MOBILE RADIO

(Applies to Mastr II, Exec II, and Custom MVP.
Noise Blanker version is LBI-4991)

MAINTENANCE MANUAL

25—50 MHz RF ASSEMBLY 19D416478G1-G4 AND MIXER/IF BOARD 19C320094G1-G4

TABLE OF CONTENTS

DESCRIPTION

The RF Assembly uses two tuned helical resonators and four L-C tuned circuits to provide front end selectivity.

The Mixer/IF board (MIF) uses the RF input from the RF Assembly and the mixer injection frequency from the oscillator/multiplier board to generate the IF frequency.

CIRCUIT ANALYSIS

RF ASSEMBLY

ANTENNA INPUT A301

An RF signal from the antenna is applied to A301 which provides an AC ground between vehicle ground and receiver A-. Resistor R1 prevents a static charge from building up on the vehicle antenna. The output of A301 is coupled through two high-Q helical resonators (L301, C301 and L302, C302) to the RF amplifier. The coils are tuned to the incoming frequency by C301 and C302. Lamp DS1 protects the RF amplifier stage against an excessive RF input.

RF AMPLIFIER A302

RF Amplifier Q1 is a Field-Effect Transistor (FET). Q1 operates as a grounded gate amplifier, with the RF input applied to the "source" terminal. This method of operation provides a low impedance input to the amplifier. The amplified output is taken from the "drain" terminal and coupled through four L-C tuned circuits (L1-C7, L2-C8, L3-C9 and L4-C10) to the mixer. The four tuned circuits and the two helical resonators provide the receiver front end selectivity.

MIXER-IF

MIXER & CRYSTAL FILTER

The mixer uses a FET (Q501) as the active device. The FET mixer provides a high input impedance, high power gain, and an output relatively free of harmonics (low in intermodulation products).

In the mixer stage, RF from the RF amplifier stage is coupled through tank circuit L501 and C502 to the gate of mixer Q501. The tank circuit provides increased selectivity and impedance matching between the RF Assembly and the gate of mixer Q501. Injection voltage from the multiplier-selectivity stages is inductively coupled through L502 to the source of the mixer. The mixer IF output signal is coupled from the drain of Q501 through a tuned circuit (L504 and C511) which matches the mixer output to the input of the four-pole monolithic crystal filter. The highly-selective crystal filter (FL501 and FL502) provides the first portion of the receiver IF selectivity. The output of the filter is coupled

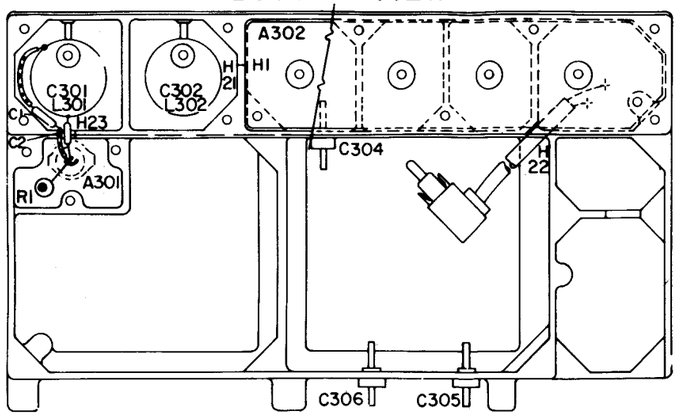
through impedance matching network Z502 (L520 and C523) to the IF amplifier.

IF AMPLIFIER

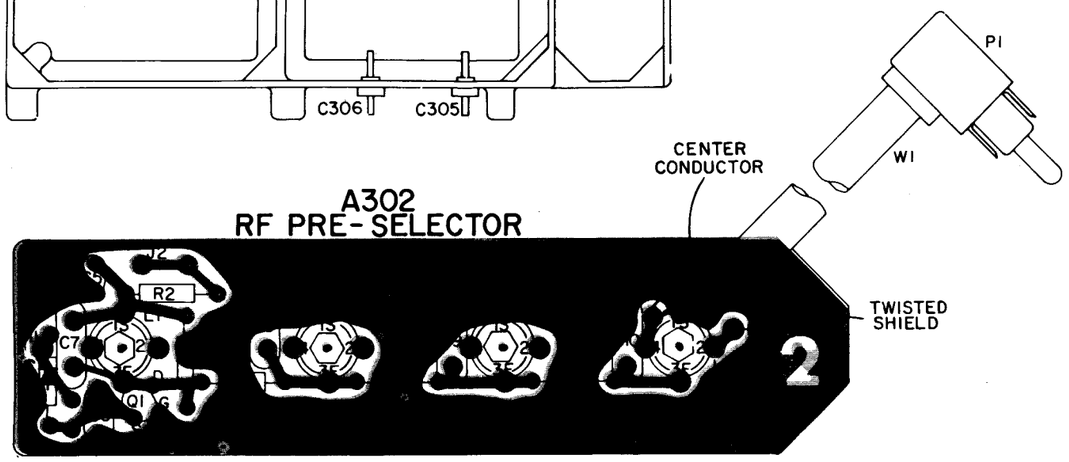
IF amplifier Q502 is a dual-gate FET. The filter output is applied to Gate 1 of the amplifier, and the output is taken from the drain. The biasing on Gate 2 and the drain load determines the gain of the stage. The amplifier provides approximately 20 dB of IF gain. The output of Q502 is coupled through a network (L521 and C528) that matches the amplifier output to the crystal filter on the next IF stage. The output of the MIF board is coupled to the next IF stage through feed-through capacitor C305.

Supply voltage for the RF amplifier and MIF board is supplied through feed-through capacitor C306. SERVICE NOTE: Variable capacitor C521 does not require adjustment when performing normal alignment. If the 4-pole monolithic crystal filter is replaced, then adjustment of C521 is necessary for optimum IF response.

RF ASSEMBLY BOTTOM VIEW



A302 RF PRE-SELECTOR

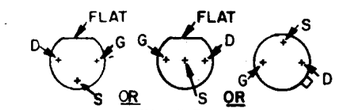


(19B219444, Sh. 1, Rev. 2)
(19B219444, Sh. 2, Rev. 2)

A301 ANT INPUT

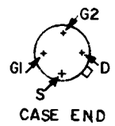
(19B219449, Sh. 1, Rev. 2)
(19B219449, Sh. 2, Rev. 2)

LEAD IDENTIFICATION FOR Q1 & Q501



NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

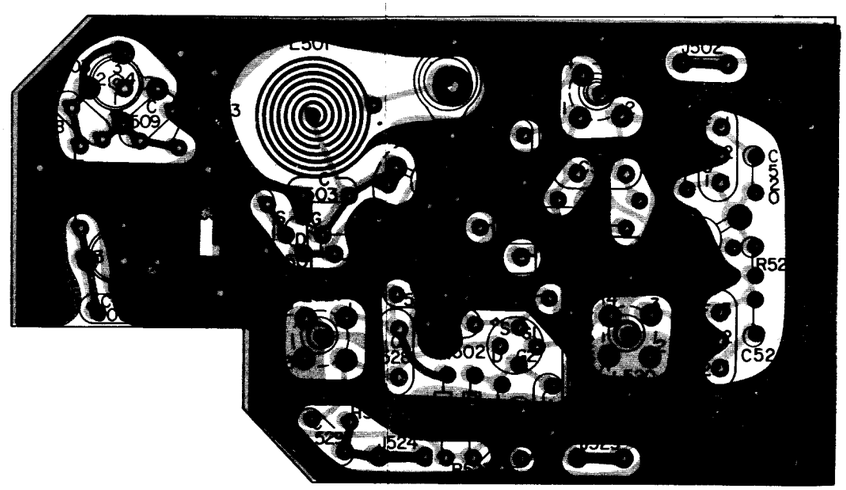
LEAD IDENTIFICATION FOR Q502



(19D423628, Rev. 2)

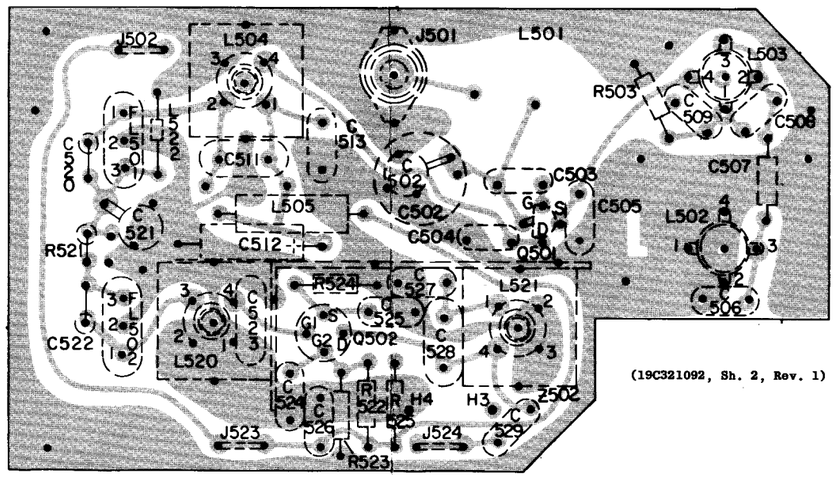
MIXER/IF BOARD

COMPONENT SIDE



(19C321092, Sh. 2, Rev. 1)
(19C321092, Sh. 3, Rev. 1)

SOLDER SIDE

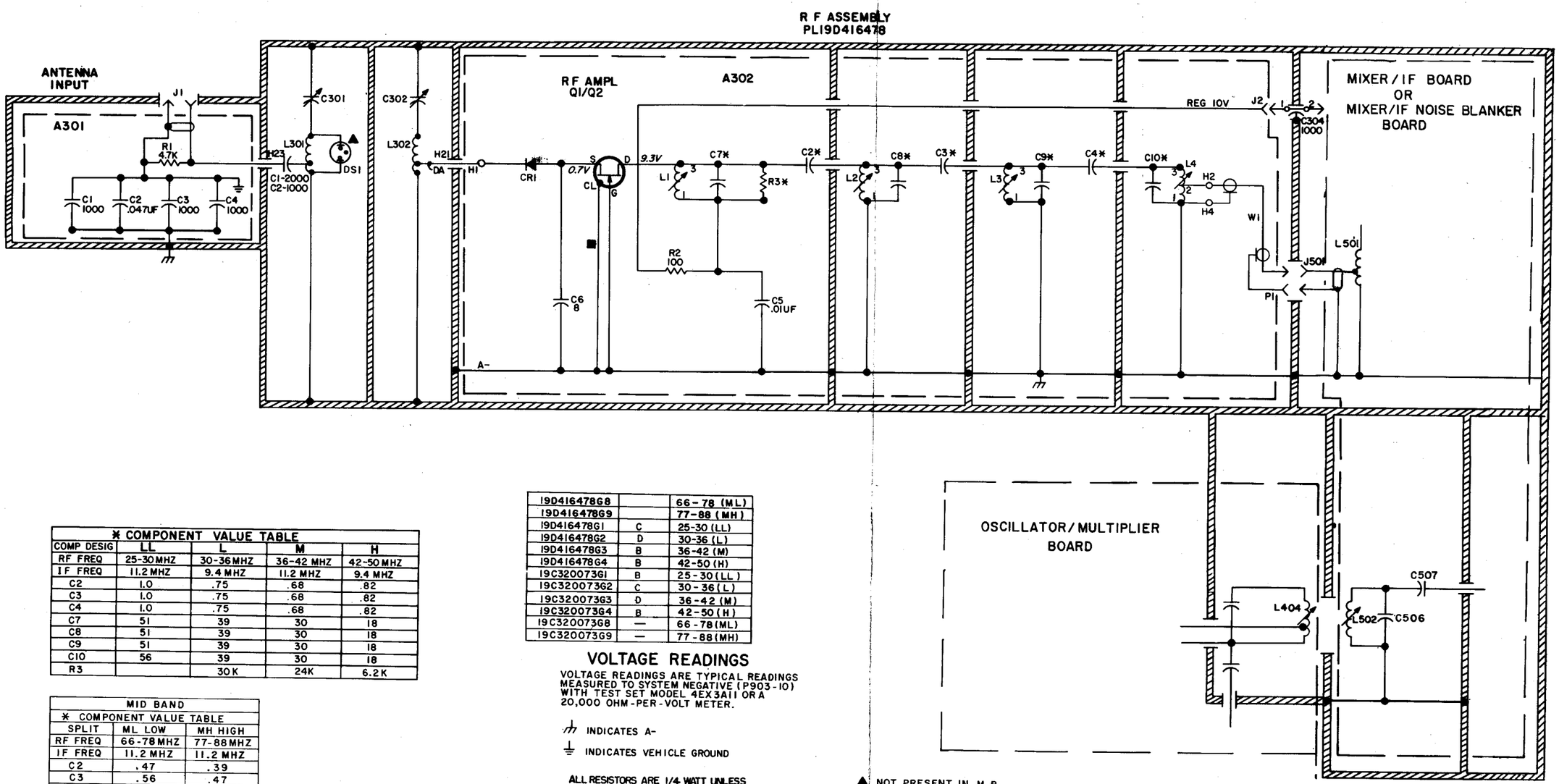


(19C321092, Sh. 2, Rev. 1)

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

OUTLINE DIAGRAM

25—50 MHz RF ASSEMBLY AND MIXER/IF BOARD



* COMPONENT VALUE TABLE				
COMP DESIG	LL	L	M	H
RF FREQ	25-30 MHZ	30-36 MHZ	36-42 MHZ	42-50 MHZ
IF FREQ	11.2 MHZ	9.4 MHZ	11.2 MHZ	9.4 MHZ
C2	1.0	.75	.68	.82
C3	1.0	.75	.68	.82
C4	1.0	.75	.68	.82
C7	51	39	30	18
C8	51	39	30	18
C9	51	39	30	18
C10	56	39	30	18
R3		30K	24K	6.2K

MID BAND		
* COMPONENT VALUE TABLE		
SPLIT	ML LOW	MH HIGH
RF FREQ	66-78 MHZ	77-88 MHZ
IF FREQ	11.2 MHZ	11.2 MHZ
C2	.47	.39
C3	.56	.47
C4	1.0	.82
C7	15	10
C8	18	13
C9	18	13
C10	18	13
R3	6.8K	6.8K

19D416478G8		66-78 (ML)
19D416478G9		77-88 (MH)
19D416478G1	C	25-30 (LL)
19D416478G2	D	30-36 (L)
19D416478G3	B	36-42 (M)
19D416478G4	B	42-50 (H)
19C320073G1	B	25-30 (LL)
19C320073G2	C	30-36 (L)
19C320073G3	D	36-42 (M)
19C320073G4	B	42-50 (H)
19C320073G8	—	66-78 (ML)
19C320073G9	—	77-88 (MH)

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MEASURED TO SYSTEM NEGATIVE (P903-10) WITH TEST SET MODEL 4EX3A11 OR A 20,000 OHM-PER-VOLT METER.

⫽ INDICATES A-

⏚ INDICATES VEHICLE GROUND

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.

CPD 310A

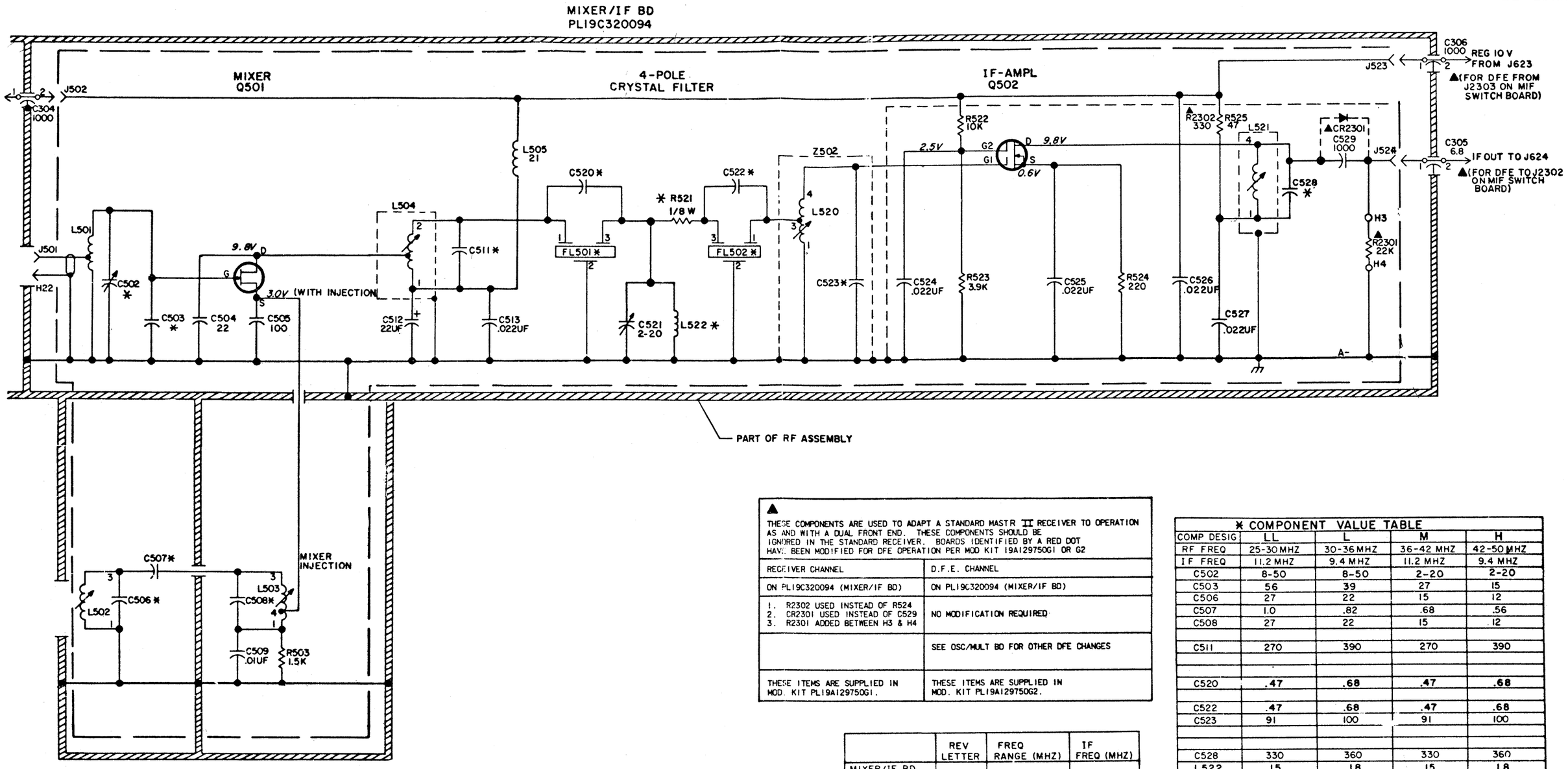
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

▲ NOT PRESENT IN M.B.
■ NOT PRESENT IN L.B.

SCHEMATIC DIAGRAM

25—50 MHz RF ASSEMBLY

(19D423475, Rev. 7)



VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MEASURED TO SYSTEM NEGATIVE (P903-10) WITH TEST SET MODEL 4EX3A11 OR A 20,000 OHM-PER-VOLT METER.

⏚ INDICATES A-

⏚ INDICATES VEHICLE GROUND

▲

THESE COMPONENTS ARE USED TO ADAPT A STANDARD MASTR II RECEIVER TO OPERATION AS AND WITH A DUAL FRONT END. THESE COMPONENTS SHOULD BE IGNORED IN THE STANDARD RECEIVER. BOARDS IDENTIFIED BY A RED DOT HAVE BEEN MODIFIED FOR DFE OPERATION PER MOD KIT 19A129750G1 OR G2

RECEIVER CHANNEL	D.F.E. CHANNEL
ON PL19C320094 (MIXER/IF BD)	ON PL19C320094 (MIXER/IF BD)
1. R2302 USED INSTEAD OF R524 2. CR2301 USED INSTEAD OF C529 3. R2301 ADDED BETWEEN H3 & H4	NO MODIFICATION REQUIRED
	SEE OSC/MULT BD FOR OTHER DFE CHANGES
THESE ITEMS ARE SUPPLIED IN MOD. KIT PL19A129750G1.	THESE ITEMS ARE SUPPLIED IN MOD. KIT PL19A129750G2.

	REV LETTER	FREQ RANGE (MHZ)	IF FREQ (MHZ)
MIXER/IF BD			
19C320094G1	D	25-30 (LL)	11.2
19C320094G2	D	30-36 (L)	9.4
19C320094G3	C	36-42 (M)	11.2
19C320094G4	C	42-50 (H)	9.4

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.

CPD 310A

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.

* COMPONENT VALUE TABLE				
COMP DESIG	LL	L	M	H
RF FREQ	25-30 MHZ	30-36 MHZ	36-42 MHZ	42-50 MHZ
IF FREQ	11.2 MHZ	9.4 MHZ	11.2 MHZ	9.4 MHZ
C502	8-50	8-50	2-20	2-20
C503	56	39	27	15
C506	27	22	15	12
C507	1.0	.82	.68	.56
C508	27	22	15	12
C511	270	390	270	390
C520	.47	.68	.47	.68
C522	.47	.68	.47	.68
C523	91	100	91	100
C528	330	360	330	360
L522	15	18	15	18
R521	560	330	560	330
FL501	FL501LL	FL501L	FL501M	FL501H
FL502	FL502LL	FL502L	FL502M	FL502H

(19D423476, Rev. 2)

SCHEMATIC DIAGRAM

25—50 MHz MIXER/IF BOARD

Issue 2

PARTS LIST

LBI-4990C

25-50 MHz
RF ASSEMBLY 19D416478G1-G4
AND
MIF ASSEMBLY 19C320094G1-G4

SYMBOL	GE PART NO.	DESCRIPTION
		RF ASSEMBLY 19D416478G1 25-30 MHz (LL) 19D416478G2 30-36 MHz (L) 19D416478G3 36-42 MHz (M) 19D416478G4 42-50 MHz (H)
A301		COMPONENT BOARD 19B219453G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C2	19A116080P5	Polyester: 0.047 µf ±20%, 50 VDCW.
C3 and C4	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R152P472K	Composition: 4.7K ohms ±10%, 1/4 w.
A302		COMPONENT BOARD 19C320073G1 25-30 MHz (LL) 19C320073G2 30-36 MHz (L) 19C320073G3 36-42 MHz (M) 19C320073G4 42-50 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C2LL*	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P122	Phenolic: 1.2 pf ±5%, 500 VDCW.
C2L*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW. In REV B and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C2M*	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW. In REV C and earlier:
	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW.
C2N*	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C3LL*	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P122	Phenolic: 1.2 pf ±5%, 500 VDCW.
C3L*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW. In REV B and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C3M*	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW. In REV C and earlier:
	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW.
C3N*	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C4LL*	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P122	Phenolic: 1.2 pf ±5%, 500 VDCW.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C4L*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW. In REV B and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C4M*	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW. In REV C and earlier:
	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW.
C4N*	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW. In REV A and earlier:
	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C5	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C6	19A116656P8K8	Ceramic: 8 pf ±1 pf ±10%, -80 PPM.
C7LL	5496219P256	Ceramic disc: 51 pf ±5%, 500 VDCW, temp coef -80 PPM.
C7L	5496219P253	Ceramic disc: 39 pf ±5%, 500 VDCW, temp coef -80 PPM.
C7N	5496219P250	Ceramic disc: 30 pf ±5%, 500 VDCW, temp coef -80 PPM.
C7H	5496219P245	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef -80 PPM.
C8LL	5496219P256	Ceramic disc: 51 pf ±5%, 500 VDCW, temp coef -80 PPM.
C8L	5496219P253	Ceramic disc: 39 pf ±5%, 500 VDCW, temp coef -80 PPM.
C8N	5496219P250	Ceramic disc: 30 pf ±5%, 500 VDCW, temp coef -80 PPM.
C8H	5496219P245	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef -80 PPM.
C9LL	5496219P256	Ceramic disc: 51 pf ±5%, 500 VDCW, temp coef -80 PPM.
C9L	5496219P253	Ceramic disc: 39 pf ±5%, 500 VDCW, temp coef -80 PPM.
C9N	5496219P250	Ceramic disc: 30 pf ±5%, 500 VDCW, temp coef -80 PPM.
C9H	5496219P245	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef -80 PPM.
C10LL	5496219P257	Ceramic disc: 56 pf ±5%, 500 VDCW, temp coef -80 PPM.
C10L	5496219P253	Ceramic disc: 39 pf ±5%, 500 VDCW, temp coef -80 PPM.
C10N	5496219P250	Ceramic disc: 30 pf ±5%, 500 VDCW, temp coef -80 PPM.
C10H	5496219P245	Ceramic disc: 18 pf ±5%, 500 VDCW, temp coef -80 PPM.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A116052P2	Silicon.
		- - - - - - - - JACKS AND RECEPTACLES - - - - -
J2	19A116975P1	Receptacle, wire spring.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1* thru L3*	19C307170P306	Coil, RF: variable; sim to Paul Smith 092574-XX-3. In 19C320073G1 REV A and earlier: In 19C320073G2 REV B and earlier: In 19C320073G3 REV C and earlier: In 19C320073G4 REV A and earlier:
	19B219419G2	Coil. Includes:
	5491798P5	Tuning slug.
L4*	19C307170P308	Coil, RF: variable; sim to Paul Smith 071774-XX-7. In 19C320073G1 REV A and earlier: In 19C320073G2 REV B and earlier: In 19C320073G3 REV C and earlier: In 19C320073G4 REV A and earlier:
	19B219419G1	Coil, Includes:
	5491798P5	Tuning slug.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1		(Part of W1).
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A116154P1	N Type, field effect.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R2	3R152P101J	Composition: 100 ohms ±5%, 1/4 w.
R3L*	3R152P303J	Composition: 30K ohms ±5%, 1/4 w. Deleted by REV B. Added to G2 by REV D.
R3M*	3R152P243J	Composition: 24K ohms ±5%, 1/4 w. Added by REV C.
	3R152P153J	Composition: 15K ohms ±5%, 1/4 w. Deleted by REV B.
R3H	3R152P622J	Composition: 6.2K ohms ±5%, 1/4 w.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1	5491689P85	Cable, RF: approx 4 inches long. (Includes P1).
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C301		(Part of L301).
C302		(Part of L302).
C304	19B209488P2	Ceramic, feed-thru: 1000 pf +100 -0%, 500 VDCW; sim to Allen-Bradley Style FA5D.
C305	19B209488P1	Ceramic, feed-thru: 6.8 pf ±20%, 500 VDCW; sim to Allen-Bradley Style FA5D.
C306	19B209488P2	Ceramic, feed-thru: 1000 pf +100 -0%, 500 VDCW; sim to Allen-Bradley Style FA5D.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L301LL	19B219455G1	Coil, Includes:
C1*	5494481P13	Capacitor, ceramic disc: 2000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap. In 19D416478G2 of REV B and earlier:
	5494481P11	Capacitor, ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C301	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
DS1	19B209067P1	Lamp, glow: 0.7 ma; sim to GE NE2ET.
L301L	19B219455G1	Coil, Includes:
C1	5494481P13	Capacitor, ceramic disc: 2000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C301	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
DS1	19B209067P1	Lamp, glow: 0.7 ma; sim to GE NE2ET.
L301M	19B219455G3	Coil, Includes:
C2	5494481P11	Capacitor, ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C301	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
DS1	19B209067P1	Lamp, glow: 0.7 ma; sim to GE NE2ET.
L302LL	19B219455G2	Coil, Includes:
C302	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
L302L	19B219455G2	Coil, Includes:
C302	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
L302M	19B219455G4	Coil, Includes:
C302	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.

SYMBOL	GE PART NO.	DESCRIPTION
L302H	19B219455G4	Coil, Includes:
C302	19B209159P4	Capacitor, variable, air: 1.80 to 8.3 pf, 650 v peak; sim to EF Johnson 189.
	19B201074P305	- - - - - - - - - - MISCELLANEOUS - - - - - - - - - - Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Secures A301 and A302).
		MIF ASSEMBLY 19C320094G1 25-30 MHz (LL) 19C320094G2 30-36 MHz (L) 19C320094G3 36-42 MHz (M) 19C320094G4 42-50 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C502LL	5490446P1	Variable, ceramic: approx 8-50 pf, 350 VDCW, temp coef -750 PPM; sim to Erie Style 557-36.
C502L	5490446P1	Variable, ceramic: approx 8-50 pf, 350 VDCW, temp coef -750 PPM; sim to Erie Style 557-36.
C502M	19B209351P2	Variable, ceramic, 2.5 to 20 pf, 200 VDCW, temp coef -250 +700 PPM/°C; sim to Katchuhita ECV-12W20P32.
C502H	19B209351P2	Variable, ceramic, 2.5 to 20 pf, 200 VDCW, temp coef -250 +700 PPM/°C; sim to Katchuhita ECV-12W20P32.
C503LL	5490008P21	Silver mica: 56 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C503L	5490008P17	Silver mica: 39 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C503M	5490008P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C503H	5490008P8	Silver mica: 15 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C504	19A116656P22J0	Ceramic disc: 22 pf ±5%, 500 VDCW, temp coef 0 PPM.
C505	5490008P27	Silver mica: 100 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C506LL	19A116656P27K8	Ceramic disc: 27 pf ±10%, 500 VDCW, temp coef -80 PPM.
C506L	19A116656P24K8	Ceramic disc: 24 pf ±10%, 500 VDCW, temp coef -80 PPM.
C506M	19A116656P15K8	Ceramic disc: 15 pf ±10%, 500 VDCW, temp coef -80 PPM.
C506H	19A116656P12K8	Ceramic disc: 12 pf ±10%, 500 VDCW, temp coef -80 PPM.
C507LL	5491601P120	Phenolic: 1.0 pf ±5%, 500 VDCW.
C507L	5491601P119	Phenolic: 0.82 pf ±5%, 500 VDCW.
C507M	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW.
C507H	5491601P115	Phenolic: 0.56 pf ±5%, 500 VDCW.
C508LL	19A116656P27K8	Ceramic disc: 27 pf ±10%, 500 VDCW, temp coef -80 PPM.
C508L	19A116656P24K8	Ceramic disc: 24 pf ±10%, 500 VDCW, temp coef -80 PPM.
C508M	19A116656P15K8	Ceramic disc: 15 pf ±10%, 500 VDCW, temp coef -80 PPM.
C508H	19A116656P12K8	Ceramic disc: 12 pf ±10%, 500 VDCW, temp coef -80 PPM.
C509	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C511	5490008P137	Silver mica: 270 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C511L	5490008P141	Silver mica: 390 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C511M	5490008P137	Silver mica: 270 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C511H	5490008P141	Silver mica: 390 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C512	5496267P10	Tantalum: 22 pf ±20%, 15 VDCW; sim to Sprague Type 150D.

SYMBOL	GE PART NO.	DESCRIPTION
C513	19A116080P3	Polyester: 0.022 µf ±20%, 50 VDCW.
C520LL	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW.
C520L	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW.
C520M	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW.
C520H	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW.
C521	19B209351P2	Variable: 2.5 to 20 pf, 200 VDCW, -250 +700 PPM/°C; sim to Katchuhita ECV-12W20P32.
C522LL	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW.
C522L	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW.
C522M	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW.
C522H	5491601P117	Phenolic: 0.68 pf ±5%, 500 VDCW.
C523		(Part of Z502).
C524 thru C527	19A116080P3	Polyester: 0.022 µf ±20%, 50 VDCW.
C528LL	5490008P139	Silver mica: 330 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C528L	5490008P40	Silver mica: 360 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C528M	5490008P139	Silver mica: 330 pf ±10%, 500 VDCW; sim to Electro Motive Type DM-15.
C528H	5490008P40	Silver mica: 360 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C529	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - - - FILTERS - - - - - - - - - -
FL501LL	19B219573G5	Crystal, freq: Sec 1: Resonator A: 11.204000 KHz, Resonator B: 11.196000 KHz. Sec 2: Resonator A: 11.204000 KHz, Resonator B: 11.196000 KHz.
FL501L	19B219574G3	Crystal, freq: Sec 1: Resonator A: 11.200000 KHz, Resonator B: 11.196024 KHz. Sec 2: Resonator A: 11.200000 KHz, Resonator B: 11.196024 KHz.
FL501M	19B219573G5	Crystal, freq: Sec 1: Resonator A: 11.204000 KHz, Resonator B: 11.196000 KHz. Sec 2: Resonator A: 11.204000 KHz, Resonator B: 11.196000 KHz.
FL501H	19B219574G3	Crystal, freq: Sec 1: Resonator A: 11.200000 KHz, Resonator B: 11.196024 KHz. Sec 2: Resonator A: 11.200000 KHz, Resonator B: 11.196024 KHz.
FL502LL		(Part of FL501LL).
FL502L		(Part of FL501L).
FL502M		(Part of FL501M).
FL502H		(Part of FL501H).
		- - - - - - - - JACKS AND RECEPTACLES - - - - -
J501	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.
J502	19A116975P1	Receptacle, wire spring.
J523 and J524	19A116975P1	Receptacle, wire spring.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L501		(Part of printed board 19C321092P1).
L502	19B219419G2	Coil, Includes:
	5491798P5	Tuning slug.
L503	19B219419G4	Coil, Includes:
	5491798P5	Tuning slug.
L504	19C320141G30	Coil, Includes:
	5493185P12	Tuning slug.

SYMBOL	GE PART NO.	DESCRIPTION
L505	7488079P48	Choke, RF: 27.0 µh ±10%, 1.40 ohms DC res max; sim to Jeffers 4422-9K.
L520LL		(Part of Z502LL).
L520L		(Part of Z502L).
L520M		(Part of Z502M).
L520H		(Part of Z502H).
L521	19C320141G6	Coil, Includes:
	5493185P9	Tuning slug.
L522LL	19B209420P27	Coil, RF: 15.0 µh ±5%, 2.75 ohms DC res max; sim to Jeffers 441316-2J.
L522L	19B209420P28	Coil, RF: 18.0 µh ±5%, 3.00 ohms DC res max; sim to Jeffers 441316-3J.
L522M	19B209420P27	Coil, RF: 15.0 µh ±5%, 2.75 ohms DC res max; sim to Jeffers 441316-2J.
L522H	19B209420P28	Coil, RF: 18.0 µh ±5%, 3.00 ohms DC res max; sim to Jeffers 441316-3J.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q501	19A116154P1	N Type, field effect.
Q502	19A116818P1	N Channel, field effect.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R503	3R152P152K	Composition: 1.5K ohms ±10%, 1/4 w.
R521LL	3R151P561J	Composition: 560 ohms ±5%, 1/8 w.
R521L	3R151P331J	Composition: 330 ohms ±5%, 1/8 w.
R521M	3R151P561J	Composition: 560 ohms ±5%, 1/8 w.
R521H	3R151P331J	Composition: 330 ohms ±5%, 1/8 w.
R522	3R152P103K	Composition: 10K ohms ±10%, 1/4 w.
R523	3R152P392K	Composition: 3.9K ohms ±10%, 1/4 w.
R524	3R152P221K	Composition: 220 ohms ±10%, 1/4 w.
R525	3R152P470K	Composition: 47 ohms ±10%, 1/4 w.
		- - - - - - - - - - NETWORKS - - - - - - - - - -
Z502LL	19C320141G4	Coil. Includes: Tuning slug.
Z502L	5493185P9 19C320141G5	Coil. Includes: Tuning slug.
Z502M	19C320141G4	Coil. Includes: Tuning slug.
Z502H	5493185P9 19C320141G5	Coil. Includes: Tuning slug.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19B219470P2	Shield.
	19A129424G1	Can. (Quantity 3).
	4031594P1	Insulator. (Used with C502, C521).
	4033306P23	Washer, fiber. (Used with J501).

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 thru D - Mixer/IF Board 19C320094G1,2

REV. A thru C - Mixer/IF Board 19C320094G3,4

REV. A - RF Filter Board 19C320073G1-4
Above revisions incorporated in initial shipment.

REV. B - RF Filter Board 19C320073G2 & 3
To improve receiver sensitivity. Deleted R3L and R3M.

REV. C - RF Filter Board 19C320073G3
To prevent oscillation. Added R3M.

REV. B - RF Filter Board 19C320073G1, 4

REV. C - RF Filter Board 19C320073G2

REV. D - RF Filter Board 19C320073G3
To improve receiver sensitivity. Changed C2, C3 and C4 and L1 thru L4.

REV. D - RF Filter Board 19C320073G2
To prevent oscillation in pre-selector board. Added R3L.

REV. A,B - RF Assembly 19D416478G1-4
Incorporated in initial shipment.

REV. C - RF Assembly 19D416478G1.
To improve sensitivity in 25-30 MHz range. Changed C1 (part of L301).