

Band/Barrel Heaters

Band/Barrel Heaters

| | |
|--------------------------------------|-----|
| Mineral Insulated Band Heaters | 505 |
| THINBAND® Mica Heaters | 517 |
| Special Mica Band Heaters | 537 |
| Ceramic Knuckle Band Heaters..... | 547 |





Band/Barrel Heaters

Mineral Insulated Band Heaters

The mineral insulated (MI) band heater from Watlow® is a high-performance heater. Its performance and name are derived from Watlow's exclusive mineral insulation—a material with much higher thermal conductivity than 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 lowering element wire temperatures and increasing heater life.

Performance Capabilities

- Heater operating temperatures to 1400°F (760°C)
- Watt densities to 100 W/in² (15.5 W/cm²) available on large diameter barrel bands

Features and Benefits

Operating temperatures up to 1400°F (760°C)

- Allows safe melting of resins such as PEEK®, Teflon®, Ultem® and Zytel®

Higher watt densities

- Contributes to faster heat-up and throughput for increased productivity

High thermal conductivity of MI and low mass construction

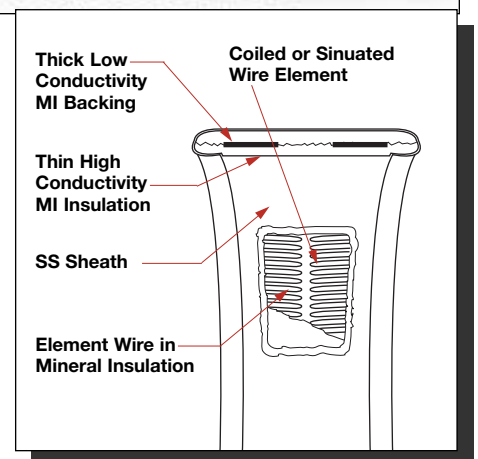
- Gives an almost instant response to temperature control
- Eliminates thermal lag and temperature overshoot associated with ceramic knuckle heaters

Stainless steel cover and side fold design

- Resists contamination from overflow of plastic or other free-flowing materials

Permanently attached clamp bars

- Eliminates cumbersome clamping straps, making installation easier



Applications

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

Band/Barrel Heaters

Mineral Insulated Band Heaters

Applications and Technical Data

The *Physical Limitations of Variations* table shows you the availability of widths, inside diameters and terminations for Watlow's MI band and barrel heaters. To make sure the available terminations will meet your application needs, refer to the illustrations of termination variations in this section.

If you need to exceed limitations shown, contact your Watlow representative.

Physical Limitations of Variations

| Width in. (mm) | I.D. Available — in. (mm) | | | | | | | | Available Terminations |
|-------------------|---------------------------|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|----------------------------|
| | 1 pc. Construction | | Expandable | | 2 pc. Construction | | | | |
| | Min. in. (mm) | Max. in. (mm) | Min. in. (mm) | Max. in. (mm) | Min. in. (mm) | Max. in. (mm) | Min. in. (mm) | Max. in. (mm) | |
| 1 (25.0) | 1 (25) | 6 (152) | 3 (76) | 12 (305) | 3 (76) | 12 (305) | 3 (76) | 12 (305) | All |
| 1½ (34.9) | 1 (25) | 3 (76) | 3 (76) | 6 (152) | 3 (76) | 6 (152) | 3 (76) | 6 (152) | All - Except SLE |
| 1½ (38.0) | 1 (25) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 2 (51.0) | 1½ (32) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 2½ (64.0) | 1½ (32) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 3 (76.0) | 1½ (38) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 3½ (89.0) | 1½ (45) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All - Except 90° "B" Leads |
| 4 (102.0) | 2 (51) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 4½ (114.0) | 2½ (57) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 3 (76) | 28 (711) | All |
| 5 (127.0) | 2½ (64) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 4 (102) | 28 (711) | All - Except 90° "B" Leads |
| 5½ (140.0) | 2½ (70) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 4 (102) | 28 (711) | Post Terminals, SLE only |
| 6 (152.0) | 3 (76) | 14 (356) | 3 (76) | 14 (356) | 3 (76) | 28 (711) | 4 (102) | 28 (711) | All |
| 7 (178.0) | | | 4 (102) | 14 (356) | | | | | Post Terminals, SLE only |

General Limitations

- Maximum width of 1 in. (25 mm) diameter heater is 1½ in. (38 mm)
- Maximum heater width: 2x heater diameter
- Minimum I.D. for Type B, C, E and H leads: 1 in. (25 mm)
- Minimum I.D. for Type B—90° leads: 1½ in. (28.6 mm)
- Maximum lead amperes: 12.5A per pair
- SLE maximum: 17.0A
- Maximum amperes (post terminals): 30A per pair
- Minimum diameter and width for SLE: 4 in. x 1½ in. (102 mm x 38 mm) width
- 90° leads not available over 250V~(ac)
- Minimum I.D. for post terminals: 1½ in. (32 mm)
- Actual width for 7 in. (178 mm) wide heater: 6⅞ in. (174.6 mm)

Standard Gaps

- ≤ 3 in. = ⅛ in. nominal
- 3 in. ≤ 6 in. = ¼ in. nominal ± ⅛ in.
- 6 in. ≤ 14 in. = ⅜ in. nominal ± ⅛ in.
- >14 in. = ½ in. nominal ± ¼ in.

Band/Barrel Heaters

Mineral Insulated Band Heaters

Applications and Technical Data (Continued)

Calculating Watt Density

Watt density is the amount of wattage per square inch of heated area. To determine watt density, divide the total wattage by the heated area.

$$\text{Watt Density} = \frac{\text{Total Watts}}{\text{Heated Area}}$$

To apply this equation, we must define the term "heated area." Heated area is the total contact surface of the heater less areas of no-heat found around terminals, mounting holes, etc.

Heated Area = Total Contact Area - No-Heat Area

To calculate the heated area:

1. Locate the **no-heat factor** from the chart below that corresponds to the type of heater being considered.

| Type | Factor in. |
|---|------------|
| 1 pc. lead unit Type B, C, H, E or 90°B | 1.37 |
| 1 pc. post terminal | 1.60 |
| 1 pc. expandable post term | 3.18 |
| 1 pc. expandable lead unit | 3.00 |
| True 2 pc. post term | 3.20 |
| True 2 pc. leads | 2.74 |
| SLE | 3.68 |

2. To use the formula below, insert the no-heat factors, diameter and width (in inches).

$$\text{Heated Area} = (3.14 \times \text{Diameter} - \text{No-Heat Factor}) \times \text{Width}$$

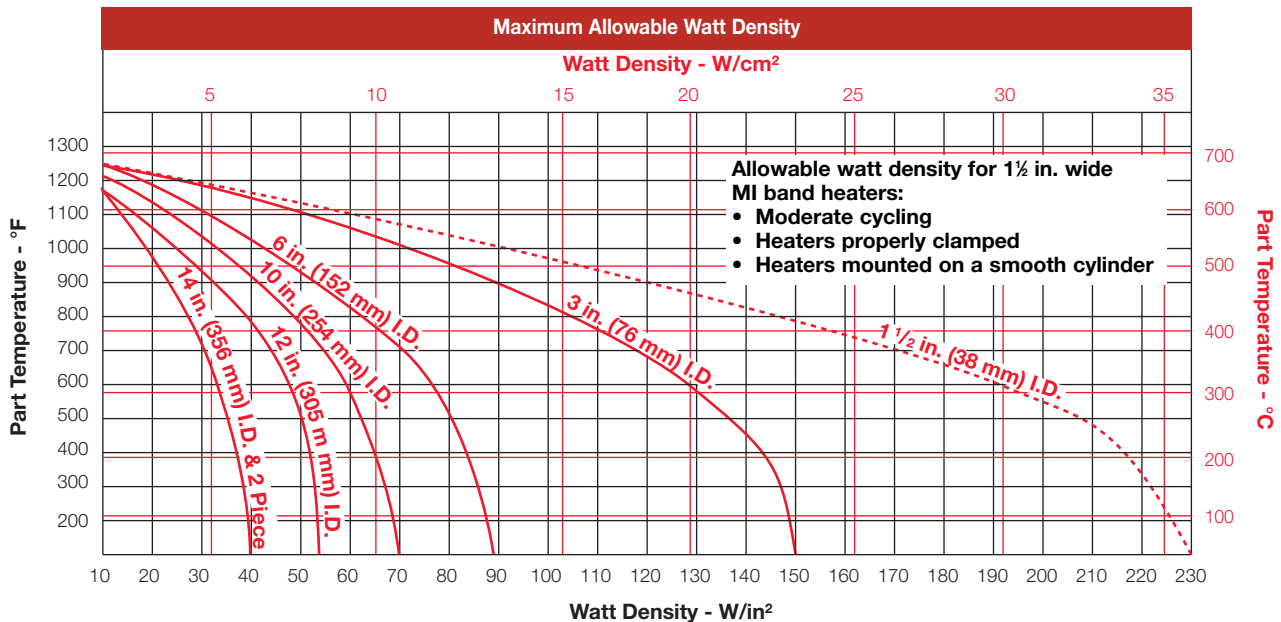
Maximum Allowable Watt Density

The following derating factors apply to the *Maximum Allowable Watt Density* chart, which are shown in both inch base and metric for your convenience. Please review these factors and the chart to determine the correct watt density curve for your application.

Derating Factors:

- For units over 2 in. (51 mm) in width, multiply watt density by 0.80.

- In applications where unusual operating conditions are present, such as irregular mounting surfaces, contact your Watlow representative for watt density limitations.
- For two-piece units used in vertical applications, refer to *Clamping Matrix Application Guide* on page 508.
- For applications where insulating blankets are used, multiply watt density by 0.75.



Band/Barrel Heaters

Mineral Insulated Band Heaters

Applications and Technical Data (Continued)

- Review the *Watt Density* chart to ensure the application does not exceed the maximum watt density at operating temperature after applying derating factors.
- Locate clamping guideline for unit diameter, width and watt density.
- Description of guideline letters are at the bottom of the *MI Band Clamping Matrix Application Guide*.
- Note:** Upward arrows are up to and not including specified watt density. Downward arrows are greater than or equal to specified watt density.

MI Band Clamping Matrix Application Guide

| | 8 ≥ 10 | | 10 ≥ 12 | | 12 ≥ 14 | | 14 ≥ 16 | | 16 ≥ 18 | | 18 ≥ 20 | | 20 ≥ 22 | | 22 ≥ 24 | | 24 ≥ 26 | | 26 ≥ 28 | |
|----|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" | 1 ½" to 4" | 4 ½" to 7" |
| 80 | | | | | | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | |
| 65 | B | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | |
| 55 | | B | | | | | | | | | | | | | | | | | | |
| 50 | | | B | | | | | | | | | | | | | | | | | |
| 45 | | | | B | | | | | | | | | | | | | | | | |
| 40 | | | | | B | | | | | | | | | | | | | | | |
| 35 | | | | | | B | | | | | | | | | | | | | | |
| 30 | A | | | | | | D | | | | | | | | | | | | | |
| 25 | | A | | | | | | D | | | | | | | | | | | | |
| 20 | | | A | | | | | | D | | | | | | | | | | | |
| 15 | | | | A | | | | | | D | | | | | | | | | | |
| 10 | | | | | A | | | | | | D | | | | | | | | | |
| 5 | | | | | | A | | | | | | D | | | | | | | | |
| 0 | | | | | | | A | | | | | | D | | | | | | | |

Above Recommended Watt Densities
Contact Watlow

- A = Standard clamping, expandable or one piece construction
- B = Spring clamps, expandable or one piece construction
- C = Spring clamps, at one gap, welded barrel nuts at other gap
- D = Spring clamps, spring clamps at both gaps

| Width | Clamp Points at Each Gap |
|------------------|--------------------------|
| ≥ 5 in. (127 mm) | 3 |
| ≥ 3 in. (76 mm) | 2 |
| < 3 in. (76 mm) | 1 |

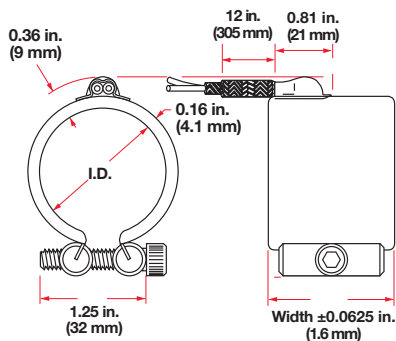
Note: 1 in. (25 mm) wide heaters use welded barrel nuts rather than clamp bars.

Band/Barrel Heaters

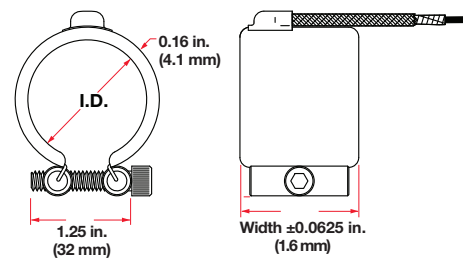
Mineral Insulated Band Heaters

Termination Variations

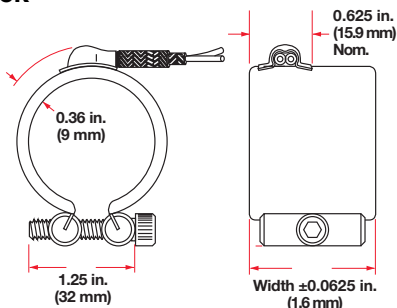
Type B Stock



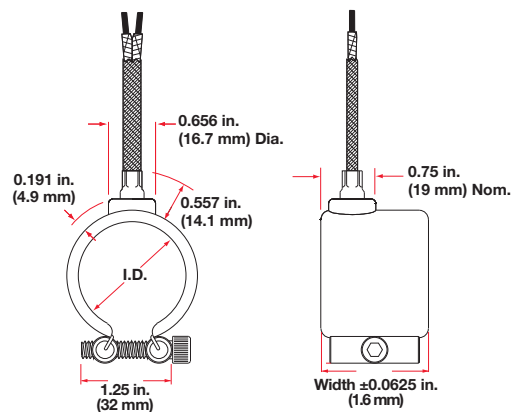
Type B - 180° Rotation Stock



Type B - 90° Rotation Non-Stock

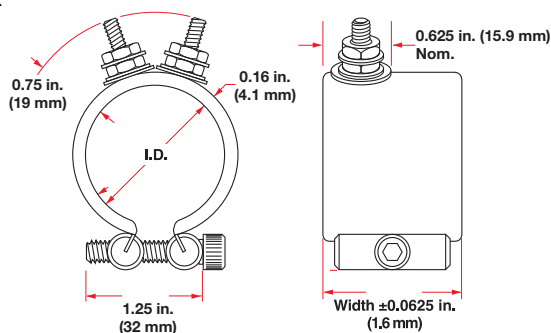


Type C Stock



Leads Type B, Type B - 90° rotation, Type B - 180° 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 2 in. (51 mm) longer than braid. Shipped with 12 in. (305 mm) leads, unless longer length is specified. To order, specify **type** and **length**.

Post Terminals Stock



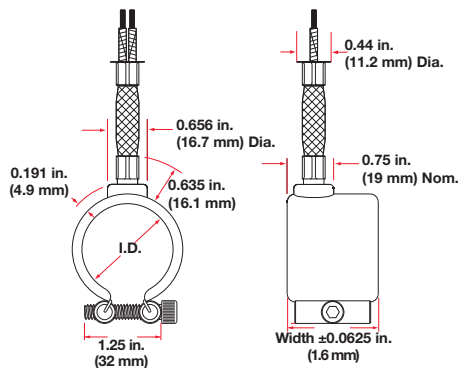
Post terminals provide optimum connections. Screw thread is 10-24. To order, specify **post terminals** (metric threads available).

Band/Barrel Heaters

Mineral Insulated Band Heaters

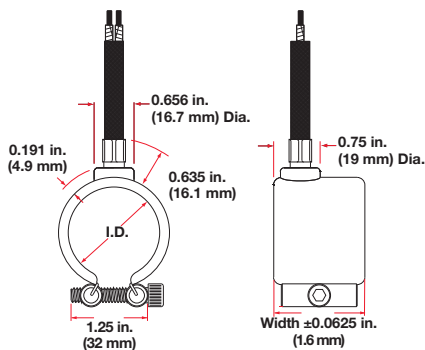
Termination Variations (Continued)

Type E Stock



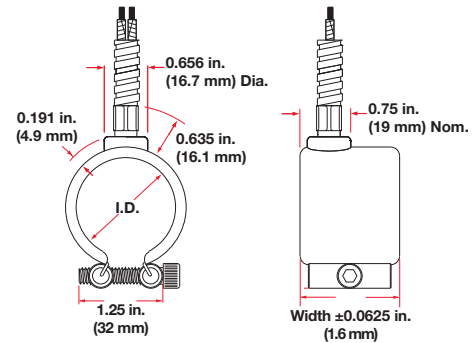
Type E: Loose metal braid encloses two fiberglass leads for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than braid. Shipped with 12 in. (305 mm) leads, unless longer length is specified. To order, specify **Type E** and **length**.

Type F Stock



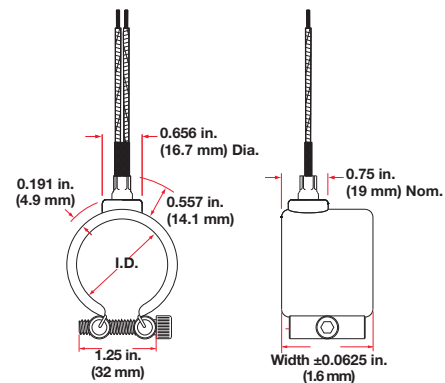
Type F: Loose fiberglass sleeving encloses two fiberglass leads for additional insulation protection where high temperature or minor abrasion is present. Leads are 2 in. (51 mm) longer than the sleeving. To order, specify **Type F** and **length**.

Type H Stock



Type H: A flexible steel hose encloses the leads for maximum abrasion protection. Leads are 2 in. (51 mm) longer than hose. Shipped with 12 in. (305 mm) leads, unless longer length is specified. To order, specify **Type H** and **length**.

Type K Stock



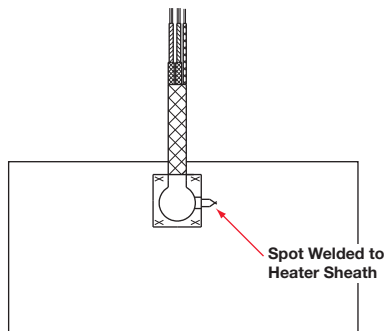
Type K: Flexible lead wires exit vertically from the heater. These leads can be bent adjacent to the heater for a quick and easy connection. To order, specify **Type K** and **length**.

Band/Barrel Heaters

Mineral Insulated Band Heaters

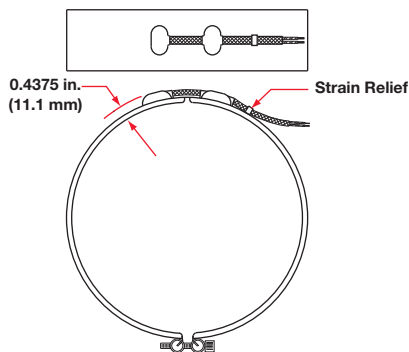
Variations

Thermocouple



ASTM Type J or K thermocouples are available on lead Type B with loose braid and fiberglass sleeving. They are also available on E, F and H leads. The thermocouple junction, spot-welded to the heater sheath, provides a signal for measuring relative heater temperature. A separate thermocouple is available.

Type SLE

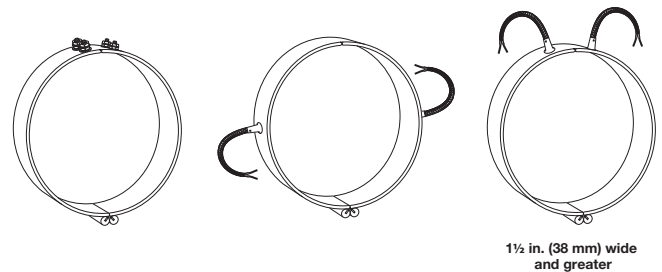


Two fiberglass lead wires exit a single, tightly woven metal braid at right angle on the expandable construction vs. two sets of leads. The minimum diameter capability is 4 in. (102 mm). Minimum width capability is 1½ in. (38 mm). To order, specify **Type SLE** and **length**.

Ground Wire

Insulated ground wire is available, contact your Watlow representative.

Expandable Heaters With Post Terminals or Leads



Expandable heaters are two-piece units with a common top metal allowing 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.

MI band heaters 1½ in. (38 mm) 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 1 in. (25 mm) wide MI band heaters, post terminals will be located 90° 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 are required. To order, specify **expandable**. Expandable heaters are designed to be opened for new installation only.

Lead Wire

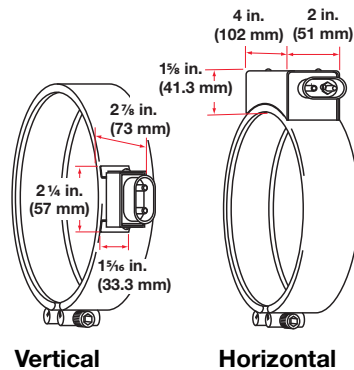
Heaters rated at less than 250V~(ac) use UL® approved lead insulation for operations to 480°F (250°C) as standard. Lead insulation UL® rated for operation to 840°F (450°C) is available for high-temperature applications where the leads are shrouded or enclosed with the heater. These leads are available 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. When ordering, specify **850°F (450°C) wire**.

Band/Barrel Heaters

Mineral Insulated Band Heaters

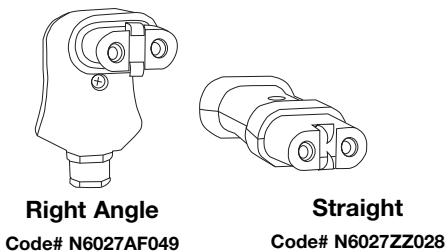
Variations (Continued)

High Temperature “Quick Disconnect” European Style Plugs



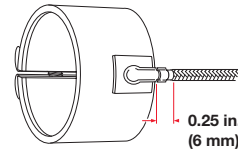
They provide the simplest and safest way to apply power to band heaters. The combination of high-temperature male and female “quick disconnect” plug assemblies eliminates all live exposed terminals and electrical wiring that can be a potential hazard to employees or machine. Maximum 15 amperes at 240V~(ac), maximum 240V. To order, specify **vertical** or **horizontal** European plug.

High Temperature “Quick Disconnect” European Style Female Adapters



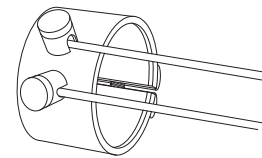
Available as an accessory item that must be used in conjunction with high-temperature “quick disconnect” European style plugs. To order, specify code number **N6027AF049** or **N6027ZZ028** and quantity.

Heavy Duty Strain Relief



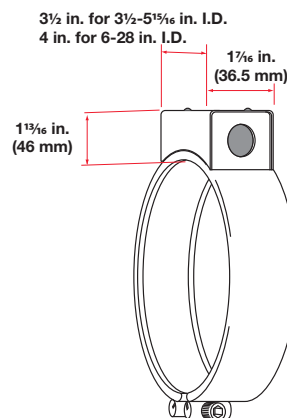
Heavy duty strain relief is recommended for applications where there is great stress or continued flexing of the leads. The strain relief is available on Type B, Type B - 90° and Type B - 180° leads only. To order, specify **heavy-duty strain relief**. **Note:** not available with loose braid or fiberglass sleeving.

Ceramic Terminal Cover



Ceramic covers, with openings for leads, are screwed on to post terminals, providing a convenient, economical insulator. To order, specify code number **Z-4918** and **quantity**. Ceramic terminal covers are also available in metric, specify thread. **Note:** Ceramic terminal covers will not fit on some stock expandable MI bands. Contact your Watlow representative for more information

Metallic Terminal Box



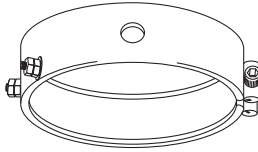
Metallic terminal boxes are available from stock on 3 1/2 in. inside diameter x 1 1/2 in. wide (89 mm x 38 mm) or larger heaters. Terminal boxes, which attach directly to the heater, act as a safety feature by covering the terminals. Conduit may be attached to the box through 7/8 in. (22.2 mm) diameter holes in the ends of the box. Two-piece heaters require two boxes. To order, specify **terminal box**. Oversized terminal boxes are available on heaters 2 in. (51 mm) and wider. Contact your Watlow representative for more information.

Band/Barrel Heaters

Mineral Insulated Band Heaters

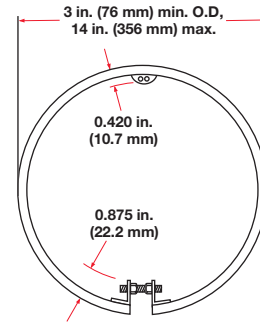
Variations (Continued)

MI Band Heater With Holes



MI band heaters with holes are available on all widths except 1 in. (25 mm) wide. Contact your Watlow representative for hole sizes and location restraints. To order, specify **hole size** and **location**. There is a 3 in. (76 mm) inside diameter minimum.

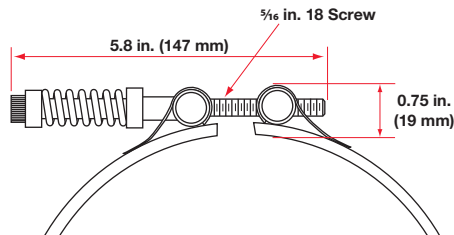
Outside Diameter Heater



Two fiberglass-insulated lead wires rated to 840°F (450°C) exit a metal braid 180° opposite from gap, Type B outside diameter designed and constructed to mate with inside diameter of cylinders. Maximum width for outside diameter heaters is 6 in. (152 mm) To order, specify **outside diameter and width** of heater.

Clamping Variations

Tig-Welded Barrel Nuts with Spring Loaded Clamping

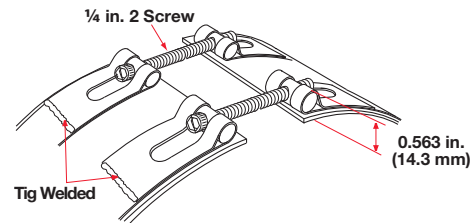


Welded barrel nuts with spring loaded clamping are used during start-up to maintain a tight heater fit on large barrels. This clamping variation is standard for all MI band heaters that are greater than 14 in. (356 mm) in diameter and 1½ in. (38 mm) or greater in width. Refer to *MI Band Clamping Matrix Application Guide*. For smaller diameter heaters, it is an option and must be ordered separately. To order, specify **spring loaded clamping**.

Low-Profile Tig-Welded Barrel Nuts

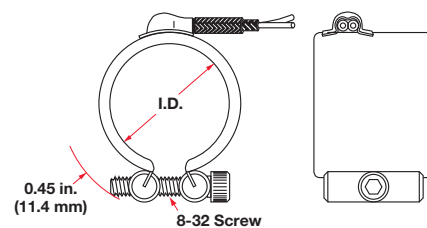
Low-profile barrel nuts are available on all widths. Low-profile barrel nuts have a clearance of 0.406 in. (10.3 mm), this will vary with heater diameter. To order, specify **low-profile tig-welded barrel nuts**.

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 (tig-welded barrel nuts are standard on 1 in. (25 mm) wide MI band heaters). To order, specify **tig-welded barrel nuts** and **gap dimension** when ordering.

Low-Profile Clamp Bars



Low-profile clamp bars are available on both 1 in. (25 mm) and 1½ in. (38 mm) wide heaters, for wider widths contact your Watlow representative. Watlow recommends not using low-profile clamping on diameters and widths greater than 3 in. (76 mm) The bars are ¼ in. (6 mm) diameter with an 8-32 screw. To order, specify **low-profile clamp bars**.

Band/Barrel Heaters

Mineral Insulated Band Heaters

Stock and Standard Heater Code Numbers

| I.D. in. (mm) | Width in. (mm) | Construction | Volts | Watts | Watt Density | | Termination | Approx. Net Wt. | | Avail. | Code Number |
|------------------|-------------------|--------------|-------|-------|-------------------|----------------------|--|--------------------|----------|-----------------|------------------|
| | | | | | W/in ² | (W/cm ²) | | lbs | (kg) | | |
| 1 (25.0) | 1 (25.0) | 1 pc | 120 | 150 | 92 | (14.2) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1AN1 |
| | 1 (25.0) | 1 pc | 120 | 100 | 61 | (9.4) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1AN2 |
| | 1 (25.0) | 1 pc | 120 | 200 | 122 | (18.9) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1AN3 |
| | 1 (25.0) | 1 pc | 240 | 200 | 122 | (18.9) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1AN4 |
| | 1½ (38.0) | 1 pc | 240 | 300 | 106 | (16.4) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1JN1 |
| | 1½ (38.0) | 1 pc | 120 | 300 | 106 | (16.4) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1JN2 |
| | 1½ (38.0) | 1 pc | 240 | 200 | 70 | (10.8) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1A1JN3 |
| | 1½ (38.0) | 1 pc | 120 | 200 | 70 | (10.8) | Type B,C,E, F or H | 0.1 | (0.05) | Standard | MB1A1JN4 |
| | 1½ (38.0) | 1 pc | 240 | 400 | 141 | (21.8) | Type B,C,E, F or H | 0.1 | (0.05) | Standard | MB1A1JN5 |
| | 1¼ (32.0) | 1 (25.0) | 1 pc | 240 | 250 | 104 | (16.1) | Type B,C,E, F or H | 0.1 | (0.05) | Stock |
| 1 (25.0) | | 1 pc | 120 | 250 | 104 | (16.1) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1E1AN2 |
| 1 (25.0) | | 1 pc | 240 | 300 | 124 | (19.2) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1E1AN3 |
| 1½ (38.0) | | 1 pc | 240 | 350 | 87 | (13.5) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1E1JN1 |
| 1½ (38.0) | | 1 pc | 120 | 350 | 87 | (13.5) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1E1JN2 |
| 1½ (38.0) | | 1 pc | 240 | 450 | 112 | (17.3) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1E1JN3 |
| 1½ (38.0) | 1 (25.0) | 1 pc | 240 | 300 | 93 | (14.4) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1J1AN1 |
| | 1 (25.0) | 1 pc | 120 | 300 | 93 | (14.4) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1J1AN2 |
| | 1 (25.0) | 1 pc | 240 | 200 | 62 | (9.6) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1J1AN3 |
| | 1 (25.0) | 1 pc | 120 | 200 | 62 | (9.6) | Type B,C,E, F or H | 0.1 | (0.05) | Standard | MB1J1AN4 |
| | 1 (25.0) | 1 pc | 240 | 400 | 125 | (19.3) | Type B,C,E, F or H | 0.1 | (0.05) | Stock | MB1J1AN5 |
| | 1½ (38.0) | 1 pc | 120 | 300 | 62 | (9.6) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1J1JN1 |
| | 1½ (38.0) | 1 pc | 240 | 450 | 87 | (13.5) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1J1JN2 |
| | 1½ (38.0) | 1 pc | 240 | 300 | 62 | (9.6) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1J1JN3 |
| | 1½ (38.0) | 1 pc | 240 | 600 | 116 | (17.9) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1J1JN4 |
| | 1½ (38.0) | 1 pc | 240 | 300 | 62 | (9.6) | Post | 0.2 | (0.09) | Standard | MB1J1JP4 |
| | 1½ (38.0) | 1 pc | 240 | 450 | 96 | (14.8) | Post | 0.2 | (0.09) | Stock | MB1J1JP6 |
| | 2 (51.0) | 1 pc | 240 | 450 | 57 | (8.8) | Type B,C,E, F or H | 0.3 | (0.14) | Stock | MB1J2AN1 |
| | 2 (51.0) | 1 pc | 240 | 300 | 42 | (6.5) | Type B,C,E, F or H | 0.3 | (0.14) | Stock | MB1J2AN2 |
| | 2 (51.0) | 1 pc | 240 | 900 | 125 | (19.3) | Type B,C,E, F or H | 0.3 | (0.14) | Stock | MB1J2AN3 |
| | 3 (76.0) | 1 pc | 240 | 500 | 45 | (7.0) | Type B,C,E, F or H | 0.4 | (0.18) | Stock | MB1J3AN1 |
| | 3 (76.0) | 1 pc | 240 | 350 | 31 | (4.8) | Type B,C,E, F or H | 0.4 | (0.18) | Stock | MB1J3AN2 |
| 3 (76.0) | 1 pc | 240 | 1000 | 104 | (16.1) | Type B,C,E, F or H | 0.4 | (0.18) | Standard | MB1J3AN3 | |
| 1¾ (45.0) | 1¾ (34.9) | 1 pc | 240 | 450 | 83 | (12.9) | 36 in. 90° Type B braid w/HD strain relief | 0.2 | (0.09) | Stock | MB1N1GX3A |
| | 1½ (38.0) | 1 pc | 240 | 300 | 47 | (7.3) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1N1JN1 |
| | 1½ (38.0) | 1 pc | 120 | 300 | 50 | (7.7) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1N1JN2 |
| | 1½ (38.0) | 1 pc | 240 | 700 | 110 | (17.0) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB1N1JN3 |
| | 2 (51.0) | 1 pc | 240 | 750 | 86 | (13.3) | Type B,C,E, F or H | 0.3 | (0.14) | Stock | MB1N2AN1 |
| 2 (51.0) | 1 (25.0) | 1 pc | 240 | 350 | 73 | (11.3) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB2A1AN1 |
| | 1 (25.0) | 1 pc | 120 | 350 | 73 | (11.3) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB2A1AN2 |
| | 1 (25.0) | 1 pc | 240 | 450 | 94 | (14.5) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB2A1AN3 |
| | 1 (25.0) | 1 pc | 240 | 350 | 73 | (10.3) | 36 in. 90° Type B braid w/HD strain relief | 0.2 | (0.09) | Stock | MB2A1AX6B |
| | | | | | | | | | | | |

CONTINUED

Band/Barrel Heaters

Mineral Insulated Band Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Construction | Volts | Watts | Watt Density | | Termination | Approx. Net Wt. | | Avail. | Code Number |
|------------------|-------------------|--------------|---------|-------|-------------------|----------------------|--|--------------------|--------|----------|------------------|
| | | | | | W/in ² | (W/cm ²) | | lbs | (kg) | | |
| 2 (51.0) | 1½ (38.0) | 1pc | 240 | 400 | 53 | (8.2) | Type B,C,E, F or H | 0.3 | (0.14) | Stock | MB2A1JN1 |
| | 1½ (38.0) | 1pc | 240 | 1000 | 132 | (20.4) | Type B,C,E, F or H | 0.3 | (0.14) | Standard | MB2A1JN2 |
| | 2 (51.0) | 1pc | 240 | 750 | 75 | (11.6) | Type B,C,E, F or H | 0.4 | (0.18) | Stock | MB2A2AN1 |
| | 2 (51.0) | 1pc | 240 | 1200 | 125 | (19.3) | Type B,C,E, F or H | 0.4 | (0.18) | Stock | MB2A2AN2 |
| | 2 (51.0) | 1pc | 240 | 750 | 75 | (11.6) | 36 in. 90° Type B braid w/HD strain relief | 0.2 | (0.09) | Stock | MB2A2AX2A |
| 2¼ (57.0) | 2 (51.0) | 1pc | 240 | 750 | 63 | (9.7) | 120 in. 180° Type B braid w/HD strain relief | 0.2 | (0.09) | Stock | MB2E2AX7 |
| | 2½ (64.0) | 1 pc | 240 | 1000 | 72 | (11.2) | Type B,C,E, F or H | 0.5 | (0.23) | Stock | MB2E2JN1 |
| 2½ (64.0) | 1 (25.0) | 1 pc | 240 | 400 | 63 | (9.7) | Type B,C,E, F or H | 0.2 | (0.09) | Stock | MB2J1AN1 |
| | 1½ (38.0) | 1 pc | 240 | 500 | 50 | (7.7) | Type B,C,E, F or H | 0.4 | (0.18) | Stock | MB2J1JN1 |
| 3 (76.0) | 1 (25.0) | 1 pc | 240 | 400 | 54 | (8.4) | Post | 0.3 | (0.14) | Stock | MB3A1AP1 |
| | 1½ (38.0) | 1 pc | 240 | 500 | 40 | (6.2) | Post | 0.4 | (0.18) | Stock | MB3A1JP1 |
| | 1½ (38.0) | 2 pc exp | 230/460 | 525 | 53 | (8.2) | Post | 0.4 | (0.18) | Stock | MB3A1JP10 |
| 3½ (89.0) | 2 (51.0) | 1 pc | 240 | 800 | 42 | (6.5) | Post | 0.7 | (0.32) | Stock | MB3J2AP2 |
| 3¾ (92.1) | 1½ (38.0) | 2 pc exp | 230/460 | 650 | 51 | (7.9) | Post | 0.5 | (0.23) | Stock | ME3L1JP5 |
| 4 (102.0) | 1 (25.0) | 1 pc | 240 | 700 | 62 | (9.6) | Post | 0.4 | (0.18) | Stock | MB4A1AP1 |
| | 1½ (38.0) | 1 pc | 240 | 800 | 48 | (7.4) | Post | 0.6 | (0.27) | Stock | MB4A1JP2 |
| | 1½ (38.0) | 2 pc exp | 230/460 | 625 | 43 | (6.7) | Post | 0.6 | (0.27) | Stock | ME4A1JP11 |
| | 1½ (38.0) | 2 pc exp | 230/460 | 725 | 50 | (7.8) | Post | 0.6 | (0.27) | Stock | ME4A1JP12 |
| 4½ (114.0) | 2½ (64.0) | 1pc | 240 | 1250 | 40 | (6.2) | Post | 1.0 | (0.45) | Stock | MB4J2JP1 |
| 5 (127.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1000 | 52 | (8.1) | Post | 0.8 | (0.36) | Stock | ME5A1JP8 |
| 5½ (133.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1000 | 48 | (7.4) | Post | 0.8 | (0.36) | Standard | ME5E1JP1 |
| | 1½ (38.0) | 2 pc exp | 230/460 | 600 | 29 | (4.5) | Post | 0.7 | (0.32) | Stock | ME5E1JP9 |
| | 3 (76.0) | 2 pc exp | 230/460 | 1700 | 40 | (6.2) | Post | 1.5 | (0.68) | Stock | ME5E3AP5 |
| | 4½ (114.0) | 2 pc exp | 230/460 | 2400 | 38 | (5.9) | Post | 2.2 | (1.00) | Stock | ME5E4JP2 |
| | 4½ (114.0) | 2 pc exp | 230/460 | 2700 | 43 | (6.6) | Post | 2.2 | (1.00) | Standard | ME5E4JP3 |
| 5½ (140.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1000 | 46 | (7.1) | Post | 0.9 | (0.40) | Stock | ME5J1JP1 |
| 6 (152.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1000 | 41 | (6.4) | Post | 0.9 | (0.40) | Stock | ME6A1JP2 |
| 6½ (165.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1250 | 47 | (7.3) | Post | 1.0 | (0.45) | Stock | ME6J1JP5 |
| 6¾ (171.0) | 1½ (38.0) | 2 pc exp | 230/460 | 815 | 29 | (4.5) | Post | 0.9 | (0.40) | Standard | ME6N1JP6 |
| | 1½ (38.0) | 2 pc exp | 230/460 | 1000 | 36 | (5.6) | Post | 0.9 | (0.40) | Standard | ME6N1JP7 |
| | 4 (102.0) | 2 pc exp | 230/460 | 2600 | 35 | (5.4) | Post | 2.5 | (1.10) | Stock | ME6N4AP2 |
| | 5 (127.0) | 2 pc exp | 230/460 | 3700 | 40 | (6.2) | Post | 3.2 | (1.50) | Standard | ME6N5AP3 |
| | 6 (152.0) | 2 pc exp | 230/460 | 3750 | 33 | (5.1) | Post | 3.8 | (1.70) | Standard | ME6N6AP5 |
| 7 (178.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1250 | 43 | (6.6) | Post | 1.1 | (0.50) | Standard | ME7A1JP4 |
| 7½ (191.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1500 | 47 | (7.3) | Post | 1.1 | (0.50) | Stock | ME7J1JP4 |
| 7¾ (193.7) | 3 (76.0) | 2 pc exp | 230/460 | 1800 | 28 | (4.3) | Post | 2.2 | (1.00) | Standard | ME7L3AP1 |
| 8 (203.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1250 | 37 | (5.7) | Post | 1.2 | (0.54) | Stock | ME8A1JP4 |
| 9 (229.0) | 1½ (38.0) | 2 pc exp | 240/480 | 1500 | 39 | (6.0) | Post | 1.4 | (0.64) | Stock | ME9A1JP1 |
| 9½ (241.0) | 3 (76.0) | 2 pc exp | 230/460 | 3000 | 37 | (5.7) | Post | 2.6 | (1.20) | Stock | ME9J3AP2 |
| 11¼ (286.0) | 3 (76.0) | 2 pc exp | 230/460 | 2400 | 24 | (3.7) | Post | 3.2 | (1.50) | Standard | ME11E3AP2 |
| | 5 (127.0) | 2 pc exp | 230/460 | 5100 | 31 | (4.8) | Post | 5.2 | (2.40) | Stock | ME11E5AP1 |

Notes:

All lead units are available with any length Type B, C, E, F or Type H leads.
Type B 90° rotation not available from stock.

Availability

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

Standard: Please contact your Watlow representative for lead times.

Band/Barrel Heaters

Mineral Insulated Band Heaters

How to Order

To order your stock MI band heater, specify:

- Quantity
- Watlow code number
- Options

Availability

Stock: Same day shipment on MI band heaters with post terminals.

Made-to-Order: If stock units do not meet application needs, Watlow can manufacture MI band heaters to special requirements. Please contact your Watlow representative.

Band/Barrel Heaters

THINBAND® Mica Heaters

The THINBAND® heater from Watlow® is a patented redesign of the mica band. THINBAND heaters have faster delivery and install easily, keeping costs down and machines running.

Performance Capabilities

- Sheath temperatures to 900°F (480°C)
- Watt densities to 55 W/in² (8.5 W/cm²)



Features and Benefits

Flexible, one-piece design

- Makes installation easier on plastic processing equipment because it can open to full diameter of the barrel without internal damage to the heater
- Installs on a barrel without removing other band heaters already in place

Same day shipment on more than 1,000 variations available because of Watlow's Lead Adapter (LA) manufacturing method

- Reduces inventories and costly downtimes

Only one set of leads or terminals are needed

- Ends the need for two sets required by cumbersome, two-piece replacement heaters

QUICK CLAMP

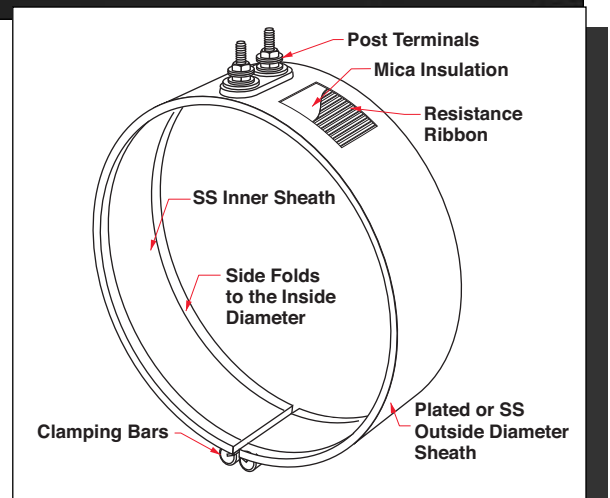
- Opens to fit over barrels and snaps in place with one easy flip of its latching lever
- Eliminates the need to remove other heaters

No folds on the outside of the heater

- Resists contamination
- Provides permanently attached clamping bars

Applications

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



Band/Barrel Heaters

THINBAND Mica Heaters

Applications and Technical Data

Operating Factors

You can use as low of a watt density rating as your application permits. A close match of the heat supplied to the actual requirements will reduce temperature overshoot, reduce cycling and increase the life of any band heater you use.

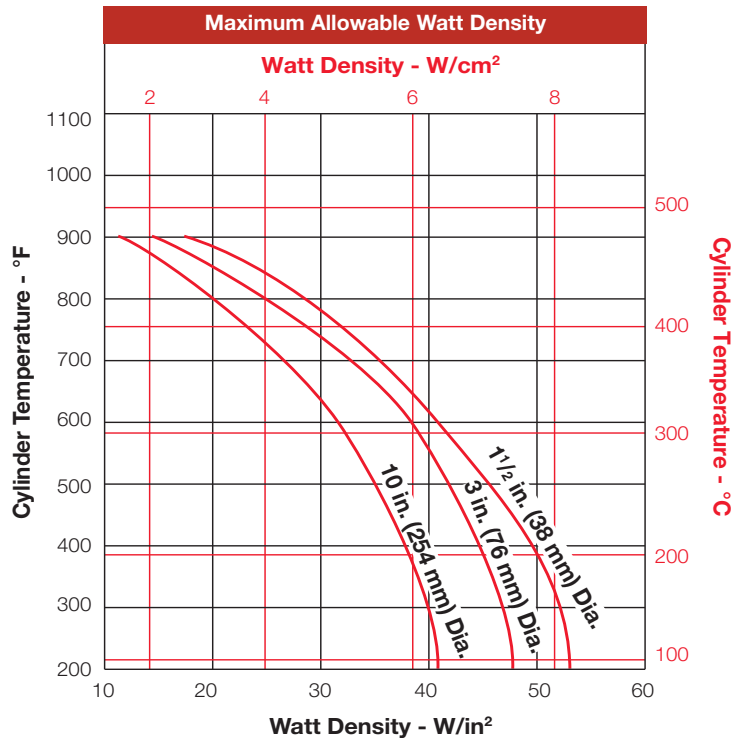
Calculate the **safe maximum wattage** for your heater using:

Heated Area x Maximum Watt Density

Calculate the **heated area** of your band heater by subtracting the no-heat area from the total area in contact with the cylinder (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 *Maximum Allowable Watt Density* graph. The curves are based on narrow heaters mounted on a smooth steel cylinder. Apply the necessary correction factors:

- For heaters 2¼ in. to 5 in. (57 mm to 127 mm) wide multiply watt density by 0.8.
- For high expansion cylinders (aluminum or brass), reduce the watt density by 3 W/in² (0.46 W/cm²).
- For heaters 2¼ in. to 5 in. (57 mm to 127 mm) wide installed on a high-expansion cylinder, reduce watt density by a total of 3 W/in² (0.46 W/cm²) only.
- For regular cylinder surfaces other than smooth, machined finish, reduce watt density by 3 W/in² (0.46 W/cm²).
- For heaters that will be insulated or enclosed, contact your Watlow representative for specific watt densities.
- For units greater than 14 in. (356 mm) diameter, consult the *THINBAND Recommended Clamping Options* graph on page 520.
- For units used in vertical applications, contact your Watlow representative for application assistance.



No-Heat Area for THINBAND Barrel (All Terminations)

| Heater Type | Heater Size | | No-Heat Area Standard Gap % in. in. (mm) |
|-------------|-------------------|------------------|--|
| | Diameter in. (mm) | Width in. (mm) | |
| One Piece | Less than 2½ (64) | Up to 7 (178) | 1¼ (32) x width |
| Two Piece | 5 (127) or more | More than 3 (76) | 2½ (64) x width |

Band/Barrel Heaters

THINBAND Mica Heaters

Applications and Technical Data (Continued)

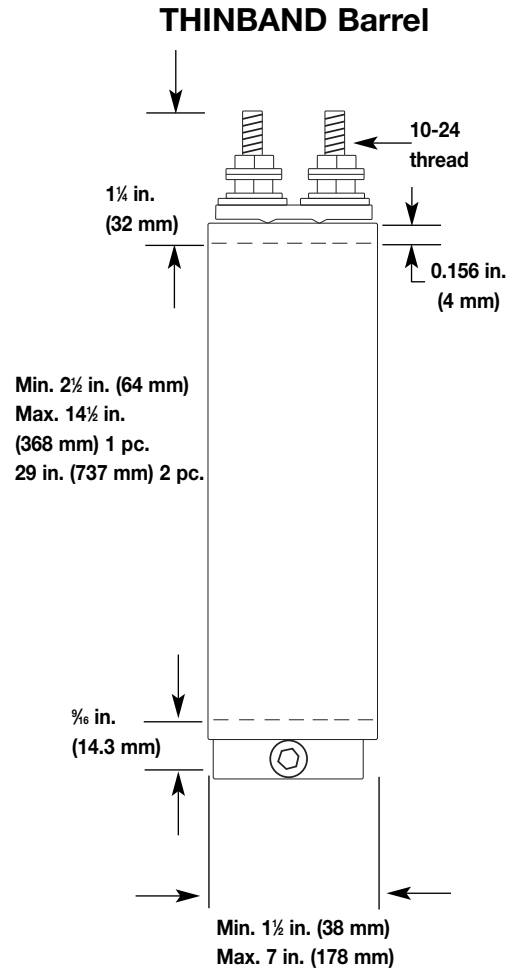
Check the table to be certain the variations and lead arrangements you order are available on the heater size you require. If you need to exceed any limitations, please contact your Watlow representative.

Physical Limitations of Lead Variations

| Heater Type | Diameter | | Width | |
|---------------------------|------------------|------------------|------------------|------------------|
| | Min. in. (mm) | Max. in. (mm) | Min. in. (mm) | Max. in. (mm) |
| 1 pc. const. | 1 (25) | 14 ½ (368) | 1 ½ (38) | 7 (178) |
| 2 pc. const. | 5 (127) | 29 (737) | 1 ½ (38) | 7 (178) |
| <i>Nozzle</i> | | | | |
| Type A | 1 (25) | 4 (102) | 1 (25) | 6 (152) |
| Type L | 1 (25) | 4 (102) | 1 (25) | 6 (152) |
| <i>Barrel</i> | | | | |
| Type T | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Type H | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Type F, FR | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Type E | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Type C, BR | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Type K, KR | 2 ½ (64) | | 1 ½ (38) | 7 (178) |
| Terminal Box | 3 ½ (89) | | 1 ½ (38) | 7 (178) |
| <i>European Plug</i> | | | | |
| 1 pc. vertical | 2 ½ (64) | 14 ½ (368) | 1 ½ (38) | 7 (178) |
| 1 pc. horizontal | 2 ½ (64) | 14 ½ (368) | 1 ½ (38) | 7 (178) |
| <i>Welded Barrel Nuts</i> | | | | |
| 1 pc. | 2 ½ (64) | 14 ½ (368) | 1 ½ (38) | 7 (178) |

Note: Some combinations of maximums and minimums cannot occur on the same heater. Check the table to be certain the variations and lead arrangements you order are available on the heater size you require. If you need to exceed any limitations, please contact your Watlow representative.

Standard gap is ⅜ in. (9.5 mm) between clamp bars.



Band/Barrel Heaters

THINBAND Mica Heaters

QUICK CLAMP Option

With QUICK CLAMP, the THINBAND heater can be secured tightly in place in a matter of seconds. The spring-loaded clamp secures the heater tightly around the barrel with an easy flip of the lever.

Benefits of QUICK CLAMP

- THINBAND with QUICK CLAMP fits over barrels and snaps in place with easy flip of its latching lever
- Hot change-outs are completed in seconds
- Spring tensioned clamp keeps the THINBAND heater tight against barrel—will not loosen over time
- Ideal for vertical applications
- Available on selected stock and made-to-order THINBAND barrel heaters—minimum 4 in. (102 mm) diameter, 1½ in. (38 mm) width
- Standard gap is ½ in. (13 mm)

QUICK CLAMP eliminates tools, loose parts and hassle



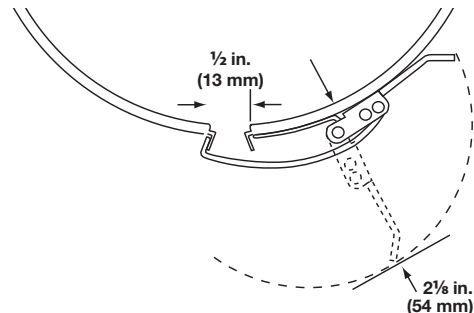
- THINBAND opens up to fit over barrel. There is no need to remove other heaters.



- One easy flip of the latching lever and QUICK CLAMP shuts, completing installation.

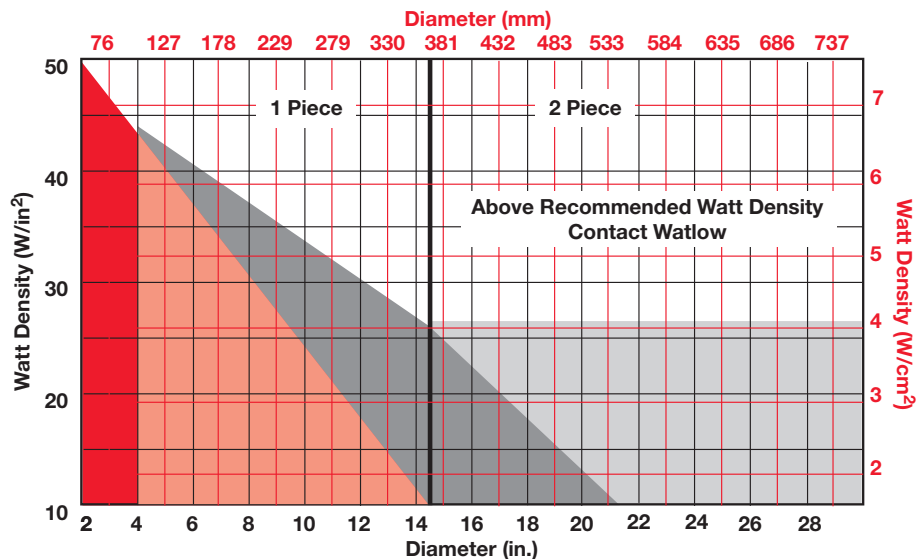
Clearance Dimensions

| Width Range in. (mm) | Number of QUICK CLAMPS | Distance Between Clamps in. (mm) |
|-------------------------|---------------------------|--|
| 1½ (38) to 2¼ (68.3) | 1 | NA |
| 2¾ (70) to 3¼ (93.7) | 2 | ½ (13) |
| 3¾ (95) to 4¼ (119.1) | 2 | 1 (25) |
| 4¾ (121) to 5¼ (141.5) | 3 | ½ (13) |
| 5¾ (146) to 7 (178.0) | 3 | 1 (25) |



Recommended Clamping Options THINBAND Barrel Products

- Clamp Bars**
- Clamp Bars or QUICK CLAMP**
above 4 in. (102 mm) diameter
- QUICK CLAMP**
For 2 piece:
Clamp bar at other gap
- Coil Spring**
For 2 piece only:
Clamp bar at other gap



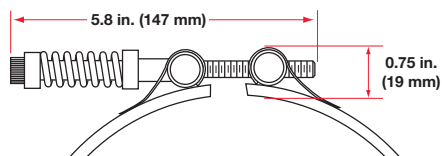
Notes: Widths 4 in. (102 mm) and over add 2 in. (51 mm) to diameter then reference chart clamp selection.

Band/Barrel Heaters

THINBAND Mica Heaters

Clamping Variations

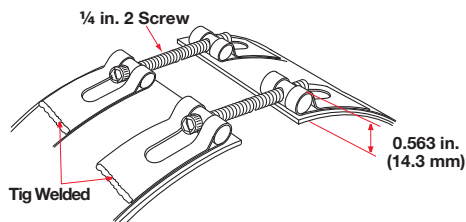
Tig-Welded Barrel Nuts with Spring-Loaded Clamping



Tig-welded barrel nuts with spring-loaded clamping are used during start-up to maintain a tight heater fit on large barrels. Stainless steel top metal is required.

Refer to the *THINBAND Recommended Clamping Options* graph on page 520. This option is mandatory on vertical applications. To order, specify **spring loaded clamping**.

Tig-Welded Barrel Nuts



An ideal way to provide access for instrumentation is to specify an oversized gap between the heater ends. If the THINBAND clamp bar screw interferes with the positioning of the instrumentation device, tig-welded barrel nuts are recommended. Stainless steel top metal is required. Maximum gap is 1 in. (25 mm). Specify **tig-welded barrel nuts** and **gap dimension** when ordering.

Variations

Non-Stock Option

Holes

An economical way to provide access for instrumentation is to specify an oversized gap between the heater ends.

A hole in the sheath should be specified only when all the cylinder surface adjacent to the hole must be heated.

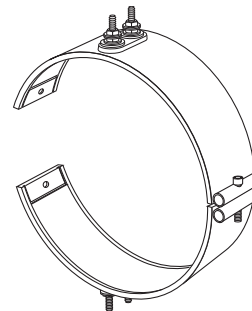
When required, one hole may be provided in nearly any location as long as there is at least 1 in. (25 mm) between the hole and one side of the heater.

Standard hole sizes up to 2 in. (51 mm) diameter.

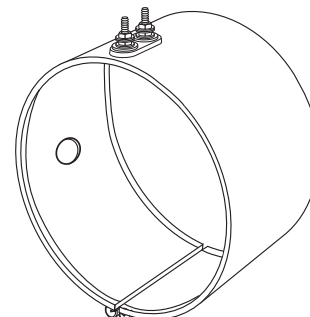
Contact your Watlow representative for limitations.

For proper hole location, a **dimensional drawing or custom supplied sample heater is required.**

Clamping Pads Non-Stock Option



Clamping pads are used when an obstruction would prevent a standard full circumferential heater from fitting completely around a machine barrel. The clamping pads have a hole to allow easy fastening to the machine barrel. **Dimensional drawing or customer supplied sample heater is required** when ordering.

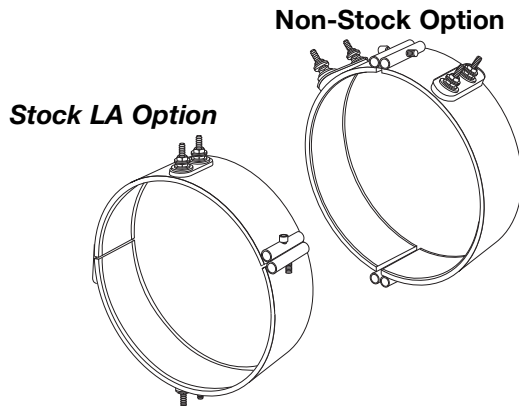


Band/Barrel Heaters

THINBAND Mica Heaters

Variations (Continued)

Two-Piece Band Heaters

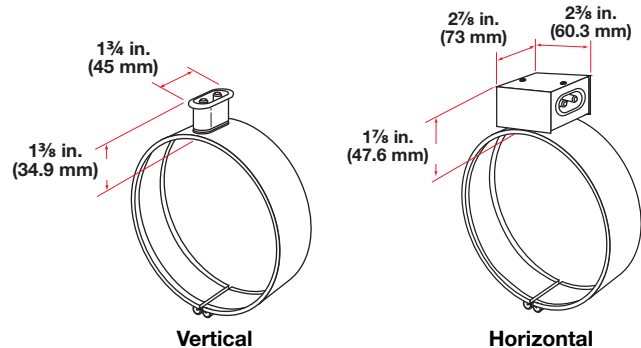


Two-piece construction is available on heaters 5 in. (127 mm) or greater in diameter. Heaters 1½ in. (38 mm) wide and greater with post terminals have the two terminals side-by-side.

Note: When ordering two-piece band heaters, specify the **volts** and **watts per half**. On two-piece units with leads, you must also specify the **power supply voltage**. Example: a two-piece band that is 240V~(ac) per half may be wired in series to a 480V~(ac) power supply. In this case the band heater lead wire insulation must be rated for 480V~(ac). Available from stock by combining two one-piece heaters to create a large diameter. Terminations will be 90° from each gap. **QUICK CLAMP** must be supplied at one gap when ordering.

High-Temperature “Quick Disconnect” European Style Plugs

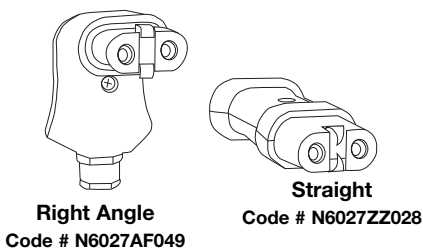
Stock Options



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 15 amperes at 240V~(ac), maximum 240 volts. When ordering, specify **vertical** or **horizontal** European plug.

High-Temperature “Quick Disconnect” European Style Female Adapters

Stock Options



Available as an accessory item that must be used in conjunction with high-temperature “quick disconnect” European style plugs.

Specify code number **N6027AF049** or **N6027ZZ028** and quantity.

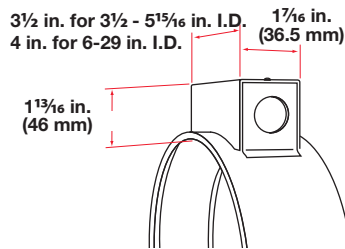
Band/Barrel Heaters

THINBAND Mica Heaters

Variations (Continued)

Metallic Terminal Box

Stock Option



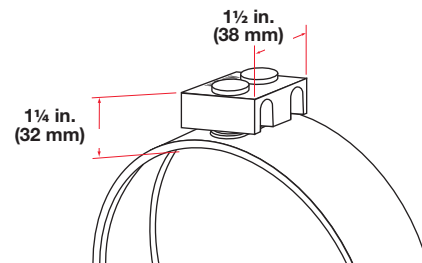
Metallic terminal boxes are available on heaters 3½ in. (89 mm) diameter or larger. Terminal boxes are attached to the heater to cover the terminals for an added safety feature. Conduit may be attached to the box through ⅝ in. (22.2 mm) diameter holes in the ends of the box. Terminal box is available on one or two-piece stock THINBAND heaters. When ordering, specify **terminal box**.

Metric Clamp Bars and Screws

Metric hardware is available on made-to-order THINBAND heaters with post terminals and clamp bars. The post terminal thread size is M5X.8. The screw for the clamp bar will be M6X1.0 socket head cap screw. When ordering, specify **metric hardware** required.

Ceramic Terminal Covers

Stock Option



Code # Z-4919

Ceramic terminal covers are a convenient and economical way to insulate post terminals. They are sized for standard length posts, 10-24 screw thread size. These are supplied as an accessory item and shipped separately. Specify code number **Z-4919** and quantity.

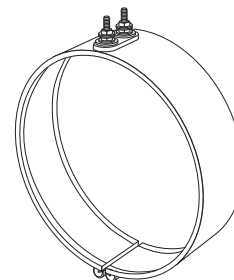
Terminations

Type T

Stock LA Option

Post terminals provide a quick connection with ring or fork connectors, or buss strips. Threaded 10-24 studs or optional metric (M5X.8) are provided with double nuts and washers. Post terminals have a threaded length of ⅝ in. (14.3 mm) and require 1¼ in. (32 mm) clearance from the cylinder. Maximum amperage for post terminals is 35 amperes and they can withstand up to 45 in.-lbs (61.0 Newton-Meter) of torque. The increased torque is possible due to the unique add-on lead cap design, which makes the cap a separate entity from the heater. This means all of the torque carrying capability is maintained within the cap design, allowing the terminal hardware to be torqued to a specific setting and tested prior to connection to the heater.

The welded electrical connection to the heater is superior to crimped or staked connections, which can loosen and oxidize during operation. To order, specify **Type T**.



Band/Barrel Heaters

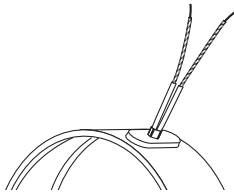
THINBAND Mica Heaters

Terminations (Continued)

Heaters rated at less than 250 volts use UL® approved lead insulation for operations to 482°F (250°C) as standard. Lead insulation UL® rated for operation to 850°F (450°C) may be required in high-temperature applications where the leads are shrouded or enclosed with the heater. All heaters rated at more than 250V~(ac) use this wire.

Type K

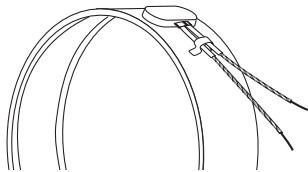
Stock LA Option



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 KR

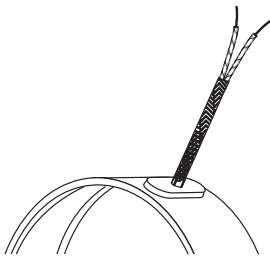
Stock LA Option



Same specifications as Type K except lead wires exit at right angle. To order, specify **Type KR** and length.

Type C

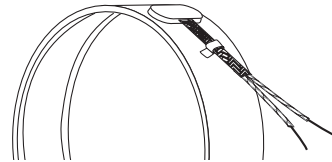
Stock LA Option



Two fiberglass lead wires exit a single tightly woven metal braid for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than the braid. To order, specify **Type C** and length.

Type BR

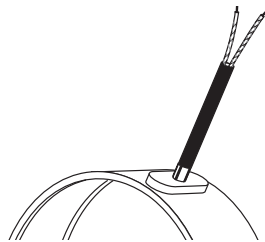
Stock LA Option



Same specifications as Type C except lead wires exit at right angle. To order, specify **Type BR** and length.

Type F

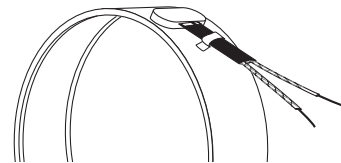
Stock LA Option



Loose fiberglass sleeving encloses two fiberglass leads for additional insulation protection where high temperature or minor abrasion is present. Leads are 2 in. (51 mm) longer than the sleeving. To order, specify **Type F** and length.

Type FR

Stock LA Option



Same specifications as Type F except lead wires exit at right angle. To order, specify **Type FR** and length.

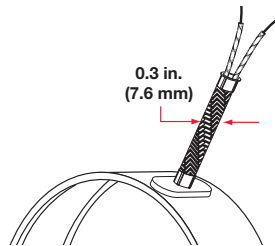
Band/Barrel Heaters

THINBAND Mica Heaters

Terminations (Continued)

Type E

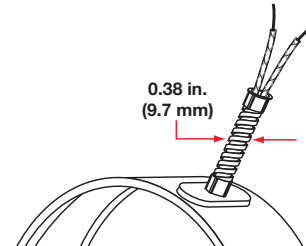
Stock LA Option



Loose metal braid encloses two fiberglass leads for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than the braid. To order, specify **Type E** and length.

Type H

Stock LA Option



A stainless steel, flexible conduit encloses the leads for superior mechanical protection where lead abrasion is a particular problem. Leads are 2 in. (51 mm) longer than the conduit. To order, specify **Type H** and length.

Ground Wire or Terminal Stud

Uninsulated 18 gauge ground wire is available on all lead types except post terminals and Type C leads. A 10-24 ground terminal stud has a threaded length of $1\frac{1}{16}$ in. (27 mm). To order, specify **uninsulated ground wire** or **terminal stud**.

Band/Barrel Heaters

THINBAND Mica Heaters

How to Utilize Watlow's Universal THINBAND Barrel Stock Program

Watlow stocks THINBAND barrel heaters ranging in diameters from 3 to 9 in. (76 to 229 mm) in $\frac{1}{4}$ in. (6 mm) increments and widths in $1\frac{1}{2}$, 2 and 3 in. (38, 51 and 76 mm). Watlow can combine these sizes, creating a two-piece assembly ranging from 9 to 18 in. (229 to 457 mm) in diameter, and any combination between 3 and 18 in. (76 and 457 mm) as a two-piece assembly. This versatility should satisfy almost any requirements whether millimeter or inch size barrels.

Regarding possible slight wattage differences from your original heater to your THINBAND replacement you must keep in mind that about 80 percent of the wattage is required to bring the barrel up to temperature. The 20 percent remaining is used to offset radiation and convection heat losses. So if you have a 550 watt heater, there is no harm in using a 500 or 600 watt stock THINBAND barrel heater.

There are three approaches to receiving a THINBAND combination from stock. To illustrate below, there is a customer who needs a 10 in. (254 mm) diameter heater but, neither the size or width needed is in stock.

Solutions

1. Take two 5 in. (127 mm) diameter heaters and curve to a 10 in. (254 mm) diameter. Please note that a QUICK CLAMP has to be added to the order for the heater to fit. This heater is offered next day delivery.
2. Take two THINBAND heaters as noted in #1 but mix each diameter. For example, one 4 in. (102 mm) and one, 6 in. (152 mm) diameter or a $4\frac{3}{4}$ (121 mm) diameter with a $5\frac{1}{4}$ (133 mm) diameter equal 10 in. (254 mm). Again, a QUICK CLAMP is needed. This heater is also offered for next day delivery.
3. Take two THINBANDs as in #1 or #2 but subtract a $\frac{1}{4}$ in. (6 mm) to the diameter and supply without the QUICK CLAMP for same day delivery. For example for a 10 in. (254 mm) diameter, any combination of $9\frac{3}{4}$ in. (248 mm) should be supplied to fit the 10 in. (254 mm) diameter requirement. The selection size has to be reduced by $\frac{1}{4}$ in. (6.4 mm) to ensure a gap when tightening the clamp bars. If this is not done, the bars will touch before the heater can be tightened completely to the barrel. This is only necessary when QUICK CLAMP is not included.

Note: Various diameters and widths of Watlow's unique patented flexible THINBAND barrel heaters are available with LA terminations for shipment faster than any in the market because of Watlow's unique stocking program.

Installation Procedures

1. Install heaters over a clean surface.
2. After installing the unit, begin to tighten the clamp screw. The clamping screw is $\frac{1}{4}$ in.-20 x $1\frac{1}{4}$ in., allen head cap screw. Begin tightening the clamp bars. If the clamp bars appear not to have seated, tap the clamp bars with a small hammer to insure the bars are well seated in the angle formed by the 60° bent tab and the heater.
3. If the bar has multiple screws, alternately tighten the screws as you would the lug nuts on a car wheel to ensure even loading.
4. Torque all screws to approximately 8 ft-lbs.
5. Take a soft rubber mallet and tap gently around the circumference of the heater while tightening the screws. This will ensure the heater fit to the barrel is maximized without any air gaps.
6. When installing terminal lugs, torque the top nuts to 30 in.-lbs. The bottom nut should not be touched as it is factory torqued to 45 in.-lbs. at assembly.
7. Retighten the heater after the heater has operated for a short time. Always make adjustments when the heater and cylinder are cold.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|---------------------------------------|-------------------|-------|----------|---|---------------------------------------|--|--------------------------------|-----------------|-----------------|--------------------------|
| 1 ⁵ / ₁₆ (33.3) | 2 (51.0) | 240 | 175 | 45 (7.0) | 1 | Mica Band—12 in. Type K | 0.2 (0.09) | Standard | BOS2AK1 | — |
| 1 (25.0) | 1 (25.0) | 120 | 100 | 44 (6.8) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1A1 | B1A1AN1 |
| | 1 (25.0) | 240 | 100 | 44 (6.8) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1A2 | B1A1AN2 |
| | 1 (25.0) | 120 | 125 | 55 ^① (8.5) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1A3 | B1A1AN3 |
| | 1 (25.0) | 240 | 125 | 55 ^① (8.5) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1A4 | B1A1AN4 |
| | 1½ (38.0) | 120 | 150 | 44 (6.8) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Standard | STB1A1J1 | B1A1JN1 |
| | 1½ (38.0) | 240 | 150 | 44 (6.8) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1J2 | B1A1JN2 |
| | 1½ (38.0) | 120 | 200 | 59 ^① (9.1) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1J3 | B1A1JN3 |
| | 1½ (38.0) | 240 | 200 | 59 ^① (9.1) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1A1J4 | B1A1JN4 |
| 1¼ (32.0) | 1½ (41.3) | 120 | 100 | 54 ^① (8.4) | 1 | Mica Band—12 in. Type A | 0.2 (0.09) | Stock | B1EOLA1 | — |
| | 1¼ (32.0) | 120 | 125 | 33 (5.1) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1E1E1 | B1E1EN1 |
| | 1¼ (32.0) | 240 | 125 | 33 (5.1) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1E1E2 | B1E1EN2 |
| | 1¼ (32.0) | 240 | 75 | 20 (3.1) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Standard | STB1E1E4 | B1E1EN3 |
| | 1¼ (32.0) | 240 | 250 | 67 ^① (10.4) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1E1E3 | B1E1EN4 |
| | 3 (76.0) | 240 | 150 | 16 (2.5) | 1 | THINBAND—Type A or L | 0.5 (0.22) | Standard | STB1E3A1 | B1E3AN1 |
| | 3 (76.0) | 240 | 250 | 27 (4.2) | 1 | THINBAND—Type A or L | 0.5 (0.22) | Stock | STB1E3A2 | B1E3AN2 |
| 1½ (34.9) | 3 (76.0) | 240 | 300 | 33 (5.1) | 1 | THINBAND—Type A or L | 0.5 (0.22) | Stock | STB1E3A3 | B1E3AN3 |
| | 1 (25.0) | 120 | 140 | 41 (6.4) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1G1A1 | B1G1AN1 |
| | 2 (51.0) | 240 | 300 | 51 ^① (7.9) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1G2A1 | B1G2AK1 |
| | 3½ (89.0) | 240 | 200 | 17 (2.6) | 1 | THINBAND—Type A or L | 0.6 (0.27) | Standard | STB1G3J1 | B1G3JA1 |
| 1½ (38.0) | 3½ (89.0) | 240 | 250 | 21 (3.3) | 1 | THINBAND—Type A or L | 0.6 (0.27) | Standard | STB1G3J2 | B1G3JA2 |
| | 1½ (47.6) | 240 | 100 | 31 (4.8) | 1 | Mica Band—Type A or L | 0.2 (0.09) | Stock | B1JORN1 | — |
| | 1 (25.0) | 120 | 100 | 26 (4.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A1 | B1J1AN1 |
| | 1 (25.0) | 240 | 100 | 26 (4.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A2 | B1J1AN2 |
| | 1 (25.0) | 120 | 150 | 39 (6.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A3 | B1J1AN3 |
| | 1 (25.0) | 240 | 150 | 39 (6.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A4 | B1J1AN4 |
| | 1 (25.0) | 120 | 200 | 52 ^① (8.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A5 | B1J1AN5 |
| | 1 (25.0) | 240 | 200 | 52 ^① (8.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1A6 | B1J1AN6 |
| | 1 (25.0) | 240 | 150 | 40 (6.2) | 1 | Mica Band—Post Terminals Only w/Strap | 0.2 (0.09) | Standard | B1J1AP2 | — |
| | 1¼ (32.0) | 240 | 250 | 52 ^① (8.0) | 1 | THINBAND—Type A or L | 0.2 (0.09) | Stock | STB1J1E1 | B1J1EN1 |
| | 1½ (38.0) | 120 | 200 | 35 (5.4) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Standard | STB1J1J1 | B1J1JN1 |
| | 1½ (38.0) | 240 | 200 | 35 (5.4) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J2 | B1J1JN2 |
| | 1½ (38.0) | 120 | 250 | 43 (6.6) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J3 | B1J1JN3 |
| | 1½ (38.0) | 240 | 250 | 43 (6.6) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J4 | B1J1JN4 |
| | 1½ (38.0) | 120 | 275 | 48 (7.4) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J5 | B1J1JN5 |
| | 1½ (38.0) | 240 | 275 | 48 (7.4) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J6 | B1J1JN6 |
| 1½ (38.0) | 240 | 300 | 52 (8.0) | 1 | THINBAND—Type A or L | 0.3 (0.14) | Stock | STB1J1J7 | B1J1JN7 | |
| 1½ (38.0) | 240 | 200 | 36 (5.6) | 1 | Mica Band—Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1J1JP3 | — | |

CONTINUED

① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|----------|-------|---|----------------------|---|--------------------------------|------------|-----------------|--------------------------|
| 1½ (38.0) | 1½ (38.0) | 240 | 200 | 43 (6.6) | 1 | Mica Band-36 in. Black Glass 90° from Gap | 0.3 (0.14) | Stock | B1J1JX1 | - |
| | 1½ (38.0) | 240 | 250 | 45 (7.0) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1J1JP4 | - |
| | 1½ (38.0) | 120 | 275 | 49 ^① (7.6) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1J1JP5 | - |
| | 1½ (38.0) | 240 | 275 | 49 ^① (7.6) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1J1JP6 | - |
| | 2 (51.0) | 240 | 300 | 39 (6.0) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1J2A1 | B1J2AN1 |
| | 2 (51.0) | 240 | 300 | 40 (6.2) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1J2AP1 | - |
| | 2½ (64.0) | 240 | 400 | 42 (6.5) | 1 | THINBAND-Type A or L | 0.5 (0.23) | Stock | STB1J2J1 | - |
| | 2½ (64.0) | 240 | 400 | 43 (6.7) | 1 | Mica Band-36 in. Type C 90° from Gap | 0.5 (0.23) | Stock | B1J2JC1 | - |
| | 3 (76.0) | 240 | 350 | 30 (4.6) | 1 | THINBAND-Type A or L | 0.6 (0.27) | Stock | STB1J3A1 | B1J3AN1 |
| | 3 (76.0) | 240 | 500 | 43 (6.7) | 1 | THINBAND-Type A or L | 0.6 (0.27) | Stock | STB1J3A2 | B1J3AN2 |
| | 3 (76.0) | 240 | 800 | 69 ^① (10.7) | 1 | THINBAND-Type A or L | 0.6 (0.27) | Stock | STB1J3A3 | B1J3AN3 |
| | 4 (102.0) | 240 | 600 | 39 (6.0) | 1 | THINBAND-Type A or L | 0.6 (0.27) | Stock | STB1J4A1 | - |
| 1¾ (41.3) | 1¾ (41.3) | 240 | 250 | 49 ^① (7.6) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1L1EP1 | - |
| | 1¾ (41.3) | 240 | 300 | 59 ^① (9.1) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1L1EP2 | - |
| | 4¼ (108.0) | 120 | 550 | 30 (4.6) | 1 | Mica Band-Post Terminals Only w/Strap | 0.7 (0.32) | Standard | B1L4ER1 | - |
| 1¾ (45.0) | 1 (25.0) | 240 | 175 | 39 (6.0) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1N1AP1 | - |
| | 1½ (38.0) | 240 | 150 | 22 (3.4) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1N1J1 | B1N1JN1 |
| | 1½ (38.0) | 120 | 200 | 29 (4.5) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1N1J2 | B1N1JN2 |
| | 1½ (38.0) | 240 | 200 | 29 (4.5) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Standard | STB1N1J3 | B1N1JN3/4 |
| | 1½ (38.0) | 240 | 225 | 32 (5.0) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Standard | STB1N1J5 | B1N1JN5 |
| | 1½ (38.0) | 240 | 250 | 36 (5.6) | 1 | Thinband-Type A or L | 0.3 (0.14) | Stock | STB1N1J6 | B1N1JN6 |
| | 1½ (38.0) | 120 | 300 | 43 (6.7) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1N1J7 | B1N1JN7 |
| | 1½ (38.0) | 240 | 300 | 43 (6.7) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1N1J8 | B1N1JN8 |
| | 1½ (38.0) | 240 | 200 | 30 (4.6) | 1 | Mica Band-72 in. Type C | 0.3 (0.14) | Standard | B1N1JC3 | - |
| | 1½ (38.0) | 240 | 300 | 44 (6.8) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B1N1JP5 | - |
| | 1¾ (47.6) | 1 (25.0) | 240 | 140 | 28 (4.3) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB1R1A1 |
| 1 (25.0) | | 240 | 200 | 41 (6.4) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B1R1AP1 | - |
| 2 (51.0) | 1½ (38.0) | 120 | 300 | 42 (6.5) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2A1JP1 | - |
| | 1½ (38.0) | 240 | 300 | 42 (6.5) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2A1JP2 | - |
| 2½ (54.0) | 1 (25.0) | 120 | 200 | 34 (5.3) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB2C1A1 | B2C1AN1 |
| | 2 (51.0) | 240 | 200 | 17 (2.6) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB2C2A1 | B2C2AN1 |
| 2¾ (57.0) | ¾ (22.2) | 120 | 215 | 43 (6.7) | 1 | Mica Band-Type A or L | 0.3 (0.14) | Stock | B2E0RN1 | - |
| | 1 (25.0) | 120 | 250 | 45 ^① (7.0) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B2E1AP1 | - |
| | 1 (25.0) | 240 | 250 | 45 ^① (7.0) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2E1AP2 | - |
| | 2 (51.0) | 240 | 525 | 47 ^① (7.3) | 1 | Mica Band-Post Terminals Only w/Strap | 0.6 (0.27) | Stock | B2E2AP1 | - |
| | 2½ (64.0) | 240 | 500 | 38 (5.9) | 1 | Mica Band-36 in. Type K w/sleeving | 0.6 (0.27) | Stock | B2E2JK1 | - |
| 2¾ (60.4) | 1 (25.0) | 240 | 100 | 17 (2.6) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B2G1AP1 | - |
| | 1 (25.0) | 240 | 250 | 42 (6.5) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2G1AP2 | - |
| | 1 (25.0) | 240 | 275 | 46 ^① (7.1) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2G1AP3 | - |

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① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|-------|----------|---|--------------------------------|--|--------------------------------|----------------|------------------|----------------------------|
| 2½ (64.0) | 1 (25.0) | 120 | 300 | 47 ^① (7.3) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Standard | B2J1AP1 | - |
| | 1 (25.0) | 240 | 300 | 47 ^① (7.3) | 1 | Mica Band-Post Terminals Only w/Strap | 0.3 (0.14) | Stock | B2J1AP2 | - |
| | 1½ (38.0) | 240 | 200 | 19 (2.9) | 1 | THINBAND-Type A or L | 0.3 (0.14) | Stock | STB2J1J1 | B2J1JN1 |
| | 1½ (38.0) | 120 | 300 | 31 (4.8) | 1 | THINBAND-All LA Options, except A or L | 0.4 (0.18) | Stock | STB2J1J8 | B2J1JP1 |
| | 1½ (38.0) | 240 | 300 | 31 (4.8) | 1 | THINBAND-All LA Options, except A or L | 0.4 (0.18) | Stock | STB2J1J9 | B2J1JP2 |
| | 1½ (38.0) | 120 | 350 | 37 (5.7) | 1 | THINBAND-All LA Options, except A or L | 0.4 (0.18) | Stock | STB2J1J10 | B2J1JP3 |
| | 1½ (38.0) | 240 | 350 | 37 (5.7) | 1 | THINBAND-All LA Options, except A or L | 0.4 (0.18) | Stock | STB2J1J11 | B2J1JP4 |
| | 2¾ (60.3) | 240 | 550 | 39 (6.0) | 1 | THINBAND-All LA Options, except A or L | 0.6 (0.27) | Stock | STB2J2G1 | B2J2GP1^② |
| | 2¾ (73.0) | 240 | 650 | 38 (5.9) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.32) | Stock | STB2J2R1 | B2J2RP1^② |
| | 4 (102.0) | 240 | 850 | 32 (5.0) | 1 | THINBAND-All LA Options, except A or L | 1.0 (0.45) | Stock | STB2J4A2 | B2J4AP1^② |
| | 5 (127.0) | 240 | 1150 | 35 (5.4) | 1 | THINBAND-All LA Options, except A or L | 1.2 (0.32) | Stock | STB2J5A3 | B2J5AP1^② |
| 8 (203.0) | 240 | 1800 | 33 (5.1) | 1 | Mica Band-Post-T/C Hole at Gap | 2.0 (0.91) | Stock | B2J8AP1 | - | |
| 2¾ (70.0) | 1½ (38.0) | 240 | 400 | 34 (5.3) | 1 | THINBAND-Type A or L | 0.4 (0.18) | Stock | STB2N1J1 | B2N1JN1 |
| 3 (76.0) | 1 (25.0) | 240 | 200 | 23 (3.6) | 1 | THINBAND-Type A or L | 0.4 (0.18) | Stock | STB3A1A2 | B3A1AN1 |
| | 1 (25.0) | 240 | 250 | 29 (4.5) | 1 | THINBAND-Type A or L | 0.4 (0.18) | Stock | STB3A1A3 | B3A1AN2 |
| | 1 (25.0) | 240 | 300 | 35 (5.4) | 1 | THINBAND-Type A or L | 0.4 (0.18) | Stock | STB3A1A4 | B3A1AN3 |
| | 1 (25.0) | 240 | 300 | 38 (5.9) | 1 | Mica Band-Post Terminals Only w/Strap | 0.4 (0.18) | Stock | B3A1AP1 | - |
| | 1 (25.0) | 240 | 350 | 44 (6.8) | 1 | Mica Band-Post Terminals Only w/Strap | 0.4 (0.18) | Stock | B3A1AP2 | - |
| | 1 (25.0) | 240 | 400 | 50 ^① (7.7) | 1 | Mica Band-Post Terminals Only w/Strap | 0.4 (0.18) | Stock | B3A1AP4 | - |
| | 1½ (38.0) | 240 | 400 | 31 (4.8) | 1 | THINBAND-Type A or L | 0.5 (0.23) | Standard | STB3A1J5 | B3A1JN1 |
| | 1½ (38.0) | 120 | 600 | 47 ^① (7.3) | 1 | THINBAND-Type A or L | 0.5 (0.23) | Stock | STB3A1J6 | B3A1JN2 |
| | 1½ (38.0) | 240 | 400 | 32 (5.0) | 1 | THINBAND-All LA Options, except A or L | 0.5 (0.23) | Stock | STB3A1J1 | B3A1JP1/C1 |
| | 1½ (38.0) | 240 | 450 | 36 (5.6) | 1 | THINBAND-All LA Options, except A or L | 0.5 (0.23) | Stock | STB3A1J2 | B3A1JP2 |
| | 1½ (38.0) | 120 | 500 | 40 (6.2) | 1 | THINBAND-All LA Options, except A or L | 0.5 (0.23) | Stock | STB3A1J3 | B3A1JP3 |
| | 1½ (38.0) | 240 | 500 | 40 (6.2) | 1 | THINBAND-All LA Options, except A or L | 0.5 (0.23) | Stock | STB3A1J4 | B3A1JP4 |
| | 2 (51.0) | 240 | 500 | 30 (4.6) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB3A2A1 | B3A2AP1 |
| | 2 (51.0) | 240 | 600 | 36 (5.6) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB3A2A2 | B3A2AP2 |
| | 2½ (64.0) | 240 | 650 | 33 (5.1) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB3A2J7 | B3A2JP1 |
| | 3 (76.0) | 240 | 750 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.0 (0.45) | Stock | STB3A3A18 | |
| 3¾ (79.4) | 1 (25.0) | 240 | 400 | 48 ^① (7.4) | 1 | Mica Band-Post Terminals Only w/Strap | 0.4 (0.18) | Standard | B3C1AP1 | - |
| 3¼ (83.0) | 1½ (38.0) | 240 | 400 | 29 (4.5) | 1 | THINBAND-All LA Options, except A or L | 0.5 (0.23) | Stock | STB3E1J1 | B3E1JP1 |
| | 2 (51.0) | 240 | 500 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.33) | Stock | STB3E2A41 | |
| | 3 (76.0) | 240 | 650 | 24 (3.7) | 1 | THINBAND-All LA Options, except A or L | 1.0 (0.45) | Standard | STB3E3A10 | |

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① Watt density is above Watlow recommendations at some common molding temperatures.

② Mica band post-thermocouple hole at gap, THINBAND replacement does not include thermocouple hole at gap.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|---------|-------|---|----------------------|--|--------------------------------|----------|------------------|--------------------------|
| 3½ (89.0) | 1 (25.0) | 120 | 300 | 32 (5.0) | 1 | Mica Band—36 in. Type C | 0.5 (0.23) | Stock | B3J1AC1 | — |
| | 1½ (38.0) | 120 | 400 | 27 (4.2) | 1 | THINBAND—All LA Options, except A or L | 0.5 (0.23) | Stock | STB3J1J1 | B3J1JP1 |
| | 1½ (38.0) | 240 | 500 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 0.5 (0.23) | Stock | STB3J1J2 | B3J1JP3/P2 |
| | 2 (51.0) | 240 | 650 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB3J2A1 | B3J2AP1 |
| | 2½ (64.0) | 240 | 750 | 30 (4.6) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB3J2J1 | B3J2JP1 |
| | 3 (76.0) | 240 | 750 | 25 (3.9) | 1 | THINBAND—All LA Options, except A or L | 1.1 (0.54) | Stock | STB3J3A31 | |
| 3¾ (95.0) | 1 (25.0) | 240 | 350 | 34 (5.3) | 1 | Mica Band—Post Terminals Only w/Strap | 0.5 (0.23) | Stock | B3N1AP1 | — |
| | 1 (25.0) | 120/240 | 350 | 40 (6.2) | 2 | Mica Band—Post Terminals Only w/Strap | 0.5 (0.23) | Standard | B3N1AP2 | — |
| | 1½ (38.0) | 240 | 700 | 43 ^① (6.7) | 1 | THINBAND—All LA Options, except A or L | 0.6 (0.27) | Stock | STB3N1J1 | B3N1JP1 |
| | 2 (51.0) | 240 | 600 | 28 (4.4) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB3N2A17 | |
| | 2½ (64.0) | 240 | 850 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.45) | Stock | STB3N2J1 | B3N2JP1 |
| | 3 (76.0) | 240 | 900 | 28 (4.4) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.58) | Stock | STB3N3A5 | |
| 4 (102.0) | 1 (25.0) | 240 | 625 | 55 ^① (8.5) | 1 | Mica Band—Post Terminals Only w/Strap | 0.7 (0.32) | Stock | B4A1AP1 | — |
| | 1½ (38.0) | 240 | 550 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 0.6 (0.27) | Stock | STB4A1J1 | B4A1JP1/2 |
| | 1½ (38.0) | 240 | 750 | 43 (6.5) | 1 | THINBAND—All LA Options, except A or L | 0.6 (0.27) | Stock | STB4A1J2 | B4A1JP4 |
| | 1½ (38.0) | 240 | 650 | 37 (5.7) | 1 | THINBAND—All LA Options, except A or L | 0.6 (0.27) | Stock | STB4A1J3 | B4A1JP3 |
| | 2 (51.0) | 240 | 550 | 24 (3.7) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB4A2A1 | B4A2AP1 |
| | 2 (51.0) | 240 | 800 | 35 (5.4) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB4A2A2 | B4A2AP2 |
| 4¼ (108.0) | 1½ (38.0) | 240 | 550 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4E1J13 | |
| | 2 (51.0) | 240 | 700 | 28 (4.4) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB4E2A20 | |
| | 3 (76.0) | 240 | 900 | 24 (3.7) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.58) | Stock | STB4E3A9 | |
| 4½ (114.0) | 1 (25.0) | 240 | 350 | 28 (4.3) | 1 | Mica Band—Post Terminals Only w/Strap | 0.6 (0.27) | Stock | B4J1AP1 | — |
| | 1½ (38.0) | 240 | 650 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4J1J1 | B4J1JP2/3 |
| | 1½ (38.0) | 240 | 400 | 20 (3.1) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4J1J2 | B4J1JP1 |
| | 2 (51.0) | 240 | 500 | 19 (2.9) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Stock | STB4J2A1 | B4J2AP1 |
| | 2½ (64.0) | 240 | 1000 | 35 (5.4) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.45) | Stock | STB4J2J1 | B4J2JC1 |
| | 3 (76.0) | 240 | 1200 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.58) | Stock | STB4J3A26 | |
| 4¾ (121.0) | 1½ (38.0) | 240 | 600 | 29 (4.5) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4N1J1 | — |
| | 1½ (38.0) | 480 | 600 | 29 (4.5) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4N1J2 | — |
| | 1½ (38.0) | 240 | 650 | 31 (4.8) | 1 | THINBAND—All LA Options, except A or L | 0.7 (0.32) | Stock | STB4N1J3 | B4N1JP2 |
| | 2 (51.0) | 240 | 800 | 29 (4.5) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Stock | STB4N2A11 | |
| | 2 (51.0) | 480 | 800 | 29 (4.5) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Stock | STB4N2A12 | |
| | 3 (76.0) | 240 | 1100 | 26 (4.1) | 1 | THINBAND—All LA Options, except A or L | 1.4 (0.64) | Stock | STB4N3A12 | |
| | 3 (76.0) | 480 | 1100 | 26 (4.1) | 1 | THINBAND—All LA Options, except A or L | 1.4 (0.64) | Stock | STB4N3A13 | |

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① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|---------|-------|---|----------------------|---|--------------------------------|----------|----------------|--------------------------|
| 4½ (123.8) | 1½ (38.0) | 240 | 900 | 42 (6.50) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.32) | Stock | STB4R1J1 | B4R1JP1 |
| | 2 (51.0) | 240 | 650 | 23 (3.60) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB4R2A1 | B4R2AP1 |
| | 2 (51.0) | 240/480 | 760 | 28 (4.30) | 2 | Mica Band-Post (2 on 1) | 0.9 (0.41) | Standard | B4R2AR1 | - |
| | 2 (51.0) | 240 | 760 | 27 (4.20) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB4R2A2 | - |
| | 2 (51.0) | 480 | 760 | 27 (4.20) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB4R2A3 | - |
| 5 (127.0) | 1½ (38.0) | 240 | 700 | 32 (5.00) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.32) | Stock | STB5A1J1 | B5A1JP1/2 |
| | 1½ (38.0) | 240 | 900 | 41 (6.40) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.32) | Stock | STB5A1J2 | B5A1JP3 |
| | 2 (51.0) | 240 | 900 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5A2A27 | |
| | 2 (51.0) | 480 | 900 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5A2A28 | |
| | 3 (76.0) | 240 | 850 | 20 (3.10) | 1 | THINBAND-All LA Options, except A or L | 1.4 (0.64) | Stock | STB5A3A5 | B5A3AP1 |
| | 3¼ (83.0) | 240 | 1250 | 26 (4.00) | 1 | THINBAND-All LA Options, except A or L | 1.5 (0.68) | Stock | STB5A3E1 | B5A3ER1 |
| 5½ (130.2) | 1½ (38.0) | 240 | 900 | 42 ^① (6.50) | 1 | THINBAND-All LA Options, except A or L | 0.7 (0.32) | Stock | STB5C1J2 | B5C1JP1 |
| 5¼ (133.0) | 1 (25.0) | 240 | 500 | 33 (5.10) | 1 | Mica Band-72 in. (Type C-180° from ¼ in. Gap) | 0.7 (0.32) | Stock | B5E1AC1 | - |
| | 1½ (38.0) | 240/480 | 600 | 30 (4.60) | 2 | Mica Band-Post Terminals Only w/Strap | 0.8 (0.36) | Standard | B5E1JP2 | - |
| | 1½ (38.0) | 240 | 600 | 26 (4.00) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB5E1J1 | B5E1JP1 |
| | 1½ (38.0) | 480 | 600 | 43 ^① (6.70) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB5E1J5 | - |
| | 1½ (38.0) | 240 | 1000 | 43 ^① (6.70) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB5E1J2 | B5E1JP3 |
| | 2 (51.0) | 240 | 1000 | 33 ^① (5.10) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5E2A1 | B5E2AP1 |
| | 3 (76.0) | 240 | 1200 | 26 (4.08) | 1 | THINBAND-All LA Options, except A or L | 1.4 (0.64) | Stock | STB5E3A14 | |
| 5½ (140.0) | 3 (76.0) | 480 | 1200 | 26 (4.08) | 1 | THINBAND-All LA Options, except A or L | 1.4 (0.64) | Stock | STB5E3A15 | |
| | 1½ (38.0) | 240 | 800 | 33 (5.10) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB5J1J1 | B5J1JP1/2 |
| | 1½ (38.0) | 240 | 900 | 37 (5.70) | 1 | THINBAND-All LA Options, except A or L | 0.8 (0.36) | Stock | STB5J1J2 | B5J1JP3 |
| | 2 (51.0) | 240 | 1000 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5J2A23 | |
| | 2 (51.0) | 480 | 1000 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5J2A24 | |
| | 3 (76.0) | 240 | 1500 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.6 (0.72) | Stock | STB5J3A19 | |
| 5¾ (146.0) | 3 (76.0) | 480 | 1500 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.6 (0.72) | Stock | STB5J3A20 | |
| | 1½ (38.0) | 240 | 750 | 29 (4.50) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB5N1J17 | |
| | 1½ (38.0) | 480 | 750 | 29 (4.50) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Standard | STB5N1J18 | |
| | 2 (51.0) | 240 | 1000 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.0 (0.45) | Stock | STB5N2A5 | |
| | 2 (51.0) | 480 | 1000 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.0 (0.45) | Standard | STB5N2A6 | |
| | 3 (76.0) | 240 | 1500 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.8 (0.82) | Stock | STB5N3A8 | |
| 6 (152.0) | 3 (76.0) | 480 | 1500 | 30 (4.65) | 1 | THINBAND-All LA Options, except A or L | 1.8 (0.82) | Stock | STB5N3A9 | |
| | 1¼ (34.9) | 120/240 | 950 | 43 ^① (6.70) | 2 | Mica Band-Post Terminals Only w/Strap | 0.9 (0.41) | Standard | B6A1GP1 | - |
| | 1½ (38.0) | 240 | 600 | 22 (3.40) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB6A1J1 | B6A1JP1 |
| | 1½ (38.0) | 240 | 850 | 32 (5.00) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB6A1J2 | B6A1JP2/3 |
| | 1½ (38.0) | 240 | 1000 | 37 (5.70) | 1 | THINBAND-All LA Options, except A or L | 0.9 (0.41) | Stock | STB6A1J3 | B6A1JP4 |

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① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|---------|-------|---|----------------------|--|--------------------------------|----------|------------------|--------------------------|
| 6 (152.0) | 2 (51.0) | 240 | 1000 | 28 (4.3) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB6A2A36 | |
| | 2 (51.0) | 480 | 1000 | 28 (4.3) | 1 | THINBAND—All LA Options, except A or L | 0.8 (0.36) | Stock | STB6A2A37 | |
| | 2½ (64.0) | 240 | 1450 | 34 (5.3) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB6A2J3 | B6A2JP1 |
| | 3 (76.0) | 240/480 | 1400 | 27 (4.2) | 2 | Mica Band—Post (2 on 1) | 1.6 (0.73) | Stock | B6A3AR1 | — |
| | 3 (76.0) | 240 | 1400 | 26 (4.0) | 1 | THINBAND—All LA Options, except A or L | 1.6 (0.73) | Stock | STB6A3A1 | — |
| | 3 (76.0) | 480 | 1400 | 26 (4.0) | 1 | THINBAND—All LA Options, except A or L | 1.6 (0.73) | Stock | STB6A3A2 | — |
| 6¼ (159.0) | 1½ (38.0) | 240 | 850 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Standard | STB6E1J10 | |
| | 1½ (38.0) | 480 | 850 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Standard | STB6E1J11 | |
| | 2 (51.0) | 240 | 1000 | 27 (4.2) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB6E2A5 | |
| | 2 (51.0) | 480 | 1000 | 27 (4.2) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Standard | STB6E2A6 | |
| | 3 (76.0) | 240/480 | 1500 | 29 (4.5) | 2 | Mica Band—Post (2 on 1) | 1.8 (0.82) | Stock | B6E3AR1 | — |
| | 3 (76.0) | 240 | 1500 | 27 (4.2) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6E3A1 | — |
| 6⅝ (160.3) | 3 (76.0) | 480 | 1500 | 27 (4.2) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6E3A2 | — |
| | 3 (76.0) | 240/480 | 1250 | 25 (3.9) | 2 | Mica Band—Post Terminals Only w/Strap | 1.8 (0.82) | Standard | B6F3AP1 | — |
| | 3 (76.0) | 240 | 1250 | 22 (3.4) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6F3A1 | — |
| 6½ (165.0) | 3 (76.0) | 480 | 1250 | 22 (3.4) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6F3A2 | — |
| | 1½ (38.0) | 240 | 900 | 31 (4.8) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Stock | STB6J1J1 | B6J1JP1/2 |
| | 1½ (38.0) | 240 | 950 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 0.9 (0.41) | Stock | STB6J1J2 | B6J1P3 |
| | 2 (51.0) | 240 | 1000 | 26 (3.9) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.54) | Stock | STB6J2A1 | B6J2AP1 |
| | 3 (76.0) | 240 | 1400 | 24 (3.7) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6J3A13 | |
| 6¾ (168.0) | 3 (76.0) | 480 | 1400 | 24 (3.7) | 1 | THINBAND—All LA Options, except A or L | 1.8 (0.82) | Stock | STB6J3A14 | |
| | 4½ (114.0) | 240 | 2300 | 26 (4.0) | 1 | THINBAND—All LA Options, except A or L | 2.8 (1.27) | Stock | STB6L4J1 | B6L4JR1 |
| 6¾ (172.0) | 1½ (38.0) | 240 | 1000 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB6N1J1 | B6N1JP2 |
| | 1½ (38.0) | 240 | 750 | 25 (3.9) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB6N1J2 | B6N1JP1 |
| | 1½ (38.0) | 240 | 1150 | 38 (5.9) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB6N1J3 | B6N1JP3 |
| | 2 (51.0) | 240 | 1300 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.59) | Stock | STB6N2A1 | B6N2AP1/2 |
| | 3 (76.0) | 240 | 2000 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 2.0 (0.90) | Stock | STB6N3A7 | |
| | 3 (76.0) | 480 | 2000 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 2.0 (0.90) | Stock | STB6N3A8 | |
| 7 (178.0) | 1½ (38.0) | 240 | 950 | 30 (4.6) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB7A1J1 | B7A1JP1 |
| | 1½ (38.0) | 240 | 1100 | 35 (5.4) | 1 | THINBAND—All LA Options, except A or L | 1.0 (0.46) | Stock | STB7A1J2 | B7A1JP2 |
| | 2 (51.0) | 240 | 1100 | 26 (4.1) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.59) | Stock | STB7A2A16 | |
| | 2 (51.0) | 480 | 1100 | 26 (4.1) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.59) | Stock | STB7A2A17 | |
| | 3 (76.0) | 230/460 | 1650 | 28 (4.3) | 2 | Mica Band—Post (2 on 1) | 2.0 (0.90) | Stock | B7A3AR1 | — |
| | 3 (76.0) | 230 | 1650 | 26 (4.0) | 1 | THINBAND—All LA Options, except A or L | 2.0 (0.90) | Stock | STB7A3A1 | — |
| | 3 (76.0) | 460 | 1650 | 26 (4.0) | 1 | THINBAND—All LA Options, except A or L | 2.0 (0.90) | Stock | STB7A3A2 | — |

CONTINUED

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|---------|-------|---|----------------------|--|--------------------------------|----------|------------------|--------------------------|
| 7¼ (184.0) | 1½ (38.0) | 240 | 1000 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB7E1J9 | |
| | 1½ (38.0) | 480 | 1000 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Standard | STB7E1J10 | |
| | 2 (51.0) | 240 | 1200 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 1.5 (0.65) | Stock | STB7E2A10 | |
| | 2 (51.0) | 480 | 1200 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 1.5 (0.65) | Stock | STB7E2A11 | |
| | 3 (76.0) | 240 | 1800 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.2 (1.00) | Stock | STB7E3A3 | |
| | 3 (76.0) | 480 | 1800 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.2 (1.00) | Stock | STB7E3A4 | |
| 7½ (191.0) | 1 (25.0) | 120/240 | 700 | 35 (5.4) | 2 | Mica Band-Post Terminals Only w/Strap | 1.0 (0.45) | Standard | B7J1AP1 | - |
| | 1½ (38.0) | 240 | 1000 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB7J1J1 | B7J1JP1 |
| | 1½ (38.0) | 240 | 1200 | 35 (5.4) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB7J1J2 | B7J1JP2 |
| | 2 (51.0) | 240 | 1200 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.0 (0.90) | Stock | STB7J2A13 | |
| | 2 (51.0) | 480 | 1200 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.0 (0.90) | Stock | STB7J2A14 | |
| | 3 (76.0) | 240/480 | 1800 | 28 (4.3) | 2 | Mica Band-Post (2 on 1) | 2.4 (1.08) | Standard | B7J3AR1 | - |
| | 3 (76.0) | 240 | 1800 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.4 (1.08) | Stock | STB7J3A1 | - |
| | 3 (76.0) | 480 | 1800 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.4 (1.08) | Stock | STB7J3A2 | - |
| 7¾ (197.0) | 1½ (38.0) | 240 | 1000 | 29 (4.5) | 1 | THINBAND-All LA Options, except A or L | 1.2 (0.58) | Stock | STB7N1J10 | |
| | 1½ (38.0) | 480 | 1000 | 29 (4.5) | 1 | THINBAND-All LA Options, except A or L | 1.2 (0.58) | Stock | STB7N1J11 | |
| | 2 (51.0) | 240 | 1300 | 28 (4.3) | 1 | THINBAND-All LA Options, except A or L | 2.1 (0.95) | Stock | STB7N2A2 | |
| | 2 (51.0) | 480 | 1300 | 28 (4.3) | 1 | THINBAND-All LA Options, except A or L | 2.1 (0.95) | Stock | STB7N2A3 | |
| | 3 (76.0) | 240 | 2000 | 29 (4.5) | 1 | THINBAND-All LA Options, except A or L | 2.3 (1.10) | Stock | STB7N3A22 | |
| | 3 (76.0) | 480 | 2000 | 29 (4.5) | 1 | THINBAND-All LA Options, except A or L | 2.3 (1.10) | Stock | STB7N3A23 | |
| 8 (203.0) | 1½ (38.0) | 240 | 950 | 26 (4.0) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB8A1J1 | B8A1JP1 |
| | 1½ (38.0) | 240/480 | 1200 | 36 (5.6) | 2 | Mica Band-Post Terminals Only w/Strap | 1.1 (0.50) | Standard | B8A1JP3 | - |
| | 1½ (38.0) | 240 | 1200 | 33 (5.1) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB8A1J2 | B8A1JP2 |
| | 1½ (38.0) | 480 | 1200 | 33 (5.1) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB8A1J3 | - |
| | 1½ (38.0) | 240 | 1400 | 39 ^① (6.0) | 1 | THINBAND-All LA Options, except A or L | 1.1 (0.50) | Stock | STB8A1J4 | B8A1JP4 |
| | 2 (51.0) | 240 | 1500 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.5 (0.65) | Stock | STB8A2A20 | |
| | 2 (51.0) | 480 | 1500 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.5 (0.65) | Stock | STB8A2A21 | |
| | 3 (76.0) | 240/480 | 2250 | 33 (5.1) | 2 | Mica Band-Post (2 on 1) | 2.6 (1.18) | Stock | B8A3AR1 | - |
| 8¼ (210.0) | 3 (76.0) | 240 | 2250 | 31 (4.8) | 1 | THINBAND-All LA Options, except A or L | 2.6 (1.18) | Stock | STB8A3A1 | - |
| | 3 (76.0) | 480 | 2250 | 31 (4.8) | 1 | THINBAND-All LA Options, except A or L | 2.6 (1.18) | Stock | STB8A3A2 | - |
| | 1½ (38.0) | 240 | 1100 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.2 (0.58) | Standard | STB8E1J5 | |
| | 1½ (38.0) | 480 | 1100 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 1.2 (0.58) | Standard | STB8E1J6 | |
| | 2 (51.0) | 240 | 1500 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 2.3 (1.10) | Stock | STB8E2A8 | |
| | 2 (51.0) | 480 | 1500 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 2.3 (1.10) | Stock | STB8E2A9 | |
| 8 (210.0) | 3 (76.0) | 240 | 2000 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.6 (1.18) | Stock | STB8E3A10 | |
| | 3 (76.0) | 480 | 2000 | 27 (4.2) | 1 | THINBAND-All LA Options, except A or L | 2.6 (1.18) | Stock | STB8E3A11 | |
| | 4 (102.0) | 240/480 | 3000 | 31 (4.8) | 2 | Mica Band-Post Terminals Only w/Strap | 3.0 (1.36) | Stock | B8E4AP1 | - |
| | 4 (102.0) | 240 | 3000 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 3.0 (1.36) | Stock | STB8E4A1 | - |
| | 4 (102.0) | 480 | 3000 | 30 (4.7) | 1 | THINBAND-All LA Options, except A or L | 3.0 (1.36) | Stock | STB8E4A2 | - |

CONTINUED

① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

Stock and Standard Heater Code Numbers (Continued)

| I.D. in. (mm) | Width in. (mm) | Volts | Watts | Watt Density W/in ² (W/cm ²) | 1 pc. or 2 pc. | Terminals, Leads and Special Features | Approx. Net Wt. lbs (kg) | Avail. | Code Number | Former Code Number |
|------------------|-------------------|---------|-------|---|----------------------|--|--------------------------------|----------|------------------|--------------------------|
| 8½ (216.0) | 1½ (38.0) | 240 | 1200 | 31 (4.8) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.55) | Stock | STB8J1J1 | B8JIJP1 |
| | 1½ (38.0) | 480 | 1200 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.2 (0.55) | Stock | STB8J1J21 | |
| | 2 (51.0) | 240 | 1600 | 31 (4.8) | 1 | THINBAND—All LA Options, except A or L | 1.6 (0.73) | Stock | STB8J2A1 | B8J2AP1 |
| | 2 (51.0) | 480 | 1600 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.6 (0.73) | Stock | STB8J2A12 | |
| | 3 (76.0) | 240 | 2500 | 32 (5.0) | 1 | THINBAND—Post Terminals Only | 2.4 (1.08) | Stock | STB8J3A14 | |
| | 3 (76.0) | 480 | 2500 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 2.4 (1.08) | Stock | STB8J3A15 | |
| 8¾ (222.0) | 1½ (38.0) | 240 | 1200 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.61) | Stock | STB8N1J10 | |
| | 1½ (38.0) | 480 | 1200 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.61) | Stock | STB8N1J11 | |
| | 2 (51.0) | 240 | 1600 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB8N2A10 | |
| | 2 (51.0) | 480 | 1600 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB8N2A11 | |
| | 3 (76.0) | 240/480 | 2000 | 27 (4.2) | 2 | Mica Band—Post (2 on 1) | 2.7 (1.22) | Stock | B8N3AR1 | — |
| | 3 (76.0) | 240 | 2000 | 25 (3.9) | 1 | THINBAND—All LA Options, except A or L | 2.7 (1.22) | Stock | STB8N3A1 | — |
| 9 (229.0) | 1½ (38.0) | 240 | 1300 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.61) | Stock | STB9A1J1 | B9A1JP1 |
| | 1½ (38.0) | 240/480 | 1500 | 40 [Ⓟ] (6.2) | 2 | Mica Band—Post Terminals Only w/Strap | 1.3 (0.61) | Standard | B9A1JP3 | — |
| | 1½ (38.0) | 240 | 1500 | 37 [Ⓟ] (5.7) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.61) | Stock | STB9A1J2 | B9A1JP2 |
| | 1½ (38.0) | 480 | 1500 | 37 [Ⓟ] (5.7) | 1 | THINBAND—All LA Options, except A or L | 1.3 (0.61) | Stock | STB9A1J3 | — |
| | 2 (51.0) | 240 | 1800 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB9A2A1 | B9A2AP1 |
| | 2 (51.0) | 480 | 1800 | 33 (5.1) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB9A2A20 | |
| | 3 (76.0) | 240 | 2500 | 30 (4.7) | 1 | THINBAND—Post Terminals Only | 2.6 (1.18) | Stock | STB9A3A18 | |
| | 3 (76.0) | 480 | 2500 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 2.6 (1.18) | Stock | STB9A3A19 | |
| 9½ (241.0) | 2 (51.0) | 240 | 1800 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 1.7 (0.77) | Stock | STB9J2A1 | B9J2AP1 |
| | 3 (76.0) | 240/480 | 2000 | 24 (3.7) | 2 | Mica Band—Post (2 on 1) | 2.8 (1.27) | Standard | B9J3AR1 | — |
| | 3 (76.0) | 240 | 2000 | 23 (3.6) | 1 | THINBAND—All LA Options, except A or L | 2.8 (1.27) | Stock | STB9J3A1 | — |
| | 3 (76.0) | 480 | 2000 | 23 (3.6) | 1 | THINBAND—All LA Options, except A or L | 2.8 (1.27) | Stock | STB9J3A2 | — |
| 9¾ (244.5) | 3 (76.0) | 240/480 | 3000 | 37 (5.7) | 2 | Mica Band—Post Terminals Only w/Strap | 2.7 (1.22) | Stock | B9L3AP2 | — |
| | 3 (76.0) | 480 | 3000 | 34 (5.3) | 1 | THINBAND—All LA Options, except A or L | 2.8 (1.27) | Stock | STB9L3A4 | — |
| 9¾ (248.0) | 2 (51.0) | 240 | 2000 | 34 (5.3) | 1 | THINBAND—All LA Options, except A or L | 1.9 (0.86) | Stock | STB9N2A1 | B9N2AP1 |
| 10 (254.0) | 1½ (38.0) | 240 | 1400 | 31 (4.8) | 1 | THINBAND—All LA Options, except A or L | 1.5 (0.68) | Stock | STB10A1J1 | B10A1JP1 |
| 10¼ (260.0) | 4 (102.0) | 240/480 | 3000 | 25 (3.9) | 2 | Mica Band—Post Terminals Only w/Strap | 3.9 (1.77) | Stock | B10E4AP1 | — |
| 11 (279.0) | 1½ (38.0) | 240 | 1600 | 32 (5.0) | 1 | THINBAND—All LA Options, except A or L | 1.7 (0.77) | Stock | STB11A1J1 | B11A1JP1 |
| | 2 (51.0) | 240 | 2000 | 30 (4.7) | 1 | THINBAND—All LA Options, except A or L | 2.1 (1.95) | Stock | STB11A2A1 | B11A2AP1 |
| 12 (305.0) | 2 (51.0) | 240/480 | 2300 | 33 (5.1) | 2 | Mica Band—Post Terminals Only w/Strap | 2.3 (1.04) | Stock | B12A2AP2 | — |

① Watt density is above Watlow recommendations at some common molding temperatures.

Band/Barrel Heaters

THINBAND Mica Heaters

How to Order

To order stock THINBAND or standard mica band, specify:

- Watlow code number
- Termination type(s)
- Lead lengths
- Quantity

Notes:

- Post terminals are provided unless otherwise specified.
- On Types A, L and K, 12 in. (305 mm) in lead length will be supplied unless otherwise specified.
- On Types E, C, F and H, 14 in. (356 mm) in lead length will be supplied unless otherwise specified.
- On Types A, E, C, F and H, leads will be 2 in. (51 mm) longer than the protective covering unless otherwise specified.
- All LA termination options will be 180° from the gap unless otherwise specified.
- Stock LA termination options can only be supplied with LA termination 180° from the gap.
- For THINBAND heaters higher than 8.5 amperes, contact your Watlow representative.

Availability

- **Stock:** Same day shipment
- **Made-to-Order:** If our stock units do not meet your application needs, Watlow can manufacture to your special requirements. Please contact your Watlow representative for price and delivery of made-to-order items.



Band/Barrel Heaters

Special Mica Band Heaters

For over 85 years, Watlow® has been solving complex and unique application problems with special mica band/barrel heaters. Watlow is continuously improving design and application knowledge through engineering expertise and experience with numerous OEM and end user applications.

This has resulted in the development of many specialty variations in construction resulting in the best heat solutions.

Performance Capabilities

- Sheath temperatures to 900°F (480°C)
- Watt densities to 55 W/in² (8.5 W/cm²)

Features and Benefits

UL® component recognition

- Made available for applications up to 900°F (480°C)

Patented clamping strap

- Assures efficient heat transfer

Low mass design

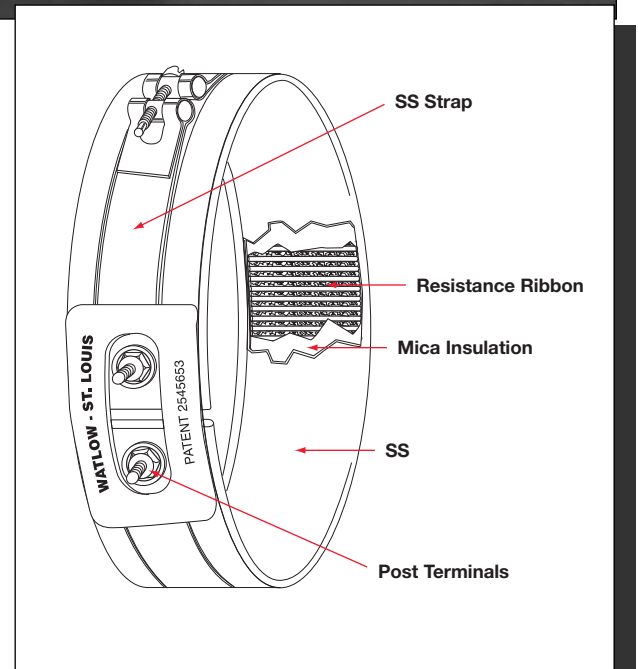
- Allows fast heat-up and quick response

Design variations

- Provides user convenience and heater protection

Applications

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



Band/Barrel Heaters

Special Mica Band Heaters

Applications and Technical Data

Operating Factors

Use lowest watt density per the graph below. A close match of the heat supplied to the actual requirements will reduce temperature overshoot, reduce cycling and increase the life of any band heater used.

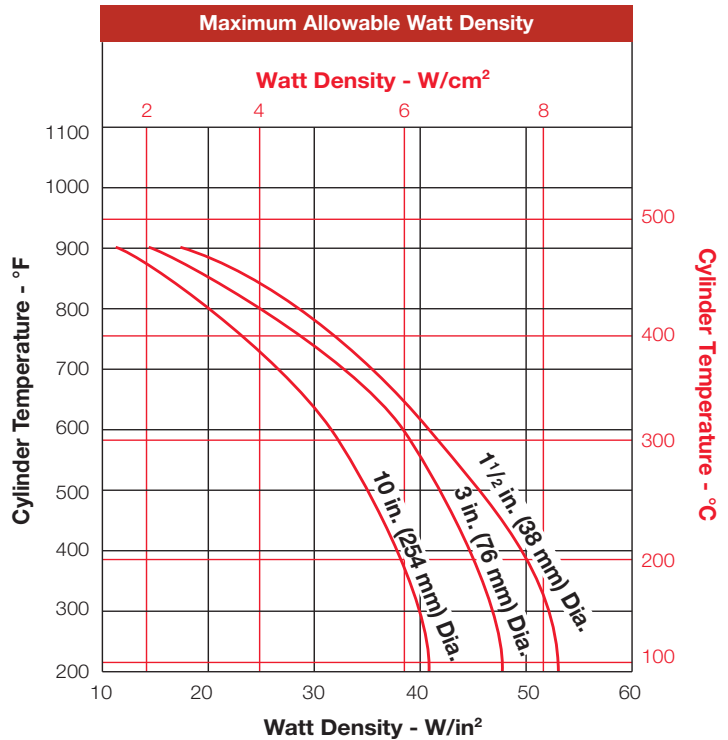
Calculate the **safe max. wattage** for the heater using:

Heated Area x Max. Watt Density

Calculate the **heated area** of the band heater by subtracting the no-heat area from the total area in contact with the cylinder (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 the heater from the *Maximum Allowable Watt Density* graph. The curves are based on narrow heaters mounted on a smooth steel cylinder. Apply the necessary correction factors:

- For heaters 2¼ to 5 in. wide (57 to 127 mm), multiply watt density by 0.80.
- For high expansion cylinders (aluminum or brass), reduce the watt density by 3 W/in² (0.46 W/cm²).
- For heaters 2¼ to 5 in. wide (57 to 127 mm), installed on a high expansion cylinder, reduce watt density by a total of 3 W/in² (0.46 W/cm²) only.
- For regular cylinder surfaces other than smooth, machined finish, reduce watt density by 3 W/in² (0.46 W/cm²).
- For heaters that will be insulated or enclosed, contact your Watlow representative for specific watt densities.



No-Heat Area for Special Mica Band (Post Terminals)

| Heater Type | Heater Size | | No-Heat Area at Terminals in. (mm) |
|-------------|-------------------|------------------|------------------------------------|
| | Diameter in. (mm) | Width in. (mm) | |
| One Piece | Less than 2 (51) | Up to 6 (152) | 1 (25) x width |
| | 2 (51) or more | Up to 3 (76) | 1½ (38) x width |
| | | More than 3 (76) | 1 (25) x width |
| Two Piece | 3 (76) or more | Up to 3 (76) | 3 (76) x width |
| | | More than 3 (76) | 2 (51) x width |

Band/Barrel Heaters

Special Mica Band Heaters

Applications and Technical Data (Continued)

Check the table to be certain the variations and lead arrangements being ordered are available on the heater size required. If you need to exceed any limitations, please contact your Watlow representative.

Physical Limitations of Variations

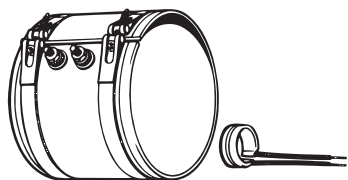
| Heater Type | Diameter | | Width | |
|--------------------|-------------------------|------------------|------------------------|------------------|
| | Min. in. (mm) | Max. in. (mm) | Min. in. (mm) | Max. in. (mm) |
| 1 pc. | 1 $\frac{1}{16}$ (33.3) | 22 (559) | $\frac{5}{8}$ (15.9) | 15 (381) |
| 2 pc. | 3 (76.0) | 44 (1118) | $\frac{5}{8}$ (15.9) | 15 (381) |
| Expandable: | | | | |
| Narrow | 1 $\frac{3}{4}$ (45.0) | — — | 1 (25.0) | 3 (76) |
| Wide | 1 $\frac{3}{4}$ (45.0) | — — | 2 (51.0) | 6 (152) |
| O.D. heater | | | | |
| 1 pc. | 3 (76.0) | 22 (559) | 1 (25.0) | 6 (76) |
| 2 pc. | 3 (76.0) | 44 (1118) | 1 (25.0) | 6 (76) |
| Type K leads | $\frac{3}{4}$ (19.0) | — — | 1 (25.0) | 15 (381) |
| Type L leads | $\frac{3}{4}$ (19.0) | — — | $\frac{5}{8}$ (15.9) | 15 (381) |
| Type E leads | 1 $\frac{1}{2}$ (38.0) | 22 (559) | $\frac{5}{8}$ (15.9) | 15 (381) |
| Type F leads | 1 $\frac{1}{2}$ (38.0) | 22 (559) | $\frac{5}{8}$ (15.9) | 15 (381) |
| Type H leads | 1 $\frac{1}{2}$ (38.0) | 22 (559) | $\frac{5}{8}$ (15.9) | 15 (381) |
| Type B leads | 1 $\frac{1}{2}$ (38.0) | 22 (559) | $\frac{3}{4}$ (19.0) | 15 (381) |
| Post terminals | 1 $\frac{1}{16}$ (33.3) | — — | 1 (25.0) | 15 (381) |
| Type A leads | $\frac{3}{4}$ (19.0) | — — | $\frac{5}{8}$ (15.9) | 15 (381) |
| Type C leads | 1 $\frac{1}{16}$ (33.3) | — — | 1 (25.0) | 15 (381) |
| Terminal box | 3 $\frac{1}{2}$ (89.0) | — — | 1 $\frac{1}{8}$ (34.9) | 15 (381) |
| Plug w/bracket | 3 (76.0) | — — | 3 $\frac{1}{2}$ (89.0) | 15 (381) |
| 3-phase | — — | — — | 3 (76.0) | 15 (381) |
| European plug | | | | |
| 1 pc. vertical | 1 $\frac{1}{16}$ (33.3) | 22 (559) | 1 (25.0) | 15 (381) |
| 1 pc. horizontal | 3 (76.0) | 22 (559) | 2 (51.0) | 15 (381) |
| 2 pc. vertical | 3 (76.0) | 44 (1118) | 1 (25.0) | 15 (381) |
| 2 pc. horizontal | 3 (76.0) | 44 (1118) | 2 (51.0) | 15 (381) |
| HV Wedge-Lok | 1 (25.0) | 3 (76) | 1 (25.0) | 6 (152) |
| Clamping tabs | 2 (51.0) | — — | 1 (25.0) | 15 (381) |
| Welded barrel nuts | | | | |
| 1 pc. | 2 (51.0) | 22 (559) | 1 (25.0) | 15 (381) |
| 2 pc. | 4 (102.0) | 44 (1118) | 1 (25.0) | 15 (381) |

Note: Some combinations of max. and min. cannot occur on the same heater.

Standard gap is $\frac{1}{4}$ in. (6 mm)

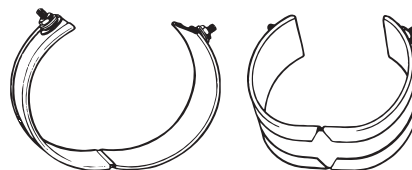
Variations

Different Widths



The 1 $\frac{1}{2}$ in. (38 mm) wide heater is the most efficient due to maximum clamping action. Heaters are available in widths from $\frac{5}{8}$ in. (15.9 mm) to 15 in. (381 mm). Multiple clamping straps are provided for heaters more than 3 in. (76 mm) wide.

Expandable Heaters



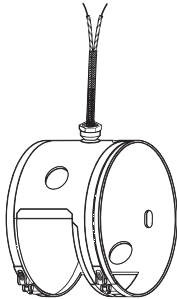
Heaters 3 in. (76 mm) wide or less are constructed with a notched sheath. Heaters wider than three inches are constructed with an expansion seam. These heaters are shipped open and should not be closed and reopened more than twice. To order, specify **expandable**.

Band/Barrel Heaters

Special Mica Band Heaters

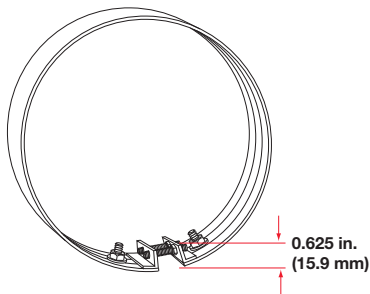
Variations (Continued)

Holes and Notches



An economical way to provide access for instrumentation is to specify an oversized gap between the heater ends. Holes and notches in the sheath should be specified only when all the cylinder surface adjacent to the hole or notch must be heated. Required holes must be provided in nearly any location as long as there is at least 1 in. (25 mm) between the hole and one side of the heater. Standard hole sizes up to 2 in. (51 mm) diameter. For proper hole and/or notch location, a **dimensional drawing or customer supplied sample heater is required.**

Outside Diameter



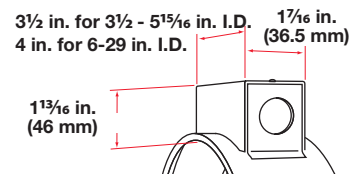
This variation is specially designed and constructed to heat the inside diameter of cylinders (i.e., large diameter blown film dies). All the terminations and mounting hardware are located on the I.D. of the heater. Contact your Watlow representative for available sizes and terminations. To order, specify **outside diameter** heater.

Two Piece Band Heaters



Two-piece construction is available on heaters 3 in. (76 mm) or greater in diameter. Heaters 3 in. (76 mm) wide or less with post terminals have one terminal on each end. Heaters over 3 in. (76 mm) wide with post terminals have the two terminals side by side on one end. On two-piece units with leads, also specify the power supply voltage. The power supply voltage is the voltage to which the heater will be wired. For example, a two-piece band that is 240V~(ac) per half may be wired in series to a 480V~(ac) power supply. In this case the band heater lead wire insulation must be rated for 480V~(ac). To order, specify **two piece band heater**, with **volts** and **watts per half** and **power supply voltage**.

Metallic Terminal Box



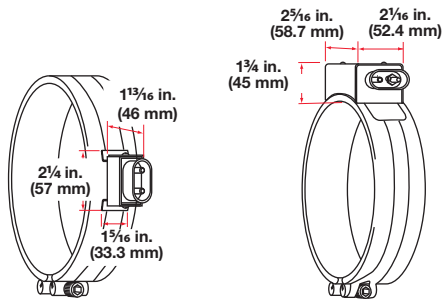
Terminal boxes are attached to the heater to cover the terminals for an added safety feature. Conduit may be attached to the box through $\frac{7}{8}$ in. (22.2 mm) diameter holes in the ends of the box. Terminal box is available on two-piece heaters. When ordering, specify **terminal box**.

Band/Barrel Heaters

Special Mica Band Heaters

Variations (Continued)

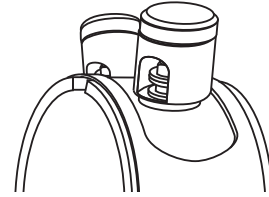
High-Temperature “Quick Disconnect” European Style Plugs



These plugs 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 machines. Maximum 15 amperes at 240V~(ac), maximum 240V. To order, specify a **vertical** or **horizontal** european plug.

Ceramic Terminal Covers

Stock Option

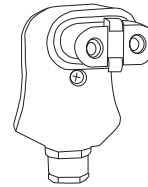


Code # Z-4918

Ceramic terminal covers are a convenient and economical way to insulate post terminals and are sized for standard length posts. Ceramic terminal covers also have a 10-24 screw thread size. These are supplied as an accessory item and shipped separately. To order, specify **Z-4918** and quantity.

High-Temperature “Quick Disconnect” European Style Female Adapters

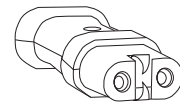
Vertical



Right Angle

Code # N6027AF049

Horizontal



Straight

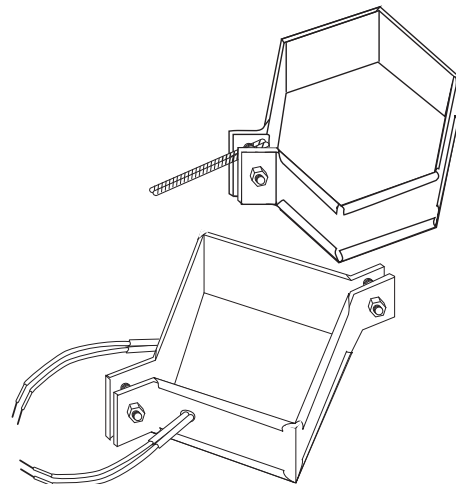
Code # N6027ZZ028

Available as an accessory item that must be used in conjunction with high-temperature, “quick disconnect” European style plugs. To order, specify code number **N6027AF049** or **N6027ZZ028** and quantity.

Special Construction Variations

Square, Rectangular and Hex Bands

Square and rectangular heaters are made in either one or two-piece construction. These units are ideal for heating dies on plastic extruders or the barrels of twin screw extruders. Hex-shaped heaters are commonly used on the hex-shaped portion of the nozzle injection molding machines. Hex-shaped heaters are made to exact customer specifications. To order, specify **square** or **rectangular** heaters. A **dimensional drawing** or **customer supplied sample heater** is required.



Band/Barrel Heaters

Special Mica Band Heaters

Special Construction Variations (Continued)

Square, Rectangular and Hex Bands (continued)

Clamping Styles

The preferred clamping style is illustrated in Figure 1 showing bent-up flange clamping. This clamping style applies a uniform clamping force at the corners.

Figure 2 shows bent-up flanges or built-in strapping bracket at the side.

The least preferred clamping style is shown in Figure 3. The one-piece heater does not apply a uniform clamping force.

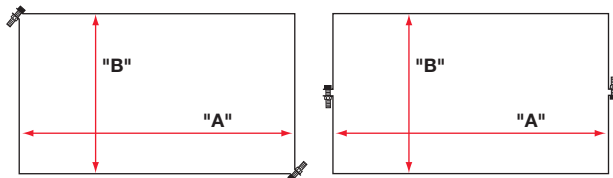


Figure 1

Figure 2

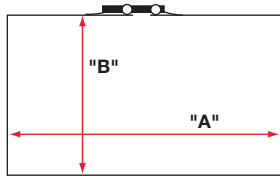
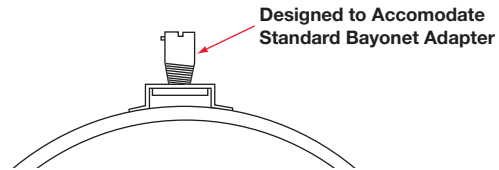


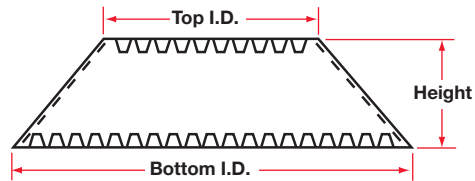
Figure 3

Thermocouple Bracket



The thermocouple bracket simplifies the installation of an external thermocouple with a bayonet adapter. The standard location for the adapter is 90° from the gap. Sizes available are 1/8 in. (3.2 mm), 1/4 in. (6 mm) and 3/8 in. (9.5 mm). To order, specify a **thermocouple bracket**.

Cone Shapes



Cone shaped heaters are ideal for applications where heat is required for hoppers or funnels. The preferred method of attachment is with bent-up flange clamping. Cone shaped heaters are made to exact customer specifications. To order, specify a **cone shape adapter**. A **dimensional drawing or customer supplied sample heater is required**.

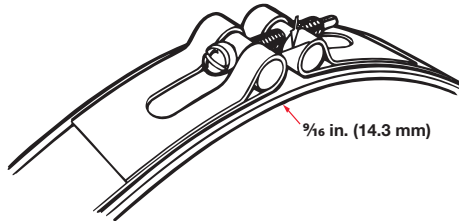
Note: Complex configurations may require design charges or minimum quantities. Use stock or standard products if possible.

Band/Barrel Heaters

Special Mica Band Heaters

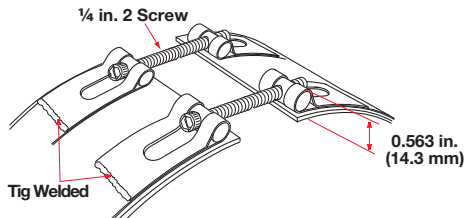
Clamping Variations

Standard and Low-Profile Clamping Strap



The standard clamping strap requires $\frac{5}{16}$ in. (14.3 mm) clearance above the heated surface at the barrel nuts. When clearance is limited, smaller barrel nuts can be used and require only $\frac{3}{8}$ in. (9.3 mm) clearance. The clearance required by the clamping screw depends on the screw length and the diameter of the heater. The low-profile clamping strap is standard on units less than $1\frac{1}{2}$ in. (34.9 mm) wide and utilizes a $\frac{1}{2}$ in. (13 mm) wide strap. Contact your Watlow representative for more information. To order, specify a **low-profile clamping strap**.

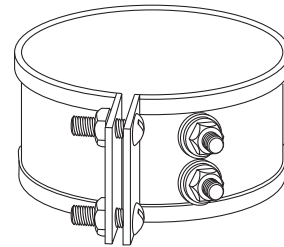
Welded Barrel Nuts



An ideal way to provide access for instrumentation is to specify an oversized gap between the heater ends. If the clamp strap interferes with the positioning of the instrumentation device, welded barrel nuts are recommended. Maximum gap is 1 in. (25 mm). To order, specify **welded barrel nuts with dimensional location and gap dimension** when ordering.

Clamping Tabs

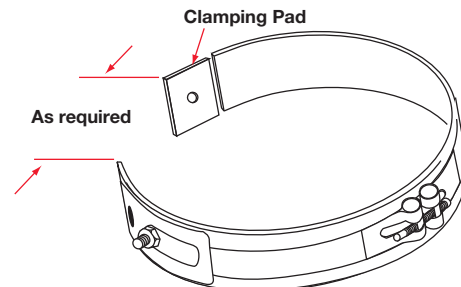
Non-Stock Options



Tabs—or lock-up flanges—are available. However, the special mica band heater and strap design provides superior clamping and improved heat transfer and should be used whenever possible. To order, specify **clamping tabs**.

Clamping Pads

Non-Stock Options



Clamping pads have a hole to allow easy fastening to machine barrel. Clamping pads are used when an obstruction hinders a standard clamping strap from fitting completely around the machine barrel. To order, specify **clamping pads and degrees coverage**.

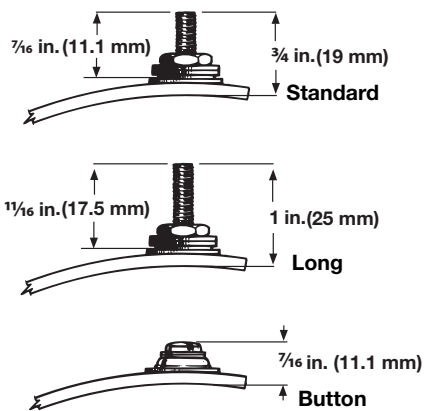
Band/Barrel Heaters

Special Mica Band Heaters

Termination Variations

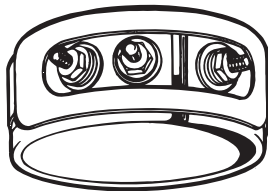
Heaters rated at less than 250V use UL® approved lead insulation for operations to 482°F (250°C) as standard. Lead insulation UL® rated for operation to 850°F (450°C) may be required in high-temperature applications where the leads are shrouded or enclosed with the heater. All heaters rated at more than 250V~(ac) use this wire.

Post Terminal Options



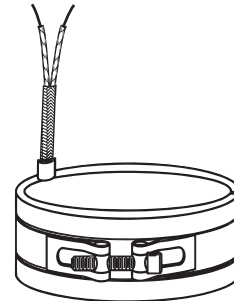
Standard post terminals have a threaded length of 7/16 in. (11.1 mm) and require 3/4 in. (19 mm) clearance from the cylinder. Terminals with 1 1/16 in. (17.5 mm) threaded lengths are available that require 1 in. (25 mm) of clearance. Button terminals require only 7/16 in. (11.1 mm) clearance. Maximum amperage for post terminals is 35 ampere. To order, specify **standard**, **long** or **button** terminals.

Three Phase or Dual Voltage



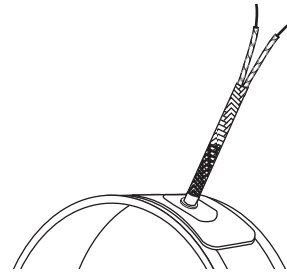
A third terminal can be added to provide dual voltage or three-phase. Standard terminal location on heaters 3 in. (76 mm) wide or less is one terminal at each end of the heater centered on the width. On heaters 3 in. (76 mm) wide or wider, the terminals are located side-by-side on one end. Special terminal locations are available. To order, specify **dual voltage** or **three-phase**.

Type B



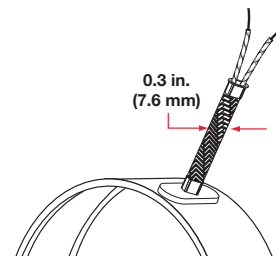
Two fiberglass-insulated lead wires exit in a single metal braid for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than braid. To order, specify **Type B** and **length**.

Type C



Two fiberglass lead wires exit a single tightly woven metal braid for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than the braid. To order, specify **Type C** and **length**.

Type E



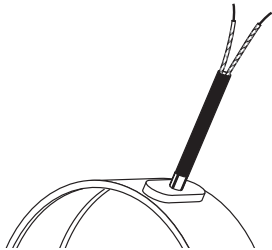
Loose metal braid encloses two fiberglass leads for good abrasion protection, lead flexibility and wiring convenience. Leads are 2 in. (51 mm) longer than the braid. To order, specify **Type E** and **length**.

Band/Barrel Heaters

Special Mica Band Heaters

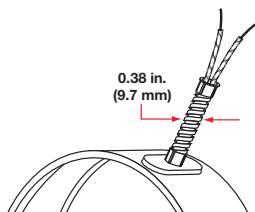
Termination Variations (Continued)

Type F



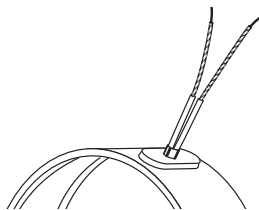
Loose fiberglass sleeving encloses two fiberglass leads for additional insulation protection where high temperature or minor abrasion is present. Leads are 2 in. (51 mm) longer than the sleeving. To order, specify **Type F** and **length**.

Type H



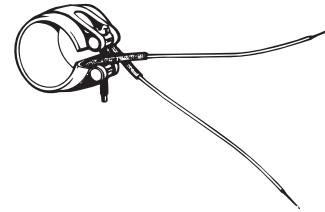
A stainless steel, flexible conduit encloses the leads for superior mechanical protection where lead abrasion is a particular problem. Leads are 2 in. (51 mm) longer than the conduit. To order, specify **Type H** and **length**.

Type K (Vertical)



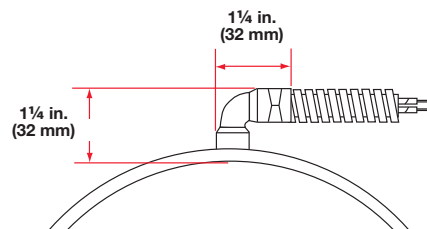
Flexible lead wires exit vertically from the heater. These leads can be bent adjacent to the heater for a quick and easy connection. To order, specify **Type K (vertical)** and **length**.

Type K (Horizontal)



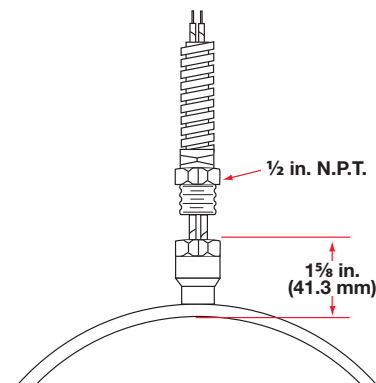
The horizontal **Type K** leads give excellent performance on small heaters when not subjected to strain or hot plastics. The leads are fiberglass insulated. To order, specify **Type K (horizontal)**.

Right Angle Armor Cable



Armor cable provides superior protection to lead wires where abrasion can cause damage. The standard leads are 12 in. (305 mm) of armor cable over 14 in. (356 mm) of flexible leads. Right angle armor cable is available on any clamping or construction variation. To order, specify a **right angle armor cable**.

Removable Armor Cable



Removable armor cable is recommended on applications where removable armor is required. It is available on any clamping or construction variation. The fitting will accept the standard armor cable connector. The standard flexible leads are 14 in. (356 mm). To order, specify a **removable armor cable**.

Band/Barrel Heaters

Special Mica Band Heaters

Installation Procedures

1. Install heaters over a clean surface.
2. Install clamp straps, tightening until screw cannot be tightened additionally. On heaters with multiple straps, alternately tighten each strap until no additional tightening occurs.
3. To ensure that the heater is properly seated on the barrel, it is advisable to tap around the circumference of heater with a soft mallet. This will result in a final conforming of the heater to the cylinder. Generally after this is done, operators can get an additional turn or two on the clamp screw. Each screw should have an ultimate torque value as in below chart.
4. When installing terminal lugs, torque the top nut to 12 in.-lbs. The bottom nut should be held by a wrench when tightening the top nut.
5. After the machine has been run for its initial heat up, it is advisable to retighten the clamping bands.

Note: This retightening must be done when the heaters are cold. If the heater becomes loose due to normal operating and cycling, the strap can be retightened; though frequent adjustments are not advisable. It is advisable to check bands for tightness every three to four months.

Clamp Strap Torque Specifications

| Strap Width in. (mm) | Strap Screw | Allen Type | Pan Head Type |
|-------------------------|----------------|---------------|------------------|
| ¾ (22.2) | 10 - 24 | 60 - 75 lb/in | 30 - 35 lb/in |
| ¾ (15.9) | 10 - 24 | 30 - 35 lb/in | 30 - 35 lb/in |
| ½ (13.0) | 6 - 32 | 25 lb/in | 25 lb/in |

Band/Barrel Heaters

Ceramic Knuckle Band Heaters

Ceramic knuckle band heaters are designed to provide high-performance barrel heating at temperatures up to 1400°F (760°C). This level of performance is achieved utilizing ceramic materials, which provide excellent insulation and long heater life. The construction of the ceramic knuckle heater includes interlocking ceramic blocks with resistance wires threaded through holes within the ceramic. This method provides superior heat distribution across the band, resulting in a uniformly heated surface. Ceramic knuckle heaters are specifically engineered and manufactured with three layers.

The aluminized steel sheath layer improves mechanical protection to the heater and resists corrosion.

The ceramic fiber layer provides thermal insulation energy conservation and minimizes heat loss.

The ceramic knuckle layer provides mechanical protection and electrical insulation to the resistance element, which increases heater life and conducts or radiates the heat to the surface.

Performance Capabilities

- 1400°F (760°C) maximum operational temperatures
- Watt densities up to 45 W/in²

Features and Benefits

Ceramic insulator

- Allows for high temperature operation
- Provides longer heater life
- Ensures accurate heating

Aluminized steel cover

- Provides excellent protection from abrasion

Radiation or conduction heat transfer

- Ensures dependable heat transfer method

Standard Construction

- Aluminized sheath
- Clamp tabs
- Post terminals

Applications

- Injection molding barrels
- Extruder barrels
- Blown film dies



Specifications

Electrical

- Resistance tolerance: -10% (+5%)
- Wattage tolerance: +10% (-5%)
- Maximum watt density: 114 W/cm² (45 W/in²)
- Maximum operating temperature: 1400°F (760°C)

Mechanical

- Overall thickness: 0.5 in. (13 mm)
- Minimum width: 1.5 in (38 mm)
- Maximum width: 9.69 in. (246.1 mm)
- Minimum I.D.: 2 in. (51 mm)
- Maximum I.D.: 15 in. (381 mm)*
- Width tolerance: 0.125 in. (±3.175 mm)
- Standard gap: 0.25 in. (6.4 mm):

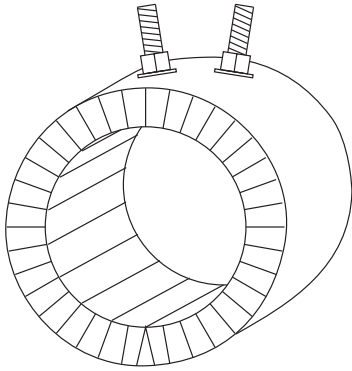
*One-piece construction

Band/Barrel Heaters

Ceramic Knuckle Band Heaters

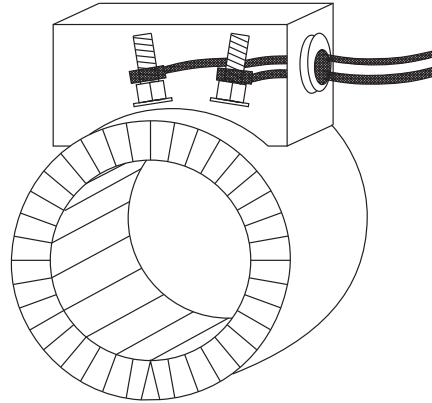
Termination Options

Post Terminals



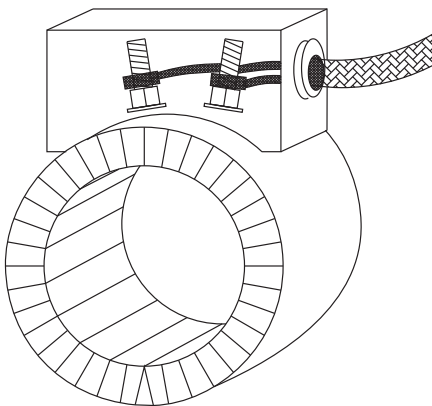
Post terminals are the standard termination, providing quick connection with ring or fork connectors or buss strips, ¼ -20 in. thread and includes double nuts and washers. Standard terminal location is 180° from gap.

Flexible Lead Wire



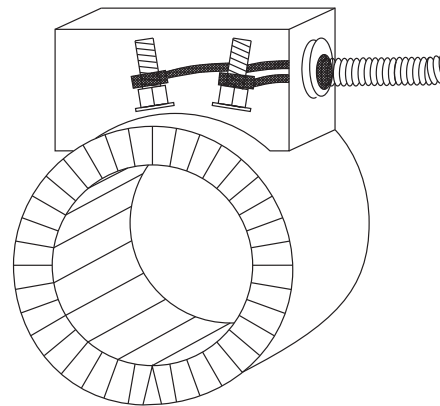
Flexible lead wire exits tangential to heater and includes leads connected to the post terminals with ring connectors. This termination method requires a terminal box.

Stainless Steel Braid



The stainless steel braid method includes a loose metal braid that is welded to the terminal box with a coupler. This provides excellent abrasion protection and flexibility. Leads are attached to posts with a ring connector.

Flexible Stainless Steel Hose



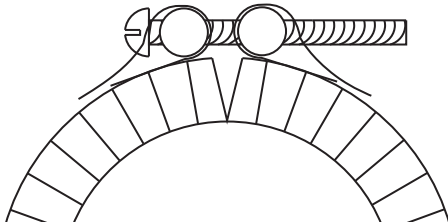
Flexible stainless steel hose is welded to the terminal box with a coupler. This terminal option provides superior mechanical protection where lead abrasion is a problem. Leads are attached to posts with a ring connectors.

Band/Barrel Heaters

Ceramic Knuckle Band Heaters

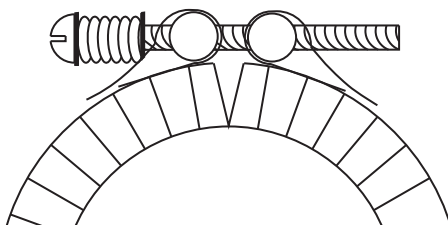
Clamping Options

Barrel Clamps



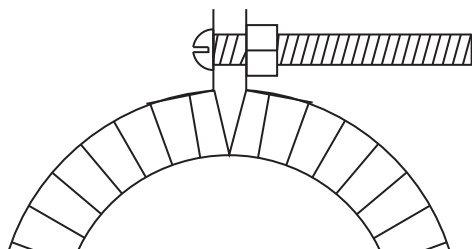
Barrel clamps are used in applications where access for instrumentation is required. It includes an oversized gap.

Spring Loaded Barrel Clamps



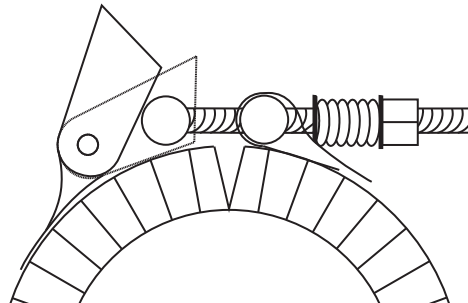
Spring loaded barrel clamps help to compensate for the thermal expansion of metals.

Clamp Tabs



Clamp tabs are a standard clamping option that offers a uniform clamping force across the heater width.

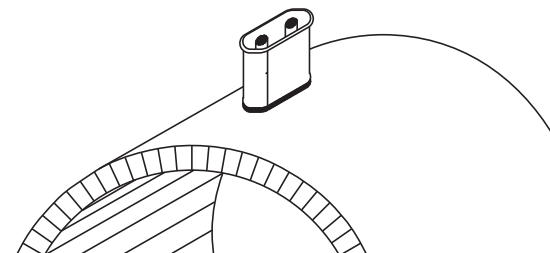
Flexible Lead Wire



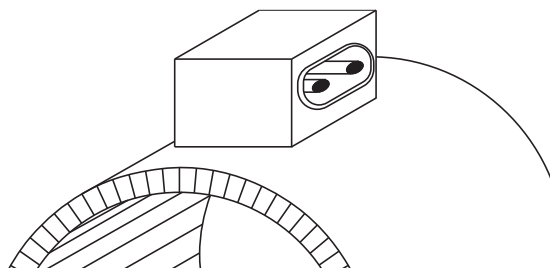
Latch and trunion clamps provide a quick clamp option. Clamping force is similar to barrel clamps and a spring is included to allow for thermal expansion of metals.

European Style Plugs

Vertical



Horizontal



European style plugs provide a simple and safe way to apply power. The combination of high temperature male and female “quick disconnect” plug assemblies eliminate all live exposed terminals and electrical wiring. When ordering, specify vertical or horizontal European plug.

Band/Barrel Heaters

Ceramic Knuckle Band Heaters

Options

Terminal box provides protection for electrical connections in hazardous environments.

Partial coverage helps heating of large pipes and covers large diameters with two or more sections, dimensional drawing required when ordering.

Thermocouple bracket % NPT necessary for instrumentation. A dimensional drawing is required when ordering.

Holes and notches necessary for instrument access, etc. Heater must be 2.5 in. (64 mm) minimum width and 2.5 in. (64 mm) minimum I.D. A dimensional drawing is required when ordering.

Ceramic terminal covers provide easy installation and protect electrical connections on each individual terminal.

Other Options

- Dual voltage (factory approval required)
- Stainless steel sheath
- Ground stud
- Ground lead
- Three-phase voltage (factory approval required)

Ceramic Band Heater Check List

- The surface where a heater will be mounted must be clean and the heater maintained. It must be free of all contaminants that might cause a short circuit in the heater (typically conductive liquids).
- To prevent overheating, Watlow recommends installing an appropriate temperature controller and checking the correct performance of the thermocouple.
- Do not use in environments containing combustible gases or vapors.
- Keep all electrical connections properly protected to avoid electrical hazards to machine operators.
- Do not over tighten clamps to the point where serrated side folds begin to collapse. Ceramic band heaters utilize radiation heating and excessive force may break ceramic insulators.

Physical Limitations

| Options | I.D. (in.) | | Width (in.) | | Terminals | Clamp |
|--|---------------|------|----------------|------|------------------------|-------------------|
| | Min. | Max. | Min. | Max. | | |
| One piece | 2½ | 15 | 1½ | 10 | — | — |
| Partial coverage | 7 | — | 1½ | 9¾ | — | Except clamp tabs |
| Clamp tabs | 2½ | 15 | 1½ | 10 | | — |
| Barrel nuts | 4 | — | 1½ | 10 | | — |
| Spring loaded barrel nuts | 4 | — | 1½ | 10 | — | |
| Latch and trunion clamps | 3 | — | 1½ | 10 | — | |
| Stud terminals | — | — | — | 10 | | — |
| Flexible leads | 2½ | — | 2½ | 10 | | — |
| SS hose leads | 2½ | — | 2½ | 10 | | — |
| SS braided leads | 2½ | — | 2½ | 10 | | — |
| Terminal box | 2½ | — | 2½ | 10 | — | — |
| Holes and notches | 2½ | — | 2½ | 10 | — | — |
| Ceramic cover | 2 | — | 1½ | 10 | Post | — |
| Terminal clamp | 3 | — | 2½ | 9¾ | Post with terminal box | — |
| European plug both vertical and horizontal | 2½ | — | 2 | 10 | | — |

— No restrictions.

Note: These are all standard clamping options, for special constructions please consult factory.