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Tempco Mi-Plus® Heater Bands

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Mi-Plus® Construction Characteristics

The Mi-Plus is the solution for applications that require high watt densities and/or high operating temperatures. Mi-Plus heater bands are capable of temperatures to 1400°F and watt densities up to 150W/in². The recommended maximum watt density for a specific application will depend on the heater size and its operating temperature. Specially formulated mineral insulated tape providing excellent thermal conductivity and dielectric strength is used to insulate the nickel chrome resistance wire from the stainless steel sheath. The heater assembly is formed under pressure to a precise diameter with a thin low-mass cross section, assuring fast heat-up rates and reduced cycle times.

Construction Styles

Non-Expandable One-Piece Construction

One-piece heaters are the most efficient construction, as they provide the most heated surface area. This style can only be slipped over the end of the barrel. One-piece heaters have built-in, full-width clamping bars.

Expandable One-Piece Construction

The expandable construction style allows the heater to be opened up and placed anywhere along the machine barrel, as well as minimizing the unheated area as compared to a two-piece heater. With two heater circuits in a common case this heater naturally lends itself to a dual voltage system, a 240/480 volt package being the most common. When wired in parallel these heaters can run at 240 volts, and when wired in series, at 480 volts.

Two-Piece Construction

Two-piece construction satisfies the need for a heater that can be placed anywhere along the machine barrel with a minimum of time and labor. Two-piece construction is recommended for larger diameter heaters because two-piece construction employs two sets of built-in clamps that deliver maximum clamping force. The two-piece construction style also provides dual voltage capability. The heater halves may be wired together either in series or parallel, providing two voltage options. Two-piece heaters are rated at full voltage and half the total wattage for each half.

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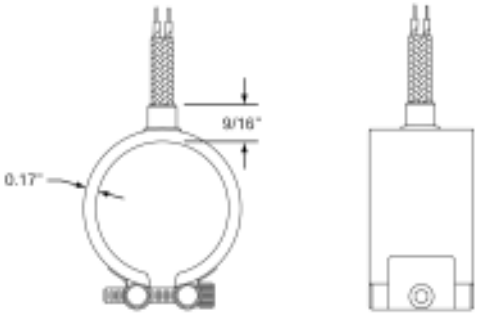
Termination Styles

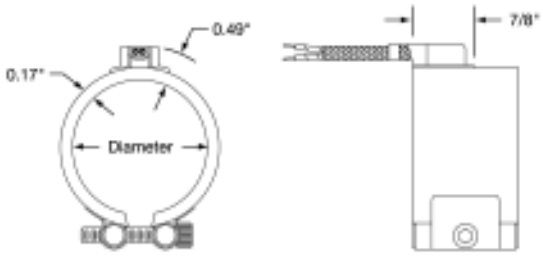
Mi-Plus® Type W1 - Abrasion Resistant Straight Wire Braid Leads

The lead wires exit straight out through a stainless steel eyelet. Flexible stainless steel wire braid leads are highly recommended for improved abrasion resistance. Wire braid leads offer sharp bending not possible with armor cable. This stainless steel braid is loosely wrapped around two mica insulated lead wires rated for 842°F. The standard leads are 10" of stainless steel loose wire braid over 12" of flexible leads.



Mi-Plus® Type W2 - Right-Angle Wire Braid Leads, 90 Degrees to Heater Diameter

This style of wiring is the most prevalent for nozzle band heaters, as it contributes to the most flexible and space saving installation. Mica insulated lead wires rated for 842°F with tightly wrapped stainless steel overbraid are used, providing protection in abrasive environments. The stainless steel braid exits parallel to the heater centerline through a low profile stainless steel cap. This cap also acts as a strain relief, guarding against excessive flexing or pulling of the lead wires. This termination style is located 180° from the gap for one-piece heaters and 90° from the gap for two-piece heaters and exits the heater near the edge. By keeping the lead wires away from the heater, less damage from high temperature contact is likely to occur.



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Termination Styles

Screw Terminals: Type T2 & T3X

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.

Mi-Plus Type T2 - Screw Terminals

One-Piece Band
Standard Termination Location:
Opposite the gap, center of width
• Minimum Inside Diameter: 2-1/2" •
• Minimum Width: 1-1/2" •
• Post Terminals: 10-32 or 8-32 •
• Maximum Voltage: 480 VAC •

Two-Piece Band
Standard Termination Location:
Center of each half, center of width
• Minimum Inside Diameter: 3" •
• Minimum Width: 1-1/2" •
• Post Terminals: 10-32 or 8-32 •
• Maximum Voltage: 480 VAC •

One-Piece Expandable Band
Standard Termination Location:
Two sets of terminals opposite the gap, center of width
• Minimum Inside Diameter: 2-1/2" •
• Minimum Width: 1-1/2" •
• Post Terminals: 10-32 or 8-32 •
• Maximum Voltage: 480 VAC •

Mi-Plus Type T3X - Screw Terminals

One-Piece Band
Standard Termination Location:
Opposite the gap, across center of width
• Minimum Inside Diameter: 2-1/2" •
• Minimum Width:
2" with 8-32 Terminals
2-1/2" with 10-32 Terminals •
• Maximum Voltage: 480 VAC •

Two-Piece Band
Standard Termination Location:
Center of each half, across center of width
• Minimum Inside Diameter: 3" •
• Minimum Width:
2" with 8-32 Terminals
2-1/2" with 10-32 Terminals •
• Maximum Voltage: 480 VAC •

One-Piece Expandable Band
Standard Termination Location:
Two sets of terminals opposite the gap, across center of width
• Minimum Inside Diameter: 2-1/2" •
• Minimum Width:
2" with 8-32 Terminals
2-1/2" with 10-32 Terminals •
• Maximum Voltage: 480 VAC •

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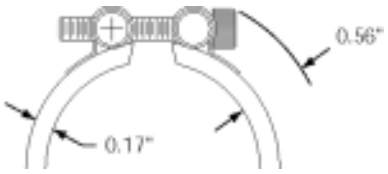
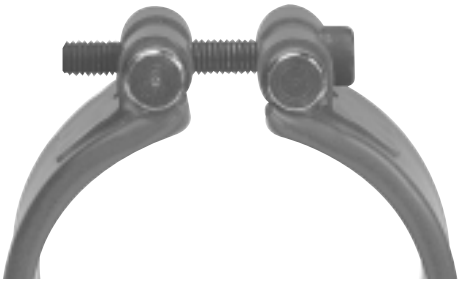
Mi-Plus® Built-In Clamping Strap Variations

Mi-Plus Low Profile Built-In Clamping Strap

When space is limited use Tempco's low profile clamping, a design that does not sacrifice strength for size. This compact design uses 10-32 alloy socket head cap screws.

Type LB - One-piece band.
Type LS - Two-piece band.
Type LE - One-piece expandable band.

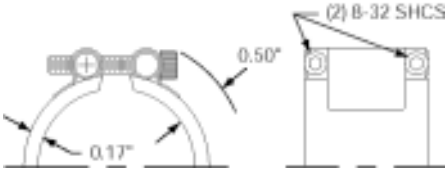




Mi-Plus Outrigger Built-In Clamping Strap

This design is unique to 1" wide heaters from 1-3/8" diameter and greater. Two 8-32 alloy sockets head cap screws are used to give 1" wide heaters the required clamping power.

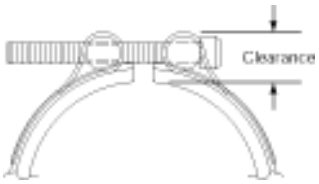
Type OB - One-piece band.
Type OS - Two-piece band.
.

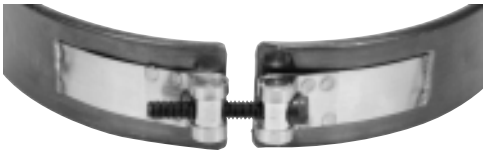


Mi-Plus Weld-On Bracket

The Mi-Plus is available without built-in brackets. For this option, brackets are welded onto the heater plate at user-specified locations. A weld-on bracket is useful when clearance is limited or there is an obstruction for using separate straps.

Type WB - One-piece band.
Type WS - Two-piece band.
Type WE - One-piece expandable band.





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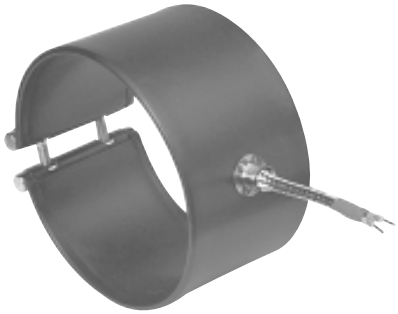

I.D.	Width	Wattage	Termination	Clamping/ Construction	Part Number Voltage 120	Part Number Voltage 240	Price
1	1	150	W2	WB	MPP50101	---	107.15
	1	225	W2	WB	---	MPP50206	107.15
	1-1/2	200	W2	WB	MPP50301	MPP50401	97.65
	1-1/2	250	W2	WB	---	MPP50601	107.15
	1-1/2	300	W2	WB	MPP50701	MPP50801	107.15
1-1/4	1	250	W2	WB	MPP51101	MPP51202	107.15
	1	275	W2	WB	---	MPP51401	107.15
	1-1/2	350	W2	LB	MPP51701	---	107.15
	1-1/2	350	W2	WB	---	MPP51801	107.15
1-1/2	1	200	W2	OB	MPP51901	MPP52001	97.65
	1	300	W2	OB	MPP52301	MPP52402	97.65
	1-1/2	300	W2	LB	MPP52501	MPP52602	97.65
	1-1/2	450	W2	LB	---	MPP52903	97.65
	2	300	W2	LB	---	MPP53001	101.10
	2	450	W2	LB	---	MPP53202	101.10
	3	350	W2	LB	---	MPP53401	109.45
	3	500	W2	LB	---	MPP53501	109.45
1-3/4	1-1/2	300	W2	LB	MPP53801	MPP53901	97.65
	2	750	W2	LB	---	MPP54301	101.10
	2-1/2	550	W2	LB	---	MPP54401	104.45
	3	1000	W2	LB	---	MPP55601	109.45
2	1	350	W2	OB	MPP54701	MPP54801	97.65
	1-1/2	400	W2	LB	---	MPP54901	97.65
	2	750	W2	LB	MPP55051	MPP55101	101.10
2-1/4	1	350	W2	OB	---	MPP55401	97.65
	2-1/2	1000	W2	LB	---	MPP55801	104.45
2-1/2	1	400	W2	OB	---	MPP56001	97.65
	1-1/2	500	W2	LB	---	MPP56101	97.65

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I.D.	Width	Wattage	Voltage	Style	Termination	Clamping/ Construction	Part Number	Price
3	1-1/2	500	240	1 Piece	T2	NB	MPP000203	78.90
	1-1/2	525	240	1 Piece	T2	NB	MPP000231	78.90
3-1/4	2-1/2	1100	120	1 Piece	T3X	NB	MPP000232	90.70
	2-1/2	1400	240	1 Piece	T3X	NB	MPP000233	90.70
3-1/2	2	800	240	1 Piece	T3X	NB	MPP000234	85.70
3-5/8	1-1/2	650	240/480	Expandable	T2	NE	MPP000235	103.65
4	1-1/2	625	240/480	Expandable	T2	NE	MPP000236	103.65
	1-1/2	725	240/480	Expandable	T2	NE	MPP000237	103.65
	1-1/2	800	240	1 Piece	T2	NB	MPP000238	85.70
4-1/2	2-1/2	1250	240	1 Piece	T3X	NB	MPP000186	100.70
5	1-1/2	1000	240/480	Expandable	T2	NE	MPP000239	108.65
5-1/4	1-1/2	600	240/480	Expandable	T2	NE	MPP000240	112.05
	1-1/2	1000	240/480	Expandable	T2	NE	MPP000241	112.05
	3	1700	240/480	Expandable	T3X	NE	MPP000187	137.15
	4-1/2	2400	240/480	Expandable	T3X	NE	MPP000242	177.25
	4-1/2	2700	240/480	Expandable	T3X	NE	MPP000243	177.25
5-1/2	1-1/2	1000	240/480	Expandable	T2	NE	MPP000244	112.05
	1-1/2	1300	240/480	Expandable	T2	NE	MPP000245	112.05
6	1-1/2	1000	240/480	Expandable	T2	NE	MPP000246	115.30
	1-1/2	1400	240/480	Expandable	T2	NE	MPP000247	115.30
6-1/2	1-1/2	1250	240/480	Expandable	T2	NE	MPP000248	118.65
6-3/4	1-1/2	815	240/480	Expandable	T2	NE	MPP000249	122.10
	1-1/2	1000	240/480	Expandable	T2	NE	MPP000250	122.10
	4	2600	240/480	Expandable	T3X	NE	MPP000188	185.70
	5	3700	240/480	Expandable	T3X	NE	MPP000251	217.50
	6	3750	240/480	Expandable	T3X	NE	MPP000189	245.95
7	1-1/2	1250	240/480	Expandable	T2	NE	MPP000252	122.10
	1-1/2	1500	240/480	Expandable	T2	NE	MPP000253	122.10
7-1/2	1-1/2	1500	240/480	Expandable	T2	NE	MPP000254	125.55
7-5/8	3	1800	240/480	Expandable	T3X	NE	MPP000255	165.75
	4-1/2	3150	240/480	Expandable	T3X	NE	MPP000190	219.25
8	1-1/2	1250	240/480	Expandable	T2	NE	MPP000256	128.75
	1-1/2	1600	240/480	Expandable	T2	NE	MPP000257	128.75
9	1-1/2	1500	240/480	Expandable	T2	NE	MPP000258	133.80
	1-1/2	1750	240/480	Expandable	T2	NE	MPP000259	133.80
9-1/2	3	3000	240/480	Expandable	T3X	NE	MPP000190	182.30
11-1/4	3	2400	240/480	Expandable	T3X	NE	MPP000260	204.15
	5	5100	240/480	Expandable	T3X	NE	MPP000261	204.15

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