

 **MOBILE RADIO**

# CUSTOM **MVP** MAINTENANCE MANUAL

**AC POWER SUPPLY** 19D423793-G1 and G2  
(OPTIONS 1901-1904)



## **SPECIFICATIONS \***

### OUTPUT VOLTAGE

Standby	16.4 VDC @ 0.5 Ampere
Receive	16.0 VDC @ 1.0 Ampere
Transmit	13.3 VDC @ 6.0 Ampere

### INPUT VOLTAGE

Option 1901 & 1903	121 VAC, 60 Hertz only
Option 1902 & 1904	100-247 VAC, 50 or 60 Hertz

DIMENSIONS (H x W x D)	3.5" x 8.4" x 10.6"
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WEIGHT	13 lbs.
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\*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

**GENERAL  ELECTRIC**

## TABLE OF CONTENTS

	<u>Page</u>
SPECIFICATIONS .....	1
DESCRIPTION .....	1
CIRCUIT ANALYSIS .....	1
TROUBLESHOOTING .....	1
OUTLINE DIAGRAM .....	2
SCHEMATIC DIAGRAM (Includes Parts List and Production Changes) .....	3-4

## 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

The AC Power Supply option is required when the Custom MVP radio is used as a base station. The supply is housed similar to the radio with a front cap attached to a mounting frame. The mounting frame slides into a box-type cover. Four screws at the rear of the unit hold the frame to the cover.

A speaker grille is molded into the front cap of the supply. A speaker and a green POWER ON Light Emitting Diode (LED) indicator are provided with the unit. The radio may be stacked on top of the supply or the two units may be located side-by-side. A 15-inch 6-conductor cable connects between the supply and the radio.

Options 1901 and 1903 provide a 19D423793G1 Power Supply for use with 121 VAC, 60 Hertz only. Option 1901 is a factory option which deletes the standard radio power cable, mounting bracket and speaker replacing these items with the AC supply. Option 1903 provides the supply for field applications.

Options 1902 and 1904 provide a 19D423793G2 supply. This supply contains a multitap transformer which allows strapping for 100, 110, 123.5, 200, 220 or 247 VAC at either 50 or 60 Hertz. Option 1902 deletes the standard radio power cable, mounting bracket and speaker, replacing these items with the AC supply. Option 1904 provides the 19D423793G2 supply for field applications.

An ON-OFF power switch and an AC line fuse are located on the rear of the power supply. Normally the switch is left in the ON position and the power to the radio is controlled by the power ON-OFF switch on the radio front panel.

## CIRCUIT ANALYSIS

When the ON-OFF switch S801 (on the rear of the power supply), is in the ON position, 121 VAC is connected to the primary of T801 (Power Supply 19D423793G1) or T802 (Power Supply 19D423793G2). The secondary of the transformer applies the stepped-down voltage to the bridge rectifier (CR1-CR4) located on the component board A801. Some filtering of the rectified voltage is provided by L801 and C801.

The rectifier output is applied to the collectors of Q2 (on the component board A801) and Q801. In the transmit mode, Q2 and Q801 operate as a filter for the voltage applied to the transmitter PA. In this condition, the pass transistor Q801 is switched on to saturation. If line transients occur which may damage the transmitter transistors, Q801 will react to limit the transients to a safe level.

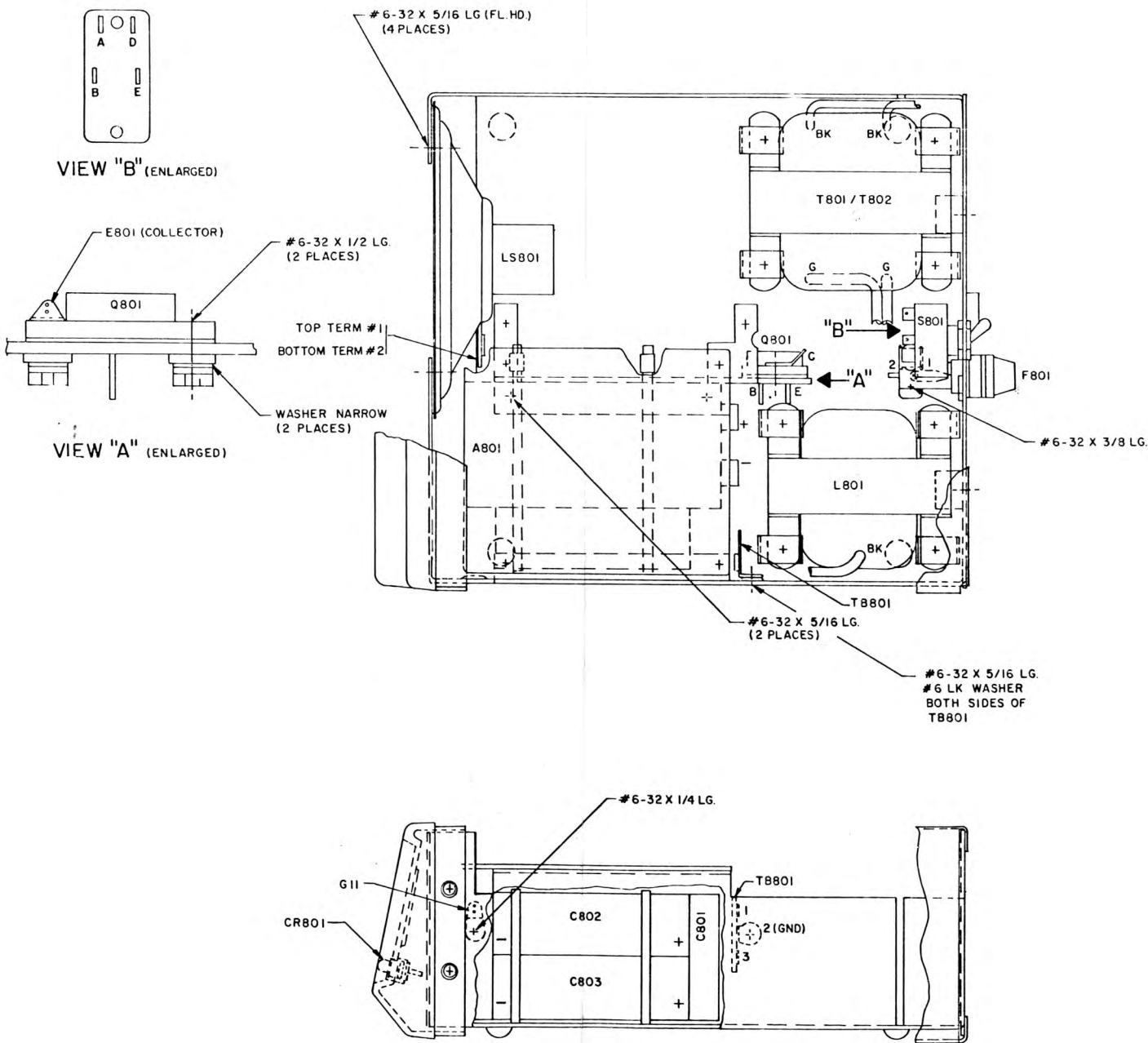
In the receive mode, the circuit acts as a limiter for the receiver supply voltage. If the output of Q801 starts to rise, Zener diode VR1 (in the base of Q3) breaks down and Q3 starts conducting. This causes Q801 and Q2 to conduct less, limiting the voltage to the receiver.

## TROUBLESHOOTING PROCEDURE

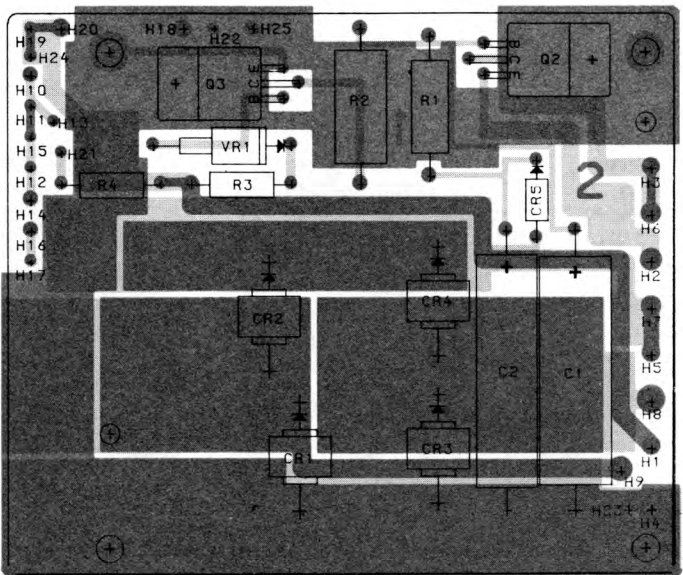
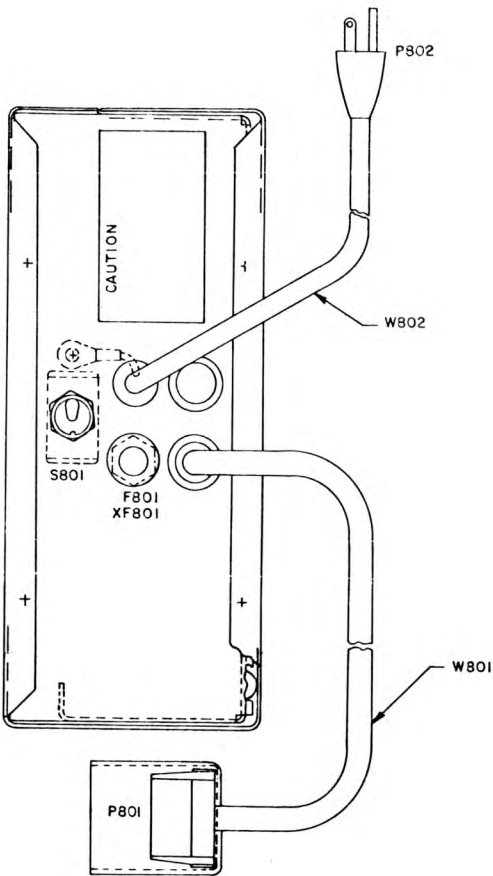
SYMPTOM	PROCEDURE
No output voltage or low voltage at P801-1 and P801-2	<p>Check the following:</p> <ol style="list-style-type: none"> <li>1. AC input voltage at S801.</li> <li>2. Open F801.</li> <li>3. Open T801 (T802), S801, CR1-CR4 or L801.</li> <li>4. Open Q801 or Q2. If open, check for shorts between the transistor bases and A-, and for shorts between the emitters and A- before replacing.</li> <li>5. Shorted VR1, Q3.</li> <li>6. Shorts between positive voltage points and A-.</li> </ol>
Voltage at P801-1 and P801-2 is too high (over 17 Volts with 0.5 Ampere load)	<p>Check the following:</p> <ol style="list-style-type: none"> <li>1. Open VR1, Q3</li> <li>2. Shorted Q2</li> <li>3. Open CR5</li> </ol>

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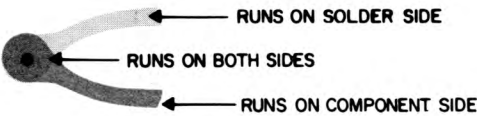
**GENERAL  ELECTRIC**



(19D424113, Rev. 2)

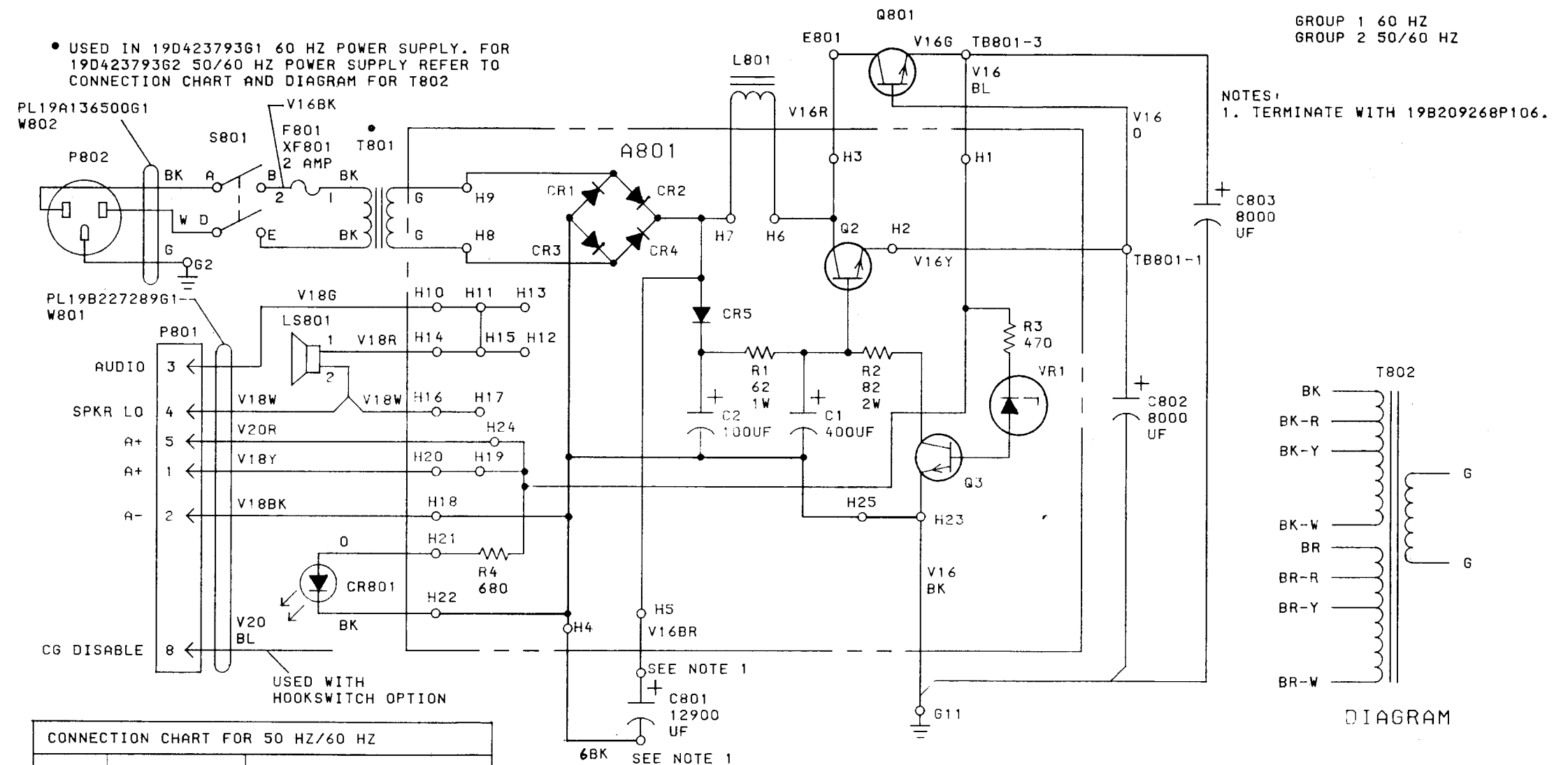


(19C327059, Rev. 1)  
(19B227257, Sh. 1, Rev. 2)  
(19B227257, Sh. 2, Rev. 1)



OUTLINE DIAGRAM

AC POWER SUPPLY



CONNECTION CHART FOR 50 HZ/60 HZ			
INPUT VOLTS	CONNECT TOGETHER	CONNECT TO	
		S801-E	XF801-2
100	BK-W & BR-W BK-Y & BR-Y	BK-W & BR-W	BK-Y & BR-Y
110	BK-W & BR-W BK-R & BR-R	BK-W & BR-W	BK-R & BR-R
*123.5	BK & BR BK-W & BR-W	BK & BR	BK-W & BR-W
200	BK-W & BR-Y	BK-Y	BR-W
220	BK-W & BR-R	BK-R	BR-W
247	BK-W & BR	BK	BR-W

\* CONNECTED AT FACTORY FOR 123.5 VAC INPUT.  
INDIVIDUALLY SLEEVE ALL UNUSED WIRES.

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.

MODEL NO	REV LETTER
PL19D423793G1	B
PL19D423793G2	A
PL19C321990G1	A

PARTS LIST

LBI30171C  
CUSTOM MVP  
AC POWER SUPPLY  
19D423793G1 60 Hz  
19D423793G2 50 Hz

SYMBOL	GE PART NO.	DESCRIPTION
A801		POWER SUPPLY BOARD 19C321990G1
		----- CAPACITORS -----
C1	19A115680P24	Electrolytic: 400 uF +150% -10%, 18 VDCW; sim to Mallory Type TTX.
C2	19A115680P5	Electrolytic: 100 uF +150 -10%, 25 VDCW; sim to Mallory Type TTX.
		----- DIODES AND RECTIFIERS -----
CR1 thru CR4	19A116783P1	Rectifier, silicon: 100 VDC blocking, 6 amp; sim to MR751.
CR5	4037822P1	Silicon, 1000 mA, 400 PIV.
		----- TRANSISTORS -----
Q2 and Q3	19A116118P1	Silicon, NPN.
		----- RESISTORS -----
R1	3R78P620J	Composition: 62 ohms ±5%, 1 w.
R2	19A700111P37	Composition: 82 ohms ±5%, 2 w.
R3	19A700113P55	Composition: 470 ohms ±5%, 1/2 w.
R4	19A700113P59	Composition: 680 ohms ±5%, 1/2 w.
		----- VOLTAGE REGULATORS -----
VR1	19A115528P6	Silicon, zener: 1 w, 16.0 v.
		----- CAPACITORS -----
C801	5496520P21	Electrolytic: 12900 pF -10 + 100%, 40 VDCW, 43F86F159M.
C802 and C803	5493132P17	Electrolytic: 8000 uf -10 + 150%, 20 VDCW.
		----- DIODES AND RECTIFIERS -----
CR801	19B219800G5	Diode, green light emitting.
		----- TERMINALS -----
E801	4036994P1	Terminal, solderless: sim to Zierick Mfg Corp 505.
		----- FUSES -----
F801	1R16P5	Quick blowing: 2 amp at 250 v; sim to Littelfuse 312002 or Bussmann AGC-2.
		----- INDUCTORS -----
L801	19A134314P2	Reactor: 4.5 mH min., 0.1 ohm DC res max.
		----- LOUDSPEAKERS -----
LS801	19C307094P1	Permanent magnet: 3.2 ohms ±10% voice coil imp, 3 x 5 inch speaker; sim to Oaktron S7473.
		----- PLUGS -----
P801		(Part of W801).
P802		(Part of W802).

SYMBOL	GE PART NO.	DESCRIPTION
		----- TRANSISTORS -----
Q801	19A116753P1	Silicon, NPN; sim to Type 2N5302.
		----- SWITCHES -----
S801	5491899P2	Toggle: DPST rated 3 amps at 250 V, sim. Cutler-Hammer 8370K8.
		----- TRANSFORMERS -----
T801	19A134324P1	Power, step-down: Pri: 121 VDC, 60 Hz; Sec: 14.5 ±0.5 VDC at 6.3 amps, 60 Hz; Refer to schematic for primary connections.
T802	19A134324P2	Power step-down: Pri: 100/110/123.5/200/220/247 VDC, 50/60 Hz; Sec: 14.5 ±0.5 VDC at 6.3 amps, 60 Hz; Refer to schematic for primary connections.
		----- TERMINAL BOARDS -----
TB801	7775500P7	Phenolic: 2 insulated, 1 ground terminal.
		----- CABLES -----
W801		CABLE ASSEMBLY 19B227289G1
		----- PLUGS -----
P801		Connector. Includes: Shell. Connector. (Quantity 6). Connector cover.
W802	19A136500G1	Power Cable: 3 conductor, approx 8 feet long; sim to Belden 17238.
		----- SOCKETS -----
XF801	19B209005P1	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342012.
		CAPACITOR ASSEMBLY 19D423793G6 (Includes C801-C803, E801, Q801)
		----- MISCELLANEOUS -----
	19D423788P2	Front cap.
	19B209209P304	Tap screw, Phillips POZIDRIV: No. 6-32 x 1/4. (Secures front cap to chassis).
	19B201074P304	Tap screw, Phillips POZIDRIV: No. 6-32 x 1/4. (Secures covers to housing).
	4036994P1	Terminal, solderless: sim to Zierick Mfg Corp 505. (Located at G11).
	4035267P2	Rivet, drive: nylon; sim to Fastex 254-090401-00-0101. (Located on base of power supply).
	19J706152P9	Retaining strap; sim to Dennison BAR-LOK 08471. (Secures wires behind A801).
	19A116677P2	Bushing. (Used with CR801).
	19A701863P18	Clip loop.
	4029851P18	Clip, loop: 1/4 inch. (Located at XF801).
	7160861P34	Nut, sheet spring: sim to Tinnerman C7159-8Z-24. (Used with L801, T801, T802).
	N193P1408C6	Tap screw, Phillips head: No. 8-18 x 1/2. (Secures L801, T801, T802).
	4029974P1	Insulator, plate: aluminum. (Used with Q801).
	19A121882P1	Washer, shield. (Used with Q801).
	7115130P11	Lockwasher: 15/32; sim to Shakeproof 1222-1. (Used with S801).
	19A702464P4	Bushing, strain relief. (Used with W802).
	NP280158A	Nameplate, aluminum foil. (60 Hz GE identification).
	NP280158B	Nameplate, aluminum foil. (50 Hz GE identification).

SYMBOL	GE PART NO.	DESCRIPTION
	NP280161	Nameplate. (CAUTION).
	NP280156	Nameplate, etched aluminum. (GE monogram).
	19A701502P1	Plastic bumper.
	19A700115P3	Insulator, plate. (Used with Q2 & Q3 on A801).
	19A116022P1	Insulator, bushing. (Used with Q2 & Q3 on A801).
	N84P9005C6	Machine screw: No. 4-40 x 5/16. (Secures Q2, Q3).
	7165075P3	Hex nut, brass: thd. size No. 15/32. (Secures S801).
	19A121882P1	Washer, shield. (Used with Q801).

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.

- 19C321990G1 Board  
REV. A - Added H25 to allow incorporating board into new design.
- 19D423793G1 Board  
REV. B - Remove plating from two unplated holes.
- 19D423793G2 Board  
REV. A - Remove plating from two unplated holes.