# HA-04 AND HA-05 HIGH ALTITUDE CONVERSION KIT (FOR TWO-STAGE 9-TAP AND VARIABLE SPEED FURNACES ONLY) INSTALLATION INSTRUCTIONS

**WARNING**

**ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE, MAINTENANCE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT.**

**THIS EQUIPMENT IS NOT INTENDED FOR USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY.**

**CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE EQUIPMENT.**

**THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SUPERVISION, SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER SUPERVISION, INSTALLATION, ADJUSTMENT, SERVICING, MAINTENANCE OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER SUPERVISION OR TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.**

**WARNING**

**DO NOT BYPASS SAFETY DEVICES.**

**RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION**

## INDEX



## DESCRIPTION

This kit contains the appropriate burner orifices, and/or pressure switch for the application of 80% furnaces 2 Stage Furnaces in installations above their maximum (as shipped) rated altitudes. Natural Gas Kit changes applies as shown in Table 1 and Propane Gas Kit changes applies as shows in Table 2. Refer to Table 3 for information on the accurate kit number.

| "Standard" and "High Altitude" Kits (NATURAL GAS) | | | | | |
|---|---|---|---|---|---|
| 0-2,000 Feet (Standard Altitude) | | 2,000-5,400 Feet | | 5,400-7,800 Feet | |
| Gas Orifices | Pressure Switch | Gas Orifices | Pressure Switch | Gas Orifices | ID Blower Pressure Switch |
| No Change | No Change | No Change | Pressure switch must be replaced per table 3 | No Change | Pressure switch must be replaced per table 3 |

**Table 1**

| "Standard" and "High Altitude" Kits (PROPANE) | | | | | |
|---|---|---|---|---|---|
| 0-2,000 Feet (Standard Altitude) | | 2,000-5,400 Feet | | 5,400-7,800 Feet | |
| Gas Orifices | Pressure Switch | Gas Orifices | Pressure Switch | Gas Orifices | ID Blower Pressure Switch |
| Gas orifices must be replaced with #55 orifices for all propane installations. Refer to kit LPM-06 | No Change | Gas orifices must be replaced with #56 orifices for all propane installations | Pressure switch must be replaced per table 3 | Gas orifices must be replaced with #56 orifices for all propane installations | Pressure switch must be replaced per table 3 |

**Table 2**


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| MODELS | | | | 2000 FT - 5400 FT | 5400 FT - 7800 FT |
|---|---|---|---|---|---|
| DC80TN | GC9C80 | AC9C80 | 0403A* | HA-04 | HA-04 |
| DC80TN | GC9C80 | AC9C80 | 0603A* | HA-05 | HA-05 |
| DC80TN | GC9C80 | AC9C80 | 0603B* | HA-05 | HA-05 |
| DC80TN | GC9C80 | AC9C80 | 0804B* | HA-04 | HA-05 |
| DC80TN | GC9C80 | AC9C80 | 0805C* | HA-04 | HA-05 |
| DC80TN | GC9C80 | AC9C80 | 1005C* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0403A* | HA-04 | HA-04 |
| DM80TN | GM9C80 | N/A | 0603A* | HA-05 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0603B* | HA-05 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0803B* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0804B* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0804C* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0805C* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 0805D* | HA-04 | HA-05 |
| DM80TN | GM9C80 | N/A | 1004C* | HA-04 | HA-05 |
| DM80TN | GM9C80 | AM9C80 | 1005C* | HA-04 | HA-05 |
| DM80TN | GM9C80 | N/A | 1205D* | HA-05 | HA-05 |
| DC80VC | GCVC80 | ACVC80 | 0603B* | HA-05 | HA-05 |
| DC80VC | GCVC80 | ACVC80 | 0803B* | HA-04 | HA-05 |
| DC80VC | GCVC80 | ACVC80 | 0805C* | HA-04 | HA-05 |
| DC80VC | GCVC80 | ACVC80 | 1005C* | HA-04 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0603B* | HA-05 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0604B* | HA-05 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0803B* | HA-04 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0804C* | HA-04 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0805C* | HA-04 | HA-05 |
| DM80VC | GMVC80 | AMVC80 | 0805D* | HA-04 | HA-05 |
| DM80VC | GMVC80 | N/A | 1005C* | HA-04 | HA-05 |

**Table 3**

A different pressure switch must be used above the rated altitude of 2,000 feet. A high-altitude pressure switch is necessary as a result of the reduction in air density and is required regardless of the Btu content of the fuel used.

Above an altitude of 2,000 feet, a derating of the appliance must be followed since the CFM moved by the induced draft blower remains almost constant while the pounds of oxygen in that air is reduced as altitude increases. If this procedure is not followed and the fuel input is not reduced by adjusting the manifold pressure, the resulting combustion can be inefficient, incomplete, or possibly cause premature heat exchanger failure due to excessive temperature rise. **NOTE: "Point of use" Btu content will be less due to decreased atmospheric pressure.** If the Btu content of your gas supply has been artificially changed to account for altitude, contact your gas supplier for orifice sizing.

**Do not derate by adjusting the manifold pressure to a lower pressure setting than specified on the furnace nameplate (3.5" W.C. for Natural Gas and 10" W.C. for Propane)**

## GENERAL INFORMATION

**WARNING**

**PERSONAL INJURY HAZARD**

This conversion kit must be installed by a qualified 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, explosion or production of carbon monoxide can result causing property damage, personal injury or loss of life. The qualified service agency performing this work assumes responsibility for the proper conversion of this appliance with this kit.

**WARNING**

**IF THE PRESENCE OF GAS IS SUSPECTED:**

- DO NOT TRY TO LIGHT ANY APPLIANCE.
- DO NOT TOUCH ANY ELECTRICAL SWITCH OR USE ANY PHONE IN YOUR BUILDING.
- IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBOR'S PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
- IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT.

## HIGH ALTITUDE INSTALLATION FOR PROPANE ONLY

The conversion from "standard altitude" orifices (as shipped from the factory) to "high altitude" orifices need to take place for propane gas only. It requires:

- Removing gas manifold
- Replacing burner orifices
- Reinstalling gas manifold

Before proceeding, shut OFF gas supply at manual shut-off and turn off power to the unit.

**WARNING**

**PERSONAL INJURY HAZARD**

To avoid the risk of property damage, personal injury or fire, shut off the gas supply first, then disconnect all electrical power before proceeding with the installation.

## ORIFICE INSTALLATION

### Gas Manifold Removal

1. Shut OFF gas supply at manual shutoff and turn OFF power to the unit.
2. Disconnect wiring from the gas valve.
3. Where necessary, cut wire ties securing wiring to manifold.
4. Remove the screws securing the gas manifold and valve to the burner bracket. Separate gas manifold and valve from burner bracket.

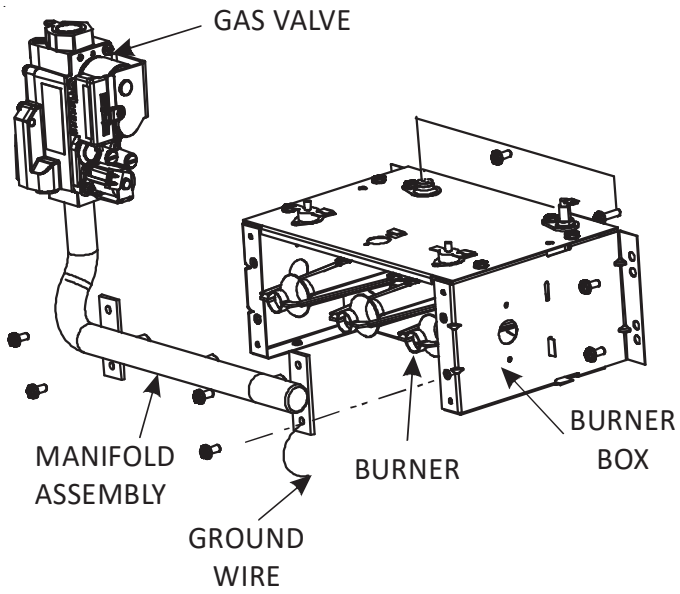


**Figure 1**
**Gas Manifold Removal**

### Burner Orifice Replacement

1. Remove standard altitude natural gas orifices from gas manifold using a box end wrench.
2. Install high altitude gas orifices supplied in the high altitude kit. Tighten orifices with a box-end wrench. Do not use a socket wrench as it could damage the orifices. Do not cross-thread or overtighten.

### Gas Manifold Re-Installation

1. Reinstall gas manifold and valve. Make certain that the orifices are inserted in each burner.

   **NOTE:** Secure green burner assembly ground wire with manifold screw.
2. Reconnect wiring to gas valve.

**⚠ CAUTION**

WIRING MUST NOT INTERFERE WITH ORIFICES OR BURNERS OR CONTACT ANY HOT SURFACES.

3. Refer to the following sections detailing Adjustments and Checks for natural gas.

## ADJUSTMENTS AND CHECKS

The following adjustments and checks are a required part of this conversion. Adjustments and checks include:

- Leak checking orifices
- Checking and adjusting line and manifold gas pressures
- Verifying proper unit operation (input rate, operational sequence, burner flame, temperature rise, etc.)

**⚠ WARNING**

**PERSONAL INJURY HAZARD**
To prevent property damage, personal injury or death due to fire or explosion, do not use a flame to check for leaks.

### Orifice Leak Check

Leak check burner orifice threads using a soap solution.

### Line Pressure Check

1. Shut OFF gas at the manual gas shutoff valve and turn OFF power to the unit.
2. Connect a Calibrated manometer or appropriate gas pressure gauge at either the gas valve **inlet** pressure tap or gas piping drip leg.
3. Turn ON the power and gas, put the unit into heating cycle and turn on all other gas consuming appliances.
4. Measure the gas supply pressure with the burners firing. The inlet gas pressure for natural gas should be between **4.5 and 10.0 inches W.C.** and for propane between **11.0 and 13.0 inches W.C.** If supply pressure differs from required, make necessary adjustments to pressure regulator(s), gas piping, etc.
5. Turn OFF gas to the unit at the manual shutoff valve and disconnect manometer. Reinstall line pressure tap plug. Turn OFF any unnecessary appliances started in step 3.

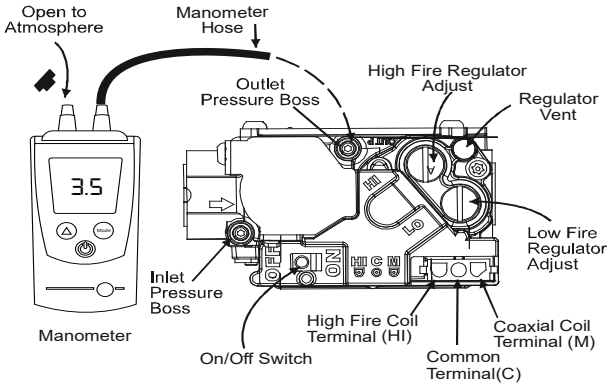


**Figure 2**
**White-Rodgers Model 36G54/36J54 Connected to Manometer**

### Manifold Pressure Check

Only small variations in gas flow should be made by adjusting the gas valve pressure regulator. See following table for the required natural gas manifold pressure.

| Natural Gas Manifold Pressure |
|---|
| 3.5” W.C. (High) and 1.8” W.C. (Low) |
| **Propane Manifold Pressure** |
| 10.0” W.C. (High) and 5” W.C. (Low) |

**Table 4**

1. Turn OFF gas to the unit at the manual gas shutoff valve.
2. Connect a calibrated water manometer or appropriate gas pressure gauge to the gas valve **outlet** pressure tap.
3. Turn ON gas supply and operate unit.
4. Remove the cap screw from the manifold pressure regulator adjustment location.
5. Adjust the manifold pressure regulator to the required manifold pressure (Table 4).
6. Reinstall the manifold pressure regulator cap screw. Confirm manifold pressure.
7. Turn OFF gas supply to unit. Disconnect manometer and reinstall manifold pressure tap plug.

## HIGH ALTITUDE INSTALLATION FOR PROPANE AND NATURAL GAS

The conversion from “standard altitude” pressure switch assembly (as shipped from the factory) to “high altitude” pressure switch assembly requires:

- Removing standard altitude pressure switch
- Installing high altitude pressure switch

Before proceeding, shut OFF gas supply at manual shut-off and turn OFF power to the unit.

**WARNING**

**PERSONAL INJURY HAZARD**
To avoid the risk of property damage, personal injury or fire, shut off the gas supply first, then disconnect all electrical power before proceeding with the installation.

## PRESSURE SWITCH REMOVAL/ REPLACEMENT

1. Shut OFF gas supply at manual shutoff and turn OFF power to the unit.
2. Disconnect the pressure switch hose from the pressure switch.
3. Disconnect wiring (yellow wires) from pressure switch.
4. Remove mounting bracket screw(s) securing standard altitude pressure switch to top panel (up flow) or inner blower door (downflow).
5. Install high altitude pressure switch using screw(s) removed in step 4.
6. Reconnect wiring to pressure switch.
7. Reconnect pressure switch hose to new switch.
8. Verify proper furnace operation.

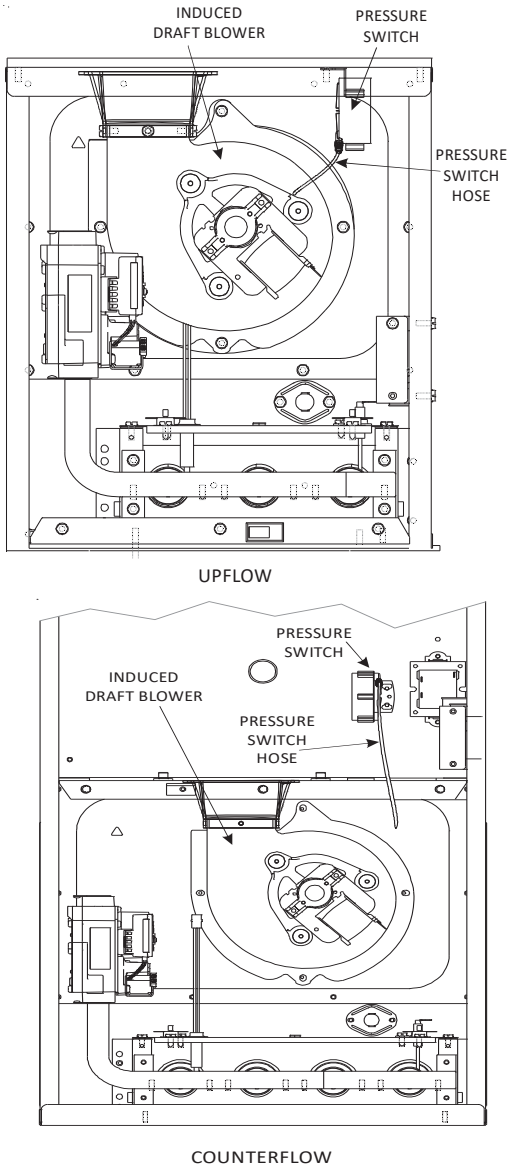


**Figure 3**
**Induced Draft Blower Pressure Switch Location**

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**CUSTOMER FEEDBACK**

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