

AL/11-6

speed of subsonic aircraft. The final influencing factor of note is that icing does not occur above about 12 000 m (40,000 ft) since the droplets are all frozen and in the form of ice crystals and will not adhere to the aircraft's surface.

3 TYPES OF ICE DETECTOR HEADS

3.1 **Pressure Operated Ice Detector Heads.** These consist of a short stainless steel or chromium plated brass tube, which is closed at its outer end and mounted so that it projects vertically downwards from a portion of the aircraft known to be susceptible to icing. Four small holes are drilled in the leading edge of this tube, and in the trailing edge are two holes of less total area than those of the leading edge (Figure 1). A heater element is fitted to allow the detector head to be cleared of ice. In some units of this type a further restriction to the air flow is provided by means of a baffle mounted through the centre of the tube.

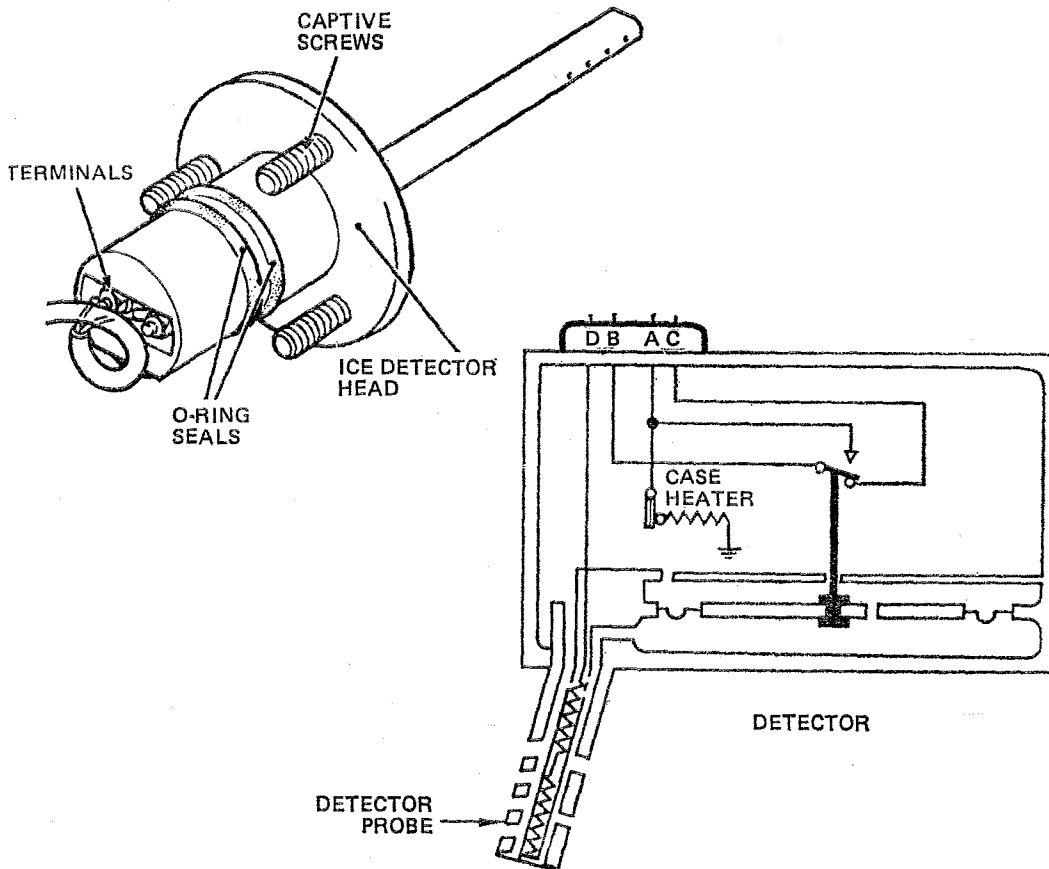


Figure 1 PRESSURE OPERATED ICE DETECTOR HEAD

3.1.1 When, in normal flight, pressure is built up inside the tube by the airstream, this pressure is then communicated, by tubing, to the capsule of an electro-pneumatic relay tending to expand it and separate a pair of electrical contacts. When icing conditions are met, ice will form on the leading edge and close off the holes. As the holes in the trailing edge will not be covered by ice the airstream will now tend to exhaust the system, collapsing the relay capsule and so closing the relay contacts. Generally these contacts operate in conjunction with a thermal device, to illuminate a warning indicator in the flight compartment and to switch on the heater in the detector head; the latter clears the head of ice and is then switched off allowing continued detection of icing conditions. This cycling will continue until such time that the icing conditions no longer exist.

3.2 **Hot Rod Ice Detector Head.** This consists of an aluminium alloy oblong base (called the plinth) on which is mounted a steel tube detector mast of aerofoil section, angled back to approximately 30° from the vertical, mounted on the side of the fuselage, so that it can be seen from the flight compartment windows. The mast houses a heating element, and in the plinth there is a built-in floodlight (Figure 2).

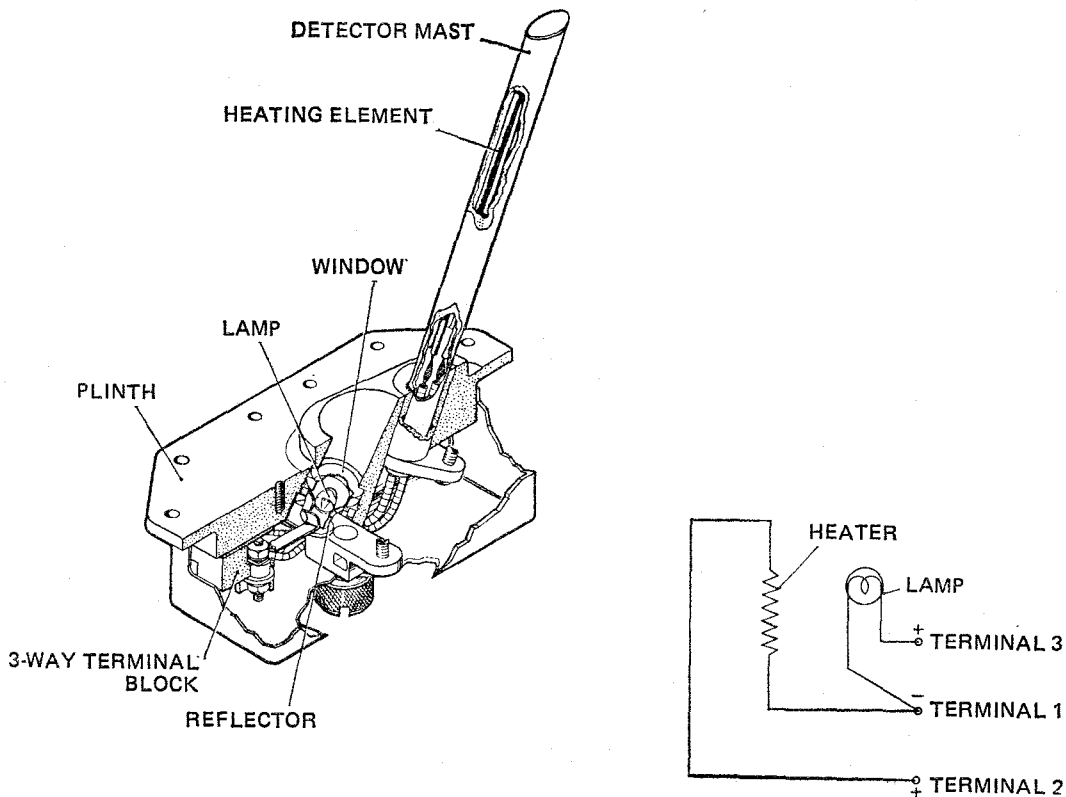


Figure 2 HOT ROD ICE DETECTOR HEAD