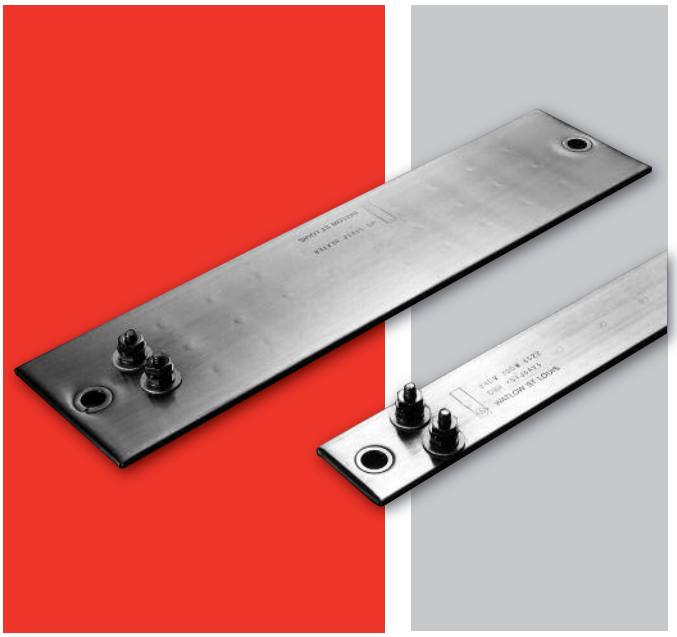
Strip/Clamp-On Heaters

Strip/Clamp-On Heaters	Sheath Materials	Max. Operating Temperatures °F	°C	Typical Max. Watt Densities W/in²	W/cm²	Page
Mineral Insulated (MI)	304 stainless steel	1400	760	140	21.7	515
375 High-Temperature	Aluminized steel	1100	595	100	15.5	518
FIREBAR® Clamp-On	Incoloy®	1400	760	120	18.6	525
	304 stainless steel	1200	650	120	18.6	
Thick Film Conduction	430 stainless steel	1025	550	75	11.6	526

Mineral Insulated (MI) Strip Heaters



The MI strip heater is a thin, responsive heater setting unmatched standards for performance and durability. It makes use of the most advanced heater construction techniques, including embedding a nickel-chromium element wire in an exclusive mineral insulation. Watlow's exclusive mineral insulation is a material with a much higher thermal conductivity than the mica and hard ceramic insulators used in conventional heaters. This thin layer of insulation brings the element wire closer to the heater sheath, resulting in easy heat flow from the element wire to the sheath. This allows the wire to run cooler than conventional heaters and increases heater life.

Performance Capabilities

- Sheath temperatures to 1400°F (760°C)
- Watt densities to 140 W/in^2 (21.7 W/cm^2)
- Maximum voltage 480VAC
- UL® component recognition for most 240VAC or less designs (UL® File #E52951)

Features and Benefits

Higher watt densities more than any other strip heater

- Provides faster heat up

Exclusive mineral insulation

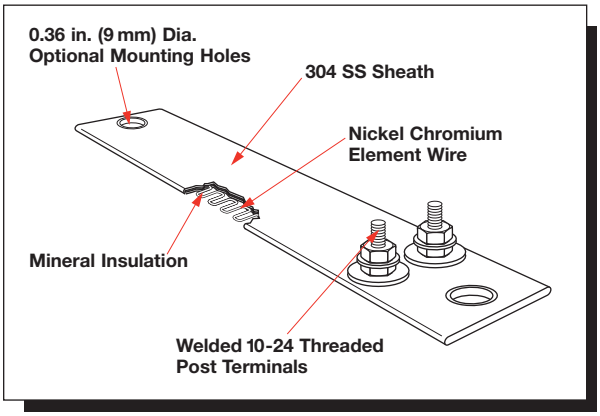
- Combines dielectric strength and superior thermal conductivity
- Transfers heat rapidly to the sheath

304 stainless steel sheath

- Maintains the high compaction of mineral insulation
- Produces a rigid heater

Typical Applications

- Solder pots
- Zinc die-casting equipment
- Die and mold heating
- High-temperature resins
- Tank and platen heating
- Ovens
- Packaging equipment



RAPID SHIP

- Same day shipment on all products with stock delivery

Mineral Insulated (MI) Strip Heaters

Applications and Technical Data

Calculating Watt Density

Watt density is the amount of wattage per square inch of heated area. To determine watt density, divide the total wattage by the heated area.

$$\text{Watt Density} = \frac{\text{Total Watts}}{\text{Heated Area}}$$

To apply this equation, we must define the term "heated area." Heated area is the total contact surface of the heater less areas of no-heat found around terminals, mounting holes, etc.

Heated Area = Total Contact Area - No-Heat Area

To calculate the heated area:

1. Locate the **no-heat factor** from the chart below corresponding to the type of heater being considered.
2. To use the formula below, insert the no-heat factors, length and width (in inches).

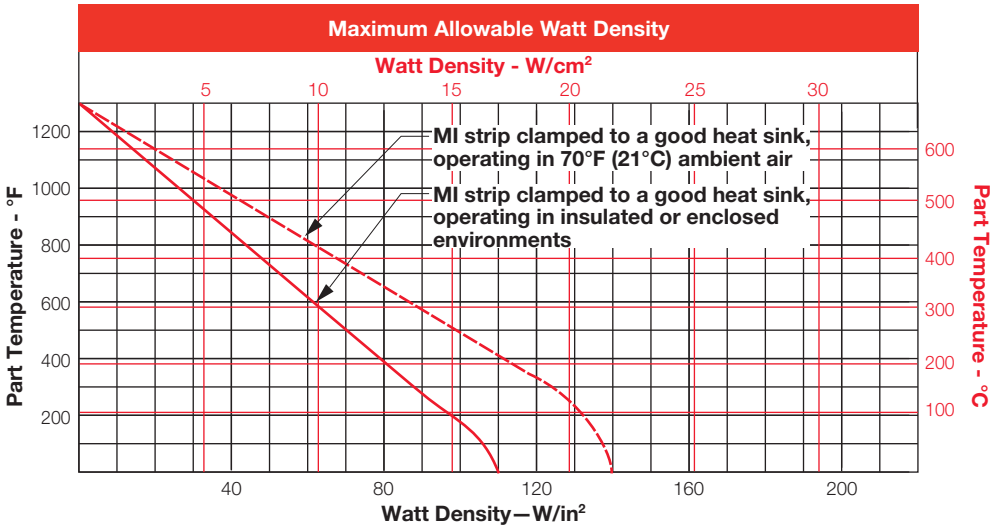
Heated Area = (Heated Length - No-Heat Factor) x Width

Type	Factor (in.)
1 in. Wide	
1 in. wide post terminal 1 on 1	1.75
1 in. wide post terminal 1 on 1 with mounting holes	3.00
1 in. wide post terminal 2 on 1	1.93
1 in. wide post terminal 2 on 1 with mounting holes	3.93
For all other widths	
2 on 1 post terminal	1.18
2 on 1 with mounting holes	3.18

Calculating Watt Density

The drawings on the next page and the graph on this page will help select the correct watt density for a particular application. First, refer to the drawings to determine the heated area of the heater. Then, use the watt density formula and graph to make sure the maximum watt density of the heater will not be exceeded in the specific application.

$$\text{Watt Density} = \frac{\text{Wattage}}{\text{Heated Area}}$$



Mineral Insulated (MI) Strip Heaters

Applications and Technical Data *(Continued)*

Specifications

Width

- 1, 1½ and 2 in. (25, 38, 51 mm), Tolerance ±1/32

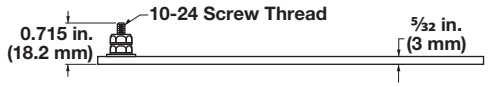
Length

- 8 to 30 in. (203 to 762 mm), Tolerance ±⅛

Terminations

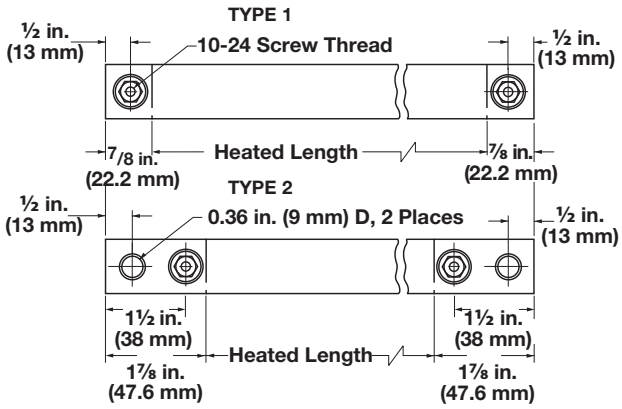
- 1 in. (25 mm) wide—post terminals one-on-one
  1½ to 2 in. (38 to 51 mm)—post terminals two-on-one

All Widths

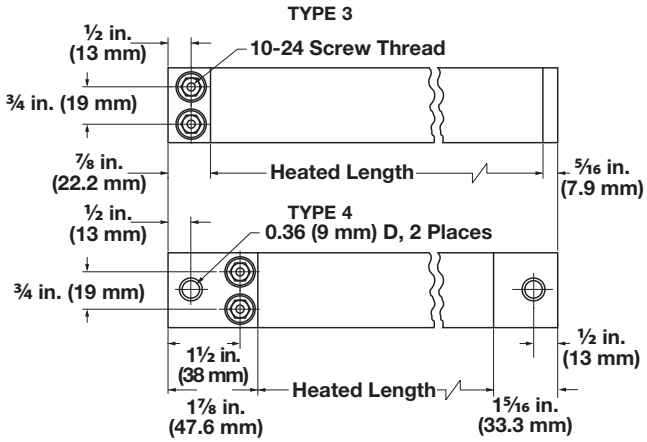


Note: In most applications, mounting holes alone will not provide adequate clamping. A clamp bar should be used for each 4 in. (102 mm) of heater length.

1 in. (25 mm) Wide



1½ in.–2 in. (38 – 51 mm) Wide



Heater Code Numbers (Parallel Terminals) Type 3 and 4

Width in.	(mm)	Length in.	(mm)	Volts	Power (Watts)	Watt Density W/in²	(W/cm²)	Approx. Net Wt. lbs.	(kg)	Type	Code Number
1½	(38)	8	(203)	120	500	48	(7.4)	0.3	(0.15)	3	**MS1J8AS1**
1½	(38)	8	(203)	240	500	50	(7.8)	0.3	(0.15)	3	**MS1J8AS3**
1½	(38)	12	(305)	120	350	26	(4.0)	0.5	(0.2)	4	**MS1J12AV2**①
1½	(38)	12	(305)	240	350	26	(4.0)	0.5	(0.2)	4	**MS1J12AV3**①
1½	(38)	12	(305)	120	800	49	(7.6)	0.5	(0.2)	3	**MS1J12AS1**
1½	(38)	12	(305)	240	800	49	(7.6)	0.5	(0.2)	3	**MS1J12AS2**
1½	(38)	18	(457)	120	1000	40	(6.2)	0.8	(0.3)	3	**MS1J18AS1**
1½	(38)	18	(457)	240	1000	40	(6.2)	0.8	(0.3)	3	**MS1J18AS2**

① Denotes units with mounting holes. Mounting holes are 0.36 in. (9 mm) in diameter and are intended for use with ¼ in. (6 mm) bolts. Centers of mounting holes are located ½ in. (13 mm) from the ends of the heater.
Note: Type 1 and 2 are made-to-order only.

375 High-Temperature Strip Heaters

Named for its 0.375 in. (9.5 mm) thickness, the Watlow® 375 strip is a rugged heater capable of both high temperatures and high watt densities.

Its ruggedness comes from the design and use of choice materials. Watlow begins construction by accurately placing a coiled, nickel-chromium element wire in the center of the heater. The element wire is then embedded in MgO-based insulation compacted into a solid mass resulting in excellent heat conductivity and high dielectric strength. Finally, the heater is enclosed in aluminized steel sheathing.

Performance Capabilities

- Aluminized steel sheath temperatures to 1100°F (595°C)
- Stainless steel sheath temperatures to 1200°F (650°C)
- Watt densities to 100 W/in^2 (15.5 W/cm^2)
- UL® approved to 240VAC (File No. E52951)
- CSA approved to 600VAC (File No. LR7392)

Features and Benefits

Nickel-chromium element wire is centered in the heater
- Assures uniform heat

Aluminized steel sheath
- Operates at higher temperatures
- Resists corrosion better than iron-sheathed heaters

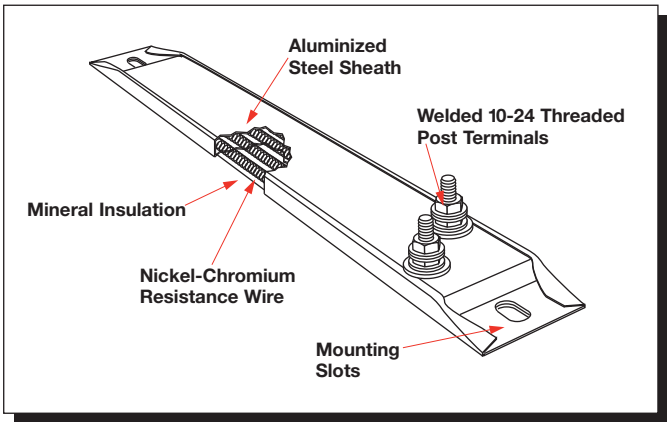
Optional 430 stainless steel sheath
- Meets temperature requirements that reach up to 1200°F (650°C)

Post terminals, welded to the element wire
- Produces strong, trouble-free connections

Rigid ⅜ in. (9.5 mm) thick design
- Enables the heater to fit into many existing applications

Over 100 in-stock models in popular sizes and ratings
- Allows next day shipment

Available dimensions are 1½ in. (38 mm) wide and 5½ to 48 in. (140 to 1219 mm) long
- Fits a variety of application needs



Typical Applications

- Food warming
- Freeze and moisture protection
- Tank and platen heating
- Packaging
- Dies and mold heating
- Autoclaves
- Ovens
- Telecom

RAPID SHIP
- Same day shipment on all products with stock delivery

375 High-Temperature Strip Heaters

Applications and Technical Data

Calculating Watt Density

Use the *Maximum Allowable Watt Density* graphs and formulas to ensure the allowable watt density for the heater will not be exceeded in the application. **Watt density is calculated for one side of the heater only.**

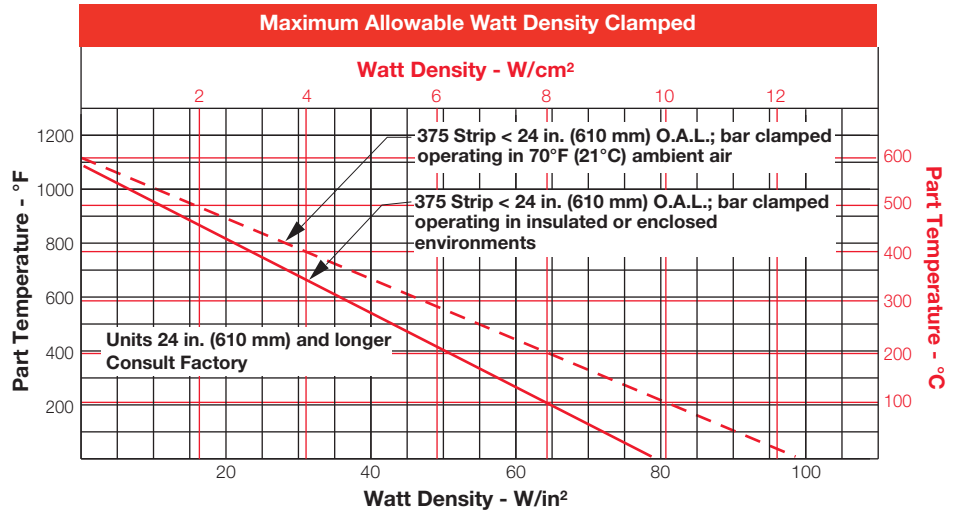
Formulas

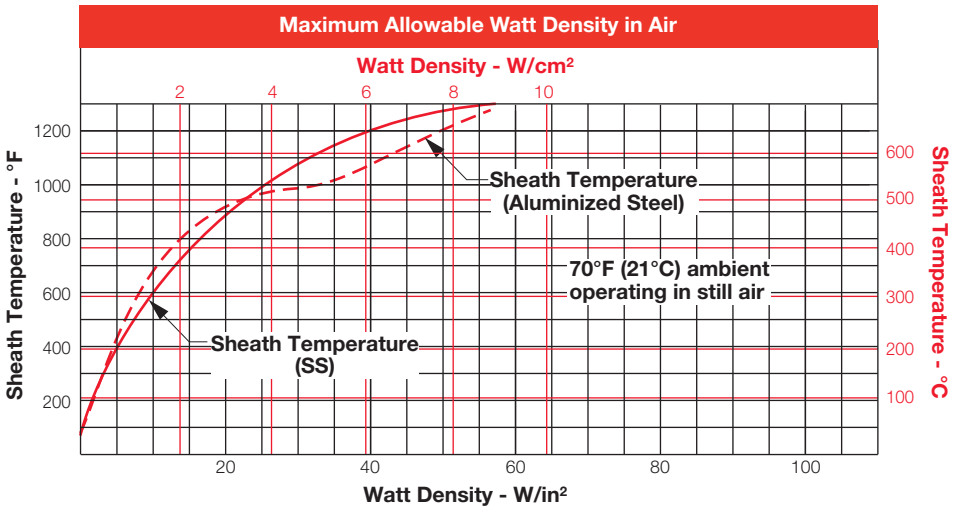
$$\text{Watt Density} = \frac{\text{Wattage}}{\text{Heated Area}}$$

Heated Area
(Offset Terminals) = [Overall Length (A) x 1.5 in] - 6 in^2
= [Overall Length (A) x 38 mm] - 38.7 cm^2

Heated Area
(Parallel Terminals) = [Overall Length (A) x 1.5 in] - 4.7 in^2
= [Overall Length (A) x 38 mm] - 30.3 cm^2

Heated Area
(One-on-One Terminals) = [Overall Length (A) x 1.5 in] - 6 in^2
= [Overall Length (A) x 38 mm] - 38.7 cm^2

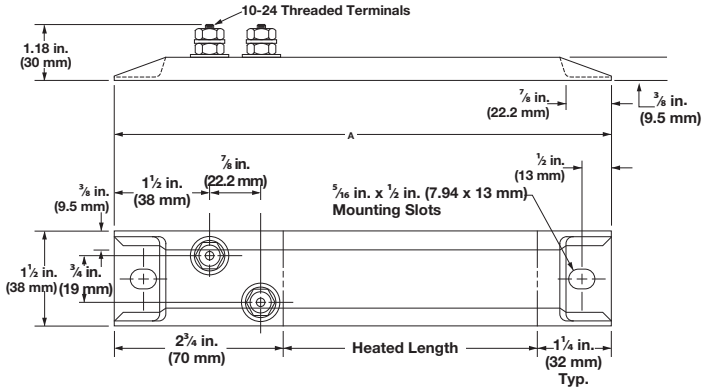




375 High-Temperature Strip Heaters

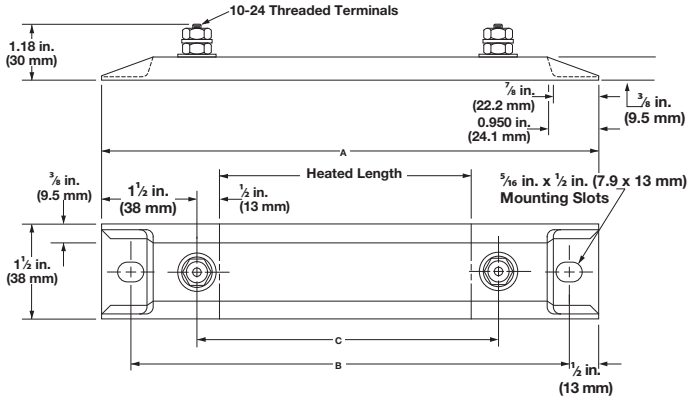
Termination Options

Offset Terminals*



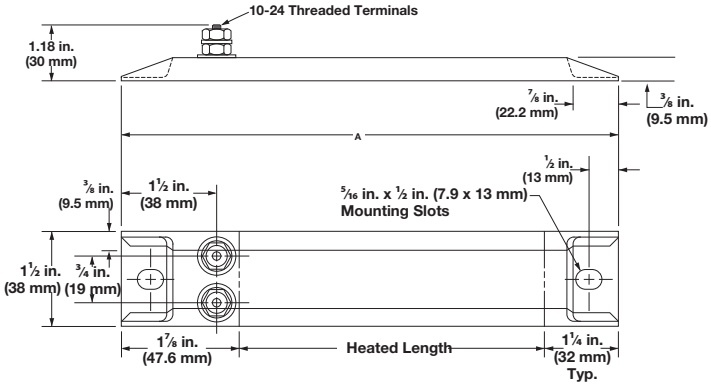
Two, 10-24 threaded post terminals are offset from each other on the same end.

One-on-One Terminals*



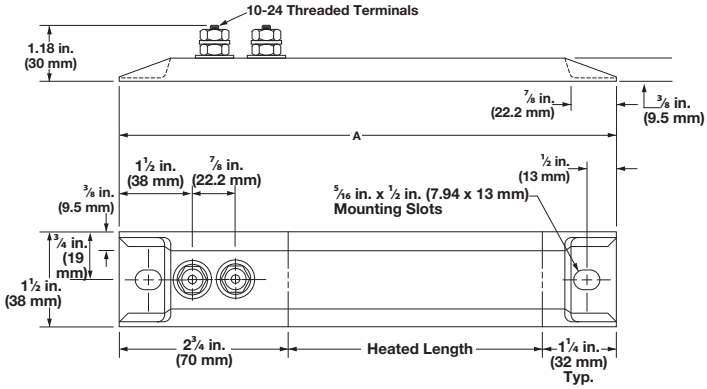
Two, 10-24 threaded post terminals are placed one on each end.

Parallel Terminals*



Two, 10-24 threaded post terminals are used; both terminals on one end.

In-Line Terminals*



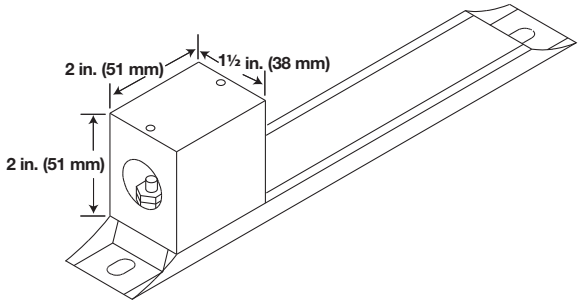
Two, 10-24 threaded post terminals are in-line with each other on the same end.

* Tab removal available from stock or manufactured.
Length without tabs = Length with tabs minus 1.5 in. (38 mm)

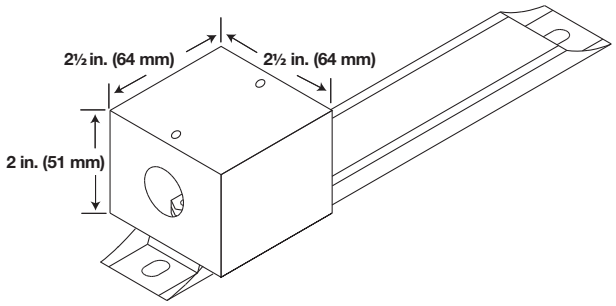
375 High-Temperature Strip Heaters

Termination Options *(Continued)*

Metallic Terminal Boxes - Variations



Available on in-line terminals only.

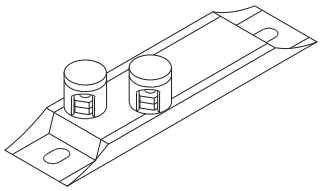


Available on offset terminals from stock and manufactured.

Metallic terminal boxes are available on offset terminals from stock. Terminal boxes act as a safety feature by covering the terminals. Conduit may be attached to the box through ⅞ in. (22.2 mm) diameter holes in the ends of the box. To order, specify **terminal box**.

Accessories

Ceramic Terminal Covers



A convenient and economic way to insulate post terminals. Sized for standard length posts with 10-24 screw thread size. These are supplied as an accessory item and shipped separately. Specify **Z-4918** and quantity.

375 High-Temperature Strip Heaters

Heater Code Numbers

Width in. (mm)	Length in. (mm)	Term.	Volts	Power (Watts)	Watt Density W/in² (W/cm²)	Approx. Net Wt. lbs (kg)	Delivery	Code Number	Chromalox® Code No. ①		Wellman® Code No. ①	
									Rust Resist. Iron Sheath	Chrome Stl. Sheath	Aluminized Steel Sheath	Chrome Stl. Sheath
1½ (38)	5½ (140)	Parallel	120	125	35 (5.4)	0.4 (0.18)	Stock	**SGA1J5JP1**	PT-512	—	—	—
	5½ (140)	Parallel	120	250	70 (10.8)	0.4 (0.18)	Stock	**SGA1J5JP2**	—	PT-502	—	—
	6 (152)	Parallel	120	150	35 (5.4)	0.4 (0.18)	Stock	**SGA1J6AP2**	PT-615	—	—	—
	6 (152)	Parallel	240	150	35 (5.4)	0.4 (0.18)	Stock	**SGA1J6AP3**	PT-615	—	—	—
	6 (152)	Parallel	120	300	70 (10.8)	0.4 (0.18)	Stock	**SGA1J6AP4**	—	PT-603	—	—
	6 (152)	Parallel	240	300	70 (10.8)	0.4 (0.18)	Stock	**SGA1J6AP5**	—	PT-603	—	—
	7½ (191)	Offset	120	150	29 (4.5)	0.5 (0.23)	Stock	**SGA1J7JO1**	OT-715	—	SS1041	—
	7½ (191)	Offset	240	150	29 (4.5)	0.5 (0.23)	Standard	**SGA1J7JO2**	OT-715	—	SS1052	—
	7½ (191)	Offset	240	200	38 (5.9)	0.5 (0.23)	Stock	**SGA1J7JO3**	—	OT-702	—	SS2052
	8 (203)	Offset	120	150	25 (3.9)	0.5 (0.23)	Stock	**SGA1J8AO1**	OT-815	—	SS1061	—
	8 (203)	Offset	240	150	25 (3.9)	0.5 (0.23)	Stock	**SGA1J8AO5**	OT-815	—	SS1072	—
	8 (203)	Offset	120	175	29 (4.5)	0.5 (0.23)	Stock	**SGA1J8AO6**	OT-817	—	SS1081	—
	8 (203)	Offset	240	175	29 (4.5)	0.5 (0.23)	Standard	**SGA1J8AO7**	OT-817	—	SS1092	—
	8 (203)	Offset	120	250	42 (6.5)	0.5 (0.23)	Stock	**SGA1J8AO2**	—	OT-802	—	SS2061
	8 (203)	Offset	240	250	42 (6.5)	0.5 (0.23)	Stock	**SGA1J8AO8**	—	OT-802	—	SS2072
	8 (203)	Offset	120	400	67 (10.4)	0.5 (0.23)	Stock	**SGA1J8AO9**	—	OT-804	—	SS2081
	8 (203)	Offset	240	400	67 (10.4)	0.5 (0.23)	Stock	**SGA1J8AO10**	—	OT-804	—	SS2092
	8 (203)	Offset	120	500	83 (12.9)	0.5 (0.23)	Stock	**SGA1J8AO3**	—	—	—	—
	8 (203)	Offset	240	500	83 (12.9)	0.5 (0.23)	Stock	**SGA1J8AO4**	—	—	—	—
	8 (203)	1-on-1	120	150	24 (3.7)	0.5 (0.23)	Stock	**SGA1J8AT1**	S-815	—	SD1021	—
	8 (203)	1-on-1	240	150	24 (3.7)	0.5 (0.23)	Standard	**SGA1J8AT2**	S-815	—	SD1032	—
	9½ (241)	1-on-1	120	200	23 (3.6)	0.6 (0.27)	Standard	**SGA1J9JT1**	S-920	—	SD1041	—
	10½ (267)	Offset	120	250	26 (4.0)	0.7 (0.32)	Stock	**SGA1J10JO1**	OT-1025	—	SS1101	—
	10½ (267)	Offset	240	250	26 (4.0)	0.7 (0.32)	Stock	**SGA1J10JO2**	OT-1025	—	SS1102	—
	10½ (267)	Offset	120	350	36 (5.6)	0.7 (0.32)	Stock	**SGA1J10JO8**	—	OT-1003	—	SS2101
	10½ (267)	Offset	240	350	36 (5.6)	0.7 (0.32)	Stock	**SGA1J10JO5**	—	OT-1003	—	SS2112
	10½ (267)	Offset	120	400	41 (6.4)	0.7 (0.32)	Stock	**SGA1J10JO6**	—	OT-1004	—	SS2131
	10½ (267)	Offset	240	400	41 (6.4)	0.7 (0.32)	Stock	**SGA1J10JO7**	—	OT-1004	—	SS2132
	12 (305)	Offset	120	250	21 (3.3)	0.8 (0.32)	Stock	**SGA1J12AO1**	OT-1225	OT-1202	SS1141	—
	12 (305)	Offset	240	250	21 (3.3)	0.8 (0.32)	Stock	**SGA1J12AO2**	OT-1225	OT-1202	SS1152	—
	12 (305)	Offset	120	350	29 (4.5)	0.8 (0.36)	Stock	**SGA1J12AO5**	—	OT-1203	—	SS2141
	12 (305)	Offset	240	350	29 (4.5)	0.8 (0.36)	Stock	**SGA1J12AO6**	—	OT-1203	—	SS2152
	12 (305)	Offset	120	500	42 (6.5)	0.8 (0.36)	Stock	**SGA1J12AO3**	—	OT-1205	—	SS2161
	12 (305)	Offset	240	500	42 (6.5)	0.8 (0.36)	Stock	**SGA1J12AO4**	—	OT-1205	—	SS2172
	12 (305)	1-on-1	120	250	20 (3.1)	0.8 (0.36)	Standard	**SGA1J12AT1**	S-1225	S-1202	SD1061	SD2071
	12 (305)	1-on-1	240	250	20 (3.1)	0.8 (0.36)	Stock	**SGA1J12AT2**	S-1225	S-1202	SD1072	SD2082
	12 (305)	1-on-1	240	500	40 (6.2)	0.8 (0.36)	Stock	**SGA1J12AT3**	—	S-1205	—	SD2122
	14 (356)	Offset	120	300	20 (3.1)	0.9 (0.41)	Stock	**SGA1J14AO2**	OT-1430	—	SS1181	—
	14 (356)	Offset	240	300	20 (3.1)	0.9 (0.41)	Stock	**SGA1J14AO1**	OT-1430	—	SS1192	—
	14 (356)	Offset	120	500	33 (5.1)	0.9 (0.41)	Stock	**SGA1J14AO3**	—	OT-1405	—	SS2181
	14 (356)	Offset	240	500	33 (5.1)	0.9 (0.41)	Stock	**SGA1J14AO4**	—	OT-1405	—	SS2192
	14 (356)	1-on-1	120	300	20 (3.1)	0.9 (0.41)	Standard	**SGA1J14AT1**	S-1430	—	SD1131	—
	15¼ (387)	Offset	120	325	19 (2.9)	1.0 (0.45)	Stock	**SGA1J15EO2**	OT-1532	—	SS1201	—
	15¼ (387)	Offset	240	325	19 (2.9)	1.0 (0.45)	Stock	**SGA1J15EO3**	OT-1532	—	SS1212	—
	15¼ (387)	Offset	240	500	30 (4.6)	1.0 (0.45)	Stock	**SGA1J15EO4**	—	OT-1505	—	SS2212
	17⅞ (454)	Offset	120	350	17 (2.6)	1.2 (0.54)	Stock	**SGA1J17RO4**	OT-1835	—	SS1221	SS2221
	17⅞ (454)	Offset	240	350	17 (2.6)	1.2 (0.54)	Standard	**SGA1J17RO5**	OT-1835	—	SS1232	SS2232
	17⅞ (454)	Offset	120	375	18 (2.8)	1.2 (0.54)	Standard	**SGA1J17RO6**	OT-1837	—SS1261	SS2241	—

CONTINUED

① Chromalox® and Wellman® code numbers are used as a cross reference to help in selecting the equivalent Watlow code number. Chromalox® sizes 27 in. (686 mm) and longer, and all Wellman® sizes, will have mounting slot center to center distances ⅛ in. (3.2 mm) less than Watlow spacing.

- Stock delivery, same day
- Standard delivery, 3 working days

375 High-Temperature Strip Heaters

Heater Code Numbers *(Continued)*

Width in. (mm)	Length in. (mm)	Term.	Volts	Power (Watts)	Watt Density W/in² (W/cm²)	Approx. Net Wt. lbs (kg)	Delivery	Code Number	Chromalox® Code No. ① Rust Resist. Iron Sheath	Chromalox® Code No. ① Chrome Stl. Sheath	Wellman® Code No. ① Aluminized Steel Sheath	Wellman® Code No. ① Chrome Stl. Sheath
1½ (38)	17⅞ (454)	Offset	240	375	18 (2.8)	1.2 (0.54)	Stock	**SGA1J17RO7**	OT-1837	—	SS1252	—
	17⅞ (454)	Offset	120	500	24 (3.7)	1.2 (0.54)	Stock	**SGA1J17RO1**	OT-1850	—	SS1261	SS2241
	17⅞ (454)	Offset	240	500	24 (3.7)	1.2 (0.54)	Stock	**SGA1J17RO2**	OT-1850	—	SS1272	SS2252
	17⅞ (454)	Offset	120	750	36 (5.6)	1.2 (0.54)	Stock	**SGA1J17RO9**	—	OT-1807	—	SS2261
	17⅞ (454)	Offset	240	750	36 (5.6)	1.2 (0.54)	Stock	**SGA1J17RO8**	—	OT-1807	—	SS2272
	17⅞ (454)	Offset	120	1000	48 (7.4)	1.2 (0.54)	Stock	**SGA1J17RO10**	—	OT-1801	—	SS2281
	17⅞ (454)	Offset	240	1000	48 (7.4)	1.2 (0.54)	Stock	**SGA1J17RO3**	—	OT-1801	—	SS2292
	17⅞ (454)	1-on-1	120	500	24 (3.7)	1.2 (0.54)	Standard	**SGA1J17RT1**	S-1850	S-1805	SD1211	SD2171
	17⅞ (454)	1-on-1	240	500	24 (3.7)	1.2 (0.54)	Stock	**SGA1J17RT2**	S-1850	S-1805	SD1222	SD2182
	17⅞ (454)	1-on-1	240	750	35 (5.4)	1.2 (0.54)	Standard	**SGA1J17RT3**	—	S-1807	—	SD2202
	17⅞ (454)	1-on-1	120	1000	47 (7.3)	1.2 (0.54)	Standard	**SGA1J17RT4**	—	S-1801	—	SD2211
	17⅞ (454)	1-on-1	240	1000	47 (7.3)	1.2 (0.54)	Standard	**SGA1J17RT5**	—	S-1801	—	SD2222
	19½ (496)	Offset	240	350	15 (2.3)	1.3 (0.59)	Stock	**SGA1J19JO6**	OT-1935	—	SS1301	—
	19½ (496)	Offset	120	500	22 (3.4)	1.3 (0.59)	Standard	**SGA1J19JO7**	OT-1950	OT-1905	—	SS2301
	19½ (496)	Offset	240	500	22 (3.4)	1.3 (0.59)	Stock	**SGA1J19JO4**	OT-1950	OT-1905	—	SS2312
	19½ (496)	Offset	240	750	32 (5.0)	1.3 (0.59)	Stock	**SGA1J19JO8**	—	OT-1907	—	—
	19½ (496)	Offset	240	1000	43 (6.7)	1.3 (0.59)	Stock	**SGA1J19JO1**	—	OT-1901	—	SS2332
	19½ (496)	1-on-1	240	750	32 (5.0)	1.3 (0.59)	Standard	**SGA1J19JT1**	—	S-1907	—	SD2262
	21 (533)	Offset	120	500	20 (3.1)	1.4 (0.64)	Standard	**SGA1J21AO1**	OT-2150	—	SS1341	—
	21 (533)	Offset	240	500	20 (3.1)	1.4 (0.64)	Stock	**SGA1J21AO2**	OT-2150	—	SS1352	—
	21 (533)	Offset	120	750	29 (4.5)	1.4 (0.64)	Stock	**SGA1J21AO3**	—	OT-2107	—	SS2341
	21 (533)	Offset	240	750	29 (4.5)	1.4 (0.64)	Stock	**SGA1J21AO4**	—	OT-2107	—	SS2352
	21 (533)	1-on-1	120	500	19 (2.9)	1.4 (0.64)	Standard	**SGA1J21AT1**	S-2050	S-2005	SD1291	SD2291
	23¾ (603)	Offset	120	500	17 (2.6)	1.5 (0.68)	Stock	**SGA1J23NO5**	OT-2450	OT-2405	SS1361	SS2361
	23¾ (603)	Offset	240	500	17 (2.6)	1.5 (0.68)	Stock	**SGA1J23NO6**	OT-2450	OT-2405	SS1372	SS2372
	23¾ (603)	Offset	120	750	25 (3.9)	1.5 (0.68)	Standard	**SGA1J23NO1**	OT-2475	OT-2407	SS1391	SS2381
	23¾ (603)	Offset	240	750	25 (3.9)	1.5 (0.68)	Stock	**SGA1J23NO2**	OT-2475	OT-2407	SS1402	SS2392
	23¾ (603)	Offset	120	1000	34 (5.3)	1.5 (0.68)	Stock	**SGA1J23NO7**	—	OT-2401	—	SS2401
	23¾ (603)	Offset	240	1000	34 (5.3)	1.5 (0.68)	Stock	**SGA1J23NO3**	—	OT-2401	—	SS2412
	23¾ (603)	Offset	240	1500	51 (7.9)	1.5 (0.68)	Stock	**SGA1J23NO4**	—	OT-2415	—	—
	23¾ (603)	1-on-1	240	250	8 (1.2)	1.5 (0.68)	Standard	**SGA1J23NT1**	S-2425	—	SD1322	—
	23¾ (603)	1-on-1	240	500	17 (2.6)	1.5 (0.68)	Stock	**SGA1J23NT3**	S-2450	S-2404	SD1342	SD2322
	23¾ (603)	1-on-1	240	750	25 (3.9)	1.5 (0.68)	Stock	**SGA1J23NT5**	—	S-2407	—	SD2352
	23¾ (603)	1-on-1	120	1000	33 (5.1)	1.5 (0.68)	Stock	**SGA1J23NT6**	—	S-2401	—	SD2361
	23¾ (603)	1-on-1	240	1000	33 (5.1)	1.5 (0.68)	Standard	**SGA1J23NT7**	—	S-2401	—	SD2372
	23¾ (603)	1-on-1	240	1500	50 (7.8)	1.5 (0.68)	Standard	**SGA1J23NT8**	—	S-2415	—	—
	25½ (648)	Offset	120	500	16 (2.5)	1.7 (0.77)	Stock	**SGA1J25JO1**	OT-2550	—	SS1421	—
	25½ (648)	Offset	240	500	16 (2.5)	1.7 (0.77)	Stock	**SGA1J25JO2**	OT-2550	—	SS1432	—
	25½ (648)	Offset	120	750	23 (3.6)	1.7 (0.77)	Standard	**SGA1J25JO3**	OT-2575	OT2507	SS1441	SS2421
	25½ (648)	Offset	240	750	23 (3.6)	1.7 (0.77)	Stock	**SGA1J25JO4**	OT-2575	OT-2507	SS1452	SS2432
	25½ (648)	Offset	240	1000	31 (4.8)	1.7 (0.77)	Stock	**SGA1J25JO5**	—	OT-2501	—	SS2452
	26¾ (680)	Offset	240	700	21 (3.3)	1.7 (0.77)	Stock	**SGA1J26NO1**	OT-2670	—	SS1472	—
	26¾ (680)	Offset	240	1000	29 (4.5)	1.7 (0.77)	Stock	**SGA1J26NO2**	—	OT-2601	—	SS2472
	30½ (775)	Offset	120	750	19 (2.9)	2.0 (0.91)	Standard	**SGA1J30JO2**	OT-3075	OT-3007	SS1481	—
	30½ (775)	Offset	240	750	19 (2.9)	2.0 (0.91)	Stock	**SGA1J30JO3**	OT-3075	OT-3007	SS1492	SS2482
	30½ (775)	1-on-1	240	750	19 (2.9)	2.0 (0.91)	Stock	**SGA1J30JT1**	S-3075	S-3007	SD1452	—

CONTINUED

① Chromalox® and Wellman® code numbers are used as a cross reference to help in selecting the equivalent Watlow code number. Chromalox® sizes 27 in. (686 mm) and longer, and all Wellman® sizes, will have mounting slot center to center distances ⅛ in. (3.2 mm) less than Watlow spacing.

- Stock delivery, same day
- Standard delivery, 3 working days

375 High-Temperature Strip Heaters

Heater Code Numbers *(Continued)*

Width in. (mm)	Length in. (mm)	Term.	Volts	Power (Watts)	Watt Density W/in² (W/cm²)	Approx. Net Wt. lbs (kg)	Delivery	Code Number	Chromalox® Code No. ① Rust Resist. Iron Sheath	Chromalox® Code No. ① Chrome Stl. Sheath	Wellman® Code No. ① Aluminized Steel Sheath	Wellman® Code No. ① Chrome Stl. Sheath
1½ (38)	33½ (851)	Offset	240	750	17 (2.6)	2.2 (1.0)	Stock	**SGA1J33J01**	OT-3375	OT-3307	SS1522	SS2522
	33½ (851)	1-on-1	240	1000	22 (3.4)	2.2 (1.0)	Standard	**SGA1J33JT1**	—	S-3301	—	SD2472
	35⅞ (911)	Offset	120	1000	21 (3.3)	2.3 (1.0)	Standard	**SGA1J35R04**	OT-3610	—	SS1531	—
	35⅞ (911)	Offset	240	1000	21 (3.3)	2.3 (1.0)	Stock	**SGA1J35R03**	OT-3610	—	SS1542	SS2532
	35⅞ (911)	Offset	240	1500	31 (4.8)	2.3 (1.0)	Stock	**SGA1J35R01**	—	OT-3601	SS2552	—
	35⅞ (911)	1-on-1	240	1000	21 (3.3)	2.3 (1.0)	Stock	**SGA1J35RT1**	S-3610	S-3601	SD1492	SD2492
	38½ (978)	Offset	120	1000	19 (2.9)	2.5 (1.1)	Standard	**SGA1J38J02**	OT-3810	OT-3801	SS1581	SS2561
	38½ (978)	Offset	240	1500	29 (4.5)	2.5 (1.1)	Stock	**SGA1J38J03**	—	OT-3815	—	—
	42½ (1080)	Offset	240	1500	26 (4.0)	2.8 (1.3)	Stock	**SGA1J42J01**	—	OT-4315	SS1632	SS2632
	47⅞ (1216)	Offset	240	2250	34 (5.3)	3.1 (1.4)	Stock	**SGA1J47R01**	—	OT-4822	—	—

① Chromalox® and Wellman® code numbers are used as a cross reference to help in selecting the equivalent Watlow code number. Chromalox® sizes 27 in. (686 mm) and longer, and all Wellman® sizes, will have mounting slot center to center distances ⅛ in. (3.2 mm) less than Watlow spacing.

- Stock delivery, same day
- Standard delivery, 3 working days

Note: 5/16 in. x ½ in. (7.9 mm x 13 mm) mounting slots are supplied on all 375 strip heaters. Tabs can be removed upon request. Also, note Watlow code number specifies the 375 strip heater comes with an aluminized steel sheath. If a special sheath material is required, such as stainless steel, please contact your Watlow representative for material availability.

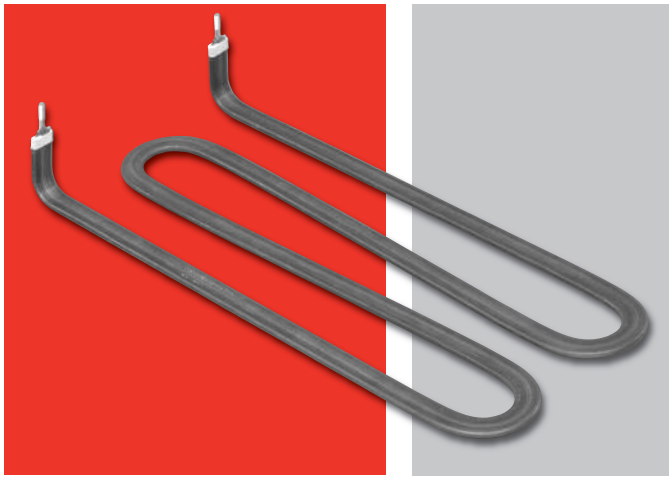
FIREBAR® Clamp-On Heaters

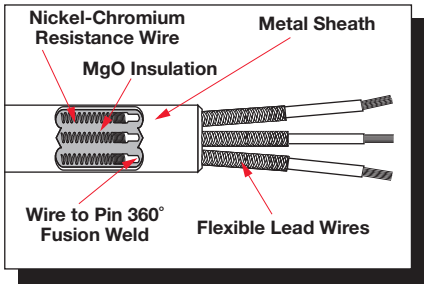
FIREBAR® heating elements provide added heating performance over standard round tubular heating elements—especially for immersion applications in petroleum based liquids that require high kilowatts.

The FIREBAR's unique flat surface geometry packs more power in shorter elements and assemblies, along with a host of other performance improvements. These include:

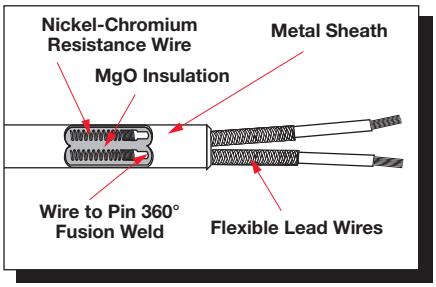
- Minimizing coking and fluid degrading
- Enhancing the flow of fluid past the element's surface to carry heat from the sheath
- Improving heat transfer with a significantly larger boundary layer allowing much more liquid to flow up and across the sheath's surface

FIREBAR elements are available in single- and double-ended constructions with one inch or ⅝ inch heights. These two configuration variables make it possible to use FIREBAR elements instead of round tubular elements in virtually all applications.





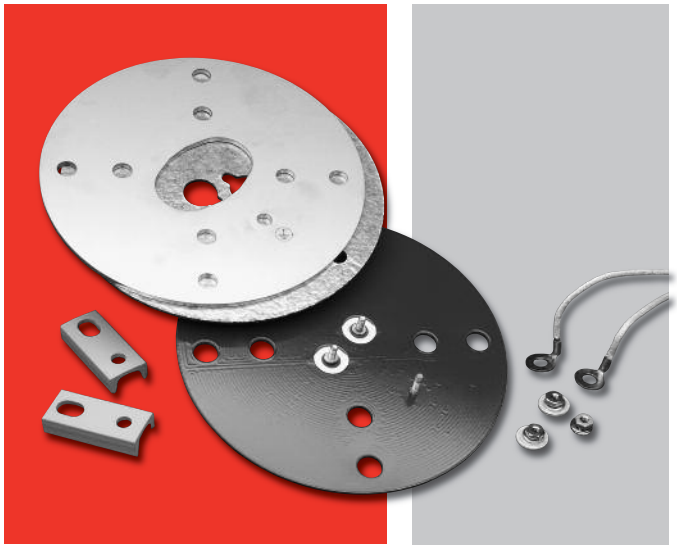
One-Inch Double-Ended FIREBAR Element and Lead Configurations

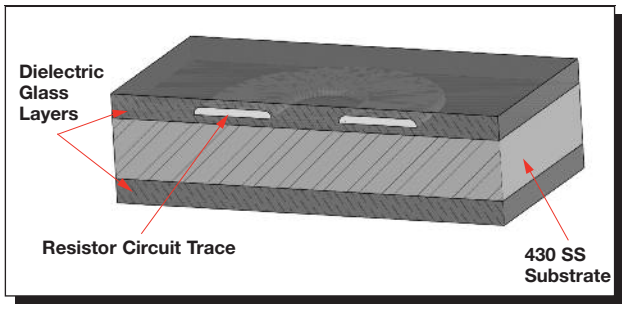


⅝-Inch Double-Ended FIREBAR Element and Lead Configurations

For detailed product and ordering information, see the full FIREBAR product section located on pages 91 through 109.

Thick Film Conduction Heaters





Watlow's 430 stainless steel thick film conduction heaters are ideal for use in many applications where fast response and uniformity are essential. A clamp-on thick film heater provides the best possible combination of heat transfer, thermal efficiency and temperature uniformity.

These high performance heaters use thick film technology to provide maximum temperature response in a low profile package. This technology can be applied in areas where space is at a premium or where conventional heaters cannot be used because of limited voltage and wattage combinations.

Thick film conduction heaters provide a low-profile heater in a variety of shapes. These shapes include two-dimensional circular and rectangular forms. Due to the direct surface contact, thick film heaters ensure efficient heat transfer through thermally stable substrates and precise resistance trace patterns.

Performance Capabilities

- Maximum substrate temperature up to 1025°F (550°C), contact your Watlow representative for applications over 842°F (450°C)
- Watt densities up to 75 W/in^2 (11.6 W/cm^2)
- Maximum voltage up to 240V

Features and Benefits

Watt densities up to 75 W/in^2 (11.6 W/cm^2) for clamp-on applications

- Allows for precise, repeatable wattage distribution and uniform temperature distribution

UR® File #E52951 CSA available

- Conforms with applicable CE directives

Threaded stud termination

- Produces strong, trouble-free connections, see *Termination Assembly* drawing on page 502.

Typical Applications

- Food warming cabinets
- Load dump resistors
- Seal bars
- Deposition chamber lids

For detailed product and ordering information, see the full Thick Film Conduction product section located on pages 501 through 502.