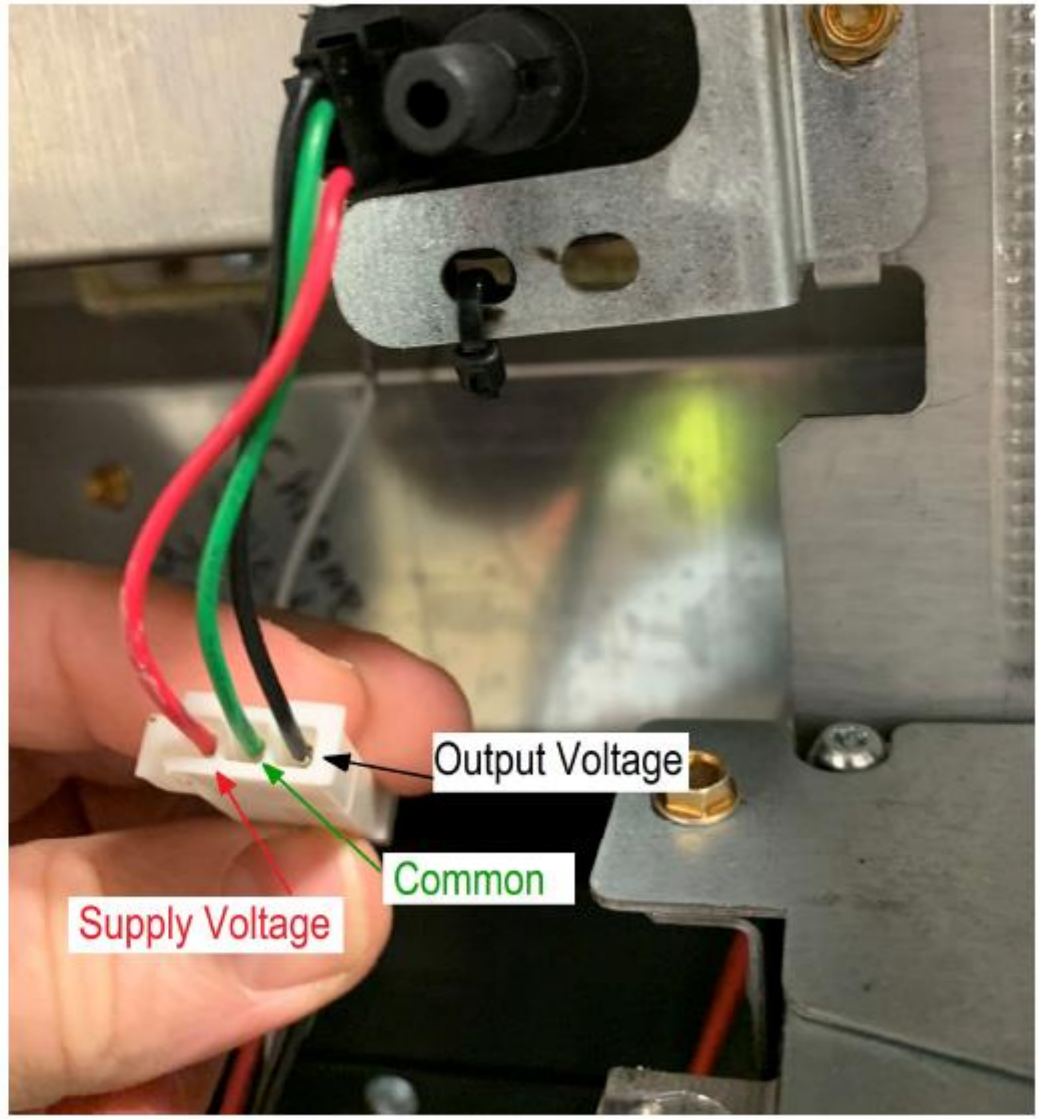
2023 ULN Transducers

ULN Furnace troubleshooting

Pressure Transducer

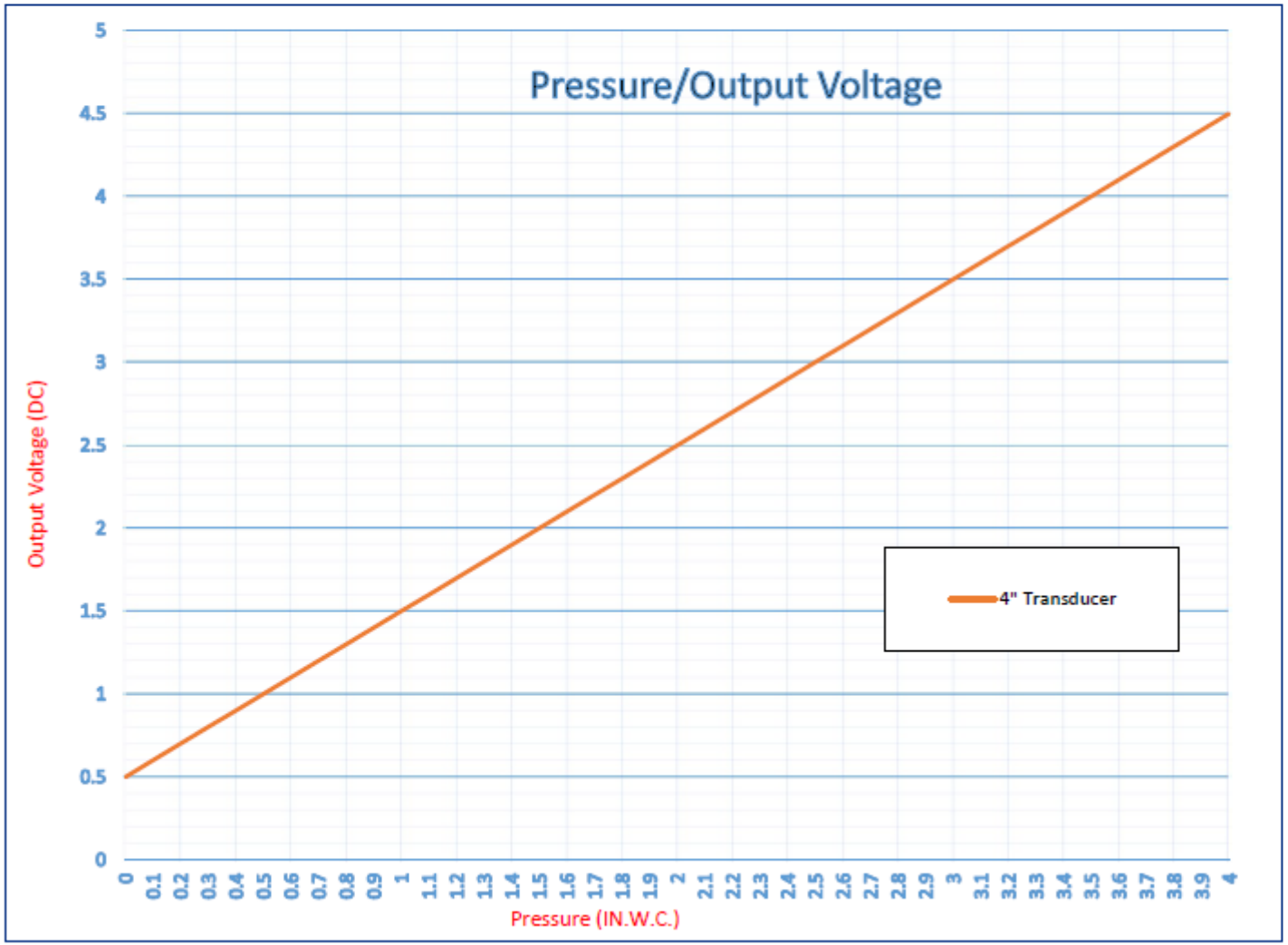
Three terminal device

- Red- Supply voltage to transducer
  - -003 and -004 transducers
    - 5VDC +/- .2VDC
  - -006 transducer
    - 12VDC +/- .2VDC
- Black – Output from transducer
  - Voltage will vary based on pressure applied to transducer
- Green – Common



4” Range Transducer Output

(Used on all communicating and condensing models- 90% GREEN condensing furnace controls, and ALL BLUE furnace controls



Pressure (In.W.C.)	4"transducer Voltage (DC)
0	0.5
0.1	0.6
0.2	0.7
0.3	0.8
0.4	0.9
0.5	1
0.6	1.1
0.7	1.2
0.8	1.3
0.9	1.4
1	1.5
1.1	1.6
1.2	1.7
1.3	1.8
1.4	1.9
1.5	2
1.6	2.1
1.7	2.2
1.8	2.3
1.9	2.4
2	2.5
2.1	2.6
2.2	2.7
2.3	2.8
2.4	2.9
2.5	3
2.6	3.1
2.7	3.2
2.8	3.3
2.9	3.4
3	3.5
3.1	3.6
3.2	3.7
3.3	3.8
3.4	3.9
3.5	4
3.6	4.1
3.7	4.2
3.8	4.3
3.9	4.4
4	4.5

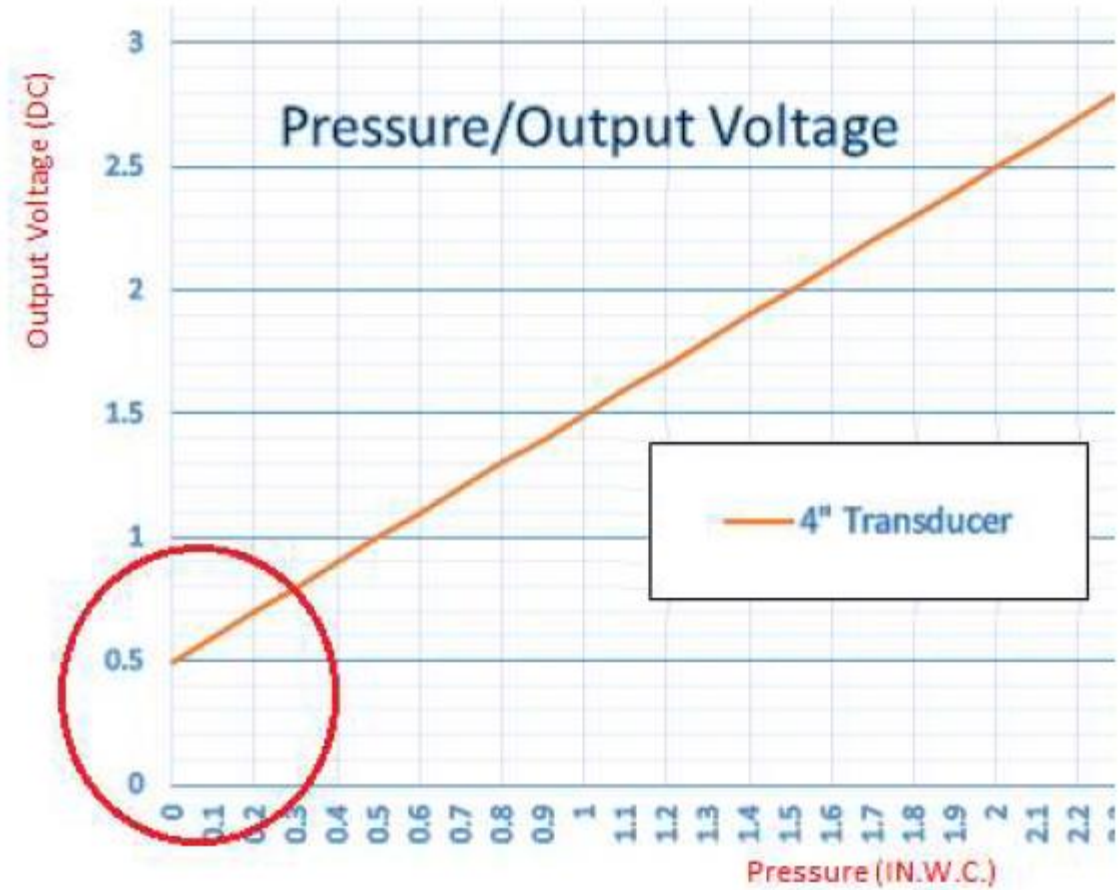
Target Pressures – BLUE CONTROLS

Heating Call Sequence	80% furnaces				90% furnaces			
Unit Size (KBTU/h)	40	60	80	100	40	60	80	100
Model Plug	HK70EZ024	HK70EZ026	HK70EZ028	HK70EZ029	HK70EZ032	HK70EZ034	HK70EZ036	HK70EZ037
Startup (Heat call initiation)								
Inducer pressure (In.W.C.) (must be less than)	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Transducer feedback (VDC) (must be less than)	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
PrePurge and Ignition (15s+ igniter warmup)								
Inducer pressure (In.W.C.)	0.60	0.65	1.10	0.80	1.65	1.40	1.50	2.00
Transducer feedback (VDC)	1.10	1.15	1.60	1.30	2.15	1.90	2.00	2.50
Flame Stabilization								
Inducer pressure (In.W.C.)	0.70	1.00	1.30	1.10	2.15	1.80	1.80	2.20
Transducer feedback (VDC)	1.20	1.50	1.80	1.60	2.65	2.30	2.30	2.70
Time at this pressure (seconds)	2	-	-	10	10	-	-	-
Run pressure								
Inducer pressure (In.W.C.)	1.90	1.25	1.55	1.45	2.40	2.25	2.35	2.40
Transducer feedback (VDC)	2.40	1.75	2.05	1.95	2.90	2.76	2.85	2.90
Post Purge	Inducer RPM will remain the same is it was when the heat call was terminated, so pressure and resultant Transducer voltage will rise very slightly as the unit cools							

4” Range Transducer (NULL) Output – HK05ZZ004, HK05ZZ006

- Used on series 2 non-communicating 80%, all condensing models, all communicating models, and)

Pressure (In W.C.)	4"transducer Voltage (DC)
0	0.5
0.1	0.6
0.2	0.7
0.3	0.8
0.4	0.9
0.5	1



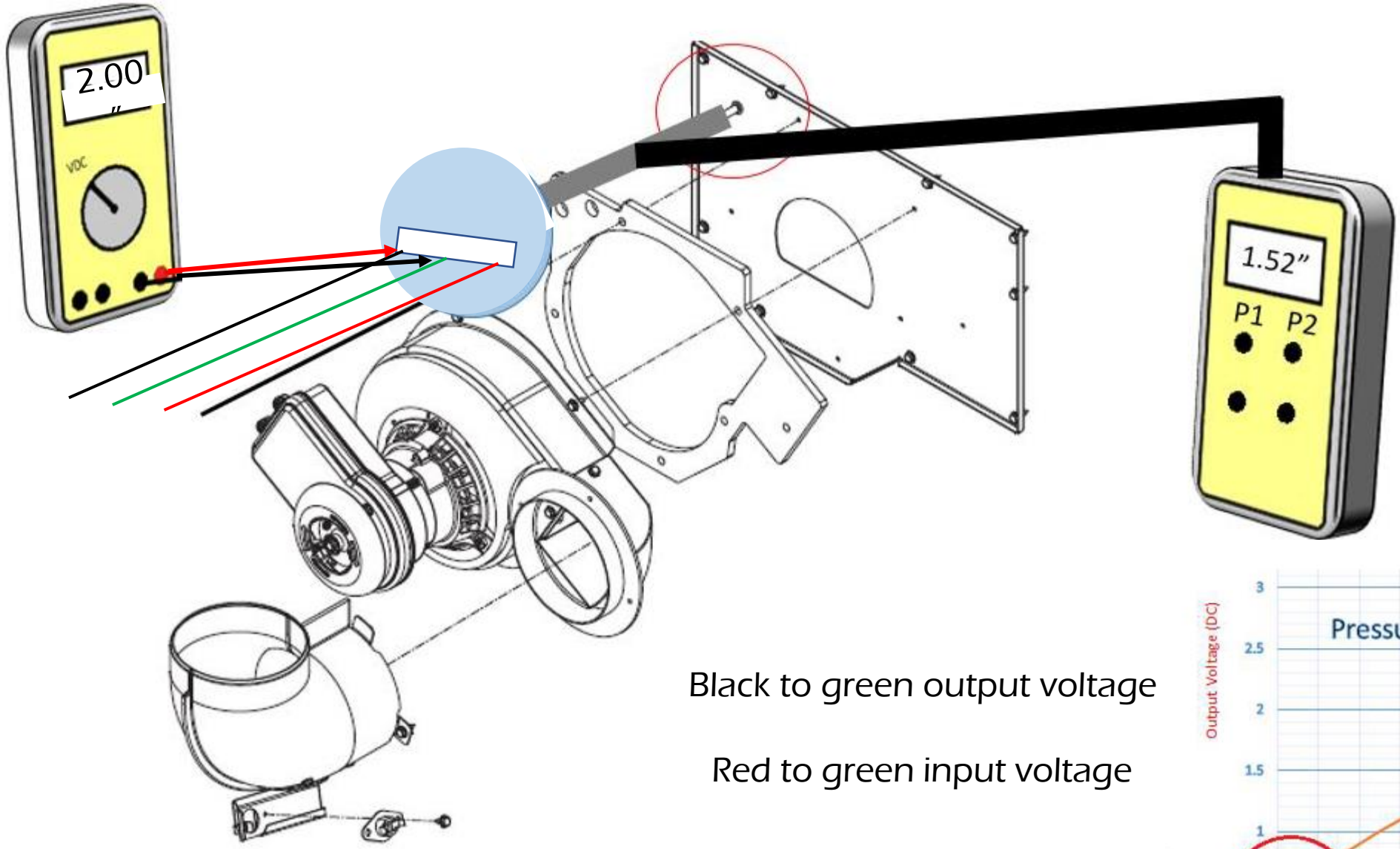
Troubleshooting transducer operation - BLUE control

- From the service label

23	PRESSURE > 0.15" w.c. AT START-UP. Check for:			
	- Obstruction in pressure tubing or Transducer vent holes		- Defective Transducer	-Transducer wiring

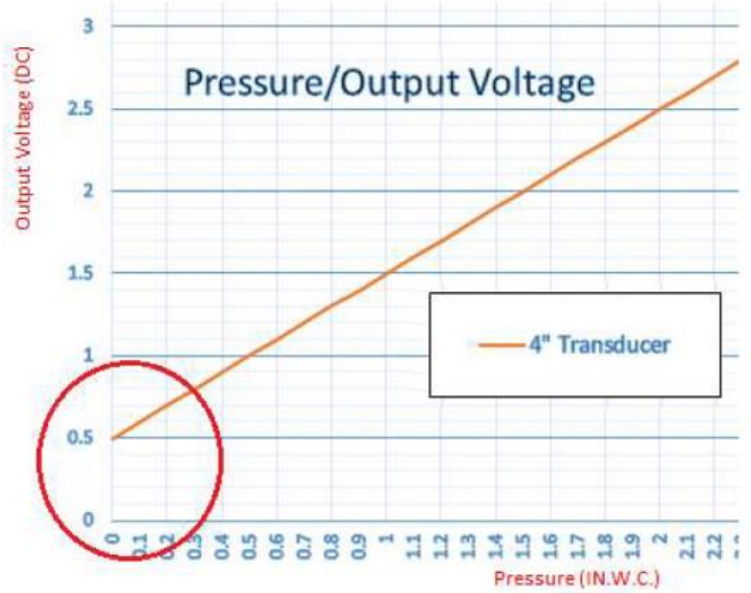
- Negative pressure on transducer MUST be 0.15" or less (<0.65VDC output)
- Tee into the pressure hose and measure pressure on transducer with no call for heat.
    - If pressure is above 0.15"W.C., vent system modifications may be necessary

- Determine defective transducer
    - Unplug pressure hose from transducer
        - Measure input voltage from Red to Green. Should be ~12VDC
        - Measure voltage output from Black to Green.
            - Should be between 0.43VDC and 0.58VDC.
        - Measurements outside of this range indicate a defective transducer.



Black to green output voltage

Red to green input voltage



How to test the pressure transducer

VDC Between Black and Green is Signal
VDC Between Red and Black is Supply

* S = Static Condition
O = Operating Condition

Transducer Supply Voltage_____VDC(s)

Transducer Signal Voltage_____VDC(s)

Transducer Manometer Pressure _____"W.C.(s)

Transducer Supply Voltage_____VDC(o)

Transducer Signal Voltage_____VDC(o)

Transducer Manometer Pressure_____"W.C.(o)

HK05ZZ006
TRANSDUCER, PRESSURE