

# Instructions for Williams Gas Appliance Conversion Kits 8935, 8936, 8937 & 8938 Liquid Propane Gas to Natural Gas

## KIT CONTENTS:

- |                               |                       |
|-------------------------------|-----------------------|
| (1) Pressure Regulator        | (2) Conversion Labels |
| (4) Pilot Orifices (L.P. Gas) | (2) Screws            |
| (1) Burner Orifice (L.P. Gas) | (1) L.P.G. Tag        |

Kit number 8935, 8936, 8937 & 8938 is for use with model numbers: 2001621; 2001622; 3501521; 3501921; 3502521; 33502521; 3502921; 3501522; 3501922; 3502922; 5001521; 5001921; 5002521; 5002921; 5002921; 5001522; 5001922; 5002522; 5002922; 6501521; 6501921; 6501522; 6501922; 6502521; 6502921; 6502522; 6502922 MANUFACTURED FOR USE WITH PROPANE GAS AND EQUIPPED WITH GAS VALVE PART NUMBER 6003 ONLY.

**WARNING:** This conversion kit shall 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, 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.

**WARNING:** The Williams conversion kit numbers 8935, 8936, 8937, 8938 can **only** be used on model gas valve 6003. It must never be used on any other brand of gas valve. **DO NOT USE THE CONVERSION KIT ON ROBERTSHAW BRAND GAS VALVES.** If you are unable to determine that gas valve model number, do not convert your furnace.


MANUFACTURED FOR USE WITH PROANE GAS AND EQUIPPED WITH GAS VALVE PART NUMBER 6003 ONLY.

**CAUTION:** The gas supply shall be shutoff prior to disconnecting the electrical power (if equipped with blower) before proceeding with the conversion.

## CONVERSION INSTRUCTIONS- L.P. GAS TO NATURAL GAS

1. Shut off gas to the furnace.
2. Shutoff electric to the furnace (if equipped with blower).
3. Disconnect gas supply line from control valve.
4. Disconnect thermostat wires from control valve.

**CAUTION:** Label all wires prior to disconnection for proper reconnection

5. Remove burners by unscrewing (2) Phillips head screws.
6. Use a boxed end wrench and remove the main burner orifices
7. Remove pilot orifices from pilot and replace with orifice provided in this kit. See Figure 2A,B.
8. To replace the pressure regulator on the gas valve. Refer to Figure 1.
9. Push in gas control knob slightly and turn clockwise  to "OFF"
10. Remove (2) screws from the pressure regulator.

11. Lift the pressure regulator and gasket from valve and discard.
12. Install the new gasket, pressure regulator and (2) screws from this conversion kit.  
IMPORTANT: Discard old gasket and screws. Do not reuse.
13. IMPORTANT: Check the location of the pilot to the burner. See Figure 4.
14. Reassemble the furnace by following Steps 1 thru 5 in reverse order.

### **IMPORTANT: LABEL PLACEMENT**

After conversion is completed, the large conversion label provided in this kit must be filled out completely (using chart information). Attach small conversion label to gas valve, and attach large data conversion label to inside of the casing door next to rating plate. Remove "Natural Gas" tag from burner and replace with "Liquid Propane Gas" tag provided with this kit. This is necessary to provide information for future servicing. Failure to do so could result in property damage, personal injury or death.

Refer to the Lighting and Operating Instruction Plate located in control area of furnace for instructions on lighting the burner.

### **WARNING**



Any adjustments must be performed by a qualified service technician only. Improper adjustments could result in property damage, personal injury or death. The following information is provided for use by a qualified service technician.

With main burner in operation, check all pipe connections, pilot gas tubing and around pressure regulator for gas leaks with a rich soap and water solution. Bubbles indicate gas leakage. Never use a match or open flame to test for leaks. Correct even the slightest leaks at once before using furnace.

### **ADJUST PILOT BURNER**

**NOTE:** Pilot gas may need adjustment depending on inlet pressure, increase or decrease to obtain proper setting.

Pilot flame should surround 3/8 inch to 1/2 inch of the generator tip. To adjust, remove pilot adjustment cap.

1. Remove screw cover over pilot adjusting screw.
2. Insert small screwdriver. Adjust flame as needed. Turn screw counter clockwise  to increase flame or clockwise  to decrease flame.
3. Turn thermostat to highest setting. Main burner should light quickly and smoothly. Turn thermostat to lowest setting. Main burner should go out. Pilot should remain lit.
4. Replace screw cover over pilot adjusting screw.

### **WARNING: DANGER OF PROPERTY DAMAGE, BODILY INJURY OR DEATH.**

Liquid petroleum (L.P.) is heavier than air and it will settle in any low area, including open depressions, and it will remain there unless area is ventilated. Never attempt startup of unit before thoroughly ventilating area. The surface of the furnace is hot during operation. Keep children, clothing, furniture and flammable material away from it. Do not store or use gasoline or other flammable liquids or vapors near the furnace.

## CHART



### TO BE USED ON CONVERSION LABEL

KIT NO.	MODEL NO. ON RATING PLATE	NEW MODEL NO.	NEW INPUT BTU/HR	NEW HEATING CAPACITY TU/HR	NEW ORIFICE SIZE
7681	2001622	2001621	20,000	16,000	#56
7682	3501522; 3501922;3502522; 3502522; 3502922	3501521; 3501921; 3502521; 3502921	35,000	26,250	#54
7683	5001522; 5001922; 5002522; 5002922	5001521; 5001921; 5002521; 5002921	50,000	37,500	#47
7684	6201522;6501922; 6502522; 6502922	6501521; 6501921; 6502521; 6502921	65,000	50,400	#43

After conversion is completed, the large conversion label provided in this kit must be filled out completely (using chart information). Attach small conversion label to gas valve, and attach large data conversion label to inside of casing door next to rating plate. Remove "Natural Gas" tag from burner and replace with "Liquid Propane Gas" tag provided with this kit. This is necessary to provide information for future servicing. Failure to do so could result in property damage, personal injury or death.

### CHECK GAS PRESSURE

The minimum inlet pressure in the in the gas supply should be 11.0" for Propane Gas. The maximum inlet pressure should never exceed 13.0". This should be checked at the 1/8" inch N.P.T. plugged tapping in the supply line with a manometer.

The manifold pressure for this appliance is 10.3" w.c. for Propane Gas. Check with a manometer at the pressure tap on the control valve. To adjust pressure, remove cap from regulator and turn regulator adjustment screw on the control valve. To adjust pressure, remove cap from regulator and turn regulator adjustment screw clockwise  to increase and counter clockwise  to decrease pressure.

## RATE VERIFICATION

Refer to the lighting and Operating Instruction Plate located in control area of furnace for instructions on lighting the pilot.



1. Make certain there is no gas flow through the meter other than to the appliance being checked. Other appliances must remain off and the pilots extinguished (or their consumption deducted from the meter reading).
2. With gas control knob in "ON" position, cycle main burner on and off several times by means of thermostat to stabilize pressure regulator valve (PRV) diaphragm.
3. With second hand on watch, carefully clock gas meter to determine exact rate of gas flow to main burner in cubic feet per hour (see CONVERSION TABLE below).
4. Compare actual input with manufacturer's recommended hourly input stamped on rating plate. Convert BTU per hour input rating to cubic feet of gas per hour (cfh) by using the following formula.

Where as:

PRV = Pressure Regulator Valve       $\frac{\text{Input Rating in BTU per Hour}}{\text{BTU Content of Gas per cu ft}} = \text{Cubic Feet of Gas per Hour}$

MJ= Megajoule       $\frac{\text{Input Rating in MJ/hr}}{\text{MJ of Gas per m}^3} = \text{m}^3/\text{hr}$

M<sup>3</sup>= Metric Cube

5. If actual gas flow (cfh) does not conform to manufacturer's recommended input rating (cfh of BTU converted to CFH), a limited adjustment of the PRV may be made. Turn PRV adjusting screw clockwise  to increase or counter clockwise  to decrease gas flow. Burner input must not exceed nameplate rating.
6. Replace cap screw in PRV adjustment stack. Turn gas supply to other appliances back on and re-light all pilots.
7. Place furnace in operation and observe through at least one complete cycle to be sure all controls are operating satisfactorily.

**CONVERSION TABLE**

TIME Sec	FLOW Cfh	FLOW M3/hr	TIME Sec	FLOW Cfh	FLOW Cfh	TIME Sec	FLOW Cfh	FLOW M3/hr
40	90	2.55	56	64	1.81	88	41	1.16
41	88	2.50	57	63	1.78	92	39	1.10
42	86	2.44	58	62	1.76	96	38	1.08
43	84	2.38	59	61	1.73	100	36	1.02
44	82	2.32	60	60	1.70	105	34	.96
45	80	2.27	62	58	1.64	110	33	.93
46	78	2.21	64	56	1.59	115	31	.88
47	77	2.18	66	54	1.53	120	30	.85
48	75	2.12	68	53	1.50	125	29	.82
49	73	2.07	70	51	1.44	130	28	.79
50	72	2.04	72	50	1.42	135	27	.76
51	71	2.01	74	49	1.39	140	26	.74
52	69	1.95	76	47	1.33	150	24	.68
53	68	1.93	78	46	1.30	160	23	.65
54	67	1.90	80	45	1.27	170	21	.59
55	65	1.84	84	43	1.22	180	20	.57

For ½ cu. ft. per revolution of meter dial, multiply flow rate by 2.

For 2 cu. ft. per revolution of meter dial, divide flow rate by 2.

**IMPORTANT: LEAVE THESE INSTRUCTIONS WITH THE HOMEOWNER.**

**Replacement Parts List**

2001621; 2031621; 2051621; 2001622; 2031622; 2051622 Models

No.	Description	2001621; 2031621; 2051621	20011622; 2031622; 2051622
1.	Wrapper Assembly	K000275	K000275
2.	Draft Diverter Assembly	K000274	K000274
3.	Combustion Chamber	K000279	K000279
4.	Base Plate	K000265	K000265
5.	Valve Bracket	K000850	K000850
6.	Control Valve	P322660	P232011
7.	Burner	K000851	K000851
8.	Orifice Fitting	P500086	P500086
9.	Burner Orifice	P322915	P501771
10.	Pilot & Generator Assembly	P501618	P501617
11.	Electrode	P322276	P322276
12.	Igniter Bracket	7A189	7A189
13.	Vent Safety Switch	P500406	P500406
14.	Thermostat	P322016	P322016
16.	Wire Assembly	P500409	P500409
17.	Manual Spark Igniter	P285500	P285500
18.	Manifold Plate	K000852	K000852
19.	Manifold Assembly	K000848	K000848

Note: Screws, bolts and washers are standard hardware and may be purchased locally.

MANUFACTURED FOR: WILLIAMS FURNACE COMPANY, COLTON, CA USA (909)825-0993  
 6003 NATURAL 4"W.C. MAX ½ P.S.I. OR MILLIVOLT SYSTEM ONLY.  
 REPLACEMENT PART no. P323011 Made in Taiwan.