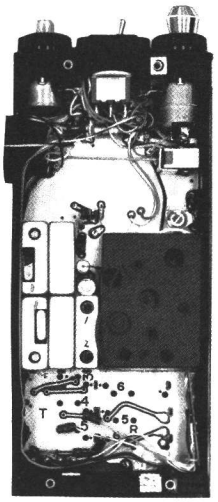
MOBILE RADIO

MASTR®

MVP Personal

SYSTEMS BOARD AND CASE ASSEMBLY 19D423171G2

Maintenance Manual LBI4900E
DATAFILE FOLDER - DF4100



SYSTEMS BOARD AND CASE ASSEMBLY 19D423171G2

SPECIFICATIONS *

MODEL NUMBERS	
19D423171G2	450-470 MHz
CONTROLS	Volume ON-OFF Switch
	Squelch Control
	Six-Frequency Selector Switch
	PTT Switch
	Tone Option Switch
	Collapsible Antenna

*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

NOTICE

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 CIRCUTTS.

DESCRIPTION

System Board A702 contains plug in audio Module A1, 5.4 Voltage Regulator Module A2, Compensator Module A3, Modulator Module A4 and oscillator modules A5 through A10 for the PY transmitter. In addition to the transmitter modules, the system board contains oscillator modules A11 and A12 for the receiver and system interconnections for the transmitter, receiver, tone options and operating controls.

CIRCUIT ANALYSIS

When "ON" - "OFF" switch S701 is in the "ON" position, switched +7.5 VDC for the receiver, is connected connected through PTT switch S1 to P702-3. Receiver RF input from the antenna is also connected through S1 to J3. Pressing S1 applies +7.5 VDC to +5.4 Volt Regulator Module A2, Modulation Module A4, J9 for the PA, and J10 for the exciter. RF is connected from PA RF Output, J4, through S1 to the antenna.

Receiver audio is connected directly from P702-2 to Speaker/Microphone LS1. Transmitter audio is coupled from LS1 through C2 and R1 to Audio Module A1.

Rotary switch S1 selects transmitter and receiver oscillator modules by applying +5.4 VDC to Pin 2 of the selected modules.

Volume control R701 and Squelch control R702 is connected to the receiver through P702 and P703.

REPEATING OSCILLATOR MODULE

Both the transmitter and receiver can be adapted to repeat the use of the same frequency without the use of additional Oscillator Modules. The Oscillator Module is replaced by a diode, allowing the frequency selector switch to have the same frequency on one or more switch positions even though only one Oscillator Module is used for each of the repeated channels. A typical diagram with repeated Oscillator Modules is shown in Figure 1.

Complete instructions for multi-frequency modifications are contained in

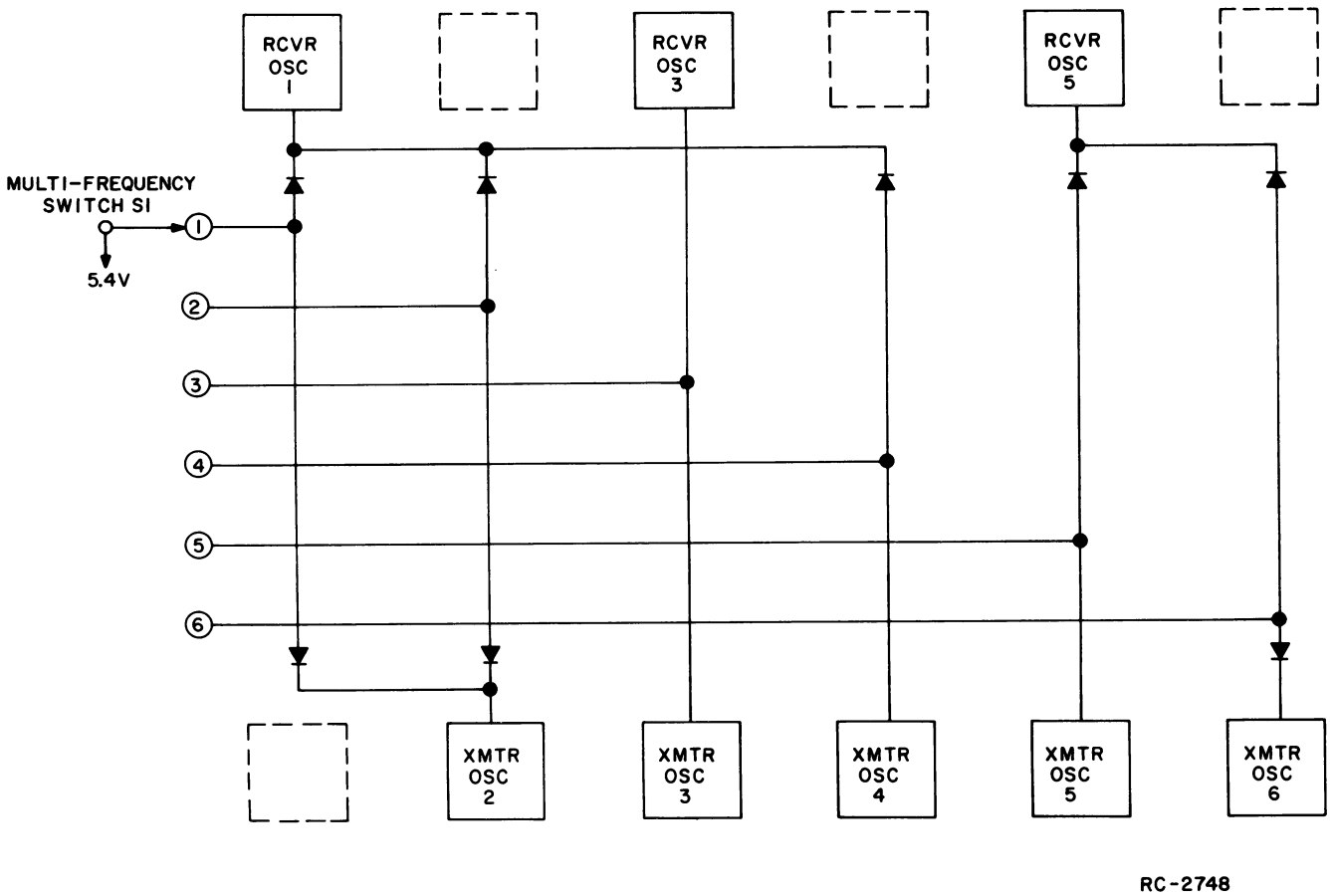


Figure 1 - Repeating Oscillator Modules

the Multi-Frequency Modification diagram (see Table of Contents).

For radios equipped with Channel Guard, Type 90 Encoders/Decoders or Type 99 Decoders, repeating Oscillator Modules also permit switching or disabling tones on the same RF frequency with the multi-frequency switch. Also the tone and RF frequency can be changed at the same time.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
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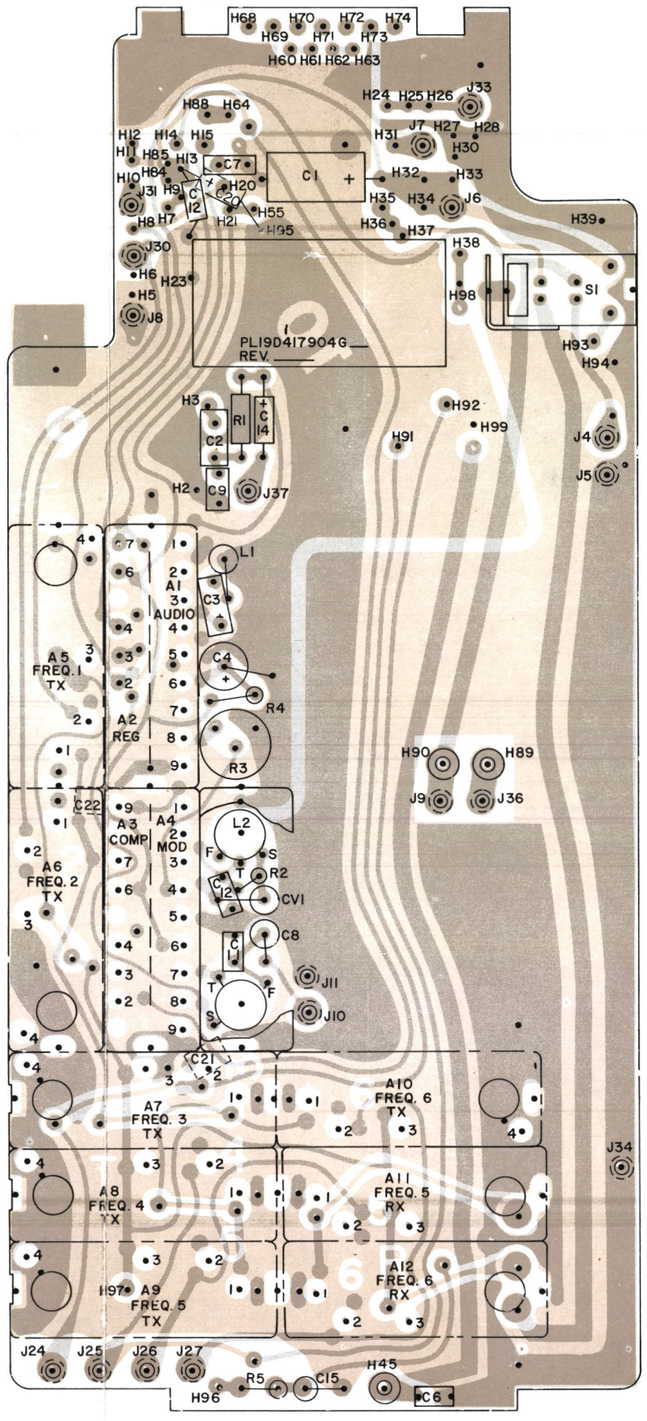
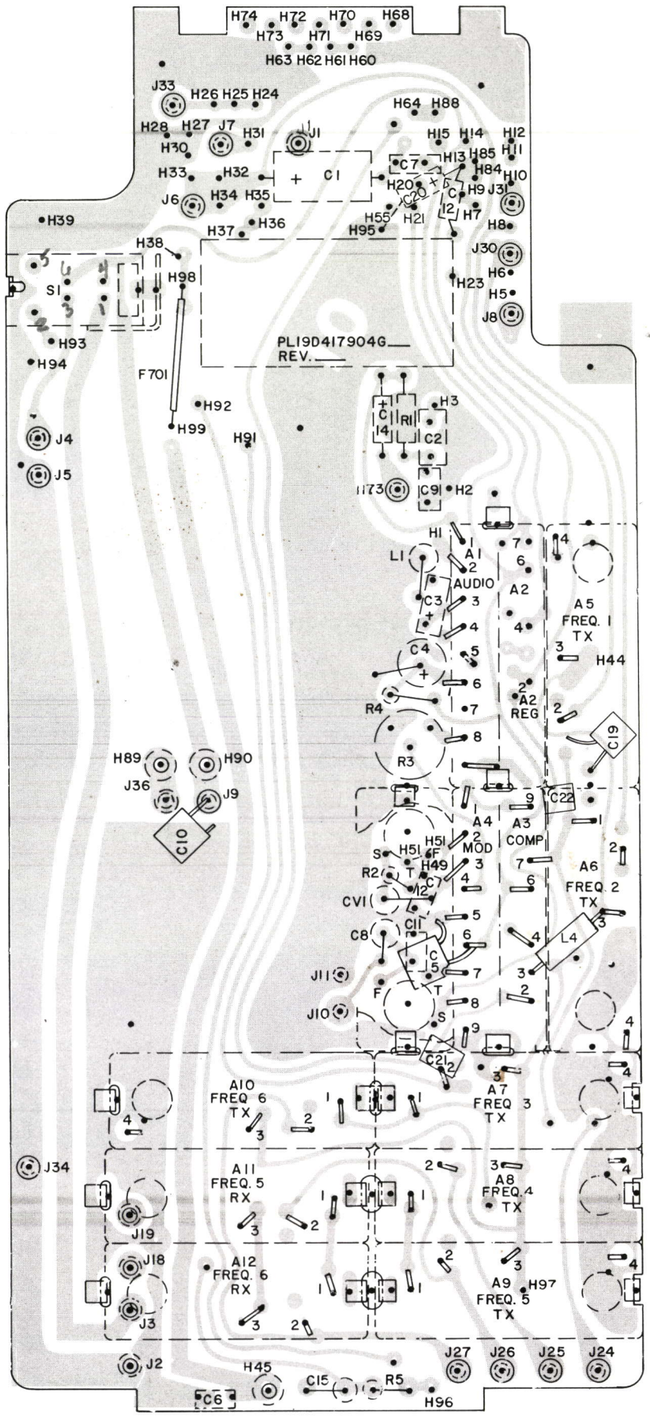
COMPONENT SIDE



(19D417903, Sh. 2, Rev. 10)
(19D417903, Sh. 3, Rev. 9)

SOLDER SIDE



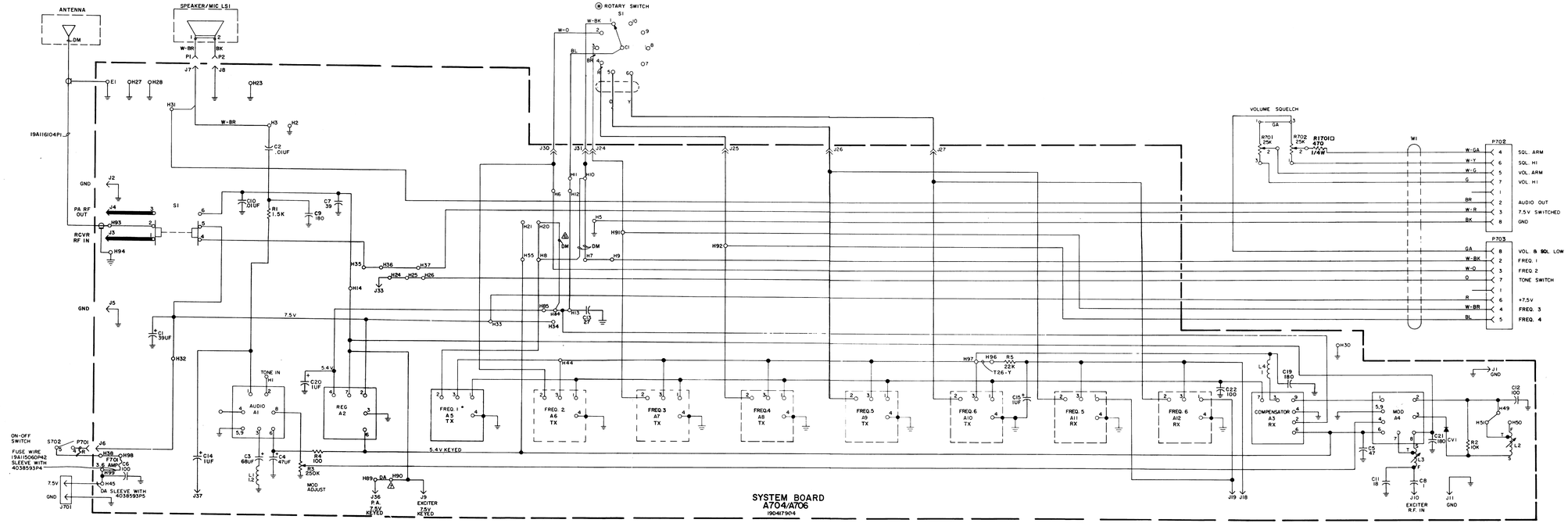
(19D417903, Sh. 2, Rev. 10)

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

(19D423317, Rev. 12)

OUTLINE DIAGRAM

450—470 MHz SYSTEM BOARD



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
PLI9D4253171GZ	C
PLI9D4173041G1	L

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. DA = #22AWG
2. ⊗THESE ITEMS ARE PART OF KIT PL19A130530G1.
3. ALL WIRES ARE T28 UNLESS OTHERWISE SPECIFIED.
4. □ R1701 IS PART OF KIT 19A130620P1.
5. GND MAY BE MADE THROUGH CAN ONLY ON SICOMS.

⚠ JUMPER BETWEEN H20-H84 "NOT PRESENT IN MULTI-FREQ UNITS."

⚠ JUMPER BETWEEN H89-H90 AND J36 NOT PRESENT IN LOW POWER UNITS.

(19B622148, Rev. 20)

SCHEMATIC DIAGRAM

450—470 MHz SYSTEM BOARD

PARTS LIST

LBI4901E

SYSTEM BOARD AND CASE ASSEMBLY
19D412171G2
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
A702		SYSTEM BOARD 19D417904G1
A1	19C320062G1	Audio Transmitter.
A2*	19C328070G1	Regulator.
		In REV C & earlier:
	19C319050G2	Regulator.
A3	19C320061G3	Oscillator Compensator.
A4	19C320084G1	Modulator.
		- - - - - - - - - CAPACITORS - - - - - - - - -
C1	5491674P30	Tantalum: 39 µf ±20%, 10 WDCW; sim to Sprague Type 162D.
C2*	19A116192P1	Ceramic: 0.01 µf ±20%, 50 WDCW; sim to Erie 822; SPECIAL.
		In REV D & earlier:
	19A116244P2	Ceramic: 0.022 µf ±20%, 50 WDCW.
C3	19C307102P19	Tantalum: 68 µf ±20%, 4 WDCW.
C4	5491674P42	Tantalum: 47 µf ±20%, 6 WDCW; sim to Sprague Type 162D.
C5	19A700226P53	Ceramic: 47 pf ±5%, 100 WDCW; temp coef -750 PPM/°C.
C6	19A700226P65	Ceramic: 100 pf ±5%, 100 WDCW; temp coef -750 PPM/°C.
C7	19A700226P49	Ceramic: 39 pf ±10%, 100 WDCW; temp coef -80 PPM/°C.
C8	19A700G13P13	Phenolic: 1.0 pf ±5%, 500 WDCW.
C9	19A700229P73	Ceramic: 180 pf ±10%, 100 WDCW; temp coef -3300 PPM/°C.
C10	19A116192P1	Ceramic: 0.01 pf ±20%, 50 WDCW; sim to Erie 822; SPECIAL.
C11	19A700221P8	Ceramic: 1.8 pf ±5%, 100 WDCW; temp coef -80 PPM/°C.
C12	19A700227P65	Ceramic: 100 pf ±5%, 100 WDCW; temp coef -1500 PPM/°C.
C13	19A700221P44	Ceramic: 27 pf ±5%, 100 WDCW; temp coef -80 PPM/°C.
C14	5491674P1	Tantalum: 1.0 µf +40-20%, 10 WDCW; sim to Sprague Type 162D.
C15*	5491674P1	Tantalum: 1.0 µf +40-20%, 10 WDCW; sim to Sprague Type 162D.
		In REV F & G:
	5491674P2	Tantalum: 10 µf ±20%, 10 WDCW; sim to Sprague Type 162D.
		In REV A-E:
	5491674P1	Tantalum: 1.0 µf +40-20%, 10 WDCW; sim to Sprague Type 162D. Added by REV A.
C16* thru C18*	19A116114P10073	Ceramic: 180 pf ±10%, 100 WDCW; temp coef -3300 PPM. Added by REV B. Deleted by REV D.
C19*	19A700229P73	Ceramic: 180 pf ±10%, 100 WDCW; temp coef -3300 PPM/°C. Added by REV B.
C20*	5491674P1	Tantalum: 1.0 µf +40-20%, 10 WDCW; sim to Sprague Type 162D. Added by REV D.

SYMBOL	GE PART NO.	DESCRIPTION
C21*	19A700229P73	Ceramic: 180 pf ±10%, 100 WDCW; temp coef -3300 PPM/°C. Added by REV K.
C22*	19A700229P65	Ceramic: 100 pf ±5%, 100 WDCW; temp coef -3300 PPM/°C. Added by REV R.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CV1	5495769P9	Silicon, variable capacitance, 33 pf nominal.
		- - - - - - - - - - FUSES - - - - - - - - - -
F701*	19A127884P1	Fuse Kit. Added by REV J.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1 thru J5	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
J6 thru J8	19A116366P2	Contact, electrical: sim to Cambion 460-3233-01-03.
J9 thru J11	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
J18 and J19	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
J24 thru J27	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
J30 and J31	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
J33 and J34	19A116366P2	Contact, electrical: sim to Cambion 460-2233-01-03.
J37	19A116366P2	Contact, electrical: sim to Cambion 460-3233-01-03.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	19B209420P114	Coil, RF: 1.20 µh ±10%, 0.18 ohm DC res max; sim to Jeffers 4436-1K.
L2	19A127798G2	Coil. Includes:
	19B209435P1	Tuning slug.
L3	19B219527G1	Coil. Includes:
	19B209434P1	Tuning slug.
L4*	19B209420P101	Coil, RF: 0.10 µh ±10%, 0.08 ohm DC res max; sim to Jeffers 4416-1K. Added by REV C.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1*	3R151P152J	Composition: 1.5K ohms ±5%, 1/8 w.
		In REV D & earlier:
	3R151P222J	Composition: 2.2K ohms ±5%, 1/8 w.
R2	3R151P103J	Composition: 10K ohms ±5%, 1/8 w.
R3	19A116412P4	Variable, cermet: 250K ohms ±10%, 0.16 w; sim to Bellpot Model 62 PT.
R4	3R151P101K	Composition: 100 ohms ±10%, 1/8 w.
R5*	3R151P223J	Composition: 22K ohms ±5%, 1/8 w.
		In REV A-G:
	3R151P103J	Composition: 10K ohms ±5%, 1/8 w. Added by REV A.
S1*	19A116250P2	- - - - - - - - - - SWITCHES - - - - - - - - - - Slide: 4-10 ma at 14 VDC; sim to Chicago Switch Series 23-GDU.
		In REV K & earlier:
	19A116250P1	Slide: 4-10 ma at 14 VDC; sim to Chicago Switch Series 23-GDU.
J701		- - - - - - - JACKS AND RECEPTACLES - - - - - - - Connector. Includes:
	19B216891G1	Spring.
	19D413467P1	Fastener.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - PLUGS - - - - - - - - - -
P701	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.
P702 and P703	19A115137P3	Socket, crystal: 8 contacts; sim to Cinch 133-98-92-001 Special. (Part of W1).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R701	19A116227P1	Variable, carbon film: 25K ohms ±20%, 1/8 w. Switch (S702): DPST, 3 amp at 125 VAC; sim to Mallory Type MZC.
R702	19A116227P2	Variable, carbon film: 25K ohms ±10%, 1/8 w; sim to Mallory Type MZC.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S701		See Mechanical Parts items 44-49.
S702		(Part of R701).
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	19C338266G2	Cable. (Includes P702 & P703).
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19B216897G3	Rear Cover. (STANDARD).
	19B216897G4	Rear Cover. (BELT CLIP).
	19B219953G4	Antenna Assembly. (See items 40-43, 68).
	19D413522G4	Battery, rechargeable.
	4038831P4	Alignment Tool, fork tip.
	19B219879G1	Alignment Tool, allen tip.
	7;5072294	Allen wrench. (Used with No. 10 set screw (r No. 5-6 socket head cap screw).

ASSOCIATED ASSEMBLIES

- - - - - - - - - - OSCILLATORS - - - - - - - - - -

NOTE: When reordering, give GE part number and specify exact frequency needed.

Fx = Freq. Operating
MHz

A5 thru A10	4EG27A11	Oscillator Module. (TRANSMITTER).

Fx = Freq. Operating -23
MHz

A11 and A12	4EG28A28	Oscillator Module. (RECEIVER).

FRONT COVER ASSEMBLY
19C317416G8 LOW POWER
19C317416G10 HIGH POWER

- - - - - - - - - - LOUDSPEAKERS - - - - - - - - - -

LS1*	19A134949P1	Permanent magnet: 2.00 inch, 8 ohms ±3% voice coil imp, 300 Hz ±50 Hz resonant; sim to Oaktron Sample No. T6703.
		Earlier than REV A:
	19A116090P1	Permanent magnet: 2.00 inch, 8 ohms ±10% voice coil imp, 450 Hz ±112 Hz resonant; freq range 400 to 3000 Hz.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1 and P2	19A115834P4	Contact, electrical: sim to AMP 2-332070-9.

SYMBOL	GE PART NO.	DESCRIPTION
		MULTI FREQUENCY KIT 19A115030G1
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1	19B219515G1	Rotary: 1 section, 1 pole, (adj 2-10 position), non-shorting; sim to Grayhill 50MT23h1-1-N8.
		HI SPLIT KIT 19A127838G3
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C16	19A700222P38	Ceramic: 18 pf ±5%, 100 WDCW; temp coef -80 PPM/°C.
		HIGH POWER MOD KIT 19A130967G2
		- - - - - - - - - - JACKS AND RECEPTACLES - - - - -
J36	19A116366P4	Contact, electrical: sim to Cannon 10-891-1.
	19A130965P1	Jumper.
		MECHANICAL PARTS (SEE MC2814)
1	19A127319P1	Hex nut: No. 1/4-32.
2	4uu;064P18	Washer, non metallic.
3	4035610P1	Washer: teflon.
4	19B232786G2	Knob Assembly. (Includes items 5 & 7).
5	NT0BP703C6	Set screw: No. 3-48 x 3/16. (Part of item 4).
6	19A137254P1	Insert, tapered. (Part of item 4).
7	NS13P604C	Pin. (Stop for item 4 knob- Not Used).
8	19B227727G1	Grille. (LOW POWER).
	19B227727G2	Grille. (HIGH POWER).
9	NP28015OP1	Nameplate. (GE monogram).
10	NP28015OP2	Nameplate. (GE monogram- Hi Power).
11	4026859P7	Insulated sleeving. (Specify length).
12	19A127795P2	Rod.
13	19D423170G1	Case assembly. (Includes items 7, 18, 22, 27, 28, 37, 54, 59).
14	19B216858P1	Insert.
15	NS81P5002C6	Screw, phillips head: No. 2-56 x 1/8.
16	NJ1GP0004C17	Cap screw: No. 4-40 x 1/4. (Heat sink screw used in Hi Power only- Screw location varies from Hi Band to 450 Band).
17	NP270G87	Nameplate. (Property of General Electric).
18	19A134548P1	Insert, threaded.
19	19A130472P1	Cover.
20		(Not Used).
21	19A127779G8	Antenna tube. (Includes teflon insert 19A129451P1).
22	19B216875P1	Support.
23	19A130516P1	Plate. (Not Used).
24	19C321435P1	Insert.
25	N146P503C	Tap screw: No. 2-32 x 3/16. (Not Used).
26	19C317135P1	Dummy plug.
27	19A115983P3	Seal, "O" ring: sim to Parker Seal 2-10.
28	NS69P603C	Dowel pin: 1/16 x 3/8.
29	19B219510P1	Insulator.

SYMBOL	GE PART NO.	DESCRIPTION
30	19A130397P1	Strap.
31	19C317394P6	Gasket.
32	19B216897G3	Rear Cover Assembly. (Without clip).
33	19B216897G4	Rear Cover Assembly. (With clip).
34	19C317394P4	Gasket.
35	19A143483P1	Diaphragm.
36	19A116272P1	Tape, pressure sensitive. (Specify length).
37	NS30P6092F22	Eyelet, metalic.
38	19B216664P1	Support.
39	19C311491P3	Can. (Al-s4).
40	19A132949P1	Antenna cap.
41	19A129652P1	Nut, knurled: thd. size 7/16 x 40.
42	19C320352P1	Bushing.
43	19B219650P1	Antenna rod.
44	19A129734P1	Spring.
45	19A130934P1	Plate.
46	N40I3P1C6	Flatwasher: No. 0. (Not Used).
47	19A137791P1	Button.
48	NS5P1O06	Machine screw, slotted: No. 0-80 x 3/8.
49	19C320559P2	Collar.
50	19A127762P1	Strap.
51	19A115784P3	Flat head screw: steel, No. 2-56 x 5/16. (Part of J701).
52	19D413467P1	Fastener. (Part of J701).
53	19B216891G1	Spring assembly. (Part of J701).
54	19A129723P1	Rivet.
55	19A130426G2	Knob.
56	19A127319P2	Hexnut: No. 1/4-28.
57	19B216520P4	Washer, nylon: 1/4 inch.
58	19A134425P1	Machine screw, hex head: No. 2-56 x 3/16.
59	19C317383P1	Dummy plug.
60	19A137254P1	Insert. (Not Used).
61	19A127805P1	Shield.
62	19A116773P805	Tap screw, Phillips RAIDRIVE: No. 4-24 x 5/16.
63	19A130993P1	Gasket. (Not Used).
64	19A130926P1	Plate nut.
65	19A130586P1	Insulator.
66	19B223210P1	Button plug.
67	19A129651P1	Teflon ins rt
68	NT0P703C6	Set screw: No. 3-48 x 3/16.

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 - Case Assembly 19D423171G2
To incorporate metal nuts to securing PTT Switch to case.
Added nuts.

REV. B - To improve filtering.
Added R5 and C15

REV. A - System Board 19D417904G1
To improve filtering.
Added R5 and C15

REV. B - To improve RF filtering.
Added C16, C17, C18 and C19.

REV. C - To improve RF filtering.
Added L4.

REV. D - To incorporate a new 5.4 volt regulator module.
Changed A2 and added C20.

REV. C - Case Assembly 19D423171G2
To increase travel of PTT button and actuator.
Changed PTT button and actuator rod.
Added two flat washers.
Deleted gasket and disc.

REV. E - System Board 19D417904G1
To improve quality of transmitted audio.
Changed C2 and R1.

REV. F - To improve Channel Guard operation.
Changed C13.

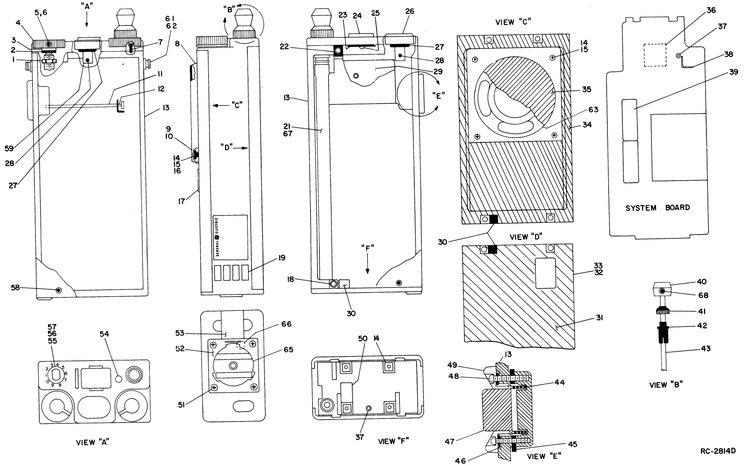
REV. G - To make compatible with option 4192.
Added C18.

REV. H - To improve transmit SICOM frequency stability.
Changed C15 and R5.

REV. J - To incorporate a more reliable fuse.
Changed F701.

REV. K - To improve modulation.
Added C21 and C22.

REV. L - To improve reception.
Changed PTT switch S1.



RC-2814D

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

MULTI-FREQUENCY MODIFICATIONS

(19D423192, Sh. 1, Rev. 7 & Sh. 2, Rev. 1)

The multi-frequency modifications include instructions for adjusting the stop post on multi-frequency switch S1, adding oscillator modules, repeating frequencies and repeating oscillator modules.

1- STOP POST ADJUSTMENT

CAUTION

Due to the small size of the stop posts, be very careful when making adjustments to avoid losing the stops.

1. Remove the multi-frequency switch as directed in the Disassembly Procedure (See LBI-4995).
2. Turn the shaft fully counterclockwise as viewed from the knob end.
3. Unscrew the panel seal to gain access to the stop post (see Figure 1).
4. Install the stop post in the appropriate hole as shown in the following chart.

STOP POST ADJUSTMENTS	
No. of Freq.	Move Adjustment Stop To:
2	H2
3	H3
4	H4
5	H5
6	H6

5. Replace the panel seal with the side marked "Bottom" against surface "Z".
6. Re-install the Multifrequency Switch.

2- ADDING OSCILLATOR MODULES

1. After completing the stop post adjustment, connect the leads from multi-frequency switch S1 as shown in the following chart (see Figure 3 for connection points). Tape back all unused leads.
2. Place the oscillator module(s) in the proper holes (see Figure 3). Then bend over tabs on the can and solder to the adjacent pads (see Figure 2).

CONNECTION CHART			
FROM	TO	WIRE COLOR	S1 POSITION
S1-C1	H11 (solder)	BL	
S1-1	J31	W-BK	1
S1-2	J30	W-O	2
S1-3	J24	B	3
S1-4	J25	R	4
S1-5	J26	O	5
S1-6	J27	Y	6
S1-7	Let Hang	G	7
S1-8	Let Hang	BL	8

3. Bend the leads of the oscillator module as shown in Figure 2 (or appropriate Outline Diagram) and solder to the adjacent pads.
4. For two or more transmitter frequencies and one receiver frequency, remove the jumper from H7 to H10 and add a sleeved jumper (#26 AWG) from H7 to H13 on the Systems Board.
5. For two or more receiver frequencies and one transmitter frequency, remove the jumper from H8 to H10 and add a sleeved jumper (#26 AWG) from H20 and H21 on the Systems Board.

3- REPEATING FREQUENCIES

For repeating both transmitter and receiver frequencies without adding additional oscillator modules, add a sleeved jumper (#26 AWG) between the frequencies to be repeated. For example, if transmitter and receiver channels 1 and 5 are to be repeated, add the jumper from S1-1 to S1-5.

4- REPEATING OSCILLATOR MODULES

To repeat frequencies for the transmitter only or the receiver only, diodes can be used in place of oscillator modules.

1. Set the stop on S1 and install the oscillator modules whose frequencies are not to be repeated as directed in Section I and II.
2. Install the oscillator(s) whose frequencies are to be repeated as directed above except solder the Number 2 pin to the "E" pad instead of the "P" pad (see Figure 2).
3. For every channel that a frequency is being repeated, assemble a diode 19A115100P1 in the space normally intended for the oscillator module by putting the annode lead in the Number 2 hole, bending it over and soldering to the "P" pad. The cathode lead will be terminated later.
4. For each different frequency that is repeated, an additional diode (19A115100P1) is to be assembled in respective channel closest to the oscillator module being repeated. Assemble the diode in the Number 1 hole, annode lead down and sleeved, and connect to the associated "E" pad. Then run the jumper from this pad to the "P" pad of related oscillator module.

The cathode end of the diodes should be connected together using mid air connections. Make the connection and run the wire down the side of the diode along the component side of the board to the next diode, and so on until all the diode's cathodes are connected together. Route these wires to give the shortest connections. Now connect a lead to the cathode of the diode that is closest to the repeated oscillator module and run this lead down the side of the diode and through any empty hole or slot to the solder side of the board, and connect the lead to the "E" pad of the oscillator module. Next, sleeve the diodes as shown in Figure 4.

Example: Channel 3 and 4 to be same as Channel 1.
Channel 5 and 6 to be same as Channel 2.

1. Assemble the oscillator module in Channels 1 and 2 as normal except connect the Number 2 lead to the "E" pad instead of "P" pad.
2. Assemble (1) diode in the Number 2 hole, anode lead down, in each of Channels 3, 4, 5, & 6 and solder to "P" pads.
3. Since two frequencies are being repeated, two additional diodes will be required, one in the Number 1 hole of Channel 3 and the other in the Number 1 hole of Channel 5. Sleeve, bend, and solder leads to the "E" pad. Connect jumper between the "E" pad of the Number 3 Channel and "P" pad of oscillator module Number 1. Connect a jumper between the "E" pad of Number 5 Channel and "P" pad of oscillator module Number 2.
4. Connect the top lead (cathode) of diodes (3) in Channel 3 and 4 to each other by soldering jumper wire to leads, dressing the wire down the side of the diodes and along the board. Connect a jumper from the top of diode in the Number 1 hole of Channel 3 to the "E" pad of oscillator module Number 1. Run the wire down through the board using any available hole or slot to the solder side.
5. Connect top lead (cathode) of diodes (3) in Channel 5 & 6 to each by soldering jumper wire to lead, dressing wire down the side of the diodes and along the board. Connect jumper from top of diode in number 1 hole of Channel 5 to "E" pad number 2. Run wire down through board using any avilable hole or slot, to solder side.

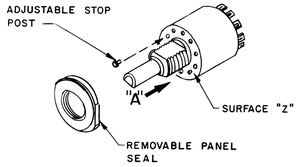
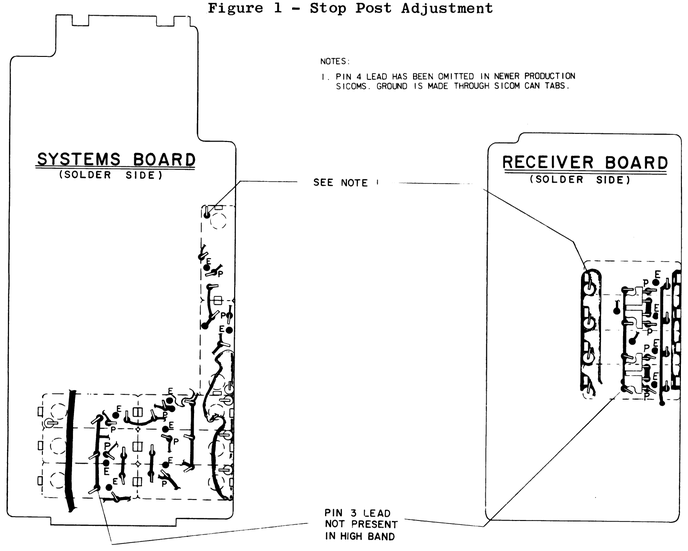
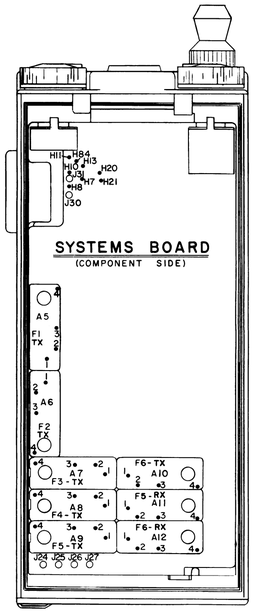


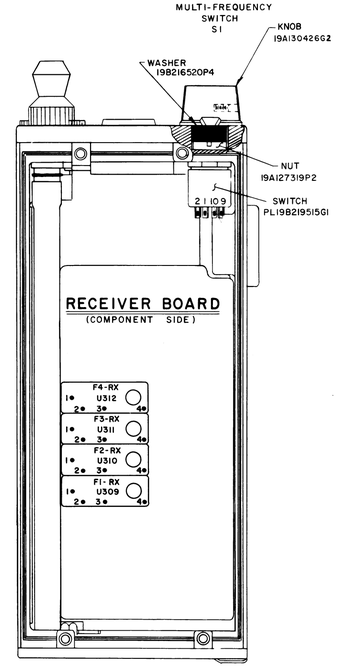
Figure 1 - Stop Post Adjustment



(19D423192, Sh. 2, Rev. 1)

Figure 2 - Oscillator Module and Diode Installation





(19D423192, Sh. 1, Rev. 6)

Figure 3 - Oscillator Mounting Positions & S1 Connection Points

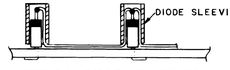


Figure 4 - Typical Diode Mounting