

High-Temperature Insertion Heaters



Description

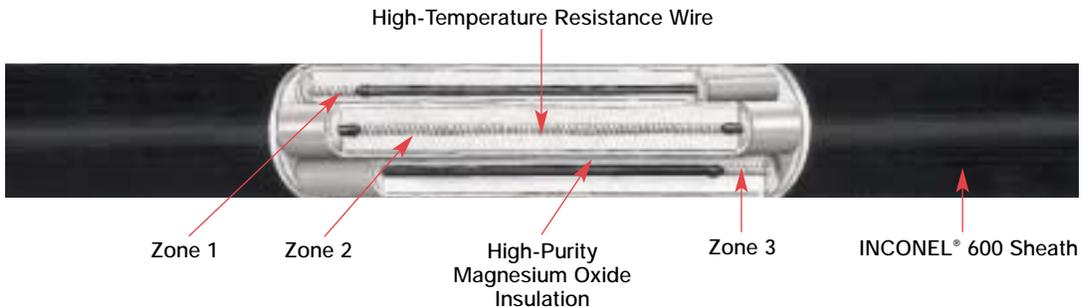
Chromalox® MaxiZone® high-temperature insertion heaters produce continuous sheath temperatures up to 2,000°F (1,095°C). They are designed to achieve precise, uniform temperatures with two or three independently controlled heating zones along the length of the sheath. Radiant heat transfer enables MaxiZone heaters to be smaller than the openings in which they are to be placed for easy insertion and removal.

The MaxiZone insertion heater is constructed of two to six separate metal-sheathed, high-temperature resistance wire heating elements

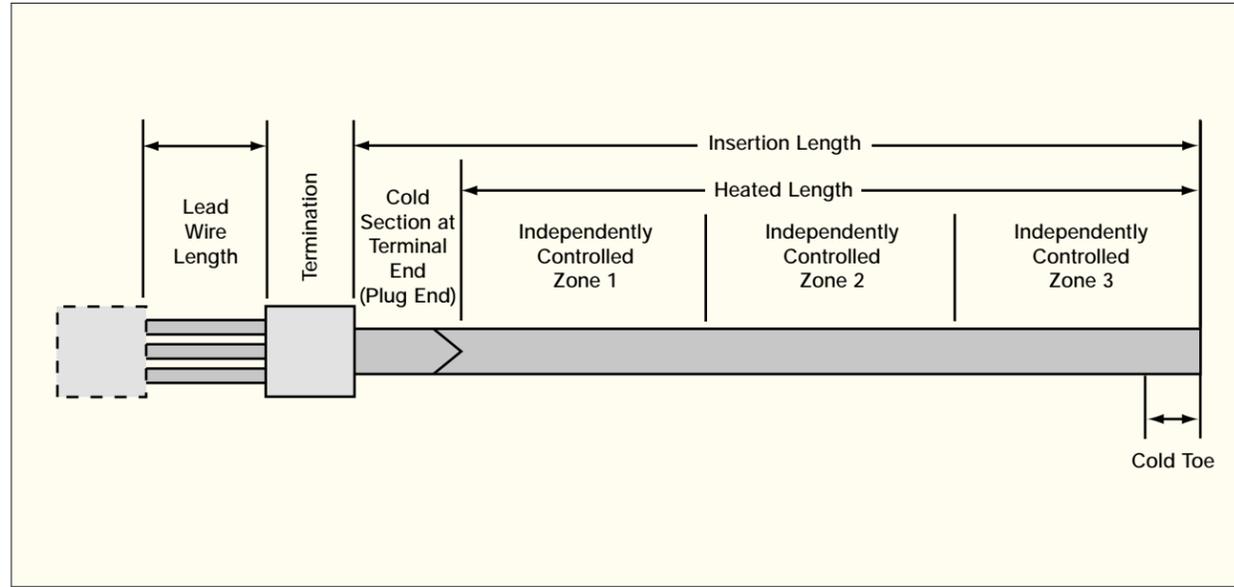
arranged and swaged in place with high-purity magnesium oxide insulation in an INCONEL® 600 outer sheath. A variety of termination assemblies are available, including quick disconnect plugs.

Applications

- Zone control in high-temperature plattens
- Titanium or carbon fiber hot forming
- Aerospace and aircraft manufacturing
- Metal die-casting
- Super-heated gas
- Fluidized bed catalytic reaction



Anatomy of a MaxiZone High-Temperature Insertion Heater



Sheath Length

Overall length of the heater from the point of termination, including no-heat section, bends, heated length (consisting of one, two, or three independently controlled zones), and cold toe.

dependent on the number of independently controlled heated zones:

Single Zone:	1.6 ± 5/16 in.	(40.64 ± 7.9 mm)
Two Zones:	2 ± 5/16 in.	(50.8 ± 7.9 mm)
Three Zones:	2.25 ± 5/16 in.	(57.15 ± 7.9 mm)

Insertion Length

Length of the heater from the beginning of a bend or stopping tab or washer to the cold toe.

Independently Controlled Heated Zones

One, two, or three separately controlled heated zones. These zones can be of varying lengths and wattages.

Cold Toe

At the end of the sheath length opposite the termination end, with a minimum length requirement

Heated Length

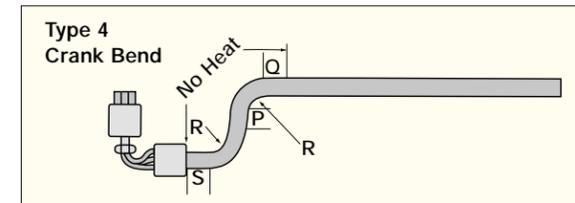
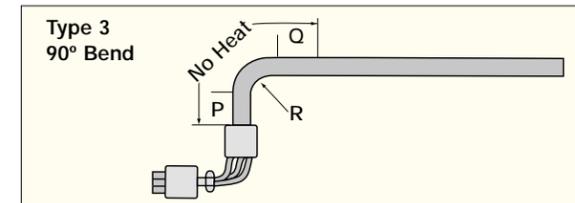
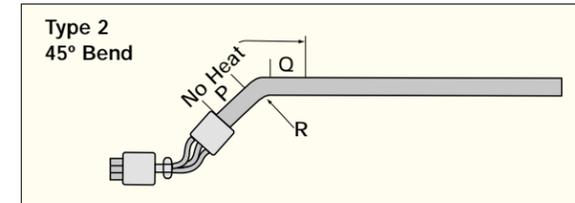
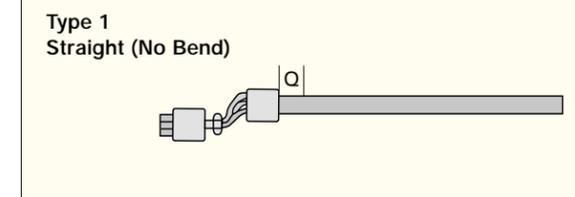
The combination of all independently controlled heated zones.

Heater Diameter	Platen Hole Size	Minimum Heated Length per Zone	Minimum Heated Length	Maximum Heated Length
0.495 in. (12.5 mm)	0.563 or 0.625 in. (14.3 or 15.9 mm)	---	8 in. (203.2 mm)	170 in. (4,318 mm)
0.685 in. (17.4 mm)	0.75 or 0.875 in. (19.05 or 22.2 mm)	8 in. (203.2 mm)	8 in. (203.2 mm)	172 in. (4,369 mm)
0.935 in. (23.75 mm)	1 or 1.25 in. (25.4 or 31.75 mm)	8 in. (203.2 mm)	8 in. (203.2 mm)	165 in. (4,191 mm)

Notes: 0.495 in. (12.5 mm) diameter available in single zone only. Overtemperature thermocouple option available for 0.685 in. (17.4 mm) and 0.935 in. (23.75 mm) diameters only.

Bending Options

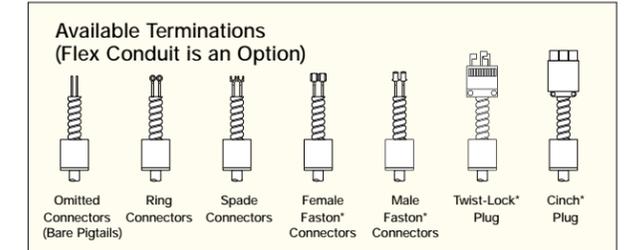
MaxiZone insertion heaters are available as a straight length or in any of three bend configurations, shown below.



Termination Options

A Cinch* plug is standard for two- or three-zone MaxiZone insertion heaters. Twist-Lock* or straight plugs are available for single-zone applications. Socket receptacles may be supplied for the plug terminations.

Other non-plug terminations may also be provided, as shown.



General Specifications

Temperature.....1,500°C to 1,800°F (815°C to 982°C)

Available Diameters.....0.495 ±0.005 in. (12.5 ±0.127 mm) (Single Zone Only)

0.685 ±0.005 in. (17.4 ±0.127 mm)

0.935 ±0.005 in. (23.75 ±0.127 mm)

Other diameters available. Consult factory.

Lengths.....18 in. to 15 ft. (457.2 to 4,572 mm) ±3%

Heated Length

Tolerance.....Consult factory.

Sheath Material.....INCONEL* 600

Resistance Tolerance.....+10%/-5%

Wattage Tolerance.....+5%/-10%

Power.....30 to 50 W/in.²

Voltage.....110 to 480 Vac

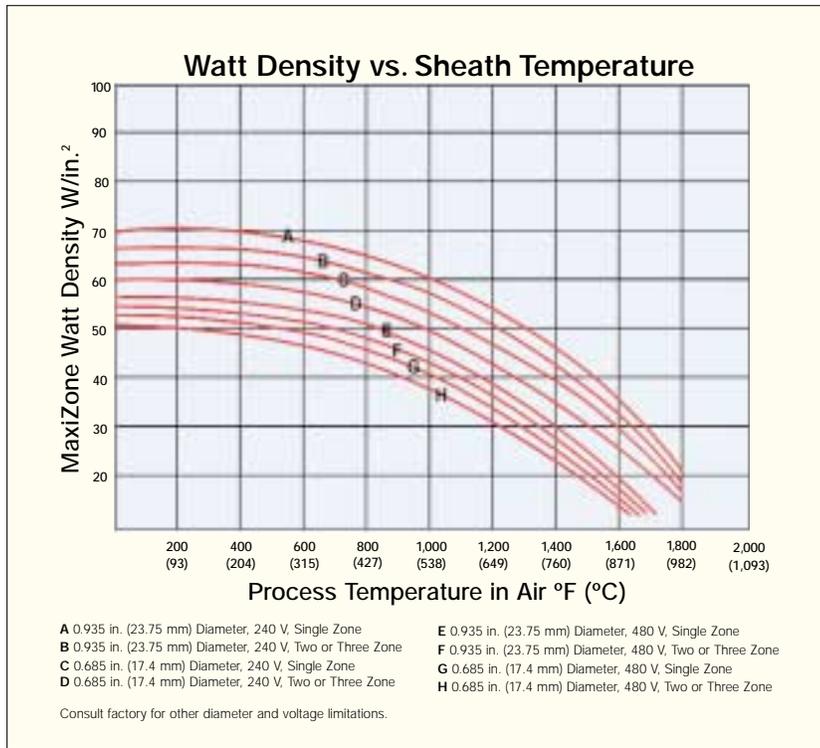
Note: For configurations outside of these values, consult factory.

Bend Type	Heater Diameter	P (Std. Min.)	R (Std. Min.)	Q* (Std. Min.)	S (Std. Min.)	Min. Cold Section at Terminal End**
Type 1 Straight (No Bend)	0.495 in. (12.5 mm)	---	---	2 in. (50.8 mm)	---	Equal to Q
	0.685 in. (17.4 mm)	---	---	2 in. (50.8 mm)	---	Equal to Q
	0.935 in. (23.75 mm)	---	---	2 in. (50.8 mm)	---	Equal to Q
Type 2 45°	0.495 in. (12.5 mm)	4 in. (101.6 mm)	1.125 in. (28.5 mm)	1 in. (25.4 mm)	---	6 in. (152.4 mm)
	0.685 in. (17.4 mm)	4 in. (101.6 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	---	6.5 in. (165.1 mm)
	0.935 in. (23.75 mm)	4 in. (101.6 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	---	7.5 in. (190.5 mm)
Type 3 90°	0.495 in. (12.5 mm)	4 in. (101.6 mm)	1.125 in. (28.5 mm)	1 in. (25.4 mm)	---	7.25 in. (184.15 mm)
	0.685 in. (17.4 mm)	4 in. (101.6 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	---	8 in. (203.2 mm)
	0.935 in. (23.75 mm)	4 in. (101.6 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	---	9.75 in. (247.65 mm)
Type 4 Crank	0.495 in. (12.5 mm)	1.5 in. (38.1 mm)	1.125 in. (28.5 mm)	1 in. (25.4 mm)	2.5 in. (63.5 mm)	8.5 in. (215.9 mm)
	0.685 in. (17.4 mm)	1.5 in. (38.1 mm)	1.5 in. (38.1 mm)	1 in. (25.4 mm)	3 in. (76.2 mm)	10.25 in. (260.35 mm)
	0.935 in. (23.75 mm)	1.5 in. (38.1 mm)	2.5 in. (63.5 mm)	1 in. (25.4 mm)	4 in. (101.6 mm)	12 in. (304.8 mm)

*INCONEL is the registered trademark of Huntington Alloys Corporation. Twist-Lock is the registered trademark of Hubbell Incorporated. Cinch is the registered trademark of Cinch Connectors, Inc. Faston is the registered trademark of Whitaker Corporation.

*Q=Minimum straight length in cold section after last bend transition.

**Minimum length of cold section at terminal end (plug end) = P+Q+R (+S, for crank only). Note: For configurations outside of these values, consult factory.



Ordering Information

Model	
MZ	MaxiZone High-Temperature Insertion Heater
Code	Diameter
50	0.495
60	0.685
90	0.935
Code	Length
XXA	Multiple Digit Length Code "XX" refers to length in inches (whole number value) "A" refers to decimal equivalent portion of remaining length (e.g. 331=33.125 in.)
Code	Serial Number
0000	Assigned at Factory

MZ 90 XXA 0000 ————— **Typical Model Number**

¹ MaxiZone heaters are design-specific products based on application. Consult factory.
² Other diameters available. Consult factory.



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