Chromalox®

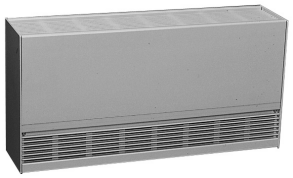
Installation, Operation

and

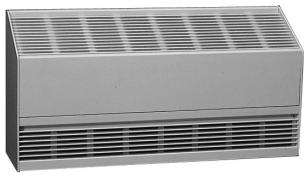
MAINTENANCE

SERVICE REFERENCE	
DIVISION 4	SECTION CAF-12 CCAS-12
SALES REFERENCE (Supersedes PF493)	PF493-1
	161-506171-001
DATE JULY, 2002	

Architectural Convection Heaters Type CAF-12 and CCAS-12



CAF-12



CCAS-12

TABLE 1 — Specifications

Model	Model	Volts	Phase	Watts	Amps	BTUH	Dimensions (In.)			Weight (Lbs.)
							Height	Length	Depth	
CAF-12F211	CCAS-12F211	208	1	1125	5.4	3,838	12	24.3	5.75	19
CAF-12F211	CCAS-12F211	208	3	1125	3.1	3,838	12	24.3	5.75	19
CAF-12F211	CCAS-12F211	240	1	1125	4.7	3,838	12	24.3	5.75	19
CAF-12F211	CCAS-12F211	277	1	1125	4.1	3,838	12	24.3	5.75	19
CAF-12F215	CCAS-12F215	208	1	1500	7.2	5,118	12	24.3	5.75	19
CAF-12F215	CCAS-12F215	208	3	1500	4.2	5,118	12	24.3	5.75	19
CAF-12F215	CCAS-12F215	240	1	1500	6.3	5,118	12	24.3	5.75	19
CAF-12F215	CCAS-12F215	277	1	1500	5.4	5,118	12	24.3	5.75	19
CAF-12F215	CCAS-12F215	480	3	1500	1.8	5,118	12	24.3	5.75	19
CAF-12F316	CCAS-12F316	208	1	1687	8.1	5,756	12	36.3	5.75	24
CAF-12F316	CCAS-12F316	208	3	1687	4.7	5,756	12	36.3	5.75	24
CAF-12F316	CCAS-12F316	240	1	1687	7	5,756	12	36.3	5.75	24
CAF-12F316	CCAS-12F316	277	1	1687	6.1	5,756	12	36.3	5.75	24
CAF-12F316	CCAS-12F316	480	3	1687	2	5,756	12	36.3	5.75	24
CAF-12F422	CCAS-12F422	208	1	2250	10.8	7,677	12	48.3	5.75	29
CAF-12F422	CCAS-12F422	208	3	2250	6.3	7,677	12	48.3	5.75	29
CAF-12F422	CCAS-12F422	240	1	2250	9.3	7,677	12	48.3	5.75	29
CAF-12F422	CCAS-12F422	277	1	2250	8.1	7,677	12	48.3	5.75	29
CAF-12F422	CCAS-12F422	480	3	2250	2.7	7,677	12	48.3	5.75	29
CAF-12F430	CCAS-12F430	208	1	3000	14.4	10,236	12	48.3	5.75	29
CAF-12F430	CCAS-12F430	208	3	3000	8.3	10,236	12	48.3	5.75	29
CAF-12F430	CCAS-12F430	240	1	3000	12.5	10,236	12	48.3	5.75	29
CAF-12F430	CCAS-12F430	277	1	3000	10.8	10,236	12	48.3	5.75	29
CAF-12F430	CCAS-12F430	480	3	3000	3.6	10,236	12	48.3	5.75	29
CAF-12F633	CCAS-12F633	208	1	3375	16.2	11,515	12	72.3	5.75	39
CAF-12F633	CCAS-12F633	208	3	3375	9.4	11,515	12	72.3	5.75	39
CAF-12F633	CCAS-12F633	240	1	3375	14.1	11,515	12	72.3	5.75	39
CAF-12F633	CCAS-12F633	277	1	3375	12.2	11,515	12	72.3	5.75	39
CAF-12F633	CCAS-12F633	480	3	3375	4.1	11,515	12	72.3	5.75	39
CAF-12F645	CCAS-12F645	208	1	4500	21.6	15,354	12	72.3	5.75	39
CAF-12F645	CCAS-12F645	208	3	4500	12.5	15,354	12	72.3	5.75	39
CAF-12F645	CCAS-12F645	240	1	4500	18.8	15,354	12	72.3	5.75	39
CAF-12F645	CCAS-12F645	277	1	4500	16.2	15,354	12	72.3	5.75	39
CAF-12F645	CCAS-12F645	480	3	4500	5.4	15,354	12	72.3	5.75	39
CAF-12F845	CCAS-12F845	208	1	4500	21.6	15,354	12	96.3	5.75	49
CAF-12F845	CCAS-12F845	208	3	4500	12.5	15,354	12	96.3	5.75	49
CAF-12F845	CCAS-12F845	240	1	4500	18.8	15,354	12	96.3	5.75	49
CAF-12F845	CCAS-12F845	277	1	4500	16.2	15,354	12	96.3	5.75	49
CAF-12F845	CCAS-12F845	480	3	4500	5.4	15,354	12	96.3	5.75	49
CAF-12F860	CCAS-12F860	208	1	6000	28.8	20,472	12	96.3	5.75	49
CAF-12F860	CCAS-12F860	208	3	6000	16.7	20,472	12	96.3	5.75	49
CAF-12F860	CCAS-12F860	240	1	6000	25	20,472	12	96.3	5.75	49
CAF-12F860	CCAS-12F860	277	1	6000	21.7	20,472	12	96.3	5.75	49
CAF-12F860	CCAS-12F860	480	3	6000	7.2	20,472	12	96.3	5.75	49

MODEL NUMBER DESCRIPTION

CAF-12 or CCAS-12	B	2	15	21	01	A9

Type

Code Inlet Location
F = Front B = Bottom

Code Length
2 = 2 ft. 3 = 3 ft. 4 = 4 ft. 6 = 6 ft. 8 = 8 ft.

Code Wattage (See Table)

Code Voltage/Phase
21 = 208/1 23 = 208/3 31 = 240/1 41 = 277/1 73 = 480/3

Code Finish

Painted	Anodized
68 = Almond	07 = Bronze
02 = White	10 = Clear

Code	Control Options (Factory Installed)	Refer to Wiring Diagram
00	= No Control Options	A
A9	= Built-in DP tamperproof hydraulic thermostat 208 - 277V	E
A3	= Built-in 3P tamperproof hydraulic thermostat for 3P voltages 208 - 480V	G
A4	= Built-in 24V low voltage relay for 1P voltages 208 - 277V	B
A5	= Built-in 24V low voltage relay and transformer for 1P voltages 208 - 277V	D
A6	= Built-in 24V contactor for 3P voltages 208 - 480V	F
A7	= Built-in 24V contactor and transformer for 3P voltages 208 - 480V	H
A8	= Built-in disconnect switch, rated 277V@20A	I
B9	= Built-in DP tamperproof thermostat and disconnect	J
B3	= Built-in 3P tamperproof thermostat and disconnect	K

GENERAL

This document explains the correct procedure for the installation and safe operation of all models of Draft Barrier and Pedestal Mounted Heaters.

Draft Barrier Heating Systems are designed to be installed in accordance with the National Electrical Code and with local codes by a qualified person.

General Information —

Draft Barriers and Pedestal Mounted Heaters are intended for wall, sill or floor mounting.

The heaters are designed so that they may be used as an individual cabinet convector, in a wall-to-wall configuration or as an end-to-end continuous perimeter room heating system.

Draft Barrier heating systems are supported by a wide selection of controls and accessories designed to solve any heating requirement.

Before You Unpack —

1. Make certain that the number of cartons received agrees with the Bill of Lading, Packing List and original order. Also check that the correct style (Model) and color have been shipped.
2. Every heater is carefully inspected and shipped with a clear Bill of Lading.
   Obvious external and/or concealed damage must be reported to the carrier for remedy.

WARNING: — Hazard of Fire

1. ***DO NOT INSTALL HEATERS AGAINST ANY HIGHLY COMBUSTIBLE SURFACES SUCH AS LOW DENSITY CELLULOSE FIBRE.***
2. ***DO NOT LOCATE HEATER BELOW ELECTRICAL CONVENIENCE RECEPTACLES.***
3. ***DO NOT STORE OR USE GASOLINE OR FLAMMABLE LIQUIDS IN THE VICINITY OF THE HEATERS.***

WARNING: ***Hazard of Fire. The normal operating temperatures of cabinet convectors are relatively high and proper operation requires free circulation of room air through the heating element. Bottom air inlet heaters must be mounted with minimum of 3" from finished floor.***

WARNING: ***Hazard of Fire. Keep electrical cords, drapes, rugs and other furnishings away from the heater.***

WARNING: ***Hazard of Fire. Furniture must be placed no closer than four inches from the heater (see Figure 1).***

WARNING: ***Hazard of Fire. Drapes must clear the top of heater by at least twelve inches; or, if floor length drapes are used, they must clear the finished floor by three inches and the minimum clearance from the back fold to the front cover should be at least four inches (see Figure 1).***

WARNING: ***Hazard of Fire. When the floor is to be finished in carpet, allow clearance under the heaters and corners for carpet installation. Bottom air inlet heaters are to be mounted a minimum of 3" from the finished floor.***

WARNING: ***Hazard of Fire. Rugs may be placed up to a heater provided that they are not of a thickness that would block the air-intake. Bottom air inlet heaters are to be mounted a minimum of 3" from the finished floor.***

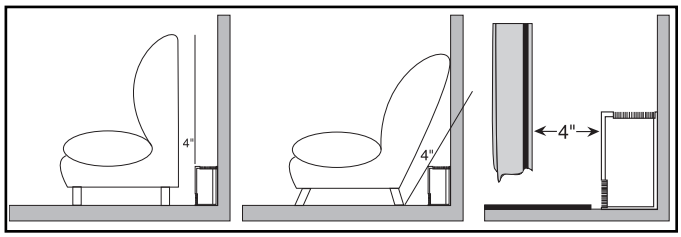


Figure 1: Furniture & Drapes

GENERAL

Draft Barrier Heater Installation (Wall)

1. Once the correct mounting height is established, scribe or snap a level line on the wall to maintain each heater back plate in horizontal alignment, when mounting.
2. Remove heater front cover by lifting top rear edge to unsnap cover from back plate (store cover in safe location to avoid damage to the finish). (See Figure 2.)
3. Remove all appropriate knockouts from terminal boxes, particularly terminal box end knockouts when installing continuous run heating. (See Figure 3.)
4. Mount the back panel to the wall using suitable fasteners (not supplied). Should the wall surface be uneven, secure the heater backplate to the high spots only to avoid a distorted appearance.

Draft Barrier Heater Installation (Floor)

1. Unpack the heater and pedestal(s) from the carton (The pedestals are packed at the end of carton) and lift the front/top panels up and off the heater.
2. Disassemble the pedestal base from the pedestal pad.
3. Remove the desired terminal box cover(s) and supply wire entry knockouts from the terminal boxes.
4. Secure a pedestal to each end of the heater bottom with #8 screws provided aligning the back and front edges of the pad with the heater. This will align the supply entry knockout with opening in pedestal pad.
   TIP: Units longer than 4 feet will be provided with 3 or more pedestals. The extra pedestals should be used to support the middle of heaters.
5. Place heater on the pedestal base(s) and tighten all screws.
   TIP: The height of the heater can be adjusted on the pedestal to aid in leveling the heater by loosening the securing bolt at the side of the pedestals.
6. Remove the terminal box cover and proceed to wiring instructions.

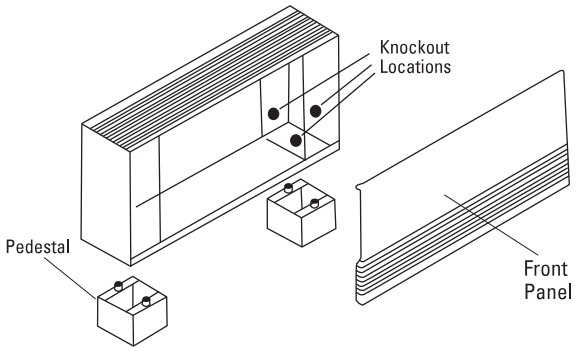


Figure 2

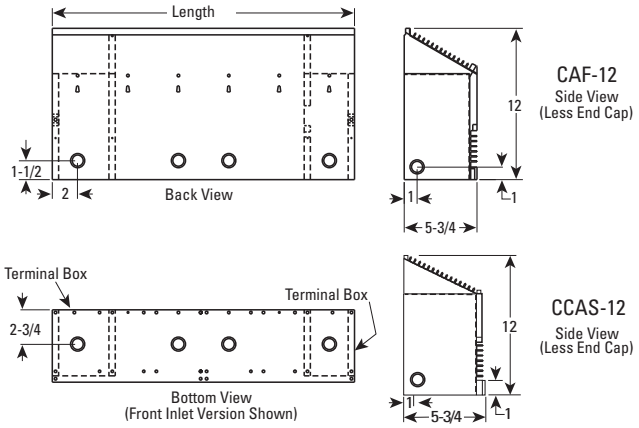


Figure 3

WIRING

Ground Continuity —

Note: All wiring should be done in accordance with local codes and the National Electrical Code by a qualified person.

WARNING: ***Hazard of Electric Shock. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.***

Prior To Installation —

WARNING: ***Hazard of Electric Shock. Disconnect all power before installing heater.***

1. All branch circuit and service supply wiring must be completed to the heater terminal box location.
2. Check heater nameplate ratings to be sure heater voltage is same as service supply.
3. Service supply entry is usually made to one heater terminal box (see Figure 3) with through wiring (Factory Installed) being used for interconnection of all heaters in a continuous run installation.

Note: When heaters are mounted end to end, remove the finishing end plate, install a chase nipple and locknut in the terminal box end knockout to ensure grounding continuity and to protect the wiring.

Where heaters are spaced apart, remove the finishing end plate, and use rigid conduit (Provided by customer) for through wiring and ground continuity. Do not exceed the allowable number of conductors allowed by the National Electrical Code.

Note: See Table 3 for recommended service supply wire sizes.

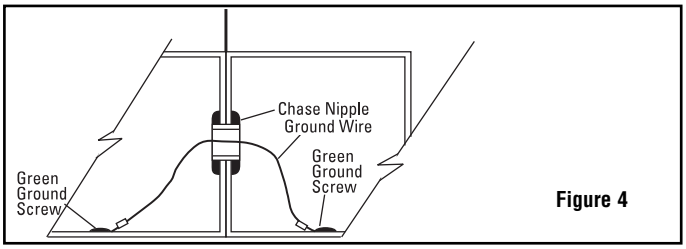


Figure 4

4. Knockouts are provided at the back, bottom and ends of all heater backs (see Figure 3). Terminal boxes are located at both ends of every heater.

Table 3: Service Supply Wiring Sizes
Recommended minimum supply wire sizes are listed in the table below:

Maximum Watts Per Circuit Using 75 Degree C. Wire								
	Rough In Wire Size	120V	208V	240V	277V	347V	480V	600V
Copper Wire	14	1440	2496	2880	3324	4164	5760	7200
	12	1920	3328	3840	4432	5552	7680	9600
	10	2880	4992	5760	6648	8328	11520	14400

WIRING

1. Wire all heaters and controls in accordance with the appropriate wiring diagram provided below.
2. Run a ground jumper from the ground screw in one terminal box to the ground screw in the adjacent terminal box. (See Figure 4.)
3. Do a final and complete check of all wiring then replace the terminal box covers being careful not to pinch any wires.
4. The front panel may now be installed.
5. Place the front panel over the flange of the bottom panel. Hook the top back edge of the front panel over the top panel, and secure with screws.

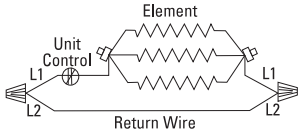
Table 2: Terminal Box Volumes (Cubic Inches)

Heater Style	Left Hand Box 4" Wide	Right Hand Box 5" Wide
CAF-12, CCAS-12	146.25	182.75

WARNING: ***TO PREVENT THE RISK OF FIRE, DO NOT OPERATE THE HEATER WITHOUT THE FRONT PANEL IN PLACE.***

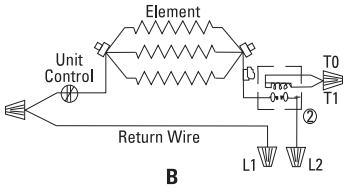
WIRING DIAGRAMS

Heater No Controls – 1-Ph Parallel



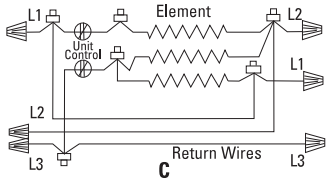
A

Heater LYD Relay – 1-Ph Parallel



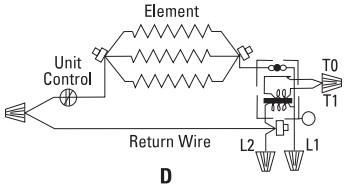
B

Heater No Controls – 3-Ph Delta



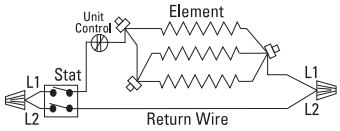
C

Heater LVC Relay – 1-Ph Parallel



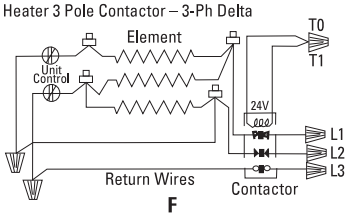
D

Heater 2 Pole Stat – 1-Ph Parallel



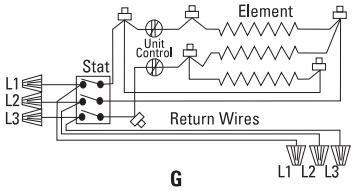
E

Heater 3 Pole Contactor – 3-Ph Delta



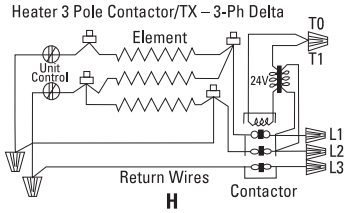
F

Heater 3 Pole Stat – 3-Ph Parallel



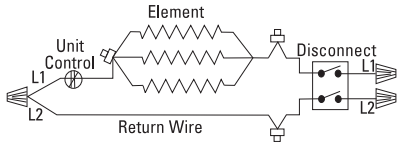
G

Heater 3 Pole Contactor/TX – 3-Ph Delta



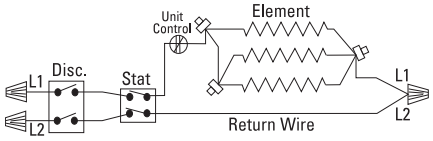
H

Heater 2 Pole Disconnect – 1-Ph



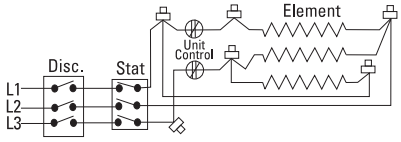
I

Heater 2 Pole Stat & Disconnect – 1-Ph



J

Heater 3 Pole Disconnect 3 Pole Stat – 3-Ph



K

Limited Warranty:
Please refer to the Chromalox limited warranty applicable to this product at http://www.chromalox.com/customer-service/policies/termsofsale.aspx.

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