KGANP45011HW

NATURAL GAS TO PROPANE CONVERSION KIT PG9YAA

Installation Instructions

SAFETY REQUIREMENTS

Installing and servicing heating equipment can be hazardous due to gas and electrical components. Only trained and qualified personnel should install, repair, or service heating equipment.

Untrained service 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 heating equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the furnace and other safety precautions that may apply.

Follow all safety codes. In the United States, follow all safety codes including the National Fuel Gas Code (NFGC) ANSI Z223.1-2006/NFPA 54-2006. In Canada, refer to the National Standard of Canada Natural Gas and Propane Installation Code (NSCNGPIC) CAN/CGA-B149.1 and .2-M-05.

Wear safety glasses and work gloves. Have fire extinguisher available during Start-up, Adjustment steps, and service calls.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the furnace and 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.

This conversion kit shall be installed by a qualified service agency. Please read these instructions completely before attempting installation. Consult gas supplier and tables in National Fuel Gas Code NFPA 54/ANSI Z223.1, 2006 or latest edition. In Canada, the National Standard CAN/CGA B149-1 and B149-2-05.

Parts List

Description	Part #	Qty.
Burner Orifice #55	1011354	5
Honeywell Conv. Kit #396221	1172953	1
Switch, Low Pressure (LGPS)	1008801	1
Fitting Assy.	1009775	1
Wire Assy.	1173071	1
Label, Field Conversion	1009678	1
Label, Propane Conversion	333681–101	1
Label, Derate	2505235	1
Instructions	IIKKGANP4501–001	1

Orifices for High Altitude Conversion
(Refer to Table 1 - for required orifice)

Description	Part #	Qty.
Burner Orifice #56	1011355	5

⚠ WARNING

FIRE, EXPLOSION, ELECTRIC SHOCK, AND CARBON MONOXIDE 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 technician 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 appliance is checked as specified in the manufacturer's instructions supplied with the kit.

General Information

This kit is for conversion of furnaces equipped with Honeywell VR8205S Series 2-stage gas valves certified for use with Natural Gas (and so marked) to units functionally the same as the certified furnace for use with Propane Gas. Before the furnace can be operated with Propane Gas, the Propane low pressure switch must be installed. A gas valve conversion kit must be installed and main burner orifices must be replaced **with properly sized orifices.**

The orifices provided in this kit are stamped to indicate the size (twist drill number) and are sized for commercially pure propane gas ONLY. Do NOT use them with butane or a mixture of butane and propane gas. The parts list specifies the size orifices supplied in the kit. Compare the size marking on the orifices with the sizes as listed in the parts list. Make sure you have the correct main burner orifices.

Extreme care is used to assure that this kit contains the proper orifices. Oversized orifices could result in hazardous conditions, especially if the venting is inadequate. For that reason, we recommend that the installer check the size of the orifice with a new twist drill of the correct size. This procedure assures that the orifices provided are the correct size.

Installation

⚠ WARNING

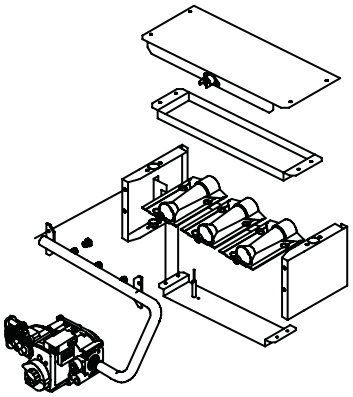
ELECTRIC SHOCK, FIRE, AND EXPLOSION HAZARD

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

Turn OFF gas supply at manual gas valve before turning OFF electric power supply and starting conversion.

Turn OFF electric power supply at disconnect switch or service panel before starting conversion.

Disassembly



A07838

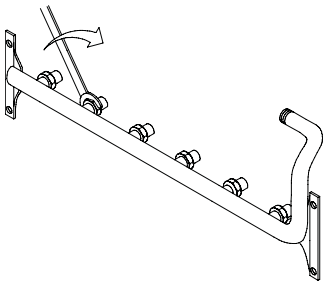
Fig. 1 - Disassembly

Refer to Fig. 1 and the following steps.

1. After disconnecting power and gas supply to the furnace, remove the access door, exposing gas valve and burner compartment.
2. Disconnect gas line from gas valve so manifold assembly can be removed.
3. Disconnect wiring at gas valve. Be sure to note the proper location of any and all electrical wiring disconnected.
4. Remove the screws holding the manifold and gas valve to the manifold supports. Do not discard any screws.
5. Carefully remove the manifold assembly.

Main Burner Orifices

1. Remove the Natural gas burner orifices from the manifold assembly and replace them with the appropriate Propane (silver) orifices furnished in the conversion kit (Fig. 2), unless converting a high altitude unit, then see Table 1 for appropriate orifices.



A07839

Fig. 2 - Remove Orifices

2. Tighten the orifices so they are seated and gas tight about $1\text{-}1/8''$ (28.6 mm) from the face of the orifice to the back of the manifold pipe (Fig. 3). Make sure orifice is installed straight so that it forms a right angle (90°) to the manifold.

MANIFOLD PRESSURE AND ORIFICE SIZE FOR HIGH ALTITUDE APPLICATIONS

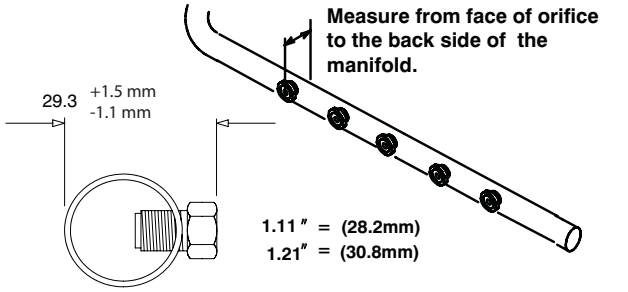
PROPANE GAS MANIFOLD PRESSURE (IN WC)							
HEATING VALUE AT ALTITUDE BTU/CU. FT.	MEAN ELEVATION FEET ABOVE SEA LEVEL						
	0 to 2000	2001 to 3000	3001 to 3999	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000
2500	10.0	10.0	9.0	10.0	9.4	8.5	10
Orifice Size	**#55**	**#55**	**#55**	#56	#56	#56	#56

NOTE: Propane data is based on 1.53 specific gravity. For fuels with different specific gravity consult the National Fuel Gas Code ANSI Z223.1–2002/NFPA 54–2006 or National Standard of Canada, Natural Gas and Propane Installation Code CSA B149.1–05.

NOTE: Unshaded orifice size box indicates factory shipped size.

NOTE: In the USA, the input rating for altitudes above 2000′ must be reduced by **4%** for each 1000′ above sea level (see Table 1)
In Canada, the input rating for altitudes above 2000′ must be reduced by **10%** for altitudes of 2000′ to 4500′ above sea level. Use the 2001 to 3000 column Table 1.

Table 1 – Manifold Pressure and Orifice Size



A07840

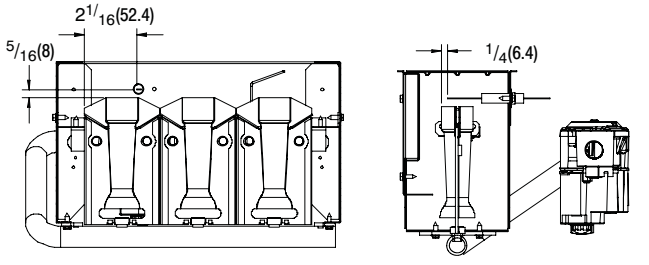
Fig. 3 - Changing Orifices

High Altitude Installation

Gas input rate on furnace rating plate is for installation at altitudes up to 2,000′ (610 M). The #55 burner orifices supplied in this kit are sized for propane gas at full rate only, for use between 0-2000′ (0 to 610 M) elevation. Do not use them above 2000'(610 M) (except when noted by Table 1). Orifices for conversion at high altitude are included in this kit.

In the USA, the input rating for altitudes above 2000′ (610 M) must be de-rated by **4%** for each 1000′ (305 M) above sea level (see Table 1).

In Canada, the input rating for altitudes above 2000′(610 M) must be reduced by **10%** for altitudes of 2000′ (610 M) to 4500′ (1372 M) above sea level. Use the 2001 to 3000 (610 M to 914 M) column in Table 1.



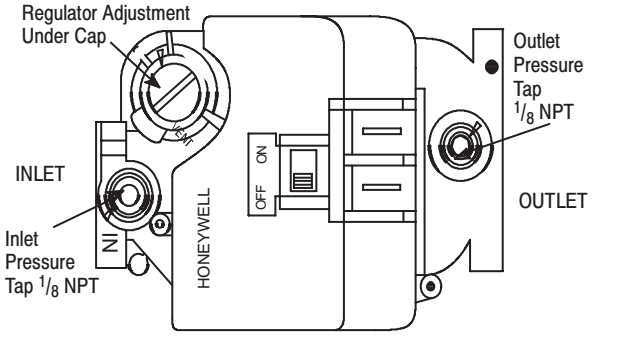
A07735

Fig. 4 - Igniter Location

Gas Valve Conversion

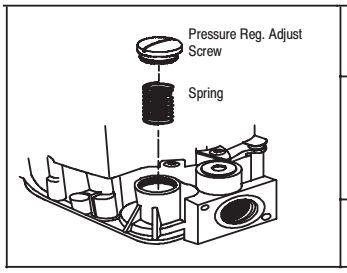
Conversion of Honeywell VR8205Q Gas Valve using Natural Gas Conversion Kit #396221.

1. Remove the cap screw and pressure regulator adjusting screw. (See Fig. 5 & Fig. 6)
2. Remove the existing regulator spring from the regulator housing.
3. Insert the replacement spring (red color) contained in this kit into the regulator housing.
4. Install the pressure regulator adjusting screw and give it eleven (11) full clockwise turns. This will set the manifold pressure close to required setting for normal operation.
5. Replace the regulator cap screw.
6. Attach the Yellow Attention Label contained in the kit to the Gas Valve where it can be readily seen.



A07843

Fig. 5 - Typical Gas Control Valve



Color Code	Propane Gas	Natural Gas
Pressure Regulator Adjusting Screw	Black	Black
Spring	Red	Stainless Steel

A07844

Fig. 6 - Honeywell Gas Valve VR8205S

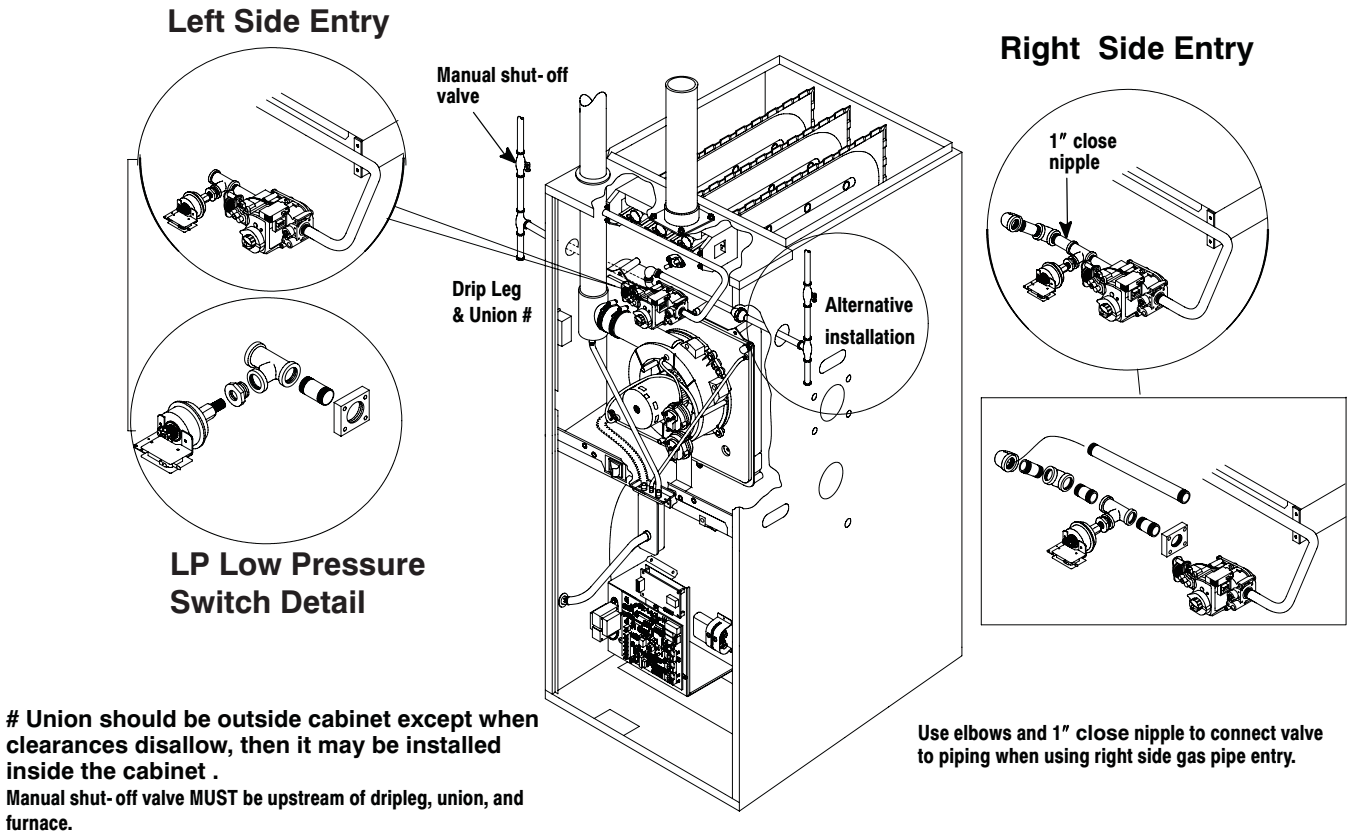


Fig. 7 - Typical Gas Piping and Adding Propane Low Pressure Switch

Propane Low Pressure Switch (Required)

1. Using pipe joint compound that is resistant to Propane gas, tighten the fitting assembly into the inlet side of the gas valve. (Fig. 7)**.** Position fitting assembly as shown.
2. Screw the Propane pressure switch into the bushing. Use pipe dope on connection. Tighten securely.

NOTE: Do not block inlet port of pressure switch with pipe dope. Switch will not operate if inlet port is blocked.

3. Remove one yellow wire from the pressure switch. Connect this wire to the male terminal of the insulated yellow wire in the wire harness provided.
4. Connect the other yellow wire in the harness to the open termination on the air pressure switch.
5. Connect the other end of the wire harness to the two terminals on the Propane low pressure switch.

NOTE: Propane low pressure switch is factory set to open if Propane gas supply pressure falls below 6 in w.c.

NOTE: See Furnace Wiring Label to confirm wiring.

Reassembly

Reassemble all parts in reverse order as removed. Attach Propane Conversion Label next to the furnace rating plate or to the front exterior of the furnace.

- **Manifold Assembly -** Be sure to engage the main burner orifices in the proper openings in the burners.
- Verify the igniter is in the correct location. (See Fig. 4).
- **Testing for leaks -** After reassembly, turn the gas on and check all joints for gas leaks using a soapy solution. All leaks must be repaired immediately.

Gas Pressure

- Refer to the furnace rating plate for the approved gas input ratings.
- Gas input to burners MUST NOT exceed the rated input shown on rating plate.
- **Do NOT** allow minimum gas supply pressure to vary downward. Doing so will decrease input to furnace. Refer to Table 2 for gas supply and manifold pressures.

Gas Pressures

Gas Type	Supply Pressure			Manifold Pressure
	Recom-mended	Max.	Min.	
Propane	11″ (2.7kPa)	14″ (3.5kPa)	11″ (2.7kPa)	10″ * (2.5kPa)

***SEE TABLE 1**

Important Notes

- **With Propane gas, the rated input is obtained when the BTU content is 2,500 BTU per cubic foot and manifold pressure set at 10 in wc.**
- **If Propane gas has a different BTU content, orifices MUST be changed by licensed Propane installer.**
- **Measured input can NOT exceed rated input.**
- **Any major change in gas flow requires changing burner orifice size.**

Table 2 – Gas Pressures (in wc)

Start-up and Check-out

1. Remove the plug from the Inlet Pressure Tap on gas valve and install a manometer. (Fig. 5)
2. Open manual gas line valve to unit. Check for gas leaks and correct as necessary. Check supply pressure, 11 in wc recommended, (11 in wc minimum, 14 in wc maximum). If not within these limitations DO NOT OPERATE FURNACE, contact gas supplier.
3. Close manual gas line valve to unit, remove manometer and replace inlet pressure tap plug.

Gas Valve Adjustments

1. With the gas valve switch in the OFF position, remove the pressure tap plug from the outlet end of the valve, and connect a "U" tube manometer to the pressure port (See Fig. 5).
2. Turn the gas valve switch to the ON position and restore electrical power to unit. Cycle the main burner on and off several times to stabilize the pressure regulator diaphragm. This MUST be done before an accurate pressure reading can be obtained.
3. With the main burner on, read the manometer. For appropriate reading, see Table 1. Turn pressure regulator adjusting screw clockwise to increase or counterclockwise to decrease manifold pressure. Burner Input must not exceed nameplate rating. Refer to Section "Checking Input Rate".
4. Turn gas valve to OFF. Remove the manometer and replace the pressure tap plug and pressure regulator cap screw.
5. Start the main burners and check pressure tap plug for gas leaks.
6. With gas valve on, observe furnace through two or more complete cycles to be sure all controls are operating.

Checking Input Rate

***High Altitude Input Rate =**
Nameplate Sea Level Input Rate x (Multiplier)

Elevation	High Altitude Multiplier Propane Gas*
0′ - 2000′ (0 – 610 M)	1.00
2001′ - 3000′ (610 – 914 M)	0.90
3001′ - 4000′ (914 - 1219 M)	0.86
4001′ - 5000′ (1219 – 1524 M)	0.82
5001′ - 6000′ (1524 – 1829 M)	0.78
6001′ - 7000′ (1829 – 2134 M)	0.74
7001′ - 8000′ (2134 – 2438 M)	0.70

* Based on mid–range of elevation.

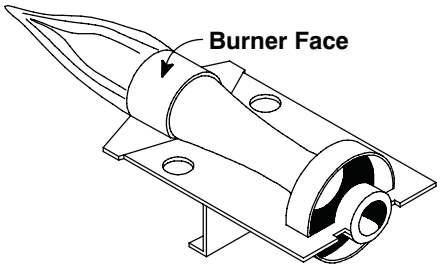
Table 3 – Input Rate Multiplier

Main Burner Flame Check

Check for the following: (See Fig. 8)

- Stable and blue flames. Dust may cause orange tips or wisps of yellow, but flames **MUST NOT** have solid, yellow tips.
- Flames extending directly from burner into heat exchanger.
- Flames do **NOT** touch sides of heat exchanger.

If any problems with main burner flames are noted, it may be necessary to adjust gas pressures or check for drafts.



A07734

Fig. 8 - Main Burner

High Altitude Derated Unit Label

The derated label supplied with the conversion kit must be completed and affixed to the furnace near the rating plate. Fill in the manifold pressure, orifice size and revised input rate.

Refer to Table 1 provided to determine the manifold pressure and proper orifice part numbers.

Verify System Operation

Upon completion of all conversion procedures, perform the following steps to attach the appropriate labels and verify the system operation.

1. Locate the Propane Gas Conversion Label next to the furnace rating plate.
2. Fill out and attach the Field Conversion Label to the front exterior of the furnace.
3. Turn the thermostat to its lowest temperature setting or to OFF if equipped with a System Select Switch.
4. Turn the gas switch to ON.
5. Reinstall all access panels.
6. Turn ON all electrical power to the unit.
7. Set the thermostat to the desired temperature and the System Select Switch to HEAT.
8. Observe unit operation through two (2) complete heating cycles. See "Sequence of Operation" in furnace intallation instructions.

 Printed in U.S.A. Edition Date: 09/07 **Catalog No: IIKKGANP4501–001**

 Replaces: NEW