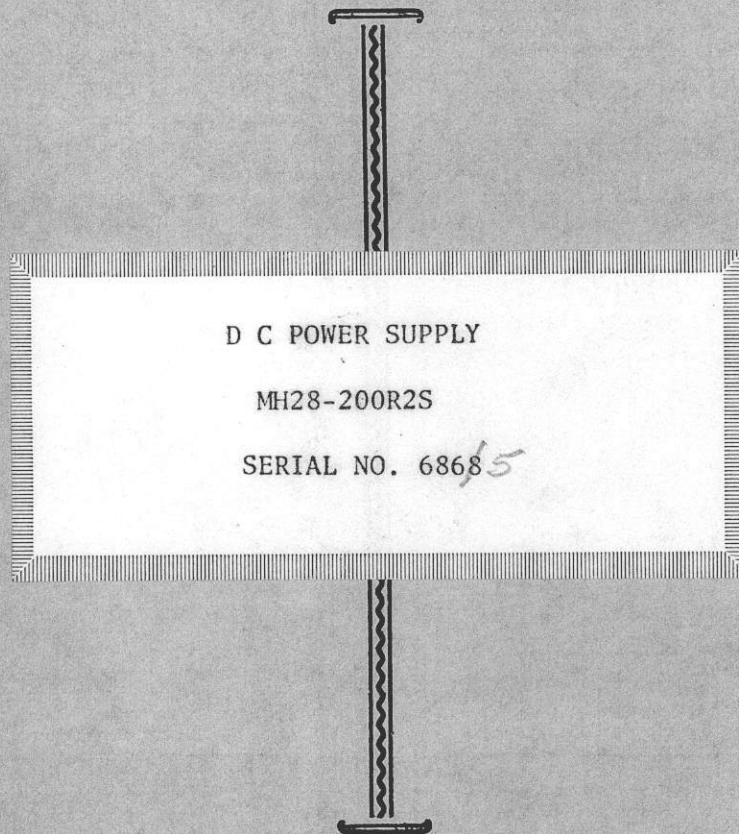


RECTODYNE DC POWER SUPPLIES  
SERIES "H", "A", "2A", "3A", "4A", "B"  
"M" and "MH"

# INSTRUCTIONS



**CHRISTIE ELECTRIC CORP.**

3410 WEST 67th STREET

LOS ANGELES, 43, CALIFORNIA

PRINTED IN U.S.A.

# RECTODYNE DC POWER SUPPLIES



## **CHRISTIE ELECTRIC CORP.**

3410 West 67th Street  
Los Angeles 43, California

# RECTODYNE DC POWER SUPPLIES

## INSTRUCTIONS

### UNPACKING AND INSTALLING:

If any damage has occurred during shipping, call the transportation company at once for an inspection and file a claim.

- a. Remove shipping bolts.
- b. On stationary models (except M & MH Series) unscrew the bolts which hold the legs in their shipping position on each side of the cabinet. **Fasten the legs in their operating position** by using the **upper** holes in the legs. This will allow free access of air through the bottom of the rectifier.
- c. On mobile models mount the front legs, insert the axle through the holes in the cabinet, fasten the set screw which holds the axle, then mount the wheels. Mount the handle by the bolts provided on the sides of the cabinet.
- d. Do not obstruct air inlets or exhaust air openings. If the power supply is placed with its back close to a wall, a baffle must be provided to direct the exhaust air upward to avoid recirculating. If the power supply is confined to a small space, ample ventilation must be provided.

### CONNECTING:

- a. Check the a-c voltage shown on the name plate, then check the a-c supply voltage with an a-c voltmeter to see that it does not differ by more than 5% from that shown on the name plate. Then connect the a-c supply wires to the a-c terminals on starter or terminal strip, and ground the cabinet to a good ground. To connect the mobile model to the a-c supply, use a flexible cord with an extra grounding wire. Connect the grounding wire to the grounding lug in the bottom of the connector box for grounding the cabinet. **Grounding the cabinet is an important safety measure.**
- b. On 230/208 volt 3 phase models three leads marked "230 volts" and three leads marked "208 volts" are brought out at a-c starter.  
**For 230 volt systems** (218 to 242 volts) the leads marked "230 volts" are connected to the starter (terminals T1, T2, T3,) and the leads marked "208 volts" should be left idle and taped up. (This is the way the power supplies are ordinarily connected when leaving the factory.)  
**For 208 volt systems** (198 to 218 volts) remove the 3 leads marked "230 volts" from the starter (contactor) terminals T1, T2 and T3, taping carefully each lead after removal, and leave these three leads idle. Then untape the 3 leads marked "208 volts" and connect these to terminals T1, T2 and T3 from which the 230 volt leads have just been removed.
- c. On 230/460 volt 3 phase models a terminal board is provided for changing from a 460 volt system to a 230 volt system by changing a set of connecting links. **It is necessary that these be carefully checked before connecting the unit to the a-c power line.** (Note: The above similarly applies to other combination models, such as 200/380 volt models.) In addition, a moveable bar is provided on some models for making small voltage adjustment.
- d. A-c and d-c CABLES:  
In order to avoid excessive voltage drop at heavy momentary inrush currents, it is desirable to use as short lines as practicable.

### STARTING THE POWER SUPPLY:

- a. After connection has been made to the proper a-c supply according to the above, turn the control knob to position number 1, (counter clockwise) then, before connecting the d-c load, start the power supply by pushing the start button. Do not hold the switch longer than necessary for the fan to come up to speed. This should close the a-c starters, and give a reading on the d-c voltmeter, and the cooling fan should automatically start blowing air upwards. The pilot lamp should now light.
- b. Adjust the d-c voltage to the desired value (generally 29 volts at no load, on 28 volt system) by turning the control knob.  
**Note: The power supply must never be operated unless fan is running in proper direction. The openings in the bottom, sides and top must never be blocked or obstructed. These are necessary for ventilation of the power supply.**
- c. Connect the d-c load and watch the ammeter. Do not exceed the rating of the power supply. To read the ammeter push the switch (if furnished) near the meter.
- d. If desirable to change to another control position **stop the power supply before operating the knob.** This will eliminate unnecessary wear on the contacts.

### OPERATING PRACTICE:

- a. Stop the power supply before operating the control knob.
- b. Stop the power supply when not in use. This will avoid running the fan unnecessarily.
- c. If the power supply is confined in a small room ample ventilation must be provided.

### OVERLOAD PROTECTION:

Prolonged overload of the power supply will cause the starter to trip. **It is then necessary to wait a few minutes before the power supply can be started again.**

### OVERHEAT PROTECTION IN CABINET:

Should the ventilating fan stop during the operation the power supply would overheat. To protect against this, an air flow switch is connected in series with the starter coil. In case of fan failure the switch will open and thus stop the power supply.

### WHAT TO DO IF POWER SUPPLY WILL NOT START:

- If the a-c starter will not operate when pushing the Start Button:
- Check the fan rotation. If air stream is not **upwards**, reverse 2 of the 3 a-c supply wires (3-phase).
  - Starter overload relay may have tripped. Wait a few minutes before starting.
  - Turn control knob to another position.
  - On 3-phase models check with a test light or voltage tester across **all 3 phases** of the a-c line to see that there is 3 phase voltage to the starter.
  - Check the air flow switch in the power supply cabinet under the fan partition. This may be done by shorting across the air flow switch.
  - Check that the power supply is not overloaded. High overloads cause the instantaneous magnetic overload relay to trip.

### HOW TO OPEN CABINET:

**Warning.** Before opening the cabinet **pull the a-c disconnect switch in the a-c line ahead of the power supply.**

- Remove the upper front panel by unscrewing the screws on the sides.

### IF POWER SUPPLY WILL NOT DELIVER ITS FULL OUTPUT:

- If one phase of the a-c circuit is open, the power supply will deliver only half voltage. In such case check with a voltmeter or a test light across all three a-c terminals to see that one phase is not dead. Also turn the control knob to see that it is making proper contact.
- In order for the power supply to deliver its full output it is necessary to have a supply line of ample capacity so that the voltage drop at the a-c terminals of the power supply is less than 5% under full load.

### CLEANING:

Collection of excessive dust on the rectifier should be avoided by blowing air with an air hose through the side louvers and bottom openings into the cabinet. This should be done at least every 90 days if operation is continuous.

### BALLAST CONTROL (VOLTAGE STABILIZER) IN "CHRISTIE" RECTODYNE D-C POWER SUPPLIES

Power supplies with suffix "R" or "T" contain a ballast, or dummy load consisting of a set of ballast resistors mounted in the cover of the unit.

The purpose of these resistors is to prevent excessive rise in the d-c output voltage at no load or small loads, by automatically applying a ballast or dummy load whenever the external load is reduced to a small value.

In power supply types with the suffix "R" these ballast resistors are divided into two groups and controlled in two stages by means of solenoid relays, each of which in turn is controlled by a ballast control unit.

In power supply types with the suffix "T" the ballast is controlled in a single stage.

### MODE OF OPERATION

**With the "T" type (single stage) ballast,** all the ballast should automatically disconnect and remain off whenever the external load exceeds  $\frac{1}{2}$  of full load (feel the resistors in the cover cool off).

When the load is reduced below 50%, the ballast resistors should again connect (feel the resistors heat up).

**With the "R" type (two-stage) ballast,** the first half of the ballast resistors should disconnect whenever the current exceeds  $\frac{1}{3}$  of full load and the second half should disconnect when the load exceeds  $\frac{2}{3}$  and should again connect when the load is reduced below these values.

### ADJUSTMENT OF BALLAST CONTROL UNIT

Operation of this unit is adjusted by addition or removal of resistance in the circuit. The length of resistance wire mounted next to the ballast control unit determines the operating point. An increase in length of this load, affected by addition of wire (No. 15 AWG resistance wire, 294 ohms per circular mil foot — Advance, Copel, Cupron, or equal —) will cause the solenoid to operate at a higher load current. A decrease in resistance of this lead will lower the operating point.

The a-c input voltage to the control unit is approximately 20 volts at normal line voltage and the d-c output to the solenoid relay is approximately 10 volts (if less than 8 volts, replace the control unit).

**NOTE: The type number and serial number of the power supply must be specified when ordering parts**

PART NO.	PART NAME	QTY. RUN	QTY. PER ASSY	QTY. ISSUED	QTY. SHORT	PER LABOR HRS.	PER EACH PART NO. MAT. \$	PER ASSY TOTAL HRS.	DATE REQ'D:
528040-001	MOTOR- 1/25 h.p., 5/16" shaft, 60 cycle	1	1						
530107-305	CAPACITOR- electrolytic, 7000 mfd, 35 v.,	2	2						
535132-312	3-1/2" rect., 2% ideal ANMETER- 0-300 adc, moving coil, with zero adjust	1	1						
536151-313	3-1/2" rect., 1% ideal VOLTMETER- 0-50 vdc, moving coil, with zero adjust.	1	1						
541100-013	DIODE- silicon, 50 v., 160 amp., (IN3260)	6	6						
546506-004	LAMP- 6 volt., (#55)	1	1						
546700-008	LIGHT INDICATOR- bayonnet base, red lens	1	1						
555150-001	RESISTOR- fixed, 15 ohm, 100 w., w/w type	1	1						
571115-002	RELAY- 1 pole, 15 amp., 125 mv., d.c. type	1	1						
571180-004	RELAY- 1 pole, 80 amp., 12 v., coil, d.c. type	2	2						
575311-016	HEATER- size 1, (42019) treated per JAN-T-152, 2 overload relays	2	2						
575713-008	STARTER- size 1, 3 pole, 220/440v, coil, less heaters	1	1						
578000-002	1 contact normally open, 1 contact normally closed S1 SWITCH- push type, 2 button, "special" start/stop,	1	1						
578400-006	S2 SWITCH- lever type, sensitive, windswitch	1	1						
585217-601	TERMINAL BOARD- barrier screw, 50 amp., 1 contact	3	3						
585219-310	TERMINAL BOARD- barrier screw, 15 amp., 10 contact	1	1						
585999-001	TERMINAL BOARD- end piece, no contact, no rating	1	1						
522121-801	INPELLER-12" dia., 18°, 5/16" bore, 4 blades	1	1						
515610-001	SPRING- tap switch, 0.060 music wire	1	1						
515810-403	WASHER- centering	2	2						









501203	REV. A
--------	-----------

SYM	REVISION	DATE	DR.	APP'D
A	ORIGINAL ISSUE			

OPERATING INSTRUCTIONS

1. TO START POWER SUPPLY - PUSH START BUTTON.
2. TO STOP POWER SUPPLY - PUSH STOP BUTTON.
3. ADJUST DC VOLTAGE AT NO LOAD BY TURNING CONTROL KNOB.
4. IF OVERLOAD HAS TRIPPED, WAIT A FEW MINUTES BEFORE STARTING.
5. STOP POWER SUPPLY WHEN NOT IN USE.

NOTE: UNLESS OTHERWISE NOTED—  
 1.) ALL RESISTORS 1/2W. 10%.  
 2.) ALL CAPACITORS UF AND WVDC.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF CHRISTIE ELECTRIC CORP. AND SHALL NOT BE REPRODUCED, OR COPIED, OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS WITHOUT PERMISSION.

MH28-200R2S U110911-1 MH28-200R2D U110292-1  MODEL	<b>CHRISTIE ELECTRIC CORP.</b> <small>FORMERLY MCCOLPIN-CHRISTIE CORP          LOS ANGELES 43, CALIFORNIA</small>	DRAWN L.R.DAVIS DATE 2-24-70 CHECKED APP'D <i>[Signature]</i> SUPERSEDES
	<b>SCHEMATIC WIRING DIAGRAM</b>	DWG. NO. 501203 REV. A

