Installation Instructions (Propane-to-Natural)
Part No. 58GP-900-14101

NOTE: Read the entire instructions before starting the installation. There are additional parts shipped in the kit. When the installation is complete, discard the unused parts.

INTRODUCTION

This instruction covers the installation of conversion kit Part No. 58GP-900-14101 in a Model 58GP Upflow or Model 58DP Downflow Natural-Draft Furnace with the Honeywell VR800A, or VR820H Gas Valve. The kit is designed to convert propane, match-lit, 100 percent shut-off gas controls to natural, match-lit, 100 percent shut-off gas controls in furnaces with 50,000- through 175,000-Btu/h nominal capacity.

NOTE: The definition of 100 percent shutoff refers to automatic shut-off of the main burner and pilot gas when the ignition source is not proven.

Table 1—Kit Contents

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NO.</th>
<th>QTY</th>
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<tr>
<td>Natural Regulator Spring Kit for Honeywell VR800A Gas Valve (Tapered-Silver, 14 Turns)</td>
<td>304986-104</td>
<td>1</td>
</tr>
<tr>
<td>Natural Regulator Spring Kit for Honeywell VR8200H Gas Valve (Tapered-Silver, 8 Turns)</td>
<td>EF892W001</td>
<td>1</td>
</tr>
<tr>
<td>Main Burner Orifice No. 42</td>
<td>LH92DB207</td>
<td>7</td>
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<tr>
<td>Pilot Orifice (Silver 9/16-In. Long, 0.016-In. Orifice Diameter Marked N) for Roberts/Long 2CH Pilot</td>
<td>6992-1-1</td>
<td>1</td>
</tr>
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<td>Gas Control Conversion Label</td>
<td>310148-302</td>
<td>1</td>
</tr>
<tr>
<td>Conversion Responsibility Label</td>
<td>310167-342</td>
<td>1</td>
</tr>
<tr>
<td>Conversion Rating Plate</td>
<td>310188-322</td>
<td>1</td>
</tr>
<tr>
<td>Installation Instructions</td>
<td>58DP-58G-SSI</td>
<td>1</td>
</tr>
</tbody>
</table>

INSTALLATION OF PILOT ORIFICES

1. Turn OFF gas and electric supplies to furnace.
2. Remove control compartment access door.
3. Disconnect pilot gas tube and thermocouple from gas valve.

(Fig. 1.)

Fig. 1—Gas Controls

4. Remove pilot mounting screw. Remove pilot assembly from burner and furnace.
5. Using backup wrench, remove gas supply tube from pilot.
6. Remove and discard propane gas pilot orifice (red, 9/16-in. long, 0.010-in. diameter orifice marked LF) from gas supply opening of pilot.

(Fig. 2.)

WARNING

This conversion kit is to be installed by a Carrier factory-authorized dealer, distributor, or other qualified agency in accordance with the manufacturer's instructions and all codes and requirements of the authority having jurisdiction. A failure to follow instructions could result in serious injury or property damage. The qualified agency performing this work assumes responsibility for this conversion.

In Canada, the conversion shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the Natural-Gas and Propane Gas Installation Codes CAN/CGA B149.1-and-.2-M86.

CAUTION

Follow these instructions where they differ from the instructions packaged with the springs.

WARNING

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, local gas supplier, or your distributor or branch for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.
Fig. 2—Robertshaw Pilot

7. Install new natural pilot orifice (silver, 9/16-in. long, 0.016-in. diameter orifice marked N) provided in kit.

8. Reinstall pilot gas supply tube on pilot. When tightening pilot tube, use backup wrench and turn pilot so that it will be on the same angle as before. Do not reinstall pilot at this time.

INSTALLATION OF MAIN BURNER ORIFICES

1. Remove secondary air shield.

2. Remove main burners from manifold.

3. Remove and discard No. 54 (or field-installed per local application) orifices from manifold.

4. Install No. 42 main burner orifices provided in kit. Finger-tighten orifices at least one full turn so as not to cross-thread, then tighten with wrench. There are enough orifices in each kit for the largest furnace. Discard extra orifices. Orifices of other sizes must be field supplied.

      See Table 3 for correct orifice size up to 2000 ft based on local gas conditions.

      In the U.S.A., the input rating for altitudes above 2000 ft must be reduced by 4 for each 1000 ft above sea level.

      Consult the current edition of the National Fuel Gas Code, NFPA No. 54/ANSI Z223.1-1988, Part 8.1 and Appendix F Table F-4, for input adjustment for high altitude.

      In Canada, high altitude adjustments must be made in accordance with CAN/CGA B149.1- and 2-M86 Installation Codes. The Canadian ratings are for altitudes up to 2000 ft for natural and propane gases. High altitude ratings are from 2000 ft to 4500 ft above sea level. Derate the furnace input 10 percent for high altitudes.

5. Reinstall main burners on manifold. See Fig. 3 for proper orientation of burners and pilot.

6. Reinstall pilot assembly.

7. Reconnect pilot supply tube and thermocouple to gas valve.

8. Reinstall secondary air shield.

→ CONVERSION OF GAS VALVE AND INLET GAS PRESSURE CHECK

1. Remove regulator seal cap. See Fig. 4 for Honeywell VR800A, or Fig. 5 for Honeywell VR8200H Gas Valve.

Fig. 3—Pilot/Burner Relationship

2. Remove adjustment screw and propane gas regulator spring.

3. Install proper natural gas regulator spring (tapered silver, 14 turns for VR800A, 8 turns for VR8200H) provided in kit. (See Table 3.) For Honeywell gas valves only, insert small end of spring into valve first.

4. Replace regulator adjustment screw. Do not reinstall regulator seal cap at this time.

5. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve.

6. Check inlet natural gas pressure.

Fig. 4—Honeywell Model VR800A Gas Valve

NOTE: This kit is to be used only when inlet gas pressure is between 4.5- and 13.6-in. wc.

a. Attach manometer at inlet pressure tap on gas supply side of furnace gas valve.

b. Set room thermostat to “call for heat.”

c. Turn gas supply manual shut-off valve ON.

△ CAUTION

Do not operate furnace more than one minute to check inlet gas pressure as conversion is not complete at this time.
WARNING
Never use a match or other open flame to check for leaks. Use a soap-and-water solution. A failure to heed this warning could result in personal injury or death.

d. Turn furnace gas valve control knob to PILOT and depress, then check pilot tube connections for gas leaks.
e. Turn furnace gas valve control knob to OFF and wait 5 minutes.
f. Light pilot in accordance with furnace lighting instructions on furnace.
g. Turn furnace gas valve control knob to ON.
h. When main burners have ignited, confirm proper inlet gas pressure.
i. Turn furnace gas valve control knob to OFF.
j. Turn gas supply manual shut-off valve off.
k. Turn electrical supply to furnace OFF.
l. Remove manometer and reinstall plug in pressure tap.

NOTE: Use propane-gas-resistant pipe dope. Do not use Teflon tape.

7. Attach gas control conversion label Part No. 310148-302 to inner front panel.
8. Attach rating plate Part No. 310168-322 near existing rating plate. (See Fig. 1.)

CHECK FURNACE OPERATION AND MAKE NECESSARY ADJUSTMENTS
1. Be sure main gas and electric supplies to furnace are off.
2. Attach manometer at manifold pressure tap on down-stream side of gas valve.
3. Set room thermostat to “call for heat.”

WARNING
Never use a match or other open flame to check for leaks. Use a soap-and-water solution. A failure to heed this warning could result in personal injury or death.

4. Turn gas supply manual shut-off valve on.
5. Turn furnace gas valve control knob to ON and check all threaded pipe connections for gas leaks.
6. Turn furnace gas valve control knob to OFF and wait 5 minutes.
7. Light pilot in accordance with furnace lighting instructions on furnace.
8. Turn ON electrical supply.
9. Turn furnace gas valve control knob to ON.
10. When main burners ignite, check manifold orifices for gas leaks.
11. The pilot flame should be soft blue in color and it must provide good impingement on the pilot thermocouple. The flame should extend above the burner carryover port to provide proper ignition. (See Fig. 3.)
   When the pilot flame requires adjustment:
   a. Locate adjustment screw on top of the gas valve. (See Fig. 4 or 5.)

Fig. 5—Honeywell Model VR8200H Gas Valve

b. Remove cap and turn adjustment screw clockwise to decrease pilot gas flow. Turn screw counterclockwise to increase pilot gas flow.
c. When proper adjustment is obtained, replace screw cap.

GAS INPUT
NOTE: The U.S.A. nameplate ratings are for altitudes up to 2000 ft for natural and propane gases. Refer to National Fuel Gas Code Appendix F, Table F-4 for proper orifice sizing at high altitudes. The Canadian nameplate ratings are for altitudes up to 2000 ft for natural and propane gases. High altitude ratings are from 2000 ft to 4500 ft above sea level. Derate the furnace input 10 percent for high altitudes.

Determine the gas input as follows:
1. Set gas input rate.

There are two methods of adjusting the gas input rate. The preferred method is by using Table 3 and item a. The second method is by clocking the gas meter and item b.

The gas valve regulator should be nominally-set at 3.5-in. wc for natural gas. When adjusting input rate, do not set manifold pressure above 3.8- or below 3.2- in. wc.

d. Check gas input rate using Table 3 for 58DP and 58GP Furnaces.
(1) Obtain average yearly heat value for local gas supply.
(2) Obtain average yearly specific gravity for local gas supply.
(3) Verify furnace model. Table 3 can only be used for Model 58DP, and 58GP Furnaces.
(4) Check and verify orifice size in furnace. NEVER ASSUME THE ORIFICE SIZE. ALWAYS CHECK AND VERIFY.
(5) Find natural gas heat value and specific gravity in Table 3.
(6) Follow heat value and specific gravity lines to point of intersection. Find orifice size and manifold pressure settings for proper operation at given natural gas conditions.
EXAMPLE: (Using Table 3)
Heat value 950 Btu/cu ft
Specific gravity 0.58
Therefore, Orifice No. 40 or 41
* The kit is shipped with No. 42 orifice. Therefore, in this example other main burner orifices must be obtained.
Manifold pressure acceptable from 3.2-3.8 in. wc. Use orifice size with manifold pressure nearest 3.5 in. wc.

(7.) Proceed to item c to adjust manifold pressure.
e. Check gas input rate by closing gas meter.
(1.) Obtain average yearly heat value for local gas supply.
(2.) Obtain average yearly specific gravity for local gas supply.
(3.) Check and verify orifice size in furnace. NEVER ASSUME THE ORIFICE SIZE. ALWAYS CHECK AND VERIFY.
(4.) Turn off all gas appliances and pilots.
(5.) Start furnace and let run for 3 minutes.
(6.) Measure time (in seconds) for gas meter to complete one revolution.
(7.) Refer to Table 2 for cubic ft of gas per hour.
(8.) Multiply gas rate (cu ft/hr) x heating value (Btu/cu ft).

EXAMPLE:
Btu/hr heating input Btu/cu ft times cu ft/hr
Heating value of gas 950 Btu/cu ft
Time for one revolution of 2-cu ft dial 72 seconds
Gas rate 100 x 950 = 95,000 Btu/hr

(9.) The measured gas input must be within 2 percent of the rating plate input.
(10.) Proceed to item c to adjust manifold pressure.

⚠️ CAUTION

DO NOT retighten burner orifices. Obtain new orifices if orifice size must be changed.

f. Adjust gas input.
(1.) Remove regulator seal cap.
(2.) Turn adjusting screw counterclockwise to decrease input. Turn screw clockwise to increase input. DO NOT set manifold pressure less than 3.2- or more than 3.8-in. wc for natural gas. Make any major adjustments by changing main burner orifices.
(3.) When correct input is obtained, replace regulator seal cap.
(4.) Turn furnace gas valve control knob to PILOT.
(5.) Remove manometer and replace manifold pressure tap plug.

NOTE: Use propane-gas-resistant pipe dope. Do not use Teflon tape.
(6.) Turn furnace gas valve control knob to ON.

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### Table 2—Gas Rate Cu Ft/Hr

<table>
<thead>
<tr>
<th></th>
<th>Seconds for One Revolution</th>
<th>Size of Test Dial</th>
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<tr>
<td></td>
<td>1 Cu Ft</td>
<td>2 Cu Ft</td>
</tr>
<tr>
<td>1</td>
<td>369</td>
<td>720</td>
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<tr>
<td>11</td>
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<td>19</td>
<td>185</td>
<td>387</td>
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</table>

(10.) With main burners ignited, check pressure tap plug for gas leaks.

**ADJUST MAIN BURNER FLAME**

The main burner flame should be clear blue, almost transparent, with a well-defined inner cone. If there is too much primary air, the flame will be too defined, but with a tendency to float or lift off the burner ports. (See Fig. 6.)

Fig. 6—58GP and 56DP Burner

1. Allow unit to operate 5 minutes.
2. Burners are equipped with a primary air adjustment. Adjust each burner by closing the air shutter until a slight yellow tip appears on the flame; then open, just enough to clear yellow from the flame.
3. Replace control access door.
4. Check furnace through one operating cycle.
a. Set room thermostat below room temperature.
b. Ensure main burners and blower shut off. Pilot should remain lit.

5. Sign and date conversion responsibility label Part No. 310167-342, provided in kit, and attach to outside of blower compartment door.

6. Set room thermostat to desired temperature.
Table 3—Models 58DP and 58GP Orifice Size and Manifold Pressure for Correct Input Rate
(Tabulated data based on altitude up to 2000 ft and 25,000 Btuh per burner.)

<table>
<thead>
<tr>
<th>GAS HEAT VALUE (BTUH/CU FT)</th>
<th>SPECIFIC GRAVITY OF NATURAL GAS</th>
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