MOBILE RADIO

Porta·Mobil II™

VEHICULAR CHARGER

Maintenance Manual LBI-30388

DATAFILE FOLDER — DF-0075

Porta Mobil II
VEHICULAR CHARGER

SPECIFICATIONS *

Combination Number	375C1A2X
Used With	Porta•Mobil II Two-Way Radios
Input Voltage	13.8 VDC
Polarity	Negative Ground Only
Input Current (Charging)	330 to 400 mA

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

GENERAL ELECTRIC

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ILLUSTRATIONS

WARNING

Although the highest DC voltage in Porta•Mobil II™ Equipment is supplied by a Portable or vehicular battery, high currents may be drawn under short circuit conditions. These currents can possibly heat metal objects such as tools, rings, watchbands, etc., enough to cause burns. Be careful when working near energized circuits! High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns upon contact. Keep away from these circuits when the transmitter is energized!

COMBINATION NOMENCLATURE

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit	7th Digit	8th Digit
3 Charger	**7** Porta• Mobil II	**5** Mobile	**C** -12 VDC (Negative Gnd)	**1** 16 Hour	**A** 1 Charge Socket	**2** Vintage	**X** Not Range Sensitive

DESCRIPTION

General Electric charger combination 375C1A2X is a lockable vehicular charger for the Porta•Mobil II portable. Connectors are provided on the charger for connecting an external power source and antenna, permitting full performance of the portable while charging the battery pack, regardless of the charge state of the battery pack. Placing the portable into the charger automatically depresses a switch and charging current is applied to the battery pack. A red indicator lamp will light indicating proper contact has been made and the battery pack is being charged.

The charging rate of the charger is C/10, requiring a 16 hour charge time for a fully discharged battery pack.

References to symbol numbers mentioned in the following text are found on the Schematic Diagram, Outline Diagrams and Parts List (see Table of Contents).

OPERATION

To use the vehicular charger simply place the portable into the charger with the antenna of the portable toward connector J801 of the charger (see Figure 1). Connect J801 to J704 of the portable and tighten the retaining screw. The portable may now be locked in the charger and the key removed. The red indicator lamp should be on, indicating proper contact and the battery pack is being charged at a C/10 rate. The portable may now be operated as a mobile two-way radio.

CIRCUIT ANALYSIS

Placing the portable into the charger automatically depresses switch S1 applying power to the charging circuit. The charging circuit consists of incandescent lamps DS1, DS2 and DS3 for current limiting. The three lamps are connected in parallel with each other and in series with the battery pack. Each lamp draws from 110 to 133 milliamps at 13.8 VDC. The charging current is connected to the battery pack through jacks J804 and J805.

Voltage to operate the receiver is connected through de-coupling circuit CR1, C1 and C2 and through J801-7 to the portable receiver.

The external vehicular antenna is connected through J803 and J801-2 to the portable radio.

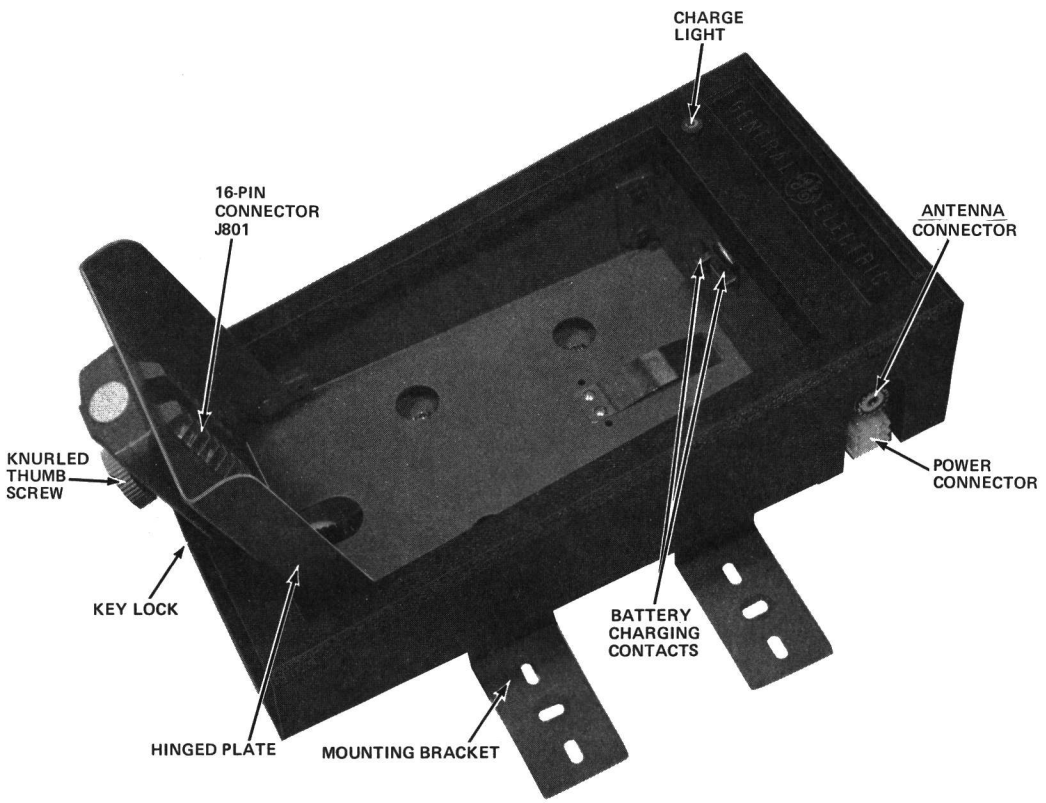


Figure 1 - Vehicular Charger

INSTALLATION

To install the Porta•Mobil II portable vehicular charger, the following equipment is required:

- An electric drill for drilling mounting holes
- Drills and circle cutters (see sizes in box below)
- A soldering iron for the antenna cable
- Phillips and flat-blade screwdrivers and a 5/16-inch hex head driver for mounting screws

DRILL SIZES

No. 31 (1/8-inch) Drill for No. 8 Self-Tapping Screws

No. 27 (9/64-inch) for No. 10 Self-Tapping Screws

9/32-Inch Drill for 30-88 MHz Antenna and 1/4-Inch Bolt (Optional)

3/4-Inch Punch or Holesaw for 132-512 MHz Antenna (Optional)

1 3/8-Inch Circle Cutter, Holesaw and Socket Punch for 30-50 MHz Antenna (Optional)

No. 9 (3/16-Inch) Drill for 25-88 MHz Antenna Ground Screw (Optional)

7/8-Inch Circle Cutter, Holesaw and Socket Punch for rubber grommet

Unpacking and Checking Equipment

Carefully unpack the charger combination. It is recommended that you identify the items in the packing case and check them off in the appropriate column below before discarding the packing material. If any damage has occurred to the equipment during shipment, file a claim with the carrier immediately.

Vehicular Mounting Frame and Charger .. ☐

Microphone Bracket (Optional) ..... ☐

Power Cables with Noise Filter ..... ☐

Hardware Kit ..... ☐
(Check items in hardware kit from Parts List. See Table of Contents)

Antenna Cable and RF Connector (Optional) ..... ☐

(30-88 MHz antenna whip shipped in separate carton)

Planning the Installation

Before starting, plan your installation carefully - so it will be:

- Convenient for the operator to use
- Neat
- Protected from damage from water
- Easy for the serviceman to service
- Out of the way of auto mechanics
- Out of the way of passengers

It is suggested that you take advantage of the experience of one of the many authorized General Electric Service Stations located throughout the United States by having them install your Two-Way Radio and make the final adjustments.

WARNING

Interference with Vehicular Electronics - Electronic fuel injection systems, electronic anti-skid braking systems, electronic cruise control systems, etc., are typical of the types of electronic devices which may be prone to malfunction due to the lack of protection from radio frequency energy present when transmitting. If the vehicle contains such equipment, consult the dealer for the make of vehicle and enlist his aid in determining if such electronic circuits will perform normally when the radio is transmitting.

Power Cable Assembly

The power cable assembly consists of a power cable with one red lead and one black lead, a system plug, an ignition noise filter, one red battery cable and one black battery cable (see Figure 2). To install the cable assembly, mount the noise filter near the battery with the retaining straps provided. Connect the red battery cable between the positive terminals of the filter and the battery. Connect the black battery cable between the negative terminals of the filter and the battery. With the system plug end of the power cable at the location of the charger run the cable leads to the noise filter. Connect the red lead to the positive terminal and the black lead to the negative terminal. Coil up any surplus cable and secure it out of the way. Be sure to leave some slack in the cables going to the charger so that it may be pulled out for servicing with the power applied. Use the retaining straps and No. 8 screws to secure the power cable.

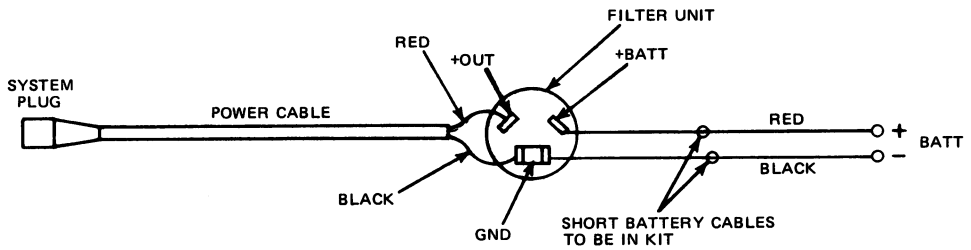


Figure 2 - Power Cable Assembly

NOTE

The Porta•Mobil II vehicular charger combination operates in 12-volt negative ground systems only! Always check the battery polarity and voltage of the vehicle before installing the radio.

Installing the Vehicular Charger

Mount the Charger so that the Porta• Mobil II controls are within reach of the operator. The charger may be rotated 90° on the mounting bracket to allow operation of the radio from any angle. Use the mounting bracket with the flanges bent to fit the hump as a template to locate the holes. Mount the charger as shown in Figure 3. Be sure to leave enough room at the rear of the charger for calbe connections.

CAUTION

Be careful to avoid damaging some vital part of the vehicle when drilling mounting holes. Always check to see how far the mounting screws will extend below the mounting surface before installing.

Microphone

Mount the Porta•Mobil II microphone where it will be within easy reach of the operator, but will not interfere with safe operation of the vehicle (See Figure 4).

Antenna (Optional)

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

For the 138-512 MHz antenna, the most effective mounting position is usually in the center of the roof of the vehicle. The antenna cable will normally run from the front of the Two-Way Radio, behind sections of the interior trim to a door or window post, and then up between the roof and headliner in the passenger compartment to the antenna base.

For the 30-88 MHz antenna, the most effective mounting position is usually on the driver's side of the vehicle near the top of the left rear fender or body of the vehicle.

Try to route the cable away from locations where it will be exposed to heat, sharp edges or mechanical damage, and where it will be out of the way of the driver, passengers or vehicle mechanics. Wherever possible, existing holes in the trunk wall, and the channels above or beneath doors and window columns should be utilized.

Placing the Two-Way Radio into Operation

After the installation is completed, a 1st or 2nd Class FCC Radiotelephone licensed electronic technician must make the final transmitter and receiver adjustments as described in the MAINTENANCE MANUAL.

Be sure a RADIO TRANSMITTER IDENTIFICATION form (FCC 452-C or General Electric Form NP270303) is filled out and attached to the transmitter.

Fill out and mail the "ON ARRIVAL" Information Card.

Give the Operator's Manual for the Two-Way Radio to the person who is going to operate it, or place the manual in the vehicle where he will find it.

MAINTENANCE

Access

To gain access to the circuitry for servicing, simply remove the four Allen-head screws holding the panel in place with a 5/64" Allen-head wrench. Slide the panel

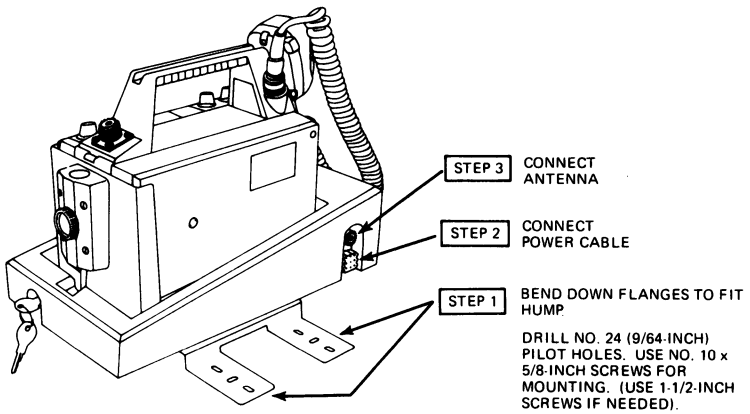


Figure 3 - Installing the Charger

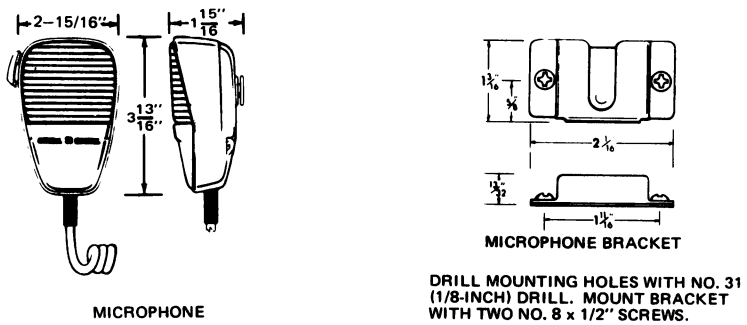


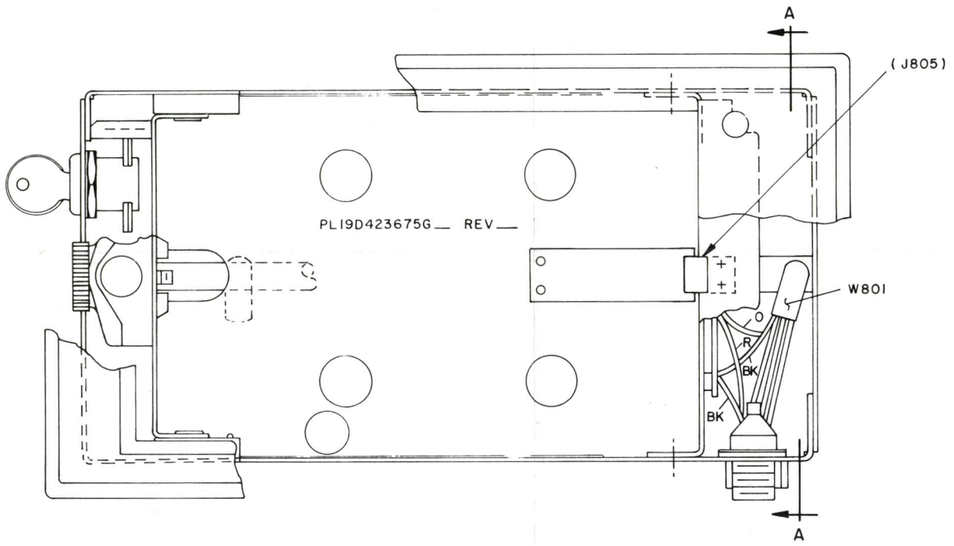
Figure 4 - Microphone Bracket Mounting

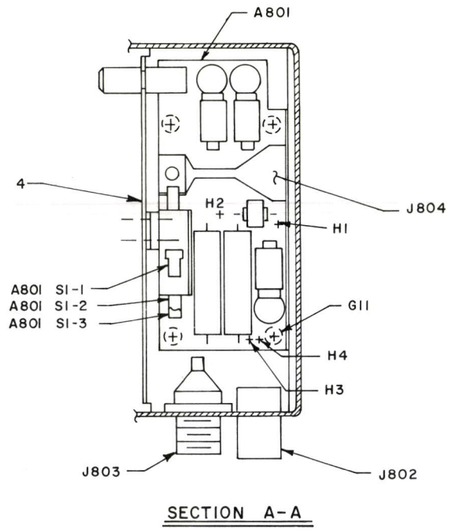
forward and bend it down. The associated cable will allow the panel to fold forward easily. To locate the circuit panel, refer to the Table of Contents for the Outline Diagram.

Troubleshooting

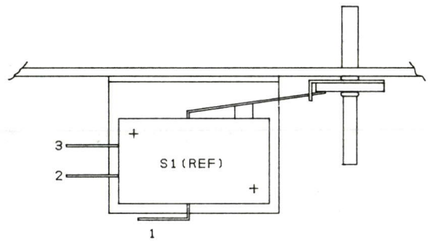
To troubleshoot the charger make the following checks:

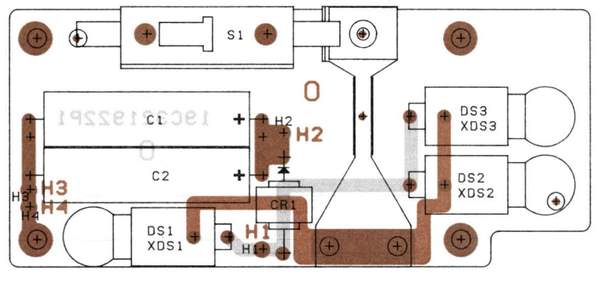
SYMPTOM	PROCEDURE
Battery will not charge	1. Check to see if charge indicator lamp is on. 2. If indicator lamp is on try a known good battery pack. 3. If indicator lamp is off check for 13.8 VDC at J803-1. 4. If 13.8 VDC is present check switch S1. 5. If S1 is operatable check for proper connection at J804 and J805. 6. If 13.8 VDC is not present check fuse in ignition noise filter.
Battery charges slowly	1. Check DS1, DS2 and DS3. 2. Check for receiver voltage at J801-7. 3. Check CR1, C1 and C2.





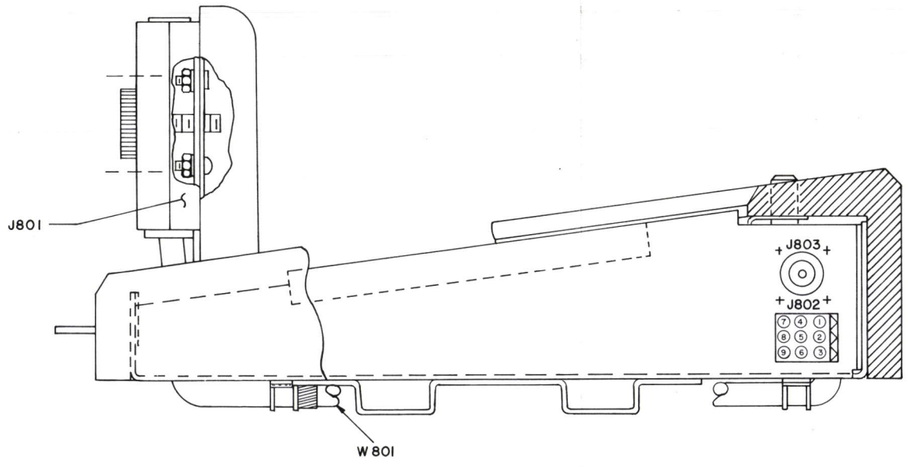
SECTION A-A





(19C327088, Rev. 0)
(19B227190, Sh. 1, Rev. 0)
(19B227190, Sh. 2, Rev. 0)

REFER TO WIRING DIAGRAM 19D423874 FOR THE FOLLOWING CONNECTION	
FROM	TO
S1-2	H1



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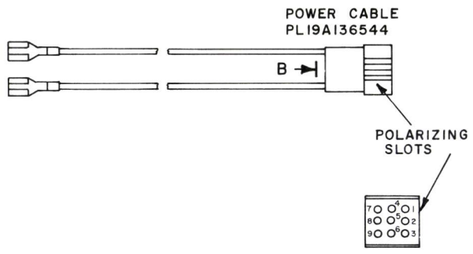
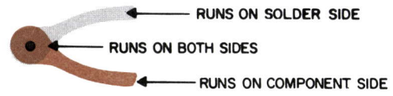
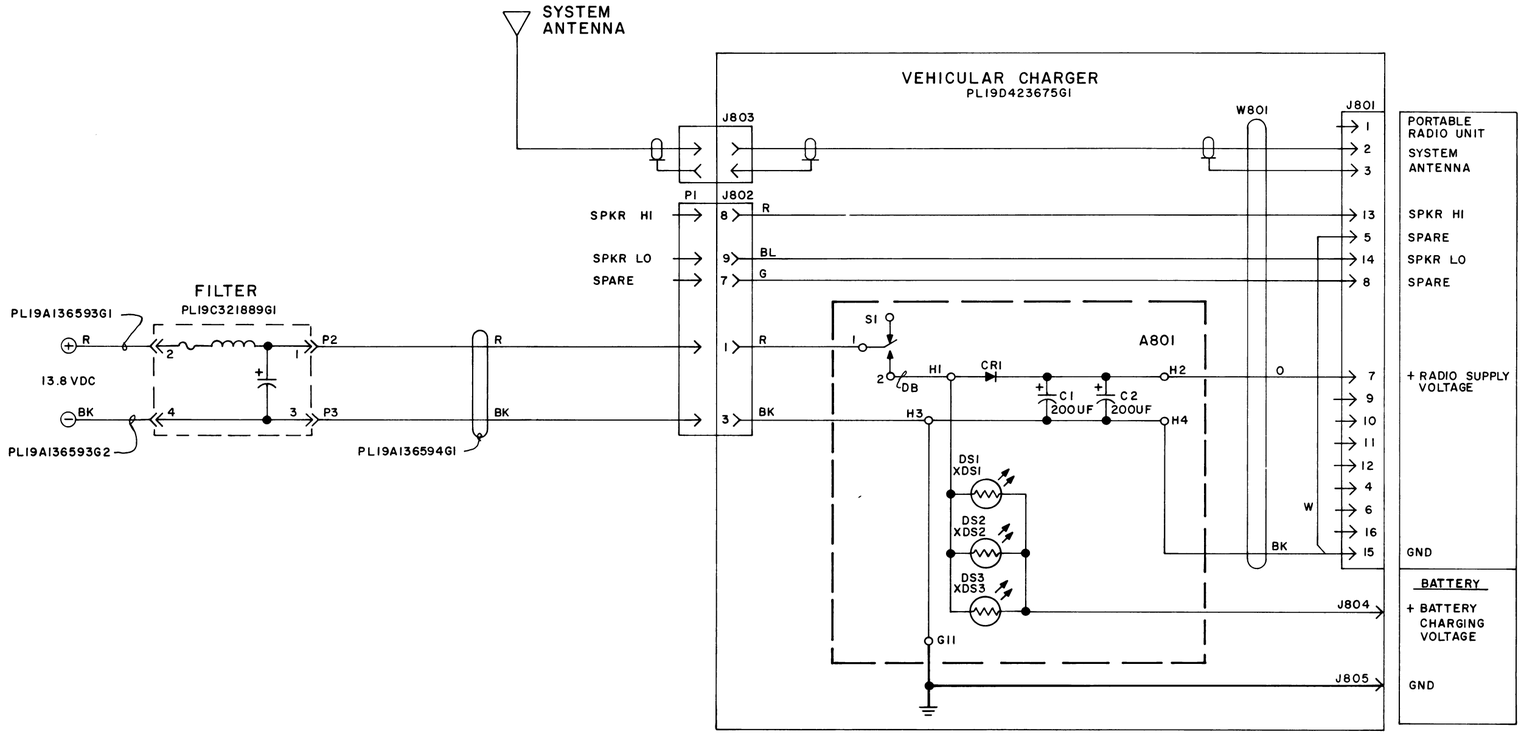


VIEW B



OUTLINE DIAGRAM

VEHICULAR CHARGER
COMBINATION 375C1A2X



THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PLI9D423675GI	

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.

(19D423874, Rev. 2)

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.

SCHEMATIC DIAGRAM

VEHICULAR CHARGER COMBINATION 375C1A2X

PARTS LIST

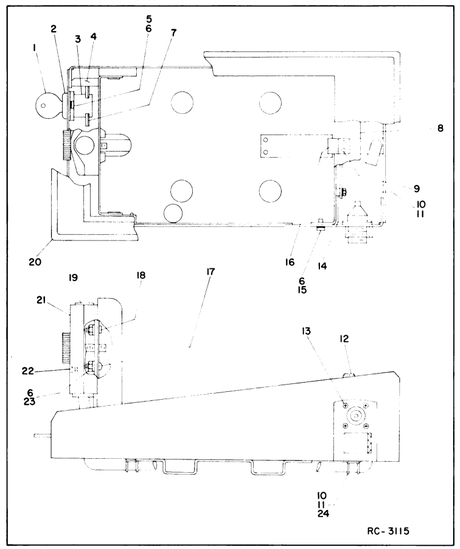
LBI-30387

PORTA MOBIL II VEHICULAR CHARGER
COMBINATION 375C1A2X

SYMBOL	GE PART NO.	DESCRIPTION
		VEHICLE CHARGER 19D423675G1
A801		COMPONENT BOARD 19C321923G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 and C2	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A116783P1	Silicon.
		- - - - - - - - INDICATING DEVICES - - - - - - - -
DS1 thru DS3	19C307037P1	Lamp, incandescent: 7.5 v; sim to GE Lamp Dept. 51.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J804	19A136722G1	Contact.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19A134345P1	Sensitive: SPDT, 10 amps at 125/250 VRMS; sim to Cherry Electrical E33-50H.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS1 thru XDS3	4038268P2	Lamp socket: sim to Leecraft 7-35.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19A129365P1	Stop. (Used with S1).
	19B227316P1	Support. (S1).
	19B200525P78	Rivet, tubular. (Secures S1).
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J805	19A136558G1	Catch Assembly.
		- - - - - - - - - - - - CABLES - - - - - - - - - - -
W801		CABLE ASSEMBLY 19C327063G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J801		Connector. Includes:
	19C321269G4	Connector.
	19B226586P1	Seal.
	19A130332G1	Cover.
	19A130897P1	Strain relief.
	19B226518P1	Cap.
	19A116773P105	Tap screw, Phillips POZIDRIV®: No. 7-19 x 5/16. (Quantity 2).
J802	19B209288P3	Receptacle: sim to Molex 1292R.
J803		Connector. Includes:
	4029493P1	Receptacle.
	4029082P2	Cover.
	N330P1205F22	Metallic eyelet.

SYMBOL	GE PART NO.	DESCRIPTION
		NOISE FILTER 19C321889G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 thru C5	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E1	4033714P20	Terminal: sim to Zierick 379.
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	7102673P3	Quick blowing: 10 amps, 32 v; sim to Littelfuse 311010 or Bussmann AGC10.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	19A134293P1	Coil, RF: 1.10 mh ±20% ind., 0.110 ohms DC res; sim to Artted Co. 8736.
		- - - - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	19B227149G1	Terminal board: 3 terminals.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XF1	19B209005P2	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342015.
		POWER CABLE 19A136594G1
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1		Connector. Includes:
	19B209388P4	Shell.
	19B209288P2	Contact, electrical: sim to Molex 1190-T. (Quantity 2).
P2 and P3	19A134089P2	Terminal, solderless: wire size No. 18-14; sim to AMP 42281-2.
		MOUNTING HARDWARE KIT 19A136650G1
	19C327218G1	Charger support.
	N80P15007C6	Machine screw: No. 8-32 x 7/16. (Secures charger to support).
	N403P16C6	Lockwasher, external tooth: No. 8. (Secures charger to support).
	5491480P25	Clip loop: sim to Adel Precision Products 754E. (Secures filter to vehicle frame).
	N130P1610C6	Tap screw, thread forming: No. 10-16 x 5/8. (Secures support and filter to vehicle frame).
	19A115185P3	Retainer strap: sim to Panduit Corp. SST-2. (Secures cables to vehicle).
	5490407P17	Grommet, rubber. (Locates in firewall).
	19A136593G1	Battery Cable. (Red).
	19A136593G2	Battery Cable. (Black).
	19A134090P3	Connector sleeve. (Black- Used with 19A136593 and 19A136594 Cables).
	19A134090P4	Connector sleeve (Red- Used with 19A136593 and 19A136594 Cables).
	19B209288P2	Connector, male contact: wire size 14-20 AWG; sim to Molex 1190-T. (For special use in P1 - SPEAKER HI, SPEAKER LO, Spare).
		MECHANICAL PARTS (SEE RC-3115)
1	5491682P4	Key.
2	5491682P20	Lock plug.
3	5491682P21	Lock cylinder.
4	19A136549P1	Lock spacer. (Located at lock bolt).

SYMBOL	GE PART NO.	DESCRIPTION
5	N80P13006C6	Machine screw, phillips: No. 6-32 x 3/8. (Used with lock assembly).
6	N404P13C6	Lockwasher, internal tooth: No. 6. (Used with J801, lock, and angle that mounts A801).
7	19B227175G1	Lock bolt.
8	19B227192G1	Support. (Mounts A801).
9	19B200525P157	Rivet, tubular. (Secures J805).
10	7141225P2	Hex nut: No. 4-40. (Secures A801 and W801 cable clamp).
11	N404P11C6	Lockwasher, internal tooth: No. 4. (Secures A801 and W801 cable clamp).
12	19A136545P1	Lens: red. No. 2444 Plexiglass Rohn and Haas Co. (Used with DS2, DS3).
13	N80P9006C6	Machine screw, Phillips: No. 4-40 x 3/8. (Secures J803).
14	7150186P103	Spacer. (Used with A801).
15	N170P13004C6	Cap screw, socket head: No. 6-32 x 1/4. (Secures angle that mounts A801).
16	19A136558G1	Catch. (J805).
17	N80P13005C6	Screw, phillips: No. 6-32 x 5/16. (Used with J801).
18	19A130882P1	Rivet. (Used with J801).
19	19B226518P1	Cap. (Part of J801).
20	19D423668P1	Charger Cover.
21	19A130332G1	Cover. (Part of J801).
22	19A116773P106	Tap screw, Phillips POZIDRIV®: No. 7-19 x 3/8. (Secures J801 cover).
23	7141225P3	Hex nut: No. 6-32. (Used with J801).
24	4029851P8	Clip loop.



*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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-30388

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

GENERAL ELECTRIC

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