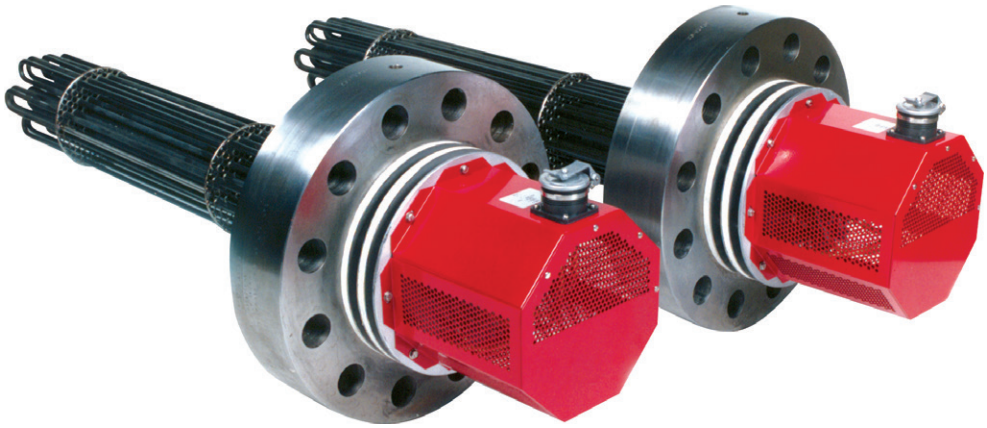
Flange Heaters - CX



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 Thermon 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.

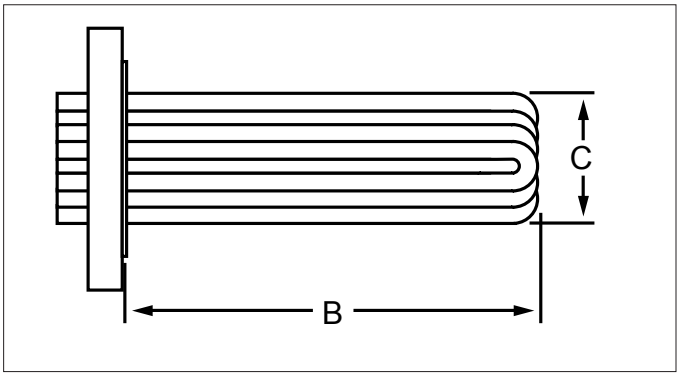


Figure 18 – Element Dimensions

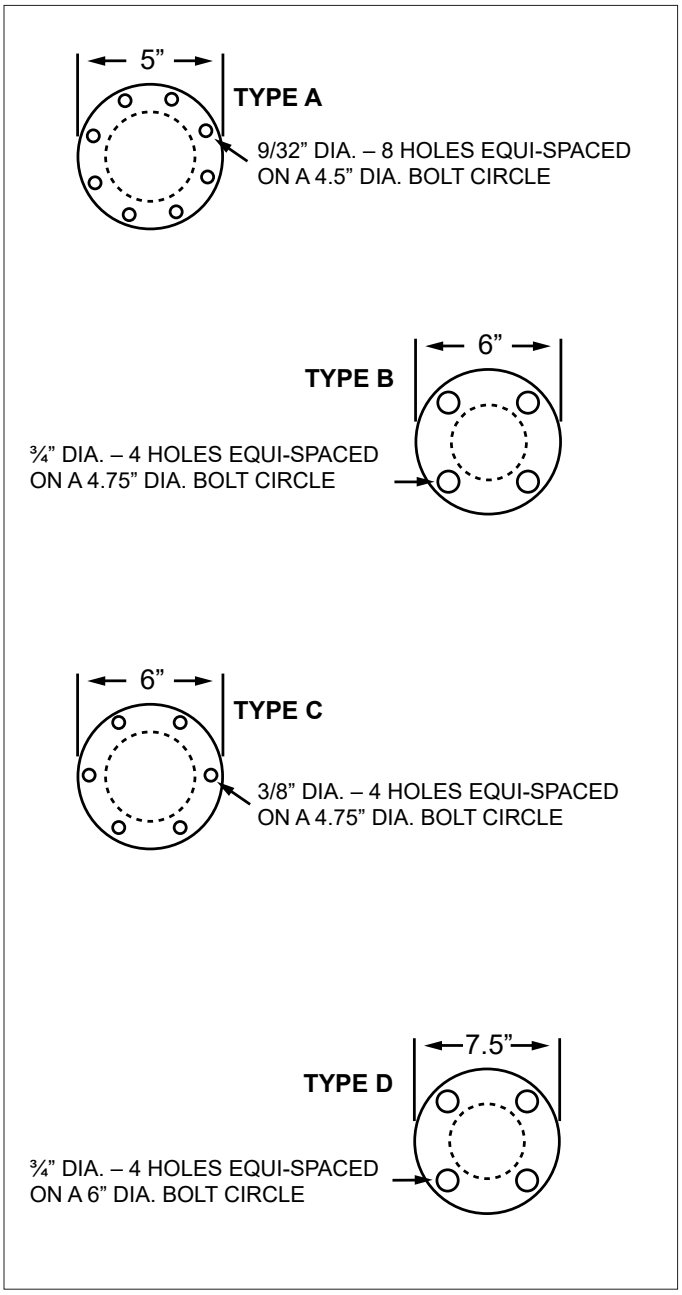


Figure 19 – Flange Type

To Order Specify

To order a custom round flange boiler replacement specify:

- Flange type from Figure 18 on page B27
  - ‘B’ and ‘C’ dimensions
- Voltage
- Phase
- Kilowatts
- Number of elements
- 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.

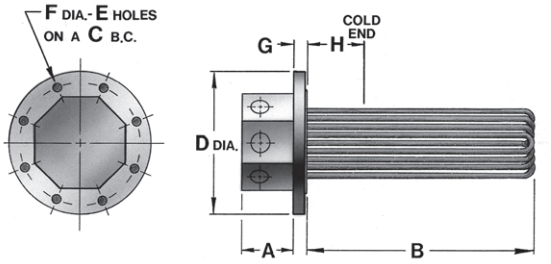


Table 15 – 2 1/2" Flange Heater Dimensions

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	Watt Density		Without Thermostat	With Thermostat 50°F to 250°F (10°C to 120°C)	Net Weight	
		in	mm	208, 240, 416, 480, 600	W/in²	W/cm²	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.

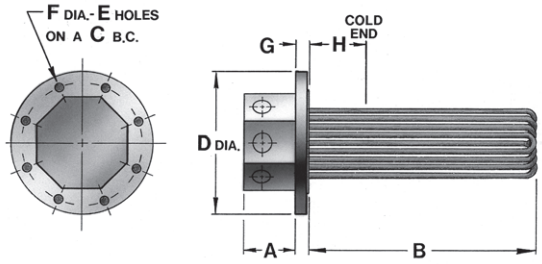


Table 17 – 3" Flange Heater Dimensions

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/in²	W/cm²	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		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		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		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.

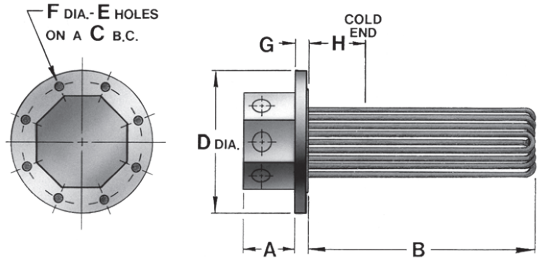


Table 19 – 4" Flange Heater Dimensions

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 50°F to 250°F (10°C to 120°C)	Net Weight	
		in	mm		W/in²	W/cm²	Catalog No.	Catalog No.	lbs	kg
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		60	8.4	CXI612F4	CXIT612F4	26.5	12
	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		30	4.6	CXF606F4	CXFT606F4	28.7	13
	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		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.

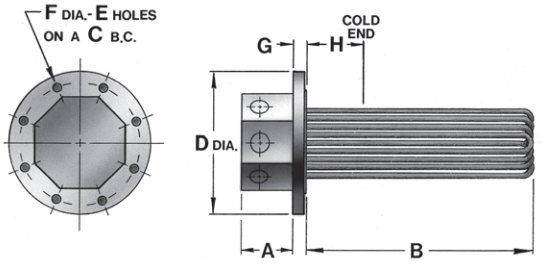


Table 21 – 5" Heater Dimensions

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 50°F to 250°F (10°C to 120°C)	Net Weight	
		in	mm		W/in²	W/cm²	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
	45.0	39.6	1005		54	8.4	CXC945F5	CXCT945F5	44.1	20
High Density Incoloy® Sheath	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
	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
Medium Density Incoloy® Sheath	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
	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
Low Density Incoloy® Sheath	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

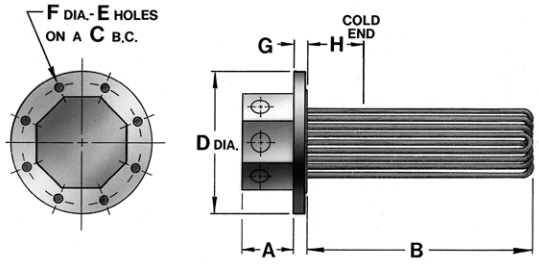
Selection

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.



To Order Specify

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

Table 23 – 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	152

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								
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	Catalog No.	Part No.	Catalog No.	lbs	kg
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	✓	✓	✓		27	4.2	CXF1522F6		CXFT1522F6	52.9	24
	30.0	32.7	830							CXF1530F6		CXFT1530F6	57.3	26
	37.5	39.6	1005							CXF1537F6		CXFT1537F6	63.9	29
	45.0	47.4	1205	–	✓	✓		26	4.1	CXF1545F6		CXFT1545F6	70.5	32
	60.0	61.2	1555							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	152

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 50°F to 250°F (10°C to 120°C)	Net Weight	
				208, 240		480, 600								
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	Catalog No.	Part No.	Catalog No.	lbs	kg
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									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.

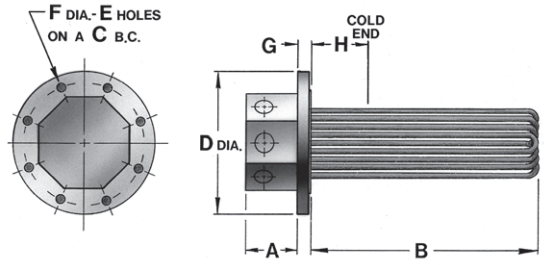


Table 27 – 10" Flange Heater Dimensions

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									
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	Catalog No.	Part No.	Catalog No.	Part No.	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									CXI48384F10				205.0	93
Medium Density Incoloy® Sheath	108	47.2	1200		–	✓		30	4.6	CXF36108F10				165.4	75
	126					–				CXF42126F10				187.4	85
	144					–				CXF48144F10				205.0	93
Low Density Incoloy® Sheath	72	47.2	1200		✓	✓		20	3.1	CXF3672F10				165.4	75
	84									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.

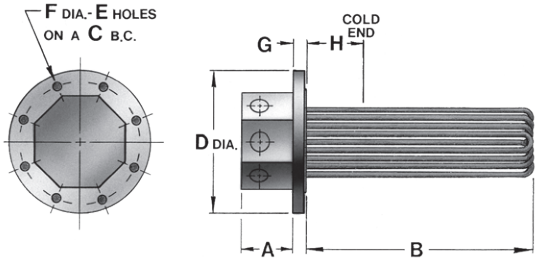


Table 29 – 12" Flange Heater Dimensions

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 50°F to 250°F (10°C to 120°C)		Net Weight	
				208, 240		480, 600									
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	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									CXI60480F12				271.2	123
Medium Density Incoloy® Sheath	144	47.0	1195		–	–		30	4.6	CXF48144F12				238.1	108
	162									CXF64162F12				255.7	116
	180									CXF60180F12				271.2	123
Low Density Incoloy® Sheath	96		1195		✓	✓		20	3.1	CXF4896F12				238.1	108
	108				–	✓				CXF54108F12				255.7	116
	120				–	–				CXF60120F12				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.

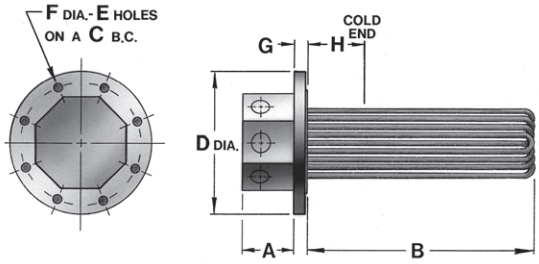


Table 31 – 14" Flange Heater Dimensions

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									
		in	mm	1Ø	3Ø	1Ø	3Ø	W/in²	W/cm²	Catalog No.	Part No.	Catalog No.	Part No.	lbs	kg
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	93.2					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					80	12.3	CXI72576F14				343.9	156
	672									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.

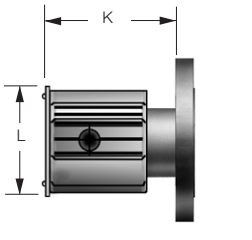


Figure 20

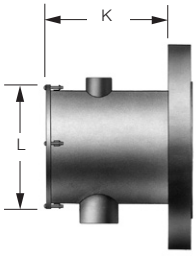


Figure 21

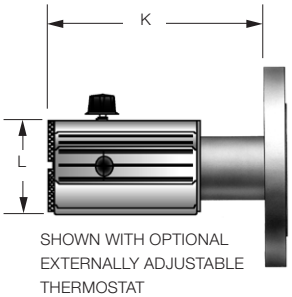


Figure 22

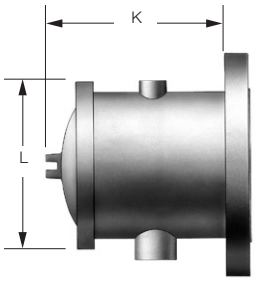


Figure 23

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		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	6.00)	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				
	12	2	9.000	229	16.750	425				
	14	2	9.000	229	18.750	476				
Explosion Resistant	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				