

## Installation Instructions For Natural Gas Conversion

Kit Part No. NPNGCONV004A00, Standard Altitude Only 0-2,000 ft. (0-610m)

Models WPG3\*\*4, PGD3, PGS3, PDD3, PDS3, PGD4, PGS4, PGN4, PGD5, PGS5, PGN5

2 to 5 Ton Single Stage Units - 40,000 to 130,000 Btu/hr

This kit is designed for conversion from Propane to Natural Gas


**NOTE:** Read the entire instruction manual before starting the installation.

### SAFETY CONSIDERATIONS

Installation and servicing of this equipment can be hazardous due to mechanical and electrical components. Only trained and qualified personnel should install, repair, or service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on this equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit and other safety precautions that may apply.

Follow all safety codes. Installation must be in compliance with local and national building codes. Wear safety glasses, protective clothing, and work gloves. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit.

Recognize safety information. This is the safety-alert symbol . When you see this symbol in instruction manuals be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, or CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards, those that will result in severe personal injury or death. WARNING signifies a hazard that could result in personal injury or death. CAUTION is used to identify unsafe practices that may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions that will result in enhanced installation, reliability, or operation.

Follow all safety codes. Wear safety glasses and work gloves. Have a fire extinguisher available.



## WARNING

### PERSONAL INJURY, PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death or property damage.

This conversion kit shall 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. 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 furnace is checked as specified in the manufacturer's instructions supplied in the kit.



## AVERTISSEMENT

### LE FEU, L'EXPLOSION, CHOC ELECTRIQUE, ET MONOXYDE DE CARBONE EMPOISONNER

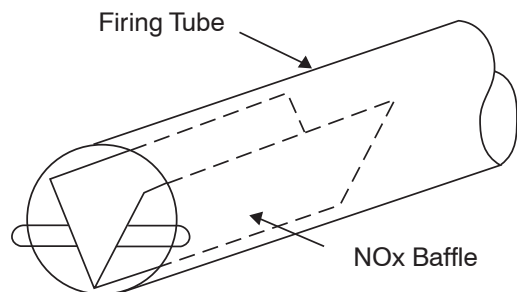
La négligence de suivre l'avis suivant, peut causer des blessures personnelles, la mort ou du dommage à la propriété.

Cette trousse de conversion doit être installée par un Entrepreneur qualifié, selon les instructions du fabricant et doit se conformer à toutes les exigences et tout les codes pertinents de l'autorité compétente. L'Entrepreneur qualifié est responsable, et doit s'assurer de bien suivre les instructions dans cet avis. L'installation sera considérée conforme et rencontrant les spécifications et instructions du fabricant qui sont inclus dans la trousse, seulement après vérification de l'opération de la fournaise convertie.

Table 1 – Single Stage Kit Contents

ITEM	Part Number	QUANTITY
Installation Instructions	46206210300	1
Natural Gas Orifice #31*	1171462	3
Natural Gas Orifice #33*	1172226	3
Natural Gas Orifice #38*	1172235	3
Natural Gas Orifice #44*	1175977	3
Regulator Spring (F92-0953)	EF39ZW037	2
Natural Conversion Label (Rating Plate)	50CY502302	1
Natural Conversion Label (Installer Responsibility)	50CY502303	1
Natural Conversion Warning Label (Gas Valve)	1177093	1
1/8-in. Pipe Plug	CA64AS001	1

\*Refer to Fig. 11 to determine the correct orifice to use.

**Figure 1****Low NOx Baffle Location  
(California installations only)****WARNING****EXPLOSION, FIRE, UNIT DAMAGE HAZARD**

Failure to follow this warning could result in personal injury or death.

This unit is designed to operate at 3.5 IN. W.C. (+/- 0.3 IN. W.C.) of manifold pressure on high stage with natural gas. Refer to Table 4 for proper manifold pressure settings for high stage and low stage.

**SINGLE-STAGE KIT INTRODUCTION**

These instructions cover the installation of a natural gas conversion kit on models **WPG3\*\*4, PGD3, PGS3, PDD3, PDS3, PGD4, PGS4, PGN4, PGD5, PGS5, and PGN5** that are equipped with a White Rodgers single-stage automatic gas valve regulator.

**DESCRIPTION AND USAGE**

This single-stage kit is applicable to units with heating inputs from 40,000 to 130,000 Btu/hr installed at standard altitudes from 0 ft to 2000 ft. (0-610 m). It cannot be used for high altitude installation. For high altitude conversion please contact your local supplier. All such units were factory equipped to operate on natural gas, but may have been field converted to operate on propane gas. This kit restores the unit to original factory conditions.

**SINGLE-STAGE KIT INSTALLATION****WARNING****FIRE, EXPLOSION, ELECTRICAL HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

Gas supply **MUST** be shut off before disconnecting electrical power and proceeding with conversion.

Before installing or servicing system, always turn off main power to system. There may be more than one disconnect switch. Tag disconnect switch with suitable warning label.

1. Turn off gas supply first, then power to unit.
2. Remove the control access panel from unit.
3. Disconnect the gas pipe from the gas valve.
4. Remove the screw attaching the gas manifold to the basepan, and partially slide out the entire burner rack assembly from unit. Save screw. The fan partition mounting bracket may be removed for easier access to the burner assembly. The bracket may be removed by removing 2 screws (located on the left side of the control compartment on the fan partition panel) and sliding the bracket forward, bottom first. See Fig. 9.

**CAUTION****UNIT "RED TAG" HAZARD**

Failure to follow this caution may result in local or state fines or legal consequences.

Failure to install proper baffles in this unit will violate applicable laws regulating NOx emissions in those districts.

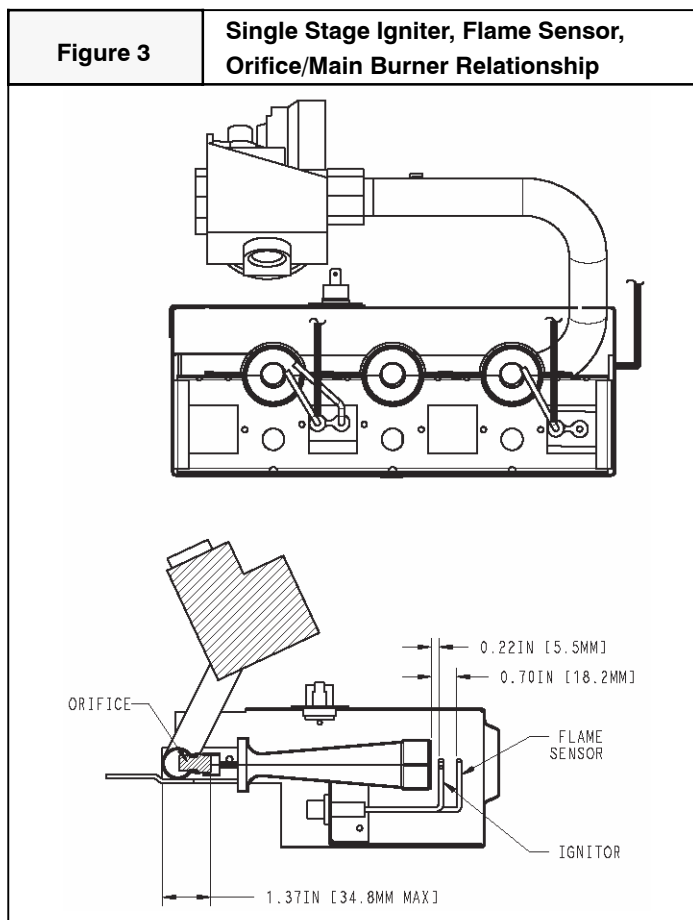
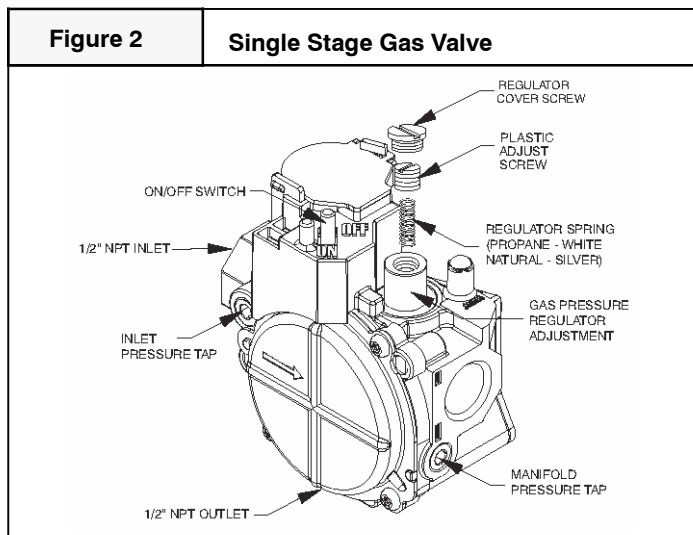
**CALIFORNIA INSTALLATIONS ONLY:** When this unit is operated with natural gas fuel in certain State of California Air Quality Management Districts, the firing tubes must be equipped with V-shaped NOx baffles to reduce NOx emissions below mandated limits. This unit was originally factory equipped to operate with natural gas fuel and NOx baffles, but the baffles were removed during field conversion to propane gas. These baffles **MUST** be reinstalled as shown in Fig. 1. If the original baffles are not longer available, order replacement baffles from the factory.

5. Disconnect the gray and brown wires from the gas valve, and remove blue wires from the rollout switch.

NOTE: To locate rollout switch, see Fig. 7.

6. Disconnect orange sparker cable from the sparker.
7. Disconnect yellow flame sensor wire from the flame sensor.
8. Remove the ground screw securing the brown wire from the burner assembly. Ground screw is attached to the fan partition. Save screw.
9. Completely slide out the entire burner rack assembly from unit. Save screw.
10. Using a 5/16 in. nut driver, remove the four screws securing the manifold/gas valve assembly to the burner assembly. Save these screws.
11. If there is a low gas pressure switch mounted to the gas valve (see Fig. 8) it must be removed. Disconnect the switch and all of the 1/8-in NPT pipe fittings leading back to the gas valve. Plug the open hole in the gas valve with the 1/8-in. pipe plug contained in this kit. Use a suitable pipe sealant (field-supplied, must be certified for use with natural gas) to prevent leakage of combustible gas.
12. Remove the propane gas orifices from the manifold using a 9/16 in. wrench and install the correct natural gas orifices in the manifold (See Fig. 11 to select correct orifice size based on rated input. See Fig. 3 and 6 for orifice installation).
13. Replace the manifold/gas valve assembly into the burner assembly using the four screws saved from step 10.
14. Remove regulator cover screw from the gas regulator (see Fig. 2). Save regulator cover screw.
15. Using a screwdriver, remove the plastic regulator adjust screw from the gas regulator (see Fig. 2). Save plastic regulator adjust screw.
16. Remove regulator spring (white) from the gas regulator (see Fig. 2). Discard regulator spring.
17. Install natural gas regulator spring (silver) shipped with this kit. (See Fig. 2).
18. Install plastic adjust screw into the gas regulator, turn clockwise 12 turns (see Fig. 2).
19. Verify igniter, flame sensor, orifice/main burner relationship prior to completing conversion. (See Fig. 3.) Partially slide burner rack assembly into unit.
20. Reconnect the orange wire removed in step 11 to the combustion air pressure switch.

NOTE: The other end of this wire should already be connected to pin 9 of plug J2 located on the furnace control board. (See Fig. 10.)



21. Reconnect the blue wires removed in step 5 to the rollout switch and reinstall the rollout switch.
22. Reconnect orange sparker cable to sparker and reconnect the yellow flame sensor wire to the flame sensor.
23. Reconnect the gray and brown wires removed in step 5 to the gas valve.
24. Slide burner rack assembly into base pan. Align burner rack with screws on sheet metal partition and slide assembly back tight to the partition. Replace the screw attaching the burner rack to the base pan removed in step 4. If the fan partition

mounting bracket was removed, slide bracket back into place and fasten with 2 screws (see Fig. 9).

25. Reconnect the brown wire from the burner assembly to the fan partition panel, using the ground screw saved from step 8.
26. Remove the 1/8 in. pipe plug on the gas manifold and connect a pressure manometer (see Fig. 4).
27. Reconnect electrical power and gas supply to the unit. For propane applications, the gas pressure must not be less than 7.0 IN. W.C. or greater than 10.5 IN. W.C. at the unit connection. A 1/8-in. NPT plugged tapping, accessible for test gauge connection, must be installed immediately upstream of the gas supply connection to the gas valve and downstream of the manual equipment shutoff valve.

## ⚠ WARNING

### FIRE AND EXPLOSION HAZARD

Failure to follow this warning could result in personal injury and/or death, and/or property damage.

NEVER test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections.

**IMPORTANT:** Restart unit and leak check all gas connections including the main service connection, gas valve, gas spuds, and manifold pipe plug.

28. Fire unit and verify proper ignition and proper sequence of operation (Table 2). See Fig. 11 for proper manifold pressure setting for your unit. Adjust the gas valve setting by turning the plastic adjustment screw clockwise to increase pressure and counter-clockwise to decrease pressure. Refer to Table 3 for required rated heating input rates. Replace regulator cover screw when finished (see Fig. 2).

### Verify natural gas input rate.

- a. Turn off all other gas appliances and pilots served by the gas meter.
- b. If unit is not running, set desired temperature several degrees above room temperature in gas heat mode using the thermostat.
- c. Record number of seconds for gas meter to complete 1 revolution.
- d. Divide number of seconds in step c, into 3600 (number of seconds in 1 hour).
- e. Multiply result of step d. by the number of cubic feet shown for one revolution of test dial to obtain cubic feet of gas flow per hour.
- f. Multiply result of step f. by Btu heating value of the gas to obtain total measured input shown in Table 4. (Consult the local gas supplier if the heating value of gas is not known).

EXAMPLE: Assume a 90,000 input unit is being installed. Assume that the size of the dial is 2 cubic ft., one revolution takes 84 seconds, and the heating value of the gas is 1025 Btu/ft<sup>3</sup>. Proceed as follows:

- a. 84 seconds to complete one revolution
- b.  $3600/84 = 42.9$
- c.  $42.9 \times 2 = 85.8 \text{ ft}^3 \text{ of gas flow/hr.}$
- d.  $85.8 \times 1050 = 90,090 \text{ Btuh input.}$

In this example, the nominal input rate is 90,000 Btu/hr, so the manifold pressure is correctly set. If the measured rate is too low, increase the manifold pressure to increase rate. If the measured rate is too high, decrease the manifold pressure to decrease rate.

29. With control access panel removed, observe unit heating operation. Watch burner flames to verify that they are blue in appearance, and that the flames are approximately the same for each burner (see Fig. 5).
30. Turn off unit, remove pressure manometer and replace the 1/8 in. pipe fitting on the gas manifold (see Fig. 4).
31. Attach warning label (P/N 1177093) to visible side of gas valve.
32. Attach conversion label (P/N 50CY502302) above unit rating plate on exterior of unit.
33. Attach completed conversion responsibility label (see Fig. 11, P/N 50CY502303) inside control access panel.
34. After all leaks are eliminated, replace control access panel.

**Table 2 – Sequence of Operations**

**Trial-for-Ignition Sequence:** The ignition sequence is to immediately energize the inducer motor on a call for heat. Within approximately 5 sec of the call for heat, the gas valve will open and the igniter will spark. Seven sec will be allowed to prove flame sense on the far burner.

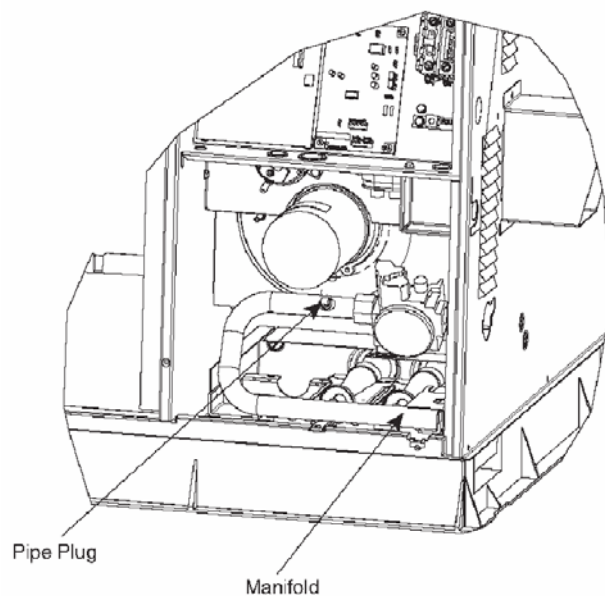
**Flame-Proving:** Once flame is proven, the control will wait an additional 45 sec to energize the indoor blower motor. On removal of the call for heat, the gas valve will immediately shut down, the inducer motor will run for an additional 5 sec, and the indoor blower will run for an additional 45 sec (minimum).

**Table 3 – Single-Stage Rated Heating Input, Natural Gas (0-2000 ft [0-610 m] Altitude)**

NAMEPLATE INPUT (BTU/HR)	RATED HEATING INPUT NATURAL (BTU/HR)
40,000	40,000
60,000	60,000
90,000	90,000
115,000	115,000
130,000	130,000

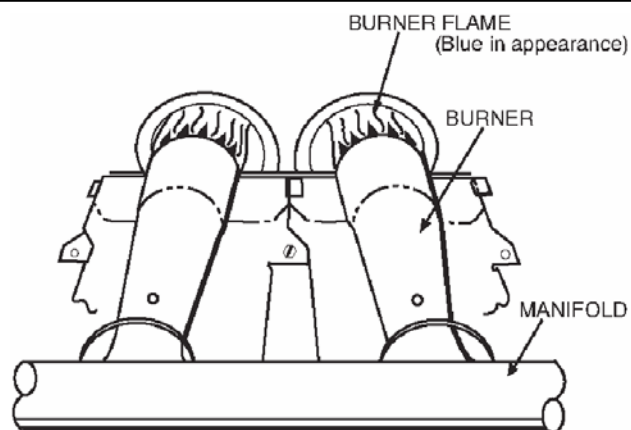
**Figure 4**

**Single Stage Burner Assembly**



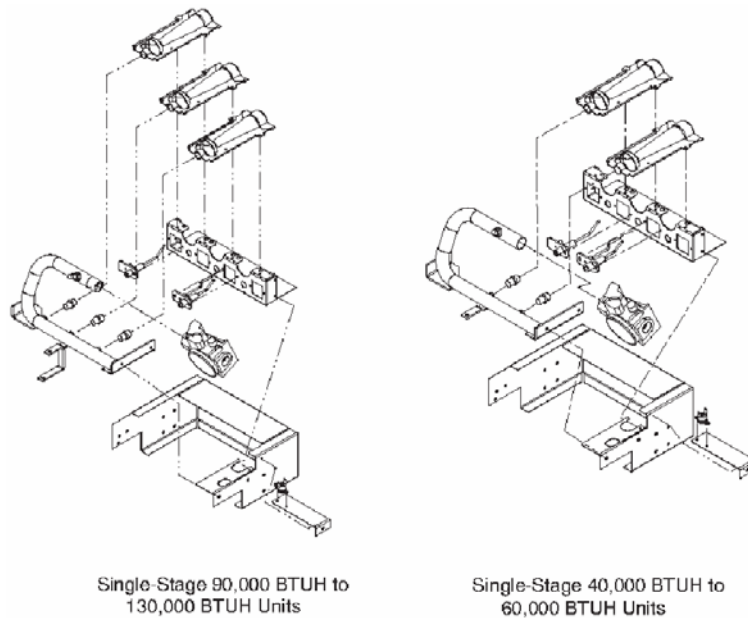
**Figure 5**

**Monoport Burner**



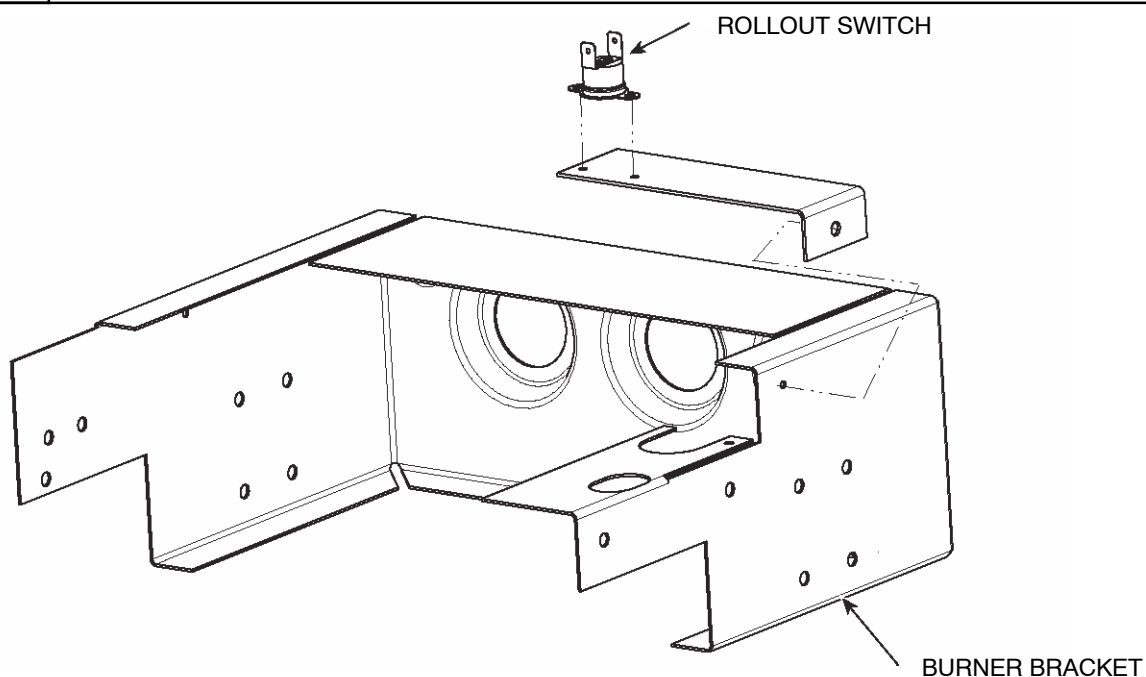
**Figure 6**

**Single Stage Orifice Installation**



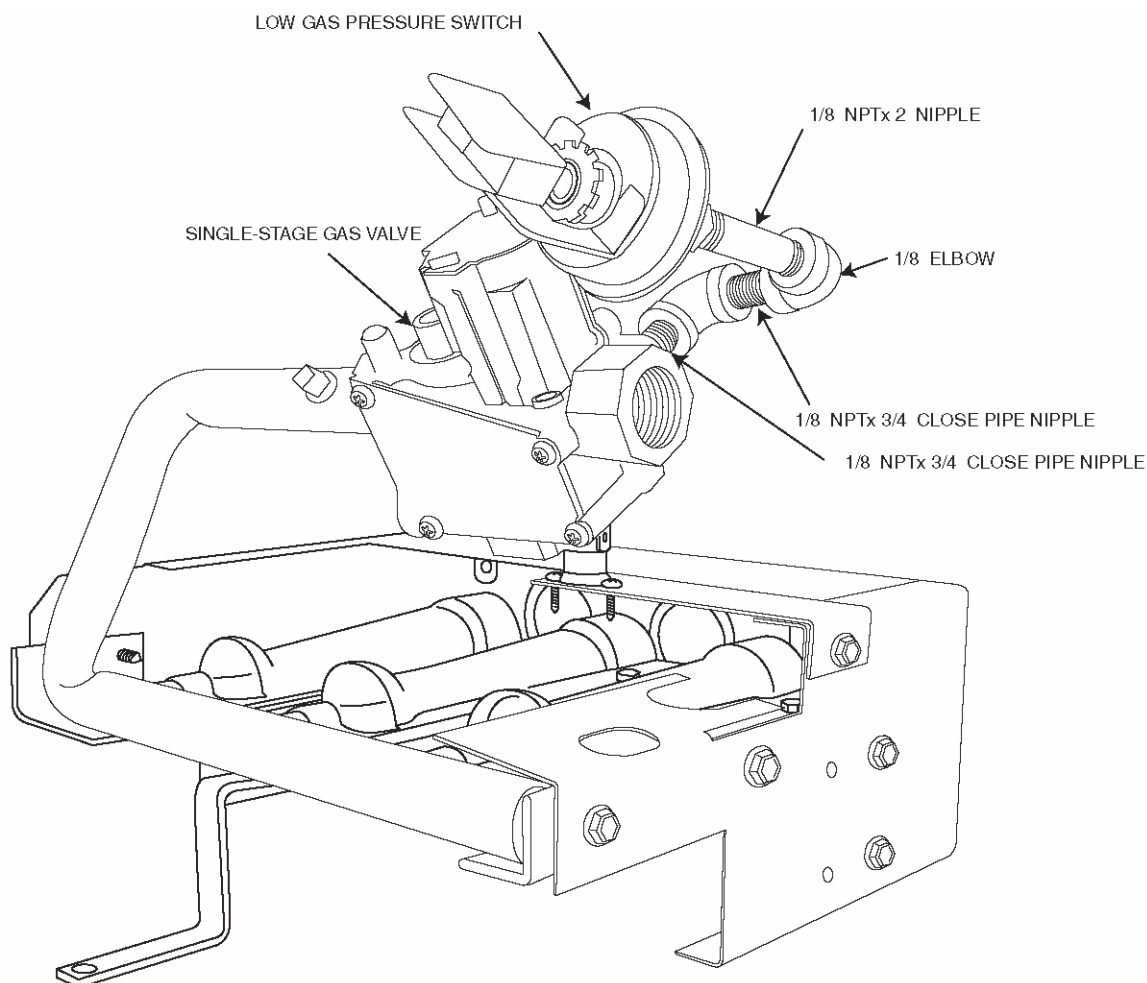
**Figure 7**

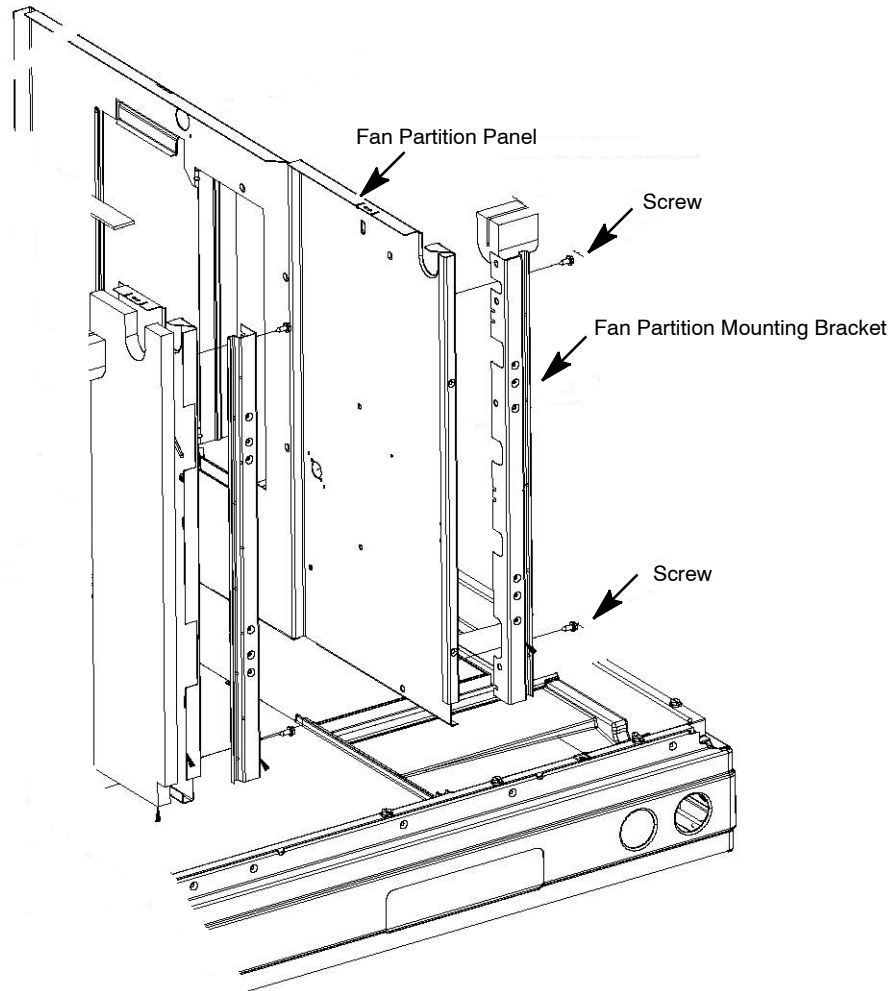
**Single Stage Burner Bracket**



**Figure 8**

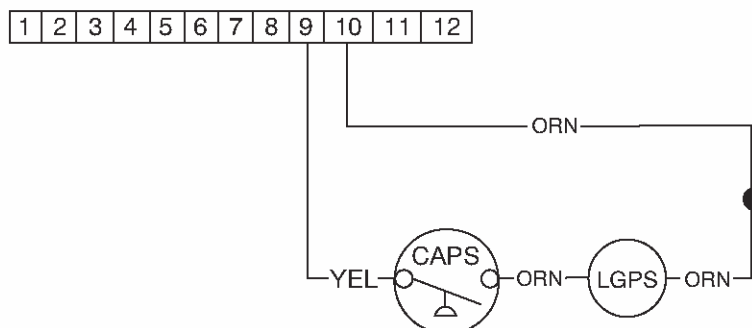
**Removing Elbows, Nipples, and Low Gas Pressure Switch on Single Stage Units**



**Figure 9****Fan Partition Bracket Removal****Figure 10****Removing Low Gas Pressure Switch Wiring**

FURNACE CONTROL BOARD

PLUG J2



LEGEND

ORN = ORANGE

YEL = YELLOW

LGPS = LOW GAS PRESSURE SWITCH

CAPS = COMBUSTION AIR PRESSURE SWITCH

● = QUICK CONNECTION

Figure 11

## Conversion Responsibility Label

# **NATURAL GAS CONVERSION KIT RATING PLATE** **INTERNATIONAL COMFORT PRODUCTS, LLC**

**THIS APPLIANCE HAS BEEN CONVERTED TO USE NATURAL GAS FOR FUEL. REFER TO KIT INSTRUCTIONS FOR CONVERSION PROCEDURES. USE PARTS SUPPLIED WITH KIT AND INSTALLED BY QUALIFIED PERSONNEL. SEE EXISTING RATING PLATE FOR APPLIANCE MODEL NO. AND INPUT RATING.**

**NOTE:** Gas input rate on rating plate is for installations up to 2000 ft. above sea level. In U.S.A. the input rating for altitudes above 2000 ft. must be derated by 4% for each 1000 ft. above sea level. In Canada the input rating must be derated by 10% for altitudes of 2000 ft. to 4500 ft. above sea level. For installation altitudes above 2000 ft., contact your distributor for proper orifice size.

**KIT NO.** NPNGCONV004A00 (0 to 2000 ft. above sea level) **FUEL USED:** NATURAL GAS **INLET PRESSURE (min - max):** 4.0 - 13.0 in. wc

APPLIANCE MODELS	NAMEPLATE INPUT, HIGH STAGE (Btu/hr)	FOR INSTALLATION ALTITUDES OF 0 to 2000 FT. (0 to 610 m) ABOVE SEA LEVEL		
		Orifice No.	Manifold Pressure, (in.wc)	
PDD3, PDS3, PGD3, PGD4, PGD5 PGN4, PGN5, PGS3, PGS4, PGS5, WPG3**4	40,000	44	3.2-3.8	
	60,000 90,000	38	3.2-3.8	
	115,000	33	3.2-3.8	
	130,000	31	3.2-3.8	

50CY502302

This control has been converted for use with natural gas.  
Ce contrôle a été converti pour fonctionner au gaz naturel.  
1177093

THIS FURNACE WAS CONVERTED ON  
\_\_\_\_\_  
TO NATURAL GAS

(DAY - MONTH - YEAR)

**KIT NO.:** NPNGCONV004A00

(0 to 2000 ft. above sea level),

BY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(Name and address of organization making this conversion),  
which accepts the responsibility that this conversion has  
been properly made.

CE GÉNÉRATEUR D'AIR CHAUD A ÉTÉ  
CONVERTI LE \_\_\_\_\_ POUR

(JOUR - MOIS - ANNÉE)

**DE L'ENSEMBLE N°:** NPNGCONV004A00

(0 to 2000 ft. above sea level),

PAR: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(nom et adresse de l'organisme qui a effectué la conversion),  
qui accepte l'entière responsabilité de la conversion.

50CY502303