

PITOT STATIC SYSTEM (OXFORD)-

- ❖ A PITOT HEAD IS USED TO MEASURE- STATIC PLUS DYNAMIC PRESSURE
- ❖ A STATIC VENT IS USED TO MEASURE- ATMOSPHERIC PRESSURE.
- ❖ A PRESSURE HEAD IS SUBJECT TO THE FOLLOWING ERRORS- (**M I P**)- MANOEUVERING INDUCED, INSTRUMENT ERROR, POSITION ERROR.
- ❖ TURBULENT FLOW AROUND A PRESSURE HEAD WILL CAUSE- 95% OF PRESSURE ERROR.
- ❖ MANOEUVRE INDUCED ERROR- IS CAUSED BY PRESSURE CHANGES AT STATIC VENTS AND LAG.
- ❖ POSITION ERROR – MAY BE REDUCED BY THE FITTING OF STATIC VENTS.
- ❖ PRESSURE HEADS SUPPLY DATA TO THE FOLLOWING INSTRUMENTS- ALTIMETER, ASI, VSI, MACHMETER, AIR DATA COMPUTER.
- ❖ STATIC VENTS ARE USUALLY FITTED TO BOTH SIDES OF THE AIRCRAFT FUSELAGE. THIS WILL – BALANCE OUT ERRORS CAUSED BY SIDE SLIPPING OR YAWING.
- ❖ WHICH OF THE FOLLOWING INSTRUMENTS REQUIRE INPUTS OF BOTH PITOT AND STATIC PRESSURE- AIRSPEED INDICATOR AND MACHMETER
- ❖ WHEN AN ALTERNATE STATIC SOURCE IS FITTED USED OF THIS SOURCE USUALLY LEADS TO- AN INC IN POSITION ERROR.

AIR TEMPERATURE MEASUREMENT:-

- ❖ CONVERTED INTO DEGREES CELSIUS $-40^{\circ}\text{C} = -40^{\circ}\text{F}$.
- ❖ IN THE A/C THERMOMETER WITH AN ELECTRICAL RESISTANCE SENSOR TO MEASURE THE AIR TEMP. THE RESISTANCE WIRE ELEMENT IS PROBABLY- PLATINUM
- ❖ FLYING AT HIGH SPEED AT HIGH ALTITUDE THE DIFFERENCE BETWEEN RAM AIR TEMP. AND STATIC TEMP. IS- DUE TO ADIABATIC WARMING.
- ❖ A/C AIR TEMP. THERMOMETER ARE SHIELDED TO PROTECT THEM FROM- RADIATION.
- ❖ AT A TRUE AIRSPEED OF 500 KTS A RAM RISE OF AIR TEMPERATURE CAN BE EXPECTED OF – 25°C BY $(V^2/100)$.
- ❖ AND AIR TEMPERATURE PROBE MAY BE ASPIRATED IN ORDER TO- MEASURE AIR TEMPERATURE ON THE GROUND.
- ❖ TOTAL AIR TEMPERATURE – THE MAXIMUM TEMP ATTAINABLE BY THE AIR WHEN BROUGHT TO REST, ADIABATICALLY.
- ❖ THE DIFF. BETWEEN STATIC AIR TEMP. AND TOTAL AIR TEMP. IS KNOWN AS- THE RAM RISE.
- ❖ A DIRECT READING A/C THERMOMETER USUALLY CONSIST OF A BIMETALLIC HELIX PROTRUDING INTO THE AIR STREAM. MOVEMENT OF THE POINTER OVER TEMP SCALE WILL DEPENDS UPON- DIFF. COEFFICIENTS OF EXPANSION OF THE TWO METALS.
- ❖ A REMOTE READING THERMOMETER DEPENDS UPON- TO INDICATE CHANGES IN THE TEMPERATURE CHANGE OF ELECTRICAL RESISTANCE WITH TEMP.