(For Mastr II radios. Addendum #1 is included)

MOBILE RADIO

LBI-30038C
(DFI110)

MAINTENANCE MANUAL
RF STEERING SWITCH 19C320583G1,
MIXER-IF SWITCH 19C320691G2 AND
MIXER-IF SWITCH/2nd CONVERTER 19C320691G1

TABLE OF CONTENTS

DESCRIPTION

In DFE applications, an RF Steering switch, a Mixer/IF switch (MIF switch) or Mixer IF/2nd converter is required.

The RF Steering switch connects a single antenna to the receiver or DFE front end. The RF Steering switch is controlled by the select lead on the DFE Osc/Mult board.

DFE's are capable of cross band or same band operation. When the receiver and DFE have different IF frequencies, the MIF Switch/Converter is used to convert the DFE IF frequency to the receive IF frequency. The converter circuit converts a 9.4 MHz IF frequency to 11.2 MHz, or an 11.2 MHz IF frequency to 9.4 MHz and applies it to the IFAS board.

When matching IF frequencies are used, a MIF switch is used to apply the DFE IF to the IFAS board.

CIRCUIT ANALYSIS

RF STEERING SWITCH

The RF Steering Switch consists of PIN diodes CR1 and CR2, dc switches Q1 through Q3, and associated components. Pin diodes CR1 and CR2 are placed in series with the input/output RF paths through the RF Steering Switch. These diodes, when forward biased, establish a low resistance path between input and output of either selected channel (J1 to J2 or J3 to J2) but not both channels simultaneously.

RF from the antenna switch is applied to J2 (ANT) of the RF Steering Switch. When the select line from the DFE OSC/MULT board is a high voltage state (approximately +10V), indicating selection of the Receiver channel (ICOM of selected channel in Receiver), transistors Q1 and Q2 are turned OFF, turning Q3 ON. With Q3 turned ON, PIN diode CR2 is forward biased through the DC path from the collector of Q3, L2, PIN diode CR2, R6 and L3 to A-. A low resistance RF path is provided from J2 (ANT) through C6, CR2 and C5 to J1 (RX). The antenna is now connected to the Receiver channel with the RF Steering switch offering a very low insertion loss (less than 0.5 dB).

Inductors L1, L2, L3 are RF chokes which provide RF isolation from the DC circuits. The DC Voltage developed across R6 reverse biases PIN diode CR1, increasing its resistance, thus providing a minimum of 22 dB of isolation (typically 30 dB of isolation) between the selected receiver channel and the unselected DFE channel.

When the DFE Channel is selected (ICOM of selected channel in DFE), the select line pulls to a low voltage state (+8.5 V maximum). As a result, Q2 turns ON, turning Q3 OFF. Also, Q1 turns ON, forward biasing PIN diode CR1. The antenna RF path is then coupled from J2 (ANT) through C6, CR1, and C4 to J3 (DFE). The DC path from the collector of Q1 is through L1, CR1, R6 and L3 to A-. The voltage developed across R6 reverse biases PIN diode CR2, increasing its resistance. This provides RF isolation of the unselected Receiver Channel.

MIXER-IF SWITCH (MATCHING IF FREQUENCY)

IF signal from the DFE IF-Filter board is applied to the Mixer-IF Switch board (MIF Switch) through J2302. The IF output of the MIF Switch is applied through W2302 and W2301 to the IFAS board of the Receiver Channel. W2302 and W2301 are 72-ohm coaxial cables.

Transistor Q2304 and pin diode CR2302 comprise the IF switching circuit that determines whether the IF signal from the DFE is applied to the IFAS board. Regulated +10V from P2301-14 is applied to Q2304 to control the biasing of PIN diode CR2302.

Selecting the DFE channel causes the select line to drop to 8.5 volts. This turns on DC switch Q2304 and applies +10 volts to the anode of PIN diode CR2302. This forward biases the diode, applying the input IF signal from J2302 on the MIF Switch board to the IFAS board through cables W2302 and W2301. Forward biasing the PIN diode also applies +10 Volts through cables W2302 and W2301, through the IFAS board (J624) to the IF output of the Receiver MIF board. This positive voltage is then applied to the cathode of PIN diode CR2301 on the Receiver MIF board. The positive voltage applied to the anode of CR2301 is slightly lower than that on its cathode (approximately 1 Volt lower) thus reverse biasing CR2301. This isolates the Receiver IF and, allows the DFE MIF Switch to operate into the IFAS board.

Metering jack J2301 provides MULT 1 (J2301-3) and MULT 2 (J2301-4) metering points.

Selecting the receiver channel causes the Select Line to go to +10 Volts. This turns DC switch Q2304 off and removes the forward bias voltage from CR2302. This interrupts the DFE IF signal path to the IFAS board. Regulated +10 Volts from the IFAS board is applied to R2302 on the receiver MIF board through J623. This DC voltage is then applied through the IF output tuned circuit to PIN diode CR2301 forward biasing CR2301.

The DC voltage from CR2301 on the Receiver MIF board is applied through cable W2301 and W2302, to the MIF switch. This voltage reverse biases PIN diode CR2302, isolating the DFE from the IFAS board.

Voltage compensation for the DFE ICOMs is provided by a voltage divider consisting of R2327 and R2328. The regulated +10 Volts input to the voltage divider provides +5 Volts compensation at P2301-15. This voltage provides compensation from 0°C to +55°C, in the event of a failure of the compensator in the DFE 5C-ICOM.

MIXER-IF SWITCH/2ND CONVERTER (NON-MATCHING IF FREQUENCY)

The MIF Switch/2nd Converter board contains a High Pass Filter, a Mixer circuit, a Bandpass Filter, a 1.8 MHz Local Oscillator and Low Pass Filter, a Diode-Shorting Switch, a DC Switch and an IF-DC Switch. The Mixer-IF Switch/2nd Converter (MIF Switch/2nd Converter) performs a second conversion of the IF output from the DFE MIF board and controls the operation of the IF-DC switch. The IF-DC switch controls the DFE IF signal to the IFAS board.

A 1.8 MHz signal generated on the MIF Switch, is mixed with the incoming 11.2 MHz IF from the MIF board. The IF output (11.2 MHz - 1.8 MHz = 9.4 MHz) from the MIF switch will now match that of the IFAS board in the Receiver channel. The IF output signal is achieved by proper tuning of the circuits within the MIF Switch/2nd Converter. The MIF Switch/2nd Converter also provides unity gain of the converted output IF signal.

IF AMPLIFIER AND HIGHPASS FILTER

The IF signal from the DFE MIF board enters the MIF Switch/2nd Converter board through J2302. The IF signal is then applied to IF amplifier Q2307. The output from the emitter of Q2307 is coupled to a 9 MHz highpass filter, which consists of C2318 through C2322, and L2304 and L2305. The output of the Highpass Filter is applied to Gate 1 of Mixer Q2308 (dual-gate FET).

1.8 MHz LOCAL OSCILLATOR AND 2 MHz LOWPASS FILTER

The local oscillator (Y2301 and Q2301) operates at a fundamental frequency of 1.8 MHz. The output at the collector of Q2301 is coupled to the input of a 2 MHz Lowpass Filter which is used to reduce injection of local oscillator harmonics into the mixer circuit. The Lowpass Filter consists of L2301 and L2302 and capacitors C2306 through C2310. The output of the Lowpass Filter is coupled through C2311 to Gate 2 of Mixer Q2308 (Mixer Injection).

MIXER

The Mixer (Q2308) uses a dual-gate FET as the active device. The mixer injection is applied to Gate 2 of Q2308 and is mixed with the IF signal applied to Gate 1, producing a difference frequency of 9.4 MHz (11.2 MHz - 1.8 MHz = 9.4 MHz). This 2nd IF frequency is coupled from the drain of Q2308 to a tunable Bandpass Filter consisting of L2306, L2307, L2308, and C2329 through C2331. The Bandpass Filter is tuned to 9.4 MHz.

The converted IF output or 2nd IF output, from the Bandpass Filter is coupled through PIN diode CR2302 to W2302. W2302 is a 72-ohm coaxial cable equipped with an in-line connector.

DIODE SHORTING SWITCH AND DC SWITCH CIRCUIT

Transistor switches Q2302 and Q2303, and PIN diode CR2301 are used as an RF shorting switch to provide a RF path to A- at the mixer injection point (GATE 2 of Q2308) when the DFE channel is not selected. This provides additional protection against spurious response in the Receiver channel.

When the DFE channel is not selected the select line goes to a high voltage state (approximately +10V). Q2302 turns OFF and Q2303 turns ON. Diode CR2301 is forward biased by the collector voltage of Q2303. When this occurs an RF short is presented by C2313 and CR2301 to A-.

When the DFE channel is selected, the select line pulls to a low voltage state (+8.5V maximum). As a result, Q2302 is turned ON and Q2303 is turned OFF, thus removing the RF short from the mixer injection point and allowing the mixer circuit to operate.

IF-DC SWITCH

Selecting the DFE channel causes the select line to drop to a maximum of 8.5 volts, turning on DC switch Q2304 and applying +10 Volts to the anode of PIN diode CR2302. This forward biases CR2302 and applies the input IF signal from J2302 on the MIF Switch/2nd Converter board to the IFAS board through cables W2302 and W2301. Forward biasing the PIN diode also applies +10 Volts through cables W2302 and W2301, through the IFAS board (J624) to the IF output of the Receiver MIF board. This allows the converted or 2nd IF signal to be coupled to the Receiver IFAS board through cables W2302 and W2301. This same DC voltage is also applied to the IF output of the Receiver MIF board, reverse biasing PIN diode CR2301. The positive voltage applied to the anode of CR2301 on the Receiver MIF board is slightly lower than that on its cathode (approximately 1 Volt lower), thus reverse biasing CR2301. This provides isolation of the Receiver channel from the IFAS board.

Selecting the receiver channel causes the select line to go to +10 Volts. This turns DC switch Q2304 off and removes the forward bias voltage from CR2302, interrupting the DFE IF signal path. Regulated +10 Volts from the IFAS board is applied to R2302 on the receiver MIF board through J623. This DC voltage is then applied through the IF output tuned circuit to forward bias PIN diode CR2301.

The DC voltage from CR2301 on the Receiver MIF board is applied through cable W2301 and W2302, to the MIF Switch/2nd Converter. This voltage reverse biases PIN diode CR2302 on the MIF Switch/2nd Converter, isolating the DFE from the IFAS board.

Metering jack J2301 provides MULT 1 (2301-3) and MULT 2 (J2301-4) metering points.

Voltage compensation for the DFE ICOMs is provided by a voltage divider network consisting of R2327 and R2328. The regulated +10 Volts input to the voltage divider provides +5 Volts compensation at P2301-15.

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

GENERAL ELECTRIC*
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Printed in U.S.A.

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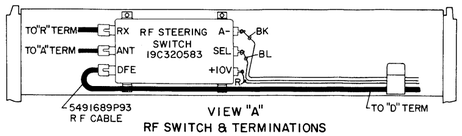
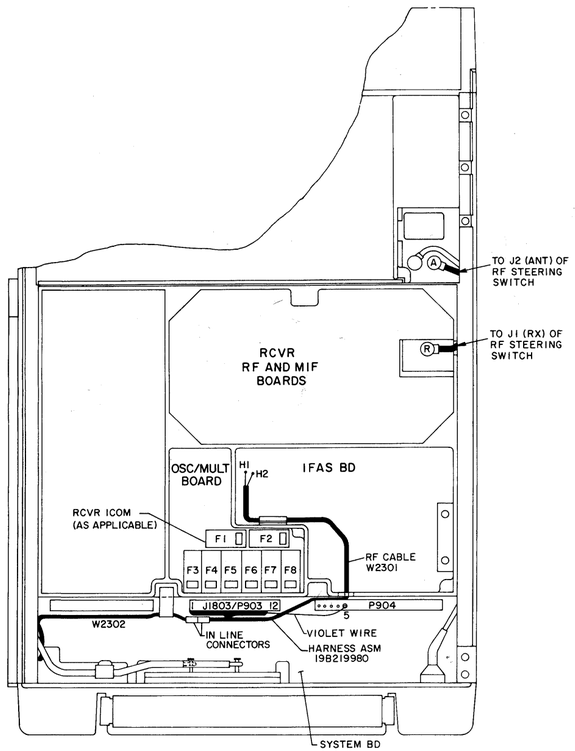
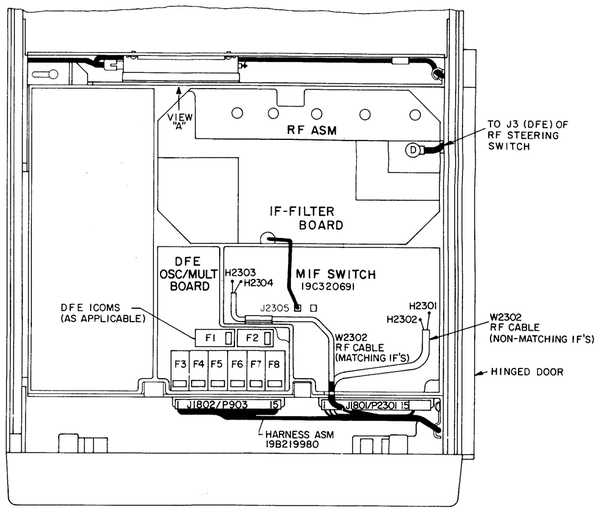
CABLE HARNESS ROUTING



RF SWITCH & TERMINATIONS



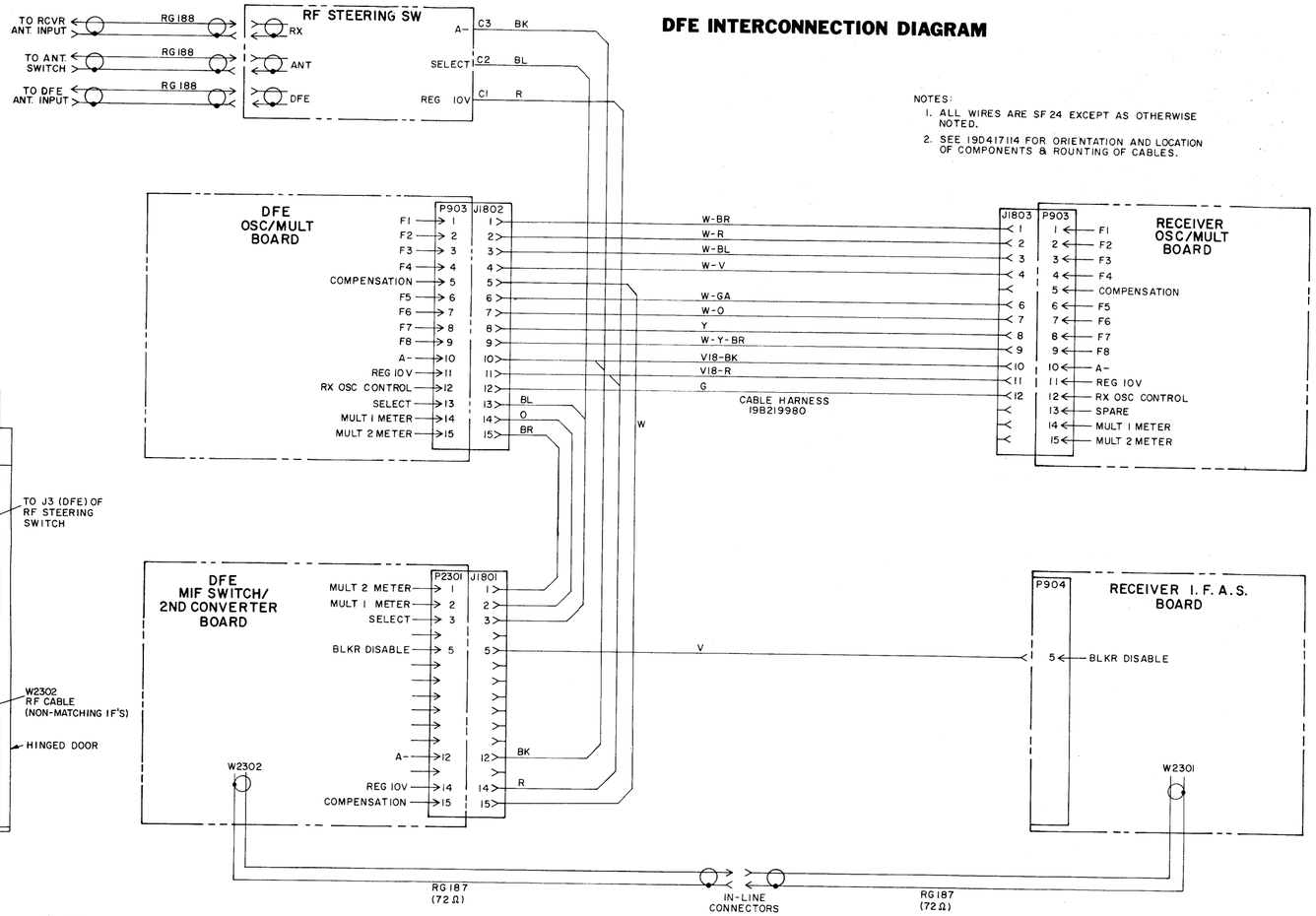
TOP VIEW
RECEIVER



BOTTOM VIEW OF HINGE ASM
DUAL FRONT END

RC-2593

DFE INTERCONNECTION DIAGRAM



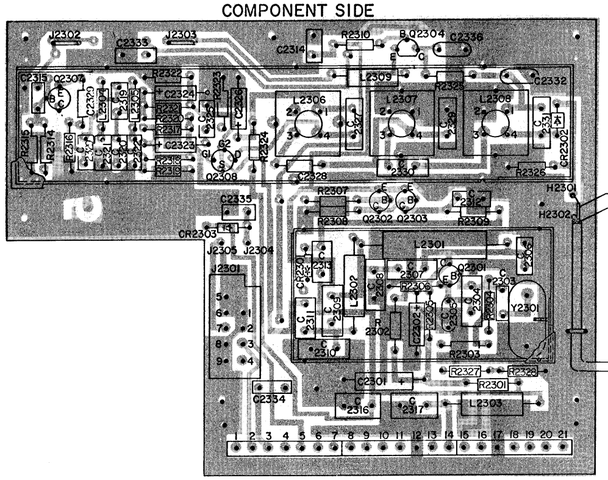
(19D417142, Rev. 2)

CABLE HARNESS ROUTING & INTERCONNECTION DIAGRAM

MIF SWITCH/2ND CONVERTER BOARD (NON-MATCHING IF FREQ)

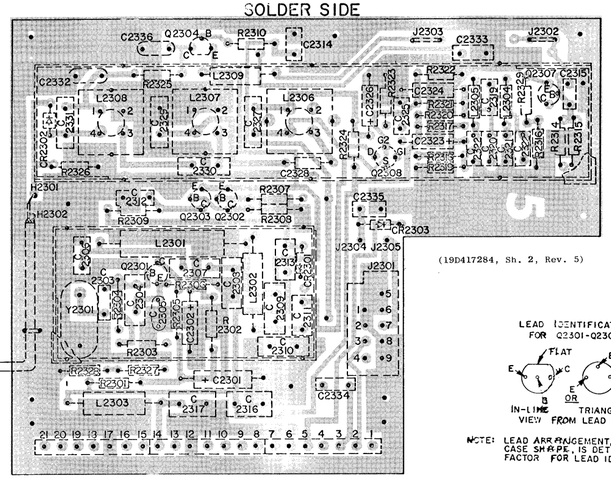
19C320691G1

COMPONENT SIDE



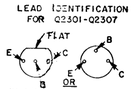
(19D417284, Sh. 2, Rev. 5)
(19D417284, Sh. 3, Rev. 5)

SOLDER SIDE



(19D417284, Sh. 2, Rev. 5)

LEAD IDENTIFICATION FOR Q2301-Q2307

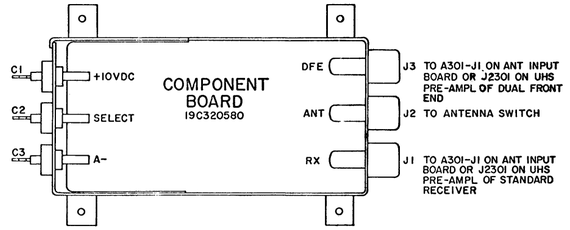


LEAD IDENTIFICATION FOR Q2308

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

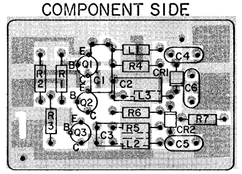
RF STEERING SWITCH

19C320583



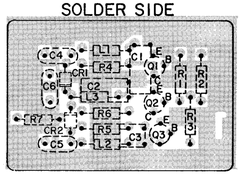
RF STEERING SWITCH BOARD

COMPONENT SIDE



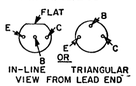
(19C320581, Sh. 2, Rev. 1)
(19C320581, Sh. 3, Rev. 1)

SOLDER SIDE



(19C320581, Sh. 2, Rev. 1)

LEAD IDENTIFICATION FOR Q1, Q2, & Q3

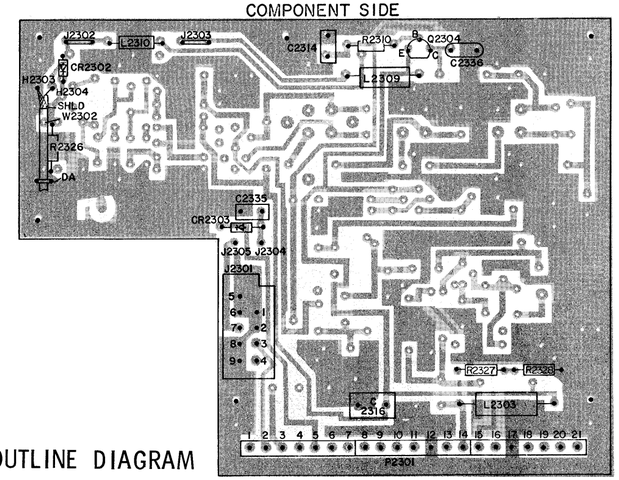


NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

MIF SWITCH BOARD (MATCHING IF FREQ)

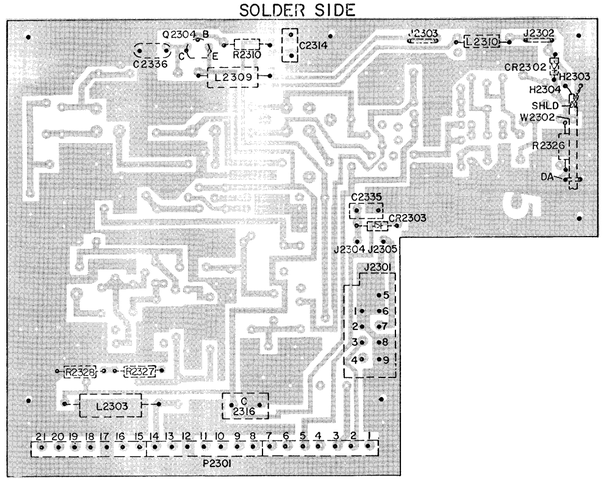
19C320691G2

COMPONENT SIDE



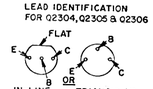
(19D417284, Sh. 2, Rev. 5)
(19D417284, Sh. 3, Rev. 5)

SOLDER SIDE



(19D417284, Sh. 2, Rev. 5)

LEAD IDENTIFICATION FOR Q2304, Q2305 & Q2306



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

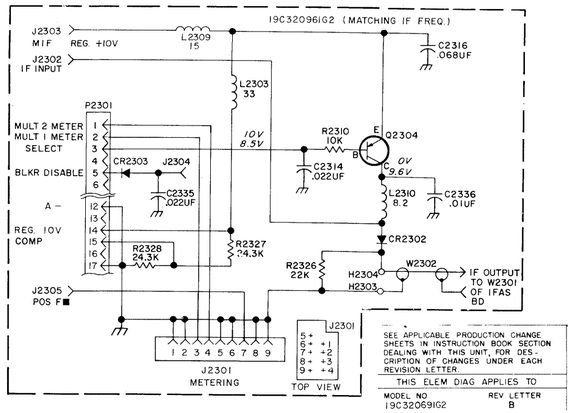
RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

(19R622099, Rev. 6)

OUTLINE DIAGRAM

MIF SWITCH (MATCHING IF'S)
MIF SWITCH/2nd CONVERTER (NON-MATCHING IF'S)
RF STEERING SWITCH

MIXER-IF-SWITCH (MATCHING IF'S)

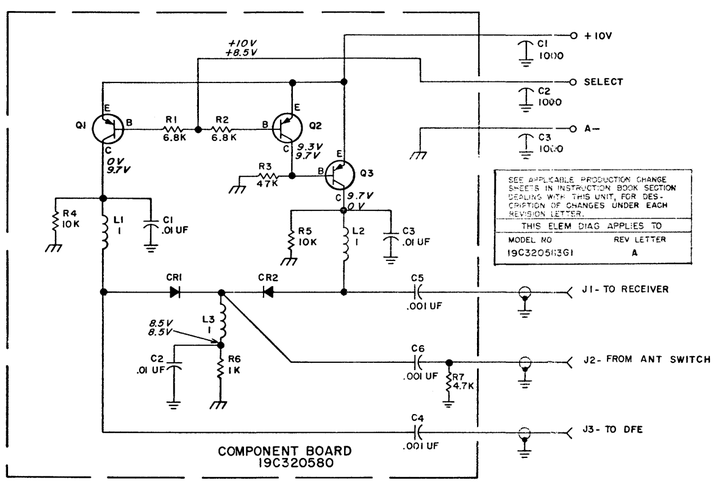


(19B226053, Rev. 5)

VOLTAGE READINGS

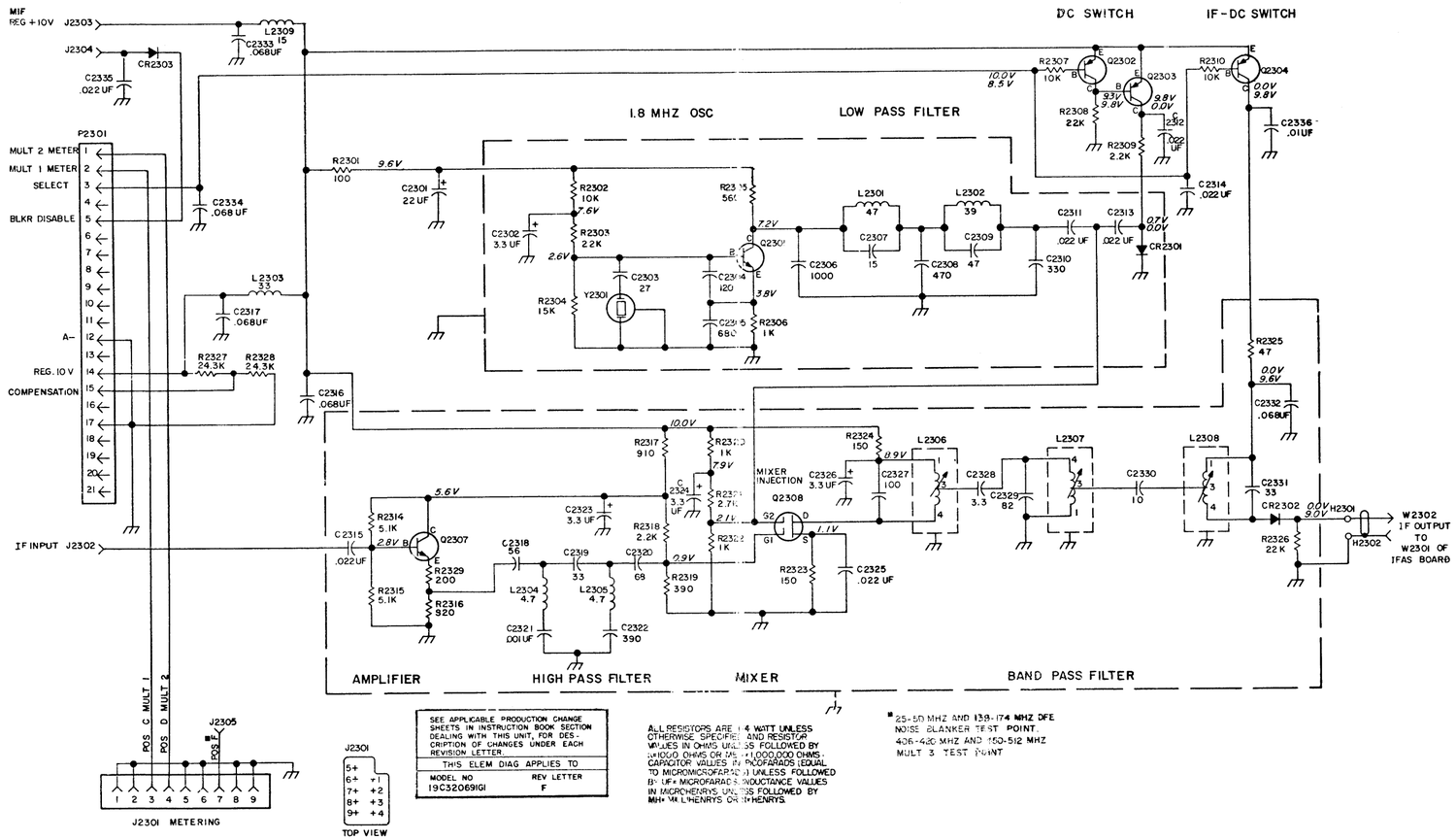
VOLTAGE READINGS ARE TYPICAL READINGS MEASURED TO SYSTEM NEGATIVE (A–) WITH TEST SET MODEL 4EX3A11 OR A 20,000 OHM-PER-VOLT METER. VOLTAGES LISTED AT THE TOP ARE TAKEN WITH THE SELECT LINE IN A "HIGH STATE." THE BOTTOM VOLTAGES WERE TAKEN WITH THE SELECT LINE IN A "LOW STATE."

RF STEERING SWITCH



(19C320585, Rev. 2)

MIXER-IF SWITCH/2nd CONVERTER (NON-MATCHING IF'S)



(19D417300, Rev. 10)

SCHEMATIC DIAGRAMS

MIF SWITCH (MATCHING IF'S)
MIF SWITCH/2nd CONVERTER (NON-MATCHING IF'S)
RF STEERING SWITCH

PARTS LIST

LBI4673H

MIF SWITCH/2ND CONVERTER
(NON-MATCHING IF FREQ)
MIF SWITCH (MATCHING IF FREQ)
RF STEERING SWITCH

SYMBOL	GE PART NO.	DESCRIPTION
		MIF SWITCH/2ND CONVERTER (NON-MATCHING IF FREQ) 19C320691G1
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C2301	5496267P10	Tantalum: 22 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C2302	5496267P9	Tantalum: 3.3 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C2303	7489162P13	Silver mica: 27 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2304	19A700105P36	Mica: 120 pF ±5%, 500 VDCW.
C2305*	19A700001P6	Ceramic: 680 pF ±20%, 50 VDCW.
		In REV D & earlier:
	7489162P43	Silver mica: 470 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2306	5494481P12	Ceramic disc: 1000 pF ±10%, 1000 VDCW; sim to Type JF Discap.
C2307	19A700105P11	Mica: 15 pF ±5%, 500 VDCW.
C2308	7489162P43	Silver mica: 470 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2309	19A700105P26	Mica: 47 pF ±5%, 500 VDCW.
C2310	7489162P39	Silver mica: 330 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2311 thru C2315	19A116080P103	Polyester: 0.022 uF ±10%, 50 VDCW.
C2316 and C2317	19A116080P106	Polyester: 0.068 uF ±10%, 50 VDCW.
C2318	19A700105P28	Mica: 56 pF ±5%, 500 VDCW.
C2319	7489162P15	Silver mica: 33 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2320	19A700105P30	Mica: 68 pF ±5%, 500 VDCW.
C2321	5494481P12	Ceramic disc: 1000 pF ±10%, 1000 VDCW; sim to Type JF Discap.
C2322	7489162P41	Silver mica: 390 pF ±5%, 500 VDCW; sim to Sprague Type 118.
C2323 and C2324	5496267P9	Tantalum: 3.3 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C2325	19A116080P103	Polyester: 0.022 uF ±10%, 50 VDCW.
C2326	5496267P9	Tantalum: 3.3 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C2327	19A700105P34	Mica: 100 pF ±5%, 500 VDCW.
C2328	5491601P130	Phenolic: 3.6 pF ±5%, 500 VDCW.
C2329	19A700105P32	Mica: 82 pF ±5%, 500 VDCW.
C2330	19A700105P6	Mica: 10 pF ±5%, 500 VDCW.
C2331*	7489162P15	Silver mica: 33 pF ±5%, 500 VDCW; sim to Sprague Type 118.
		In REV B and earlier:
	7489162P19	Silver mica: 47 pF ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C2332*	19A116080P106	Polyester: 0.068 uF ±10%, 50 VDCW.
		In REV A and earlier:
	5496267P9	Tantalum: 3.3 uF ±20%, 15 VDCW; sim to Sprague Type 150D.
C2333 and C2334	19A116080P106	Polyester: 0.068 uF ±10%, 50 VDCW.
C2335	19A116080P103	Polyester: 0.022 uF ±10%, 50 VDCW.
C2336*	19A116080P101	Polyester: 0.01 uF ±10%, 50 VDCW. Added by REV B.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
C2301	4037822P1	Silicon, 1000 mA, 400 PIV.
C2302	19A116925P1	Silicon.
C2303	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J2301	19B219374G1	Connector: 9 contacts. Includes: Shell.
J2302 and J2303	19A116975P1	Receptacle, wire spring.
J2304 and J2305	19A701785P1	Contact, electrical; sim to Molex 08-50-0404.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L2301	7488079P69	Coil, RF: 47 uH 10%, 1.1 ohms DC res. max; sim to Jeffers 4420-5.
L2302	7488079P50	Coil, RF: 39 uH 10%, 2.0 ohms DC res. max; sim to Jeffers 4422-11.
L2303	7488079P49	Coil, RF: 33 uH 10%, 1.9 ohms DC res. max; sim to Jeffers 4422-10.
L2304 and L2305	19A700024P21	Coil, RF: 4.7 uH ±10%.
L2306 thru L2308	19C320141G3	Coil. Includes:
	5493185P9	Tuning slug.
L2309	19A700000P25	Coil, RF: 15.0 uH ±10%, 350 VRMS.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P2301	19B219594P1	Contact, electrical: 7 pins. (Quantity 3).
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q2301	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q2302 thru Q2304	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q2305*	19A115852P1	Silicon, PNP; sim to Type 2N3906. Deleted by REV B.
Q2306*	19A115910P1	Silicon, NPN; sim to Type 2N3904. Deleted by REV B.
Q2307	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q2308*	19A115818P2	Silicon, NPN; sim to Type 2N3772.
		In REV A & earlier:
	19A115818P1	Silicon, NPN; sim to Type 2N3772.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R2301	19A700106P39	Composition: 100 ohms ±5%, 1/4 w.
R2302	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R2303	19A700106P95	Composition: 22K ohms ±5%, 1/4 w.
R2304	19A700106P91	Composition: 15K ohms ±5%, 1/4 w.
R2305	19A700106P57	Composition: 560 ohms ±5%, 1/4 w.
R2306	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R2307	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R2308	19A700106P95	Composition: 22K ohms ±5%, 1/4 w.
R2309	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R2310	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R2311*	19A700106P87	Composition: 10K ohms ±5%, 1/4 w. Deleted by REV B.
R2312*	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w. Deleted by REV B.
R2313*	19A700106P87	Composition: 10K ohms ±5%, 1/4 w. Deleted by REV B.
R2314 and R2315	3R152P512J	Composition: 5.1K ohms ±5%, 1/4 w.
R2316*	19A700106P61	Composition: 820 ohms ±5%, 1/4 w.
		In REV C & earlier:
	3R152P102J	Composition: 1K ohms ±5%, 1/4 w.
R2317	3R152P911J	Composition: 910 ohms ±5%, 1/4 w.
R2318	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R2319	19A700106P53	Composition: 390 ohms ±5%, 1/4 w.
R2320	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R2321	19A700106P73	Composition: 2.7K ohms ±5%, 1/4 w.
R2322	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R2323 and R2324	19A700106P43	Composition: 150 ohms ±5%, 1/4 w.
R2325	19A700106P31	Composition: 47 ohms ±5%, 1/4 w.
R2326	19A700106P95	Composition: 22K ohms ±5%, 1/4 w.
R2327* and R2328*	19A701250P338	Metal film: 24.3K ohms ±1%, 1/4 w. Added by REV A.
R2329*	19A700106P46	Composition: 200 ohms ±5%, 1/4 w. Added by REV D.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W2302	19B219999G1	RF: approx. 18-1/4 inches long.
		- - - - - - - - - - CRYSTALS - - - - - - - - - -
Y2301	19B226002G1	Crystal, freq: 1800 KHz.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B226048G1	Can. (Located around L2306-L2308).
	19B219554G1	Can. (Located around Y2301).
	19B219555P1	Cover. (Located over Y2301).
	19B226046P1	Cover. (Located over L2306-L2308).
	19A129424G1	Can. (Used with L2306-L2308).
	4035306P59	Washer, fiber. (Used with Y23010.
	19B226182G1	Shell. (Located on solder side of board).
		MIF SWITCH (MATCHING IF FREQ) 19C320691G2
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C2314	19A116080P103	Polyester: 0.022 uF ±10%, 50 VDCW.
C2316	19A116080P106	Polyester: 0.068 uF ±10%, 50 VDCW.
C2335	19A116080P103	Polyester: 0.022 uF ±10%, 50 VDCW.
C2336*	19A116080P101	Polyester: 0.01 uF ±10%, 50 VDCW. Added by REV B.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR2302*	19A116925P1	Silicon, pin: 35 Reverse Breakdown v, 400 mW. Added by REV B.
CR2303	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J2301	19B219374G1	Connector: 9 contacts. Includes: Shell.
J2302 and J2303	19A116975P1	Receptacle, wire spring.
J2304 and J2305	19A701785P1	Contact, electrical; sim to Molex 08-50-0404.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L2303	7488079P49	Coil, RF: 33 uH 10%, 1.9 ohms DC res. max; sim to Jeffers 4422-10.
L2309	19A700000P25	Coil, RF: 15.0 uH ±10%, 1.20 ohms DC res max..
L2310*	19A700000P22	Coil, RF: 8.20 uH ±10%, 0.44 ohms DC res max. Added by REV B.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P2301	19B219594P1	Contact, electrical: 7 pins. (Quantity 3).
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q2304	19A115852P1	Silicon, PNP; sim to Type 2N3906.
Q2305*	19A115852P1	Silicon, PNP; sim to Type 2N3906. Deleted by REV B.
Q2306*	19A115910P1	Silicon, NPN; sim to Type 2N3904. Deleted by REV B.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R2310	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R2311*	19A700106P87	Composition: 10K ohms ±5%, 1/4 W. Deleted by REV B.
R2312*	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w. Deleted by REV B.
R2313*	19A700106P87	Composition: 10K ohms ±5%, 1/4 w. Deleted by REV B.
R2326*	19A700106P95	Composition: 22K ohms ±5%, 1/4 w. Added by REV B.
R2327* and R2328*	19A701250P338	Metal film: 24.3K ohms ±1%, 1/4 w. Added by REV A.
		- - - - - - - - - - - CABLES - - - - - - - - - - -
W2302	19B219999G1	RF: approx. 18-1/4 inches long.
		RF STEERING SWITCH 19C320583G1 REV A
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1 thru C3	5493392P7	Ceramic, feed thru: 1000 pF -0+100%, 500 VDCW.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1 thru J3	7104941P16	Jack, phono: coaxial.
		COMPONENT BOARD 19C320580G1
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1 thru C3	19A116080P101	Polyester: 0.01 uF ±10%, 50 VDCW.
C4 thru C6	19A116655P20	Ceramic disc: 1000 pF ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1 and CR2	19A116925P1	Silicon, pin: 35 volt Reverse Breakdown, 400 mW.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1 thru L3	19A700024P13	Coil, RF: 1.0 uH ±10%, 1.0 ohms DC res max.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q1 thru Q3	19A115852P1	Silicon, PNP; sim to Type 2N3906.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1 and R2	19A700106P83	Composition: 6.8K ohms ±5%, 1/4 w.
R3	19A700106P103	Composition: 47K ohms ±5%, 1/4 w.
R4 and R5	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R6	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R7	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19B219965P1	Cover. (Used with RF Steering Switch).
		ASSOCIATED ASSEMBLIES
		DUAL FRONT END INTERCONNECTION CABLE 19B219980G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1801 thru J1803		Includes:
	19A116659P22	Shell.
	19A116781P5	Contact, electrical: wire range No. 18-24 AWG; sim to Molex 08-50-0106. (J1801-3, 12, 14, J1802-10, 11, J1803-10, 11).
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (J1801-1, 2, 5, J1802-1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15, J1803-1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12).
	4036634P1	Contact, electrical; sim to AMP 42428-2. (Quantity 1).
		- -
	5491689P93	RF Cable. (Located between DFE terminal of RF Steering Switch and antenna input of DFE).
	19A129694G1	RF Cable. (Located between antenna switch and antenna terminal of RF Steering Switch).
	19A129694G2	RF Cable. (Located between receiver terminal of RF Steering Switch and receiver antenna input).

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 & B - MIF Switch Board 19C320691G2
Incorporated in initial shipment.

REV. A - C - MIF Switch Board 19C320691G1
Incorporated in initial shipment.

REV. D - MIF Switch Board 19C320691G1
To eliminate oscillations in Q2307 that cause receiver quieting. Changed R2316 and added R2329.

REV. D - MIF Switch Board 19C320691G1
To improve operation of oscillator. Changed C2305.

REV. E - To improve operation of DC offset converter. Changed C2305.

REV. F - To improve tuning of band pass section. Changed C2329. C2329 was 19A700105P34 - Mica: 100 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.

REV. A - RF Steering Switch 19C320583G1
To reduce static change on Antenna, increasing reliability of RF Steering diode and pre-amplifier FET.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

ADDENDUM NO. 1 TO LBI30038C

This addendum describes Revision Letter changes that are not yet included in the publication.

REV.B- RF STEERING SWITCH 19C320583G1

To improve operation in the 450-512 mHz range. Changed L1-L3 from 1uH to 0.82 uH. New part number is:

19A700024P12, COIL,RF:0.82UF ±10%, 0.85 OHMS DC res max.

Additionally, correct the Parts list to show part number for Q2308 to be 19A116818P2 and in REV. A and earlier models to be 19A116818P3. Similiar to 3N187.