

# PUREFIRE® Gas Conversion Instructions for Propane or Natural Gas

## **⚠ WARNING**

This conversion shall be done by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. A qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.

## **⚠ WARNING**

If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life.

## **Stop! Read these instructions or warranty will be void!**

### **ITEMS REQUIRED FOR CONVERSION**

- "Valve Converted to LP" Label (9349, included)
- "Valve Converted to Natural Gas" Label (9350, included)
- Boiler Conversion Label (9486, included)
- Flat Blade Screwdriver
- Combustion Analyzer with Carbon Dioxide and Carbon Monoxide Reading Capability (Testo 325-M or equivalent)
- 21/64" Drill
- 1/8" NPT Tap and plug (PVC and CPVC venting only)

The boiler conversion must be done by a qualified installer or service technician in accordance with these instructions and must meet all local codes and requirements of the authority having jurisdiction. The qualified installer or technician performing this work assumes full responsibility for this conversion.

It is important that you follow the conversion procedure in the proper sequence. We have enclosed for your convenience three conversion labels, one of which will be attached to the inside of the boiler and one which will be placed near the rating label on the outside of the boiler. One will not be used.

## **⚠ WARNING**

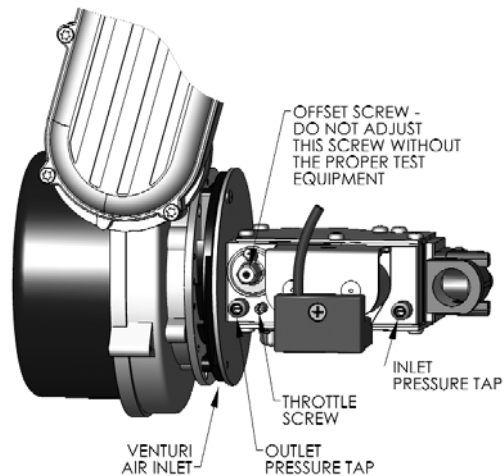
**It is very important that you carefully follow the instructions below correctly. Death or serious injury could result.**

**Note: Failure to do so will void your warranty.**

### **STEP 1**

Turn off all power to the unit. Shut the gas off with the manual shutoff valve. Make sure that the gas supply is connected. Check gas pressure and gas piping to assure proper sizing to the boiler firing rate.

If connecting to LP gas, it is recommended that you contact your gas supplier to size the piping and the tank. It may also be necessary to install a 100% lockup gas pressure regulator of sufficient capacity to supply an adequate gas flow.



**Figure 1**

### **STEP 2 - PVC & CPVC ONLY**

Drill and tap a 21/64" diameter, 1/8" NPT hole into exhaust piping 1 foot from unit to be used as a test port for the combustion analyzer. See Figure 2.



**Figure 2**

**STEP 3**

Turn on the manual gas shut off valve. Check for gas leaks. If leaks are found, turn off the gas and repair the leaks.

**⚠ WARNING**

If you smell gas:

- Turn off the gas supply.
- Do not try to light any appliance.
- Do not touch any electrical switch: do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department. Installation and service must be performed by a qualified installer, service agency or the gas supplier.

**⚠ WARNING**

It is very important that this conversion is set up within the recommended combustion measurements in Step 4. Visually looking at the flame does not determine flame quality. A combustion measurement using a combustion analyzer with CO and CO<sub>2</sub> reading capability is the only way to assure a correct adjustment.

**STEP 4**

**NOTE:** When converting a Natural Gas Boiler to an LP Gas Boiler, turn the gas valve throttle screw clockwise 1 to 2 turns.

When converting an LP Gas Boiler to a Natural Gas Boiler, turn the gas throttle screw counterclockwise 1 to 2 turns.

These adjustments are not final. Follow the procedure below for final adjustments.

Turn on the power to the boiler. Place the Control Board into System Test Mode by holding down the "Menu" and "Select" keys simultaneously for 10 seconds. Then press the "▼" key until the "→" indicates System Test. Press the "Select" key to choose the menu.

Select Maximum Power on the System Test menu. Insert the combustion analyzer probe into the test port. See Figure 3. The combustion readings should agree with Table 1.

**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 <sub>2</sub> )	8.5% – 9.5%	8.5% – 9.5%	9.5% – 10.5%	9.5% – 10.5%



**Figure 3**

If the combustion readings do not agree with Table 1, turn the throttle screw as shown in Figure 4 and Table 2 until the readings are within the acceptable range as shown in Table 1. Record the High Fire combustion readings on the combustion data sheet, Table 3.

Select Low Power on the System Test menu. Record the Low Fire combustion readings after they have stabilized. If the Low Fire combustion readings do not agree with Table 1, turn off the boiler and contact your PB Heat Representative.



**Figure 4**

**Table 2**

Turning Gas Valve Throttle Screw		
	If CO is not too high	If CO is too high
If CO <sub>2</sub> is too high	Turn Clockwise (-)	Turn Clockwise (-)
If CO <sub>2</sub> is too low	Turn Counterclockwise (+)	Turn Clockwise (-)*

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

**STEP 5**

After the combustion test is complete, exit the System Test mode and return to normal operation. Plug the test port. For PVC and CPVC venting, use a standard 1/8" NPT pipe plug. See Figure 5.



Figure 5

**STEP 6**

Place labels provided with the conversion instructions in the proper locations.

- Place the appropriate valve conversion label as close to the adjusted gas valve as possible, inside the boiler enclosure. See Figure 6.
- Fill in required information on the appropriate boiler conversion label. Place label next to rating label. See Figure 7.



Figure 6



Figure 7

**⚠ WARNING**

It is extremely important that all enclosed conversion labels are placed in the proper locations shown. Not following these instructions correctly could result in death or serious injury.

**Table 3**

<b>Combustion Test Record</b>			
<b>Installation Information</b>			
Contact:		Phone Number:	
Company Name:		Fax Number:	
Address:		Email Address:	
Job Name:		Jobsite Address:	
Boiler Model:		Boiler Serial No.:	
Manufacture Date:		Conversion Date:	
<b>Pressure Readings</b>			
Intake Gas Pressure (in. w.c.):		Intake Gas Pressure Drop at Startup:	
High Fire Outlet Gas Pressure (in. w.c.):		Low Fire Outlet Gas Pressure (in. w.c.):	
<b>Combustion Readings</b>			
Flame Signal High Fire ( $\mu$ A):		Flame Signal Low Fire ( $\mu$ A):	
CO <sub>2</sub> High Fire (%):		CO <sub>2</sub> Low Fire (%):	
CO High Fire (ppm):		CO Low Fire (ppm):	
Fan Speed High Fire (°F):		Fan Speed Low Fire (°F):	
Excess Air High Fire (%):		Excess Air Low Fire (%):	
Exhaust Temp High Fire (°F):		Exhaust Temp Low Fire (°F):	



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