

CARTRIDGE HEATERS

Heaters built to Meet the Demands of the Global Market



Star Electric cartridge heaters are built using only the finest materials and construction methods and are backed with extensive quality assurance programs. With premium materials and tight manufacturing controls, we provide superior heat transfer, uniform temperatures, resistance to oxidation and corrosion and a long life even at high temperatures. Star Electric offers many delivery and stocking programs to meet your needs.

Performance Capabilities

- Part temperatures up to 1400°F (760°C) on Incoloy® sheath
- Watt densities up to 400 W/in² (62 W/cm²)
- Maximum voltage up to 480V

Features & Benefits

- Nickel-chromium resistance wire assures even and efficient distribution of heat to the sheath
- Conductor pins provides a metallurgical bond to the resistance wire and ensures a trouble-free electrical connection
- Magnesium oxide insulation of specific grain and purity Results in high dielectric strength and contributes to faster heat-up

Incoloy® sheath

- Resists oxidation and corrosion from many chemicals, heat and atmospheres Minimal spacing between the element wire and sheath
- Results in lower internal temperature
- Accommodates a design with fewer or smaller heaters operating at higher watt densities

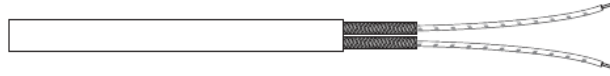
Diameter (inches)		Length (inches)	
Nominal	Actual	Min	Max
.125	.122	1.25	12.00
.250	.246	.875	36.00
.375	.371	.875	48.00
.500	.496	.875	60.00
.625	.621	1.00	72.00
.750	.746	1.00	72.00
1.00	.966	1.25	72.00



Lead Arrangements & Options

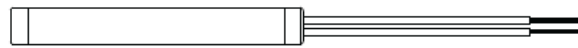
Standard Crimped On leads

Conductor pins exit the cartridge heater and have crimped on fiberglass lead-wire with silicone sleeving protection. These leads are sufficient for non flexing low temperature applications.



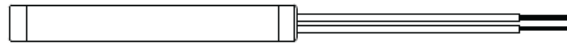
Swaged-In Leads

Swaged-in flexible leads are used in applications where a high degree of flexing exists or the leads must be bent sharply adjacent to the heater without exposing or breaking the conductor. The stranded wire leads are connected internally and exit through the lead end. Lead wire type is high temperature fiberglass. The maximum temperature of the standard fiberglass end piece is 842°F (450°C). Unless specified, 12 in. (305 mm) leads are supplied.



Teflon Seal & Leads

Teflon® seal and leads protect the heater against moisture and contamination from cleaning solvents, plastic material or fumes and organic tapes. This seal is effective to 392°F (200°C) under continuous operation. Teflon® seal and leads will have a minimum lead end unheated section of 1 in. (25 mm). Additional no-heat may be required to keep the seal below its maximum operating temperature.



Straight Stainless Steel Hose

Straight stainless steel hose provides the best protection against abrasion from sharp edges. It also offers ease of handling and wiring in abrasive environments. Unless specified, 12 in. (305 mm) hose is supplied. Leads are 2 in. (51 mm) longer than hose. Option adds 1/4 in. (6 mm) to overall length of heater.



Straight Stainless Braid

Straight stainless braid is designed to protect leads from abrasion against sharp edges. It is the most flexible of our protective lead arrangements. Unless specified, 12 in. (305 mm) braid is supplied. Leads are 2 in. (51 mm) longer than braid. Option adds 1/4 in. (6 mm) to overall length of heater.

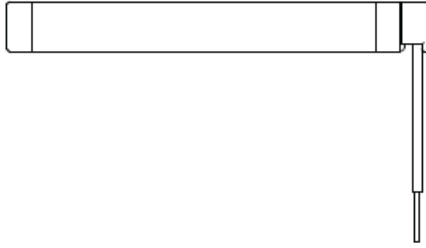


Silicone Rubber Leads

Silicone rubber seal and leads protect the heater against moisture/contamination from lubricating oil, cleaning solvents, plastic material or fumes and organic tapes. This seal is effective to 400°F (204°C) under continuous operation. Silicone rubber seal and leads units greater than 10 in. (250 mm) long will have a minimum no-heat section of approximately 12 percent of the overall length. Longer no-heat sections are available if required.

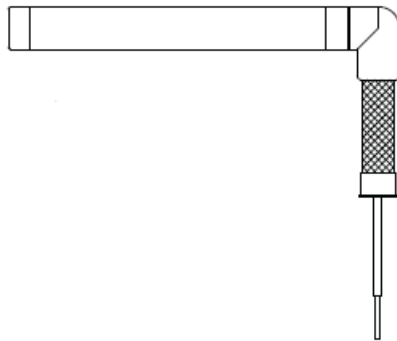


Lead Arrangements & Options



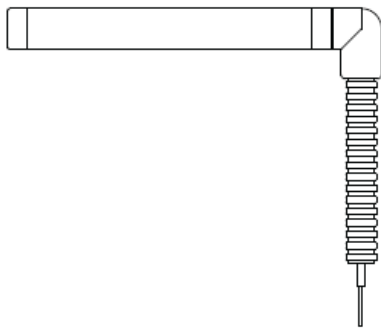
Right Angle Leads

Right angle leads are used in applications with a high degree of flexing and when space limitations are critical. Standard lead wires are connected internally (swaged-in) and exit at a 90° angle at the end of the heater.



Right Angle Braided Leads

Right angle stainless steel braid is provided for wiring convenience. Like straight braid, it protects leads from abrasion against sharp edges. Unless specified, 12 in. (305 mm) hose is supplied. Leads are 2 in. (51 mm) longer than hose.



Right Angle Stainless Steel Hose

Right angle stainless steel hose is provided for wiring convenience. Like straight stainless steel hose, it protects leads from abrasion against sharp edges. Unless specified, 12 in. (305 mm) hose is supplied. Leads are 2 in. (51 mm) longer than hose.

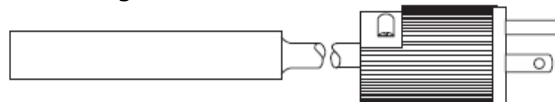
Epoxy Seal

Epoxy seals help protect the heater against moisture/contamination from lubricating oil, cleaning solvents, plastic material or fumes and organic tapes. These seals are effective to 250°F (121°C) under continuous operation. Epoxy seals can be ordered only on units greater than 1/8 in. (3.2 mm) diameter with crimped on leads. Minimum no-heat section at the lead end is 1 in. (25 mm). Longer no-heat sections are available upon request.



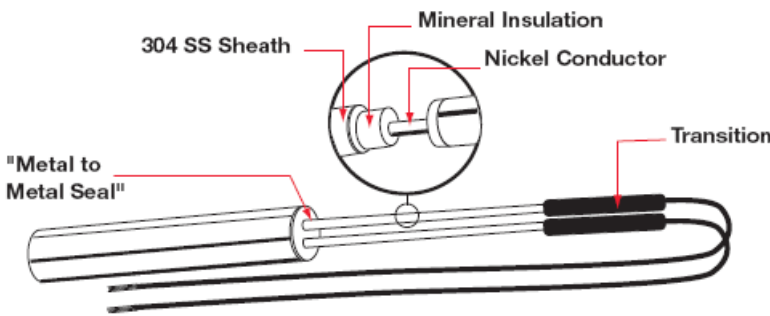
UL Listed NEMA Plugs

UL® listed plugs are a safe, convenient method of installation, especially when frequent connection or disconnection is required. These plugs have a nylon dead front, a molded-in cord grip and either straight or Twist-Lock® blades with or without ground. Use UL® listed plugs with stainless steel hose, conduit, braid or lead wires with sleeving.



Lead Arrangements & Options

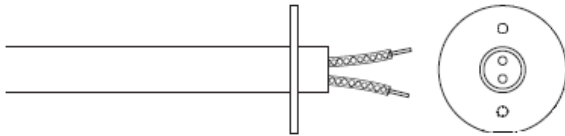
Mineral Insulated Leads



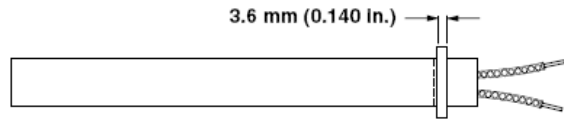
MI leads handle both high temperatures and contamination, and resist other problems like abrasion and excessive vibration. The metal seal and swaged-in, formable MI cable leads are capable of handling temperatures up to 1500°F (815°C). In addition, the lead end seal resists moisture and other forms of contamination, including gases, oils, plastic drool,

solvents and water. The Watlow FIREROD with the patented MI lead and seal option is covered by a two-year limited warranty. This extended warranty for this product only applies to manufacturing defects or product failure due to contamination.

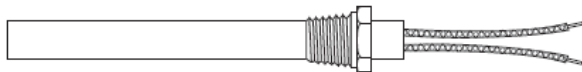
Flanges



Locator Rings



Threaded Fittings

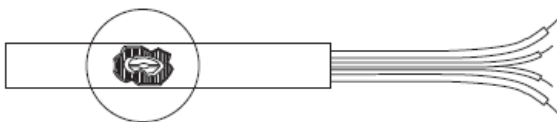


Distributed Wattage

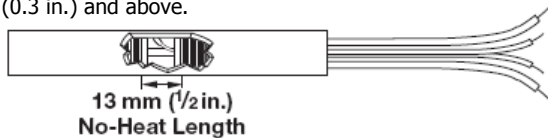


Internal Thermocouples

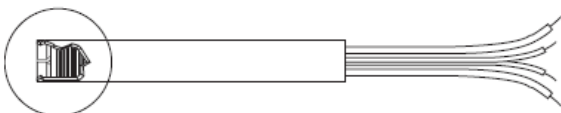
The **Style A** internal thermocouple can be used to evaluate heat transfer efficiency of an application, a measure enabling a customer to cut energy costs and increase heater life.



The **Style B** internal thermocouple gives a good approximation of part temperature and is only available for diameters 8 mm (0.3 in.) and above.

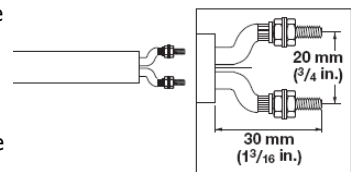


A **Style C** internal thermocouple is useful in applications where material flows past the end of the heater, as in plastic molding.

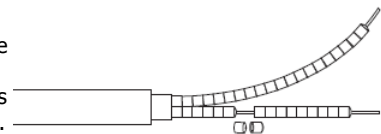


Other Lead Options

Post Terminals provide a quick, secure connection with ring or fork connectors, or bus bars. Threaded 6-32 studs are soldered to the solid power pins.



Ceramic Bead insulation protects the leads from high ambient temperatures above 842°F (450°C).



NEMA 1, NEMA 4 (moisture-proof) and NEMA 7 (explosion-proof) octagonal **Terminal Boxes** can be mounted to a flange or threaded fitting

