

GAS CONVERSION KIT INSTALLATION FOR GAS-FIRED LOW-INTENSITY RADIANT TUBE HEATER

DISCONTINUED MODEL VR

These gas conversion kits are for model VR heaters. All conversion kits include burner orifices for multiple sizes. 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.

⚠ 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. 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.
- 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.
- The gas burner in this gas-fired equipment is designed and equipped to provide safe and economically controlled 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. Model TRTR-H Heaters may be safely operated in the vented or unvented mode. **FAILURE TO PROVIDE PROPER VENTING OR TO MEET FRESH AIR REQUIREMENTS FOR UNVENTED INSTALLATIONS WILL RESULT IN A HEALTH HAZARD WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH.**
- Always comply with the combustion air requirements in the installation codes and instructions. If combustion air is brought from outside, use only the outside combustion air kit specifically designed for Model VR heaters. **NEVER RESTRICT OR OTHERWISE ALTER THE SUPPLY OF COMBUSTION AIR TO ANY HEATER.** Indoor units installed in a confined space must be supplied with air for combustion as required by Code and in the heater installation manual. If two Model VR heaters use the same vent terminal, a specially designed dual vent kit must be installed. If the unit is vented, **MAINTAIN THE VENT SYSTEM TO BE STRUCTURALLY SOUND AND IN FREE FLOWING OPERATING CONDITION.** If the unit is unvented, **PROVIDE 4 CFM OF FRESH AIR PER 1,000 BTUH'S FOR NATURAL GAS OR 5 CFM OF FRESH AIR PER 1,000 BTUH'S FOR PROPANE GAS.**

FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury, death, or property damage.
- Improper installation, adjustment, alteration, service, or maintenance can cause serious injury, death, or property damage.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.
- Be sure to read and understand the installation, operation, and service instructions in this manual.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a phone remote from the building. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

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

DANGER

The gas burner in this gas-fired equipment is designed and equipped 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. Model VR tubular infrared heaters may be safely operated in the vented or unvented mode. **FAILURE TO PROVIDE PROPER VENTING OR TO MEET FRESH AIR REQUIREMENTS FOR UNVENTED INSTALLATIONS WILL RESULT IN A HEALTH HAZARD THAT COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH.**

Always comply with the combustion air requirements in the installation codes and instructions. If combustion air is brought from outside, use only the outside combustion air kit specifically designed for Model VR heaters. **NEVER RESTRICT OR OTHERWISE ALTER THE SUPPLY OF COMBUSTION AIR TO ANY HEATER.** Indoor units installed in a confined space must be supplied with air for combustion as required by Code and in the heater installation manual. If two Model VR heaters use the same vent terminal, a specially designed dual vent kit must be installed. If the unit is vented, **MAINTAIN THE VENT SYSTEM TO BE STRUCTURALLY SOUND AND IN FREE FLOWING OPERATING CONDITION.** If the unit is unvented, **PROVIDE 4 CFM OF FRESH AIR PER 1000 BTUH'S FOR NATURAL GAS OR 5 CFM OF FRESH AIR PER 1000 BTUH'S FOR PROPANE GAS.**

Application and Kit Selection

The gas conversion kits in these instructions are for Model VR heaters. All conversion kits include burner orifices for multiple sizes. See page 6 or 7 for a list of conversion kit components.

Kit P/N's, Application, and Components

- Natural **TO** Propane Kits page 6
- Propane **TO** Natural Kits page 7

Gas Conversion Instructions

1. Check kit contents for agreement with the parts list and the size of heater being serviced. (See the parts lists and application for each kit on page 6 or 7.)

Gas conversion of a unit using these kits will not alter the input rate. Refer to the rating plate on the heater for input rate and other appropriate information.

(**NOTE:** If adjusted for high altitude operation, input rate will be affected; for high altitude input ratings and capacities refer to **TABLE 3** on page 5.)

2. **Turn off the gas supply at a shutoff valve outside of the heater and turn off the electrical supply.** Open both the control and burner access panels.
3. **Select and Install the Regulator Spring Conversion Kit**

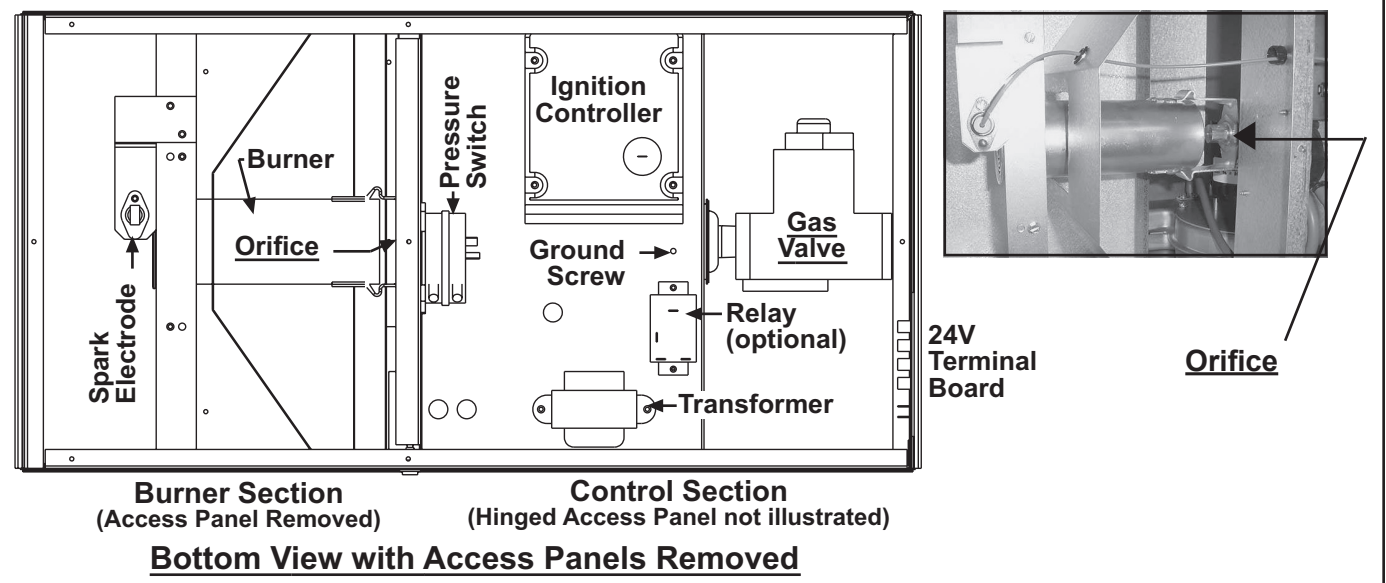
The kits include one or two regulator spring conversion kits. Check the package carefully and choose the regulator spring kit that corresponds with the valve on the heater. **NOTE:** The other regulator spring kit will not be used.

WARNING

Regulator spring conversion kits are not interchangeable. Each spring kit must be used only in the model and type of valve for which the kit is designated. Verify compatibility before installing the regulator spring kit.

To install the regulator spring kit, follow the valve manufacturer's installation instructions that are included with the regulator spring conversion kit. After a new regulator spring kit is installed, it is necessary to adjust the spring for the correct manifold pressure. This adjustment can only be made after the heater is in operation; instructions are included in Step No. 6.

FIGURE 1 - Control and Burner Sections Showing Location of Gas Valve and Burner Orifice



4. Select and Install Burner Orifice

WARNING

Do not attempt to drill orifice. Use factory-supplied orifice only.

Select the orifice to install.

Because each gas conversion kit is designed to convert more than one size of heater, there are two or three burner orifices per kit. From **TABLE 1** below, find the marking that appears on the orifice for the heater being converted. Select the orifice from the kit that has the marking required for the size of heater. The other orifice(s) will not be used in the conversion.

TABLE 1 - Burner Orifice P/N's and Markings

Burner Orifice for Model VR Heaters by Size								
Size		50	75	100	125	150	175	200
Natural Gas	P/N	120147	131579	205430	205431	120165	120165	205432
	Marking	#29	4.25MM	#11	#2	D	D	J
Propane	P/N	124966	196852	196854	196838	120149	205433	205434
	Marking	#45	#39	3.0MM	#30	#27	5/32	4.3MM

Install the orifice.

Refer to **FIGURE 1** and locate the gas orifice on the heater. Using a 9/16" open end wrench, carefully remove the orifice.

Install the orifice selected from the conversion package.

Close the burner access panel (control access panel remains open).

- 5. Turn on the electric and the gas.** Relight, following the instructions on the heater. Check for gas leaks using a commercial leak detecting fluid or a rich soap and water solution. Leaks are indicated by the presence of bubbles. Check all connections. If a leak cannot be stopped by tightening, replace the part.
- 6. Adjust the outlet (manifold) pressure.** Follow these requirements and instructions to adjust outlet gas pressure.
 - 1) The correct pressure adjustment depends on the area of the country in terms of elevation. If you don't know the elevation, check with your local gas company.
 - 2) See **TABLE 2**, page 4, and determine the required manifold pressure.
 - 3) See **FIGURE 2**, page 4, and locate the 1/8" outlet pressure tap on the valve. Turn the knob or switch on the valve to "OFF". Connect a manometer to the 1/8" pipe outlet pressure tap in the valve. Use a water column manometer that is readable to the nearest tenth of an inch. (NOTE: A manometer (fluid-filled gauge) is recommended rather than a spring type gauge due to the difficulty of maintaining calibration of a spring type gauge.)

Gas Conversion Instructions (cont'd)

6. Adjust the outlet (manifold) pressure. (cont'd)

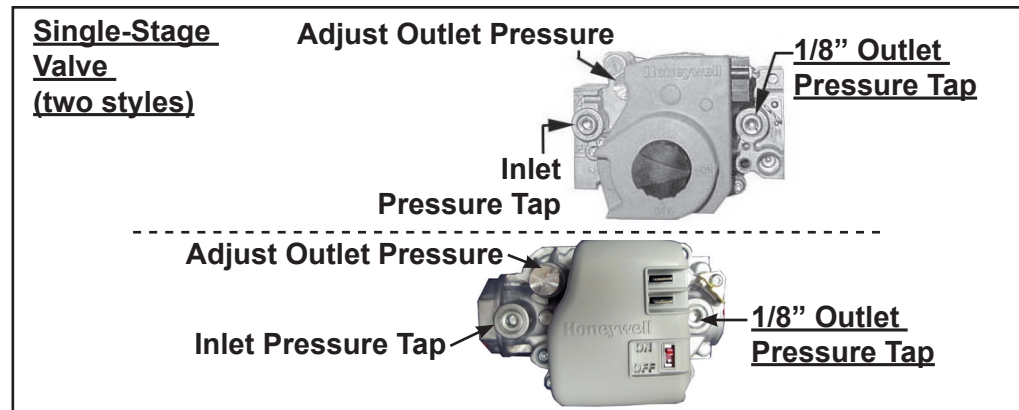
WARNING

Manifold gas pressure must never exceed 3.5" w.c. for natural gas Sizes 50-150 or 5" w.c. for natural gas Sizes 175-200. Manifold gas pressure must never exceed 10" w.c. for all sizes equipped for use with propane gas.

TABLE 2 - Valve Outlet (Manifold) Pressure by Altitude

Manifold Pressure Settings by Altitude for the UNITED STATES				
Altitude		Natural Gas		Propane
Feet	Meters	50, 75, 100, 125, 150	175 & 200	All Sizes
0 - 2000	0 - 610	3.5" w.c.	5.0" w.c.	10.0" w.c.
2001 - 3000	611 - 915	2.7" w.c.	3.9" w.c.	7.7" w.c.
3001 - 4000	916 - 1220	2.5" w.c.	3.5" w.c.	7.1" w.c.
4001 - 5000	1221 - 1525	2.2" w.c.	3.2" w.c.	6.4" w.c.
5001 - 6000	1526 - 1830	2.0" w.c.	2.9" w.c.	5.8" w.c.
6001 - 7000	1831 - 2135	1.8" w.c.	2.6" w.c.	5.2" w.c.
7001 - 8000	2136 - 2440	1.6" w.c.	2.3" w.c.	4.6" w.c.
8001 - 9000	2441 - 2745	1.4" w.c.	2.0" w.c.	4.1" w.c.
9001 - 10000	2746 - 3051	1.3" w.c.	1.8" w.c.	3.6" w.c.
Manifold Pressure Settings by Altitude for CANADA				
Altitude		Natural Gas		Propane
Feet	Meters	50, 75, 100, 125, 150	175 & 200	All Sizes
0 - 2000	0 - 610	3.5" w.c.	5.0" w.c.	10.0" w.c.
2001 - 4500	611 - 1373	2.8" w.c.	4.1" w.c.	8.1" w.c.

FIGURE 2 - Gas Valve identifying Pressure Taps and Adjustment Screw



- 4) **Pressure Adjustment** - Turn the knob or switch on the valve to "ON". Remove the cap from the pressure adjusting screw and adjust the manifold pressure to the pressure selected from **TABLE 2**. Adjust pressure by turning the regulator screw IN (clockwise) to increase pressure or OUT (counterclockwise) to decrease pressure.

CAUTION

DO NOT bottom out the gas valve regulator adjusting screw. This can result in unregulated manifold pressure causing excess overfire and heat exchanger failure.

- 5) Turn up the thermostat. Cycle the burner once or twice to properly seat the adjustment spring in the valve.
Re-check the pressure(s). When the outlet pressure is right for the installation, remove the manometer and replace the cap.
Check for leakage at the pressure tap fitting.
- 6) With the heater operating, determine that the inlet pressure to the heater is between 5 and 13.5 inches w.c. for natural gas or between 10 and 13.5 inches w.c. for propane. Take this reading as close as possible to the heater. (The

gas valve has an inlet pressure tap; see **FIGURE 2**.) If the inlet pressure is not within the specified range, the inlet pressure must be corrected and the manifold (outlet) pressure re-checked.

- 7) If the gas valve has been adjusted for operation above 2000 ft, find the High Altitude Adjustment label in the kit. Using a permanent marker, fill-in the appropriate input from **TABLE 3**. Select a location for the label on the rear of the burner/control box so that it will be conspicuous to anyone operating or servicing the unit. Be sure the surface is clean and dry and adhere the label. (**NOTE:** At altitudes from 0- 2000ft/0-610M, the high altitude label is not used.)

WARNING

If the heater will be operated above 6000 ft (1830M), a high altitude pressure switch (Option DJ20) must be installed on Model VR Sizes 50-175.

TABLE 3 - BTUH Inputs by Altitude

Model VR BTUH Inputs by Altitude in the UNITED STATES								
Altitude		Normal BTU Input						
Feet	Meters	Size 50	Size 75	Size 100	Size 125	Size 150	Size 175	Size 200
0 - 2000	0 - 610	50,000	75,000	100,000	125,000	150,000	175,000	200,000
2001 - 3000	611 - 915	44,000	66,000	88,000	110,000	132,000	154,000	176,000
3001 - 4000	916 - 1220	42,000	63,000	84,000	105,000	126,000	147,000	168,000
4001 - 5000	1221 - 1525	40,000	60,000	80,000	100,000	120,000	140,000	160,000
5001 - 6000	1526 - 1830	38,000	57,000	76,000	95,000	114,000	133,000	152,000
6001 - 7000	1831 - 2135	36,000	54,000	72,000	90,000	108,000	126,000	144,000
7001 - 8000	2136 - 2440	34,000	51,000	68,000	85,000	102,000	119,000	136,000
8001 - 9000	2441 - 2745	32,000	48,000	64,000	80,000	96,000	112,000	128,000
9001 - 10000	2746 - 3051	30,000	45,000	60,000	75,000	90,000	105,000	120,000
Model VR BTUH Inputs by Altitude in CANADA								
Altitude		Normal BTU Input						
Feet	Meters	Size 50	Size 75	Size 100	Size 125	Size 150	Size 175	Size 200
0 - 2000	0 - 610	50,000	75,000	100,000	125,000	150,000	175,000	200,000
2001 - 4500	611 - 1373	45,000	67,500	90,000	112,500	135,000	157,500	180,000

7. Check for safe and proper operation of the heater by observing operation for at least one complete cycle.
8. Fill in the information required on the gas conversion tape. Select a location on the rear of the burner/control box near the rating plate. Be sure the surface is clean and dry and adhere the tape to the box.
Close the control access door.

Application and Components

WARNING

These gas conversion kits are applicable only for a Model VR in the sizes listed. Misapplication of these kits can result in severe personal injury or death.

De-Coding the Heater Serial Number

The identifying model and serial number can be found on the heater rating plate. When converting fuels, it is necessary that you have the complete heater model and serial number. See the example below to determine the serial number valve code. **The rating plate identifies original equipment only so also compare the label on the gas valve with the description listed.**

Serial No. Example:	BLI	80	U2	N	99999
	Code for Year and Month the Heater was Manufactured	Ignition Controller	Type of Valve	Type of Gas (N = Natural; L = Propane)	Consecutive Number

Natural to Propane Kits

Natural TO Propane Conversion Kit P/N 269842			
Applies to:		Model VR Sizes 50, 75, and 100	
Equipped with the following valve:			
Serial No. Code		Description	
U2		VR8205M1130, Single-Stage, 1/2"	
7E		VR8215S1263, Single-Stage, 1/2"	
Components:			
Qty	P/N	Description	Use in Valve w/Serial No. Code
1	98720	Spring Kit #393691 for VR8105, VR8205, VR8305 Single-Stage Valves	U2
1	260605	Spring Kit #396221 for a VR8215 Single-Stage Valve	7E
1	124966	SIZE 50, Burner Orifice, #45	
1	196852	SIZE 75, Burner Orifice, #39	
1	196854	SIZE 100, Burner Orifice, 3.0MM	
1	64391	Conversion Tape	
1	37752	Propane Gas Disk	
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)	

Natural TO Propane Conversion Kit P/N 269843			
Applies to:		Model VR Sizes 125 and 150	
Equipped with the following valve:			
Serial No. Code		Description	
U2		VR8205M1130, Single-Stage, 1/2"	
7E		VR8215S1263, Single-Stage, 1/2"	
Components:			
Qty	P/N	Description	Use in Valve w/Serial No. Code
1	98720	Spring Kit #393691 for VR8105, VR8205, VR8305 Single-Stage Valves	U2
1	260605	Spring Kit #396221 for a VR8215 Single-Stage Valve	7E
1	196838	SIZE 125, Burner Orifice, #30	
1	120149	SIZE 150, Burner Orifice, #27	
1	64391	Conversion Tape	
1	37752	Propane Gas Disk	
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)	

Propane to Natural Kits

Natural TO Propane Conversion Kit P/N 269844		
Applies to:	Model VR Sizes 175 and 200	
Equipped with the following valve:		
Serial No. Code	Description	
6A	VR8205M2955, Single-Stage, 1/2"	
Components:		
Qty	P/N	Description
1	98720	Spring Kit #393691 for VR8105, VR8205, VR8305 Single-Stage Valves
1	260605	Spring Kit #396221 for a VR8215 Single-Stage Valve
1	205433	SIZE 175 - Burner Orifice, 5/32"
1	205434	SIZE 200 - Burner Orifice, 4.3MM
1	64391	Conversion Tape
1	37752	Propane Gas Disk
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)

Propane TO Natural Conversion Kit P/N 269856			
Applies to:		Model VR Sizes 50, 75, and 100	
Equipped with either of the following valves:			
Serial No. Code		Description	
U3		VR8205M1148, Single-Stage, 1/2"	
8E		VR8215S5215, Single-Stage, 1/2"	
Components:			
Qty	P/N	Description	Use in Valve w/Serial No. Code
1	98721	Spring Kit #394588 for VR8105, VR8205, VR8305 Single-Stage Valves	U3
1	261651	Spring Kit #396222 for a VR8215 Single-Stage Valve	8E
1	120147	SIZE 50, Burner Orifice, #29	
1	131579	SIZE 75, Burner Orifice, 4.25MM	
1	205430	SIZE 100, Burner Orifice, #11	
1	64391	Conversion Tape	
1	1401	Natural Gas Disk	
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)	

Propane TO Natural Conversion Kit P/N 269857			
Applies to:		Model VR Sizes 125 and 150	
Equipped with either of the following valves:			
U3		VR8205M1148, Single-Stage, 1/2"	
8E		VR8215S5215, Single-Stage, 1/2"	
Components:			
Qty	P/N	Description	Use in Valve w/Serial No. Code
1	98721	Spring Kit #394588 for VR8105, VR8205, VR8305 Single-Stage Valves	U3
1	261651	Spring Kit #396222 for a VR8215 Single-Stage Valve	8E
1	205431	SIZE 125, Burner Orifice, #2	
1	120165	SIZE 150, Burner Orifice, D	
1	64391	Conversion Tape	
1	1401	Natural Gas Disk	
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)	

(continued)

**Propane to Natural
Kits (continued)**

Propane TO Natural Conversion Kit P/N 269858			
Applies to:		Model VR Sizes 175 and 200	
Equipped with either of the following valves:			
U3		VR8205M1148, Single-Stage, 1/2"	
8E		VR8215S5215, Single-Stage, 1/2"	
Components:			
Qty	P/N	Description	Use in Valve w/Serial No. Code
1	98721	Spring Kit #394588 for VR8105, VR8205, VR8305 Single-Stage Valves	U3
1	261651	Spring Kit #396222 for a VR8215 Single-Stage Valve	8E
1	120165	SIZE 175 - Burner Orifice, D	
1	205432	SIZE 200 - Burner Orifice, J	
1	64391	Conversion Tape	
1	1401	Natural Gas Disk	
1	204741	High Altitude Adjustment Label (use above 2000ft/610M only)	

