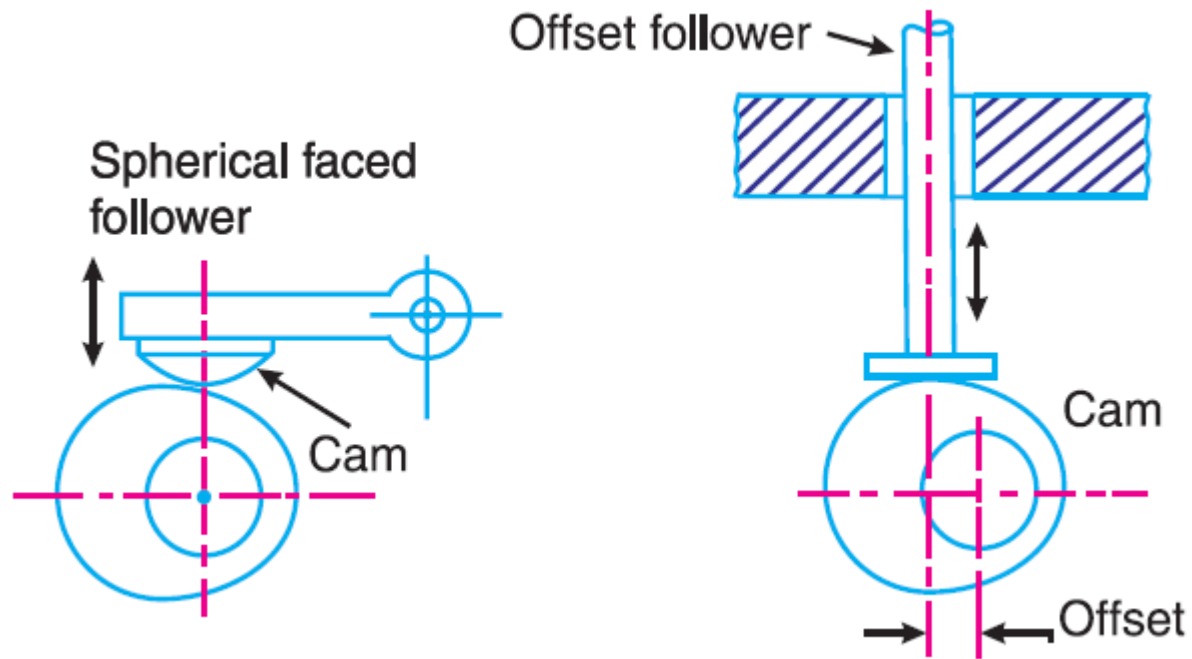
Off-set follower



SOURCE: CAMGIF



# CLASSIFICATION OF FOLLOWERS



SOURCE: KHURMI R S

*BOARD USAGE ALSO*



## TERMS USED IN CAMS

1. **Base circle.** It is the smallest circle that can be drawn to the cam profile.
2. **Trace point.** It is a reference point on the follower and is used to generate the pitch curve. In case of knife edge follower, the knife edge represents the trace point and the pitch curve corresponds to the cam profile. In a roller follower, the centre of the roller represents the trace point.
3. **Pressure angle.** It is the angle between the direction of the follower motion and a normal to the pitch curve. This angle is very important in designing a cam profile. If the pressure angle is too large, a reciprocating follower will jam in its bearings.





## TERMS USED IN CAMS

4. **Pitch point.** It is a point on the pitch curve having the maximum pressure angle.
5. **Pitch circle.** It is a circle drawn from the centre of the cam through the pitch points.
6. **Pitch curve.** It is the curve generated by the trace point as the follower moves relative to the cam. For a knife edge follower, the pitch curve and the cam profile are same whereas for a roller follower, they are separated by the radius of the roller.



## TERMS USED IN CAMS

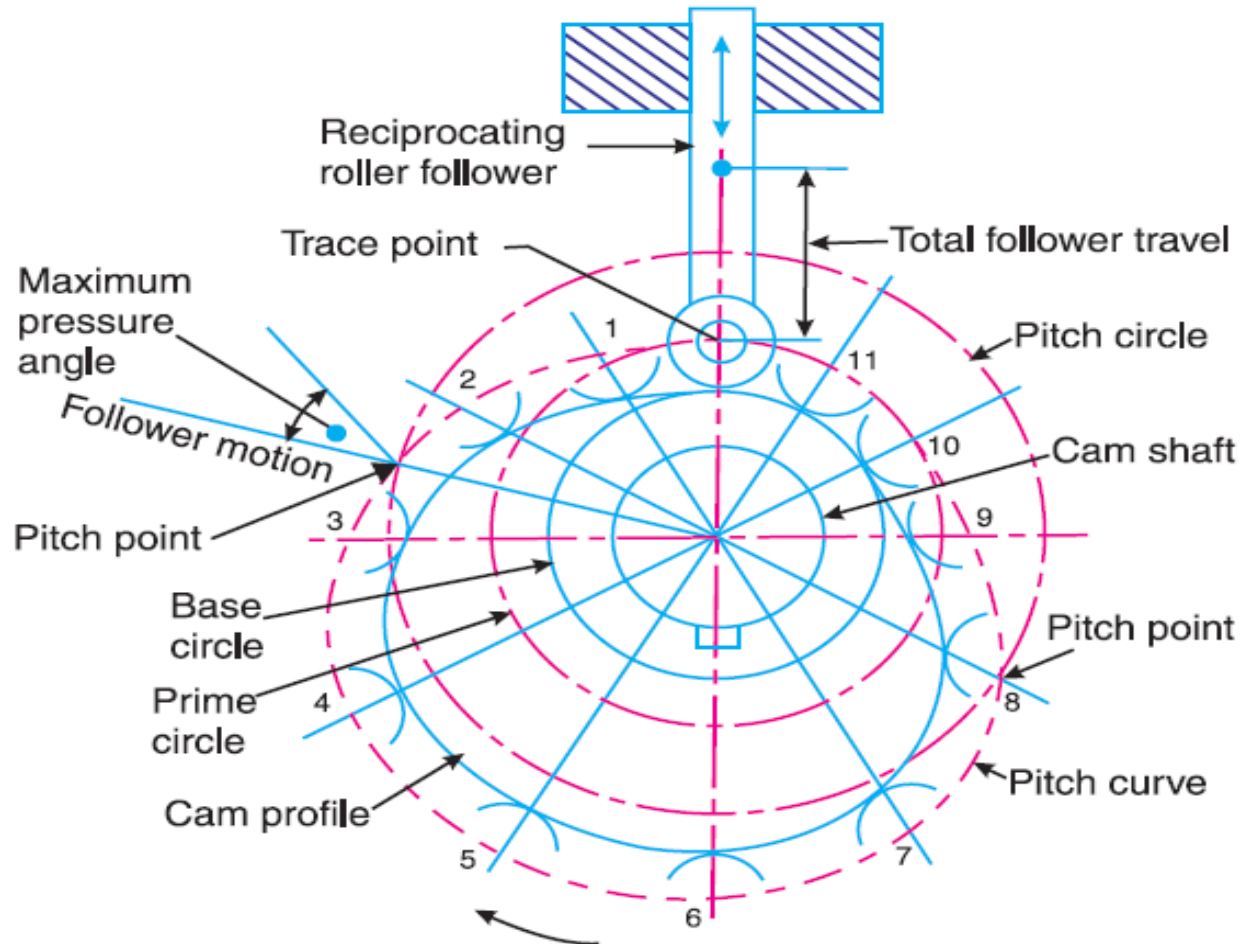
7. **Prime circle.** It is the smallest circle that can be drawn from the centre of the cam and tangent to the pitch curve. For a knife edge and a flat face follower, the prime circle and the base circle are identical. For a roller follower, the prime circle is larger than the base circle by the radius of the roller.

8. **Lift or stroke.** It is the maximum travel of the follower from its lowest position to the topmost position.





## TERMS USED IN CAMS



SOURCE: KHURMI R S

**BOARD USAGE ALSO**



## MOTION OF THE FOLLOWER

**The follower, during its travel, may have one of the following motions.**

1. Uniform velocity,
2. Simple harmonic motion,
3. Uniform acceleration and retardation, and
4. Cycloid motion.

*BOARD USAGE ALSO*



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**ASSESSMENT QUESTIONS**



**Classification of Cams**

Though the cams may be classified in many ways, yet the following two types are important from the subject point of view and **Find out what type of follower is shown in the slide number 12:**

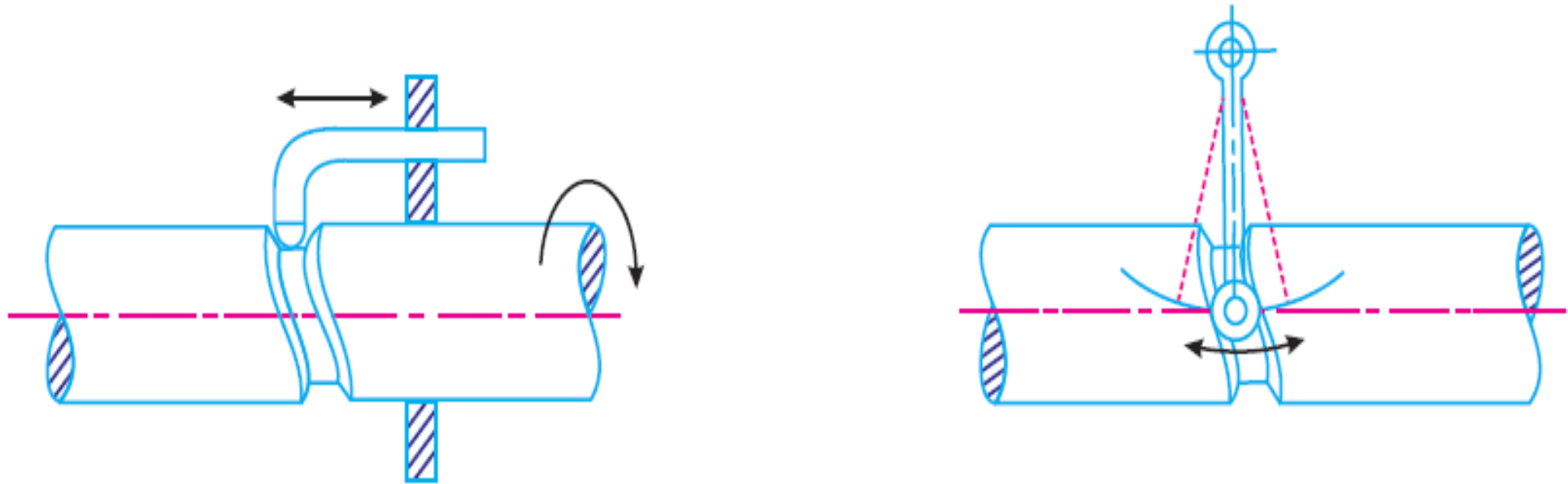
**Note :** In all cases, the follower must be constrained to follow the cam.

This may be done by springs, gravity or hydraulic means. In some types of cams, the follower may ride in a groove.





**ASSESSMENT QUESTIONS**



SOURCE: KHURMI R S

**FIGURE: 1**



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Thank  
you!

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