Band Heaters

Duraband

General purpose terminal box can be attached on Duraband diameters of 2-1/2" or larger. It offers excellent protection to exposed terminals. To simplify wiring, the box has a 1/2" trade size knockout (actual diameter 7/8") that will accept standard conduit or flexible armor cable connectors. It can be field assembled on most band heaters with screw terminals having a center distance of 7/8".

Flexible armor cable for lead protection is available where abrasion is a problem.

For maximum surface contact, the torque resistant and virtually unbreakable stainless steel screw terminals are securely fastened to a connecting jumper, assuring positive contact with the windings and providing maximum amperage carrying capacity. For other terminal or lead arrangements, see pages 1-36 through 1-41.

Specially designed mounting brackets with 1/4"-20 socket cap screws are used to draw the Built-In Strap to a high degree of tension. This tension exerts the great amount of drawing power required to pull the heating element assembly against the cylinder evenly and tightly across its entire width, thus eliminating all air gaps that can cause premature heater failure. The number of bracket assemblies used increases as the width of a Duraband heater increases.

Specially treated rust-resistant steel sheath casing provides the best combination of physical strength, high emissivity and good thermal conductivity to heated cylindrical parts, good for sheath temperatures up to 900°F (480°C).

Specially selected grade and thickness of mica sheet is used to insulate the windings, providing excellent thermal conductivity and dielectric strength.

The gauge of nickel-chrome resistance ribbon wire is selected to achieve the lowest internal element temperatures possible, resulting in maximum heater life. The ribbon wire is wound evenly spaced on a specially selected mica strip, providing even heat distribution and thus eliminating hot spotting that can cause premature heater failure.

Duraband’s Built-In Strap is a unique design feature developed and patented by Tempco. A Low Thermal Expansion alloy sheath is used for the outer sheath, covering the entire width of the band heater.

*U.S. Patent #3829657

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Typical Applications
- Plastic Injection Molding Machines
- Plastic Extruders
- Oil Reclamation Equipment
- Food and Candy Extruders
- Drum Heating
- Extrusion Dies
- Holding Tanks
- Blow Molding Machines
- Vending Machines
- Barrels & Heads
- Food Service Warming
  - Autoclaves & Sterilizers
  - Metallurgical Analyzers
  - Fluidized Beds
- Hot Runner Molds
- Pulp and Paper Processing Equipment

Designed For Trouble-Free Service
Tempco’s Duraband heater design is the result of many years of research, development and testing for a reliable mica insulated band heater that can perform at the higher operating temperatures [up to 900°F (480°C)] essential to process high temperature resins, providing long, efficient service necessary for today’s high productivity of plastic extruders, injection and blow molding machines.

Duraband is a proven heater design for good life efficiency and dependability. It assures maintaining the lowest winding temperatures possible, keeping a low-mass heating element assembly for fast heat-up and quick thermal response to controls. It incorporates the Low Thermal Expansion Built-In Strap, a unique design feature originally developed and patented by Tempco.

Advantages and Variations
Duraband mica insulated heaters are widely used on operations involving heating of cylindrical surfaces and are manufactured in a full range of standard construction variations, physical dimensions, electrical ratings, and a complete arrangement of screw terminals and lead terminations. (See pages 1-36 through 1-41).

However, these standard Duraband heater variations and terminations do not represent the full extent of our capabilities. Tempco’s engineering staff, with many years of experience in heat processing and temperature control applications, can assist you in designing the right Duraband heater for your specific application.

Construction Characteristics & Features
- Built-in bracket for superior clamping
- Unbreakable and torque-resistant screw terminals
- Temperatures up to 900°F (480°C)
- Full width stainless steel built-in strap
- Flexibility to incorporate holes and cutouts
- Available two-piece and expandable designs
- Best mica insulated heater on the market
- Faster delivery than any other type of heater band
- Most economical among various heater bands
- Most versatile and commonly used heater band

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### Duraband Specifications

**PERFORMANCE RATINGS**

- **Maximum Temperature:** Standard Sheath: 900°F (482°C)
- **Nominal Watt Density:** 20-45 W/in² (3.7 W/cm²)
- **Maximum Watt Density:** Dependent on heater size and operating temperature.

**ELECTRICAL RATINGS**

- **Maximum Voltage:** 480 VAC
- **Dual Voltage or 3-Phase:** Available depending on heater design
- **Maximum Amperage:** lead wire termination: 10 amp screw terminations: 8-32UNF—20 amp; 10-32UNF—25 amp
- **Resistance Tolerance:** +10%, −5%
- **Wattage Tolerance:** +5%, −10%

Exposed electrical wiring on band heater installations is a violation of Electrical Safety Codes including O.S.H.A.

### PHYSICAL SIZE CONSTRUCTION LIMITATIONS

- **Minimum Width:** 3/4" (19.1 mm)
- **Width Tolerance:** ±1/16" (1.59 mm)
- **Minimum Inside Diameter:** 7/8" (22.1 mm)
- **Nominal Gap:** 3/8" (9.5 mm)—If a larger gap is required for probes or thermocouples, specify when ordering.

### BUILT-IN BRACKETS

- **Heater Width** | **Number of Brackets**
  --- | ---
  1-1/2" to 3" (38-76 mm) | 1
  3-1/8" to 5" (79-127 mm) | 2
  5-1/8" to 6-7/8" (130-145 mm) | 3
  7" to 10" (178-254 mm) | 4
  10-1/8" to 15" (257-381 mm) | 5

*If tighter tolerances are required, consult Tempco.*

### Minimum ID and Width for Construction/Clamping Styles

<table>
<thead>
<tr>
<th>Style</th>
<th>Min. ID</th>
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**Note:** Refer to individual descriptions for further information. Actual heater minimums will be a combination of termination and construction/strap styles.
The chart displays the maximum Watt Density curves for various diameter heaters. Use this chart when determining the appropriate wattage value for your chosen heater.

Be aware that certain factors will require you to derate the watt density (W/in²) of your heater selection.

Failure to adhere to the maximum allowable watt density per heater size will result in poor operating life.

**CORRECTION FACTORS**

- For heaters wider than 3" (76.2 mm), reduce maximum recommended watt density from chart by 20%.
- For applications using insulating shroud, reduce maximum recommended watt density from chart by 25%.

**CALCULATING MAXIMUM WATT DENSITY**

Factors to be taken into consideration

A. Type of controls
B. Voltage variations
C. Machine cycling rate
D. Type of resin being processed
E. Coefficient of thermal expansion and conductivity of the cylinder
F. Designing a heater that closely matches the wattage requirement will decrease the frequency of cycling and temperature overshoot, thereby increasing the life of the heater.

Once these factors have been established, proceed with the following steps:

1. Determine the maximum operating temperature.
2. Calculate the total wattage required to obtain the maximum operating temperature. (See engineering section.)
3. Determine the quantity and size of the heater bands to be used. 1-1/2" through 3" wide band heaters have proven to be the most efficient and reliable in most cylindrical heating applications.
4. Determine individual band heater wattage by dividing the total required wattage by the quantity of band heaters selected.
5. Determine the band heater watt density by subtracting unheated areas from the band heater diameter created by screw terminals, gaps, holes, and cutouts (see formula below).

**Watt Density Formula**

\[
\text{Watt Density (W/in}^2\text{)} = \frac{\text{Wattage}}{(3.14 \times \text{Band ID} - \text{Gap-1-3/8}) \times \text{Band Width} - \text{Unheated Area (see table)}}
\]

Unheated Area (See Table) = Unheated area for construction style + unheated area for any holes or cutouts
Band Heaters

Construction Styles

Duraband® Construction Styles

CONSTRUCTION TYPES

One-Piece Band
The one-piece construction is available on any screw or lead termination and clamping variation. It can be used where band heaters can be slipped over the end of the cylinder.

Two-Piece Band
The Two-Piece construction is available on any screw or lead and clamping variation. The Duraband two-piece design provides a built-in hinge, making handling and installation easier. It is used on large cylinders or where the heater cannot be slipped over the end of the cylinder. Two-piece band heaters are rated at watts and volts per each half when ordering.

NOTE: Multiple segment designs are recommended on larger diameter (typically larger than 15") heaters to improve the clamping force and increase the surface contact between the heater and the barrel for efficient heat transfer.

One-Piece Expandable Band
The one-piece expandable construction is available on any screw or lead and clamping variation. It can be used where a one-piece band heater would have to be expanded to fit over the barrel during installation, rather than slipped over the end of the barrel.

Note: The One-Piece Expandable Band should not be opened and closed more than twice.
CONSTRUCTION TYPES

One-Piece Band
The one-piece construction is available on any screw or lead termination and clamping variation. It can be used where band heaters can be slipped over the end of the cylinder.

Two-Piece Band
The Two-Piece construction is available on any screw or lead and clamping variation. The Duraband two-piece design provides a built-in hinge, making handling and installation easier. It is used on large cylinders or where the heater cannot be slipped over the end of the cylinder. Two-piece band heaters are rated at watts and volts per each half when ordering.

**NOTE:** Multiple segment designs are recommended on larger diameter (typically larger than 15\(^\circ\)) heaters to improve the clamping force and increase the surface contact between the heater and the barrel for efficient heat transfer.

One-Piece Expandable Band
The one-piece expandable construction is available on any screw or lead and clamping variation. It can be used where a one-piece band heater would have to be expanded to fit over the barrel during installation, rather than slipped over the end of the barrel.

**Note:** The One-Piece Expandable Band should not be opened and closed more than twice.
Standard Built-In Strap Clamping (Low Thermal Expansion)

The Built-In Strap is available with any screw or lead termination and construction variation. The Built-In Strap eliminates the use of awkward-to-handle separate straps, providing more drawing power than any other type of clamping system. The Duraband with Built-In Strap is standard on many designs. Consult Tempco for multiple segment heaters.

Type NB—One-Piece Band
Min. ID: 2" (50.8 mm)
Min. Width: 1-1/4" (31.8 mm)

Type NS—Two-Piece Band
Min. ID: 3" (76.2 mm)
Min. Width: 1-1/4" (31.8 mm)

Type NE—One-Piece Expandable Band
Min. ID: 2-1/2" (63.5 mm)
Min. Width: 1-1/4" (31.8 mm)

Wedge Lock

Wedge Lock clamping is designed for applications where mounting space is severely limited. It lends itself mainly to small diameter nozzle heaters.

Type TWL—One-Piece Band
Min. ID: 1" (25.4 mm)
Min. Width: 1" (25.4 mm)
Max. Width: 3-1/2" (88.9 mm)

Separate Straps

The Separate Strap clamping is available with any screw or lead termination and construction variation. It is strongly recommended that the Duraband with Built-In Strap design be used whenever possible because it provides more drawing power than any other type of clamping system. Consult Tempco for multiple segment heaters.

Type SB—One-Piece Band
Min. ID: 7/8" (22.2 mm)
Min. Width: 3/4" (19.1 mm)

Type SS—Two-Piece Band
Min. ID: 2" (50.8 mm)
Min. Width: 3/4" (19.1 mm)

Type SE—One-Piece Expandable Band
Min. ID: 2-1/2" (63.5 mm)
Min. Width: 1-1/4" (31.8 mm)

Clearance Dimensions for Separate Strap Clamping

Separate strap clearance dimensions are dependent on heater ID. The strap dimensions are shown below.
**Standard Built-In Strap Clamping (Low Thermal Expansion)**

The Built-In Strap is available with any screw or lead termination and construction variation. The Built-In Strap eliminates the use of awkward-to-handle separate straps, providing more drawing power than any other type of clamping system. The Duraband with Built-In Strap is standard on many designs. Consult Tempco for multiple segment heaters.

**Type NB—One-Piece Band**
- Min. ID: 2" (50.8 mm)
- Min. Width: 1-1/4" (31.8 mm)

**Type NS—Two-Piece Band**
- Min. ID: 3" (76.2 mm)
- Min. Width: 1-1/4" (31.8 mm)

**Type NE—One-Piece Expandable Band**
- Min. ID: 2-1/2" (63.5 mm)
- Min. Width: 1-1/4" (31.8 mm)

**Wedge Lock**

Wedge Lock clamping is designed for applications where mounting space is severely limited. It lends itself mainly to small diameter nozzle heaters.

**Type TWL—One-Piece Band**
- Min. ID: 1" (25.4 mm)
- Min. Width: 1" (25.4 mm)
- Max. Width: 3-1/2" (88.9 mm)

**Separate Straps**

The Separate Strap clamping is available with any screw or lead termination and construction variation. It is strongly recommended that the Duraband with Built-In Strap design be used whenever possible because it provides more drawing power than any other type of clamping system. Consult Tempco for multiple segment heaters.

**Type SB—One-Piece Band**
- Min. ID: 7/8" (22.2 mm)
- Min. Width: 3/4" (19.1 mm)

**Type SS—Two-Piece Band**
- Min. ID: 2" (50.8 mm)
- Min. Width: 3/4" (19.1 mm)

**Type SE—One-Piece Expandable Band**
- Min. ID: 2-1/2" (63.5 mm)
- Min. Width: 1-1/4" (31.8 mm)

**Clearance Dimensions for Separate Strap Clamping**

Separate strap clearance dimensions are dependent on heater ID. The strap dimensions are shown below.
Band Heaters

Construction/Clamping Variations

Duraband® Construction/Clamping Variations

**Spring Loaded with Built-In Bracket**

The Heavy Duty Stainless Steel Spring with Built-In Bracket is a variation on the basic Duraband design. It is available with any screw or lead termination and construction variation. It is recommended for heaters over 12" in diameter, and for any diameter heater used in the vertical position, to prevent the heater from slipping off the machine. The springs provide constant tension, therefore maintaining optimum surface contact against the cylinder being heated.

Consult Tempco for multiple segment heaters.

**Type SL—One-Piece Band**
- **Min. ID:** 4" (101.6 mm)
- **Min. Width:** 1-1/4" (31.8 mm)

**Type NSL—Two-Piece Band**
- **Min. ID:** 4" (101.6 mm)
- **Min. Width:** 1-1/4" (31.8 mm)

**Type NEL—One-Piece Expandable Band**
- **Min. ID:** 4" (101.6 mm)
- **Min. Width:** 1-1/4" (31.8 mm)

**Latch and Trunnion**

The Latch and Trunnion Clamping System is available with any screw or lead termination and construction variation. It is ideal in absorbing thermal expansion due to the spring loading on the screws. The latch fully opens, facilitating installation on large diameter cylinders. The outer sheath is made from a Low Thermal Expansion alloy.

Consult Tempco for multiple segment heaters.

**Type LT—One-Piece Band**
- **Min. ID:** 7" (177.8 mm)
- **Min. Width:** 1-1/2" (38.1 mm)

**Type LS—Two-Piece Band**
- **Min. ID:** 7" (177.8 mm)
- **Min. Width:** 1-1/2" (38.1 mm)

**Type LE—One-Piece Expandable Band**
- **Min. ID:** 7" (177.8 mm)
- **Min. Width:** 1-1/2" (38.1 mm)

**Bent-Up Flange (Ears)**

The Bent-Up Flange clamping is available with any screw or lead termination and construction variation. The outer sheath is made from a Low Thermal Expansion alloy. The Bent-Up Flange design is best suited for narrow band heaters with small diameters.

**Type FB—One-Piece Band**
- **Min. ID:** 1" (25.4 mm)
- **Min. Width:** 3/4" (19.1 mm)

**Type FS—Two-Piece Band**
- **Min. ID:** 2" (50.8 mm)
- **Min. Width:** 3/4" (19.1 mm)

**Type FE—One-Piece Expandable Band**
- **Min. ID:** 2-1/2" (63.5 mm)
- **Min. Width:** 1-1/4" (31.8 mm)

**Note:** The Bent-Up flange design should only be used when other clamping methods are not suitable for a specific application. Tempco recommends Built-In Strap Clamping be used whenever possible, especially on large diameter heaters, because it provides superior clamping power.

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Type RN□—Internal Reverse Band (with bracket clamping)

This construction style is used to heat cylindrical surfaces from the inside on heaters 5-1/2" diameter and larger.

Type RNB—Reverse 1-Piece Construction

ID: 5-1/2" (139.7 mm) to 10" (254.0 mm)

Width: 1" (25.4 mm) to 3-1/2" (88.9 mm)

Maximum Voltage: 240VAC

Type RNS—Reverse 2-Piece Construction

ID: 10" (254.0 mm) to 20" (508.0 mm)

Width: 1" (25.4 mm) to 3-1/2" (88.9 mm)

Maximum Voltage: 240VAC

For IDs greater than 20", consult Tempco with your requirements.

Type NS — 2-Piece With Built-In Brackets

Partial coverage band heaters are normally required when holes and cutouts will not allow the heater to sufficiently clear the machine obstructions. The preferred method of construction is the Two-Piece Band Heater with Built-In Brackets as illustrated. The heater is screwed down to the cylinder at the ends and the built-in Low Thermal Expansion Strap pulls the heater tightly against the cylinder being heated. The standard center of hole to edge of heater dimension is 1/4". When ordering, please provide the angle of coverage from center to center of the mounting screw holes as shown.

Type PS — One-Piece with Two-Piece Separate Strap with Padded Ends

The alternate method of partial coverage construction is the One-Piece Band Heater with a separate Two-Piece Strap. The two-piece strap itself is screwed down at the padded ends, allowing the heater to float between the pads as illustrated. When the strap is tightened, it will pull the heater against the cylinder being heated. The standard center of hole to edge of heater dimension is 1/4". When ordering, please provide the angle of coverage from center to center of the mounting screw holes as shown.

Type NB — One-Piece with Built-In Strap Clamping

Another alternate method of partial coverage construction. The one piece with clamp screws on both sides allows it to be secured to anchor points on either side of a barrel without drilling holes into the barrel.
**Stainless Steel Power Terminals: Type T1, Type T2 & Type T3**

Available on any clamping or construction variation, the specially designed Stainless Steel Power Terminals are internally connected to the heater and are resistant to over-torquing. The screw terminals are virtually unbreakable. Secure tightening of the electrical connections is essential for safety and long heater life.

**Duraband® Type T1 – Screw Terminals**

**One-Piece Band**

**Standard**

**Termination Location:**

- each side of gap; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 7/8" (22.2 mm)
- **Post Terminals:** 10-32 standard except 8-32 on < 1" wide heaters & heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

**Two-Piece Band**

**Standard**

**Termination Location:**

- next to gaps on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 7/8" (22.2 mm)
- **Post Terminals:** 10-32 standard except 8-32 on < 1" wide heaters & heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

**One-Piece Expandable Band**

**Standard**

**Termination Location:**

- each side of gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Post Terminals:** 10-32 standard except 8-32 on heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

**Duraband Type T2 – Screw Terminals**

**One-Piece Band**

**Standard**

**Termination Location:**

- next to gap; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 7/8" (22.2 mm)
- **Post Terminals:** 10-32 standard except 8-32 on < 1" wide heaters & heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

**Two-Piece Band**

**Standard**

**Termination Location:**

- next to same gap on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 7/8" (22.2 mm)
- **Post Terminals:** 10-32 standard except 8-32 on < 1" wide heaters & heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

**One-Piece Expandable Band**

**Standard**

**Termination Location:**

- next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Post Terminals:** 10-32 standard except 8-32 on heaters with ID < 3"
- **Max. Volts/Amps:** 480VAC/25A (10-32) or 20A (8-32)

Recommended for narrow band heaters where screw terminals are preferred or the C2 terminal box protection is required.

Considered standard on most band heaters unless otherwise specified.
**Optional Igloo™ Ceramic Covers for Heaters with Screw Terminals**

**Igloo™ Ceramic Terminal Covers** consist of two individual ceramic parts. Unlike conventional ceramic caps, Igloo fully insulates any standard #8 or #10 terminal lugs used for electrical hook-ups.

**Limitations**

To assemble Igloo covers, terminals should be at least 7/8" apart.

**Min. ID:** 2" (50.8 mm) **Min. Width:** 1-1/4" (31.7 mm)

Three types of Igloo™ bases are available:

- **Type C6** – Double Port In-Line P/N CER-101-104
- **Type C7** – Double Port 90° P/N CER-101-106
- **Type C8** – Single Port P/N CER-101-107

Igloo™ caps are available in the following three screw terminal sizes:

- **10-32** – P/N CER-102-101
- **10-24** – P/N CER-102-104
- **8-32** – P/N CER-102-105

When ordering, specify the type of Igloo and the screw terminal size.
Low-Profile Button Terminals: Type B1, Type B2 & Type B3

Available on any clamping or construction variation, the specially designed Stainless Steel Button Terminals are internally connected to the heater and are resistant to over-torquing while offering a low profile for tight spaces. They are virtually unbreakable. Secure tightening of the electrical connections is essential for safety and long heater life.

**Duraband® Type B1 – Button Terminals**

**One-Piece Band**

*Standard Termination Location:*
- each side of gap; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 25A (10-32) or 20A (6-32)

**Two-Piece Band**

*Standard Termination Location:*
- next to gaps on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts/Amps:** 480VAC/25A (10-32) or 20A (6-32) each half

**One-Piece Expandable Band**

*Standard Termination Location:*
- each side of gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts/Amps:** 480VAC/25A (10-32) or 20A (6-32)

**Duraband Type B2 – Button Terminals**

**One-Piece Band**

*Standard Termination Location:*
- next to gap; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 25A (10-32) or 20A (6-32)

**Two-Piece Band**

*Standard Termination Location:*
- next to same gap on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts/Amps:** 480VAC/25A (10-32) or 20A (6-32) each half

**One-Piece Expandable Band**

*Standard Termination Location:*
- next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts/Amps:** 480VAC/25A (10-32) or 20A (6-32)
One-Piece Band

**Standard** Termination Location:
next to gap; across center of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 2-3/8" (60.3 mm)
- Screw Size: 10-32 standard except 6-32 on IDs < 5"
- Maximum Volts: 480VAC
- Maximum Amps: 25A (10-32) or 20A (6-32)

Two-Piece Band

**Standard** Termination Location:
next to same gap on each half; across center of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 2-3/8" (60.3 mm)
- Screw Size: 10-32 standard except 6-32 on IDs < 5"
- Maximum Volts/Amps: 480VAC/25A (10-32) or 20A (6-32) each half

One-Piece Expandable Band

**Standard** Termination Location:
next to gap; across center of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 2-3/8" (60.3 mm)
- Screw Size: 10-32 standard except 6-32 on IDs < 5"
- Maximum Volts/Amps: 480VAC/25A (10-32) or 20A (6-32)

Plain Lead Wire Terminations: Type L1, Type L2 & Type L4

Available on any clamping or construction variation.

**Duraband Type L1 – Straight Lead Wires**

The lead wires exit through a brass eyelet. The standard flexible leads are 10" long with 3" of fiberglass sleeving. **If longer leads are required, specify when ordering.**

Two-Piece Band

**Standard** Termination Location:
next to same gap on each half; center of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480V
- Maximum Amps: 10A each half

One-Piece Band

**Standard** Termination Location:
next to gap; center of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

One-Piece Expandable Band

**Standard** Termination Location:
next to gap; center of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1-1/4" (31.8 mm)
- Maximum Volts: 480V
- Maximum Amps: 10A

CONTINUED
Band Heaters

Terminations

Continued from previous page...

L2 is the preferred termination on all small diameter and small width band heaters. The standard flexible leads are 10" long with 3" of fiberglass sleeving. If longer leads are required, specify when ordering.

**Duraband® Type L2 – Lead Wires**

**One-Piece Band**

*Standard* Termination Location:

- each side of gap; edge of width

- Minimum Inside Diameter: 7/8" (22.2 mm)
- Minimum Width: 3/4" (19.1 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

**Two-Piece Band**

*Standard* Termination Location:

- each side of each gap; edge of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 3/4" (19.1 mm)
- Maximum Volts: 480V each half
- Maximum Amps: 10A each half

**One-Piece Expandable Band**

*Standard* Termination Location:

- each side of gap; edge of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1-1/4" (31.8 mm)
- Maximum Volts: 480V
- Maximum Amps: 10A

**Duraband Type L4 – Lead Wires**

L4 is a suitable lead termination for small band heaters. The standard flexible leads are 10" long with 3" of fiberglass sleeving. If longer leads are required, specify when ordering.

**One-Piece Band**

*Standard* Termination Location:

- same side of gap; edge of width

- Minimum Inside Diameter: 7/8" (22.2 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

**Two-Piece Band**

*Standard* Termination Location:

- each side of same gap; center of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480V each half
- Maximum Amps: 10A each half

**One-Piece Expandable Band**

*Standard* Termination Location:

- same side of gap; edge of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1-1/4" (31.8 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

View Product Inventory @ www.tempco.com
Abrasion Resistant Lead Terminations:

Type W1, Type W2, Type W2M, Type W3, Type W4 & Type W5M

Available on any clamping or construction variation.
Wire braid leads offer sharp bending not possible with armor cable.

**Duraband® Type W1 & W1T – Straight Wire Braid Leads**

**Type W1** — Braided lead wire crimped in place for heaters under 2-1/2" I.D. and/or under 1-1/4" width.

**Type W1T** — Braided lead wire attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

---

**One-Piece Band**

**Standard Termination Location:**

next to gap; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

The standard leads are 10" of wire braid over 12" of flexible leads.

*If longer leads are required, specify when ordering.*

---

**Two-Piece Band**

**Standard Termination Location:**

next to same gap on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC each half
- **Maximum Amps:** 10A each half

---

**One-Piece Expandable Band**

**Standard Termination Location:**

next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

---

**Duraband Type W2 – Wire Braid Leads**

The W2 wire braid exits at 180° from the gap for special nozzle heating applications. Sleeving is used for additional protection. The standard leads are 10" of wire braid over 12" of flexible leads with 3" of fiberglass sleeving.

*If longer leads are required, specify when ordering.*

**Note:** Type W2 is not available on Two-Piece or One-Piece Expandable Duraband Heaters

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(800) 323-6859 • Email: sales@tempco.com
Highly recommended for nozzle heating applications. The standard leads are 10" of wire braid over 12" of flexible leads with 3" of fiberglass sleeving.

If longer leads are required, specify when ordering.

Duraband® Type W3 – Single Wire Braid Leads

One-Piece Band

Standard Termination Location:
- each side of gap; edge of width

- Minimum Inside Diameter: 3/4" (19.1 mm)
- Minimum Width: 7/8" (22.2 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

Two-Piece Band

Standard Termination Location:
- each side of each gap; edge of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 3/4" (19.1 mm)
- Maximum Volts: 480VAC each half
- Maximum Amps: 10A each half

One-Piece Expandable Band

Standard Termination Location:
- each side of gap; edge of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1-1/4" (31.8 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

Duraband Type W4 – Wire Braid Leads On One Side

One-Piece Band

Standard Termination Location:
- next to gap; edge of width

- Minimum Inside Diameter: 7/8" (22.2 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

Two-Piece Band

Standard Termination Location:
- next to same gap on each half; edge of width

- Minimum Inside Diameter: 2" (50.8 mm)
- Minimum Width: 1" (25.4 mm)
- Maximum Volts: 480VAC each half
- Maximum Amps: 10A each half

One-Piece Expandable Band

Standard Termination Location:
- next to gap; edge of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1-1/4" (31.8 mm)
- Maximum Volts: 480VAC
- Maximum Amps: 10A

A suitable termination for nozzle heating applications. The standard leads are 10" of wire braid over 12" of flexible leads.

If longer leads are required, specify when ordering.

View Product Inventory @ www.tempco.com
Duraband® Type W2M – Right-Angle Wire Braid Leads, 90° to Heater

Stainless Steel Wire Braid exits perpendicular to the heater centerline through a low profile stainless steel cap. This cap acts as a strain relief which protects against excessive flexing or pulling of the lead wire. The standard leads are 10" of wire braid over 12" of flexible leads.

**If longer leads are required, specify when ordering.**

**Note:** Stainless steel construction may be required for widths of 7/8" (22.2 mm) to 1-5/8" (41.3 mm).

**One-Piece Band**

**Standard Termination Location:**
opposite of gap; center of width

- **Minimum Inside Diameter:** 1-1/2" (38.1 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

**Two-Piece Band**

**Standard Termination Location:**
next to same gap on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC each half
- **Maximum Amps:** 10A each half

**One-Piece Expandable Band**

**Standard Termination Location:**
next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

**Duraband Type W5M – Right-Angle Wire Braid Leads, Parallel to Heater**

Stainless Steel Wire Braid exits parallel to the heater centerline through a low profile stainless steel cap. This cap acts as a strain relief which protects against excessive flexing or pulling of the lead wire. The standard leads are 10" of wire braid over 12" of flexible leads.

**If longer leads are required, specify when ordering.**

**Note:** Stainless steel construction may be required for widths of 7/8" (22.2 mm) to 1-5/8" (41.3 mm).

**One-Piece Band**

**Standard Termination Location:**
opposite of gap; center of width

- **Minimum Inside Diameter:** 1-1/2" (38.1 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

**Two-Piece Band**

**Standard Termination Location:**
next to same gap on each half; center of width

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC each half
- **Maximum Amps:** 10A each half

**One-Piece Expandable Band**

**Standard Termination Location:**
next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

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Band Heaters

Terminations

Armor Cable Terminations: Type R1, Type R2 & Type R3

Available on any clamping or construction variation. Armor cable provides far superior protection to lead wires where abrasion is a constant problem. The standard leads are 10” of armor cable over 12” of flexible leads. If longer leads are required, specify when ordering.

Duraband® Type R1 – Straight Armor Cable

Type R1A — Galvanized armor cable crimped in place for heaters under 2-1/2" I.D. and/or under 1-1/4" width.

Type R1AT — Galvanized armor cable attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

Type R1B — Stainless Steel armor cable crimped in place for heaters under 2-1/2" I.D. and/or under 1-1/4" width.

Type R1BT — Stainless Steel armor cable attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

Type R1C — Galvanized armor cable, tack welded

Type R1D — SS armor cable, tack welded

Type R1E — Galvanized armor cable, full silver brazing

Type R1F — SS armor cable, full silver brazing

One-Piece Band

Standard Termination Location:
next to gap; center of width

✦ Minimum Inside Diameter: 1-1/2" (38.1 mm)
✦ Minimum Width: 1" (25.4 mm)
✦ Maximum Volts: 480VAC
✦ Maximum Amps: 10A

Two-Piece Band

Standard Termination Location:
next to same gap on each half; center of width

✦ Minimum Inside Diameter: 2" (50.8 mm)
✦ Minimum Width: 1" (25.4 mm)
✦ Maximum Volts/Amps: 480VAC/10A each half

Type R2A – Galvanized armor cable, crimped

Type R2B – SS armor cable, crimped

Type R2C – Plain leads, no cable

One-Piece Band

Standard Termination Location:
next to gap; center of width

✦ Minimum Inside Diameter: 1-1/2" (38.1 mm)
✦ Minimum Width: 1-1/4" (31.8 mm)
✦ Maximum Volts: 480VAC
✦ Maximum Amps: 10A

Two-Piece Band

Standard Termination Location:
next to same gap on each half; center of width

✦ Minimum Inside Diameter: 2" (50.8 mm)
✦ Minimum Width: 1-1/4" (31.8 mm)
✦ Maximum Volts/Amps: 480VAC/10A each half

Duraband Type R2 – Right-Angle Armor Cable

Type R2A Type R1AT

Type R2B Type R2C

Type R2BT Type R2D

Type R2CT

Type R2E Type R2FT

One-Piece Expandable Band

Standard Termination Location:
next to gap; center of width

✦ Minimum Inside Diameter: 2-1/2" (63.5 mm)
✦ Minimum Width: 1-1/4" (31.8 mm)
✦ Maximum Volts/Amps: 480VAC/10A

View Product Inventory @ www.tempco.com
One-Piece Band

Standard Termination Location:
next to gap; center of width

- **Minimum Inside Diameter:** 1-1/2" (38.1 mm)
- **Minimum Width:** 1-1/4" (31.7 mm)
- **Maximum Volts/Amps:** 480VAC/10A

One-Piece Expandable Band

Standard Termination Location:
next to gap; center of width

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts/Amps:** 480VAC/10A

**Duraband Type S1 – Lead Wire Spring Strain Relief**

A strain relief spring is attached to the heater at the termination exit to reduce strain on leads subjected to excessive flexing. The spring is 2-1/8" long. The flexible standard leads are 10" long with 3" of fiberglass sleeving. **If longer leads are required, specify when ordering.**

- **Type S1A** – Plain Leads and Strain Relief Spring crimped in place for heaters under 2-1/2" I.D. and/or under 1-1/4" width.
- **Type S1AT** – Plain Leads and Strain Relief Spring attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.
- **Type S1B** – Stainless Steel Wire Braided Leads and Strain Relief Spring crimped in place for heaters under 2-1/2" I.D. and/or under 1-1/4" width.
- **Type S1BT** – Stainless Steel Wire Braided Leads and Strain Relief Spring attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

**One-Piece Band**

Standard Termination Location: next to gap; center of width
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Maximum Volts:** 480VAC
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Amps:** 10A

**Two-Piece Band**

Standard Termination Location: next to same gap on each half; center of width
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/4" (31.75 mm)
- **Maximum Volts/Amps:** 480VAC/10A each half

Type S1B

Type S1BT

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Band Heaters

Terminations

General Purpose Terminal Boxes: Type C2 and Type C5

Available with any construction or clamping variation. They are a simple & economical way to protect employees from electric shock or prevent electric shorts that can result from exposed wiring on band heater electrical installations.

The Heavy Duty Terminal Boxes have 1/2" knockouts that will accept standard armor cable connectors. They can be field assembled on band heaters that have a center distance between terminal screws of 7/8". Boxes can be pre-wired with galvanized armor, stainless steel armor, wire braid or plain leads. If a Low Profile Box with cable or leads is required, it is strongly recommended to order it pre-wired by the factory.

The standard leads are 10" of cable or wire braid over 12" of flexible leads. If longer leads are required, specify when ordering.

Duraband® Type C2 – Standard Terminal Boxes

Two-Piece Band

Standard Termination Location:
next to same gap on each half; center of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1" (25.4 mm)
  Heater widths between 1" and 2-1/2" require a minimum ID of 5-1/2" or greater.
- Maximum Volts/Amps: 480VAC/25A each half

One-Piece Band

Standard Termination Location:
next to gap; center of width

- Minimum Inside Diameter: 2-1/2" (63.5 mm)
- Minimum Width: 1" (25.4 mm)
  Heater widths between 1" and 2-1/2" require a minimum ID of 5-1/2" or greater.
- Maximum Volts/Amps: 480VAC/25A each half

Duraband Type C5 – Low Profile Terminal Boxes

Two-Piece Band

Standard Termination Location:
next to same gap on each half; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 1" (25.4 mm)
  Heater widths between 1" and 2-1/2" require a minimum ID of 5-1/2" or greater.
- Maximum Volts/Amps: 480VAC/25A each half

One-Piece Expandable Band

Standard Termination Location:
next to gap; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 1" (25.4 mm)
  Heater widths between 1" and 2-1/2" require a minimum ID of 5-1/2" or greater.
- Maximum Volts/Amps: 480VAC/25A each half

Type C2 — Standard Box

C2A – Box only
C2B – w/galvanized armor
C2C – w/stainless steel armor
C2D – w/wire braid

Type C5 — Low Profile Box

C5A – box only
C5B – w/galvanized armor
C5C – w/SS armor
C5D – w/wire braid
C5J – w/plain leads

View Product Inventory @ www.tempco.com
Quick Disconnect Plugs: Type P1, Type P2, Type P3 and Type P4

Available on any construction or clamping variation. These plug assemblies are highly recommended & should be used whenever possible. The combination of plug & cup assembly along with armor cable covered leads eliminates all live exposed terminals or wiring that can be a potential hazard to employees or machinery.

Type P1 and P3 assemblies are available with a straight or right-angle plug. Type P2 and P4 plug assemblies have a lower profile and are available with a straight plug only.

To simplify installation, band heaters with these assemblies can be supplied pre-wired, using high temperature lead wires. The standard leads are 10" of armor cable over 12" of flexible leads. If longer leads are required, specify when ordering.

Duraband® Type P1 – High Temperature Quick Disconnect Plugs

Type P1

P1K – Cup assembly only
P1L – w/straight plug only
P1M – w/90° plug only
P1N – w/str. plug & galvanized cable
P1O – w/str. plug & SS cable
P1P – w/str. plug & wire braid
P1Q – w/90° plug & galvanized cable
P1R – w/90° plug & SS cable
P1S – w/90° plug & wire braid

Plug Electrical Ratings

✦ 2-Pole 3-Wire Grounding
✦ Maximum Volts: 250 VAC
✦ Maximum Amps: 16A
✦ Maximum Temperature: 572°F (300°C)

Selection TERMINATION Guide

One-Piece Band

Standard Termination Location:
next to gap; center of width

✦ Minimum Inside Diameter: 2" (50.8 mm)
✦ Minimum Width: 1-1/2" (38.1 mm)
  If width is between 1-1/2" and 2", minimum diameter is 5-1/2".
  If width is greater than 2", minimum diameter is 2".

Two-Piece Band

Standard Termination Location:
next to same gap on each half; center of width

✦ Minimum Inside Diameter: 2" (50.8 mm)
✦ Minimum Width: 1-1/2" (38.1 mm)
  If width is between 1-1/2" and 2", minimum diameter is 5-1/2".
  If width is greater than 2", minimum diameter is 2".

One-Piece Expandable Band

Standard Termination Location:
next to gap; center of width

✦ Minimum Inside Diameter: 2-1/2" (63.5 mm)
✦ Minimum Width: 1-1/2" (38.1 mm)
  If width is between 1-1/2" and 2", minimum diameter is 5-1/2".
  If width is greater than 2", minimum diameter is 2".

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Band Heaters

Terminations

**Duraband® Type P2 – High Temperature Quick Disconnect Plugs**

*Continued from previous page…*

**One-Piece Band**

*Standard Termination Location:*
- next to gap; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 2-1/2" (63.5 mm)

**Plug Electrical Ratings**

- 2-Pole 3-Wire Grounding
- Maximum Volts: 250 VAC
- Maximum Amps: 16A
- Maximum Temperature: 572°F (300°C)

**Two-Piece Band**

*Standard Termination Location:*
- next to same gap on each half; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 2-1/2" (63.5 mm)

**One-Piece Expandable Band**

*Standard Termination Location:*
- next to gap; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 2-1/2" (63.5 mm)

**Duraband Type P3 – DIN 49458 A/B Quick Disconnect Plugs**

**One-Piece Band**

*Standard Termination Location:*
- next to gap; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 1-1/2" (38.1 mm)

**Plug Electrical Ratings**

- 2-Pole 3-Wire Grounding
- Maximum Volts: 250 VAC
- Maximum Amps: 16A
- Maximum Temperature: 392°F (200°C)

**Two-Piece Band**

*Standard Termination Location:*
- next to same gap on each half; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 1-1/2" (38.1 mm)

**One-Piece Expandable Band**

*Standard Termination Location:*
- next to gap; center of width

- Minimum Inside Diameter: 3" (76.2 mm)
- Minimum Width: 1-1/2" (38.1 mm)

View Product Inventory @ www.tempco.com
Quick Disconnect Plugs: Type P1, Type P2, Type P3 and Type P4

Available on any construction or clamping variation. These plug assemblies are highly recommended & should be used whenever possible. The combination of plug & cup assembly along with armor cable covered leads eliminates all live exposed terminals or wiring that can be a potential hazard to employees or machinery.

Type P1 and P3 assemblies are available with a straight or right-angle plug. Type P2 and P4 plug assemblies have a lower profile and are available with a straight plug only.

To simplify installation, band heaters with these assemblies can be supplied pre-wired, using high temperature lead wires. The standard leads are 10” of armor cable over 12” of flexible leads. If longer leads are required, specify when ordering.

**Duraband® Type P1 – High Temperature Quick Disconnect Plugs**

**Type P1**
- P1K – Cup assembly only
- P1L – w/straight plug only
- P1M – w/90° plug only
- P1N – w/str. plug & galvanized cable
- P1O – w/str. plug & SS cable
- P1P – w/str. plug & wire braid
- P1Q – w/90° plug & galvanized cable
- P1R – w/90° plug & SS cable
- P1S – w/90° plug & wire braid

**Plug Electrical Ratings**
- 2-Pole 3-Wire Grounding
- Maximum Volts: 250 VAC
- Maximum Amps: 16A
- Maximum Temperature: 572°F (300°C)

**Selection TERMINATION Guide**

- **One-Piece Band**
  - Standard Termination Location: next to gap; center of width
    - Minimum Inside Diameter: 2” (50.8 mm)
    - Minimum Width: 1-1/2” (38.1 mm)

    If width is between 1-1/2” and 2”, minimum diameter is 5-1/2”.
    If width is greater than 2”, minimum diameter is 2”.

- **Two-Piece Band**
  - Standard Termination Location: next to same gap on each half; center of width
    - Minimum Inside Diameter: 2” (50.8 mm)
    - Minimum Width: 1-1/2” (38.1 mm)

    If width is between 1-1/2” and 2”, minimum diameter is 5-1/2”.
    If width is greater than 2”, minimum diameter is 2”.

- **One-Piece Expandable Band**
  - Standard Termination Location: next to gap; center of width
    - Minimum Inside Diameter: 2-1/2” (63.5 mm)
    - Minimum Width: 1-1/2” (38.1 mm)

    If width is between 1-1/2” and 2”, minimum diameter is 5-1/2”.
    If width is greater than 2”, minimum diameter is 2”.

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Band Heaters

Terminations

Duraband® Type P2 – High Temperature Quick Disconnect Plugs

Continued from previous page…

**One-Piece Band**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
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<tbody>
<tr>
<td>Standard Pin Orientation</td>
<td>Next to gap; center of width</td>
</tr>
<tr>
<td>Minimum Inside Diameter</td>
<td>3&quot; (76.2 mm)</td>
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<tr>
<td>Minimum Width</td>
<td>2-1/2&quot; (63.5 mm)</td>
</tr>
<tr>
<td>Plug Electrical Ratings</td>
<td>2-Pole 3-Wire Grounding</td>
</tr>
<tr>
<td>Maximum Volts</td>
<td>250 VAC</td>
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<tr>
<td>Maximum Amps</td>
<td>16A</td>
</tr>
<tr>
<td>Maximum Temperature</td>
<td>572°F (300°C)</td>
</tr>
</tbody>
</table>

**Type P2** — Low Profile Assembly

- **P2F** — Low profile assembly only
- **P2G** — w/straight plug only
- **P2H** — w/str. plug and galvanized cable
- **P2J** — w/str. plug and SS cable
- **P2K** — w/str. plug and wire braid

**Two-Piece Band**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Pin Orientation</td>
<td>Next to same gap on each half; center of width</td>
</tr>
<tr>
<td>Minimum Inside Diameter</td>
<td>3&quot; (76.2 mm)</td>
</tr>
<tr>
<td>Minimum Width</td>
<td>2-1/2&quot; (63.5 mm)</td>
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</tbody>
</table>

**Type P2H** shown

**One-Piece Expandable Band**

<table>
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<th>Description</th>
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<td>Minimum Width</td>
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**Type P2G** shown

Duraband Type P3 — DIN 49458 A/B Quick Disconnect Plugs

**One-Piece Band**

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<td>2-Pole 3-Wire Grounding</td>
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<td>Maximum Amps</td>
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<tr>
<td>Maximum Temperature</td>
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**Type P3** — Vertical Box Assembly

- **P3A** — Box assembly only
- **P3B** — Box assembly w/straight plug
- **P3C** — Box assembly w/right-angle plug only

**Two-Piece Band**

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**Type P3C** shown

**One-Piece Expandable Band**

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**Type P2** shown

View Product Inventory @ www.tempco.com
Duraband® Type P4 – DIN 49458 A/B Quick Disconnect Plugs

**Type P4** — Horizontal Box Assembly

- P4A – Box assembly only
- P4B – Box assembly with straight plug

**Plug Electrical Ratings**

- **2-Pole 3-Wire Grounding**
- **Maximum Volts**: 250 VAC
- **Maximum Amps**: 16A
- **Maximum Temperature**: 392°F (200°C)

**One-Piece Band**

**Standard Termination Location:**
next to gap; center of width

- **Minimum Inside Diameter**: 3" (76.2 mm)
- **Minimum Width**: 2-1/2" (63.5 mm)

**Two-Piece Band**

**Standard Termination Location:**
next to same gap on each half; center of width

- **Minimum Inside Diameter**: 3" (76.2 mm)
- **Minimum Width**: 2-1/2" (63.5 mm)

**One-Piece Expandable Band**

**Standard Termination Location:**
next to gap; center of width

- **Minimum Inside Diameter**: 2-1/2" (63.5 mm)
- **Minimum Width**: 3" (76.2 mm)
**Variety and Versatility in Mica Insulated Heaters.** No other heater band has the design and manufacturing flexibility of mica insulated heaters. Tempco's flexible CNC sheet metal fabricating machines, custom developed engineering programs with built-in intelligence, and experienced and talented engineering staff allow us to push the limits on band heater designs.

Throughout our catalog we show Tempco’s standard specifications and most popular designs. However, as a custom heating element manufacturer, we recognize that many applications require non-standard and unique designs.

At Tempco, we are constantly challenged by our customers to solve their heating applications. We have the experience, technical knowledge and manufacturing capability to solve all your heating problems with unique heater designs. You should use Tempco’s talent and capabilities to your benefit to solve your specific heating problem in an expeditious and cost effective manner. **The following pictures** show some of the heater designs that we have developed for special applications. Next time, when you have a special application and you want someone to work with you and “think outside the box” to solve your specific heating application, call Tempco.

We haven’t seen all heating applications, but most likely our experienced staff has seen and solved more heating problems than you have seen.

*Use our knowledge and experience to work for you. Challenge us? You will be glad you did. We Welcome Your Inquiries.*
An alternative to wound ribbon core heaters is the sinuated heater element. In this type of construction, the heating element resistance wire is sinuated, or “formed” back and forth without a middle core layer of mica insulation. The heating element is then sandwiched between two layers of specially selected mica insulation to provide excellent thermal conductivity and dielectric strength.

The sinuated formed element lends itself to lower temperature and watt density applications where high watt density construction is not required.

**Typical Applications (Cylindrical Surfaces)**

- Food and Candy Extruders
- Vending Machines
- Commercial Food Equipment
- Food Service Warming Items
- Laboratory and Scientific Apparatus
- Photographic Equipment
- Incubators

**Typical Applications (Flat Surfaces)**

- Laminating
- Food Service Warming Items
- Radiant Heating
- Incubators

This design is widely used in food service and the farming industry. By careful selection of economical materials used for these low temperature applications, significant cost savings can be realized compared to standard mica heaters.

*Contact Tempco for Complete Product Details.*
Installation

1. Disconnect electric power to the machine and/or heaters prior to installing or replacing heaters.
2. Do not install heaters in areas where combustible gases, vapor or dust is present.
3. Use as many narrow band heaters as the application will permit. 1-1/2” through 3” wide heaters are recommended.
4. Using a heater that closely matches the wattage requirements will decrease the frequency of cycling and temperature overshoot, thereby increasing the life of the heater.
5. Make sure that all barrel surfaces are clean and have a smooth finish. Any contaminants or imperfections on the surface can cause premature heater failure.
6. Tempco expandable type Mica Band Heaters may be opened once at the gap to fit on the barrel. Do not open these heaters beyond their specified heater diameter.
   Do not open Tempco One-Piece Non-Expandable Type mica band Heaters. Opening of these heaters can damage Mica Insulation and will create electrical short circuits.
7. Position heater bands on the barrel.
8. Securely tighten heater bands around the barrel. Clamping force must be equally distributed on heaters with more than one set of clamping brackets.
   Recommended clamping bolt torque is 10 ft./lbs.
9. For heaters with screw terminals, remove the top nut and flat washers from the power screw terminals. Do not remove or loosen the bottom nut on the power screw terminals. The bottom nut is tightened to 60 in./lbs. at the factory. A loose bottom nut may cause premature heater failure.

Installation Accessories Available

IMMEDIATE DELIVERY!

- High Temperature Terminal Lugs
- Igloo™ Ceramic Terminal Covers
- UL Listed Plugs
- High Temperature Lead Wire 842°F (450°C)
- Armor Cable
- Stainless Steel Braid
- High Temperature Sleevings
- High Temperature Mica Insulated Wiring Harnesses 842°F (450°C)
- Thermocouples
- Temperature Controllers
- High Temperature Fiberglass Tape

RECOMMENDATIONS

10. All electrical wiring of heater bands should be done by a qualified electrician.
   a. Use only Stainless Steel or other high temperature lugs to prevent material degradation when exposed to high temperatures over a prolonged period of time.
   CAUTION
   DO NOT USE COPPER OR PLATED COPPER LUGS.
   b. Use only lead wire with high temperature insulation and proper gauge size.
   c. When connecting power leads to screw terminals make certain that barrels of terminal lugs are not facing down toward the heater case, which will create a short circuit.
   Tighten the top nut to 30 in/lbs.
   d. Make certain power lead wires do not make contact with hot heater surface to avoid degradation of lead wire, as this can cause electrical short circuits.
   e. Make sure the voltage input to the heater bands does not exceed the voltage rating that is stamped on the heater band.
   f. It is recommended that an amperage reading is taken for each heater to verify proper wiring.
      (Amps = Watts/Volts)
11. Insulate all live electrical wires per applicable safety standards.
   a. Energize heater bands and allow the heater to reach 300°F (149°C). This usually takes between 3 and 5 minutes.
   b. Turn off power and immediately re-tighten the heater bands to 10 ft./lbs. Turn power back on.
13. Install shrouds around the machine to meet applicable safety requirements.
14. Once installed, check surroundings to make sure that contaminants won’t get on the heater while the unit is in operation. Accumulation of contaminants on heaters can cause premature heater failure.
15. Insulating blanket installations must have band heater retightening sequence (#12) completed before blanket installation. Lead wires must exit the insulation blanket as soon as possible; do not entrap lead wires between heater sheath and insulation blanket.
   It is imperative that upon start-up of new machines at customer facilities, all of the aforementioned parameters are double checked by qualified field service personnel.

Exposed electrical wiring on band heater installations is a violation of Electrical Safety Codes including O.S.H.A.
Band Heaters

Duraband Nozzle Band Heaters

STOCK Replacement Band Heaters for Plastic Injection Molding Machines

COST EFFECTIVE WITHOUT COMPROMISING QUALITY

NHL Mica Insulated Nozzle Heater

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Note: For normal plastic processing Tempco recommends Watt Densities under 55 W/in².
## STOCK Replacement Band Heaters for Plastic Injection Molding Machines

**COST EFFECTIVE WITHOUT COMPROMISING QUALITY**

**Duraband®**

- **In Stock!**
  - Economically Priced
  - Type NHW with 12” leads and 10” SS wire braid
  - Supplied with low profile clamping strap

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**NHW Mica Insulated Nozzle Heater**

**Ordering Information**

See page 1-48

(800) 323-6859 • Email: sales@tempco.com
**Band Heaters**

**Duraband Nozzle Band Heaters**

**Stock and Standard (Non-Stock) Replacement Mica Insulated Band Heaters for Plastic Injection Molding Machines**

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**Stock Items Are Shown In RED**

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Heaters have built-in Type J Thermocouple

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**Stock Items Are Shown In RED**

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**Design Features:**

* All heaters have 24” high temperature leads with 22” stainless steel overbraid

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**Ordering Information**

See page 1-48
Stock and Standard (Non-Stock) Mica Insulated Band Heaters for Plastic Injection Molding Machines

Design Features:

✴ All heaters have 24” high temperature leads with 22” stainless steel overbraid — Type W3
✴ Heaters less than 1-1/2” wide have separate straps — Type SE
✴ Designed as one-piece expandable type, enables you to open up the heater to the diameter of the barrel for easy installation.

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Design Features:

✴ All heaters have 24” high temperature leads — Type L2
✴ Heaters less than 1-1/2” wide have separate straps — Type SE
✴ Designed as one-piece expandable type, enables you to open up the heater to the diameter of the barrel for easy installation.

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(800) 323-6859 • Email: sales@tempco.com
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### Design Features:
- **All heaters have 24” high temperature leads with 22” stainless steel overbraid — Type W1**
- **Heaters less than 1-1/2” wide have separate straps — Type SE**
- **Designed as one-piece expandable type, enables you to open up the heater to the diameter of the barrel for easy installation.**

### Ordering Information
See page 1-48
**Design Features:**

* Features unbreakable 10-32 screw terminals.
* Larger heaters (dia. 2-1/2" or greater) are designed as one-piece expandable type, enabling you to open up the heater to the diameter of the barrel for easy installation.
* Heaters less than 1-1/2" wide have separate straps — Type SE

Optional Igloo™ ceramic covers can fully insulate any standard #8 or #10 terminal lugs used for electrical hook-ups. See page 1-33.

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**Stock Items Are Shown In RED**

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### Band Heaters

**Duraband Barrel Band Heaters**

**Stock and Standard (Non-Stock) Mica Insulated Band Heaters for Plastic Injection Molding Machines**

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Order Info. See page 1-48
### Stock & Standard (Non-Stock) Mica Insulated Band Heaters for Plastic Injection Molding Machines

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**Stock Items Are Shown In RED**

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**Order Info.**

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