

Installation Instructions

Manufactured (Mobile) Home Installation and Gas Conversion Kit

KGAMH0102KIT



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 personnel should install or service heating equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on heating equipment, observe precautions in the literature, on tags, and on labels attached to the unit.

→ Follow all safety codes. In the United States, follow all safety codes including the National Fuel Gas Code (NFGC) NFPA No. 54-2002/ANSI Z223.1-2002. In Canada, refer to the current edition of the National Standard of Canada CAN/CGA-B149.1- and .2-M05 Natural Gas and Propane Installation Codes (NSCNGPIC).

Wear safety glasses and work gloves. Have a fire extinguisher available.

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. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies a hazard which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** 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: FIRE, EXPLOSION, ELECTRICAL SHOCK, AND CARBON MONOXIDE POISONING HAZARD**

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 could 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: LE FEU, L'EXPLOSION, CHOC ELECTRIQUE ,ET MONOXYDE DE CARBONE EMPOISONNER**

Cette trousse de conversion doit être installée par un service d'entretien qualifié, selon les instructions du fabricant et selon toutes les exigences et tous les codes pertinents de l'autorité compétente. Assurez-vous de bien suivre les instructions dans cette notice pour réduire au minimum le risque d'incendie, d'explosion ou la production de monoxyde de carbone pouvant causer des dommages matériels, de blessure ou la mort. Le service d'entretien qualifié est responsable de l'installation 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 kit Part No. KGAMH0102KIT in the following gas furnaces for manufactured (mobile) home applications.

→ This kit is only for use in single stage 40,000 through 120,000 Btuh gas input models 58MCA, 58MCB, 58MXA, 58MXB, 340MAV, 340AAV, 350MAV, 350AAV, PG9MAA, and PG9MAB when installed as a direct vent (2-pipe) furnace.

→ **NOTE:** This kit is not approved for the 140,000 Btuh gas input model furnace, any 2-stage and variable speed models, any non-direct vent (1-pipe) applications nor any furnace that does not have a sealed combustion system with provisions for outside air.

⚠ WARNING: FIRE, EXPLOSION, ELECTRICAL SHOCK, AND CARBON MONOXIDE POISONING HAZARD

Failure to follow this warning could result in serious injury or property damage.

Proper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electric 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.

⚠ WARNING: FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in fire, personal injury or death.

Gas supply and electrical power **MUST** be shut off to the furnace before proceeding with conversion.

DESCRIPTION AND USAGE

This kit is designed for use in the furnaces listed in the Introduction. These instructions describe the modifications required for use in a manufactured (mobile) home. See Table 1 for kit contents. This conversion uses a White-Rodgers 36E convertible (natural or propane) gas valve. More parts are shipped in the kit than will be needed to complete the conversion. When installation is complete, the extra parts are to remain with the furnace for future use.

→ This furnace must be installed in accordance with the manufacturer's instructions and Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 or, when such standard is not applicable, the ANSI A225.1, Standard for Manufactured Home Installation (Manufactured Home Sites, Communities and Set-Ups), or the Mobile Homes Standard CAN/CSA-Z240 MH Series-92 (R2001).

→ Ce générateur d'air chaud doit être installé conformément avec les instructions du fabricant et la norme intitulée Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 ou, lorsque cette norme ne s'applique pas, la norme ANSI A225.1, intitulée Standard for Manufactured Home Installation (Manufactured Home Sites, Communities and Set-Ups), ou la norme CAN/CSA-Z240 MH Série 92 (R2001) de l'ACNOR, intitulée Maisons mobiles.

This furnace must be installed with a direct-vent (combustion air and flue) system and a factory accessory termination kit. In a direct-vent system, all air for combustion is taken directly from the outside atmosphere, and all flue products are discharged to the outside atmosphere. See furnace and factory accessory termination kit instructions for proper installation.

NOTE: The factory accessory termination kit when used for sidewall termination **MUST NOT** project more than 3 in. beyond the surface of the wall.

See the appropriate section for installation modification.

SECTION I: Initial Kit Installation

SECTION II: Conversion from Natural Gas to Propane

SECTION III: Conversion from Propane to Natural Gas

→ **Table 1—Kit Contents**

DESCRIPTION	PART NO.	QUANTITY
Gas Valve—Convertible (White-Rodgers 36E)	EF32CW202	1
Main Burner Orifice (Drill Size No. 55)	LH32DB201	7
Main Burner Orifice (Drill Size 1.30mm)	LH32DB210	7
Conversion Rating Plate Label	331103-101	1
Conversion Responsibility Label	331102-101	1
Manufactured (Mobile) Home Installation Label	322236-101	1
Adjusting Key	322226-201	1
Installation Instructions	AG-GAMH-09	1
Orange Wire Assembly	W182X23 04 018	1
Orange Wire Assembly	W182X66 04 102	1
Yellow Wire Assembly	W182Y66 11 006	1
Yellow Wire Assembly	W182Y66 11 014	1
Yellow Wire Assembly	W182Y66 23 016	1
Pressure Switch	HK02LB008	1
Brass T	CA21JZ001	1
Brass Coupling	CA52JZ103	1

SECTION I: INITIAL KIT INSTALLATION

PROCEDURE 1—GENERAL

A downflow furnace application is where furnace blower is located above combustion and controls section of furnace, and conditioned air is discharged downwards.

Attach adhesive pouch containing literature packet and gas conversion parts to outside of main furnace door or accessible side of furnace for use at a later date. (See Fig. 1.)

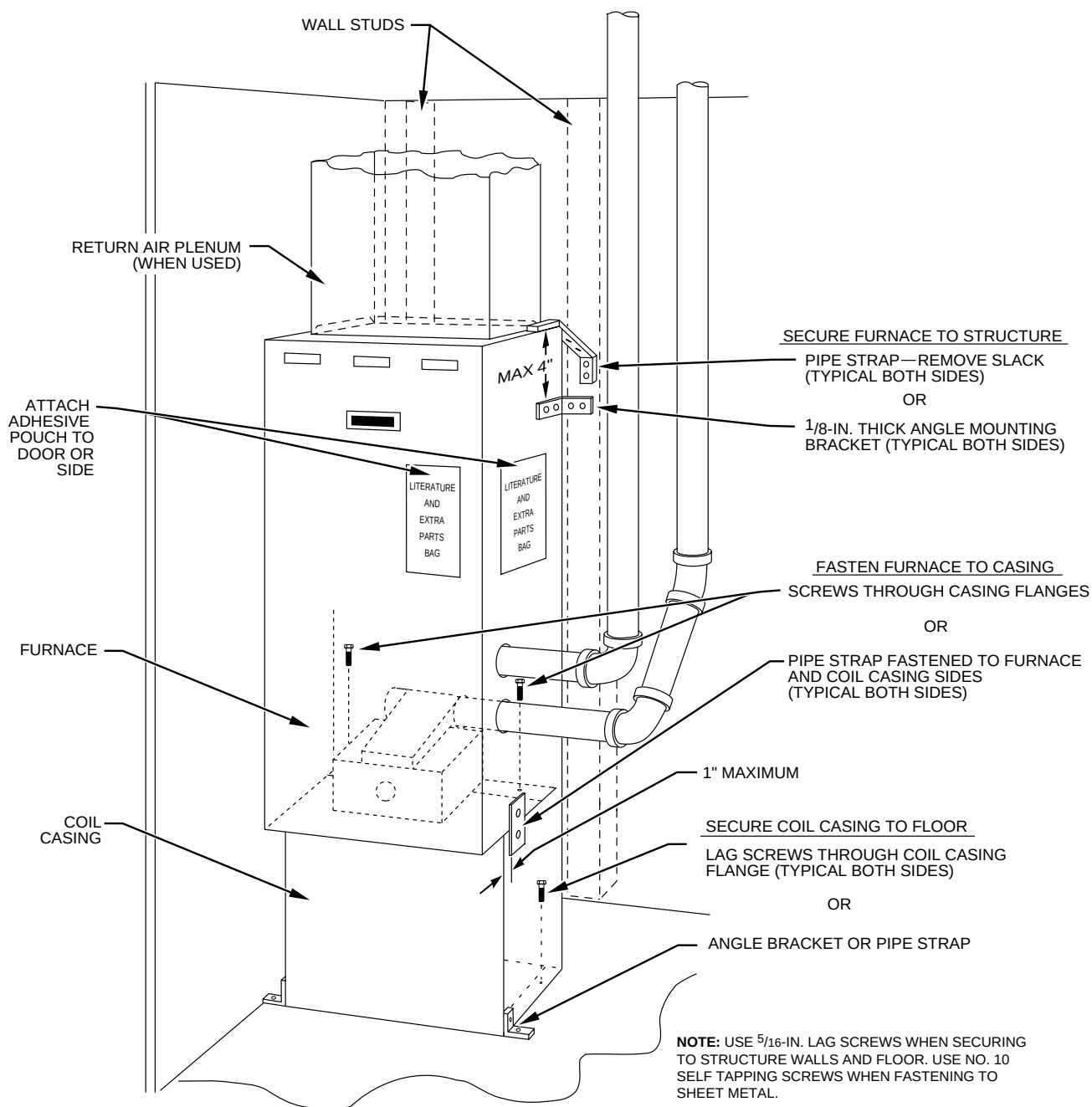


Fig. 1—Securing Furnace to Structure

⚠ WARNING: PERSONAL INJURY AND UNIT DAMAGE HAZARD

Failure to follow this warning could result in personal injury and possible unit damage.

When installing the air conditioning coil casing or when servicing air conditioning, caution must be taken to ensure furnace will not fall forward. (See Fig. 2.)

⚠ CAUTION: UNIT DAMAGE HAZARD

Failure to follow this caution may result in possible damage to the unit.

To prevent damage during transportation of the home, coil casing must be secured to the floor, furnace and coil casing must be fastened together, and furnace must be secured to wall of the structure. When a coil casing is not used, an accessory floor base is required. (See furnace rating plate or clearance label for special accessory floor base part number.) Secure floor base to structure and attach furnace to floor base.

RECOMMENDED METHODS OF SECURING FOR TYPICAL INSTALLATION. (SEE FIG. 1.) ALL MOUNTING HARDWARE IS FIELD SUPPLIED.

1. Secure coil casing to floor.
 - a. Secure coil casing to floor of structure using 5/16-in. lag screws (one each side) through lower inside flanges of coil casing.
 - b. *Alternate method:* Attach right angle mounting brackets or pipe strap (bent 90 degrees) to coil casing using No. 10 self tapping screws. Attach other end of brackets/strap to floor of structure using 5/16-in. lag screws. If coil is present in casing, be careful not to damage condensate pan with tip of screw or remove coil from casing.
2. Fasten furnace to coil casing.
 - a. Secure furnace to coil casing using 2 No. 10 self tapping screws (one on each side of burner enclosure) through cell panel flange, lower furnace casing plate, and coil casing top flange.
 - b. *Alternate method:* Attach pipe strap to both furnace casing and coil casing (one each side). If coil is present in coil casing, be careful not to damage it with tip of screw.
3. Secure furnace to structure.
 - a. Attach pipe strap to top of furnace casing using No. 10 self tapping screws. Angle strap down and away from back of furnace, remove all slack, and fasten to wall stud of structure using 5/16-in. lag screws. Typical both sides of furnace.
 - b. *Alternate method:* Secure furnace to wall stud using 1/8-in. thick right-angle brackets. Attach brackets to furnace using No. 10 self tapping screws, and to wall stud using 5/16-in. lag screws.

WHEN COIL CASING IS NOT INSTALLED (NOT SHOWN)

1. Accessory floor base **MUST** be used. Review floor base Installation Instructions before installation.
2. Secure accessory floor base to structure using 5/16-in. lag screws.
3. Fasten furnace to accessory floor base using No. 10 self tapping screws through tabs on both sides of base (two each side).

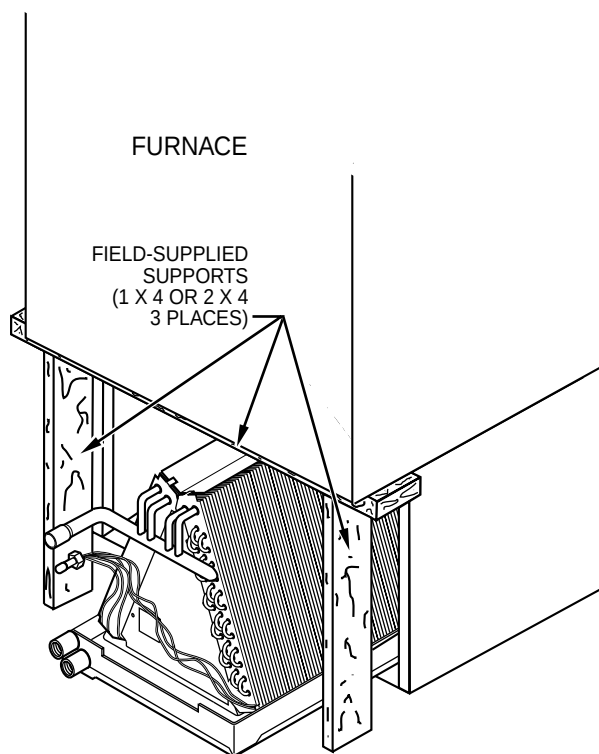


Fig. 2—Furnace Support for Servicing Air Conditioning Coil

PROCEDURE 2—REPLACE GAS VALVE

1. Turn off gas and electrical supplies to furnace.
2. Remove main furnace door.
3. Turn furnace gas valve control knob or switch to OFF position.
4. Remove burner enclosure front.
5. Remove gas supply pipe from gas valve (if installed).
6. Remove wires from gas valve. Note location for reassembly.

⚠ CAUTION: ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

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

⚠ ATTENTION: L'Échec ELECTRIQUE de DANGER D'OPERATION

Pour suivre cette prudence a pour résultat les dommages d'équipement ou l'opération déplacée.

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.

7. Remove burner box pressure tube from gas valve burner enclosure reference pressure tap fittings. (See Fig. 3.)
- 8. Unplug igniter from wire harness.
- 9. Remove igniter leads from slot in manifold grommet.
10. Remove screws securing manifold to burner box. Remove manifold, orifices, and gas valve as 1 assembly.
11. Remove production gas valve from manifold assembly and discard valve.

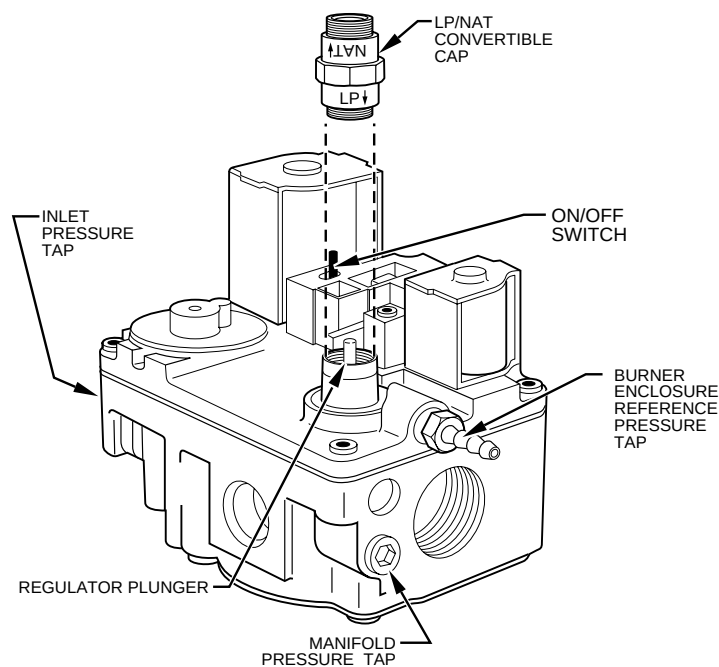
NOTE: Production gas valve has a slotted cap on regulator adjustment cap. The convertible valve has cap marked NAT and LP.

12. Install new convertible gas valve to manifold.

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

NOTE: If you will be converting furnace for use with propane, attach kit labels and extra parts bag as described in Procedure 3 then proceed to Section II.

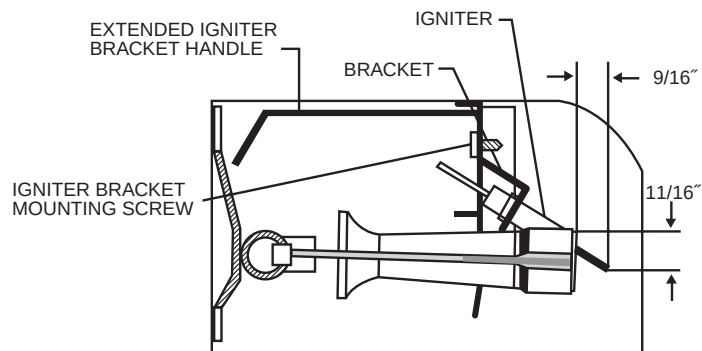
13. Reinstall manifold, orifice, and gas valve assembly in burner box. Ensure manifold seal grommet is installed properly and burners fit over orifices. (See Fig. 4 for igniter position.)



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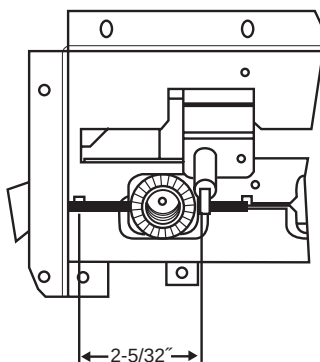
Fig. 3—Redundant Automatic Convertible Gas Valve

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→ Fig. 4a—Position of Igniter to Burner



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→ Fig. 4b—Position of Igniter to Burner

→ 14. Reinsert igniter wires in the slot in manifold grommet, dressing the wires to ensure there is no tension on the igniter itself. (See Fig. 5.)

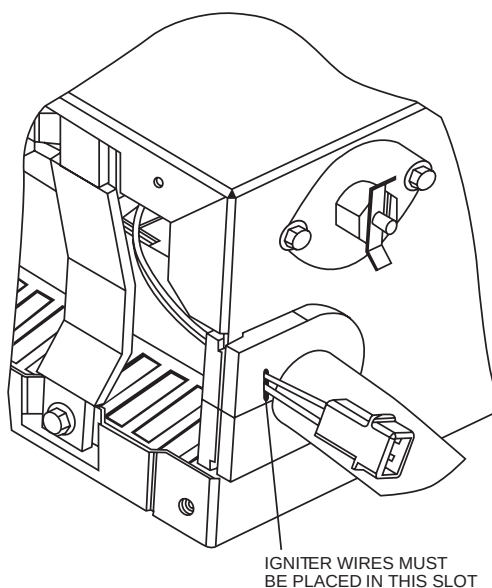
→ **⚠ WARNING: ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in electrical shock, personal injury, or death.

Igniter wires must be securely placed in slot in manifold grommet or else they could become pinched or severed and electrically shorted.

15. Reconnect wires to gas valve. Refer to furnace wiring schematic or as labeled earlier for proper wire location.

16. Reinstall burner box pressure tube to gas valve regulator fitting.



→ Fig. 5—Igniter Wire Placement

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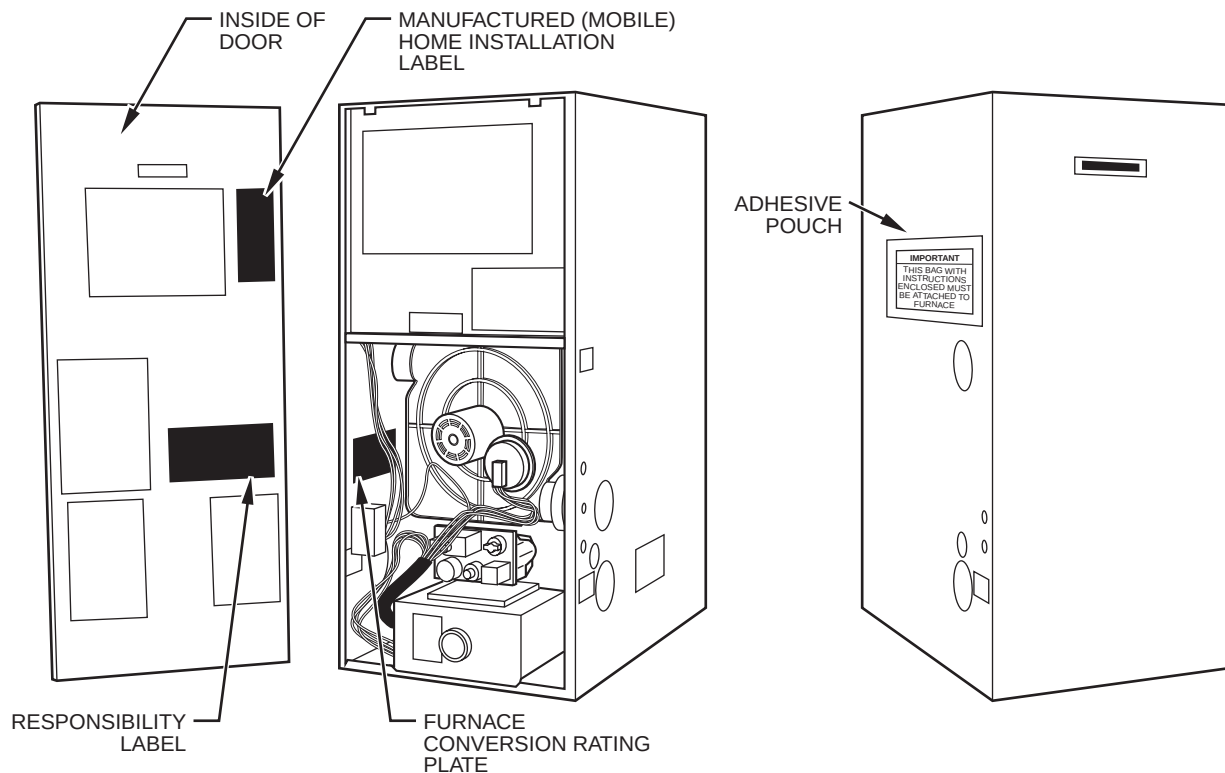


Fig. 6—Furnace Component and Conversion Label Location in Downflow Orientation

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17. Reconnect gas supply pipe to gas valve using backup wrench on gas valve to prevent rotation and improper orientation.

⚠ WARNING: FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury, death, or property damage.
Gas valve knob or switch **MUST** be facing forward or tilted upward.

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

PROCEDURE 3—LABEL AND EXTRA PARTS BAG ATTACHMENT

NOTE: See Fig. 5 for label location.

- 1. Attach Conversion Responsibility Label (331102-101) inside of main furnace door. Date, name, and address of organization making this conversion are required. (See Fig. 6.)
- 2. Attach Conversion Rating Plate Label (331103-101) inside of lower left-hand side of controls compartment (downflow) as shown in Fig. 6.
3. Attach Manufactured (Mobile) Home Installation Label (322236-101) inside of main furnace door. (See Fig. 6.)
4. Attach adhesive pouch containing gas orifices and Installation Instructions to front of main furnace door or accessible furnace side. (See Fig. 1 or 6.) Pouch must not cover or block vents on door.
5. Proceed to Section II or III for gas type modification and input rate adjustment.

SECTION II: CONVERSION FROM NATURAL GAS TO PROPANE

PROCEDURE 1—SET GAS INPUT RATE—PROPANE GAS (SEE SECTION III A FOR NATURAL GAS ADJUSTMENT.)

Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft. Input rate is same for propane and natural gases.

In the U.S.A., the input ratings for altitudes above 2000 ft must be reduced by 2 percent for each 1000 ft above sea level.

In Canada, the input ratings 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 adjusted for altitude.

1. Determine propane gas orifice size and manifold pressure for correct input using Fig. 7.
2. Check and verify burner orifice size in furnace. **NEVER ASSUME ORIFICE SIZE; ALWAYS CHECK AND VERIFY.** (See Fig. 7.)

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.

→ ⚠ WARNING: FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in fire, personal injury or death.

Gas supply and electrical power **MUST** be shut off to the furnace before proceeding with conversion.

3. Change orifice if required or proceed to Item 4.
 - a. Turn off gas and electrical supplies to furnace.
 - b. Remove main furnace door.

CONVERSION KIT KGAMH0102KIT RATING PLATE**PLAQUE SIGNALÉTIQUE DE LA TROUSSE DE CONVERSION KGAMH0102KIT - CARRIER CORPORATION**

This appliance has been converted for Manufactured (Mobile) or Modular home applications. Refer to installation instructions for gas conversion procedures. Use parts supplied by manufacturer and installed by qualified personnel. See main rating plate for appliance model number and input rating.

NOTE: Furnace gas input rate on rating plate is for installations up to 2000 ft above sea level. In U.S.A. The input rating for altitudes above 2000 ft must be derated by 2% for each 1000 ft above sea level. In Canada the input rating must be derated by 5% for altitudes of 2000 ft to 4500 ft above sea level.

L'appareil a été converti pour installation dans des habitations mobiles préfabriquées. Voir instructions d'installation pour les méthodes de conversion de gaz. Employer les pièces fournies par le fabricant, et les faire installer par du personnel qualifié. Voir plaque signalétique principale pour le numéro du modèle de l'appareil et le débit d'entrée.

REMARQUE: Le débit d'entrée du gaz de la fournaise indiqué sur la plaque signalétique s'applique à l'installation jusqu'à 610m au-dessus du niveau de la mer. Aux États-Unis, le débit d'entrée pour les altitudes au-dessus de 610m doit être réduit de 2% pour chaque 305m au-dessus du niveau

APPROVED FOR MODELS / APPROUVÉ POUR LES MODÈLES: 58MXA, 58MCA, PG9MAA, 350MAV, 340MAV, 58MXB, 58MCB, PG9MAB, 350AAV, 340AAV

FUEL USED: NATURAL GAS

CARBURANT UTILISÉ: GAZ NATUREL

INLET PRESSURE (min - max): 4.5 - 13.6 in. wc

PRESSION D'ENTRÉE (MIN. - MAX.): 4.5 - 13.6 PO COLONNE D'EAU

Furnace supplied with 45 orifices. Adjust input rate using local natural gas heat content and application altitude to determine proper orifice size. See Installation Instructions.

La fournaise est fournie avec 45 orifices. Régler le débit d'entrée selon la teneur en chaleur du gaz naturel local et l'altitude de l'installation pour déterminer le diamètre correct de l'orifice. Voir instructions d'installation.

FUEL USED: PROPANE GAS

CARBURANT UTILISÉ: GAZ PROPANE

INLET PRESSURE (min - max): 11.0 - 13.6 in. WC

PRESSION D'ENTRÉE (MIN. - MAX.): 11.0 - 13.6 PO COLONNE D'EAU

		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A. *							
		ALTITUDE DE L'INSTALLATION (PI AU-DESSUS DU NIVEAU DE LA MER) É.-U.*							
		0 - 2000	2001-3000 *	3001-4000	4001-5000	5001-6000	6001-7000	7001-8000	8001-9000
		0 - 610	611-914 *	915-1219	1221-1524	1525-1829	1830-2134	2135-2438	2439-2743
Orifice No.	N° Orifice	55	55	55	55	1.30mm	1.30mm	1.30mm	1.30mm
Manifold Pressure	Pression collecteur	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

* For Canadian Installations from 2000 to 4500 ft use U.S.A. Column 2001 to 3000 ft.

* Pour les installations au Canada entre 610 et 1373m, utiliser la colonne 611 à 914m des É.-U.

331103-101 REV. A

Fig. 7—Conversion Rating Plate

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- c. Turn furnace gas valve control knob or switch to OFF position.
- d. Remove burner enclosure front.
- e. Remove gas supply pipe from gas valve.
- f. Remove wires from gas valve. Note location for reassembly.

⚠ CAUTION: ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

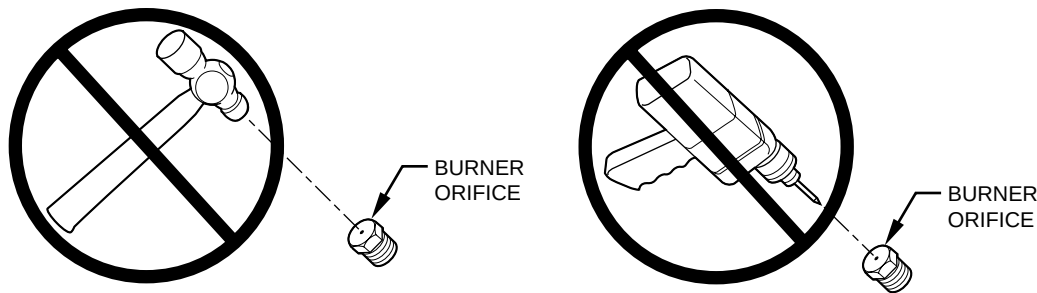
Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

⚠ ATTENTION: L'Échec ÉLECTRIQUE de DANGER D'OPERATION

Pour suivre cette prudence a pour résultat les dommages d'équipement ou l'opération déplacée.

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.

- g. Remove burner enclosure pressure tube from gas valve burner enclosure reference pressure tap fittings. (See Fig. 3.)
- h. Unplug igniter form wire harness.
- i. Remove igniter leads from slot in manifold grommet.
- j. Remove screws securing manifold to burner box. Remove manifold, orifices, and gas valve as 1 assembly.
- k. Remove natural gas orifices from manifold and place them in the bag supplied marked "Natural Gas Orifices." Manufactured (mobile) home installations are required to have these materials located with furnace for future conversion.
- l. Find correct propane gas orifices in parts bag provided with this kit or in adhesive pouched bag attached to side of furnace.



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Fig. 8—Burner Orifice

- m. Install main burner orifices. Do not use Teflon tape. Finger-tighten orifices at least 1 full turn to prevent cross-threading, then tighten orifices with wrench. There are enough orifices in parts bag for the largest furnace. Orifices of other sizes must be field supplied and are available through your local distributor.

→ **⚠ WARNING: FIRE AND FURNACE DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, property damage and/or unit damage.

DO NOT redrill 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 burners and heat exchangers causing failures. (See Fig. 8.)

- n. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve. (See Fig. 9). DO NOT DISCARD PLUG!
- o. Apply pipe dope sparingly to the ends of the 1/8-in. brass coupling (part CA52JZ103 provided in kit) and install it in 1/8-in. tapped opening in gas valve inlet pressure tap. Tighten fitting with a small wrench.
- p. Attach the female end of the female x female x male brass tee (part CA21JZ001-provided in kit). Tighten fitting with a small wrench so the male portion of the tee points out from the furnace.
- q. Apply pipe dope sparingly to male end of brass tee. Install propane low gas pressure switch (part HK02LB008-provided in kit) on nipple. After switch has been finger tightened, use small wrench on base of pressure switch for final tightening. When pressure switch is tight, switch terminals should point as shown in Fig. 9 and Fig. 10 relative to gas valve and clear control door.
- r. Connect a manometer to the open end of the tee installed in the gas valve.
- s. Reinstall manifold, orifices, and gas valve assembly in burner box. Ensure manifold grommet seal is installed properly and burners fit over orifices. (See Fig. 4.)

- t. Reinsert igniter wires in slot in manifold grommet, dressing the wires to ensure there is no tension on the igniter itself. (See Fig. 5.)

→ **⚠ WARNING: ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in electrical shock, personal injury, or death.

Igniter wires must be securely placed in slot in manifold grommet or else they could become pinched or severed and electrically shorted.

- u. Modify Single Stage Pressure Switch Wiring

Refer to furnace wiring diagram or Fig. 11.

- (1.) Disconnect yellow wire from pressure switch (PRS) in furnace inducer housing. Attach wire to C terminal on low gas pressure switch (LGPS).
- (2.) Connect insulated terminal of 16-in. yellow wire (provided in kit) to NO terminal on low gas pressure switch (LGPS). Connect other (flag style insulated) end to the C terminal on furnace pressure switch (PRS) located on inducer housing.
- (3.) Route wires along wire harness. Secure with wire tie provided in kit.

- v. Reinstall burner enclosure pressure tube to gas valve burner enclosure reference pressure tap. (See Fig. 3.)

- w. Reinstall gas supply pipe to gas valve using backup wrench to prevent rotation and improper orientation.

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

⚠ WARNING: FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in property damage, personal injury, or death.

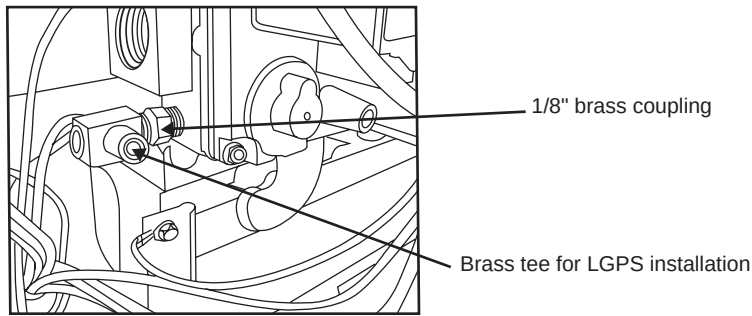
Gas valve knob or switch **MUST** be facing forward or tilted upward.

NOTE: DO NOT reinstall burner enclosure front at this time.

4. Check Inlet Gas Pressure

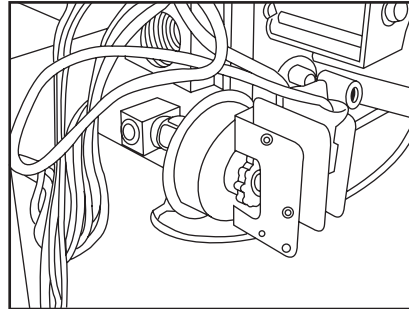
NOTE: For propane applications, inlet gas pressure must be regulated between 11.0-in. wc and 13.6-in. wc.

- a. Be sure main gas and electric supplies to furnace are off.
- b. Turn on furnace power supply.
- c. Turn gas supply manual shutoff valve to ON position.



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→ Fig. 9—Gas Valve Inlet Pressure Trap



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Fig. 10—LGPS Installed

- d. Turn furnace gas valve control knob or switch to ON position.

→ **WARNING: FIRE AND FURNACE DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, property damage and/or unit damage..
DO NOT operate furnace more than 1 minute to check inlet gas pressure as conversion is not complete at this time.

- e. Jumper R and W thermostat connections to call for heat.
 - f. When main burners have ignited, confirm proper inlet gas pressure is between 11.0-in. wc and 13.6-in. wc for propane applications.
 - g. Remove jumper across R and W thermostat connections to terminate call for heat.
 - h. Turn furnace gas valve control knob or switch to OFF position.
 - i. Turn gas supply manual shutoff valve to OFF position.
 - j. Turn off furnace power supply.
5. Adjust manifold pressure to obtain input rate.

NOTE: Manifold pressure must always be measured with burner enclosure front REMOVED.

- a. Remove burner enclosure front.
- b. Orient gas valve LP/NAT cap for propane gas. The LP arrow should point toward gas valve. (See Fig. 3.)
- c. Check input rate manifold pressure for propane gas. (See Fig. 7.) Manifold pressure must be between 9.5-in. wc and 10.5-in. wc.

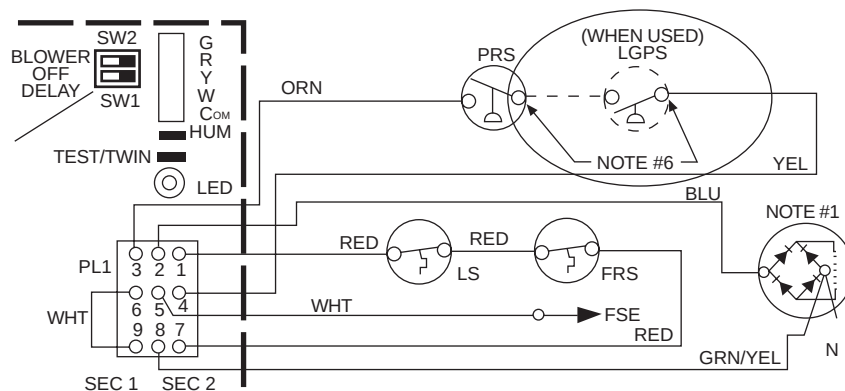


Fig. 11—Typical Wiring Diagram Showing LGPS Installed

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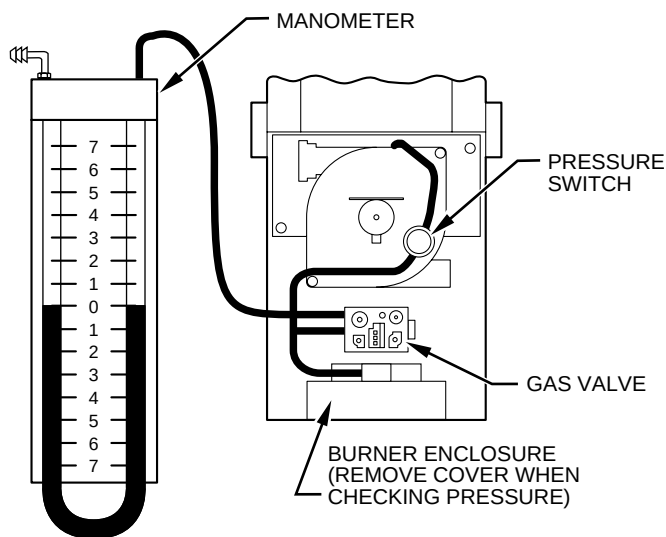


Fig. 12—Adjusting Manifold Pressure (Manometer Attachment)

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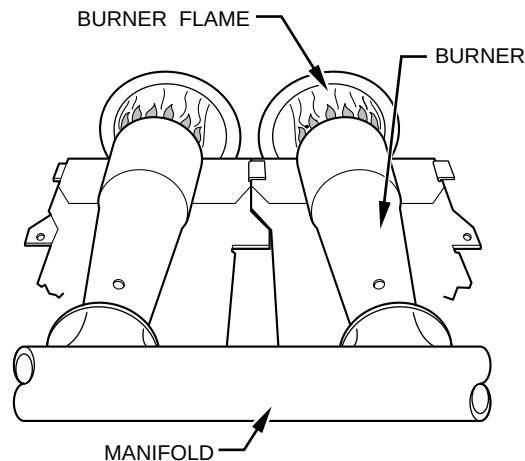


Fig. 13—Burner Flame

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- d. If manifold pressure needs to be adjusted, use gas valve adjustment key, factory-supplied in this kit or adhesive pouch. (See Fig. 14.)
- e. Remove cap that conceals adjustment screw for gas valve regulator. (See Fig. 3.)
- f. Turn adjusting screw using supplied ADJUSTING KEY either counterclockwise (out) to decrease input rate or clockwise (in) to increase rate. (See Fig. 14.)
- g. Replace cap and check rate. Cap MUST be in place to actuate regulator.
- h. Repeat items e and f until correct input rate is obtained. When correct input is obtained, make sure cap that conceals gas valve regulator adjustment screw is oriented properly for propane (LP) gas. The LP arrow should be pointing toward gas valve. (See Fig. 3.)
- i. Replace burner enclosure front.

→ **⚠ WARNING: FIRE AND FURNACE DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, property damage and/or unit damage. Be sure burner enclosure front is in place after adjustments have been made.

- j. Look through sight glass in burner enclosure and check burner flame. Burner flame should be clear blue, almost transparent. (See Fig. 13.)

- k. Check for gas leaks.

→ **⚠ WARNING: FIRE OR EXPLOSION HAZARD**

Failure to follow this warning exactly could result in serious injury, death, or property damage. Never test for gas leaks with a open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections.

PROCEDURE 2—CHECK LOW GAS PRESSURE SWITCH OPERATION

The newly installed low gas pressure switch is a safety device used to guard against adverse burner operating characteristics that can result from low gas supply pressure. Switch opens at not less than 6.5" w.c. and closes at not greater than 10.2" w.c.

This switch also prevents operation when the propane tank level is low which can result in gas with a high concentration of impurities, additives, and residues that have settled to the bottom of the tank. Operation under these conditions can cause harm to the heat exchanger system. This normally open switch closes when gas is supplied to gas valve under normal operating pressure. The closed switch completes control circuit. Should an interruption or reduction in gas supply occur, the gas pressure at switch drops below low gas pressure switch setting, and switch opens. Any interruption in control circuit (in which low gas pressure switch is wired) quickly closes gas valve and stops gas flow to burners.

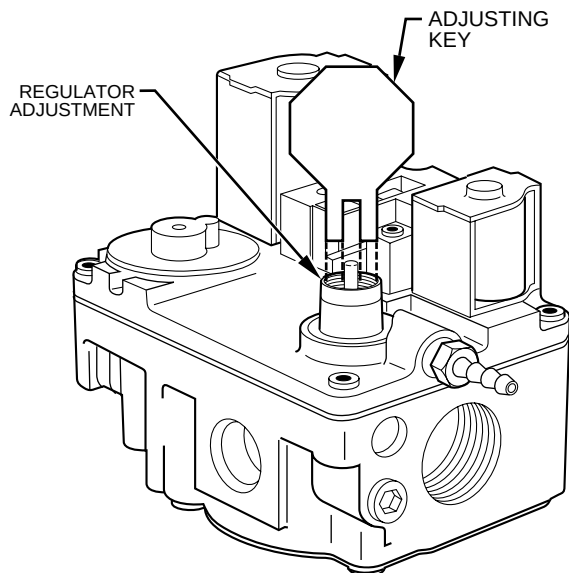
When normal gas pressure is restored, the system must be electrically reset to re-establish normal heating operation.

Before leaving installation, observe unit operation through 2 complete heating cycles. During this time, turn gas supply to gas valve off just long enough to completely extinguish burner flame, then instantly restore full gas supply. To ensure proper low gas pressure switch operation, observe that there is no gas supply to burners until after hot surface igniter begins glowing.

PROCEDURE 3—LABEL MODIFICATION

NOTE: See Fig. 5 for label location.

-
1. Fill in Conversion Responsibility Label (331102-101) previously applied to inside of main furnace door by installer. Date, name, and address of organization making this conversion are required. Specify that unit is now converted for use with propane.
 2. Place ALL unused parts, adjusting key, and these Installation Instructions in adhesive pouch attached to outside of main furnace door or accessible side of furnace.



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Fig. 14—Adjusting Manifold Pressure With Adjustment Key

3. Reinstall main furnace door.

SECTION III: CONVERSION FROM PROPANE TO NATURAL GAS

PROCEDURE 1—SET GAS INPUT RATE—NATURAL GAS (SEE SECTION II FOR PROPANE GAS ADJUSTMENT.)

Furnace gas input rate on rating plate is for installations at altitudes up to 2000 ft.

In the U.S.A., the input ratings for altitudes above 2000 ft must be reduced by 2 percent for each 1000 ft above sea level.

In Canada, the input ratings 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 adjusted for altitude.

1. Determine natural gas orifice size and manifold pressure for correct input.
 - a. Obtain average yearly heat value (at installed altitude) from local gas supplier.
 - b. Obtain average yearly specific gravity from local gas supplier.
 - c. Find installation altitude in Table 2.

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

- d. Find closest natural gas heat value and specific gravity on Table 2.
- e. Follow heat value and specific gravity lines to point of intersection to find orifice size and manifold pressure settings for proper operation.

EXAMPLE: (0—2000 ft altitude using Table 2)

Heating value = 1050 Btu/cu ft

Specific gravity = 0.62

Therefore: Orifice No. 45

Manifold pressure 3.6-in. wc

* Furnace is shipped with No. 45 orifices. In this example all main burner orifices are the correct size and do not need to be changed to obtain the proper input rate.

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

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.

→ **⚠ WARNING: FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in fire, personal injury or death.

Gas supply and electrical power **MUST** be shut off to the furnace before proceeding with conversion.

3. Change orifice if required or proceed to Item 4.
 - a. Turn off gas and electrical supplies to furnace.
 - b. Remove main furnace door.
 - c. Turn furnace gas valve control knob or switch to OFF position.
 - d. Remove burner enclosure front.
 - e. Remove gas supply pipe from gas valve.

- f. Remove wires from gas valve. Note location for reassembly.
- g. Remove wires from Low Gas Pressure Switch (LGPS). Remove "field-installed" yellow wire from furnace pressure switch. Attach remaining wire back onto furnace pressure switch (returning to factory wiring).

⚠ CAUTION: ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

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

⚠ ATTENTION: L'Échec ELECTRIQUE de DANGER D'OPERATION

Pour suivre cette prudence a pour résultat les dommages d'équipement ou l'opération déplacée.

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.

- h. Remove burner enclosure pressure tube from gas valve burner enclosure reference pressure tap fittings. (See Fig. 3.)
- i. Unplug igniter from harness.
- j. Remove igniter leads from slot in manifold grommet
- k. Remove screws securing manifold to burner box. Remove manifold, orifices, and gas valve as 1 assembly.
- l. Obtain new natural gas orifices from authorized factory parts distributor.
- m. Remove propane gas orifices from manifold and place them in the bag supplied marked "Propane Orifices." Manufactured (mobile) home installations are required to have these materials located with furnace for future conversion.
- n. Install main burner orifices. Do not use Teflon tape. Finger-tighten orifices at least 1 full turn to prevent cross-threading, then tighten orifices with wrench. There are enough orifices in each kit for the largest furnace. Orifices of other sizes must be field supplied and are available through your local distributor.
- o. Remove brass tee, coupling fitting and LGPS switch from gas valve.
- p. Re-insert igniter wires in the slot in manifold grommet, dressing wires to ensure there is no tension on the igniter itself. (See Fig. 15.)

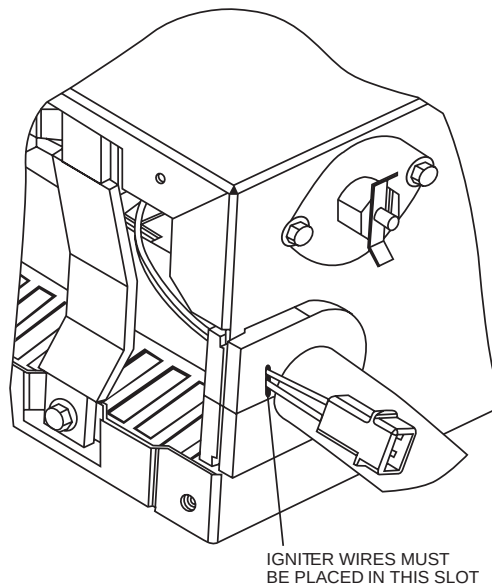
→ **⚠ WARNING: ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in electrical shock, personal injury, or death.

Igniter wires must be securely placed in slot in manifold grommet or else they could become pinched or severed and electrically shorted.

- q. Remove 1/8-in. pipe plug from brass tee and install plug back into inlet pressure tap (factory setting). Be sure to apply pipe dope to threads to prevent any leaks.
- r. Reinstall manifold, orifices, and gas valve assembly in burner box. Ensure manifold seal is installed properly and burners fit over orifices. (See Fig. 17.)
- s. Reconnect wires to gas valve. Refer to furnace wiring schematic or as labeled earlier for proper wire location.
- t. Reinstall burner enclosure pressure tube to gas valve burner enclosure reference pressure tap. (See Fig. 16.)
- u. Reinstall gas supply pipe to gas valve using backup wrench to prevent rotation and improper orientation.

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



→ **Fig. 15—Igniter Wire Placement**

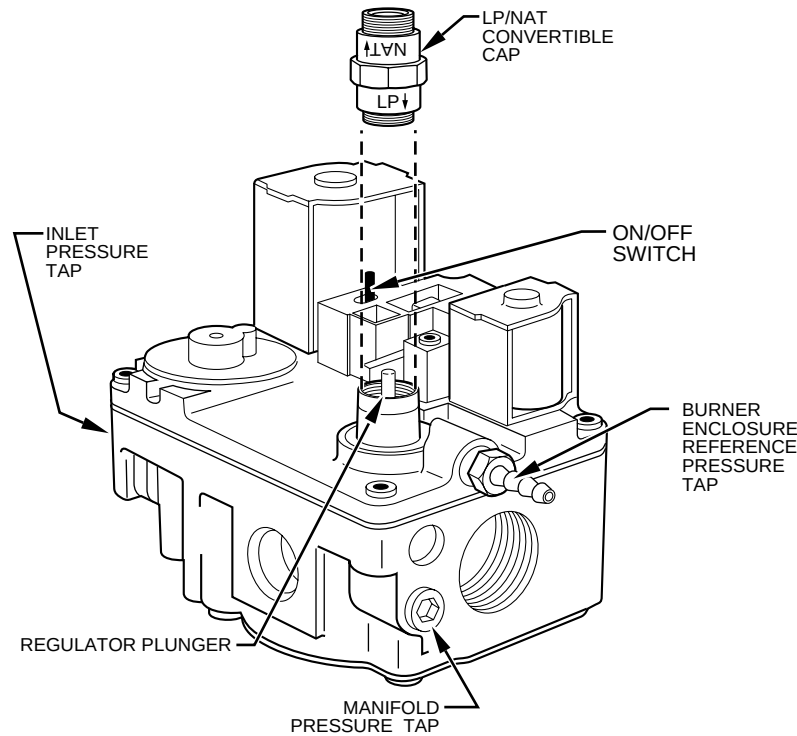


Fig. 16—Redundant Convertible Automatic Gas Valve

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- v. Be sure to retain brass tee, brass coupling fitting and LGPS for future propane applications.

⚠ WARNING: FIRE OR EXPLOSION HAZARD

Failure to follow this warning could result in personal injury, death or property damage. Gas valve knob or switch **MUST** be facing forward or tilted upward.

NOTE: DO NOT reinstall burner enclosure front at this time.

- 4. 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 LP/NAT cap that conceals adjustment screw for gas valve regulator. (See Fig. 16.)
- c. Adjust manifold pressure by using gas valve adjustment key, factory-provided in loose parts bag. (See Fig. 14.) Turn adjusting screw, counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure. Adjust pressure to setting found in Table 2.

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.

→ **⚠ WARNING: FIRE AND FURNACE DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death, property damage and/or unit damage..

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.

- d. Replace gas valve LP/NAT cap. The NAT arrow point should be pointing towards gas valve.
- e. Replace burner enclosure front and verify adjusted gas input rate using method outlined in item 5.
- f. Look through sight glass in burner enclosure and check burner flame. Burner flame should be clear blue, almost transparent. (See Fig. 13.)

- 5. 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 altitudes above 2000 ft, this furnace has been approved for a 2 percent derate for each 1000 ft above sea level. See Table 3 for derate multiplier factor.

Table 2—Fixed-Capacity Multipoise Condensing Furnace Orifice Size and Manifold Pressure for Correct Input
(Tabulated Data Based on 20,000 Btuh per Burner, Derated 2% for Each 1000 Ft Above Sea Level)
For Use with 040 through 120 Size Furnaces in Direct Vent (2-Pipe) Applications Only

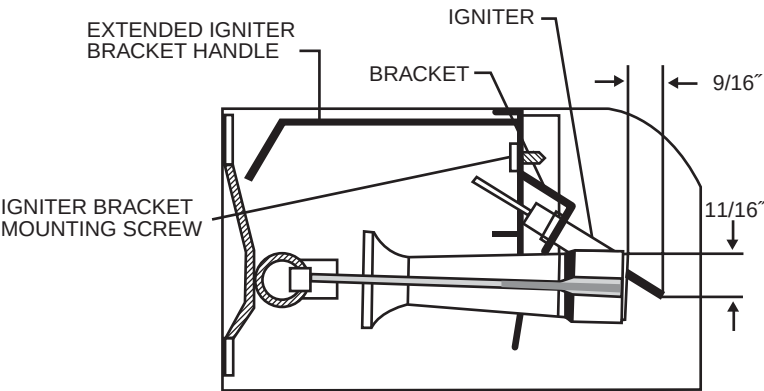
Altitude Range (ft)		Avg Gas Heat Value at Altitude (BTU/cu ft)	Specific Gravity of Natural Gas									
			0.58		0.60		0.62		0.64		0.66	
			Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure	Orifice No.	Manifold Pressure
U.S.A. and 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

Table 2—Fixed-Capacity Multipoise Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Continued
(Tabulated Data Based on 20,000 Btuh per Burner, Derated 2% for Each 1000 Ft Above Sea Level)
For Use with 040 through 120 Size Furnaces in Direct Vent (2-Pipe) Applications Only

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	43	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

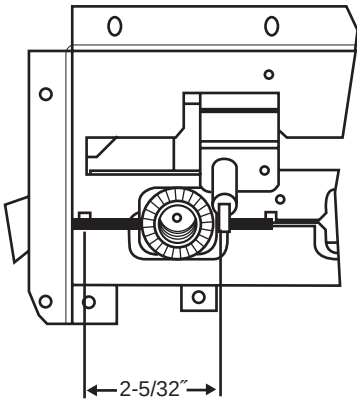
Table 2—Fixed-Capacity Multipoise Condensing Furnace Orifice Size and Manifold Pressure for Correct Input Continued
 (Tabulated Data Based on 20,000 Btuh per Burner, Derated 2% for Each 1000 Ft Above Sea Level)
 For Use with 040 through 120 Size Furnaces in Direct Vent (2-Pipe) Applications Only

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



→ Fig. 17a—Position of Igniter to Burner

A05075



→ Fig. 17b—Igniter

A04181

EXAMPLE:

80,000 Btuh input furnace installed at 4300 ft.

Furnace Input Rate at Sea Level	X	Derate Multiplier Factor	=	Furnace Input Rate at Installation Altitude
80,000	X	0.91	=	72,800

- 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 above and use 0.95 as derate multiplier factor.

 - Turn off all other gas appliances and pilots.
 - Start furnace and let operate for 3 minutes.

Table 3—Altitude Derate Multiplier for U.S.A.†

ALTITUDE (FT)	% 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.

† Derate multiplier for Canada is 0.95.

- d. Measure time (in sec) for gas meter test dial to complete 1 revolution.
- e. Refer to Table 4 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: (0—2000 ft altitude)

Furnace input from rating plate is 80,000 Btuh.

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 = 88 sec

Gas rate = 82 cu ft/hr (from Table 4)

Btu heating input = 82 X 975 = 79,950 Btuh

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

- g. Fill in Conversion Responsibility Label (321102-101) located on inside of main furnace door. Date, name, and address of organization making the conversion is required.

→ 6. Check for gas leaks.

→ **WARNING: FIRE OR EXPLOSION HAZARD**

Failure to follow the warning exactly could result in serious injury, death, or property damage.

Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections.

PROCEDURE 2—LABEL MODIFICATION

NOTE: See Fig. 5 for label location.

- 1. Fill in Conversion Responsibility Label (321102-101) previously applied to inside of main furnace door by installer. Date, name, and address of organization making this conversion are required. Specify that unit is now converted for use with natural gas.
2. Place ALL unused parts, adjusting key, and these Installation Instructions in adhesive pouch attached to outside of main furnace door or accessible side of furnace.
3. Reinstall main furnace door.

Table 4—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
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				

