Chromalox®

Installation, Operation and RENEWAL PARTS IDENTIFICATION

SERVICE REFERENCE			
DIV. 4	SEC. VC	NUMBER	3005C
SALES REFERENCE	(Supersedes PK424-5 & PK433-2)		PK433-3
			161-048629-001
DATE	March, 1985		

Chromalox Input Controllers

Catalog Numbers as listed below

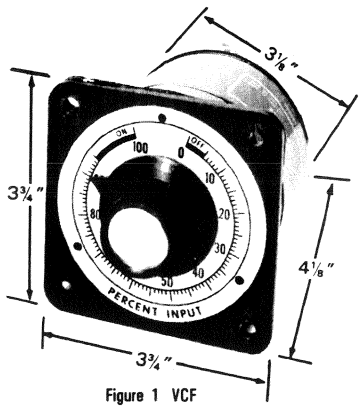


Figure 1 VCF

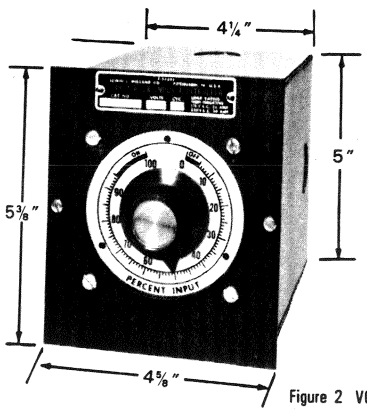


Figure 2 VCS

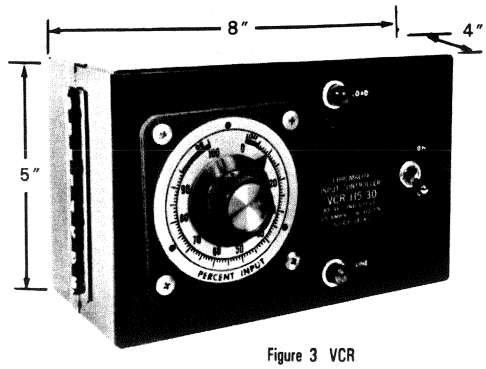
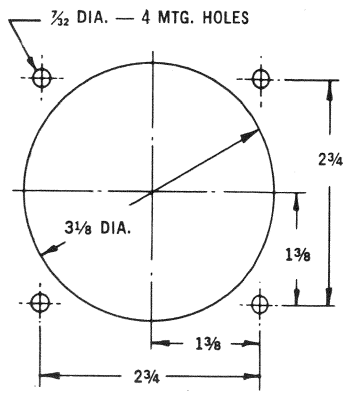


Figure 3 VCR

Type of Mounting	Volts Motor (50/60 cy)	Time Cycle Seconds	Contact Capacity, Amps	Catalog Number	Product Code No. (PCN)	Approx. Net Wt. Lbs.
Flush Fig. 1	115	30	25	VCF-401A	114340	2
	115	15	25	VCF-401A-15	114390	2
	230	30	20†	VCF-402A	114358	2
	230	15	20†	VCF-402A-15	114403	2
Surface Fig. 2	115	30	25	VCS-401A	112117	3¾
	115	15	25	VCS-401A-15	114374	3¾
	230	30	20†	VCS-402A	112125	3¾
	230	15	20†	VCS-402A-15	114382	3¾
Surface Fig. 3	115	30	25	VCR-115	112168	5
	230	30	20	VCR-230	112176	6

Ambient Temperature Range: 35°F to 100°F.
†25 amps permissible on 230V, but not UL.
Note 1: Magnetic Contactor required for 3 phase loads or loads above the power capacity of the VC.
Note 2: When used on 50 cycles, standard units will give you 36-second cycle instead of 30, or 18-second cycle instead of 15.



VCF PANEL CUTOUT

Figure 4

GENERAL

Type VC input controllers — percentage timing devices*

Motor driven cycling device, with SPST switch, which "pulses" radiant or other electric heaters for process or comfort heating. Can be set to select the percentage of a 30-second (or 15 sec.) cycle during which heaters are energized (e.g. 60% of 30-sec. cycle is 18-seconds "on", 12-seconds "off"). The mass of the metal-sheathed heater element smooths out pulses with fly-wheel effect into even radiation. Sufficient heating capacity is therefore installed for maximum work load conditions — and the input controller in effect derates radiation and/or heat output to match varying work loads, conveyor speeds, work sized, etc.

Input controllers allow "logging" dial settings for each part processed — enabling exact heat duplication when any given part is rerun. Heater output is variable and accurate from 4% to 100% capacity. "Heat zones" may be worked out to bring up temperature quickly, using VC controllers for accurate "holding heat." VC controllers can be surface (Fig. 2) or flush-mounted (Fig. 1) indoors and are usually connected in holding-coil circuit of magnetic contactors, except for single-phase loads within power capacity of VC.

Input Controller Panel (Fig. 3) — a packaged pre-wired combination of input controller, pilot lights, fuse blocks, line switch — to simplify wiring of heaters and contactors and for limiting maximum demand of heating loads.

***NOTICE:** Type VC input controllers function as temperature controllers. Because they do not fail safe, they should not be used for temperature limiting duty.

***CAUTION:** *Users should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure may be severe, back-up controls are essential. Although the safety of the installation is the responsibility of the user, Chromalox will be glad to make equipment recommendations.*

INSTALLATION

Note: Electric Wiring to heater must be installed in accordance with Local and National Electrical Codes.
WARNING: Use copper conductors only.

INSTALLING TYPE VCF — Cut out panel at desired location per drawing (Fig. 4) and mount control from rear using four No. 8 or No. 10 Machine screws, nuts and lockwashers. Terminal block will accommodate No. 12 wire. See Wiring Diagrams 3 and 4.

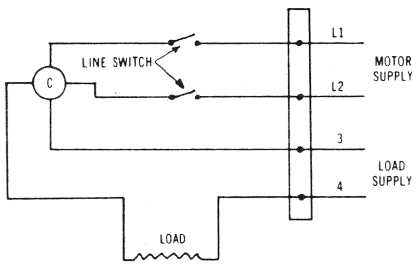
INSTALLING TYPE VCR — Mount on wall or panel in desired position, using the key-hole slots in back side of case. Two 7/8" diameter knockouts for ½" conduit are provided in the case for wiring. Terminal block will accommodate No. 12 wire. See Wiring Diagrams 1 and 2.

INSTALLING TYPE VCS — Mount on wall or panel in desired position, using the key-hole slots in back side of case. Four 1⅛" diameter knockouts for ¾" conduit are provided in the case for wiring. Terminal block will accommodate No. 12 wire. See Wiring Diagrams 3 and 4.

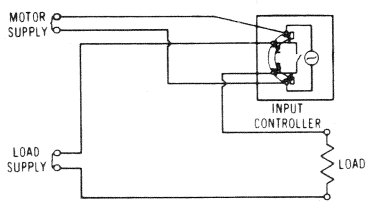
Note: The VCF, VCR, and VCS Input Controllers may be mounted at any angle from horizontal without affecting operation.

Caution: Line voltage should be checked for agreement with voltage stamped on nameplate of controller. Controller may be safely operated on voltages from 85% to 110% of rated voltage. Low voltage (if excessive or chronic) may cause erratic functioning.

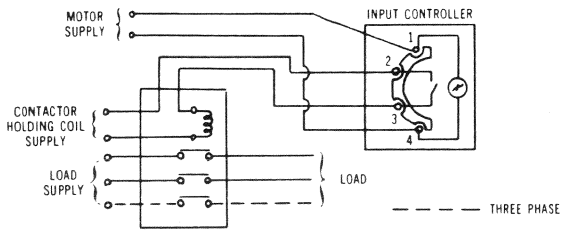
WIRING



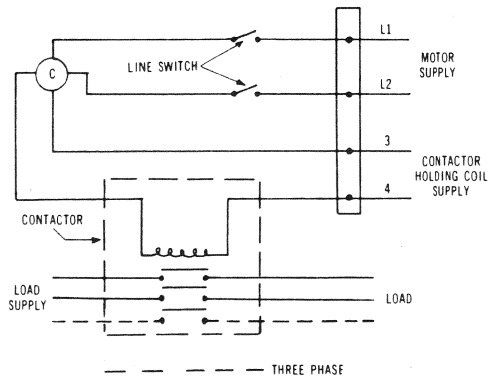
WIRING DIAGRAM 1 – Amperage of load less than current carrying capacity of VCR Controller.



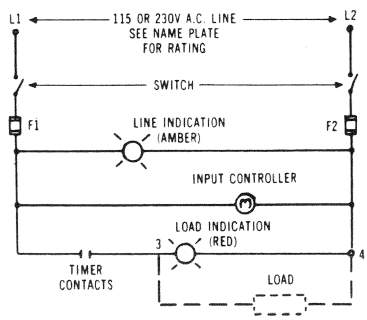
WIRING DIAGRAM 3 – Single phase load – Amperage of load less than current carrying capacity of VCF or VCS Controller.



WIRING DIAGRAM 4 – Amperage of load exceeds current carrying capacity of VCF or VCS Controller.



WIRING DIAGRAM 2 – Amperage of load exceeds current carrying capacity of VCR Controller or a three phase load is used.



WIRING DIAGRAM 5 – Internal wiring diagram of VCR Controller.

MAINTENANCE

CAUTION: ***Hazard of electric shock. Disconnect all power before wiring or servicing this control.***

1. The motor is permanently lubricated for life.

2. At about six month intervals the small idler pinion shaft (located in the terminal block) should be given one or two drops of light machine oil.

Note: If stalling is noted — remove motor and examine gears for dirt and gum accumulation. Clean with carbon tetrachloride or kerosene, then re-oil as above.

3. MOTORS: If it is desired to change the voltage, frequency or speed of operation, the proper motor should be ordered with the required characteristics.

To change motors: disconnect the two motor leads and the two motor mounting screws. Remove the motor and replace with new motor. All motors have a small idler gear which connects to the main idler shaft and is in turn engaged by the pinion on the motor.

4. CONTACTS: The contacts should be dressed occasionally with fine sandpaper or a contact dressing tool.

To replace contacts:
a. Remove "O" ring and housing cover (VCF and VCR). Remove two screws and housing cover (VCS).
b. Remove the screws used to hold the ends of the leads to the terminal block.
c. Remove the round bakelite insulator stud, located over the contact fingers, which is held in place by a single long screw extending from the terminal block into the front plate.
d. Using a scewdriver, loosen the shaft at rear of the contact finger assembly, and shaft may be removed toward the terminal block, removing the terminal block from the body frame.
e. To install a new contact finger assembly — reverse the above procedure.
f. Replace housing cover and "O" ring (VCF and VCR). Replace housing cover and two screws (VCS).