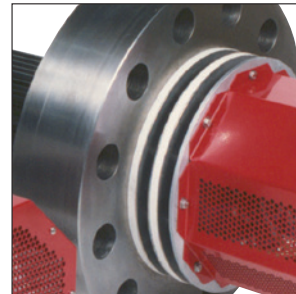
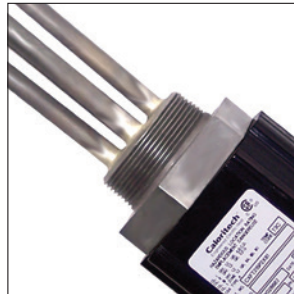


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Caloritech™

Engineered Electric Heat



Immersion Heaters

Section B

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Screwplug Heaters - CX



Application

Screwplug heaters are primarily used to heat liquids in tanks or vessels. To do so safely and reliably requires that the heating elements remain fully immersed in the liquid. Liquids such as water, oils, trichlorethylene, etc. can be heated through natural convection currents created by the immersed elements.

Although electricity costs are generally higher than gas or oil, it can be demonstrated that a Caloritech™ immersion heater is often your best choice. The electric heater provides close to 100% efficiency, is safer and easier to control and is usually cheaper to install.

Terminal Block Simplifies Wiring

All thermostat equipped screwplug heaters with moisture or explosion-proof housings feature a convenient terminal block mounted to a slide out trolley.

This unique Caloritech™ feature simplifies installation and reduces maintenance.

Installation

Listed heaters have standard 1" to 2 1/2" NPT tapered plugs. Any other size or type of plug is available on special order. The heater is installed through a threaded half coupling located in the vessel wall well below the minimum liquid level but spaced sufficiently above the bottom to allow for sludge build-up which should never be allowed to cover any part of the elements.

Horizontal installation is preferred even though heater replacement will require draining of the tank. Vertical installation is sometimes possible but it is best that you contact the factory for advice prior to purchase.

Operation

For an immersion heater to transfer heat it must establish a balance between convection currents and the temperature difference between itself and the liquid. Viscous liquids which retard convection currents are the most difficult to heat. Care must be exercised to ensure that the required rate of heat transfer from the heating elements is achieved without overheating the element and the liquid resulting in coking. This is generally achieved through the selection of heater watt density.

Heaters immersed in liquids, such as water with high calcium and magnesium content, phosphates or eluate solutions, have a tendency to precipitate their solids over the elements on heating. These heaters require scheduled maintenance to remove scale build up which may thermally insulate the elements and reduce their service life.

Selection

Proper selection of the screwplug heater is required to maximize service life. Once the wattage requirement is established decide on heater voltage and phase. Remember that unrealistic heat-up time requirements will increase equipment and operating costs.

The tables list, under "watt density", the required heat transfer rate from the various heaters. Refer to Section D of the Caloritech™ catalog for guidance on the acceptable watt density for your application. If a heater is not listed with the density you require we can fabricate to suit.

Of equal importance is the selection of the materials of construction which will resist corrosion and not wear away or contaminate the liquid. Refer to the corrosion guide in Section D for a list of the standard materials for various solutions. Also see page B26 for discussion on watt density.

The heaters are not guaranteed against corrosion since Thermon Heating Systems has no control over the liquid type, concentration or temperature of the solution. Consult your factory representative or your chemical supplier for recommendation on materials for your solution. Recommendations are not implied guarantees.

Warning - Fire Hazard

The heaters listed in the catalog may occasionally malfunction in normal use and if operated in the presence of explosive or combustible materials may cause fires. Do not operate in the presence of explosive or combustible materials. Observe fire prevention precautions and consult the local sales office or contact Thermon Heating Systems for proper application and installation instructions.

The thermostat controls function as temperature controls. Because they do not fail safe, an approved temperature and/or pressure safety control may be required for safe operation. Inclusion of consumer warnings on assembled products containing these elements and thermostats is recommended.

Heaters with 1" and 1 1/4" Plugs

Application

Type CXC heaters are used primarily for water heating and have brass screwplugs and copper sheaths.

Type CXF are used primarily for oil heating and have steel screwplugs. Low watt density heaters are used in heavier, non-circulated oils. Higher watt density heaters are suitable for light oils or in forced oil circulation loops. Incoloy® elements are silver brazed into a steel screwplug.

Built-in Thermostats

Standard built-in thermostat is a one pole device limited to 240V 25 amp. Whenever the heater voltage exceeds 240V or the heater current exceeds 25 amps or for three phase supply, the thermostat is intended for pilot duty only and is not factory wired to the elements. See Section F of the Caloritech™ catalog for selection of the contactor and control transformer you may require in these instances.

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features



Table 1 – Screwplug Heaters (One Element) - 1" NPT

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Copper Sheath Brass Plug 80 W/in ² (12.4 W/cm ²)	0.50	5.5	140	120	CXC105P111	CXCT105P111	CXC105P1R11	CXCT105P1R11	CXC105P1X11	CXCT105P1X11	2.2	1
				208	CXC105P121	CXCT105P121	CXC105P1R21	CXCT105P1R21	CXC105P1X21	CXCT105P1X21		
				240	CXC105P131	CXCT105P131	CXC105P1R31	CXCT105P1R31	CXC105P1X31	CXCT105P1X31		
	0.75	5.5	140	120	CXC107P111	CXCT107P111	CXC107P1R11	CXCT107P1R11	CXC107P1X11	CXCT107P1X11		
				208	CXC107P121	CXCT107P121	CXC107P1R21	CXCT107P1R21	CXC107P1X21	CXCT107P1X21		
				240	CXC107P131	CXCT107P131	CXC107P1R31	CXCT107P1R31	CXC107P1X31	CXCT107P1X31		
	1.00	7.1	180	120	CXC110P111	CXCT110P111	CXC110P1R11	CXCT110P1R11	CXC110P1X11	CXCT110P1X11		
				208	CXC110P121	CXCT110P121	CXC110P1R21	CXCT110P1R21	CXC110P1X21	CXCT110P1X21		
				240	CXC110P131	CXCT110P131	CXC110P1R31	CXCT110P1R31	CXC110P1X31	CXCT110P1X31		
	1.50	10.6	270	120	CXC115P111	CXCT115P111	CXC115P1R11	CXCT115P1R11	CXC115P1X11	CXCT115P1X11		
				208	CXC115P121	CXCT115P121	CXC115P1R21	CXCT115P1R21	CXC115P1X21	CXCT115P1X21		
				240	CXC115P131	CXCT115P131	CXC115P1R31	CXCT115P1R31	CXC115P1X31	CXCT115P1X31		
	2.00	7.5	190	120	CXC120P111	CXCT120P111	CXC120P1R11	CXCT120P1R11	CXC120P1X11	CXCT120P1X11		
				208	CXC120P121	CXCT120P121	CXC120P1R21	CXCT120P1R21	CXC120P1X21	CXCT120P1X21		
				240	CXC120P131	CXCT120P131	CXC120P1R31	CXCT120P1R31	CXC120P1X31	CXCT120P1X31		
	3.00	10.8	275	120	CXC130P111	CXCT130P111	CXC130P1R11	CXCT130P1R11	CXC130P1X11	CXCT130P1X11		
				208	CXC130P121	CXCT130P121	CXC130P1R21	CXCT130P1R21	CXC130P1X21	CXCT130P1X21		
				240	CXC130P131	CXCT130P131	CXC130P1R31	CXCT130P1R31	CXC130P1X31	CXCT130P1X31		
	5.00	16.9	430	120	CXC150P111	CXCT150P111	CXC150P1R11	CXCT150P1R11	CXC150P1X11	CXCT150P1X11		
				208	CXC150P121	CXCT150P121	CXC150P1R21	CXCT150P1R21	CXC150P1X21	CXCT150P1X21		
				240	CXC150P131	CXCT150P131	CXC150P1R31	CXCT150P1R31	CXC150P1X31	CXCT150P1X31		

Table 1 – Screwplug Heaters (One Element) - 1" NPT (Cont'd)

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Steel Plug Incoloy® Sheath 23 watts in ² (3.4 watts cm ²)	0.30	7.5	190	120	CXF103P111	CXFT103P111	CXF103P1R11	CXFT103P1R11	CXF103P1X11	CXFT103P1X11	2.2	1
				208	CXF103P121	CXFT103P121	CXF103P1R21	CXFT103P1R21	CXF103P1X21	CXFT103P1X21		
				240	CXF103P131	CXFT103P131	CXF103P1R31	CXFT103P1R31	CXF103P1X31	CXFT103P1X31		
	0.50	8.9	225	120	CXF105P111	CXFT105P111	CXF105P1R11	CXFT105P1R11	CXF105P1X11	CXFT105P1X11	2.2	1
				208	CXF105P121	CXFT105P121	CXF105P1R21	CXFT105P1R21	CXF105P1X21	CXFT105P1X21		
				240	CXF105P131	CXFT105P131	CXF105P1R31	CXFT105P1R31	CXF105P1X31	CXFT105P1X31		
	0.70	11	280	120	CXF107P111	CXFT107P111	CXF107P1R11	CXFT107P1R11	CXF107P1X11	CXFT107P1X11	4.4	2
				208	CXF107P121	CXFT107P121	CXF107P1R21	CXFT107P1R21	CXF107P1X21	CXFT107P1X21		
				240	CXF107P131	CXFT107P131	CXF107P1R31	CXFT107P1R31	CXF107P1X31	CXFT107P1X31		
	0.90	12	305	120	CXF109P111	CXFT109P111	CXF109P1R11	CXFT109P1R11	CXF109P1X11	CXFT109P1X11	4.4	2
				208	CXF109P121	CXFT109P121	CXF109P1R21	CXFT109P1R21	CXF109P1X21	CXFT109P1X21		
				240	CXF109P131	CXFT109P131	CXF109P1R31	CXFT109P1R31	CXF109P1X31	CXFT109P1X31		
Steel Plug Incoloy® Sheath 15 W/in ² (2.3 W/cm ²)	0.10	5	127	120	CXF101P1511	CXFT101P1511	CXF101P15R11	CXFT101P15R11	CXF101P15X11	CXFT101P15X11	2.2	1
	0.15	7	178	120	CXF101P1711	CXFT101P1711	CXF101P17R11	CXFT101P17R11	CXF101P17X11	CXFT101P17X11	2.2	1
	0.20	7.5	229	120	CXF102P111	CXFT102P111	CXF102P1R11	CXFT102P1R11	CXF102P1X11	CXFT102P1X11	2.2	1
				208	CXF102P121	CXFT102P121	CXF102P1R21	CXFT102P1R21	CXF102P1X21	CXFT102P1X21		
				240	CXF102P131	CXFT102P131	CXF102P1R31	CXFT102P1R31	CXF102P1X31	CXFT102P1X31		
	0.25	10	279	120	CXF102P11011	CXFT102P11011	CXF102P110R11	CXFT102P110R11	CXF102P110X11	CXFT102P110X11	4.4	2
				208	CXF102P11021	CXFT102P11021	CXF102P110R21	CXFT102P110R21	CXF102P110X21	CXFT102P110X21		
				240	CXF102P11031	CXFT102P11031	CXF102P110R31	CXFT102P110R31	CXF102P110X31	CXFT102P110X31		
	0.40	9.4	239	120	CXF104P111	CXFT104P111	CXF104P1R11	CXFT104P1R11	CXF104P1X11	CXFT104P1X11	4.4	2
				208	CXF104P121	CXFT104P121	CXF104P1R21	CXFT104P1R21	CXF104P1X21	CXFT104P1X21		
				240	CXF104P131	CXFT104P131	CXF104P1R31	CXFT104P1R31	CXF104P1X31	CXFT104P1X31		
	0.50	10	254	120	CXF105P11011	CXFT105P11011	CXF105P110R11	CXFT105P110R11	CXF105P110X11	CXFT105P110X11	4.4	2
				208	CXF105P11021	CXFT105P11021	CXF105P110R21	CXFT105P110R21	CXF105P110X21	CXFT105P110X21		
				240	CXF105P11031	CXFT105P11031	CXF105P110R31	CXFT105P110R31	CXF105P110X31	CXFT105P110X31		
	0.60	11	279	120	CXF106P111	CXFT106P111	CXF106P1R11	CXFT106P1R11	CXF106P1X11	CXFT106P1X11	4.4	2
				208	CXF106P121	CXFT106P121	CXF106P1R21	CXFT106P1R21	CXF106P1X21	CXFT106P1X21		
				240	CXF106P131	CXFT106P131	CXF106P1R31	CXFT106P1R31	CXF106P1X31	CXFT106P1X31		
	0.75	15	381	120	CXF107P11511	CXFT107P11511	CXF107P115R11	CXFT107P115R11	CXF107P115X11	CXFT107P115X11	4.4	2
				208	CXF107P11521	CXFT107P11521	CXF107P115R21	CXFT107P115R21	CXF107P115X21	CXFT107P115X21		
				240	CXF107P11531	CXFT107P11531	CXF107P115R31	CXFT107P115R31	CXF107P115X31	CXFT107P115X31		
	1.0	19	483	120	CXF110P11911	CXFT110P11911	CXF110P119R11	CXFT110P119R11	CXF110P119X11	CXFT110P119X11	4.4	2
208				CXF110P11921	CXFT110P11921	CXF110P119R21	CXFT110P119R21	CXF110P119X21	CXFT110P119X21			
240				CXF110P11931	CXFT110P11931	CXF110P119R31	CXFT110P119R31	CXF110P119X31	CXFT110P119X31			

To Order Specify

- Quantity
- Wattage
- Catalog number
- Special features
- Voltage

Table 2 – Screwplug Heaters (Two Elements) - 1 ¼" NPT

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight		
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg	
Copper Sheath Brass Plug 80 W/in ² (12.4 W/cm ²)	1.5	5.7	145	120	CXC215P1211	CXCT215P1211	CXC215P12R11	CXCT215P12R11	CXC215P12X11	CXCT215P12X11	8.8	4	
				208	CXC215P1221	CXCT215P1221	CXC215P12R21	CXCT215P12R21	CXC215P12X21	CXCT215P12X21			
				240	CXC215P1231	CXCT215P1231	CXC215P12R31	CXCT215P12R31	CXC215P12X31	CXCT215P12X31			
	2.0	7.3	285	120	CXC220P1211	CXCT220P1211	CXC220P12R11	CXCT220P12R11	CXC220P12X11	CXCT220P12X11	8.8	4	
				208	CXC220P1221	CXCT220P1221	CXC220P12R21	CXCT220P12R21	CXC220P12X21	CXCT220P12X21			
				240	CXC220P1231	CXCT220P1231	CXC220P12R31	CXCT220P12R31	CXC220P12X31	CXCT220P12X31			
Incoloy® Sheath Steel Plug 23 W/in ² (3.4 W/cm ²)	1.0	13	330	120	CXF210P121311	CXFT210P121311	CXF210P1213R11	CXFT210P1213R11	CXF210P1213X11	CXFT210P1213X11	8.8	4	
				208	CXF210P121321	CXFT210P121321	CXF210P1213R21	CXFT210P1213R21	CXF210P1213X21	CXFT210P1213X21			
				240	CXF210P121331	CXFT210P121331	CXF210P1213R31	CXFT210P1213R31	CXF210P1213X31	CXFT210P1213X31			
	1.5	18	457	120	CXF215P121811	CXFT215P121811	CXF215P1218R11	CXFT215P1218R11	CXF215P1218X11	CXFT215P1218X11	11	5	
				208	CXF215P121821	CXFT215P121821	CXF215P1218R21	CXFT215P1218R21	CXF215P1218X21	CXFT215P1218X21			
				240	CXF215P121831	CXFT215P121831	CXF215P1218R31	CXFT215P1218R31	CXF215P1218X31	CXFT215P1218X31			
	2.0	24	610	120	CXF220P122411	CXFT220P122411	CXF220P1224R11	CXFT220P1224R11	CXF220P1224X11	CXFT215P1218X11	11	5	
				208	CXF220P122421	CXFT220P122421	CXF220P1224R21	CXFT220P1224R21	CXF220P1224X21	CXFT215P1218X21			
				240	CXF220P122431	CXFT220P122431	CXF220P1224R31	CXFT220P1224R31	CXF220P1224X31	CXFT215P1218X31			
	Incoloy® Sheath Steel Plug 15 W/in ² (2.3 W/cm ²)	0.20	5	127	120	CXF202P12511	CXFT202P12511	CXF202P125R11	CXFT202P125R11	CXF202P125X11	CXFT202P125X11	8.8	4
					208	CXF202P12521	CXFT202P12521	CXF202P125R21	CXFT202P125R21	CXF202P125X21	CXFT202P125X21		
					240	CXF202P12531	CXFT202P12531	CXF202P125R31	CXFT202P125R31	CXF202P125X31	CXFT202P125X31		
0.30		7	178	120	CXF203P12711	CXFT203P12711	CXF203P127R11	CXFT203P127R11	CXF203P127X11	CXFT203P127X11	8.8	4	
				208	CXF203P12721	CXFT203P12721	CXF203P127R21	CXFT203P127R21	CXF203P127X21	CXFT203P127X21			
				240	CXF203P12731	CXFT203P12731	CXF203P127R31	CXFT203P127R31	CXF203P127X31	CXFT203P127X31			
0.40		9	229	120	CXF204P12911	CXFT204P12911	CXF204P129R11	CXFT204P129R11	CXF204P129X11	CXFT204P129X11	8.8	4	
				208	CXF204P12921	CXFT204P12921	CXF204P129R21	CXFT204P129R21	CXF204P129X21	CXFT204P129X21			
				240	CXF204P12931	CXFT204P12931	CXF204P129R31	CXFT204P129R31	CXF204P129X31	CXFT204P129X31			
0.50		11	279	120	CXF205P121111	CXFT205P121111	CXF205P1211R11	CXFT205P1211R11	CXF205P1211X11	CXFT205P1211X11	8.8	4	
				208	CXF205P121121	CXFT205P121121	CXF205P1211R21	CXFT205P1211R21	CXF205P1211X21	CXFT205P1211X21			
				240	CXF205P121131	CXFT205P121131	CXF205P1211R31	CXFT205P1211R31	CXF205P1211X31	CXFT205P1211X31			
0.60		11	279	120	CXF206P1211	CXFT206P1211	CXF206P12R11	CXFT206P12R11	CXF206P12X11	CXFT206P12X11	11	5	
				208	CXF206P1221	CXFT206P1221	CXF206P12R21	CXFT206P12R21	CXF206P12X21	CXFT206P12X21			
				240	CXF206P1231	CXFT206P1231	CXF206P12R31	CXFT206P12R31	CXF206P12X31	CXFT206P12X31			
0.75		15	381	120	CXF207P121511	CXFT207P121511	CXF207P1215R11	CXFT207P1215R11	CXF207P1215X11	CXFT207P1215X11	11	5	
				208	CXF207P121521	CXFT207P121521	CXF207P1215R21	CXFT207P1215R21	CXF207P1215X21	CXFT207P1215X21			
				240	CXF207P121531	CXFT207P121531	CXF207P1215R31	CXFT207P1215R31	CXF207P1215X31	CXFT207P1215X31			
1.0		19	483	120	CXF210P121911	CXFT210P121911	CXF210P1219R11	CXFT210P1219R11	CXF210P1219X11	CXFT210P1219X11	13.2	6	
				208	CXF210P121921	CXFT210P121921	CXF210P1219R21	CXFT210P1219R21	CXF210P1219X21	CXFT210P1219X21			
				240	CXF210P121931	CXFT210P121931	CXF210P1219R31	CXFT210P1219R31	CXF210P1219X31	CXFT210P1219X31			
1.5		27	686	120	CXF215P122711	CXFT215P122711	CXF215P1227R11	CXFT215P1227R11	CXF215P1227X11	CXFT215P1227X11	13.2	6	
				208	CXF215P122721	CXFT215P122721	CXF215P1227R21	CXFT215P1227R21	CXF215P1227X21	CXFT215P1227X21			
				240	CXF215P122731	CXFT215P122731	CXF215P1227R31	CXFT215P1227R31	CXF215P1227X31	CXFT215P1227X31			

Heaters with 2" and 2 1/2" Plugs

Application

Type CXC heaters are used primarily for water heating and have brass screwplugs and copper sheaths.

Type CXF are used primarily for oil heating and have steel screwplugs. Low watt density heaters are used in heavier, non-circulated oils. Higher watt density heaters are suitable for light oils or in forced oil circulation loops. Incoloy® elements are silver brazed into a steel screwplug.

Type CXI heaters are used primarily for heating mildly corrosive solutions and use higher density Incoloy® elements welded into a stainless steel screwplug.

Built-in Thermostats

Standard built-in thermostat is a one pole device limited to 240V 25 amp. Whenever the heater voltage exceeds 240V or the heater current exceeds 25 amps or for three phase supply, the thermostat is intended for pilot duty only and is not factory wired to the elements. See Section F of the Caloritech™ catalog for selection of the contactor and control transformer you may require in these instances.



To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

Table 3 – Screwplug Heaters (Two Elements) - 2" NPT

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Copper Sheath Brass Plug 54 to 60 W/in ² (8.3 to 9.3 W/cm ²)	1.5	7.9	201	120	CXC215P211	CXCT215P211	CXC215P2R11	CXCT215P2R11	CXC215P2X11	CXCT215P2X11	8.8	4
				208	CXC215P221	CXCT215P221	CXC215P2R21	CXCT215P2R21	CXC215P2X21	CXCT215P2X21		
				240	CXC215P231	CXCT215P231	CXC215P2R31	CXCT215P2R31	CXC215P2X31	CXCT215P2X31		
				480	CXC215P271	CXCT215P271	CXC215P2R71	CXCT215P2R71	CXC215P2X71	CXCT215P2X71		
				600	CXC215P281	CXCT215P281	CXC215P2R81	CXCT215P2R81	CXC215P2X81	CXCT215P2X81		
	2.0	7.9	201	120	CXC220P211	CXCT220P211	CXC220P2R11	CXCT220P2R11	CXC220P2X11	CXCT220P2X11	8.8	4
				208	CXC220P221	CXCT220P221	CXC220P2R21	CXCT220P2R21	CXC220P2X21	CXCT220P2X21		
				240	CXC220P231	CXCT220P231	CXC220P2R31	CXCT220P2R31	CXC220P2X31	CXCT220P2X31		
				480	CXC220P271	CXCT220P271	CXC220P2R71	CXCT220P2R71	CXC220P2X71	CXCT220P2X71		
				600	CXC220P281	CXCT220P281	CXC220P2R81	CXCT220P2R81	CXC220P2X81	CXCT220P2X81		
	3.0	11.8	300	120	CXC230P211	CXCT230P211	CXC230P2R11	CXCT230P2R11	CXC230P2X11	CXCT230P2X11	11	5
				208	CXC230P221	CXCT230P221	CXC230P2R21	CXCT230P2R21	CXC230P2X21	CXCT230P2X21		
				240	CXC230P231	CXCT230P231	CXC230P2R31	CXCT230P2R31	CXC230P2X31	CXCT230P2X31		
				480	CXC230P271	CXCT230P271	CXC230P2R71	CXCT230P2R71	CXC230P2X71	CXCT230P2X71		
				600	CXC230P281	CXCT230P281	CXC230P2R81	CXCT230P2R81	CXC230P2X81	CXCT230P2X81		

Screwplug Heaters – CX

Table 3 – Screwplug Heaters (Two Elements) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Copper Sheath Brass Plug 54 to 60 W/in ² (8.3 to 9.3 W/cm ²)	4.0	17.7	450	208	CXC240P221	CXCT240P221	CXC240P2R21	CXCT240P2R21	CXC240P2X21	CXCT240P2X21	11	5
				240	CXC240P231	CXCT240P231	CXC240P2R31	CXCT240P2R31	CXC240P2X31	CXCT240P2X31		
				480	CXC240P271	CXCT240P271	CXC240P2R71	CXCT240P2R71	CXC240P2X71	CXCT240P2X71		
				600	CXC240P281	CXCT240P281	CXC240P2R81	CXCT240P2R81	CXC240P2X81	CXCT240P2X81		
	5.0	21.7	551	208	CXC250P221	CXCT250P221	CXC250P2R21	CXCT250P2R21	CXC250P2X21	CXCT250P2X21	11	5
				240	CXC250P231	CXCT250P231	CXC250P2R31	CXCT250P2R31	CXC250P2X31	CXCT250P2X31		
				480	CXC250P271	CXCT250P271	CXC250P2R71	CXCT250P2R71	CXC250P2X71	CXCT250P2X71		
				600	CXC250P281	CXCT250P281	CXC250P2R81	CXCT250P2R81	CXC250P2X81	CXCT250P2X81		
	6.0	25.6	650	208	CXC260P221	CXCT260P221	CXC260P2R21	CXCT260P2R21	CXC260P2X21	CXCT260P2X21	13.2	6
				240	CXC260P231	CXCT260P231	CXC260P2R31	CXCT260P2R31	CXC260P2X31	CXCT260P2X31		
				480	CXC260P271	CXCT260P271	CXC260P2R71	CXCT260P2R71	CXC260P2X71	CXCT260P2X71		
				600	CXC260P281	CXCT260P281	CXC260P2R81	CXCT260P2R81	CXC260P2X81	CXCT260P2X81		
	8.0	32.5	826	208	CXC280P221	CXCT280P221	CXC280P2R21	CXCT280P2R21	CXC280P2X21	CXCT280P2X21	13.2	6
				240	CXC280P231	CXCT280P231	CXC280P2R31	CXCT280P2R31	CXC280P2X31	CXCT280P2X31		
				480	CXC280P271	CXCT280P271	CXC280P2R71	CXCT280P2R71	CXC280P2X71	CXCT280P2X71		
				600	CXC280P281	CXCT280P281	CXC280P2R81	CXCT280P2R81	CXC280P2X81	CXCT280P2X81		
	10.0	39.4	1001	208	CXC2100P221	CXCT2100P221	CXC2100P2R21	CXCT2100P2R21	CXC2100P2X21	CXCT2100P2X21	15.4	7
				240	CXC2100P231	CXCT2100P231	CXC2100P2R31	CXCT2100P2R31	CXC2100P2X31	CXCT2100P2X31		
				480	CXC2100P271	CXCT2100P271	CXC2100P2R71	CXCT2100P2R71	CXC2100P2X71	CXCT2100P2X71		
				600	CXC2100P281	CXCT2100P281	CXC2100P2R81	CXCT2100P2R81	CXC2100P2X81	CXCT2100P2X81		
12.0	47.2	1199	208	CXC2120P221	CXCT2120P221	CXC2120P2R21	CXCT2120P2R21	CXC2120P2X21	CXCT2120P2X21	15.4	7	
			240	CXC2120P231	CXCT2120P231	CXC2120P2R31	CXCT2120P2R31	CXC2120P2X31	CXCT2120P2X31			
			480	CXC2120P271	CXCT2120P271	CXC2120P2R71	CXCT2120P2R71	CXC2120P2X71	CXCT2120P2X71			
			600	CXC2120P281	CXCT2120P281	CXC2120P2R81	CXCT2120P2R81	CXC2120P2X81	CXCT2120P2X81			
Incoloy® Sheath Stainless Plug 54 to 60 W/in ² (8.3 to 9.3 W/cm ²)	1.5	7.9	201	120	CXI215P211	CXIT215P211	CXI215P2R11	CXIT215P2R11	CXI215P2X11	CXIT215P2X11	8.8	4
				208	CXI215P221	CXIT215P221	CXI215P2R21	CXIT215P2R21	CXI215P2X21	CXIT215P2X21		
				240	CXI215P231	CXIT215P231	CXI215P2R31	CXIT215P2R31	CXI215P2X31	CXIT215P2X31		
				480	CXI215P271	CXIT215P271	CXI215P2R71	CXIT215P2R71	CXI215P2X71	CXIT215P2X71		
				600	CXI215P281	CXIT215P281	CXI215P2R81	CXIT215P2R81	CXI215P2X81	CXIT215P2X81		
	2.0	7.9	201	120	CXI220P211	CXIT220P211	CXI220P2R11	CXIT220P2R11	CXI220P2X11	CXIT220P2X11	8.8	4
				208	CXI220P221	CXIT220P221	CXI220P2R21	CXIT220P2R21	CXI220P2X21	CXIT220P2X21		
				240	CXI220P231	CXIT220P231	CXI220P2R31	CXIT220P2R31	CXI220P2X31	CXIT220P2X31		
				480	CXI220P271	CXIT220P271	CXI220P2R71	CXIT220P2R71	CXI220P2X71	CXIT220P2X71		
				600	CXI220P281	CXIT220P281	CXI220P2R81	CXIT220P2R81	CXI220P2X81	CXIT220P2X81		
	3.0	11.8	300	120	CXI230P211	CXIT230P211	CXI230P2R11	CXIT230P2R11	CXI230P2X11	CXIT230P2X11	11	5
				208	CXI230P221	CXIT230P221	CXI230P2R21	CXIT230P2R21	CXI230P2X21	CXIT230P2X21		
				240	CXI230P231	CXIT230P231	CXI230P2R31	CXIT230P2R31	CXI230P2X31	CXIT230P2X31		
				480	CXI230P271	CXIT230P271	CXI230P2R71	CXIT230P2R71	CXI230P2X71	CXIT230P2X71		
				600	CXI230P281	CXIT230P281	CXI230P2R81	CXIT230P2R81	CXI230P2X81	CXIT230P2X81		
	4.0	17.7	450	208	CXI240P221	CXIT240P221	CXI240P2R21	CXIT240P2R21	CXI240P2X21	CXIT240P2X21	11	5
				240	CXI240P231	CXIT240P231	CXI240P2R31	CXIT240P2R31	CXI240P2X31	CXIT240P2X31		
				480	CXI240P271	CXIT240P271	CXI240P2R71	CXIT240P2R71	CXI240P2X71	CXIT240P2X71		
				600	CXI240P281	CXIT240P281	CXI240P2R81	CXIT240P2R81	CXI240P2X81	CXIT240P2X81		
	5.0	21.7	551	208	CXI250P221	CXIT250P221	CXI250P2R21	CXIT250P2R21	CXI250P2X21	CXIT250P2X21	13.2	6
240				CXI250P231	CXIT250P231	CXI250P2R31	CXIT250P2R31	CXI250P2X31	CXIT250P2X31			
480				CXI250P271	CXIT250P271	CXI250P2R71	CXIT250P2R71	CXI250P2X71	CXIT250P2X71			
600				CXI250P281	CXIT250P281	CXI250P2R81	CXIT250P2R81	CXI250P2X81	CXIT250P2X81			

CX - Screwplug Heaters

Table 3 – Screwplug Heaters (Two Elements) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Stainless Plug 54 to 60 W/in ² (8.3 to 9.3 W/cm ²)	6.0	25.6	650	208	CXI260P221	CXIT260P221	CXI260P2R21	CXIT260P2R21	CXI260P2X21	CXIT260P2X21	13.2	6
				240	CXI260P231	CXIT260P231	CXI260P2R31	CXIT260P2R31	CXI260P2X31	CXIT260P2X31		
				480	CXI260P271	CXIT260P271	CXI260P2R71	CXIT260P2R71	CXI260P2X71	CXIT260P2X71		
				600	CXI260P281	CXIT260P281	CXI260P2R81	CXIT260P2R81	CXI260P2X81	CXIT260P2X81		
	8.0	32.5	826	208	CXI280P221	CXIT280P221	CXI280P2R21	CXIT280P2R21	CXI280P2X21	CXIT280P2X21	13.2	6
				240	CXI280P231	CXIT280P231	CXI280P2R31	CXIT280P2R31	CXI280P2X31	CXIT280P2X31		
				480	CXI280P271	CXIT280P271	CXI280P2R71	CXIT280P2R71	CXI280P2X71	CXIT280P2X71		
	10.0	39.4	1001	208	CXI2100P221	CXIT2100P221	CXI2100P2R21	CXIT2100P2R21	CXI2100P2X21	CXIT2100P2X21	15.4	7
				240	CXI2100P231	CXIT2100P231	CXI2100P2R31	CXIT2100P2R31	CXI2100P2X31	CXIT2100P2X31		
				480	CXI2100P271	CXIT2100P271	CXI2100P2R71	CXIT2100P2R71	CXI2100P2X71	CXIT2100P2X71		
				600	CXI2100P281	CXIT2100P281	CXI2100P2R81	CXIT2100P2R81	CXI2100P2X81	CXIT2100P2X81		
	12.0	47.2	1199	208	CXI2120P221	CXIT2120P221	CXI2120P2R21	CXIT2120P2R21	CXI2120P2X21	CXIT2120P2X21	15.4	7
240				CXI2120P231	CXIT2120P231	CXI2120P2R31	CXIT2120P2R31	CXI2120P2X31	CXIT2120P2X31			
480				CXI2120P271	CXIT2120P271	CXI2120P2R71	CXIT2120P2R71	CXI2120P2X71	CXIT2120P2X71			
600				CXI2120P281	CXIT2120P281	CXI2120P2R81	CXIT2120P2R81	CXI2120P2X81	CXIT2120P2X81			
Incoloy® Sheath Steel Plug 23 W/in ² (3.6 W/cm ²)	1.5	14	356	120	CXF215P21411	CXFT215P21411	CXF215P214R11	CXFT215P214R11	CXF215P214X11	CXFT215P214X11	11	5
				208	CXF215P21421	CXFT215P21421	CXF215P214R21	CXFT215P214R21	CXF215P214X21	CXFT215P214X21		
				240	CXF215P21431	CXFT215P21431	CXF215P214R31	CXFT215P214R31	CXF215P214X31	CXFT215P214X31		
				480	CXF215P21471	CXFT215P21471	CXF215P214R71	CXFT215P214R71	CXF215P214X71	CXFT215P214X71		
				600	CXF215P21481	CXFT215P21481	CXF215P214R81	CXFT215P214R81	CXF215P214X81	CXFT215P214X81		
	2.0	18	457	120	CXF220P21811	CXFT220P21811	CXF220P218R11	CXFT220P218R11	CXF220P218X11	CXFT220P218X11	11	5
				208	CXF220P21821	CXFT220P21821	CXF220P218R21	CXFT220P218R21	CXF220P218X21	CXFT220P218X21		
				240	CXF220P21831	CXFT220P21831	CXF220P218R31	CXFT220P218R31	CXF220P218X31	CXFT220P218X31		
				480	CXF220P21871	CXFT220P21871	CXF220P218R71	CXFT220P218R71	CXF220P218X71	CXFT220P218X71		
				600	CXF220P21881	CXFT220P21881	CXF220P218R81	CXFT220P218R81	CXF220P218X81	CXFT220P218X81		
	3.0	26	660	120	CXF230P22611	CXFT230P22611	CXF230P226R11	CXFT230P226R11	CXF230P226X11	CXFT230P226X11	13.2	6
				208	CXF230P22621	CXFT230P22621	CXF230P226R21	CXFT230P226R21	CXF230P226X21	CXFT230P226X21		
				240	CXF230P22631	CXFT230P22631	CXF230P226R31	CXFT230P226R31	CXF230P226X31	CXFT230P226X31		
				480	CXF230P22671	CXFT230P22671	CXF230P226R71	CXFT230P226R71	CXF230P226X71	CXFT230P226X71		
				600	CXF230P22681	CXFT230P22681	CXF230P226R81	CXFT230P226R81	CXF230P226X81	CXFT230P226X81		
	4.0	34	864	208	CXF240P23421	CXFT240P23421	CXF240P234R21	CXFT240P234R21	CXF240P234X21	CXFT240P234X21	13.2	6
				240	CXF240P23431	CXFT240P23431	CXF240P234R31	CXFT240P234R31	CXF240P234X31	CXFT240P234X31		
				480	CXF240P23471	CXFT240P23471	CXF240P234R71	CXFT240P234R71	CXF240P234X71	CXFT240P234X71		
				600	CXF240P23481	CXFT240P23481	CXF240P234R81	CXFT240P234R81	CXF240P234X81	CXFT240P234X81		
	5.0	42	1067	208	CXF250P24221	CXFT250P24221	CXF250P242R21	CXFT250P242R21	CXF250P242X21	CXFT250P242X21	15.4	7
240				CXF250P24231	CXFT250P24231	CXF250P242R31	CXFT250P242R31	CXF250P242X31	CXFT250P242X31			
480				CXF250P24271	CXFT250P24271	CXF250P242R71	CXFT250P242R71	CXF250P242X71	CXFT250P242X71			
600				CXF250P24281	CXFT250P24281	CXF250P242R81	CXFT250P242R81	CXF250P242X81	CXFT250P242X81			
6.0	50	1270	208	CXF260P25021	CXFT260P25021	CXF260P250R21	CXFT260P250R21	CXF260P250X21	CXFT260P250X21	15.4	7	
			240	CXF260P25031	CXFT260P25031	CXF260P250R31	CXFT260P250R31	CXF260P250X31	CXFT260P250X31			
			480	CXF260P25071	CXFT260P25071	CXF260P250R71	CXFT260P250R71	CXF260P250X71	CXFT260P250X71			
			600	CXF260P25081	CXFT260P25081	CXF260P250R81	CXFT260P250R81	CXF260P250X81	CXFT260P250X81			

Table 3 – Screwplug Heaters (Two Elements) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Stainless Steel Plug 23 W/in ² (3.6 W/cm ²)	1.5	14	356	120	CXI215P21411	CXIT215P21411	CXI215P214R11	CXIT215P214R11	CXI215P214X11	CXIT215P214X11	11	5
				208	CXI215P21421	CXIT215P21421	CXI215P214R21	CXIT215P214R21	CXI215P214X21	CXIT215P214X21		
				240	CXI215P21431	CXIT215P21431	CXI215P214R31	CXIT215P214R31	CXI215P214X31	CXIT215P214X31		
				480	CXI215P21471	CXIT215P21471	CXI215P214R71	CXIT215P214R71	CXI215P214X71	CXIT215P214X71		
				600	CXI215P21481	CXIT215P21481	CXI215P214R81	CXIT215P214R81	CXI215P214X81	CXIT215P214X81		
	2.0	18	457	120	CXI220P21811	CXIT220P21811	CXI220P218R11	CXIT220P218R11	CXI220P218X11	CXIT220P218X11	11	5
				208	CXI220P21821	CXIT220P21821	CXI220P218R21	CXIT220P218R21	CXI220P218X21	CXIT220P218X21		
				240	CXI220P21831	CXIT220P21831	CXI220P218R31	CXIT220P218R31	CXI220P218X31	CXIT220P218X31		
				480	CXI220P21871	CXIT220P21871	CXI220P218R71	CXIT220P218R71	CXI220P218X71	CXIT220P218X71		
				600	CXI220P21881	CXIT220P21881	CXI220P218R81	CXIT220P218R81	CXI220P218X81	CXIT220P218X81		
	3.0	26	660	120	CXI230P22611	CXIT230P22611	CXI230P226R11	CXIT230P226R11	CXI230P226X11	CXIT230P226X11	13.2	6
				208	CXI230P22621	CXIT230P22621	CXI230P226R21	CXIT230P226R21	CXI230P226X21	CXIT230P226X21		
				240	CXI230P22631	CXIT230P22631	CXI230P226R31	CXIT230P226R31	CXI230P226X31	CXIT230P226X31		
				480	CXI230P22671	CXIT230P22671	CXI230P226R71	CXIT230P226R71	CXI230P226X71	CXIT230P226X71		
				600	CXI230P22681	CXIT230P22681	CXI230P226R81	CXIT230P226R81	CXI230P226X81	CXIT230P226X81		
	4.0	34	864	208	CXI240P23421	CXIT240P23421	CXI240P234R21	CXIT240P234R21	CXI240P234X21	CXIT240P234X21	13.2	6
				240	CXI240P23431	CXIT240P23431	CXI240P234R31	CXIT240P234R31	CXI240P234X31	CXIT240P234X31		
				480	CXI240P23471	CXIT240P23471	CXI240P234R71	CXIT240P234R71	CXI240P234X71	CXIT240P234X71		
				600	CXI240P23481	CXIT240P23481	CXI240P234R81	CXIT240P234R81	CXI240P234X81	CXIT240P234X81		
5.0	42	1067	208	CXI250P24221	CXIT250P24221	CXI250P242R21	CXIT250P242R21	CXI250P242X21	CXIT250P242X21	15.4	7	
			240	CXI250P24231	CXIT250P24231	CXI250P242R31	CXIT250P242R31	CXI250P242X31	CXIT250P242X31			
			480	CXI250P24271	CXIT250P24271	CXI250P242R71	CXIT250P242R71	CXI250P242X71	CXIT250P242X71			
			600	CXI250P24281	CXIT250P24281	CXI250P242R81	CXIT250P242R81	CXI250P242X81	CXIT250P242X81			
6.0	50	1270	208	CXI260P25021	CXIT260P25021	CXI260P250R21	CXIT260P250R21	CXI260P250X21	CXIT260P250X21	15.4	7	
			240	CXI260P25031	CXIT260P25031	CXI260P250R31	CXIT260P250R31	CXI260P250X31	CXIT260P250X31			
			480	CXI260P25071	CXIT260P25071	CXI260P250R71	CXIT260P250R71	CXI260P250X71	CXIT260P250X71			
			600	CXI260P25081	CXIT260P25081	CXI260P250R81	CXIT260P250R81	CXI260P250X81	CXIT260P250X81			
Incoloy® Sheath Steel Plug 15 W/in ² (2.3 W/cm ²)	1.0	17.7	450	120	CXF210P211	CXFT210P211	CXF210P2R11	CXFT210P2R11	CXF210P2X11	CXFT210P2X11	11	5
				208	CXF210P221	CXFT210P221	CXF210P2R21	CXFT210P2R21	CXF210P2X21	CXFT210P2X21		
				240	CXF210P231	CXFT210P231	CXF210P2R31	CXFT210P2R31	CXF210P2X31	CXFT210P2X31		
				480	CXF210P271	CXFT210P271	CXF210P2R71	CXFT210P2R71	CXF210P2X71	CXFT210P2X71		
				600	CXF210P281	CXFT210P281	CXF210P2R81	CXFT210P2R81	CXF210P2X81	CXFT210P2X81		
	1.5	25.6	650	120	CXF215P22511	CXFT215P22511	CXF215P225R11	CXFT215P225R11	CXF215P225X11	CXFT215P225X11	11	5
				208	CXF215P22521	CXFT215P22521	CXF215P225R21	CXFT215P225R21	CXF215P225X21	CXFT215P225X21		
				240	CXF215P22531	CXFT215P22531	CXF215P225R31	CXFT215P225R31	CXF215P225X31	CXFT215P225X31		
				480	CXF215P22571	CXFT215P22571	CXF215P225R71	CXFT215P225R71	CXF215P225X71	CXFT215P225X71		
				600	CXF215P22581	CXFT215P22581	CXF215P225R81	CXFT215P225R81	CXF215P225X81	CXFT215P225X81		
	2.0	32.5	826	120	CXF220P23211	CXFT220P23211	CXF220P232R11	CXFT220P232R11	CXF220P232X11	CXFT220P232X11	11	5
				208	CXF220P23221	CXFT220P23221	CXF220P232R21	CXFT220P232R21	CXF220P232X21	CXFT220P232X21		
				240	CXF220P23231	CXFT220P23231	CXF220P232R31	CXFT220P232R31	CXF220P232X31	CXFT220P232X31		
				480	CXF220P23271	CXFT220P23271	CXF220P232R71	CXFT220P232R71	CXF220P232X71	CXFT220P232X71		
				600	CXF220P23281	CXFT220P23281	CXF220P232R81	CXFT220P232R81	CXF220P232X81	CXFT220P232X81		
	3.0	39.4	1001	120	CXF230P23911	CXFT230P23911	CXF230P239R11	CXFT230P239R11	CXF230P239X11	CXFT230P239X11	13.2	6
				208	CXF230P23921	CXFT230P23921	CXF230P239R21	CXFT230P239R21	CXF230P239X21	CXFT230P239X21		
				240	CXF230P23931	CXFT230P23931	CXF230P239R31	CXFT230P239R31	CXF230P239X31	CXFT230P239X31		
				480	CXF230P23971	CXFT230P23971	CXF230P239R71	CXFT230P239R71	CXF230P239X71	CXFT230P239X71		
				600	CXF230P23981	CXFT230P23981	CXF230P239R81	CXFT230P239R81	CXF230P239X81	CXFT230P239X81		

CX – Screwplug Heaters

Table 3 – Screwplug Heaters (Two Elements) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Standard Voltages 1 Phase Only	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Stainless Plug 15 W/in ² (2.3 W/cm ²)	1.0	17.7	450	120	CXI210P211	CXIT210P211	CXI210P2R11	CXIT210P2R11	CXI210P2X11	CXIT210P2X11	8.8	4
				208	CXI210P221	CXIT210P221	CXI210P2R21	CXIT210P2R21	CXI210P2X21	CXIT210P2X21		
				240	CXI210P231	CXIT210P231	CXI210P2R31	CXIT210P2R31	CXI210P2X31	CXIT210P2X31		
				480	CXI210P271	CXIT210P271	CXI210P2R71	CXIT210P2R71	CXI210P2X71	CXIT210P2X71		
				600	CXI210P281	CXIT210P281	CXI210P2R81	CXIT210P2R81	CXI210P2X81	CXIT210P2X81		
	1.5	25.6	650	120	CXI215P22511	CXIT215P22511	CXI215P225R11	CXIT215P225R11	CXI215P225X11	CXIT215P225X11	8.8	4
				208	CXI215P22521	CXIT215P22521	CXI215P225R21	CXIT215P225R21	CXI215P225X21	CXIT215P225X21		
				240	CXI215P22531	CXIT215P22531	CXI215P225R31	CXIT215P225R31	CXI215P225X31	CXIT215P225X31		
				480	CXI215P22571	CXIT215P22571	CXI215P225R71	CXIT215P225R71	CXI215P225X71	CXIT215P225X71		
				600	CXI215P22581	CXIT215P22581	CXI215P225R81	CXIT215P225R81	CXI215P225X81	CXIT215P225X81		
	2.0	32.5	826	120	CXI220P23211	CXIT220P23211	CXI220P232R11	CXIT220P232R11	CXI220P232X11	CXIT220P232X11	8.8	4
				208	CXI220P23221	CXIT220P23221	CXI220P232R21	CXIT220P232R21	CXI220P232X21	CXIT220P232X21		
				240	CXI220P23231	CXIT220P23231	CXI220P232R31	CXIT220P232R31	CXI220P232X31	CXIT220P232X31		
				480	CXI220P23271	CXIT220P23271	CXI220P232R71	CXIT220P232R71	CXI220P232X71	CXIT220P232X71		
				600	CXI220P23281	CXIT220P23281	CXI220P232R81	CXIT220P232R81	CXI220P232X81	CXIT220P232X81		
	3.0	39.4	1001	120	CXI230P23911	CXIT230P23911	CXI230P239R11	CXIT230P239R11	CXI230P239X11	CXIT230P239X11	8.8	4
				208	CXI230P23921	CXIT230P23921	CXI230P239R21	CXIT230P239R21	CXI230P239X21	CXIT230P239X21		
				240	CXI230P23931	CXIT230P23931	CXI230P239R31	CXIT230P239R31	CXI230P239X31	CXIT230P239X31		
				480	CXI230P23971	CXIT230P23971	CXI230P239R71	CXIT230P239R71	CXI230P239X71	CXIT230P239X71		
				600	CXI230P23981	CXIT230P23981	CXI230P239R81	CXIT230P239R81	CXI230P239X81	CXIT230P239X81		

Table 4 – Screwplug Heaters (Three Element) - 2" NPT

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight						
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg					
Copper Sheath Brass Plug 54 to 60 W/in ² (8.3 to 8.9 W/cm ²)	3.0	7.9	201	1	120	CXC330P211	CXCT330P211	CXC330P2R11	CXCT330P2R11	CXC330P2X11	CXCT330P2X11	11	5					
				1	208	CXC330P221	CXCT330P221	CXC330P2R21	CXCT330P2R21	CXC330P2X21	CXCT330P2X21							
				3	208	CXC330P223	CXCT330P223	CXC330P2R23	CXCT330P2R23	CXC330P2X23	CXCT330P2X23							
				1	240	CXC330P231	CXCT330P231	CXC330P2R31	CXCT330P2R31	CXC330P2X31	CXCT330P2X31							
				1	480	CXC330P271	CXCT330P271	CXC330P2R71	CXCT330P2R71	CXC330P2X71	CXCT330P2X71							
				3	480	CXC330P273	CXCT330P273	CXC330P2R73	CXCT330P2R73	CXC330P2X73	CXCT330P2X73							
				1	600	CXC330P281	CXCT330P281	CXC330P2R81	CXCT330P2R81	CXC330P2X81	CXCT330P2X81							
				3	600	CXC330P283	CXCT330P283	CXC330P2R83	CXCT330P2R83	CXC330P2X83	CXCT330P2X83							
				4.5	11.8	300	1	208	CXC345P221	CXCT345P221	CXC345P2R21			CXCT345P2R21	CXC345P2X21	CXCT345P2X21	13.2	6
							3	208	CXC345P223	CXCT345P223	CXC345P2R23			CXCT345P2R23	CXC345P2X23	CXCT345P2X23		
	1	240	CXC345P231				CXCT345P231	CXC345P2R31	CXCT345P2R31	CXC345P2X31	CXCT345P2X31							
	1	480	CXC345P271				CXCT345P271	CXC345P2R71	CXCT345P2R71	CXC345P2X71	CXCT345P2X71							
	3	480	CXC345P273				CXCT345P273	CXC345P2R73	CXCT345P2R73	CXC345P2X73	CXCT345P2X73							
	1	600	CXC345P281				CXCT345P281	CXC345P2R81	CXCT345P2R81	CXC345P2X81	CXCT345P2X81							
	3	600	CXC345P283				CXCT345P283	CXC345P2R83	CXCT345P2R83	CXC345P2X83	CXCT345P2X83							
	6.0	17.7	450				1	208	CXC360P221	CXCT360P221	CXC360P2R21	CXCT360P2R21	CXC360P2X21	CXCT360P2X21	13.2	6		
							3	208	CXC360P223	CXCT360P223	CXC360P2R23	CXCT360P2R23	CXC360P2X23	CXCT360P2X23				
							1	240	CXC360P231	CXCT360P231	CXC360P2R31	CXCT360P2R31	CXC360P2X31	CXCT360P2X31				
				1	480	CXC360P271	CXCT360P271	CXC360P2R71	CXCT360P2R71	CXC360P2X71	CXCT360P2X71							
				3	480	CXC360P273	CXCT360P273	CXC360P2R73	CXCT360P2R73	CXC360P2X73	CXCT360P2X73							
1				600	CXC360P281	CXCT360P281	CXC360P2R81	CXCT360P2R81	CXC360P2X81	CXCT360P2X81								
3				600	CXC360P283	CXCT360P283	CXC360P2R83	CXCT360P2R83	CXC360P2X83	CXCT360P2X83								

Screwplug Heaters – CX

Table 4 – Screwplug Heaters (Three Element) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Copper Sheath Brass Plug 54 to 60 W/in ² (8.3 to 8.9 W/cm ²)	7.5	21.7	551	1	208	CXC375P221	CXCT375P221	CXC375P2R21	CXCT375P2R21	CXC375P2X21	CXCT375P2X21	13.2	6
				3	208	CXC375P223	CXCT375P223	CXC375P2R23	CXCT375P2R23	CXC375P2X23	CXCT375P2X23		
				1	240	CXC375P231	CXCT375P231	CXC375P2R31	CXCT375P2R31	CXC375P2X31	CXCT375P2X31		
				1	480	CXC375P271	CXCT375P271	CXC375P2R71	CXCT375P2R71	CXC375P2X71	CXCT375P2X71		
				3	480	CXC375P273	CXCT375P273	CXC375P2R73	CXCT375P2R73	CXC375P2X73	CXCT375P2X73		
				1	600	CXC375P281	CXCT375P281	CXC375P2R81	CXCT375P2R81	CXC375P2X81	CXCT375P2X81		
	9.0	25.6	650	3	208	CXC390P223	CXCT390P223	CXC390P2R23	CXCT390P2R23	CXC390P2X23	CXCT390P2X23	15.4	7
				1	240	CXC390P231	CXCT390P231	CXC390P2R31	CXCT390P2R31	CXC390P2X31	CXCT390P2X31		
				1	480	CXC390P271	CXCT390P271	CXC390P2R71	CXCT390P2R71	CXC390P2X71	CXCT390P2X71		
				3	480	CXC390P273	CXCT390P273	CXC390P2R73	CXCT390P2R73	CXC390P2X73	CXCT390P2X73		
				1	600	CXC390P281	CXCT390P281	CXC390P2R81	CXCT390P2R81	CXC390P2X81	CXCT390P2X81		
				3	600	CXC390P283	CXCT390P283	CXC390P2R83	CXCT390P2R83	CXC390P2X83	CXCT390P2X83		
	12.0	32.5	826	3	208	CXC3120P223	CXCT3120P223	CXC3120P2R23	CXCT3120P2R23	CXC3120P2X23	CXCT3120P2X23	15.4	7
				1	480	CXC3120P271	CXCT3120P271	CXC3120P2R71	CXCT3120P2R71	CXC3120P2X71	CXCT3120P2X71		
				3	480	CXC3120P273	CXCT3120P273	CXC3120P2R73	CXCT3120P2R73	CXC3120P2X73	CXCT3120P2X73		
1				600	CXC3120P281	CXCT3120P281	CXC3120P2R81	CXCT3120P2R81	CXC3120P2X81	CXCT3120P2X81			
3				600	CXC3120P283	CXCT3120P283	CXC3120P2R83	CXCT3120P2R83	CXC3120P2X83	CXCT3120P2X83			
Incoloy® Sheath Steel Plug 23 W/in ² (3.6 W/cm ²)	3.0	17.7	450	1	120	CXF330P211	CXFT330P211	CXF330P2R11	CXFT330P2R11	CXF330P2X11	CXFT330P2X11	11	5
				1	208	CXF330P221	CXFT330P221	CXF330P2R21	CXFT330P2R21	CXF330P2X21	CXFT330P2X21		
				3	208	CXF330P223	CXFT330P223	CXF330P2R23	CXFT330P2R23	CXF330P2X23	CXFT330P2X23		
				1	240	CXF330P231	CXFT330P231	CXF330P2R31	CXFT330P2R31	CXF330P2X31	CXFT330P2X31		
				1	480	CXF330P271	CXFT330P271	CXF330P2R71	CXFT330P2R71	CXF330P2X71	CXFT330P2X71		
				3	480	CXF330P273	CXFT330P273	CXF330P2R73	CXFT330P2R73	CXF330P2X73	CXFT330P2X73		
				1	600	CXF330P281	CXFT330P281	CXF330P2R81	CXFT330P2R81	CXF330P2X81	CXFT330P2X81		
				3	600	CXF330P283	CXFT330P283	CXF330P2R83	CXFT330P2R83	CXF330P2X83	CXFT330P2X83		
	6.0	34	864	1	208	CXF360P23421	CXFT360P23421	CXF360P234R21	CXFT360P234R21	CXF360P234X21	CXFT360P234X21	13.2	6
				3	208	CXF360P23423	CXFT360P23423	CXF360P234R23	CXFT360P234R23	CXF360P234X23	CXFT360P234X23		
				1	240	CXF360P23431	CXFT360P23431	CXF360P234R31	CXFT360P234R31	CXF360P234X31	CXFT360P234X31		
				1	480	CXF360P23471	CXFT360P23471	CXF360P234R71	CXFT360P234R71	CXF360P234X71	CXFT360P234X71		
				3	480	CXF360P23473	CXFT360P23473	CXF360P234R73	CXFT360P234R73	CXF360P234X73	CXFT360P234X73		
				1	600	CXF360P23481	CXFT360P23481	CXF360P234R81	CXFT360P234R81	CXF360P234X81	CXFT360P234X81		
				3	600	CXF360P23483	CXFT360P23483	CXF360P234R83	CXFT360P234R83	CXF360P234X83	CXFT360P234X83		
9.0	50	1270	3	208	CXF390P25023	CXFT390P25023	CXF390P250R23	CXFT390P250R23	CXF390P250X23	CXFT390P250X23	15.4	7	
			1	240	CXF390P25031	CXFT390P25031	CXF390P250R31	CXFT390P250R31	CXF390P250X31	CXFT390P250X31			
			1	480	CXF390P25071	CXFT390P25071	CXF390P250R71	CXFT390P250R71	CXF390P250X71	CXFT390P250X71			
			3	480	CXF390P25073	CXFT390P25073	CXF390P250R73	CXFT390P250R73	CXF390P250X73	CXFT390P250X73			
			1	600	CXF390P25081	CXFT390P25081	CXF390P250R81	CXFT390P250R81	CXF390P250X81	CXFT390P250X81			
			3	600	CXF390P25083	CXFT390P25083	CXF390P250R83	CXFT390P250R83	CXF390P250X83	CXFT390P250X83			

To Order Specify

- Quantity
- Wattage
- Catalog number
- Special features
- Voltage

CX – Screwplug Heaters

Table 4 – Screwplug Heaters (Three Element) - 2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Steel Plug 15 W/in ² (2.3 W/cm ²)	1.5	17.7	450	1	120	CXF315P211	CXFT315P211	CXF315P2R11	CXFT315P2R11	CXF315P2X11	CXFT315P2X11	11	5
				1	208	CXF315P221	CXFT315P221	CXF315P2R21	CXFT315P2R21	CXF315P2X21	CXFT315P2X21		
				3	208	CXF315P223	CXFT315P223	CXF315P2R23	CXFT315P2R23	CXF315P2X23	CXFT315P2X23		
				1	240	CXF315P231	CXFT315P231	CXF315P2R31	CXFT315P2R31	CXF315P2X31	CXFT315P2X31		
				1	480	CXF315P271	CXFT315P271	CXF315P2R71	CXFT315P2R71	CXF315P2X71	CXFT315P2X71		
				3	480	CXF315P273	CXFT315P273	CXF315P2R73	CXFT315P2R73	CXF315P2X73	CXFT315P2X73		
				1	600	CXF315P281	CXFT315P281	CXF315P2R81	CXFT315P2R81	CXF315P2X81	CXFT315P2X81		
				3	600	CXF315P283	CXFT315P283	CXF315P2R83	CXFT315P2R83	CXF315P2X83	CXFT315P2X83		
	3.0	32.5	826	1	120	CXF330P23211	CXFT330P23211	CXF330P232R11	CXFT330P232R11	CXF330P232X11	CXFT330P232X11	15.4	7
				1	208	CXF330P23221	CXFT330P23221	CXF330P232R21	CXFT330P232R21	CXF330P232X21	CXFT330P232X21		
				3	208	CXF330P23223	CXFT330P23223	CXF330P232R23	CXFT330P232R23	CXF330P232X23	CXFT330P232X23		
				1	240	CXF330P23231	CXFT330P23231	CXF330P232R31	CXFT330P232R31	CXF330P232X31	CXFT330P232X31		
				1	480	CXF330P23271	CXFT330P23271	CXF330P232R71	CXFT330P232R71	CXF330P232X71	CXFT330P232X71		
				3	480	CXF330P23273	CXFT330P23273	CXF330P232R73	CXFT330P232R73	CXF330P232X73	CXFT330P232X73		
				1	600	CXF330P23281	CXFT330P23281	CXF330P232R81	CXFT330P232R81	CXF330P232X81	CXFT330P232X81		
				3	600	CXF330P23283	CXFT330P23283	CXF330P232R83	CXFT330P232R83	CXF330P232X83	CXFT330P232X83		
	4.5	39.4	1001	1	208	CXF345P221	CXFT345P221	CXF345P2R21	CXFT345P2R21	CXF345P2X21	CXFT345P2X21	15.4	7
				3	208	CXF345P223	CXFT345P223	CXF345P2R23	CXFT345P2R23	CXF345P2X23	CXFT345P2X23		
				1	240	CXF345P231	CXFT345P231	CXF345P2R31	CXFT345P2R31	CXF345P2X31	CXFT345P2X31		
				1	480	CXF345P271	CXFT345P271	CXF345P2R71	CXFT345P2R71	CXF345P2X71	CXFT345P2X71		
				3	480	CXF345P273	CXFT345P273	CXF345P2R73	CXFT345P2R73	CXF345P2X73	CXFT345P2X73		
				1	600	CXF345P281	CXFT345P281	CXF345P2R81	CXFT345P2R81	CXF345P2X81	CXFT345P2X81		
				3	600	CXF345P283	CXFT345P283	CXF345P2R83	CXFT345P2R83	CXF345P2X83	CXFT345P2X83		

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

Table 5 – Screwplug Heaters (Three Element) - 2 1/2" NPT

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight						
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg					
Copper Sheath Brass Plug 54 to 60 W/in ² (8.3 to 8.9 W/cm ²)	3.0	7.7	195	1	120	CXC330P2511	CXCT330P2511	CXC330P25R11	CXCT330P25R11	CXC330P25X11	CXCT330P25X11	8.8	4					
				1	208	CXC330P2521	CXCT330P2521	CXC330P25R21	CXCT330P25R21	CXC330P25X21	CXCT330P25X21							
				3	208	CXC330P2523	CXCT330P2523	CXC330P25R23	CXCT330P25R23	CXC330P25X23	CXCT330P25X23							
				1	240	CXC330P2531	CXCT330P2531	CXC330P25R31	CXCT330P25R31	CXC330P25X31	CXCT330P25X31							
				1	480	CXC330P2571	CXCT330P2571	CXC330P25R71	CXCT330P25R71	CXC330P25X71	CXCT330P25X71							
				3	480	CXC330P2573	CXCT330P2573	CXC330P25R73	CXCT330P25R73	CXC330P25X73	CXCT330P25X73							
				1	600	CXC330P2581	CXCT330P2581	CXC330P25R81	CXCT330P25R81	CXC330P25X81	CXCT330P25X81							
				3	600	CXC330P2583	CXCT330P2583	CXC330P25R83	CXCT330P25R83	CXC330P25X83	CXCT330P25X83							
	4.5	11.6	295	1	208	CXC345P2521	CXCT345P2521	CXC345P25R21	CXCT345P25R21	CXC345P25X21	CXCT345P25X21	8.8	4					
				3	208	CXC345P2523	CXCT345P2523	CXC345P25R23	CXCT345P25R23	CXC345P25X23	CXCT345P25X23							
				1	240	CXC345P2531	CXCT345P2531	CXC345P25R31	CXCT345P25R31	CXC345P25X31	CXCT345P25X31							
				1	480	CXC345P2571	CXCT345P2571	CXC345P25R71	CXCT345P25R71	CXC345P25X71	CXCT345P25X71							
				3	480	CXC345P2573	CXCT345P2573	CXC345P25R73	CXCT345P25R73	CXC345P25X73	CXCT345P25X73							
				1	600	CXC345P2581	CXCT345P2581	CXC345P25R81	CXCT345P25R81	CXC345P25X81	CXCT345P25X81							
				3	600	CXC345P2583	CXCT345P2583	CXC345P25R83	CXCT345P25R83	CXC345P25X83	CXCT345P25X83							
				6.0	17.5	445	1	208	CXC360P2521	CXCT360P2521	CXC360P25R21			CXCT360P25R21	CXC360P25X21	CXCT360P25X21	11	5
	3	208	CXC360P2523				CXCT360P2523	CXC360P25R23	CXCT360P25R23	CXC360P25X23	CXCT360P25X23							
	1	240	CXC360P2531				CXCT360P2531	CXC360P25R31	CXCT360P25R31	CXC360P25X31	CXCT360P25X31							
	1	480	CXC360P2571				CXCT360P2571	CXC360P25R71	CXCT360P25R71	CXC360P25X71	CXCT360P25X71							
	3	480	CXC360P2573				CXCT360P2573	CXC360P25R73	CXCT360P25R73	CXC360P25X73	CXCT360P25X73							
	1	600	CXC360P2581				CXCT360P2581	CXC360P25R81	CXCT360P25R81	CXC360P25X81	CXCT360P25X81							
	3	600	CXC360P2583				CXCT360P2583	CXC360P25R83	CXCT360P25R83	CXC360P25X83	CXCT360P25X83							
	7.5	21.5	545				1	208	CXC375P2521	CXCT375P2521	CXC375P25R21	CXCT375P25R21	CXC375P25X21	CXCT375P25X21	11	5		
				3	208	CXC375P2523	CXCT375P2523	CXC375P25R23	CXCT375P25R23	CXC375P25X23	CXCT375P25X23							
				1	240	CXC375P2531	CXCT375P2531	CXC375P25R31	CXCT375P25R31	CXC375P25X31	CXCT375P25X31							
				1	480	CXC375P2571	CXCT375P2571	CXC375P25R71	CXCT375P25R71	CXC375P25X71	CXCT375P25X71							
				3	480	CXC375P2573	CXCT375P2573	CXC375P25R73	CXCT375P25R73	CXC375P25X73	CXCT375P25X73							
				1	600	CXC375P2581	CXCT375P2581	CXC375P25R81	CXCT375P25R81	CXC375P25X81	CXCT375P25X81							
				3	600	CXC375P2583	CXCT375P2583	CXC375P25R83	CXCT375P25R83	CXC375P25X83	CXCT375P25X83							
				9.0	25.4	645	3	208	CXC390P2523	CXCT390P2523	CXC390P25R23	CXCT390P25R23	CXC390P25X23	CXCT390P25X23			13.2	6
	1	240	CXC390P2531				CXCT390P2531	CXC390P25R31	CXCT390P25R31	CXC390P25X31	CXCT390P25X31							
	1	480	CXC390P2571				CXCT390P2571	CXC390P25R71	CXCT390P25R71	CXC390P25X71	CXCT390P25X71							
	3	480	CXC390P2573				CXCT390P2573	CXC390P25R73	CXCT390P25R73	CXC390P25X73	CXCT390P25X73							
	1	600	CXC390P2581				CXCT390P2581	CXC390P25R81	CXCT390P25R81	CXC390P25X81	CXCT390P25X81							
	3	600	CXC390P2583				CXCT390P2583	CXC390P25R83	CXCT390P25R83	CXC390P25X83	CXCT390P25X83							
	12.0	32.3	820				3	208	CXC3120P2523	CXCT3120P2523	CXC3120P25R23	CXCT3120P25R23	CXC3120P25X23	CXCT3120P25X23	13.2	6		
							1	480	CXC3120P2571	CXCT3120P2571	CXC3120P25R71	CXCT3120P25R71	CXC3120P25X71	CXCT3120P25X71				
				3	480	CXC3120P2573	CXCT3120P2573	CXC3120P25R73	CXCT3120P25R73	CXC3120P25X73	CXCT3120P25X73							
				1	600	CXC3120P2581	CXCT3120P2581	CXC3120P25R81	CXCT3120P25R81	CXC3120P25X81	CXCT3120P25X81							
				3	600	CXC3120P2583	CXCT3120P2583	CXC3120P25R83	CXCT3120P25R83	CXC3120P25X83	CXCT3120P25X83							
				15.0	39.2	995	3	208	CXC3150P2523	CXCT3150P2523	CXC3150P25R23	CXCT3150P25R23	CXC3150P25X23	CXCT3150P25X23			15.4	7
							1	480	CXC3150P2571	CXCT3150P2571	CXC3150P25R71	CXCT3150P25R71	CXC3150P25X71	CXCT3150P25X71				
3							480	CXC3150P2573	CXCT3150P2573	CXC3150P25R73	CXCT3150P25R73	CXC3150P25X73	CXCT3150P25X73					
1	600	CXC3150P2581	CXCT3150P2581				CXC3150P25R81	CXCT3150P25R81	CXC3150P25X81	CXCT3150P25X81								
3	600	CXC3150P2583	CXCT3150P2583				CXC3150P25R83	CXCT3150P25R83	CXC3150P25X83	CXCT3150P25X83								
18.0	47	1195	3				208	CXC3180P2523	CXCT3180P2523	CXC3180P25R23	CXCT3180P25R23	CXC3180P25X23	CXCT3180P25X23	15.4	7			
			1				480	CXC3180P2571	CXCT3180P2571	CXC3180P25R71	CXCT3180P25R71	CXC3180P25X71	CXCT3180P25X71					
			3				480	CXC3180P2573	CXCT3180P2573	CXC3180P25R73	CXCT3180P25R73	CXC3180P25X73	CXCT3180P25X73					
			1	600	CXC3180P2581	CXCT3180P2581	CXC3180P25R81	CXCT3180P25R81	CXC3180P25X81	CXCT3180P25X81								
			3	600	CXC3180P2583	CXCT3180P2583	CXC3180P25R83	CXCT3180P25R83	CXC3180P25X83	CXCT3180P25X83								

CX - Screwplug Heaters

Table 5 – Screwplug Heaters (Three Element) - 2 1/2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Stainless Steel Plug 54 to 60 W/in ² (8.3 to 8.9 W/cm ²)	3.0	7.7	195	1	120	CXI330P2511	CXIT330P2511	CXI330P25R11	CXIT330P25R11	CXI330P25X11	CXIT330P25X11	8.8	4
				1	208	CXI330P2521	CXIT330P2521	CXI330P25R21	CXIT330P25R21	CXI330P25X21	CXIT330P25X21		
				3	208	CXI330P2523	CXIT330P2523	CXI330P25R23	CXIT330P25R23	CXI330P25X23	CXIT330P25X23		
				1	240	CXI330P2531	CXIT330P2531	CXI330P25R31	CXIT330P25R31	CXI330P25X31	CXIT330P25X31		
				1	480	CXI330P2571	CXIT330P2571	CXI330P25R71	CXIT330P25R71	CXI330P25X71	CXIT330P25X71		
				3	480	CXI330P2573	CXIT330P2573	CXI330P25R73	CXIT330P25R73	CXI330P25X73	CXIT330P25X73		
				1	600	CXI330P2581	CXIT330P2581	CXI330P25R81	CXIT330P25R81	CXI330P25X81	CXIT330P25X81		
				3	600	CXI330P2583	CXIT330P2583	CXI330P25R83	CXIT330P25R83	CXI330P25X83	CXIT330P25X83		
	4.5	11.6	295	1	208	CXI345P2521	CXIT345P2521	CXI345P25R21	CXIT345P25R21	CXI345P25X21	CXIT345P25X21	8.8	4
				3	208	CXI345P2523	CXIT345P2523	CXI345P25R23	CXIT345P25R23	CXI345P25X23	CXIT345P25X23		
				1	240	CXI345P2531	CXIT345P2531	CXI345P25R31	CXIT345P25R31	CXI345P25X31	CXIT345P25X31		
				1	480	CXI345P2571	CXIT345P2571	CXI345P25R71	CXIT345P25R71	CXI345P25X71	CXIT345P25X71		
				3	480	CXI345P2573	CXIT345P2573	CXI345P25R73	CXIT345P25R73	CXI345P25X73	CXIT345P25X73		
				1	600	CXI345P2581	CXIT345P2581	CXI345P25R81	CXIT345P25R81	CXI345P25X81	CXIT345P25X81		
	6.0	17.5	445	1	208	CXI360P2521	CXIT360P2521	CXI360P25R21	CXIT360P25R21	CXI360P25X21	CXIT360P25X21	11	5
				3	208	CXI360P2523	CXIT360P2523	CXI360P25R23	CXIT360P25R23	CXI360P25X23	CXIT360P25X23		
				1	240	CXI360P2531	CXIT360P2531	CXI360P25R31	CXIT360P25R31	CXI360P25X31	CXIT360P25X31		
				1	480	CXI360P2571	CXIT360P2571	CXI360P25R71	CXIT360P25R71	CXI360P25X71	CXIT360P25X71		
				3	480	CXI360P2573	CXIT360P2573	CXI360P25R73	CXIT360P25R73	CXI360P25X73	CXIT360P25X73		
				1	600	CXI360P2581	CXIT360P2581	CXI360P25R81	CXIT360P25R81	CXI360P25X81	CXIT360P25X81		
	7.5	21.5	545	1	208	CXI375P2521	CXIT375P2521	CXI375P25R21	CXIT375P25R21	CXI375P25X21	CXIT375P25X21	11	5
				3	208	CXI375P2523	CXIT375P2523	CXI375P25R23	CXIT375P25R23	CXI375P25X23	CXIT375P25X23		
				1	240	CXI375P2531	CXIT375P2531	CXI375P25R31	CXIT375P25R31	CXI375P25X31	CXIT375P25X31		
				1	480	CXI375P2571	CXIT375P2571	CXI375P25R71	CXIT375P25R71	CXI375P25X71	CXIT375P25X71		
				3	480	CXI375P2573	CXIT375P2573	CXI375P25R73	CXIT375P25R73	CXI375P25X73	CXIT375P25X73		
				1	600	CXI375P2581	CXIT375P2581	CXI375P25R81	CXIT375P25R81	CXI375P25X81	CXIT375P25X81		
	9.0	25.4	645	3	208	CXI390P2523	CXIT390P2523	CXI390P25R23	CXIT390P25R23	CXI390P25X23	CXIT390P25X23	13.2	6
					240	CXI390P2531	CXIT390P2531	CXI390P25R31	CXIT390P25R31	CXI390P25X31	CXIT390P25X31		
				480	CXI390P2571	CXIT390P2571	CXI390P25R71	CXIT390P25R71	CXI390P25X71	CXIT390P25X71			
				480	CXI390P2573	CXIT390P2573	CXI390P25R73	CXIT390P25R73	CXI390P25X73	CXIT390P25X73			
				600	CXI390P2581	CXIT390P2581	CXI390P25R81	CXIT390P25R81	CXI390P25X81	CXIT390P25X81			
				600	CXI390P2583	CXIT390P2583	CXI390P25R83	CXIT390P25R83	CXI390P25X83	CXIT390P25X83			
12.0	32.3	820	3	208	CXI3120P2523	CXIT3120P2523	CXI3120P25R23	CXIT3120P25R23	CXI3120P25X23	CXIT3120P25X23	13.2	6	
			1	480	CXI3120P2571	CXIT3120P2571	CXI3120P25R71	CXIT3120P25R71	CXI3120P25X71	CXIT3120P25X71			
			3	480	CXI3120P2573	CXIT3120P2573	CXI3120P25R73	CXIT3120P25R73	CXI3120P25X73	CXIT3120P25X73			
			1	600	CXI3120P2581	CXIT3120P2581	CXI3120P25R81	CXIT3120P25R81	CXI3120P25X81	CXIT3120P25X81			
			3	600	CXI3120P2583	CXIT3120P2583	CXI3120P25R83	CXIT3120P25R83	CXI3120P25X83	CXIT3120P25X83			
15.0	39.2	820	3	208	CXI3150P2523	CXIT3150P2523	CXI3150P25R23	CXIT3150P25R23	CXI3150P25X23	CXIT3150P25X23	15.4	7	
			1	480	CXI3150P2571	CXIT3150P2571	CXI3150P25R71	CXIT3150P25R71	CXI3150P25X71	CXIT3150P25X71			
			3	480	CXI3150P2573	CXIT3150P2573	CXI3150P25R73	CXIT3150P25R73	CXI3150P25X73	CXIT3150P25X73			
			1	600	CXI3150P2581	CXIT3150P2581	CXI3150P25R81	CXIT3150P25R81	CXI3150P25X81	CXIT3150P25X81			
			3	600	CXI3150P2583	CXIT3150P2583	CXI3150P25R83	CXIT3150P25R83	CXI3150P25X83	CXIT3150P25X83			
18.0	47	1195	3	208	CXI3180P2523	CXIT3180P2523	CXI3180P25R23	CXIT3180P25R23	CXI3180P25X23	CXIT3180P25X23	15.4	7	
			1	480	CXI3180P2571	CXIT3180P2571	CXI3180P25R71	CXIT3180P25R71	CXI3180P25X71	CXIT3180P25X71			
			3	480	CXI3180P2573	CXIT3180P2573	CXI3180P25R73	CXIT3180P25R73	CXI3180P25X73	CXIT3180P25X73			
			1	600	CXI3180P2581	CXIT3180P2581	CXI3180P25R81	CXIT3180P25R81	CXI3180P25X81	CXIT3180P25X81			
			3	600	CXI3180P2583	CXIT3180P2583	CXI3180P25R83	CXIT3180P25R83	CXI3180P25X83	CXIT3180P25X83			

Table 5 – Screwplug Heaters (Three Element) - 2 1/2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Steel Plug 23 W/in² (3.6 W/cm²)	3.0	17.5	445	1	120	CXF330P2511	CXFT330P2511	CXF330P25R11	CXFT330P25R11	CXF330P25X11	CXFT330P25X11	11	5
				1	208	CXF330P2521	CXFT330P2521	CXF330P25R21	CXFT330P25R21	CXF330P25X21	CXFT330P25X21		
				3	208	CXF330P2523	CXFT330P2523	CXF330P25R23	CXFT330P25R23	CXF330P25X23	CXFT330P25X23		
				1	240	CXF330P2531	CXFT330P2531	CXF330P25R31	CXFT330P25R31	CXF330P25X31	CXFT330P25X31		
				1	480	CXF330P2571	CXFT330P2571	CXF330P25R71	CXFT330P25R71	CXF330P25X71	CXFT330P25X71		
				3	480	CXF330P2573	CXFT330P2573	CXF330P25R73	CXFT330P25R73	CXF330P25X73	CXFT330P25X73		
				1	600	CXF330P2581	CXFT330P2581	CXF330P25R81	CXFT330P25R81	CXF330P25X81	CXFT330P25X81		
				3	600	CXF330P2583	CXFT330P2583	CXF330P25R83	CXFT330P25R83	CXF330P25X83	CXFT330P25X83		
	6.0	25.4	645	1	208	CXF345P2521	CXFT345P2521	CXF345P25R21	CXFT345P25R21	CXF345P25X21	CXFT345P25X21	13.2	6
				3	208	CXF345P2523	CXFT345P2523	CXF345P25R23	CXFT345P25R23	CXF345P25X23	CXFT345P25X23		
				1	240	CXF345P2531	CXFT345P2531	CXF345P25R31	CXFT345P25R31	CXF345P25X31	CXFT345P25X31		
				1	480	CXF345P2571	CXFT345P2571	CXF345P25R71	CXFT345P25R71	CXF345P25X71	CXFT345P25X71		
				3	480	CXF345P2573	CXFT345P2573	CXF345P25R73	CXFT345P25R73	CXF345P25X73	CXFT345P25X73		
				1	600	CXF345P2581	CXFT345P2581	CXF345P25R81	CXFT345P25R81	CXF345P25X81	CXFT345P25X81		
				3	600	CXF345P2583	CXFT345P2583	CXF345P25R83	CXFT345P25R83	CXF345P25X83	CXFT345P25X83		
				1	208	CXF360P253421	CXFT360P253421	CXF360P2534R21	CXFT360P2534R21	CXF360P2534X21	CXFT360P2534X21		
				3	208	CXF360P253423	CXFT360P253423	CXF360P2534R23	CXFT360P2534R23	CXF360P2534X23	CXFT360P2534X23		
				1	240	CXF360P253431	CXFT360P253431	CXF360P2534R31	CXFT360P2534R31	CXF360P2534X31	CXFT360P2534X31		
				1	480	CXF360P253471	CXFT360P253471	CXF360P2534R71	CXFT360P2534R71	CXF360P2534X71	CXFT360P2534X71		
				3	480	CXF360P253473	CXFT360P253473	CXF360P2534R73	CXFT360P2534R73	CXF360P2534X73	CXFT360P2534X73		
	7.5	42	1067	3	208	CXF375P254223	CXFT375P254223	CXF375P2542R23	CXFT375P2542R23	CXF375P2542X23	CXFT375P2542X23	15.4	7
				1	240	CXF375P254231	CXFT375P254231	CXF375P2542R31	CXFT375P2542R31	CXF375P2542X31	CXFT375P2542X31		
				1	480	CXF375P254271	CXFT375P254271	CXF375P2542R71	CXFT375P2542R71	CXF375P2542X71	CXFT375P2542X71		
				3	480	CXF375P254273	CXFT375P254273	CXF375P2542R73	CXFT375P2542R73	CXF375P2542X73	CXFT375P2542X73		
				1	600	CXF375P254281	CXFT375P254281	CXF375P2542R81	CXFT375P2542R81	CXF375P2542X81	CXFT375P2542X81		
				3	600	CXF375P254283	CXFT375P254283	CXF375P2542R83	CXFT375P2542R83	CXF375P2542X83	CXFT375P2542X83		
	9.0	50	1270	3	208	CXF390P25023	CXFT390P25023	CXF390P250R23	CXFT390P250R23	CXF390P250X23	CXFT390P250X23	15.4	7
				1	240	CXF390P25031	CXFT390P25031	CXF390P250R31	CXFT390P250R31	CXF390P250X31	CXFT390P250X31		
				1	480	CXF390P25071	CXFT390P25071	CXF390P250R71	CXFT390P250R71	CXF390P250X71	CXFT390P250X71		
				3	480	CXF390P25073	CXFT390P25073	CXF390P250R73	CXFT390P250R73	CXF390P250X73	CXFT390P250X73		
				1	600	CXF390P25081	CXFT390P25081	CXF390P250R81	CXFT390P250R81	CXF390P250X81	CXFT390P250X81		
				3	600	CXF390P25083	CXFT390P25083	CXF390P250R83	CXFT390P250R83	CXF390P250X83	CXFT390P250X83		

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

Table 5 – Screwplug Heaters (Three Element) - 2 1/2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight						
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg					
Incoloy® Sheath Stainless Steel Plug 23 W/in ² (3.6 W/cm ²)	3.0	17.5	445	1	120	CXI330P251711	CXIT330P251711	CXI330P2517R11	CXIT330P2517R11	CXI330P2517X11	CXIT330P2517X11	11	5					
				1	208	CXI330P251721	CXIT330P251721	CXI330P2517R21	CXIT330P2517R21	CXI330P2517X21	CXIT330P2517X21							
				3	208	CXI330P251723	CXIT330P251723	CXI330P2517R23	CXIT330P2517R23	CXI330P2517X23	CXIT330P2517X23							
				1	240	CXI330P251731	CXIT330P251731	CXI330P2517R31	CXIT330P2517R31	CXI330P2517X31	CXIT330P2517X31							
				1	480	CXI330P251771	CXIT330P251771	CXI330P2517R71	CXIT330P2517R71	CXI330P2517X71	CXIT330P2517X71							
				3	480	CXI330P251773	CXIT330P251773	CXI330P2517R73	CXIT330P2517R73	CXI330P2517X73	CXIT330P2517X73							
				1	600	CXI330P251781	CXIT330P251781	CXI330P2517R81	CXIT330P2517R81	CXI330P2517X81	CXIT330P2517X81							
				3	600	CXI330P251783	CXIT330P251783	CXI330P2517R83	CXIT330P2517R83	CXI330P2517X83	CXIT330P2517X83							
	4.5	25.4	645	1	208	CXI345P252521	CXIT345P252521	CXI345P2525R21	CXIT345P2525R21	CXI345P2525X21	CXIT345P2525X21	13.2	5					
				3	208	CXI345P252523	CXIT345P252523	CXI345P2525R23	CXIT345P2525R23	CXI345P2525X23	CXIT345P2525X23							
				1	240	CXI345P252531	CXIT345P252531	CXI345P2525R31	CXIT345P2525R31	CXI345P2525X31	CXIT345P2525X31							
				1	480	CXI345P252571	CXIT345P252571	CXI345P2525R71	CXIT345P2525R71	CXI345P2525X71	CXIT345P2525X71							
				3	480	CXI345P252573	CXIT345P252573	CXI345P2525R73	CXIT345P2525R73	CXI345P2525X73	CXIT345P2525X73							
				1	600	CXI345P252581	CXIT345P252581	CXI345P2525R81	CXIT345P2525R81	CXI345P2525X81	CXIT345P2525X81							
				3	600	CXI345P252583	CXIT345P252583	CXI345P2525R83	CXIT345P2525R83	CXI345P2525X83	CXIT345P2525X83							
				1	208	CXI360P253421	CXIT360P253421	CXI360P2534R21	CXIT360P2534R21	CXI360P2534X21	CXIT360P2534X21							
	6.0	34	864	3	208	CXI360P253423	CXIT360P253423	CXI360P2534R23	CXIT360P2534R23	CXI360P2534X23	CXIT360P2534X23	13.2	5					
				1	240	CXI360P253431	CXIT360P253431	CXI360P2534R31	CXIT360P2534R31	CXI360P2534X31	CXIT360P2534X31							
				1	480	CXI360P253471	CXIT360P253471	CXI360P2534R71	CXIT360P2534R71	CXI360P2534X71	CXIT360P2534X71							
				3	480	CXI360P253473	CXIT360P253473	CXI360P2534R73	CXIT360P2534R73	CXI360P2534X73	CXIT360P2534X73							
				1	600	CXI360P253481	CXIT360P253481	CXI360P2534R81	CXIT360P2534R81	CXI360P2534X81	CXIT360P2534X81							
				3	600	CXI360P253483	CXIT360P253483	CXI360P2534R83	CXIT360P2534R83	CXI360P2534X83	CXIT360P2534X83							
				7.5	42	1067	3	208	CXI375P254223	CXIT375P254223	CXI375P2542R23			CXIT375P2542R23	CXI375P2542X23	CXIT375P2542X23	15.4	7
							1	240	CXI375P254231	CXIT375P254231	CXI375P2542R31			CXIT375P2542R31	CXI375P2542X31	CXIT375P2542X31		
	1	480	CXI375P254271				CXIT375P254271	CXI375P2542R71	CXIT375P2542R71	CXI375P2542X71	CXIT375P2542X71							
	3	480	CXI375P254273				CXIT375P254273	CXI375P2542R73	CXIT375P2542R73	CXI375P2542X73	CXIT375P2542X73							
	1	600	CXI375P254281				CXIT375P254281	CXI375P2542R81	CXIT375P2542R81	CXI375P2542X81	CXIT375P2542X81							
	3	600	CXI375P254283				CXIT375P254283	CXI375P2542R83	CXIT375P2542R83	CXI375P2542X83	CXIT375P2542X83							
9.0	50	1270	3				208	CXI390P255023	CXIT390P255023	CXI390P2550R23	CXIT390P2550R23	CXI390P2550X23	CXIT390P2550X23	15.4	7			
			1				240	CXI390P255031	CXIT390P255031	CXI390P2550R31	CXIT390P2550R31	CXI390P2550X31	CXIT390P2550X31					
			1	480	CXI390P255071	CXIT390P255071	CXI390P2550R71	CXIT390P2550R71	CXI390P2550X71	CXIT390P2550X71								
			3	480	CXI390P255073	CXIT390P255073	CXI390P2550R73	CXIT390P2550R73	CXI390P2550X73	CXIT390P2550X73								
			1	600	CXI390P255081	CXIT390P255081	CXI390P2550R81	CXIT390P2550R81	CXI390P2550X81	CXIT390P2550X81								
			3	600	CXI390P255083	CXIT390P255083	CXI390P2550R83	CXIT390P2550R83	CXI390P2550X83	CXIT390P2550X83								
			Incoloy® Sheath Steel Plug 15 W/in ² (2.3 W/cm ²)	1.5	17.7	450	1	120	CXF315P251711	CXFT315P251711	CXF315P2517R11	CXFT315P2517R11	CXF315P2517X11			CXFT315P2517X11	11	5
							1	208	CXF315P251721	CXFT315P251721	CXF315P2517R21	CXFT315P2517R21	CXF315P2517X21			CXFT315P2517X21		
3	208	CXF315P251723					CXFT315P251723	CXF315P2517R23	CXFT315P2517R23	CXF315P2517X23	CXFT315P2517X23							
1	240	CXF315P251731					CXFT315P251731	CXF315P2517R31	CXFT315P2517R31	CXF315P2517X31	CXFT315P2517X31							
1	480	CXF315P251771					CXFT315P251771	CXF315P2517R71	CXFT315P2517R71	CXF315P2517X71	CXFT315P2517X71							
3	480	CXF315P251773					CXFT315P251773	CXF315P2517R73	CXFT315P2517R73	CXF315P2517X73	CXFT315P2517X73							
1	600	CXF315P251781					CXFT315P251781	CXF315P2517R81	CXFT315P2517R81	CXF315P2517X81	CXFT315P2517X81							
3	600	CXF315P251783					CXFT315P251783	CXF315P2517R83	CXFT315P2517R83	CXF315P2517X83	CXFT315P2517X83							
3.0	32.5	825		1	120	CXF330P253211	CXFT330P253211	CXF330P2532R11	CXFT330P2532R11	CXF330P2532X11	CXFT330P2532X11	15.4	7					
				1	208	CXF330P253221	CXFT330P253221	CXF330P2532R21	CXFT330P2532R21	CXF330P2532X21	CXFT330P2532X21							
				3	208	CXF330P253223	CXFT330P253223	CXF330P2532R23	CXFT330P2532R23	CXF330P2532X23	CXFT330P2532X23							
				1	240	CXF330P253231	CXFT330P253231	CXF330P2532R31	CXFT330P2532R31	CXF330P2532X31	CXFT330P2532X31							
				1	480	CXF330P253271	CXFT330P253271	CXF330P2532R71	CXFT330P2532R71	CXF330P2532X71	CXFT330P2532X71							
				3	480	CXF330P253273	CXFT330P253273	CXF330P2532R73	CXFT330P2532R73	CXF330P2532X73	CXFT330P2532X73							
				1	600	CXF330P253281	CXFT330P253281	CXF330P2532R81	CXFT330P2532R81	CXF330P2532X81	CXFT330P2532X81							
				3	600	CXF330P253283	CXFT330P253283	CXF330P2532R83	CXFT330P2532R83	CXF330P2532X83	CXFT330P2532X83							

Screwplug Heaters – CX

Table 5 – Screwplug Heaters (Three Element) - 2 1/2" NPT (Cont'd)

	kW	Immersion Length 'B'		Phase	Standard Voltage	General Purpose Terminal Box		NEMA 4 Terminal Box		Explosion-Proof Terminal Box		Net Weight	
		in	mm			Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	lbs	kg
Incoloy® Sheath Steel Plug 15 W/in ² (2.3 W/cm ²)	4.5	39.2	995	1	208	CXF345P253921	CXFT345P253921	CXF345P2539R21	CXFT345P2539R21	CXF345P2539X21	CXFT345P2539X21	15.4	7
				3	208	CXF345P253923	CXFT345P253923	CXF345P2539R23	CXFT345P2539R23	CXF345P2539X23	CXFT345P2539X23		
				1	240	CXF345P253931	CXFT345P253931	CXF345P2539R31	CXFT345P2539R31	CXF345P2539X31	CXFT345P2539X31		
				1	480	CXF345P253971	CXFT345P253971	CXF345P2539R71	CXFT345P2539R71	CXF345P2539X71	CXFT345P2539X71		
				3	480	CXF345P253973	CXFT345P253973	CXF345P2539R73	CXFT345P2539R73	CXF345P2539X73	CXFT345P2539X73		
				1	600	CXF345P253981	CXFT345P253981	CXF345P2539R81	CXFT345P2539R81	CXF345P2539X81	CXFT345P2539X81		
	6.0	51	1295	3	600	CXF345P253983	CXFT345P253983	CXF345P2539R83	CXFT345P2539R83	CXF345P2539X83	CXFT345P2539X83	15.4	7
				1	208	CXF360P255121	CXFT360P255121	CXF360P2551R21	CXFT360P2551R21	CXF360P2551X21	CXFT360P2551X21		
				3	208	CXF360P255123	CXFT360P255123	CXF360P2551R23	CXFT360P2551R23	CXF360P2551X23	CXFT360P2551X23		
				1	240	CXF360P255131	CXFT360P255131	CXF360P2551R31	CXFT360P2551R31	CXF360P2551X31	CXFT360P2551X31		
				1	480	CXF360P255171	CXFT360P255171	CXF360P2551R71	CXFT360P2551R71	CXF360P2551X71	CXFT360P2551X71		
				3	480	CXF360P255173	CXFT360P255173	CXF360P2551R73	CXFT360P2551R73	CXF360P2551X73	CXFT360P2551X73		
				1	600	CXF360P255181	CXFT360P255181	CXF360P2551R81	CXFT360P2551R81	CXF360P2551X81	CXFT360P2551X81		
				3	600	CXF360P255183	CXFT360P255183	CXF360P2551R83	CXFT360P2551R83	CXF360P2551X83	CXFT360P2551X83		
Incoloy® Sheath Stainless Steel Plug 15 W/in ² (2.3 W/cm ²)	1.5	17.7	450	1	120	CXI315P251711	CXIT315P251711	CXI315P2517R11	CXIT315P2517R11	CXI315P2517X11	CXIT315P2517X11	11	5
				1	208	CXI315P251721	CXIT315P251721	CXI315P2517R21	CXIT315P2517R21	CXI315P2517X21	CXIT315P2517X21		
				3	208	CXI315P251723	CXIT315P251723	CXI315P2517R23	CXIT315P2517R23	CXI315P2517X23	CXIT315P2517X23		
				1	240	CXI315P251731	CXIT315P251731	CXI315P2517R31	CXIT315P2517R31	CXI315P2517X31	CXIT315P2517X31		
				1	480	CXI315P251771	CXIT315P251771	CXI315P2517R71	CXIT315P2517R71	CXI315P2517X71	CXIT315P2517X71		
				3	480	CXI315P251773	CXIT315P251773	CXI315P2517R73	CXIT315P2517R73	CXI315P2517X73	CXIT315P2517X73		
				1	600	CXI315P251781	CXIT315P251781	CXI315P2517R81	CXIT315P2517R81	CXI315P2517X81	CXIT315P2517X81		
				3	600	CXI315P251783	CXIT315P251783	CXI315P2517R83	CXIT315P2517R83	CXI315P2517X83	CXIT315P2517X83		
	3.0	32.5	825	1	120	CXI330P253211	CXIT330P253211	CXI330P2532R11	CXIT330P2532R11	CXI330P2532X11	CXIT330P2532X11	15.4	7
				1	208	CXI330P253221	CXIT330P253221	CXI330P2532R21	CXIT330P2532R21	CXI330P2532X21	CXIT330P2532X21		
				3	208	CXI330P253223	CXIT330P253223	CXI330P2532R23	CXIT330P2532R23	CXI330P2532X23	CXIT330P2532X23		
				1	240	CXI330P253231	CXIT330P253231	CXI330P2532R31	CXIT330P2532R31	CXI330P2532X31	CXIT330P2532X31		
				1	480	CXI330P253271	CXIT330P253271	CXI330P2532R71	CXIT330P2532R71	CXI330P2532X71	CXIT330P2532X71		
				3	480	CXI330P253273	CXIT330P253273	CXI330P2532R73	CXIT330P2532R73	CXI330P2532X73	CXIT330P2532X73		
1				600	CXI330P253281	CXIT330P253281	CXI330P2532R81	CXIT330P2532R81	CXI330P2532X81	CXIT330P2532X81			
3				600	CXI330P253283	CXIT330P253283	CXI330P2532R83	CXIT330P2532R83	CXI330P2532X83	CXIT330P2532X83			
4.5	39.2	995	1	208	CXI345P253921	CXIT345P253921	CXI345P2539R21	CXIT345P2539R21	CXI345P2539X21	CXIT345P2539X21	15.4	7	
			3	208	CXI345P253923	CXIT345P253923	CXI345P2539R23	CXIT345P2539R23	CXI345P2539X23	CXIT345P2539X23			
			1	240	CXI345P253931	CXIT345P253931	CXI345P2539R31	CXIT345P2539R31	CXI345P2539X31	CXIT345P2539X31			
			1	480	CXI345P253971	CXIT345P253971	CXI345P2539R71	CXIT345P2539R71	CXI345P2539X71	CXIT345P2539X71			
			3	480	CXI345P253973	CXIT345P253973	CXI345P2539R73	CXIT345P2539R73	CXI345P2539X73	CXIT345P2539X73			
			1	600	CXI345P253981	CXIT345P253981	CXI345P2539R81	CXIT345P2539R81	CXI345P2539X81	CXIT345P2539X81			
			3	600	CXI345P253983	CXIT345P253983	CXI345P2539R83	CXIT345P2539R83	CXI345P2539X83	CXIT345P2539X83			
			1	208	CXI360P255121	CXIT360P255121	CXI360P2551R21	CXIT360P2551R21	CXI360P2551X21	CXIT360P2551X21			
			3	208	CXI360P255123	CXIT360P255123	CXI360P2551R23	CXIT360P2551R23	CXI360P2551X23	CXIT360P2551X23			
			1	240	CXI360P255131	CXIT360P255131	CXI360P2551R31	CXIT360P2551R31	CXI360P2551X31	CXIT360P2551X31			
			1	480	CXI360P255171	CXIT360P255171	CXI360P2551R71	CXIT360P2551R71	CXI360P2551X71	CXIT360P2551X71			
			3	480	CXI360P255173	CXIT360P255173	CXI360P2551R73	CXIT360P2551R73	CXI360P2551X73	CXIT360P2551X73			
			1	600	CXI360P255181	CXIT360P255181	CXI360P2551R81	CXIT360P2551R81	CXI360P2551X81	CXIT360P2551X81			
			3	600	CXI360P255183	CXIT360P255183	CXI360P2551R83	CXIT360P2551R83	CXI360P2551X83	CXIT360P2551X83			

Special Features (Check Factory)

Heaters With Built-in Thermostats

All screwplug heaters listed are available with built-in thermostats. Heaters with thermostats have a "T" added to their catalog no. prefix. Standard thermostat range is 50°F to 250°F (10°C to 120°C). Ratings are normally 25 amps at 240V single pole single throw. 600V thermostats and double pole thermostats are available on special order.

Special Thermostat Ranges

Thermostats with the following temperature ranges are also available upon request:

- 0°F to 100°F (-18°C to 40°C)
- 150°F to 550°F (70°C to 280°C)
- 300°F to 700°F (150°C to 370°C)

Terminal Housings

Shown below are the different types of terminal housings used with screwplug heaters.

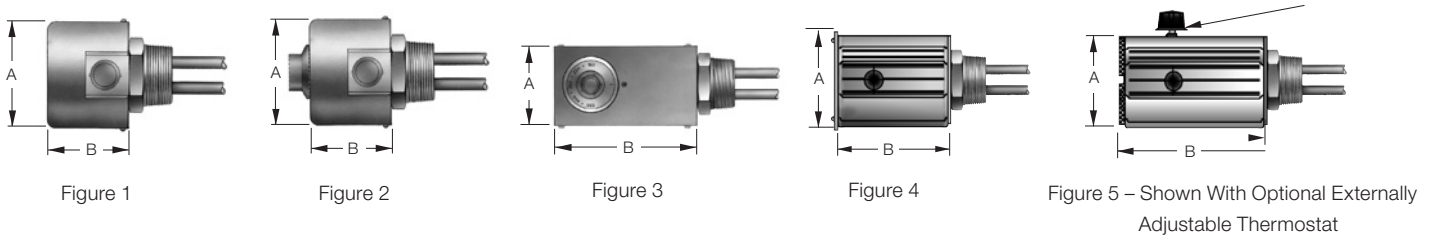


Table 6 – Terminal Housings

Description	Figure	'A'		'B'	
		in	mm	in	mm
Standard Housing Without Thermostat	1	4.000	102	2.750	70
Standard Thermostat Housing (1 Pole)	2	4.000	102	4.000	102
Special Thermostat Housing	3	4.125	106	7.000	180
Moisture Resistant Housing with 1 Pole Thermostat or without Thermostat	4	4.250	108	7.250	185
Moisture Resistant Housing with 2 Pole Thermostat	4	4.250	108	8.500	215
Explosion-Proof Housing with 1 Pole Thermostat or without Thermostat	5	4.250	108	8.000	205
Explosion-Proof Housing with 2 Pole Thermostat	5	4.250	108	9.250	235

Voltage

Custom built heaters are available in any special voltage rating up to 600V.

Wattage

Heaters listed are standard wattage. Any reasonable wattage is available to replace your present heater with a similar Caloritech™ unit.

Length

Heaters are available with immersed lengths up to 135" (3430 mm). Internal vessel support must be used when immersed length exceeds 49" (1245 mm).

Plug Sizes and Ratings

Thermon Heating Systems can install elements in virtually any size or rating of plug, special or standard.

Special Materials

Special sheath, plug and terminal box materials are available on request.

Welded Elements

While welded elements are standard for CXI heaters, CXF heaters listed have the elements silver brazed to the plug which suits most applications. Thermon Heating Systems can provide listed CXF heaters with elements welded to the plug.

Built-in Thermostat Well

Built-in thermostat wells are available. Specify length and internal diameter required.

Heaters ordered with explosion-proof or moisture resistant housings have built-in wells as standard.

Passivation

Incoloy® and stainless steel sheathed heaters are available with chemically passivated sheaths which will provide superior corrosion resistance in most applications. Passivation is achieved through an electropolishing technique.

Heaters with stainless steel plugs are available with all wetted surfaces passivated.

Moisture Resistant Terminal Housings

Moisture resistant terminal housings suitable for outdoor applications are available for all heater sizes. See Figure 4 on page B20.

Explosion-Proof Terminal Housings

If the heater is to be operated in a hazardous environment an explosion-proof housing must be used. See Figure 5 on page B20. Specify Class, Div. (or Zone), Group and Temp. Code for the hazardous location.

Domestic Immersion Heaters - CX

Application

Caloritech™ domestic immersion heaters have been developed as high quality replacements for the most commonly used heater types.

In cases where the old style resistor type element is called for, choose a tin or zinc plated element. The plating reduces galvanic current within the tank, thus reducing corrosion and providing a longer heater and tank life. The elements are also epoxy sealed to protect the heater from moisture and other contaminants which could otherwise lead to premature element failure.

Choose a suitable element from the following tables or have your nearest Caloritech™ representative assist you in your selection.

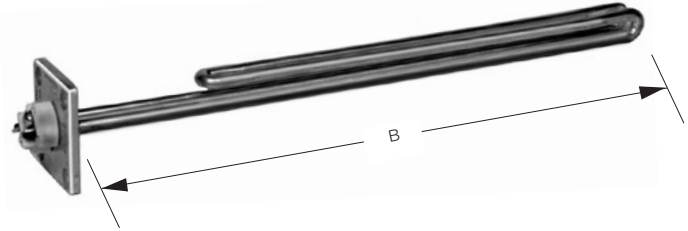


Figure 6 – CXC10632-XX and CXI10635-XX

Table 7 – 2 1/2" Sq. Flange, Figure 6 on page B21

	'B' Dim		Watts	Volts	Catalog No.	Replacement Catalog No.		
	in	mm				Chrom'x	Giant	GSW
Tinned Copper Sheath	6.500	165	500	120	CXC10632-01	20200-010	-	
			750	120	CXC10632-04	20200-100	-	
			750	240	CXC10632-06	20200-120	9G7	-
	8.000	203	1000	120	CXC10632-07	20200-160	9G10	85075
				240	CXC10632-09	20204-070	10G10	85079
				240	CXC10632-09	20200-180	10G10	85079
	15.750	400	1500	120	CXC10632-10	20200-580	9G1527	-
				240	CXC10632-12	20200-600	-	-
	11.000	279	1500	120	CXC10632-13	20200-250	9G15	85100
				240	CXC10632-15	20204-130	10G15	85104
				240	CXC10632-15	20200-260	10G15	85104
	6.500	165	1500	120	CXC10632-16	-		
				240	CXC10632-18	-		
	14.500	368	2000	120	CXC10632-19	20200-670	-	
				208	CXC10632-20	20200-680	-	
				240	CXC10632-21	20200-690	-	
	8.000	203	2000	120	CXC10632-22	20200-640	9G20	-
				208	CXC10632-23	20204-430	9AG20	-
				240	CXC10632-24	20200-660	10G20	85151
	11.250	286	3000	120	CXC10632-28	20200-760	9G30	85202
208				CXC10632-29	20204-490	9AG30	85200	
240				CXC10632-30	20200-770	10G30	85201	
11.000	279	3000	120	CXC10632-31	20204-500	-		
			240	CXC10632-33	20200-780	-		
15.750	400	4500	208	CXC10632-35	20200-860	9AG45	85302	
			240	CXC10632-36	20204-560	10G45	85304	

	'B' Dim		Watts	Volts	Catalog No.	Replacement Catalog No.		
	in	mm				Chrom'x	Giant	GSW
Tinned Copper Sheath	16.000	406	4500	280	CXC10632-38	-		
				240	CXC10632-39	-		
	17.500	445	5000	208	CXC10632-41	20200-890	9AG50	85402
				240	CXC10632-42	20204-590	10G50	85400
	9.500	241	5000	280	CXC10632-44	20200-900	10G50	85400
				240	CXC10632-45	20204-600	-	
	21.000	533	6000	208	CXC10632-47	20200-920	9AG60	-
				240	CXC10632-48	20204-680	10G60	85501
	11.250	286	6000	280	CXC10632-50	20200-930	10G60	85501
				240	CXC10632-51	20204-690	-	
Incoloy® Sheath	8.750	222	2000		CXI10635-03	20205-020	-	
	11.625	295	3000		CXI10635-06	20205-040	-	
	13.875	352	4500	600	CXI10635-09	20205-200	-	
	15.125	384	5000		CXI10635-12	20205-220	-	
	17.875	454	6000		CXI10635-15	20205-240	-	

Note: These heaters are normally stocked in limited quantities.

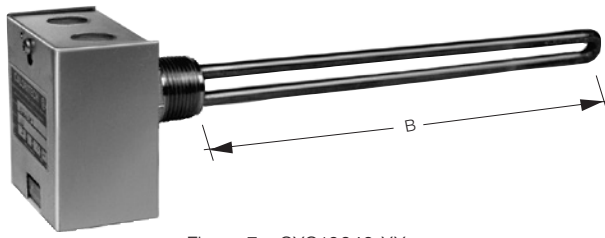


Figure 7 – CXC10640-XX

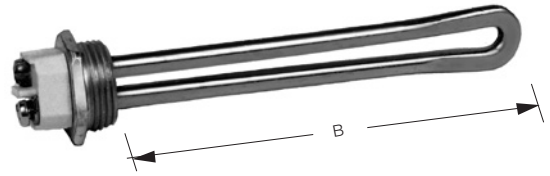


Figure 8 – CXC10642-XX

Table 8 – 1" Tapered Brass Plug, Figure 7 on page B22

	'B' Dim		Watts	Volts	Catalog No.	Replacement Cat. No.		
	in	mm				Chrom'x	Giant	GSW
Copper Sheath	5.500	140	500	120	CXC10640-01	30201-070		
				240	CXC10640-03	30201-090		
	5.500	140	750	120	CXC10640-04	30201-130		
				240	CXC10640-06	30201-150		
	7.000	178	1000	120	CXC10640-07	30201-190	1G10	80469
				240	CXC10640-09	30201-210	2G10	80472
	15.250	394	1500	120	CXC10640-11			
				240	CXC10640-12			
	10.500	267	1500	120	CXC10640-13	30201-250	1G15	80470
				208	CXC10640-14			
				240	CXC10640-15	30201-270	2G15	80472
	6.500	165	1500	120	CXC10640-16			
				208	CXC10640-17			
				240	CXC10640-18			
	14.000	356	2000	208	CXC10640-20			
				240	CXC10640-21			
	7.500	191	2000	120	CXC10640-22	30201-280		
				208	CXC10640-23			
				240	CXC10640-24	30201-300		
	9.000	229	2500	208	CXC10640-26			
				240	CXC10640-27			
	10.750	273	3000	120	CXC10640-28	30201-340		
				208	CXC10640-29			
				240	CXC10640-30	30201-360	2G30	80473
	6.000	152	3000	120	CXC10640-31			
				208	CXC10640-32			
				240	CXC10640-33			
	15.250	394	4500	208	CXC10640-35			
				240	CXC10640-36	30201-420		
	8.250	210	4500	208	CXC10640-38			
240				CXC10640-39				
17.000	432	5000	208	CXC10640-41				
			240	CXC10640-42	30201-450			
9.000	229	5000	208	CXC10640-44				
			240	CXC10640-45				
20.500	521	6000	208	CXC10640-47				
			240	CXC10640-48				
10.750	273	6000	208	CXC10640-50				
			240	CXC10640-51				

Table 9 – 1" Non-Tapered Brass Plug, Figure 8 on page B22

	'B' Dim		Watts	Volts	Catalog No.	Replacement Cat. No.		
	in	mm				Chrom'x	Giant	GSW
Copper Sheath	6.500	165	500	120	CXC10642-01	20704-070		
				240	CXC10642-02	20704-090		
	750	120	CXC10642-04					
		240	CXC10642-06					
	8.000	203	1000	120	CXC10642-07	20704-190	3G10/80	
				240	CXC10642-09	20704-210	04G10/80	
	15.750	400	1500	120	CXC10642-10			
				240	CXC10642-12			
	11.000	279	1500	120	CXC10642-13	20704-580	04G20/80	80476
				240	CXC10642-15	20704-600		80474
	6.500	165	1500	120	CXC10642-16	20704-640		
				240	CXC10642-18	20704-660		
	14.500	368	2000	240	CXC10642-21			
				120	CXC10642-22	20704-280		
	8.000	203	2000	208	CXC10642-23	20704-290	3AG20/80	
				240	CXC10642-24	20704-300	04G20/80	
	9.500	241	2500	120	CXC10642-25	20704-310		
				240	CXC10642-27	20704-330		
	11.250	286	3000	120	CXC10642-28	20704-340		
				208	CXC10642-29	20704-350	3AG30/80	
	6.500	165	3000	240	CXC10642-30	20704-360	04G60/80	80475
				240	CXC10642-33	20704-690		
	15.750	400	4500	208	CXC10642-35	20704-410	3AG45/80	
				240	CXC10642-36	20704-420	04G45/80	80477
	8.750	222	4500	208	CXC10642-38	20704-710		
				240	CXC10642-39	20704-720		
	17.500	445	5000	208	CXC10642-41	20704-440	3AG50/80	
				240	CXC10642-42	20704-450	04G50/80	
	9.500	241	5000	208	CXC10642-44			
				240	CXC10642-45			
21.000	533	6000	240	CXC10642-48	20704-510	04G50/80		
			240	CXC10642-51				

Domestic Immersion Heaters – CX

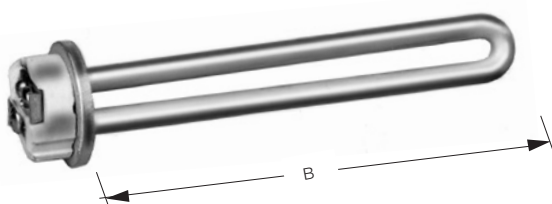


Figure 9 – CXC10636-XX

Table 10 – Round Flange, Figure 9 on page B22

	'B' Dim		Watts	Volts	Catalog No.	Replacement Cat. No.		
	in	mm				Chrom'x	Giant	GSW
Zinc Plated Copper Sheath	11.250	286	4500	240	CXC10636-12			

Type AW Replacement Thermostats and Type HLC1610 High Limit Cutout

Type AW thermostats are replacement units for all storage-type domestic water heaters. They are for use with immersion or wrap around type elements and can be screw or clamp mounted.

Type HLC1610 high limit controls are specifically designed for domestic hot water heater protection.

Table 12 – Domestic Immersion Heater Thermostats and High Limit with Manual Reset

Catalog No.	Electrical Rating	Circuit Hop	Temperature	
			°F	°C
AW7025	240V 25 amp Single Pole Single Throw	On Temperature Rise	120 to 180	49 to 82
AW7135	240V 25 amp Single Pole Double Throw	Circuit 1 on Temperature Rise Circuit 2 on Temperature Fall	120 to 180	49 to 82
HLC1610	240V 25 amp Double Pole Double Throw	On Temperature Rise	190 ± 5	88 ± 2.8



Figure 11 – AW7025 Thermostat



Figure 10 – AW7135 Thermostat

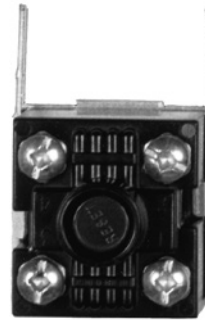


Figure 12 – HLC1610 High Limit

Urn Heaters - TX

Application

Type TX immersion heaters are intended for use in steam tables, coffee urns, kettles, sterilizers, percolators and many other water heating applications where a bottom-mount heater is most practical.

The heaters are not guaranteed against corrosion since Thermon Heating Systems has no control over the liquid type, concentration or temperature.

Heaters must be kept free of heavy scale build-up to prolong life. Most importantly, the heating elements must be fully immersed in liquid during operation. Units with built-in low water level cutouts are recommended. Units without cutout will fail under low water conditions. Cutouts are a safety device and should not be relied on as the only form of water level control.

Features

Type TX heater represents a complete redesign of the TTUH unit. All models have an O-ring sealing gasket with elements fully prewired.

The most advanced feature, intended to provide extended life, is the fast response low level trip used on the built-in cutout models. Once the cutout trips (and after the water level is restored) it must be manually reset before the heater will energize.

CAUTION: This limit is not intended to function as a low level control. Repeated use as a low level control will result in premature heater failure.

For heaters which draw over 25 amps, or for three phase heaters, the cutout is intended for pilot duty only and is not factory prewired to the elements.



Installation

After removal of the terminal box and the mounting ring, the heater is inserted from the inside of the tank. A 2.44" (62 mm) diameter opening in the vessel (which is normally of thin walled construction) is required to receive the brass mounting flange.

To insert the heater into a closed or semi-closed tank, an opening at the top or side of the tank is required. Check Table 13 on page B24 for the required size of this hand-hole.

Construction

All units have a brass mounting flange and a copper sensing capillary for the low level cutout (when installed). Heaters without a factory installed cutout can only be retrofitted with a cutout at the factory since a special socket wrench is required for this purpose.

Standard element sheath material is copper. Other materials are available on custom orders. Special wattage and voltage ratings can be ordered.

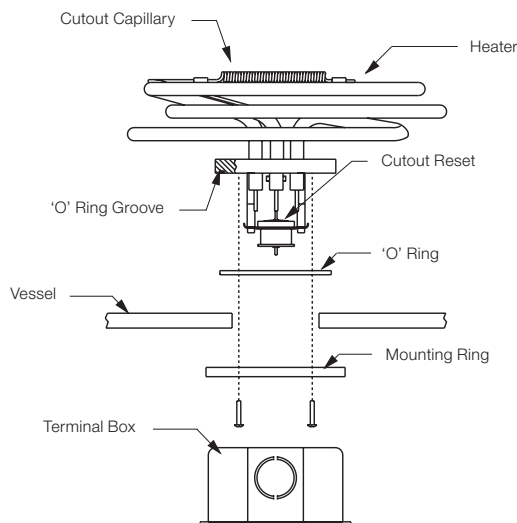


Figure 13 – Urn Heater Diagram

Table 13 – Hand-Hole Requirements

Heater Type	Hand-Hole Size	
	in.	mm
1 Element	5.125	103
2 Element	5.500	140
3 Element	5.875	150

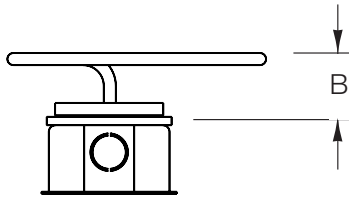


Figure 14 – 1 Element Unit

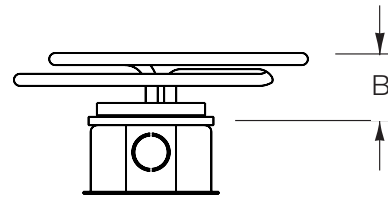


Figure 15 – 2 Element Unit

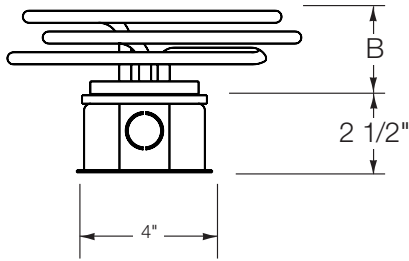


Figure 16 – 3 Element Unit

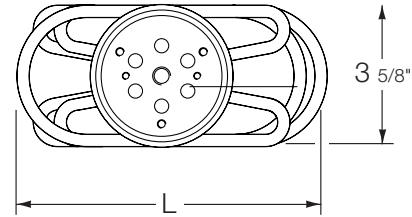


Figure 17 – Bottom View

Selection

Type TXC heaters are primarily for water heating and have copper sheathed heating elements. These units do not have a built-in low level cutout and should only be used where there is no chance that the water level will fall exposing the elements. Elements will fail if not completely immersed.

Type TXCC heaters are similar to the TXC models except that a built-in low level cutout is designed to trip the heater circuit in the event of low water. If there is even the slightest chance of a low water condition, the TXCC should be specified.

Special Sheath

These heaters are available with Incoloy® sheath on special order.

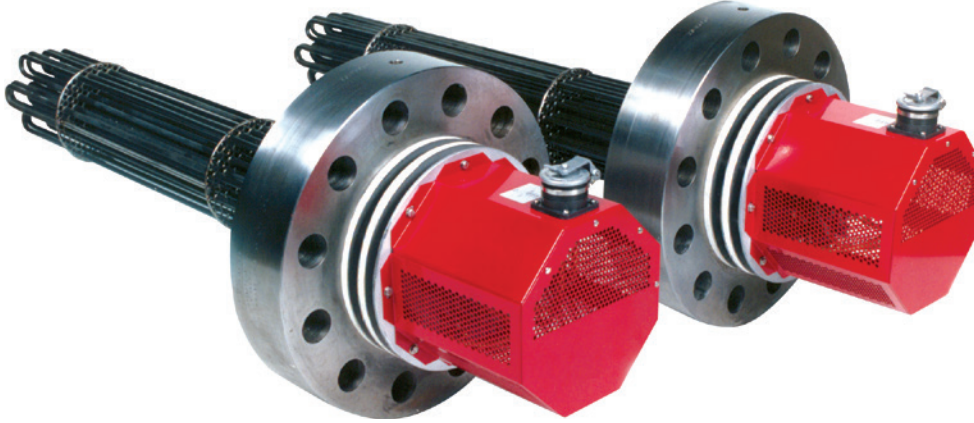
To Order Specify

- Quantity
- Phase
- Catalog number
- Wattage
- Voltage
- Special features

Table 14 – TX Heater Selection Guide

	kW	Standard Voltages			'B' Dimension		'L' Dimension		Catalog No.	Part No.	Figure No.
		120	208	240	in.	mm	in.	mm			
Type TXC without Low Level Cutout	1.0	1Ø			1.500	3.8	7.750	19.7	TXC110	TTUH-10R	1
	1.5	1Ø			1.500	3.8	7.750	19.7	TXC115	TTUH-15R	1
	2.0	1Ø or 3Ø			1.500	3.8	7.750	19.7	TXC220	TTUH-20R	2
	2.5	-	1Ø	1Ø	1.500	3.8	12.750	32.4	TXC125	TTUH-25R	1
	3.0	1Ø or 3Ø			1.500	3.8	7.750	19.7	TXC230	TTUH-30R	2
	4.0	1Ø or 3Ø			1.500	3.8	12.750	32.4	TXC240	TTUH-40R	2
	4.5	1Ø or 3Ø			2.125	5.4	7.750	19.7	TXC345	TTUH-45R	3
	5.0	-	1Ø or 3Ø		1.500	3.8	12.750	32.4	TXC250	TTUH-50R	2
	6.0	1Ø or 3Ø			2.125	5.4	12.750	32.4	TXC360	TTUH-60R	3
7.5	1Ø or 3Ø			2.125	5.4	12.750	32.4	TXC375	TTUH-75R	3	
Type TXCC with Built-in Low Level Cutout	1.0	1Ø			1.500	3.8	7.750	19.7	TXCC110	TTUH-CO-10R	1
	1.5	1Ø			1.500	3.8	7.750	19.7	TXCC115	TTUH-CO-15R	1
	2.0	1Ø or 3Ø			1.500	3.8	7.750	19.7	TXCC220	TTUH-CO-20R	2
	2.5	-	1Ø	1Ø	1.500	3.8	12.750	32.4	TXCC125	TTUH-CO-25R	1
	3.0	1Ø or 3Ø			1.500	3.8	7.750	19.7	TXCC230	TTUH-CO-30R	2
	4.0	1Ø or 3Ø			1.500	3.8	12.750	32.4	TXCC240	TTUH-CO-40R	2
	4.5	1Ø or 3Ø			2.125	5.4	7.750	19.7	TXCC345	TTUH-CO-45R	3
	5.0	-	1Ø or 3Ø		1.500	3.8	12.750	32.4	TXCC150	TTUH-CO-50R	2
	6.0	1Ø or 3Ø			2.125	5.4	12.750	32.4	TXCC360	TTUH-CO-60R	3
7.5	1Ø or 3Ø			2.125	5.4	12.750	32.4	TXCC375	TTUH-CO-75R	3	

Flange Heaters - CX



Application

Flange heaters are used to heat liquids or gases in tanks or in-line vessels. Safe and reliable service from the heater requires the correct selection of materials and heating element watt density.

Watt Density

Watt density refers to the wattage output of a heater divided by the total surface area of the heated sections of all heating elements in the heater.

It is important to understand the basic thermal difference between an electric immersion heater and a steam or liquid heat exchanger. Unlike the steam or liquid heat exchanger, all of the heat produced by an electric heater will leave the heater. Even though the surface area in contact with the work is fixed, the heating element sheath temperature will continue to rise until the heat produced is equal to the heat transferred to the process.

A detailed understanding of this behaviour and the system parameters will allow the design of a suitable heater to heat virtually any liquid or gas with the only limitation being its ability to resist corrosion in highly active solutions.

As a general rule, low watt density heaters will provide longer service life than high density heaters, especially when the fluid being heated is viscous or stagnant. However, low density heaters are initially more expensive and in larger systems it is best to check with the factory for assistance in optimizing the heater selection.

See Section D of the Caloritech™ catalog for recommended watt densities for some of the more common fluids.

A final word of caution... improper selection of watt density can result in damage to the product and failure of the heater.

Corrosion

The heaters are not guaranteed against corrosion since Therman Heating Systems has no control over the type, concentration and temperature of the solution. Our experience is that published corrosion guidelines are based on ideal situations which may prove to be a bit optimistic in actual practice. In some instances there is little alternative other than to accept reduced service life and keep a spare heater on hand as a standby replacement.

Passivation

Incoloy® and stainless steel sheathed heaters are available with chemically passivated sheaths which will provide superior corrosion resistance in most applications. Passivation is achieved through an electropolishing technique.

Heaters with stainless steel flanges are available with all wetted surfaces passivated.

Since passivation is a relatively expensive procedure it should only be specified in highly corrosive applications and on the recommendation of the chemical supplier.

Construction

Standard heaters listed have 150 lb ANSI rated steel flanges and copper or Incoloy® sheathed elements silver brazed to the flange. Heaters pictured on these introductory pages are examples of some of the custom heaters we have produced to meet special process requirements.

It is important to note flange heaters used in closed vessels may require registration as ASME fittings from the pressure vessel authority in the jurisdiction of use. For questions regarding application registration requirements, consult with the factory. Use of a non-registered heater may violate the Pressure Vessels Act depending upon the jurisdiction of use.



Wiring

High amperage heaters allow staging through 45 amp subcircuits to allow the use of 50 amp definite purpose magnetic contactors on each circuit.

Terminal lugs and grounding lugs are provided.

Refer to Section F of the Caloritech™ catalog for wiring and temperature control accessories available from Thermon Heating Systems.

Control

Most systems require some method of temperature and limit control. As heating control specialists we can provide state-of-the-art control systems to meet any process requirements.

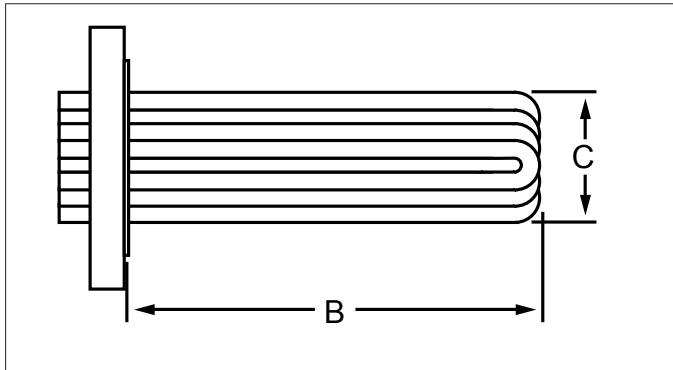


Figure 18 – Element Dimensions

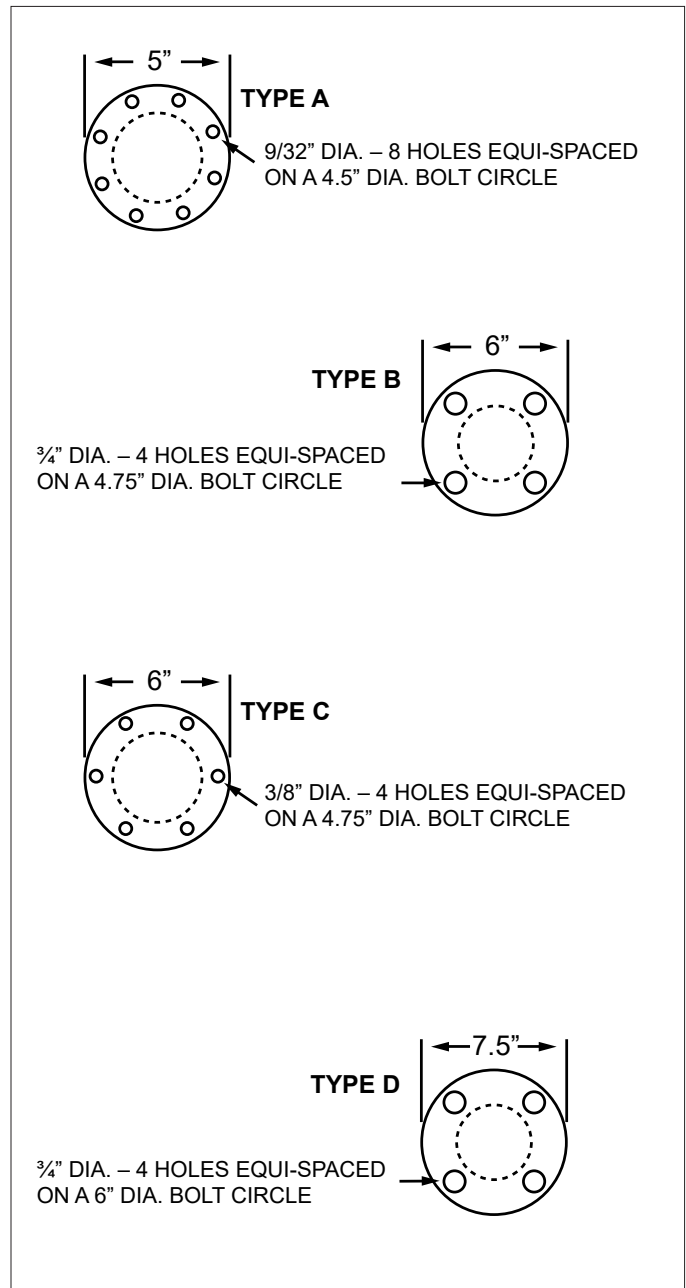


Figure 19 – Flange Type

To Order Specify

To order a custom round flange boiler replacement specify:

- Flange type from Figure 18 on page B27
- Phase
- Kilowatts
- Number of elements
- Voltage
- Number of circuits

If your flange does not match any of these types send us a similar sketch or a description. Include the flange thickness.

2 1/2" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

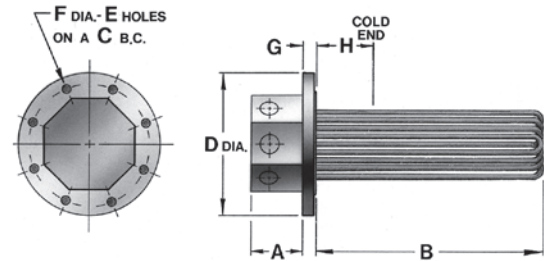


Table 15 – 2 1/2" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	2.875	73	5.500	140	7.000	178	4	0.750	19	0.875	22	5.500	140
300 lb			5.875	149	7.500	191	8	0.875	22	1.000	25		



To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 16 – Steel Flange Heaters - 2 1/2" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages 208, 240, 416, 480, 600	Watt Density		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Net Weight	
		in	mm		W/in ²	W/cm ²	Catalog No.	Catalog No.	lbs	kg
High Density Copper Sheath	6.0	18.1	460	1 or 3 Phase	60	9.3	CXC306F25	CXCT306F25	15.4	7
	9.0	26.0	660		55	8.5	CXC303F25	CXCT303F25	15.4	7
	12.0	32.9	835		54	8.4	CXC312F25	CXCT312F25	17.6	8
	15.0	39.8	1010		54	8.4	CXC315F25	CXCT315F25	17.6	8
	18.0	47.6	1210		53	8.2	CXC318F25	CXCT318F25	19.8	9
High Density Incoloy® Sheath	6.0	18.1	460		60	9.3	CXI306F25	CXIT306F25	15.4	7
	9.0	26.0	660		55	8.5	CXI309F25	CXIT309F25	15.4	7
	12.0	32.9	835		54	8.4	CXI312F25	CXIT312F25	17.6	8
	15.0	39.8	1010		54	8.4	CXI315F25	CXIT315F25	17.6	8
	18.0	47.6	1210		53	8.2	CXI318F25	CXIT318F25	19.8	9
Medium Density Incoloy® Sheath	3.0	18.1	460		30	4.6	CXF303F25	CXFT303F25	15.4	7
	4.5	26.0	660		27	4.2	CXF304F25	CXFT304F25	15.4	7
	6.0	32.9	835		27	4.2	CXF306F25	CXFT306F25	17.6	8
	7.5	39.8	1010		27	4.2	CXF307F25	CXFT307F25	17.6	8
	9.0	47.6	1210		26	4.1	CXF309F25	CXFT309F25	19.8	9
Low Density Incoloy® Sheath	3.0	32.9	835	14	2.1	CXF303F2532	CXFT303F2532	17.6	8	
	4.5	39.8	1010	16	2.5	CXF304F2539	CXFT304F2539	17.6	8	
	6.0	47.6	1210	18	2.7	CXF306F2547	CXFT306F2547	19.8	9	

3" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

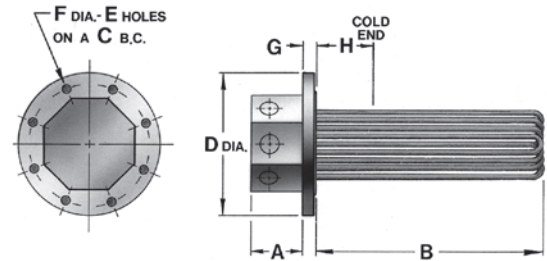


Table 17 – 3" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	3.500	89	6.000	152	7.500	191	4	0.750	19	0.938	24	5.500	140
300 lb			6.625	175	8.750	210	8	0.875	22	1.125	29		

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

Table 18 – Steel Flange Heaters - 3" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages 208, 240, 416, 480, 600	Watt Density		Without Thermostat		With Thermostat 50°F to 250°F (10°C to 120°C)	Net Weight		
		in	mm		W/in ²	W/cm ²	Catalog No.	Part No.		Catalog No.	lbS	kg
High Density Copper Sheath	6.0	17.9	455	1 or 3 Phase	60	9.3	CXC306F3	TM-3-306	CXCT306F3	15.4	7	
	9.0	25.8	655		55	8.5	CXC309F3	TM-3-309	CXCT309F3	15.4	7	
	12.0	32.7	830		54	8.4	CXC312F3	TM-3-312	CXCT312F3	17.6	8	
	15.0	39.6	1005		54	8.4	CXC315F3	TM-3-315	CXCT315F3	17.6	8	
	18.0	47.4	1205		53	8.2	CXC318F3	TM-3-318	CXCT318F3	19.8	9	
	18.0	25.8	655		55	8.5	CXC618F3	-	CXCT618F3	22.0	10	
	24.0	32.8	830		54	8.4	CXC624F3		CXCT624F3	24.3	11	
	30.0	39.6	1005		54	8.4	CXC630F3		CXCT630F3	26.5	12	
High Density Incoloy® Sheath	6.0	17.9	455	1 or 3 Phase	60	9.3	CXI306F3	TMI-3H-306	CXIT306F3	15.4	7	
	9.0	25.8	655		55	8.5	CXI309F3	TMI-3H-309	CXIT309F3	15.4	7	
	12.0	32.7	830		54	8.4	CXI312F3	TMI-3H-312	CXIT312F3	17.6	8	
	15.0	39.6	1005		54	8.4	CXI315F3	TMI-3H-315	CXIT315F3	17.6	8	
	18.0	47.4	1205		53	8.2	CXI318F3	TMI-3H-318	CXIT318F3	19.8	9	
	18.0	25.8	605		55	8.5	CXI618F3	-	CXIT618F3	22.0	10	
	24.0	32.7	830		54	8.4	CXI624F3		CXIT624F3	24.3	11	
	30.0	39.6	1005		54	8.4	CXI630F3		CXIT630F3	26.5	12	
Medium Density Incoloy® Sheath	3.0	17.9	455	1 or 3 Phase	30	4.6	CXF303F3	TMI-3-303	CXFT303F3	15.4	7	
	4.5	25.8	655		27	4.2	CXF304F3	TMI-3-304	CXFT304F3	15.4	7	
	6.0	32.7	830		27	4.2	CXF306F3	TMI-3-306	CXFT306F3	17.6	8	
	7.5	39.6	1005		27	4.2	CXF307F3	TMI-3-307	CXFT307F3	19.8	9	
	9.0	47.4	1205		26	4.1	CXF309F3	TMI-3-309	CXFT309F3	19.8	9	
Low Density Incoloy® Sheath	3.0	32.7	830	1 or 3 Phase	14	2.1	CXF303F332	TMI-3L-303	CXFT303F332	17.6	8	
	4.5	39.6	1005		17	2.5	CXF304F339	TMI-3L-304	CXFT304F339	17.6	8	
	6.0	47.4	1205		18	2.7	CXF306F347	TMI-3L-306	CXFT306F347	19.8	9	

4" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

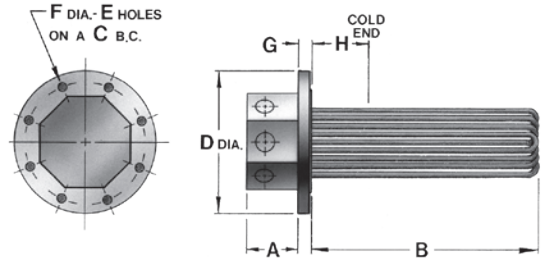


Table 19 – 4" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	5.000	127	7.500	191	9.000	229	8	0.750	19	0.938	24	5.500	140
300 lb			7.875	200	10.000	254		0.875	22	1.250	32		



To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 20 – Steel Flange Heaters - 4" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages 208, 240, 416, 480, 600	Watt Density		Without Thermostat	With Thermostat	Net Weight	
		in	mm		W/in ²	W/cm ²	50°F to 250°F (10°C to 120°C)	lbs	kg	
							Catalog No.			Catalog No.
High Density Copper Sheath	12.0	17.9	455	1 or 3 Phase	60	8.4	CXC612F4	CXCT612F4	26.5	12
	15.0	21.9	555		57	8.8	CXC615F4	CXCT615F4	28.7	13
	18.0	25.8	655		55	8.5	CXC618F4	CXCT618F4	28.7	13
	24.0	32.7	830		54	8.4	CXC624F4	CXCT624F4	30.9	14
	30.0	39.6	1005		54	8.4	CXC630F4	CXCT630F4	33.1	15
	18.0	17.9	455		60	9.3	CXC918F4	CXCT918F4	37.5	17
	27.0	25.8	655		55	8.5	CXC927F4	CXCT927F4	39.7	18
	36.0	32.7	830		54	8.4	CXC936F4	CXCT936F4	39.7	18
	45.0	39.6	1005		54	8.4	CXC945F4	CXCT945F4	44.1	20
	High Density Incoloy® Sheath	12.0	17.9		455	1 or 3 Phase	60	8.4	CXI612F4	CXIT612F4
15.0		21.9	555	57	8.8		CXI615F4	CXIT615F4	28.7	13
18.0		25.8	655	55	8.5		CXI618F4	CXIT618F4	28.7	13
24.0		32.7	830	54	8.4		CXI624F4	CXIT624F4	30.9	14
30.0		39.6	1005	54	8.4		CXI630F4	CXIT630F4	33.1	15
18.0		17.9	455	60	9.3		CXI918F4	CXIT918F4	37.5	17
27.0		25.8	655	55	8.5		CXI927F4	CXIT927F4	39.7	18
36.0		32.7	830	54	8.4		CXI936F4	CXIT936F4	39.7	18
45.0		39.6	1005	54	8.4		CXI945F4	CXIT945F4	44.1	20
Medium Density Incoloy® Sheath		6.0	17.9	455	1 or 3 Phase		30	4.6	CXF606F4	CXFT606F4
	9.0	25.8	655	27		4.2	CXF609F4	CXFT609F4	30.9	14
	12.0	32.7	830	27		4.2	CXF612F4	CXFT612F4	33.1	15
	9.0	17.9	455	30		4.6	CXF909F4	CXFT909F4	37.5	17
	13.5	25.8	655	27		4.2	CXF913F4	CXFT913F4	39.7	18
	18.0	32.7	830	27		4.2	CXF918F4	CXFT918F4	41.9	19
Low Density Incoloy® Sheath	6.0	32.7	830	1 or 3 Phase	14	2.1	CXF606F432	CXFT606F432	30.9	14
	9.0						CXF909F432	CXFT909F432	39.7	18

5" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities.

These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

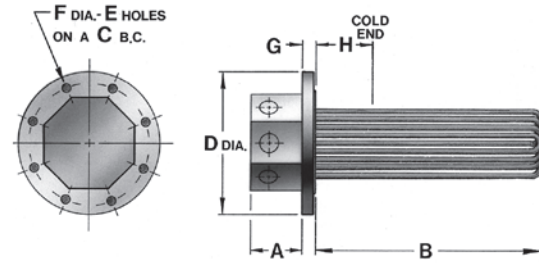


Table 21 – 5" Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	5.000	127	8.500	216	10.000	254	8	0.875	22	0.938	24	6.750	171
300 lb			9.250	235	11.000	279				1.375	35	6.000	152

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 22 – Steel Flange Heaters - 5" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages 208, 240, 416, 480, 600	Watt Density		Without Thermostat	With Thermostat	Net Weight		
		in	mm		W/in ²	W/cm ²	50°F to 250°F (10°C to 120°C)	Catalog No.	Catalog No.	lbs	kg
High Density Copper Sheath	12.0	17.9	455	1 or 3 Phase	60	9.3	CXC612F5	CXCT612F5	26.5	12	
	15.0	21.9	555		57	8.8	CXC615F5	CXCT615F5	28.7	13	
	18.0	25.8	655		55	8.5	CXC618F5	CXCT618F5	28.7	13	
	24.0	32.7	830		54	8.4	CXC624F5	CXCT624F5	30.9	14	
	30.0	39.6	1005		54	8.4	CXC630F5	CXCT630F5	33.1	15	
	27.0	25.8	655		55	8.5	CXC927F5	CXCT927F5	39.7	18	
	36.0	32.7	830		54	8.4	CXC936F5	CXCT936F5	41.9	19	
High Density Incoloy® Sheath	45.0	39.6	1005	54	8.4	CXC945F5	CXCT945F5	44.1	20		
	12.0	17.9	455	60	9.3	CXI612F5	CXIT612F5	26.5	12		
	15.0	21.9	555	57	8.8	CXI615F5	CXIT615F5	28.7	13		
	18.0	25.8	655	55	8.5	CXI618F5	CXIT618F5	28.7	13		
	24.0	32.7	830	54	8.4	CXI624F5	CXIT624F5	30.9	14		
	30.0	39.6	1005	54	8.4	CXI630F5	CXIT630F5	33.1	15		
	27.0	25.8	655	55	8.5	CXI927F5	CXIT927F5	39.7	18		
Medium Density Incoloy® Sheath	36.0	32.7	830	54	8.4	CXI936F5	CXIT936F5	39.7	18		
	45.0	39.6	1005	54	8.4	CXI945F5	CXIT945F5	44.1	20		
	6.0	17.9	455	30	4.6	CXF606F5	CXFT606F5	28.7	13		
	9.0	25.8	655	27	4.2	CXF609F5	CXFT609F5	30.9	14		
	12.0	32.7	830	27	4.2	CXF612F5	CXFT612F5	33.1	15		
	15.0	39.6	1005	27	4.2	CXF615F5	CXFT615F5	33.1	15		
	18.0	47.4	1205	26	4.1	CXF618F5	CXFT618F5	41.9	19		
	9.0	17.9	455	30	4.6	CXF909F5	CXFT909F5	37.5	17		
Low Density Incoloy® Sheath	13.5	25.8	655	27	4.2	CXF913F5	CXFT913F5	41.9	19		
	18.0	32.7	830	27	4.2	CXF918F5	CXFT918F5	41.9	19		
	27.0	47.4	1205	26	4.1	CXF927F5	CXFT927F5	50.7	23		
	6.0	32.7	830	14	2.1	CXF606F532	CXFT606F532	30.9	14		
	12.0	47.4	1205	18	2.7	CXF612F547	CXFT612F547	41.9	19		
	9.0	32.7	830	14	2.1	CXF909F532	CXFT909F532	39.7	18		
	18.0	47.4	1205	18	2.7	CXF918F547	CXFT918F547	50.7	23		

6" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

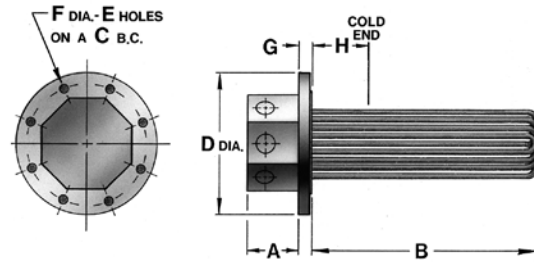


Table 23 – 6" Flange Heater Dimensions

Flange Rating	A		C		D		Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	5.000	127	9.500	241	11.000	279	8	0.875	22	1.000	25	6.750	171
300 lb			12.500	138	10.000	254	12			1.438	37	6.000	152

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 24 – Steel Flange Heaters - 6" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages				Watt Density		Without Thermostat		With Thermostat 50°F to 250°F (10°C to 120°C)		Net Weight	
				208, 240		480, 600				Catalog No.	Part No.	Catalog No.	lbs		
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in ²	W/cm ²						
High Density Copper Sheath	36.0	25.8	655	✓				55	8.5	CXC1236F6	TM-6-1236	CXCT1236F6	44.1	20	
	48.0	32.7	830	–	✓	✓		54	8.4	CXC1248F6	TM-6-1248	CXCT1248F6	48.5	22	
	60.0	39.6	1005	–				54	8.4	CXC1260F6	TM-6-1260	CXCT1260F6	52.9	24	
	72.0	47.4	1205	–				53	8.2	CXC1272F6	TM-6-1272	CXCT1272F6	57.3	26	
	45.0	25.8	655					55	8.5	CXC1545F6		CXCT1545F6	50.7	23	
	60.0	32.7	830					54	8.4	CXC1560F6		CXCT1560F6	55.1	25	
	75.0	39.5	1005	–	✓	✓		54	8.4	CXC1575F6	–	CXCT1575F6	61.7	28	
	90.0	47.4	1205					53	8.2	CXC1590F6		CXCT1590F6	68.3	31	
	90.0	39.6	1005					54	8.4	CXC1890F6		CXCT1890F6	70.5	32	
High Density Incoloy® Sheath	36.0	25.8	655	✓				55	8.5	CXI1236F6	TMI-6-1236	CXIT1236F6	44.1	20	
	48.0	32.7	830	–	✓	✓		54	8.4	CXI1248F6		CXIT1248F6	48.5	22	
	60.0	39.6	1005	–				54	8.4	CXI1260F6		CXIT1260F6	52.9	24	
	72.0	47.4	1205	–				53	8.2	CXI1272F6		CXIT1272F6	57.3	26	
	45.0	25.8	655					55	8.5	CXI1545F6		CXIT1545F6	50.7	23	
	60.0	32.7	830					54	8.4	CXI1560F6		CXIT1560F6	55.1	25	
	75.0	39.5	1005	–	✓	✓		54	8.4	CXI1575F6	–	CXIT1575F6	61.7	28	
	90.0	47.4	1205					53	8.2	CXI1590F6		CXIT1590F6	68.3	31	
	90.0	39.6	1005			✓		54	8.4	CXI1890F6		CXIT1890F6	70.5	32	
120.0	47.4	1205	–	–	–	✓	70	10.9	CXI15120F6		CXIT15120F6	72.8	33		
144.0	47.4	1205			–		70	10.9	CXI18144F6		CXIT18144F6	83.8	38		
Medium Density Incoloy® Sheath	18.0	25.8	655					27	4.2	CXF1218F6	TMI-6H-1218	CXFT1218F6	46.3	21	
	24.0	32.7	830					27	4.2	CXF1221F6	TMI-6H-1224	CXFT1221F6	50.7	23	
	30.0	39.6	1005	✓	✓	✓		27	4.2	CXF1230F6	TMI-6H-1230	CXFT1230F6	55.1	25	
	36.0	47.4	1205					26	4.1	CXF1236F6	TMI-6H-1236	CXFT1236F6	59.5	27	
	48.0	61.2	1555					26	4.1	CXF1248F6		CXFT1248F6	70.5	32	
	22.5	25.8	655							CXF1522F6		CXFT1522F6	52.9	24	
	30.0	32.7	830	✓	✓	✓		27	4.2	CXF1530F6		CXFT1530F6	57.3	26	
	37.5	39.6	1005							CXF1537F6	–	CXFT1537F6	63.9	29	
	45.0	47.4	1205	–	✓	✓				CXF1545F6		CXFT1545F6	70.5	32	
60.0	61.2	1555					26	4.1	CXF1560F6		CXFT1560F6	83.8	38		
Low Density Incoloy® Sheath	12.0	32.7	830					14	2.1	CXF1212F6	–	CXFT1212F6	48.5	22	
	18.0	39.6	1005	✓	✓	✓		16	2.5	CXF1218F639	TMI-6L-1218	CXFT1218F639	57.3	26	
	24.0	47.4	1205					18	2.7	CXF1224F647		CXFT1224F647	66.1	30	
	15.0	32.7	830					14	2.1	CXF1515F6	–	CXFT1515F6	52.9	24	
	22.5	39.6	1005	✓	✓	✓		16	2.5	CXF1522F639		CXFT1522F639	63.9	29	
	30.0	47.4	1205					18	2.7	CXF1530F647		CXFT1530F647	77.2	35	

8" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

Table 26 – 6" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	5.000	127	9.500	241	11.000	279	8	0.875	22	1.000	25	6.750	171
300 lb			12.500	138	10.000	254				12	1.438	37	6.000

To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 25 – Steel Flange Heaters - 8" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages				Watt Density		Without Thermostat		With Thermostat		Net Weight	
				208, 240		480, 600						50°F to 250°F (10°C to 120°C)			
				in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	Catalog No.	Part No.	Catalog No.	lbs
High Density Copper Sheath	54.0	25.6	54					55	8.5	CXC1854F8	TM-8-1850	CXCT1854F8	49.4	36	
	72.0	32.5	72					54	8.4	CXC1872F8	TM-8-1872	CXCT1872F8	83.8	38	
	90.0	39.4	90			✓	✓	54	8.4	CXC1890F8	-	CXCT1890F8	90.4	41	
	108.0	47.2	108					53	8.2	CXC18108F8	TM-8-18100	CXCT18108F8	99.2	45	
	81.0	25.6	81			✓	✓	55	8.5	CXC2781F8		CXCT2781F8	90.4	41	
	108.0	32.5	108			-	✓	54	8.4	CXC27108F8	-	CXCT27108F8	101.4	46	
	135.0	39.4	135			-	-	54	8.4	CXC27135F8		CXCT27135F8	110.2	50	
	162.0	47.2	162			-	-	53	8.2	CXC27162F8		CXCT27162F8	125.7	57	
High Density Incoloy® Sheath	54.0	25.6	650					55	8.5	CXI1854F8	TMI-8-1850	CXIT1854F8	79.4	36	
	72.0	32.5	825			✓	✓	54	8.4	CXI1872F8		CXIT1872F8	83.8	38	
	90.0	39.4	1000					54	8.4	CXI1890F8		CXIT1890F8	90.4	41	
	108.0	47.2	1200					53	8.2	CXI18108F8		CXIT18108F8	99.2	45	
	81.0	25.6	650			✓	✓	55	8.5	CXI2781F8		CXIT2781F8	90.4	41	
	108.0	32.5	825			-	✓	54	8.4	CXI27108F8		CXIT27108F8	101.4	46	
	135.0	39.4	1000			-	-	54	8.4	CXI2735F8		CXIT2735F8	110.2	50	
	162.0	47.2	1200			-	-	53	8.2	CXI2716F8		CXIT2716F8	125.7	57	
	120.0							70	10.9	CXI15120F8		CXIT15120F8	92.6	42	
	144.0						CXI18144F8				CXIT18144F8	99.2	45		
	168.0	47.2	1200				CXI21168F8				CXIT21168F8	110.2	50		
	192.0						CXI24192F8				CXIT24192F8	116.8	53		
	216.0						CXI27216F8				CXIT27216F8	125.7	57		
	240.0						CXI30240F8				CXIT30240F8	134.5	61		
Medium Density Incoloy® Sheath	36.0	32.5	825	✓				27	4.2	CXF1836F8	TMI-8H-1830	CXFT1836F8	83.8	38	
	54.0	47.2	1200	-				26	4.1	CXF1854F8	TMI-8H-1850	CXFT1854F8	101.4	46	
	63.0	47.2	1200	-				26	4.1	CXF2163F8	-	CXFT2163F8	110.2	50	
	72.0	47.2	1200	-	✓	✓		26	4.1	CXF2472F8	-	CXFT2472F8	116.8	53	
	81.0	47.2	1200	-				26	4.1	CXF2781F8	-	CXFT2781F8	125.7	57	
	90.0	47.2	1200	-				26	4.1	CXF3090F8	-	CXFT3090F8	134.5	61	
Low Density Incoloy® Sheath	27.0	39.4	1000					16	2.5	CXF1827F8	-	CXFT1827F8	90.4	41	
	31.5	39.4	1000					16	2.5	CXF2131F8	TMO-8-1830	CXFT2131F8	97.0	44	
	36.0	39.4	1000	✓	✓	✓		16	2.5	CXF2436F8	TMO-8-1840	CXFT2436F8	101.4	46	
	36.0	47.2	1200					17	2.7	CXF1836F847	TMO-8L-2435	CXFT1836F847	101.4	46	
	40.5	39.4	1000					16	2.5	CXF2740F8	-	CXFT2740F8	110.2	50	
	45.0	39.4	1000	-	✓	✓		16	2.5	CXF3045F8	-	CXFT3045F8	116.8	53	
	54.0	47.2	1200					17	2.7	CXF2754F8	TMO-8L-2450	CXFT2754F8	125.7	57	

10" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

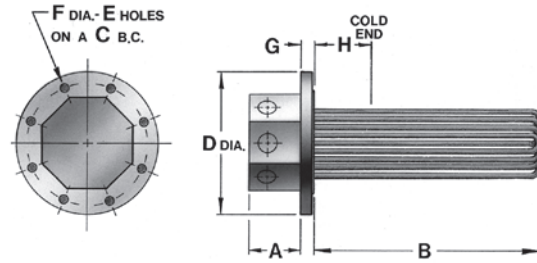


Table 27 – 10" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	8	203	14.250	362	16.000	406	12	1.000	25	1.188	30	10.000	254
300 lb			15.250	387	17.500	444	16	1.125	29	1.875	48	9.250	235



To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 28 – Steel Flange Heaters - 10" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages				Watt Density		Without Thermostat		With Thermostat 50°F to 250°F (10°C to 120°C)		Net Weight	
				208, 240		480, 600						Catalog No.	Part No.		
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in ²	W/cm ²					lbs	kg
High Density Copper Sheath	180	39.4	1000					63	9.8	CXC36180F10				152.1	69
	216	47.2	1200			–	–	60	9.3	CXC36216F10				165.4	75
	252	47.2	1200					60	9.3	CXC42252F10				187.4	85
High Density Incoloy® Sheath	180	39.4	1000					63	9.8	CXI36180F10				152.1	69
	216	47.2	1200			–	–	60	9.3	CXI36216F10				165.4	75
	252	47.2	1200					60	9.3	CXI42252F10				187.4	85
	288	47.2	1200					80	12.3	CXI36288F10				165.4	75
	336	47.2	1200	–	–	–	✓	80	12.3	CXI42336F10	–	–	–	187.4	85
	384	47.2	1200							CXI48384F10				205.0	93
Medium Density Incoloy® Sheath	108									CXF36108F10				165.4	75
	126	47.2	1200			–	–	30	4.6	CXF42126F10				187.4	85
	144									CXF48144F10				205.0	93
Low Density Incoloy® Sheath	72									CXF3672F10				165.4	75
	84	47.2	1200			✓	✓	20	3.1	CXF4284F10				187.4	85
	96									CXF4896F10				205.0	93

12" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

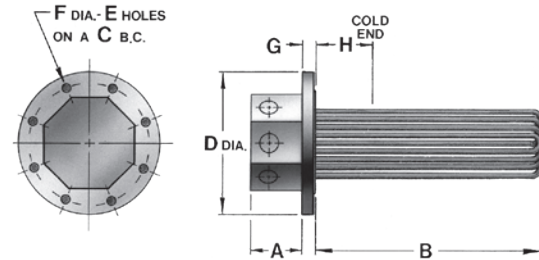


Table 29 – 12" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	8.00	203	17.00	432	19.00	483	12	1.00	25	1.25	32	10.00	248
300 lb			17.75	451	20.50	521	16	1.25	32	2.00	51	9.25	229



To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 30 – Steel Flange Heaters - 12" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages				Watt Density		Without Thermostat		With Thermostat		Net Weight	
				208, 240		480, 600						50°F to 250°F (10°C to 120°C)			
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in ²	W/cm ²	Catalog No.	Part No.	Catalog No.	Part No.	lbs	kg
High Density Copper Sheath	240	39.2	995					63	9.8	CXC48240F12				218.3	99
	288	47.0	1195					60	9.3	CXC48288F12				238.1	108
	324	47.0	1195			–	–	60	9.3	CXC54324F12				255.7	116
	360	47.0	1195					60	9.3	CXC60360F12				246.9	112
High Density Incoloy® Sheath	240	39.2	995					63	9.8	CXI48240F12				218.3	99
	288	47.0	1195					60	9.3	CXI48288F12				238.1	1058
	324	47.0	1195			–	–	60	9.3	CXI54324F12				255.7	116
	360	47.0	1195					60	9.3	CXI60360F12				246.9	112
	432	47.0	1195					80	12.3	CXI54432F12				255.7	116
	480	47.0	1195	–	–	–	✓			CXI60480F12	–	–	–	271.2	123
Medium Density Incoloy® Sheath	144	47.0	1195					30	4.6	CXF48144F12				238.1	108
	162											255.7	116		
	180											271.2	123		
Low Density Incoloy® Sheath	96	47.0	1195			✓	✓	20	3.1	CXF4896F12				238.1	108
	108					–	✓					255.7	116		
	120					–	–					271.2	123		

14" Flange Heaters

Selection

Type CXC heaters are used primarily for heating water and have copper sheathed elements silver brazed to a steel flange.

Type CXI heaters may also be used to heat water, especially in hot water and steam boilers. These heaters are also suitable for heating mildly corrosive solutions in rinse tanks, spray washers, etc.

Heaters consist of Incoloy® sheathed elements silver brazed to a steel flange.

Type CXF heaters are constructed of similar materials to CXI heaters except that the heating elements have much lower watt densities. These heaters are especially suited to heating oils, gases and mildly corrosive liquids. Select the lower density CXF heaters for stagnant or heavy oils or for high temperature, low flow gas heating.

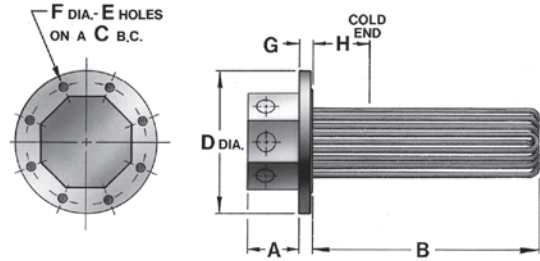


Table 31 – 14" Flange Heater Dimensions

Flange Rating	A		C		D		E Holes	F		G		H	
	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm
150 lb	8.000	203	8.750	222	21.000	533	12	1.125	29	1.375	35	9.750	248
300 lb			20.250	514	23.000	584	20	1.250	32	2.125	54	9.000	229



To Order Specify

- Quantity
- Catalog number
- Voltage
- Phase
- Wattage
- Special features

Table 32 – Steel Flange Heaters - 14" (150 lb)

	kW	Immersion Length 'B'		Standard Voltages				Watt Density		Without Thermostat		With Thermostat 50°F to 250°F (10°C to 120°C)		Net Weight	
				208, 240		480, 600				Catalog No.	Part No.	Catalog No.	Part No.		
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in ²	W/cm ²						
High Density Copper Sheath	300	995	39.2					63	9.8	CXC60300F14				286.6	130
	360	1195	47.0					60	9.3	CXC60360F14				313.1	142
	432	1195	47.0					60	9.3	CXC72432F14				343.9	156
	504	1195	47.0					60	9.3	CXC84504F14				377.0	171
High Density Incoloy® Sheath	300	995	39.2					63	9.8	CXI60300F14				286.6	130
	360	1195	47.0							CXI60360F14				313.1	142
	432	1195	47.0							CXI72432F14				343.9	156
	504	1195	47.0							CXI84504F14				377.0	171
	576	1195	47.0							CXI72576F14				343.9	156
	672	1195	47.0				✓	80	12.3	CXI84672F14	-	-	-	377.0	171
Medium Density Incoloy® Sheath	180	1195	47.0					30	4.6	CXI60180F14				313.1	142
	216			CXI72216F14						343.9	156				
	252			CXI74252F14						377.0	171				
Low Density Incoloy® Sheath	120	1195	47.0					20	3.1	CXF60120F14				313.1	142
	144			CXF72144F14						343.9	156				
	168			CXF84168F14						377.0	171				

Special Features

Voltage

Custom built flange heaters are available in any special voltage rating up to 600V max.

Wattage

Special wattage units are available to replace your present heater with a similar Caloritech™ unit.

Length

Heaters are available with immersed lengths up to 135" (3430 mm). Internal vessel support is recommended when immersed length exceeds 50" (1275 mm).

Extra Heavy Wall Sheath

Standard sheath wall thickness is 0.035" (0.889 mm). Heavy wall sheath with a thickness of 0.049" (1.24 mm) or 0.065" (1.65 mm) is available in Incoloy®, Inconel®, steel and stainless steel sheaths.

Flange Sizes and Ratings

Thermon Heating Systems can install elements in virtually any size or rating of flange, special or standard.

Flexitallic Gasket

Stainless steel flexitallic gaskets are available for all flange sizes.

Special Materials

Special sheath, flange and terminal box materials are available on request.

Passivation

Incoloy® and stainless steel sheathed heaters are available with chemically passivated sheaths which will provide superior corrosion resistance in most applications. Passivation is achieved through an electropolishing technique. Heaters with stainless steel flanges are available with all wetted surfaces passivated.

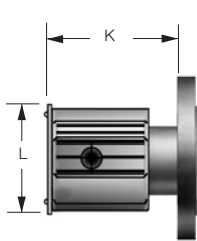


Figure 20

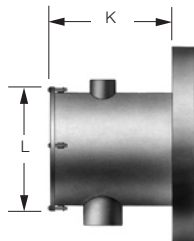
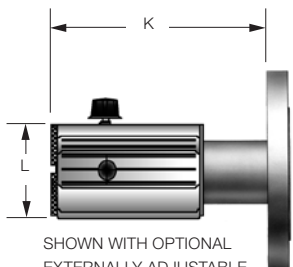


Figure 21



SHOWN WITH OPTIONAL
EXTERNALLY ADJUSTABLE
THERMOSTAT

Figure 22

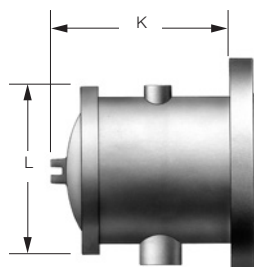


Figure 23

Welded Elements

Standard flange heaters listed have the elements silver brazed to the flange which suits most applications.

Thermon Heating Systems can provide heaters with elements welded to the flange for all sheath materials except copper.

Built-in Thermostat Well

Built-in thermostat wells are available. Specify length and internal diameter required.

Built-in Limits and Thermostats

Built-in high limits and thermostats are available. Standard built-in thermostat is a one pole device limited to 240V 25 amp. Whenever the heater voltage exceeds 240V or the heater current exceeds 25 amps or for three phase supply, the thermostat is intended for pilot duty only and is not factory wired to the elements. See Section F of the Caloritech™ catalog for selection of the contactor and control transformer you may require in these instances.

Built-in Thermocouples

Integrally mounted thermocouples can be provided for sheath limit protection or temperature control of the fluid.

Vented or Stilted Housings

Vented or stilted terminal housings are required in many high temperature applications to ensure that connection wire is not overheated.

Special Terminal Housings

Moisture resistant and/or explosion resistant terminal housings are available for all flange heater types. When ordering an explosion-proof housing specify Class, Div. (or Zone), Group and Temp. Code for the hazardous location. See Figure 20 through Figure 23.

Table 33 – Terminal Housing

	Flange Size	Figure No.	Without Thermostat				With Thermostat			
			K		L		K		L	
			in	mm	in	mm	in	mm	in	mm
Moisture Resistant	2 1/2	1	4.750	121	4.750	108	8.500	216	4.750	108
	3	1	4.750	121	4.750	108	8.500	216	4.750	108
	4	1	5.125	130	6.000	152	8.500	216	6.000	152
	5	2	7.000	178	9.750	235				
	6	2	7.000	178	10.125	257				
	8	2	9.000	229	12.125	308				
	10	2	9.000	229	14.750	375				
Explosion Resistant	12	2	9.000	229	16.750	425				
	14	2	9.000	229	18.750	476				
	2 1/2	3	5.750	146	4.000	102	9.750	235	4.000	102
	3	3	5.750	146	4.000	102	9.750	235	4.000	102
	4	3	6.125	156	5.625	143	9.750	235	5.625	143
	5	4	7.500	191	7.500	191				
	6	4	7.500	191	9.000	229				
	8	4	8.125	206	11.000	279				
10	4	10.125	257	13.500	343					
12	4	10.125	257	15.500	394					
14	4	10.125	257	17.500	445					

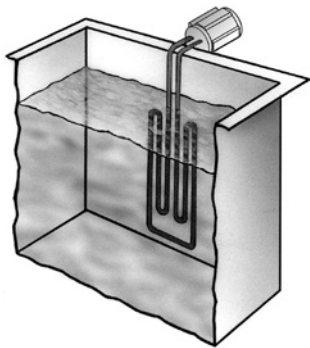
Over-the-Side Immersion Heaters - DX

Application

Side mount immersion heaters are for use in solutions requiring easy removal of heaters for cleaning or inspection.

Single phase or three phase heaters are available. Refer to the Corrosion Guide (Section D) to assist in the selection of the heater most suited to your conditions.

Refer to Section D to select the heater with a watt density suitable to your application. Lower watt densities normally provide longer service life.



Installation

During installation the heated section (See Figure 24 and on page B38) of the heater must always remain totally immersed or the heater may fail.

When determining your minimum liquid level be sure to make allowance for loss of solution volume by evaporation and removal of work.

TYPE DXC - Used mainly for heating water or water solutions which will not corrode copper.

TYPES DXI, DXS - Type DXI heaters are used in water rinse tanks with contaminants which would be corrosive to copper. Type DXS and DXI are also suitable for use in oil based solutions or other chemical solutions which would not be corrosive to stainless or Incoloy®.

TYPES DXN, DXT - These high grade Inconel® or titanium sheathed heaters are frequently used when copper, stainless or Incoloy® sheathed heaters are unsuitable. Check the Corrosion Guide in Section D for further information.

To Order Specify

- Quantity
- Phase
- Catalog number
- Wattage
- Voltage

Note: The type DXT titanium sheathed heater does not have stand-off brackets.

Table 34 – Single Element Over-the-Side Immersion (Figure 24)

Sheath	Standard Volts: 208, 240, 480, 600 (Phase 1)						
	kW	Watt Density		Catalog No.	Part No.	Net Weight	
		W/in ²	W/cm ²			lbs	kg
Copper	3.0	19	2.9	DXC1030	RTC-30	8.8	4
	5.0	32	5.0	DXC1050	RTC-50		
	7.5	48	7.4	DXC1075	RTC-75		
304 S.S.	3.0	19	2.9	DXS1030	RTSS-30		
	5.0	32	5.0	DXS1050	RTSS-50		
	7.5	48	7.4	DXS1075	RTSS-75		
Incoloy®	3.0	19	2.9	DXI1030	RTI-30		
	5.0	32	5.0	DXI1050	RTI-50		
	7.5	48	7.4	DXI1075	RTI-75		
Inconel®	3.0	19	2.9	DXN1030	RTIL-30		
	5.0	32	5.0	DXN1050	RTIL-50		
	7.5	48	7.4	DXN1075	RTIL-75		
Titanium	3.0	19	2.9	DXT1030	RTT-30		
	5.0	32	5.0	DXT1050	RTT-50		
	7.5	48	7.4	DXT1075	RTT-75		

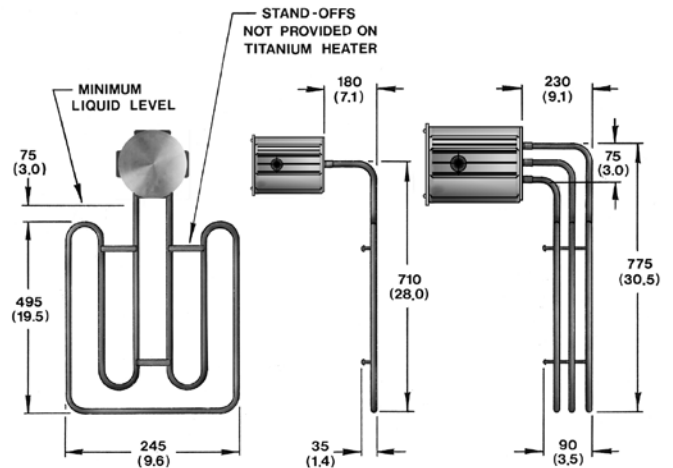


Figure 24

Figure 25

Note: Special dimensions are available.

Table 35 – Three Element Over-the-Side Immersion (Figure 25)

Sheath	Standard Volts: 208, 240, 480, 600 (1 or 3 Phase)						
	kW	Watt Density		Catalog No.	Part No.	Net Weight	
		W/in ²	W/cm ²			lbs	kg
Copper	9.0	19	2.9	DXC3090	-	22.0	10
	15.0	32	5.0	DXC3150			
	22.5	48	7.4	DXC3225			
304 S.S.	9.0	19	2.9	DXS3090			
	15.0	32	5.0	DXS3150			
	22.5	48	7.4	DXS3225			
Incoloy®	9.0	19	2.9	DXI3090			
	15.0	32	5.0	DXI3150			
	22.5	48	7.4	DXI3225			
Inconel®	9.0	19	2.9	DXN3090			
	15.0	32	5.0	DXN3150			
	22.5	48	7.4	DXN3225			

Application

Caloritech™ bottom mount heaters are available as standard in copper or Incoloy® sheaths for use in most liquid heating applications. Check the construction details listed below and also Section D of the Caloritech™ catalog for watt density and sheath selection.

Construction

Types DXLC and DXRC heaters have copper sheathed heating elements silver brazed to a welded 304 stainless steel box and riser.

Types DXLI and DXRI heaters feature high density Incoloy® sheathed heating elements and 304 stainless steel immersed parts in a fully welded construction.

Types DXLF and DXRF heaters feature low density Incoloy® sheathed heating elements and steel immersed parts in a fully welded construction.

To Order Specify

- Quantity
- Phase
- Catalog number
- Wattage
- Voltage
- Special features

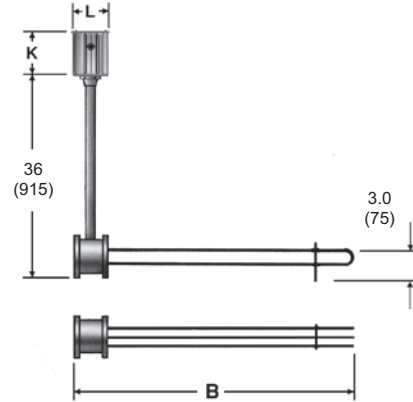


Figure 26

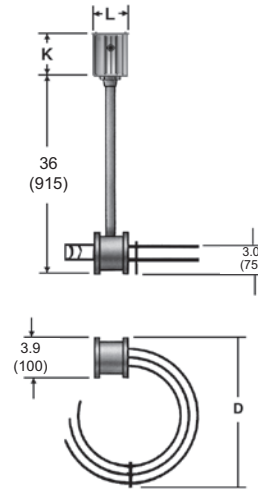


Figure 27

Special Features (Ordered Separately)

- Special wattage or voltage
- Special riser height
- Special materials
- Multiple rows of elements for higher wattages
- Built-in thermostat or high limit controller
- 4" (102 mm) sludge legs
- Passivation for Incoloy® and stainless steel sheath
- Explosion-proof construction

Table 36 – Terminal Housings

Box Type	No Thermostat				With Thermostat			
	K		L		K		L	
	in	mm	in	mm	in	mm	in	mm
Moisture Resistant (Standard)	3.50	89	4.25	108	6.250	159	6.000	152
Explosion-Proof	4.75	108	4.00	102	7.000	178	5.625	143

Table 37 – Over-the-Side Heaters (Figure 26 and Figure 27)

Sheath Material	kW	Dimensions				Watt Density		Figure 24		Figure 25		Net Weight	
		B (Figure 26)		D (Figure 27)		W/in ²	W/cm ²	Catalog No.	Part No.	Catalog No.	Part No.	lb	kg
		in	mm	in	mm								
Copper	3.0	12.4	315	-	-	53	8.1	DXLC3030	TLC-330-1	-	KTLC-330-1	11.0	5
	6.0	22.2	565	15.7	400	60	9.3	DXLC3060	TLC-360-1	DXRC3060	KTLC-360-1	11.0	5
	9.0	30.1	765	17.3	440	55	8.5	DXLC3090	TLC-390-1	DXRC3090	KTLC-390-1	13.2	6
	12.0	37.0	940	18.9	480	54	8.4	DXLC3120	TLC-312-1	DXRC3120	KTLC-312-1	13.2	6
	15.0	43.9	1115	20.5	520	54	8.4	DXLC3150	TLC-315-1	DXRC3150	KTLC-315-1	15.4	7
	18.0	51.8	1315	22.0	560	53	8.2	DXLC3180	TLC-318-1	DXRC3180	KTLC-318-1	15.4	7
Incoloy®	3.0	12.4	315	-	-	53	8.1	DXLI3030	TLI-330-1	-	KTLI-330-1	11.0	5
	6.0	22.2	565	15.7	400	60	9.3	DXLI3060	TLI-360-1	DXRI3060	KTLI-360-1	11.0	5
	9.0	30.1	765	17.3	440	55	8.5	DXLI3090	TLI-390-1	DXRI3090	KTLI-390-1	13.2	6
	12.0	37.0	940	18.9	480	54	8.4	DXLI3120	TLI-312-1	DXRI3120	KTLI-312-1	13.2	6
	15.0	43.9	1115	20.5	520	54	8.4	DXLI3150	TLI-315-1	DXRI3150	KTLI-315-1	15.4	7
	18.0	51.8	1315	22.0	560	53	8.2	DXLI3180	TLI-318-1	DXRI3180	KTLI-318-1	15.4	7
	3.0	22.2	565	15.7	400	30	4.6	DXLF3030	TLO-330-1	DXRF3030	KTLO-330-1	11.0	5
	6.0	37.0	940	18.9	480	27	4.2	DXLF3060	TLO-360-1	DXRF3060	KTLO-360-1	13.2	6
	9.0	51.8	1315	22.0	560	26	4.1	DXLF3090	TLO-390-1	DXRF3090	KTLO-390-1	15.4	7
	3.0	565	940	18.9	480	14	2.1	DXLF3030-1	-	DXRF3030-1	-	11.0	5
	4.5	940	1115	20.5	520	16	2.5	DXLF3045	-	DXRF3045	-	13.2	6
	6.0	1315	1315	22.0	560	18	2.7	DXLF3060-1	-	DXRF3060-1	-	15.4	7

Pipe-Insert Immersion Heaters - MX

Application

For heating asphalt, molasses, tar, paint, glue or any viscous fluids. When heating corrosive liquids the pipe enclosing the heater must be resistant to corrosion. Tank fabricator to supply and install pipes. Heater can be removed without draining the liquid.

Heat is transferred safely from the heating element to the inner wall of the pipe by a combination of convection and radiation. Note that filling the pipe with a heat transfer fluid is neither required nor recommended.

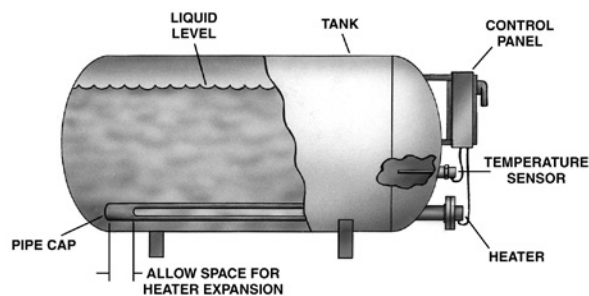


Figure 28 – Typical application of pipe-insert immersion heater for viscous fluids

Construction

Standard heaters have heavy duty alloy sheathed element(s) fitted to either a 3" 150 lb. steel flange or a 2" NPT screwplug. The terminal box is moisture resistant for outdoor applications. One 1" NPT conduit fitting is provided on units without thermocouple, and an additional 1/2" NPT conduit fitting is provided on units with built-in thermocouples.

Heaters with Type K thermocouples (one per tank) are used for detecting low liquid levels. If the level drops below the uppermost heater, the temperature inside the heater pipe will rise. The thermocouple will detect this temperature rise, and, when this signal is fed through an electronic temperature limit control, it will automatically trip the system off. Thermon Heating Systems can provide a packaged control panel or ship the control components individually.

Refer to Section D for information on Caloritech™ control panels for this application.

Refer to Section F for information on thermostat and thermocouple assemblies with attached wells.

Installation

Install heaters in a suitable metal pipe with a 2" (51 mm) minimum inside diameter. Fit 3" standard pipe flanges or 2" (51 mm) couplings where pipes extend outside the tank wall and cap the pipe ends inside the vessel.

It is best to leave one pipe a few inches higher than the others. This pipe will receive the heater with the built-in thermocouple or limit device to provide fast response under low liquid level conditions.

Selection and Sizing

Use the graphs (Figure 29 and Figure 30) and the explanation on the following page to determine the kilowatts necessary to maintain the tank at the required temperature. Next, select the required number of heaters with an insert length long enough to provide good heat distribution.

Normally the one element and two element style heaters are used in groups of three so that they can be wired in a three phase balanced system.

When the application entails heating an extremely viscous liquid from a cold start, the one element heater should be selected since the lower resulting watt density on the pipe surface will prevent coking (see Table 38 on page B40).

Table 38 –Watt Density on Pipe Surface vs. Heater Type

Pipe Size		Element Type					
		1			2		
in	mm	W/in ² on Pipe			W/cm ² on Pipe		
2	51	5.5	7.4	6.8	0.9	1.1	1.1
2 1/2	64	4.6	6.2	5.7	0.7	1.0	0.9
3	76	3.8	5.1	4.7	0.6	0.8	0.7
4	102	3.0	4.0	3.7	0.5	0.6	0.6

Special Features

- Packaged control systems
- Special voltage
- Special wattage
- Explosion resistant terminal housings
- Built-in thermostats/limits
- Special lengths
- Special flange or screwplug sizes
- Extra conduit fittings

Solving Heating Problems: Figure 29 through Figure 31

Step 1: Use tank diameter and length and Figure 29 to determine tank surface area.

Step 2: Using Figure 30, surface area, and maximum design temperature difference between tank contents and surroundings, the heat loss can be determined for 2" (51 mm) or 4" (102 mm) of insulation.

Step 3: Figure 31 for asphalt or heavy oil, is used to determine the additional energy required for heat-up from a cold start if cold loads are added. Use maximum heat-up times to minimize installed kW requirements.

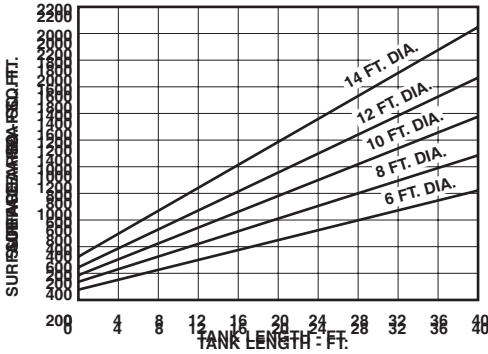


Figure 29 – Tank Surface Area vs. Length

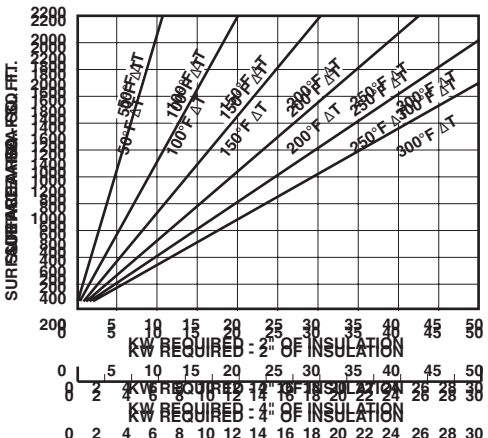


Figure 30 – Tank Surface Area vs. Installed Kilowatts

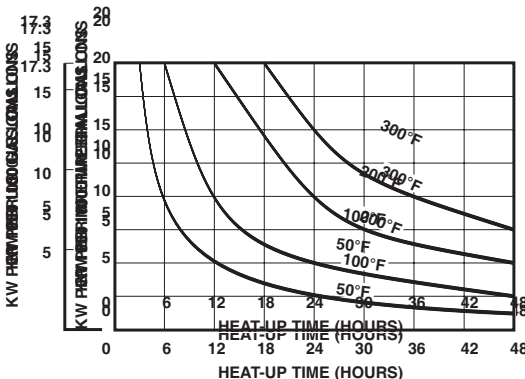


Figure 31 – Tank Capacity vs. Heat-Up Time for Asphalt

Control Systems

Thermon Heating Systems manufactures standard and custom designed control panels for pipe insert heating systems. See Section D for listings of CPA, CPB and CPP panels.

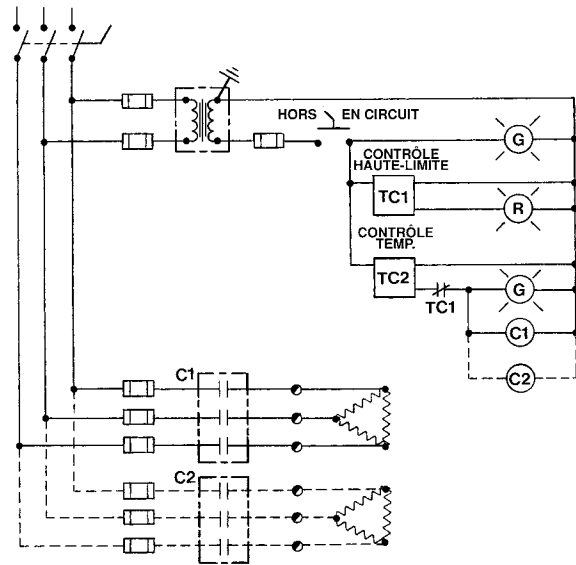


Figure 32 – Typical Control System



Special Pipe Heaters Assemblies

Some applications may require a higher kW rating than can be achieved with individual pipe heaters. Special assemblies of closely spaced pipes mounted to a common header are available. Each pipe in the header is fitted with a special heating element.

Another advantage of this system is that, in the event that an element has to be removed for servicing, draining is not required.

This type of heater is particularly suitable for suction heating in large bunker oil storage tanks.

Pipe-Insert Heaters MX Series

Pipe-insert heaters are listed with a choice of flange or screwplug mount. Special mounting types and sizes are available on request.

Many storage tanks containing high viscosity liquids require a method of heating which will uniformly distribute the heat and will not cause charring or coking. Electric insert heaters installed in pipe wells with large surface areas in contact with the product have proven to be a cost effective and virtually maintenance free solution to these heating problems.

Application

Heat transfer in liquids is mainly by convection as opposed to conduction. Because of their high viscosities, heavy liquids such as asphalt, molasses, tar, paint, wax and some oils have poor heat transfer at low temperatures.

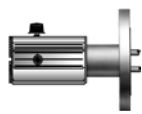
If these liquids require heating, careful consideration must be given to the rate at which heat is being introduced into the product since coking of the liquid at the heating surface could spoil the entire tank contents. Electric pipe-insert heaters eliminate the need for high maintenance pumps or open flames which may present a fire hazard, especially when the liquid being heated is flammable.

Refer to page B40 and page B41 for detailed information on the construction and use of pipe-insert heaters. Table 38 on page B40 gives the resultant watt density (watts per sq. in. of surface area) on 2" (51 mm) to 4" (102 mm) pipes when fitted with any one of the three basic heater types offered.

When heating highly viscous liquids select a pipe size large enough to match the pipe surface watt density with the ability of the liquid to carry the heat away. Table 38 on page B40 gives an explanation of watt density which also applies to pipe heater pipe well surfaces.

Built-in Thermocouples and Thermostats as Limit Devices

If there is even the slightest chance that the liquid level could fall below the uppermost surface of any pipe well, an overtemperature control is recommended. Units listed with built-in thermocouples are intended for use with a Caloritech™ control system.



Explosion-Proof Housing With Externally Adjustable Thermostat For Limit Sensing

Figure 33

The Type MXI heater can also be factory fitted with a built-in thermostat as a limit device with the sensing bulb installed in a thermostat well. Note that the temperature inside the pipe is much hotter than the pipe itself and varies with the system parameters. It is recommended that you consult the nearest Thermon Heating Systems sales office for assistance with the thermostat selection.

Construction

The heaters are available with single hairpin element, double hairpin elements, or three straight elements. The double hairpin element type can be wired in single phase or three phase, open delta. The three element type is suitable for three phase wiring only.

The heaters can be coiled to a six-foot diameter to permit installation or removal where space restrictions exist.

Special Features

- Special voltage
- Special wattage
- Explosion resistant terminal housings
- Built-in thermostats/limits
- Special lengths
- Special flange sizes
- Extra conduit fittings
- Control systems

Table 39 – 3" - 150 lb Flange (One Hairpin Element)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
3	208	74.8	1900	MXI103F3	TMP-3-103	MXIK103F3	TMP-3-103-2
4	240	98.4	2500	MXI104F3	TMP-3-104	MXIK104F3	TMP-3-104-2
	480						
5	480	122.0	3100	MXI105F3	TMP-3-105	MXIK104F3	TMP-3-105-2
	600						
6	480	133.9	3400	MXI106F3133	TMP-3-106	MXIK106F3133	TMP-3-106-2
6	480	145.7	3700	MXI106F3	—	MXIK106F3	—
		600					
7	480	169.3	4300	MXI107F3169	TMP-3-107	MXIK107F3169	TMP-3-107-2
7		181.1	4600	MXI107F3	—	MXIK107F3	—
8	480	192.9	4900	MXI108F3	TMP-3-108	MXIK108F3	TMP-3-108-2
9		216.5	5500	MXI109F3	TMP-3-109	MXIK109F3	TMP-3-109-2
10	480	240.2	6100	MXI110F3	TMP-3-110	MXIK110F3	TMP-3-110-2
11		263.8	6700	MXI111F3	TMP-3-111	MXIK111F3	TMP-3-111-2
12	600	287.4	7300	MXI112F3	TMP-3-112	MXIK112F3	TMP-3-112-2
13		311.0	7900	MXI113F3	TMP-3-113	MXIK113F3	TMP-3-113-2
14	600	334.6	8500	MXI114F3	—	MXIK114F3	—
15		358.3	9100	MXI115F3	—	MXIK115F3	—
15	425.2	10800	MXI115F3425	—	MXIK115F3425	—	

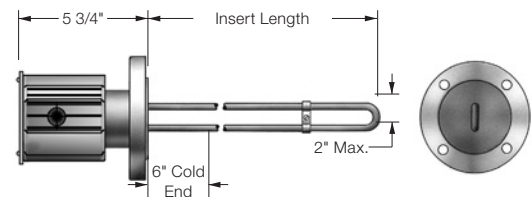


Figure 34 – 3" - 150 lb Flange (One Hairpin Element)

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

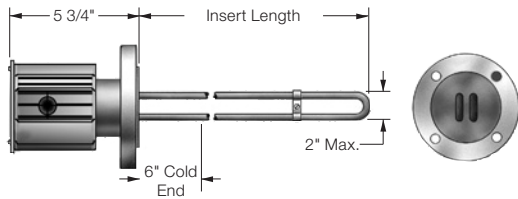


Figure 35 - 3" - 150 lb Flange (Two Hairpin Elements)

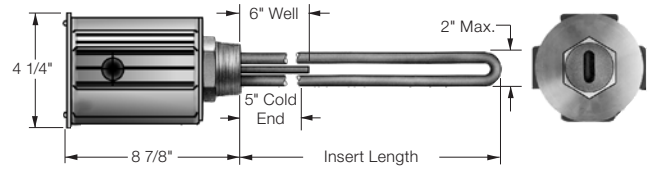


Figure 37 - 2" NPT Screwplug (One Hairpin Element)

Table 40 - 3" - 150 lb Flange (Two Hairpin Elements)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
3	208 240 480 600	55.1	1400	MXI203F3	-	MXIK203F3	-
4		70.9	1800	MXI204F3		MXIK204F3	
5		86.6	2200	MXI205F3		MXIK205F3	
6		102.4	2600	MXI206F3		MXIK206F3	
7		118.1	3000	MXI207F3		MXIK207F3	
8		133.9	3400	MXI208F3		MXIK208F3	
10		165.4	4200	MXI210F3		MXIK210F3	
12		196.9	5000	MXI212F3		MXIK212F3	
14	228.3	5800	MXI214F3	MXIK214F3			
16	259.8	6600	MXI216F3	MXIK216F3			

Table 42 - 2" NPT Screwplug (One Hairpin Element)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
3	208 240 480 600	74.8	1900	MXI130P2	MTP-230-1	MXIK130P2	MTP-230-2
4		98.4	2500	MXI140P3	MTP-240-1	MXIK140P2	MTP-240-2
5		122.0	3100	MXI150P2	MTP-250-1	MXIK150P2	MTP-250-2
6	480 600	133.9	3400	MXI160P2	-	MXIK160P2	-

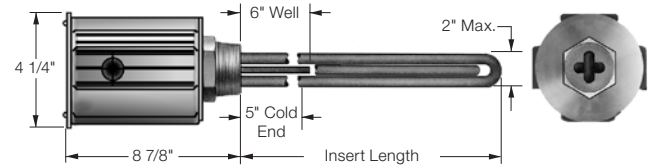


Figure 38 - 2" NPT Screwplug - Two Hairpin Elements

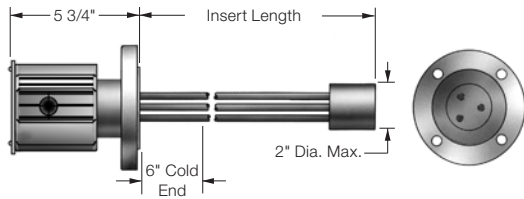


Figure 36 - 3" - 150 lb Flange (Three Straight Elements)

Table 43 - 2" NPT Screwplug (Two Hairpin Elements)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
3	208 240 480 600	74.8	1900	MXI130P2	MTP-230-1	MXIK130P2	MTP-230-2
4		98.4	2500	MXI140P3	MTP-240-1	MXIK140P2	MTP-240-2
5		122.0	3100	MXI150P2	MTP-250-1	MXIK150P2	MTP-250-2
6	480 600	133.9	3400	MXI160P2	-	MXIK160P2	-

Table 41 - 3" - 150 lb Flange (Three Straight Elements)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
2	208 240 480 600	45.3	1150	MXI302F3	-	MXIK302F3	-
3		64.0	1625	MXI303F3		MXIK303F3	
4		82.7	2100	MXI304F3		MXIK304F3	
5		101.4	2575	MXI305F3		MXIK305F3	
6		120.1	3050	MXI306F3		MXIK306F3	
7		138.8	3525	MXI307F3		MXIK307F3	
8		157.5	4000	MXI308F3		MXIK308F3	
9		176.2	4475	MXI309F3		MXIK309F3	
10		194.9	4950	MXI310F3		MXIK310F3	
11		213.6	5425	MXI311F3		MXIK311F3	
12		232.3	5900	MXI312F3		MXIK312F3	
13		251.0	6375	MXI313F3		MXIK313F3	
14		269.7	6850	MXI314F3		MXIK314F3	
15		288.4	7325	MXI315F3		MXIK315F3	

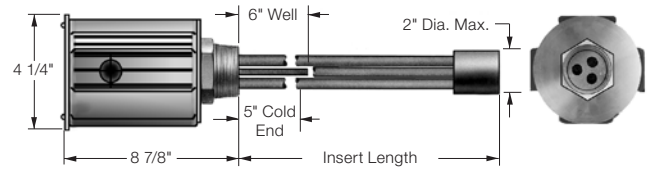


Figure 39 - 2" NPT Screwplug (Three Straight Elements)

Table 44 - 2" NPT Screwplug (Three Straight Elements)

kW	Std. Volts (1Ø Only)	Insert Length		Without T/C		With 'K' Type T/C	
		in	mm	Catalog No.	Part No.	Catalog No.	Part No.
2	208 240 480 600	45.3	1150	MXI320P2	-	MXIK320P2	-
3		64.0	1625	MXI330P2		MXIK330P2	
4		82.7	2100	MXI340P2		MXIK340P2	
5		101.4	2575	MXI350P2		MXIK350P2	
6		120.1	3050	MXI360P2		MXIK360P2	

Flanged Pipe Heaters - FPH

Caloritech™ FPH Series Flanged Pipe Insert Heaters consist of closely spaced insert pipes mounted to a common flange. Each pipe in the flange is fitted with an independent heavy duty alloy sheathed heating element. The insert pipes and flange provide the heater with a sealed installation, keeping the elements from contacting the fluid in the tank. Heater elements are individually removable in the event of servicing without draining the tank.

The FPH is suited to applications requiring a higher kW rating than can be achieved with individual pipe insert heaters. This type of heater is particularly suitable for liquid heating applications requiring low watt densities such as in large bunker oil storage tanks.



Application

Flanged pipe heaters are uniquely designed to heat storage tanks containing highly viscous, corrosive or heat sensitive materials.

High viscosity, heavy liquids such as asphalt, molasses, tar, paint, wax and some oils have poor heat transfer at low temperatures.

For these liquids, careful consideration must be given to the rate of heat transfer into the product since boiling and coking of the liquid at the heating surface can occur, spoiling tank contents and shortening heater life.

FPH heaters are specifically engineered to reduce overall watt density by maximizing pipe surface area. The large surface area allows for greater kW ratings while maintaining low surface temperatures and controlled heat transfer.

Construction

Standard heaters listed utilize 2", 2 1/2" or 3" SCH.40 steel pipe welded to a 150 lb ANSI rated steel flange. Stainless steel construction is available depending on the application. Heater sizes and ratings are specified based on flange layouts maximizing pipe surface area.

FPH heaters use heavy duty alloy sheathed elements fitted to a 2" or 2 1/2" NPT screwplug for single pipe insert heaters or networked inside the terminal box for units with multiple pipe inserts. Heaters are available

with single hairpin elements, double hairpin elements, triple hairpin elements or three straight elements.

Moisture resistant and/or explosion resistant terminal housings are available for all flanged pipe insert heater sizes.

Caloritech™ manufactures standard and custom designed control panels, engineered to match the specific requirements of tank heating systems. See Section D for listings of CPA, CPB and CPP panels.

Special Features

- Custom voltage
- Custom wattage
- Custom Materials
- Explosion resistant terminal housings
- Built-in thermostat/limits
- Custom lengths
- Various flange sizes
- Control systems
- Partial U-stamp
- Watt densities available below 5 W/in²

Selection

Flanged pipe insert heaters are listed in ascending flange size. Three specific watt densities are listed although additional watt densities are available through special order.

Flanged pipe insert heaters should be selected based on required heating load, flange size, pipe insert length and the maximum watt density for the application.

Standard heaters are constructed with a moisture resistant terminal housing. Optional explosion resistant terminal housings are available.

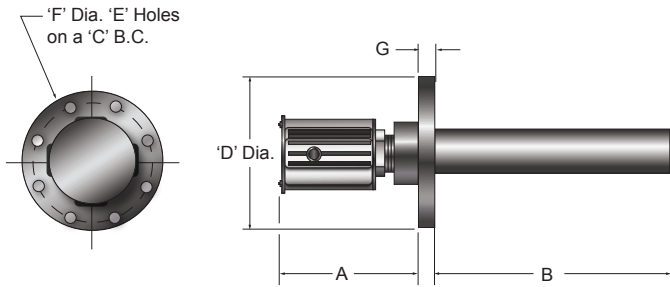


Figure 40

Table 45 – 3" to 4" Flange Heater Dimensions

Flange Size	Flange Rating	A		C		D		E Holes	F		G	
		in	mm	in	mm	in	mm		in	mm	in	mm
3	150	9.625	244	6.000	152	7.500	191	4	0.750	19	0.938	24
	300			6.625	168	8.250	210	8	0.875	22	1.125	29
4	150	9.625	244	7.500	191	9.000	229	8	0.750	19	0.938	24
	300			7.875	200	10.000	254	8	0.875	22	1.250	32

Table 46 – 3" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.
		in	mm		W/in ²	W/cm ²	
High Density 7.5 W/in ² (1.2 W/cm ²)	7	140	3556	1 or 3 Phase	7.5	1.2	FPH107F3140
	5	105	2667				FPH105F3105
	5	90	2286				FPH105F390
	3	60	1524				FPH103F360
Medium Density 5 W/in ² (0.8 W/cm ²)	5	140	3556		5.0	0.8	FPH105F3140
	3	105	2667				FPH103F3105
	3	90	2286				FPH103F390
	2	60	1524				FPH102F360
Low Density 3 W/in ² (0.5 W/cm ²)	3	140	3556		3.0	0.5	FPH103F3140
	2	105	2667				FPH102F3105
	2	90	2286				FPH102F390
	1	60	1524				FPH101F360

Table 47 – 4" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.
		in	mm		W/in ²	W/cm ²	
High Density 7.5 W/in ² (1.2 W/cm ²)	11	140	3556	1 or 3 Phase	7.5	1.2	FPH111F4140
	8	105	2667				FPH108F4105
	7	90	2286				FPH107F490
	5	60	1524				FPH105F460
Medium Density 5 W/in ² (0.8 W/cm ²)	7	140	3556		5.0	0.8	FPH107F4140
	5	105	2667				FPH105F4105
	5	90	2286				FPH105F490
	3	60	1524				FPH103F460
Low Density 3 W/in ² (0.5 W/cm ²)	4	140	3556		3.0	0.5	FPH104F4140
	3	105	2667				FPH103F4105
	3	90	2286				FPH103F490
	2	60	1524				FPH102F460

To Order Specify

- Quantity
- Catalog number
- Voltage
- Wattage
- Special features

Table 48 – 5" to 10" Flange Heater Dimensions

Flange Size	Flange Rating	A		C		D		E Holes	F		G			
		in	mm	in	mm	in	mm		in	mm	in	mm		
5	150	7.000	178	8.500	216	10.000	254	8	0.875	22	0.938	24		
	300			9.250	235	11.000	279	8			1.375	35		
6	150			9.500	241	11.000	279	8			1.000	25		
	300			10.625	270	12.500	318	12			1.438	37		
8	150			11.750	298	13.500	343	8			0.875	22	1.125	29
	300			13.000	230	15.000	381	12			1.000	25	1.625	41
10	150			14.250	362	16.000	406	12	1.000	25	1.188	30		
	300			15.250	387	17.500	445	16	1.125	29	1.875	48		

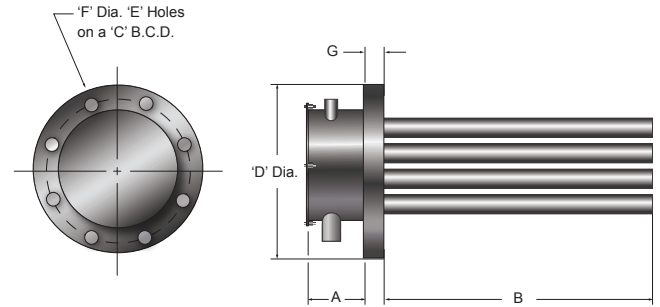


Table 49 – 5" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	11	140	3556	1 or 3 Phase	7.5	1.2	FPH111F5140		
	8	105	2667				FPH108F5105		
	7	90	2286				FPH107F590		
	5	60	1524				FPH105F560		
Medium Density 5 W/in ² (0.8 W/cm ²)	7	140	3556				5.0	0.8	FPH107F5140
	5	105	2667						FPH105F5105
	5	90	2286		FPH105F590				
	3	60	1524		FPH103F560				
Low Density 3 W/in ² (0.5 W/cm ²)	4	140	3556		3.0	0.5	FPH104F5140		
	3	105	2667				FPH103F5105		
	3	90	2286				FPH103F590		
	2	60	1524				FPH102F560		

Table 51 – 8" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	22	140	3556	1 or 3 Phase	7.5	1.2	FPH322F8140		
	16	105	2667				FPH316F8105		
	15	90	2286				FPH315F890		
	10	60	1524				FPH310F860		
Medium Density 5 W/in ² (0.8 W/cm ²)	15	140	3556				5.0	0.8	FPH315F8140
	11	105	2667						FPH311F8105
	10	90	2286		FPH310F890				
	6	60	1524		FPH306F860				
Low Density 3 W/in ² (0.5 W/cm ²)	9	140	3556		3.0	0.5	FPH309F8140		
	7	105	2667				FPH307F8105		
	6	90	2286				FPH306F890		
	4	60	1524				FPH304F860		

Table 50 – 6" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	11	140	3556	1 or 3 Phase	7.5	1.2	FPH111F6140		
	8	105	2667				FPH108F6105		
	7	90	2286				FPH107F690		
	5	60	1524				FPH105F660		
Medium Density 5 W/in ² (0.8 W/cm ²)	7	140	3556				5.0	0.8	FPH107F6140
	5	105	2667						FPH105F6105
	5	90	2286		FPH105F690				
	3	60	1524		FPH103F660				
Low Density 3 W/in ² (0.5 W/cm ²)	4	140	3556		3.0	0.5	FPH104F6140		
	3	105	2667				FPH103F6105		
	3	90	2286				FPH103F690		
	2	60	1524				FPH102F660		

Table 52 – 10" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	58	240	6096	1 or 3 Phase	7.5	1.2	FPH358F10240		
	34	140	3556				FPH334F10140		
	26	105	2667				FPH326F10105		
	22	90	2286				FPH322F1090		
Medium Density 5 W/in ² (0.8 W/cm ²)	38	240	6096				5.0	0.8	FPH338F10240
	22	140	3556						FPH322F10140
	16	105	2667		FPH316F10105				
	15	90	2286		FPH315F1090				
Low Density 3 W/in ² (0.5 W/cm ²)	22	240	6096		3.0	0.5	FPH322F10240		
	13	140	3556				FPH313F10140		
	10	105	2667				FPH310F10105		
	9	90	2286				FPH309F1090		

To Order Specify

- Quantity
- Wattage
- Catalog number
- Special features
- Voltage

Table 53 – 12" to 20" Heater Dimensions

Flange Size	Flange Rating	A		C		D		E Holes	F		G	
		in	mm	in	mm	in	mm		in	mm	in	mm
12	150	9.000	229	17.000	432	19.000	483	12	1.000	25	1.250	32
	300			17.750	451	20.500	524	16	1.250	32	2.000	51
14	150			18.750	476	21.000	533	12	1.375	35	1.375	35
	300			20.250	514	23.000	584	20	1.250	32	2.125	54
16	150			21.250	540	23.500	597	16	1.125	29	1.438	37
	300			22.500	572	25.500	648	20	1.375	35	2.250	57
18	150			22.750	578	25.000	635	16	1.250	32	1.563	40
	300			24.750	629	28.000	711	24	1.375	35	2.375	60
20	150			25.000	635	27.500	699	20	1.250	32	1.688	43
	300			27.000	686	30.500	775	24	1.375	35	2.500	64

Table 56 – 16" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	160	240	6096	1 or 3 Phase	7.5	1.2	FPH12160F16240		
	94	140	3556				FPH1294F16140		
	70	105	2667				FPH1270F16105		
Medium Density 5 W/in ² (0.8 W/cm ²)	105	240	6096				5.0	0.8	FPH12105F16240
	62	140	3556						FPH1262F16140
	46	105	2667						FPH1246F16105
Low Density 3 W/in ² (0.5 W/cm ²)	64	240	6096		3.0	0.5			FPH1264F16240
	36	140	3556						FPH1236F16140
	28	105	2667						FPH1228F16105

Table 54 – 12" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	94	240	6096	1 or 3 Phase	7.5	1.2	FPH794F12240		
	54	140	3556				FPH754F12140		
	40	105	2667				FPH740F12105		
	34	90	2286				FPH734F1290		
Medium Density 5 W/in ² (0.8 W/cm ²)	62	240	6096				5.0	0.8	FPH762F12240
	36	140	3556						FPH736F12140
	26	105	2667		FPH726F12105				
	22	90	2286		FPH722F1290				
Low Density 3 W/in ² (0.5 W/cm ²)	36	240	6096		3.0	0.5			FPH736F12240
	22	140	3556						FPH722F12140
	16	105	2667				FPH716F12105		
	14	90	2286				FPH714F1290		

Table 57 – 18" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	185	240	6096	1 or 3 Phase	1.2	1.2	FPH14185F18240		
	110	140	3556				FPH14110F18140		
	82	105	2667				FPH1482F18105		
Medium Density 5 W/in ² (0.8 W/cm ²)	125	240	6096				5.0	0.8	FPH14125F18240
	72	140	3556						FPH1472F18140
	54	105	2667						FPH1454F18105
Low Density 3 W/in ² (0.5 W/cm ²)	74	240	6096		3.0	5.0			FPH1474F18240
	44	140	3556						FPH1444F18140
	32	105	2667						FPH1432F18105

Table 55 – 14" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	110	240	6096	1 or 3 Phase	7.5	1.2	FPH7110F14240		
	66	140	3556				FPH766F14140		
	50	105	2667				FPH750F14105		
Medium Density 5 W/in ² (0.8 W/cm ²)	76	240	6096				5.0	0.8	FPH776F14240
	44	140	3556						FPH744F14140
	32	105	2667						FPH732F14105
Low Density 3 W/in ² (0.5 W/cm ²)	44	240	6096		3.0	0.5			FPH744F14240
	26	140	3556						FPH726F14140
	20	105	2667						FPH720F14105

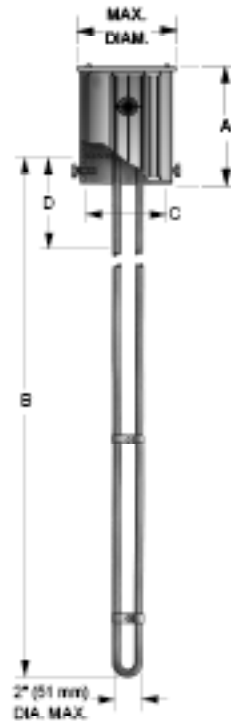
Table 58 – 20" 150 lb (Steel Flange)

	kW	Pipe Length 'B'		Std. Voltages 208, 240, 480, 600	Pipe Surface Watt Density		Catalog No.		
		in	mm		W/in ²	W/cm ²			
High Density 7.5 W/in ² (1.2 W/cm ²)	255	240	6096	1 or 3 Phase	7.5	1.2	FPH19255F20240		
	145	140	3556				FPH19145F20140		
	110	105	2667				FPH19110F20105		
Medium Density 5 W/in ² (0.8 W/cm ²)	170	240	6096				5.0	0.8	FPH19170F20240
	98	140	3556						FPH1998F20140
	74	105	2667						FPH1974F20105
Low Density 3 W/in ² (0.5 W/cm ²)	100	240	6096		3.0	0.5			FPH19100F20240
	58	140	3556						FPH1958F20140
	44	105	2667						FPH1944F20105

To Order Specify

- Quantity
- Wattage
- Catalog number
- Special features
- Voltage

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 ingress 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.

To Order Specify

Voltage and Wattage - wattage may range from 6 to 16 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.

Type	Dimensions				Maximum Diameter	
	A		C		In	mm
1			3.000	76	3.625	92
2	5.000	127	4.125	105	4.925	117
3			4.375	111	4.875	124

Gate Body Duct Heater

Application

Gate body duct heaters are custom engineered by CCI Thermal 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 ingress 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.



Inlet End

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 CCI Thermal also builds control panels for sluice gate heating control (see Section D).