

MI BARREL AND NOZZLE

High Performance Heater—More Efficient Heat Transfer



Watlow's MI band is a high performance heater. Its performance and name are derived from Watlow's exclusive mineral insulation—a material that has a much higher thermal conductivity than the mica and hard ceramic insulators used in conventional heaters.

A thin layer of the "high" thermal conductive MI material is used to electrically insulate the element wire from the inside diameter of the heater sheath. A thicker, "low" thermal conductivity layer backs up the element wire, directing the heat inward toward the part being heated. The result is more efficient heat transfer ... a performance solution that lowers element wire temperatures and increases heater life.

Applications

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

Performance Capabilities

- Heater operating temperatures to 760°C (1400°F)
- Watt densities to 35.6 W/cm² (230 W/in²)

Peek™ is a registered trademark of Victrex plc.

Teflon® and Zytel® are registered trademarks of E.I. du Pont de Nemours & Company.

Ultem® is a registered trademark of General Electric.

Features and Benefits

Operating temperatures to 760°C (1400°F)

- Safely melts even the newest resins, like Peek™, Teflon®, Ultem® and Zytel®

Higher watt densities than any other band heater

- Faster heat-up and through-put to increase productivity

High thermal conductivity of MI material

- Eliminates thermal lag and temperature overshoot associated with ceramic knuckle heaters

Stainless steel cover

- Resists contamination

Permanently attached clamp bars

- Eliminates clamping straps, making installation easier



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STL-MIB-0405

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1-800-WATLOW2

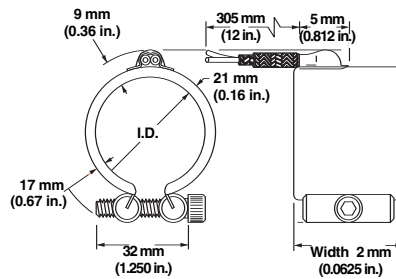
International Technical and Sales Offices: Australia, +61 (39) 335-6449 • China, +86 (21) 5211-0231 • France, +33 (01) 3073-2425 • Germany, +49 (0) 7253-9400-0 • Italy, +39 (02) 458-8841 • Japan, +81 (03) 3518-6630 • Korea, +82 (02) 575-9804 • Malaysia, +60 (4) 641-5977 • Mexico, +52 (442) 217-6235 • Singapore, +65 6773-9488 • Spain, +34 91 675 12 92 • Sweden, +46 31 7014959 • Taiwan, +886 (0) 7-288-5168 • United Kingdom, +44 (0) 115-964-0777



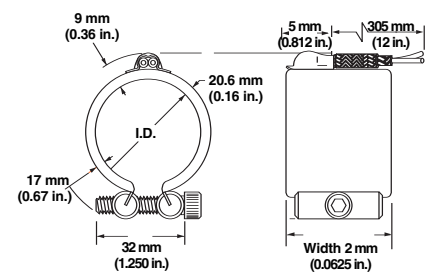
Termination Variations

Leads Type B, Type B—90 Degree Rotation, Type B—180 Degree Rotation or Type C: Two fiberglass-insulated lead wires exit in a single metal braid for good abrasion protection, lead flexibility and wiring convenience. Leads are 51 mm (two inches) longer than braid. Shipped with 305 mm (12 inch) leads, unless longer length is specified.

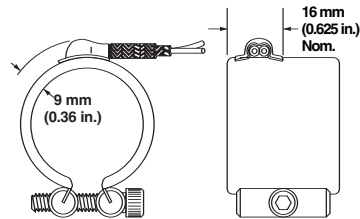
Type B



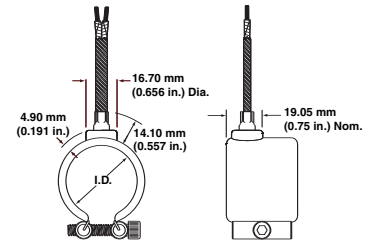
Type B — 180 Degree Rotation



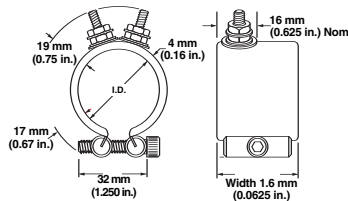
Type B — 90 Degree Rotation



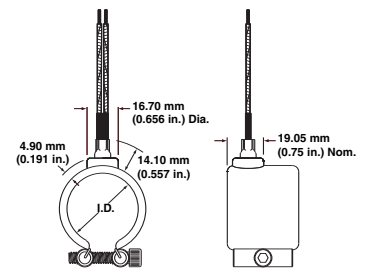
Type C



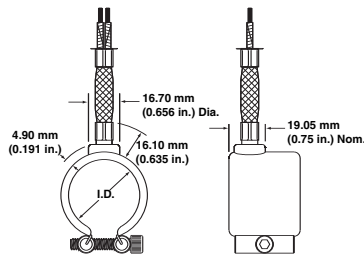
Post Terminals: Provide optimum connections. Screw thread is 10-24.



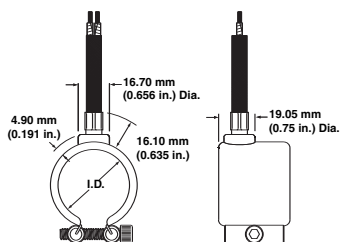
Type K: Flexible lead wires exit vertically from the heater. These leads can be bent adjacent to the heater for a quick and easy connection. To order, specify Type K and length.



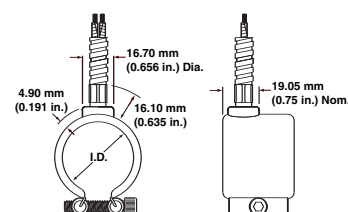
Type E: Loose metal braid encloses two fiberglass leads for good abrasion protection, lead flexibility and wiring convenience. Leads are 51 mm (two inches) longer than braid. Shipped with 305 mm (12 inch) leads, unless longer length is specified.



Type F: Loose fiberglass sleeving encloses two fiberglass leads for additional insulation protection where high temperature or minor abrasion is present. Leads are 51 mm (two inches) longer than the sleeving.



Type H: A flexible steel hose encloses the leads for maximum abrasion protection. Leads are 51 mm (two inches) longer than hose. Shipped with 305 mm (12 inch) leads, unless longer length is specified.



Variations

Lead wire: Heaters rated at less than 250V~(ac) use UL® approved lead insulation for operations to 250°C (480°F) as standard. Lead insulation UL® rated for operation to 450°C (840°F) is available for high temperature applications where the leads are shrouded or enclosed with the heater. These leads are available in any of the Type B with loose braid, as well as Types E, F and H lead configurations. All heaters rated at more than 250V~(ac) use this wire.

Thermocouple: ASTM Type J or K internal thermocouples are available on lead Type B with loose braid. The thermocouple junction, which is welded inside the lead cap or spot welded to heater sheath, provides a signal for measuring relative heater temperature.

Expandable heaters with and without leads: Expandable heaters are two-piece units with a common top metal that allows the heater to expand open to the full diameter of the barrel. On expandable bands, each half will be one half of the total wattage. Plus, on both expandable and two-piece bands, each half will be rated at full operating voltage, unless otherwise specified

Variations (con't)

MI band heaters 38 mm (1.5 inches) wide or greater will have post terminals located next to the expansion joint. Leads may be located anywhere along the circumference except near the gap and at the expansion joint. Two sets of leads required. On 25 mm (one inch) wide MI band heaters, post terminals will be located 90 degrees from the expansion joint. Leads may be located anywhere along the circumference except near the gap and at the expansion joint. Two sets of leads required.

Type SLE: Two fiberglass lead wires exit a single tightly woven metal braid at right angle on the expandable construction verses two sets of leads. Minimum diameter capabilities is 100 mm (four inch). Minimum width capabilities is 38 mm (1.5 inch).

High temperature "quick disconnect" European style plugs: They provide the simplest and safest way to apply power to band heaters. The combination of high temperature male and female quick disconnect plug assemblies eliminates all live exposed terminals and electrical wiring that can be a potential hazard to employees or machine. Maximum amps 15 at 240V~(ac), maximum volts 240.

High temperature "quick disconnect" European style female adapters: Available as an accessory item that must be used in conjunction with high temperature "quick disconnect" European style plugs.

Heavy duty strain relief: Recommended for applications where there is great stress or continued flexing of the leads. The strain relief is available on Type B, Type B—90 degree and Type B—180 Degree leads only.

Ceramic terminal cover: Ceramic covers, with openings for leads, are screwed on to post terminals, providing a convenient, economical insulator.

Metallic terminal box: Metallic terminal boxes are available from stock on 89 mm inside diameter x 38 mm wide (3.5 inch x 1.5 inch) or larger heaters. Terminal boxes, which attach directly to the heater, act as a safety feature by covering the terminals. Conduit may be attached to the box through 22 mm (8.75 inch) diameter holes in the ends of the box. Two piece heaters require two boxes. Oversized terminal boxes are available on heaters 51 mm (two inches) and wider. Consult your Watlow representative.

MI band heaters with holes: MI Band heaters with holes are available on all widths except one inch wide. Consult the Watlow factory in St. Louis, Missouri, for hole sizes and location restraints.

Outside diameter heater: Two fiberglass insulated lead wires rated to 450°C (840°F) exit a metal braid 180 degrees opposite from gap. Type B outside diameter designed and constructed to mate with inside diameter of cylinders.

Clamping Variations

Tig welded barrel nuts with spring loaded clamping: Welded barrel nuts with spring loaded clamping are used during start-up to maintain a tight heater fit on large barrels. This clamping variation is standard for all MI band heaters that are greater than 355 mm (14 inches) in diameter and 38 mm (1.5 inches) or greater in width. Refer to MI Band *Clamping Matrix Application Guide*, on page 16 of the Watlow heaters catalog. For smaller diameter heaters, it is an option and must be ordered separately.

Tig welded barrel nuts: An ideal way to provide access for instrumentation is to specify an oversized gap between the heater ends. If the clamp bar screw interferes with the positioning of the instrumentation device, welded barrel nuts are recommended.

Low profile tig welded barrel nuts: Low profile barrel nuts are available on all widths. Low profile barrel nuts have a clearance of 10 mm (0.406 inch).

Low profile clamp bars: Low profile clamp bars are available on both 25 mm (one inch) and 38 mm (1½ inch) wide heaters, for wider widths consult factory. These bars are 6 mm (0.25 inch) diameter with an 8-32 screw.

Ordering Information

To order your stock MI band heater, specify:

- Quantity
- Watlow code number (available from the Watlow heaters catalog)
- Options (available from the Watlow heaters catalog)
- Lead type and length, or terminal type configuration (If code number has an "N" as the last letter in the code, you must specify termination type and lead length. 305 mm (12 inch) leads will be supplied if not otherwise specified.)

Availability

Stock: Same day shipment on MI band heaters with post terminals or 305 mm (12 inch) Type B leads. Longer lead lengths or other terminations will ship next day.

Made-to-Order: If our stock units do not meet your application needs, Watlow can manufacture MI band heaters to your special requirements. Please consult your Watlow sales engineer or authorized distributor.