

## INSTALLATION INSTRUCTIONS

### Alternate Input Propane Gas Conversion Kit No: NAHA002AL

This kit is designed to convert the **N9MP1**, **N9MP2** and **\*9MPD** "C" Series Furnaces from standard input Propane Gas to alternate Propane Gas ratings (USA only).

\* Denotes Brand (T, H or C)

**Please read these instructions completely before attempting installation.**

This conversion kit shall be installed by a qualified service agency. Please read these instructions completely before attempting installation. Consult gas supplier and tables in the latest edition of National Fuel Gas Code NFPA 54/ANSI Z223.1.

#### Parts List

Description	Part #	Qty.
Burner Orifice #55	1011354	5
Label, Field Conversion	1009678	1
Label, Derate	2505235	1
Instructions	441 06 1074 00	1

**Parts for High Altitude Conversion (Not included in kit)**

**Burner Orifice #56 (4001' - 8000' ) 1011355 as required**

### **WARNING**

This conversion kit shall be installed by a qualified service technician in accordance with the Manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. The qualified service agency performing this work assumes responsibility for the proper conversion of this furnace with this kit.

Failure to follow these instructions exactly can result in property damage, personal injury and/or death.

## GENERAL INFORMATION

This kit is for conversion of furnaces certified for use with LP Gas (and so marked) at standard input ratings to units functionally the same as the certified furnace for use with Propane Gas at alternate input ratings. Before the furnace can be operated with LP Gas at the alternate input rating the main burner orifices must be replaced with the orifices in this kit **or with properly sized orifices for high altitude ordered separately.**

The orifices provided in this kit are stamped to indicate the size (twist drill number) and are sized for commercially pure propane gas ONLY. Do NOT use them with butane or a mixture of butane and propane gas. The parts list specifies the size orifices supplied in the kit. Compare the size marking on the orifices with the size listed in the parts list. Make sure you have the correct main burner orifices. **All Propane Gas Main burner orifices in the kit are silver in color.**

Extreme care is used to assure that this kit contains the proper orifices. **Oversized orifices could result in hazardous conditions, especially if the venting is inadequate.** For

that reason, we recommend that the installer check the size of the orifice with a new twist drill of the correct size. This procedure assures that the orifices provided are the correct size.

## INSTALLATION

### **WARNING**

**ELECTRIC SHOCK HAZARD/FIRE AND/OR EXPLOSION HAZARD.**

Turn OFF gas supply at manual gas valve before turning OFF electric power supply and starting installation.

Turn OFF electric power supply at disconnect switch or service panel before starting installation. Failure to properly install orifices could result in death, personal injury and/or property damage.

Failure to properly install orifices could result in death, personal injury and/or property damage.

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

## SEE FURNACE INSTALLATION MANUAL:

Check Burners (Section 9 - Checks & Adjustments)

## Gas Pressure

- Refer to Table 1 for the approved gas input rating for the furnace.

Table 1	Alternate Input Ratings USA ONLY	
BTUH Standard Rating	BTUH Alternate Rating	LP Gas Orifice
50,000	40,000	#55
75,000	60,000	#55
100,000	80,000	#55
125,000	100,000	#55

- Gas input to burners MUST NOT exceed the rated input shown on rating plate.
- Do NOT allow minimum gas supply pressure to vary downward. Doing so will decrease input to furnace. Refer to **Table 2** for gas supply and manifold pressur-es.

Table 2		Gas Pressures		
Gas Type	Supply Pressure			Manifold Pressure
	Recommended	Max.	Min.	
LP	11"	14"	11"	10"

**Important Notes**

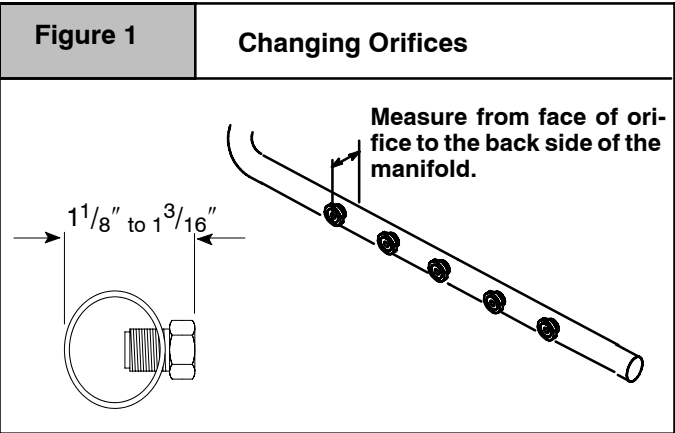
- With Propane gas, the rated input is obtained when the BTU content is 2,500 BTU per cubic foot and manifold pressure set at 10" W.C.
- If Propane gas has a different BTU content, orifices **MUST** be changed by licensed Propane installer.
- Measured input can **NOT** exceed rated input.
- Any major change in gas flow requires changing burner orifice size.

Do **NOT** allow minimum gas supply pressure to vary downward. Doing so will decrease input to furnace. Refer to **Table 2** for gas supply and manifold pressures.

CHANGING ORIFICES

**NOTE:** Main burner orifices can be changed for high altitudes.

- 1. Disconnect gas line from gas valve.
- 2. Remove manifold from furnace.
- 3. Remove the orifices from the manifold and replace them with #55 orifices in the conversion kit.
- 4. Tighten orifices so it is seated and gas tight about 1 1/8 from the face of the orifice to the back of the manifold pipe. (See Figure 1)
- 5. Make sure orifice is installed straight so that it forms a right angle (90°) to the manifold.



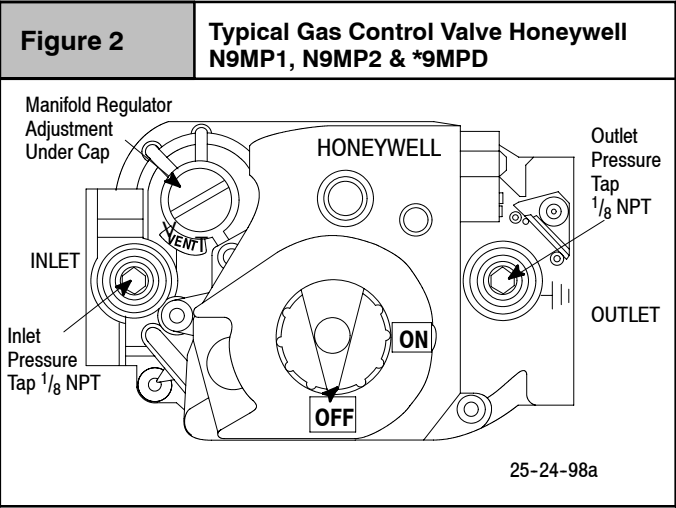
- 6. Reinstall manifold. Ensure burners do **NOT** bind on new orifices.

START-UP AND CHECK-OUT

- 1. Remove the plug from the Inlet Pressure Tap on gas valve (See Figure 2) and install a manometer.
- 2. Open manual gas line valve to unit. Check for gas leaks and correct as necessary. Check supply pressure, 11" WC recommended, (11" wc minimum, 14" maximum). If not within these limitations DO NOT OPERATE FURNACE, contact gas supplier.
- 3. Close manual gas line valve to unit, remove manometer and replace inlet pressure tap plug.

Gas Valve Adjustment

- 4. With the gas valve knob in the OFF position, remove the pressure tap plug from the outlet end of the valve, and connect a "U" tube manometer to the pressure tap. (See Figure 2)
- 5. Turn the gas valve knob to the ON position and restore electrical power to unit. Cycle the main burner on and off several times to stabilize the pressure regulator diaphragm. This **MUST** be done before an accurate pressure reading can be obtained.
- 6. With the main burner on, read the pressure gauge. Reading should be 10" WC. Turn pressure regulator adjusting screw clockwise to increase or counter-clockwise to decrease manifold pressure. Burner input must not exceed nameplate rating. **Refer to Section "Checking Input Rate"**.
- 7. Turn gas valve OFF. Remove the pressure gauge and replace the pressure tap plug and pressure regulator cap screw.
- 8. Start the main burners and check pressure tap plug for gas leaks.
- 9. With gas valve on, observe furnace through two or more complete cycles to be sure all controls are operating.



CHECKING INPUT RATE

**Checking Burner Input.** The fixed orifice size for each burner may be used to determine the burner input in accordance with Table F-2 of the National Fuel code for liquefied propane gas. Excerpt of Table F-2 is listed below.

Orifice #	BTUH/hr per burner at Sea Level (10" of w.c. manifold pressure)
54	24,630
55	21,939
56	17,572

For Altitudes above 5,000', refer to Section, "High Altitude Installation".

## MAIN BURNER FLAME CHECK

See Furnace Installation Manual

## HIGH ALTITUDE INSTALLATION

These units may be installed at full alternate input rating when installed at altitudes up to 4000' with the #55 gas orifice.

When installed above 5000', the input MUST be derated by 4% for each 1000'. Orifices for conversion at high altitude (4001 – 8000') must be ordered from Service Parts. A #55 orifice is indicated for use between sea level and 4000', and a #56 orifice is indicated for altitudes in the 4001– 8000' range. Refer to the parts list provided to determine the proper orifice part number for ordering purposes.

Altitudes over 4,000' may require a different air pressure switch than the one installed at the factory. Check parts list for pressure switch and consult your distributor for part number and availability.

## High Altitude Derated Unit Label

The derated label supplied with the orifice kit must be completed and affixed to the furnace near the rating plate. Fill in the manifold pressure, orifice size and revised input rate. The revised input is determined in the following manner:

High Altitude Input Rate = Nameplate Input X (Multiplier)

**\*High Altitude Input Rate =  
Nameplate Sea Level Input Rate x (Multiplier)**

Elevation	High Altitude Multiplier LP Gas* Standard Input	High Altitude Multiplier LP Gas* 80,000 BTUH Input Model	High Altitude Multiplier LP Gas* Alternate Input
0' - 2000'	1.00	1.00	0.80
2001' - 3000'	0.90	1.00	0.80
3001' - 4000'	0.86	1.00	0.80
4001' - 5000'	0.82	1.00	0.80
5001' - 6000'	0.78	0.96	0.78
6001' - 7000'	0.74	0.92	0.74
7001' - 8000'	0.70	0.88	0.70

Table 3	LPG or PROPANE GAS MANIFOLD PRESSURE (" w.c.) ALTERNATE INPUT MODELS						
HEATING VALUE at ALTITUDE BTU/CU. FT.	MEAN ELEVATION FEET ABOVE SEA LEVEL						
	0 to 2000	2001 to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000
2500	10.0	8.9	8.4	10.0	10.0	10.0	10.0
Orifice Size	#55	#55	#55	#56	#56	#56	#56

NOTE: Propane data is based on 1.53 specific gravity. For fuels with different specific gravity consult the National Fuel Gas Code ANSI Z223.1-2002/NFPA 54-2002 or National Standard Of Canada, Natural Gas And Propane Installation Code CSA B149.1-05.

**NOTE:** The derating of these furnaces at 4% (Propane Gas) has been tested and design-certified by CSA. In Canada, the input rating must be derated 10% (Propane Gas) for altitudes of 2,000 to 4,500 above sea level. Use the 2001 to 3000 column in **Table 3**.

## VERIFY SYSTEM OPERATION

Upon completion of all conversion procedures, perform the following steps to verify the system operation.

1. Turn the thermostat to its lowest temperature setting or to OFF if equipped with a System Select Switch.
2. Turn the gas valve control knob to ON.
3. Reinstall all access panels.
4. Turn ON all electrical power to the unit.
5. Set the thermostat to the desired temperature and the System Select Switch to HEAT.