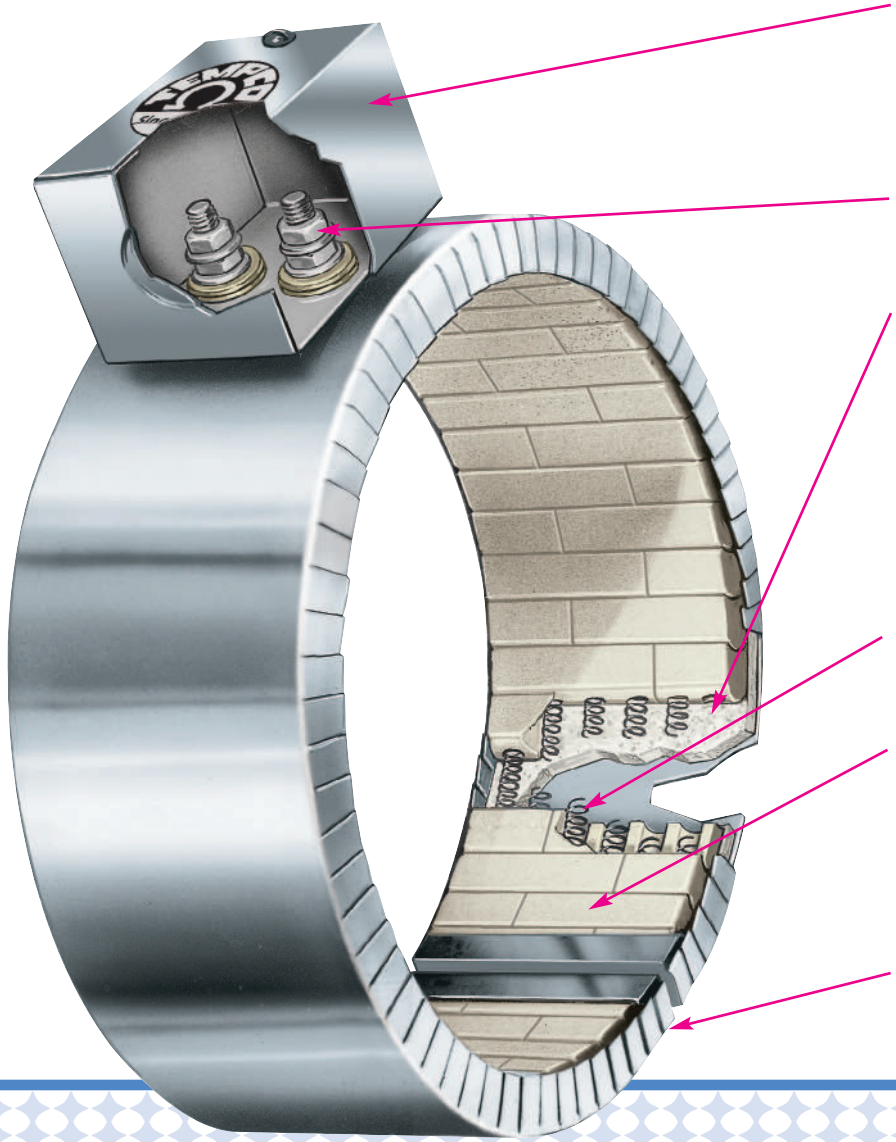
Made in USA

Ceramic Insulated Band Heaters



A General purpose terminal box offers excellent protection to exposed terminals. To simplify electrical wiring, the box has a 1/2" trade size knockout (actual dia. 7/8") that will accept standard conduit or flexible armor cable connectors.

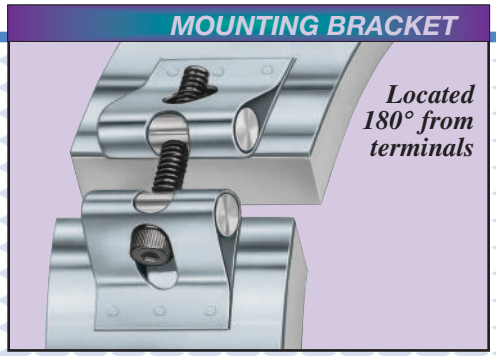
B Stainless steel screw terminals connected to stranded nickel wire designed to provide maximum amperage carrying capacity.

C Built-In ceramic fiber insulation 1/4" thick standard on all Ceramic Bands will reduce power consumption by 25 to 30 percent. Further reduction can be obtained with optional 1/2" thick insulation. Specially designed mounting brackets with 1/4"-20 socket cap screws are used to securely draw the heating element assembly against the cylinder evenly and tightly across its entire width. Brackets are located 180° from the screw terminals.

D Helically wound nickel-chrome resistance wire strung through specially designed ceramic insulating bricks.

E Tempco's ceramic insulating bricks provide excellent dielectric strength at high temperatures and high voltages. Interlocking ceramic brick construction is used where applicable to allow for additional heater widths and to improve the rigidity of the heater.

F Stainless steel housing with serrated edges provides maximum flexibility for ease of installation.



REDUCE HEAT LOSS

CONSERVE ENERGY

MAXIMIZE OPERATOR COMFORT

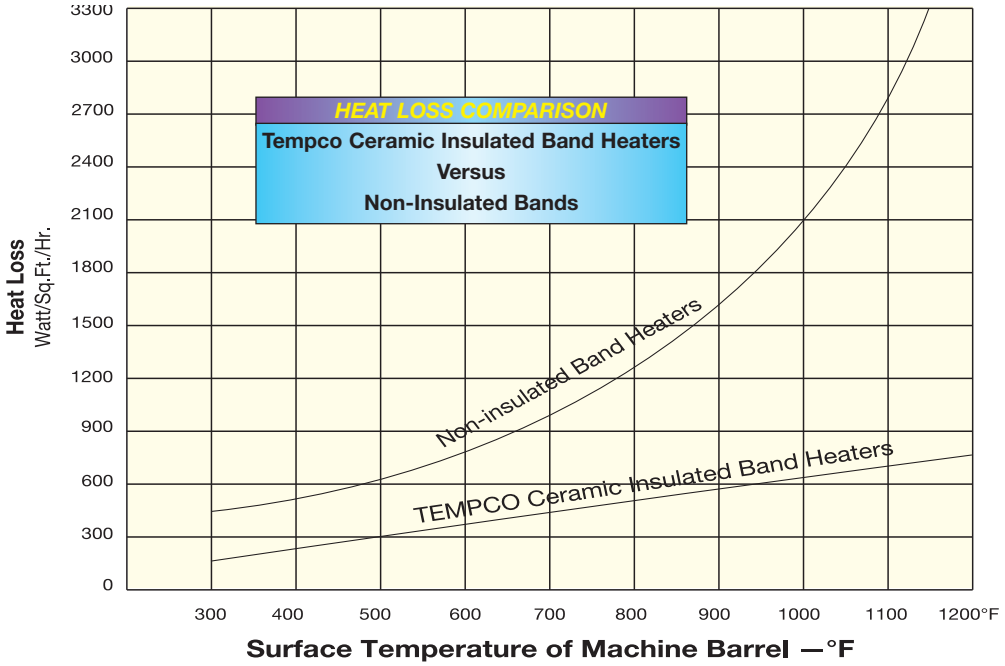
REDUCE OVERALL OPERATION COST

View Product Inventory @ www.tempco.com

Ceramic Band Heaters Are Designed To Conserve Energy and Improve Operation Efficiency

Design Features

- *Built-In Thermal Insulation*
- *Conserves Electrical Energy*
- *Minimum Heat Loss*
- *Fully Flexible For Easy Installation*
- *Good Temperature Uniformity*
- *Longer Heater Life*
- *Various Constructions & Terminations*
- *Heats Through Conduction and Radiation*
- *Designed to Your Specifications*



Tempco Ceramic Insulated Band Heaters are specifically designed and engineered to meet the ever increasing demand for energy conservation and to improve operation efficiency. The Ceramic Band Heaters are capable of generating the higher temperatures essential to process today's high temperature resins. Electrical energy savings are achieved by using a 1/4" thick ceramic fiber insulating blanket, reducing power consumption by 25 to 30 percent. Because of the low thermal conductivity of the ceramic fiber insulation, the external surface temperature of the Ceramic Band Heater is approximately 400°F while running the inside surface temperature at 1200°F.

Ceramic Band Heaters transmit heat through both conduction and radiation. The element winding is designed to run at maximum temperature and heat the ceramic blocks to the point at which they radiate energy into the barrel as well as conduct energy by being in contact with the barrel. Therefore, the fit is not as critical as in other types of bands.

Tempco Ceramic Band Heaters have become extremely popular among Original Equipment Manufacturers as the standard heaters for the barrels of Plastic Injection Molding Machines, Extruders, and Blow Molding Equipment.

Variations and Advantages

Ceramic Band Heaters are manufactured in a full range of standard construction variations, physical dimensions, electrical ratings, and a complete arrangement of screw terminals and lead terminations.

However, these standard Ceramic Band Heater variations and terminations do not represent the 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 Ceramic Band Heater for your specific application.

Construction Characteristics

Standard

The basic Tempco Ceramic Band Heater design consists of a helically wound resistance coil made from nickel-chrome wire, evenly stretched and precisely strung through specially designed ceramic insulating bricks, forming a flexible heating mat. The ceramic heating mat along with 1/4" thick ceramic fiber insulation is installed in a stainless steel housing made with serrated edges, providing maximum flexibility for ease of installation. This allows the use of wider band heaters, eliminating the need for numerous narrow width and two-piece band heaters.

Double Insulated

For situations requiring additional insulation for lower external temperatures and increased electrical energy savings, Tempco offers Double Insulated Ceramic Bands with a full 1/2" thick ceramic fiber insulation. This will decrease power consumption by 35 to 37 percent when compared to uninsulated band heaters.

Rib Cage (Type R) Ceramic Band Heater

When Ceramic Band Heaters are used on extruder barrels that require both heating and cooling, Tempco manufactures the ***Rib Cage (Type R)*** Air-Cooled Ceramic Band Heater in two watt density styles. See page 1-75 for details.

Made in USA

Ceramic Band Standard Specifications and Tolerances

PERFORMANCE RATINGS

Maximum Temperature: 1400°F (760°C)
Nominal Watt Density: 20-45 W/in² (3-7 W/cm²)
Maximum Watt Density: 45 W/in² (7 W/cm²)

ELECTRICAL RATINGS

Maximum Voltage: 480 VAC per termination
Dual Voltage: Available depending on heater configuration
Maximum Amperage per circuit:
lead wire termination: 12.5 amp
screw terminations: 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

Sheath Material: Stainless Steel
Insulation Material: Ceramic Fiber Blanket
Standard Thickness: 1/4" (6.4 mm)
Double Thickness: 1/2" (12.7 mm)

Overall Thickness:

Insulation Type	Dia. less than 4"	Dia. 4" or greater	
	Standard	Standard	Optional
Standard	1/2" (12.7 mm)	5/8" (15.9 mm)	1/2" (12.7 mm)
Double	11/16" (17.5 mm)	3/4" (19.1 mm)	11/16" (17.5 mm)
Ribcage (Uninsulated)	11/32" (8.7 mm)	1/2" (12.7 mm)	11/32" (8.7 mm)

Minimum Width: 1" (25.4 mm)
Standard Width Increments: 1/8" (3.2 mm)
Consult Tempco for non-standard widths.
Maximum Width:
One-Piece & Two-Piece:
Dependent upon the ratio of diameter to width
Maximum Width to Diameter Ratio is 3:1
Maximum Width for 5" or greater ID is 15"
Reverse Band: 4" (101.6 mm)
Width Tolerance:
1" (25.4 mm) to 3-1/2" (88.9 mm): ±1/16" (±1.6 mm)
4" (101.8 mm) to 6-1/2" (165.1 mm): ±1/8" (±3.2 mm)
Over 6-1/2" (165.1 mm): ±1/4" (6.4 mm)
Minimum Diameter:
One-Piece: 2" (50.8 mm)
Two-Piece: 4" (101.6 mm)
Reverse Band: 5-1/2" (139.7 mm)
Maximum Diameter
One-Piece: 21" (533.4 mm)
Two-Piece & Reverse Band: 44" (1,117.6 mm)
Nominal Gap: 3/8" (9.5 mm) — If a larger gap is required for probes or thermocouples, specify when ordering.

If tighter tolerances are required consult Tempco.

Construction / Clamp	Min. ID in	Min. ID mm	Min. Width in	Min. Width mm	Max. ID in	Max. ID mm
One-Piece	2	50.8	1	25.4	21	533.4
Two-Piece	4	101.6	1	25.4	44	1117.6
Reverse Band	5.5	139.7	1	25.4	44	1117.6
Standard Insulation	2	50.8	1	25.4	N/A	
Double Insulation	2	50.8	1	38.1	N/A	
Rib Cage (RCC)	3	76.2	1	114.3	N/A	
Built-In Bracket	2	50.8	1	25.4	N/A	
Built-In Bracket Spring Loaded	2	50.8	1	25.4	N/A	
Latch and Trunnion	4	101.6	1	25.4	N/A	
Bent-Up Flange	2	50.8	1	25.4	N/A	
Shell Overlap	3	76.2	1	38.1	20	508.0

Note: Refer to individual construction and termination descriptions on pages 1-66 through 1-74 for further information. Actual heater minimums and maximums will depend upon the combination of construction/clamp, termination styles and electrical ratings.

TEMPCO Since 1972

Ceramic Band

Standard (Non-Stock) Ceramic Bands

ID		Width			Watt Density			Part Number			
in	mm	in	mm	Wattage	W/in²	W/cm²	Terminal	120V	240V	480V	240/480V
2⅜	60.3	1½	38.1	250	26	4.0	T2	—	BCH00017	—	—
2⅜	60.3	6	152.4	1000	26	4.0	T3	—	BCH00018	—	—
2½	63.5	1	25.4	375	55	8.5	R2A	—	BCH00019	—	—
3	76.2	1	25.4	400	47	7.4	T2	—	BCH00020	—	—
3	76.2	1	25.4	500	59	9.2	R2A	—	BCH00021	—	—
3	76.2	1½	38.1	500	40	6.1	T2	BCH00001	BCH00022	—	—
3	76.2	2½	63.5	1000	47	7.4	T3	BCH00002	—	—	—
3	76.2	3	76.2	1100	44	6.7	T3	—	BCH00023	—	—
3	76.2	4	101.6	450	13	2.1	C2A	—	BCH00024	—	—
3	76.2	4	101.6	1500	45	6.9	T3	—	BCH00025	—	—
3	76.2	6	152.4	1500	30	4.6	T3	BCH00003	BCH00026	—	—
3	76.2	6	152.4	1500	30	4.6	C2A	—	BCH00027	—	—
3½	88.9	2	50.8	650	33	5.0	T3	—	—	—	BCH00163
3½	88.9	2	50.8	700	35	5.4	W1	—	BCH00028	—	—
3½	88.9	2	50.8	850	43	6.6	T3	—	BCH00029	—	—
3½	88.9	3	76.2	875	29	4.5	T3	—	BCH00030	—	—
3½	88.9	3	76.2	1000	33	5.2	T3	—	BCH00031	—	—
3½	88.9	4	101.6	1200	30	4.7	T3	BCH00004	BCH00032	—	—
3½	88.9	4½	114.3	1200	27	4.1	C2A	—	BCH00033	—	—
3½	88.9	5	127.0	2300	46	7.1	T3	—	BCH00034	—	—
3½	88.9	6	152.4	2970	50	7.7	T3	—	BCH00035	—	—
3¾	95.3	1½	38.1	460	28	4.4	T2	—	BCH00036	—	—
3 15/16	100.0	4	101.6	1140	25	3.9	T3	—	BCH00037	—	—
4	101.6	2	50.8	460	20	3.1	T3	—	BCH00038	—	—
4	101.6	2	50.8	1000	43	6.7	T2	—	—	BCH00120	—
4	101.6	2½	63.5	600	21	3.2	C2A	—	—	BCH00121	—
4	101.6	3	76.2	950	27	4.2	T3	—	—	—	BCH00164
4	101.6	3	76.2	1200	35	5.4	T3	BCH00005	BCH00039	—	—
4	101.6	4	101.6	1200	26	4.0	C2A	—	BCH00040	—	—
4	101.6	10	254.0	4500	39	6.0	T3	—	BCH00041	—	—
4	101.6	11	279.4	5000	39	6.1	T3	—	BCH00042	—	—
4¼	108.0	2½	63.5	950	31	4.8	C5E	—	—	BCH00122	—
4½	114.3	2	50.8	1100	42	6.5	T3	BCH00006	BCH00043	—	—
4½	114.3	3	76.2	900	23	3.5	T3	BCH00007	BCH00044	—	—
4½	114.3	4	101.6	2300	44	6.8	T3	—	BCH00045	—	—
4½	114.3	4½	114.3	1400	24	3.7	C5E	—	—	—	BCH00165
4½	114.3	6	152.4	2000	25	3.9	T3	BCH00008	BCH00046	—	—
4⅞	123.8	4	101.6	2000	35	5.4	T3	—	BCH00047	—	—
4 15/16	125.4	2	50.8	1000	34	5.3	L1	—	—	BCH00123	—
4 15/16	125.4	2½	63.5	1650	45	7.0	T3	—	—	BCH00124	—
4 15/16	125.4	4	101.6	2000	34	5.3	T3	—	—	BCH00125	—
5	127.0	1½	38.1	800	36	5.6	T2	—	BCH00048	BCH00126	—
5	127.0	2	50.8	1200	41	6.3	T3	—	BCH00049	—	—
5	127.0	3	76.2	1200	27	4.2	T2	—	BCH00050	—	—
5	127.0	3½	88.9	2200	43	6.6	T3	—	BCH00051	—	—
5	127.0	4	101.6	1500	25	4.0	C5E	—	BCH00052	—	—
5	127.0	4	101.6	2200	37	5.8	T3	—	BCH00053	—	—
5	127.0	6	152.4	3000	34	5.3	T3	—	BCH00054	—	—
5¼	133.4	3	76.2	1500	32	5.0	T3	—	BCH00055	—	—
5½	139.7	1½	38.1	770	32	4.9	T3	—	—	BCH00127	—
5½	139.7	2	50.8	1000	31	4.8	T3	—	BCH00056	—	—
5½	139.7	2½	63.5	1800	44	6.9	C2A	—	BCH00057	—	—
5½	139.7	3	76.2	1200	25	3.8	T2	—	BCH00058	—	—
5½	139.7	4	101.6	1500	23	3.6	T3	—	—	—	BCH00166
5½	139.7	4	101.6	2000	31	4.8	T3	—	BCH00059	—	—
5½	139.7	5	127.0	2000	25	3.8	T3	BCH00009	BCH00060	—	—
5⅞	149.2	5	127.0	2350	27	4.2	T3	—	—	BCH00128	—
5 15/16	150.8	5	127.0	2350	27	4.1	T3		BCH00061	—	—

Ordering Information
See page 1-65

CONTINUED

Made in USA

Standard (Non-Stock) Ceramic Bands

Continued from previous page…

ID		Width			Watt Density			Part Number			
in	mm	in	mm	Wattage	W/in²	W/cm²	Terminal	120V	240V	480V	240/480V
6	152.4	1½	38.1	950	35	5.5	T2	BCH00010	BCH00062	—	—
6	152.4	2	50.8	1900	53	8.2	T3	—	BCH00063	BCH00129	—
6	152.4	2½	63.5	1600	36	5.6	C2A	—	BCH00064	BCH00130	—
6	152.4	3	76.2	1400	26	4.1	T3	—	—	—	BCH00167
6	152.4	4	101.6	1300	18	2.8	T3	BCH00011	BCH00065	—	—
6	152.4	5	127.0	1600	18	2.8	C5E	—	—	—	BCH00168
6	152.4	5½	139.7	2000	20	3.2	T3	—	—	—	BCH00169
6	152.4	6	152.4	2000	19	2.9	T3	—	—	—	BCH00170
6	152.4	6	152.4	3000	28	4.3	T3	—	BCH00066	—	—
6	152.4	6	152.4	4000	37	5.8	T3	—	BCH00067	—	—
6¼	158.8	4	101.6	2430	33	5.1	T3	—	BCH00068	—	—
6¼	158.8	6	152.4	4600	41	6.4	T3	—	—	BCH00131	—
6½	165.1	1½	38.1	1000	34	5.3	T2	—	BCH00069	—	—
6½	165.1	2	50.8	1600	41	6.4	T3	—	BCH00070	—	—
6½	165.1	3½	88.9	1800	26	4.1	T3	BCH00012	BCH00071	—	—
6½	165.1	5	127.0	2500	26	4.0	T3	—	BCH00072	—	—
6½	165.1	5½	139.7	4200	39	6.1	T3	—	—	BCH00132	—
6½	165.1	6	152.4	2000	17	2.7	C5E	—	—	—	BCH00171
6½	165.1	6½	165.1	3700	29	4.5	T3	—	BCH00073	—	—
6⅝	168.3	4½	114.3	3300	37	5.7	T3	—	—	BCH00133	—
6¾	171.5	1½	38.1	1000	33	5.1	T2	BCH00013	BCH00074	—	—
6¾	171.5	5	127.0	2500	25	3.8	C5E	—	BCH00075	—	—
7	177.8	2	50.8	1400	33	5.2	C2A	—	—	BCH00134	—
7	177.8	3	76.2	1650	26	4.1	T3	—	BCH00076	—	—
7	177.8	3½	88.9	1300	18	2.7	T3	BCH00014	BCH00077	—	—
7	177.8	4	101.6	3500	42	6.5	T3	—	BCH00078	BCH00135	—
7	177.8	5½	139.7	2000	17	2.7	C5E	—	BCH00079	—	BCH00172
7	177.8	6	152.4	5400	43	6.6	T3	—	BCH00080	—	—
7½	190.5	2	50.8	1900	42	6.5	T3	—	BCH00081	—	—
7½	190.5	3	76.2	1800	27	4.1	T3	—	BCH00082	BCH00136	—
7½	190.5	4½	114.3	2000	20	3.1	T3	—	—	—	BCH00173
7½	190.5	4½	114.3	2000	20	3.1	T3	BCH00015	BCH00083	—	—
7½	190.5	5	127.0	2500	22	3.4	C2A	—	BCH00084	—	—
7½	190.5	5½	139.7	2500	20	3.1	T3	BCH00016	—	—	BCH00174
7½	190.5	7	177.8	6500	41	6.4	T3	—	—	—	BCH00175
7½	190.5	9	228.6	5710	28	4.4	T3	—	—	BCH00137	—
8	203.2	1½	38.1	770	21	3.3	T2	—	BCH00085	BCH00138	—
8	203.2	1½	38.1	1000	28	4.3	T2	—	—	BCH00139	—
8	203.2	2	50.8	2000	41	6.4	T3	—	BCH00086	—	—
8	203.2	2½	63.5	1000	17	2.6	T2	—	—	BCH00140	—
8	203.2	3	76.2	1900	26	4.1	T3	—	—	—	BCH00176
8	203.2	4	101.6	3000	31	4.8	T3	—	BCH00087	—	—
8	203.2	6	152.4	3500	24	3.7	T3	—	BCH00088	—	—
8	203.2	6	152.4	4500	31	4.8	T3	—	—	BCH00141	—
8	203.2	6½	165.1	2600	17	2.6	C5E	—	—	—	BCH00177
8 1/16	204.8	4	101.6	2100	22	3.3	T3	—	—	BCH00142	—
8 1/16	204.8	4	101.6	2800	29	4.5	T3	—	—	BCH00143	—
8 1/16	204.8	9	228.6	4900	22	3.5	T3	—	—	BCH00144	—
8¼	209.6	3	76.2	2300	31	4.8	C5E	—	BCH00089	—	—
8¼	209.6	7½	190.5	3100	17	2.6	C5E	—	—	—	BCH00178
8 7/16	214.3	3	76.2	3000	39	6.1	T3	—	—	BCH00145	—
8 7/16	214.3	3½	88.9	2800	31	4.9	T3	—	BCH00090	BCH00146	—
8 7/16	214.3	3½	88.9	3255	36	5.7	T3	—	—	BCH00147	—
8 7/16	214.3	4	101.6	3400	33	5.2	T3	—	BCH00091	BCH00148	—
8 7/16	214.3	5½	139.7	3800	27	4.2	T3	—	—	BCH00149	—
8½	215.9	1½	38.1	1250	32	5.0	C2A	—	BCH00092	—	—
8½	215.9	4½	114.3	3890	34	5.2	T3	—	BCH00093	—	—
8¾	222.3	9	228.6	4100	17	2.7	C5E	—	—	—	BCH00179
9	228.6	1½	38.1	1100	27	4.2	T2	—	—	BCH00150	—
9	228.6	2	50.8	2300	42	6.5	T3	—	BCH00094	—	—
9	228.6	2½	63.5	2800	41	6.4	T3	—	BCH00095	—	—
9	228.6	3	76.2	2200	27	4.2	T3	—	—	—	BCH00180
9	228.6	5	127.0	2500	18	2.8	T3	—	—	—	BCH00181
9	228.6	5½	139.7	3000	20	3.1	T3	—	BCH00096	—	BCH00182
9	228.6	8½	215.9	3900	17	2.6	C5E	—	—	—	BCH00183

Standard (Non-Stock) Ceramic Bands

Continued from previous page…

ID		Width			Watt Density			Part Number			
in	mm	in	mm	Wattage	W/in²	W/cm²	Terminal	120V	240V	480V	240/480V
9 7/16	239.7	3	76.2	2500	29	4.5	T3	—	BCH00097	BCH00151	—
9½	241.3	1½	38.1	1200	28	4.3	T2	—	—	BCH00152	—
9½	241.3	3	76.2	2200	25	3.9	T3	—	—	—	BCH00184
9¾	247.7	10	254.0	5200	18	2.7	C5E	—	—	—	BCH00185
10	254.0	1½	38.1	600	13	2.0	T2	—	BCH00098	—	—
10	254.0	2	50.8	1800	30	4.6	C2A	—	BCH00099	—	—
10	254.0	3	76.2	2400	26	4.1	T3	—	—	—	BCH00186
10	254.0	4	101.6	1500	12	1.9	C2A	—	BCH00100	—	—
10	254.0	5	127.0	2800	18	2.9	C5E	—	—	—	BCH00187
10	254.0	5½	139.7	2500	15	2.3	T3	—	BCH00101	—	—
10	254.0	6	152.4	3000	16	2.5	C2A	—	BCH00102	—	—
10½	266.7	4½	114.3	5000	35	5.4	C2A	—	BCH00103	—	—
11	279.4	3	76.2	2600	26	4.0	T3	—	—	—	BCH00188
11	279.4	5	127.0	4000	24	3.7	T3	—	—	—	BCH00189
11 1/16	281.0	4	101.6	4000	30	4.6	T3	—	—	BCH00153	—
12	304.8	2	50.8	2000	27	4.2	C2A	—	BCH00104	—	—
12	304.8	3	76.2	2000	18	2.8	C2A	—	—	—	BCH00190
12	304.8	6	152.4	4000	18	2.8	T3	—	—	—	BCH00191
12	304.8	12	304.8	2000	5	0.7	T3	—	BCH00105	—	—
12½	317.5	4	101.6	1950	13	2.0	C2A	—	BCH00106	—	—
12½	317.5	4	101.6	2600	17	2.6	T3	—	BCH00107	—	—
13	330.2	2	50.8	2000	25	3.9	C5E	—	BCH00108	—	—
13	330.2	3	76.2	4200	35	5.4	T3	—	—	—	BCH00192
13	330.2	6	152.4	4000	17	2.6	T3	—	BCH00109	—	—
14½	368.3	3	76.2	2300	17	2.7	T3	—	—	BCH00154	—
15¼	387.4	2	50.8	3000	32	5.0	C2A	—	BCH00110	—	—
16	406.4	2	50.8	1500	15	2.4	C2A	—	BCH00111	—	—
16	406.4	3	76.2	5000	34	5.2	C2A	—	BCH00112	—	—
16½	419.1	2	50.8	3000	30	4.6	C2A	—	BCH00113	—	—
16½	419.1	3	76.2	5400	35	5.5	C2A	—	BCH00114	—	—
16½	419.1	3½	88.9	1800	10	1.6	C2A	—		BCH00155	—
16½	419.1	3½	88.9	2500	14	2.2	T3	—	BCH00115	—	—
16½	419.1	4	101.6	3500	17	2.7	C2A	—	BCH00116	—	—
16½	419.1	5	127.0	4350	17	2.7	T3	—	BCH00117	—	—
17½	444.5	1½	38.1	825	10	1.6	C2A	—	BCH00118	—	—
19¼	489.0	2½	63.5	5000	34	5.2	C2A	—	BCH00119	—	—
21	533.4	4½	114.3	5039	17	2.7	C2A	—	—	BCH00156	—
21	533.4	6	152.4	5600	14	2.2	T3	—	—	BCH00157	—
21½	546.1	3½	88.9	3000	13	2.0	T3	—	—	BCH00158	—
26	660.4	5	127.0	6800	17	2.6	C2A	—	—	BCH00159	—
28	711.2	4½	114.3	6600	17	2.6	T3	—	—	BCH00160	—
28	711.2	5	127.0	5750	13	2.0	T3	—	—	BCH00161	—
32½	825.5	3½	88.9	3000	8	1.3	C2A	—	—	BCH00162	—

Ordering Information

Standard Heaters

Select a Ceramic Insulated Band Heater from pages 1-63 through 1-65. Each heater's Termination Type is indicated.

Type L1 has 10" long leads.

Type W1 has 12" long leads with 10" wire braid.

Type R2A has 12" long leads with 10" galvanized steel armor cable.

Custom Engineered/Manufactured Heaters

Understanding that an electric heater can be very application specific, for sizes and ratings not listed **TEMPCO** will design and manufacture a Ceramic Insulated Band Heater to meet your requirements. ***Standard lead time is 3 weeks.***

Please Specify the following:

- ❑ Inside Diameter
- ❑ Width
- ❑ Wattage
- ❑ Voltage
- ❑ Termination (see pages 1-68 through 1-74)
- ❑ Lead Cable/Braid Length
- ❑ Construction style (see page 1-66)
- ❑ Clamping variation (see page 1-67)

⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Ceramic Band Construction

Made in USA

How To Specify A Ceramic Band Heater

Ceramic band heaters offer several variations in construction, clamping and electrical terminations. For ease of ordering, make a selection from options listed in each of the boxes below.

☑ Construction

(See below)
One-piece
Two-piece
Multiple Sections
(Specify number of sections required.)
Type T – Reverse Heater Band

☑ Insulation

(See page 1-67)
Standard 1/4" insulation **(S)**
Double 1/2" insulation **(D)**
Uninsulated **(R)** (1-75)

☑ Clamping

(See page 1-67)
Type B – Built-in bracket (Standard)
Type S – Built-in bracket with spring loaded screw
Type L – Latch and trunnion
Type F – Bent-up flange (Ears)

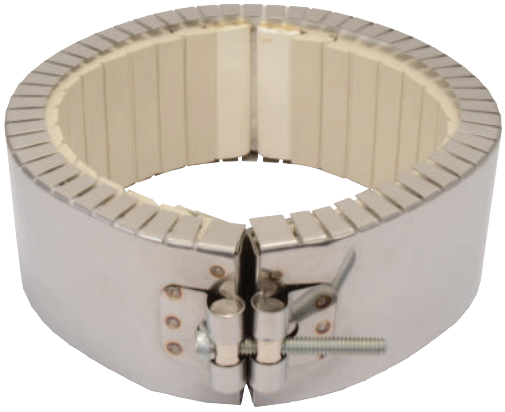
☑ Shell Overlap

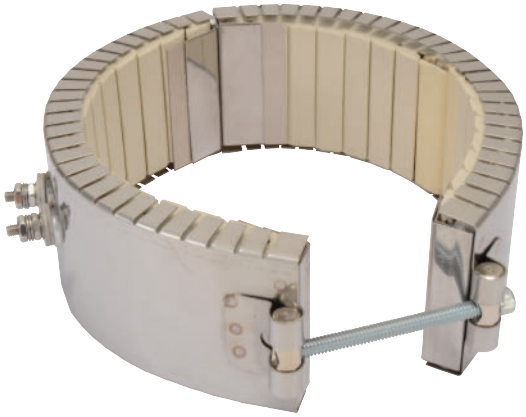
(See page 1-67)
Provides T/C hole.
(Specify if required.)

☑ Termination

Select termination type from pages 1-68 through 1-74

Ceramic Band Construction Styles





One-Piece Band

The One-Piece Ceramic Band Heater is the basic design most often specified by OEMs and processors. It is available with all types of insulation, construction styles, clamping or termination variations.

Min. ID: 2" (50.8 mm)
Min. Width: 1" (25.4 mm)
Max. ID: 21" (533.4 mm)

Two-Piece Band

The Two-Piece Ceramic Band Heater is commonly used on sizes larger than 21" diameter or when it would be inconvenient to use a one-piece heater. It is available with all types of insulation, construction styles, clamping or termination variations.

Min. ID: 4" (101.6 mm)
Min. Width: 1" (25.4 mm)
Max. ID: 44" (1118 mm)

Larger sizes are manufactured in multiple sections. Watts and volts are specified per each section when ordering.

Ceramic Band Construction Variation

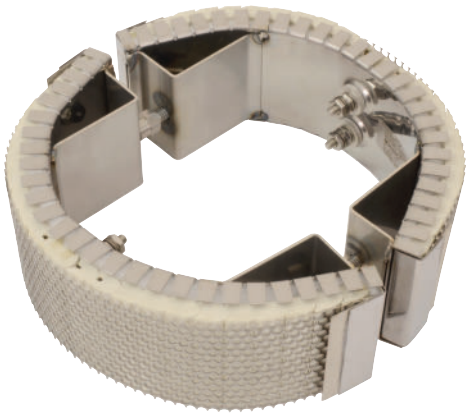
Type T: Reverse Band

Reverse Ceramic Band Heaters are intended for the outer surface of the band to heat the inner surface of a cylinder. These heaters use the same built-in insulation as normal ceramic bands and therefor can either reduce the power needed to heat an application to the desired temperature or offer some thermal protection to anything else that might also be inside the cylinder.

The specially designed internal brackets exert outward pressure to ensure good contact with the application surface. To aid in holding the internal components together during installation, reverse ceramic bands are supplied with a perforated stainless steel outer liner.

The outer diameter is the distinguishing characteristic and should match the inner diameter of the cylinder to be heated.

If airflow is needed for cooling, Tempco's Type R Uninsulated Ceramic Band with a perforated sheath is also available. This is also the same robust construction that can reach higher temperatures than other heater bands.



Min. ID: 5-1/2" (139.7 mm)
Min. Width: 1" (25.4 mm)
Max. ID: 44" (1117.6 mm)
Max. Width: 4" (101.6 mm)

View Product Inventory @ www.tempco.com

Ceramic Band Insulation Options

Standard Insulation (S): 1/4"

Built-In ceramic fiber insulation ¼" thick standard on all Ceramic Bands will reduce power consumption by 25 to 30 percent, and lower external temperatures.

Standard Insulation
Cross Section

Optional Double Insulation (D): 1/2"

For situations requiring additional insulation for lower external temperatures and increased electrical energy savings, Tempco offers Double Insulated Ceramic Bands with a full 1/2" thick ceramic fiber insulation. This will decrease power consumption by 35 to 37 percent when compared to uninsulated band heaters.

Double Insulation
Cross Section

Note: Not available for Reverse Construction

Ceramic Band Clamping Variations

Type B – Built-In Bracket (Standard)

The Built-In Bracket is the basic design most often specified by OEMs and processors. The standard screw used is 1/4-20. It is available with all types of insulation, construction styles, and termination variations.

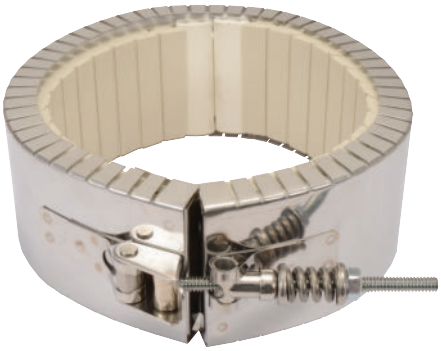
Type S – Built-In Bracket with Spring-Loaded Screw

The Built-In Bracket can also be supplied with a spring- loaded screw. The spring-loaded clamp aids in absorbing thermal expansion.

Limitations –

One-Piece Bands
Min. ID: 2" (50.8 mm)
Min. Width: 1" (25.4 mm)

Two-Piece Bands
Min. ID: 4" (101.6 mm)
Min. Width: 1" (25.4 mm)



Type L – Latch and Trunnion

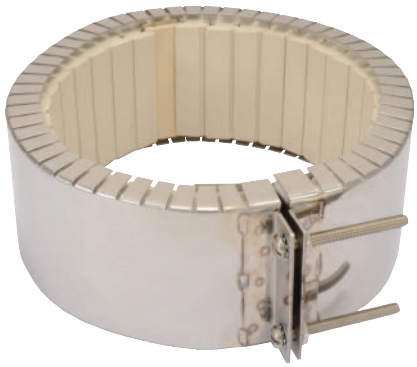
The spring-loaded Latch and Trunnion clamping system is ideal for bands over 12" in diameter to absorb thermal expansion and facilitate installation on large bands.

The Latch and Trunnion clamping system is available with all types of insulation, construction styles, and termination variations.

Limitations –

One-Piece Bands
Min. ID: 4" (101.6 mm)
Min. Width: 1" (25.4 mm)

Two-Piece Bands
Min. ID: 4" (101.6 mm)
Min. Width: 2" (50.8 mm)



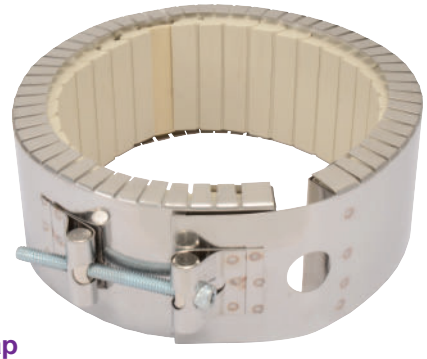
Type F – Bent-Up Flange (Ears)

The Bent-Up Flange (Ears) design is available with all types of insulation, construction styles, and termination variations.

Limitations –

One-Piece Bands
Min. ID: 2" (50.8 mm)
Min. Width: 1" (25.4 mm)

Two-Piece Bands
Min. ID: 4" (101.6 mm)
Min. Width: 2.5" (63.5 mm)



Shell Overlap

The Shell Overlap design is the preferred method of providing a thermocouple mounting hole in a ceramic band heater. It is available with all types of insulation, construction styles, clamping and termination variations.

Limitations –

One-Piece Bands
Min. ID: 3" (76.2 mm)
Min. Width: 1-1/2" (38.1 mm)
Standard Hole: 3/4" (19.1 mm)

Two-Piece Bands
Min. ID: 4" (101.6 mm)
Min. Width: 2" (50.8 mm)
Standard Hole: 3/4" (19.1 mm)

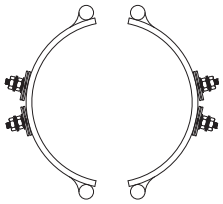
Ceramic Band Type T2 – Screw Terminals

Type T2 Screw Terminals are available with all types of insulation, construction styles, and clamping variations. They are considered to be standard on most band heaters under 2" in width unless otherwise specified. 10-32 post terminals are standard.

One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/25A



Two-Piece Band

***Standard* Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/25A each half

Note: Not available for Reverse Construction

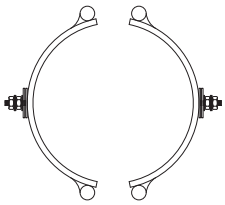
Ceramic Band Type T3 – Screw Terminals

Type T3 Screw Terminals are available with all types of insulation, construction styles, and clamping variations. They are considered to be standard on most band heaters unless otherwise specified. For use with leads, crimp terminals, or bus bars.

One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 2" (50.8 mm)
- **Maximum Volts/Amps:** 480VAC/25A



Two-Piece Band

***Standard* Termination Location:**
center of each half; across center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 2" (50.8 mm)
- **Maximum Volts/Amps:** 480VAC/25A each half

***Available on* Reverse Band**

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

Optional Igloo™ Ceramic Covers for Heaters with Screw Terminals

Igloo™ Ceramic Terminal Covers consist of two individual ceramic parts. They are available with all types of insulation, construction styles, and clamping variations. Unlike conventional ceramic caps, Igloo fully insulates any standard #10 terminal lugs used for electrical hook-ups.

Limitations

One-Piece Band with Type T2 or Type T3 Screw Terminals
Min. ID: 2" (50.8 mm) **Min. Width:** 1" (25.4 mm)

Two-Piece Band with Type T2 or Type T3 Screw Terminals
Min. ID: 4" (101.6 mm) **Min. Width:** 1" (25.4 mm)

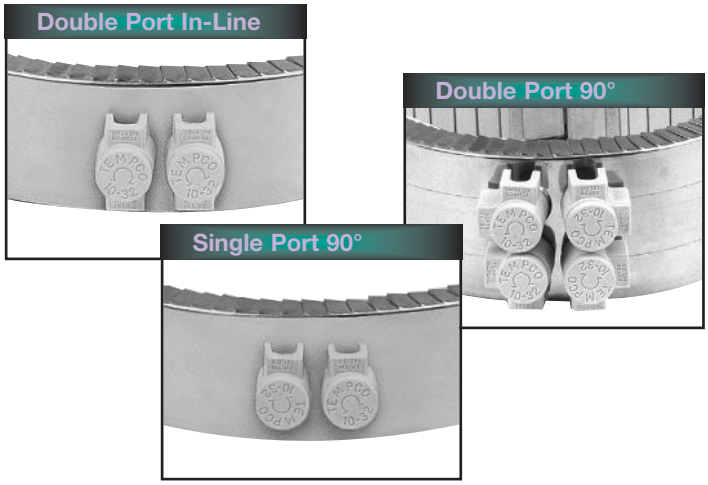
Reverse Band with Type T3 Screw Terminals
Min. ID: 5-1/2" (139.7 mm)

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 screw terminal size:

10-32 — P/N CER-102-101

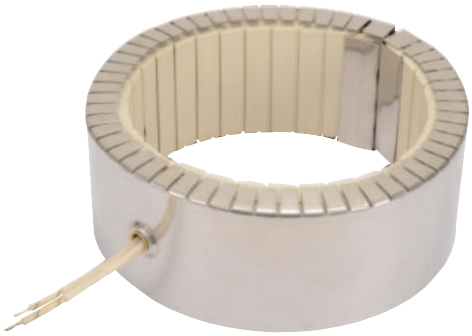


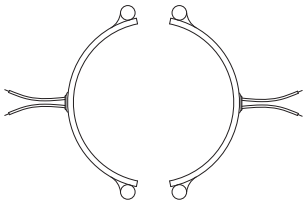
Exposed electrical wiring on band heater installations is a violation of Electrical Safety Codes including O.S.H.A.

Ceramic Band Type L1 – Straight Lead Wires

Type L1 Straight Lead Wires are available with all types of insulation, construction styles, and clamping variations. They are used primarily on small diameter bands where clearance is limited. If applicable, screw terminals should always be specified due to the high heat generated by ceramic bands. The standard flexible leads are 10" long.

If longer leads are required, specify when ordering.





One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each

Available on **Reverse Band**

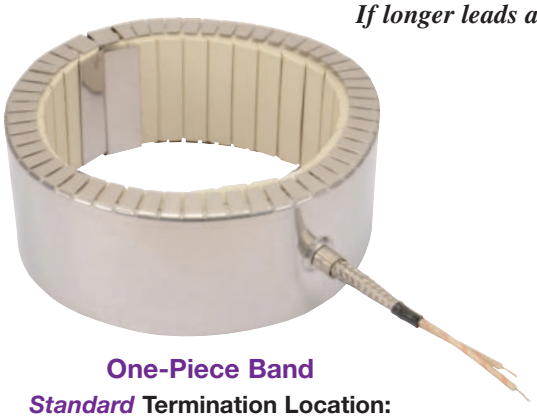
- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

Made in USA

Ceramic Band Type W1 – Abrasion Resistant Straight Wire Braid Leads

Straight Wire Braid Leads are available with all types of insulation, construction styles, and clamping variations. Wire braid leads offer sharp bending not possible with armor cable. If applicable, screw terminals should always be specified due to the high heat generated by ceramic bands. The standard leads are 10" of wire braid over 12" of flexible leads.

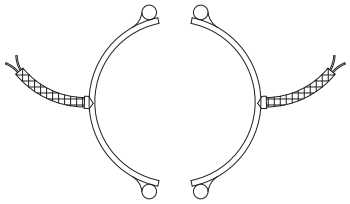
If longer leads are required, specify when ordering.



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A



Two-Piece Band

***Standard* Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

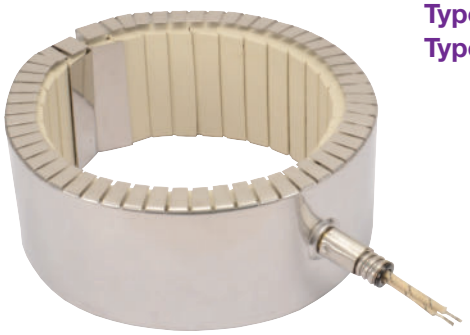
***Available on* Reverse Band**

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

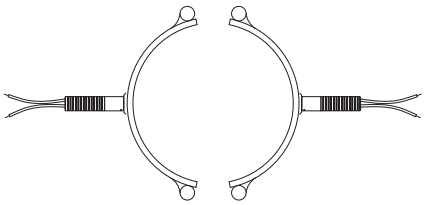
Ceramic Band Type R1 – Abrasion Resistant Straight Armor Cable

Straight Armor Cable is available with all types of insulation, construction styles, and clamping variations. Armor cable provides far superior protection to lead wires where abrasion is a constant problem. If applicable, screw terminals should always be specified due to the high heat generated by ceramic bands. The standard leads are 10" of armor cable over 12" of flexible leads.

If longer leads or electrical connectors are required, specify when ordering.



Type R1A – Galvanized Steel Armor Cable
Type R1B – Stainless Steel Armor Cable



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

***Standard* Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

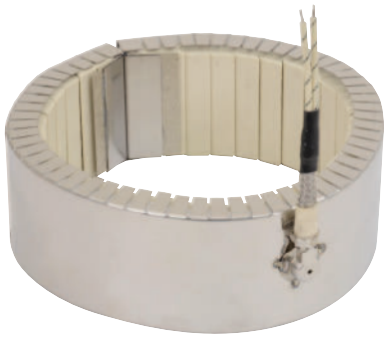
***Available on* Reverse Band**

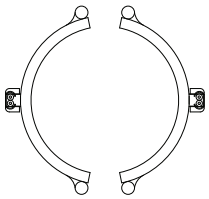
- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

Ceramic Band 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.





One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

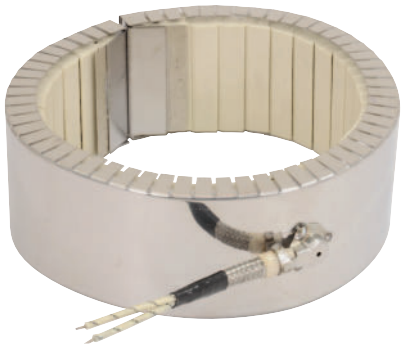
Available on **Reverse Band**

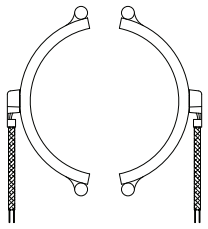
- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

Ceramic Band Type W5M – Right-Angle Wire Braid Leads, Parallel to Heater

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

If longer leads are required, specify when ordering.





One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

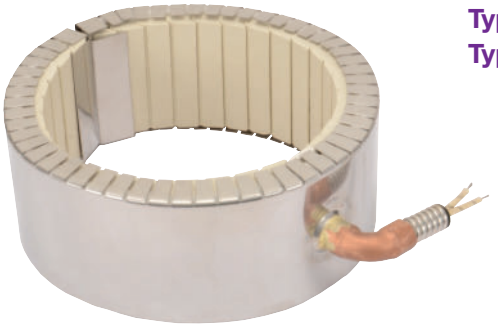
Available on **Reverse Band**

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

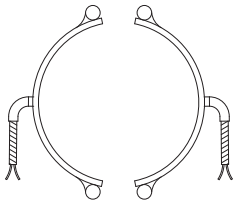
Ceramic Band Type R2 – Abrasion Resistant Right-Angle Armor Cable

Right-Angle Armor Cable is available with all types of insulation, construction styles, and clamping variations. It is used where space is limited and abrasion is a constant problem. If applicable, screw terminals should always be specified due to the high heat generated by ceramic bands. The standard leads are 10" of armor cable over 12" of flexible leads.

If longer leads or electrical connectors are required, specify when ordering.



Type R2A — Galvanized Steel Armor Cable
Type R2B — Stainless Steel Armor Cable



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

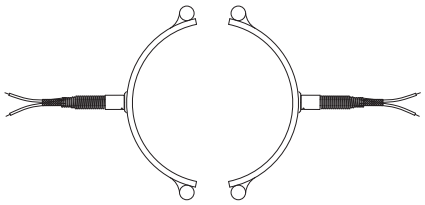
Available on **Reverse Band**

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

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 2-5/8" long. The flexible standard leads are 10" long with 2-1/2" of fiberglass sleeving.

If longer leads are required, specify when ordering.

Type S1A — Plain Leads and Strain Relief Spring
Type S1B — Stainless Steel Wire Braided Leads and Strain Relief Spring



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1" (25.4 mm)
- **Maximum Volts/Amps:** 480VAC/12.5A each half

Available on **Reverse Band**

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

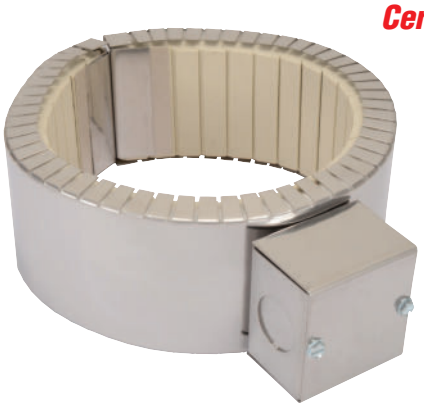
Made in USA

General Purpose Terminal Boxes: Type C2 & Type C5

Terminal Boxes are available with all types of insulation, construction styles, or clamping variations. It is a simple and 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 a 1/2" trade size knockout (actual diameter 7/8") that will accept standard armor cable connectors. The boxes can be field assembled on band heaters that have a center distance between screws of 7/8". To simplify installation the boxes can be pre-wired with galvanized armor, stainless steel armor, or wire braid.

Ceramic Band Type C2 – Standard Terminal Box



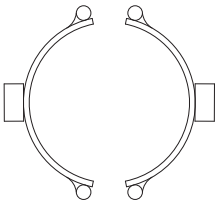
Type C2☐ Standard Box

C2A—Box only
C2B—with galvanized armor
C2C—with stainless steel armor
C2D—with wire braid

Box Size: 1-1/2"H × 1-1/2"W × 2-1/2"L for bands 1-1/2" to 2" wide

Box Size: 1-1/2"H × 2-1/8"W × 2-1/8"L for bands greater than 2" wide

NOTE: Heater dimensions will determine terminal configuration.



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Maximum Volts/Amps:** 480VAC/25A

Available on Reverse Band

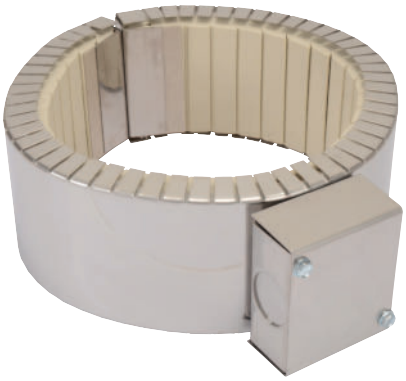
- **Minimum Inside Diameter:** 15" (381 mm)

Two-Piece Band

***Standard* Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Maximum Volts/Amps:** 480VAC/25A each half

Ceramic Band Type C5 – Low-Profile Terminal Box



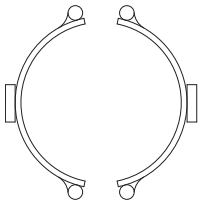
Type C5☐ Low Profile Box

C5A—Box only
C5B—with galvanized armor
C5C—with stainless steel armor
C5D—with wire braid
C5J—Box with lead wire

Box Size: 1"H × 1-1/4"W × 3"L for bands 1-1/2" to 2" wide

Box Size : 1"H × 2-1/4"W × 2"L for bands greater than 2" wide

NOTE: Heater dimensions will determine terminal configuration.



One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Maximum Volts/Amps:** 480VAC/25A

Available on Reverse Band

- **Minimum Inside Diameter:** 15" (381 mm)

Two-Piece Band

***Standard* Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 1-1/2" (38.1 mm)
- **Maximum Volts/Amps:** 480VAC/25A each half

Note: If a Low Profile Box with cable or leads is required, it is strongly recommended to order it pre-wired by the factory.

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

Quick Disconnect Plugs: Type P1, Type P2, Type P3 & Type P4

Quick Disconnect Plugs are available on any construction or clamping variation. These quick disconnect plug assemblies are highly recommended and should be used whenever possible. The combination of plug and 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.

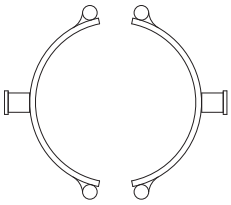
To simplify installation, band heaters with these assemblies can be supplied pre-wired using high temperature lead wire protected with armor cable. ***If longer leads are required, specify when ordering.***

Ceramic Band Type P1 – Quick Disconnect Plugs

Type P1Q shown

Type P1☐—Standard Cup Assembly

P1K—Cup Assembly only
P1L—w/straight plug only
P1M—w/90° plug only
P1N—w/straight plug & galvanized armor cable
P1O—w/straight plug & stainless steel armor cable
P1P—w/straight plug & wire braid
P1Q—w/90° plug & galvanized armor cable
P1R—w/90° plug & stainless steel armor cable
P1S—w/90° plug & wire braid



Plug Electrical Ratings

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

One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 2" (50.8 mm) depending on termination orientation

Available on Reverse Band

- **Minimum Inside Diameter:** 5-1/2" (139.7 mm)

Two-Piece Band

***Standard* Termination Location:** center of each half; center of width

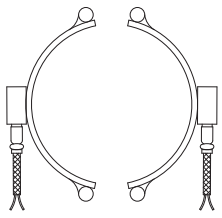
- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 2" (50.8 mm) depending on termination orientation

Ceramic Band Type P2 – Quick Disconnect Plugs

Type P2H shown

Type P2☐—Low Profile Assembly

P2F—Low profile assembly only
P2G—w/straight plug only
P2H—w/straight plug and galvanized armor cable
P2J—w/straight plug and stainless steel armor cable
P2K—w/straight plug and wire braid



Plug Electrical Ratings

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

One-Piece Band

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

- **Minimum Inside Diameter:** 2" (50.8 mm)
- **Minimum Width:** 2" (50.8 mm)

Available on Reverse Band

Consult Tempco with your requirements.

Two-Piece Band

***Standard* Termination Location:** center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 2" (50.8 mm)

CONTINUED

Ceramic Band Type P3 – DIN 49458 A/B Quick Disconnect Plugs

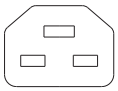
Continued from previous page…

Type P3☐—Vertical Box Assembly

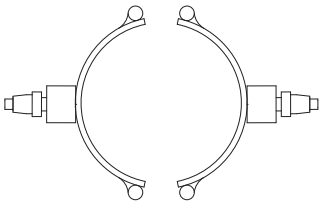
P3A—Box assembly only
P3B—Box assembly w/straight plug
P3C—Box assembly w/right-angle plug

Plug Electrical Ratings

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



Standard Pin Orientation



One-Piece Band

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

- **Minimum Inside Diameter:** 3" (76.2 mm)
- **Minimum Width:** 2" (50.8 mm)

Available on **Reverse Band**

Consult Tempco with your requirements.

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 2" (50.8 mm)

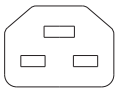
Ceramic Band Type P4 – DIN 49458 A/B Quick Disconnect Plugs

Type P4☐—Horizontal Box Assembly

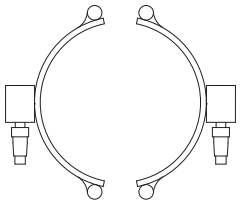
P4A—Box assembly only
P4B—Box assembly w/straight plug

Plug Electrical Ratings

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



Standard Pin Orientation



One-Piece Band

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

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

Available on **Reverse Band**

Consult Tempco with your requirements.

Two-Piece Band

Standard **Termination Location:**
center of each half; center of width

- **Minimum Inside Diameter:** 4" (101.6 mm)
- **Minimum Width:** 2-1/2" (63.5 mm)

Ceramic Band Heaters — Cool TO-THE Touch Shroud Systems

Type R Uninsulated Ceramic Band Heaters

This system was developed to provide another means of heating and cooling high temperature extrusion processes. Typically cast-in bronze or brass units are used in applications in which heater temperatures can be in excess of 700°F (371°C). Cast-in bronze or brass heaters are expensive and since they weigh approximately three times their aluminum counterparts they are difficult to install.

In response to this challenge, Tempco's engineers have developed a low mass, non-thermally insulated ceramic band heater to work in tandem with a highly efficient stainless steel sheet metal shroud for high temperature heating and cooling extrusion processes.

Forced air blowers are used for cooling. The ambient air-flow enters the shroud, circulates around the ceramic heater and barrel, removes the heat from the heater and the process and exits the shroud opposite the entrance port.

Type R Uninsulated Ceramic Band Heater

Cool TO-THE Touch™ Shroud System with Type RCC

Construction Characteristics

Type R construction is an uninsulated ceramic band heater with a perforated Stainless Steel outer shell for more efficient cooling. It is typically used in multiple quantities with forced air cooling systems.

Consult Tempco with your requirements.

Type RCC (Ribcage) Heating Mounting Configuration

Tempco's **Type RCC** (Rib Cage) Air Cooled System uses multiple Type R Ceramic Band Heaters under one air cooled shroud. Type R heaters are typically arranged with spaces between the heaters to enhance the cooling of the barrel when external heat is no longer required.

The Cool TO-THE Touch dual layer shroud uses an inner stainless steel solid layer thermally isolated from the heater, providing a path for the forced cooling air. An outer Stainless Steel perforated layer provides optimal venting and heat dissipation while providing personnel safety.

See catalog page 3-29 for shroud assembly details.

Complete Information on Shrouds Systems can be found in Section 3, pages 3-26 through 3-47

PERFORMANCE RATINGS FOR HEATER BAND

Maximum Watt Density: 50 W/in^2 (8 W/cm^2)

Maximum Temperature: 900°F (482°C)

MECHANICAL

Standard Width Increments: 1/8" (3.2 cm)

Maximum Width: depends on ratio of diameter to width

Minimum Width: 1" (25.4 mm)

Standard Gap: 3/8" ±1/8" (9.5 ±3.2 mm)

ELECTRICAL RATINGS

Resistance tolerance: +10%, –5%

Wattage tolerance: +5%, –10%

Maximum Voltage: 480 single or 3-phase (when applicable)

Maximum Amperage: Screw Terminals: 25 Amps per circuit
Lead Wire: 10 Amps per circuit

Made in USA

Additional 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 with all types of insulation, construction styles, and clamping variations.

Limitations
Minimum width: 3" (76.2 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 high or low voltage, the wattage will be the same. Dual Voltage wiring is available with all types of insulation, construction styles, or clamping variations.

Limitations
Minimum width: 2" (50.8 mm)

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

Lead VARIATIONS

Electrical Plugs — Industry standard NEMA twist lock electrical connectors are available. The plugs can be attached to fiberglass leads, armor cable or wire braid. Electrical Plugs can be added to any termination variation. See Section 15 page 15-15.

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. See Section 15 page 15-18.

High Temperature Lead Wire — When required, high temperature lead wire can be used. The wire is insulated with mica tapes over the stranded nickel conductors and then treated fiberglass overbraid. See Section 15 page 15-2.

Maximum temperature: 450°C (842°F)

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 construction or termination variation.

Other VARIATIONS

Oversize Gap — The nominal gap is 3/8". If a larger gap is required for probes or thermocouples, specify when ordering.

Installation Accessories Available for Immediate Delivery

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

All Items Available from Stock

View Product Inventory @ www.tempco.com

Installation RECOMMENDATIONS

1. Disconnect electric power to the machine and/or heaters prior to installing or replacing heaters.

2. Do not install heaters in areas where combustible gases, vapor or dust is presentt.

3. Reduce the number of narrow or two-piece bands used on the barrel. Ceramic bands are very flexible and can be made in large widths and one-piece construction for easy installation. This eliminates heat losses between narrow bands and sharply reduces costly installation labor.

4. Use a heater that closely matches the wattage requirements. This will decrease the frequency of cycling and temperature overshoot, thereby increasing the life of the heater.

5. When replacing any other type of non-insulated band heater with Tempco ceramic band heaters using standard or double insulation, you can decrease your total operating wattage by approximately 15 to 20 percent.

6. To prevent overheating and heater failure, adequate temperature controls should be installed. The thermocouples must be kept free of contaminants and checked for good response to temperature changes. A faulty thermocouple can cause the destruction of an entire heating zone due to overheating. Tempco offers a wide variety of temperature controls and thermocouples from stock for immediate delivery. Consult the index of this catalog for appropriate pages.

7. Make certain that all barrel surfaces are clean and free of contaminants. During operation, the band heaters and cylinder surface must be kept free of all contaminants that might liquefy under heat and find their way into the heater windings, carbonizing and becoming conductive. The smallest amount of contamination can cause electrical shorts, resulting in heater failure.

8. Position heater bands on the barrel.

9. Take up all the slack by tightening the outer housing until the serrated edges come firmly in direct contact with the cylinder. Do not overtighten to the point where the serrated edges begin to collapse and thrust outward. At this point you are compressing the ceramic insulation and decreasing its insulating value. Unlike all other types of band heaters, ceramic bands heat by radiation as well as conduction and they do not require the same clamping force that is essential with all other types of band heaters. The proper torque is approximately 8 ft/lbs.

10. For heaters with screw terminals, remove the top nut and flat washers from the power screw terminals. Do not remove or loosen the bottom nut on the power screw terminals.

11. All electrical wiring of heater bands should be done by a qualified electrician using proper, dry personal protective equipment.

12. Use only lead wire with high temperature insulation and proper gauge size. See page 15-2 in the accessories section.

13. When connecting power leads to screw terminals make certain that barrels of terminal lugs are not facing down toward the heater case, which will create a short circuit.

14. Ensure leads are not kinked or sharply bent around other obstructions.

15. Make sure the voltage input to the heater bands does not exceed the voltage rating that is stamped on the heater band

16. It is recommended that an amperage reading is taken for each heater to verify proper wiring. (Amps = Watts ÷ Volts).

17. Insulate all live electrical connections per applicable safety standards.

18. Install shrouds around the machine to meet applicable safety requirementse.

19. Once installed, check surroundings to make sure that contaminants won't get on the heater while the unit is in operation. Accumulation of contaminants on heaters can cause premature heater failure.

It is imperative that upon start-up of new machines at customer facilities, all of the aforementioned parameters are double checked by qualified field service personnel.

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