MODINE

ELECTRIC UNIT HEATERS FOR STANDARD AND HAZARDOUS (CLASSIFIED) LOCATIONS

MODEL HER

MODEL VE

MODEL PTE

MODEL HEX

2-116.9 • MARCH, 2020

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Selectable using the Modine Breeze™
AccuSpec Selection Software.

As Modine Manufacturing Company has a continuous product improvement program, it reserves the right to change design and specifications without notice.

Wide Range of Sizes and Types

Horizontal air delivery unit heater type (HER series):

32 models, 8 sizes from 3 kW through 25 kW.

Recommended for buildings with low ceilings, they are equipped with horizontal air deflector blades to adjust airflow either up or down. Optional vertical deflector blades are also available to deflect air to the right or left, providing complete directional control over discharge of heated air. Horizontal delivery units are normally placed around the perimeter of the building where heat loss is greatest, so that the air stream from each heater "wipes" the wall to produce a blanket of warm air along the outside walls.

Vertical air delivery unit heater type (VE series):

21 models, 9 sizes from 5 kW through 50 kW.

Recommended for buildings with high ceilings are high and where obstructions do not permit good horizontal movement of air. Various optional air deflectors are available to produce a variety of distribution patterns (see page 12). Vertical unit heaters are usually oriented so that the heat spread from one overlaps the heat spread of another unit heater.

Power-Throw™ unit heater type (PTE series):

3 models, 3 sizes from 15 kW through 50 kW.

For applications requiring heat throw greater than can be provided by HER units, Power-Throw™ unit heaters should be considered. For hard-to-heat areas, such as near frequently opened loading dock doors or large warehouses, Power-Throw™ units are frequently an ideal choice. They are equipped with horizontal air deflector blades to adjust airflow either up or down. Due to the higher velocity of discharge air, their air streams should not be directed at room occupants. A single Power-Throw™ unit heater can often be used to replace as many as three smaller horizontal delivery units, thereby reducing equipment, installation, and maintenance costs.

Explosion Proof Horizontal Air Delivery Unit Heater Type (HEX series):

⚠ WARNING

Before installing and operating heaters confirm location, classification and properties of flammable vapors, liquids, gases, dusts and fibers which may be present. Each room, section or area should be considered individually.

26 model combinations, 9 sizes from 3 kW through 35 kW.

These horizontal heaters are designed for rugged industrial applications in hazardous locations such as oil refineries, petrochemical plants, pulp and paper mills, coal mines, grain elevators, etc., where the possibility of explosion or fire exists due to the presence of flammable gases, vapors, powdered metals or dusts. Heaters are UL Listed for Class I, Divisions 1 & 2, Groups C and D; Class II, Division 1, Groups E, F and G, and Class II, Division 2, Groups F and G. The UL temperature code shall be T3B 329°F (165°C) for Class I and II, indicating maximum operating surface temperatures. Before selecting any heater for a particular application, refer to Article 500 of the National Electric Code, as well as other applicable Standards. Abbreviated descriptions of UL classes, groups, and divisions are as follows.

Class I: Locations in which flammable gas or vapors may be present, such as, but not limited to:

- Group C: Atmospheres such as ethylene, alcohol, carbon monoxide, or hydrogen sulfide.
- Group D: Atmospheres such as acetone, gasoline, natural gas, propane or other gases or vapors of equivalent hazard.

Class II: Locations in which combustible dusts may be present, such as, but not limited to:

- Group E: Atmospheres containing combustible metal dust regardless of resistivity or other combustible dust of similar hazard characteristics.
- Group F: Atmospheres containing carbon black, charcoal, coal or coke dust or dust of similar hazard characteristics.
- Group G: Atmospheres containing flour, starch, grain dust or dusts of similar hazards.

Division I: Location in which ignitable concentrations of flammable material exist under normal operating conditions.

Division II: Locations in which flammable materials will normally be confined within closed containers and escape only in the case of abnormal conditions. Any equipment approved for Division I is automatically also approved for Division II.

For further information, please consult the National Electric Code (NEC) and National Fire Prevention Association (NFPA) standards.

Low Installation Cost

Transformers, contactors and fuses are factory-furnished and factory-wired when required. Terminal blocks facilitate connection of power supply and control wiring. Modine electric unit heaters are lightweight and require no special reinforcement to suspend them.

Easy to Service

Fan and motor are exposed and can be removed without lowering the unit heater. A hinged bottom panel permits full access to controls on models HER, horizontal units. Vertical delivery and Power-Throw™ models have separate control boxes externally mounted on the units. Motors are totally enclosed, permanently lubricated, and thermally protected. Electrical contactors, fuses, and transformers are all safely enclosed in control compartments.

Application Flexibility

Total Heating

Units can meet the total heating requirement in most industrial plants, commercial and recreational buildings, and in special-purpose structures such as animal shelters. The features that make them the ideal selection for these types of buildings are a long heat throw, uniform heat delivery and low installation and maintenance costs. High up and out-of-the-way, unit heaters provide heat into work areas for clean, safe, economical heating comfort.

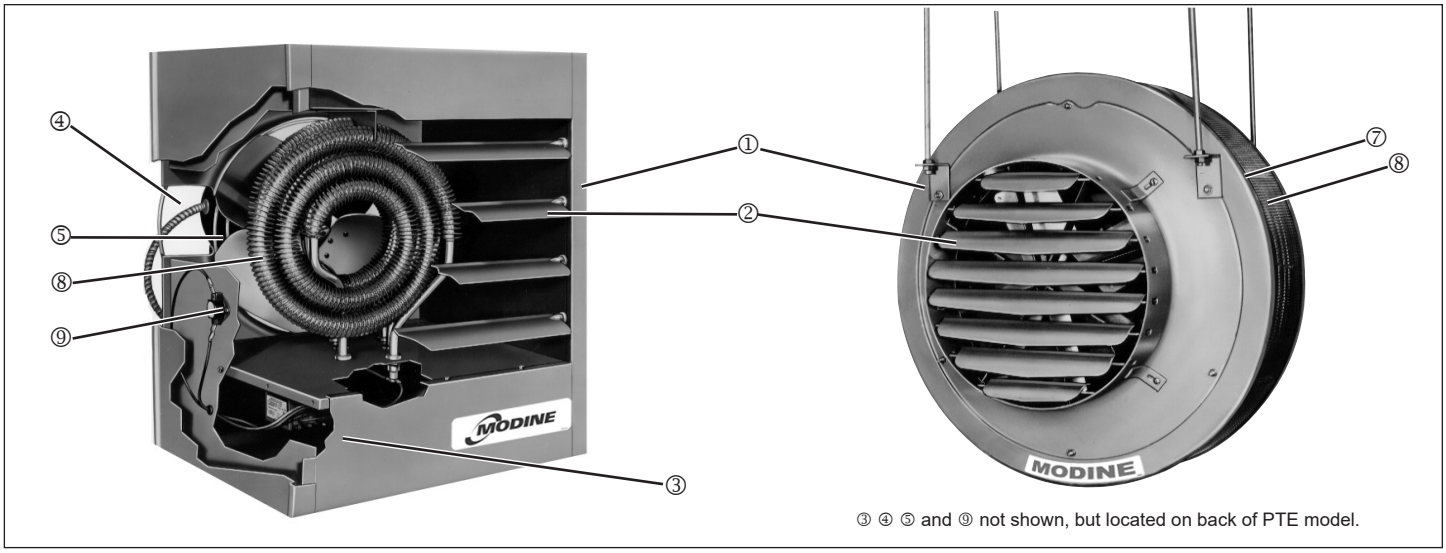
Supplemental Heating

They are ideal for spot heating applications during short periods of occupancy in the area to be heated. In out-of-the-way locations, remote from areas served by the building's main heating systems, electric unit heaters can often eliminate the expense of extending gas, steam, or hot water lines.

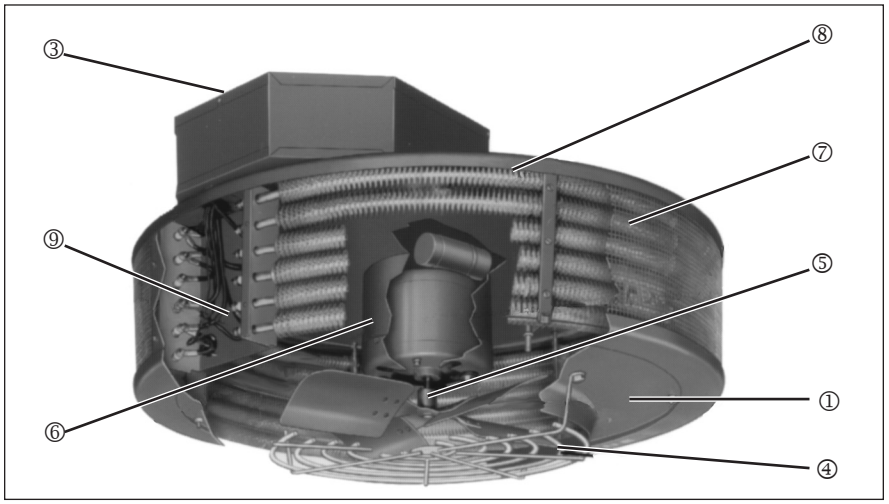
Stand-by/Back-up Heating

Where fossil fuel supplies are interruptible or undependable, electric unit heaters are recommended as a stand-by or back-up heating system to supply comfort to an entire building or any part of it.

Figure 4.1 - Model HER & PTE Controls and Features



③ ④ ⑤ and ⑨ not shown, but located on back of PTE model.



① **Casing** - The casing is cleaned and phosphatized prior to electrostatic application of a baked-on, gray-green polyester powdercoat paint.

② **Adjustable Air Deflector Blades (HER & PTE units only)** - Adjustable up and down, blades provide control over the horizontal air delivery of the unit heater.

③ **Control Compartment** - Safely encloses power and control terminal blocks, contactor(s), fuses and transformer. Terminal blocks provide easy access for field wiring. On model HER horizontal units, a hinged bottom panel swings down for full access to the control compartment.

④ **Safety Fan Guard** - Formed from heavy gauge steel rod stock, the fan guard is attached to the unit heater casing and provides a rigid support for the motor and protection from the exposed fan.

⑤ **Motor/Fan** - The totally enclosed, thermally protected, continuous-duty motor is mounted to the fan guard utilizing rubber vibration absorbing material. The lightweight aluminum propeller type fan is connected directly to the motor shaft and is statically balanced for peak performance and low sound level.

⑥ **Motor Heat Shield (VE units only)** - Protects the motor from heated air passing through the unit heater.

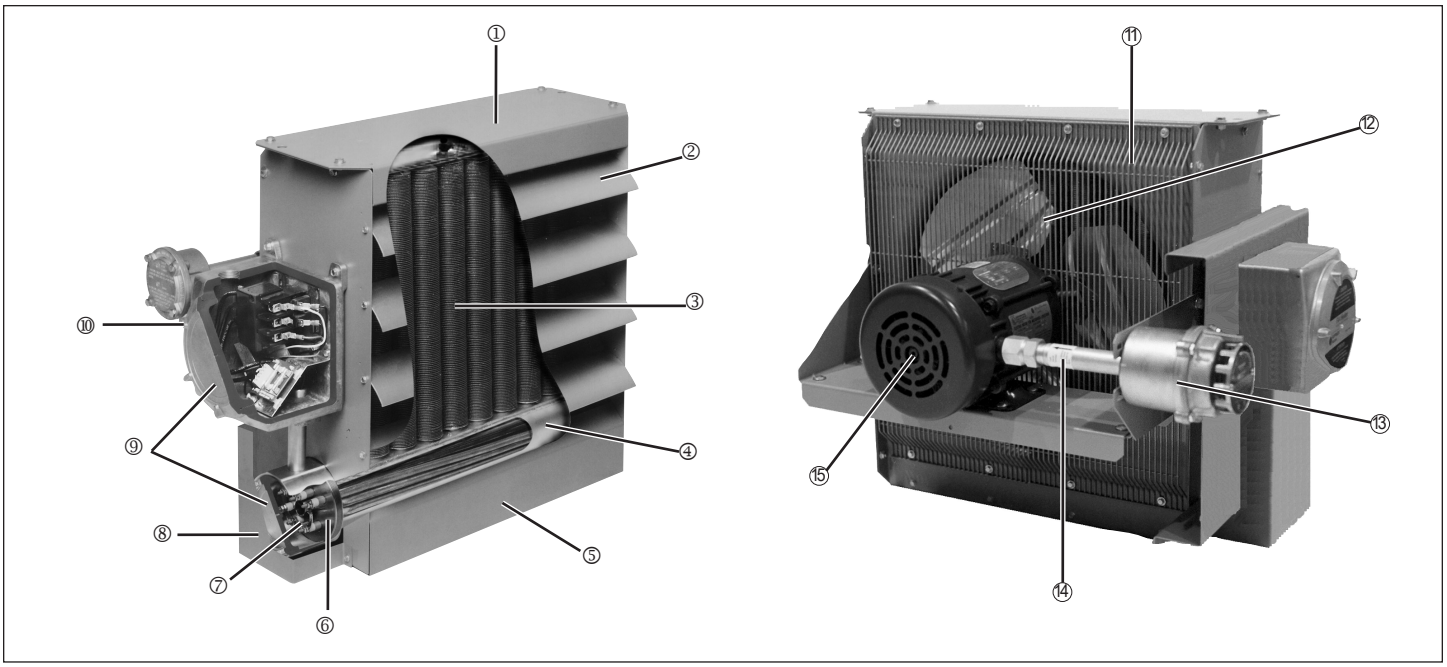
⑦ **Protective Screen (VE & PTE units only)** - The aluminum screen protects heating elements from accidental damage and further enhances the appearance of the unit heater.

⑧ **Heating Element** - Nickel-chromium wire elements are enclosed in powder-filled aluminum coated steel tubes to which spiraled fins are permanently fused for maximum heat transfer. Elements are resistant to thermal shock and vibration.

⑨ **Automatic Reset Overheat Control** - In the event of overheating, this control interrupts the power supply to the heating elements. The control automatically resets itself once the heater cools to a safe temperature. Control includes a switch located in terminal box with a capillary tube around bottom heating element.

Features

Figure 5.1 - Model HEX Controls and Features



① **Epoxy coated 14 gauge steel cabinet** contains heater core, motor, and fan assembly. All fasteners are plated for corrosion protection.

② **Adjustable extruded aluminum louvers** allow directional control of airflow.

③ **Liquid to air finned tube heat exchanger core**. An Ethylene Glycol and water solution is used as the heat transfer fluid, providing freeze protection to -49°F (-45°C). A pressure relief valve protects the core from overpressure damage. Heaters are UL Listed for Class I, Divisions 1 & 2, Groups C and D, and Class II, Division 1, Groups E, F and G, and Class II, Division 2, Groups F and G. UL temperature code shall be T3B 329°F (165°C) for Class I and II, indicating maximum operating surface temperatures. Refer to page 3 for additional details.

④ **Low watt density metal sheathed immersion type heating elements** in the liquid filled lower tank feature a Teflon® liner to keep elements away from outer surfaces. (Teflon® is a registered trademark of E.I du Pont de Nemours & Co.).

⑤ **The core** is easily removable through the bottom of the heater for ease of service.

⑥ **Automatic reset, bimetal, high-limit** provides over temperature protection and is rated for 100,000 cycles of service.

⑦ **Factory wiring** to tin plated copper bus bars for effective handling of high current flow.

⑧ **Outer protective cover** protects against high surface temperatures.

⑨ **Threaded explosion proof covers** on junction boxes.

⑩ **NEMA Type 7 & 9 enclosures** with large, heavy-duty aluminum data plate houses the built-in control transformer, convenient terminals for 120V room thermostat wiring connection, load carrying contactor with severe duty coil, and fuse protection for contactor coil, including a spare fuse in a convenient holder.

⑪ **Narrow gap two-piece safety fan guard** shields all moving parts.

⑫ **Heavy gauge embossed fan blades.**

⑬ **Optional factory installed explosion proof thermostat.**

⑭ **Factory wired motor connections** with copper conductor wires enclosed in steel conduit. Conduit is reverse threaded for easy motor removal.

⑮ **Thermally protected, automatic reset explosion-proof motor**

Teflon® is a registered trademark of E.I du Pont de Nemours & Co.

PERFORMANCE DATA - ALL MODELS

Location & Air Delivery Type		Model	Heating Capacity				Air Data ①			
			High Stage		Low Stage					
			kW	Btu/hr	kW	Btu/hr	Airflow (CFM) ②	Temp Rise (°F)	Heat Throw (ft.)	Maximum Mounting Height (ft.)
Standard Locations	Horizontal Delivery	HER 30	3	10,200	n/a	n/a	380	25	12	8
		HER 50	5	17,100	n/a	n/a	380	42	12	8
		HER 75	7.5	25,600	n/a	n/a	530	45	14	8
		HER100	10	34,100	n/a	n/a	830	38	20	9
		HER125	12.5	42,700	n/a	n/a	830	48	20	10
		HER150	15	51,200	n/a	n/a	830	57	20	10
		HER200	20	68,200	n/a	n/a	1300	49	25	11
		HER250	25	85,300	n/a	n/a	1300	61	25	12
		PTE300	30	102,400	15	51,200	2575	40	75	17
		PTE400	40	136,500	20	68,200	2575	54	60	15
		PTE500	50	170,600	25	85,300	2575	70	45	14
	Vertical Delivery	VE 50	5	17,100	n/a	n/a	800	21	See Table 7.1 for Throw/Mounting Height Data.	
		VE 75	7.5	25,600	n/a	n/a	800	31		
		VE 100	10	34,100	n/a	n/a	940	36		
		VE 150	15	51,200	n/a	n/a	1340	38		
		VE 200	19	64,800	n/a	n/a	1600	41		
		VE 250	25	85,300	n/a	n/a	1600	55		
		VE 300	30	102,400	15	51,200	2575	40		
		VE 400	40	136,500	20	68,200	2575	54		
		VE 500	50	170,600	25	85,300	2575	70		
Hazardous Locations (Explosion Proof) ③	Horizontal Delivery	HEX___-3	3	10,250	n/a	n/a	500	19	15	7
		HEX___-5	5	17,050	n/a	n/a	500	31.6	15	7
		HEX___-7.5	7.5	25,600	n/a	n/a	850	27.9	30	10
		HEX___-10	10	34,100	n/a	n/a	850	37.2	30	10
		HEX___-15	15	51,200	n/a	n/a	1750	27.1	40	10
		HEX___-20	20	68,250	n/a	n/a	1750	36.1	40	10
		HEX___-25	25	85,300	n/a	n/a	3600	21.9	70	20
		HEX___-30	30	102,350	n/a	n/a	3600	26.3	70	20
		HEX___-35	35	119,450	n/a	n/a	3950	28	70	20

① Airflow shown is at 70°F ambient and heating at full rated capacity.
② For HER, airflow CFM is for inlet. For PTE and VE, airflow CFM is outlet.
③ For HEX units above 6000 feet above sea level, altitude limits may exist. Refer to the latest revision of Installation & Service Manual 2-519.

Table 6.2 - Unit Motor Data - All Models

Model	Motor Information		
	Motor HP	Motor Type	Motor Bearing Type
HER 30	1/40	Totally Enclosed, Shaded Pole	Sleeve
HER 50			
HER 75			
HER 100	1/15		
HER 125			
HER 150			
HER 200			
HER 250			
PTE300	1/6	Totally Enclosed, Permanent Split Capacitor	Ball
PTE400			
PTE500			
VE 50	1/15	Totally Enclosed, Shaded Pole	Sleeve
VE 75			
VE 100			
VE 150	1/8	Totally Enclosed, Permanent Split Capacitor	Ball
VE 200			
VE 250			
VE 300	1/6		
VE 400			
VE 500			
HEX512-⑤60-3.0	1/2	Explosion Proof	Ball
HEX512-⑤60-5.0			
HEX512-⑤60-7.5			
HEX512-⑤60-10.0			
HEX516-⑤60-15.0			
HEX516-⑤60-20.0			
HEX520-⑤60-25.0			
HEX520-⑤60-30.0			
HEX520-⑤60-35.0			

Performance Data

Heat Spread and Mounting Height

Refer to Table 7.1 and Figures 7.2 through 7.5 for the recommended mounting heights and accompanying heat spread of vertical units without an air deflector and with the three air deflectors offered.

Table 7.1 - Heat Spread and Mounting Height (Ft.) ①

Model No.	With No Deflector		With Deflector							
			Truncone		Cone-Jet		Louvers			
					Vertical③		Vertical③		45°③	
	Max. Height	Spread (S)	H	S	H	S	H	S	H	S
VE 50	13	20	9	24	18	23	15	13	8	23
VE 75	11	17	8	20	15	20	13	11	8	20
VE100	12	18	8	22	17	22	14	12	8	22
VE150	17	26	11	30	23	30	20	17	10	30
VE200	20	30	13	36	27	35	23	20	12	35
VE250	17	26	11	31	23	31	20	18	10	31
VE300	20	31	15	36	28	36	24	21	12	36
VE400	18	27	13	32	24	32	21	18	11	32
VE500	16	24	12	29	22	29	19	16	10	29

① With 70°F ambient air and heating at full capacity
① Indicates pitch of adjustable louvers. 45° louvers are available for one- or two-way deflection

Figure 7.1 - Vertical Air Outlet Accessories

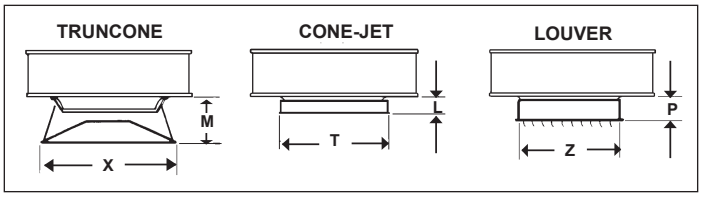


Table 7.2 - Vertical Air Outlet Accessories

Model No.	Truncone		Cone-Jet		Louvers	
	M	X	L	T	P	Z
VE50-VE250	12 1/2	22	6 1/2	18 7/8	6 1/2	16 7/8
VE300-VE-500	12 1/2	27	7 1/2	24 3/4	7 1/2	19 3/4

Figure 7.2 - Without Deflector

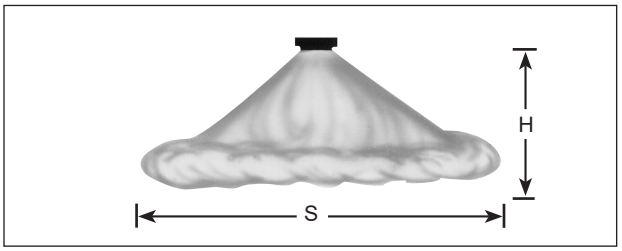


Figure 7.3 - With Truncone

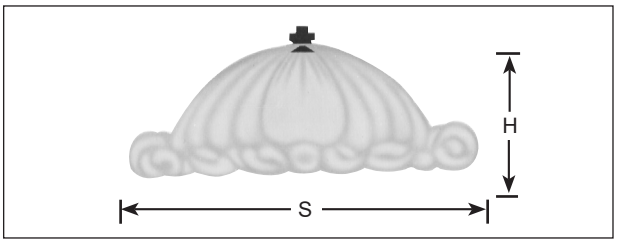


Figure 7.4 - With Cone-Jet

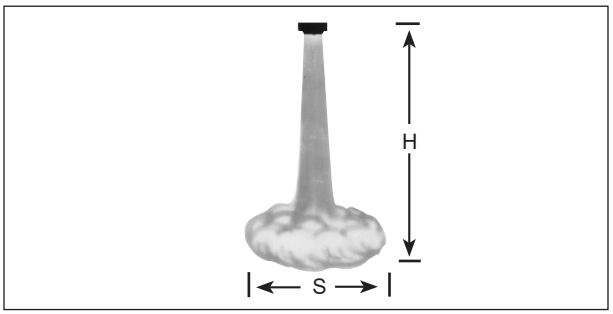


Figure 7.5 - With One- or Two-Way Louvers

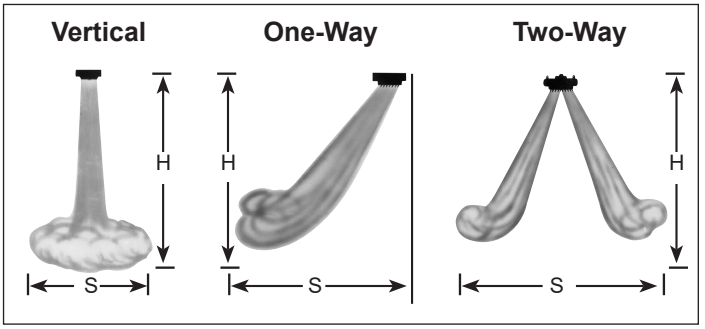
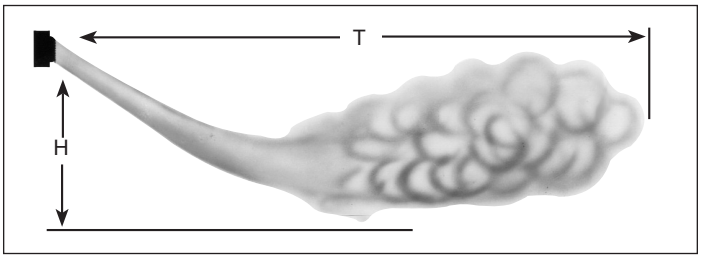
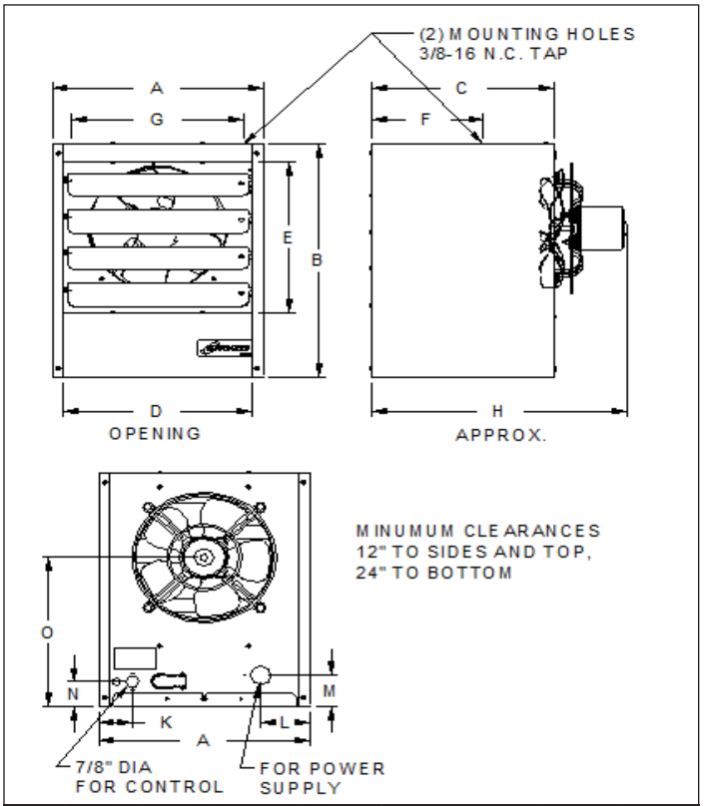


Figure 7.6 - Mounting Height & Heat Throw - Models HER, PTE, & HEX (refer to Table 6.1)



Dimensional Data

Figure 8.1 - Model HER Dimensions (inches)



	MODEL							
Dim.	HER 30	HER 50	HER 75	HER 100	HER 125	HER 150	HER 200	HER 250
A	14-1/4	14-1/4	16-7/8	16-7/8	16-7/8	16-7/8	18-7/8	18-7/8
B	17-1/2	17-1/2	20-7/8	20-7/8	20-7/8	20-7/8	24	24
C	12-1/4	12-1/4	14-3/4	14-3/4	14-3/4	14-3/4	20	20
D	12-7/8	12-7/8	14-1/2	14-1/2	14-1/2	14-1/2	16-1/2	16-1/2
E	11-3/8	11-3/8	13	13	13	13	16	16
F	7-1/2	7-1/2	8-7/8	9-5/8	9-5/8	9-5/8	12-5/8	12-5/8
G	11-5/8	11-5/8	13-1/2	13-1/2	13-1/2	13-1/2	15-1/2	15-1/2
H	17-1/4	17-1/4	20-1/4	21-1/4	21-1/4	21-1/4	26-1/2	26-1/2
K	2-1/4	2-1/4	2-1/4	2-1/4	2-1/4	2-1/4	3-1/4	3-1/4
L	3-3/8	3-3/8	3-1/4	3-1/4	3-1/4	3-1/4	4-1/4	4-1/4
M	2-3/8	2-3/8	2-1/4	2-1/4	2-1/4	2-1/4	2-1/2	2-1/2
N	1-7/8	1-7/8	2-1/4	2-1/4	2-1/4	2-1/4	2-1/2	2-1/2
O	11-1/8	11-1/8	12-3/4	12-3/4	12-3/4	12-3/4	14-1/2	14-1/2
Fan Dia.	9	9	12	12	12	12	14	14
Wt. Lbs.①	34 ①	34 ①	52 ①	67 ①	65 ①	74 ①	97 ①	98 ①

① Approximate Shipping Weight Add 7 lbs. for 480 Volt Models.

Figure 8.2 - Model PTE Dimensions (inches)

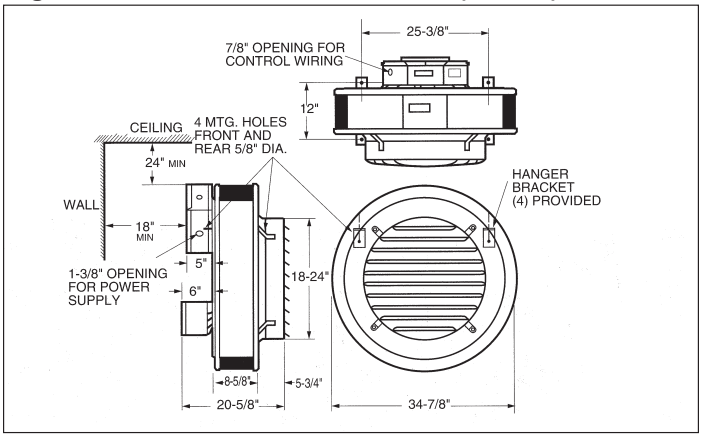
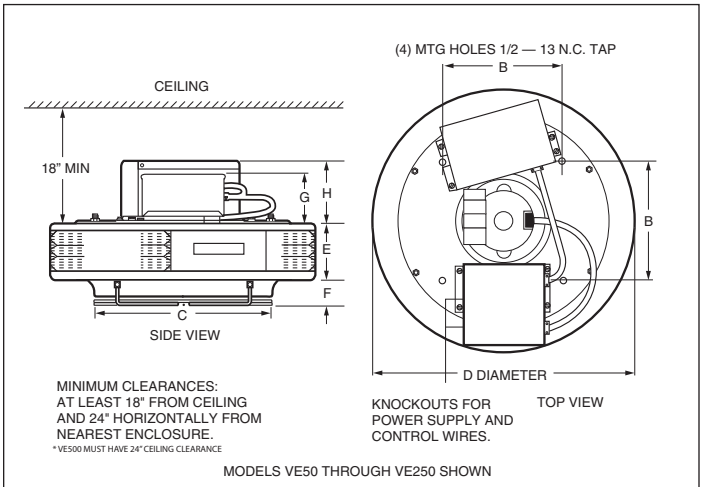


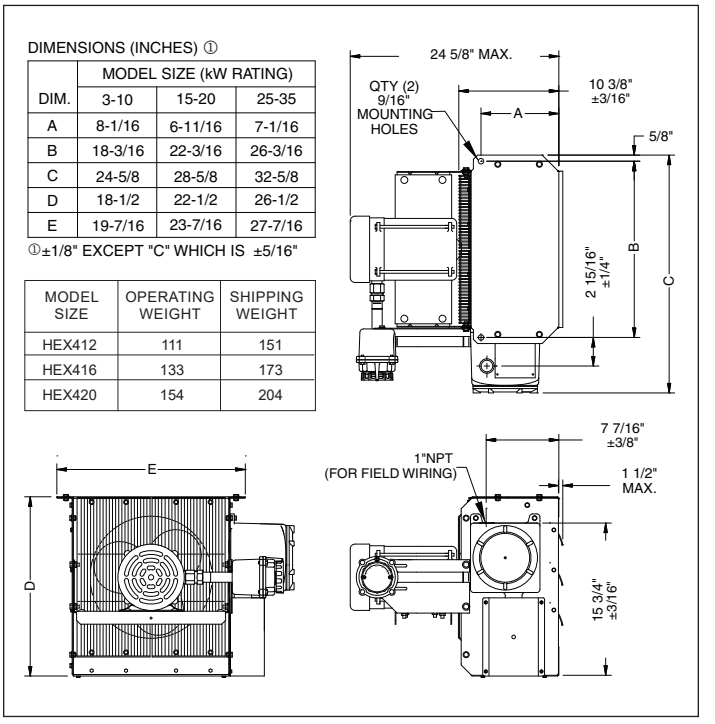
Figure 8.3 - Model VE Dimensions (inches)



MODELS VE50 THROUGH VE250 SHOWN

	Model								
Dim.	VE50	VE75	VE100	VE150	VE200	VE250	VE300	VE400	VE500
B	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	11 3/8	18 3/8	18 3/8	18 3/8
C	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	19 1/2	19 1/2	19 1/2
D	24 7/8	24 7/8	24 7/8	24 7/8	24 7/8	24 7/8	34 7/8	34 7/8	34 7/8
E	4 1/4	4 1/4	5	5	5	5	8 5/8	8 5/8	8 5/8
F	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	2 1/8	2 1/8	2 1/8
G	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4
H	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4	6 1/4
Fan Dia.	14	14	14	14	14	14	19	19	19
Approx. Wt. Lbs.	62	64	66	70	72	73	122	125	129

Figure 8.4 - Model HEX Dimensions (inches)



Thermostats

The unit-mounted thermostat in Figure 9.1 is provided as a field installed kit for a model HER series only. Temperature range of the dial setting is from 40°F to 90°F.

Other thermostats offered (not unit-mounted) are:

- Line-voltage single stage
- Line-voltage, 2-stage (available on PTE and VE models 300, 400 and 500)
- Low-voltage single stage (requires Low-Voltage Control kit.)

Figure 9.1 - Unit-Mounted Thermostat

Low-Voltage Control

This control permits use of a low-voltage thermostat control of electric unit heaters. High capacity models VE300, VE400, VE500 and all PTE series heaters cannot operate in two stages with a low-voltage thermostat; however, they will respond in one stage with full operation of all elements. On model HER series, this control cannot be combined with the unit-mounted thermostat.

Summer-Winter Switch

In the winter position, the thermostat will cycle the fan and heating elements. In the summer position, the switch will permit the fan to run continuously while the heating elements are controlled by the thermostat. Maximum switch rating is 10A at 250 volts. Kit includes switch, conduit box, wire nuts, and installation instructions.

Figure 9.2
Low-Voltage Control

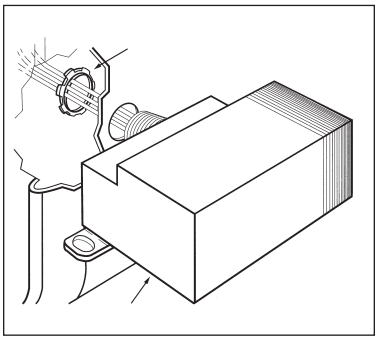


Figure 9.3
Summer-Winter Switch

Vertical Unit Air Deflector Blades

Blades used to deflect airflow in directions left or right of unit heater. Used in addition to standard horizontal deflector blades. Not available for Power-Throw™ models.

Vertical Unit Air Deflectors (refer to page 7 for more info)

- The cone-jet allows the discharge air stream to be adjusted from a concentrated high velocity jet to a broadened air stream to cover a larger area.
- The truncone causes a broad discharge air stream covering a larger area than possible with the cone-jet.
- The one-way louver allows the discharge air stream to be adjusted in one direction.
- The two-way louver allows the discharge air stream to be adjusted in two directions.

Pipe Suspension Adapter Kit

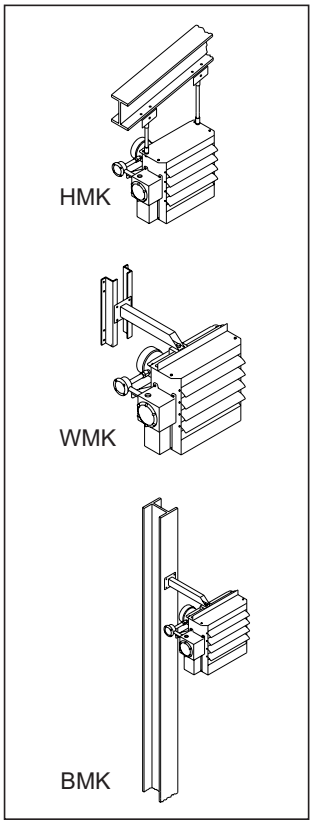
To facilitate threaded-pipe suspension mounting, a pipe-adapter kit is available that includes two drilled pipe caps and two 3/8 - 16 x 1 1/2" capscrews. One kit is required to pipe-mount HER series and two kits must be ordered to mount VE series unit heaters. (On models VE50 through VE250 supplied with 480 volt, 3 phase service, clearance is not adequate for utilization of this kit.) This kit cannot be used with Power-Throw™ (PTE series) unit heaters.

Wall Mounting Bracket

For easier unit installation, where ceiling suspension is not feasible, a wall-mounting bracket is available for models HER50 through HER250 and PTE300 through PTE500. The one-point suspension illustrated in Figure 9.4 permits swiveling the unit 90° horizontally for most effective air flow direction. Fasteners for mounting to wall are not furnished.

Figure 9.4
Wall Mounting Bracket

Figure 9.5
HEX Mounting Kits ①



Hanging Mounting Kit (HMK) ①
Simple and economical if adequate overhead structure exists. Requires 1/2" pipe, cut and threaded (not supplied)

Wall Mounting Kit (WMK) ①
Ideal for use in buildings that have substantial walls. the Z sections provide additional support where necessary.

Basic Mounting Kit (BMK) ①
Suitable for applications where the support arm can be bolted or welded directly to structural steel or concrete.

① Available for HEX models only.

UNIT SELECTION - ALL MODELS

To order a Modine electric unit heater, specify:

1. Model Number:
   HER - Horizontal Electric Unit Heater
   VE - Vertical Electric Unit Heater
   PTE - Power-Throw™ Horizontal Electric Unit Heater
   HEX - Horizontal Explosion Proof Electric Unit Heater

2. Select the full model number from Table 10.1 by locating the model series from Step 1 within Table 10.1 at the intersection of the kW rating and supply voltage required. If that selection shows "-", then there is not a model available matching those parameters.

3. Add any required accessories as shown on page 7 and 9.

Table 10.1 - Full Model Number Selection

			Supply Voltage and Power Code					
			208V/1ph	240V/1ph	208V/3ph	240V/3ph	480V/3ph	600V/3ph
Electric Unit Heater Type		kW Rating	11	12	31	32	33	34
Standard Locations	Horizontal Air Delivery	3	HER 30C 1101	HER 30C 1201	HER 30C 3101	HER 30C 3201	HER 30C 3301	HER 30C 3401
		5	HER 50C 1101	HER 50C 1201	HER 50C 3101	HER 50C 3201	HER 50C 3301	HER 50C 3401
		7.5	HER 75C 1101	HER 75C 1201	HER 75C 3101	HER 75C 3201	HER 75C 3301	HER 75C 3401
		10	HER100C 1101	HER100C 1201	HER100C 3101	HER100C 3201	HER100C 3301	HER100C 3401
		12.5	-	-	HER125C 3101	HER125C 3201	HER125C 3301	HER125C 3401
		15	-	-	HER150C 3101	HER150C 3201	HER150C 3301	HER150C 3401
		20	-	-	HER200C 3101	HER200C 3201	HER200C 3301	HER200C 3401
		25	-	-	HER250C 3101	HER250C 3201	HER250C 3301	HER250C 3401
		30	-	-	-	-	PTE300C 3301	-
		40	-	-	-	-	PTE400C 3301	-
		50	-	-	-	-	PTE500C 3301	-
	Vertical Air Delivery	5	-	VE 50C 1201	VE 50C 3101	VE 50C 3201	VE 50C 3301	-
		7.5	-	VE 75C 1201	VE 75C 3101	VE 75C 3201	VE 75C 3301	-
		10	-	VE 100C 1201	VE 100C 3101	VE 100C 3201	VE 100C 3301	-
		15	-	-	VE 150C 3101	VE 150C 3201	VE 150C 3301	-
		20	-	-	-	VE 200C 3201	VE 200C 3301	-
		25	-	-	-	-	VE 250C 3301	-
		30	-	-	-	-	VE 300C 3301	-
		40	-	-	-	-	VE 400C 3301	-
		50	-	-	-	-	VE 500D 3301	-
Hazardous Locations (Explosion Proof)	Horizontal Air Delivery	3	HEX512-208160-3.0	HEX512-240160-3.0	HEX512-208360-3.0	HEX512-240360-3.0	HEX512-480360-3.0	-
		5	HEX512-208160-5.0	HEX512-240160-5.0	HEX512-208360-5.0	HEX512-240360-5.0	HEX512-480360-5.0	-
		7.5	HEX512-208160-7.5	HEX512-240160-7.5	HEX512-208360-7.5	HEX512-240360-7.5	HEX512-480360-7.5	--
		10	-	HEX512-240160-10.0	HEX512-208360-10.0	HEX512-240360-10.0	HEX512-480360-10.0	-
		15	-	-	HEX516-208360-15.0	HEX516-240360-15.0	HEX516-480360-15.0	-
		20	-	-	-	-	HEX516-480360-20.0	-
		25	-	-	-	-	HEX520-480360-25.0	-
		30	-	-	-	-	HEX520-480360-30.0	-
		35	-	-	-	-	HEX520-480360-35.0	-

A. Standards

A.1.a. Units shall be UL and C-UL listed for safe operation, construction, and performance. Units shall be listed for use in both the U.S. and Canada for commercial and industrial installations. (Models HER, VE, and PTE)

A.1.b. Explosion proof units, model HEX4 shall be UL listed and CSA certified for use in the following hazardous areas:

- Class I, Divisions 1 & 2, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class II, Division 2, Groups F & G
- Class I, Zones 1 & 2, Group IIA & IIB

Units shall be rated for National Electrical Code and Canadian Electrical Code Temperature Code T3B 165°C (329°F).

B. Mechanical Configuration

B.1.a. Heater shall be a Modine model HER horizontal air delivery electric unit heater of the size, capacity, and voltage as listed in the equipment schedule.

B.1.b. Heater shall be a Modine Power-Throw™ model PTE horizontal air delivery electric unit heater of the size, capacity, and voltage as listed in the equipment schedule.

B.1.c. Heater shall be a Modine model VE vertical air delivery electric unit heater of the size, capacity, and voltage as listed in the equipment schedule.

B.1.d. Heater shall be a Modine model HEX4 horizontal air delivery electric unit heater of the size, capacity, and voltage as listed in the equipment schedule.

C. Unit Casing

C.1. Unit shall have a steel casing that is treated for corrosion resistance and painted with an electrostatically applied, baked on, gray-green polyester powdercoat paint finish. (Models HER, VE, and PTE)

C.2.a. Model HER unit shall have a squared corner casing and the top shall have two threaded holes (3/8" - 16 TAP) for threaded rod suspension. The bottom of casing shall have a hinged panel for service access to wiring and controls.

C.2.b. Model PTE unit shall consist of two circular steel covers bolted together with the heating element supports. The air discharge side cover shall have a die-formed fan venturi. The back cover shall have a depression for motor mounting with openings for cooling-air circulation for the motor. Four hanging brackets shall be provided for use with 5/8” diameter suspension rods.

C.2.c. Model VE unit shall consist of two circular steel covers bolted together with the heating element supports. The bottom cover shall have a die-formed fan venturi. The top cover shall include an inner cone for motor mounting and to provide a heat shield from radiant and convective heat from the heating elements.

C.2.d. Model HEX4 shall be fabricated from 14 gauge steel with a baked epoxy powder coating over a 5-stage pretreatment including iron phosphate, for protection from corrosive atmospheres. The cabinet shall include two (2) 9/16” mounting holes located on the top.

D. Heating Elements

D.1.a. Elements shall consist of a nickel-chromium resistance wire surrounded with magnesium oxide and sheathed in steel spiral-finned tubes. Elements shall have kilowatt rating as listed in the equipment schedule. (Models HER, VE, and PTE)

D.1.b. The heat exchanger shall be fluid-to-air type consisting of steel tubes with roll-formed aluminum fins and be vacuum charged. The heat exchanger shall be protected by a preset 100 psig (690 kPa) pressure-relief valve, aluminum body, no serviceable parts. The heat exchanger shall be filled to design level with a custom-blended, long-life solution of ethylene-glycol, water, and corrosion inhibitors. The heat exchanger shall have three heavy-duty immersion heating elements brazed into a heavy steel bulkhead. The elements shall consist of high-quality resistance wire embedded in a compacted magnesium oxide refractory and sheathed in metal tubing. The heater is to be protected by a snap-action bimetal temperature high-limit, which shall not be affected by altitude or changes in atmospheric pressure. The high-limit shall be an automatic reset type, and will shut off the heater if the exchanger temperature rises due to a lack of heat dissipation.

E. Motor and Propeller Fan

E.1.a. Each unit shall have a single 208-230V/60Hz/1ph motor. The motor shall be totally enclosed, continuous-duty, with automatic resetting, thermal-overload protection. Propeller fan shall be directly connected to the motor shaft and be statically balanced. The motor shall be mounted to the unit with rubber vibration absorbing material. (Models HER, VE, and PTE)

E.1.b. Each unit shall have a ball bearing, permanently lubricated, thermally protected explosion-proof motor rated for continuous duty. The fan blades shall be aluminum to prevent sparking. Propeller fan shall be directly connected to the motor shaft and be statically balanced. The fan shall be shielded with a heavy-duty epoxy coated guard of two piece construction to provide easy maintenance and cleaning of the fan and motor. The guard shall not allow a 1/4" or larger probe to enter. (Model HEX4 only)

F. Electrical

F.1. All units shall have built-in contactors and control circuit transformers (where required) to provide single-source power connection.

F.1.a. Models VE and PTE, sizes 300 through 500 shall have two sets of contactors to provide for two-stage operation.

F.1.b. Model HEX4 shall have a contactor coil that is encapsulated severe duty and separately fuse-protected.

F.2. Fuse blocks and factory-supplied fuses shall be installed on all models except HER 30, 50, and 75 with 208 volt or 230-volt single or 3-phase power supply. A wiring diagram and grounding lug shall be included in each control compartment.

F.3.a. Transformers shall be factory installed on all models with 460 and 600 volt, 3 phase power supply to permit 230 volt motor operation. (Models HER, VE, and PTE)

F.3.b. Transformers shall be factory installed on all HEX4 models with the primary voltage being the same as the heater voltage and the secondary being 120V grounded circuit.

F.4. Electrical control components shall be safely enclosed in a separate junction box. A wiring diagram and a grounding lug shall be included in each power junction box.

F.4.a. The Model HEX4 control center shall be enclosed in an explosion-proof control enclosure with a large threaded cover for easy access. The control center shall include a printed circuit board with a terminal block for room thermostat connection and in-line fuse protection, with both an operating fuse and a spare fuse.

F.5. (opt) The HEX4 heater shall be supplied with a built-in explosion-proof room thermostat mounted on the control enclosure side of the heater.

G. Air Deflectors

G.1.a. Adjustable horizontal air deflectors shall be furnished. (Models HER and PTE)

G.1.b. Louvers shall be individually adjustable and made of anodized extruded aluminum. (Model HEX4)

Products from Modine are designed to provide indoor air-comfort and ventilation solutions for residential, commercial, institutional and industrial applications. Whatever your heating, ventilating and air conditioning requirements, Modine has the product to satisfy your needs, including:

HVAC

- Unit Heaters:
  - Gas
  - Hydronic
  - Electric
  - Oil
- Ceiling Cassettes
- Duct Furnaces
- Hydronic Cabinet Unit Heaters, Fin Tube, Convectors
- Infrared Heaters
- Make-up Air Systems
- Unit Ventilators

Ventilation

- Packaged Rooftop Ventilation

School Products

- Vertical Packaged Classroom HVAC:
  - DX Cooling/Heat Pump
  - Water/Ground Source Heat Pump
  - Horizontal/Vertical Unit Ventilators

Specific catalogs are available for each product. Catalogs 75-136 and 75-137 provide details on all Modine HVAC equipment.

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