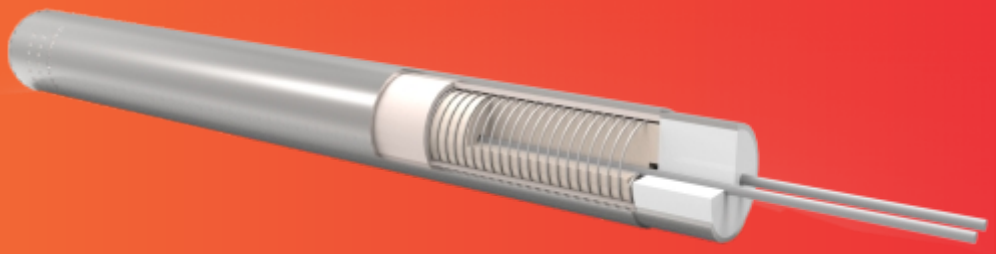
Marathon Temp Watt

Engineered Solution for Heating

CARTRIDGE HEATERS



Cartridge heater often considered as component heater has a heating coil wound on a ceramic core and are cylindrical-shaped, heavy-duty Joule heating element. Electricity flows through coil when a two or three-phase voltage is applied. The electricity heats the coil and, subsequently, the cartridge sheath. The watt density (in Watt/inch2) depends on the number of spirals or turns per inch. The sheath comes in contact with the surface being heated. Insulation in the cartridge heater ensures that the heating wire never comes in contact with the sheath and protects the sheath from melting in case of any mishap. The leads that come out of the heater terminal have metal conduit, or silicon sleeves to protect from high temperature. Lead wires are often fiberglass or silicon rubber.

These heaters provide a suitable, reliable and competent method of applying concentrated heat to solid metal components to high temperatures, particularly where compact, insert type heating is desirable. Swaged construction provides minimal air gaps, which lead to high efficiency and improved heat transfer. Distinguished for long trouble free service, cartridge heaters have precise dimensions and tolerances. Heating elements are kept close to the material being heated for maximum heat transfer, minimum core temperature, and faster heating. Use of stainless steel sheaths provides non oxiding surfaces. The surface watts density and operating temperature of a cartridge is dependent on hole clearance. The larger the hole clearance the lower the recommended watt density. For temperature sensing, a thermocouple should be positioned in the heater but its life is reduced by slow "on/off" cycling of power controllers. So PID auto tuning controllers with solid state relay or thyristor output are suggested.

OPTIONS

Sheath Material	Stainless steel, INCOLOY
Watt Density	Up to 400 W/in2
Watt Rating	Up to 11.5 kW
Voltage	Up to 480V AC
Length	Up to 72 inches
Leads	Stranded/ Swaged in/ Pin leads/ Customized
Diameter	Up to 1.297 inches
Controls	Thermocouple/ RTD

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SPECIFICATIONS

Resistance Wire : High grade nickel chromium resistance wire

Insulation : MgO

Leads : Stranded leads with silicone impregnated mica glass insulation or swaged in

Pin Leads : Available; Sealed using Epoxy or Teflon

Graphite Coating : For easy installation and removal

Thermocouples : Type J or K, grounded or ungrounded and attached either at the disc end or the middle of the cartridge.

Cold Section : Customized; controlled independently

APPLICATIONS

Application	Sheath Material
Molds, Metal dies, Patens, hot plates, sealing tools, fluid heating, aerospace, semiconductor industry	Stainless Steel, INCOLOY
Food service and medical equipment, Deionized water	Stainless Steel
General applications	INCOLOY
Highly corrosive applications	Titanium

OPERATING TEMPERATURES & WATT DENSITY

Material	Maximum Operating Temperatures		Maximum Watt Density	
	°F	°C	W/in2W/in2	W/cm2
INCOLOY	1400	760	400	62
Stainless Steel	1000	538	400	62

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