

INSTALLATION INSTRUCTIONS

For Propane to Natural Gas Conversion Kit Model No: NAHF003NG or Part No. (1013816)

This kit is designed to convert the **N9MP1080, N9MP2080 & *9MPD080** Series Furnaces equipped with Honeywell SV9541 Series gas valve and Honeywell Q3450 igniter from Propane Gas (LP) to Natural Gas.

* 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 National Fuel Gas Code NFPA 54/ANSI Z223.1, 1992 or latest edition. In Canada, the National Standard CAN/CGA B149-1 and B149-2.

Parts List

Description	Part#	Qty.
Burner Orifice #44	1011352	4
Pilot Orifice, Natural (0.018)	503211	1
Honeywell Conv. Kit #394588	1147772	1
Label, Field Conversion	1009678	1
Label, Nat Conversion	1009682	1
Label, Derate	2505235	1
Instructions	441 06 1034 00	1

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.

AVERTISSEMENT

Cet ensemble de conversion ne doit être installé que par le représentant d'un organisme qualifié et conformément aux instructions du fabricant et à tous les codes et exigences applicables de l'autorité compétente. L'organisme qualifié qui effectue les travaux est responsable de la conversion correcte de ce générateur d'air chaud à l'aide de cet ensemble. Quiconque ne respecte pas à la lettre les instructions dans le présent manuel risque de déclencher un incendie ou une explosion entraînant des dommages matériels, des lésions corporelles ou la perte de vies humaines.

General Information

This kit is for conversion of furnaces equipped with Honeywell SV9541 Series gas valves.

The orifices provided in this kit are stamped to indicate the size (twist drill number). The parts list specifies the size orifices supplied in the kit. Compare the size marking on the orifices with the sizes as listed in the parts list. Make sure you have the correct main burner orifices.

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.

- Shut off gas supply to furnace at manual shut-off valve before starting installation.
- Disconnect electric power supply to the furnace before starting installation.
- Check for gas leaks after installation of kit and before attempting to start furnace.
- Fill out and attach the Natural Gas Conversion Label near the furnace rating plate.
- Fill out and attach the Field Conversion Label to the front exterior of the furnace.

Gas Pressure

- Refer to the furnace rating plate for the approved gas input ratings.
- 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 1** for gas supply and manifold pressures.

Table 1 Gas Pressures				
Gas Type	Supply Pressure			Manifold Pressure
	Recommended	Max.	Min.	
Natural	7" (1.7kPa)	14" (3.5kPa)	4.5" (1.1kPa)	3.5" (0.9kPa)
LP	11" (2.7kPa)	14" (3.5kPa)	11" (2.7kPa)	10" (2.5kPa)
Important Notes				
<ul style="list-style-type: none">• 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.				

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

Disassembly

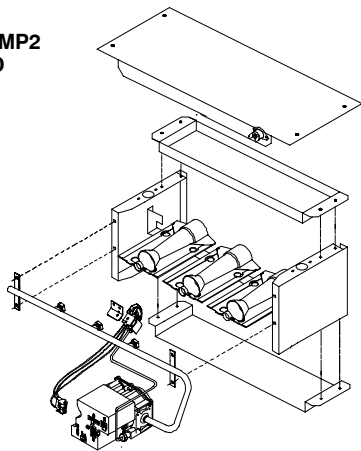
Refer to **Figure 1** and the following steps.

1. After disconnecting power and gas supply to the furnace, remove the access door, exposing gas valve and burner compartment.
2. Disconnect gas line from gas valve so manifold assembly can be removed.
3. Remove the pilot supply line from the gas valve.
4. Disconnect wiring at gas valve. Be sure to note the proper location of any and all electrical wiring disconnected.
5. Remove the four (4) screws holding the manifold and gas valve to the manifold supports. Do Not discard any screws.
6. Carefully remove the manifold assembly.

Figure 1

Disassembly

N9MP1, N9MP2
and *9MPD

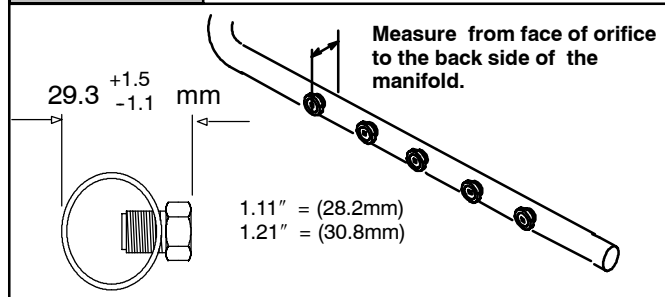


Changing Main Burner Orifices

1. Remove the Propane (silver) burner orifices from the manifold assembly and replace them with the #44 Natural gas (brass) orifices furnished in the conversion kit.
2. Tighten the orifices so they are seated and gas tight, about $1\frac{1}{8}$ " from the face of the orifice to the back of the manifold pin. Make sure orifice is installed straight so that it forms a right angle (90°) to the manifold. See **(Figure 2)**

Figure 2

Changing Orifices

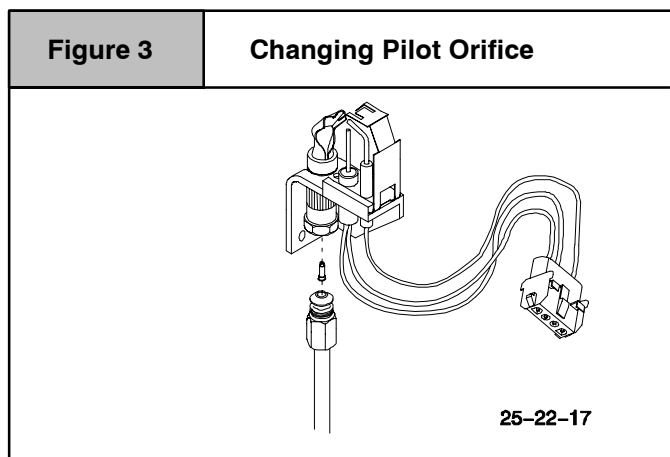


High Altitude Installation

For operation with natural gas at altitudes above 2,000', orifice change and/or manifold pressure adjustment may be required to suit gas supplied. Check with gas supplier. If orifice sizing is needed, it should be based on reducing the input rate by 2% for each 1,000' above sea level. See **Table 2** and **Figure 2** for required pressure change and/or orifice change for high altitudes.

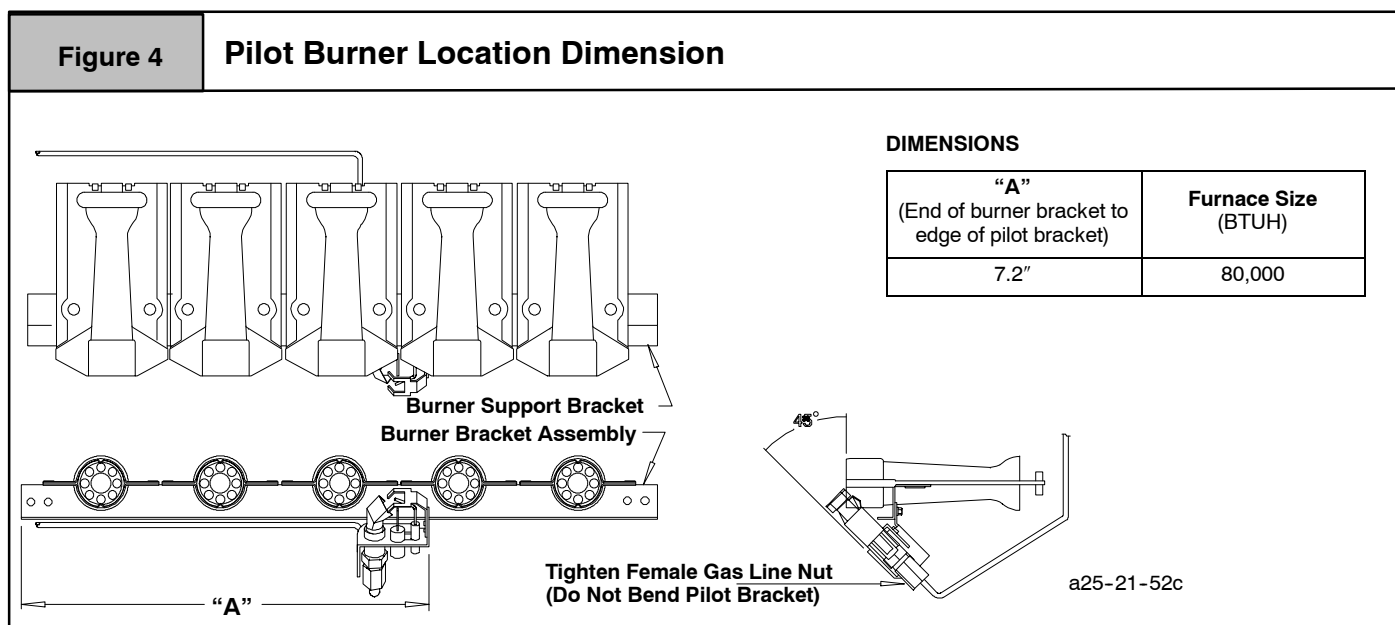
MANIFOLD PRESSURE AND ORIFICE SIZE FOR HIGH ALTITUDE APPLICATIONS

Table 2		NATURAL GAS						
Heat Value Btu/Cu.Ft.	Elevation Above Sea Level							
	0-1999 (" ·wc)	2000-2999 (" ·wc)	3000-3999 (" ·wc)	4000-4999 (" ·wc)	5000-5999 (" ·wc)	6000-6999 (" ·wc)	7000-7999 (" ·wc)	
800	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
850	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
900	3.5	3.5	3.5	3.5	3.5	3.5	3.4	
950	3.5	3.5	3.5	3.5	3.3	3.2	3.1	
1000	3.5	3.4	3.3	3.2	3.0	2.9	2.8	
1050	3.2	3.1	3.0	2.9	2.7	2.6	2.5	
1100	2.9	2.8	2.7	2.6	2.5	2.4	2.3	
Orifice Size	#44	#44	#44	#44	#44	#44	#44	



Changing Pilot Burner Orifice

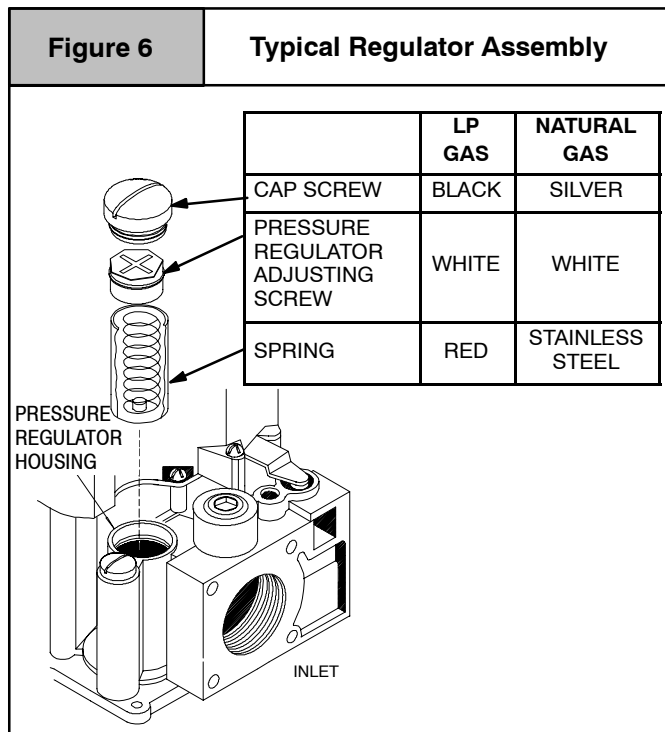
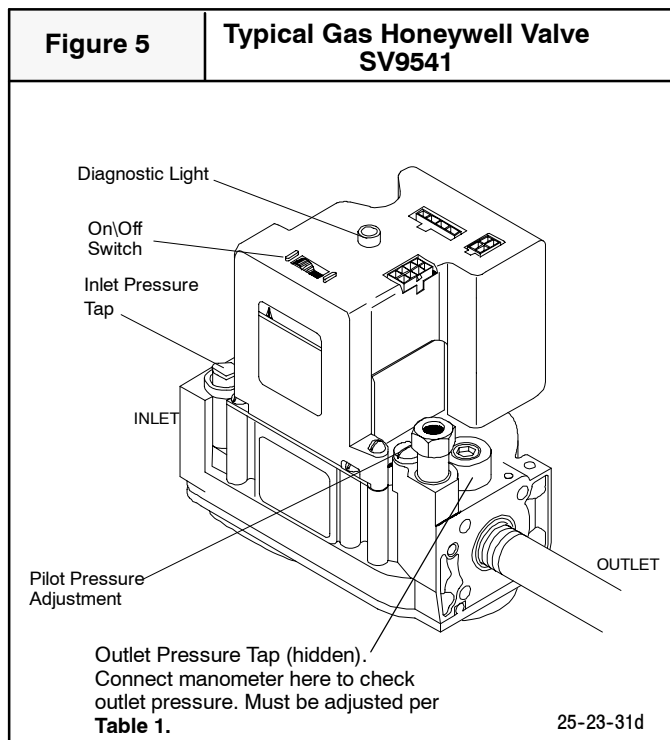
1. Remove screws securing pilot assembly to burner bracket. Disconnect the pilot supply line from the pilot burner.
2. Remove pilot orifice from pilot burner. Replace with natural gas orifice stamped BCR18 which is provided in kit.
3. Reconnect the pilot tubing securely to the pilot burner.
4. Verify proper relationship of pilot burner assembly per **Figure 4**.



Gas Valve Conversion

Conversion of Honeywell SV9541 Gas Valves using Natural Gas Conversion Kit #394588.

1. Remove the regulator cap screw and pressure regulator adjusting screw. (See **Figure 5** & **Figure 6**)
2. Remove the existing regulator spring from the regulator housing.
3. Insert the replacement spring (silver color) contained in this kit into regulator housing.
4. Install the pressure regulator adjusting screw and give it six (6) full turns. This will set the manifold pressure close to required setting for normal operation.
5. Replace the regulator cap screw.
6. Attach the Caution Label contained in the kit to the Gas Valve where it can be readily seen.



Reassembly

Reassemble all parts in reverse order as removed. Attach Nat. Conversion Label to the front exterior of the furnace.

- **Manifold Assembly** - Be sure to engage the main burner orifices in the proper openings in the burners.
- **Testing for leaks** - After reassembly, turn the gas on and check all joints for gas leaks using a soapy solution. All leaks must be repaired immediately.

Start-up and Check-out

1. Remove the plug from the Inlet Pressure Tap on gas valve and install a manometer. (See **Figure 5**)
2. Open manual gas line valve to unit. Check for gas leaks and correct as necessary. Check supply pressure, 7" WC recommended, (4.5" 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 switch 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 port. (See **Figure 5**)
5. Turn the gas valve switch 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 3.5" wc. If not, remove the regulator cap screw and adjust the manifold gas pressure. 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. With furnace operating, observe pilot connections for gas leaks. Turn gas OFF and tighten connections if required.
8. Turn gas valve to OFF. Remove the pressure gauge and replace the pressure tap plug and pressure regulator cap screw.
9. Start the main burners and check pressure tap plug for gas leaks.
10. With gas valve on, observe furnace through two or more complete cycles to be sure all controls are operating.
11. Replace furnace access door.

Checking Input Rate

Checking Burner Input Using A Meter To check the BTU input rate, the test hand on the meter should be timed for at least one revolution and the input determined from this timing. Refer to Section 8, Table XIII of the National Fuel Gas Code for converting test hand readings to cubic feet per hour.

Example			
Natural Gas BTU Content	No. of Seconds Per Hour	Time Per Cubic Foot in Seconds	BTU Per Hour
1,000	3,600	48	75,000

Example:

$$1,000 \text{ BTU} \times 3,600 \div 48 = 75,000 \text{ BTU/hour}$$

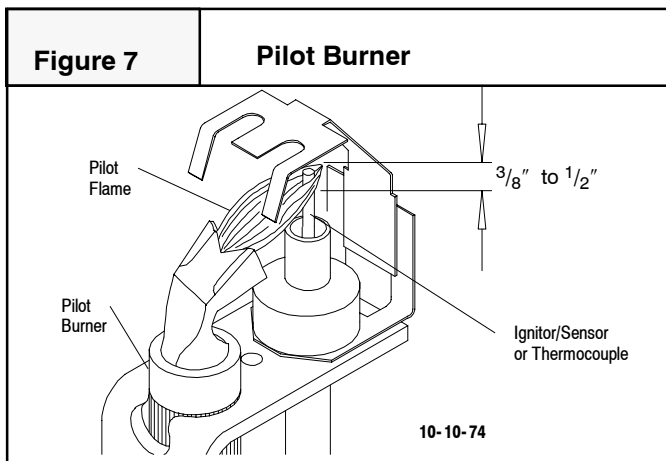
High Altitude Derated Unit Label

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.

Pilot Burner Flame Check

Adjust flames so they surround $\frac{3}{8}$ " (9 mm) to $\frac{1}{2}$ " (13 mm) of the thermocouple/sensor tip (See **Figure 7**).

1. Remove the cap from the pilot adjusting screw (See **Figure 5**).
2. Turn pilot adjusting screw counterclockwise to increase, clockwise to decrease.
3. Replace the cap on the pilot adjusting screw.

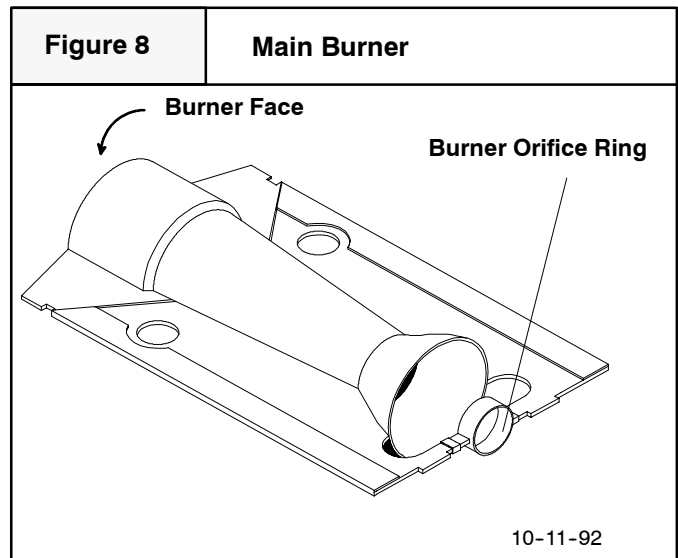


Main Burner Flame Check

Check for the following: (See **Figure 8**)

- Stable and blue flames
- Flames extending directly from burner into heat exchanger.
- Flames DO NOT touch sides of heat exchanger.

NOTE: Dust may cause orange tips or wisps of yellow, but flames MUST NOT have solid, yellow tips.



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 switch 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.
6. On model with the Honeywell pilot ignition system, upon call for HEAT from the thermostat, the Ignitor will ignite the pilot flame. Upon ignition of pilot flame, the main valve will open, providing gas for ignition of the main burners.