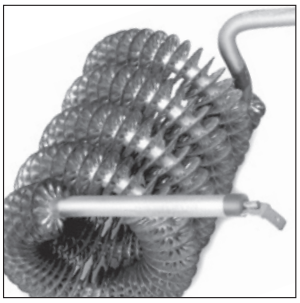
HEATING SYSTEMS

Caloritech™

Engineered Electric Heat



Air and Space Heaters

Section C

Product Catalog

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Contents

Fan-Forced Enclosure Heater - PH

Application

Caloritech™ PH fan-forced enclosure heaters are designed to control the environment within enclosures by maintaining a stable temperature.

Effects of low temperatures such as corrosion, freezing or condensation will adversely affect the components inside control panels. The Caloritech™ PH enclosure heater will provide an optimal performance environment for the critical components contained within the control panel.

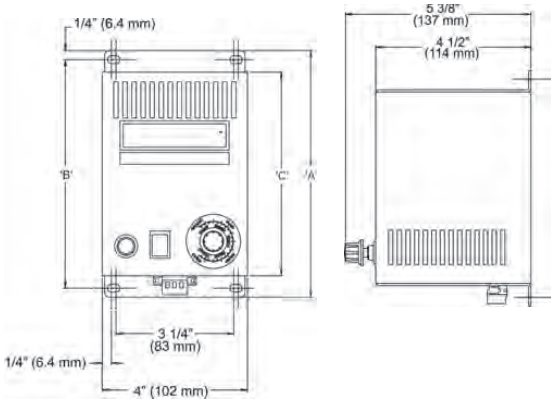


Figure 1

Table 1 – Dimensions

Catalog No.	Dimensions					
	A		B		C	
	in	mm	in	mm	in	mm
PH125/PH200	5.500	140	5.000	127	4.125	105
PH400/PH800	7.500	191	7.000	178	6.188	157

Features

- $_{C}CSA_{US}$ approved
- $_{C}UL_{US}$ certified
- Light weight unit
- Low maintenance
- Aluminum alloy outer casing
- Externally adjustable thermostat 0°F to 100°F (-18°C to 38°C)
- Pilot light for “heat-on” indication
- High temperature safety protection
- Fan on/auto switch to prolong motor life
- Terminal strip provides quick installation and accepts both stranded and solid wire

Selection

The wattage requirement is determined from a consideration of the surface area, insulation properties of the enclosure or space and the temperature difference between the ambient and the enclosure. For small enclosures (less than 100 ft² (9.3 m²) surface area) conservative values for heat loss areas shown in Table 2, page C4.

Table 2 – Temperature Difference

Watts/ft² per 10°F	Indoors	Outdoors
Uninsulated	5	7
Insulated (Min. 1”/25 mm)	1	1.2
Watts/m² per 5.5°C	**Indoors**	**Outdoors**
Uninsulated	54	75
Insulated (Min. 2.5 cm)	11	13

Example: To find wattage requirements in an uninsulated enclosure 2' x 3' x 1' (0.61 m x 0.91 m x 0.3 m), which must be held at 40°F (4°C) in a 10°F (-12°C) outdoor ambient. Internal electrical components use 80 watts.

Surface Area (ft²) = 2[(2' x 3') + (2' x 1') + (3' x 1')] = 22 ft²

Surface Area (m²) = 2[(0.61 m x 0.92 m) + (0.61 m x 0.3 m) +(0.92 m x 0.3 m)
= 2.0404 m²

Heat Loss: From Table 2, page C4, an uninsulated outdoor enclosure requires 7 watts for each 10°F temperature difference (75 watts for each 5.5°C temperature difference).

Temperature Difference (°F) = 40°F – 10°F = 30°F

Temperature Difference (°C) = 4.4°C – (-12.2°C) = 16.6°C

Wattage Required = (30°F ÷ 10°F) x 7 x 22 ft² = 462 watts

Or:

Wattage Required = (16.6°C ÷ 5.5°C) x 75 x 2.0404 m² = 462 watts

Heater Wattage = Wattage required less component wattage

Or:

462 – 80 = 382 watts

Use one PH400 rated at 400 watts. For enclosures requiring more than 800 watts, two or more PH heaters may be used.

Installation

The Caloritech™ PH fan-forced enclosure heater should be installed in the centre of the cabinet and as low as practicable for the best possible heat dissipation. The optimum efficiency is obtained when the unit is mounted in a vertical position allowing the top air vents to release the heated air in the most effective manner. The control panels should be sealed and free from dust and dirt. Do not install the heaters on wood, cardboard or other flammable panels. Heat sensitive components should not be placed near the heat discharge area. For larger enclosures, two or more heaters may be used.

Table 3 – PH Series Fan-Forced Enclosure Heater

Catalog Number	Watts	Voltage	Hertz	Phase	Weight	
					lbs	kg
PH12511	125	120	60	1	2.2	1.0
PH12531	125	240	60		2.2	1.0
	105	220	50		2.2	1.0
PH20011	200	120	60		2.2	1.0
PH20031	200	240	60		2.2	1.0
	168	220	50		2.2	1.0
PH40011	400	120	60		3.0	1.4
PH40031	400	240	60		3.0	1.4
	336	220	50		3.0	1.4
PH80011	800	120	60		3.0	1.4
PH80031	800	240	60		3.0	1.4
	672	220	50		3.0	1.4

Control Panel & Pump House Heater - PXFT

(Guard optional on some units)

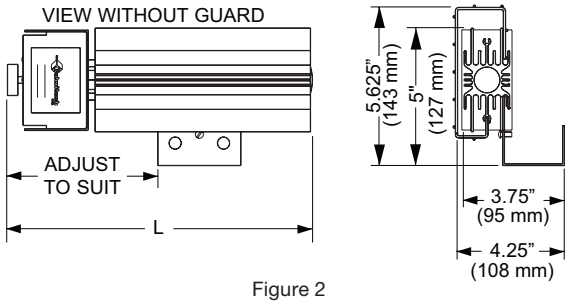


Figure 2

Application

Caloritech™ PXFT heaters are designed to maintain a stable temperature inside control enclosures, pump houses or similar spaces. The standard units are not suitable for use outdoors, unprotected from the weather. All heaters have a built-in thermostat. The heater is also available without a thermostat on special order.

Features

The PXFT heater uses a high surface area aluminum heat emitter to eliminate the need for a fan while providing low radiation and high convection heating to the enclosure. The thermostat rating is 25 A at 240V, Single Pole, Single Throw, adjustable from 30°F to 120°F (0°C to 50°C). A movable bracket allows the heater to be floor or wall mounted with the terminal box located on the left or right side, top or bottom. Wire guards are provided standard with the PXFT-300, PXFT-400 and PXFT-600 watt heaters, and are available as an option on the PXFT-050, PXFT-125 and PXFT-200-watt units. Moisture resistant heaters (shown below) are available on special order.

Figure 3

Selection

The wattage requirement is determined from a consideration of the surface area, insulation properties of the enclosure or space and the temperature difference between the ambient and the enclosure. For small enclosures (less than 100 ft² (9.3 m²) surface area) conservative values for heat losses are as shown in Table 4, page C6.

Table 4 – Temperature Difference

Watts/ft² Per 10°F	Indoors	Outdoors
Uninsulated	5	7
Insulated (Min. 1")	1	1.2
Watts/m² Per 5.5°C	**Indoors**	**Outdoors**
Uninsulated	54	75
Insulated (Min. 2.5 cm)	11	13

Example: To find wattage requirements in an uninsulated enclosure 2' x 3' x 1/2' (0.61 m x 0.91 m x 0.15 m), which must be held at 40°F (4°C) in a 10°F (-12°C) outdoor ambient.

Surface Area (ft²) = 2 [(2' x 3') + (2' x 1/2') + (3' x 1/2')] = 17 ft²

Surface Area (m²) = 2[(0.61 m x 0.92 m) +(0.61 m x 0.15 m)
+ (0.92 m x 0.15 m)]
= 1.5814 m²

Heat Loss: From Table 4, page C6, an uninsulated outdoor enclosure requires 7 watts for each 10°F temperature difference. (75 watts for each 5.5°C temperature difference).

Temperature Difference (°F) = 40°F to 10°F = 30°F

Temperature Difference (°C) = 4.4°C – (-12.2°C) = 16.6°C

Wattage Required = (30°F ÷ 10°F) x 7 x 17 = 357 watts

Or:

Wattage Required = (16.6°C ÷ 5.5°C) x 75 x 1.5814 m² = 357 watts

Use one PXFT400 rated at 400 watts. For enclosures requiring more than 600 watts, two or more PXFT heaters can be used. Higher wattage heaters are available. Check factory.

Installation

Caloritech™ PXFT heater is approved for horizontal or vertical mounting on the floor or lower wall of the enclosure. Heaters must be installed using the mounting bracket provided to ensure minimum spacing between the heater and the wall or floor. Try to maximize the spacing between the heater and temperature sensitive components. Surface temperatures of the 50-watt and 125-watt units are about 212°F (100°C) and 338°F (170°C) respectively. The other units listed operate around 410°F (210°C).

Table 5 – PXFT Series - Control Panel and Pump House Heaters

Watts	Standard Voltages	Length 'L'		Catalog No.*	Weight	
		in	mm		lbs	kg
50	120	8.375	213	PXFT050	2.6	1.1
125	120	8 375	213	PXFT125	2.6	1.1
200	120	8.375	213	PXFT200	2.9	1.3
300	120, 240	15.000	381	PXFT300	3.5	1.6
400	120, 240	21.750	553	PXFT400	5.5	2.5
600	120, 240	28.500	724	PXFT600	7.5	3.4

Note:

*For units without thermostat, omit 'T' in catalog number.

Inventory - these heaters are normally stocked in limited quantities

To Order Specify

- Quantity
- Catalog number
- Voltage
- Special features

Heavy Duty Convection Heater - BX

Application

Caloritech™ BX convection heaters are ideally suited for industrial applications where rugged and dependable units are required. Typical installations include:

- Factory offices
- Crane cabs
- Ticket booths
- Guard houses
- Repair shops
- Shipping rooms
- Trains and streetcars

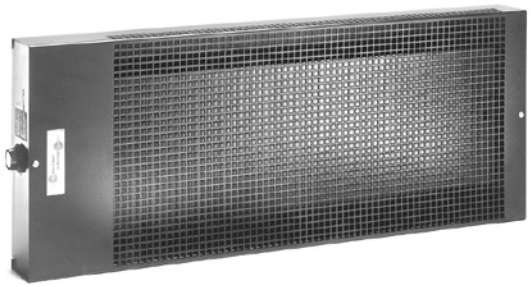


Figure 4 – The unit is not for use in hazardous locations. Thermon Heaing Systems manufactures heaters under the Ruffneck™ and Norseman™ brand names that are approved for hazardous areas.

Construction

The BX heater features low density stainless steel sheathed Caloritech™ heating elements for extended life. The perforated enclosure is 14-gauge steel to withstand even the most hostile industrial environments. Standard finish is scratch resistant black wrinkle baked enamel.

Symmetrical design allows the terminal box to be located at the left or right side of the heater.

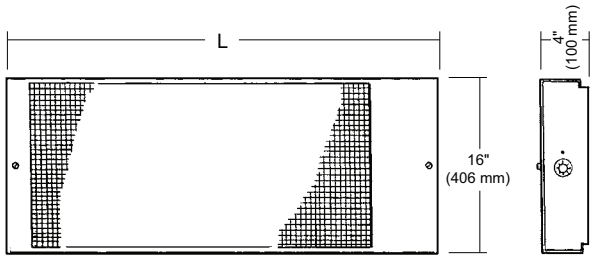


Figure 5

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage

Special Features

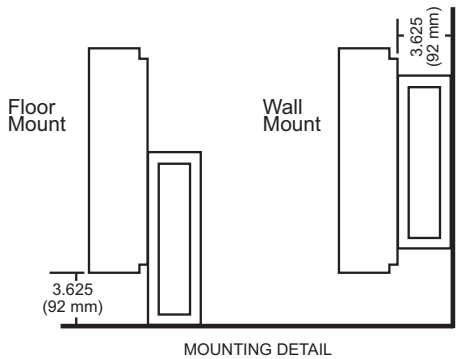
Heaters are available without controls for connection to a remote switch or with built-in thermostat.

Installation

In addition to the reversible terminal enclosure, as a further convenience, heaters include combination brackets (shipped separately) suitable for wall or floor mounting. When installed, heaters must be spaced not less than 3.625" (92 mm) from floor or wall. Use supply wires suitable for 194°F (90°C).

Table 6 – BX Convection Heater

kW	Volts	Ph	Catalog Number		'L' dim.		Approx. Ship. Wt.	
			With Thermostat	Without Controls	in	mm	lbs	kg
2	120	1	BX2011ST	BX2011S	26.5	673	30	14
	208	1	BX2021ST	BX2021S				
	240	1	BX2031ST	BX2031S				
	480	1	BX2071ST	BX2071S				
	600	1	BX2081ST	BX2081S				
	208	3	BX2023ST	BX2023S				
	240	3	BX2033ST	BX2033S				
	480	3	BX2073ST	BX2073S				
	600	3	BX2083ST	BX2083S				
	208	1	BX2021T	BX2021	40.0	1016	44	20
	240	1	BX2031T	BX2031				
	480	1	BX2071T	BX2071				
	600	1	BX2081T	BX2081				
	208	3	BX2023T	BX2023				
	240	3	BX2033T	BX2033				
	480	3	BX2073T	BX2073				
	600	3	BX2083T	BX2083				
3	208	1	BX3021T	BX3021				
	240	1	BX3031T	BX3031				
	480	1	BX3071T	BX3071				
	600	1	BX3081T	BX3081				
	208	3	BX3023T	BX3023				
	240	3	BX3033T	BX3033				
	480	3	BX3073T	BX3073				
	600	3	BX3083T	BX3083				



MOUNTING DETAIL

Figure 6

Air Duct Heaters - DFF, DIF, DFT & DIT

Application

Caloritech™ air duct heaters are for use in comfort heating applications. Typical applications include:

- Make-up air heating
- Air pre-heating
- Air handling equipment
- Fan coils
- Terminal reheating
- Multizone reheating
- Heat pump auxiliary systems
- Return air heating

DFF is a flanged duct heater with finned tubular heating elements.

DIF is an insert duct heater with finned tubular heating elements.

DFT is a flanged duct heater with Incoloy® (non-finned) tubular heating elements.

DIT is an insert duct heater with tubular heating elements.

Standard Features

- Primary linear cutout, 160°F (71°C) 277/600 VAC, 25/10 amp non-inductive
- Secondary linear cutout – Manual reset complete with back-up magnetic contactor on units under 300V, 30 kW and less, 225°F (107°C) 277/600 VAC, 25/10 amp non-inductive

Optional Auxiliary Duct Heater Controls

These controls are available as factory installed on the duct heater or as an Electrical & Electronic Manufacturing Association (EEMAC) rated:

- Wall thermostats: T498A, T6051A (1 stage), T6052A (2 stage), T921A (0-135 Ω)
- Duct thermostats: T675A (1-stage), T678A (2-stage), T991A (0-135 Ω)
- Bulb holders
- Silent contactors
- SCR controllers
- Sail switch
- Differential pressure switch
- Main disconnect
- Pneumatic electric switches
- **"ON/OFF"** switch
- Magnetic contactors
- Step controllers (specify) control panel for wall mount:
- HRC fusing
- Control transformers
- Fan interlock relay
- Pilot lights

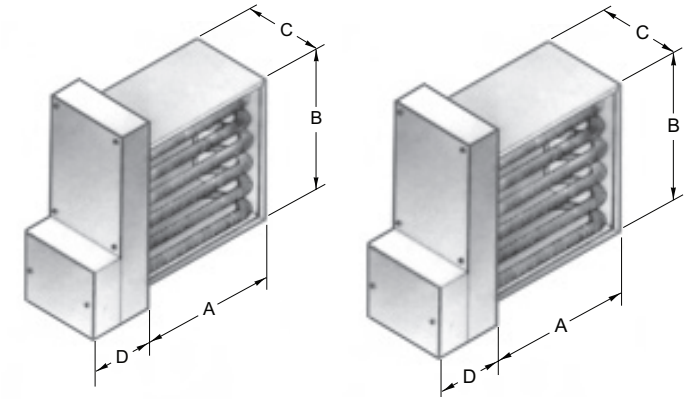


Figure 7

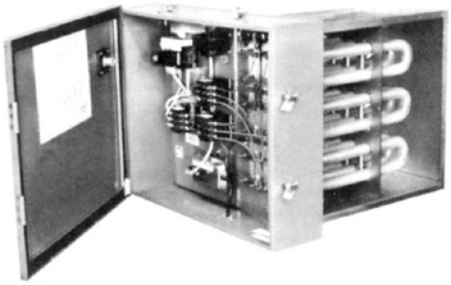


Figure 8

Element Types

The finned tubular element design is the most popular. It incorporates the highest wattage per cross sectional duct area thus making it more economical than the Incoloy® tubular design.

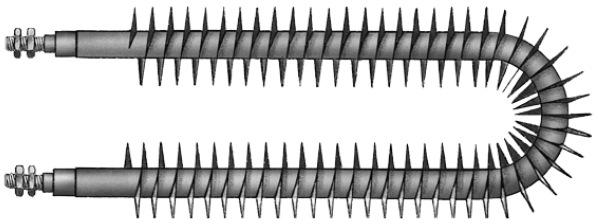


Figure 9 – Finned Tubular Element

Finned tubular elements are constructed using a steel tube with a corrugated steel fin wrapped around it and brazed together. This increases the heat transfer surface of the element resulting in a lower operating temperature than tubular designs.

Figure 10 – Tubular Element

Incoloy® tubular elements are similarly constructed, but without the steel fin in order to increase the corrosion resistance. The Incoloy® design should be chosen where high humidity or slightly corrosive chemical contaminants are present in the air stream. These units are made and approved on special order only. Both element types are designed to provide many years of maintenance free service. Unlike open coil designs, duct heaters fitted with tubular elements are not subject to hazards of electrical shock which allows installation close to a register or grille.

Recommended Kilowatts

In order to select the proper kW for your application, use Figure 11 and Figure 12, page C10.

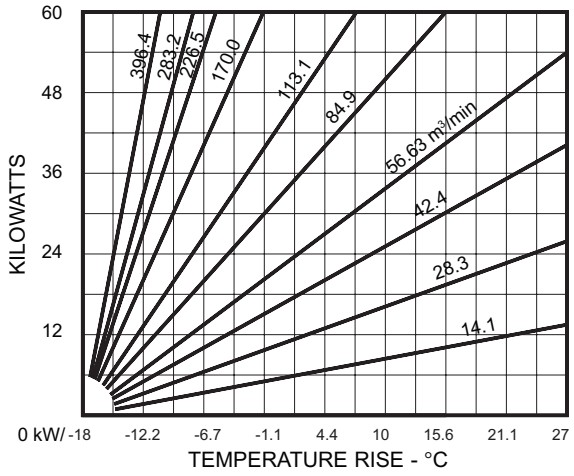


Figure 11 – Recommended Kilowatts

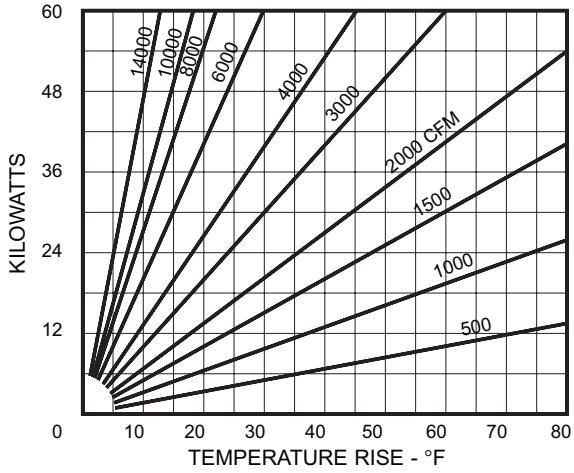


Figure 12 – Recommended Kilowatts

Wiring and Auxiliary Controls

Caloritech™ electric duct heaters are available for supply voltages up to 600V, 3 phase. Multi-staging to provide increments of temperature rise can be incorporated where dimensional space and element spacing allows. Special electrical features are available providing simple or sophisticated temperature control to suit individual requirements. See Optional Auxiliary Duct Heater Controls, page C9.

Construction

Two basic heater frame constructions are available, flange type or insert type (see Figure 13 and Figure 14, page C10).

All frames are fabricated from 16-gauge satin coat steel. Specially constructed stainless steel frames are also available.

A unique modular construction using stock frame components is employed using vertical and horizontal dimensional increments of two inches, ensuring rapid delivery.

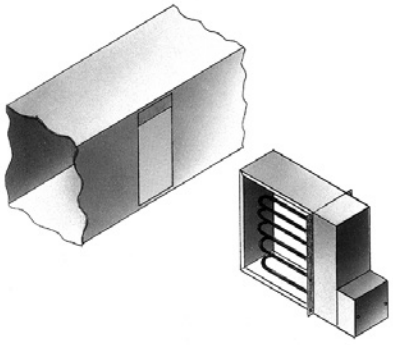


Figure 13 – Insert Type

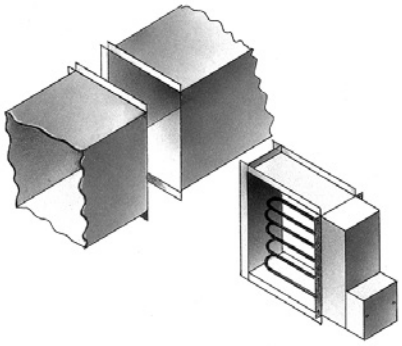
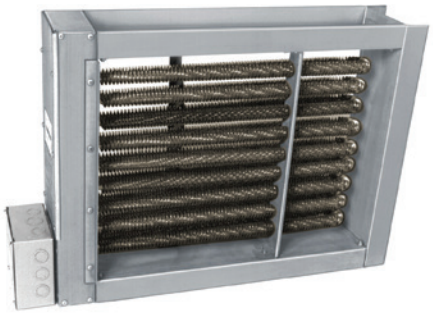


Figure 14 – Flange Type

Standard Dimensions

Insert type duct heaters are slightly undersized to permit installation in ducts having the A and B dimensions listed in Table 7, page C11.



Selection and Installation

Finned tubular duct heaters are approved for horizontal duct installation where the maximum inlet air temperature does not exceed 77°F (25°C) and the maximum rating does not exceed 120 kW. Multiple heaters can be installed in tandem (series provided that the inlet temperature to any heater section one heater) is not more than 77°F (25°C) and the air velocity is not less than the requirements of Figure 15, page C11. Check factory if you require assistance.

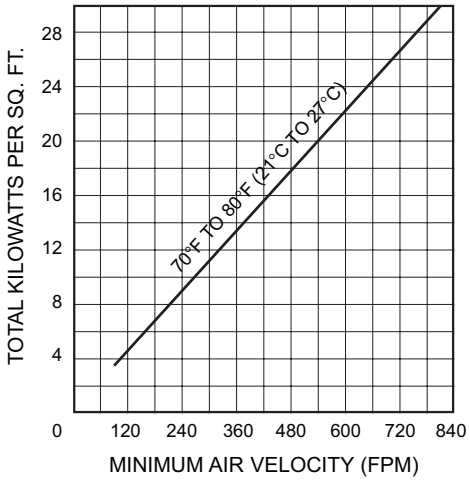


Figure 15 – Air Velocity Requirements

See Table 7, page C11 for typical duct heater sizes and kW ratings based on an air flow velocity of 500 ft/min or higher.

If the flow velocity is less than 500 ft/min, the typical maximum kW ratings in the table must be derated using .

Multiply the kW ratings shown in Table 7, page C11 by the appropriate derating factor from Figure 16, page C11.

Table 7, page C11 lists some of the more common heater sizes with maximum kilowatt ratings for each size. Stock modular frames allow quick delivery for other sizes in increments of 2" (51 mm).

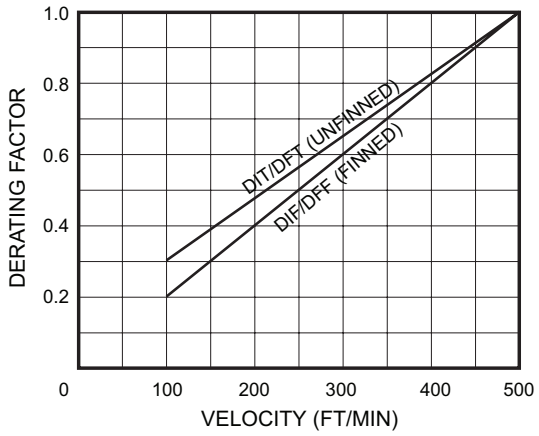


Figure 16 – Derating Factors

Table 7 – Maximum Single Heater kW Rating for Typical Duct Heater Sizes

Dimensions A x B		DIF/DFF		DIT/DFT	
in	mm	Max. kW	Max No. of Elements	Max. kW	Max No. of Elements
6 x 6	152 x 152	2.5	3	1.5	6
8 x 6	203 x 152	3.0	3	3.0	6
10 x 6	254 x 152	4.0	3	2.5	6
10 x 8	254 x 203	5.5	4	3.5	8
12 x 6	305 x 152	5.0	3	3.5	6
12 x 8	305 x 203	6.5	4	4.5	8
12 x 10	305 x 254	8.0	5	5.5	10
14 x 8	356 x 203	7.5	4	5.5	8
14 x 10	356 x 254	9.5	5	6.5	10
14 x 12	356 x 305	11.5	6	8.0	12
16 x 10	406 x 254	11.0	5	7.5	10
16 x 12	406 x 305	13.0	6	9.0	12
16 x 14	406 x 356	15.5	7	10.5	14
18 x 12	457 x 305	15.0	6	10.5	12
18 x 14	457 x 356	17.5	7	12.0	14
18 x 16	457 x 406	20.0	8	14.0	16
20 x 14	508 x 356	19.0	7	13.5	14
20 x 16	508 x 406	22.0	8	15.5	16
20 x 18	508 x 457	25.0	9	17.5	18
22 x 16	559 x 406	24.0	8	17.0	16
22 x 18	559 x 457	27.5	9	19.0	18
22 x 20	559 x 508	30.5	10	21.0	20
24 x 18	610 x 457	30.0	9	21.0	18
24 x 20	610 x 508	33.0	10	23.0	20
24 x 22	610 x 559	36.5	11	25.5	22
26 x 20	660 x 508	36.0	10	25.0	20
26 x 22	660 x 559	39.5	11	27.5	22
26 x 24	660 x 610	43.0	12	30.0	24
28 x 22	711 x 559	42.5	11	29.5	22
28 x 24	711 x 610	46.5	12	32.5	24
28 x 26	711 x 660	50.5	13	35.0	26
30 x 24	762 x 610	50.0	12	35.0	24
30 x 26	762 x 660	54.0	13	37.5	26
30 x 28	762 x 711	58.0	14	40.5	28
30 x 30	762 x 762	62.5	15	43.5	30

Types DFF and DIF duct heaters are designed and approved for comfort heating applications. The unit must be installed in a horizontal duct with the terminal housing at the side or bottom. Tandem mounting (more than one heater in series) is permitted within certain limitations. See previous discussion. Units listed in Table 9, page C12 are representative only. It is reasonably safe to specify any similar unit using this table as a guideline, and we will build to your specifications.

Standard Features

- Primary linear cutout, 160°F (71°C) 277/600 VAC, 25/10 amp non-inductive
- Secondary linear cutout - Manual reset complete with back-up magnetic contactor on units under 300V, 30 kW and less, 225°F (107°C) 277/600 VAC, 25/10 amp non-inductive

Optional Features

See Optional Auxiliary Duct Heater Controls, page C9.

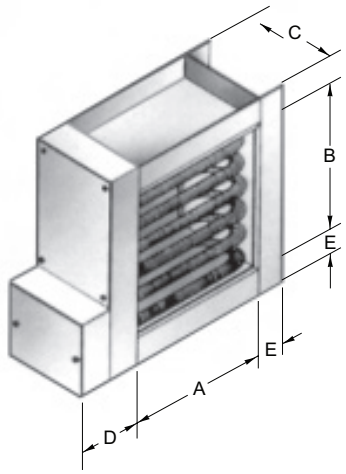


Figure 17 – Type DFF

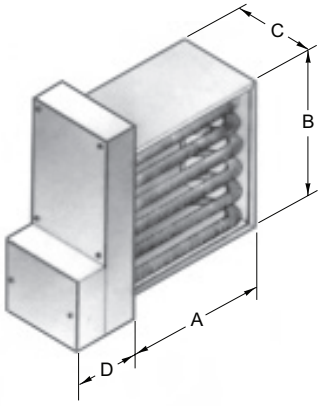


Figure 18 – Type DIF

Table 8 – Type DFF

DIM.	in	mm
C	6.5	163
D	7.0	178
E	2.0	51

To Order Specify

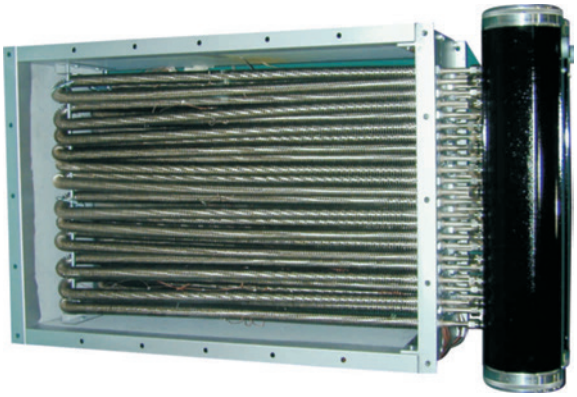
- Quantity
- Catalog number
- Voltage
- Phase
- kW
- Minimum CFM
- Duct dimensions
- Optional features

Table 9 – Types DFF/DIF Duct Heaters With Finned Element

kW	Standard Voltages					Dimensions				Min. Air Flow		No. of Elements	Catalog No.		Approx. Weight	
	120 V	280 V, 240 V		480 V, 600 V		A		B								
	1Ø	1Ø	3Ø	1Ø	3Ø	in	mm	in	mm	CFM	m³/min.		Flange Type	Insert Type	lbs	kg
1	✓	✓	–	–	–	6	152	6	152	50	1.4	2	DFF06x06-01	DIF06x06-01	15	7
2.5	✓	✓		–	–	6	152	6	152	150	4.2	3	DFF06x06-02.5	DIF06x06-02.5	15	7
7.5	–	✓		✓	✓	14	356	8	203	390	11.0	4	DFF14x08-07.5	DIF14x08-07.5	20	9
10	–	✓		✓	✓	14	356	12	305	500	14.1	6	DFF14x12-10	DIF14x12-10	25	11
12.5	–	✓		✓	✓	16	406	12	305	625	17.7	6	DFF16x12-12.5	DIF16x12-12.5	30	14
15	–	✓		✓	✓	18	457	12	305	750	21.2	6	DFF18x12-15	DIF18x12-15	30	14
17.5	–	✓		✓	✓	18	457	14	356	875	24.8	6	DFF18x14-17.5	DIF18x14-17.5	35	16
20	–	✓		✓	✓	18	457	16	406	1000	28.3	6	DFF18x16-20	DIF18x16-20	35	16
25	–	–		✓	✓	20	508	18	457	1250	35.4	9	DFF20x18-25	DIF20x18-25	50	23
30	–	–	✓	✓	✓	24	610	18	457	1500	42.4	9	DFF24x18-30	DIF24x18-30	55	25
35	–	–		✓	✓	24	610	22	559	1650	46.7	9	DFF24x22-35	DIF24x22-35	60	27
40	–	–		✓	✓	26	660	24	610	2050	58.0	12	DFF26x24-40	DIF26x24-40	70	32
45	–	–		✓	✓	28	711	24	610	2200	62.2	12	DFF26x24-45	DIF26x24-45	75	34
50	–	–		✓	✓	28	711	26	660	2500	70.7	12	DFF28x26-50	DIF28x26-50	80	36
60	–	–		✓	✓	30	762	30	762	3000	84.9	15	DFF30x30-60	DIF30x30-60	95	43
80	–	–		✓	✓	36	914	32	813	4000	113.1	15	DFF36x32-80	DIF36x32-80	105	48
100	–	–		✓	✓	42	1067	36	914	5250	148.5	18	DFF42x36-100	DIF42x36-100	130	59
120	–	–		✓	✓	48	1219	36	914	6000	170.0	18	DFF48x36-120	DIF48x36-120	150	68

Note: Incoloy® tubular duct heaters, types DFT and DIT, are available on special order only.

Explosion-Proof Duct Heaters - XDF



Application

Caloritech™ XDF duct heaters are designed for heating air or gases which contain potentially explosive substances.

Designed for Application in Hazardous Environments, such as:

- Oil refineries
- Coal mines
- Pulp and paper mills
- Petrochemical plants
- Grain elevators
- Sewage treatment plants

XDF heaters feature the unique Caloritech™ approach to explosion-proof electric heater design which embodies safety, reliability and economic value. The XDF heater is a factory pre-wired explosion-proof duct heater. Standard models are available in three duct sizes, with either a single or double bank of heating modules. XDF heaters are available as standard units with a T2D, T3A or T3B hazardous area temperature codes.

Construction

The XDF explosion-proof duct heater utilizes heavy walled carbon steel finned tubular elements with nickel plated finish to provide safe, efficient, low temperature heat transfer. Standard units have a painted steel duct with mounting holes provided for attachment to the duct section.

XDF heaters feature the unique copper free aluminum extruded ***x-Max***® terminal housing (U.S. Pat. No. 5,798,910, CDN. Pat. No. 2,212,500). A track and trolley system and threaded covers at each end allow easy access to wiring terminal connections. Units are approved for mounting in a horizontal duct section.

Wattage

Units are available in wattages up to 50 kW.

Control Panels

Control panel options are shown in Control Packages, page C18.

Thermostats

Thermon Heating Systems, Inc. offers a wide variety of explosion-proof thermostats to suit most every need. All model XDF heaters are available with remote externally adjustable thermostats which are field convertible to tamper-proof.

Heater Selection

Standard Caloritech™ XDF duct heaters may be operated in hazardous areas where the ambient temperature does not exceed 104°F (40°C) and the maximum heater surface temperature does not exceed the temperature code rating.

Use the following steps for heater selection.

1. Determine temperature code rating Standard heaters are available for the T2D, T3A or T3B areas.
2. Determine kW rating Standard heaters are available up to 50 kW.
3. Determine duct size Three standard sizes are available and transition sections can be provided for other duct sizes.
4. Verify air flow requirements Table 11, page C15 lists the minimum air flow (SCFM) required for each heater type.
5. Verify temperature rise using the following formula:

$$\text{°F temp. rise} = \frac{\text{kW} \times 3000}{\text{SCFM}} \qquad \text{°C temp. rise} = \text{kW} \times 1667 \text{ SCFM}$$

6. Determine power supply voltage and phase. Standard units are available in 208, 240, 480 or 600V (3-phase). Optional 1-phase units also available.

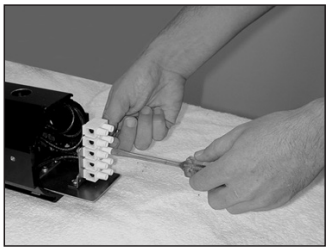


Figure 19

Standard Heater Features

- T2D, T3A or T3B temperature code
- Painted steel duct section
- Differential pressure switch
- Factory installed high limit sensing thermocouples

Optional Features

- Transition sections
- Stainless steel duct section
- Mechanical temperature control
- Outlet air thermocouple
- Special temperature code
- Oulet air thermostat

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Hazardous location designation
- Temperature code
- Control package
- Optional Features

Table 10 – Dimensions

Duct Size		A		B		C		D		L	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
24 x 12	610 x 305	24.0	610	12.0	305	27.0	686	15.0	381	36.5	927
30 x 18	762 x 457	30.0	762	18.0	457	33.0	838	21.0	533	42.5	1080
36 x 24	914 x 610	36.0	914	24.0	610	39.0	991	27.0	686	48.5	1232

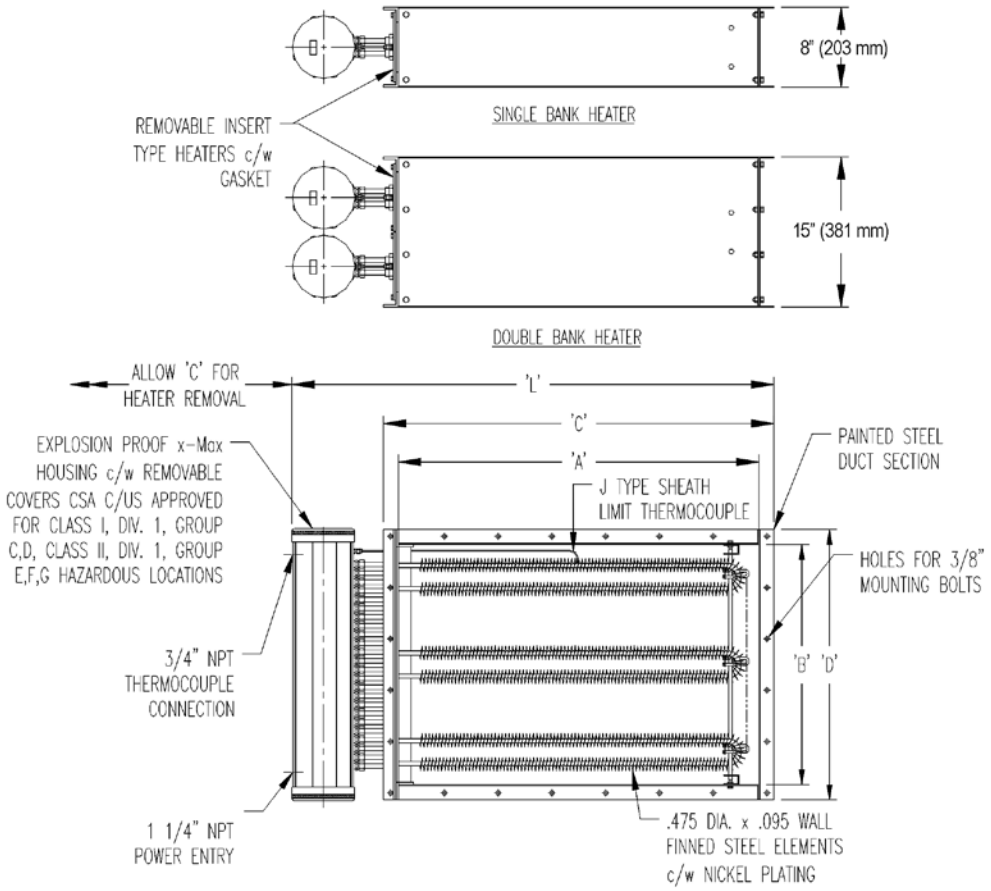


Figure 20

Table 11 – Heater Specifications for High Temperature Rise Units

Duct Size (A x B)		No. of Heating Banks	kW	Available Voltages		High Temperature Rise Units - T2D (482°F / 215°C) Class I, Div. 1 & 2, Groups C, D					Net Weight	
				208V	240 V, 480 V, 600 V	Temp. Code	Catalog No.	Max. Temp. Rise		Min. Air Flow		
in	mm			3Ø	3Ø			°F	°C	SCFM	lbs	kg
24 x 12	610 x 305	1	2.5			T2D	XDF1-24X12-025T2D	13.9	7.7	540	90	41
			3.75				XDF1-24X12-038T2D	20.8	11.6	540		
			5				XDF1-24X12-050T2D	19.7	11.0	761		
			7.5				XDF1-24X12-075T2D	18.0	10.0	1247		
		2	5				XDF2-24X12-050T2D	27.8	15.4	540	160	73
			7.5				XDF2-24X12-075T2D	41.7	23.2	540		
			10				XDF2-24X12-100T2D	39.4	21.9	761		
			15				XDF2-24X12-150T2D	36.1	20.1	1247		
30 x 18	762 x 457	1	5				XDF1-30X18-050T2D	14.8	8.2	1013	135	61
			5.25	✓			XDF1-30X18-053T2D	18.5	10.3	1013		
			7.5				XDF1-30X18-075T2D	22.2	12.3	1013		
			10				XDF1-30X18-100T2D	19.6	10.8	1538		
			12.5				XDF1-30X18-125T2D	18.9	10.5	1989		
			15				XDF1-30X18-150T2D	18.4	10.2	2440		
		2	10				XDF2-30X18-100T2D	29.5	16.5	1013	250	114
			12.5				XDF2-30X18-125T2D	37.0	20.6	1013		
			15		✓		XDF2-30X18-150T2D	44.5	24.7	1013		
			20				XDF2-30X18-200T2D	39.0	21.7	1538		
			25				XDF2-30X18-250T2D	37.7	21.0	1989		
			30				XDF2-30X18-300T2D	36.9	20.5	2440		
36 x 24	914 x 610	1	7.5	✓			XDF1-36X24-075T2D	13.9	7.7	1620	180	82
			10	✓			XDF1-36X24-100T2D	18.5	10.3	1620		
			12.5	✓			XDF1-36X24-125T2D	23.2	12.9	1620		
			15	✓			XDF1-36X24-150T2D	20.2	11.2	2230		
			20	✓			XDF1-36X24-200T2D	19.3	10.7	3115		
			25	–			XDF1-36X24-250T2D	18.8	10.4	4000		
		2	15	✓			XDF2-36X24-150T2D	27.8	15.4	1620	325	148
			20	✓			XDF2-36X24-200T2D	37.0	20.6	1620		
			25	✓			XDF2-36X24-250T2D	46.3	25.7	1620		
			30	✓			XDF2-36X24-300T2D	40.4	22.4	2230		
			40	✓			XDF2-36X24-400T2D	38.5	21.4	3115		
			50	–			XDF2-36X24-500T2D	37.5	20.8	4000		

Table 12 – Heater Specifications for Low Temperature Rise Units

Duct Size (A x B)		No. of Heating Banks	kW	Available Voltages		Low Temperature Rise Units T3A (356°F / 180°C) or T3B (329°F / 165°C)					Net Weight	
				208V	240V, 480V, 600V	Class I, Div. 1 & 2, Groups C, D Class II, Div. 1 & 2, Groups E, F, G						
				3Ø	3Ø	Temp Code	Catalog No.	Max. Temp. Rise		Min. Air Flow		
in	mm							°F	°C	SCFM	lbs	kg
24 x 12	610 x 305	1	2.5			T3B	XDF1-24X12-025T3B	6.8	3.8	1107	90	41
			3.75			T3B	XDF1-24X12-038T3B	8.4	4.7	1334		
			5			T3B	XDF1-24X12-050T3B	9.6	5.3	1562		
			7.5			T3A	XDF1-24X12-075T3A	13.0	7.2	1728		
		2	5			T3B	XDF2-24X12-050T3B	13.6	7.5	1107	160	73
			7.5			T3B	XDF2-24X12-075T3B	16.9	9.4	1334		
			10			T3B	XDF2-24X12-100T3B	19.2	10.7	1562		
			15			T3A	XDF2-24X12-150T3A	26.0	14.6	1728		
30 x 18	762 x 457	1	5			T3B	XDF1-30X18-050T3B	7.1	4.0	2109	135	61
			5.25	✓		T3B	XDF1-30X18-053T3B	8.0	4.5	2331		
			7.5			T3B	XDF1-30X18-075T3B	8.8	4.9	2553		
			10			T3B	XDF1-30X18-100T3B	10.0	5.6	2991		
			12.5			T3B	XDF1-30X18-125T3B	10.9	6.1	3434		
			15			T3A	XDF1-30X18-150T3A	13.5	7.5	3333		
		2	10			T3B	XDF2-30X18-100T3B	14.2	7.9	2109	250	114
			12.5			T3B	XDF2-30X18-125T3B	16.1	8.9	2331		
			15		✓	T3B	XDF2-30X18-150T3B	17.6	9.8	2553		
			20			T3B	XDF2-30X18-200T3B	20.1	11.1	2991		
			25			T3B	XDF2-30X18-250T3B	21.8	12.1	3434		
			30			T3A	XDF2-30X18-300T3A	27.0	15.0	3333		
36 x 24	914 x 610	1	7.5	✓		T3B	XDF1-36X24-075T3B	6.9	3.8	3256	180	82
			10	✓		T3B	XDF1-36X24-100T3B	8.1	4.5	3690		
			12.5	✓		T3B	XDF1-36X24-125T3B	9.1	5.1	4125		
			15	✓		T3B	XDF1-36X24-150T3B	9.9	5.5	4559		
			20	✓		T3B	XDF1-36X24-200T3B	11.1	6.1	5428		
			25	–		T3A	XDF1-36X24-250T3A	13.8	7.7	5427		
		2	15	✓		T3B	XDF2-36X24-150T3B	13.8	7.7	3256	325	148
			20	✓		T3B	XDF2-36X24-200T3B	16.3	9.0	3690		
			25	✓		T3B	XDF2-36X24-250T3B	18.2	10.1	4125		
			30	✓		T3B	XDF2-36X24-300T3B	19.7	11.0	4559		
			40	✓		T3B	XDF2-36X24-400T3B	22.1	12.3	5428		
			50	–		T3A	XDF2-36X24-500T3A	27.6	15.4	5427		

Note: For optional disconnect switch, add 'D' to end of catalog number.

Control Panels for XDF Duct Heaters - CPXD Series

Caloritech™ XDF duct heaters are normally supplied with a CPXD control panel. These control panels are available in two basic types - Type 4 moisture resistant or explosion-proof, and with four different control packages as listed.

Standard Features

All CPXD control panels are supplied with magnetic contactor, HRC fusing, fused 120V control transformer, high limit controls, control circuit, **"ON/OFF"** switch, control **"ON"** light, high-limit indicator light, high-limit push-to-reset, terminals for connection of temperature controls and differential air pressure switch.

Enclosure Types

CPXD control panels are available for either type 4 moisture resistant locations or hazardous locations Class I, Div. 1 & 2, Groups C, D and Class II, Div. 1 & 2, Groups E, F, G.

Table 13 – Control Panel Specifications: Type 4 Moisture Resistant

No. of Circuits	kW	Package #1 Basic Unit without Disconnect				Catalog No.			
		208V 3Ø	240V 3Ø	480V 3Ø	600V 3Ø	Package #1	Package #2	Package #3	Package #4
1	2.5	✓	✓	✓	✓	CPXD1-025R	CPXD1-025TR	CPX1-025SR	CPXD1-025STR
	3.75	✓				CPXD1-038R	CPXD1-038TR	CPX1-038SR	CPXD1-038STR
	5	✓				CPXD1-050R	CPXD1-050TR	CPX1-050SR	CPXD1-050STR
	6.25	✓				CPXD1-063R	CPXD1-063TR	CPX1-063SR	CPXD1-063STR
	7.5	✓				CPXD1-075R	CPXD1-075TR	CPX1-075SR	CPXD1-075STR
	10	✓				CPXD1-100R	CPXD1-100TR	CPX1-100SR	CPXD1-100STR
	12.5	✓				CPXD1-125R	CPXD1-125TR	CPX1-125SR	CPXD1-125STR
	15	✓				CPXD1-150R	CPXD1-150TR	CPX1-150SR	CPXD1-150STR
	20	✓				CPXD1-200R	CPXD1-200TR	CPX1-200SR	CPXD1-200STR
	25	–				CPXD1-250R	CPXD1-250TR	CPX1-250SR	CPXD1-250STR
2	5	✓	✓	✓		CPXD2-050R	CPXD2-050TR	CPX2-050SR	CPXD2-050STR
	7.5	✓	✓	✓		CPXD2-075R	CPXD2-075TR	CPX2-075SR	CPXD2-075STR
	10	✓	✓	✓		CPXD2-100R	CPXD2-100TR	CPX2-100SR	CPXD2-100STR
	12.5	✓	✓	✓		CPXD2-125R	CPXD2-125TR	CPX2-125SR	CPXD2-125STR
	15	✓	✓	✓		CPXD2-150R	CPXD2-150TR	CPX2-150SR	CPXD2-150STR
	20	✓	✓	✓		CPXD2-200R	CPXD2-200TR	CPX2-200SR	CPXD2-200STR
	25	–	✓	✓		CPXD2-250R	CPXD2-250TR	CPX2-250SR	CPXD2-250STR
	30	–	–	✓		CPXD2-300R	CPXD2-300TR	CPX2-300SR	CPXD2-300STR
	40	–	–	✓		CPXD2-400R	CPXD2-400TR	CPX2-400SR	CPXD2-400STR
	50	–	–	✓		CPXD2-500R	CPXD2-500TR	CPX2-500SR	CPXD2-500STR

Note: For optional disconnect switch, add 'D' to end of catalog number.

Control Packages

Package #1 - Basic Unit (**"ON/OFF"** Control)

All standard features. Terminals are provided for connection to a remote **"ON/OFF"** temperature control and connection of differential air pressure switch.

Package #2 - Built-in Temperature Controller

Same features as Package #1 except with factory installed digital temperature controller for control of outlet air temperature.

Package #3 - SCR with Remote Temperature Controller

All standard features and a factory installed full load zero fired SCR with terminals provided for remote 4-20 mA temperature control signal and connection of differential air pressure switch.

Package #4 - SCR with Built-in Temperature Controller

Same features as Package #3 except with factory installed digital temperature controller for control of outlet air temperature.

Table 14 – Control Panel Specifications: Explosion-Proof Class I, Div. 1 & 2, Group C, D, Class II, Div. 1 & 2, Group E, F, G

No. of Circuits	kW	Package #1 Basic Unit without Disconnect				Catalog No.			
		208V 3Ø	240V 3Ø	480V 3Ø	600V 3Ø	Package #1	Package #2	Package #3	Package #4
1	2.5	✓	✓	✓	✓	CPXD1-025X	CPXD1-025TX	CPXD1-025SX	CPXD1-025STX
	3.75	✓	✓			CPXD1-038X	CPXD1-038TX	CPXD1-038SX	CPXD1-038STX
	5	✓	✓			CPXD1-050X	CPXD1-050TX	CPXD1-050SX	CPXD1-050STX
	6.25	✓	✓			CPXD1-063X	CPXD1-063TX	CPXD1-063SX	CPXD1-063STX
	7.5	✓	✓			CPXD1-075X	CPXD1-075TX	CPXD1-075SX	CPXD1-075STX
	10	✓	✓			CPXD1-100X	CPXD1-100TX	CPXD1-100SX	CPXD1-100STX
	12.5	✓	✓			CPXD1-125X	CPXD1-125TX	CPXD1-125SX	CPXD1-125STX
	15	✓	✓			CPXD1-150X	CPXD1-150TX	CPXD1-150SX	CPXD1-150STX
	20	✓	✓			CPXD1-200X	CPXD1-200TX	CPXD1-200SX	CPXD1-200STX
	25	–	–			CPXD1-250X	CPXD1-250TX	CPXD1-250SX	CPXD1-250STX
2	5	✓	✓	✓	✓	CPXD2-050X	CPXD2-050TX	CPXD2-050SX	CPXD2-050STX
	7.5	✓	✓	✓	✓	CPXD2-075X	CPXD2-075TX	CPXD2-075SX	CPXD2-075STX
	10	✓	✓	✓	✓	CPXD2-100X	CPXD2-100TX	CPXD2-100SX	CPXD2-100STX
	12.5	✓	✓	✓	✓	CPXD2-125X	CPXD2-125TX	CPXD2-125SX	CPXD2-125STX
	15	✓	✓	✓	✓	CPXD2-150X	CPXD2-150TX	CPXD2-150SX	CPXD2-150STX
	20	✓	✓	✓	✓	CPXD2-200X	CPXD2-200TX	CPXD2-200SX	CPXD2-200STX
	25	–	✓	✓	✓	CPXD2-250X	CPXD2-250TX	CPXD2-250SX	CPXD2-250STX
	30	–	–	–	✓	CPXD2-300X	CPXD2-300TX	CPXD2-300SX	CPXD2-300STX
	40	–	–	–	–	CPXD2-400X	CPXD2-400TX	CPXD2-400SX	CPXD2-400STX
	50	–	–	–	–	CPXD2-500X	CPXD2-500TX	CPXD2-500SX	CPXD2-500STX

Note: For optional disconnect switch, add 'D' to end of catalog number.

Wiring Diagrams

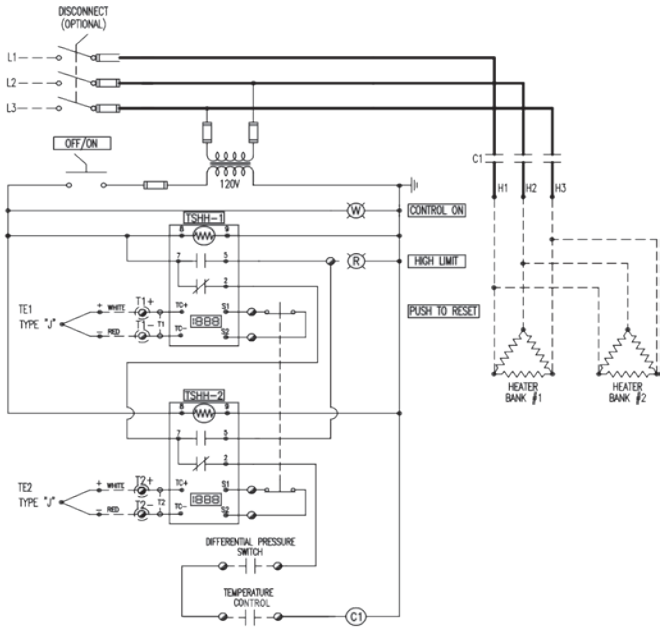


Figure 21 – Package #1 Basic Unit (“**ON/OFF**” Control)

Note:

One high limit control provided on single bank heaters.

Two high limit controls provided on double bank heaters.

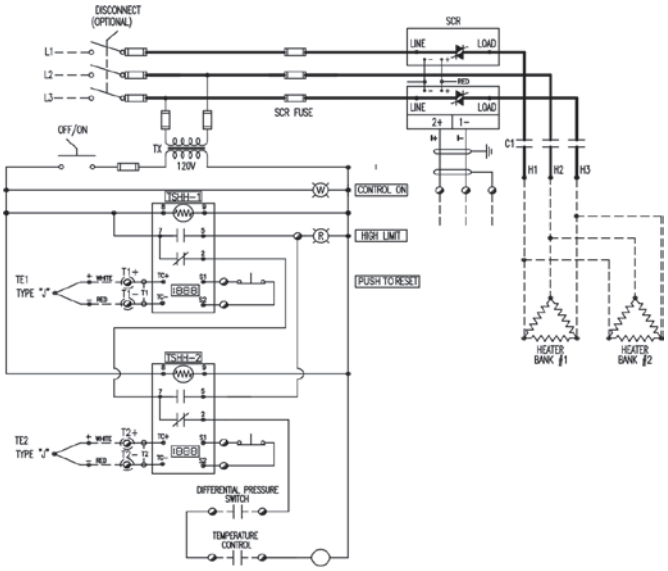


Figure 23 – Package #3 SCR with Remote Temperature Controller

Note:

One high limit control provided on single bank heaters.

Two high limit controls provided on double bank heaters.

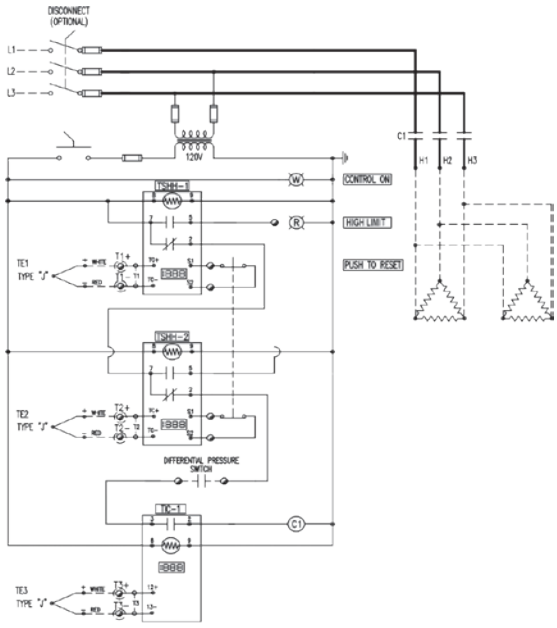


Figure 22 – Package #2 Built-in Temperature Controller

Note:

One high limit control provided on single bank heaters.

Two high limit controls provided on double bank heaters.

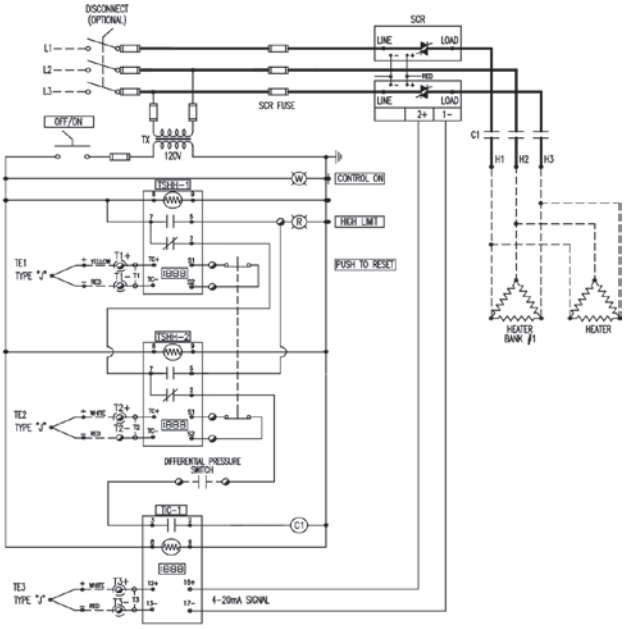


Figure 24 – Package #4 SCR with Built-in Temperature Controller

Note:

One high limit control provided on single bank heaters.

Two high limit controls provided on double bank heaters.

Specification Sheets

Scope

Electric explosion-proof duct heaters hall be Caloritech™ type XDF, from Thermon Heating Systems, Inc., complete with all standard equipment and optional features as specified in this section.

General

1. The heater is to be $_{C}CSA_{US}$ certified with ratings as specified in Specifications & Ratings.
2. The heater shall be provided with standard features and optional features as outlined in: Standard Heater Features and Optional Features & Equipment.

Specifications & Ratings

1. The duct heater shall be designed to heat air at:
   _____SCFM from _____°F to _____°F (_____°C to _____°C)
2. The heater shall be of the explosion-proof, duct type, catalog number_____,
   rated _____V, _____Ø, _____Hz, _____kW.
   - ☐ Class _____, Divisions _____, Groups; _____,
   - ☐ Class _____, Divisions _____, Groups; _____,
3. The duct heater shall be marked with a _____ temperature code, or maximum surface temperature of _____.
4. The minimum rated airflow through the duct heaters shall be _____SCFM.
5. The maximum outlet temperature of the duct heater shall not exceed _____°F (_____°C).
6. The duct heater is to be mounted in a horizontal duct section:
   - ☐ Downstream
   - ☐ Upstream from the customer supplied blower.
7. The duct heater shall be suitable for operation in a -40°F (-40°C) min. to 104°F (40°C) max. ambient temperature.

Standard Features - Duct Heater

1. The duct heater shall be supplied with a:
   _____" (W) x _____" (H) x _____" (L), or
   _____mm (W) x _____mm (H) x _____mm (L) carbon steel duct section with 1" (25 mm) wide mounting flange and painted ASA61 gray epoxy outside and high temperature aluminium inside.
2. The heating elements shall be (0.475"/12 mm) dia., extra heavy wall (0.095"/2.4 mm) finned tubular steel with nickel plated finish. Fins are to be fully brazed to the element sheath for maximum performance and efficiency.
3. The heating elements shall extend through Thermon Heating Systems certified explosion-proof compression fittings in a patented ***x-Max***® explosion-proof, extruded copper-free aluminium terminal housing(s) with ____" NPT power conduit entry and ____" NPT conduit entry for high limit thermocouple connection.

Standard Features - Duct Heater (cont'd)

4. The heating elements shall be mounted as _____ removable heating bank(s) and wired to terminal blocks for _____ x _____ kW, _____ V, _____ phase heating circuits to be
   - ☐ Fully SCR controlled
   - ☐ **"ON/OFF"** control.
5. The duct heater shall be supplied with _____ 'J' type sheathed thermocouples welded or brazed to the element sheath for connection to:
   - ☐ Customer supplied
   - ☐ Factory installed certified high limit controllers. High limit set points will be factory preset.
6. Explosion-proof differential pressure switch shall be factory installed on the heater to prove that air is moving. Customer must ensure that the minimum airflow is maintained at all times. The differential pressure switch is to be:
   - ☐ Field wired to the remote control panel
   - ☐ Factory mounted onto the heater
7. The duct heater shall be mounted in a horizontal duct section with the terminal box(es) at the side.
8. The approximate weight of the duct heater shall be _____ lbs (_____ kg).

Standard Features - Control Package

1. Enclosure type (check one):
   - ☐ Type 4 - moisture proof
   - ☐ Explosion-proof
2. Temperature control (check one):
   - ☐ Basic unit - customer supplied temperature control signal
   - ☐ Built-in temperature controller
   - ☐ SCR controller - customer supplied 4-20 mA control signal
   - ☐ SCR controller with built-in temperature controller

Optional Features & Equipment (check as desired):

- ☐ Stainless steel duct section
- ☐ Transition sections to _____" (W) x _____" (H) duct or _____" round duct, or _____ mm (W) x _____ mm (H) duct or _____ mm round duct
- ☐ Special temperature code of _____

Gain & Gate Heaters - MXS & WXS

Gain & Gate Guide Heater

Application

These heaters are specifically designed to prevent ice build-up on sluice gate guides or bodies. The heater is usually installed in a vertical well or duct of round or square cross section having a round nozzle at the top for fastening.

Construction

The heaters are available in single or dual wattage, customized to specifically suit the application.

The heating elements are silver brazed into a water tight terminal housing having recessed base for mounting. Element ends are hermetically sealed to prevent moisture ingression over prolonged periods when the heaters are not in service.

Unlike open wire heaters with ceramic supports, Type MXS heaters can be coiled to a six foot diameter to facilitate shipping and handling.

Table 15 – Standard Box Dimensions (not exactly as shown)

Type	Dimensions				Maximum Diameter	
	A		C			
	in	mm	in	mm	in	mm
1	5	127	3	76	3 5/8	92
2			4 1/8	105	4 5/8	117
3			4 3/8	111	4 7/8	124

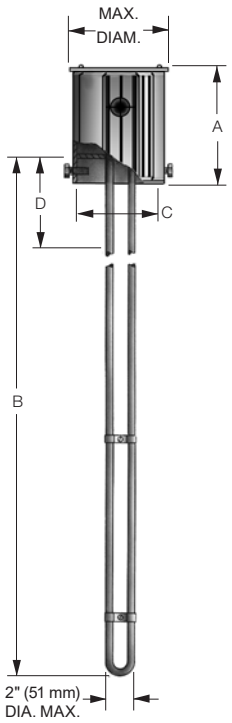


Figure 25 – MXS Series Heater

To Order Specify

Voltage and Wattage - wattage may range from 6 to 18 watts per lineal inch depending on the conditions. For extra long heaters, utilize 480V or 600V to ensure that the heater can be built. If dual wattage is required, specify details.

Terminal Box - check the dimensions of the standard terminal box shown in the figure above, depicting the MXS series heater, for suitability. Other sizes and types are available.

Heating Element Dimensions - indicate insert length “B” and non-heated Section D. Allow 2% for manufacturing tolerance plus heater expansion when specifying “B” dimension.

Gate Body Duct Heater

Application

Gate body duct heaters are custom engineered by Thermon Heating Systems to heat the inside of the gate and prevent ice build-up on the gate walls, wind seals and end members.

The heaters can be connected to a duct having outlets at various elevations within the gate.

Construction

Gate body duct heaters feature a weather proof duct heater and matched motor and high static axial fan assembly installed within a galvanized heavy steel housing.

Heating elements are hermetically sealed to prevent moisture ingression over prolonged periods when the heaters are not in service.

Various control options are available such as ambient temperature sensing thermostat, outlet air temperature thermostat, limit control and differential pressure switch. Designs are available from 4 kW to 120 kW.

Figure 26 – WXS Series Heater

To Order Specify

Voltage, phase and wattage plus control options.

Also specify static pressure requirements of the fan assembly at the design air flow and the duct diameter.

Note that Thermon Heating Systems also builds control panels for sluice gate heating control (see Section D).

Process Duct Heaters - WX

Application

Caloritech™ WX duct heaters are designed for installation in process ducts to heat air or other non-hazardous gases.

Construction

Standard heaters have replaceable “W” shaped Incoloy® elements each rated at 2 kW. Multiple circuits are selected to limit the line current in each circuit to 48 amps.

Type WXL heaters have steel mounting plate and terminal box with a stainless steel element support plate.

Type WXH heaters have stainless steel mounting plate, terminal box and support plate suitable for high temperature operation.

Installation

Installation can be in any position; top, bottom or side mounting. The heater is inserted into the duct through a hole and secured with suitable bolts, studs or screws. For heavier units duct work may require reinforcement.

In larger ducts, internal duct baffles may be required to ensure that the minimum air velocity as shown in Figure 27, page C23 passes over the elements.

All process duct heater installations must include a device such as a thermocouple control or a proximity high limit cutout to limit the outlet temperature in the event of fan failure or malfunction of the process temperature regulator.

Special Features

Type WX heaters are available in other sizes and ratings. Units can be supplied with duct section, fan assembly and control panel. Consult factory for additional information.

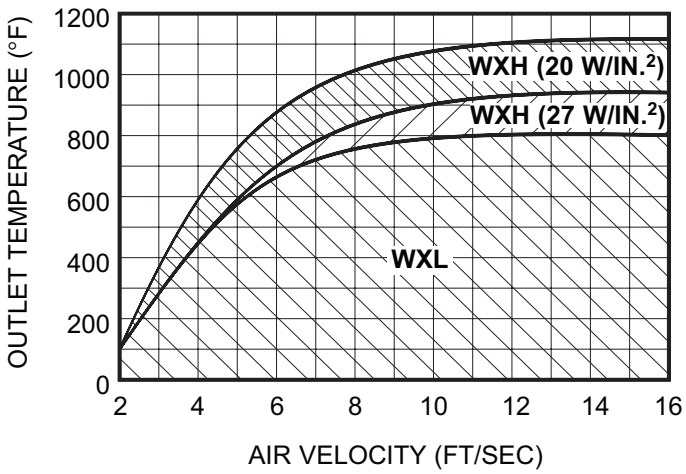


Figure 27 – Heater Selection

Selection

WXL heaters are suitable for outlet air temperatures up to 797°F (425°C) providing the air velocity is not less than the required velocity shown on Figure 27, page C23. If the air velocity is less, contact factory for a modified heater with a lower watt density to suit your conditions.

WXH heaters are suitable for outlet air temperatures up to 1112°F (600°C) providing the air velocity is not less than the required velocity shown on Figure 27, page C23. Note that type WXH heaters are available as standard in two separate watt densities.

If the air velocity is less than indicated by Figure 27, page C23 contact factory for a modified heater with a lower watt density to suit your conditions. Use Figure 28 and Figure 29 to determine approximate kW requirements

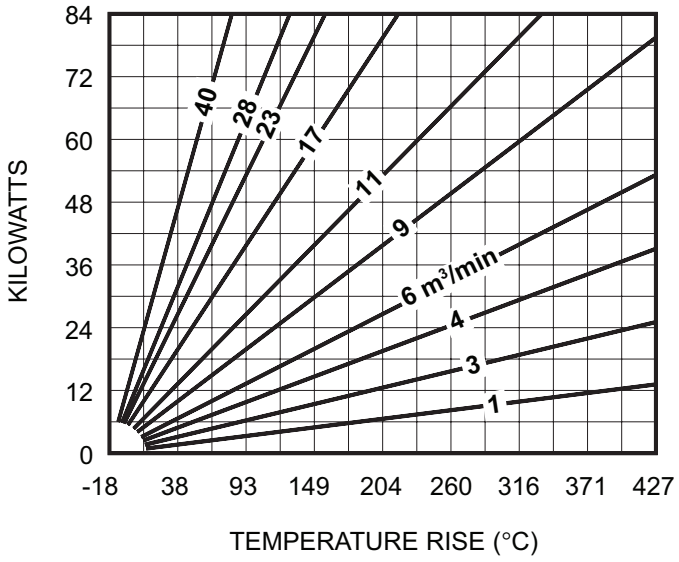


Figure 28 – Recommended Kilowatts

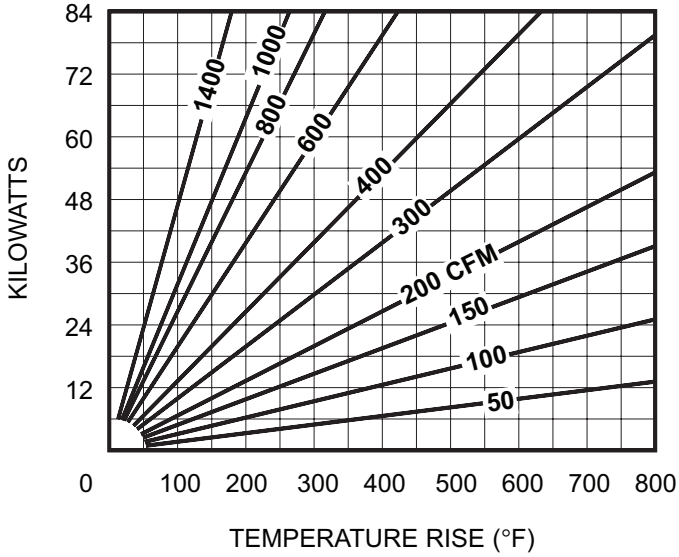


Figure 29 – Recommended Kilowatts

Table 16 – 'B', 'E', and 'F' Dimensions

Model	W/in²	W/cm²	'B' Dim.		'E' Dim		'F' Dim	
			in	mm	in	mm	in	mm
WXL	27	4.2	16.1	410	5.9	150	1.4	35
WXH	27	4.2	16.1	410	9.8	250	0	0
WXH	20	3.1	20.9	530	9.8	250	0	0

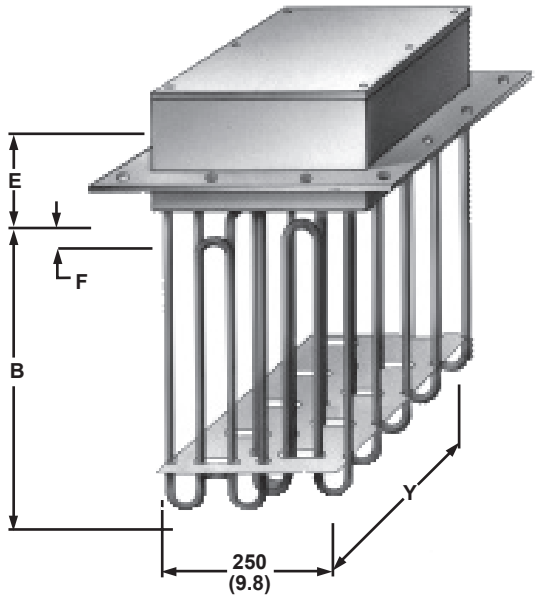


Figure 30

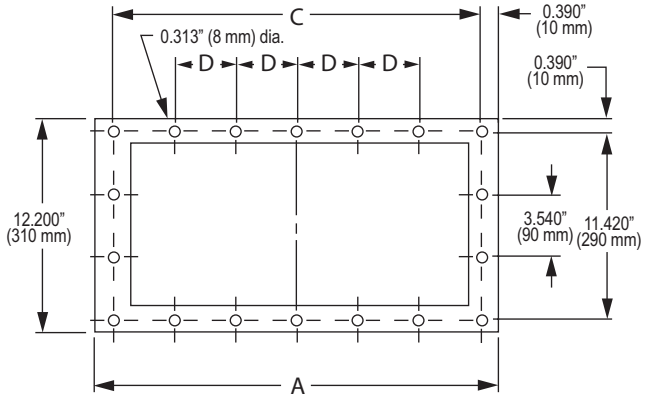


Figure 31 –Recommended Kilowatts

Table 17 – Type WXL: Intermediate Temperature Design, 27 W/in² (4.2 W/cm²)

kW	Standard. Volts				'A' Dimension		'C' Dimension		'D' Dimension		'Y' Dimension		Superceded Catalog No.	Catalog No.	Net Weight	
	208, 240		480, 600													
	1Ø	3Ø	1Ø	3Ø	in	mm	in	mm	in	mm	in	mm			lbs	kg
6	✓				6.1	155	5.3	135	–	–	4.3	110	TDH-6C	WXL-6	15.4	7
12	✓				9.3	235	8.5	215	–	–	7.5	190	TDH-12C	WXL-12	26.5	12
18	✓				12.2	310	11.4	290	1.97	50	10.4	265	TDH-18C	WXL-18	39.7	18
24	–				15.2	385	14.4	365	3.54	90	13.4	340	TDH-24C	WXL-24	48.5	22
30	–				18.1	460	17.3	440	4.33	110	16.3	415	TDH-30C	WXL-30	57.3	26
36	–	✓	✓	✓	21.3	540	20.5	520	5.12	130	19.5	495	TDH-36C	WXL-36	63.9	29
42	–				24.2	615	23.4	595	5.9	150	22.4	570	TDH-42C	WXL-42	72.8	33
48	–				27.2	690	26.4	670	6.69	170	25.4	645	TDH-48C	WXL-48	79.4	36
54	–				30.1	765	29.3	745	7.28	185	28.3	720	TDH-54C	WXL-54	86.0	39
60	–				33.1	840	32.3	820	8.07	205	31.5	800	TDH-60C	WXL-60	92.6	42
72	–				39	990	38.2	970	6.3	160	37.4	950	–	WXL-72	105.8	48
84	–				44.9	1140	44.1	1120	7.28	185	43.3	1100	–	WXL-84	119.1	54

Table 18 – Type WXH: High Temperature Design (Up To 950°F/ 510°C Outlet Temperature), 27 W/in² (4.2 W/cm²)

kW	Standard. Volts				'A' Dimension		'C' Dimension		'D' Dimension		'Y' Dimension		Catalog No.	Net Weight	
	208, 240		480, 600												
	1Ø	3Ø	1Ø	3Ø	in	mm	in	mm	in	mm	in	mm		lbs	kg
12	✓				9.3	235	8.5	215	–	–	7.5	190	WXH-12	28.7	13
18	✓				12.2	310	11.4	290	1.97	50	10.4	265	WXH-18	41.9	19
24	–				15.2	385	14.4	365	3.54	90	13.4	340	WXH-24	55.1	25
36	–	✓	✓	✓	21.3	540	20.5	520	5.12	130	19.5	495	WXH-36	68.3	31
48	–				27.2	690	26.4	670	6.69	170	25.4	645	WXH-48	81.6	37
60	–				33.1	840	32.3	820	8.07	205	31.5	800	WXH-60	94.8	43
72	–				39	990	38.2	970	6.3	160	37.4	950	WXH-72	108.0	49
84	–				44.9	1140	44.1	1120	7.28	185	43.3	1100	WXH-84	121.3	55

Table 19 – Type WXH - High Temperature Design (Up To 1100°F/ 593°C Outlet Temperature) - 20 W/in² (3.1 W/cm²)

kW	Standard. Volts				'A' Dimension		'C' Dimension		'D' Dimension		'Y' Dimension		Catalog No.	Net Weight	
	208, 240		480, 600												
	1Ø	3Ø	1Ø	3Ø	in	mm	in	mm	in	mm	in	mm		lbs	kg
12	✓				9.3	235	8.5	215	–	–	7.5	190	WXH-1222	30.9	14
18	✓				12.2	310	11.4	290	1.97	50	10.4	265	WXH-1822	44.1	20
24	–				15.2	385	14.4	365	3.54	90	13.4	340	WXH-2422	57.3	26
36	–	✓	✓	✓	21.3	540	20.5	520	5.12	130	19.5	495	WXH-3622	70.5	32
48	–				27.2	690	26.4	670	6.69	170	25.4	645	WXH-4822	83.8	38
60	–				33.1	840	32.3	820	8.07	205	31.5	800	WXH-6022	97.0	44
72	–				39	990	38.2	970	6.3	160	37.4	950	WXH-7222	110.2	50
84	–				44.9	1140	44.1	1120	7.28	185	43.3	1100	WXH-8422	123.5	56

Forced Air Heaters Regular Duty - GE

Application

Caloritech™ GE fan-forced heater is designed for use in regular duty industrial and commercial space heating applications. This heater features 's robust design which surpasses the standards of most competitive models.

If the environment is particularly demanding, the Caloritech™ GX heater is recommended (see Forced Air Heaters Heavy Duty - GX, page C29)

Also available are specially equipped 5 kW barn heaters which have been approved by Manitoba Hydro for use in buildings housing livestock.

Designed for Application in Non-Hazardous Environments

- Factories
- Warehouses
- Parking garages
- Boiler rooms
- Arenas
- Grandstands
- Mechanical rooms
- Shopping malls, display areas, stores

Features

- 2 kW to 40 kW output
- 208V to 600V, 1 or 3 phase
- Field convertible from 1 to 3 phase
- Tubular heating elements
- Adjustable air flow louvres
- Permanently lubricated motors
- Overheat protection
- 18-gauge steel cabinet
- Epoxy painted (ASA61 Grey)
- Optional thermostats and controls
- Optional wall bracket
- Motors mounted outside element bundle
- Ceiling mounting bracket supplied

Motors

- 2 to 10 kW heaters are standard with dual rated motors; 208/240V single phase. Where necessary, transformers are used to provide proper motor voltage.
- 15 to 40 kW heaters are standard with single phase full voltage rated motors.
- Standard motors have permanently lubricated bearings and built-in thermal overloads.
- Totally enclosed ball bearing motors are standard.
- Motor RPM - 1550 unless otherwise stated.
- Motor HP
  - 2 to 10 kW: 1/20 HP
  - 15 to 40 kW: 1/10 HP
  - Other ratings available, check factory.

Contactors and Transformers

- Factory installed contactors are available when required.
- Transformers are standard when primary voltage is not suitable for motor operation or contactor coil ratings.
- Standard control voltage is 240V.

Mounting Brackets

WB210 - Wall Mounting Bracket for 2 to 10 kW heaters

WB1540 - Wall Mounting Bracket for 15 to 40 kW heaters

Table 20 – Dimensions

Heater Rating	'A'		'B'		'C' Depth		'D' Hole Dia.		'S'		'T'		'U'	
kW	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
2 to 10	17.000	432	14.000	356	15.500	394	0.500	13	12.500	318	4.500	114	4.500	114
15 to 40	24.000	610	19.500	495	21.000	533	0.62	16	17.500	445	6.000	152	6.000	152

Table 21 – Height & Weight

kW	Normal Mounting Height		Shipping Weight	
	ft	m	lbs	kg
2 to 10	6 to 8	1.8 to 2.4	59	24
15 to 40	8 to 12	2.4 to 3.0	104	47

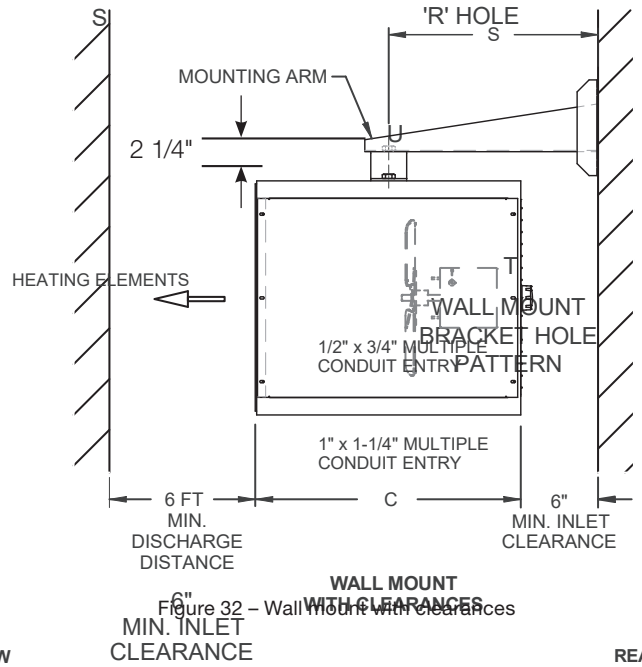


Figure 32 – Wall mount with clearances

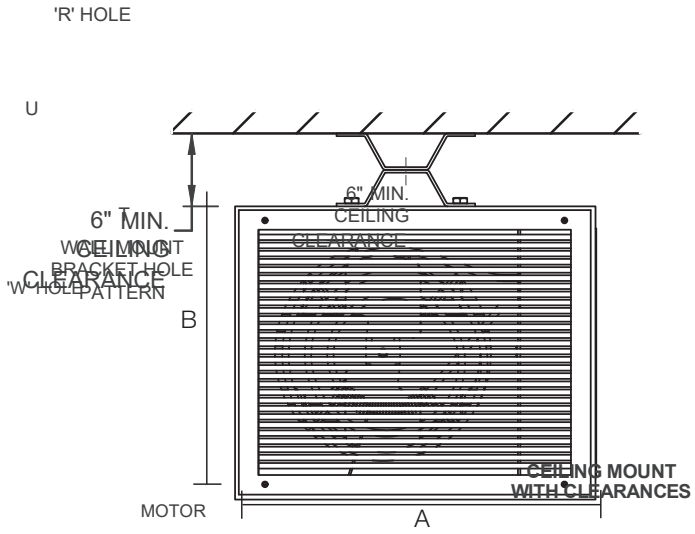


Figure 33 – Ceiling mount with clearances

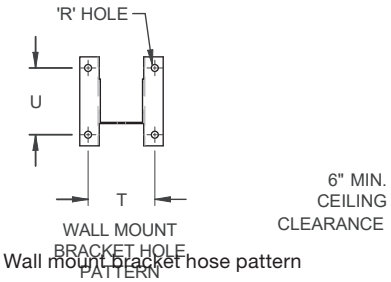


Figure 34 – Wall mount bracket hose pattern

Table 22 – Specifications

kW	Btu/hr	Voltage	Phase	CFM	m³/min	Temperature Rise		Motor Volts	Catalog No.			
						°F	°C		Basic Unit	Basic Unit with:		
										Contactor	Thermostat (1 phase only)	Contactor & Thermostat
2	6824	208	1 or 3	460	13	14	8	208/240	GE022	GE022C	GE022T	GE022CT
		240	1						GE023	GE023C	GE023T	GE023CT
3	10236	208	1 or 3	465	13	21	12		GE032	GE032C	GE032T	GE032CT
		240	1						GE033	GE033C	GE033T	GE033CT
		600	1 or 3						GE038	GE038C	GE038T	GE038CT
4	13648	208	1 or 3	475	14	28	16		GE042	GE042C	GE042T	GE042CT
		240	1						GE043	GE043C	GE043T	GE043CT
		480	1 or 3						GE047	GE047C	GE047T	GE047CT
		600	1 or 3						GE048	GE048C	GE048T	GE048CT
5	17060	208	1 or 3	480	14	40	22		GE052	GE052C	GE052T	GE052CT
		240	1						GE053	GE053C	GE053T	GE053CT
		480	1 or 3						GE057	GE057C	GE057T	GE057CT
		600	1 or 3						GE058	GE058C	GE058T	GE058CT
5	17060	208	1	550	16	35	20		–	–	GE052T/GX*	–
		240	1						–	–	GE053T/GX*	–
7.5	25590	208	1 or 3	590	17	43	24		GE072	GE072C	–	GE072CT
		240							GE073	GE073C		GE073CT
		480							GE077	GE077C		GE077CT
		600							GE078	GE078C		GE078CT
10	34120	208	1 or 3	760	22	45	25		GE102	GE102C		GE102CT
		240							GE103	GE103C		GE103CT
		480							GE107	GE107C		GE107CT
		600							GE108	GE108C		GE108CT
15	51180	208	1 or 3	1040	29	50	28	208	GE152	GE152C		GE152CT
		240						240	GE153	GE153C		GE153CT
		480						480	GE157	GE157C		GE157CT
		600						600	GE158	GE158C		GE158CT
20	68240	208	1 or 3	1260	37	55	31	208	GE202	GE202C		GE202CT
		240						240	GE203	GE203C		GE203CT
		480						480	GE207	GE207C		GE207CT
		600						600	GE208	GE208C		GE208CT
25	85300	208	1 or 3	1500	43	61	34	208	GE252	GE252C		GE252CT
		480						480	GE257	GE257C		GE257CT
		600						600	GE258	GE258C		GE258CT
30	102360	480	1 or 3	1500	43	70	39	480	GE307	GE307C		GE307CT
		600						600	GE308	GE308C		GE308CT
40	136480	480	1 or 3	1500	43	80	44	480	GE407	GE407C		GE407CT
		600	1					600	GE408	GE408C		GE408CT

Note: Barn Heaters: Approved by Manitoba Hydro for use in buildings housing livestock: c/w low watt density elements, manual reset high limit, built-in thermostat.

Optional Factory Installed Features

- Built-in thermostat 41°F to 100°F (5°C to 38°C)
- Fused control circuit
- Manual reset high limit
- **"FAN ONLY"** switch
- Low voltage relay for remote 24V thermostat
- Epoxy painted fan blade and motor
- Special wattages and voltages
- Special control voltages (standard is 240V)
- Available in special finishes
- Disconnect Switch

Accessories for Field Installation

- FAT8 thermostat kit 41°F to 100°F (5°C to 38°C)
- WB210 wall mount bracket (2 to 10 kW)
- WB1540 wall mount bracket (15 to 40 kW)
- Remote thermostat available

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- kW
- Optional features
- Accessories

Forced Air Heaters Heavy Duty - GX

Application

Caloritech™ GX Forced Air Heater has been designed specifically for heavy duty use in industrial environments. This heater will reduce the downtime and maintenance costs normally experienced with heaters of standard design.

Specifically Designed for Application in Non-Hazardous Environments:

- Mine shafts
- Pulp and paper mills
- Hoist houses
- Welding shops
- Maintenance shops
- Sewage treatment plants
- Chemical plants
- Repair shops
- Wash down areas
- Weigh scale pits
- Elevator shafts
- High humidity areas
- Crane cabs

Standard GX Product Features

- CSA approved for horizontal and vertical air flow
- Automatic reset high-limit
- 15, 20, 25, 30, 40, 50 kW units
- 40 and 50 kW units incorporate split loads (50%) for remotely controlled energy management systems
- Factory-installed transformers, contactors, and thermostats where specified
- Individually adjustable louvres
- Factory-balanced aluminum fan blade
- Fan delay in **"ON"** and **"OFF"** cycles
- Full sized control panel with hinged removable door, constructed to EEMAC 12 standards
- **"FAN ONLY"** terminals for connection to remote switch
- 14-gauge steel cabinet
- Epoxy painted (ASA61 Grey) for superior resistance to corrosion
- 1/3 HP motor with sealed ball bearings and totally enclosed construction
- Ceiling mounting bracket supplied
- Motor mounted outside of the element bundle eliminating premature failure due to overheating and providing easy access for motor maintenance
- Elements are robust Caloritech™ type KX finned tubular sheathed type with epoxy sealed terminals to eliminate contamination from moisture and airborne impurities

Mounting Configurations

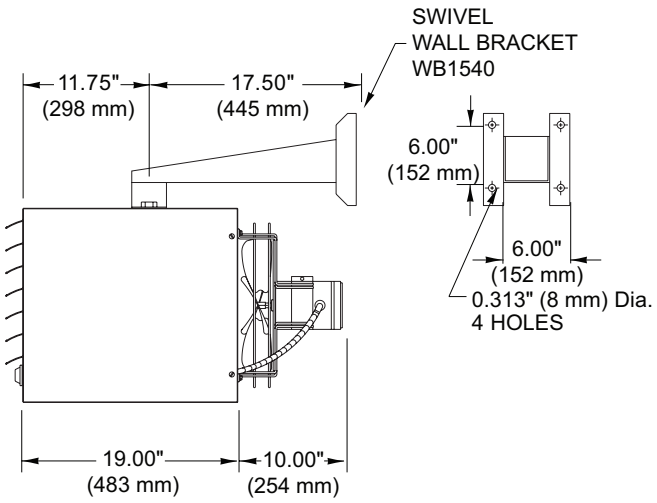


Figure 35 – Horizontal air flow wall mount

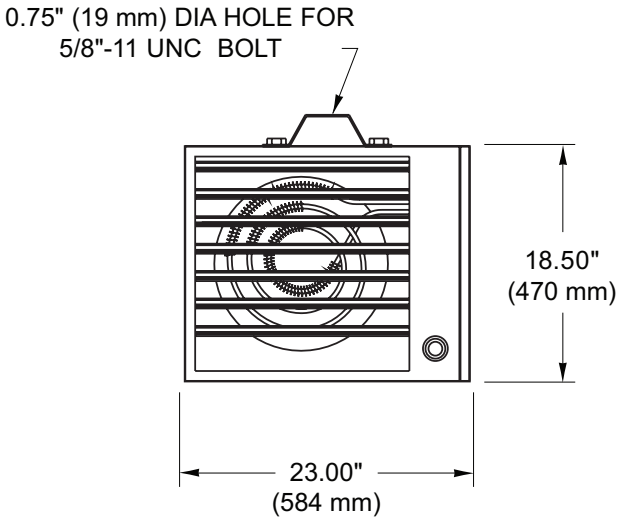


Figure 36 – Horizontal air flow ceiling mount

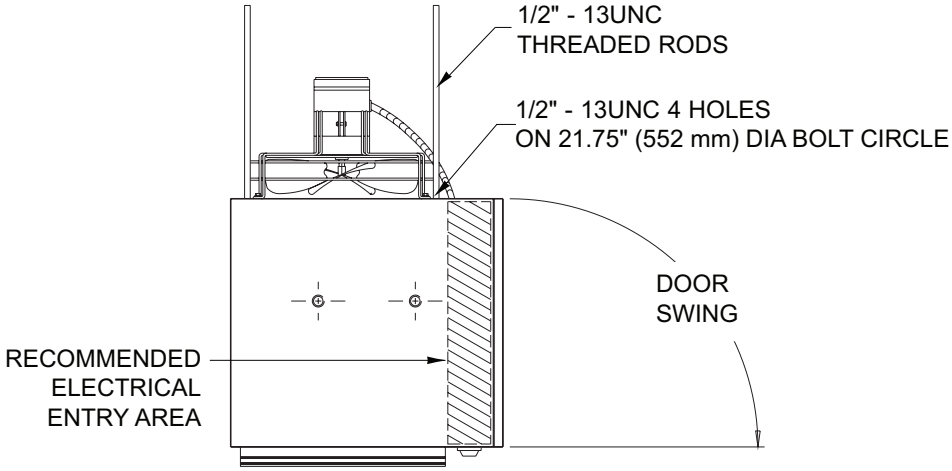


Figure 37 – Vertical air flow

Table 23 – Specifications

kW	Btu/hr	Voltage	Phase	CFM	m³/min	Temperature Rise		Catalog No.			Net Weight	
								Basic Unit	Basic Unit With:			
						°F	°C		Contactor	Contactor & Thermostat	lbs	kg
15	51180	208	3	1800	50	25	14	GX152	GX152C	GX152CT	105	47.6
		240	1					GX153	GX153C	GX153CT		
		480	3					GX157	GX157C	GX157CT		
		600	3					GX158	GX158C	GX158CT		
20	68240	208	3	1800	50	34	19	GX202	GX202C	GX202CT	105	47.6
		240	1					GX203	GX203C	GX203CT		
		480	3					GX207	GX207C	GX207CT		
		600	3					GX208	GX208C	GX208CT		
25	85300	208	3	1800	50	41	24	GX252	GX252C	GX252CT	105	47.6
		240	1					GX253	GX253C	GX253CT		
		480	3					GX257	GX257C	GX257CT		
		600	3					GX258	GX258C	GX258CT		
30	102300	480	3	2100	60	41	24	GX307	GX307C	GX307CT	105	47.6
		600						GX308	GX308C	GX308CT		
40	136500	480	3	2100	60	58	32	GX407	GX407C	GX407CT	125	56.7
		600						GX408	GX408C	GX408CT		
50	170600	480	3	2100	60	72	40	GX507	GX507C	GX507CT	125	56.7
		600						GX508	GX508C	GX508CT		

Note:

1. Motor voltage and phase is same as heater supply.
2. Standard control voltage is 240V. A control transformer is included where required. Other control voltages are available (check factory).
3. 15, 20, 25, 30 kW units are pre-wired as one circuit. The split load feature (50%) is available as an option.
4. 40 and 50 kW units are pre-wired for split load (50%) control by customer unless specified otherwise.
5. All motors are 1/3 HP, totally enclosed ball bearing type, permanently lubricated, thermally protected.

Optional Factory Installed Features

- Built-in thermostat 41°F to 100°F (5°C to 38°C)
- Disconnect switch with door interlock
- HRC main load fuses
- Fused control circuit
- Manual reset high limit
- **"FAN ONLY"** switch
- Low voltage relay for remote 24V thermostat
- Epoxy painted fan blade and motor
- Special wattages and voltages
- Special control voltages (standard is 240V)
- Available in special finishes
- Split load feature: 15, 20, 25, 30 kW units
- Nickel plated elements
- Alloy elements with brazed alloy fins
- EEMAC 4 construction
- Stainless steel cabinet

Accessories For Field Installation

- FAT8A thermostat kit 41°F to 100°F (5°C to 38°C)
- WB1540 wall mount bracket (horizontal air flow)
- Air diffuser (vertical air flow)
- **"FAN ONLY"** switch and cover plate
- Remote thermostat available

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- kW
- Optional features
- Accessories

Infrared Radiant Heaters

General Information

The major benefit of infrared heating is its ability to transfer heat to a person or object without heating the surrounding air.

As an example, a person doing heavy work requires an air temperature of 66°F to 68°F (19°C to 20°C) to maintain the feeling of warmth, but to provide the same feeling of warmth with infrared heating requires an air temperature of only 55°F to 60°F (13°C to 16°C).

Table 24 – Temperatures

Type of Work	Normal Air Temperature		Equivalent Temperature with Infrared Heating	
	°F	°C	°F	°C
Heavy Work	66 to 68	19 to 20	55 to 60	13 to 16
Light Work	70 to 72	21 to 22	60 to 65	16 to 18
Seated	74 to 76	23 to 24	65 to 70	18 to 21
Swimming Pool	85 to 90	29 to 32	75 to 80	24 to 27

DANGER - HAZARD OF FIRE

Avoid direct contact of heater case with any combustible surfaces. Energized heaters should be spaced so that no combustible surfaces exceed 194˚F (90˚C). For metal sheathed heaters, insulation contamination or moisture accumulation can cause fault to the element sheath generating arcing and releasing molten metal. Proper ground fault protection shall be provided to prevent personal injury and/or property.

Features

Caloritech™ infrared heaters are available in a wide variety of fixtures with a choice of metal sheathed (type C), quartz tube (type T), or quartz lamp (type L) heating elements. Quartz lamp heaters are more efficient than quartz tube heaters which are in turn more efficient than metal tube heaters.

Where vibration or mechanical shock risk exists, do not use quartz tube or quartz lamp heaters. Quartz tubes and lamps must be mounted horizontal. Use metal sheathed heaters in these instances. Terminal ends must be protected from severe moisture or contaminating vapours. Use heaters with moisture resistant terminal housings (See Type R, page C41 and Portable Radiant Heaters, page C44) in these environments. Two fixture types are available. The deep reflector type gives better radiation at greater than normal mounting height.

Life Expectancy

The normal life expectancy of a radiant heater depends, in part, on heater watt density and operating conditions. Applications characterized by high ambient temperatures or frequent switching are the most demanding. Note that the heaters are warranted only for defects in material and workmanship. Estimates of life expectancy for a particular application are available on request.

Application

In general, the application of infrared heaters is complex and allowances must be made for in-field adjustments to output intensity and heater positioning.

Space heating applications are reasonably straightforward. Pay close attention to the energy spread to achieve maximum utilization.

For process heating applications, it may be necessary to run a series of tests to establish the most satisfactory heating method. Thermon Heating Systems' technical sales specialists can help you to achieve the best results.

Energy Spread

Use the table below to determine the effective energy spread for the 45°, 60° and 70° fixtures. Proper application of this information will help in establishing an efficient layout for uniform infrared coverage of the product or space.

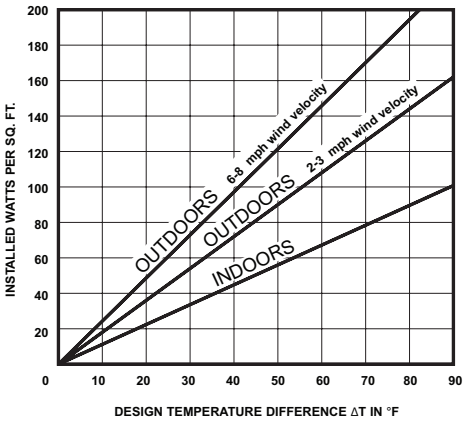


Figure 38 – Recommended installed watts/sq.ft of floor area using quartz lamp heaters

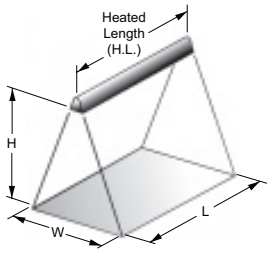


Figure 39

Table 25 – Radiant Coverage at Various Heights

Spread*	Width (W)	Length (L)
45°	0.83H	H + H.L.*
60°	1.15H	
70°	1.4H	

Note: * See listings for H.L. (heated length)

Selection

Table 26 – Applications and Elements

Application	Incoloy® Tubular Element	Quartz Tube Element	Quartz Lamp Element
Comfort Heating Application	-	-	-
Arenas	✓	-	-
Assembly Areas	✓	-	✓
Auditoriums	✓	✓	✓
Bathrooms	-	✓	-
Booths	✓	✓	-
Bowling Alleys	✓	✓	✓
Brooders for Chickens, etc.	✓	✓	-
Building Entrances	✓	-	✓
Bus Stations and Shelters	✓	✓	✓
Car Washes especially coin operated	✓	-	✓
Churches (Especially rural)	✓	✓	-
Drive-ins (Restaurants, Banks, etc)	✓	✓	✓
Entrances	-	-	✓
Exhibition Halls	✓	-	✓
Factories	✓	-	✓
Farm Animals	✓	-	✓
Farm Sheds	✓	✓	-
Garages	✓	-	✓
Gatehouses	✓	-	✓
Grandstands	-	-	✓
Gymnasiums	✓	-	✓
Hangers	✓	-	✓
Hospital Emergency Entrances	-	-	✓
Hotel Entrances	✓	-	✓
Loading Platforms	-	-	✓
Milk Parlours	✓	✓	-
Outdoor Cafes	-	✓	✓
Skating Shelters	✓	-	-
Ski Chalets	✓	-	-
Snow Melting (Refer to Factory)	-	-	✓
Spot heating, indoors	✓	✓	✓
Spot heating, outdoors	✓	-	✓
Stadiums	-	-	✓
Subway Stations	✓	-	✓
Process Heating Applications	-	-	-
Baking (curing) paint on metal	✓	✓	-
Baking (curing) paint on plastic or wood	-	✓	✓
Baking cakes, etc	-	-	✓
Blanching vegetables	✓	-	-

Application	Incoloy® Tubular Element	Quartz Tube Element	Quartz Lamp Element
Boosting Temperature in existing ovens	-	-	✓
Broiling chickens, etc	✓	✓	✓
Conveyorized Systems	✓	-	✓
Curing Concrete	✓	-	✓
Dehydrating	✓	-	-
Drying Abrasive Powder	✓	-	-
Drying Concentrates	-	-	✓
Drying Gum on Powder (ex. Envelopes and textiles)	✓	✓	✓
Drying Paint on textiles - Heavy	-	✓	✓
Drying Paint on textiles - Light	-	✓	✓
Drying paint or print on paper, plastic	✓	-	-
Drying soil, clay, sand, etc	✓	-	-
Frit drying in ceramic processes	✓	-	-
Ice-prevention in chutes, hoppers, etc.	-	-	✓
Melting snow (dump sites, etc.) Refer to Factory	✓	-	-
Mirror coatings	-	-	✓
Paper Machinery	-	-	✓
Peeling apples, etc	✓	-	-
Preheating metal prior to welding	-	-	✓
Silk Screen drying	✓	-	✓
Thawing frozen or or coal in railroad cars for easier dumping	-	-	✓
Thawing ice	-	-	✓
Thawing soil	✓	-	-
Vacuum Forming	-	-	-

Control Options

Percentage Timers

Percentage timers (input controllers) are used mainly for pulsing power to metal tubular element type radiant heaters. Where load voltage and current ratings exceed the timer's contact rating, the timer can be used to switch contactors (see Section F). Percentage timers can not be effectively used on quartz lamp type radiant heaters and have restricted use on quartz tube type heaters.

The OKT features a synchronous motor driven cam which closes a snap action switch for a percentage of 30 second **"ON"** time. The adjustment knob sets the pointer to an **"ON"** time of 0 to 100%. For instance, a timer set to 50% (mid scale) would allow full voltage to the heater(s) for 15 seconds and no voltage for 15 seconds thus reducing the average heat output. Standard features include a plug-in style mounting, an electrically isolated pilot light and a cycle progress pointer.

Figure 41 – Percentage timer

Thermostatic Control

Thermostatic control is used primarily for indoor applications and consists of an indoor thermostat, or an indoor thermostat combined with an outdoor thermostat. Rooms heated with infrared heaters can normally be maintained at lower temperatures and still be in the comfort range.

Thermostats should be located in the area to be heated but not directly exposed to the heater beam pattern. Thermostats may be shielded by placing a reflective cover over top.

Thermostatic controls can be used in conjunction with a percentage timer for cost efficient space heating. Two thermostats (or one 2-stage thermostat) are required.

In the above circuit, one thermostat is set at the maximum required room temperature and one is set at the minimum desired room temperature. The input controller is adjusted to provide modulated infrared heat when the space temperature is between the above limits.

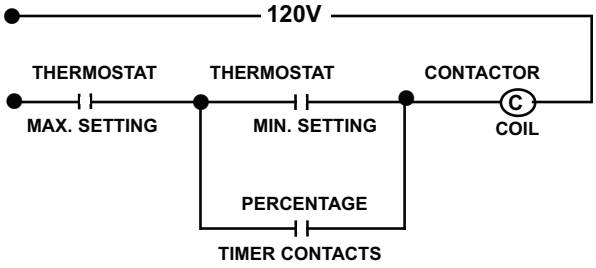


Figure 40

Step and Continuous Control

Larger installations may require custom control panels for more sophisticated zone control using staging and SCRs. Refer to Section D or consult your nearest Caloritech™ representative to aid you in selecting the proper type of control for your individual requirements.

Protective Wire Guards

Protective wire guards can be factory installed on all styles of infrared heaters.

Guards are recommended when there is a danger of accidental contact with the heating element by a person, animal or object.

Table 27 – Wire Guards for Infrared Radiant Heaters

Heated Length		OKA/OKB	OKD	OKH	OK3
in	mm	Catalog No.			
5	127	WGA012	WGD012	WGH012	
10	254	WGA025	WGD025	WGH025	
14	356	WGA035	–	WGH035	
16	406	WGA040	WGD040	WGH040	
19	483	WGA048	–	WGH048	
20	508	WGA050	WGD050	WGH050	
25	635	WGA063	WGD063	WGH063	
29	737	WGA073	–	WGH073	
32	813	WGA081	WGD081	WGH081	–
34	864	WGA086	–	WGH086	
38	965	WGA096	WGD096	WGH096	
40	1041	WGA104	–	WGH104	
47	1194	WGA119	–	WGH119	
50	1270	WGA127	WGD127	WGH127	
59	1499	WGA149	–	WGH149	
62	1575	WGA157	WGD157	WGH157	
71	1803	WGA180	–	WGH180	
72	1829	–	–	–	WGT182

OKA Series (Process Heating)

Applications

Caloritech™ OKA infrared radiant heaters are primarily designed for industrial applications such as:

- Conveyorized or batch type ovens
- Degreasing
- Weld preheating
- Roll heating
- Curing, drying, softening of resins, vinyls and plastics
- Baking, drying, curing of paint, lacquers and adhesives
- Defrosting soil prior to pouring concrete
- Curing concrete in winter construction
- Thawing ore and coal in railroad cars for easier dumping

Features

Available with a choice of single or dual Incoloy® tubular elements, quartz tubes, or quartz lamps. Anodized and chemically brightened extruded aluminum reflector. Custom mounting frames and carts to suit individual requirements can be provided upon request (check factory). Also see Construction, page C44.

For wiring, use standard 392°F (200°C) supply wires.

Type C – Single Tubular Element

Generally used in conveyorized or batch type process heating applications requiring far infrared for drying or curing where a small economical unit is preferred. The mineral insulated alloy sheath heating element enables the unit to withstand splashing and vibration and is the most durable of the three heat sources.

Table 28 – Type C 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.95	120, 208, 240	29	737	20	508	OKA299C6	2.5	1.1
1.5		41	1041	32	813	OKA411C6	3.4	1.5
1.9		47	1194	38	965	OKA471C6	4.2	1.9
2.0	208, 240, 480, 600	41	1041	32	813	OKA412C6	3.8	1.7
2.3		47	1194	38	965	OKA472C6	4.3	1.9
3.0		59	1499	50	1270	OKA593C6	5.2	2.4
3.8		71	1803	62	1575	OKA713C6	6.2	2.8

Note: For 45° spread, last number in catalog no. is changed from “6” to “4”.

DANGER - HAZARD OF FIRE

See warning located at the start of Infrared Radiant Heater Section.

Type E – Double Tubular Element

With two series wired heating elements in each reflector, these units are normally used in industrial applications where a rugged, efficient, high heat concentration is required. Applications include degreasing, weld preheating, roll heating, drying, sterilization, etc.

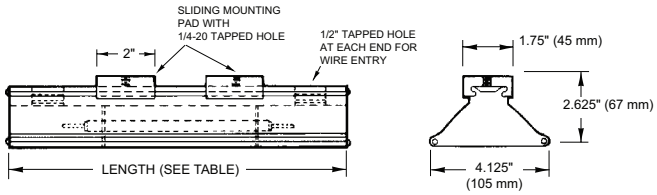


Figure 42

Table 29 – Type E 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.8	208, 240, 480, 600	29	737	20	508	OKA291E6	3.5	1.6
3.2		41	1041	32	813	OKA413E6	4.8	2.2
3.8		47	1194	38	965	OKA473E6	5.4	2.5
5.0		59	1499	50	1270	OKA595E6	6.7	3.0
6.2		71	1803	62	1575	OKA716E6	8.0	3.6

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage

Type R – Hairpin Tubular Element with Moisture Resistant Terminal Housing

Type R heaters are for use in outdoor installations or areas subject to periodic washdown.

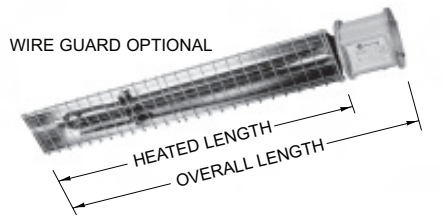


Figure 43 – Type R

Table 30 – Type R 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.1	208, 240 480, 600	18.25	463	14	356	OKA141H6R	2.9	1.3
1.6		23.25	590	19	483	OKA191H6R	4.8	2.2
2.1		29.25	743	25	635	OKA252H6R	5.4	2.5
2.5		33.25	844	29	737	OKA292H6R	5.8	2.6
3.0	208, 240 480, 600	38.25	971	34	864	OKA343H6R	6.4	2.9
3.6		45.25	1149	41	1041	OKA413H6R	7.1	3.2
4.2		51.25	1301	47	1194	OKA474H6R	7.8	3.5
5.3		63.25	1606	59	1499	OKA595H6R	9.1	4.1
6.5		75.25	1911	71	1803	OKA716H6R	10.4	4.7

Note: 1.1 kW unit also available 120V.

Type T – Quartz Tube Element

These units are commonly used in industrial applications where medium intensity infrared heat is required such as paint spray booths, curing, drying and softening of resins, vinyls, or plastics.

Note: Quartz tube fixtures must be mounted horizontally.

Table 31 – Type T 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.8	120, 208, 240	25	635	16	406	OKA258T6	2.6	1.2
1.6		41	1041	32	813	OKA411T6	3.8	1.7
2.5	208, 240, 480, 600	59	1499	50	1270	OKA592T6	5.0	2.3
3.1		70	1803	62	1575	OKA713T6	5.8	2.6

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage

Type F – Double Quartz Tube Elements

For use in applications where high intensity heat is required but the light emitted by quartz lamps would be objectionable.

Note: Quartz tube fixtures must be mounted horizontally.

Table 32 – Type F 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.6	120, 208, 240	25	635	16	406	OKA251F6	3.2	1.5
3.2		41	1041	32	813	OKA413F6	4.6	2.1
5.0	208, 240, 480, 600	59	1499	50	1270	OKA595F6	6.1	2.8
6.2		71	1803	62	1575	OKA716F6	7.1	3.2

Type L – Quartz Lamp Element

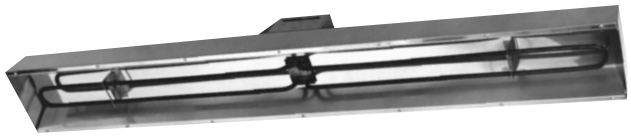
These are widely used in industrial applications where high intensity radiation is required and where it is essential to turn the heat on or off instantaneously. They are commonly used for baking, drying and curing items such as paint, varnishes, lacquers, and adhesives, for softening plastics and for food processing.

Note: Quartz lamp fixtures must be mounted horizontally.

Table 33 – Type L 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.5	120	14	356	5	127	OKA145L6	1.9	0.9
1.0	240	19	483	10	254	OKA191L6	2.2	1.0
1.6	208,240	25	635	16	406	OKA251L6	2.6	1.2
2.5	480, 600	34	864	25	635	OKA342L6	3.3	1.5
3.8	600	47	1194	38	965	OKA473L6	4.2	1.9

OK3 Series (Process or Comfort Heating)



Application

The OK3 infrared radiant heater is used where an extra high density rugged heat source is required. It is suited for process or comfort heating.

Features

This unit features two Incoloy® tubular elements which are designed for operation under severe working conditions. Thermal insulation decreases heat losses, increases efficiency, and reduces power required. Tarnish free, high lustre, aluminum reflector increases efficiency by concentrating energy on the area to be heated (energy spread approximately 60°).

Models are available with general purpose or weatherproof terminal boxes to meet a wide variety of special process heating applications.

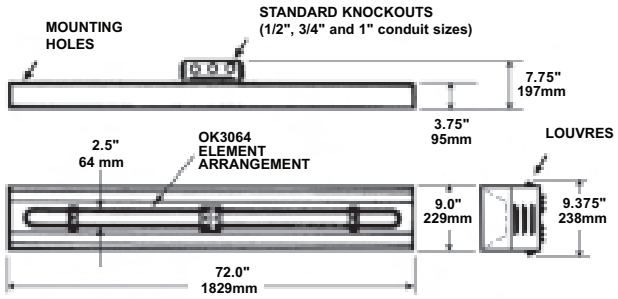


Figure 44

DANGER - HAZARD OF FIRE

See warning located at the start of Infrared Radiant Heater Section.

Table 34 – Type OK3 60° Spread

kW	Standard Voltages	Catalog No.		Shipping Weight	
		General Purpose Housing	Moisture Resistant Housing	lb	kg
6.4	208, 240, 480, 600	OK3064	OK3064R	38	17.4
8.0		OK3080	OK3080R		
10.0		OK3100	OK3100R		

OKB, OKH, OKD Series (Comfort Heating)

Applications

- Outdoor grandstands
- Indoor arenas
- Indoor pools
- Churches and halls
- Patios
- Outdoor shelters
- Spot heating in large unheated buildings and garages
- Entry vestibules
- Storefront snow melting
- Warehouse loading bays
- Work areas in farm buildings

DANGER - HAZARD OF FIRE

Avoid direct contact of heater case with any combustible surfaces. Energized heaters should be spaced so that no combustible surfaces exceed 194˚F (90˚C). For metal sheathed heaters, insulation contamination or moisture accumulation can cause fault to the element sheath generating arcing and releasing molten metal. Proper ground fault protection shall be provided to prevent personal injury and/or property.

Features

All units are available with Incoloy® tubular, quartz tube, or quartz lamp type elements. Extruded aluminium, anodized and chemically brightened reflectors are standard. Tilting accessories are not required; units come complete with swivel bracket and set screw adjustment. Eyebolts are supplied for chain mounting. Units may also be surface mounted to recessed outlet box on non-combustible surfaces. Use 194°F (90°C) wires.

Tilting accessories are not required. Simply adjust set screw at one end to achieve desired degree horizontal tilting. Eyebolts with holes for chain-mounting are provided.

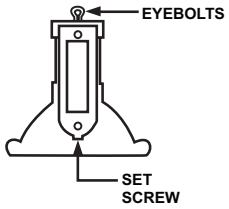


Figure 45 – Tilting accessories are not required. Simply adjust set screw at one end to achieve desires degree horizontal tilting. Eyebolts with holes for chain-mounting are provided.

OKB Series (Comfort Heating)

OKB

Type C – Single Tubular Element

Commonly used for indoor spot heating applications where a great amount of heat is not required and where the mounting height is relatively low. Example installations would include churches, garages, and indoor pools.

Table 35 – Type C 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.95	120, 208, 240	31.5	800	20	508	OKB299C6	5.1	2.3
1.5		43.5	1105	32	813	OKB411C6	6.8	3.7
1.9		49.5	1257	38	965	OKB471C6	8.0	3.6
2.0	208, 240 480, 600	43.5	1105	32	813	OKB412C6	7.2	3.3
2.3		49.5	1257	38	965	OKB472C6	8.1	3.7
3.0		61.5	1562	50	1270	OKB593C6	9.9	4.5
3.8		73.5	1867	62	1575	OKB713C6	11.7	5.3

Note: For 45°spread, last number in catalog number is changed from “6” to “4”.

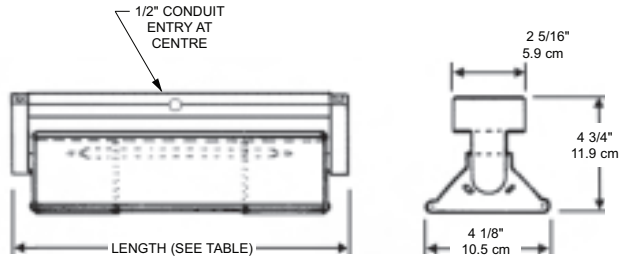


Figure 46

Type E – Double Tubular Element

Ideal for heating small indoor areas where a more intense heat is required and where the light emitted by a quartz lamp would be objectionable.

Table 36 – Type E 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.8	208, 240, 480, 600	31.5	800	20	508	OKB291E6	6.0	2.7
3.2		43.5	1105	32	813	OKB413E6	8.2	3.7
3.8		49.5	1257	38	965	OKB473E6	9.2	4.2
5.0		61.5	1562	50	1270	OKB595E6	11.4	5.2
6.2		73.5	1867	62	1575	OKB716E6	13.5	6.1

DANGER - HAZARD OF FIRE

See warning located at the start of Infrared Radiant Heater Section.

Type T – Quartz Tube

Ideal for indoor and outdoor applications where fast heat up and no light is required such as canopies, patios and garages.

Note: Quartz tube fixtures must be mounted horizontally.

Table 37 – Type T 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.8	120, 208, 240	27.5	699	16	406	OKB258T6	4.9	2.2
1.6		43.5	1105	32	813	OKB411T6	7.1	3.2
2.5	208, 240, 480, 600	61.5	1562	50	1270	OKB592T6	9.7	4.4
3.1		73.5	1867	62	1575	OKB713T6	11.3	5.1

Type L – Quartz Lamp

For use in indoor or outdoor comfort heating applications where the mounting height is greater than 15' and a small compact unit is required.

Note: Quartz lamp fixtures must be mounted horizontally.

Table 38 – Type L 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.5	120	16.5	419	5	127	OKB145L6	3.4	1.5
1.0	240	21.5	547	10	254	OKB191L6	4.1	1.9
1.6	208, 240	27.5	699	16	406	OKB251L6	4.9	2.2
2.5	480, 600	36.5	927	25	635	OKB342L6	6.2	2.8
3.8	600	49.5	1257	38	965	OKB473L6	8.0	3.6

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage

OKH Series (Comfort Heating)

Type C – Incoloy® Tubular Element

Ideal for arenas and other indoor applications where a larger, more rugged unit is required and where the light emitted from a quartz lamp would be objectionable. Excellent for indoor comfort heating applications such as factory work stations or isolated service booths where good temperature control is required.

Table 39 – Type C 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.95	120, 280, 240	31.5	800	20	508	OKH299C4	7.7	3.5
1.5		43.5	1105	32	813	OKH411C4	10.2	4.6
1.9		49.5	1257	38	965	OKH471C4	11.9	5.4
2.0	20, 240, 480, 600	43.5	1105	32	813	OKH412C4	10.6	4.8
2.3		49.5	1257	38	965	OKH472C4	11.9	5.4
3.0		61.5	1562	50	1270	OKH593C4	14.6	6.6
3.8		73.5	1867	62	1575	OKH713C4	17.3	7.9

OKH

Note: For 70° spread, last number in catalog number is changed from “4” to “7”.

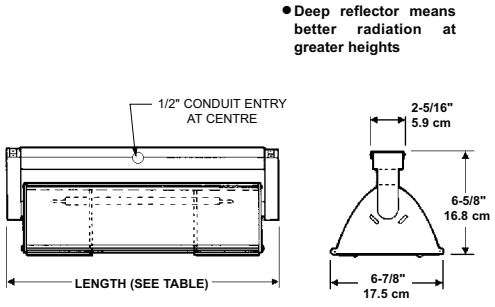


Figure 47

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage

DANGER - HAZARD OF FIRE

See warning located at the start of Infrared Radiant Heater Section.

Type R – Hairpin Tubular Element with Moisture Resistant Terminal Housing

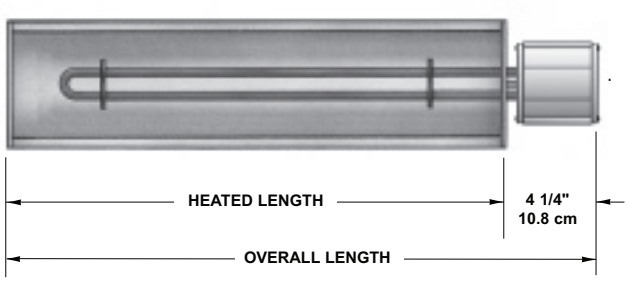


Figure 48

Note: This model does not have the tilting fixture. Sliding mounting pads with hooks are provided.

Table 40 – Type R 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.6	208, 240, 480, 600	23.25	590	19	483	OKH191H6R	6.3	2.9
2.1		29.25	742	25	635	OKH252H6R	7.4	3.4
3.0		38.25	971	34	864	OKH343H6R	9.0	4.1
4.2		51.25	1301	47	1194	OKH474H6R	11.3	5.1
5.3		63.25	1606	59	1499	OKH595H6R	13.5	6.1
6.5		75.25	1911	71	1803	OKH716H6R	15.6	7.1

Type T – Quartz Tube Element

Used in applications similar to the quartz lamp where light emitted by the lamp would be undesirable. Maintains high density at greater than normal mounting heights.

Note: Quartz tube fixtures must be mounted horizontally.

Table 41 – Type T 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.8	120, 208, 240	27.5	699	16	406	OKH258T4	7.2	3.3
1.6		43.5	1105	32	813	OKH411T4	10.6	4.8
2.5	208, 240, 480, 600	61.5	1563	50	1270	OKH592T4	14.3	6.5
3.1		73.5	1867	62	1575	OKH713T4	16.8	7.6

Type L – Quartz Lamp Element

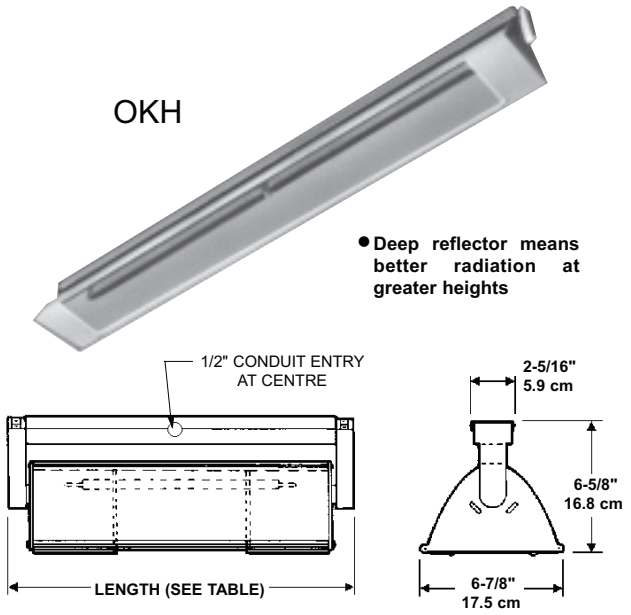


Figure 49

Excellent for indoor and outdoor areas where increased density at high mounting heights is essential and light emitted could be used to an advantage. For example: race tracks and other outdoor stadiums, parking garage amps, aircraft hangars and high bay industrial buildings.

Note: Quartz lamp fixtures must be mounted horizontally.

Table 42 – Type L 45° Spread

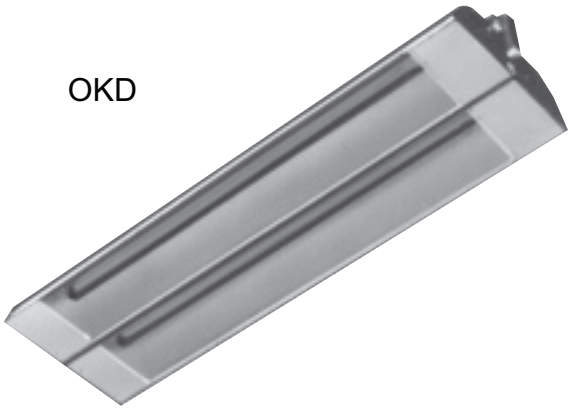
kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.5	120	16.5	419	5	127	OKH145L4	4.9	2.2
1.0	240	21.5	547	10	254	OKH191L4	6.0	2.7
1.6	208, 240	27.5	699	16	406	OKH251L4	7.2	3.3
2.5	480, 600	36.5	927	25	635	OKH342L4	9.1	4.1
3.8	600	49.5	1257	38	965	OKH473L4	11.8	5.4

Note: For 70° spread, last number within the catalog number is changed from “4” to “7”.

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage

OKD Series (Comfort Heating)



- Double reflector unit using OKH fixtures
- Contains one element per reflector to utilize maximum reflector efficiency
- Available in choice of 45°or 70°energy spreads.
- Swivel mount

Type C – Incoloy® Tubular Element

Used in similar applications to OKH series except twice as much heat is emitted for harder to heat areas such as large unheated factories, sawmills, ice rinks and gymnasiums.

Table 43 – Type C 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.9	120, 208, 240	31.5	800	20	508	OKD291C4	14.3	6.5
3.0		43.5	1105	32	813	OKD413C4	19.0	8.6
3.8		49.5	1257	38	965	OKD473C4	22.2	10.1
4.0	208, 240 480, 600	43.5	1105	32	813	OKD414C4	19.8	9.0
4.6		49.5	1257	38	965	OKD474C4	22.3	10.1
6.0		61.5	1562	50	1270	OKD596C4	27.3	12.4
7.6		73.5	1867	62	1575	OKD717C4	32.4	14.7

Note: For 70° spread, last number within the catalog number is changed from “4” to “7”.

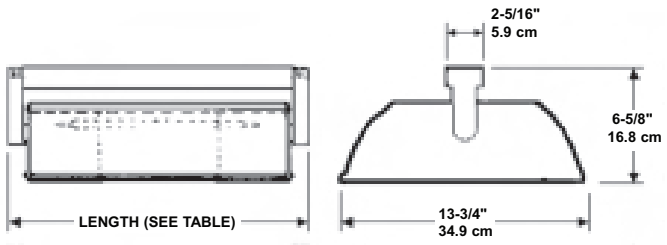


Figure 50

DANGER - HAZARD OF FIRE

See warning located at the start of Infrared Radiant Heater Section.

Type T – Quartz Tube Element

Used for indoor and outdoor comfort heating at higher than normal heights 12' to 20' (3.7 m to 6 m) where light emitted from lamps would be undesirable such as auditoriums, bowling alleys and open-air restaurants.

Note: Quartz tube fixtures must be mounted horizontally.

Table 44 – Type T 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.6	120, 208, 240	27.5	699	16	406	OKD251T4	13.3	6.0
3.2		43.5	1105	32	813	OKD413T4	19.7	9.0
5.0	208, 240, 480, 600	61.5	1563	50	1270	OKD595T4	26.8	12.2
6.2		73.5	1867	62	1575	OKD716T4	31.6	14.4

Note: For 70° spread, last number within the catalog number is changed from “4” to “7”.

Type L – Quartz Lamp Element

Very good for indoor applications where the light emitted could be used to an advantage such as warehouses, hangars and loading docks. Also well-suited for outdoor applications where a more intense heat is required, for example: snow melting, hotel entrances, building walkways.

Note: Quartz lamp fixtures must be mounted horizontally

Table 45 – Type L 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.0	120	16.5	419	5	127	OKD141L4	9.0	4.1
2.0	240	21.5	547	10	254	OKD192L4	11.0	5.0
3.2	208, 240	27.5	699	16	406	OKD253L4	13.3	6.0
5.0	480, 600	36.5	908	25	635	OKD345L4	16.9	7.7
7.6	600	49.5	1258	38	965	OKD477L4	22.1	10.0

Note: For 70° spread, last number within the catalog number is changed from “4” to “7”.

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage (if applicable)

Portable Radiant Heaters

OKP Series (Comfort Heating)

Type OKP portable radiant heaters provide spot heating in areas not normally heated. Heaters can be used to heat workers, thaw pipes, dry paint, remove moisture, etc. The unit is not suitable for operation in the presence of combustible liquids or vapours.

Construction

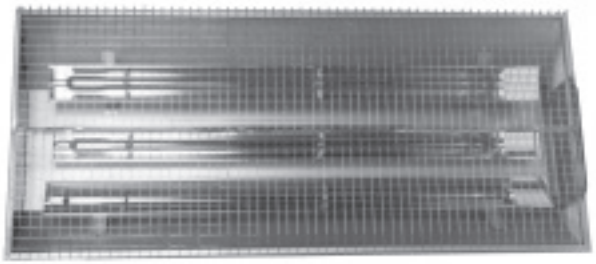
Three OKA hairpin type radiant heaters with a single moisture resistant housing are mounted to an aluminized steel casing which is bolted to a rugged two wheel trolley.

Three standard sizes are available: 6.3 kW, 9.0 kW and 13.5 kW. Special sizes can also be supplied on short notice.

The heating elements are epoxy end sealed. The moisture resistant housing, when properly connected, allows the assembly to be hosed clean. A plated steel safety screen protects persons from accidental contact with hot surfaces.

Movable support legs allow the unit to be self supporting when laid on its left or right side for wider coverage.

The heavy duty construction of the OKP, built to resist weathering and rough handling, ensures extended service life.



Wiring

Terminals from each of the three radiant heating fixtures are wired to an internal trolley mounted terminal block. All units are suitable for connection of either single or three phase power.

Table 46 – OKP Series Portable Radiant Heaters

kW	Standard Voltages	Dimensions				Catalog No.	Shipping Weight	
		A		B				
		in	mm	in	mm		lbs	kg
6.3	208, 240 480, 600	26	660	40	1016	OKP063	40	18
9.0		26	660	49	1245	OKP090	48	22
13.5		26	660	62	1575	OKP135	58	26

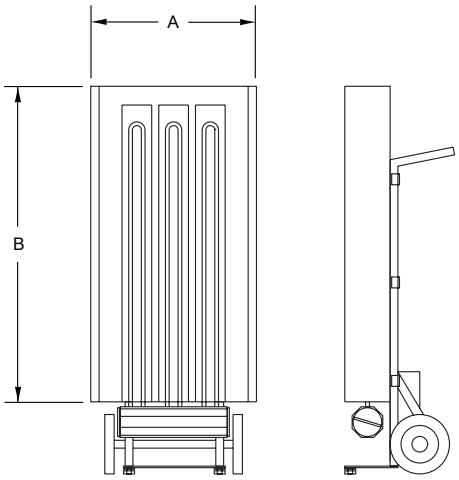


Figure 51

Corrosion-Resistant Washdown Unit Heaters - CCR1 Triton™

Caloritech™ CCR1 Triton™ is a new generation of NEMA 4X corrosion-resistant washdown heaters. The first UL listed Type 4X heater with models ranging from 3 kW to 39 kW.

IMPORTANT: Caloritech™ CCR1 heaters are suitable for non-hazardous locations only. For washdown applications use water pressure less than 70 psi.

Features

- Entire heater is NEMA type 4x
- Epoxy-coated fan blade
- 16-gauge stainless-steel cabinet
- Custom configured stainless steel elements
- Optional built-in accessories
- Stainless steel wall/ceiling mounting kit
- 120 V controls
- Stainless steel temperature high-limit

Benefits

- Increased safety and protection against water penetration
- Added corrosion protection
- Better resistance to corrosion for longer life
- Improved heat distribution and corrosion protection
- Flexibility and reduced field installation costs
- Flexible options for mounting heater
- Better contactor pull-in reliability
- Increased safety and reliability

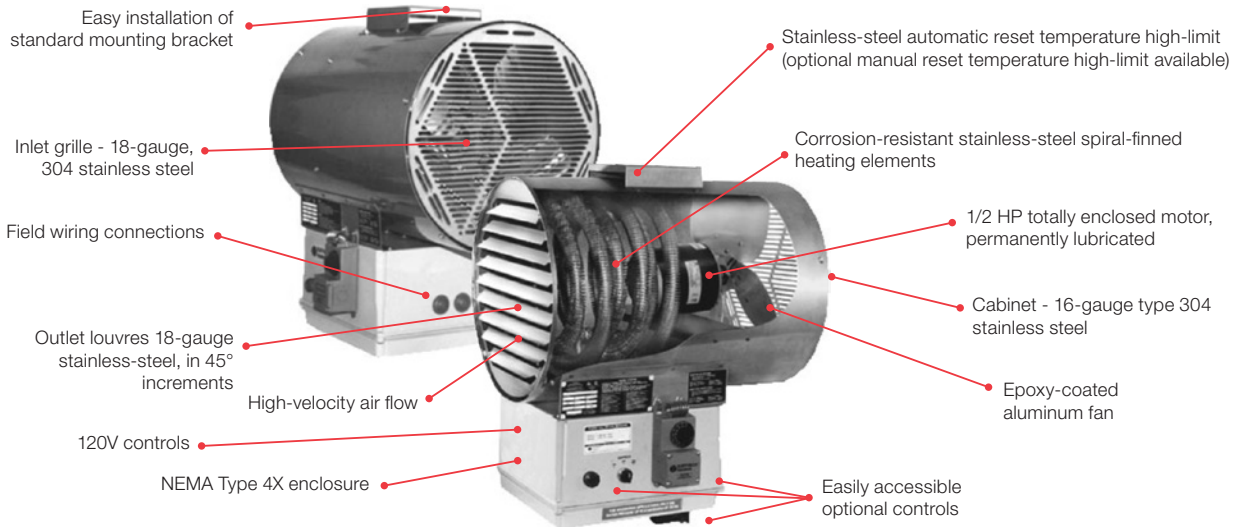


Figure 56

Model Coding

CCR1 - 480 3 60 - 200 - T

- **CCR1** – Model Series: 1st Generation
- **480** – Heater Voltage: 208V, 240V, 480V, 600V
- **3** – Phase: 1, 3
- **60** – Hertz: 60
- **200** – Heater Kilowatts:
  - 030 - 3 kW
  - 050 - 5 kW
  - 075 - 7.5 kW
  - 100 - 10 kW
  - 150 - 15 kW
  - 200 - 20 kW
  - 250 - 25 kW
  - 300 - 30 kW
  - 390 - 39 kW
- **T** – Options:
  - D – Built-in door interlocking disconnect switch
  - E – Monel® elements
  - F – Built-in 3-position fan switch (**"ON"**, **"OFF"**, **"FAN ONLY"**)
  - M – Built-in manual reset temperature high-limit
  - P – Built-in pilot light
  - T – Built-in room thermostat

Table 47 – CCR1 Triton™ 60 Hertz Technical Data

Model	Nominal Power	Unit Voltage	Phase	Unit Current	Air Temperature Rise		Btu/hr
	kW	V		A	°F	°C	
CCR1-208160-030	3	208	1	17.4	13.5	7.5	10250
CCR1-240160-030	3	240	1	15.5			
CCR1-208360-030	3	208	3	11.3			
CCR1-240360-030	3	240	3	10.2			
CCR1-480360-030	3	480	3	5.1			
CCR1-600360-030	3	600	3	3.9			
CCR1-208160-050	5	208	1	27.0	22.5	12.5	17050
CCR1-240160-050	5	240	1	23.8			
CCR1-208360-050	5	208	3	16.9			
CCR1-240360-050	5	240	3	15.0			
CCR1-480360-050	5	480	3	7.5			
CCR1-600360-050	5	600	3	5.8			
CCR1-208160-075	7.5	208	1	39.1	33.8	18.8	25600
CCR1-240160-075	7.5	240	1	34.3			
CCR1-208360-075	7.5	208	3	23.8			
CCR1-240360-075	7.5	240	3	21.0			
CCR1-480360-075	7.5	480	3	10.5			
CCR1-600360-075	7.5	600	3	8.2			
CCR1-240160-100	10	240	1	44.7	45.0	25.0	34100
CCR1-208360-100	10	208	3	30.8			
CCR1-240360-100	10	240	3	27.1			
CCR1-480360-100	10	480	3	13.5			
CCR1-600360-100	10	600	3	10.8			
CCR1-208360-150	15	208	3	44.6	32.6	18.1	51200
CCR1-240360-150	15	240	3	39.1			
CCR1-480360-150	15	480	3	19.5			
CCR1-600360-150	15	600	3	15.4			
CCR1-480360-200	20	480	3	25.6	43.6	24.2	68250
CCR1-600360-200	20	600	3	20.3	43.6	24.2	68250
CCR1-480360-250	25	480	3	31.6	37.5	20.9	85300
CCR1-600360-250	25	600	3	25.1	37.5	20.9	85300
CCR1-480360-300	30	480	3	37.6	45.1	25.0	102350
CCR1-600360-300	30	600	3	29.9	45.1	25.0	102350
CCR1-480360-350	35	480	3	43.6	52.6	29.2	119400
CCR1-600360-350	35	600	3	34.7	52.6	29.2	119400
CCR1-480360-390	39	480	3	48.0	58.6	32.5	133100
CCR1-600360-390	39	600	3	38.5	58.6	32.5	133100

Note:

1. To order a heater with a built-in room thermostat add a "T" suffix to model number.
2. To order a heater with a built-in pilot light add a "P" suffix to model number.
3. To order a heater with a built-in 3-position fan switch (on, off, fan only) add an "F" to model number.
4. To order a heater with a built-in door interlocking disconnect switch add a "D" suffix to model number.
5. To order a heater with a built-in manual reset temperature high-limit add an "M" suffix to model number. Also included is a built-in door interlocking disconnect switch to meet UL requirements. This option replaces the automatic reset temperature high-limit.

Note: To order a heater that meets U.S. Coast Guard regulations, order built-in control option #5 above.

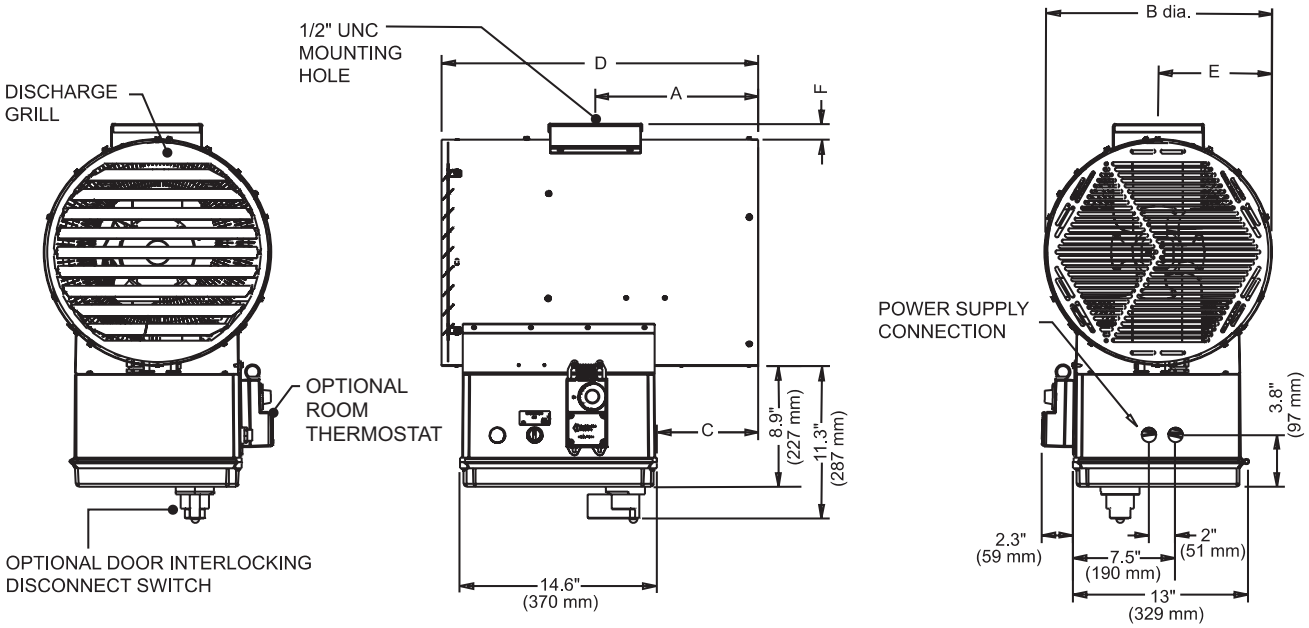


Figure 52 – CCR1 Triton™ Physical Dimensions

Table 48 – Dimensions

Dimensions	A		B		C		D		E		F	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
3 to 10 kW	12.5”	318	12.8”	325	8.5”	216	24.4”	620	6.4”	162.5	0.9”	23
15 and 20 kW	12.1”	307	16.7”	425	7.5”	190	23.4”	595	8.4”	212.5	1.2”	30
25 to 39 kW	12.1”	307	20.7”	526	7.5”	190	23.4”	595	10.3”	262.5	1.3”	33

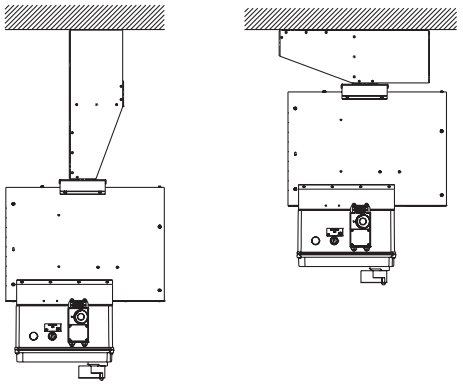


Figure 53 – Ceiling Mount (using factory supplied mounting bracket, included with each heater)

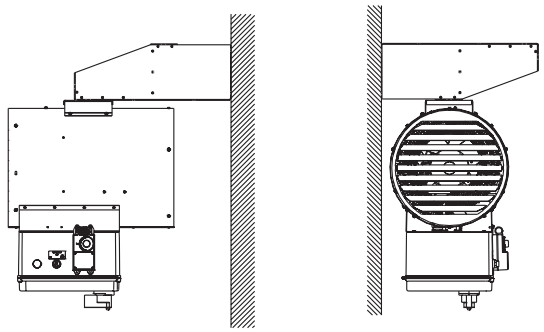


Figure 54 – Wall Mount (using factory supplied mounting bracket, included with each heater)

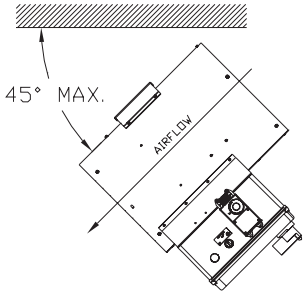


Figure 55 – Heater can be mounted up to a 45° angle (customer-supplied bracket)

Table 49 – General Specifications

		3, 5, 7.5, 10	15, 20	25, 30, 35, 39
Air Delivery	CFM	700	1450	2100
	m^3/hr	20	41	60
Approximate Air Velocity	ft/min	785	950	288
	m/s	240	288	276
Fan Diameter	in	12	16	20
	mm	305	406	508
Horizontal Air Throw	ft	22	35	44
	m	6.7	10.7	13.4
Maximum Mounting Height* (Horizontal to Underside)	ft	8.5	11.5	12.3
	m	2.6	3.5	3.7
Maximum Mounting Height* (45° decline to underside)	ft	12.8	18.0	18.8
	m	3.9	5.5	5.7
Minimum Mounting Height	ft	6.0		
	m	1.8		
Net Weight	lbs	75.0	90.0	130
	kg	34.1	40.9	59.1
Shipping Weight	lbs	125.0	140.0	180
	kg	56.8	40.9	81.8

1. **Approvals** — UL listed to U.S. & Canadian safety standards. Type 4X.
   Complies with U.S. Coast Guard electrical engineering regulations subchapter J (46 CFR Parts 110-113) when manual reset temperature high-limit is ordered
2. **Enclosure** — NEMA Type 4X non-metallic enclosure
3. **Motor Type** — Thermally protected, ½ HP, 1725 RPM, permanently lubricated ball bearings
4. **Fan** — Epoxy coated, aluminium blade, steel spider
5. **Mounting Bracket** — Type 304 stainless steel universal mounting bracket Minimum 16-gauge (0.06" / 1.52 mm)
6. **Heating Elements** — Type 321 stainless steel sheath with Type 304 stainless steel spiral fins
7. **Temperature High-Limit** — Automatic reset, stainless steel bulb and capillary
   Optional manual reset, stainless steel bulb and capillary. Replaces automatic reset.
8. **Temperature Limitations** — Storage: -4°F to 140°F (-20°C to 40°C)
   Operating: -4°F to 104°F (-20°C to 60°C)
9. **Control Circuit** — 120 Vac
10. **Optional Built-in Thermostat** — NEMA Type 4X thermostat
11. **Control Transformer** — Multi-tap primary, 120V secondary, 50 VA
12. **Contactor** — 40 or 75 amp. Rated for 500,000 mechanical operations. 120V, 15 VA coil
13. **Cabinet Material** — Type 304 stainless-steel, 16-gauge (0.06" / 1.52 mm) All external fasteners are stainless steel
14. **Inlet Grille** — Type 304 stainless steel, ¼" (6.3 mm) maximum openings Minimum 18-gauge (0.05" / 1.21 mm)
15. **Discharge Grille** — Type 304 stainless steel. Rotatable in 45° increments Minimum 18-gauge (0.05" / 1.21 mm)

Note:

* Maximum mounting height to ensure warm air reaches the floor. Contact factory for suitable applications.