Band Heaters

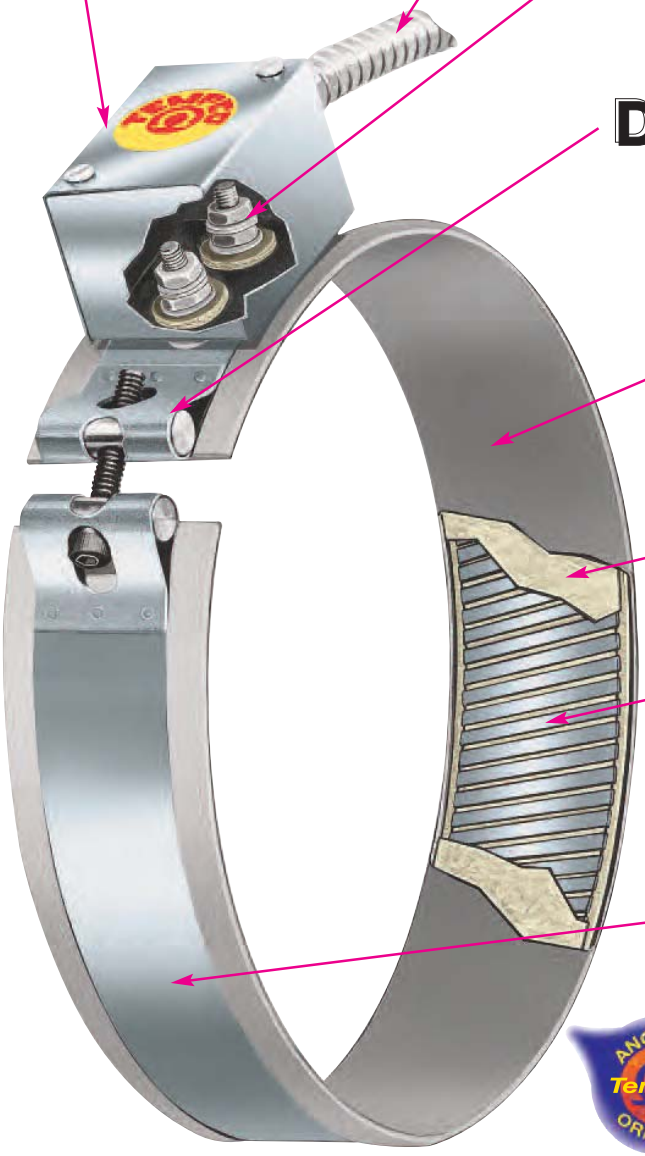
Duraband

DURABAND* with BUILT-IN STRAP

A 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".

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

C 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.



D 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.

E 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).

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

G 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.

H 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.

ANOTHER Tempco ORIGINAL

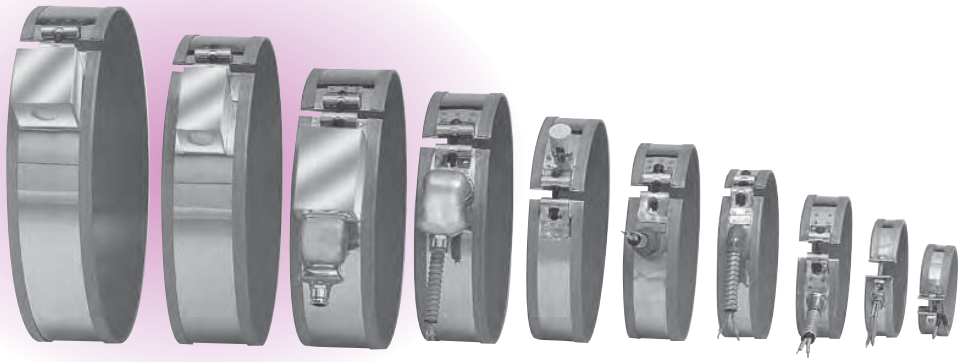
*U.S. Patent #3829657

Duraband®

makes handling and installation easier!

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*

Band Heaters

Duraband Specifications

Duraband® Standard Specifications and Tolerances

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%

CAUTION

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

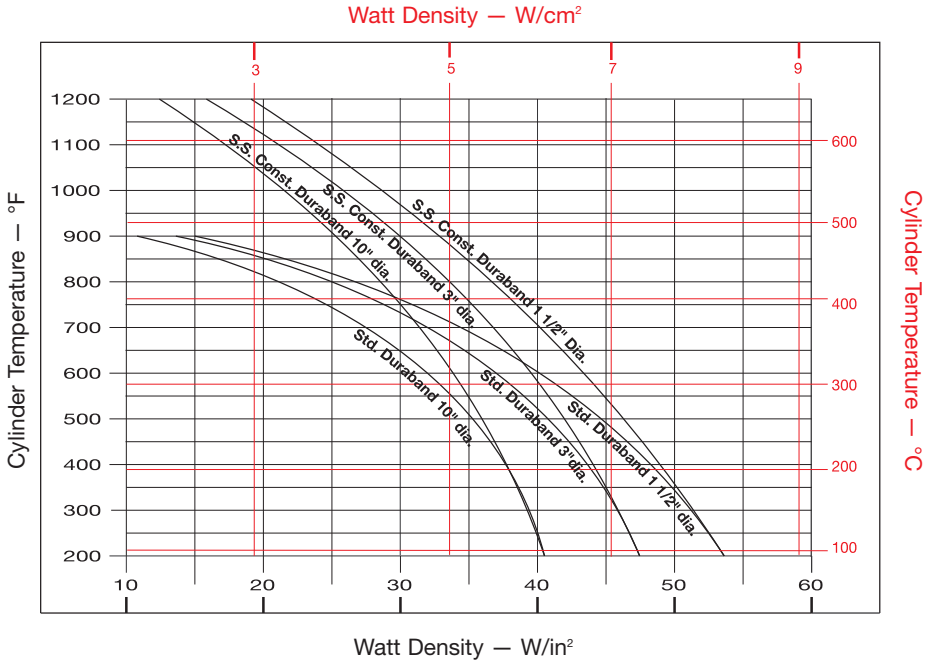
If tighter tolerances are required, consult Tempco.

Minimum ID and Width for Construction/Clamping Styles

Style	Min. ID in	Min. ID mm	Min. Width in	Min. Width mm
NB	2	50.8	1-1/4	31.8
NS	3	76.2	1-1/4	31.8
NE	2-1/2	63.5	1-1/4	31.8
SB	7/8	22.1	3/4	19.1
SS	2	50.8	3/4	19.1
SE	2-1/2	63.5	1-1/4	31.8
FB	1	25.4	3/4	19.1
FS	2	50.8	3/4	19.1
FE	2-1/2	63.5	1-1/4	31.8
SL	4	101.6	1-1/4	31.8
NSL	4	101.6	1-1/4	31.8
NEL	4	101.6	1-1/4	31.8
LT	7	177.8	1-1/2	38.1
LS	7	177.8	1-1/2	38.1
LE	7	177.8	1-1/2	38.1
TWL	1	25.4	1	25.4
RNB	5-1/2	134.7	1	25.4
RNS	10	254	1	25.4

Note: Refer to individual descriptions for further information. Actual heater minimums will be a combination of termination and construction/strap styles.

Duraband® Maximum Watt Densities



MAXIMUM ALLOWABLE WATT DENSITY

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.

CAUTION 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).
6. Determine if the required watt density previously calculated exceeds the maximum recommended watt density. Note the maximum cylinder temperature required on the left-hand side of the graph, follow the horizontal line until it intersects with the line of the band heater being used, and read directly down to obtain the maximum recommended watt density (W/in²).
7. If the calculated watt density is higher than the recommended value, it must be corrected or it will cause poor heater life.This can be accomplished by using more band heaters, lowering the heater wattage, or using a different construction type or a different type of band heater.
8. Should you have a problem in selecting the proper band heater or establishing watt density for your application, consult with one of the qualified engineers at Tempco.

Nominal Unheated Areas

Construction Style	Unheated Area to Subtract
One-piece band	1" × width
Two-piece band	2" × width
Holes and cutouts	Size + 1/2" × width

Watt Density Formula

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

Duraband® Construction Styles

3 CONSTRUCTION TYPES

Shown with Type NB Built-In Strap

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.

Shown with Type NS Built-In Strap

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.

Shown with Type NE Built-In Strap

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.

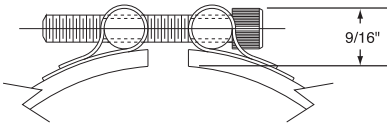
Note: The One-Piece Expandable Band should not be opened and closed more than twice.

Duraband® Construction/Clamping Variations

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.

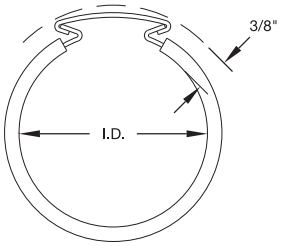


Type NB Shown

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 Shown

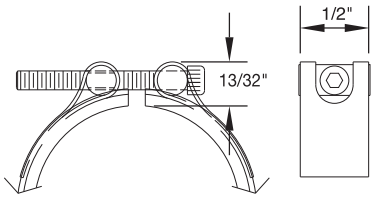
Type SB—One-Piece Band
Min. ID: 7/8" (22.2 mm)
Min. Width: 3/4" (19.1 mm)

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

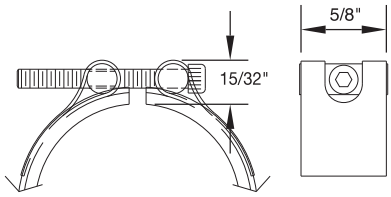
Type SE—One-Piece Expandable Band
Min. ID: 2-1/2" (63.5 mm)
Min. Width: 1-1/4" (31.8 mm)

Clearance Dimensions for Separate Strap Clamping

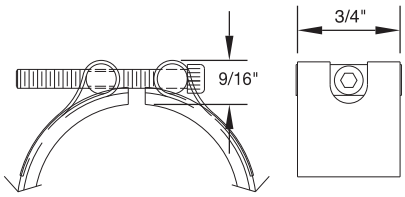
Separate strap clearance dimensions are dependent on heater ID. The strap dimensions are shown below.



< 2" ID — 6-32 Screw



2 to 3-1/2" ID — 8-32 Screw



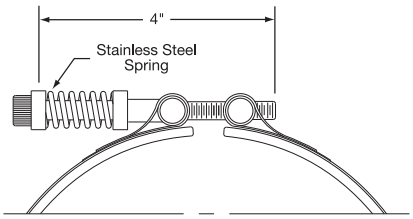
> 3-1/2" ID — 1/4-20 Screw

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.

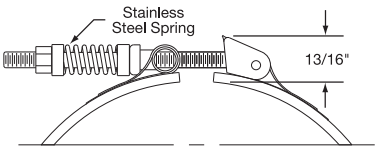
Consult Tempco for multiple segment heaters.

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.

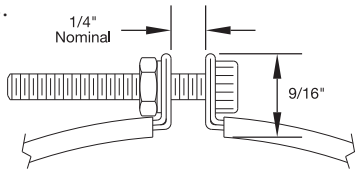
Type LT—One-Piece Band
Min. ID: 7" (177.8 mm)
Min. Width: 1-1/2" (38.1 mm)

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.



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.

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)

Duraband® Internal Reverse Bands

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" (2854 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 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 RTWL—Internal Reverse Band (with wedge lock clamping)

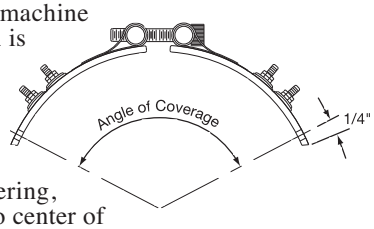
This construction style is used to heat cylindrical surfaces from the inside on heaters less than 5" outside diameter.

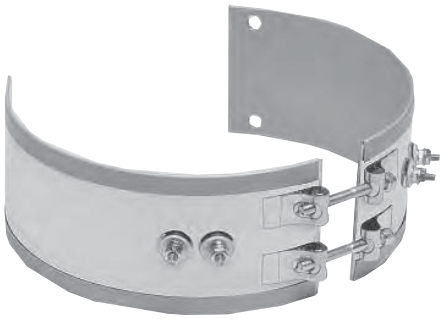
ID: Less than 5-1/2" (139.7 mm)
Width: 1" to 3-1/2" (25.4 - 88.9 mm)

Duraband Partial Coverage

Type NS — 2-Piece With Built-In Brackets

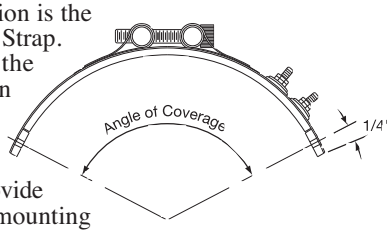
Partial coverage band heaters are normally required when holes and cutouts will not allow the heater to sufficiently clear the machine obstructions. The preferred method of construction is the Two-Piece Band Heater with Built-In Brackets as illustrated. The heater is screwed down to the cylinder at the 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.





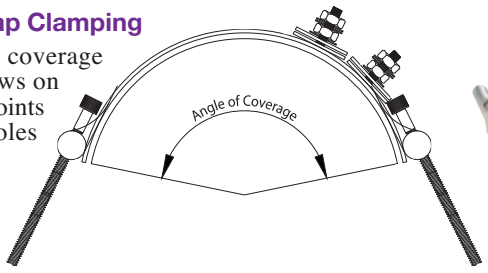
Type PS — One-Piece with Two-Piece Separate Strap with Padded Ends

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.



Band Heaters

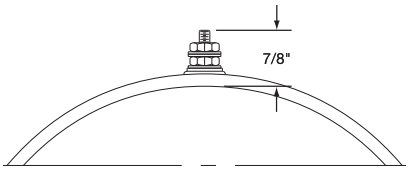
Terminations

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

Considered standard on most band heaters unless otherwise specified.



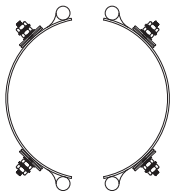
One-Piece Band

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) each half

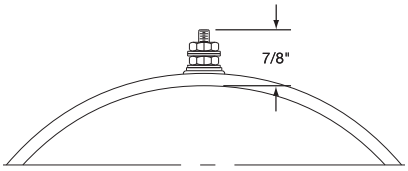
One-Piece Expandable Band

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

- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (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

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



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)

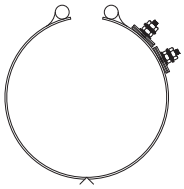
Two-Piece Band

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) each half

One-Piece Expandable Band

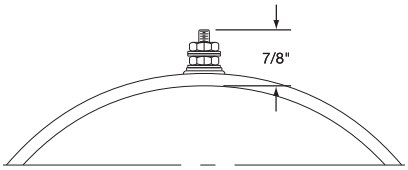
Standard **Termination Location:** next to gap; center of width



- **Minimum Inside Diameter:** 2-1/2" (63.5 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **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 T3 – Screw Terminals

The preferred design on band heaters over 3" (76.2 mm) wide or when C3 terminal box is required.

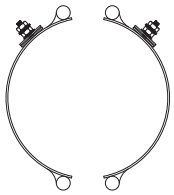


One-Piece Band

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

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

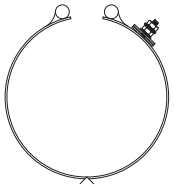
Two-Piece Band



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

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

Selection TERMINATION Guide

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)

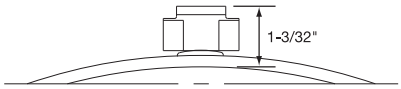
Three types of Igloo™ bases are available:

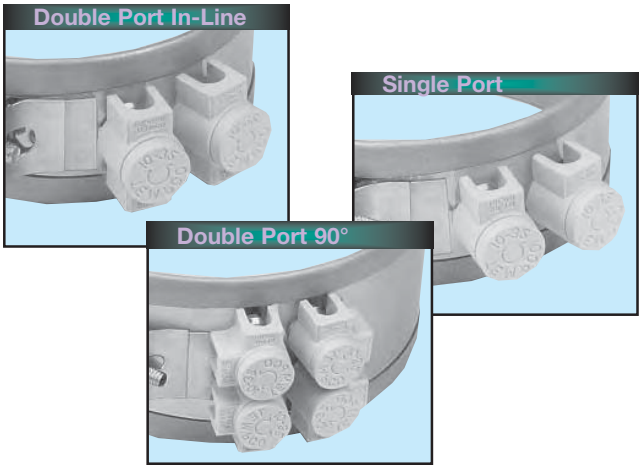
Type C6 – Double Port In-Line P/N CER-101-104
Type C7 – Double Port 90° P/N CER-101-106
Type C8 – Single Port P/N CER-101-107

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.





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

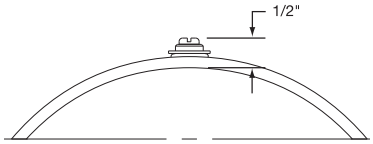
Band Heaters

Terminations

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.

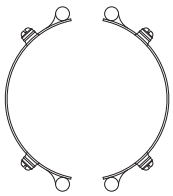
Duraband® Type B1 – Button Terminals



One-Piece Band

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

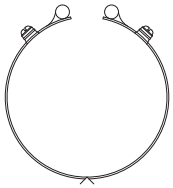
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 25A (10-32) or 20A (6-32)



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

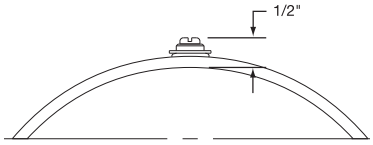


One-Piece Expandable Band

***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)

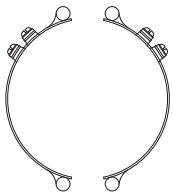
Duraband Type B2 – Button Terminals



One-Piece Band

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

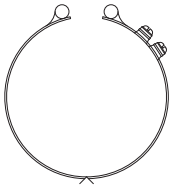
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 25A (10-32) or 20A (6-32)



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

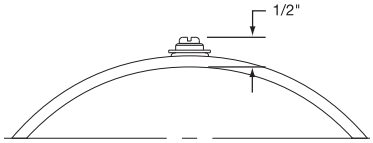


One-Piece Expandable Band

***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)

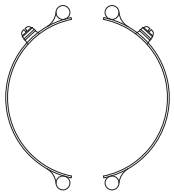
Duraband® Type B3 – Button Terminals



One-Piece Band

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

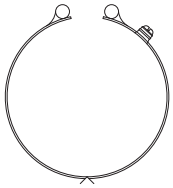
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 2-3/8" (60.3 mm)
- **Screw Size:** 10-32 standard except 6-32 on IDs < 5"
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 25A (10-32) or 20A (6-32)



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)

Selection TERMINATION Guide

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

Available on any clamping or construction variation.

Duraband Type L1 – Straight Lead Wires

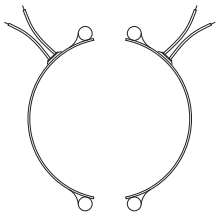
The lead wires exit through a brass eyelet. The standard flexible leads are 10" long with 3" of fiberglass sleeving.

If longer leads are required, specify when ordering.

One-Piece Band

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

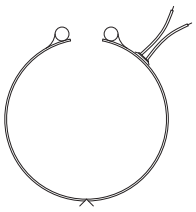
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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 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:** 480V
- **Maximum Amps:** 10A

CONTINUED

Band Heaters

Terminations

Duraband® Type L2 – Lead Wires

Continued from previous page…

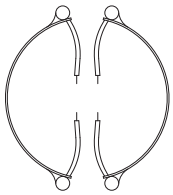
L2 is the preferred termination on all small diameter and small width band heaters. The standard flexible leads are 10" long with 3" of fiberglass sleeving.

If longer leads are required, specify when ordering.

One-Piece Band

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

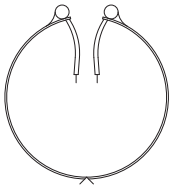
- **Minimum Inside Diameter:** 7/8" (22.2 mm)
- **Minimum Width:** 3/4" (19.1 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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

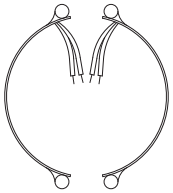
L4 is a suitable lead termination for small band heaters. The standard flexible leads are 10" long with 3" of fiberglass sleeving.

If longer leads are required, specify when ordering.

One-Piece Band

Standard **Termination Location:**
same side of gap; edge of width

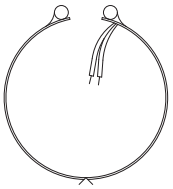
- **Minimum Inside Diameter:** 7/8" (22.2 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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

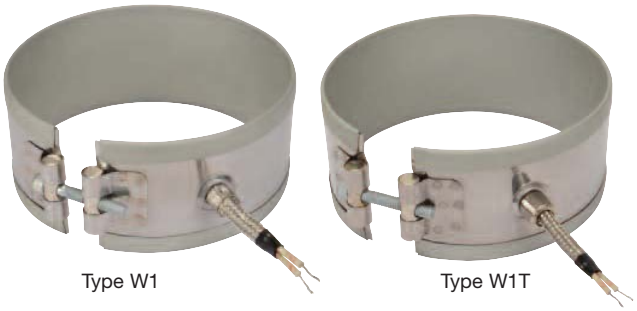
Standard **Termination Location:**
same side of gap; edge of width

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

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 Type W1T

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

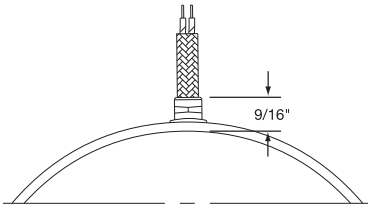
Type W1T – Braided lead wire attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

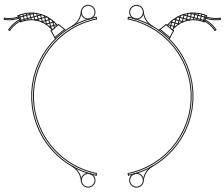
One-Piece Band

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.

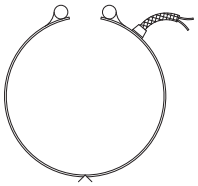




Two-Piece Band

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

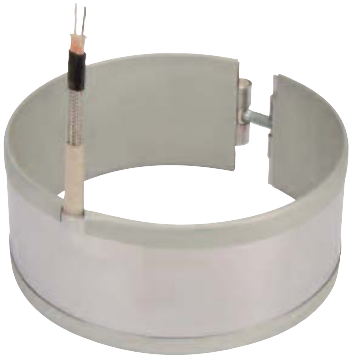
Standard **Termination Location:**
next to gap; center of width

- **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 fiber-glass sleeving.
If longer leads are required, specify when ordering.

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



One-Piece Band

Standard **Termination Location:**
opposite the gap; edge of width

- **Minimum Inside Diameter:** 7/8" (22.2 mm)
- **Minimum Width:** 1-1/8" (28.6 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A

CONTINUED

Band Heaters

Terminations

Duraband® Type W3 – Single Wire Braid Leads

Continued from previous page…

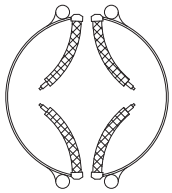
Highly recommended for nozzle heating applications. The standard leads are 10" of wire braid over 12" of flexible leads with 3" of fiberglass sleeving.

If longer leads are required, specify when ordering.

One-Piece Band

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

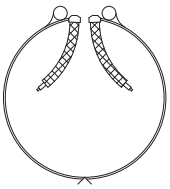
- **Minimum Inside Diameter:** 3/4" (19.1 mm)
- **Minimum Width:** 7/8" (22.2 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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

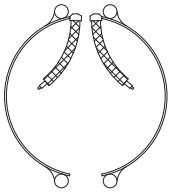
A suitable termination for nozzle heating applications. The standard leads are 10" of wire braid over 12" of flexible leads.

If longer leads are required, specify when ordering.

One-Piece Band

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

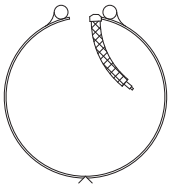
- **Minimum Inside Diameter:** 7/8" (22.2 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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

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.

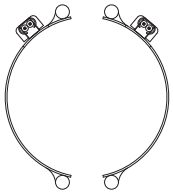
If longer leads are required, specify when ordering.

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

Selection TERMINATION Guide

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.

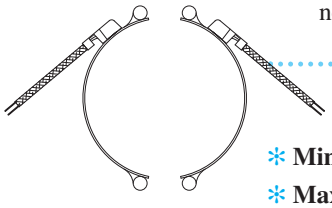
If longer leads are required, specify when ordering.

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

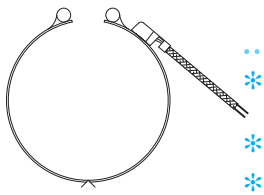
- **Minimum Inside Diameter:** 1-1/2" (38.1 mm))
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



Two-Piece Band

Standard **Termination Location:** next to same gap on each side; 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

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.

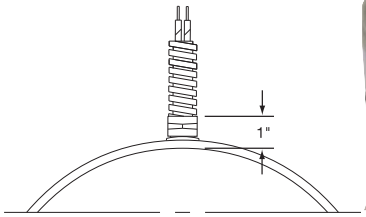
Type R1BT – Stainless Steel armor cable attached with a threaded fitting for heaters over/equal 2-1/2" I.D. and over/equal 1-1/4" width.

Type R1C – Galvanized armor cable, tack welded

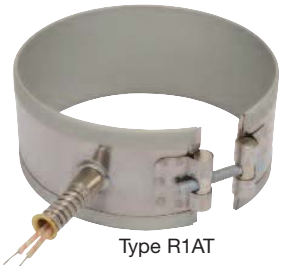
Type R1D – SS armor cable, tack welded

Type R1E – Galvanized armor cable, full silver brazing

Type R1F – SS armor cable, full silver brazing



Type R1A

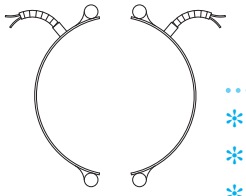


Type R1AT

One-Piece Band

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

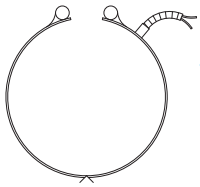
- **Minimum Inside Diameter:** 1-1/2" (38.1 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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



One-Piece Expandable Band

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

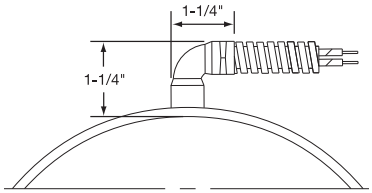
- **Minimum Inside Diameter:** 2-1/2" (65.3 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts/Amps:** 480VAC/10A

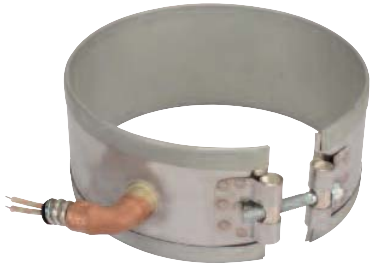
Duraband Type R2 – Right-Angle Armor Cable

Type R2A – Galvanized armor cable, crimped

Type R2B – SS armor cable, crimped

Type R2C – Plain leads, no cable

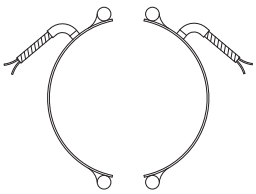




One-Piece Band

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

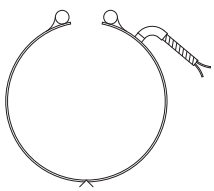
- **Minimum Inside Diameter:** 1-1/2" (38.1 mm)
- **Minimum Width:** 1-1/4" (31.8 mm)
- **Maximum Volts:** 480VAC
- **Maximum Amps:** 10A



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



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

Band Heaters

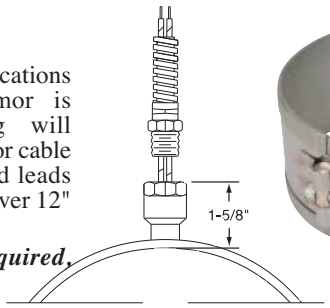
Duraband®

Duraband® Type R3 – Removable Armor Cable

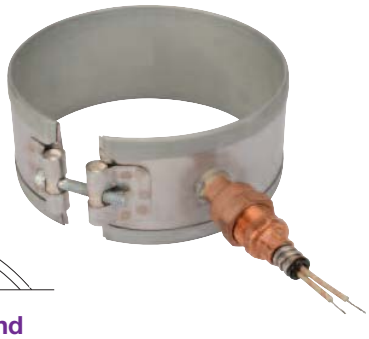
Type R3A – Plain Leads & Female Fitting

Recommended on applications where removable armor is required. The fitting will accept the standard armor cable connector. The standard leads are 10" of armor cable over 12" of flexible leads.

If longer leads are required, specify when ordering.

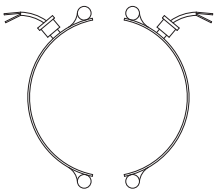


Type R3B – Leads, Male Adapter & Galvanized Armor



Type R3C – Leads, Male Adapter & SS Armor

Two-Piece Band



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

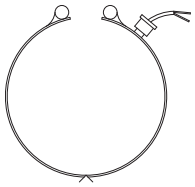
- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/4" (31.7 mm)
- **Maximum Volts/Amps:** 480VAC/10A each half

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
10" of braid over 12" of flexible leads is standard.

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.
10" of braid over 12" of flexible leads is standard.

Selection TERMINATION Guide


Type S1B

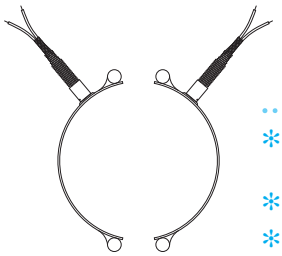

Type S1BT

One-Piece Band

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

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

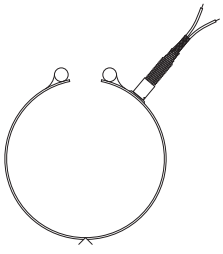
Two-Piece Band



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" (31.75 mm)
- **Maximum Volts/Amps:** 480VAC/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" (31.75 mm)
- **Maximum Volts/Amps:** 480VAC/10A

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 – Terminal Boxes

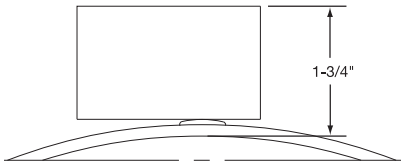
One-Piece Band

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

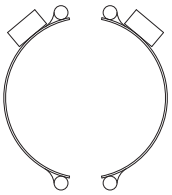
Type C2☐—Standard Box

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



Two-Piece Band

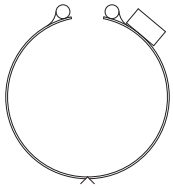
Standard **Termination Location:**
next to same gap on each half; center of width



- **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.
- **Max. Volts/Amps:** 480VAC/25A 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" (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

Duraband Type C5 – Terminal Boxes

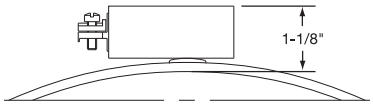
One-Piece Band

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

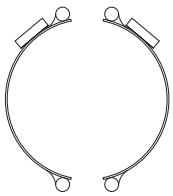
Type C5☐—Low Profile Box

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



Two-Piece Band

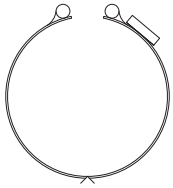
Standard **Termination Location:**
next to same gap on each half; center of width



- **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.
- **Max. Volts/Amps:** 480VAC/25A 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" (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

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.

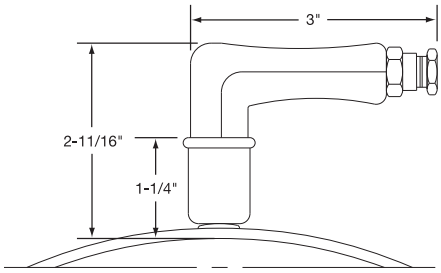
To simplify installation, band heaters with these assemblies can be supplied pre-wired, using high temperature lead wires.

The standard leads are 10" of armor cable over 12" of flexible leads. ***If longer leads are required, specify when ordering.***

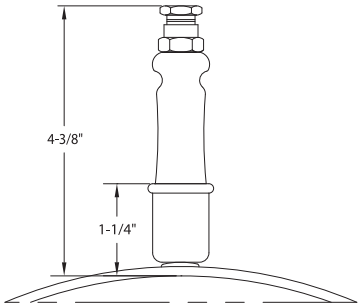
Duraband® Type P1 – High Temperature Quick Disconnect Plugs

Type P1☐

P1K – Cup assembly only
P1L – w/straight plug
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



Type P1M



Type P1L

Plug Electrical Ratings

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

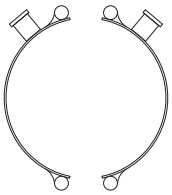
Type P1Q shown

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".

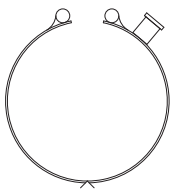


Two-Piece Band

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)

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".

CONTINUED

Band Heaters

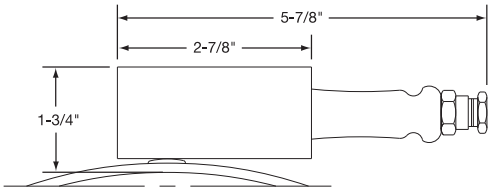
Terminations

Duraband® Type P2 – High Temperature Quick Disconnect Plugs

Continued from previous page…

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)



Type P2G Shown


Type P2H shown

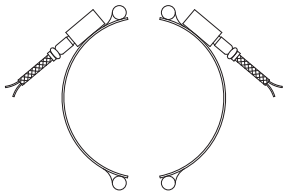
One-Piece Band

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

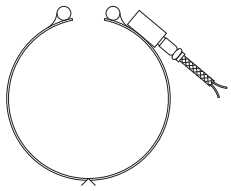
- ✻ **2-Pole 3-Wire Grounding**
- ✻ **Maximum Volts:** 250 VAC
- ✻ **Maximum Amps:** 16A
- ✻ **Maximum Temperature:** 572°F (300°C)



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

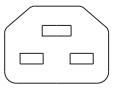
One-Piece Band

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

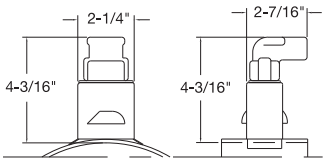
- ✻ **2-Pole 3-Wire Grounding**
- ✻ **Maximum Volts:** 250 VAC
- ✻ **Maximum Amps:** 16A
- ✻ **Maximum Temperature:** 392°F (200°C)

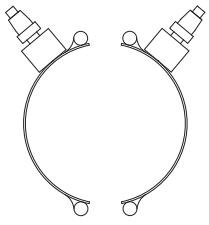

Standard Pin Orientation


Type P3C Shown

Type P3☐—Vertical Box Assembly

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

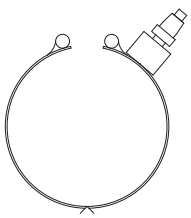




Two-Piece Band

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

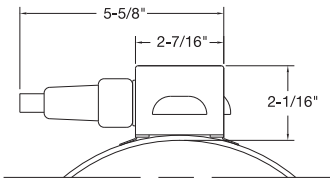
Standard **Termination Location:**
next to gap; center of width

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

Duraband® Type P4 – DIN 49458 A/B Quick Disconnect Plugs

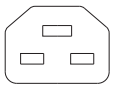
Type P4☐—Horizontal Box Assembly

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)



Standard Pin Orientation

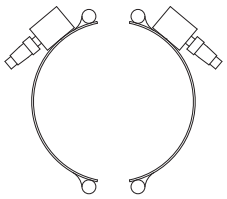
Type P4C shown

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)

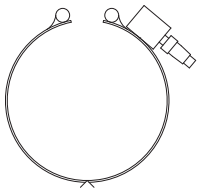
Selection TERMINATION Guide



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

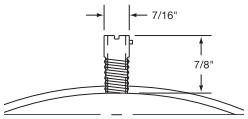
Standard **Termination Location:**
next to gap; center of width

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

Band Heaters

Construction Options and Variations

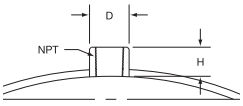
Special Duraband® Construction Options



Thermocouple Bayonet Adapter

A standard Bayonet Adapter facilitates the installation of an external thermocouple with a standard bayonet cap. The standard location for the adapter is 90° from the gap. Specify without through hole for heater sensing or with through hole for load sensing. For heaters less than 1" wide order separate strap clamping and utilize the gap for the thermocouple.

Refer to pages 14-3 and 14-4 for a complete selection of thermocouples available from stock.



Thermocouple Coupling

The Thermocouple Coupling facilitates the installation of an external thermocouple with a threaded fitting to sense the temperature of the band. The standard location for the coupling is 90° from the gap. Specify without through hole for heater sensing or with through hole for load sensing.

Available Bushing Sizes:

Thread	D	H
1/8-27 NPT	9/16"	5/8"
1/4-20 NPT	3/4"	11/16"
3/8-18 NPT	7/8"	5/8"
M12–1.75 mm	3/4"	1/2"

Holes and Cutouts

Holes and cutouts are normally required in band heaters for clearance for thermocouple probes or holding bolts. An oversize gap can in many cases serve the same purpose, saving the expense of the hole.

Using the center of the gap as a starting point, specify the location of the centerpoint of the hole or cutout in terms of degrees and the distance from the edge of the heater. In addition, state the size of the hole or cutout.

For critical hole and cutout locations, a detailed drawing will be required.

Note: A minimum of 1/2" is required from the hole to the edge of the heater.

Hinged Two-Piece Band

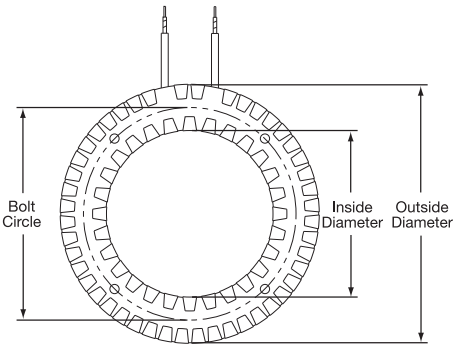
The Hinged Two-Piece Band Heater is connected with a continuous hinge for easy installation and removal. This heater can be opened and closed as often as is necessary. The preferred method of clamping is latch and trunnion. It is available with any screw or lead variation. When ordering, specify watts and volts each half.

Minimum Width: 1-3/8" (34.9 mm)

Special Mica Insulated Heater Construction Variations

Ring Heaters

When ordering Ring Heaters, specify inside and outside diameters. If mounting holes are required, specify location and hole size. For critical hole and cutout locations, a detailed drawing will be required.



Special Mica Insulated Heater Construction Variations (continued)

Square, Rectangular, or Hexagon Bands

Square or Rectangular band heaters are normally used for heating dies on plastic extruders, or the barrels of twin screw extruders. They can be made in either one- or two-piece construction but two-piece construction with **Style 1** Clamping (***see below***) is recommended.

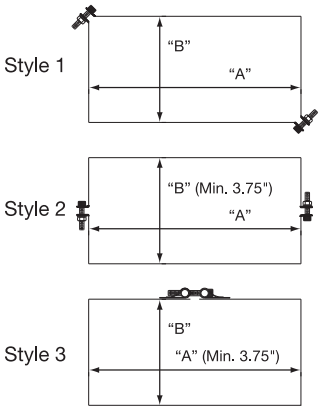
Hexagon shaped band heaters are used on the hex shaped portion of the nozzle on injection molding machines. These types of heaters are strictly made to customer specifications with bent-up flange clamping only.

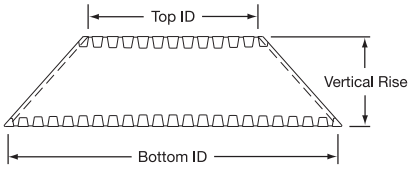
Clamping Styles – Three clamping styles are used on square and rectangular band heaters:

Style 1 for 2-piece heaters: bent-up flange clamping at the corners provides the most uniform clamping force and should be used whenever possible.
Maximum Recommended Watt Density: 25 w/in²

Style 2 for 2-piece heaters: bent-up flange clamping or built-in strap brackets at the sides requires a minimum "B" dimension of 3.75" (95.3 mm).
Maximum Recommended Watt Density: 20 w/in²

Style 3 for 1-piece heaters: bent-up flange clamping or built-in strap brackets at the sides requires a minimum "A" dimension of 3.75" (95.3 mm).
Maximum Recommended Watt Density: 25 w/in²





Cone Shapes

Cone Shaped Heaters are normally used for special heating applications when heat is required for hoppers or funnels. They are made strictly to customer specifications. The preferred method of attachment is with built-in bracket clamping. When ordering or for quoting purposes, supply a detailed drawing or sample part. Include the top ID, bottom ID, and the vertical rise or heater width.

Band Heaters

Duraband Features

Additional Duraband® Heater Features

Electrical Variations

Three-Phase On very high wattage band heaters it would be advantageous to set up the wiring three-phase to reduce the current load across a single conductor. Three-Phase wiring is available on select clamping/construction or termination variation (termination location is subject to engineering approval).

Min. ID: 3" (76.2 mm), **Min. Width:** 2" (50.8 mm)

Dual Voltage Band heaters can be designed using 3-wire series/parallel circuits for dual voltage applications. Whether the heater is run on the higher or lower voltage, the wattage will be the same. Dual Voltage wiring is available on any clamping/construction or termination variation.

Ground Terminal or Lead For those applications requiring a separate ground terminal or lead attached to the heater sheath. A Ground Terminal or Lead is available on any clamping/construction or termination variation.

Single Phase/Three Phase Duraband Heaters can be designed with multiple circuits to operate single or three-phase.

CONSULT TEMPCO WITH YOUR REQUIREMENTS — WE HAVE THE RIGHT SOLUTIONS

Built-In Thermocouples

Heaters can be manufactured with a Built-In Thermocouple to closely control the temperature of the heater.

Type J or K thermocouples are available with fiberglass, wire braid or any other required insulation.

Consult Tempco with your requirements.

Construction Variations

All Stainless Steel Construction Mica band heaters can be constructed with the external sheath made entirely from stainless steel. This allows the Duraband to reach the maximum temperature of 1200°F (650°C). All Stainless Steel Construction is available on any clamping/construction or termination variation.

Other Sheath Materials Other sheath materials, such as rust-resistant steel, Monel®, aluminum, or copper are also available for unique applications.

Lead Variations

Electrical Plugs Industry standard NEMA Twist-Lock® electrical plugs are available. The plugs can be attached to fiberglass leads, armor cable or wire braid. Electrical Plugs can be added to any clamping/construction or termination variation.

See page 15-15 for additional Twist-Lock electrical plugs.

"P4"

"P5"

"P9"

Reference	NEMA P or R	Amps	Volts	Plug Part Number	Connectors (Female) Part Number
P4 twist lock	L5-15	15A	125V	EHD-102-113	EHD-103-104
P5 twist lock	L6-15	15A	250V	EHD-102-121	EHD-103-107
P9 twist lock	L2-20	20A	250V	EHD-102-104	N/A

Terminal Lugs Various types of crimp terminals can be attached to the heater leads to make wiring into applications quick and easy. High temperature 1200°F (649°C) ring terminals and nylon or PVC insulated terminals are available. Spade, ring, and right-angle or straight quick disconnect type terminals can be attached to the leads.

Duraband® and Mica Insulated Heater Special Custom Designs

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.

Ring Heater with clearance hole

Heater with large cutout at gap and clearance holes

Boat shaped two-piece heater

Dual circuit unit has two heaters in one envelope

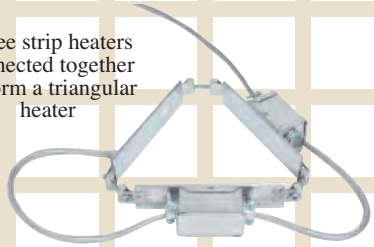
Two-piece rectangular heater with corner radius and cutouts

Fully flexible tapered two-piece heater.

Arch shaped heater for a special die. A two-piece heater will cover an obround die.

Heater with miniature outlet box and clearance hole

Three strip heaters connected together to form a triangular heater



Long conical two-piece heater

Fully flexible one-piece heater with varying width

Disc Heater

Band Heaters

Sinuated Element

"Sinuated" Element Construction for Commercial OEM Applications

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*

The Solution for Low to Medium Temperature Cylindrical and Flat Surface Heating Applications

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.