

LP/High Altitude LP/High Altitude Natural Gas Conversion Kit For United States Installations

Installation Instructions

For Model Series G Furnaces, P(G,N) Gas/Electric Appliances, and R Gas/Electric Appliances

IMPORTANT: Read all instructions before beginning the conversion of the appliance.

This conversion kit is only for United States installations to convert a natural gas furnace to a propane (LP) gas application, a high altitude natural gas application, or a high altitude propane (LP) gas application. For Canadian installations, the Canadian conversion kit must be used.



WARNING:

This conversion kit is to be installed by a qualified service technician in accordance with these instructions and all codes having jurisdiction. Failure to follow these instructions could result in serious injury, property damage, or death. The qualified service technician performing this work assumes responsibility for this conversion.



CAUTION:

All gas piping must conform with local building codes or, in the absence of local codes, with most recent edition of the National Fuel Gas Code ANSI Z223.1. All electrical wiring must comply with the latest edition of the National Electrical Code ANSI/NFPA 70.

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment.



WARNING:

DO NOT REMOVE OR DEFACE THE ORIGINAL RATING PLATE.



CAUTION:

The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.

To Turn Off the Fuel Supply to the Appliance:

1. Set the room thermostat to "OFF" or its lowest temperature setting.
2. Turn OFF the main gas supply to the appliance at the manual valve, outside of the appliance casing.
3. Remove the control access panel / louvered door.
4. Move the appliance gas valve lever/knob to the "OFF" position.
5. Turn OFF the electrical power to the appliance.

To Remove the Burner Assembly:

1. Follow the instructions "To Turn Off the Fuel Supply to the Appliance".
2. Disconnect the flame sensor wire from the burner box.
3. Disconnect the ignitor wires at the 2 pin plug. This is a locking quick connect and both sides of the lower section must be depressed in order to be separated.
4. Remove the wires from the terminals of the gas valve.
5. If present, disconnect the rubber pressure tubes from the gas valve and the burner box. Note: pressure tubes are present only in units with a sealed burner box, which is shown in Figure 2.
6. If present, remove the burner access cover plate from the burner box. Note: the burner access cover plate is present only in units with a sealed burner box, which is shown in Figure 2.
7. Remove supply gas piping from the gas valve.
8. Carefully remove the burner assembly fasteners and remove the burner assembly from the appliance. Keep the fasteners that were removed. Note that the burner box may have hooks near the top and on the right and left hand sides. To remove this type of burner box, lift the burner box upwards and then remove the box from the unit.

To Remove the Burner Orifices:

1. Remove the four (4) fasteners that secure the gas manifold to the burner box, as shown in Figures 1 and 2. Carefully remove the gas manifold assembly from the burner box. Note that the gas manifold assembly consists of the gas valve, the gas manifold, and the orifices.

- Carefully remove the burner orifices from the gas manifold, as shown in Figures 1 and 2.

⚠ CAUTION:

Caution: Do not re-drill the burner orifices. If the orifice size must be changed, use only new orifices.

Note: The size of the new orifices that will be installed into the unit will depend upon the type of conversion (sea level or high altitude; natural gas or LP gas). Please refer to the appropriate section for more details on your particular conversion.

To Convert the Unit to Natural Gas For Altitudes Between 2,000 and 10,000 Feet Only

- Table 1 is a detailed listing of the components in the high altitude natural gas conversion kit. Please check the contents of the conversion kit with that of the parts listing, and familiarize yourself with each component.
- Examine the rating plate of the unit to determine the rated input (Btu/hr). Count the number of burners in the burner box. Determine the appropriate high altitude natural gas orifice size for your conversion using either Table 4 for G series appliances, or Table 5 for P(G,N) and R series appliances.
- Install the appropriate high altitude natural gas burner orifices into the gas manifold. When installing the new orifices, **DO NOT** use pipe joint compound on the orifice threads. Screw the orifices into the manifold by hand

until snug to eliminate cross threading, then tighten with a wrench. Before installing an orifice, check the face or side of the orifice for the drill number to ensure that it is the appropriate size.

To Convert the Unit to LP Gas For Altitudes Between 0 and 2,000 Feet Only

- Table 2 is a detailed listing of the components in the LP gas conversion kit. Please check the contents of the conversion kit with that of the parts listing, and familiarize yourself with each component.
- Examine the rating plate of the unit to determine the rated input (Btu/hr). Count the number of burners in the burner box. Determine the appropriate LP gas orifice size for your conversion using either Table 4 for G series appliances, or Table 5 for P(G,N) and R series appliances.
- Install the appropriate LP gas burner orifices into the gas manifold. When installing the new orifices, **DO NOT** use pipe joint compound on the orifice threads. Screw the orifices into the manifold by hand until snug to eliminate cross threading, then tighten with a wrench. Before installing an orifice, check the face or side of the orifice for the drill number to ensure that it is the appropriate size.
- For the conversion to LP gas from natural gas, the spring in the gas valve must be replaced. Two gas valve conversion kits are supplied with this LP gas conversion kit. One gas valve conversion kit (#624588) is used to convert the Honeywell VR8205 series gas valve, and the other kit (#660798) is used to convert the Robertshaw 7200 series gas valve. Inspect the gas valve that was removed from the unit being converted to determine the manufacturer and series. Then, install the appropriate gas valve conversion kit using the instructions supplied with that kit.

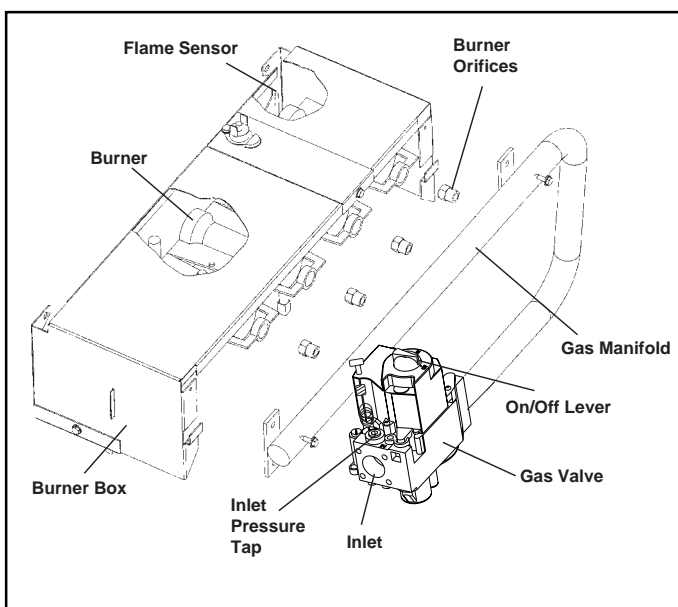


Figure 1. Typical Installation For Non-Sealed Burner Box

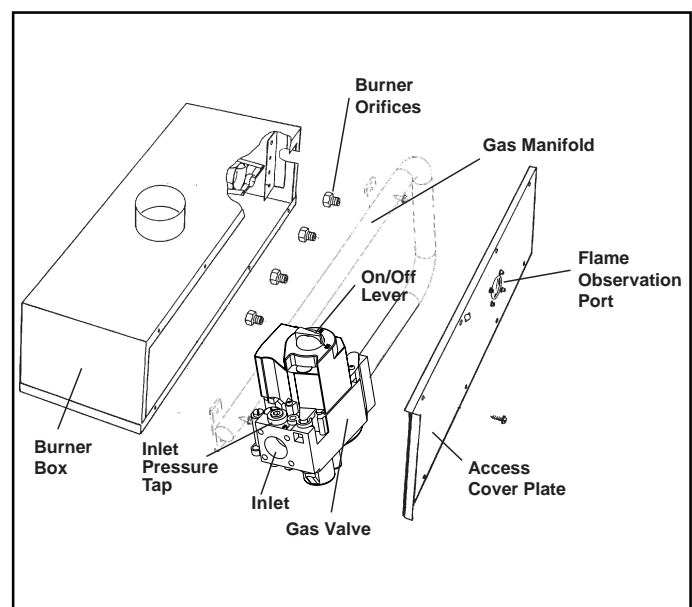


Figure 2. Typical Installation For Sealed Burner Box With Access Cover Plate

To Convert the Unit to LP Gas For Altitudes Between 2,000 and 10,000 Feet Only

1. Table 3 is a detailed listing of the components in the high altitude LP gas conversion kit. Please check the contents of the conversion kit with that of the parts listing, and familiarize yourself with each component.
2. Examine the rating plate of the unit to determine the rated input (Btu/hr). Count the number of burners in the burner box. Determine the appropriate high altitude LP gas orifice size for your conversion using either Table 4 for G series appliances, or Table 5 for series P(G,N) and R series appliances.
3. Install the appropriate LP gas burner orifices into the gas manifold. When installing the new orifices, **DO NOT** use pipe joint compound on the orifice threads. Screw the orifices into the manifold by hand until snug to eliminate cross threading, then tighten with a wrench. Before installing an orifice, check the face or side of the orifice for the drill number to ensure that it is the appropriate size.

<u>Description</u>	<u>Part No.</u>	<u>Quantity</u>
Installation Instructions	707758-	1
Burner Orifice #43 Drill	661043-	6
Burner Orifice #44 Drill	661044-	6
Burner Orifice #45 Drill	661045-	6
Burner Orifice #46 Drill	661046-	6
Burner Orifice #48 Drill	661048-	6
Burner Orifice #49 Drill	661049-	6
Burner Orifice #50 Drill	661050-	6
Conversion Warning Label	703935-	1
Conversion Information Label	703942-	1

Table 1. High Altitude Natural Gas Conversion Kit

<u>Description</u>	<u>Part No.</u>	<u>Quantity</u>
Installation Instructions	707758-	1
Conversion Kit for Gas Valve Honeywell Gas Valve VR8205A 2008	624588-	1
Conversion Kit for Gas Valve Robertshaw Gas Valve 7200 Series	660798-	1
Burner Orifice #54 Drill	661054-	6
Burner Orifice #55 Drill	661055-	6
Conversion Warning Label	703935-	1
Conversion Information Label	703942-	1

Table 2. LP Gas Conversion Kit

4. For the conversion to LP gas from natural gas, the spring in the gas valve must be replaced. Two gas valve conversion kits are supplied with this LP gas conversion kit. One gas valve conversion kit (#624588) is used to convert the Honeywell VR8205 series gas valve, and the other kit (#660798) is used to convert the Robertshaw 7200 series gas valve. Inspect the gas valve that was removed from the unit being converted to determine the manufacturer and series. Then, install the appropriate gas valve conversion kit using the instructions supplied with that kit.

Reinstalling the Burner Assembly:

1. Reinstall the gas manifold assembly to the burner box with the four (4) fasteners, which were removed earlier.
2. Carefully reinstall the burner box into the unit. After installing the burner, inspect the alignment of the burners with the heat exchanger tubes. The center of the burners should be aligned with the center of the tubes.
3. Reconnect the gas piping to the gas valve.
4. Reconnect the wires to the gas valve terminals.
5. Reconnect the rubber pressure tubes to the gas valve and the burner box. Reinstall the burner access cover plate. Note that this step is only for the sealed burner box, which is shown in Figure 2.
6. Reconnect the ignitor at the 2 position plug.
7. Reconnect the flame sensor wire to the burner box.

<u>Description</u>	<u>Part No.</u>	<u>Quantity</u>
Installation Instructions	707724-	1
Conversion Kit for Gas Valve Honeywell Gas Valve VR8205A 2008	624588-	1
Conversion Kit for Gas Valve Robertshaw Gas Valve 7200 Series	660798-	1
Burner Orifice #55 Drill	661055-	6
Burner Orifice #56 Drill	661056-	6
Burner Orifice #57 Drill	661057-	6
Conversion Warning Label	703935-	1
Conversion Information Label	703942-	1

Table 3. High Altitude LP Gas Conversion Kit

Rated Input (BTU/HR)	No. of Burners	Elevation 0 - 2,000		Elevation 2,000-4,000		Elevation 4,000-6,000		Elevation 6,000-8,000		Elevation 8,000-10,000	
		Nat.	LP	Nat.	LP	Nat.	LP	Nat.	LP	Nat.	LP
40,000	2	45	55	46	55	49	56	49	56	50	57
45,000	2	44	54	45	55	46	55	48	56	49	56
60,000	3	45	55	46	55	49	56	49	56	50	57
72,000	3	43	54	44	55	45	55	46	56	48	56
80,000	4	45	55	46	55	49	56	49	56	50	57
96,000	4	43	54	44	55	45	55	46	56	48	56
100,000	5	45	55	46	55	49	56	49	56	50	57
120,000	5	43	54	44	55	45	55	46	56	48	56
120,000	6	45	55	46	55	49	56	49	56	50	57
144,000	6	43	54	44	55	45	55	46	56	48	56

Table 4. G Series Orifice Sizes for Both Natural and LP Gases (U.S. Installations Only)

Rated Input (BTU/HR)	No. of Burners	Elevation 0 - 2,000		Elevation 2,000-4,000		Elevation 4,000-6,000		Elevation 6,000-8,000		Elevation 8,000-10,000	
		Nat.	LP	Nat.	LP	Nat.	LP	Nat.	LP	Nat.	LP
45,000	2	43	54	45	55	46	55	48	56	49	56
72,000	3	43	54	44	55	45	55	46	56	48	56
96,000	4	43	54	44	55	45	55	46	56	48	56
120,000	5	43	54	44	55	45	55	46	56	48	56

Table 5. P(G,N) and R Series Orifice Sizes for Both Natural and LP Gases (U.S. Installations Only)

Pressure Gauge Installation

NOTE: For natural gas installations, the incoming gas line pressure at the gas valve inlet must be between 4.5" WC and 10.0" WC. For LP gas installations, the incoming gas line pressure at the gas valve inlet must be between 11.0" WC and 14.0" WC. This pressure can be checked at the inlet end of the gas valve using a pressure gauge or U-tube manometer, which must be installed according to the manufacturer's supplied instructions.

LIGHTING AND ADJUSTMENT OF THE APPLIANCE

1. Turn ON the gas at the manual valve, outside of the unit.
2. Check all gas connections for leaks with a soap and water solution. If the solution bubbles there is a gas leak which must be corrected. Do NOT use an open flame to check for gas leaks.
3. Turn ON the electrical power to the appliance.
4. Move the gas valve lever/knob to the "ON" position. The lever/knob must be moved to the end of its range of motion to insure the valve is completely open. Use only your hand to push in or turn the gas control valve. Never use tools.
5. Set the room thermostat to a point above room temperature to begin the heating cycle of the unit.
6. Check that the unit ignites and operates properly. Refer to the installation instructions provided with your unit for the normal operating sequence.
7. After the flame ignites, visually inspect the burner assembly to ensure that the flame is drawn directly into the center of the heat exchanger tube, as shown in Figure 3. The end of the flame will be out of sight around the bend of the heat exchanger tube. In a properly adjusted burner assembly, the flame color should be blue with some light yellow streaks near the outer portions of the flame.

NOTE: Until all of the air is bled out of the gas line, the hot surface ignitor may not ignite the gas. If the ignition control locks out, turn the thermostat to its lowest setting and wait one minute then turn the thermostat to a point above room temperature and the ignitor will try again to ignite the main burners. This process may have to be repeated several times before the burners will ignite. Once the burners are lit, check all gas connections for leaks again with the soap and water solution. If the solution bubbles there is a gas leak which must be corrected. Do not use an open flame to check for gas leaks.

Checking the Manifold Pressure

The manifold pressure can be measured by installing a pressure gauge or U-tube manometer to the outlet end of the gas valve as follows:

1. With a 3/16" Allen wrench, remove the manifold pressure tap plug located on the outlet side of the gas valve. Refer to Figure 3.
2. A fitting, which has a 1/8" NPT pipe thread that is compatible with the pressure gauge or U-tube manometer, must be installed at this point.
3. Install the pressure gauge or U-tube manometer according to the manufacturer's supplied instructions.
4. Set the room thermostat to a point above room temperature to start the furnace.
5. Allow the furnace to operate for three (3) minutes and then check the manifold pressure. For natural gas installations, the manifold pressure should be set to 3.5" WC. For LP gas installations, the manifold pressure should be set to 10" WC. If the manifold pressure is not set to the appropriate pressure, then it must be adjusted.

Adjusting the Manifold Pressure

1. If the manifold pressure must be adjusted, then remove the protective cap from the top of the gas valve regulator, as shown in Figure 3.
2. Using a short screwdriver, turn the adjustment screw to obtain a reading of 3.5" WC for natural gas installations or 10.0" WC for LP gas installations. Note: Turning the screw clockwise increases the pressure, whereas, turning the screw counter-clockwise decreases the pressure.
3. Replace and tighten the protective cap over the adjustment screw.

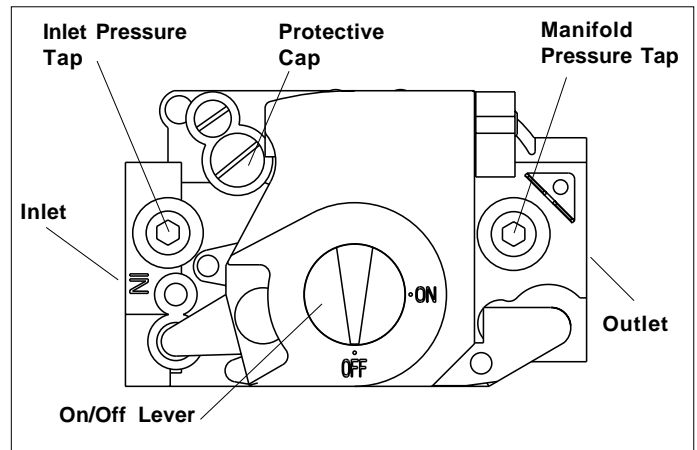


Figure 3. Gas Valve (Honeywell shown)

Removing the Pressure Gauge or U-tube Manometer

Once the manifold pressure has been properly adjusted, the pressure gauge or U-tube manometer must be removed from the gas valve.

1. Turn the thermostat to its lowest setting.
2. Turn OFF all of the electrical power supplies to the unit.
3. Turn OFF the main gas supply to the unit at the manual shut-off valve, which is located outside of the unit.
4. Remove the manometer adapter from the gas valve and replace it with the 1/8" NPT manifold pressure plug that had been removed earlier. Ensure that the plug is tight and not cross-threaded.
5. Turn ON the electrical power to the unit.
6. Turn ON the main gas supply to the unit at the manual shut-off valve, which is located outside of the unit.

COMPLETING THE CONVERSION

1. For G series conversions, affix the conversion warning label (#703935) provided in the kit to the outside of the unit door. Next, affix the conversion information label (#703942) near the rating plate on the inside of the control area. Finally, affix the gas valve conversion label found in the Gas Valve Conversion Kit on the gas valve. Each label should be prominent and visible, after installation.
2. For P(G,N) and R series conversions, affix the conversion warning label (#703935) provided in the kit to the outside of the unit near the rating plate. Next, affix the conversion information label (#703942) inside the control area. Finally, affix the gas valve conversion label found in the Gas Valve Conversion Kit on the gas valve. Each label should be prominent and visible after installation.
3. Reinstall the appliance control panel/door.
4. Run the appliance through a complete cycle to assure proper operation.

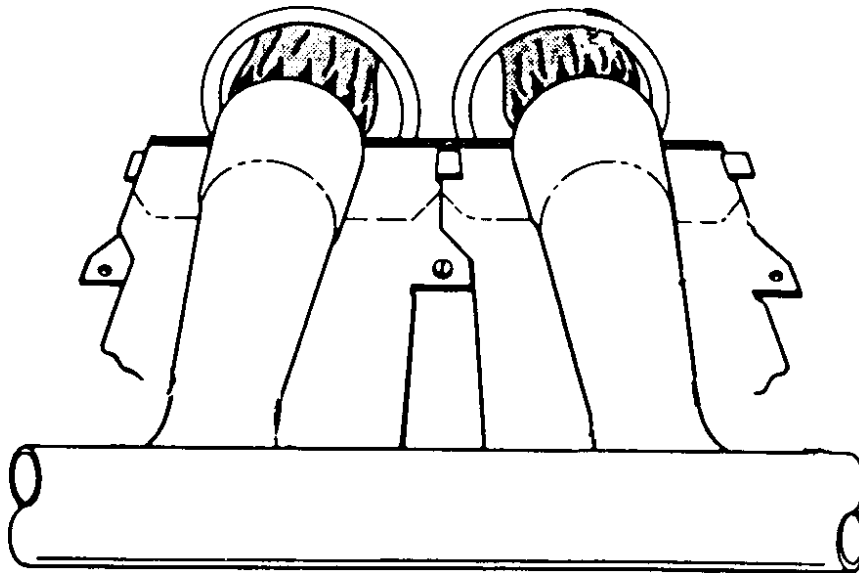


Figure 4. Burner Inspection



707758B (Replaces 707758A)

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