PUREFIRE® Gas Valve Replacement Instructions

⚠ WARNING

Installation of the primary gas safety shutoff 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 (CO_2) 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.

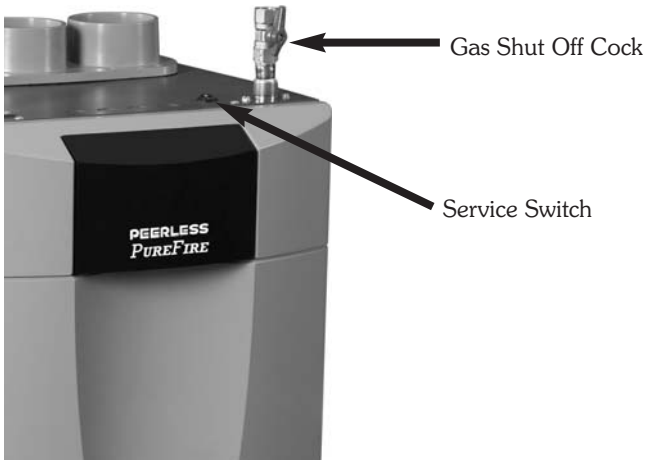

Figure 1

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.

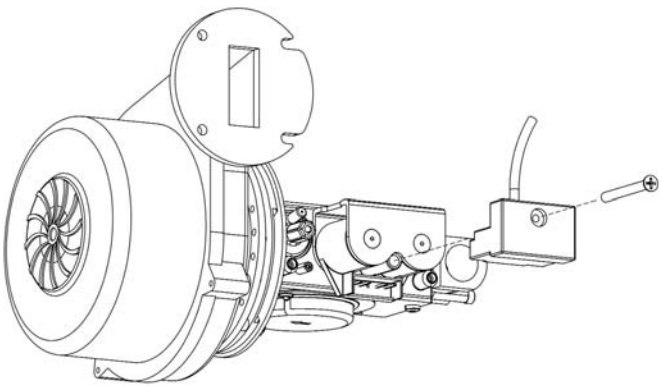

Figure 2

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.

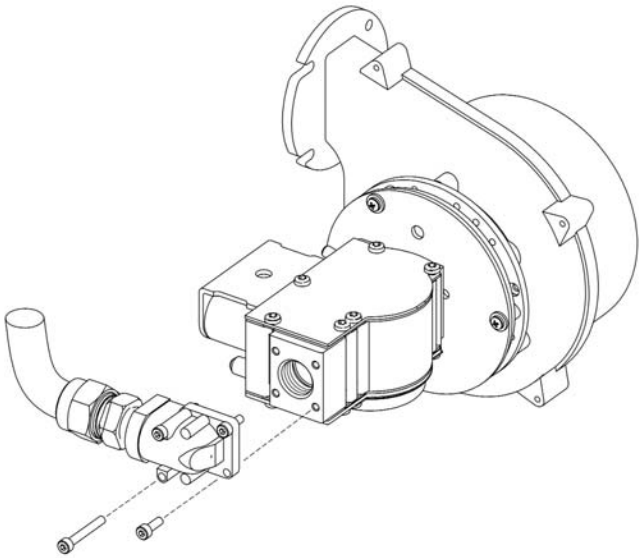

Figure 3

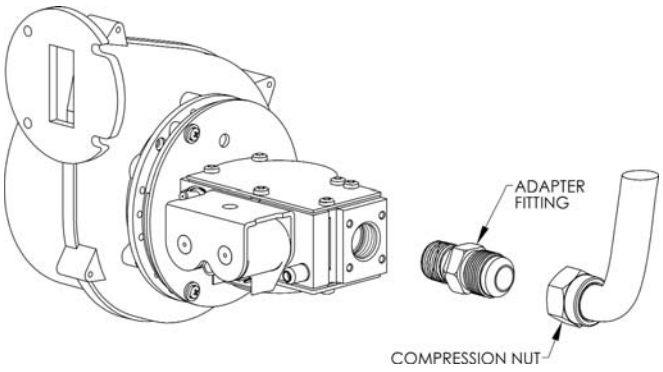

Figure 4

STEP 4 – DISCONNECT GAS VALVE FROM BLOWER

- Using a T20 Torx driver, remove the three screws ② holding the gas valve ① and swirl plate ③ to the blower assembly.
- The PF-140 valve includes six washers ④.
- Inspect the valve for signs of electrical damage or unusual wear.

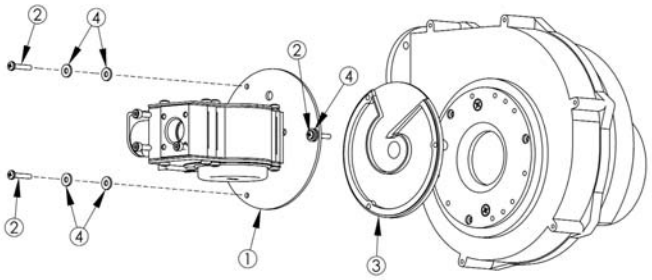

Figure 5

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.

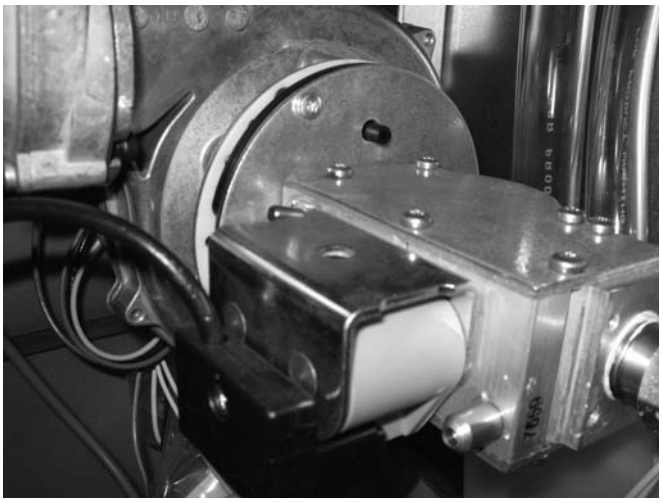

Figure 6

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.

Figure 7: Gas Leakage Test Instructions

STEP 7 – COMBUSTION SETUP

- Turn on the service switch to power the boiler.
- Verify the display reads “Standby”.
- Press the “MENU” and “SELECT” buttons simultaneously to enter the Installer Menu.
- Using the ▼ key, choose the last menu option, “System Test”.
- Press the ▼ key 3 times and press select to choose “High Power”.
- Allow the boiler to start and ramp up to 100% input.
- Check combustion by inserting the analyzer probe into the test port.
- If there is no test port available, drill and tap into the PVC or CPVC pipe as shown in Section 9.0 of the Installation, Operation and Maintenance Manual.
- Refer to Table 1 for recommended combustion values.

Table 1

Combustion Settings				
High Firing rates and Low Firing rates on all Models				
	Natural Gas		Propane LP	
	Low	High	Low	High
Carbon Monoxide (CO)	< 50 ppm	< 100 ppm	< 50 ppm	< 100 ppm
Carbon Dioxide (CO_2)	8.5% – 9.5%	8.5% – 9.5%	9.5% – 10.5%	9.5% – 10.5%

- 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.

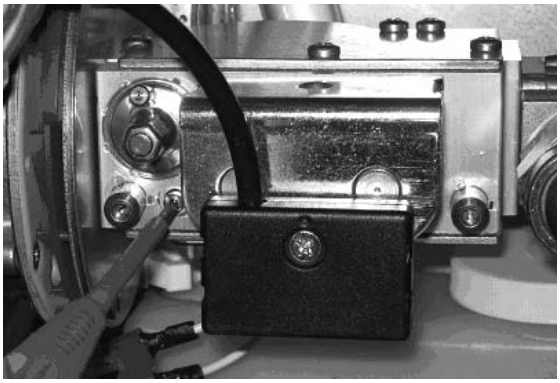

Figure 8

Table 2

Turning Gas Valve Throttle Screw		
	If CO is not too high	**If CO is too high**
If CO_2 is too high	Turn Clockwise (–)	Turn Clockwise (–)
If CO_2 is too low	Turn Counterclockwise (+)	Turn Clockwise (–)*

*Very high CO with low CO_2 indicates possible unburned gas due to insufficient air

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