



# **MARATHON HEATER**

**HEATERS AND THERMOCOUPLES**

# **Mica Band & Mica Strip Heaters**



**THERMAL  
PRODUCTS**  
INC.

Engineered Solutions To  
Industrial Applications

# DESIGN AND CONSTRUCTION

Marathon Band Heaters are computer designed and manufactured to your specifications.

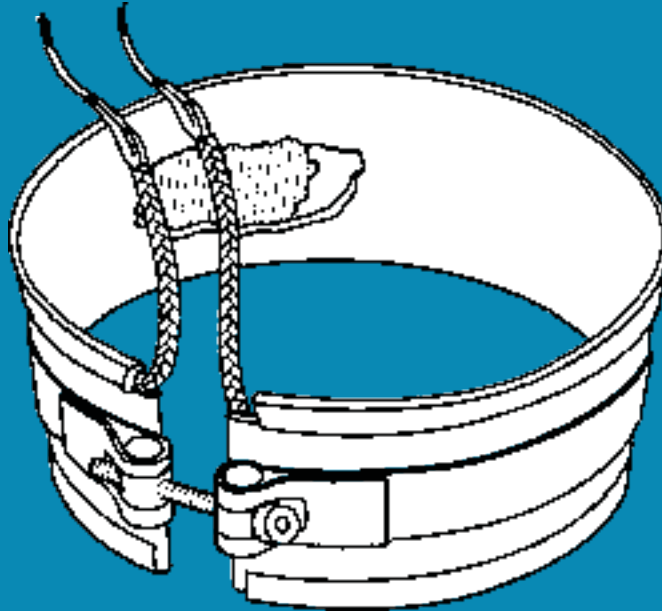
Only the highest quality materials are used for optimal performance.

Tell us about your application so we can best serve your Band Heaters needs.

Marathon Heater BANDs are UL recognized to standard UL499

and to Canadian standard C222. File number 72-M1984

- High temperature oxidation resistant metal sheath
- Highest grade mica insulation provides excellent electrical insulation at high temperatures and is resistant to moisture.
- Clamping band is low thermal expansion stainless steel construction designed to maintain clamping pressure at elevated temperatures.



- Nickel/Chromium resistance wire evenly wound for uniform heat distribution and reliable accuracy.
- Standard 10" fiberglass leadwires are UL rated and provide protection up to 850 degrees F.
- Approximately 1/8" thick.

## Stock

Marathon's stock nozzle and band heater inventory is constantly growing. We stock a wide variety of heaters right on the shelf that are available for same day shipping. All stock heaters are marked with the Marathon name, part number, watts and volts.

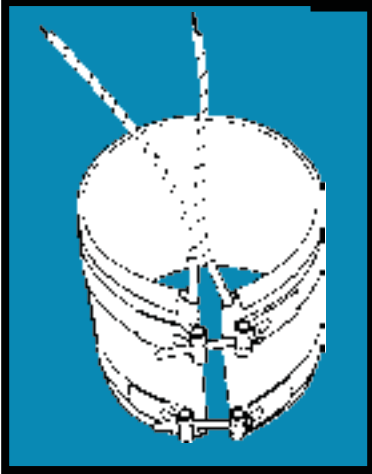


## Expedite Service

Marathon offers prompt service at competitive prices on all products. We also offer a three day expedite service on custom designs. And remember, there is never a minimum order quantity.

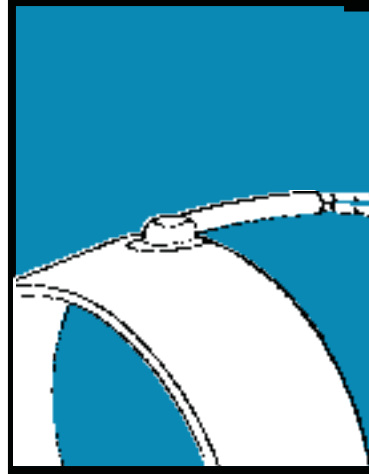
# FIBERGLASS LEAD TERMINATIONS

## ORDER TYPE L1



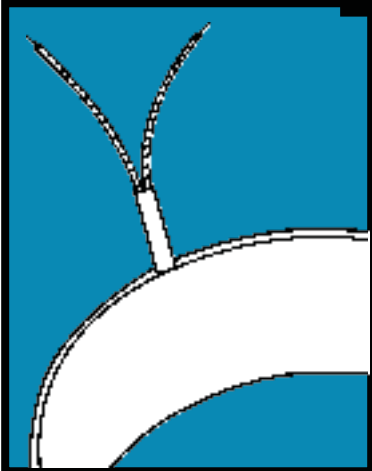
- Leads exiting both sides of gap are standard unless otherwise specified.
- High temperature fiberglass leads are rated to 850 degrees F.
- Standard lead length is 10"

## ORDER TYPE L4



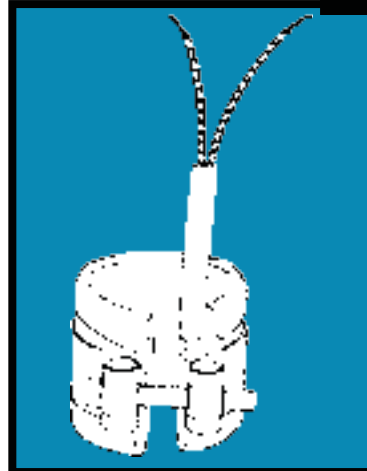
- Leads may exit at right angle out of cap from any position on the heater.
- 1.5" of sleeve protection is standard.

## ORDER TYPE L2



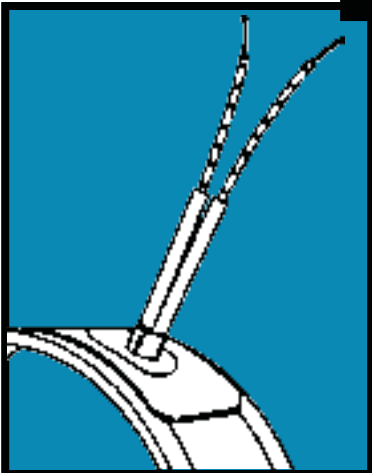
- Lead wires exiting 180 degrees from gap are common on nozzle heater applications.
- 1.5" of sleeve protection is standard on lead exits.

## ORDER TYPE L5



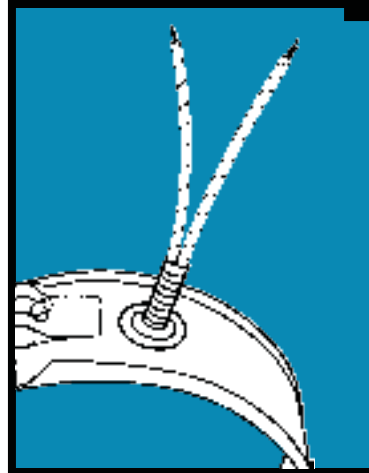
- Lead wires on one side of gap are available on any construction.
- Common exit for small band heaters.
- Standard gap is .300"

## ORDER TYPE L3



- Leads exiting straight out the side are available on any construction.
- Leads exit through a brass eyelet.

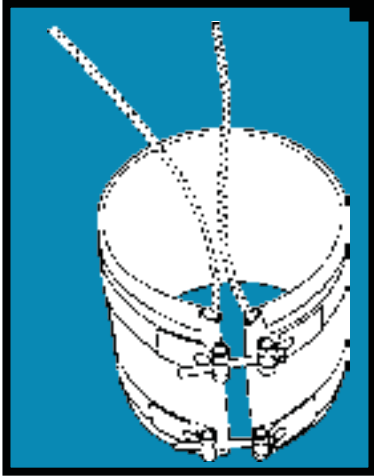
## ORDER TYPE L6



- Stainless steel spring provides extra support, protecting leads from sharp bends.

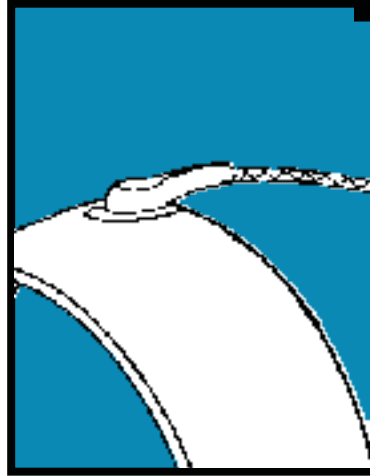
# STAINLESS STEEL BRAID TERMINATIONS

## ORDER TYPE B1



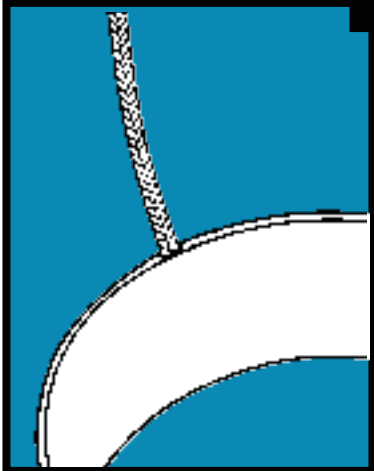
- Stainless Steel braid exiting both sides of gap.
- Leads are 2" longer than S/S braid.
- Stainless Steel braid offers both flexibility and abrasion protection.

## ORDER TYPE B4



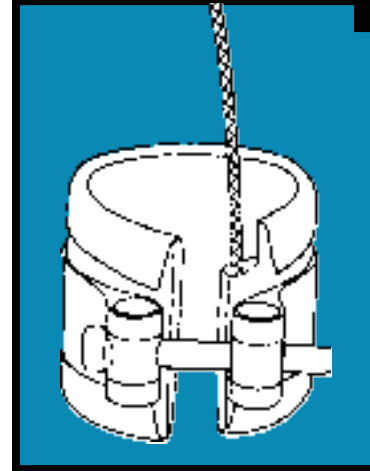
- Stainless Steel braid with right angle exit through cap.

## ORDER TYPE B2



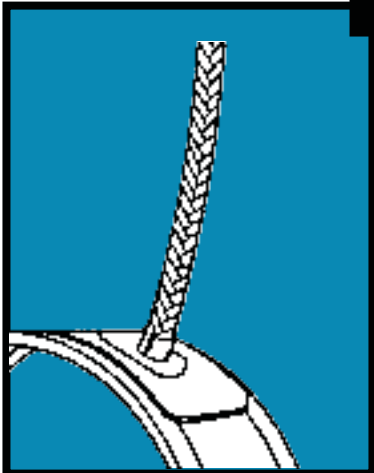
- Stainless Steel braid exiting 180 degrees from gap.

## ORDER TYPE B5



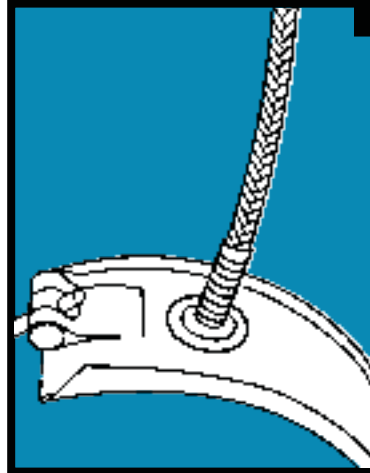
- Stainless Steel braid out same side of gap.
- Standard gap is .300"

## ORDER TYPE B3



- Stainless Steel braid straight out side
- Leads exit sheath through brass eyelet.

## ORDER TYPE B6

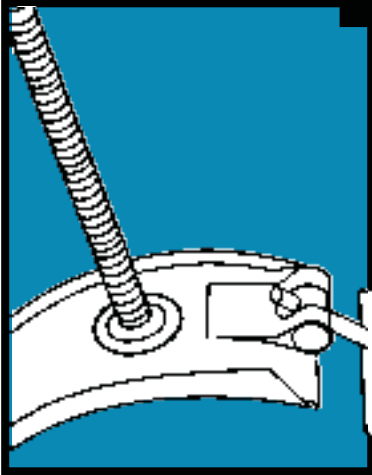


- Stainless Steel braid with spring guard.



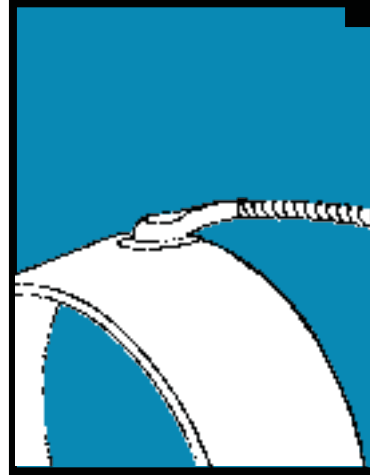
# STAINLESS STEEL CONDUIT TERMINATIONS

## ORDER TYPE C3



- Flexible Stainless Steel Conduit offers utmost lead abrasion protection.
- Leads are 2" longer than conduit.
- S/S Conduit is sometimes referred to as armor cable or hose.

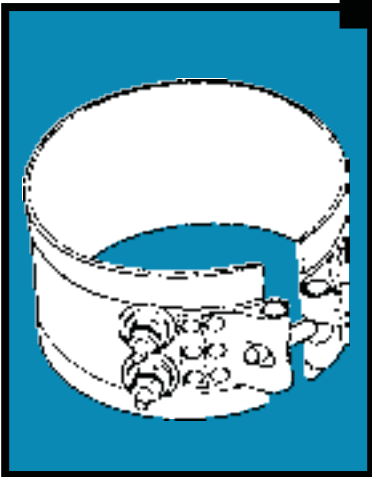
## ORDER TYPE C4



- Flexible Stainless Steel Conduit exiting through right angle cap.

# POST TERMINATIONS

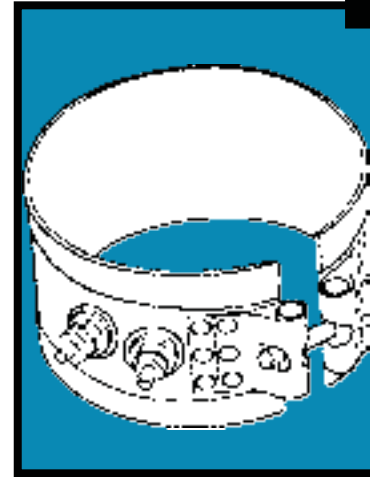
## ORDER TYPE N1



- Post Terminal Vertical position.
- This is standard position for heaters 2" wide and greater.
- #10-32 screw thread

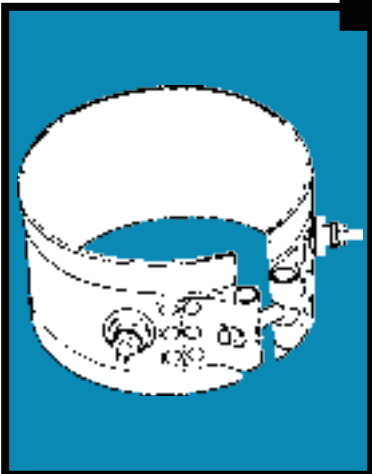


## ORDER TYPE N3



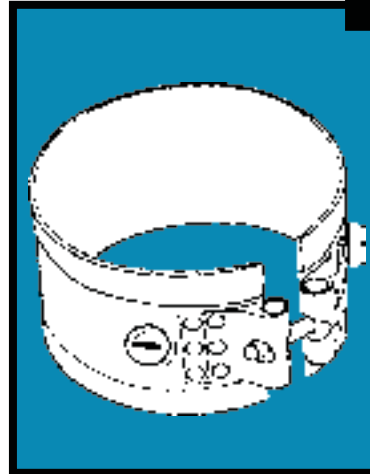
- Post Terminals Parallel position.
- #10-32 screw thread.

## ORDER TYPE N2

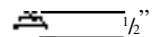


- Post Terminals each side of gap.
- This is standard position for nozzle heaters and band heaters less than 2" wide.
- #10-32 screw thread.

## ORDER TYPE BN

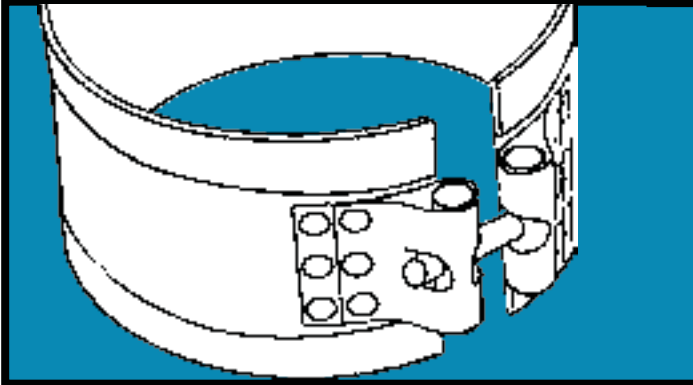


- Button terminals may be ordered in same position as N-1, N-2 or N-3.



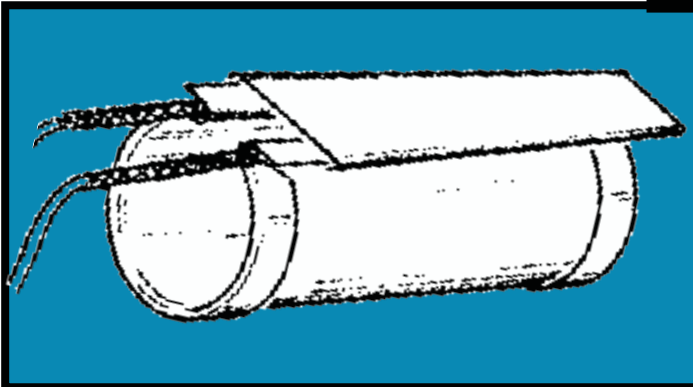
# CLAMPING VARIATIONS

## WELDED ON BARREL NUT



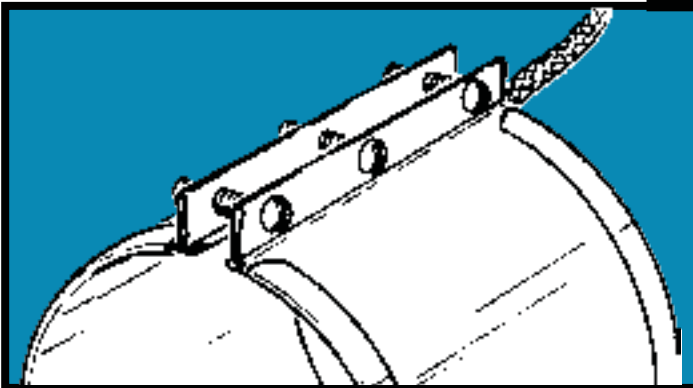
- Welded on barrel Nuts are optional on any screw or lead termination.
- Excellent clamping option for heaters with holes or cutouts.
- No strap to loosen or adjust.
- Standard Barrel nuts are 3/8" diameter and use a 10-24 socket head cap screw.
- 5/8" clearance required.

## WEDGE



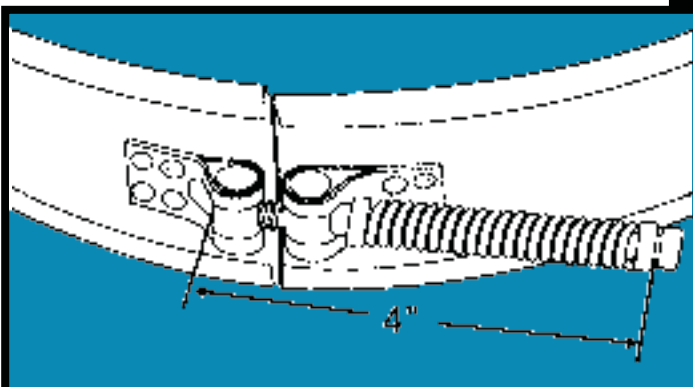
- Wedge mount is ideal for low profile clearance and when access is limited.
- 1/8" clearance required.
- Min I.D. 1"
- Min width 1"
- Standard wedge exit is out each side of gap.

## FLANGE



- Flange lock up is best for heaters with multiple holes or cut outs.
- 1/2" clearance required
- Min. I.D. 1"
- Min. width 1"

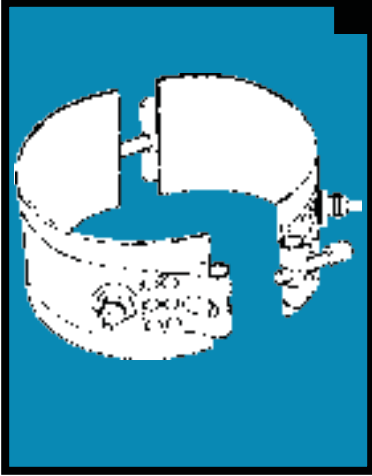
## SPRING LOADED CLAMPING



- Tig welded barrel nuts.
- Spring loaded clamping.
- Stainless steel top metal.
- Retains tight heater fit during start-up.

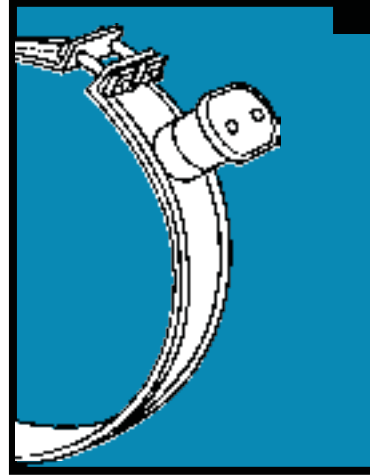
# MARATHON BAND HEATER SPECIAL CONSTRUCTIONS

## TWO PIECE



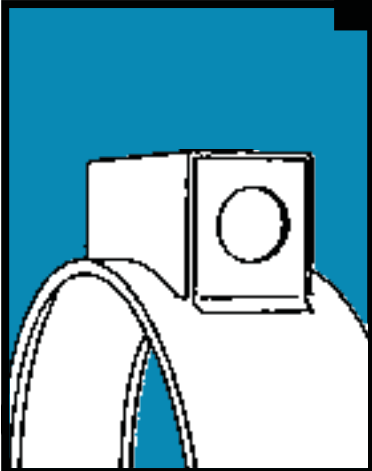
- Two piece construction is available for easy installation and removal.
- Please specify total wattage when ordering
- Min. I.D. 3"

## EURO PLUG



- European type plugs are available upon request.
- 1" x 1.75" x 1"

## TERMINAL BOX



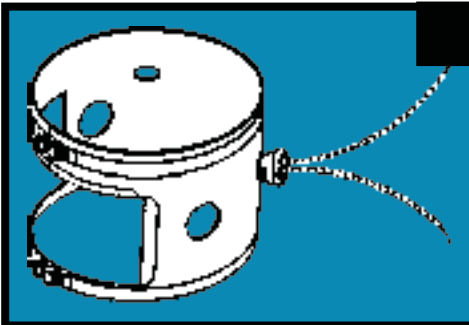
- Terminal boxes are excellent for preventing electrical shock or electrical shorts. Terminal boxes are available on any clamping or construction style.
- 1.5" wide x 2.5" long x 1.87" deep

## EXPANDABLE



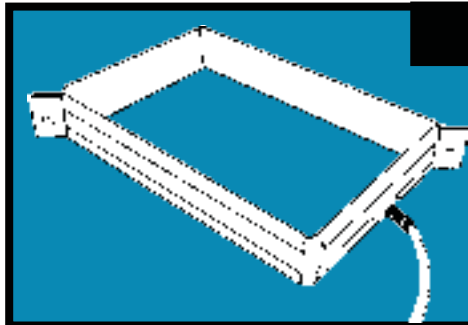
- Expandable Mica Heaters allow you to open the heaters to the diameters of the barrel for easy installation.
- Min. I.D. 3"
- Heaters should only be opened all the way one time.

## HOLES



- Band Heaters can be manufactured with custom holes or slots for thermocouples or special mounting needs.
- Please supply drawing or sketch for exact hole locations.
- Specify location in terms of degrees and size of hole.
- Minimum of 1/2" is required from the hole to the edge of the heater.

## Box



- Box or rectangular heaters are efficient for heating dies on plastic extruders or the barrels of twin extruders.
- They can be manufactured in one or two piece construction.
- Please supply detailed drawings or sample part when ordering or for quoting.

# SPECIAL CONSTRUCTION OPTIONS

- Three phase construction for high wattage heaters.
- Dual voltage wiring allowing the heater to run on either voltage at the same wattage is available on any clamping or termination design.
- Ground lead or terminal is available on any design.
- Ceramic terminal covers.
- Internal Type J or Type K thermocouples are available for close temperature monitoring.
- Box and irregular shaped heaters can be designed to your specifications. Please supply drawing on all special orders.
- Bayonet adapter for thermocouples.

# BAND HEATER ORDERING TIPS

When ordering please specify:

- Quantity
- Inside diameter and width
- Volts/Watts
- Termination Type
- Desired clamping
- Part number if known or previously ordered
- Construction variations e.g. wedge lock, flange, two piece, expandable, etc.
- Special holes or cut outs. Please provide drawing of hole location
- Specify total wattage on 2-Piece construction.

# WATT DENSITY GUIDE LINES

## MAXIMUM ALLOWABLE WATT DENSITY

Cylinder Temp F	200	300	400	500	600	700	800
1.5-3 I.D.	52	51	50	46	41	37	29
3-10 I.D.	47	46	45	42	38	33	25
10 and > I.D.	41	40	39	36	31	27	20

## WATT DENSITY - W/ SQ. IN

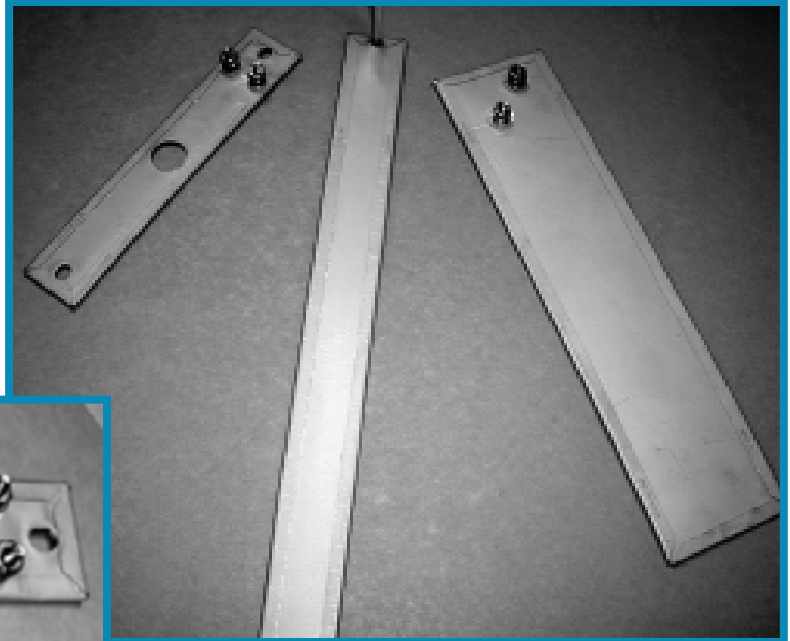
<p>Watt Density Formula for Band Heaters with Leads</p> $\frac{\text{Wattage}}{(\text{Heater I.D.} \times 3.14) - .75 \times \text{Width}}$	<p>Watt Density Formula for Band Heaters with Posts</p> $\frac{\text{Wattage}}{(\text{Heater I.D.} \times 3.14) - 1.75 \times \text{Width}}$
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# MARATHON STRIP HEATERS

Marathon Strip Heaters are manufactured to your custom specifications. Marathon strip heaters feature a high temperature oxidation metal sheath and high grade mica insulation resistant to moisture and high temperatures. Nickel/Chromium resistance wire evenly wound provides for uniform and reliable heat distribution. Marathon Mica Strip Heaters are LLL recognized to standard UL499 and test to Canadian standard C222. File number 72-M1984



## MICA STRIP SPECIFICATIONS

### Length

Minimum 2.5"  
Maximum - Consult Sales

### Width

Minimum 3/4"

### Thickness

Standard .156"

### Fold over 1/4"

### Maximum Sheath Temperature

Maximum 900 F; 482 C

### Mounting Slot

9/32" x 3/8"

### Terminals

10-32 x 5/8" Post terminals or  
10" High temperature  
fiberglass leads

### Wattage

Recommended maximum  
wattage 35 watts/sq. in.

### Voltage

480 VAC Max

## STRIP HEATER OPTIONS

- S/S braided leads for flexibility
- Button terminals
- S/S conduit for maximum lead protection
- Right angle exit available on any construction
- Dual voltage and 3 phase construction
- Spring guard upon request
- Built in thermocouple
- Euro plug
- Terminal box
- Ground wire construction
- Custom mounting holes
- Ceramic terminal covers

## STRIP HEATER ORDERING INFORMATION

- Quantity
- Length and Width
- Volts/Watts
- Lead wire or Post Terminal Design
- Mounting Holes or slots
- Special construction

## WATT DENSITY - W/ SQ. IN

Watt Density Formula  
for  
Strip  
Heaters

Wattage

\_\_\_\_\_  
(Heater Length - Cold) x Width

## FIBERGLASS LEADS

### ORDER TYPE SL1

- Fiberglass leads out same end center
- 10" leads standard
- Leads rated to 850° F

### ORDER TYPE SL2

- Leads out same end edge
- 1/2" sleeving at exit

### ORDER TYPE SL3

- Leads out opposite ends
- 1/2" sleeving at exit

### ORDER TYPE SL4

- Leads out at top of heater
- Brass eyelet where leads exit sheath
- 1/2" sleeving at exit

## STAINLESS STEEL BRAID

### ORDER TYPE SB1

- Stainless Steel Braid offers a combination of flexibility and abrasion protection
- Leads out same end center
- Specify Braid length
- Leads are 2" longer than braid

### ORDER TYPE SB2

- Leads out same end edge

### ORDER TYPE SB3

- Leads out opposite ends

### ORDER TYPE SB4

- Leads out top of heater
- Brass eyelet where leads exit the sheath

## POST TERMINALS

### ORDER TYPE SN1

- Post terminals vertical
- Minimum width 1.5"
- Marathon standard location

### ORDER TYPE SN2

- Post terminals parallel
- Minimum width 1.5"

### ORDER TYPE SN3

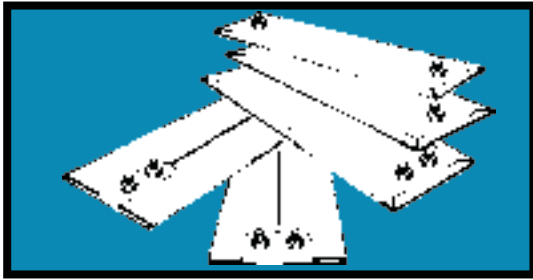
- Post terminals opposite ends
- Minimum width 1"
- 1/2" sleeving at exit

## STAINLESS STEEL CONDUIT

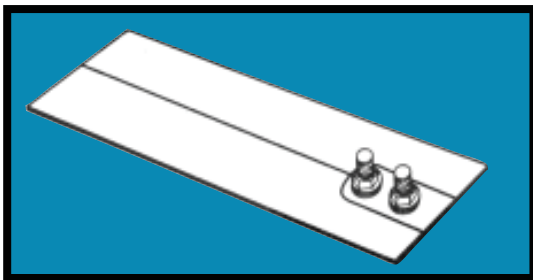
### ORDER TYPE SC4

- Stainless Steel Conduit offers utmost abrasion protection
- Leads exiting out top side of sheath
- Leads are 2" longer than conduit

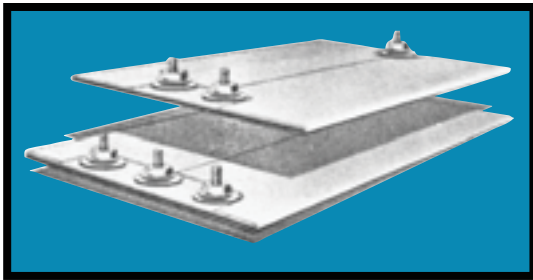
# STRIP HEATER DIMENSIONS AND VARIATIONS



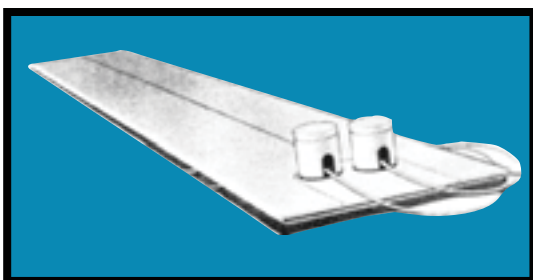
- Marathon manufactures strip heaters in a variety of sizes and configurations.
- The 1.5" wide strip heater is preferred for clamping applications.



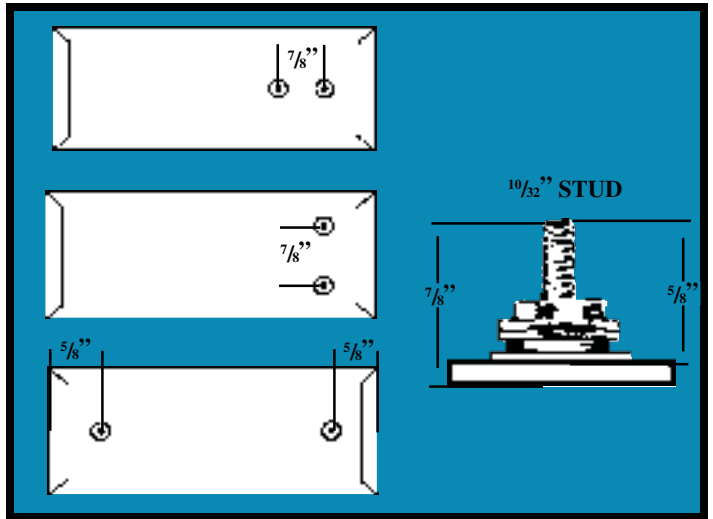
- Butt case for applications where strip heater will be placed in a mill slot between two steel plates.



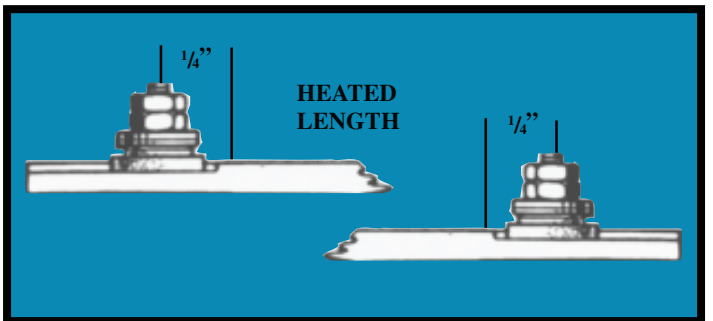
- A third terminal may be added for dual voltage, three phase operation or for easy grounding.



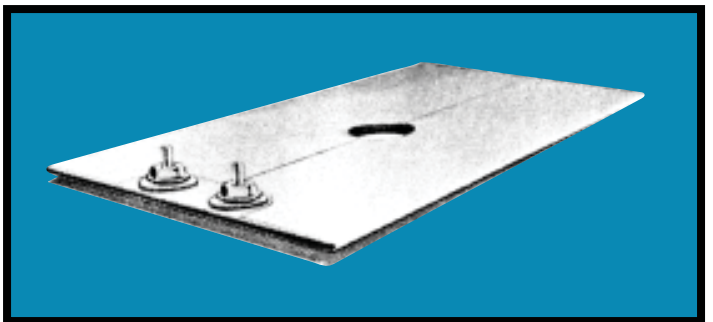
- Ceramic terminal covers 3/4" in height and 3/4" diameter



- Post terminal dimensions and locations.



- Post terminals are located 1/4" from edge of heated section.



- Mounting holes may be located anywhere on the heater as long as there is a minimum of 1" between the edge of the hole and one side of the heater
- Please provide drawing for hole dimensions and locations.

OTHER  
**MARATHON  
HEATER**  
PRODUCTS



**Coil Heaters**

Marathon stocks their own Viper Coil Heaters. These heaters are ideal for high temperature and high watt density applications.



**Cartridge Heaters**

Marathon specializes in custom manufactured cartridge heaters and also carries a wide variety of stock cartridge heaters.



**OEM Replacement Heaters**

Marathon manufactures and stocks high quality and competitive priced replacement heaters for a variety of OEM Equipment.



**Temperature Controllers**

Marathon carries a variety of microprocessor based temperature controllers for all applications and price ranges.

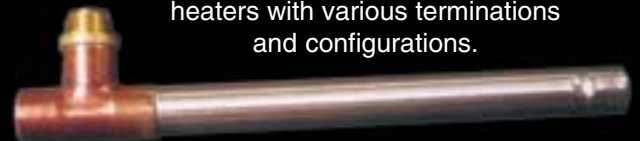
**Thermocouples**

Type J and type K thermocouples with both braid and flexible stainless hose are stocked and ready for immediate delivery. Various terminations are available.



**Air Heaters**

Marathon manufactures and stocks a line of 1/2" diameter air heaters with various terminations and configurations.



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