

# CARTRIDGE HEATERS

Cartridge heaters, also called heating rods come in cylindrical form elements, in different diameters and in variable lengths.

The heat transfer process varies according to the required application, such as heating :

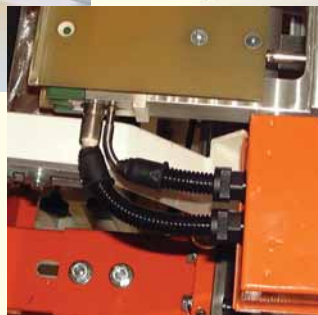
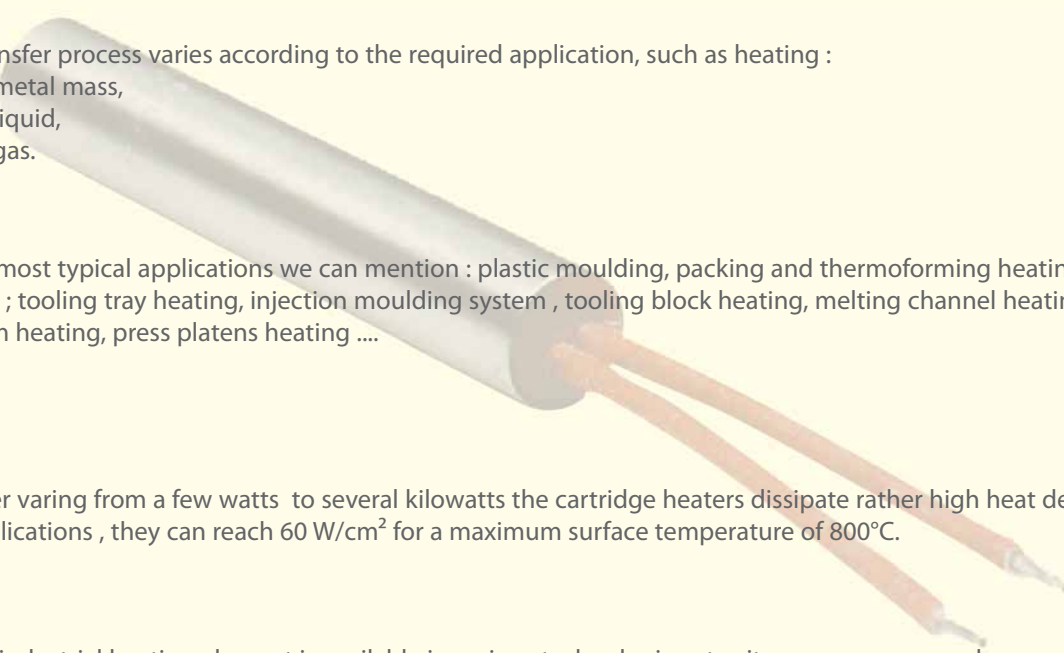
- a metal mass,
- a liquid,
- a gas.

Among the most typical applications we can mention : plastic moulding, packing and thermoforming heating equipment ; tooling tray heating, injection moulding system , tooling block heating, melting channel heating, brake system heating, press platens heating ....

With a power varying from a few watts to several kilowatts the cartridge heaters dissipate rather high heat densities. In some applications , they can reach  $60 \text{ W/cm}^2$  for a maximum surface temperature of  $800^\circ\text{C}$ .

This type of industrial heating element is available in various technologies to suit your purposes, such as :

- o **Traditional cartridge heaters** : ..... Standard application,  
**low density, medium density and high density.**
- o **Split cartridge heaters** ..... Ease of removal.

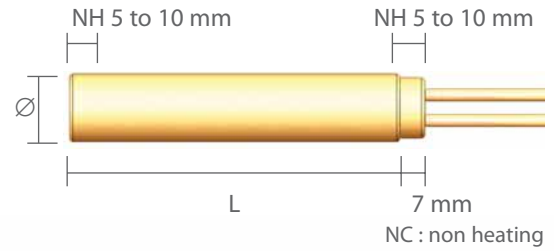


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# STANDARD CARTRIDGE HEATERS

- Whether they are kept in stock or not, standard cartridge heaters are manufactured according to high density technology.
- This technology requires a H7 bore fit (see p.8).
- Stocked cartridge heaters are available within 48 hours, within the limit of our stock.
- Maximum watt density over the surface of the cartridge can reach 50 W/cm<sup>2</sup>, under specific conditions.
- Rated Wattage : from 75 to 2500 W.
- Rated Voltage : 230 V single phase.
- Stainless steel sheath.
- Ceramic end cap protecting the connection leads.
- Standard connection leads ; flexible multi strands, nickel core wire with fiberglass silk silicone impregnated insulation.
- Tolerance over the length : L < 100 mm : ± 2 mm.  
L ≥ 100 mm : ± 2 %.
- Manufactured in accordance with EN 60335-1 standards  
Tolerance over the wattage : +5% -10%  
Leakage current < 0.5 mA/kW

- Standard cartridge heater's dimensions :



Nominal Ø - mm (equiv. inches)	Tolerance over Ø - mm	Min Length - mm (equiv. inches)	Max Length. - mm (equiv. inches)
6.35 - (1/4")	-0.03 / -0.05	31.75 (1"1/4)	152.4 (6")
6.5	-0.03 / -0.05	32	160
8	-0.04 / -0.06	32	160
9.52 - (3/8")	-0.04 / -0.07	31.75 (1"1/4)	203.2 (8")
10	-0.04 / -0.07	32	200
12.5	-0.05 / -0.08	40	300
12.7 - (1/2")	-0.05 / -0.08	38.1 (1"1/2)	304.8 (12")
15.87 - (5/8")	-0.05 / -0.08	50.8 (2")	304.8 (12")
16	-0.05 / -0.08	40	300
19.05 - (3/4")	-0.06 / -0.1	63.5 (2"1/2)	304.8 (12")
20	-0.06 / -0.1	40	300
25.4 - (1")	-0.06 / -0.16	63.5 (2"1/2)	Nous consulter

- Some standard cartridge heaters can be fitted with built in "J" thermocouples (shown in the table as P+tcj), see the layout sketches and the assembling recommendations p.8 & 16. In this case, the standard length of connection leads and thermocouple wires is 1000 mm.
- Our full range of cartridge, from the table below, is UL recognized by Underwriters Laboratories for the USA and Canada. 
- Standard cartridge heaters can be fitted with several types of connection (see p.9) and/or accessories (see p.12)
- Special manufacturing : odd sizes, variable power zone, built in thermocouple .... (see p.16)

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked
6.35 (1/4")	31.7 (1"1/4)	75	250	17	-	H1/4X1.2X75
		100	250	22	H1/4X1.2X100	-
		150	250	34	-	H1/4X1.2X150
		175	250	39	H1/4X1.2X175	-
	175+tcj	1000	39	HJ1/4X1.2X175	-	-
	38.1 (1"1/2)	75	250	15	H1/4X1.5X75	-
		100	250	20	-	H1/4X1.5X100
		100+tcj	1000	20	HJ1/4X1.5X100	-
		125	250	25	H1/4X1.5X125	-
		150	250	29	H1/4X1.5X150	-
		150+tcj	1000	29	HJ1/4X1.5X150	-
		175	250	34	H1/4X1.5X175	-
200		250	39	H1/4X1.5X200	-	
200+tcj	1000	39	HJ1/4X1.5X200	-		
250	250	49	H1/4X1.5X250	-		
50.8 (2")	100	250	13	H1/4X2X100	-	
	100+tcj	1000	13	HJ1/4X2X100	-	
	125	250	16	H1/4X2X125	-	
	150	250	20	-	H1/4X2X150	
	175	250	23	H1/4X2X175	-	
	175	500	23	H1/4X2X175A	-	
	200	250	26	H1/4X2X200	-	
	200+tcj	1000	26	HJ1/4X2X200	-	
	250	250	33	H1/4X2X250	-	
	300	250	39	H1/4X2X300	-	
63.5 (2"1/2)	100	250	10	-	H1/4X2.5X100	
	125	250	12	-	H1/4X2.5X125	

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked
6.35 (1/4")	63.5 (2"1/2)	150	250	15	-	H1/4X2.5X150
		175	250	17	-	H1/4X2.5X175
		200	250	20	H1/4X2.5X200	-
		200+tcj	1000	20	HJ1/4X2.5X200	-
		250	250	25	H1/4X2.5X250	-
		250+tcj	1000	25	HJ1/4X2.5X250	-
	76.2 (3")	100	250	8	-	H1/4X3X100
		150	250	12	H1/4X3X150	-
		175	250	14	-	H1/4X3X175
		200	250	16	H1/4X3X200	-
200+tcj		1000	16	HJ1/4X3X200	-	
250		250	20	H1/4X3X250	-	
250+tcj		1000	20	HJ1/4X3X250	-	
300		250	24	H1/4X3X300	-	
300+tcj	1000	24	HJ1/4X3X300	-		
400	250	31	H1/4X3X400	-		
88.9 (3"1/2)	150	250	10	-	H1/4X3.5X150	
	200	250	13	H1/4X3.5X200	-	
	250	250	16	-	H1/4X3.5X250	
	300	250	20	H1/4X3.5X300	-	
101.6 (4")	125	250	7	-	H1/4X4X125	
	150	250	8	-	H1/4X4X150	
	175	250	10	-	H1/4X4X175	
	200	250	11	H1/4X4X200	-	
	250	250	14	H1/4X4X250	-	
	300	250	17	H1/4X4X300	-	
	300+tcj	1000	17	HJ1/4X4X300	-	

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Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked	
6.35 (1/4")	101.6 (4")	350	250	20	H1/4X4X350	-	
		127 (5")	150	250	7	-	H1/4X5X150
			200	250	9	H1/4X5X200	-
			250	250	11	-	H1/4X5X250
			300	250	13	H1/4X5X300	-
	152.4 (6")	350	250	15	-	H1/4X5X350	
		400	250	18	-	H1/4X5X400	
		150	250	5	-	H1/4X6X150	
			200	250	7	-	H1/4X6X200
	200	250	11	-	H1/4X6X300		
		350	250	13	-	H1/4X6X350	
	400	250	14	H1/4X6X400	-		
		500	250	18	-	H1/4X6X500	
6.5	32	75	250	16	H6.5X32X75	-	
		100	250	22	-	H6.5X32X100	
		150	250	32	-	H6.5X32X150	
		175	250	37	-	H6.5X32X175	
		40	100	250	16	H6.5X40X100	-
	100+tcj		1000	16	HJ6.5X40X100	-	
	125		250	20	H6.5X40X125	-	
	150		250	25	H6.5X40X150	-	
	175		250	29	H6.5X40X175	-	
	200		250	33	H6.5X40X200	-	
	200+tcj		1000	33	HJ6.5X40X200	-	
	250		250	41	-	H6.5X40X250	
	50	125	250	16	H6.5X50X125	-	
		150	250	20	H6.5X50X150	-	
		150+tcj	1000	20	HJ6.5X50X150	-	
		175	250	23	-	H6.5X50X175	
		200	250	26	H6.5X50X200	-	
		200+tcj	1000	26	HJ6.5X50X200	-	
		250	250	32	H6.5X50X250	-	
		250+tcj	1000	32	HJ6.5X50X250	-	
	60	125	250	13	H6.5X60X125	-	
		125+tcj	1000	13	HJ6.5X60X125	-	
		150	250	15	H6.5X60X150	-	
		175	250	18	-	H6.5X60X175	
		200	250	21	H6.5X60X200	-	
		200+tcj	1000	21	HJ6.5X60X200	-	
		250	250	26	H6.5X60X250	-	
		250+tcj	1000	26	HJ6.5X60X250	-	
	80	125	250	9	H6.5X80X125	-	
		175	250	13	H6.5X80X175	-	
		200	250	15	H6.5X80X200	-	
		200+tcj	1000	15	HJ6.5X80X200	-	
		250	250	18	H6.5X80X250	-	
		300	250	22	H6.5X80X300	-	
		300+tcj	1000	22	HJ6.5X80X300	-	
		350	250	24	H6.5X80X350	-	
	100	125	250	7	-	H6.5X100X125	
		125+tcj	1000	7	HJ6.5X100X125	-	
		150	250	8	H6.5X100X150	-	
		200	250	11	-	H6.5X100X200	
		250	250	14	H6.5X100X250	-	
		300	250	17	H6.5X100X300	-	
300+tcj		1000	17	HJ6.5X100X300	-		
350		250	20	-	H6.5X100X350		
400		250	22	H6.5X100X400	-		
130		125	250	5	H6.5X130X125	-	
	200	250	6	-	H6.5X130X150		

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked	
6.5	130	200	250	8	-	H6.5X130X200	
		250	250	10	H6.5X130X250	-	
		300	250	13	-	H6.5X130X300	
		300+tcj	1000	13	HJ6.5X130X300	-	
		350	250	15	-	H6.5X130X350	
		400	250	17	H6.5X130X400	-	
		160	150	250	5	-	H6.5X160X150
	200		250	7	H6.5X160X200	-	
	300		250	10	-	H6.5X160X300	
	350		250	12	-	H6.5X160X350	
	400	250	13	-	H6.5X160X400		
		500	250	17	-	H6.5X160X500	
	8	32	200	250	38	H8X32X200	-
			40	50	250	7	H8X40X50
		40	100	250	14	H8X40X100	-
125			250	19	H8X40X125	-	
125+tcj			1000	19	HJ8X40X125	-	
150			250	23	H8X40X150	-	
200			250	30	H8X40X200	-	
200+tcj			1000	30	HJ8X40X200	-	
50			125	250	15	H8X50X125	-
		125+tcj	1000	15	HJ8X50X125	-	
		150	250	18	H8X50X150	-	
		200	250	23	H8X50X200	-	
		200+tcj	1000	23	HJ8X50X200	-	
60		125	250	11	H8X60X125	-	
		125	500	11	H8X60X125A	-	
		150	250	14	H8X60X150	-	
		200	250	18	-	H8X60X200	
		200+tcj	1000	18	HJ8X60X200	-	
		250	250	23	H8X60X250	-	
		250+tcj	1000	23	HJ8X60X250	-	
		300	250	27	H8X60X300	-	
		400	250	36	H8X60X400	-	
		400+tcj	1000	36	HJ8X60X400	-	
80		150	250	9	H8X80X150	-	
		175	250	11	H8X80X175	-	
		200	250	12	H8X80X200	-	
		200+tcj	1000	12	HJ8X80X200	-	
	250	250	16	H8X80X250	-		
	300	250	19	H8X80X300	-		
	400	250	25	H8X80X400	-		
	400+tcj	1000	25	HJ8X80X400	-		
100	175	250	8	-	H8X100X175		
	200	250	10	H8X100X200	-		
	250	250	12	H8X100X250	-		
	250+tcj	1000	12	HJ8X100X250	-		
	300	250	14	H8X100X300	-		
	300+tcj	1000	14	HJ8X100X300	-		
	400	250	19	H8X100X400	-		
	400+tcj	1000	19	HJ8X100X400	-		
130	175	250	6	-	H8X130X175		
	200	250	7	H8X130X200	-		
	250	250	9	H8X130X250	-		
	300	250	11	H8X130X300	-		
	400	250	14	H8X130X400	-		
	400	500	14	H8X130X400A	-		
	400+tcj	1000	14	HJ8X130X400	-		
160	200	250	6	-	H8X160X200		
	250	250	7	H8X160X250	-		

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Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked
<b>8</b>	<b>160</b>	250+tcj	1000	7	HJ8X160X250	
		300	250	8	H8X160X300	-
		400	250	11	H8X160X400	-
		400+tcj	1000	11	HJ8X160X400	-
		500	250	14	-	H8X160X500
	600	250	17	-	H8X160X600	
<b>9.52</b> (3/8")	<b>31.75</b> (1"1/4)	75	250	13	H3/8X1.2X75	-
		100	250	18	-	H3/8X1.2X100
		150	250	26	-	H3/8X1.2X150
		200	250	35	H3/8X1.2X200	-
	<b>38.1</b> (1"1/2)	100	250	14	H3/8X1.5X100	-
		125	250	18	-	H3/8X1.5X125
		150	250	21	H3/8X1.5X150	-
		200	250	28	H3/8X1.5X200	-
		200+tcj	1000	28	HJ3/8X1.5X200	-
		250	250	35	-	H3/8X1.5X250
	250+tcj	1000	35	HJ3/8X1.5X250	-	
	400	250	42	-	H3/8X1.5X400	
	<b>50.8</b> (2")	100	250	10	H3/8X2X100	-
		125	250	13	-	H3/8X2X125
		150	250	15	-	H3/8X2X150
175		250	18	H3/8X2X175	-	
175		500	18	H3/8X2X175A	-	
200		250	20	H3/8X2X200	-	
250		250	25	H3/8X2X250	-	
250+tcj		1000	25	HJ3/8X2X250	-	
300		250	30	-	H3/8X2X300	
500		250	51	H3/8X2X500	-	
<b>63.5</b> (2"1/2)	100	250	7	-	H3/8X2.5X100	
	125	250	9	-	H3/8X2.5X125	
	150	250	11	-	H3/8X2.5X150	
	200	250	15	H3/8X2.5X200	-	
	250	250	18	H3/8X2.5X250	-	
	300	250	22	H3/8X2.5X300	-	
	350	250	26	-	H3/8X2.5X350	
	400	250	29	-	H3/8X2.5X400	
<b>76.2</b> (3")	150	250	9	H3/8X3X150	-	
	200	250	12	H3/8X3X200	-	
	250	250	14	H3/8X3X250	-	
	300	250	17	H3/8X3X300	-	
	300+tcj	1000	17	HJ3/8X3X300	-	
	400	250	23	H3/8X3X400	-	
	400+tcj	1000	29	HJ3/8X3X400	-	
	500	250	29	H3/8X3X500	-	
600	250	34	H3/8X3X600	-		
<b>88.9</b> (3"1/2)	250	250	12	-	H3/8X3.5X250	
	300	250	14	-	H3/8X3.5X300	
	350	250	17	-	H3/8X3.5X350	
	400	250	19	H3/8X3.5X400	-	
	400+tcj	1000	19	HJ3/8X3.5X400	-	
500	250	24	-	H3/8X3.5X500		
<b>101.6</b> (4")	150	250	6	H3/8X4X150	-	
	200	250	8	H3/8X4X200	-	
	250	250	10	H3/8X4X250	-	
	300	250	12	H3/8X4X300	-	
	400	250	16	H3/8X4X400	-	
	400+tcj	1000	16	HJ3/8X4X400	-	
	500	250	20	H3/8X4X500	-	
600	250	24	-	H3/8X4X600		
750	250	30	H3/8X4X750	-		
<b>127</b> (5")	175	250	5	-	H3/8X5X175	
	250	250	8	-	H3/8X5X250	

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked
<b>9.52</b> (3/8")	<b>127</b> (5")	300	250	9	H3/8X5X300	-
		400	250	12	H3/8X5X400	-
		500	250	15	H3/8X5X500	-
		800	250	25	H3/8X5X800	-
		1000	250	31	-	H3/8X5X1000
	<b>152.4</b> (6")	250	250	6	-	H3/8X6X250
		300	250	8	H3/8X6X300	-
		400	250	10	H3/8X6X400	-
		500	250	12	H3/8X6X500	-
		500	1000	12	H3/8X6X500B	-
600	250	15	-	H3/8X6X600		
800	250	19	H3/8X6X800	-		
1000	250	25	-	H3/8X6X1000		
<b>165.1</b> (6"1/2)	400	250	9	H3/8X6.5X400	-	
<b>177.8</b> (7")	350	250	7	-	H3/8X7X350	
	400	250	8	-	H3/8X7X400	
	500	250	11	H3/8X7X500	-	
	600	250	13	H3/8X7X600	-	
	750	250	16	H3/8X7X750	-	
	1000	250	21	H3/8X7X1000	-	
<b>203.2</b> (8")	300	250	5	H3/8X8X300	-	
	400	250	7	-	H3/8X8X400	
	500	250	9	H3/8X8X500	-	
	600	250	11	-	H3/8X8X600	
	750	250	14	H3/8X8X750	-	
1000	250	18	H3/8X8X1000	-		
<b>10</b>	<b>32</b>	75	250	12	-	H10X32X75
		100	250	16	-	H10X32X100
		150	250	24	-	H10X32X150
		200	250	32	-	H10X32X200
	<b>40</b>	100	250	13	H10X40X100	-
		125	250	16	H10X40X125	-
		150	250	19	H10X40X150	-
		200	250	25	H10X40X200	-
		200+tcj	1000	25	HJ10X40X200	-
		250	250	31	H10X40X250	-
300	250	38	H10X40X300	-		
300+tcj	1000	38	HJ10X40X300	-		
<b>50</b>	125	250	12	-	H10X50X125	
	150	250	14	H10X50X150	-	
	150+tcj	1000	14	HJ10X50X150	-	
	200	250	19	H10X50X200	-	
	250	250	24	H10X50X250	-	
300	250	29	-	H10X50X300		
400	250	38	H10X50X400	-		
400+tcj	1000	38	HJ10X50X400	-		
<b>60</b>	125	250	9	H10X60X125	-	
	150	250	11	H10X60X150	-	
	200	250	15	H10X60X200	-	
	200+tcj	1000	15	HJ10X60X200	-	
	250	250	19	H10X60X250	-	
	300	250	22	H10X60X300	-	
400	250	30	H10X60X400	-		
400+tcj	1000	30	HJ10X60X400	-		
<b>80</b>	150	250	8	-	H10X80X150	
	200	250	10	H10X80X200	-	
	250	250	13	H10X80X250	-	
	300	250	15	H10X80X300	-	
	400	250	20	H10X80X400	-	
	400+tcj	1000	25	HJ10X80X400	-	
	500	250	25	H10X80X500	-	

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# STANDARD CARTRIDGE HEATERS

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stocked	Non stocked	
<b>10</b>	<b>80</b>	630	250	29	H10X80X630	-	
		<b>100</b>	200	250	8	H10X100X200	-
			250	250	10	H10X100X250	-
			250+tcj	1000	10	HJ10X100X250	-
			300	250	12	H10X100X300	-
			350	250	13	H10X100X350	-
			350+tcj	1000	13	HJ10X100X350	-
	400		250	15	H10X100X400	-	
	500	250	19	H10X100X500	-		
	500+tcj	1000	19	HJ10X100X500	-		
	600	250	23	H10X100X600	-		
	700	250	26	H10X100X700	-		
	<b>130</b>	250	250	7	H10X130X250	-	
		300	250	8	H10X130X300	-	
		400	250	11	H10X130X400	-	
		500	250	14	H10X130X500	-	
		600	250	17	H10X130X600	-	
		800	250	23	H10X130X800	-	
		800	500	23	H10X130X800A	-	
	<b>160</b>	300	250	7	-	H10X160X300	
		400	250	9	H10X160X400	-	
		400+tcj	1000	9	HJ10X160X400	-	
		500	250	11	-	H10X160X500	
		600	250	13	H10X160X600	-	
		600	500	13	H10X160X600A	-	
		800	250	18	-	H10X160X800	
	<b>200</b>	400	250	7	-	H10X200X400	
500		250	9	H10X200X500	-		
600		250	10	-	H10X200X600		
750		250	13	-	H10X200X750		
1000		250	17	H10X200X1000	-		
<b>250</b>	1000	250	14	H10X250X1000	-		
<b>12.5</b>	<b>40</b>	125	250	13	-	H12.5X40X125	
		160	250	16	-	H12.5X40X160	
		200	250	20	-	H12.5X40X200	
		250	250	25	H12.5X40X250	-	
		300	250	30	-	H12.5X40X300	
		350	250	35	-	H12.5X40X350	
		400	250	40	-	H12.5X40X400	
		500	250	50	-	H12.5X40X500	
		<b>50</b>	160	250	12	H12.5X50X160	-
	200		250	14	H12.5X50X200	-	
	250		250	18	-	H12.5X50X250	
	300		250	22	H12.5X50X300	-	
	350		250	25	-	H12.5X50X350	
	400		250	29	H12.5X50X400	-	
	500		250	36	-	H12.5X50X500	
	600		250	43	-	H12.5X50X600	
	<b>60</b>	125	250	8	-	H12.5X60X125	
		160	250	10	-	H12.5X60X160	
		200	250	12	H12.5X60X200	-	
		250	250	15	H12.5X60X250	-	
		300	250	18	H12.5X60X300	-	
		350	250	21	-	H12.5X60X350	
		400	250	24	H12.5X60X400	-	
		500	250	30	-	H12.5X60X500	
		600	250	36	-	H12.5X60X600	
	<b>80</b>	125	250	5	-	H12.5X80X125	
		160	250	7	-	H12.5X80X160	
		200	250	8	H12.5X80X200	-	
		250	250	10	H12.5X80X250	-	
		300	250	12	H12.5X80X300	-	

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stocked	Non stocked	
<b>12.5</b>	<b>80</b>	350	250	14	-	H12.5X80X350	
		400	250	17	H12.5X80X400	-	
		500	250	21	H12.5X80X500	-	
		600	250	25	H12.5X80X600	-	
		600	500	25	H12.5X80X600A	-	
		750	250	31	H12.5X80X750	-	
		<b>100</b>	160	250	5	H12.5X100X160	-
	200		250	6	-	H12.5X100X200	
	250		250	8	H12.5X100X250	-	
	300		250	9	H12.5X100X300	-	
	400		250	12	H12.5X100X400	-	
	400+tcj		1000	12	HJ125X100X400	-	
	500		250	16	H12.5X100X500	-	
	600		250	19	H12.5X100X600	-	
	800		250	25	H12.5X100X800	-	
	1000		250	31	H125X100X1000	-	
	<b>130</b>		250	250	6	-	H12.5X130X250
			350	250	8	-	H12.5X130X350
			400	250	9	H12.5X130X400	-
		500	250	11	H12.5X130X500	-	
		600	250	14	H12.5X130X600	-	
		800	250	18	H12.5X130X800	-	
		800	500	18	H125X130X800A	-	
		1000	250	23	H125X130X1000	-	
		1000	1000	23	125X130X1000B	-	
		<b>160</b>	400	250	7	H12.5X160X400	-
			400+tcj	1000	7	HJ125X160X400	-
			500	250	9	H12.5X160X500	-
			500	1000	9	H125X160X500B	-
	600		250	11	H12.5X160X600	-	
	800		250	14	H12.5X160X800	-	
	800		500	14	H125X160X800A	-	
	800		2000	14	H125X160X800E	-	
1000	250		18	H125X160X1000	-		
1000	1000		18	125X160X1000B	-		
1200	250		22	H125X160X1200	-		
<b>180</b>	630		250	10	H12.5X180X630	-	
	1000		250	16	H125X180X1000	-	
	<b>200</b>	300	250	4	H12.5X200X300	-	
		500	250	7	H12.5X200X500	-	
		600	250	8	H12.5X200X600	-	
		800	250	11	H12.5X200X800	-	
800		2000	11	H125X200X800E	-		
1000		250	14	H125X200X1000	-		
<b>250</b>	1200	250	17	H125X200X1200	-		
	1500	250	19	H125X200X1500	-		
	2000	250	22	-	H125X200X2000		
	500	250	6	H12.5X250X500	-		
	800	250	9	H12.5X250X800	-		
	1000	250	11	H125X250X1000	-		
<b>300</b>	1000	1000	11	125X250X1000B	-		
	1250	250	14	H125X250X1250	-		
	1500	250	17	H125X250X1500	-		
	2000	250	22	-	H125X250X2000		
	500	250	5	H12.5X300X500	-		
	800	250	7	H12.5X300X800	-		
<b>12.7</b> (1/2")	<b>38.1</b> (1 1/2")	125	250	14	-	H1/2X1.5X125	
		150	250	17	-	H1/2X1.5X150	
		200	250	22	H1/2X1.5X200	-	
		1000	250	9	H125X300X1000	-	
		1250	250	11	-	H125X300X1250	
1500	250	14	H125X300X1500	-			
2000	250	18	-	H125X300X2000			

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# STANDARD CARTRIDGE HEATERS

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked
<b>12.7</b> (1/2")	<b>38.1</b> (1"1/2)	250	250	28	-	H1/2X1.5X250
		300	250	33	-	H1/2X1.5X300
<b>50.8</b> (2")		150	250	11	H1/2X2X150	-
		200	250	15	H1/2X2X200	-
		250	250	19	H1/2X2X250	-
		300	250	23	H1/2X2X300	-
		400	250	30	H1/2X2X400	-
<b>63.5</b> (2"1/2)		150	250	8	-	H1/2X2.5X150
		250	250	14	-	H1/2X2.5X250
		300	250	16	-	H1/2X2.5X300
		400	250	22	H1/2X2.5X400	-
		500	250	27	H1/2X2.5X500	-
<b>76.2</b> (3")		200	250	9	H1/2X3X200	-
		250	250	11	-	H1/2X3X250
		300	250	13	H1/2X3X300	-
		400	250	17	H1/2X3X400	-
		500	250	21	H1/2X3X500	-
		500	500	21	H1/2X3X500A	-
		600	250	26	H1/2X3X600	-
750	250	32	H1/2X3X750	-		
<b>88.9</b> (3"1/2)		250	250	9	-	H1/2X3.5X250
		300	250	11	H1/2X3.5X300	-
		350	250	12	-	H1/2X3.5X350
		500	250	18	-	H1/2X3.5X500
<b>101.6</b> (4")		250	250	8	H1/2X4X250	-
		300	250	9	H1/2X4X300	-
		300+tcj	1000	9	H1/2X4X300	-
		350	250	10	-	H1/2X4X350
		400	250	12	H1/2X4X400	-
		500	250	15	H1/2X4X500	-
		600	250	18	H1/2X4X600	-
800	250	22	H1/2X4X800	-		
1000	250	30	H1/2X4X1000	-		
<b>127</b> (5")		300	250	7	H1/2X5X300	-
		350	250	8	H1/2X5X350	-
		400	250	9	-	H1/2X5X400
		500	250	12	H1/2X5X500	-
		600	250	14	H1/2X5X600	-
		750	250	17	H1/2X5X750	-
		900	250	21	-	H1/2X5X900
1000	250	23	H1/2X5X1000	-		
<b>152.4</b> (6")		300	250	6	H1/2X6X300	-
		400	250	7	H1/2X6X400	-
		500	250	9	H1/2X6X500	-
		600	250	11	H1/2X6X600	-
		750	250	14	H1/2X6X750	-
		850	250	16	H1/2X6X850	-
1000	250	19	H1/2X6X1000	-		
<b>165.1</b> (6"1/2)		1000	250	17	H1/2X6.5X1000	-
<b>177.8</b> (7")		500	250	8	H1/2X7X500	-
		600	250	9	-	H1/2X7X600
		700	250	11	H1/2X7X700	-
		1000	250	16	H1/2X7X1000	-
<b>203.2</b> (8")		500	250	7	H1/2X8X500	-
		800	250	11	H1/2X8X800	-
		1000	250	14	H1/2X8X1000	-
		1500	250	20	H1/2X8X1500	-
		2000	250	27	-	H1/2X8X2000

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	Wdens. (W/cm <sup>2</sup> )	Stocked	Non stocked	
<b>12.7</b> (1/2")	<b>228.6</b> (9")	500	250	6	H1/2X9X500	-	
		600	250	7	-	H1/2X9X600	
		750	250	9	-	H1/2X9X750	
		1000	250	12	H1/2X9X1000	-	
		1200	250	14	H1/2X9X1200	-	
	<b>254</b> (10")		1500	250	18	H1/2X9X1500	-
			500	250	5	H1/2X10X500	-
			750	250	8	-	H1/2X10X750
			1000	250	11	H1/2X10X1000	-
			1200	250	13	-	H1/2X10X1200
	<b>279.4</b> (11")		1500	250	16	H1/2X10X1500	-
			2000	250	21	H1/2X10X2000	-
			800	250	8	H1/2X11X800	-
	<b>304.8</b> (12")		600	250	5	H1/2X12X600	-
			800	250	7	-	H1/2X12X800
1000			250	9	H1/2X12X1000	-	
1500			250	13	H1/2X12X1500	-	
2000			250	18	H1/2X12X2000	-	
<b>15.87</b> (5/8")	<b>50.8</b> (2")	200	250	12	H5/8X2X200	-	
		300	250	18	-	H5/8X2X300	
		500	250	30	-	H5/8X2X500	
	<b>63.5</b> (2"1/2)		175	250	8	-	H5/8X2.5X175
			250	250	11	-	H5/8X2.5X250
			300	250	13	-	H5/8X2.5X300
			400	250	18	-	H5/8X2.5X400
			500	250	22	-	H5/8X2.5X500
	<b>76.2</b> (3")		750	250	33	-	H5/8X2.5X750
			250	250	9	-	H5/8X3X250
			300	250	10	-	H5/8X3X300
			400	250	14	H5/8X3X400	-
			500	250	17	H5/8X3X500	-
	<b>101.6</b> (4")		600	250	21	-	H5/8X3X600
			750	250	26	-	H5/8X3X750
1000			250	34	-	H5/8X3X1000	
300			250	7	-	H5/8X4X300	
400			250	10	H5/8X4X400	-	
500			250	12	H5/8X4X500	-	
600			250	14	-	H5/8X4X600	
750	250	18	H5/8X4X750	-			
<b>127</b> (5")		1000	250	24	-	H5/8X4X1000	
		1200	250	29	-	H5/8X4X1200	
		400	250	7	-	H5/8X5X400	
		500	250	9	-	H5/8X5X500	
		600	250	11	-	H5/8X5X600	
		800	250	15	H5/8X5X800	-	
		1000	250	18	H5/8X5X1000	-	
1300	250	24	-	H5/8X5X1300			
<b>152.4</b> (6")		400	250	6	H5/8X6X400	-	
		600	250	9	H5/8X6X600	-	
		800	250	12	H5/8X6X800	-	
		1000	250	15	H5/8X6X1000	-	
		1500	250	22	-	H5/8X6X1500	
<b>177.8</b> (7")		500	250	6	H5/8X7X500	-	
		600	250	8	-	H5/8X7X600	
		1000	250	13	H5/8X7X1000	-	
<b>203.2</b> (8")		1500	250	19	H5/8X7X1500	-	
		500	250	5	-	H5/8X8X500	
		750	250	8	H5/8X8X750	-	
1000	250	11	H5/8X8X1000	-			

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Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stocked	Non stocked
15.87 (5/8")	203.2 (8")	1200	250	13	H5/8X8X1200	-
		1500	250	16	H5/8X8X1500	-
		2000	250	22	-	H5/8X8X2000
	228.6 (9")	500	250	5	-	H5/8X9X500
		1000	250	10	-	H5/8X9X1000
		1250	250	12	H5/8X9X1250	-
	254 (10")	750	250	6	H5/8X10X750	-
		1000	250	9	H5/8X10X1000	-
		1300	250	11	H5/8X10X1300	-
		1600	250	14	H5/8X10X1600	-
		2000	250	17	H5/8X10X2000	-
	304.8 (12")	750	250	5	-	H5/8X12X750
1000		250	7	H5/8X12X1000	-	
1500		250	11	H5/8X12X1500	-	
1800		250	13	H5/8X12X1800	-	
2000		250	14	-	H5/8X12X2000	
2500		250	18	-	H5/8X12X2500	
16	40	160	250	12	-	H16X40X160
		200	250	15	H16X40X200	-
		250	250	19	-	H16X40X250
		300	250	23	-	H16X40X300
		400	250	31	H16X40X400	-
		500	250	39	H16X40X500	-
	50	160	250	9	-	H16X50X160
		200	250	11	H16X50X200	-
		250	250	14	-	H16X50X250
		315	250	17	H16X50X315	-
		400	250	22	H16X50X400	-
		500	250	28	H16X50X500	-
	60	160	250	8	H16X60X160	-
		200	250	9	H16X60X200	-
		250	250	12	-	H16X60X250
		300	250	14	H16X60X300	-
		400	250	19	H16X60X400	-
		400+tcj	1000	19	HJ16X60X400	-
	80	250	250	8	-	H16X80X250
		300	250	10	H16X80X300	-
		400	250	13	H16X80X400	-
		500	250	16	H16X80X500	-
		600	250	19	H16X80X600	-
		800	250	25	H16X80X800	-
100	250	250	32	H16X80X1000	-	
	300	250	7	H16X100X300	-	
	400	250	10	H16X100X400	-	
	500	250	12	H16X100X500	-	
	600	250	15	H16X100X600	-	
	800	250	19	H16X100X800	-	
130	1000	250	24	H16X100X1000	-	
	1200	250	29	-	H16X100X1200	
	400	250	7	-	H16X130X400	
	500	250	9	H16X130X500	-	
	600	250	11	H16X130X600	-	
	800	250	14	H16X130X800	-	
160	1000	250	18	H16X130X1000	-	
	1200	250	21	H16X130X1200	-	
	400	250	6	-	H16X160X400	
	500	250	7	-	H16X160X500	
	600	250	8	H16X160X600	-	

Diam. Ø(mm)	Length L(mm)	Watt. P (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stocked	Non stocked
16	160	800	250	11	H16X160X800	-
		800	1000	11	H16X160X800B	-
		900	250	13	H16X160X900	-
		1000	1000	14	H16X160X1000	-
		1000	1500	14	H16X160X1000D	-
		1250	250	18	H16X160X1250	-
	180	1600	250	22	H16X160X1600	-
		850	250	10	-	H16X180X850
		1000	250	12	-	H16X180X1000
	200	1250	250	15	-	H16X180X1250
		500	250	6	H16X200X500	-
		800	250	9	H16X200X800	-
	250	1000	250	11	H16X200X1000	-
		1000	1500	11	H16X200X1000D	-
		1250	250	14	H16X200X1250	-
		1500	250	16	H16X200X1500	-
		2000	250	22	H16X200X2000	-
		500	250	4	-	H16X250X500
300	800	250	7	H16X250X800	-	
	1000	250	9	H16X250X1000	-	
	1300	250	11	H16X250X1300	-	
	1600	250	14	H16X250X1600	-	
	1600	500	14	H16X250X1600A	-	
	2000	250	17	H16X250X2000	-	
19.05 (3/4")	76.2 (3")	300	250	9	-	H3/4X3X300
		400	250	13	-	H3/4X3X400
		500	250	16	-	H3/4X3X500
	101.6 (4")	350	250	7	-	H3/4X4X350
		450	250	10	-	H3/4X4X450
		600	250	13	-	H3/4X4X600
		1000	250	21	-	H3/4X4X1000
	127 (5")	400	250	6	-	H3/4X5X400
		500	250	8	-	H3/4X5X500
		1000	250	16	-	H3/4X5X1000
	152.4 (6")	1500	250	24	-	H3/4X5X1500
		350	250	5	-	H3/4X6X350
500		250	6	-	H3/4X6X500	
203.2 (8")	1000	250	13	-	H3/4X6X1000	
	1500	250	19	-	H3/4X6X1500	
	500	250	5	H3/4X8X500	-	
254 (10")	600	250	6	-	H3/4X8X600	
	1000	250	9	-	H3/4X8X1000	
	2000	250	19	-	H3/4X8X2000	
	800	250	6	-	H3/4X10X800	
304.8 (12")	1000	250	7	H3/4X10X1000	-	
	2000	250	15	-	H3/4X10X2000	
	800	250	5	-	H3/4X12X800	
	1000	250	6	-	H3/4X12X1000	
	1500	250	9	-	H3/4X12X1500	
	2000	250	12	H3/4X12X2000	-	
	2500	250	15	-	H3/4X12X2500	

Our products specifications are subject to change without notice. We reserve the right to modify them according to the technical evolution.

# STANDARD CARTRIDGE HEATERS

Diam. Ø(mm)	Length L(mm)	Watt. (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stockées	Non stockées
20	60	200	250	8	-	H20X60X200
		300	250	12	-	H20X60X300
		500	250	21	-	H20X60X500
		600	250	25	-	H20X60X600
		800	250	33	-	H20X60X800
	80	300	250	8	-	H20X80X300
		400	250	11	-	H20X80X400
		500	250	14	-	H20X80X500
		600	250	16	-	H20X80X600
		800	250	22	-	H20X80X800
		1000	250	27	-	H20X80X1000
	100	1250	250	34	-	H20X80X1250
		350	250	7	H20X100X350	-
		450	250	9	-	H20X100X450
		600	250	12	H20X100X600	-
800		250	16	H20X100X800	-	
1000		250	20	-	H20X100X1000	
1400		250	28	-	H20X100X1400	
130	1600	250	33	-	H20X100X1600	
	400	250	6	-	H20X130X400	
	500	250	7	H20X130X500	-	
	600	250	96	-	H20X130X600	
	800	250	12	-	H20X130X800	
	1000	250	15	H20X130X1000	-	
1500	250	22	H20X130X1500	-		

Diam. Ø(mm)	Length L(mm)	Watt. (W)	Leads (mm)	W.dens. (W/cm <sup>2</sup> )	Stockées	Non stockées	
20	130	2000	250	29	H20X130X2000	-	
		160	500	250	6	H20X160X500	-
			800	250	9	H20X160X800	-
			1000	250	12	-	H20X160X1000
			1500	250	17	-	H20X160X1500
	2000		250	23	-	H20X160X2000	
	200	800	250	7	H20X200X800	-	
		1000	250	9	H20X200X1000	-	
		1500	250	13	H20X200X1500	-	
		1800	250	16	-	H20X200X1800	
		2000	250	18	H20X200X2000	-	
		2500	250	22	-	H20X200X2500	
	250	800	250	6	-	H20X250X800	
		1000	250	7	H20X250X1000	-	
		1500	250	11	-	H20X250X1500	
2000		250	14	H20X250X2000	-		
2500		250	17	-	H20X250X2500		
300	1000	250	6	H20X300X1000	-		
	1500	250	9	H20X300X1500	-		
	2000	250	11	H20X300X2000	-		
	2500	250	14	-	H20X300X2500		
25.4 (1")	76.2 (3")	600	250	15	-	H1X3X600	

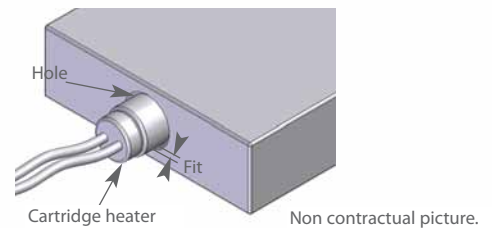
- All these cartridge heaters can be fitted with specific accessories and connection types (see p 9 et p12).
- In addition to standard cartridge heaters, see our special product range (p16)

## ASSEMBLY RECOMMENDATIONS FOR CARTRIDGE HEATERS

### BORING AND FIT OF STANDARD CARTRIDGE HEATERS

In order to facilitate the heat transfer between the cartridge heater and the mass to be heated, a bore with an H7 tolerance is recommended.

Nominal boring diameter in mm	H7 Bore	
	Mini value (mm)	Maxi value (mm)
6.35 (1/4") - 6.5 - 8 - 9.52 (3/8") - 10	- 0	+0.015
12.5 - 12.7 (1/2") - 15.87 (5/8") - 16	- 0	+0.018
19.05 (3/4") - 20	- 0	+0.021



Standard cartridge heaters require a H7 bore fit. However, when needed for applications with high watt density or high temperature requirements, fitting tolerances can be tighter.

### ASSEMBLY RECOMMENDATIONS

In order to improve heat transfer, some basic cares should be taken. For further details, see our technical assembly section.

- Cartridge heaters should never operate in the open air.



- To protect the heater from damage, we recommend using thermal transfer paste like GRIPACIM. It will improve heat transfer between the heater and the object to be heated.

**Caution ! Do not apply paste over connection wires.**

- It is highly recommended to protect connections from excessive bending and to keep lead wires away from moisture, and from any possible matter spillover ...
- Cartridge heaters are manufactured to be part of an assembly. As standard, they are not fitted with an earth wire ; it is up to the user to make sure that the systems is in accordance with the local safety standards.



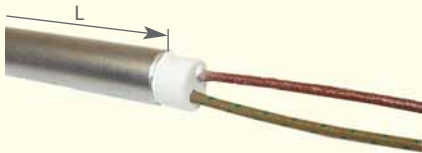
# CONNECTION TYPES FOR STANDARD CARTRIDGE HEATERS

- Stock standard cartridge heaters can be fitted with the following connection types and are available within 72 hours.
- The sealing connection of the cartridges listed below are made of a thermal cement (except for CCT.4).
- For a silicone sealing (Tmax : 260°C), protecting against moisture, please write down the kind of output chosen and specify CCT.15 (T°C max 180°C except if heating area is in front of the connection : 250°C).  
Sealing is not suitable for connection type CCT.1 and CCT.2. Contact us for connection - sealing compatibility

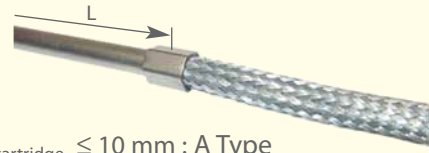
## STRAIGHT CONNECTIONS

- Flexible wires, nickel conductor, fiberglass insulated, designed to support a maximum operating temperature of 350°C. (except for CCT.4)
- Caption : L = total length of cartridge

### Wires - CCT.0 (fitted on a standard cartridge heater)

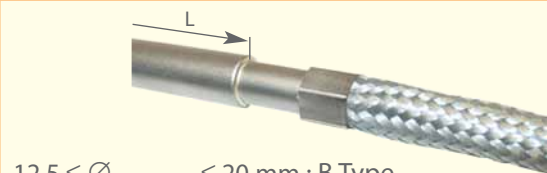
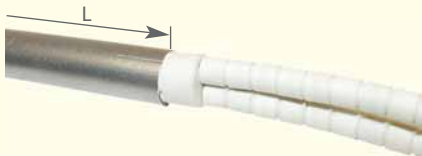


### Braid - CCT.3



$6.35 \leq \varnothing_{\text{cartridge}} \leq 10 \text{ mm} : \text{A Type}$

### Ceramic beads insulations - CCT.1

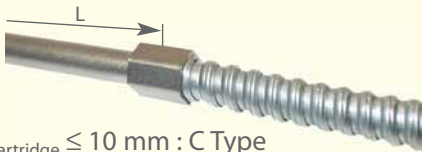


$12.5 \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm} : \text{B Type}$

Galvanized steel braid. They are suitable for a good mechanical protection of lead wires.

Ceramic beads protect the leads and are suitable for high working temperatures in excess of 350°.

### Flexible metal conduit - CCT.2 (GMF)

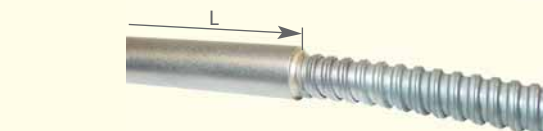


$6.35 \leq \varnothing_{\text{cartridge}} \leq 10 \text{ mm} : \text{C Type}$

### Connection with a multiconductor cable - CCT.4



$6.35 \leq \varnothing_{\text{cartridge}} \leq 10 \text{ mm}$

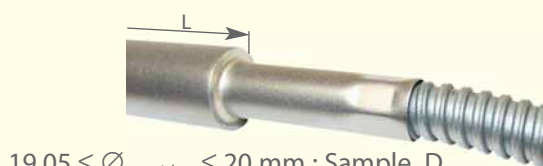


$12.5 \leq \varnothing_{\text{cartridge}} \leq 16 \text{ mm} : \text{B Type}$



$12.5 \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm}$

Copper cable silicone insulated, 2 wires + earth, T° max.: 180°C. Brazed watertight assembly. Silicone seal.



$19.05 \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm} : \text{Sample D}$

Steel galvanized flexible metal conduit, crimped or silver brazed, depending on the diameter of the cartridge heater.

### Reinforced connection - CCT.25



$6.35 \leq \varnothing_{\text{cartridge}} \leq 10 \text{ mm}$

### Without ceramic head rigid connection - CCT.29



Wiring which combines both high intensity and low profile. Lead wires connected to the rigid connection rod and insulated with a high temperature protection sleeve.



$12.5 \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm}$

Recommended when both the cartridge heater and the wiring are in motion. These cables should be very flexible.

Wirings length varies according to the diameter of the cartridge heater.

In case of space restrictions, please consult us.

Possibility of combining a thermocouple or an earth wire, fitted with some of the above connections. Please contact us.

# CONNECTION TYPES FOR STANDARD CARTRIDGE HEATERS

- Stock standard cartridge heaters can be fitted with the following connection types and are available within 72 hours.
- The sealing connection of the cartridges listed below are made of a thermal cement (except for CCT.4).
- For a silicone sealing (Tmax : 260°C), protecting against moisture, please write down the kind of output chosen and specify CCT.15 (T°C max 180°C except if heating area is in front of the connection : 250°C).  
Sealing is not suitable for connection type CCT.10. Contact us for connection - sealing compatibility

## 90° BENT CONNECTIONS

- Flexible wires, nickel core, fiberglass insulated, designed to support a maximum operating temperature of 350°C.
- Copper elbow brazed with silver.
- Flexible metal conduit made of galvanized steel.

Caption : L = total length of cartridge

### Wires - CCT.5



$$6.35 (1/4") \leq \varnothing_{\text{cartridge}} \leq 16 \text{ mm}$$



$$19.05 (3/4") \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm}$$

### Flexible metallic conduit- CCT.6



$$6.35 (1/4") \leq \varnothing_{\text{cartridge}} \leq 16 \text{ mm}$$



$$19.05 (3/4") \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm}$$

## 90° SQUARE BLOCK CONNECTIONS

- Flexible wires, nickel conductor, fiberglass insulated, designed to support a maximum operating temperature of 350°C. (exp. for CCT.10)
- Sealed square block, made of welded stainless steel .
- Flexible metal conduit and braid : galvanized steel.

Caption : L = total length of cartridge

### Wire - CCT.7



### Braid - CCT.9



### Flexible metal conduit - CCT.8



$$\varnothing_{\text{cartouche}} \geq 9.52 \text{ mm } (3/8")$$

### Flexible metal conduit + reinforced tube - CCT.28



### Connection with a multicore cable - CCT.10



$$\varnothing_{\text{cartridge}} \geq 9.52 \text{ mm } (3/8")$$

Copper cable silicone insulated , 2 wires + earth, T°max :180°C  
Braze waterproof assembly. Silicone seal.

### Square block with silicone sleeves- CCT.22



Wires protected with a silicone sleeve.  
Good resistance to vibrations and movements.  
Maximum operating temperature for cables : 200°C.

# CONNECTION TYPES FOR SPECIAL CARTRIDGE HEATERS

Stock standard cartridge heaters can be fitted with the following connection types and are available within 72 hours.

- The sealing connection of the cartridges listed below are made of a thermal cement (except for CCT.4).
- For a silicone sealing (Tmax : 260°C), protecting against moisture, please write down the kind of output chosen and specify CCT.15 (T°C max 180°C except if heating area is in front of the connection : 250°C). Sealing is not suitable for connection type CCT.10A. Contact us for connection - sealing compatibility

## STRAIGHT CONNECTIONS

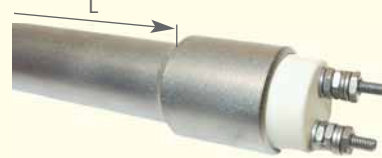
Caption : L = total length of cartridge

### Earth return - CCT.16



Single wire termination + earth return.

### Stud terminals - CCT.17



$9.45 \leq \varnothing_{\text{cartridge}} \leq 16 \text{ mm}$  : A type  
 $18 \leq \varnothing_{\text{cartridge}} \leq 21 \text{ mm}$ : A type



$22 \leq \varnothing_{\text{cartridge}} \leq 32 \text{ mm}$  : B type

M3 stud terminals, supplied with 2 nuts and 2 washers.

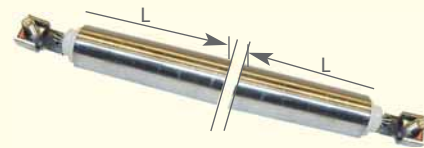
### Pins and receptacle socket- CCT.18



$9.45 \leq \varnothing_{\text{cartridge}} \leq 18 \text{ mm}$

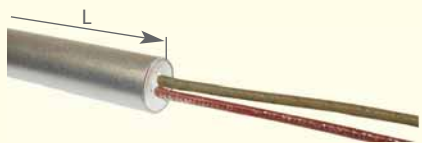
Supplied with 2 x  $\varnothing 6 \text{ mm}$  pins, 19 mm CTC, nickel plated steel, specially designed for a quick connection.

### Both ends rigid connection



This type of connection is particularly used for replacing a tubular heating element.

### Flexible connection without ceramic cap - CCT.30



Inside lead connection without head.

## SQUARE CONNECTIONS

- Flexible wires, nickel conductor, fiberglass insulated, designed to support a maximum operating temperature of 350°C.

Caption : L = total length of cartridge

### 90° square connection coming of the tube - CCT.21



This product requires a non heating length of 12 mm on the connection side.

### Flexible metal conduit - CCT.8 A



$\varnothing_{\text{cartridge}} : 11 \text{ à } 12, 13 \text{ à } 15, 16.5 \text{ à } 18, 21 \text{ à } 32 \text{ mm}$

Wirings sleeved in a galvanized steel flexible metal conduit.

### "L" shape side connection at 90° - CCT.23



Stainless steel tube welded at 90° from the heater.

$\varnothing_{\text{cartridge}} \geq 9.52 \text{ mm}$  (3/8")

### Connection with a multiconductor cable - CCT.10 A



$\varnothing_{\text{cartridge}} : 11 \text{ à } 12, 13 \text{ à } 15, 16.5 \text{ à } 18 ; 21 \text{ à } 32 \text{ mm}$

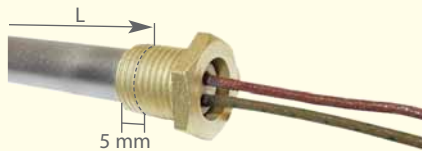
Copper cable silicone insulated, 2 wires + earth, Tmax : 180°C. Brazed waterproof assembly.

Productions of cartridge heaters are subject to our approval, depending on power rating, current, sizes, connections and accessories. See p.14. How to define a cartridge heater.

Our products specifications are subject to change without notice. We reserve the right to modify them according to the technical evolution.

# ACCESSORIES FOR STANDARD CARTRIDGE HEATERS

## Threaded gland - Accessory 11



Brazed watertight threaded gland over the cold zone. The gland sticks out of the heater.  
Threading according to the diameter of the heater. Metrical or gas thread. Please contact us with requirements.

For a different gland position, see our section "Accessories for a special cartridge heater", accessory 11 A.

## Reverse threaded gland - Accessory 12



Brazed watertight threaded gland over the cold zone. The gland sticks out of the heater.  
Threading according to the diameter of the heater. Metrical or gas thread. Please contact us with requirements.

For a different gland position, see our section "Accessories for a special cartridge heater", accessory 12 A.

## Flange - Accessory 13



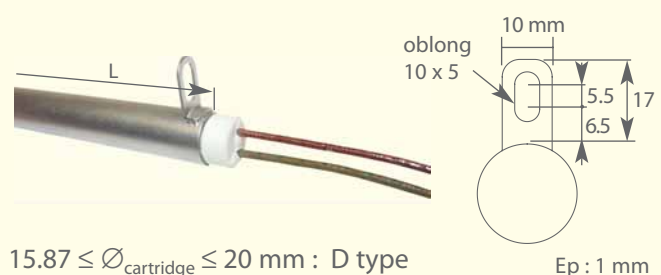
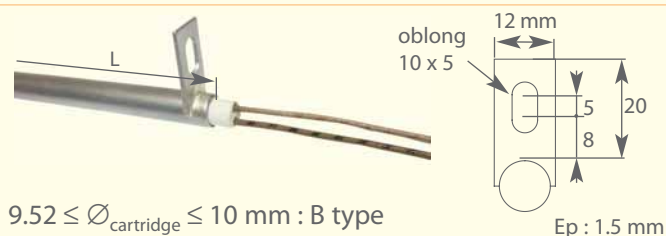
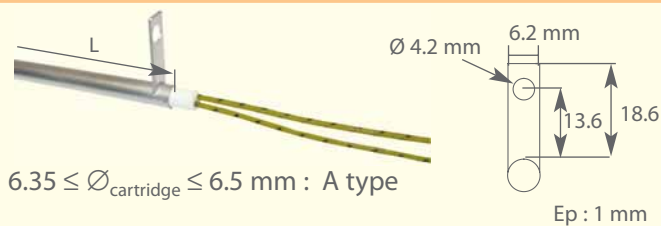
Stainless steel flange brazed over the cold zone.  
Length between the head and the flange : 5 mm.

## Abutment - Accessory 14



Stainless steel abutment brazed over the cold zone.  
Length between the ceramic head and the abutment: 5mm

## Tabs - Accessory 19



Recommended accessory for securing the heater.  
The tab is fitted on the cold zone of the heater.

## Connectors - Accessory 26



2 pins connector - STAS 2



3 pins connector - Hypra

For all other kind of connectors, please contact us.

## Lug terminals - Accessory 20



Round lug terminals, inside diameter of 4 mm or 5 mm, kept in stock. Other dimensions on request. Imperatively precise the diameter when ordering.



# ACCESSORIES FOR STANDARD CARTRIDGE HEATERS

## Flexible spring - Accessory 27



Please, consult us with your requirements.

This system protects cables while the cartridge heater is in motion.

## End threaded fitting for flexible conduct- Accessory 31



Flexible metal conduit  $\varnothing_{\text{external}} : 10 \text{ mm}$

Gland brazed to a flexible metal conduit, used for coupling it to a plug or for connecting it to an electrical box. Gland threaded to electrical standards.

## Copper end disk - Accessory 32



$\varnothing_{\text{cartridge}} \geq 12.5 \text{ mm}$

Copper end disk welded to the bottom of the cartridge. Enables easy removal of the heater.

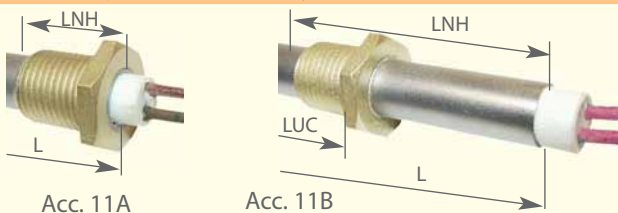
- Available within 72 hours for mounting on stock standard cartridge heaters within the limit of available stock.
- The sizes of these accessories vary according to the diameter of the heater. In case of space restrictions (overall dimensions) for these accessories, please indicate your limitation.
- Combining connections and accessories is possible, after checking with our engineering department.

# ACCESSORIES FOR SPECIAL CARTRIDGE HEATERS

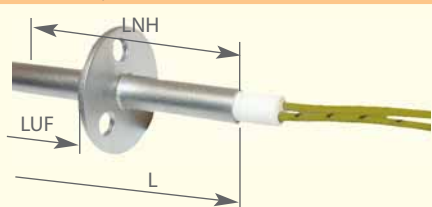
- These assembly types allow a temperature reduction on the wirings. These accessories are fitted on cold zones. These cold zone will be longer than the ones of our standard cartridge heaters.
- Please, specify the position of the chosen accessory, by indicating the LU length (Length under ...).

Caption : - L = Total length of cartridge - LNH = length non heating  
- LU = Length Under .... According to the model : (C = cap ; T = tab ; F = flange).

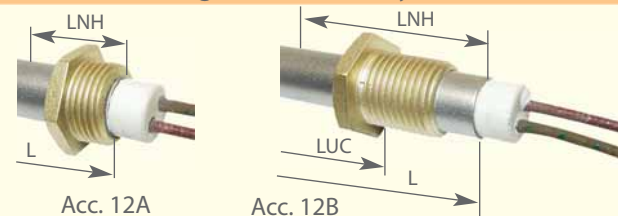
## Threaded gland - Accessory 11 A ou 11 B



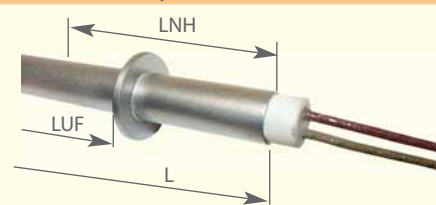
## Flange - Accessory 13 A



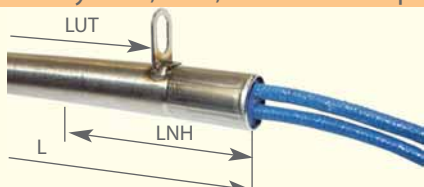
## Reverse threaded gland - Accessory 12 A ou 12 B



## Abutment - Accessory 14 A



## Tabs - Accessory 19 A, 19 B, 19 C or 19 D special



Overall dimensions of the various tabs, see accessory 19, p12.

- The sizes of these accessories vary according to the diameter of the heater. In case of space restrictions (overall dimensions) for these accessories, please indicate your limitation.
- Combining connections and accessories is possible, after checking with our engineering department.
- Productions of cartridge heaters are subject to our approval, depending on power rating, current, sizes, terminations and accessories.

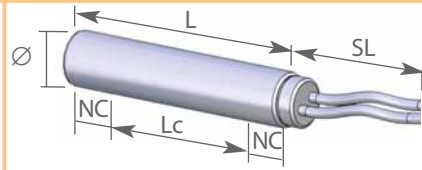
Our products specifications are subject to change without notice. We reserve the right to modify them according to the technical evolution.

# DEFINING A CARTRIDGE HEATER

Form available on our web site : [www.acim-jouanin.fr](http://www.acim-jouanin.fr)

**Company :** ..... **Tel :** ..... / **Fax :** .....  
**Contact :** ..... **Department :** ..... **Date :** .....  
**Brand of the machine on which the cartridge will be mounted :** .....

Unless specified otherwise, your cartridge heaters will be manufactured as follows :  
 - With standard cold zone (from 5 to 10 mm at each extremity),  
 - Standard wiring supplied with a ceramic cap and a termination lead of 250 mm,  
 - Heat resistant cement sealing.



Ø : Diameter  
 L : Total length, excluded ceramic cap\*  
 Lc : Lg heating  
 NC : Lg non heating  
 SL : Leads length

\* Exemple : Drawing with connection type CCT.0

**Dimensionnel de la cartouche :**

Diameter Ø (mm) : .....  
 Length L (mm) : .....  
 Wattage (W) : .....  
 Voltage (V) : .....

Non heating length (mm) : .....  
 Connection side :  Standard  Autre : .....  
 Opposite to connection :  Standard  Autre : .....

**Material :**

Stainless steel  Brass

**UL approval :**

**Quantity :** .....

**Connection \* :** Select the shape and connection type

**Connection number :** CCT. ....

If the number is unknown, full fill the questionnaire below :

**Lead termination :**

- Type :  Leads  Without ceramic head  Reinforced connection
- Flex. metal conduit + reinforced tube  Silicone tube (90° squ.)
- Multiconductors wires
- "L" shape side connection at 90°  C. coming of the tube (90°sq)
- Flexible connection without ceramic cap  Earth return

- Lead length (mm) (by multiple of 250 mm) : .....

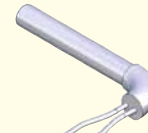
- Leads type (except multiconductors wires) :

- Standard (nickel conductor, fiberglass insulated)
- PTFE (nickel conductor PTFE insulated)
- CS (copper conductor, silicone insulated)
- CSES ( copper conductor, silicone insulated, extra flexible)

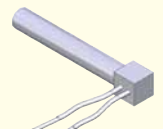
**Connection type**



Straight



90° bent



90° square

**Type of protection :**

- Ceramic beads  Braid  Flexible metal braid

Lead length (mm) : .....

(This length must be shorter than the length of the lead)

**Other connection types :**  Pins and receptable socket

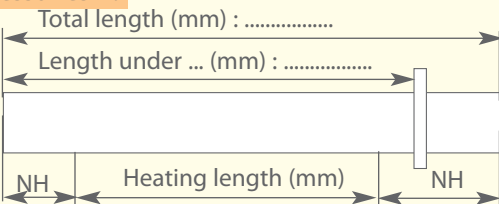
- Stud terminals  Both ends rigid connection

*Informations written in italic, require productions of special cartridges.*

**Sealing connection :**

Cement  Silicone

**Accessoires \* :**



NH : non heating length

**N° accessories :** .....

(Indicate the disposition of the accessorie on the sketch.)

- Threaded fitting :  Internal  External / Thread : .....
- Gaz  Metrical
- Anchor tabs  Mounting flange  Abutment / Dimensions : .....

Other accoessories :  Spring  Threaded fitting  Lug terminals

- Reinforcement end cap  Plugs : kind of plug : .....

Other informations : .....

**Thermocouple :**

- Thermocouple type :  J  K

- Leads length (mm) : .....

- Working temperature : .....

- Positionnement : At the bottom of the cart. :  Insulated  Non insulat.

In the center of the cart. :  Insulated  Non insulated

**Informations complémentaires :**

Bore (compulsory) : .....

Working temperature : .....

Regulation type : .....

Complementary information concerning the applications : .....

.....  
 .....  
 .....  
 .....

For a special cartridge, please precise the complete description of your requirements.

*\*In case of restriction of overall dimensions on accessories and/or on connections, please indicate your limitation. Productions of cartridge heaters are subject to our approval depending on power rating, current, sizes, connections and accessories.*

This form aims at defining a cartridge heater.  
These information will enable us to choose the best suitable cartridge for your application.

**Company :** ..... **Tel :** ..... / **Fax :** .....

**Name :** ..... **Department :** ..... **Date :** .....

**Application :**

Temperature rise       Heating + temperature holding       Temperature holding only

**Product to be heated :** .....

Volume or mass (static) (kg or m<sup>3</sup>) : .....      Flow (m<sup>3</sup>/h) : .....

Initial temperature (°C) : .....      Final temperature (°C) : .....      Ambient temperature (°C) : .....

Time for the temperature rise (hours) : .....

Characteristics : Density (kg/m<sup>3</sup>) : .....      Specific heat (J/ kg.K) : .....      Thermal conductivity (W/m<sup>2</sup>.°C) : .....

Specific information about the product : .....

Is there a change of state during the heating process (ex. solid becomes liquid) : .....

    Melting temperature (°C) : .....      Latent heat of melting (J/kg) : .....

**Type of machine where the cartridges will be mounted :** .....

Zone to be heated : length x width x height (mm) : .....

    Quantity of cartridges requested : ..... (Under conditions)

Cartridges with UL approval :     UL

Voltage (V) : .....

    Type of connection :     Leads or braided leads : length (mm) : .....       Stud terminals       Pins

Characteristics of the block to heat :

    Material : .....      Dimensions (mm) : .....

    Mass or volume of the support (kg or m<sup>3</sup>) : .....

Characteristics : Density (kg/m<sup>3</sup>) : .....      Specific heat (J/ kg.K) : .....      Thermal conductivity (W/m<sup>2</sup>.°C) : .....

Free space around the support : .....

Please send us a drawing of the piece to heat. This will enable us to calculate the heating losses and to choose the best suitable heater, taking into account the dimensions and holes .

**Informations about the environment :**

Field of application : food, industrial, plastics ....    Corrosive environment ...    Need of a reinforced heating zone .... :

.....

Material of the cartridge :     Alumined steel     Stainless steel

Operating place : inside or outside , heated room or nit , windy place ...

.....

**Regulation :**

Position of the temperature sensor : .....

Sensor :  J thermocouple     K thermocouple     PT 100 Sensor        Ungrounded junction     Grounded junction

Type (with bayonet, to screw ...) : .....      Sensor bridge : Diameter .....      Thread .....

Requested type of regulation :  TOR     PID     Other : .....

Don't hesitate to ask for our brochure "temperature sensors"

Cartridges are subject to compatibility of wattage, intensity, dimension, termination, accessories and options

**ACIM JOUANIN - 650, Rue Vulcain - Z.I. n°1 Nétreville - BP 1725 - 27017 EVREUX Cedex - France**  
**Tél : 02.32.62.34.20      Fax : 02.32.62.34.29      E-mail : export@acim-jouanin.fr      Web : www.acim-jouanin.fr**

Our products specifications are subject to change without notice. We reserve the right to modify them according to the technical evolution.

# EXAMPLES OF SPECIAL CARTRIDGE HEATERS

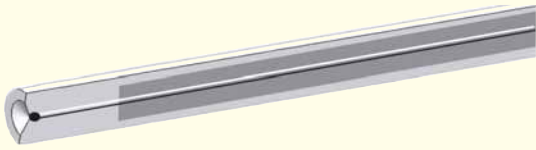
In order to accurately define your cartridge heater we kindly ask you to provide us with detailed specification sheets.

- **CARTOUCHES AVEC THERMOCOUPLE INCORPORE**

J or K thermocouples are insulated with fiberglass, PFA, Standard length leads : 1000 mm (max)

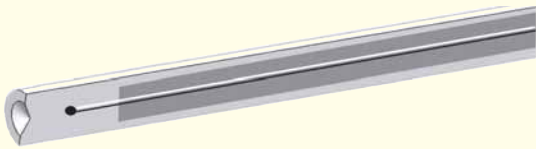
The maxi working temperature on the cartridge heater body : 800°C However, following the using conditions ( bore, cartridges' assembly...). Thermocouples can be subjected to upper temperatures to those given by regulation and undergo damages (notably assemblies 1 and 2). For information: T<sup>m</sup>max on the thermocouples' conductors; T<sub>CJ</sub> 750°C, T<sub>CK</sub> 1100°C. Available with some connections. Please consult us.

## Non insulated from earth / thermocouple located at the bottom of the cartridge - TCJ1 or TCK1



When inserted into a blind hole, it provides a good temperature reading with an average response time.

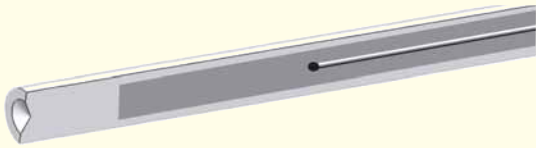
## Insulated from earth / thermocouple located at the bottom of the cartridge



- Fitted as standard on all  $\varnothing$  6.35 mm (1/4") to 8 mm, cartridge heaters with built in thermocouple unless otherwise specified.
- Fitted on cartridges when a built in thermocouple is required at bottom of cartridge and when insulation is not precisely defined.

Earth insulation, allows a good protection of the electric elements of the control system.

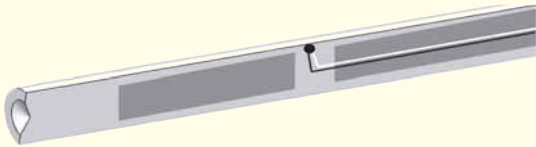
## Insulated thermocouple located in the center of the heating core - TCJ3 or TCK3



- Fitted as standard on all  $\varnothing$  9.52 mm (3/8") to 20 mm, cartridge heaters with built in thermocouple unless otherwise specified.

Highly recommended for all kind of applications, as the thermocouple monitors the internal temperature of the cartridge with an accurate reading and a very fast time of response.

## Ungrounded thermocouple located in the center, in contact with metal tube - TCJ4 or TCK4



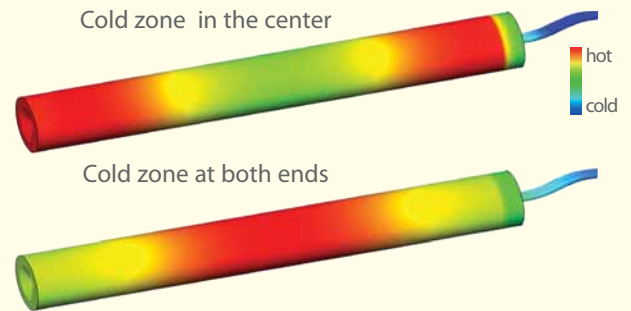
- Assembly for :  $12.5 \text{ mm} \leq \varnothing_{\text{cartridge}} \leq 20 \text{ mm}$

Monitoring of the outer sheet metal temperature. This system saves the adding of a sensor to the part to be heated by the cartridge.

- **OTHER MANUFACTURES :**

### Cold zones

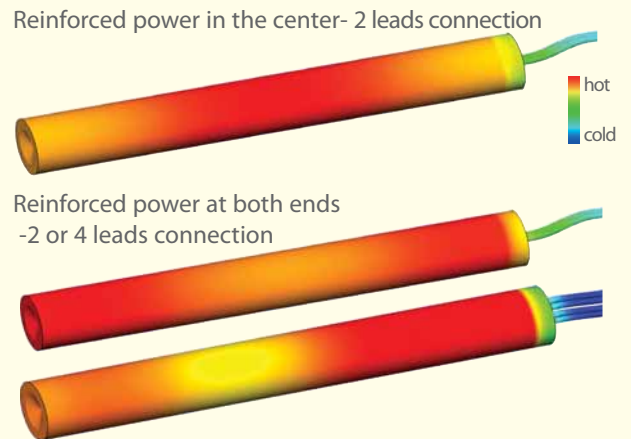
Examples of application :



For instance : The location of the cold zone on the wiring side is particularly used when the heater emerges from the part to be heated. Thus, the cartridge heater will not overheat and it will not conk out.

### Area(s) with variable wattage

Examples of application :



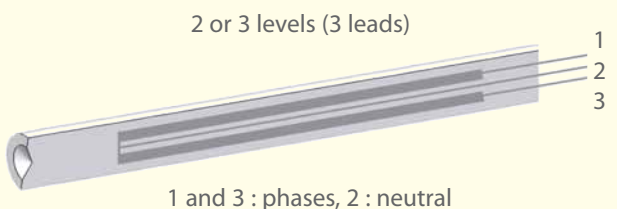
Multiple-zone manufacture, to distribute the heating power.

4 leads connection: different heating circuits available for  $\varnothing_{\text{cartridge heater}} \geq 14 \text{ mm}$

Compensated power at both ends of the cartridge allows a good compensation of the heat losses at each end of the mold or the tooling.

### Multiple temperature levels

Examples of application :



Dual voltage application.

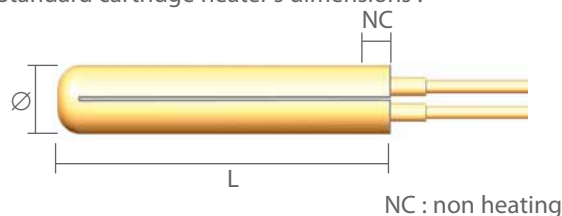
The above example will provide quick heating of the system by only using the necessary power to achieve the required temperature.

Assembly for  $\varnothing_{\text{cartridge heater}} \geq 14 \text{ mm}$



- This type of heater is made of two semicircular halves containing a continuous heating element. When energized, the heater expands to make wall-to-wall contact with the bore, maximizing heat transfer .
- After cooling, the heater will contract for ease of removal and elimination of bore seizure.
- Manufactured to suit customer requirements.
- Rated wattage : 500 to 5100 W.
- Rated voltage : 230 V single phase.
- Incoloy 800 external metal sheath.
- Leads : Woven PTFE-Glass-PTFE over stranded nickel wire - rated to 250°C. Length 12" (300 mm)
- Length tolerance :  $L < 500 \text{ mm} : \pm 3\%$   
 $L \geq 500 \text{ mm} : \pm 2\%$
- Diameter tolerance :  $\pm 0.002'' (\pm 0.0051 \text{ mm})$
- Wattage tolerance :  $\pm 10\%$

- Standard cartridge heater's dimensions :



Ø nominal - mm (equiv. inches)	Unheated lengths mm (equiv. inches)	Length. mini mm (equiv. inches)	Length. maxi mm (equiv. inches)
6.35 - (1/4")	7.9 (5/16")	31.75 (1"1/4)	559 (22")
8	8	38	660
9.52 - (3/8")	9.5 (3/8")	38.1 (1"1/2)	914 (36")
10	9.5	38	915
12	15.9	50	1140
12.5	15.9	50	1140
12.7 - (1/2")	15.9 (5/8")	51 (2")	1143 (45")
15	15.9	65	1250
15.87 - (5/8")	15.9 (5/8")	63.5 (2"1/2)	1524 (60")
16	15.9	65	1525
17.5 (11/16")	15.9 (5/8")	89 (3"1/2)	1625 (64")
19.05 - (3/4")	15.9 (5/8")	89 (3"1/2)	1829 (72")
20	15.9	100	1525
25.4 (1")	25.4 (1")	254 (10")	1524 (60")

## TERMINATIONS

### Leads (Guide leads)



Leads : possible angle to 0° or to 90°.

### Flexible metal braid



### Threaded post terminal



### Flexible metal sheath - termination to 0° or to 90°



**HOW TO DEFINE A CARTRIDGE HEATER**, see p14.

## ACCESSORIES

### Flange



## MANUFACTURING OPTIONS

- Thermocouple :
- Earth wire
- Distributed watt density.



## OPTIONS

- Leads length made to suit customer requirements. High temperature resistant :
  - ceramic beads
  - mica insulated lead - fiberglass
- Hot tip , opposite end from termination.
- Non heating areas, to suit customer requirements.

## BORE SIZING

The respect of an adjustment is necessary to improve the heat transmission to the metallic mass, the insertion and removal of the cartridge.

- mini bore : -0 mm
- maxi bore : +0.18 mm (+0.007")



Electric caskets, temperature's sensors, regulators, electric and extension cables

You have just chosen cartridge answering to your needs.

To use your machine, you need regulation ( temperature's sensors, regulators, electric supply...)

We offer you several sensor technologies, according to your needs:  
 thermocouples, PT 100 sonde, thermistor..... from diverse forms: with bayonet, curved for surface measure, straight, with screw, with head ... with grounded or ungrounded junction

The range of regulator enable several ways of running : PID (Proportionnal Integral Derivative) or AON (All Or Nothing) ...

Do not hesitate to consult our internet website or to ask our specific documentations.





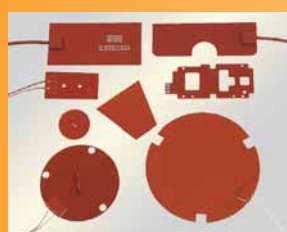
Sensors -  
Temperature controllers



Band heaters



Electrical air  
heaters



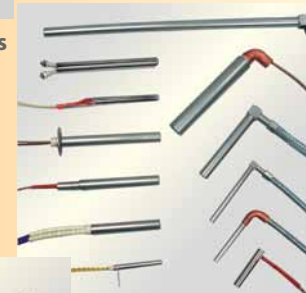
Flexible heaters



Immersion heaters



Tubular heaters - finned heaters



Cartridge  
heaters



Coil heaters



Infrared emitters



Strip heaters



Ovens



Drum heaters



Cast in heaters



Accessories

But also families of : **Tracing ....**



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