KGANP4301STM

Gas Conversion Kit Natural–to–Propane for 90% Step Modulating Variable Speed, Condensing Gas Furnace

Installation Instructions

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

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. Trained service personnel must perform all other operations. 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 (NFGC) NFPA No. 54-2006/ANSI Z223.1-2006. In Canada, refer to the National Standard of Canada, Natural Gas and Propane Installation Codes (NSCNGPIC), CAN/CGA-B149.1 and .2-M05.

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

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

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.

INTRODUCTION

This instruction covers the installation of gas conversion kit Part No. KGANP4301STM to convert the following furnaces from natural gas usage to propane gas usage:

Models 58MVC and 355CAV 4-Way Multipoise, Hot Surface Ignition, Variable-Speed, Step-Modulating, Condensing Furnaces. This kit is designed for use in furnaces with 60,000 through 120,000 Btuh gas input rates.

This kit is designed for use in the furnaces listed above. The gas valve will be a White-Rodgers.

⚠ WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK AND CARBON MONOXIDE POISONING HAZARD

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

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 your distributor or branch for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when servicing this product.

Table 1 – Kit Contents

DESCRIPTION	PART NO.	QUANTITY
Main Burner Orifice (Drill Size 1.25 mm)	LH32DB209	7
Screw, Spoiler **DO NOT USE**	327593–401	7
Diverter Plate	323184–301	1
Low Gas Pressure Switch (Propane) (LGPS)	HK02LB008	1
Nipple	CA52JZ103	1
90° Street Elbow (1/8 in.)	CA15RA001	1
Male X Female X Female Tee (1/8 in.)	CA21JZ001	1
Splice Connector (1/4 in. Male, Both Ends)	66175D55	1
Splice Connector (3/16 in. Male, Both Ends)	HY89SC047	1
Orange Wire Assembly (18 in.)	W182X23—04—018	2
Wire Tie	HY76TB125	1
Conversion Rating Plate Label—Condensing Furnaces	333583–201	1
Conversion Responsibility Label	333583–203	1
Gas Control Conversion Label (adjusted)	333583–202	1
Installation Instructions	IIKKGANP4301STM001	1
Regulator Spring Kit (White—Propane–EF39W023) for White–Rodgers 36J Valve	92–0659	2

DESCRIPTION AND USAGE

This kit is designed for use in the furnaces listed above. See Table 1 for kit contents. To accommodate many different furnace models, more parts are shipped in kit than will be needed to complete conversion. When installation is complete, discard extra parts.

INSTALLATION

DIRECT VENT, VARIABLE-SPEED, 4-WAY MULTIPOISE, STEP-MODULATING CONDENSING FURNACES

VARIABLE SPEED MODELS	
58MVC (Multipoise)	355CAV (Multipoise)

Step 1 — Install Main Burner Orifices

NOTE: See Fig. 2 for component location in UPFLOW orientation. Reorient component arrangement when furnace is installed in other positions.

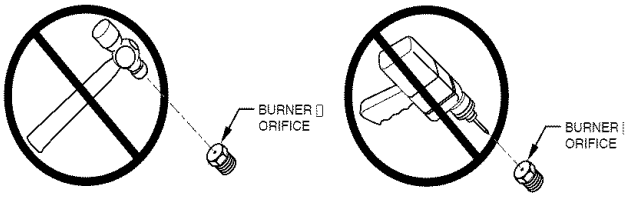

Fig. 1 - Burner Orifice

⚠ WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

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

Gas supply MUST be shut off before disconnecting electrical power and proceeding with conversion.

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

⚠ CAUTION

UNIT OPERATION HAZARD

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

Label all wires prior to disconnection when servicing controls.

7. Remove burner-box pressure tube from gas valve burner enclosure; reference pressure-tap fitting. (See Fig. 2).
8. Remove screws that secure manifold to burner box and remove manifold, orifices, and gas valve train as one assembly.
9. Remove and discard orifices from manifold.
10. Refer to conversion kit rating plate 333583-201 to determine main burner orifice size. (See Fig. 3.)

Furnace gas input rate on furnace 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.

The Conversion Kit Rating Plate accounts for high altitude derate.

11. Install main burner orifices. Do not use Teflon tape. Finger-tighten orifices at least one full turn to prevent cross-threading, then tighten with wrench. There are enough orifices in each kit for largest furnace. Discard extra orifices.

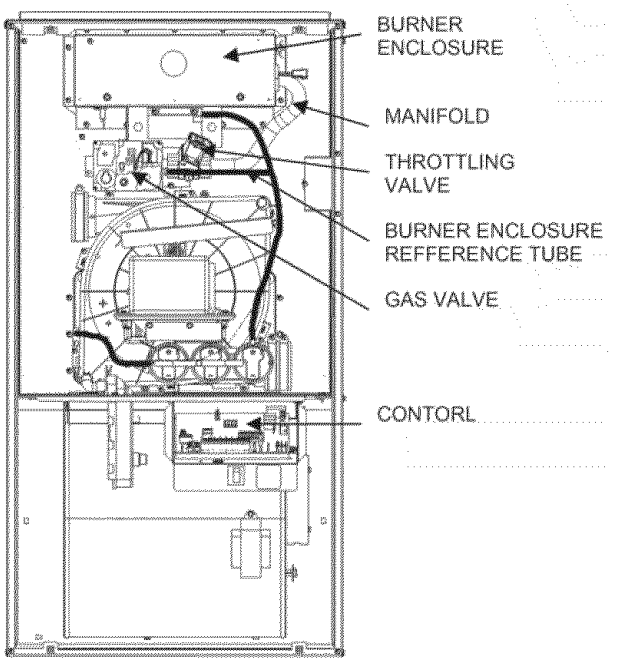

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Fig. 2 - Multipoise Variable Speed Condensing Furnace Component Location

NOTE: DO NOT reinstall the manifold, orifices, gas-valve assembly, and burner enclosure front at this time.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage.

DO NOT re-drill burner orifices. Improper drilling may result in burrs, out-of-round holes, etc. Obtain new orifices if orifice size must be changed. (See Fig. 1.)

Step 2 — Reposition Air Shutter

Remove two screws holding air shutter in natural gas usage (NAT) position.

1. Reposition air shutter to propane gas usage (PROP) position. (See Fig. 4). Screws will now be located in the shutter next to the PROP stamp.

NOTE: Air opening above burners will now be partially obstructed by air shutter.

Step 3 — Install Diverter Plate

1. Install diverter plate (provided in kit) above combustion air intake box as follows:
   a. Remove front two screws on combustion air intake box. (See Fig. 5.)
   b. Remove combustion air intake box and set aside.
   c. Install diverter plate Part Number 323184-301 provided in kit. (See Fig. 6.)
   d. Reinstall combustion air intake box and replace two screws to ensure diverter plate is properly installed. (See Fig. 5.)

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CONVERSION KIT RATING PLATE - CARRIER CORP.

THIS APPLIANCE HAS BEEN CONVERTED TO USE PROPANE GAS FOR FUEL. REFER TO KIT INSTRUCTIONS FOR CONVERSION PROCEDURES. USE PARTS SUPPLIED BY CARRIER CORPORATION AND INSTALLED BY QUALIFIED PERSONNEL. SEE EXISTING RATING PLATE FOR APPLIANCE MODEL NO. 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.

KIT NO. KGANP4201LPR FUEL USED: PROPANE GAS INLET PRESSURE (min - max): 11.0 - 13.6 in. wc

APPLIANCE MODELS		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A. *								
		0 to 2000	2001 * to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000
58MVC, 355CAV	Orifice No.	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm
	Mnfld Press									
	High	11.0 /	11.0 /	11.0 /	11.0 /	11.0 /	11.0 /	11.0 /	11.0 /	11.0 /
	Med	5.8 /	5.5 /	5.5 /	5.5 /	5.4 /	5.4 /	5.4 /	5.3 /	5.3 /
	Low	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0

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

333583-201 REV. A

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Fig. 3 - Conversion Kit Rating Plate

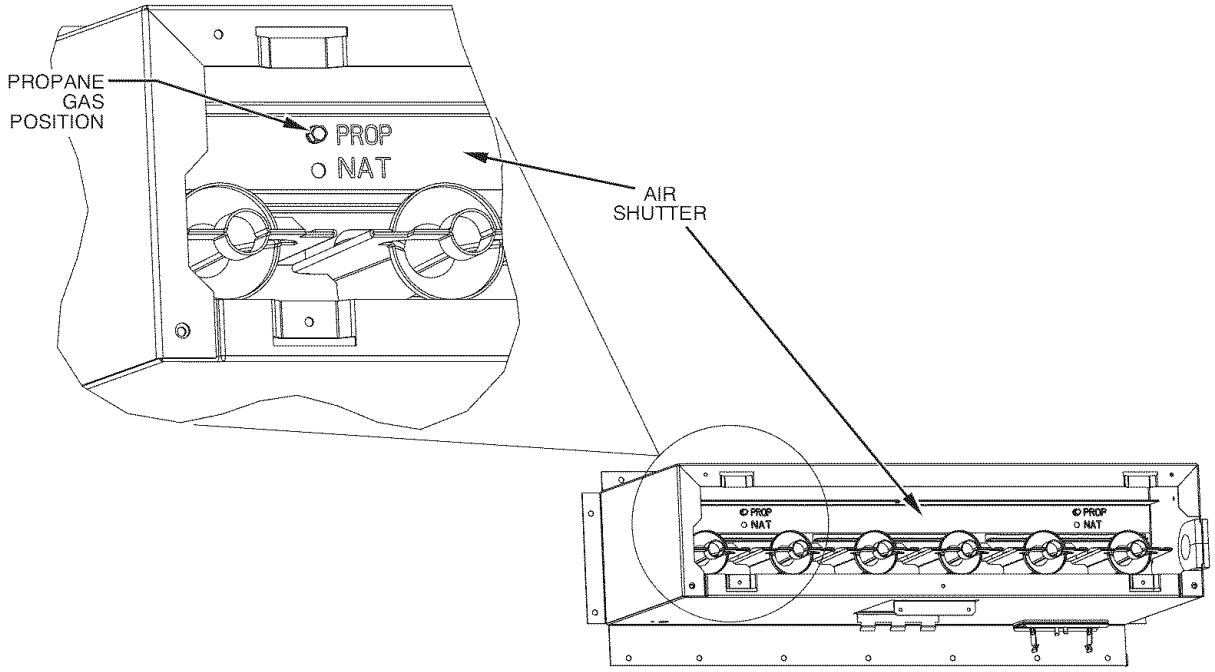

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Fig. 4 - Air Shutter in Propane Gas Usage (PROP) Position

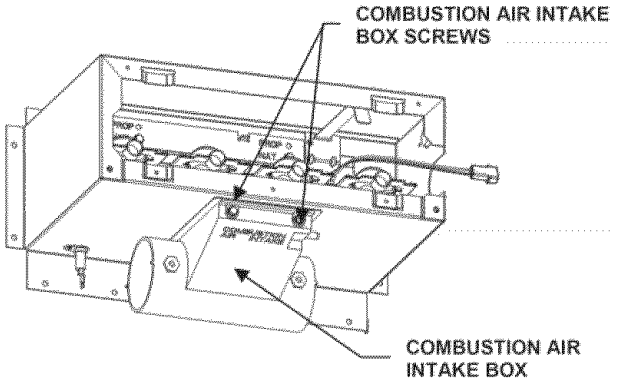

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Fig. 5 - Removing Combustion Air Intake Box

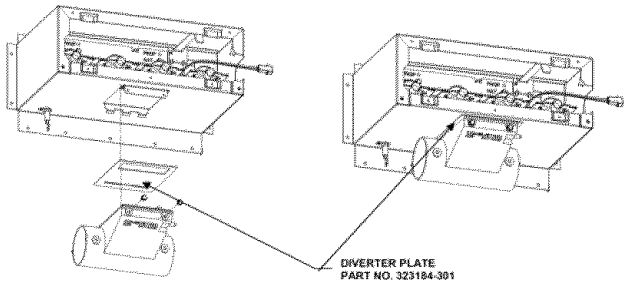

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Fig. 6 - Installing Diverter Plate

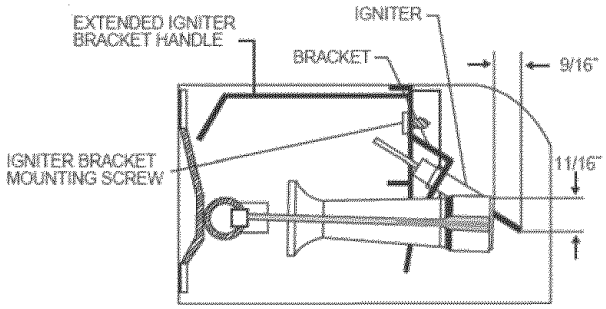

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Fig. 7 - Igniter to Burner

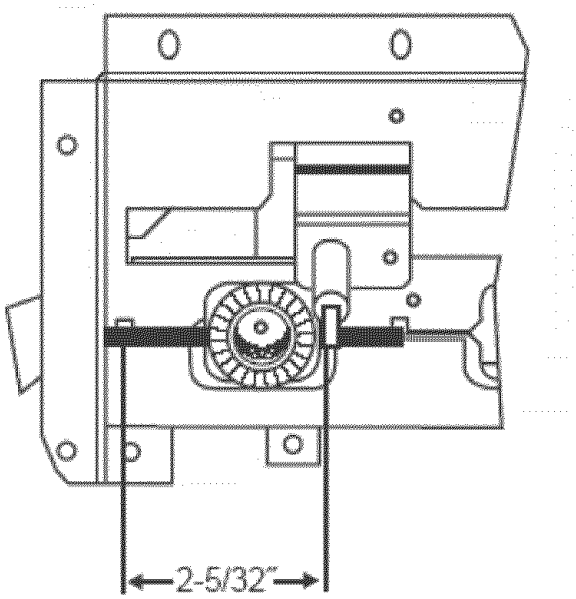

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Fig. 8 - Position of Igniter to Burner

Step 4 — Install Manifold Assembly

1. Reinstall manifold, orifice, and gas-valve assembly in burner box. Ensure manifold seal grommet is installed properly and burners fit over orifices. Verify Igniter to Burner alignment. See Fig. 7 and 8.
2. Reconnect wires to gas valve. Refer to furnace wiring schematic for proper wire location.
3. Reinstall burner box pressure tube to gas-valve regulator fitting.

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

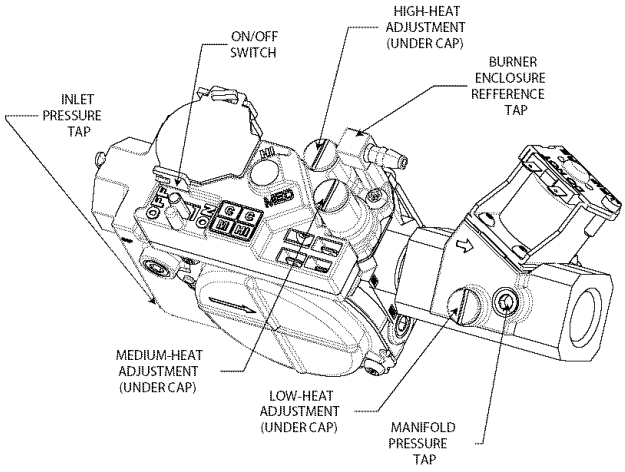

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Fig. 9 - Redundant Automatic Gas Valve with Throttling Valve

Step 5 — Replace Regulator Springs and Pre-adjust Gas Valve

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage

The gas valve must be pre-adjusted before operating on propane gas. If left non-modified, sooting and corrosion will occur leading to early heat exchanger failure.

1. Be sure gas and electrical supplies to furnace are off.
2. Remove caps that conceal adjustment screws for high-, medium-, and low-heat stage gas-valve regulators. (See Fig. 9.)
3. Remove the high-heat and medium-heat regulator adjustment screws.
4. Remove the high-heat and medium-heat gas regulator springs (silver).
5. Install the high-heat and medium heat propane gas regulator springs (white).
6. Install the high-heat and medium-heat regulator adjustment screws.
7. Turn high-heat stage adjusting screw clockwise (in) 13.5 full turns. This will increase the manifold pressure closer to the propane high-heat set point. (See Fig. 9.)
8. Turn medium-heat stage adjusting screw clockwise (in) 9.5 full turns. This will increase the manifold pressure closer to the propane medium-heat set point. (See Fig. 9.)

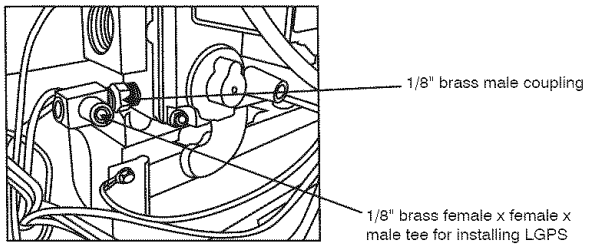

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Fig. 10 - Gas Valve Inlet Pressure tap

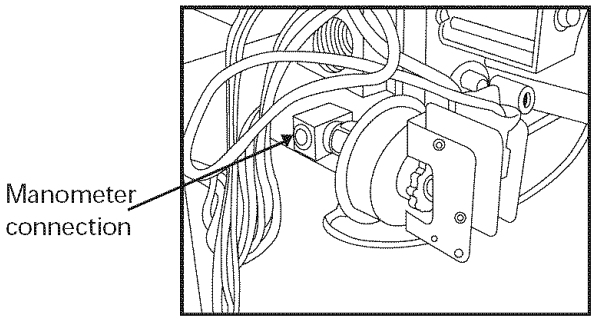

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Fig. 11 - LGPS Installed

KGANP4301STM

9. Turn low-heat stage adjusting screw (flat blade screwdriver screw) clockwise (in) the number of turns shown in Table 2. This will increase the manifold pressure closer to the propane low-heat set point. (See Fig. 9.)
10. Do not install regulator seal caps at this time.

Table 2 – Low Stage Pre-Adjustment

Model	Number of Turns
042060 / 060–14	1 ¾
042080 / 080–14	2 ½
060080 / 080–20	2 ½
060100 / 100–20	3
060120 / 120–20	3 ½

Step 6 — Install Low Gas Pressure Switch (LGPS)

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

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. 9.) DO NOT DISCARD PLUG!
3. Apply pipe dope sparingly to the ends of 1/8 in. brass male coupling (provided in kit) and install it in 1/8 in. tapped opening in gas valve inlet pressure-tap. Tighten fitting with a small wrench. (See Fig. 10.)
4. Attach the female end of the female x female x male brass tee (provided in kit). Tighten fitting with a small wrench so the male portion of the tee points out from the furnace. (See Fig. 10.)
5. Apply pipe dope sparingly to male end of brass tee. Install propane low gas pressure switch (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. 11 relative to gs valve and clear control compartment access door.
6. Apply pipe dope sparingly to end of inlet gas pipe and connect gas supply pipe to gas valve using backup wrench on gas valve to prevent rotation and improper orientation.
7. Connect a manometer to the open end of the tee installed in the gas valve. (See Fig. 11.)

Step 7 — Check Inlet Gas Pressure

NOTE: This kit is to be used only when inlet gas pressure is between 11.0-in. wc and 13.6-in. wc.

1. Verify manometer is connected to inlet pressure tap on gas valve.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage.

DO NOT operate furnace more than one minute to check inlet gas pressure, as conversion is not complete at this time.

2. Turn on furnace power supply.
3. Turn gas supply manual shutoff valve to ON position.
4. Turn furnace gas valve switch to ON position.
5. Turn Setup Switch SW4-2 on furnace control ON (see Fig. 13)
6. Jumper R-W/W1 and R-W2 thermostat connections on control.
7. When main burners ignite, confirm inlet gas pressure is between 11.0-in. w.c. and 13.6-in. w.c.
8. Remove jumper across R-W/W1 and R-W2 thermostat connections to terminate call for heat.
9. Turn furnace gas valve switch to OFF position.
10. Turn gas supply manual shutoff valve to OFF position.
11. Turn off furnace power supply.
12. Remove manometer.
13. Apply pipe dope sparingly to end of inlet gas pipe plug and install into unused end of 1/8 in. tee. Use a small back-up wrench on tee when tightening gas inlet pipe plug. (See Fig. 11)

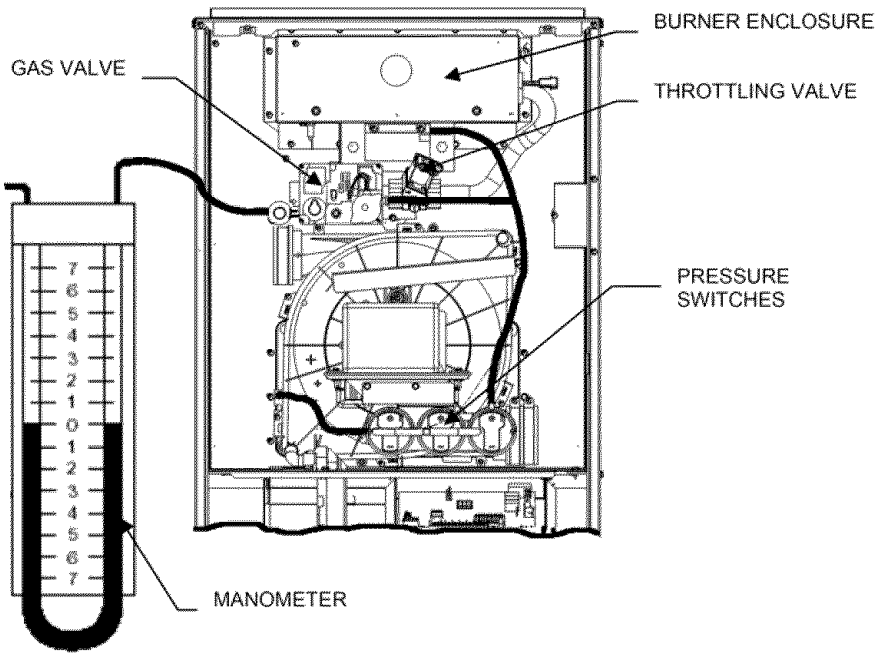

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Fig. 12 - Checking Line Pressure

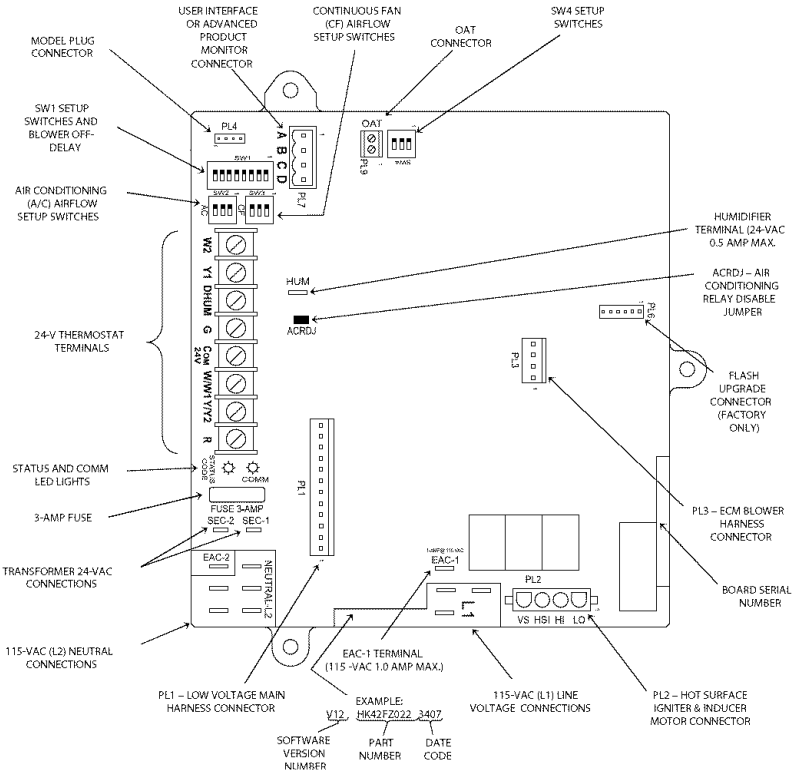

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Fig. 13 - Furnace Control

Step 8 — Pressure Switch Wiring (refer to furnace wiring diagram)

1. Disconnect orange wire from low-heat pressure switch LPS on inducer housing.
2. Connect uninsulated terminal of one orange wire (provided in kit) to splice connector. Connect other end to C terminal on low gas pressure switch LGPS. Connect the other end of the splice connector to the orange wire disconnected in Step 1.
3. Connect insulated terminal of second orange wire (provided in kit) to N.O. terminal on low gas pressure switch LGPS. Connect other end to pressure switch LPS located on inducer housing.
4. Route orange wires along wire harness. If possible, secure with wire tie provided in kit.

Step 9 — 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 throttling valve. (See Fig. 9.)
3. Attach manometer to manifold pressure tap on throttling valve (See Fig. 14.)
4. Turn gas supply manual shutoff valve to ON position.
5. Turn furnace gas valve switch to ON position.
6. Check all threaded pipe connections for gas leaks.
7. Turn on furnace power supply.

Step 10 — Gas Input Rate Information

The gas-input rate for propane is the same as for natural gas. See furnace rating plate (Fig. 16) for input rate. The input rate for propane is determined by manifold pressure and orifice size (See Fig. 3.) The gas-valve regulator must be set for high heat first, then medium heat and then set for low heat.

NOTE: Manifold pressure MUST always be measured with the burner enclosure front REMOVED. (See Fig. 2.) 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.

The Conversion Kit Rating Plate accounts for high altitude derate.

Step 11 — Set Gas Input Rate

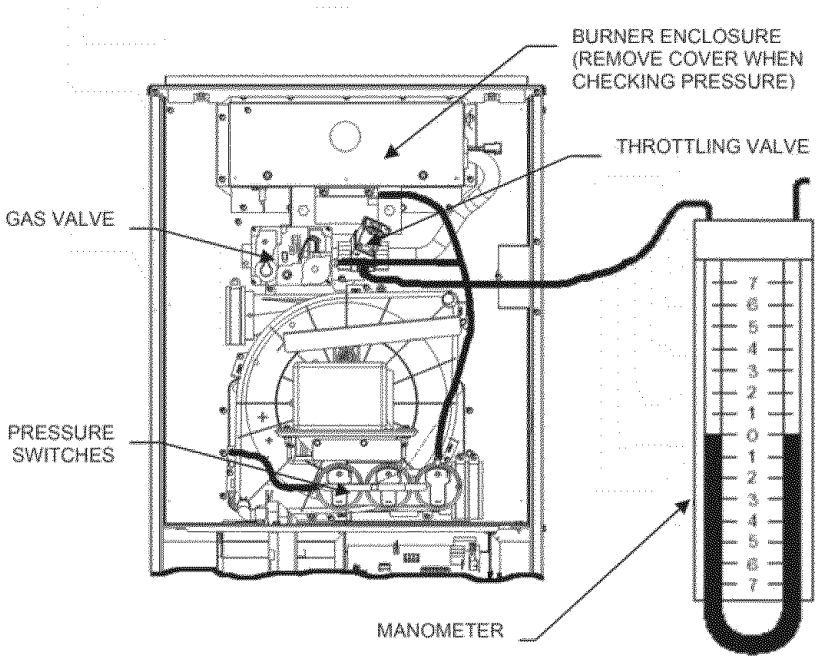

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Fig. 14 - Adjusting Manifold Pressure (Manifold Attachment)

1. Setup switch SW4-2 on control center should already be in the ON position. If not, put setup switch SW4-2 in the ON position. (See Fig. 13.) This keeps furnace locked in medium-heat operation.
2. Jumper R and W/W1 and R to W2 thermostat connections on furnace control. (See Fig. 13.) This keeps furnace locked in high-heat operation.
3. Turn high-heat adjusting screw (3/32 hex Allen wrench) counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure.
4. Remove jumper across R to W/W2.
5. Wait one minute then turn medium-heat adjusting screw (3/32) hex Allen wrench) counterclockwise (out) to decrease manifold pressure or clockwise (in) to increase manifold pressure.
6. Remove jumper across R to W/W1.
7. Wait for blower off-delay to finish then reset 115-v power to furnace.
8. Move setup switch SW4-2 to OFF position.
9. Jumper R to W/W1 thermostat connections on control to start furnace.
10. Wait for the blower to turn ON then check low-heat manifold pressure. Remove the low-heat adjustment cap (See Fig. 9) and turn the low-heat adjusting screw clockwise (in) to decrease manifold pressure or counterclockwise (out) to increase manifold pressure. You will only have 15 minutes to make and adjustment. If you need more time then move setup switch (SW1-2 on control center to ON position (See Fig. 13.)
11. When correct manifold pressures are obtained, replace caps that conceal gas valve adjustment screws. Min burner flame should be clear blue, almost transparent. (See Fig. 15.)
12. Remove jumper across R to W/W1. If necessary move setup switch SW1-2 to the OFF position.
13. Turn furnace gas valve control switch or control knob to OFF position.
14. Turn off furnace power supply.
15. Remove manometer and reattach manifold pressure tap plug to the throttling valve. (See Fig. 9.)
16. Reinstall burner enclosure front.
17. Turn furnace gas valve switch to ON position.
18. Turn on furnace power supply.
19. Set room thermostat to call for heat.
20. Check pressure tap plug for gas leaks when main burners ignite.
21. Check for correct burner flame.
22. Observe unit operation through 2 complete heating cycles. See Sequence of Operation in furnace Supplemental Instructions.
23. Set room thermostat to desired temperature.

Step 12 — 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 in. w.c. and closes at not greater than 10.2 in. 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.

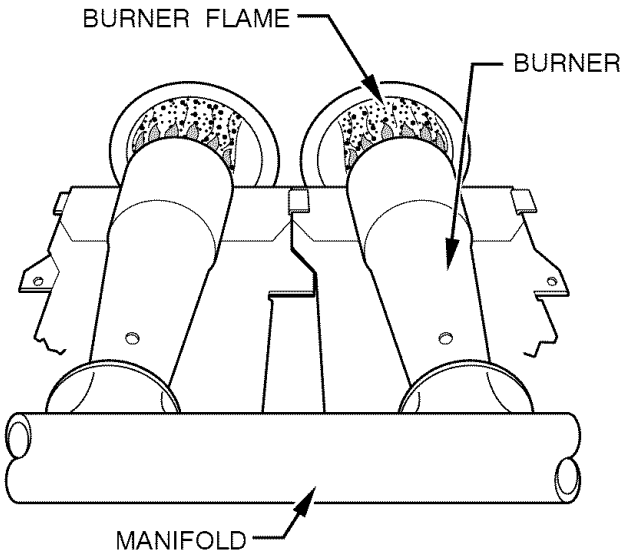

Fig. 15 - Burner Flame

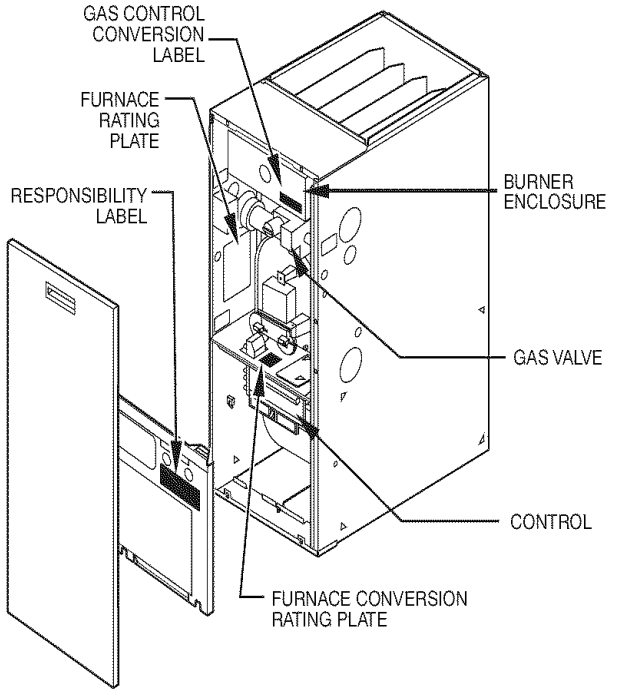

Fig. 16 - Condensing Furnace Label Location

Step 13 — Label Application

1. Fill in Conversion Responsibility Label 333583-203 and apply to Blower Access Door of furnace as shown. (See Fig. 16.) Date, name, and address of organization making this conversion are required.
2. Attach Conversion Rating Plate Label 333583-201, see Fig. 16 to Outer Door of furnace.
3. Apply Gas Control Conversion Label to gas valve: Apply label 333583-203 to gas valve.
4. Reinstall main furnace door.

 Printed in U.S.A. Edition Date: 07/07 **Catalog No: IIKKGANP4301STM001**

Replaces: New