

Band Heaters and Strip Heaters



Band Heaters

New materials and ever changing manufacturing cycles demand thermal engineering versatility.

HOTSET meets the challenge with standard mica and ceramic construction with sheath material of brass and stainless steel to accommodate your requirements.

Table of Contents

MICA INSULATED BAND HEATERS	1, 2
MICA INSULATED STRIP HEATERS	3, 4
RADIANT CERAMIC STRIP HEATERS	5
CERAMIC BAND HEATERS	6, 7
ULTRA THIN CERAMIC BAND HEATER	8
INSULATION PLUS BAND HEATER	9, 10
AIR COOLED CERAMIC HEATER BAND	11
ULTRAALUMINUM BAND HEATER	12
MICA BAND STOCK LIST	13

Mica Band Heaters

Technical Data:

Inside Diameter:	7/8" and larger
Maximum ID:	Please consult factory
Stud Terminals:	If required at the same end of the band, they will be normally located as follows: Under 2" width: Tandem around the circumference. 2" width and over: Across the width of band heater
Clamping:	Mounting flange, clamping strap, wedge lock, welded barrel nut and latch & trunnion
Maximum Watt Density:	35 W/sq. inch
Maximum voltage:	480 V (single or 3 phase)
Resistance and Wattage Tolerance:	NEMA Standard

Options:

1. Flexible armor cable above flexible leads (ARM)
2. Metal braid above flexible leads (BMS)
3. Flexible leads-fiberglass insulated
4. Stud terminals (PT)*
5. Flexible armor cable with right angle bracket (RBL w/ARM)
6. Twist lock plug on leads
7. Button terminals
8. Grounding options
9. Stud terminals protection box
10. Dual voltage, please specify
11. Thermocouple hole
12. Appliance pins
13. Extra wide gap, please specify
14. Stainless steel sheath
15. Low profile strap - 1/4" high (Height of standard clamping strap is 3/8")
16. 2-piece construction
17. Expandable design

While ordering, please specify the following: A) Quantity, B) Inside Diameter, C) Width, D) Wattage- specify total wattage for two piece band, E) Voltage - Please specify the total voltage for two piece band, F) Lead style and exit type.

*Any heater manufactured with post terminals MUST have either a terminal box or ceramic caps for safety.

Mica Insulated Band Heaters Standard Constructions

Type 1



BARREL NUT STRAP
Leads in Metal Braid

Type 2



BARREL NUT STRAP
Leads without metal braid.

Type 3



BARREL NUT STRAP
Leads exit through outside surface.

Type 4



BARREL NUT STRAP
Leads exit through edge, 180 deg. from gap.

Type 5



BARREL NUT STRAP
Leads exit through edge, inside gap, one from each side of gap.

Type 6



FLANGE LOCK-UP
Leads exit through edge on both sides of gap.

Type 7



BARREL NUT STRAP
Leads in metal braid exit through edge, both leads at same side of gap.

Type 8



BARREL NUT STRAP ONE PIECE
Post terminal at each end.

Type 9



BARREL NUT STRAP TWO PIECE
Post terminal at each end.

Type 10



BARREL NUT STRAP ONE PIECE
Post terminals at same end of heater.

Type 11



BARREL NUT STRAP TWO PIECE
Post terminals at same end of heater.

Type 12



BARREL NUT STRAP - EXPANDABLE

Type 13



BARREL NUT STRAP
Partial coverage band with padded clamping straps.

Type 14



FLANGE LOCK-UP ONE PIECE
Leads exit through outside surface.

Type 15



FLANGE LOCK-UP TWO PIECE
Leads exit through outside surface.

Type 16



TAPERED WEDGE LOCK
Leads exit through edge.

Type 17



FLANGE LOCK-UP HINGED
Post terminal at each end.

Type 18



FLANGE LOCK-UP HINGED
Post terminals at same end of heater.

Type 19



FLANGE LOCK-UP HINGED
Leads exit through outside surface of band.

Type 20



FLANGED LOCK-UP ONE PIECE
Post terminal at each end.

Type 21



FLANGED LOCK-UP TWO PIECE
Post terminal at each end.

Type 22



FLANGE LOCK-UP ONE PIECE
Post terminals at same end.

Type 23



FLANGE LOCK-UP TWO PIECE
Post terminals at same end of heater.

Type 24



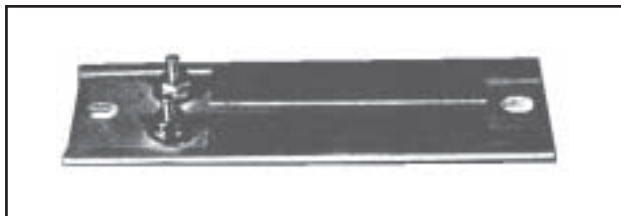
EXTENDED FLANGE WITH ELECTRICAL CONNECTIONS
ONE PIECE

Type 25



EXTENDED FLANGE WITH ELECTRICAL CONNECTIONS
TWO PIECE

MICA STRIP HEATERS



Technical Data:

Width:	Minimum width Styles P1-P2R (excl. P3R) and L2CR-L3AR = 3/4" Minimum width: Styles P3R = 1 3/4" Maximum width: Please consult factory
Length:	Minimum length without mounting slots: 2 1/2" Minimum length with mounting slots: 3 1/2" Maximum length: Please consult factory
Thickness:	Standard = 3/16"
Wattage:	Maximum 35 W/sq. inch recommended
Voltage:	Maximum voltage: 480V (Single Phase or 3 Phase)
Sheath Temperatures (Mica Band Heaters):	Standard Heaters, maximum = 900 F Stainless steel sheath, maximum - 1200 F
Termination (Mica Band Heaters):	10-32 x 7/16 post terminals or 12" flexible leads

Options:

1. Flexible armor cable over flexible leads (ARM)
2. Metal braid over flexible leads (BMS)
3. Flexible leads-fiberglass and teflon insulated nickel or nickel clad conductor
4. Stud terminals (PT)*
5. Flexible armor cable with right angle bracket (RBL with ARM)
6. Twist lock plug on leads
7. Button terminals
8. Grounding options
9. Stud terminals protection box*
10. Dual voltage, please specify
11. Thermocouple hole
12. Appliance pins
13. Bracket for strain relief
14. Stainless steel sheath
15. Mounting holes at each end (1/4" x 3/8")
For definite distance, please specify the location of mounting holes

While ordering, please specify the following: A) Quantity, B) Width, C) Length, D) Wattage, E) Voltage, F) Lead style and exit type.

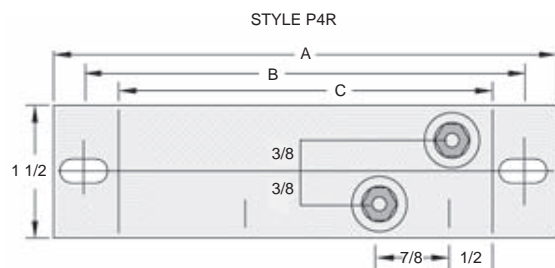
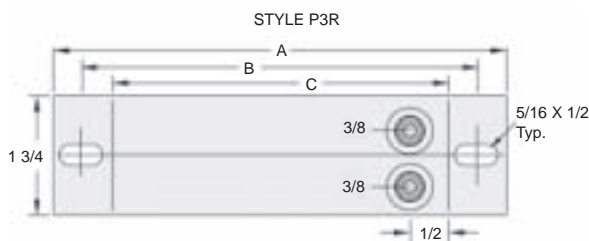
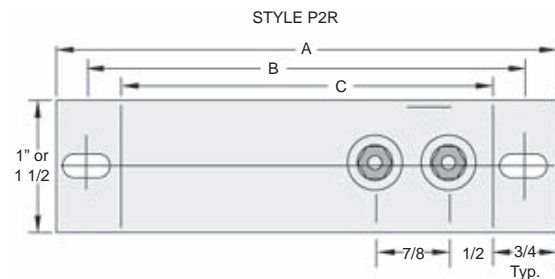
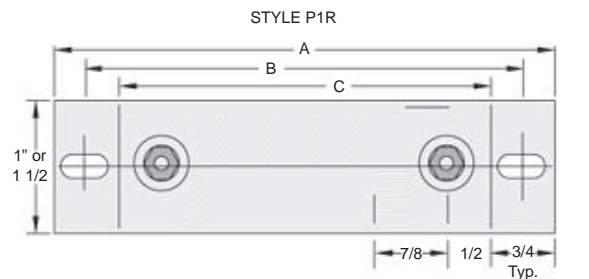
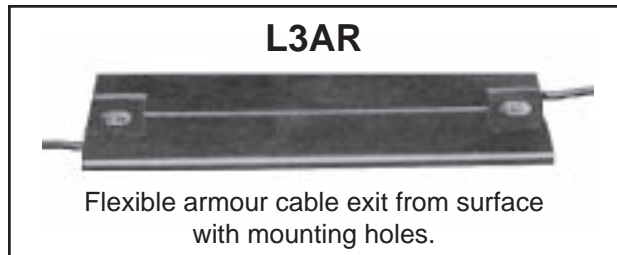
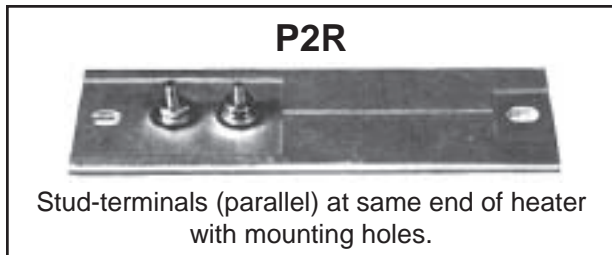
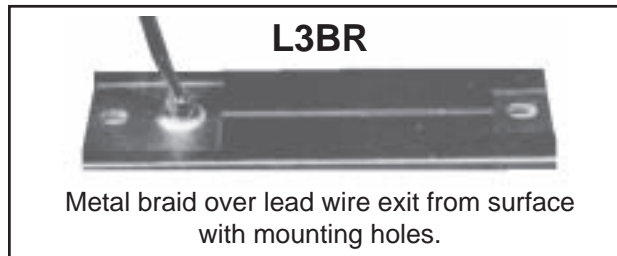
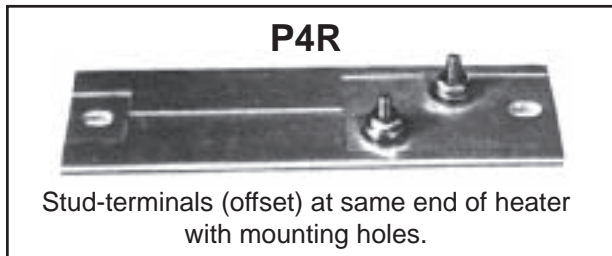
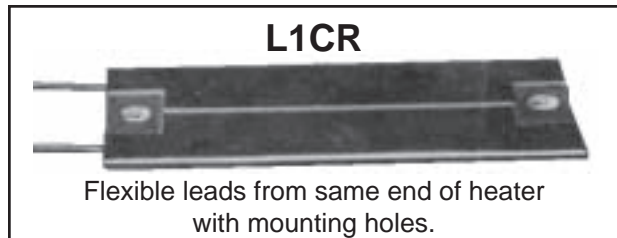
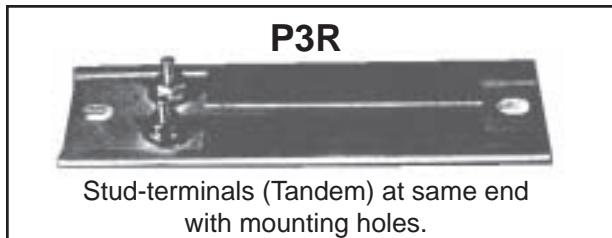
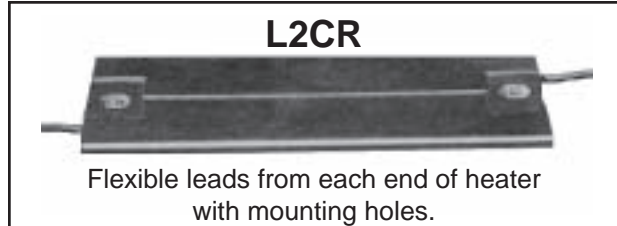
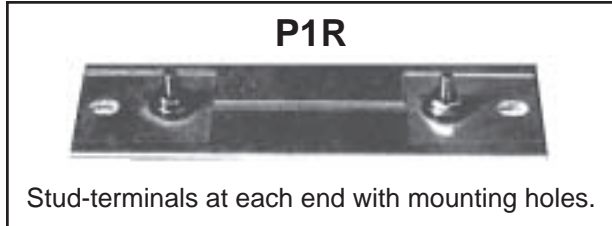
*Any heater manufactured with post terminals MUST have ceramic caps for safety.

See next page for styles.

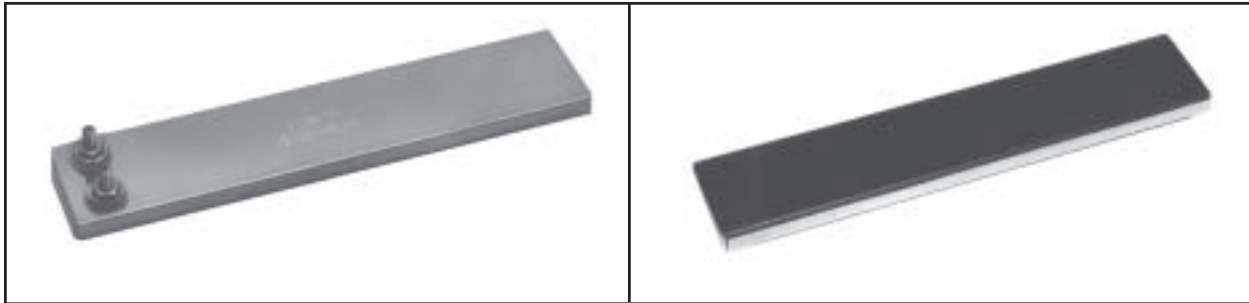
Mica Insulated Strip Heaters Standard Constructions

Stud Terminal Options

Lead Variation Options



BLACK STAR RADIANT CERAMIC STRIP HEATERS



Technical Data:

Element:	Nickel/Chrome coil
Voltage:	Up to 240V; consult factory
Sheath:	Stainless steel for higher voltage (heavy gauge)
Terminals:	Post type-std-10-24 Thread x 7/16" Length
Thickness:	1/4" - 5/16" - 3/8"
Length:	Min. 4" up to any practical
Temperature:	Up to 1400 degrees F
Watt Density:	Up to 45 W/sq. inch
Mounting Tabs:	Available with or without
Mounting Slots:	5/16" x 1/2"

Options:

1. Leads: Off top surface or from end
2. Leads: In braid of armor
3. Post terminals*: 2 on one end - one on each end
4. Terminal box
5. Ceramic terminal covers

Some Typical Applications:

Thermoforming (Radiant Panels)	Molds
Air Heating	Ovens
Platens	Sealing
Hot Plates	Tank Heaters

AVAILABILITY (Thickness x Width): 1/4" x 1"; 5/16" x 1 1/2"; 3/8" x 1 1/2"

Other sizes available. Please consult factory with your requirements.

Radiant panels incorporating these heaters can be custom manufactured. Please consult factory.

While ordering, please specify the following: A) Quantity, B) Width, C) Length, D) Wattage, E) Voltage, F) Lead style and exit type.

*Any heater manufactured with post terminals MUST have ceramic caps for safety.

CERAMIC BANDS DEVELOPED ESPECIALLY FOR PLASTICS PROCESSING

Plastics processing requires high operating temperatures and fast production cycles. HOTSET has designed its ceramic band heaters to meet these demands. These heaters are, in effect, high temperature electric furnaces capable of very efficient heat transfer by conduction, convection and radiation heat. Built-in insulation minimizes unwanted temperature changes along the barrel.

Other types of band heaters are primarily conductive, requiring an intimate fit with components being heated. Grooves or other surface irregularities form voids under the bands, resulting in hot spots affecting the performance of the heater ability to transfer heats.

Technical Data:

Temperatures:	Up to 1400 degree F; Sizes: 2" dia. and up
Watt Density:	Up to 45 W/sq. inch 1-1/2" side and up (in 1/2" increments)
Voltage:	Up to 480 V (single or three phase)
Terminals:	1/4" - 20" Post terminals standard
Resistance:	NEMA Standard +10%
Sheath:	Stainless Steel
Lock-up:	Flange type standard
Wattage:	NEMA Standard +/- 5%
Maximum ID:	Consult factory
Increments:	1/2"
Insulation Available in both standard 1/4" and Ultra-Thin	Standard gap when Tightened: 1/4" Construction Thickness w/ Insulation 5/8" Thickness w/ Insulation 1/2" Insulation 7/8"

Options:

1. Where flexible leads in armor or braid are specified, HOTSET recommends the use of post terminals in box with leads off box. (Add if you want the "Ultra-Thin")
2. Armor cable (ARM)
3. Braided metal sleeving (BMS)
4. Lead wire, no braid or armor
5. Leads exiting out of edge of heater, through porcelain insulator
6. Terminal connectors on studs-ring lugs*
7. Partial coverage
8. Thermocouple hole in element area
9. Thermocouple hole in gap area, notched
10. Inner liner
11. Twist lock plug on leads
12. Wider than the normal gap, specify
13. Ground wire
14. Dual voltage-for bands 2-1/2" or more in width
15. Four wire construction
16. Overlapping shell on gap area

NOTE: A) Latch and trunnion has quick release spring loading, suggested for ceramic band with a 12" diameter or greater. B) Terminal boxes and stud terminals are normally located 180 degrees opposite the gap at centerline of width.

*Any heater manufactured with post terminals **MUST** have either a terminal box or ceramic caps for safety.

See next page for styles.

CERAMIC BANDS DEVELOPED ESPECIALLY FOR PLASTICS PROCESSING

Type 100



**Standard Flange
Lock-Up**

Type 200



Welded Barrel Nut Strap

Type 300



**Spring Loaded Latch &
Trunnion**

When Ordering Ceramic Bands Please Specify:

1. Quantity
2. Inside diameter & width
3. Voltage - on 2 piece bands we suggest each piece be rated at half the operating value; please specify total voltage.
4. Wattage - on 2 piece bands please specify total wattage
5. Basic construction and options
6. Part number (if known if previously ordered)
7. Gap (if other than factory minimum)
8. Lead length (if other than standard 12")

Maintenance and Trouble Shooting for Prolonged Heater Life:

1. Regulate voltage. A 10% variation in voltage results in a 20% variation in power.
2. When attaching the lead wires to the terminals , excessive torque pressure can cause breakage of the terminal wire.
3. A 1/4" gap should be maintained at the opening when operating. Retightening is not normally required, however, if the operating temperature is changed, the clamp bolt should be checked.
4. Any material which can be carbonized such as dirt, oil, plastic, etc., should not be allowed to contact the heater.
5. Select a heater to match the diameter of the cylinder. In no case should heaters be used that are too large.
6. Match the heaters as closely as possible to the actual load requirement to reduce cycling.

THE BEST CERAMIC INSULATED BAND HEATER YOU CAN BUY: THE ULTRA THIN



HOTSET engineering solves your most difficult problems with innovative products, and energy saving concepts.

HOTSET's Ultra Thin Heater band is designed for processing high temperature engineered resins. "Ultra Thin" heater bands have the same basic construction as our standard ceramic heaters except they are much thinner, and a high ratio of thermal to electrical construction. The thin ceramic insulator's used results in a lower mass construction, which improves response to control and minimizes temperature lag and overshoot.

Nothing else beats the Ultra Thin as a high temperature barrel heater in any size.

The thermal insulation is highly efficient and results in minimal heat loss and lower sheath temperature. The "Ultra Thin" has averaged 100 degree F lower sheath temperature when tested against other high temperature heaters at 600 degree F cylinder temperatures.

The "Ultra Thin" heaters are constructed of all high temperature materials. The heater element itself is computer designed for maximum wire size, which results in longer service life. Developed primarily for high temperature, high watt density plastic processing machinery, this premium performance heater can be used in many other applications.

Special Note:

These are completely flexible radiant heaters. Heavy clamping pressures aren't required regardless of heater size. No need for hinged, two piece, or expandable designs associated with mineral insulated (MI), mica or other conduction type heaters.

Technical Data:

Wall:	Thickness: 11/32" (+1/32", -0.0)
Insulation:	3/16" thick thermal insulation
Temperature:	Up to 1400 F (ceramic fiber)
Watt Density:	Up to 65 W/sq. inch
Sizes:	Min. ID 1 1/2" (38.1mm)
Voltage:	Up to 480 V (single or 3 phase)
Terminals:	Post terminals standard* (10-24 or 1/4-20 thread)
Resistance:	Tolerance: +10% - 5%
Sheath:	Stainless steel
Wattage:	Tolerance: +5% -10%
Lock-up:	Flange or barrel nut
Max. Amperage:	20/Circuit standard
Standard Gap:	1/4" when tightened

Metric Sizes Available

For other options, please consult factory.

Options for "Ultra Thin"

Ceramic Band Heater:

1. Armor cable (ARM)
2. Braided metal sleeving (BMS)
3. Fiberglass leads
4. Right angle armor (REX w/ARM)
5. Right angle braid (REX w/BMS)
6. Partial coverage
7. T/C hole (specify location)
8. Inner S.S. liner
9. Ground stud or wire
10. Dual voltage
11. Latch - Trunnion lock-up
12. Overlap on shell at gap
13. Standard terminal box
14. Low profile (1" high) terminal box
15. Ceramic terminal caps
16. Quick disconnect high temperature plugs

WHAT “INSULATION PLUS” CAN DO FOR YOU

The standard ceramic insulated band has been, and continues to be the only barrel heater having built-in thermal insulation. In the past, machine manufacturers have elected to use the heater because of several advantages, but rarely for its heat conserving qualities.

The present energy situation (in which the plastic processor must bare exorbitant costs) is the reason for the development of the “INSULATION PLUS” ceramic band heater.

The “INSULATION PLUS” ceramic band heater consists of the standard ceramic band components and additional insulation chamber, all of which is contained in a single flexible sheath. This additional insulation chamber dramatically reduces power consumption, in comparison to all other non-insulated band heaters.

JOIN THE MAJOR PLASTIC PROCESSORS WHO HAVE COMPARISON TESTED OUR “INSULATION PLUS” BANDS

We invite you to test run one of your injection machines with its present heater bands, recording the KWH used. Then, fit the same machine with “INSULATION PLUS” barrel heaters and run it under identical conditions.

In every case the savings realized will dictate prompt conversion of all machine to “INSULATION PLUS” or at least the phasing out of all other barrel heaters during routine maintenance.

Your local utility company will gladly cooperate in helping to obtain and set up the necessary recording equipment



DESIGN CONSIDERATION

“INSULATION PLUS” bands are not suitable for use in areas where contamination is a problem. Machinery barrels and end caps are normally well protected.

No need to order two piece heaters. Our bands are completely flexible and will open fully for installation on machine barrels.

Lock-up Flanges are standard. They are 5/8” high. Optional spring loaded latch and trunnion lock-up style is available for larger diameters where expansion is a problem.

Wall thickness of band is 7/8”

Standard terminals are 1/4-20 studs mounted on outer sheath of band. Preferred location of terminals is 180 degrees from gap, on centerline of width.

Terminal boxes are available as options. Our standard box is 1-3/4” high. Where clearance is a problem, a low profile box (1” high) can be supplied.

Thermocouple holes. We suggest locating thermocouple in the heater gap. Holes in the body of the band are more expensive.

INSULATION PLUS



When Ordering Please Specify:

1. Quantity
2. Inside diameter and width
3. Voltage - on 2 piece bands we suggest each piece be rated at half the operating voltage; please specify total voltage.
4. Wattage - on 2 piece bands please specify total wattage
5. Basic construction and options
6. Part number (if known of previously ordered)
7. Gap (if other than the factory minimum)
8. Lead length (if other than factory minimum 12")

*Any heater manufactured with post terminals MUST have either a terminal box or ceramic caps for safety.

AIR COOLED CERAMIC HEATER BAND

HOTSET'S new, super-efficient and economical air cooled ceramic heater bands are designed for use on extrusion machinery or on any heat/cool operation.

HOTSET's new heater bands feature a 63% open perforated metal sheath, which assures that maximum surface area is exposed.

They also provide the user with a more economical operation, via their rapid heat-up and cool-down feature. Their "Black Star" coating further increases efficiency. Advantages of air cooled vs. liquid cooled operation include: lower cost, low maintenance, no leak problems, and close temperature control.

HOTSET's new air-cooled ceramic heater bands are available in various sizes to either accommodate new designs or to replace less efficient, more expensive cast aluminum heaters.

HOTSET also offers a full line of custom and standard heaters and controllers.



Technical Data:

Temperatures:	Up to 1400 degrees F
Watt Density:	Up to 45 W/sq. inch
Voltage:	Up to 480 V (single or three phase)
Resistance Tolerance:	NEMA Standard plus 10%, minus 5%
Wattage Tolerance:	NEMA Standard plus 5%, minus 10%
Maximum Amperage:	25/Circuit
Sizes:	2" dia, and up; 1 1/2" width and up (in 1/2" increments)
Terminals:	1/4-20 post terminals standard*
Sheath:	Aluminized Steel
Lock-up:	Flange type standard
Maximum ID:	Consult factory
Standard width increments:	1/2"
Standard gap when tightened:	1/4"
Thickness:	1/2"

Options:

Where flexible leads in armor or braid are specified, HOTSET recommends the use of post terminals in box with leads off box.

- | | |
|---|--|
| 1. Armor cable (ARM) | 7. Thermocouple hole in gap area, notched |
| 2. Braided metal sleeving (BMS) | 8. Twist lock plug on leads |
| 3. Fiberglass leads | 9. Wider than normal gap, speci |
| 4. Terminal connectors on studs-ring lugs | 10. Ground stud or wire |
| 5. Partial coverage | 11. Dual voltage-for bands 2 1/2" or more in width |
| 6. Thermocouple in element area | |

NOTE: Terminal boxes and stud terminals are normally located 180 degrees opposite the gap at centerline of width

When Ordering Please Specify:

- Quantity
- Inside diameter and width
- Voltage - on 2 piece bands we suggest each piece be rated at half the operating voltage; please specify total voltage.
- Wattage - on 2 piece bands please specify wattage
- Basic construction and options
- Part number (if known of previously ordered)
- Gap (if other than factory minimum)
- Lead length (if other than the standard 12")

*Any heater manufactured with post terminals MUST have either a terminal box or ceramic caps.

ULTRALUMINUM

Innovative Extruded Aluminum Heater Bands & Strips

This new innovative heater band features contamination-resistant construction, low thermal mass & high watt density. We've embedded heating coils in an aluminum extrusion offering flexibility of design previously not possible in heaters of this type.

The result is the truly innovative Ultraluminum...a low profile, a low mass construction heater. Available in heater bands and strips, the Ultraluminum provides the user with many benefits: Fast, responsive heat, longer heater life, Uniform heat distribution, higher allowable sheath temperature, and fewer problems usually associated with aluminum segmented heaters.



Technical Data:

Maximum Watt Density:	55 W/IN ²
Maximum Voltage:	240V/480V
Maximum Amperage:	25A/Circuit
Wattage Tolerance:	NEMA Standard +5%, -10%
Resistance Tolerance:	NEMA Standard +10%, -5%
Maximum Operating Temperature:	850°F
Sizes - Width:	1", 1-1/2", 2", 2-1/2", 3", 4"
Thickness:	7/16"
Maximum ID:	Consult Factory
Standard Gaps:	1/4"

Options:

Bands:

Leads	armored, braided
Terminal Box	
Partial Coverage	
Thermocouple Holes	in element area, in gap
Notches	

Strips:

Leads - off the top surface	armored, braided
Terminal Box	
Built-in Thermocouple	
Mounting Holes	

NOTE:

Consult factory for complete list of options.

MICA BAND STOCK LIST

Code #	ID	Width	Volts	Wattage
0218	1.00"	1.00"	120	125
0219	1.00"	1.00"	240	125
0220	1.00"	1.50"	120	150
0221	1.00"	1.50"	120	275
0222	1.00"	1.50"	240	150
0223	1.00"	2.00"	120	200
0224	1.00"	2.00"	240	200
0225	1.00"	2.00"	240	250
0226	1.25"	1.00"	240	125
0227	1.25"	2.00"	240	250
0228	1.50"	1.00"	120	150
0229	1.50"	1.00"	240	150
0230				
0231	1.50"	1.50"	120	271
0232				
0233	1.50"	2.50"	240	400
0234	1.50"	1.50"	240	275
0235	1.50"	2.00"	240	300
0236	1.50"	2.00"	120	300
0237	1.50"	2.00"	240	300
0238	1.50"	2.00"	240	450
0239	1.50"	2.50"	120	300
0240	1.50"	2.50"	240	450
0241	1.50"	2.50"	240	400
0242	1.50"	2.75"	240	450
0243	1.50"	3.00"	240	600
0244	1.50"	3.00"	120	450
0245	1.50"	3.00"	240	450
0246	1.50"	4.00"	120	500
0247	1.50"	4.00"	240	400
0248	1.50"	4.00"	240	550
0249	1.50"	5.00"	120	700
0250	1.50"	5.00"	240	550
0251	1.50"	5.00"	240	700
0252	1.50"	5.50"	240	825
0253	1.75"	1.00"	240	175
0254	1.75"	1.50"	240	250
0255	1.75"	1.50"	240	300
0256	1.75"	2.00"	240	350
0257	1.75"	3.00"	240	450
0258	1.75"	2.00"	240	500

Code #	ID	Width	Volts	Wattage
0259	1.75"	3.00"	120	450
0260	1.75"	4.00"	120	700
0261	1.75"	4.00"	240	700
0262	1.75"	4.00"	240	900
0263	2.00"	1.00"	240	200
0264	2.00"	1.50"	240	300
0265	2.00"	2.00"	240	500
0266	2.00"	2.00"	240	200
0267	2.00"	2.00"	240	300
0268	2.00"	2.00"	240	400
0269	2.50"	1.50"	240	250
0270	2.50"	1.50"	240	350
0271	2.50"	2.00"	120	500
0272	2.50"	2.00"	240	500
0273	65"	130"	240	1050
0274	2.75"	2.00"	240	665
0275	3.00"	1.00"	240	300
0276	3.00"	1.50"	120	500
0277	3.00"	1.50"	240	500
0278	3.00"	2.00"	240	600
0279	3.00"	3.00"	240	770

hotset — in Germany, USA and 28 other countries all over the world:



- Argentina
- Australia
- Austria
- Belgium
- Brazil
- Czech Republic
- Denmark
- Finland
- France
- Great Britain
- Greece
- Hongkong
- India
- Israel
- Italy
- Japan
- Korea
- Netherlands
- New Zealand
- Philippines
- Portugal
- Singapore
- South Africa
- Spain
- Sweden
- Switzerland
- Taiwan
- Turkey



Corporation

