

GAS UNITS KITS AND ACCESSORIES

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INSTRUCTIONS FOR MANIFOLD, COMBUSTION AND SIGNAL PRESSURE CHECK FOR ULTRA LOW NOX 90% EFFICIENCY UNITS

IMPORTANT

**Disconnect power before servicing unit.
Shut off main gas supplies to appliance until installation is complete.**

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 installer (or equivalent), service agency or the gas supplier.

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 5" W.C. And 14" 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 5" W.C. then consult either a licensed plumber or the gas company to correct.

Gas Orifice and Flue Shield Check

If both line voltage and gas line pressure are within the acceptable limits, then check the units serial number to see if the **gas orifice** should be replace. If the unit serial number indicates it was built prior to May 2021 (5921EXXXXX) where "21" is the year built and "E" is the month built and there is no sticker indicating the gas orifice has already been replaced, then see table 4 for correct kit and replace the gas orifice.

The inner flue shield can deform and short out the flame sensor. See figure 1. If flame sensor is shorted to ground, or if unit lights but shuts down after a short run time, check the inner flue shield. Follow kit instructions to replace flue shield if needed. If the flue shield does not need replacing, re-install, but make note of the numbered sequence to re-install screws on the air fuel plenum. See figure 2.

Manifold and Signal Pressure Check

- 1 - Turn off the electrical power and gas supply to the furnace.
- 2 - Remove the threaded plug from the outlet side of the gas valve and install a field-provided barbed fitting. Connect measuring device positive "+" to barbed fitting to measure manifold pressure. See figure 3 for manifold location.
- 3 - Install hoses and meter as shown in figure 6 for signal pressure measurement.
- 4 - 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 continue.

Valve is not adjustable. Do not adjust manifold pressure.

- 5 - Record signal pressure and compare to value in table 1. If signal pressure is within range continue. If the signal is not within range go to "Troubleshooting".
- 6 - Shut off unit and remove manometer and signal meter after accurate readings has been obtained.
- 7 - Restart unit and check for gas leaks. Seal any leaks found.

If the unit has difficulty igniting or ignites with loud resonance the air orifice must be checked and replaced if necessary.

TABLE 1

Manifold and Signal Pressure (inches w.c.)

Model	Manifold		Signal	
	High Fire	Low Fire	High Fire	Low Fire
Two Stage				
040	3.2 - 3.8	1.4 - 2.0	0.80 - 0.93	0.32 - 0.42
060			0.69 - 0.93	0.28 - 0.45
080			0.73 - 0.93	0.30 - 0.40
Single Stage				
040	3.2 - 3.8	N/A	0.80 - 0.93	N/A
060			0.69 - 0.93	
080			0.73 - 0.93	
100			0.75 - 0.93	



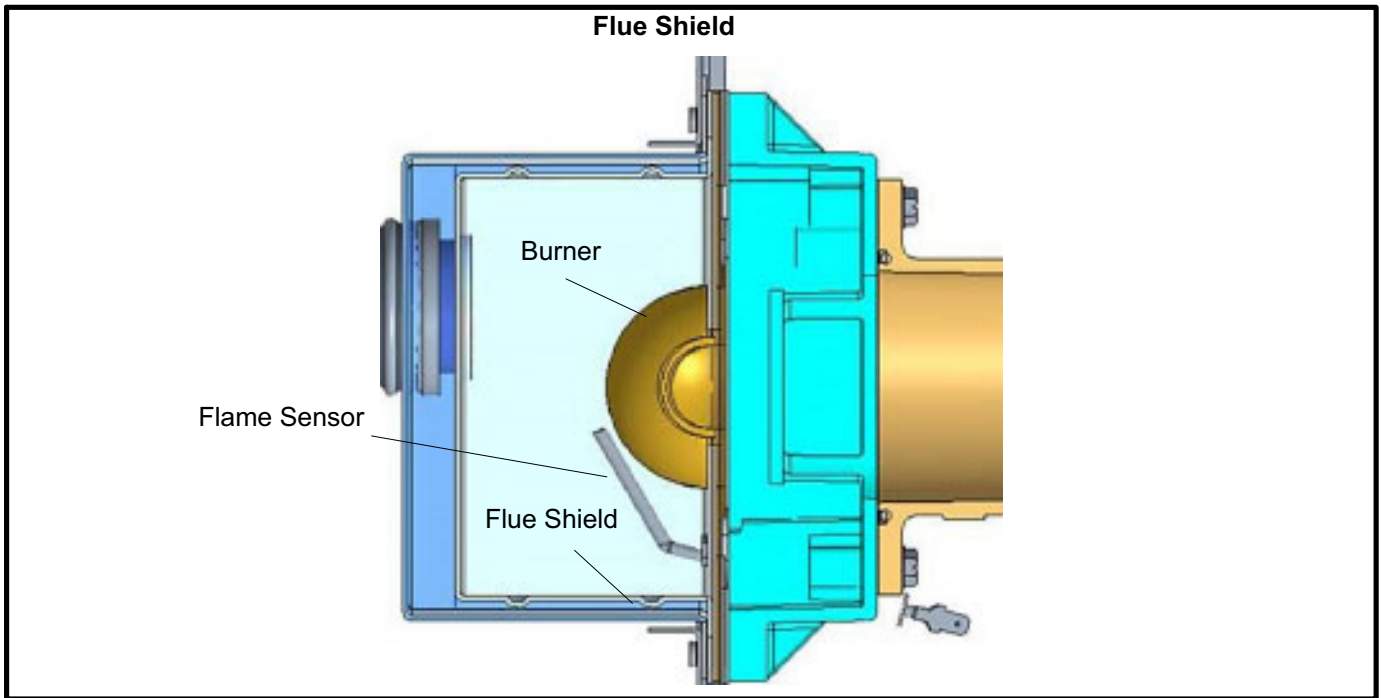


FIGURE 1

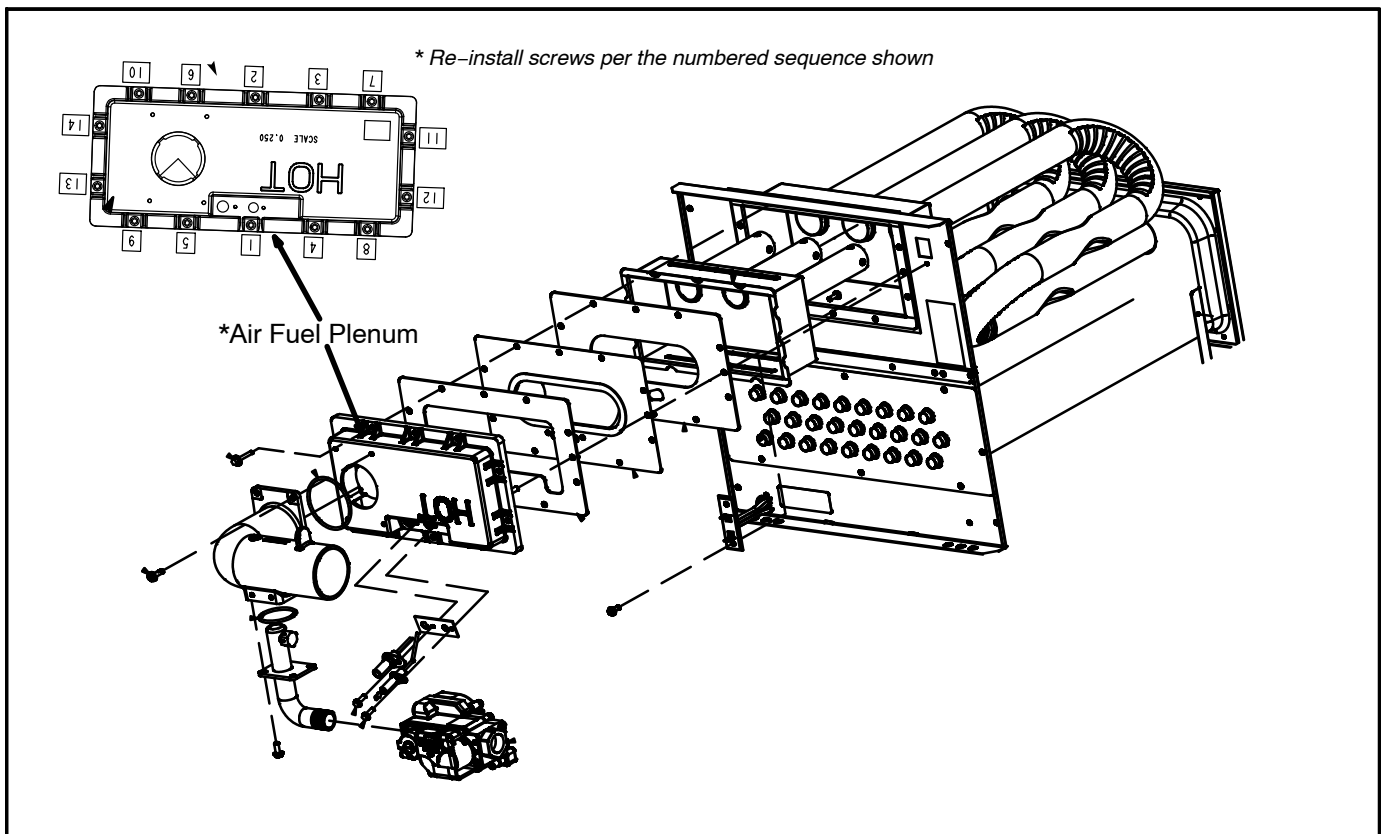


FIGURE 2

Air Orifice Replacement

Do not replace the air orifice until the problem has been determined. If the unit has difficulty igniting the orifice is oversized and brings in too much air. If the unit ignites but with loud resonance the orifice is too small and needs more air. The air orifice is located inside the gray coupling between the clamps. Figure 5 show corresponding steps with the steps below.

- 1 - Turn off the electrical power and gas supply to the furnace.
- 2 - Remove the black air pressure tube on the air intake coupling.
- 3 - Use a 5/16" nut driver to loosen the clamps on the gray coupling.
- 4 - Remove the two screws attaching the air intake coupling to the furnace cabinet.
- 5 - Remove the air intake coupling. If the air intake coupling is still too difficult to remove, then remove the two screws from the right side of the top cap and one from the far right side of the blower deck that attaches to the cabinet. See figure 4. Carefully pull cabinet side away from air intake coupling, then remove the air intake coupling. **Note: Be careful not to bend the cabinet side.**
- 6 - Remove the air orifice. Check the "Part" number stamped on the air orifice. See table 3. If the part number is incorrect, then replace it with the proper air orifice. Repeat manifold check. If air orifice is correct diameter, then it must be replaced to resolve ignition or resonance issue. See table 3 for replacement.
- 7 - Reinstall the air orifice on the left side of the coupling and push firmly into place.
- 8 - Reinstall air intake coupling making sure it is fully seated in the gray coupling. Re-install the two screws attaching the air intake coupling to the furnace cabinet. Tighten clamps to secure the coupling. Re-install the two screws on the right side of the top cap and the one screw that attaches the blower deck to the cabinet.
- 9 - Reconnect the black air pressure tube.
- 10 -Repeat manifold and signal pressure check. If unit ignites and manifold and signal pressure are correct, move on to combustion check. If unit still does not ignite or ignites with loud resonance go to Troubleshooting.

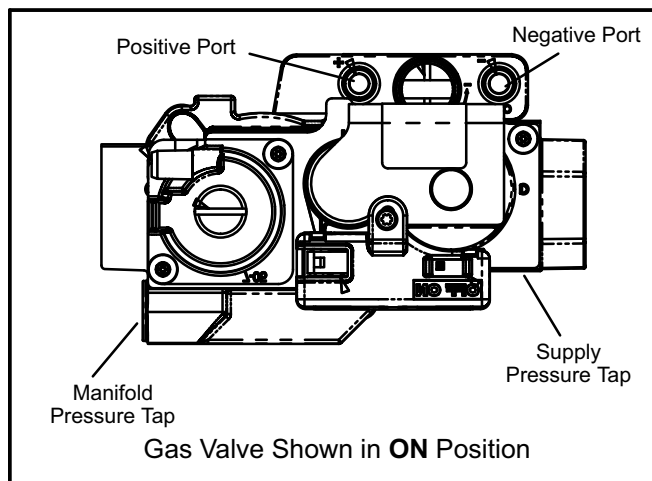


FIGURE 3

Proper Combustion

Furnace should operate minimum 15 minutes with correct manifold and signal pressure before checking combustion. Table 2 shows acceptable combustion for all EL195UHNE and SL297UHNV models. **The maximum carbon monoxide reading should not exceed 100ppm.**

TABLE 2

Two-Stage	High Fire CO ₂	Low Fire CO ₂
040	6.3 - 7.8	6.3 - 7.8
060	6.5 - 8.2	6.5 - 8.2
080	7.2 - 8.4	7.2 - 8.4
Single-Stage		N/A
040	6.3 - 7.8	
060	6.5 - 8.2	
080	7.2 - 8.4	
100	7.3 - 8.5	

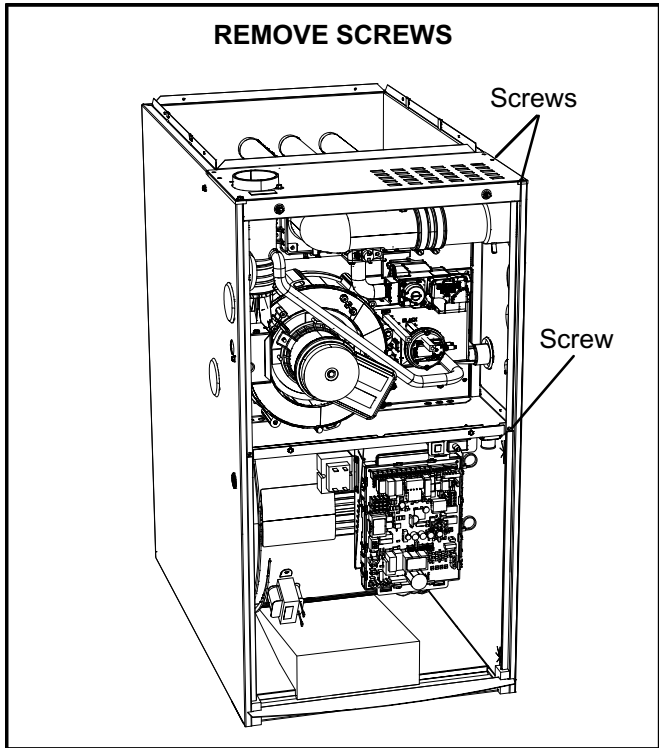


FIGURE 4

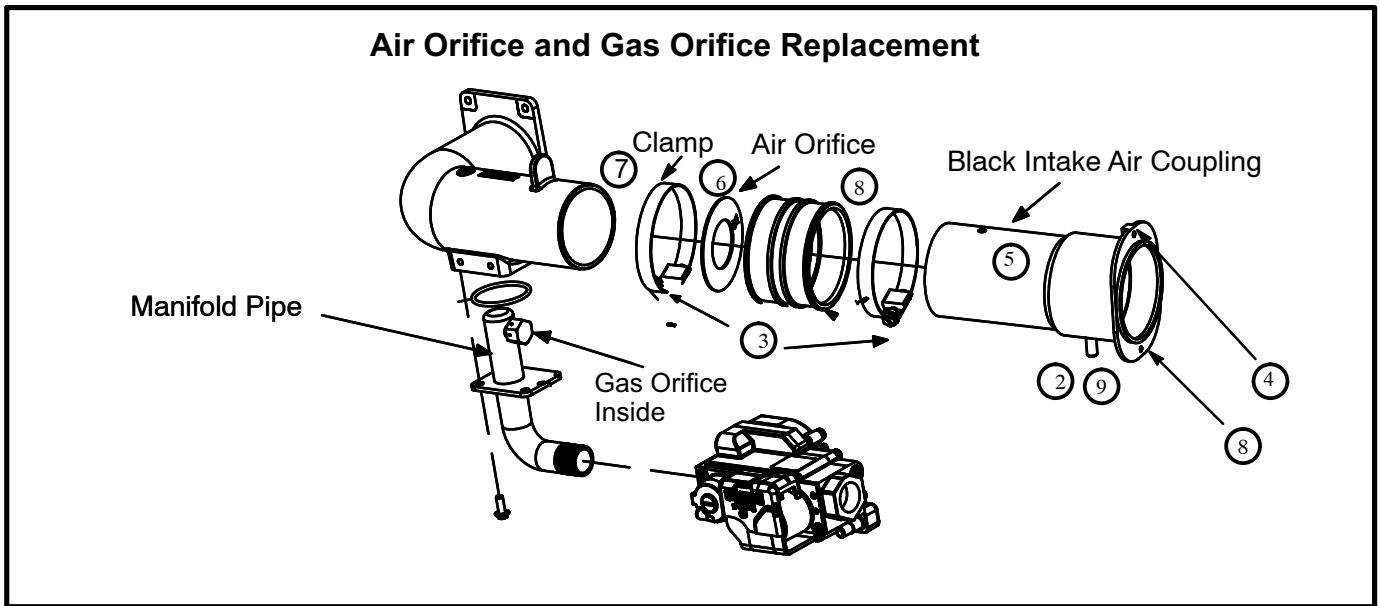


FIGURE 5

**Operating Signal Pressure and
Manifold Pressure Measurement**

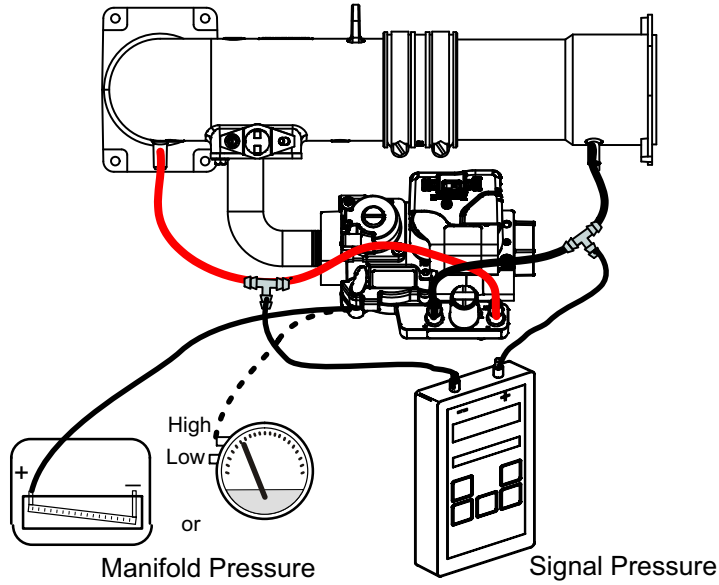


FIGURE 6

TABLE 3

Capacity	Production	Resonance (more air)		Difficulty Igniting (less air)	
	Air Orifice size (Part #)	Air Orifice Size (Part #)	Cat #	Air Orifice Size (Part #)	Cat #
040	0.800 (16)	0.812 (01)	21U23	0.787 (20)	21U01
060	0.995 (14)	1.010 (21)	21U02	0.980 (13)	21U25
080	1.105 (12)	1.125 (03)	19X31	1.085 (22)	21U03
100	1.250 (06)	1.281 (19)	19X39	1.219 (04)	19X32

TABLE 4

Capacity	Gas Orifice Kit #
040	22P38
060	22P39
080	22P40
100	22P41

Troubleshooting Poor Ignition or Combustion Resonance Issues

