

High Altitude Natural Gas Conversion Kit For United States Installations

Installation Instructions

R4G*-150/180 Model Series Accessory

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, factory rated 0-2,000 Ft., to a high altitude Natural 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 all electrical power to the appliance.
3. Turn OFF the main gas supply to the appliance at the manual valve, outside of the appliance casing.
4. Open the Control/Gas Valve Access Panel.
5. Move the appliance gas valve lever/knob to the “OFF” position. See Figures 1 and 3.

To Remove the Manifold Assembly:

1. Follow the instructions “To Turn Off the Fuel Supply to the Appliance”.
2. Remove the Burner Access Panel louvered door.
3. Remove the White wires from the GV-1 terminal, the Brown wire from the GV-2 terminal, and the Black wires from the C-2 terminal of the gas valve.
4. **Using two wrenches** remove supply gas line, gas valve, and factory gas piping back to the manifold elbow. **DO NOT ALLOW THE BURNER ASSEMBLY TO ROTATE.**
5. Remove the four (4) fasteners that secure the gas manifold to the burner box, as shown in Figure 1. Carefully remove the gas manifold assembly from the burner box. Note that the gas manifold consists of the gas manifold and the orifices.
6. Carefully remove the burner orifices from the gas manifold, as shown in Figure 1.

NOTE: Care should be taken to ensure no damage occurs to the spark ignitor, flame sensor, or roll out limit switch.

Note: The size of the new orifices that will be installed into the unit will depend upon the altitude. Please refer to Table 1 for more details on your particular conversion.

Kit Includes:

⚠ CAUTION:

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

<u>Description</u>	<u>Qty.</u>
Burner Orifice	7
Conversion Warning Label	1
Conversion Information Label	1
Installation Instruction Sheet	1

in Step 5. Ensure all orifices are aligned into the burners.

Reinstalling the Burner Manifold Assembly:

To Convert the Unit to Natural Gas for Altitudes Between 2,000 and 7,000 Feet

1. Table 1 is a detailed listing of orifices required for converting R4GM-150/180 Series units to Natural Gas for altitudes between 2,000 and 7,000 feet. 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 Model number and rated input (Btu/hr). Count the number of burners in the burner box. Cross check all information with Table 1 to determine the appropriate Natural Gas orifice size for your application.
3. Install the appropriate 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.
4. Install manifold pipe with new Natural orifices onto the burner box assembly using four (4) fasteners removed

1. **Using two wrenches** carefully reinstall the factory gas piping and Gas Valve to the manifold elbow. **DO NOT ALLOW THE BURNER ASSEMBLY TO ROTATE.** Ensure a leak tight seal using joint compound approved for Natural Gas or other equivalent approved methods. Secure the gas valve and piping assembly using existing unit clamp.
2. Upon completion of the installation, 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. See Figure 2.
3. Reconnect the main gas piping to the gas valve.
4. Reconnect wiring to the gas valve terminals. Two White wires to GV-1, Brown wire to GV-2, and two black wires to C-2.

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.

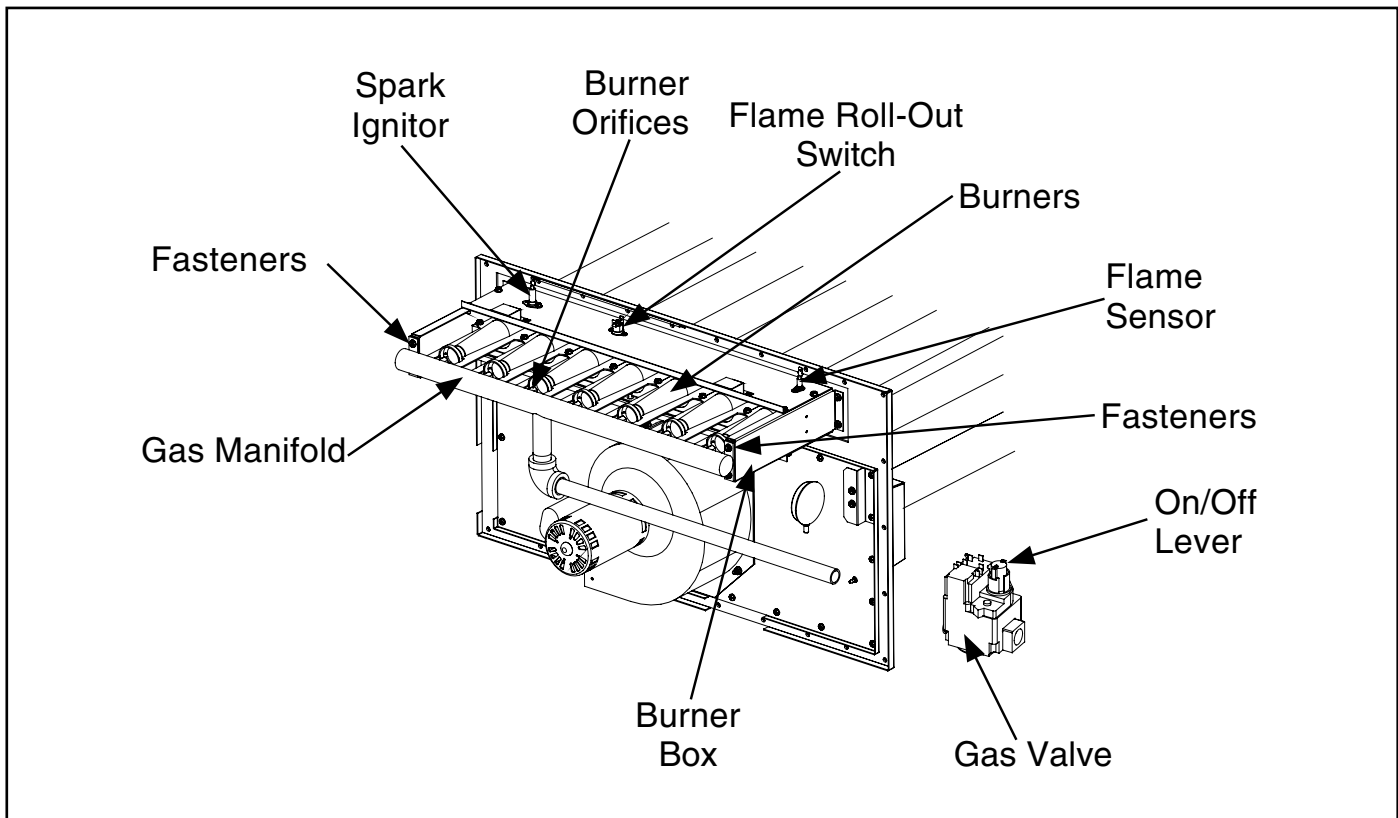


Figure 1. Typical Installation For R4GM-150/180 Burner Box

Unit Model Number	Type Gas Fuel	Heating Input (BTU/HR.)	No. of Burners	Orifice Size		
				Elevation (Ft.)		
				2000-4000	4000-6000	6000-7000
GR4GM-XXX* 180C	Nat.	180,000	4	# 31	2.90mm	# 34
GR4GM-XXX* 270C	Nat.	270,000	6	# 31	2.90mm	# 34
GR4GM-XXX* 315C	Nat.	315,000	7	# 31	2.90mm	# 34
Kit #				918839	918840	918841

Table 1. Natural Conversion Table for Altitudes Between 2,000 and 7,000 Feet.

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 2. 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.

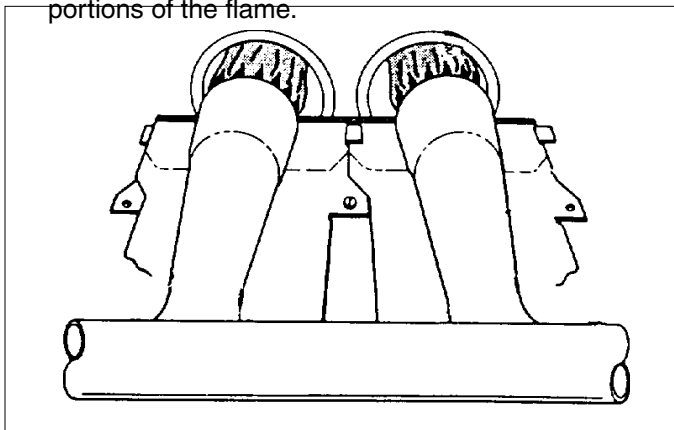


Figure 2. Burner Inspection

NOTE: Until all of the air is bled out of the gas line, the spark 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. 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. Turn the thermostat "OFF" or to its lowest temperature setting.
2. Turn OFF all electrical supplies to the unit.
3. Turn OFF the main gas supply to the unit at the manual shut-off valve, located outside of the unit.
4. 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.
5. 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.
6. Install the pressure gauge or U-tube manometer according to the manufacturer's supplied instructions.
7. Turn ON all electrical power to the unit.
8. Turn ON the main gas supply to the unit at the manual shut-off valve, located outside of the unit.
9. Set the room thermostat to a point above room temperature to start the furnace.
10. 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. 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 3.50" WC for Natural 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.

Removing the Pressure Gauge 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 "OFF" or to its lowest temperature setting.
2. Turn OFF all electrical supplies to the unit.
3. Turn OFF the main gas supply to the unit at the manual shut-off valve, 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 removed earlier. Ensure the plug is tightly sealed and not cross threaded.
5. Turn ON all electrical power to the unit.
6. Turn ON the main gas supply to the unit at the manual shut-off valve, located outside of the unit.

Completing the Conversion

1. For all R4GM Series high elevation conversions, affix the conversion warning label (#703935) provided in the kit to the outside of the unit's louvered burner access panel. Next, affix the conversion information label (#710005) over the Natural Gas warning label. Each label shall be prominent and visible after installation.
2. Replace the unit's louvered burner access panel.
3. Run the appliance through a complete cycle to assure proper operation.

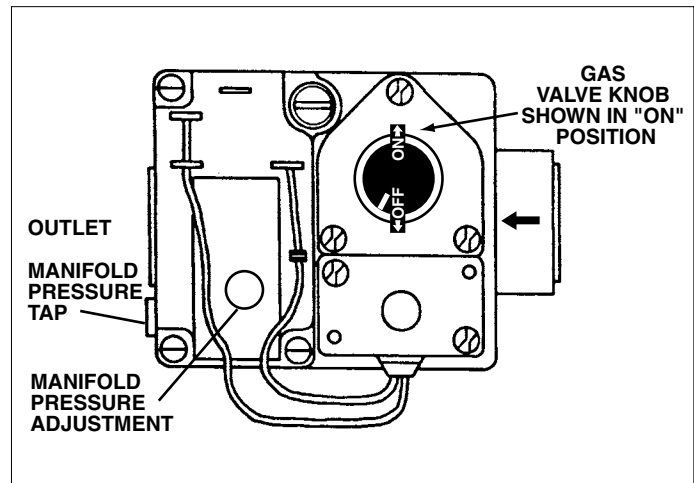


Figure 3. Gas Valve

