TECHNICAL DIAGNOSIS AND SOLUTIONS BULLETIN
Polaris Heaters With Pressure Switches Installed on the Air Intake

The purpose of this technical bulletin is to communicate a simple solution to a potential problem when a Polaris water heater is drawing extremely cold air. The cold air is causing moisture or frost or both to build-up in the brass pitot tube and brass barb connected to the pitot tube. If the moisture/frost blocks air flow through the pitot tube, then the water heater will shut down. Figure 1 shows frost build-up on the brass barb of the pitot tube. The water heater was drawing air at –20°F.

Moisture/frost build-up is prevented by sealing what is called the bleed hole on the pressure switch. The bleed hole is located on the plastic barb on the negative side of the pressure switch. The negative side is colored gray and labeled "- P2". Figure 2 shows the negative side of the pressure switch. Figure 3 is a close-up view of the bleed hole.

To seal the bleed hole, the pressure switch should be removed from the heater. A small droplet of silicone cement can be used to seal the bleed hole. Since the hole is small and the negative pressure in the water heater is small, the silicone cement does not have to dry before the pressure switch is re-installed.

Before re-installing the pressure switch, the moisture in the pitot tube and pitot tube barb should be removed. To remove the moisture, disconnect the clear PVC tubing from the both metal barbs. Use a tissue or cotton swab to pull the water from inside the PVC tubing connected to the pitot tube barb. Use a tissue or cotton swab to remove the water from the brass barb opening. Apply heat to the brass barb with an air gun, such as a hair drier. Figure 4 shows an air-intake pipe with the pitot tube, the brass barb of the pitot tube, and the stainless steel barb.

When the PVC tubing is re-connected to the barbs on the pressure switch and air-inlet tube, it is important to make certain the tubing is completely covering the barbs. If the connections are not leak-tight, the water heater may not start.

When the heater is re-started, you may still see some frost on the brass barb. This frost is not a concern. There will always be some residual moisture in the PVC tubing and the pressure switch. Since the bleed hole is now sealed, the frost will not build-up. You may also see moisture on the brass nut of the barb. This frost is not a concern, since it is external to the pitot tube.

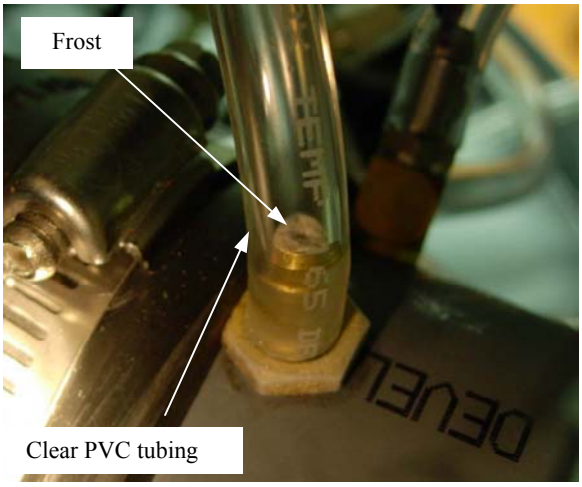

Fig. 1. View of frost on brass barb of the pitot tube. After the bleed hole is sealed, the moisture must be removed from inside the brass barb and pitot tube.

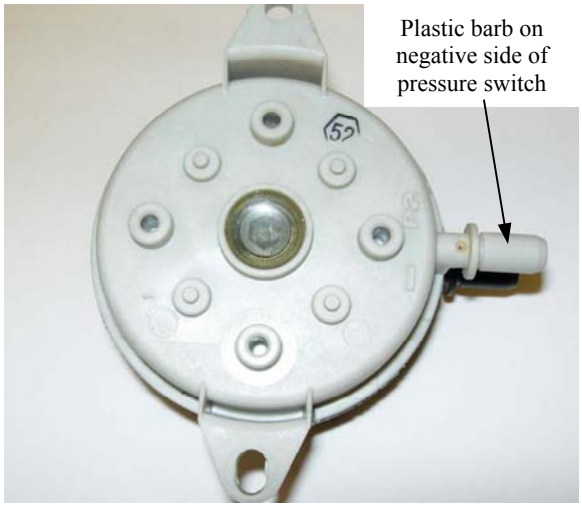

Fig. 2. View of negative side of pressure switch.

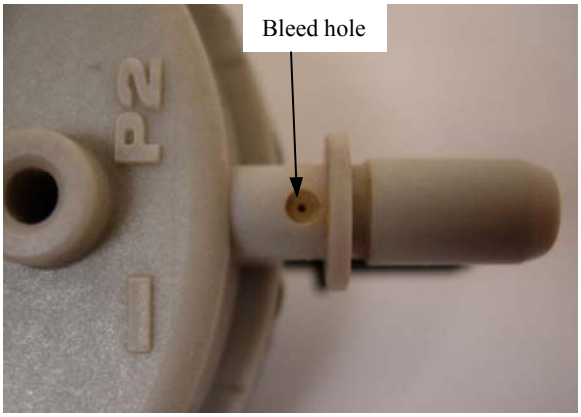

Fig. 3. Close-up view of bleed hole on negative side of pressure switch.

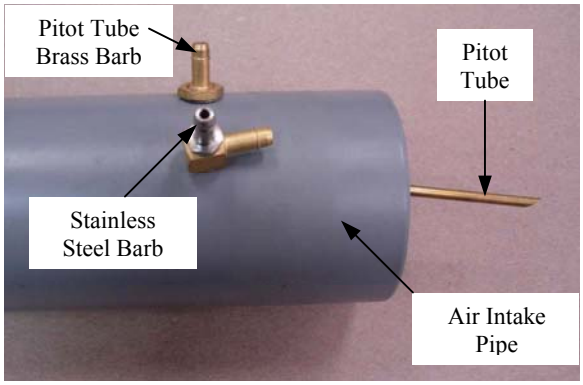

Fig. 4. Air intake pipe showing the pitot tube, the brass barb of the pitot tube, and the stainless steel barb.