

SERVICE TIPS

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TO: All York Branches and Distributors
All York Service Managers
All Field Service Supervisors

SUBJECT: Modulating Furnace Pressure Switch Testing

Due to several inquiries we have recently received regarding the proper method for checking the operation of the pressure switch on a modulating furnace, we offer the following.

A standard multi-meter measures resistance by applying a small DC voltage to the load, and measuring the proportional current. The resistance is then calculated by dividing this voltage by the current: $R=V/I$, Ohm's Law.

In most furnaces a pressure switch is only energized when the inducer is running. At the specific vacuum (negative pressure), the pressure switch closes and allows AC current to flow to the control board. However, in JCI's modulating furnaces the pressure switch signal is continuously monitored by the control board, with or without a call for heat from thermostat, and AC voltage is always present on the switch contacts even when the inducer is NOT running. This is a designed feature, which has been incorporated to insure against any unsafe furnace operation.

WARNING:

DO NOT USE the CONTINUITY or RESISTANCE setting of a multi-meter to check the pressure switch contacts. The presence of the AC load will cause the meter to 'flash' or 'beep' intermittently. Reference Figure 1.



Figure 1.

If checking continuity or resistance of the switch with the leads attached, the entire circuit of the furnace is being checked; including the control board, which will lead to false readings. To properly check continuity of a pressure switch in a modulating furnace, we recommend the voltage drop method:

Voltage Drop Method:

The voltage drop method is a basic application of Ohm’s Law. It simply states that the drop in voltage measured across a resistive load (in this case the pressure switch) is proportional to the resistance. Therefore, by measuring a low AC voltage across the pressure switch terminals, we can determine:

- a) If the pressure switch contacts are closed, and
- b) That the pressure switch impedance is low.

When the pressure switch contacts are closed, the meter should read no more than 0.8VAC or 800mVA. When the pressure drops below the pressure switch setting of the switch, and the contacts open, the meter will measure approximately 24VAC (nominal furnace voltage). Reference Figures 2 & 3.



Figure 2 Open Pressure Switch



Figure 3 Closed Pressure Switch

In order to perform the voltage drop test, connect your meter leads on the pressure switch terminals as shown in Figure 4.



Figure 4.

Note that this same test procedure should be used for checking any pressure switch, limit switch or rollout switch. For more information regarding pressure switch operation on modulating furnaces, reference the 33” Modulating Furnace Training manual.

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