

SELECTION AND INSTALLATION INSTRUCTIONS

conversion from natural gas to propane gas for models PD/BD, PDP/BDP, PV/BV, DJE/DHE, IJE/IHE with control codes 11-14 or 30-33 and built 4/91 or after, “D” and “I” series duct furnace/make up air units with digits 11 & 12 = N1 or S1

WARNING

1. All field gas piping must be pressure/leak tested prior to operation. Never use an open flame. Use a soap solution or equivalent for testing.
2. Gas supply shall be shut-off and the electrical power disconnected before proceeding with the conversion. Failure to do so could result in fire, explosion or electrical shock.

IMPORTANT

1. The use of this manual is specifically intended for a qualified installation and service agency. All installation and service of these kits must be performed by a qualified installation and service agency.
2. These instructions must also be used in conjunction with the Installation and Service manual originally shipped with the appliance being converted, in addition to any other accompanying component supplier literature.

As Modine Manufacturing Company has a continuous product improvement program, it reserves the right to change design and specifications without notice.

The propane kits appearing in this bulletin are for use with units which are going to be installed between 0 and 2000 ft. elevation. If a unit is to be installed at higher elevations, a special “high altitude” propane orifice kit must be ordered in addition to the propane conversion kits shown here. See Bulletin 75-535 for selection of “high altitude” orifice kits.

When converting units to propane at elevations over 2000 ft., the main burner orifices in the propane conversion kit must be replaced with the orifices from the “high altitude” orifice kit. The remaining components of the propane kit, those other than the main burner orifices, are still required to complete the conversion to propane gas, regardless of the elevation at which the unit is installed.

Identifying the Model, Control Code and Date of Manufacture

Figure 2.1, shown on the next page, is an example of a typical serial plate. Markings pertinent to verifying correct application of the conversion kit are identified and explained in detail. **All prerequisites must be satisfied before the unit is deemed convertible.**

1. The first two or three characters in the model number box are letters. These letters identify the style of the heater. If any of the following model prefixes appear in this box, the unit is potentially convertible: PD/BD, PDP/BDP, PV/BV, DJE, IJE, DFG, IFG, NFG, DFP, IFP, DFS, IFS.
2. Next, the number 11, 12, 13, 14, 30, 31, 32, or 33 must be the control code or digits 11 and 12 of the model number are N1 or S1. This is item (2) in Figure 2.1. Any other number code disqualifies the unit for conversion.
3. Item (3) in Figure 2.1 in the serial number box designates the date the unit was built. In Figure 2.1, the numbers 3601 are shown. This number is interpreted as the thirty sixth week of 2001. Prior to January 1995, the digits preceding the year represent month of manufacture. After January 1995, the (2) digits proceeding the year represent the week of manufacture. Any serial number dated 4/91 or after is acceptable for conversion.

NATURAL TO PROPANE CONVERSION KIT SELECTION GUIDE

Figure 2.1
Typical Serial Plate

Modine Manufacturing Company				UNIT HEATER FOR INDUSTRIAL / COMMERCIAL USE AÉROTHERME POUR USAGE INDUSTRIEL / COMMERCIAL				
1221 Magnolia Ave., Buena Vista, VA 24416; Phone: 540-261-2166						Made in U.S.A.		
MODEL NUMBER NUMERO DE MODELE	PD 250AA0 11			MIN. INPUT BTU/HR DEBIT CALORIFIQUE MIN. BTU/HEURE	VOLTS	AMPS	PHASE	HERTZ
SERIAL NUMBER NUMERO DE SERIE	30011013601-0978			MIN. INLET PRESS. FOR PURPOSE OF INPUT ADJUSTMENT PRESSION D'ALIMENTATION EN GAZ MIN. ADMISE	6.0	IN. W.C. P.O.C.D'E	CATEGORY CATEGORIE	DESIGN COMPLIES WITH UNIT HEATER STANDARD: CATEGORIE
TYPE OF GAS TYPE DE GAZ	Natural			MANIFOLD PRESSURE PRESSION A LA TUBULURE D'ALIMENTATION	3.5	IN. W.C. P.O.C.D'E	APPROVALS	CGA-2.6-M96
				MAXIMUM EXTERNAL STATIC PRESSURE PRESSION STATIQUE EXTERIEUR MAXIMUM	0.0	IN. W.C. P.O.C.D'E	ACCEPTED BY CITY OF NEW YORK:	MEA 293-96-E
	0 TO 2000 FT. 0 ET 610 M.	(IN CANADA) 2000 TO 4500 FT. 610 ET 1370 M.	MINIMUM CLEARANCE TO COMBUSTIBLE MATERIAL DÉGAGEMENT MINIMUM POUR MATIÈRES COMBUSTIBLES			PENNSYLVANIA APPROVAL NO. 3465		

Selection of the Proper Kit

Referring to the model number box on the serial plate in Figure 2.1 (above), the prefix letters and succeeding numbers which are needed for kit selection are PD250.

The letters identify the model, and the numbers indicate the size of the unit. Referring to Tables 2.1, 2.2, or 2.3 locate the model type column (i.e. PD, BD, etc.). Working with Table 2.1 and the

row labeled PD/BD, move right searching for the proper model size. Read the kit number suffix directly below the model size for a PD250. Add this suffix (-9) to the base part number for the propane conversion kit shown in the heading of Table 2.1. The correct kit for a PD250 with Control Code 11, is 3H034670-9.

Table 2.1
Natural Gas to Propane Gas Conversion Kit Selection Guide

Base Kit Number – 3H034670...(Choose correct suffix -1, -2, -3, etc...)

Model Type	Model Size											
PD/BD, PDP/BDP	30	50	75	100	125	150	175	200	250	300	350	400
Suffix	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12

Table 2.2
Natural Gas to Propane Gas Conversion Kit Selection Guide (For units manufactured after April 1, 1991)

Base Kit Number – 3H33749...(Choose correct suffix -1, -2, -3 etc., per instructions, before ordering propane conversion kits.)

Model Type	Model Size														
PAE/BAE	30	50	75	100	125	145	–	175	200	225	–	250	300	350	400
Suffix	-1	-2	*-14	-4	-5	-6	–	-7	-8	-9	–	-10	-11	-12	-13
PV/BV	30	50	75	100	125	145	–	175	200	–	–	250	300	350	400
Suffix	-1	-2	-14	-4	-5	-6	–	-7	-8	–	–	-10	-11	-12	-13
DJE/DHE	–	–	75	100	125	–	150	–	200	225	–	250	300	350	400
Suffix	–	–	-14	-15	-16	–	-6	–	-8	-17	–	-10	-11	-18	-13

* For units manufactured after September, 1993. For units manufactured prior to this date, consult the factory.

Table 2.3
Natural Gas to Propane Gas Conversion Kit Selection Guide

Base Kit Number – 3H036483...(Choose correct suffix -1, -2, -3 etc...)

Model Type	Model Size										
DFG/IFG/NFG, DFP/IFP, DFS/IFS	75	100	125	150	175	200	225	250	300	350	400
Suffix	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11

INSTALLATION

Installation of Kit

Conversion of any unit is the responsibility of, and the risk of the person making the conversion.

WARNING

1. All field gas piping must be pressure/leak tested prior to operation. Never use an open flame. Use a soap solution or equivalent for testing.
2. Gas supply shall be shut-off and the electrical power disconnected before proceeding with the conversion. Failure to do so could result in fire, explosion or electrical shock.

General

1. Shut off gas supply to the unit. Disconnect the electrical power to the unit.
2. For codes 11, 12, 13, 14 or if digit 11 of the model number is S or T and digit 12 is 1, disconnect the pilot gas tube and thermocouple lead at the combination gas control. For codes 30, 31, 32, 33 or if digit 11 of the model number is N or P and if digit 12 is 1, disconnect the pilot gas tube at the combination gas control and the ignition cable(s) at the ignition control.
3. Remove burner assembly.

For PD/BD, PDP/BDP, and PV/BV Models

Lower bottom pan to expose burner and manifold (see Figure 3.1).

For codes 11, 12, 13, or 14, disconnect pilot gas tube and thermocouple lead at the controls. For codes 30, 31, 32, or 33, disconnect the pilot gas tube at the combination gas control and the ignition cable(s) at the ignition control.

Remove the two burner retaining pins holding the burner in place (see Figure 3.2). The burner can then be easily lowered from the unit. In replacing the burner, be certain that the slots at the front of the burner are located properly on their shoulder rivets and that the burner retaining pins are put back into their proper locations.

After removing burner assembly, proceed with step #4, page 4.

For Indoor Duct Furnace Models

On DHE/IHE models, lower the controls enclosure cover and disconnect the pilot gas supply line and thermocouple at the gas valve. On models DJE/IJE, DFG/IFG/NFG, DFP/IFP, DBG/IBG, DCG/ICG, DBP/IBP, and DCP/ICP models, the gas controls are exposed. On models DFS/IFS, remove lower access door to expose gas controls and burner.

The burner may be removed from either side of the duct furnace. To remove the burner, remove all of the sheet metal screws holding the side burner access panel in place. (**Note:** with the side access panel screws removed, the access panel is free to move, be careful not to drop the panel.)

Figure 3.1
Hinged Bottom for Burner Service

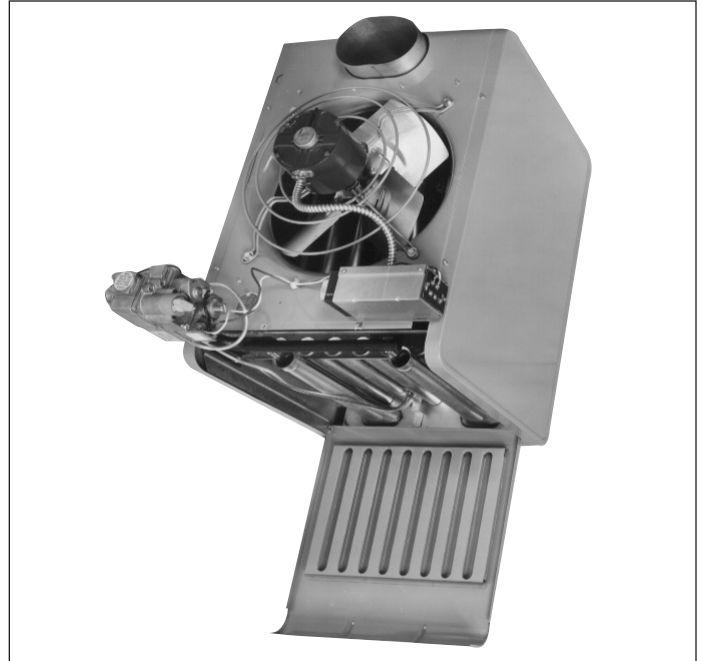


Figure 3.2
Manifold Adjustment

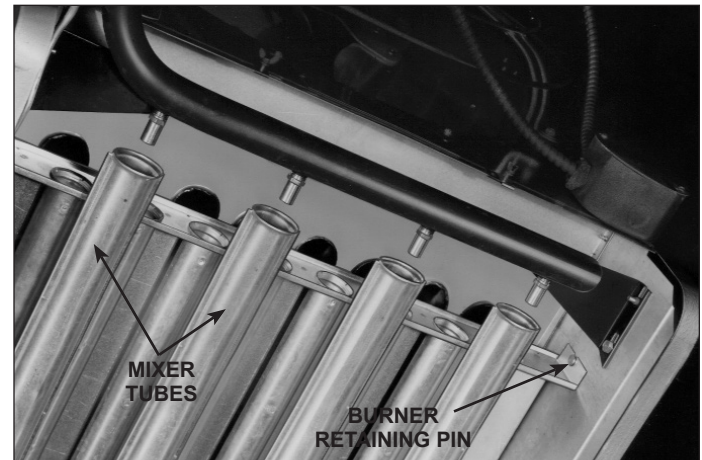
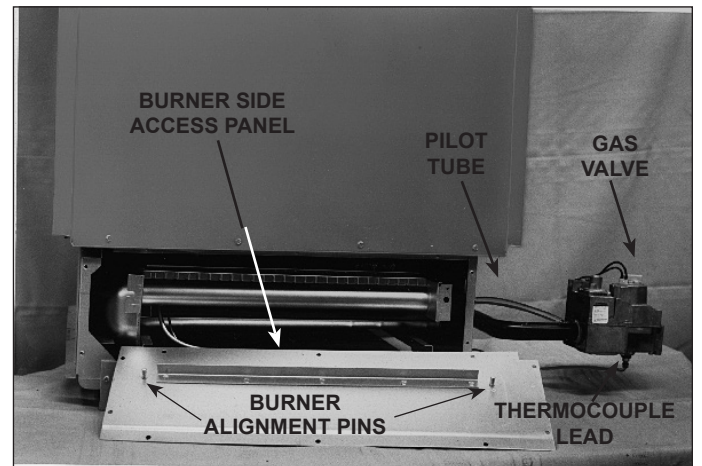


Figure 3.3



INSTALLATION

Remove the side access panel to expose the furnace burner assembly.

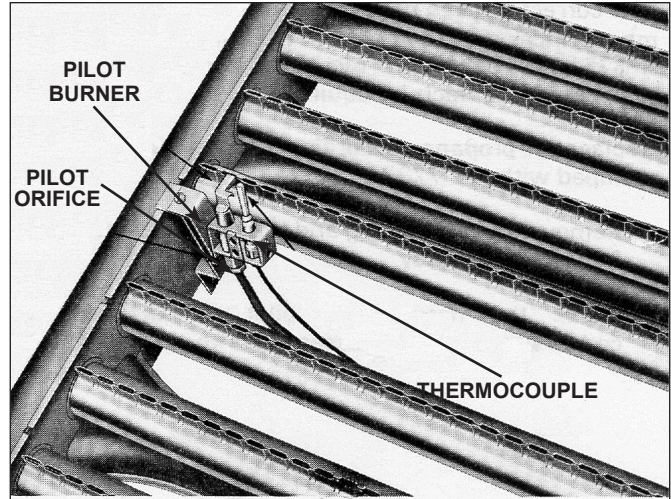
For DJE, IJE, DHE, and IHE carefully thread the pilot tube and the thermocouple leads through the combustion air slot (at the rear of the unit) into the burner box so they may be drawn out with the burner.

Slide the complete burner assembly out of the burner box. The complete burner and pilot assembly are now free for service (see Fig. 4.1).

To replace the burner, follow the above steps in reverse order, being careful to align the burner assembly properly on the alignment pins on the access panels on both sides of the duct furnace (see Fig. 3.3).

4. Remove pilot gas tube at the pilot, and exchange pilot orifice (see Figures 4.2 and 4.3) as follows:
 - For Robertshaw pilots, replace the pilot orifice stamped N18 with the pilot orifice supplied in the conversion kit stamped LP10.
 - For Honeywell pilots, replace the pilot orifice stamped BCR-18 with the pilot orifice supplied in the conversion kit stamped BBR - 11 or 12.
 - For PSE pilots, replace the pilot orifice stamped 018N with the pilot orifice supplied in the conversion kit stamped 012LP.

Figure 4.3 - Pilot Assembly



5. Verify that pilot is oriented to main burner as shown in Fig. 4.3.
6. Exchange main burner orifice(s) and install air shutters (see Figure 4.4). Check the orifice number stamped on each orifice. Be sure that this number is the same number indicated on the kit parts list for the kit being installed. (See Table 5.1 or 5.2).

Figure 4.1 - Burner Assembly

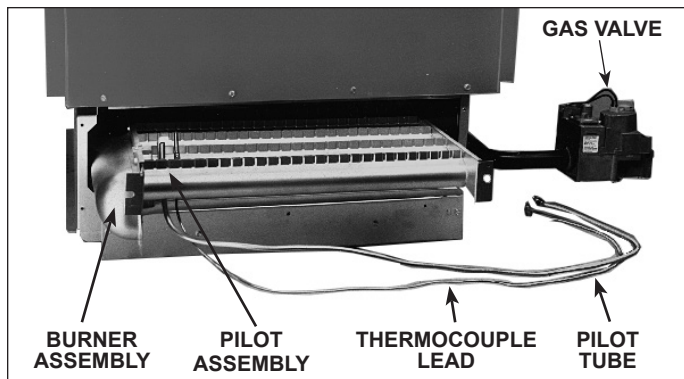


Figure 4.4 - Burner Orifices and Air Shutters

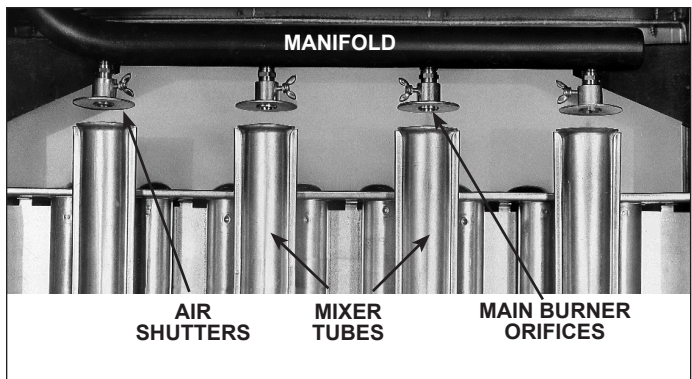
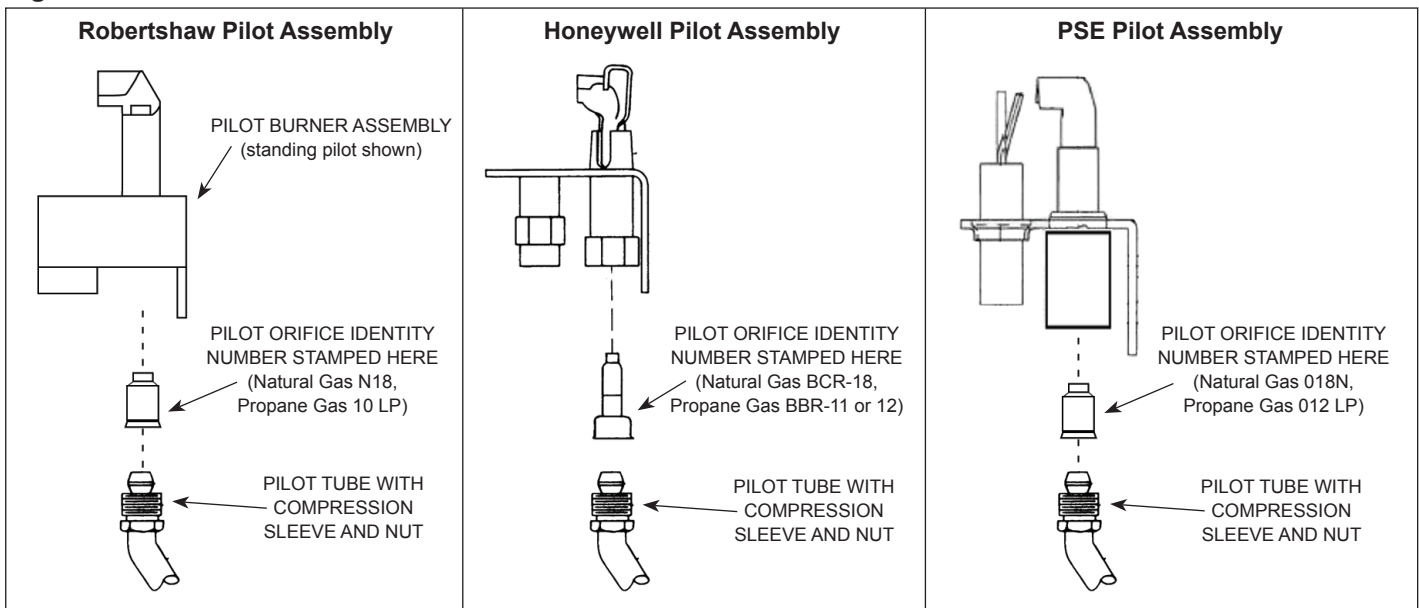


Figure 4.2 - Pilot Assemblies & Orifices



INSTALLATION

Table 5.1 – Conversion Kit Parts List, Natural to Propane for Base Kit 3H034670-xxxx (Refer to Table 2.1)

	Qty	Part Number	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12
Regulator Kit for Honeywell VR8200, VR8300, VR8204, VR8304	1	393691		x	x	x	x	x	x	x	x	x	x	x
Regulator Kit for Honeywell V800, VR800, VR8440	1	391937											x	x
Regulator Kit for Robertshaw 7200ER, 7200IPER	1	78776	x	x	x	x	x	x	x	x				
Regulator Kit for Robertshaw 7000BER/BDER/ERHC/DERHC	1	85478									x	x	x	x
Regulator Kit for Robertshaw 7222IPER	1	54302	x	x	x	x	x							
Regulator Kit for White-Rogers 36E, 36C	1	92-0659	x	x	x	x	x	x	x	x	x	x	x	x
Main Burner Orifice Drill Size	()	5H54751 Qty	52 (1)	45 (1)	39 (1)	45 (2)	43 (2)	39 (2)	43 (3)	42 (3)	36 (3)	39 (4)	41 (5)	42 (6)

Table 5.2 – Conversion Kit Parts List, Natural to Propane for Base Kit 3H033749-xxxx (Refer to Table 2.2)

	Qty.	Part Number	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18
Regulator Kit for Honeywell VR8200 VR8300, VR8204, VR8304	1	393691						X		X		X		X	X	X	X	X		
Regulator Kit for Honeywell V800, VR800, VR8440	1	391937	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Regulator Kit for Robertshaw 7200ER, 7200IPER	1	78776									X	X	X	X						
Regulator Kit for Robertshaw 7000BER/BDER/ERHC/DERHC	1	85478	X	X	X	X	X	X	X	X										
Regulator Kit for Robertshaw 7222IPER	1	54302	X	X		X	X	X	X	X	X	X	X	X	X	X				X
Main Burner Orifice Drill Size	()	5H54751B... Qty.	52 (1)	45 (1)	49 (2)	45 (2)	42 (2)	45 (3)	43 (3)	40 (3)	43 (4)	42 (4)	43 (5)	39 (5)	40 (6)	37 (1)	45 (2)	48 (3)	37 (3)	43 (6)
Carton Label	1	5H73133C...	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Parts Common To Kits: (Table 5.1 and Table 5.2)		Description																		
		Honeywell Pilot Orifice								1										Orifice Stamp BBR-11
		Robertshaw Pilot Orifice								1										Orifice Stamp 10 LP
		PSE Pilot Orifice								1										Orifice Stamp 012 LP
		Air Shutter								Same As Main Burner Orifice Qty.										3H20634A2
		Gas Designation Disc								1										5H604841A
		Conversion Kit Rating Plate								1										5H73734A
		Instruction Sheet								1										5H72298A

Table 5.3 – Conversion Kit Parts List, Natural to Propane for Base Kit 3H036483-xxxx (Refer to Table 2.3)

	Qty.	Part Number	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11
Regulator Kit for Honeywell VR8204, VR8200A, VR8300A	1	5H71926A2	X	X	X	X	X	X	X	X	X	X	X
Regulator Kit for Honeywell V800A	1	5H7057A2											X
Regulator Kit for Robertshaw 7200IPER, 7200ER	1	5H73135A2	X	X	X	X	X	X					
Regulator Kit for Robertshaw 700BDER, 700DERHC, 7000BER, 7000ERHC	1	5H73134A2								X	X	X	X
Regulator Kit for White Rodgers 36E36, 36C38, 36C03	1	5H73134A2	X	X	X	X	X	X	X	X	X	X	X
Main Burner Orifice Drill Size	()	5H54751B Qty	37 (1)	45 (2)	42 (2)	45 (3)	43 (3)	40 (3)	37 (3)	42 (4)	37 (4)	43 (6)	42 (6)
Carton Label	1	5H78020B	1	2	3	4	5	6	7	8	9	10	11
Parts Common To Kit: (Table 5.3)		Description											
		Robertshaw Pilot Orifice								1			
		Air Shutter								Same As Main Burner Orifice Qty.			
		Gas Designation Disc								1			
		Conversion Kit Rating Plate								1			
		Instruction Sheet								1			
													5H71962A2
													3H20634A2
													5H604841A
													5H73734A
													5H72298A

INSTALLATION

7. Reinstall the burner assembly making certain that the retaining pins (and clips) are replaced and the burner is correctly positioned.
8. For codes 11 or 12 or if digit 11 of model number is S and digit 12 is 1, reconnect the pilot gas tube and thermocouple at the combination gas control. For codes 30 or 31 or if digit 11 of model number is N and digit 12 is 1, reconnect the pilot gas tube at the combination gas control and the ignition cable(s) at the ignition control.
9. Modify the combination gas control regulator to use propane gas. Follow the instructions in the regulator kit to convert the combination gas control. Some conversion kits will have more than one regulator kit and they are specific to the manufacturer of the combination gas control (i.e. Honeywell, Robertshaw, etc.). Check the conversion kit Parts List, Table 5.1, 5.2, or 5.3, for application of the correct regulator kit. A second check can be made by finding the model number on the combination gas control and matching it with the correct kit. Do not attempt to substitute one regulator kit for another.
10. Affix the propane conversion label to the combination gas control. This label is supplied with the regulator conversion kit (see Figure 6.2).
11. Affix the conversion Rating Plate adjacent to the unit's original rating plate (see Figure 6.3). Be sure that all blanks on the label are completely filled in (date of conversion, kit number, and organization/individual performing the conversion).
12. Remove the natural gas designation disc(s) and replace with the propane gas designation disc(s) included with the conversion kit (see Figure 7.1). Note that some units may use several discs.
13. Turn on the gas supply to the unit.
14. Check the line pressure of the gas supply upstream of the combination gas control either with a water column manometer or with a gauge with water column scale. The supply pressure should be no less than 12 in. w.c. and no more than 14 in. w.c.
15. Connect the manometer or (gauge) to the outlet pressure tap designated on the combination gas control.
16. Restore electric supply to unit.
17. Light unit following instructions on unit rating plate. Turn up thermostat setting to call for heat. After the main burners light, measure the outlet (manifold) pressure of the combination gas control. The outlet pressure should be 10 in. w.c. The outlet pressure can be adjusted at the combination gas control's regulator. Turning the adjustment clockwise will increase the outlet pressure while turning it counterclockwise will decrease the pressure.
18. Verify normal operating sequence of ignition system according to the Installation & Service Manual.
19. Check for leaks at all joints and connections in the gas lines. This is most easily done with a soap/water solution. Simply brush or spray some of the solution on a joint or connection and look for bubble formation.
20. Observe the main burner flame. The flame should have a well-defined conical shape with the base anchored to the burner port. If the flame appears to be lifting or rising above the burner port (see Figure 6.1), loosen the thumb screw on the air shutter and slide the shutter forward toward the mixer tube (see Figure 4.4).
21. If a majority of the flame is yellow, move the air shutter back away from the mixer tube. Slight yellow tips on a propane flame are common and are not objectionable. Adjust pilot flame. Follow instructions in Installation and Service Manual.

Figure 6.1
Lifting Flame

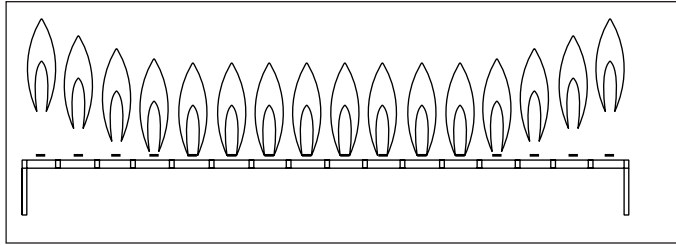


Figure 6.2
Typical Combination Gas Control Conversion Label



Figure 6.3
Conversion Rating Plate

**MODINE MANUFACTURING COMPANY
CONVERSION KIT RATING PLATE**

This appliance was converted on
to propane gas with kit no. _____
by: _____

_____ which accepts the responsibility that this conversion has been properly made. Use parts supplied by Heating Division of Modine Manufacturing Company. Conversion to be performed by a qualified service technician.

Appliance model number and input rating: See existing rating plate.

Inlet gas pressure: Minimum 12" W.C.
Maximum 14" W.C.

Manifold gas pressure: 10" W.C.

Burner orifice size: # _____ drill

Ce générateur d'air chaud a été converti le _____ pour fonctionner au gaz propane à l'aide de l'ensemble n° _____ par _____

_____ (nom et adresse de l'organisme qui a effectué la conversion), qui accepte l'entière responsabilité de la conversion.

5H73734A

INSTALLATION

Figure 7.1
Gas Designation Disc



22. See the original rating plate for the unit heater's rated input. The input can be verified at any time simply by checking for the correct main burner orifice size and manifold pressure. This information is presented on the conversion kit rating plate.

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75-511.13