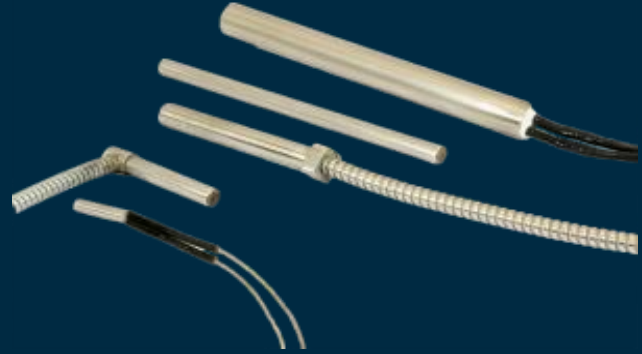


## Cartridge Heaters Technical Information



### Introduction

Hedin Cartridge Heaters are rugged, high watts density, hi-temp and swaged in construction to minimise air gaps and provide excellent heat transfer efficiency (typically 90 to 95 watts per square inch, depending on the application). This type of construction improves reliability and enables the cartridge to withstand internal temperatures up to 870°C (1600°F). All our heaters are CE or UKCA approved with UL approval availability on request.

### Options

- Moisture & water resistance seals available.
- Non-standard diameters and split-sheath available on request.
- Square cartridge heaters available [in 9.5mm (3/8"), 12.7mm (1/2"), 15.9mm (5/8") as standard]
- Flanges/Washers/Stop Ends available on request.
- Integral thermocouples (either bottom grounded, centre grounded, or isolated)

### Applications

Cartridge heaters have a myriad of uses. But the majority are used in:

- Moulds & Dies
- Packaging
- Tooling
- Platens
- Rollers
- Refrigeration
- Smelting of materials
- Heating of fluids
- Heat welding, etc

### Technical Specifications

Heat Intensity:	Not exceeding 40W/cm <sup>2</sup>
Escape of current: (when cold)	≤0.1mA at 242V
Insulation: (when cold)	>100MΩ at 500Vdc
Dielectric Strength:	1500V 1/seg
Working Temperature:	750°C
Length tolerance:	2% (min 1mm)
Diameter tolerance:	-0.02 to -0.06mm
Cut of connection tolerance:	±15mm
Power tolerance (w):	± 10%
Cold Areas:	Depends on length and diameter 5-15mm
Power:	Depends on the dimension

### Ordering Procedure

Specify the following parameters:

- Diameter
- Length
- Watts
- Volts
- Lead Length
- Lead Style (for right angle cable entry, give insert and overall length)
- Application

## Cartridge Heaters Technical Information



### **Bespoke**

All our cartridge heaters are bespoke, designed to meet the specific needs of our customers.

Diameters from 3mm to 32mm  
Lengths from 20mm to 6 m  
Powers from 10W to >5kW

With more than half a dozen termination choices (some shown below) and lead wire insulation materials (up to 1000°C) ; with sleeves of silicon tubing to stainless steel armour. Tell us what threads, ceramic blocks or angle exit you need, and we will design a cartridge heater to match.

### **Square**

Square cartridges heaters come in 3 sizes, 9.5cm, 12.7cm and 15.9cm square, and are especially designed for quick adaptation in moulds or surfaces where the use of rivets causes problems using standard cylindrical cartridge heaters.

Cartridges with a low wattage are most suitable for moderate heating up to a maximum temperatures of 300°C.

The tubes are made of stainless steel, into which a long-life ceramic piece, with the heater wire inside, is inserted. The tube stands up to continuous temperature variation and has the best possible thermic conductivity, as the ceramic piece is in contact with the wall of the tube, which makes for perfect distribution of heat.

### **Split Sheath**

The expandable (split sheath) cartridge Heaters solve two major problems with conventional high density compressed heaters: heat transfer due to inadequate fit and difficulty with extraction, thereby improving the accuracy of the temperature and the longevity of the equipment.

Our Heaters expand to fit the hole, helpful in larger holes & those that are a loose fit due to wear and tear or drilled out holes.

They support faster & easier extraction, as our Split Sheath Cartridges close together when cool, reducing the diameter & loosening the fit within the hole, so no need for drilling out the cartridge or using lubricants, this saves a lot of time & effort.

Allowing trouble free use in longer holes, as the split sheath design increases the cartridges rigidity, so prevents bending therefore keeping a flatter profile enabling a better fit.

Due to the split sheath expanding & contracting its diameter, there is less need to worry about tight tolerances i.e. a loose fitting or drilled out hole.

Both standard sizes or customised versions to your specifications are available.

Additional benefits include:

- Longer Lifetime
- Easy removal
- More compact terminations
- More drilling tolerance
- No cold zones
- Hundreds of terminations and endings













## Cartridge Heaters Technical Information



### Terminations

Circlips can be cut into any circular cartridge heaters to provide depth location and all cartridge heaters can be supplied with an earth wire on request. Examples of the terminations available on request are as follows:






Internally Connected Leads:		Square Lock Armour:	
Externally Connected Leads:		90° Leads with Stainless Steel Leads:	
Braid Over Pair of Leads:		90° Leads with Stainless Steel Armour:	
BSPP, BSPT or NPT Bushing:		Straight Leads with Clip Support:	
Right Angle Elbow:		Right Angle with Clip Support:	

### Lead Protection

The choice of connecting leads and cabling are very important. Shocks, vibrations, and sudden excessive movements to avoid scratching, cuts and breakages as well as different environmental situations like excessive heating, moisture, corrosives fluids, etc are all things to consider.

Options Include:

#### Lead Wire Cabling

Rigid Nickel Rods (VN)		VN
Teflon (TF)		TF
Flexible Silicone Lead (SF)		SF
Glass Fibre Lead (CV)		CV
3 Core Silicone Tube (CS)		CS

#### Sleeving

Silicone Sleeve (FS)		FS
Twisted Mesh/Braided Metal (TM)		TM
Nickel Vinkel Hose (TV)*		TV
Fibre Glass Sleeve (FV)		FV
Steatite Beads (ST)		ST

\*or Galvanised Steel Armour