

ELECTRIC UNIT HEATERS FOR STANDARD AND HAZARDOUS (CLASSIFIED) LOCATIONS



MODEL HER



MODEL VE



MODEL PTE



MODEL HEX



Table of Contents	Page
I. Electric Unit Heaters - Models HER, VE, PTE	
A. Features	3, 4
B. Application Suggestions.....	5
II. Design Benefits	
A. Unit Components	6
B. Unit Options	7, 8
III. Horizontal Delivery Unit Heaters - Model HER	
A. Dimensional Data.....	9
B. Performance Data	10
IV. Vertical Delivery Unit Heaters - Model VE	
A. Dimensional Data.....	11
B. Performance Data	12
V. "Power-Throw" Horizontal Delivery Unit Heaters - Model PTE	
A. Dimensional Data.....	13
B. Performance Data	14
VI. Ordering Information	15
VII. Explosion-Proof Horizontal Unit Heaters-Model HEX	
A. Features	16, 17
B. Performance Data	18
C. Dimensional Data.....	19
VIII. Specifications	
A. Models HER,VE,PTE	20
B. Model HEX.....	21, 22

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

Features

Wide Range of Sizes and Types

Horizontal air delivery unit heater type (HER series):

27 models, seven sizes from 5 kW through 25 kW.

Vertical air delivery unit heater type (VE series):

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

“Power-Throw” unit heater type (PTE series):

This is a high-capacity unit with horizontal air delivery. Three models, three sizes from 15 kW through 50 kW.

Low Installation Cost

Transformers, contactors and fuses are factory-furnished and factory-wired when required. Terminal blocks are supplied to facilitate connection of power supply and control wiring. Standard wiring and conduit sizes are utilized. Modine electric unit heaters are lightweight - require no special reinforcement to suspend them. Hang them, connect them to the power supply, controls and thermostat and they are ready to operate.

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.

Low Maintenance

Motors are totally enclosed, permanently lubricated, and thermally protected. Electrical contactors, fuses, and transformers are all safely enclosed in control compartments.

Control Flexibility

Low-voltage control is available for both horizontal and vertical delivery models for low voltage thermostat control. Standard two-stage controls are used on 30, 40, and 50 kW vertical and “Power-Throw” unit heaters. Low-voltage control is not offered for use with two-stage thermostats on the three larger capacity vertical units nor on the “Power-Throw” units.

Application Flexibility

Horizontal delivery models, including the high-capacity “Power-Throw” units, are equipped with adjustable horizontally positioned air deflector blades to provide control over the up and down movement of air delivered by the unit heaters. Further control over air discharge may be achieved by means of deflector blades which are vertically positioned within the discharge opening of the unit heater. Only available as an option on model HER horizontal units, the addition of these vertical blades together with the standard horizontal blades permit complete directional control over the air discharged by the unit heaters. Vertical delivery models may be equipped with optional air deflectors to provide flexibility for a variety of installations.

Quiet Operation

Fans are accurately balanced to move air quietly. Die-formed venturi openings reduce noise of air movement and shield motors on vertical delivery and “Power-Throw” models to dampen operational noise and to keep motors cool. Motors mounted to fan guards utilize rubber vibration absorbing material for quieter operation.

Longer Unit Heater Life

Nickel chromium wire elements are enclosed in a powder-filled steel tube around which external fins are spiralled and permanently fused to provide maximum heat transfer. Heating elements are resistant to thermal shock and vibration for a long, trouble-free life.

Features

Horizontal Delivery Unit Heaters

Horizontal delivery units are recommended for use in buildings where ceilings are low and with few obstructions. They are equipped with air deflector blades that can be adjusted to lengthen or shorten heat throw as well as to direct heated air either up or down. Vertical deflector blades are also available (optional) to deflect air either to the left or right of the heater. Together, both sets of deflectors permit complete directional control over discharge of heated air. Horizontal delivery units are normally placed around the perimeter of the building so that the air stream from each heater “wipes” the wall to produce a blanket of warm air along the building’s outside walls where heat loss is greatest.

Vertical Delivery Unit Heaters

Vertical delivery units are generally installed in areas where ceilings are high and where obstructions do not permit good horizontal movement of air. Deflectors (optional) can be used 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” Horizontal Delivery Unit Heaters

Where there is a requirement for air velocity and heat throw greater than can be provided by cataloged horizontal delivery models, “Power-Throw” unit heaters with their longer horizontal heat throw should be considered. For hard-to-heat areas, such as the vicinity of frequently opened loading dock doors or large warehouses, “Power-Throw” units are frequently an ideal choice. Due to the higher velocity of discharge air, however, 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.

Electric Unit Heaters Recommended as a Solution to Many Heating Problems

Recommended for TOTAL HEATING

Modine electric unit heaters 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 beam heat down into work areas to provide clean, safe, economical heating comfort.

Recommended for TEMPORARY HEATING

The ease with which electric unit heaters are installed make them ideal for use in buildings under construction, where heat is needed temporarily. Also, in buildings where frequently changing work locations present heating problems, electric units can be relocated quickly, saving time and labor costs.

Recommended for SUPPLEMENTAL HEATING

Like a light bulb, electric units cost nothing when not in use. They are ideal for spot heating applications during short periods of occupancy of 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 preclude the expense of extending gas, steam, or hot water lines.

Recommended for LOW HEATING REQUIREMENTS

In mild climates, or in certain areas where just-above-freezing temperature must be maintained, electric unit heaters are recommended as the heat source. Thermostats can be set to automatically maintain a predetermined temperature, an advantage which especially dictates their use in unattended buildings. Short and infrequent operation of electric unit heaters provided an economical means for supplying low heating requirements with only a modest investment in equipment.

Recommended for STAND-BY 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. Electric units are economical to purchase, install and maintain. Each of these is an advantage which dictates the economic feasibility of providing the safety factor of a stand-by heating system.

Application Suggestions

- Use as few unit heaters as possible to give proper heat distribution and coverage of the area. The number of units should be determined by the heat throw and heat spread of the units selected. Arrange each unit to minimize electrical conduit installation costs without compromising comfort.
- Height at which unit heaters are suspended is critical. Improper mounting height is responsible for most unsatisfactory installations. Where necessary to mount units low, select models with lower cfm ratings as the greater volumes of air handled by larger units can create excessive air movement.
- Unit heaters should be arranged so that they do not blow directly on personnel. The air streams should be directed down aisles, into open spaces on the floor, and along exterior building walls.
- Horizontal delivery unit heaters should be arranged so that the air stream of each unit “wipes” the exposed walls of the building with either parallel flow or angular flow without blowing directly against the walls. Heaters should be spaced so that the air stream from one supports the air stream of another to set up a circulatory air movement of warm air along the cold outside wall of the building. In small areas where one horizontal delivery unit may be used, both horizontal and vertical air deflector blades are suggested for maximum heat coverage and air control.
- Locate heaters so that their air streams are subjected to minimum interference from columns, machinery, partitions and other obstacles. In a building which is exposed to a prevailing wind, unit heaters should be located so that a major volume of heated air is directed along the windward wall.
- In large areas where maximum comfort is not the controlling factor in unit heater selection, a smaller number of larger capacity units should be used. In smaller areas, or areas in which occupant comfort is a prime consideration, more heaters of lesser heating capacities should be selected.
- Several unit heaters may be operated by a single thermostat. In larger open areas where various activities are carried on, zonal heating will improve comfort and generally reduce heating costs. Units may also be controlled individually, either by a thermostat or manually.

Figure 5.1



Heat a cold corner or operate the unit heater fan only on a hot summer day to provide cooling air circulation.

Figure 5.2



Gentle circulation of heated air produces a desirable climate in electrically heated buildings of all types.

Figure 5.3



Vertical delivery electric unit heaters, warm work station in vocational school.

Unit Components

Figure 6.1

Model HER Controls and Features

Safety fan guard – Formed from heavy steel rod stock, the fan guard eliminates the hazards presented by an exposed fan. The guard is attached to the unit heater casing and provides a rigid support for the motor.

Motor – The totally enclosed, thermally protected, continuous-duty motor is mounted to the heavy steel fan guard utilizing rubber vibration absorbing material. Motors are selected to match fan requirements.

Automatic re-setting overheat control – In the event the unit heater becomes overheated, this interrupts the power supply to the heating elements. The control automatically resets itself once the unit has cooled to a safe temperature.

Fan – The large-bladed, lightweight aluminum fan is connected directly to the motor shaft and is statically balanced for peak performance.

Adjustable air deflector blades – Adjustable up and down, blades provide control over the horizontal air delivery of the unit heater.

Casing – The steel casing is rust- and corrosion-treated prior to application of a baked-on, gray-green enamel finish. Hinged bottom panel swings down for full access to wiring and control compartment.

Heating Element – Nickel-chromium wire elements are enclosed in powder-filled aluminum coated steel tubes to which fins are permanently fused for maximum heat transfer.

Controls – Terminal blocks and contactors are built into all units. Transformers and fuse blocks with fuses, when required, are factory-mounted and wired.

Figure 6.2

Model VE Controls and Features

Control Compartment – Safely encloses power and control terminal blocks, contactor(s), fuses and transformer.

Terminal block – Provides easy access to heating element terminals and overhead control switch.

Automatic resetting 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 and a capillary tube around bottom heating element.

Motor heat shield – Motor is protected from heated air passing through the unit heater by this heat shield.

Heating element – Nickel-chromium wire elements are enclosed in powder-filled aluminum coated steel tubes to which fins are permanently fused for maximum heat transfer.

Protective screen – This non-corrosive aluminum screen protects heating elements from accidental damage and further enhances the appearance of the unit heater.

Motor – Totally enclosed and thermal overload-protected. Motor is continuous-duty, selected to match fan requirements, and is attached to motor mount with rubber vibration-absorbing material.

Fan – Large, lightweight statically balanced aluminum fan directly connects to motor shaft.

Safety fan guard – Formed from heavy steel rod stock, the fan guard eliminates the hazards presented by an exposed fan.

Figure 6.3
Element for
HER Models

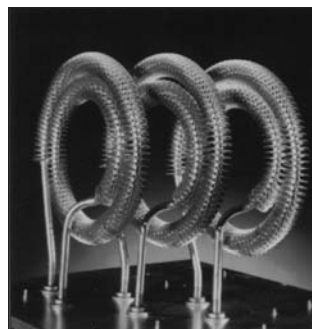
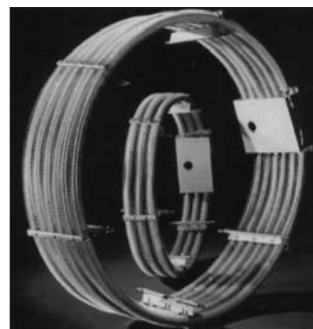


Figure 6.4
Element for VE and PTE
Models



Heating elements consist of spirally wound fins and steel tubes permanently fused for maximum heat transfer. Tubes enclose nickel chromium wire elements which are imbedded in magnesium oxide powder for dielectric strength. Ends of elements are capped with a special ceramic material. Tube configuration and spacing provide maximum heat transfer and economical operation of the heating elements in both horizontal and vertical unit heaters.

Unit Options

Thermostats

The unit-mounted thermostat illustrated is provided as a field installed kit for a horizontal delivery unit heater (HER series only). Temperature range of the dial setting is from 40°F to 90°F. This thermostat can only be ordered by specifying item code 32321.

Other thermostats offered (not unit-mounted) are:

Line-voltage thermostat. 8 ampere @ 230 volts, range 50°F to 90°F, 2° differential.

Line-voltage thermostat. 8 ampere @ 230 volts, range 50°F to 80°F, 1° differential.

Line-voltage thermostat. 4.9 ampere @ 230 volts, range 44°F to 86°F.

Line-voltage, 2-stage thermostat, 3 amps. @ 230 volts, range 40°F to 90°F, 2.0°F differential, 3°F between stages (available on vertical delivery and "Power-Throw" models 300, 400 and 500)

Low-voltage thermostat, heat anticipator 0.1 to 1.2 ampere @ 25 volts AC, range 50°F to 100°F.

Low-voltage thermostat, heat anticipator 0.18 to 1.0 ampere rating @ 25 volts AC, range 45°F to 75°F, 2°F differential.

Low-voltage thermostat, heat anticipator 0.18 to 0.8 ampere rating @ 25 volts AC, range 55°F to 95°F.

Low-Voltage Control

This control permits use of a low-voltage thermostat for closer temperature 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 horizontal models (HER series), this control cannot be combined with the unit-mounted thermostat. For field installation control kit, specify item code 78630 for 240 or 480 volt systems and item code 78635 for 208 volt systems.

Summer-Winter Switch

To allow a choice of fan operation of any electric unit heater cataloged for heating and/or ventilation, a summer-winter toggle switch kit is available for field installation. In the winter position, the interconnected line-voltage thermostat will cycle the fan and heating elements "on" and "off". In the summer position, the switch will permit the fan to run continuously for ventilation while the heating elements are controlled by the thermostat. Maximum switch rating is 10 amperes at 250 volts. Kit includes toggle switch, conduit box, wire nuts, and installation instructions.

Figure 7.1
Unit-Mounted Thermostat



Figure 7.2
Low-Voltage Control

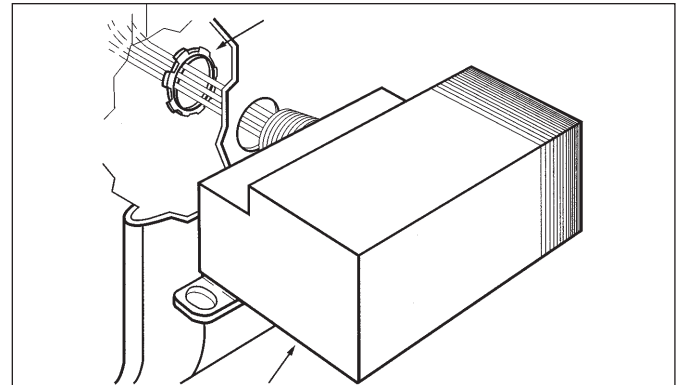


Figure 7.3
Summer-Winter Switch



Unit Options

Air Deflectors

A set of horizontally positioned air deflector blades is furnished as standard with all horizontal delivery and “Power-Throw” models. These blades permit adjustment of the air stream up or down. For model HER only, a vertical deflector kit is available for complete directional control of discharge air.

Vertical deflector kits are not available for “Power-Throw” unit heater models.

When selecting air deflectors for vertical delivery type unit heaters, refer to page 12 to determine mounting height and heat spread. To order deflector, specify deflector model number to match the vertical delivery unit heater:

Deflector	Heater Models	Model No.
TRUNCONE	VE50 through VE250	TR-1
	VE300 through VE500	TR-3
CONE-JET	VE50 through VE250	CJ-11
	VE300 through VE500	CJ-13

LOUVERS

ONE-WAY	VE50 through VE250	LO-2
	VE300 through VE500	LO-3
TWO-WAY	VE50 through VE250	LT-2
	VE300 through VE500	LT-3

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" cap screws. One kit is required to pipe-mount a horizontal unit (HER series) and two kits must be ordered to mount vertical (VE series) unit heaters. (On vertical 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 horizontal-delivery models HER50 through HER250 and PTE300 through PTE500. The field assembled three-piece bracket, saves installation time with built-in wall clearances and provides an inexpensive and convenient wall-mounting method. The one-point suspension illustrated in figure 8.4 permits swiveling the unit 90° horizontally for most effective air flow direction. To order specify wall-mounting bracket kit and electric unit heater model number. Fasteners for mounting to wall are not furnished.

Figure 8.1
Truncone Deflector

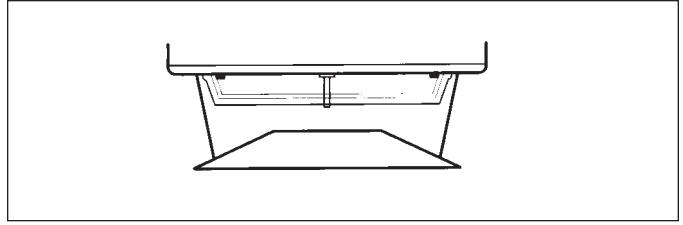


Figure 8.2
Cone-Jet Deflector

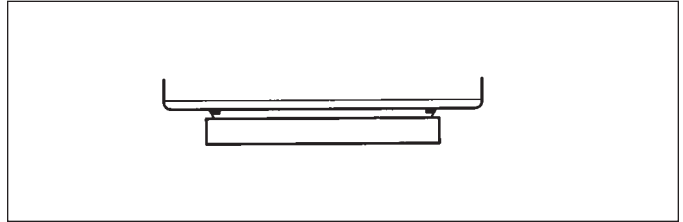
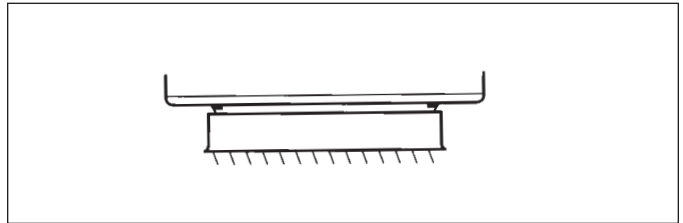


Figure 8.3
Louver Deflector



Louvers are available for one- or two-way deflection as illustrated on page 10. One- or two-way louvers must be specified when ordering.

Figure 8.4
Wall Mounting Bracket



Dimensional Data

The horizontal delivery unit heater, the most popular of all types, is ideal for heating buildings in which the path of air discharged by the unit is devoid of large obstacles which would impede heat throw. Areas with low ceilings can also be heated comfortably by this versatile heater. Its excellent warm-air wiping action makes it ideal for use in countering drafts along outside building walls, particularly where considerable window areas are present.

This unit may be operated automatically by a thermostat located in the area to be heated, or manually by means of an on-off switch. The unit heater fan can be operated during the summer to provide air circulation.

Standard equipment includes adjustable horizontal air deflector blades and a safety fan guard. Please refer to pages 7-8 for optional controls and accessory equipment.

Table 9.1
Outline Dimensions in Inches

Dim.	Electrical Unit Heater Models						
	HER50	HER75	HER100	HER125	HER150	HER200	HER250
A	16-7/8	16-7/8	16-7/8	16-7/8	16-7/8	18-7/8	18-7/8
B	20-7/8	20-7/8	20-7/8	20-7/8	20-7/8	24	24
C	14-3/4	14-3/4	14-3/4	14-3/4	14-3/4	20	20
D	14-1/2	14-1/2	14-1/2	14-1/2	14-1/2	16-1/2	16-1/2
E	13	13	13	13	13	16	16
F	8-7/8	8-7/8	9-5/8	9-5/8	9-5/8	12-5/8	12-5/8
G	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	15-1/2	15-1/2
H	20-1/4	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	3-1/4	3-1/4
L	3-1/4	3-1/4	3-1/4	3-1/4	3-1/4	4-1/4	4-1/4
M	2-1/4	2-1/4	2-1/4	2-1/4	2-1/4	2-1/2	2-1/2
O	12-3/4	12-3/4	12-3/4	12-3/4	12-3/4	14-1/2	14-1/2
Fan Dia.	12	12	12	12	12	14	14
Wt. [ⓐ] Lbs.	52	52	67	65	74	97	96

[ⓐ] Approx. Shipping Weight. . .Add 7 lbs. for 480 Volt Models.

Table 9.2
Specifications

Model	HP	Voltage	Phase	Amp.	Hertz	RPM	Motor Type W/T.O.L.	Shaft Dia. (In.)	Bearing Type
HER50 HER75	1/40	208-230	1	0.50	60	1550	Totally Enclosed Shaded Pole	5/16	Sleeve
HER100 HER125 HER150 HER200 HER250	1/15	208-230	1	1.28	60	1050	Totally Enclosed Shaded Pole	1/2	Sleeve

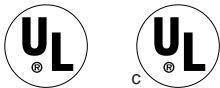


Figure 9.1
Dimensions of Unit Heaters

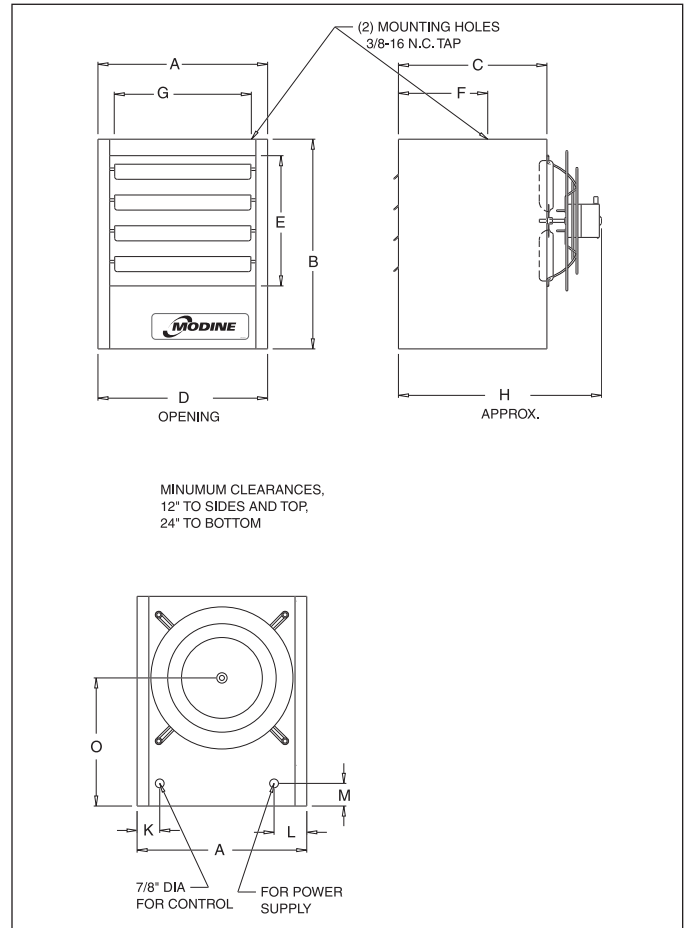
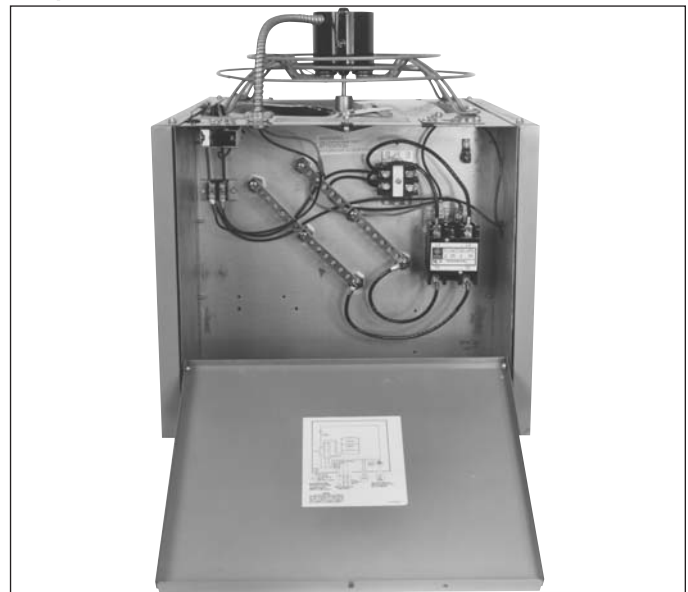


Figure 9.2
Drop Down Service Panel



Drop the bottom hinged panel and all controls and electrical connections become completely accessible. A wiring diagram is attached to the panel for easy reference during installation and servicing.

Performance Data

Table 10.1
Performance Ratings of "Horizontal" Unit Heaters

Model No.	Heating Capacity		Fan and Air Delivery Data				Max. Mtg. Ht. (FT.)	Electrical Data			
	kW	Btu/Hr	Inlet CFM	Outlet Velocity (FPM)	Temp ^① Rise (F)	Heat ^② Throw (FT.)		Power Code	Supply Volts	Phase	Total Amps
HER 50	5	17,100	530	420	30	14	8	11	208	1	24.5
								12	240	1	21.3
								31	208	3	14.3
								32	240	3	12.5
								33	480	3	6.5
HER 75	7.5	25,600	530	430	45	14	8	11	208	1	36.5
								12	240	1	31.7
								31	208	3	21.3
								32	240	3	18.5
								33	480	3	9.5
HER 100	10	34,100	830	670	38	20	9	11	208	1	49.4
								12	240	1	42.9
								31	208	3	29.0
								32	240	3	25.3
								33	480	3	13.3
HER 125	12.5	42,700	830	680	48	20	10	31	208	3	36.0
								32	240	3	31.4
								33	480	3	16.3
HER 150	15	51,200	830	690	57	20	10	31	208	3	42.9
								32	240	3	37.4
								33	480	3	19.3
HER 200	20	68,300	1300	760	49	25	11	31	208	3	56.8
								32	240	3	49.4
								33	480	3	25.3
HER 250	25	85,400	1300	780	61	25	12	31	208	3	70.7
								32	240	3	61.4
								33	480	3	31.4

① With 70°F Ambient Air

② Hot air throw with 70°F ambient and louvers directed to the floor at 45°

Heat Throw and Mounting Height

Heat throw ratings listed in the performance table 10.1 are for specific unit heater models installed at recommended mounting heights shown. Mounting the unit higher or lower than these mounting heights will increase or decrease the heat throw. It is therefore important that this fact is recognized whenever occupant comfort is a prime consideration.

Figure 10.1

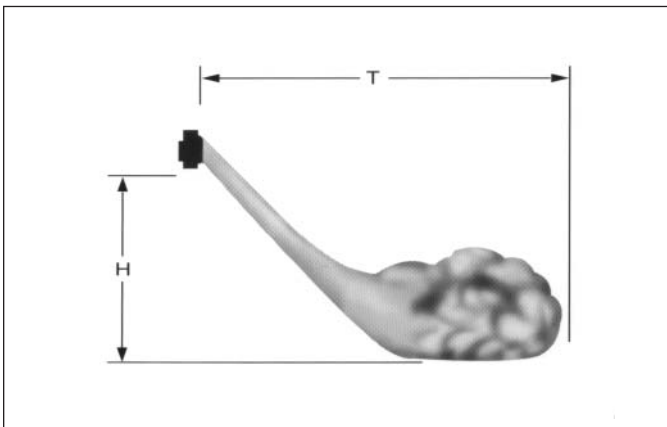


Figure 10.2

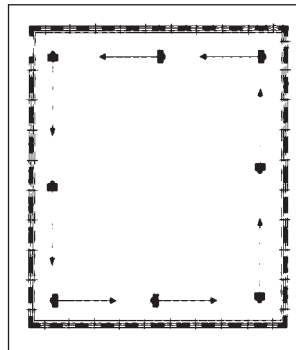
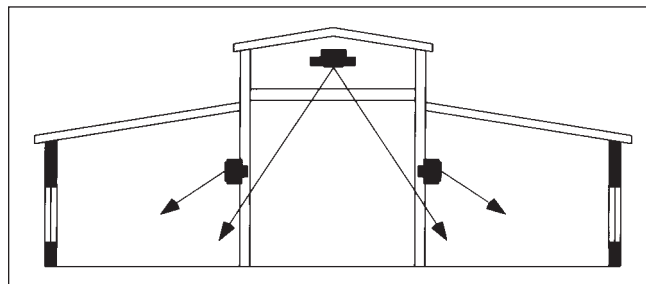


Figure 10.2: Horizontal delivery unit heaters should be generally oriented so that the air stream from one unit supports the air stream from another to set up a circulatory movement of warm air within the space to be heated.

Figure 10.3: This application combines both horizontal and vertical units. Horizontal units are located in the low ceiling areas and vertical units in the central high-ceiling area above the craneway. Good heat coverage of the entire floor area can be achieved as a result of this combination use.

Figure 10.3



Dimensional Data

Table 11.1
Dimensions in Inches

Dim.	Model No.								
	VE50	VE75	VE100	VE150	VE200	VE250	VE300	VE400	VE500
A ^①	18	18	18	18	18	18	18	18	18
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

① Minimum

Table 11.2
Air Deflector Dimensions

Model No.	Truncone M	Cone-Jet L	Louvers P
VE50-VE250	12 1/2	6 1/2	6 1/2
VE300-VE-500	12 1/2	7 1/2	7 1/2

Table 11.3
Motor Specifications

Model No.	HP	Volt	Phase	Amp.	Hertz	RPM	Motor Type W/T.O.L.	Bearing Type
VE50-VE100	1/15	208/230	1	1.28	60	1050	Totally Enc. Shaded Pole	Sleeve
VE150-VE-250	1/8	208/230	1	1.00	60	1725	Totally Enc. PSC	Ball
VE300-VE500	1/6	208/230	1	1.54	60	1075	Totally Enc. PSC	Ball

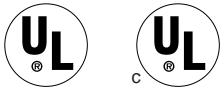


Figure 11.1
Unit Heater Dimensions

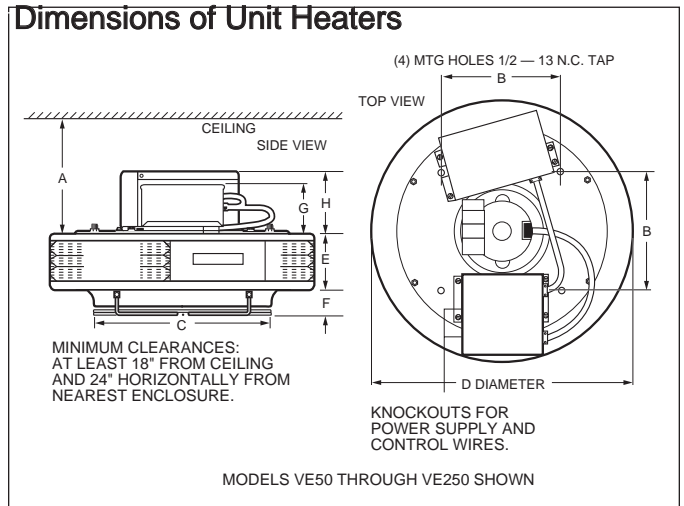


Figure 11.2
Unit with Truncone

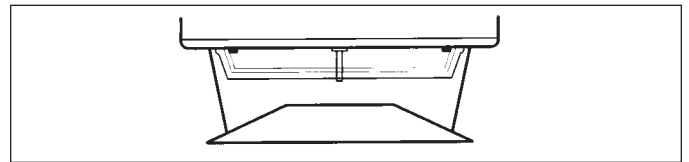


Figure 11.3
Unit with Cone-Jet

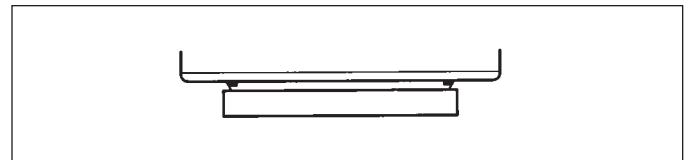
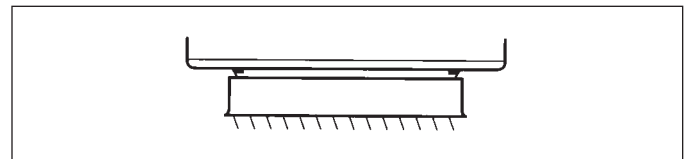


Figure 11.4
Unit with Louvers



Performance Data

Table 12.1

Performance Ratings of "Vertical" Unit Heaters

Model No.	Heating Data		Air Data ^①			Electrical Data			
	Btu/Hr	kW	Outlet cfm	Discharge Velocity FPM	Temp. Rise (°F)	Power Code	Supply Volts	Phase	Total Amps.
VE 50	5.0 17,100	800	700	21	12	240	1	21.4	
					31	208	3	14.5	
					32	240	3	12.7	
					33	480	3	6.7	
VE 75	7.5 25,600	800	700	31	12	240	1	31.9	
					31	208	3	21.4	
					32	240	3	18.6	
					33	480	3	9.7	
VE100	10 34,100	940	820	36	12	240	1	42.3	
					31	208	3	28.3	
					32	240	3	24.6	
					33	480	3	12.7	
VE150	15 51,200	1340	1170	38	31	208	3	42.5	
					32	240	3	37.0	
					33	480	3	19.0	
VE200	19 64,900	1600	1400	41	32	240	3	49	
					33	480	3	25	
VE250	25 85,400	1600	1400	55	33	480	3	31.0	
1-stage VE300	15 51,200	2575	1240	40	33	480	3	19.5	
	30 102,222							37.6	
1-stage VE 400	20 68,300	2575	1240	54	33	480	3	25.5	
	40 137,000							49.6	
1-stage VE500	25 85,400	2575	1240	70	33	480	3	31.5	
	50 171,000							61.5	

① With 70°F ambient air and heating at full capacity

Table 12.2

Heat Spread and Mounting Height (Ft.) with and without Deflectors.^②

Model No.	With No Deflector		With Deflector							
	Max. Height	Spread (S)	Truncone		Cone-Jet		Louvers			
			H	S	H	S	Vertical ^③		45° ^③	
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

② With 70°F ambient air and heating at full capacity

③ Indicates pitch of adjustable louvers. 45° louvers are available for one- or two-way deflection

Heat Spread and Mounting Height

Refer to Table 12.2 for the recommended mounting heights and accompanying heat spread of vertical units without an air deflector and with the three air deflectors offered.

Figure 12.1 Without Deflector

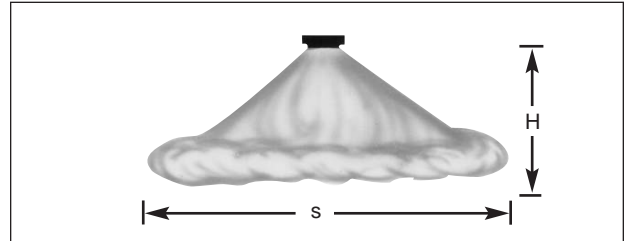


Figure 12.2 With Truncone

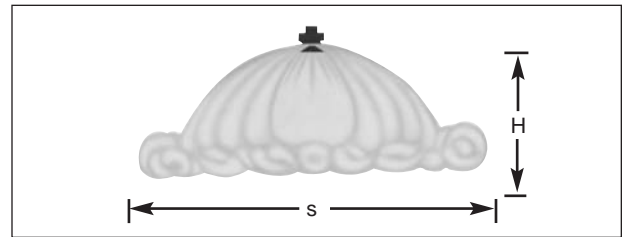


Figure 12.3 With Cone-Jet

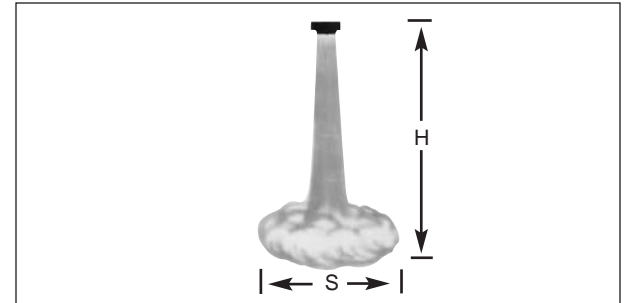
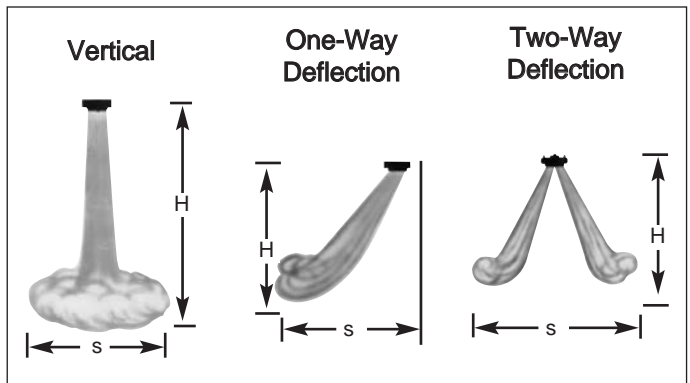


Figure 12.4 With Louvers



Dimensional Data

Figure 13.1



Figure 13.2
Dimensions of Unit Heaters

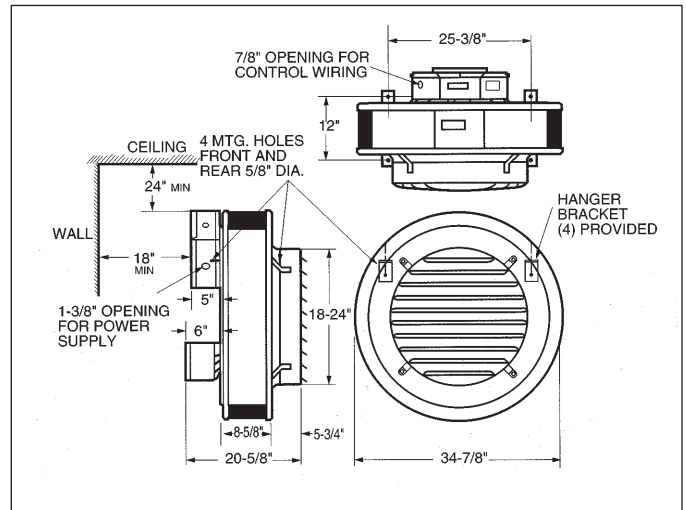
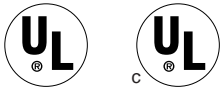


Table 13.1
Motor Specifications

Model No.	HP	Volt	Phase	Amp.	Hertz	RPM	Motor Type w/Tol	Bearing Type
PTE300	1/6	208-230	1	1.54	60	1075	Totally Enc. PSC	Ball
PTE400	1/6	208-230	1	1.54	60	1075	Totally Enc. PSC	Ball
PTE500	1/6	208-230	1	1.54	60	1075	Totally Enc. PSC	Ball

Note: Shipping weight of each of these models is 133 lbs.

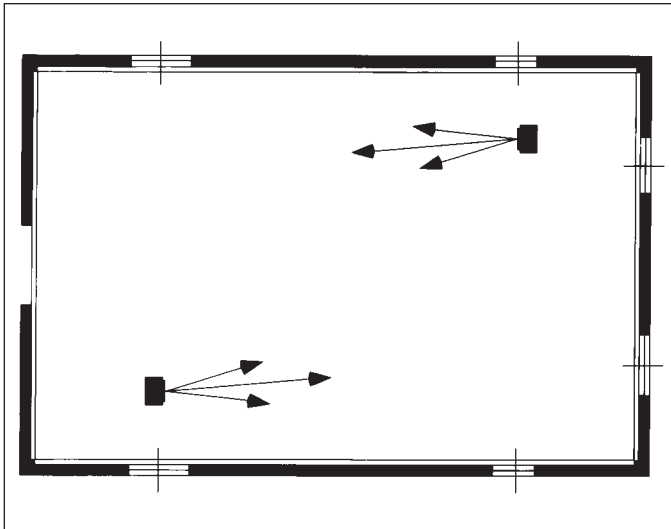


Performance Data

Mounting Height and Heat Throw

Air distribution is controlled by means of air deflector blades (standard). Blades can be adjusted to deliver a high-velocity air stream into a concentrated space or a heat throw pattern to cover a broader area.

Figure 14.1



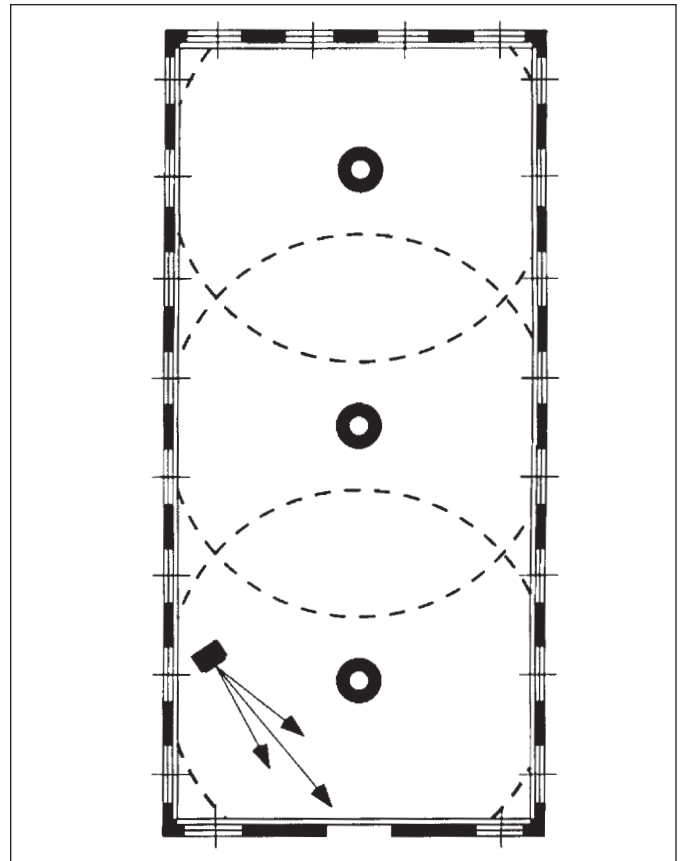
This typical application of “Power-Throw” unit heaters illustrates the maximum heat coverage with a minimum number of units such as in a warehouse where occupant comfort is not a primary consideration.

Table 14.1
Performance Ratings of “Power-Throw” Unit Heaters

Model No.	Heating Data		Air Data ^①			Electrical Data			
	kW	Outlet cfm	Temp. Rise (°F)	Mounting Height H ^① (Ft.)	Heat Throw T ^① (Ft.)	Power Code	Supply Volts	Phase	Total Amps.
	Btu/Hr	FPM ^②							
1-stage PTE 300	15	2575	40	17	75	33	480	3	19.5
	51,200								
	30	1240							
2-stage	102,000								37.6
1-stage PTE 400	20	2575	54	15	60	33	480	3	25.5
	68,300								
	40	1240							
2-stage	137,000								49.6
1-stage PTE 500	25	2575	70	14	45	33	480	3	31.5
	85,400								
	50	1240							
2-stage	171,000								61.5

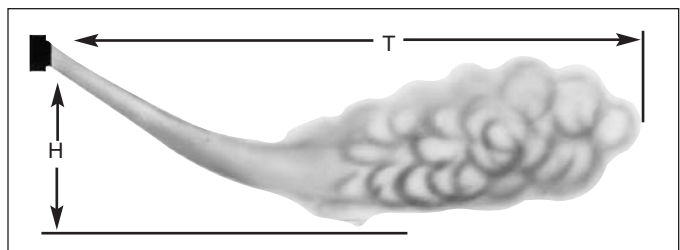
① With 70°F ambient air and heating at full capacity.
② Discharge Velocity FPM

Figure 14.2



One “Power-Throw unit heater blankets a doorway with a curtain of warm air to prevent cold air infiltration into the work areas when doors are opened, while vertical delivery units heat the building.

Figure 14.3



Ordering Information

To order a Modine electric unit heater, specify:

1. Unit heater model number
2. Power code
3. Control code

Table 15.1

Kilowatt Rating ⇒	5.0	7.5	10.0	12.5	15.0	20.0	25.0	30.0**	40.0**	50.0**
Horizontal Unit Heater Model No	HE50	HE75	HE100	HE125	HE150	HE200	HE250	–	–	–
Vertical Unit Heater Model No.	VE50	VE75	VE100	–	VE150	VE200*	VE250	VE300	VE400	VE500
“Power-Throw” Unit Heater Model No.	–	–	–	–	–	–	–	PTE300	PTE400	PTE500
Btu/Hr	17,100	25,600	34,100	42,700	51,200	68,300	85,400	102,000	137,000	171,000

* VE200 19.0 kW/64,900 Btu/Hr

** On High Stage

1. **MODEL NUMBER:** Select model number from Table 15.1 and indicate unit heater type, i.e., horizontal (HER), vertical (VE) or “Power-Throw” (PTE)
2. **POWER CODE:** Select power code from Table 15.2 to agree with power supply to be used to operate unit heaters.
3. **CONTROL CODE:** Use control code 01 for electric unit heaters.

Table 15.2

	Power Supply (Volts/Phase)				
	208/1φ	240/1φ	208/3φ	240/3φ	480/3φ
Power Code	11	12	31	32	33

EXAMPLES

On a horizontal delivery unit heater order. Model HER 100/12/01 refers to a horizontal electric unit heater with a 10-kilowatt rating for a 240 volt, single-phase power supply. The unit heater has factory-installed standard components.

On a vertical delivery unit heater order. Model VE500/33/01 refers to a vertical electric unit heater with a 50 kilowatt rating for a 480 volt, 3 phase power supply. The unit heater has factory-installed standard components.

Features

! 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.

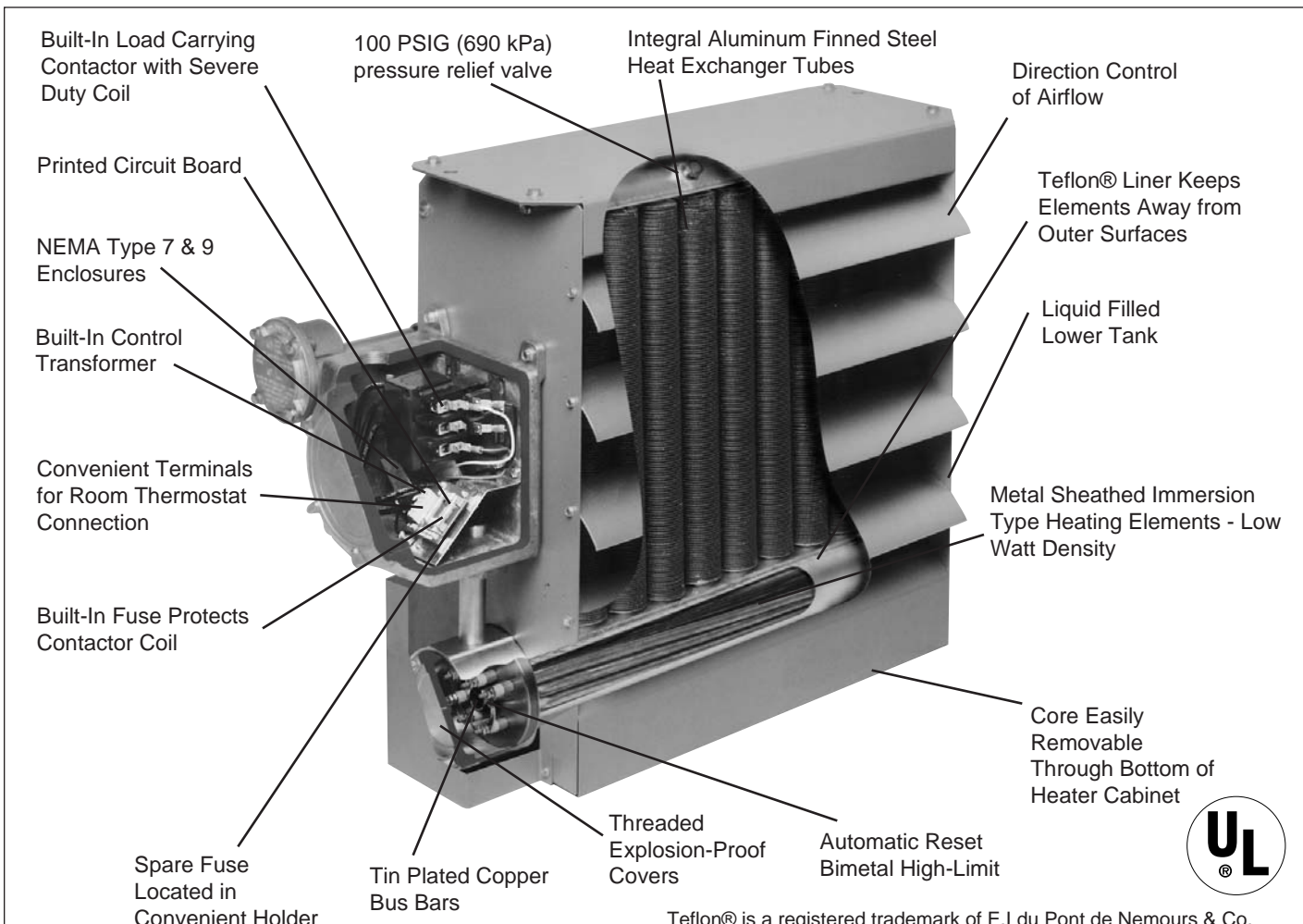
For further information consult National Electric Code and National Fire Prevention Association (ANSI) standards.

Designed for hazardous locations. 26 models from 3 through 35 kw.

“Explosion-Proof” Horizontal Delivery Unit Heaters

These heaters are designed for rugged industrial applications in hazardous locations 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. UL temperature code shall be T3B 329°F (165°C) for Class I and II, indicating maximum operating surface temperatures.

Figure 16.1
Controls and Features



Abbreviated descriptions of UL classes, groups and divisions.

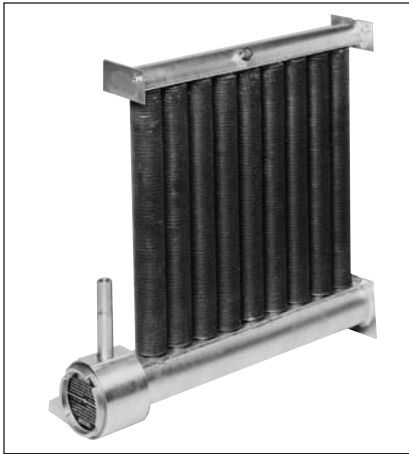
Before selecting any heater for a particular application, refer to Article 500 as well as other standards referenced in the National Electric Code.

- **Class I:** Locations in which flammable gas or vapors may be present.
- **Class II:** Locations in which combustible dusts may be present.
- **Group C:** Atmospheres such as, but not limited to, Ethylene, Alcohol, Carbon Monoxide, or Hydrogen Sulfide.
- **Group D:** Atmospheres such as, but not limited to, acetone, gasoline, natural gas, propane or other gases or vapors of equivalent hazard.
- **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:** A 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 accidental rupture, breakdown or during maintenance operations. Any equipment approved for Division I is automatically also approved for Division II.

Features

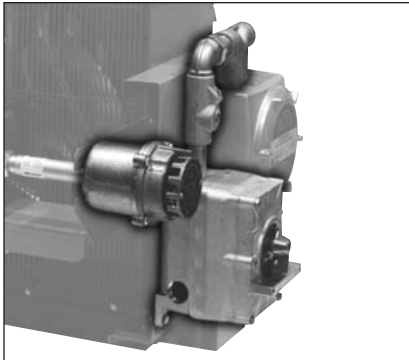
Modine HEX 4 Series

Figure 17.1



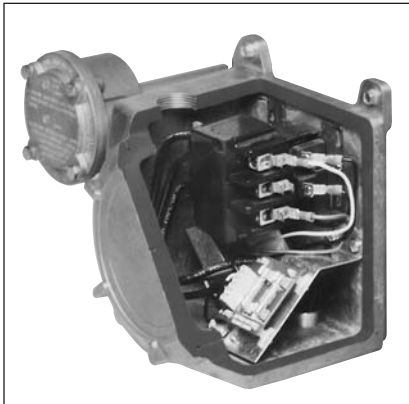
Evacuated liquid to air heat exchanger with low watt density heating elements in ethylene glycol solution that provides freeze protection to -49°F (-45°C).

Figure 17.2



Optional side-mounted built-in room thermostat and disconnect switch for added convenience.

Figure 17.3



Easy access to controls in explosion-proof enclosure with screw-on cover makes for easy access for installation and maintenance.

A new generation of liquid-filled Explosion-Proof Electric Unit Heaters! For hazardous location heating, rely on the Modine HEX 4 electric unit heater for the most dependable, trouble-free service available.

HEX 4 unit heaters are U.L. approved for Class I, Division 1 & 2, Groups C & D; Class II, Division 1, Groups E, F, and G; Class II, Division 2, Groups F & G Hazardous Locations. They are designed for rugged industrial applications such as oil refineries, petrochemical plants, pulp and paper mills, coal mines, grain elevators, etc. where specific explosive gases or dusts are present.

- Liquid to air, finned tube heat exchanger core.
- Ethylene Glycol and water mixture used as heat transfer fluid in the heater core, providing -49°F (-45°C) freeze damage protection.
- Thermally protected, automatic reset explosion-proof motor driven fan moves air across finned tubes for even heat distribution.
- Automatic reset, bimetal, high-limit provides over temperature protection and is rated for 100,000 cycles of service.
- Pressure relief valve handles over-pressure.
- Epoxy coated 14 gauge steel cabinet contains heater core, motor and fan assembly.
- Narrow gap two-piece safety fan guard shields all moving parts.
- Adjustable extruded aluminum louvers allow directional control of air.
- All fasteners are plated for corrosion protection.
- Copper conductor wires enclosed in steel conduits carry all electrical power.

Before selecting any heater for a particular application, refer to Article 500 as well as other standards referenced in the National Electric Code.

Figure 17.4

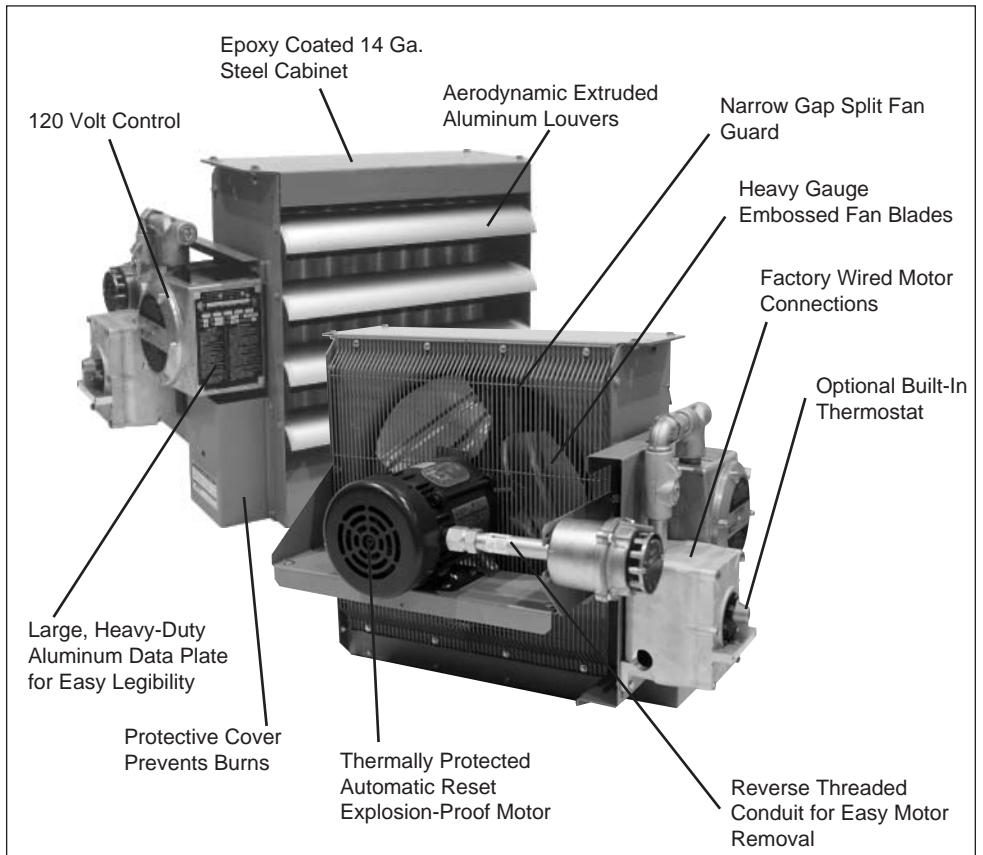
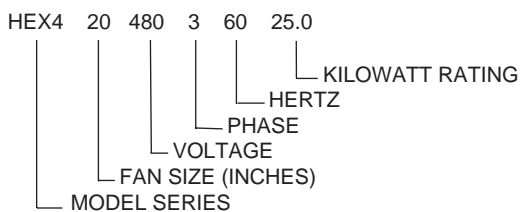


Table 18.1
Performance Data

NOMINAL WATTAGE (kW)	MODEL	VOLTAGE	PHASE	TOTAL CURRENT (A)	TEMPERATURE RISE		Btu/Hr
					°F	°C	
3	HEX412-208160-3	208	1	14.4	19.0	10.5	10,250
	HEX412-240160-3	240	1	12.5			
	HEX412-208360-3	208	3	8.3			
	HEX412-240360-3	240	3	7.2			
	HEX412-480360-3	480	3	3.6			
5	HEX412-208160-5	208	1	24.0	31.6	17.6	17,050
	HEX412-240160-5	240	1	20.8			
	HEX412-208360-5	208	3	13.9			
	HEX412-240360-5	240	3	12.0			
	HEX412-480360-5	480	3	6.0			
7.5	HEX412-208160-7.5	208	1	36.1	27.9	15.5	25,600
	HEX412-240160-7.5	240	1	31.3			
	HEX412-208360-7.5	208	3	20.8			
	HEX412-240360-7.5	240	3	18.0			
	HEX412-480360-7.5	480	3	9.0			
10	HEX412-240160-10	240	1	41.7	37.2	20.6	34,100
	HEX412-208360-10	208	3	27.8			
	HEX412-240360-10	240	3	24.1			
	HEX412-480360-10	480	3	12.0			
15	HEX416-208360-15	208	3	41.6	27.1	15.0	51,200
	HEX416-240360-15	240	3	36.1			
	HEX416-480360-15	480	3	18.0			
20	HEX416-480360-20	480	3	24.1	36.1	20.1	68,250
25	HEX420-480360-25	480	3	30.1	21.9	12.2	85,300
30	HEX420-480360-30	480	3	36.1	26.3	14.6	102,350
35	HEX420-480360-35	480	3	42.1	28.0	15.6	119,450

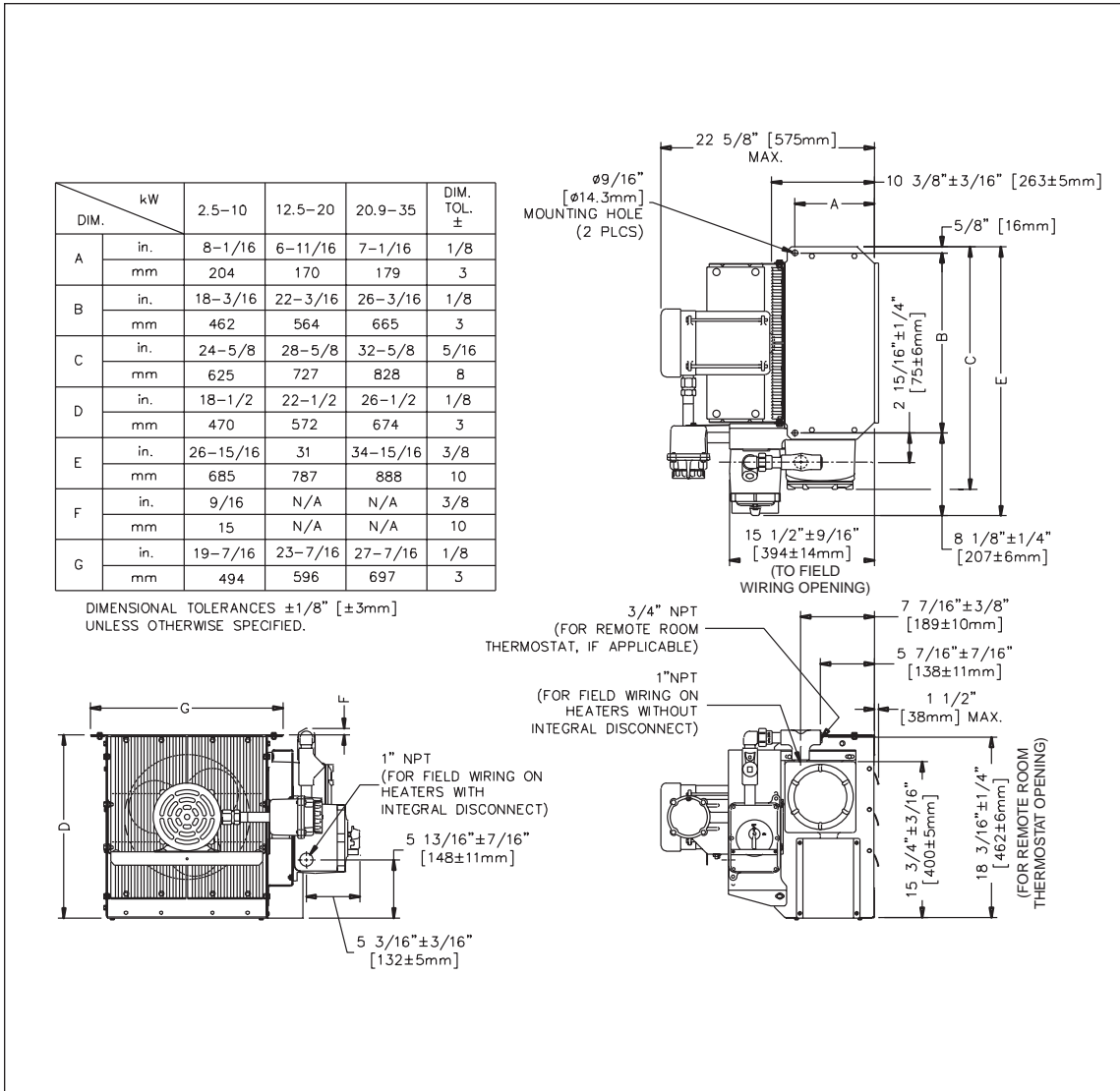
Model Coding



Installation Conditions

1. The HEX4 VacuCore Series Electric Air Heaters are listed by U.L. for maximum surface temperatures. Use only in atmospheres having an ignition temperature higher than 329°F (165°C) (T3B) for class I & II.
2. Altitude restrictions apply – see Specifications.
3. Heaters must be installed in a permanently mounted upright position and be connected to a fixed power supply.
4. Read and be aware of the terms of our Warranty.
5. Refer to Owner's Manual.

Figure 19.1
Physical Dimensions

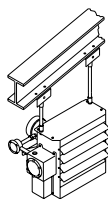


Accessories



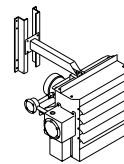
TEX-1
Hazardous Location
Thermostat

As an option, this thermostat is available factory installed and unit mounted. (copper free) (Temperature range 36° to 82°F/2° - 28°C). 22 amps resistive, 1/2 Hp @ 125 VAC, 1 Hp @ 250 VAC



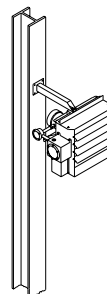
HMK
Hanging Mounting
Kit

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



WMK
Wall Mounting Kit

Ideal for use in buildings that have substantial walls. the Z sections provide additional support where necessary.



BMK
Basic Mounting Kit

The BMK is suitable for applications where the support arm can be bolted or welded directly to structural steel or concrete.

Horizontal Delivery Unit Heaters

General – The contractor shall furnish and install MODINE horizontal air delivery electric unit heaters of the size, capacity, and voltage specified on the plans and/or specifications. Heaters shall be installed according to manufacturer’s recommendations and applicable local and national codes, and shall be UL and C-UL listed.

Unit Casing – Unit shall have a steel casing, be corrosion-resistant and finished with a gray-green, baked-on polyester high-solids finish. Top of casing shall have two threaded holes (3/8" - 16 TAP) for threaded rod suspension. Bottom of casing shall have a hinged panel for service access to wiring and controls.

Heating Elements – 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 specified.

Motor and Propeller Fan – Each unit shall have a single 208/230 volt motor and propeller. 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. Motor mounted to unit with rubber vibration absorbing material.

Electrical – All units shall have built-in contactors and control circuit transformers (where required) to provide single-source power connection. Built-in fuse blocks and factory-supplied fuses shall be installed on all models except HER 50 and HER 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.

Air Deflectors – Removable and adjustable horizontal air deflectors shall be furnished on all models.

Vertical Delivery Unit Heaters

General – The contractor shall furnish and install MODINE vertical air delivery electric unit heaters of the size, capacity, and voltage specified on the plans and/or specifications. Heaters shall be installed to manufacturer’s recommendations and applicable local and national codes, and shall be UL and C-UL listed.

Unit Casing – Casings shall consist of two circular steel covers that are 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 to provide a heat shield form radiant and convected air from the heating elements. All metal surfaces of the casing shall be rust and corrosion treated and shall be finished with a gray-green, baked-on polyester high-solids paint.

Heating Elements – Elements shall consist of nickel-chromium resistance wire surrounded with magnesium oxide and sheathed in steel spiral-finned tubes. Elements shall have kilowatt rating as specified.

Motor and Propeller Fan – Each unit shall have a single 208/230 volt motor and propeller. 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. Motor mounted to unit with rubber vibration absorbing material.

Electrical – All units shall have built-in contactors and control circuit transformers (where required) to provide a single-source power connection. Models VE300, VE400 and VE500 shall have two sets of contactors to provide two-stage heating operation with a two-stage thermostat. Built-in transformers and built-in fuse blocks with factory-supplied fuses shall be installed on all models with 480 volt, 3-phase power supply to permit 230 volt motor operation. 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.

“Power-Throw” (Horizontal Delivery) Unit Heaters

General – The contractor shall furnish and install MODINE “Power-Throw” (Model PTE); horizontal air delivery electric unit heaters of the size, capacity, and voltage specified on the plans and/or specifications. Heaters shall be installed according to manufacturer’s recommendations and applicable local and national codes, and shall be UL and C-UL listed.

Unit Casing – Each unit shall consist of two circular steel covers securely bolted together with the heating element supports to form a single unit. Air discharge side cover shall have a die-formed fan venturi. 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 5/8-inch diameter suspension rods to be furnished by installer. All metal surfaces of the casing shall be rust and corrosion treated and shall be finished with a gray-green, baked-on polyester high-solids paint.

Heating Elements – Elements shall consist of a nickel-chromium resistance wire surrounded with magnesium oxide and sheathed in a steel spiral-finned tube. Elements shall have kilowatt rating as specified.

Motor and Propeller Fan – Each unit shall have a single 208/230-volt motor and propeller. 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. Motor mounted to unit with rubber vibration absorbing material.

Electrical – All units shall have built-in contactors and control circuit transformers (where required) to provide a single-source power connection. Models PTE300, PTE400, and PTE500 shall have two sets of contactors to provide two-stage thermostat. Built-in transformers and built-in fuse blocks with factory-supplied fuses shall be installed on all models with 480 volt, 3 phase power supply to permit 230 volt motor operation. 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.

Air Deflectors – An adjustable horizontal air deflector assembly shall be furnished on all models.

SPECIFICATIONS - MODEL HEX



Table 21.1
Specifications

Nominal KW	HEX412				HEX416		HEX420		
	3	5	7.5	10	15	20	25	30	35
Max. Altitude (ft.) (m)	12,000 3,685	8,000 2,438	10,000 3,048	7,000 2,134	10,000 3,048	7,000 2,134	10,000 3,048	7,000 2,134	6000 1,829
Air Delivery @70°F @21°C (CFM) (m³/hr)	500 850		850 1444		1750 2973		3600 6116		3950 6711
Horizontal Throw (ft.) (m)	15 4.6		30 9.1		40 12.2		70 21.3		
Max. Mounting Height (to underside) (ft.) (m)	7 2.1		10 3.0		10 3.0		20 6.1		
Motor Power (HP) (kw)	1/4 0.187				1/4 0.187		1/2 0.373		
Fan Diameter (in.) (mm)	12 305				16 406		20 508		
Net Weight (lbs) (kg)	111 50				133 61		154 70		
Shipping Weight (lbs.) (kg)	151 69				173 79		204 93		
Hazardous Locations Classifications	Class I, Divisions 1 & 2, Groups C & D Class II, Division 1, Groups E, F, & G; Class II, Division 2, Groups F & G.								
Motor Type	Explosion-Proof, Thermally protected, Permanently lubricated ball bearings. 1725 RPM.								
Fan	Aluminum blade. Steel spider and hub with 5/8 in. (15.875 mm) bore.								
Fan Guard	Split design with close wire spacing. 1/4 in. (6.3 mm) diameter probe will not enter.								
Mounting Holes	Two 9/16 in. (14.3 mm) diameter holes at top of heater.								
Heating Elements	Three long life, low watt-density, copper sheathed elements.								
Temperature High-Limit	Automatic reset type, snap-action bimetal, open on temperature rise. Rated 100,000 cycles at 10 amps, handles 0.128 amps.								
Control Circuit	120 Volts, 0.128 amps, 15 VA.								
Optional Built-In Thermostat	Copper free, 36 - 82°F (2° - 28°C) Explosion-proof.								
Control Transformer	Multitap primary, 120V secondary, 25 VA.								
Contactors	40 or 75 amp. Rated 500,000 mechanical operations. 120 V, 15 VA fuse protected coil.								
Heat Transfer Fluid	Long life formulated ethylene glycol and water, freeze protected to -49°F (-45°C).								
Cabinet Material	14 gauge (0.075 in.) (1.90 mm steel). Epoxy coated with 5 stage pretreatment, including iron phosphate.								
Core	Steel with integral aluminum fins, vacuum charged and hermetically sealed.								
Conduit Material	Heavy wall, 0.122 in. (3.1 mm). steel, cadmium plated.								
Overpressure Protection	Preset 100 psig pressure relief value, aluminum body, no serviceable parts.								
Temperature Code Rating	T3B 329°F (165°C) Class I and II.								
Temperature Limitations	Operational: -49°F to 104°F (-45°C to 40°C). Storage: -49°F to 176°F (-45°C to 80°C), short term to 248°F (120°C).								

1.0 General

- 1.1 The explosion-proof unit heater(s) shall be supplied and installed in accordance with the plans and specifications, with ratings as listed in the schedule of electrical heating equipment, and shall be MODINE HEX4 Series Explosion-Proof Electric Air Heaters.
- 1.2 The unit heater(s) shall be 60 Hertz models and be Underwriters Laboratories Inc. listed for use in Class I, Divisions 1 & 2, Groups C & D; Class II, Division 1, Groups E, F & G; Class II, Division 2, Groups F & G; and Class I, Zones 1 & 2, Groups IIA & IIB Hazardous Locations, and shall be rated for National Electrical Code Temperature Code T3B, 165°C (329°F).
- 1.3 The unit heater(s) shall be manufactured under a registered ISO 9002 quality system.

2.0 Heater Exchanger

- 2.1 The heat exchanger shall be fluid-to-air type consisting of steel tubes with roll-formed aluminum fins and be vacuum charged.
- 2.2 The heat exchanger shall be protected by a preset 100 psig(690 kPa) pressure-relief valve, aluminum body, no serviceable parts.
- 2.3 The heat exchanger shall be filled to design level with a custom-blended, long-life solution of ethylene-glycol, water, and corrosion inhibitors.
- 2.4 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 a metal tubing. The heater is to be protected by a snap-action bimetal temperature high-limit cutout rated 100,000 cycles at 10 amps. The high-limit shall not be effected 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.

3.0 Fan and Motor assembly

- 3.1 The fan assembly shall include a ball bearing, permanently lubricated, thermally protected explosion-proof motor rated for continuous duty.
- 3.2 The fan blades shall be aluminum to prevent sparking. The fan shall be directly connected to the motor, balanced, and designed specifically for heater application.
- 3.3 The fan shall be shielded with a heavy-duty epoxy coated guard. To provide easy maintenance and cleaning of the fan and motor, the fan guard shall be of a two-piece construction. The guard shall not allow a 1/4" or larger probe to enter.

4.0 Control Center

- 4.1 The control center shall be completely factory prewired and tested, and enclosed in an explosion-proof control enclosure with a large threaded cover for easy access.

- 4.2 The control center shall include a magnetic contactor sized to handle the heater and motor current. The contactor shall be rated for 500,000 mechanical operations. The coil shall be 120V encapsulated severe duty and separately fuse-protected.
- 4.3 The control center shall include a control circuit transformer, the primary voltage being the same as the heater voltage and the secondary being a 120V grounded circuit.
- 4.4 The control center shall include printed circuit board with a terminal block for room thermostat connection.
- 4.5 The control circuit shall include in-line fuse protection on secondary side of transformer. The fuse holder shall be mounted on the printed circuit board and contain both an operating fuse and a spare fuse.

5.0 Cabinet assembly

- 5.1 The cabinet assembly 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.
- 5.2 The cabinet shall include two (2) 9/16 inch (14.3 mm) mounting holes located on the top.
- 5.3 Louvers shall be individually adjustable and made of anodized extruded aluminum.

6.0 Mounting Kits

- 6.1 The heater shall be provided with a steel mounting kit, with wet applied enamel paint, specifically designed to bear the weight of the heater assembly.
- 6.2 The mounting kit shall be - (select one):
 - Type BMK - basic mounting kit
 - Type WMK - wall mounting kit
 - Type HMK - hanging mounting kit

7.0 Thermostat Options

- 7.1 The heater shall be supplied with - (select one):
 - Built-in, explosion-proof room thermostat mounted on the control enclosure side of the heater.
 - Field installed, explosion-proof room thermostat.

8.0 Disconnect Switch Option

- 8.1 The heater shall be supplied with a factory built-in disconnect switch mounted on the control enclosure side of the heater. The conduit between the heater control enclosure and the switch enclosure shall be factory pre-sealed. The built-in disconnect switch shall be completely factory pre-wired, tested and include a lockout feature. The switch shall be rated for at least full line amperage and 600 VAC.

INDOOR AIR SOLUTIONS

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

- Gas-fired unit heaters
- Gas-fired duct furnaces
- Gas-fired high-intensity infrared heaters
- Gas-fired low-intensity infrared heaters
- Steam/hot water unit heaters
- Steam/hot water cabinet unit heaters
- Steam/hot water commercial fin tube radiation
- Steam/hot water convectors
- Oil-fired unit heaters
- Electric unit heaters
- Indoor gravity vented duct furnace make-up units
- Indoor gravity vented multiple duct furnace make-up air units
- Indoor separated combustion duct furnace make-up air units
- Indoor separated combustion multiple duct furnace make-up air units
- Outdoor duct furnace make-up air units
- Outdoor multiple duct furnace make-up air units
- Direct-fired make-up air units

With burner capacities up to 7,128,000 Btu/hr and air-handling capacities as high as 60,000 CFM, Modine products are compatible with every fuel type, including:

• **Natural or Propane Gas • Steam/Hot Water • Oil • Electric**

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

The Modine brand has been the industry standard since Arthur B. Modine invented and patented the first lightweight, suspended hydronic unit heater in 1923. No other manufacturer can provide the combined application flexibility, technical expertise and fast delivery found at Modine. Consult your local Modine distributor for help in solving your indoor air problems.

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2-116



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