



LBI4989F
(DF1107)
(DF1119, IMTS)

MAINTENANCE MANUAL

25-50 MHz RF ASSEMBLY 19D4I6478GI-G4, G10-G13

AND

MIXER/IF BOARD 19C320094GI-G4

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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.

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

CIRCUIT ANALYSIS

RF ASSEMBLY

ANTENNA INPUT A301A/A301B

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

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

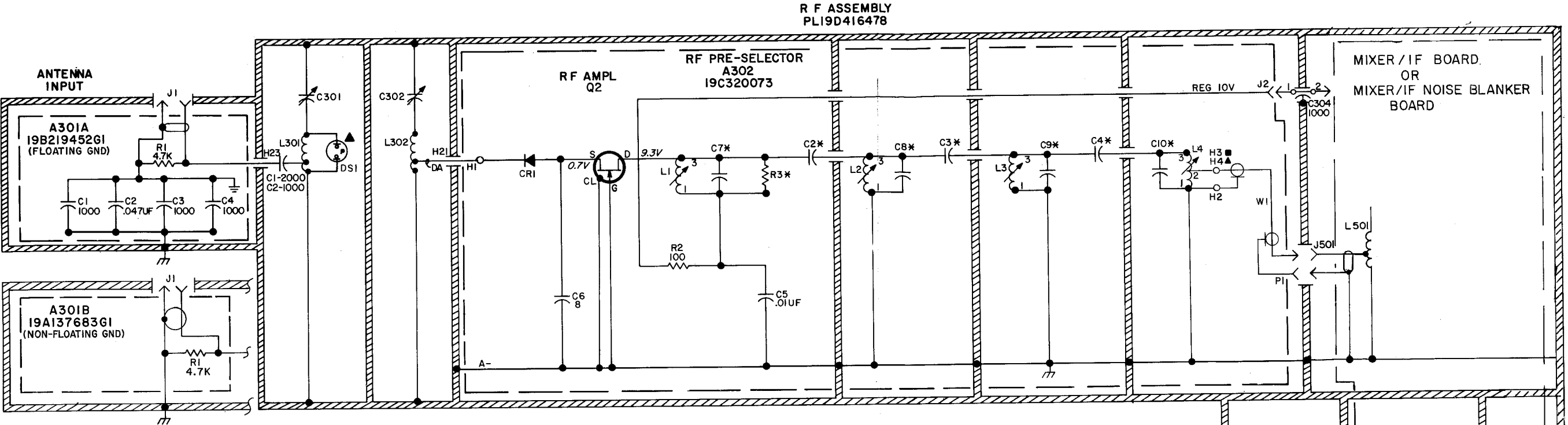
IF amplifier Q502 is a dual-gate FET. The filter output is applied to Gate 1 of the amplifier, and the output is taken from the drain. The biasing on Gate 2 and the drain load determines the gain of the stage. The amplifier provides approximately 20 dB of IF gain. The output of Q502 is coupled through 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.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

GENERAL  **ELECTRIC***
U.S.A.



* COMPONENT VALUE TABLE				
COMP DESIG	LL	L	M	H
RF FREQ	25-30MHZ	30-36MHZ	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			24K	6.2K

MID BAND		
* COMPONENT VALUE TABLE		
SPLIT	ML LOW	MH HIGH
RF FREQ	66-78MHZ	77-88MHZ
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

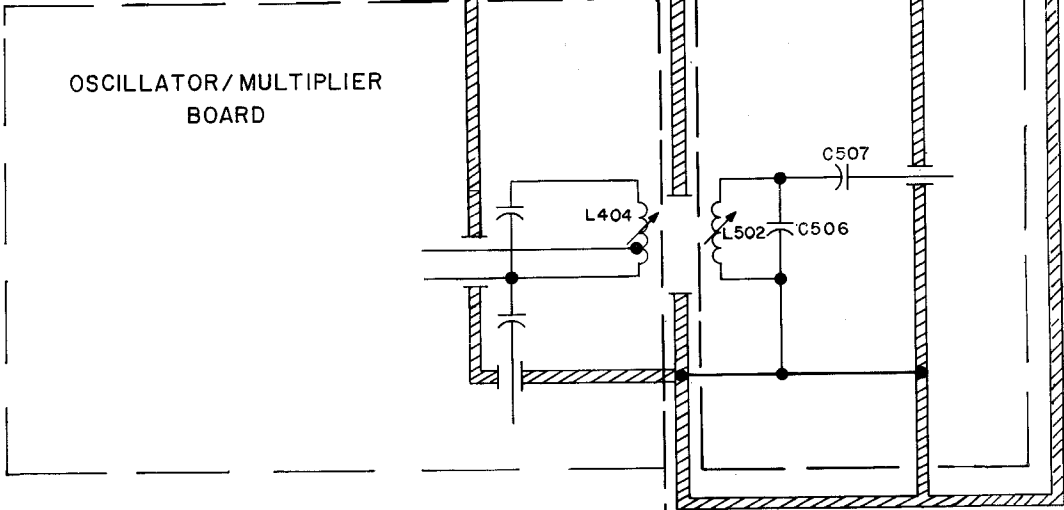
RF ASSEMBLY	RF PRE-SELECTOR	ANTENNA INPUT	FREQ (MHZ)
	REV LTR	REV LTR	
19D416478G1	C	19C320073G1	C 19B219452GI - 25-30 (LL)
19D416478G2	C	19C320073G2	F 19B219452GI - 30-36 (L)
19D416478G3	B	19C320073G3	E 19B219452GI - 36-42 (M)
19D416478G4	B	19C320073G4	C 19B219452GI - 42-50 (H)
19D416478G8	-	19C320073G8	- 19B219452GI - 66-78 (ML)
19D416478G9	-	19C320073G9	- 19B219452GI - 77-88 (MH)
19D416478G10	-	19C320073G1	C 19B219452GI - 25-30 (LL)
19D416478G11	-	19C320073G2	F 19A137683GI - 30-36 (L)
19D416478G12	-	19C320073G3	E 19A137683GI - 36-42 (M)
19D416478G13	-	19C320073G4	C 19A137683GI - 42-50 (H)
19D416478G14	-	19C320073G8	- 19A137683GI - 66-78 (ML)
19D416478G15	-	19C320073G9	- 19A137683GI - 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.

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



SCHEMATIC DIAGRAM

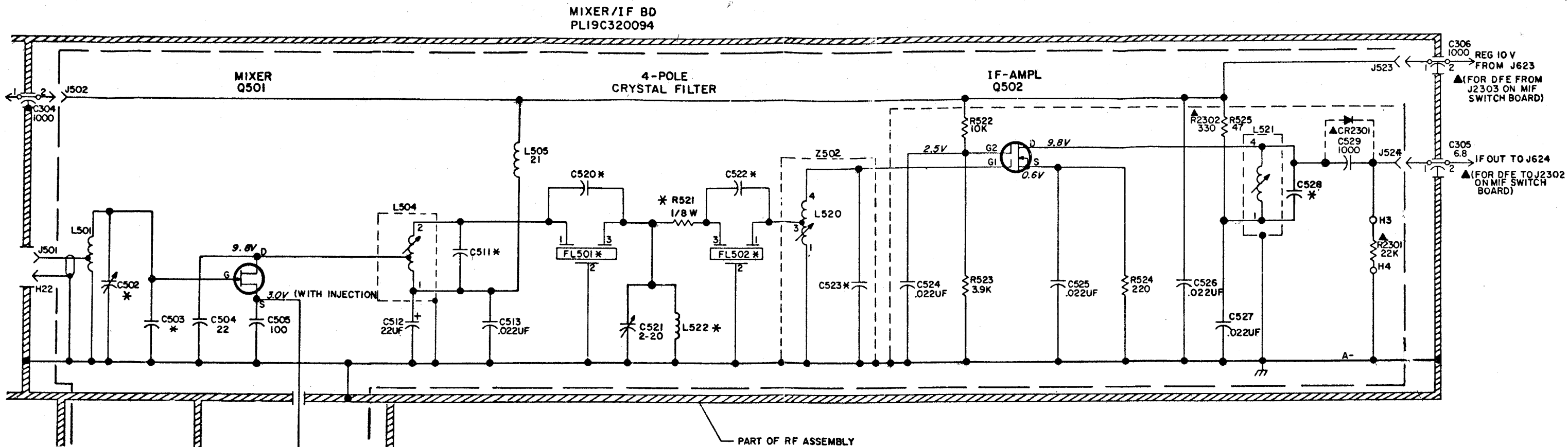
25-50 MHz RF ASSEMBLY

(19D423475, Rev. 10)

PARTS LIST		
LB14989B		
25-50 MHz		
RF ASSEMBLY 19D16478G1-G4, G10-G13		
AND		
MIF ASSEMBLY 19C320094G1-G4		
SYMBOL	GE PART NO.	DESCRIPTION
A301A	COMPONENT BOARD 19B219452G1	
	----- CAPACITORS -----	
	C1	19A116855P19 Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
	C2	19A1168080P5 Polyester: 0.047 μf ±20%, 50 VDCW.
C3 and C4	19A116855P19	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.
R1	----- RESISTORS -----	
	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
A301B	ANTENNA PLATE ASSEMBLY 19A137683G1	
	----- JACKS AND RECEPTACLES -----	
	J1	7104941P20 Connector, jack: sim to National Tel.
	----- RESISTORS -----	
R1	19A700106P79	Composition: 4.7K ohms ±5%, 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 -----	
	C21LL*	19A700013P13 Phenolic: 1.0 pf ±5%, 500 VDCW.
	C21L*	5491601P122 In REV A & earlier: Phenolic: 1.2 pf ±5%, 500 VDCW.
C2M*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW.
	5491601P120	In REV B & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C2H*	19A700013P11	Phenolic: 0.68 pf ±5%, 500 VDCW.
	5491601P119	In REV C & earlier: Phenolic: 0.82 pf ±5%, 500 VDCW.
C3LL*	19A700013P12	Phenolic: 0.82 pf ±5%, 500 VDCW.
	5491601P120	In REV A & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C3LL*	19A700013P13	Phenolic: 1.0 pf ±5%, 500 VDCW.
	5491601P122	In REV A & earlier: Phenolic: 1.2 pf ±5%, 500 VDCW.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C3L*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW.
	5491601P120	In REV B & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C3M*	19A700013P11	Phenolic: 0.68 pf ±5%, 500 VDCW.
	5491601P119	In REV C & earlier: Phenolic: 0.82 pf ±5%, 500 VDCW.
C3H*	19A700013P12	Phenolic: 0.82 pf ±5%, 500 VDCW.
	5491601P120	In REV A & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C4LL*	19A700013P13	Phenolic: 1.0 pf ±5%, 500 VDCW.
	5491601P122	In REV A & earlier: Phenolic: 1.2 pf ±5%, 500 VDCW.
C4L*	5491601P118	Phenolic: 0.75 pf ±5%, 500 VDCW.
	5491601P120	In REV B & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C4M*	19A700013P11	Phenolic: 0.68 pf ±5%, 500 VDCW.
	5491601P119	In REV C & earlier: Phenolic: 0.82 pf ±5%, 500 VDCW.
C4H*	19A700013P12	Phenolic: 0.82 pf ±5%, 500 VDCW.
	5491601P120	In REV A & earlier: Phenolic: 1.0 pf ±5%, 500 VDCW.
C5	19A1168080P101	Polyester: 0.01 μf ±10%, 50 VDCW.
C6	19A116856P8K8	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.
C7M	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.
C8M	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.
C9M	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.
C10M	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.
CR1	----- DIODES AND RECTIFIERS -----	
	19A116052P2	Silicon, hot carrier: Fwd. drop .410 volts max.
J2	----- JACKS AND RECEPTACLES -----	
	19A116975P1	Receptacle, wire spring.



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.

MIXER/IF BD	REV LETTER	FREQ RANGE (MHZ)	IF FREQ (MHZ)
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 M=1,000,000 OHMS. CAPACITOR VALUES μ= MICROFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

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

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

SCHEMATIC DIAGRAM

25-50 MHz MIXER/IF BOARD

Issue 3

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(19D423476, Rev. 2)

SYMBOL	GE PART NO.	DESCRIPTION
L1* thru L3*	19C307170P306	----- INDUCTORS ----- Coil, RF: variable; sim to Paul Smith 092574-DS-3. In 19C320073G1 REV A & earlier: In 19C320073G2 REV B & earlier: In 19C320073G3 REV C & earlier: In 19C320073G4 REV A & earlier:
	19B219419G2	Coil. Includes:
	5491798P5	Tuning slug.
L4*	19C307170P308	Coil, RF: variable; sim to Paul Smith 071774-UG-7. In 19C320073G1 REV A & earlier: In 19C320073G2 REV B & earlier: In 19C320073G3 REV C & earlier: In 19C320073G4 REV A & earlier:
	19B219419G1	Coil. Includes:
	5491798P5	Tuning slug.
P1		----- PLUGS ----- (Part of W1).
Q1*	19A116154P1	----- TRANSISTORS ----- N Type, field effect. Deleted in G1 & G4 by REV C. Deleted in G2 & G3 by REV E.
	19A116960P1	N Type, field effect; sim to Type 2N4416. Added to G1 & G4 by REV C. Added to G2 & G3 by REV E.
R2	19A700106P39	----- RESISTORS ----- Composition: 100 ohms $\pm 5\%$, 1/4 w.
R3L*	3R152P303J	Composition: 30K ohms $\pm 5\%$, 1/4 w. Deleted by REV B. Added to G2 by REV D. Deleted by REV F.
R3M*	3R152P243J	Composition: 24K ohms $\pm 5\%$, 1/4 w. Added by REV C.
	3R152P153J	Composition: 15K ohms $\pm 5\%$, 1/4 w. Deleted by REV B.
R3H	3R152P622J	Composition: 6.2K ohms $\pm 5\%$, 1/4 w.
W1	5491689P85	----- CABLES ----- Cable, RF: approx 4 inches long. (Includes P1).
		----- CAPACITORS ----- (Part of L301).
		(Part of L302).
C301		
C302		
C304	19B209488P2	Ceramic, feed-thru: 1000 pf $\pm 10\%$ -0%, 500 VDCW; sim to Allen-Bradley Style FA5D.
C305	19B209488P1	Ceramic, feed-thru: 6.8 pf $\pm 20\%$, 500 VDCW; sim to Allen-Bradley Style FA5D.
C306	19B209488P2	Ceramic, feed-thru: 1000 pf $\pm 10\%$ -0%, 500 VDCW; sim to Allen-Bradley Style FA5D.
L301LL	19B219455G1	----- INDUCTORS ----- Coil. Includes:
	C1*	Capacitor, ceramic disc: 2000 pf $\pm 20\%$, 1000 VDCW; sim to RMC Type JF Discap. In 19D416478G2 of REV B & earlier:
	5494481P11	Capacitor, ceramic disc: 1000 pf $\pm 20\%$, 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 $\pm 20\%$, 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.

SYMBOL	GE PART NO.	DESCRIPTION
L301M	19B219455G3	Coil. Includes:
C2	5494481P11	Capacitor, ceramic disc: 1000 pf $\pm 20\%$, 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.
L301H	19B219455G3	Coil. Includes:
C2	5494481P11	Capacitor, ceramic disc: 1000 pf $\pm 20\%$, 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.
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 P64IDRIV®: No. 6-32 x 5/16. (Secures A301 & A302).
C502LL	5490446P1	MIF ASSEMBLY 19C320094G1 25-30 MHz (LL) 19C320094G2 30-36 MHz (L) 19C320094G3 36-42 MHz (M) 19C320094G4 42-50 MHz (H)
	C502L	Variable, ceramic: approx 8-50 pf, 350 VDCW, temp coef -750 PPM; sim to Erie Style 557-36.
	C502M	Variable, ceramic: approx 8-50 pf, 350 VDCW, temp coef -750 PPM; sim to Erie Style 557-36.
C502H	19A700012P2	Variable, ceramic: 2.5-20 pf, 200 VDCW, temp coef -250 to -700 Parts/M°C; sim to Panasonic ECV- LW20X32.
C503LL	5490008P21	Variable, ceramic: 2.5-20 pf, 200 VDCW, temp coef -250 to -700 Parts/M°C; sim to Panasonic ECV- LW20X32.
C503L	5490008P17	Silver mica: 56 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C503M	5490008P13	Silver mica: 27 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C503H	5490008P8	Silver mica: 15 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C504	19A116656P22J0	Ceramic disc: 22 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C505	5490008P27	Silver mica: 100 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C506LL	19A116656P27K8	Ceramic: 27 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C506L	19A116656P24K8	Ceramic disc: 24 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C506M	19A116656P15K8	Ceramic disc: 15 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C506H	19A116656P12K8	Ceramic disc: 12 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C507LL	19A700013P13	Phenolic: 1.0 pf $\pm 5\%$, 500 VDCW.
C507L	19A700013P12	Phenolic: 0.82 pf $\pm 5\%$, 500 VDCW.
C507M	19A700013P11	Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW.
C507H	19A700013P10	Phenolic: 0.56 pf $\pm 5\%$, 500 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C508LL	19A116656P27K8	Ceramic disc: 27 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C508L	19A116656P24K8	Ceramic disc: 24 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C508M	19A116656P15K8	Ceramic disc: 15 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C508H	19A116656P12K8	Ceramic disc: 12 pf $\pm 10\%$, 500 VDCW, temp coef -80 PPM.
C509	19A116080P101	Polyester: 0.01 pf $\pm 10\%$, 50 VDCW.
C511	5490008P137	Silver mica: 270 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C511L	5490008P141	Silver mica: 390 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C511M	5490008P137	Silver mica: 270 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C511H	5490008P141	Silver mica: 390 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C512	5496267P10	Tantalum: 22 pf $\pm 20\%$, 15 VDCW; sim to Sprague Type 150D.
C513	19A116080P3	Polyester: 0.022 pf $\pm 20\%$, 50 VDCW.
C520LL	19A700013P9	Phenolic: 0.47 pf $\pm 5\%$, 500 VDCW.
C520L	19A700013P11	Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW.
C520M	19A700013P9	Phenolic: 0.47 pf $\pm 5\%$, 500 VDCW.
C520H	19A700013P11	Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW.
C521	19A700012P2	Variable: 2.5-20 pf, 200 VDCW, -250 to -700 Parts/M°C; sim to Panasonic ECV-LW20X32.
C522LL	19A700013P9	Phenolic: 0.47 pf $\pm 5\%$, 500 VDCW.
C522L	19A700013P11	Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW.
C522M	19A700013P9	Phenolic: 0.47 pf $\pm 5\%$, 500 VDCW.
C522H	19A700013P11	Phenolic: 0.68 pf $\pm 5\%$, 500 VDCW.
C523		(Part of 4502).
C524 thru C527	19A116080P3	Polyester: 0.022 pf $\pm 20\%$, 50 VDCW.
C528LL	5490008P139	Silver mica: 330 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C528L	5490008P40	Silver mica: 360 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C528M	5490008P139	Silver mica: 330 pf $\pm 10\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C528H	5490008P40	Silver mica: 360 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15.
C529	19A116655P19	Ceramic disc: 1000 pf $\pm 20\%$, 1000 VDCW; sim to RMC Type JF Discap.
FL501LL	19B219573G5	----- FILTERS ----- Crystal, freq: Resonator A: 11204.000 KHz, Resonator B: 11196.000 KHz, Resonator A: 11204.000 KHz, Resonator B: 11196.000 KHz.
	FL501L	Crystal, freq: Resonator A: 9400.000 KHz, Resonator B: 9396.024 KHz.
	FL501M	Crystal, freq: Resonator A: 11204.000 KHz, Resonator B: 11196.000 KHz, Resonator A: 11204.000 KHz, Resonator B: 11196.000 KHz.
FL501H	19B219574G6	Crystal, freq: Resonator A: 9400.000 KHz, Resonator B: 9396.024 KHz.
FL502LL		(Part of FL501LL).
FL502L		(Part of FL501L).
FL502M		(Part of FL501M).
FL502H		(Part of FL501H).

SYMBOL	GE PART NO.	DESCRIPTION
J501	19A130924G1	----- JACKS AND RECEPTACLES ----- Receptacle, coaxial: jack type; sim to Cinch 14H11613.
J502	19A116975P1	Receptacle, wire spring.
J523 and J524	19A116975P1	Receptacle, wire spring.
L501		----- INDUCTORS ----- (Part of printed board 19C321092P1).
	L502	Coil. Includes:
	5491798P5	Tuning slug.
L503	19B219419G4	Coil. Includes:
	5491798P5	Tuning slug.
L504	19C320141G30	Coil. Includes:
	5493185P12	Tuning slug.
L505	7488079P48	Choke, RF: 27.0 μ h $\pm 10\%$, 1.40 ohms DC res max; sim to Jeffers 4422-8K.
L520LL		(Part of 4502LL).
L520L		(Part of 4502L).
L520M		(Part of 4502M).
L520H		(Part of 4502H).
L521	19C320141G6	Coil. Includes:
	5493185P9	Tuning slug.
L522LL	19B209420P27	Coil, RF: 15.0 μ h $\pm 5\%$, 2.75 ohms DC res max; sim to Jeffers 441316-2J.
L522L	19B209420P28	Coil, RF: 18.0 μ h $\pm 5\%$, 3.00 ohms DC res max; sim to Jeffers 441316-3J.
L522M	19B209420P27	Coil, RF: 15.0 μ h $\pm 5\%$, 2.75 ohms DC res max; sim to Jeffers 441316-2J.
L522H	19B209420P28	Coil, RF: 18.0 μ h $\pm 5\%$, 3.00 ohms DC res max; sim to Jeffers 441316-3J.
Q501	19A116154P1	----- TRANSISTORS ----- N Type, field effect.
	Q502	N Channel, field effect.
		----- RESISTORS -----
R503	19A700106P67	Composition: 1.5K ohms $\pm 10\%$, 1/4 w.
R521LL	3R151P561J	Composition: 560 ohms $\pm 5\%$, 1/8 w.
R521L	3R151P331J	Composition: 330 ohms $\pm 5\%$, 1/8 w.
R521M	3R151P561J	Composition: 560 ohms $\pm 5\%$, 1/8 w.
R521H	3R151P331J	Composition: 330 ohms $\pm 5\%$, 1/8 w.
R522	19A700106P87	Composition: 10K ohms $\pm 10\%$, 1/4 w.
R523	19A700106P77	Composition: 3.9K ohms $\pm 5\%$, 1/4 w.
R524	19A700106P47	Composition: 220 ohms $\pm 5\%$, 1/4 w.
R525	19A700106P31	Composition: 47 ohms $\pm 5\%$, 1/4 w.
4502LL	19C320141G4	----- NETWORKS ----- Coil. Includes:
	5493185P9	Tuning slug.
	4502L	Coil. Includes:
	5493185P9	Tuning slug.
4502M	19C320141G4	Coil. Includes:
	5493185P9	Tuning slug.
4502H	19C320141G5	Coil. Includes:
	5493185P9	Tuning slug.
19B219470P2		----- MISCELLANEOUS ----- Shield.
	19A129424G1	Can. (Quantity 3).
	4031594P1	Insulator. (Used with C502, C521).
	4035306P23	Washer, fiber. (Used with J501).

SYMBOL	GE PART NO.	DESCRIPTION
C2301		RECEIVER MOD KIT 19A129750G1
	19A116656P8J0	----- CAPACITORS ----- Ceramic disc: 8 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
		----- DIODES AND RECTIFIERS ----- Silicon, pin: 35 volt Reverse Breakdown, 400 mW.
CR2301	19A116925P1	Coil. Includes:
R2301	19A700106P95	Composition: 22K ohms $\pm 5\%$, 1/4 w.
R2302	19A700106P59	Composition: 680 ohms $\pm 10\%$, 1/4 w.
W2301		----- CABLES ----- Cable, RF: approx 1 foot long, includes connector (5496078P2).
	19B219899G2	
C2301*		DUAL FRONT END MOD KIT 19A129750G2
	19A116656P8J0	----- CAPACITORS ----- Ceramic disc: 8 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV D.

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 thru D - Mixer/IF Board 19C320094G1, G2
REV. A thru C - Mixer/IF Board 19C320094G3, G4
REV. A - RF Filter Board 19C320073G1-G4
Above revisions incorporated in initial shipment.
- REV. B - RF Filter Board 19C320073G2 & G3
To improve receiver sensitivity. Deleted R3L and R3M.
- REV. C - RF Filter Board 19C320073G3
To prevent oscillation. Added R3M.
- REV. B
REV. C
REV. D - RF Filter Board 19C320073G1, G4
- RF Filter Board 19C320073G2
- 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-G4
Incorporated in initial shipment.
- REV. C - RF Assembly 19D416478G1
To improve sensitivity in 25-30 Mhz range.
Changed C1 (part of L301).
- REV. C
REV. E - RF Filter Board 19C320073G1, G4
- RF Filter Board 19C320073G2, G3
To standardize components. Deleted Q1 and PWB 19C320072.
Added Q2 and PWB 19C327760P1.
- REV. F - RF Filter Board 19C320073G2
To improve RF sensitivity. Deleted R3L.