# ACCESSORY KIT INSTALLATION MANUAL

## LP (PROPANE) CONVERSION KIT 1NP0366
## FOR USE WITH MODELS: G8C & GF8

**⚠WARNING**

*This conversion kit shall be installed by a qualified service agency in accordance with these 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 these instructions supplied with the kit.*

**⚠ CAUTION**

*The conversion of new certified central heating gas appliances must conform to directions outlined in this instruction.*

*Installation must be made in accordance with American National Standard National Fuel Gas Code, ANSI Z223.1-latest edition, unless superseded by local codes. For Canadian installations, the conversion shall be carried out in accordance with the requirements of the Provincial authorities having jurisdiction and in accordance with the CAN1-B149.1 and .2 installation codes.*

*The manufacturer accepts no responsibility for malfunctions due to improper conversions*

## GENERAL

**⚠WARNING**

*Improper installation, adjustment, service or maintenance can cause injury or property damage; therefore, only a qualified installer or qualified service personnel should perform this conversion.*

**IMPORTANT -** These instructions are for the use of qualified individuals specially trained, experienced and certified in the installation of this type of equipment and related systems components. Installation and service personnel are required by some states to be licensed. Persons not qualified shall not install this equipment nor interpret these instructions.

⚠ This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

Understand and pay particular attention to the signal words **DANGER**, **WARNING**, or **CAUTION**.

**DANGER** indicates an **imminently** hazardous situation, which, if not avoided, **will result in death or serious injury**.

**WARNING** indicates a **potentially** hazardous situation, which, if not avoided, **could result in death or serious injury**.

**CAUTION** indicates a potentially hazardous situation, which, if not avoided **may result in minor or moderate injury.** It is also used to alert against unsafe practices and hazards involving only property damage.

**TABLE 1:**Conversion Application Table (0 - 2000 Ft.)

| Furnace Model | Input (BTUH) | LP (Propane) Orifice Size |
|---|---|---|
| G8C050, GF8050 | 50,000 | .055 (#54) x 2 |
| G8C075, GF8075 | 75,000 | .055 (#54) x 3 |
| G8C100, GF8100 | 100,000 | .055 (#54) x 4 |
| G8C125, GF8125 | 125,000 | .055 (#54) x 5 |
| G8C150, GF8150 | 150,000 | .055 (#54) x 6 |

| CONTENTS OF KIT | | |
|---|---|---|
| **DESCRIPTION** | **PART NUMBER** | **QTY** |
| Gas Line Pressure Switch | 17471 | 1 |
| Tapped Gas Pipe Nipple | 18095 | 1 |
| Propane Gas Orifice | 18081 | 7 |
| Wire Harness | 20461 | 1 |
| Installation Instructions | 247585 | 1 |
| Valve Conversion Kit | 7614 (WR #92-0923) | 1 |
| Packaging Kit (33 Cu In) | 93689 | 1 |
| Label, Bar Code | 11931 | 1 |
| Label, Conversion | 255424 | 1 |
| Label, Carton | 255426 | 1 |
| Label, Conversion Rating Plate | 255417 | 1 |

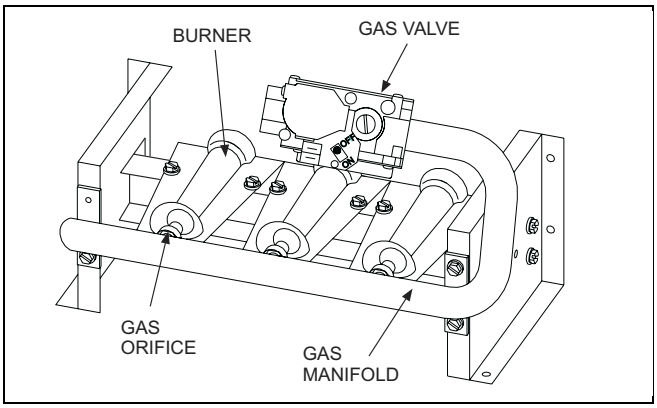


**FIGURE 1:** Burner Assembly

## CONVERSION PROCEDURE

**⚠ CAUTION**

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

**⚠WARNING**

***SHOCK HAZARD** – Turn off electrical supply to furnace.*

1. Shut off gas supply at valve upstream from furnace or at meter as required.
2. Disconnect gas supply piping from gas valve on furnace.
3. Disconnect electrical wires from gas valve, noting which wires are connected to which terminals.
4. Remove the four screws that attach the gas manifold to the burner support box. See Figure 1.
5. Remove and discard natural gas orifices.
6. Install the LP (propane) gas orifices supplied with the kit. Tighten to 15-25 inch-pounds of torque.
7. Reinstall the manifold in the assembly by reversing the removal process.
8. Reconnect the wires to the proper terminals on the gas valve.
9. When installing gas piping on 80% AFUE units, insert tapped gas pipe nipple (supplied with kit) into inlet fitting of gas valve. If using the right side cabinet knock out, the nipple can be either be installed before or after making the u-bend.
10. Install (thread) the gas line pressure switch (supplied with kit) into the 1/8 NPT tapped hole in nipple applying pipe dope to the switch fitting prior to installation. Tighten the switch making sure the connection does not leak.

**NOTE:** The gas line pressure switch will cause the furnace to lock out if the gas supply pressure drops below 6” w.c. The ignition control will display a fault code 7 and will reset after one hour.

11. Disconnect the purple wire from the flame sensor.
12. Using the wire harness (supplied with kit) connect the purple wire from the flame sensor into the insulated male connector; connect the two 1/4” insulated terminals to the pressure switch; and connect the remaining insulated terminal to the flame sensor.
13. Reattach the manifold and orifices to the furnace, making sure that the orifices are pointing properly down the center of the burners.
14. Convert the gas valve for LP (propane) gas operation by following the instructions and using the components supplied in the envelope. Apply the label supplied in the kit to the gas valve to show that it has been converted.
15. Locate the silver colored conversion plate sticker for the furnace model being converted. Attach it to the furnace as close as possible to the rating plate where it will be clearly visible. The name and address of the company making the conversion and the date of conversion must be written on the plate.
16. Reconnect the electrical wires to the gas valve using the wiring diagram as a guide.
17. Reconnect the gas supply piping to the gas valve and insure that all gas connections are tight.
18. Loosten pressure tap set screw at gas valve pressure ports and connect water gauge to the pressure tap ports. See Figure 2 for location of the gas valve pressure taps and pressure regulator adjustment.
19. Turn on gas supply to furnace and check all gas connections with suitable leak detector.

**⚠WARNING**

*Never use an open flame to check for leaks. Fire or explosion could occur. Since some leak solutions including soap and water may cause corrosion or stress cracking, the piping must be rinsed with water after testing unless it has been determined that the leak test solution is non-corrosive.*

20. After assuring that there is no gas leakage, light the furnace using the lighting instructions shown on the label on the door panel.
21. Verify that the gas supply pressure is between 11 and 14 inches water column with the furnace operating. Adjust gas valve manifold pressure regulator to obtain gas pressure reading of 10 ± 0.3" W.C.
22. Screw in place the slotted cap, covering the manifold pressure adjustment screw.
23. Turn gas supply off, remove pressure gauge, and tighten pressure tap set screws.
24. Turn gas supply on, re-light the furnace, and check for gas leak at the pressure ports.
25. Cycle furnace with thermostat a few times to insure that everything is working properly.
26. Check gas input rate as described in next paragraph.

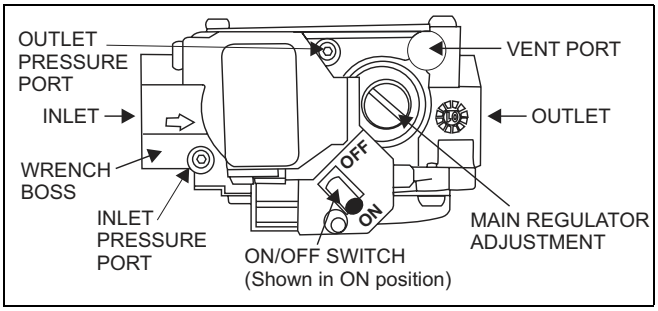


**FIGURE 2:** Gas Valve

**IMPORTANT -** If the gas supply does not have a meter, then be sure that the proper orifice has been installed. Also verify that the gas supply pressure is between 11 and 14 inches water column and the manifold pressure is 10 ± 0.3 inches water column.

## CALCULATING THE FURNACE INPUT (NATURAL GAS)

**NOTE:** Burner orifices are sized to provide proper input rate using natural gas with a heating value of 1030 BTU/$Ft^3$. If the heating value of your gas is significantly different, it may be necessary to replace the orifices.

1. Turn off all other gas appliances connected to the gas meter.
2. At the gas meter, measure the time (with a stop watch) it takes to use cubic ft. (0.0566 $m^3$) of gas.
3. Calculate the furnace input by using one of the following equations.

## CALCULATING THE FURNACE INPUT (PROPANE GAS)

**NOTE:** Burner orifices are sized to provide the proper input rate using propane gas with a heating value of 2500 BTU/$Ft^3$. If the heating value of your gas is significantly different, it may be necessary to replace the orifices with different size orifices. Follow the procedure below to calculate the furnace input.

1. Turn off all gas appliances connected to the gas meter.
2. Start the furnace.
3. Use a stop watch to measure the time it takes for the furnace to burn 1 cubic ft. of gas.
4. Calculate the furnace input by using one of the following equations.

**In the USA use the following formula to calculate the furnace input.**

For natural gas multiply the heat content of the gas BTU/SCF (or Default 1030 BTU/SCF, times 2 cubic ft. of gas measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time (In seconds) it took to measure 2 cubic ft. of gas from the gas meter.

For propane (LP) gas multiply the heat content of the gas BTU/SCF (or Default 2500 BTU/SCF, times 1 cubic ft. of gas measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time (In seconds) it took to measure 1 cubic ft. of gas from the gas meter.

**The formula for US input calculation using a cubic foot gas meter:**

| $BTU/f^3$ x 2 cu.ft. x 0.960 x 3600 / Seconds it took to measure the 2 cu.ft. of gas | = | BTUH/H | $BTU/f^3$ x 1 cu.ft. x 0.960 x 3600 / Seconds it took to measure the 2 cu.ft. of gas | = | BTUH/H |
|---|---|---|---|---|---|
| **NATURAL GAS INPUT CALCULATION** | | | **PROPANE (LP) GAS INPUT CALCULATION** | | |
| EXAMPLE: | | | EXAMPLE: | | |
| 1030 x 2 x 0.960 x 3600 / 90.5 | = | 79,997.38 | 2500 x 1 x 0.960 x 3600 / 108 | = | 80,000.00 |
| Natural Gas | | | Propane Gas | | |
| BTU/SCF 1030 | | | BTU/SCF 2500 | | |

**In Canada you will use the following formula to calculate the furnace input if you are using a cubic foot gas meter.**

For Natural Gas multiply the Heat content of the gas $MJ/m^3$ (or Default 39.2), times 2 cu. ft. of gas x 0.02831 to convert from cubic feet to cubic meters measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time it took to measure 2 cu.ft. of gas from the gas meter.

For Propane (LP) Gas multiply the Heat content of the gas $MJ/m^3$ (or Default 93.14), times 1 cu. ft. of gas x 0.02831 to convert from cubic feet to cubic meters measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time it took to measure 1 cu.ft. of gas from the gas meter.

**The formula for metric input calculation using a cubic foot gas meter:**

| $MJ/m^3$ x (2 cu.ft. x Conv) x 0.960 x 3600 / Seconds it took to measure the 2 cu.ft. of gas | = | MJ/H | x | 0.2777 | = | kW | x | 3412.14 | = | BTUH/H |
|---|---|---|---|---|---|---|---|---|---|---|
| **NATURAL GAS INPUT CALCULATION**<br>EXAMPLE:<br>39.2 x 2 x 0.960 x 3600 / 90.5<br>Natural Gas<br>BTU/SCF 1030 = 39.2 $MJ/m^3$ | = | 84.76 | x | 0.2777 | = | 23.54 | x | 3412.14 | = | 80,312.62 |
| **PROPANE (LP) GAS INPUT CALCULATION**<br>EXAMPLE:<br>93.15 x 1 x 0.960 x 3600 / 108<br>Propane Gas<br>BTU/SCF 2500+93.15 $MJ/m^3$ | = | 84.41 | x | 0.2777 | = | 23.45 | x | 3412.14 | = | 80,000.00 |

**In Canada use the following formula to calculate the furnace input if you are using a gas meter that measures cubic meters.**

For Natural Gas multiply the Heat content of the gas $MJ/m^3$ (or Default 39.2), times 0.0566 $m^3$ of gas measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time it took to measure 0.0566 $m^3$ of gas from the gas meter.

For Propane (LP) Gas multiply the Heat content of the gas $MJ/m^3$ (or Default 93.14), times 0.00283 $m^3$ of gas measured at the gas meter, times a barometric pressure and temperature correction factor of 0.960; times 3600, then divided by the time it took to measure 0.0283 cm of gas from the gas meter.

**The formula for metric input calculation using a cubic foot gas meter:**

| $MJ/m^3$ x (2 cu.ft. x Conv) x 0.960 x 3600 / Seconds it took to measure the 2 cu.ft. of gas | = | MJ/H | x | 0.2777 | = | kW | x | 3412.14 | = | BTUH/H |
|---|---|---|---|---|---|---|---|---|---|---|
| **NATURAL GAS INPUT CALCULATION**<br>EXAMPLE:<br>39.2 x 2 x 0.960 x 3600 / 90.5<br>Natural Gas<br>BTU/SCF 1030 = 39.2 $MJ/m^3$ | = | 84.76 | x | 0.2777 | = | 23.54 | x | 3412.14 | = | 80,312.62 |
| **PROPANE (LP) GAS INPUT CALCULATION**<br>EXAMPLE:<br>93.15 x 1 x 0.960 x 3600 / 108<br>Propane Gas<br>BTU/SCF 2500+93.15 $MJ/m^3$ | = | 84.41 | x | 0.2777 | = | 23.45 | x | 3412.14 | = | 80,000.00 |

DO NOT ADJUST the manifold pressure regulator if the actual input is equal to or within 8% less than the furnace input specified on the rating plate or if the furnace rise is above the specified rise range on the rating plate.

**If the actual input is significantly higher than the furnace input specified on the rating plate** then replace the gas orifice spuds with the gas orifice spuds of the proper size for the type of gas you are using.

## GAS PRESSURE REGULATION

**⚠ CAUTION**

*Be sure to relight any gas appliances that were turned off at the start of this input check.*

**TABLE 2:**Inlet Gas Pressure Range

| INLET GAS PRESSURE RANGE | |
|---|---|
| | Propane (LP) |
| Minimum | 8.0” W.C. (1.99 kPa) |
| Maximum | 13.0” (3.24 kPa) W.C. |

**IMPORTANT -** The inlet gas pressure operating range table specifies what the minimum and maximum gas line pressures must be for the furnace to operate safely. The gas line pressure **MUST BE** a minimum of

- 11” W.C. (2.74 kPA) for Propane (LP) Gas

in order to obtain the BTU input specified on the rating plate and in these instructions.

### ADJUSTMENT OF MANIFOLD GAS PRESSURE

Manifold gas pressure may be measured at the gas valve.

**Turn gas off at the ball valve or gas cock on gas supply line before the gas valve. Find the pressure ports on the gas valve marked OUT P and IN P.**

1. The manifold pressure must be taken at the port marked OUT P.
2. The gas line pressure must be taken at the port marked IN P.
3. Using a 3/32” Allen wrench, loosen the setscrew by turning it 1 turn counter clockwise. DO NOT REMOVE THE SET SCREW FROM THE PRESSURE PORT.
4. Use the 4” (10.2 cm) piece of 1/8” (0.3 cm) tubing to connect the positive side of the manometer to the gas valve pressure reference port. Refer to Figure 4 for connection details.

**IMPORTANT -** The cap for the pressure regulator must be removed entirely to gain access to the adjustment screw. Loosening or tightening the cap does not adjust the flow of gas.

5. Refer to Figure 3 for location of pressure regulator adjustment cap and adjustment screw on main gas valve.
6. Turn gas and electrical supplies on and follow the operating instructions to place the unit back in operation.
7. Adjust manifold pressure by adjusting gas valve regulator screw for the appropriate gas per the following:

**TABLE 3:**Nominal Manifold Pressure

| Nominal Manifold Pressure | |
|---|---|
| Propane (LP) Gas | 10.0" w.c. (2.488 kPa) |

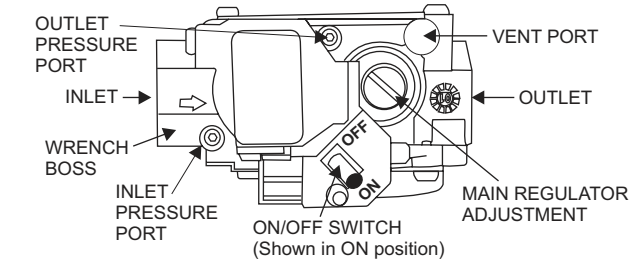


**FIGURE 3** Gas Valve

**IMPORTANT -** If gas valve regulator is turned in (clockwise), manifold pressure is increased. If screw is turned out (counterclockwise), manifold pressure will decrease.

8. After the manifold pressure has been adjusted, re-calculate the furnace input to make sure you have not exceeded the specified input on the rating plate. Refer to “CALCULATING THE FURNACE INPUT (NATURAL GAS)”.
9. Once the correct BTU (kW) input has been established, turn the gas valve to OFF and turn the electrical supply switch to OFF; then remove the flexible tubing and fittings from the gas valve pressure tap and tighten the pressure tap plug using the 3/32” Allen wrench.
10. Turn the electrical and gas supplies back on, and with the burners in operation, check for gas leakage around the gas valve pressure port for leakage using an approved gas detector, a non-corrosive leak detection fluid, or other leak detection methods.

**⚠WARNING**

*The manifold pressure must be checked with the screw-off cap for the gas valve pressure regulator in place. If not, the manifold pressure setting could result in an over-fire condition. A high manifold pressure will cause an over-fire condition, which could cause premature heat exchanger failure. If the manifold pressure is too low, sooting and eventual clogging of the heat exchanger could occur. Be sure that gas valve regulator cap is in place and burner box to gas valve pressure reference hose is connected.*

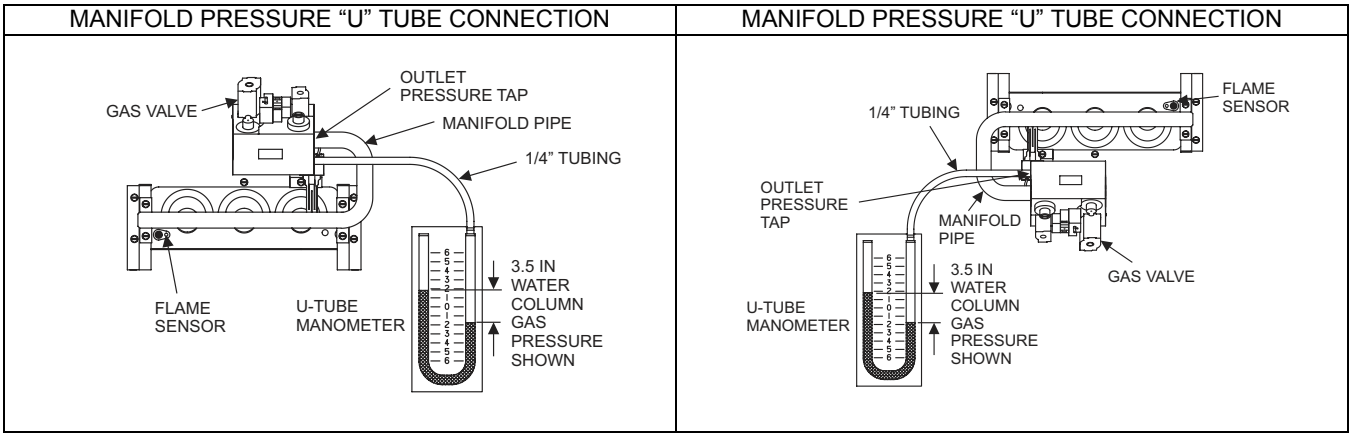


**FIGURE 4** Reading Gas Pressure

## LABELS

1. Remove conversion rating plate label from the shipping box. Check the natural gas to propane box. If in Canada, check the appropriate box for respective conversion station.

NOTE: If the unit has been converted from natural gas to propane (LP), remove the conversion label on the door.

2. Place the conversion rating plate label 255424 as close to the rating plate as possible.
3. Gas appliance conversion label, write the following:
   a. Kit number, located on the outside of the kit box.
   b. Stamp or write in the name of the organization making conversion, address, city, state, month, and year.
4. Remove label backing and affix label adjacent to the rating plate.

# NOTES

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247587-UAI-A-0706
Supersedes: 158115-UAI-A-0905