

HANG20

HIGH ALTITUDE CONVERSION KIT

INSTALLATION INSTRUCTIONS

ATTENTION INSTALLING PERSONNEL:

As a professional installer you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is **your** responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.



DESCRIPTION

This kit contains the appropriate burner orifices, and/or pressure switch for the application of 80% furnaces (2-stage communicating not included) in installations above their maximum (as shipped) rated altitudes. This kit is not applicable in Canada. Kit applies as shown in Table 1.

"Standard" and "High Altitude" Kits					
0 - 4,500 Feet (Standard Altitude)		4,501 - 7,500 Feet		Above 7,500 Feet	
Natural Gas Orifices	Pressure Switch	Natural Gas Orifices	Pressure Switch	Natural Gas Orifices	ID Blwr Pressure Switch
No Change	No Change	No Change	B1370142	#46	B1370142

Table 1

A different pressure switch must be used above the rated altitude of 4,500 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 7,500 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 the resulting combustion can be inefficient, incomplete, or possibly cause premature heat exchanger failure due to excessive temperature rise. The burner orifices in the high altitude kits have been selected as a result of agency certified testing at high altitude and will provide the appropriate derating. Orifice selection is based on non-derated gas [at standard conditions of 29.92 in Hg and 60°F—approximately 1,000 Btu/ft³ for natural gas and 2,500 Btu/ft³ for propane]. **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. A lower air density in combination with a lower manifold pressure at the burner orifice will prevent the orifice from aspirating the proper amount of air into the burner required for complete combustion.

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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.

HANG20

The conversion from "standard altitude" orifices (as shipped from the factory) to "high altitude" orifices 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 - HANG20

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.

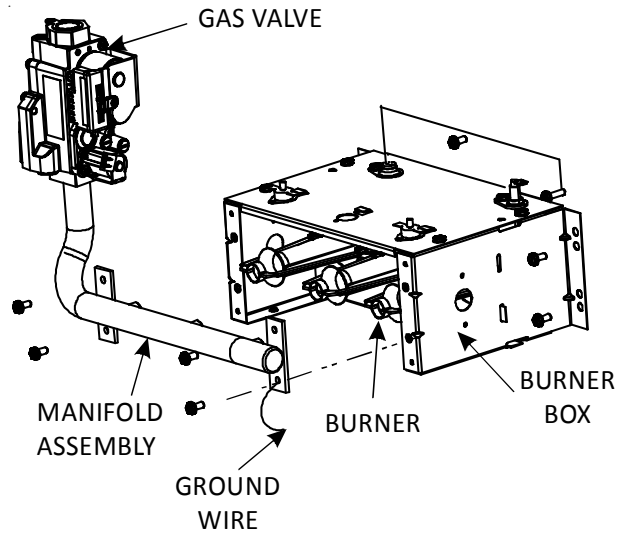


Figure 1
Gas Manifold Removal

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 - HANG20

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.

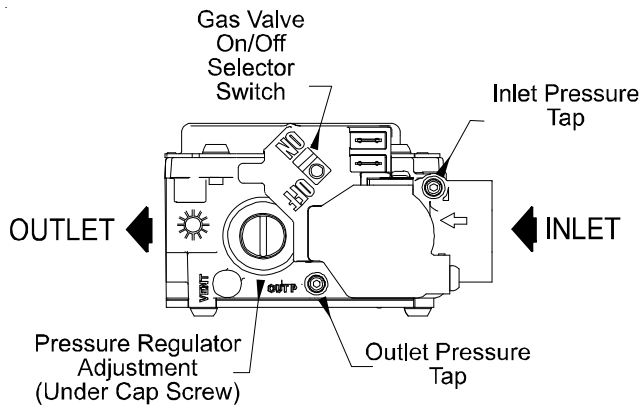
ORIFICE LEAK CHECK

Leak check burner orifice threads using a soap solution.

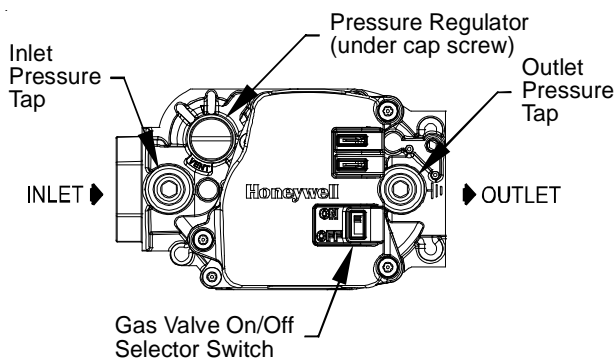
LINE PRESSURE CHECK

1. Shut OFF gas at the manual gas shutoff valve and turn OFF power to the unit.
2. Connect a calibrated water 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.** 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.

SINGLE STAGE GAS VALVES

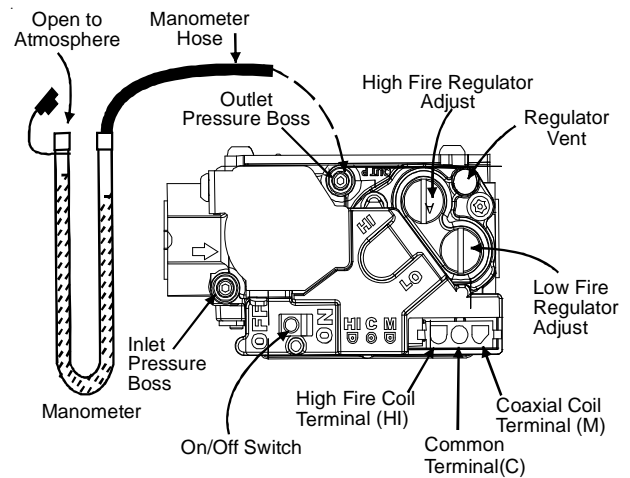


White-Rodgers Model 36G22

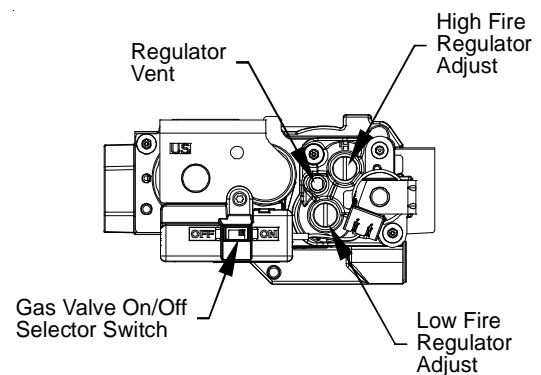


Honeywell Model VR8215 (Single Stage)

TWO STAGE GAS VALVES



White-Rodgers Model 36G54 Connected to Manometer



Honeywell Model VR9205 (Two-Stage)

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
3.2 to 3.8" W.C.

Table 2

1. Turn OFF gas to the unit at the manual gas shutoff valve.
2. Connect a calibrated water manometer or appropriate gas pressure gauge at 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 2).
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.

HANG20

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.



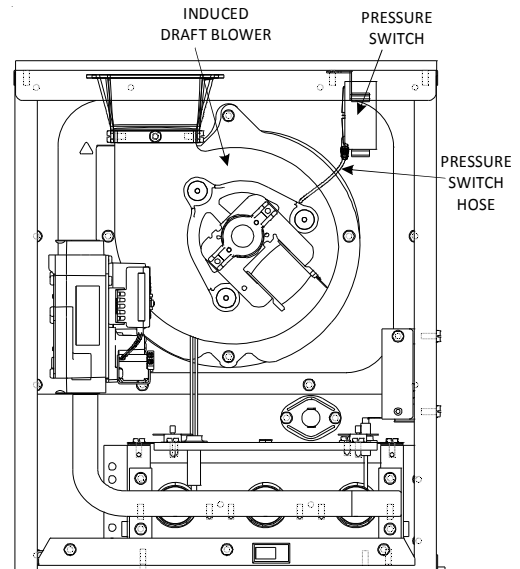
WARNING

PERSONAL INJURY HAZARD

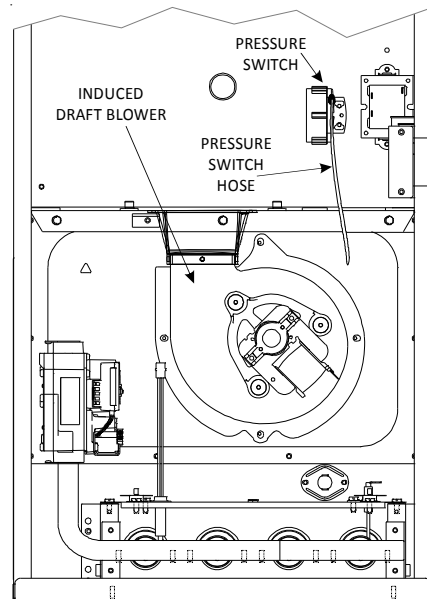
To avoid the risk of property damage, personal injury or fire, shut off the gas supply first, then disconnect all electrical power before proceeding with the installation.

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 (upflow) 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.



UPFLOW



COUNTERFLOW

Induced Draft Blower Pressure Switch Location

Above 4,500 Feet	
Pressure Switch	Set Point
B1370142	-0.60

Table 3

Pressure Switch

Goodman Manufacturing Company, L.P.
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www.daikincomfort.com, www.goodmanmfg.com and www.amana-hac.com
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