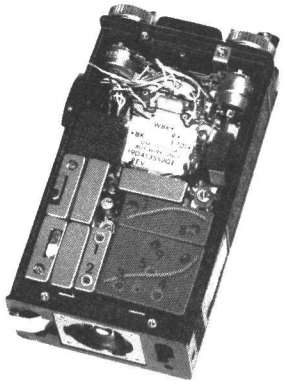
MOBILE RADIO

MASTR® Personal Series

PROGRESS LINE

REMOTE PE MODELS
SYSTEMS BOARD AND CASE ASSEMBLY 19D413548G8

Maintenance Manual LBI 4770B
DATAFILE FOLDER - DF4097



SPECIFICATIONS *

MODEL NUMBERS

19D413548G8	138 - 174 MHz

CONTROLS:

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

SYSTEM BOARD AND CASE ASSEMBLY
19D413548G8

*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

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.

DESCRIPTION

System Board A708 provides system interconnections between the transmitter, receiver, tone options, and operating controls in the 138 to 174 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, Modulator Module A4 and optional Compressor Module A50. 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 J703 connects an external microphone. Jacks 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.

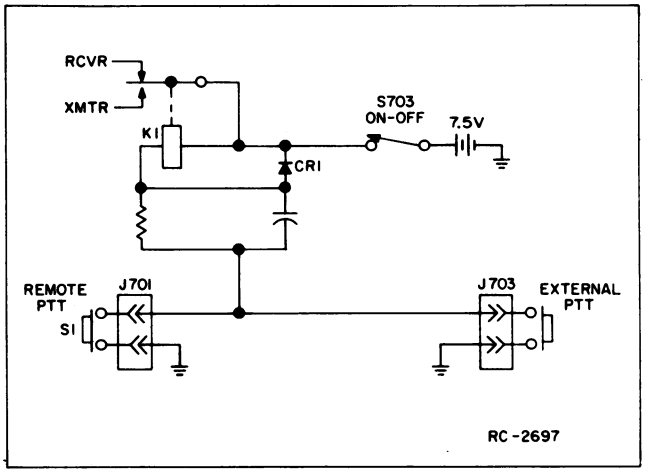
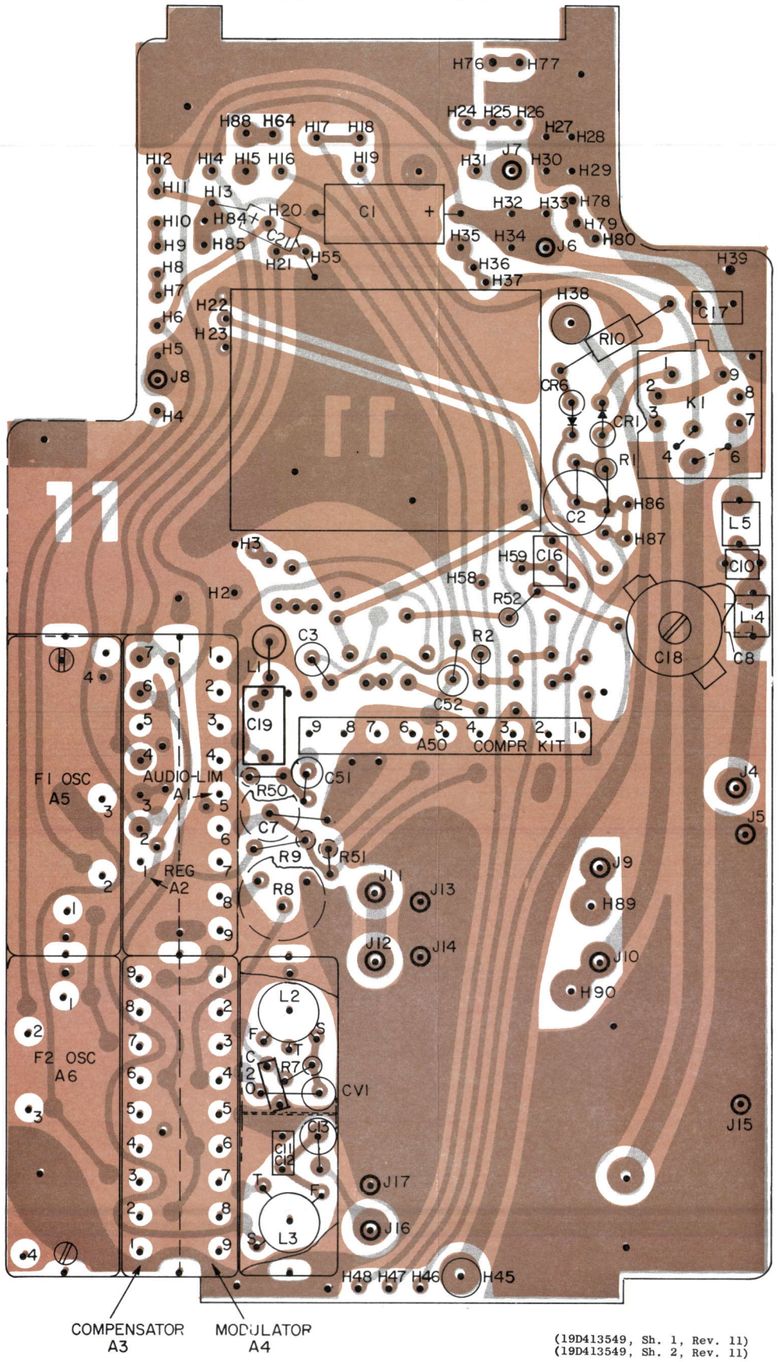


Figure 1 - DC Switching Circuit

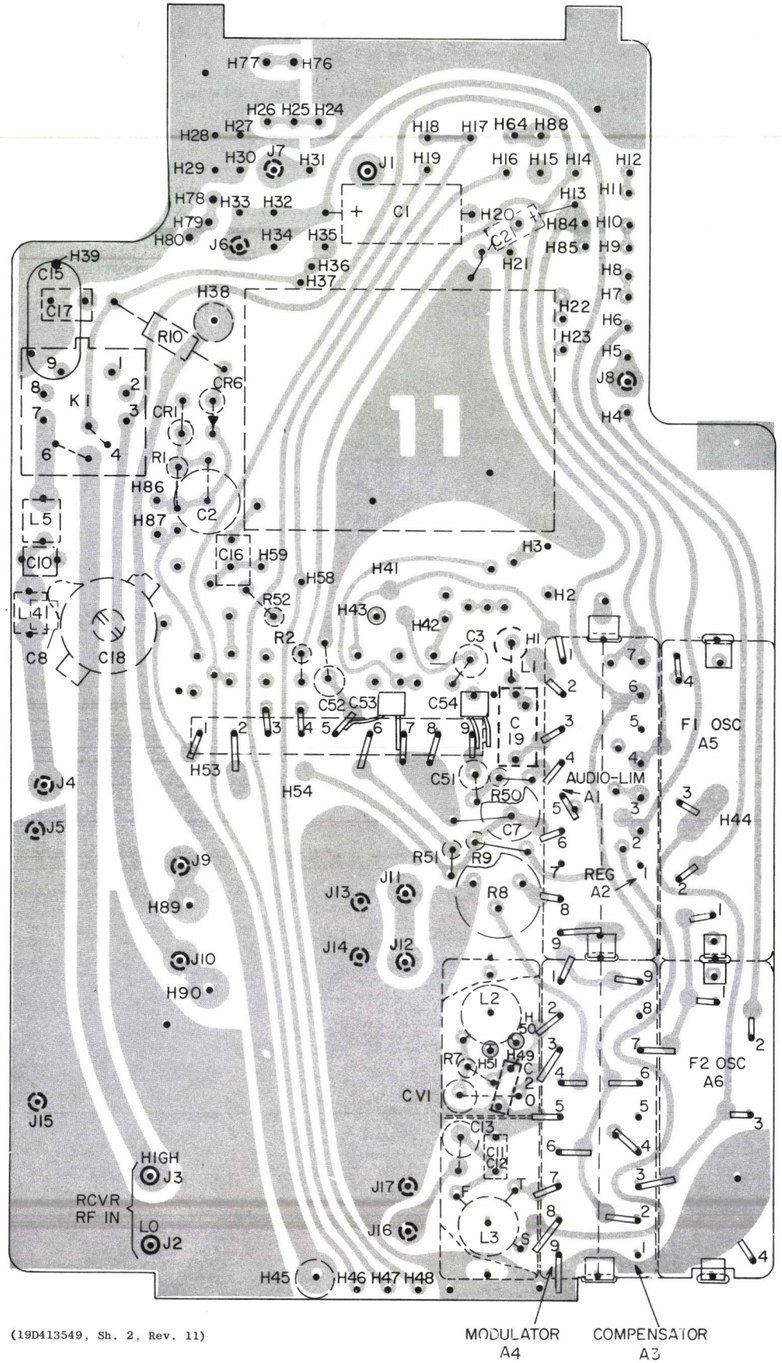
COMPONENT SIDE



RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

(19D413549, Sh. 1, Rev. 11)
(19D413549, Sh. 2, Rev. 11)

SOLDER SIDE

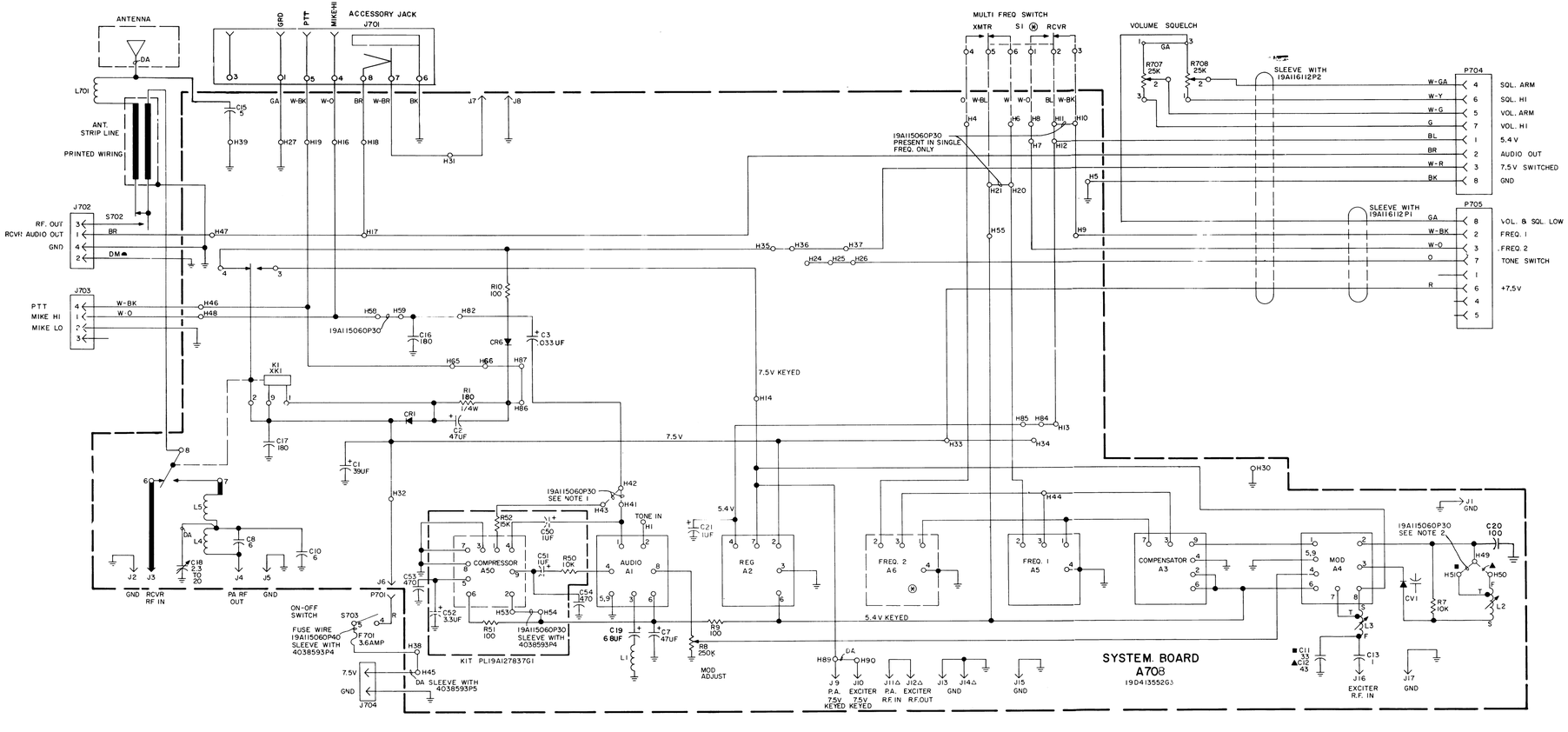


(19D413549, Sh. 2, Rev. 11)

OUTLINE DIAGRAM

SYSTEM BOARD & CASE ASSEMBLY

(19D423218, Rev. 5)



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
PL19D413548G6	E
PL19D413552G3	F
PL19A127837G1	A

ALL RESISTORS ARE 1/8 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.

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.

NOTES:
1. CONNECT HOLE 42 TO HOLE 41 WHEN COMPRESSOR A50 IS NOT USED. CONNECT HOLE 42 TO HOLE 43 WHEN COMPRESSOR A50 IS USED.
2. ▲USED IN LO SPLIT (132-150.8 MHZ)
   ■USED IN HI SPLIT (150.8-174 MHZ)
   ●PRESENT IN HI POWER UNITS
   △NOT PRESENT IN HI POWER UNITS
3. DA=#22 AWG.
4. (R) THESE ITEMS ARE PART OF KIT PL19A127828.
5. GND MAY BE MADE THROUGH CAN ONLY ON SICOMS.

(198621915, Rev. 15)

SCHEMATIC DIAGRAM

SYSTEM BOARD & CASE ASSEMBLY

PARTS LIST

LBI4766B

SYSTEM BOARD/CASE ASSEMBLY
19D413548G8
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
A708		SYSTEM BOARD 19D413552G3
A1	19C320062G1	Transmitter Audio Module.
A2*	19C328070G1	5.4 volt Regulator Module.
		In REV E & earlier:
	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 / 12
A5 and A6	4EG27A10	Transmitter Oscillator.
		- - - - - - - - - CAPACITORS - - - - - - - - -
C1	5491674P30	Tantalum: 39 µf ±20%, 10 VDCW; sim to Sprague Type 162D.
C2	5491674P42	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 162D.
C3*	5491674P51	Tantalum: 0.033 µf ±10%, 35 VDCW; sim to Sprague Type 162D.
		In REV D & earlier:
	5491674P49	Tantalum: 0.068 µf ±10%, 20 VDCW; sim to Sprague Type 162D.
C7	5491674P42	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 162D.
C8	19A116114P20	Ceramic: 6 pf ±5%, 100 VDCW; temp coef 0 PPM.
C10	19A116114P20	Ceramic: 6 pf ±5%, 100 VDCW; temp coef 0 PPM.
C13	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C15	5490218P36	Ceramic disc: 5.0 pf ±0.25 pf, 500 VDCW, temp coef 0 PPM.
C16 and C17	19A116114P10073	Ceramic: 180 pf ±5%, 100 VDCW; temp coef -3300 PPM.
C18	19B209351P2	Variable: 2.3 to 20 pf, 200 VDCW; -450 ±200 PPM/°C; sim to Matsushita ECV-12-#20P32.
C19	19C307102P19	Tantalum: 68 µf ±20%, 4 VDCW.
C20	19A116114P8065	Ceramic: 100 pf ±5%, 100 VDCW; temp coef -1500 PPM.
C21*	5491674P1	Tantalum: 1.0 µf +40-20%, 10 VDCW; sim to Sprague Type 162D. Added by REV F.
		- - - - - - - DIODES AND RECTIFIERS - - - - -
CR1	19A115100P1	Silicon; sim to Type 1N458A.
CR6	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CV1	849576P9	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 J17	19A116366P4	Contact, electrical: sim to Concord 10-891-1.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1	19B209562P2	Hermetic sealed: between 45-100 ohms ±10%, 2 form C contacts, 5.0 VDC nominal, 1.0 w max operating; sim to GE 3SCS1002A2.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L1	19B209420P114	Coil, RF: 1.20 µh ±10%, 0.18 ohms DC res max; sim to Jeffers 4436-1K.
L2	19A127798G1	Coil: 6.05-6.9 µh.
L3	19B216910G1	Coil.
L4 and L5	19B216320P3	Coil.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R1	3R152P181J	Composition: 180 ohms ±5%, 1/4 w.
R7	3R151P103J	Composition: 10K ohms ±5%, 1/8 w.
R8	19A116412P4	Variable, cermet: 250K ohms ±10%, 1/2 w; sim to Helipot Model 62 PF.
R9 and R10	3R151P101K	Composition: 100 ohms ±10% 1/8 w.
		- - - - - - - - - - FUSES - - - - - - - - -
F701	19A127884G1	Fuse Kit.
		- - - - - - - JACKS AND RECEPTACLES - - - -
J701	19B216594G2	Connector, female: 6 contacts.
J702		See Mechanical Parts RC2713, items 11, 13, 41.
J703		See Mechanical Parts RC2713, items 11, 41, 43.
J704		See Mechanical Parts RC2713, items 46-48, 63.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L701	19A127815P1	Coil.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P701	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.
P704 and P705	19A127569G1	Plug: 8 contacts.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R707	19A116227P1	Resistor/Switch: variable, carbon film, 25K ohms ±20%, 1/8 w, (includes S705), SPST, 3 amps at 125 VAC.
R708	19A116227P2	Variable, carbon film: 25K ohms ±20%, 1/8 w.
		- - - - - - - - - - SWITCHES - - - - - - - - -
S702		See Mechanical Parts RC2713, items 33-40.
S703		(Part of R707).
		ASSOCIATED ASSEMBLIES
		HI/LOW SPLIT MODIFICATION KIT 19A127838G1 HI SPLIT 19A127838G2 LOW SPLIT
		- - - - - - - - - CAPACITORS - - - - - - - - -
C11	19A116114P2047	Ceramic: 33 pf ±5%, 100 VDCW; temp coef -80 PPM.
C12	19A116114P2051	Ceramic: 43 pf ±5%, 100 VDCW; temp coef -80 PPM.
		MULTI-FREQUENCY MODIFICATION KIT 19A127828G1
		- - - - - - - - - - SWITCHES - - - - - - - - -
S1	19A127824G1	Toggle: DPDT, 100 µa at 5 VDC, mounting hardware; sim to Arrow-Hart and Hegeman 78-6.
		COMPRESSOR KIT 19A127837G1
A50	19C311907G2	Audio Compressor Board.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - CAPACITORS - - - - - - - - -
C50 and C51	5491674P1	Tantalum: 1.0 µf +40 -20%, 10 VDCW; sim to Sprague Type 162D.
C52	5491674P36	Tantalum: 3.3 µf ±20%, 10 VDCW; sim to Sprague Type 162D.
C53 and C54	19A116192P2	Ceramic: 470 pf ±20%, 50 VDCW; sim to Erie 8111-050-W3R.
		- - - - - - - - - RESISTORS - - - - - - - - -
R50	3R151P103J	Composition: 10K ohms ±5%, 1/8 w.
R51	3R151P101J	Composition: 100 ohms ±5%, 1/8 w.
R52	3R151P153J	Composition: 15K ohms ±5%, 1/8 w.
R53	3R151P433J	Composition: 43K ohms ±5%, 1/8 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B216897G5	Front Cover Assembly. (See RC2713, items 2, 3, 53).
	19B216897G1	Rear Cover Assembly. (See RC 2713, items 53, 54, 56).
	19B216897G2	Rear Cover Assembly. Clip type. (See RC2713, items 53, 54, 55).
	4EM33G10	Speaker/Mike. (Hang-up Button).
	4EM33G11	Speaker/Mike. (VELCO® Hanger).
	19D413522G1	Battery, rechargeable. Nickel Cadmium.
	4038831P4	Alignment tool. Fork tip.
	19B219079G1	Alignment tool. Allen tip.
	19B219442P1	Antenna Strip line.
		MECHANICAL PARTS (SEE RC2713)
1	19A134425P1	Machine screw, hex head, steel: thd. size No. 2-56 -2 or 3A.
2	19C317394P5	Gasket.
3	19B216897G5	Front Cover.
4	19A127319P1	Nut: No. 14-32.
5	4037064P18	Washer, non-metallic.
6	N70BP703C6	Set screw: No. 3-48 x 3/16.
7	19B232784G1	Knob. (SQUELCH, ON-OFF-VOLUME).
8	19B219953G3	Antenna assembly. (Not Used).
9	NP25786BP2	Nameplate. (GE monogram).
10	19D413542G15	Case assembly. (Includes items 11, 12, 15, 23, 30-32, 41-43).
11	19A127753P1	Contact. (Part of J102 and J703).
12	19A134348P1	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, Not Used).
17	19C320383P2	Antenna rod. (Part of item 8, Not Used).
18	19A129652P1	Nut, knurled: thd size 7/16-40. (Part of item 8, Not Used).
19	19C320352P1	Bushing (Part of item 8, Not Used).
20	19C317050P1	Protective Cover.
21	19A129390P1	Disc.
22	19C317383P1	Dummy plug.
23	19A129723P1	Rivet.
24	19B219540P1	Catch.
25	19C320721P1	Seal, moisture.
26	4033306P2	Washer, fiber.

SYMBOL	GE PART NO.	DESCRIPTION
27	19B216926G5	Decorative cap.
28	19A115983P3	Seal, O Ring.
29	N509P606C	Dowel pin: No. 1/16 x 3/8.
30	19C320442P1	Collar.
31	N41P1004	Screw, slotted, steel: No. 0-80 x 1/4.
32	19C320558P1	Diaphragm.
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	N910P6C6	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. (Not Used).
43	19A127760P1	Contact.
44	19B216858P1	Insert.
45	19A127762P1	Strap.
46	19B216891G1	Spring assembly. (Part of J704).
47	19D413467P1	Fastener (Part of J704).
48	19A115794P3	Screw, self locking, flathead, steel: No. 2-56 x 5/16. (Part of J704).
49	19B216847P1	Insulator, pressure sensitive.
50	19C311491P3	Can. (Used with Regulator, Oscillator Compensator, and Compressor 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).
57	19A137254P1	Insert.
58	4033630P1	Washer: teflon.
59	N513P604C	Pin, grooved.
60	19A127802P1	Shield rivet.
61	19A116773P805	Tap screw, Phillips POZIDRIV®: No. 4-24 x 5/16.
62	19A130926P1	Plate nut.
63	19A130583P1	Insulator.

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 - Compressor Kit 19A127837G1
Incorporated in initial shipment.

REV. A - C - System Board and Case Assembly 19D413548G8
Incorporated in initial shipment.

REV. A & B - System Board 19D413552G3
Incorporated in initial shipment.

REV. D - System Board and Case Assembly 19D413548G8
To prevent battery from shorting to ground. Added insulator to battery connector J704.

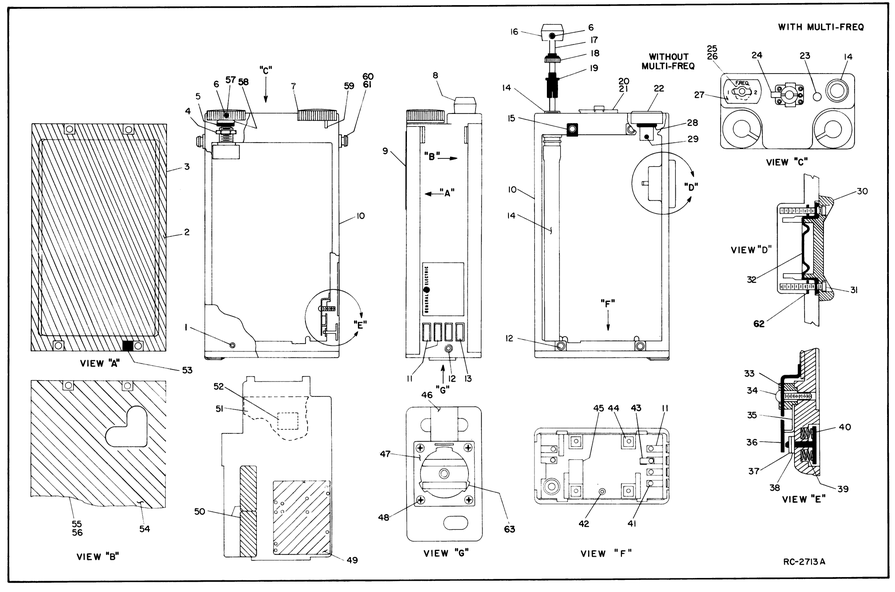
REV. E - To incorporate metal nuts to screws securing PTT switch. Added Nuts

REV. C - System Bovrd 19D413552G3
To improve PTT relay pickup. Changed K1 and R1.

REV. D - To improve frequency response. Changed C3. C5. R2 and R5. Deleted R6.

REV. E - To optimize frequency response. Changed C3 and C5.

REV. F - To incorporate a new 5.4v regulator module Changed A2 and added C17.



*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES