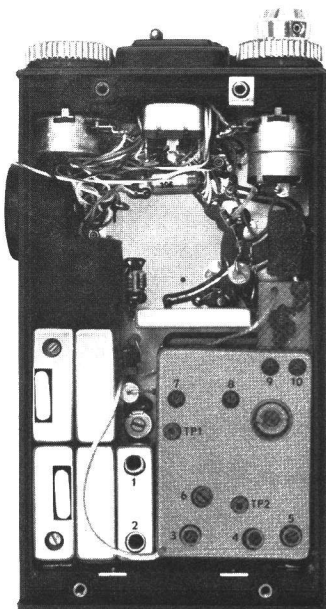


MASTR *Personal Series*

PROGRESS LINE

**REMOTE PE MODELS
SYSTEMS BOARD AND CASE ASSEMBLY 19D413548G9 & G13**



SPECIFICATIONS *

MOBEL NUMBERS

19D413 548G9
19D413 548G13

406-470 MHz
470-512 MHz

CONTROLS

Volume ON-OFF Switch
Squelch Control
Two-Frequency Selector Switch
PTT Switch
Tone Option Switch
Collapsible Antenna
Speaker/Microphone
Accessory Jack

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

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Figure 1 - DC Switching	1
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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

System Boards A709 and A713 provide system interconnections between the transmitter, receiver, tone options, and operating controls in the 406 to 512 MHz, two-frequency, remote operated PE Series. The system board contains transmitter oscillator modules A5 and A6. Other modules on the system board are the Audio Amplifier Module A1, 5.4-Volt Regulator Module A2, Compensator Module A3 and Modulator Module A4. The system board also contains system relay K1 and DC switching circuitry.

Accessory jack J701 and jacks J702 and J703 are connected to the system board and provide connections for external speakers, microphones and antennas. Accessory jack J701 provides connections for a remote speaker/microphone. Jack 702 connects an external speaker and antenna. Jack J702 and J703 are used when the PE Radio is plugged into either a vehicular or desk charger.

The remote speaker/microphone, Type EM-33-G provides for the remote operated PE Radio PTT switch S1 as well as a remote speaker, and microphone.

CIRCUIT ANALYSIS

DC switching between the transmitter and receiver is accomplished by operation of system relay K1. Operation of system relay K1 is controlled by an external PTT switch or by PTT switch S1 on the remote Speaker/Microphone. Pressing either switch completes the relay path to ground (see Figure 1). This energizes relay K1 and switches the battery voltage to the transmitter audio and regulator modules. Energizing K1 also connects the transmitter power output to the antenna.

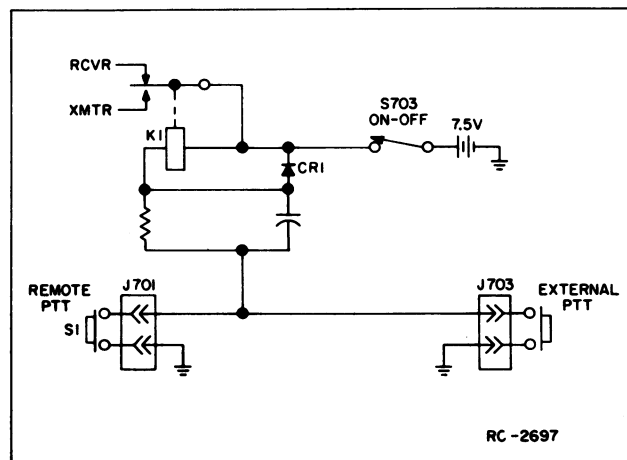
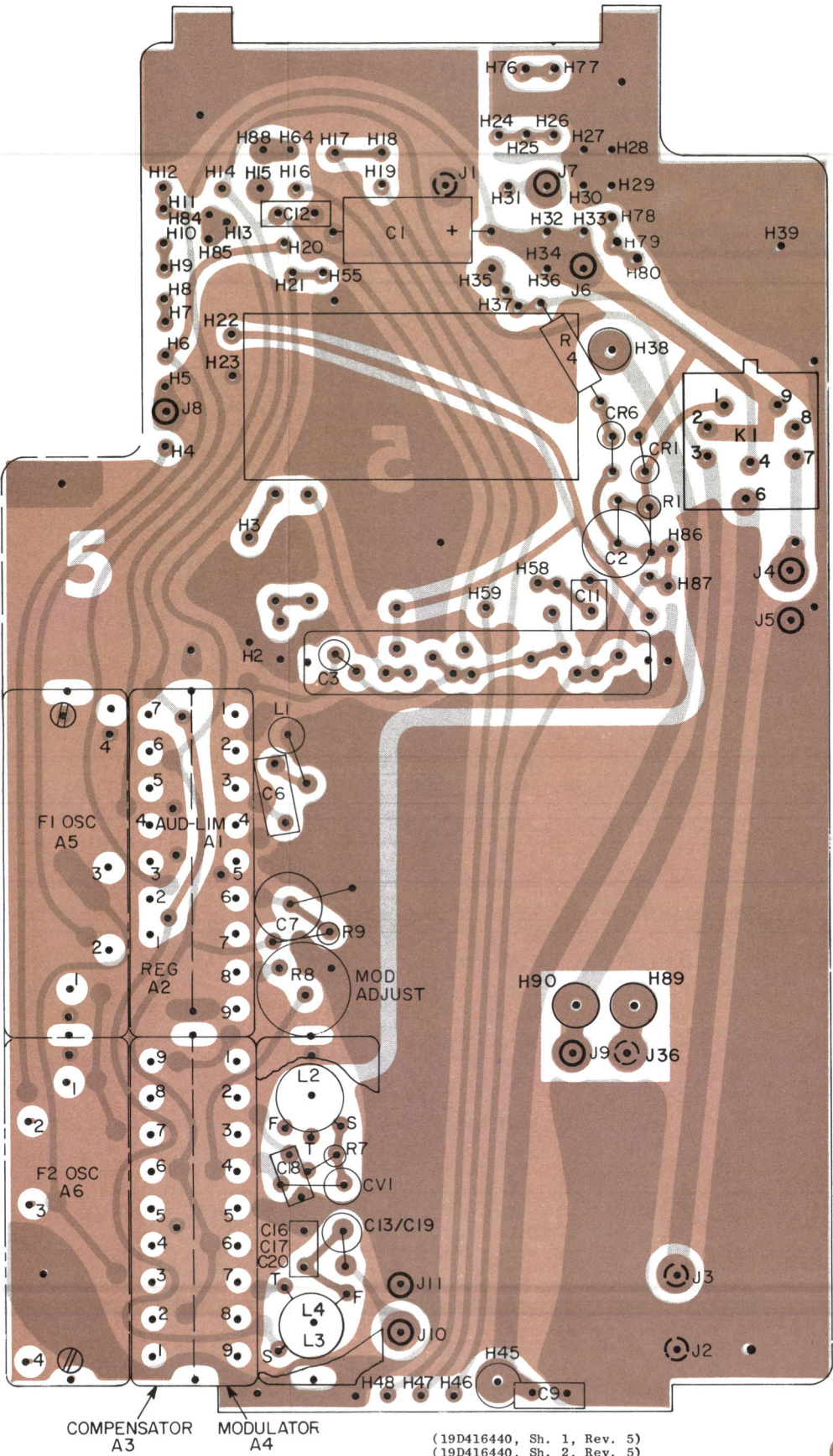


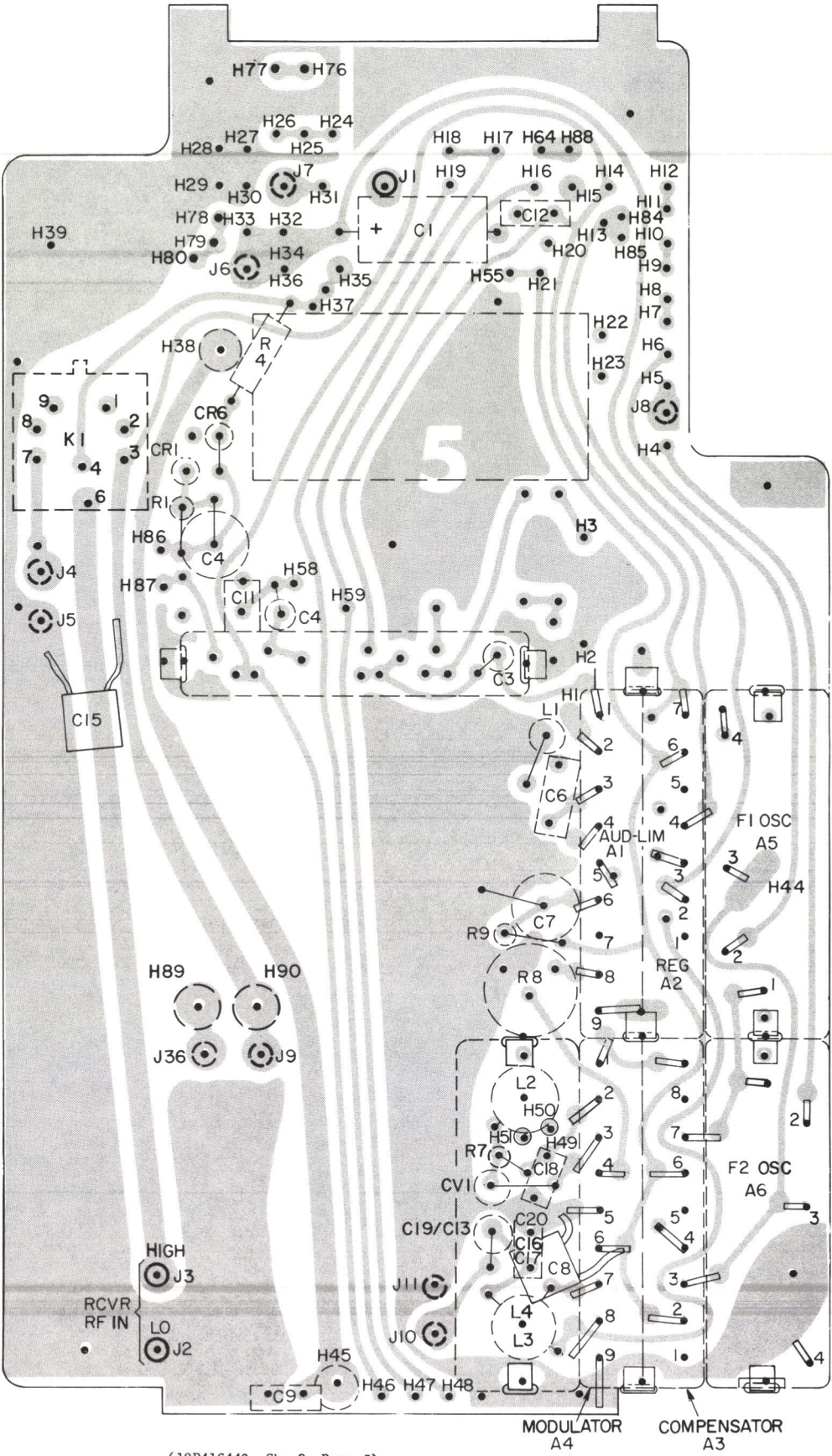
Figure 1 - DC Switching Circuit

COMPONENT SIDE



(19D416440, Sh. 1, Rev. 5)
(19D416440, Sh. 2, Rev. 5)

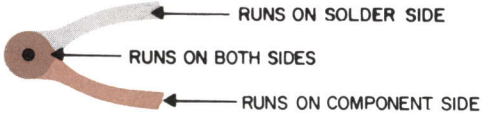
SOLDER SIDE

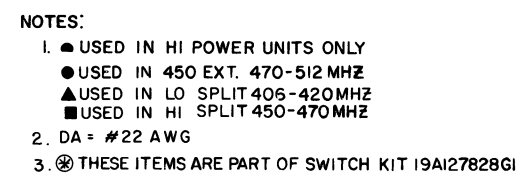


(19D416440, Sh. 2, Rev. 5)

OUTLINE DIAGRAM

SYSTEM BOARD & CASE ASSEMBLY





Issue 1

PARTS LIST

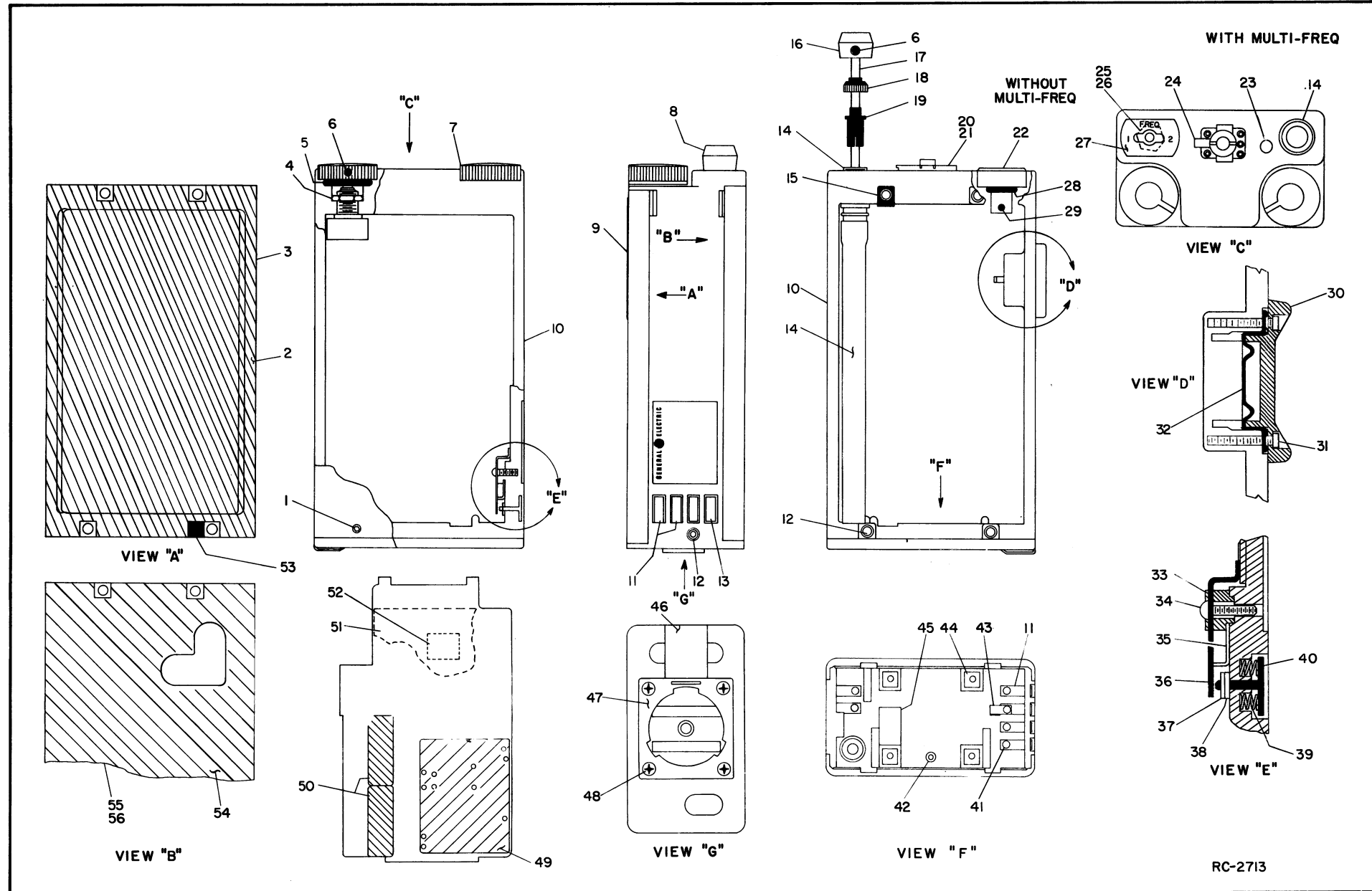
LBI-4767
SYSTEM BOARD/CASE ASSEMBLY
19D413548G5 450 MHz
19D413548G13 450 MHz EXT.
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
A709 and A713		SYSTEM BOARD A709 19D416438G5 A713 19D416438G8 EXT
A1	19C320062G1	Transmitter Audio Module.
A2	19C311905G2	Regulator Module.
A3	19C320060G1	Oscillator Compensator Module.
A4	19C320084G1	Modulator Module.
		NOTE: When reordering give GE Part Number and exact crystal frequency. Crystal Freq = Operating Freq x 24
A5 and A6	4EG27A11	Transmitter Oscillator.
		----- CAPACITORS -----
C1	5491674P30	Tantalum: 39 pf $\pm 20\%$, 10 VDCW; sim to Sprague Type 162D.
C2	5491674P42	Tantalum: 47 pf $\pm 20\%$, 6 VDCW; sim to Sprague Type 162D.
C3	5491674P1	Tantalum: 1.0 pf $\pm 40-20\%$, 10 VDCW; sim to Sprague Type 162D.
C6	19C307102P19	Tantalum: 68 pf $\pm 20\%$, 4 VDCW.
C7	5491674P42	Tantalum: 47 pf $\pm 20\%$, 6 VDCW; sim to Sprague Type 162D.
C8	19A116114P7053	Ceramic: 476 pf $\pm 5\%$, 100 VDCW; temp coef -750 PPM.
C9	19A116114P7065	Ceramic: 100 pf $\pm 5\%$, 100 VDCW; temp coef -750 PPM.
C11	19A116114P10073	Ceramic: 180 pf $\pm 5\%$, 100 VDCW; temp coef -3300 PPM.
C12	19A116114P2049	Ceramic: 39 pf $\pm 10\%$, 100 VDCW; temp coef -80 PPM.
C13	5491601P120	Phenolic: 1.0 pf $\pm 5\%$, 500 VDCW.
C15	19A116192P1	Ceramic: 0.01 pf $\pm 20\%$, 50 VDCW; sim to Erie 8121-050-WSR.
C18	19A116114P8065	Ceramic: 100 pf $\pm 5\%$, 100 VDCW; temp coef -1500 PPM.
C19	5491601P115	Phenolic: 0.56 pf $\pm 5\%$, 500 VDCW.
C20	19A116114P2035	Ceramic: 13 pf $\pm 5\%$, 100 VDCW; temp coef -80 PPM.
		----- DIODES AND RECTIFIERS -----
CR1	19A115100P1	Silicon; sim to Type 1N458A.
CR6	19A115250P1	Silicon.
CV1	5495769P9	Silicon, capacitive.
		----- JACKS AND RECEPTACLES -----
J1 thru J5	19A116366P4	Contact, electrical: sim to Concord 10-891-1.
J6 thru J8	19A116366P2	Contact, electrical: sim to Cambion 3233-1.
J9 thru J11	19A116366P4	Contact, electrical: sim to Concord 10-891-1.

SYMBOL	GE PART NO.	DESCRIPTION
J36	19A116366P4	Contact, electrical: sim to Concord 10-891-1.
		----- RELAYS -----
K1	19B209562P1	Relay, hermetic sealed: 98 ohms $\pm 10\%$, 2 form C contacts, 6.0 VDC nominal, 1.0 w max operating; sim to Wabco 95430101-86.
		----- INDUCTORS -----
L1	19B209420P114	Coil, RF: 1.20 μ h $\pm 10\%$, 0.18 ohms DC res max; sim to Jeffers 4436-1.
L2	19A127798G2	Coil: 3.5-4.3 ph.
L3	19B219527G1	Coil.
L4	19B219527G3	Coil.
		----- RESISTORS -----
R1	3R152P221J	Composition: 220 ohms $\pm 5\%$, 1/4 w.
R4	3R151P101K	Composition: 100 ohms $\pm 10\%$, 1/8 w.
R7	3R151P103J	Composition: 10,000 ohms $\pm 5\%$, 1/8 w.
R8	19A116412P4	Variable, cermet: 250,000 ohms $\pm 10\%$, 1/2 w; sim to Helipot Model 62 PF.
R9	3R151P101K	Composition: 100 ohms $\pm 10\%$, 1/8 w.
		----- CAPACITORS -----
C701	19A116114P2007	Ceramic: 2.2 pf $\pm 10\%$, 100 VDCW; temp coef -80 PPM.
C702	19A116114P4	Ceramic: 1.5 pf $\pm 5\%$, 100 VDCW; temp coef 0 PPM.
		----- FUSES -----
F701	19A127884G1	Fuse Kit.
		----- JACKS AND RECEPTACLES -----
J701	19B216594G2	Connector, female: 6 contacts.
J702		See Mechanical Parts RC-2713, items 11, 13, 41.
J703		See Mechanical Parts RC-2713, items 11, 41, 43.
J704		See Mechanical Parts RC-2713, items 46-48.
		----- PLUGS -----
P701	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.
P704 and P705	19A127569P1	Plug: 8 contacts.
		----- RESISTORS -----
R707	19A116227P1	Resistor/Switch: variable, carbon film, 25,000 ohms $\pm 20\%$, 1/8 w, (Includes S703), SPST, 3 amps at 125 VAC.
R708	19A116227P2	Variable, carbon film: 25,000 $\pm 20\%$, 1/8 w.
		----- SWITCHES -----
S701		See Mechanical Parts RC-2713, items 30-32.
S702		See Mechanical Parts RC-2713, items 33-40.
S703		(Part of R707).
		ASSOCIATED ASSEMBLIES
		HI/LOW SPLIT MODIFICATION KIT 19A127838G3 HI SPLIT 19A127838G4 LOW SPLIT
		----- CAPACITORS -----
C16	19A116114P2038	Ceramic: 18 pf $\pm 5\%$, 100 VDCW; temp coef -80 PPM.
C17	19A116114P2044	Ceramic: 27 pf $\pm 5\%$, 100 VDCW; temp coef -80 PPM.

SYMBOL	GE PART NO.	DESCRIPTION
		MULTI-FREQUENCY MODIFICATION KIT 19A127828G1
		----- SWITCHES -----
S1	19A127824G1	Toggle: DPDT, 100 μ a at 5 VDC, mounting hardware; sim to Arrow-Hart and Hegeman TS-6.
		----- MISCELLANEOUS -----
	19B216897G5	Front Cover Assembly. (See RC-2713, items 2, 3, 53).
	19B216897G1	Rear Cover Assembly. (See RC-2713, items 53, 54, 56).
	19B216897G2	Rear Cover Assembly. Clip type. (See RC-2713, items 53, 54, 55).
	4EM33G10	Speaker/Mike. (Hang-up Button).
	4EM33G11	Speaker/Mike. (VELCO® Hanger).
	19B219953G3	Antenna Assembly. (See RC-2713, items 6, 16-19).
	19D413522G1	Battery, rechargeable. Nickel Cadmium.
	4038831P4	Alignment tool. Fork tip.
	19B219079G1	Alignment tool. Allen tip.
	19B219442P1	Antenna Strip line.
		MECHANICAL PARTS (SEE RC-2713)
1	19A116543P1	Cap screw, socket head: No. 2-56 x 1/4.
2	19C317394P5	Gasket.
3	19B216897G5	Front Cover.
4	19A127319P1	Nut: No. 14-32.
5	19A115983P5	Seal, "O" ring: sim to Parker Seal 2-13.
6	N70P703C13	Set screw: No. 3-48 x 3/16.
7	19C317065P1	Knob. (SQUELCH, ON-OFF-VOLUME).
8	19B219953G3	Antenna assembly. (Includes items 6, 16-19).
9	NP257868P2	Nameplate. (GE monogram).
10	19D413542G5	Case assembly. (Includes items 11, 12, 15, 23, 30-32, 41-43).
11	19A127753P1	Contact. (Part of J102 and J703).
12	19A116719P1	Insert, screw thread: No. 2-56.
13	19B216862P2	Contact. (Part of J702).
14	19A127779G6	Antenna tube.
15	19B216875P1	Support.
16	19A129649P1	Antenna Cap. (Part of item 8).
17	19C320383P2	Antenna rod. (Part of item 8).
18	19A129652P1	Nut, knurled: thd size 7/16-40. (Part of item 8).
19	19C320352P1	Bushing (Part of item 8).
20	19C317050P1	Protective Cover.
21	19A129390P1	Disc.
22	19C317383P1	Dummy plug.
23	19A129723P1	Rivet.
24	19B219540P1	Catch.
25	19C320721P1	Seal, moisture.
26	4035306P2	Washer, fiber.
27	19B216926P5	Decorative cap.
28	19A115983P3	Seal, "O" ring: sim to Parker Seal 2-10.
29	N509P606C	Dowel pin: No. 1/16 x 3/8.
30	19C320442P1	Collar.
31	N41P1004Y	Screw, slotted, steel: No. 0-80 x 1/4.
32	19C320558P1	Diaphragm.

SYMBOL	GE PART NO.	DESCRIPTION
33	19B216865P1	Insulator. (Part of S702).
34	N647P5004C	Cap screw: 2-56 x 1/4. (Part of S702).
35	19B216864P1	Contact. (Part of S702).
36	19B216863P1	Spring contact. (Part of S702).
37	N910P6C13	Retaining ring. (Part of S702).
38	19A127754P1	Gasket. (Part of S702).
39	19A127755P1	Spring. (Part of S702).
40	19B216862P1	Contact. (Part of S702).
41	N330P605F22	Eyelet, brass: 1/16 x 5/32.
42	N330P602F22	Eyelet, brass: 1/16 x 1/16.
43	19A127760P1	Contact.
44	19B216858P1	Insert.
45	19A127762P1	Strap.
46	19B216891G1	Spring assembly. (Part of J704).
47	19D413467P1	Fastener (Part of J704).
48	N83P5005E	Flat head screw: brass, 2-56 x 5/16. (Part of J704).
49	19B219443P1	Insulator, pressure sensitive.
50	19C311491P3	Can. (Used with Regulator, Oscillator Compensator Circuits).
51	19B216912P1	Insulator. (Located between System and Receiver Boards).
52	19A116270P1	Tape, pressure sensitive. (Specify length).
53	19A130397P1	Strap. (Both covers).
54	19C317394P5	Gasket.
55	19B216897G1	Rear Cover Assembly. (without clip).
56	19B216897G2	Rear Cover Assembly. (with clip).



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-4771

DF-4097
4/1/0

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



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