Supersedes: CP-UD&APD Series-GC (02-18) PN197209R17

# **GAS CONVERSION KIT INSTALLATION FOR UNIT HEATERS**

MODELS APD AND UDAP: STANDARD POWER VENT FAN TYPE MODEL UDBP: STANDARD POWER VENT BLOWER TYPE MODEL UDAS: SEPARATED COMBUSTION FAN TYPE MODEL UDBS: SEPARATED COMBUSTION BLOWER TYPE

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# **⚠ WARNING ⚠**

#### FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury or property damage.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.
- 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 neighbor's phone. 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.

### **GENERAL INFORMATION**

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.

#### References

Table 1. Related Technical Manuals Available from Factory Distributor									
Туре	Form	PN							
Installation/operation	I-UD&APD	195673							
Replacement parts	P-UD&APD	270285							

### **Application**

These gas conversion kits are for standard power vent and separated combustion heaters equipped with either a single-stage or two-stage gas valve.

#### **Model Identification**

The identifying model number can be found on the heater rating plate. When converting fuels, it is necessary that you have the complete heater model.

The rating plate identifies only original equipment so also compare the label on the gas valve with the description listed.

### **Important Safety Information**

Please read all information in this manual thoroughly and become familiar with the capabilities and use of your appliance before attempting to operate or maintain this unit. 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:** A danger statement describes a potentially hazardous situation that if not avoided, will result in severe personal injury or death and/or property damage.

**WARNING:** A warning statement describes a potentially hazardous situation that if not avoided, can result in severe personal injury and/or property damage.

**CAUTION:** A caution statement describes a potentially hazardous situation that if not avoided, can result in minor or moderate personal injury and/or property damage.

**NOTE:** A note provides important information that should not be ignored.

### **⚠ DANGER ⚠**

- 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.
- On separated combustion heaters, install either the horizontal or vertical combustion air/vent system illustrated in the heater venting manual, using the concentric adapter supplied. For all heater installations, always comply with the combustion air requirements in the installation codes and instructions. Standard Power Vent heaters 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.

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- 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 conversion kit is to be selected and installed by a qualified service person in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. 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.

### **CONVERSION KIT SELECTION**

Each conversion kit includes two or three spring kits and burner orifices for multiple unit sizes. Some parts will not be used—carefully select the parts to be used. Refer to Table 2 for a list of natural gas to propane conversion kit components. Refer to Table 3 for a list of propane to natural gas conversion kit components.

			Table 2.	Natural Gas to Propane Conversion Kit Compon	ents									
Unit Size	Model	Kit PN	Component	Description	PN*	Gas Valve (Manufacturer's PN)								
				Common Components (Provided in All Kits)										
		98720												
ΛII			Tape	Conversion	64391									
All		Disk	Propane	37752	<del>_</del>									
			Label**	High-altitude adjustment	197062									
				Kit-Specific Components										
			Spring kit	#396221 for a VR8215 single-stage valve	260605									
	APD, UDAP,	000005	Burner orifice	1.6 mm (unit size 030)	196844									
	UDAP,	209633	burner offlice	#48 (unit size 045)	196845	1/2-inch, single-stage								
030,			Plate	Air restrictor, 1-3/8-inch (35 mm) diameter opening	196687	(VR8105K2942,								
045			Spring kit	#396221 for single-stage valve VR8215	260605	VR8205K2957, or								
	UDBP.	000040	D. was a wifi a a	1.6 mm (unit size 030)	196844	VR8215T1239)								
	UDBS	269840	269840	269840	269840	269840	269840	269840	S 269840	269840	Burner orifice	#48 (unit size 045)	196845	
			Plate	Air restrictor, 1-3/16-inch (30 mm) diameter opening	203078									
	APD, UDAP, UDAS		On sin a Lit	#396221 for a VR8215 single-stage valve	260605									
			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207									
			269836	269836	D. was a wifi a a	2.3 mm (unit size 060)	196846	1/2-inch, single-stage						
				Burner orifice	#39 (unit size 075)	196852	(VR8105K2942, VR8205K2957, or							
060.			Plate	Air restrictor, 1-3/4-inch (44 mm) diameter opening	196688	VR8215T1239)								
075		269841					Consider as Isit	#396221 for single-stage valve VR8215	260605	or				
			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207	1/2-inch, two-stage (VR8105N2949 or								
	UDBP, UDBS			269841	269841	D. was a wifi a a	2.3 mm (unit size 060)	196846	VR8205N2921)					
	0000			Burner orifice	#39 (unit size 075)	196852								
			Plate	Air restrictor restrictor, 1-9/16-inch (40 mm) diameter opening	202051									
			Carina kit	#396221 for single-stage valve VR8215	260605									
			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207									
100, 125		269837	D. was a wifi a a	3.0 mm (unit size 100)	196854									
123			Burner orifice	3.2 mm (unit size 125)	196847	1/2-inch, single-stage								
			Plate***	Air restrictor, 1-3/4-inch (44 mm) diameter opening	196688	(VR8205K2957 or VR8215T1239)								
	All		On the section	#396221 for single-stage valve VR8215	260605	or								
			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207	1/2-inch, two-stage (VR8205N2921)								
150, 175		269838	D	9/64-inch (unit size 150)	196898	(*110200142021)								
1/5			Burner orifice	#24 (unit size 175)	196899									
			Plate***	Air restrictor, 1-3/4-inch (44 mm) diameter opening	196688									
*Quant	tity = one	(1).												

<sup>\*\*</sup>Used only above 2000 feet (610 meters).

<sup>\*\*\*</sup>Plate from kit PN 269837 not used on unit size 125. Plate from kit PN 269838 not used on unit size 175 for residential or commercial applications.

### **CONVERSION KIT SELECTION—CONTINUED**

			Table 2.	Natural Gas to Propane Conversion Kit Compo	nents—C	Continued			
Unit Size	Model	Kit PN	Component	Description	PN*	Gas Valve (Manufacturer's PN)			
			Carina kit	#396221 for single-stage valve VR8215	260605	1/2-inch, single-stage (VR8205K2957 or			
			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207	VR8215T1239),			
200, 225, 250		269839		4.1 mm (unit size 200)	196900	3/4-inch single-stage (VR8305K4241),			
230			Burner orifice	11/64-inch (unit size 225)	196901	or 1/2-inch, two-stage			
	All				#14 (unit size 225)	196902	(VR8205N2921 or VR8305N4297)		
						Carina kit	#393691 for single-stage valve VR8305K	98720	O/A track streets street
300.			Spring kit	#396021 for two-stage valve VR8105, VR8205, or VR8305	197207	3/4-inch, single-stage (VR8305K4241)			
350,		201732		#8 (unit size 300)	196903	` or ´			
400			Burner orifice	#3 (unit size 350)	196904	3/4-inch, two-stage (VR8305N4297)			
				5.8 mm (unit size 400)	196905	(*110003144297)			
*Quant	tity = one	(1).							

Table 3. Propane to Natural Gas Conversion Kit Components (All Models)										
Unit Size	Kit PN	Component	Description	PN*	Gas Valve (Manufacturer's PN)					
		_	Common Components (Provided in All Kits)							
		Spring kit	#394588 for single-stage valve VR8105, VR8205, or VR8305	98721						
All		Tape	Conversion	64391	_					
		Disk	Natural gas	1401	_					
		Label**	High-altitude adjustment	197062						
			Kit-Specific Components							
		Spring kit	Spring kit #396222 for a VR8215 single-stage valve	261651	1/2-inch, single-stage					
030, 045	269851	Burner orifice	#37 (unit size 030)	196853	(VR8105K2959, VR8205K2965, or					
0.10		Burrier Offlice	#30 (unit size 045)	196838	VR8215T5214)					
		Carina kit	#396222 for single-stage valve VR8215	261651						
060,	269852	Spring kit	#396205 for two-stage valve VR8105, VR8205, or VR8305	197208						
075	209002	Durmar arifica	3.7 mm (unit size 060)	196839						
		Burner orifice	#19 (unit size 075)	196855	1/2-inch, single-					
		Consider on Isla	#396222 for single-stage valve VR8215	261651	stage (VR85K2959, VR8205K2965, or					
100.	269853	Spring kit	#396205 for two-stage valve VR8105, VR8205, or VR8305	197208	VR8215T5214)					
125		Burner orifice	#10 (unit size 100)	120158	or '					
			#4 (unit size 125)	196840	1/2-inch, two-stage (VR8105N2931 or					
		Spring kit	#396222 for single-stage valve VR8215	261651	VR8205N2913)					
150,	269854		#396205 for two-stage valve VR8105, VR8205, or VR8305	197208						
175		Burner orifice	5.9 mm (unit size 150)	131581						
		burner offlice	E (unit size 175)	196891						
		Consin on his	#396222 for single-stage valve VR8215	261651	1/2-inch, single- stage (VR85K2959, VR8205K2965, or					
		Spring kit	#396205 for two-stage valve VR8105, VR8205, or VR8305	197208	VR8215T5214),					
200, 225, 250	269855		6.8 mm (unit size 200)	196892	3/4-inch single-stage (VR8305N4258),					
200		Burner orifice	6.95 mm (unit size 225)	221121	1/2-inch, two-stage (VR8105N2931 or VR8205N2913),					
			L (unit size 250)	208255	or 3/4-inch, two-stage (VR8305N4289)					
		Spring kit	#396205 for two-stage valve VR8105, VR8205, or VR8305	197208	3/4-inch, single-stage					
300,	201722		8.0 mm (unit size 300)	221122	(VR8305N4258) or					
350, 400	201738	Burner orifice	8.7 mm (unit size 350)	221123	3/4-inch, two-stage					
			9.6 mm (unit size 400)	196897	(VR8305N4289)					
'Quant	ity = one (1)	).			<u> </u>					
**Used	only above	2000 feet (610 me	ters).							

### INSTALLATION

Install the conversion kit in accordance with the following steps. Ensure that the kit is correct for the size of the heater being serviced (refer to **Table 2** or **Table 3**).

### NOTE:

- Conversion of a unit using these kits does not alter the input rate. Refer to the rating plate on the heater for the input rate and other appropriate information.
- If adjusted for high-altitude operation, the input rate will be affected. For high-altitude input ratings and capacities refer to the APPENDIX.
- 1. Remove gas supply and electrical power.
  - a. Turn off gas supply at shutoff valve outside of heater.
  - b. Turn off electrical power.
  - c. Open control access panel.
- 2. Install regulator spring kit (see Figure 1 for heater component location).

### ⚠ WARNING ⚠

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

- a. Select regulator spring kit that corresponds with gas valve on heater. All gas conversion kits include one or two regulator spring kits for single-stage valve and one regulator spring for two-stage valve. Other included regulator spring kits will not be used.
- b. Install regulator spring kit in accordance with gas valve manufacturer's instructions (included with regulator spring kit).

NOTE: After a new regulator spring kit is installed, it is necessary to adjust the spring for correct manifold pressure. This adjustment can be made only after the heater is in operation (refer to step 7).

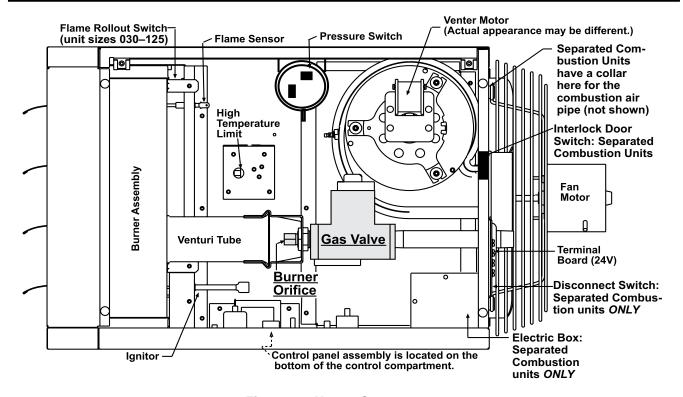
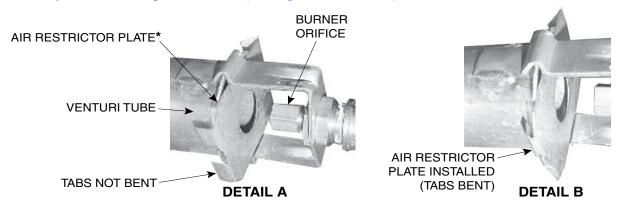


Figure 1. Heater Components

### INSTALLATION—CONTINUED

- 3. Remove or install air restrictor plate as necessary and replace burner orifice.
  - a. Carefully remove existing burner orifice (see Figure 2, DETAIL A).



\*USED ONLY ON PROPANE UNITS: MODELS UDAP, UDAS, UDBP, AND UDBS (UNIT SIZES 030, 045, 060, 075, 100, AND 150) AND MODELS UDBP AND UDBS (UNIT SIZE 125).

Figure 2. Burner Orifice and Air Restrictor Plate

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- The air restrictor plate MUST BE INSTALLED when converting models UDAP, UDAS, UDBP, and UDBS (unit sizes 030, 045, 060, 075, 100, and 150) and models UDBP and UDBS (unit size 125) to propane.
- The air restrictor plate MUST BE REMOVED when converting models UDAP, UDAS, UDBP, and UDBS (unit sizes 030, 045, 060, 075, 100, and 150) and models UDBP and UDBS (unit size 125) to natural gas.
- For these models/unit sizes, the failure to install or remove the air restrictor plate in accordance with the following directions can cause death or injury and/or property damage.
  - b. For models UDAP, UDAS, UDBP, and UDBS (unit sizes 030, 045, 060, 075, 100, and 150) and models UDBP and UDBS (unit size 125), proceed to step c. For all other models/unit sizes, proceed to step e.
  - c. If converting from propane to natural gas, remove air restrictor plate as follows. If converting from natural gas to propane, install air restrictor plate in accordance with step d.
    - (1) See Figure 2 to locate air restrictor plate held in place on venturi tube by its bent tabs.
    - (2) Use pliers to carefully unbend tabs as shown in Figure 2, DETAIL A and remove air restrictor plate.
  - d. For natural gas to propane conversion, install air restrictor plate as follows:
    - (1) Refer to **Table 2** or **Table 3** to select correct air restrictor plate. Slide plate in place over venturi tube opening so that its 45-degree angle is hooked over rear of venturi tube (see **Figure 2**).
    - (2) While holding plate in position, use pliers to carefully bend tabs to lock plate in place (see **Figure 2**, DETAIL B). Ensure that air restrictor is aligned and secure.
  - e. For all conversions, select replacement burner orifice that has marking required for size of heater being converted (refer to **Table 4**). All conversion kits include two or three burner orifices. Other included orifice(s) will not be used.

## **⚠ WARNING ⚠**

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

f. Install replacement burner orifice (see Figure 2, DETAIL A).

	Table 4. Burner Orifice Markings													
Orifice ID		Unit Size												
Offlice ID	030	045	060	075	100	125	150	175	200	225	250	300	350	400
	Natural Gas													
PN	196853	196838	196839	196855	120158	196840	131581	196891	196892	221121	208255	221122	221123	196897
Marking	#37	#30	3.7 mm	#19	#10	#4	5.9 mm	E	6.8 mm	6.95 mm	L	8.0 mm	8.7 mm	9.6 mm
						P	ropane							
PN	196844	196845	196846	196852	196854	196847	196898	196899	196900	196901	196902	196903	196904	196905
Marking	1.6 mm	#48	2.3 mm	#39	3.0 mm	3.2 mm	9/64"	#24	4.1 mm	11/64"	#14	#8	#3	5.8 mm

### **△** CAUTION △

If the heater will be operated at an elevation above 6,000 feet (1,830 meters), a high-altitude pressure switch must be installed.

### NOTE:

- If the installation location is above 6,000 feet (1,830 meters), verify that the altitude on the rating plate or high-altitude label is above 6,000 feet (1,830 meters). If the rating plate or label does not indicate an altitude above 6,000 feet (1,830 meters), order and install the appropriate high pressure switch kit.
- If the heater is equipped for installation above 6,000 feet (1,830 meters) and is being installed at a lower elevation, order and install the appropriate switch.
- Contact your distributor to select the factory-authorized replacement part.

#### 4. Replace pressure switch.

- a. Locate pressure switch in control compartment (see Figure 1) and mark and disconnect two pressure switch wires.
- b. Mark and disconnect sensing tube(s) from pressure switch.
- c. Remove two screws that secure mounting bracket and remove bracket and pressure switch. Save bracket and screws for reuse.
- d. Install replacement pressure switch using mounting bracket and two screws. Reconnect sensing tube(s) and wires.

### 5. Restore electrical power and gas supply.

- a. Turn on electrical power.
- b. Turn on gas supply and relight heater, following instructions on heater.

#### 6. Perform leak test.

- a. Check all connections for gas leaks using commercial leak-detecting fluid or rich soap and water solution.
   Leaks are indicated by presence of bubbles.
- b. If leak is detected, tighten connection. If leak cannot be stopped by tightening connection, replace part(s).

#### 7. Adjust manifold (outlet) pressure.

a. Refer to **Table 5** to determine required manifold pressure for elevation where heater will be operated. If elevation is unknown, check with local gas company.

# **⚠ WARNING ⚠**

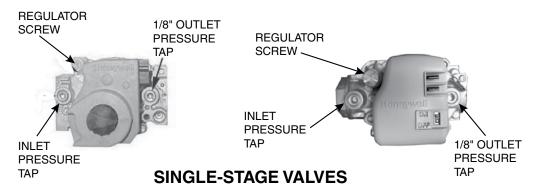
Manifold gas pressure must never exceed 3.5 IN WC for natural gas or 10 IN WC for propane.

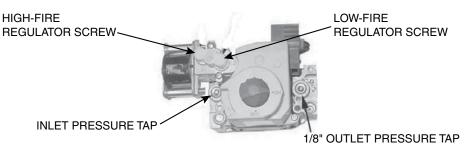
NOTE: A manometer (fluid-filled gauge) is recommended for measuring manifold pressure—rather than a spring-type gauge—due to the difficulty of maintaining the calibration of a spring-type gauge. Use a water column manometer readable to the nearest tenth-inch.

### INSTALLATION—CONTINUED

- b. Turn knob or switch on top of gas valve to OFF. Connect manometer to 1/8-inch outlet pressure tap (see Figure 3).
- c. Turn knob or switch on top of gas valve to ON and remove cap from regulator screw.
- d. For two-stage low-fire manifold pressure adjustment, disconnect wire from HI terminal on valve before adjusting regulator screw. Reconnect wire to HI terminal when required outlet pressure (refer to **Table 5**) is achieved.

Table 5. Manifold Pressure Settings by Altitude										
Alti	tude	Single-Stage and 1	wo-Stage High-Fire	Two-Stage Low-Fire						
Feet	Meters	Natural Gas	Propane	Natural Gas	Propane					
reet	Weters		Required Manifold	Pressure (IN WC)						
		Installat	ion in US							
0–2000	0–610	3.5	10.0	1.8	5.0					
2001–3000	611–915	3.1	8.8	1.6	4.4					
3001–4000	916–1220	3.0	8.5	1.5	4.2					
4001- 5000	1221–1525	2.8	8.1	1.5	4.1					
5001–6000	1526–1830	2.7	7.7	1.4	3.9					
6001–7000	1831–2135	2.6	7.4	1.3	3.7					
7001–8000	2136–2440	2.5	7.1	1.3	3.5					
8001–9000	2441–2745	2.4	6.7	1.2	3.4					
9001–10,000	2746–3045	2.3	0.7	1.2	3.4					
	Installation in Canada									
0–2000	0–610	3.5	10.0	1.8	5.0					
2001–4500	611–1373	2.8	8.1	1.5	4.1					





### **TWO-STAGE VALVE**

Figure 3. Manifold Pressure Adjustment

### $\triangle$ CAUTION $\triangle$

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

e. For all gas valves, adjust outlet pressure by turning regulator screw IN (clockwise) to increase pressure or OUT (counterclockwise) to decrease pressure. See **Figure 3** to determine which regulator screw (low-fire or high-fire) to adjust for two-stage valves.

- f. When manometer reading indicates that required pressure has been achieved, turn up thermostat (on models UDAS and UDBS, depress and hold door safety switch).
- g. Cycle burner once or twice to properly seat adjustment spring in gas valve and recheck outlet pressure. When pressure corresponds to **Table 5**, disconnect manometer and install cap on regulator screw.
- h. Check for leakage at 1/8-inch outlet pressure tap fitting. Correct as necessary.
- i. Connect manometer to inlet pressure tap (see **Figure 3**). While heater is operating, measure inlet pressure, which should be between 5 and 13.5 IN WC for natural gas or between 10 and 13.5 IN WC for propane.
- j. If inlet pressure is not between 5 and 13.5 IN WC for natural gas or between 10 and 13.5 IN WC for propane, inlet pressure must be corrected and manifold (outlet) pressure must be rechecked.

# NOTE: The high-altitude adjustment label is not used on units operated at elevations of 2,000 feet (610 meters) or below.

- k. If gas valve has been adjusted for operation above 2,000 feet, use permanent marker to fill in appropriate input and capacity information (from APPENDIX) on high-altitude adjustment label (from conversion kit). Select location for label on outside of heater access panel that will be conspicuous to anyone operating or servicing unit. Ensure that surface is clean and dry and affix label.
- I. Observe heater operation for at least one complete cycle to check for safe and proper operation (on models UDAS and UDBS, depress and hold safety door switch).
- 8. Fill in required information on gas conversion tape (from conversion kit). Select location near rating plate, ensure that surface is clean and dry, and affix tape to heater.
- 9. Close control access panel.

#### APPENDIX: INPUTS AND CAPACITIES BY ALTITUDE

	Inputs and Capacities by Altitude in US										
Altit Feet	ude Meters	Normal Input (BTUh)	Thermal Output Capacity (BTUh)	Minimum Input (BTUh)	Normal Input (BTUh)	Thermal Output Capacity (BTUh)	Minimum Input (BTUh)				
	Unit Size	(BTOII)	030	(BTOII)	(51011)	045	(1011)				
0–2000	0–610	30.000	24.600	30.000	45.000	37.350	45.000				
2001–3000	611–915	28,200	23,124	28,200	42.300	35,109	42,300				
3001–4000	916–1220	27,600	22.632	27,600	41.400	34.362	41,400				
4001–5000	1221–1525	27,000	22,140	27,000	40,500	33,615	40,500				
5001–6000	1526–1830	26,400	21.648	26,400	39,600	32,868	39,600				
6001–7000	1831–2135	25.800	21.156	25.800	38.700	32,121	38,700				
7001–8000	2136–2440	25,200	20,664	25,200	37,800	31,374	37,800				
8001–9000	2441–2745	24,600	20,172	24,600	36,900	30,627	36,900				
9001-10,000	2746–3045	24,000	19,680	24,000	36,000	29,880	36,000				
,	Unit Size	,	060	•	,	075	·				
0–2000	0–610	60,000	49,800	42,000	75,000	62,250	52,500				
2001–3000	611–915	56,400	46,812	39,480	70,500	58,515	49,350				
3001-4000	916–1220	55,200	45,816	38,640	69,000	57,270	48,300				
4001–5000	1221–1525	54,000	44,820	37,800	67,500	56,025	47,250				
5001-6000	1526–1830	52,800	43,824	36,960	66,000	54,780	46,200				
6001–7000	1831–2135	51,600	42,828	36,120	64,500	53,535	45,150				
7001–8000	2136–2440	50,400	41,832	35,280	63,000	52,290	44,100				
8001–9000	2441–2745	49,200	40,836	34,440	61,500	51,045	43,050				
9001–10,000	2746–3045	48,000	39,840	33,600	60,000	49,800	42,000				
	Unit Size		100			125					
0–2000	0–610	105,000	88,200	73,500	120,000	100,800	84,000				
2001–3000	611–915	98,700	82,908	69,090	112,800	94,752	78,960				
3001–4000	916–1220	96,600	81,144	67,620	110,400	92,736	77,280				
4001–5000	1221–1525	94,500	79,380	66,150	108,000	90,720	75,600				
5001–6000	1526–1830	92,400	77,616	64,680	105,600	88,704	73,920				
6001–7000	1831–2135	90,300	75,852	63,210	103,200	86,688	72,240				
7001–8000	2136–2440	88,200	74,088	61,740	100,800	84,672	70,560				
8001–9000	2441–2745	86,100	72,324	60,270	98,400	82,656	68,880				
9001–10,000	2746–3045	84,000	70,560	58,800	96,000	80,640	67,200				

### APPENDIX: INPUTS AND CAPACITIES BY ALTITUDE—CONTINUED

	Inputs and Capacities by Altitude in US—Continued										
Altit	ude	Normal	Thermal Output	Minimum	Normal	Thermal Output	Minimum				
Feet	Meters	Input (BTUh)	Capacity (BTUh)	Input (BTUh)	Input (BTUh)	Capacity (BTUh)	Input (BTUh)				
	Unit Size		150			175					
0–2000	0–610	150,000	124,500	105,000	175,000	145,250	122,500				
2001–3000	611–915	141,000	117,030	98,700	164,500	136,535	115,150				
3001–4000	916–1220	138,000	114,540	96,600	161,000	133,630	112,700				
4001–5000	1221-1525	135,000	112,050	94,500	157,500	130,725	110,250				
5001-6000	1526–1830	132,000	109,560	92,400	154,000	127,820	107,800				
6001–7000	1831–2135	129,000	107,070	90,300	150,500	124,915	105,350				
7001–8000	2136–2440	126,000	104,580	88,200	147,000	122,010	102,900				
8001–9000	2441–2745	123,000	102,090	86,100	143,500	119,105	100,450				
9001-10,000	2746-3045	120,000	99,600	84,000	140,000	116,200	98,000				
	Unit Size		200			225					
0–2000	0–610	200,000	166,000	140,000	225,000	186,750	157,500				
2001–3000	611–915	188,000	156,040	131,600	211,500	175,545	148,050				
3001-4000	916–1220	184,000	152,720	128,800	207,000	171,810	144,900				
4001–5000	1221-1525	180,000	149,400	126,000	202,500	168,075	141,750				
5001-6000	1526-1830	176,000	146,080	123,200	198,000	164,340	138,600				
6001–7000	1831–2135	172,000	142,760	120,400	193,500	160,605	135,450				
7001–8000	2136–2440	168,000	139,440	117,600	189,000	156,870	132,300				
8001–9000	2441–2745	164,000	136,120	114,800	184,500	153,135	129,150				
9001-10,000	2746-3045	160,000	132,800	112,000	180,000	149,400	126,000				
	Unit Size		250			300					
0–2000	0–610	250,000	207,500	175,000	300,000	249,000	210,000				
2001–3000	611–915	235,000	195,050	164,500	282,000	234,060	197,400				
3001–4000	916–1220	230,000	190,900	161,000	276,000	229,080	193,200				
4001–5000	1221–1525	225,000	186,750	157,500	270,000	224,100	189,000				
5001–6000	1526–1830	220,000	182,600	154,000	264,000	219,120	184,800				
6001–7000	1831–2135	215,000	178,450	150,500	258,000	214,140	180,600				
7001–8000	2136–2440	210,000	174,300	147,000	252,000	209,160	176,400				
8001–9000	2441–2745	205,000	170,150	143,500	246,000	204,180	172,200				
9001-10,000	2746–3045	200,000	166,000	140,000	240,000	199,200	168,000				
	Unit Size		350			400					
0–2000	0–610	350,000	290,500	245,000	400,000	332,000	280,000				
2001–3000	611–915	329,000	273,070	230,300	376,000	312,080	263,200				
3001–4000	916–1220	322,000	267,260	225,400	368,000	305,440	257,600				
4001–5000	1221–1525	315,000	261,450	220,500	360,000	298,800	252,000				
5001–6000	1526–1830	308,000	255,640	215,600	352,000	292,160	246,400				
6001–7000	1831–2135	301,000	249,830	210,700	344,000	285,520	240,800				
7001–8000	2136–2440	294,000	244,020	205,800	336,000	278,880	235,200				
8001–9000	2441–2745	287,000	238,210	200,900	328,000	272,240	229,600				
9001-10,000	2746–3045	280,000	232,400	196,000	320,000	265,600	224,000				

	Inputs and Capacities by Altitude in Canada										
Altit Feet	ude Meters	Normal Input (BTUh)	Thermal Output Capacity (BTUh)	Minimum Input (BTUh)	Normal Input (BTUh)	Thermal Output Capacity (BTUh)	Minimum Input (BTUh)				
	Unit Size	(51011)	030	(51011)	(21011)	045	(21011)				
0–2000	0–610	30,000	24,600	30,000	45,000	37,350	45,000				
2001–4500	611–1373	27,000	22,140	27,000	40,500	33,615	40,500				
	Unit Size		060			075					
0–2000	0–610	60,000	49,800	42,000	75,000	62,250	52,500				
2001–4500	611–1373	54,000	44,820	37,800	67,500	56,025	47,250				
	Unit Size		100			125					
0–2000	0–610	105,000	88,200	73,500	120,000	100,800	84,000				
2001–4500	611–1373	94,500	79,380	66,150	108,000	90,720	75,600				
	Unit Size	150			175						
0–2000	0–610	150,000	124,500	105,000	175,000	145,250	122,500				
2001–4500	611–1373	135,000	112,050	94,500	157,500	130,725	110,250				
	Unit Size		200			225					
0–2000	0–610	200,000	166,000	140,000	225,000	186,750	157,500				
2001–4500	611–1373	180,000	149,400	126,000	202,500	168,075	141,750				
	Unit Size		250			300					
0–2000	0–610	250,000	207,500	175,000	300,000	249,000	210,000				
2001–4500	611–1373	225,000	186,750	157,500	270,000	224,100	189,000				
	Unit Size		350			400					
0–2000	0–610	350,000	290,500	245,000	400,000	332,000	280,000				
2001–4500	611–1373	315,000	261,450	220,500	360,000	298,800	252,000				







