INSTRUCTIONS FOR MANIFOLD, COMBUSTION AND SIGNAL PRESSURE CHECK FOR ULTRA LOW NOX 80% 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.

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 1 for manifold location.
3 - Install hoses and meter as shown in figure 3 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Manifold</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Fire</td>
<td>Low Fire</td>
</tr>
<tr>
<td>Two Stage</td>
<td>3.0 - 3.8</td>
<td>1.3 - 1.7</td>
</tr>
<tr>
<td>060</td>
<td>0.78 - 0.86</td>
<td>0.35 - 0.43</td>
</tr>
<tr>
<td>080</td>
<td>0.62 - 0.70</td>
<td>0.29 - 0.37</td>
</tr>
<tr>
<td>Single Stage</td>
<td>1.6 - 2.2</td>
<td>N/A</td>
</tr>
<tr>
<td>040</td>
<td>0.77 - 0.85</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>0.78 - 0.86</td>
<td></td>
</tr>
<tr>
<td>080</td>
<td>0.62 - 0.70</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

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 2 show corresponding steps with the steps below.

1 - Turn off the electrical power and gas supply to the furnace.
2 - Remove the air hose fitting from the brass fitting on the air inlet screen.
3 - Use a 5/16” nut driver to loosen the clamps on the gray coupling.
4 - Remove the air inlet screen housing and coupling.
5 - Remove the air orifice. Check the “Part” number stamped on the air orifice. See table 3. If incorrect replace with proper air orifice. Repeat manifold check. If air orifice is correct then it must be replaced. See table 3 for replacement.
6 - Reinstall the air orifice on the right side of the coupling and push firmly into place.
7 - Reinstall air inlet housing and coupling making sure the coupling is fully seated against the air inlet elbow. Tighten clamps to secure the coupling.
8 - Reconnect the air pressure tubing.
9 - 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.

**Proper Combustion**

Furnace should operate minimum 15 minutes with correct manifold and signal pressure before checking combustion. Table 2 shows acceptable combustion for all EL180UHNE and SL280UHNV models. The maximum carbon monoxide reading should not exceed 100ppm.

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Two-Stage</th>
<th>High Fire CO₂</th>
<th>Low Fire CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>060</td>
<td>6.0 - 7.8</td>
<td>6.0 - 7.8</td>
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<tr>
<td></td>
<td>080</td>
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<tr>
<td></td>
<td>100</td>
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<td></td>
</tr>
<tr>
<td>Single-Stage</td>
<td>040</td>
<td>6.5 - 7.5</td>
<td>N/A</td>
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<tr>
<td></td>
<td>060</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
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</tbody>
</table>

**FIGURE 1**

**FIGURE 2**
Operating Signal Pressure Measurement
Honeywell Valve

FIGURE 3

TABLE 3

<table>
<thead>
<tr>
<th>Single-Stage</th>
<th>Production</th>
<th>Resonance (more air)</th>
<th>Difficulty Igniting (less air)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Orifice Size (Part No)</td>
<td>Orifice Size</td>
<td>Cat No</td>
</tr>
<tr>
<td>040</td>
<td>0.969 (08)</td>
<td>1.000</td>
<td>19X30</td>
</tr>
<tr>
<td>060</td>
<td>0.969 (08)</td>
<td>1.000</td>
<td>19X30</td>
</tr>
<tr>
<td>080</td>
<td>1.094 (07)</td>
<td>1.125</td>
<td>19X31</td>
</tr>
<tr>
<td>100</td>
<td>1.250 (06)</td>
<td>1.281</td>
<td>19X39</td>
</tr>
<tr>
<td>Two-Stage</td>
<td>Orifice Size</td>
<td>Orifice Size</td>
<td>Cat No</td>
</tr>
<tr>
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<tr>
<td>100</td>
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<td>1.281</td>
<td>19X39</td>
</tr>
</tbody>
</table>
Troubleshooting Poor Ignition or Combustion Resonance Issues

Has the unit inducer RPM been reduced to 4300 RPM? Does not apply to single stage 040 model.

- Yes
  - Check Air Orifice
    - See Figure 2.

- No
  - Contact your Service Representative for assistance

Check the following:
1. Does the unit have the correct air orifice size? See table 3.
2. Is the orifice fully seated tight against the elbow?
3. Is the orifice damaged in any way?
4. Is the air inlet screen clear of any obstruction?

Correct any problems found.

- Yes
  - Is ignition or resonance issue resolved?

- No
  - Troubleshooting is complete

Check Gas Manifold Pressure

Gas manifold pressure within range shown in table 1?

- Yes
  - Replace air orifice.
    - see table 3.

- No
  - Check signal Pressure
    - Signal pressure within range shown in table 1?
      - Yes
        - Replace gas valve
      - No
        - Check the following:
          1. Vent /air intake pipe restriction.
          2. Plugged air inlet screen
          3. Signal hoses to gas valve for kinks, loose fit or plugging.

Correct any problems found.

- Yes
  - Is ignition or resonance issue resolved?

- No
  - Replace gas valve

- Troubleshooting is complete

Yes

No

Replace air orifice.
see table 3.