P/N 240674 Rev.-1

ISO 9001
Registered Quality Management System

RAYPAK REPLACEMENT INSTRUCTIONS

MILLIVOLT GAS CONVERSION PROPANE TO NATURAL
MODELS 130, 185, 206, 265, 266, 335, 336, 405, 406

IMPORTANT NOTICE

These instructions are primarily intended for the use by qualified personnel specifically trained and experienced in the installation of this type of heating equipment and related system components. Installation and service personnel may be required to be licensed in some states. Persons not qualified shall not attempt to install this equipment nor attempt repairs according to these instructions.

DANGER - SHOCK HAZARD

Make sure electrical power to the heater is disconnected to avoid damage to components, potential serious personal injury or death. Make sure the gas to the heater has been shut off to the heater.

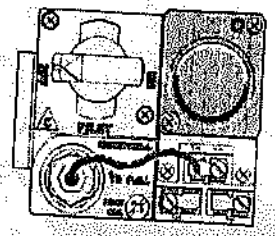
SCOPE:

The components in this kit will provide the below model sizes to be converted from propane to natural gas.

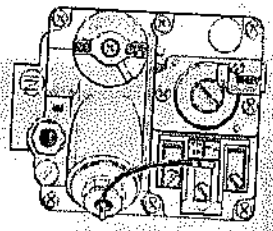
USAGE	MODEL SIZES	
	130, 185, 206, 265, 266	335, 336, 405, 406
KIT PART NUMBERS PROPANE GAS TO NATURAL GAS	005319F	005320F
	010419F	010420F
	011634F	

GENERAL INSTRUCTIONS:

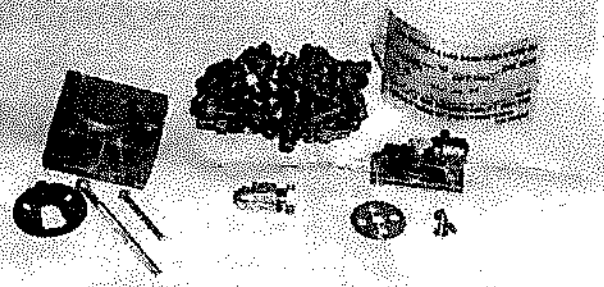
When a gas system is converted from propane gas to natural gas, the main burner orifices, the pilot orifice, and the pressure regulator assembly of the gas valve **must** be changed in order for the heater to operate properly. The pool heaters are equipped with either the Robertshaw or the Honeywell gas control components. Conversion instructions for both control components are included in this kit. Refer to the illustrations on the following pages to determine the type of gas valve used in the heater, then follow the conversion instructions corresponding to the gas valve systems used.



Honeywell Gas Valve



Robertshaw Gas Valve



P/N 005320F Kit Shown

Raypak

2151 Eastman Ave., Oxnard, CA 93030 805-278-5300 Fax 800-777-7026 www.raypak.com Technical support is available M-F, 5:30 AM to 5:00 PM PST, at 800-947-2975 or 800-627-2975

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PARTS LIST

Kit # 005319F Propane to Natural			Kit # 005320F Propane to Natural		
Part #	**Description**	**Qty**	**Part #**	**Description**	**Qty**
240674	Instructions	1	240674	Instructions	1
350080	Burner Orifice #51	19	350079	Burner Orifice #50	29
600002 F	Pilot Orifice .018	1	600002F	Pilot Orifice .018	1
600886 F	Gas Valve Regulator (Honeywell Valve)	1	600886F	Gas Valve Regulator (Honeywell Valve)	1
600998 F	Gas Valve Regulator (Robertshaw Valve)	1	600998F	Gas Valve Regulator (Robertshaw Valve)	1
900866	Conversion Data Decal	1	900866	Conversion Data Decal	1

Kit # 010419F Propane to Natural			Kit # 010420F Propane to Natural		
Part #	**Description**	**Qty**	**Part #**	**Description**	**Qty**
240674	Instructions	1	240674	Instructions	1
350078	Burner Orifice #49	18	350078	Burner Orifice #49	27
600002 F	Pilot Orifice .018	1	600002F	Pilot Orifice .018	1
600886 F	Gas Valve Regulator (Honeywell Valve)	1	600886F	Gas Valve Regulator (Honeywell Valve)	1
600998 F	Gas Valve Regulator (Robertshaw Valve)	1	600998F	Gas Valve Regulator (Robertshaw Valve)	1
900866	Conversion Data Decal	1	900866	Conversion Data Decal	1

Kit # 011634F Pr		
Part #	**Description**	**Qty**
240674	Instructions	1
350080	Burner Orifice #51	10
600002 F	Pilot Orifice .018	1
601802	Gas Valve Regulator	1
900866	Conversion Data Decal	1

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Gas Valve Regulator Conversion – Robertshaw

1. Make sure electrical power to nearby equipment and gas supply to heater have been shut-off.
2. Remove front door.
3. Disconnect gas line from gas valve.
4. Note location of gas valve pressure regulator and gas cock knob as shown in **Fig. 1.**
5. Depress gas cock knob and turn to "Off" position.
6. Remove two Phillips head screws from pressure regulator.
7. Remove existing pressure regulator and gasket. **Do Not** re-use gasket.
8. Before installing new pressure regulator, inspect gasket area and remove any foreign material.
9. Install new gasket and carefully position new pressure regulator to line up with screw holes.
10. Install and tighten screws evenly and securely.

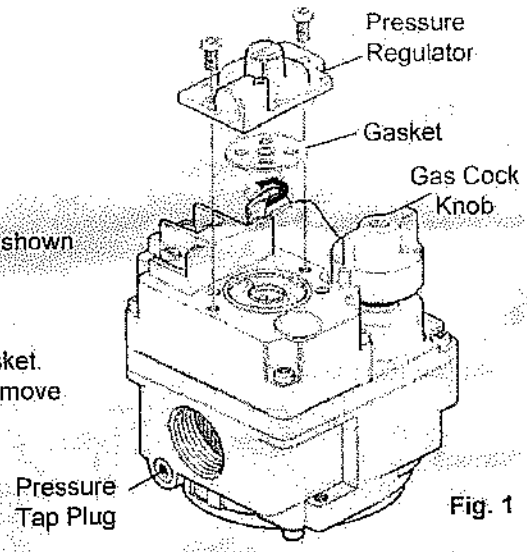

Fig. 1

Robertshaw Gas Valve

Gas Valve Regulator Conversion – Honeywell

1. Make sure electrical power to nearby equipment and gas supply to heater have been shut-off.
2. Remove front door.
3. Disconnect gas line from gas valve.
4. Note location of pressure regulator as shown in **Fig. 2.**
5. Remove two Phillips head screws from gas valve. Note of location of longer screw.
6. Remove existing pressure regulator and gasket. **Do Not** re-use gasket.
7. Before installing new pressure regulator inspect gasket area (also ports) and remove any foreign material.
8. Carefully press new gasket into circular recess of operator cavity.
9. Position new regulator over locating pin, and fasten with two screws provided.
10. Insert long screw in outside corner to extend through regulator and valve operator body.
11. Tighten screws evenly and securely.

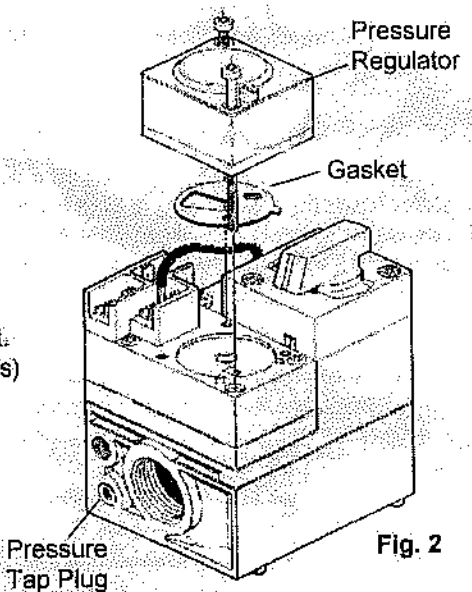

Fig. 2

Honeywell Gas Valve

Note: Conversion label supplied with this kit must be completely filled out and attached to heater in a location visible when all appliance panels are installed.

Date of Conversion

Authorizing Company Effecting Conversion

THIS APPLICATION HAS BEEN CONVERTED ON _____ TO _____ GAS, WITH
(DATE) (NAT./PRO.)
KIT NO. _____ BY _____
_____, WHO
ACCEPTS THE RESPONSIBILITY FOR THE CORRECTNESS OF THIS CONVERSION.

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TO REPLACE MAIN BURNER ORIFICES AND PILOT ORIFICE

1. Make sure electrical power to nearby equipment and gas supply to heater have been shut-off.
2. Remove front door.
3. Disconnect gas line from gas valve.
4. Remove two screws that mount burner tray to unit, and two screws that secure gas valve to jacket.
5. Disconnect wires that terminate at gas valve.
6. Slide burner tray out of heater.
7. Remove screws and burner hold down bracket as shown in **Fig. 3**.
8. Lift burners from slotted spacers and slide away from orifices.

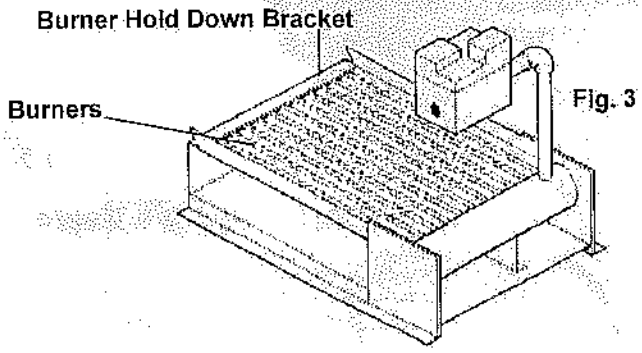

Fig. 3

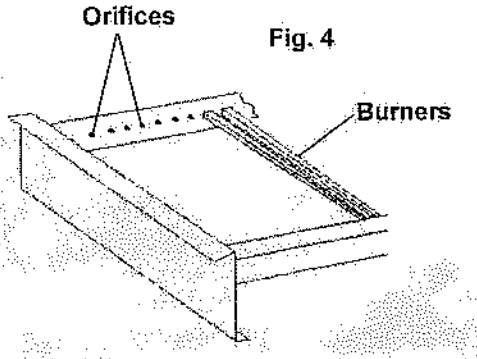

Fig. 4

9. Remove orifices and replace with new orifices provided with this kit. See **Fig. 4**.
   Note: Check proper size marked on orifice, check table on page 2 for proper orifice size.
10. Disconnect the pilot tubing at pilot burner. See **Fig. 5**.
11. Unscrew the pilot orifice from pilot burner and replace with orifice provided. See **Fig. 6**. Check proper size: 0.018 for natural gas. These are stamped on top or sides of pilot orifice.
12. Reverse above procedures to re-install pilot burner, main burners and burner tray.

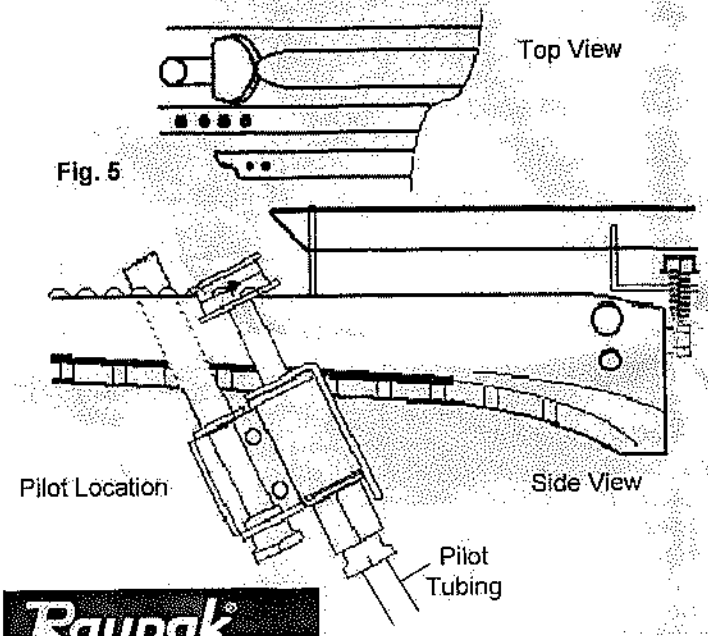

Fig. 5

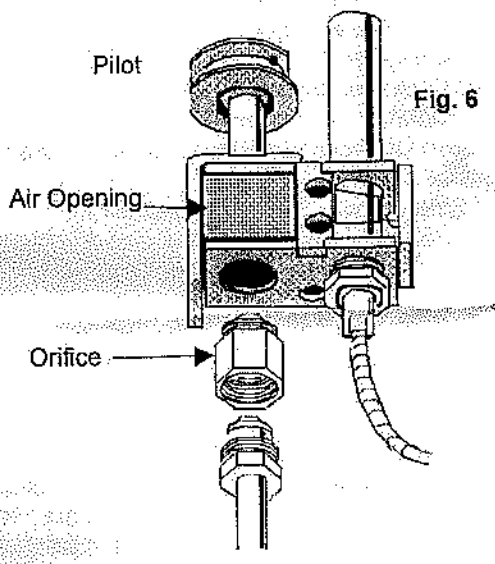

Fig. 6

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START-UP AND ADJUSTMENTS

1. Verify that gas supply to heater has been shut off. Remove pressure tap plug from gas line upstream of heater and from outlet side of gas valve and connect pressure gauges (manometers) to inlet and outlet pressure taps.
2. Follow lighting instructions provided on heater instruction plate.
3. With main burner "ON", test for gas leaks using soap solution around pressure regulator and gas connections.
4. With main burner "ON", turn gas pressure regulator adjustment screw to obtain proper operating manifold pressure.
5. Adjust pressure to 4" W.C. (for 185 to 406 models) and 3.5" W.C. for model 130A on natural gas.
6. Verify that inlet gas pressure under load conditions are within following ranges:

GAS TYPE	MAXIMUM PRESSURE	MINIMUM PRESSURE
NATURAL GAS	14" W.C.	7" W.C.

CHECKING GAS INPUT TO APPLIANCE

A. MANOMETER (PRESSURE GAUGE) METHOD

1. Turn gas control knob to "ON" position and start main burner. Cycle burner on and off several times by means of automatic valve operator to make certain control system is functioning normally.
2. With main burner on, read pressure gauge. If reading does not conform to manifold pressure indicated on appliance rating plate (in inches W.C.), adjust pressure regulator.

B. METER CLOCKING METHOD

1. Make certain there is no gas flow through (installation) gas meter other than to appliance being checked. Other appliances must remain off, and all pilots extinguished (or their consumption deducted from meter reading).
2. Cycle burner on and off several times by means of automatic valve operator to make certain control system is functioning normally then, with burner in operation, proceed to step 3.
3. Using second hand on watch, carefully clock gas meter to determine exact rate of gas flow to main burner in cubic feet per hour.
4. Compare actual input with appliance hourly input in chart on page six. Convert BTU per hour input rating to cubic feet of gas per hour (CFH) by using formula below:

Formula → $\frac{\text{INPUT RATING IN BTU PER HOUR}}{\text{BTU CONTENT OF GAS PER CU FT}} = \text{CFH}$

Example → $\frac{399{,}000 \text{ BTU INPUT}}{1{,}000 \text{ BTU CFT}} = 399 \text{ CFH}$

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INPUT RATING IN BTU PER HOUR

MODEL SIZE	INPUT RATING IN BTU PER HOUR
	NATURAL GAS
130	130,000
185	180,700
206	199,500
265	264,100
266	266,000
335	333,600
336	332,500
405	399,000
406	399,000

5. If actual gas flow (CFH) does not conform to appliance rating plate input rating (BTU converted to CFH) adjust pressure regulator.
6. Turn gas supply to other appliances back on and relight all pilots.
7. Pilot flame should envelop 3/8 to 1/2 inch of pilot generator. See **Fig. 7.**
8. Remove pilot adjustment cover screw.
9. Turn inner adjustment screw clockwise to decrease or counter clockwise to increase pilot flame.
   Note: Be sure to replace cover screw after adjustment to prevent poisonous gas leakage.

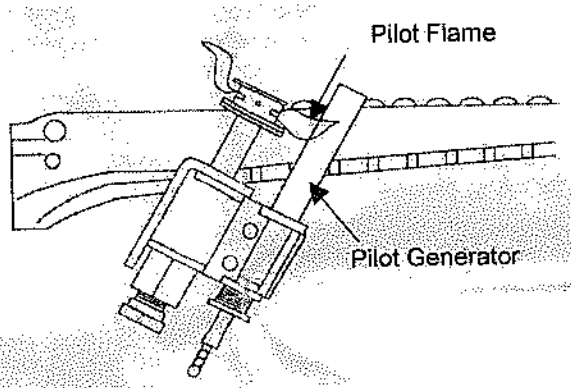

Fig. 7