

TECHNICAL SPECIFICATIONS FOR MODEL LDAP

**COMMERCIAL/INDUSTRIAL POWER-VENTED HIGH-VELOCITY
GAS-FIRED DOWNFLOW HEATER**

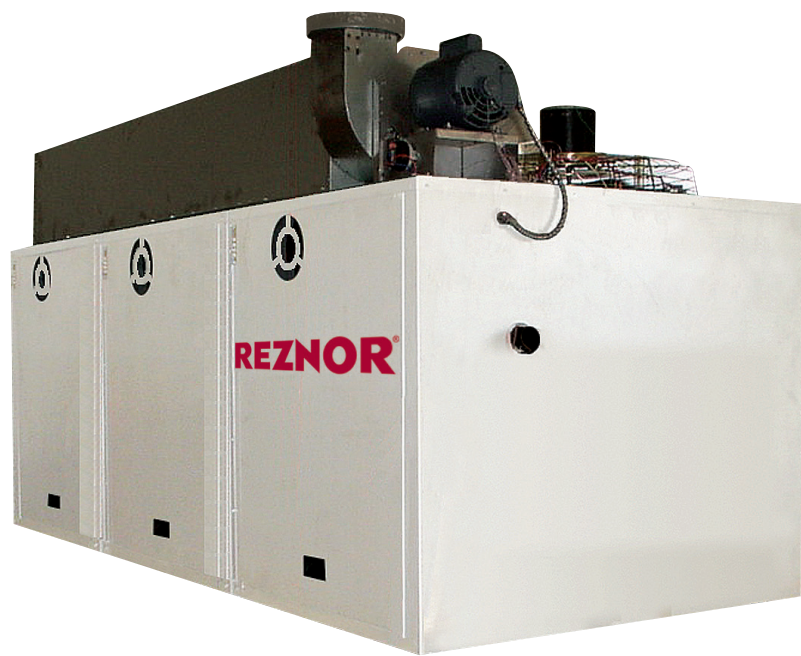


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In keeping with our policy of continuous product improvement, we reserve the right to alter, at any time, the design, construction, dimensions, weights, etc., of equipment information shown here.

TECHNICAL SPECIFICATIONS—CONTINUED

Unit Sizes

These downflow heaters are available in three unit sizes based on 400,000–1,200,000 BTUh input.

Features

- Voltage/phase/Hz options: 208/1/60 and 230/1/60
- Natural gas or propane
- 83% thermal efficient
- Painted galvanized-steel cabinet
- Destratification fan recycles heat back down to the floor (can be run in summer without heat to create a cooling effect)
- 55°F temperature rise
- Integrated circuit board(s) with diagnostic LEDs
- Vibration- and noise-isolated fan and venter motors for quiet operation
- TCORE²® heat exchanger
- High temperature limit switches
- May be integrated with building automation system
- External terminal strip for 24V wiring and built-in disconnect switch

Factory-Installed Options

Option	Description
AA1	Natural gas
AA2	Propane
AC1	Aluminized-steel heat exchanger
AC2	409 SST heat exchanger
AG1	Single-stage combination gas valve
AG2	Two-stage combination gas valve (not available on unit sizes 800 and 1200)
AK2	208/1/60 voltage
AK3	230/1/60 voltage

Field-Installed Options

Option	Description
CC1	Vent cap
CD32	Vertical louvers
CD57	30-degree downturn nozzle
CD58	60-degree downturn nozzle
CD59	30-degree downturn nozzle with four-way louvers
CE1	Manual shutoff valve, natural gas or propane
CL1	Single-stage thermostat with fan switch
CL22	Two-stage thermostat with fan switch
CM1	Locking thermostat cover
CK10	Adapts 3/8-inch hangers for four-point suspension from 1-inch threaded pipe
CL31, CL32	Multiple unit control: option CL31 includes components for one control unit and one additional unit—option CL32 includes components for each additional non-control unit
DJ20	High-elevation pressure switch for installation elevations >6,000 feet (>1,830 meters)

Technical Data

Parameter	Unit of Measure	Unit Size		
		400	800	1200
Input heating capacity	BTUh	400,000*	800,000	1,200,000
	kW	117.1*	234.2	351.4
Output heating capacity (83%)	BTUh	332,000**	664,000	996,000
	kW	97.2**	194.4	291.6
Air volume (high fan speed)	CFM	5589	11,178	16,768
	meter ³ /hour	158	317	475
Destratification air volume (low-medium fan speed)	CFM	3250-4650	6500-9300	9750-13,950
	meter ³ /hour	92-132	184-263	276-395
Outlet velocity (high fan speed)	FPM	1521		
	meter/minute	464		
Destratification outlet velocity (low-medium fan speed)	FPM	885-1266		
	meter/minute	270-386		
Gas connection	inch	1	1-1/4	
Vent connection diameter		6	8	
Full load amps (208V)	amp	5.6	13.6	19.4
Full load amps (230V)		5.5	12.8	18.5
Unit control amps (24V)		1.0	2.0	3.0
Normal power consumption (208V)	watt	1150	2448	3730
Normal power consumption (230V)		1230	2597	3959
Discharge air temperature rise	°F	55		
Fan motor size	HP	1		
Fan motor speed	RPM	1050		
Fan diameter	inch	24		
Discharge air opening area	feet ²	3.67	7.35	11.02
	meter ²	0.34	0.68	1.02
Sound level @ 20 feet (6.1 meters)	dBa	69	72	74
	Pascal (Pa)	0.058	0.080	0.100
	microbar (μbar)	0.580	0.800	1.000
Sound level @ 25 feet (7.6 meters)	dBa	65	68	70
	Pascal (Pa)	0.037	0.051	0.064
	microbar (μbar)	0.371	0.512	0.640
Sound level @ 30 feet (9.1 meters)	dBa	62	65	67
	Pascal (Pa)	0.026	0.036	0.044
	microbar (μbar)	0.258	0.356	0.444
Sound level @ 35 feet (10.7 meters)	dBa	60	62	64
	Pascal (Pa)	0.019	0.026	0.033
	microbar (μbar)	0.189	0.261	0.327
Sound level @ 40 feet (12.2 meters)	dBa	57	60	62
	Pascal (Pa)	0.015	0.020	0.025
	microbar (μbar)	0.145	0.200	0.250
*High fire values shown—low fire values are 300,000 BTUh (87.9kW). The two-stage combination gas valve (option AG2) is available only on unit size 400.				
**High fire values shown—low fire values are 249,000 BTUh (73.0kW).				

Certification

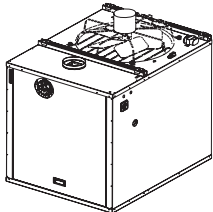
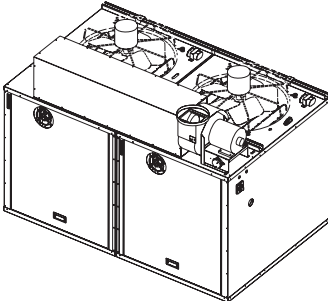
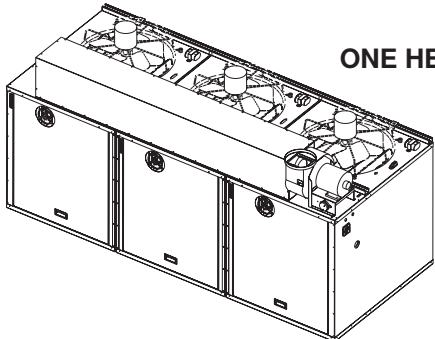
- These units are listed by Intertek as Category III heaters for use in industrial and commercial installations in the United States and Canada.
- All unit sizes are available for use with either natural or propane gas. The type of gas, the input rate, and the electrical supply requirement are shown on the heater rating plate. Check the rating plate to determine if the heater is appropriate for the intended installation.

TECHNICAL SPECIFICATIONS—CONTINUED

Installation Codes

- These heaters must be installed in accordance with local building codes. In the absence of local codes, in the United States, the heater must be installed in accordance with the *National Fuel Gas Code*, ANSI Z223.1. Local authorities having jurisdiction should be consulted before installation is made to verify local codes and installation procedure requirements.
- Installations in aircraft hangars should be in accordance with the *Standard for Aircraft Hangars* (ANSI/NFPA 409, latest edition). Installations in public garages should be in accordance with the *Standard for Parking Structures* (ANSI/NFPA 88A, latest edition). Installations in repair garages should be in accordance with the *Standard for Repair Garages* (NFPA 88B), which has been incorporated into the *Code for Motor Fuel Dispensing Facilities and Repair Garages* (NFPA 30A, latest edition). In Canada, installations in aircraft hangars and public garages should be in accordance with CSA B149.
- If the heater is being installed in the Commonwealth of Massachusetts, installation must be performed by a licensed plumber or licensed gas fitter.

Cabinet Configurations

UNIT SIZE 400 	ONE DOWNFLOW HEATER
UNIT SIZE 800 	ONE HEATER WITH TWO DOWNFLOW HEAT SECTIONS
UNIT SIZE 1200 	ONE HEATER WITH THREE DOWNFLOW HEAT SECTIONS

Heater Location

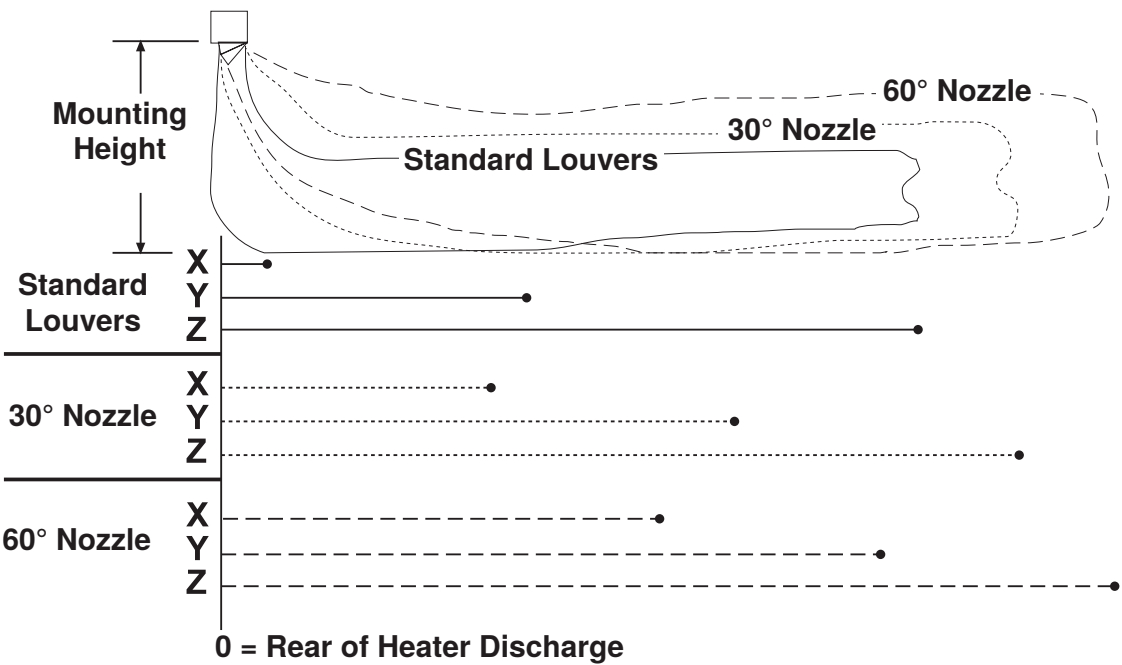
⚠ CAUTION ⚠

- Unit heaters should not be used in an application where the heated space temperature is below 40°F (4°C). Operating under low ambient conditions may cause condensation to form in the heat exchanger.
- Do not locate the heater where it may be exposed to water spray, rain, or dripping water.

There are a variety of factors such as system application, building structure, dimensions, and weight that contribute to selecting the location. Read the installation information in the installation manual and select a location that complies with the requirements.

Heater Throw

Throw pattern changes with louver angle, two-way louver direction, and/or optional four-way louvers.



X = DISTANCE FROM 0 TO BEGINNING OF FLOOR COVERAGE
Y = DISTANCE FROM 0 TO END OF FLOOR COVERAGE
Z = DISTANCE FROM 0 TO POINT WHERE AIR VELOCITY DROPS TO <50 FEET (15.2 METERS) PER MINUTE
Y - X = LENGTH OF FLOOR COVERAGE

Mounting Height	Standard Louvers			30-Degree Nozzle			60-Degree Nozzle		
	Dimension (See Graphic Above)								
	X	Y	Z	X	Y	Z	X	Y	Z
Feet (Meters)									
20 (6.1)	5 (1.5)	55 (16.8)	134 (40.8)	40 (12.2)	90 (27.4)	146 (44.5)	70 (21.3)	125 (38.1)	158 (48.2)
30 (9.1)	8 (2.4)	53 (16.2)	121 (36.9)	44 (13.4)	86 (26.2)	133 (40.5)	76 (23.2)	119 (36.3)	145 (44.2)
40 (12.2)	12 (3.7)	49 (14.9)	109 (33.2)	47 (14.3)	81 (24.7)	120 (36.6)	—		
50 (15.2)	17 (5.2)	45 (13.7)	96 (29.3)	—					
NOTE: The above is for heat mode at high speed for standard louvers facing one direction and fully open.									

TECHNICAL SPECIFICATIONS—CONTINUED

Mounting Height Requirements

WARNING

If touched, the vent pipe and internal heater surfaces that are accessible from outside the heater will cause burns. Suspend the heater a minimum of 15 feet (4.6 meters) above the floor.

- For best results, the heater should be mounted with certain rules in mind. In general, a unit should be located 15 to 40 feet (4.6 to 12.2 meters) above the floor. Where two or more units are installed in the same room, a general scheme of air circulation should be maintained for best results.
- Suspended heaters are most effective when located as close to the working zone as possible, and this fact should be kept in mind when determining the mounting heights to be used. However, care should be exercised to avoid directing the discharged air directly on the room occupants.
- Partitions, columns, counters, or other obstructions should be taken into consideration when locating the unit heater so that a minimum quantity of airflow will be deflected by such obstacles.

Halogenated Hydrocarbons

Halogenated hydrocarbons are a family of chemical compounds characterized by the presence of halogen elements (fluorine, chlorine, bromine, etc.). These compounds are used in refrigerants, cleaning agents, and solvents and are heavier than air, a fact that should be kept in mind when determining the installation location of heaters and building exhaust systems.

CAUTION

CORROSION HAZARD: Halogenated hydrocarbons, when exposed to flame, precipitate with any condensation present in the heater to form hydrochloric acid, which readily attacks all metals, including 300 grade stainless steel. Care should be taken to separate these vapors from the combustion process. An outside air supply MUST BE provided to the burner whenever the presence of these compounds is suspected.

Combustion Air Requirements

WARNING

The unit is designed to take combustion air from the space in which it is installed and is not designed for connection to an outside combustion air intake duct. Connecting this unit to an outside combustion air intake duct voids the warranty and could cause hazardous operation.

- Requirements for combustion air and ventilation air depend upon whether the unit is located in a confined or unconfined space. A confined space is defined as a space whose volume is <50 cubic feet per 1,000 BTUh of the installed appliance input rating. An unconfined space is defined as a space whose volume is ≥50 cubic feet per 1,000 BTUh of the installed appliance input rating.
- Sufficient air must enter the equipment location to replace the air exhausted through the vent system. Refer to the installation manual for further information on confined spaces and combustion air requirements.

Venting Requirements

- Safe operation of any gas-fired equipment requires a properly operating vent system, correct provision for combustion air, and regular maintenance and inspection.
- Venting must be in accordance with the *National Fuel Gas Code Z223.1* (latest edition) and all local codes. Local requirements supersede national requirements.
- These power-vented units are designed to operate safely and efficiently with either a horizontal or vertical vent. Comply with the specific requirements and instructions.
- Refer to the installation manual for further information on venting requirements.

Unit Size	Venter Outlet Diameter	Vent Pipe Diameter	Maximum Vent Length*	Equivalent Straight Length**		Venter Outlet Connection***
				90-Degree Elbow	45-Degree Elbow	
		Inches (mm)		Feet (Meters)		Inches (mm)
400	6 (152)	6 (152)	45 (13.7)	15 (4.6)	7.5 (2.3)	—
		7 (178)	60 (18.3)	8 (2.4)	4 (1.2)	6–7 (152–178)
800	8 (203)	8 (203)	50 (15.2)	15 (4.6)	7.5 (2.3)	—
		10 (254)	45 (13.7)	5 (1.5)	2.5 (0.8)	8–10 (203–254)
1200	8 (203)	8 (203)	50 (15.2)	15 (4.6)	7.5 (2.3)	—
		10 (254)	45 (13.7)	5 (1.5)	2.5 (0.8)	8–10 (203–254)
NOTE: The above applies to both horizontal and vertical vents.						
*Includes one 90° elbow at venter outlet.						
**Add all straight sections and equivalent lengths for elbows—the total combined length must not exceed the maximum vent length.						
***Field-supplied taper-type increaser connection required at the venter outlet.						

Clearances

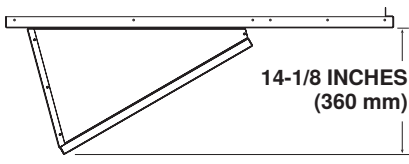
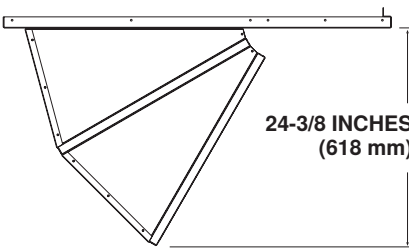
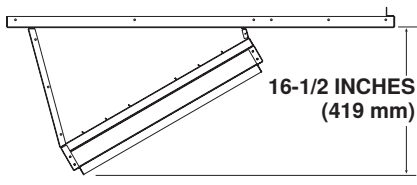
Units must be installed so that the clearances are provided for with regards to combustion air space, inspection, and service and for proper spacing from combustible construction. Clearance to combustibles is defined as the minimum distance from the heater to a surface or object for which it is necessary to ensure that a surface temperature of 90°F (50°C) above the surrounding ambient temperature is not exceeded. Ensure that clearances are as follows:

Heater Surface	Minimum Clearance (Inches (mm))
Top	12 (305)
Flue connector	6 (152)
Front (access panel)	18 (457)
Rear	2 (51)
Disconnect side	18 (457)
Side	2 (51)
Bottom	60 (1524)

Weights

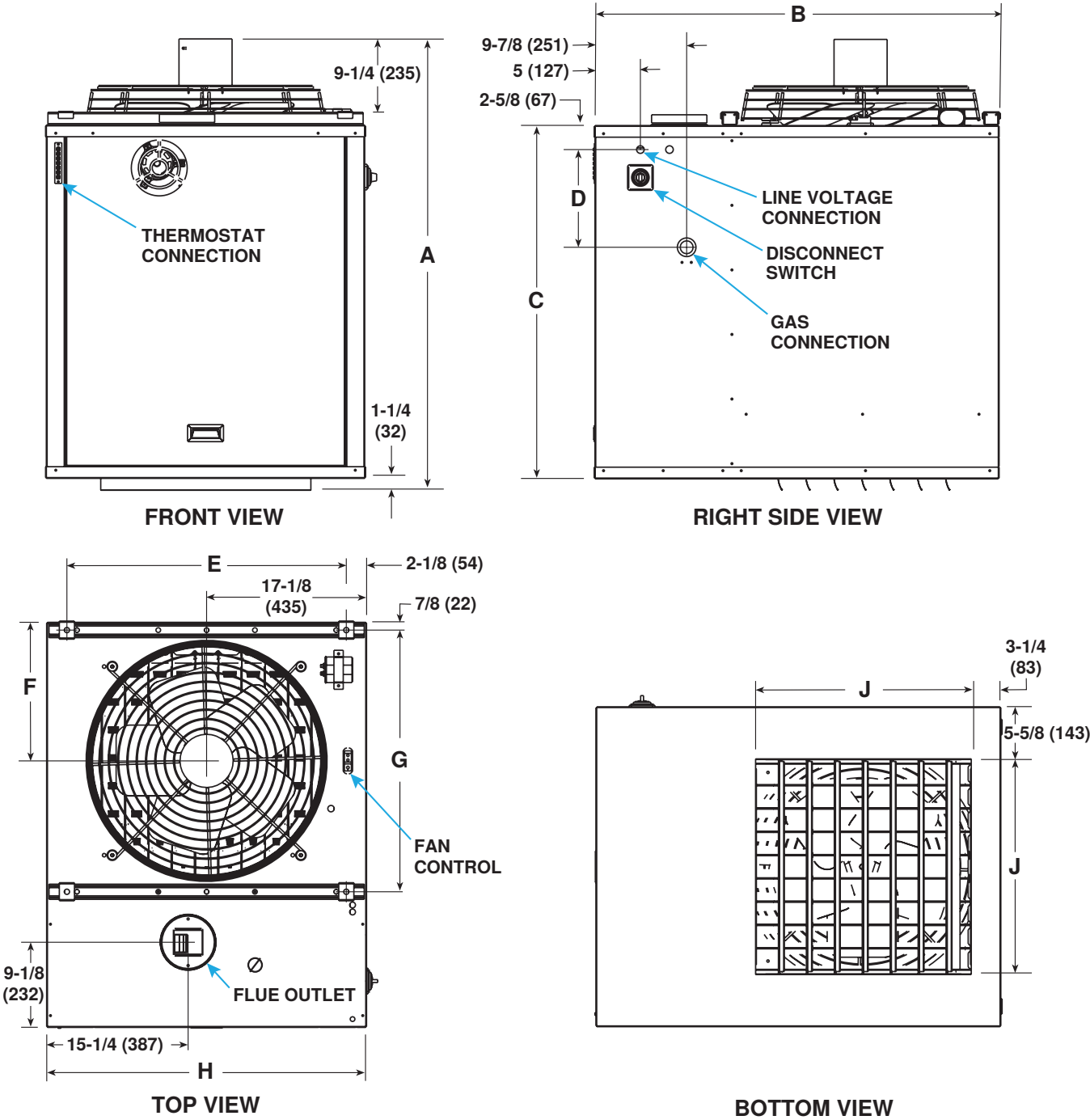
Type	Unit Size		
	400	800	1200
	Pounds (kg)		
Unit	375 (170)	805 (365)	1195 (542)
Shipping	672 (305)	1309 (594)	1847 (838)

Dimensions

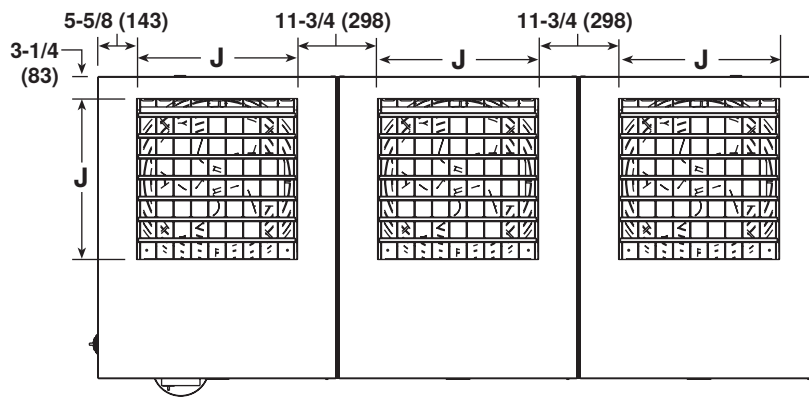
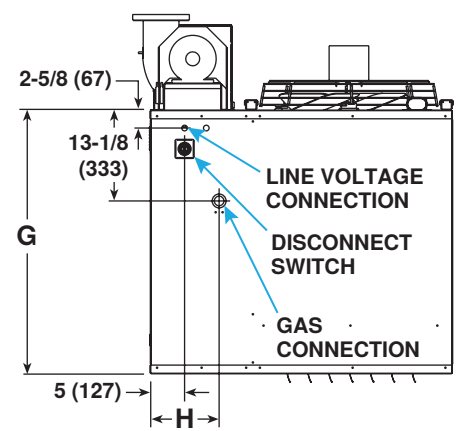
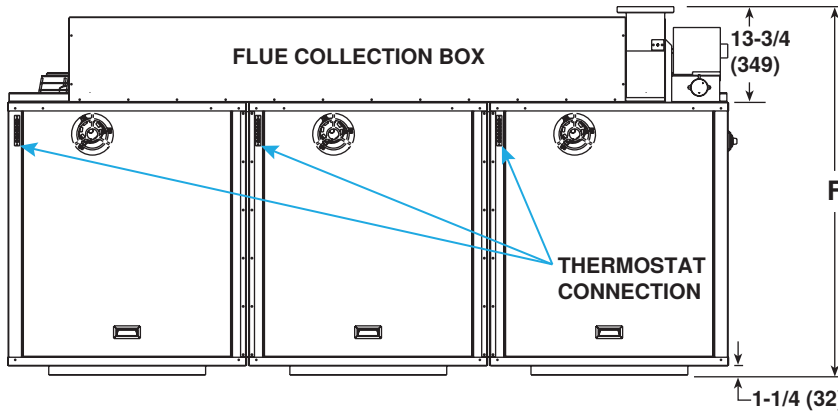
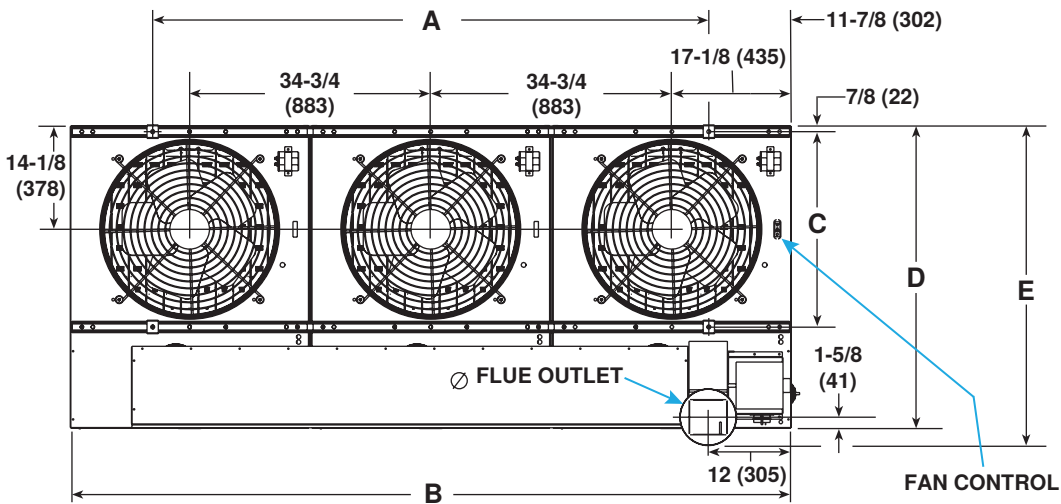
CD57 	CD58 	CD59 
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TECHNICAL SPECIFICATIONS—CONTINUED

Dimensions—Continued



Unit Size	Dimension (See Graphic Above)								
	A	B	C	D	E*	F	G*	H	J**
	Inches (mm)								
400	48-1/2 (1232)	43-1/2 (1105)	38 (965)	13-1/8 (333)	30 (762)	14-7/8 (378)	28-1/8 (714)	34-3/8 (873)	23 (584)
*Heater suspension points—1/2-13 FEM.									
**Discharge opening.									



Unit Size	Dimension (See Graphic Above)								
	A*	B	C*	D	E	F	G	H	J**
	Inches (mm)								
800	46 (1168)	69 (1753)	28-1/8 (714)	43-1/2 (1105)	46 (1168)	53 (1346)	38 (965)	9-7/8 (251)	23 (584)
1200	80 (2032)	103-3/4 (2635)							
*Heater suspension points—1/2-13 FEM.									
**Discharge opening.									

⚠ DANGER ⚠

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.
- 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.

For more information on Reznor HVAC products:

- **Contact your local Reznor representative at 1-800-695-1901**
- **Refer to the manuals and additional consumer materials found at www.reznorhvac.com**

