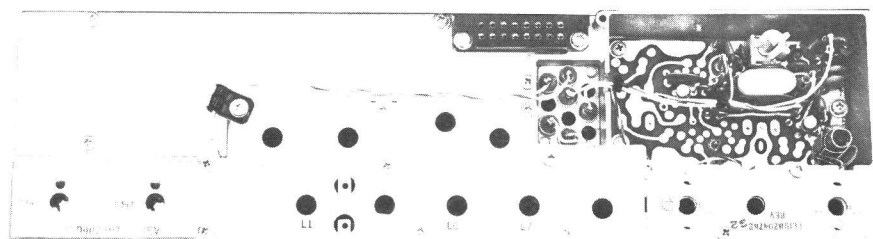




MASTR

Progress Line

25-50 MHz DUAL FRONT END MODELS 19D402497-G7 THRU G9
(WITH SEARCH-LOCK MONITOR)



Maintenance Manual

LBI-3991
DF-8401

SPECIFICATIONS *

FREQUENCY RANGE

19D402497-G7
19D402497-G8
19D402497-G9

25—33 MHz
33—42 MHz
42—50 MHz

SENSITIVITY

12-dB SINAD
20-dB quieting

0.25 microvolt
0.35 microvolt

INTERMODULATION (EIA)

-60 dB

INPUT POWER

.010 Amps at 10 volts

FREQUENCY STABILITY

$\pm 0.0005\%$ (-30°C to $+60^{\circ}\text{C}$)

TRANSISTORS

4

DIMENSIONS (HxWxD)

2-1/4" x 11-3/4" x 4-3/8"

SEARCH-LOCK MONITOR 19A121599-G1

SEARCH RATE (Receiver squelched)

Samples each channel approximately
ten times per second.

INPUT POWER

.005 Amps at 10 volts

TRANSISTORS

3

TEMPERATURE RANGE

-30°C to $+60^{\circ}\text{C}$ (-22°F to $+140^{\circ}\text{F}$)

DIMENSIONS (HxWxD)

2" x 2-3/4" x 3/4"

DUAL FRONT END 25-50 MHz

*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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DESCRIPTION

DUAL FRONT END

General Electric Dual Front End Models 19D402497-G7 thru -G9 are designed for operation in the 25—50 megahertz range. The Dual Front End (DFE) is used in cross-band applications with 132-174 megahertz MASTR Progress Line receivers.

The DFE is of single-unit construction, completely housed in an aluminum casting for maximum shielding and rigidity. The unit consists of an RF amplifier, mixer, oscillator and two multiplier stages. The output feeds directly into the receiver crystal filter as shown in Figure 1. The chassis is mounted in a housing on the rear of the mobile frame and adding approximately three inches to the overall length of the mobile unit.

SEARCH-LOCK MONITOR (SLM)

Mobile combinations with Dual Front End are also equipped with Search-Lock Monitor to provide two-frequency monitoring. A three-position Search-Lock Monitor Switch (S705) is mounted on the Mobile Control Unit. The switch has F1, F1-F2 and F2 positions. When the switch is in the F1-F2 position, no voltage is fed from S705 to either receiver crystal-switching diode or Dual Front End switching diodes and the Search-Lock Monitor operates. The Search-Lock Monitor then provides two-channel monitoring by alternately switching +10 volts between the receiver crystal-switching diode and Dual Front End switching diodes at a rate of approximately ten times per second. When a signal is received on either channel, the SLM "locks" on that frequency for the duration of the signal (see Figure 2).

Turning the switch to the F1 or F2 position applies +10 volts to the selected crystal-switching diode and overrides the SLM. Switching to the F1 or F2 position also connects the crystal-switching diode of the transmitter oscillator to ground, so that the receiver or Dual Front End will operate on the frequency determined by the selected transmitter and receiver/Dual Front End oscillator. With the switch in the F1-F2 position, the transmitter will operate on the F1 frequency only.

In combinations equipped with Channel Guard, the receiver Channel Guard operates only in the F1 position. The transmitter Channel Guard operates in the F1 and F1-F2 position.

The Search-Lock Monitor board is mounted on the rear of the mobile system frame between the Dual Front End and the receiver.

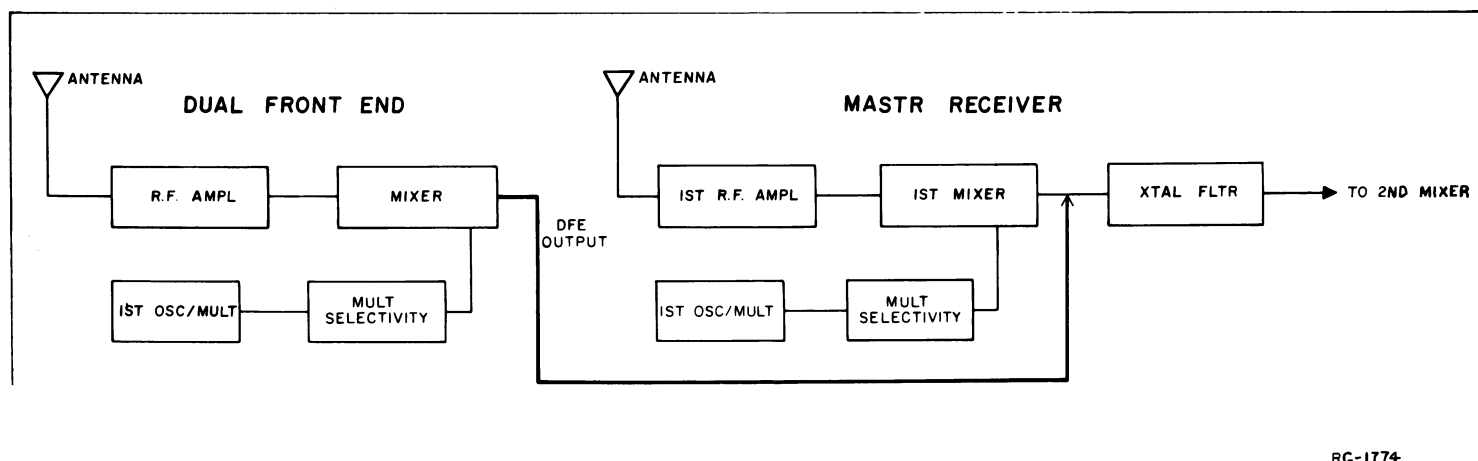
DUAL ANTENNA SYSTEM (Figure 3)

Two antennas are required for cross-band operation. One antenna connects through antenna jack J902 on the front of the mobile unit to jack J1 on the DFE. The second antenna connects through J901 to the common terminal of antenna relay K901. The normally closed relay contact is connected to receiver antenna jack J441, and the normally open contact is connected to the transmitter.

CIRCUIT ANALYSIS

DUAL FRONT END

The MASTR Progress Line Dual Front End is completely transistorized using four



RC-1774

Figure 1 - Dual Front End Block Diagram

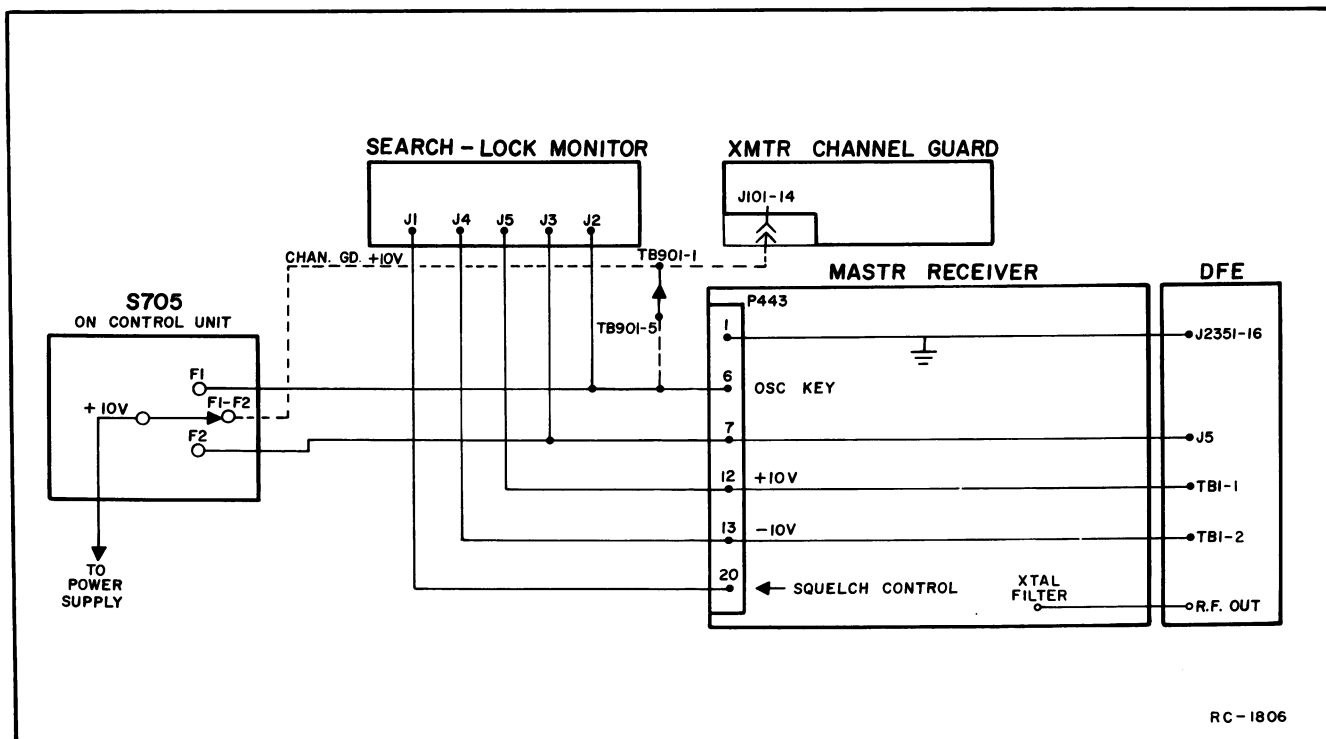


Figure 2 - Search-Lock Monitor Switching Diagram

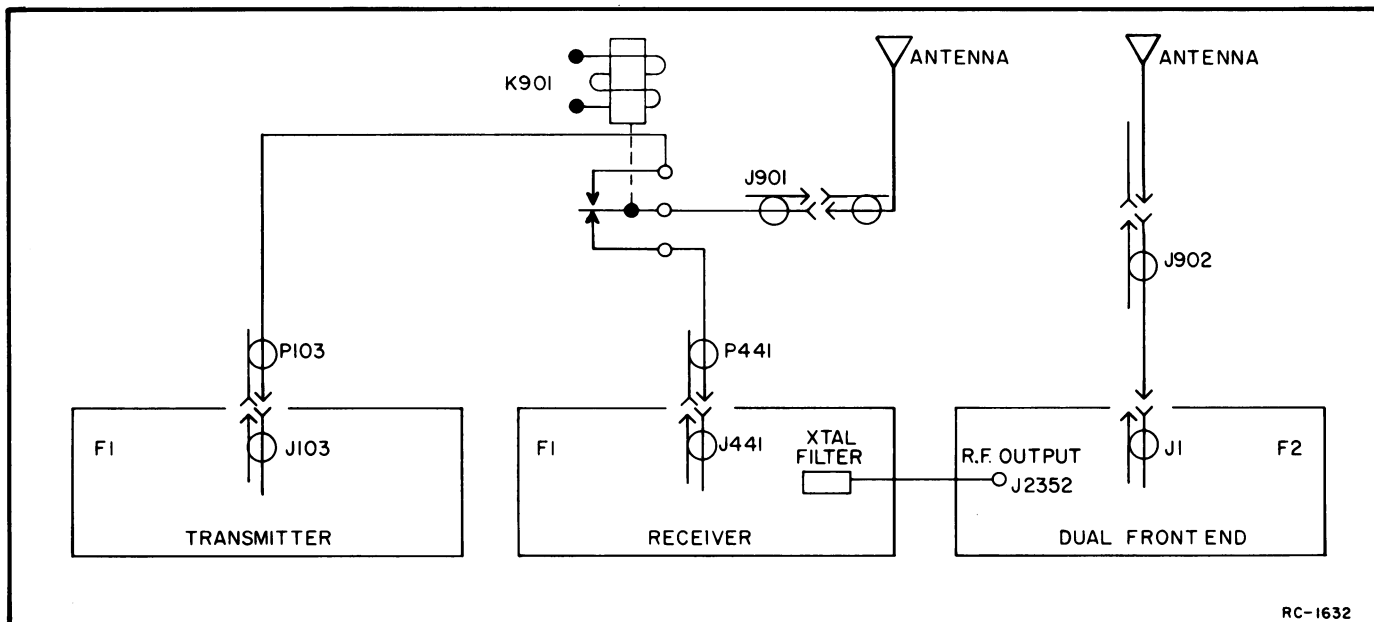


Figure 3 - Dual Antenna Block Diagram

silicon transistors. A regulated 10 volts is used for all stages of the Dual Front End.

Centralized metering jack J2351 is provided for use with the General Electric Test Set EX-3-A for ease of alignment and servicing. The Test Set meters the oscillator, multipliers, and the regulated 10 volts.

RF Amplifier (A2351)

RF Amplifier (A2351) consists of two high-Q helical resonators and an RF amplifier stage (Q1). The RF signal from the antenna is coupled by RF cable W2351 to a tap on L2351/L2353/L2355. The tap is positioned to insure the proper impedance match to the antenna. RF energy is coupled through the two coils by an opening in the shield wall to the base of RF Amplifier Q1. The coils are tuned to the incoming frequency by air trimmer capacitors C341 and C342. The output of Q1 is coupled through three tuned circuits to the base of the 1st mixer.

1st Oscillator and Multiplier (A2353-A2354)

The receiver 1st oscillator operates in a Transistorized Colpitts oscillator circuit. The oscillator crystal operates in a fundamental mode at a frequency of approximately 10 to 15 megahertz. The crystal is cut to provide temperature compensation at the high end of the temperature range and is thermistor compensated at low temperatures. This provides $\pm 0.0005\%$ frequency stability as soon as the receiver is energized--without having to wait for crystal ovens to warm up.

Regulated 10 volts is supplied to the crystal circuit to forward bias diode CR1. Forward biasing the diode reduces its impedance, so that the crystal frequency is applied to the base of oscillator transistor Q1. Feedback for the oscillator is developed across C21/C22. The oscillator output is fed through C24 to the base of the 1st multiplier (Q2).

The output of the 1st multiplier (doubler Q2) is transformer-coupled (T3/T4) to multiplier selectivity assembly A2355/A2356. The 1st multiplier tank is tuned to three times the crystal frequency. The 1st multiplier stage is metered at the centralized metering jack J2351-4.

Multiplier Selectivity (A2355/2356)

Following the 1st multiplier tank (T3/T4) are three additional tuned circuits (L1, L2 and L3). Capacitor C12/C16 couples the multiplier selectivity output to the base of the 1st mixer.

1st Mixer (A2357)

The RF signal from the RF amplifier and the low-side injection voltage (42-50 MHz) and the high-side injection voltage (25-42 MHz) from the multiplier selectivity are applied to the base of 1st Mixer A2357-Q2. The output is connected from J2352 to the crystal filter in the receiver.

Centralized metering jack J2351 is provided for maintenance and alignment of the 1st multiplier. The four leads from the receiver plug P443 supplies the regulated 10 volts for the Dual Front End circuit, crystal switching, system negative, and ground connections.

SEARCH-LOCK MONITOR

The SLM circuit consists of a pulse generator (Q1) and a bistable multivibrator circuit (Q2 and Q3). The pulse generator operates at a nominal frequency of twenty pulses per second.

When the receiver is squelched, 9 volts from the collector of the receiver DC amp (Q8) is fed through J1 and R2 on the SLM board to the base of pulse generator Q1. This voltage causes Q1 to operate, sending a series of pulses to the base of switching transistors Q2 and Q3. These pulses activate the switching circuit which alternately applies +10 volts to each receiver oscillator-switching diode at a rate of approximately ten times per second.

When a signal is received, the receiver squelch opens; and the voltage at the base of Q1 drops almost to zero. This disables the pulse generator and switching circuit, and the +10 volt input from J5 is applied through R11 and Q2 or Q3 to the receiver oscillator. For example, if the first call is received on F1, the +10 volts is applied to the F1 receiver oscillator through R11 and Q2, locking the receiver on F1. Subsequent signals at F2 will not be heard while the F1 signal is being received.

When the signal at F1 stops, the receiver squelches and 9 volts is fed to the base of pulse generator Q1. Then Q2 and Q3 begin to switch back and forth until another signal is received.

Back bias is prevented from reaching the collectors of Q2 and Q3 by CR1 and CR2. CR4 biases Q3 off while Q2 is conducting, thereby preventing Q3 from conducting while Q2 is operating. The pulse generator circuit consists of R1, R2, R3, R13, R14, R15, RT1, C1 and Q1.

MAINTENANCE

DISASSEMBLY

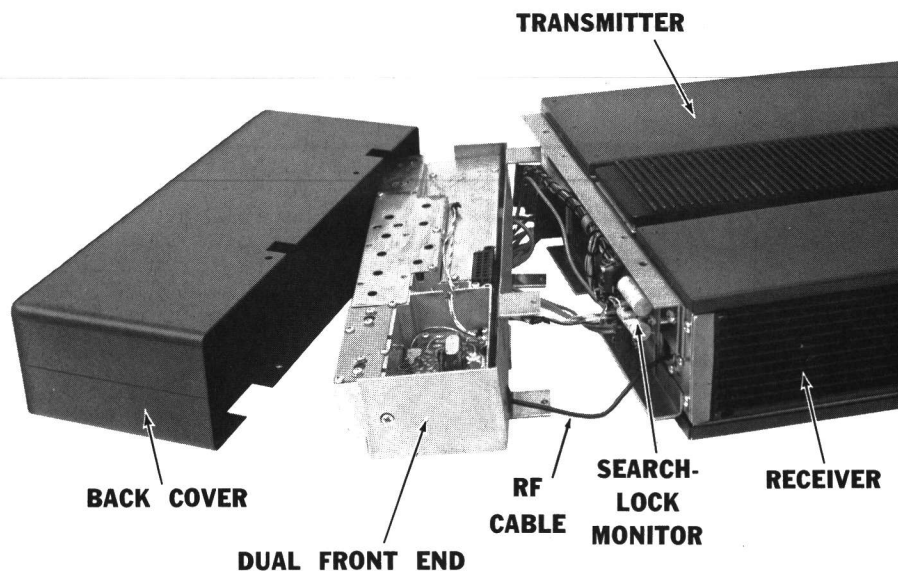


Figure 4 - Dual Front End Disassembly

Removing Dual Front End and/or Search-Lock Monitor:

Dual-Front End

1. Pull locking handle down and pull radio out of mounting frame.
2. Remove the four screws holding back cover to system frame. Slide cover back and lift off (see Figure 4).
3. Remove four screws from angle brackets holding Dual Front End to the system frame.
4. Carefully swing Dual Front End chassis out for servicing.

Search-Lock Monitor

1. Follow Steps 1 through 4 above.
2. Remove three screws holding circuit board to system frame (at rear of receiver).

TEST PROCEDURES

Dual Front End

SYMPTOM	CHECK
No Signal	<ol style="list-style-type: none"> 1. Connections to P443. 2. Cable from J2352 to receiver mixer board. 3. Antenna terminal connections. 4. Search-Lock Monitor switching circuit. 5. Check 10-volt supply with GE Test Set on Position J, or pin 13 on DFE centralized metering jack J2351.
Low Sensitivity	<ol style="list-style-type: none"> 1. DFE alignment. 2. Cable and relay connections. 3. RF Amplifier Q1 voltages. 4. 1st Oscillator Q1 voltages.
Low Oscillator Reading	<ol style="list-style-type: none"> 1. Oscillator alignment. 2. Voltage readings at 1st Oscillator Q1. 3. Crystal Y1.

Search-Lock Monitor

1. Turn the SLM switch to the F1-F2 (Search-Lock) positions and make sure that the receiver is squelched.
2. Connect positive probe of oscilloscope to junction of R1 and CR1 (for F1) or R22 and CR2 (for F2) on the oscillator board. Connect negative probe to J442-8 (negative). If SLM is operating, the signal should vary from zero to a positive voltage approximately ten times per second.
3. Next, unsquelch the receiver. The Search-Lock circuit will lock on one of the channels. Oscilloscope reading should be less than one volt on OFF channel (not conducting) and 6.6 volts on ON channel (conducting).
4. Switch to the F1 position. Reading at junction of R1 and CR1 should be approximately 6.6 volts. Then switch to the F2 position. Reading at junction of R2 and CR2 should be approximately 6.6 volts.

DUAL FRONT END ALIGNMENT

EQUIPMENT REQUIRED

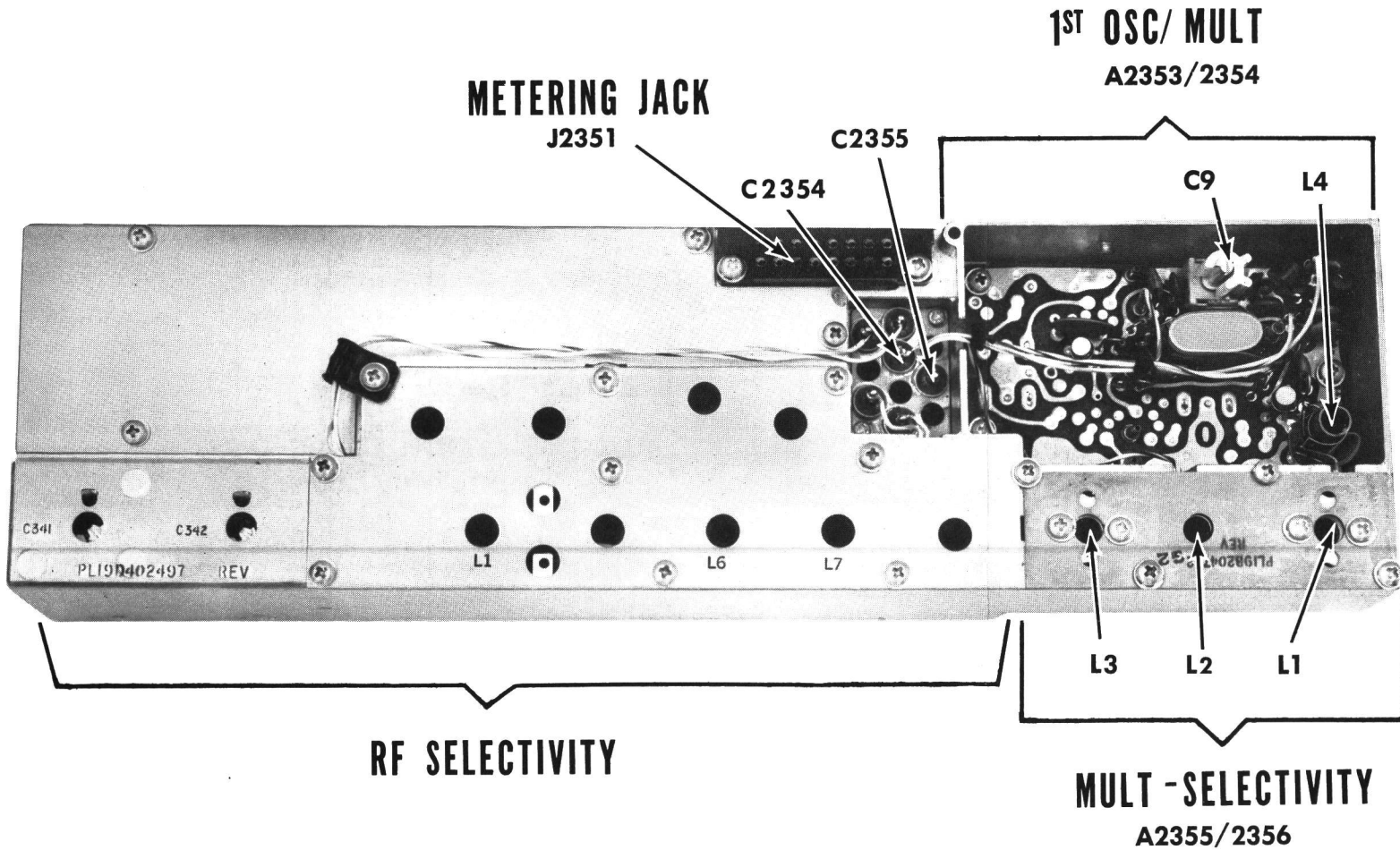
- 1. GE Test Set Model 4EX3A10 or a 20,000 ohm-per-volt multimeter.
- 2. 455 kHz and 25-50 MHz range Signal Generator. Connect a one-inch piece of insulated wire no larger than .065-inch diameter to generator output probe.

PRELIMINARY CHECKS AND ADJUSTMENTS

- 1. With test set in position J, check for regulated 10 volts. If using multimeter, measure between C2354 and C2355.
- 2. If using multimeter for alignment, connect positive lead to J2351-16 (ground).
- 3. Set crystal trimmer C9 (1st Osc/Mult) to mid-capacity. Then set the frequency selector switch to the F2 position.

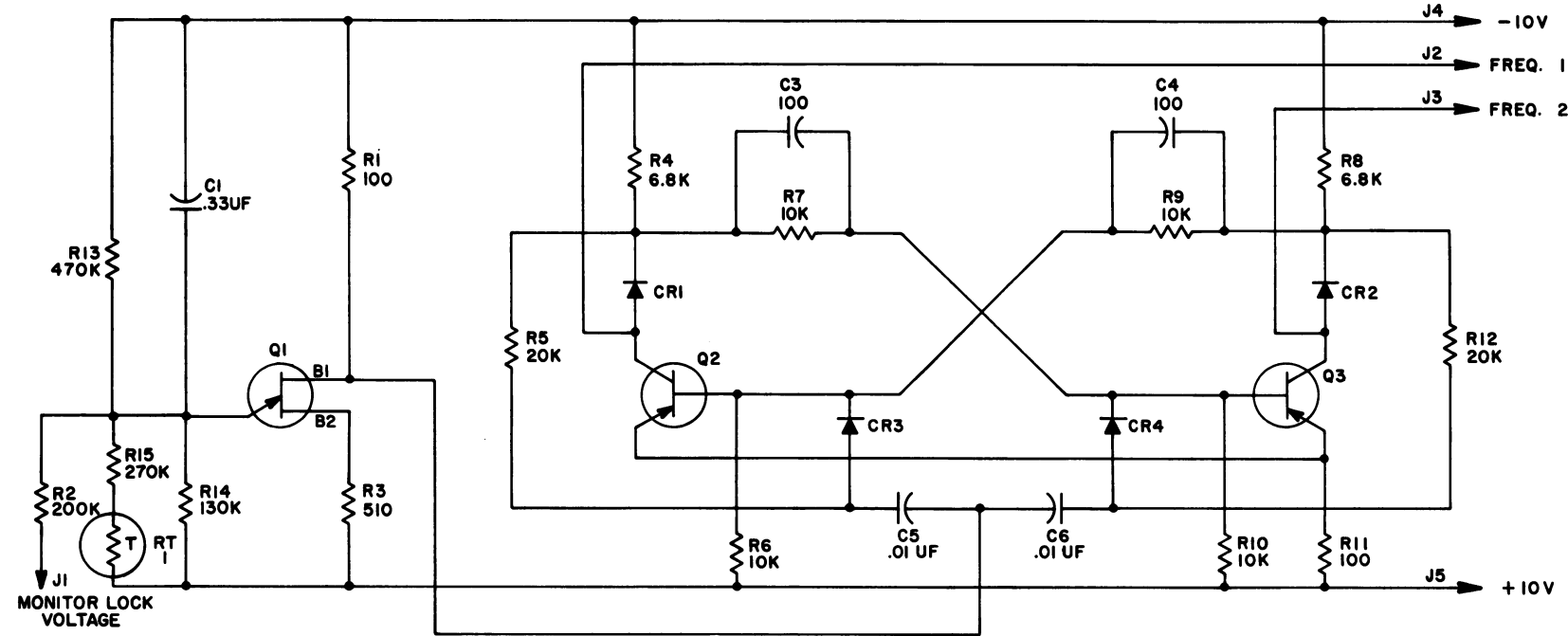
Refer to Receiver MAINTENANCE MANUAL for Receiver Mixer and IF Alignment Procedure.

STEP	METERING POSITION		TUNING CONTROL	METER READING	PROCEDURE
	GE Test Set or Meter Panel	Multimeter Minus at J2352			
			OSCILLATOR - MULTIPLIER		
1	D	pin 4	L4 (1st OSCILLATOR) L1 (MULT-SELECTIVITY)	Max	Tune for peak reading.
2	D	pin 4	L2 (MULT-SELECTIVITY)	Min	Tune for minimum reading. Change voltage scale if necessary.
3	D	pin 4	L3 (MULT-SELECTIVITY)	Max	Tune for maximum reading.
			RF CIRCUITS		
4	A	pin 10	Insert signal generator probe into L6 hole.	0	Adjust Signal Generator frequency for deflection on discriminator meter.
5	B	pin 2	L7, L6	Max	Peak L7. Insert generator probe in L1 hole and peak L6.
6			C341, C342 L1 (RF AMP)	Max	Connect generator to Ant input and peak C341, C342 and L1. Reduce signal to keep reading below 0.5 volt.
7			L1, (RF AMP) L6, L7	Max	Retune for maximum reading.
8	B	pin 2	L4 (1st OSCILLATOR) L1, L2, L3 (MULT-SELECTIVITY)	Max	Retune for maximum reading.
9			C341, C342		Tune for best sensitivity.



ALIGNMENT PROCEDURE

25—50 MHz DUAL FRONT END
19D402497-G7 thru -G9



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

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:

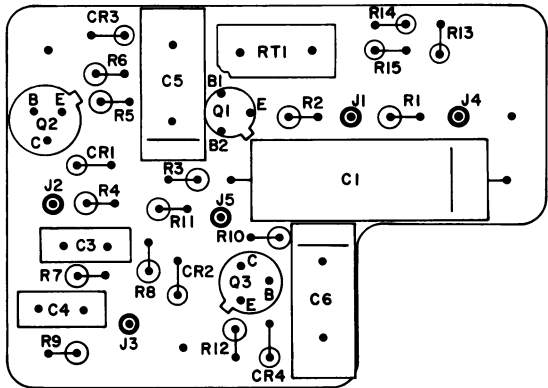
THIS ELEM DIAG APPLIES TO
MODEL NO
PL19A121599G1
PL19A121657G1
REV LETTER
A

(19B204847, Rev. 3)

OUTLINE DIAGRAM

CONNECTIONS			
FROM		TO	
WIRE COLOR	SEARCH LOCK MONITOR BD.	MOBILE	STATION
G-BK-R	J1	P443-20	P443-20 (RECEIVER)
W-Y-BR	J2	P443-6	T8502-9 (EP-38-A)
W-Y-R	J3	P443-7	T8502-8 (EP-38-A)
W-O	J4	P443-13	T8501-12 (EP-38-A)
W-R	J5	P443-12	T8501-7 (EP-38-A)

SEARCH - LOCK MONITOR BOARD



(19C303818, Rev. 1)

SCHEMATIC & OUTLINE DIAGRAMS

SEARCH-LOCK MONITOR
19A121599-G1

PARTS LIST

LBI-3626B

SEARCH LOCK MONITOR KIT
PL-19A121599-G1 (Mobile)
PL-19A121647-G1 (Station)

PRODUCTION CHANGES

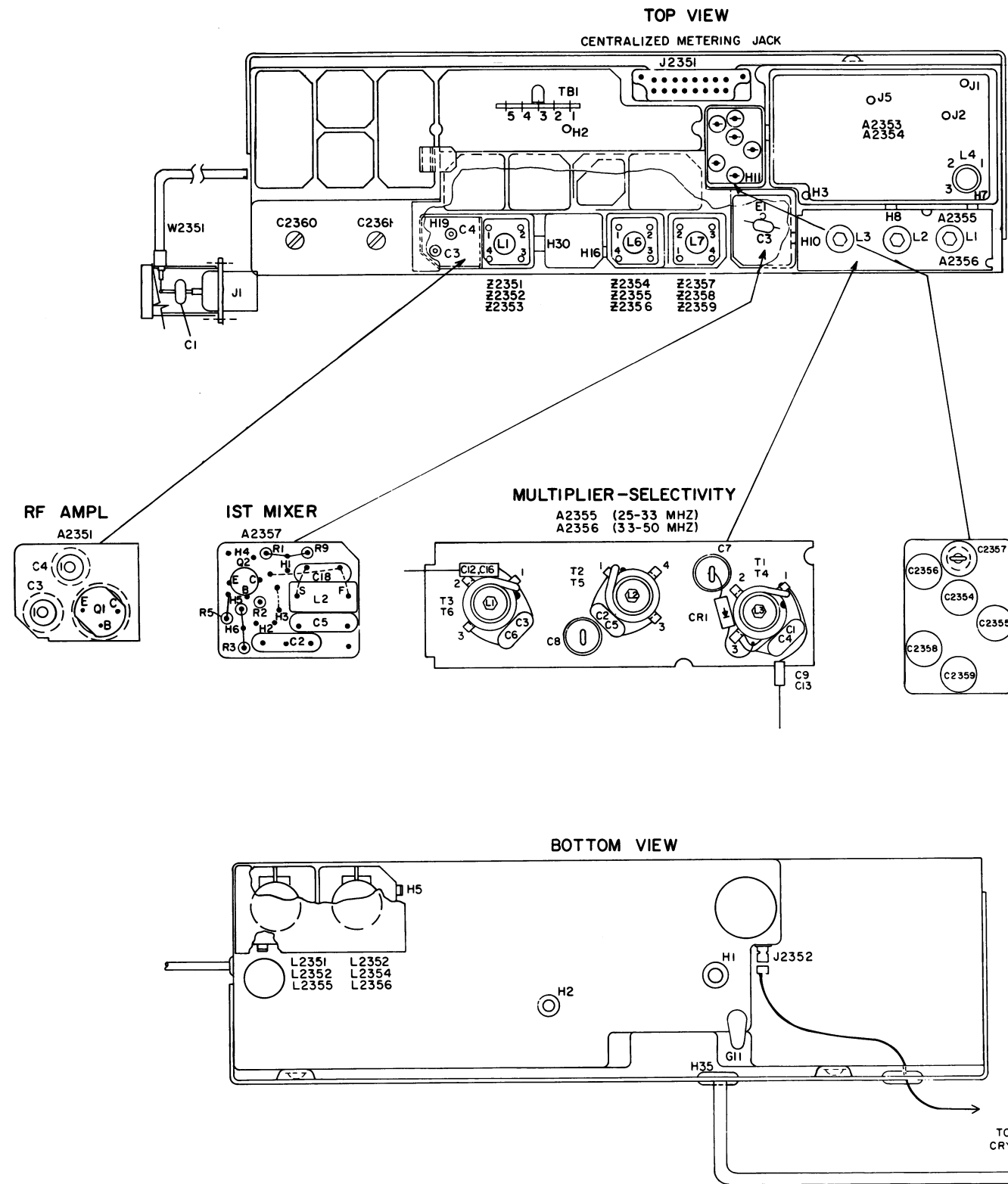
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - To increase search rate.
Deleted C2 and added R13, R14, R15, and RT1.

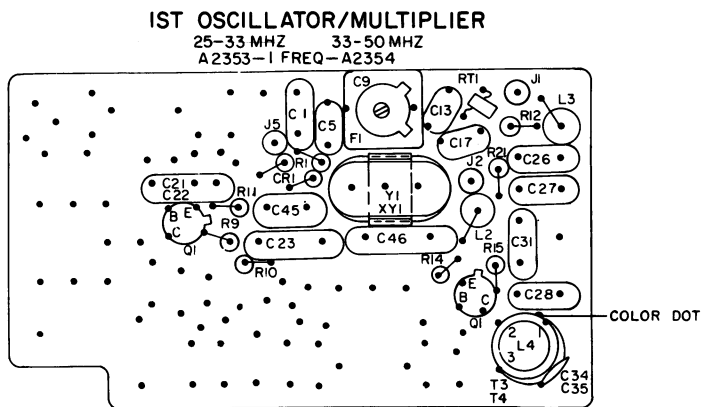
SYMBOL	G-E PART NO.	DESCRIPTION
----- DIODES -----		
CR5	5494922-P1	Silicon; sim to Type 1N456. (used with 19A121599-G1 only).
COMPONENT BOARD ASSEMBLY PL-19B204748-G1		
----- CAPACITORS -----		
C1	7491930-P11	Tubular, Mylar® dielectric: axial leads, 0.33 µf ±20%, 100 VDCW; sim to G-E Type 61F.
C2*	7491930-P11	Tubular, Mylar® dielectric: axial leads, 0.33 µf ±20%, 100 VDCW; sim to G-E Type 61F. Deleted by REV. A.
C3 and C4	5490008-P127	Silver mica, dipped phen: radial leads, 100 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C5 and C6	19A115028-P107	Mylar® dielectric, dipped phen: radial leads, .01 µf ±20%, 200 VDCW.
----- DIODES AND RECTIFIERS -----		
CR1 thru CR4	5494922-P1	Silicon; sim to Type 1N456.
----- JACKS AND RECEPTACLES -----		
J1 thru J5	4033513-P4	Contact, electrical: sim to Bead Chain L93-3.
----- TRANSISTORS -----		
Q1	19A115364-P1	Silicon, unijunction; sim to Type 2N2846.
Q2 and Q3	19A115706-P1	Silicon, PNP; sim to Type 2N1024.
----- RESISTORS -----		
R1	3R152-P101K	Fixed composition: 100 ohms ±10%, 1/4 w.
R2	3R152-P204J	Fixed composition: 0.2 megohm ±5%, 1/4 w.
R3	3R152-P511K	Fixed composition: 510 ohms ±10%, 1/4 w.
R4	3R152-P682J	Fixed composition: 6800 ohms ±5%, 1/4 w.
R5	3R152-P203K	Fixed composition: 20,000 ohms ±10%, 1/4 w.
R6 and R7	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.
R8	3R152-P682J	Fixed composition: 6800 ohms ±5%, 1/4 w.
R9 and R10	3R152-P103J	Fixed composition: 10,000 ohms ±5%, 1/4 w.
R11	3R152-P101J	Fixed composition: 100 ohms ±5%, 1/4 w.
R12	3R152-P203K	Fixed composition: 20,000 ohms ±10%, 1/4 w.
R13	3R152-P474J	Fixed composition: 0.474 megohm ±5%, 1/4 w. Added by REV. A.
R14	3R152-P134J	Fixed composition: 0.134 megohm ±5%, 1/4 w. Added by REV. A.
R15	3R152-P274J	Fixed composition: 0.274 megohm ±5%, 1/4 w. Added by REV. A.
----- THERMISTERS -----		
RT1	5490828-P37	Rod: thermal, 0.12 megohms ±10% at 25°C. Added by REV. A.
----- MISCELLANEOUS -----		
19A121648-G1		Station Support Assembly.
19A121592-G1		Mobile support assembly.
----- CABLES -----		
19A121603-G1		Cable Assembly, 24" long. (Used with PL-19A121592-G1 only).
19B204903-G1		Cable Assembly, 23" long (Used with PL-19A121647-G1 only).

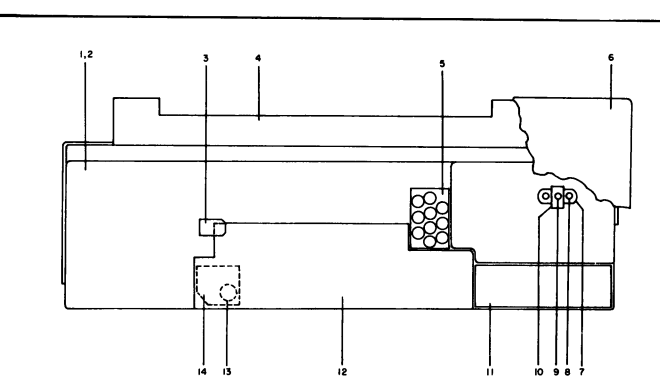
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

OUTLINE DIAGRAM



(19R621268, Rev. 0)



3991			PARTS LIST			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION		
LBI-3992			25-50 MHz DUAL FRONT END 19D042497-07-9																	
SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION			SYMBOL G-E PART NO DESCRIPTION		
A2351 RF AMPLIFIER ASSEMBLY 19B204772-G1			L2 and L3 7488079-P16			C7 and C8 5493392-P107 Ceramic, stand-off: .001 pf $\pm 100\%$ -0%, 500 VDCW; sim to Allen-Bradley Type 535A.			C2354 thru C2359 5493392-P7 Ceramic, feed-thru: .001 pf $\pm 100\%$ -0%, 500 VDCW; sim to Allen-Bradley Type FA5C.			Z2354 thru Z2356 COIL ASSEMBLY Z2354 19B204767-G1 Z2355 19B204767-G2 Z2356 19B204767-G3			7 19C311172-P1 Crystal socket. (Part of XY1 in A2353, 2354).					
C1 5494481-P12 Ceramic disc: .001 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			Q1 and Q2 19A115330-P1 Silicon, NPN.			C9 5491601-P123 Phenolic: 1.5 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			J2351 19B205669-G2 Connector: 18 pin contacts.			C1 5496218-P254 Ceramic disc: 43 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			8 19A115793-P1 Electrical contact: sim to Methode 752 V (PB). (Part of XY1 in A2353, 2354).					
C2 5494481-P14 Ceramic disc: .002 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			R1 3R152-P562J Composition: 5600 ohms $\pm 5\%$, 1/4 w.			C10 5491601-P117 Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			J2352 19A115465-P1 Receptacle, coaxial: 500 v; sim to Micon Electronics Type 1104.			C2 5496218-P250 Ceramic disc: 30 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			9 19B200525-P9 Rivet. (Part of XY1 in A2353, 2354).					
C3 and C4 5493392-P7 Ceramic feed-thru: .001 pf $\pm 100\%$ -0%, 500 VDCW; sim to Allen-Bradley Type FASC.			R9 3R152-P153J Composition: 15,000 ohms $\pm 5\%$, 1/4 w.			C11 5491601-P118 Phenolic: 0.75 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			J2353 thru J2356 7147199-P1 Connector, brass: male contact; sim to Winchester Electronics 21803.			C3 5496218-P245 Ceramic disc: 18 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			10 4033089-P1 Clip. (Part of XY1 in A2353, 2354).					
Q1 19A115342-P1 Silicon, NPN.			R10 3R152-P101K Composition: 100 ohms $\pm 10\%$, 1/4 w.			C12 5491601-P132 Phenolic: 4.7 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			L2351 thru L2356 COIL ASSEMBLY L2351 19B204820-G5, L2352 19B204820-G6 L2353 19B204820-G1, L2354 19B204820-G2 L2355 19B204820-G3, L2356 19B204820-G4			5491798-P1 Tuning slug. (Used in Z2354).			11 19A121435-P1 Support. (Used in A2355, 2356).					
R1 3R152-P123K Composition: 12,000 ohms $\pm 10\%$, 1/4 w.			R4 3R152-P103J Composition: 10,000 ohms $\pm 5\%$, 1/4 w.			C13 5491601-P137 Phenolic: 0.91 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			C2360 and C2361 19B209159-P2 Variable, subminiature: approx 1.54-6.9 pf, 750 v peak; sim to EF Johnson 189-3-55.			Z2357 thru Z2359 COIL ASSEMBLY Z2357 19B204784-G4 Z2358 19B204784-G5 Z2359 19B204784-G6			12 19B204672-P1 Cover.					
R2 3R152-P302K Composition: 3000 ohms $\pm 10\%$, 1/4 w.			R5 3R152-P101K Composition: 100 ohms $\pm 10\%$, 1/4 w.			C14 5491601-P114 Phenolic: 0.51 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			----- INDUCTORS -----			5491798-P4 Tuning slug. (Used in Z2355).			13 7162414-P1 Mounting ring, transistor socket; sim to Elco 757. (Used with Q1 in A2351).					
R3 3R152-P102K Composition: 1000 ohms $\pm 10\%$, 1/4 w.			R9 3R152-P360J Composition: 36 ohms $\pm 5\%$, 1/4 w.			C15 5491601-P115 Phenolic: 0.56 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			----- CAPACITORS -----			5491798-P5 Tuning slug. (Used in Z2356).			14 19B204917-P1 Support. (Used with A2351).					
R4 3R152-P391K Composition: 390 ohms $\pm 10\%$, 1/4 w.			R21 3R152-P750J Composition: 75 ohms $\pm 5\%$, 1/4 w.			C16 5491601-P130 Phenolic: 3.3 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			----- DIODES AND RECTIFIERS -----											
XY1 5490277-P1 Transistor, mica-filled phen: 4 contacts rated at 1 amp at 400 VRMS; sim to Elco 3303.			RT1 19B209284-P5 Disc: 43 ohms res nominal at 25°C, color code green.			CR1 4038056-P1 Germanium.			----- RESISTORS -----											
A2353 and A2354 FIRST OSCILLATOR ASSEMBLY A2353 19B204419-G13 (19D042497-G7) A2354 19B204419-G16 (19D042497-G8, 9)			T3 and T4 COIL ASSEMBLY T3 19B205416-G1 T4 19B205416-G2			R1 3R152-P473K Composition: 47,000 ohms $\pm 10\%$, 1/4 w.			P2351 thru P2353 4029840-P2 Contact, electrical; sim to Amp 42827-2.			C7 and C8 5496218-P248 Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			 DUAL FRONT END - LOW BAND					
C1 5494481-P112 Ceramic disc: .001 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			C34 5496218-P253 Ceramic disc: 39 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			T1 19B205325-G2 Coil. Includes L1.			R2351 5495948-P444 Deposited carbon: 0.28 megohms $\pm 1\%$, 1/2 w; sim to Texas Instrument Type CDI/2MR.			C9 5496218-P244 Ceramic disc: 15 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.								
C5 5496219-P751 Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef -750 PPM.			C35 5496218-P249 Ceramic disc: 27 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			T2 19B205325-G1 Coil. Includes L2.			R2352 and R2353 3R152-P101K Composition: 100 ohms $\pm 10\%$, 1/4 w.			5491798-P1 Tuning slug. (Used in Z2357).								
C9 5491271-P106 Variable, subminiature: approx 2.1-12.7 pf, 750 v peak; sim to EF Johnson 189-6-5.			L4 19A121464-P2 Coil. Includes tuning slug 5491798-P5.			T3 19B205325-G1 Coil. Includes L3.			TB1 7487424-P7 Miniature, phen: 4 terminals.			5491798-P4 Tuning slug. (Used in Z2358).								
C13 5496219-P40 Ceramic disc: 9 pf ± 0.25 pf, 500 VDCW, temp coef 0 PPM.			XY1 Refer to Mechanical Parts (RC-1235).			T4 19B205325-G2 Coil. Includes L1.			W2351 CONNECTOR ASSEMBLY 19B204930-G1			5491798-P5 Tuning slug. (Used in Z2359).								
C17 19C300685-P93 Ceramic disc: 5 pf ± 0.1 pf, 500 VDCW, temp coef 0 PPM.			L4 19A121464-P2 Coil. Includes tuning slug 5491798-P5.			T5 19B205325-G1 Coil. Includes L2.			----- CABLES -----			PLATE ASSEMBLY - TRUNK MOUNT 19B205195-G2								
C21 5496219-P771 Ceramic disc: 220 pf $\pm 5\%$, 500 VDCW, temp coef -750 PPM.			XY1 Refer to Mechanical Parts (RC-1235).			T6 19B205325-G1 Coil. Includes L3.			----- CAPACITORS -----			19A121759-P1 Thumbscrew: 1/4-20 thread.								
C22 5496219-P773 Ceramic disc: 270 pf $\pm 5\%$, 500 VDCW, temp coef -750 PPM.			XY1 Refer to Mechanical Parts (RC-1235).			L2 19A121082-G2 Toroidal coil.			C1 19B209141-P1 Ceramic disc: .001 pf $\pm 10\%$, 500 VDCW.			4036436-P2 Nut, push-on; sim to Fastex 8063-21-00.								
C23 5494481-P114 Ceramic disc: .002 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			XY1 Refer to Mechanical Parts (RC-1235).			Q2 19A115245-P1 Silicon, NPN.			J1 2R22-P3 Receptacle, panel, coaxial: mica-filled insert, UHF contact. Signal Corps SO-239 or sim to Amphenol 83-1R.			19B205194-P2 Plate.								
C26 thru C28 5494481-P112 Ceramic disc: .001 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			XY1 Refer to Mechanical Parts (RC-1235).			C2 5494481-P114 Ceramic disc: 2000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			19B209044-P19 Cable, RF: 1200 VRMS max, approx 40 inches.			19A121759-P1 Thumbscrew: 1/4-20 thread.								
C31 5494481-P112 Ceramic disc: .001 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			XY1 Refer to Mechanical Parts (RC-1235).			C3 5491271-P106 Variable, sub-miniature: approx 2.1-12.7 pf, 750 v peak; sim to EF Johnson 189.			----- JACKS AND RECEPTACLES -----			4036436-P2 Nut, push-on; sim to Fastex 8063-21-00.								
C45 5490008-P35 Silver mica: 220 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.			XY1 Refer to Mechanical Parts (RC-1235).			C6 5494481-P12 Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			----- MISCELLANEOUS -----			19B205638-P1 Plate.								
C46 5496219-P563 Ceramic disc: 100 pf $\pm 5\%$, 500 VDCW, temp coef -330 PPM.			XY1 Refer to Mechanical Parts (RC-1235).			C18 5496218-P247 Ceramic disc: 22 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			Z2351 thru Z2353 COIL ASSEMBLY Z2351 19B204786-G1 Z2352 19B204786-G2 Z2353 19B204786-G3			4039109-P1 Coil: operating freq 25-54 MHz; sim to Antenna Specialists ASPA87.								
J1 thru J6 4033513-P4 Contact, electrical: sim to Bead Chain L93-3.			XY1 Refer to Mechanical Parts (RC-1235).			L2 19A121082-G2 Toroidal coil.			----- TUNED CIRCUITS -----			19B205638-P1 Plate.								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			Q2 19A115245-P1 Silicon, NPN.			----- TRANSISTORS -----			ANTENNA LOADING COIL MODEL 4KY9A1								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			R1 3R152-P562J Composition: 56,000 ohms $\pm 5\%$, 1/4 w.			----- CAPACITORS -----			MECHANICAL PARTS (SEE RC-1235)								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			R2 3R152-P822J Composition: 8200 ohms $\pm 5\%$, 1/4 w.			C1 5496218-P254 Ceramic disc: 43 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			1 19B500817-P2 Chassis. (Used in 19D042497-G1, 2).								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			R3 3R152-P202J Composition: 2000 ohms $\pm 5\%$, 1/4 w.			C2 5496218-P250 Ceramic disc: 30 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			2 19B500817-P1 Chassis. (Used in 19D042497-G3-6).								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			R5 3R152-P390J Composition: 39 ohms $\pm 5\%$, 1/4 w.			C3 5496218-P245 Ceramic disc: 18 pf $\pm 5\%$, 500 VDCW, temp coef -80 PPM.			3 4029851-P3 Cable clamp: nylon; sim to Weckesser 1/8-4.								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			R9 3R152-P471K Composition: 470 ohms $\pm 10\%$, 1/4 w.			C4 5494481-P14 Ceramic disc: .002 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.			4 19C303649-P1 Support. (Mounts cover).								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			C2351 5491601-P114 Tubular: 0.51 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			----- INDUCTORS -----			5 19A121383-P1 Support.								
			A2355 and A2356 MULTIPLIER SELECTIVITY ASSEMBLY A2355 19B205326-G1 A2356 19B205326-G2			C2352 and C2353 5491601-P110 Tubular: 0.36 pf $\pm 5\%$, 500 VDCW; sim to Quality Components Type MC.			L1 19A121478-P2 Coil.			6 19B204383-P1 Cover.								

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

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