

GAS CONVERSION KIT INSTALLATION FOR ROOFTOP DOAS UNITS

DISCONTINUED DEDICATED OUTDOOR AIR SYSTEM MODELS R7DA AND R7TQ

GENERAL INFORMATION

These gas conversion kits are for converting natural gas units to propane (LP). When converting fuels, it is necessary to have the complete heater model. The identifying model number can be found on the heater rating plate. The rating plate identifies only original equipment so also compare the label on the gas valve with the description listed.

Important Safety Information

Refer to the installation manual provided with the unit for important safety information. Pay attention to all dangers, warnings, cautions, and notes highlighted in this manual. Safety markings should not be ignored and are used frequently throughout to designate a degree or level of seriousness.

⚠ DANGER ⚠

- All gas conversion must be done by a qualified service person in accordance with these instructions and in compliance with all codes and requirements. In Canada, gas conversion shall be carried out in accordance with the requirements of the Provincial Authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149.1 and CAN/CGA-B149.2 installation code.
- Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury, or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment. Failure to follow instructions could result in death, serious injury, and/or property damage. The qualified agency performing this work assumes responsibility for this conversion.
- The gas burner in this gas-fired equipment is designed to provide safe, complete combustion. However, if the installation does not permit the burner to receive the proper supply of combustion air, complete combustion may not occur. The result is incomplete combustion, which produces carbon monoxide, a poisonous gas that can cause death.
- Safe operation of indirect-fired gas burning equipment requires a properly operating vent system which vents all flue products to the outside atmosphere. Failure to provide proper venting will result in a health hazard which could cause serious personal injury or death.
- For all installations, always comply with the combustion air requirements in the installation codes and instructions. Units installed in a confined space must be supplied with air for combustion as required by Code and in the heater installation manual. Combustion air at the burner should be regulated only by manufacturer-provided equipment. Never restrict or otherwise alter the supply of combustion air to any heater. Maintain the vent or vent/combustion air system in structurally sound and proper operating condition.

DO NOT DESTROY. PLEASE READ CAREFULLY. KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

KIT COMPONENTS

Conversion kits are listed in [Table 1](#). Ensure that the selected kit matches the application.

Table 1. Conversion Kits			
Component	Description	Heat Size (Elevation of Installation)	
		100K BTU (0–8000 Feet) 225K BTU (0–4000 Feet)	100K BTU (8001–10,000 Feet) 166K/200K BTU (0–10,000 Feet) 225K BTU (4001–10,000 Feet)
		Kit PN	
		1011435	1011436
		Component PN (Quantity)*	
Spring kit, gas valve conversion	100/166 BTU, R7TQ units only	624667	624667
	100/166 BTU, R7DA units only	624642	624642
	200/225 BTU, R7TQ units only	197207	197207
	200/225 BTU, R7DA units only	098720	098720
Pressure switch	Venter, 0.58-inch (green)**	204327	204327
	Venter, 0.75-inch (red)	203933	203933
	Venter, 1.00-inch (brown)	—	201160
	Manifold, propane, R7DA units only	211710	211710
Label	Warning	703935	703935
	LC information	1011987	1011987
Burner orifice	Propane	Refer to Table 2	
*Quantity is one (1) unless otherwise indicated.			
**The mounting bracket from the replaced pressure switch must be reused.			

Table 2. Burner Orifices				
Installation Elevation (Feet (Meters))	Heat Size (MBH)			
	100	166	200	225
	PN, Drill Size (Quantity)			
0–2000 (0–610)	273353, #46 (2)	273357, #50 (4)	273357, #50 (5)	273355, #48 (5)
2001–3000 (611–915)	273354, #47 (2)			273356, #49 (5)
3001–4000 (916–1220)		273355, #48 (2)	273358, #51 (4)	273358, #51 (5)
4001–5000 (1221–1525)				
5001–6000 (1526–1830)	273356, #49 (2)	273358, #51 (4)	273359, #52 (5)	273358, #51 (5)
6001–7000 (1831–2135)		273359, #52 (4)		
7001–8000 (2136–2440)	273357, #50 (2)	273359, #52 (4)	273359, #52 (5)	273358, #51 (5)
8001–9000 (2441–2745)				
9001–10,000 (2746–3048)			273359, #52 (5)	

INSTALLATION

- Remove gas supply and electrical power:
 - Set thermostat to OFF position or to its lowest temperature setting.
 - Shut OFF gas supply at manual shutoff valve outside of unit.
 - Turn OFF all electrical power to unit.
 - Remove unit's louvered burner access panel.
 - Place gas valve ON/OFF switch (see [Figure 1](#)) in OFF position.

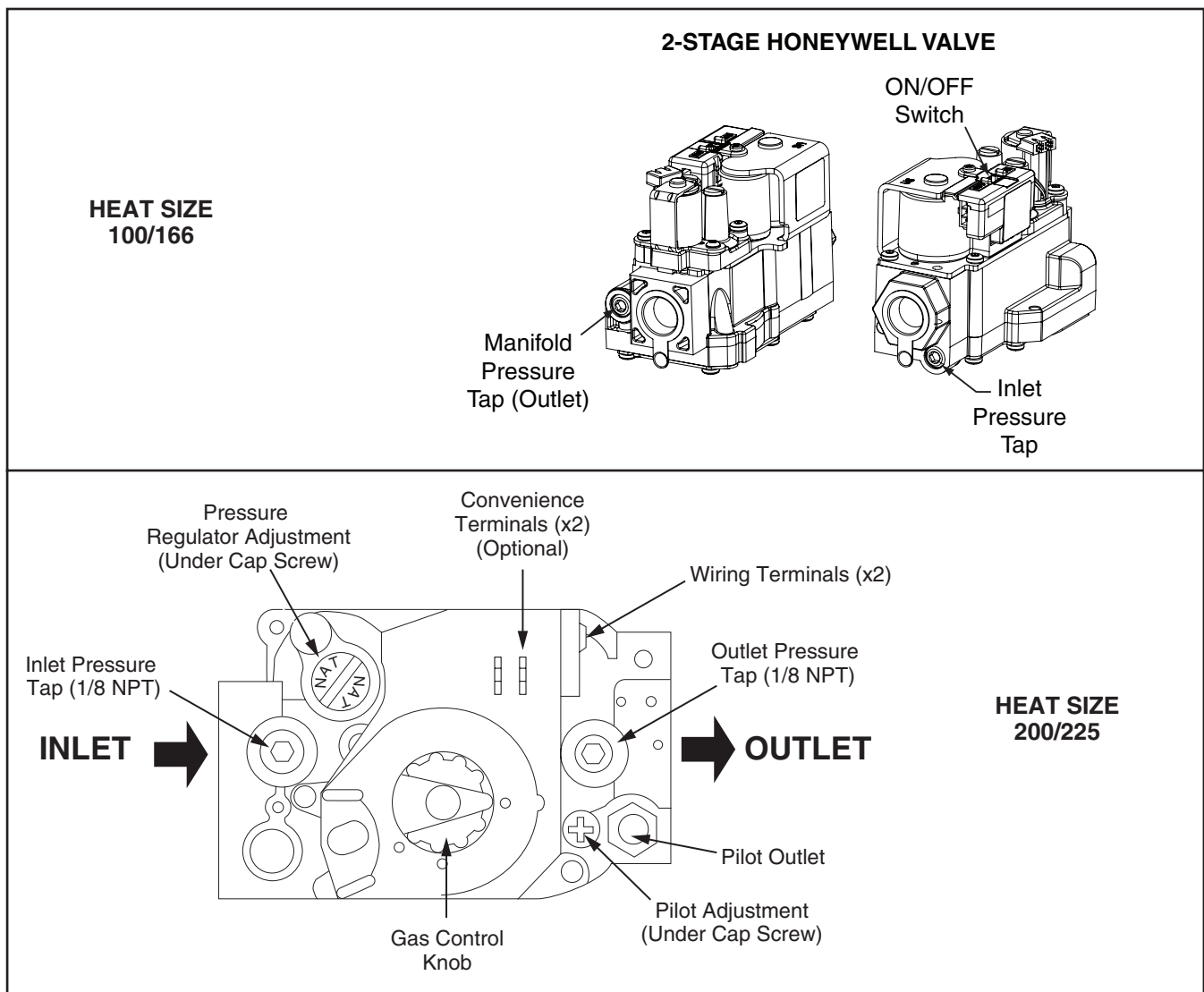


Figure 1. Typical Gas Valves

2. Remove gas manifold assembly:
 - a. Remove cover retaining screw to allow heat surface cover to slide out.
 - b. Disconnect all wiring from gas manifold components. Label wires to ensure correct reconnection.
 - c. If installed, disconnect supply gas piping from gas valve.
 - d. Remove four fasteners that secure gas manifold to burner box and carefully remove gas manifold assembly (see [Figure 2](#)) from burner box.

INSTALLATION—CONTINUED

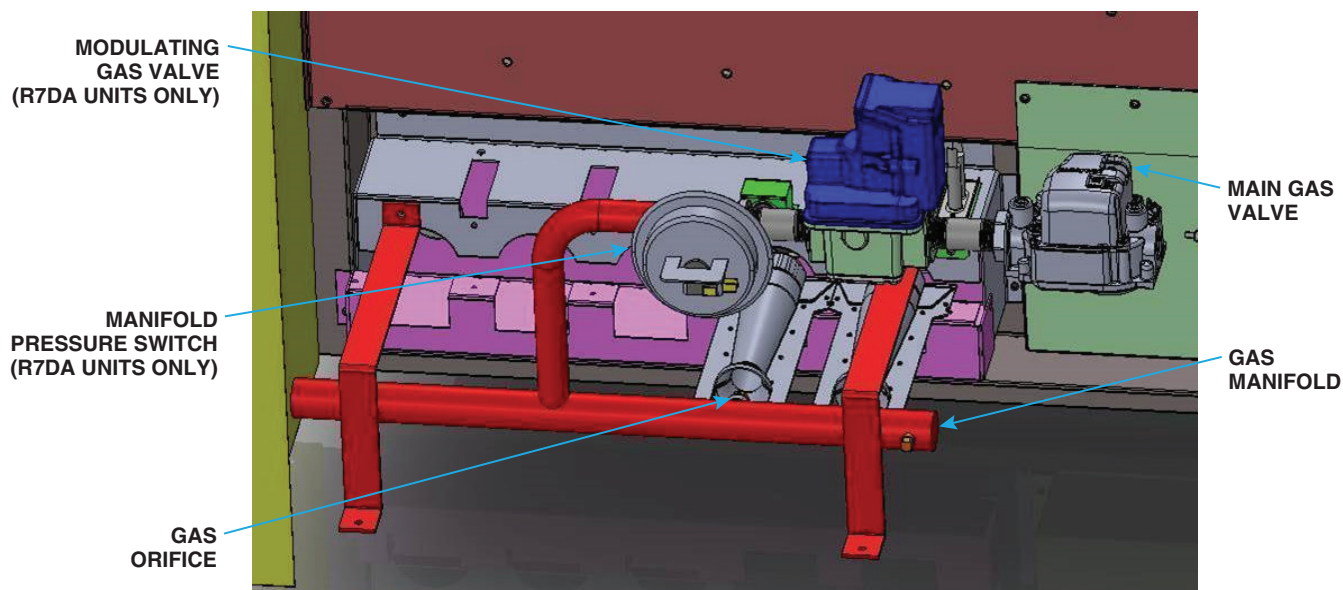


Figure 2. Typical Gas Manifold Assembly

NOTE: The following gas valve conversion procedure is a general guide. Refer also to the Honeywell kit instructions for the specific valve being converted.

3. Convert gas valve to propane:

NOTE: Use only a Torx-25 or 3/16-inch flathead screwdriver when removing adjustment screws.

- a. Remove existing protective capscrew(s) and adjustment screw(s) (see [Figure 3](#)).
 - b. Remove existing spring(s) (see [Figure 3](#)).
 - c. Install replacement spring(s) from spring kit in conversion kit with tapered end down (see [Figure 3](#)).
 - d. Install replacement adjustment screw(s) from spring kit in conversion kit. Ensure that top of screw is flush (level) with top of pressure regulator.
 - e. Turn pressure regulator adjustment screw(s) clockwise six complete turns to achieve preliminary pressure setting of about 10.0 IN WC (2.5 kPa).
 - f. Install replacement protective capscrew(s) from spring kit in conversion kit.
4. Replace manifold pressure diaphragm-type switch (R7DA units only):

NOTE: The following manifold pressure switch replacement procedure applies only to R7DA units. R7TQ units do not have a manifold pressure switch.

- a. Disconnect diaphragm-type manifold pressure switch (see [Figure 2](#)) wiring. Label wires to ensure correct reconnection.
- b. Unthread existing manifold pressure switch (see [Figure 2](#)) from piping and remove switch. Inspect and clean pipe threads as necessary.
- c. Thread replacement manifold pressure switch in conversion kit into piping using pipe sealant or Teflon[®] tape.
- a. Connect pressure switch wiring.

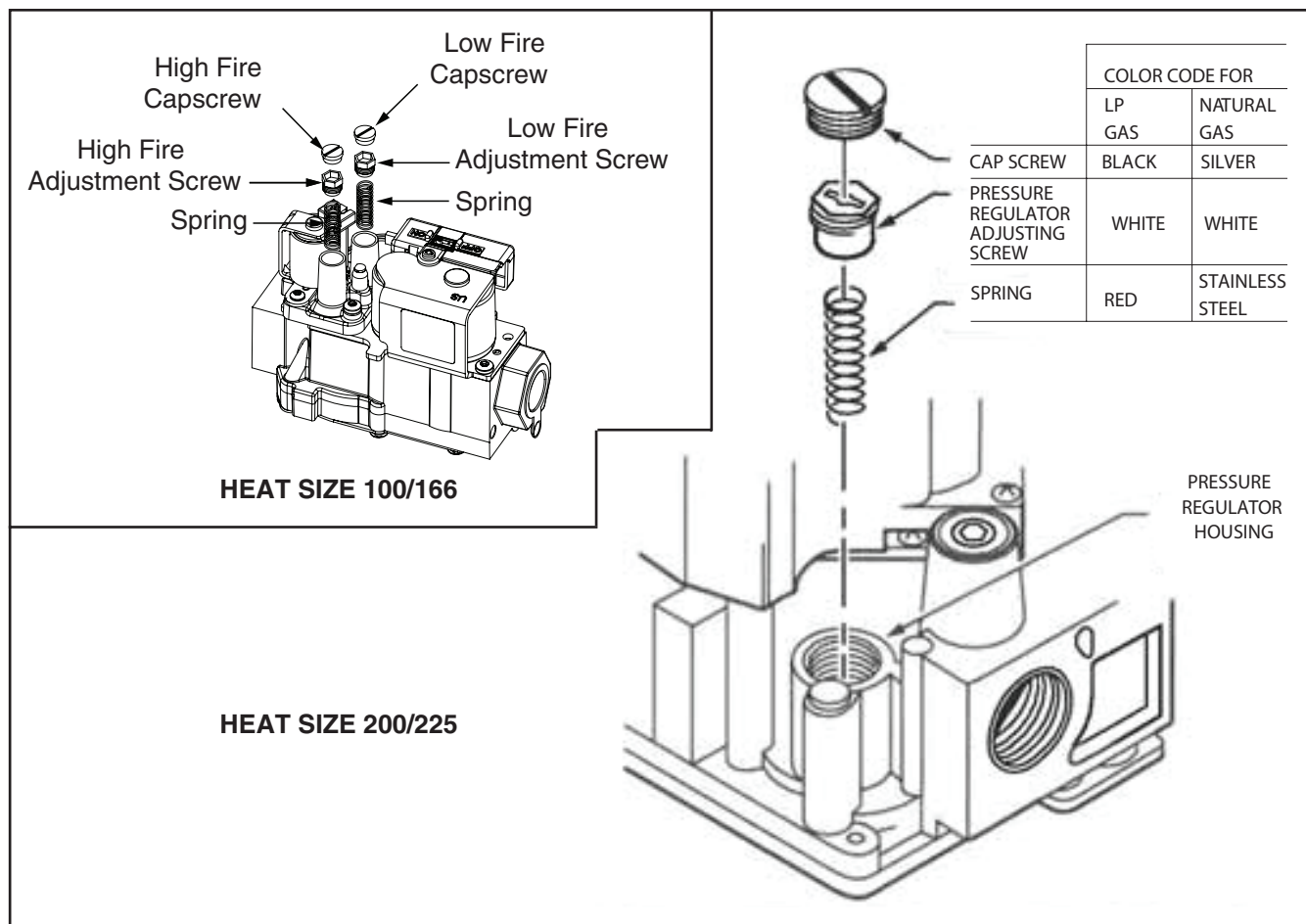


Figure 3. Typical Gas Valve Adjustment Screws and Regulator Springs

5. Replace gas orifices:

- Determine model number and rated input (BTUh) from unit's rating plate.
- Determine appropriate number and size (refer to [Table 2](#)) of LP gas orifices for application.

NOTE: Before installing an orifice, check the face or side of the orifice for the drill size.

- Unthread existing gas orifices from gas manifold.

⚠ DANGER ⚠

- Do not use Teflon[®] tape or pipe joint compound on the orifice threads. The hole in the orifice may become blocked and may cause fire, explosion, property damage, carbon monoxide poisoning, personal injury, or death.
- Use only using factory-supplied orifices. Do not attempt to drill out orifices in the field. Improperly drilled orifices may cause fire, explosion, carbon monoxide poisoning, personal injury, or death.

- Thread replacement LP gas orifices in conversion kit into gas manifold. To prevent cross-threading, hand-tighten orifices into gas manifold assembly until snug and then tighten one-half to one turn using wrench.

INSTALLATION—CONTINUED

6. Install gas manifold assembly:
 - a. Carefully install gas manifold assembly (see [Figure 2](#)) in burner box and secure using four fasteners removed in step 2d. Ensure that alignment of burners with heat exchanger tubes is correct—center of burners should be aligned with center of tubes.
 - b. Connect supply gas piping to gas valve if disconnected in step 2c.
 - c. Connect all wiring that was disconnected and labeled in step 2b to gas manifold components.
 - d. Install heat surface cover and secure using cover retaining screw.
7. Perform leak test.

⚠ DANGER ⚠

DO NOT use an open flame to check for gas leaks.

- a. Turn ON gas supply at manual shutoff valve outside of unit.
 - b. Check all connections for gas leaks using commercial leak-detecting fluid or rich soap and water solution. Leaks are indicated by presence of bubbles.
 - c. If leak is detected, tighten connection. If leak cannot be stopped by tightening connection, replace part(s).
8. Replace venter pressure switch if installation is at elevation of >6,000 feet:

NOTES:

- **The venter pressure switch is replaced only on units installed at an elevation of >6,000 feet or if operational issues are present after the conversion.**
- **R7TQ units have one venter pressure switch.**
- **R7DA units have two venter pressure switches: HIGH fire and LOW fire. For high elevation conversion, the HIGH fire pressure switch requires replacement.**

- a. Open upper control cabinet doors and locate venter pressure switch (see [Figure 4](#)).
- b. Disconnect venter pressure switch wiring. Label wires to ensure correct reconnection.
- c. Remove fasteners that secure existing venter pressure switch and remove switch.

NOTE: Replacement venter pressure switch should be next numerically-lower switch from kit (e.g., replace existing 0.65-inch switch with 0.58-inch switch from kit).

- d. Install replacement venter pressure switch in conversion kit and secure using fasteners.
- e. Connect pressure switch wiring.

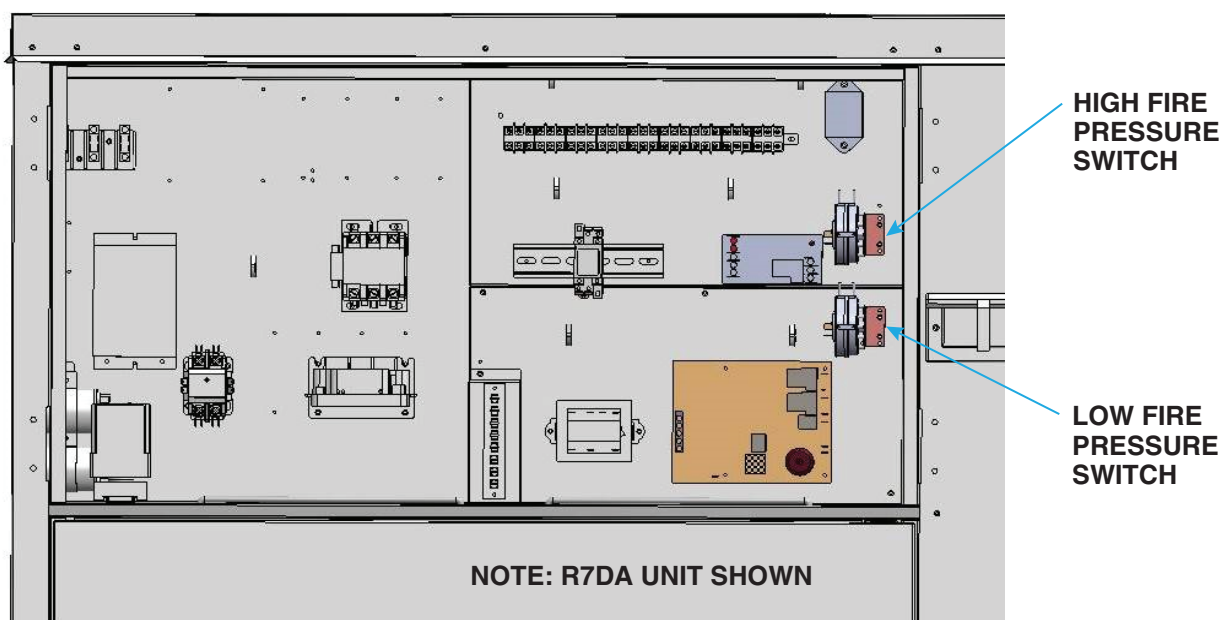


Figure 4. Venter Pressure Switch Location

9. Restore electrical power and light burner flame:
 - a. Ensure that gas is turned ON at manual shutoff valve outside of unit and turn ON electrical power to unit.

⚠ CAUTION ⚠

The gas valve ON/OFF switch must be moved to the end of its range of motion to ensure that the valve is completely open. Use only your hand to push in or turn the gas control valve. Never use tools.

- b. Place gas valve ON/OFF switch (see [Figure 1](#)) in ON position.
 - c. Set thermostat to point above room temperature to start unit's heating cycle.

NOTE: Until all of the air is bled out of the gas line, the spark ignitor may not ignite the gas. If the ignition control locks out, turn the thermostat to its lowest setting and wait 1 minute before turning the thermostat to a point above room temperature. The ignitor will try again to ignite the main burners. This process may have to be repeated several times before the burners will ignite.

- d. Check to ensure that unit ignites and operates properly. Refer to installation, operation, and maintenance manual provided with unit for normal operating sequence.

NOTE: In a properly-adjusted burner assembly, the flame color should be blue with some light yellow streaks near the outer portions of the flame. Observe the action of the burners to ensure that there is minimal yellowing, lifting, or flashback of the flame.

- e. Visually inspect burner assembly to ensure that flame is drawn directly into center of heat exchanger tube. The end of the flame will be out of sight around the bend of the heat exchanger tube.
 - f. After burners are lit, check all gas connections for leaks in accordance with steps 7b and 7c.
10. Adjust modulating gas valve (R7DA units only):
 - a. Refer to installation, operation, and maintenance manual provided with unit to adjust valve.
 - b. Refer to controls manual available at www.reznorvac.com to access Carel controller in right control cabinet, to navigate to **E.d.1** setting in **Service Menu**, and to change setting from **AA1** to **AA2**.

INSTALLATION—CONTINUED

11. Calculate unit's actual input rate:

NOTES:

- The input rate must be verified for each installation to prevent over-firing of the unit.
 - The input rate must not exceed the rate shown on the unit's rating plate.
 - At elevations >2,000 feet, the input rate must not exceed that on the rating plate minus 4% for each 1,000 feet. At high elevations, lower atmospheric pressure requires a lower input rate.
- a. Obtain gas heating value from gas supplier. If not available, assume 2,560 BTU per cubic foot.
 - b. Ensure that gas supply line pressure is within allowable range listed on unit rating plate.
 - c. Shut OFF all other gas-fired appliances and start up unit in heating mode and allow it to run for at least 3 minutes.
 - d. Using in-line flowmeter, measure gas flow rate through supply line to unit. Convert flowmeter reading into cubic feet per hour. Refer to flowmeter manufacturer's instructions or gas supplier for more information.
 - e. Multiply gas flow rate obtained in step 11d by gas heating value obtained in step 11a to calculate actual input rate in BTU/h.
 - f. Accounting for elevation of installation, compare unit's actual input rate to recommended input rates listed in [Table 3](#). If input rates are in accordance with listed values, adjust unit's input rate as necessary by adjusting manifold pressure in accordance with steps 12 and 13.

Table 3. Recommended Input Rates

Heat Size (MBH)	LOW or HIGH Fire	Elevation of Installation (Feet (Meters))								
		0–2000 (0–610)	2001–3000 (611–915)	3001–4000 (916–1220)	4001–5000 (1221–1525)	5001–6000 (1526–1830)	6001–7000 (1831–2135)	7001–8000 (2136–2440)	8001–9000 (2441–2745)	9001–10,000 (2746–3048)
		Input Rate (BTUh)								
Model R7TQ										
100	LOW	70,000	64,400	61,600	58,800	56,000	53,200	50,400	47,600	44,800
	HIGH	100,000	92,000	88,000	84,000	80,000	76,000	72,000	68,000	64,000
166	LOW	116,200	106,904	102,256	97,608	92,960	88,312	83,664	79,016	74,368
	HIGH	166,000	152,720	146,080	139,440	132,800	126,160	119,520	112,880	106,240
200	LOW	140,000	128,800	123,200	117,600	112,000	106,400	100,800	95,200	89,600
	HIGH	200,000	184,000	176,000	168,000	160,000	152,000	144,000	136,000	128,000
225	LOW	157,500	144,900	138,600	132,300	126,000	119,700	113,400	107,100	100,800
	HIGH	225,000	207,000	198,000	189,000	180,000	171,000	162,000	153,000	144,000
Model R7DA										
100	LOW	20,000	18,400	17,600	16,800	16,000	15,200	14,400	13,600	12,800
	HIGH	100,000	92,000	88,000	84,000	80,000	76,000	72,000	68,000	64,000
166	LOW	33,200	30,544	29,216	27,888	26,560	25,232	23,904	22,576	21,248
	HIGH	166,000	152,720	146,080	139,440	132,800	126,160	119,520	112,880	106,240
200	LOW	40,000	36,800	35,200	33,600	32,000	30,400	28,800	27,200	25,600
	HIGH	200,000	184,000	176,000	168,000	160,000	152,000	144,000	136,000	128,000
225	LOW	45,000	41,400	39,600	37,800	36,000	34,200	32,400	30,600	28,800
	HIGH	225,000	207,000	198,000	189,000	180,000	171,000	162,000	153,000	144,000

NOTE: The following manifold pressure measurement and adjustment procedures apply only to R7TQ units. For R7DA units, refer to the installation, operation, and maintenance manual provided with the unit.

⚠ CAUTION ⚠

- If pressure-testing the gas supply lines at pressures greater than 1/2 psig (14 IN WC), the unit must be disconnected from the gas supply piping system to prevent damage to the gas valve.
- Refer to the unit rating plate to determine the incoming maximum and minimum gas inlet pressures.

12. Measure manifold pressure (R7TQ units only):

- Turn OFF all electrical power to unit.
- Shut OFF gas supply at manual shutoff valve outside of unit.
- Using 3/16-inch Allen wrench, remove plug from manifold pressure tap on outlet side of gas valve (see [Figure 1](#)) and install 1/8-inch NPT pipe thread fitting compatible with manometer or similar pressure gauge.
- Connect manometer or pressure gauge to 1/8-inch NPT pipe thread fitting at manifold pressure tap.
- Turn ON all electrical power to unit.
- Turn ON gas supply at manual shutoff valve outside of unit.
- Set thermostat to point above room temperature to start unit's heating cycle.
- Allow unit to operate for 1 minute and then check manometer or pressure gauge for manifold pressure reading.

NOTE: The unit's input rate should be inspected for each installation as described in these instructions. The manifold pressure may be different than the factory setting. If determination of the actual unit input rate cannot be made using quality instruments, the manifold pressure should be set to the factory setting.

- If gas manifold pressure reading is in accordance with [Table 4](#) and input rate is in accordance with [Table 3](#), proceed to step 14—if not, adjust gas manifold pressure in accordance with step 13.

Table 4. Recommended Manifold Pressures

Table 4. Recommended Manifold Pressures					
Model	Honeywell Gas Valve Model	Heat Size (MBH)	Manifold Pressure (IN WC)		
			LOW Fire	HIGH Fire	
R7TQ	VR9205Q	100, 166	4.90	10.00	
	VR8305	200, 225			
R7DA	VR8215S	100	0.40		
		166	0.30		
	VR8305K	200, 225	0.45		

13. Adjust manifold pressure (R7TQ units only):

NOTE: The following manifold pressure adjustment procedure applies only to R7TQ units. For R7DA units, refer to the installation manual (I-R7DA) provided with the unit (also, available at www.reznorhvac.com) and to [Table 4](#).

- Remove protective capscrew (see [Figure 3](#)) from top of HIGH fire gas valve regulator.

NOTE: Use only a Torx-25 or 3/16-inch flathead screwdriver to turn adjustment screws.

- Slowly—to prevent screw from backing out—turn HIGH fire adjustment screw (see [Figure 3](#)) clockwise to increase manifold pressure or counterclockwise to reduce pressure. Observe reading on manometer or pressure gauge connected in step 12d. Adjust pressure in accordance with [Table 4](#) or to obtain input rate listed in [Table 3](#).
- Replace and tighten protective capscrew over HIGH fire adjustment screw.
- Repeat steps 13a, 13b, and 13c to adjust LOW fire manifold pressure using LOW fire adjustment screw (see [Figure 3](#)).

INSTALLATION—CONTINUED

14. Restore gas valve to operation:

- a. Set thermostat to OFF position or to its lowest temperature setting.
- b. Shut OFF gas supply at manual shutoff valve outside of unit.
- c. Turn OFF all electrical power to unit.
- d. Remove manometer or pressure gauge and 1/8-inch NPT pipe thread fitting from manifold pressure tap on outlet side of gas valve (see **Figure 1**) that was installed in step 12d.
- e. Replace plug in manifold pressure tap on outlet side of gas valve (see **Figure 1**) that was removed in step 12c. Ensure that plug is not cross-threaded and is sealed tight.

15. Install required labels on unit:

NOTE: Labels must be prominent and visible after installation.

- a. Affix warning label provided in conversion kit to outside of unit's louvered burner access panel.
- b. Affix information label provided in conversion kit over natural gas warning label.
- c. Affix gas valve manufacturer's labels to valve as described in manufacturer's instructions.

16. Replace unit's louvered burner access panel.

17. Operate unit through complete cycle to ensure proper operation:

- a. Turn ON all electrical power to unit.
- b. Turn ON gas supply at manual shutoff valve outside of unit.

NOTE: Retain pressure switches within the unit.

- c. If unit fails to start or if operational issues are present after conversion, replace venter high pressure switch in accordance with step 10.

