

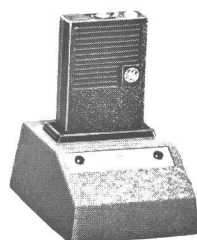
MAINTENANCE MANUAL

DESK CHARGER MODELS 4EP67A10, 11

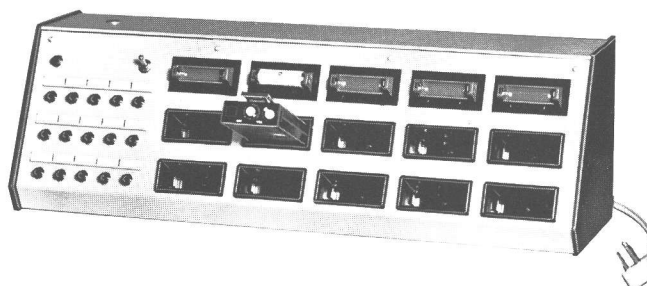
MULTI-CHARGER MODELS 4EP74A10-13

(Options 5405, 5406 & 5407 thru 5410)

Maintenance Manual LBI-4217C
DF-0069



DESK CHARGER



MULTI-CHARGER

SPECIFICATIONS *

Used With:

Input Voltage:

Input Power:

Desk Charger

4EP67A10

4EP67A11

Multi-Charger

Charging Current (per battery)

Trickle-Charge Current (per battery)

Maximum Charging Time

100% Charge

70% Charge

Temperature Range

Dimensions (H X W X D)

Desk Charger

Multi-Charger

Weight

Desk Charger

Multi-Charger

Personal Pagers (PCO and PVO Models)

120 VAC \pm 10%, 50/60 Hz

Charging

Not Charging

2 watts

0.5 watt

4 watts

0.5 watt

15 watts

5 watts

17 milliamperes

5 milliamperes

14 hours

8 hours

0 C to 55 C

2 1/2" x 3 7/8" x 5 1/2"

7 5/8" x 24 1/8" x 7 3/16"

1-1/4 pounds

23 pounds

OPTIONS

Option Number	Model Number	Recharges:
5405	4EP67A10	1 Radio
5406	4EP67A11	1 Radio and 1 Battery
5407	4EP74A10	15 Radios
5408	4EP74A11	10 Radios and 5 Batteries
5409	4EP74A12	5 Radios and 10 Batteries
5410	4EP74A13	15 Batteries

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

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WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

DESCRIPTION

General Electric Desk Charger Models 4EP67A10, 11 and Multi-Charger Models 4EP74A10-13 will fully recharge the nickel-cadmium battery used with the Personal Pager in 14 hours or less. The chargers will also provide approximately 70% charge in 8 hours or less.

Both of the chargers are equipped with a circuit that prevents the battery from overcharging. When the battery is charged to 70% of capacity, the charger applies a trickle charge for the remaining 6 hours of the charging time. The battery may be left on trickle charge indefinitely without damage.

INSTALLATION

DESK CHARGER

The desk charger can be located on a desk or table top, or other flat surface. The location should be close to a 120-volt AC, 50/60 Hz source. If the radio is to be used while charging, the charger should be located so that it is convenient to the operation.

MULTI-UNIT CHARGER

The multi-charger may be located on a table top or shelf, or may be mounted on a wall or other vertical surface. Two mounting holes approximately 16 inches apart are provided in the back of the charger for wall mounting. The mounting location should be close to a 120-volt AC, 50/60 Hz source. To mount the multi-charger on a wall:

1. Make sure that the power cable is disconnected. Then remove the

four Phillips-head screws along the top of the front panel and swing down the panel.

2. Use the charger as a template and mark the mounting holes.
3. Mount the charger using two 1/4-inch lag screws or #14 wood screws as required.
4. Replace the front cover and plug in the power cable.

OPERATION

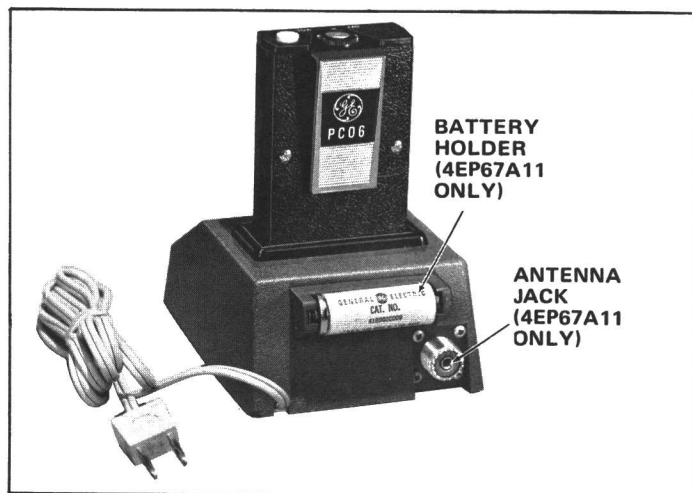
Due to the temperature characteristics of nickel-cadmium batteries, the batteries will not take a full charge at temperature extremes. For a maximum charge, recharge the battery at room temperatures of from 65° to 85° Fahrenheit whenever possible.

DESK CHARGERS

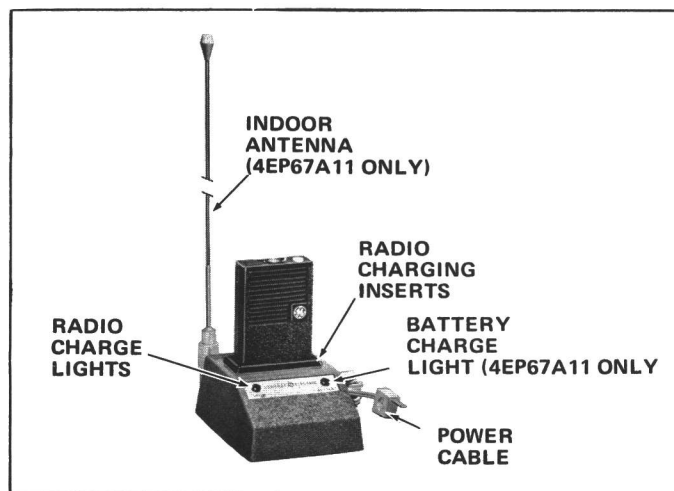
Two desk chargers are available for recharging the nickel-cadmium battery from a 120-volt, 50/60 Hz source. Charger Model 4EP67A10 will recharge one battery in the radio, and charger Model 4EP67A11 will recharge one radio and one battery.

To use the desk charger, turn the Pager OFF. Then place the radio into the charging insert, or the battery into the battery holder (see Figure 1). The red charge light(s) will glow brightly at the beginning of the charge cycle and will gradually become dimmer until it goes out, indicating that the charger is on trickle charge. The charger will fully recharge the battery in an additional 6 hours.

Charger Model 4EP67A11 is also equipped with an antenna jack for use with the optional indoor antenna, or an external antenna.



REAR VIEW



FRONT VIEW

Figure 1 - Desk Chargers

Placing the Pager into the charging insert with the speaker facing the front of the charger automatically connects the Pager to the antenna. The Pager may be turned ON to monitor the channel and receive messages while in the charger. The battery can be charged up to approximately 50% of capacity with the Pager turned ON.

MULTI-CHARGER

Four multi-chargers are available for recharging up to 15 radios, 15 batteries, or a combination of radios and batteries.

To use the multi-charger, plug the power cable into a 120-volt, 50/60 Hz source (see Figure 2). Then turn the OFF-ON switch to the ON position. Next, place the radios into the charging inserts, or the batteries into the battery holders. The green charge light will glow brightly at the start of the charging cycle, and will gradually become dimmer until it goes out, indicating that the charger is on trickle charge. The charger will fully recharge the batteries in an additional 6 hours.

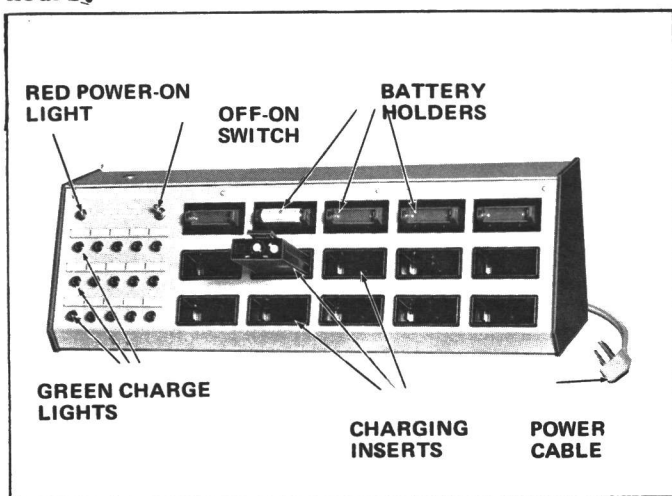


Figure 2 - Multi-Charger

CIRCUIT ANALYSIS

Desk Charger Model 4EP67A10 contains a power supply and one charging circuit, and Desk Charger Model 4EP67A11 contains a power supply and two charging circuits. The multi-chargers contain a power supply and 15 charging circuits. The charging circuits used in both types of chargers are identical.

References to symbol numbers mentioned in the following text can be found on the applicable Parts List, Schematic and Outline Diagram as listed in the Table of Contents.

POWER SUPPLIES

DESK CHARGERS

Connecting the charger to a power source applies 120-volts to the primary step-down transformer T501. The primary is protected by fuse F501.

The AC voltage developed across the secondary of T501 is rectified by full-wave bridge rectifiers CR1 through CR4. The unfiltered rectified output is applied to the charging circuit.

MULTI-CHARGERS

Placing OFF-ON switch S501 to the ON position applies 120-volts to the primary of step-down transformer T501. The primary is protected by fuse F501.

The AC voltage developed across the secondary of T501 is rectified by fullwave bridge rectifiers CR501 through CR504. The unfiltered rectified output is applied to the charging circuits. Thyrector CR505 protects the charging circuits against abnormal voltage surges.

CHARGING CIRCUIT

As the charging circuits in the Desk Charger and Multi-charger are identical, only the operation of the 4EP67A10 will be described in this section.

The charger operates as a current-limited voltage regulator. Placing a radio into the charger causes Q2 to conduct. This forward biases CR5 and applies a 17 milliamper charging current to the battery. The charging current is limited by R2. Diode CR5 prevents the battery from discharging into the charging circuit whenever power is removed from the charger.

When Q2 conducts heavily, Q1 turns on and lights the red charge light. Q3 in the differential amplifier circuit also turns on, keeping Q4 turned off.

At the start of the charging cycle, Q2 normally operates as a fully saturated stage. As the battery charges up, the voltage at the anode of CR5 increases to a level that causes Q4 to start conducting. When Q4 starts conducting, its collector becomes more negative. This reduces the degree of saturation of Q2, which reduces the current applied to the battery. When Q4 starts conducting, the emitter bias of Q1 is also reduced, causing the charge light to grow dimmer.

When the battery is charged up to approximately 70% of capacity, the charger

is in the trickle charge mode. Q4 is conducting at a level that has Q1 turned off (charge light out), and the output of Q2 has been reduced to 5 milliamperes. The charger remains in the trickle charge mode until the radio is removed.

The setting of R9 in the base circuit of Q4 determines the voltage level of the trickle charge mode. Complete instructions for setting R9 are contained in the ADJUSTMENT section.

MAINTENANCE

DISASSEMBLY

To gain access to the desk charger circuitry for servicing, remove the four Phillips-head screws in the bottom of the charger and carefully lift off the housing. The charger must be disassembled to replace the CHARGE light.

To gain access to the multi-charger circuitry, remove the four Phillips-head screws along the top of the front panel, and swing open the panel. It is not necessary to open the front panel to change the indicator lights. To change the bayonet-type lamps, first unscrew the colored lens. Then push in on the lamp bulb, turn it 1/4 turn to the left and lift the lamp out.

TROUBLESHOOTING

Should a difficult service problem arise, the Troubleshooting Procedure listed in the Table of Contents is provided to assist the serviceman. The procedure includes servicing both the desk charger and the multi-charger.

ADJUSTMENT

Potentiometer R9 (and R16) is adjusted and secured with a sealant at the factory to prevent tempering. If CR5 through CR8, Q2, Q3, Q4, R8, R9, VR2 are replaced, (or equivalent components on boards with dual charging circuits), it will be necessary to adjust R9 (or R16). It is recommended that R9/R16 be replaced to facilitate adjustment.

If a replacement part for R9/R16 is not available, the sealant may be loosened by heating the metal ring on the potentiometer with a soldering iron while making the adjustment.

PREFERRED METHOD

If calibrator Model 4EX10A10 is used, set R9/R16 as follows:

Equipment Required:

- Calibrator Model 4EX10A10
- GE Test Set Model 4EX3A10 (or equivalent 20,000 ohms-ver-volt meter).

Procedure

1. Disconnect the charger power cable. Then remove the desk charger housing or open the front panel of the multi-charger as directed in the Disassembly procedure.
2. Connect a clip lead from the red calibrator jack to H5 (+) and a clip lead from the black calibrator jack to H6 (-). Connect the clip leads to H9 (+) and H10 (-) for setting R16.
3. Connect Test Set 4EX3A10 across R2 (R11 for setting R16).
4. Place the calibrator switch in Position A.
5. Connect the charger power cable to a 120-volt source.
6. Adjust R9/R16 for the correct voltage across R2/R11 (± 0.3 -volt) according to the room temperature as shown in Figure 3.

NOTE

The calibrator and the charger should be at the same temperature when setting the charger.

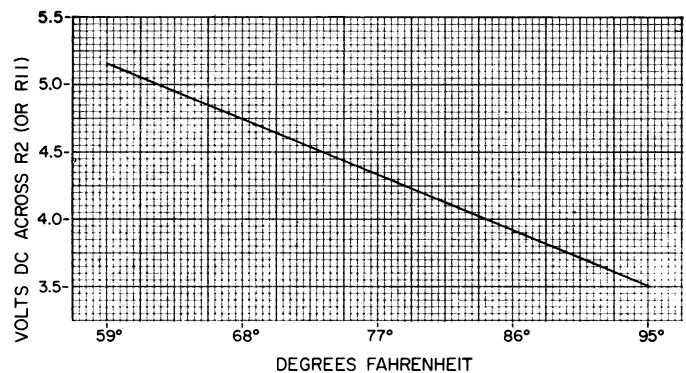


Figure 3
Voltage versus Temperature Chart

ALTERNATE METHOD

If calibrator Model 4EX10A10 is not available, this alternate method of adjusting R9/R16 may be used. Set the potentiometer as follows:

Equipment Required:

- DC-VTVM accurate to $\pm .02$ volt.
- Test Set Model 4EX3A10 or equivalent 20,000 ohms-per-volt meter.

- 6,000 mF capacitor (GE Part No. 5496520-P6) and a 0- to 500-ohm potentiometer.

CAUTION

Failure to adjust R9/R16 to within .02 volt may result in an insufficient charge or damage to the battery.

Procedure

1. Disconnect the charger power cable. Then remove the desk charger housing

or open the front panel of the multi-charger as directed in the Disassembly Procedure.

2. Connect the equipment as shown in Figure 4.
3. Connect the charger power cable to a 117-volt source.
4. Set the 500-ohm potentiometer for a VTVM reading of 4.18 volts ± 0.02 volt.
5. Adjust R9/R16 for the correct voltage across R2/R11 (± 0.3 volt) according to the room temperature as shown in Figure 3, while keeping the output voltage at 4.18 volts by using the 500-ohm pot.

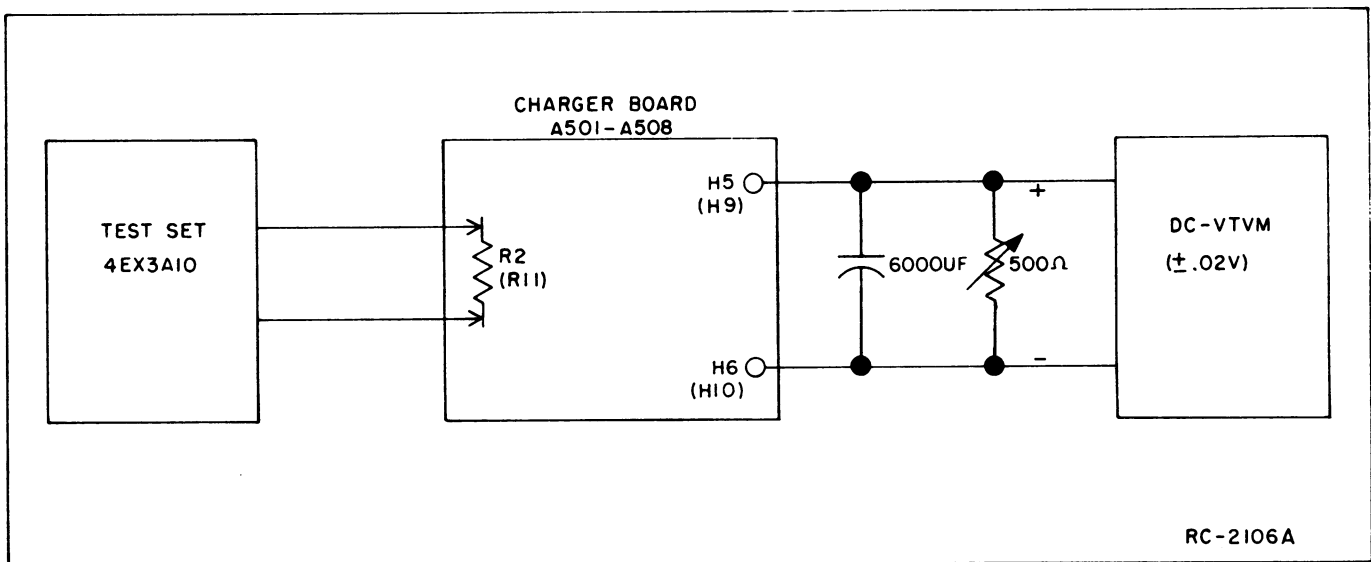
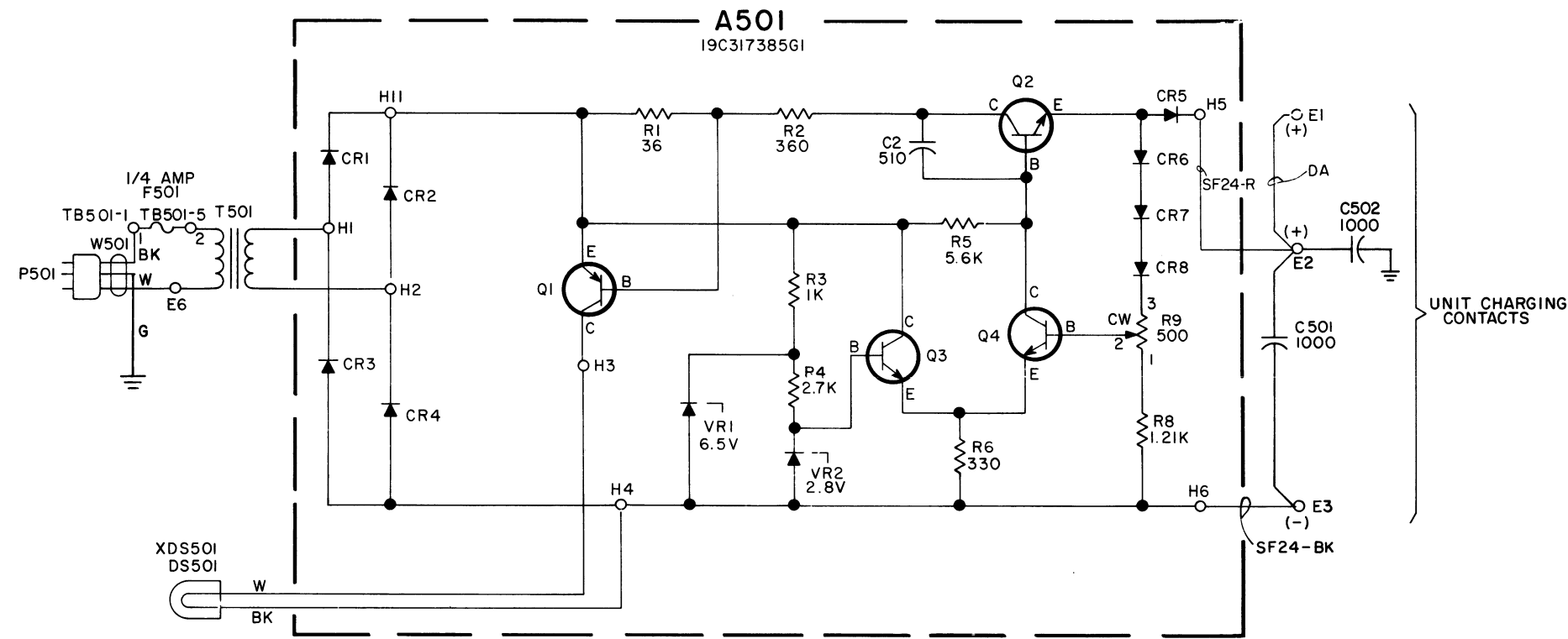


Figure 4 - Test Set-Up

MODEL 4EP67A10



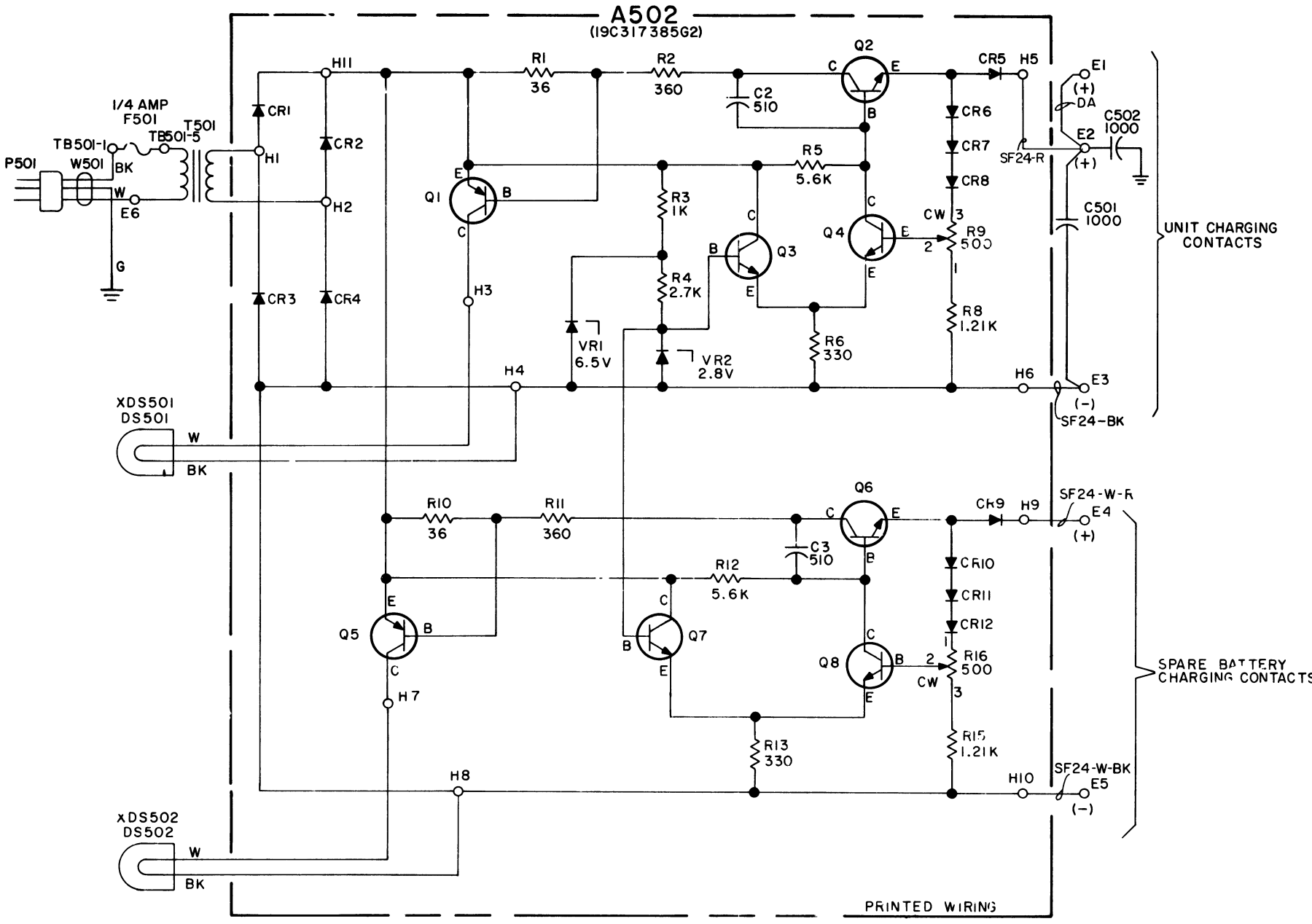
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICO FARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
19E500911G1	C

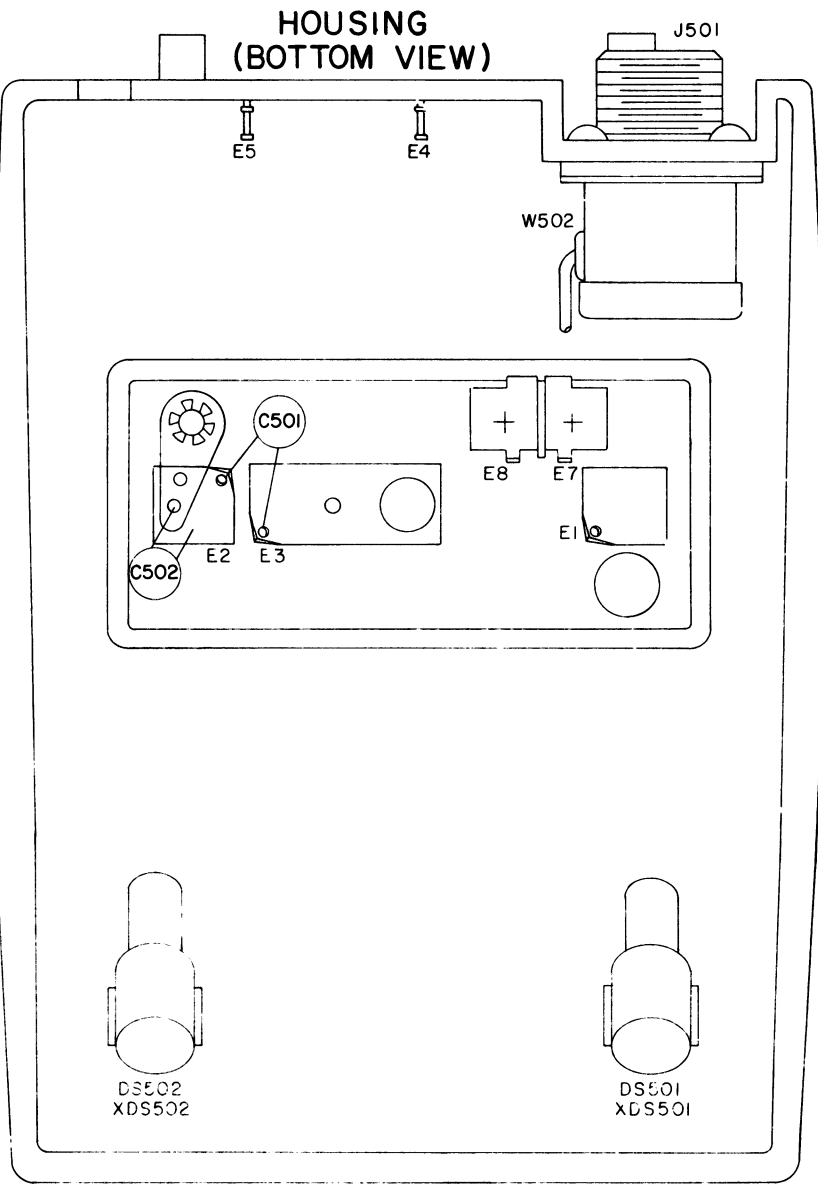
(19C317395, Rev. 10)

MODEL 4EP67A11

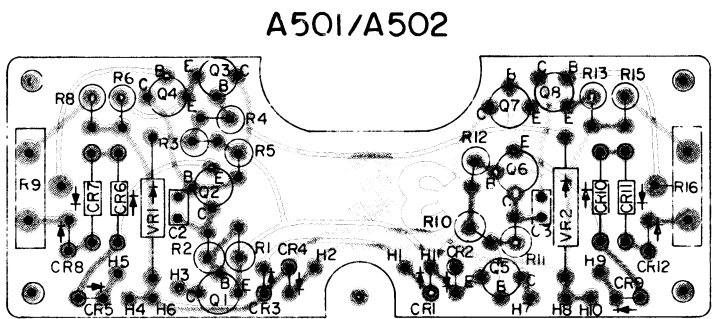
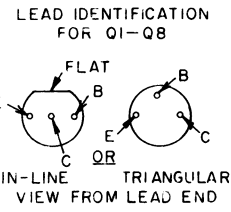
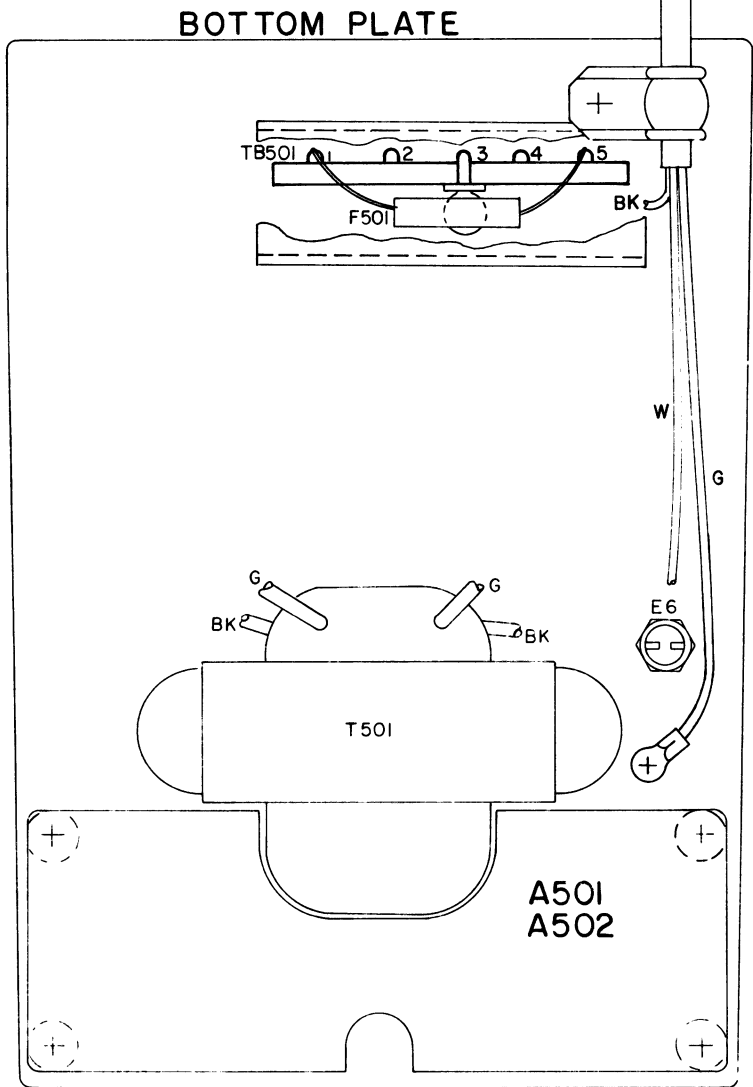


(19C317390, Rev. 9)

OUTLINE DIAGRAM



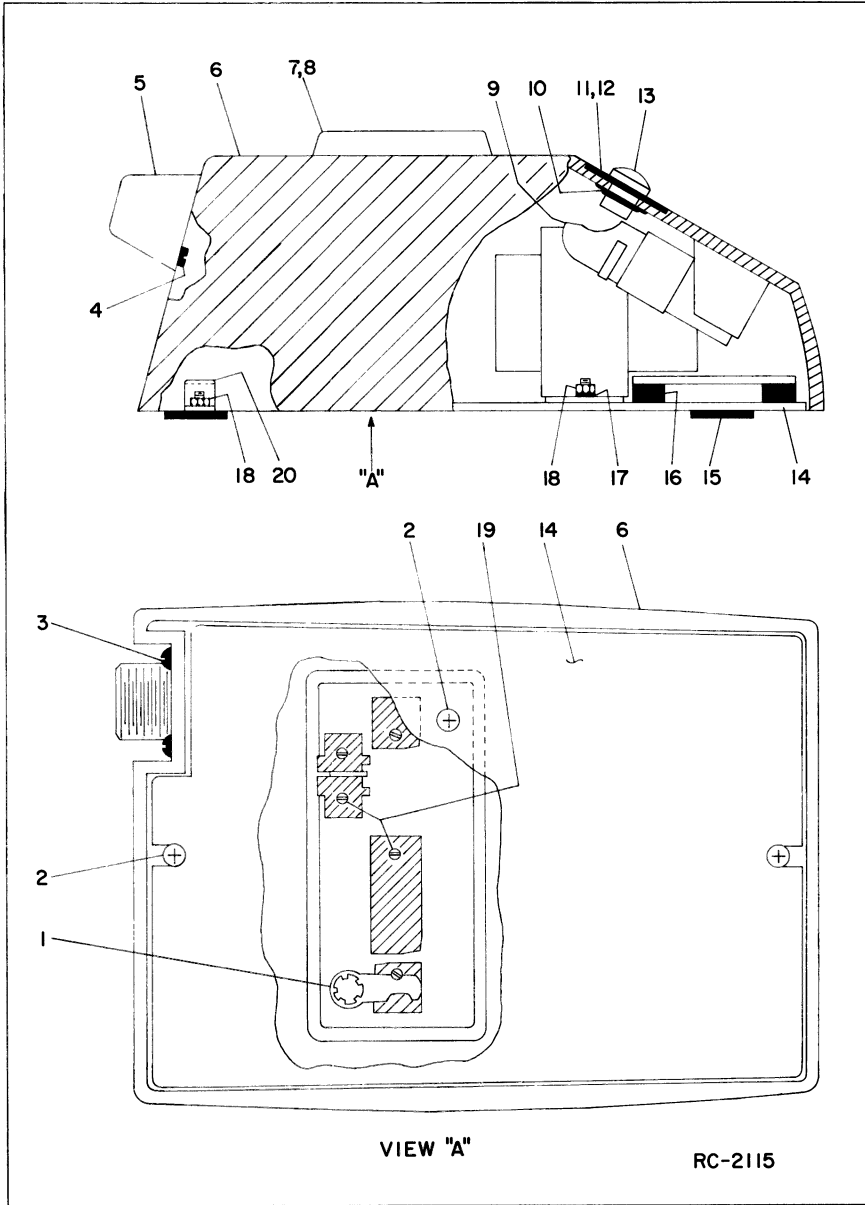
(19D416037, Rev. 4)
(19B216861, Sh. 1, Rev. 3)
(19B216861, Sh. 2, Rev. 3)



SCHEMATIC & OUTLINE DIAGRAM

DESK CHARGER
MODELS 4EP67A10 & 4EP67A11

PARTS LIST			SYMBOL	GE PART NO.	DESCRIPTION
LBI-4218C DESK CHARGER MODEL 4EP67A10 19E500911G1 MODEL 4EP67A11 19E500911G2					
A501 and A502		CHARGER BOARD A501 19C317385G1 A502 19C317385G2	E7	19B216848P2	Contact.
			E8	19B216848P1	Contact.
			F501*	19A116658P3	Enclosed link: 1/4 amp at 250 v; sim to Bussman GY 1/4. Earlier than REV A: Quick blowing: 1/4 amp at 250 v; sim to Littelfuse 312,250 or Bussmann AGC-1/4.
				1R16P13	
			J501		----- JACKS AND RECEPTACLES ----- (Part of W502).
C2 and C3	19A116114P13090	Ceramic: 510 pf ±5%, 100 VDCW; temp coef -5600 PPM.			----- PLUGS ----- (Part of W501).
CR1 thru CR12	19A115250P1	Silicon.			----- TRANSFORMERS -----
			T501	19A116444P1	Power, step-down: Pri: 117 VRMS, 50/60 Hz, Sec: 14.25 VDC.
Q1	19A115768P1	Silicon, PNP; sim to Type 2N3702.			----- TERMINAL BOARDS -----
Q2 thru Q4	19A115123P1	Silicon, NPN.	TB501*	7775500P11	Phen: 5 terminals. Added by REV A.
Q5	19A115768P1	Silicon, PNP; sim to Type 2N3702.			----- CABLES -----
Q6 thru Q8	19A115123P1	Silicon, NPN.	W501*	19A116740P2	Power: 2 pole, 3 wire grounding, approx 8 feet long. In REV A and earlier: Power: approx 7 ft long, with 2 contact plug (P501).
				4036441P7	RF cable: approx 3 inches long. Includes (J501).
R1	3R77P360J	Composition: 36 ohms ±5%, 1/2 w.			----- SOCKETS -----
R2	3R77P361J	Composition: 360 ohms ±5%, 1/2 w.	W502	19B216886G1	Lampholder, miniature: sim to Drake N517.
R3	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.			
R4	3R77P272K	Composition: 2700 ohms ±10%, 1/2 w.	XDS501 and XDS502	4032220P1	Fuseholder: 5 amps at 125 v; sim to Littelfuse E-357001. Deleted by REV A.
R5	3R77P562J	Composition: 5600 ohms ±5%, 1/2 w.			MECHANICAL PARTS (SEE RC-2115)
R6	3R77P331K	Composition: 330 ohms ±10%, 1/2 w.	1	4036835P10	Terminal, solderless: No. 6; sim to Shakeproof 2120-06-00.
R8	19A116278P209	Metal film: 1210 ohms ±2%, 1/2 w.	2	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16.
R9	19B209358P102	Variable, carbon film: approx 25 to 500 ohms ±10%, 0.2 w; sim to CTS Type X-201.	3	19B201074P206	Tap screw, Phillips POZIDRIV®: No. 4-40 x 3/8. (Secures J501).
R10	3R77P360J	Composition: 36 ohms ±5%, 1/2 w.	4	N136P504C	Tap screw, Phillips: No. 2 x 1/4.
R11	3R77P361J	Composition: 360 ohms ±5%, 1/2 w.	5	19B216914G1	Battery Holder.
R12	3R77P562J	Composition: 5600 ohms ±5%, 1/2 w.	6	19E500910P1	Housing.
R13	3R77P331K	Composition: 330 ohms ±10%, 1/2 w.	7	19C317366G1	Insert assembly. (Includes items 1, 8, E1-E3, E7, E8, C501).
R15	19A116278P209	Metal film: 1210 ohms ±2%, 1/2 w.	8	19E500908P1	Insert.
R16	19B209358P102	Variable, carbon film: approx 25 to 500 ohms ±10%, 0.2 w; sim to CTS Type X-201.	9	19A116427P1	Reflector: sim to Amatone Electronic Hardware Co 3113.
			10	19C307038P6	Nut, push on: sim to Tinnerman C15226SS-010.
VR1	4036887P6	Silicon, Zener.	11	NP270304A	Nameplate. (Unit Charge only).
VR2	4036887P2	Silicon, Zener.	12	NP270304B	Nameplate. (Unit and Battery Charge).
			13	19B204949P1	Jewel, red. (Used with DS501 and DS502).
			14	19B216872G1	Base.
C501	5494481P11	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.	15	19A116417P1	Bumper, plastic: sim to Kent Mfg 5112.
C502*	5494481P11	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. Added by REV C.	16	7142162P92	Spacer. (Used with A501 and A502).
			17	K404P1C13	Lockwasher: No. 4-40.
			18	7141225P2	Hex nut: No. 4-40. (Used with XF501, T501, and item 20).
DS501 and DS502	19C307037P6	Lamp, incandescent: 28 v; sim to GE 1819.	19	N108P503C	Tap screw: No. 2 x 3/16. (Secures E1-E3, E7, E8).
			20	4029851P5	Clip loop: sim to Weckesser 1/4-4-128.
E1 and E2	19B216851P1	Contact.			
E3	19A127739G1	Contact.			
E6	7143206P1	Terminal, standoff.			



PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - Desk Chargers 19E500911G1, G2

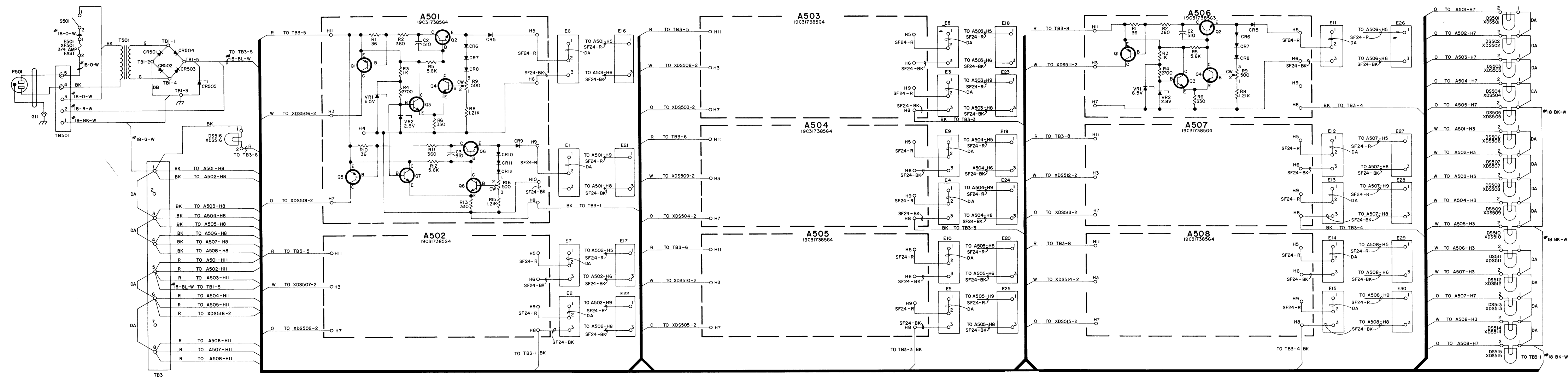
To improve the Desk Chargers. Changed F501, XF501 and associated hardware. Added name plate.

REV. B - To incorporate a 3-wire AC power cable. Changed W501.

REV. C - To prevent B+ from appearing between antenna ground and chassis ground. Added C502.

SCHEMATIC DIAGRAM

OUTLINE DIAGRAM



- NOTES:
1. ALL WIRING SF22 UNLESS OTHERWISE INDICATED.
 2. E1-E15 ARE CHARGING INSERTS 19C317366G2.
 3. DA-#22 AWG WIRE SIZE.

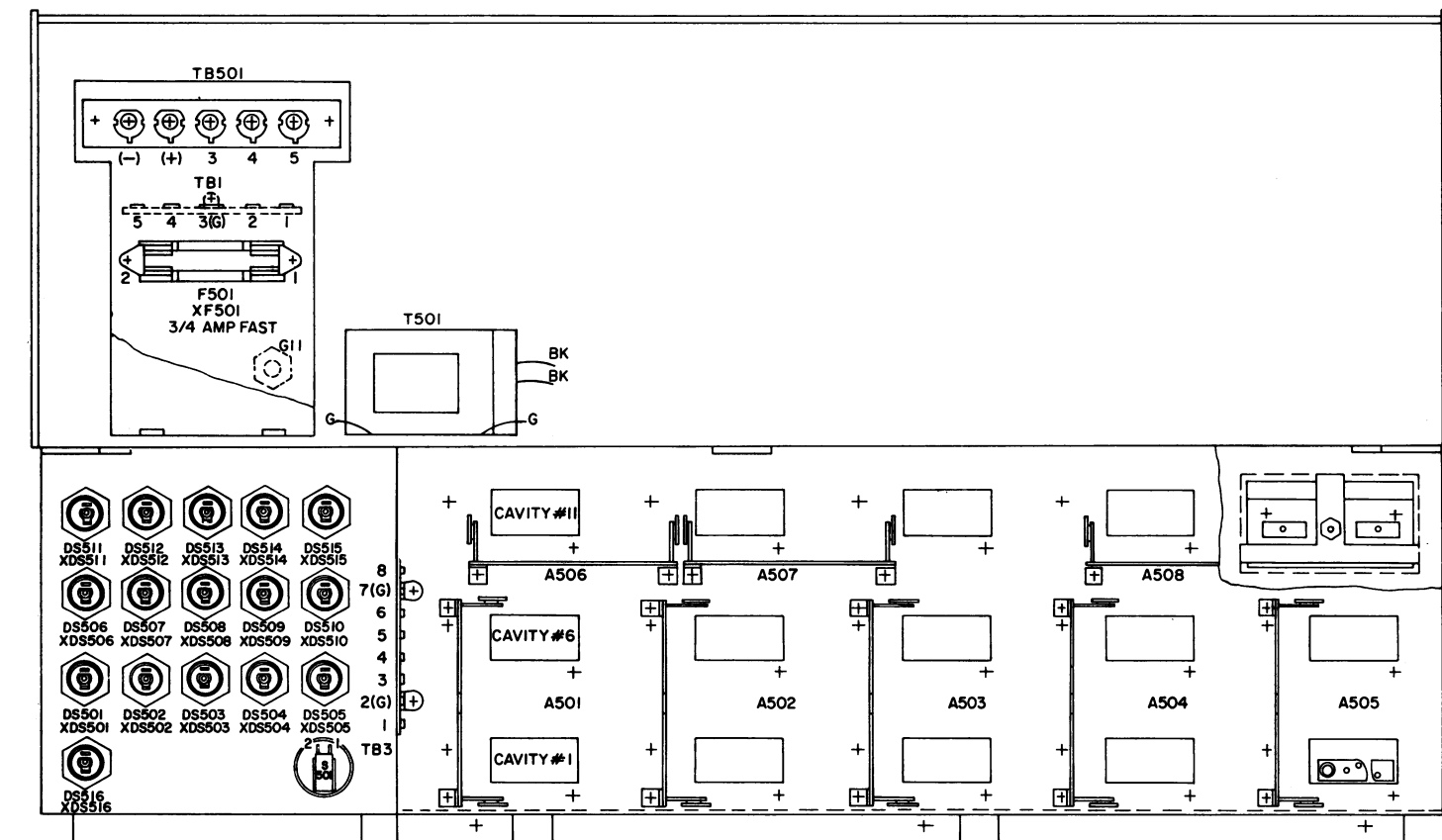
ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN MICROFARADS EQUAL TO MICROFARADS UNLESS FOLLOWED BY U= MICROFARADS. INDUCTANCE VALUES IN MILLIHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

THIS ORDER OF PARTS LISTED EQUIPMENT PERFORMANCE, REPLACEMENT OF PARTS SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SAME PART NO. (SHOWS THE PARTS LIST FOR THAT PART)

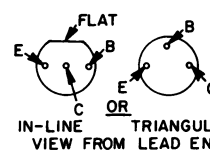
SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION SEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO:
MODEL NO. REV LETTER
PL19E500924G1

(19R621382, Rev. 4)



LEAD IDENTIFICATION FOR Q1-Q8



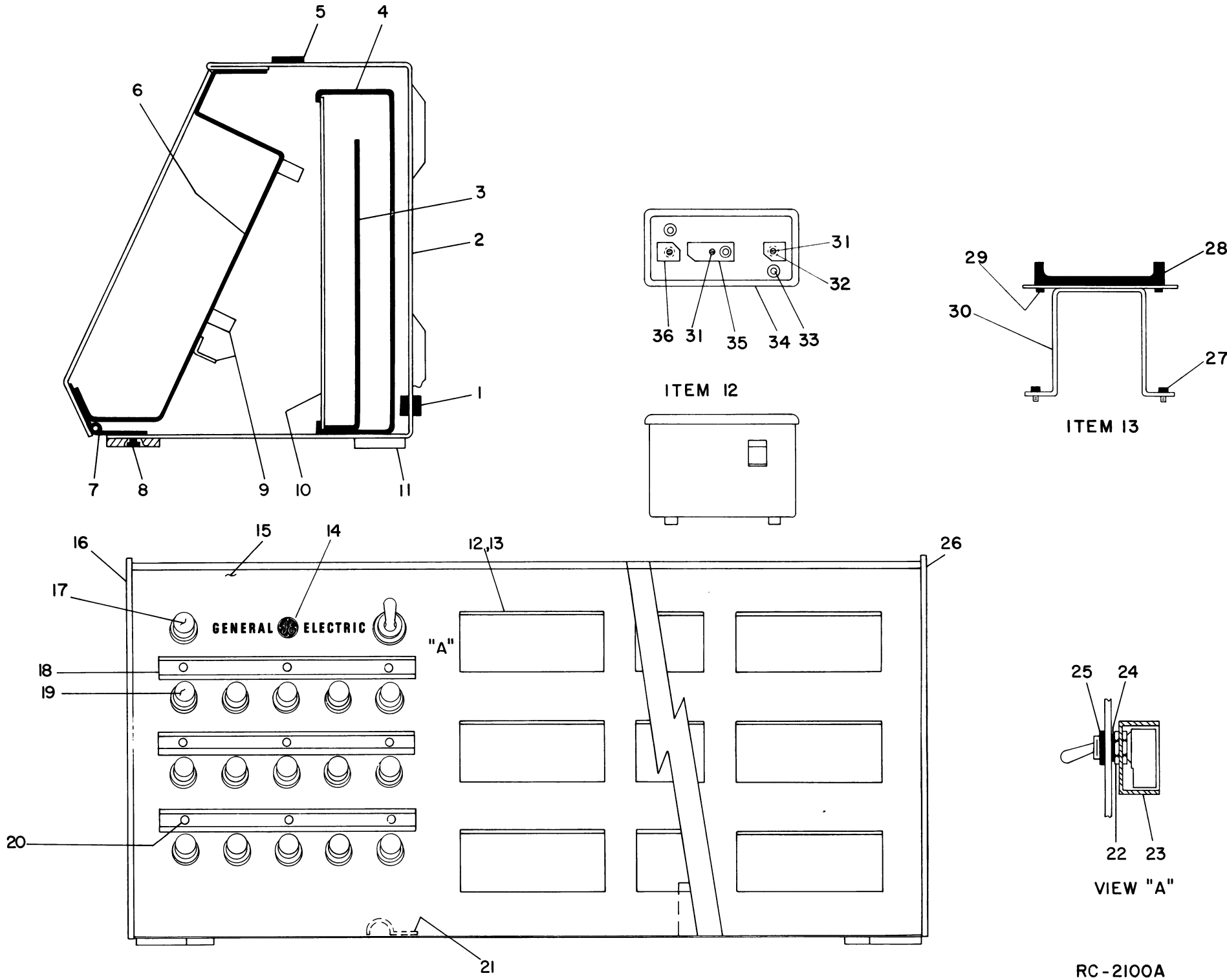
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← RUNS ON BOTH SIDES
← RUNS ON COMPONENT SIDE

(19D416043, Rev. 1)
(19B216861, Sh. 1, Rev. 3)
(19B216861, Sh. 2, Rev. 3)

SCHEMATIC & OUTLINE DIAGRAM

MULTI-CHARGER
MODEL 4EP74A10-13

PARTS LIST			SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
<div> <div>LBI-4219B</div> <div>MULTI-CHARGER</div> <div>MODELS 46P74A10-13</div> <div>19E500924G1</div> </div>								
SYMBOL	GE PART NO.	DESCRIPTION						
A501 thru A508		COMPONENT BOARD A501 19C317385G4 thru A505 A506 19C317385G3 A507 19C317385G4 A508 19C317385G4	F501	1R16P2	----- FUSES ----- Quick blowing: 3/4 amp at 250 v; sim to Littelfuse 312.750 or Bussmann AGC-3/4.	22	7115195P2	Hex, nut: No. 15/32-32.
C2 and C3	19A116114P13090	Ceramic: 510 pf ±5%, 100 VDCW; temp coef -5600 PPM.	P501		----- PLUGS ----- (Part of W501).	23	19A127616P1	Shield, plastic.
CB5 thru CB12	19A115250P1	Silicon.	S501	5491899P3	----- SWITCHES ----- Toggle: SPST, 6 amps at 125 VAC/VDC; sim to Cutler-Hammer 8383K3.	24	7115130P11	Lockwasher: sim to Shakeproof 1222-1.
Q1	19A115768P1	Silicon, PNP; sim to Type 2N3702.	T501	5493743P1	----- TRANSFORMERS ----- Power, step-down: Pri: 117 v, 50/60 Hz, Sec 1: 12.6 v ±3%, 2 amps.	25	4033394P1	Knurled nut: sim to H. H. Smith 1187.
Q2 thru Q4	19A115123P1	Silicon, NPN; sim to Type 2N2712.			----- TERMINAL BOARDS ----- Phen: 2 terminals.	26	19C317192G1	End plate.
Q5	19A115768P1	Silicon, PNP; sim to Type 2N3702.	TB501	7117710P5	Phen: 8 terminals.	27	19B201074P206	Tap screw: No. 4-40 x 3/8. (Part of battery holder item 13).
Q6 thru Q8	19A115123P1	Silicon, NPN; sim to Type 2N2712.	W501	7491206P3	Phen: 5 terminals; sim to Cinch 1775.	28	19B216914G1	Battery clip. (Part of battery holder item 13).
R1	3R77P360J	Composition: 36 ohms ±5%, 1/2 w.			----- CABLES ----- Power: 3 conductor, 10 amps at 125 V RMS max, approx 7 feet long. Includes P501.	29	19B219080G1	Plate. (Part of battery holder item 13).
R2	3R77P361J	Composition: 360 ohms ±5%, 1/2 w.	XD5S01 thru XD516	19B201122P2	----- SOCKETS ----- Lampholder: sim to Drake Series 121.	30	N108P504B	Tap screw: No. 2 x 1/4. (Part of battery holder item 13).
R3	3R77P102K	Composition: 1000 ohms ±10%, 1/2 w.	XF501	7141008P1	Fuseholder: 5 amps at 125 v; sim to Littelfuse E-357001.	31	N108P503C	Tap screw: No. 2 x 3/16. (Part of radio insert item 12).
R4	3R77P272K	Composition: 2700 ohms ±10%, 1/2 w.			HARNESS ASSEMBLY 19E500924G2 (Includes TB3)	32	N404P8C13	Lockwasher, internal tooth: No. 2. (Part of radio insert item 12).
R5	3R77P562J	Composition: 5600 ohms ±5%, 1/2 w.			MECHANICAL PARTS (SEE RC-2100)	33	19B201074P304	Tap screw: No. 6-32 x 1/4. (Secures radio insert item 12).
R6	3R77P331K	Composition: 330 ohms ±10%, 1/2 w.	1	19A115725P2	Bushing, strain relief: sim to Fastex Div 222-504402-00.	34	19E500908P1	Insert block. (Part of radio insert item 12).
R8	19A116278P209	Metal film: 1210 ohms ±2%, 1/2 w.	2	19D413322G2	Support.	35	19A127739G1	Contact. (Part of radio insert item 12).
R9	19B209358P102	Variable, carbon film: approx 25 to 500 ohms ±10%, 0.2 w; sim to CTS Type X-201.	3	19B216621G2	Support.	36	19B216851P1	Contact. (Part of radio insert item 12).
R10	3R77P360J	Composition: 36 ohms ±5%, 1/2 w.	4	19C317287P1	Support.			
R11	3R77P361J	Composition: 360 ohms ±5%, 1/2 w.	5	N529P16C	Button plug.			
R12	3R77P562J	Composition: 5600 ohms ±5%, 1/2 w.	6	19B219024G1	Support.			
R13	3R77P331K	Composition: 330 ohms ±10%, 1/2 w.	7	19B216619G1	Hinge.			
R15	19A116278P209	Metal film: 1210 ohms ±2%, 1/2 w.	8	N330P1506F22	Eyelet, metallic.			
R16	19B209358P102	Variable, carbon film: approx 25 to 500 ohms ±10%, 0.2 w; sim to CTS Type X-201.	9	19A127965P1	Support.			
VR1	4036887P6	Silicon, Zener.	10	19B216754P1	Insulator.			
VR2	4036887P2	Silicon, Zener.	11	19A115990P1	Bumper, rubber: sim to Stromberg-Carlson 300570-541.			
CB501 thru CB504	4037822P1	Silicon.	12	19C317366G2	Insert (Radio). Includes items 31 thru 36.			
CB505	19A116062P2	Selenium.	13	19B219095G1	Holder. (Battery). Includes items 27 thru 30.			
DS501 thru DS516	19A115825P1	Lamp, incandescent: 28 v; sim to Drake 2840.	14	NP270412	Nameplate.			
		----- VOLTAGE REGULATORS -----	15	19B219023G1	Plate.			
		----- DIODES AND RECTIFIERS -----	16	19C317192G1	End plate.			
		----- INDICATING DEVICES -----	17	19B201122P4	Cap, lens: red translucent nylon.			
			18	19A127800P1	Guide.			
			19	19B201122P14	Panel light, indicator: green lens; sim to Drake Mfg 121A.			
			20	19B200525P4	Rivet, tubular.			
			21	7763541P3	Clip, spring tension.			



QUICK CHECKS

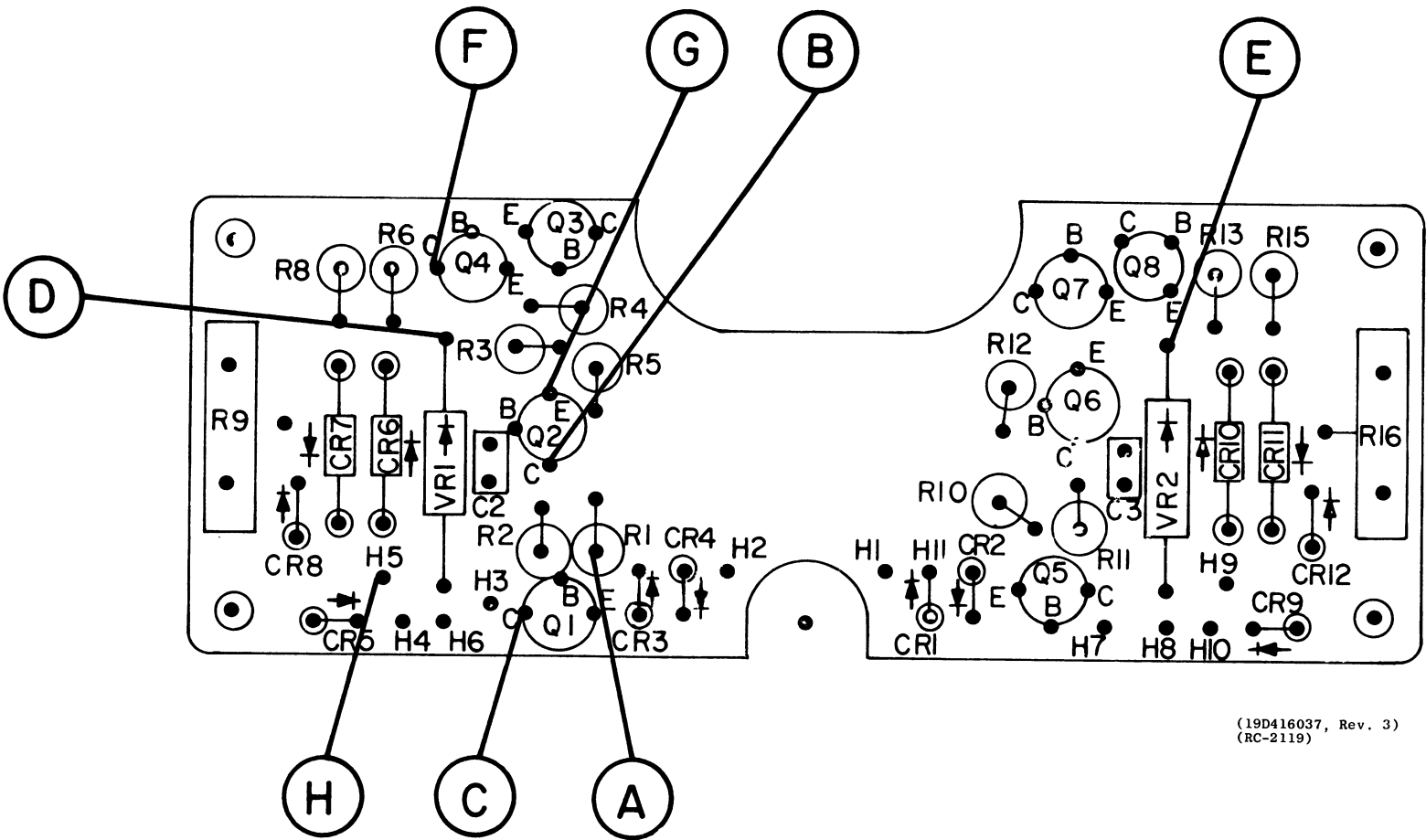
SYMPTOM	CHECK FOR:
Battery will not charge (charge light won't come on)	1. Open F501 or DS501 (DS502 for Dual Charger) 2. Defective Q1 or Q2 (Q5 or Q6 for Dual Charger)
Charger won't turn off (Light stays on)	1. Q2 or CR5 shorted (Q5 or Q6 for Dual Charger) 2. Improper adjustment of R9 (R16 for Dual Charger)
Charger turns off too quickly	1. Improper adjustment of R9 (R16 for Dual Charger) 2. Check CR6, CR7 and CR9 (CR10, CR11 & CR12 for Dual Charger)
Charge light on without battery	1. Shorted Q1 (Q5 for Dual Charger)

VOLTAGE READINGS

These voltage readings are RMS readings on the unfiltered DC voltage measured with GE Test Set 4EX3A10, 4EX8K11 or equivalent 20,000 ohms-per-volt meter, and measured from the metering point shown to component board ground.

METERING POINT	WITHOUT BATTERY	WITH BATTERY
(A) - Rectified output	11.5V	11.5V
(B) - Q2 Collector	11 V	4.2V
(C) - Q1 Collector	0 V	8 V
(D) - VR1	5.4V	5.4V
(E) - VR2	2.3V	2.3V
(F) - Q4 Collector	4.8V	*
(G) - Q2 Emitter	4.2V	*
(H) - Regulator Output	3.8V	*

* These readings would depend on the condition of the battery.



(19D416037, Rev. 3)
(RC-2119)

TROUBLESHOOTING PROCEDURE

DESK CHARGER MODELS 4EP67A10, 11
& MULTI-CHARGER MODELS 4EP74A10-13

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and GE Part Number.

Service parts may be obtained from Authorized GE Communication Equipment Service Stations or through any GE Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. GE Part Number for component
2. Description of part
3. Model Number of equipment
4. Revision letter stamped on unit

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-4217

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



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