

Installation Instructions

Gas Conversion Kit Propane-to-Natural for Standing Pilot and HSI Fixed-Speed Furnaces

KGAPN1601ALL

NOTE: Read the entire instruction manual before starting the installation.



This symbol → indicates a change since the last issue.

SAFETY CONSIDERATIONS

Installing and servicing heating equipment can be hazardous due to gas and electrical components. Only trained and qualified personnel should install, repair, or service heating equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on heating equipment, observe precautions in the literature, on tags, and on labels attached to or shipped with the unit, and other safety precautions that may apply.

Follow all safety codes. In the United States, follow all safety codes including the National Fuel Gas Code (NFPA No. 54-1999/ANSI Z223.1-1999. In Canada, refer to the National Standard of Canada, Natural Gas and Propane Installation Codes (NSCNGPIC), CAN/CGA-B149.1 and .2-M95.

Wear safety glasses and work gloves. Have a fire extinguisher available during start-up, adjustment procedures, and service calls.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the furnace and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. The words DANGER, WARNING, and CAUTION are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury, or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

 **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 furnace with 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.

 **AVERTISSEMENT:** Cette trousse de conversion ne doit être installée que par le représentant d'un organisme qualifié et conformément aux instructions du fabricant et à tous les codes et exigences pertinents de l'autorité compétente. Les instructions du présent guide doivent être suivies afin de réduire au minimum au risque d'incendie ou d'explosion de dommage matériels, de blessure ou de mort. L'organisme qualifié responsable de l'installation adéquate de cette trousse. L'installation n'est pas adéquate ni complète tant que le bon fonctionnement de l'appareil converti n'a pas été vérifié selon les instructions du fabricant fournies avec la trousse.

INTRODUCTION

This instruction covers the installation of gas conversion kit Part No. KGAPN1601ALL to convert the following furnaces from propane gas usage to natural gas usage. See the appropriate section for your furnace type.

- Section 1—Models 58DFA, 58GFA, 58PAP, 58RAP, 373LAD, 383KAD, 394HAD, 396HAD, GA1AAD, and GA2AAD Induced-Combustion, Standing Pilot, Fixed-Speed, Non-Condensing Furnaces. This kit is designed for use in furnaces with 65,000 through 150,000 Btuh gas input rates. The gas valve will be either a Honeywell VR8200H or VR8300H.

- Section 2—Models 58DHC, 58PAV, 58RAV, 58SSC, 58WAV, 58YAV, 58ZAV, 373LAV, 376CAV, 383KAV, 393AAV, 395CAV, 480BAV, 481BAV, GB1AAV, GB3AAV, PG8DAA, and PG8UAA Induced-Combustion, Hot-Surface Ignition, Fixed-Speed, Non-Condensing Furnaces. This kit is designed for use in furnaces with 45,000 through 155,000 Btuh gas input rates. The gas valve will be a White-Rodgers 36E with either an electric control switch or a manual control knob.
- Section 3—Models 58MCA, 58MSA, 58MXA, 340MAV, 345MAV, 350MAV, 490AAV, and PG9MAA Multipoise, Hot-Surface Ignition, Fixed-Speed, Condensing Furnaces. This kit is designed for use in furnaces with 40,000 through 140,000 Btuh gas input rates. The gas valve will be a White-Rodgers 36E with either an electric control switch or a manual control knob.

⚠ WARNING: Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions which could result in personal injury or death. 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. Failure to follow instructions could result in serious injury or property damage.

⚠ CAUTION: Gas supply **MUST** be shut off before disconnecting electrical power and proceeding with conversion.

DESCRIPTION AND USAGE

This kit is designed for use in the furnaces listed above. See Table 1 for kit contents. More parts are shipped in the kit than will be needed to complete conversion. When installation is complete, discard extra parts

→ **Table 1 — Kit Contents**

DESCRIPTION	PART NO.	QUANTITY
Regulator Spring Kit (Natural, Silver) for White-Rodgers 36E Valve	EF39ZW037	1
Regulator Spring Kit for Honeywell VR8200 Gas Valve	EF39ZW001	1
Pilot Orifice—Honeywell	LH32AN101	1
Main Burner Orifice (Drill Size No. 42)	LH32DB207	7
Main Burner Orifice (Drill Size No. 43)	LH32DB202	7
Main Burner Orifice (Drill Size No. 44)	LH32DB200	7
Main Burner Orifice (Drill Size No. 45)	LH32DB205	7
Conversion Rating Plate Label	326107-201	1
Conversion Responsibility Label	326107-203	1
Gas Control Conversion Label	326107-202	1
Installation Instructions	AG-GAPN-19	1

INSTALLATION

SECTION 1—MODELS 58DFA, 58GFA, 58PAP, 58RAP, 373LAD, 383KAD, 394HAD, 396HAD, GA1AAD, AND GA2AAD INDUCED-COMBUSTION, STANDING PILOT, FIXED-SPEED, NON-CONDENSING FURNACES

PROCEDURE 1—INSTALL PILOT ORIFICE

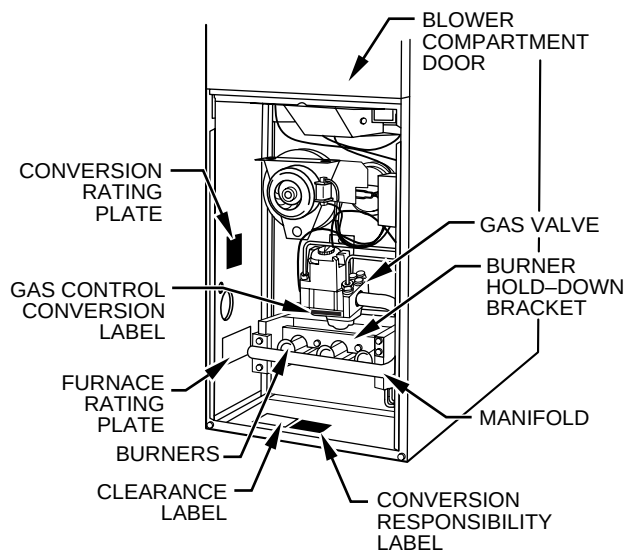
NOTE: See Figs. 1 and 2 for component location.

1. Turn off furnace gas and electrical supplies.
2. Remove furnace control access door.
3. Turn furnace gas valve control knob to OFF position.
4. Disconnect pilot gas tube and thermocouple from gas valve.
5. Remove pilot mounting screw and remove pilot assembly from burner and furnace.
6. Remove gas supply tube from pilot using a backup wrench.
7. Remove and discard propane gas pilot orifice from gas supply opening of pilot.
8. Install new natural gas pilot orifice provided in kit.
9. Reinstall pilot gas supply tube and mounting bracket on pilot. When tightening pilot tube, use backup wrench and turn pilot so that it will be at the same angle as before. (See Fig. 3.)

NOTE: DO NOT reinstall pilot at this time.

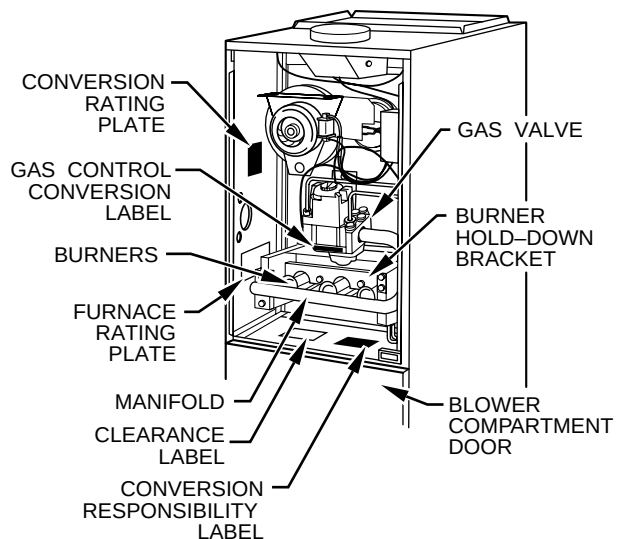
PROCEDURE 2—INSTALL MAIN BURNER ORIFICES

1. Remove burner hold-down bracket.
2. Remove burners from manifold.
3. Remove and discard orifices from manifold.
- 4. Determine natural gas orifice size for correct input at installed altitude by using Table 2 (for upflow models) or Table 3 (for downflow models). (See also conversion kit rating plate 326107–201.)
Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft.
In the U.S.A., the input rating for altitudes above 2000 ft must be reduced by 4 percent for each 1000 ft above sea level.
In Canada, the input rating must be derated by 10 percent for altitudes of 2000 ft to 4500 ft above sea level.



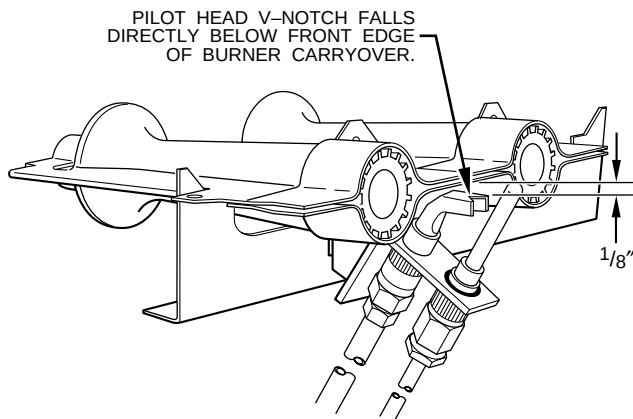
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Fig. 1—Downflow, Standing Pilot, Fixed-Speed, Non-Condensing Furnace Component and Conversion Label Location



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Fig. 2—Upflow, Standing Pilot, Fixed-Speed, Non-Condensing Furnace Component and Conversion Label Location



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Fig. 3—Position of Pilot to Burner

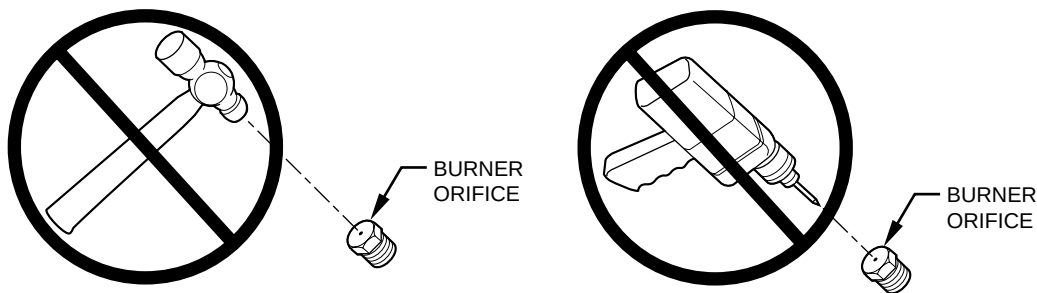
- Obtain yearly heat value average (at installed altitude) for local gas supply.
- Obtain yearly specific gravity average for local gas supply.
- Verify furnace model and select appropriate table. Table 2 can only be used for upflow, standing pilot, non-condensing furnaces. Table 3 can only be used for downflow, standing pilot, non-condensing furnaces.
- Find installation altitude in Table 2 (for upflow models) or Table 3 (for downflow models).

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 2 or 3.

- Find closest natural gas heat value and specific gravity in Table 2 (for upflow models) or Table 3 (for downflow models).
- Follow heat value line and specific gravity line to point of intersection to find orifice size and manifold pressure settings for proper operation at given natural gas condition.

EXAMPLE: (Using Table 2 at 0—2000 ft altitude)
Heat value 1050 Btu/cu ft
Specific gravity 0.62
Therefore, Orifice No. 44 is required.

- Install main burner orifices. DO NOT use Teflon tape. Finger-tighten orifices at least 1 full turn to prevent cross-threading, 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 and are available through your local distributor.



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⚠ CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers causing failure. Obtain new orifices if orifice size must be changed.

- Reinstall main burners on manifold. Burners should be installed left to right to ensure proper alignment of the burner crossover slot. (See Fig. 3.)
- Reinstall pilot assembly. See Fig. 3 for proper orientation of burners and pilot.
- Reconnect pilot supply tube and thermocouple to gas valve.
- Reinstall burner hold-down bracket.

Table 2—Upflow, Standing Pilot, Fixed-Speed, Non-Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Rate (Tabulated Data Based on 21,000 Btuh per Burner, Derated 4 percent for Each 1000 Ft Above Sea Level)

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	42	3.3	42	3.4	42	3.5	42	3.7	42	3.8
		875	43	3.8	42	3.2	42	3.3	42	3.5	42	3.6
		900	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		925	43	3.4	43	3.5	43	3.6	43	3.8	42	3.2
		950	44	3.7	44	3.8	43	3.5	43	3.6	43	3.7
		975	44	3.5	44	3.6	44	3.8	43	3.4	43	3.5
		1000	44	3.3	44	3.5	44	3.6	44	3.7	44	3.8
		1025	44	3.2	44	3.3	44	3.4	44	3.5	44	3.6
		1050	45	3.7	45	3.8	44	3.2	44	3.4	44	3.5
		1075	46	3.7	46	3.8	45	3.7	44	3.2	44	3.3
1100	46	3.5	46	3.6	46	3.8	45	3.7	45	3.8		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	43	3.7	42	3.2	42	3.3	42	3.4	42	3.5
		800	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		825	44	3.8	43	3.4	43	3.5	43	3.6	43	3.7
		850	44	3.6	44	3.7	44	3.8	43	3.4	43	3.5
		875	44	3.4	44	3.5	44	3.6	44	3.7	44	3.8
		900	44	3.2	44	3.3	44	3.4	44	3.5	44	3.6
		925	44	3.0	44	3.1	44	3.2	44	3.3	44	3.4
		950	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		975	44	2.7	44	2.8	44	2.9	44	3.0	44	3.1
		1000	44	2.6	44	2.7	44	2.7	44	2.8	44	2.9
1025	44	2.4	44	2.5	44	2.6	44	2.7	44	2.8		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		775	44	3.8	43	3.4	43	3.5	43	3.6	43	3.7
		800	44	3.5	44	3.7	44	3.8	43	3.4	43	3.5
		825	44	3.3	44	3.4	44	3.5	44	3.7	44	3.8
		850	44	3.1	44	3.2	44	3.3	44	3.4	44	3.6
		875	44	2.9	44	3.1	44	3.2	44	3.3	44	3.4
		900	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		925	44	2.6	44	2.7	44	2.8	44	2.9	44	3.0
		950	44	2.5	44	2.6	44	2.7	44	2.8	44	2.8
		975	44	2.4	44	2.5	44	2.5	44	2.6	44	2.7
1000	44	2.3	44	2.3	44	2.4	44	2.5	44	2.6		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	44	3.8	43	3.4	43	3.5	43	3.6	43	3.7
		750	44	3.5	44	3.6	44	3.8	43	3.4	43	3.5
		775	44	3.3	44	3.4	44	3.5	44	3.6	44	3.7
		800	44	3.1	44	3.2	44	3.3	44	3.4	44	3.5
		825	44	2.9	44	3.0	44	3.1	44	3.2	44	3.3
		850	44	2.7	44	2.8	44	2.9	44	3.0	44	3.1
		875	44	2.6	44	2.7	44	2.8	44	2.9	44	2.9
		900	44	2.4	44	2.5	44	2.6	44	2.7	44	2.8
		925	44	2.3	44	2.4	44	2.5	44	2.6	44	2.6
		950	44	2.2	44	2.3	44	2.3	44	2.4	44	2.5

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	44	3.5	44	3.6	44	3.8	43	3.4	43	3.5
		725	44	3.3	44	3.4	44	3.5	44	3.6	44	3.7
		750	44	3.1	44	3.2	44	3.3	44	3.4	44	3.5
		775	44	2.9	44	3.0	44	3.1	44	3.2	44	3.3
		800	44	2.7	44	2.8	44	2.9	44	3.0	44	3.1
		825	44	2.5	44	2.6	44	2.7	44	2.8	44	2.9
		850	44	2.4	44	2.5	44	2.6	44	2.6	44	2.7
		875	44	2.3	44	2.3	44	2.4	44	2.5	44	2.6
		900	44	2.1	44	2.2	44	2.3	44	2.3	44	2.4
		925	44	2.0	44	2.1	44	2.2	44	2.2	44	2.3
		950	49	3.7	49	3.8	44	2.0	44	2.1	44	2.2
		975	49	3.5	49	3.6	49	3.7	44	2.0	44	2.1
		1000	49	3.3	49	3.4	49	3.6	49	3.7	49	3.8
U.S.A. Only	6001 to 7000	650	44	3.5	44	3.7	44	3.8	43	3.4	43	3.5
		675	44	3.3	44	3.4	44	3.5	44	3.6	44	3.7
		700	44	3.0	44	3.2	44	3.3	44	3.4	44	3.5
		725	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		750	44	2.7	44	2.7	44	2.8	44	2.9	44	3.0
		775	44	2.5	44	2.6	44	2.7	44	2.7	44	2.8
		800	44	2.3	44	2.4	44	2.5	44	2.6	44	2.7
		825	44	2.2	44	2.3	44	2.3	44	2.4	44	2.5
		850	44	2.1	44	2.1	44	2.2	44	2.3	44	2.4
		875	49	3.8	44	2.0	44	2.1	44	2.2	44	2.2
U.S.A. Only	7001 to 8000	625	44	3.3	44	3.4	44	3.5	44	3.6	44	3.7
		650	44	3.0	44	3.1	44	3.3	44	3.4	44	3.5
		675	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		700	44	2.6	44	2.7	44	2.8	44	2.9	44	3.0
		725	44	2.4	44	2.5	44	2.6	44	2.7	44	2.8
		750	44	2.3	44	2.4	44	2.4	44	2.5	44	2.6
		775	44	2.1	44	2.2	44	2.3	44	2.4	44	2.4
		800	44	2.0	44	2.1	44	2.1	44	2.2	44	2.3
		825	49	3.6	49	3.8	44	2.0	44	2.1	44	2.1
		850	49	3.4	49	3.5	49	3.7	49	3.8	44	2.0
U.S.A. Only	8001 to 9000	600	44	3.1	44	3.2	44	3.3	44	3.4	44	3.5
		625	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		650	44	2.6	44	2.7	44	2.8	44	2.9	44	3.0
		675	44	2.4	44	2.5	44	2.6	44	2.7	44	2.8
		700	44	2.2	44	2.3	44	2.4	44	2.5	44	2.6
		725	44	2.1	44	2.2	44	2.2	44	2.3	44	2.4
		750	49	3.8	44	2.0	44	2.1	44	2.2	44	2.2
		775	49	3.5	49	3.7	49	3.8	44	2.0	44	2.1
		800	49	3.3	49	3.4	49	3.5	49	3.7	49	3.8

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	44	2.8	44	2.9	44	3.0	44	3.1	44	3.2
		600	44	2.6	44	2.7	44	2.8	44	2.9	44	3.0
		625	44	2.4	44	2.5	44	2.6	44	2.6	44	2.7
		650	44	2.2	44	2.3	44	2.4	44	2.4	44	2.5
		675	44	2.1	44	2.1	44	2.2	44	2.3	44	2.3
		700	49	3.7	49	3.8	44	2.0	44	2.1	44	2.2
		725	49	3.4	49	3.5	49	3.7	49	3.8	44	2.0
		750	50	3.8	49	3.3	49	3.4	49	3.5	49	3.6
		775	50	3.5	50	3.7	50	3.8	49	3.3	49	3.4

PROCEDURE 3—CONVERT GAS VALVE

1. Be sure main gas and electrical supplies to furnace are off.
2. Remove regulator seal cap. (See Fig. 4.)
3. Remove adjustment screw and propane gas regulator spring.
4. Install natural gas regulator spring from Honeywell kit.
5. Replace regulator adjustment screw.

NOTE: DO NOT reinstall regulator seal cap at this time.

Table 3—Downflow, Standing Pilot, Fixed-Speed, Non-Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Rate (Tabulated Data Based on 22,000 Btuh per Burner, Derated 4 percent for Each 1000 Ft Above Sea Level)

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	42	3.6	42	3.8	41	3.5	41	3.6	41	3.7
		875	42	3.4	42	3.6	42	3.7	42	3.8	41	3.5
		900	42	3.2	42	3.4	42	3.5	42	3.6	42	3.7
		925	43	3.7	42	3.2	42	3.3	42	3.4	42	3.5
		950	43	3.6	43	3.7	43	3.8	42	3.2	42	3.3
		975	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		1000	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		1025	44	3.5	43	3.2	43	3.3	43	3.4	43	3.5
		1050	44	3.3	44	3.4	44	3.6	43	3.2	43	3.3
		1075	45	3.8	44	3.3	44	3.4	44	3.5	43	3.2
1100	45	3.7	45	3.8	44	3.2	44	3.4	44	3.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
		800	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		825	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		850	43	3.4	43	3.5	43	3.6	43	3.8	42	3.2
		875	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		900	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		925	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		950	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		975	43	2.6	43	2.7	43	2.8	43	2.9	43	2.9
		1000	43	2.5	43	2.5	43	2.6	43	2.7	43	2.8
1025	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7		

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		775	43	3.6	43	3.7	43	3.8	42	3.3	42	3.4
		800	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		825	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		850	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		875	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		900	43	2.7	43	2.8	43	2.9	43	2.9	43	3.0
		925	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		950	43	2.4	43	2.5	43	2.6	43	2.6	43	2.7
		975	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
1000	43	2.2	43	2.2	43	2.3	43	2.4	43	2.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		750	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		775	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		800	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		825	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		850	43	2.6	43	2.7	43	2.8	43	2.9	43	3.0
		875	43	2.5	43	2.6	43	2.6	43	2.7	43	2.8
		900	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7
		925	43	2.2	43	2.3	43	2.4	43	2.4	43	2.5
		950	43	2.1	43	2.2	43	2.2	43	2.3	43	2.4
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		725	43	3.1	43	3.2	43	3.4	43	3.5	43	3.6
		750	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		775	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		800	43	2.6	43	2.7	43	2.8	43	2.8	43	2.9
		825	43	2.4	43	2.5	43	2.6	43	2.7	43	2.8
		850	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
		875	43	2.2	43	2.2	43	2.3	43	2.4	43	2.5
		900	43	2.0	43	2.1	43	2.2	43	2.2	43	2.3
		925	48	3.6	48	3.8	43	2.1	43	2.1	43	2.2
		950	48	3.4	48	3.6	48	3.7	43	2.0	43	2.1
		975	49	3.8	48	3.4	48	3.5	48	3.6	48	3.7
1000	49	3.6	49	3.8	48	3.3	48	3.4	48	3.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	6001 to 7000	650	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		675	43	3.1	43	3.2	43	3.4	43	3.5	43	3.6
		700	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		725	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		750	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		775	43	2.4	43	2.5	43	2.5	43	2.6	43	2.7
		800	43	2.2	43	2.3	43	2.4	43	2.5	43	2.5
		825	43	2.1	43	2.2	43	2.2	43	2.3	43	2.4
		850	48	3.7	43	2.0	43	2.1	43	2.2	43	2.3
		875	48	3.5	48	3.6	48	3.8	43	2.1	43	2.1

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	7001 to 8000	625	43	3.1	43	3.3	43	3.4	43	3.5	43	3.6
		650	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		675	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		700	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		725	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7
		750	43	2.2	43	2.3	43	2.3	43	2.4	43	2.5
		775	43	2.0	43	2.1	43	2.2	43	2.3	43	2.3
		800	48	3.6	48	3.7	43	2.1	43	2.1	43	2.2
		825	48	3.4	48	3.5	48	3.6	48	3.8	43	2.1
	850	49	3.8	48	3.3	48	3.4	48	3.5	48	3.6	
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	8001 to 9000	600	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		625	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		650	43	2.5	43	2.6	43	2.7	43	2.8	43	2.8
		675	43	2.3	43	2.4	43	2.5	43	2.6	43	2.6
		700	43	2.2	43	2.2	43	2.3	43	2.4	43	2.4
		725	43	2.0	43	2.1	43	2.1	43	2.2	43	2.3
		750	48	3.5	48	3.6	43	2.0	43	2.1	43	2.1
		775	48	3.3	48	3.4	48	3.5	48	3.6	48	3.8
		800	49	3.6	49	3.8	48	3.3	48	3.4	48	3.5
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		600	43	2.5	43	2.6	43	2.7	43	2.7	43	2.8
		625	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
		650	43	2.1	43	2.2	43	2.3	43	2.3	43	2.4
		675	48	3.7	43	2.0	43	2.1	43	2.2	43	2.2
		700	48	3.4	48	3.6	48	3.7	43	2.0	43	2.1
		725	49	3.8	48	3.3	48	3.4	48	3.5	48	3.6
		750	49	3.5	49	3.6	49	3.8	48	3.3	48	3.4
		775	49	3.3	49	3.4	49	3.5	49	3.6	49	3.7

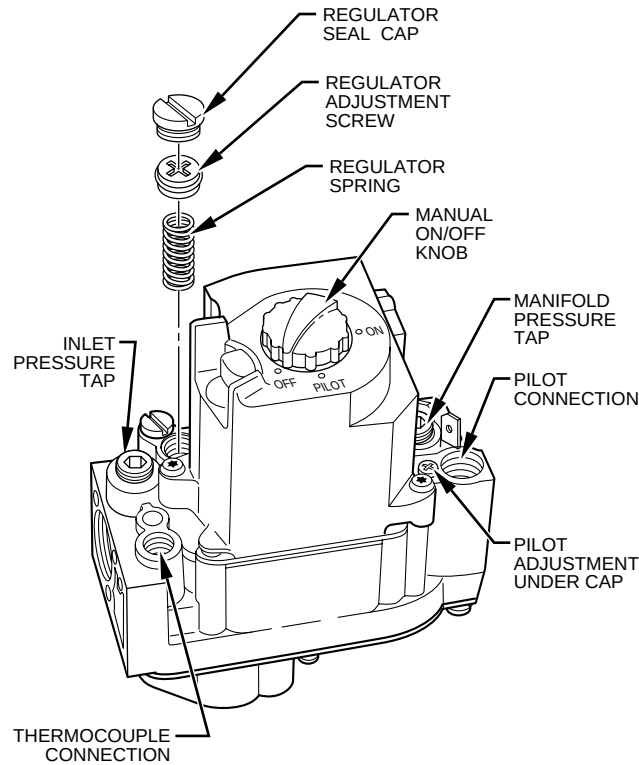
PROCEDURE 4—CHECK INLET GAS PRESSURE

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

1. Be sure main gas and electric supplies to furnace are off.
2. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve. (See Fig. 4.)
3. Attach manometer to inlet pressure tap on furnace gas valve.

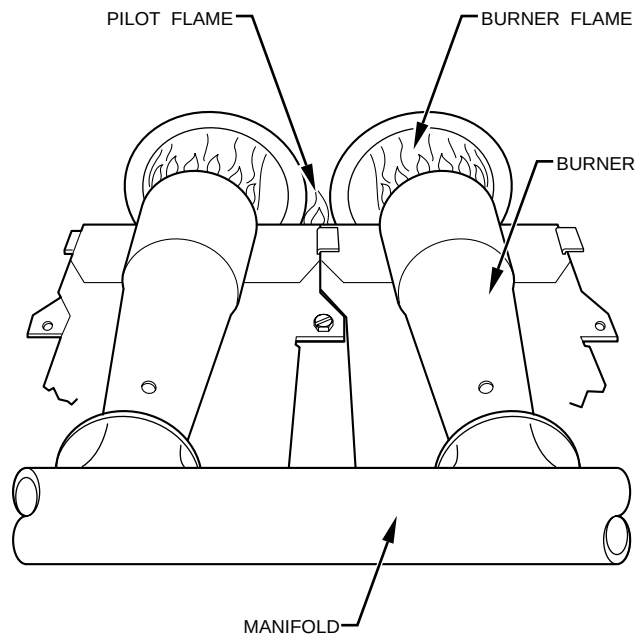
⚠ CAUTION: DO NOT operate furnace more than 1 minute to check inlet gas pressure as conversion is not complete at this time.

4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve control knob to PILOT position and depress.
6. Check pilot tube connections for gas leaks.
7. Turn furnace gas valve control knob to OFF position and wait 5 minutes.
8. Light pilot in accordance with furnace lighting instructions.
9. Turn furnace gas valve control knob to ON position.
10. Turn on furnace power supply.
11. Jumper R and W thermostat connections to call for heat.
12. When main burners ignite, confirm inlet gas pressure is between 4.5-in. wc and 13.6-in. wc.
13. Remove jumper across R and W thermostat terminals to terminate call for heat.
14. Turn furnace gas valve control knob to OFF position.
15. Turn gas supply manual shutoff valve to OFF position.



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Fig. 4—Honeywell Gas Valve



A84076

Fig. 5—Burner Flame

16. Turn off furnace power supply.

17. Remove manometer and reinstall plug in inlet pressure tap.

NOTE: Use propane-gas-resistant pipe dope on all connections to prevent gas leaks. DO NOT use Teflon tape.

PROCEDURE 5—CHECK FURNACE OPERATION AND MAKE NECESSARY ADJUSTMENTS

1. Be sure main gas and electric supplies to furnace are off.
2. Remove 1/8-in. pipe plug from manifold pressure tap on downstream side of gas valve. (See Fig. 4.)
3. Attach manometer to manifold pressure tap on gas valve.
4. Turn gas supply manual shutoff valve to ON position.
5. Turn on furnace power supply.

6. Turn furnace gas valve control knob to ON position.
7. Check all threaded pipe connections for gas leaks.

⚠ WARNING: NEVER use matches, candles, flame, or other sources of ignition to check for gas leakage. Use a soap-and-water solution to check for leaks. Failure to follow this warning could result in fire, explosion, personal injury, or death.

8. Light pilot in accordance with furnace lighting instructions.
9. Turn furnace gas valve control knob to ON position
10. Jumper R and W thermostat connections to call for heat.
11. When main burners ignite, check manifold orifices for gas leaks.

NOTE: The pilot flame should be soft blue in color and must provide good impingement on pilot thermocouple. The flame should extend above burner carryover port to provide proper ignition.

12. If pilot flame requires adjustment:
 - a. Locate adjustment screw on top of gas valve. (See Fig. 4.)
 - b. Remove cap and turn adjustment screw clockwise (in) to decrease pilot gas flow and counterclockwise (out) to increase pilot gas flow.
 - c. When proper adjustment is obtained, replace screw cap.

PROCEDURE 6—SET GAS INPUT RATE

→ Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft. (See conversion kit rating plate 326107–201.)

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

In Canada, the input rating must be derated by 10 percent for altitudes of 2000 ft to 4500 ft above sea level.

Furnace input rate must be within ± 2 percent of input on furnace rating plate.

1. Determine natural gas orifice size and manifold pressure for correct input using Table 2 (for upflow models) or Table 3 (for downflow models).
 - a. Obtain yearly heat value average (at installed altitude) from local gas supplier.
 - b. Obtain yearly specific gravity average from local gas supplier.
 - c. Verify furnace model and select appropriate table. Table 2 can only be used for upflow, standing pilot, non-condensing furnaces. Table 3 can only be used for downflow, standing pilot, non-condensing furnaces.
 - d. Find installation altitude in Table 2 (for upflow models) or Table 3 (for downflow models).

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 2 or 3.

- e. Find closest natural gas heat value and specific gravity in Table 2 (for upflow models) or Table 3 (for downflow models).
 - f. Follow heat value and specific gravity lines to point of intersection to find orifice size and manifold pressure settings for proper operation.

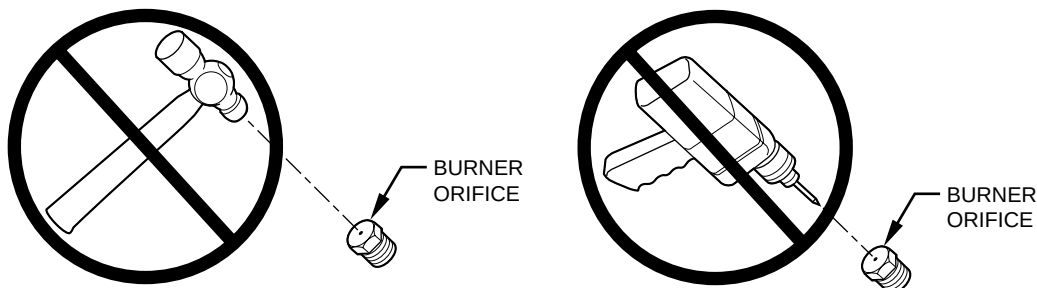
EXAMPLE: (Using Table 2 at 0—2000 ft altitude)
Heating value = 1050 Btu/cu ft
Specific gravity = 0.62
Therefore: Orifice No. 44, Manifold pressure 3.2-in. wc

- g. Check and verify burner orifice size in furnace. NEVER ASSUME ORIFICE SIZE. ALWAYS CHECK AND VERIFY.
2. Adjust manifold pressure to obtain input rate.
 - a. Remove regulator adjustment seal cap. (See Fig. 4.)
 - b. Turn adjusting screw, counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure.

NOTE: This furnace has been approved for a manifold pressure of 3.2-in. wc to 3.8-in. wc when installed at altitudes up to 2000 ft. For altitudes above 2000 ft, the manifold pressure can be adjusted from 2.0-in. wc to 3.8-in. wc.

⚠ CAUTION: DO NOT bottom out gas valve regulator adjusting screw. This can result in unregulated manifold pressure and result in excess overfire and heat exchanger failures.

NOTE: If orifice hole appears damaged or it is suspected to have been redrilled, check orifice hole with a numbered drill bit of correct size. Never redrill an orifice. A burr-free and squarely aligned orifice hole is essential for proper flame characteristics.



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⚠ CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers causing failure. Obtain new orifices if orifice size must be changed.

- c. After correct manifold pressure is obtained, replace gas valve regulator adjustment screw cap and verify adjusted gas input rate using method outlined in item 3.
 - d. Burner flame should be clear blue, almost transparent. (See Fig. 5.)
3. Verify natural gas input rate by clocking gas meter.
- a. Calculate high-altitude adjustment (if necessary).
- UNITED STATES
- At installation altitudes above 2000 ft, this furnace has been approved for a 4 percent derate for each 1000 ft above sea level. See Table 4 for derate multiplier factor and example.

Table 4—Altitude Derate Multiplier for U.S.A.

ALTITUDE (FT)	PERCENT OF DERATE	DERATE MULTIPLIER FACTOR FOR U.S.A.*
0-2000	0	1.00
2001—3000	8—12	0.90
3001—4000	12—16	0.86
4001—5000	16—20	0.82
5001—6000	20—24	0.78
6001—7000	24—28	0.74
7001—8000	28—32	0.70
8001—9000	32—36	0.66
9001—10,000	36-40	0.62

*Derate multiplier factor is based on midpoint altitude for altitude range.

CANADA

At installation altitudes from 2000 to 4500 ft, this furnace must be derated 10 percent by an authorized Gas Conversion Station or Dealer. To determine correct input rate for altitude, see example and use 0.90 as derate multiplier factor.

EXAMPLE: (For upflow furnace)

105,000 Btu/h input furnace installed at 4300 ft.

Furnace Input Rate at Sea Level X Derate Multiplier Factor = Furnace Input Rate at Installation Altitude

105,000 X 0.82 = 86,000

- b. Turn off all other gas appliances and pilots.
- c. Start furnace and let operate for 3 minutes.
- d. Measure time (in sec) for gas meter test dial to complete 1 revolution.
- e. Refer to Table 5 for cu ft of gas per hr.
- f. Multiply gas rate (cu ft/hr) X heating value (Btu/cu ft) using natural gas heating value from local gas utility/supplier.

EXAMPLE: (For upflow furnace at 0—2000 ft altitude)

Btu heating input = Btu/cu ft X cu ft/hr

Heating value of gas = 1050 Btu/cu ft

Time for 1 revolution of 2-cu ft dial = 72 sec

Gas rate = 100 cu ft/hr (from Table 5)

Btu heating input = 100 X 1050 = 105,000 Btu/h

In this example, the orifice size and manifold pressure adjustment is within ± 2 percent of the furnace input rate.

NOTE: Measured gas input must be within ± 2 percent of that stated on furnace rating plate when installed at sea level or derated per that stated above when installed at higher altitudes.

4. Remove jumper across R and W thermostat connections to terminate call for heat.

5. Turn furnace gas valve control knob to PILOT position.

6. Remove manometer and replace manifold pressure tap plug. (See Fig. 4.)

NOTE: Use propane-gas-resistant pipe dope to prevent gas leaks. DO NOT use Teflon tape.

7. Turn furnace gas valve control knob to ON position.

8. Set room thermostat to call for heat.

9. Check pressure tap plug for gas leaks when main burners ignite.

10. Check for correct burner flame. (See Fig. 5.)

11. Observe unit through 2 complete heating cycles. See sequence of operation in furnace Installation, Start-Up, and Operating Instructions.

12. Set room thermostat to desired temperature.

Table 5—Gas Rate (Cu Ft/Hr)

SECONDS FOR 1 REVOLUTION	SIZE OF TEST DIAL			SECONDS FOR 1 REVOLUTION	SIZE OF TEST DIAL		
	1 Cu Ft	2 Cu Ft	5 Cu Ft		1 Cu Ft	2 Cu Ft	5 Cu Ft
10	360	720	1800	50	72	144	360
11	327	655	1636	51	71	141	355
12	300	600	1500	52	69	138	346
13	277	555	1385	53	68	136	340
14	257	514	1286	54	67	133	333
15	240	480	1200	55	65	131	327
16	225	450	1125	56	64	129	321
17	212	424	1059	57	63	126	316
18	200	400	1000	58	62	124	310
19	189	379	947	59	61	122	305
20	180	360	900	60	60	120	300
21	171	343	857	62	58	116	290
22	164	327	818	64	56	112	281
23	157	313	783	66	54	109	273
24	150	300	750	68	53	106	265
25	144	288	720	70	51	103	257
26	138	277	692	72	50	100	250
27	133	267	667	74	48	97	243
28	129	257	643	76	47	95	237
29	124	248	621	78	46	92	231
30	120	240	600	80	45	90	225
31	116	232	581	82	44	88	220
32	113	225	563	84	43	86	214
33	109	218	545	86	42	84	209
34	106	212	529	88	41	82	205
35	103	206	514	90	40	80	200
36	100	200	500	92	39	78	196
37	97	195	486	94	38	76	192
38	95	189	474	96	38	75	188
39	92	185	462	98	37	74	184
40	90	180	450	100	36	72	180
41	88	176	439	102	35	71	178
42	86	172	429	104	35	69	173
43	84	167	419	106	34	68	170
44	82	164	409	108	33	67	167

SECONDS FOR 1 REVOLUTION	SIZE OF TEST DIAL			SECONDS FOR 1 REVOLUTION	SIZE OF TEST DIAL		
	1 Cu Ft	2 Cu Ft	5 Cu Ft		1 Cu Ft	2 Cu Ft	5 Cu Ft
45	80	160	400	110	33	65	164
46	78	157	391	112	32	64	161
47	76	153	383	116	31	62	155
48	75	150	375	120	30	60	150
49	73	147	367	--	--	--	--

PROCEDURE 7—LABEL APPLICATION

NOTE: See Fig. 1 or 2 for label location.

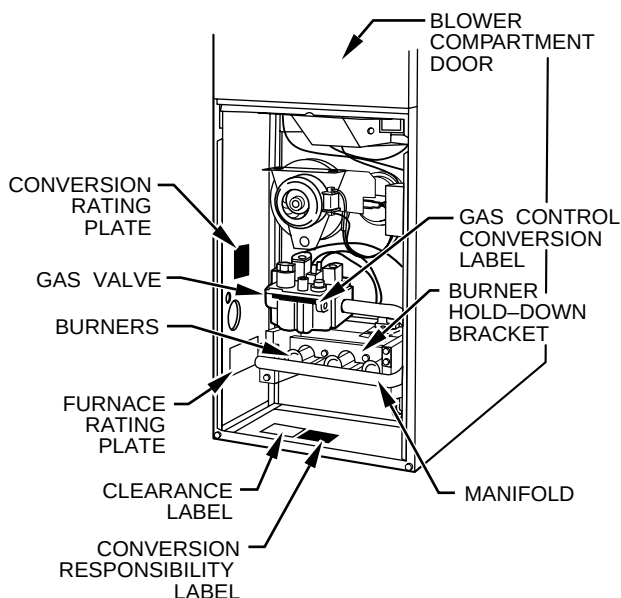
- 1. Fill in Conversion Responsibility Label (326107–203) and apply to front of blower door as shown. Date, name, and address of organization making conversion are required.
- 2. Apply Gas Control Conversion Label (326107–202) to gas valve as shown.
- 3. Apply Furnace Conversion Rating Plate (326107–201) near existing furnace rating plate.
- 4. Replace furnace control access door.

SECTION 2—MODELS 58DHC, 58PAV, 58RAV, 58SSC, 58WAV, 58YAV, 58ZAV, 373LAV, 376CAV, 383KAV, 393AAV, 395CAV, 480BAV, 481BAV, GB1AAV, GB3AAV, PG8DAA, AND PG8UAA INDUCED-COMBUSTION, HOT-SURFACE IGNITION, FIXED-SPEED NON-CONDENSING FURNACES

PROCEDURE 1—INSTALL MAIN BURNER ORIFICES

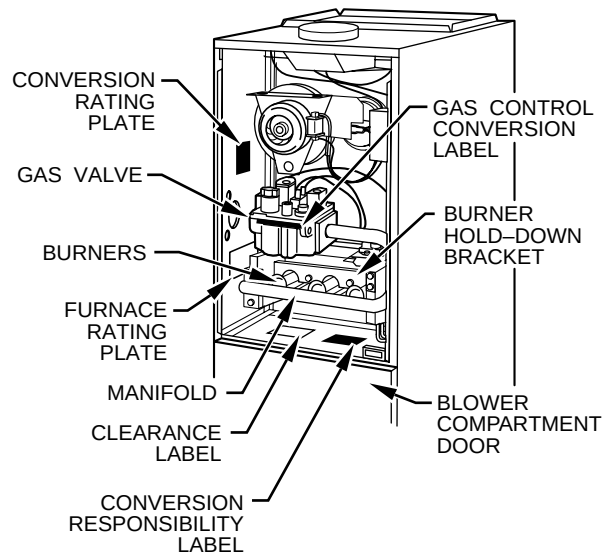
NOTE: See Figs. 6 and 7 for component location.

- 1. Turn off furnace gas and electrical supplies.
- 2. Remove control access door.
- 3. Turn furnace gas valve control switch/knob to OFF position.
- 4. Remove burner hold-down bracket.
- 5. Remove burners from manifold.
- 6. Remove and discard orifices from manifold.
- 7. Determine natural gas orifice size for correct input at installed altitude by using Table 6 (for upflow furnaces) or Table 7 (for downflow/horizontal furnaces). (See conversion kit rating plate 326107-201.)
Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft.
In the U.S.A., the input rating for altitudes above 2000 ft must be reduced by 4 percent for each 1000 ft above sea level.
In Canada, the input rating must be derated by 10 percent for altitudes of 2000 ft to 4500 ft above sea level.
 - a. Obtain yearly heat value average (at installed altitude) for local gas supply.
 - b. Obtain yearly specific gravity average for local gas supply.
 - c. Verify furnace model and select appropriate table. Table 6 can only be used for upflow, hot-surface ignition, non-condensing furnaces. Table 7 can only be used for downflow/horizontal, hot-surface ignition, non-condensing furnaces.



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Fig. 6—Downflow/Horizontal Hot-Surface Ignition, Fixed-Speed, Non-Condensing Furnace Component and Conversion Label Location



A95460

Fig. 7—Upflow, Hot-Surface Ignition, Fixed-Speed, Non-Condensing Furnace Component and Conversion Label Location

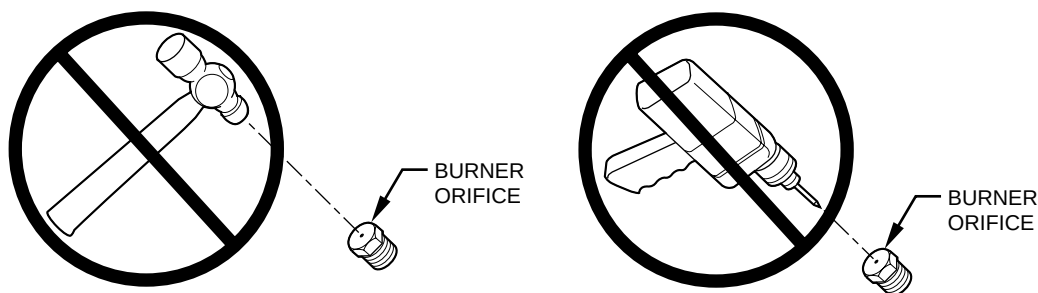
- d. Find installation altitude in Table 6 (for upflow models) or Table 7 (for downflow/horizontal models).

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 6 or 7.

- e. Find closest natural gas heat value and specific gravity in Table 6 (for upflow models) or Table 7 (for downflow/horizontal models).
f. Follow heat value and specific gravity lines to point of intersection. Find orifice size for proper operation at given natural gas condition.

EXAMPLE: (Using Table 6 for upflow furnace at 0—2000 ft altitude)
Heat value 1025 Btu/cu ft
Specific gravity 0.62
Therefore, Orifice No. 43 is required.

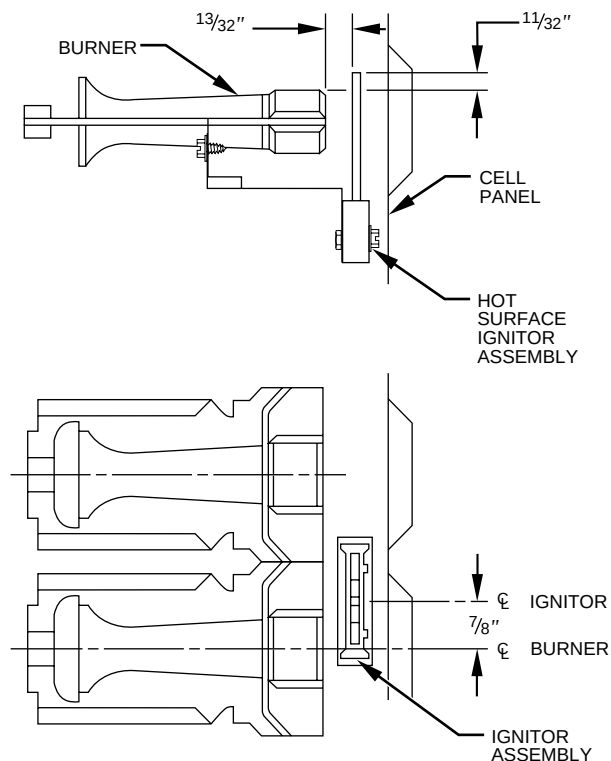
8. Install properly sized orifices in manifold. Do not use Teflon tape. Finger-tighten orifices at least 1 full turn to prevent cross-threading, then tighten with wrench. There are enough orifices in each kit for the largest furnace. Discard extra orifices. Orifices of other sizes must be field supplied and are available through your local distributor.



A96249

⚠ CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers, causing failures. Obtain new orifices if orifice size must be changed.

9. Reinstall main burners on manifold. Burners should be installed left to right to ensure proper alignment of the burner crossover slot. (See Fig. 8 for ignitor position.)
10. Reinstall burner hold-down bracket.



A93347

Fig. 8—Position of Ignitor to Burner

Table 6—Upflow, Hot-Surface Ignition, Fixed-Speed, Non-Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Rate (Tabulated Data Based on 22,000 Btuh per Burner, Derated 4 percent for Each 1000 Ft Above Sea Level)

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	42	3.6	42	3.8	41	3.5	41	3.6	41	3.7
		875	42	3.4	42	3.6	42	3.7	42	3.8	41	3.5
		900	42	3.2	42	3.4	42	3.5	42	3.6	42	3.7
		925	43	3.7	42	3.2	42	3.3	42	3.4	42	3.5
		950	43	3.6	43	3.7	43	3.8	42	3.2	42	3.3
		975	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		1000	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		1025	44	3.5	43	3.2	43	3.3	43	3.4	43	3.5
		1050	44	3.3	44	3.4	44	3.6	43	3.2	43	3.3
		1075	45	3.8	44	3.3	44	3.4	44	3.5	43	3.2
1100	45	3.7	45	3.8	44	3.2	44	3.4	44	3.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
		800	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		825	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		850	43	3.4	43	3.5	43	3.6	43	3.8	42	3.2
		875	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		900	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		925	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		950	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		975	43	2.6	43	2.7	43	2.8	43	2.9	43	2.9
		1000	43	2.5	43	2.5	43	2.6	43	2.7	43	2.8
1025	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7		

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		775	43	3.6	43	3.7	43	3.8	42	3.3	42	3.4
		800	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		825	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		850	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		875	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		900	43	2.7	43	2.8	43	2.9	43	2.9	43	3.0
		925	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		950	43	2.4	43	2.5	43	2.6	43	2.6	43	2.7
		975	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
1000	43	2.2	43	2.2	43	2.3	43	2.4	43	2.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		750	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		775	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		800	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		825	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		850	43	2.6	43	2.7	43	2.8	43	2.9	43	3.0
		875	43	2.5	43	2.6	43	2.6	43	2.7	43	2.8
		900	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7
		925	43	2.2	43	2.3	43	2.4	43	2.4	43	2.5
		950	43	2.1	43	2.2	43	2.2	43	2.3	43	2.4
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		725	43	3.1	43	3.2	43	3.4	43	3.5	43	3.6
		750	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		775	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		800	43	2.6	43	2.7	43	2.8	43	2.8	43	2.9
		825	43	2.4	43	2.5	43	2.6	43	2.7	43	2.8
		850	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
		875	43	2.2	43	2.2	43	2.3	43	2.4	43	2.5
		900	43	2.0	43	2.1	43	2.2	43	2.2	43	2.3
		925	48	3.6	48	3.8	43	2.1	43	2.1	43	2.2
		950	48	3.4	48	3.6	48	3.7	43	2.0	43	2.1
		975	49	3.8	48	3.4	48	3.5	48	3.6	48	3.7
1000	49	3.6	49	3.8	48	3.3	48	3.4	48	3.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	6001 to 7000	650	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		675	43	3.1	43	3.2	43	3.4	43	3.5	43	3.6
		700	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		725	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		750	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		775	43	2.4	43	2.5	43	2.5	43	2.6	43	2.7
		800	43	2.2	43	2.3	43	2.4	43	2.5	43	2.5
		825	43	2.1	43	2.2	43	2.2	43	2.3	43	2.4
		850	48	3.7	43	2.0	43	2.1	43	2.2	43	2.3
		875	48	3.5	48	3.6	48	3.8	43	2.1	43	2.1

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	7001 to 8000	625	43	3.1	43	3.3	43	3.4	43	3.5	43	3.6
		650	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		675	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		700	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		725	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7
		750	43	2.2	43	2.3	43	2.3	43	2.4	43	2.5
		775	43	2.0	43	2.1	43	2.2	43	2.3	43	2.3
		800	48	3.6	48	3.7	43	2.1	43	2.1	43	2.2
		825	48	3.4	48	3.5	48	3.6	48	3.8	43	2.1
850	49	3.8	48	3.3	48	3.4	48	3.5	48	3.6		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	8001 to 9000	600	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		625	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		650	43	2.5	43	2.6	43	2.7	43	2.8	43	2.8
		675	43	2.3	43	2.4	43	2.5	43	2.6	43	2.6
		700	43	2.2	43	2.2	43	2.3	43	2.4	43	2.4
		725	43	2.0	43	2.1	43	2.1	43	2.2	43	2.3
		750	48	3.5	48	3.6	43	2.0	43	2.1	43	2.1
		775	48	3.3	48	3.4	48	3.5	48	3.6	48	3.8
		800	49	3.6	49	3.8	48	3.3	48	3.4	48	3.5
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		600	43	2.5	43	2.6	43	2.7	43	2.7	43	2.8
		625	43	2.3	43	2.4	43	2.4	43	2.5	43	2.6
		650	43	2.1	43	2.2	43	2.3	43	2.3	43	2.4
		675	48	3.7	43	2.0	43	2.1	43	2.2	43	2.2
		700	48	3.4	48	3.6	48	3.7	43	2.0	43	2.1
		725	49	3.8	48	3.3	48	3.4	48	3.5	48	3.6
		750	49	3.5	49	3.6	49	3.8	48	3.3	48	3.4
		775	49	3.3	49	3.4	49	3.5	49	3.6	49	3.7

PROCEDURE 2—CONVERT GAS VALVE

1. Be sure main gas and electrical supplies to furnace are off.
2. Remove regulator seal cap. (See Fig. 9 or 10.)
3. Remove adjustment screw and propane gas regulator spring (white).
4. Install natural gas regulator spring (silver) into gas valve (10 turns).

NOTE: DO NOT reinstall regulator seal cap at this time.

PROCEDURE 3—CHECK INLET GAS PRESSURE

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

1. Be sure gas and electric supplies to furnace are off.
2. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve. (See Fig. 9 or 10.)
3. Attach manometer to inlet pressure tap on furnace gas valve.

⚠ CAUTION: DO NOT operate furnace more than 1 minute to check inlet gas pressure as conversion is not complete at this time.

4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve control switch/knob to ON position.
6. Turn on furnace power supply.
7. Jumper R and W thermostat connections to call for heat.
8. When main burners ignite, confirm inlet gas pressure is between 4.5-in. wc and 13.6-in. wc.
9. Remove jumper across R and W thermostat connections to terminate call for heat.

10. Turn furnace gas valve control switch/knob to OFF position.
11. Turn gas supply manual shutoff valve to OFF position.
12. Turn off furnace power supply.
13. Remove manometer and reinstall gas valve inlet pressure tap plug.

NOTE: Use propane-gas-resistant pipe dope to prevent gas leaks. DO NOT use Teflon tape.

PROCEDURE 4—CHECK FURNACE OPERATION AND MAKE NECESSARY ADJUSTMENTS

1. Be sure main gas and electrical supplies to furnace are off.
2. Remove 1/8-in. pipe plug from manifold pressure tap on gas valve. (See Fig. 9 or 10.)
3. Attach manometer to manifold pressure tap on gas valve.
4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve control switch/knob to ON position.
6. Check all threaded pipe connections for gas leaks.

⚠ WARNING: NEVER use matches, candles, flame, or other sources of ignition to check for gas leakage. Use a soap-and-water solution to check for leaks. Failure to follow this warning could result in fire, explosion, personal injury, or death.

7. Turn on furnace power supply.
8. Jumper R and W thermostat connections to call for heat.
9. When main burners ignite, check manifold orifices for gas leaks.

Table 7—Downflow/Horizontal, Hot-Surface Ignition, Fixed-Speed, Non-Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Rate (Tabulated Data Based on 23,000 Btuh per Burner, Derated 4 percent for Each 1000 Ft Above Sea Level)*

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	41	3.6	41	3.7	41	3.8	40	3.6	40	3.8
		875	42	3.8	41	3.5	41	3.6	41	3.7	41	3.8
		900	42	3.5	42	3.7	42	3.8	41	3.5	41	3.6
		925	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
		950	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6
		975	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		1000	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		1025	43	3.3	43	3.4	43	3.6	43	3.7	43	3.8
		1050	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		1075	44	3.5	44	3.6	43	3.2	43	3.3	43	3.4
1100	44	3.3	44	3.4	44	3.5	43	3.2	43	3.3		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	42	3.7	42	3.8	41	3.5	41	3.6	41	3.8
		800	42	3.4	42	3.6	42	3.7	42	3.8	41	3.5
		825	42	3.2	42	3.3	42	3.5	42	3.6	42	3.7
		850	43	3.7	43	3.8	42	3.3	42	3.4	42	3.5
		875	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		900	43	3.3	43	3.4	43	3.5	43	3.7	43	3.8
		925	43	3.1	43	3.2	43	3.4	43	3.5	43	3.6
		950	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		975	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		1000	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
1025	43	2.6	43	2.6	43	2.7	43	2.8	43	2.9		

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	42	3.4	42	3.6	42	3.7	42	3.8	41	3.5
		775	42	3.2	42	3.3	42	3.5	42	3.6	42	3.7
		800	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		825	43	3.5	43	3.6	43	3.7	43	3.8	42	3.2
		850	43	3.3	43	3.4	43	3.5	43	3.6	43	3.7
		875	43	3.1	43	3.2	43	3.3	43	3.4	43	3.5
		900	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		925	43	2.8	43	2.9	43	3.0	43	3.0	43	3.1
		950	43	2.6	43	2.7	43	2.8	43	2.9	43	3.0
		975	43	2.5	43	2.6	43	2.7	43	2.7	43	2.8
1000	43	2.4	43	2.4	43	2.5	43	2.6	43	2.7		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	42	3.2	42	3.3	42	3.5	42	3.6	42	3.7
		750	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		775	43	3.4	43	3.6	43	3.7	43	3.8	42	3.2
		800	43	3.2	43	3.3	43	3.5	43	3.6	43	3.7
		825	43	3.0	43	3.1	43	3.2	43	3.4	43	3.5
		850	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		875	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		900	43	2.6	43	2.6	43	2.7	43	2.8	43	2.9
		925	43	2.4	43	2.5	43	2.6	43	2.7	43	2.8
		950	43	2.3	43	2.4	43	2.5	43	2.5	43	2.6
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		725	43	3.4	43	3.6	43	3.7	43	3.8	42	3.2
		750	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		775	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		800	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		825	43	2.7	43	2.7	43	2.8	43	2.9	43	3.0
		850	43	2.5	43	2.6	43	2.7	43	2.8	43	2.8
		875	43	2.4	43	2.4	43	2.5	43	2.6	43	2.7
		900	43	2.2	43	2.3	43	2.4	43	2.5	43	2.5
		925	43	2.1	43	2.2	43	2.3	43	2.3	43	2.4
		950	48	3.8	43	2.1	43	2.1	43	2.2	43	2.3
		975	48	3.6	48	3.7	43	2.0	43	2.1	43	2.2
1000	48	3.4	48	3.5	48	3.6	48	3.7	43	2.1		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	6001 to 7000	650	43	3.7	43	3.8	42	3.2	42	3.3	42	3.5
		675	43	3.4	43	3.5	43	3.7	43	3.8	42	3.2
		700	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		725	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		750	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
		775	43	2.6	43	2.7	43	2.8	43	2.9	43	3.0
		800	43	2.4	43	2.5	43	2.6	43	2.7	43	2.8
		825	43	2.3	43	2.4	43	2.5	43	2.5	43	2.6
		850	43	2.2	43	2.2	43	2.3	43	2.4	43	2.5
		875	43	2.0	43	2.1	43	2.2	43	2.3	43	2.3

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	7001 to 8000	625	43	3.4	43	3.6	43	3.7	43	3.8	42	3.2
		650	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		675	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		700	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		725	43	2.6	43	2.6	43	2.7	43	2.8	43	2.9
		750	43	2.4	43	2.5	43	2.6	43	2.6	43	2.7
		775	43	2.2	43	2.3	43	2.4	43	2.5	43	2.5
		800	43	2.1	43	2.2	43	2.2	43	2.3	43	2.4
		825	48	3.7	43	2.0	43	2.1	43	2.2	43	2.2
850	48	3.5	48	3.6	48	3.7	43	2.1	43	2.1		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	8001 to 9000	600	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		625	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		650	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		675	43	2.5	43	2.6	43	2.7	43	2.8	43	2.9
		700	43	2.4	43	2.4	43	2.5	43	2.6	43	2.7
		725	43	2.2	43	2.3	43	2.3	43	2.4	43	2.5
		750	43	2.0	43	2.1	43	2.2	43	2.3	43	2.3
		775	48	3.6	48	3.7	43	2.1	43	2.1	43	2.2
		800	48	3.4	48	3.5	48	3.6	48	3.7	43	2.0
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		600	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		625	43	2.5	43	2.6	43	2.7	43	2.8	43	2.8
		650	43	2.3	43	2.4	43	2.5	43	2.6	43	2.6
		675	43	2.1	43	2.2	43	2.3	43	2.4	43	2.4
		700	48	3.8	43	2.1	43	2.1	43	2.2	43	2.3
		725	48	3.5	48	3.6	48	3.7	43	2.1	43	2.1
		750	49	3.8	48	3.4	48	3.5	48	3.6	48	3.7
		775	49	3.6	49	3.7	49	3.8	48	3.4	48	3.5

* For 060135 and 135-20 sizes only, input is 22,500 Btu/h. Deduct 0.1-in. wc from manifold pressure shown in table. Change orifice size if manifold pressure falls below 3.2-in. wc. on altitudes up to 2000 ft, otherwise change orifice size if manifold pressure falls below 2.0-in. wc.

PROCEDURE 5—SET GAS INPUT RATE

→ Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft. (See conversion kit rating plate 326107–201.)

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

In Canada, the input rating must be derated by 10 percent for altitudes of 2000 ft to 4500 ft above sea level.

Furnace input rate must be within ± 2 percent of input on furnace rating plate.

- Determine natural gas orifice size and manifold pressure for correct input using Table 6 (for upflow models) or Table 7 (for downflow/horizontal models).
 - Obtain yearly heat value average (at installed altitude) from local gas supplier.
 - Obtain yearly specific gravity average from local gas supplier.
 - Verify furnace model and select appropriate table. Table 6 can only be used for upflow, hot-surface ignition, non-condensing furnaces. Table 7 can only be used for downflow/horizontal, hot-surface ignition, non-condensing furnaces.
 - Find installation altitude in Table 6 (for upflow models) or Table 7 (for downflow/horizontal models).

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 6 or 7.

- Find closest natural gas heat value and specific gravity in Table 6 (for upflow models) or Table 7 (for downflow/horizontal models).
- Follow heat value and specific gravity lines to point of intersection to find orifice size and manifold pressure settings for proper operation.

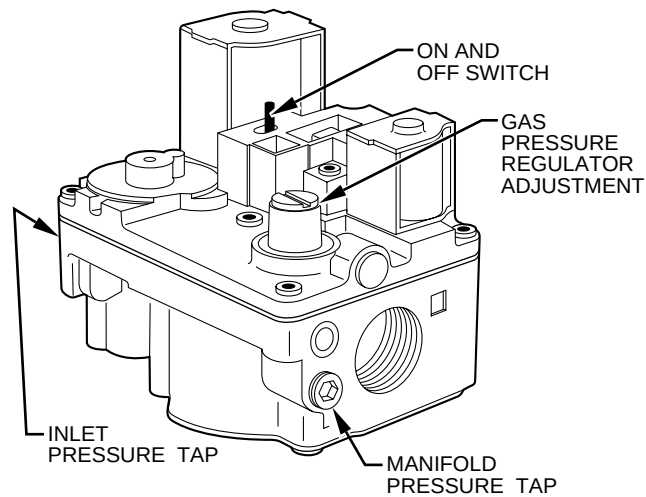
EXAMPLE: (Using Table 6 for upflow furnace at 0—2000 ft altitude)

Heating value = 1025 Btu/cu ft

Specific gravity = 0.62

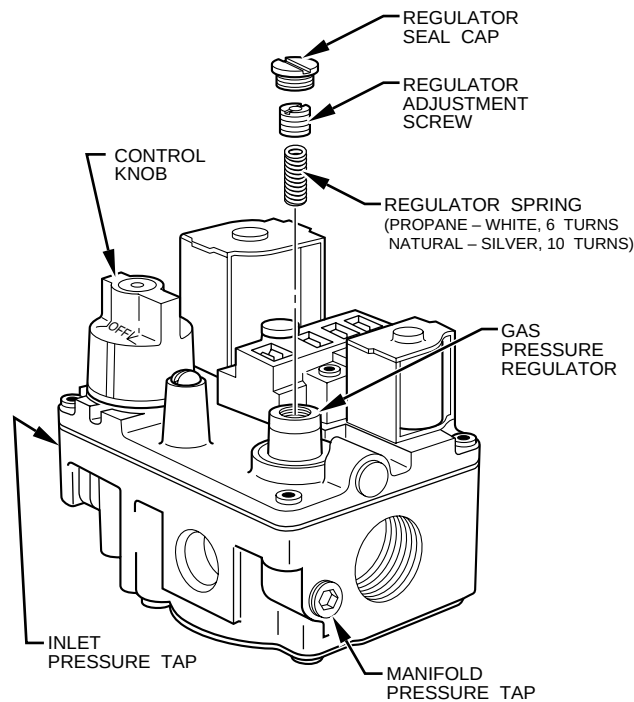
Therefore: Orifice No. 43, Manifold pressure 3.3-in. wc

- Check and verify burner orifice size in furnace. NEVER ASSUME ORIFICE SIZE. ALWAYS CHECK AND VERIFY.



A95618

Fig. 9—White-Rodgers Model 36E Gas Valve (With Electric Control Switch)



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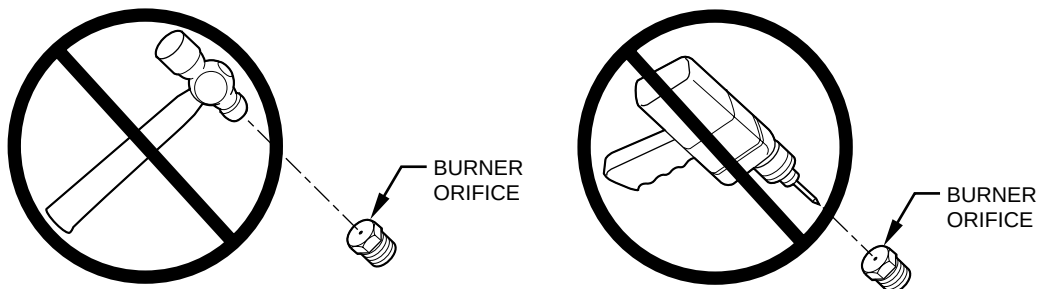
Fig. 10—White-Rodgers Model 36E Gas Valve (With Manual Control Knob)

2. Adjust manifold pressure to obtain input rate.
 - a. Remove regulator adjustment seal cap. (See Fig. 9 or 10.)
 - b. Turn adjusting screw, counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure.

NOTE: This furnace has been approved for a manifold pressure of 3.2-in. wc to 3.8-in. wc when installed at altitudes up to 2000 ft. For altitudes above 2000 ft, the manifold pressure can be adjusted from 2.0-in. wc to 3.8-in. wc.

CAUTION: DO NOT bottom out gas valve regulator adjusting screw. This can result in unregulated manifold pressure and result in excess overfire and heat exchanger failures.

NOTE: If orifice hole appears damaged or it is suspected to have been redrilled, check orifice hole with a numbered drill bit of correct size. Never redrill an orifice. A burr-free and squarely aligned orifice hole is essential for proper flame characteristics.



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CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers causing failure. Obtain new orifices if orifice size must be changed.

- c. After correct manifold pressure is obtained, replace gas valve regulator adjustment screw cap and verify adjusted gas input rate using method outlined in item 3.
 - d. Burner flame should be clear blue, almost transparent. (See Fig. 11.)
3. Verify natural gas input rate by clocking gas meter.
- a. Calculate high-altitude adjustment (if required).
- UNITED STATES**
- At installation altitudes above 2000 ft, this furnace has been approved for a 4 percent derate for each 1000 ft above sea level. See Table 8 for derate multiplier factor and example.

Table 8—Altitude Derate Multiplier for U.S.A.

ALTITUDE (FT)	PERCENT OF DERATE	DERATE MULTIPLIER FACTOR FOR U.S.A.*
0-2000	0	1.00
2001-3000	8-12	0.90
3001-4000	12-16	0.86
4001-5000	16-20	0.82
5001-6000	20-24	0.78
6001-7000	24-28	0.74
7001-8000	28-32	0.70
8001-9000	32-36	0.66
9001-10,000	36-40	0.62

*Derate multiplier factor is based on midpoint altitude for altitude range.

CANADA

At installation altitudes from 2000 to 4500 ft, this furnace must be derated 10 percent by an authorized Gas Conversion Station or Dealer. To determine correct input rate for altitude, see example and use 0.90 as derate multiplier factor.

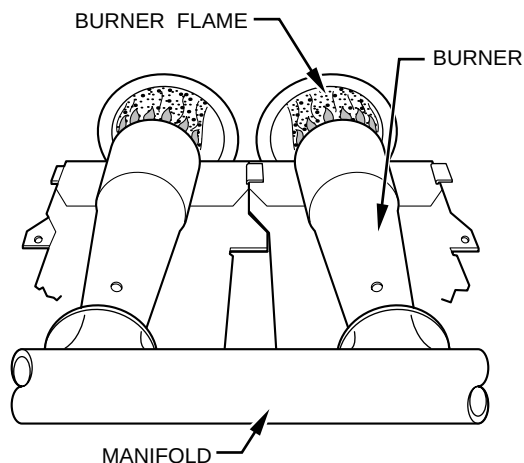


Fig. 11—Burner Flame

A89020

EXAMPLE: (For upflow furnace)

88,000 Btuh input furnace installed at 4300 ft.

Furnace Input Rate at Sea Level X Derate Multiplier Factor = Furnace Input Rate at Installation Altitude

$88,000 \times 0.82 = 72,160$

- b. Turn off all other gas appliances and pilots.
- c. Start furnace and let operate for 3 minutes.
- d. Measure time (in sec) for gas meter test dial to complete 1 revolution.
- e. Refer to Table 5 for cu ft of gas per hr.
- f. Multiply gas rate (cu ft/hr) X heating value (Btu/cu ft) using natural gas heating value from local gas utility/supplier.

EXAMPLE: (For upflow furnace at 0—2000 ft altitude)

Btu heating input = Btu/cu ft X cu ft/hr

Heating value of gas = 1050 Btu/cu ft

Time for 1 revolution of 2-cu ft dial = 70 sec

Gas rate = 103 cu ft/hr (from Table 5)

Btu heating input = $103 \times 1050 = 108,150$ Btuh

In this example, the orifice size and manifold pressure adjustment is within ± 2 percent of the furnace input rate.

NOTE: Measured gas input must be within ± 2 percent of that stated on furnace rating plate when installed at sea level or derated per that stated above when installed at higher altitudes.

4. Remove jumper across R and W thermostat connections to terminate call for heat.
5. Turn furnace gas valve control switch/knob to OFF position.
6. Remove manometer and reinstall gas valve inlet pressure tap plug. (See Fig. 9 or 10.)

NOTE: Use propane-gas-resistant pipe dope to prevent gas leaks. DO NOT use Teflon tape.

7. Turn furnace gas valve control switch/knob to ON position.
8. Set room thermostat to call for heat.
9. Check manifold pressure tap plug for gas leaks when main burners ignite.
10. Check for correct burner flame. (See Fig. 11.)
11. Observe unit through 2 complete heating cycles. See sequence of operation in furnace Installation, Start-Up, and Operating Instructions.
12. Set room thermostat to desired temperature.

PROCEDURE 6—LABEL APPLICATION

NOTE: See Fig. 6 or 7 for label location.

- 1. Fill in Conversion Responsibility Label (326107–203) and inside furnace casing as shown. Date, name, and address of organization making conversion are required.
- 2. Apply Gas Control Conversion Label (326107–202) to gas valve as shown.
- 3. Apply Furnace Conversion Rating Plate (326107–201) near existing furnace rating plate.
- 4. Replace furnace control access door.

NOTE: Discard labels and instructions packaged with White-Rodgers regulator spring conversion kit.

SECTION 3—MODELS 58MCA, 58MSA, 58MXA, 340MAV, 345MAV, 350MAV, 490AAV, AND PG9MAA MULTIPOISE, HOT-SURFACE IGNITION, FIXED-SPEED, CONDENSING FURNACES

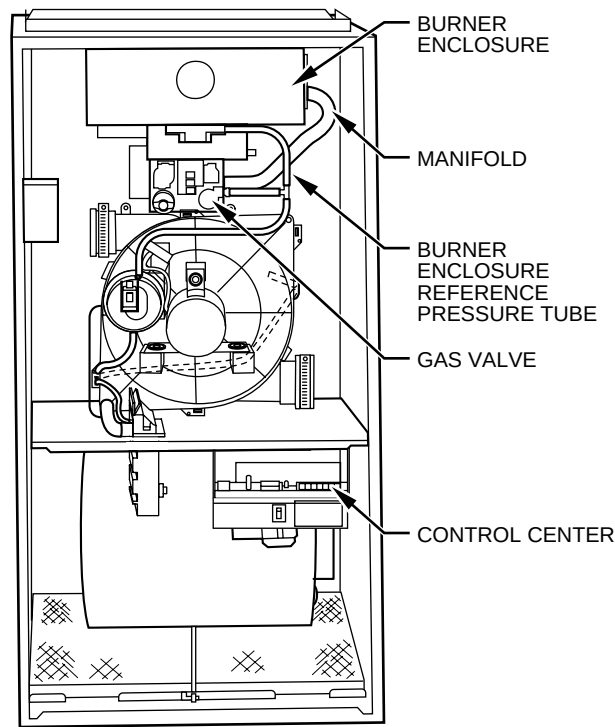
PROCEDURE 1—INSTALL MAIN BURNER ORIFICES

NOTE: See Fig. 12 for component location in upflow furnaces. Re-orient component arrangement when furnace is installed in other orientations.

1. Turn off gas and electrical supplies to furnace.
2. Remove main furnace door.
3. Turn furnace gas valve control switch/knob to OFF position.
4. Remove burner enclosure cover.
5. Remove gas supply piping from gas valve.

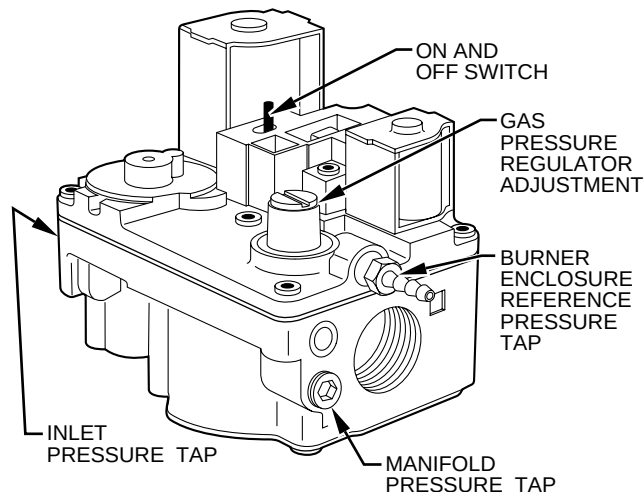
⚠ CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

⚠ ATTENTION: Lors des opérations d'entretien des commandes, étiqueter tous les fils avant de les déconnecter. Toute erreur de câblage peut être une source de danger et de panne.



A95024

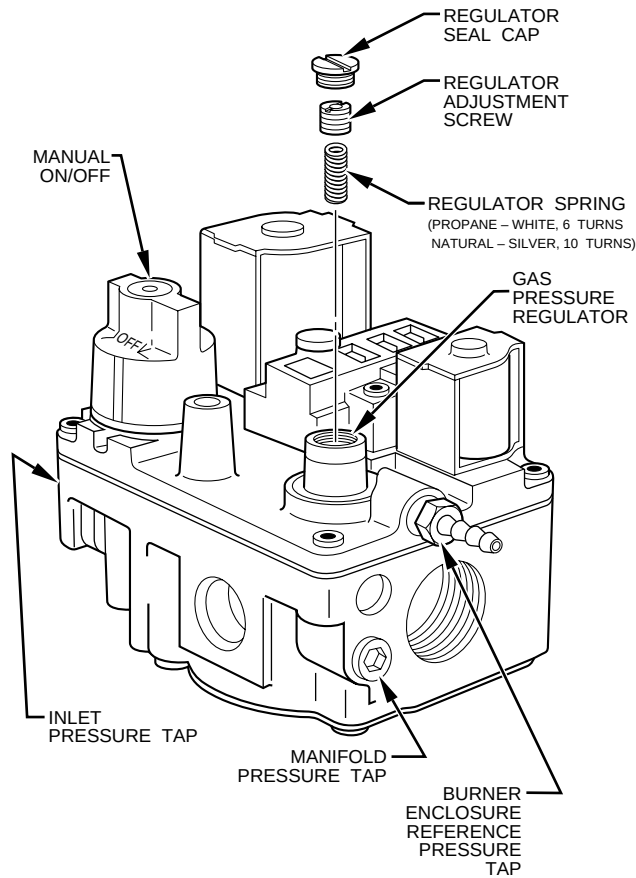
Fig. 12—Multipoise, Fixed-Speed, Condensing Furnace Component Location (Upflow Orientation Shown)



A95622

Fig. 13—Redundant Automatic Gas Valve (With Electric Control Switch)

6. Remove wires from gas valve. Note location for reassembly.
7. Remove burner enclosure pressure tube from gas valve regulator fitting. (See Fig. 13 or 14.)
8. Remove screws that secure manifold to burner enclosure and remove manifold, orifices, and gas valve as 1 assembly.
9. Remove and discard orifices from manifold.
- 10. Determine natural gas orifice size for correct input at installed altitude by using Table 9 or 10. (See also conversion kit rating plate 326107-201.)
 Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft.
 In the U.S.A., the input rating for altitudes above 2000 ft must be reduced by 2 percent for each 1000 ft above sea level.
 In Canada, the input rating must be derated by 5 percent for altitudes of 2000 ft to 4500 ft above sea level.
 - a. Obtain yearly heat value average (at installed altitude) for local gas supply.
 - b. Obtain yearly specific gravity average for local gas supply.
 - c. Verify furnace model and size. Table 9 can only be used for 40-in. tall, multipoise, hot-surface ignition, condensing furnaces with heating sizes of 040 through 120. Table 10 can only be used for 40-in. tall, multipoise, hot-surface ignition, condensing furnaces with a 140 heating size.
 - d. Find installation altitude in Table 9 or 10.



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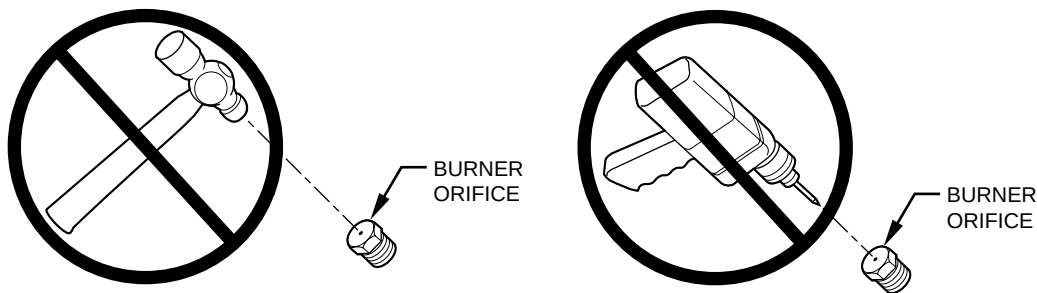
Fig. 14—Redundant Automatic Gas Valve (With Manual Control Knob)

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 9 or 10.

- e. Find closest natural gas heat value and specific gravity in Table 9 or 10.
- f. Follow heat value line and specific gravity line to point of intersection to find orifice size and manifold pressure settings for proper operation at given natural gas condition.

EXAMPLE: (Using Table 9 at 0—2000 ft altitude)
 Heat value = 1050 Btu/cu ft
 Specific gravity = 0.62
 Therefore: Orifice No. 45 is required.

11. Install properly sized orifices in manifold. DO NOT use Teflon tape. Finger-tighten each orifice 1 complete turn to prevent cross threading, then tighten with wrench. There are sufficient orifices for the largest size furnace. Discard extra orifices. Orifices of other sizes must be field-supplied and are available through your local distributor.



CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers causing failure. Obtain new orifices if orifice size must be changed.

12. Reinstall manifold, orifice, and gas valve assembly in burner box. Ensure manifold seal is installed properly and burners fit over orifices.
13. Reconnect wires to gas valve. Refer to furnace wire schematic for proper wire location.
14. Reinstall burner box pressure tube to gas valve regulator fitting.

NOTE: DO NOT reconnect gas supply or reinstall burner box cover at this time.

Table 9—Multipoise, Fixed-Speed, Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Rate For Use with 040 through 120 Size Furnaces Only (Tabulated Data Based on 20,000 Btuh per Burner, Derated 2 percent for Each 1000 Ft Above Sea Level)

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		875	43	3.5	43	3.6	43	3.7	43	3.8	42	3.2
		900	44	3.7	43	3.4	43	3.5	43	3.6	43	3.7
		925	44	3.5	44	3.7	44	3.8	43	3.4	43	3.5
		950	44	3.4	44	3.5	44	3.6	44	3.7	44	3.8
		975	44	3.2	44	3.3	44	3.4	44	3.5	44	3.6
		1000	45	3.7	45	3.8	44	3.2	44	3.4	44	3.5
		1025	45	3.5	45	3.6	45	3.7	44	3.2	44	3.3
		1050	45	3.3	45	3.4	45	3.6	45	3.7	45	3.8
		1075	45	3.2	45	3.3	45	3.4	45	3.5	45	3.6
1100	47	3.6	47	3.7	45	3.2	45	3.4	45	3.5		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	43	3.8	42	3.2	42	3.3	42	3.4	42	3.5
		800	43	3.5	43	3.7	43	3.8	42	3.2	42	3.3
		825	44	3.8	43	3.4	43	3.6	43	3.7	43	3.8
		850	44	3.6	44	3.7	44	3.8	43	3.5	43	3.6
		875	44	3.4	44	3.5	44	3.6	44	3.7	43	3.4
		900	44	3.2	44	3.3	44	3.4	44	3.5	44	3.6
		925	45	3.7	45	3.8	44	3.2	44	3.3	44	3.4
		950	45	3.5	45	3.6	45	3.7	45	3.8	44	3.3
		975	45	3.3	45	3.4	45	3.5	45	3.6	45	3.8
		1000	45	3.1	45	3.2	45	3.4	45	3.5	45	3.6
1025	45	3.0	45	3.1	45	3.2	45	3.3	45	3.4		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	43	3.7	43	3.8	42	3.3	42	3.4	42	3.5
		775	43	3.5	43	3.6	43	3.7	43	3.8	42	3.2
		800	44	3.7	43	3.4	43	3.5	43	3.6	43	3.7
		825	44	3.5	44	3.6	44	3.8	43	3.4	43	3.5
		850	44	3.3	44	3.4	44	3.5	44	3.7	44	3.8
		875	45	3.8	44	3.2	44	3.3	44	3.5	44	3.6
		900	45	3.6	45	3.7	45	3.8	44	3.3	44	3.4
		925	45	3.4	45	3.5	45	3.6	45	3.7	44	3.2
		950	45	3.2	45	3.3	45	3.4	45	3.5	45	3.7
		975	45	3.0	45	3.2	45	3.3	45	3.4	45	3.5
1000	45	2.9	45	3.0	45	3.1	45	3.2	45	3.3		

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		750	43	3.4	43	3.5	43	3.7	43	3.8	42	3.2
		775	44	3.7	44	3.8	43	3.4	43	3.5	43	3.7
		800	44	3.5	44	3.6	44	3.7	44	3.8	43	3.4
		825	44	3.2	44	3.4	44	3.5	44	3.6	44	3.7
		850	45	3.7	45	3.8	44	3.3	44	3.4	44	3.5
		875	45	3.5	45	3.6	45	3.7	44	3.2	44	3.3
		900	45	3.3	45	3.4	45	3.5	45	3.6	45	3.8
		925	45	3.1	45	3.2	45	3.3	45	3.4	45	3.6
	950	45	3.0	45	3.1	45	3.2	45	3.3	45	3.4	
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		725	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		750	44	3.6	44	3.7	43	3.4	43	3.5	43	3.6
		775	44	3.4	44	3.5	44	3.6	44	3.7	43	3.4
		800	44	3.2	44	3.3	44	3.4	44	3.5	44	3.6
		825	45	3.6	45	3.7	44	3.2	44	3.3	44	3.4
		850	45	3.4	45	3.5	45	3.6	45	3.8	44	3.2
		875	45	3.2	45	3.3	45	3.4	45	3.6	45	3.7
		900	45	3.0	45	3.1	45	3.3	45	3.4	45	3.5
		925	45	2.9	45	3.0	45	3.1	45	3.2	45	3.3
		950	45	2.7	45	2.8	45	2.9	45	3.0	45	3.1
		975	45	2.6	45	2.7	45	2.8	45	2.9	45	2.9
	1000	45	2.5	45	2.5	45	2.6	45	2.7	45	2.8	
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	6001 to 7000	650	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6
		675	43	3.6	43	3.7	43	3.8	42	3.2	42	3.3
		700	44	3.8	43	3.4	43	3.6	43	3.7	43	3.8
		725	44	3.6	44	3.7	44	3.8	43	3.4	43	3.5
		750	44	3.3	44	3.4	44	3.6	44	3.7	44	3.8
		775	45	3.8	44	3.2	44	3.3	44	3.4	44	3.5
		800	45	3.5	45	3.7	45	3.8	44	3.2	44	3.3
		825	45	3.3	45	3.4	45	3.6	45	3.7	45	3.8
		850	45	3.1	45	3.2	45	3.4	45	3.5	45	3.6
	875	45	3.0	45	3.1	45	3.2	45	3.3	45	3.4	
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	7001 to 8000	625	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		650	43	3.5	43	3.7	43	3.8	42	3.2	42	3.3
		675	44	3.8	43	3.4	43	3.5	43	3.6	43	3.7
		700	44	3.5	44	3.6	44	3.8	43	3.4	43	3.5
		725	44	3.3	44	3.4	44	3.5	44	3.6	44	3.7
		750	45	3.7	45	3.8	44	3.3	44	3.4	44	3.5
		775	45	3.5	45	3.6	45	3.7	45	3.8	44	3.3
		800	45	3.3	45	3.4	45	3.5	45	3.6	45	3.7
		825	45	3.1	45	3.2	45	3.3	45	3.4	45	3.5
	850	45	2.9	45	3.0	45	3.1	45	3.2	45	3.3	

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	8001 to 9000	600	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		625	43	3.5	42	3.6	43	3.8	42	3.2	42	3.3
		650	44	3.7	43	3.4	43	3.5	43	3.6	43	3.7
		675	44	3.5	44	3.6	44	3.7	44	3.8	43	3.4
		700	44	3.2	44	3.3	44	3.4	44	3.6	44	3.7
		725	45	3.6	45	3.8	44	3.2	44	3.3	44	3.4
		750	45	3.4	45	3.5	45	3.6	45	3.8	44	3.2
		775	45	3.2	45	3.3	45	3.4	45	3.5	45	3.6
	800	45	3.0	45	3.1	45	3.2	45	3.3	45	3.4	
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	43	3.8	42	3.2	42	3.3	42	3.5	42	3.6
		600	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		625	44	3.7	44	3.8	43	3.5	43	3.6	43	3.7
		650	44	3.4	44	3.5	44	3.7	44	3.8	43	3.4
		675	45	3.8	44	3.3	44	3.4	44	3.5	44	3.6
		700	45	3.6	45	3.7	45	3.8	44	3.3	44	3.4
		725	45	3.3	45	3.4	45	3.6	45	3.7	45	3.8
		750	45	3.1	45	3.2	45	3.3	45	3.4	45	3.5
	775	45	2.9	45	3.0	45	3.1	45	3.2	45	3.3	

PROCEDURE 2—CONVERT GAS VALVE

1. Be sure main gas and electrical supplies to furnace are off.
2. Remove regulator seal cap. (See Fig. 13 or 14.)
3. Remove adjustment screw and propane gas regulator spring (white).
4. Install natural gas regulator spring (silver) in gas valve (10 turns).

NOTE: DO NOT reinstall regulator seal cap at this time.

PROCEDURE 3—CHECK INLET GAS PRESSURE

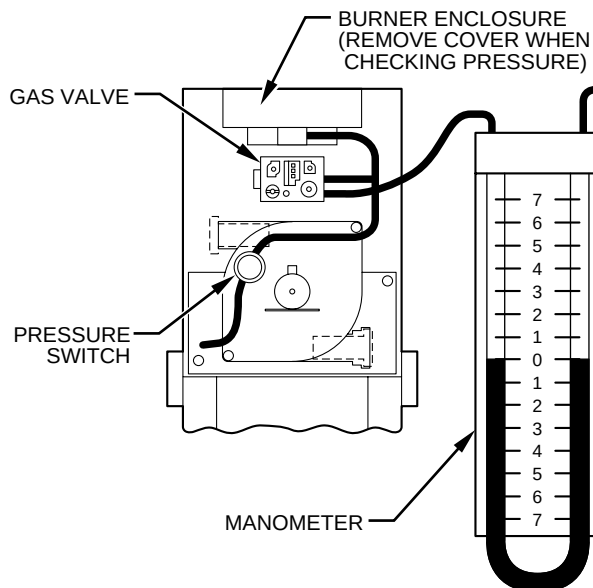
NOTE: This kit is to be used only when inlet gas pressure is between 4.5-in. wc and 13.6-in. wc.

1. Be sure gas and electric supplies to furnace are off.
2. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve. (See Fig. 13 or 14.)
3. Attach manometer to inlet pressure tap on furnace gas valve. (See Fig. 15.)

⚠ CAUTION: DO NOT operate furnace more than 1 minute to check inlet gas pressure as conversion is not complete at this time.

4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve control switch/knob to ON position.
6. Turn on furnace power supply.
7. Jumper R and W thermostat connections to call for heat.
8. When main burners ignite, confirm inlet gas pressure is between 4.5-in. wc and 13.6-in. wc.
9. Remove jumper across R and W thermostat connections to terminate call for heat.
10. Turn furnace gas valve control switch/knob to OFF position.
11. Turn gas supply manual shutoff valve to OFF position.
12. Turn off furnace power supply.
13. Remove manometer and reinstall gas valve inlet pressure tap plug.

NOTE: Use propane-gas-resistant pipe dope to prevent gas leaks. DO NOT use Teflon tape.



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Fig. 15—Adjusting Manifold Pressure (Attaching Manometer)

Table 10—Multipoise, Fixed-Speed Condensing Furnace Orifice Size and Manifold Pressure for Correct Input For Use with 140 Size Furnaces Only (Tabulated Data Based on 23,000 Btuh per Burner, Derated 2 percent for Each 1000 Ft Above Sea Level)

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	0 to 2000	850	41	3.6	41	3.7	41	3.8	40	3.6	40	3.8
		875	42	3.8	41	3.5	41	3.6	41	3.7	41	3.8
		900	42	3.5	42	3.7	42	3.8	41	3.5	41	3.6
		925	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
		950	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6
		975	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		1000	43	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		1025	43	3.3	43	3.4	43	3.6	43	3.7	43	3.8
		1050	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		1075	44	3.5	44	3.6	43	3.2	43	3.3	43	3.4
1100	44	3.3	44	3.4	44	3.5	43	3.2	43	3.3		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and Canada	U.S.A. Altitudes 2001 to 3000 or Canada Altitudes 2000 to 4500	775	41	3.7	41	3.8	40	3.6	40	3.7	39	3.6
		800	42	3.8	41	3.6	41	3.7	41	3.8	40	3.6
		825	42	3.6	42	3.7	41	3.5	41	3.6	41	3.7
		850	42	3.4	42	3.5	42	3.6	42	3.7	41	3.5
		875	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6
		900	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		925	3.5	3.5	43	3.6	43	3.7	42	3.2	42	3.3
		950	43	3.3	43	3.4	43	3.5	43	3.7	43	3.8
		975	43	3.1	43	3.3	43	3.4	43	3.5	43	3.6
		1000	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
1025	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2		

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	3001 to 4000	750	41	3.6	41	3.8	40	3.6	40	3.7	40	3.8
		775	42	3.8	41	3.5	41	3.6	41	3.7	40	3.6
		800	42	3.5	42	3.7	42	3.8	41	3.5	41	3.6
		825	42	3.3	42	3.4	42	3.6	42	3.7	42	3.8
		850	43	3.8	42	3.2	42	3.4	42	3.5	42	3.6
		875	43	3.6	43	3.7	42	3.2	42	3.3	42	3.4
		900	43	3.4	43	3.5	43	3.6	43	3.8	42	3.2
		925	43	3.2	43	3.3	43	3.5	43	3.6	43	3.7
		950	43	3.1	43	3.2	43	3.3	43	3.4	43	3.5
		975	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
1000	43	2.8	43	2.9	43	3.0	43	3.0	43	3.1		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	4001 to 5000	725	41	3.6	41	3.7	41	3.8	40	3.6	40	3.8
		750	42	3.7	42	3.8	41	3.6	41	3.7	41	3.8
		775	42	3.5	42	3.6	42	3.7	42	3.8	41	3.6
		800	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7
		825	43	3.7	42	3.2	42	3.3	42	3.4	42	3.5
		850	43	3.5	43	3.6	43	3.8	42	3.2	42	3.3
		875	43	3.3	43	3.4	43	3.6	43	3.7	43	3.8
		900	43	3.1	43	3.3	43	3.4	43	3.5	43	3.6
		925	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		950	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	5001 to 6000	700	41	3.5	41	3.7	41	3.8	40	3.6	40	3.7
		725	42	3.7	42	3.8	41	3.5	41	3.6	41	3.8
		750	42	3.4	42	3.5	42	3.7	42	3.8	41	3.5
		775	42	3.2	42	3.3	42	3.4	42	3.5	42	3.7
		800	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		825	43	3.5	43	3.6	43	3.7	43	3.8	42	3.2
		850	43	3.3	43	3.4	43	3.5	43	3.6	43	3.7
		875	43	3.1	43	3.2	43	3.3	43	3.4	43	3.5
		900	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
		925	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1
		950	43	2.6	43	2.7	43	2.8	43	2.9	43	3.0
		975	43	2.5	43	2.6	43	2.6	43	2.7	43	2.8
1000	43	2.3	43	2.4	43	2.5	43	2.6	43	2.7		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	6001 to 7000	650	41	3.8	40	3.6	40	3.7	40	3.8	39	3.7
		675	41	3.5	41	3.6	41	3.7	40	3.6	40	3.7
		700	42	3.6	42	3.7	41	3.5	41	3.6	41	3.7
		725	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
		750	43	3.8	42	3.3	42	3.4	42	3.5	42	3.6
		775	43	3.6	43	3.7	43	3.8	42	3.3	42	3.4
		800	43	3.4	43	3.5	43	3.6	43	3.7	43	3.8
		825	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		850	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		875	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2

ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	7001 to 8000	625	41	3.7	40	3.6	40	3.7	40	3.8	39	3.7
		650	41	3.5	41	3.6	41	3.7	41	3.8	40	3.6
		675	42	3.6	42	3.7	42	3.8	41	3.5	41	3.7
		700	42	3.3	42	3.4	42	3.6	42	3.7	42	3.8
		725	43	3.8	42	3.2	42	3.3	42	3.4	42	3.5
		750	43	3.5	43	3.6	43	3.8	42	3.2	42	3.3
		775	43	3.3	43	3.4	43	3.5	43	3.6	43	3.8
		800	43	3.1	43	3.2	43	3.3	43	3.4	43	3.5
		825	43	2.9	43	3.0	43	3.1	43	3.2	43	3.3
850	43	2.7	43	2.8	43	2.9	43	3.0	43	3.1		
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	8001 to 9000	600	41	3.7	40	3.6	40	3.7	40	3.8	39	3.7
		625	42	3.8	41	3.6	41	3.7	41	3.8	40	3.6
		650	42	3.5	42	3.7	42	3.8	41	3.5	41	3.6
		675	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7
		700	43	3.7	43	3.8	42	3.3	42	3.4	42	3.5
		725	43	3.5	43	3.6	43	3.7	43	3.8	42	3.2
		750	43	3.2	43	3.4	43	3.5	43	3.6	43	3.7
		775	43	3.0	43	3.1	43	3.2	43	3.3	43	3.5
		800	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2
ALTITUDE RANGE (FT)		AVG GAS HEAT VALUE AT ALTITUDE (BTU/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. Only	9001 to 10,000	575	41	3.7	40	3.6	40	3.7	40	3.8	39	3.7
		600	42	3.8	41	3.5	41	3.7	41	3.8	40	3.6
		625	42	3.5	42	3.6	42	3.7	41	3.5	41	3.6
		650	42	3.2	42	3.4	42	3.5	42	3.6	42	3.7
		675	43	3.7	43	3.8	42	3.2	42	3.3	42	3.4
		700	43	3.4	43	3.5	43	3.6	43	3.8	42	3.2
		725	43	3.2	43	3.3	43	3.4	43	3.5	43	3.6
		750	43	3.0	43	3.1	43	3.2	43	3.3	43	3.4
		775	43	2.8	43	2.9	43	3.0	43	3.1	43	3.2

PROCEDURE 4—CHECK FURNACE OPERATION AND MAKE NECESSARY ADJUSTMENTS

1. Be sure main gas and electric supplies to furnace are off.
2. Remove 1/8-in. pipe plug from manifold pressure tap on gas valve. (See Fig. 13 or 14.)
3. Attach manometer to manifold pressure tap on gas valve.
4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve control switch/knob to ON position.
6. Check all threaded pipe connections for gas leaks.

⚠ WARNING: NEVER use matches, candles, flame, or other sources of ignition to check for gas leakage. Use a soap-and-water solution to check for leaks. Failure to follow this warning could result in fire, explosion, personal injury, or death.

7. Turn on furnace power supply.
8. Jumper R and W thermostat connections to call for heat.
9. When main burners ignite, check manifold orifices for gas leaks.

PROCEDURE 5—SET GAS INPUT RATE

→ Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft. (See conversion kit rating plate 326107–201.)

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

In Canada, the input rating must be derated by 5 percent for altitudes of 2000 ft to 4500 ft above sea level.

Furnace input rate must be within ± 2 percent of input on furnace rating plate.

1. Determine natural gas orifice size and manifold pressure for correct input.
 - a. Obtain yearly heat value average (at installed altitude) from local gas supplier.

- b. Obtain yearly specific gravity average from local gas supplier.
- c. Verify furnace model and size. Table 9 can only be used for 40-in. tall, multipoise, hot-surface ignition, condensing furnaces with heating sizes of 040 through 120. Table 10 can only be used for 40-in. tall, multipoise, hot-surface ignition, condensing furnaces with a 140 heating size.
- d. Find installation altitude in Table 9 or 10.

NOTE: For Canada altitudes of 2000 to 4500 ft, use U.S.A. altitudes of 2001 to 3000 ft in Table 9 or 10.

- e. Find closest natural gas heat value and specific gravity in Table 9 or 10.
- f. Follow heat value and specific gravity lines to point of intersection to find orifice size and manifold pressure settings for proper operation.

EXAMPLE: (Using Table 9 at 0—2000 ft altitude)
 Heating value = 1050 Btu/cu ft
 Specific gravity = 0.62
 Therefore: Orifice No. 45, Manifold pressure 3.6-in. wc

- g. Check and verify burner orifice size in furnace. NEVER ASSUME ORIFICE SIZE. ALWAYS CHECK AND VERIFY.

- 2. Adjust manifold pressure to obtain input rate.

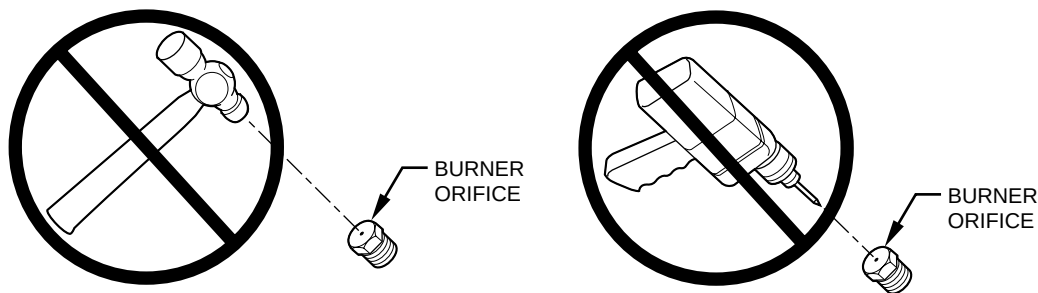
NOTE: Manifold pressure must always be measured with burner enclosure front REMOVED. Gas meter must always be clocked with burner enclosure front INSTALLED.

- a. Remove burner enclosure front.
- b. Remove cap that conceals adjustment screw for gas valve regulator. (See Fig. 13 or 14.)
- c. Turn adjusting screw, counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure.

NOTE: This furnace has been approved for a manifold pressure of 3.2-in. wc to 3.8-in. wc when installed at altitudes up to 2000 ft. For altitudes above 2000 ft, the manifold pressure can be adjusted from 2.0-in. wc to 3.8-in. wc.

⚠ CAUTION: DO NOT bottom out gas valve regulator adjusting screw. This can result in unregulated manifold pressure and result in excess overfire and heat exchanger failures.

NOTE: If orifice hole appears damaged or it is suspected to have been redrilled, check orifice hole with a numbered drill bit of correct size. Never redrill an orifice. A burr-free and squarely aligned orifice hole is essential for proper flame characteristics.



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⚠ CAUTION: DO NOT redrill burner orifices. Improper drilling (burrs, out-of-round holes, etc.) can cause excessive burner noise and misdirection of burner flames. This can result in flame impingement of the burners and heat exchangers causing failure. Obtain new orifices if orifice size must be changed.

- d. Replace gas valve regulator adjustment screw cap.
- e. Replace burner enclosure front and verify adjusted gas input rate using method outlined in item 3.
- f. Look through sight glass in burner enclosure and check burner flame. Burner flame should be clear blue, almost transparent. (See Fig. 11.)

- 3. Verify natural gas input rate by clocking gas meter.

NOTE: Be sure all pressure tubing, combustion-air and vent pipes, and burner enclosure front are in place when checking input by clocking gas meter.

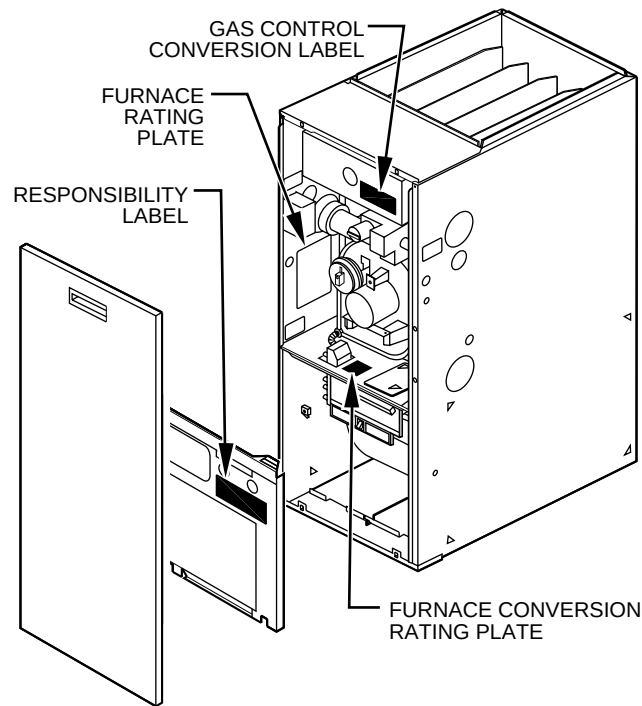
- a. Calculate high-altitude adjustment (if required).

UNITED STATES

At installation altitudes above 2000 ft, this furnace has been approved for a 2 percent derate for each 1000 ft above sea level. See Table 11 for derate multiplier factor and example.

CANADA

At installation altitudes from 2000 to 4500 ft, this furnace must be derated 5 percent by an authorized Gas Conversion Station or Dealer. To determine correct input rate for altitude, see example and use 0.95 as derate multiplier factor.



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Fig. 16—Multipoise, Fixed-Speed, Condensing Furnace Conversion Label Location (Upflow Orientation Shown)

Table 11—Altitude Derate Multiplier for U.S.A.

ALTITUDE (FT)	PERCENT OF DERATE	DERATE MULTIPLIER FACTOR FOR U.S.A.*
0-2000	0	1.00
2001—3000	4—6	0.95
3001—4000	6—8	0.93
4001—5000	8—10	0.91
5001—6000	10—12	0.89
6001—7000	12—14	0.87
7001—8000	14—16	0.85
8001—9000	16—18	0.83
9001—10,000	18—20	0.81

*Derate multiplier factor is based on midpoint altitude for altitude range.

EXAMPLE:

100,000 Btuh input furnace installed at 4300 ft.

Furnace Input Rate at Sea Level X Derate Multiplier Factor = Furnace Input Rate at Installation Altitude

100,000 X 0.91 = 91,000

- Turn off all other gas appliances and pilots.
- Start furnace and let operate for 3 minutes.
- Measure time (in sec) for gas meter test dial to complete 1 revolution.
- Refer to Table 5 for cu ft of gas per hr.
- Multiply gas rate (cu ft/hr) X heating value (Btu/cu ft) using natural gas heating value from local gas utility/supplier.

EXAMPLE: (For all models at 0—2000 ft altitude)

Btu heating input = Btu/cu ft X cu ft/hr

Heating value of gas = 975 Btu/cu ft

Time for 1 revolution of 2-cu ft dial = 70 sec

Gas rate = 103 cu ft/hr (from Table 5)

Btu heating input = 103 X 975 = 100,425 Btuh

In this example, the orifice size and manifold pressure adjustment is within ± 2 percent of the furnace input rate.

NOTE: Measured gas input must be within ± 2 percent of that stated on furnace rating plate when installed at sea level or derated per that stated above when installed at higher altitudes.

4. Remove jumper across R and W thermostat connections to terminate call for heat.
5. Turn furnace gas valve control switch/knob to OFF position.
6. Remove manometer and reinstall gas valve manifold pressure tap plug. (See Figs. 13 or 14 and 15.)

NOTE: Use propane-gas-resistant pipe dope to prevent gas leaks. DO NOT use Teflon tape.

7. Turn furnace gas valve control switch/knob to ON position.
8. Set room thermostat to call for heat.
9. Check inlet and manifold pressure tap plugs for gas leaks when main burners ignite.
10. Check for correct burner flame. (See Fig. 11.)
11. Observe unit through 2 complete heating cycles. See sequence of operation in furnace Installation, Start-Up, and Operating Instructions.
12. Set room thermostat to desired temperature.

PROCEDURE 6—LABEL APPLICATION

NOTE: See Fig. 16 for label location.

- 1. Fill in Conversion Responsibility Label (326107–203) and apply to blower access panel as shown. Date, name, and address of organization making conversion are required.
- 2. Apply Gas Control Conversion Label (326107–202) to burner enclosure cover as shown.
- 3. Apply Furnace Conversion Rating Plate (326107–201) to blower shelf as shown.
- 4. Reinstall main furnace door.

NOTE: Discard labels and instructions packaged with White-Rodgers regulator spring conversion kit.

