communications

VOICE COMMANDER

MULTICHARGER MODEL 4EP46A10

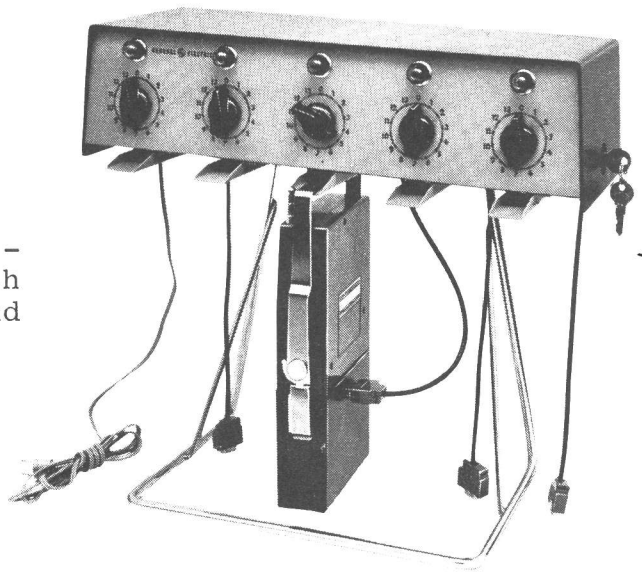


Fig. 1 - Multicharger with Optional Desk Stand

SPECIFICATIONS *

Number of Charging Positions	five
Input Voltage	117 VAC, 50/60 cps
Input Power	34 watts maximum
Output	
Full Charge	120 milliamperes ±10%
Trickle Charge	13 milliamperes ±10%
Timers	Individually adjustable from 0 to 14 hours
Dimensions	4-1/2" high x 7-3/4" deep x 17-1/8" long (16-1/2" high using optional desk stand)
Weight	8 pounds 15 ounces (less desk stand or wall-mounted plate)

fil: 0051

EQUIPMENT INDEX

Option Number	Equipment
5985	Multicharger ..... 4EP46A10 Mounting Hardware 19A122007-G1
5984	Desk Stand 19C303675-G1

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Certified and Guaranteed Specification Sheet for the complete specifications.

DESCRIPTION

Multicharger Model 4EP46A10 permits up to five Voice Commanders with Rechargeable Power Supply EP-32-A or -B to be recharged simultaneously. The charger can be either wall-mounted or desk-mounted (using the optional desk stand shown in Figure 1). On the right end of the charger, a lock has been provided to prevent unauthorized removal of a Voice Commander.

Each Voice Commander is charged for the length of time set on its individual timer. The charger then reverts automatically to a trickle charge, maintaining the radio at peak charge for an indefinite period of time.

INSTALLATION

WALL MOUNTING

Select a mounting location which will provide at least 11" of space beneath the charger for the Voice Commanders to hang while charging. Attach the mounting plate to a vertical mounting surface, using a screw or bolt (not supplied) in each corner. The mounting holes are spaced 16" apart so that the screws can be anchored into wall studs. Screw two shoulder screws (supplied in the mounting hardware) into the upper pair of tapped holes in the plate. Then slip the keyhole slots in the mounting channels on the back of the charger over the shoulder screws. The two additional machine screws can be used to fasten the bottom of the charger to the mounting plate.

DESK MOUNTING (Using Optional Desk Stand)

Slip the two legs of the desk stand through the two mounting channels on the back of the charger. Secure the stand to the charger with four screws through the holes in the channels.

POWER CONNECTION

Plug the power cable into a 117-VAC, 50/60-cps outlet. If more than one charger is being installed, they can be mounted side by side and plugged in series, using the outlet beneath each charger.

OPERATION

To charge a Voice Commander, unlock the multicharger and hang the radio on one of the brackets beneath the charger so that the antenna is at the front. (See Figure 1.) If desired, the unit can be left in operation while charging, with the antenna extended. Plug the 9-pin charging cable hanging to the right of the unit into the back of the battery pack and rotate the timer knob above the radio to the right past "2" and then to the number of hours it is to be charged. The timer knob can be moved in either direction at any time without damaging the timer. The amber pilot light over the timer will remain lit while the radio is under timer-controlled charge. To prevent unauthorized removal of a radio, lock the charger.

It is not necessary to unplug the charging cord when the amber light goes out at the end of the charging time. The charger automatically reverts to a trickle charge, maintaining the batteries at peak charge.

CHARGING EXTRA BATTERY PACKS

For Voice Commanders which are in continuous use, extra battery packs can be recharged while disconnected from the transmitter-receiver. The charging cables are long enough to allow sitting the extra packs on top of the charger.

NOTE

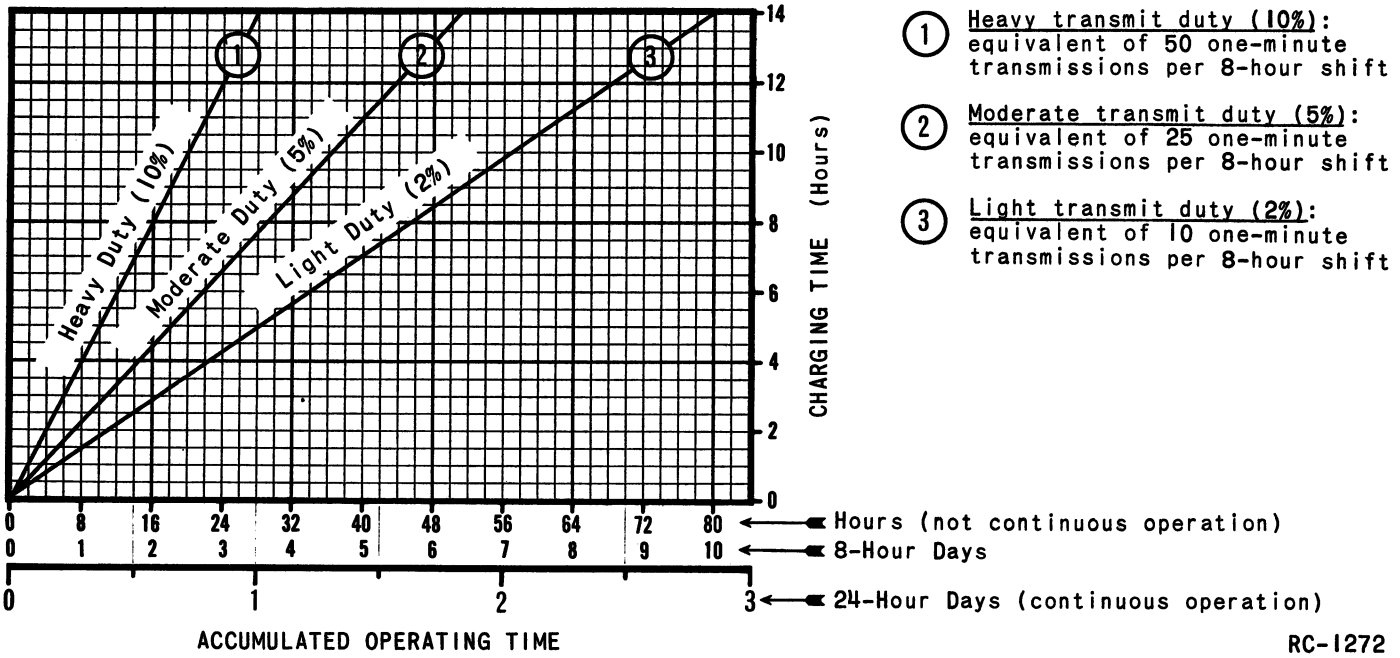
Be sure to plug the charging cable into the back of the battery pack. (A similar jack is present inside the unit.)

CHARGING TIME

Use Figure 2 to determine how frequently and how long to recharge your Voice Commander. This will depend upon the number of hours per day you use your radio, the number of transmissions you make, and the length of the transmissions. By estimating the length of time your Voice Commander has been operating and your transmit duty, you can quickly determine the required charging time from Figure 2.

"Moderate" transmit duty (line "2" in Fig. 2) should be used for Voice Commanders which transmit an average of 5% of the time they are

Figure 2 - Time Required to Fully Recharge Voice Commanders



turned on. This would be a total of 3 minutes of transmit time per hour (3 one-minute calls or 6 half-minute calls per hour, for example). Additional curves are provided in Fig. 2 for heavy or light transmit duty.

Example 1 - Suppose that you use your Voice Commander for one 8-hour shift per day and make about 25 one-minute calls during that time (moderate transmit duty). Line "2" in Fig. 2 indicates that if you use your Voice Commander for six 8-hour days, you should recharge the batteries for slightly over 13 hours. If you have a 6-day work week, you will probably find it convenient to recharge your radio for 14 hours every weekend.

Example 2 - If you operate your Voice Commander only 2 hours a day with a light transmit duty, you could recharge your radio for 5 hours every 14 days (accumulated operating time 28 hours) or for 7-1/2 hours every 21 days (accumulated operating time 42 hours). Select a recharging schedule which is most convenient for your particular radio system.

CIRCUIT ANALYSIS

The power transformer supplies power to five pairs of silicon diodes. The anodes of each pair of diodes are tied together, making five full-wave rectifier circuits for charging Voice Commander rechargeable power supplies. When a charging cable is plugged into a battery pack, one battery is charged through pin 3 and the other battery is charged through pin 7 from one of the rectifier circuits. An 80-ohm current-limiting resistor limits the charge to 120 milliamperes during full charge. Since this resistance is much greater than the impedance of the batteries, the charging current remains almost constant -- even though the battery impedance changes as the batteries charge.

During full charge, the pilot lamp and the timer provide the connection for charging current to the center tap of the power transformer. The lamp should light to indicate that the battery pack is being charged. A 22-ohm resistor across the lamp limits current through the lamp, greatly extending its life. If a lamp should fail, however, charging will continue at about 90% of full charge.

The timers used in the charger are high reliability devices with an accuracy of ±5%. As a timer reaches the end of its timing cycle, it opens the short across a 510-ohm resistor. This reduces the charging current to 13 milliamperes to maintain a trickle charge through each battery. The current which continues to flow through the pilot lamp is too small to light the lamp.

MAINTENANCE

If one of the charging lamps burns out, it can be replaced from the front of the panel by simply unscrewing the lens. The 117-VAC line fuse can be readily replaced beneath the charger.

To open the charger for servicing, remove the two screws on the back of the unit and the four screws on the bottom of the unit (near the back edge). The chassis can then be pulled forward out of its housing.

PARTS LIST

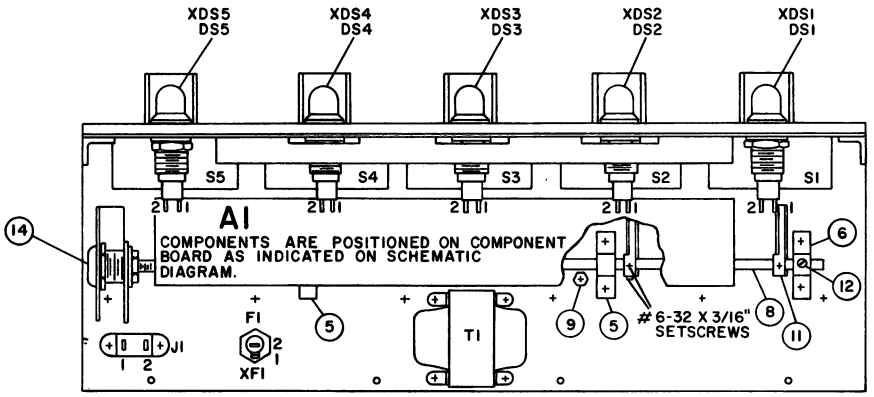
SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - SUBASSEMBLIES - - - - - - - - -
A1		COMPONENT BOARD PL-19B204905-G1
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR1 thru CR10	4037822-P1	Silicon.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R78-P511J	Fixed composition: 510 ohms ±5%, 1 w.
R2	3R78-P220J	Fixed composition: 22 ohms ±5%, 1 w.
R3 and R4	5493035-P4	Wirewound: 80 ohms ±5%, 5 w; sim to Tru-Ohm X-60.
R5	3R78-P511J	Fixed composition: 510 ohms ±5%, 1 w.
R6	3R78-P220J	Fixed composition: 22 ohms ±5%, 1 w.
R7 and R8	5493035-P4	Wirewound: 80 ohms ±5%, 5 w; sim to Tru-Ohm X-60.
R9	3R78-P511J	Fixed composition: 510 ohms ±5%, 1 w.
R10	3R78-P220J	Fixed composition: 22 ohms ±5%, 1 w.
R11 and R12	5493035-P4	Wirewound: 80 ohms ±5%, 5 w; sim to Tru-Ohm X-60.
R13	3R78-P511J	Fixed composition: 510 ohms ±5%, 1 w.
R14	3R78-P220J	Fixed composition: 22 ohms ±5%, 1 w.
R15 and R16	5493035-P4	Wirewound: 80 ohms ±5%, 5 w; sim to Tru-Ohm X-60.
R17	3R78-P511J	Fixed composition: 510 ohms ±5%, 1 w.
R18	3R78-P220J	Fixed composition: 22 ohms ±5%, 1 w.
R19 and R20	5493035-P4	Wirewound: 80 ohms ±5%, 5 w; sim to Tru-Ohm X-60.
		- - - - - - - - - INDICATING DEVICES - - - - - - - - -
DS1 thru DS5	19C307037-P2	Lamp, incandescent: miniature, 6.3 v; sim to G-E 47.
		- - - - - - - - - - - FUSES - - - - - - - - - - -
F1	1R16-P3	Cartridge, quick blowing: 1 amp at 250 v; sim to Littelfuse 312001 or Bussmann AGC-1.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - - -
J1	19B209162-P3	Plug, power, phen: sim to Alden 402 ACEH.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1		(Part of W1).
P2		(Part of W2).
P3		(Part of W3).
P4		(Part of W4).
P5		(Part of W5).
P6		(Part of W6).
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1 thru S5	19B209242-P1	Timer, interval: 0-14 hour time setting; sim to MH Rhodes 91076.
		- - - - - - - - - TRANSFORMERS - - - - - - - - -
T1	19B209248-P1	Power, step-down: Primary: 117 VRMS. Secondaries: 23 VRMS ±2 VRMS.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1	4036441-P7	Power: 2-conductor, with 2-contact molded plastic plug (P1), approx 7 feet.
W2	PL-19B204999-G1	Cable: with 9-contact connector (P2), approx 18 inches.
W3	PL-19B204999-G1	Cable: with 9-contact connector (P3), approx 18 inches.
W4	PL-19B204999-G1	Cable: with 9-contact connector (P4), approx 18 inches.
W5	PL-19B204999-G1	Cable: with 9-contact connector (P5), approx 18 inches.
W6	PL-19B204999-G1	Cable: with 9-contact connector (P6), approx 18 inches.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS1 thru XDS5	7141855-P7	Lamp: amber plastic lens; sim to Dialight 95-410-933.
XF1	7115179-P1	Fuseholder: 15 amps at 250 v; sim to Bussmann HKP.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	PL-19A122007-G1	Mounting Hardware Kit.
	PL-19C303675-G1	Desk Stand.

PARTS LIST (Continued)

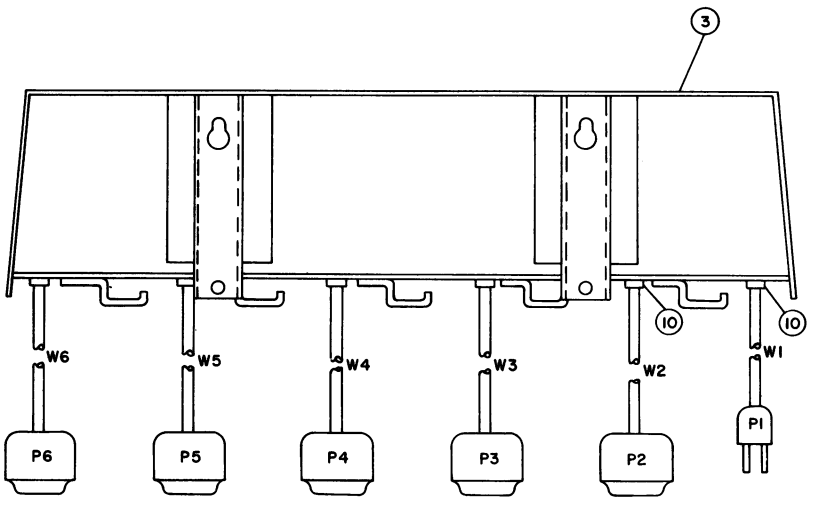
SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - MECHANICAL PARTS - - - - - - - - (SEE FIGURE 3)
3	PL-19D402474-G1	Cover.
5	19A121642-P2	Support, locking shaft. (Center).
6	19A121642-P1	Support, locking shaft. (End).
8	19A121070-P1	Locking shaft.
9	7142162-P73	Spacer. (For A1 board).
10	5491419-P1	Strain relief. (For W1 thru W6).

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - MECHANICAL PARTS(Cont'd) - - - -
11	19A121643-P1	Locking bar.
12	5492487-P11	Screw, shaft tension: nylon.
13	19A115492-P1	Knob. (For S1 thru S5).
14	4033979-P2	Lock: includes 2 keys.
24	7142162-P97	Spacer. (Mounts cover).

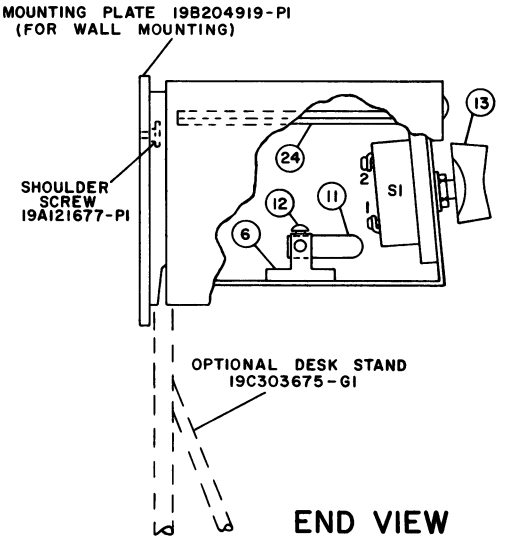


TOP VIEW
(WITH COVER REMOVED)

(19C303983, Rev. 0)



BACK VIEW



END VIEW

Figure 3 - Outline Diagram

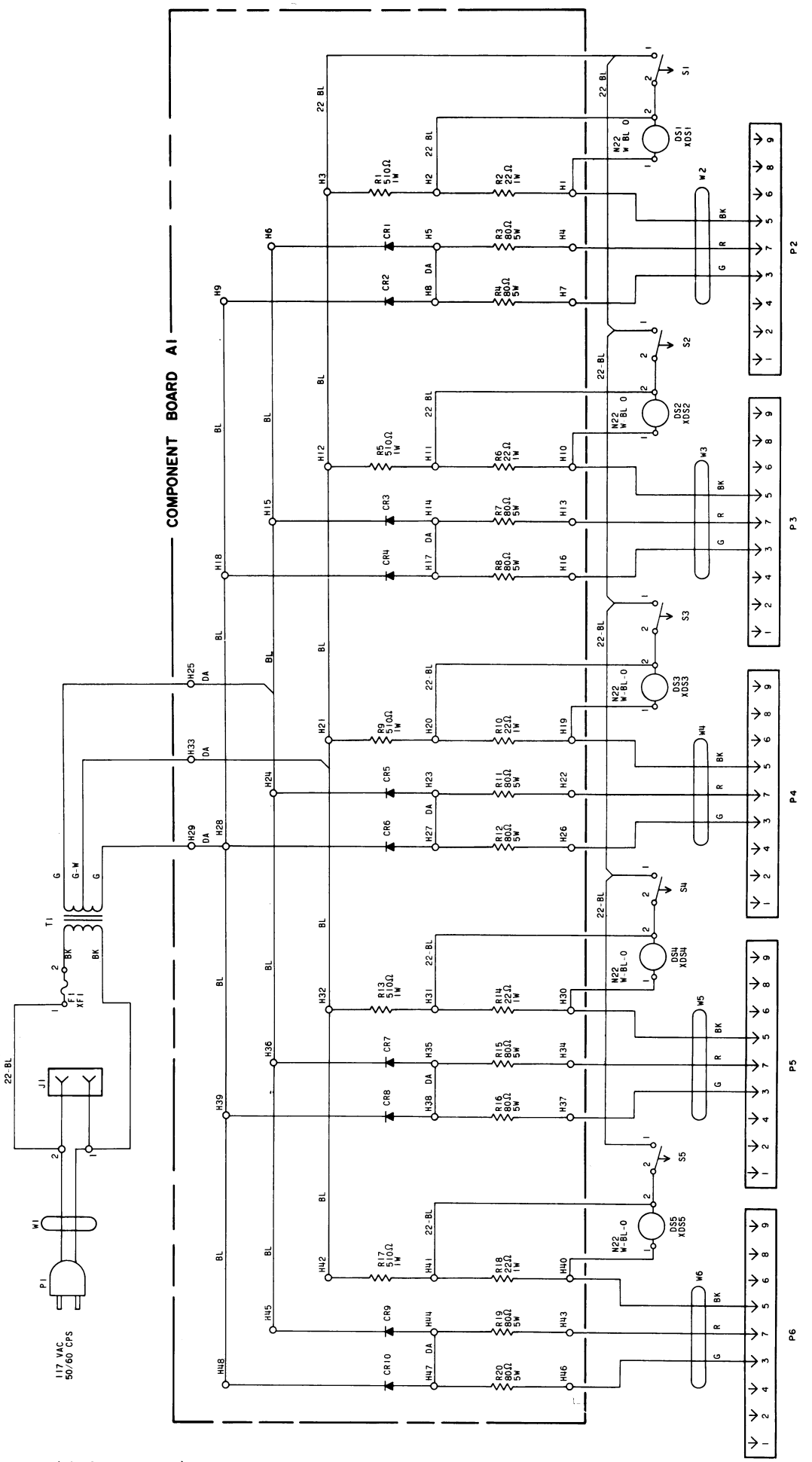


Figure 4 - Schematic Diagram

(19D402494, Rev. 1)

MAINTENANCE MANUAL

LBI-3673

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