

TECH TIPS

February 20, 2018

Modulating Furnace Pressure Transducer

What is a pressure transducer?

Pressure transducers are found on Luxaire LP9C (97.5%+) and LPLC (80%) modulating furnaces. Its function is to measure combustion air pressure and convert the applied pressure to an electrical signal. This signal is measured in DC volts. The transducer sends this voltage to the furnace control board to determine inducer motor speed and gas valve firing rate.

This is what you will find inside the transducer:



S1-02435922000



S1-03109198000
"Lo(-)" port is used

Either transducer can be used in a modulating furnace.

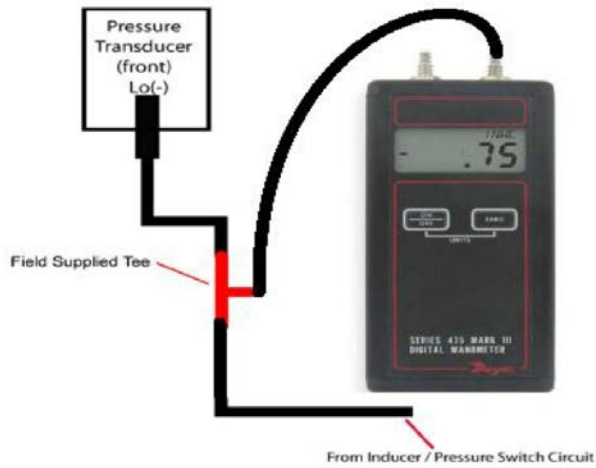
Troubleshooting the Pressure Transducer

- Green – Common
- Red – 5 VDC input
- Black - .25-5VDC output

To test the calibration if the pressure transducer you will need the following tools:

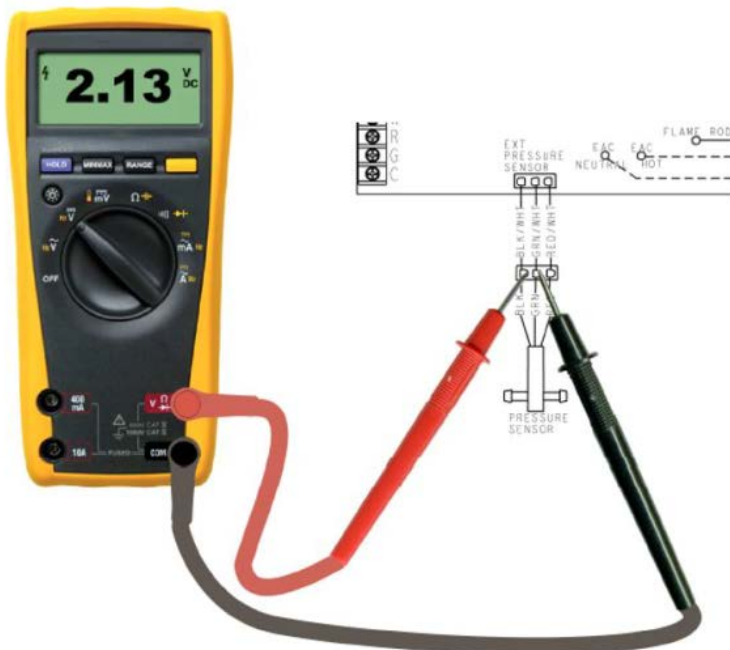
- Voltmeter
- Manometer
- Pressure hose
- Pressure hose tee
- Low voltage jumper wire

Connect your manometer in-line with the pressure transducer, vent pressure switch, and inducer as illustrated below:



Check volts DC output from the transducer. With no inducer motor operation your output voltage should read 0.25 VDC (Black to Green)

Zero your manometer and create a call for heat either from the thermostat or by jumping R-W. Use the pressure to voltage chart below to compare VDC output (**BLACK** to **GREEN**) from pressure transducer to pressure read from manometer.



Pressure (in. w.c.)	Voltage (VDC)
0.00	0.25
0.40	1.00
0.45	1.09
0.50	1.19
0.55	1.28
0.60	1.38
0.65	1.47
0.70	1.56
0.75	1.66
0.80	1.75
0.85	1.84
0.90	1.94
0.95	2.03
1.00	2.13
1.05	2.22
1.10	2.31
1.15	2.41
1.20	2.50
1.25	2.59
1.30	2.69
1.35	2.78
1.40	2.88
1.45	2.97
1.50	3.06
1.55	3.16
1.60	3.25

NOTE: As you can see from the chart, the pressure to voltage relationship is within a very tight tolerance. They should correspond to within +/- 0.1" w.c.

Things to Remember

- Make sure your meter is set to **VDC**. Attempting this testing procedure with your meter set to *ohms* can damage the furnace control board
- At lower combustion firing rates the combustion/vent pressure switch will open. This is **normal** operation and can be confusing to a technician who is unfamiliar with this furnace when they see continuous flame with an open pressure switch.
- Furnace control board error codes 2 and 3 are referencing the combustion/vent pressure switch **ONLY**, not the blocked condensate drain pressure switch.
- Always check to ensure that factory installed zip ties are not pinching pressure switch and transducer tubing. This can cause furnace lockouts and nuisance callbacks.
- “Lo(-)” port is used to reference inducer pressure.
- Since the pressure transducer is also used to regulate gas valve operation, a non-functioning pressure transducer can also cause Modulating Gas Valve fault codes.
- A condensate drain on the INTAKE of a 2-pipe hi efficiency furnace should always be installed. Drain kits are provided with current models. On legacy products, if you have signs of moisture or corrosion on your pressure transducer or gas valve, a drain should be installed in the field. Water from the intake primarily occurs in the summer as hot humid air migrates back through the intake and condenses on the inside of the pipe. Kids have also been known to put snow down intake pipes in the winter too 😊. On certain models, the gas valve and/or pressure transducer may be directly underneath the intake as shipped from the factory. Consider bringing your intake in from either side of the furnace cabinet as this helps reduce issues related to water entering from the intake.

If you have any questions regarding this TECH TIP, please feel free to contact me at the office at 800-830-0853, mobile phone 610-241-5839 or via email at patmoran@americanairdist.com.

Thanks!

Patrick

Patrick Moran
Technical Support Specialist
Thanks!