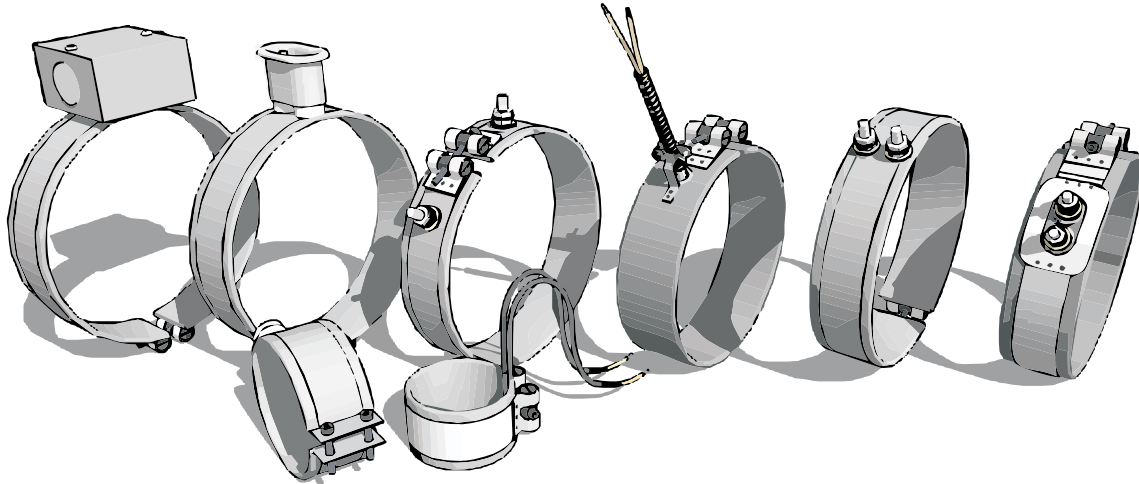


## MICA BAND HEATERS



### Mica Band and Nozzle Heaters

Zesta designs and manufactures all components of the thermal system - heaters, sensors and control systems.

For more than 45 years, Zesta has provided expert solutions to thousands of challenging and unique application problems. This datasheet details Zesta's mica band heater offering.

Mica band heaters are utilized in applications across various industries, and extensively in the plastics industry. Mica band heaters are capable of sheath temperatures up to 1200°F (650°C) with stainless steel sheath, or 900°F (480°C) with aluminized steel sheath. A variety of heater constructions are available, with many termination and clamping options.

This datasheet contains many typical mica band heater configurations. For specialized variations, please consult your Zesta sales engineer for custom applications.

### Performance Capabilities

- Aluminized steel sheath temperatures to 900°F (480°C)
- Stainless steel sheath temperatures to 1200°F (650°C)
- Watt densities to 55 W/in<sup>2</sup> (8.5 W/cm<sup>2</sup>)

### Features and Benefits

- Economic and rugged design.
- Expert engineered for optimal heater performance and longevity
- Available in 2-pc or expandable construction for convenient installation and removal from barrel.
- A variety of termination options to fit application needs.

### Applications

- Extruders
- Blown film dies
- Injection molding machines
- Other cylinder heating applications

### Calculating Maximum Wattage

Calculate the safe maximum wattage for your heater using: **Heated Area x Maximum Watt Density.**

The **Heated Area** of your band heater is calculated by subtracting the no-heat area from the total area (3.14 x I.D. x width). Subtract the no-heat area at the terminals (from table) and any additional no-heat area caused by holes, slots or oversize gaps.

Determine the **maximum watt density** of your heater from the graph below. Apply the necessary correction factors:

- For heaters 2.25" (57mm) to 5" wide (127mm), multiply watt density by 0.8.
- For high expansion cylinders (aluminum or brass), reduce watt density by 3 W/in<sup>2</sup> (0.46 W/cm<sup>2</sup>).
- For heaters 2.25" to 5" (57mm to 127mm) wide installed on a high expansion cylinder, reduce watt density by a total of 3 W/in<sup>2</sup> (0.46 W/cm<sup>2</sup>) only.
- For cylinder surfaces other than smooth, machined finish, reduce watt density by 3 W/in<sup>2</sup> (0.46 W/cm<sup>2</sup>).
- For heaters that will be insulated or enclosed, contact Zesta for specific watt densities.

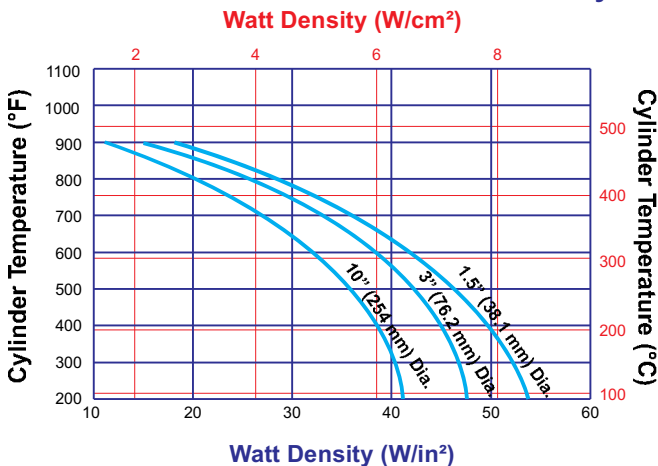
### No-Heat Area (for Mica Bands with Terminals)

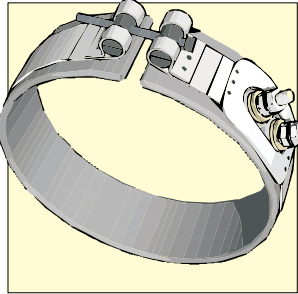
Heater Type	Heater Size		No-Heat Area at Terminals in (mm)
	Diameter in (mm)	Width in (mm)	
One Piece	Less than 2 (50.8)	Up to 6 (152.4)	1 (25.4)xwidth
		Up to 3 (76.2)	1.5 (38.1)xwidth
	2 (50.8) or more	More than 3 (76.2)	1 (25.4)xwidth
Two Piece	3 (76.2) or more	Up to 3 (76.2)	3 (76.2)xwidth
		More than 3 (76.2)	2 (50.8)xwidth

### Physical Limitation of Variations

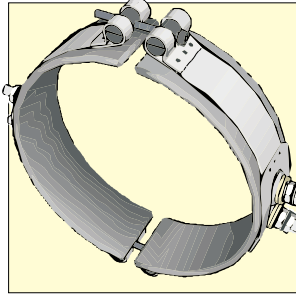
Heater Type	Diameter		Width	
	Min. in (mm)	Max. in (mm)	Min. in (mm)	Max. in (mm)
1 pc.	1.315 (33.3)	22 (559)	0.625 (15.8)	15 (381)
2 pc.	3 (76.2)	44 (1117)	0.625 (15.8)	15 (381)
Expandable:				
Narrow	1.75 (44.4)	— —	1 (25.4)	3 (76.2)
Wide	1.75 (44.4)	— —	2 (50.8)	6 (152.4)
O.D. heater				
1 pc.	3 (76.2)	22 (559)	1 (25.4)	6 (152.4)
2 pc.	3 (76.2)	44 (1117)	1 (25.4)	6 (152.4)
Type K leads	0.75 (19.05)	— —	0.625 (15.8)	15 (381)
Type L leads	0.75 (19.05)	— —	0.75 (19.05)	15 (381)
Type E leads	1.5 (38.1)	22 (559)	0.75 (19.05)	15 (381)
Type F leads	1.5 (38.1)	22 (559)	0.75 (19.05)	15 (381)
Type H leads	1.5 (38.1)	22 (559)	0.75 (19.05)	15 (381)
Type B leads	1.5 (38.1)	22 (559)	0.75 (19.05)	15 (381)
Post terminals	1.315 (33.3)	— —	1 (25.4)	15 (381)
Type A leads	0.75 (19.05)	— —	0.75 (19.05)	15 (381)
Type C leads	1.315 (33.3)	— —	1 (25.4)	15 (381)
Terminal box	3.5 (88.9)	— —	1.375 (34.9)	15 (381)
Plug w/bracket	3 (76.2)	— —	3.5 (88.9)	15 (381)
3-phase	— —	— —	3 (76.2)	15 (381)
European plug				
1 pc. vertical	1.315 (33.3)	22 (559)	1 (25.4)	15 (381)
1 pc. horizontal	3 (76.2)	22 (559)	2 (50.8)	15 (381)
2 pc. vertical	3 (76.2)	44 (1117)	1 (25.4)	15 (381)
2 pc. horizontal	3 (76.2)	44 (1117)	2 (50.8)	15 (381)
HV Wedge-Lok	1 (25.4)	3 (76.2)	1 (25.4)	6 (76.2)
Clamping tabs	2 (50.8)	— —	1 (25.4)	15 (381)
Welded barrel nuts				
1 pc.	2 (50.8)	22 (559)	1 (25.4)	15 (381)
2 pc.	4 (101.6)	44 (1117)	1 (25.4)	15 (381)

### Maximum Recommended Watt Density

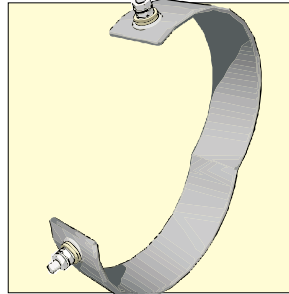




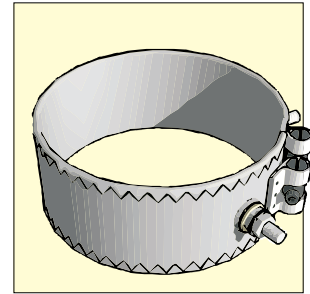
**1-Piece Construction**  
Common mica band heater construction.



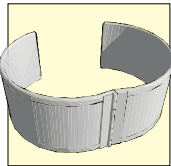
**2-Piece Construction**  
Allows easy installation and removal. Available on heaters 3" diameter or greater. Specify total wattage when ordering.



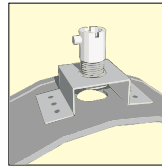
**Expandable Construction**  
An expansion seam allows heater to be opened to the full diameter of the barrel. Heaters should not be expanded more than twice.



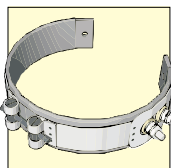
**Flex-band Construction**  
Flexible 1-piece construction allows heater to be opened up to the full diameter of the barrel.



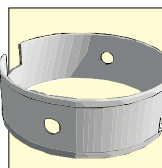
**Hinged Construction**  
Can be opened and closed as often as necessary. Allows easy installation and removal.



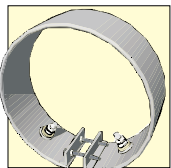
**Bayonet Adaptor**  
Mounting hardware for bayonet style thermocouples.



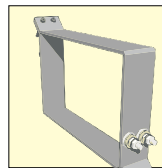
**Partial Coverage**  
Used when an obstruction would prevent a standard full circumferential heater from fitting completely around a machine barrel.



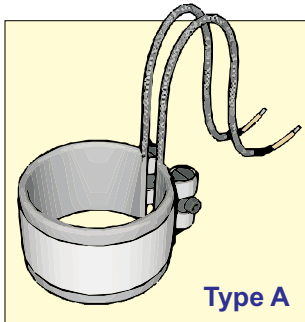
**Holes & Notches**  
Provides access for instrumentation. Standard hole sizes up to 2" diameter.



**Inside-out Band Construction**  
Designed to heat the inside diameter of cylinders. Termination and mounting hardware are located on the I.D. of the heater.

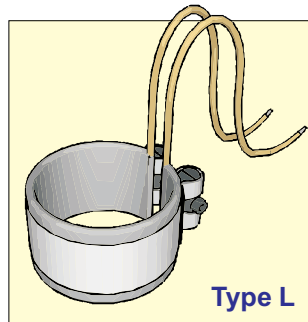


**Rectangular Construction**  
Made to exact customer specifications. Dimensional drawing is required.



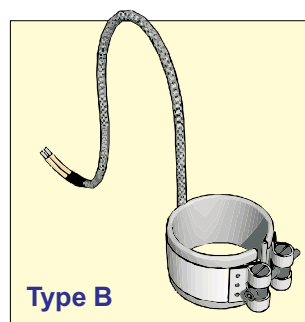
Type A

**Type A**  
Stainless steel braided leads, axial exit from both sides of gap. Braided leads offer flexibility and abrasion protection. Typical lead exit for nozzle heaters.



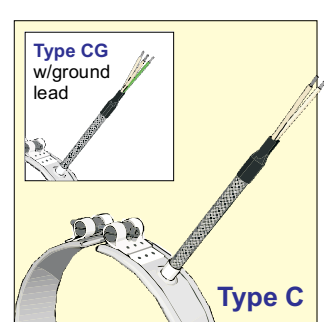
Type L

**Type L**  
Fiberglass leads, axial exit from both sides of gap. Typical lead exit for nozzle heaters.



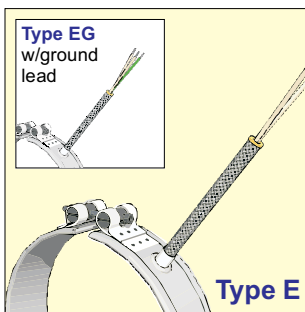
Type B

**Type B**  
Fiberglass leads with tight stainless steel overbraid, axial exit 180° from gap. Braided leads offer flexibility and abrasion protection.



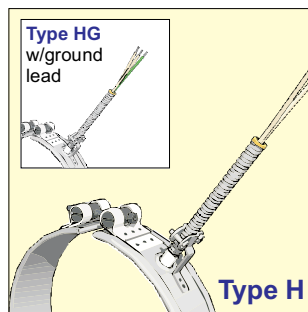
Type C

**Type C**  
Leads with tight stainless steel overbraid, radial exit. Braided leads offer flexibility and abrasion protection.



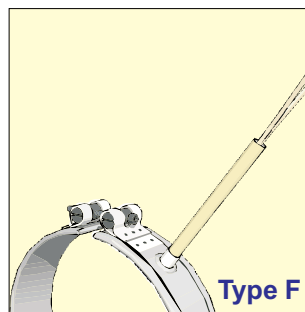
Type E

**Type E**  
Leads with loose stainless steel overbraid, radial exit. Braided leads offer flexibility and abrasion protection.



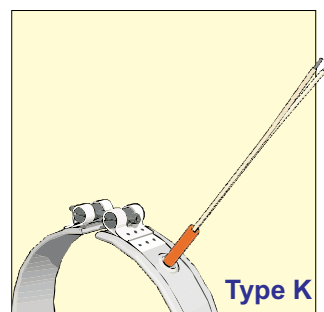
Type H

**Type H**  
Leads with stainless steel flexible hose protection, radial exit. Hose provides superior abrasion protection.



Type F

**Type F**  
Leads with fiberglass sleeving, radial exit. Provides additional temperature protection.



Type K

**Type K**  
Leads with no additional protection, radial exit.



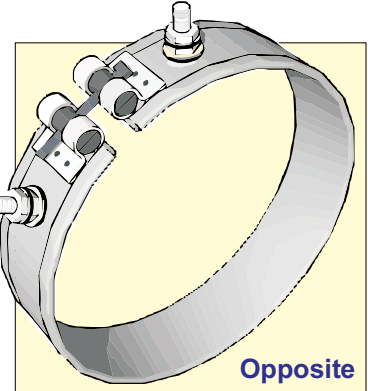
**Parallel**

**Parallel**  
Standard orientation for heaters 1.5" wide or greater. #10-32 threaded screw terminals.



**Tandem**

**Tandem**  
#10-32 threaded screw terminals.



**Opposite**

**Opposite**  
Terminals on each side of gap. Standard for nozzle heaters and band heaters less than 1.5" wide. #10-32 threaded screw terminal.

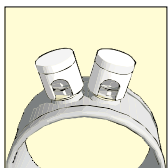
**Terminal Options**



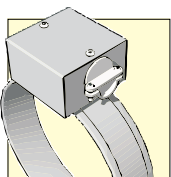
**Three Terminal Construction:**

**Ground Terminal**  
Can be connected to the sheath for easy grounding.

**3-phase or Dual Voltage**  
A third terminal can be added to provide dual voltage or three-heat operation.

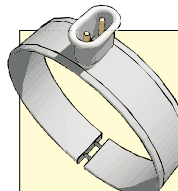


**Ceramic Terminal Covers**  
A cost effective way to insulate post terminals. Sized for standard length posts. #10-32 screw thread size.

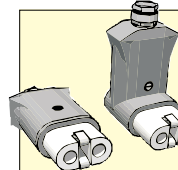


**Terminal Box**  
Covers terminals for added safety. Conduit may be attached to the box through 7/8" dia. holes in the ends of the box.

**European Plug**



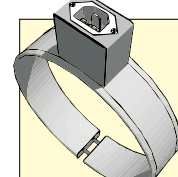
**European Plug (DIN)**  
"ERGE" European style plugs provides a safe and simple way to apply power to band heaters. Maximum of 15A at 240V.



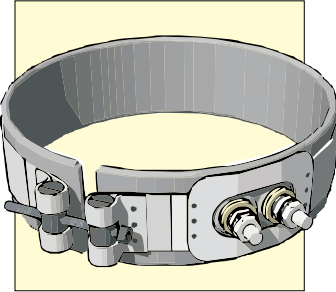
**European Style Female Adaptors**  
For use with "ERGE" high temperature European style plugs.



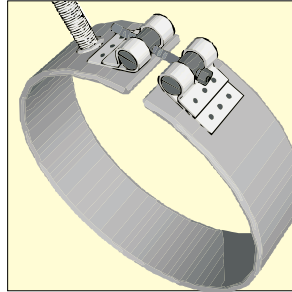
**European Plug (IEC) Vertical**  
Maximum of 15A at 240V.



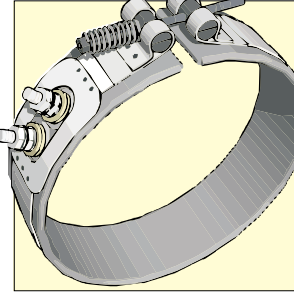
**European Plug (IEC) Horizontal**  
Maximum of 15A at 240V.



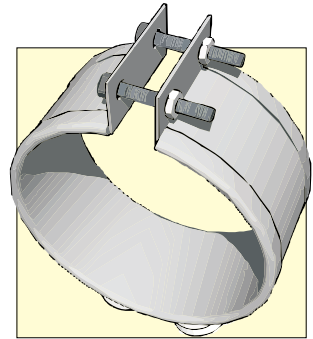
**Stainless Steel Strap**  
Provides superior clamping and heat transfer.



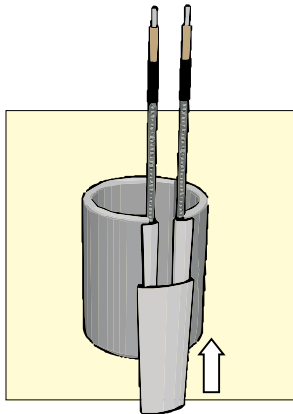
**Integrated Barrel Nuts**  
Barrel nuts are welded directly to the sheath of the heater. No strap to loosen or adjust. 5/8" clearance required.



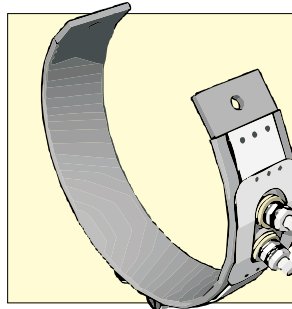
**Spring Loaded Barrel Nuts**  
Maintains a tight heater fit during start-up.



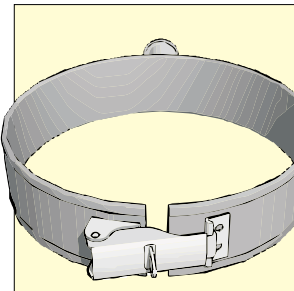
**Flange Lock Up**  
This option is available, however the stainless steel strap design is superior, and should be used whenever possible. 1/2" clearance required.



**Wedge Lock**  
Provides clamping where mounting space is limited. Available with Type A and L leads only. Clearance from I.D. of the heater to the outside edge of the Wedge-Lok is 5/16 inch (8 mm) nominal.



**Clamping Pads**  
Used when an obstruction hinders a standard clamping strap from fitting completely around the machine barrel. Clamping pads have a hole to allow easy fastening to machine barrel.



**Quick Latch**  
Allows easy and fast installation and removal without tools.