



Customized or made-to-order  
products specialist.



# Cartridge Heaters

MANUFACTURER

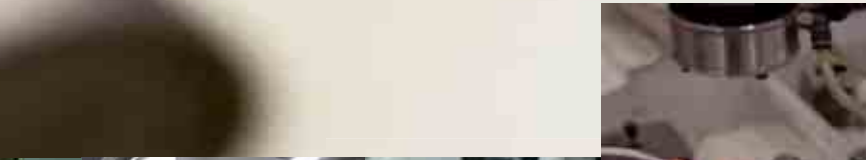


**Maxiwatt**<sup>®</sup>  
www.cartrige-heater.com

**40**  
**YEARS**  
MANUFACTURER

Knowing us  
For over 40 years our aim has been to offer the best cartridge heaters to our customers. The highest technological standards are used in their manufacture. We ensure first class quality in our products. Before our products are incorporated into the cartridge, they must undergo the strictest quality tests. Therefore, we are able to supply the most suitable and reliable cartridge heaters, which may vary in size, from only 4 mm Microwatt cartridge to cartridges from 700 mm and 6 m length.

Together with the importance of good service, Maxiwatt offer our customers a 48-hour delivery service, permanent stock, made-to-order cartridges (available in 24 hours) as well as free consulting, manufacturing research, plus a long list of advantages for the benefit of our customers.





Maxiwatt applies the following American and European Directives in system design and production of resistors:

- Directive 1989/336 EEC "relating to electromagnetic compatibility"
- Directive 2002/95/EC (ROHS) "on the restriction of the use of certain hazardous substances in electrical and electronic equipment"
- Directive 2002/96/EC (WEEE) "on waste electrical and electronic equipment"
- Directive 2006/95/EC "relating to electrical equipment designed for use within certain voltage limits"

Maxiwatt are UL recognized, File #E202904, CSA certified, CSA file no. LR 109455-1 and RoHS Compliant . fabricadps segun directiva europea 2006/95/EG



Bureau Veritas certify that the Manager System of Cartridge-Heaters Maxiwatt has been audited and found to be in accordance with the requirements of the management system standars: ISO9001:2015.



# Quality.

C E R T I F I E D





## Premium Quality. High Density. Maxiwatt compressed cartridges

Cartridges with high watt density.

They provide a great uniform distribution of heat, and are hermetically manufactured, which considerably increases the long life of the resistance as well as preventing the oxidation of the heating wire even at high temperatures. Over 25.000 measurements in high density cartridges available.

High density Maxiwatt cartridges are manufactured from prime quality materials and undergoing the strictest safety controls, according with international standards.

- Long-life
- High temperatures
- Maximum watts capacity 60w/cm<sup>2</sup>



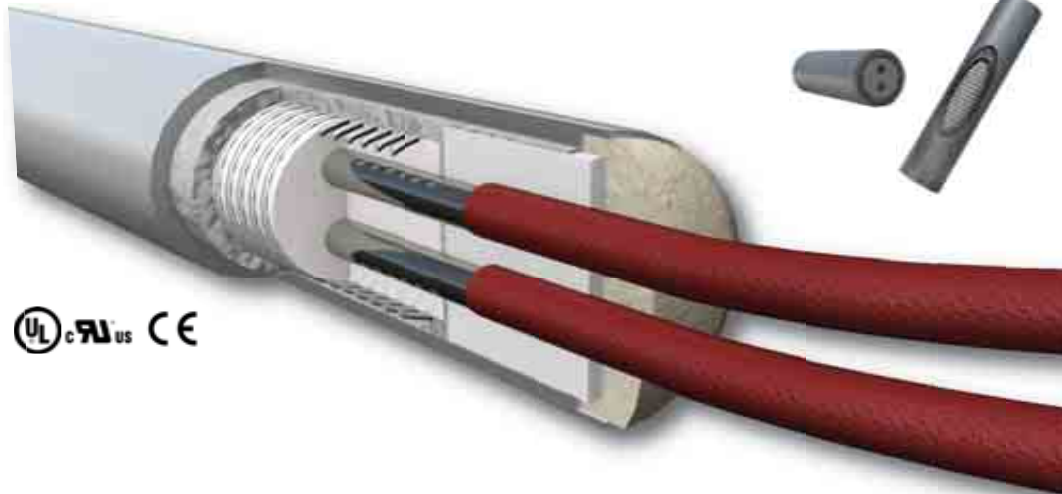
### Use

They are able to resist the toughest working conditions, such as vibration, moisture, fluid, spills, frequent expansion and where temperatures of between 400°C and 750°C are required, or temperatures within a limited space.

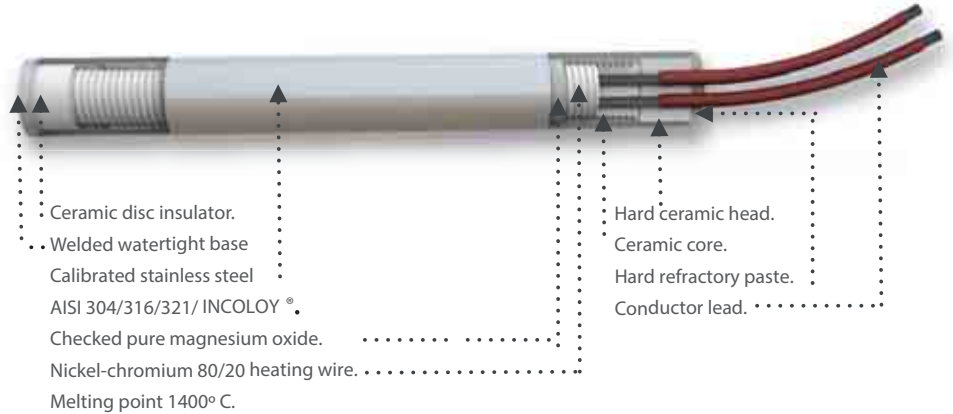
### Applications

- Molds
- Smelting of materials
- Heating of fluids
- Welding heating, etc

The unique system of Maxiwatt manufacture makes perfect concentricity possible and together with its electronic system of the space between the spirals guarantees the same temperature around the whole perimeter and length of the cartridge, thereby obtaining a uniform and long lasting temperature



Maxiwatt Model AC cartridge heaters are manufactured by means of compression for all their components, with the purpose of lengthening their working life. The conductor wire is wound spirally the hard ceramic body into which the conductor lead is inserted, with no connection (sometimes, a connection may occur on the outside of the cartridge). Ceramic discs and heads are inserted to obtain insulation and protection. Everything is coated with checked pure magnesium oxide to ensure a total full cartridge. Later a process of compression and another of correction of the surface is carried out until the required measure is calibrated. Finally, a strict quality control is carried out to guarantee the best performance of the cartridge



### Ni-Cr 80/20 heating wire

The most important element for ensuring the long life of the cartridge heater is the heating wire used in its manufacturing. Maxiwatt uses the best to be found anywhere in the market. After extensive research and years of experience it has been shown that a heating wire made of Ni-Cr 80/20 is both efficient and resistant to the formation of metallic coating brought out by oxidation. As the austenitic combination of nickel and chromium lacks iron, it is the most recommended for the heating wire.

### Total insulation

Magnesium oxide is used for insulation, and is the most suitable for insulating the heating wire and the conductor lead against the current of the sheath of the cartridge. When the space between the heating wire and the protecting sheath is too short, an insulator is required, this should be composed of the best qualities: purity, high degree of thermal cartridge heater, maximum melting point, uniform and exact compression, perfect thermal conductivity, etc, so that the best insulation is obtained. Control of the working temperature is essential. It must never exceed the working limits of the cartridge. It is very important to store the cartridge in a dry space because magnesium oxide is very hygroscopic. Just a few drops of water particles are enough to weaken considerably the insulating capacity of magnesium oxide bolts, opposite outputs, etc. The different types of connection are shown on protections section

### Conductor lead

For the induction of electricity a nickel cable (sheathed by fiberglass) is used. It is coated with silicone and fire-proof glazing. The cable wires are turned. Sometimes, the charge of the cartridge prevents the use of this type of connection. Finally, special procedures are used: threaded outputs with bolts, opposite outputs, etc. The different types of connection are shown on protections section

### Stainless steel 321: cover

The stainless steel 321 cover provides the highest quality to the manufacture of cartridge heaters. The materials which can be used in their manufacture are limited due to the strain caused by constant expansion due to the cooling and heating of the cartridge heater, the lack of a metal cover, which causes oxidation, and abrasive action. Stainless steel has been shown to be the most suitable material for the construction of cartridge heaters.

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	>= 5 MW at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm
	inch: A 0.79 mils [A 0.02 mm]

TESTED AT ENVIRONMENTAL TEMPERATURE

## Medium Watt Density Maxiwatt compressed cartridges

Cartridges with high watt density.

They provide a great uniform distribution of heat, and are hermetically manufactured, which considerably increases the long life of the resistance as well as preventing the oxidation of the heating wire even at high temperatures. Over 25,000 measurements in high density cartridges available.

High density Maxiwatt cartridges are manufactured from prime quality materials and undergoing the strictest safety controls, according with international standards.

- Long-life
- medium temperatures
- Maximum watts capacity 30w/cm2

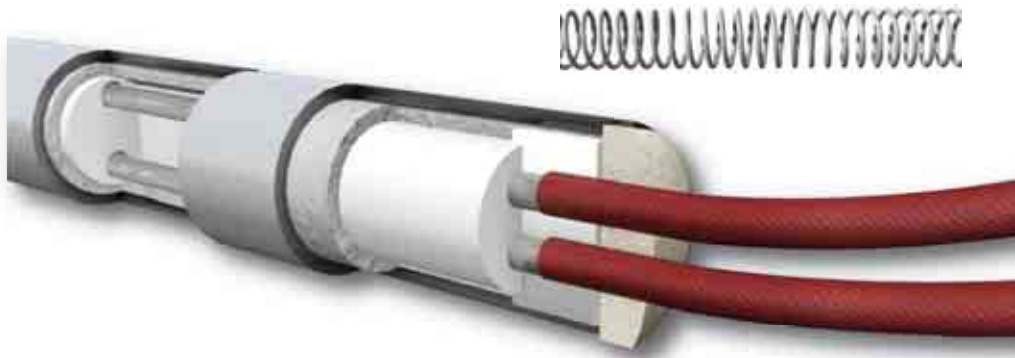


**Use**  
They are able to resist the toughest working conditions, such as vibration, moisture, fluid, spills, frequent expansion and where temperatures of between 400°C and 750°C are required, or temperatures within a limited space.

### Applications

- Molds
- Smelting of materials
- Heating of fluids
- Heat welding, etc

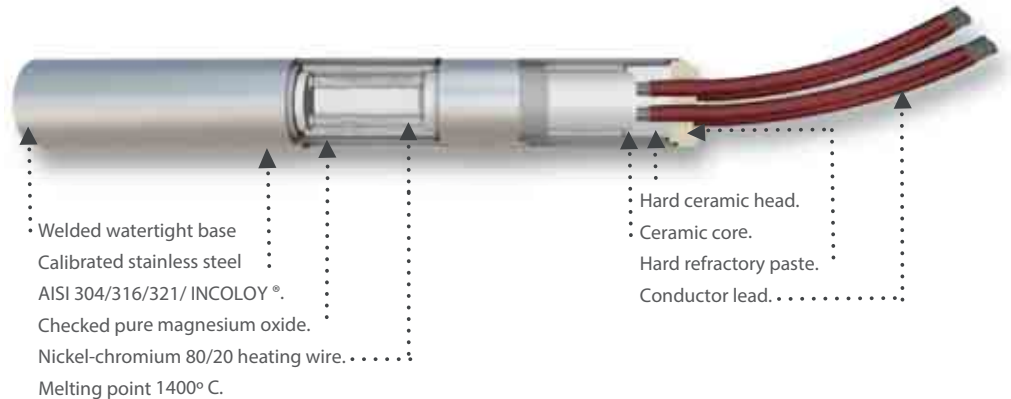
The unique Maxiwatt manufacturing system, together with its electronic system, makes it possible to separate the spirals, guaranteeing the same temperature for the whole perimeter and length of the cartridge. Therefore, an uniform and long lasting temperature is obtained



Maxiwatt Model AC cartridge heaters are manufactured by means of compression for all their components, with the purpose of lengthening their working life.

The conductor wire is wound spirally the hard ceramic body into which the conductor lead is inserted, with no connection (sometimes, a connection may occur on the outside of the cartridge). Ceramic discs and heads are inserted to obtain insulation and protection. Everything is coated with checked pure magnesium oxide to ensure a total full cartridge.

Later a process of compression and another of correction of the surface is carried out until the required measure is calibrated. Finally, a strict quality control is carried out to guarantee the best performance of the cartridge



### Ni-Cr 80/20 heating wire

The most important element for ensuring the long life of the cartridge heater is the heating wire used in its manufacturing. Maxiwatt uses the best to be found anywhere in the market. After extensive research and years of experience it has been shown that a heating wire made of Ni-Cr 80/20 is both efficient and resistant to the formation of metallic coating brought out by oxidation. As the austenitic combination of nickel and chromium lacks iron, it is the most recommended for the heating wire.

### Total insulation

Magnesium oxide is used for insulation, and is the most suitable for insulating the heating wire and the conductor lead against the current of the sheath of the cartridge. When the space between the heating wire and the protecting sheath is too short, an insulator is required, this should be composed of the best qualities: purity, high degree of thermal cartridge heater, maximum melting point, uniform and exact compression, perfect thermal conductivity, etc, so that the best insulation is obtained.

Control of the working temperature is essential. It must never exceed the working limits of the cartridge. It is very important to store the cartridge in a dry space because magnesium oxide is very hygroscopic. Just a few drops of water particles are enough to weaken considerably the insulating capacity of magnesium oxide bolts, opposite outputs, etc.

The different types of connection are shown on protections section

### Conductor lead

For the induction of electricity a nickel cable (sheathed by fiberglass) is used. It is coated with silicone and fire-proof glazing. The cable wires are turned. Sometimes, the charge of the cartridge prevents the use of this type of connection. Finally, special procedures are used: threaded outputs with bolts, opposite outputs, etc.

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## Low Watt Density.

Cartridges with low voltage charge are the most recommended for moderate heating up to 300°C. Made with the best quality stainless steel tube that can be found, or with other material such as copper, brass or aluminium. Everything is perfectly calibrated, such as the exterior. A long-life ceramic piece is inserted into the tube and stands up to every continuous temperature variation, together with the best possible thermal conductivity, as the piece is in contact with the wall of the tube, giving a perfect distribution of the heat.

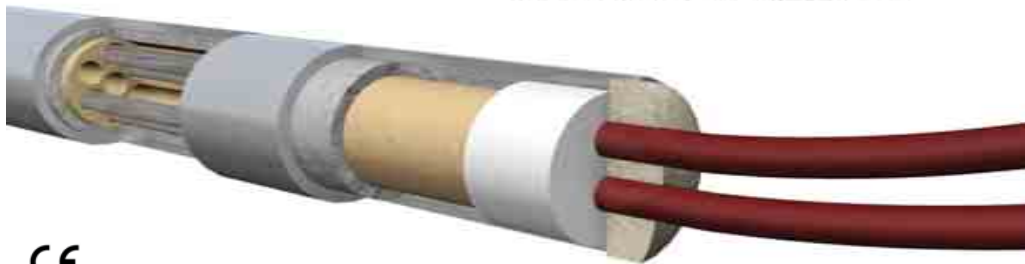
- Economical
- Uniform temperature
- Variety of terminations



**Use**  
They are able to resist the toughest working conditions, such as vibration, moisture, fluid, spills, frequent expansion and where temperatures of between 400°C and 750°C are required, or temperatures within a limited space.

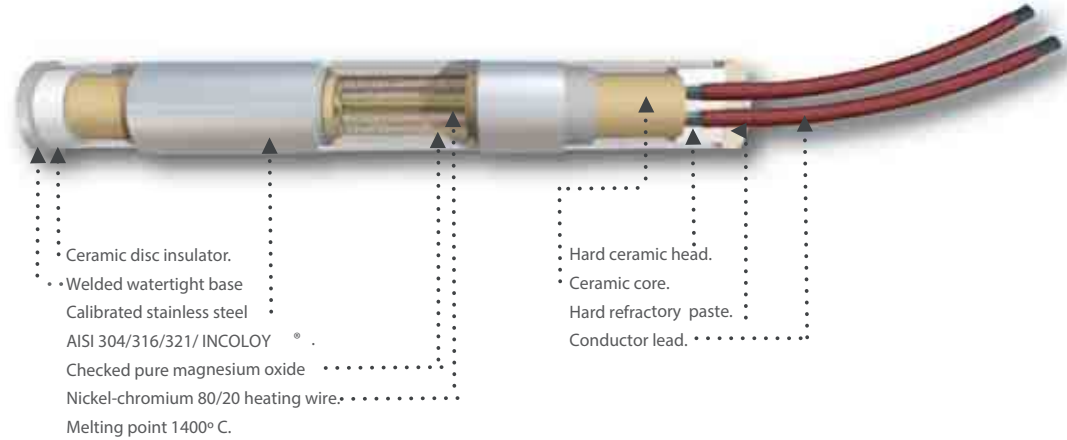
- Applications**
- Molds
  - Smelting of materials
  - Heating of fluids
  - Welding heating, etc

The unique Maxi watt manufacturing system, together with its electronic system, makes it possible to separate the spirals, guaranteeing the same temperature for the whole perimeter and length of the cartridge. Therefore, an uniform and long lasting temperature is obtained



CE

**Maxiwatt AC Model** The heater wire is inside the ceramic piece and is of first class quality. The nickel-chromium heating wire is the most recommended in the manufacturing of cartridge heaters due to its high degree of tolerance to high temperatures. Coated with checked magnesium oxide, covering the whole inside of the cartridge heater. Obtaining, a perfect conductivity between the heating wire and the heater



**Ni-Cr 80/20 heating wire**  
The most important element to ensure the long life of the cartridge heater is the heating wire used in its manufacturing. Maxi watt uses the best to be found anywhere in the market. After extensive research and years of experience it has been shown that a heating wire made of Ni-Cr 80/20 is both efficient and resistant to the formation of metallic coating brought out by oxidation. As the austenitic combination of nickel and chromium lacks iron, it is the most recommended for the heating wire.

**Total insulation**  
Magnesium oxide is used for insulation, and is the most suitable for isolating the heating wire and the conductor lead against the current of the sheath of the cartridge. When the space between the heating wire and the protecting sheath is too short, an insulator is required, this should be composed of the best qualities: purity, high degree of thermic cartridge heater, maximum melting point, uniform and exact compression, perfect thermal conductivity, etc, so that the best isolation is obtained.

Control of the working temperature is essential. It must never exceed the working limits of the cartridge. It is very important to store the cartridge in a dry space because magnesium oxide is very hygroscopic. Just a few drops of water particles are enough to weaken considerably the isolating capacity of magnesium oxide bolts, opposite outputs, etc.  
The different types of connection are shown on protections section.

**Conductor lead**  
For the induction of electricity a nickel cable (sheathed by fiberglass) is used. It is coated with silicone and fire-proof glazing. The cable wires are turned. Sometimes, the charge of the cartridge prevents the use of this type of connection. Finally, special procedures are used: threaded outputs with bolts, opposite outputs, etc.  
The different types of connection are shown on protections section

**Stainless steel 321: cover**  
The stainless steel 321 cover provides the highest quality to the manufacture of cartridge heaters. The materials which can be used in their manufacture are limited due to the strain caused by constant expansion due to the cooling and heating of the cartridge heater, the lack of a metal cover, which causes oxidation, and abrasive action. Stainless steel has been shown to be the most suitable material for the construction of cartridge heaters

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## Medium Watt Density Square Maxiwatt compressed cartridges

### Easy installation

They are especially designed for quick adaptation in molds or surfaces where the use of rivets either causes problems or impossibility to use. Cuadrawatt cartridges are the better choice. Cartridges with a low density of watts are most recommended for moderate heating up to a maximum temperatures of 300°C. The square tube is made of prime quality stainless steel. All the tubes are perfectly calibrated both inside and outside, into which a long-life ceramic piece is inserted. The tube resists a continuous temperature variation and has the best possible thermal conductivity, as the ceramic piece is in contact with the wall of the tube, which makes the most perfect heat distribution possible.

### Options.

- Special Cold Sections
- Distributed Wattage
- Single Circuit Element
- Independent Heat Zones
- Three Phase Element
- Dual Voltage Designs
- Thermocouple A,B,C
- RTD Elements
- Thermostats



### Use

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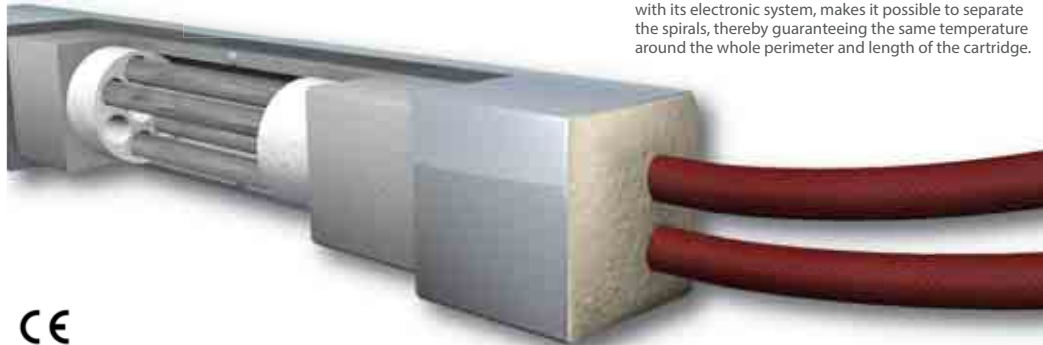


### Applications

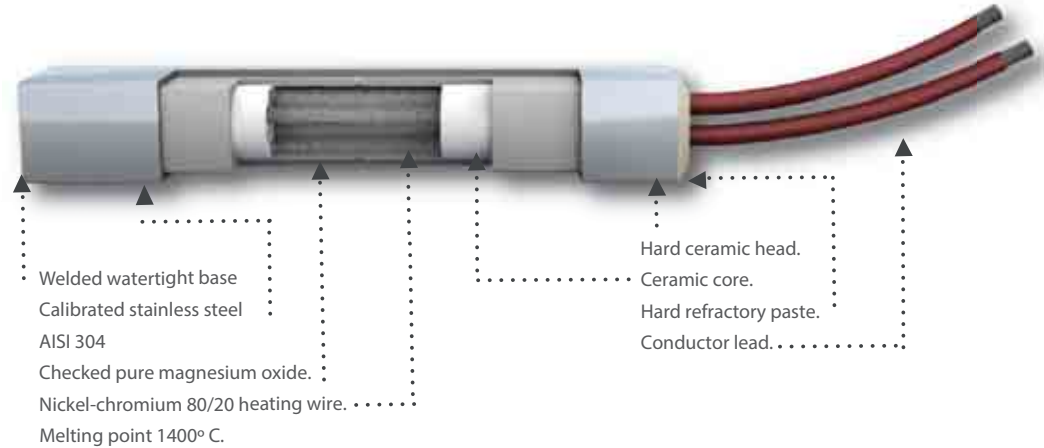
- Molds
- Smelting of materials
- Heating of fluids
- Welding heating, etc



The unique Maxiwatt manufacturing system, together with its electronic system, makes it possible to separate the spirals, thereby guaranteeing the same temperature around the whole perimeter and length of the cartridge.



**Maxiwatt Model SC** The heating wire is inside the ceramic piece. The nickel-chromium heater wire is of first-class quality and is the most recommended for the manufacturing of cartridge heaters due to its great tolerance to high temperatures. Everything is coated with checked magnesium oxide. The whole interior of the cartridge is also coated. Therefore, there is excellent conductivity between the heating wire and the object to be heated.



### Ni-Cr 80/20 heating wire

The most important element for ensuring the long life of the cartridge heater is the heating wire used in its manufacture. Maxiwatt uses the best to be found anywhere in the market. After extensive research and years of experience it has been shown that a heating wire made of Ni-Cr 80/20 is both efficient and resistant to the formation of metallic coating brought out by oxidation. As the austenitic combination of nickel and chromium lacks iron, it is the most recommended for the heating wire.

### Total insulation

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Control of the working temperature is essential. It must never exceed the working limits of the cartridge. It is very important to store the cartridge in a dry space because magnesium oxide is very hygroscopic. Just a few drops of water particles are enough to weaken considerably the insulating capacity of magnesium oxide bolts, opposite outputs, etc.

The different types of connection are shown on protections section

### Conductor lead

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### Stainless steel 321: cover

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The most adjusted and faster extraction system.

The expandable cartridge Heaters solve two major problems with conventional high density heaters, poor durability and proper fit extraction improving the accuracy of the temperature with hundreds of attachments and exits for all kind of processes.

With the expandable cartridge heaters we join for the first time the best of the common cartridge heater with cartridge and an adaptive tuning quick and easy removal.



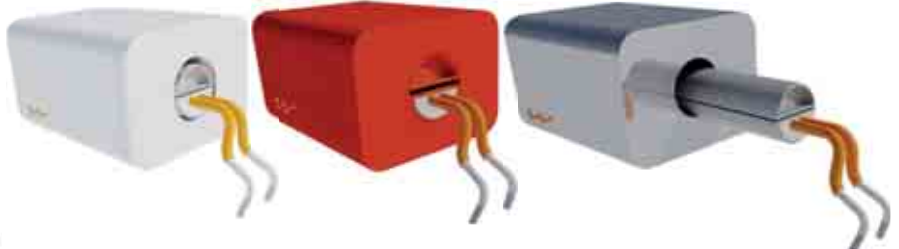
**The system**

The Expandable Heaters consist of a compressed cartridge heater with high performance and are made with the best materials with the particularity of being able to expand itself because of the fork-shaped tensioned in a point that allows the expansion and retraction of



**The extraction, faster and easier even in long lengths.**

Expandable heaters, due their unique construction, allow the easy removal when the cartridge is cold saving time and considerable effort, minimizing the time that the machine is arrested and human resources. Needs no adjustment paste and you will not have to drill, destroy or undertake the costly operations to remove the cartridge, you can quickly use the Expandable Heaters in other molds needing heating.



At the contraction process the Expandable Heaters returns to its original shape, helping for easy removal of the bore, with the subsequent advantages like not having to drill the mold, reuse them in other locations, reduction

of stock since it will have the same diameter for different bores, etc. In the expansion process the expandable cartridge fits the walls the bore, providing the correct transference of the temperature, and avoiding the "oven effect" that occurs in other types of cartridge poorly dimensioned with respect to diameter and room. The drills that for any other circumstances are oversized have the best solution to allow more adjustment tolerance.

Please note that you must provide us with exact hole diameter in order to start EXPAN production with the right tolerance. It is important to get harmony between the hole and heating element for a perfect working. Tolerance for EXPAN heaters -0.0039" / -0.006". For example, if the hole you will insert the EXPAN element is Ø 1/2" we will produce the split elements between 0.496" - 0.494". You must inform us about the exact. Diameter for the hole you will place the heater and we will produce with the right tolerance.

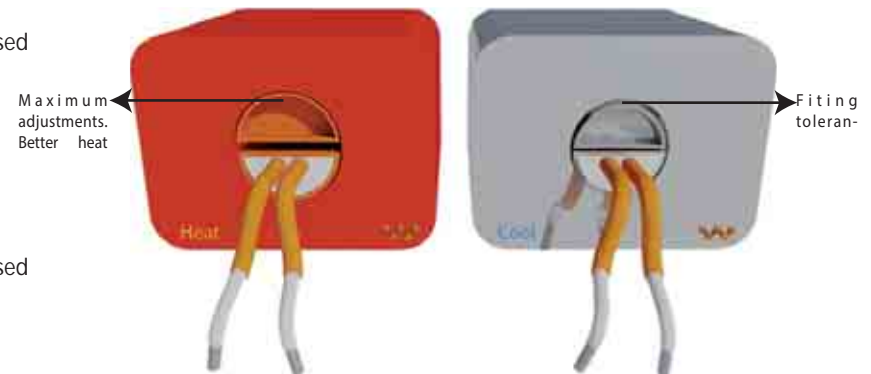
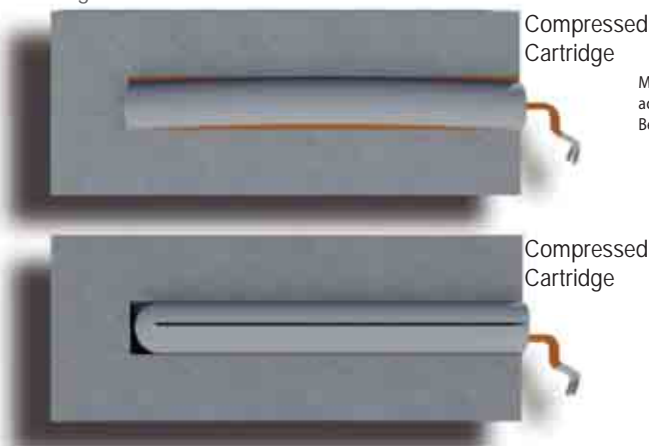
 **Faster Removal**

**Long lengths**

Expandable heaters will not bend, this is the main problem with conventional cartridges, due to the shape of their tubes which perform the function to reinforce the structure of expandable heaters longitudinally, helping for their removal, by expanding equally throughout the perimeter, heat transference will be uniform not creating curvatures which produce cavities resulting overheat breaking the heater..

**The heater that fits in the hole.**

The expansion around the perimeter of the cartridge makes of the Expandable Heater the best solution for large diameter holes, wear and tear caused by expansion or made out of tolerance.



The adjustment tolerance of the heater is called the distance obtained between the surface of the cartridge and the inner wall of the hole, which must be uniform throughout its lineal perimeter.

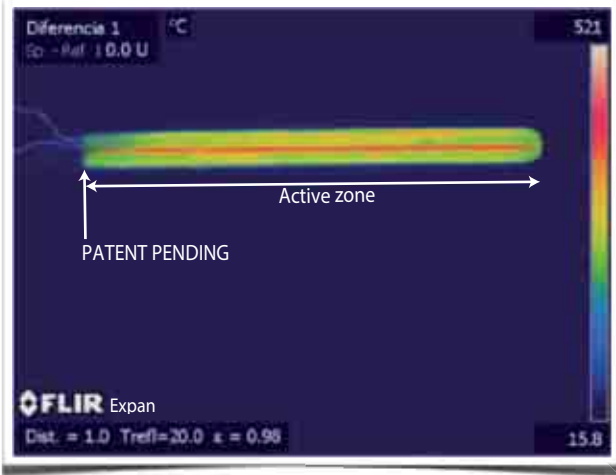


## Longer Durability "The Difference"

More Nickel/Chrome 80/20 heating wire at the Expandable Heaters than in a bipartite heater or a compressed cartridge heater with the same compression. The Expandable Heater has more heating wire (nickel / chromium 80/20) than the bipartite heaters or compressed cartridges with the same compression. The main key is the more heating wire, the larger diameter for the same amount of watts. The larger diameter reduces fatigue and use of the heating wire, resulting into a longer service life.

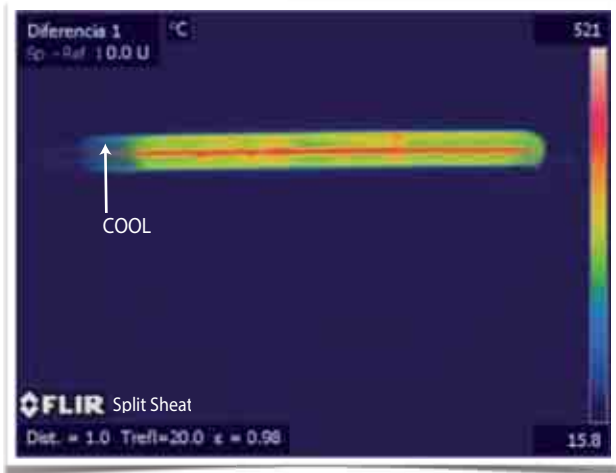
### Expan Heaters thermography

Clearly shows the absence of cold zones due to its unique construction, which allows more heating wire in the whole area of the cartridge included in the connection areas.



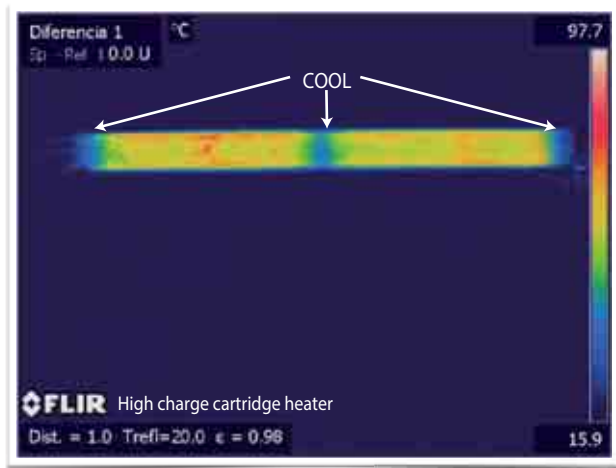
### Split Sheath cartridge heater thermography

It is observed cold spots at the end of the connections. This does not heat evenly the mold or application.



### Compressed high density cartridge heater thermography

It is observed various cold areas, especially in the center of the heater from 250 mm



Expan Split Sheath Insertion



Section of an Expandable heater with more heating wire per cartridge

Expan Split Sheath



Heated zone (patent pendig)

Cold zone

### Advantage over common cartridge heaters

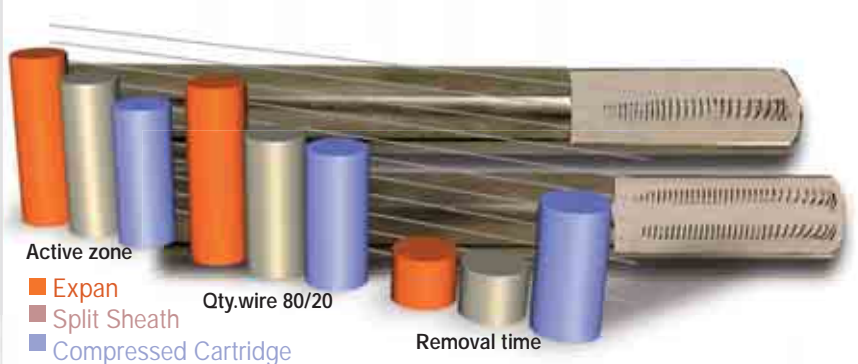
- Longer life
- Faster and easier extraction
- More length without bending
- More hole tolerance
- Heated ends

### Advantage over split heaters

- The only one cartridge heater in the market that heats along the complete length.
- Compressed version.
- Flexible leads from inside.
- Built in Thermocouple.



Uniform Heating



### Each application with it special leads

Placing the correct lead for each application is fundamental for the security and life of the cartridge heater. Excessive vibration and temperature would cause them to lose insulation and produce breakage and short-circuits.

Insulation Material.	Operating temperature.	Useful life.	High temperatures.	Vibrations.	Hermetic.
Silicon Rubber.	302°F / 150°C	Poor	Poor	excellent	good
Fluoropolymer Lead (PFA).	392°F / 200°C	excellent	good	excellent	excellent
Fiberglass/silicone.	482°F / 250°C	good	good	poor	poor
Fiberglass/mica/silicone.	752°F / 400°C	good	excellent	poor	good
Ceramic Bead Insulation.	1200°F / 650°C	poor	excellent	male	male

### Protect your Lead Wires.

Protect your leads to avoid shocks, scratches, overheating, cleaning, contamination, cuts, explosive environments, moisture, etc. you will win in security and life will increase, giving extra professionalism to your project.

Material.	First quality.	Useful life.	High temperatures.	Vibrations.	Hermetic.
Nickel Tube	Bumps / Dirt	poor	good	poor	good
Braided Metal	Cuts / Dirt	good	good	excellent	poor
Fiberglass sleeve	High temperatures	poor	good	good	good
silicone sleeve	Moisture/ Cleaning	poor	good	excellent	excellent
Stainless Steel Sleeve	Bumps/ Cuts/ Hermetic	excellent	excellent	good	excellent

Internal ending

External ending



Connection tube (inches)	6,5	8	10	12,5	16	20
Nickel Tube	-	6	8	10	12	12
Braided Metal	-	-	8	9	12	12
Fiberglass sleeve	4	6	8	10	12	12
Silicone sleeve	-	6	10	10	12	12
Stainless Steel Sleeve	-	-	10	10	12	12

Conection tube ( mm )	6,5	8	10	12,5	16	20
Nickel Tube	-	6	8	10	12	12
Braided Metal	-	-	8	9	12	12
Fiberglass sleeve	4	6	8	10	12	12
Silicone sleeve	-	6	10	10	12	12
Stainless Steel Sleeve	-	-	10	10	12	12

We have all features you may require for underwater applications, vibration, high temperatures, special food grade, corrosive environment, moisture etc.

#### FiberGlass Lead

Ref. P.Cv.



Pure nickel lead, sheathed with fiberglass, coated with silicone, heat resistant. Standard lead.

#### Fluoropolymer Lead (PFA)

Ref. P.Tf.



Ideal for watertightness and cleanliness of the cable. Do not resist high temperatures.

#### 3 Core Silicone Tube

Ref. P.Cs.



Ideal for long lengths. Does resist high temperatures. Copper core.

#### Steatite

Ref. P.st.



Ideal for high temperatures. Interior pure nickel wire. Not recommended for to knocking or excessive vibrations.

#### Braided Metal

Ref. P.Tm

For places with high friction and constant flexibility.

Stainless steel.

#### Stainless steel armor

Ref. P.SSa.



Protects against shocks and spillage of viscous products, relative mobility. The maximum in protection for abrasive

#### Nickel Rods

Ref. Vn.



Rigid pure nickel rods where moving the position of the connection is required. They do not resist repeated movements. They are coated with insulated materials.

#### Flexible Silicone Lead

Ref. P.Sf.



Ideal for excessive movement, vibration and moderate temperature.

#### Silicone Sleeve

Re. P.Fs.



Ideal for moisture environment with moderate friction. Protects the interior of fiberglass lead

#### Fiberglass Sleeve

Ref. P.Fv.



Protects against high temperatures, moderate friction. Ideal for twined conduction cable.

#### Nickel Tube

Ref. P.Tv.



Protects against shocks and spillage of viscous products, relative mobility.

### Moisture Protection.



T1 Standard ending, refractory paste

T2 With steatite ceramic piece

T3 Sealed with silicone are temperature resistant up to 180 °C and should be used in connection with silicone insulated leads.

T4 Epoxy resin are temperature resistant up to 120 °C and can be used in connection with silicone insulated as well as PTFE insulated leads.

1W PTFE dresins can resist temperatures resistant up to 230 °C and should be used in connection with PTFE insulated leads.

# Termocouple: cartridge with termocouple.

## The best complement.

Cartridges can be made with inbuilt sounding lead at any point of the cartridge, according to the customer's requirements. The advantages of the sounding lead are countless. For instance, length of cartridge life, accuracy e of localized temperature, energy saving and where a conventional sounding lead cannot be housed due to a question of space.

Several types of temperature regulators which require a special thermocouple can be found on the market, eg, J or K

### Thermocouple isolated "Tr.A"

Model is fully insulated against the heating wire of the connections and the protecting sheath. Among its qualities the protection of the instruments for temperature measurements stands out. This is very important as the reading takes place within a few minutes and the reading-out continues to be quick.



### Thermocouple "Tr.B"

The joint of the thermocouple, in this model, is in contact with the protecting sheath of the cartridge heater, thereby giving a quick and accurate reading where the cartridge is housed.



### Thermocouple "Tr.C"

This model can be housed according to the customer's requirements. This is important for long cartridges so that a medium temperature is obtained.



### Installation tips

When a thermocouple cartridge heater is installed, several factors must be noted. If the temperatures of several cartridge heaters need to be controlled, it is advisable to place the thermocouple in the middle of the group.

The thermocouple should never be placed at one of the endings of the cartridge as this will send out wrong inner temperature information to the heater. The wire of the thermocouple is 1 meter long, you should compensate and adjust your regulator to have a more accurate temperature reading.



THERMOCOUPLE CHARACTERISTICS TABLE						
ANSI / ASTM	Symbol / Single	Generic Names	Color Coding		Magnetic Yes/No	Environment (Bare Wire)
			Individual Conductor	Overall Jacket Extension Grade Wire		
J	JP JN	Iron Constantan, Nominal Composition: 55% Cu, 45% Ni	WHITE RED	BLACK	x x	Reducing Vacu., inert. Limited use in oxidizing at High Temperatures. Not recommended for low temps.
K	KP KN	Chromel, Nominal Composition: 90% Ni, 10% Cr Alumel®, Nominal Composition: 95% Ni, 2% Mn, 2% Al	YELO RED	YELO	x x	Clean Oxidizing and Inert. Limited use in Vacuum or Reducing

TOLERANCE OF THERMOCOUPLES						
ANSI / ASTM	Temperature Range		°C		°F	
	Standard	Special	Standard	Special	Standard	Special
J	-200° to -67°		±1.5%T		-328° to -88°	±1.5% (T-32)
	-67° to -62°		±1°		-88° to -80°	±1.8°
	-62° to 125°		±1°	±0.8%T*	-80° to 257°	±1.8°
	125° to 133°		±1°	±0.5*	257° to 272°	±1.8°
	133° to 370°		±0.75%T	±0.4%T	272° to 700°	±0.75% (T-32)
K	-200° to -110°		±2%T	-	-328° to -166°	±2% (T-32)
	-100° to 0°		±2.2°	-	-166° to 32°	±3.96°
	0° to 275°		±2.2°	±1.1*	32° to 527°	±3.96°
	275° to 293°		±2.2°	±0.4%T	527° to 560°	±3.96°
	293° to 1260°		±0.75%T	±0.4%T	560° to 2300°	±0.75% (T-32)
						-

### Thermal Fuses REF: "Tf"

Thermal fuses are installed inside the cartridge heater and are used to limit the heating element temperature, producing a cut-off electricity, protecting from overheating. Once open-system occurs, it can't be rearmed. It requires around 2 1/2" (43.5mm) at the beginning or ending of the cartridge to place it.



### Thermostat REF: "Tm"

Thermostats are factory made in a broad range of temperature, max 300°F (150°C). Its function is to cut the electrical input, when it reaches the right temperature, and when the temperature goes down, they let electricity pass again.



### REF: "PT100"

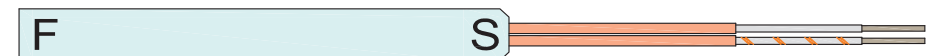
A PT100 is a temperature sensor. It consists in a platinum wire that at 0°C has 100 ohms and when the temperature grows, its electrical resistance also grows. The PT100 can easily give precise readings of a decimal of degree with the advantage that the PT100 don't split up gradually giving wrong readings. It's just that normally it opens, whereby the measuring device detects immediately the sensor failure and gives notice. The PT100 can also be settled at a distance of the measurer without any problem (until 30 meter) using the conventional copper wire to make the extension.

In general a PT100 doesn't should be set in places submitted to excessive vibration, because it is probably that it breaks.

mm	6.5	8	10	12.5	16	20	25
PT100	S	S	S,F	S,F	S,F	S,F	S,F
THERMOSTAT	-	-	-	S	S,F	S,F	S,F
THERMOFUSIBLE	-	-	-	S	S,F	S,F	S,F

Depending on the diameter it can be placed at the top of the cartridge, at leads side "S" or at the bottom "F".  
For thermostats and thermal fuses, placing space is 2" (30.8mm). PT100 needs 1"(25.4mm).

inches	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
PT100	S	S	S,F	S,F	S,F	S,F	S,F
THERMOSTAT	-	-	-	S	S,F	S,F	S,F
THERMOFUSIBLE	-	-	-	S	S,F	S,F	S,F





## Breaking reasons.

### Over temperature

Dissipation of the cartridge heater is critical for the life of the element. The fit between the housing and the cartridge has to be maximum, so that it can transmit a good heating to the entire mold.

The higher working temperature the lower life of the cartridge heater. So it is recommended to use the minimum power possible to do their job and not exceed.

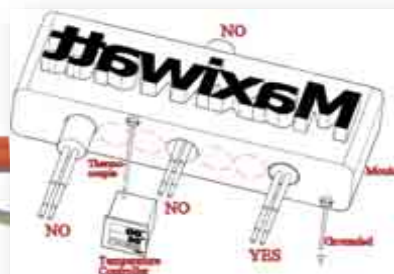
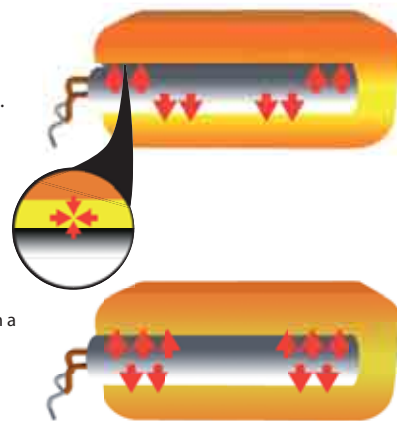
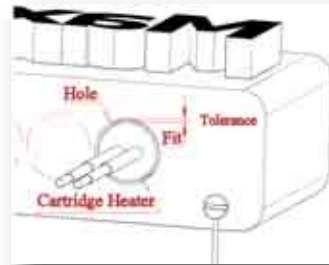
Stainless steel sheath has to be 100% introduced into the hole, any part outside will produce a short-circuit as result of an overheating of the element.

### Repetitive cycles.

After the heating wire placed inside the cartridge heater has been heated, it forms a very thin oxide film which crystallized by high temperature. Once cooled, the heating wire is contracted. The oxide sheet breaks and exposes a fresh layer wire but smaller in diameter. Cyclically repetition of this process is the main cause of heating wire breakings. Therefore it is recommended to use a fixed temperature with suitable power and not energize and de-energize. This process can also cause a different Ohm value registration during his life.

### Vibrations and impacts.

Maxiwatt's heaters are the most compacted. Even so we have available special manufacturing systems to support excessive vibrations or repeated blows. That information must be on the purchase order, otherwise we will produce them with a standard ending. Vibrations and impacts will gradually damage the internal compression until the wire comes in contact with the atmosphere and oxide.



## Pollution inside the element.

Cartridge heaters are basically formed by ceramic powder and Magnesium Oxide. This last one is very hygroscopic and absorbs the moisture. Together with the process of expansion and retraction, when a cartridge heaters is energized the leads absorb all type of liquids and gases around, such as moisture, water, oil, polish, melted plastics, brine, organic debris, detergents, etc. Elements that in normal conditions are harmless, when the cartridge is warm will be absorbed by the heater and produce an internal pollution. At the same time a short-circuit will reduce the heating wire and the heater will lose the electrical insulation.

## Unsuitable leads.

An overheating at the leads cause damages at the heater. The element will lose the insulation protection causing short-circuit. Excessive vibration and movement causes breakage. Maxiwatt offers different type of leads for each use and specific protections over the leads.

## Regulation.

Thermocouples and sensor should be placed in the hottest part of the mold or piece. If they are placed in other positions the heater must do an extra work due to the effort it must do to get the desired temperature. So that the heater will work over his normal conditions and that will reduce the elements life.

Breakage by	Over temperature	Repetitive cycles	Pollution	Leads
	Rated over temperature	Total cooling and maximum wire heating.	Absorption of contaminating elements inside the cartridge heater like moisture, water, oil, plastic, brine, etc.	broken or unprotected.
Effect	Heating wire melts or loses its insulation.	Dilation or contraction of the wire will finally reduce it or break itself due to the oxidation.	Short circuit, due to an internal contamination that causes grounding of the element.	No electricity input in the circuit or grounding due to a non insulation.
Reasons	Poor heating dissipation.	Working without any external regulator at maximum capacity and total disconnection until the element is cold, during short and repetitive cycles.	Moisture condenses forming a bridge between the heating wire, sheet and leads. Producing short-circuit. Materials that in normal do not conduct electricity can do it after support high temperatures and be charred.	Vibrations, movement, impacts and high temperatures at leads side. Also leads inside the hole.
Appearance	Blue tones and also dark brown with small oxide layer in parts where the cartridge heater is not in contact with the hole.	heating element fusion.	Standard colors on the heater. Internally different colorations and steel sheet crater-shaped.	Rubbings, peels, cuts, material breakup.

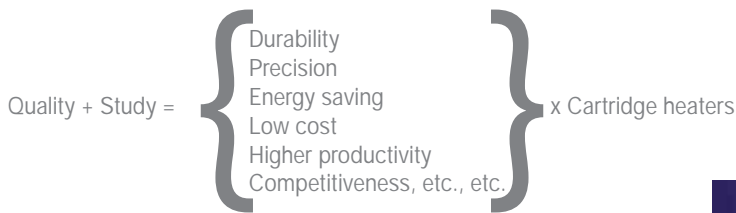
## Premature breaking factors

You can think that previous elements had a longer life. We can say that there are lot of different reasons that can cause a premature breaking. First of all you must analyze the previous element and check the internal construction (cold zones, wire thickness, isolation, granulometry, compression). These details can help us to check if two cartridge heaters with the same external length have the same internal heating zone. They can have a longer active zone and this part can be placed outside the hole, that causes an overheating and short-circuit. Both elements are perfectly produced, with details provided, and have the same appearance but internally they are different.

By the other hand, you should also control that the hole where the heater is placed must have a perfect tolerance type H7. Holes can have reduction in diameter due to the continuous friction when elements are installed. That occurs also due to the dilation or contraction of the elements causing a wrong diameter size. When a new cartridge heater is placed in the hole and it has a wrong tolerance, we mean diameter -0.02mm to -0.06mm, the heater can't dissipate the heating correctly and that will reduce heaters life.



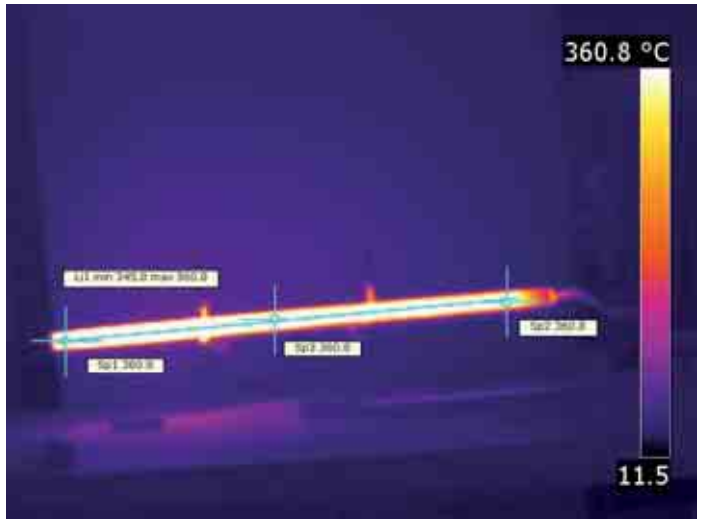
Thermography: thermographic studies



### Uses in plastic industry.

The infrared technic thermography can be used in plastic industries to optimize the process and improvement of quality, as well as in the development of new tools.

In the thermoplastic injection process, can be found wide information about the transformation process itself: through thermographic images upon items just injected, even on the mold, apart from those extracted from it, or on the mold's surface itself:



- Temperature deviation in critical points (injection points, inserts, item's thicker zones, etc)
- Hot points detection produced by thermoplastic material friction in any mold zone.
- Temperature control effectiveness.
- Mold's system tempering effectiveness.
- Heat accurate distribution, in both mold and item.
- Temperature development study on mold surface until the process is stabilized.
- Cooling time/course optimization.
- Result's obtained validation with simulation programs.

### Thermographic infrared usefulness in plastic industry:

Resistencia Industriales Maxiwatt carries out studies with thermographic cameras to detect our cartridge heater's effectiveness, in client's mold or any wanted application, getting spectacular thermal precision results in graded cartridges..

According to application or mold, we basically get exact temperature effectiveness, through all mold's surface or application.

In order to achieve the proper use, it is built with right watts density, getting a bigger saving.

The cartridges are built with a bigger overload margin, producing higher durability due to the power study and calculation of the proper temperature.

In case of temperature loss we recommend different positions avoiding mold's or application's cooling or overheating.

Resistencia Industriales Maxiwatt provides detailed in writing study, about the thermographic process developed by skilled technicians, as we use the best international computer programs and cameras.



### Inspection Report

Reporting date: 22/01/2013

Company: Maxiwatt

Address:

Thermographer:

Client:

Client address:

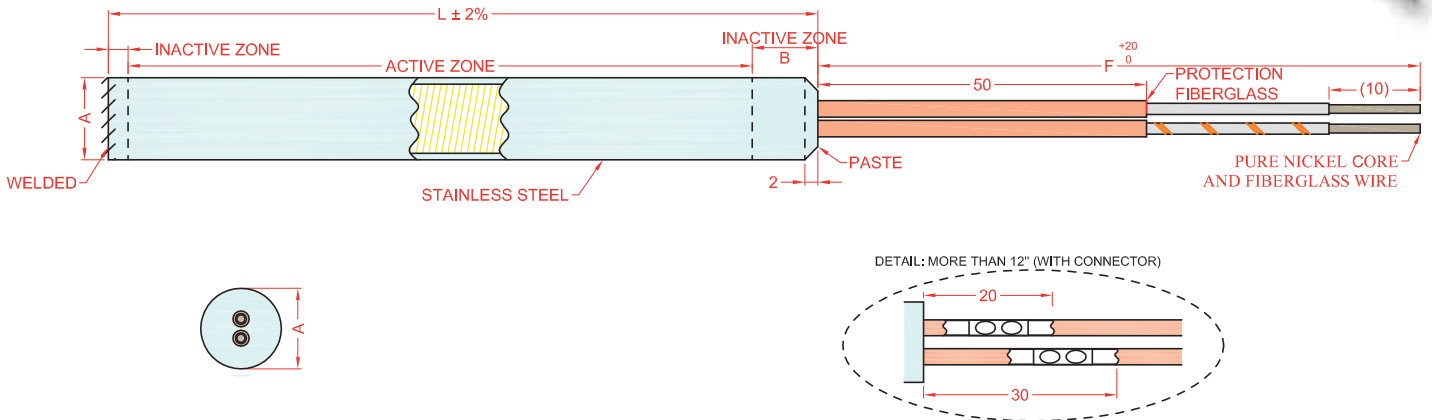
Contact person:




Parameters	Comments
Camera model: FLIR T335	
Image date: 22/01/2013	
Image name: IR_138.JPG	
Sensitivity: 0.18	
Reflected temperature: 20.6°C	
Object distance: 1.0 m	
Description:	

# Cartridge Heaters

Reliable Premium Quality. High Density ● Circular Flange  
Medium Density ● Ending T1  
Low Density ●



### Base Ending:

Compressed cartridge heaters, base ending Ref. "T1"

The cartridge is fully compressed, with a heat-resistant ceramic paste which seals the entry. The remaining cartridges are made from this base.

### Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
L (inches)	minimum			0.984			
	maximum			236.220			
F (inches)	Standard			9.843			
	Customer			∞			

### mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
L (mm)	minimum			25			
	maximum			6000			
F (mm)	Standard			250			
	Customer			∞			

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm
	inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

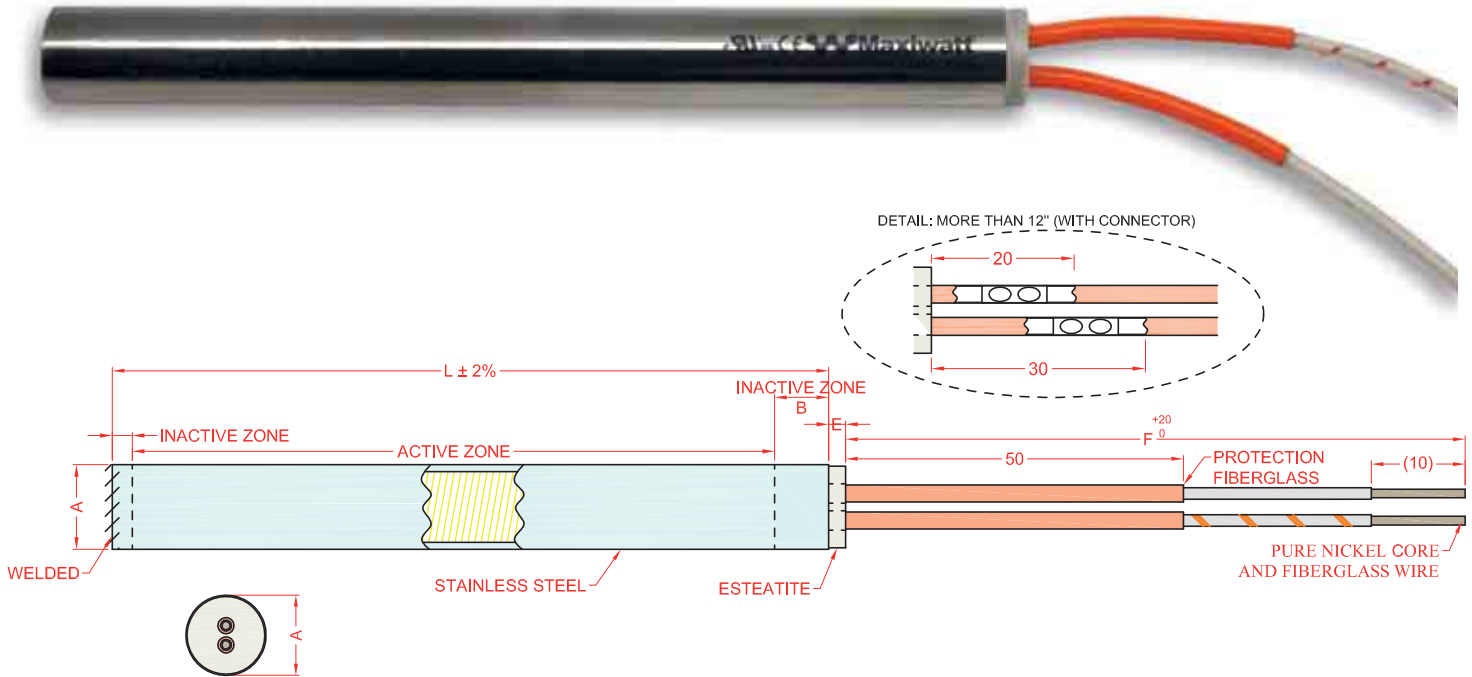
### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



# Cartridge Heaters

Reliable Premium Quality. High Density ● Medium Density ● Low Density ● Circular Flange Ending T2



Estateite (soapstone) Ending :  
compressed cartridge heaters. steatite (soapstone) end Ref. "T2"  
Cartridge with one steatite ceramic piece which juts out. It is 3mm to 6mm long, depending on the diameter of the cartridge.  
It prevents the connection of the wire with the tube, thereby giving more consistency to the cable entry.

## Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
E (inches)	0.098	0.098	0.098	0.098	0.118	0.118	0.118
L (inches)	minimum			0.984			
	maximum			236.220			
F (inches)	Standard			9.843			
	Customer			∞			

## mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
E (mm)	2.5	2.5	2.5	2.5	3	3	3
L (mm)	minimum			25			
	maximum			6000			
F (mm)	Standard			250			
	Customer			∞			

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

## Options:

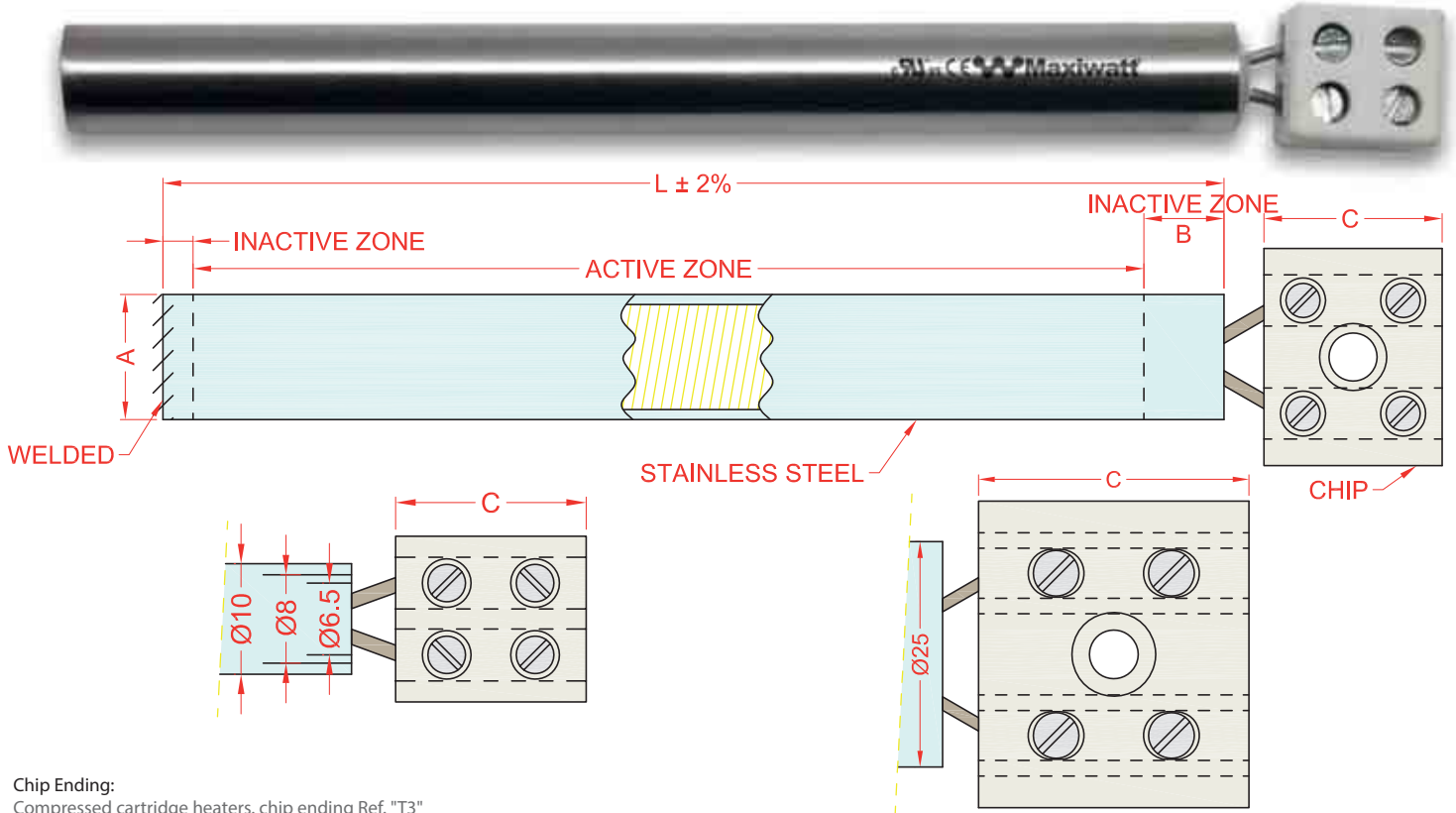
- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

# Cartridge Heaters

Reliable Premium Quality. High Density ● Medium Density ● Low Density ● Circular Flange Ending T3



Chip Ending:  
Compressed cartridge heaters. chip ending Ref. "T3"  
Cartridge with a steatite ceramic piece. Ready for a quick change of wires.

## Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
C (inches)	0.68	0.68	0.68	0.70	0.70	0.70	1.32
L (inches)	minimum			0.984			
	maximum			236.220			

## mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
C (mm)	17.25	17.25	17.25	17.80	17.80	17.80	33.60
L (mm)	minimum			25			
	maximum			6000			

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

## Options:

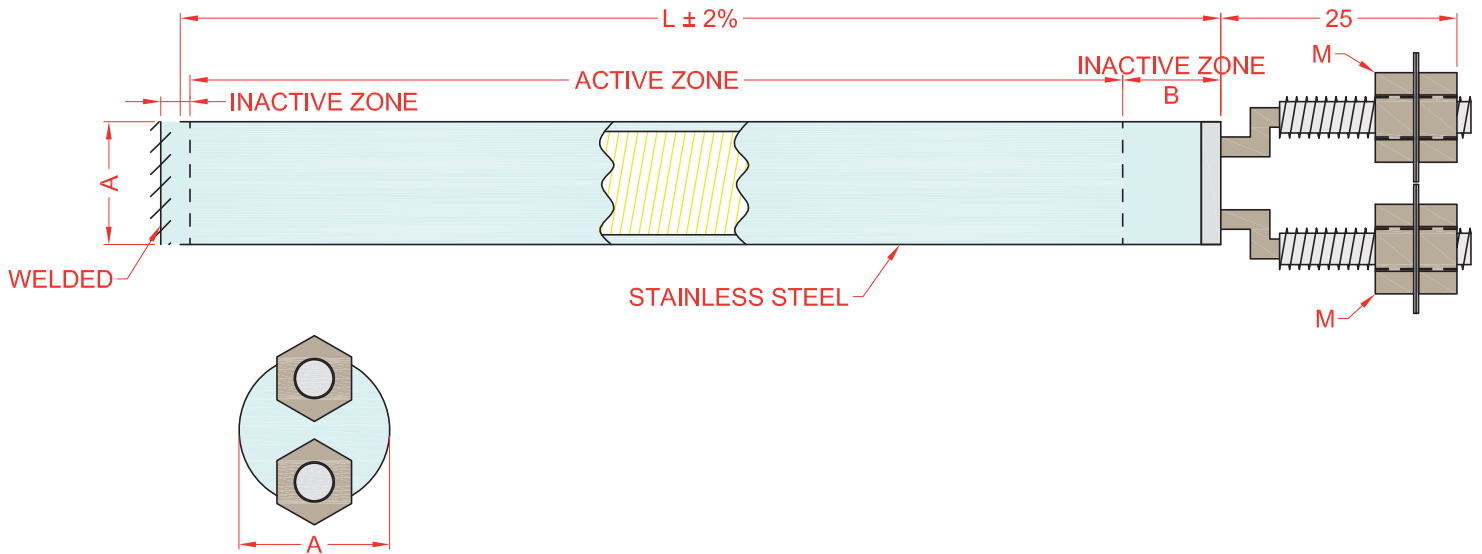
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

# Cartridge Heaters

Reliable Premium Quality. **High Density** ● Circular Flange  
**Medium Density** ● Ending T4  
**Low Density** ●



Metric Ending:  
 Compressed cartridge heaters. metric ending Ref. "T4"  
 Cartridge with stainless steel metric stud. Useful for quick change of wires.

## Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
L (inches)	minimum			0.984			
	maximum			236.220			
M	M3	M3 / M4	M3 / M4	M4 / M5	M5 / M6	M5 / M6	M6 / M8

## mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
L (mm)	minimum			25			
	maximum			6000			
M	M3	M3 / M4	M3 / M4	M4 / M5	M5 / M6	M5 / M6	M6 / M8

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

## Options:

- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

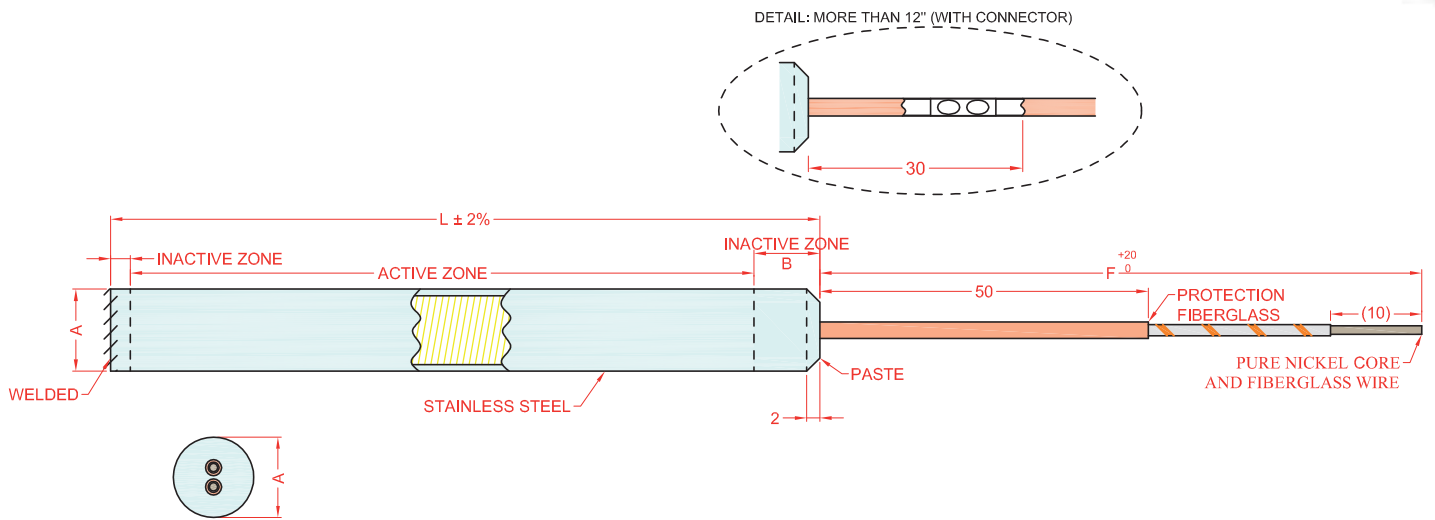
## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



# Cartridge Heaters

Reliable Premium Quality. **High Density** ● **Medium Density** ● **Low Density** ● **Circular Flange Ending T5**



**Unipolar Ending:**

Compressed cartridge heaters. unipolar ending Ref. "T5"

Cartridge with output for fiberglass cable. Unipolar for cartridges of low voltage.

**Inches**

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.315 +1%L	0.394 +1%L	0.492 +1%L	0.630 +1%L	0.787 +1%L	0.984 +1%L
L (inches) minimum	0.984						
L (inches) maximum	236.220						
F (inches) Standard	9.843						
F (inches) Customer	∞						

**mm**

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
L (mm) minimum	25						
L (mm) maximum	6000						
F (mm) Standard	250						
F (mm) Customer	∞						

**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	±5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

**Options:**

- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

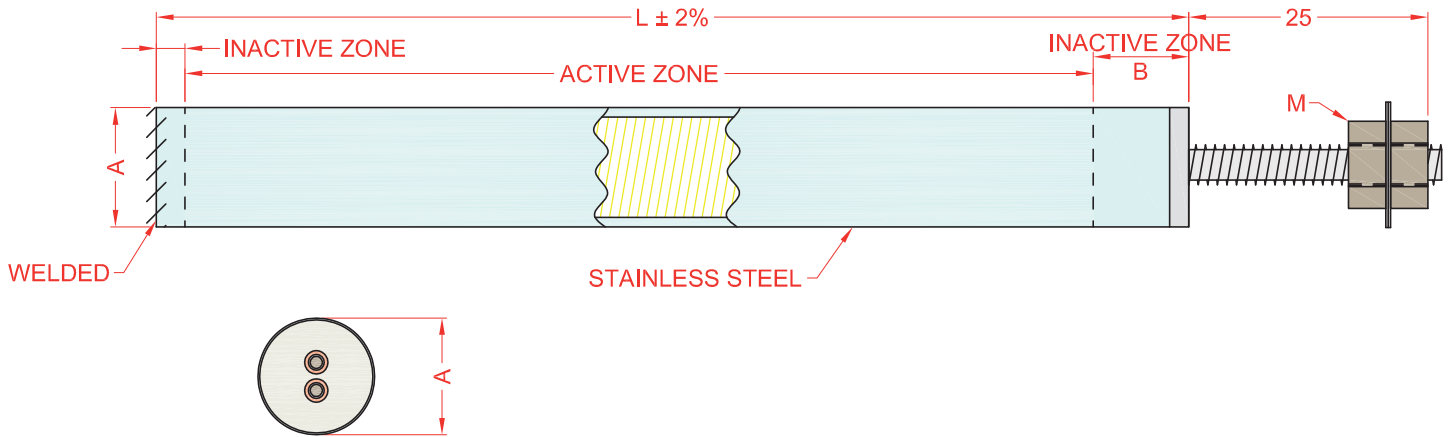
**Urgent service.**

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.

# Cartridge Heaters

Reliable Premium Quality. **High Density** ● **Medium Density** ● **Low Density** ● **Circular Flange Ending T6**



Unipolar Screw Ending:  
Compressed cartridge heaters. unipolar screw ending Ref. "T6"  
Cartridge with a metric unipolar output for a quick cable extraction.

## Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
L (inches)	minimum	0.984					
	maximum	236.220					
M	M3	M3 / M4	M3 / M4	M4 / M5	M5 / M6	M5 / M6	M6 / M8

## mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
L (mm)	minimum	25					
	maximum	6000					
M	M3	M3 / M4	M3 / M4	M4 / M5	M5 / M6	M5 / M6	M6 / M8

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

## Options:

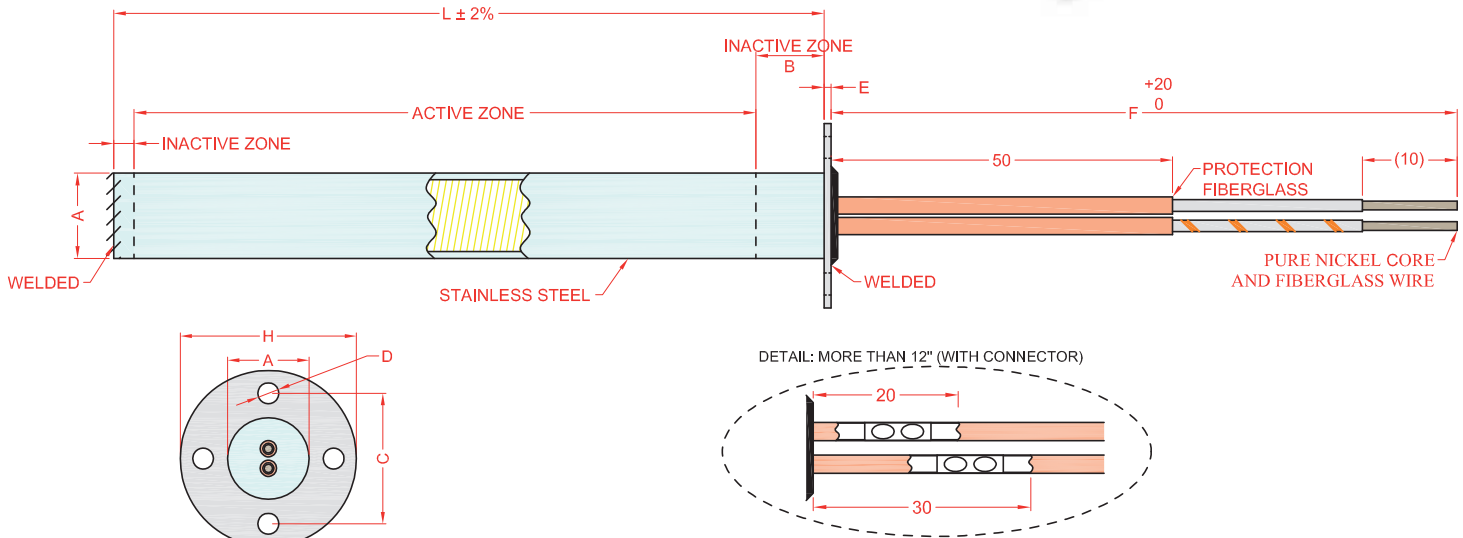
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as costumer's requirements.
- Ground lead.
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

# Cartridge Heaters

Reliable Premium Quality. **High Density** ● **Medium Density** ● **Low Density** ● **Circular Flange Ending T7**



### Disc Plate Ending:

Compressed cartridge heaters. (pletina) iron plate ending Ref. "T7"

Fully compressed and reinforced cartridge. Ready for fastening the object to be heated. Ideal for areas with motion and vibration.

### Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (inches)	0.197 +1%L	0.197 +1%L	0.275591 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
C (inches)	0.512	0.512	0.787	0.787	1.008	1.008	1.299
D (inches)	0.126	0.126	0.126	0.126	0.165	0.165	0.205
E (inches)	0.0394 to 0.0472	0.0394 to 0.0472	0.0394 to 0.0472	0.0394 to 0.0472	0.0394 to 0.0472	0.0591 to 0.0787	0.0591 to 0.0787
H (inches)	0.709	0.709	1.063	1.063	1.299	1.299	1.614
L (inches)	minimum			0.984			
	maximum			236.220			
F (inches)	standard			9.843			
	customer			∞			

### mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum							
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
C (mm)	13	13	20	20	25.6	25.6	33
D (mm)	3.2	3.2	3.2	3.2	4.2	4.2	5.2
E (mm)	1 to 1.2	1 to 1.2	1 to 1.2	1.2 to 1.5	1.2 to 1.5	1.5 to 2	1.5 to 2
H (mm)	18	18	27	27	33	33	41
L (mm)	minimum			25			
	maximum			6000			
F (mm)	standard			250			
	customer			∞			

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

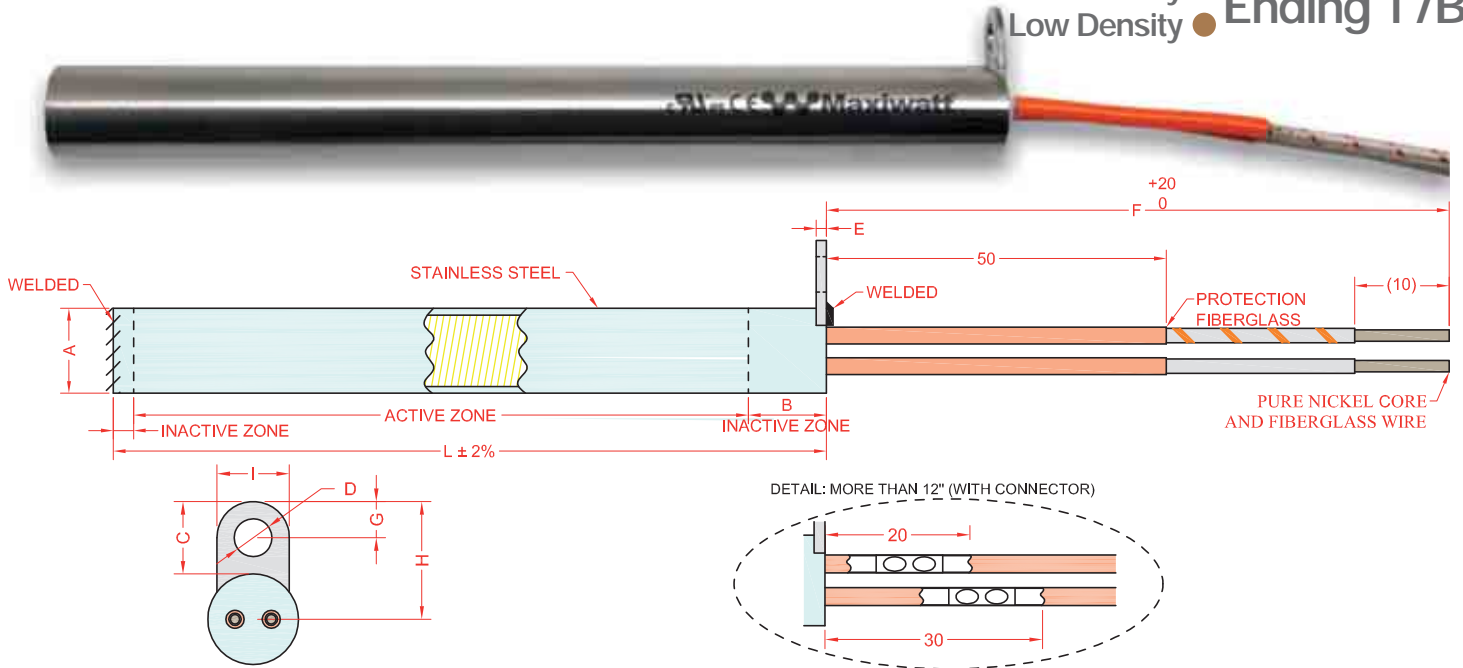
### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

# Cartridge Heaters

Reliable Premium Quality. High Density ●  
Medium Density ● ●  
Low Density ● ● ●

Circular Flange  
**Ending T7B**



**Iron Plate Ending:**  
Compressed cartridge heaters. (pletina) iron plate ending Ref. "T7B"  
Fully compressed and reinforced cartridge. Ready for fastening the object to be heated.  
Ideal for areas with motion and vibration.

### Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744
B (inches)	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L
C (inches)	0.256	0.354	0.354	0.394	0.433	0.512
Ø D (inches)	0.126	0.165	0.165	0.205	0.205	0.244
E (inches)	0.089	0.079	0.079	0.059	0.079	0.079
G (inches)	0.130	0.177	0.177	0.197	0.217	0.256
H (inches)	0.512	0.669	0.748	0.886	1.063	1.299
I (inches)	0.256	0.315	0.374	0.394	0.472	0.709
L (inches)	minimum	0.984				
	maximum	236.22				
F (inches)	Standard	9.843				
	Customer	∞				

### mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20
Diameter nominal H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94
B (mm)	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L
C (mm)	6.5	9	9	10	11	13
Ø D (mm)	3.2	4.2	4.2	5.2	5.2	6.2
E (mm)	2.25	2	2	1.5	2	2
G (mm)	3.3	4.5	4.5	5	5.5	6.5
H (mm)	13	17	19	22.5	27	33
I (mm)	6.5	8	9.5	10	12	18
L (mm)	minimum	25				
	maximum	6000				
F (mm)	Standard	250				
	Customer	∞				

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm
	inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

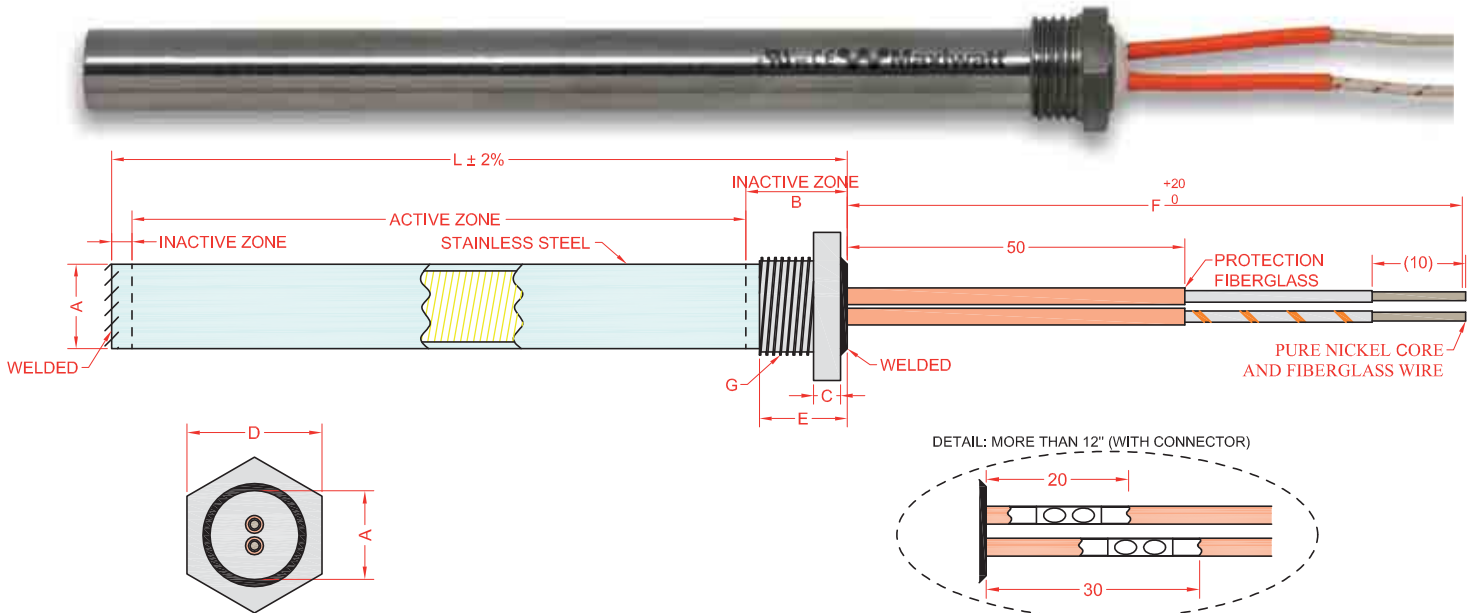
### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



# Cartridge Heaters

Reliable Premium Quality. High Density ● Circular Flange  
Medium Density ● Ending T8  
Low Density ●



## Inches

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744
B (inches)	E+1%L	E+1%L	E+1%L	E+1%L	E+1%L	E+1%L
C (inches)	0.157	0.157	0.157	0.157	0.157	0.157
D (inches)	0.472	0.551	0.669	0.748	0.945	1.063
E (inches)	0.423	0.423	0.502	0.512	0.591	0.591
G (inches)	1/8"	1/4"	1/4"	3/8"	1/2"	3/4"
L (inches)	minimum					0.984
	maximum					236.22
F (inches)	Standard					9.843
	Customer					∞

## mm

A Ø Diameter (mm)	6.5	8	10	12.5	16	20
Diameter nominal H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94
B (mm)	E+1%L	E+1%L	E+1%L	E+1%L	E+1%L	E+1%L
C (mm)	4	4	4	4	4.0	4.0
D (mm)	12	14	17	19	24	27
E (mm)	10.75	10.75	12.75	13	15	15
G (mm)	M10	M12	M14	M16	M20	M26
L (mm)	minimum					25
	maximum					6000
F (mm)	Standard					250
	Customer					∞

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

## Nipple Ending:

Compressed cartridge heaters. nipple ending Ref. "T8"  
Fully water resistant and reinforced cartridge. Ready for removal by means of a screw, should the cartridge become dislodged. Ideal for areas where pressure and fluids are watertight. The ending Ref. T8 is indicate for heating of areas with internal pressure (oil tanks, water, glue, plastic) or deflagration.

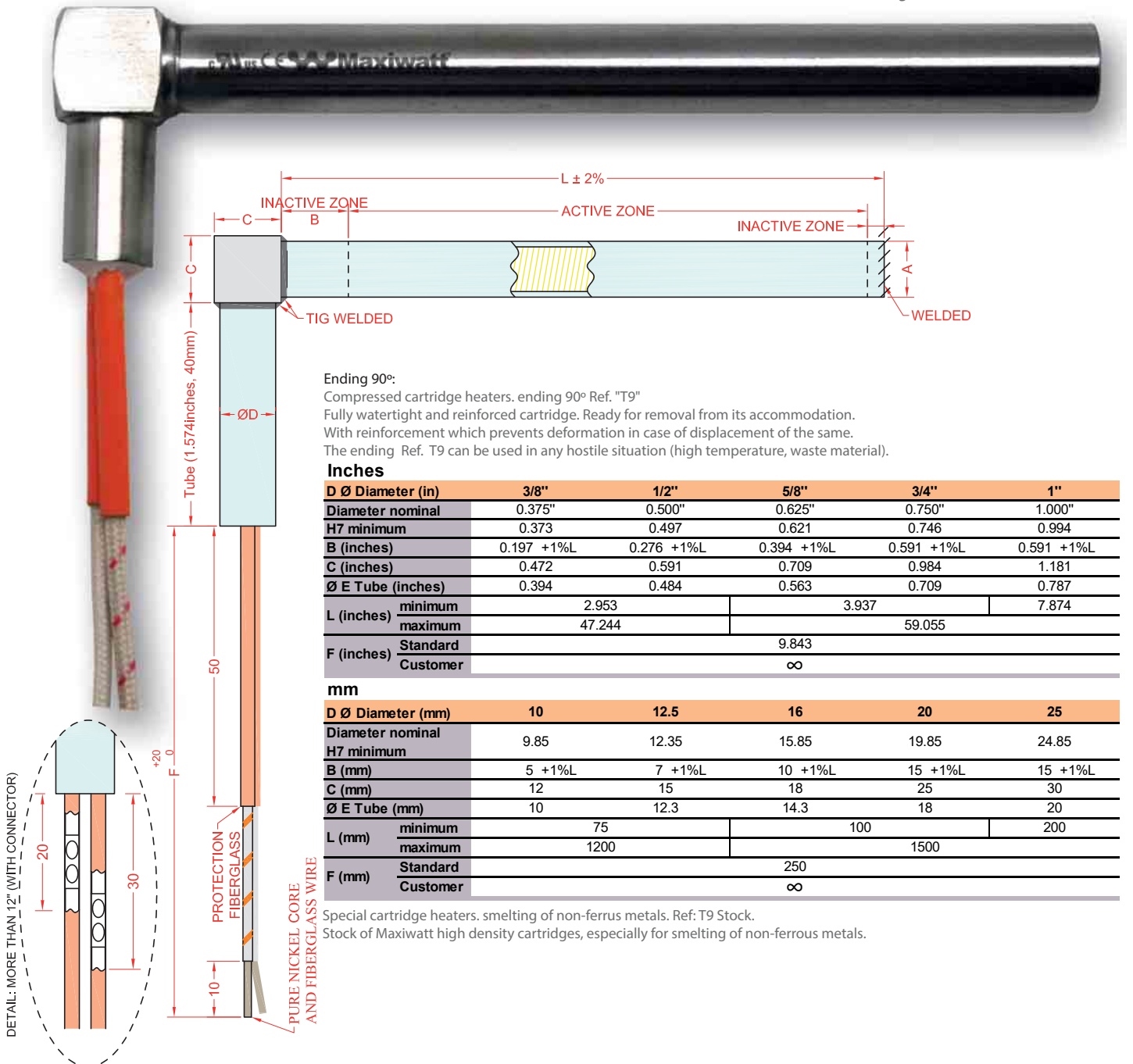
## Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

Reliable Premium Quality. High Density ● Circular Flange  
Medium Density ● Ending T9  
Low Density ●



Ending 90°:  
Compressed cartridge heaters. ending 90° Ref. "T9"  
Fully watertight and reinforced cartridge. Ready for removal from its accommodation.  
With reinforcement which prevents deformation in case of displacement of the same.  
The ending Ref. T9 can be used in any hostile situation (high temperature, waste material).

### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L
C (inches)	0.472	0.591	0.709	0.984	1.181
Ø E Tube (inches)	0.394	0.484	0.563	0.709	0.787
L (inches)	minimum	2.953		3.937	7.874
	maximum	47.244		59.055	
F (inches)	Standard	9.843			
	Customer	∞			

### mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L
C (mm)	12	15	18	25	30
Ø E Tube (mm)	10	12.3	14.3	18	20
L (mm)	minimum	75		100	200
	maximum	1200		1500	
F (mm)	Standard	250			
	Customer	∞			

Special cartridge heaters. smelting of non-ferrous metals. Ref: T9 Stock.  
Stock of Maxi watt high density cartridges, especially for smelting of non-ferrous metals.

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	±5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

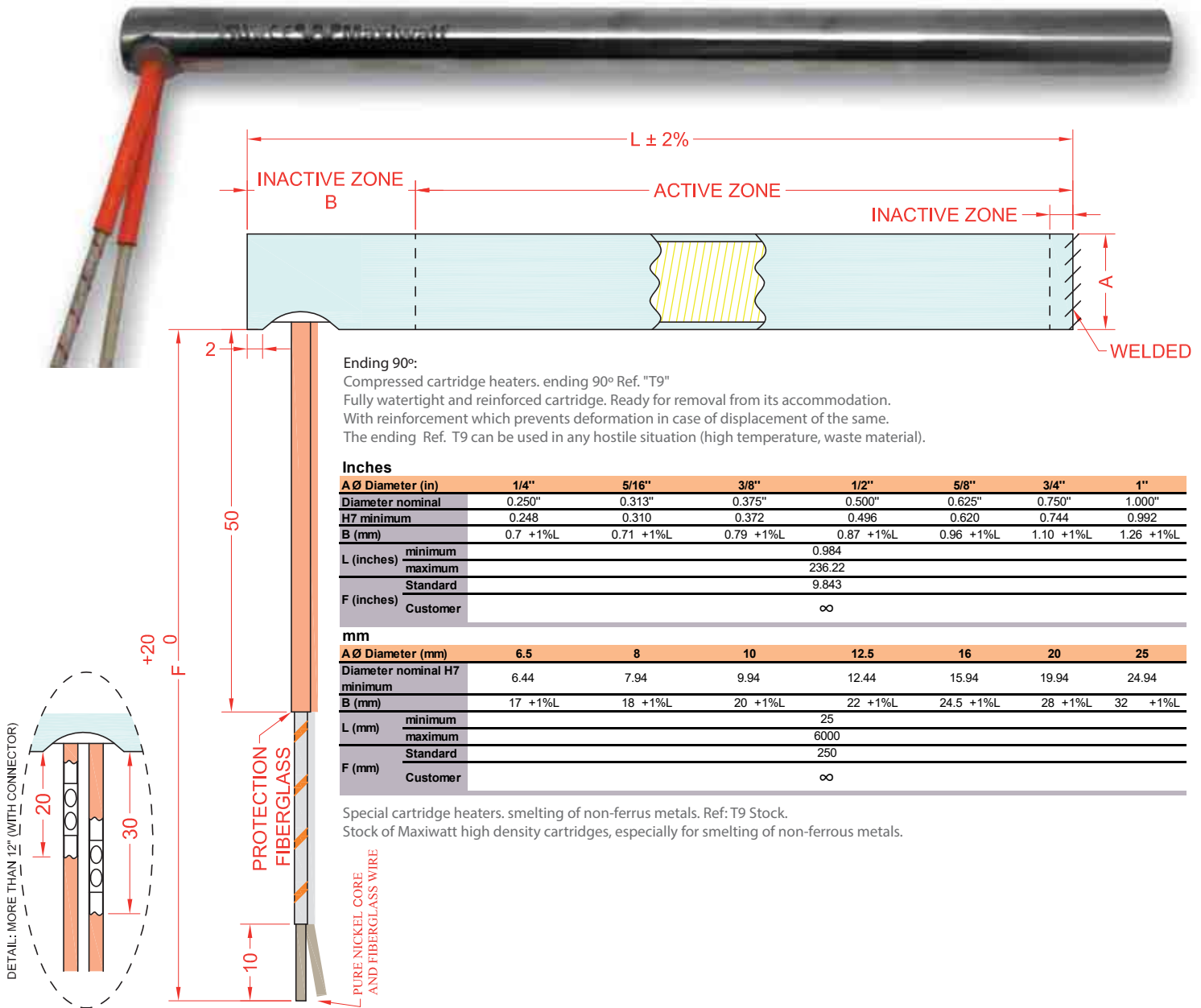
- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

Reliable Premium Quality. High Density ●  
 Medium Density ●  
 Low Density ●

Circular Flange  
**Ending T9B**



### Technical Key

<b>Sheath material</b>	Stainless steel 1.4541
<b>Heating conductor material</b>	NiCr 8020
<b>Max. Sheath temperature</b>	750 °C / 1380 °F
<b>Max. Voltage</b>	480 V
<b>Wattage tolerance*</b>	+5% -10%
<b>High voltage resistance*</b>	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
<b>Insulation resistance*</b>	> 5 MΩ at 500 V DC
<b>Leakage current*</b>	<= 0.5 mA at 253 V AC
<b>Length tolerance</b>	A 1.5%, min A 1mm
<b>Standard diameter tolerance</b>	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

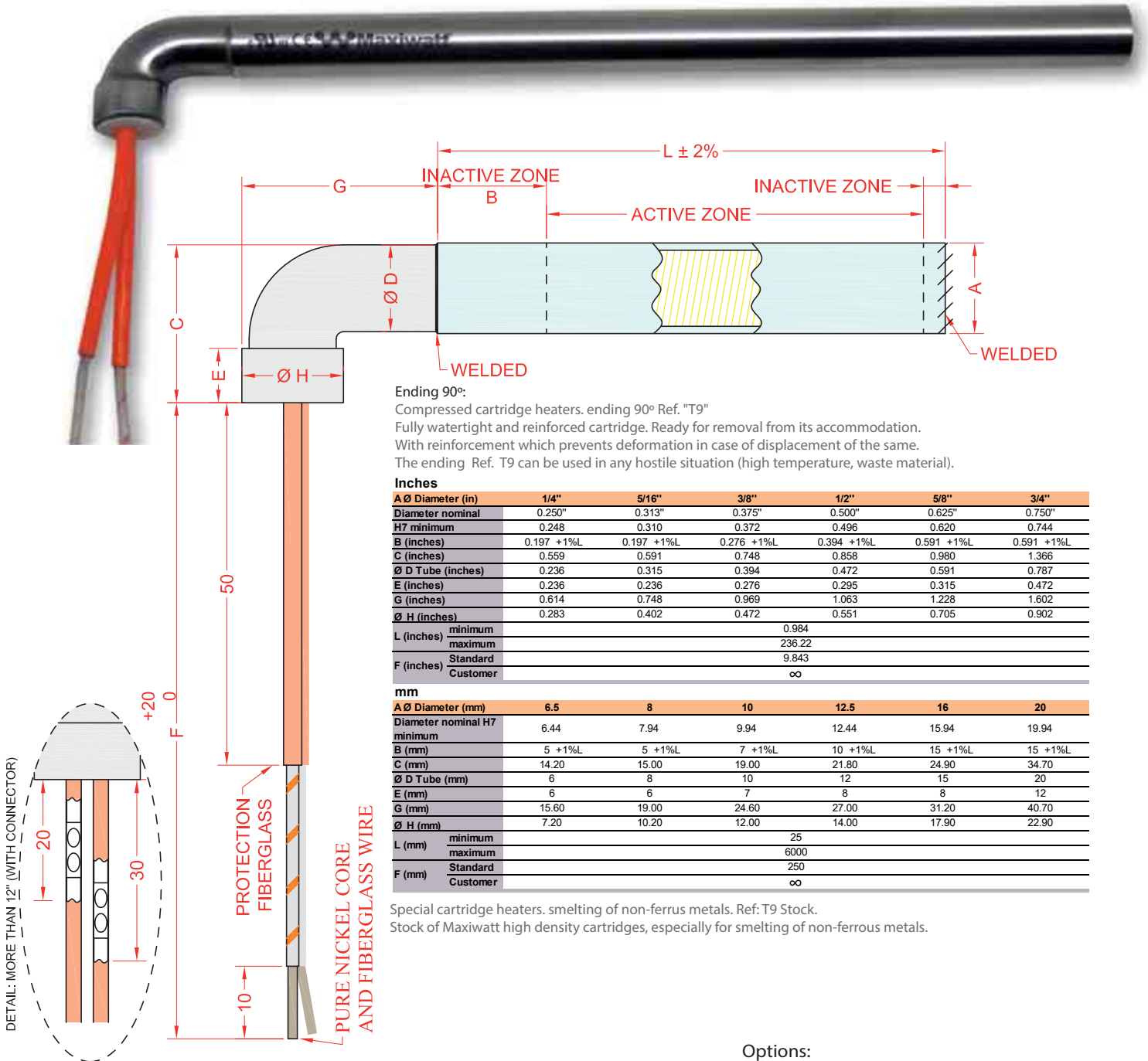
- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

Reliable Premium Quality. High Density ●  
Medium Density ●  
Low Density ●

Circular Flange  
Ending T9CA



**Ending 90°:**

Compressed cartridge heaters. ending 90° Ref. "T9"  
Fully watertight and reinforced cartridge. Ready for removal from its accommodation.  
With reinforcement which prevents deformation in case of displacement of the same.  
The ending Ref. T9 can be used in any hostile situation (high temperature, waste material).

Inches	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
<b>A Ø Diameter (in)</b>	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"
<b>Diameter nominal H7 minimum</b>	0.248	0.310	0.372	0.496	0.620	0.744
<b>B (inches)</b>	0.197 +1%L	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L
<b>C (inches)</b>	0.559	0.591	0.748	0.858	0.980	1.366
<b>Ø D Tube (inches)</b>	0.236	0.315	0.394	0.472	0.591	0.787
<b>E (inches)</b>	0.236	0.236	0.276	0.295	0.315	0.472
<b>G (inches)</b>	0.614	0.748	0.969	1.063	1.228	1.602
<b>Ø H (inches)</b>	0.283	0.402	0.472	0.551	0.705	0.902
<b>L (inches)</b>				0.984		
				236.22		
<b>F (inches)</b>				9.843		
				∞		
<b>mm</b>						
<b>A Ø Diameter (mm)</b>	6.5	8	10	12.5	16	20
<b>Diameter nominal H7 minimum</b>	6.44	7.94	9.94	12.44	15.94	19.94
<b>B (mm)</b>	5 +1%L	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L
<b>C (mm)</b>	14.20	15.00	19.00	21.80	24.90	34.70
<b>Ø D Tube (mm)</b>	6	8	10	12	15	20
<b>E (mm)</b>	6	6	7	8	8	12
<b>G (mm)</b>	15.60	19.00	24.60	27.00	31.20	40.70
<b>Ø H (mm)</b>	7.20	10.20	12.00	14.00	17.90	22.90
<b>L (mm)</b>				25		
				6000		
<b>F (mm)</b>				250		
				∞		

Special cartridge heaters. smelting of non-ferrous metals. Ref: T9 Stock.  
Stock of Maxiwatt high density cartridges, especially for smelting of non-ferrous metals.

**Technical Key**

<b>Sheath material</b>	Stainless steel 1.4541
<b>Heating conductor material</b>	NiCr 8020
<b>Max. Sheath temperature</b>	750 °C / 1380 °F
<b>Max. Voltage</b>	480 V
<b>Wattage tolerance*</b>	+.5% -10%
<b>High voltage resistance*</b>	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
<b>Insulation resistance*</b>	> 5 MΩ at 500 V DC
<b>Leakage current*</b>	<= 0.5 mA at 253 V AC
<b>Length tolerance</b>	A 1.5%, min A 1mm
<b>Standard diameter tolerance</b>	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

**Options:**

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

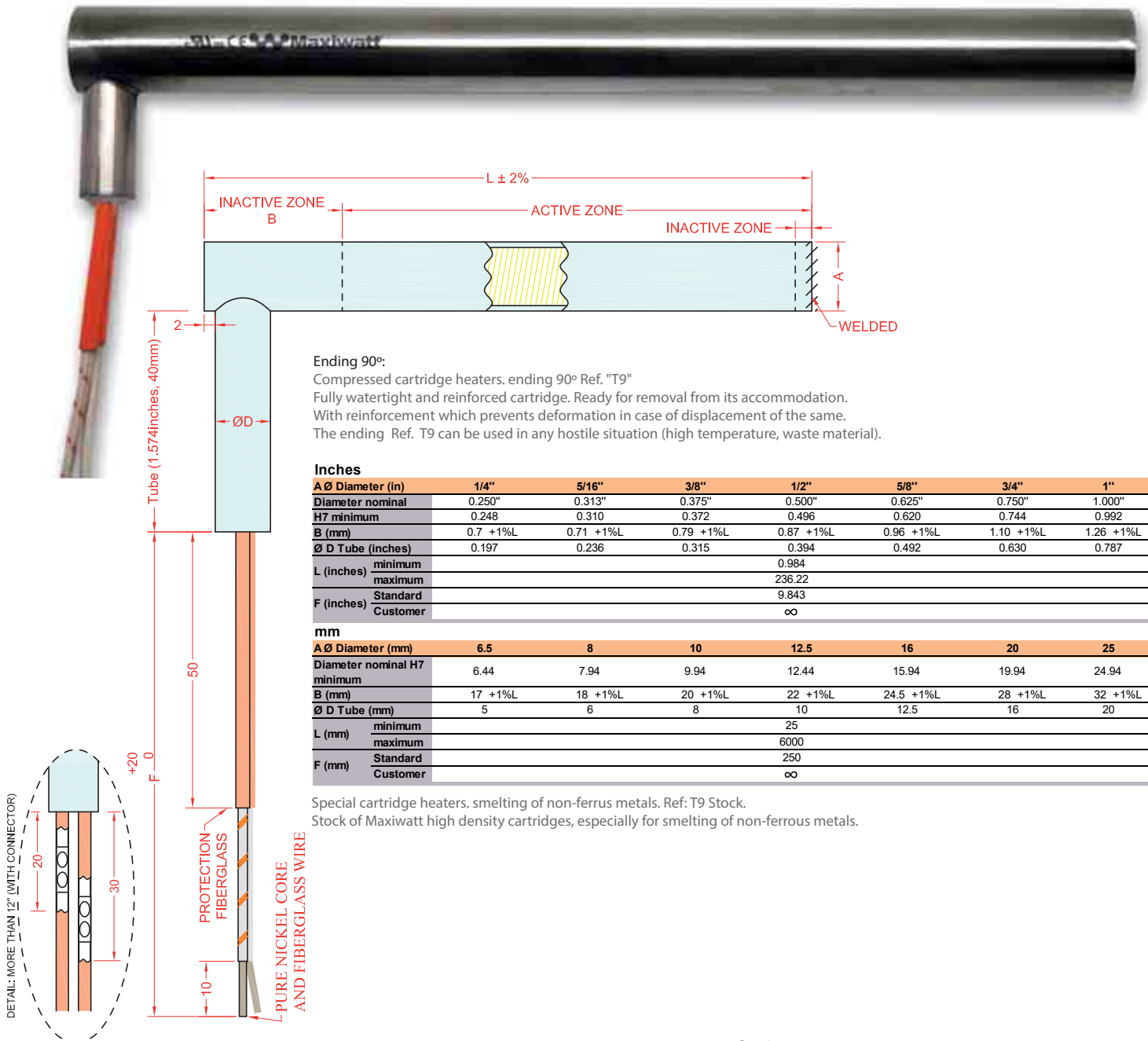
**Urgent service.**

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



Reliable Premium Quality. High Density ●  
Medium Density ●  
Low Density ●

Circular Flange  
Ending T9PB



**Ending 90°:**  
Compressed cartridge heaters. ending 90° Ref. "T9"  
Fully watertight and reinforced cartridge. Ready for removal from its accommodation.  
With reinforcement which prevents deformation in case of displacement of the same.  
The ending Ref. T9 can be used in any hostile situation (high temperature, waste material).

**Inches**

A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (mm)	0.7 +1%L	0.71 +1%L	0.79 +1%L	0.87 +1%L	0.96 +1%L	1.10 +1%L	1.26 +1%L
Ø D Tube (inches)	0.197	0.236	0.315	0.394	0.492	0.630	0.787
L (inches)	minimum	0.984					
	maximum	236.22					
F (inches)	Standard	9.843					
	Customer	∞					

**mm**

A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal	6.44	7.94	9.94	12.44	15.94	19.94	24.94
H7 minimum	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	17 +1%L	18 +1%L	20 +1%L	22 +1%L	24.5 +1%L	28 +1%L	32 +1%L
Ø D Tube (mm)	5	6	8	10	12.5	16	20
L (mm)	minimum	25					
	maximum	6000					
F (mm)	Standard	250					
	Customer	∞					

Special cartridge heaters. smelting of non-ferrous metals. Ref: T9 Stock.  
Stock of Maxiwatt high density cartridges, especially for smelting of non-ferrous metals.

**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

**Options:**

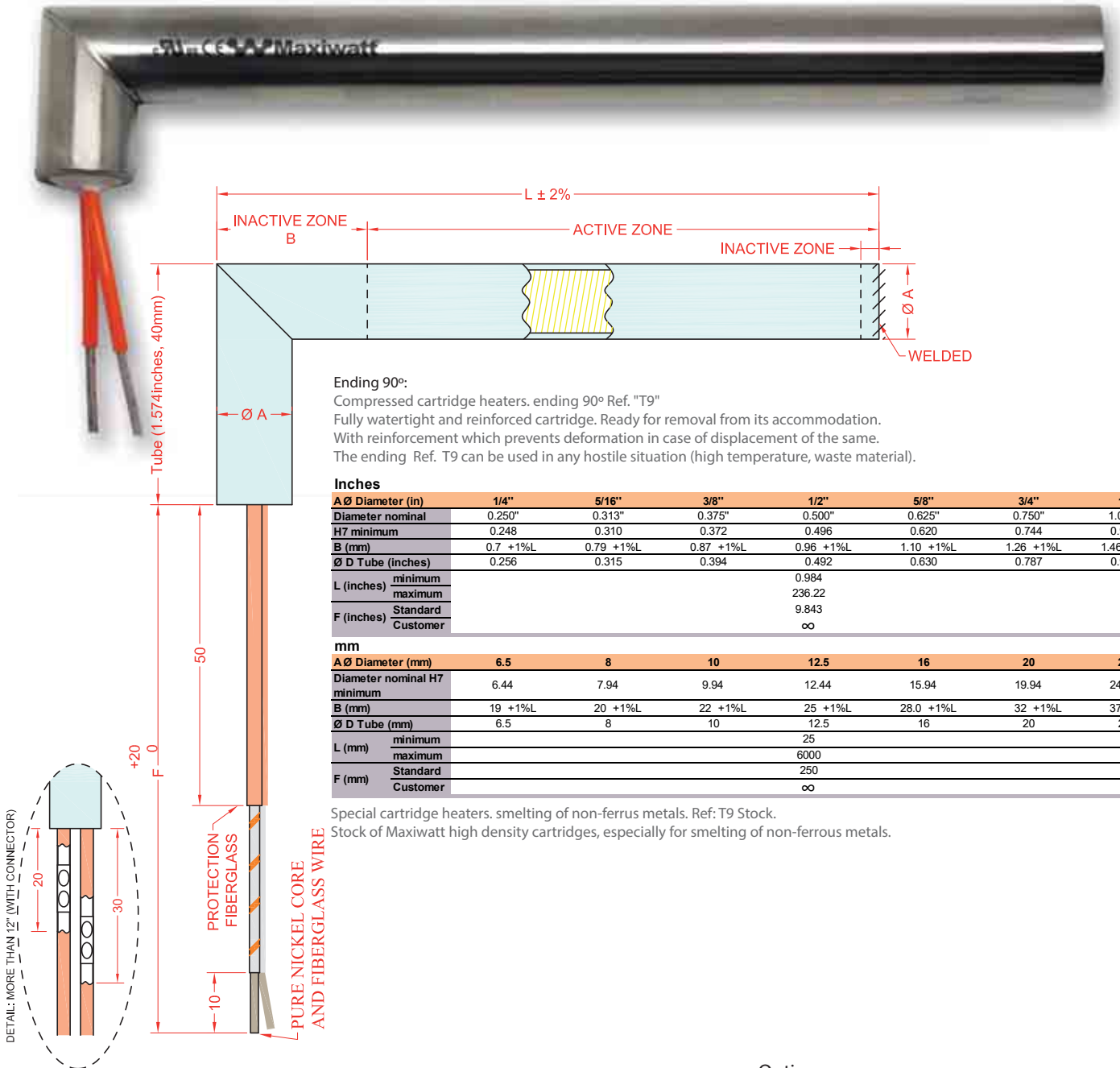
- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

**Urgent service.**

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

Reliable Premium Quality. High Density ●  
Medium Density ●  
Low Density ●

Circular Flange  
**Ending T9PBE**



**Ending 90°:**  
Compressed cartridge heaters, ending 90° Ref. "T9"  
Fully watertight and reinforced cartridge. Ready for removal from its accommodation.  
With reinforcement which prevents deformation in case of displacement of the same.  
The ending Ref. T9 can be used in any hostile situation (high temperature, waste material).

Inches							
A Ø Diameter (in)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.250"	0.313"	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.248	0.310	0.372	0.496	0.620	0.744	0.992
B (mm)	0.7 +1%L	0.79 +1%L	0.87 +1%L	0.96 +1%L	1.10 +1%L	1.26 +1%L	1.46 +1%L
Ø D Tube (inches)	0.256	0.315	0.394	0.492	0.630	0.787	0.984
L (inches)	minimum		0.984		maximum		
			236.22				
F (inches)	Standard		9.843		Customer		
			∞				
mm							
A Ø Diameter (mm)	6.5	8	10	12.5	16	20	25
Diameter nominal H7	6.44	7.94	9.94	12.44	15.94	19.94	24.94
B (mm)	19 +1%L	20 +1%L	22 +1%L	25 +1%L	28.0 +1%L	32 +1%L	37 +1%L
Ø D Tube (mm)	6.5	8	10	12.5	16	20	25
L (mm)	minimum		25		maximum		
			6000				
F (mm)	Standard		250		Customer		
			∞				

Special cartridge heaters, smelting of non-ferrous metals. Ref: T9 Stock.  
Stock of Maxi watt high density cartridges, especially for smelting of non-ferrous metals.

Technical Key	
Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

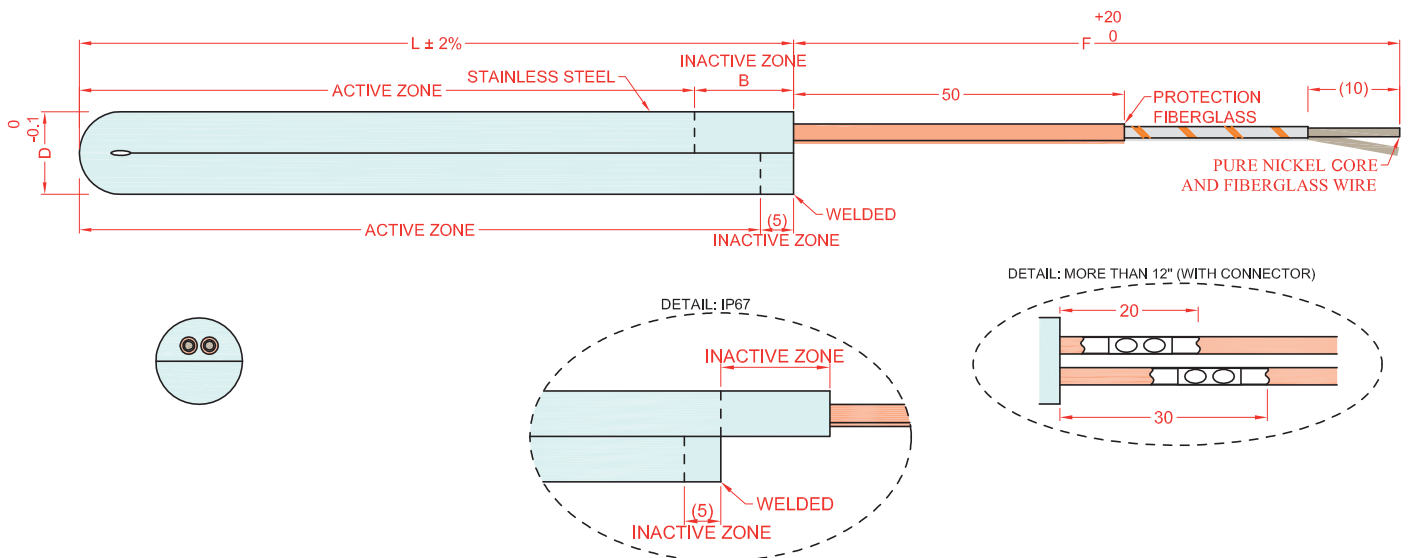
TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.
- Diameter tolerance H7: +0 / -0.02 / -0.06mm

### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
L (inches)	minimum	2.953		3.937	7.874
	maximum	47.244		59.055	
F (inches)	Standard	9.843			
	Customer	∞			

### mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
L (mm)	minimum	75		100	200
	maximum	1200		1500	
F (mm)	Standard	250			
	Customer	∞			

### Technical Key

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	☒ 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15
	inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

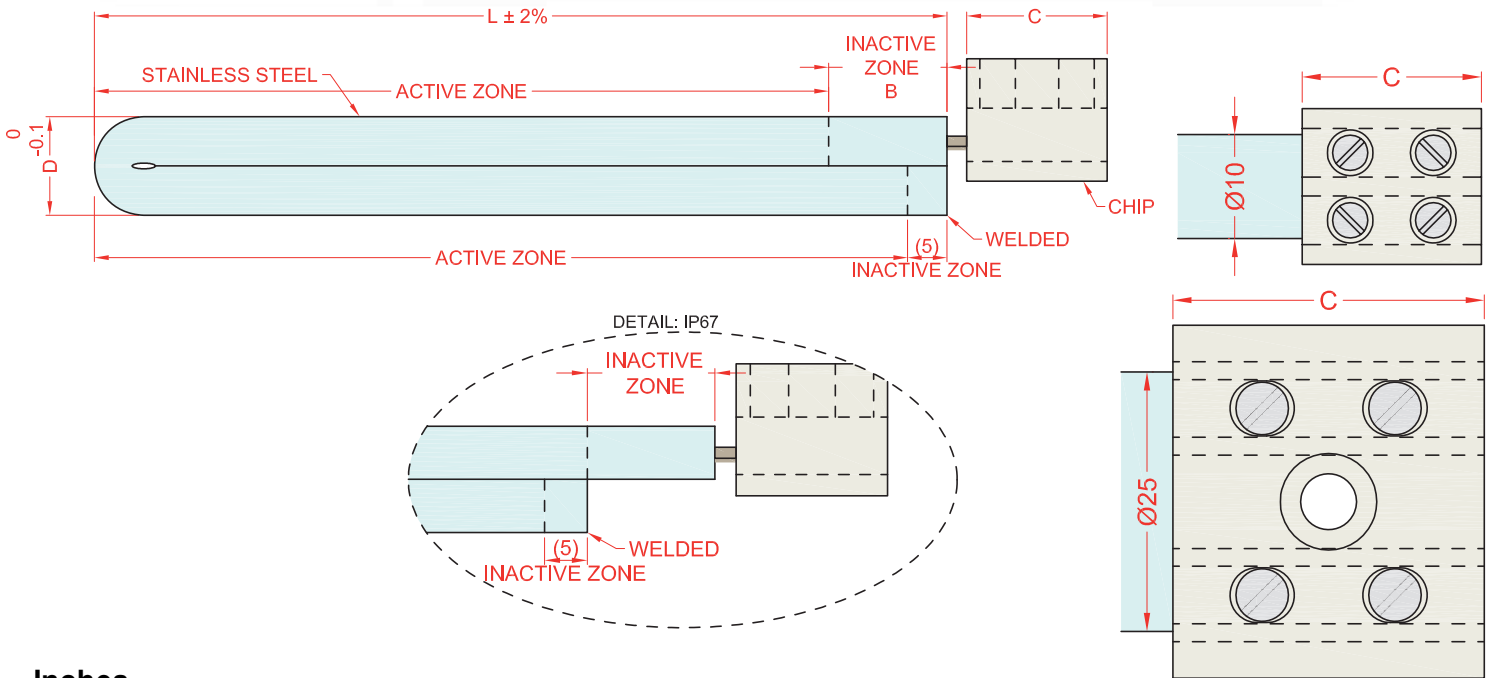
### Options:

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- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different ends and protections.

### Urgent service.

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.



### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
C (inches)	0.68	0.70	0.70	0.70	1.32
L (inches)	minimum	2.953		3.937	7.874
	maximum	47.244		59.055	

### mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
C (mm)	17.25	17.80	17.80	17.80	33.60
L (mm)	minimum	75		100	200
	maximum	1200		1500	

### Technical Key

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0°10-0°15
	inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

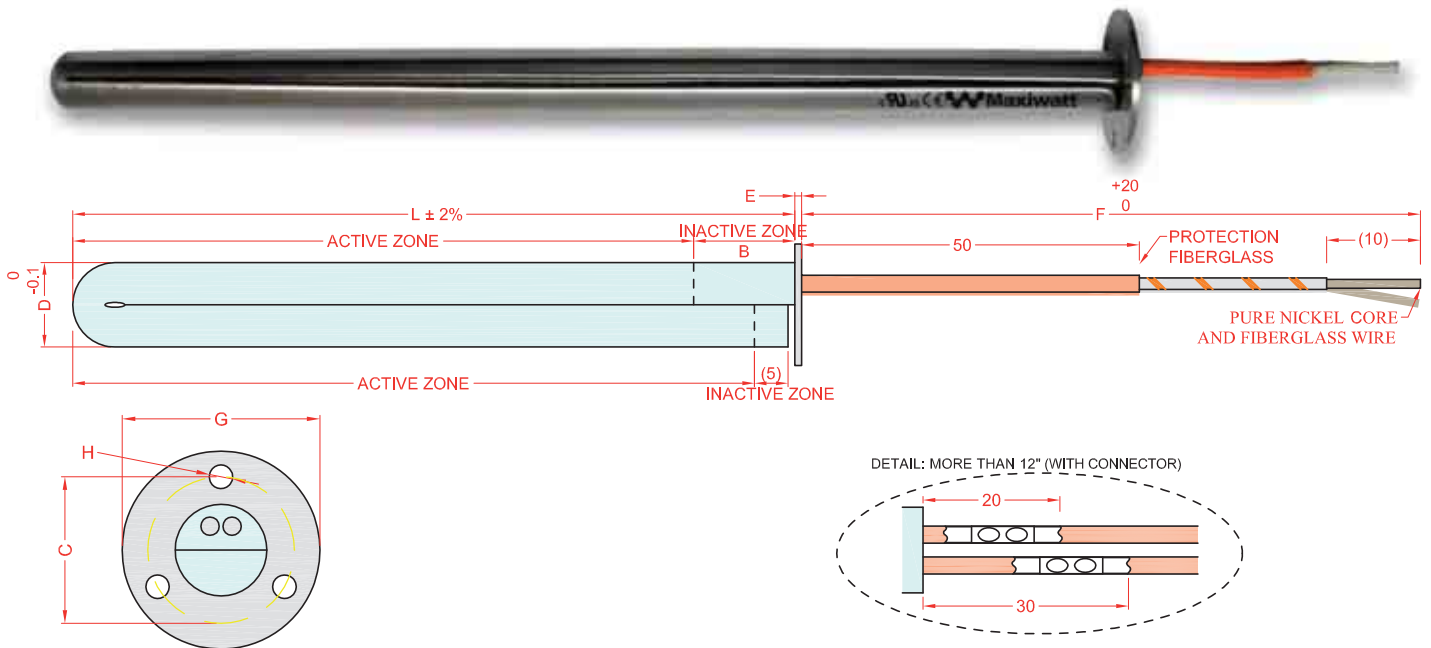
### Options:

- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.

### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.





### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L	0.787 +1%L
C (inches)	0.787	0.787	1.008	1.008	1.299
E (inches)	0.039	0.059	0.059	0.059	0.059
G (inches)	1.063	1.063	1.299	1.299	1.614
H (inches)	0.126	0.126	0.165	0.165	0.205
L (inches)	minimum	2.953		3.937	
	maximum	47.244		59.055	
F (inches)	Standard	9.843			
	Customer	∞			

### mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	7 +1%L	10 +1%L	15 +1%L	15 +1%L	20 +1%L
C (mm)	20	20	25.6	25.6	33
E (mm)	1	1.5	1.5	1.5	1.5
G (mm)	27	27	33	33	41
H (mm)	3.2	3.2	4.2	4.2	5.2
L (mm)	minimum	75		100	
	maximum	1200		1500	
F (mm)	Standard	250			
	Customer	∞			

### Technical Key

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15 inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

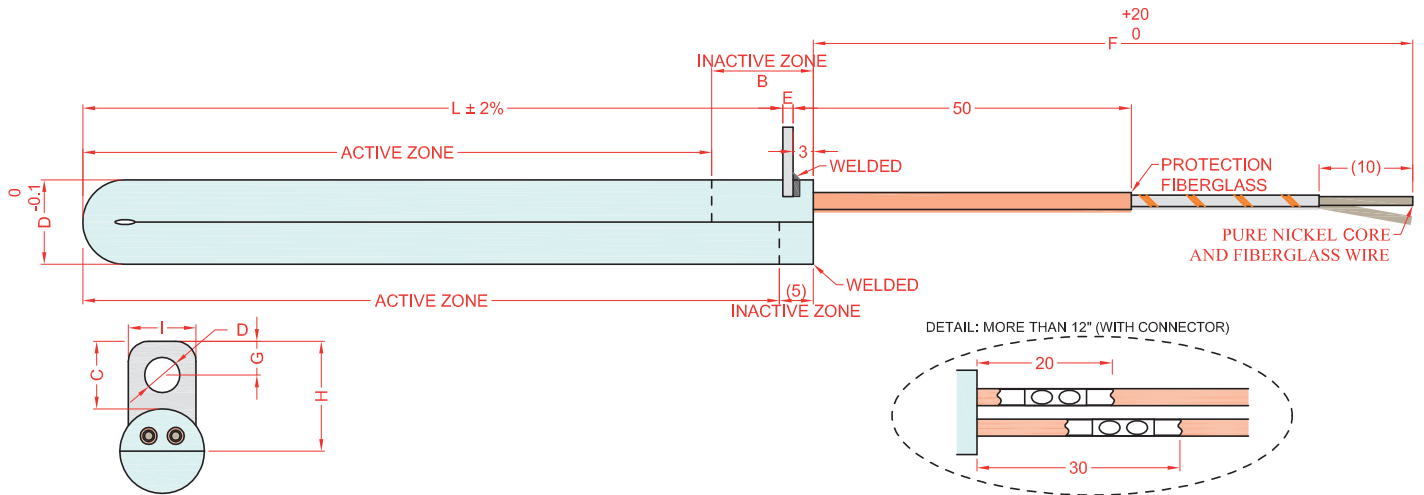
### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.

### Urgent service.

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.



### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"
Diameter nominal	0.375"	0.500"	0.625"	0.750"
H7 minimum	0.373	0.497	0.621	0.746
B (inches)	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L
C (inches)	0.354	0.394	0.433	0.512
Ø D (inches)	0.165	0.205	0.205	0.244
E (inches)	0.079	0.059	0.079	0.079
G (inches)	0.177	0.197	0.217	0.256
H (inches)	0.748	0.886	1.063	1.299
I (inches)	0.374	0.394	0.472	0.709
L (inches)	minimum	2.953		3.937
	maximum	47.244		59.055
F (inches)	Standard	9.843		
	Customer	∞		

### mm

D Ø Diameter (mm)	10	12.5	16	20
Diameter nominal	9.85	12.35	15.85	19.85
H7 minimum	9.80	12.30	15.80	19.80
B (mm)	7 +1%L	10 +1%L	15 +1%L	15 +1%L
C (mm)	9	10	11	13
Ø D (mm)	4.2	5.2	5.2	6.2
E (mm)	2	1.5	2	2
G (mm)	4.5	5	5.5	6.5
H (mm)	19	22.5	27	33
I (mm)	9.5	10	12	18
L (mm)	minimum	75		100
	maximum	1200		1500
F (mm)	Standard	250		
	Customer	∞		

### Technical Key

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	> 5 M.Ω at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0°10-0°15
	inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

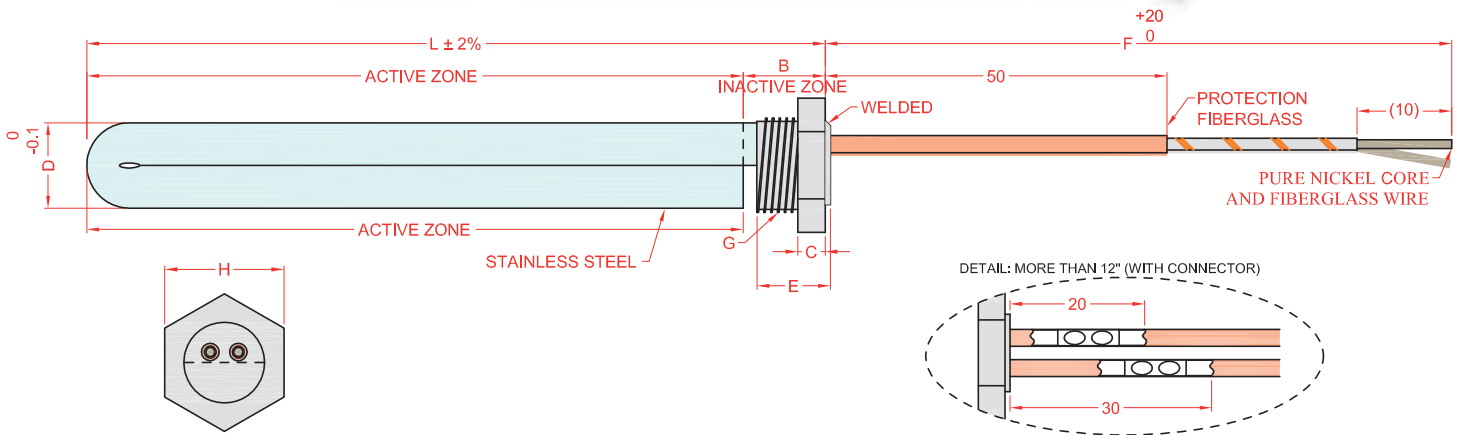
### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.

### Urgent service.

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.



### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"
Diameter nominal	0.375"	0.500"	0.625"	0.750"
H7 minimum	0.373	0.497	0.621	0.746
B (inches)	E+1%L	E+1%L	E+1%L	E+1%L
C (inches)	0.157	0.157	0.157	0.157
E (inches)	0.423	0.502	0.591	0.591
G (inches)	1/4"	3/8"	1/2"	3/4"
H (inches)	0.669	0.748	0.945	1.063
L (inches)	minimum	2.953		3.937
	maximum	47.244		59.055
F (inches)	Standard	9.843		
	Customer	∞		

### mm

D Ø Diameter (mm)	10	12.5	16	20
Diameter nominal	9.85	12.35	15.85	19.85
H7 minimum	9.85	12.35	15.85	19.85
B (mm)	E+1%L	E+1%L	E+1%L	E+1%L
C (mm)	4	4	4	4
E (mm)	10.75	12.75	15	15
G (mm)	M14	M16	M20	M26
H (mm)	17	19	24	27
L (mm)	minimum	75		100
	maximum	1200		1500
F (mm)	Standard	250		
	Customer	∞		

### Technical Key

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0°10-0°15 inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

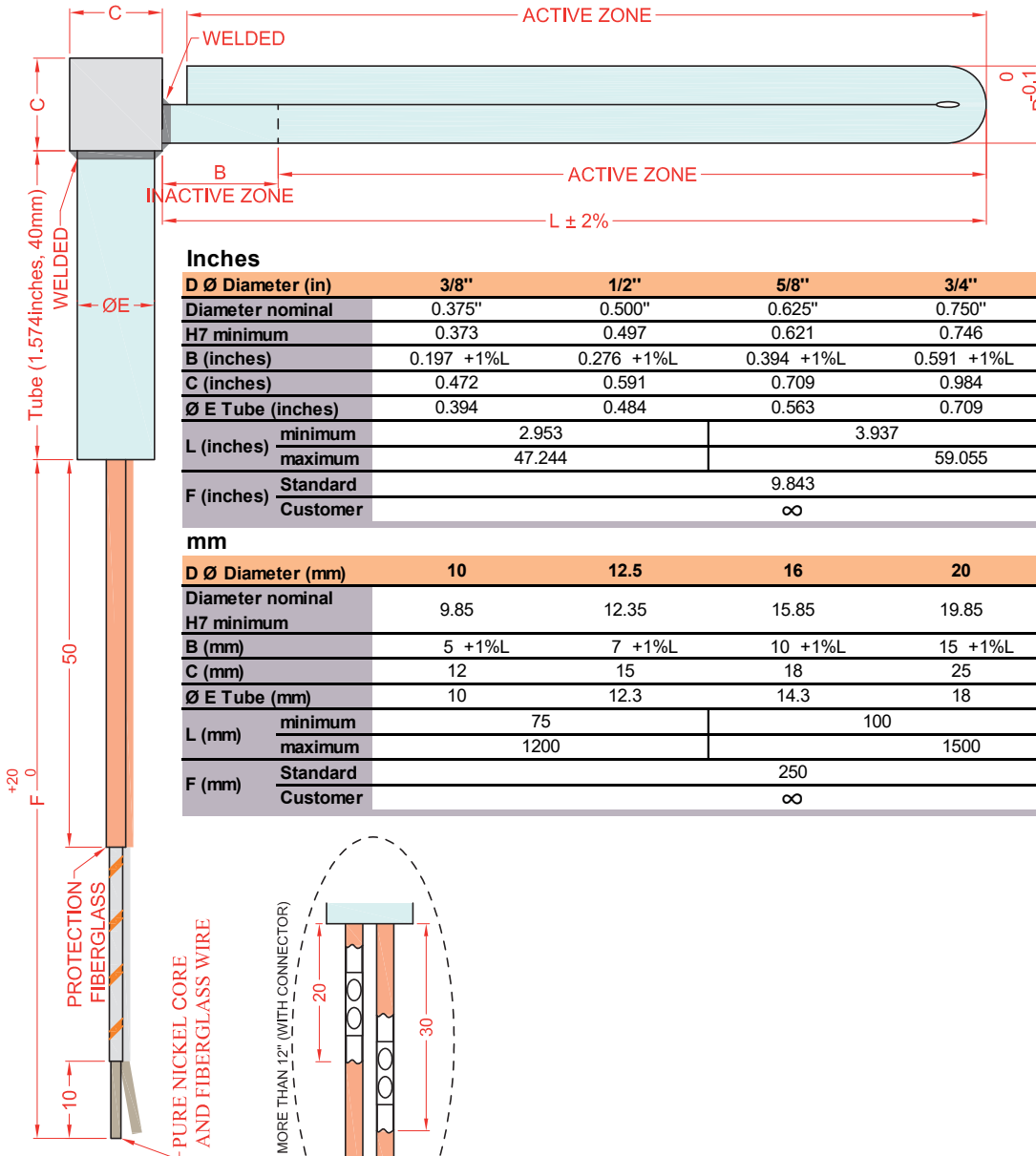
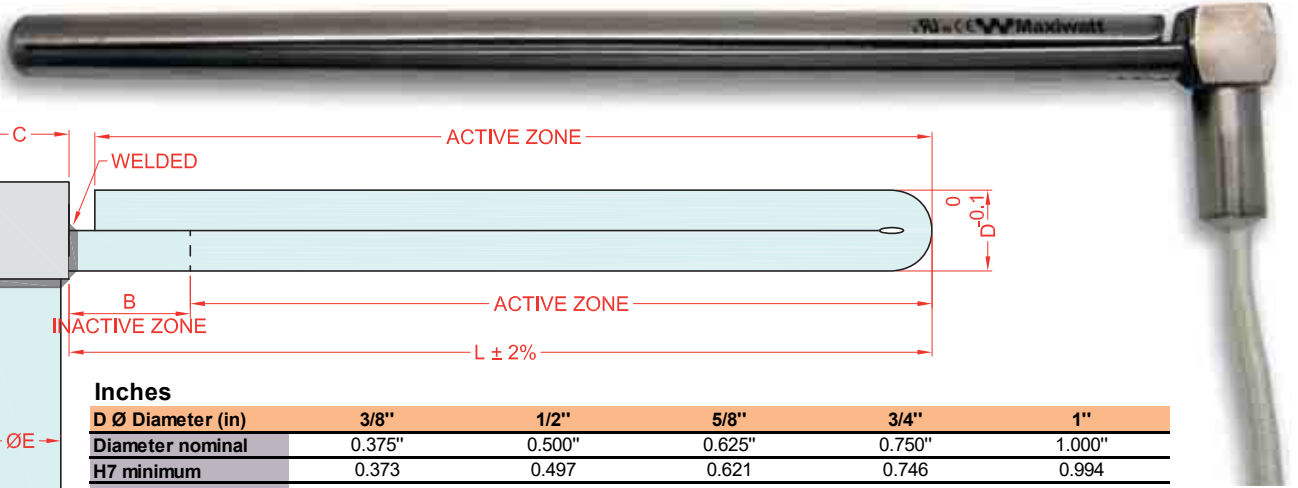
### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.

### Urgent service.

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.

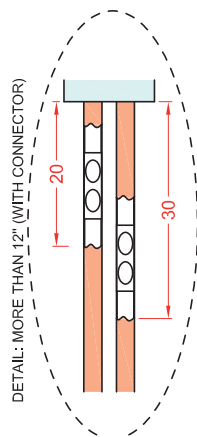


**Inches**

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.197 +1%L	0.276 +1%L	0.394 +1%L	0.591 +1%L	0.591 +1%L
C (inches)	0.472	0.591	0.709	0.984	1.181
Ø E Tube (inches)	0.394	0.484	0.563	0.709	0.787
L (inches)	minimum 2.953 maximum 47.244		3.937	59.055	7.874
F (inches)	Standard		9.843		
	Customer		∞		

**mm**

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	5 +1%L	7 +1%L	10 +1%L	15 +1%L	15 +1%L
C (mm)	12	15	18	25	30
Ø E Tube (mm)	10	12.3	14.3	18	20
L (mm)	minimum 75 maximum 1200		100	1500	200
F (mm)	Standard		250		
	Customer		∞		



**Technical Key**

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15
	inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

**Options:**

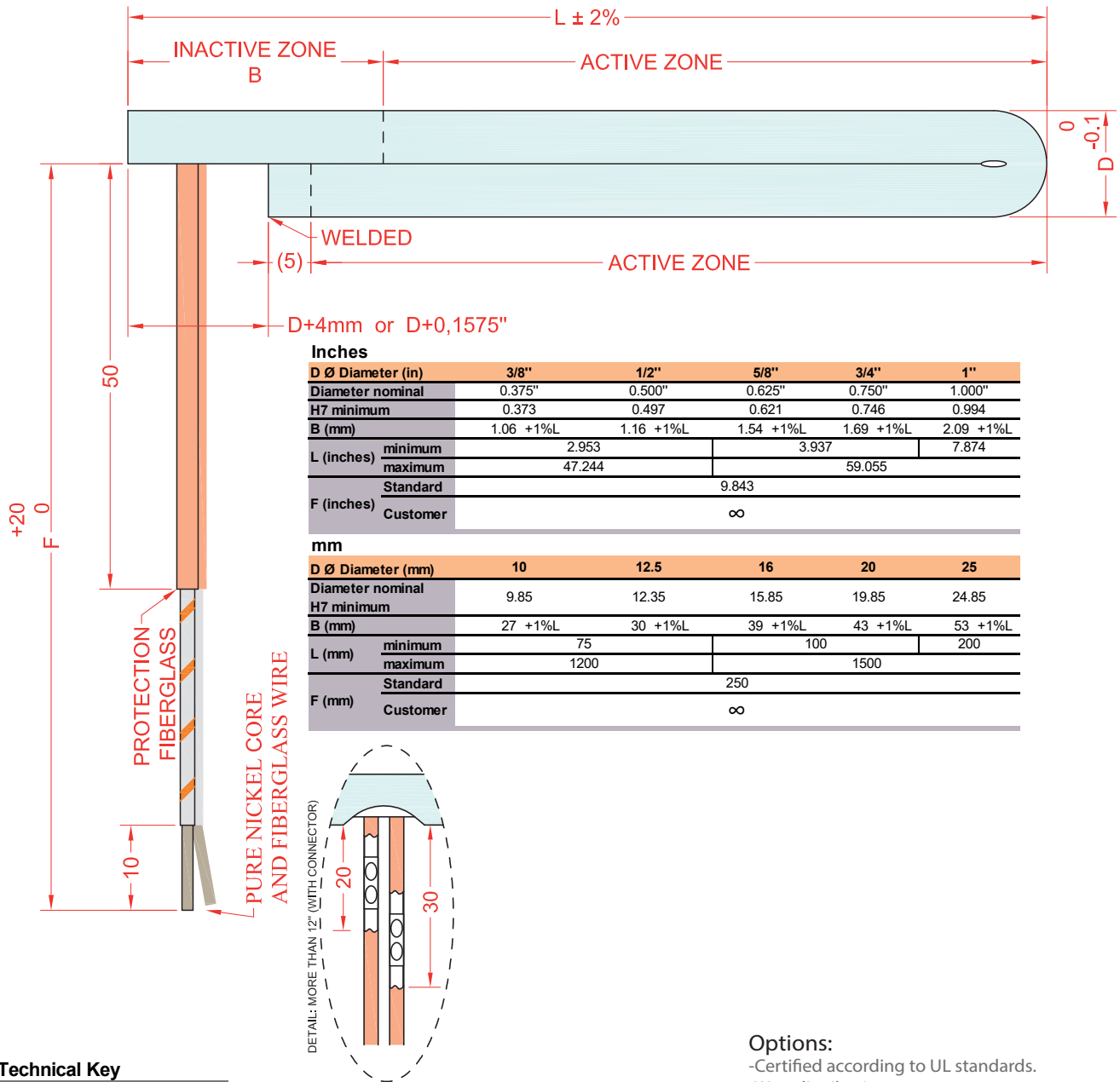
- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.

**Urgent service.**

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.





Technical Key	
Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	☒ 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 M.Ω at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15 inch -0,003937 -0,0059055

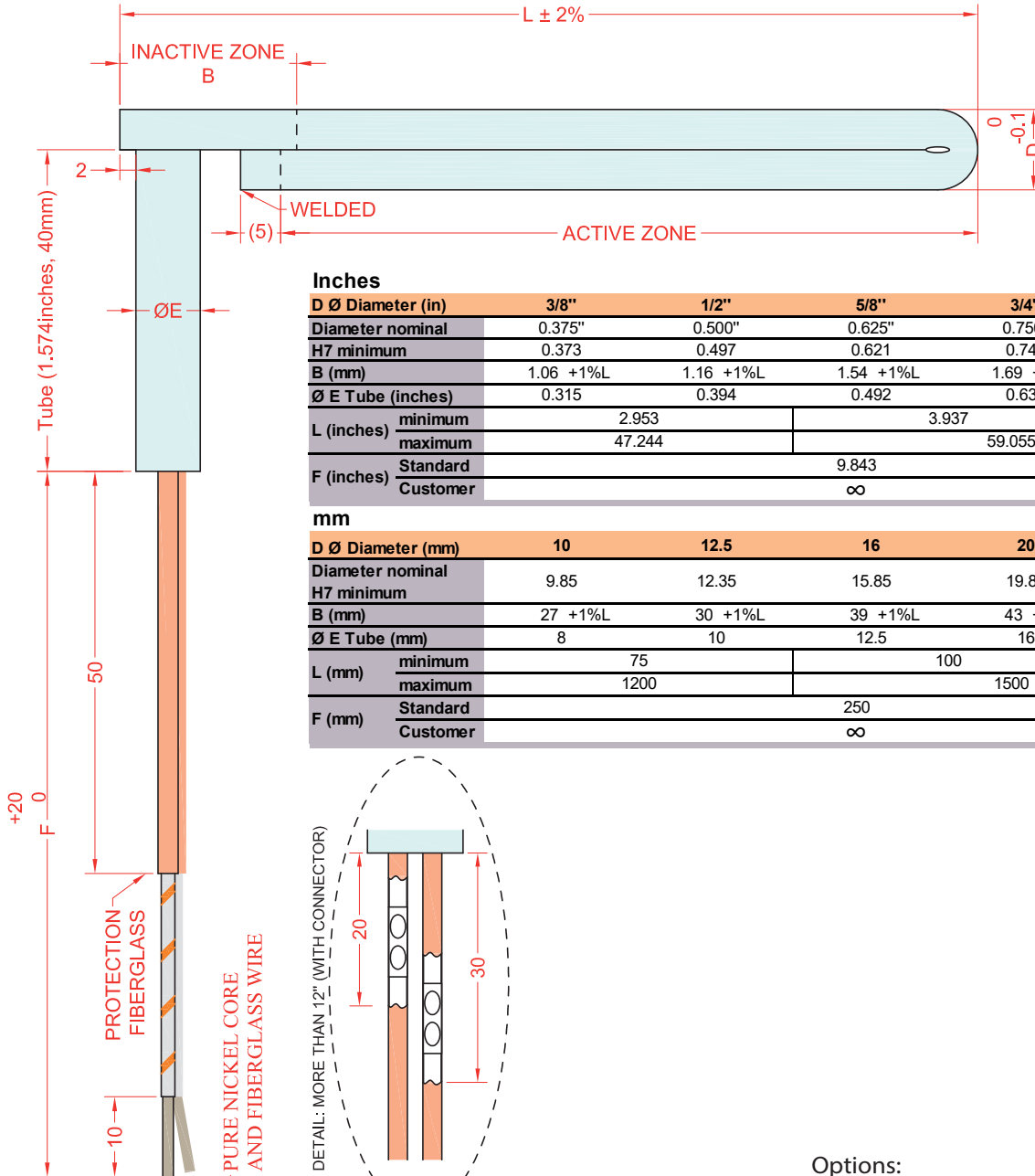
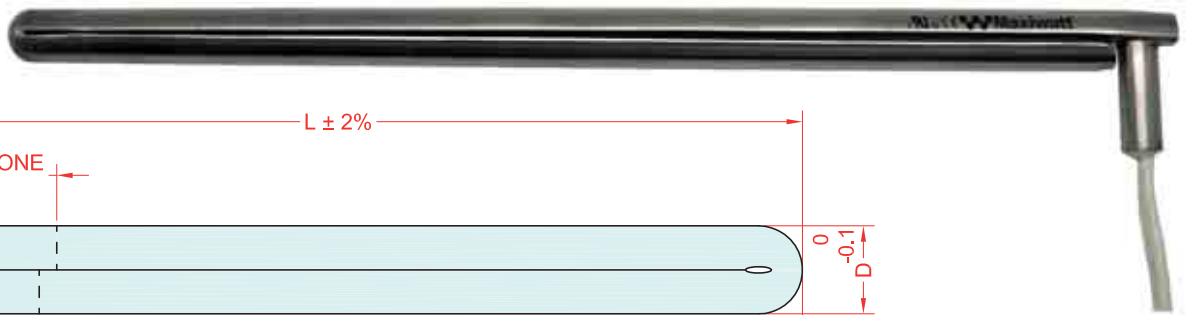
TESTED AT ENVIRONMENTAL TEMPERATURE

### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.

### Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.



### Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (mm)	1.06 +1%L	1.16 +1%L	1.54 +1%L	1.69 +1%L	2.09 +1%L
Ø E Tube (Inches)	0.315	0.394	0.492	0.630	0.787
L (inches)	minimum	2.953		3.937	7.874
	maximum	47.244		59.055	
F (inches)	Standard	9.843			
	Customer	∞			

### mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	27 +1%L	30 +1%L	39 +1%L	43 +1%L	53 +1%L
Ø E Tube (mm)	8	10	12.5	16	20
L (mm)	minimum	75		100	200
	maximum	1200		1500	
F (mm)	Standard	250			
	Customer	∞			

Technical Key	
Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 M.Ω at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15 inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE

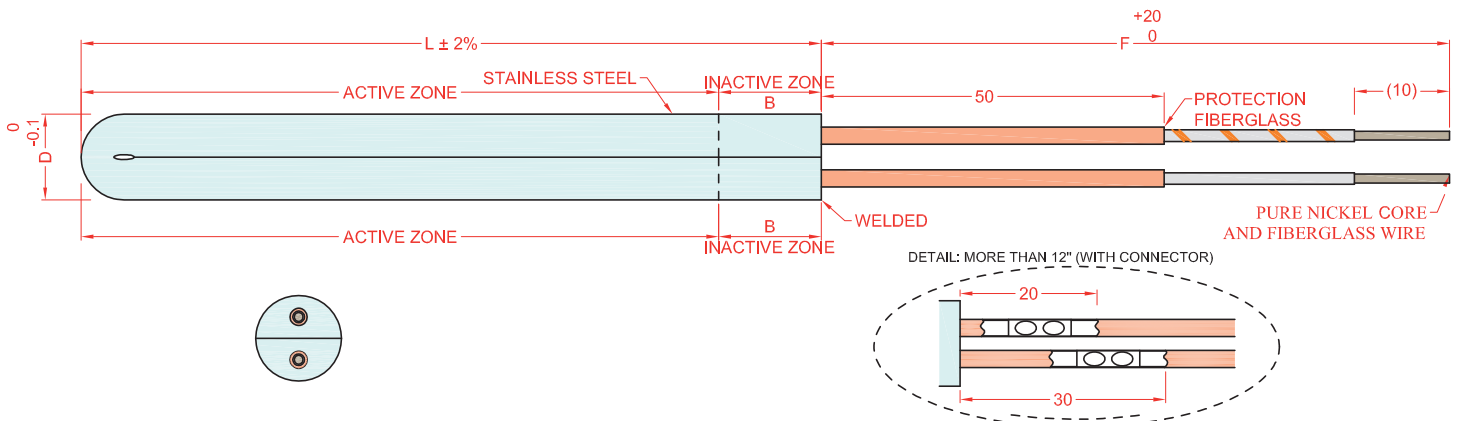
### Options:

- Certified according to UL standards.
- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- IP67: For extremely environments (wetness and dust)
- Different endings and protections.

### Urgent service.

Ordered by 10:00 a.m. CET / CEST, following urgent services are available:

- 24 hours: MOQ 4 pieces and maximum 25 pieces.
- 48 hours: MOQ 4 piece and maximum 50 pieces.
- 3/5 days: MOQ 2 pieces and maximum 150 pieces.
- 7/8 days: MOQ 2 pieces.



## Inches

D Ø Diameter (in)	3/8"	1/2"	5/8"	3/4"	1"
Diameter nominal	0.375"	0.500"	0.625"	0.750"	1.000"
H7 minimum	0.373	0.497	0.621	0.746	0.994
B (inches)	0.984	0.984	0.984	1.181	1.181
L (inches)	minimum	2.953		3.937	
	maximum	47.244		59.055	
F (inches)	Standard	9.843			
	Customer	∞			

## mm

D Ø Diameter (mm)	10	12.5	16	20	25
Diameter nominal	9.85	12.35	15.85	19.85	24.85
H7 minimum	9.85	12.35	15.85	19.85	24.85
B (mm)	25	25	25	30	30
L (mm)	minimum	75		100	
	maximum	1200		1500	
F (mm)	Standard	250			
	Customer	∞			

## Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE

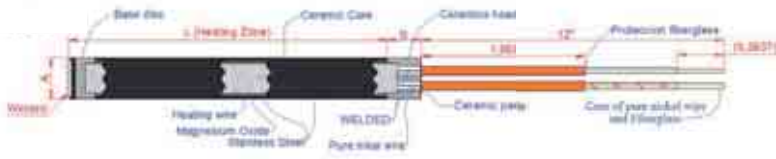
## Options:

- Watt distribution:
- Isolated or non isolated thermocouples type "J" and "K", placed as customer's requirements.
- Ground lead.
- Different endings and protections.

## Urgent service.

- Ordered by 10:00 a.m. CET / CEST, following urgent services are available:
- 24 hours: MOQ 4 pieces and maximum 25 pieces.
  - 48 hours: MOQ 4 piece and maximum 50 pieces.
  - 3/5 days: MOQ 2 pieces and maximum 150 pieces.
  - 7/8 days: MOQ 2 pieces.

Reliable Premium Quality  
**Cartridge Heaters** High Watt Density



Length h	120v. Or 240v.										Code No.	
mm	WATTS										Example: AC652524080	
25	80	100	160									AC6525(volts)(watts)
30	80	100	125	160	200							AC6530(volts)(watts)
40	100	125	160	175	200	250						AC6540(volts)(watts)
50	100	125	160	180	200	250	300					AC6550(volts)(watts)
60	125	160	180	200	250	280	315					AC6560(volts)(watts)
80	125	160	180	200	250	280	315	350				AC6580(volts)(watts)
100	125	160	180	200	250	280	315	350	400			AC65100(volts)(watts)
130	220	250	280	315	350	400						AC65130(volts)(watts)
160	250	280	315	350	400	450						AC65160(volts)(watts)
180	250	350	400	450	500							AC65180(volts)(watts)
200	250	350	400	450	630							AC65200(volts)(watts)
250	250	350	400	450	630	800						AC65250(volts)(watts)

Length h	120v. Or 240v.										Code No.	
mm	WATTS										Example: AC83024080	
30	80	100										AC830(volts)(watts)
40	100	125	160	175	200	250						AC840(volts)(watts)
50	100	125	160	175	200	250	315					AC850(volts)(watts)
60	100	125	140	160	180	200	220	250	280	315	350	AC860(volts)(watts)
80	160	180	200	250	280	315	350	400	500			AC880(volts)(watts)
100	180	200	250	280	315	350	400					AC8100(volts)(watts)
130	250	280	315	350	400	500						AC8130(volts)(watts)
160	200	250	280	315	350	400	450	500				AC8160(volts)(watts)
180	250	280	315	350	400	450	500	630				AC8180(volts)(watts)
200	350	400	450	500	630							AC8200(volts)(watts)
250	400	450	630	750								AC8250(volts)(watts)

Length h	120v. Or 240v.										Code No.			
mm	WATTS										Example: AC103024080			
30	80	100	150	200								AC1030(volts)(watts)		
40	80	100	120	160	200	250	315					AC1040(volts)(watts)		
50	100	125	160	175	200	250	315	400				AC1050(volts)(watts)		
60	125	160	180	200	250	315	400	500				AC1060(volts)(watts)		
80	125	160	180	200	220	250	280	315	400	500	630	AC1080(volts)(watts)		
100	160	200	220	250	280	315	350	400	500	560	630	700	850	AC10100(volts)(watts)
130	280	315	350	400	500	630	750							AC10130(volts)(watts)
160	350	400	500	630	750	800								AC10160(volts)(watts)
180	350	400	500	630	750	800	900							AC10180(volts)(watts)
200	350	400	500	630	750	800	900	1000						AC10200(volts)(watts)
250	400	500	630	750	800	900	1000							AC10250(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

Length h	120v. Or 240v.										Code No.	
mm	WATTS										Example: AC1254024080	
40	100	160	200	250	315	400						AC12540(volts)(watts)
50	100	160	200	250	315	400						AC12550(volts)(watts)
60	125	160	200	250	315	400	500					AC12560(volts)(watts)
80	160	200	250	315	400	500	630	800				AC12580(volts)(watts)
100	125	220	250	315	350	400	500	560	630	800	1000	AC125100(volts)(watts)
130	350	400	500	630	700	800	1000	1100	1250			AC125130(volts)(watts)
160	400	500	630	800	900	1000	1250					AC125160(volts)(watts)
180	400	500	630	700	800	900	1000	1250				AC125180(volts)(watts)
200	400	500	630	700	800	1000	1500					AC125200(volts)(watts)
250	630	800	900	1000	1250	1500						AC125250(volts)(watts)
300	630	800	1000	1250	1500	2000						AC125300(volts)(watts)

Length h	120v. Or 240v.										Code No.		
mm	WATTS										Example: AC164024080		
40	100	160	200	250	315	400	500					AC1640(volts)(watts)	
50	100	160	200	250	315	400	500	630				AC1650(volts)(watts)	
60	125	160	200	250	315	400	500	630				AC1660(volts)(watts)	
80	160	200	250	280	315	400	500	630	800	850	1000	AC1680(volts)(watts)	
100	125	220	250	315	350	400	500	560	630	800	1000	1250	AC16100(volts)(watts)
130	400	500	630	700	800	1000	1100	1250	1400	1600	1800	AC16130(volts)(watts)	
160	400	500	630	800	900	1000	1250	1600	1800			AC16160(volts)(watts)	
180	400	500	630	700	800	850	1000	1100	1250	1800		AC16180(volts)(watts)	
200	400	500	630	700	800	1000	1500	1800	2000			AC16200(volts)(watts)	
250	630	800	1000	1250	1500	1600	1800					AC16250(volts)(watts)	
300	630	800	1000	1250	1500	1800	2000					AC16300(volts)(watts)	

Length h	120v. Or 240v.										Code No.	
mm	WATTS										Example: AC204024080	
40	100	160	200	250	315	400						AC2040(volts)(watts)
50	100	160	200	250	315	400						AC2050(volts)(watts)
60	125	160	200	250	316	400	500	630	800			AC2060(volts)(watts)
80	160	200	250	315	400	500	630	800	1000	1250		AC2080(volts)(watts)
100	250	315	350	400	450	500	560	630	800	1000	1500	AC20100(volts)(watts)
130	500	630	800	900	1000	1100	1250	1400	1600	1800		AC20130(volts)(watts)
160	500	800	900	1000	1100	1250	1800	2000	2200			AC20160(volts)(watts)
180	800	1000	1100	1250	2000	2200						AC20180(volts)(watts)
200	500	800	1000	1250	1500	1600	2000	2500				AC20200(volts)(watts)
250	800	1000	1250	1600	1800	2000						AC20250(volts)(watts)
300	1000	1250	1500	1600	2000	2200	2500	3000				AC20300(volts)(watts)

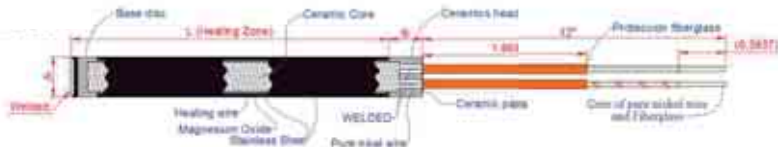
**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE



Reliable Premium Quality  
**Cartridge Heaters** High Watt Density



**1/4" 0.250 in**

Length	120v. Or 240v.										Code No.	
Inch.	<b>WATTS</b>										Example AC14124080	
1"	80	100	160									AC1411(volts)(watts)
1 1/4"	80	100	125	160	200							AC14114(volts)(watts)
1.5"	100	125	160	175	200	250						AC1415(volts)(watts)
2"	100	125	160	180	200	250	300					AC142(volts)(watts)
2.5"	125	160	180	200	250	280	315					AC1425(volts)(watts)
3"	125	160	180	200	250	280	315	350				AC143(volts)(watts)
3 1/4"	125	160	180	200	250	280	315	350				AC14314(volts)(watts)
4"	125	160	180	200	250	280	315	350	400			AC144(volts)(watts)
5"	220	250	280	315	350	400						AC145(volts)(watts)
5 1/4"	220	250	280	315	350	400						AC14514(volts)(watts)
6"	250	280	315	350	400	450						AC146(volts)(watts)
6.5"	250	280	315	350	400	450						AC1465(volts)(watts)
7"	250	350	400	450	500							AC147(volts)(watts)
8"	250	350	400	450	630							AC148(volts)(watts)
10"	250	350	400	450	630	800						AC1410(volts)(watts)

**5/16" 0.313 in**

Length	120v. Or 240v.										Code No.	
Inch.	<b>WATTS</b>										Example AC51611424080	
1 1/4"	80	100										AC516114(volts)(watts)
1.5"	100	125	160	175	200	250						AC51615(volts)(watts)
2"	100	125	160	175	200	250	315					AC5162(volts)(watts)
2.5"	100	125	140	160	180	200	220	250	280	315	350	AC51625(volts)(watts)
3"	160	180	200	250	280	315	350	400	500			AC5163(volts)(watts)
3 1/4"	160	180	200	250	280	315	350	400				AC516314(volts)(watts)
4"	180	200	250	280	315	350	400					AC5164(volts)(watts)
5"	250	280	315	350	400	500						AC5165(volts)(watts)
5 1/4"	250	280	315	350	400	500						AC516514(volts)(watts)
6"	200	250	280	315	350	400	450	500				AC5166(volts)(watts)
6.5"	200	250	280	315	350	400	450	500				AC51665(volts)(watts)
7"	250	280	315	350	400	450	500	630				AC5167(volts)(watts)
8"	350	400	450	500	630							AC5168(volts)(watts)
10"	400	450	630	750								AC51610(volts)(watts)

**3/8" 0.375 in**

Length	120v. Or 240v.										Code No.			
Inch.	<b>WATTS</b>										Example AC3811424080			
1 1/4"	80	100	150	200								AC38114(volts)(watts)		
1.5"	80	100	120	160	200	250	315					AC3815(volts)(watts)		
2"	100	125	160	175	200	250	315	400				AC382(volts)(watts)		
2.5"	125	160	180	200	250	315	400	500				AC3825(volts)(watts)		
3"	125	160	180	200	220	250	280	315	400	500	630	AC383(volts)(watts)		
3 1/4"	125	160	180	200	250	315	400	500	315			AC38314(volts)(watts)		
4"	160	200	220	250	280	315	350	400	500	560	630	700	850	AC384(volts)(watts)
5"	280	315	350	400	500	630	750							AC385(volts)(watts)
5 1/4"	280	315	350	400	500	630	750							AC38514(volts)(watts)
6"	350	400	500	630	750	800								AC386(volts)(watts)
6.5"	350	400	500	630	750	800								AC3865(volts)(watts)
7"	350	400	500	630	750	800	900							AC387(volts)(watts)
8"	350	400	500	630	750	800	900	1000						AC388(volts)(watts)
10"	400	500	630	750	800	900	1000							AC3810(volts)(watts)

**1/2" 0.50 in**

Length	120v. Or 240v.										Code No.	
Inch.	<b>WATTS</b>										Example AC121524080	
1.5"	100	160	200	250	315	400						AC1215(volts)(watts)
2"	100	160	200	250	315	400						AC122(volts)(watts)
2.5"	125	160	200	250	315	400	500					AC1225(volts)(watts)
3"	160	200	250	315	400	500	630	800				AC123(volts)(watts)
3 1/4"	160	200	250	315	400	500	630	800				AC12314(volts)(watts)
4"	125	220	250	315	350	400	500	560	630	800	1000	AC124(volts)(watts)
5"	350	400	500	630	700	800	1000	1100	1250			AC125(volts)(watts)
5 1/4"	350	400	500	630	700	800	1000	1100	1250			AC12514(volts)(watts)
6"	400	500	630	800	900	1000	1250					AC126(volts)(watts)
6.5"	400	500	630	700	800	900	1000	1250				AC1265(volts)(watts)
7"	400	500	630	700	800	1000	1100	1250				AC127(volts)(watts)
8"	400	500	630	700	800	1000	1500					AC128(volts)(watts)
10"	630	800	900	1000	1250	1500						AC1210(volts)(watts)
12"	630	800	1000	1250	1500	2000						AC1212(volts)(watts)

**5/8" 0.625 in**

Length	120v. Or 240v.										Code No.		
Inch.	<b>WATTS</b>										Example AC581524080		
1.5"	100	160	200	250	315	400	500					AC5815(volts)(watts)	
2"	100	160	200	250	315	400	500	630				AC582(volts)(watts)	
2.5"	125	160	200	250	315	400	500	630				AC5825(volts)(watts)	
3"	160	200	250	280	315	400	500	630	800	850	1000	AC583(volts)(watts)	
3 1/4"	160	200	250	280	315	400	500	630	800	850	1000	AC58314(volts)(watts)	
4"	125	220	250	315	350	400	500	560	630	800	1000	1250	AC584(volts)(watts)
5"	400	500	630	700	800	1000	1100	1250	1400	1600	1800	AC585(volts)(watts)	
5 1/4"	400	500	630	700	800	1000	1100	1250	1400	1600	1800	AC58514(volts)(watts)	
6"	400	500	630	800	900	1000	1250	1600	1800			AC586(volts)(watts)	
6 1/2"	400	500	630	800	900	1000	1250	1600	1800			AC58612(volts)(watts)	
7"	400	500	630	700	800	850	1000	1100	1250	1800		AC587(volts)(watts)	
8"	400	500	630	700	800	1000	1500	1800	2000			AC588(volts)(watts)	
10"	630	800	1000	1250	1500	1600	1800					AC5810(volts)(watts)	
12"	630	800	1000	1250	1500	1800	2000					AC5812(volts)(watts)	

**3/4" 0.750 in**

Length	120v. Or 240v.										Code No.	
Inch.	<b>WATTS</b>										Example AC341524080	
1.5"	100	160	200	250	315							AC3415(volts)(watts)
2"	100	160	200	250	315	400						AC342(volts)(watts)
2.5"	125	160	200	250	315	400	500	630	800			AC3425(volts)(watts)
3"	160	200	250	315	400	500	630	800	1000	1250		AC343(volts)(watts)
3 1/4"	250	315	350	400	500	630	800	1000				AC34314(volts)(watts)
4"	250	315	350	400	450	500	560	630	800	1000	1500	AC344(volts)(watts)
5"	500	630	800	900	1000	1100	1250	1400	1600	1800		AC345(volts)(watts)
5 1/4"	500	630	800	900	1000	1100	1250	1400	1600	1800	AC34514(volts)(watts)	
6"	500	800	900	1000	1100	1250	1800	2000	2200			AC346(volts)(watts)
6.5"	800	900	1000	1100	1250	1800	2000	2200				AC3465(volts)(watts)
7"	800	1000	1100	1250	2000	2200						AC347(volts)(watts)
8"	500	800	1000	1250	1500	1600	2000	2500				AC348(volts)(watts)
10"	800	1000	1250	1600	1800	2000						AC3410(volts)(watts)
12"	1000	1250	1500	1600	2000	2200	2500	3000				AC3412(volts)(watts)

**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage
	500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm
	inch: -0.003 -0.008

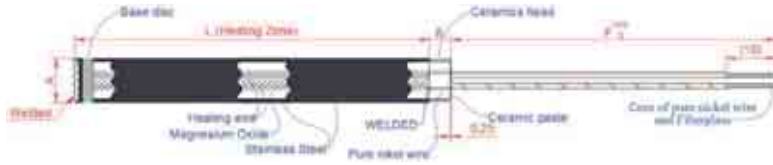
TESTED AT ENVIRONMENTAL TEMPERATURE



All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc



**Cartridge Heaters** Medium Watt Density



6,5 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	40	50									Example MCI411424040
40	40	50	60								MCI530(volts)(watts)
50	40	50	60	75	100						MCI540(volts)(watts)
60	40	50	60	75	100	120					MCI550(volts)(watts)
80	40	50	60	75	100	120	150				MCI560(volts)(watts)
100	50	60	75	100	120	150	175	210			MCI580(volts)(watts)
130	75	100	120	150	175	210	250				MCI5100(volts)(watts)
160	100	120	150	175	210	250	315				MCI5130(volts)(watts)
180	120	150	175	210	250	315	350				MCI5160(volts)(watts)
200	150	175	210	250	315	350	400				MCI5180(volts)(watts)
250	175	210	250	315	350	400	500				MCI5200(volts)(watts)

8 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	50										Example MC5161142405
40	50	60	80								MCI30(volts)(watts)
50	50	60	75	100	120						MCI40(volts)(watts)
60	50	60	75	100	120	150					MCI50(volts)(watts)
80	50	60	75	100	120	150	175				MCI60(volts)(watts)
100	60	75	100	120	150	175	210	250			MCI80(volts)(watts)
130	100	120	150	175	210	250	315				MCI100(volts)(watts)
160	120	150	175	210	250	315	400				MCI130(volts)(watts)
180	150	175	210	250	315	350	500				MCI160(volts)(watts)
200	175	210	250	315	350	400	550				MCI180(volts)(watts)
250	210	250	315	350	400	500	600				MCI200(volts)(watts)

10 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	50	60	90								Example MC3811424050
40	60	80	100								MCI030(volts)(watts)
50	60	75	100	120	140						MCI040(volts)(watts)
60	60	75	100	120	150	175					MCI050(volts)(watts)
80	60	75	100	120	150	175	200				MCI060(volts)(watts)
100	75	100	120	150	175	210	250	315			MCI080(volts)(watts)
130	120	150	175	210	250	315	350				MCI0100(volts)(watts)
160	150	175	210	250	315	400	450				MCI0130(volts)(watts)
180	175	210	250	315	350	500	550				MCI0160(volts)(watts)
200	210	250	315	350	400	630	650				MCI0180(volts)(watts)
250	250	315	350	400	500	630	700				MCI0200(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

12,5 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	50	60	80	100							Example MCI215424050
40	50	60	75	120	150	175					MCI2530(volts)(watts)
50	60	75	100	120	175	200					MCI2540(volts)(watts)
60	60	75	100	120	150	175	200	250			MCI2550(volts)(watts)
80	60	75	100	120	150	175	250	315			MCI2560(volts)(watts)
100	100	120	150	175	210	315	350	450	630		MCI2580(volts)(watts)
130	120	150	175	210	250	315	350	500			MCI25100(volts)(watts)
160	150	175	210	250	315	400	500				MCI25130(volts)(watts)
180	210	250	315	350	400	500	630				MCI25160(volts)(watts)
200	250	315	350	400	500	630	700				MCI25180(volts)(watts)
250	315	350	400	500	630	700	800	1000			MCI25200(volts)(watts)

16 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	60	80	100	150							Example MC5815424060
40	60	75	120	150	175	250					MCI630(volts)(watts)
50	75	100	120	175	200	250	315				MCI640(volts)(watts)
60	75	100	120	150	175	200	250	315			MCI650(volts)(watts)
80	75	100	120	150	175	250	315	350			MCI660(volts)(watts)
100	75	100	120	150	175	250	315	350			MCI680(volts)(watts)
130	150	175	210	250	315	350	450	500	630	650	MCI6100(volts)(watts)
160	175	210	250	315	350	500	630	700			MCI6130(volts)(watts)
180	210	250	315	400	500	630					MCI6160(volts)(watts)
200	350	400	500	630	700	800					MCI6180(volts)(watts)
250	400	500	630	700	900	1000					MCI6200(volts)(watts)

20 mm

Length mm	120v. Or 240v.										Code No.
	WATTS										
30	75	100	120	150							Example MC3415424075
40	80	120	150	200	250						MC2030(volts)(watts)
50	100	120	175	200	250	315	350				MC2040(volts)(watts)
60	100	120	150	175	200	250	315	350			MC2050(volts)(watts)
80	120	150	175	250	315	400	450				MC2060(volts)(watts)
100	210	315	350	450	500	630	700	750	800		MC2080(volts)(watts)
130	250	315	350	500	630	700	800				MC20100(volts)(watts)
160	315	400	500	630	800						MC20130(volts)(watts)
180	500	630	700	800	1000						MC20160(volts)(watts)
200	630	700	900	1000	1100						MC20180(volts)(watts)
250	700	800	1000	1100	1250	1500					MC20200(volts)(watts)

**Technical Key**

<b>Sheath material</b>	Stainless steel 1.4541
<b>Heating conductor material</b>	NiCr 8020
<b>Max. Sheath temperature</b>	750 °C / 1380 °F
<b>Max. Voltage</b>	480 V
<b>Wattage tolerance*</b>	+5% -10%
<b>High voltage resistance*</b>	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
<b>Insulation resistance*</b>	> 5 MΩ at 500 V DC
<b>Leakage current*</b>	<= 0.5 mA at 253 V AC
<b>Length tolerance</b>	A 1.5%, min A 1mm
<b>Standard diameter tolerance</b>	metric -0.02 / -0.06 mm inch: -0.003 -0.008

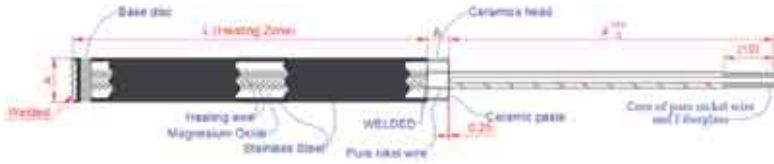
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Cartridge Heaters Medium Watt Density



Stock



Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1 1/4"	40	50										Example MCI4114(volts)(watts)
1.5"	40	50	60									MCI415(volts)(watts)
2"	40	50	60	75	100							MCI42(volts)(watts)
2.5"	40	50	60	75	100	120						MCI425(volts)(watts)
3"	40	50	60	75	100	120	150					MCI43(volts)(watts)
3 1/4"	50	60	75	100	120	150	175					MCI4314(volts)(watts)
4"	50	60	75	100	120	150	175	210				MCI44(volts)(watts)
5"	75	100	120	150	175	210	250					MCI45(volts)(watts)
5 1/4"	75	100	120	150	175	210	250					MCI4514(volts)(watts)
6"	100	120	150	175	210	250	315					MCI46(volts)(watts)
6.5"	100	120	150	175	210	250	315					MCI465(volts)(watts)
7"	120	150	175	210	250	315	350					MCI47(volts)(watts)
8"	150	175	210	250	315	350	400					MCI48(volts)(watts)
10"	175	210	250	315	350	400	500					MCI410(volts)(watts)

Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1 1/4"	50											Example MCS161142405
1.5"	50	60	80									MCS1615(volts)(watts)
2"	50	60	75	100	120							MCS162(volts)(watts)
2.5"	50	60	75	100	120	150						MCS1625(volts)(watts)
3"	50	60	75	100	120	150	175					MCS163(volts)(watts)
3 1/4"	60	75	100	120	150	175	200					MCS16314(volts)(watts)
4"	60	75	100	120	150	175	210	250				MCS164(volts)(watts)
5"	100	120	150	175	210	250	315					MCS165(volts)(watts)
5 1/4"	100	120	150	175	210	250	350					MCS16514(volts)(watts)
6"	120	150	175	210	250	315	400					MCS166(volts)(watts)
6.5"	120	150	175	210	250	315	400					MCS1665(volts)(watts)
7"	150	175	210	250	315	350	500					MCS167(volts)(watts)
8"	175	210	250	315	350	400	550					MCS168(volts)(watts)
10"	210	250	315	350	400	500	600					MCS1610(volts)(watts)

Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1 1/4"	50	60	90									Example MC381142405
1.5"	60	80	100									MC3815(volts)(watts)
2"	60	75	100	120	140							MC382(volts)(watts)
2.5"	60	75	100	120	150	175						MC3825(volts)(watts)
3"	60	75	100	120	150	175	200					MC383(volts)(watts)
3 1/4"	75	100	120	150	175	200	250					MC38314(volts)(watts)
4"	75	100	120	150	175	210	250	315				MC384(volts)(watts)
5"	120	150	175	210	250	315	350					MC385(volts)(watts)
5 1/4"	120	150	175	210	250	350	400					MC38514(volts)(watts)
6"	150	175	210	250	315	400	450					MC386(volts)(watts)
6.5"	150	175	210	250	315	400	500					MC3865(volts)(watts)
7"	175	210	250	315	350	500	550					MC387(volts)(watts)
8"	210	250	315	350	400	630	650					MC388(volts)(watts)
10"	250	315	350	400	500	630	700					MC3810(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1.5"	50	60	80	100								Example MCI215424050
2"	50	60	75	120	150	175						MCI22(volts)(watts)
2.5"	60	75	100	120	175	200						MCI225(volts)(watts)
3"	60	75	100	120	150	175	200	250				MCI23(volts)(watts)
3 1/4"	60	75	100	120	150	175	250	315				MCI2314(volts)(watts)
4"	75	100	120	150	175	250	315	400				MCI24(volts)(watts)
5"	100	120	150	175	210	315	350	450	630			MCI25(volts)(watts)
5 1/4"	120	150	175	210	250	315	350	500				MCI2514(volts)(watts)
6"	120	150	175	210	250	350	400	630				MCI26(volts)(watts)
6.5"	150	175	210	250	315	400	500					MCI265(volts)(watts)
7"	150	175	210	250	315	400	500	630				MCI27(volts)(watts)
8"	210	250	315	350	400	500	630					MCI28(volts)(watts)
10"	250	315	350	400	500	630	700					MCI210(volts)(watts)
12"	315	350	400	500	630	700	800	1000				MCI212(volts)(watts)

Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1.5"	60	80	100	150								Example MCS815424060
2"	60	75	120	150	175	250						MCS82(volts)(watts)
2.5"	75	100	120	175	200	250	315					MCS825(volts)(watts)
3"	75	100	120	150	175	200	250	315				MCS83(volts)(watts)
3 1/4"	75	100	120	150	175	250	315	350				MCS8314(volts)(watts)
4"	120	150	175	250	315	400	450					MCS84(volts)(watts)
5"	150	175	210	315	350	450	500	630	650			MCS85(volts)(watts)
5 1/4"	175	210	250	315	350	500	630	700				MCS8514(volts)(watts)
6"	175	210	250	350	400	630	700					MCS86(volts)(watts)
6.5"	210	250	315	400	500	630						MCS865(volts)(watts)
7"	250	315	400	500	630	700						MCS87(volts)(watts)
8"	350	400	500	630	700	800						MCS88(volts)(watts)
10"	400	500	630	700	900	1000						MCS810(volts)(watts)
12"	500	630	700	800	1000	1100						MCS812(volts)(watts)

Length Inch.	120v. Or 240v.										Code No.	
	WATTS											
1.5"	75	100	120	150								Example MC3415424075
2"	80	120	150	200	250							MC342(volts)(watts)
2.5"	100	120	175	200	250	315	350					MC3425(volts)(watts)
3"	100	120	150	175	200	250	315	350				MC343(volts)(watts)
3 1/4"	120	150	175	250	315	400	450					MC34314(volts)(watts)
4"	175	250	315	400	450	500						MC344(volts)(watts)
5"	210	315	350	450	500	630	700	750	800			MC345(volts)(watts)
5 1/4"	250	315	350	500	630	700	800					MC34514(volts)(watts)
6"	250	350	400	630	700	900						MC346(volts)(watts)
6.5"	315	400	500	630	800							MC3465(volts)(watts)
7"	400	500	630	700	900	1000						MC347(volts)(watts)
8"	500	630	700	800	1000							MC348(volts)(watts)
10"	630	700	900	1000	1100							MC3410(volts)(watts)
12"	700	800	1000	1100	1250	1500						MC3412(volts)(watts)

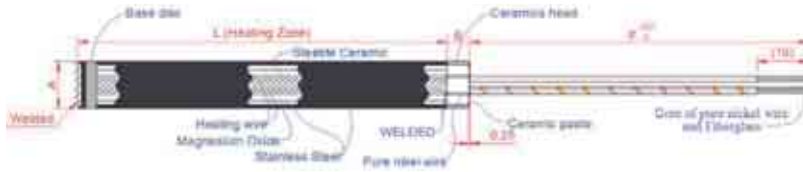
Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE



## Cartridge Heaters Low Watt Density



8 mm

Lenght	120v. Or 240v.										Code No.
mm	WATTS										Example BC5161524040
40	40										BC840(volts)(watts)
50	40	50	60								BC850(volts)(watts)
60	40	50	60	75							BC860(volts)(watts)
80	40	50	60	75	100						BC880(volts)(watts)
100	50	60	75	100	120	130					BC8100(volts)(watts)
130	75	100	120	150	175						BC8130(volts)(watts)
160	100	120	150	175	220						BC8160(volts)(watts)
180	120	150	175	220	250						BC8180(volts)(watts)
200	150	175	210	250							BC8200(volts)(watts)
250	175	210	250	315							BC8250(volts)(watts)

10 mm

Lenght	120v. Or 240v.										Code No.
mm	WATTS										Example BC381524040
40	40										BC1040(volts)(watts)
50	40	50	60	75							BC1050(volts)(watts)
60	40	50	60	75	100						BC1060(volts)(watts)
80	40	50	60	75	100	120					BC1080(volts)(watts)
100	50	60	75	100	120	130	150				BC10100(volts)(watts)
130	75	100	120	150	175	200					BC10130(volts)(watts)
160	100	120	150	175	220	250					BC10160(volts)(watts)
180	120	150	175	220	250	315					BC10180(volts)(watts)
200	150	175	210	250	315	350					BC10200(volts)(watts)
250	175	210	250	315	350	400					BC10250(volts)(watts)

12,5 mm

Lenght	120v. Or 240v.										Code No.
mm	WATTS										Example BC121524050
40	50	60									BC12540(volts)(watts)
50	50	60	75	100	120						BC12550(volts)(watts)
60	50	60	75	100	120						BC12560(volts)(watts)
80	50	60	75	100	120	150					BC12580(volts)(watts)
100	60	75	100	120	150	175					BC125(volts)(watts)
130	100	120	150	175	210	250					BC125100(volts)(watts)
160	120	150	175	210	250	315					BC125160(volts)(watts)
180	150	175	210	250	315	350					BC125180(volts)(watts)
200	175	210	250	315	350	400	450				BC125200(volts)(watts)
250	210	250	315	350	400	500					BC125250(volts)(watts)
300	315	350	400	500	630	700					BC125300(volts)(watts)

16 mm

Lenght	120v. Or 240v.										Code No.
mm	WATTS										Example BC581524050
40	50	60	80								BC1640(volts)(watts)
50	50	60	75	120							BC1650(volts)(watts)
60	60	75	100	120	150						BC1660(volts)(watts)
80	60	75	100	120	150	175	200				BC1680(volts)(watts)
100	75	100	120	150	175	250					BC16100(volts)(watts)
130	100	120	150	175	250	315					BC16130(volts)(watts)
160	120	150	175	210	250	350	450				BC16160(volts)(watts)
180	150	175	210	250	315	400	500				BC16180(volts)(watts)
200	210	250	315	350	400	500					BC16200(volts)(watts)
250	250	315	350	400	500	630	700				BC16250(volts)(watts)
300	315	350	400	500	630	700	800				BC16300(volts)(watts)

20 mm

Lenght	120v. Or 240v.										Code No.
mm	WATTS										Example BC341524050
40	50	60	80								BC2040(volts)(watts)
50	50	60	75	120							BC2050(volts)(watts)
60	60	75	100	120	175						BC2060(volts)(watts)
80	60	75	100	120	150	175	200				BC2080(volts)(watts)
100	75	100	120	150	175	250	315				BC20100(volts)(watts)
130	100	120	150	175	210	315	350	400			BC20130(volts)(watts)
160	120	150	175	210	250	350	400				BC20160(volts)(watts)
180	150	175	210	250	315	400	500				BC20180(volts)(watts)
200	210	250	315	350	400	500	630				BC20200(volts)(watts)
250	250	315	350	400	500	630	700				BC20250(volts)(watts)
12"	315	350	400	500	630	700	800	1000			BC20300(volts)(watts)

### Technical Key

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	±5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at ≤ 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	≤ 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch -0.003 -0.008

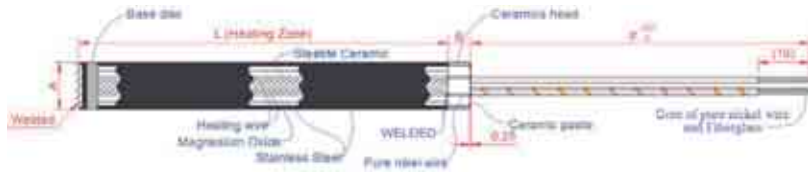
TESTED AT ENVIRONMENTAL TEMPERATURE



All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

**Cartridge Heaters**

Low Watt Density



**5/16"**  
0.313 in

Lenght Inch.	120v. Or 240v.										Code No. Example BC5161524040
	WATTS										
1.5"	40										BC51615(volts)(watts)
2"	40	50	60								BC5162(volts)(watts)
2.5"	40	50	60	75							BC51625(volts)(watts)
3"	40	50	60	75	100						BC5163(volts)(watts)
3 1/4"	50	60	75	100	120						BC516314(volts)(watts)
4"	50	60	75	100	120	130					BC5164(volts)(watts)
5"	75	100	120	150	175						BC5165(volts)(watts)
5 1/4"	75	100	120	150	175						BC516514(volts)(watts)
6"	100	120	150	175	220						BC5166(volts)(watts)
6.5"	100	120	150	175	220	250					BC51665(volts)(watts)
7"	120	150	175	220	250						BC5167(volts)(watts)
8"	150	175	210	250							BC5168(volts)(watts)
10"	175	210	250	315							BC51610(volts)(watts)

**3/8"**  
0.375 in

Lenght Inch.	120v. Or 240v.										Code No. Example BC381524040
	WATTS										
1.5"	40										BC3815(volts)(watts)
2"	40	50	60	75							BC382(volts)(watts)
2.5"	40	50	60	75	100						BC3825(volts)(watts)
3"	40	50	60	75	100	120					BC383(volts)(watts)
3 1/4"	50	60	75	100	120	130					BC38314(volts)(watts)
4"	50	60	75	100	120	130	150				BC384(volts)(watts)
5"	75	100	120	150	175	200					BC385(volts)(watts)
5 1/4"	75	100	120	150	175	220					BC38514(volts)(watts)
6"	100	120	150	175	220	250					BC386(volts)(watts)
6.5"	100	120	150	175	220	250					BC3865(volts)(watts)
7"	120	150	175	220	250	315					BC387(volts)(watts)
8"	150	175	210	250	315	350					BC388(volts)(watts)
10"	175	210	250	315	350	400					BC3810(volts)(watts)

**1/2"**  
0.50 in

Lenght Inch.	120v. Or 240v.										Code No. Example BC121524050
	WATTS										
1.5"	50	60									BC1215(volts)(watts)
2"	50	60	75	100	120						BC122(volts)(watts)
2.5"	50	60	75	100	120						BC1225(volts)(watts)
3"	50	60	75	100	120	150					BC123(volts)(watts)
3 1/4"	60	75	100	120	150	175					BC12314(volts)(watts)
4"	60	75	100	120	150	175	200				BC124(volts)(watts)
5"	100	120	150	175	210	250					BC125(volts)(watts)
5 1/4"	100	120	150	175	210	250					BC12514(volts)(watts)
6"	120	150	175	210	250	315					BC126(volts)(watts)
6.5"	120	150	175	210	250	315					BC1265(volts)(watts)
7"	150	175	210	250	315	350					BC127(volts)(watts)
8"	175	210	250	315	350	400	450				BC128(volts)(watts)
10"	210	250	315	350	400	500					BC1210(volts)(watts)
12"	315	350	400	500	630	700					BC1212(volts)(watts)

**5/8"**  
0.625 in

Lenght Inch.	120v. Or 240v.										Code No. Example BC581524050
	WATTS										
1.5"	50	60	80								BC5815(volts)(watts)
2"	50	60	75	120							BC582(volts)(watts)
2.5"	60	75	100	120	150						BC5825(volts)(watts)
3"	60	75	100	120	150	175	200				BC583(volts)(watts)
3 1/4"	60	75	100	120	150	175	220				BC58314(volts)(watts)
4"	75	100	120	150	175	250					BC584(volts)(watts)
5"	100	120	150	175	250	315					BC585(volts)(watts)
5 1/4"	120	150	175	210	250	315	350				BC58514(volts)(watts)
6"	120	150	175	210	250	350	450				BC586(volts)(watts)
6.5"	150	175	210	250	315	400	500				BC5865(volts)(watts)
7"	150	175	210	250	315	400	500				BC587(volts)(watts)
8"	210	250	315	350	400	500					BC588(volts)(watts)
10"	250	315	350	400	500	630	700				BC5810(volts)(watts)
12"	315	350	400	500	630	700	800				BC5812(volts)(watts)

**3/4"**  
0.750 in

Lenght Inch.	120v. Or 240v.										Code No. Example BC341524050
	WATTS										
1.5"	50	60	80								BC3415(volts)(watts)
2"	50	60	75	120							BC342(volts)(watts)
2.5"	60	75	100	120	175						BC3425(volts)(watts)
3"	60	75	100	120	150	175	200				BC343(volts)(watts)
3 1/4"	60	75	100	120	150	175	250				BC34314(volts)(watts)
4"	75	100	120	150	175	250	315				BC344(volts)(watts)
5"	100	120	150	175	210	315	350	400			BC345(volts)(watts)
5 1/4"	120	150	175	210	250	315	350	400			BC34514(volts)(watts)
6"	120	150	175	210	250	350	400				BC346(volts)(watts)
6.5"	150	175	210	250	315	400	500				BC3465(volts)(watts)
7"	150	175	210	250	315	400	500				BC347(volts)(watts)
8"	210	250	315	350	400	500	630				BC348(volts)(watts)
10"	250	315	350	400	500	630	700				BC3410(volts)(watts)
12"	315	350	400	500	630	700	800	1000			BC3412(volts)(watts)

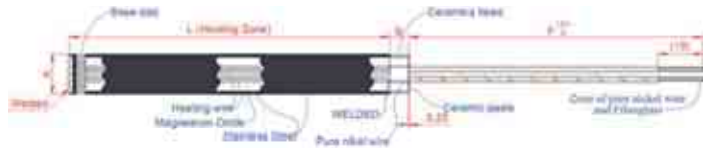
**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	±5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric -0.02 / -0.06 mm inch: -0.003 -0.008

TESTED AT ENVIRONMENTAL TEMPERATURE



All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc



Lenght mm	120v. Or 240v.										Code No.
	WATTS										Example SC1411424040
60	40	50	60	75	100	120					SC6560(volts)(watts)
80	40	50	60	75	100	120	150				SC6580(volts)(watts)
											SC65(volts)(watts)
100	50	60	75	100	120	150	175	210			SC65100(volts)(watts)
130	75	100	120	150	175	210	250				SC65130(volts)(watts)
											SC65(volts)(watts)
160	100	120	150	175	210	250	315				SC65160(volts)(watts)
											SC65(volts)(watts)
180	120	150	175	210	250	315	350				SC65180(volts)(watts)
200	150	175	210	250	315	350	400				SC65200(volts)(watts)
250	175	210	250	315	350	400	500				SC65250(volts)(watts)

Lenght mm	120v. Or 240v.										Code No.
	WATTS										Example SC5161142405
60	50	60	75	100	120	150					SC860(volts)(watts)
80	50	60	75	100	120	150	175				SC880(volts)(watts)
											SC8(volts)(watts)
100	60	75	100	120	150	175	210	250			SC8100(volts)(watts)
130	100	120	150	175	210	250	315				SC8130(volts)(watts)
											SC8(volts)(watts)
160	120	150	175	210	250	315	400				SC8160(volts)(watts)
											SC8(volts)(watts)
180	150	175	210	250	315	350	500				SC8180(volts)(watts)
200	175	210	250	315	350	400	550				SC8200(volts)(watts)
250	210	250	315	350	400	500	600				SC8250(volts)(watts)

Lenght mm	120v. Or 240v.										Code No.
	WATTS										Example SC3811424050
60	60	75	100	120	150	175					SC1060(volts)(watts)
80	60	75	100	120	150	175	200				SC1080(volts)(watts)
											SC10(volts)(watts)
100	75	100	120	150	175	210	250	315			SC10100(volts)(watts)
130	120	150	175	210	250	315	350				SC10130(volts)(watts)
											SC10(volts)(watts)
160	150	175	210	250	315	400	450				SC10160(volts)(watts)
											SC10(volts)(watts)
180	175	210	250	315	350	500	550				SC10180(volts)(watts)
200	210	250	315	350	400	630	650				SC10200(volts)(watts)
250	250	315	350	400	500	630	700				SC10250(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

Lenght mm	120v. Or 240v.										Code No.	
	WATTS										Example SC1215424050	
80	60	75	100	120	150	175	250	315			SC12580(volts)(watts)	
											SC125(volts)(watts)	
100	100	120	150	175	210	315	350	450	630			SC125100(volts)(watts)
130	120	150	175	210	250	315	350	500				SC125130(volts)(watts)
											SC125(volts)(watts)	
160	150	175	210	250	315	400	500				SC125160(volts)(watts)	
											SC125(volts)(watts)	
180	210	250	315	350	400	500	630				SC125180(volts)(watts)	
200	250	315	350	400	500	630	700				SC125200(volts)(watts)	
250	315	350	400	500	630	700	800	1000			SC125250(volts)(watts)	

Lenght mm	120v. Or 240v.										Code No.	
	WATTS										Example SC5815424060	
80	75	100	120	150	175	250	315	350			SC1680(volts)(watts)	
											SC16(volts)(watts)	
100	150	175	210	315	350	450	500	630	650			SC16100(volts)(watts)
130	175	210	250	315	350	500	630	700				SC16130(volts)(watts)
											SC16(volts)(watts)	
160	210	250	315	400	500	630				SC16160(volts)(watts)		
											SC16(volts)(watts)	
180	350	400	500	630	700	800				SC16180(volts)(watts)		
200	400	500	630	700	900	1000				SC16200(volts)(watts)		
250	500	630	700	800	1000	1100				SC16250(volts)(watts)		

Lenght mm	120v. Or 240v.										Code No.	
	WATTS										Example SC3415424075	
80	120	150	175	250	315	400	450			SC2080(volts)(watts)		
											SC20(volts)(watts)	
100	210	315	350	450	500	630	700	750	800			SC20100(volts)(watts)
130	250	315	350	500	630	700	800				SC20130(volts)(watts)	
											SC20(volts)(watts)	
160	315	400	500	630	800					SC20160(volts)(watts)		
											SC20(volts)(watts)	
180	500	630	700	800	1000					SC20180(volts)(watts)		
200	630	700	900	1000	1100					SC20200(volts)(watts)		
250	700	800	1000	1100	1250	1500				SC20250(volts)(watts)		

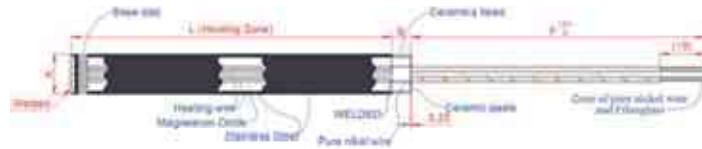
**Technical Key**

Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	.+5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric ± 0.1 mm inch: ± 0.003937"

TESTED AT ENVIRONMENTAL TEMPERATURE







1/4" 0.246 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example MCI 411424040	
2.5"	40	50	60	75	100	120								MCI 425(volts)(watts)
3"	40	50	60	75	100	120	150							MCI 43(volts)(watts)
3 1/4"	50	60	75	100	120	150	175							MCI 4314(volts)(watts)
4"	50	60	75	100	120	150	175	210						MCI 44(volts)(watts)
5	75	100	120	150	175	210	250							MCI 45(volts)(watts)
5 1/4"	75	100	120	150	175	210	250							MCI 4514(volts)(watts)
6"	100	120	150	175	210	250	315							MCI 46(volts)(watts)
6.5"	100	120	150	175	210	250	315							MCI 465(volts)(watts)
7"	120	150	175	210	250	315	350							MCI 47(volts)(watts)
8"	150	175	210	250	315	350	400							MCI 48(volts)(watts)
10"	175	210	250	315	350	400	500							MCI 410(volts)(watts)

5/16" 0.313 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example MC51 61142405	
2.5"	50	60	75	100	120	150								MC51 625(volts)(watts)
3"	50	60	75	100	120	150	175							MC51 63(volts)(watts)
3 1/4"	60	75	100	120	150	175	200							MC51 6314(volts)(watts)
4"	60	75	100	120	150	175	210	250						MC51 64(volts)(watts)
5	100	120	150	175	210	250	315							MC51 65(volts)(watts)
5 1/4"	100	120	150	175	210	250	350							MC51 6514(volts)(watts)
6"	120	150	175	210	250	315	400							MC51 66(volts)(watts)
6.5"	120	150	175	210	250	315	400							MC51 665(volts)(watts)
7"	150	175	210	250	315	350	500							MC51 67(volts)(watts)
8"	175	210	250	315	350	400	550							MC51 68(volts)(watts)
10"	210	250	315	350	400	500	600							MC51 610(volts)(watts)

3/8" 0.375 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example MC3811424050	
2.5"	60	75	100	120	150	175								MC3825(volts)(watts)
3"	60	75	100	120	150	175	200							MC383(volts)(watts)
3 1/4"	75	100	120	150	175	200	250							MC38314(volts)(watts)
4"	75	100	120	150	175	210	250	315						MC384(volts)(watts)
5	120	150	175	210	250	315	350							MC385(volts)(watts)
5 1/4"	120	150	175	210	250	350	400							MC38514(volts)(watts)
6"	150	175	210	250	315	400	450							MC386(volts)(watts)
6.5"	150	175	210	250	315	400	500							MC3865(volts)(watts)
7"	175	210	250	315	350	500	550							MC387(volts)(watts)
8"	210	250	315	350	400	630	650							MC388(volts)(watts)
10"	250	315	350	400	500	630	700							MC3810(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

1/2" 0.50 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example SC1 215424050	
3 1/4"	60	75	100	120	150	175	250	315						SC1 2314(volts)(watts)
4"	75	100	120	150	175	250	315	400						SC1 24(volts)(watts)
5	100	120	150	175	210	315	350	450	630					SC1 25(volts)(watts)
5 1/4"	120	150	175	210	250	315	350	500						SC1 2514(volts)(watts)
6"	120	150	175	210	250	350	400	630						SC1 26(volts)(watts)
6.5"	150	175	210	250	315	400	500							SC1 265(volts)(watts)
7"	150	175	210	250	315	400	500	630						SC1 27(volts)(watts)
8"	210	250	315	350	400	500	630							SC1 28(volts)(watts)
10"	250	315	350	400	500	630	700							SC1 210(volts)(watts)
12"	315	350	400	500	630	700	800	1000						SC1 212(volts)(watts)

5/8" 0.625 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example SC5815424060	
3 1/4"	75	100	120	150	175	250	315	350						SC58314(volts)(watts)
4"	120	150	175	250	315	400	450							SC584(volts)(watts)
5	150	175	210	315	350	450	500	630	650					SC585(volts)(watts)
5 1/4"	175	210	250	315	350	500	630	700						SC58514(volts)(watts)
6"	175	210	250	350	400	630	700							SC586(volts)(watts)
6.5"	210	250	315	400	500	630								SC5865(volts)(watts)
7"	250	315	400	500	630	700								SC587(volts)(watts)
8"	350	400	500	630	700	800								SC588(volts)(watts)
10"	400	500	630	700	900	1000								SC5810(volts)(watts)
12"	500	630	700	800	1000	1100								SC5812(volts)(watts)

3/4" 0.75 in	Lenght		120v. Or 240v.										Code No.	
	Inch.	WATTS											Example SC3415424075	
3 1/4"	120	150	175	250	315	400	450							SC34314(volts)(watts)
4"	175	250	315	400	450	500								SC344(volts)(watts)
5	210	315	350	450	500	630	700	750	800					SC345(volts)(watts)
5 1/4"	250	315	350	500	630	700	800							SC34514(volts)(watts)
6"	250	350	400	630	700	900								SC346(volts)(watts)
6.5"	315	400	500	630	800									SC3465(volts)(watts)
7"	400	500	630	700	900	1000								SC347(volts)(watts)
8"	500	630	700	800	1000									SC348(volts)(watts)
10"	630	700	900	1000	1100									SC3410(volts)(watts)
12"	700	800	1000	1100	1250	1500								SC3412(volts)(watts)

**Technical Key**

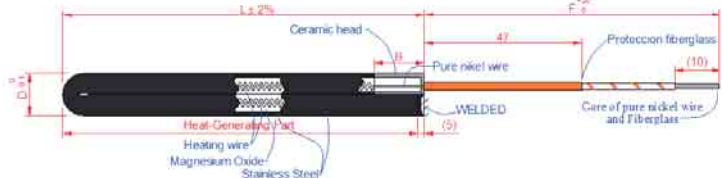
Sheath material	Stainless steel 1.4541
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	480 V
Wattage tolerance*	+.5% -10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 1.5%, min A 1mm
Standard diameter tolerance	metric ± 0.1 mm inch: ± 0.003937"

TESTED AT ENVIRONMENTAL TEMPERATURE



Cartridge Heaters

Medium Watt Density  
Inch



Length mm	Code No.				
	Ø 10	Ø 12.5	Ø 16	Ø 20	Ø 25
1.02	EX1 0102(volts)(watts)	EX125102(volts)(watts)	EX16102(volts)(watts)	EX20102(volts)(watts)	EX25102(volts)(watts)
1.27	EX1 0127(volts)(watts)	EX125127(volts)(watts)	EX16127(volts)(watts)	EX20127(volts)(watts)	EX25127(volts)(watts)
1.52	EX1 0152(volts)(watts)	EX125152(volts)(watts)	EX16152(volts)(watts)	EX20152(volts)(watts)	EX25152(volts)(watts)
1.78	EX1 0178(volts)(watts)	EX125178(volts)(watts)	EX16178(volts)(watts)	EX20178(volts)(watts)	EX25178(volts)(watts)
2.03	EX1 0203(volts)(watts)	EX125203(volts)(watts)	EX16203(volts)(watts)	EX20203(volts)(watts)	EX25203(volts)(watts)
2.29	EX1 0229(volts)(watts)	EX125229(volts)(watts)	EX16229(volts)(watts)	EX20229(volts)(watts)	EX25229(volts)(watts)
2.54	EX1 0254(volts)(watts)	EX125254(volts)(watts)	EX16254(volts)(watts)	EX20254(volts)(watts)	EX25254(volts)(watts)
2.79	EX1 0279(volts)(watts)	EX125279(volts)(watts)	EX16279(volts)(watts)	EX20279(volts)(watts)	EX25279(volts)(watts)
3.05	EX1 0305(volts)(watts)	EX125305(volts)(watts)	EX16305(volts)(watts)	EX20305(volts)(watts)	EX25305(volts)(watts)
3.30	EX1 0330(volts)(watts)	EX125330(volts)(watts)	EX16330(volts)(watts)	EX20330(volts)(watts)	EX25330(volts)(watts)
3.56	EX1 0356(volts)(watts)	EX125356(volts)(watts)	EX16356(volts)(watts)	EX20356(volts)(watts)	EX25356(volts)(watts)
3.81	EX1 0381(volts)(watts)	EX125381(volts)(watts)	EX16381(volts)(watts)	EX20381(volts)(watts)	EX25381(volts)(watts)
4.06	EX1 0406(volts)(watts)	EX125406(volts)(watts)	EX16406(volts)(watts)	EX20406(volts)(watts)	EX25406(volts)(watts)
4.32	EX1 0432(volts)(watts)	EX125432(volts)(watts)	EX16432(volts)(watts)	EX20432(volts)(watts)	EX25432(volts)(watts)
4.57	EX1 0457(volts)(watts)	EX125457(volts)(watts)	EX16457(volts)(watts)	EX20457(volts)(watts)	EX25457(volts)(watts)
4.83	EX1 0483(volts)(watts)	EX125483(volts)(watts)	EX16483(volts)(watts)	EX20483(volts)(watts)	EX25483(volts)(watts)
5.08	EX1 0508(volts)(watts)	EX125508(volts)(watts)	EX16508(volts)(watts)	EX20508(volts)(watts)	EX25508(volts)(watts)
5.33	EX1 0533(volts)(watts)	EX125533(volts)(watts)	EX16533(volts)(watts)	EX20533(volts)(watts)	EX25533(volts)(watts)
5.59	EX1 0559(volts)(watts)	EX125559(volts)(watts)	EX16559(volts)(watts)	EX20559(volts)(watts)	EX25559(volts)(watts)
5.84	EX1 0584(volts)(watts)	EX125584(volts)(watts)	EX16584(volts)(watts)	EX20584(volts)(watts)	EX25584(volts)(watts)
6.10	EX1 0610(volts)(watts)	EX125610(volts)(watts)	EX16610(volts)(watts)	EX20610(volts)(watts)	EX25610(volts)(watts)
6.35	EX1 0635(volts)(watts)	EX125635(volts)(watts)	EX16635(volts)(watts)	EX20635(volts)(watts)	EX25635(volts)(watts)
6.60	EX1 0660(volts)(watts)	EX125660(volts)(watts)	EX16660(volts)(watts)	EX20660(volts)(watts)	EX25660(volts)(watts)
6.86	EX1 0686(volts)(watts)	EX125686(volts)(watts)	EX16686(volts)(watts)	EX20686(volts)(watts)	EX25686(volts)(watts)
7.11	EX1 0711(volts)(watts)	EX125711(volts)(watts)	EX16711(volts)(watts)	EX20711(volts)(watts)	EX25711(volts)(watts)
7.37	EX1 0737(volts)(watts)	EX125737(volts)(watts)	EX16737(volts)(watts)	EX20737(volts)(watts)	EX25737(volts)(watts)
7.62	EX1 0762(volts)(watts)	EX125762(volts)(watts)	EX16762(volts)(watts)	EX20762(volts)(watts)	EX25762(volts)(watts)
7.87	EX1 0787(volts)(watts)	EX125787(volts)(watts)	EX16787(volts)(watts)	EX20787(volts)(watts)	EX25787(volts)(watts)
8.13	EX1 0813(volts)(watts)	EX125813(volts)(watts)	EX16813(volts)(watts)	EX20813(volts)(watts)	EX25813(volts)(watts)
8.38	EX1 0838(volts)(watts)	EX125838(volts)(watts)	EX16838(volts)(watts)	EX20838(volts)(watts)	EX25838(volts)(watts)
8.64	EX1 0864(volts)(watts)	EX125864(volts)(watts)	EX16864(volts)(watts)	EX20864(volts)(watts)	EX25864(volts)(watts)
8.89	EX1 0889(volts)(watts)	EX125889(volts)(watts)	EX16889(volts)(watts)	EX20889(volts)(watts)	EX25889(volts)(watts)
9.14	EX1 0914(volts)(watts)	EX125914(volts)(watts)	EX16914(volts)(watts)	EX20914(volts)(watts)	EX25914(volts)(watts)
9.40	EX1 0940(volts)(watts)	EX125940(volts)(watts)	EX16940(volts)(watts)	EX20940(volts)(watts)	EX25940(volts)(watts)
9.65	EX1 0965(volts)(watts)	EX125965(volts)(watts)	EX16965(volts)(watts)	EX20965(volts)(watts)	EX25965(volts)(watts)
9.91	EX1 0991(volts)(watts)	EX125991(volts)(watts)	EX16991(volts)(watts)	EX20991(volts)(watts)	EX25991(volts)(watts)
10.16	EX1 01016(volts)(watts)	EX1251016(volts)(watts)	EX161016(volts)(watts)	EX201016(volts)(watts)	EX251016(volts)(watts)
10.41	EX1 01041(volts)(watts)	EX1251041(volts)(watts)	EX161041(volts)(watts)	EX201041(volts)(watts)	EX251041(volts)(watts)
10.67	EX1 01067(volts)(watts)	EX1251067(volts)(watts)	EX161067(volts)(watts)	EX201067(volts)(watts)	EX251067(volts)(watts)
10.92	EX1 01092(volts)(watts)	EX1251092(volts)(watts)	EX161092(volts)(watts)	EX201092(volts)(watts)	EX251092(volts)(watts)
11.18	EX1 01118(volts)(watts)	EX1251118(volts)(watts)	EX161118(volts)(watts)	EX201118(volts)(watts)	EX251118(volts)(watts)
11.43	EX1 01143(volts)(watts)	EX1251143(volts)(watts)	EX161143(volts)(watts)	EX201143(volts)(watts)	EX251143(volts)(watts)
11.68	EX1 01168(volts)(watts)	EX1251168(volts)(watts)	EX161168(volts)(watts)	EX201168(volts)(watts)	EX251168(volts)(watts)
11.94	EX1 01194(volts)(watts)	EX1251194(volts)(watts)	EX161194(volts)(watts)	EX201194(volts)(watts)	EX251194(volts)(watts)
12.19	EX1 01219(volts)(watts)	EX1251219(volts)(watts)	EX161219(volts)(watts)	EX201219(volts)(watts)	EX251219(volts)(watts)
12.45	EX1 01245(volts)(watts)	EX1251245(volts)(watts)	EX161245(volts)(watts)	EX201245(volts)(watts)	EX251245(volts)(watts)
12.70	EX1 01270(volts)(watts)	EX1251270(volts)(watts)	EX161270(volts)(watts)	EX201270(volts)(watts)	EX251270(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

Length Inch	Code No.				
	Ø 3/8"	Ø 1/2"	Ø 5/8"	Ø 3/4"	Ø 1"
4"	EX384(volts)(watts)	EX124(volts)(watts)	EX584(volts)(watts)	EX344(volts)(watts)	EX14(volts)(watts)
5"	EX385(volts)(watts)	EX125(volts)(watts)	EX585(volts)(watts)	EX345(volts)(watts)	EX15(volts)(watts)
6"	EX386(volts)(watts)	EX126(volts)(watts)	EX586(volts)(watts)	EX346(volts)(watts)	EX16(volts)(watts)
7"	EX387(volts)(watts)	EX127(volts)(watts)	EX587(volts)(watts)	EX347(volts)(watts)	EX17(volts)(watts)
8"	EX388(volts)(watts)	EX128(volts)(watts)	EX588(volts)(watts)	EX348(volts)(watts)	EX18(volts)(watts)
9"	EX389(volts)(watts)	EX129(volts)(watts)	EX589(volts)(watts)	EX349(volts)(watts)	EX19(volts)(watts)
10"	EX3810(volts)(watts)	EX1210(volts)(watts)	EX5810(volts)(watts)	EX3410(volts)(watts)	EX110(volts)(watts)
11"	EX3811(volts)(watts)	EX1211(volts)(watts)	EX5811(volts)(watts)	EX3411(volts)(watts)	EX111(volts)(watts)
12"	EX3812(volts)(watts)	EX1212(volts)(watts)	EX5812(volts)(watts)	EX3412(volts)(watts)	EX112(volts)(watts)
13"	EX3813(volts)(watts)	EX1213(volts)(watts)	EX5813(volts)(watts)	EX3413(volts)(watts)	EX113(volts)(watts)
14"	EX3814(volts)(watts)	EX1214(volts)(watts)	EX5814(volts)(watts)	EX3414(volts)(watts)	EX114(volts)(watts)
15"	EX3815(volts)(watts)	EX1215(volts)(watts)	EX5815(volts)(watts)	EX3415(volts)(watts)	EX115(volts)(watts)
16"	EX3816(volts)(watts)	EX1216(volts)(watts)	EX5816(volts)(watts)	EX3416(volts)(watts)	EX116(volts)(watts)
17"	EX3817(volts)(watts)	EX1217(volts)(watts)	EX5817(volts)(watts)	EX3417(volts)(watts)	EX117(volts)(watts)
18"	EX3818(volts)(watts)	EX1218(volts)(watts)	EX5818(volts)(watts)	EX3418(volts)(watts)	EX118(volts)(watts)
19"	EX3819(volts)(watts)	EX1219(volts)(watts)	EX5819(volts)(watts)	EX3419(volts)(watts)	EX119(volts)(watts)
20"	EX3820(volts)(watts)	EX1220(volts)(watts)	EX5820(volts)(watts)	EX3420(volts)(watts)	EX120(volts)(watts)
21"	EX3821(volts)(watts)	EX1221(volts)(watts)	EX5821(volts)(watts)	EX3421(volts)(watts)	EX121(volts)(watts)
22"	EX3822(volts)(watts)	EX1222(volts)(watts)	EX5822(volts)(watts)	EX3422(volts)(watts)	EX122(volts)(watts)
23"	EX3823(volts)(watts)	EX1223(volts)(watts)	EX5823(volts)(watts)	EX3423(volts)(watts)	EX123(volts)(watts)
24"	EX3824(volts)(watts)	EX1224(volts)(watts)	EX5824(volts)(watts)	EX3424(volts)(watts)	EX124(volts)(watts)
25"	EX3825(volts)(watts)	EX1225(volts)(watts)	EX5825(volts)(watts)	EX3425(volts)(watts)	EX125(volts)(watts)
26"	EX3826(volts)(watts)	EX1226(volts)(watts)	EX5826(volts)(watts)	EX3426(volts)(watts)	EX126(volts)(watts)
27"	EX3827(volts)(watts)	EX1227(volts)(watts)	EX5827(volts)(watts)	EX3427(volts)(watts)	EX127(volts)(watts)
28"	EX3828(volts)(watts)	EX1228(volts)(watts)	EX5828(volts)(watts)	EX3428(volts)(watts)	EX128(volts)(watts)
29"	EX3829(volts)(watts)	EX1229(volts)(watts)	EX5829(volts)(watts)	EX3429(volts)(watts)	EX129(volts)(watts)
30"	EX3830(volts)(watts)	EX1230(volts)(watts)	EX5830(volts)(watts)	EX3430(volts)(watts)	EX130(volts)(watts)
31"	EX3831(volts)(watts)	EX1231(volts)(watts)	EX5831(volts)(watts)	EX3431(volts)(watts)	EX131(volts)(watts)
32"	EX3832(volts)(watts)	EX1232(volts)(watts)	EX5832(volts)(watts)	EX3432(volts)(watts)	EX132(volts)(watts)
33"	EX3833(volts)(watts)	EX1233(volts)(watts)	EX5833(volts)(watts)	EX3433(volts)(watts)	EX133(volts)(watts)
34"	EX3834(volts)(watts)	EX1234(volts)(watts)	EX5834(volts)(watts)	EX3434(volts)(watts)	EX134(volts)(watts)
35"	EX3835(volts)(watts)	EX1235(volts)(watts)	EX5835(volts)(watts)	EX3435(volts)(watts)	EX135(volts)(watts)
36"	EX3836(volts)(watts)	EX1236(volts)(watts)	EX5836(volts)(watts)	EX3436(volts)(watts)	EX136(volts)(watts)
37"	EX3837(volts)(watts)	EX1237(volts)(watts)	EX5837(volts)(watts)	EX3437(volts)(watts)	EX137(volts)(watts)
38"	EX3838(volts)(watts)	EX1238(volts)(watts)	EX5838(volts)(watts)	EX3438(volts)(watts)	EX138(volts)(watts)
39"	EX3839(volts)(watts)	EX1239(volts)(watts)	EX5839(volts)(watts)	EX3439(volts)(watts)	EX139(volts)(watts)
40"	EX3840(volts)(watts)	EX1240(volts)(watts)	EX5840(volts)(watts)	EX3440(volts)(watts)	EX140(volts)(watts)
41"	EX3841(volts)(watts)	EX1241(volts)(watts)	EX5841(volts)(watts)	EX3441(volts)(watts)	EX141(volts)(watts)
42"	EX3842(volts)(watts)	EX1242(volts)(watts)	EX5842(volts)(watts)	EX3442(volts)(watts)	EX142(volts)(watts)
43"	EX3843(volts)(watts)	EX1243(volts)(watts)	EX5843(volts)(watts)	EX3443(volts)(watts)	EX143(volts)(watts)
44"	EX3844(volts)(watts)	EX1244(volts)(watts)	EX5844(volts)(watts)	EX3444(volts)(watts)	EX144(volts)(watts)
45"	EX3845(volts)(watts)	EX1245(volts)(watts)	EX5845(volts)(watts)	EX3445(volts)(watts)	EX145(volts)(watts)
46"	EX3846(volts)(watts)	EX1246(volts)(watts)	EX5846(volts)(watts)	EX3446(volts)(watts)	EX146(volts)(watts)
47"	EX3847(volts)(watts)	EX1247(volts)(watts)	EX5847(volts)(watts)	EX3447(volts)(watts)	EX147(volts)(watts)
48"	EX3848(volts)(watts)	EX1248(volts)(watts)	EX5848(volts)(watts)	EX3448(volts)(watts)	EX148(volts)(watts)
49"	EX3849(volts)(watts)	EX1249(volts)(watts)	EX5849(volts)(watts)	EX3449(volts)(watts)	EX149(volts)(watts)
50"	EX3850(volts)(watts)	EX1250(volts)(watts)	EX5850(volts)(watts)	EX3450(volts)(watts)	EX150(volts)(watts)

**Technical Key**

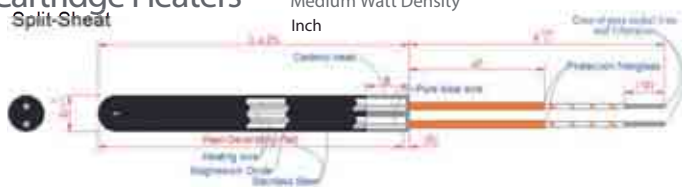
Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 M.Ω at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	A 2%, min A 1mm
Standard diameter tolerance	metric -0'10-0'15 inch -0,003937 -0,0059055

TESTED AT ENVIRONMENTAL TEMPERATURE



**Cartridge Heaters**  
Split-Sheath

Medium Watt Density  
Inch



Length mm	Code No.				
	Ø 10	Ø 12.5	Ø 16	Ø 20	Ø 25
1.02	SS10102(volts)(watts)	SS125102(volts)(watts)	SS16102(volts)(watts)	SS20102(volts)(watts)	SS25102(volts)(watts)
1.27	SS10127(volts)(watts)	SS125127(volts)(watts)	SS16127(volts)(watts)	SS20127(volts)(watts)	SS25127(volts)(watts)
1.52	SS10152(volts)(watts)	SS125152(volts)(watts)	SS16152(volts)(watts)	SS20152(volts)(watts)	SS25152(volts)(watts)
1.78	SS10178(volts)(watts)	SS125178(volts)(watts)	SS16178(volts)(watts)	SS20178(volts)(watts)	SS25178(volts)(watts)
2.03	SS10203(volts)(watts)	SS125203(volts)(watts)	SS16203(volts)(watts)	SS20203(volts)(watts)	SS25203(volts)(watts)
2.29	SS10229(volts)(watts)	SS125229(volts)(watts)	SS16229(volts)(watts)	SS20229(volts)(watts)	SS25229(volts)(watts)
2.54	SS10254(volts)(watts)	SS125254(volts)(watts)	SS16254(volts)(watts)	SS20254(volts)(watts)	SS25254(volts)(watts)
2.79	SS10279(volts)(watts)	SS125279(volts)(watts)	SS16279(volts)(watts)	SS20279(volts)(watts)	SS25279(volts)(watts)
3.05	SS10305(volts)(watts)	SS125305(volts)(watts)	SS16305(volts)(watts)	SS20305(volts)(watts)	SS25305(volts)(watts)
3.30	SS10330(volts)(watts)	SS125330(volts)(watts)	SS16330(volts)(watts)	SS20330(volts)(watts)	SS25330(volts)(watts)
3.56	SS10356(volts)(watts)	SS125356(volts)(watts)	SS16356(volts)(watts)	SS20356(volts)(watts)	SS25356(volts)(watts)
3.81	SS10381(volts)(watts)	SS125381(volts)(watts)	SS16381(volts)(watts)	SS20381(volts)(watts)	SS25381(volts)(watts)
4.06	SS10406(volts)(watts)	SS125406(volts)(watts)	SS16406(volts)(watts)	SS20406(volts)(watts)	SS25406(volts)(watts)
4.32	SS10432(volts)(watts)	SS125432(volts)(watts)	SS16432(volts)(watts)	SS20432(volts)(watts)	SS25432(volts)(watts)
4.57	SS10457(volts)(watts)	SS125457(volts)(watts)	SS16457(volts)(watts)	SS20457(volts)(watts)	SS25457(volts)(watts)
4.83	SS10483(volts)(watts)	SS125483(volts)(watts)	SS16483(volts)(watts)	SS20483(volts)(watts)	SS25483(volts)(watts)
5.08	SS10508(volts)(watts)	SS125508(volts)(watts)	SS16508(volts)(watts)	SS20508(volts)(watts)	SS25508(volts)(watts)
5.33	SS10533(volts)(watts)	SS125533(volts)(watts)	SS16533(volts)(watts)	SS20533(volts)(watts)	SS25533(volts)(watts)
5.59	SS10559(volts)(watts)	SS125559(volts)(watts)	SS16559(volts)(watts)	SS20559(volts)(watts)	SS25559(volts)(watts)
5.84	SS10584(volts)(watts)	SS125584(volts)(watts)	SS16584(volts)(watts)	SS20584(volts)(watts)	SS25584(volts)(watts)
6.10	SS10610(volts)(watts)	SS125610(volts)(watts)	SS16610(volts)(watts)	SS20610(volts)(watts)	SS25610(volts)(watts)
6.35	SS10635(volts)(watts)	SS125635(volts)(watts)	SS16635(volts)(watts)	SS20635(volts)(watts)	SS25635(volts)(watts)
6.60	SS10660(volts)(watts)	SS125660(volts)(watts)	SS16660(volts)(watts)	SS20660(volts)(watts)	SS25660(volts)(watts)
6.86	SS10686(volts)(watts)	SS125686(volts)(watts)	SS16686(volts)(watts)	SS20686(volts)(watts)	SS25686(volts)(watts)
7.11	SS10711(volts)(watts)	SS125711(volts)(watts)	SS16711(volts)(watts)	SS20711(volts)(watts)	SS25711(volts)(watts)
7.37	SS10737(volts)(watts)	SS125737(volts)(watts)	SS16737(volts)(watts)	SS20737(volts)(watts)	SS25737(volts)(watts)
7.62	SS10762(volts)(watts)	SS125762(volts)(watts)	SS16762(volts)(watts)	SS20762(volts)(watts)	SS25762(volts)(watts)
7.87	SS10787(volts)(watts)	SS125787(volts)(watts)	SS16787(volts)(watts)	SS20787(volts)(watts)	SS25787(volts)(watts)
8.13	SS10813(volts)(watts)	SS125813(volts)(watts)	SS16813(volts)(watts)	SS20813(volts)(watts)	SS25813(volts)(watts)
8.38	SS10838(volts)(watts)	SS125838(volts)(watts)	SS16838(volts)(watts)	SS20838(volts)(watts)	SS25838(volts)(watts)
8.64	SS10864(volts)(watts)	SS125864(volts)(watts)	SS16864(volts)(watts)	SS20864(volts)(watts)	SS25864(volts)(watts)
8.89	SS10889(volts)(watts)	SS125889(volts)(watts)	SS16889(volts)(watts)	SS20889(volts)(watts)	SS25889(volts)(watts)
9.14	SS10914(volts)(watts)	SS125914(volts)(watts)	SS16914(volts)(watts)	SS20914(volts)(watts)	SS25914(volts)(watts)
9.40	SS10940(volts)(watts)	SS125940(volts)(watts)	SS16940(volts)(watts)	SS20940(volts)(watts)	SS25940(volts)(watts)
9.65	SS10965(volts)(watts)	SS125965(volts)(watts)	SS16965(volts)(watts)	SS20965(volts)(watts)	SS25965(volts)(watts)
9.91	SS10991(volts)(watts)	SS125991(volts)(watts)	SS16991(volts)(watts)	SS20991(volts)(watts)	SS25991(volts)(watts)
10.16	SS101016(volts)(watts)	SS1251016(volts)(watts)	SS161016(volts)(watts)	SS201016(volts)(watts)	SS251016(volts)(watts)
10.41	SS101041(volts)(watts)	SS1251041(volts)(watts)	SS161041(volts)(watts)	SS201041(volts)(watts)	SS251041(volts)(watts)
10.67	SS101067(volts)(watts)	SS1251067(volts)(watts)	SS161067(volts)(watts)	SS201067(volts)(watts)	SS251067(volts)(watts)
10.92	SS101092(volts)(watts)	SS1251092(volts)(watts)	SS161092(volts)(watts)	SS201092(volts)(watts)	SS251092(volts)(watts)
11.18	SS101118(volts)(watts)	SS1251118(volts)(watts)	SS161118(volts)(watts)	SS201118(volts)(watts)	SS251118(volts)(watts)
11.43	SS101143(volts)(watts)	SS1251143(volts)(watts)	SS161143(volts)(watts)	SS201143(volts)(watts)	SS251143(volts)(watts)
11.68	SS101168(volts)(watts)	SS1251168(volts)(watts)	SS161168(volts)(watts)	SS201168(volts)(watts)	SS251168(volts)(watts)
11.94	SS101194(volts)(watts)	SS1251194(volts)(watts)	SS161194(volts)(watts)	SS201194(volts)(watts)	SS251194(volts)(watts)
12.19	SS101219(volts)(watts)	SS1251219(volts)(watts)	SS161219(volts)(watts)	SS201219(volts)(watts)	SS251219(volts)(watts)
12.45	SS101245(volts)(watts)	SS1251245(volts)(watts)	SS161245(volts)(watts)	SS201245(volts)(watts)	SS251245(volts)(watts)
12.70	SS101270(volts)(watts)	SS1251270(volts)(watts)	SS161270(volts)(watts)	SS201270(volts)(watts)	SS251270(volts)(watts)

All of the intermediate sizes can be made in diameter and length, volts, watts distribution, cold areas, special endings, protections, etc

Length Inch	Code No.				
	Ø 3/8"	Ø 1/2"	Ø 5/8"	Ø 3/4"	Ø 1"
4"	SS384(volts)(watts)	SS124(volts)(watts)	SS584(volts)(watts)	SS344(volts)(watts)	SS14(volts)(watts)
5"	SS385(volts)(watts)	SS125(volts)(watts)	SS585(volts)(watts)	SS345(volts)(watts)	SS15(volts)(watts)
6"	SS386(volts)(watts)	SS126(volts)(watts)	SS586(volts)(watts)	SS346(volts)(watts)	SS16(volts)(watts)
7"	SS387(volts)(watts)	SS127(volts)(watts)	SS587(volts)(watts)	SS347(volts)(watts)	SS17(volts)(watts)
8"	SS388(volts)(watts)	SS128(volts)(watts)	SS588(volts)(watts)	SS348(volts)(watts)	SS18(volts)(watts)
9"	SS389(volts)(watts)	SS129(volts)(watts)	SS589(volts)(watts)	SS349(volts)(watts)	SS19(volts)(watts)
10"	SS3810(volts)(watts)	SS1210(volts)(watts)	SS5810(volts)(watts)	SS3410(volts)(watts)	SS110(volts)(watts)
11"	SS3811(volts)(watts)	SS1211(volts)(watts)	SS5811(volts)(watts)	SS3411(volts)(watts)	SS111(volts)(watts)
12"	SS3812(volts)(watts)	SS1212(volts)(watts)	SS5812(volts)(watts)	SS3412(volts)(watts)	SS112(volts)(watts)
13"	SS3813(volts)(watts)	SS1213(volts)(watts)	SS5813(volts)(watts)	SS3413(volts)(watts)	SS113(volts)(watts)
14"	SS3814(volts)(watts)	SS1214(volts)(watts)	SS5814(volts)(watts)	SS3414(volts)(watts)	SS114(volts)(watts)
15"	SS3815(volts)(watts)	SS1215(volts)(watts)	SS5815(volts)(watts)	SS3415(volts)(watts)	SS115(volts)(watts)
16"	SS3816(volts)(watts)	SS1216(volts)(watts)	SS5816(volts)(watts)	SS3416(volts)(watts)	SS116(volts)(watts)
17"	SS3817(volts)(watts)	SS1217(volts)(watts)	SS5817(volts)(watts)	SS3417(volts)(watts)	SS117(volts)(watts)
18"	SS3818(volts)(watts)	SS1218(volts)(watts)	SS5818(volts)(watts)	SS3418(volts)(watts)	SS118(volts)(watts)
19"	SS3819(volts)(watts)	SS1219(volts)(watts)	SS5819(volts)(watts)	SS3419(volts)(watts)	SS119(volts)(watts)
20"	SS3820(volts)(watts)	SS1220(volts)(watts)	SS5820(volts)(watts)	SS3420(volts)(watts)	SS120(volts)(watts)
21"	SS3821(volts)(watts)	SS1221(volts)(watts)	SS5821(volts)(watts)	SS3421(volts)(watts)	SS121(volts)(watts)
22"	SS3822(volts)(watts)	SS1222(volts)(watts)	SS5822(volts)(watts)	SS3422(volts)(watts)	SS122(volts)(watts)
23"	SS3823(volts)(watts)	SS1223(volts)(watts)	SS5823(volts)(watts)	SS3423(volts)(watts)	SS123(volts)(watts)
24"	SS3824(volts)(watts)	SS1224(volts)(watts)	SS5824(volts)(watts)	SS3424(volts)(watts)	SS124(volts)(watts)
25"	SS3825(volts)(watts)	SS1225(volts)(watts)	SS5825(volts)(watts)	SS3425(volts)(watts)	SS125(volts)(watts)
26"	SS3826(volts)(watts)	SS1226(volts)(watts)	SS5826(volts)(watts)	SS3426(volts)(watts)	SS126(volts)(watts)
27"	SS3827(volts)(watts)	SS1227(volts)(watts)	SS5827(volts)(watts)	SS3427(volts)(watts)	SS127(volts)(watts)
28"	SS3828(volts)(watts)	SS1228(volts)(watts)	SS5828(volts)(watts)	SS3428(volts)(watts)	SS128(volts)(watts)
29"	SS3829(volts)(watts)	SS1229(volts)(watts)	SS5829(volts)(watts)	SS3429(volts)(watts)	SS129(volts)(watts)
30"	SS3830(volts)(watts)	SS1230(volts)(watts)	SS5830(volts)(watts)	SS3430(volts)(watts)	SS130(volts)(watts)
31"	SS3831(volts)(watts)	SS1231(volts)(watts)	SS5831(volts)(watts)	SS3431(volts)(watts)	SS131(volts)(watts)
32"	SS3832(volts)(watts)	SS1232(volts)(watts)	SS5832(volts)(watts)	SS3432(volts)(watts)	SS132(volts)(watts)
33"	SS3833(volts)(watts)	SS1233(volts)(watts)	SS5833(volts)(watts)	SS3433(volts)(watts)	SS133(volts)(watts)
34"	SS3834(volts)(watts)	SS1234(volts)(watts)	SS5834(volts)(watts)	SS3434(volts)(watts)	SS134(volts)(watts)
35"	SS3835(volts)(watts)	SS1235(volts)(watts)	SS5835(volts)(watts)	SS3435(volts)(watts)	SS135(volts)(watts)
36"	SS3836(volts)(watts)	SS1236(volts)(watts)	SS5836(volts)(watts)	SS3436(volts)(watts)	SS136(volts)(watts)
37"	SS3837(volts)(watts)	SS1237(volts)(watts)	SS5837(volts)(watts)	SS3437(volts)(watts)	SS137(volts)(watts)
38"	SS3838(volts)(watts)	SS1238(volts)(watts)	SS5838(volts)(watts)	SS3438(volts)(watts)	SS138(volts)(watts)
39"	SS3839(volts)(watts)	SS1239(volts)(watts)	SS5839(volts)(watts)	SS3439(volts)(watts)	SS139(volts)(watts)
40"	SS3840(volts)(watts)	SS1240(volts)(watts)	SS5840(volts)(watts)	SS3440(volts)(watts)	SS140(volts)(watts)
41"	SS3841(volts)(watts)	SS1241(volts)(watts)	SS5841(volts)(watts)	SS3441(volts)(watts)	SS141(volts)(watts)
42"	SS3842(volts)(watts)	SS1242(volts)(watts)	SS5842(volts)(watts)	SS3442(volts)(watts)	SS142(volts)(watts)
43"	SS3843(volts)(watts)	SS1243(volts)(watts)	SS5843(volts)(watts)	SS3443(volts)(watts)	SS143(volts)(watts)
44"	SS3844(volts)(watts)	SS1244(volts)(watts)	SS5844(volts)(watts)	SS3444(volts)(watts)	SS144(volts)(watts)
45"	SS3845(volts)(watts)	SS1245(volts)(watts)	SS5845(volts)(watts)	SS3445(volts)(watts)	SS145(volts)(watts)
46"	SS3846(volts)(watts)	SS1246(volts)(watts)	SS5846(volts)(watts)	SS3446(volts)(watts)	SS146(volts)(watts)
47"	SS3847(volts)(watts)	SS1247(volts)(watts)	SS5847(volts)(watts)	SS3447(volts)(watts)	SS147(volts)(watts)
48"	SS3848(volts)(watts)	SS1248(volts)(watts)	SS5848(volts)(watts)	SS3448(volts)(watts)	SS148(volts)(watts)
49"	SS3849(volts)(watts)	SS1249(volts)(watts)	SS5849(volts)(watts)	SS3449(volts)(watts)	SS149(volts)(watts)
50"	SS3850(volts)(watts)	SS1250(volts)(watts)	SS5850(volts)(watts)	SS3450(volts)(watts)	SS150(volts)(watts)

**Technical Key**

Sheath material	Stainless steel
Heating conductor material	NiCr 8020
Max. Sheath temperature	750 °C / 1380 °F
Max. Voltage	>120V <=480V (OTHER V.: TO CONSULT)
Wattage tolerance*	± 10%
High voltage resistance*	1500 V AC at > 24 V operation voltage 500 V at <= 24 V operation voltage
Insulation resistance*	> 5 MΩ at 500 V DC
Leakage current*	<= 0.5 mA at 253 V AC
Length tolerance	Δ 2%, min Δ 1mm
Standard diameter tolerance	metric -0.10-0.15 inch -0.003937 -0.0059055

TESTED AT ENVIRONMENTAL TEMPERATURE



The order confirmation means for the purchaser that the following sales conditions apply:

The minimum details required for correct manufacture are:

- Diameter.
- Length.
- Volts.
- Watts.
- Placed in vertical position, horizontal position, air or submerged...
- Tails length.
- Special pieces attached, if any. -Connection protections.
- Conditions of use such as humidity, vibration, bumps (or shocks), contamination.
- Function to perform: casting plastic, sealing bags, marking...
- Name and machine model.

Any omission from the required details will void the warranty understanding that it is an own design from the customer and he will assume full responsibility as we will produce a prototype or prototypes according to his specifications. It is also necessary to continue, without exception, at the installation processes and security measures reflected in the technical security specifications.

Quantity:

The sale of the product will be done by Buyer's order confirmation, accepting only by written confirmation (e-mail, fax, post...) but never by telephone, over or under production can occur. In the case of lack of material to begin production Maxiwatt may use without previous notice, superior quality material and production methods to improve the heater function, without any price increase. But this will not be a standard for future similar orders.

Delivery:

When deliveries are made with EXW conditions, the loss risk in transportation will be assumed by the buyer. Unless the customer specifies special shipping conditions in the order Maxiwatt will decide the transport method and conditions.

Restocking charges:

The stock size heaters may be returned if they have not been used, with a 20% surcharge of the purchase price. Special heater sizes, manufactured exclusively as clients request cannot be returned. The return for stock orders will only be accepted within 120 days after delivery date.

Return policy:

Before any return can take place Maxiwatt must be informed of the reason for the return. Upon receipt of this information Maxiwatt will allow the buyer to return faulty material, always with paid transport charges, to review and determine if it is a manufacturing defect. If it proves to be a manufacturing fault Maxiwatt will assume the transport and material payment or replace the goods. In case of credit, the amount will be set against future purchases. For items that have been mishandled, misused or mechanically damaged, Maxiwatt will not assume liability. The returned items will be available for collection by the purchaser for a period of 30 days. After which they will be destroyed.

Responsibility :

The total financial liability for any claim will have as its limit, the price of the product that has caused the complaint. It will never exceed the total price invoiced. In no case Maxiwatt will be responsible for consequences of accidents or incidents (accidents to persons, damage to property or financial consequences).

Changes to orders:

Please confirm in writing any change required for your order such as quantity, sizes and heater specifications before they are in production process. After receipt of such notification Maxiwatt will inform the client of any changes in the conditions for the production of the order, price and delivery as result of the requested changes. These changes must be approved by the client before Maxiwatt proceeds with production.

Prices:

The prices in our price list are referred to the materials and specifications detailed in the same or our catalogues. We will not include in our prices the transport costs and customs charges or any other taxes or fees that occur once the goods leave Maxiwatt. Changes in prices and stock material availability may occur without previous notice.

Tools:

All tools and accessories in Maxiwatt are property of the company, Maxiwatt will accept tools sent by the buyer to carry out his orders, even the shipment of the tools is done without any cost or shipping charges for the seller company. The tool will always be property of the purchaser and Maxiwatt undertakes to make good use of the tool in the production process.

Cancellation charges:

We will not charge our customers for cancellation of orders in stock items. Orders for specially manufactured products will be subjected to a cancellation fee depending on how far into the manufacturing process the goods are at the time of cancellation.

Prototypes:

If the goods ordered by the buyer, are based upon a prototype, there is no guarantee that covers the material purchased by the buyer because it is his responsibility to test the prototype before the execution and application, due to the possible modifications needed for the prototype such as material and assembly methods.

Warranty:

Maxiwatt guarantees its products against defects in materials and manufacturing for one year after the date of delivery, provided that they have been used and maintained correctly. This is not to be confused with useful life of the heater which can be from minutes to several years. Elements used in aggressive environments, fluids and chemical solutions are not guaranteed in any event against corrosion or other defects. Maxiwatt will not guarantee any of its products against damage caused by corrosion or use in aggressive environments. Heaters that are inactive or stored for long periods can absorb moisture electrical insulation value decreases, can be restored by either preheating or being slowly taken up to temperature. The Warranty is limited to replace or repair the defective element.

Law:

The validity, interpretation and execution of this agreement and/or order of any related dispute shall be submitted to the judges and courts of Miami FL to register express of any other law.

## Security specifications

- Cartridge heater to use only in industrial environments.
- Cartridge element with high wattage density in w/cm<sup>2</sup> which develops high temperatures.
- Serious burns can result if skin comes in contact with parts of the warming system.
- The installations process for a cartridge heater requires expert knows and qualified by the installer.
- It is necessary to use glasses, safety gloves and clothing for high temperatures.

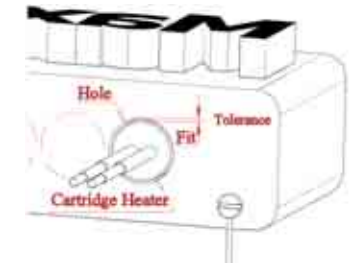
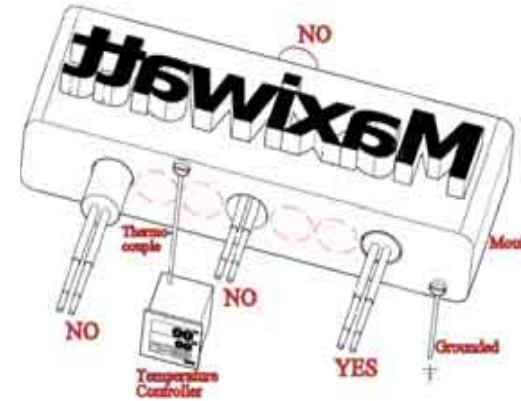
Installation:

- This equipment must be grounded.
- Indicate with symbols warning of hot surfaces.
- Store the most protected from any moisture.
- Cut the total current of the machine or mold.
- Check that the machine or mold is at room temperature.
- Introduction without any anti-grippant paste.
- Exclusively for holes with H7 tolerance.
- Attach regulator and cut systems (thermocouples and regulators).
- Introduce the 100% of the length of the heater.
- Do not place the cable inside the hole.
- Protect the heater cable and entrance connection against shocks, splashes and excess material.
- Neither take nor transport the heater for the tails.
- Keep the tails away from heat sources and protected from it.
- Do not repair damaged tails. Replace them with new ones identical to the originals.
- Indicate and send before accepting the order, in writing, the work conditions (vibration,blows,humid environments...).
- Never stop running without qualified human presence.
- All exposed parts are mandatory for safety people and goods.

Installation tips:

Cartridge heaters must be installed as tight as possible. You should take in consideration the following factors when drilling out:

- The inner of the drill must be uniform, no scratches or different diameters including minimal differences. We recommend finishing with a broach.
- Note that heat rises, the dissipation is higher at the ends and heat is concentrated in the centre.
- Choose stock sizes. -Try to have a hole with exit, it would be easier to remove the heater.
- The connection never have to be in the drill, run the risk of turn or burn.
- The connections have to be protected to prevent loss of liquid, plastic, gases, etc.
- We recommend gauges installation that must be placed at maximum 15mm of the heater. This last one must be
- Connected to a temperature controller.
- The cartridges must have minimum three diameters separation between them.



### QUALITY CONTROL

All heaters are tested under hard quality check points that are certified by an independent company. In compliance with ISO 9001:2000.

Guidelines, we subject our heaters to the following tests:

- Diameter.
- Length.
- Volts.
- Watts.
- Termination.
- Tails length.
- Leakage current:(cold) =0.1ma A 242V.
- Isolation: (cold) =5ml Ohms minimum to 500V
- Dielectric strength:1500v 1/seg.
- Length tolerance: All units to 41/2 inches (115 mm) long: ±332 inch (±2.4 mm)  
1/8 inch diameter units over 41/2 inches (75 mm) long: ±3 %  
All other units over 41/2 inches (115 mm) long: ±2 %
- Diameter tolerance : 1 in. units:±/ - 0.003 in. (0.02 to -0.08 mm ).  
All other units: ±/ - 0.002 in.(0.02-0.07mm)
- Connection tolerance: 0,59 in.(±/-15mm)
- Power tolerance:(w) +5% / -10%
- Cold zone pending length and diameter around 0,196 to 0,59 (5 to15mm)

This is very important  
Introduce  
holes tolerance  
±0.002in.  
(-0.02 / -0.06 mm )

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