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User's Guide

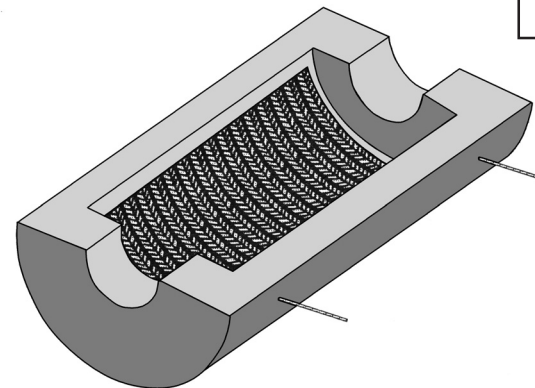
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e-mail: sales@omegaeng.nl

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WARNING: These products are not designed for use in, and should not be used for, patient-connected applications.



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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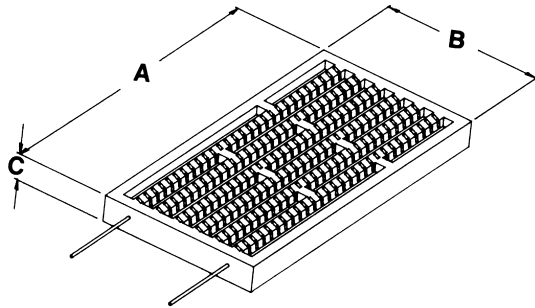
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4.6 CRFP Series (Continued)

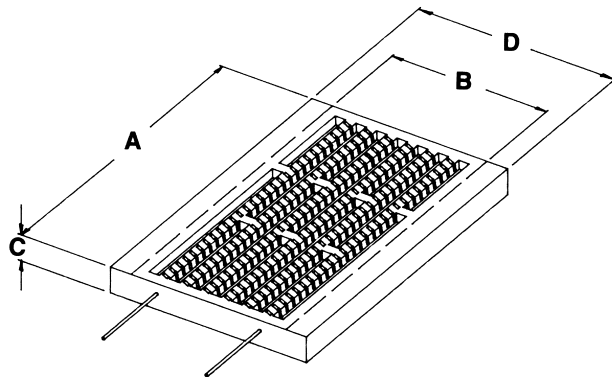
Watts	Volts	All Dimensions in Inches				Without Flange
		A Dim	B Dim	\$ C Dim	D Dim	Part Number #
300	60	6	4	2	8	CRFP-64/60
600	120	12	4	2	8	CRFP-124/120
400	60	6	6	2	10	CRFP-66/60
800	120	12	6	2	10	CRFP-126/120
1250	120	18	6	2	10	CRFP-186/120
1650	240	24	6	2	10	CRFP-246/240
1100	120	12	8	2	12	CRFP-128/120
1650	240	18	8	2	12	CRFP-188/240
2200	240	24	8	2	12	CRFP-248/240
1375	240	12	10	2	14	CRFP-1210/240
2050	240	18	10	2	14	CRFP-1810/240
2750	240	24	10	2	14	CRFP-2410/240
3400	240	30	10	2	14	CRFP-3010/240
1650	240	12	12	2	16	CRFP-1212/240
2460	240	18	12	2	16	CRFP-1812/240
3280	240	24	12	2	16	CRFP-2412/240
4100	240	30	12	2	16	CRFP-3012/240
3700	240	18	18	2	22	CRFP-1818/240
5000	240	24	18	2	22	CRFP-2418/240
6200	240&	30	18	2	22	CRFP-3018/240

\$ Add 4" for units with flanges (forms new "D" dimension)
& Dual 240VAC circuits

4.6 CRFP Series



**Flat Plate - Without Flanges
(Surface is fully heated)**



**Flat Plate - With Unheated Flanges
Add (-C) to Part Number**

SECTION 1 INTRODUCTION

1.1 Description

The OMEGALUX™ CRFC, CRWS, CRRS, and CRFP Series of vacuum formed ceramic heaters are produced using high quality, high purity, vacuum formed ceramic with a low sodium inorganic bond. In the CRRS and CRFP Series, helically wound quality iron-chrome-aluminum ribbon elements are mounted in ridges which permit heat dissipation in three directions, thereby, transferring more radiant heat energy to the work chamber and load. By using this grooved surface, these OMEGALUX products can more than triple the effective radiant surface. Sections 4.3 through 4.6 show the different types of heaters that are available from OMEGALUX as well as their specifications.

FOR YOUR INFORMATION

Care must be taken in handling the vacuum formed ceramic heaters due to the materials used in manufacturing them.

1.2 Recommended Maximum Operating Temperature

Maximum operating temperature is limited to 1800 degrees F degrees C. For more information refer to the material safety data sheet (MSDS-0135).

1.3 Tolerance

Because of the nature of ceramic fiber, there will be a potential variance of $\pm 1/4$ " in the size of the heaters. These products initially may shrink at higher temperatures. This shrinkage could be up to 4% for temperatures up to 980° C, resistance tolerance is $\pm 5\%$.

SECTION 2 UNPACKING

Remove the Packing list and verify that all equipment has been received. If there are any questions about the shipment, please call the OMEGALUX Customer Service Department at 1-800-622-2378.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE: The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

SECTION 3 WIRING PROCEDURES

CAUTION AND WARNING!!

Fire and electrical shock may result if products are used improperly or installed or used by non-qualified persons. Refer to the inside front cover for additional warranty information. The CR Series heaters are intended for RADIANT heat only. **NEVER LET MATERIAL COME INTO DIRECT CONTACT WITH THE FACE OF THE HEATER.**

3.1 General

1. Be sure that the line voltage matches the heater's rated voltage.
2. Electric wiring to heater must be installed in accordance with Local and National Electric Code.

3.2 Heating Element Power Connection

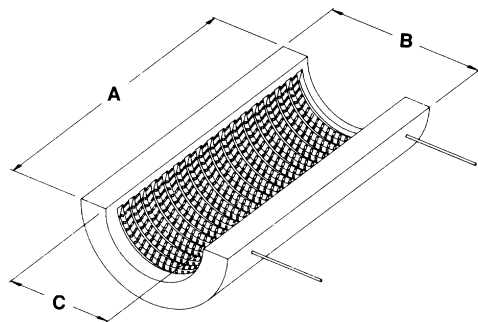
1. Figures 3-1, 3-2, 3-3, and 3-4 should be closely adhered to, to insure maximum element life. L1 and L2 indicate the two power input wires from the user's power source. Polarity MUST always be observed. L1 and L2 should never be connected adjacent to each other. Failure to observe polarity may cause premature heater failure.
2. Recommended are mechanical terminations such as SPLIT BOLT connections or TERMINAL STRIPS. For the all heating element listed in this manual, the wire leads become brittle after being brought up to maximum operating temperature (980° C). Caution should be taken in handling heaters after initial operation.
3. Lead wire extending from the heater elements may be bent to form to your specific needs. Caution must be taken so that the integrity of the internal connection is maintained to prolong the life of the heating element. To avoid placing excessive stress on this junction, use soft nose pliers to hold the lead wire secure where the wire exits from the heating element and then bend.

4.5 CRRS Series (Continued)

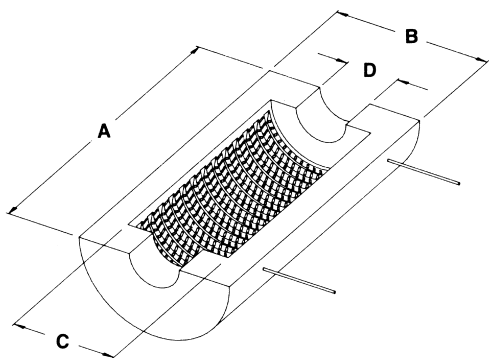
Watts	Volts	All Dimensions in Inches				Without Vestibules Part Number #
		A Dim*	B Dim	C Dim	D Dim	
800	120	6	11	7	5	CRRS-67/120
1600	240	12	11	7	5	CRRS-127/240
2400	240	18	11	7	5	CRRS-187/240
3200	240	24	11	7	5	CRRS-247/240
900	120	6	12	8	6	CRRS-68/120
1800	240	12	12	8	6	CRRS-128/240
2700	240	18	12	8	6	CRRS-188/240
3600	240	24@	12	8	6	CRRS-248/240
2250	240	12	14	10	8	CRRS-1210/240
3375	240	18	14	10	8	CRRS-1810/240
4500	240	24@	14	10	8	CRRS-2410/240
2700	240	12	16	12	10	CRRS-1212/240
4050	240	18	16	12	10	CRRS-1812/240
5400	240	24@	16	12	10	CRRS-2412/240
3400	240	12	19	15	13	CRRS-1215/240
5100	240	18	19	15	13	CRRS-1815/240
6800	240&	24@	19	15	13	CRRS-2415/240
4100	240	12	22	18	16	CRRS-1218/240
6150	240&	18	22	18	16	CRRS-1818/240
8200	240&	24@	22	18	16	CRRS-2418/240
4750	240	12	25	21	19	CRRS-1221/240
7125	240&	18	25	21	19	CRRS-1821/240
9500	240&	24@	25	21	19	CRRS-2421/240

* Add 3 inches to "A" dimension for units with vestibules
 # Unit with "C" complete with vestibules attached
 & Dual 240VAC circuits
 @ Using two 12" long heaters; the indicated wattage is the total of two 12" heaters

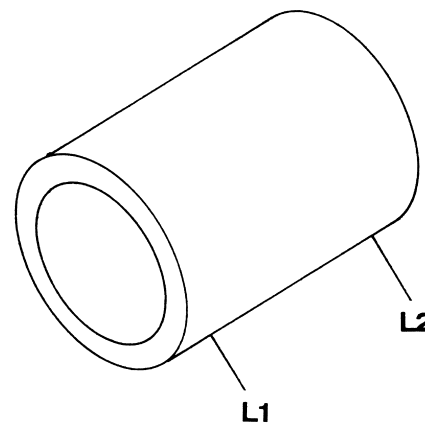
4.5 CRRS Series



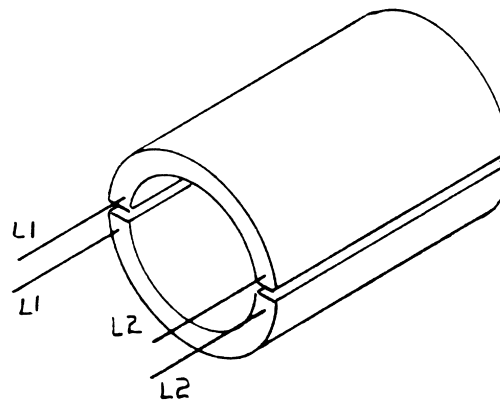
**Without Vestibules
(Full Length is Heated)**



**With Optional Unheated
Vestibules (-C)**

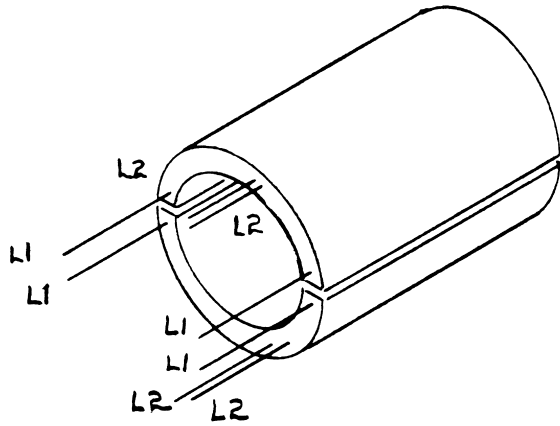


**Figure 3-1. Full Circle Wiring Diagram (Group A)
CRFC Series**



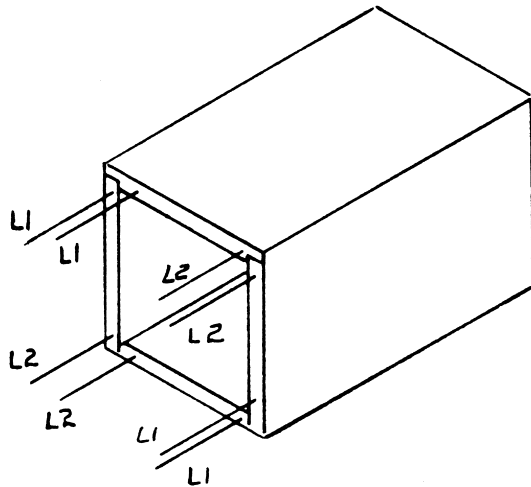
Containing one coil per half circle
(2 wires extending from ends of each half)

**Figure 3-2. Half Circle Wiring Diagram (Group B)
CRWS/CRRS Series**



Containing two coils per half circle
(4 wires extending from ends of each half)

**Figure 3-3. Half Circle Wiring Diagram (Group C)
Dual 240VAC**



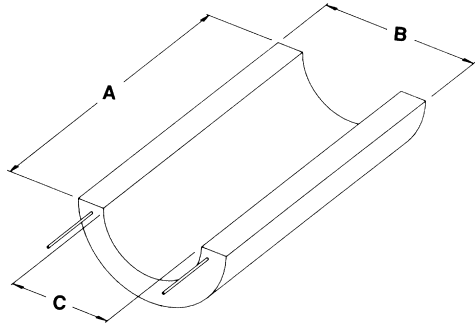
**Figure 3-4. Flat Heating Wiring Diagram (Group D)
CRFP Series
(4 Heating Elements Formed into an Oven)**

4.4 CRWS Series (Continued)

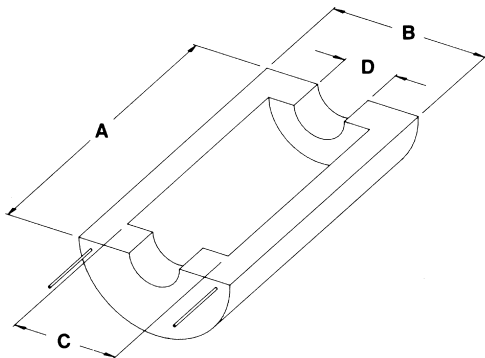
Watts	Volts	All Dimensions in Inches				Without Vestibules Part Number #
		A Dim*	B Dim	C Dim	D Dim	
300	60	6	4	2	1.5	CRWS-62/60
600	120	12	4	2	1.5	CRWS-122/120
900	120	18	4	2	1.5	CRWS-182/120
1200	240	24	4	2	1.5	CRWS-242/240
425	120	6	5	3	2	CRWS-63/120
850	120	12	5	3	2	CRWS-123/120
1275	240	18	5	3	2	CRWS-183/240
1700	240	24	5	3	2	CRWS-243/240
565	120	6	6	4	2.5	CRWS-64/120
1130	120	12	6	4	2.5	CRWS-124/120
1700	240	18	6	4	2.5	CRWS-184/240
2250	240	24	6	4	2.5	CRWS-244/240
650	120	6	9	5	3.5	CRWS-65/120
1300	240	12	9	5	3.5	CRWS-125/120
1950	240	18	9	5	3.5	CRWS-185/240
2600	240	24	9	5	3.5	CRWS-245/240
850	120	6	10	6	4	CRWS-66/120
1700	240	12	10	6	4	CRWS-126/240
2550	240	18	10	6	4	CRWS-186/240
3400	240&	24	10	6	4	CRWS-246/240
920	240	6	11	7	5	CRWS-67/240
1840	240	12	11	7	5	CRWS-127/240
2760	240	18	11	7	5	CRWS-187/240
3680	240&	24	11	7	5	CRWS-247/240
1100	240	6	12	8	6	CRWS-68/240
2200	240	12	12	8	6	CRWS-128/240
3300	240	18	12	8	6	CRWS-188/240
4400	240&	24@	12	8	6	CRWS-248/240
2250	240	12	14	10	8	CRWS-1210/240
3400	240&	18	14	10	8	CRWS-1810/240
4500	240&	24@	14	10	8	CRWS-2410/240
2700	240	12	16	12	10	CRWS-1212/240
4050	240&	18	16	12	10	CRWS-1812/240
5400	240&	24@	16	12	10	CRWS-2412/240
3400	240&	12	19	15	13	CRWS-1215/240
5100	240&	18	19	15	13	CRWS-1815/240
6800	240&	24@	19	15	13	CRW-2415/240
4100	240&	12	22	18	16	CRWS-1218/240
6150	240&	18	22	18	16	CRWS-1818/240
8200	240&	24@	22	18	16	CRWS-2418/240
4750	240&	12	25	21	19	CRWS-1221/240
7125	240&	18	25	21	19	CRWS-1821/240
9500	240&	24@	25	21	19	CRWS-2421/240

* Add 3 inches to "A" dimension for units with vestibules
Units with "-C" complete with vestibules attached
& Dual 240VAC circuits
@ Using two 12" long heaters; the indicated wattage is the total of two 12" heaters

4.4 CRWS Series



**Without Vestibules
(Full Length is Heated)**



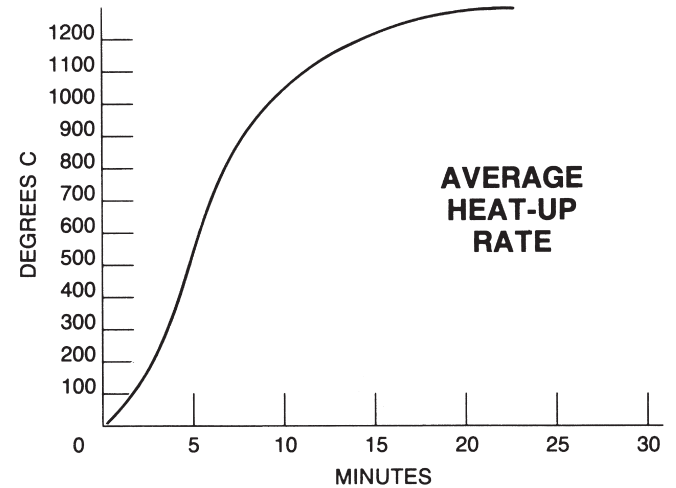
**With Optional Unheated
Vestibules (-C)**

SECTION 4 SPECIFICATIONS

4.1 General

Voltage:	60, 120, 240VAC single and dual circuits
Wattage:	300 to 9500
Maximum Operating Temperature:	CRFC, CRWS Series: 980° C CRFP, CRRS Series: 980° C
Dimensions:	see specific sections later on

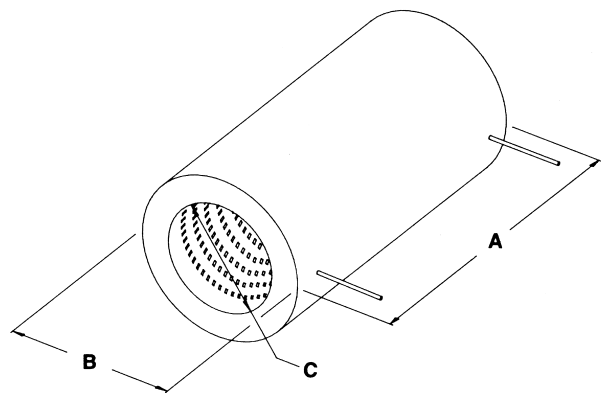
4.2 Average Heat-up Rate



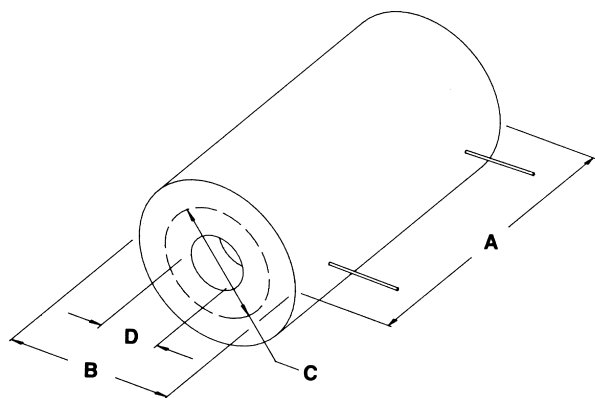
With proper installation and proper amounts of insulation, the average heat-up time can be reached as indicated.

Figure 4-1. Average Heat-up Rate

4.3 CRFC Series



**Without Vestibules
(Full Length is Heated)**



**With Optional Unheated
Vestibules (-C)**

4.3 CRFC Series (Continued)

Watts	Volts	All Dimensions in Inches				Without Vestibules Part Number #
		A Dim*	B Dim	C Dim	D Dim	
220	60	6	3	0.75	0.25	CRFC-756/60
440	120	12	3	0.75	0.25	CRFC-7512/120
250	60	6	3	1	0.5	CRFC-16/60
500	120	12	3	1	0.5	CRFC-112/120
300	60	6	3	1.25	0.75	CRFC-1256/60
600	120	12	3	1.25	0.75	CRFC-12512/120
350	60	6	3.5	1.5	1	CRFC-156/60
350	120	12	3.5	1.5	1	CRFC-1512/120
435	120	6	4	2	1.5	CRFC-26/120
870	120	12	4	2	1.5	CRFC-212/120
700	115	6	5	3	2	CRFC-36/115
1400	240	12	5	3	2	CRFC-312/240
2100	240	18	5	3	2	CRFC-318/240
900	240	6	7	4	2.5	CRFC-46/240
1800	240	12	7	4	2.5	CRFC-412/240
2700	240	18	7	4	2.5	CRFC-418/240
1130	240	6	9	5	3.5	CRFC-56/240
2260	240	12	9	5	3.5	CRFC-512/240
3390	240&	18	9	5	3.5	CRFC-518/240
4520	240&	24	9	5	3.5	CRFC-524/240
1350	240	6	10	6	4.5	CRFC-66/240
2700	240&	12	10	6	4.5	CRFC-612/240
4000	240&	18	10	6	4.5	CRFC-618/240

* Add 3 inches to "A" dimension for overall heater length
Units with "-C" complete with vestibules attached
& Dual 240VAC circuits