

## **MERCURY BAROMETER**

The pressure of the atmosphere at any point is due to the weight of overlying air. Pressure at the surface of the earth is normally measured by the mercury barometer and is expressed in inches of mercury. The mercury barometer consists of an open dish of mercury into which the open end of an evacuated glass tube is placed. Atmospheric pressure forces the mercury to rise in the tube. The greater the pressure the higher the column rises.

## **UNITS OF MEASURE**

### **Pressure**

- Force per unit area.

### **Inches of mercury**

- The unit used to measure the length of a column of mercury in the barometer ("Hg).

### **Millibars**

- The pressure exerted on an area of 1 square cm by a force of 1000 Dynes (mb).

### **Kilopascals**

- Equals 10 hectopascals
- One hectopascal equals one millibars (hPa)

## **ICAO – INTERNATIONAL CIVIL AVIATION ORGANIZATION**

The ICAO Standard Atmosphere consists of:

- MSL pressure                      29.92"Hg = 1013.2 mb = 101.3 kPa
- MSL temperature                15°C
- Lapse Rate                        1.98°C/1000ft
- Air is a                              Perfectly dry gas

## **DENSITY**

Mass per unit volume.

## **PRESSURE AND DENSITY**

Are directly proportional. As density increases so does pressure.

### **ALTIMETER SETTING**

- The barometric pressure reading is used to adjust the altimeter for variations in existing atmospheric pressure or to the standard altimeter setting.
- If set to the existing pressure it will read the true elevation of the airport above sea level.
- It is measured in inches of mercury.

### **METEOROLOGICAL ASPECTS OF THE ALTIMETER**

- When flying from an area of high pressure to an area of low pressure the altimeter will read higher than what the aircraft is actually flying.

#### **HIGH TO LOW - LOOK OUT BELOW**

- When flying from an area of low pressure to an area of high pressure the altimeter will read lower than what the aircraft is actually flying.

#### **LOW TO HIGH - CLEAR BLUE SKY**