

# ACCESSORY KIT INSTALLATION INSTRUCTIONS

## 1PS0306 / 1PS0307 / 1PS0308 / 1PS0309 HIGH ALTITUDE APPLICATION CONVERSION INSTRUCTION HIGH EFFICIENCY GAS FURNACES FOR MODELS P\*UR / G9T-UP / P\*DH / G9T-DH / GF9 / GM9

### ⚠ WARNING

*This conversion kit is to 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.*

### ⚠ 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must be made in accordance with American National Standard National Fuel Gas Code, ANSI Z223.1-latest edition, unless superseded by local codes.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

This instruction is intended for the conversion of new equipment only, for operation at altitudes greater than 4,500 ft. above sea level. Follow the basic unit installation instruction for all other aspects of the installation.

All units are equipped to operate up to 4,500 ft. above sea level without a high altitude kit. Installations above 2,000 ft. must be field derated as required by the National Fuel Gas Code, ANSI Z223.1 (latest edition), or in Canada, CAN/CGA B149.1 or .2 and all other applicable local codes and utility requirements.

This instruction provides the necessary information to select and install both the proper pressure switch and orifice for your specific application. Data is provided for both natural and propane (LP) gases. This high altitude pressure switch and accessory includes a special switch and other items as detailed below.

### ⚠ 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.*

### COMMON PARTS

Description	Part Number	Quantity
Conversion Label	035-11635-000	1
Install. Instruction.	035-14447-000	1

### PRESSURE SWITCH

Accessory Kit	Switch Part Number	Pressure Setting
1PS0306	024-27633-00*	0.55 IWC
1PS0307	024-27635-00*	0.75 IWC
1PS0308	024-27636-00*	0.85 IWC
1PS0309	024-27637-00*	0.90 IWC

\* May be any numeral 0-9.

## PRESSURE SWITCH

For installations below 4500 ft., refer to furnace installation instructions for applications which do not require a pressure switch change. For all other high altitude applications, a pressure switch change is required to provide safe and reliable operation. Table 1 indicates the correct pressure switch accessory for each unit model applied at two different altitude groupings.

### ⚠ WARNING

*Do not adjust the original pressure switch to allow operation at high altitude. Unsafe operation will result.*

**Table 1: HIGH ALTITUDE PRESSURE SWITCH USAGE**

INPUT (MBH)	ACCESSORY PART NUMBER
P*UR / G9T-UP	
40	1PS0309
60	1PS0307
80 / 1200	1PS0306
80 / 1600	1PS0307
100	1PS0306
120	1PS0307
140	1PS0307
P*DH / G9T-DH	
40	1PS0309
60	1PS0307
80 / 1200	1PS0306
80 / 1600	1PS0307
100	1PS0306
120	1PS0307
GF9 / GM9	
60 / 80 / 120	1PS0309
100	1PS0307

The high altitude pressure switch should be changed by following this procedure.

1. Remove the burner access door.

### ⚠ CAUTION

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

2. Note the location of the wires on the pressure control and then disconnect them. Remove the hose from the pressure control.
3. Remove the screws securing the pressure control and remove it from the unit. Check that the new pressure control part number is correct for your application (Refer to "Pressure Switch" Table on page 1). Install the new pressure control.
4. Replace the hose and wiring as originally connected.

## ORIFICE SIZE SELECTION

A number of factors determine the correct orifice usage for your application. These factors include the original orifice sizing, BTU content of the gas and the altitude.

The standard orifice used in the furnace is shown in Table 2 or 3. Find your unit and determine the standard orifice provided.

For natural gas applications, contact your gas supplier for the actual BTU content (heating value) of the fuel provided at your altitude. Table 4 indicates various BTU content fuels.

Use the BTU heating value that is nearest to your value. Read across the selected table from the standard orifice to

the altitude for your application and then note the new orifice number.

**EXAMPLE:** If your unit has a #45 orifice as standard and a heating gas value of 900 BTU/CU.FT., at an altitude of 7,000 feet a #47 orifice will provide the correct firing rate.

For propane (LP) gas applications, Use Table 5 to select the proper high altitude orifice size.

### ⚠ WARNING

*The furnace must first be converted to use propane (LP) through the use of the standard propane conversion kit accessory.*

After selecting the proper orifice size for your application, see Table 6 that indicates the part number for your required orifice number. The orifices may be obtained through your local Source 1 Parts Distribution Center.

The high altitude orifices should be changed by the following procedure:

**Table 2: STANDARD ORIFICE USAGE**

INPUT (MBH)	NATURAL ORIFICE SIZE	PROPANE ORIFICE SIZE
Upflow Models		
40	45	55
60	45	55
80	45	55
100	45	55
120	45	55
140	43	54

**Table 3: STANDARD ORIFICE USAGE**

INPUT (MBH)	NATURAL ORIFICE SIZE	PROPANE ORIFICE SIZE
Downflow/Horizontal Models		
40	45	55
60	45	55
80	45	55
100	45	55
120	45	55

1. Carefully remove the wires from the gas valve and note their location so they may be properly replaced. Remove the burner box door. Remove the two screws that hold the manifold to the manifold to the burner box and slide the manifold and orifices back out of the burners.
2. Remove the main burner orifices from the manifold and discard them.
3. Install the derate main burner orifices in the manifold and tighten them. After installing a new orifice in each location, any leftover orifices may be discarded.
4. Reinstall the main burners in the assembly by reversing the removal process.

**Table 4:** ALTITUDE/NATURAL GAS HEATING VALUE ORIFICE SELECTION

NATURAL GAS HEATING VALUE (MANIFOLD PRESSURE 3.5" W.C.)	ORIFICE SHIPPED WITH UNIT	RECOMMENDED ORIFICE									
		ALTITUDE (FT. ABOVE SEA LEVEL)									
		0	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
1200 BTU/CU Ft.	45	48	49	49	50	50	50	51	51	52	52
	43	45	46	47	47	47	48	49	49	49	49
1100 BTU/CU.FT.	45	47	48	48	49	49	49	50	50	51	51
	43	44	45	45	45	46	47	47	48	48	49
1000 BTU/CU.FT.	45	45	46	47	47	47	48	48	49	49	50
	43	43	44	44	44	45	45	46	47	47	48
900 BTU/CU.FT.	45	44	45	45	45	46	47	47	48	48	49
	43	42	42	43	43	43	44	44	45	46	47
800 BTU/CU.FT.	45	43	44	44	44	45	45	46	47	47	48
	43	39	40	41	41	42	42	43	43	44	44

**Table 5:** ALTITUDE/PROPANE (LP) GAS HEATING VALUE ORIFICE SELECTION

PROPANE GAS HEATING VALUE (MANIFOLD PRESSURE 10.0" W.C.)	PROPANE ORIFICE @ SEA LEVEL	RECOMMENDED ORIFICE									
		ALTITUDE (FT. ABOVE SEA LEVEL)									
		0	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
2516 BTU/CU FT.	54	54	54	55	55	55	55	55	56	56	56
	55	55	55	55	55	56	56	56	56	56	57
	56	56	56	56	57	57	57	58	59	59	60

**Table 6:** ORIFICE PART NUMBERS

BURNER ORIFICES	
Size #	Source 1 Part Number
41	029 - 20423 - 041
42	029 - 20423 - 042
43	029 - 20423 - 043
44	029 - 20423 - 044
45	029 - 20423 - 045
46	029 - 20423 - 046
47	029 - 20423 - 047
48	029 - 20423 - 048
49	029 - 20423 - 049
50	029 - 20423 - 050
51	029 - 20423 - 051
52	029 - 20423 - 052
55	029 - 20423 - 055
56	029 - 20423 - 056
57	029 - 20423 - 057
58	029 - 20423 - 058
59	029 - 20423 - 059
60	029 - 20423 - 060

5. Install the high altitude conversion labels as described in the LABELS sections of this instruction.
6. Refer to the unit installation instructions to complete the installation before continuing with these procedures.

## TESTS AND ADJUSTMENTS

The following tests must be performed at the time of conversion following completion of the installation.

### CAUTION

*Make sure both gas and power supplies are shut off before proceeding.*

1. Connect a manometer to the pressure tap on both the inlet and outlet side of the gas valve. Connect a power supply and a gas supply to the unit, if not already connected.

### CAUTION

*Refer to unit installation instructions for proper procedure for connecting manometer to furnace.*

2. Turn on the gas supply and bleed air from the gas supply lines at a point as close to the inlet or the gas valve as is practical.

### CAUTION

*Make sure the space is free of gas before proceeding.*

3. Turn the gas valve control knob to the ON position.
4. Make sure unit electrical disconnect switch is in the OFF position.

### NATURAL GAS

INLET GAS PRESSURE MUST BE  
AT 4.5" - 13.8" WC AT FURNACE.  
SET MANIFOLD PRESSURE AT 3.5" WC

### PROPANE (LP) GAS

INLET GAS PRESSURE MUST BE  
AT 11 - 13.8" WC AT FURNACE.  
SET MANIFOLD PRESSURE AT 10" WC

- Set the room thermostat to call for heat.
- Turn unit electrical disconnect switch to ON. The combustion blower should start and the hot surface igniter should start glowing.
- After air has been purged from the gas supply line, ignition should occur. Shortly after ignition, the manifold and gas inlet pressures can be checked on the manometers. Main burner ignition may be delayed on the first ignition cycle due to air in the gas manifold.
- Adjust manifold pressure to specifications shown above. This setting will result in an input which is properly derated for your altitude. Supply gas must be within the range shown above. If required, adjust the incoming regulator spring so that the pressure falls within the range.

### CAUTION

*The gas valve regulator cap must be in place to determine final gas pressure setting.*

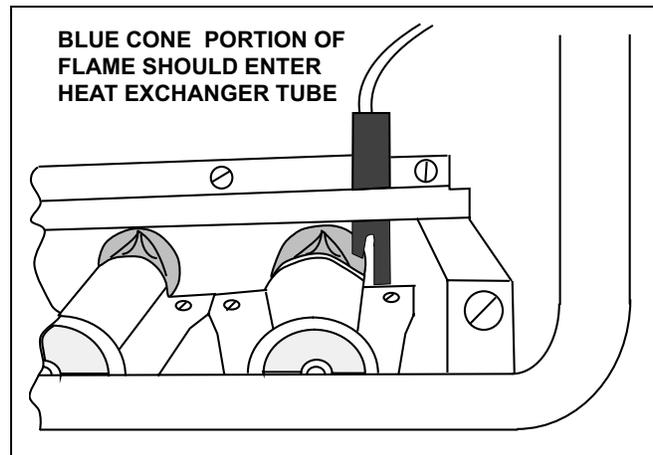
- Observe several ignition cycles. All main burners must ignite without delayed ignition or burning at the orifices. If delayed ignition is observed, verify that the igniter is properly mounted (not loose or crooked on bracket, and that bracket screws are not loose).
- If burning at the orifices, excessive yellow tipping, or excessive noise is observed during any phase of main burner operation, correct unit operation.
- With the main burners ignited, check for gas leaks, especially in the following locations: gas valve inlet and outlet connections, manifold union in the burner compartment, and main burner orifices where they thread into the manifold. Repair any leaks found and recheck.

### CAUTION

*Do not use an open flame or any source of ignition to check for leaks.*

- Operate the furnace for 15 minutes and measure the supply and return air temperatures. Verify that the temperature rise (supply air - return air rise) is within the allowable range. See the unit data plate for the minimum/maximum allowable temperature rise. If the measured rise is in excess of the maximum shown on the data plate, a higher blower speed must be selected. See the unit wiring diagram to make this change.

- During unit operation, the main burner appearance and igniter location should be as shown in Figure 1.



**FIGURE 1 : Proper Burner Flame Appearance**

- With the main burners off, disconnect the manometers and replace the plugs. Check for gas leakage at the plugs.
- Replace all access panels.

### LABELS

- Remove label 035-11635-000 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), place the new label over the existing label and fill in the appropriate information.

- Under "Rating After Conversion", write in the following:
  - Orifice size, as stamped on the orifice
  - Maximum inlet pressure
  - Minimum inlet pressure
  - Manifold pressure for both low and high inputs
  - Input ratings, same as on the Rating Plate
  - Outlet ratings, same as on the Rating Plate
- Under "Changes After Conversion", write in the following:
  - Kit number, located on the outside of the box
  - Unit model number
  - Stamp or write in the name of the organization making conversion, address, city, state, month and year.
- Remove label backing and affix label adjacent to the Rating Plate.
- On propane (LP) conversions, affix the corresponding gas valve label (provided in the conversion kit) to the valve.