

Part I

Chapter 11—Pitot-static System and Flight Instruments

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1 Pitot-static system

(a) The pitot-static system may be divided into the following five separate systems:

- (i) Port wing pressure head.
- (ii) Starboard wing pressure head.
- (iii) Nose pitot head.
- (iv) Fuselage static vents.
- (v) Wing static vents.

(b) The port wing pressure head system supplies both pitot and static pressure to the following:

1st pilot's machmeter, ASI, altimeter* and rate of climb indicator*
AMU

Bombsight computer

(* = Static pressure only)

(c) The starboard wing pressure head system supplies both pitot and static pressure to the following:

- (i) 2nd pilot's machmeter, ASI, altimeter* and rate of climb indicator*
- (ii) Master navigator's ASI and altimeter*.
- (iii) CL *Warning Detector Panel*. This panel is mounted at the AEO's station and contains the stall warning detector switches

and contacting machmeters used to automatically control the operation of the wing nose flaps.

(iv) *Auto Height and Auto Mach Units*. These units are mounted on the pressure bowl in the cabin and are the controlling units for the elevator auto mach trim.

(v) *Undercarriage Pressure Switch*. This switch is mounted on the NBC crate behind the co-pilot's seat. Its purpose is to automatically release the lock on the undercarriage UP button when a speed of 105 knots is attained. This allows a normal undercarriage UP selection to be made. It also completes the circuit to the following:

1H15	Auxiliary intake heaters	Port wing
2H15	Auxiliary intake heaters	Stbd. wing
1H24	Engine intake heating	Port
2H24	Engine intake heating	Stbd.
1H25	Front fuselage intake heating	Port
2H25	Front fuselage intake heating	Stbd.
H31	Ice detector test	
H33	Cold air unit control valves	
5H14	DV window heating	Port
6H14	DV window heating	Stbd. wing

(vi) *Vertical Gust Recorder.* When a vertical gust recorder is carried it is mounted at the starboard side of the bomb-bay, and is connected to the pressure and static supply through a cock located in the cabin adjacent to the navigator's position.

(vii) *Bomb Gear Circuit Pitot Switch.* This switch is mounted in the cabin adjacent to the VG recorder cock and operates in conjunction with the bomb gear.

(viii) *Fatigue Meter Switch.* This switch is mounted in the cabin near the VG recorder cock and controls the switching ON and OFF of the RAE Fatigue Meter.

(ix) *Auto-pilot coupling unit.* This unit is located under the navigator's table and is connected to the static supply only.

(x) *Pitot Head Heaters.* Two switches are located on panel AZ, one of the two switches controls the port pitot head heater while the other controls the starboard. The nose pitot head heater is switched on with the Front Fuselage Heater Switch on panel AD, but the heater does not actually come on until a forward speed of 105 knots is reached.

(d) *Nose pressure head.* This protrudes from the nose of the aircraft and is provided to supply pressure during flight to the bellows of the artificial feel unit.

(e) *Fuselage Static System.* The static vents are on either side of the fuselage below the line of the cabin floor and are interconnected by a 1½ in. dia. pipe. Tappings are taken from the pipe for:

- (1) The artificial feel unit compartment
- (2) The fuel pressure venting system

2 Pitot-static operated instruments

(a) *Airspeed indicators*

Three ASI's are fitted, one on each pilot's instrument panel and one at the navigator's station. Both pilots' ASI's are fitted with a flag which appears and oscillates in the face of the dial if speed is reduced below 160 knots with the undercarriage up. When Mod. 864 (1st pilot—Mk. 1A) and Mod. 2987 (2nd pilot) are embodied

both ASI's are replaced by two-pointer instruments not incorporating warning flags.

(b) *Altimeters*

Three altimeters are fitted, one on each pilot's instrument panel and one at the navigator's station. Mod. 3190 provides vibrators for the Mk. 19B or C altimeters on the co-pilot's instrument panel. Mod. 3486 replaces the Mk. 19B or C altimeters at all three stations with Mk. 19F altimeters and additionally provides vibrators at the 1st pilot's and navigator's stations.

(c) *Machmeters*

A machmeter is fitted on each pilot's instrument panel.

3 Other instruments

(a) *Electrically-operated instruments*

See Part I, Chap. I.

(b) *Accelerometer*

The accelerometer is mounted in front of the 1st pilot on AZ and indicates all normal accelerations imposed on the aircraft in the pitching plane by means of three concentrically-mounted pointers. One pointer indicates instantaneous G and automatically reverts to 1G reading when the aircraft is in straight level flight. The other two register the maximum positive and negative G readings respectively until reset manually.

(c) *Outside air temperature gauge*

An outside air temperature gauge is fitted on panel AB and at the navigator's station.

4 Malfunctioning of the pitot-static system

(a) The starboard system contains a greater number of pipe joints than the port system and is therefore more susceptible to a leak developing.

(b) If a discrepancy occurs between the readings of the 1st and 2nd pilots' pressure instruments it is more likely that the instruments fed from the starboard system are in error.

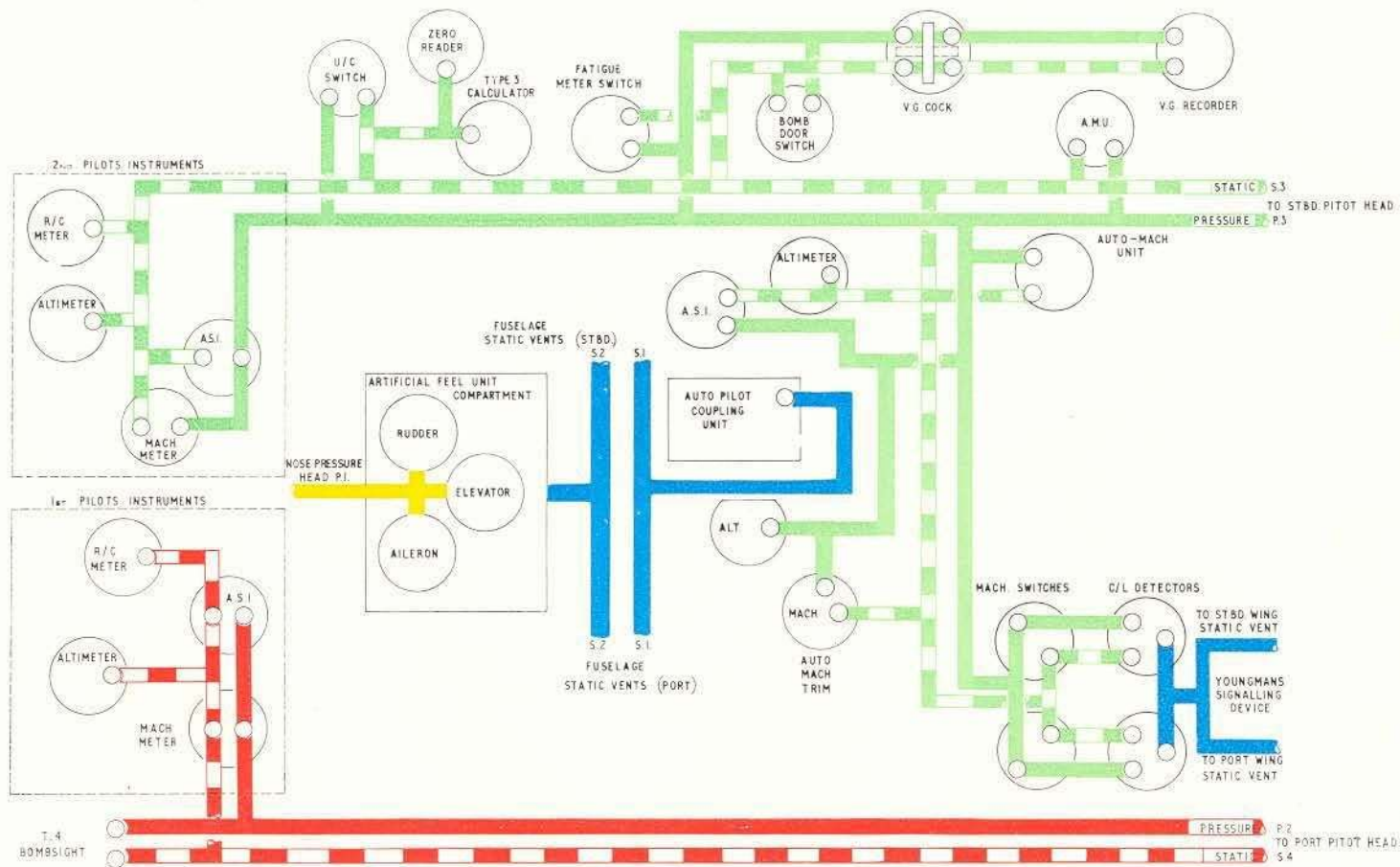


Fig. 1 Pitot-static system

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LIGHTNING MK. 1
COVER PITOT HEAD
EB2-88-511