MOBILE RADIO

MASTR® II MAINTENANCE MANUAL

BASE STATION 50 Hz POWER SUPPLY (OPTIONS 9500 & 9501)

Maintenance Manual LBI 4851A
DATAFILE FOLDER - DF 0072

BASE STATION 50 Hz POWER SUPPLY

SPECIFICATIONS *

	TO P.A.	TO SYSTEM
OUTPUT VOLTAGE	12.3 VDC @ 27 Amperes	12.3 VDC @ 3 Amperes
INPUT VOLTAGE	123.5/247 VAC, 100/200 VAC,	110/220 VAC
LOAD DUTY CYCLE	Continuous @ ±10% Line Operable @ ±20% Line	
Dimensions (HxWxD)	7 1/4" x 19" x 10 1/2"	
Weight	65 lbs.	

*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

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.

High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns. KEEP AWAY FROM THESE CIRCUITS WHEN THE TRANSMITTER IS ENERGIZED!

DESCRIPTION

General Electric MASTR®II Base Station 50 Hertz Power Supplies are provided in 18 Ampere or 30 Ampere chassis models for operation with a variety of 50 Hz input voltages. Jumper connections, located on the back of the power supply front panel, must be connected for the desired input. These connections are shown on the Schematic Diagram (see Table of Contents). Unless otherwise specified, the supply is connected for 123.5 VAC ±10%, 50 Hz at the factory.

Option 9500 deletes the 18 Ampere 60 Hz Power Supply from stations with RF power output levels of 65 Watts or lower and substitutes a 30 Ampere, 50 Hz supply properly fused for the application.

Option 9501 deletes the 30 Ampere 60 Hz Power Supply from stations with RF power output levels of 66 to 128 Watts and substitutes a 30 Ampere, 50 Hz supply properly fused for the application. Both options are supplied without a connector on the power cord.

The input voltage is stepped down to 12 Volts by a ferroresonant transformer which provides line regulation of ±2% for a ±20% primary change. A power switch and primary and secondary fuses are located on the power supply front panel. A high-current fuse for the PA supply is located on the rear panel of the Power Supply. The rear panel hinges to provide access to the power supply components for in-rack servicing.

CIRCUIT ANALYSIS

When the power supply ON-OFF switch S1 is in the ON position, the input voltage is connected across the primary of power transformer T801. The power transformer is a ferroresonant type which has inherent good line regulation so that no additional high-current regulators are required (refer to Figure 1). C801 serves as a resonating capacitor across the secondary taps of the transformer.

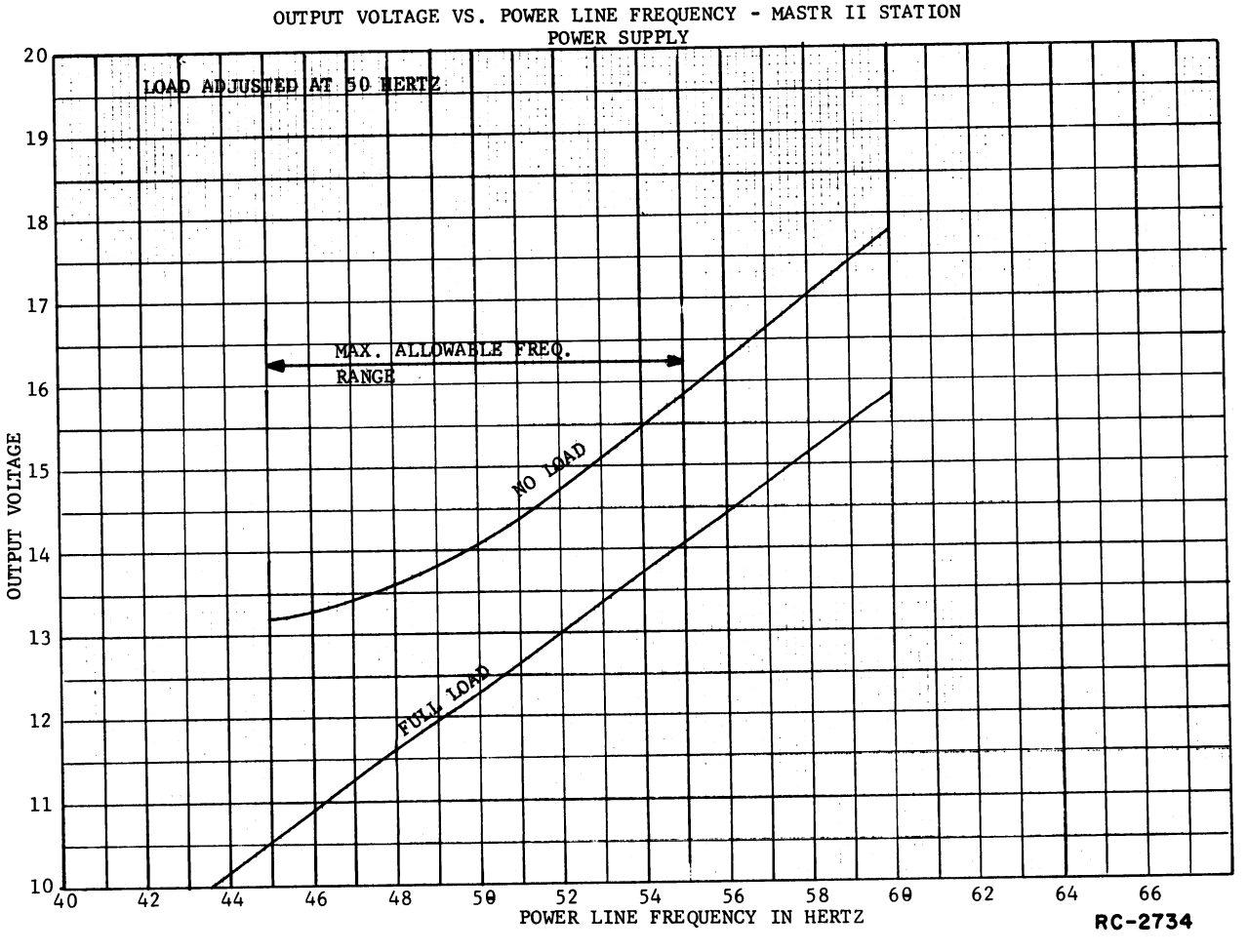


Figure 1 - Power Supply Line Regulation

The transformer steps the input voltage down to 12 Volts and this lower voltage is applied to the bridge rectifier composed of CR1, CR2 (mounted on heat sink A803) and CR801 and CR802. Connector P801 is in the bridge circuit which mates with the Battery Standby/Charger (Option 9502) connector P1. This option mounts on the power supply rear panel.

The rectified output of the bridge is fed to the low- and high-current filters (see Figure 2). The high-current filter consists of C802, C803 and L801. R801 serves as a bleeder for the high-current supply and the output of the filter is applied through the high-current fuse (F801) to the station transmitter power amplifier. Output connections are made to terminals 2 and 3 of the high-current fuse block. The high-current output is rated at 12.3 Volts, 27 Amperes.

The low-current filter is composed of C802, L802 and C804. The low-current supply is rated at 12 Volts, 3 Amperes and supplies the station transmitter exciter and receiver circuits. The output of the low-current supply is fused by F3, located on front panel A802. External connections are made at J801. Diode CR803 helps suppress high voltage transients in the high-current supply.

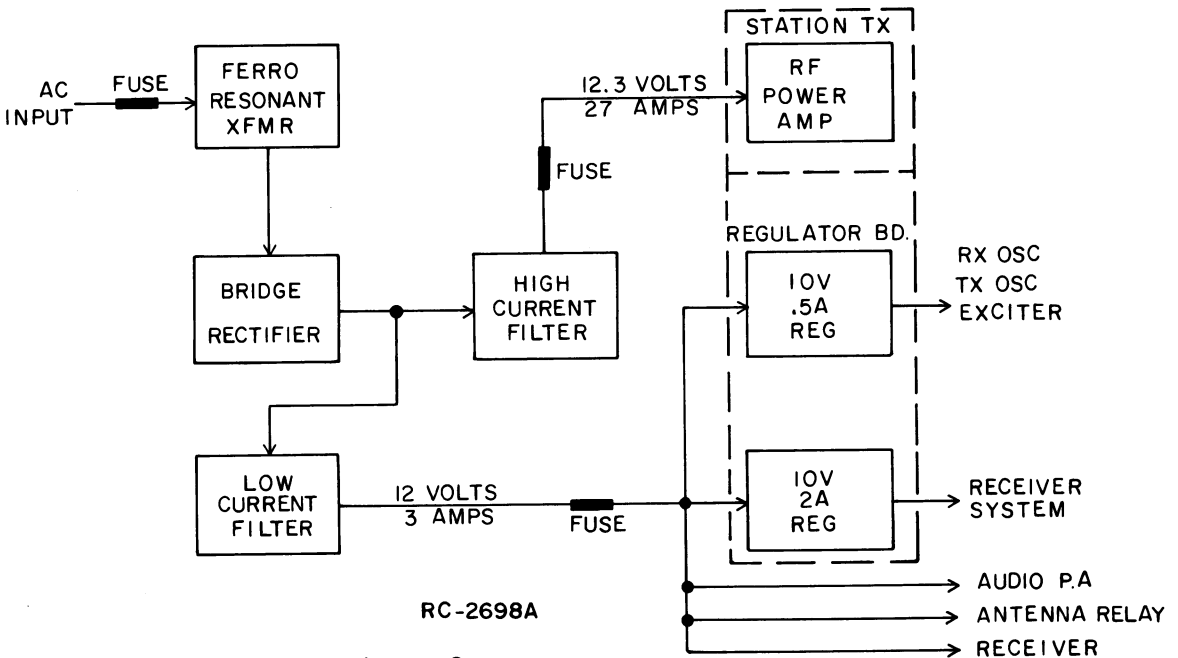
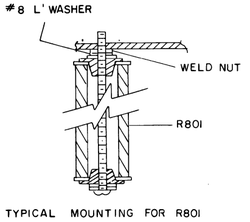


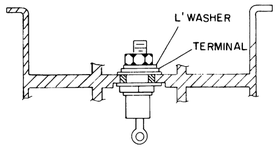
Figure 2 - Power Distribution

TROUBLESHOOTING PROCEDURE

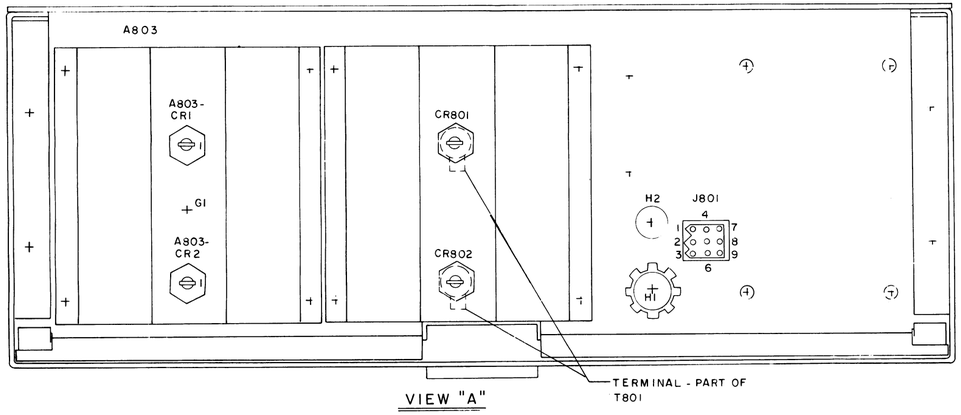
Symptom	Procedure
No output voltage at J801-1 and J801-5.	Check the following: A1. Proper input voltage on TB2-4 & TB2-5. A2. Open F1 or F3. A3. Open T801, S1, L802, CR1, CR2, CR801, CR802. A4. Shorted T801, C801, C802, C804.
No output voltage at F801-2 and 3.	Check the Following: B1. Open F801, L801. B2. Shorted C802, C803.
Either output greater than 15.5 Volts.	Check the following: C1. Open C801, R801. C2. Line Frequency.



TYPICAL MOUNTING FOR R801



TYPICAL MOUNTING
FOR CR801 & CR802

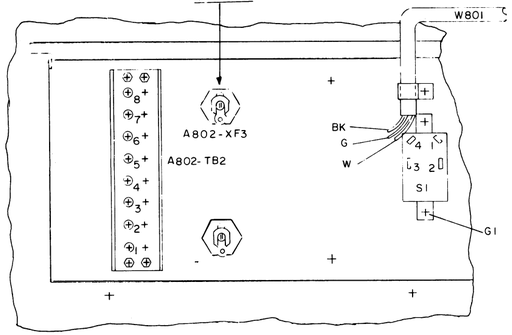


VIEW "A"

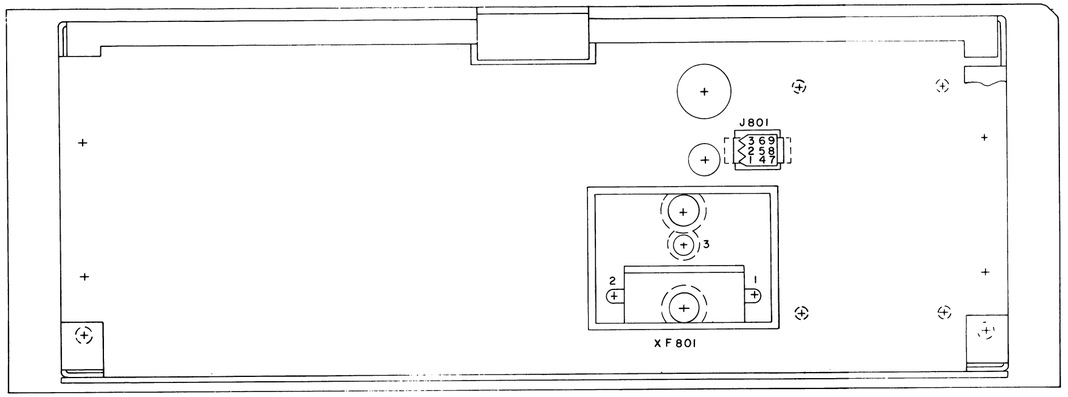
TERMINAL IDENTIFICATION
FOR A802-XF3 & A802-XF1

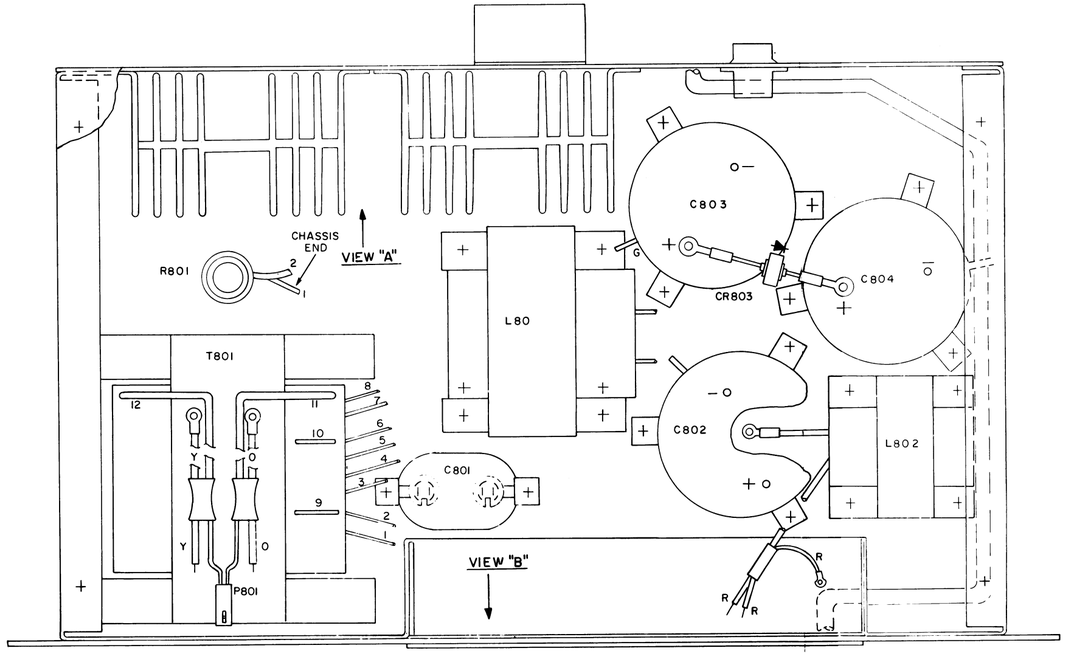
VIEW "E"

VIEW "E"



VIEW "B"



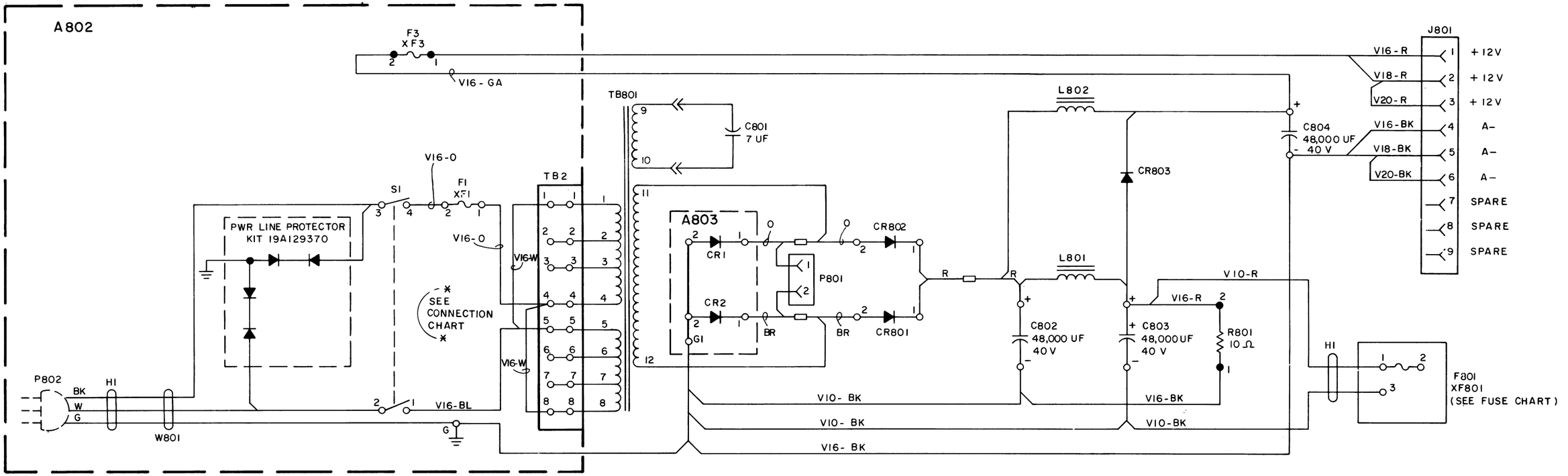


(19R622161, Rev. 0)

OUTLINE DIAGRAM

BASE STATION 50 Hz POWER SUPPLY
19E501149G3

Issue 1



FUSE APPLICATION CHART (F801)		
BAND	POWER	FUSE
LOW	50 W	15A
LOW	70 W	20A
LOW	100W	30A
HIGH	35 W	15A
HIGH	65W	20A
HIGH	110W	30A
450	20W	10A
450	40W	15A
450	75W	20A
450	100W	30A

123 5 VAC 50HZ
* CONNECTION SHOWN

INPUT VOLTAGE	CONNECT AT TB2
100 VAC 50 HZ	4 TO 6 & 3 TO 5
100 VAC 50 HZ	2 TO 5 & 4 TO 7
123.5 VAC 50 HZ	1 TO 5 & 4 TO 8
200 VAC 50 HZ	3 TO 6
220 VAC 50 HZ	2 TO 7
247 VAC 50 HZ	1 TO 8

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

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PL19E501149G3	

NOTE:
CHANGES TO THIS DRAWING MAY AFFECT WIRING DIAGRAM 19D417238.

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.

(19D423216, Rev. 2)

SCHEMATIC DIAGRAM

BASE STATION 50 Hz POWER SUPPLY 19E501149G3

Issue 2

PARTS LIST

LBI4893A

MASTR II STATION POWER SUPPLY
19E501149G3 30 AMP 50 Hz

SYMBOL	G-E PART NO.	DESCRIPTION
A802		60 Hz POWER SUPPLY 19C320779G2
		- - - - - - - - - - FUSES - - - - - - - - - -
F1	7484390P4	Quick blowing: 8 amp 250 v; sim to Littelfuse 314008 or Bussmann ABC-8.
F3	1R16P8	Quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann MTH-5.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B209498P1	Push: DPST, 20 amps and 220 VRMS; sim to McGill 0811-0188.
		- - - - - - - - - TERMINAL BOARDS - - - - - - -
TB2	19C301087P4	Phen: 8 terminals; sim to GE CR151D.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XF1	4037402P2	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342001.
XF3	4037402P2	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342001.
A803		HEAT SINK 19C320836G1
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 and CR2	19A116524P2	Silicon: sim to Type 1N2158R, includes N210P20C6 nut.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C801	19A134574P2	Quick disconnect: 7 µf ±6%, 660 working volts; sim to GE 26F6624FB.
C802	19A134033P1	Electrolytic: 49,000 ohms +50% -10%, 20 VDCW; sim to GE 92F180AMA.
C803 and C804	5496520P19	Electrolytic: 48,000 µf +100% -10%, 40 VDCW; sim to GE Type 86F561M.
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR801 and CR802	19A116524P2	Silicon: sim to Type 1N2158R, includes N210P20C6 nut.
CR803	19B226282G2	Rectifier, silicon.
		- - - - - - - - - - FUSES - - - - - - - - - -
F801		(See Fuse Kit 19B216021).
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J801	19B209288P3	Receptacle: 9 cavities; sim to Molex Products 1292R.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L801	19B209497P1	Reactor: 1 mh ind min at 27 amps. 0.010 ohms DC res max.
L802	19B226151G1	Reactor: 10 mh ind min, 2.50 amps, 0.100 ohms DC res max.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R801	2R17P21	Wirewound: 10 ohms ±5%, 50 w; sim to Ward Leonard K41389-1.

SYMBOL	G-E PART NO	DESCRIPTION
		- - - - - - - - - - TRANSFORMERS - - - - - - - -
T802	19C320835G3	Transformer, power: Pri input: 100/110/123.5/200/220/247 ±20%, 50 Hz, Sec A output: 3.0 amp, Sec B output: 12.3 VDC at 27.0 amp. (Includes P801).
		- - - - - - - - - - CABLES - - - - - - - - - -
W801	5490059P6	Cable, RF: 3 conductor, approx 10 feet long. (Includes P802).
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XF801	19B216021G7	Fuse Holder. (Includes 19D413045P1 base, (2) 19B205950P1 clips, (2) N117P15006C13 tap screws.
		- - - - - - - - - - MISCELLANEOUS - - - - - - -
	19B226097G2	Cover. (A802).
	19B226005G1	Heat sink. (Used with A803).
	19A115275P2	Insulator, disc. (Used with CR1, CR2 on A803).
		FUSE KIT 19B216021G8 15 AMP 19B216021G9 20 AMP 19B216021G10 30 AMP 19B216021G11 10 AMP
		- - - - - - - - - - FUSES - - - - - - - - - -
F801	1R11P4	Quick blowing: 15 amps, 250 v; sim to Bussmann NON15. (Used in G8).
	1R11P5	Quick blowing: 20 amps, 250 v; sim to Bussmann NON20. (Used in G9).
	1R11P7	Quick blowing: 30 amps, 250 v; sim to Bussmann NON30. (Used in G10).
	1R11P3	Quick blowing: 10 amps, 250 v; sim to Bussmann NON10. (Used in G11).
	19D413046P1	Cover.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.