

Natural Gas to L.P. Gas Conversion Kit

For Bosch 96% AFUE Gas Furnace, BGH96 Models



BOSCH

Installation Instructions



Table of Contents

1 Key to Symbols and Safety Instructions	4
1.1 Key to Symbols	4
1.2 Safety Instructions	4

2 Gas Conversion Procedure	5
2.1 Turning Off the Fuel Supply to the Appliance	5
2.2 Removal of the Burner Assembly	5
2.3 Removal of the Burner Orifices	5
2.4 Conversion of Unit to LP Gas	5
2.5 Reinstalling the Burner Assembly	6
2.6 Checking the Gas Line Pressure	6
2.7 Lighting and Adjustment of the Appliance	6
2.8 Checking the Manifold Pressure	7
2.9 Adjusting the Manifold Pressure	7
2.10 Removing the Pressure Gauge or Manometer	7
2.11 Completing the Conversion	7

1 Key to Symbols and Safety Instructions

1.1 Key to Symbols

Warnings



Warnings in this document are identified by a warning triangle printed against a grey background. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and will be used in this document:

- ▶ **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- ▶ **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- ▶ **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.
- ▶ **NOTICE** is used to address practices not related to personal injury.

Important information



This symbol indicates important information where there is no risk to people or property.

1.2 Safety Instructions

The conversion kit supplied with the Bosch 96% AFUE Gas Furnace BGH96 model is only to be used for gas furnace installations to convert a natural gas furnace to a propane (LP) gas application for elevations less than 2000 ft. For high altitude (above 2000 ft (610m) elevation) conversions these instructions can be used as a guide, but you must refer to Section 9.2 of the Installation, Operation, and Maintenance Manual for further instructions based on your specific application.



Read all instructions before beginning the conversion of the appliance.



WARNING: FIRE OR EXPLOSION HAZARD

- ▶ This conversion kit must be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. 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. The 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:

- ▶ This product can expose you to chemicals including Lead and Lead components, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



CAUTION:

- ▶ All gas piping must conform with local building codes or in the absence of local codes, refer to the latest version of NFPA54/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.

2 Gas Conversion Procedure



CAUTION:

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



In addition to this procedure, please also refer to the Regulated Natural to L.P. Gas Conversion Kit for Two-Stage Gas Valve Instructions shipped with this kit.

2.1 Turning 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 cabinet.
3. Remove the burner access panel.
4. Move the appliance gas valve switch to the "OFF" position.
5. Turn OFF the electrical power to the appliance.

2.2 Removal of the Burner Assembly

1. Before beginning this step, follow the instructions listed above to turn off the fuel supply to the appliance.
2. Remove the 2 ground wires from the burner box.
3. Remove the wires from the terminals of the gas valve.
4. Remove supply gas piping from the gas valve.

2.3 Removal of the Burner Orifices

1. 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 assembly consists of the gas valve, the gas manifold, and the orifices.
2. Carefully remove the burner orifices from the gas manifold, as shown in Figure 1.



CAUTION:

- ▶ Do not redrill the burner orifices. If the orifice size must be changed, use only new orifices.



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 Section 9.2 of the Installation, Operation, and Maintenance Manual for more details on your particular conversion.

2.4 Conversion of Unit to LP Gas

1. Table 1 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.
2. For natural gas to LP conversions at elevations less than 2000 ft, use the orifices supplied with your conversion kit. For other applications:
 - a. Refer to Section 9.2 of the Installation, Operation, and Maintenance Manual.
 - b. Examine the rating plate of the unit to determine the rated input (Btu/hr).
 - c. Count the number of burners in the burner box to determine the appropriate quantity of LP gas orifices required for your conversion.
 - d. Using Tables 15 & 16 in Section 9.2 of the Installation, Operation, and Maintenance Manual, determine and obtain the correct orifices required for your application.
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.
4. For the conversion to LP gas from natural gas, the springs in the current gas valve must be replaced with the new springs that come with the kit.
5. Unscrew the Regulator Cover Screw and Plastic Regulator Adjustment Screw, and remove the natural gas springs. Refer to Figure 3.
6. Carefully place the liquefied petroleum gas springs in the HI and LO side. Ensure the springs are concentric to the threaded hole.
7. Screw the HI and LO Plastic Regulator Adjustment Screws back in.
8. Turn both the HI and LO Plastic Regulator Adjustment Screws clockwise to the bottom, and then rotate counterclockwise 2 - 3 turns.



HI and LO Plastic Regulator Adjustment Screw turns may need to be adjusted to meet the required Manifold Pressures once Furnace is fired up. Refer to Section 2.9.



All Bosch 96% AFUE Gas Furnaces come standard with Natural Gas to LP Conversion Kits. These kits are only applicable for units installed at elevations between 0 and 2,000 feet.

For LP applications above 2000 ft elevation, the manifold and inlet gas pressure requirements remain the same as stated in this manual, the only change is to the orifices used. Refer Tables 15 & 16 in Section 9.2 of the Installation, Operation, and Maintenance Manual to determine which orifice to use based on your application.

Description	Quantity
Installation instructions	1
#55 LPG main burner orifices	3/4/5/6*
Conversion kit for gas valve	1
Gas valve instruction	1
Reducer bushings	2
Conversion information label	1

Table 1 LP gas conversion kit contents

* Dependent on the model of the furnace.



Two (2) 1/2" NPT x 3/8" NPT reducer bushings can be found in the paper bag supplied in the LP gas conversion kit. These will only be used if connecting a 3/8" gas supply to the gas valve. If not needed, they can be discarded.

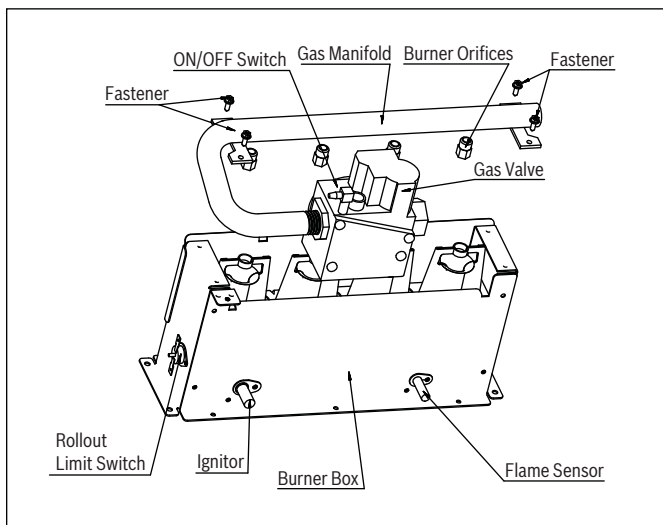


Figure 1 Typical Furnace Installation

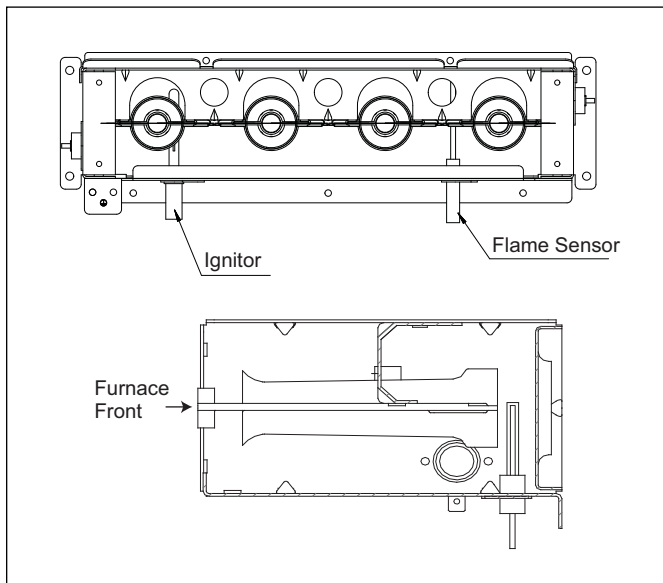


Figure 2 Ignitor Position

2.5 Reinstalling the Burner Assembly

1. Reinstall the gas manifold assembly to the burner box with the four (4) fasteners, which were removed earlier.
2. 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. For the ignitor and flame sensor position refer to Figure 1 and Figure 2.
3. Reconnect the gas piping to the gas valve.
4. Reconnect the wires to the gas valve terminals.
5. Reconnect the 2 ground wires to the burner box.

2.6 Checking the Gas Line Pressure

For natural gas installations, the incoming gas line pressure at the gas valve inlet must be between 4.5 in. WC and 10.5 in. WC. For LP gas installations, the incoming gas line pressure at the gas valve inlet must be between 11.0 in. WC and 13.0 in. WC. This pressure can be checked at the inlet end of the gas valve using a pressure gauge or manometer. The pressure gauge must be installed according to the manufacturer's supplied instructions.

2.7 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 to the "ON" position. The lever must be moved to the end of its range of motion to ensure 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 temperature above room temperature to begin the heating cycle of the unit.
6. Reinstall the burner access panel.
7. Check that the unit ignites and operates properly. Refer to the Installation, Operation, and Maintenance Manual provided with your unit for the normal operating sequence.
8. 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 4. 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.



Until all of the air is bled out of the gas line, the hot surface ignitor may not ignite the gas. If the unit fails to ignite 4x in succession, the ignition will lock out (E7 fault code). If the ignition locks out, Shut off power to the furnace and wait 10 seconds to reset the lock out. Turn power back on to allow the furnace to attempt ignition again. This process may have to be repeated several times before the burners will ignite.



WARNING:

- ▶ 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.

2.8 Checking the Manifold Pressure

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

1. Remove the burner access panel.
2. Remove the manifold pressure tap plug located on the outlet side of the gas valve. Refer to Figure 3.

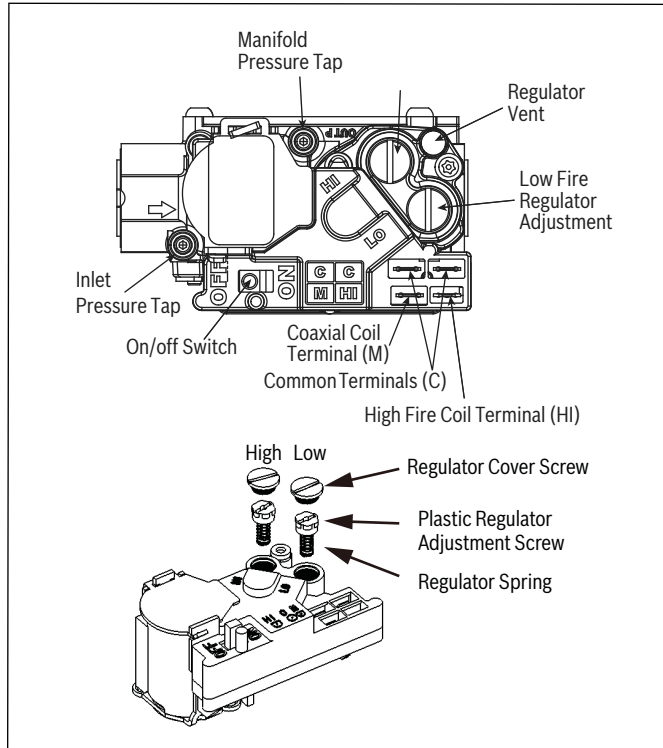


Figure 3 Gas Valve

3. Install the manometer according to the manufacturer's supplied instructions.
4. Set the room thermostat to a temperature above room temperature to start the furnace.
5. Allow the furnace to operate for three (3) minutes and then check the manifold pressure. For LP gas installations, the manifold pressure should be set to 4 in. WC for low fire, and 10 in. WC for high fire. If the manifold pressure is not set to the appropriate pressure, then it must be adjusted.

2.9 Adjusting the Manifold Pressure

1. If the manifold pressure must be adjusted, then remove the 2 regulator cover screws from the top of the gas valve regulator, as shown in Figure 3.
2. Set the unit to low fire (W1) and turn the LO fire Plastic Regulator Adjustment Screw until the manifold pressure reads 4 in. WC.
3. Set the unit to high fire (W2) and turn the HI fire Plastic Regulator Adjustment Screw until the manifold pressure reads 10 in. WC.
4. Once your HI pressure is set to 10 in. WC, check your LO fire pressure again to ensure pressure reads 4 in. WC. Adjust LO fire Plastic Regulator Adjustment screw if necessary.



Turning the screw clockwise increases the pressure, whereas, turning the screw counter-clockwise decreases the pressure.

5. Replace and tighten the regulator cover screws over the adjustment screws.

2.10 Removing the Pressure Gauge or Manometer

Once the manifold pressure has been properly adjusted, the pressure gauge or 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 was 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.

2.11 Completing the Conversion

1. For LP gas conversions, affix the conversion information label 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. Reinstall the burner access panel.
3. Run the appliance through a complete cycle to ensure proper operation.

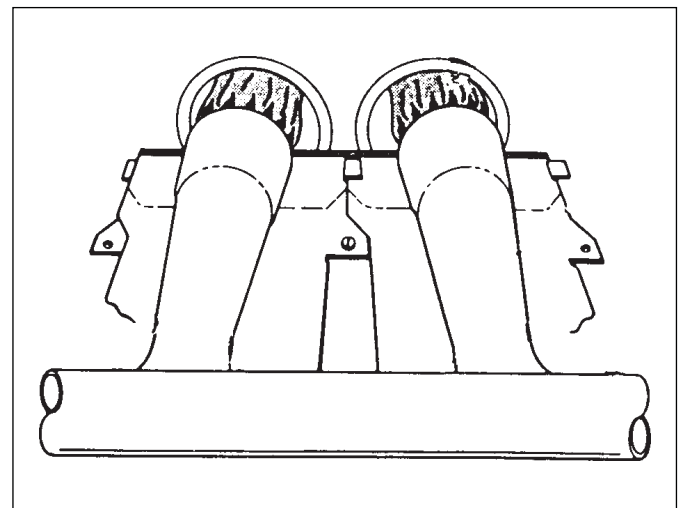


Figure 4 Burner Inspection

United States of America

**Bosch Thermotechnology Corp.
65 Grove Street
Watertown, MA 02472**

**Tel: 1-866-642-3198
Fax: 1-603-965-7581
www.bosch-thermotechnology.us**