

LP & HIGH ALTITUDE LP GAS CONVERSION KIT FOR INSTALLATIONS IN THE UNITED STATES

INSTALLATION INSTRUCTIONS

For Single & 2-Stage Package Gas / Electric and Dual Fuel Models Using Honeywell Gas Valves Only

BEFORE THE CONVERSION

IMPORTANT: Please read all instructions before converting the furnace. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage

This conversion kit is only to be used to convert natural gas furnaces to LP/Propane gas in the United States. For installations in Canada, the Canadian conversion kit must be used.

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.

IMPORTANT: When converting a low NOx furnace from natural gas to LP/Propane gas, it is necessary to remove the NOx Baffles from the furnace.

| | DESCRIPTION | NORDYNE P/N | QTY |
|--|--|----------------|-----|
| Single Stage | Honeywell Conversion Kit 396221 | | |
| | Converts valve # 624657 (VR8205 S 2890) | 624642 | 1 |
| | Converts valve # 624775 (VR8215 S 1289) | | |
| Two- Stage Models | Honeywell Conversion Kit 396021 | | |
| | Converts valve # 624652 (VR8205 Q 2381) | 624667 | 1 |
| | Honeywell Conversion Kit 50033841 | | |
| | Converts valve 624787 (VR9205 Q 1127) | 624805 | 1 |
| | #54 Drill Size Burner Orifice Kit (contains (7) 661054) | 150601 | |
| #55 Drill Size Burner Orifice Kit (contains (7) 661055) | 150602 | 1 | |
| #56 Drill Size Burner Orifice Kit (contains (7) 661056) | 272221 | 1 | |
| Conversion Warning Label | 703935 | 1 | |
| Conversion Information Label | 703942 | 1 | |
| Installation Instructions | 709376 | 1 | |

Table 1. LP Gas Conversion Kit

WARNING:

FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury or property damage.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a neighbors phone. Follow the gas suppliers instructions.
- If you cannot reach your gas supplier, call the fire department.

DO NOT DESTROY.

KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.



WARNING:

All gas piping must conform with local building codes, or in the absence of local codes, with the most recent edition of the National Fuel Gas Code ANSI Z223.1. DO NOT attempt to modify, or tap into existing gas lines yourself. Fire or explosion may result causing property damage, personal injury or loss of life. Failure to follow the safety warnings exactly could result in serious injury, death or property damage.



WARNING:

All electrical wiring must comply with the latest edition of the National Electrical Code ANSI/NFPA 70. Failure to follow these instructions could result in possible damage to equipment, serious personal injury, or death.

CONVERTING TO LP/PROPANE GAS AT ALTITUDES BETWEEN ZERO & 10,000 FT.

Converting single stage valves to LP/Propane requires the replacement of the burner orifices and/or the spring found under the cap screw in the pressure regulator. Converting 2 - stage valves to LP/Propane requires the replacement of the burner orifices and/or the stem/spring assembly in the pressure regulator.

Table 2 (page 4), provides the manifold pressure for altitudes above 2,000 feet.

WARNING:

Shut off the gas supply at the manual gas shutoff valve, before disconnecting the electrical power. A fire or explosion may result causing property damage, personal injury or loss of life. Failure to follow the safety warnings exactly could result in serious injury, death or property damage.

WARNING:

To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.

WARNING:

The reduction of input rating necessary for high altitude installation may only be accomplished with factory supplied orifices. Do not attempt to drill out orifices in the field. Improperly drilled orifices may cause fire, explosion, carbon monoxide poisoning, personal injury or death.

Before You Convert the Gas Valve

1. Turn the thermostat OFF or to its lowest temperature setting.
2. Verify the gas supply is shut OFF.
3. Verify the electrical power to the appliance is turned OFF.

Removing The Burner Orifices

1. Set the thermostat to the OFF position, or its lowest temperature setting.
2. Shut OFF the gas supply at the manual shutoff valve located outside of the appliance.
3. Turn off all electrical power to the appliance.
4. Remove the louvered access panel from the burner compartment.

5. Move the gas valve ON/OFF switch to the OFF position. See Figure 1 (page 3). **NOTE:** For VR8205Q2381 gas valves, turn the knob to the OFF position.

CAUTION:

It is good practice to label all wires prior to disconnection. Wiring errors can cause improper and dangerous operation.

6. Remove the wires from the gas valve terminals.
7. Remove the supply gas piping from the gas valve inlet.
8. Carefully remove four screws securing the gas manifold assembly to the burner assembly.
9. Set the screws aside (do not discard) and remove the gas manifold assembly from the appliance.
10. Carefully remove the burner orifices from the gas manifold assembly by turning counter clockwise.
11. Read the rating plate affixed to the appliance to determine its rated input (Btu/hr) and the size of the factory installed orifices.

IMPORTANT NOTE: Before installing an orifice, check the side or face of the orifice for the drill number to ensure that it is the appropriate size.

WARNING:

Do not use Teflon tape or pipe joint compound on the orifice threads. The hole in the orifice may become blocked and cause fire, explosion, property damage, carbon monoxide poisoning, personal injury, or death.

12. Install the appropriate LP/Propane gas burner orifices (see Table 2, page 4) into the gas manifold assembly. **NOTE:** To prevent cross threading, hand tighten the orifices (clockwise) into the gas manifold assembly until snug, then tighten with a wrench 1/2 to 1 full turn.

IMPORTANT NOTE: If the unit is equipped with Low NOx baffles, it is necessary to remove these baffles from the heat exchanger tubes prior to operating with LP/Propane gas. Complete steps 13-19 if NOx baffles are installed. If no NOx baffles are installed skip to Step 16.

CAUTION:

It is good practice to label all wires prior to disconnection. Wiring errors can cause improper and dangerous operation.

13. While gas valve/manifold piping assembly are removed, carefully disconnect the wires from the flame sensor, the flame roll out switch, and the ignitor wires at the 2 pin plug connector atop the burner box. Depress the snap locks on each side of the connector to unlock.

Carefully remove the four screws inside the burner box (2 at each end), securing the complete burner box assembly to the heat exchanger panel while ensuring not to damage the ignitor. See Figure 1.

NOTE: The burner box may have hooks near the top on both ends. To remove this type of burner box, lift the burner box upwards and then remove the box from the unit. Remove the screw securing the NOx baffle retainer clip to the heat exchanger panel, then pull the baffle straight forward to remove. Repeat these steps for each additional tube assembly. Discard retainer screws, retainers, and NOx baffles.

- 14 Reinstall the burner box assembly using the four screws removed in Step 13.
- 15 Reconnect the wires to the flame roll-out switch, flame sensor, and ignitor removed earlier in step 13.
16. Reinstall the gas manifold assembly to the burner assembly with the 4 screws, that were removed earlier in step 8. **NOTE:** It is important that the center of the orifices are aligned with the center of the burners.
17. Reconnect the gas piping to the gas valve inlet.
18. Reconnect the wires to the gas valve terminals.
19. After re-installing the gas valve/manifold assembly, 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.

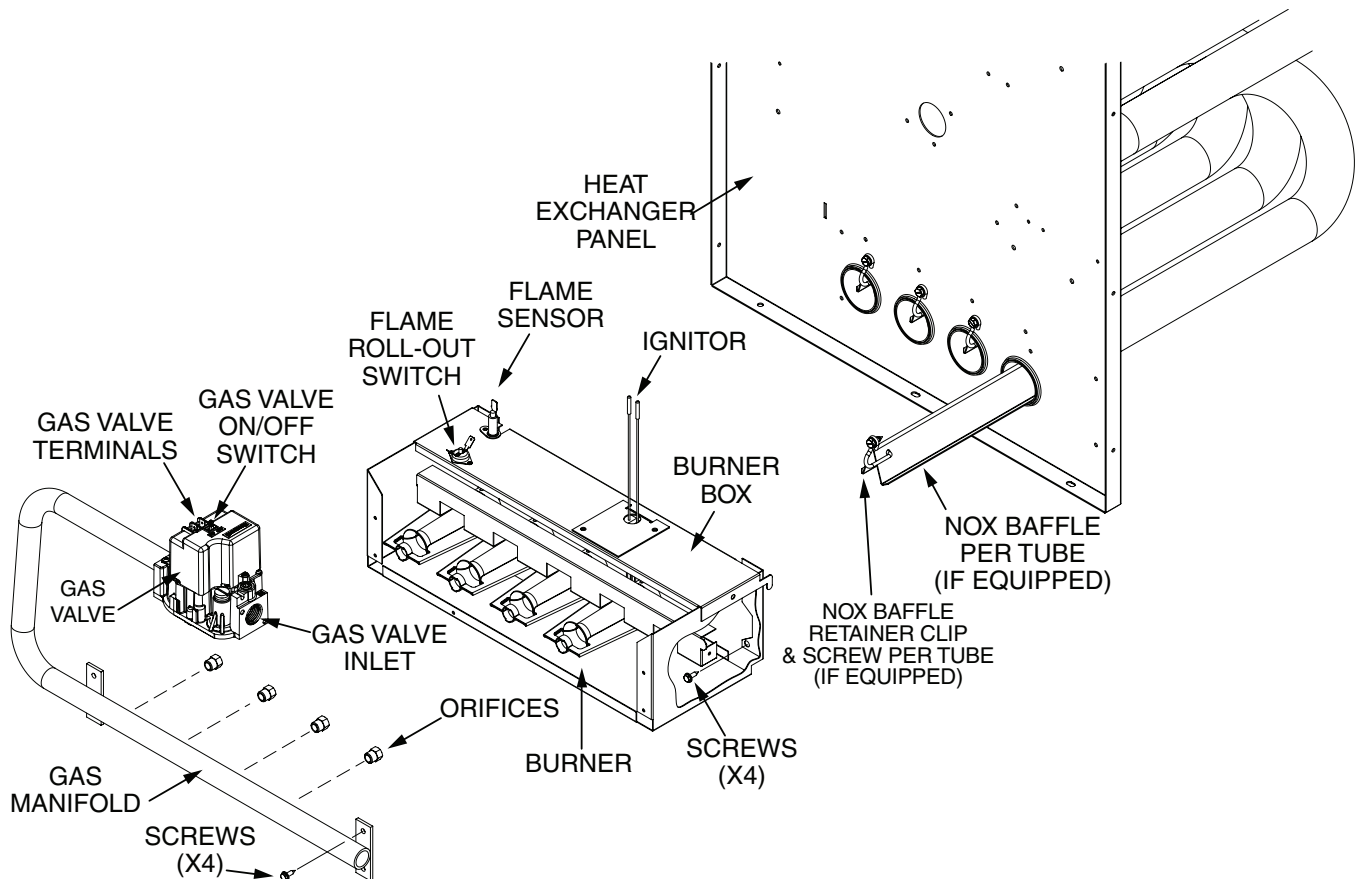


Figure 1. Burner & Manifold Assembly

| MODEL NUMBER | | GAS VALVE SETTING | INPUT | ALTITUDE ABOVE SEA LEVEL | | | | | | | | | | | |
|---------------------|--|-------------------|---------|--------------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|--------------------|------------------------------|
| | | | | 0 to 1,999 FT | | 2,000 to 2,999 FT | | 3,000 to 4,999 FT | | 5,000 to 5,999 FT | | 6,000 to 7,999 FT | | 8,000 to 10,000 FT | |
| | | | | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) | ORIFICE SIZE | MANIFOLD PRESSURE (ln. W.C.) |
| Single Stage Models | R6GD PPG2GD R8GD PPG3GD | High | 45,000 | 54 | 9.8 | 54 | 8.8 | 54 | 8.3 | 55 | 9.8 | 55 | 8.8 | 55 | 8.3 |
| | | | 72,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | | | 96,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | | | 120,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | TGRG(24,30)451E TGRG(24,30,36)721E TGRG(36,42,48)961E TGRG601201E | High | 45,000 | 54 | 9.8 | 54 | 8.8 | 54 | 8.3 | 55 | 9.8 | 55 | 8.8 | 55 | 8.3 |
| | | | 72,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | | | 96,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | | | 120,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.5 | 55 | 10.0 | 55 | 9.0 | 55 | 8.5 |
| | R6GF PPG2GF DF6SF PDF2SF R6GI PPG2GI | High | 72,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.0 | 55 | 10.0 | 55 | 9.0 | 55 | 8.0 |
| | | | 46,800 | 54 | 4.8 | 54 | 4.0 | 54 | 3.5 | 55 | 4.8 | 55 | 4.0 | 55 | 3.5 |
| | | High | 80,000 | 55 | 10.0 | 55 | 9.0 | 55 | 8.0 | 56 | 10.0 | 56 | 9.0 | 56 | 8.0 |
| | | | 52,000 | 55 | 4.8 | 55 | 4.0 | 55 | 3.5 | 56 | 4.8 | 56 | 4.0 | 56 | 3.5 |
| | | High | 96,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.0 | 55 | 10.0 | 55 | 9.0 | 55 | 8.0 |
| | | | 62,400 | 54 | 4.8 | 54 | 4.0 | 54 | 3.5 | 55 | 4.8 | 55 | 4.0 | 55 | 3.5 |
| | | High | 100,000 | 55 | 10.0 | 55 | 9.0 | 55 | 8.0 | 56 | 10.0 | 56 | 9.0 | 56 | 8.0 |
| | | | 65,000 | 55 | 4.8 | 55 | 4.0 | 55 | 3.5 | 56 | 4.8 | 56 | 4.0 | 56 | 3.5 |
| Two-Stage Models | -120(C,X) | High | 120,000 | 54 | 10.0 | 54 | 9.0 | 54 | 8.0 | 55 | 10.0 | 55 | 9.0 | 55 | 8.0 |
| | | Low | 78,000 | 54 | 4.8 | 54 | 4.0 | 54 | 3.5 | 55 | 4.8 | 55 | 4.0 | 55 | 3.5 |

Table 2. Liquid Propane Conversion Chart

Single Stage Honeywell Valves

Models: VR8205S2890 or VR8215S1289

IMPORTANT NOTE: When converting to LP/ Propane gas from natural gas, the black spring in the gas valve must be replaced by the red spring in the kit.

1. Remove the cap screw from the gas valve as shown in Figure 2.

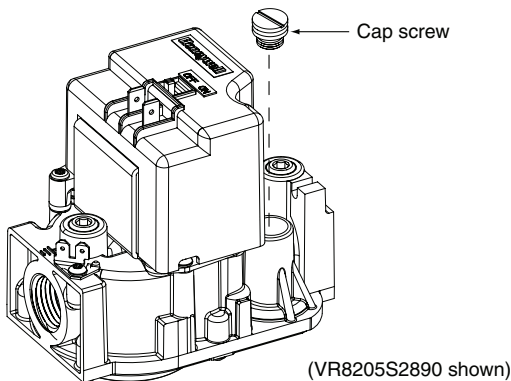


Figure 2. Cap Screw Removal

2. Remove and discard the plastic pressure regulator adjustment screw from the gas valve. See Figure 3.
3. Remove the black colored spring from the gas valve.
4. Install the red spring from the conversion kit.
5. Install the new adjusting screw from the kit.
6. Check and adjust the regulator setting. See Gas Pressure Adjustment Section (page 6).

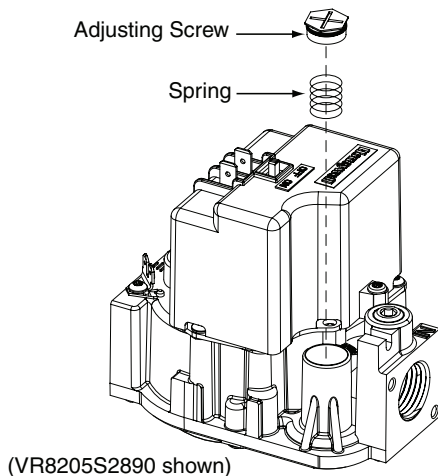


Figure 3. Pressure Regulator Spring & Adjustment Screw Removal

7. Reinstall the cap screw.
8. Affix the label from the conversion kit to the gas valve.

2 - Stage Honeywell Valves

Model VR8205Q2381

IMPORTANT NOTE: When converting to LP/ Propane gas from natural gas, the white stem/spring assembly in the gas valve must be replaced by the black stem/spring assembly in the kit.

1. Remove two screws (1) securing the pressure regulator cover assembly (2) to the gas valve. See Figure 4.
2. Remove the pressure regulator cover assembly (2) from the gas valve.
3. Remove and discard the existing stem/spring assembly (3) from the gas valve.
4. Install the replacement stem/spring assembly (3) from the conversion kit.
5. Reinstall the pressure regulator cover assembly (2) onto the gas valve.
6. Install the two screws (1) and tighten.
7. Affix the label from the conversion kit to the gas valve

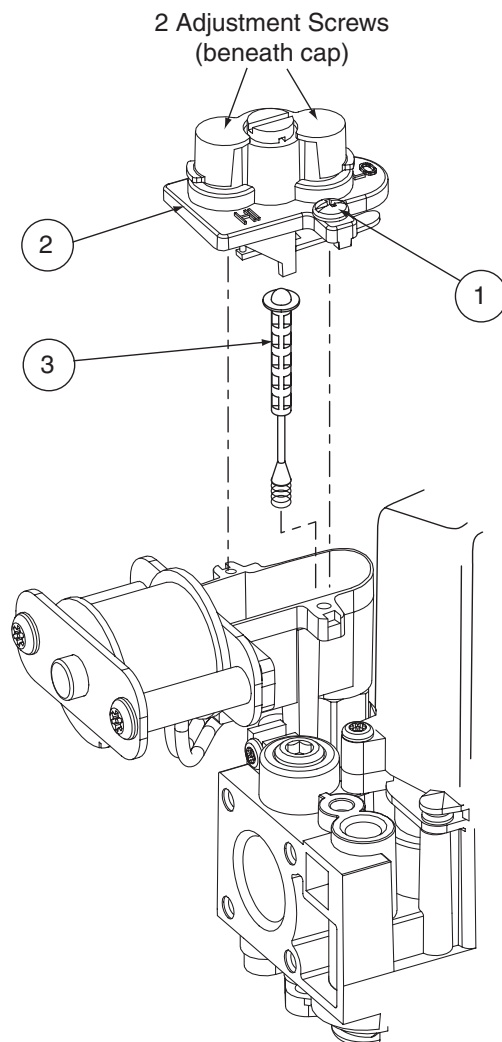


Figure 4. Spring / Stem Assembly Removal

IMPORTANT NOTES:

- When converting to LP/Propane gas from natural gas, the springs from gas valve must be replaced by the larger springs from the kit. The LP/Propane springs for both HIGH & LOW fire are the same size, shape and color.
 - Use only a Torx-25 or 3/16" flathead screwdriver when removing adjustment screws or during pressure adjustment.
- Remove the HIGH fire cap screw. See Figure 5.
 - Remove and discard the HIGH fire adjustment screw from the gas valve.
 - Remove the spring from the gas valve and discard.
 - Install a larger spring from the conversion kit.
 - Install a new adjusting screw from the kit.

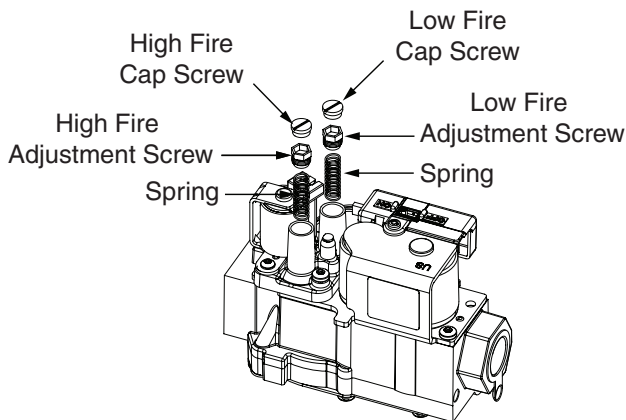


Figure 5. Pressure Regulator Spring & Adjustment Screw Removal

- Repeat steps 1 - 5 for replacement of the LOW fire spring and adjustment screw.
- Check and adjust the regulator setting. See Gas Pressure Adjustment Section.
- Reinstall the cap screws on the HIGH and LOW regulators. Plastic replacement cap screws are provided in the conversion kit.
- Affix the label from the conversion kit to the gas valve.

GAS PRESSURE ADJUSTMENT

Measuring the Supply Gas Pressure

- Turn OFF the gas supply at the manual valve located on the outside of the unit.
- Using a 3/16" Allen wrench, remove the plug from the inlet pressure tap (INLET side of gas valve). See Figure 6.
- Install an 1/8" NPT pipe thread fitting, that is compatible with a Manometer or similar pressure gauge.
- Connect the Manometer or pressure gauge to the Inlet Pressure Tap.
- Turn ON the main gas supply at the manual valve.
- Check and adjust the incoming gas line pressure to 11.0-14.0 inches Water Column for LP/Propane gas.
- Turn OFF the gas supply at the manual valve.
- Disconnect the Manometer or pressure gauge.
- Remove the NPT fitting and reinstall the INLET pressure tap plug. Hand tighten the plug first to prevent cross-threading. Tighten with 3/16 Allen wrench.

Lighting & Adjustment of the Appliance

⚠ WARNING:

FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury 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. A fire or explosion may result causing property damage, personal injury or loss of life.

- Turn ON the manual gas valve, located on the outside of the unit to the ON position.
- 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.
- Turn on the electrical power to the appliance.
- Place the gas valve ON/OFF switch/knob to the ON position. See Figure 6.

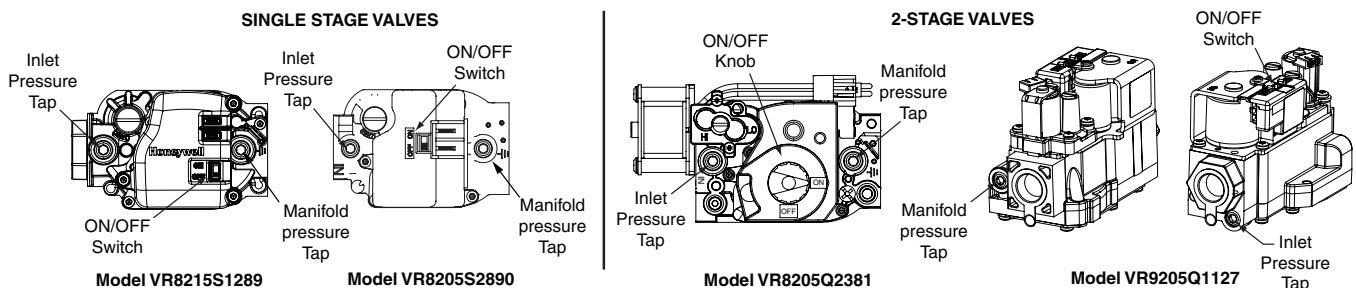


Figure 6. Inlet & Manifold Pressure Tap Locations

5. Set the thermostat above room temperature to begin the heating cycle of the furnace.
6. Check that the furnace ignites and operates properly. Refer to the installation instructions provided with the unit for the normal operating sequence.
7. After ignition, visually inspect the burner assembly to ensure that the flame is drawn directly into the center 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.

NOTE: The ignitor may not ignite the gas until all air is bled from the gas line. If the ignition control locks out, turn the thermostat to its lowest setting and wait one minute then turn the thermostat above room temperature and the ignitor will try again to ignite the main burners. This process may have to be repeated several times before the burners will ignite. After the burners are lit, check all gas connections for leaks again with the soap and water solution.

Measuring the Manifold Pressure

The manifold pressure must be measured by installing a pressure gauge (Manometer, Magnehelic Meter, etc.) to the outlet end of the gas valve as follows:

1. Turn off all electrical power to the appliance.
2. Shut OFF the gas supply at the manual shutoff valve located outside of the appliance.
3. Using a 3/16" Allen wrench, remove the manifold pressure tap plug located on the outlet side of the gas valve. See Figure 6 (page 6).
4. Install an 1/8" NPT pipe thread fitting, that is compatible with a Manometer or similar pressure gauge.
5. Connect the Manometer or pressure gauge to the manifold pressure tap.
6. Set the room thermostat above room temperature to start the furnace.
7. Allow the furnace to operate for 3 minutes and then check the manifold pressure. Compare the measured value with the value shown in Table 2 (page 4). If the manifold pressure is not set to the appropriate pressure, then it must be adjusted.

Adjusting the Manifold Pressure

NOTE: Adjustments must be made to both LOW & HIGH fire settings when converting two-stage gas valves. Refer to Table 2 for manifold pressures.

1. Single stage gas valve: Remove the cap screw from the top of the gas valve regulator. See Figure 2 (page 4) for VR8205S2890 or VR8215S1289 models.
2-stage gas valve: For VR8205Q2381 models, remove the plastic cap covering the adjustment screws (Figure 4 page 5). For VR9205Q1127 models, remove the cap screw (Figure 5, page 6).
2. Using a screwdriver or Allen wrench (where appropriate), slowly turn the adjustment screw till the appropriate manifold pressure listed in Table 2 is achieved. See Figure 2 for VR8205S2890 or VR8215S1289 models.

See Figure 4 for VR8205Q2381 models or Figure 5 for VR9205Q1127 models.

NOTE: Turning the screw clockwise increases the pressure, turning the screw counter-clockwise decreases the pressure. To prevent the screw from backing all the way out from the valve, turn the screw slowly.

3. Replace and tighten the cap screw or the plastic cap over the adjustment screw.

Removing the Manometer/Pressure Gauge

After the manifold pressure is properly adjusted, the Manometer or pressure gauge must be removed from the gas valve.

1. Turn the thermostat to its lowest setting.
2. Turn OFF the main gas supply to the unit at the manual shut-off valve, which is located outside of the unit.
3. Turn OFF all of the electrical power supplies to the unit.
4. Remove the pressure gauge adapter from the gas valve and replace it with the 1/8" NPT manifold pressure plug that had been removed earlier. **NOTE:** Make sure 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.

COMPLETING THE CONVERSION



WARNING:

Do not alter or remove the original rating plate from the furnace.

1. Attach the following labels:
 - The conversion warning label (P/N 703935) should be affixed to the outside of the unit door.
 - The conversion information label (P/N 703942) should be affixed near the rating plate on the inside of the control area.
 - The gas valve conversion label should be affixed on the gas valve.

NOTE: Each label should be prominently visible after installation.

2. Reinstall the appliance door.
3. Run the appliance through 3 complete cycles to assure proper operation.

The installer performing this work assumes all responsibility for this conversion. These instructions are primarily intended to assist qualified individuals experienced in the proper installation of these components. Some local codes require licensed installation/service personnel for this type of equipment. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Improper installation of the components or failure to follow safety warnings could result in serious injury, death, or property damage. After completing the installation, return these instructions to the Homeowner's Package for owner-user's future reference.

