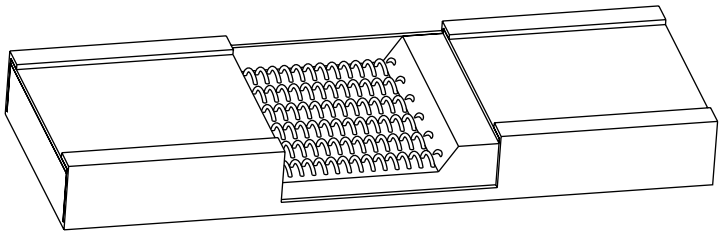
Strip & Ring Heaters

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. Mounting studs are readily available by contacting your Local Chromalox Sales office.

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

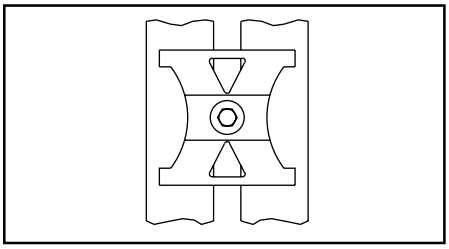
Chromalox strip elements, in most cases, can be applied with standard hardware. However, for firm contact and best heat transfer, stocked Chromalox clamps are recommended.

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.

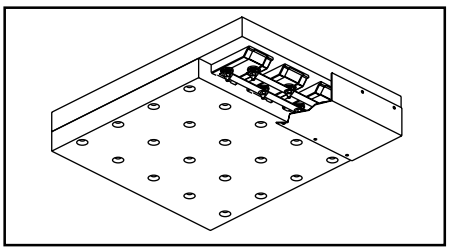
Utility Clamps



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

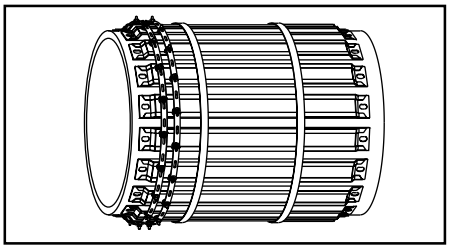


Clamping Bands

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.

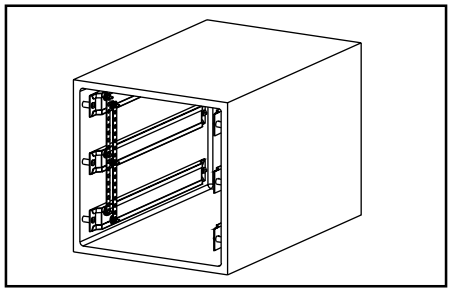
Clamping Bands



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

Modifications

Lengthwise Bending

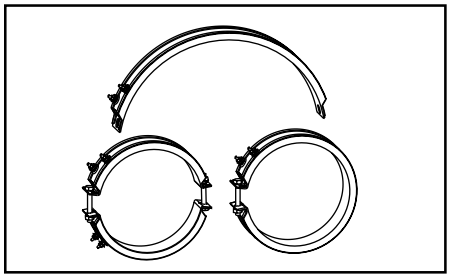
Lengthwise Bending for clamping around pipes or cylindrical vessels. Terminals may be located inside or outside of curvature for all types listed.

3" Min. Inside Radius — Type S, SE, OT PT, TH, NH, SNH, SN and ST.

6" Min. Inside Radius — Type SSE, SSEM, SSNH and SSNHM.

4-3/4" Min. Inside Radius — Type WS.

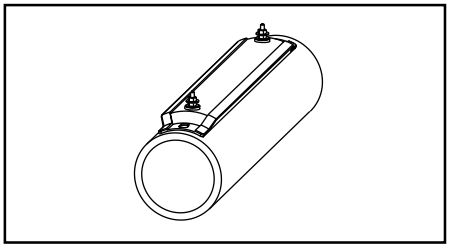
Lengthwise Bending



Cross-Section Curving

Cross-Section Curving — Type SE only, for clamping strips to 2, 2-1/2, 3, 4, 6, 8 and 12" pipes. For larger size pipe, use flat strips. Radii available 1-3/16, 1-7/16, 1-3/4, 2-1/4, 3-5/16, 4-5/16 and 6-5/16". Terminals outside only.

Cross-Section Curving



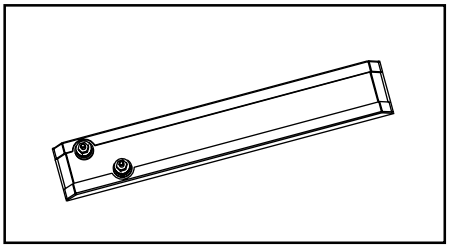
Special Lengths — Type PT, SE, SN and SNH only. Special lengths are made-to-order for instances in which the amount of heat applied to a surface is critical and standard lengths are not suitable.

Special Voltage and Wattage — All types. Certain highly specialized applications may require special ratings. However, most can be handled with standard heaters or standard ratings applied on an alternate voltage. Contact your Local Chromalox Sales office.

Special Wattage Distribution — All types except TH. When even temperatures are required and end losses may cause an unsatisfactory temperature drop near the edges, additional wattage can be provided at each end of the strip to make up for losses.

Dual Contact Surface — Type SE only. 53-7/8" maximum A dimension. Flush-top construction gives good contact for all surfaces of the strip heater. Ideal for use in machined slots and installing between two smooth metal surfaces.

Without Mounting Tabs



Without Mounting Tabs — All types. Permits installing more heat in a given confined space. **Specify "without mounting tabs" when ordering this feature.**

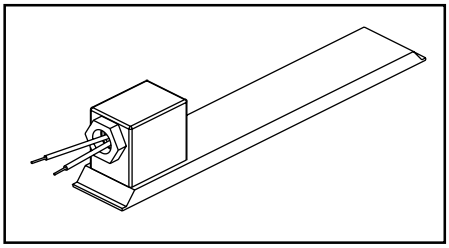
Extra Strong Mounting Tabs — All types except WS. Recommended when strips are bent lengthwise and tabs are used for bolting.

Monel® Sheath — Type S, SE, OT, PT, HSP and WS.

Stainless Steel Sheath — All types.

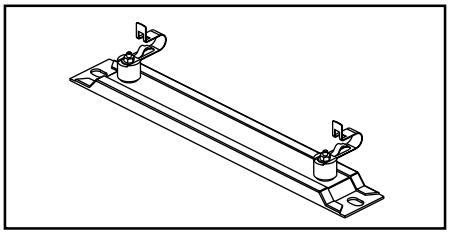
Cover for Seamless Strips, Factory Welded

Cover for Seamless Strips with Threaded Opening for Conduit — Cover is welded to heater. Specify position of threaded opening either on top of cover, or as shown. Type SSE, SSEM and SSNHM.



Fahnestock® Terminals

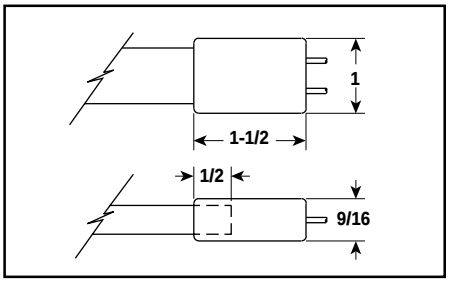
Fahnestock® Terminals — Type S only. For quick temporary connections where ambient temperatures do not exceed 150°C. Maximum recommended amperage is 7.5 Amps.



Special Length Terminals — All types. Where a shorter or longer terminal bolt than standard shown in drawing is needed, indicate length needed.

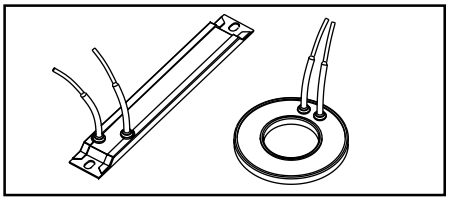
Rubber-Molded Terminals

Rubber-Molded Terminals — Type NS only. Used generally in low temperature applications where moisture, condensation and high humidity are considerations. Available in neoprene-rubber (to 190°F). Longer cold end or lower wattage is required to assure temperature limit of molding material is not exceeded. End opposite terminal is welded closed.



Special Lead Wire Terminal Construction

Special Lead Wire Terminal Construction — All types. Specified most often when clearance is unavailable for standard terminals and when lead wires are more suitable for wiring to nearby components.



Secondary Insulation Bushing

Secondary Insulation Bushings — All Types except NS. Must be used when strips are mounted for air heating only or when connected in series on line voltages 480V or above. **Note** — To accommodate bushings, a 17/32 x 11/16" diameter mounting hole in tabs should be specified for heaters. To Order — Specify PCN 255716 (includes bushing and hardware for one strip) and quantity.