Components
Overview

Component Heaters include the basic types of heating elements:

- **Tubular Elements**
- **Thin Blade Heaters**
- **Strip Heaters**
- **Ring & Disc Heaters**
- **Band & Nozzle Heaters**
- **Cartridge Heaters**
- **Flexible Heaters**
- **Specialty Heaters**

Component heaters may be used by themselves to solve many heating problems. They may also be incorporated into more complex heating systems, providing a complete thermal solution for your heating requirements.

Chromalox carries the widest selection of standard component heaters in many shapes, sizes and wattages. Chromalox is the “First Choice for Thermal Solutions”.

Applications

With component heaters, most often the shape and size will be the determining factor in most heater applications. Brief descriptions of each heater type follow, with selection guidelines that lead to a detailed description on individual product pages.

Tubular heating elements perform exceptional heat transfer by conduction, convection or radiation to heat liquids, air, gases and surfaces. In most heater assemblies, tubular element design configurations vary — round, triangular, flat press and formed. Bends are made to customer requirements Custom built from 0.200" to 0.625" diameters, a multitude of sheath materials with sheath temperature capabilities up to 1600°F, watt densities to fit many applications and up to 690 volts. Available with over 20 optional terminations and many stocked accessories.

Thin blade heater elements provide more surface area than standard tubular elements to offer greater wattage or lower watt densities. Select from many sheath materials with watt densities to 75 W/in^2 and sheath temperatures as high as 1200°F. Heating elements can be as long as 120" and are capable of being formed into many configurations for heating via immersion, direct surface contact or convection. Three wire construction within the element provides uniform heating. Available in single or 3-phase current terminations with a 120 to 240 volt range.

Components
Application Guidelines

Applications (cont'd.)

Strip/Ring/Disc heating elements are rugged and easy to install for heat transfer by conduction or convection to heat liquids, air, gases and surfaces with sheath temperatures up to 1500°F and watt densities to 35 W/in^2. Common applications include drying, melting, baking and curing. Strip heater sizes range from 0.5" wide to 2.5" and lengths to 72" long. Heaters bolt or clamp to many surfaces. Nested ring heaters can provide concentrated heat in small areas. Select from many sheath materials, termination styles, operating temperatures, sizes, voltages, wattage ratings and mounting devices.

Band heaters grip tightly to cylindrical surfaces to supply uniform heat transfer, critical to the heater life. Chromalox band heaters are flexible and come in one or two-piece construction for easy installation and removal. They accommodate diameters as small as 15/16" and as large as 20" and are capable of reaching sheath temperatures up to 1500°F. Stainless steel braids and conduit protect terminations and resist contamination. Completely customize your heater by specifying exact physical dimensions, material, electric ratings and terminations.

Cartridge heaters are high efficiency heating elements. Diameters of cartridge heaters range from 0.25" to 1.25". Watt densities from 25 W/in^2 to 200 W/in^2 and sheath temperatures to 1800°F. Optional end seals resist contaminants and moisture from entering inside the heater. Chromalox provides a variety of sizes, wattage ratings, voltages and protective features to meet many challenging applications.

Flexible heaters are very versatile and provide solutions to a vast number of low-to-medium temperature applications. Heaters are manufactured with rugged light-weight materials providing chemical and moisture resistance with operating temperatures to 392°F. Wire elements are durable and wound precisely within the structure for optimal performance. A variety of electrical, shape and contour fittings to meet many specifications.

Tubular Heaters — Section Outline

Tubular Heaters — Selection Guidelines

Type	Sheath	Diameter (In.)	Model	Page
Round	INCOLOY®	0.475	TRI	A-13
		0.475	TRID	A-14
		0.475	TRIW	A-14
		0.430	TRI	A-15
		0.375	TRI	A-16
		0.315	TRI	A-17
		0.260	TRI	A-19
		0.246	TRI	A-20
		0.200	TSSM	A-21
	Stainless Steel	0.475	TRSS	A-22
		0.475	TRSSH	A-23
		0.475	TRSSN	A-23
	Steel	0.475	TRS	A-24
		0.475	TRSCD	A-24
		0.475	TRSC	A-25
		0.315	TRS	A-27
	Copper	0.475	TRC	A-28
		0.475	TRCC	A-28
		0.315	TRC	A-30
Heart Shaped	INCOLOY®	0.5	TI	A-31
		0.375	TI	A-33
		0.375	RTU	A-35
		0.375	UTU	A-37
		0.375	UTU-LT	A-40
		0.430	UTUA-LT	A-41
		0.375	URPT	A-42
		0.375	LMS	A-43
	Steel	0.5	TS	A-44
		0.375	TS	A-45
Flat Pressed	INCOLOY®	0.375, 0.4375	ATS	A-47
		0.375, 0.4375	ATU	A-47
Round/Single End	INCOLOY®	0.475	STRI	A-48
		0.315	STRI	A-49
	Steel	0.475	STRS	A-50
		0.315	STRS	A-51
	Copper	0.475	STRC	A-52
		0.315	STRC	A-53
Hopper Heater	INCOLOY®		FSRM	A-54
Thin Blade	Stainless Steel		CTB	A-55
Mini Tubular			MTH	A-56

Components
Selection Guidelines

Strip, Ring & Disc Heaters — Section Outline

Strip, Ring & Disc Heaters — Selection Guidelines

Type	Size (In.)	Model	Page
Strip	1-1/2	OT S & SE ST PT TH STTH	A-63 A-64 A-65 A-65 A-66 A-66
Strip	3/4 2-1/2 1 1 3/4 3/4 1/2 1-1/8 1-11/16 1-11/16	SN WS SNH NH NS NSL NSA SSNHM SSE SSEM	A-67 A-67 A-68 A-68 A-69 A-69 A-70 A-70 A-71 A-71
Explosion-Proof		AEPS	A-72
Ring		A HSN HSW RHSW	A-73 A-74 A-74 A-74
Disc		HSP	A-75
Mighty-Tuff Strip		MIS	A-76
Mica Strip		MSH	A-78

Band & Nozzle Heaters — Selection Guidelines

Type	Size (In.)	Model	Page
One-Piece Band	1-1/2 2-1/2	DB DBW	A-80 A-81
Two-Piece Band	1-1/2	HB	A-82
One-Piece/Mica Ins. Two-Piece/Mica Ins.		MB-1 MB-2	A-87 A-90
Ceramic Band		CB	A-91
Aluma-Flex Band		AFH	A-97
Mighty-Tuff Band		MTB	A-104

Cartridge Heaters — Section Outline

Cartridge Heaters — Selection Guidelines

Type/Sheath	Size (In.)	Model	Page
INCOLOY®	1/4 - 3/4	CIR	A-117
SS	1/8-3/4	C-DD	A-124
Brass	15/16 - 1-19/64	C-HD	A-125
INCONEL® 600	.495, .685, .935	MZ	A-126
Split	3/8 - 1	SST/QST	A-128
Screw Base		SCB	A-130
Sleeve Adapter		Accessory	A-130
Heavy Duty		CTRH	A-131
Stud Heater		CBH	A-132

Flexible Heaters — Section Outline

Flexible Heaters — Selection Guidelines

Type	Description	Model	Page
Silicone Rubber	General Purpose Enclosure & Air	SL SL-N SL-B	A-137 A-138 A-139
Silicone Rubber	Drum	SLDH	A-144
Heavy Duty Woven	Drum Heaters with Thermostat	PHD PHDT	A-146 A-146
Thermal Insulation	Drum	IBG	A-147

Tubular Heaters
Application Guidelines

- **Up to 172" Lengths (Std.)**
- **75 - 10,000 Watts (Std.)**
- **120, 240 and 480 Volt (Std.)**
- **3 - 53 W/In² (Std.)**
- **Max. Sheath Temp.**
  - **Copper — 350°F**
  - **Steel — 750°F**
  - **Stainless Steel — 1200°F**
  - **INCOLOY® — 1600°F**

Applications

Extremely Versatile Heat Source — Highly adaptable, the tubular element, in its many forms and as a component of Chromalox packaged heaters and systems, has vastly increased the scale of electric heating applications. The heaters' mechanical and electrical flexibility are important to process engineers and product designers alike, as heating requirements can be matched accurately by proper selection from a great variety of element lengths, sheaths, diameters and watt densities.

Product Uniformity — Electric tubular heating elements provide a method of applying the exact amount of heat required at a specific area. When used with appropriate temperature control, product repeatability is assured.

Increased Production — Adding heat to a process often leads to increased production. For example, drying time may be reduced by heating the air or the product being dried. Chemical and cleaning processes are often more efficient when heated and a more consistent finished product results.

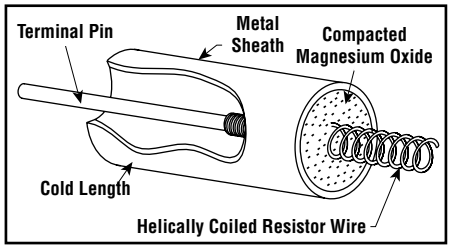
Less Down Time — Chromalox quality tubular elements with properly applied watt density and sheath material will provide long life, less down time and little or no maintenance.

Construction

Chromalox tubular elements are used for practically the entire range of electric resistance heating applications.

A metal sheath material is selected. The proper size resistance wire for the heating element is carefully selected and verified by computer calculations to ensure the longest service life possible. The high quality resistor wire is carefully tested and inspected to meet rigid specifications prior to being coiled. The resistance wire is then welded to a terminal pin to assure positive connection. The wire is centered in a metal sheath and insulated with high quality magnesium oxide which is highly compacted around it and acts as an electrical insulator. This material readily conducts the heat from the coiled resistor to the metal sheath and puts the heat where it is required, which results in maximum heater life.

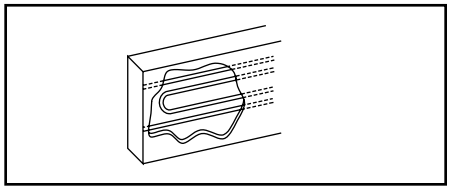
The highly compacted magnesium oxide holds the terminal pin securely allowing maximum torque of eight inch pounds when tightening terminal hardware



Typical Installations

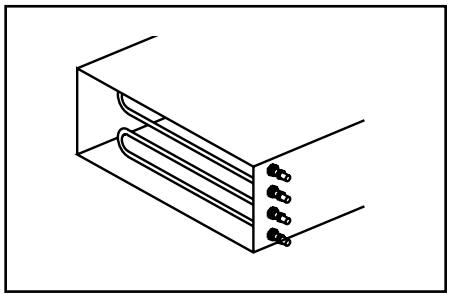
In Free Air — For applications like ovens and drying cabinets, tubular elements are compact, rugged heat sources. Their formability permits fitting around other oven components and work protrusions, concentrating heat at any point.

In Free Air



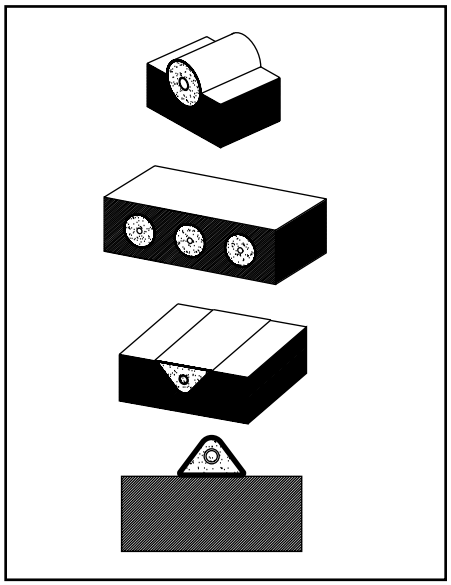
In Moving Air — Compression fittings, factory mounted fittings or brackets will mount a tubular element in a duct or air heating chamber.

In Moving Air



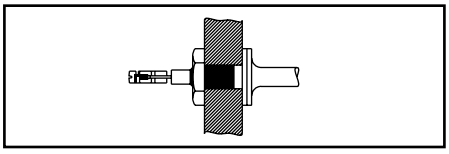
In Transferring Heat to Metal Parts - Dies, Molds, Platens — The available diameters, lengths, ratings, watt densities, cross-sections, and maximum temperatures provide the solution for a given job.

Transferring Heat to Metal



In Liquids — Tubular elements listed may be mounted through the side wall of a tank with compression fittings or by factory mounted fittings.

In Liquids



Tubular Heaters

Application Guidelines *(cont'd.)*

Liquid Heating

Direct Immersion — Water and water solutions can generally be heated to any desired temperature. If liquid is under pressure, temperatures should not exceed the maximum sheath temperature of the element minus 100°F.

Note — Heated section of element must be immersed at all times when energized. Longer cold ends can be provided, if required.

Threaded fittings are available for mounting through tank walls.

Oil Heating

Steel sheath elements can be used for heating oils, heat transfer oils and other solutions not corrosive to steel sheath.

Air & Gas Heating

Use watt densities compatible with work temperatures. Refer to Technical section of this catalog. Heaters mounted horizontally must be supported to avoid sagging at high temperatures.

Proper spacing of supports may vary with application temperature, element diameter and sheath material. Generally 12 to 18" spacing of supports is adequate.

Max. Sheath Temperatures

To assure maximum life, tubular elements should not be operated beyond the temperatures in this tabulation:

Sheath Material	Max. Allowable Sheath Temp. (°F)
Copper	350
Steel	750
MONEL®	900
Stainless Steel	1200
INCOLOY®	1600
INCONEL®	1600

Metric Diameter Equivalents

Inches (±0.005)	Millimeter
0.5	12.7
0.475	12.07
0.43	10.92
0.375	9.53
0.315	8
0.26	6.6
0.246	6.25
0.2	5.08

Where air flowing over elements permits use of higher watt densities, make sure air flow is evenly distributed.

Allow approximately 1/8" per foot of element length for expansion and contraction of elements (i.e., 24" long element could expand 1/4" when energized).

Clamp-On Heating

Use watt densities compatible with work temperatures. Refer to Application Guide for Tubular Heating of Solids, Liquids, Air & Gas or use curve G-175S in Technical section. Heaters should be clamped tightly for good heat transfer but should be allowed to expand as they heat up. Heaters clamped too tightly will bow away from the heated surface which results in poor heating efficiency and possible heater failure. It is generally best to tighten the middle clamp first to hold the element. Other clamps should be tightened enough to hold, but back off 1/2 turn to allow for expansion and contraction.

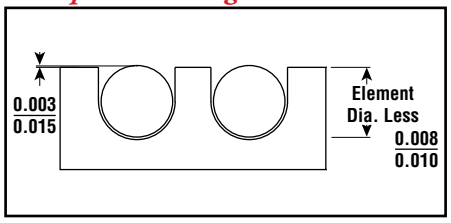
Heaters should be spaced on approximately two inch centers minimum.

Heaters are commonly installed by clamping into machined grooves for better heat transfer.

Note — Depth of groove should never exceed element diameter to assure positive clamping.

Grooves should be machined to the following tolerences:

Clamp-On Heating



WARNING — When insulation is used over elements, an air space must be provided between the elements and insulation. Insulation should never be in direct contact with heated section of elements.

Application Engineering

Is available from direct sales and engineering representatives. The largest, most experienced organization of field engineers in the country is ready to help solve any heating problem. Contact your Local Chromalox Sales office. (See back of catalog.)

Tubular Heating Application Guidelines

Product To Be Heated	Temperature Desired (°F)	Suggested Application	Sheath Material	Work Temperature (°F)	Allowable Watt Density (W/In^2)
Solids					
Molds, Platens, Dies, Pipes, Tanks	Up to 1400	Clamp-On	INCOLOY®	Up to 300 Up to 500 Up to 800 Up to 1000 Up to 1200 Up to 1400	30 20 15 10 7 2.5
Liquids					
Water, Clean	Up to 250 Up to 550	Immersion Immersion	Copper INCOLOY®	250 550	Up to 80[2] 40
Water Solutions, Mild Corrosion[1], Corrosive[1]	Up to 200 Up to 200	Immersion Immersion	304SS INCOLOY®	200 200	50 50
Oil					
Low Viscosity Med. Viscosity High Viscosity	Up to 180	Immersion	Steel	Up to 180	23 15 6.5
Air & Gases					
Moving, 9'/sec Velocity	Up to 1500	In Ducts	INCOLOY®	500 800 1000 1200 1500	40 32 25 15 2
Still	Up to 1500	Ovens	INCOLOY®	700 1000 1200 1500	30 20 10 2

1. See Corrosion Guide in Technical section. 2. VDE - 50 W/In^2 max.

Tubular Heaters

Design & Installation Guidelines

Design Considerations

Sheath Material — For resisting corrosion inherent in the process or environment and for withstanding the sheath temperature required — Standard sheath materials are INCOLOY®, steel, copper and stainless steel (type 304). Other types of stainless steel, MONEL®, titanium and INCONEL® are available.

Job Requirements — The calculation of total heat requirements for an application is outlined in Technical section. For assistance, contact your Local Chromalox field sales engineer who will be glad to contribute his judgement, experience and knowledge in solving your heating problem.

After the specific heater size and rating has been tentatively selected, the watt density must be checked against the curves in Technical section.

If the heater selected has a watt density higher than stipulated by the curve, consider these alternatives:

1. Use more heaters of a lower watt density to obtain the required kW capacity.
2. Reduce the kW capacity needed by reducing heat losses and/or allowing for a longer heat-up time.

Watt Densities — The watt density of the element, or watts per square inch of element heated area, should be low for heating asphalt, molasses and other thick substances with low heat transferability. It can be higher for heating air, metals, liquids and other heat-conducting materials. See curves in Technical section for determining allowable watt densities.

When high operating temperatures are needed, watt density must be limited in order not to exceed the maximum sheath temperature. Watt density is given in the specifications for each tubular heater.

In general, a viscous material with low thermal conductivity requires a low watt density. Higher watt densities can be used with thinner liquids and with materials of high thermal conductivity. Premature loss of the element due to excessive temperature may result if the material's heat-take-away ability is low. Also, the material may be charred, carbonized or its chemical makeup altered by overheating.

Terminal Selection — Stocked tubulars are shipped with standard terminals, see Terminal Options in this section. Many other terminals and terminal end seals are available made to order.

CAUTION — Protect terminals from possible contamination from surrounding atmospheres such as oil fumes, chemical vapors from other processes, moisture, weather, etc. MgO insulation is hygroscopic.

Vacuums — Tubular heaters operate at higher temperatures in a vacuum because there is no air to take away the heat. Therefore, watt densities are recommended to be 20 to 30% lower. It is recommended terminals of the element be kept outside of the vacuum.

Code Compliance — Chromalox manufactures the highest quality heaters and controls and, where applicable, in compliance with such codes as the Canadian Standards Association (CSA), Underwriters Laboratories Inc. (UL) and Verification of Devices for Europe Testing and Certification Institute (VDE) and CE.

Installation Guidelines

Wiring — Must be in accordance with The National Electrical Code (NEC). It is important to use the correct wire gauge to carry the amperage required. A wire not large enough can overheat, become brittle and break. The ambient temperature must also be considered in choosing the correct type of wire and insulation. *Make sure wiring to terminals is tight. Keep terminals away from heat, if possible. (For higher temperatures, contact your Local Chromalox Sales office.)*

Mounting Methods — Elements can be supplied with threaded fittings for mounting thru walls of tanks, ovens, etc. Compression threaded fittings are also available for easy field installation. Rings, clips, brackets and washers can also be attached to elements for mounting purposes.

Easy Bending — To put heat where it is needed, tubular elements can be bent to fit most requirements. See following pages for customer bending and factory bending details. Bending should be done around a smooth round object such as a piece of pipe. For minimum bending radii, see Bending Guidelines.

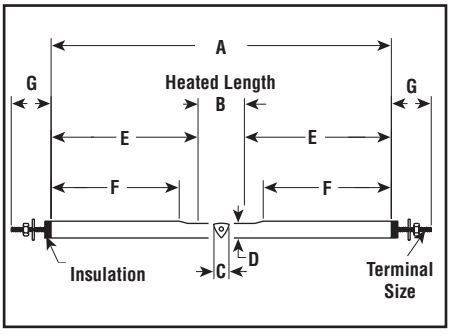
Triangular Cross-Section

These unique cross-sectioned elements are specially designed for high element surface temperature applications, and wherever extreme rigidity is required.

Triangulation — A patented extra step by Chromalox to increase insulation density and maximize heat transfer and operating life. This method of compaction increases uniformity of resistance wire spacing to help eliminate hot and cold spots. It also increases the rigidity of the element, which is an advantage in some applications.

The terminal ends of these elements are re-rounded to facilitate the use of threaded fittings or other mounting methods.

The heart shaped cross-section is recommended for certain heavy duty applications. It has added structural strength, achieved through die pressing, which resists deform-ation or sagging when installed in the flow of high velocity air or thick oils and compounds, or in high surface temperature air heating.



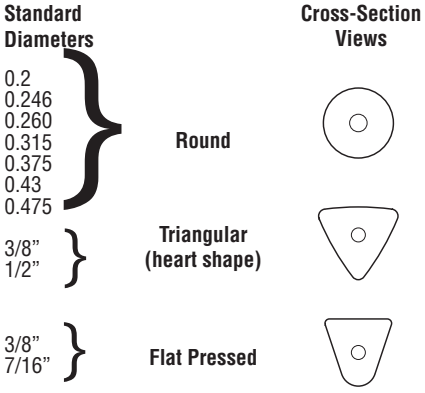
Sheath Material	Dimensions (In.)							Terminal Size
	A	B	C	D	E	F	G	
Copper	1	1	3/8	21/64	3-3/8	1-1/2	1±1/16	#10-32
Steel or INCOLOY®	1	1	3/8	21/64	3-3/8	1-1/2	1±1/16	#10-32
Copper, Steel or INCOLOY®	1	1	1/2	15/32	3-7/16	2-1/2	13/16±1/16	#8-32

1. See complete heater dimensions in table on product pages.

Tubular Heaters

Modifications

World Leader in the Manufacture of Electric Heating Elements — Chromalox offers the most complete line of tubular heaters available. Standard diameters are:



Round Cross Section — Highly adaptable where elements must be bent — particularly if bending is performed in the field.

Triangular Cross Section — Patented process produces elements with the closest possible dimensional control.

Triangulated Cross Section — Flat pressed. Patented process provides large contact area for clamp-on applications. This means more efficient heat transfer, fewer elements since higher element ratings may be employed.

Voltage or Wattage — Heaters can be made for operation on any voltage and rated at any wattage suitable for the application within practical limits. For voltages higher than 480V, specify high voltage terminal construction. See Component section Tubular Heater (0.475 or 1/2" diameter only).

Special Wattage Distribution — Heaters can be made with higher wattages toward the end of the heated section to help offset losses in certain applications. Check with your Local Chromalox Sales office for additional information.

Tubing — Standard industrial grade wall thickness:

Repressed Bends — Tubulars can be bent to tighter radii at the factory. Bends are then repressed to ensure re-compaction of insulation for long life. Customer bending on larger radii does not require repressing. (See Factory Bending Guidelines in this section).

Sheath Length — Larger diameter heaters can be made in unspliced lengths up to 40 feet.

This eliminates the need for a spliced joint which is always a possible weak point that might cause premature heater failure.

Element Dia. (In.)	Max. Heater Length (Ft. ± 1%)
0.2	10
0.246	30
0.315	30
0.375	30
0.43	40
0.475	40
3/8	17±1/8"
1/2	17±1/8
Single Ended	10

Terminal Construction — Many choices to suit your application. Tubular elements generally have a terminal for electrical connection at each end. Single end construction has both terminals at the same end.

UL and CSA — Chromalox tubular heaters can be furnished as UL Recognized and CSA Certified components with the addition of a terminal end seal. Terminal end seals can be added to stock elements and shipped in one week. (UL File E198480, Guide UBJY2, CSA File 40859). Use "end seal/moisture barrier" in place of end seal.

VDE and CE — Chromalox tubular heaters can be furnished as VDE Certified and CE certified. Contact your Local Chromalox Sales office.

Wide Choice of Sheath Materials — Available to meet a wide variety of applications. Standard sheath materials are: INCOLOY®, steel, type 304 and 316 stainless steel, copper, INCONEL® and MONEL®.

In addition, titanium and other 300 series stainless steel sheaths are available upon request. For applications requiring other materials, contact your Local Chromalox Sales office.

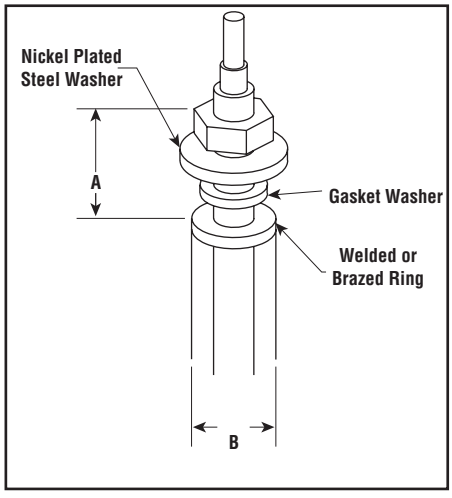
Cold Section — Longer cold ends can be supplied, as required, up to 20 inches. For longer cold ends, contact your Local Chromalox Sales office.

Factory Bending — Tighter bends can be made at the factory.

Tubular heaters can be formed to many different shapes to suit your application. This is done by specially designed bending tools and repressing dies for bending on many different radii.

Additional Features — Many additional features are available for the difficult jobs which require custom designed elements employing Chromalox's vast engineering experience.

Threaded Fittings



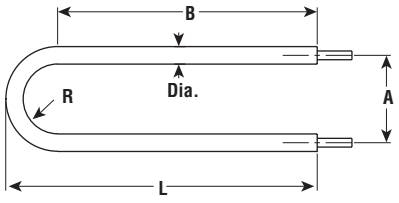
Element Dia. (In.)	Fitting Material	Mtg. Hole Dia. (In.)	Max. Wall Thickness (In.)	Thrd. Size F	Dimensions (In.)	
					A	B
0.246	Brass	13/32	7/32	3/8 - 24	15/32	7/8
0.315	Brass	15/32	5/16	7/16 - 28	13/16	7/8
3/8	Brass	17/32	5/16	1/2 - 28	13/16	7/8
1/2-0.475	Brass	21/32	5/16	5/8 - 24	13/16	1
0.246	Steel	13/32	7/32	3/8 - 24	15/32	7/8
0.315	Steel	15/32	5/16	7/16 - 28	13/16	7/8
3/8	Steel	17/32	5/16	1/2 - 28	13/16	7/8
1/2-0.475	Steel	21/32	5/16	5/8 - 24	13/16	1
0.246	Stainless Steel	13/32	7/32	3/8 - 24	15/32	7/8
0.315	Stainless Steel	15/32	5/16	7/16 - 28	13/16	7/8
3/8	Stainless Steel	17/32	5/16	1/2 - 28	13/16	7/8
1/2-0.475	Stainless Steel	21/32	5/16	5/8 - 24	13/16	1

Tubular Heaters

Factory Bending Guidelines

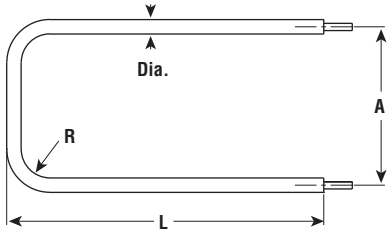
Note — OAL represents overall length.

Figure 1



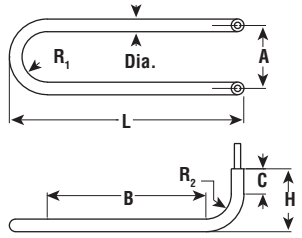
OAL = 2L + 1.14R - 0.43" Dia.

Figure 2



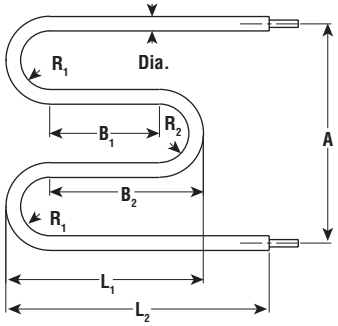
OAL = 2L - 0.86R - 1.43" Dia. + A

Figure 3



OAL = 2H - 0.86R_2 - 2.86" Dia. + 2A + 1.14R_1

Figure 4



OAL = 2L_2 + 1.14R_1 - 1.29" Dia. + 2L_1 + 1.14R_2

Factory Minimum Bends for Tubular Heaters

Element Dia. & Sheath	Inside $R_{1,2,3}$	Dimensions (In.)[1] A	$B_{1,2}$	C	Inside D	E
∇ 1/2" INCOLOY®[5]	3/4	1-3/8	1	1-1/2	5	8
Steel & Copper	1/2	1-3/8	1	1-1/2	8	6
0.475" INCOLOY®	3/4	1-3/8	1	1-1/2	3	8
Steel & Copper	1/2	1-3/8	1	1-1/2	3	6
0.430" INCOLOY®	7/16	1-3/8	1	1	3	8
Steel & Copper	7/16	1-3/8	1	1	3	6
∇ 3/8" INCOLOY®[5]	9/16	1-3/16	1	1-1/2	3-3/4	5
Steel & Copper	3/8	1-3/16	1	1-1/2	6	3
0.375" INCOLOY®	3/8	1-3/16	1	1	2-5/8	5
Steel & Copper	3/8	1-3/16	1	1	2-5/8	3
0.315" INCOLOY®	9/16	1-3/16	1	1-1/2	2	5
Steel & Copper	5/16	1-3/16	1	1-1/2	2	3
0.260" INCOLOY®	1/4	1-1/8		1	1-7/8	5
Steel & Copper	1/4	1-1/8	1	1	1-7/8	3
0.245" INCOLOY®	3/8	1-1/16	1	1-3/16	1-1/2	5
Steel & Copper	1/4	1-1/16	1	1-3/16	1-1/2	3
0.200" INCOLOY®	1/4	1/4	1	3/4	1-1/4	5

To Order — Specify model, PCN, volts, watts, special features, if required, and quantity.

Specify for Factory Formed Tubulars:

A. Figure number.
B. A, $B_{1,2}$, C, D, E, H, J, K, $L_{1,2}$ and $R_{1,2,3}$ dimension as required.
C. N - number of turns, Dia. - Element Diameter- aid < - angle as required.
D. Material for threaded fittings.
E. Special terminal type.
F. Position of crown (flat side) of element (TC, TI, TS only).
G. Submit sketch with special details.

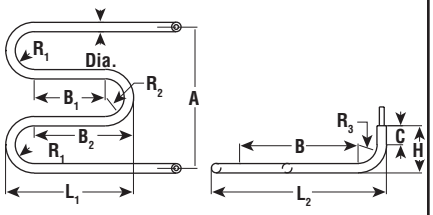
Notes —

1. These are general guidelines only. Special dimensions and configurations are possible. Contact your Local Chromalox Sales office.
2. A dimension can be less if no fittings are required.
3. C dimension may need to be greater if special fittings are used.
4. E dimension is a minimum when R dimension is less than customer minimum bending radius.
5. Heart Shaped cross-section only.

Tubular Heaters

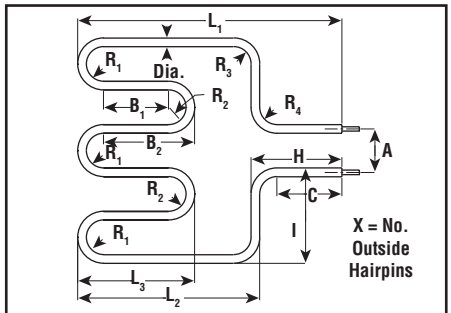
Factory Bending Guidelines *(cont'd.)*

Figure 5



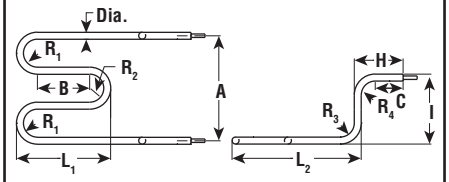
OAL = $2H + 0.86R_3 - 3.72Dia. + 2L_1 + 2L_2 + 2.28R_1 + 1.14R_2$

Figure 6



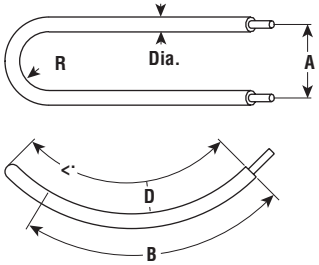
OAL = $2L_2 + 2H + 2I + 2L_3(X-1) - 0.86R_3 - 0.86R_4 - 4.86Dia. + 1.14R_1(X) + 1.14R_2(X-1) - (2X-1)0.43Dia.$

Figure 7



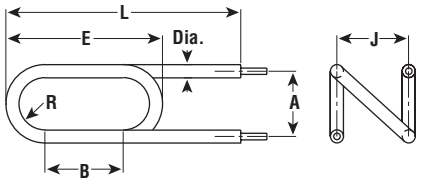
OAL = $2H + 0.86R_3 - 0.86R_4 - 6.15Dia. + 2I + 2L_1 + 2.28R_1 + 1.14R_2$

Figure 8



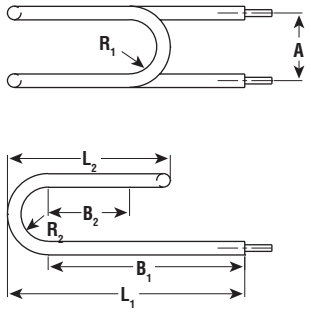
OAL = $0.0175(<\cdot)(2D/2 + Dia.) + 1.14R + 0.43Dia.$

Figure 9



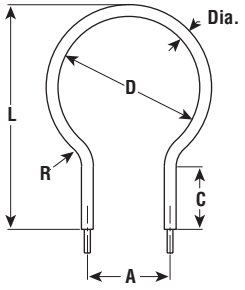
OAL = $2L + 3.42R - 1.29Dia. + 2E$

Figure 10



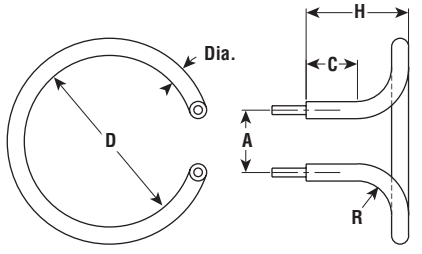
OAL = $2L_1 + 2.28R_2 - 1.29Dia. + 2L_2 + 1.14R_1$

Figure 11



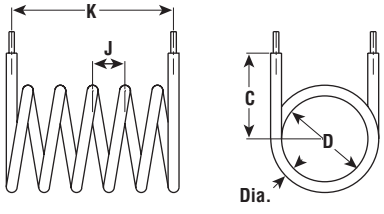
OAL = $(D + Dia.)3.14 + 1.14R + 2C + 3.71Dia. - A$

Figure 12



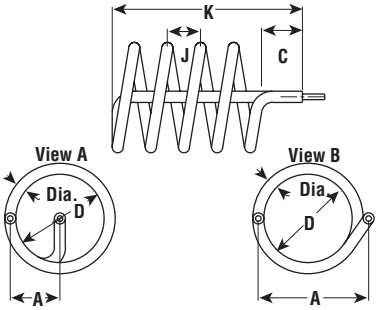
OAL = $(D + Dia.)3.14 + 1.14R + 2H + 3.28Dia. - A$

Figure 13



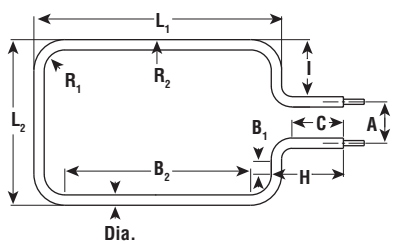
OAL = $[(D + Dia.)(3.14)(Number\ of\ 360°'s)] + 2C$

Figure 14



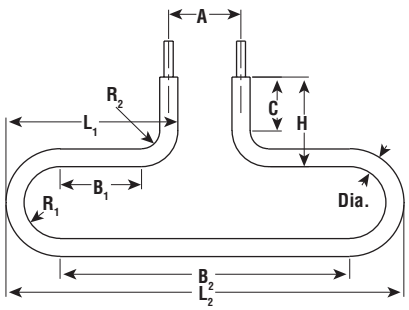
OAL = $[(D + Dia.)(3.14)(No.\ 360°'s)] + (D/2) + K + C$

Figure 15



OAL = $2H + 2L_2 + 2L_1 - A - 1.72R_1 - 0.86R_2 - 6.29Dia.$

Figure 16

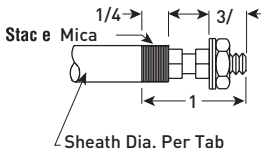
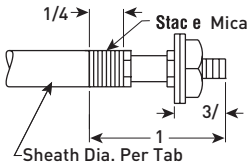
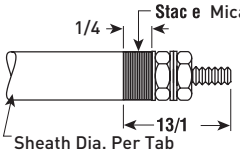
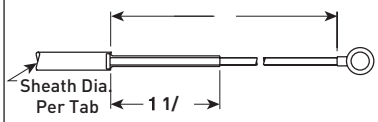
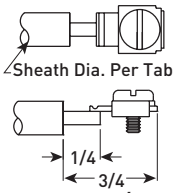
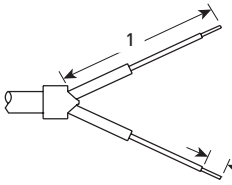
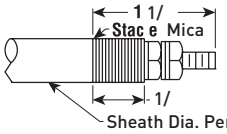
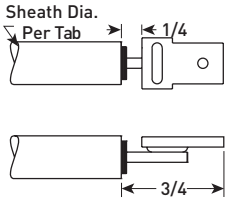
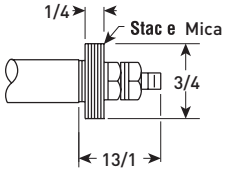
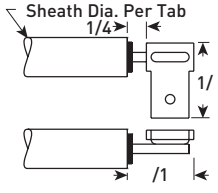
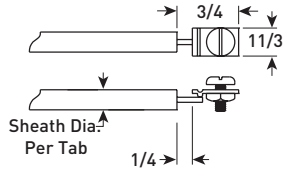
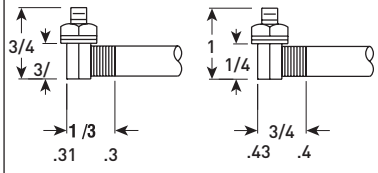


OAL = $2L_2 + 2H - A - 2.28R_1 - 0.86R_2 - 3.29Dia.$

Tubular Heaters

Terminal Options

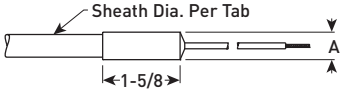
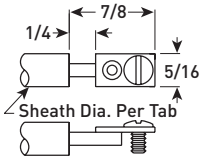
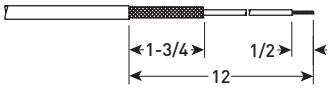
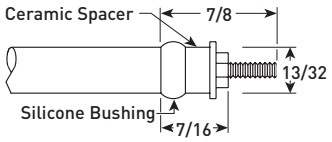
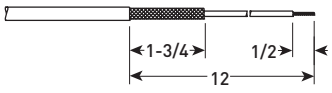
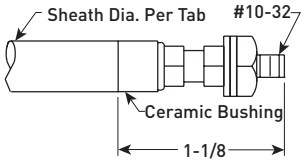
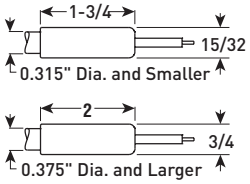
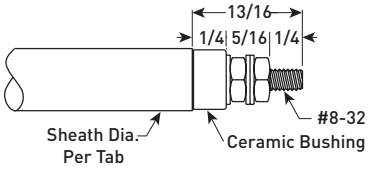
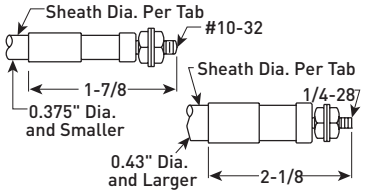
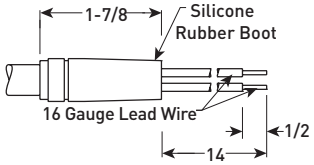
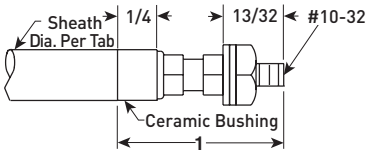
Standard, Alternate and Moisture Resistant Terminals

Type	Description	Sheath Dia. (In.)	Max. Volts	Type	Description	Sheath Dia. (In.)	Max. Volts
Standard Terminals							
3	 **Welded on threaded pin (#10-32), nut and washer**	0.315 0.375 0.43 0.475	480 480 480 480	**28**	 **Welded on threaded pin (#8-32), nut and washer**	0.246 0.25 0.26	240 240 240
4	 **Threaded terminal pin (#8-32), nut and washer**	0.43 0.475 0.5	480 480 480	**34**	 **Leadwire with sleeving, #6 Connector**	0.2	240
8	 **Terminal connector - 5/16" long, #10-32 machine screw**	0.246 0.25 0.26 0.315 0.375 0.43 0.475	240 240 240 240 240 240 240	**STRI/ STRS/ STRC**	 **Single-end tubular termination, 10" leadwire**	0.315 0.475	240 480
Alternate Terminals							
23	 **Threaded terminal pin (#8-32), nut and washer**	0.43 0.475 0.5	600 600 600	**30**	 **Ark-Les® Connector**	All	240
24	 **Threaded terminal pin (#8-32), nut and washer**	0.43 0.475 0.5	600 600 600	**30R**	 **Right-angle Ark-Les® Connector**	All	240
25	 **5/16" Long #10-32 Bolt with nut**	0.246 0.25 0.26 0.315 0.375 0.43 0.475	240 240 240 240 240 240 240	**37**	 **Extra mechanical strength # 8-32 thread**	0.315 0.375 0.43 0.475	240 240 480 480

Tubular Heaters

Terminal Options *(cont'd.)*

Standard, Alternate and Moisture Resistant Terminals

Type	Description	Sheath Dia. (In.)	Max. Volts	Type	Description	Sheath Dia. (In.)	Max. Volts
Alternate Terminals (cont.d)							
38	Dia. (In.) / A 0.315 / 3/8 0.375 / 1/2 0.43, 0.475 / 9/16  **Leadwire type terminal**	0.315 0.375 0.43 0.475	480 480 480 480	**48**	 **Narrow profile terminal connector 5/16" Long #10-32 or #8-32 machine screw.**	0.246 0.25 0.26 0.315 0.375 0.43 0.475	240 240 240 240 240 240 240
47-L	 **105°C leadwire, silicone sleeving**	0.315 0.375 0.43 0.475	480 480 480 480	**49/50**	 **Silicone bushing/ceramic disc seal epoxy/RTV/silicone resin can be placed under bushing (type 49, #8-32 thread/ type 50, #10-32 thread)**	0.315 0.43 0.475 0.5	480 480 480 480
47-M	 **200°C leadwire, silicone sleeving**	0.315 0.375 0.43 0.475	480 480 480 480	**53**	 **Air set cement, →700°F temp**	0.315 0.375 0.43 0.475	480 480 480 480
Moisture Resistant Terminals Note: Type 26 is the only Hermetic Seal, all others are Barriers.							
13	 **EPDM rubber vulcanized to sheath and leadwire, max. temp. 220°F**	0.246 0.25 0.26 0.315 0.375 0.43 0.475 0.5	240 240 240 300 480 480 480 550	**39/40**	 **Epoxy, 194°F max. temp., (type 39) RTV, 350°F max. temp., (type 40)**	0.43 0.475 0.5	480 480 480
26	 **Hermetic seal, 1000°F max. element temp.**	0.315 0.375 0.43 0.475 0.5	240 480 480 480 480	**42**	 **Silicone rubber boot potted with RTV sealant, 0.475" dia. single-end only**	0.475	480
39/40	 **Epoxy, 194°F max. temp., (type 39) RTV, 350°F max. temp., (type 40)**	0.315 0.375 0.43	480 480 480	**V** **VP** **A**	V Seal (284°F) V Seal Plus (392°F) A Seal (Sheath Limit) RX Seal (600°F) G Seal (1100°F)	0.26 to 0.475	480

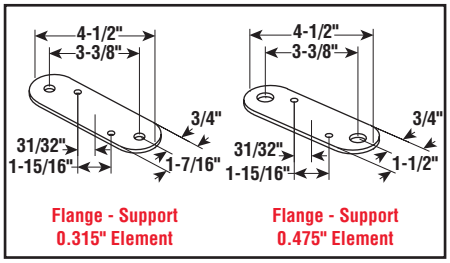
Tubular Heaters

Customer Bending & Accessories

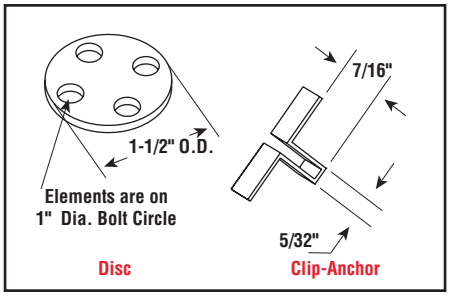
Brackets, Discs & Clips

Brackets, Discs and Clips — Various types of brackets and clips can be fastened to the heaters to facilitate installation. The following are typical.

For other brackets to meet your installation requirements, contact your Local Chromalox Sales office.



Flange - Support 0.315" Element | Flange - Support 0.475" Element

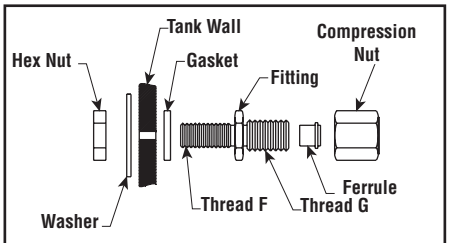


Disc | Clip-Anchor

Compression Fittings

Field Installed Compression Fittings — For 0.475, 0.315 and 0.246" diameter elements. Available in both brass and steel, these fittings have been tested to 600 psi hydrostatic pressures and may be used in tank walls for liquid immersion as well as in air ducts and a variety of other applications.

Compression fittings do not require brazing and can be field mounted in minutes. They may be positioned anywhere along the cold section of the heating element. Do not position over heated section. Cannot be installed over terminal Type #26 (Hermetic Seal), and some other terminals wider than sheath diameter.



Compression Fittings for 0.475, 0.315 and 0.246" Diameter Elements for Installation in the Field.

Customer Bending

Simple element configurations can be made easily in the field from stocked tubulars listed in this catalog. **If copper or stainless sheaths are selected, specify "To be fully annealed for bending."** Elements can be bent around any round, smooth surface of the right diameter.

Three precautions should be observed to prevent damage to the element:

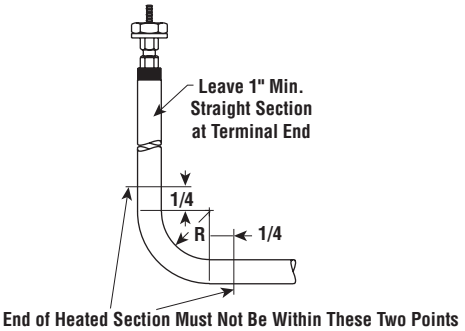
1. Radius of the round object, around which the element is bent, should be no smaller than the minimum radius for the element, as shown in the table below.
2. Sharp edges of tools should not be permitted to gouge the element sheath while bending.
3. End of cold section of the element should not fall within the bend nor come within 1/4" of either side of the bend. To locate end of cold section, see dimensions for the element on its catalog page and determine as follows: **Example —** To locate end of cold section of TRI-1645 tubular element, refer to the individual product page. Sheath length: 16" Less heated length: 9-1/8" Total cold length: 6-7/8" Cold length of each end (6-7/8" ÷ 2) = 3-7/16"

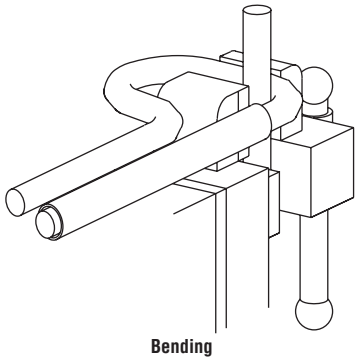
Terminal end bending can be done with pipe section of slightly larger diameter than sheath. A minimum 1" straight section should be left at the end. **Note** — To protect sheath, copper sheet can be bolted to vise jaws and end of pipe can be filed to remove sharp edge.

Before bending, it is best to lay out and dimension the configuration. Also, it is best to start bending from the center of the heater and work toward the terminal ends.

Sheath Material	Degree of Bend	Customer Bending — Min. Inside Radius (In.)								
		1/2"	0.475"	0.430"	3/8"	0.375"	0.315"	0.26"	0.246"	0.2"
Copper	90	3-1/2	1-1/2	1-5/16	2-5/16	1-1/8	15/16	7/8	3/4	Not Std. Mat. in this Dia.
	180	3-1/2	1-1/2	1-5/16	2-5/16	1-1/8	15/16	7/8	3/4	
Steel	90	2-1/2	1-1/2	1-5/16	1-7/8	1-1/8	15/16	7/8	3/4	
	180	2-1/2	1-1/2	1-5/16	1-7/8	1-1/8	15/16	7/8	3/4	
Alloy	90	2-1/2	1-1/2	1-5/16	1-7/8	1-1/8	15/16	7/8	3/4	5/8
	180	2-1/2	1-1/2	1-5/16	1-7/8	1-1/8	15/16	7/8	3/4	5/8

1. For radii smaller than shown, special processing is required to achieve good life qualities. Contact your Local Chromalox Sales office.





Bending

Material[1]	Dimensions (In.)				Thread Size		
	Elem. Dia.	Mtg. Hole Dia.	Max. Wall Thickness	Assembled Overall Length	F	G	PCN
Brass	0.246	13/32	7/32	1-7/16	3/8-24	1/2-24	144151
Brass	0.315	15/32	5/16	1-1/2	7/16-28	1/2-24	144143
Brass	0.475	21/32	5/16	2	5/8-24	3/4-24	144135
Steel	0.246	13/32	7/32	1-3/4	3/8-24	1/2-24	143474
Steel	0.315	15/32	5/16	1-3/4	7/16-28	1/2-24	143466
Steel	0.475	21/32	5/16	2-1/8	5/8-24	3/4-24	143458

To Order—Specify PCN, material, element diameter and quantity. Available in pairs only.

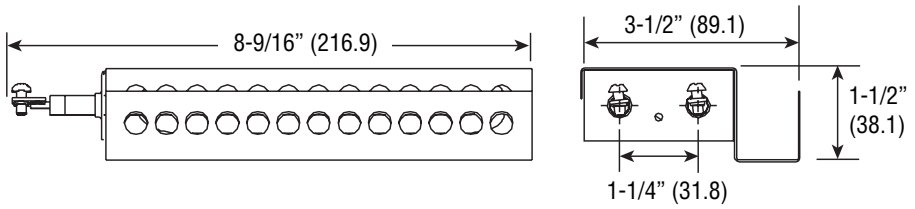
1. Available only in brass and steel at this time.

Click Here for Quote!

TEH

Tubular Enclosure and Switchgear Heaters

- **Several Standard Models in Stock**
- **UL and CSA Component Recognized**
- **Optional Adjustable Ambient Thermostat 0-107°F (-18 to 42°C)**
- **Custom Designs Available**



Description

Type TEH Tubular Enclosure Heaters and General Purpose Air Heaters are used for freeze protection and condensate protection in electrical enclosures and switchgear. They can also be installed in equipment to keep mechanical components functioning in applications such as valve enclosures and line metering.

Applications

Freeze or condensate protection in enclosures containing mechanical and electronic equipment, such as: temperature control panels, control valve housings, ATMs, traffic signal boxes, and line metering enclosures.

Features

- Element construction features Nichrome A resistance wire, high grade MgO and INCOLOY sheath to ensure long life
- Moisture resistant terminal seal
- Standard Wattages to 400 watts, higher custom wattages available
- Multiple enclosure configurations for versatile mounting
- Optional ambient sensing adjustable thermostat
- Standard 8-32 Screw terminals or 1/4" Quick Disconnect for lead wire connection
- Galvanized sheet metal cover to prevent corrosion
- Optional terminal cover to prevent incidental contact

TEH

Tubular Enclosure and Switchgear Heaters *(cont'd.)*

Notes:

1. Enclosure type "C" includes mounting bracket option "S".
2. Heaters with enclosure type "D" are designed to be mounted on top of those with enclosure type "C". See instructions for details.
3. Standard models available in 25 W increments up to 400W max.
4. Thermostat option only available with type A enclosure.
5. For custom designs, including voltages, wattages, and configurations with preset thermostats. contact sales.

Model	Code	Enclosure Type
TEH	A	Base with U-Shaped Mounting
	B	Base with L-Shaped Mounting
	C	Base with Mounting Brackets
	D	Top

Code	Power (Watts)
XXXW	

Code	Voltage (Volts)
24	24 V
120	120 V
208	208 V
240	240 V

Code	Terminal Cover
0	None
T	Included

Code	Mounting Brackets
0	None
S	Included (See note 1)

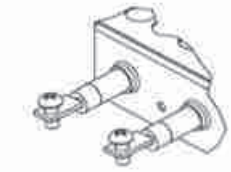
Code	Thermostat
0	None
A	Adjustable
P	Preset

Code	Terminal Type
T	8-32 Terminals (Std.)
D	1/4" Quick Disconnect

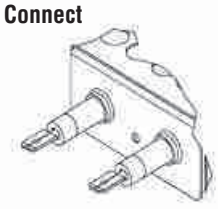
TEH-	A-	200W-	120V-	T-	S-	A-	T	Typical Model Number

Terminal Configurations

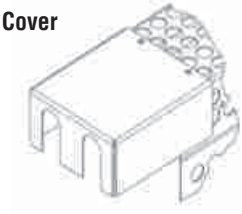
8-32 Screw Terminals



1/4" Quick Connect

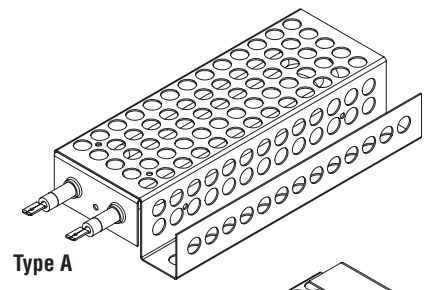


Terminal Cover

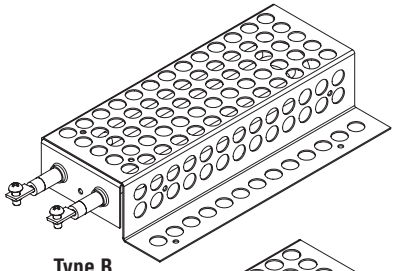


*See specification data sheet for full dimensions (SDS- PB301)

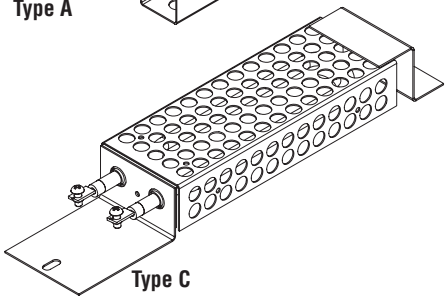
Element Closure Configurations



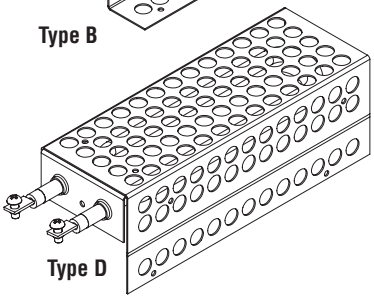
Type A



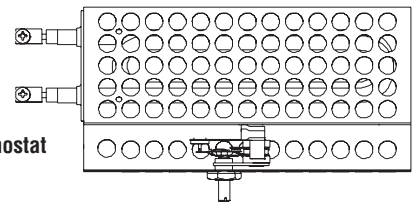
Type B



Type C



Type D



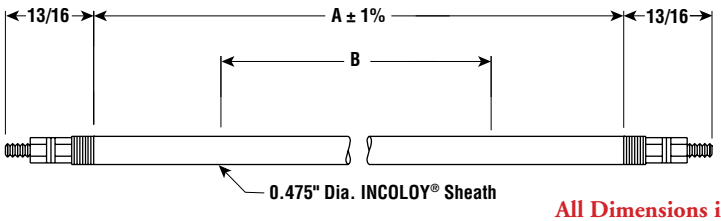
Type A with Thermostat

Click Here for Quote!

TRI
.475" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **450 - 4,750 Watts**
- **120 and 240 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time, it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending require-ments in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Heated B	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
450	120	30	16	9-1/8	TRI-1645	NS	281316	0.5
540	120	30	18	11-1/8	TRI-1845	NS	281324	0.5
635	120	30	20	13-1/8	TRI-2045	NS	281332	0.5
750	120	30	23	16-1/8	TRI-2345	NS	281340	0.5
750	240	30	23	16-1/8	TRI-2345	NS	281359	0.5
825	240	30	25	18-1/8	TRI-2545	NS	281367	0.7
900	240	30	27	20-1/8	TRI-2745	NS	281375	0.9
1,000	120	30	28	21-1/8	TRI-2845	NS	175716	1
1,000	240	30	28	21-1/8	TRI-2845	NS	281383	1
1,100	240	30	30	23-1/8	TRI-3045	NS	281391	1
1,200	240	30	32	25-1/8	TRI-3245	NS	281404	1.1
1,275	240	30	34	27-1/8	TRI-3445	NS	281412	1.1
1,350	240	30	36	29-1/8	TRI-3645	NS	281420	1.2
1,500	120	30	40	33-1/8	TRI-4045	NS	175724	1.3
1,500	240	30	40	33-1/8	TRI-4045	NS	281439	1.3
1,725	240	30	44	37-1/8	TRI-4445	NS	281447	1.4
1,800	240	30	46	39-1/8	TRI-4645	NS	281455	1.6
1,950	240	30	50	43-1/8	TRI-5045	NS	281463	1.8
2,000	240	30	54-1/4	47-3/8	TRI-5445	NS	281471	1.8
2,250	240	30	58	51	TRI-5845	NS	281244	1.8
2,500	120	30	60	53	TRI-6045	NS	175732	1.8
2,500	240	30	60	53	TRI-6045	NS	281252	1.8
2,750	240	30	66	59	TRI-6645	NS	281260	1.8
3,000	240	30	70	63	TRI-7045	NS	281279	1.8
3,125	240	30	74	67	TRI-7445	NS	281287	1.8
3,250	240	30	78	71	TRI-7845	NS	281295	1.8
3,500	240	30	85	78	TRI-8545	NS	281308	2.3
4,000	240	30	100	93	TRI-10045	NS	281480	3.3
4,500	240	30	108	101	TRI-10845	NS	281498	3.3
4,750	240	30	112	105	TRI-11245	NS	281500	3.3

Stock Status: S = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRID & TRIW

.475" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **1,000 - 7,500 Watts**
- **120, 240 and 480 Volt**
- **19 and 22 W/In² (type TRID)**
- **40 W/In² (type TRIW)**
- **1600°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

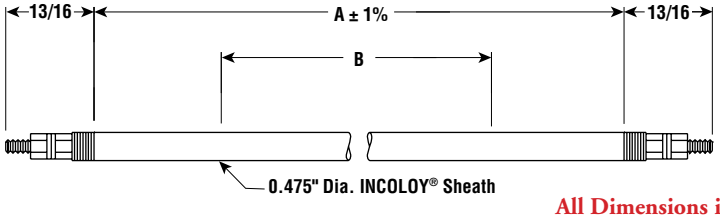
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Heated B	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
TRID — 22 W/In²								
1,000	240	22	40	28-1/8	TRID-4065	NS	143722	1.3
1,000	480	22	40	28-1/8	TRID-4065	NS	143730	1.3
1,250	240	22	43-9/16	31-11/16	TRID-4365	NS	143749	1.5
1,250	480	22	43-9/16	31-11/16	TRID-4365	NS	175740	1.5
1,500	240	22	54-1/4	42-3/8	TRID-5465	NS	143757	1.8
1,500	480	22	54-1/4	42-3/8	TRID-5465	NS	143765	1.8
2,000	240	22	70	58-1/8	TRID-7065	NS	143773	1.8
2,000	480	22	70	58-1/8	TRID-7065	NS	143781	1.8
2,500	240	22	85	73-1/8	TRID-8565	NS	143790	2.3
2,500	480	22	85	73-1/8	TRID-8565	NS	143802	2.3
3,000	240	22	100	88-1/8	TRID-10065	NS	143810	3.3
3,000	480	22	100	88-1/8	TRID-10065	NS	143829	3.3
3,334	240	22	108	96-1/8	TRID-10865	NS	143837	3.3
4,167	240	22	134	122-1/8	TRID-13465	NS	143845	4.3
5,000	240	22	160	148-1/8	TRID-16065	NS	143853	6
TRID — 19 W/In²								
1,667	240	19	70	54-3/8	TRID-7085	NS	177560	1.8
2,225	240	19	91-3/4	76	TRID-9285	NS	177578	2.3
2,778	240	19	108	92-3/8	TRID-10885	NS	177586	3.3
TRIW — 40 W/In²								
1,000	120	40	20	13-1/8	TRIW-2045	NS	143490	0.5
1,000	240	40	20	13-1/8	TRIW-2045	NS	143503	0.5
1,250	120	40	23	16-1/8	TRIW-2345	NS	143511	0.5
1,250	240	40	23	16-1/8	TRIW-2345	NS	175759	0.5
1,500	120	40	28	21-1/8	TRIW-2845	NS	143520	1
1,500	240	40	28	21-1/8	TRIW-2845	NS	143538	1
1,500	480	40	28	21-1/8	TRIW-2845	NS	175767	1
2,000	240	40	40	28	TRIW-4065	NS	143546	1.3
2,000	480	40	40	28	TRIW-4065	NS	143554	1.3
2,500	240	40	43-1/2	31-1/2	TRIW-4365	NS	143562	1.3
2,500	480	40	43-1/2	31-1/2	TRIW-4365	NS	143570	1.3
3,000	240	40	54-1/4	42-3/8	TRIW-5465	NS	143589	1.8
3,000	480	40	54-1/4	42-3/8	TRIW-5465	NS	143597	1.8
3,500	240	40	60	48	TRIW-6065	NS	143600	1.8
4,000	240	40	70	58	TRIW-7065	NS	143618	1.8
4,000	480	40	70	58	TRIW-7065	NS	143626	1.8
5,000	240	40	85	73	TRIW-8565	NS	143634	2.3
5,000	480	40	85	73	TRIW-8565	NS	143642	2.3
6,000	240	40	100	88	TRIW-10065	NS	143650	3.3
6,000	480	40	100	88	TRIW-10065	NS	143669	3.3
7,500	240	40	112	100	TRIW-11265	NS	143677	3.3

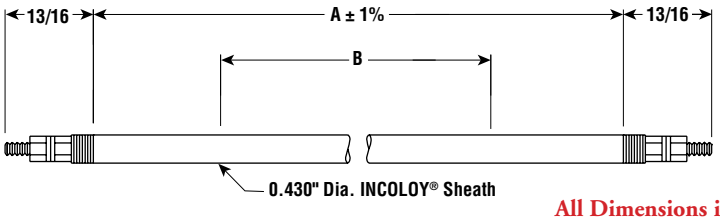
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

TRI
.430" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **400 - 4,500 Watts**
- **120 and 240 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-5/16". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
400	120	30	16	9-1/8	TRI-1644	NS	337201	0.5
575	120	30	20	13-1/8	TRI-2044	NS	337210	0.5
900	240	30	28	21-1/8	TRI-2844	NS	337228	1
1,100	240	30	32	25-1/8	TRI-3244	NS	337236	1.1
1,300	240	30	36	29-1/8	TRI-3644	NS	337244	1.2
1,400	240	30	40	33-1/8	TRI-4044	NS	337252	1.2
2,000	240	30	54	47-1/8	TRI-5444	NS	337260	1.7
2,300	240	30	60	53	TRI-6044	NS	337279	1.7
2,500	240	30	66	59	TRI-6644	NS	337287	1.7
2,700	240	30	70	63	TRI-7044	NS	337295	1.7
3,100	240	30	78	71	TRI-7844	NS	337308	1.7
3,400	240	30	85	78	TRI-8544	NS	337316	2.2
4,000	240	30	100	93	TRI-10044	NS	337324	3.2
4,300	240	30	108	101	TRI-10844	NS	337332	3.2
4,500	240	30	112	105	TRI-11244	NS	337340	3.2

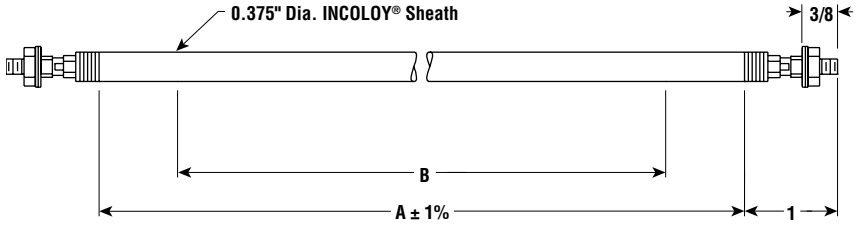
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRI

.375" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **350 - 4,000 Watts**
- **120 and 240 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum bending inside radius is 1-1/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
350	120	30	16	9-1/4	TRI-1643	NS	337033	0.4
500	120	30	20	13-1/4	TRI-2043	NS	337041	0.4
800	120	30	28	21-1/4	TRI-2843	NS	337050	0.8
800	240	30	28	21-1/4	TRI-2843	NS	337068	0.8
950	120	30	32	25-1/4	TRI-3243	NS	337076	0.8
950	240	30	32	25-1/4	TRI-3243	NS	337084	0.8
1,100	240	30	36	29-1/4	TRI-3643	NS	337092	0.8
1,300	120	30	42	35-1/4	TRI-4243	NS	337105	1
1,300	240	30	42	35-1/4	TRI-4243	NS	337113	1
1,500	240	30	48	41-1/4	TRI-4843	NS	337121	1.1
1,800	120	30	54	47-1/4	TRI-5443	NS	337130	1.3
1,800	240	30	54	47-1/4	TRI-5443	NS	337148	1.3
2,100	240	30	62	55-1/4	TRI-6243	NS	337156	1.3
2,400	240	30	70	63-1/4	TRI-7043	NS	337164	1.3
3,000	240	30	86	79-1/4	TRI-8643	NS	337172	1.8
3,600	240	30	102	95-1/4	TRI-10243	NS	337180	2
4,000	240	30	112	105-1/4	TRI-11243	NS	337199	2.5

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

TRI
.315" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **275 - 1,450 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

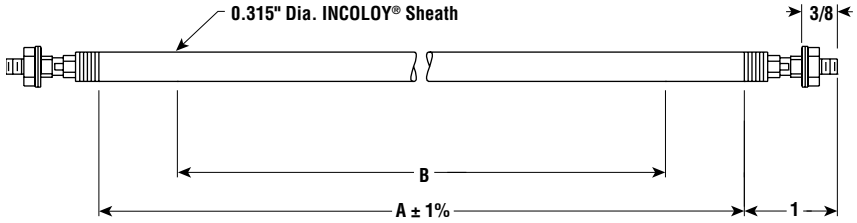
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 15/16". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
275	120	30	16	9-1/4	TRI-1648	NS	281519	0.4
350	120	30	18	11-1/4	TRI-1848	NS	281527	0.4
400	120	30	20	13-1/4	TRI-2048	NS	281535	0.4
500	120	30	22	15-1/4	TRI-2248	NS	281543	0.5
650	120	30	25	18-1/4	TRI-2548	NS	281551	0.6
650	240	30	25	18-1/4	TRI-2548	NS	281560	0.6
700	120	30	27	20-1/4	TRI-2748	NS	281578	0.7
700	240	30	27	20-1/4	TRI-2748	NS	281586	0.7
625	120	30	28	21-1/4	TRI-2848	NS	281594	0.8
625	240	30	28	21-1/4	TRI-2848	NS	281607	0.8
800	120	30	30	23-1/4	TRI-3048	NS	281615	0.8
800	240	30	30	23-1/4	TRI-3048	NS	281623	0.8
750	120	30	32	25-1/4	TRI-3248	NS	281631	0.8
750	240	30	32	25-1/4	TRI-3248	NS	281640	0.8
900	120	30	34	27-1/4	TRI-3448	NS	281658	0.8
900	240	30	34	27-1/4	TRI-3448	NS	281666	0.8
850	120	30	36	29-1/4	TRI-3648	NS	176591	0.8
850	240	30	36	29-1/4	TRI-3648	NS	281674	0.8
1,050	120	30	38	31-1/4	TRI-3848	NS	281682	0.9
1,050	240	30	38	31-1/4	TRI-3848	NS	281690	0.9
975	120	30	40	33-1/4	TRI-4048	NS	281703	1
975	240	30	40	33-1/4	TRI-4048	NS	281711	1
1,200	120	30	42	35-1/4	TRI-4248	NS	281720	1
1,200	240	30	42	35-1/4	TRI-4248	NS	281738	1
1,250	120	30	44	37-1/4	TRI-4448	NS	281746	1
1,250	240	30	44	37-1/4	TRI-4448	NS	281754	1
1,150	120	30	46	39-1/4	TRI-4648	NS	176604	1
1,150	240	30	46	39-1/4	TRI-4648	NS	281762	1
1,150	480	30	46	39-1/4	TRI-4648	NS	176612	1
1,350	120	30	48	41-1/4	TRI-4848	NS	281770	1.1
1,350	240	30	48	41-1/4	TRI-4848	NS	281789	1.1
1,450	120	30	50	43-1/4	TRI-5048	NS	281797	1.2
1,450	240	30	50	43-1/4	TRI-5048	NS	281800	1.2
1,325	120	30	52	45-1/4	TRI-5248	NS	176620	1.3
1,325	240	30	52	45-1/4	TRI-5248	NS	281818	1.3
1,325	480	30	52	45-1/4	TRI-5248	NS	176639	1.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRI

.315" Dia. Round Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **1,550 - 3,150 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

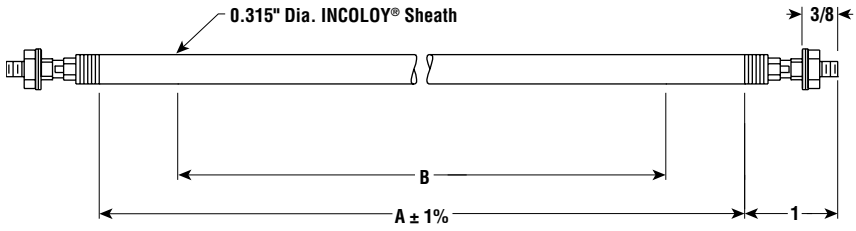
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 15/16". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Heated B	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
1,550	120	30	54	47-1/4	TRI-5448	NS	281826	1.3
1,550	240	30	54	47-1/4	TRI-5448	NS	281834	1.3
1,500	120	30	58	51-1/4	TRI-5848	NS	281842	1.3
1,500	240	30	58	51-1/4	TRI-5848	NS	281850	1.3
1,500	480	30	58	51-1/4	TRI-5848	NS	176647	1.3
1,850	120	30	62	55-1/4	TRI-6248	NS	281869	1.3
1,850	240	30	62	55-1/4	TRI-6248	NS	281877	1.3
1,675	120	30	64	57-1/4	TRI-6448	NS	176655	1.3
1,675	240	30	64	57-1/4	TRI-6448	NS	281885	1.3
1,675	480	30	64	57-1/4	TRI-6448	NS	176663	1.3
1,950	120	30	66	59-1/4	TRI-6648	NS	281893	1.3
1,950	240	30	66	59-1/4	TRI-6648	NS	281906	1.3
1,850	120	30	70	63-1/4	TRI-7048	NS	176671	1.3
1,850	240	30	70	63-1/4	TRI-7048	NS	281914	1.3
1,850	480	30	70	63-1/4	TRI-7048	NS	176680	1.3
2,250	240	30	74	67-1/4	TRI-7448	NS	281922	1.5
2,025	120	30	76	69-1/4	TRI-7648	NS	176698	1.5
2,025	240	30	76	69-1/4	TRI-7648	NS	281930	1.5
2,025	480	30	76	69-1/4	TRI-7648	NS	176700	1.5
2,350	240	30	78	71-1/4	TRI-7848	NS	281949	1.5
2,200	120	30	82	75-1/4	TRI-8248	NS	176719	1.8
2,200	240	30	82	75-1/4	TRI-8248	NS	281957	1.8
2,200	480	30	82	75-1/4	TRI-8248	NS	176727	1.8
2,600	240	30	86	79-1/4	TRI-8648	NS	281965	1.8
2,375	240	30	88	81-1/4	TRI-8848	NS	281973	1.8
2,375	480	30	88	81-1/4	TRI-8848	NS	176735	1.8
2,750	240	30	90	83-1/4	TRI-9048	NS	281981	1.8
2,550	240	30	94	87-1/4	TRI-9448	NS	176743	1.8
2,550	480	30	94	87-1/4	TRI-9448	NS	176751	1.8
3,000	240	30	98	91-1/4	TRI-9848	NS	281990	2
2,700	240	30	100	93-1/4	TRI-10048	NS	176760	2
2,700	480	30	100	93-1/4	TRI-10048	NS	176778	2
3,150	240	30	102	95-1/4	TRI-10248	NS	282001	2
2,875	240	30	106	99-1/4	TRI-10648	NS	176786	2.3
2,875	480	30	106	99-1/4	TRI-10648	NS	176794	2.3
3,050	240	30	112	105-1/4	TRI-11248	NS	282010	2.5
3,050	480	30	112	105-1/4	TRI-11248	NS	176807	2.5

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

TRI
.260" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **175 - 2,500 Watts**
- **120 and 240 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

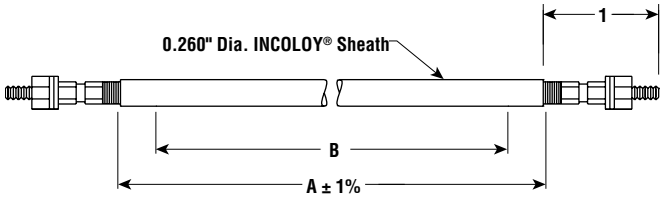
Features

Type 28 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 7/8". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
175	120	30	12	7-1/2	TRI-1216	NS	337359	0.2
270	120	30	16	11-1/2	TRI-1616	NS	337367	0.3
360	120	30	20	15-1/2	TRI-2016	NS	337375	0.3
360	240	30	20	15-1/2	TRI-2016	NS	337383	0.3
450	120	30	24	19-1/2	TRI-2416	NS	337391	0.3
450	240	30	24	19-1/2	TRI-2416	NS	337404	0.3
550	120	30	28	23-1/2	TRI-2816	NS	337412	0.5
550	240	30	28	23-1/2	TRI-2816	NS	337420	0.5
650	120	30	32	27-1/2	TRI-3216	NS	337439	0.6
650	240	30	32	27-1/2	TRI-3216	NS	337447	0.6
725	120	30	36	31-1/2	TRI-3616	NS	337455	0.6
725	240	30	36	31-1/2	TRI-3616	NS	337463	0.6
825	120	30	40	35-1/2	TRI-4016	NS	337471	0.7
825	240	30	40	35-1/2	TRI-4016	NS	337480	0.7
975	120	30	46	41-1/2	TRI-4616	NS	337498	0.7
975	240	30	46	41-1/2	TRI-4616	NS	337500	0.7
1,100	120	30	52	47-1/2	TRI-5216	NS	337519	0.9
1,100	240	30	52	47-1/2	TRI-5216	NS	337527	0.9
1,250	120	30	58	53-1/2	TRI-5816	NS	337535	0.9
1,250	240	30	58	53-1/2	TRI-5816	NS	337543	0.9
1,400	120	30	64	59-1/2	TRI-6416	NS	337551	0.9
1,400	240	30	64	59-1/2	TRI-6416	NS	337560	0.9
1,525	120	30	70	65-1/2	TRI-7016	NS	337578	0.9
1,525	240	30	70	65-1/2	TRI-7016	NS	337586	0.9
1,650	120	30	76	71-1/2	TRI-7616	NS	337594	0.9
1,650	240	30	76	71-1/2	TRI-7616	NS	337607	0.9
1,800	120	30	82	77-1/2	TRI-8216	NS	337615	1.3
1,800	240	30	82	77-1/2	TRI-8216	NS	337623	1.3
1,950	120	30	88	83-1/2	TRI-8816	NS	337631	1.3
1,950	240	30	88	83-1/2	TRI-8816	NS	337640	1.3
2,100	240	30	94	89-1/2	TRI-9416	NS	337658	1.3
2,200	240	30	100	95-1/2	TRI-10016	NS	337666	1.7
2,350	240	30	106	101-1/2	TRI-10616	NS	337674	1.7
2,500	240	30	112	107-1/2	TRI-11216	NS	337682	1.7

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRI

.246" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **165 - 2,365 Watts**
- **120 and 240 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

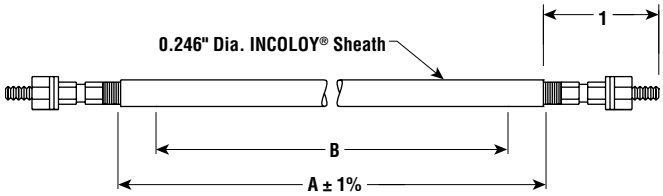
Small Diameter Tubular Elements — Most easily bent to conform to work surfaces and to "pack" heat into confined spaces. Because of the small cross-section, these tubulars also heat up and cool rapidly.

Type 28 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 3/4". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Heated B	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
165	120	30	12	7-1/2	TRI-1212	NS	282052	0.2
255	120	30	16	11-1/2	TRI-1612	NS	282060	0.3
340	120	30	20	15-1/2	TRI-2012	NS	282079	0.3
340	240	30	20	15-1/2	TRI-2012	NS	177420	0.3
430	120	30	24	19-1/2	TRI-2412	NS	282087	0.3
430	240	30	24	19-1/2	TRI-2412	NS	282095	0.3
515	120	30	28	23-1/2	TRI-2812	NS	282108	0.5
515	240	30	28	23-1/2	TRI-2812	NS	282116	0.5
605	120	30	32	27-1/2	TRI-3212	NS	282124	0.5
605	240	30	32	27-1/2	TRI-3212	NS	177439	0.5
690	120	30	36	31-1/2	TRI-3612	NS	282132	0.5
690	240	30	36	31-1/2	TRI-3612	NS	282140	0.5
780	120	30	40	35-1/2	TRI-4012	NS	177447	0.7
780	240	30	40	35-1/2	TRI-4012	NS	143870	0.7
910	120	30	46	41-1/2	TRI-4612	NS	177455	0.7
910	240	30	46	41-1/2	TRI-4612	NS	282159	0.7
1,045	120	30	52	47-1/2	TRI-5212	NS	282167	0.9
1,045	240	30	52	47-1/2	TRI-5212	NS	143888	0.9
1,175	120	30	58	53-1/2	TRI-5812	NS	177463	0.9
1,175	240	30	58	53-1/2	TRI-5812	NS	177471	0.9
1,310	120	30	64	59-1/2	TRI-6412	NS	282175	0.9
1,310	240	30	64	59-1/2	TRI-6412	NS	282183	0.9
1,440	120	30	70	65-1/2	TRI-7012	NS	282191	0.9
1,440	240	30	70	65-1/2	TRI-7012	NS	282204	0.9
1,570	120	30	76	71-1/2	TRI-7612	NS	177480	0.9
1,570	240	30	76	71-1/2	TRI-7612	NS	282212	0.9
1,700	120	30	82	77-1/2	TRI-8212	NS	177498	1.2
1,700	240	30	82	77-1/2	TRI-8212	NS	177500	1.2
1,835	120	30	88	83-1/2	TRI-8812	NS	177519	1.2
1,835	240	30	88	83-1/2	TRI-8812	NS	177527	1.2
1,965	240	30	94	89-1/2	TRI-9412	NS	282220	1.2
2,100	240	30	100	95-1/2	TRI-10012	NS	177535	1.7
2,230	240	30	106	101-1/2	TRI-10612	NS	177543	1.7
2,365	240	30	112	107-1/2	TRI-11212	NS	177551	1.7

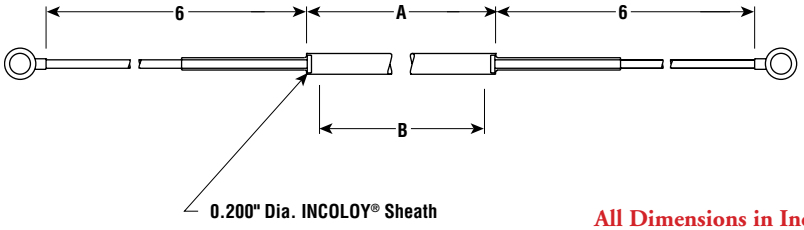
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TSSM

.200" Dia. Round Cross-Section

- **INCOLOY® Sheath**
- **75 - 1,200 Watts**
- **28, 57.7 and 115 Volt**
- **29 - 49 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Compasses and gyroscopes, tubing "wrap-arounds," oil igniters and burning off flue gases.

Advantages

An Extremely Versatile Element — Used where just a little heat is needed or where a high temperature is needed quickly in a tight spot. Heat-up is fast due to the small mass of the element.

Flexible — Easily forms to a wide range of configurations.

Features

Type 34 Terminals — Standard with high temperature leads attached to sheath. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 5/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
75	28	40	6	3	**TSSM-6**	**S**	**143319**	0.1
110	57.7	35	8	5	**TSSM-8**	**S**	**143327**	0.1
150	57.7	34	10	7	**TSSM-10**	**S**	**143335**	0.1
175	115	31	12	9	**TSSM-12**	**S**	**143343**	0.1
225	115	33	14	11	**TSSM-14**	**S**	**143351**	0.1
275	115	34	16	13	**TSSM-16**	**S**	**143360**	0.2
300	115	32	18	15	**TSSM-18**	**S**	**143378**	0.2
350	115	33	20	17	**TSSM-20**	**S**	**143386**	0.2
830	115	49	30	27	**TSSM-30**	**S**	**143394**	0.2
1,120	115	48	40	37	**TSSM-40**	**S**	**143407**	0.3
1,400	115	47	50	47	**TSSM-50**	**S**	**143415**	0.3
1,400	115	29	60	57	TSSM-60	NS	143423	0.4
1,200	115	29	70	67	**TSSM-70**	**S**	**143431**	0.5

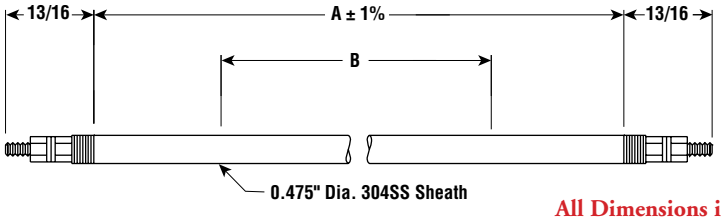
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRSS

.475" Dia. Round Cross-Section

- **Stainless Steel Sheath (type 304)**
- **1,000 - 7,500 Watts**
- **120, 208, 240, 277 and 480 Volt**
- **50 W/In²**
- **1200°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 4 Terminals — Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		304 Stainless Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
1,000	120	50	20	13-1/8	TRSS-2045	NS	143909	0.5
1,000	208	50	20	13-1/8	TRSS-2045	NS	328090	0.5
1,000	277	50	20	13-1/8	TRSS-2045	NS	143917	0.5
1,000	277	50	20	13-1/8	TRSS-2045	NS	328102	0.5
1,250	240	50	23	16-1/8	TRSS-2345	NS	143925	0.5
1,500	120	50	28	21-1/8	TRSS-2845	NS	143933	1
1,500	208	50	28	21-1/8	TRSS-2845	NS	328110	1
1,500	240	50	28	21-1/8	TRSS-2845	NS	143941	1
1,500	480	50	28	21-1/8	TRSS-2845	NS	143950	1
2,000	120	50	40	28	TRSS-4065	NS	143968	1.3
2,000	208	50	40	28	TRSS-4065	NS	328129	1.3
2,000	240	50	40	28	TRSS-4065	NS	143976	1.3
2,000	480	50	40	28	TRSS-4065	NS	143984	1.3
2,500	208	50	43-1/2	31-1/2	TRSS-4365	NS	328137	1.3
2,500	240	50	43-1/2	31-1/2	TRSS-4365	NS	143992	1.3
2,500	480	50	43-1/2	31-1/2	TRSS-4365	NS	144004	1.3
3,000	208	50	54-1/4	42-3/8	TRSS-5465	NS	328145	1.8
3,000	240	50	54-1/4	42-3/8	TRSS-5465	NS	144012	1.8
3,000	480	50	54-1/4	42-3/8	TRSS-5465	NS	144020	1.8
4,000	208	50	70	58	TRSS-7065	NS	328153	1.8
4,000	240	50	70	58	TRSS-7065	NS	144055	1.8
4,000	480	50	70	58	TRSS-7065	NS	144063	1.8
5,000	208	50	85	73	TRSS-8565	NS	328161	2.3
5,000	240	50	85	73	TRSS-8565	NS	144071	2.3
5,000	480	50	85	73	TRSS-8565	NS	144080	2.3
6,000	208	50	100	88	TRSS-10065	NS	328170	3.3
6,000	240	50	100	88	TRSS-10065	NS	144098	3.3
6,000	480	50	100	88	TRSS-10065	NS	144100	3.3
7,500	240	50	112	100	TRSS-11265	NS	144119	3.3

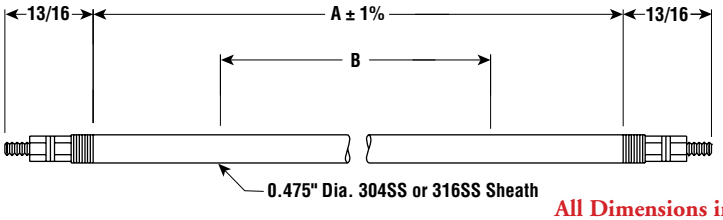
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRSSH & TRSSN

.475" Dia. Round Cross-Section

- **Stainless Steel Sheath (type 304 and 316)**
- **1,000 - 5,000 Watts**
- **240 and 480 Volt**
- **23 W/In² (type TRSSH)**
- **46 W/In² (type TRSSN)**
- **1200°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Heated B	Stainless Steel Sheath Model	Stock	PCN	Wt. (Lbs.)
TRSSH — 304 Stainless Steel — 23 W/In²								
1,000	240	23	40	28	TRSSH-4065	NS	328188	1.3
1,000	480	23	40	28	TRSSH-4065	NS	328196	1.3
1,500	240	23	54-1/4	42-1/4	TRSSH-5465	NS	328209	1.8
1,500	480	23	54-1/4	42-1/4	TRSSH-5465	NS	328217	1.8
2,000	240	23	70	58	TRSSH-7065	NS	328225	1.8
2,000	480	23	70	58	TRSSH-7065	NS	328233	1.8
2,500	240	23	85	73	TRSSH-8565	NS	328241	2.3
2,500	480	23	85	73	TRSSH-8565	NS	328250	2.3
3,000	240	23	100	88	TRSSH-10065	NS	328268	3.3
3,000	480	23	100	88	TRSSH-10065	NS	328276	3.3
3,334	240	23	108	96	TRSSH-10865	NS	328284	3.3
TRSSN — 316 Stainless Steel — 46 W/In²								
3,000	240	46	54-1/4	42-1/4	TRSSN-5465	NS	328049	1.5
3,000	480	46	54-1/4	42-1/4	TRSSN-5465	NS	328014	1.5
4,000	240	46	70	58	TRSSN-7065	NS	328022	1.8
4,000	480	46	70	58	TRSSN-7065	NS	328030	1.8
5,000	240	46	85	73	TRSSN-8565	NS	328057	2.3
5,000	480	46	85	73	TRSSN-8565	NS	328065	2.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRS & TRSCD

.475" Dia. Round Cross-Section

- **Steel Sheath**
- **300 - 3,000 Watts**
- **120, 240 and 480 Volt**
- **20 W/In² (type TRS)**
- **14 and 15 W/In² (type TRSCD)**
- **750°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

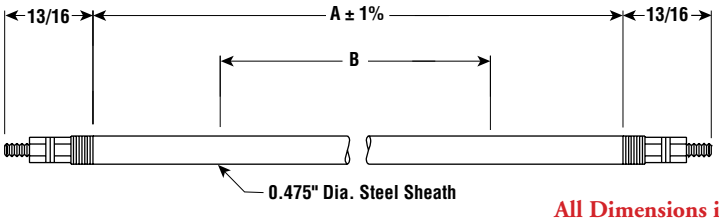
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



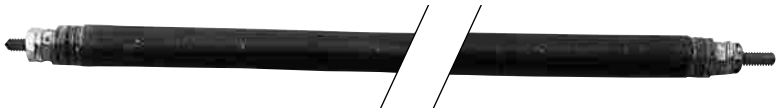
All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
TRS — 20 W/In²								
300	120	20	16	9-1/8	TRS-1645	NS	174609	0.5
350	120	20	18	11-1/8	TRS-1845	NS	174617	0.5
425	120	20	20	13-1/8	TRS-2045	NS	174625	0.5
500	120	20	23	16-1/8	TRS-2345	NS	174633	0.5
500	240	20	23	16-1/8	TRS-2345	NS	174641	0.5
575	120	20	25	18-1/8	TRS-2545	NS	174650	0.5
575	240	20	25	18-1/8	TRS-2545	NS	174668	0.5
600	120	20	27	20-1/8	TRS-2745	NS	174676	0.5
600	240	20	27	20-1/8	TRS-2745	NS	174684	0.5
750	120	20	28	21-1/8	TRS-2845	NS	174692	1
750	208	20	28	21-1/8	TRS-2845	NS	328356	1
750	240	20	28	21-1/8	TRS-2845	NS	174705	1
775	120	20	30	23-1/8	TRS-3045	NS	174713	1
775	240	20	30	23-1/8	TRS-3045	NS	174721	1
800	120	20	32	25-1/8	TRS-3245	NS	174730	1
800	240	20	32	25-1/8	TRS-3245	NS	174748	1
850	120	20	34	27-1/8	TRS-3445	NS	174756	1
850	240	20	34	27-1/8	TRS-3445	NS	174764	1
900	120	20	36	29-1/8	TRS-3645	NS	174772	1
900	240	20	36	29-1/8	TRS-3645	NS	174780	1
950	120	20	38	31-1/8	TRS-3845	NS	174799	1
950	240	20	38	31-1/8	TRS-3845	NS	174801	1
TRSCD — 15 W/In²								
1,000	240	15	54	42-3/8	TRSCD-5465	NS	175492	1.8
1,334	240	15	70	58-1/8	TRSCD-7065	NS	175505	1.8
1,667	240	15	85	73-1/8	TRSCD-8565	NS	175513	2.3
2,000	240	15	100	88-1/8	TRSCD-10065	NS	175521	3.3
2,000	480	15	100	88-1/8	TRSCD-10065	NS	175572	3.3
2,500	240	15	118	106-1/8	TRSCD-11865	NS	175530	3.3
3,000	240	15	140	128-1/8	TRSCD-14065	NS	175548	4.3
TRSCD — 15 W/In²								
1,115	240	14	70	54-3/8	TRSCD-7085	NS	175441	1.8
1,390	240	14	91-3/4	76	TRSCD-9285	NS	175450	2.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRSC
.475" Dia.
Round Cross-Section



- **Steel Sheath**
- **1,000 - 2,000 Watts**
- **120, 240 and 480 Volt**
- **20 - 22 W/In²**
- **750°F Max. Sheath Temp**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

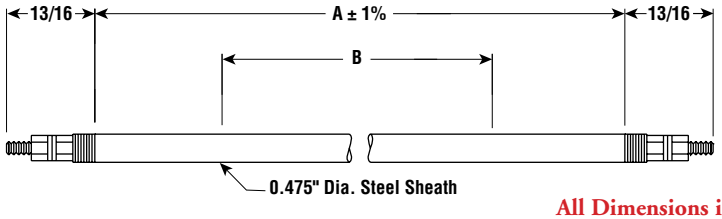
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
TRSC — 20 W/In²								
1,667	240	20	70	54-3/8	TRSC-7085	NS	175468	1.8
2,225	240	20	92	76	TRSC-9285	NS	175476	2.3
2,225	480	20	92	76	TRSC-9285	NS	175564	2.3
2,778	240	20	108	92-3/8	TRSC-10885	NS	175484	3.3
TRSC — 22 W/In²								
1,000	120	22	40	28-1/8	TRSC-4065	NS	174810	1
1,000	240	22	40	28-1/8	TRSC-4065	NS	174828	1
1,000	480	22	40	28-1/8	TRSC-4065	NS	174836	1
1,250	120	22	43-9/16	31-11/16	TRSC-4365	NS	174844	1
1,250	240	22	43-9/16	31-11/16	TRSC-4365	NS	174852	1
1,250	480	22	43-9/16	31-11/16	TRSC-4365	NS	174860	1
1,300	120	22	46	34-1/8	TRSC-4665	NS	174879	1
1,300	240	22	46	34-1/8	TRSC-4665	NS	174887	1
1,300	480	22	46	34-1/8	TRSC-4665	NS	174895	1
1,350	120	22	48	36-1/8	TRSC-4865	NS	174908	1.5
1,350	240	22	48	36-1/8	TRSC-4865	NS	174916	1.5
1,350	480	22	48	36-1/8	TRSC-4865	NS	174924	1.5
1,400	120	22	50	38-1/8	TRSC-5065	NS	174932	1.5
1,400	240	22	50	38-1/8	TRSC-5065	NS	174940	1.5
1,400	480	22	50	38-1/8	TRSC-5065	NS	174959	1.5
1,450	120	22	52	40-1/8	TRSC-5265	NS	174967	1.5
1,450	240	22	52	40-1/8	TRSC-5265	NS	174975	1.5
1,450	480	22	52	40-1/8	TRSC-5265	NS	174983	1.5
1,500	120	22	54-1/4	42-3/8	TRSC-5465	NS	174991	1.6
1,500	240	22	54-1/4	42-3/8	TRSC-5465	NS	175003	1.6
1,500	480	22	54-1/4	42-3/8	TRSC-5465	NS	175011	1.6
1,670	120	22	58	46-1/8	TRSC-5865	NS	175020	1.6
1,670	240	22	58	46-1/8	TRSC-5865	NS	175038	1.6
1,670	480	22	58	46-1/8	TRSC-5865	NS	175046	1.6
1,750	120	22	60	48-1/8	TRSC-6065	NS	175054	1.6
1,750	240	22	60	48-1/8	TRSC-6065	NS	175062	1.6
1,750	480	22	60	48-1/8	TRSC-6065	NS	175070	1.6
1,875	120	22	66	51-1/8	TRSC-6665	NS	175089	1.7
1,875	240	22	66	51-1/8	TRSC-6665	NS	175097	1.7
1,875	480	22	66	51-1/8	TRSC-6665	NS	175100	1.7
2,000	120	22	70	58-1/8	TRSC-7065	NS	175118	1.7
2,000	240	22	70	58-1/8	TRSC-7065	NS	175126	1.7
2,000	480	22	70	58-1/8	TRSC-7065	NS	175134	1.7

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRSC

.475" Dia. Round Cross-Section *(cont'd.)*

- **Steel Sheath**
- **2,120 - 5,000 Watts**
- **120, 240 and 480 Volt**
- **22 W/In²**
- **750°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

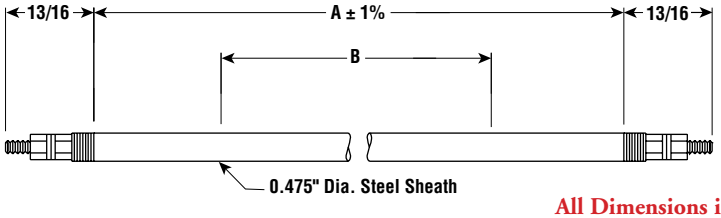
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
2,120	120	22	74	62-1/8	TRSC-7465	NS	175142	1.8
2,120	240	22	74	62-1/8	TRSC-7465	NS	175150	1.8
2,120	480	22	74	62-1/8	TRSC-7465	NS	175169	1.8
2,250	120	22	78	66-1/8	TRSC-7865	NS	175177	1.9
2,250	240	22	78	66-1/8	TRSC-7865	NS	175185	1.9
2,250	480	22	78	66-1/8	TRSC-7865	NS	175193	1.9
2,380	120	22	82	70-1/8	TRSC-8265	NS	175206	2
2,380	240	22	82	70-1/8	TRSC-8265	NS	175214	2
2,380	480	22	82	70-1/8	TRSC-8265	NS	175222	2
2,500	120	22	85	73-1/8	TRSC-8565	NS	175230	2
2,500	240	22	85	73-1/8	TRSC-8565	NS	175249	2
2,500	480	22	85	73-1/8	TRSC-8565	NS	175257	2
2,620	120	22	90	78-1/8	TRSC-9065	NS	175265	2.2
2,620	240	22	90	78-1/8	TRSC-9065	NS	175273	2.2
2,620	480	22	90	78-1/8	TRSC-9065	NS	175281	2.2
2,750	120	22	94	82-1/8	TRSC-9465	NS	175290	2.4
2,750	240	22	94	82-1/8	TRSC-9465	NS	175302	2.4
2,750	480	22	94	82-1/8	TRSC-9465	NS	175310	2.4
2,880	120	22	98	86-1/8	TRSC-9865	NS	175329	2.4
2,880	240	22	98	86-1/8	TRSC-9865	NS	175337	2.4
2,880	480	22	98	86-1/8	TRSC-9865	NS	175345	2.4
3,000	240	22	100	88-1/8	TRSC-10065	NS	175353	2.5
3,000	480	22	100	88-1/8	TRSC-10065	NS	175361	2.5
3,120	240	22	106	94-1/8	TRSC-10665	NS	175370	2.5
3,120	480	22	106	94-1/8	TRSC-10665	NS	175388	2.5
3,334	240	22	108	96-1/8	TRSC-10865	NS	175396	2.5
3,334	480	22	108	96-1/8	TRSC-10865	NS	175409	2.5
2,500	240	22	118	106-1/8	TRSC-11865	NS	175417	2.6
4,167	240	22	134	122-1/8	TRSC-13465	NS	175425	2.6
5,000	240	22	160	148-1/8	TRSC-16065	NS	175433	2.6

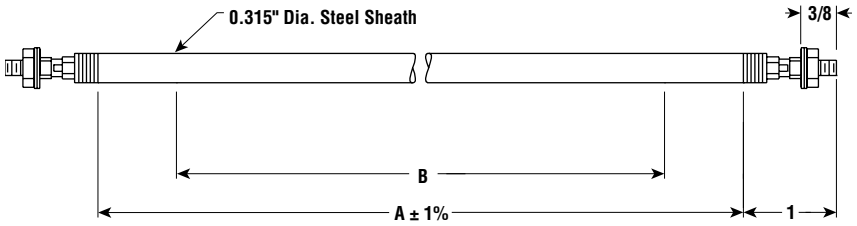
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

TRS
.315" Dia. Round Cross-Section

- **Steel Sheath**
- **200 - 2,175 Watts**
- **120, 240 and 480 Volt**
- **20 W/In²**
- **750°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 15/16". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
200	120	20	16	9-1/4	TRS-1648	NS	176153	0.4
275	120	20	20	13-1/4	TRS-2048	NS	176161	0.4
450	120	20	28	21-1/4	TRS-2848	NS	176170	0.4
450	240	20	28	21-1/4	TRS-2848	NS	176188	0.4
525	120	20	32	25-1/4	TRS-3248	NS	176196	0.8
525	240	20	32	25-1/4	TRS-3248	NS	176209	0.8
600	120	20	36	29-1/4	TRS-3648	NS	176217	0.8
600	240	20	36	29-1/4	TRS-3648	NS	176225	0.8
700	120	20	40	33-1/4	TRS-4048	NS	176233	1
700	240	20	40	33-1/4	TRS-4048	NS	176241	1
825	120	20	46	39-1/4	TRS-4648	NS	176250	1
825	240	20	46	39-1/4	TRS-4648	NS	176268	1
825	480	20	46	39-1/4	TRS-4648	NS	176276	1
950	120	20	52	45-1/4	TRS-5248	NS	176284	1.3
950	240	20	52	45-1/4	TRS-5248	NS	176292	1.3
950	480	20	52	45-1/4	TRS-5248	NS	176305	1.3
1,075	120	20	58	51-1/4	TRS-5848	NS	176313	1.3
1,075	240	20	58	51-1/4	TRS-5848	NS	176321	1.3
1,075	480	20	58	51-1/4	TRS-5848	NS	176330	1.3
1,200	120	20	64	57-1/4	TRS-6448	NS	176348	1.3
1,200	240	20	64	57-1/4	TRS-6448	NS	176356	1.3
1,200	480	20	64	57-1/4	TRS-6448	NS	176364	1.3
1,325	120	20	70	63-1/4	TRS-7048	NS	176372	1.3
1,325	240	20	70	63-1/4	TRS-7048	NS	176380	1.3
1,325	480	20	70	63-1/4	TRS-7048	NS	176399	1.3
1,450	120	20	76	69-1/4	TRS-7648	NS	176401	1.3
1,450	240	20	76	69-1/4	TRS-7648	NS	176410	1.3
1,450	480	20	76	69-1/4	TRS-7648	NS	176428	1.3
1,575	120	20	82	75-1/4	TRS-8248	NS	176436	1.8
1,575	240	20	82	75-1/4	TRS-8248	NS	176444	1.8
1,575	480	20	82	75-1/4	TRS-8248	NS	176452	1.8
1,700	120	20	88	81-1/4	TRS-8848	NS	176460	1.8
1,700	240	20	88	81-1/4	TRS-8848	NS	176479	1.8
1,700	480	20	88	81-1/4	TRS-8848	NS	176487	1.8
1,825	120	20	94	87-1/4	TRS-9448	NS	176495	1.8
1,825	240	20	94	87-1/4	TRS-9448	NS	176508	1.8
1,825	480	20	94	87-1/4	TRS-9448	NS	176516	1.8
1,925	120	20	100	93-1/4	TRS-10048	NS	176524	2.5
1,925	240	20	100	93-1/4	TRS-10048	NS	176532	2.5
1,925	480	20	100	93-1/4	TRS-10048	NS	176540	2.5
2,025	240	20	106	99-1/4	TRS-10648	NS	176559	2.5
2,025	480	20	106	99-1/4	TRS-10648	NS	176567	2.5
2,175	240	20	112	105-1/4	TRS-11248	NS	176575	2.5
2,175	480	20	112	105-1/4	TRS-11248	NS	176583	2.5

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRC & TRCC

.475" Dia. Round Cross-Section

- **Copper Sheath**
- **675 - 2,500 Watts**
- **120, 208, 240 and 480 Volt**
- **50 W/In²**
- **350°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

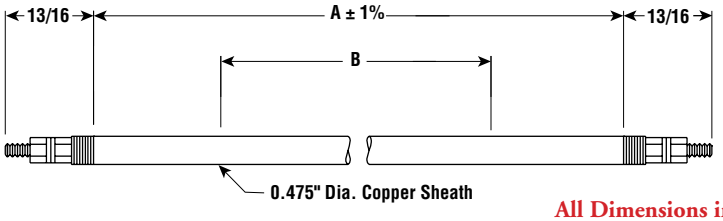
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Copper Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
TRC — 50 W/In²								
675	120	50	16	9-1/8	TRC-1645	NS	173788	0.5
815	120	50	18	11-1/8	TRC-1845	NS	173796	0.5
1,000	120	50	20	13-1/8	TRC-2045	NS	173809	0.5
1,000	208	50	20	13-1/8	TRC-2045	NS	173817	0.5
1,000	240	50	20	13-1/8	TRC-2045	NS	173825	0.5
1,250	120	50	23	16-1/8	TRC-2345	NS	173833	0.5
1,250	208	50	23	16-1/8	TRC-2345	NS	173841	0.5
1,250	240	50	23	16-1/8	TRC-2345	NS	173850	0.5
1,300	120	50	25	18-1/8	TRC-2545	NS	173868	0.5
1,300	240	50	25	18-1/8	TRC-2545	NS	173876	0.5
1,450	120	50	27	20-1/8	TRC-2745	NS	173884	0.5
1,450	240	50	27	20-1/8	TRC-2745	NS	173892	0.5
1,500	120	50	28	21-1/8	TRC-2845	NS	173905	1
1,500	208	50	28	21-1/8	TRC-2845	NS	173913	1
1,500	240	50	28	21-1/8	TRC-2845	NS	173921	1
1,500	480	50	28	21-1/8	TRC-2845	NS	173930	1
1,650	120	50	30	23-1/8	TRC-3045	NS	173948	1
1,650	240	50	30	23-1/8	TRC-3045	NS	173956	1
1,800	120	50	32	25-1/8	TRC-3245	NS	173964	1
1,800	240	50	32	25-1/8	TRC-3245	NS	173972	1
1,950	120	50	34	27-1/8	TRC-3445	NS	173980	1
1,950	240	50	34	27-1/8	TRC-3445	NS	173999	1
2,100	120	50	36	29-1/8	TRC-3645	NS	174000	1
2,100	240	50	36	29-1/8	TRC-3645	NS	174019	1
2,200	120	50	38	31-1/8	TRC-3845	NS	174027	1
2,200	240	50	38	31-1/8	TRC-3845	NS	174035	1
TRC — 50 W/In²								
2,000	120	50	40	28-1/8	TRCC-4065	NS	174043	1.3
2,000	208	50	40	28-1/8	TRCC-4065	NS	174051	1.3
2,000	240	50	40	28-1/8	TRCC-4065	NS	174060	1.3
2,000	480	50	40	28-1/8	TRCC-4065	NS	174078	1.3
2,350	120	50	41	29-1/8	TRCC-4165	NS	174086	1.3
2,350	240	50	41	29-1/8	TRCC-4165	NS	174094	1.3
2,500	120	50	43-9/16	31-11/16	TRCC-4365	NS	174107	1.3
2,500	208	50	43-9/16	31-11/16	TRCC-4365	NS	174115	1.3
2,500	240	50	43-9/16	31-11/16	TRCC-4365	NS	174123	1.3
2,500	480	50	43-9/16	31-11/16	TRCC-4365	NS	174131	1.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TRCC

.475" Dia. Round Cross-Section

- **Copper Sheath**
- **2,600 - 10,000 Watts**
- **120, 208, 240 and 480 Volt**
- **40 - 50 W/In²**
- **350°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

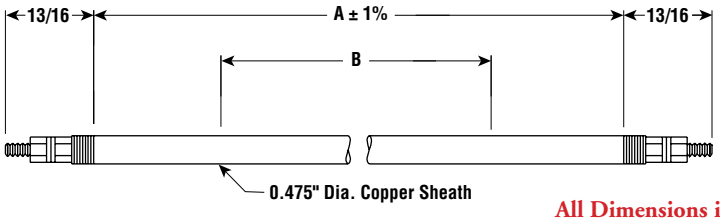
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Copper Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
2,600	120	50	44	32-1/8	TRCC-4465	NS	174140	1.3
2,600	240	50	44	32-1/8	TRCC-4465	NS	174158	1.3
2,700	120	50	46	34-1/8	TRCC-4665	NS	174166	1.3
2,700	240	50	46	34-1/8	TRCC-4665	NS	174174	1.3
2,800	120	50	48	36-1/8	TRCC-4865	NS	174182	1.3
2,800	240	50	48	36-1/8	TRCC-4865	NS	174190	1.3
2,900	120	50	50	38-1/8	TRCC-5065	NS	174203	1.8
2,900	240	50	50	38-1/8	TRCC-5065	NS	174211	1.8
3,000	208	50	54-1/4	42-3/8	TRCC-5465	NS	174220	1.8
3,000	240	50	54-1/4	42-3/8	TRCC-5465	NS	174238	1.8
3,000	480	50	54-1/4	42-3/8	TRCC-5465	NS	174246	1.8
3,250	240	50	58	46-1/8	TRCC-5865	NS	174254	1.8
3,250	480	50	58	46-1/8	TRCC-5865	NS	174262	1.8
3,500	240	50	60	48-1/8	TRCC-6065	NS	174270	1.8
3,500	480	50	60	48-1/8	TRCC-6065	NS	174289	1.8
3,750	240	50	66	51-1/8	TRCC-6665	NS	174297	1.8
3,750	480	50	66	51-1/8	TRCC-6665	NS	174300	1.8
4,000	208	50	70	58-1/8	TRCC-7065	NS	174318	1.8
4,000	240	50	70	58-1/8	TRCC-7065	NS	174326	1.8
4,000	480	50	70	58-1/8	TRCC-7065	NS	174334	1.8
4,250	240	50	74	62-1/8	TRCC-7465	NS	174342	2.3
4,250	480	50	74	62-1/8	TRCC-7465	NS	174350	2.3
4,500	240	50	78	66-1/8	TRCC-7865	NS	174369	2.3
4,500	480	50	78	66-1/8	TRCC-7865	NS	174377	2.3
4,750	240	50	82	70-1/8	TRCC-8265	NS	174385	2.3
4,750	480	50	82	70-1/8	TRCC-8265	NS	174393	2.3
5,000	208	50	85	73-1/8	TRCC-8565	NS	174406	2.3
5,000	240	50	85	73-1/8	TRCC-8565	NS	174414	2.3
5,000	480	50	85	73-1/8	TRCC-8565	NS	174422	2.3
5,250	240	50	90	78-1/8	TRCC-9065	NS	174430	2.3
5,250	480	50	90	78-1/8	TRCC-9065	NS	174449	2.3
5,500	240	50	94	82-1/8	TRCC-9465	NS	174457	2.3
5,500	480	50	94	82-1/8	TRCC-9465	NS	174465	2.3
5,750	240	50	98	86-1/8	TRCC-9865	NS	174473	3.3
5,750	480	50	98	86-1/8	TRCC-9865	NS	174481	3.3
6,000	208	50	100	88-1/8	TRCC-10065	NS	174490	3.3
6,000	240	50	100	88-1/8	TRCC-10065	NS	174502	3.3
6,000	480	50	100	88-1/8	TRCC-10065	NS	174510	3.3
6,667	208	50	108	96-1/8	TRCC-10865	NS	174529	3.3
6,667	240	50	108	96-1/8	TRCC-10865	NS	174537	3.3
6,667	480	50	108	96-1/8	TRCC-10865	NS	174545	3.3
8,334	480	50	134	122-1/8	TRCC-13465	NS	174553	4.3
10,000	480	50	160	148-1/8	TRCC-16065	NS	174561	4.3
2,778	240	50	60	44-3/8	TRCC-6085	NS	174570	1.8
4,166	240	50	78	62-3/8	TRCC-7885	NS	174588	2
5,556	240	50	92	76-5/8	TRCC-9285	NS	174596	3

Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity.

TRC

.315" Dia. Round Cross-Section

- **Copper Sheath**
- **500 - 5,475 Watts**
- **120, 240 and 480 Volt**
- **53 W/In²**
- **350°F Max. Sheath Temp.**

Applications

Versatile tubular elements can be designed for use in most applications. See guidelines in the Tubular Heater Overview section.

Advantages

The metal sheath isolates and protects the resistor wire from the environment. At the same time it maximizes heat transfer capability to the work. Tubular elements can be bent to put the heat where it works best.

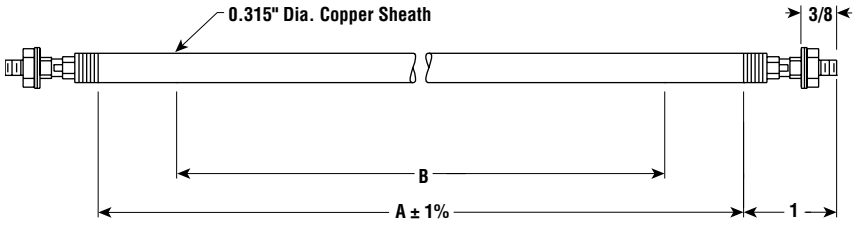
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 15/16". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Copper Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
500	120	53	16	9-1/4	TRC-1648	NS	175775	0.4
700	120	53	20	13-1/4	TRC-2048	NS	175783	0.4
700	240	53	20	13-1/4	TRC-2048	NS	175791	0.4
1,125	120	53	28	21-1/4	TRC-2848	NS	175804	0.8
1,125	240	53	28	21-1/4	TRC-2848	NS	175812	0.8
1,325	120	53	32	25-1/4	TRC-3248	NS	175820	0.8
1,325	240	53	32	25-1/4	TRC-3248	NS	175839	0.8
1,525	120	53	36	29-1/4	TRC-3648	NS	175847	0.8
1,525	240	53	36	29-1/4	TRC-3648	NS	175855	0.8
1,725	120	53	40	33-1/4	TRC-4048	NS	175863	1
1,725	240	53	40	33-1/4	TRC-4048	NS	175871	1
2,050	120	53	46	39-1/4	TRC-4648	NS	175880	1
2,050	240	53	46	39-1/4	TRC-4648	NS	175898	1
2,050	480	53	46	39-1/4	TRC-4648	NS	175900	1
2,350	120	53	52	45-1/4	TRC-5248	NS	175919	1.3
2,350	240	53	52	45-1/4	TRC-5248	NS	175927	1.3
2,350	480	53	52	45-1/4	TRC-5248	NS	175935	1.3
2,675	120	53	58	51-1/4	TRC-5848	NS	175943	1.3
2,675	240	53	58	51-1/4	TRC-5848	NS	175951	1.3
2,675	480	53	58	51-1/4	TRC-5848	NS	177594	1.3
2,975	120	53	64	57-1/4	TRC-6448	NS	175960	1.3
2,975	240	53	64	57-1/4	TRC-6448	NS	175978	1.3
2,975	480	53	64	57-1/4	TRC-6448	NS	175986	1.3
3,300	240	53	70	63-1/4	TRC-7048	NS	175994	1.3
3,300	480	53	70	63-1/4	TRC-7048	NS	176006	1.3
3,600	240	53	76	69-1/4	TRC-7648	NS	176014	1.3
3,600	480	53	76	69-1/4	TRC-7648	NS	176022	1.3
3,900	240	53	82	75-1/4	TRC-8248	NS	176030	1.8
3,900	480	53	82	75-1/4	TRC-8248	NS	176049	1.8
4,225	240	53	88	81-1/4	TRC-8848	NS	176057	1.8
4,225	480	53	88	81-1/4	TRC-8848	NS	176065	1.8
4,525	240	53	94	87-1/4	TRC-9448	NS	176073	1.8
4,525	480	53	94	87-1/4	TRC-9448	NS	176081	1.8
4,850	240	53	100	93-1/4	TRC-10048	NS	176090	2.5
4,850	480	53	100	93-1/4	TRC-10048	NS	176102	2.5
5,150	240	53	106	99-1/4	TRC-10648	NS	176110	2.5
5,150	480	53	106	99-1/4	TRC-10648	NS	176129	2.5
5,475	240	53	112	105-1/4	TRC-11248	NS	176137	2.5
5,475	480	53	112	105-1/4	TRC-11248	NS	176145	2.5

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TI

1/2" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **450 - 2,500 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

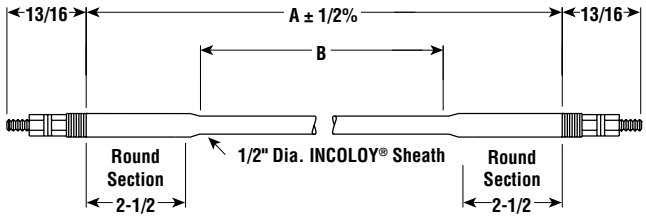
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 2-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
450	120	30	16	9-1/2	TI-1645	NS	144160	0.5
540	120	30	18	11-1/2	TI-1845	NS	144178	0.5
635	120	30	20	13-1/2	TI-2045	NS	144186	0.5
750	120	30	23	16-1/2	TI-2345	NS	144194	0.5
750	240	30	23	16-1/2	TI-2345	NS	144207	0.5
825	120	30	25	18-1/2	TI-2545	NS	171600	0.5
825	240	30	25	18-1/2	TI-2545	NS	144215	0.5
900	120	30	27	20-1/2	TI-2745	NS	171619	0.5
900	240	30	27	20-1/2	TI-2745	NS	144223	0.5
1,000	120	30	28	21-1/2	TI-2845	NS	144231	1
1,000	240	30	28	21-1/2	TI-2845	NS	144240	1
1,100	120	30	30	23-1/2	TI-3045	NS	171627	1
1,100	240	30	30	23-1/2	TI-3045	NS	144258	1
1,200	120	30	32	25-1/2	TI-3245	NS	171635	1
1,200	240	30	32	25-1/2	TI-3245	NS	144493	1
1,275	120	30	34	27-1/2	TI-3445	NS	171643	1
1,275	240	30	34	27-1/2	TI-3445	NS	144266	1
1,350	120	30	36	29-1/2	TI-3645	NS	171651	1
1,350	240	30	36	29-1/2	TI-3645	NS	144274	1
1,425	120	30	38	31-1/2	TI-3845	NS	171660	1
1,425	240	30	38	31-1/2	TI-3845	NS	144282	1
1,500	120	30	40	33-1/2	TI-4045	NS	144290	1.3
1,500	240	30	40	33-1/2	TI-4045	NS	144303	1.3
1,650	120	30	43-1/2	37	TI-4345	NS	171678	1.3
1,650	240	30	43-1/2	37	TI-4345	NS	144311	1.3
1,725	120	30	44	37-1/2	TI-4445	NS	171686	1.3
1,725	240	30	44	37-1/2	TI-4445	NS	144320	1.3
1,800	120	30	46	39-1/2	TI-4645	NS	171694	1.3
1,800	240	30	46	39-1/2	TI-4645	NS	144338	1.3
1,875	120	30	48	41-1/2	TI-4845	NS	171707	1.3
1,875	240	30	48	41-1/2	TI-4845	NS	144346	1.3
1,950	120	30	50	43-1/2	TI-5045	NS	171715	1.3
1,950	240	30	50	43-1/2	TI-5045	NS	144354	1.3
1,950	480	30	50	43-1/2	TI-5045	NS	171723	1.3
2,000	120	30	54-1/4	47-3/8	TI-5445	NS	144362	1.8
2,000	240	30	54-1/4	47-3/8	TI-5445	NS	144370	1.8
2,000	480	30	54-1/4	47-3/8	TI-5445	NS	171731	1.8
2,250	120	30	58	51-1/2	TI-5845	NS	171740	1.8
2,250	240	30	58	51-1/2	TI-5845	NS	144389	1.8
2,250	480	30	58	51-1/2	TI-5845	NS	171758	1.8
2,500	120	30	60	53-1/2	TI-6045	NS	171766	1.8
2,500	240	30	60	53-1/2	TI-6045	NS	144397	1.8
2,500	480	30	60	53-1/2	TI-6045	NS	171774	1.8

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TI

1/2" Dia. Heart Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **2,750 - 6,750 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

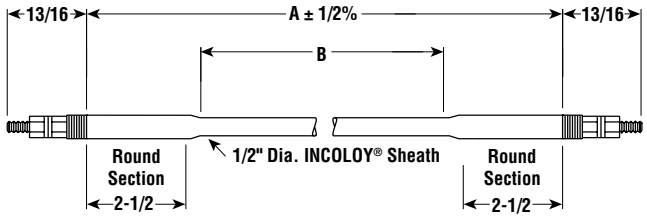
Features

Type 4 Terminals — Standard. Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 2-1/2". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
2,750	120	30	66	59-1/2	TI-6645	NS	171782	1.8
2,750	240	30	66	59-1/2	TI-6645	NS	144400	1.8
2,750	480	30	66	59-1/2	TI-6645	NS	171790	1.8
3,000	120	30	70	63-1/2	TI-7045	NS	171803	1.8
3,000	240	30	70	63-1/2	TI-7045	NS	144418	1.8
3,000	480	30	70	63-1/2	TI-7045	NS	171811	1.8
3,125	120	30	74	67-1/2	TI-7445	NS	171820	1.8
3,125	240	30	74	67-1/2	TI-7445	NS	144426	1.8
3,125	480	30	74	67-1/2	TI-7445	NS	171838	1.8
3,250	120	30	78	71-1/2	TI-7845	NS	171846	2.3
3,250	240	30	78	71-1/2	TI-7845	NS	144434	2.3
3,250	480	30	78	71-1/2	TI-7845	NS	171854	2.3
3,375	240	30	82	75-1/2	TI-8245	NS	144442	2.3
3,375	480	30	82	75-1/2	TI-8245	NS	171862	2.3
3,500	240	30	85	78-1/2	TI-8545	NS	144450	2.3
3,500	480	30	85	78-1/2	TI-8545	NS	171870	2.3
3,625	240	30	90	83-1/2	TI-9045	NS	171889	2.3
3,625	480	30	90	83-1/2	TI-9045	NS	171897	2.3
3,750	240	30	94	87-1/2	TI-9445	NS	171900	2.3
3,750	480	30	94	87-1/2	TI-9445	NS	171918	2.3
3,875	240	30	98	91-1/2	TI-9845	NS	171926	2.3
3,875	480	30	98	91-1/2	TI-9845	NS	171934	2.3
4,000	240	30	100	93-1/2	TI-10045	NS	144469	3.3
4,000	480	30	100	93-1/2	TI-10045	NS	171942	3.3
4,500	240	30	108	101-1/2	TI-10845	NS	144477	3.3
4,500	480	30	108	101-1/2	TI-10845	NS	171950	3.3
4,750	240	30	112	105-1/2	TI-11245	NS	144485	3.3
4,750	480	30	112	105-1/2	TI-11245	NS	171969	3.3
5,000	240	30	118	111-1/2	TI-11845	NS	171977	3.3
5,000	480	30	118	111-1/2	TI-11845	NS	171985	3.3
5,250	240	30	130	123-1/2	TI-13045	NS	171993	3.3
5,250	480	30	130	123-1/2	TI-13045	NS	172005	3.3
5,500	240	30	136	129-1/2	TI-13645	NS	172013	3.3
5,500	480	30	136	129-1/2	TI-13645	NS	172021	3.3
5,750	240	30	142	135-1/2	TI-14245	NS	172030	4.3
5,750	480	30	142	135-1/2	TI-14245	NS	172048	4.3
6,000	480	30	148	141-1/2	TI-14845	NS	172056	4.3
6,250	480	30	156	149-1/2	TI-15645	NS	172064	4.3
6,500	480	30	164	157-1/2	TI-16445	NS	172072	4.3
6,750	480	30	172	165-1/2	TI-17245	NS	172080	4.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

TUBULAR

TI

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **300 - 1,850 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

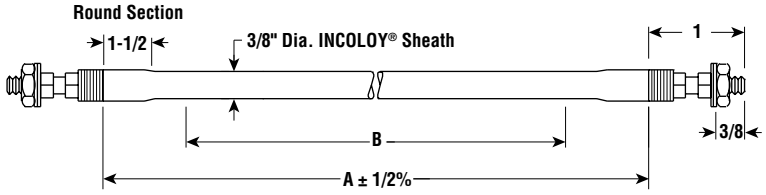
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See bending inside requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Sheath B	INCOLOY® Sheath Model	INCOLOY® Sheath Stock	INCOLOY® Sheath PCN	Wt. (Lbs.)
300	120	30	16	9-1/2	TI-1648	NS	282263	0.4
350	120	30	18	11-1/2	TI-1848	NS	282271	0.4
450	120	30	20	13-1/2	TI-2048	NS	282280	0.4
500	120	30	22	15-1/2	TI-2248	NS	282298	0.4
650	120	30	25	18-1/2	TI-2548	NS	282300	0.4
650	240	30	25	18-1/2	TI-2548	NS	282319	0.4
700	120	30	27	20-1/2	TI-2748	NS	282327	0.4
700	240	30	27	20-1/2	TI-2748	NS	282335	0.4
750	120	30	28	21-1/2	TI-2848	NS	282343	0.8
750	240	30	28	21-1/2	TI-2848	NS	282351	0.8
800	120	30	30	23-1/2	TI-3048	NS	282360	0.8
800	240	30	30	23-1/2	TI-3048	NS	282370	0.8
850	120	30	32	25-1/2	TI-3248	NS	282386	0.8
850	240	30	32	25-1/2	TI-3248	NS	282394	0.8
900	120	30	34	27-1/2	TI-3448	NS	282407	0.8
900	240	30	34	27-1/2	TI-3448	NS	282415	0.8
1,000	120	30	36	29-1/2	TI-3648	NS	282423	0.8
1,000	240	30	36	29-1/2	TI-3648	NS	282431	0.8
1,050	120	30	38	31-1/2	TI-3848	NS	282440	0.8
1,050	240	30	38	31-1/2	TI-3848	NS	282458	0.8
1,100	120	30	40	33-1/2	TI-4048	NS	282466	1
1,100	240	30	40	33-1/2	TI-4048	NS	282474	1
1,200	120	30	42	35-1/2	TI-4248	NS	282482	1
1,200	240	30	42	35-1/2	TI-4248	NS	282490	1
1,250	120	30	44	37-1/2	TI-4448	NS	282503	1
1,250	240	30	44	37-1/2	TI-4448	NS	282511	1
1,300	120	30	46	39-1/2	TI-4648	NS	282520	1
1,300	240	30	46	39-1/2	TI-4648	NS	282538	1
1,350	120	30	48	41-1/2	TI-4848	NS	282546	1
1,350	240	30	48	41-1/2	TI-4848	NS	282554	1
1,450	120	30	50	43-1/2	TI-5048	NS	282562	1
1,450	240	30	50	43-1/2	TI-5048	NS	282570	1
1,450	480	30	50	43-1/2	TI-5048	NS	173462	1
1,550	120	30	54	47-1/2	TI-5448	NS	282589	1.3
1,550	240	30	54	47-1/2	TI-5448	NS	282597	1.3
1,550	480	30	54	47-1/2	TI-5448	NS	173470	1.3
1,700	120	30	58	51-1/2	TI-5848	NS	282600	1.3
1,700	240	30	58	51-1/2	TI-5848	NS	282618	1.3
1,700	480	30	58	51-1/2	TI-5848	NS	173489	1.3
1,850	120	30	62	55-1/2	TI-6248	NS	282626	1.3
1,850	240	30	62	55-1/2	TI-6248	NS	282634	1.3
1,850	480	30	62	55-1/2	TI-6248	NS	173497	1.3

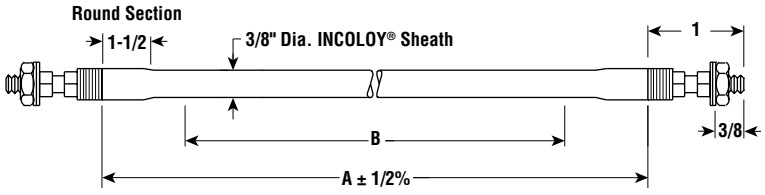
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TI

3/8" Dia. Heart Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **1,950 - 5,350 Watts**
- **120, 240 and 480 Volt**
- **30 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

High element surface temperature clamp-on, or air heating applications, or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
1,950	120	30	66	59-1/2	TI-6648	NS	282642	1.3
1,950	240	30	66	59-1/2	TI-6648	NS	282650	1.3
1,950	480	30	66	59-1/2	TI-6648	NS	173500	1.3
2,100	120	30	70	63-1/2	TI-7048	NS	282669	1.3
2,100	240	30	70	63-1/2	TI-7048	NS	282677	1.3
2,100	480	30	70	63-1/2	TI-7048	NS	173518	1.3
2,250	120	30	74	67-1/2	TI-7448	NS	173526	1.3
2,250	240	30	74	67-1/2	TI-7448	NS	282685	1.3
2,250	480	30	74	67-1/2	TI-7448	NS	173534	1.3
2,350	120	30	78	71-1/2	TI-7848	NS	173542	1.8
2,350	240	30	78	71-1/2	TI-7848	NS	282693	1.8
2,350	480	30	78	71-1/2	TI-7848	NS	173550	1.8
2,500	240	30	82	75-1/2	TI-8248	NS	282706	1.8
2,500	480	30	82	75-1/2	TI-8248	NS	173569	1.8
2,600	240	30	86	79-1/2	TI-8648	NS	282714	1.8
2,600	480	30	86	79-1/2	TI-8648	NS	173577	1.8
2,750	240	30	90	83-1/2	TI-9048	NS	282722	1.8
2,750	480	30	90	83-1/2	TI-9048	NS	173585	1.8
2,900	240	30	94	87-1/2	TI-9448	NS	282730	1.8
2,900	480	30	94	87-1/2	TI-9448	NS	173593	1.8
3,000	240	30	98	91-1/2	TI-9848	NS	282749	1.8
3,000	480	30	98	91-1/2	TI-9848	NS	173606	1.8
3,150	240	30	102	95-1/2	TI-10248	NS	282757	2.5
3,150	480	30	102	95-1/2	TI-10248	NS	173614	2.5
3,300	240	30	106	99-1/2	TI-10648	NS	282765	2.5
3,300	480	30	106	99-1/2	TI-10648	NS	173622	2.5
3,500	240	30	112	105-1/2	TI-11248	NS	282773	2.5
3,500	480	30	112	105-1/2	TI-11248	NS	173630	2.5
3,650	240	30	118	111-1/2	TI-11848	NS	173649	2.5
3,650	480	30	118	111-1/2	TI-11848	NS	173657	2.5
3,900	240	30	124	117-1/2	TI-12448	NS	173665	2.5
3,900	480	30	124	117-1/2	TI-12448	NS	173673	2.5
4,100	240	30	130	123-1/2	TI-13048	NS	173681	2.5
4,100	480	30	130	123-1/2	TI-13048	NS	173690	2.5
4,300	240	30	136	129-1/2	TI-13648	NS	173702	3.8
4,300	480	30	136	129-1/2	TI-13648	NS	173710	3.8
4,500	240	30	142	135-1/2	TI-14248	NS	173729	3.8
4,500	480	30	142	135-1/2	TI-14248	NS	173737	3.8
4,700	480	30	148	141-1/2	TI-14848	NS	173745	3.8
4,950	480	30	156	149-1/2	TI-15648	NS	173753	3.8
5,200	480	30	164	157-1/2	TI-16448	NS	173761	3.8
5,350	480	30	172	165-1/2	TI-17248	NS	173770	3.8

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

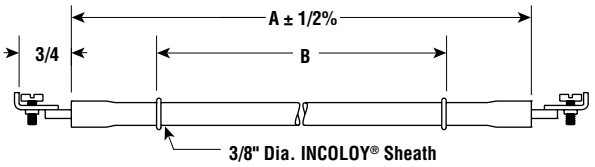
Click Here for Quote!

RTU

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **400 - 2,500 Watts**
- **120, 208, 240, 275 and 480 Volt**
- **40 W/In²**
- **1-1/2" Cold End (400 - 650 Watts)**
- **2-1/8" Cold End (800 - 2,500 Watts)**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type RAD and RADD)**

Dimensions



All Dimensions in Inches

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Type 8 Terminals — Standard with threaded clip to facilitate wiring.

Retaining Rings locate elements in radiant heater assemblies.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
400	120	40	10-1/4	7-1/4	RTU-2063AX35	NS	147766	0.8
650	120	40	16-5/8	13-5/8	RTU-2063AX29	NS	147774	0.8
800	120	40	21-1/16	16-3/16	RTU-2083A	NS	106112	0.8
800	208	40	21-1/16	16-3/16	RTU-2083AV	NS	106120	0.8
800	240	40	21-1/16	16-3/16	RTU-2083A	NS	106139	0.8
800	275	40	21-1/16	16-3/16	RTU-2083AV	NS	106147	0.8
1,100	120	40	27-5/32	22-29/32	RTU-3113A	NS	106155	1
1,100	208	40	27-5/32	22-29/32	RTU-3113AV	NS	106163	1
1,100	240	40	27-5/32	22-29/32	RTU-3113A	NS	106171	1
1,100	275	40	27-5/32	22-29/32	RTU-3113AV	NS	106180	1
1,300	208	40	32-1/8	27-7/8	RTU-3133AV	NS	147782	1
1,300	240	40	32-1/8	27-7/8	RTU-3133A	NS	108409	1
1,300	275	40	32-1/8	27-7/8	RTU-3133AV	NS	147790	1
1,300	480	40	32-1/8	27-7/8	RTU-3133A	NS	108396	1
1,800	208	40	42-27/32	38-19/32	RTU-4183AV	NS	106198	1.3
1,800	240	40	42-27/32	38-19/32	RTU-4183A	NS	106200	1.3
1,800	275	40	42-27/32	38-19/32	RTU-4183AV	NS	106219	1.3
1,800	480	40	42-27/32	38-19/32	RTU-4183A	NS	106227	1.3
2,150	208	40	50-1/32	45-17/32	RTU-5213AV	NS	147803	1.4
2,150	240	40	50-1/32	45-17/32	RTU-5213A	NS	147820	1.4
2,150	275	40	50-1/32	45-17/32	RTU-5213AV	NS	147811	1.4
2,150	480	40	50-1/32	45-17/32	RTU-5213A	NS	147838	1.4
2,500	208	40	57-15/32	53-7/32	RTU-5253AV	NS	106235	1.5
2,500	240	40	57-15/32	53-7/32	RTU-5253A	NS	106243	1.5
2,500	275	40	57-15/32	53-7/32	RTU-5253AV	NS	106251	1.5
2,500	480	40	57-15/32	53-7/32	RTU-5253A	NS	106260	1.5
2,500	480	40	57-15/32	53-7/32	RTU-5253M	NS	147846	1.5

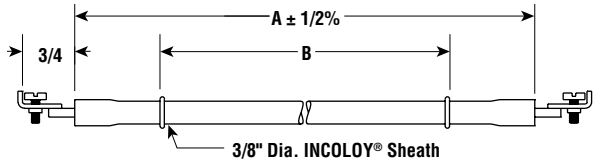
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

RTU

3/8" Dia. Heart Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **2,700 - 6,500 Watts**
- **208, 240, 275 and 480 Volt**
- **40 W/In²**
- **2-1/8, 3-3/8 and 4" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (Type RAD and RADD)**

Dimensions



All Dimensions in Inches

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Type 8 Terminals — Standard with threaded clip to facilitate wiring.

Retaining Rings locate elements in radiant heater assemblies.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

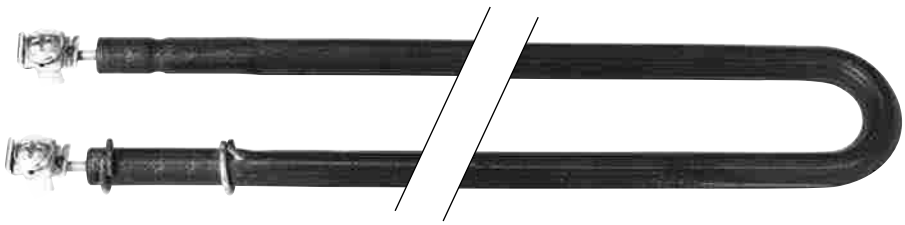
Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
2-1/8" Cold End								
2,700	208	40	61-27/32	57-11/32	RTU-6273AV	NS	147854	1.6
2,700	240	40	61-27/32	57-11/32	RTU-6273A	NS	147870	1.6
2,700	275	40	61-27/32	57-11/32	RTU-6273AV	NS	147862	1.6
2,700	480	40	61-27/32	57-11/32	RTU-6273A	NS	147889	1.6
3,000	208	40	69-1/4	65	RTU-6303AV	NS	106278	1.8
3,000	240	40	69-1/4	65	RTU-6303A	NS	106286	1.8
3,000	275	40	69-1/4	65	RTU-6303AV	NS	106294	1.8
3,000	480	40	69-1/4	65	RTU-6303A	NS	106307	1.8
3,000	480	40	69-1/4	65	RTU-6303M	NS	147897	1.8
3,350	208	40	75-21/32	71-5/32	RTU-7333AV	NS	147900	1.8
3,350	240	40	75-21/32	71-5/32	RTU-7333A	NS	147926	1.8
3,350	275	40	75-21/32	71-5/32	RTU-7333AV	NS	147918	1.8
3,350	480	40	75-21/32	71-5/32	RTU-7333A	NS	147934	1.8
3,600	208	40	81-9/32	77-1/32	RTU-7363AV	NS	106315	2
3,600	240	40	81-9/32	77-1/32	RTU-7363A	NS	106323	2
3,600	275	40	81-9/32	77-1/32	RTU-7363AV	NS	106331	2
3,600	480	40	81-9/32	77-1/32	RTU-7363A	NS	106340	2
3,600	480	40	81-9/32	77-1/32	RTU-7363M	NS	147942	2
4,500	208	40	100-1/2	96	RTU-8453AV	NS	147950	3.5
4,500	240	40	100-1/2	96	RTU-8453A	NS	147977	3.5
4,500	275	40	100-1/2	96	RTU-8453AV	NS	147967	3.5
4,500	480	40	100-1/2	96	RTU-8453A	NS	147985	3.5
4,000	240	40	109-1/4	105	RTU-7303AX10	NS	106358	4
3-3/8" Cold End								
5,000	240	40	134-1/2	127-3/4	RTU-7303AX13	NS	106366	5
4" Cold End								
5,500	240	40	153-7/8	145-7/8	RTU-7303AX9A	NS	106374	6
6,500	240	40	179-1/4	171-1/4	RTU-7363AX38	NS	106382	8

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

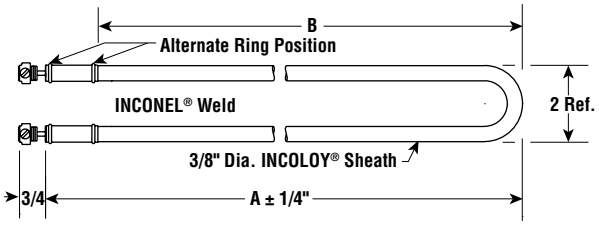
UTU

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **800 - 3,600 Watts**
- **120, 208, 240, 275 and 480 Volt**
- **40 W/In²**
- **2-1/8" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (Type U-RAD, DU-RAD and RUTU)**



Dimensions



All Dimensions in Inches

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Type 8 Terminals — Standard with threaded clip to facilitate wiring.

Retaining Rings locate elements in radiant heater assemblies.

Work Temperatures — See Tubular Heater Overview section.

Bending — Lengthwise only. See bending requirements Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
800	120	40	10-1/2	8-3/8	UTU-2	NS	106438	0.8
800	208	40	10-1/2	8-3/8	UTU-2V	NS	106446	0.8
800	240	40	10-1/2	8-3/8	UTU-2	NS	106454	0.8
800	275	40	10-1/2	8-3/8	UTU-2V	NS	106462	0.8
1,100	120	40	13-9/16	11-7/16	UTU-3	NS	106470	1
1,100	208	40	13-9/16	11-7/16	UTU-3V	NS	106489	1
1,100	240	40	13-9/16	11-7/16	UTU-3	NS	106497	1
1,100	275	40	13-9/16	11-7/16	UTU-3V	NS	106500	1
1,800	208	40	21-5/16	19-3/16	UTU-4V	NS	106518	1.3
1,800	240	40	21-5/16	19-3/16	UTU-4	NS	106526	1.3
1,800	275	40	21-5/16	19-3/16	UTU-4V	NS	106534	1.3
1,800	480	40	21-5/16	19-3/16	UTU-4	NS	106542	1.3
2,500	208	40	28-11/16	26-9/16	UTU-5V	NS	106550	1.5
2,500	240	40	28-11/16	26-9/16	UTU-5	NS	106569	1.5
2,500	275	40	28-11/16	26-9/16	UTU-5V	NS	106577	1.5
2,500	480	40	28-11/16	26-9/16	UTU-5	NS	106585	1.5
3,000	208	40	34-9/16	32-7/16	UTU-6V	NS	106593	1.8
3,000	240	40	34-9/16	32-7/16	UTU-6	NS	106606	1.8
3,000	275	40	34-9/16	32-7/16	UTU-6V	NS	106614	1.8
3,000	480	40	34-9/16	32-7/16	UTU-6	NS	106622	1.8
3,600	208	40	40-9/16	38-7/16	UTU-7V	NS	106630	2
3,600	240	40	40-9/16	38-7/16	UTU-7	NS	106649	2
3,600	275	40	40-9/16	38-7/16	UTU-7V	NS	106657	2
3,600	480	40	40-9/16	38-7/16	UTU-7	NS	106665	2

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

UTU

3/8" Dia. Heart Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **1,600 - 3,950 Watts**
- **120, 208, 275 and 480 Volt**
- **40 W/In²**
- **2-3/4" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type DU-RAD)**

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

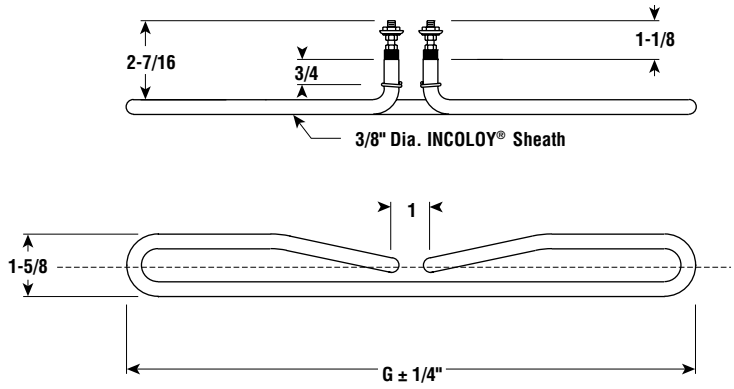
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Retaining Rings locate elements in radiant heater assemblies.

Work Temperatures — See Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	G - DIM (In.)	INCOLOY® Sheath			Wt. (Lbs.)
				Model	Stock	PCN	
1,600	120	40	18-5/16	UTU-40	NS	147002	1
1,600	208	40	18-5/16	UTU-40V	NS	147029	1
1,600	240	40	18-5/16	UTU-40	NS	147010	1
1,600	275	40	18-5/16	UTU-40V	NS	147037	1
1,970	120	40	22-13/16	UTU-48	NS	147045	1
1,970	208	40	22-13/16	UTU-48V	NS	147061	1
1,970	240	40	22-13/16	UTU-48	NS	147053	1
1,970	275	40	22-13/16	UTU-48V	NS	147070	1
2,440	120	40	27-13/16	UTU-58	NS	147088	2
2,440	208	40	27-13/16	UTU-58V	NS	147117	2
2,440	240	40	27-13/16	UTU-58	NS	147096	2
2,440	275	40	27-13/16	UTU-58V	NS	147125	2
2,440	480	40	27-13/16	UTU-58	NS	147109	2
2,820	120	40	31-13/16	UTU-66	NS	147133	2
2,820	208	40	31-13/16	UTU-66V	NS	147168	2
2,820	240	40	31-13/16	UTU-66	NS	147141	2
2,820	275	40	31-13/16	UTU-66V	NS	147176	2
2,820	480	40	31-13/16	UTU-66	NS	147150	2
3,190	120	40	35-13/16	UTU-74	NS	147184	2
3,190	208	40	35-13/16	UTU-74V	NS	147221	2
3,190	240	40	35-13/16	UTU-74	NS	147192	2
3,190	275	40	35-13/16	UTU-74V	NS	147230	2
3,190	480	40	35-13/16	UTU-74	NS	147205	2
3,570	208	40	39-7/8	UTU-82V	NS	147248	2
3,570	240	40	39-7/8	UTU-82	NS	147264	2
3,570	275	40	39-7/8	UTU-82V	NS	147256	2
3,570	480	40	39-7/8	UTU-82	NS	147272	2
3,950	208	40	43-7/8	UTU-90V	NS	147280	2
3,950	240	40	43-7/8	UTU-90	NS	147301	2
3,950	275	40	43-7/8	UTU-90V	NS	147299	2
3,950	480	40	43-7/8	UTU-90	NS	147310	2

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

UTU

3/8" Dia. Heart Cross-Section *(cont'd.)*

- **INCOLOY® Sheath**
- **4,520 - 7,830 Watts**
- **208, 240, 275 and 480 Volt**
- **40 W/In²**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type DU-RAD)**

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

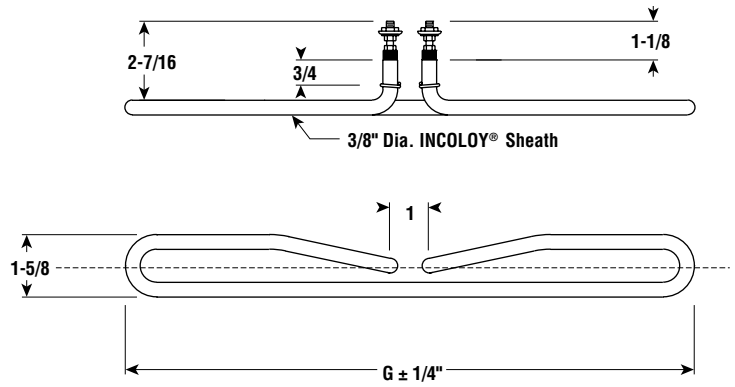
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Retaining Rings locate elements in radiant heater assemblies.

Bending — Lengthwise only. See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	G - DIM (In.)	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
4,520	208	40	49-7/8	UTU-102V	NS	147328	2
4,520	240	40	49-7/8	UTU-102	NS	147344	2
4,520	275	40	49-7/8	UTU-102V	NS	147336	2
4,520	480	40	49-7/8	UTU-102	NS	147352	2
4,990	208	40	54-7/8	UTU-112V	NS	147360	3
4,990	240	40	54-7/8	UTU-112	NS	147387	3
4,990	275	40	54-7/8	UTU-112V	NS	147379	3
4,990	480	40	54-7/8	UTU-112	NS	147395	3
5,560	208	40	60-15/16	UTU-124V	NS	147408	3
5,560	240	40	60-15/16	UTU-124	NS	147424	3
5,560	275	40	60-15/16	UTU-124V	NS	147416	3
5,560	480	40	60-15/16	UTU-124	NS	147432	3
6,130	208	40	66-15/16	UTU-136V	NS	147440	3
6,130	240	40	66-15/16	UTU-136	NS	147467	3
6,130	275	40	66-15/16	UTU-136V	NS	147459	3
6,130	480	40	66-15/16	UTU-136	NS	147475	3
6,700	208	40	72-15/16	UTU-148V	NS	147483	4
6,700	240	40	72-15/16	UTU-148	NS	147504	4
6,700	275	40	72-15/16	UTU-148V	NS	147491	4
6,700	480	40	72-15/16	UTU-148	NS	147512	4
7,100	208	40	77	UTU-156V	NS	147520	4
7,100	240	40	77	UTU-156	NS	147547	4
7,100	275	40	77	UTU-156V	NS	147539	4
7,100	480	40	77	UTU-156	NS	147555	4
7,450	240	40	81	UTU-164	NS	147580	4
7,450	275	40	81	UTU-164V	NS	147571	4
7,450	480	40	81	UTU-164	NS	147598	4
7,830	208	40	85-1/16	UTU-172V	NS	147600	5
7,830	240	40	85-1/16	UTU-172	NS	147627	5
7,830	275	40	85-1/16	UTU-172V	NS	147619	5
7,830	480	40	85-1/16	UTU-172	NS	147635	5

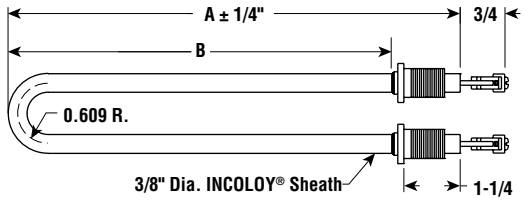
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

UTU-LT

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **800 - 3,600 Watts**
- **120, 208, 240, 275 and 480 Volt**
- **40 W/In²**
- **2-1/8" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type U-RAD-LT)**

Dimensions



All Dimensions in Inches

Applications

Threaded liquid-tight fittings permit mounting for high-velocity air or immersion heating of liquids which are not corrosive to INCOLOY®. When used for immersion heating, heated section of element must be immersed at all times.

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Type 8 Terminals — Standard with threaded clip to facilitate wiring.

Liquid-Tight Fittings — Standard for installation ease.

Work Temperatures — See Tubular Heater Overview section.

Bending — Lengthwise only. See Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
800	120	40	10-1/2	8-3/8	UTU-2LT	NS	106673	1
800	208	40	10-1/2	8-3/8	UTU-2LTV	NS	147643	1
800	240	40	10-1/2	8-3/8	UTU-2LT	NS	106681	1
800	275	40	10-1/2	8-3/8	UTU-2LTV	NS	147651	1
1,100	120	40	13-9/16	11-7/16	UTU-3LT	NS	106690	1.3
1,100	208	40	13-9/16	11-7/16	UTU-3LTV	NS	147660	1.3
1,100	240	40	13-9/16	11-7/16	UTU-3LT	NS	106702	1.3
1,100	275	40	13-9/16	11-7/16	UTU-3LTV	NS	147678	1.3
1,800	208	40	21-5/16	19-3/16	UTU-4LTV	NS	147686	1.5
1,800	240	40	21-5/16	19-3/16	UTU-4LT	NS	106710	1.5
1,800	275	40	21-5/16	19-3/16	UTU-4LTV	NS	147694	1.5
1,800	480	40	21-5/16	19-3/16	UTU-4LT	NS	106729	1.5
2,500	208	40	28-11/16	26-9/16	UTU-5LTV	NS	147707	1.8
2,500	240	40	28-11/16	26-9/16	UTU-5LT	NS	106737	1.8
2,500	275	40	28-11/16	26-9/16	UTU-5LTV	NS	147715	1.8
2,500	480	40	28-11/16	26-9/16	UTU-5LT	NS	106745	1.8
3,000	208	40	34-9/16	32-7/16	UTU-6LTV	NS	147723	2
3,000	240	40	34-9/16	32-7/16	UTU-6LT	NS	106753	2
3,000	275	40	34-9/16	32-7/16	UTU-6LTV	NS	147731	2
3,000	480	40	34-9/16	32-7/16	UTU-6LT	NS	106761	2
3,600	208	40	40-9/16	38-7/16	UTU-7LTV	NS	147740	2.3
3,600	240	40	40-9/16	38-7/16	UTU-7LT	NS	106770	2.3
3,600	275	40	40-9/16	38-7/16	UTU-7LTV	NS	147758	2.3
3,600	480	40	40-9/16	38-7/16	UTU-7LT	NS	106788	2.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

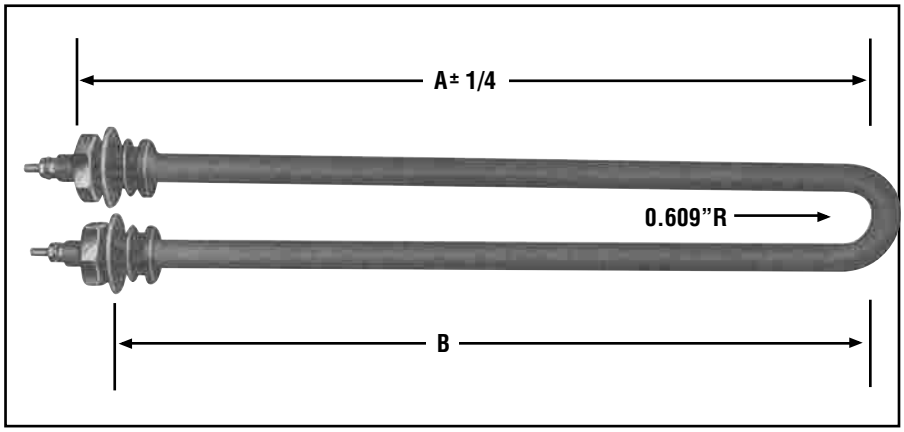
Click Here for Quote!

UTUA-LT

430" Dia. Round Cross- Section

- **INCOLOY Sheath**
- **2000 and 4500 Watts 240 and 480 Volt**
- **9/16 - 18 Bulkhead Fittings**
- **Replacement Element for Aitken* OH, SH, PPH and PHX Radiant Heaters**

Replacement Elements - Dimensions (Inches)



Applications

Replaces heating elements in radiant comfort heaters manufactured by Aitken Products, Inc. It can also be used in other heating applications where threaded liquid-tight fittings permit mounting for high-velocity air or immersion heating of liquids which are not corrosive to INCOLOY. When used for immersion heating, heated section of element must be immersed at all times.

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Liquid-Tight Fittings - 9/16-18 Brass for mounting. Nuts, washers and gaskets included.

10-32 Terminals - Stainless steel, complete with nuts and washers.

Work Temperatures - See Tubular Heater overview section for element rated 40 W/In^2

Bending - Lengthwise only. See Tubular Heater Overview Section.

Specifications and Ordering Information

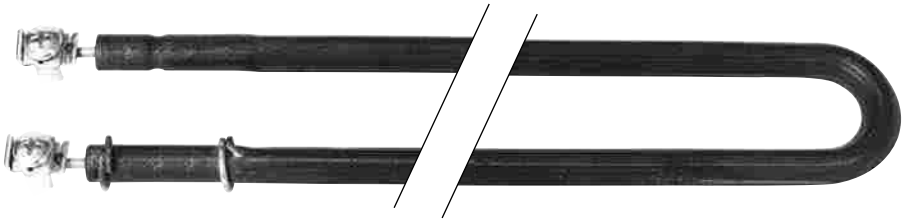
40 W/In^2 Watts	Volts	Dimensions (In) A	Dimensions (In) B	Model	Aitken* Part No.	Stock	PCN	Wt. (Lbs)
2000	240	21.5	20.5	**UTUA-224LT**	HE20240	**S**	**106016**	2
2000	480	21.5	20.5	**UTUA-248LT**	HE20480	**S**	**106024**	2
4500	240	43	42	**UTUA-424LT**	HE45240	**S**	**106032**	3
4500	480	43	42	**UTUA-448LT**	HE45480	**S**	**106040**	3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, watts, volts, phase and quantity.
*Aitken is a registered trademark of Aitken Products, Inc.

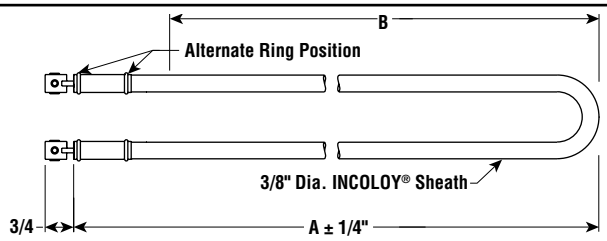
URPT

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **4,400 - 6,000 Watts**
- **208, 240, 275 and 480 Volt**
- **40 W/In²**
- **2-1/8" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type U-RP)**



Dimensions



All Dimensions in Inches

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-Ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Type 8 Terminals — Standard with threaded clip to facilitate wiring.

Retaining Rings — locate elements in radiant heater assemblies.

Work Temperatures — See Tubular Heater Overview section.

Bending — Lengthwise only. See bending requirements bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
4,400	208	40	49-7/16	47-3/16	URPT-444V	NS	147993	2
4,400	240	40	49-7/16	47-3/16	URPT-444	NS	148013	2
4,400	275	40	49-7/16	47-3/16	URPT-444V	NS	148005	2
4,400	480	40	49-7/16	47-3/16	URPT-444	NS	148021	2
6,000	208	40	67-1/16	64-13/16	URPT-560V	NS	148030	3
6,000	240	40	67-1/16	64-13/16	URPT-560	NS	148056	3
6,000	275	40	67-1/16	64-13/16	URPT-560V	NS	148048	3
6,000	480	40	67-1/16	64-13/16	URPT-560	NS	148064	3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

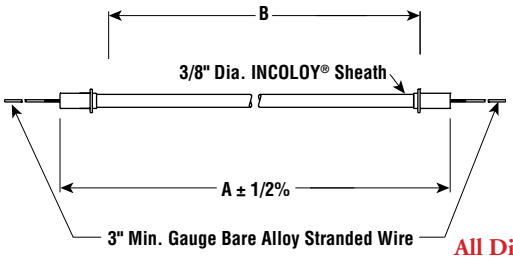
TUBULAR

LMS

3/8" Dia. Heart Cross-Section

- **INCOLOY® Sheath**
- **450 - 1,750 Watts**
- **120, 208, 240 and 480 Volt**
- **42 - 47 W/In²**
- **2-1/8" Cold Ends**
- **1600°F Max. Sheath Temp.**
- **Component of Radiant Heater (type LN and LW)**

Dimensions



All Dimensions in Inches

Applications

- Radiant Heating in Room Ambient
- Heating High Velocity Air
- Low Temperature Clamp-ons

Advantages

Specially constructed to provide excellent service life in radiant heating applications.

Features

Lead Wire — Terminals useful wherever flexible leads are desired.

Work Temperatures — See Tubular Heater Overview section.

Bending — Lengthwise only. Minimum inside bending radius 1-7/8". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
450	120	48	12-1/4	8	**LMS-15**	**S**	**114083**	1
725	208	44	18-1/8	13-7/8	**LMS-21X1**	**S**	**114104**	1
725	240	44	18-1/8	13-7/8	**LMS-21**	**S**	**114091**	1
1,150	208	43	27	22-3/4	LMS-30X1	NS	114120	1
1,150	240	43	27	22-3/4	**LMS-30**	**S**	**114112**	1
1,750	208	42	40	35-3/4	LMS-43X1	NS	114147	2
1,750	240	42	40	35-3/4	**LMS-43**	**S**	**114139**	2
1,750	480	42	40	35-3/4	**LMS-43X2**	**S**	**114155**	2

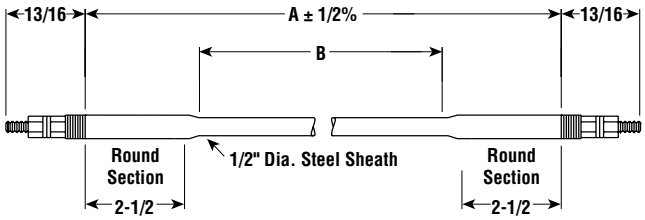
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

TS

1/2" Dia. Heart Cross-Section

- Steel Sheath
- 3,700 - 5,300 Watts
- 240 and 480 Volt
- 20 W/In²
- 750°F Max. Sheath Temp.

Dimensions



All Dimensions in Inches

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

Features

Type 4 Terminals — Integral parts of the element are of high strength to resist bending during tightening of the wiring connections. Type 4 is threaded extension of the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 2-1/2". See bending requirements in the Tubular Heater Overview section.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
3,700	240	20	112	105-1/2	TS-11245	NS	171425	3.3
3,700	480	20	112	105-1/2	TS-11245	NS	171432	3.3
3,800	240	20	124	117-1/2	TS-12445	NS	171440	3.3
3,800	480	20	124	117-1/2	TS-12445	NS	171459	3.3
3,920	240	20	130	123-1/2	TS-13045	NS	171467	3.3
3,920	480	20	130	123-1/2	TS-13045	NS	171475	3.3
4,075	240	20	136	129-1/2	TS-13645	NS	171483	4.3
4,075	480	20	136	129-1/2	TS-13645	NS	171491	4.3
4,250	240	20	142	135-1/2	TS-14245	NS	171504	4.3
4,250	480	20	142	135-1/2	TS-14245	NS	171512	4.3
4,450	240	20	148	141-1/2	TS-14845	NS	171520	4.3
4,450	480	20	148	141-1/2	TS-14845	NS	171539	4.3
4,700	240	20	156	149-1/2	TS-15645	NS	171547	4.3
4,700	480	20	156	149-1/2	TS-15645	NS	171555	4.3
5,000	240	20	164	157-1/2	TS-16445	NS	171563	4.3
5,000	480	20	164	157-1/2	TS-16445	NS	171571	4.3
5,300	240	20	172	165-1/2	TS-17245	NS	171580	4.3
5,300	480	20	172	165-1/2	TS-17245	NS	171598	4.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity. If element is to be **bent,** specify "must be annealed".

TS

3/8" Dia. Heart Cross-Section

- **Steel Sheath**
- **225 - 1,500 Watts**
- **120, 240 and 480 Volt**
- **20 W/In²**
- **750°F Max. Sheath Temp.**

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

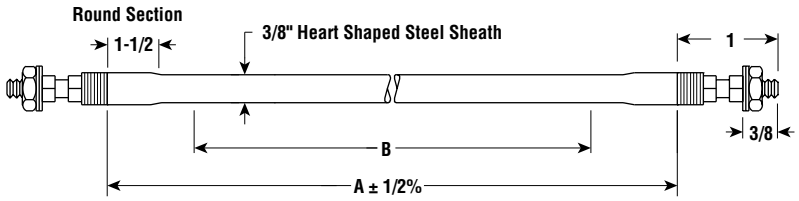
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
225	120	20	16	9-1/2	TS-1648	NS	282845	0.4
250	120	20	18	11-1/2	TS-1848	NS	282853	0.4
300	120	20	20	13-1/2	TS-2048	NS	282861	0.4
350	120	20	22	15-1/2	TS-2248	NS	172750	0.4
450	120	20	25	18-1/2	TS-2548	NS	282870	0.4
500	120	20	27	20-1/2	TS-2748	NS	282888	0.4
500	240	20	27	20-1/2	TS-2748	NS	282896	0.4
500	120	20	28	21-1/2	TS-2848	NS	282909	0.8
500	240	20	28	21-1/2	TS-2848	NS	282917	0.8
550	120	20	30	23-1/2	TS-3048	NS	282925	0.8
550	240	20	30	23-1/2	TS-3048	NS	172769	0.8
600	120	20	32	25-1/2	TS-3248	NS	282933	0.8
600	240	20	32	25-1/2	TS-3248	NS	172777	0.8
650	120	20	34	27-1/2	TS-3448	NS	172785	0.8
650	240	20	34	27-1/2	TS-3448	NS	172793	0.8
700	120	20	36	29-1/2	TS-3648	NS	282941	0.8
700	240	20	36	29-1/2	TS-3648	NS	282950	0.8
750	120	20	38	31-1/2	TS-3848	NS	282968	0.8
750	240	20	38	31-1/2	TS-3848	NS	282976	0.8
800	120	20	40	33-1/2	TS-4048	NS	172806	1
800	240	20	40	33-1/2	TS-4048	NS	282984	1
850	120	20	42	35-1/2	TS-4248	NS	172814	1
850	240	20	42	35-1/2	TS-4248	NS	172822	1
900	120	20	44	37-1/2	TS-4448	NS	172830	1
900	240	20	44	37-1/2	TS-4448	NS	282992	1
950	120	20	46	39-1/2	TS-4648	NS	172849	1
950	240	20	46	39-1/2	TS-4648	NS	172857	1
1,000	120	20	48	41-1/2	TS-4848	NS	283004	1
1,000	240	20	48	41-1/2	TS-4848	NS	283012	1
1,000	480	20	48	41-1/2	TS-4848	NS	172865	1
1,050	120	20	50	43-1/2	TS-5048	NS	172873	1
1,050	240	20	50	43-1/2	TS-5048	NS	172881	1
1,050	480	20	50	43-1/2	TS-5048	NS	172890	1
1,100	120	20	54	47-1/2	TS-5448	NS	283020	1.3
1,100	240	20	54	47-1/2	TS-5448	NS	172902	1.3
1,100	480	20	54	47-1/2	TS-5448	NS	172910	1.3
1,200	120	20	58	51-1/2	TS-5848	NS	172929	1.3
1,200	240	20	58	51-1/2	TS-5848	NS	283039	1.3
1,200	480	20	58	51-1/2	TS-5848	NS	172937	1.3
1,300	120	20	62	55-1/2	TS-6248	NS	172945	1.3
1,300	240	20	62	55-1/2	TS-6248	NS	283047	1.3
1,300	480	20	62	55-1/2	TS-6248	NS	172953	1.3
1,400	120	20	66	59-1/2	TS-6648	NS	172961	1.3
1,400	240	20	66	59-1/2	TS-6648	NS	172970	1.3
1,400	480	20	66	59-1/2	TS-6648	NS	172988	1.3
1,500	120	20	70	63-1/2	TS-7048	NS	283055	1.3
1,500	240	20	70	63-1/2	TS-7048	NS	172996	1.3
1,500	480	20	70	63-1/2	TS-7048	NS	173008	1.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity. If element is to be **bent,** specify "must be annealed".

TS

3/8" Dia. Heart Cross-Section *(cont'd.)*

- **Steel Sheath**
- **1,600 - 3,800 Watts**
- **120, 240 and 480 Volt**
- **20 W/In²**
- **750°F Max. Sheath Temp.**

Applications

High element surface temperature clamp-on or air heating applications or where extreme rigidity is required.

Advantages

More uniform surface temperatures and resistance to deformation.

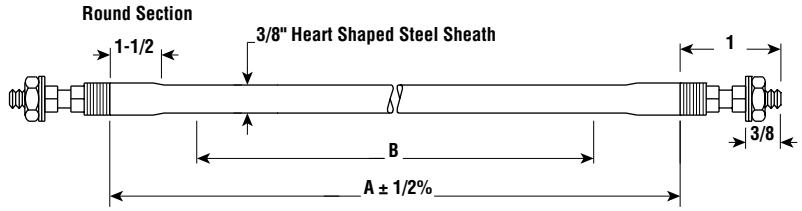
Features

Type 3 Terminals — Heliarc-welded to the cold pin. See terminal detail drawing in the Tubular Heater Overview section.

Work Temperatures — See Tubular Heater Overview section.

Bending — Customer's minimum inside bending radius is 1-7/8". See inside bending requirements in the Tubular Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Sheath B	Model	Stock	PCN	
1,600	120	20	74	67-1/2	TS-7448	NS	173016	1.3
1,600	240	20	74	67-1/2	TS-7448	NS	173024	1.3
1,600	480	20	74	67-1/2	TS-7448	NS	173032	1.3
1,700	120	20	78	71-1/2	TS-7848	NS	173040	1.8
1,700	240	20	78	71-1/2	TS-7848	NS	173059	1.8
1,700	480	20	78	71-1/2	TS-7848	NS	173067	1.8
1,800	120	20	82	75-1/2	TS-8248	NS	173075	1.8
1,800	240	20	82	75-1/2	TS-8248	NS	173083	1.8
1,800	480	20	82	75-1/2	TS-8248	NS	173091	1.8
1,850	120	20	86	79-1/2	TS-8648	NS	173104	1.8
1,850	240	20	86	79-1/2	TS-8648	NS	173112	1.8
1,850	480	20	86	79-1/2	TS-8648	NS	173120	1.8
1,950	120	20	90	83-1/2	TS-9048	NS	173139	1.8
1,950	240	20	90	83-1/2	TS-9048	NS	173147	1.8
1,950	480	20	90	83-1/2	TS-9048	NS	173155	1.8
2,050	120	20	94	87-1/2	TS-9448	NS	173163	1.8
2,050	240	20	94	87-1/2	TS-9448	NS	173171	1.8
2,050	480	20	94	87-1/2	TS-9448	NS	173180	1.8
2,150	120	20	98	91-1/2	TS-9848	NS	173198	1.8
2,150	240	20	98	91-1/2	TS-9848	NS	173200	1.8
2,150	480	20	98	91-1/2	TS-9848	NS	173219	1.8
2,250	120	20	102	95-1/2	TS-10248	NS	173227	2.5
2,250	240	20	102	95-1/2	TS-10248	NS	173235	2.5
2,250	480	20	102	95-1/2	TS-10248	NS	173243	2.5
2,350	240	20	106	99-1/2	TS-10648	NS	173251	2.5
2,350	480	20	106	99-1/2	TS-10648	NS	173260	2.5
2,500	240	20	112	105-1/2	TS-11248	NS	283063	2.5
2,500	480	20	112	105-1/2	TS-11248	NS	173278	2.5
2,600	240	20	118	111-1/2	TS-11848	NS	173286	2.5
2,600	480	20	118	111-1/2	TS-11848	NS	173294	2.5
2,750	240	20	124	117-1/2	TS-12448	NS	173307	2.5
2,750	480	20	124	117-1/2	TS-12448	NS	173315	2.5
2,900	240	20	130	123-1/2	TS-13048	NS	173323	2.5
2,900	480	20	130	123-1/2	TS-13048	NS	173331	2.5
3,050	240	20	136	129-1/2	TS-13648	NS	173340	3.3
3,050	480	20	136	129-1/2	TS-13648	NS	173358	3.3
3,200	240	20	142	135-1/2	TS-14248	NS	173366	3.3
3,200	480	20	142	135-1/2	TS-14248	NS	173374	3.3
3,350	240	20	148	141-1/2	TS-14848	NS	173382	3.3
3,350	480	20	148	141-1/2	TS-14848	NS	173390	3.3
3,550	240	20	156	149-1/2	TS-15648	NS	173403	3.3
3,550	480	20	156	149-1/2	TS-15648	NS	173411	3.3
3,700	240	20	164	157-1/2	TS-16448	NS	173420	3.3
3,700	480	20	164	157-1/2	TS-16448	NS	173438	3.3
3,800	240	20	172	165-1/2	TS-17248	NS	173446	3.3
3,800	480	20	172	165-1/2	TS-17248	NS	173454	3.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity. If element is to be **bent,** specify "must be annealed".

ATS & ATU

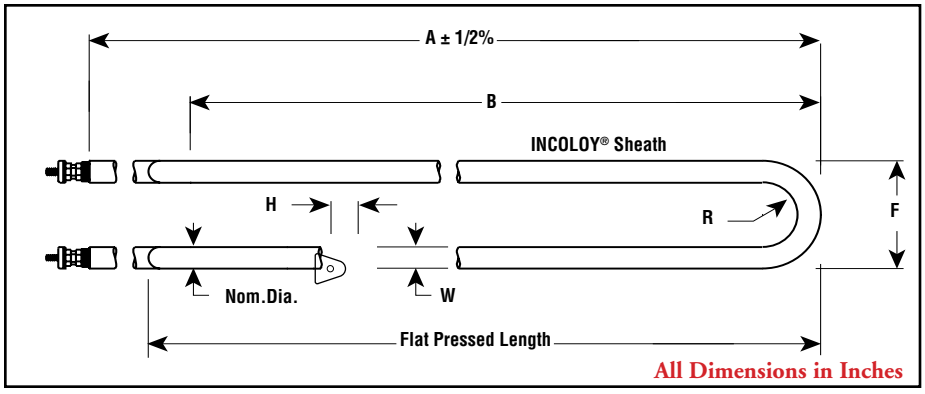
3/8 & 7/16" Dia. Flat Cross-Section

- **INCOLOY® Sheath**
- **575 - 1,350 Watts**
- **120 and 240 Volt**
- **26 - 38 W/In²**
- **1600°F Max. Sheath Temp.**
- **Straight Elements (type ATS)**
- **U-Shape Elements (type ATU)**

Applications

- Clamp-ons
- Immersion (Corrosive Liquids, Fry Kettles, etc.)
- Low Temperature Air Heating

Dimensions



Dimensions - Inches

Nom. Dia.	W	H	R	F
3/8	3/8	5/16	9/16	1-7/8
7/16	7/16	3/8	21/32	2-3/16

Features

Flat-Pressed after triangulation to increase contact surface, improve heat conductivity.

Series Wiring — Two or more elements of equal wattage may be connected in series on line voltages up to 480 volts. For application details see Tubular Heater Overview section.

Type 3 and 4 Terminals — Type 3 (3/8" dia.) are Heliarc-welded to cold pin. Type 4 (7/16" dia.) are threaded end of cold pin. See terminal detail drawings in the Tubular Heater Overview section.

Bending — Generally not recommended for flat-pressed, triangulated elements.

Specifications and Ordering Information

Nom. Dia. (In.)	Watts	Volts	W/In²	Dimensions (In.)		INCOLOY® Sheath			Wt. (Lbs.)
				Sheath A	Heated B	Model	Stock	PCN	
ATS — Straight									
7/16	1,000	120	38	26-1/2	19-5/8	ATS-2610	NS	149147	0.8
7/16	900	240	35	26-1/2	19-5/8	ATS-2690	NS	283207	0.8
7/16	1,000	120	27	33-1/2	26-5/8	ATS-3310	NS	149155	1
7/16	1,200	240	36	33-1/2	26-5/8	ATS-3312	NS	283215	1
3/8	600	120	35	21-1/8	14-3/8	ATS-2160	NS	283194	0.6
3/8	575	240	34	21-1/8	14-3/8	ATS-2157	NS	149112	0.6
3/8	600	120	26	26-1/8	19-3/8	ATS-2660	NS	149120	0.8
3/8	675	240	29	26-1/8	19-3/8	ATS-2667	NS	149139	0.8
3/8	1,350	240	31	42-7/8	36-1/8	ATS-4313	NS	149163	1.2
ATU — U-Shape									
7/16	1,000	120	38	13	9-1/2	ATU-1310	NS	283266	0.8
7/16	900	240	35	13	9-1/2	ATU-1390	NS	283274	0.8
7/16	1,000	120	27	16-1/2	13-1/16	ATU-1610	NS	283282	1
7/16	1,200	240	36	16-1/2	13-1/16	ATU-1612	NS	283290	1
3/8	600	120	35	10-1/2	7	ATU-1060	NS	283223	0.6
3/8	575	240	34	10-1/2	7	ATU-1057	NS	283231	0.6
3/8	600	120	26	12-7/8	9-1/2	ATU-1260	NS	283240	0.8
3/8	675	240	29	12-7/8	9-1/2	ATU-1267	NS	283258	0.8
3/8	1,350	240	31	21-1/4	18	ATU-2113	NS	283303	1.2

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

STRI

.475" Dia. Round Cross-Section Single-End Terminal

- **INCOLOY® Sheath**
- **325 - 3,400 Watts**
- **120 and 240 Volt**
- **3 - 30 W/In²**
- **1600°F Max. Sheath Temp.**

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped elements with terminals at each end.

Features

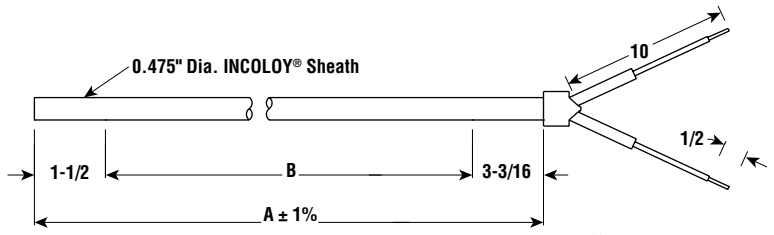
Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock, single-end elements. When ordering non-stock elements for use as immersion heaters, specify "sealed end".

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Heated B	INCOLOY® Sheath Model	Stock	PCN	Wt. (Lbs.)
325	120	30	11-7/8	7-3/16	STRI-1245	NS	149892	0.5
500	120	30	15-7/8	11-3/16	STRI-1645	NS	149905	0.5
500	240	30	15-7/8	11-3/16	**STRI-1645**	**S**	**149913**	0.5
675	120	30	19-7/8	15-3/16	STRI-2045	NS	149921	0.5
675	240	30	19-7/8	15-3/16	STRI-2045	NS	149930	0.5
850	120	30	23-7/8	19-3/16	**STRI-2445**	**S**	**149948**	0.5
850	240	30	23-7/8	19-3/16	STRI-2445	NS	149956	0.5
1,025	120	30	27-7/8	23-3/16	STRI-2845	NS	149964	1
1,025	240	30	27-7/8	23-3/16	STRI-2845	NS	149972	1
1,225	120	30	31-7/8	27-3/16	STRI-3245	NS	149980	1
1,225	240	30	31-7/8	27-3/16	**STRI-3245**	**S**	**149999**	1
1,400	120	30	35-7/8	31-3/16	STRI-3645	NS	170018	1
1,400	240	30	35-7/8	31-3/16	STRI-3645	NS	170026	1
1,575	120	30	39-7/8	35-3/16	STRI-4045	NS	170034	1.3
1,575	240	30	39-7/8	35-3/16	**STRI-4045**	**S**	**170042**	1.3
1,750	120	30	43-7/8	39-3/16	STRI-4445	NS	170050	1.3
1,750	240	30	43-7/8	39-3/16	STRI-4445	NS	170069	1.3
1,575	120	25	47-7/8	43-3/16	STRI-4845	NS	170077	1.3
1,925	240	30	47-7/8	43-3/16	STRI-4845	NS	170085	1.3
1,450	120	21	51-7/8	47-3/16	STRI-5245	NS	170093	1.8
2,100	240	30	51-7/8	47-3/16	STRI-5245	NS	170106	1.8
1,325	120	17	55-7/8	51-3/16	STRI-5645	NS	170114	1.8
2,275	240	30	55-7/8	51-3/16	STRI-5645	NS	170122	1.8
1,225	120	15	59-7/8	55-3/16	STRI-6045	NS	170130	1.8
2,475	240	30	59-7/8	55-3/16	STRI-6045	NS	170149	1.8
1,000	120	10	71-7/8	67-3/16	STRI-7245	NS	170157	1.8
3,000	240	30	71-7/8	67-3/16	STRI-7245	NS	170165	1.8
850	120	7	83-7/8	79-3/16	STRI-8445	NS	170173	2.3
3,400	240	29	83-7/8	79-3/16	STRI-8445	NS	170181	2.3
750	120	6	95-7/8	91-3/16	STRI-9645	NS	170190	3.3
3,000	240	22	95-7/8	91-3/16	STRI-9645	NS	170202	3.3
650	120	4	107-7/8	103-3/16	STRI-10845	NS	170210	3.3
2,600	240	17	107-7/8	103-3/16	STRI-10845	NS	170229	3.3
575	120	3	119-7/8	115-3/16	STRI-12045	NS	170237	3.3
2,300	240	13	119-7/8	115-3/16	STRI-12045	NS	170245	3.3

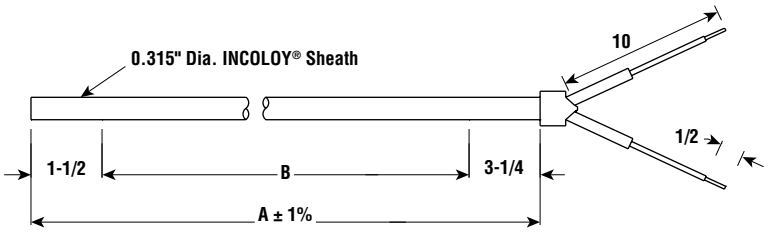
Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity. When used as an immersion heater, specify "sealed end".

STRI

.315" Dia. Round Cross-Section Single-End Terminal

- **INCOLOY® Sheath**
- **225 - 2,400 Watts**
- **120 and 240 Volt**
- **4 - 30 W/In²**
- **1600°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped element with terminals at each end.

Features

Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock, single-end elements. When ordering non-stock elements for use as immersion heaters, specify "sealed end".

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.) Sheath A	Dimensions (In.) Heated B	INCOLOY® Sheath Model	INCOLOY® Sheath Stock	INCOLOY® Sheath PCN	Wt. (Lbs.)
450	120	30	19-7/8	15-1/8	STRI-2048	NS	170982	0.4
450	240	30	19-7/8	15-1/8	STRI-2048	NS	170990	0.4
575	120	30	23-7/8	19-1/8	**STRI-2448**	**S**	**171002**	0.4
575	240	30	23-7/8	19-1/8	**STRI-2448**	**S**	**171010**	0.4
700	120	30	27-7/8	23-1/8	STRI-2848	NS	171029	0.8
700	240	30	27-7/8	23-1/8	STRI-2848	NS	171037	0.8
800	120	30	31-7/8	27-1/8	STRI-3248	NS	171045	0.8
800	240	30	31-7/8	27-1/8	STRI-3248	NS	171053	0.8
925	120	30	35-7/8	31-1/8	STRI-3648	NS	171061	0.8
925	240	30	35-7/8	31-1/8	STRI-3648	NS	171070	0.8
1,050	120	30	39-7/8	35-1/8	STRI-4048	NS	171088	1
1,050	240	30	39-7/8	35-1/8	**STRI-4048**	**S**	**171096**	1
1,175	120	30	43-7/8	39-1/8	STRI-4448	NS	171109	1
1,175	240	30	43-7/8	39-1/8	STRI-4448	NS	171117	1
1,200	120	28	47-7/8	43-1/8	STRI-4848	NS	171125	1
1,275	240	30	47-7/8	43-1/8	STRI-4848	NS	171133	1
1,200	120	26	51-7/8	47-1/8	STRI-5248	NS	171141	1.3
1,400	240	30	51-7/8	47-1/8	STRI-5248	NS	171150	1.3
1,150	120	23	55-7/8	51-1/8	STRI-5648	NS	171168	1.3
1,525	240	30	55-7/8	51-1/8	STRI-5648	NS	171176	1.3
1,075	120	13.7	59-7/8	55-1/8	STRI-6048	NS	171184	1.3
1,650	240	30	59-7/8	55-1/8	STRI-6048	NS	171192	1.3
875	120	13	71-7/8	67-1/8	STRI-7248	NS	171205	1.3
2,000	240	30	71-7/8	67-1/8	**STRI-7248**	**S**	**171213**	1.3
750	120	10	83-7/8	79-1/8	STRI-8448	NS	171221	1.8
2,350	240	30	83-7/8	79-1/8	STRI-8448	NS	171230	1.8
650	120	7	95-7/8	91-1/8	STRI-9648	NS	171248	1.8
2,400	240	27	95-7/8	91-1/8	STRI-9648	NS	171256	1.8
575	120	6	107-7/8	103-1/8	STRI-10848	NS	171264	2.5
2,300	240	23	107-7/8	103-1/8	STRI-10848	NS	171272	2.5
500	120	4	119-7/8	115-1/8	STRI-12048	NS	171280	2.5
2,000	240	18	119-7/8	115-1/8	STRI-12048	NS	171299	2.5

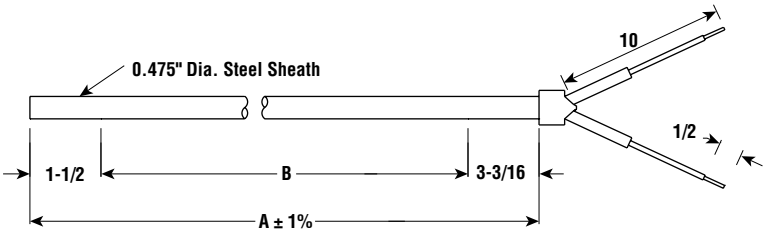
Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity. When used as an immersion heater, specify "sealed end".

STRS

.475" Dia. Round Cross-Section Single-End Terminal

- **Steel Sheath**
- **200 - 2,725 Watts**
- **120 and 240 Volt**
- **3 - 20 W/In²**
- **750°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped element with terminals at each end.

Features

Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock single-end elements. When ordering non-stock elements for use as immersion heaters, specify "sealed end".

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
450	120	20	19-7/8	15-3/16	STRS-2045	NS	149577	0.5
450	240	20	19-7/8	15-3/16	STRS-2045	NS	149585	0.5
575	120	20	23-7/8	19-3/16	STRS-2445	NS	149593	0.5
575	240	20	23-7/8	19-3/16	STRS-2445	NS	149606	0.5
700	120	20	27-7/8	23-3/16	STRS-2845	NS	149614	1
700	240	20	27-7/8	23-3/16	STRS-2845	NS	149622	1
800	120	20	31-7/8	27-3/16	STRS-3245	NS	149630	1
800	240	20	31-7/8	27-3/16	STRS-3245	NS	149649	1
925	120	20	35-7/8	31-3/16	STRS-3645	NS	149657	1
925	240	20	35-7/8	31-3/16	STRS-3645	NS	149665	1
1,050	120	20	39-7/8	35-3/16	STRS-4045	NS	149673	1.3
1,050	240	20	39-7/8	35-3/16	STRS-4045	NS	149681	1.3
1,175	120	20	43-7/8	39-3/16	STRS-4445	NS	149690	1.3
1,175	240	20	43-7/8	39-3/16	STRS-4445	NS	149702	1.3
1,275	120	20	47-7/8	43-3/16	STRS-4845	NS	149710	1.3
1,275	240	20	47-7/8	43-3/16	STRS-4845	NS	149729	1.3
1,400	120	20	51-7/8	47-3/16	STRS-5245	NS	149737	1.8
1,400	240	20	51-7/8	47-3/16	STRS-5245	NS	149745	1.8
1,325	120	17	55-7/8	51-3/16	STRS-5645	NS	149753	1.8
1,525	240	20	55-7/8	51-3/16	STRS-5645	NS	149761	1.8
1,225	120	15	59-7/8	55-3/16	STRS-6045	NS	149770	1.8
1,650	240	20	59-7/8	55-3/16	STRS-6045	NS	149788	1.8
1,000	120	10	71-7/8	67-3/16	STRS-7245	NS	149796	1.8
2,000	240	20	71-7/8	67-3/16	STRS-7245	NS	149809	1.8
850	120	7	83-7/8	79-3/16	STRS-8445	NS	149817	2.3
2,350	240	20	83-7/8	79-3/16	STRS-8445	NS	149825	2.3
750	120	6	95-7/8	91-3/16	STRS-9645	NS	149833	3.3
2,725	240	20	95-7/8	91-3/16	STRS-9645	NS	149841	3.3
650	120	4	107-7/8	103-3/16	STRS-10845	NS	149850	3.3
2,600	240	17	107-7/8	103-3/16	STRS-10845	NS	149868	3.3
575	120	3	119-7/8	115-3/16	STRS-12045	NS	149876	3.3
2,300	240	13	119-7/8	115-3/16	STRS-12045	NS	149884	3.3

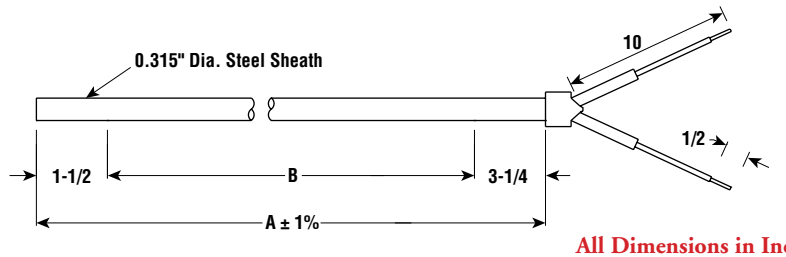
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity. If element is to be **bent**, specify "must be annealed".

STRS

.315" Dia. Round Cross-Section Single-End Terminal

- **Steel Sheath**
- **150 - 2,050 Watts**
- **120 and 240 Volt**
- **4 - 20 W/In²**
- **750°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped element with terminals at each end.

Features

Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock, single-end elements. When ordering non-stock elements for use as immersion heaters, specify "sealed end".

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Steel Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
150	120	20	11-7/8	7-1/8	STRS-1248	NS	170608	0.4
225	120	20	15-7/8	11-1/8	STRS-1648	NS	170616	0.4
225	240	20	15-7/8	11-1/8	**STRS-1648**	**S**	**170624**	0.4
300	120	20	19-7/8	15-1/8	STRS-2048	NS	170632	0.4
300	240	20	19-7/8	15-1/8	STRS-2048	NS	170640	0.4
375	120	20	23-7/8	19-1/8	STRS-2448	NS	170659	0.4
375	240	20	23-7/8	19-1/8	**STRS-2448**	**S**	**170667**	0.4
450	120	20	27-7/8	23-1/8	STRS-2848	NS	170675	0.8
450	240	20	27-7/8	23-1/8	**STRS-2848**	**S**	**170683**	0.8
550	120	20	31-7/8	27-1/8	STRS-3248	NS	170691	0.8
550	240	20	31-7/8	27-1/8	**STRS-3248**	**S**	**170704**	0.8
625	120	20	35-7/8	31-1/8	STRS-3648	NS	170712	0.8
625	240	20	35-7/8	31-1/8	STRS-3648	NS	170720	0.8
700	120	20	39-7/8	35-1/8	STRS-4048	NS	170739	1
700	240	20	39-7/8	35-1/8	STRS-4048	NS	170747	1
775	120	20	43-7/8	39-1/8	STRS-4448	NS	170755	1
775	240	20	43-7/8	39-1/8	STRS-4448	NS	170763	1
850	120	20	47-7/8	43-1/8	STRS-4848	NS	170721	1
850	240	20	47-7/8	43-1/8	STRS-4848	NS	170780	1
925	120	20	51-7/8	47-1/8	STRS-5248	NS	170798	1.3
925	240	20	51-7/8	47-1/8	STRS-5248	NS	170800	1.3
1,025	120	20	55-7/8	51-1/8	STRS-5648	NS	170819	1.3
1,025	240	20	55-7/8	51-1/8	STRS-5648	NS	170827	1.3
1,075	120	19.7	59-7/8	55-1/8	STRS-6048	NS	170835	1.3
1,100	240	20	59-7/8	55-1/8	STRS-6048	NS	170843	1.3
875	120	13	71-7/8	67-1/8	STRS-7248	NS	170851	1.3
1,325	240	20	71-7/8	67-1/8	STRS-7248	NS	170860	1.3
750	120	10	83-7/8	79-1/8	STRS-8448	NS	170878	1.8
1,575	240	20	83-7/8	79-1/8	STRS-8448	NS	170886	1.8
650	120	7	95-7/8	91-1/8	STRS-9648	NS	170894	1.8
1,800	240	20	95-7/8	91-1/8	STRS-9648	NS	170907	1.8
575	120	6	107-7/8	103-1/8	STRS-10848	NS	170915	2.5
2,050	240	20	107-7/8	103-1/8	STRS-10848	NS	170923	2.5
500	120	4	119-7/8	115-1/8	STRS-12048	NS	170915	2.5
2,000	240	13	119-7/8	115-1/8	STRS-12048	NS	170923	2.5

Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity. When used as an immersion heater, specify "sealed end".

Click Here for Quote!

STRC

.475" Dia. Round Cross-Section Single-End Terminal

- **Copper Sheath**
- **525 - 4,125 Watts**
- **120 and 240 Volt**
- **3 - 50 W/In²**
- **350°F Max. Sheath Temp.**

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped element with terminals at each end.

Features

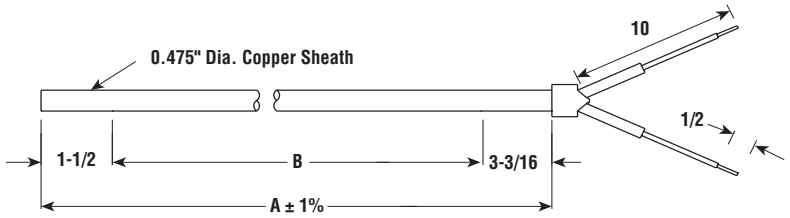
Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock, single-end elements. When ordering non-stock elements for use as immersion heaters, specify "sealed end".

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Copper Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
525	120	50	11-7/8	7-3/16	STRC-1245	NS	149198	0.5
825	120	50	15-7/8	11-3/16	STRC-1645	NS	149200	0.5
825	240	50	15-7/8	11-3/16	STRC-1645	NS	149219	0.5
1,125	120	50	19-7/8	15-3/16	STRC-2045	NS	149227	0.5
1,125	240	50	19-7/8	15-3/16	STRC-2045	NS	149235	0.5
1,425	120	50	23-7/8	19-3/16	STRC-2445	NS	149243	0.5
1,425	240	50	23-7/8	19-3/16	STRC-2445	NS	149251	0.5
1,725	120	50	27-7/8	23-3/16	STRC-2845	NS	149260	1
1,725	240	50	27-7/8	23-3/16	STRC-2845	NS	149278	1
2,025	120	50	31-7/8	27-3/16	STRC-3245	NS	149286	1
2,025	240	50	31-7/8	27-3/16	STRC-3245	NS	149294	1
2,200	120	47	35-7/8	31-3/16	STRC-3645	NS	149307	1
2,325	240	50	35-7/8	31-3/16	STRC-3645	NS	149315	1
1,950	120	37	39-7/8	35-3/16	STRC-4045	NS	149323	1.3
2,625	240	50	39-7/8	35-3/16	STRC-4045	NS	149331	1.3
1,750	120	30	43-7/8	39-3/16	STRC-4445	NS	149340	1.3
2,925	240	50	43-7/8	39-3/16	STRC-4445	NS	149358	1.3
1,575	120	25	47-7/8	43-3/16	STRC-4845	NS	149366	1.3
3,225	240	50	47-7/8	43-3/16	STRC-4845	NS	149374	1.3
1,450	120	21	51-7/8	47-3/16	STRC-5245	NS	149382	1.8
3,525	240	50	51-7/8	47-3/16	STRC-5245	NS	149390	1.8
1,325	120	17	55-7/8	51-3/16	STRC-5645	NS	149403	1.8
3,825	240	50	55-7/8	51-3/16	STRC-5645	NS	149411	1.8
1,225	120	15	59-7/8	55-3/16	STRC-6045	NS	149420	1.8
4,125	240	50	59-7/8	55-3/16	STRC-6045	NS	149438	1.8
1,000	120	10	71-7/8	67-3/16	STRC-7245	NS	149446	1.8
4,000	240	40	71-7/8	67-3/16	STRC-7245	NS	149454	1.8
850	120	7	83-7/8	79-3/16	STRC-8445	NS	149462	2.3
3,400	240	29	83-7/8	79-3/16	STRC-8445	NS	149470	2.3
750	120	6	95-7/8	91-3/16	STRC-9645	NS	149489	3.3
3,000	240	22	95-7/8	91-3/16	STRC-9645	NS	149497	3.3
650	120	4	107-7/8	103-3/16	STRC-10845	NS	149500	3.3
2,600	240	17	107-7/8	103-3/16	STRC-10845	NS	149518	3.3
575	120	3	119-7/8	115-3/16	STRC-12045	NS	149526	3.3
2,300	240	13	119-7/8	115-3/16	STRC-12045	NS	149534	3.3

Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity. When used as an immersion heater, specify "sealed end".

CHROMALOX

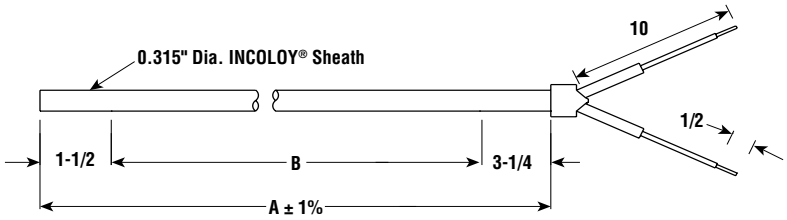
Click Here for Quote!

STRC

.315" Dia. Round Cross-Section Single-End Terminal

- **Copper Sheath**
- **350 - 2,400 Watts**
- **120 and 240 Volt**
- **4 - 50 W/In²**
- **350°F Max. Sheath Temp.**

Dimensions



All Dimensions in Inches

Applications

Molds and other heat-transferring metal parts and air heating applications. Immersion heating with flange, screwplug, threaded fitting or other means of mounting.

Advantages

Elements with both terminals at one end, in dies, can simplify wiring in many cases. Use slim elements to concentrate heat into a confined area, taking up less space than a U-shaped element with terminals at each end.

Features

Construction — Similar to the standard Chromalox tubular design, except that both terminals of the embedded resistor wire are at one end of the element. 10" lead wires have silicone-impregnated Fiberglas® sleeves and are attached to the terminals inside a ceramic terminal bushing.

Sealed End for Immersion Heating on end opposite terminals is provided on all stock, single-end elements. When ordering non-stock elements, specify "sealed end" when used as an immersion heater.

Work Temperatures — See Tubular Heater Overview section.

Bending — Generally not recommended for single-end elements.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Copper Sheath			Wt. (Lbs.)
			Sheath A	Heated B	Model	Stock	PCN	
350	120	50	11-7/8	7-1/8	STRC-1248	NS	170253	0.4
550	120	50	15-7/8	11-1/8	STRC-1648	NS	170261	0.4
550	240	50	15-7/8	11-1/8	STRC-1648	NS	170270	0.4
750	120	50	19-7/8	15-1/8	STRC-2048	NS	170288	0.4
750	240	50	19-7/8	15-1/8	STRC-2048	NS	170296	0.4
950	120	50	23-7/8	19-1/8	STRC-2448	NS	170309	0.4
950	240	50	23-7/8	19-1/8	STRC-2448	NS	170317	0.4
1,150	120	50	27-7/8	23-1/8	STRC-2848	NS	170325	0.8
1,150	240	50	27-7/8	23-1/8	STRC-2848	NS	170333	0.8
1,200	120	45	31-7/8	27-1/8	STRC-3248	NS	170341	0.8
1,350	240	50	31-7/8	27-1/8	STRC-3248	NS	170350	0.8
1,200	120	39	35-7/8	31-1/8	STRC-3648	NS	170368	0.8
1,500	240	50	35-7/8	31-1/8	STRC-3648	NS	170376	0.8
1,200	120	34	39-7/8	35-1/8	STRC-4048	NS	170384	1
1,750	240	50	39-7/8	35-1/8	STRC-4048	NS	170392	1
1,200	120	31	43-7/8	39-1/8	STRC-4448	NS	170405	1
1,950	240	50	43-7/8	39-1/8	STRC-4448	NS	170413	1
1,200	120	28	47-7/8	43-1/8	STRC-4848	NS	170421	1
2,150	240	50	47-7/8	43-1/8	STRC-4848	NS	170430	1
1,200	120	26	51-7/8	47-1/8	STRC-5248	NS	170448	1.3
2,350	240	50	51-7/8	47-1/8	STRC-5248	NS	170456	1.3
1,150	120	23	55-7/8	51-1/8	STRC-5648	NS	170464	1.3
2,400	240	47	55-7/8	51-1/8	STRC-5648	NS	170472	1.3
1,075	120	19.7	59-7/8	55-1/8	STRC-6048	NS	170480	1.3
2,400	240	44	59-7/8	55-1/8	STRC-6048	NS	170499	1.3
875	120	13	71-7/8	67-1/8	STRC-7248	NS	170501	1.3
2,400	240	36	71-7/8	67-1/8	STRC-7248	NS	170510	1.3
750	120	10	83-7/8	79-1/8	STRC-8448	NS	170528	1.8
2,400	240	31	83-7/8	79-1/8	STRC-8448	NS	170536	1.8
650	120	7	95-7/8	91-1/8	STRC-9648	NS	170544	1.8
2,400	240	27	95-7/8	91-1/8	STRC-9648	NS	170552	1.8
575	120	6	107-7/8	103-1/8	STRC-10848	NS	170560	2.5
2,300	240	23	107-7/8	103-1/8	STRC-10848	NS	170579	2.5
500	120	4	110-7/8	115-1/8	STRC-12048	NS	170587	2.5
2,000	240	18	110-7/8	115-1/8	STRC-12048	NS	170595	2.5

Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity. When used as an immersion heater, specify "sealed end".

FSRM

High Temperature Modular Hopper Heater

- **INCOLOY® Sheath**
- **225 - 2,600 Watts**
- **240 and 480 Volt**
- **3 - 15 W/In²**
- **Up to 750°F and Above Hopper Temp. (Depending on W/In²)**
- **Custom Built to Fit Requirements**

Applications

- Electrostatic Precipitators
- Fabric Filter Dust Collecting Hoppers

Advantages

Made-To-Order to your hopper specifications.

Low Watt Density design ensures long life while providing operating temperatures of 250 to 350°F or higher.

Heaters (when unenergized) Can Withstand upset conditions where temperatures in the hopper may be as high as 1200°F.

Features

Manufactured From formed 0.375" diameter INCOLOY® sheathed tubular low watt density elements for long life.

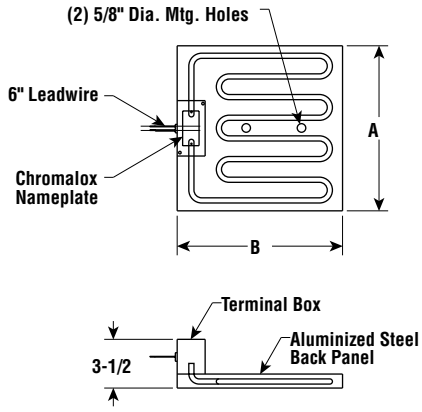
Equipped With 6", 14 gauge nickel plated copper lead wire with mica type high temperature insulation rated 842°F (450°C) for easy connection.

Shock and Vibration resistant design.

Modules are Fire Resistant and not affected by internal hopper fires.

Refer to Electromechanical Controls and Thermostats in the Controls section.

Dimensions



All Dimensions in Inches

Construction

0.375" Tubular Heating Elements are serpentine bent and mounted on a steel angle frame support with a backup aluminized steel sheet metal reflective encasement.

When Installed on the sides of the hopper and insulated, they provide a blanket heat coverage effect.

Options

- Special Voltages
- Wattage
- Sizes
- Shapes

Specifications and Ordering Information

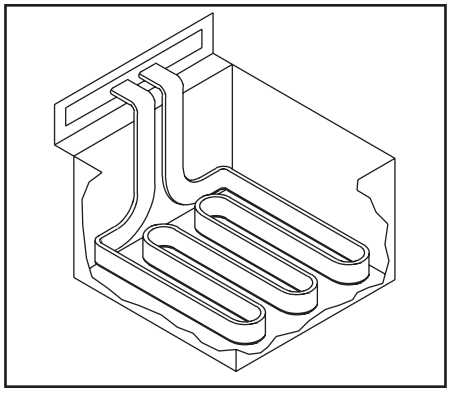
Watts	Volts	W/In²	Size	Model	Stock	PCN	Wt. (Lbs.)
225	240	3	6 x 12	FSRM-0612	NS	329092	8
450	240	6	6 x 12	FSRM-0612	NS	329105	8
550	480	3.8	12 x 12	FSRM-1212	NS	329113	16
900	480	6	12 x 12	FSRM-1212	NS	329121	16
650	480	3	12 x 18	FSRM-1218	NS	329130	24
1,300	480	6	12 x 18	FSRM-1218	NS	329148	24
1,000	480	3	18 x 18	FSRM-1818	NS	329156	32
2,000	480	6	18 x 18	FSRM-1818	NS	329172	32
450	240	3.1	12 x 12	FSRM-1212	NS	329180	16
875	480	3	12 x 24	FSRM-1224	NS	329199	32
1,750	480	6	12 x 24	FSRM-1224	NS	329201	32
2,600	480	4.5	12 x 48	FSRM-1248	NS	329210	64

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

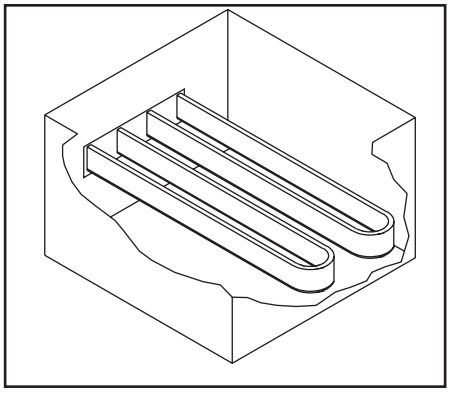
CTB
Thin Blade Heater

- 0.275 x 1" Profile
- 120 and 240 Volt
- 1 & 3 Phase
- Stainless Steel Sheath
- 10 - 75 W/In²
- High Temperature (up to 1200°F Sheath Temperature)

Side Mount



Bottom Mount



Applications

- Immersion for deep fat fryers, degreasers, plating tanks, humidifiers, lube and fuel oil heaters, hydraulic oil heaters, water heaters.
- Clamp-on for griddles, tanks, platens, dies, molds, heat sealing.
- Process air duct heaters, dirty gas stream, high temperature gas.

Advantages

More Efficient Heat Transfer — The larger sheath area of the Thin Blade conveys heat more rapidly to medium being heated.

Long Life — Particularly well suited to deep fat frying. The oil suffers less degradation and lasts longer.

Features

Adaptable to a wide range of applications now served by tubular elements with unique advantages.

Three Wire Construction — Provides a balanced 3-phase load. A wide array of heat settings using only a low-cost selector switch.

Construction

Thin Space Saving Profile — 1/4" by 1" minimizes possible interference with the process being heated. Unit can hug bottom or side of tank.

Completely Sealed Sheath permits complete immersion of heated length.

Unique Bending Properties make thin blade easy to apply to most difficult spatial limitations.

Minimum Bending potential is 1" radius on the major axis and 1/2" radius on the minor axis.

Greater Mechanical Strength — Makes the elongated cross-section more rigid than the tube.

Specifications and Ordering Information

Dimensions (In.)		Watts	W/In²	PCN		Model	Stock	Wt. (Lbs.)
Sheath Length	Heated Length			120V	240V			
30	27	1,300	20	329287	329439	CTBS-30130	NS	3.75
30	27	650	10	329295	329447	CTBS-3065	NS	3.75
36	33	1,600	20	329308	329455	CTBS-36160	NS	4.5
36	33	800	10	329316	329463	CTBS-3680	NS	4.5
42	39	1,900	20	329324	329471	CTBS-42190	NS	6
42	39	950	10	329332	329480	CTBS-4295	NS	6
48	45	2,200	20	329340	329498	CTBS-48220	NS	6.75
48	45	1,100	10	329359	329500	CTBS-48110	NS	6.75

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Click Here for Quote!

MTH
Mini-Tubular Heaters

- 360° Heated Area
- Readily Conforms to Surface
- Fast Response and Quick Heat Transfer
- Helical Coil Design for Superior Performance
- Shock, Vibration, Contamination and Corrosion Resistant
- Available with Thermocouple Grounded at End on .125 and .188
- Sheath Diameters: .040", .062", .093", .125" and .188"

Closed Wound Coil

NEW!

Special Wound Coil for Profiled Heat Pattern

Description

With the capability to be formed into many shapes, the Mini-Tubular is adaptable to a variety of applications.

Swaged or drawn alloy cable, compacted magnesium oxide and a helical or straight resistance element are the assembled components of the Mini-Tubular. Small diameters and cross-sections allow a quick response, providing heat in tight spaces where most heaters cannot be installed. The typically spiral design allows heat to be applied to the full circumference of the part. The small diameter Mini-Tubular Band Heaters at 3/4" and 7/8" inside diameter are exact OEM replacements. Also available is a square profile design that increases surface contact for improved conductive heat transfer. An internal thermocouple in some sizes allows for precise temperature monitoring and control.

Mini-Tubular Heaters can also be supplied straight for field bending.

Specifications - Closed Wound Coil

Model Number	I.D. (A)	Length (L)	Watts	Volts
MTC826	7/8"	2-5/8"	780	240
MTC831	7/8"	3-1/8"	650	240
MTC836	7/8"	3-5/8"	630	240
MTC842X	7/8"	4-5/16"	760	240
MTC852X	7/8"	5-5/16"	950	240
MTC861X	7/8"	6-15/16"	1120	240
MTC872X	7/8"	7-15/16"	1200	240
MTC882X	7/8"	8-15/16"	1260	240
MTC520	1/2"	2"	340	120
MTC525	1/2"	2-1/2"	325	120
MTC530	1/2"	3"	350	120
MTC535	1/2"	3-1/2"	400	120
MTC545	1/2"	4-1/2"	450	120
MTC555	1/2"	5-1/2"	550	120
MTC565	1/2"	6-1/2"	650	120

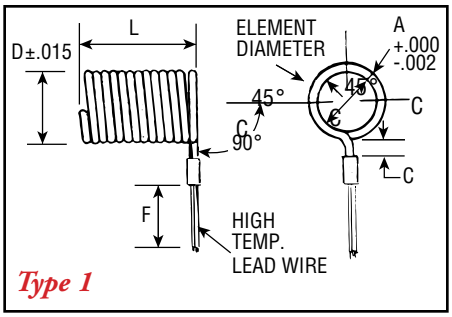
Above items standard with built-in thermocouple and 36" cable, "C" = 1" in straight position (Type 1).

Specifications - Special Wound Coil

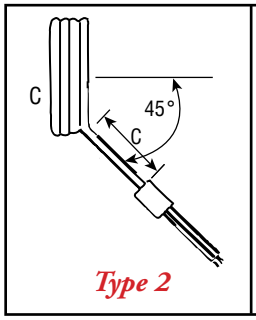
Model Number	Diameter (D)	Length (L)	Watts	Volts
MTC546	1/2"	4-5/8"	300	120
MTC546	1/2"	4-5/8"	300	240

Above items standard with built-in thermocouple and 48" armor cable, "C" = 1" at 45° (Type 2).

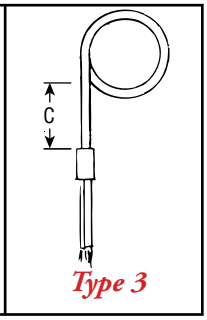
Terminations



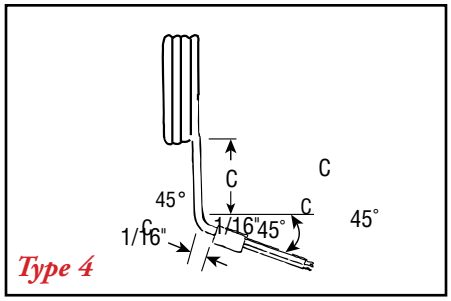
Type 1



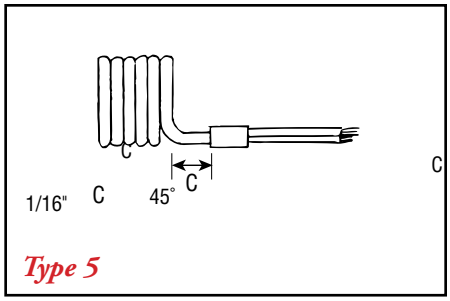
Type 2



Type 3



Type 4



Type 5

Mini-Tubular Heaters are available with standard high temperature leads (450°F/250°C), teflon leads, flexible stainless steel braided lead protection or with stainless steel armor cable.

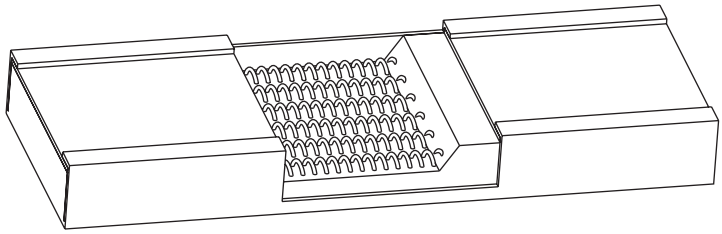
Strip & Ring Heaters

Applications & Features

- **Up to 72" Lengths**
- **Up to 3,000 Watts**
- **120 - 480 Volt**
- **Up to 38 W/In²**
- **Maximum Sheath Temp.**
  - **Rust-Resisting Iron 750°F**
  - **MONEL® 900°F**
  - **Chrome Steel 1200°F**
  - **INCOLOY® 1500°F**
- **Accessory Clamping Devices, Optional**

High Quality, Coiled Alloy Resistor Wire is uniformly spaced over the width and length of the strip heater to assure even heat distribution.

Resistor Wire is Embedded in specially formulated, high-grade refractory material which both insulates the resistor and transfers heat rapidly to the sheath.



Refractory is then Compressed to Rock-Hardness and high density under tremendous hydraulic pressure to maximize heat transfer from coil to sheath. Elements are oven cured at high temperatures to semi-vitrify and mature the refractory.

Maximum Heat Transfer, from the instant the element is first energized, is provided by the high emissivity black oxide finish. Elements with shiny surfaces do not transfer heat as well.

Applications

Chromalox strip heaters are used principally for convection-type air heating and clamp-on installations. When selecting strip heaters for either, two important factors must be considered:

1. The proper sheath material for resisting any rusting and oxidizing inherent in the process or environment and for withstanding the sheath temperature required. Standard sheath materials are rust-resisting iron, chrome steel and INCOLOY® (type NS only). Stainless Steel and MONEL® sheaths are available.
2. The watt density of the element, or watts per square inch of heated area, should be low for heating asphalt, molasses and other thick substances with low heat transferability. It can be higher for heating air, metals and other heat-conducting materials. (See Technical section for determining allowable watt densities.)

   When high operating temperatures are needed, watt density must be limited in order not to exceed the maximum sheath temperature. Watt density is given in the table for each strip heater.

In general, a viscous material with low thermal conductivity requires a low watt density. High watt densities can be used with thinner liquids and with materials of high thermal conductivity. Premature loss of the element due to excessive temperature may result if the material's heat-take-away ability is low. Also, the material may be charred, carbonized or its chemical makeup altered by overheating.

Features

Choice of Sheath Materials capable of operating up to 1500°F sheath temperature to heat various processes economically. These include rust-resisting iron (750°F), chrome steel (1200°F), Monel® (900°F), and INCOLOY® (1500°F).

Refractory Insulated Construction exclusively. By far the most rugged and best for long, dependable service.

More Types and Ratings — More precise matching to your power service and work load requirements. Special ratings and sizes can be manufactured readily.

More Stocked Models — Hundreds of models in stock and available for immediate shipment.

Lengthwise and Cross Section Curving — Available only on made-to-order products for efficient heat transfer. Strip and ring heaters can be factory formed to fit the shape of the surface to be heated.

Easy Installation — Chromalox clamping devices and mounting tabs speed installation.

More Choices of Strip Heater Terminal Locations — To simplify wiring layout between elements and power lines.

Many Additional Features — Available to adapt heaters to suit special applications — made-to-order.

Installations — Minimum maintenance costs.

Controls are Part of the Total Chromalox Package for your heating job, regardless of its type or the temperature precision you need. Refer to the Controls section.

Strip & Ring Heaters

Selection & Installation Guidelines

- Utility Clamps
- Milled Plates
- Clamping Bands
- Oven Mounting

Installation Guidelines

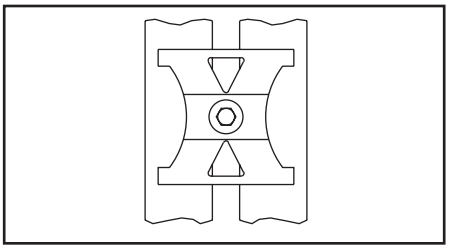
Chromalox strip elements, in most cases, can be applied with standard hardware. However, for firm contact and best heat transfer, stocked Chromalox clamps are recommended.

Note — Heat insulating material should not be placed against the sheath of the heating element

Utility Clamps

Utility Clamps secure strip elements to flat surfaces or surfaces with large radii such as large tanks. Threaded studs are welded to surface, heaters are positioned, then clamps are bolted down. Where more than one clamp is used, tighten nuts and then back off 1/2 turn to allow for expansion.

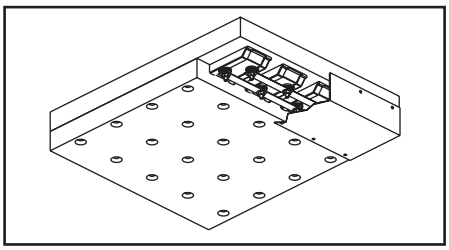
Utility Clamps



Milled Plates

Milled Plates allow heaters to be held in position in platens and similar objects with a steel plate recessed to heaters width, thickness and positions, then screwed to the working plate or surface.

Milled Plates

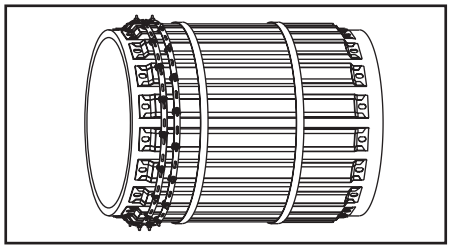


Clamping Bands

Clamping Bands can be used to firmly fasten strips longitudinally to large diameter cylindrical surfaces.

Connecting Lead Wires — Should be nickel-plated copper, nickel or alloy. Copper will oxidize and loosen connections. Do not use copper terminal lugs. See Accessories in this section.

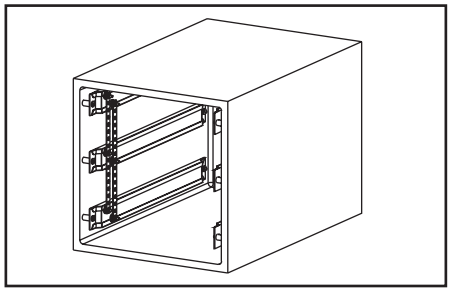
Clamping Bands



Oven Mounting

Oven Mounting — Application of strip elements to ovens may be made simply with the use of welded-on studs and secondary insulation bushings. Mounting holes in tabs are slotted to allow for expansion. Refer to Modifications in this section.

Oven Mounting



Selection Guidelines

Product to be Heated	Temperature Desired for Products	Sheath Material	Product Temp. (˚F)	Allowable Watt Density (W/In²)
Solids				
Molds, Platens, Dies, Pipes, Tanks	Up to 1400°F Clamp-On Applications	Rust-Resisting Iron	560 150	3 8
		Chrome Steel	850 700 400	7 10 15
		INCOLOY® [1]	200 750 1100 1350 1400	28 20 8 3 2.5
Air & Gases				
Free Air Velocity- 1 ft/sec.	Up to 1400°F Bracket Mounted	Rust-Resisting Iron	500 100	3 8
		Chrome Steel	950 800 500	7 10 15
		INCOLOY® [1]	1400 400	3 34
Free Air Velocity- 4 ft/sec.	Up to 1400°F Bracket Mounted	Rust-Resisting Iron	500 250	3 8
		Chrome Steel	1000 850 550	7 10 15
		INCOLOY® [1]	1400 600	5 34

Note: [1]CSA Only

Strip & Ring Heaters

Accessories *(cont'd.)*

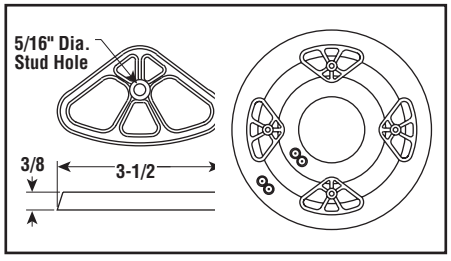
- **Element Clamps**
- **Mounting Studs**

Element Clamps

Cast-iron clamps, for use with Chromalox strip and ring elements, retain their strength at elevated temperatures to assure maximum sheath-to-surface contact. Resulting uniform efficient heat transfer from internal resistance wire to the heated material minimize hot spots on the element, contributing to long service life.

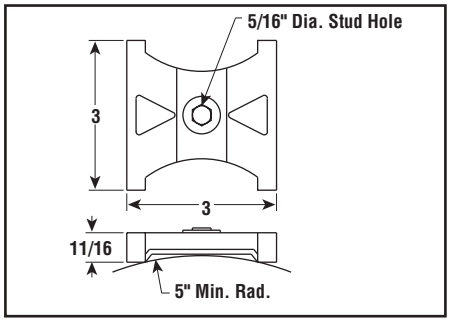
Clamp 6018 — Usually used in sets of two or more to clamp ring elements to flat surfaces. 5/16" flathead machine screws are normally used with head brazed or welded to work surface (PCN 263978).

Clamp 6018



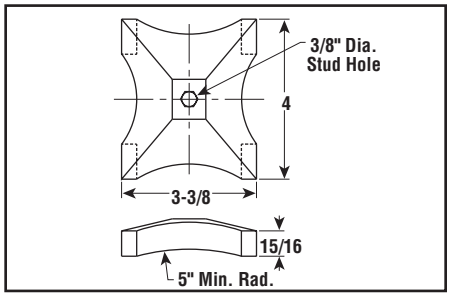
Clamp 5971 — Use to clamp two strip heaters on 2" centers using 5/16" studs spaced 5" apart (PCN 263636).

Clamp 5971



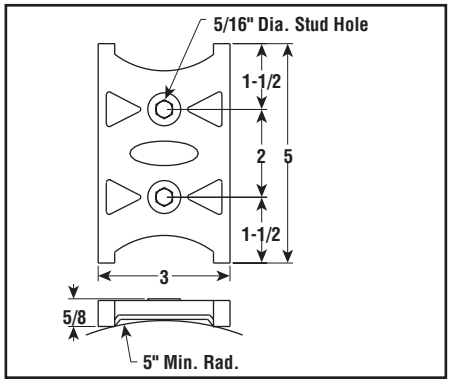
Clamp 6933 — Use to clamp two strip heaters on 3" centers using 3/8" studs at 5" intervals (PCN 263644).

Clamp 6933



Clamp 5970 — Use to clamp three strip heaters on 2" centers using 5/16" studs at 5" intervals (PCN 263652).

Clamp 5970



Mounting Studs

Mounting Studs — For use with Chromalox clamps. For all clamps except No. 6933, studs are 5/16 — 18 x 1-1/2" Monel® (PCN 127845), steel washer (PCN 127853), Monel® nut (PCN 127861). For No. 6993 clamp; studs are 5/16" — 18 x 2" Monel® (PCN 127837).

Installation — Fasten studs to the work surface by welding, brazing or threading. Use correct size stud to fit clamp. See Selection & Installation Guidelines in the Components section. For temperatures over 750°F, stainless steel studs are recommended.

Note — When tightening nuts, torsion should not exceed 10 foot pounds maximum. Heaters must be allowed to expand. One center clamp should hold heater. Nuts on other clamps should be backed off approximately 1/2 turn to allow for heater expansion.

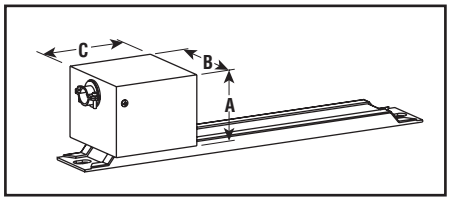
Strip & Ring Heaters

Accessories

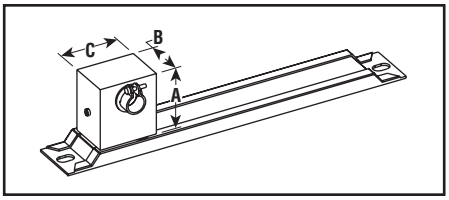
- **Protective Terminal Covers**
- **Shims**
- **Ceramic Post Terminal Insulators**
- **Porcelain Hi-Temp Insulation**

Protective Terminal Covers — Types OT, PT, SE, WS and Seamless Types SSE, SSEM, SSNH and SSNHM. Helps guard terminals from spillovers, dripping. Removable sheet-metal cover, with Bx fitting, is shipped separately.

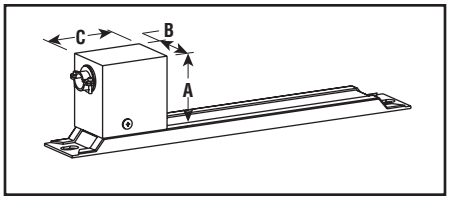
OT-AC-1 (PCN 129242)



PT-AC-1 (PCN 255724)



SE-AC-1 (PCN 256727)



Protective Terminal Covers

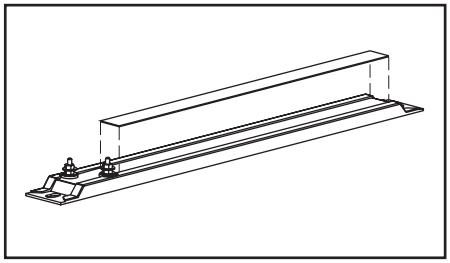
Model	Dimensions (In.)		
	A	B	C
OT-AC-1	2	2-1/2	2-1/2
PT-AC-1	1-7/8	1-1/8	1-3/4
SE-AC-1[1]	2-1/16	1-1/2	2

1. Used on type WS (mounted sideways).

Shims

Shims — Types OT, PT, S, SE and TH. Provide same advantage as flush-top construction and can be used with stock heaters. Shims are 0.031" thick, 29/32" wide and lengths to fit heater.

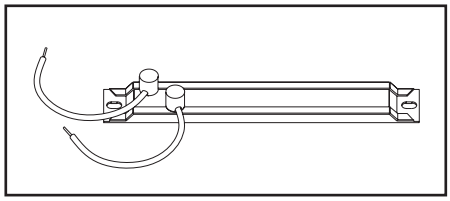
Shims



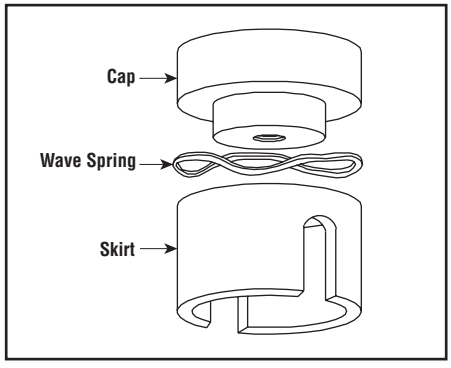
Ceramic Post Terminal Insulaters

Ceramic Post Terminal Insulators — All types except NS and SN. Use with insulated wire to help protect against electrical shock. Wires can leave terminal at any angle.

Ceramic Post Terminal Insulators



Hardware Type	Dimensions (In.)		
	OD	Height	Insulator PCN
Nickel Plate Steel	0.75	0.86	259805
Stainless Steel	0.75	0.86	255732



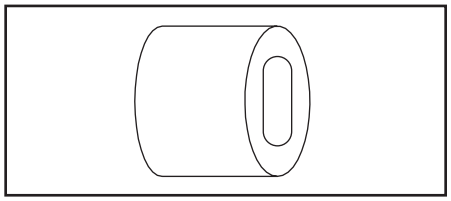
Porcelain Beads

Bead Size	Dimensions (In.)			Wire Size Solid	No. Beads Per Ft.	No. Beads (Pieces)	PCN
	A	B	C				
2	0.17	0.068	0.17	14 B&S	88	4,535	263880
3	0.2	0.092	0.2	12 B&S	69	2,900	263900
4	0.26	0.156	0.26	8 B&S	51	1,500	263927
5	0.33	0.124	0.33	10 B&S	45	650	263943
6	0.4	0.156	0.4	8 B&S	38	360	263960

To Order—Specify PCN and quantity.

Porcelain Hi-Temp Insulation

Porcelain Hi-Temp Insulation — For insulating buss bars spec. 51 porcelain insulators 1/2 L x 13/16" W with 1/8 x 9/16" slot. 95 pieces per lb.



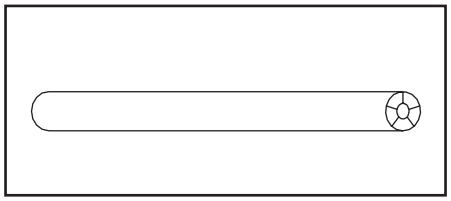
To Order — Specify pounds, PCN 269780 and porcelain insulators.

For Insulating Bare Wires — Two types available:

1. **Porcelain Tubing —** 3/8" O.D. x 1/8" I.D. x 6" L (may be broken for shorter lengths). Suitable for 10-gauge or smaller; 8-gauge takes No. 6 porcelain bead.

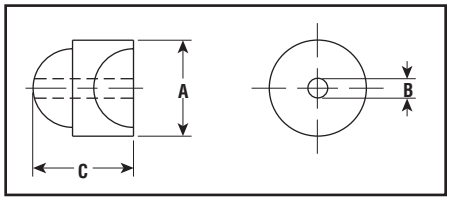
To Order — Specify quantity and PCN 263863.

Porcelain Tubing



2. **Porcelain Beads —** Listed in table below. Can be used when wiring does not permit straight tubing.

Porcelain Beads



3. When selecting porcelain beads for stranded wire, use next larger gauge wire and use bead for that size (i.e., 10 gauge stranded wire requires a No. 6 bead).

Strip & Ring Heaters

Wire & Accessories *(cont'd.)*

- **High Temperature (Bare) Wire**
- **Insulated Wire**
- **Buss Bar**
- **Silicone Boot Termination Kit**
- **Silicone Boot Termination Kit with Thermostat**

Ambient Temperature Corrections for Insulated Wires — Multiply ampacity values, in tables below, by the following correction factors to determine current-carrying capacity at higher ambient temperatures.

Ambient Temp.		Nickel-Plated Copper Teflon® Insulated	Nickel		
°C	°F		Silicone Glass	Teflon® Glass	MGS-Mica Glass
30	86	—	—	—	1.36
50	122	0.98	0.97	0.98	—
60	140	0.95	0.94	0.95	—
70	158	0.93	0.9	0.93	—
80	176	0.9	0.87	0.9	—
90	194	0.87	0.83	0.87	—
100	212	0.85	0.79	0.85	1.22
120	248	0.79	0.71	0.79	—
140	284	0.72	0.61	0.72	—
149	300	0.65	0.5	0.65	1.12
177	350	0.58	0.35	0.58	—
204	400	0.49	—	0.49	1
232	450	0.35	—	0.35	—
260	500	—	—	—	0.87
269	550	—	—	—	—
300	572	—	—	—	0.7

Note — After exposure to high temperatures, all wire insulation becomes brittle and will not withstand repeated flexing.

Wire & Buss Bar

High-temperature wire and buss bar are recommended for connections to heater terminals and for runs in heated zones. When ambient temperature exceeds maximum allowed for insulated wire, use bare wire or buss bar with porcelain insulators. Current-carrying capacities should be carefully noted.

Buss bar is solid or perforated to facilitate wiring, especially when terminals are in line. Perforated buss bar, has 11/32 x 7/32" slots on 7/16" centers. When connecting elements with buss bar, provide expansion loops between elements. Buss bars may be used in multiples for higher ampacity (approx. 33-1/2% per buss bar) than listed above, center.

High Temperature (Bare) Wire

Size AWG	Solid/S Strand/F	Amp-acity[1]	Nom. O.D.	Model	PCN
550°F Max. Wire Temp. Nickel-plated Copper, Uninsulated					
14	S	41	.064	CSB-14	263839
10	S	70	.102	CSB-10	263812
8	S	93	.128	CSB-8	263804
1000°F Max. Wire Temp. Manganese-Nickel, Uninsulated					
14	F	12	.075	AFB-14	269317
14	S	12	.064	ASB-14	269309
12	F	15	.097	AFB-12	269296
10	S	20	.102	ASB-10	269261

To Order — Specify PCN and quantity.

Insulated Wire

Size AWG	Solid/S Strand/F	Amp-acity[1]	Nom. O.D. Insul In.	Model	PCN
392°F Max. Wire Temp. Type A Nickel Wire Silicone Rubber Treated Glass Braid Insulated 600V UL Listed					
16	F	27	.224	3-CFI-16	263759
14	F	36	.237	3-CFI-14	263732
12	F	45	.263	3-CFI-12	263716
10	S	60	.29	3-CSI-10	263687
482°F Max. Wire Temp. Type TGT, Nickel-plated Copper, Teflon® Impregnated Glass Braid Insulated 600V UL Listed					
14	F	39	.121	6-CFI-14	263791
10	F	73	.17	6-CFI-10	263775
10	S	73	.156	6-CSI-10	295419
8	F	93	.212	6-CFI-8	263767
482°F Max. Wire Temp. Teflon® Tape and Silicone Impregnated Glass Braid Insulated 600V UL Listed					
14	F	39	.121	3-AFI-14	269253
12	F	54	.141	3-AFI-12	269237
10	F	73	.17	3-AFI-10	269210
842°F Max. Wire Temp. Nickel-clad Copper, MGS-Mica Glass Insulated 600V					
16	F	33[1]	.065	6-CFIM-16	295355
14	F	44[1]	.102	6-CFIM-14	295363
12	F	55[1]	.118	6-CFIM-12	295371

To Order — Specify PCN and quantity.
1. See note 1 in Buss Bar Table.
2. These wiring recommendations are general in nature. Confirm actual wire size and selection in accordance with NEC (National Electrical Code).

Buss Bar

Buss Bar Monel	DIM (In.) Width	DIM (In.) Thick	Amp-acity[1]	PCN
700°F Max. Wire Temp.				
Solid				
	0.5	.032	18	346124
	0.5	.064	28	346132
Perforated Slot Size = 7/32 Dia.				
	0.5	.032	9	346140
	0.5	.064	16	346159

To Order — Specify PCN and number of feet.
1. These current values will cause the conductor to operate at 100°F above surrounding ambient. Values may also be used for bare wire with porcelain tubes or bead insulation. Monel max. limit is 800˚F.

Silicone Boot Termination Kit

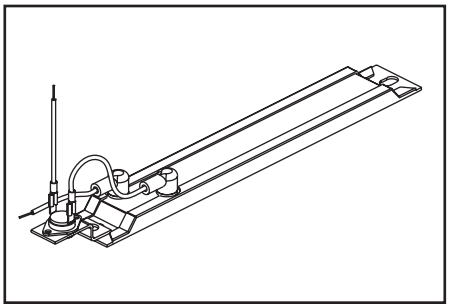
SBK — The silicone boot termination kit provides electrical insulation for strip heater terminals and leads with ring type insulated connector on one end for bringing power to the strip heaters.

Silicone Boot Termination Kit with Thermostat

SBKT — The silicone boot termination kit with thermostat used with strip heaters provides an inexpensive way to maintain temperature in control cabinets, panels and other small enclosures. In this application, strip heaters are used to prevent freezing and corrosion, and to control humidity in enclosures with humidity sensitive electronic components.

Model	PCN	Temperature (°F) Closes	Temperature (°F) Opens
SBKT-1	386011	38	53
SBKT-2	386020	60	75
SBKT-3	386038	105	120
SBK	121890	N/A	N/A

SBKT



Strip & Ring Heaters

Accessories *(cont'd.)*

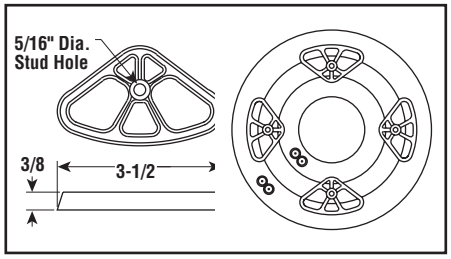
- **Element Clamps**
- **Mounting Studs**

Element Clamps

Cast-iron clamps, for use with Chromalox strip and ring elements, retain their strength at elevated temperatures to assure maximum sheath-to-surface contact. Resulting uniform efficient heat transfer from internal resistance wire to the heated material minimize hot spots on the element, contributing to long service life.

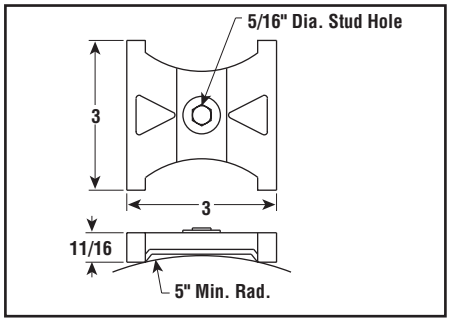
Clamp 6018 — Usually used in sets of two or more to clamp ring elements to flat surfaces. 5/16" flathead machine screws are normally used with head brazed or welded to work surface (PCN 263978).

Clamp 6018



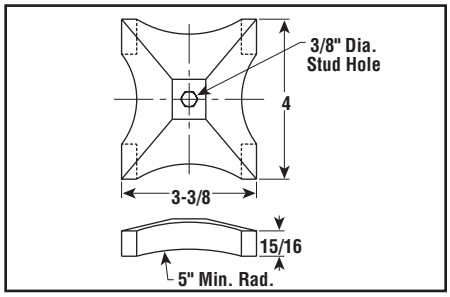
Clamp 5971 — Use to clamp two strip heaters on 2" centers using 5/16" studs spaced 5" apart (PCN 263636).

Clamp 5971



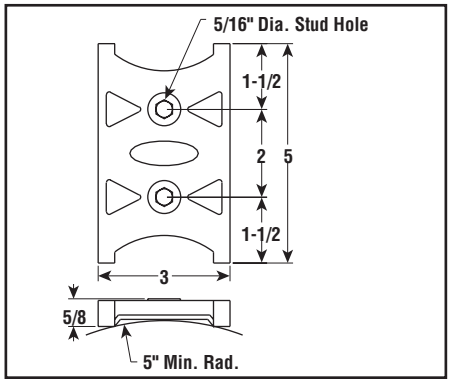
Clamp 6933 — Use to clamp two strip heaters on 3" centers using 3/8" studs at 5" intervals (PCN 263644).

Clamp 6933



Clamp 5970 — Use to clamp three strip heaters on 2" centers using 5/16" studs at 5" intervals (PCN 263652).

Clamp 5970



Mounting Studs

Mounting Studs — For use with Chromalox clamps. For all clamps except No. 6933, studs are 5/16 — 18 x 1-1/2" Monel® (PCN 127845), steel washer (PCN 127853), Monel® nut (PCN 127861). For No. 6993 clamp; studs are 5/16" — 18 x 2" Monel® (PCN 127837).

Installation — Fasten studs to the work surface by welding, brazing or threading. Use correct size stud to fit clamp. See Selection & Installation Guidelines in the Components section. For temperatures over 750°F, stainless steel studs are recommended.

Note — When tightening nuts, torsion should not exceed 10 foot pounds maximum. Heaters must be allowed to expand. One center clamp should hold heater. Nuts on other clamps should be backed off approximately 1/2 turn to allow for heater expansion.

OT

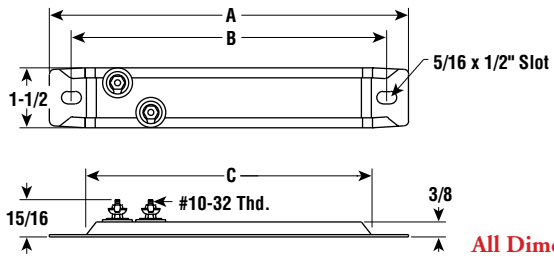
1-1/2" Wide Two Offset Terminals, One End

- **7-1/2 - 47-1/2" Lengths**
- **150 - 2,250 Watts**
- **120 and 240 Volt**
- **6 - 27 W/In²**

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)			Rust-Resisting Iron Sheath							Chrome Steel Sheath							Wt. (Lbs.)
						120V		240V					120V		240V		
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Watts	W/In²	Model	Stock	PCN	Stock	PCN	
7-1/2	6-1/2	6	150	11	**OT-715**	S	129314	S	129322	200	15	**OT-702**	S	129613	S	129621	0.5
8	7	6-1/2	150	10	**OT-815**	S	129330	S	129349	250	17	**OT-802**	S	129630	S	129648	0.56
8	7	6-1/2	175	12	**OT-817**	S	129357	S	129365	400	27	**OT-804**	S	129656	S	129664	0.56
10-1/2	9-1/2	9	250	10	**OT-1025**	S	129373	S	129381	350	15	**OT-1003**	S	129672	S	129680	0.75
10-1/2	9-1/2	9	—	—	—	S	—	—	—	400	17	**OT-1004**	S	129699	S	129701	0.88
12	11	10-1/2	250	8	**OT-1225**	S	129390	S	129402	250	8	**OT-1202**	S	129710	S	129728	0.88
12	11	10-1/2	—	—	—	S	—	—	—	350	14	**OT-1203**	S	129736	S	129744	0.88
12	11	10-1/2	—	—	—	S	—	—	—	500	17	**OT-1205**	S	129752	S	129760	0.88
14	13	12-1/2	300	8	**OT-1430**	S	129410	S	129429	500	14	**OT-1405**	S	129779	S	129787	1
15-1/4	14-1/4	13-3/4	325	8	**OT-1532**	S	129437	S	129445	500	12	**OT-1505**	S	129795	S	129808	1.13
17-7/8	16-7/8	16-3/8	350	6.5	**OT-1835**	S	129453	S	129461	500	10	**OT-1805**	S	129816	S	129824	1.38
17-7/8	16-7/8	16-3/8	375	7	**OT-1837**	S	129470	S	129488	750	15	**OT-1807**	S	129832	S	129840	1.38
17-7/8	16-7/8	16-3/8	500	10	**OT-1850**	S	129496	S	129509	1,000	19	**OT-1801**	S	129859	S	129867	1.38
19-1/2	18-1/2	18	350	6	**OT-1935**	S	129517	S	129525	500	9	**OT-1905**	S	129875	S	129883	1.5
19-1/2	18-1/2	18	500	8	**OT-1950**	S	129533	S	129541	750	13.5	**OT-1907**	S	129891	S	129904	1.5
19-1/2	18-1/2	18	—	—	—	S	—	S	—	1,000	18	**OT-1901**	S	129912	S	129920	1.5
21	20	19-1/2	500	8	**OT-2150**	S	129550	S	129568	750	12	**OT-2107**	S	129939	S	129947	1.63
23-3/4	22-3/4	22-1/4	500	7	**OT-2450**	S	129576	S	129584	500	7	**OT-2405**	S	129955	S	129963	1.81
23-3/4	22-3/4	22-1/4	750	10	**OT-2475**	S	129592	S	129605	750	10	**OT-2407**	S	129971	S	129980	1.81
23-3/4	22-3/4	22-1/4	—	—	—	—	—	—	—	1,000	14	**OT-2401**	S	129998	S	130008	1.81
23-3/4	22-3/4	22-1/4	—	—	—	—	—	—	—	1,500	19	**OT-2415**	S	129226	S	129234	1.81
25-1/2	24-1/2	24	500	6	**OT-2550**	S	121005	S	121013	750	9	**OT-2507**	S	121208	S	121216	2.06
25-1/2	24-1/2	24	750	9	**OT-2575**	S	121021	S	121030	1,000	13	**OT-2501**	S	121224	S	121232	2
26-3/4	25-3/4	25-1/4	700	8	**OT-2670**	S	121048	S	121056	1,000	12	**OT-2601**	S	121240	S	121259	2.19
26-3/4	25-3/4	25-1/4	750	9	**OT-2675**	NS	121064	S	121072	—	—	—	—	—	—	—	2.19
30-1/2	29-3/8	28	750	8	**OT-3075**	S	121080	S	121099	750	8	**OT-3007**	S	121267	S	121275	2.38
30-1/2	29-3/8	28	—	—	—	—	—	—	—	1,000	11	**OT-3001**	S	121283	S	121291	2.38
30-1/2	29-3/8	28	—	—	—	—	—	—	—	1,250	13	**OT-3012**	S	—	S	121304	2.38
33-1/2	32-3/8	31	750	7	**OT-3375**	S	121101	S	121110	750	7	**OT-3307**	S	121312	S	121320	2.69
35-7/8	34-3/4	33-1/2	1,000	9	**OT-3610**	S	121128	S	121136	1,500	13	**OT-3601**	S	121339	S	121347	2.88
38-1/2	37-1/2	36	800	6	**OT-3880**	S	121144	S	121152	1,000	8	**OT-3801**	S	121355	S	121363	3.19
38-1/2	37-1/2	36	1,000	8	**OT-3810**	S	121160	S	121179	1,500	12	OT-3815	NS	121371	S	121380	3.19
42-1/2	41-3/8	40	1,250	9	**OT-4312**	S	121187	S	121195	1,500	11	**OT-4315**	S	121398	S	121400	3.38
47-7/8	46-3/4	45-3/8	—	—	—	—	—	—	—	1,350	9	**OT-4813**	S	—	S	121419	3.75
47-7/8	46-3/4	45-3/8	—	—	—	—	—	—	—	2,250	14	**OT-4822**	S	—	S	121427	3.75

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

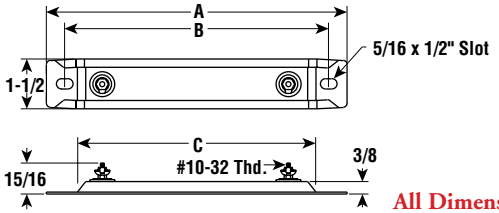
Click Here for Quote!

S & SE

1-1/2" Wide

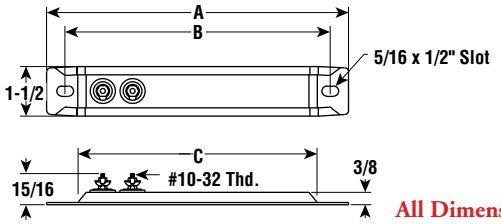
- One Terminal, Each End (type S)
- Two Terminals, One End (type SE)
- 8 - 71-7/8" Lengths
- 150 - 3,000 Watts
- 120 and 240 Volt
- 6 - 21 W/In²

Dimensions (type S)



All Dimensions in Inches

Dimensions (type SE)



All Dimensions in Inches

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Specifications and Ordering Information

Dimensions (In.)			Rust-Resisting Iron Sheath							Chrome Steel Sheath							Wt. (Lbs.)
						120V		240V					120V		240V		
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Watts	W/In²	Model	Stock	PCN	Stock	PCN	
8	7	6-1/2	150	10	**S-815**	**S**	**131115**	**S**	**131123**	250	17	S-802	NS	131473	NS	131481	0.7
9-1/2	8-1/2	8	200	10	**S-920**	**S**	**131131**	**S**	**131140**	300	15	**S-903**	**S**	**131490**	**S**	**131502**	0.8
12	11	10-1/2	250	9	**S-1225**	**S**	**131158**	**S**	**131166**	250	9	**S-1202**	**S**	**131510**	**S**	**131529**	0.9
12	11	10-1/2	—	—	—	—	—	—	—	500	17	**S-1205**	**S**	**131537**	**S**	**131545**	0.9
14	13	12-1/2	300	8	**S-1430**	**S**	**131174**	**S**	**131182**	500	14	**S-1405**	**S**	**131553**	**S**	**131561**	1.1
15-1/4	14-1/4	13-3/4	325	8	S-1532	NS	131190	**S**	**131203**	500	12	**S-1505**	**S**	**131570**	NS	131588	1.2
17-7/8	16-7/8	16-3/8	375	8	S-1837	NS	131211	**S**	**131220**	500	10	**S-1805**	**S**	**131596**	**S**	**131609**	1.4
17-7/8	16-7/8	16-3/8	500	10	**S-1850**	**S**	**131238**	**S**	**131246**	750	15	**S-1807**	**S**	**131617**	**S**	**131625**	1.4
17-7/8	16-7/8	16-3/8	—	—	—	—	—	—	—	1,000	20	**S-1801**	**S**	**131633**	**S**	**131641**	1.4
19-1/2	18-1/2	18	500	9	**S-1950**	**S**	**131254**	**S**	**131262**	500	9	**S-1905**	**S**	**131650**	**S**	**131668**	1.5
19-1/2	18-1/2	18	—	—	—	—	—	—	—	750	13	S-1907	NS	131676	**S**	**131684**	1.6
19-1/2	18-1/2	18	—	—	—	—	—	—	—	1,000	18	**S-1901**	NS	131692	**S**	**131705**	1.6
21	20	19-1/2	500	8	**S-2050**	**S**	**131270**	**S**	**131289**	500	8	**S-2005**	NS	131713	**S**	**131721**	1.8
23-3/4	22-3/4	22-1/4	250	4	**S-2425**	**S**	**131297**	**S**	**131300**	500	7	**S-2405**	**S**	**131730**	**S**	**131748**	1.9
23-3/4	22-3/4	22-1/4	500	7	S-2450	NS	131318	**S**	**131326**	750	10	**S-2407**	**S**	**131756**	**S**	**131764**	1.9
23-3/4	22-3/4	22-1/4	—	—	—	—	—	—	—	1,000	14	**S-2401**	**S**	**131772**	**S**	**131780**	1.9
23-3/4	22-3/4	22-1/4	—	—	—	—	—	—	—	1,500	21	**S-2415**	**S**	**131799**	**S**	**131801**	1.9
25-1/2	24-1/2	24	750	10	**S-2575**	**S**	**131334**	**S**	**131342**	1,000	12	**S-2501**	NS	131810	**S**	**131828**	2
26-3/4	25-3/4	25-1/4	700	8	S-2670	NS	131350	**NS**	**131369**	750	9	**S-2607**	NS	131836	NS	131844	2.1
30-1/2	29-3/8	28	750	8	S-3075	NS	131377	**NS**	**131385**	750	8	**S-3007**	NS	131852	NS	131860	2.1
33-1/2	32-3/8	31	750	7	**S-3375**	NS	131393	**S**	**131406**	1,000	10	**S-3301**	NS	131879	NS	131887	2.6
35-7/8	34-3/4	33-3/8	1,000	7	**S-3610**	**S**	**131414**	**S**	**131422**	1,000	9	**S-3601**	**S**	**131895**	S	131908	2.8
38-1/2	37-3/8	36	1,000	8	**S-3810**	**S**	**131430**	**S**	**131449**	1,000	8	**S-3801**	NS	131916	**S**	**131924**	3
42-1/2	41-3/8	40	1,250	9	**S-4312**	**S**	**131457**	**S**	**131465**	1,500	11	**S-4301**	NS	131932	**S**	**131940**	3.4
25-1/2	24-1/2	24	500	6	**SE-2550**	—	—	NS	130260	—	—	—		—	—	—	—
33-1/2	32-3/8	31	750	7	**SE-3375**	**S**	**130331**	—	—	—	—	—		—	—	—	—
38-1/2	37-3/8	36	800	7	**SE-3880**	**S**	**130374**	—	—	—	—	—		—	—	—	—
53-7/8	52-3/4	51-3/8	—	—	—	—	—	—	—	1,500	9	**SE-54**	—	—	**S**	**130964**	4.5
53-7/8	52-3/4	51-3/8	—	—	—	—	—	—	—	2,500	14	**SE-54**	—	—	**S**	**130980**	4.5
63-7/8	62-3/4	61-3/8	—	—	—	—	—	—	—	1,800	9	**SE-64**	—	—	**S**	**131000**	5.88
63-7/8	62-3/4	61-3/8	—	—	—	—	—	—	—	3,000	14	**SE-64**	—	—	**S**	**131027**	5.88
71-7/8	70-3/4	69-3/8	—	—	—	—	—	—	—	2,000	8	**SE-72**	—	—	**S**	**131035**	6
71-7/8	70-3/4	69-3/8	—	—	—	—	—	—	—	3,300	12	**SE-72**	—	—	**S**	**131043**	6
MONEL® Sheath																	
8	7	6-1/2	150	10	**SE-815M**	**S**	**259995**	—	—	—	—	—		—	—	—	—

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

CHROMALOX

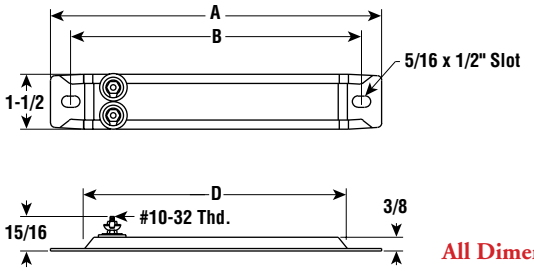
ST & PT
1-1/2" Wide

- **Two Terminals, Centered (type ST)**
- **Two Terminals, One End (type PT)**
- **5-1/2 - 23-3/4" Lengths**
- **125 - 1,000 Watts**
- **120 and 240 Volt**
- **12 - 27 W/In²**

Applications

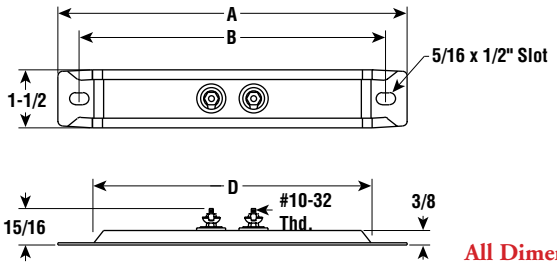
Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Dimensions (type PT)



All Dimensions in Inches

Dimensions (type ST)



All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)						120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
ST — Chrome Steel Sheath										
10-1/2	9-1/2	9	350	15	ST-1003	NS	133102	NS	133110	0.8
12	11	10-1/2	500	17	ST-1205	NS	133129	NS	133137	0.9
15-1/4	14-1/4	13-3/4	500	12	ST-1505	NS	133145	NS	133153	1.1
17-7/8	16-7/8	16-3/8	750	15	ST-1807	NS	133161	NS	133170	1.4
23-3/4	22-3/4	22-1/4	1,000	14	ST-2401	NS	133188	NS	133196	1.8
PT — Rust-Resisting Iron Sheath										
5-1/2	4-1/2	4	125	14	**PT-512**	**S**	**131959**	**S**	**257017**	0.4
6	5	4-1/2	150	14	**PT-615**	**S**	**131967**	**S**	**131975**	0.5
PT — Chrome Steel Sheath										
5-1/2	4-1/2	4	250	27	**PT-502**	**S**	**132329**	**S**	**257025**	0.4
6	5	4-1/2	300	27	**PT-603**	**S**	**132337**	**S**	**132345**	0.5

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Note — Chromalox can furnish type PT made-to-order lengths between 7-1/2 and 23-3/4". As an option, see type OT strip heaters.

TH & STTH

1-1/2" Wide
3 Terminals, 3 Heat

STTH Only

STTH Only

STTH Only

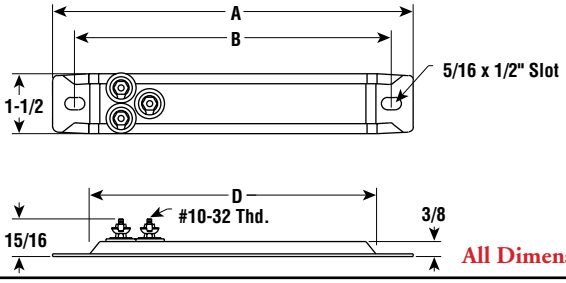
- **3 Terminals, One End (type TH)**
- **3 Terminals, Centered (type STTH)**
- **10-1/2 - 23-3/4" Lengths**
- **400 - 3,000 Watts**
- **120 and 240 Volt**
- **10 - 20 W/In²**

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

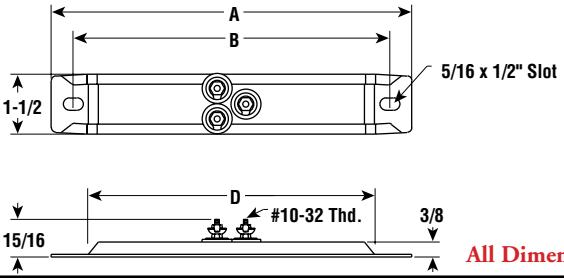
Three-Heat Strips — Have three terminals that split the heater into two equal circuits. Center terminal is common.

Dimensions (type TH)



All Dimensions in Inches

Dimensions (type STTH)



All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)					Chrome Steel Sheath					
						120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
TH — 3 Terminals, One End										
10-1/2	9-1/2	9	400	17	**TH-10**	**S**	**133356**	—	—	0.8
12	11	10-1/2	500	17	**TH-12**	NS	133364	**S**	**133372**	0.9
15-1/4	14-1/4	13-3/4	750	18	**TH-15**	NS	133380	**S**	**133399**	1.1
17-7/8	16-7/8	16-3/8	1,000	20	TH-18	NS	133401	NS	133410	1.4
23-3/4	22-3/4	22-1/4	1,250	17	TH-24	NS	133428	NS	133436	1.4
30-1/2	29-3/8	28	1,500	16	TH-30	NS	133444	NS	133452	2.4
35-7/8	34-3/4	33-3/8	1,750	15	TH-36	NS	133460	NS	133479	2.9
42-1/2	41-3/8	40	1,500	11	TH-43	NS	133487	NS	133495	3.4
42-1/2	41-3/4	40	2,000	15	TH-43	NS	133508	NS	133516	3.4
47-7/8	46-3/4	45-3/8	1,700	11	TH-48	NS	133524	NS	133532	3.7
47-7/8	46-3/4	45-3/8	2,250	14	TH-48	NS	133540	NS	133559	3.7
53-7/8	52-3/4	51-3/8	2,000	11	TH-54	NS	133567	NS	133575	4.1
53-7/8	52-3/4	51-3/8	2,500	14	TH-54	NS	133583	NS	133591	4.1
63-7/8	62-3/4	61-3/8	2,250	10	TH-64	NS	133604	NS	133612	4.9
63-7/8	62-3/4	61-3/8	3,000	13	TH-64	NS	133620	NS	133639	4.9
71-7/8	70-3/4	69-3/8	2,500	10	TH-72	NS	—	NS	133647	5.7
71-7/8	70-3/4	69-3/8	3,000	13	TH-72	NS	—	NS	133655	5.7
STTH — 3 Terminals, Centered										
23	22	21-1/2	750	12	STTH-2307	NS	141452	NS	141460	1.4
23-3/4	22-3/4	22-1/4	1,000	15	STTH-2401	NS	141479	NS	141487	1.4

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

SN & WS
3/4" Wide (SN)
2-1/2" Wide (WS)

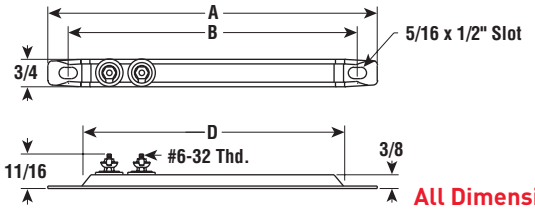
Type SN
- 9-1/2 - 35-3/4" Lengths
- 100 - 600 Watts
- 120 and 240 Volt
- 7 - 11 W/In²

Type WS
- 6-1/2 - 25-1/2" Lengths
- 400 - 1,500 Watts
- 120 and 240 Volt
- 8 - 25 W/In²

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Dimensions (type SN)



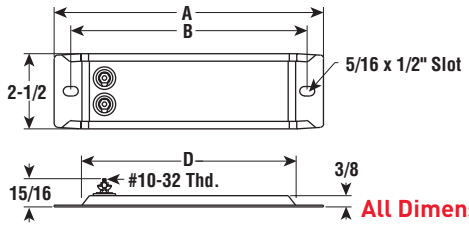
All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)						Rust-Resisting Iron Sheath				
						120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
9-1/2	8-1/2	8	100	8	**SN -910**	**S**	**132919**	—	—	0.4
10-1/2	9-1/2	9	150	11	**SN-1015**	**S**	**132927**	—	—	0.5
12	11	10-1/2	150	9	**SN-1215**	**S**	**132935**	—	—	0.6
15-1/4	14-1/4	13-3/4	200	8	**SN-1520**	**S**	**132943**	**S**	**132951**	0.8
17-7/8	16-7/8	16-3/8	250	8	**SN-1825**	**S**	**132960**	**S**	**132978**	0.9
23-3/4	22-3/4	22-1/4	300	7	**SN-2430**	**S**	**132986**	**S**	**132994**	1
30-3/8	29-3/8	28-7/8	450	8	**SN-3045**	**S**	**133006**	**S**	**133014**	1.3
35-3/4	34-3/4	34-1/4	600	9	**SN-3660**	NS	133022	**S**	**133030**	1.5

Stock Status: **S** = stock AS = assembly stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Dimensions (type WS)



All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)						120V		240V		Wt.
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
WS — Rust-Resisting Iron Sheath										
6-1/2	5-1/2	5	400	14	**WS-640**	**S**	**132716**	**S**	**132724**	0.8
8-1/2	7-1/2	7	500	16	**WS-850**	**S**	**132732**	**S**	**132740**	1
12	11	10-1/2	600	12	WS-1260	NS	144880	NS	144899	1.4
15-1/4	14-1/4	13-3/4	750	11	**WS-1575**	**S**	**132759**	**S**	**132767**	1.9
21	20	19-1/2	850	8	WS-2185	NS	132775	NS	132783	2.3
25-1/2	24-1/2	24	1,000	8	**WS-2510**	**S**	**132791**	**S**	**132804**	2.6
WS — Chrome Steel Sheath										
6-1/2	5-1/2	5	500	25	**WS-605**	**S**	**132812**	**S**	**132820**	0.8
8-1/2	7-1/2	7	600	19	**WS-806**	**S**	**132839**	**S**	**132847**	1
12	11	10-1/2	800	16	WS-1208	NS	144872	NS	144864	1.4
15-1/4	14-1/4	13-3/4	1,000	14	**WS-1501**	**S**	**132855**	**S**	**132863**	1.9
21	20	19-1/2	1,250	12	**WS-2101**	NS	132871	**S**	**132880**	2.3
25-1/2	24-1/2	24	1,500	12	**WS-2515**	NS	132898	**S**	**132900**	2.6

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

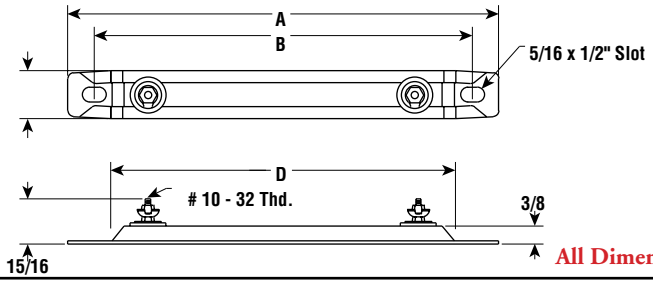
Note — If terminal housing is required with a type WS strip heater, use a type SE-AC-1 mounted sideways. Ceramic post terminal insulators can also be used. (See StripHeater Overview Section.)

SNH & NH

1" Wide

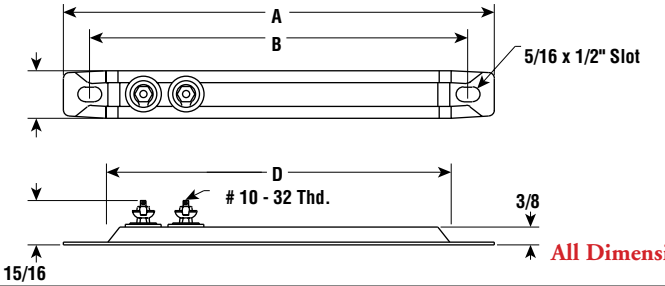
- **Two Terminals, One End (type SNH)**
- **One Terminal, Each End (type NH)**
- **8 - 53-7/8" Lengths**
- **250 - 1,500 Watts**
- **120 and 240 Volt**
- **7 - 24 W/In²**

Dimensions (type NH)



All Dimensions in Inches

Dimensions (type SNH)



All Dimensions in Inches

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Specifications and Ordering Information

Dimensions (In.)					Chrome Steel Sheath					Chrome Steel Sheath					
						120V		240V			120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Model	Stock	PCN	Stock	PCN	(Lbs.)
8	7	6-1/2	250	24	**SNH-08**	**S**	**133727**	—	—	NH-08	NS	133209	—	—	0.4
9-1/2	8-1/2	8	300	21	**SNH-09**	**S**	**133735**	—	—	NH-09	NS	133217	—	—	0.4
11	10	9-1/2	350	19	**SNH-11**	**S**	**133743**	—	—	NH-11	NS	133225	—	—	0.5
12	11	10-1/2	400	19	**SNH-12**	**S**	**133751**	**S**	**133760**	NH-12	NS	133233	—	—	0.6
14	13	12-1/2	450	17	**SNH-14**	**S**	**133778**	**S**	**133786**	NS-14	NS	133241	—	—	0.7
15-1/4	14-1/4	13-3/4	500	17	**SNH-15**	**S**	**133794**	**S**	**133807**	NH-15	NS	133250	NS	133268	0.8
17-7/8	16-7/8	16-3/8	600	17	**SNH-18**	**S**	**133815**	**S**	**133823**	NH-18	NS	133276	NS	133284	0.9
19-1/2	18-1/2	18	600	15	**SNH-19**	NS	133831	**S**	**133840**	—	—	—	—	—	1
19-1/2	18-1/2	18	700	17	—	—	—	—	—	NH-19	NS	133292	NS	133305	1
21	20	19-1/2	750	17	**SNH-21**	NS	133858	**S**	**133866**	NH-21	NS	133313	NS	133321	1
22-1/2	21-1/2	21	750	16	**SNH-22**	NS	133874	**S**	**133882**	—	—	—	—	—	1
23-3/4	22-3/4	22-1/4	300	7	—	—	—	—	—	NH-24	NS	133330	NS	133348	1
23-3/4	22-3/4	22-1/4	800	16	**SNH-24**	NS	133890	**S**	**133903**	—	—	—	—	—	1
25-1/2	24-1/2	24	900	16	SNH-25	NS	133911	NS	133920	—	—	—	—	—	1.1
27-1/2	26-1/2	26	900	14	SNH-27	NS	133938	NS	133946	—	—	—	—	—	1.1
28-3/4	27-3/4	27-1/4	1,000	16	**SNH-28**	NS	133954	**S**	**133962**	—	—	—	—	—	1.3
30-1/2	29-3/8	28	1,000	15	**SNH-30**	**S**	**133970**	**S**	**133989**	—	—	—	—	—	1.3
33-1/2	32-3/8	31	1,000	14	**SNH-33**	NS	133997	**S**	**134009**	—	—	—	—	—	1.4
35-7/8	34-3/4	33-3/8	1,000	13	**SNH-36**	NS	134017	**S**	**134025**	—	—	—	—	—	1.5
38-1/2	37-3/8	36	1,250	15	SNH-38	NS	134033	NS	134041	—	—	—	—	—	1.6
39-7/8	38-3/4	37-3/8	1,250	14	**SNH-40**	NS	134050	**S**	**134068**	—	—	—	—	—	1.6
42-1/2	41-3/8	40	1,250	13	SNH-43	NS	134076	NS	134084	—	—	—	—	—	1.8
43-7/8	42-3/4	41-3/8	1,250	13	SNH-44	NS	134092	NS	134105	—	—	—	—	—	1.8
45-7/8	44-3/4	43-3/8	1,500	14	**SNH-46**	NS	134113	**S**	**134121**	—	—	—	—	—	1.9
47-7/8	46-3/4	45-3/8	1,500	14	SNH-48	NS	134130	NS	134148	—	—	—	—	—	2
50-7/8	49-3/4	48-3/8	1,500	13	SNH-51	NS	134156	NS	134164	—	—	—	—	—	2.1
53-7/8	52-3/4	51-3/8	1,500	12	SNH-54	NS	134172	NS	134180	—	—	—	—	—	2.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

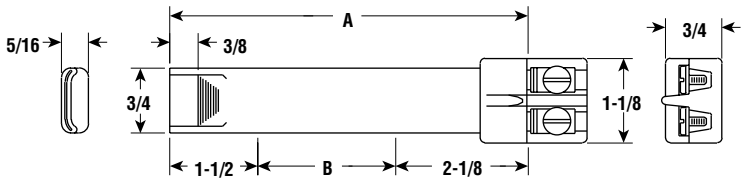
Click Here for Quote!

NS & NSL

3/4" Wide
High Temperature

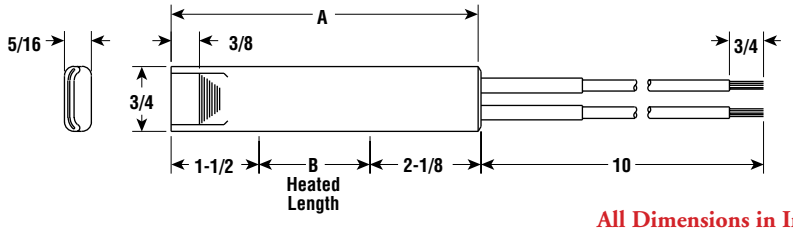
- **Terminal Block, One End (type NS)**
- **Lead Wires, One End (type NSL)**
- **12-1/2 - 54" Lengths**
- **500 - 3,000 Watts**
- **120, 240 and 480 Volt**
- **One-Piece INCOLOY® Sheath**
- **24 - 38 W/In²**
- **1500°F Max. Sheath Temp.**

Dimensions (type NS)



All Dimensions in Inches

Dimensions (type NSL)



All Dimensions in Inches

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

One-piece strip heaters are supplied without mounting tabs as standard.

Specifications and Ordering Information

Dimensions (In.)				INCOLOY® Sheath — Terminal Block							INCOLOY® Sheath — Wire Leads							Wt. (Lbs.)
					120V		240V		480V			120V		240V		480V		
A	B	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Stock	PCN	Model	Stock	PCN	Stock	PCN	Stock	PCN	
12-1/2	8-7/8	500	32	**NS-1205**	**S**	**129250**	NS	142199	—	—	NSL-1205	NS	165462	NS	165470	—	—	7
13-3/4	10-1/8	500	28	NS-1405	NS	142201	**S**	**129269**	—	—	NSL-1405	NS	165489	NS	165497	—	—	7
15-7/16	11-13/16	500	24	NS-1505	NS	142210	NS	142228	—	—	NSL-1505	NS	165550	NS	165518	—	—	7
17-13/16	14-3/16	750	30	NS-1807	NS	142236	NS	142244	—	—	**NSL-1807**	NS	165526	**S**	**144928**	—	—	0.9
18-1/2	14-7/8	1,000	38	NS-1801	NS	142252	NS	142260	—	—	NSL-1801	NS	165534	NS	165542	NS	165876	0.9
19-3/8	15-3/4	1,000	36	**NS-1901**	NS	142287	**S**	**129277**	NS	142295	NSL-1901	NS	165569	NS	165577	NS	165585	1
21-7/16	17-13/16	1,100	35	NS-2001	NS	142308	NS	142316	—	—	NSL-2001	NS	165593	NS	165606	NS	165614	1.1
23-3/4	20-1/8	1,200	34	NS-2401	NS	142332	NS	142340	NS	142359	**NSL-2401**	NS	165622	**S**	**144936**	NS	165630	1.2
25-1/4	21-5/8	1,300	34	NS-2501	NS	142367	NS	142375	NS	142383	NSL-2501	NS	165649	NS	165657	NS	165665	1.3
26-15/16	23-5/16	1,400	34	**NS-2601**	NS	142391	**S**	**129285**	NS	142404	**NSL-2601**	NS	165673	**S**	**144944**	NS	165681	1.3
30-3/16	26-9/16	1,500	32	NS-3015	NS	142412	NS	142420	NS	142439	NSL-3015	NS	165690	NS	165702	NS	165710	1.5
33-15/16	30-5/16	1,500	28	**NS-3301**	NS	142447	**S**	**142455**	NS	142463	NSL-3301	NS	165729	NS	144952	NS	165737	1.7
36-3/8	32-3/4	1,850	32	**NS-3601**	NS	142471	**S**	**142480**	NS	142498	**NSL-3601**	NS	165745	**S**	**144960**	NS	165753	1.9
39	35-3/8	2,000	32	NS-3802	NS	142500	NS	142519	NS	142527	NSL-3802	NS	165761	NS	165770	NS	165788	2
40-3/4	37-1/8	2,100	32	NS-4302	NS	142535	NS	142543	NS	142551	NSL-4302	NS	165796	NS	165809	NS	165817	2.1
51-3/8	47-3/4	2,700	32	**NS-4827**	NS	142560	**S**	**142578**	NS	142586	NSL-4827	NS	165825	NS	165833	NS	165841	2.7
54	50-3/8	3,000	34	**NS-5403**	NS	—	**S**	**142594**	NS	142607	NSL-5403	—	—	NS	165850	NS	165868	2.8

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

NSA & SSNHM

1/2" Wide (NSA)
1-1/8" Wide (SSNHM)

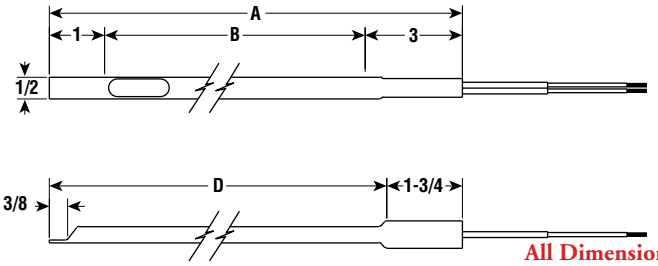
Type NSA

- **7-1/16 - 16-1/4" Lengths**
- **125 - 400 Watts**
- **120 and 240 Volt**
- **One-Piece INCOLOY® Sheath**
- **7 - 32 W/In²**
- **1500°F Max. Sheath Temp.**

Type SSNHM

- **8-1/8 - 27-5/8" Lengths (with Optional Mounting Tabs)**
- **200 - 800 Watts**
- **120 and 240 Volt**
- **One-Piece Monel Sheath**
- **900°F Max. Sheath Temp.**
- **13 - 19 W/In²**

Dimensions (type NSA)



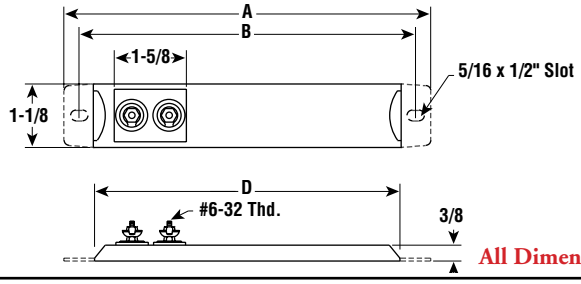
All Dimensions in Inches

Specifications and Ordering Information — NSA

Dimensions (In.)						INCOLOY® Sheath				
						120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
7-1/16	3-1/16	5-5/16	125	32	NSA-711	NS	328292	—	—	0.2
10-11/16	6-11/16	8-15/16	300	20	NSA-1013	NS	328305	—	—	0.3
11-1/8	7-1/8	9-3/8	350	22	NSA-1123	—	—	NS	328348	0.4
13-3/4	9-3/4	12	200	11	NSA-1422	—	—	NS	328321	0.5
14-3/16	10-3/16	12-7/16	200	7	NSA-1412	NS	328313	—	—	0.5
16-1/4	12-1/4	14-1/2	400	19	**NSA-1624**	—	—	**S**	**328330**	0.6

Stock Status: S = stock AS = assembly stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Dimensions (type SSNHM)



All Dimensions in Inches

Specifications and Ordering Information — SSNHM

Dimensions (In.)						MONEL® Sheath				
						120V		240V		Wt.
A	B	D	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
8-1/8	7-3/8	6-5/8	200	19	SSNHM-08	NS	142842	NS	—	0.4
9-5/8	8-7/8	8-1/8	275	19	SSNHM-09	NS	142850	NS	—	0.4
11-1/8	10-3/8	9-5/8	300	16	SSNHM-11	NS	142869	NS	—	0.5
12-1/8	11-3/8	10-5/8	320	16	SSNHM-12	NS	142877	NS	142885	0.6
14-1/8	13-3/8	12-5/8	375	14	SSNHM-14	NS	142893	NS	142906	0.7
15-3/8	14-5/8	13-7/8	415	14	SSNHM-15	NS	142914	NS	142922	0.8
18	17-1/8	16-1/2	495	13	SSNHM-18	NS	142930	NS	142949	1.4
19-5/8	18-7/8	18-1/8	550	13	SSNHM-19	NS	142957	NS	142965	1.4
21-1/8	20-3/8	19-5/8	600	13	SSNHM-21	NS	142973	NS	142981	1.6
22-5/8	21-7/8	22-1/8	625	13	SSNHM-22	NS	142990	NS	143001	1.8
23-7/8	23-1/8	22-3/8	675	13	SSNHM-24	NS	143010	NS	143028	1.8
25-5/8	24-7/8	24-1/8	725	13	SSNHM-25	NS	143036	NS	143044	2.1
27-5/8	26-7/8	26-1/8	800	13	SSNHM-27	NS	143052	NS	143060	2.3

Stock Status: S = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

One-piece strip heaters are supplied without mounting tabs as standard.

SSE & SSEM

1-11/16" Wide Two Terminals, One End

SSE Only

- 8-1/8 - 72" Lengths
- 200 - 2,550 Watts
- 120 and 240 Volt
- 10 - 13 W/In²
- Optional Mounting Tabs

Type SSE
- Rust Resisting One-Piece Iron Sheath
- 750˚F Max. Sheath Temp.

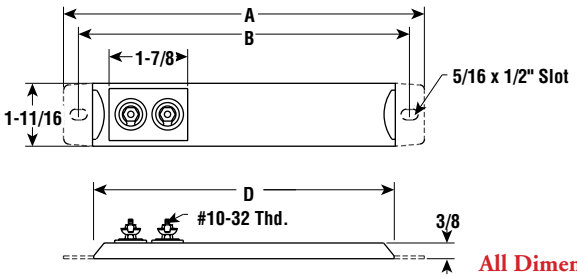
Type SSEM
- Monel One-Piece Sheath
- 900˚F Max. Sheath Temp.

Applications

Strip heaters are used for heat transfer by conduction or convection to heat liquids, air, gases and surfaces. See guidelines in the Strip Heater Overview section.

Seamless strip elements are supplied without mounting tabs as standard.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Dimensions (In.)			Watts	W/In²	Model	120V		240V		Wt. (Lbs.)
A	B	D				Stock	PCN	Stock	PCN	
SSE — Rust-Resisting Iron Sheath										
8-1/8	7-3/8	6-5/8	200	13	SSE-820	NS	141495	NS	—	0.7
10-5/8	9-7/8	9-1/8	275	11	SSE-1027	NS	141508	NS	141516	0.8
12-1/8	11-3/8	10-5/8	320	11	SSE-1232	NS	141524	NS	141532	0.9
14-1/8	13-3/8	12-5/8	375	10	SSE-1437	NS	141540	NS	141559	1
15-3/8	14-5/8	13-7/8	415	10	SSE-1541	NS	141567	NS	141575	1.1
18	17-1/4	16-1/2	500	10	SSE-1849	NS	141583	NS	141591	1.4
19-5/8	18-7/8	18-1/8	550	10	SSE-1955	NS	141604	NS	141612	1.5
21-1/8	20-3/8	19-5/8	625	10	SSE-2060	NS	141620	NS	141639	1.7
23-7/8	23-1/8	22-3/8	750	10	SSE-2467	NS	141647	NS	141655	1.8
25-5/8	24-7/8	24-1/8	800	10	SSE-2572	NS	141663	NS	141671	2.1
30-5/8	29-3/8	28-1/8	1,000	10	SSE-3085	NS	141680	NS	141698	2.3
33-5/8	32-3/8	31-1/8	1,250	12	SSE-3392	NS	141700	NS	141719	2.7
36	34-7/8	33-1/2	1,500	13	SSE-3611	NS	141727	NS	141735	2.9
38-5/8	37-3/8	36-1/8	1,500	12	SSE-3817	NS	141743	NS	141751	3.2
42-5/8	41-3/8	40-1/8	1,500	11	SSE-4315	NS	141760	NS	141778	3.4
48	46-3/4	45-1/2	1,650	10	SSE-4816	NS	141786	NS	141794	3.8
54	52-3/4	51-1/2	1,875	10	SSE-5418	NS	141807	NS	141815	4.2
64	62-3/4	61-1/2	2,250	10	SSE-6422	—	—	NS	141823	5.1
72	70-3/4	69-1/2	2,550	10	SSE-7225	—	—	NS	141831	5.8
SSEM — MONEL® Sheath										
8-1/8	7-3/8	6-5/8	200	13	SSEM-820	NS	141840	NS	—	0.7
10-5/8	9-7/8	9-1/8	275	11	SSEM-1027	NS	141858	NS	141866	0.8
12-1/8	11-3/8	10-5/8	320	11	SSEM-1232	NS	141874	NS	141882	0.9
14-1/8	13-3/8	12-5/8	375	10	SSEM-1437	NS	141890	NS	141903	1
15-3/8	14-5/8	13-7/8	415	10	SSEM-1541	NS	141911	NS	141920	1.1
18	17-1/4	16-1/2	500	10	SSEM-1849	NS	141938	NS	141946	1.4
19-5/8	18-7/8	18-1/8	550	10	SSEM-1955	NS	141954	NS	141962	1.5
21-1/8	20-3/8	19-5/8	625	10	SSEM-2060	NS	141970	NS	141989	1.7
23-7/8	23-1/8	22-3/8	750	10	SSEM-2467	NS	141997	NS	142009	1.8
25-5/8	24-7/8	24-1/8	800	10	SSEM-2572	NS	142017	NS	142025	2.1
30-5/8	29-3/8	28-1/8	1,000	10	SSEM-3085	NS	142033	NS	142041	2.3
33-5/8	32-3/8	31-1/8	1,250	12	SSEM-3392	NS	142050	NS	142068	2.7
36	34-7/8	33-1/2	1,500	13	SSEM-3611	NS	142076	NS	142084	2.9
38-5/8	37-3/8	36-1/8	1,500	12	SSEM-3817	NS	142092	NS	142105	3.2
42-5/8	41-3/8	40-1/8	1,500	11	SSEM-4315	NS	142113	NS	142121	3.4
48	46-3/4	45-1/2	1,650	10	SSEM-4816	NS	142130	NS	142148	3.8
54	52-3/4	51-1/2	1,875	10	SSEM-5418	NS	142156	NS	142164	4.2
64	62-3/4	61-1/2	2,250	10	SSEM-6422	—	—	NS	142172	5.1
72	70-3/4	69-1/2	2,550	10	SSEM-7225	—	—	NS	142180	5.8

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts, phase and quantity.

AEPS
Explosion-Proof Strip Heater

- **32-3/4 - 128-3/4" Lengths**
- **110 - 1,100 Watts**
- **120, 208, 240, 277 and 480 Volt**

Applications

For coal, ore, resins and other bulk handling equipment.

Explosion-Proof Applications — (NEC Class II, Group E, F, G and Class I, Group C and D) chemical and petrochemical plants, tanks, large pipes, control cabinets, resin material handling equipment, aggregate and other bulk raw material processors.

Features

UL Listed for use in Division I, Class I, Groups B, C, D; Class II, Groups E, F and G hazardous locations.

Integral manual reset.
Overtemperature cutout.

Freeze Protection — Particularly effective when installed at the mouth of the mine where warm moist air and coal or ore are first exposed to cold outside air, causing condensation and subsequent freezing at temperatures below 32°F. Conveyor heaters prevent such freezing, keeping the conveyors in uninterrupted operation.

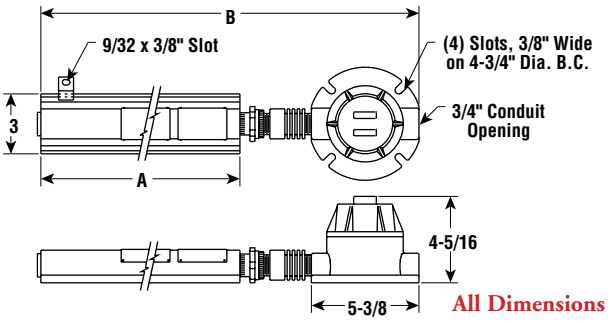
Easy System Start-Up in freezing weather.

Keeps Resins and Process Liquids Free-Flowing regardless of ambient temperature.

Long Life Operation — Heaters, inserted into solid aluminum body, resist physical damage from rough handling and/or contact with process material (Patented design).

Mounting — Channel in extrusion facilitates mounting to any surface. Clamps are supplied or bolt holes can be drilled through extrusion plate.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information for 9 Watts/In².

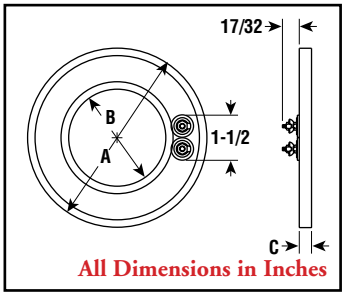
Dimensions (In.)		Watts	Volts	Model	Stock	PCN	Wt. (Lbs.)
A	B						
Temp. Code T3 (for Class I, Div. 1, Groups B, C, D) – 9 W/in²							
24	32-3/4	220	120	AEPS-024-220-917	NS	235213	24
24	32-3/4	220	240	AEPS-024-220-917	NS	235221	24
36	44-3/4	330	120	AEPS-036-330-917	NS	235230	27.2
36	44-3/4	330	240	AEPS-036-330-917	NS	235248	27.2
48	56-3/4	440	120	AEPS-048-440-917	NS	235256	30.6
48	56-3/4	440	240	AEPS-048-440-917	NS	235264	30.6
60	68-3/4	550	208	AEPS-060-550-917	NS	235222	34
60	68-3/4	550	240	AEPS-060-550-917	NS	235280	34
72	80-3/4	660	208	AEPS-072-660-917	NS	235299	37.4
72	80-3/4	660	240	AEPS-072-660-917	NS	235301	37.4
84	92-3/4	770	208	AEPS-084-770-917	NS	235310	40.9
84	92-3/4	770	240	AEPS-084-770-917	NS	235328	40.9
96	104-3/4	880	240	AEPS-096-880-917	NS	235336	44.3
96	104-3/4	880	480	AEPS-096-880-917	NS	235344	44.3
108	116-3/4	990	277	AEPS-108-990-917	NS	235352	47.8
108	116-3/4	990	480	AEPS-108-990-917	NS	235360	47.8
120	128-3/4	1,100	277	AEPS-120-1100-917	NS	235379	50.9
120	128-3/4	1,100	480	AEPS-120-1100-917	NS	235387	50.9

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

A
Single & Three Heat Ring Heater

- **125 - 1,800 Watts**
- **120 and 240 Volt**
- **Ring Clamp (type 6018) Mounts Element to Heated Surface**

Dimensions



All Dimensions in Inches

Applications

- Tank Bottoms
- Platens
- Dies
- Hot Plates
- Glue and Lead Melting Pots

Features

Chrome Steel Sheath — 1200°F max. sheath temp.

Single-Heat Rings — Have two terminals for single wattage on-off switch or thermostat.

Three-Heat Rings — Have three terminals that split the heater into two equal circuits. Center terminal is common.

Refractory-Insulated Construction — for dependable long service life.

Easy Installation — Circular shape and use of Chromalox utility clamps simplifies use of ring heaters.

Nesting Rings to Pack Heat in a Small Area — For example A-65, A-80 and A-90 combination provide 4,050 Watts within a 11" circle.

Specifications and Ordering Information

Dimensions (In.)					Chrome Steel Sheath — Single Heat					Chrome Steel Sheath — Three Heat					
						120V		240V			120V		240V		Wt.
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Model	Stock	PCN	Stock	PCN	(Lbs.)
2-15/32	7/8	1/4	125	10	**A-00**	**S**	**135239**	—	—	—	—	—	—	—	0.2
2-15/32	7/8	1/4	150	13	**A-00**	**S**	**135247**	—	—	—	—	—	—	—	0.2
2-15/32	7/8	1/4	200	17	**A-00**	**S**	**135255**	—	—	—	—	—	—	—	0.2
3	7/8	1/4	200	12	**A-10**	**S**	**135263**	—	—	—	—	—	—	—	0.3
3	7/8	1/4	250	15	**A-10**	**S**	**135271**	—	—	—	—	—	—	—	0.3
3	7/8	1/4	300	18	**A-10**	**S**	**135280**	—	—	—	—	—	—	—	0.3
3-1/2	7/8	1/4	200	9	**A-15**	**S**	**135298**	**S**	**135300**	—	—	—	—	—	0.5
3-1/2	7/8	1/4	300	14	**A-15**	**S**	**135319**	**S**	**135327**	—	—	—	—	—	0.5
3-1/2	7/8	1/4	350	16	**A-15**	**S**	**135335**	**S**	**135343**	—	—	—	—	—	0.5
3-31/32	1-11/16	5/16	300	12	**A-20**	**S**	**135351**	**S**	**135360**	**A-20-3**	**S**	**135415**	NS	135423	0.7
3-31/32	1-11/16	5/16	400	15	**A-20**	**S**	**135378**	**S**	**135386**	A-20-3	NS	135431	NS	135440	0.7
3-31/32	1-11/16	5/16	500	19	**A-20**	**S**	**135394**	**S**	**135407**	A-20-3	NS	135458	NS	135466	0.7
4-5/8	2-1/4	5/16	450	14	**A-30**	**S**	**135474**	**S**	**135482**	**A**-30-3	NS	135538	NS	135546	0.8
4-5/8	2-1/4	5/16	500	15	**A-30**	**S**	**135490**	**S**	**135503**	**A-30-3**	**S**	**135554**	**S**	**135562**	0.8
4-5/8	2-1/4	5/16	550	17	**A-30**	**S**	**135511**	**S**	**135520**	**A-30-3**	**S**	**135570**	NS	135589	0.8
5-7/16	3	5/16	500	12	**A-40**	**S**	**135597**	**S**	**135600**	A-40-3	S	135650	NS	135669	0.8
5-7/16	3	5/16	660	16	**A-40**	**S**	**135618**	**S**	**135626**	**A-40-3**	**S**	**135677**	NS	135685	0.8
5-7/16	3	5/16	750	18	**A-40**	**S**	**135634**	**S**	**135642**	A-40-3	NS	135693	**S**	**135706**	0.8
6-1/16	4-5/16	5/16	400	10	**A-50**	**S**	**135714**	**S**	**135722**	A-50-3	NS	135773	NS	135781	0.9
6-1/16	4-5/16	5/16	450	11	A-50	NS	135730	NS	135749	A-50-3	NS	135790	NS	135802	0.9
6-1/16	4-5/16	5/16	500	13	**A-50**	**S**	**135757**	**S**	**135765**	A-50-3	NS	135810	NS	135829	0.9
6-1/8	3	5/16	660	12	A-65	NS	135837	NS	135845	A-65-3	NS	135896	NS	135909	1
6-1/8	3	5/16	750	14	**A-65**	**S**	**135853**	**S**	**135861**	A-65-3	NS	135917	NS	135925	1
6-1/8	3	5/16	1,000	19	**A-65**	**S**	**135870**	**S**	**135888**	A-65-3	NS	135933	NS	135941	1
6-19/32	4-1/2	5/16	500	11	**A-60**	**S**	**135950**	**S**	**135968**	A-60-3	NS	136012	NS	136020	1
6-19/32	4-1/2	5/16	660	14	**A-60**	**S**	**135976**	NS	135984	A-60-3	NS	136039	NS	136047	1
6-19/32	4-1/2	5/16	750	16	**A-60**	**S**	**135992**	**S**	**136004**	**A-60-3**	**S**	**136055**	**S**	**136063**	1
7-7/16	5-5/16	5/16	550	9	**A-70**	**S**	**136071**	**S**	**136080**	A-70-3	NS	136135	NS	136143	1.1
7-7/16	5-5/16	5/16	660	11	A-70	NS	136098	—	—	**A-70-3**	**S**	**136151**	NS	136160	1.1
7-7/16	5-5/16	5/16	750	13	**A-70**	**S**	**136119**	**S**	**136127**	A-70-3	NS	136178	NS	136186	1.1
8-3/8	6-3/16	5/16	880	14	**A-80**	**S**	**136194**	**S**	**136207**	A-80-3	NS	136258	NS	136266	1.3
8-3/8	6-3/16	5/16	1,050	16	**A-80**	**S**	**136215**	**S**	**136223**	A-80-3	NS	136274	NS	136282	1.3
8-3/8	6-3/16	5/16	1,250	19	**A-80**	**S**	**136231**	**S**	**136240**	**A-80-3**	**S**	**136290**	NS	136303	1.3
10-31/32	8-1/2	5/16	1,000	10	**A-90**	**S**	**136311**	**S**	**136320**	**A-90-3**	**S**	**136370**	**S**	**136389**	1.8
10-31/32	8-1/2	5/16	1,500	16	**A-90**	**S**	**136338**	**S**	**136346**	A-90-3	NS	136397	NS	136400	1.8
10-31/32	8-1/2	5/16	1,800	19	**A-90**	**S**	**136354**	**S**	**136362**	A-90-3	NS	136418	NS	136426	1.8

Stock Status: **S** = stock NS = non-stock **To Order —** Specify model, PCN, watts, volts and quantity.

HSN, HSW & RHSW

Half & Full Sheath Ring Heaters

- **Narrow Ring (type HSN)**
- **Wide Ring (type HSW)**
- **Split Rivet/Wide Ring (type RHSW)**
- **500 - 1,000 Watts**
- **120 and 240 Volt**
- **Use Ring Clamp 6018 to Mount Element to Heated Surface**

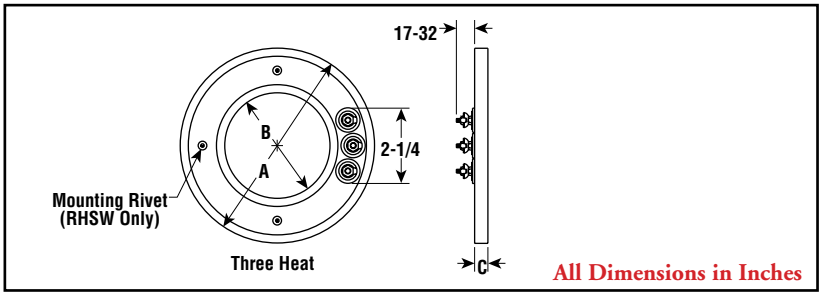
Full Sheath Only

HSW & RHSW Full & Half Sheath

Full Sheath Only

Full Sheath Only

Dimensions



All Dimensions in Inches

Features

Single-Heat Rings — Have two terminals for single wattage on-off switch or thermostat.

Three-Heat Rings — Have three terminals that split the heater into 2 equal circuits. Center terminal is common.

Easy Installation — Circular shape and use of Chromalox utility clamps simplifies use of ring heaters.

Nesting Rings to pack heat in a small area.

Half Sheath Units Have Reduced Thermal Gradient to Heated Surface — Provides faster heat up.

Specifications and Ordering Information

Dimensions (In.)			Rust-Resisting Iron Sheath							Chrome Steel Sheath							Wt. (Lbs.)
						120V		240V					120V		240V		
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Watts	W/In²	Model	Stock	PCN	Stock	PCN	
HSN — Half Sheath																	
6	4-5/16	1/4	500	14	**HSN-6**	**S**	**185818**	—	—	—	—	—	—	—	—	—	0.5
6	4-5/16	1/4	800	12	HSN-6	—	—	NS	185826	—	—	—	—	—	—	—	0.5
6	4-5/16	1/4	—	—	—	—	—	—	—	500	14	HSN-60	NS	185834	—	—	0.5
6	4-5/16	1/4	—	—	—	—	—	—	—	500	14	**HSN-60**	—	—	**S**	**185842**	0.5
HSW — Full Sheath																	
6	3-3/4	1/4	1,000	24	**HSW-61**	**S**	**185877**	—	—	—	—	—	—	—	—	—	0.5
HSW — Half Sheath																	
5-7/8	3-9/16	7/32	500	16	**HSW-5**	**S**	**185746**	—	—	—	—	—	—	—	—	—	0.5
5-7/8	3-9/16	7/32	750	23	**HSW-5**	NS	—	**S**	**185738**	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	500	12	HSW-6	**S**	185754	—	—	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	500	12	**HSW-6**	**S**	—	**S**	**185762**	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	700	17	**HSW-6**	—	**185770**	—	—	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	700	17	HSW-6	—	—	NS	185789	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	700	17	**HSW-6-3**	—	**185797**	—	—	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	700	17	**HSW-6-3**	—	**—**	**S**	**185800**	—	—	—	—	—	—	—	0.5
6	3-3/4	1/4	—	—	—	—	—	—	—	500	12	HSW-60	NS	185850	—	—	0.5
6	3-3/4	1/4	—	—	—	—	—	—	—	800	20	HSW-60	—	—	NS	185869	0.5
6	3-3/4	1/4	—	—	—	—	—	—	—	1,000	24	**HSW-60-3**	**S**	**255767**	—	—	0.5
6	3-3/4	1/4	—	—	—	—	—	—	—	750	18	**HSW-60-3**	—	—	**S**	**255759**	0.5
RHSW — Half Sheath																	
6	3-3/4	1/4	350	8	**RHSW-6-3**	**S**	**185893**	—	—	—	—	—	—	—	—	—	0.6
6	3-3/4	1/4	500	12	RHSW-6	NS	185922	—	—	—	—	—	—	—	—	—	0.6
RHSW — Full Sheath																	
6	3-3/4	1/4	800	19	**RHSW-61**	**S**	**185906**	—	—	—	—	—	—	—	—	—	0.6
6	3-3/4	1/4	800	19	RHSW-61-3	—	—	NS	185914	—	—	—	—	—	—	—	0.6

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

1. "-3" in model number indicates 3 heat.

Other Note — Type HSN is not CSA Certified.

Click Here for Quote!

HSP

Half & Full Sheath Disc Heater

- **Solid Disc Design**
- **150 - 600 Watts**
- **120 and 240 Volt**
- **Full and Half Sheath Available**
- **Use Ring Clamp 6018 to Mount Element to Heated Surface**

HSP-3, HSP31
2 Terminals Only

HSP-3-3, HSP31-3
3 Terminals Only

HSP-2.75, w6/32
Terminal Bolts

Fig. A

HSP-2, with leads

Fig. B

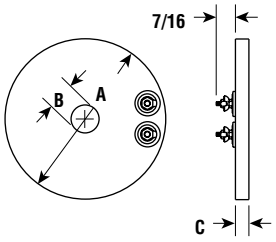
Full Sheath Only

Half & Full Sheath

Full Sheath Only

Full Sheath Only

Dimensions



All Dimensions in Inches

Features

Single-Heat Discs — Have two terminals for single wattage on-off switch or thermostat.

Three-Heat Discs — Have three terminals that split the heater into 2 equal circuits. Center terminal is common.

Easy Installation — Circular shape and use of Mounts with Bolt or Studs simplifies use of disc heaters.

Half Sheath Units Have Reduced Thermal Gradient to Heated Surface — Provides faster heat up.

Nest Disc in Ring heaters to pack heat in small area.

Specifications and Ordering Information

Dimensions (In.)			Rust-Resisting Iron Sheath							Chrome Steel Sheath							Wt. (Lbs.)
						120V		240V					120V		240V		
A	B	C	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Watts	W/In²	Model	Stock	PCN	Stock	PCN	
Half Sheath — 6/32 Terminal Bolts																	
2-3/4	1/4	11/32	250	18	**HSP-2.75**	**S**	**185949**	—	—	—	—	—	—	—	—	—	0.25
3-1/4	5/16	11/32	200	11	**HSP-3**	**S**	**185957**	—	—	—	—	—	—	—	—	—	0.3
3-1/4	5/16	11/32	400	21	**HSP-3**	**S**	**185965**	—	—	—	—	—	—	—	—	—	0.3
3-1/4	5/16	11/32	150	8	**HSP-3-3**	**S**	**185973**	—	—	—	—	—	—	—	—	—	0.3
Full Sheath — 6/32 Terminal Bolts																	
3-1/4	13/64	5/16	400	24	**HSP-31**	**S**	**255513**	—	—	—	—	HSP-310	—	—	—	**143116**	0.4
3-1/4	13/64	5/16	400	24	**HSP-31**	—	—	**S**	**255521**	—	—		—	—	—	—	0.4
3-1/4	13/64	5/16	400	24	**HSP-31-3**	**S**	**255530**	—	—	—	—	**HSP-310-3**	—	**143108**	—	—	0.4
Half Sheath — Lead Wires																	
2-1/4	1/4	1/4	150	15	HSP-2	NS	185930	—	—	250	26	**HSP-20**	**S**	**274191**	—	—	0.2
Half Sheath — 6/32 Terminal Bolts																	
3-1/4	9/32	11/32	600	31	—	—	—	—	—	600	31	**HSP-30**	**S**	**129306**	—	—	0.3
3-1/4	9/32	11/32	400	21	—	—	—	—	—	400	21	**HSP-30-3**	**S**	**185981**	—	—	0.3

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

1. "-3" in model number indicates 3 heat

MIS
Mighty-Tuff® Strip Heaters

- High Temperature (up to 1200˚F Sheath Temperature)
- 120 and 240 Volt
- Up to 6” Wide
- Up to 74” in Length
- High Temperature Leads (450˚C) or Threaded Terminations
- Stainless Steel Sheath

Mighty-Tuff with SG terminals and Mounting Holes

Mighty-Tuff with Lead Configuration

Description

The Mighty-Tuff Strip Heater provides high temperatures, extreme watt densities and quick responses in applications where previously, any other type of strip heater could not possibly be considered. Heat is transferred rapidly from the resistance element to the sheath for lower internal temperatures and long life because of the compaction of the component materials. In the most difficult application or in normal use, the Mighty-Tuff will significantly improve strip heater performance. Careful consideration in clamping strip heaters to the surface is necessary to provide adequate heat dissipation.

Advantages

Excellent heater for any applications requiring high temperatures and/or high watt densities up to 100 watts per square inch. Compacted mineral insulation and low profile allow for quick heat up and lower internal temperatures.

Features

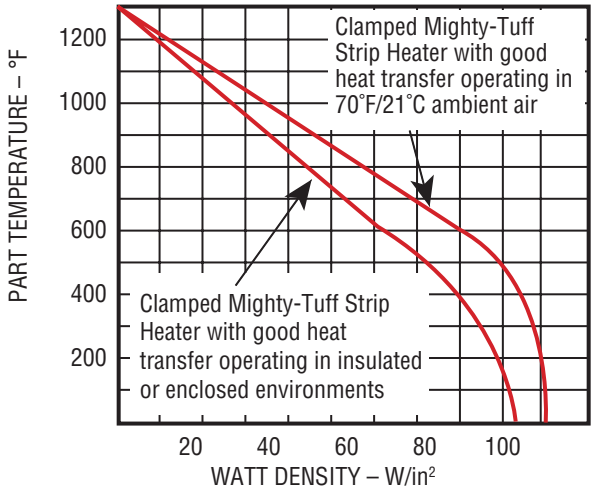
A wide variety of terminations are available. These include leads, threaded post terminals and button terminals. All terminations on the Mighty Tuff band are also available on the strip heaters. See Mighty Tuff band section for details.

MIS
Mighty-Tuff® Strip Heaters *(cont'd.)*

Specifications and Ordering Information

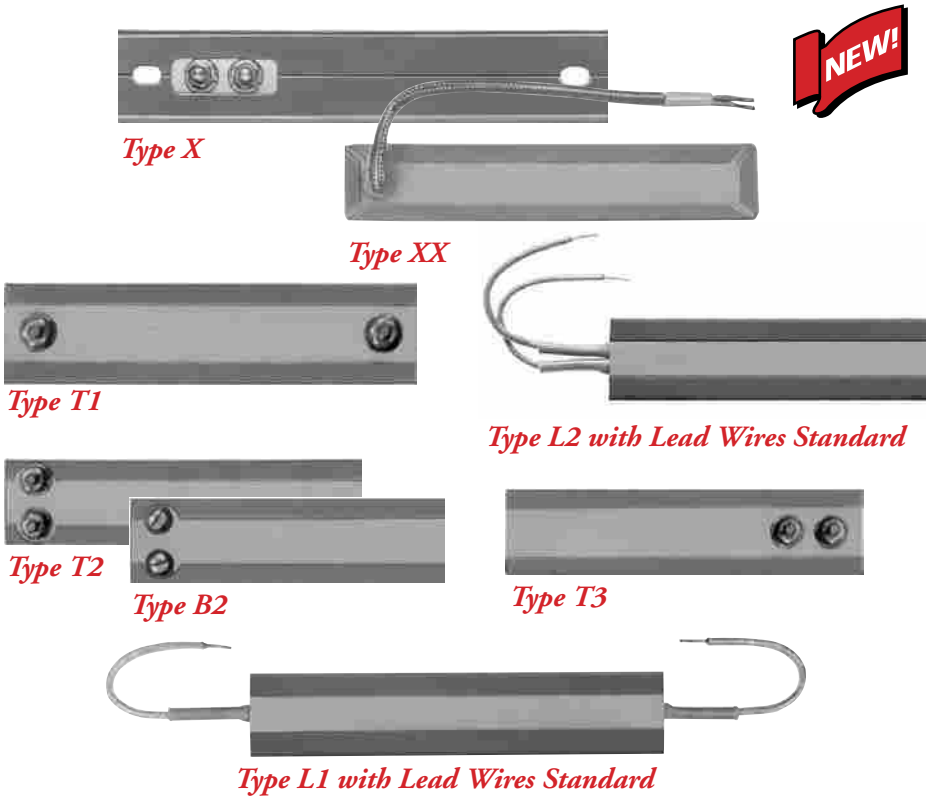
Dimensions (In.)							
Width	Length	Watts	Volts	Terminals	Stock	Model	Wt. (Lbs)
1"	6"	200	240	SE	NS	MT-06010-1109	0.3
1"	8"	275	240	SE	NS	MT-08010-1110	0.5
1"	10"	375	240	SE	NS	MT-10010-1111	0.6
1"	12"	450	240	SE	NS	MT-12010-1112	0.8
1"	14"	500	240	SE	NS	MT-14010-1113	0.9
1"	16"	575	240	SE	NS	MT-16010-1114	1.1
1"	18"	650	240	SE	NS	MT-18010-1115	1.2
1"	20"	725	240	SE	NS	MT-20010-1116	1.4
2"	6"	450	240	SG	NS	MT-06020-1117	0.6
2"	8"	625	240	SG	NS	MT-08020-1118	0.9
2"	10"	800	240	SG	NS	MT-10020-1119	1.2
2"	12"	1000	240	SG	NS	MT-12020-1120	1.5
2"	14"	1050	240	SG	NS	MT-14020-1121	1.8
2"	16"	1200	240	SG	NS	MT-16020-1122	2.1
2"	18"	1350	240	SG	NS	MT-18020-1123	2.4
2"	20"	1525	240	SG	NS	MT-20020-1124	2.7
3"	6"	675	240	SG	NS	MT-06030-1125	0.9
3"	8"	950	240	SG	NS	MT-08030-1126	1.4
3"	10"	1200	240	SG	NS	MT-10030-1127	1.8
3"	12"	1475	240	SG	NS	MT-12030-1128	2.3
3"	14"	1575	240	SG	NS	MT-14030-1129	2.7
3"	16"	1800	240	SG	NS	MT-16030-1130	3.2
3"	18"	2050	240	SG	NS	MT-18030-1131	3.6
3"	20"	2275	240	SG	NS	MT-20030-1132	4.1
4"	6"	900	240	SG	NS	MT-06040-1133	1.2
4"	8"	1250	240	SG	NS	MT-08040-1134	1.8
4"	10"	1625	240	SG	NS	MT-10040-1135	2.4
4"	12"	1975	240	SG	NS	MT-12040-1136	3.0
4"	14"	2075	240	SG	NS	MT-14040-1137	3.6
4"	16"	2400	240	SG	NS	MT-16040-1138	4.2
4"	18"	2725	240	SG	NS	MT-18040-1139	4.8
4"	20"	3050	240	SG	NS	MT-20040-1140	5.4

Note: Mounting holes not included as standard. Mounting hole size and location must be specified, if required.



MSH
Mica Strip Heaters

- **Economical**
- **120 and 240 Volt**
- **Custom Shapes and Sizes**
- **Up to 70" (1,778mm) in Length**
- **High Temperature Leads 482˚F (250˚C) or Threaded Terminations**
- **Ideal for Medium Temperature Applications**



Applications

Versatile, efficient and economical, the Mica Strip Heater is of the same construction as the Mica Band Heater in flat design. Because of the range of dimensions and configurations possible, these units furnish even heat distribution for use in hot plates, sealing equipment, hot stamping, dies and molds and hundreds of other surface heating applications.

Advantages

Economical strip heaters for applications that do not require greater than 35 watts per inch and 650˚F (343.4˚C) sheath temperature.

Available in a multitude of custom sizes and can easily accommodate special shapes, holes and cutouts. Contact sales for your custom application.

Features

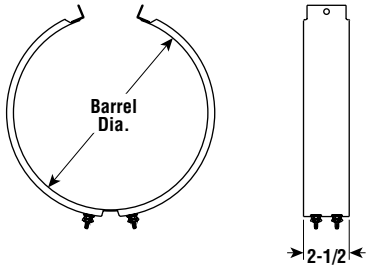
Mica Strip heaters offer wide variety of terminations. These include leads, threaded post terminals and button terminals.

DBW

2-1/2" One-Piece Band Heater

- **6-1/2 - 11-1/2" Barrel Dia.**
- **1,525 - 3,250 Watts**
- **240 - 480 Volt**
- **30 - 36 W/In²**
- **Chrome Steel Sheath**
- **Up to 1200°F Max. Sheath Temp.**
- **Up to 800°F Max. Barrel Temp.**

Dimensions



All Dimensions in Inches

Applications

- Heating Barrels of Plastic Injection Molding Machines and Extruders
- Die and Die Holder Heating of Plastic Extruders and Blow Molding Machines
- Autoclaves
- Burnout Ovens
- Heated Kettles
- Fluidized Beds
- Heat Treating Pipes
- Any application requiring heat applied to a cylindrical surface

Ten Times the Life — Long life heavy duty band heater uses a 3/8 inch thick strip heater with chrome steel sheath, offers ten times the life of a mica band heater.

Heavy Duty — Uses type PT Chromalox strip heater.

Flexible One-Piece Construction for Easy Installation and Removal — The unheated section between heated halves functions as a hinge and permits repeated opening and closing for moving heaters from one application to another. The heavy duty spring loaded clamping bolt pulls the heater tight to the work and maintains tightness by compensating for expansion.

Spring Loaded — For tight fit with Inconel® spring and nickel-plated clamping bolts and nuts. Maintains tightness.

Uniform High Temperature Capability — Highly compacted refractory insulation assures efficient heat transfer, therefore lower resistance wire temperatures.

Convenient Wiring Options — Each heated half is rated at 240V and one-half the overall wattage. Halves can be wired parallel for 240V operation or series for 480V operation.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Chrome Steel Sheath			Wt. (Lbs.)
			Barrel Dia.	Heater Width	Model	Stock	PCN	
1,525	240/480	30	6-1/2	2-1/2	**DBW-064152**	**S**	**238131**	3.75
1,800	240/480	31	7-1/2	2-1/2	**DBW-074182**	**S**	**238158**	3.75
2,000	240/480	35	8	2-1/2	**DBW-080202**	**S**	**238166**	3.75
2,250	240/480	34	8-1/2	2-1/2	**DBW-084222**	**S**	**238174**	3.75
2,500	240/480	35	9	2-1/2	**DBW-090252**	**S**	**238182**	3.75
2,800	240/480	36	10	2-1/2	**DBW-100282**	**S**	**238203**	3.75
2,950	240/480	36	10-1/2	2-1/2	**DBW-104292**	**S**	**238211**	3.75
3,250	240/480	36	11-1/2	2-1/2	**DBW-114322**	**S**	**238238**	4

Stock Status: **S** = stock NS = non-stock
To Order— Specify model, PCN, watts, volts and quantity

Note: See Chromalox Master Industrial Price List for additional models.

HB

1-1/2" Two-Piece Band Heater

- **5 - 20" Barrel Dia.**
- **750 - 3,000 Watts**
- **240 Volt**
- **20 - 68 W/In²**
- **Chrome Steel Sheath**
- **UP to 1200°F Max. Sheath Temp.**
- **UP to 800°F Max. Barrel Temp.**

Applications

- Barrel and Nozzles of Plastics Injection Molders
- Extrusion Barrels
- Autoclaves
- Heat Treating of Large Diameter Piping

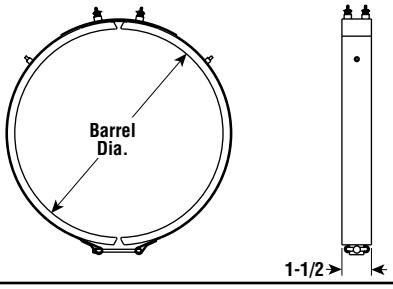
Features

High Temperature, Tight Fitting.

Uniform Heating accurately controllable.

Reduced Downtime — Elements are refractory insulated for long life and heavy usage.

Dimensions



All Dimensions in Inches

Complete, Firm Coverage at all times is assured by slip proof, stainless steel clamping bands equipped with heavy threaded socket bolt. This allows the pair of elements to be drawn tight to heated surface. The hotter it gets, the tighter it fits. Because clamps cannot loosen or slip off heater, heat transfer is continuously efficient, adding to heater life.

Surface Temperatures to 800°F — Elements are a pair of formed Type PT Chromalox strip heaters. Adjacent HB heaters of equal wattage may be wired in series on 480V or connected in multiples of three for 240 or 480V, 3 phase.

Convenient Wiring Options — Each heated half is rated at 240V and one-half the overall wattage. Halves can be wired parallel for 240V operation or series for 480V operation.

Specifications and Ordering Information

Watts	Volts	W/In²	Dimensions (In.)		Chrome Steel Sheath			Wt. (Lbs.)
			Barrel Dia.	Heater Width	Model	Stock	PCN	
750	240	50	5	1-1/2	**HB-5075**	**S**	**273631**	1.5
800	240	48	5-1/4	1-1/2	**HB-5080**	**S**	**273287**	1.75
600	240	33	5-1/2	1-1/2	HB-5460	NS	272760	1.75
1,500	240	82	5-1/2	1-1/2	HB-5415	NS	273463	1.75
400	240	20	6	1-1/2	**HB-6040**	**S**	**269149**	2
750	240	38	6	1-1/2	HB-6075	NS	268998	2
1,000	240	48	6-1/2	1-1/2	HB-6410	NS	269464	2
1,000	240	43	7	1-1/2	HB-7010	NS	273623	2
900	240	35	7-1/2	1-1/2	HB-7490	NS	269157	2.25
1,250	240	48	7-1/2	1-1/2	HB-7412	NS	273578	2.25
1,500	240	53	7-7/8	1-1/2	HB-7715	NS	273586	2.25
900	240	30	8	1-1/2	HB-8013	NS	269000	2
1,400	240	50	8	1-1/2	**HB-8014**	**S**	**273599**	2.25
1,565	240	53	8-1/2	1-1/2	**HB-8415**	**S**	**269886**	2.3
1,100	240	33	8	1-1/2	**HB-9015**	**S**	**269018**	2.5
1,710	240	53	9-1/4	1-1/2	HB-9217	NS	272073	2.5
1,300	240	35	9-1/2	1-1/2	**HB-9413**	**S**	**269165**	2.75
1,600	240	45	9-1/2	1-1/2	HB-9416	NS	273640	2.75
1,800	240	48	10	1-1/2	HB-1018	NS	269878	3
2,600	240	68	10-1/4	1-1/2	HB-10226	NS	273615	3
1,200	240	30	10-1/2	1-1/2	**HB-10415**	**S**	**269026**	3
2,025	240	48	11	1-1/2	HB-1120	NS	272305	3.25
1,200	240	28	11-1/2	1-1/2	**HB-11412**	**S**	**269034**	3.25
1,700	240	38	11-1/2	1-1/2	**HB-11417**	**S**	**273711**	3.25
1,500	240	30	12-1/2	1-1/2	**HB-12416**	**S**	**269042**	3.5
1,800	240	38	13-1/2	1-1/2	HB-13418	NS	269050	3.75
1,200	240	23	14	1-1/2	**HB-1412**	**S**	**269130**	3.9
2,500	240	45	14	1-1/2	**HB-1425**	**S**	**269069**	3.9
2,500	240	40	15-1/2	1-1/2	HB-15425	NS	269077	4
2,500	240	38	17	1-1/2	HB-1725	NS	263986	4.2
2,500	240	38	17-1/2	1-1/2	**HB-17425**	**S**	**263994**	4.3
3,000	240	38	20	1-1/2	**HB-2030**	**S**	**264006**	4.5

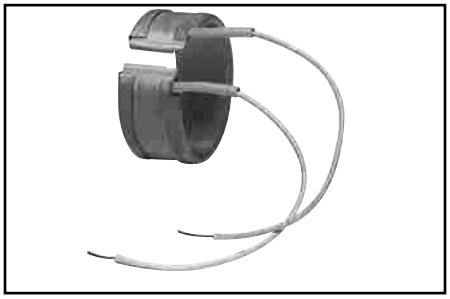
Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity

Mica Band Heaters

- **Thin, Efficient Heater**
- **Up to 800˚F Max. Sheath Temperature**
- **MB-1, MB-2**

Description

A mica core produces a thin, efficient heater. Heat from the precisely wound resistance element is quickly transferred to the working surface for fast heat-up and response. Mica provides excellent dielectric strength and heat transfer capability for long heater life. The mica core is encased in a continuous corrosion resistant sheath and formed. All full mica band heaters are designed with closed ends to protect against contamination. Maximum sheath temperature is 800°F.



Type A – Usual design for nozzle heating applications. 12" leads are standard.

Fig. 3 – Single conductor metal braid over lead wire. Offers most practical solution to abrasion problem. 12" braid with 14" overall length leads are standard.

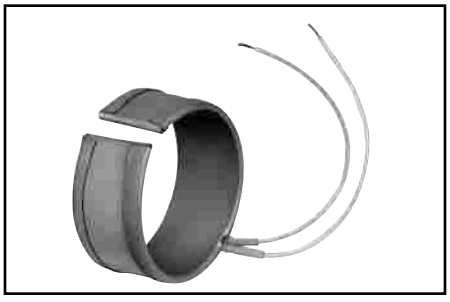


Fig. 4 – Standard lead wires exiting 180° from gap.

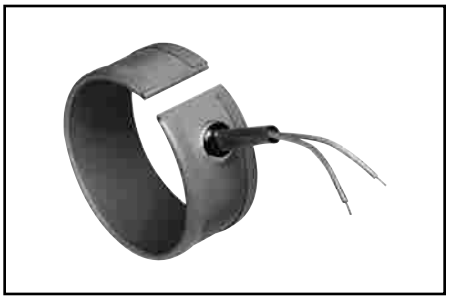


Fig. 5 – Leads exit at right angle to sheath 5⁄8" from gap. 12" lead wire in 3" long sleeving is standard. Specify alternate position.

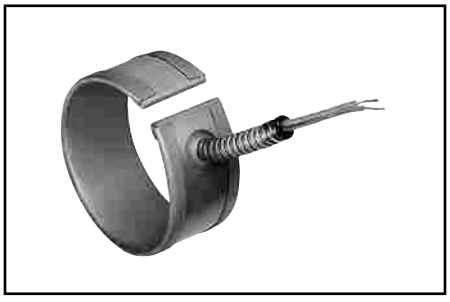


Fig. 6 – Flexible armor cable is the best solution to lead abrasion problems. 12" armor with 14" overall length leads are standard. Specify alternate position.

Fig. 7 – Double conductor metal braid exiting from edge 180° from gap.

Fig. 16 – Double conductor metal braid over lead wires at same position as Fig. 5. 12" braid with 14" overall length leads are standard. Specify alternate position.

Mica Band Heaters *(cont'd.)*

Screw Terminals

Fig. T1 – 10-24 Thread requires 15⁄16" clearance from cylinder.

Fig. T2 – Standard with terminal box. 10-24 Thread.

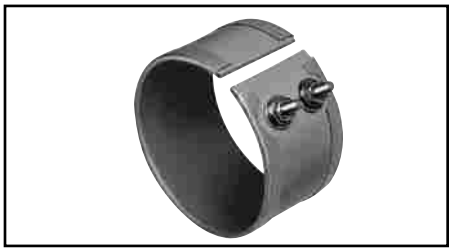


Fig. T3 – Standard position over 2 1⁄2"wide. 10-24 Thread.

Fig. B1 – 10-24 thread requires 1⁄2" clearance from cylinder.

Special Features

Fig. 12 Hinged Half-Band — convenient where two piece heaters are required. Shown with mounting flange and T3 screw terminals. Available with any termination or mounting arrangement.

Fig. 14 Half Band — eases installation in difficult situations. Shown with T1 Terminals and by-pass straps. Available with any termination or mounting arrangement

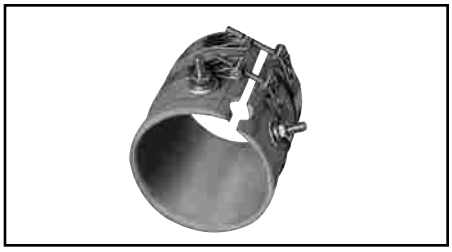


Fig. 15 – Probe holes and cut-outs — specify location in degrees from center of gap and size or provide drawing. Often a larger gap (standard gap is 1⁄4" - 1") will serve the same purpose.

Fig. 17 – Splitcase — Allows heater to be opened one time for mounting. Available with any termination or mounting arrangement.

Mica Band Heaters
(cont'd.)

Mounting Configurations

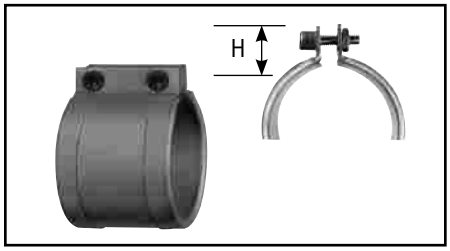


Fig. 8 Mounting Flange — a secondary means for mounting where a built-in method is preferred. With 5⁄16" Socket Head bolt. Consult factory for lead wire exit when used with Type A leads.

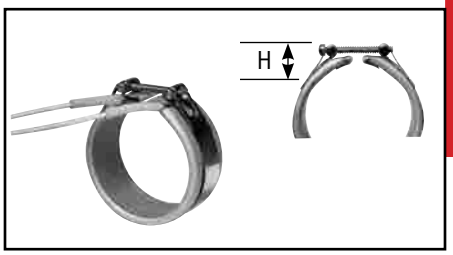


Fig. 9 Strap — made from a low expansion alloy to tighten around the whole circumference of the heater. 5/16 socket head bolts included.

Low Profile: H = 1/4", 1/2" wide (Supplied on 3" I.D. and less). Standard Profile: H = 3/8", 5/8" wide (supplied on 31⁄8" I.D. and larger). Also available with hose clamp or punch lock strap.

Fig. 10 By-Pass Strap — Supplied on less than 2" wide with terminals or Figures 5, 6 or 16.

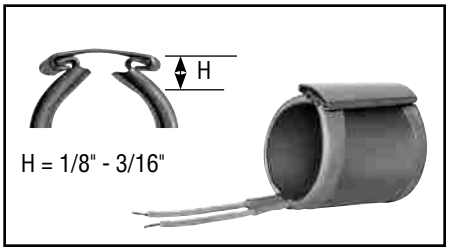


Fig. 11 Wedge Mount — for applications where an extremely low profile is required or where access is limited. Available with Type A, Figure 1 - 6 leads.

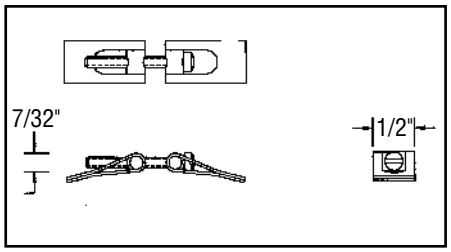


Fig. 18 Low Profile – Barrel Nut Assembly Welded to Sheath with 6-32 Screw.

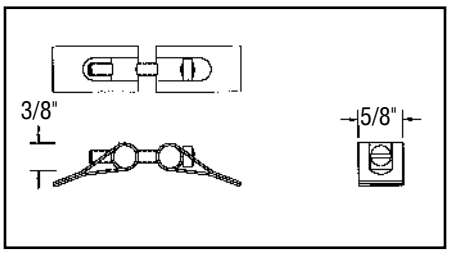


Fig. 19 Standard Profile – Barrel Nut Assembly Welded to Sheath with 10-32 Screw.

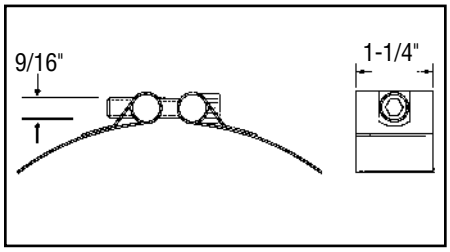


Fig. 20 Wide Barrel — 1-1⁄4" Wide Barrel Assembly Welded to Sheath with 5⁄16-18 Socket Head Screw

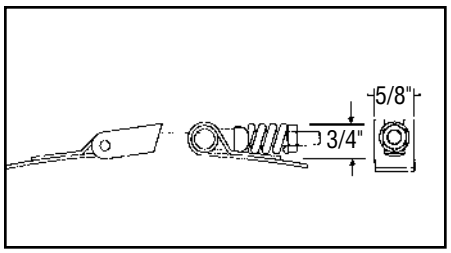


Fig. 21 Quick Release – Assembly with Spring Loaded Screw – Assembly Welded to Sheath with 1⁄4-20 screw

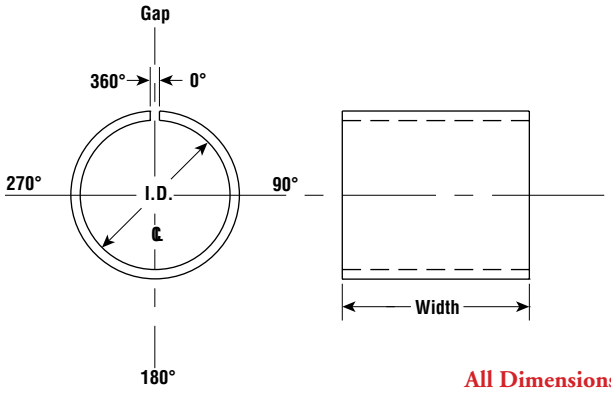
CB
Ceramic Band Heater

- **3-12" Barrel Dia.**
- **1-1/2 - 6" Widths**
- **500 - 5,000 Watts**
- **120 to 600 Volts**
- **18 - 40 W/In²**
- **Ceramic Fiber Insulated**
- **Up to 1600°F Band Operating Temp.**
- **Corrosion - Resistant Alloy Shell**

Applications

- Blow Molding
- Die Heads
- Extruders
- Heating Pipes
- Injection Molding

Dimensions



All Dimensions in Inches

Features

Type CB ceramic band heaters are best suited for applications up to 1600°F Band operating temperatures and provide even heating on injection and extrusion molding barrels. The ceramic segments and high temperature resistance wires are capable of highly efficient heat transfer. Ceramic fiber insulation, 1/4" thickness, provides an additional 25% energy savings over non-insulated types. Ceramic bands also contribute a radiant heating effect to the object being heated. They can be constructed in greater widths, allowing fewer heaters per zone, wider heating patterns, and simplified wiring.

Energy Efficient, 25% Savings

Radiant Heating Principle

Uniform Heating Pattern

Available in **Special** Configurations

Thermal Insulation

1600°F Band Operating Temperatures

Flexible

Corrosion-Resistant Alloy Shell

High Temperature Resistance Wires

Construction

The use of ceramic inserts to support high temperature resistance wire allows the Chromalox Type CB ceramic heater band to operate at high temperatures reaching 1500°F. Corrosion resistant metal is slit along the edges to allow easy fitting of the shroud to the object being heated.

Insulation — 1/4" of ceramic fiber is placed between the inserts and the shroud to provide a 25% energy savings over non-insulated heater bands. Additional insulation and metal liners can be supplied as an option.

Clamping Method — Mounting flanges are standard on Chromalox ceramic bands. Other clamping methods are available.

Terminations — Due to the high temperature capabilities of ceramic insulated heat bands, the use of lead wires is not recommended. When leads must be supplied, Chromalox will exit the heater with ceramic wire insulating beads, and make a junction with the nickel alloy lead wire at a point outside the shroud. Terminals are generally best located 180° from the gap. Alternate locations are possible, consult factory.

Sensor Holes — Sensor holes should be positioned in the gap, and a shroud be supplied as a shell overlap construction. For holes through the elements, consult factory.

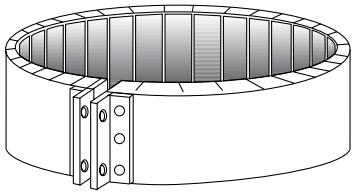
CB
Ceramic Band Heater

Variations

One-Piece

Standard completely flexible construction consists of flange lockup, 1/4" thick ceramic insulation, 1/4-20 screw terminals, located 180° from gap, on width center line.

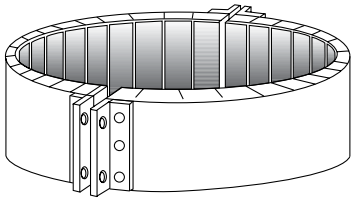
Max. I.D. 21"
Min. Width 1-1/2"



Two-Piece

Easy to apply when an obstruction prohibits the application of 1-piece heater. Heaters can be supplied with any termination or clamping variation. 2-piece heaters are rated at half of the voltage and each half is rated half of the total wattage. Larger diameters made in multiple segments.

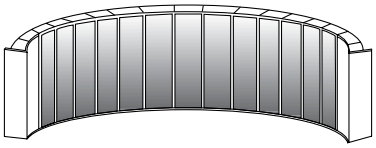
Min. I.D. 4"
Width 1-1/2"
Max. I.D. 44"



Partial Coverage

Allows for the heating of the accessible portion of machine when full coverage is not possible. Heaters supplied with standard clamping and termination.

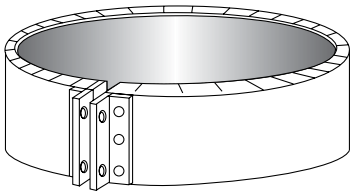
Min. length 6"
Max. length 21".



Liner

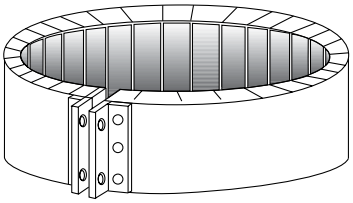
Stainless steel liners inhibit contamination of the ceramic tiles.

Min. I.D. 3"
Width 1-1/2"
Max. I.D. 21"



Special Insulation

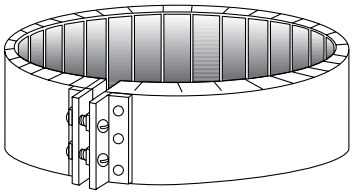
1/2" ceramic fiber insulation can be inserted. The thickness of the heater will expand to 3/4". When 3/4" ceramic fiber and an inner liner is inserted the heater will be 7/8" thick.



Clamping

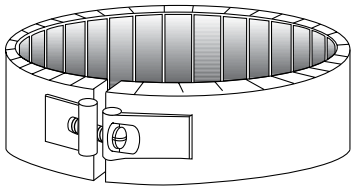
Bent-Up Flange - F

Flange clamping is standard construction on ceramic heaters



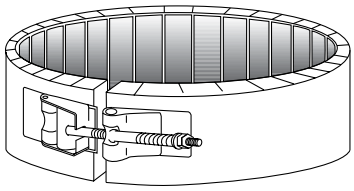
Built-In Bracket - BB

Mounting bracket with barrel nut lockup, and 1/4-20 screws. Supplied in any construction or termination variation.



Latch and Trunion - LT

Quick Release Spring loaded latch & trunion. Recommended I.D. 12" or greater.



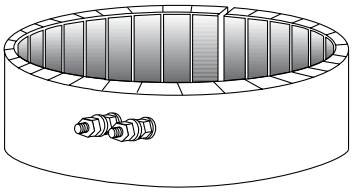
CB
Ceramic Band Heater *(cont'd.)*

Terminations

Tandem T-2

Tandem terminals located 180° from gap, on center line with length of heater. Available with 1/4-20 post terminals. Standard on widths under 3".

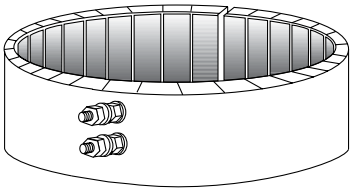
Min. I.D. 3"



Parallel T-3

Parallel terminals located 180° from gap with width of heater. Available with 1/4-20 post terminals. Standard on all heaters greater than 3" width.

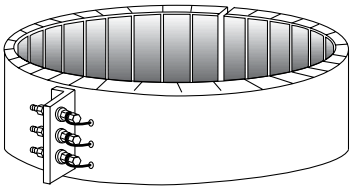
Min. I.D. 3"
Min. Width 3"



Standoff Terminals - SO

Provides relief from direct heat. Available on any constrution or clamping variation. Single or 3-phase power, single or dual voltage.

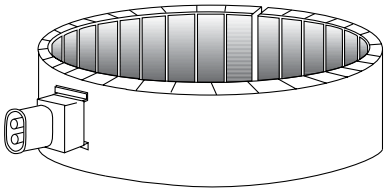
Min. I.D. 3"
Min. Width 3"



Euro Plug - EP

Quick disconnect cup assembly is a safe way to provide power to heater.

Min. Width 1-1/2"
Max. Amps 15 at 240V, Max. Volts 240

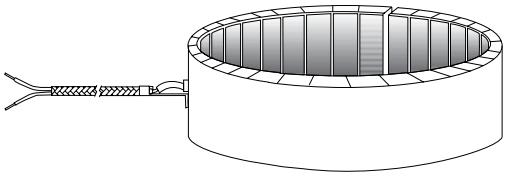


Lead Types

Stainless Steel Metal Braid - C

Provides abrasion resistant protection of fiberglass leads. Leads exit one point of heater surface through a strain relief. 10" braid over 12" leads, standard.

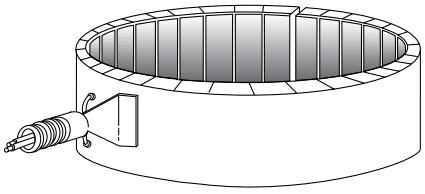
Min. I.D. 3"
Min. Width 1-1/2"



Metal Flexible Conduit - M

Stainless steel or galvanized. Flexible metal conduit to protect leads from abrasion. Available on any construction or clamping variation. 10" metal conduit over 12" fiberglass leads, standard.

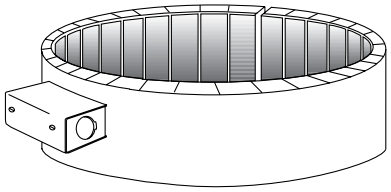
Min. I.D. 3"
Min. Width 1-1/2"



Options

Terminal Box Protection - TB

Designed in standard height of 1-3/4" high, with 5/8" conduit knockout for standard metal conduit connections. Protects terminals from damage, spill leakage, grounding or short circuiting. Available for single or 3-phase construction. For conduit connections, consult factory.



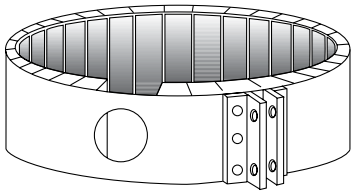
CB
Ceramic Band Heater *(cont'd.)*

Options (cont'd.)

Shroud Overlap

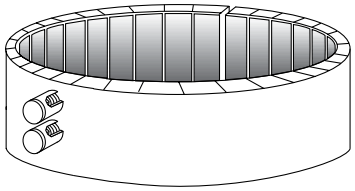
Shroud overlap designed to accommodate a thermocouple hole in gap. This is the preferred way of adding a themocouple hole. Heaters can be supplied with any termination or clamping variation.

Min. I.D. 5"
Width 1-1/2"
Max. I.D. 21"



Ceramic Caps - CC

Protects against electric shock, when used with insulated wire. Can be rotated at any angle - Screw size 1/4-20 standard.



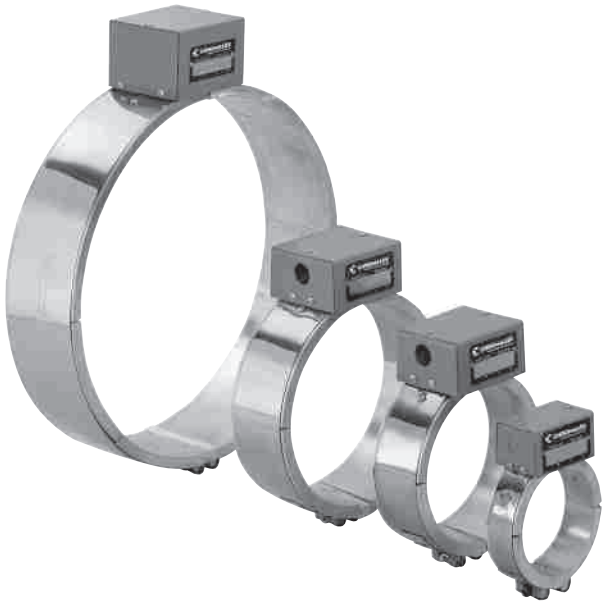
How to Order Ceramic Bands

1. Order by Catalog Code and PCN
2. Specify quantity
3. Specify Inside diameter (ID)
4. Specify Width (1/2" increments)
5. Wattage - 2-piece bands each half is rated one-half the wattage.
6. Voltage on 2-piece bands, we recommend each piece is rated at half the operating voltage.
7. Terminal type - post terminals are standard, specify terminal location.
8. Standard 1/4" insulated or optional 1/2" insulation.
9. Indicate size and location of thermocouple holes, cutouts, partial coverage, gaps or other special features - Fax Drawing.

Specifications

Sheath Material	Corrosion resistant alloy shroud
Maximum Temperature	1600°F
Insulation Material	Thickness of heater with 1/4" insulation = 5/8 Thickness of heater with 1/2" insulation = 3/4"
Minimum I.D.	3"
Minimum Width/Tolerance	1-1/2" wide Width in 1/2" increments Width tolerance: ± 1/8"
Standard Gap When Tightened	3/8" ± 1/8"
Resistance Tolerance	NEMA standard + 10% -5%
Wattage Tolerance	NEMA standard +5% -10%
Watt Density	Depends on power, operating temperature and heater size. See ordering information.
Maximum Volts	600 volts
Maximum Amps	25 amps

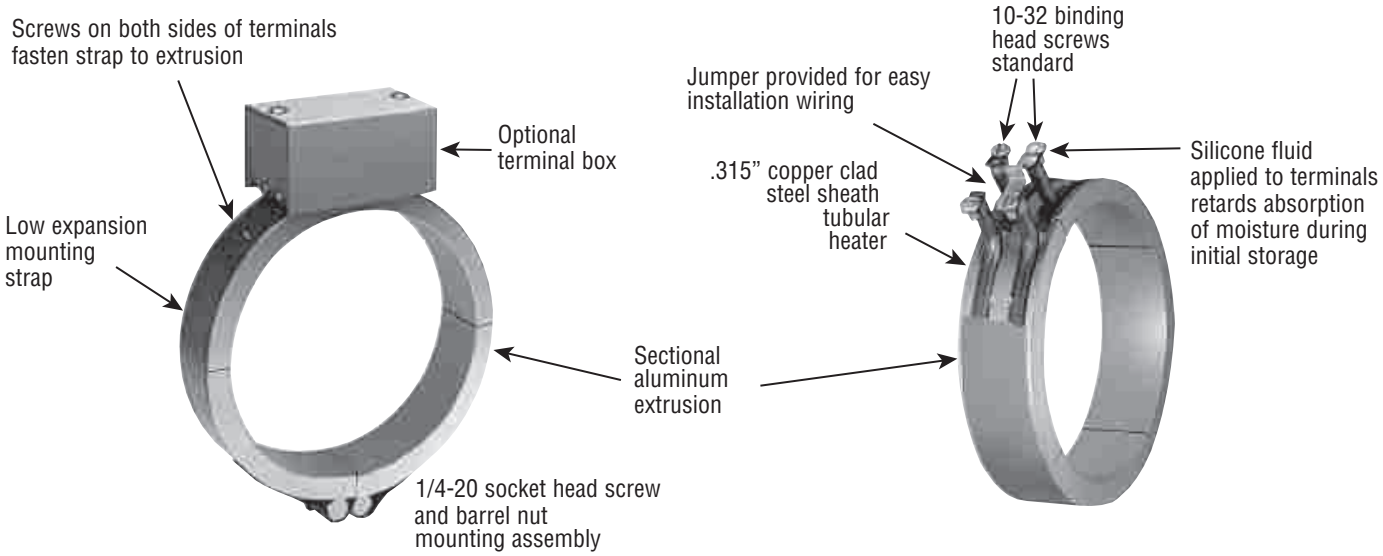
AFH
Aluma-Flex® Band Heaters



- **Rugged, Long Lasting Design**
- **Excellent Heat Transfer from Element to Sheath and Sheath to Heated Part**
- **Virtually Contamination Proof**
- **Uniform Sheath Temperatures up to 650˚F (345˚C)**
- **Easy Installation**

Description

The element utilized in the Aluma-Flex Band Heater is the highly efficient, rugged, long lasting tubular heater pressed in a grooved aluminum extrusion. The combination of the tubular heater in exact contact with the excellent thermal conducting aluminum extrusion create a quick responding band heater with uniform sheath temperatures for precise process heating. With the termination a significant distance from the part being heated and no other place for contaminants to enter, the Aluma-Flex is virtually indestructible. A low expansion alloy strap with mounting hardware allows the assembly to be tightly drawn to the part to be heated. With sheath temperatures to 650°F attainable, the Aluma-Flex Band Heater is ideal for use on barrels of plastic extruders, injection molding machines, dies and die heads of extruders and blow molding equipment, or, within temperature limitations, any cylindrical surface.

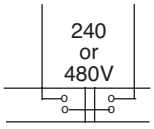


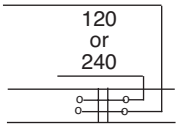
AFH
Aluma-Flex® Band Heaters *(cont'd.)*

Additional Features

- **Type BA:** Standard terminal box pre-wired and fitted with conduit (12" standard length). Plug can be attached to conduit.
- **Type P:** Probe holes (Consult factory). Max hole ø 3/8"
- **Type L:** Spring loaded screw for thermal expansion compensation (over 18" diameter).
- **Type I:** Diameter design for internally heating cylinder.

Wiring





Specifications

Resistance Tolerance: .. + 10%, - 5%
Wattage Tolerance:..... + 5%, - 10%

Maximum Volts:..... 277 each half

Maximum Amperage:.. 30

Maximum Watt Density:..... 40 watts/^{2}in. on sheath

Minimum I.D.:..... 3-1/2" on 1-1/2" and 2-1/2" wide. 5" on 3" and 4" wide.

Maximum I.D.: ..... Consult Ogden – any practical diameter is possible with additional segmentation.

Thickness:..... 1/2"

Standard Gap when Tightened:..... 1/4" up to 12" I.D. Gap increases with diameter to compensate for thermal expansion.

- **Type C:** Copper, steel or stainless steel cooling tubes on 2-1/2", 3", and 4" wide units. Can be supplied heat/cool or cooling only. Reduce standard wattages as shown by 25%.

- **Type M7:** Terminal area is brazed or welded to a moisture/explosion resistant terminal enclosure.

Note: Heaters with the M7 enclosures are not 3rd party certified for hazardous locations.

MTB
Mighty-Tuff® Band Heaters

- Stainless Steel Sheath resists oxidation
- Capable of up to 1200°F (650˚C) Sheath Temperatures
- Highest possible application temperatures
- Capable of long life at High Watt Densities
- Thin profile (3/16") for fast response

Description

Rugged construction along with high temperature and high watt density capabilities allow the Mighty-Tuff Band Heater to surpass all other band heaters in providing the ever increasing temperatures required for processing today's high tech materials. The advanced design and thin profile allow the quick transfer of heat from the element to the sheath for efficient operation to 1200°F sheath temperature. Watt densities as high as 100 wp/in^2 on small diameters are possible. A stainless steel sheath encases a compressed mineral refractory material which surrounds a helical or sinuated resistance element. The Mighty-Tuff can stand up to shock, vibration and many contaminants long after standard band heaters have failed. In normal use, or in the most difficult application, the Mighty-Tuff will improve machine productivity by improving band heater performance.

Options

- Full length fiberglass sleeving
- Ground Wire
- Ceramic Terminal Covers
- Standard NEMA Plugs
- Built-in Thermocouple

Terminations

Type F

High Temperature Leads
12" long 850°F/450°C insulated lead wires are standard. Specify longer length. Also available with full length fiberglass sleeving.

Type C

Armor Cable Leads
Armor cable is the best protection for abrasion. 12" cable and 14" overall leads are standard.

MTB
Mighty-Tuff®
Band Heaters *(cont'd.)*

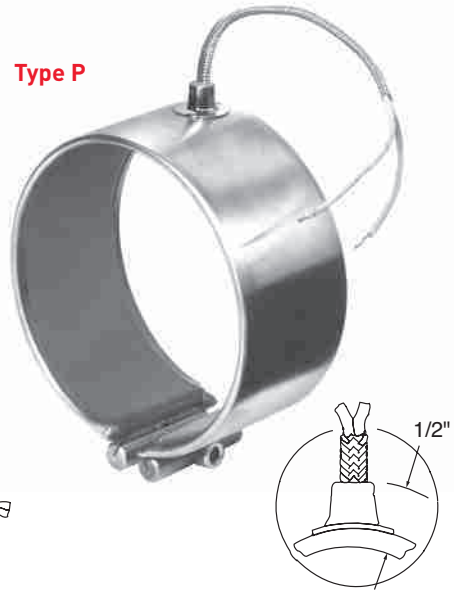
Metal Braided Leads

Double conductor metal braid provides excellent abrasion protection and flexibility. Standard Length is 12" braid with 14"overall lead wires. Specify additional length if required. Type P and Type R are available without metal braid.

Type A

Type R

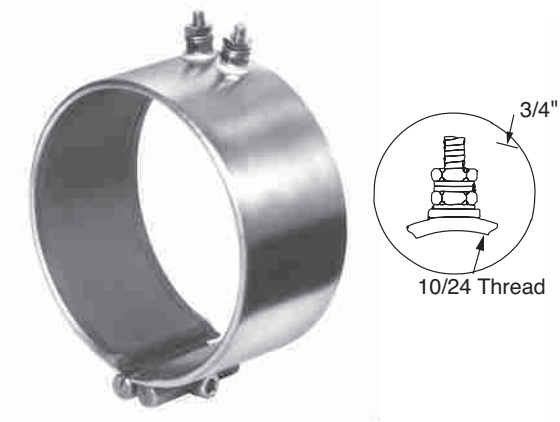
Type P



Post Terminals

Type SH

Terminals 180° from gap.



Type SG

Terminals at gap. Minimum width - 2"

Type B

Terminal Box. 2-1/16" H x 2-1/2" W x 2-1/8" D

MTB
Mighty-Tuff®
Band Heaters *(cont'd.)*

European Style High Temperature Plugs

Maximum Voltage = 250V, Maximum Amperage = 25 Amps. Other plugs attached to leads are available.

Type 110

3-5/8" H x 1-5/16" L x 2-15/16" W

Type 115

1-3/8" H x 3-7/16" L x 1-7/8" W

Fig GQ8

Receptacle PC4396-3

One Piece Expandable

Type E

(Shown with Type SG terminals) Specify termination, terminal location and other options.

Two Piece Contstruction

Type T

(Shown with Type A leads and optional spring loaded screws) Specify termination, terminal location and other options.

MTB Mighty-Tuff® Band Heaters *(cont'd.)*

Hole or Cut-Out
Mighty-Tuff Band Heaters can be manufactured with thermocouple holes. Contact Chromalox.

Maximum and Minimum Physical Limitations

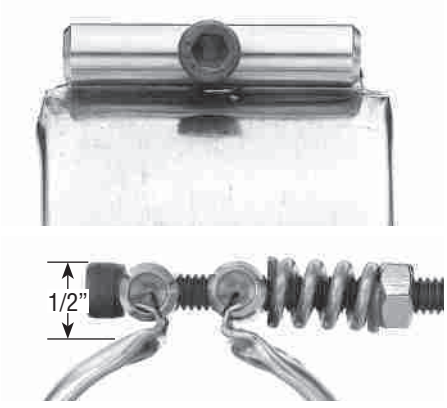
	Diameter		Minimum Width
	Minimum	Maximum	
Full Band	1"	14"	1"
1"	8"	275	240
One Piece Expandable (Type E)	3"	14"	1"
Type SG Terminals	1-1/2"	—	2"
Type SH Terminals	1-1/2"	—	1-1/2"
Type F Leads	1"	—	1"
Type A Leads	1"	—	1"
Type P Leads	1"	—	1"
Type R Leads	1"	—	1"
Type C Leads	1"	—	1"
Terminal Box	3-1/2"	—	1-1/2"
Type 110	3-1/2"	—	1-1/8"
Type 115	3-1/2"	—	1-1/8"

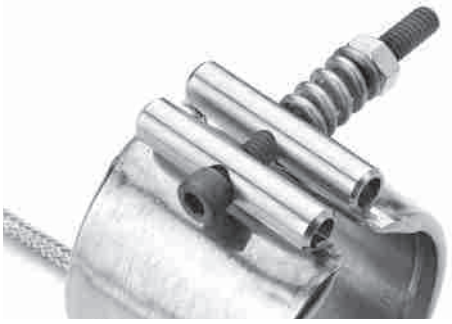
Minimum width: 1", maximum width: 6".
Standard gap: 1/4" - 1" depending upon I.D.

Type H

Type MC

Hole or Cut-Out
Mounting Clamp – Standard on all Mighty Tuff® Band Heaters up to 3" wide. Supplied with 1/4" socket head screw.



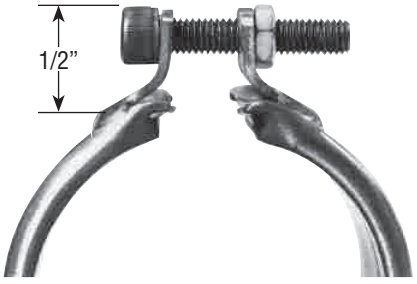


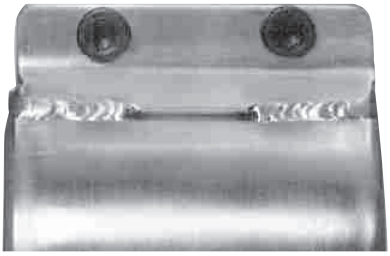
No. of Screws	Mtg. Clamp Length Per Unit	No. of Mtg. Clamps per Htr.	Actual Heater Width
1	1"	1	1" to 1-1/4"
1	1 1/4"	1	1-3/8" to-1 3/4"
1	1 3/4"	1	1-7/8" to 2-1/4"
1	2 1/4"	1	2-3/8" to 3"
2	2 3/4"	1	3-1/8" to 3 1/2"

Note: Values identical for styles MC and MCS

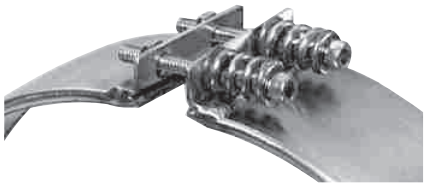
Type L

Type L Mounting Flange – Standard on Mighty-Tuff Band Heaters. Supplied with 5/16 Socket Head Cap Screw.





Type LS Mounting Flange – with Spring – Recommended over 18" I.D." or as application requires.



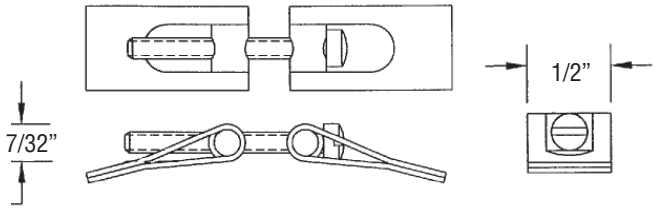
MTB
Mighty-Tuff® Band Heaters *(cont'd.)*

Type S

Mighty-Tuff Band Heaters are available with 5/8" wide straps. Some dimensional restrictions may apply based on lead type, position and width.

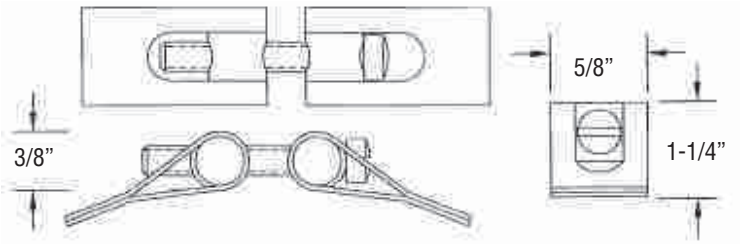
Type BL

Low Profile Barrel Nut Assembly Welded to Sheath with 6-32 Screw.



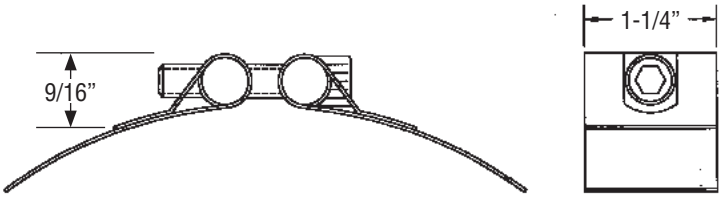
Type BN

Standard Profile Barrel Nut Assembly Welded to Sheath with 10-32 Screw.



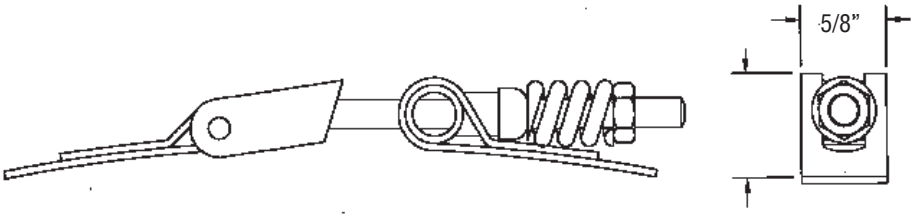
Type BW

1-1/4" Wide Barrel Nut Assembly Welded to Sheath with 5/16-18 Socket Head Screw.



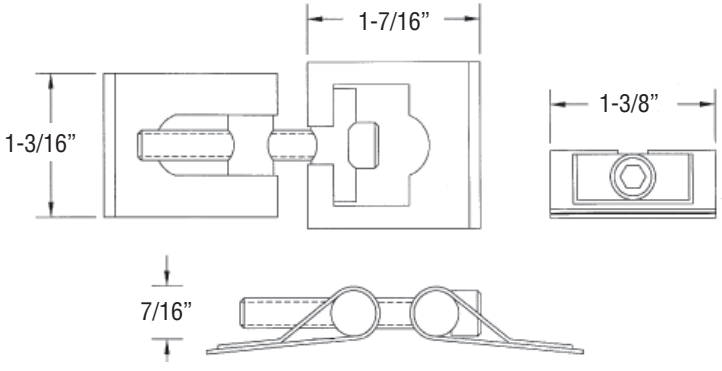
Type BR

Quick Release Assembly with Spring Loaded Screw Welded to Sheath with 1/4-20 Screw.



Type BT

Quick Release Barrel Nut Assembly Welded to Sheath with 1/4-20 Bolt.

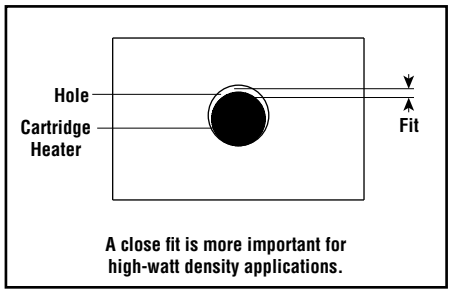


Cartridge Heaters
Application Guidelines

- **Up to 1.25" Dia.**
- **Up to 60" Lengths**
- **Up to 11,500 Watts**
- **120 and 240 Volt**
- **Up to 1400°F Max. Working Temp.**
- **Modification Available to Fit Custom Applications**

Type CIR cartridge heaters are most frequently used for heating metal parts by insertion into drilled holes. For easy installation, the heaters are made slightly undersize relative to their nominal diameter.

Determining Fit — At high watt densities, a close fit is important. The fit is the difference between the minimum diameter of the heater and the maximum diameter of the hole. For example, 1/2" diameter Type CIR cartridge heater is actually 0.498" plus 0.000" minus 0.005". If this heater is placed in a hole which has been drilled and reamed to a diameter of 0.503", then the fit would be 0.01" (0.503" - 0.493" = 0.01").



A close fit is more important for high-watt density applications.

Determining Watt Density — Watt density refers to the heat flow rate or surface loading. It is the number of watts per square inch of heated surface area. For calculation purposes, CIR stock cartridge heaters have 1/4" unheated length at each end. Thus, for a 1/2 x 12" heater rated 1,000 watts, the watt density calculation would be as follows:

$$\text{Watt density} = \frac{W}{\pi \times D \times HL}$$

Where:
W = wattage = 1,000 W
D = diameter = 0.5 in.
HL = heated length = 11.5 in.

$$\text{Watt density} = \frac{1{,}000}{3.14 \times 0.5 \times 11.5} = 55 \text{ W/In}^2$$

Selecting Sizes and Ratings — The calculation of total heat requirements for an application is outlined in the Technical section of this catalog.

Determining, Quantity, Size and Rating — Once total heat requirements are established, the quantity, size and rating of cartridge heaters can be decided. Plan for enough heaters to permit even temperatures through the part during heat-up and operation. The sensor for the temperature control should be placed close to the working surface for accurate control.

Calculate Watt Density and Fit — After the wattage for each heater has been established, the watt density and fit must be calculated. Then, use Graph G-235 to be sure that the watt density is within allowable limits. For example, a 1/2 x 12" CIR heater rated 1000 watts has a watt density of 55 W/in^2. If it were used in a part with an operating temperature of 1000°F with a fit of 0.01", the allowable watt density from the graph would be 90 W/in^2. Thus, the actual watt density of 55 W/in^2 is well below the maximum allowed. A substantial safety margin would exist and high reliability can be expected.

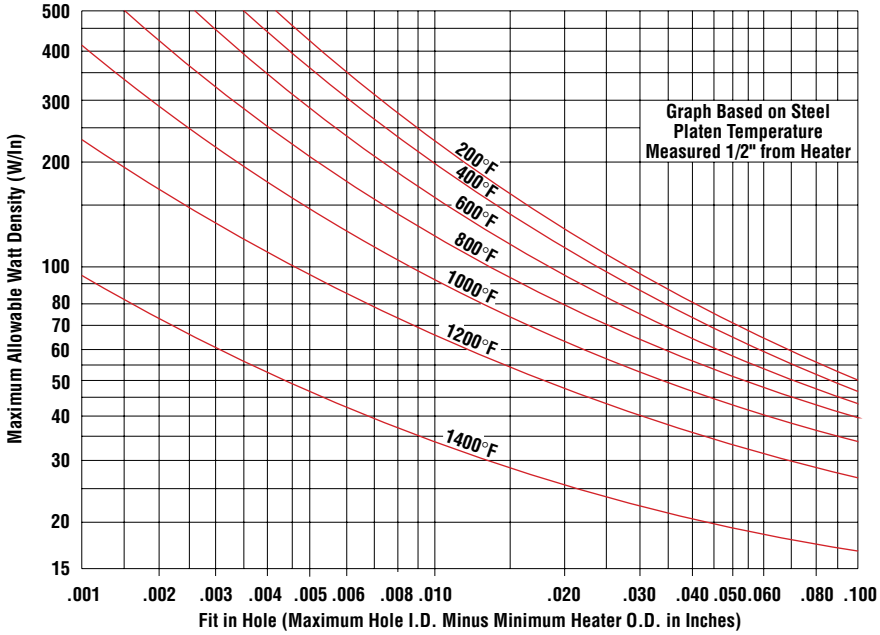
If the heater selected had a watt density higher than that allowed by the graph, consider the following changes.

1. Using more heaters of lower watt density.
2. Using longer or larger diameter heaters.
3. Improving the fit.
4. Reducing heat requirements by reducing heat losses or by allowing for longer heat-up time.

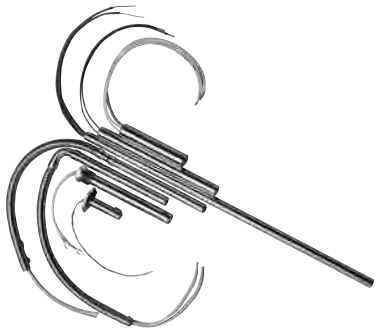
Using the Maximum Allowable Watt Density Graph — This graph is useful for choosing Type CIR cartridge heaters. The curves should be considered as guides and not precise limits.

The graph is based on a 1600°F resistance wire temperature inside the cartridge heater, when the heater is installed in an oxidized mild steel block. Watt density values from the graph should be lowered by about 10% or more when other materials are used which have a lower thermal conductivity or lower emissivity than oxidized mild steel. Contact your Local Chromalox Sales office.

Graph G-235 — Maximum Watt Density vs. Platen Temperature for Various Fits Using Chromalox Type CIR Cartridge Heaters



Cartridge Heaters
Selection Guidelines



Type CIR
High Watt Density

Advanced Internal Construction Plus Swaged Leads — The challenge to Chromalox engineers was to design a cartridge heater that would out perform any brand cartridge heater — under any given set of conditions, and to assure that the customer receives and continues to receive the most heater performance and life possible for his investment.

Type CIR Cartridge Heater — Includes several significant advances in cartridge heater technology. Its high performance characteristics have been proven, not only in the laboratory, but also on Customers' equipment on selected problem applications, at 1500°F and higher operating temperatures.

Type C-LD, C-HD & C-DE
Medium Watt Density

Type C Large Diameter Cartridge Heater — For medium and low watt density applications. The tightly compacted refractory insulation provides excellent heat transfer to the heavy wall stainless steel sheath. This means the resistance wire runs at a lower temperature than competitive units with loose-fill insulation; the result is much longer life. This heavy-duty construction also provides high dielectric strength as well as shock and vibration resistance required for many industrial applications.

Type CBH Electric Stud Heater — Used to wrench-tighten bolts or studs to "shrink fit" tightness.

Type SCB Small Space Heater — Edison screw base installs in standard porcelain lamp socket to heat very small spaces.

Cartridge Heaters — Selection Guidelines

Model	Applications	Max. Work Temp.(°F)	Watts	Dimensions (In.)		Sheath Material	Sheath Temp. (°F)	Terminal Type	Life Rating	Page
				Length	Dia.					
CIR CIRM	Molds, Dies, Platens, Hot Plates, Sealing	1400	75 - 5,000	1 - 60	1/8 to 1-1/4	INCOLOY® & Stainless Steel	1500	Swaged Leads	Superior	A-117
SST QST	Molds, Dies Platens, Presses	1400	Variable	5 to 60 5 to 36	3/8 to 1	INCOLOY®	1600	Flexible Leads	Standard	A-129
C-HD	Dies, Container	600	140 - 1,780	Up to 24	15/16, 1, 1-19/64	Brass		Two Bolt Terminals	Superior	A-125
MZ	Hot Press Metal Forming, Zone Control	1800	Variable	18 to 180	.495, .685 .935	INCONEL® 600	1800	Plug	Standard	A-126
CBH[1]	Shrink Tightening	1200	1,150 - 11,500	18 to 60	.553-1.106	Steel	1600	Standard Octagon Box with Handle	Standard	A-132
SCB	Closet and Control Cabinet Space Heating	600	50 - 200	4-3/4	1-3/8	Brass	1000	Edison Screw Base (light bulb socket)	Standard	A-130
HTRC	Heat Transfer and Release Coating	1800					<750			A-116
C-DD	Medical, Analytical, Aerospace, Transportation	1400	25-3000	1-10	1/8" - 3/4"	304/316SS	1500	Swaged Leads Pins	Superior	A -124
CTRH	Forming, Dies, Platens	800	1,670 - 5,130	Up to 66"	.553 - .663	Stainless Steel			Superior	A -131

Note —
1. Not UL Recognized or CSA Certified.

Cartridge Heaters

Application & Installation Recommendations

Applications

Application at High Watt Densities — Type CIR & CIRM cartridge heaters are designed and manufactured to provide watt density capabilities second to none. To obtain best life at the highest watt densities allowed per Curve G-235 in the Application Guidelines, close attention to application details is suggested.

A. For closest fit and best heat transfer, holes should be drilled and reamed, rather than just drilled to final diameter with a general-purpose drill.

B. The sensor for the temperature control should be placed between the working surface of the part and the heaters. The temperature of the part approximately 1/2" away from the heaters is used in selecting maximum allowable watt density from the graph.

C. Control of power is an important consideration in high watt density applications. On/Off control is frequently utilized, but it can cause wide excursions in the temperature of the heater and working parts. SCR power controls are valuable in extending the life of high watt density heaters, since they effectively eliminate on-off cycling.

Application at Medium Watt Densities — Curve G-235 in the Application Guidelines shows maximum allowable watt density for various fits and operating temperatures. The vast majority of applications do not require maximum W/In^2, however. Use a watt density only as high as you need. Take advantage of the safety margin provided by using ratings less than the maximum allowed. Select and space heaters for most even heat pattern rather than for highest possible wattage per heater.

At medium watt densities, general purpose drills are usually adequate for drilling holes. Typically, these result in holes 0.003 to 0.008" over the normal size of the drill, resulting in fits of 0.01 to 0.015". Of course, the tightest fit is desirable from a heat transfer standpoint, but somewhat looser fits aid in installing and removing cartridge heaters, especially long ones. Holes drilled completely through the part are recommended to facilitate removal of the heater. After drilling, clean or degrease the part to remove cutting lubricants.

Operation in Vacuum — When heaters are operated in a block which is in a vacuum, the inside of the holes should be pre-oxidized to improve emissivity. Substantial reductions in maximum allowable watt density are usually necessary for vacuum operation. Where possible, the installation should be designed so that the lead end of the heater is outside the vacuum. When the lead end of the heater is inside the vacuum, a voltage of 120 volts or less is recommended. On an unsealed heater, outgassing may be expected.

Operation in Square Grooves — Round type CIR & CIRM cartridge heaters may be installed in square or v-shaped grooves if this proves convenient. The inside of the groove should be treated to improve its emissivity (by oxidizing or anodizing). Allowable W/In^2 can be estimated by using the 0.05" fit line in the graph, providing that the square is approximately the same width as the nominal diameter of the heater.

Operation on 480V — Chromalox type CIR & CIRM cartridge heaters 5/8" diameter and larger can be operated on 480 volts. One approach is to take two stock 240 volt heaters and connect them in series on 480 volts. Another is to order specially rated 480 volt cartridge heaters. Check with your Local Chromalox Sales office for recommendations.

Because of higher voltage stresses inside the heater, lower maximum watt densities are allowable in 480 volt applications, either with two 240 volt heaters in series or with specially rated 480 volt units. To determine maximum allowable watt density at 480 volts, enter Curve G-235 with an operating temperature value which is 200°F higher than the actual operating temperature. A maximum operating temperature of 1000°F is suggested.

Testing Recommendations

Testing Recommendations — Testing under simulated operating conditions is suggested when equipment manufacturers design new products. Cartridge heaters of the appropriate physical size are operated on a variable transformer until the heat output is at the proper level. Then, voltage and current measurements are taken and required wattage rating is calculated. Heaters of the correct wattage rating are then ordered for the designed product.

Installation Recommendations

1. On moving machinery, anchor the leads securely. As little movement as possible should be allowed close to where the leads emerge from the heater. A loop in the lead wire will frequently extend lead life. If application conditions result in continual lead flexing, terminate the cartridge heater leads at a terminal block which moves with the heated assembly. Flexing is transferred to the extension leads which can be economically replaced.
2. For rapidly vibrating equipment, employ the terminal block described above. Keep leads from heater to block short and well supported to prevent lead movement due to vibration.
3. Protect leads from spray, oil and abrasion. Contaminating liquids and vapors can enter unsealed cartridge heaters and cause insulation breakdown.
4. Avoid tape on leads where they emerge from the cartridge heater. The adhesive on some tapes can enter the heater and turn to carbon which is electrically conductive. Where glass tape cannot be avoided, a tape with a silicone based adhesive is suggested.
5. Design the installation so that the leads are in an ambient temperature which doesn't exceed the rating on the lead insulation (842°F for standard leads). Where temperatures require it, use nickel or nickel-plated copper wire with fluoropolymer insulation, silicone impregnated Fiberglas® or Rockbestos® insulation to extend leads.
6. Graphite and other lubricants to help insert the cartridge heater into the hole are generally not recommended. These are electrically conductive and can get on the lead end of the heater unless extra care is taken. Use Chromalox heat transfer and release coating.
7. As operating temperatures rise, thermal insulation on the heated part becomes more desirable to conserve heat. Thermal insulation results in lower wattage requirements and therefore lower watt density on the heaters. Other benefits are more even work temperatures and greater operator safety and comfort.
8. Leads must not extend into the hole containing the cartridge heater. Generally, the lead end of the heater sheath should be flush with the surface of hole or extended by 1/16 inch.

Cartridge Heaters
Modifications & Options

Modifications & Options

Cartridge heaters can be easily specified to meet the demands of special applications. Simply select from a variety of standard options and features to customize the heater to your specific needs. For customized engineering or alternative options, contact your Chromalox sales representative for fast turnaround on your specifications.

- Leadwire Types
- End Seal Options
- Lead Options
- Mounting Options
- Built-In Thermocouple

Leadwire Types

Description	Volts	Operating Temperature (°F)	Operating Temperature (°C)
Mica Fiberglas® Insulation	300V Standard 600V	842	450
Fluoropolymer	300V 600V	392	200

Seal Options

Type	Description/Application
Epoxy	Epoxy seal available on above leads by voiding end of sheath and filling with epoxy to provide a moisture barrier.
Fluoro-polymer	A swaged-in seal that provides additional moisture resistance.
RTV	For applications where a moisture barrier is required.
Hermetic	Ceramic-to-metal seal is good for element temperatures up to 1000°F. Specify heater length beyond the seal. Metal portion of the seal overlaps the heater sheath by 3/16".
MR SEOT2	Meets UL File SEOT2.SA 12768

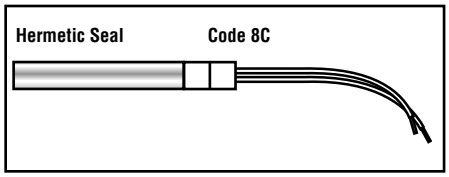
End Seal Temperature Limits

Description	Operating Temperature (°F)	Operating Temperature (°C)
Air Set Cement Standard	1000	538
Epoxy Seal	194	90
Fluoropolymer Seal	392	200
RTV Seal	284 392	140 200
Hermetic Seal	1000	538
MR-SEOT2	374	190

End Seal Options

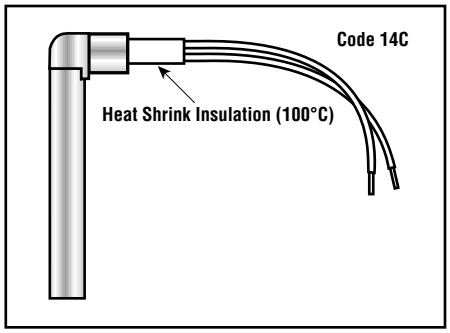
Hermetic Seal

Ceramic-to-metal seal is good for element temperatures up to 1000°F. Specify heater length beyond the seal. Metal portion of the seal overlaps the heater sheath by 3/16". For washdown conditions.



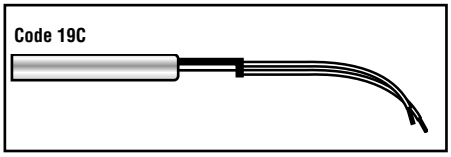
Lead Options

Right Angle Flexible Leads



Strain Relief

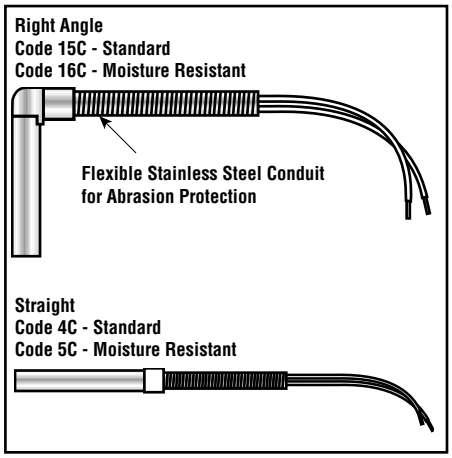
Strain Relief supports leads to reduce bending, crimping and breakage.



Lead Options (cont'd.)

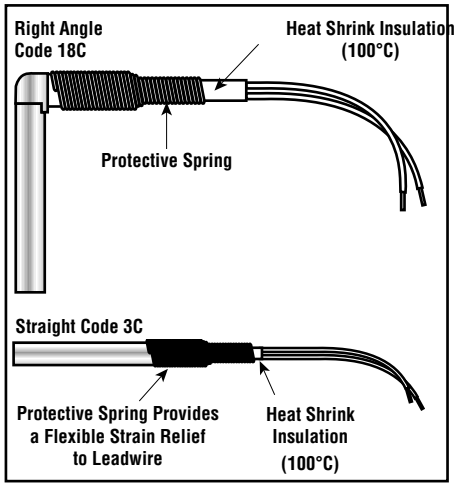
Flexible Stainless Steel Conduit

Flexible Stainless Steel Conduit provides leadwire protection from abrasion and sharp edges, and facilitates easier handling in harsh environments. Available in both straight and right angle configurations.



Protective Spring

Available in both straight and right angle configurations, the Protective Spring gives strong, yet flexible leadwire protection from bending, fatigue and flexing.



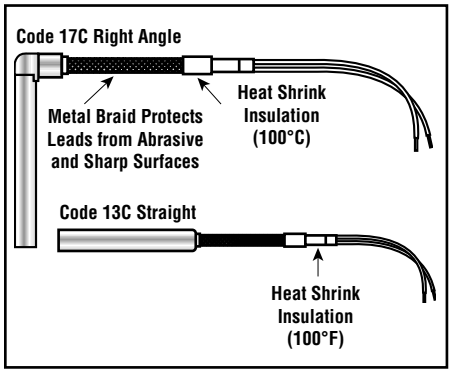
Cartridge Heaters

Modifications & Options *(cont'd.)*

Lead Options (cont'd.)

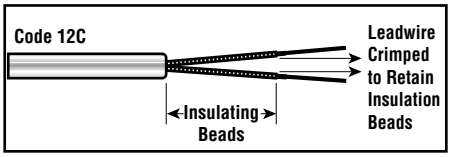
Metal Braid

Stainless Steel metal braid protects leadwire from abrasion and sharp edges, yet maintains flexibility and ease of installation. Metal braid is available in both straight and right angle configurations.



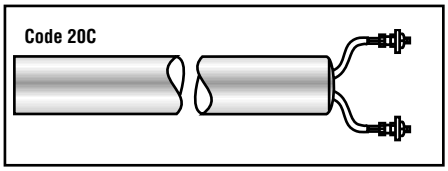
Ceramic Beads

Ceramic Bead insulation can be specified to protect leadwires from high ambient temperatures up to 1200°F (649°C). To order, specify ceramic beads length and additional lead length.



Threaded Post Terminals

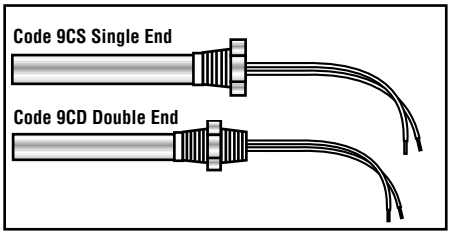
Post Terminals provide a strong, secure connection to buss bars or ring/fork connectors. Available only on 5/8 and 3/4" diameter heaters.



Mounting Options

Threaded Fittings

Threaded fittings allow the heater to be easily installed into a threaded hole for immersion applications. Available with single or double threaded fittings. The fitting overlaps the cartridge heater sheath by 1/4". Specify "brass" or "stainless steel" threaded fitting.

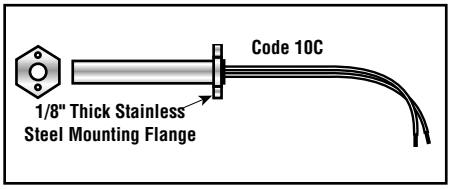


Threaded Fitting Sizes

Nom. Heater Diameter (In.)	NPT Size (In.)	Hex Size (In.)
1/4	1/8 - 27	7/16
3/8	1/4 - 18	9/16
1/2	3/8 - 18	11/16
5/8	1/2 - 14	7/8
3/4	3/4 - 14	1-1/16

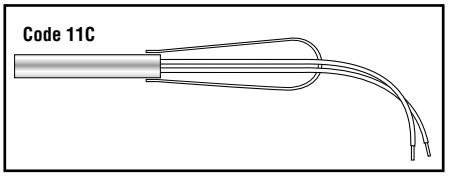
Mounting Flange

The mounting flange option allows for easy mounting and specific positioning of the heater within an application.



Wire Pull

The Wire Pull assists in heater removal.



Cartridge Heaters

Thermocouple Leadwire

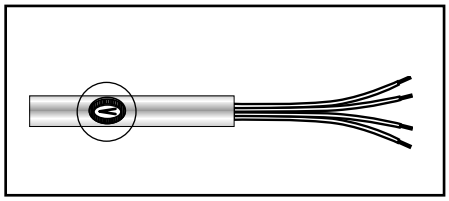
- **Process Temperature Control**
- **Protection from Overheating and Temperature Burnout**
- **Type J or K**

In some applications, the heating element temperature is closely related to the temperature of the platen or mold it is heating. Chromalox Cartridge heaters with built-in thermocouples allow you to precisely measure the temperature at the ideal measurement point within the cartridge heater, and control the internal heater temperature to more closely maintain the optimum process temperature. Longer heater life and increased heat transfer efficiency may be achieved by precisely controlling the heater temperature.

Built-In Thermocouple Cartridge Heaters are available in three styles, each designed for specific application needs.

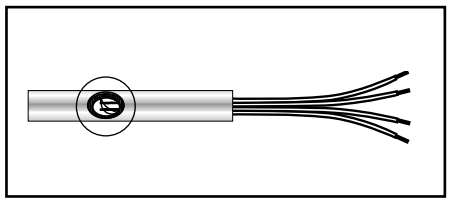
Thermocouple Cartridge Styles

Code T1



Thermocouple (T/C) junction is located in the center of the core and at any point along the length. The T/C is not grounded. Style T1 is used as an overtemperature control or for burnout protection. It can also be used for process temperature control.

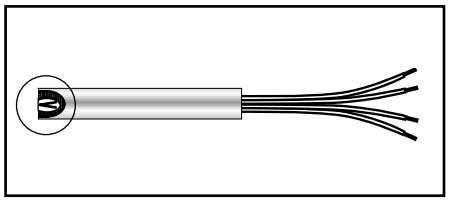
Code T2



T/C junction is located at most any point (specify location) along the length of the heater and grounded against the sheath. A 1/2" unheated section must be allowed for the T/C to clear the resistance wire.

Style T2 is used to control process temperature. T/C should be placed along the length of the heater in the most suitable position to control the temperature of the mold or platen being heated.

Code T3



T/C junction is embedded in the end disc. The T/C is grounded.

Style T3 is used when the process temperature at the end of the cartridge heater is critical. In applications where the process product flows past the heater end, such as plastic molding, this thermocouple style allows the cartridge end temperature to be closely controlled.

Thermocouples

Type	Range (°F)	Range (°C)
Type J	100 - 1400	38 - 760
Type K	100 - 2300	38 - 1260
Diameters	3/8, 1/2, 5/8, 3/4"	
Leadwire Length	Standard 14 inches Maximum length available 36 inches	

HTRC — Chromalox Heat Transfer and Release Coating (Patented)

Chromalox HTRC is used for improving heat transfer and release in the following applications.

- Cartridge units in drilled holes.
- Tubular units in drilled holes, grooves or clamp-on surfaces.
- Strip and Ring heaters in grooves or clamped on to rough surfaces.

Laboratory tests have demonstrated that in high temperature applications, improved heat transfer can lower the internal wire temperature to provide up to 100% improvement in heater life. Chromalox HTRC is recommended for use in the above applications where sheath temperature of the heater is expected to exceed 750°F.

HTRC has an excellent heat transfer co-efficient approaching that of aluminum. Shelf life greater than one year.

- PCN 014293 - 4 oz.
- Max. Temp. -1800°F

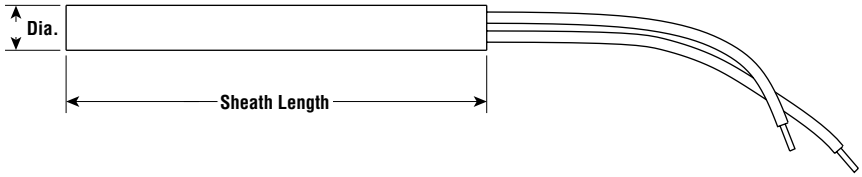
Click Here for Quote!

CIR/CIRM

CIR 1/8" to 1-1/4" dia.
CIRM 6mm to 20mm dia.
Cartridge Heater

- **50 - 5,000 Watts**
- **Up to 480 Volt**
- **1" to 60" Sheath Lengths**
- **INCOLOY® or Stainless Steel Sheath**

Dimensions



All Dimensions in Inches

Applications

- Dies and Molds
- Packing Machinery
- Laminating/Adhesives
- Hot Glue Melting
- Lead Melting
- Medical Application
- Extruding Dies
- Stamping and Marking Machine

Features

Leads can be bent at right angle near the heater without exposing bare wire therefore eliminating electrical shorts.

Sheath Material — Type CIR & CIRM cartridge heaters are made with a high- temperature INCOLOY® or stainless steel sheath material.

High Temperature Leadwire — Up to 842°F (450°C).

Lead Length — Type CIR heaters are stocked with 14" long leads. Longer lead lengths can be readily spliced on.

Advantages

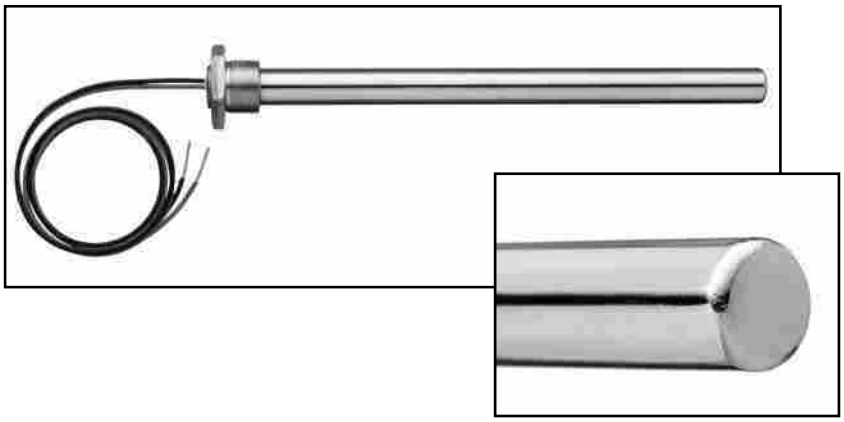
Higher Temperatures, Faster Production Rates — Because Type CIR's patented construction and high watt density capability let you put more heat in less space.

Shock and Vibration Resistant — Tightly compacted refractory insulation makes CIR heaters suitable for severe applications.

Even Temperature throughout the heater's length is produced by the uniform winding of the wire on the smooth supporting core. Close and even spacing between wire and inside of sheath is maintained for good heat transfer. Tight spacing between turns permits the use of largest gauge resistance wire.

Excellent Oxidation and Corrosion Resistance is provided by special Chromalox alloy sheath. Thermal expansion characteristics of sheath and refractory are closely matched.

C-DD
Deep Drawn Cartridge Heater



- **Seamless Sheath - No Welded End Disk**
- **304 or 316 Stainless Steel Sheath**
- **Electropolished (Option)**
- **Diameters Available: 1/8", 1/4", 3/8", 1/2", 5/8", 3/4" (.3175, .635, .9525, 1.27, 1.5875, 1.905 cm)**
- **Lengths Up to 10" (25.4 cm). See Chart**
- **High Watt Densities Available**

Advantages

Deep drawing is a sheet metal process where a sheet metal blank is radially formed into a forming die with a punch. Traditional cartridge heaters use "as welded" or "drawn over mandril" tube construction, using strip that is formed into a tube and welded. Deep drawing eliminates any weld seams that are typical on traditional cartridge heaters. Deep drawing also eliminates the need for a welded end disk which if improperly manufactured can cause the ingress of moisture into the element. This product is ideal for use in critical applications and anywhere risk mitigation is a concern.

Applications

Medical:
- Dialysis
- Nebulizers
- Hydrotherapy
- Pathology Analysis

Analytical:
- Chromatographs
- Water Baths
- Cleaners/Washers

Transportation:
- Potable Water Heaters
- Galley Equipment

Construction

C-DD uses the same robust construction as our standard high watt density cartridge heater. This model is typically supplied with a bushing or flange for immersion applications, but can also be supplied with any of the standard "CIR" configuration and seal options. Sheath material is available in either 304 or 316 stainless steel. The units can be passivated or electropolished for additional corrosion resistance.

Diameter In. (cm)	Maximum Length In. (cm)	Maximum Voltage
1/8 (.3175)	2.5 (6.35)	240
1/4 (.635)	3.75 (9.525)	240
3/8 (.9525)	5 (12.7)	480
1/2 (1.27)	7.5 (19.05)	480
5/8 (1.5875)	8 (20.32)	480
3/4 (1.905)	10 (25.4)	480

C-HD
Heavy Duty Cartridge Heater

- **1 and 1-19/64" Dia.**
- **140 - 1,780 Watts**
- **120 and 240 Volt**
- **11 - 50 W/In²**
- **Brass Sheath**
- **Two Bolt Terminals, One End**
- **Up to 600°F Max. Working Temp.**

Applications

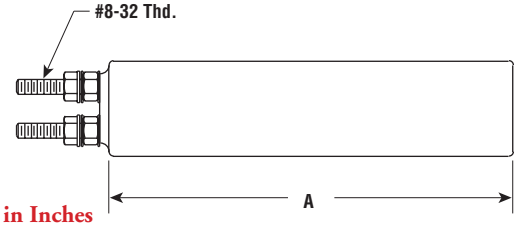
- Aluminum Extraction Dies
- Container Heaters
- Large Platens
- Molds
- Dies
- Stress Relaxing

Construction

Type C-HD is a high quality cartridge heater for medium and low watt density applications.

Available in 15/16, 1 and 1-19/64" diameter, sheath lengths up to approximately 2 feet.

Dimensions



All Dimensions in Inches

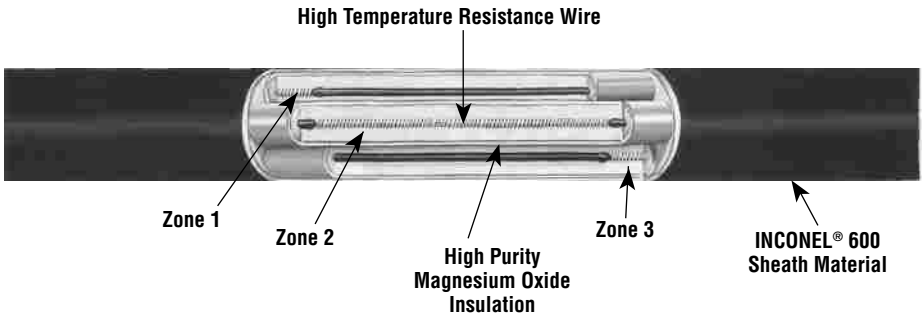
Specifications and Ordering Information

Dimensions (In.)					120V		240V		Wt.
Dia.	Sheath Length	Watts	W/In²	Model	Stock	PCN	Stock	PCN	(Lbs.)
1	3-3/8	300	35	**C-703**	**S**	**137920**	**S**	**137939**	0.31
1	4-7/8	375	28	**C-704**	—	—	**S**	**137955**	0.5
1	6-3/8	600	33	**C-705**	NS	137963	**S**	**137971**	0.63
1	7-7/8	500	22	C-706	NS	137980	—	—	0.75
1	9-3/8	700	26	**C-707**	NS	138000	**S**	**138018**	0.75
1	10-7/8	750	23	C-708	—	—	NS	138034	1
1	12-3/8	800	22	**C-709**	—	—	**S**	**138050**	1.13
1	18-3/8	1,250	23	**C-713**	—	—	**S**	**138077**	1.75
1	3-1/8	165	21	C-702	NS	137904	NS	137912	0.31
1	4-7/8	375	28	C-704	NS	137947	—	—	0.5
1	4-7/8	500	28	C-706	—	—	NS	137998	0.5
1	10-7/8	750	23	C-708	NS	138026	—	—	1
1	12-3/8	800	22	C-709	NS	138042	—	—	1.13
1	18-3/8	1,250	23	C-713	NS	275944	—	—	1.75
1	21	1,300	21	C-714	—	—	NS	275987	2.1
1	23	1,425	20	C-715	—	—	NS	275995	2.2
1	25	1,375	18	C-716	—	—	NS	276007	2.25
1-19/64	3-1/2	350	33	C-803	NS	138288	NS	138296	0.5
1-19/64	4-7/8	600	37	**C-806**	**S**	**138325**	**S**	**138333**	0.75
1-19/64	7-5/8	1,000	37	C-830	NS	138384	NS	138392	1.25
1-19/64	7-5/8	1,200	44	**C-810**	NS	138405	**S**	**138413**	1.25
1-19/64	10-1/2	1,000	26	**C-812**	NS	138448	**S**	**138456**	1.75
1-19/64	4-7/8	300	19	C-804	NS	138317	NS	138309	0.75
1-19/64	6-1/4	500	23	C-807	NS	138341	NS	138350	1
1-19/64	7-5/8	500	18	C-808	NS	138368	NS	138376	1.25
1-19/64	9	650	20	C-811	NS	138421	NS	138430	1.5
1-19/64	11-7/8	750	17	C-813	NS	138464	NS	138472	2
1-19/64	14-5/8	1,250	22	C-815	NS	138480	NS	138499	2.25
1-19/64	16	1,300	21	C-816	NS	138501	NS	138510	2.75
1-19/64	17-1/2	1,400	20	C-817	—	—	NS	277085	3
1-19/64	20-1/4	1,625	20	C-819	—	—	NS	277093	3.5
1-19/64	24-1/2	1,780	18	C-822	—	—	NS	277106	3.75

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

MaxiZone
High Temperature Insertion Heaters

- **Working Temperatures from 1500˚F to 1800˚F (815˚C to 982˚C)**
- **Inconel® 600 Sheath**
- **Exact, Uniform Temperatures with 2 or 3 Independently Controllable Zones**
- **Radiant Heat Transfer Allows Undersized Heaters for Easy Removal and Replacement**
- **Special Bending Capabilities**
- **Standard Diameter 0.495" (12.5 mm), 0.685 (17.4 mm) and 0.935" (23.75 mm) with Lengths of 18 Inches (457 mm) to 15 Feet (4572 mm)**
- **Quick Disconnect Plug and Jack**



MaxiZone Plug for 2 or 3 zone application.*

Two to Six separate metal sheathed elements are arranged and swaged in place in an INCONEL® 600 Outside Sheath

Description

The MaxiZone® High Temperature insertion heaters produce continuous sheath temperatures to 1,800°F (982°C). They are designed to achieve precise, uniform temperatures with two or three independently controlled heating zones along the length of the sheath. Radiant heat transfer enablees MaxiZone heaters to be smaller than the openings in which they are to be placed for easy insertion and removal.

Applications:

- Zone control in high temperature platens
- Titanium or carbon fiber hot forming process (super plastic)
- Aerospace, aircraft manufacturing
- Metal die casting
- Super heated gas
- Fluidized beds catalytic reaction

Specifications

Working Temperature..... 1,500˚ - 1,800˚F (815˚-982˚C)
Avail. Diameters .....495 ± .005 in. (12.5 ± .127mm) (Single Zone Only)
.685 ± .005 in. (17.4 ± .127mm)
.935 ± .005 in. (23.75 ± .127mm)
Other Diameters available. Consult Factory.
Lengths..... 18 in-15 ft. (457.2 -4,572 mm) ±3%
Heated Length Tolerance.....Consult Factory
Sheath Material .....INCONEL® 600
Resistance Tolerance ..... +10% / -5%
Wattage Tolerance..... +5% / -10%
Power.....30 to 50 W/in²
Voltage.....110 to 480 Vac

MaxiZone Quick Disconnect Plug

Part #	Zones	No. of Wires	Max. Voltage	Max. Amps
PCW-7183-1	2	4	250	15A/Zone
PCW-6570P	3	6	250	15A/Zone

*Other plugs are available for single zone applications.

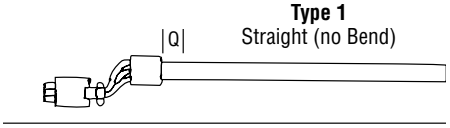
Heater Diameter	Platen Hole Size	Minimum Heated Length Per Zone	Minimum Heated Length	Maximum Heated Length
.495" (12.5 mm)	.563 or .625" (14.3 or 15.9 mm)	—	8" (203.2 mm)	170" (4318 mm)
.685" (17.4 mm)	.75 or .875 (19.05 or 22 mm)	8" (203.2 mm)	8" (203.2 mm)	172" (4369 mm)
.935" (23.75 mm)	1 or 1.25" (25.4 or 31.75 mm)	8" (203.2 mm)	8" (203.2 mm)	165" (4191 mm)

*.495 diameter available in single zone only
** Overtemperature thermocouple option for .685 and .935 diameters only

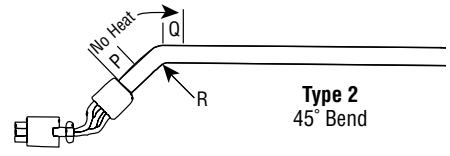
MaxiZone
High Temperature Insertion Heaters *(cont'd.)*

Bend Type	Heater Diameter	P (Std. Min.)	R (Std. Min.)	Q* (Std. Min.)	S (Std. Min.)	Min Cold Section at Terminal End**
Type 1 Straight (No Bend)	0.495 in. (12.5 mm)	- - -	- - -	2 in. (50.8 mm)	- - -	Equal to Q
	0.685 in. (17.4 mm)	- - -	- - -	2 in. (50.8 mm)	- - -	Equal to Q
	0.935 in. (23.75 mm)	- - -	- - -	2 in. (50.8 mm)	- - -	Equal to Q
Type 2 45˚	0.495 in. (12.5 mm)	4 in. (101.6 mm)	1.125 in. (28.5 mm)	1 in. (25.4 mm)	- - -	6 in. (152.4 mm)
	0.685 in. (17.4 mm)	4 in. (101.6 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	- - -	6.5 in. (165.1 mm)
	0.935 in. (23.75 mm)	4 in. (101.6 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	- - -	7.5 in. (190.5 mm)
Type 3 90˚	0.495 in. (12.5 mm)	4 in. (101.6 mm)	1.125 in.(28.5 mm)	1 in. (25.4 mm)	- - -	7.25 in. (184.15 mm)
	0.685 in. (17.4 mm)	4 in. (101.6 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	- - -	8 in. (203.2 mm)
	0.935 in. (23.75 mm)	4 in. (101.6 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	- - -	9.75 in. (247.65 mm)
Type 4 Crank	0.495 in. (12.5 mm)	1.5 in. (38.1 mm)	1.125 in.(28.5 mm)	1 in. (25.4 mm)	2.5 in. (63.5 mm)	8.5 in. (215.9 mm)
	0.685 in. (17.4 mm)	1.5 in. (38.1 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	3 in. (76.2 mm)	10.25 in. (260.35 mm)
	0.935 in. (23.75 mm)	1.5 in. (38.1 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	4 in. (101.6 mm)	12 in. (304.8 mm)

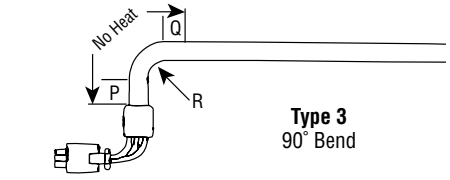
Bending Options



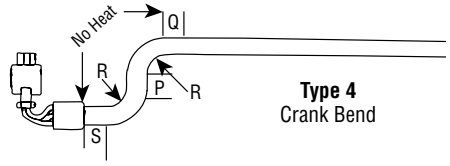
Type 1
Straight (no Bend)



Type 2
45˚ Bend

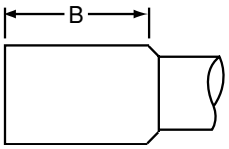


Type 3
90˚ Bend

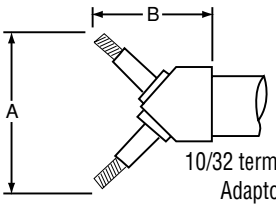


Type 4
Crank Bend

Transition Adaptors



Type L Leads
1, 2 or 3 Zone



Type Y
10/32 terminals with Ceramic Adaptor–Single Zone

MaxiZone Diameter	A	B
.495" (23.75 mm)	1-3/8"	1-1/2"
.685" (17.4 mm)	1-3/8"	1-1/2"
.935" (23.75 mm)	1-3/8"	1-1/2"

MaxiZone Diameter	A	B
.495" (23.75 mm)	1-1/4"	1-1/4"
.685" (17.4 mm)	1-1/4"	1-1/4"
.935" (23.75 mm)	1-5/8"	1-5/8"

Ordering Information

Complete the model number using the matrix provided.

Model

MZ — **MaxiZone High Temperature Insertion Heater**[1]

Code	Diameter[2]
50	0.495
60	0.685
90	0.935

Code	Length
XXA	Multiple Digit Length Code: "XX" refers to length in inches (whole number value) "A" refers to decimal equivalent portion of remaining length (example: 331 = 33.125 inches)

Code	Serial Number
0000	Assigned at Factory

MZ	90	XXA	0000	Typical Model Number

[1] MaxiZone® heaters are design-specific products based on application. Consult factory.
[2] Other diameters available. Contact factory.

SST & QST
Split Sheath Insertion Heaters

- **3/8 - 1 Inch Diameter**
- **5 - 60 Inch Lengths (SST)**
- **5 - 36 Inch Lengths (QST)**
- **Sheath Temperatures up to 1600°F (871°C)**

SST Split Sheath Insertion Heater

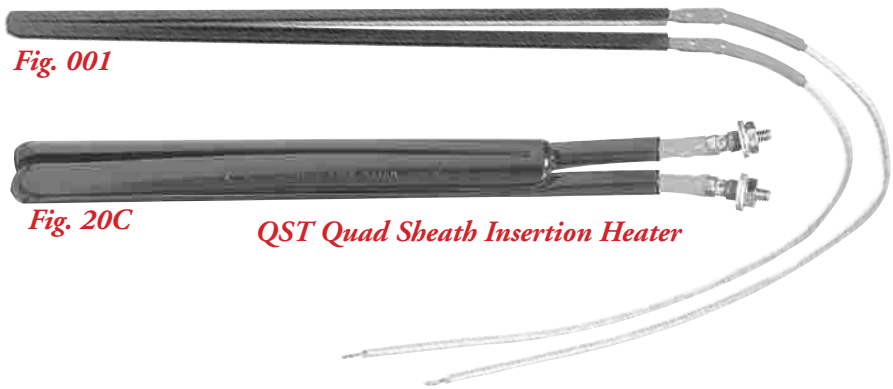


Fig. 001

Fig. 20C *QST Quad Sheath Insertion Heater*

Applications

- Platens
- Presses
- Dies
- Molds

Description

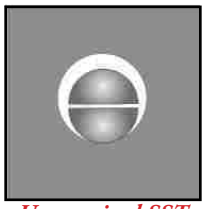
The SST and QST Split Sheath Insertion Heaters are designed especially for platen, die or mold heating applications where the holes are poorly drilled or worn through age. Independent expansion of each section of the SST and QST when energized, creates intimate contact with the wall of the hole

- Split Sheath design
- Improved conductive heater
- Easily inserted and removed from long holes
- Incoloy® Sheath for long life at extreme temperatures
- Compacted to maximum density for excellent element to sheath heat transfer and dielectric strength

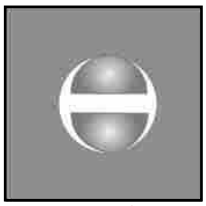
Terminations

Flexible Leads – SST & QST are available with flexible lead wires machine connected to the terminal pins, for temperatures to 850˚F(450˚C). 12" length is standard. Specify longer length.

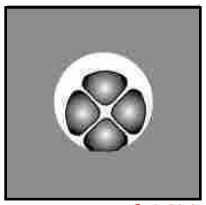
Screw Terminals – SST and QST are available with standard 8/32 x 1" welded nickel plated steel studs. Easy terminal connections are made using lugs, leads or bus bar. Stainless steel, and other thread sizes or lengths are available. Consult Chromalox.



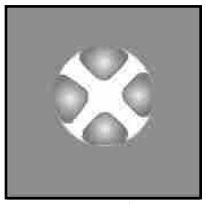
Unenergized SST



Energized SST



Unenergized QST



Energized QST

Tolerances and Limitations							
Nominal Sheath Diameter		3/8"	1/2"	5/8"	11/16"	3/4"	1"
Actual Sheath Diameter (±.003)		.370"	.495"	.620"	.682"	.745"	.995"
Minimum Sheath Length		5"	5"	5"	5"	5"	5"
Maximum Sheath Length – SST		60"	60"	60"	60"	60"	60"
Maximum Sheath Length – QST		N/A	36"	36"	36"	36"	N/A
Minimum Ohms/inch of EHL*	SST	.278	.308	.296	.296	.350	.350
	QST	–	.593	.593	.593	.593	–
Maximum Ohms/inch of EHL*	SST	11	21	21	21	26	26
	QST	–	38	38	38	38	–
Maximum Standard Voltage		240	240	240	480	480	480
Maximum Amperage	SST	15	30	40	40	40	40
	QST	–	30	30	30	30	–
Wattage		+5% – 10%					
Resistance		+10% – 5%					
Sheath Length		±3% up to 20", ±2% over 20"					

*EHL: Effective Heat Length

SST & QST
Split Sheath Insertion Heaters *(cont'd.)*

Fig. 04C Stainless Steel Armor Cable Lead Protection
Armor Cable is the best protection against abrasion or other damage to lead wires. A straight transition adapter with 12" stainless steel armor cable and 14" lead wires is standard. Specify longer length.

Fig. 15C Right Angle Stainless Steel Armor Cable Lead Protection
Figure 15C Shows an SST Insertion Heater with right angle stainless steel armor cable protect leads. Figure DS is for use where spacing is limited and for wiring convenience. 12" cable and 14" overall lengths are standard. Specify longer length.

Fig. 13C Flexible Stainless Steel Braided Leads
Figure 13C flexible stainless steel braid protects leads from sharp edges. The braided sleeving is virtually as flexible as non-protected leads. 12" stainless steel braid with 14" leads are standard. Specify longer length.

Fig. 17C Right Angle Flexible Stainless Steel Braided Leads
Figure 17C right angle flexible stainless steel braid protects lead wires from abrasion and are full length flexible at right angle orientation for installations with limited spacing. 12" stainless steel braid with 14" leads are standard. Specify longer length.

Fig. 10C Mounting Flange
Figure 10Cw is a stop washer or mounting flange. Specify distance from lead end, outside diameter and mounting hole centers, if required.

Adaptor Dimensions

SST or QST* Diameter	Figures 04C, 15C, 13C & 17C	Cable O.D.*
3/8"	5/8" x 1-1/2"	15/32
1/2"	5/8" x 1-1/2"	
5/8"	3/4" x 1-1/2"	
11/16"	3/4" x 1-1/2"	
3/4"	7/8" x 1-1/2"	
1"	1-1/8" x 1-1/2"	

* QST (QUAD) N/A in 3/8" Diameter
** Not applicable to Fig. 13C or Fig. 17C

Ordering Information
To Order — Complete the Model Number using the Matrix provided.

Model

SST Single Split-Sheath Cartridge Heater
QST Quad Split-Sheath Cartridge Heater

Code	Nominal Sheath Diameter
38	3/8" (QST not available)
50	1/2"
62	5/8"
68	11/16"
75	3/4"
10	1"

Code	Insertion Length (inches of shaft)
nnn	Enter desired shaft insertion length

Code	Voltage	Code	Voltage
1	120 Vac	**4**	480 Vac
2	240 Vac	**5**	Other (Consult Factory)
3	380 Vac		

Code	Wattage
XXXX	

Code	Termination Option
001	12" Leadwire
10C	Mounting flange/stop washer
15C	Right angle fitting with flexible stainless steel armor cable (transition 1-1/2" in length)
04C	Straight Flexible Stainless Steel Armor Cable Fitting (transition 1-1/2" in length)
17C	Right angle fitting with stainless steel braided lead protection (transition 1-1/2" in length)
13C	Straight flexible stainless steel braided lead protection (transition 1-1/2" in length)
20C	Threaded post terminal connection

SST	**30**	**015**	**1**	**1000**	**15C**	**Typical Model Number**

SCB
Edison Screw Base Space Heater

120V Only

120V Only

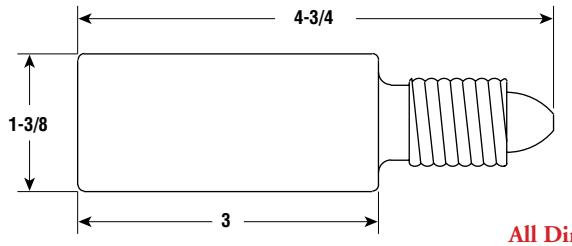
- **Edison Screw Base**
- **50 - 200 Watts**
- **120 and 240 Volt**
- **Brass Sheath**

Applications

Edison Screw Base installs in standard porcelain lamp socket for simple installation.

Prevent moisture accumulation, mildew and freezing in clothes lockers, fire extinguisher cabinets and control boxes. Also used in resistor banks.

Dimensions



All Dimensions in Inches

Specifications and Ordering Information

Watts	Model	120V		240V		Wt. (Lbs.)
		Stock	PCN	Stock	PCN	
50	**SCB-50**	**S**	**253809**	—	—	0.6
75	**SCB-75**	**S**	**253817**	**S**	**253825**	0.6
100	**SCB-100**	**S**	**253833**	**S**	**253841**	0.6
150	**SCB-150**	**S**	**253850**	**S**	**253868**	0.6
200	**SCB-200**	**S**	**256410**	**S**	**273560**	0.6

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Cartridge Accessory Sleeve Adapter

3/8" Dia. Cartridge heaters can be sleeved to fit 1/2 and 5/8" diameter holes, allowing one diameter to fit most applications.

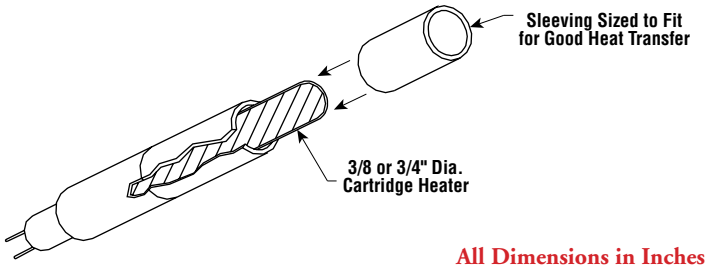
3/4" I.D. Sleeves permit installation of type CIR high watt density heaters in 1-1/4" diameter holes to replace old style large diameter heaters.

Makes Removal of heaters easier. No more drilling, hammering, etc.

Made of Steel, these pressed powder metal sleeves have been designed and fully tested to assure proper transfer of heat from the cartridge heater to the work.

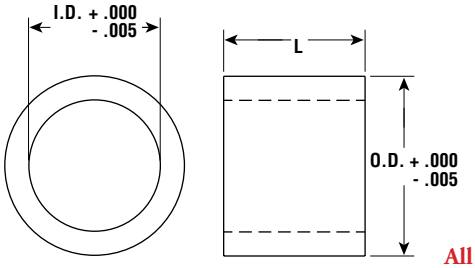
800°F Maximum Work Temperature. For higher work temperatures, contact your Local Chromalox Sales office.

Dimensions



All Dimensions in Inches

Dimensions



All Dimensions in Inches

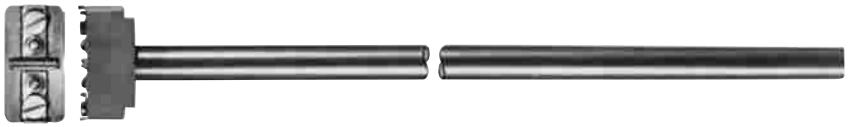
Specifications and Ordering Information

Dimensions (In.)			Model	Stock	PCN
I.D.	O.D.	Length			
3/8	**0.498**	**1**	264-055320-001	**S**	289756
3/8	**0.622**	1	264-055320-003	**S**	**289764**
3/4	**1.25**	**1**	264-055320-011	**S**	**289801**

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

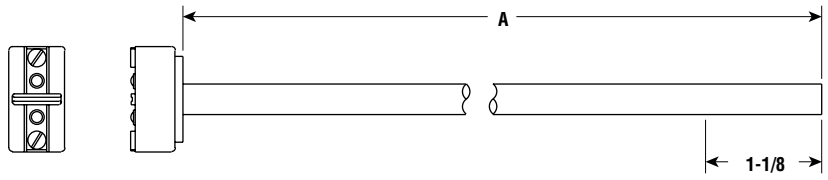
CTRH

Heavy Duty Cartridge Heater



- 0.553 and 0.66" Dia.
- 1,670 - 5,130 Watts
- 120, 208, 240 and 480 Volt
- 50 and 55 W/In²
- 304 Stainless Steel Sheath

Dimensions



All Dimensions in Inches

Applications

- Forming
- Stress Relieving Metal Parts
- Dies
- Platens

Construction

Type CTRH is an extra high-quality cartridge heater.

Available in 0.553 and 0.663" diameter, sheath lengths up to 4-1/2 feet.

50 - 55 W/In² to heat materials up to 800°F.

Specifications and Ordering Information

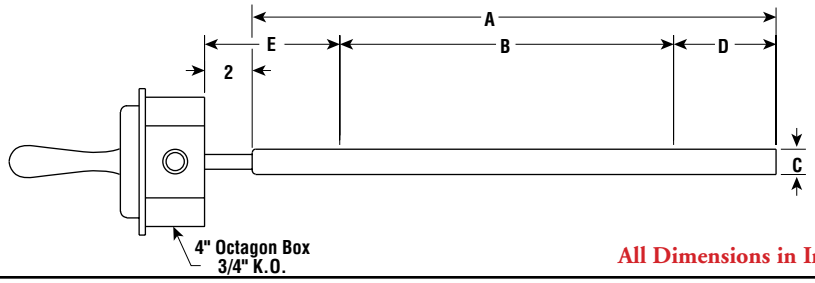
Dimensions (In.)					120V		208V		240V		480V		
Diameter	Sheath Length	Watts	W/In²	Model	Stock	PCN	Stock	PCN	Stock	PCN	Stock	PCN	Wt. (Lbs.)
0.553	20	1,670	55	CTRH-520	NS	276517	—	—	—	—	—	—	1.3
0.553	24	2,475	55	CTRH-524	NS	276525	NS	276533	NS	276541	—	—	1.5
0.553	28	2,440	55	CTRH-528	NS	276550	NS	276568	NS	276576	—	—	1.8
0.553	32	2,820	55	CTRH-532	NS	276584	NS	276592	NS	276605	—	—	2
0.553	36	3,200	55	CTRH-536	—	—	NS	276613	NS	276621	—	—	2.3
0.553	40	3,580	55	CTRH-540	—	—	NS	276630	NS	276648	—	—	2.5
0.553	44	3,970	55	CTRH-544	—	—	NS	276656	NS	276664	—	—	2.8
0.553	48	4,350	55	CTRH-548	—	—	NS	276672	NS	276680	NS	276699	3
0.553	52	4,730	55	CTRH-552	—	—	NS	276701	NS	276710	NS	276728	3.3
0.66	20	1,810	50	CTRH-620	NS	276736	—	—	—	—	—	—	1.6
0.66	24	2,475	50	CTRH-624	NS	276744	NS	276752	NS	276760	—	—	1.8
0.66	28	2,640	50	CTRH-628	NS	276779	NS	276787	NS	276795	—	—	2.1
0.66	32	3,060	50	CTRH-632	NS	276808	NS	276816	NS	276824	—	—	2.4
0.66	36	3,470	50	CTRH-636	—	—	NS	276832	NS	276840	—	—	2.7
0.66	40	3,880	50	CTRH-640	—	—	NS	276859	NS	276867	—	—	3
0.66	44	4,300	50	CTRH-644	—	—	NS	276875	NS	276883	NS	276891	3.3
0.66	48	4,610	50	CTRH-648	—	—	NS	276904	NS	276912	NS	276920	3.6
0.66	52	5,130	50	CTRH-652	—	—	NS	276939	NS	276947	NS	276955	3.9

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

CBH
Electric Stud Heater

- 1,150 - 8,000 Watts
- 120 and 240 Volt
- 18 - 60" Lengths

Dimensions



All Dimensions in Inches

Applications

- Large Compressors
- Presses
- Turbines
- Die Blocks
- Cylinders
- Engine Heads
- Pressure Vessels

Construction

Type CBH is constructed of rugged tubular element with a metal sleeve.

Accurate Diameter provides proper clearance into standard drill hole sizes.

Large Bolts or Studs may be expanded and tightened with a wrench providing "shrink fit tightness" when cool.

CBH Heaters are generally used in sets to permit uniform tightening of mating parts.

Specifications and Ordering Information

Dimensions (In.)							Watts	Model	120V		240V		Wt. (Lbs.)
Dia.	Insert Lgth. A	Htd. Lgth. B	Htr. Dia. C	Cold End D	Cold End E	Max. Stud Hole Dia.			Stock	PCN	Stock	PCN	
0.553	18	12	0.533	1-1/8	6-7/8	0.616	1,150	**CBH-1815**	**S**	**258538**	—	—	5
0.553	24	18	0.533	1-1/8	6-7/8	0.616	1,500	**CBH-2415**	**S**	**258554**	—	—	5
0.553	30	24	0.553	1-1/8	6-7/8	0.616	2,250	CBH-3025	NS	258626	**S**	**258634**	5
0.553	36	30	0.553	1-1/8	6-7/8	0.616	2,600	CBH-3625	NS	258706	NS	258714	5
0.660	18	12	0.66	1-1/8	6-7/8	0.735	1,200	**CBH-1816**	**S**	**258546**	—	—	6
0.660	24	18	0.66	1-1/8	6-7/8	0.735	1,700	CBH-2416	NS	258562	—	—	6
0.660	30	24	0.66	1-1/8	6-7/8	0.735	2,300	CBH-3026	NS	258642	—	—	6
0.660	36	30	0.66	1-1/8	6-7/8	0.735	2,800	CBH-3626	NS	258722	—	—	6
0.730	18	12	0.73	1-1/4	6-3/4	0.86	1,700	**CBH-1827**	**S**	**259266**	—	—	5
0.730	24	18	0.73	1-1/4	6-3/4	0.86	2,500	CBH-2427	NS	259274	—	—	5
0.730	36	30	0.73	1-1/4	6-3/4	0.86	4,200	CBH-3647	NS	259303	**S**	**259311**	6
0.730	48	42	0.73	1-1/4	6-3/4	0.86	6,000	CBH-4867	—	—	NS	259320	6
0.730	60	54	0.73	1-1/4	6-3/4	0.86	7,500	CBH-6177	—	—	NS	259346	7
0.855	24	18	0.855	1-1/4	6-3/4	0.985	2,700	**CBH-2438**	—	—	**S**	**258589**	7
0.855	30	24	0.855	1-1/4	6-3/4	0.985	3,600	CBH-3048	NS	258669	—	—	8
0.855	42	36	0.855	1-1/4	6-3/4	0.985	5,300	CBH-4258	NS	—	**S**	**258773**	8
0.855	48	42	0.855	1-1/4	6-3/4	0.985	6,500	CBH-4868	—	—	NS	258810	9
0.980	42	36	0.98	1-1/4	6-3/4	1.11	6,000	CBH-4269	—	—	NS	258790	9
0.980	54	48	0.98	1-1/4	6-3/4	1.11	8,000	CBH-6189	—	—	NS	258861	9

Stock Status: **S** = stock NS = non-stock
To Order—Specify model, PCN, watts, volts and quantity.

Note — Chromalox can supply other sizes and ratings. Contact your Local Chromalox Sales office.