



High Temperature Fully Flexible Leads

High temperature fiberglass flexible leads are internally connected and swaged in place. Fully flexible from the exit of the sheath, the high temperature (850°F/450°C) lead wires are ideal where flexing occurs.



Stainless Steel Armor Cable Lead Protection

Stainless steel armor cable is the best protection for use where lead wires experience abrasion. This termination configuration is available exiting straight or right angle. Please specify the overall sheath length when ordering. See chart for dimension and minimum unheated section information.

Stainless Steel Braided Lead Protection

DIA.	Min. Unheated
1/8"	-
1/4"	1"
9/16"	1"
3/8"	1-1/2"
1/2"	1-1/2"
5/8"	1-9/16"
3/4"	1-7/8"
15-16"	1-7/8"
1"	1-7/8"
1-1/4"	1-7/8"

High Temperature Fully Flexible Leads

DIA.	Standard Unheated Area
1/8"	3/8"
1/4"	1/2"
5/16"	1/2"
3/8"	9/16"
1/2"	5/8"
3/4"	7/8"
15/16"	7/8"
1"	7/8"
1-1/4"	7/8"

Stainless Steel Armor Cable Lead Protection

DIA.	Min. Unheated	Cable O.D.
1/8"	-	-
1/4"	1-1/2"	1/4"
5/16"	1-1/2"	1/4"
3/8"	1-1/2"	3/8"
1/2"	1-1/2"	3/8"
5/8"	1-9/16"	1/2"
3/4"	1-7/8"	1/2"
15/16"	1-7/8"	1/2"
1"	1-7/8"	1/2"
1-1/4"	1-7/8"	1/2"

Stainless Steel Braided Lead Protection

Swaged in double conductor stainless steel braid is internally connected for strength and full-length flexibility. Stainless steel braided leads are available exiting straight or right angle of the sheath. Please specify overall length when ordering. See chart for dimension and minimum unheated section information.



STS Southeast Thermal Systems L.L.C. Cartridge Heaters



Right Angle Flexible Leads

Right angle high temperature fiber-glass leads (850°F/450°C) is used when specific requirements are limited. Please specify overall length when ordering. See chart for dimension and minimum unheated information.



Cartridge Immersion Heaters

Available in brass or stainless steel pipe fitting which allows liquid tight installation through threaded openings. Fittings are brazed to the heater. Be certain the watt density and sheath material are compatible with the material being heated. (Available in both NPT and Straight thread with O-Ring) See chart for sizes available.

Cartridge Immersion Heaters Straight Thread

DIA.	S.A.E. O-Ring Boss	Pipe Fitting Length
1/2"	08 3/4-16 THD	3/4"
1/2"	10 7/8-14 THD	3/4"
5/8"	10 7/8-14 THD	3/4"

Moisture and Contamination Resistant Leads

DIA.	Min. Unheated
1/4"	1"
3/8"	1"
1/2"	1"

Moisture and Contamination Resistant Leads

Swaged in Teflon seal and leads resist oil and water up to (482°F/250°C) maximum application temperature.



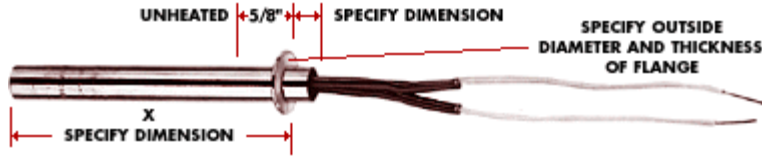
Right Angle Flexible Leads

DIA.	Standard Unheated Area
1/8"	-
1/4"	1"
5/16"	1-1/2"
3/8"	1-1/2"
1/2"	1-1/2"
5/8"	1-9/16"
3/4"	1-7/8"
15/16"	1-7/8"
1"	1-7/8"
1-1/4"	1-7/8"

Cartridge Immersion Heaters

DIA.	Pipe Size NPT	Pipe Fitting Length
1/4"	1/8-27	5/8"
3/8"	1/4-18	5/8"
1/2"	3/4-18	3/4"
5/8"	1/2-14	13/16"
3/4"	3/4-14	15/16"

Cartridge Heaters



Flanged Heaters

Cartridge Heater can be manufactured with flange located at any point along sheath with adequate unheated area.

Threaded Terminals

Screw terminals facilitate ease of connection using lug terminals, standard leads or bus bar.

Available in 1/2", 5/8", 3/4", 15/16", 1", and 1-1/4" diameters. Standard terminals are 8-32 x 5/8". Other terminal sizes are available. Please consult with Southeast Thermal.



Specifications And Limitations

NOM. DIA. IN.	Actual DIA. IN.
1/8	.121
1/4	.246
5/16	.308
3/8	.371
1/2	.496
5/8	.621
3/4	.746
1	.996
1-1/4	1.245

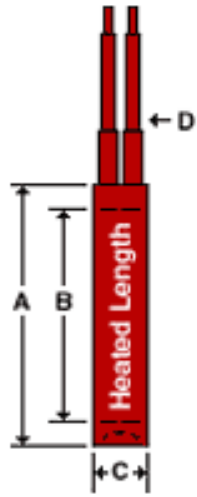
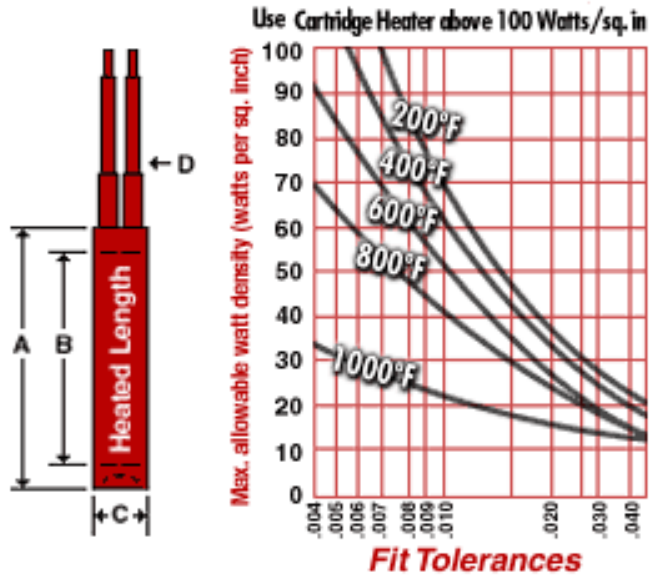
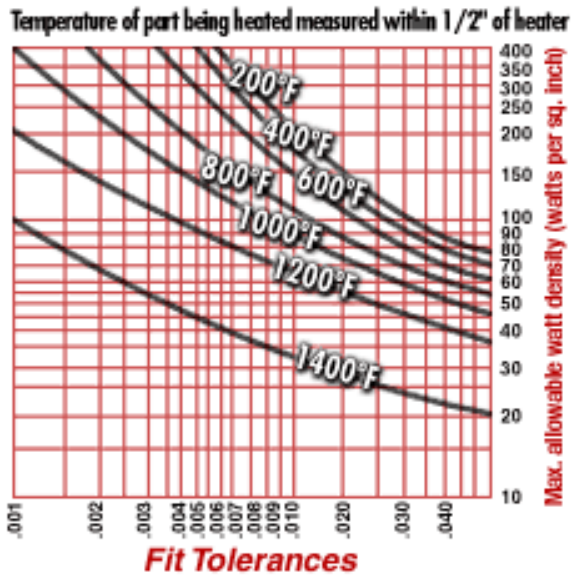
TOL ± .002

Resistance Tolerance: +10%, -5%
Wattage Tolerance: +5%, -10%
Cold Resistance: 3% Lower than Hot Resistance
Length Tolerance: ±3/32", up to 41/2", long, above 41/2", ±2%
Camber Tolerance: .0016" per inch of length, in longer heaters larger camber may occur.
Standard Unheated Section: 3/8" cold top and bottom of 3/8" diameter heaters. Slightly longer cold sections in larger heaters. See corresponding description for cold sections at lead end for all lead variations. Cold sections can be reduced or increased.
1/8" Diameter Tolerance: Wattage; +10%, -15%, length over 41/2"; ±3%

NOM. DIA. mm	Actual DIA. mm
6.5	6.45
8.0	7.95
10.0	9.95
12.5	12.45
16.0	15.95
20.0	19.95
25.0	24.95

TOL ± .05 mm

Metric Cartridge Heaters:
Length Tolerance: ± 2.4mm up to 115mm and above 115mm ± 2%
Camber Tolerance: .16mm per 100mm of length and in longer heaters larger camber may occur.



How To Order

1. When ordering Cartridge Heaters:
 - A. Overall Length
 - B. Heated Length
 - C. Nominal Diameter
 - D. Lead Length
 - E. Voltage and Wattage
 - F. Request Product Data Sheet

Diameter and length are determined by the space available and the requirements for even heat distribution. The standard leads consists of staggered 1" and 1-1/2" nickel pins.

2. Determine:

$$\text{Watt Density} = \frac{\text{Total Wattage}}{\text{Diameter} \times \pi \times \text{Heated Length}}$$

Example: a 3/8" diameter, 3" long overall (with standard 3/8" cold end), rated at 300 watts. $.371 \times 3.14 \times 2\text{-}1/4" = 2.63$ sq. in. heated area.

$$\frac{300}{2.63} = 114 \text{ watts per square inch.}$$

3. Determine: Fit = maximum inside diameter of hole minus minimum O.D. of sheath

Example: a 3/8" Cartridge Heater in a $.375 \pm .001$ reamed hole would have a .007 fit.
 $.376 - .369 = .007$

Check the required temperature against the watt density and fit indicated on the graph above.

4. To extend heater life:
 - A. Decrease the watt density by:
 1. Increasing the diameter
 2. Increasing the heated length
 3. Increasing the number of units used
 4. Reducing the wattage, allowing for longer heat-up time.
 - B. Use a tighter fit.
 - C. Consult Southeast Thermal for alternative design recommendations