

## Flanged Immersion Heaters

### Technical & Application Data

#### Description

These thru-the-side immersion heaters utilize standard pipe flanges ranging from 3 to 14" nominal pipe diameter to support high tank pressures of superheated steam, compressed gases or liquids. They are installed through a matching companion flange (obtainable from local industrial supply houses) to the tank wall. A wide selection of watt densities, heating outputs and flange sizes and ratings make this an excellent heater for all tanks, vats or irregularly shaped vessels.

#### Features — Stock Units

##### Element

- **Materials** — Copper, steel, 304 stainless steel, INCOLOY®.
- **Number Elements in Flanges** — 3, 6, 12, 18, 27, 36 and 45.
- **Element Diameter** — 0.475".
- **Watt Density** — 6.5, 15, 23, 45 and 75 W/In<sup>2</sup>.

##### Flange

- **Material** — Carbon steel, stainless steel.
- **Rating** — 150 lb. pressure class per ANSI B16.5
- **Sizes** — 3, 5, 6, 8, 10, 12 and 14", 150 lb.

##### Process Control Thermowell

- **Materials** — Copper, carbon steel, stainless steel, INCOLOY®.
- 1/2" diameter.

#### Special Features

**Kilowatt Ratings** — 500 kW and above available.

##### Element

- **Materials** — 316, 321, 347 stainless steel, INCONEL® and more.

##### Flange

- **Materials** — 316, 321, 347 stainless steel, INCONEL®, INCOLOY® and more.

- **Rating** — 300, 400, 600, 900, 1,500 and 2,500 lb. pressure class.
- **Size** — 16, 18" and larger.

#### Optional Features

**ASME** Section I, III, IV and VIII designed and certified

**Baffles** to distribute flow on elements

**Passivation** of stainless steel

**Immersion Lengths** up to 240 inches

**Stand-off Terminal Enclosures** to isolate terminal housing from flange in high temperature applications

#### Stock Status & Availability

**S** — Stocked in finished form

**AS** — Assembly Stock. Items put together using major stocked subassemblies requiring three day shipping lead time

**NS** — Non Stock (made to order). Contact your Local Chromalox Sales office for delivery

#### Terminal Enclosures

**Type E1** General Purpose, sheet metal (NEMA 1) painted with red enamel

**Type E2** Combination Moisture Resistant, Explosion Resistant enclosures involve the use of wiring enclosures for use in hazardous location conditions.

**Type E4** Moisture Resistant

Safe operation of heaters equipped with these enclosures depends on employment of electrical wiring meeting the National Electrical Code and/or IEC for hazardous locations and limiting maximum operating temperatures (including temperatures on outside of vessel, piping, flanges, screw plugs, enclosures and other heat conducting parts) as dictated by flammable liquids, vapors or gases present. Approved pressure and/or temperature limiting controls must be used to assure safe operation in the event of a system malfunction.

#### Temperature Controls

- A thermostat protective well is standard on most models. This well is installed through the flange, parallel with the heating elements. An AR type on-off mechanical control can be externally mounted to the heater with the capillary bulb installed in this well (order separately — see Controls section for details).
- A contactor is needed when the line voltage and/or current exceeds the thermostat rating.
- Other types of controls and sensors are available where a high degree of accuracy or a more versatile control scheme is required. Electronic controls and complete control panels are easily installed. See the Controls section for details.

#### Corrosion Policy

Chromalox cannot warrant any electric immersion heater against failure by sheath corrosion if such failure is the result of operating conditions beyond the control of the heater manufacturer. It is the responsibility of the purchaser to make the ultimate choice of sheath material based on their knowledge of the chemical composition of the corrosive solution, character of materials entering the solution, and controls which he maintains on the process.

## Flanged Immersion Heaters

### Technical & Application Data

*ATEX/IECEX/CSA Zone Classification Selection chart for terminal enclosure  
standoff dimension based on 30°C rise over 40°C ambient*

70°C Cable Supply			Vertical Heater Orientation		Horizontal Heater Orientation	
Temperature Code	Wet Face Temperature: °F	Wet Face Temperature: °C	Minimum Standoff Dimension		Minimum Standoff Dimension	
			Inches	mm	Inches	mm
T6	185	85	3	76	1	25
T5	212	100	3	76	2	50
T4A	248	120	5	127	3	76
T4	275	135	6	152	3	76
T3C	320	160	7.5	191	4	102
T3B	329	165	7.5	191	4	102
T3A	356	180	7.5	191	5	127
T3	392	200	9	229	5	127
T2D	419	215	9	229	5	127
T2C	446	230	9	229	6	152
T2B	500	260	10.5	267	6	152
T2A	536	280	10.5	267	6	152
T2	572	300	10.5	267	7.5	191
T1	842	450	13.5	343	9	229

*ATEX/IECEX/CSA Zone Classification Selection chart for terminal enclosure  
standoff dimension based on 10°C rise over 60°C ambient*

70°C Cable Supply			Vertical Heater Orientation		Horizontal Heater Orientation	
Temperature Code	Wet Face Temperature: °F	Wet Face Temperature: °C	Minimum Standoff Dimension		Minimum Standoff Dimension	
			Inches	mm	Inches	mm
T6	185	85	9	229	6	152
T5	212	100	10.5	267	7.5	191
T4A	248	120	12	305	7.5	191
T4	275	135	12	305	7.5	191
T3C	320	160	12	305	7.5	191
T3B	329	165	12	305	9	229
T3A	356	180	13.5	343	9	229
T3	392	200	15	381	9	229
T2D	419	215	15	381	10.5	267
T2C	446	230	15	381	10.5	267
T2B	500	260	16.5	419	10.5	267
T2A	536	280	18	457	10.5	267
T2	572	300	18	457	10.5	267
T1	842	450	24	610	12	305

*CSA Class and Division Classification Selection chart for terminal enclosure  
standoff dimension based on 85°C rise over 40°C ambient*

125°C Cable Supply			Vertical Heater Orientation		Horizontal Heater Orientation	
Temperature Code	Wet Face Temperature: °F	Wet Face Temperature: °C	Minimum Standoff Dimension		Minimum Standoff Dimension	
			Inches	mm	Inches	mm
T6	185	85	0	0	0	0
T5	212	100	0	0	0	0
T4A	248	120	0	0	0	0
T4	275	135	0	0	0	0
T3C	320	160	2	50	0	0
T3B	329	165	2	50	0	0
T3A	356	180	4	102	2	50
T3	392	200	4	102	2	50
T2D	419	215	4	102	2	50
T2C	446	230	4	102	2	50
T2B	500	260	6	152	4	102
T2A	536	280	6	152	4	102
T2	572	300	6	152	4	102
T1	842	450	7.5	191	6	152