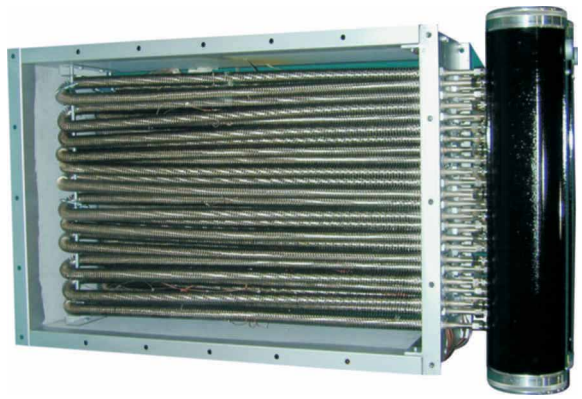
Explosion-Proof Duct Heaters - XDF



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.

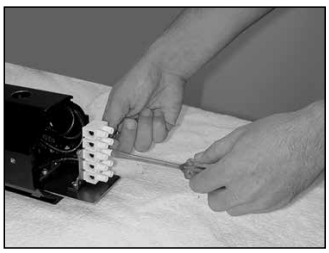


Figure 19

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

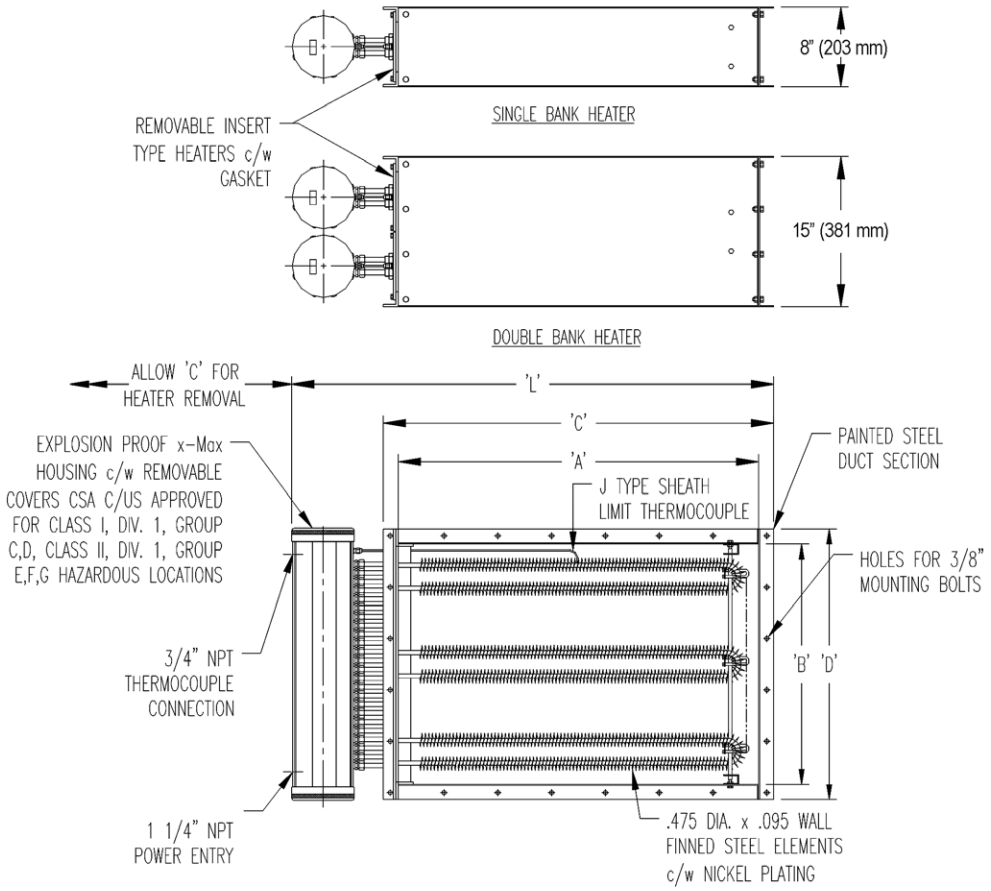


Figure 20

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.