MOBILE RADIO

MAINTENANCE MANUAL

AC POWER SUPPLY WITH STANDBY CHARGER OPTIONS

AC POWER SUPPLY WITH DESK MICROPHONE OPTIONS

SPECIFICATIONS *

OUTPUT VOLTAGE	
Standby	16.2 VDC @ 0.5 Ampere
Receive	15.7 VDC @ 1.0 Ampere
Transmit	13.0 VDC @ 6.0 Ampere
INPUT VOLTAGE	121 VAC, 60 Hertz
DIMENSIONS - INS/CM	
(H X W X D)	3.5/8.9 X 8.4/21.34 X 10.6/26.9
WEIGHT	13.0 lbs/5.9 kg

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

AC POWER SUPPLY

GENERAL ELECTRIC

TABLE OF CONTENTS

DESCRIPTION

The AC Power Supply option is required when the radio is used as a base station. The supply consists of 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 green POWER ON Light Emitting Diode (LED) indicator is 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 6 feet 3-conductor cable connects between the supply and the radio.

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 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. 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 rectifier 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 A801-VR1 (in the base of A801-Q3) breaks down and A801-Q3 starts conducting. This causes Q801 and A801-Q2 to conduct less, limiting the voltage to the receiver.

AUDIO INTERCONNECT

A jumper wire on the radio is connected between P801-3 and -10 when an internal speaker is used. This jumper is clipped when an external speaker is used.

BATTERY STANDBY/CHARGER OPTION

The battery standby/charger maintains a fully charged battery when AC voltage is present and allows uninterrupted radio operation during intermittent power failures. When AC voltage is applied to the power supply charging current is supplied to the battery through R1 and the two diodes connected to the negative terminal of the diode steering bridge. The diodes connected to the positive terminal are reverse biased. When a power failure occurs, the steering diodes connected to the negative terminal are reverse biased and the remaining two diodes are forward biased allowing power to be applied from the battery to TB802-1. TB802-2 is then connected to the negative battery terminal.

The terminals provided on the battery leads mate with the gel cell battery. If a different battery is used, the terminals should be replaced with suitable terminals.

CAUTION

THE EXPOSED TERMINALS ON THE BATTERY LEADS MUST BE INSULATED TO PROTECT AGAINST SHORTS WHEN NOT IN USE. FAILURE TO DO SO WILL RESULT IN EQUIPMENT DAMAGE.

DESK MICROPHONES

The desk microphone plugs into the standard microphone jack on the rear of the radio. In Channel Guard applications the desk microphone is equipped with a Channel Guard monitor switch. Operating this switch disables the Channel Guard decoder circuitry, allowing the operator to listen and determine whether or not the channel is busy.

Desk Microphone used with Versatone Channel Guard 19D430101

The green wire hanging loose from the microphone cable must be connected to P910-5.

Desk Microphone used with Crystal Channel Guard 19C328576

The green wire hanging loose from the microphone cable must be connected to P910-9.

TROUBLESHOOTING PROCEDURE

SYMPTOM	PROCEDURE
No output voltage or low voltage at P801-1 and P801-11.	Check the following: 1. AC input voltage at S801. 2. Open F801. 3. Open T801, S801, A801-CR1-CR4 or L801. 4. Open Q801 or A801-Q2. If open, check for shorts between the transistor bases and A-, and for shorts between the emitters and A- before replacing. 5. Shorted VR1, A801-Q3. 6. Shorts between positive voltage points and A-.
Voltage at P801-1 and P801-11 is too high (over 17 Volts with 0.5 Ampere load.	Check the following: 1. Open VR1, A801-Q3. 2. Shorted A801-Q2. 3. Open A801-CR5.

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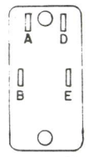
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

GENERAL ELECTRIC*
U.S.A.



VIEW "B"
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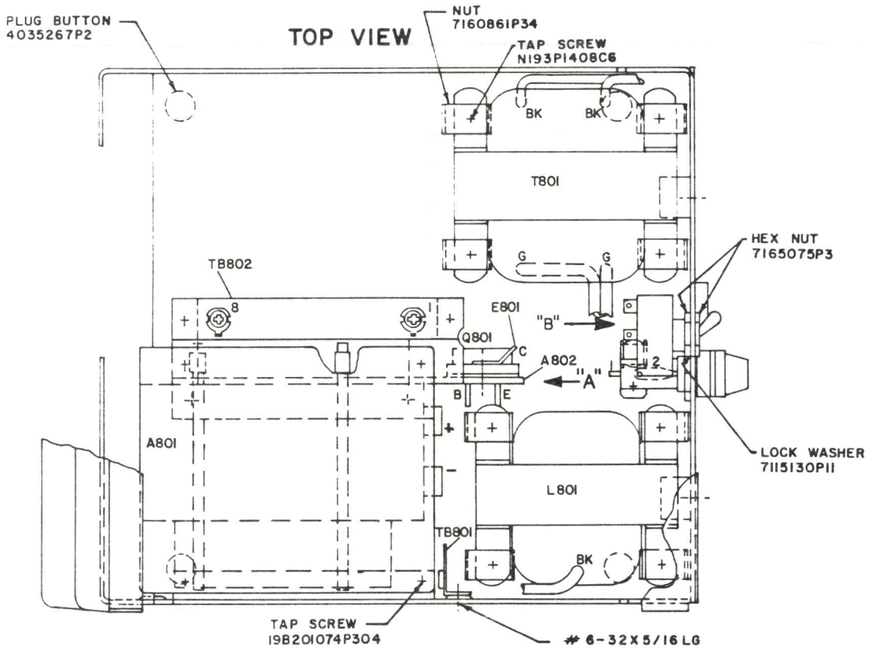

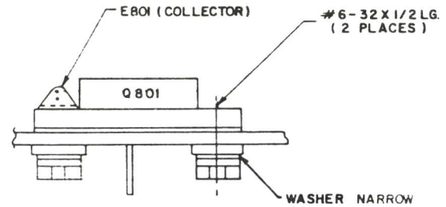

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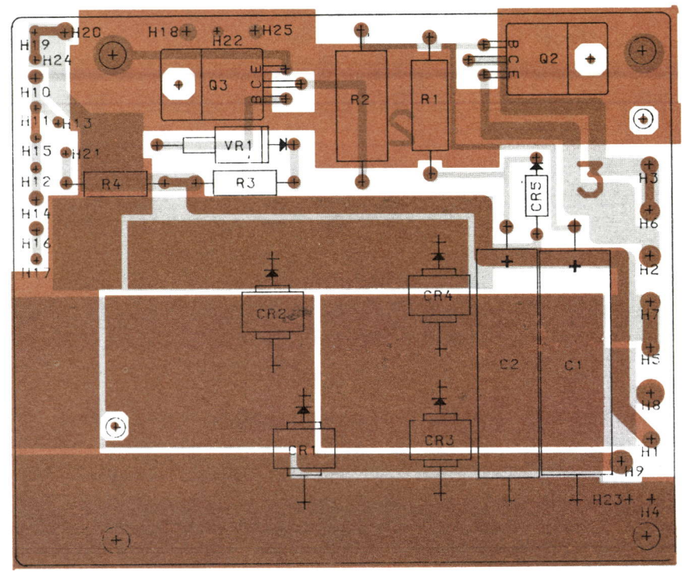
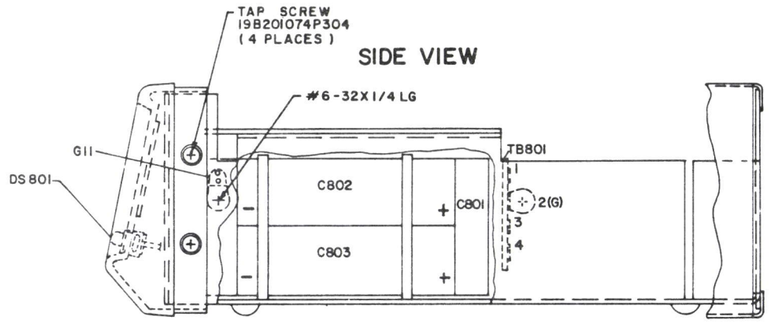
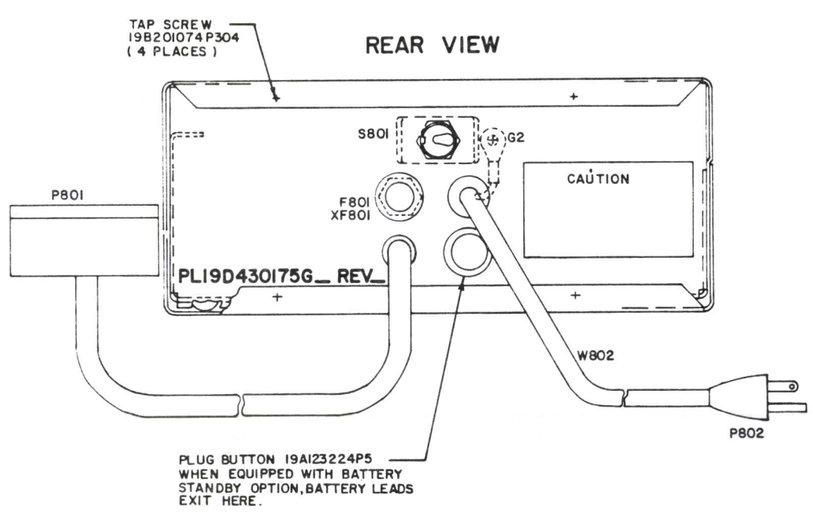


(19C327059, Rev. 1)
(19B227257, Sh. 1, Rev. 3)
(19B227257, Sh. 2, Rev. 2)

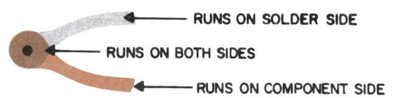


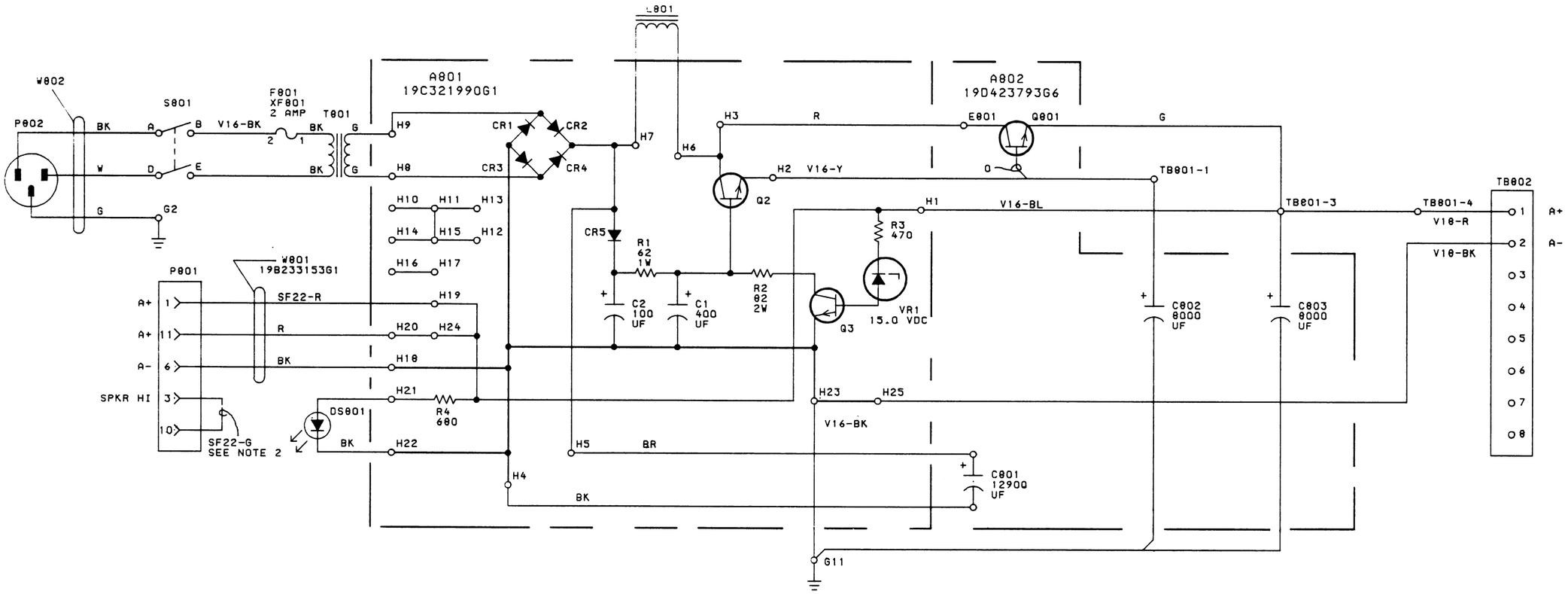


OUTLINE DIAGRAM

POWER SUPPLY 19D430175G1

(19D430381, Rev. 2)





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.
2. REMOVE JUMPER WHEN EXTERNAL SPEAKER IS USED.

MODEL NO	REV LETTER
19D430175G1	A
19C321990G1	B

(19D430218, Rev. 5)

SCHEMATIC DIAGRAM

POWER SUPPLY 19D430175G1

Issue 3

PARTS LIST

POWER SUPPLY
19D430175G1
ISSUE 5

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	T324ADP1041	Rectifier, silicon; general purpose.
		- - - - - - - - - - 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	19A700025P12	Silicon, zener: 400 mW max; sim to BZX55-C15.
A802		POWER SUPPLY 19D423793G6
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C801	5496520P21	Electrolytic: 12900 pF -10+100%, 40 VDCW, 43F86F159W.
C802 and C803	5493132P17	Electrolytic: 8000 uF -10+150%, 20 VDCW.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E801	4036994P1	Terminal, solderless.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q801	19A116753P1	Silicon, NPN.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR801	19B219800G5	Diode, green light emitting.
		- - - - - - - - - - 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.
		- - - - - - - - - - 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.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB801	7775500P8	Phen: 3 insulated and 1 ground terminal.
TB802	7117710P8	Phen: 8 terminals; sim to Cinch 1780.
		- - - - - - - - - - - - CABLES - - - - - - - - - - -
W801		CABLE ASSEMBLY 19B233153G1
		- - - - - - - - - - - - PLUGS - - - - - - - - - - -
P802		Connector. Includes:
	19A116659P143	Shell.
	19A116781P5	Contact, electrical: wire range No. 18-24 AWG; sim to Molex 08-50-0106. (Quantity 2).
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 2).
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.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A700115P3	Insulator, plate. (Used with Q2 & Q3 on A801).
	19A116022P1	Insulator, bushing. (Used with Q2 & Q3 on A801).
	19A115185P9	Retaining strap. (Secures C802 & C803 - Quantity 2).
	19B227273G1	Support. (Supports C801-C803, E801, Q801 & A801)
	4029974P1	Insulator, plate: aluminum. (Used with Q801).
	19A121882P1	Washer, shield. (Used with Q801).
	4036634P1	Contact, electrical; sim to AMP 42428-2. (Located at Q801E & Q801B).
	19C327007G3	Chassis.
	19C327086G2	Housing.
	19D423788P7	Front Cap.
	19A702464P4	Bushing, strain relief. (Used with W802).
	7165075P3	Hex nut, brass: thd. size No. 15/32. (Secures S801).
	7115130P11	Lockwasher: 15/32; sim to Shakeproof 1222-1. (Secures S801).
	19B209209P304	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/4. (Secures front cap).
	19B201074P304	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/4. (Secures 19B227273G1 Support and housing to chassis).
	4036994P1	Terminal, solderless. (Located at G11).
	19A116677P2	Bushing. (Used with CR801).
	7160861P34	Nut, sheet spring: sim to Tinnerman C7159-8Z-24. (Secures L801 & T801).
	N193P1408C6	Tap screw, phillips head: No. 8-18 x 1/2. (Secures L801 & T801).
	19A701863P14	Clip, loop. (Located at XF801).
	4035267P2	Rivet, drive: nylon; sim to Fastex 254-090401-00-0101. (Quantity 4).
	NP280161	Nameplate. (CAUTION).
	NP280653	Nameplate, faceplate.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

BATTERY STANDBY CHARGER KIT
19A142546G1
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		RECTIFIER BRIDGE 19A138538G1
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A134780P1	Rectifier Bridge: 35 amp, 50 v; sim to MDA 3500.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	19A116479P2510K	Metal film: 51 ohms ±10%, 2 w; sim to Mallory Type 2 MOL.
		- - - - - - - - - - - - CABLES - - - - - - - - - - -
W1	19A137818G8	Rectifier Bridge lead. Includes:
	19B209268P1	Terminal, solderless: sim to AMP 40956.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A137818G5	Battery lead, red.
	19A137818G6	Battery lead, black.
	19A137818G7	Lead, red. (Located on Rectifier bridge).
	19A115882P7	Terminal, Q disc. (Located on Rectifier bridge).
	N80P13012C6	Machine screw: No. 6-32 x 3/4. (Secures Rectifier bridge).
	N402P37C6	Flatwasher: No. 6. (Secures Rectifier bridge).
	N404P13C6	Lockwasher, internal: No. 6. (Secures Rectifier bridge).
	7141225P3	Hex nut: No. 6-32. (Secures Rectifier bridge).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

STANDARD DESK MICROPHONE
19B209693P1
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
	RP124	Switch Kit. (Includes switch transmit pushbutton, & two thread forming screws).
	19A116659P20	Cable connector shell; sim to Molex 09-50-3081.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 4- Used with 19A116659P20 connector shell).
	NP270641	Faceplate. (GENERAL ELECTRIC).

PARTS LIST

DESK MICROPHONE (CHANNEL GUARD)
19B209694P1
ISSUE 1

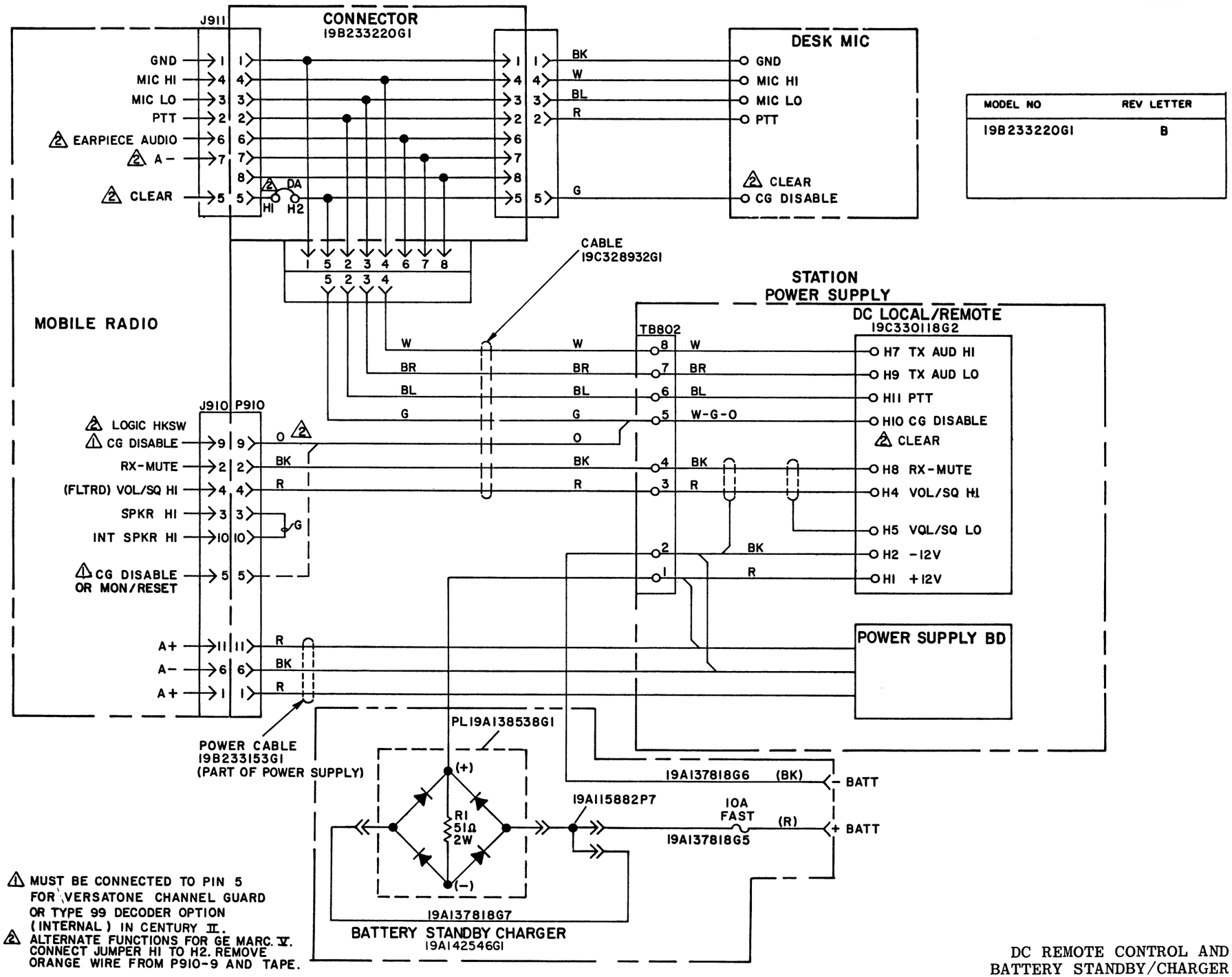
SYMBOL	GE PART NO.	DESCRIPTION
	RP119	Switch Kit. (Includes switch, transmit & Monitor pushbuttons, lock spring, retainer & spring, and two thread forming screws).
	19A116659P20	Cable connector shell; sim to Molex 09-50-3081.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 5- Used with 19A116659P20 connector shell).
	NP270713	Faceplate. (GENERAL ELECTRIC).

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 - Power Supply Assembly 19D430175G1
Incorporated in initial shipment.

REV. A - Component Board 19C321990G1
To meet CSA specification, rewired F801.

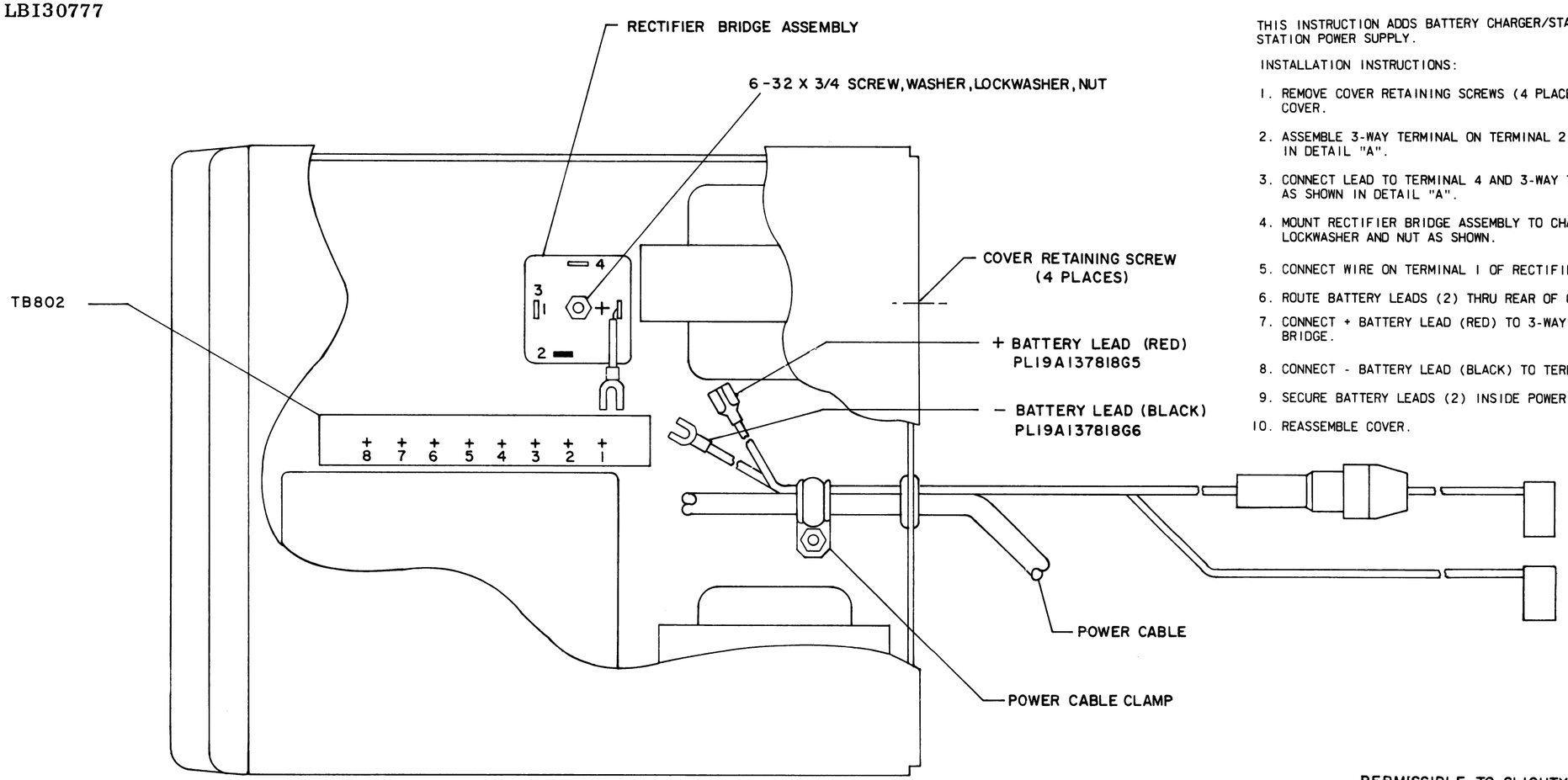


MODEL NO	REV LETTER
19B233220G1	B

⚠1 MUST BE CONNECTED TO PIN 5 FOR VERSATONE CHANNEL GUARD OR TYPE 99 DECODER OPTION (INTERNAL) IN CENTURY II.

⚠2 ALTERNATE FUNCTIONS FOR GE MARC V. CONNECT JUMPER H1 TO H2. REMOVE ORANGE WIRE FROM P910-9 AND TAPE.

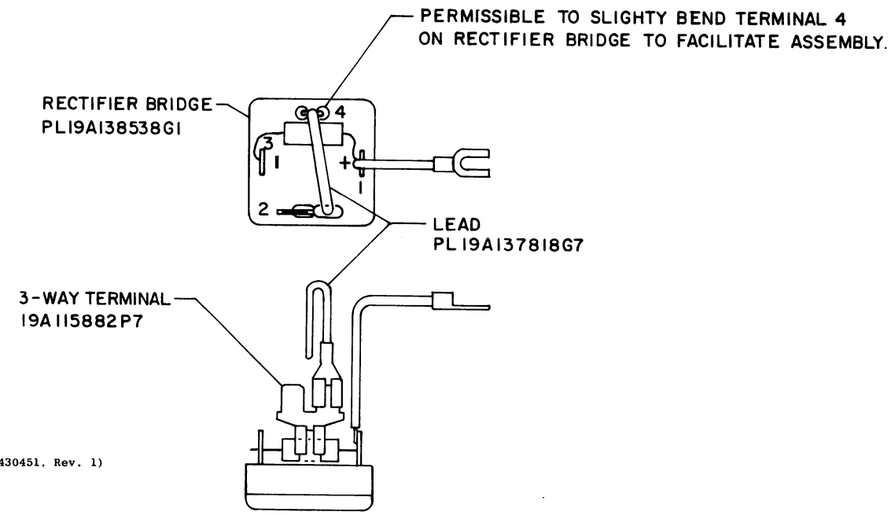
DC REMOTE CONTROL AND
BATTERY STANDBY/CHARGER
19A142546G1



THIS INSTRUCTION ADDS BATTERY CHARGER/STANDBY OPTION TO CENTURY II STATION POWER SUPPLY.

INSTALLATION INSTRUCTIONS:

1. REMOVE COVER RETAINING SCREWS (4 PLACES) AT REAR OF UNIT AND REMOVE COVER.
2. ASSEMBLE 3-WAY TERMINAL ON TERMINAL 2 OF RECTIFIER BRIDGE AS SHOWN IN DETAIL "A".
3. CONNECT LEAD TO TERMINAL 4 AND 3-WAY TERMINAL ON RECTIFIER BRIDGE AS SHOWN IN DETAIL "A".
4. MOUNT RECTIFIER BRIDGE ASSEMBLY TO CHASSIS WITH #6-32 X 3/4 SCREW, WASHER LOCKWASHER AND NUT AS SHOWN.
5. CONNECT WIRE ON TERMINAL 1 OF RECTIFIER BRIDGE TO TERMINAL 1 ON TB802.
6. ROUTE BATTERY LEADS (2) THRU REAR OF CHASSIS WITH POWER CABLE AS SHOWN.
7. CONNECT + BATTERY LEAD (RED) TO 3-WAY TERMINAL (TERMINAL 2) ON RECTIFIER BRIDGE.
8. CONNECT - BATTERY LEAD (BLACK) TO TERMINAL 2 ON TB802.
9. SECURE BATTERY LEADS (2) INSIDE POWER CABLE CLAMP AS SHOWN.
10. REASSEMBLE COVER.

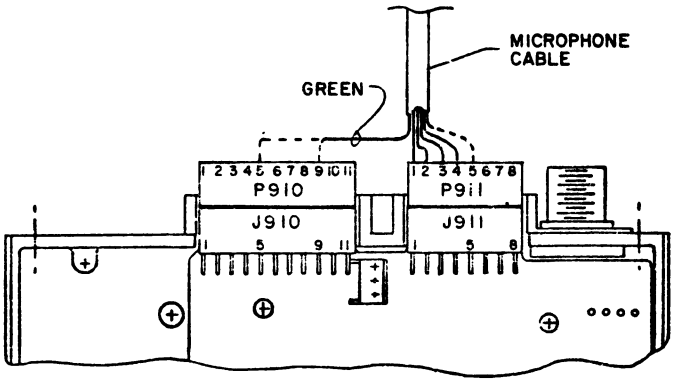


DETAIL "A"

(19D430451, Rev. 1)

These are Modification Instructions for the Desk MICROPHONE with CHANNEL GUARD (Option 2611). Also Modification Instructions for Desk Microphone with Channel Guard or Type 99 Decoder (New Option M5MC04) and AC POWER SUPPLY MOD (New Options M5PS01 and M5PS02).

OPTION 2611



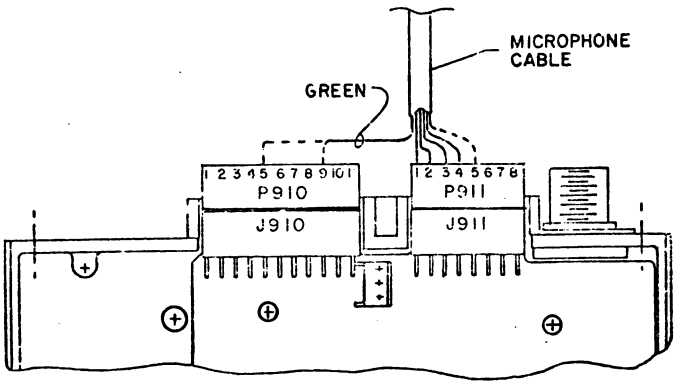
TOP VIEW

DESK MICROPHONE WITH CHANNEL GUARD MOD

1. FOR VERSATONE CHANNEL GUARD (19D430101). MOVE GREEN WIRE FROM P911-5 TO P910-5.
2. FOR CRYSTAL CHANNEL GUARD (19C328576). MOVE GREEN WIRE FROM P911-5 TO P910-9.

(19D430281, Sh. 7, Rev. 1)

OPTION M5MC04

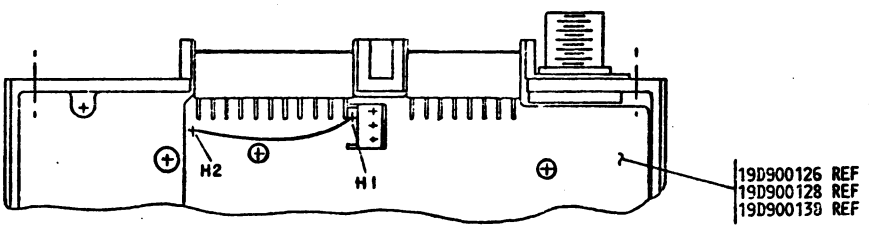


TOP VIEW

DESK MICROPHONE WITH CHANNEL GUARD OR TYPE 99 DECODER

NOTES:
1. FOR CHANNEL GUARD ONLY, MOVE GREEN WIRE FROM P911-5 TO P910-9
2. FOR TYPE 99 DECODER AND CHANNEL GUARD, MOVE GREEN WIRE FROM P911-5 TO P910-5.
3. FOR TYPE 99 DECODER ONLY, MOVE GREEN WIRE FROM P911-5 TO P910-5.

OPTIONS M5PS01 & M5PS02



TOP VIEW

AC POWER SUPPLY MOD

NOTES:

1. REMOVE JUMPER BETWEEN H1 & H2

(19D432543, Sh. 4, Rev. 3)