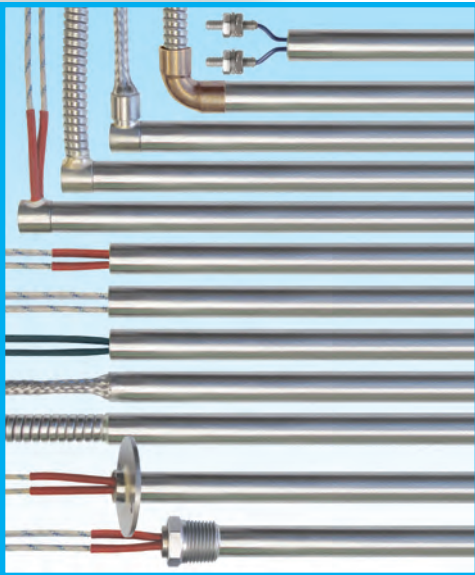


HIGH DENSITY CARTRIDGE HEATERS



Typical Heating Applications:

- *Plastic Moldings*
- *Packaging Equipment*
- *Heating Tanks*
- *Plastic Extruders*
- *Labelling Machinery*
- *Air & Liquid Heating*

In high-density cartridge heaters, the resistance wire loops are positioned as close as possible to the outside shell. Because the MgO powder insulation around these loops is compacted by swaging and transformed into a very hard medium, heat transmission is very efficient. Bucan cartridges can have up to 200 w/in² watt densities.

Cartridges are usually supplied with lead wires. The attachment of the leads to the central pins is done internally, in a 3/8" cold section. In excessively hot applications, the length of this cold section can be increased.

To facilitate installation and avoid excessive air pockets, cartridges are made 0.004" smaller than the nominal size of the receptacle hole with a tolerance of +/-0.002".

Bucan cartridges can be dual-voltage, three-phase, and/or be supplied with ground terminals.

With ten different termination styles, mounting attachments and various optional features, Bucan high-density cartridges are widely used in numerous high temperature applications.

BUKAN HIGH DENSITY CARTRIDGE HEATERS

Electrical terminations

High temperature plain leads



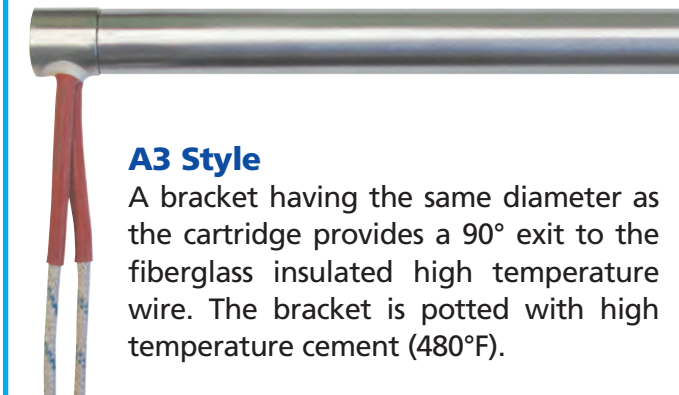
A1 Style

High temperature (840°F) fiberglass insulated wire is connected externally to the two solid pins exiting from the cartridge. A silicone impregnated fiberglass jacket insulates the connection.



A2 Style

To provide flexibility at the lead end, high temperature (840°F) leads are connected to the solid pins inside the cartridge.



A3 Style

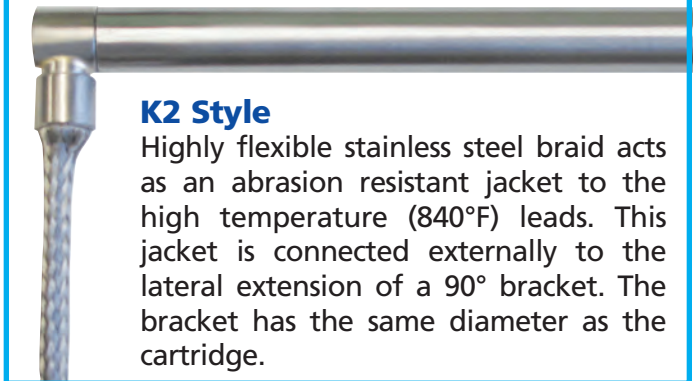
A bracket having the same diameter as the cartridge provides a 90° exit to the fiberglass insulated high temperature wire. The bracket is potted with high temperature cement (480°F).

SS braided leads



K1 Style

High temperature leads (840°F), with flexible abrasion resistant stainless steel braid exit straight from a cartridge. An additional 1/4" cold section from the immersed length is allocated to accommodate the stainless steel jacket.



K2 Style

Highly flexible stainless steel braid acts as an abrasion resistant jacket to the high temperature (840°F) leads. This jacket is connected externally to the lateral extension of a 90° bracket. The bracket has the same diameter as the cartridge.

90° bracket and elbow heights*

Cartridge OD	Bracket	Elbow
1/4"	3/8"	7/8"
5/16"	3/8"	1"
3/8"	3/8"	1"
1/2"	1/2"	1 3/16"
5/8"	5/8"	1 3/8"
3/4"	5/8"	2"

*Dimensions are subject to change

Screw terminals



PT Style

For high temperature applications, screw terminals (#10-32 is standard, other sizes are available) are silver-brazed to the extended solid pins of a cartridge. This type of terminal is not recommended for cartridges having less than 1/2" diameter.

Teflon leads



TF Style

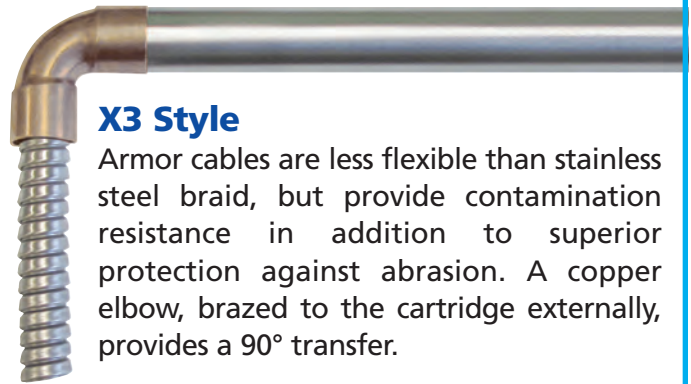
Internally connected Teflon leads (480°F), with Teflon plugs, protect the cartridge from contamination. High temperature black epoxy or silicone RTV seals are available too. A minimum cold section of 1" at the lead end is necessary to protect the Teflon leads from high temperature.

BUCAN HIGH DENSITY CARTRIDGE HEATERS

SS armor cable

X1 Style

High temperature (840°F) lead wires with abrasion and contamination resistant armor cable protection exit straight from a cartridge heater. The armor cable is crimped to the cartridge (brazing is available upon request). In order to accommodate the armor cable, an additional 1/4" cold section is allocated at the lead end.



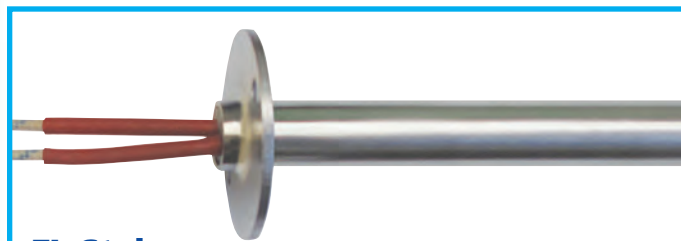
X3 Style

Armor cables are less flexible than stainless steel braid, but provide contamination resistance in addition to superior protection against abrasion. A copper elbow, brazed to the cartridge externally, provides a 90° transfer.

X2 Style

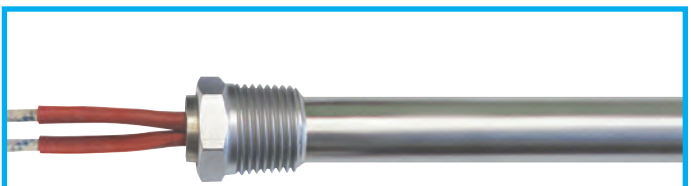
Protective armor cable, which is silver brazed to the side of a low profile stainless steel bracket, provides right-angle transfer to the high temperature leads when space is limited and elbows cannot be used.

Mounting attachments



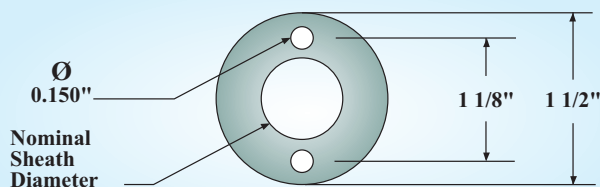
FL Style

Flange mounting attachments secure the cartridge firmly in place in applications where there is excessive vibration. 1 1/2" diameter is the standard flange size. Flanges with smaller diameters are generally used as stop rings.



IM Style

The conical thread of NPT fittings (single or double ended) allow for simultaneous threading and sealing. Brass or stainless steel fittings can be brazed on the lead end of a cartridge heater.



Cartridge Diameter	NPT Size	*Single Ended Fitting Length	*Double Ended Fitting Length
1/4"	1/8" - 27	0.56	1
3/8"	1/4" - 18	0.68	1.13
1/2"	3/8" - 18	0.75	1.25
5/8"	1/2" - 14	0.88	1.75
3/4"	3/4" - 14	1.03	1.85

*Dimensions are subject to change

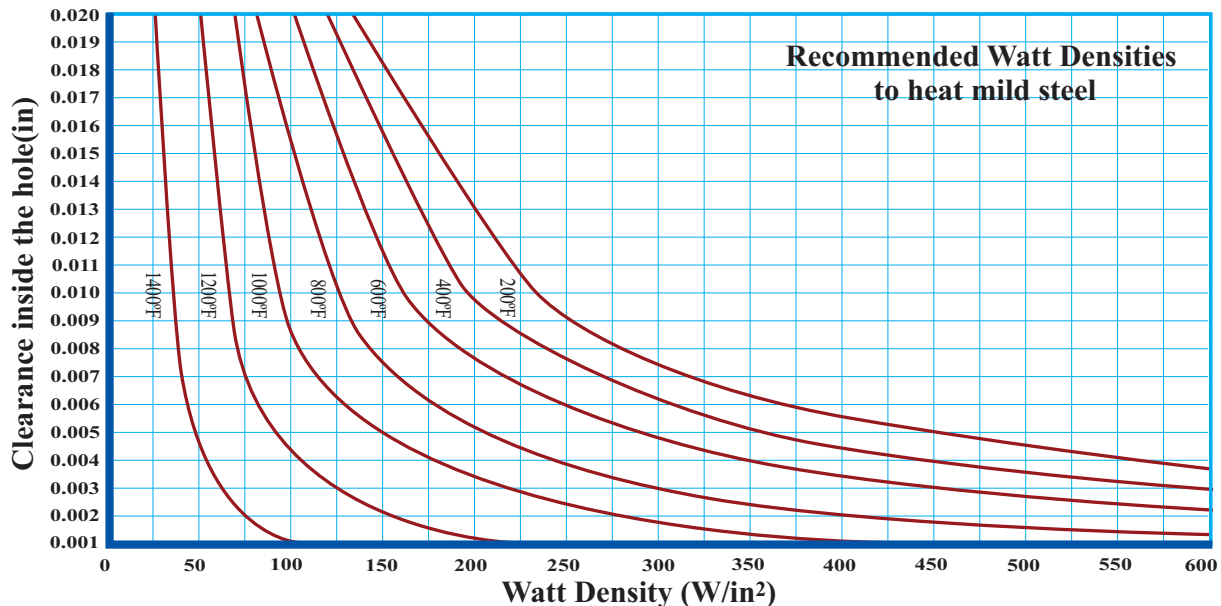
BUKAN HIGH DENSITY CARTRIDGE HEATERS

Cartridge heater specifications

DIAMETER (Nom)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
DIAMETER (Actual)	0.246"	0.310"	0.371"	0.496"	0.621"	0.746"	0.996"
MAX LENGTH	36"	36"	72"	96"	96"	96"	96"
MAX VOLTAGE (CSA)	240V	240V	480V	480V	480V	480V	480V
MAX VOLTAGE	250V	250V	600V	600V	600V	600V	600V
MAX WATTAGE AT 240V	1200W	1300W	2000W	3000W	5300W	5300W	5300W
WATTAGE TOLERANCE	+5%-10%						
DIAMETER TOLERANCE	+/-0.002"						
LENGTH TOLERANCE	+/-2% OF LENGTH						
CAMBER TOLERANCE	0.010" PER FT UP TO 12in						
	0.018" PER FT ABOVE 12in						

Selection & installation tips

- Cartridges should have a tight fit in the receptacle hole. Drilling and reaming to the next standard size and using a larger cartridge could solve the problem of loose or worn-out holes.
- Lead wires should be kept away from abrasion and should not be exposed to temperatures above 840°F.
- Stocked cartridge heaters, which have been exposed to air and moisture for a long period of time, should be energized at a low voltage prior to usage, in order to eliminate possible moisture contamination. It is always preferable to stock cartridges in sealed bags.
- Cartridges should be immersed completely inside the receptacle hole. Proper mounting attachments can prevent their edging out by vibration. If it is necessary to have an exposed section, that part should be unheated.
- Receptacle holes should be properly cleaned prior to the installation of a cartridge.
- When designing molds, it is recommended to make the receptacle cavities such that they will accommodate cartridge heaters completely and all-the-way-through. This will later facilitate the removal of the heaters.
- Watt densities should be kept within the safe range. This can be done by using either larger cartridges or as many as it is reasonably possible.
- To prevent short cycling, the wattage of a cartridge heater should be close to the required application wattage.



BUCAN HIGH DENSITY CARTRIDGE HEATERS

Optional Features

Built-in thermocouples

One optional feature on Bucan cartridges is built-in thermocouples. These could be type "J" or "K", grounded or ungrounded, and attached either at the disc end or the middle of the cartridge.

Graphite coating

To facilitate their installation and removal, cartridges can be coated with a graphite-like substance. This solid lubricant does not increase the outside diameter, and is suitable for temperatures up to 750°F.

Moisture and contamination resisting seals

To protect cartridge heaters against moisture and contamination, Teflon lead wires with Teflon seals are used. Epoxy (250°F) or RTV (450°F) silicone seals are alternative contamination and moisture resisting barriers.

Distributed wattage

In applications such as sealing bars or rubber molds, the two ends of a cartridge heater are usually colder than the middle. To overcome this inconsistency and have a uniformly distributed heat source, cartridges could be made to have higher wattages at the ends. 35/30/35 is a common wattage distribution.

Center-less grinding

In applications where superior heat transfer is required, the tolerance on the outside diameter could be improved to ± 0.001 " by center-less grinding.

Zones and cold sections

We can also manufacture cartridges with cold sections and separate zones that can be controlled independently.

Operating temperature versus actual temperature of cartridge

Bucan cartridge heaters are designed to withstand a sheath temperature of up to 1500°F. The recommended maximum operating temperatures for many applications are much less than that. There are many factors that have a direct effect on the lag between the actual sheath temperature of a cartridge heater and the monitored temperature of the surrounding material during the heat-up cycle. In some cases, this temperature lag is so significant that the cartridge will reach its elevated critical temperature even when the surrounding material is monitored to have a relatively much lower temperature level. The most common factors that contribute to the degree of temperature difference are the following:

- Thermal conductivity of the material being heated
- The cartridge sheath watt density
- The tightness of the cartridge inside the hole
- The location of the monitoring sensor
- The alloy of the cartridge sheath material
- Contamination around the cartridge heater

These factors should be taken into consideration while selecting a cartridge for a specific application. One common practice is to use stainless steel cartridge sheathes for temperatures up to 1000°F and Incoloy sheathes for temperatures up to 1400°F.

Another design consideration related to the operating temperature is the electrical termination of a cartridge. Teflon and TGGT leads have 480°F rating while MGT wires can withstand up to 840°F. When cartridges are used at relatively high temperatures, the terminals selected should be either different than the common high temperature lead wires; or the design should be such that the temperature around the lead wires (whether the leads are connected internally or externally to the cartridge) is maintained at a temperature level lower than the critical temperature limit of the lead wire.

BUKAN HIGH DENSITY CARTRIDGE HEATERS



STANDARD CARTRIDGE HEATERS (A2 STYLE) ARE SUPPLIED WITH 12" FIBERGLASS LEADS

STAINLESS STEEL 1/4" DIAMETER CARTRIDGE HEATER (ACTUAL 0.246")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
1	25.4	80	146	22.3	CA1-80-1	CA1-80-2	CA1-80-3
1 1/4	31.8	100	134	20.5	CA114-100-1	CA114-100-2	CA114-100-3
1 1/2	38.1	125	168	25.7	CA112-125-1	CA112-125-2	CA112-125-3
1 1/2	38.1	140	188	28.7	CA112-140-1	CA112-140-2	CA112-140-3
2	50.8	100	75	11.5	CA2-100-1	CA2-100-2	CA2-100-3
2	50.8	150	112	17.1	CA2-150-1	CA2-150-2	CA2-150-3
2	50.8	200	150	22.9	CA2-200-1	CA2-200-2	CA2-200-3
3	76.2	250	118	18.0	CA3-250-1	CA3-250-2	CA3-250-3
3	76.2	300	141	21.6	CA3-300-1	CA3-300-2	CA3-300-3
4	101.6	400	138	21.1	CA4-400-1	CA4-400-2	CA4-400-3
5	127.0	500	135	20.6	CA5-500-1	CA5-500-2	CA5-500-3
6	152.4	600	134	20.5	CA6-600-1	CA6-600-2	CA6-600-3

STAINLESS STEEL 5/16" DIAMETER CARTRIDGE HEATER (ACTUAL 0.310")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
1	25.4	80	163	25.2	CB1-80-1	CB1-80-2	CB1-80-3
1 1/4	31.8	100	136	20.8	CB114-100-1	CB114-100-2	CB114-100-3
1 1/2	38.1	125	128	19.6	CB112-125-1	CB112-125-2	CB112-125-3
1 1/2	38.1	140	143	21.9	CB112-140-1	CB112-140-2	CB112-140-3
2	50.8	100	68	10.4	CB2-100-1	CB2-100-2	CB2-100-3
2	50.8	150	102	15.6	CB2-150-1	CB2-150-2	CB2-150-3
2	50.8	200	136	20.8	CB2-200-1	CB2-200-2	CB2-200-3
3	76.2	250	102	15.6	CB3-250-1	CB3-250-2	CB3-250-3
3	76.2	300	122	18.7	CB3-300-1	CB3-300-2	CB3-300-3
4	101.6	400	117	17.9	CB4-400-1	CB4-400-2	CB4-400-3
5	127.0	500	113	17.3	CB5-500-1	CB5-500-2	CB5-500-3
6	152.4	600	111	17.0	CB6-600-1	CB6-600-2	CB6-600-3

BUCAN HIGH DENSITY CARTRIDGE HEATERS

STAINLESS STEEL 3/8" DIAMETER CARTRIDGE HEATER (ACTUAL 0.371")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
1	25.4	60	102	15.6	CC1-60-1	CC1-60-2	CC1-60-3
1	25.4	90	153	23.4	CC1-90-1	CC1-90-2	CC1-90-3
1 1/4	31.8	100	113	17.3	CC114-100-1	CC114-100-2	CC114-100-3
1 1/4	31.8	135	153	23.4	CC114-135-1	CC114-135-2	CC114-135-3
1 1/2	38.1	50	42	6.4	CC112-50-1	CC112-50-2	CC112-50-3
1 1/2	38.1	100	85	13.0	CC112-100-1	CC112-100-2	CC112-100-3
1 1/2	38.1	150	127	19.4	CC112-150-1	CC112-150-2	CC112-150-3
1 1/2	38.1	175	149	22.7	CC112-175-1	CC112-175-2	CC112-175-3
2	50.8	75	42	6.4	CC2-75-1	CC2-75-2	CC2-75-3
2	50.8	100	57	8.7	CC2-100-1	CC2-100-2	CC2-100-3
2	50.8	150	85	13.0	CC2-150-1	CC2-150-2	CC2-150-3
2	50.8	200	113	17.3	CC2-200-1	CC2-200-2	CC2-200-3
2	50.8	250	141	21.6	CC2-250-1	CC2-250-2	CC2-250-3
2 1/2	63.5	325	138	21.1	CC212-325-1	CC212-325-2	CC212-325-3
3	76.2	100	34	5.2	CC3-100-1	CC3-100-2	CC3-100-3
3	76.2	150	51	7.8	CC3-150-1	CC3-150-2	CC3-150-3
3	76.2	200	68	10.4	CC3-200-1	CC3-200-2	CC3-200-3
3	76.2	250	85	13.0	CC3-250-1	CC3-250-2	CC3-250-3
3	76.2	300	103	17.7	CC3-300-1	CC3-300-2	CC3-300-3
3	76.2	400	136	5.5	CC3-400-1	CC3-400-2	CC3-400-3
3	76.2	450	153	23.4	CC3-450-1	CC3-450-2	CC3-450-3
4	101.6	150	36	5.5	CC4-150-1	CC4-150-2	CC4-150-3
4	101.6	200	49	7.5	CC4-200-1	CC4-200-2	CC4-200-3
4	101.6	300	73	11.1	CC4-300-1	CC4-300-2	CC4-300-3
4	101.6	400	97	14.8	CC4-400-1	CC4-400-2	CC4-400-3
4	101.6	500	121	18.5	CC4-500-1	CC4-500-2	CC4-500-3
4	101.6	600	146	22.3	CC4-600-1	CC4-600-2	CC4-600-3
5	127.0	250	47	7.2	CC5-250-1	CC5-250-2	CC5-250-3
5	127.0	350	66	10.1	CC5-350-1	CC5-350-2	CC5-350-3
5	127.0	450	85	13.0	CC5-450-1	CC5-450-2	CC5-450-3
5	127.0	550	105	16.1	CC5-550-1	CC5-550-2	CC5-550-3
5	127.0	700	132	20.2	CC5-700-1	CC5-700-2	CC5-700-3
6	152.4	300	46	7.0	CC6-300-1	CC6-300-2	CC6-300-3
6	152.4	400	62	9.9	CC6-400-1	CC6-400-2	CC6-400-3
6	152.4	500	77	11.8	CC6-500-1	CC6-500-2	CC6-500-3
6	152.4	600	93	14.2	CC6-600-1	CC6-600-2	CC6-600-3
6	152.4	700	108	16.5	CC6-700-1	CC6-700-2	CC6-700-3
6	152.4	800	123	18.8	CC6-800-1	CC6-800-2	CC6-800-3
6	152.4	900	139	21.3	CC6-900-1	CC6-900-2	CC6-900-3
7	177.8	500	65	9.9	CC7-500-1	CC7-500-2	CC7-500-3
7	177.8	750	98	15.0	CC7-750-1	CC7-750-2	CC7-750-3
7	177.8	900	150	22.9	CC7-900-1	CC7-900-2	CC7-900-3
8	203.2	750	85	13.0	CC8-750-1	CC8-750-2	CC8-750-3
8	203.2	1000	113	17.3	-	CC8-1000-2	CC8-1000-3
8	203.2	1325	150	22.9	-	CC8-1325-2	CC8-1325-3
10	254.0	1250	112	17.1	-	CC10-1250-2	CC10-1250-3
10	254.0	1500	134	20.5	-	CC10-1500-2	CC10-1500-3
12	304.8	1400	103	15.7	-	CC12-1400-2	CC12-1400-3
12	304.8	1600	118	18.0	-	CC12-1600-2	CC12-1600-3
12	304.8	1750	129	19.7	-	-	CC12-1750-3

BUCAN HIGH DENSITY CARTRIDGE HEATERS

STAINLESS STEEL 1/2" DIAMETER CARTRIDGE HEATER (ACTUAL 0.496")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
1	25.4	50	64	9.8	CD1-50-1	CD1-50-2	CD1-50-3
1	25.4	80	102	15.6	CD1-80-1	CD1-80-2	CD1-80-3
1 1/4	31.8	100	68	10.4	CD114-100-1	CD114-100-2	CD114-100-3
1 1/4	31.8	125	106	16.2	CD114-125-1	CD114-125-2	CD114-125-3
1 1/2	38.1	150	95	14.5	CD112-150-1	CD112-150-2	CD112-150-3
1 1/2	38.1	175	111	17.0	CD112-175-1	CD112-175-2	CD112-175-3
2	50.8	200	85	13.0	CD2-200-1	CD2-200-2	CD2-200-3
2	50.8	250	106	16.2	CD2-250-1	CD2-250-2	CD2-250-3
2	50.8	275	117	17.9	CD2-275-1	CD2-275-2	CD2-275-3
2 1/4	57.2	100	36	5.5	CD214-100-1	CD214-100-2	CD214-100-3
2 1/4	57.2	125	45	6.9	CD214-125-1	CD214-125-2	CD214-125-3
2 1/4	57.2	150	55	8.4	CD214-150-1	CD214-150-2	CD214-150-3
2 1/4	57.2	200	73	11.2	CD214-200-1	CD214-200-2	CD214-200-3
2 1/2	57.2	250	91	13.9	CD214-250-1	CD214-250-2	CD214-250-3
2 1/2	63.5	175	56	8.6	CD212-175-1	CD212-175-2	CD212-175-3
2 1/2	63.5	250	80	12.2	CD212-250-1	CD212-250-2	CD212-250-3
2 1/2	63.5	300	95	14.5	CD212-300-1	CD212-300-2	CD212-300-3
2 1/2	63.5	350	111	17.0	CD212-350-1	CD212-350-2	CD212-350-3
3	76.2	125	32	4.9	CD3-125-1	CD3-125-2	CD3-125-3
3	76.2	250	64	9.8	CD3-250-1	CD3-250-2	CD3-250-3
3	76.2	350	89	13.6	CD3-350-1	CD3-350-2	CD3-350-3
3	76.2	400	102	15.6	CD3-400-1	CD3-400-2	CD3-400-3
3	76.2	425	108	16.5	CD3-425-1	CD3-425-2	CD3-425-3
3 1/2	88.9	275	58	8.9	CD312-275-1	CD312-275-2	CD312-275-3
3 1/2	88.9	500	106	16.2	CD312-500-1	CD312-500-2	CD312-500-3
4	101.6	150	27	4.1	CD4-150-1	CD4-150-2	CD4-150-3
4	101.6	250	45	6.9	CD4-250-1	CD4-250-2	CD4-250-3
4	101.6	350	64	9.9	CD3-350-1	CD3-350-2	CD3-350-3
4	101.6	400	73	11.2	CD4-400-1	CD4-400-2	CD4-400-3
4	101.6	500	91	13.9	CD4-500-1	CD4-500-2	CD4-500-3
4	101.6	600	109	16.7	CD4-600-1	CD4-600-2	CD4-600-3
4	101.6	700	127	19.4	CD4-700-1	CD4-700-2	CD4-700-3
5	127.0	250	35	5.4	CD5-250-1	CD5-250-2	CD5-250-3
5	127.0	350	50	7.6	CD5-350-1	CD5-350-2	CD5-350-3
5	127.0	400	57	8.7	CD5-400-1	CD5-400-2	CD5-400-3
5	127.0	500	71	10.9	CD5-500-1	CD5-500-2	CD5-500-3
5	127.0	750	106	16.2	CD5-750-1	CD5-750-2	CD5-750-3
5	127.0	850	120	18.3	CD5-850-1	CD5-850-2	CD5-850-3
5 1/2	139.7	500	64	9.8	CD512-500-1	CD512-500-2	CD512-500-3
5 1/2	139.7	750	95	14.5	CD512-750-1	CD512-750-2	CD512-750-3
6	152.4	300	35	5.4	CD6-300-1	CD6-300-2	CD6-300-3
6	152.4	500	58	8.9	CD6-500-1	CD6-500-2	CD6-500-3
6	152.4	750	87	13.3	CD6-750-1	CD6-750-2	CD6-750-3
6	152.4	1000	116	17.7	CD6-1000-1	CD6-1000-2	CD6-1000-3
6 1/2	165.1	1000	106	16.2	CD612-1000-1	CD612-1000-2	CD612-1000-3
7	177.8	500	49	7.5	CD7-500-1	CD7-500-2	CD7-500-3
7	177.8	1000	98	15.0	CD7-1000-1	CD7-1000-2	CD7-1000-3
8	203.2	300	25	3.8	CD8-300-1	CD8-300-2	CD8-300-3
8	203.2	500	42	6.4	CD8-500-1	CD8-500-2	CD8-500-3
8	203.2	750	64	9.8	CD8-750-1	CD8-750-2	CD8-750-3
8	203.2	1000	85	13.0	CD8-1000-1	CD8-1000-2	CD8-1000-3
8	203.2	1250	106	16.2	CD8-1250-1	CD8-1250-2	CD8-1250-3
9	228.6	500	37	5.7	CD9-500-1	CD9-500-2	CD9-500-3
9	228.6	1000	75	11.5	CD9-1000-1	CD9-1000-2	CD9-1000-3
10	254.0	500	34	5.2	CD10-500-1	CD10-500-2	CD10-500-3
10	254.0	1000	67	10.2	CD10-1000-1	CD10-1000-2	CD10-1000-3
10	254.0	1500	101	15.4	CD10-1500-1	CD10-1500-2	CD10-1500-3
10	254.0	1750	117	17.9	CD10-1750-1	CD10-1750-2	CD10-1750-3
12	304.8	600	33	5.0	CD12-600-1	CD12-600-2	CD12-600-3
12	304.8	1000	55	8.4	CD12-1000-1	CD12-1000-2	CD12-1000-3
12	304.8	1500	83	12.7	CD12-1500-1	CD12-1500-2	CD12-1500-3
12	304.8	2000	111	17.0	CD12-2000-1	CD12-2000-2	CD12-2000-3
14	355.6	2300	108	16.5	CD14-2300-1	CD14-2300-2	CD14-2300-3
16	406.4	2500	103	15.7	CD16-2500-1	CD16-2500-2	CD16-2500-3
18	457.2	2750	100	15.3	CD18-2750-1	CD18-2750-2	CD18-2750-3

BUCAN HIGH DENSITY CARTRIDGE HEATERS

STAINLESS STEEL 5/8" DIAMETER CARTRIDGE HEATER (ACTUAL 0.621")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
1 1/4	31.8	50	34	5.2	CE114-50-1	CE114-50-2	CE114-50-3
1 1/4	31.8	100	68	10.4	CE114-100-1	CE114-100-2	CE114-100-3
1 1/4	31.8	175	119	18.2	CE114-175-1	CE114-175-2	CE114-175-3
2	50.8	100	34	5.2	CE2-100-1	CE2-100-2	CE2-100-3
2	50.8	200	68	10.4	CE2-200-1	CE2-200-2	CE2-200-3
2 1/4	57.2	125	36	5.5	CE214-124-1	CE214-124-2	CE214-124-3
2 1/4	57.2	250	73	11.2	CE214-250-1	CE214-250-2	CE214-250-3
2 1/4	57.2	300	87	13.3	CE214-300-1	CE214-300-2	CE214-300-3
3	76.2	150	31	4.8	CE3-150-1	CE3-150-2	CE3-150-3
3	76.2	300	61	9.3	CE3-300-1	CE3-300-2	CE3-300-3
3	76.2	450	92	14.0	CE3-450-1	CE3-450-2	CE3-450-3
3	76.2	600	122	18.7	CE3-600-1	CE3-600-2	CE3-600-3
3 3/4	95.3	525	82	12.5	CE334-525-1	CE334-525-2	CE334-525-3
4	101.6	300	44	6.7	CE4-300-1	CE4-300-2	CE4-300-3
4	101.6	400	58	8.9	CE4-400-1	CE4-400-2	CE4-400-3
4	101.6	500	73	11.2	CE4-500-1	CE4-500-2	CE4-500-3
4	101.6	600	87	13.3	CE4-600-1	CE4-600-2	CE4-600-3
4	101.6	700	102	15.6	CE4-700-1	CE4-700-2	CE4-700-3
4	101.6	800	116	17.7	CE4-800-1	CE4-800-2	CE4-800-3
5	127.0	250	28	4.3	CE5-250-1	CE5-250-2	CE5-250-3
5	127.0	500	57	8.7	CE5-500-1	CE5-500-2	CE5-500-3
5	127.0	750	85	13.0	CE5-750-1	CE5-750-2	CE5-750-3
5	127.0	1000	113	17.3	CE5-1000-1	CE5-1000-2	CE5-1000-3
5 1/4	133.4	300	32	4.9	CE514-300-1	CE514-300-2	CE514-300-3
6	152.4	300	28	4.3	CE6-300-1	CE6-300-2	CE6-300-3
6	152.4	500	46	7.0	CE6-500-1	CE6-500-2	CE6-500-3
6	152.4	1000	93	14.2	CE6-6-1000-1	CE6-6-1000-2	CE6-6-1000-3
6	152.4	1250	116	17.7	CE6-1250-1	CE6-1250-2	CE6-1250-3
7	177.8	500	39	5.7	CE7-500-1	CE7-500-2	CE7-500-3
7	177.8	1000	78	11.9	CE7-1000-1	CE7-1000-2	CE7-1000-3
7	177.8	1500	118	18.0	CE7-1500-1	CE7-1500-2	CE7-1500-3
8	203.2	500	34	5.2	CE8-500-1	CE8-500-2	CE8-500-3
8	203.2	850	58	8.9	CE8-850-1	CE8-850-2	CE8-850-3
8	203.2	1000	68	10.4	CE8-1000-1	CE8-1000-2	CE8-1000-3
10	254.0	500	27	4.1	CE10-500-1	CE10-500-2	CE10-500-3
10	254.0	1000	54	8.3	CE10-1000-1	CE10-1000-2	CE10-1000-3
10	254.0	1500	80	12.2	CE10-1500-1	CE10-1500-2	CE10-1500-3
10	254.0	2000	107	16.4	CE10-2000-1	CE10-2000-2	CE10-2000-3
12	304.8	500	22	3.4	CE12-500-1	CE12-500-2	CE12-500-3
12	304.8	1000	44	6.7	CE12-1000-1	CE12-1000-2	CE12-1000-3
12	304.8	1500	66	10.1	CE12-1500-1	CE12-1500-2	CE12-1500-3
14	355.6	3000	113	17.3	-	CE14-1500-2	CE14-1500-3
15	381.0	2400	84	12.8	-	CE15-2400-2	CE15-2400-3
16	406.4	3750	123	18.8	-	CE16-3750-2	CE16-3750-3
18	457.2	1500	44	6.7	CE18-1500-1	CE18-1500-2	CE18-1500-3
18	457.2	3000	87	13.3	-	CE18-3000-2	CE18-3000-3
18	457.2	4250	124	19.0	-	-	CE18-4250-3
20	508.0	4500	118	18.0	-	-	CE20-4500-3
24	609.6	4500	98	15.0	-	-	CE24-4500-3
30	762.0	4600	79	12.1	-	-	CE30-4600-3
36	914.4	3250	47	7.2	-	CE36-3250-2	CE36-3250-3

BUKAN HIGH DENSITY CARTRIDGE HEATERS



STANDARD CARTRIDGE HEATERS (A2 STYLE) ARE SUPPLIED WITH 12" FIBERGLASS LEADS

STAINLESS STEEL 3/4" DIAMETER CARTRIDGE HEATER (ACTUAL 0.746")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
3	76.2	250	42	6.4	CF3-250-1	CF3-250-2	CF3-250-3
3	76.2	375	64	9.8	CF3-375-1	CF3-375-2	CF3-375-3
3	76.2	500	85	13.0	CF3-500-1	CF3-500-2	CF3-500-3
4	101.6	500	61	9.3	CF4-500-1	CF4-500-2	CF4-500-3
4	101.5	1000	121	18.5	CF4-1000-1	CF4-1000-2	CF4-1000-3
5	127.0	400	38	5.8	CF5-400-1	CF5-400-2	CF5-400-3
5	127.0	600	57	8.7	CF5-600-1	CF5-600-2	CF5-600-3
5	127.0	1000	94	14.4	CF5-1000-1	CF5-1000-2	CF5-1000-3
6	152.4	500	39	6.0	CF6-500-1	CF6-500-2	CF6-500-3
6	152.4	800	62	9.5	CF6-800-1	CF6-800-2	CF6-800-3
6	152.4	1200	93	14.2	CF6-1200-1	CF6-1200-2	CF6-1200-3
6	152.4	1500	116	17.7	CF6-1500-1	CF6-1500-2	CF6-1500-3
7	177.8	600	39	56.0	CF7-600-1	CF7-600-2	CF7-600-3
7	177.8	1100	72	11.1	CF7-1100-1	CF7-1100-2	CF7-1100-3
8	203.4	750	42	6.4	CF8-750-1	CF8-750-2	CF8-750-3
8	203.4	1000	57	8.7	CF8-1000-1	CF8-1000-2	CF8-1000-3
8	203.4	2000	113	17.3	CF8-2000-1	CF8-2000-2	CF8-2000-3
10	254.0	1000	45	6.9	CF10-1000-1	CF10-1000-2	CF10-1000-3
10	254.0	2000	89	13.6	CF10-2000-1	CF10-2000-2	CF10-2000-3
12	304.8	1000	37	5.7	CF12-1000-1	CF12-1000-2	CF12-1000-3
12	304.8	2000	74	11.3	CF12-2000-1	CF12-2000-2	CF12-2000-3
12	304.8	3000	111	17.0	-	CF12-3000-2	CF12-3000-3
15	381.0	2000	59	9.0	CF15-2000-1	CF15-2000-2	CF15-2000-3
16	406.4	2500	68	10.4	-	CF16-2500-2	CF16-2500-3
18	457.2	2750	67	10.2	-	CF18-2750-2	CF18-2750-3
20	508.0	2000	44	6.7	CF20-2000-1	CF20-2000-2	CF20-2000-3
20	508.0	3000	65	9.9	-	CF20-3000-2	CF20-3000-2
20	508.0	4000	87	13.3	-	CF20-4000-2	CF20-4000-2
24	609.6	1500	27	4.1	CF24-1500-1	CF24-1500-2	CF24-1500-2
24	609.6	3000	54	8.3	-	CF24-3000-2	CF24-3000-2
30	762.0	4000	58	8.9	-	CF30-4000-2	CF30-4000-2
36	914.4	4000	48	7.3	-	CF36-4000-2	CF36-4000-2

BUKAN HIGH DENSITY CARTRIDGE HEATERS



STANDARD CARTRIDGE HEATERS (A2 STYLE) ARE SUPPLIED WITH 12" FIBERGLASS LEADS

STAINLESS STEEL 1" DIAMETER CARTRIDGE HEATER (ACTUAL 0.996")

SHEATH LENGTH		WATTS	WATT DENSITY		CATALOG NUMBER		
inch	mm		in ²	cm ²	120V	208V	240V
3	76.2	300	38	5.8	CG3-300-1	CG3-300-2	CG3-300-3
3	76.2	400	51	7.8	CG3-400-1	CG3-400-2	CG3-400-3
3	76.2	600	76	11.6	CG3-600-1	CG3-600-2	CG3-600-3
4	101.6	750	68	10.4	CG4-750-1	CG4-750-2	CG4-750-3
4	101.5	1000	91	13.9	CG4-1000-1	CG4-1000-2	CG4-1000-3
5	127.0	500	35	5.4	CG5-500-1	CG5-500-2	CG5-500-3
5	127.0	750	53	8.1	CG5-750-1	CG5-750-2	CG5-750-3
5	127.0	1000	71	10.9	CG5-1000-1	CG5-1000-2	CG5-1000-3
6	152.4	600	35	5.4	CG6-600-1	CG6-600-2	CG6-600-3
6	152.4	850	49	7.5	CG6-850-1	CG6-850-2	CG6-850-3
6	152.4	1250	72	11.1	CG6-1250-1	CG6-1250-2	CG6-1250-3
6	152.4	1500	87	13.3	CG6-1500-1	CG6-1500-2	CG6-1500-3
7	177.8	750	37	5.7	CG7-750-1	CG7-750-2	CG7-750-3
7	177.8	1200	59	9.0	CG7-1200-1	CG7-1200-2	CG7-1200-3
8	203.4	750	32	4.9	CG8-750-1	CG8-750-2	CG8-750-3
8	203.4	1000	42	6.4	CG8-1000-1	CG8-1000-2	CG8-1000-3
8	203.4	2000	85	13.0	CG8-2000-1	CG8-2000-2	CG8-2000-3
10	254.0	1000	34	5.2	CG10-1000-1	CG10-1000-2	CG10-1000-3
10	254.0	2000	67	10.2	CG10-2000-1	CG10-2000-2	CG10-2000-3
12	304.8	1000	28	4.3	CG12-1000-1	CG12-1000-2	CG12-1000-3
12	304.8	2000	55	8.4	CG12-2000-1	CG12-2000-2	CG12-2000-3
12	304.8	3000	83	12.7	-	CG12-3000-2	CG12-3000-3
15	381.0	2000	44	6.7	CG15-2000-1	CG15-2000-2	CG15-2000-3
16	406.4	2500	51	7.8	-	CG16-2500-2	CG16-2500-3
18	457.2	2750	50	7.6	-	CG18-2750-2	CG18-2750-3
20	508.0	2000	33	5.0	CG20-2000-1	CG20-2000-2	CG20-2000-3
20	508.0	3000	49	7.5	-	CG20-3000-2	CG20-3000-3
20	508.0	4000	65	9.9	-	CG20-4000-2	CG20-4000-3
24	609.6	1500	20	3.1	CG24-1500-1	CG24-1500-2	CG24-1500-3
24	609.6	3000	41	6.3	-	CG24-3000-2	CG24-3000-3
30	762.0	4000	43	6.6	-	CG30-4000-2	CG30-4000-3
36	914.4	4000	36	5.5	-	CG36-4000-2	CG36-4000-3