



GAS UNITS KITS & ACCESSORIES

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TROUBLESHOOTING GUIDE

INSTRUCTIONS FOR TROUBLESHOOTING IGNITION OR NOISE ISSUES FOR ULTRA LOW NOX 80% EFFICIENCY -05 UNITS

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier

Combustion Air Intake Assembly and Installation

If the furnace will not light, ignites with a loud noise, or is noisy after ignition, verify the combustion air intake is assembled and installed correctly. See figure 1.

Incoming Voltage and Gas Supply Pressure Check

If the furnace will not light check voltage to the furnace. Voltage should be between 108VAC and 132VAC. If voltage is not within this range contact a license electrician or the electric company. Gas line pressure coming into the house should be between 4.5" to 10.5" W.C.

Check under the following conditions:

- 1 - With the furnace off.
- 2 - With all other gas appliances in the home on. (Includes gas logs, oven, drier and hot water).
- 3 - While attempting to light the furnace and the line pressure drops more than 1" or below 4.5" W.C. then consult either a licensed plumber or the gas company to correct.

Gas Manifold and System Operating Pressure Check

- 1 - Turn off the electrical power and gas supply to the furnace.
- 2 - Check the gas manifold pressure on the SIT gas valve by opening the manifold pressure post. See figure 2. Using a 4.5-5 x 0.8 mm screw driver, loosen the slot headed brass sealing screws. The sealant screws can not be removed.
- 3 - Install hoses and meter as shown in figure 4 and 5 for system operating pressure measurement. The system operating pressure is monitored by the pressure switch and is the pressure drop across the air orifice.

- 4 - Turn on electrical power and gas supply to the furnace. Start Furnace.
- 5 - After allowing unit to stabilize for 8 minutes, record manifold pressure and compare to value in table 1. If manifold pressure is within range, rate check is complete move to step 6. If manifold pressure is not within range replace gas valve.

Gas Valve is not adjustable. Do not adjust manifold pressure.

- 6 - Record system operating pressure and compare to value in table 3. If system operating pressure is within range continue. If the system operating pressure is not within range go to "Troubleshooting".
- 7 - Shut off unit and remove manometer and signal meter after accurate readings has been obtained. Remove measurement hoses. Tighten the brass sealing screws loosened in step 2. *Sealant screws must be tightened before firing the unit.*
- 8 - Restart unit and check for gas leaks. Seal any leaks found.

If the unit has difficulty igniting or ignites with loud noise see "Air Orifice Replacement" and "Troubleshooting".

TABLE 1
Gas Manifold Pressure

Capacity	Gas Manifold Pressure (in. w.c.)	
	Low Fire	High Fire
Single-Stage Models		
040	N/A	0.0 - 0.10
060		
080		
100		
Two-Stage Models		
060	0.0 - 0.10	0.0 - 0.10
080		
100		

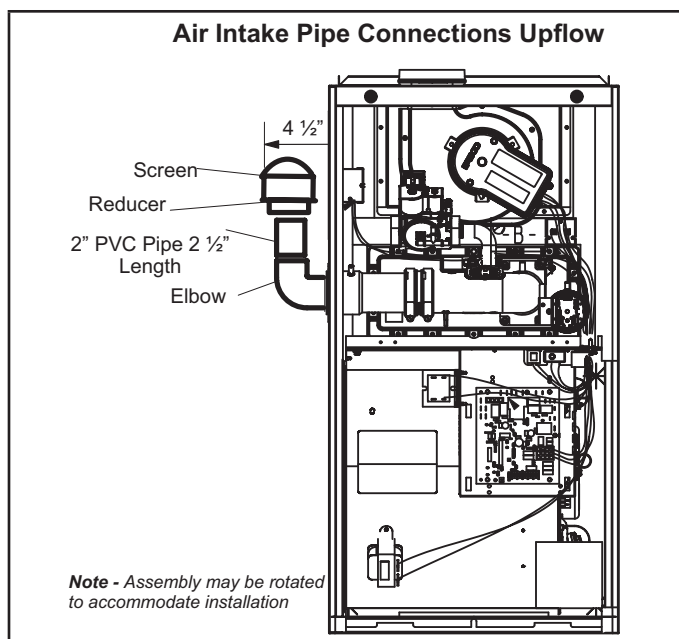


FIGURE 1

Air Orifice Replacement

Do not replace the air orifice until the problem has been determined. If the unit has difficulty igniting the air orifice is oversized and brings in too much combustion air. If the unit ignites but with loud noise, go to Troubleshooting. The air orifice is located inside the gray coupling between the clamps. See figure 3 for air orifice location.

- 1 - Turn off the electrical power and gas supply to the furnace.
- 2 - Remove the air pressure tubing from the fitting on the aluminum elbow and air intake coupling.
- 3 - Use a 5/16" nut driver to loosen the clamp on the right side of the gray coupling.
- 4 - Remove the four screws on the aluminum elbow, make note of the pressure switch bracket location. It may be necessary to disconnect the gas pipe to the gas valve before removing the screws.
- 5 - Remove the air orifice. Check the "Part" number stamped on the air orifice. Repeat manifold check. If air orifice is correct then it must be replaced. See table 4 for replacement.
- 6 - Reinstall the air orifice on the right side of the coupling and push firmly into place.
- 7 - Reinstall aluminum elbow with the four screws removed from step 4. Make sure the gray coupling is fully seated against the aluminum elbow and the pressure switch bracket is in the correct location. The bracket should be under the screw head and not under the flange on the aluminum elbow. Tighten clamp to secure the gray coupling. Reinstall the gas pipe to gas valve.

- 8 - Reconnect the air pressure tubing.
- 9 - Repeat manifold and system operating pressure check. If unit ignites and manifold and system operating pressures are correct, move on to combustion check. If unit still does not ignite or ignites with loud resonance go to Troubleshooting.

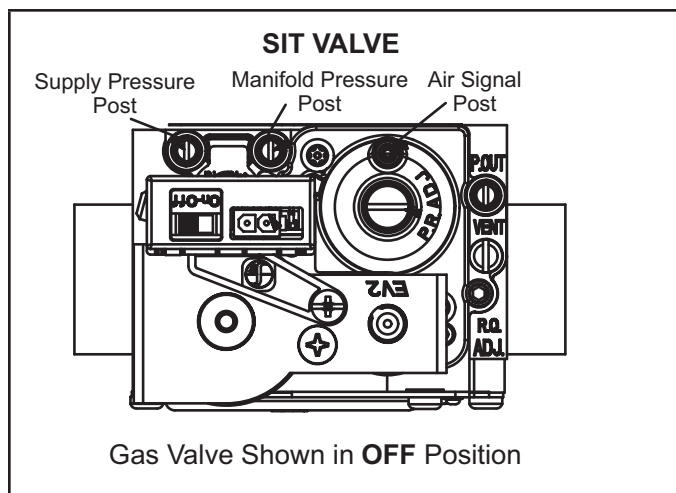


FIGURE 2

Proper Combustion

Furnace should operate minimum 15 minutes with correct manifold and system operating pressure before checking combustion. Table 2 shows acceptable combustion for all single-stage and two-stage models. The maximum carbon monoxide reading should not exceed 100ppm.

TABLE 2

Acceptable CO2 Levels

Capacity	CO2 Levels	
Single-Stage Models	Low Fire	High Fire CO2
040	N/A	6.3 - 7.3
060		7.0 - 8.0
080		
100		
Two-Stage Models	Low Fire	High Fire
060	6.8 - 8.0	6.8 - 8.0
080		
100		

TABLE 3
System Operating Pressures (in. w.c.) at Different Altitudes

Capacity	System Operating Pressure at 0 - 500ft		System Operating Pressure at 500ft - 4500ft		System Operating Pressure at 4500ft - 7500ft	
Single-Stage Models	Low Fire	High Fire	Low Fire	High Fire	Low Fire	High Fire
040	N/A	1.25 - 1.47	N/A	1.13 - 1.35	N/A	0.96 - 1.18
060		0.55 - 0.65		0.50 - 0.60		0.46 - 0.56
080		0.48 - 0.64		0.42 - 0.58		0.38 - 0.54
100		0.61 - 0.76		0.61 - 0.76		0.57 - 0.72
Two-Stage Models	Low Fire	High Fire	Low Fire	High Fire	Low Fire	High Fire
060	0.49 - 0.62	1.15 - 1.36	0.45 - 0.58	1.08 - 1.29	0.41 - 0.54	0.96 - 1.17
080	0.43 - 0.56	1.12 - 1.26	0.39 - 0.52	1.04 - 1.18	0.34 - 0.47	0.94 - 1.08
100	0.48 - 0.62	1.11 - 1.31	0.48 - 0.62	1.09 - 1.29	0.48 - 0.62	0.95 - 1.15

TABLE 4
Air Orifice Replacement

Capacity	Production		Difficult Igniting or Noisy (Need less combustion air)	
Single-Stage Models	Air Orifice Size (Part #)	Catalog Number	Air Orifice Size (Part #)	Catalog Number
040	0.745 (25)	23A27	0.730 (31)	25B92
060	1.047 (26)	23A28	1.030 (30)	24G44
080	1.219 (04)	19X32	1.210(09)	25B20
100	1.330 (27)	23A29	1.310 (11)	25B21
Two-Stage Models	Air Production Size (Part #)	Catalog Number	Air Orifice Size (Part #)	Catalog Number
060	0.880 (28)	23A31	0.860 (05)	25B19
080	1.030 (30)	24G44	1.000 (02)	19X30
100	1.160 (29)	23A32	1.140 (24)	22J97

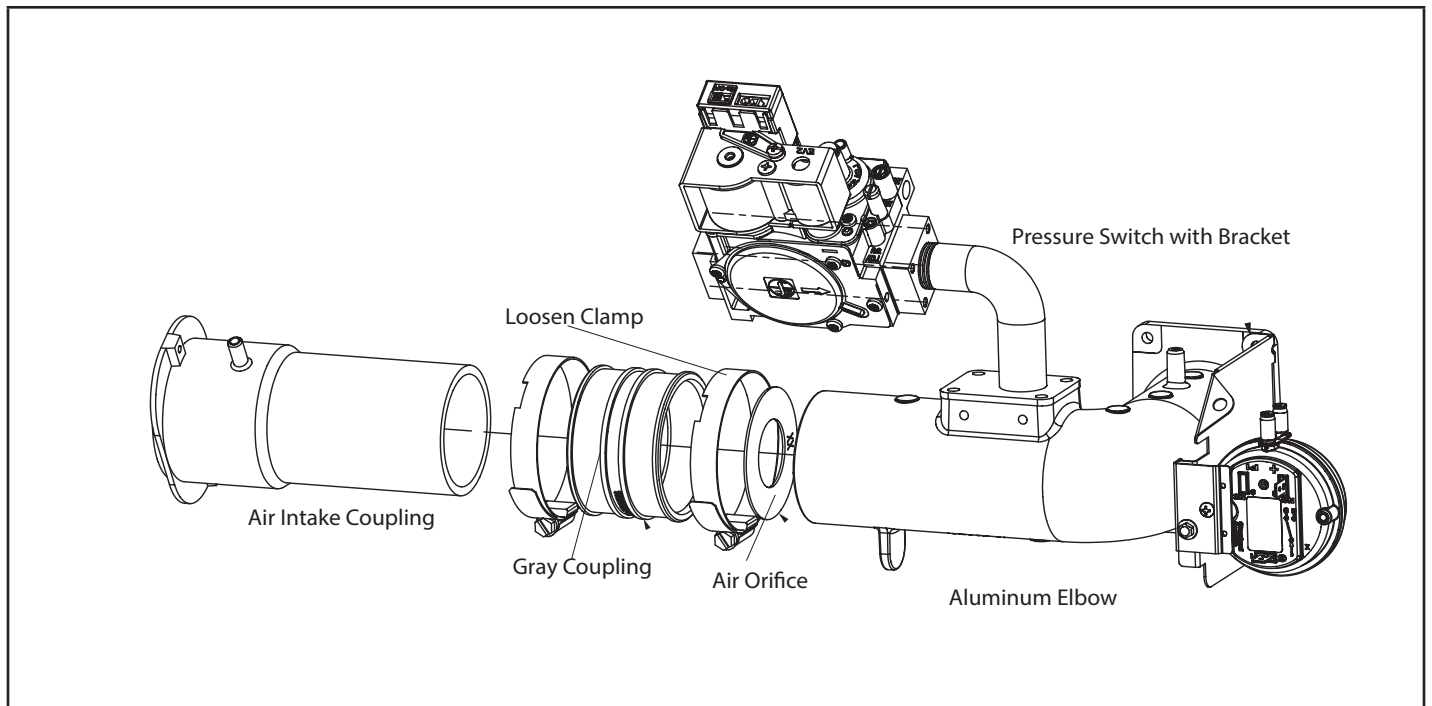


FIGURE 3

System Operating Pressure Measurement

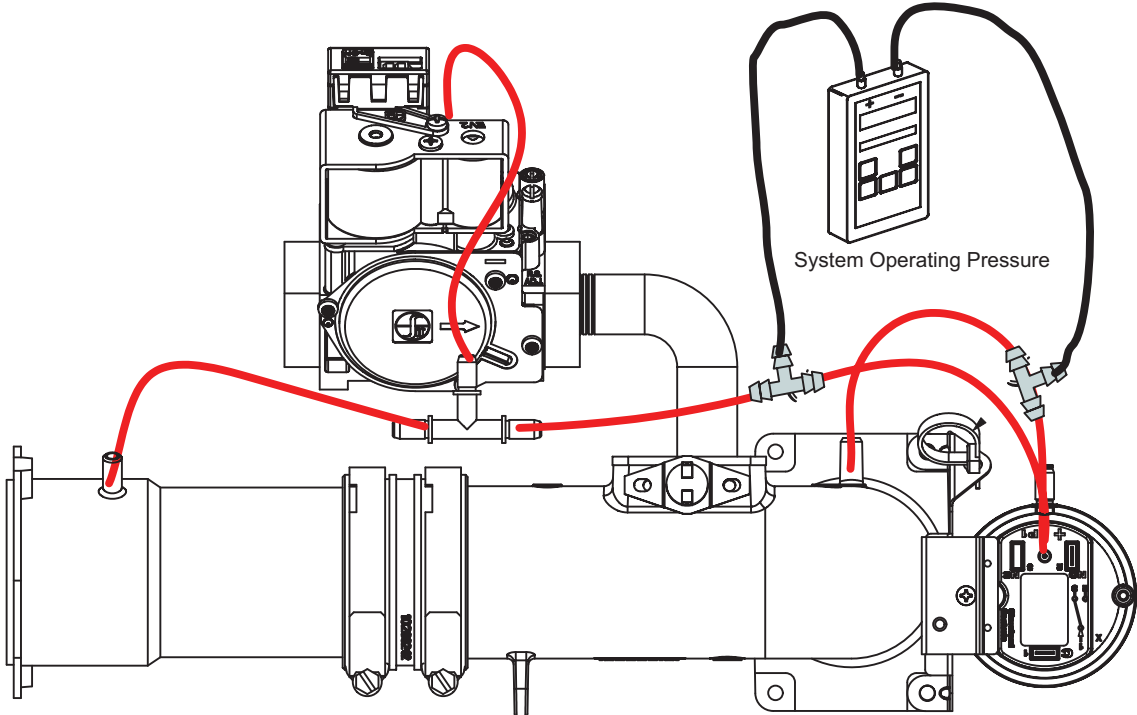


FIGURE 4

Gas Manifold Pressure Measurement

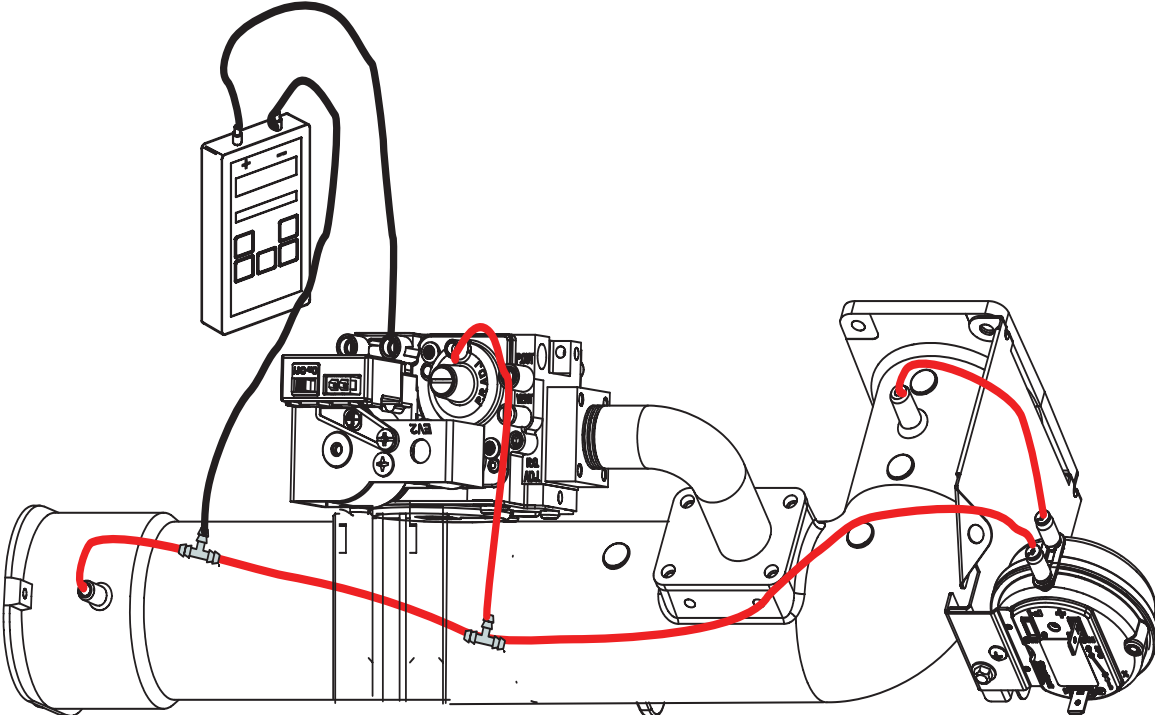


FIGURE 5

Troubleshooting

Troubleshooting Poor Ignition and Noise Issues

