



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

DEPARTMENT OF AEROSPACE ENGINEERING

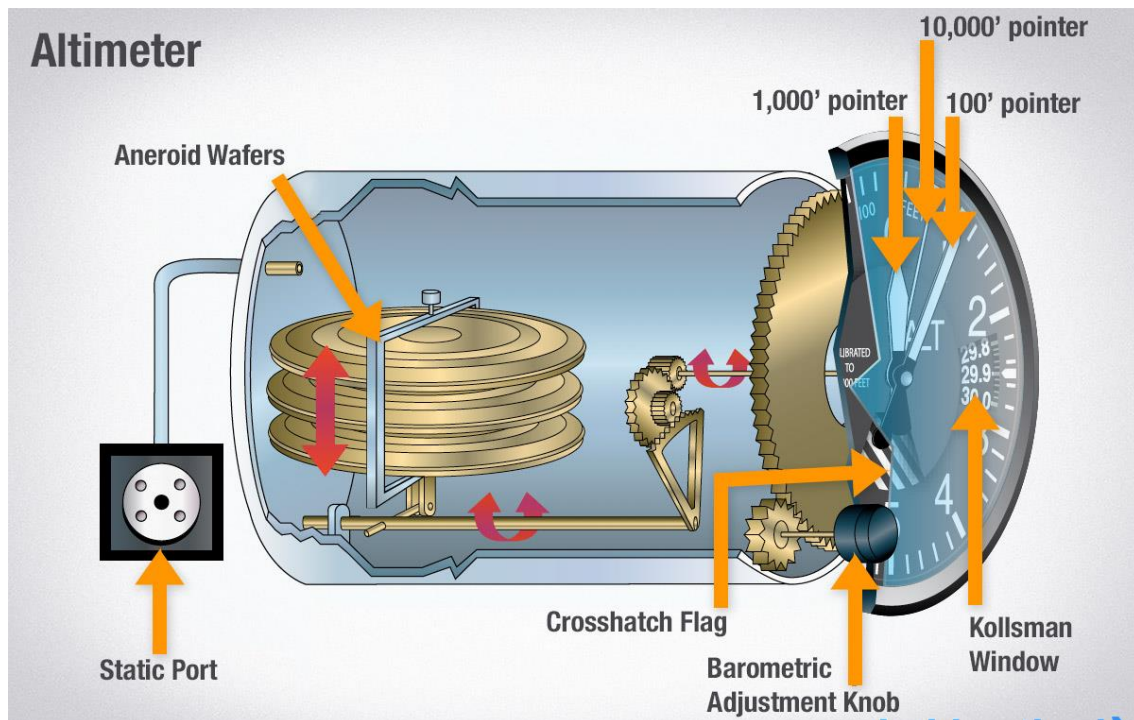
Subject Code & Name: **23AST101 Fundamentals of Aerospace Engineering**

Topic: Altimeters

Altimeters are instruments used in aircraft to measure and display the altitude above a reference point, typically sea level. Here's an overview of altimeters:

Function:

- **Measure Altitude:** Altimeters measure the atmospheric pressure and use this information to determine the aircraft's altitude above sea level.
- **Display:** Altitude is typically displayed in feet or meters on the instrument panel.



Description:

- **Barometric Pressure:** Altimeters use a sealed aneroid capsule that expands or contracts based on the atmospheric pressure. This movement is converted into an altitude reading.
- **Calibration:** Altimeters are calibrated to provide accurate readings at different altitudes and under different atmospheric conditions.

Types of Altitude:

- **Indicated Altitude:** The altitude displayed on the altimeter.
- **Pressure Altitude:** The altitude above the standard datum plane, calculated based on the atmospheric pressure.
- **True Altitude:** The actual altitude above sea level.

- **Density Altitude:** Pressure altitude corrected for non-standard temperature.

Importance:

- **Navigation:** Altitude is crucial for navigating safely, especially when flying at high altitudes or in mountainous terrain.
- **Terrain Clearance:** Altitude information helps pilots maintain safe clearance from terrain and obstacles.
- **Flight Level:** Altimeters are used to set the aircraft's altitude in the standard pressure setting to maintain separation from other aircraft at high altitudes.

Use in Flight:

- **Climb and Descent:** Pilots use altimeters to determine the rate of climb or descent and to maintain a desired altitude.
- **Approach and Landing:** Altitude information is critical during approach and landing to ensure a safe descent path and landing.

Altimeter Settings:

- **QNH:** Altimeter setting that provides altitude above mean sea level.
- **QFE:** Altimeter setting that provides altitude above a specific reference point, such as an airfield.
- **Standard Pressure:** 29.92 inches of mercury (inHg) or 1013.2 millibars, used at high altitudes.

Conclusion:

Altimeters are essential instruments in aircraft, providing pilots with critical altitude information for safe and efficient flight operations. They help maintain safe clearances from terrain, navigate accurately, and ensure compliance with airspace regulations. Pilots rely on altimeters to maintain proper altitude throughout all phases of flight.