PureFire® Gas Valve Replacement Instructions

⚠️ WARNING

Installation of the primary gas safety shut-off valve is to be performed by qualified service personnel in strict accordance with these instructions and all applicable codes and requirements of the authority having jurisdiction. The qualified service person is responsible for proper installation of this kit. The installation is not complete until the operation of the appliance is checked using a combustion analyzer as specified in these instructions.

⚠️ WARNING

If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon dioxide may result causing severe personal injury, death or major property damage.

Stop! Read these instructions or the warranty on the appliance will be void!

TOOLS REQUIRED FOR INSTALLATION

- Combustion Analyzer with the capability to read Carbon Dioxide (CO₂) and Carbon Monoxide (CO) emissions (Testo 325-M or equivalent)
- Pressure Manometer capable of reading up to 15 inches of water (Dwyer 1227 Series or equivalent)
- Flat Blade Screwdriver
- #2 Phillips Screwdriver
- T20 Torx Driver
- 3 mm Hex Key (PF-50 & PF-110)
- 10 inch (250 mm) Adjustable Wrench

⚠️ WARNING

The following instructions must be followed correctly. Failure to do so may result in death or serious injury.

STEP 1 – TURN OFF POWER & GAS

- Turn off all power to the appliance using the boiler service switch. Note that the convenience outlet is still powered when this switch is off. See Figure 1.
- Turn off gas supply to the boiler using the gas shut off cock located at the top of the boiler. See Figure 1.
- Be sure that the boiler drain valve is closed and a hose cap is installed to prevent accidental water leakage onto the boiler.

STEP 2 – DISCONNECT GAS VALVE POWER PLUG

- Using #2 screwdriver, remove the connector screw from the valve. See Figure 2.
- Remove connector from gas valve.
STEP 3 – DISCONNECT GAS INLET

- **PF-50 & PF-110**
  - Using a 3 mm hex key, remove (4) cap screws from
gas valve inlet flange. See Figure 3.

- **PF-80 & PF-140**
  - Using a 10 inch adjustable wrench, disconnect the
  compression nut from the inlet of the gas valve.
  - Remove the adapter fitting from the valve.

STEP 4 – DISCONNECT GAS VALVE FROM BLOWER

- Using a T20 Torx driver, remove the three screws holding the gas valve and swirl plate to the blower assembly.
- The PF-140 valve includes six washers.
- Inspect the valve for signs of electrical damage or unusual wear.

STEP 5 – INSTALL REPLACEMENT GAS VALVE

- Assuring that top of the gas valve is facing toward the
front of the boiler, attach the valve and swirl plate to
the blower assembly. See Figure 6.

- **PF-50 & PF-110**
  - Attach the 90° inlet flange on the inlet to the valve.

- **PF-80 & PF-140**
  - Attach the 1/2 NPT pipe fitting to the inlet of the
  valve using thread sealant appropriate for gas
  piping.
  - Connect compression fitting to the adapter from flex
  hose.

STEP 6 – GAS SYSTEM LEAK TEST

- Loosen the screw inside the inlet gas pressure port.
  See Figure 7.
- Connect a manometer to the port.
- Open the boiler gas shutoff valve and check the
  pressure at the manometer.
- Close the boiler gas shutoff valve while monitoring the
  manometer.
• If there is a significant drop in pressure (more than 1" in a 5 second span), tighten the gas inlet fittings.

• When no leaks are detected, remove the manometer and tighten the screw inside the inlet gas pressure port as shown in Figure 7.

• Open boiler gas shut off cock.

• Adjust the throttle screw to as shown to Figure 8 and Table 2 to dial in the acceptable range.

• Change input rate to low power. Modulation will drop to 1%.

• Repeat combustion readings and compare with chart. If the low fire readings do not agree with Table 1 turn off the boiler and call your PB Heat Representative. Do not make throttle adjustments at low fire.

• Record combustion readings and installer information in the space provided in the manual.

**Table 1**

<table>
<thead>
<tr>
<th>Combustion Settings</th>
<th>Natural Gas Low</th>
<th>Natural Gas High</th>
<th>Propane LP Low</th>
<th>Propane LP High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>&lt; 50 ppm</td>
<td>&lt; 100 ppm</td>
<td>&lt; 50 ppm</td>
<td>&lt; 100 ppm</td>
</tr>
<tr>
<td>Carbon Dioxide (CO2)</td>
<td>8.5% – 9.5%</td>
<td>8.5% – 9.5%</td>
<td>9.5% – 10.5%</td>
<td>9.5% – 10.5%</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Turning Gas Valve Throttle Screw</th>
<th>If CO is not too high</th>
<th>If CO is too high</th>
</tr>
</thead>
<tbody>
<tr>
<td>If CO&lt;sub&gt;2&lt;/sub&gt; is too high</td>
<td>Turn Clockwise (–)</td>
<td>Turn Clockwise (–)</td>
</tr>
<tr>
<td>If CO&lt;sub&gt;2&lt;/sub&gt; is too low</td>
<td>Turn Counterclockwise (+)</td>
<td>Turn Clockwise (–)*</td>
</tr>
</tbody>
</table>

*Very high CO with low CO<sub>2</sub> indicates possible unburned gas due to insufficient air