
INSTALLATION INSTRUCTIONS

Propane Gas Conversion Kit WGCK-1 Instructions for 0-6,000 Feet Elevation Installations

This propane gas conversion kit is to be used only when converting the following furnace models from natural to propane gas for 0-6,000' elevations.

**W24G, W30G, W36G, W42G, W48G, W60G
WG3S, WG4S, WG5S**

Parts Included		
Qty.	Part #	Description
5	9010-080	Orifice 1.45 mm (.0570" Dia.)
5	9010-081	Orifice 1.50 mm (.0590" Dia.)
5	9010-090	Orifice 1.35 mm (.0531" Dia.)
1	5603-006	Propane Gas Spring Kit
1	7960-490D	Installation Instructions
1	7961-511	Propane Gas Rating Plate Label
1	7961-073-0336	Installer Label
1	7961-614	WGCK-1 Information Label

WARNING

This conversion kit must be installed by a qualified service 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, an explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. 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.



Bard Manufacturing Company, Inc.
Bryan, Ohio 43506
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Manual: 7960-490D
Supersedes: 7960-490
Date: 4-18-16

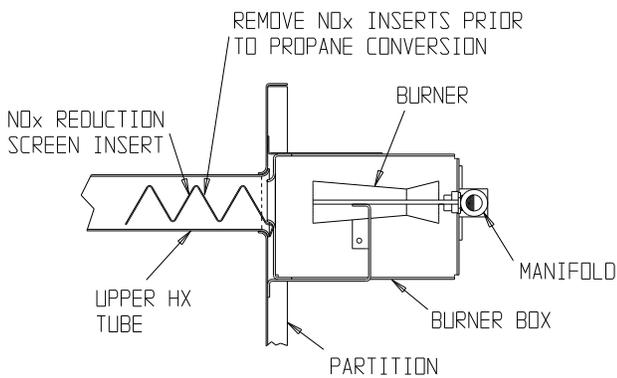
FURNACE CHANGEOVER TO USE PROPANE GAS (Direct Spark Ignition)

CAUTION: The furnace model being converted *must be* one of those shown on the cover sheet of these instructions.

! IMPORTANT

Low NOx models must have the mesh NOx inserts removed prior to converting from NATURAL to PROPANE gas. A low NOx model may be identified by an "N" in the unit model number: Example: WG48X-AN.

The removal of the NOx insert is achieved by removing the burner box which is attached by four (4) screws and removing the inserts (see below). This should be done between steps 5 and 10.



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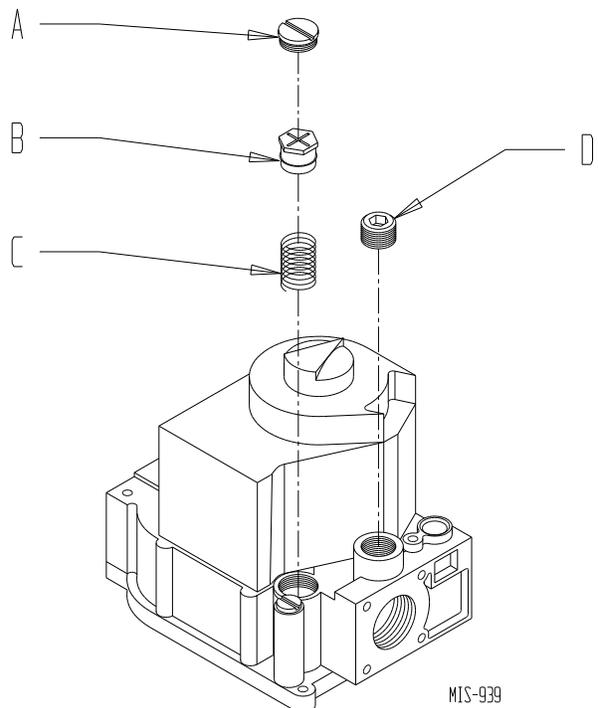
The furnace equipped for burning natural gas may be converted for burning propane gas by changing the size of the orifices in the main burner. (Hereafter, the term "orifice" is to be taken as synonymous for the spud insert that is used to direct and control the gas for the main burner by means of a small opening or orifice.) The gas valve pressure regulator is converted from NATURAL to PROPANE gas by changing the pressure regulator spring.

Suggested Procedure

- CAUTION:** The gas supply shall be shut off prior to disconnecting the electrical power before proceeding with the conversion.
- Remove burner access door.
- Remove four (4) hex head screws securing the manifold assembly to the burner box.
- Disconnect two wires from gas valve.

- Disconnect gas supply piping, if installed, from the gas valve and remove the valve and manifold assembly from the appliance.
- Secure the burner manifold in a vise and remove the multiple burner orifices. Use a box wrench for the multiple burner orifices. Replace with the proper orifices for propane gas, which are shown in Table 2.
- Refer to Figure 1 while working through the following steps:
 - Remove the SILVER slotted regulator cap "A", adjusting screw "B", and SILVER spring "C".
 - Insert the new RED propane gas spring. Install the adjusting screw "B" so that the top of the screw is flush (level) with top of regulator body, and then turn the screw clockwise 10 full turns.
 - Both the inlet (supply) and outlet (manifold) pressure must be checked with a manometer when the appliance is put back in service, and adjusted to the specifications shown in Step 8. Install BLACK slotted regulator cap "A" after all adjustments are completed.
 - Remove plug from horizontal section of gas manifold and insert pressure tap to measure manifold pressure, and plug "D" to measure supply pressure. After pressures are measured and adjusted to specifications, remove pressure taps and re-install plugs.

FIGURE 1



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8. Gas pressure specifications:
- Inlet (Supply) Pressure
12.0 Nominal W.C.
Minimum 11.0" – Maximum 13.0" W.C.
- Outlet (Manifold) Pressure
10.0" W.C.
- This pressure will result in correct input when the burners are orificed properly (based on 2500 BTU/cubic feet heat content for propane gas). See Step 9 for high altitude corrections.

Even though there is no way of mathematically determining the BTU rate of this furnace once it has been converted to propane gas, the input rate can be assured within 2% if the proper main orifice spuds are used, and the line and manifold pressures are adjusted properly.

9. These conversion kits are shipped with fixed gas orifices for use with propane gas and sized for 2500 BTU/cubic feet of gas. Make sure actual furnace gas input does not exceed furnace rating plate input. The orifices may need to be changed to get correct gas input. Whether they are changed or not depends on furnace input and the gas heat value at standard conditions. See Table 1 for decimal equivalent for all orifice sizes.

Ratings of gas utilization equipment are based on sea level operation and need not be changed for operation at elevation up to 6,000'. For operation at elevations above 6,000', unit input must be reduced and a different pressure switch is required. Gas Conversion Kit WGCK-2 is designed to accommodate installation for elevations from 6,001' – 10,000'. This kit may be purchased from the dealer.

TABLE 1
Conversion Chart – Drill Size to Decimal

Drill Size	1.35 mm	1.45 mm	1.50 mm
Decimal	.0531	.0570	.0590

All orifice sizes shown are in millimeters (mm).

10. Replace the manifold assembly into the furnace with the sheet metal screws. Reconnect the wires to the gas valve.

 CAUTION
<p>Before firing unit check to make sure that the igniter and sensor are in their proper relationship to the main burners as depicted in Figure 2.</p>

11. Test for gas leaks with strong soapy water.
12. Follow the lighting instruction on the furnace door.
- When the unit is operation normally the following ignition sequence will be observed:
- a. Call for heat.
 - b. Induce draft blower starts. Ignitor is energized and gas valve opens in 15 seconds. Burners must light and sense flame within 7 seconds.
 - c. Comfort air blower starts 30 seconds after main valve is energized.
13. Included with this kit are four identification labels to be affixed to the unit in the following manner:
- a. The information label, part number 7961-614, is to be affixed as closely as possible to the unit rating/serial plate.
 - b. The installer label, part number 7961-073-0336, is to be filled out and affixed to the unit in a location in the burner compartment.
 - c. Place "PROPANE GAS" label over the "NATURAL GAS" marking on the furnace serial plate at the "Equipped For Use With" location.
 - d. Place the yellow label, "Attention this valve has been converted for use with Propane Gas" in prominent position on the gas valve.

Heating input, and thus heating output, decreases with altitude. No orifice change is required up to 6,000' elevation and derate occurs naturally due to altitude impact. See Propane Gas Orifice and Altitude Table on following page for details.

Above 6,000' elevation orifice changes are required and capacity reductions are a function of altitude impact and orifice change. Pressure switch change is required above 6,000' elevation. For elevation above 6,000', use Kit WGCK-2.

TABLE 2
Propane Gas Orifice and Altitude Tables

Propane (LP) Derate Capacities											
WG Rated Input	Sea Level	1000	2000	3000	4000	5000	6000	7000	8000	9000	10,000
40,500	40,500	39,852	39,528	39,204	38,556	38,232	37,584	36,612	35,640	34,344	32,724
45,000	45,000	44,280	43,920	43,560	42,840	42,480	41,760	40,680	39,600	38,160	36,360
60,750	60,750	59,778	59,292	58,806	57,834	57,348	56,376	54,918	53,460	51,516	49,086
67,500	67,500	66,420	65,880	65,340	64,260	63,720	62,640	61,020	59,400	57,240	54,540
75,000	75,000	73,800	73,200	72,600	71,400	70,800	69,600	67,800	66,000	63,600	60,600
81,000	81,000	79,704	79,056	78,408	77,112	76,464	75,168	73,224	71,280	68,688	65,448
90,000	90,000	88,560	87,840	87,120	85,680	84,960	83,520	81,360	79,200	76,320	72,720
100,000	100,000	98,400	97,600	96,800	95,200	94,400	92,800	90,400	88,000	84,800	80,800
112,500	112,500	110,700	109,800	108,900	107,100	106,200	104,400	101,700	99,000	95,400	90,900
125,000	125,000	123,000	122,000	121,000	119,000	118,000	116,000	113,000	110,000	106,000	101,000

PROPANE (LP) GAS			
For Models	Propane Gas Conversion Kit		Use WGCK-1
W24G W30G W36G	Factory Standard Input	Gas Heat Value BTU/Cu. Ft.	Up to 6000' Install Orifice
	22500 BTU Per Burner	2500	1.45
		Pressure Switch	Standard (.55)
WG3S	Optional 10% Field Con- verted Derate	Gas Heat Value BTU/Cu. Ft.	Up to 6000' Install Orifice
	20250 BTU Per Burner	2500	1.35
		Pressure Switch	Standard (.55)

PROPANE (LP) GAS			
For Models	Propane Gas Conversion Kit		Use WGCK-1
W42G W48G W60G	Factory Standard Input	Gas Heat Value BTU/Cu. Ft.	Up to 6000' Install Orifice
	25000 BTU Per Burner	2500	1.50
		Pressure Switch	Standard (.55)
WG4S WG5S	Optional 10% Field Con- verted Derate	Gas Heat Value BTU/Cu. Ft.	Up to 6000' Install Orifice
	22500 BTU Per Burner	2500	1.45
		Pressure Switch	Standard (.55)

All orifice sizes shown are in millimeters (mm).

FIGURE 2
Burner Assembly

