MOBILE RADIO

MPR Personal Series

VEHICULAR CHARGER

SPECIFICATIONS *

Used With	MPR MODEL Two-Way Radios	
Input Voltage	11 VDC - 16.6 VDC	
Polarity	Neg (-) grd only	
Input Currents (@13.8 VDC)		
Standby	100 mA	
2 Watts Audio-Trickle Charge	400 mA	
2 Watts Audio-Rapid Charge	800 mA	
CHARGE CURRENTS		
Rapid Charge	450 mA	
Trickle Charge	50 mA	
CHARGE TIME	3 Hours (100% Capacity)	
CHARGE CAPACITY & TIME VS TEMPERATURE		
Temperature	Time	Capacity
+5°C (41°F)	3.3 Hours	100%
+25°C (+77°F)	3.0 Hours	100%
+45°C (113°F)	2.7 Hours	70%
INDICATORS	Amber Green	CHARGING READY
RATED AUDIO POWER	2 Watts	
DISTORTION (@ Rated Audio Power)	10%	
SPEAKER IMPEDANCE	8 ohms	

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

VEHICULAR CHARGER

GENERAL ELECTRIC

TABLE OF CONTENTS

ILLUSTRATIONS

WARNING

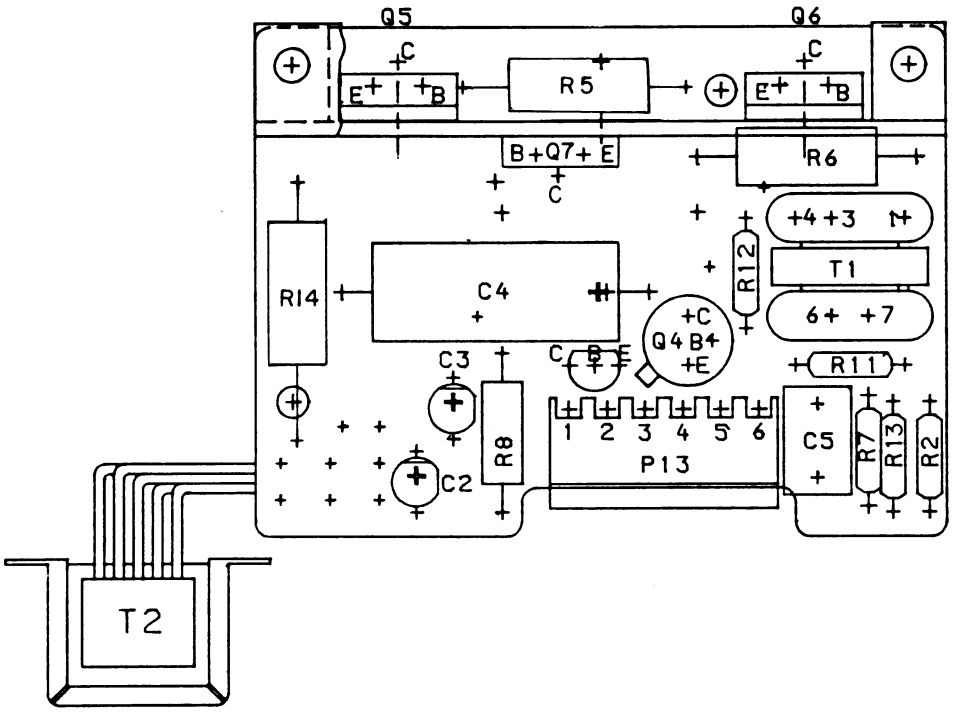
No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS!

ADDENDUM # 1
TO
LBI30781B

This addendum adds to maintenance manual LBI30781 information about an up coming revision of 15 Watt audio amplifier 19C328216G1. The 19C328216G1 audio amplifier will, at a later date, be replaced by audio amplifier 19C328216G2. In the interim, revision B to 19C328216G1 will be as follows:

REV. B - 15 Watt Audio Amplifier 19C328216G1
To improve audio quality and reliability. Deleted C1, CR1, CR2, Q1, Q2, R1, R3, R4, R9, R10, RT1 and VR1. Added Q5, Q6, and Q7.

New Outline Diagram is:

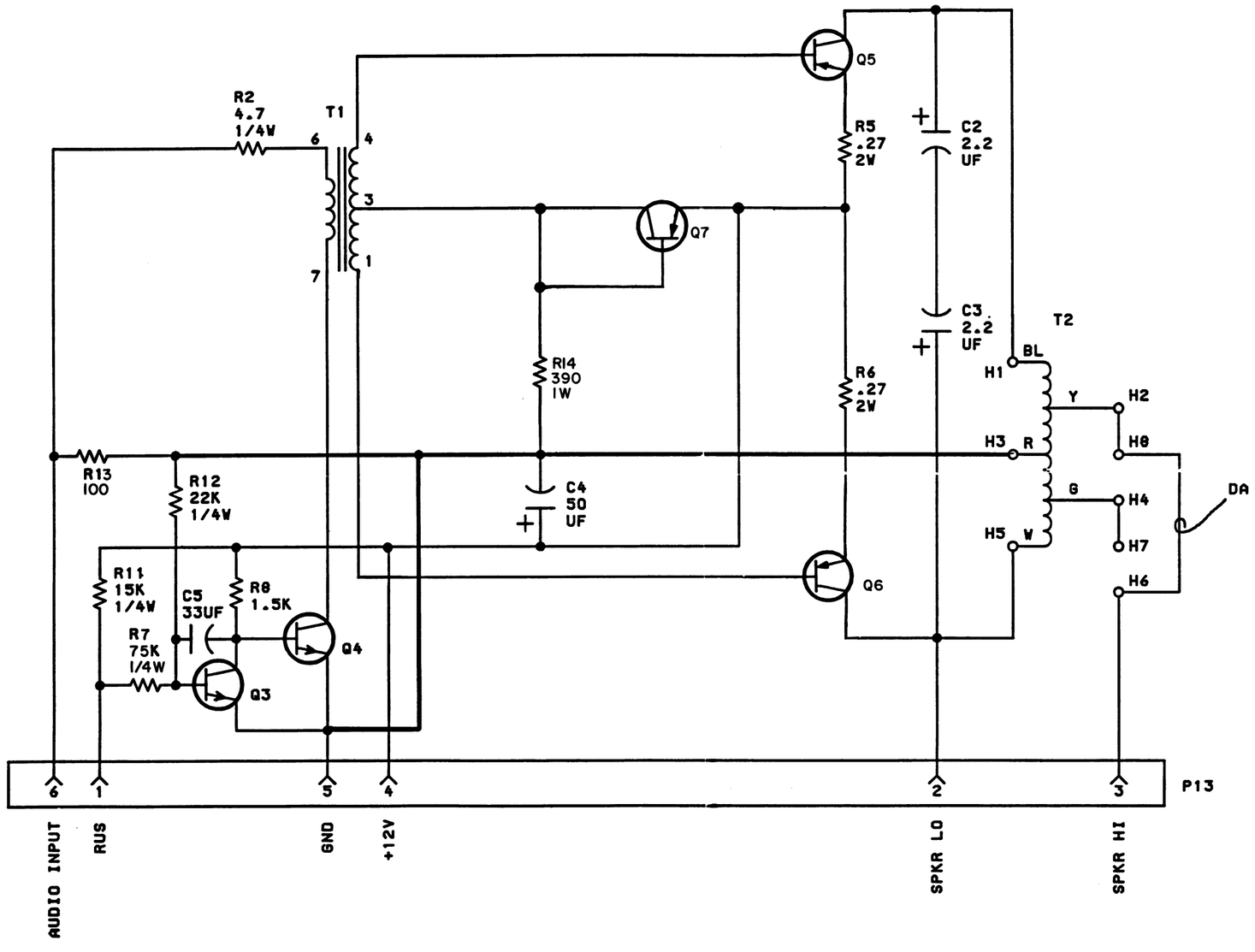


RC4286

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 USA

GENERAL ELECTRIC

New Schematic Diagram is:



RC4285

PARTS LIST

(new Components)

R13	19A700019P25	Deposited carbon: 100 ohms ±5%, 250VDC, 1/4 w.
R14	19A700112P53	Composition: 390 ohms ±5%, 1w.
Q5 thru Q7	19A116942P1	Silicon: PNP

EQUIPMENT INDEX

EQUIPMENT	PART NUMBER OR MODEL NUMBER
Charger	19D429951G1
Bottom Cover	19C328626G1
Top Cover	19D429684P1
2 Watt Audio Amplifier	19B232505G1
Speaker	19C320302G6
Microphone	19C320270G1
Cables	19B226198G2
Antenna: 138-512 MHz	19B209568P1
Key	5491682P4

OPTIONS

15 Watt Audio Amplifier	19C328216G1
External Speaker	19B232770G1
Ignition Lock	19A138074G1
Internal/External Switch	19B232790G1

COMBINATION NOMENCLATURE

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit	7th Digit	8 Digit
Product Line	Application	Package	Input Voltage	Charge Time	Version	Type	Frequency Range
3 Charger	**5** (750 mAh and 1200 mAh Battery Packs)	**4** Mobile System **5** Mobile Charger	**C** -12 VDC Neg Grd	**3** 3 Hour	**A** 1 Charge Socket	**1** Standard	**H** 138-150.8 MHz **J** 150.8-162 MHz **K** 162-174 MHz **N** 406-435 MHz **R** 435-470 MHz **S** 470-494 MHz **T** 494-512 MHz **X** Not Frequency Sensitive

DESCRIPTION

General Electric Vehicular Charger combinations provide a system for using an MPR Personal Series, FM, two-way radio as a mobile unit while recharging the MPR radio's battery pack. The vehicular charger will recharge the nickel-cadmium 1200 mAh battery pack 100% in 3 hours and a 750 mAh battery pack in less than 3 hours.

When a MPR radio with battery pack is placed in the charging insert the external antenna, microphone, Push-to-Talk, speaker and charging contacts are automatically connected. Power Switch S801 is activated by inserting the radio into the charging insert. An amber LED indicator labeled CHARGING will light, indicating the battery pack is being charged. When the battery pack is fully charged a green LED indicator labeled READY will light and the charger will automatically switch from a rapid charge rate to a safe trickly charge.

The vehicular charger uses heat sensors to constantly monitor the temperature of both the battery pack and the charging insert. When a cold battery pack is inserted into the charging insert, the charger will wait until the battery pack has warmed up to within approximately 10^{o}C of ambient. The charger will then, automatically, apply the high charging rate. When the battery pack overcharges enough to heat the cells 10^{o}C above ambient, the charger will switch from fast charge to trickle charge. The charger also has a memory, set when the charger switches from the high charging rate to trickle charge and reset by removing the battery pack from the charging insert.

If a hot battery is in the charging insert and the memory has not been reset, the charger will remain at the trickle charge rate. If the memory has been reset the charger will wait until the battery pack has cooled before automatically switching to fast charge. If a fully charged battery pack is removed from the charging insert and then re-inserted, it will charge for approximately 1/2 hour until the cells reheat.

The vehicular charger also uses a voltage controlled cut-off circuit to constantly monitor battery pack voltage. If the battery pack voltage exceeds 9.0 volts, the high rate of charge will be held off and the LED RDY indicator will light. This prevents overcharging and "gassing".

OPERATION

Temperature characteristics of nickel-cadmium batteries, prevent a full charge at temperature extremes. For a maximum charge, recharge the battery pack at temperatures of from 65^{o} to 85^{o} Farenheit whenever possible.

WARNING

General Electric Vehicular Charger Combinations are designed for recharging GE 750 mAh battery pack 19D429763G1 and GE 1200 mAh battery pack 19D429777G1. Attempting to recharge any other battery pack or batteries may result in damage to equipment, leakage or explosion.

To use the vehicular charger, place the radio, with audio adjusted for a normal listening level, into the charging insert with the speaker facing down. Press the radio into the charging insert (see Figure 1). A connector inside the charger will mate with the UDC connector on the side of the radio.

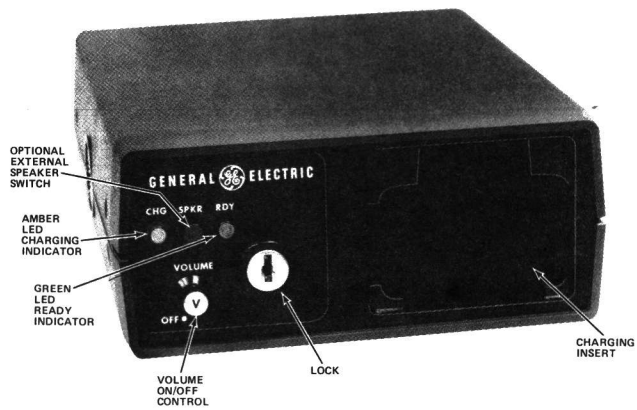


Figure 1 - Vehicular Charger

Power is automatically applied to the MPR radio through the UDC connector and ON/OFF Switch S801 when the radio is in the charging insert. The amber LED indicator labeled CHARGING will light when positive contact has been made and the green LED indicator labeled READY will light when the battery pack is fully recharged. Turn the radio on with the VOLUME/ON/OFF control and adjust the volume control on the charger for a normal listening level.

The vehicular charger is equipped with an external antenna for sending and receiving messages. A 7.5 Volt regulator circuit provides power for operating the radio while the radio's battery pack is being re-charged. This allows continuous

operation of the radio while maintaining the battery pack charge.

To remove the radio from the charger, press in on the release button and remove the radio from the charging insert.

CIRCUIT ANALYSIS

Charger

The vehicular charger consists of a charging circuit, a temperature controlled cut-off circuit and a 7.5 VDC regulator circuit. Charging current flows through series connected resistor R12 and regulator transistor Q3 to positive charging contacts E3 and E4 for the "A" size radio combination. The charging current connects to positive contacts E7 and E8 for the "B" and "C" size radio combination. A portion of the charging current is routed through resistor R19 and transistor Q2 to light LED indicator DS2 and provide a trickle charge. The series connected charge circuit determines the high charge rate and is controlled by the temperature controlled cut-off circuit. The temperature controlled cut-off circuit is contained in thick film hybrid integrated circuit (IC) U1.

Temperature cut-off IC U1 monitors the temperature of both the charging insert through thermistor RT1, and the battery pack through a thermistor inside the battery pack. It also controls transistors Q3 and Q4, turns the "READY" indicator on when the battery pack is fully charged and provides memory to prevent the same battery pack from being recharged at the high rate; unless the battery pack is first removed from the charging insert, then reinserted.

Thermistors RT1 and RT Battery are connected with R17 and R18 to form a bridge circuit (see Figure 2). The outputs of the bridge circuit are connected to terminals 2 and 14 of U1.

When the battery pack temperature is more than 10°C below ambient, thermistor RT Battery is a high resistance and the voltage on U1-14 is larger than the voltage on U1-2 just as though no battery pack were present. There is no output from U1-6 or U1-5. Transistor Q3 and LED "READY" indicator DS1 remain off. The battery pack charges at a trickle charge rate, determined by series resistance R19, until the temperature is less than 10°C below ambient. At less than 10°C below ambient, the voltage at U1-14 still larger than the voltage on U1-2, the output at U1-6 goes high causing transistor Q4 to conduct turning Q3 on beginning the high charge rate. As the battery pack temperature increases 10°C above ambient during overcharge, the voltages at U1-14 and U1-2 become equal indicating the bridge circuit is balanced and the battery

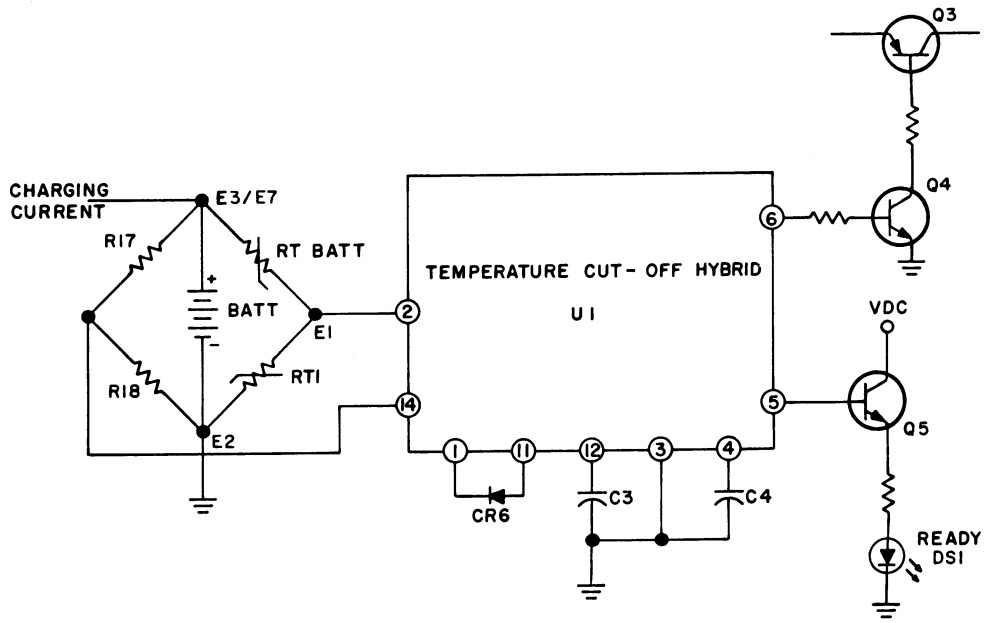


Figure 2 - Simplified Temperature Cut-off Circuit

pack is fully charged. U1-6 goes low causing Q4 to stop conducting. Q3 cuts off and the charge rate switches from the high charge rate to the trickle charge rate. The equal voltages on U1-14 and U1-2 also causes U1-5 to go high. The high output on U1-5 causes transistor Q5 to conduct and DS1 to light. A memory circuit inside of U1 is set so that the same battery pack cannot be recharged at the high charge rate. When the battery pack is removed from the charging insert, RT Battery is removed from the bridge circuit causing the bridge to again be unbalanced. U1 senses the bridge in an unbalanced state, the voltage on U1-14 being larger than the voltage on U1-2, and resets the charger memory.

Voltage regulator module VR1 controls the base of NPN transistor Q1 to provide a regulated 7.5 VDC on the emitter. The 7.5 VDC is used to power the circuits of the MPR while the battery pack is being charged.

To remove printed circuit board A801 for servicing, remove the six Phillips-head screws holding A801 and carefully lift A801 out, disconnecting speaker connector P14 or the external speaker option.

Voltage Controlled Cut-Off

The voltage controlled cut-off circuit monitors the battery voltage and cuts off regulator Q3 when the battery voltage exceeds 9.0 VDC.

A reference voltage is applied to Pin 3 of amplifier U2. Resistor R24 is adjusted so that when the battery pack voltage is 9.0 volts, a voltage equal to the reference voltage on Pin 3 is applied to Pin 2 of U2. This causes Pin 6 of U2 to go low impressing a smaller voltage on Pin 14 of U1 than is on Pin 2 of U1. This causes U1 to cut off Q3 and light LED RDY indicator DS1.

2 Watt Audio Amplifier

Receive audio is coupled through connectors P801-10, P7, J7 and J13-6 to the input of the audio amplifier circuit. P13 of audio amplifier 19B232505G1 plugs into J13, mounting the amplifier inside of the charger.

Receiver audio at P13-6 of the audio amplifier is coupled to Pin 8 of operational amplifier AR1. AR1 produces 2 watts of audio at J1-3.

The audio at P13-3 is coupled through J13-3 to J14-1. Audio at J14-1 is connected through P14-1 to J804-1 to an external speaker.

15 Watt Audio Amplifier (Optional)

P13 of 15 watt audio amplifier plugs into J13 mounting inside the charge the same as the 2 watt audio amplifier. Receiver audio is connected to J13-6.

The receiver audio at P13-6 is coupled through audio transformer T1 to push-pull, Darlington connected, power amplifier circuit Q1 and Q2. 15 Watts of audio is applied from audio output transformer T2 to P13-3.

Transistor Q3 and Q4 disable the audio when the receive circuit is squelched.

External Speaker (Optional)

The external speaker option adds a push-push switch on the charger front panel and an external speaker connection to the rear of the charger. Any 8 ohm speaker may be used.

INSTALLATION

CHARGER

When installing the charger, speaker and microphone in a vehicle, select mounting locations that will prevent injury to the occupants in case of an accident.

Install the charger where it will be within convenient reach of the operator, and where it will not interfere with the safe operation of the vehicle. The charger is normally mounted on the underside of the instrument panel.

To mount the charger:

1. Use the mounting bracket as a template and drill the two pilot holes with a #29 (9/64-inch) drill.
2. Attach the bracket to the mounting surface with the #10 x 5/8-inch self-tapping screws and lockwashers provided.
3. Mount the charger in the mounting bracket with the two machine screws and lockwashers provided.
4. Connect the Red fused lead to battery plus, and the Black lead to battery negative. Leave sufficient slack so that the charger may be pulled out of its case for servicing with the power applied.

SPEAKER

Mount the speaker where it will direct sound to the operator but not interfere with his vision, and the safe operation of the vehicle. In exposed locations or areas of high humidity, mount the speaker so that moisture will not accumulate in the speaker cone.

The universal mounting bracket enables the speaker to be mounted on the top or bottom of the instrument panel, on the firewall above the windshield in trucks, or behind the speaker grille in some vehicles.

To mount the speaker:

1. Use the mounting bracket as a template and drill three mounting holes with a #29 (9/64-inch) drill.
2. Attach the bracket to the mounting surface with the #10 x 5/8-inch self-tapping screws supplied with the unit.
3. Attach the speaker to the mounting bracket and connect the speaker plug to the speaker jack on the back of the charger.

MICROPHONE

Mount the microphone where it will be within easy reach of the operator but will not interfere with the safe operation of the vehicle.

To mount the microphone:

1. Use the microphone bracket as a template and drill two mounting holes with a #32 (1/8-inch) drill.
2. Attach the bracket to the mounting surface with the two #8 x 1/2" screws provided.
3. Connect the microphone plug to the jack on the bottom of the charger.

ANTENNA

Installation instructions for the antenna are packaged with the antenna. The antenna must be installed in accordance with good engineering practice for optimum results.

MAINTENANCE

Disassembly

To gain access to the charger circuitry for servicing, remove the top and bottom of the housing by removing the four Phillips-head screws in the sides of the housing.

The 2 watt audio amplifier board A807 or the optional 15 watt audio amplifier board A806 may be removed for servicing by removing one or two screws and unplugging the boards from J13 of printed circuit board A801.

Troubleshooting

Should a difficult service problem arise, the Troubleshooting Procedure listed in the Table of Contents is provided to assist the service technician. Also, voltages are provided on the Schematic Diagram to further assist the service technician in isolating any problem.

ADJUSTMENT PROCEDURES

VOLTAGE CUT-OFF

Equipment Needed: 4EX20A10 TEST CALIBRATOR

1. Adjust R24 on the 19D429343G1 charger board fully clockwise.
2. Set the 4EX20A10 test calibrator to voltage range "2". Set the temperature range to NORMAL. Connect the calibrator to the charger sleeve and set the VOLTAGE ADJUST to read +9.0 V ±.05 V at the external meter jacks.
3. Slowly adjust R24 counter-clockwise until the RDY indicator turns on.

15 WATT AMPLIFIER 19C328216G1

Equipment Needed: DC Ammeter (0 to 3 Amps.) connected in the +13.8 volt supply lead.

1. Adjust R3 fully counterclockwise.
2. Apply 13.8 VDC.
3. Without audio applied, adjust R3 for 120 ±2 milliamps.

NOTE: This may vary until PA thermistor reaches a stable valve.

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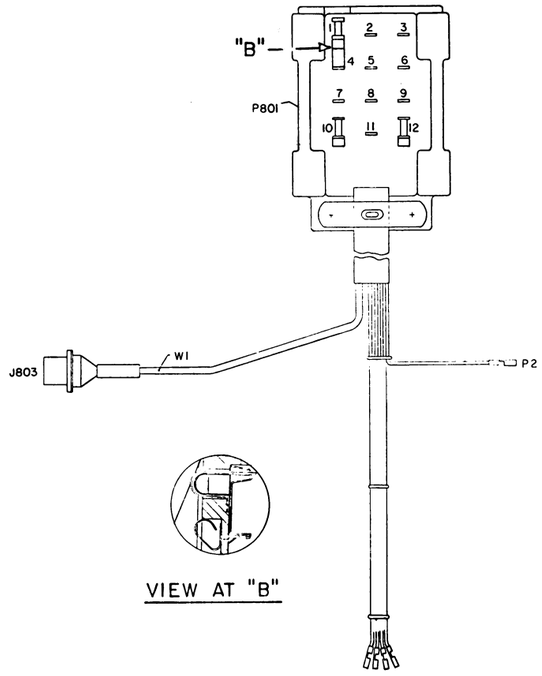
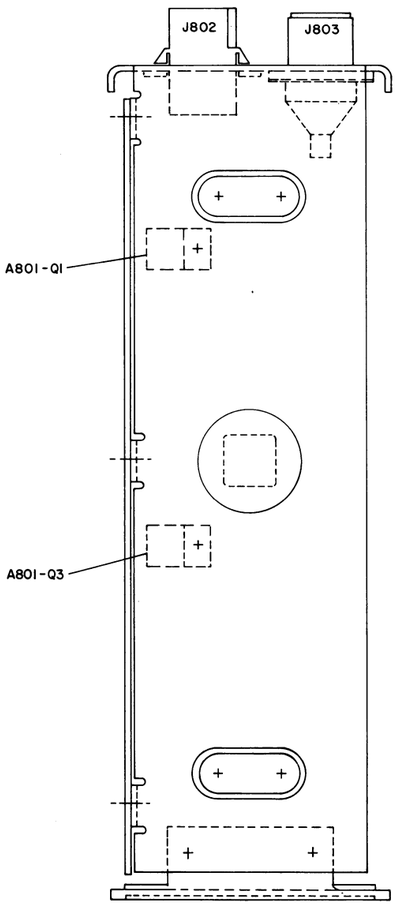
CABLE ASSEMBLY
19D429935G1



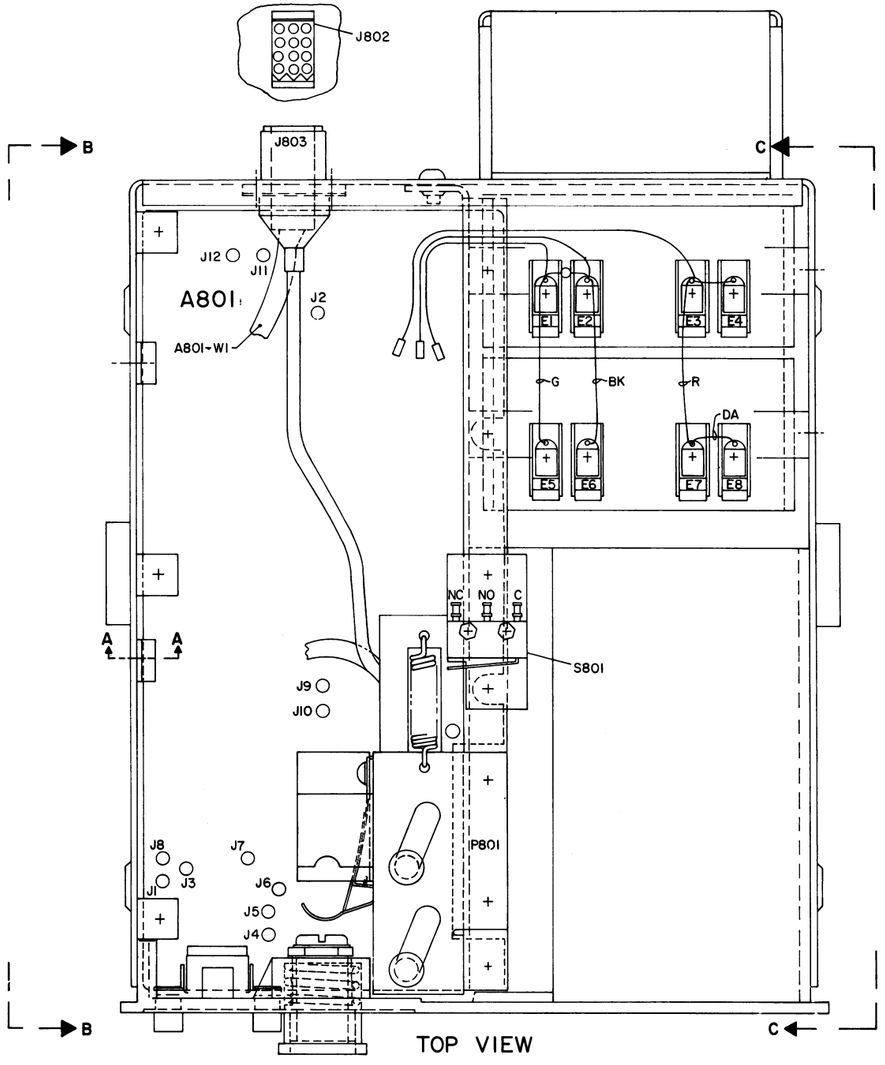
VIEW AT "B"

(19A331237, Rev. 0)

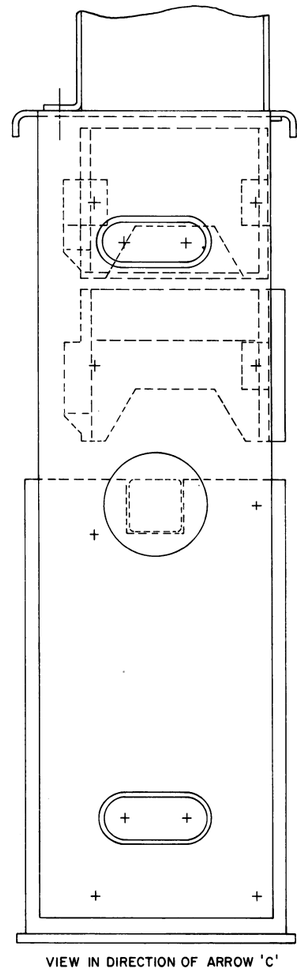
CONNECTION CHART		
FROM	TO	WIRE SIZE
P801-1	J803	CENTER CNDCT
3	P1	SF24-BR
4	J803	SHIELD
5	P6	SF24-WBK
6	P3	SF24-Y
8	P5	SHIELD
9	P4	CENTER CNDCT
10	P7	SF24-WBR
P801-12	P2	SF22-BL



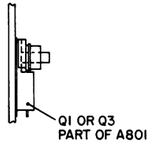
VIEW IN DIRECTION OF ARROW 'B'



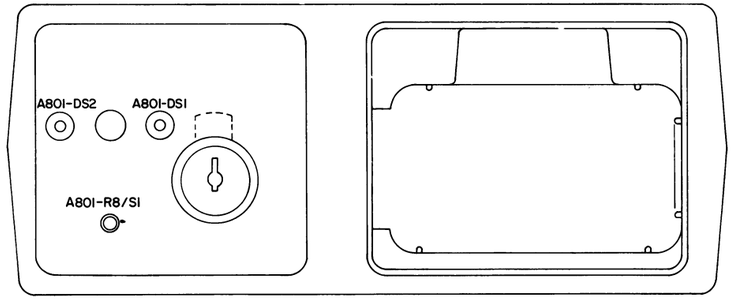
TOP VIEW



VIEW IN DIRECTION OF ARROW 'C'



SECTION IN DIRECTION
OF ARROW A-A



FRONT VIEW

(19D430402, Rev. 1)

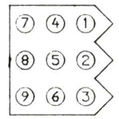
OUTLINE DIAGRAM

MPR VEHICULAR CHARGER

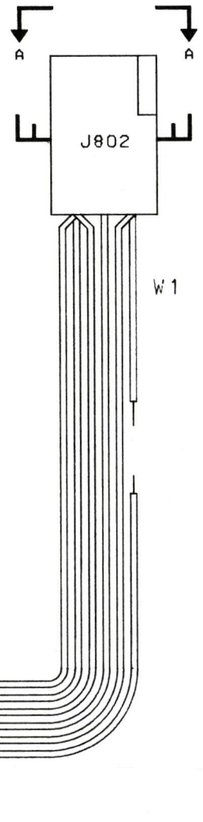
A801

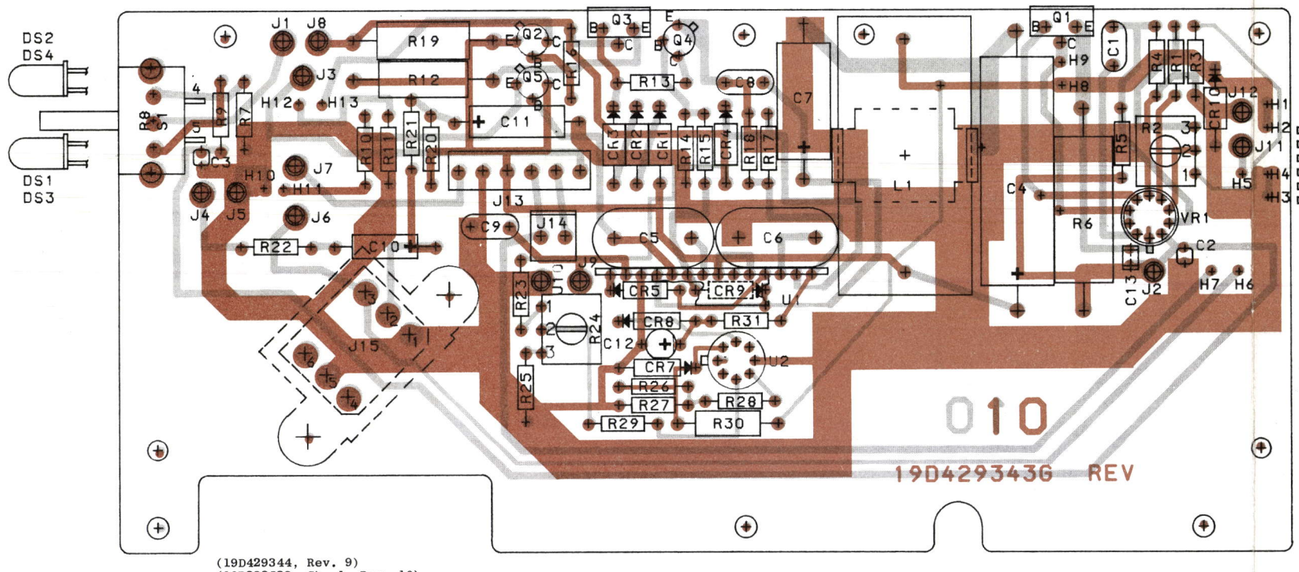
CONNECTIONS CHART				
FROM	TO	GP1	GP3	DESCP.
H1	LET HANG	X		V20-R
J802-1	LET HANG	X		V20-R
H2	J802-3	X		SF24-R
H3	J802-7	X		V20-BK
H4	J802-9	X		SF24-BK
H5	J802-4	X		SF24-WO
H6	J802-8	X		SF24-WBL
H7	J802-6	X		SF24-WG
H8	R8/S1-5	X		V20-R
H9	R8/S1-4	X		V20-R
DS1-BK	H10	X		
DS1-BL	H11	X		
DS2-BK	H12	X		
DS2-BL	H13	X		
H3	LET HANG		X	V20-BK 4
H1	LET HANG		X	V20-R
DS3-BK	H10		X	
DS3-BL	H11		X	
DS4-BK	H12		X	
DS4-BL	H13		X	

PART OF W1

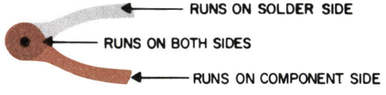


VIEW IN DIRECTION OF ARROW "A"

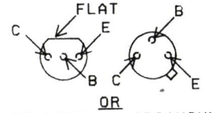




(19D429344, Rev. 9)
(19B232523, Sh. 1, Rev. 10)
(19B232523, Sh. 2, Rev. 10)



LEAD IDENTIFICATION FOR Q2, Q4, & Q5



IN-LINE TRIANGULAR

TOP VIEW

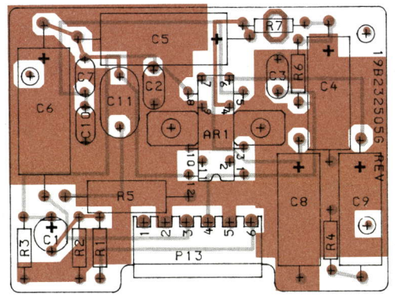
NOTE: 1 LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

OUTLINE DIAGRAM

MPR VEHICULAR CHARGER

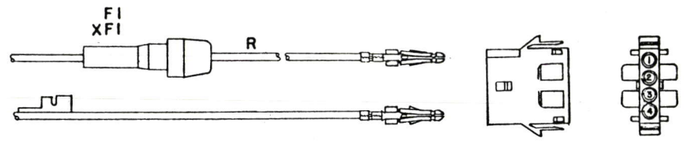
6 Issue 3

2 WATT AMPLIFIER
19B232505G1



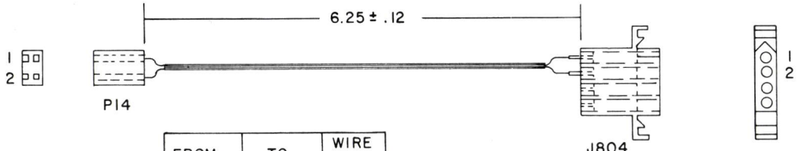
(19B233026, Rev. 0)
(19B233507, Sh. 1, Rev. 0)
(19B233507, Sh. 2, Rev. 0)

POWER CABLE
19B226198G2



RC4039

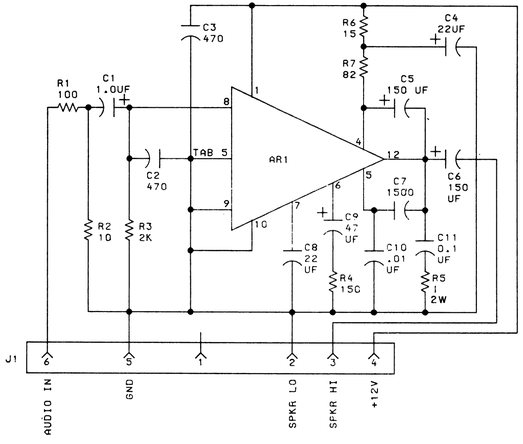
SPEAKER CABLE
19B232791G1



FROM	TO	WIRE SF-22
P14-1	J804-1	BR
P14-2	J804-2	BL

(19B233453, Rev. 0)

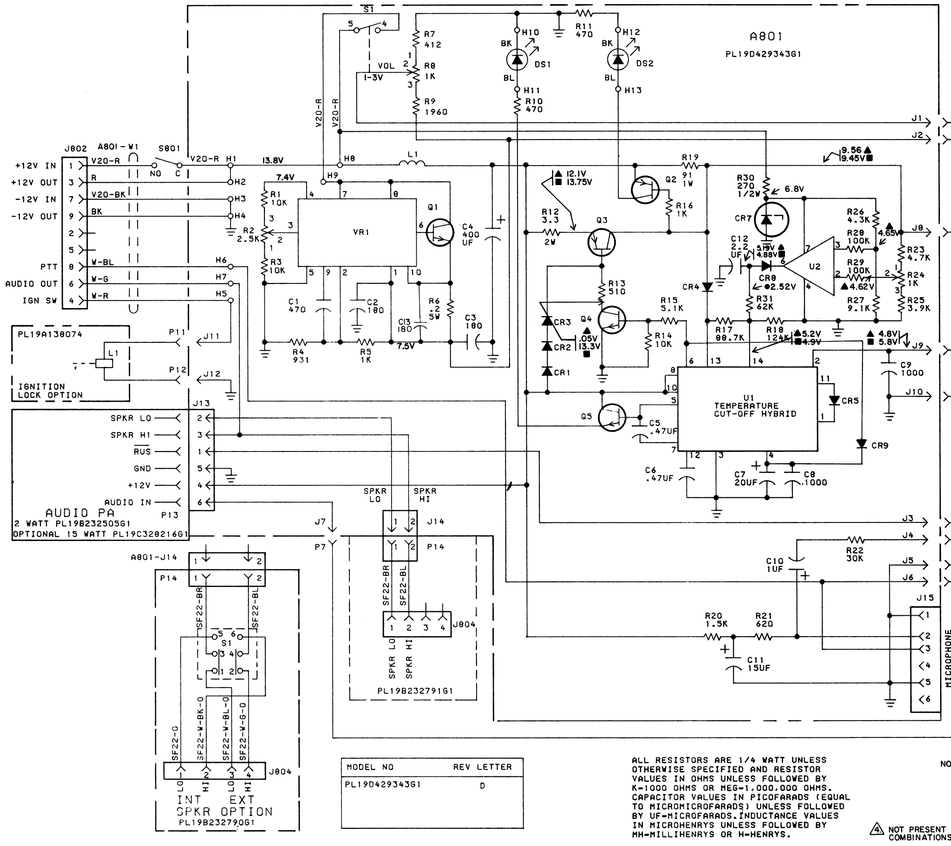
2 - WATT AMPLIFIER



THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PL19823250G1	

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

(19B232516, Rev. 2)



▲ 8.7 VDC BATTERY, 13.8 VDC SUPPLY, NORMAL TEMPERATURE.
■ 8.7 VDC BATTERY, 13.8 VDC SUPPLY, HIGH TEMPERATURE.
● 9.0 VDC BATTERY, 13.8 VDC SUPPLY, NORMAL TEMPERTURE.

MODEL NO	REV LETTER
PL19D429343G1	D

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

NOTES.
1. ALL WIRES ARE SF24 UNLESS OTHERWISE SPECIFIED.
2. TERMINATE WIRES AT J802-1&7 WITH 19B209208P1.
3. TERMINATE WIRES AT J802-3,4,6,8&9 WITH 19B209289P29.

▲ NOT PRESENT IN CHARGER ONLY COMBINATIONS.

(RC-3886A)
(19D429370, Rev. 8)

SCHEMATIC DIAGRAM

MPR VEHICULAR CHARGER

PARTS LIST

MPR 3 - HOUR VEHICULAR CHARGER
19D429957G1
ISSUE 3

SYMBOL	GE PART NO.	DESCRIPTION
A801		COMPONENT BOARD 19D429343G1 REV D
		- - - - - - - - - CAPACITORS - - - - - - - - -
C1	5494481P107	Ceramic disc; 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C2 and C3	19A700229P73	Ceramic; 180 pf ±10%, 100 VDCW; temp coef -3300 PPM.
C4	19A115680P24	Electrolytic; 400 µf +150% -10%, 18 VDCW; sim to Mallory Type TTA.
C5 and C6	19A116080P111	Polyester; 0.47 µf ±10%, 50 VDCW.
C7	19A115680P3	Electrolytic; 20 µf +150% -10%, 25 VDCW; sim to Mallory Type TTA.
C8 and C9	5494481P111	Ceramic disc; 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C10	5496267P17	Tantalum; 1.0 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C11	5496267P14	Tantalum; 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C12*	19A134202P7	Tantalum; 2.2 µf ±20%, 20 VDCW. Added by REV A.
C13	19A700229P73	Ceramic; 180 pf ±10%, 100 VDCW; temp coef -3300 PPM.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1 thru CR4	4037822P1	Silicon, 1000 ma, 400 PIV.
CR5	19A115100P1	Silicon; sim to Type 1N458A.
CR7*	4036887P6	Zener; 500 mW, 6.5 V. nominal.
CR8*	5494922P1	Silicon; sim to Type 1N456. Added by REV A.
CR9*	19A115100P1	Silicon; sim to Type 1N458A. Added by REV B.
CR10	4037822P1	Silicon, 1000 ma, 400 PIV.
		- - - - - - - INDICATING DEVICES - - - - - - -
DS1	19B219800G11	Diode, optoelectronic, green light emitting.
DS2	19B219800G12	Diode, optoelectronic, yellow light emitting.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1 thru J12	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
J13	19A116659P12	Connector, printed wiring: 6 contacts; sim to Molex 09-64-1061.
J14	19A116659P100	Connector, printed wiring: 2 contacts; sim to Molex 09-60-1021.
J15	19B219627G1	Connector: 6 contacts.
J802		Connector. Includes:
	19B209288P3	Shell.
	19B209288P1	Contact, electric: wire size No. 14-20 AWG; sim to Molex 02-09-1101. (J802-1, 7).
	19B209288P29	Contact, electric: wire size No. 22-30 AWG; sim to Molex 02-09-1141. (J802-3,4,6,8 & 9).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - INDUCTORS - - - - - - - - -
L1	19A115894P1	Reactor, audio freq; 1.0 mh ind., 0.35 ohms DC res.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1	19A116742P2	Silicon, NPN.
Q2	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q3	19A116375P1	Silicon, PNP.
Q4 and Q5	19A115910P1	Silicon, NPN; sim to Type 2N3904.
		- - - - - - - - - RESISTORS - - - - - - - - -
R1	19C314256P21002	Metal film: 10K ohms ±1%, 1/4 w.
R2	19A116559P104	Variable, cermet: 2.5K ohms ±20%, 0.5 w; sim to CTS Series 360.
R3	19C314256P21002	Metal film: 10K ohms ±1%, 1/4 w.
R4	19C314256P29310	Metal film: 931 ohms ±1%, 1/4 w.
R5	19A701250P201	Metal film: 1K ohms ±1%, 1/4 w.
R6	5493033P16	Wirewound: 0.2 ohms ±10%, 5 w; sim to Hamilton Hall Type HR.
R7	19C314256P24120	Metal film: 412 ohms ±1%, 1/4 w.
R8	19A134608P1	Resistor/switch; carbon film, 1K ohms ±20%, 0.2 w; sim to CTS Type 435-1ME200, includes Switch (S1), rotary, SPST, 3 amps at 125 v.
R9	19A701250P229	Metal film: 1960 ohms ±1%, 1/4 w.
R10 and R11	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R12	19A700050P19	Wirewound: 3.3 ohms ±10%, 2 w.
R13	3R152P511J	Composition: 510 ohms ±5%, 1/4 w.
R14	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R15	3R152P512J	Composition: 5.1K ohms ±5%, 1/4 w.
R16	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R17	19C314256P28872	Metal film: 88.7K ohms ±1%, 1/4 w.
R18	19C314256P21243	Metal film: 124K ohms ±1%, 1/4 w.
R19	3R78P910J	Composition: 91 ohms ±5%, 1 w.
R20	19A700106P67	Composition: 1.5K ohms ±5%, 1/4 w.
R21	3R152P621J	Composition: 620 ohms ±5%, 1/4 w.
R22	3R152P303J	Composition: 30K ohms ±5%, 1/4 w.
R23*	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w. Added by REV A.
R24*	19A700109P1	Variable, cermet: 1K ohms ±20%, 0.25 w. Added by REV A.
R25*	19A700106P77	Composition: 3.9K ohms ±5%, 1/4 w. Added by REV A.
R26*	3R152P432J	Composition: 4.3K ohms ±5%, 1/4 w. Added by REV A.
R27*	3R152P912J	Composition: 9.1K ohms ±5%, 1/4 w. Added by REV A.
R28* and R29*	19A700106P111	Composition: 100K ohms ±5%, 1/4 w. Added by REV A.
R30*	19A700113P49	Composition: 270 ohms ±5%, 1/2 w. Added by REV A.
R31*	3R152P623J	Composition: 62K ohms ±5%, 1/4 w. Added by REV A.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1		(Part of R8).

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
U1	19D423164G1	Hybrid, temperature.
U2*	19A116297P2	Integrated circuit, linear: Operational Amplifier; sim to µA741C. Added by REV A.
		- - - - - - - VOLTAGE REGULATORS - - - - - - -
VR1	19A116841P1	Linear, Voltage Regulator; sim to Fairchild µA723C.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	19D429343G2	Component board. (Includes S802).
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S801	19A116476P1	Sensitive: SPDT, 5 amp at 24 VDC or 5 amp at 250 VRMS; sim to Microswitch 11SM1-T2.
		REAR SLEEVE ASSEMBLY 19B233002G1 & G2
E10 thru E12	19A126140P3	Core, toroidal: sim to Stackpole 88-31959.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P8 thru P10	4029840P2	Contact, electrical: sim to Amp 42827-2.
		- - - - - - - - - THERMISTORS - - - - - - - - -
RT1	19C300048P6	Disc: 50K ohms ±10%; sim to NL IND. 4D103.
		CONNECTOR SUPPORT 19C328718G1
		CABLE ASSEMBLY 19B429935G1
		- - - - - - - - TOROIDAL CORES - - - - - - - -
E13	19A126140P3	Toroidal core, ferrite: sim to Stackpole 88-31959.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J803		Connector. Includes:
	19A700067P1	Receptacle: sim to Amphenol 83-79S.
	4029082P2	Cover.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1 thru P4	4029840P2	Contact, electrical: sim to AMP 42827-2.
P5	4029840P1	Contact, electrical: sim to AMP 41854.
P6 and P7	4029840P2	Contact, electrical: sim to AMP 42827-2.
P801		Connector. Includes:
	19B233000G1	Shell.
	19B232652G1	Contact. (P801-1, 10, 12).
	19A137578G1	Contact. (P801-3, 5, 6, 8, 9).
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	19A127521G9	Cable: 7 conductor. (Includes J803).
		MECHANICAL PARTS (A&E EC3873)
1	19D429684P1	Top cover.
2	19C328676G1	Bottom cover.
3	19A700031P310	Machine screw, Metric: 2.5-.45 x 10MM.
4	19A134657P2	Lockwasher, tooth, Metric: 2.5.

SYMBOL	GE PART NO.	DESCRIPTION
5	19A134681P3	Hex nut, Metric: M2.5 x 0.45.
6	N136AP905C6	Tap screw, phillips POZIDRIV: No. 4-24 x 5/16.
7	19A134589P3006	Tap screw, Metric: 3-0.5 x 6MM. (Secures P801, S801, rear cap, rear housing to frame).
8	19C328689P1	Cap.
9	N190AP905C6	Flat head, phillips POZIDRIV: No. 4-24 x 5/16.
10	19B233002G1	Sleeve.
11	19B233002G2	Sleeve.
12	N136P503C	Tap screw, phillips head: No. 2-32 x 3/16.
13	19C327044P1	Contact spring. (E1-E8).
14	19A137881G1	Plate.
15	19B233001G1	Frame.
16	19A134521P3	Lens.
17	19C328108P5	Knob.
18	19A134642P2503	Set screw, Metric: 2.5-.45 x 3MM.
19	19C328193P2	Knob, scaled.
20	19A134521P2	Lens.
21	5491682P25	Sim lock. (Key is not included- order key 5491682P4).
22	19C321643P1	Push button.
23	MP280586	Faceplate.
24	19A700115P3	Insulator, plate.
25	19A700068P1	Insulator, bushing.
26	19A134656P4	Flatwasher, Metric: No. 2.5MM.
27	19A134586P2510C6	Machine screw, Metric: 2.5-0.45 x 10MM.
28	19B429645P1	Front cap.
29	19A130622P1	Spring.
30	19B233684P1	Lock Stop.
31	19C328718G1	Connector support.
32	19C328679P1	Channel.
33	19A134586P3508C6	Machine screw: No. M3.5 x 8MM.
		ASSOCIATED PARTS
		2 WATT AUDIO BOARD 19B232505G1
		- - - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
AR1	19A134339P2	Linear, Audio amplifier; sim to SGS-ATES TBA810-AC8.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19A134202P14	Tantalum: 1 µf ±20%, 35 VDCW.
C2 and C3	5494481P7	Ceramic disc; 470 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C4	5496267P19	Tantalum: 22 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C5 and C6	5496267P12	Tantalum: 150 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C7	19A700005P2	Polyester: 1500 pf ±10%, 50 VDCW.
C8	5496267P19	Tantalum: 22 µf ±20%, 35 VDCW; sim to Sprague Type 150D.
C9	5496267P15	Tantalum: 47 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C10	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C11	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P13	19A116659P6	Connector, printed wiring: 6 contacts; sim to Molex 09-52-3061.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	19A700106P39	Composition: 100 ohms ±5%, 1/4 w.
R2	19A700106P15	Composition: 10 ohms ±5%, 1/4 w.
R3	3R152P202J	Composition: 2K ohms ±5%, 1/4 w.
R4	19A700106P43	Composition: 150 ohms ±5%, 1/4 w.
R5	19A700050P13	Wirewound: 1.0 ohms ±10%, 2 w.
R6	19A700109P19	Composition: 15 ohms ±5%, 1/4 w.
R7	19A700106P37	Composition: 82 ohms ±5%, 1/4 w.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19A143578P56	Spacer, threaded. (Secures AR1).
	19A137924P1	Spacer. (Secures 2 Watt Audio Board).
	19A700031P406	Machine screw, Metric: 3-0.5 x 6MM. (Secures 2 Watt Audio Board to spacer).
	19A134586P2506E	Machine screw, Metric: 2.5-0.45 x 6MM. (Secures Audio Board spacer to mounting surface).
		MICROPHONE KIT 714114G2
	4031457P1	Support.
	4031458P1	Spring.
	N193P1408C6	Tap screw, phillips head: No. 8-18 x 1/2.
	19A116773P105	Tap screw, Phillips POZIDRIV®: No. 7-19 x 5/16.
		CHARGER MOUNTING KIT 19A137839G1
	19B227124G2	Support. (Mounts on hump).
	19B233043G1	Support. (Locates between charger & hump support).
	19B209103P506	Tap screw, hex head: No. 10-32 x 3/8. (Secures charger support to hump support).
	M403P19C6	Lockwasher: No. 10. (Secures charger support to hump support).
	M402P9C6	Washer, steel: No. 10. (Secures charger support to hump support).
	N130P1610C6	Screw, thread forming: No. 10-16 x 5/8. (Secures hump mount support to vehicle- thin mounting surface).
	N130P1624C6	Screw, thread forming: No. 10-16 x 1-1/2. (Secures hump mount support to vehicle- used with thick carpets or spacers).
	19A134653P6020	Bolt, machine. (Secures charger to charger support).
	19A134654P11	Lockwasher, external tooth: No. 6.0M. (Secures charger to charger support).
	19B232982P1	Cover.
		SPEAKER CABLE 19B232791G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J804		Connector. Includes:
	19B209288P17	Shell.
	5496809P17	Connector: female contact; sim to Molex 1381-7.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P14		Connector. Includes:
	19A116659P138	Shell.
	19A116781P6	Contact, electrical; sim to Molex 08-50-0108.

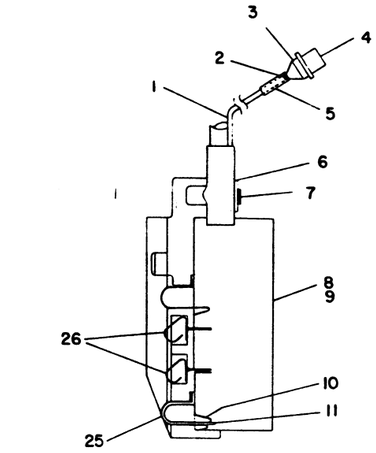
SYMBOL	GE PART NO.	DESCRIPTION
		POWER CABLE 19B226198G2
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	1R16P8	Quick blowing: 5 amps at 250 V; sim to Littelfuse 312005 or Bussmann MTH-5.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1		Connector. Includes:
	19B209288P4	Shell.
	19B209288P2	Contact, electrical: sim to Molex 02-09-2101.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XF1	19A122111G1	Lead, fuse: approx 8 feet long.
	7491823P7	Solderless terminal. (As required).
	7491823P8	Solderless terminal. (As required).
	402984P2	Contact, electrical. (As required).

PARTS LIST

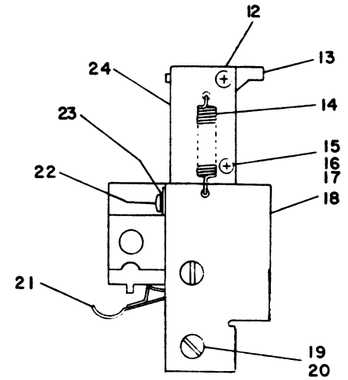
CONNECTOR SUPPORT & CABLE ASSEMBLY
19C328718G1
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		CABLE/CONNECTOR ASSEMBLY 19D429935G1
		- - - - - - - - - - - COILS - - - - - - - - - - -
E13	19A126140P3	Toroidal core: sim to Stackpole 88-31959.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1 thru P4	4029840P2	Contact, electrical: sim to Amp 42827-2.
P5	4029840P1	Contact, electrical: sim to AMP 41854.
P6 and P7	4029840P2	Contact, electrical: sim to Amp 42827-2.
P801		Connector. Includes:
	19B233000G1	Connector block.
	19A137578G1	Contact. (P801-3 thru 6, 8, 9).
	19B232652G1	Contact. (P801-1, 10, 12).
	19B232656P1	Contact.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W1		CABLE ASSEMBLY 19A127521G9
	19A700067P1	Receptacle; sim to Amphenol 83-798.
	4029082P2	Cover, receptacle.
	19B209044P19	RF Cable.
		MECHANICAL PARTS (SEE RC4122)
1	19B209044P19	RF cable.
2	7489477P8	Ferrule.
3	4029082P2	Cover.
4	19A700067P1	Connector, receptacle; sim to Amphenol 83-798.
5	19C301208P6	Insulated sleeving.
6	19B232106P1	Strain relief.
7	19A134483P3006	Machine screw, Metric: No. 3-05 x 6MM.
8	19D429935G1	Cable/Connector assembly.
9		(Not Used).
10	19B232656P1	Contact.
11	19A137593P1	Insulator.
12	N80P13024C6	Machine screw: No. 6-32 x 1-1/2.
13	19B232963P1	Stop.
14	19A137862P1	Spring.
15	19A134483P2510	Machine screw, Metric: No. 2.5-.45 x 10MM.
16	19A134657P2	Lockwasher, tooth, Metric: size No. 2.5.
17	19A138061P1	Spacer.
18	19B233012G1	Support.
19	19A134647P1	Shield screw, pan head metric: M2.5 x .45 thd.
20	19A137927P1	Spacer.
21	19B233091G1	Spring.
22	19A134589P3006	Tap screw, thd. forming: 3-0.5 x 6MM.
23	19A134656P5	Flatwasher, metric: 3.0 screw dia.
24	19B232971P1	Channel.
25	19B232652G1	Contact.
26	19A137578G1	Contact.

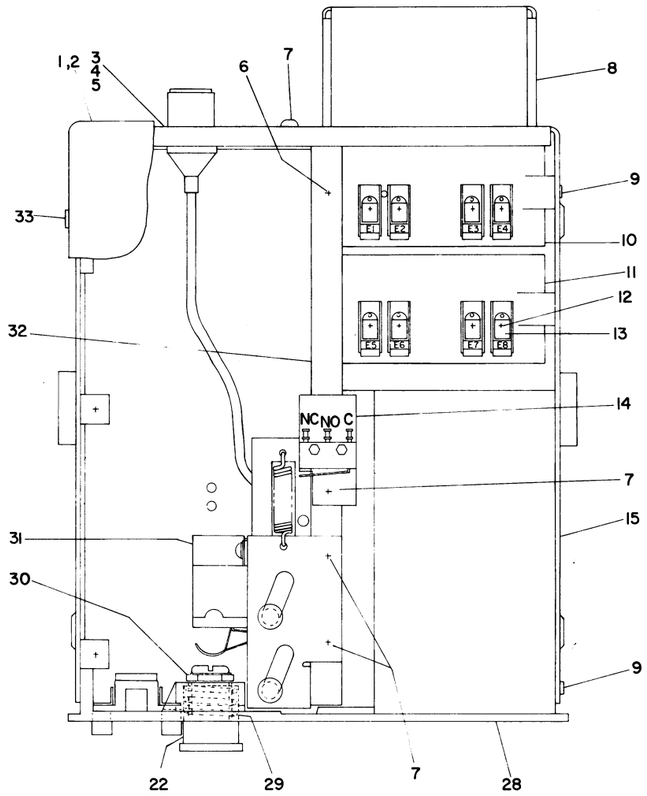
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

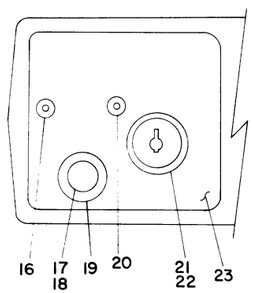


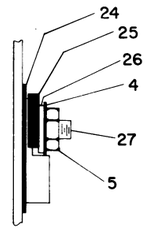
P801
CROSS SECTION VIEW



RC4122







Q1 & Q3 ON A801

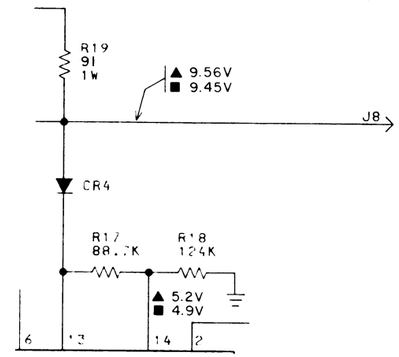
RC-3873

PRODUCTION CHANGES

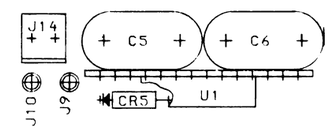
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter," which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - Component Board 19D429343G1
To add voltage cutoff for battery procetion.
Added C12, CR7, CR8, R23, R24, R25, R26, R27, R28, R29, R30, R31 and U2.

Schematic Diagram was:



Outline Diagram was:



REV. B - To improve operation of voltage cutoff circuit.
Add CR9.

REV. C - To improve RF bypass at 7.5V Regulator.
Added C13.

REV. D - To improve operation the MPR radio with delux controller when operated in the charger.
Deleted CR6. Connected J15-3 & H6 to J6.
CR6 was silicon; sim to type 1N458A.

TROUBLESHOOTING PROCEDURE

The test circuit shown can be used to simulate battery pack conditions and determine if the charger is working properly. Switch S1 simulates battery pack temperature (open-room temperature, closed-hot battery pack). Switch S2 resets charger logic, the same as removing the battery pack from the charging insert.

Connect the test circuit as shown on the diagram. Insert a battery pack into the charging insert. Use the logic chart and voltage readings on the diagram to determine the working condition of the charger.

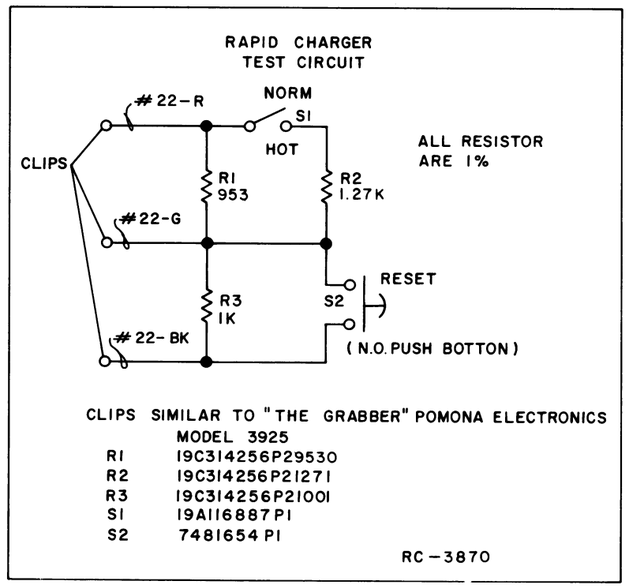
If the charger works properly with the test circuit, but not with the battery pack, check thermistors RT1 and RT Battery. Each should measure approximately 50K ohms at room temperature (25°C).

NOTE:

Insure the battery pack is fully inserted into the charging insert and all contacts are made before troubleshooting.

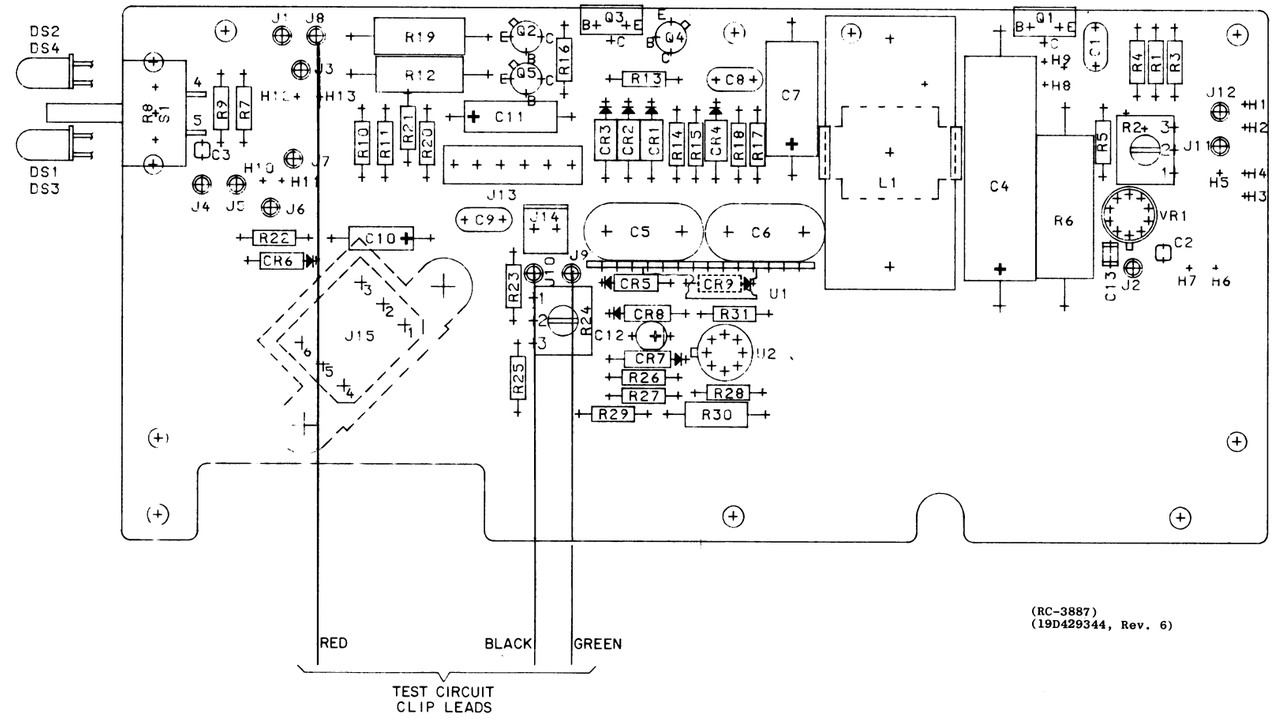
Other Checks:

1. Amber LED does not light, check fuse, Q2 and DS2.
2. If a known good battery pack has been charging and the charger fails to shut-off (READY light does not come on) at the end of the charge time, check Q3, Q4, Q5 and DS1.
3. U1-11 always high, logic will not reset, check C5.
4. U1-6 always low, no high rate of charge, check C6.
5. U1-5 always low, logic will not reset, check C7 and C8.
6. No high rate of charge, check for open CR4 or Q3.



TEST BATTERY CONDITION	U1 PIN				TEST CRT SWITCH POSITION	
	11	4	6	5	S1	S2
No Battery	High	Low	Low	Low	Norm	Closed
Cold Battery	High	Low	Low	Low	Norm	Closed
Normal Battery Charging	Low	High	High	Low	Norm	Open
Charged Battery	Low	Low	Low	High	Hot	Open
Hot Battery Just Inserted	Low	Low	Low	Low	Hot	Open

LOW - PIN VOLTAGE < 1.0 VOLTS
HIGH - PIN VOLTAGE >3.0 VOLTS



(RC-3887)
(19D429344, Rev. 6)

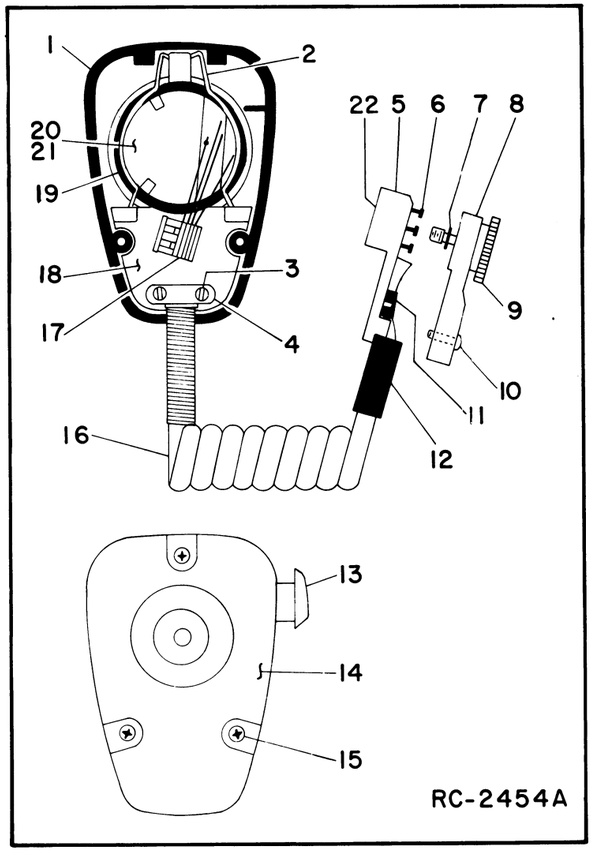
PARTS LIST

LBI-4481B

TRANSISTORIZED DYNAMIC MICROPHONE
19C320270G1, G2
(SEE RC-2454)

SYMBOL	GE PART NO.	DESCRIPTION
1		Front Case Assembly. RP127. (includes items 14, 15).
2		Retaining spring. (Part of item 18).
3		Tap screw, phillips. (Part of item 16).
4		Retaining bar. (Part of item 16).
5	19D416766P1	Connector base.
6	19A129435P1	Contact.
7	7109043P1	Retaining ring.
8	19D416767P1	Connector cover.
9	19B219723G1	Screw.
10	N136AP905C	Tap screw, phillips: No. 4 x 5/16.
11	19A116937P1	Cable clip.
12	19B219749P1	Strain relief.
13		Switch button kit. RP126.
14		Rear Case Assembly. (Part of item 1).
15		Tap screw, phillips. (Part of item 1).
16	19C321016G1	Cable assembly: Includes items 3-12 and cable RP129.
17		Switch Assembly. RP128.
18		Grille Assembly. RP130. (includes items 2, 19, 21).
19		"O" Ring. (Part of item 18).
20		Transistorized Cartridge. RP117.
21		Washer. (Located under cartridge- part of item 18).
22	19C321016G3	Connector assembly: Includes items 5-12.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



SERVICE SHEET

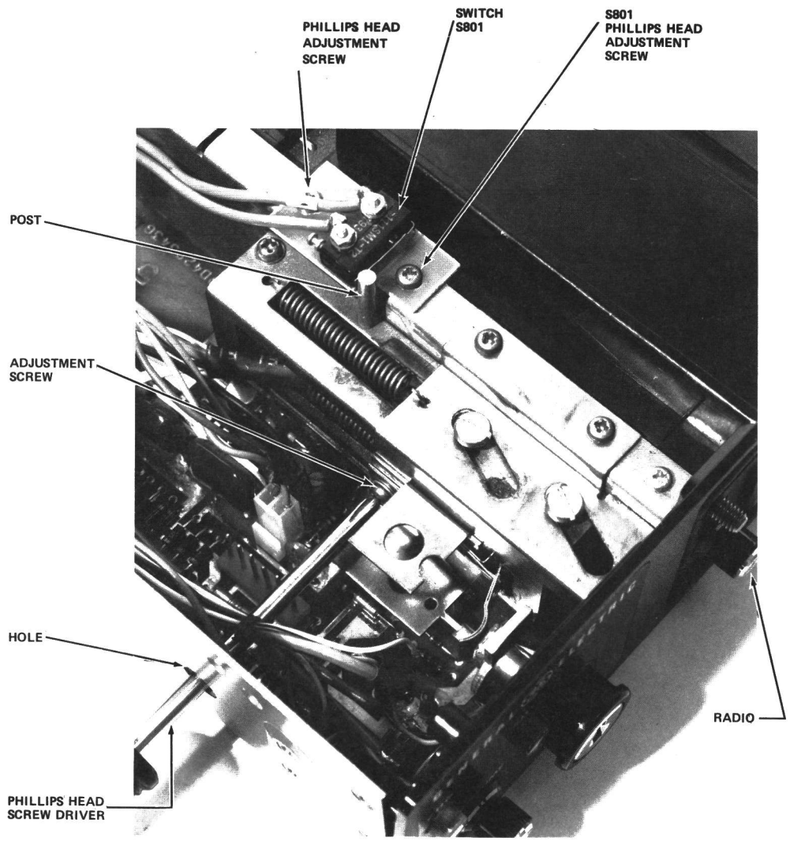
MICROPHOHE 19C320270G1 & G2
(Sheet 1)

This addendum adds to maintenance manual LBI30781 an adjustment procedure for the spring latch and power switch S801.

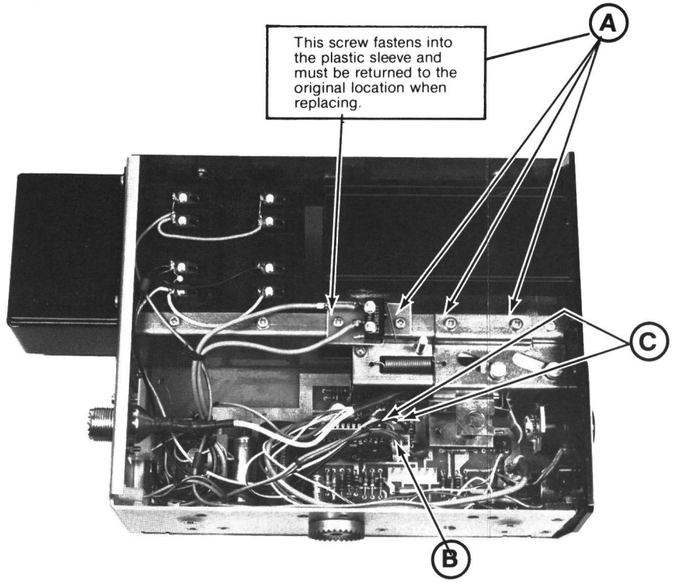
If any difficulties occur with intermittant or bad UDC contact the following adjustments should be made.

To adjust the spring latch and power switch S801:

1. Loosen all screws holding both the latch and the switch.
2. Slide S801 toward the back of the charger.
3. Press the radio into the charging insert as far as it will go. Hold the radio in this position and pull the spring latch back as far as it will go. Tighten the spring latch adjustment screw. The radio is now latched in the charging insert.
4. Slide S801 forward against the post until S801 is activated. The post should not be hitting the switch housing when the radio is pushed in as far as it will go. Tighten the two screws holding S801 in place.

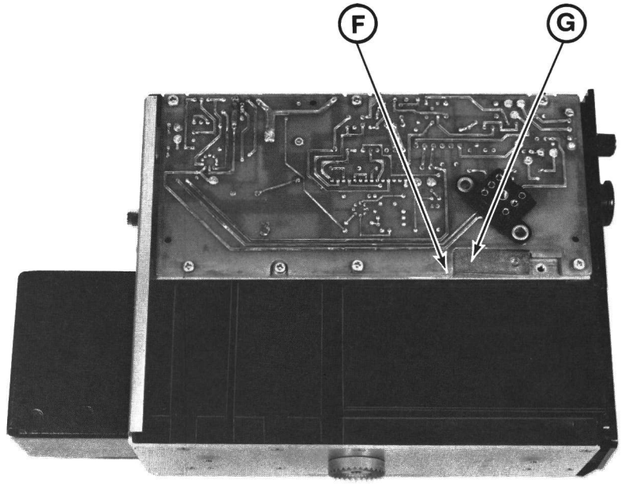


SPRING LATCH AND POWER SWITCH ADJUSTMENT PROCEDURE

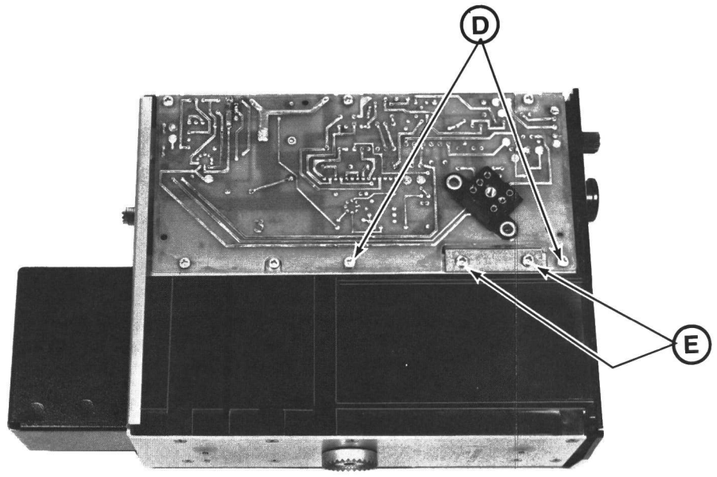


To remove cable assembly:

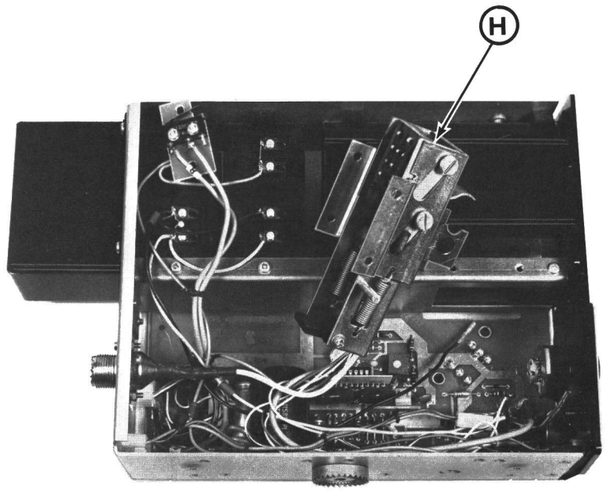
1. Remove Phillips Head screws at (A).
2. Remove P14 at (B).
3. Remove P9 and P10 at (C).



6. Lift up on edge of printed wire board at (F).
7. Push cable assembly under printed wire board (G).



4. Loosen Phillips Head screws at (D).
5. Remove Phillips Head screws at (E).



8. Lift the cable assembly up and out as shown at (H).

PROCEDURE FOR REMOVING CONNECTOR SUPPORT AND CABLE ASSEMBLY 19C328718G1

PARTS LIST

SPEAKER ASSEMBLY
19C320302G2
ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - LOUDSPEAKERS - - - - - - - - - -
LS2	19A116910P1	Permanent magnet: 5 inch, 3.2 ohms ±15% imp, 5 w max operating; sim to Pioneer 002009.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W2		CABLE ASSEMBLY 19A122167G1
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P804		Connector. Includes:
	5493018P2	Plug, phenolic: sim to Cinch 204-31-05-010.
	5491563P4	Hood.
	4033802P1	Cable: approx 4 feet.
		MECHANNEL PARTS (SEE RC3073)
7	19C320016P2	Mounting bracket.
8	N187P16010C6	Machine screw: No. 10-32 x 5/8.
9	19B227593G2	Housing.
10	19A116986P108	Tap screw, with lockwasher: No. 7-19 x 1/2. (Secures speaker LS2 to housing).
11	19A116986P112	Tap screw, with lockwasher: No. 7-19 x 3/4. (Secures grille to housing).
12	19B219692G2	Grille.

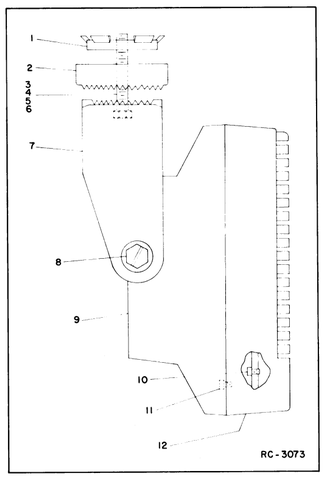
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

BREAK-AWAY DEVICE KIT
19A129461G1
(SEE RC3073)
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
1	19B219578G1	Safety Release Disc.
2	19C320022P1	Retaining bracket.
3	N187P16010C6	Screw, hex head, slotted: No. 10-32 x 5/8. (Quantity 1- used with safety release disc & retaining bracket).
4	N130P16012C6	Tap screw, hex head, slotted: No. 10-16 x 3/4. (Quantity 3- used without safety release disc & retaining bracket).
5	N130P16024C6	Tap screw, hex head, slotted: No. 10-16 x 1-1/2. (Quantity 3- used with thick carpet mounting).
6	N402AP9C	Flatwasher: No. 10. (Used with items 4 & 5).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

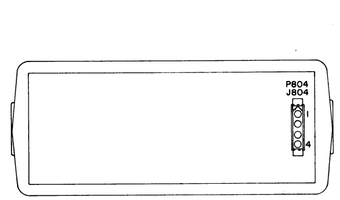


PARTS LIST

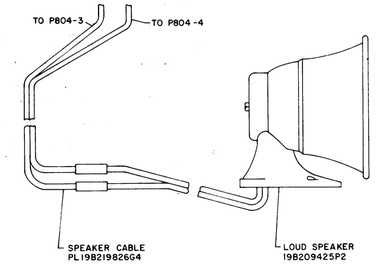
SPEAKER OPTION CABLE
19B232790G1
ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J804		Connector. Includes:
	19B209288P17	Shell.
	5496809P17	Contact, electrical, female: sim to Molex 1381-T. (Quantity 4).
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P14		Connector. Includes:
	19A116659P138	Shell.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 2).
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19A134426P2	Push: DPDT, alternate action, 14.0 VDC at 1.1 amp; sim to Switchcraft 34S-1025A.
		- - - - - - - - - - MISCELLANEOUS - - - - - - -
	N136AP905C6	Tap screw, phillips POZIDRIV: 4-24 x 5/16. (Secures S1).
	N402P5C6	Washer, steel: No. 4. (Secures S1).

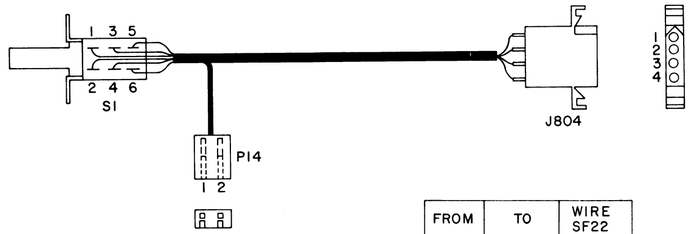
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



REAR VIEW OF VEHICULAR CHARGER



(19C328819, Rev. 1)

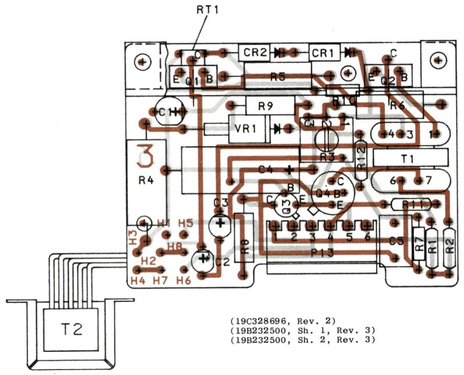


FROM	TO	WIRE SF22
S1-1	J804-3	W-BL-O
S1-2	J804-4	W-G-O
S1-3	P14-1	BR
S1-4	P14-2	BL
S1-5	J804-1	O
S1-6	J804-2	W-BK-O

(19B233504, Rev. 0)

SERVICE SHEET

SPEAKER ASSEMBLY 19C320302G2
SPEAKER OPTION CABLE 19B232790G2
(Sheet 2)

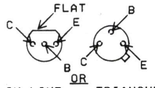


(19C328696, Rev. 2)
(19B232500, Sh. 1, Rev. 3)
(19B232500, Sh. 2, Rev. 3)

CONNECTION CHART			
FROM	TO	LENGTH±.12	REMARKS
T2-BL	H1	3.00	◆STRIP&TIN .125±.03
T2-R	H3		◆STRIP&TIN .125±.03
T2-W	H5		◆STRIP&TIN .125±.03
T2-Y	H2		◆STRIP&TIN .125±.03
T2-G	H4	3.00	◆STRIP&TIN .125±.03
H8	H6		DA JUMPER

◆ ALL CONNECTIONS TO BE MADE ON COMPONENT SIDE

LEAD IDENTIFICATION
FOR Q3 & Q4

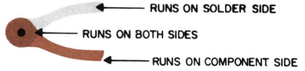


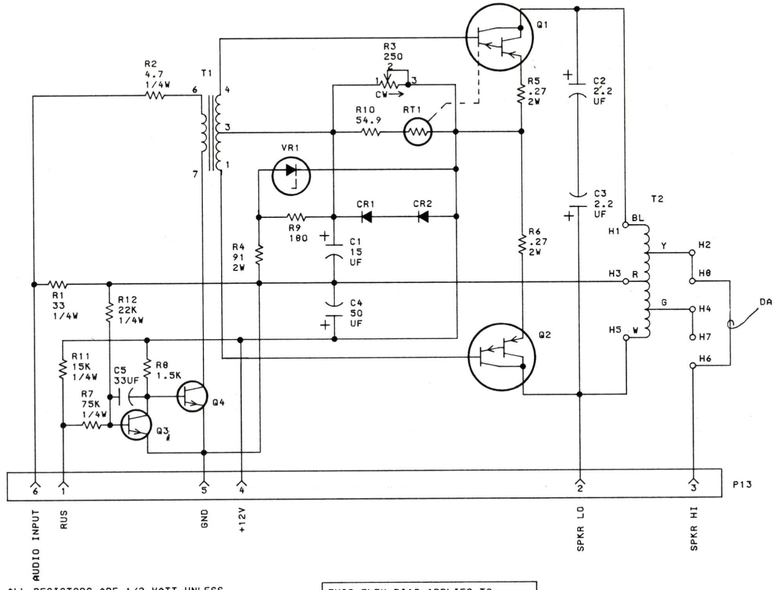
OR

IN-LINE TRIANGULAR

TOP VIEW

NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.





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 PICOFARADS (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
PL19C328216G1	A

(19C328233, Rev. 4)

PARTS LIST

OPTIONAL 15 WATT POWER AMPLIFIER BOARD
19C328216G1
ISSUE 2

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1*	19A134202P8	Tantalum: 15 µf ±20%, 20 VDCW.
		Earlier than REV A:
	5496267P14	Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C2* and C3*	19A134202P7	Tantalum: 2.2 µf ±20%, 20 VDCW.
		Earlier than REV A:
	5496267P13	Tantalum: 2.2 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C4	19A115680P4	Electrolytic: 50 µf +150% -10%, 25 VDCW; sim to Mallory Type TTX.
C5*	19A700004P5	Metallized polyester: 0.33 µf ±10%, 63 VDCW. Added by REV A.
		- - - - - - - - - DIODES AND RECTIFIERS - - - - -
CR1 and CR2	4037822P1	Silicon, 1000 mA, 400 PIV.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P13	19A116659P6	Connector, printed wiring: 6 contacts; sim to Molex 09-52-3061.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A13032G5	Silicon, PNP. Includes RT1.
Q2	19A134612P1	Silicon, PNP; sim to T1P-125.
Q3	19A115774P1	Silicon, NPN.
Q4	19A115300P4	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1*	19A700106P27	Composition: 33 ohms ±5%, 1/4 w.
		Earlier than REV A:
	19A700113P39	Composition: 100 ohms ±5%, 1/2 w.
R2*	19A700106P7	Composition: 4.7 ohms ±5%, 1/4 w.
		Earlier than REV A:
	19A700113P7	Composition: 4.7 ohms ±5%, 1/2 w.
R3*	19A116559P103	Variable, cermet: 250 ohms ±20%, 0.5 w; sim to CTS Series 360.
		Earlier than REV A:
	19A116559P115	Variable, cermet: 100 ohms ±20%, 0.5 w; sim to CTS Series 360.
R4	3R79P910J	Composition: 91 ohms ±5%, 2 w.
R5 and R6	19A700080P6	Wirewound: 0.27 ohms ±10%, 2 w.
R7*	3R152P753J	Composition: 75K ohms ±5%, 1/4 w.
		Earlier than REV A:
	3R77P753J	Composition: 75K ohms ±5%, 1/2 w.
R8	19A700113P67	Composition: 1.5K ohms ±5%, 1/2 w.
R9	19A700113P45	Composition: 180 ohms ±5%, 1/2 w.
R10	19C314256P25499	Metal film: 549.9 ohms ±1%, 1/2 w.
R11*	19A700106P91	Composition: 15K ohms ±5%, 1/4 w. Added by REV A.
R12*	19A700106P95	Composition: 22K ohms ±5%, 1/4 w. Added by REV A.
		- - - - - - - - - - THERMISTORS - - - - - - - - - -
RT1	5490828P54	Thermistor: 50 ohms ±10%, color code blue; sim to Carborundum Type B0807J-16. (Part of Q1 assembly).
		- - - - - - - - - - TRANSFORMERS - - - - - - - - -
T1	19A134159P1	Audio freq: 300-4000 Hz, ±1.0 dB max, Pri: 40 ohms ±10%, Sec: 60 ohms 2.5 MADC.
T2	19A134167P1	Audio freq: 300-4000 Hz, ±1 dB, 1.6 amp max, Input 2.0 watt at 8.0 ohms, 50 MADC, 1000 Hz.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - - -
VR1	19A115528P1	Zener: 1 watt, 6.6 mW.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B233014P1	Heat sink. (Q1 & Q2).
	19A116023P3	Insulator, plate. (Used with Q1 & Q2).
	19A134016P1	Insulator, bushing. (Used with Q1 & Q2).
	19A134661P3	Hex nut, Metric: M2.5 x 0.45. (Secures Q1 & Q2 and PA Board).
	19A134483P2510	Machine screw, Metric: 2.5-.45 x 10MM. (Secures Q1 & Q2).
	19A134657P2	Lockwasher, Metric: steel. (Secures Q1 & Q2 and PA Board).
	19A134656P4	Flatwasher, Metric: steel. (Secures Q1 & Q2 and PA Board).
	4036555P1	Insulator, washer: nylon. (Used with Q4).
	19A134589P3006	Tap screw, Metric: 3-0.5 x 6MM. (Secures heat sink to component board).
	19A134586P2510C6	Machine screw, flathead: 2.5 x 0.45 x 10MM. (Secures PA Board).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SERVICE SHEET

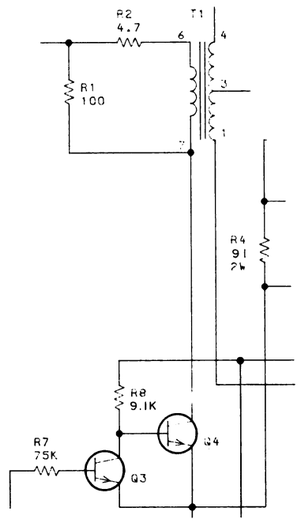
15 WATT AMPLIFIER 19C328216G1
(Sheet 3)

PRODUCTION CHANGES

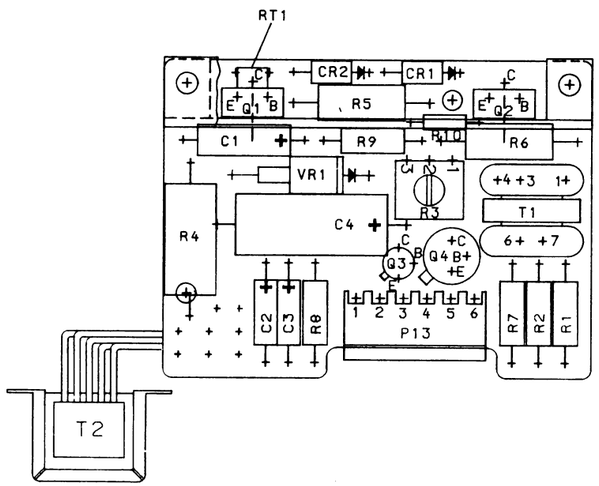
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter," which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - To reduce noise in speaker.
Changed C1, C2, C3, R1, R2, R3,and R7.
Added C5, R11 and R12.

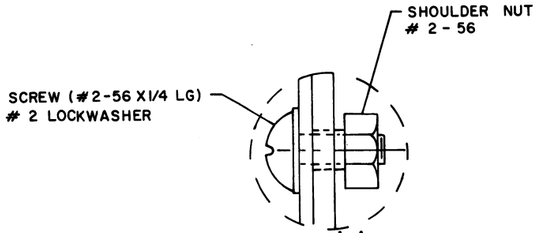
Schematic Diagram was:



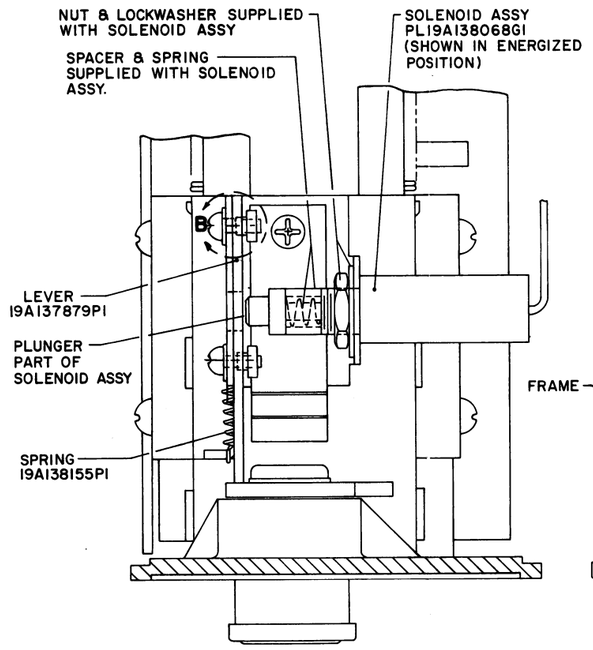
Outline Diagram was:



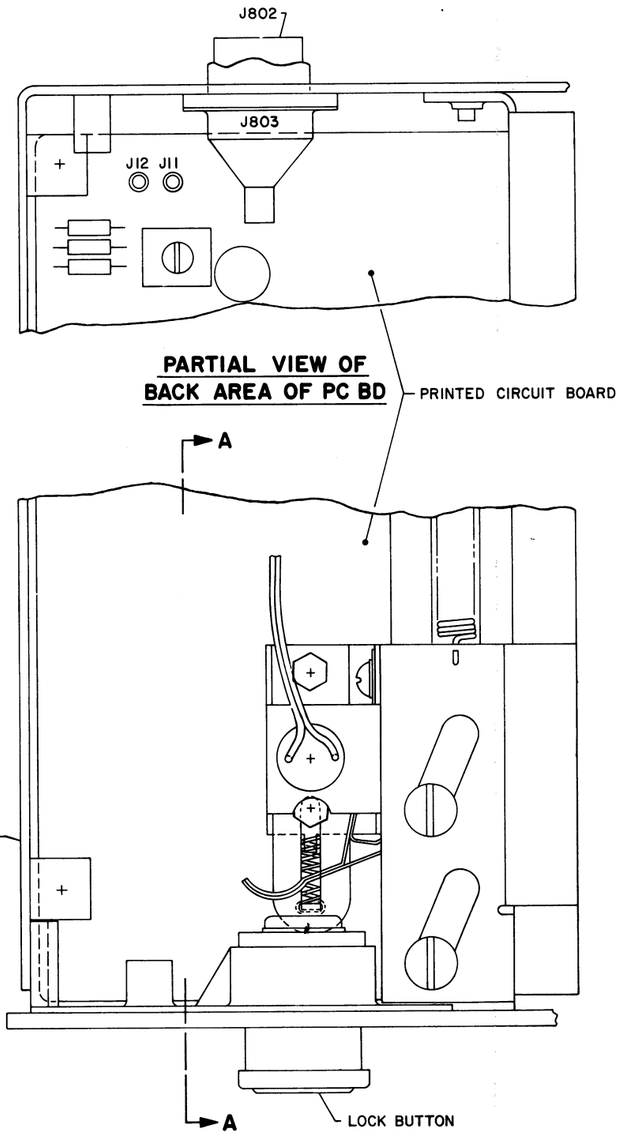
LBI30781



**VIEW 'B'
ENLARGED
2 PLACES**



SECT. A-A
VIEW IN DIRECTION OF ARROWS



PARTIAL VIEW OF BACK AREA OF PC BD

**TOP VIEW
WITHOUT COVERS**

(19D430082, Rev. 2)

(1) THESE INSTRUCTIONS COVER THE INSTALLATION OF MODIFICATION KIT PL19A138074G1 FOR APPLICATION OF THE IGNITION LOCK OPTION.

INSTRUCTIONS:

1. ASSEMBLE SPRING (19A138155P1) TO LEVER (19A137879P1) AS SHOWN.
2. ASSEMBLE LEVER (19A137879P1) TO BRACKET WITH SCREW, EYELET, LOCKWASHER AND NUT AS SHOWN. APPLY A THIN FILM OF LUBRICANT (LUBRIPLATE #130-A PER 19A115204P1 OR EQUIV) TO MATING SURFACE OF LEVER & BRACKET.
3. ASSEMBLE SOLENOID (PL19A138068G1) TO BRACKET AS SHOWN AND CONNECT WIRES TO J11 AND J12 ON PWB.
4. TEST OPERATION OF ASSEMBLY AS FOLLOWS:
   WHEN SOLENOID IS DEENERGIZED, PLUNGER TIP SHOULD ENGAGE IN THE HOLE IN THE MOUNTING BRACKET (THRU THE LEVER) AND PREVENT THE LOCK BUTTON FROM BEING DEPRESSED. WHEN SOLENOID IS ENERGIZED, (APPLY 13.8 VDC TO PINS 4 AND 7 OF J802) PLUNGER TIP SHOULD RETRACT AND ALLOW THE LOCK BUTTON TO BE DEPRESSED.

PARTS LIST

OPTIONAL IGNITION LOCK KIT
19A138074G1
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
	19A138068G1	Solenoid assembly. (Includes electrical contacts, spacer, tip, dowel pin, helical spring & solenoid).
	19A134676P1	Solenoid: 72 ohms ±10% coil res, 12 VDC, 2 watt; sim to Oak mfg Co. C7-C18C-12DC-AY-PULL Coil Res.
	4035235P11	Helical spring. (Part of 19A138068G1 assembly).
	N537P605	Dowel Pin. (Part of 19A138068G1 assembly).
	19A136667P1	Solenoid tip. (Part of 19A138068G1 assembly).
	19A136825P1	Spacer. (Part of 19A138068G1 assembly).
	4029840P2	Contact, electrical: sim to Amp 42827-2. (Part of 19A138068G1 assembly).
	19A137879P1	Lever. (Connects to bracket).
	19A138155P1	Spring. (Connects to lever).
	19A134483P2510	Machine screw, Metric: No. 2.5-.45 x 10MM. (Secures lever to bracket).
	19A134657P2	Lockwasher, tooth, Metric: No. 2.2MM. (Secures lever to bracket).
	19A134661P3	Hex nut, steel: Metric, size No. M2.5 x 0.45. (Secures lever to bracket).
	N330P1203P22	Eyelet, metallic. (Located under lever mounting screw).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SERVICE SHEET

**IGNITION LOCK KIT
19A138074G1
(Sheet 4)**