MOTOROLA

MX300 SERIES

"Handie-Talkie" FM Two-Way Radios

403-512 MHz

SPECIFICATIONS

GENERAL

POWER SUPPLY:	One rechargeable nickel-cadmium battery, or one non-chargeable mercury battery				
SIZE:	2.84" wide x 1.41" deep. See chart below for height.				
HEIGHT:	MX320 Housing	MX330 Housing	MX340 Housing	MX350 Housing	MX360 Housing
Radio Only	4.20" (107 mm)	4.59" (117 mm)	4.98" (127 mm)	5.76" (147 mm)	6.35" (162 mm)
Radio with battery			2-Hour Nickel-Cadmium Rechargeable Battery		
Ultra High Capacity	8.63" (219 mm)	9.02" (229 mm)	9.42" (239 mm)	10.2" (259 mm)	10.79" (274 mm)
			1-Hour Rapid Charge Batteries		
Light Capacity	5.66" (144 mm)	6.06" (154 mm)	6.45" (164 mm)	7.23" (184 mm)	7.82" (199 mm)
Medium Capacity	6.03" (154 mm)	6.42" (164 mm)	6.81" (173 mm)	7.59" (194 mm)	8.18" (209 mm)
High Capacity	7.75" (197 mm)	8.14" (207 mm)	8.53" (217 mm)	9.31" (236 mm)	9.90" (251 mm)
			Non-Chargeable Battery		
3500 mAH Mercury	7.60" (193 mm)	7.99" (203 mm)	8.38" (213 mm)	9.16" (233 mm)	9.75" (249 mm)
WEIGHT:					
Radio only	13.0 oz. (369g)	14.2 oz. (403g)	16.6 oz. (471g)	18.0 oz. (510g)	19.9 oz. (564g)
Radio with Battery			2-Hour Nickel-Cadmium Rechargeable Battery		
Ultra High Capacity	34.0 oz. (968g)	35.2 oz. (1003g)	37.6 oz. (1071g)	39.0 oz. (1111g)	40.9 oz. (1165g)
			1-Hour Rapid Charge Batteries		
Light Capacity	18.2 oz. (516g)	19.4 oz. (550g)	21.8 oz. (618g)	23.2 oz. (657g)	25.1 oz. (711g)
Medium Capacity	20.3 oz. (576g)	21.5 oz. (610g)	23.9 oz. (678g)	25.3 oz. (717g)	27.2 oz. (771g)
High Capacity	27.0 oz. (769g)	28.2 oz. (803g)	30.6 oz. (871g)	32.0 oz. (910g)	33.9 oz. (964g)
			Non-Chargeable Batteries		
3500 mAH Mercury	27.1 oz. (772g)	28.3 oz. (806g)	30.7 oz. (874g)	32.1 oz. (914g)	34.0 oz. (968g)

TRANSMITTER

RF Power Output — Nickel-Cadmium Battery:	1 W/2.0 W/5.0 W
Frequency Stability — (-30° C to +60° C; +25° C Ref):	±.0005%
Modulation:	16F3
FM Noise:	-60 dB
Audio Distortion — (at 1000 Hz, 3 kHz deviation):	3%
Spurious & Harmonics —	
1 Watt:	-67 dB
2.0 Watts:	-59 dB
5.0 Watts:	-53 dB
Frequency Spacing: (no degradation)	Entire Band
Current Drain * (with 7.5 V Supply)	820 mA (1 W) 1225 mA (2 W) 2740 mA (5 W)

RECEIVER

Channel Spacing:	25 kHz
Modulation Acceptance:	±7.5 kHz
Sensitivity —	
20 dB Quieting:	.5 uV
12 dB SINAD:	.35 uV
Squelch:	.25 uV
Selectivity: (EIA SINAD)	85 dB
Frequency Separation —	
No Degradation:	1 MHz
1 dB Sensitivity Deg:	3 MHz
3 dB Sensitivity Deg:	5 MHz
Intermodulation:	-75 dB
Frequency Stability — (-30° C to +60° C; +25° C Ref):	±0.0005%
Spurious and Image Rejection:	-80 dB
Audio Output: (at less than 5% distortion)	500 mW
Current Drain * (with 7.5 V Supply)	174 mA (500 mW Audio) 27 mA (Standby)

*Add 4 mA for "Private-Line" Models

MODELS 1 W H24AAU-	MODELS 2 W H34AAU-	MODELS 5 W H44AAU-	NUMBER OF CHANNELS	TYPE OF SQUELCH
	-1110B		1	Carrier
	-1120B		2	
	-1140B		4	
	-1160B		6	
	-1180B		8	
	-3110B		1	Tone "Private-Line"
	-3120B		2	
	-3140B		4	
	-3160B		6	
	-3180B		8	
	-6110B		1	"Digital Private-Line"
	-6120B		2	
	-6140B		4	
	-6160B		6	
	-6180B		8	

Specifications Subject To Change Without Notice

RELATED PUBLICATIONS AVAILABLE SEPARATELY:

Theory/Maintenance Manual 68P81013C70

Operating Instructions 68P81007C55

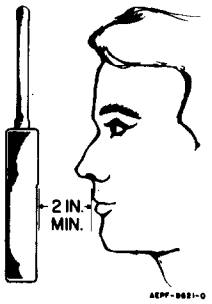
Service Manual

68P81013C75-B

SAFETY INFORMATION

The United States Department of Labor, through the provisions of the Occupational Safety and Health Act of 1970 (OSHA), has established an electromagnetic energy safety standard which applies to the use of this equipment. Proper use of this radio will result in exposure below the OSHA limit.

DO NOT hold the radio such that the antenna is very close to, or touching, exposed parts of the body, especially the face or eyes, while transmitting. The radio will perform best if the microphone is two or three inches away from the lips and the radio is vertical.



DO NOT hold the transmit (PTT) switch on when not actually desiring to transmit.

DO NOT allow children to play with any radio equipment containing a transmitter.

DO NOT operate a portable transmitter near unshielded electrical blasting caps or in an explosive atmosphere unless it is a type especially qualified for such use.

FCC REGULATIONS

State that:

1. Radio transmitters may be tuned or adjusted only by persons holding a first or second class commercial radiotelephone operator's license or by personnel working under their immediate supervision.
2. The rf power output of a radio transmitter shall be no more than that required for satisfactory technical operation considering the area to be covered and the local conditions.
3. Frequency and deviation of a transmitter must be checked before it is placed in service and rechecked once each year thereafter.

FCC DESIGNATIONS

POWER	NUMBER OF FREQUENCIES	CC DESIGNATION
1 W	2	4228
1 W	4	4229
1 W	8	4230
2 W	2	4231
2 W	4	4232
2 W	8	4233
5 W	2	4234
5 W	4	4235
5 W	8	4236
	RC DESIGNATION	0091

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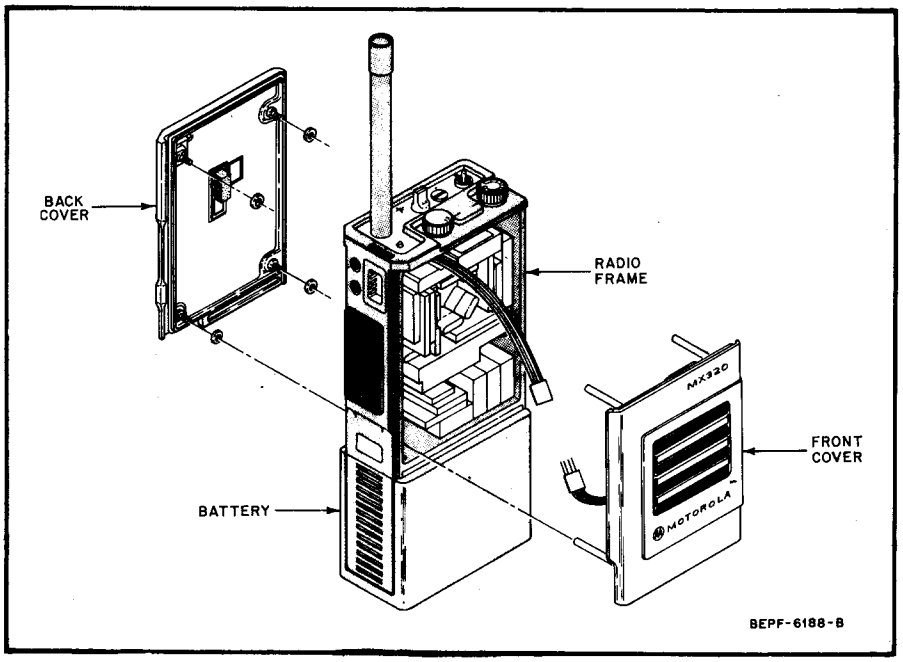
Printed in U.S.A. 1/81

DISASSEMBLY PROCEDURE

For most servicing, only the front and rear covers need to be removed. This provides access to both sides of the main circuit board, and the modules on the board may be replaced without further disassembly. Turn the radio off and remove battery before disassembly and before reassembly.



PROCEDURE

1. Loosen the four captive screws on the back cover until the back cover is free.
2. Remove the back cover. There is a captive washer on each screw. Do not remove or lose the washers. They protect the cover against excessive pressure from the front cover studs.
3. Carefully lift the front cover away from the frame.
4. Unplug the front cover assembly, if necessary.
5. When reassembling the radio, use care to replace the front cover. Slide it straight into the frame. Be sure the pad is in place around the speaker.

RADIO SERVICE NOTES

1. The main printed circuit board is a 4-layer board with two layers of printed circuit bonded inside the board.
2. Before removing the 4-layer board from the frame, unsolder the B+, B-, wires connecting the antenna jack to the board, and the ground wire at the bottom of the board.
3. The audio output to the speaker is a balanced output. Do not measure with a grounded voltmeter. Use a battery-powered voltmeter or a 1:1 transformer, such as the Motorola Part No. 25C84903H01. This transformer has two secondary windings which must be connected in series to provide a 1:1 turns ratio.
4. Flexible printed circuits are used in this radio. The foil pattern is bonded between two layers of flexible material. Use care when handling; avoid excessive bending. Do not overheat.

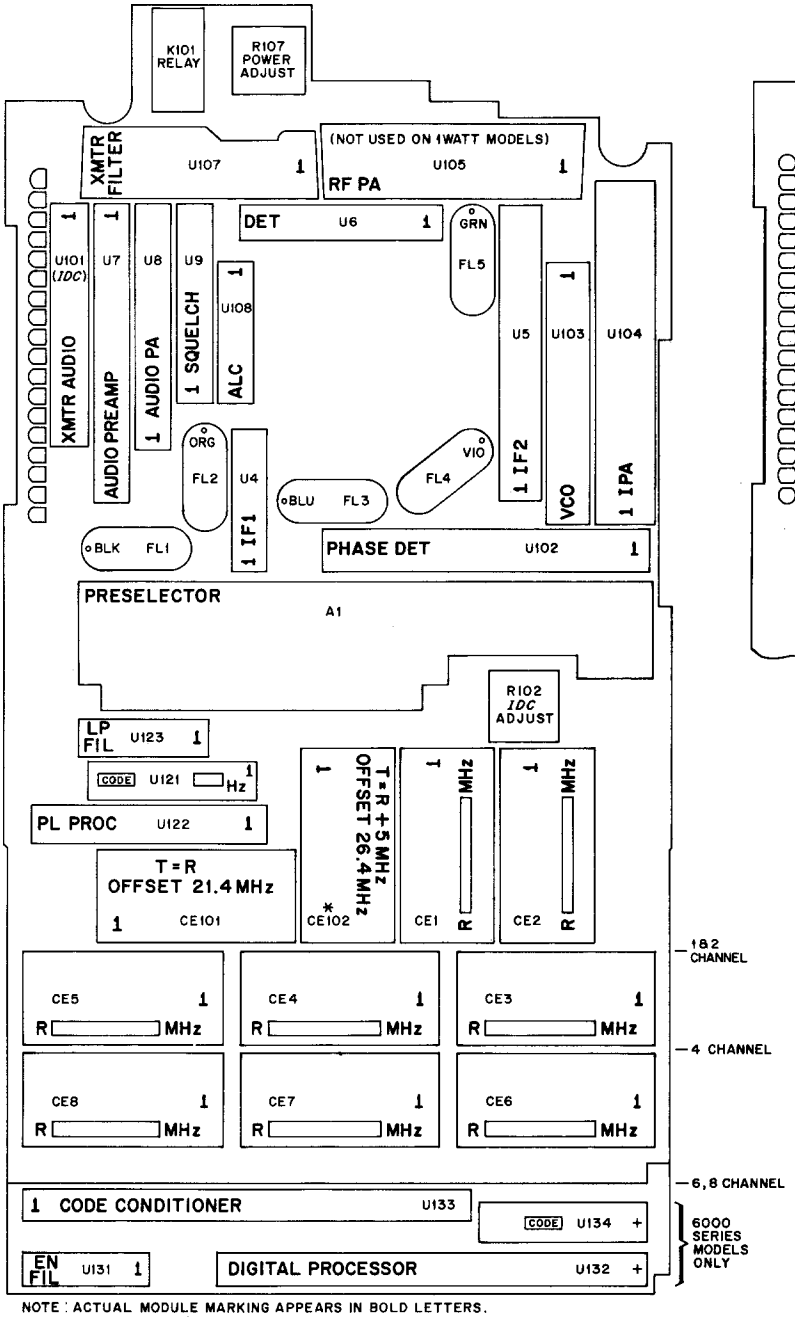
CAUTION

Use a temperature-controlled soldering iron with a 600° or 700° tip. Avoid prolonged contact with the flexible circuit.

5. To connect the radio to a 7.5-volt bench power supply, use battery block ST-1175 and a current limiting power supply set at 3 amp maximum.
6. The digital PL modulation observed on the service monitor (without audio) is a group of random square wave pulses with various widths, depending on the code plug. The pattern repeats every 178 msec. When the transmitter is unkeyed, the 135 Hz sine wave turn-off code appears at a reduced level for 120 msec. Measure the pulse peak-to-peak amplitude for deviation.

MODULE LOCATIONS

1 W & 2 W RADIOS



NOTE : ACTUAL MODULE MARKING APPEARS IN BOLD LETTERS.
THE NUMERAL 1 AT THE END OF THE MODULE INDICATES PIN 1.
*CE102 SHOWN FOR A 5MHz OFFSET

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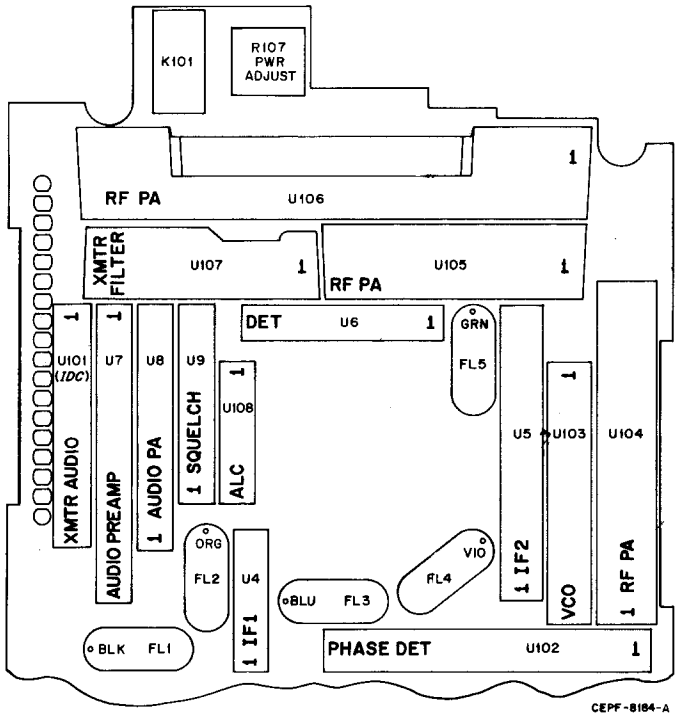
5 W RADIOS



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MODULE REMOVAL INSTRUCTIONS

CAUTION

Use the module pusher tool and remove modules with care. Avoid bending pins. Modules U132 and U133 (6000 series models) contain MOS devices which are susceptible to damage in handling due to static dischage. Handle with grounded tools and transport in conductive foam or a metallic tray. See MOS circuits handling precautions in the Theory/Maintenance Manual.

MODULE	REMOVAL PROCEDURE
Preselector and Transmitter Filter U107	Remove the threaded nuts securing the module to the board. Then press on the threaded studs and pull the module straight out from the component side.
Channel Elements	Push on the guide pin and the warp-coil-form from the solder side of the board using Module Pusher ST-1179. Then grasp the module with seizers and pull straight out from the component side.
U105,U122,U131, U132, and U133	Grasp the module with seizers and pull straight out. Observe caution above for U132 and U133.
All other modules	Push on the guide pins from the solder side of the board using the Module Pusher ST-1179. Then grasp the module with seizers and pull straight out from the component side.

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ALIGNMENT PROCEDURE

GENERAL

Radios are aligned at the factory to provide peak performance over a long period of time. Realignment may be required if components are replaced or have aged. To perform these procedures it is only necessary to remove the front and back covers of the radio, as described in the "Disassembly Procedure."

Refer to the "Main Circuit Boards" layout diagrams for the location of adjustments.

RECOMMENDED TEST EQUIPMENT AND SERVICE AIDS

MOTOROLA MODEL NO.	ITEM	APPLICATION
R-1200	Service Monitor	Signal Generator and frequency/deviation meter
S-1053	AC Voltmeter	AC and audio measurements
S-1063	DC Multimeter	DC voltage, current, and resistance measurements
S-1350 ST-1261 ST-1263	Wattmeter Wattmeter Plug-In Element Wattmeter Plug-In Element	Transmitter power output measurements (1 W, 2 W) (5 W)
S-1067	Audio Oscillator	Audio signal measurements and generate "PL" tones
ST-1175	Dummy Battery Block	Interconnects radio to bench 7.5 V power supply
NKN6222 S-1349 or	Tune-Up Cable and MX300 Portable Test Set	Connects test equipment to the antenna jack on the radio and also enables convenient connections to the accessory jack, with switching functions
RTX4005 RTK4021-A	Portable Test Set and Test Cable	Enables convenient connections to the accessory jack, with switching functions
ST-1180	RF Jack Wrench/Preselector Spanner Wrench	To remove the antenna jack and the nuts securing the preselector to the printed circuit board
SLN6413	DPL Test Set	Encodes and decodes digital PL signals
S-1347	Power Supply	Bench power supply
T-1013	Dummy RF Load	Transmitter power output measurements

RECEIVER ALIGNMENT

Preliminary Adjustments:

1. Turn PL switch off (if applicable).
2. Set squelch control to maximum ccw position.
3. Set frequency select switch to F1 position on 2 channel models, or to the channel nearest the center of the range on 4 to 8 channel models.
4. Turn Z1 thru Z7 until they are flush with the circuit board.

STEP	ADJUST	FOR	MEASURED AT	USING	NOTE
1	Z6 & Z7	Maximum Vdc (approx. 0.7 V)	M2	DC voltmeter (DC multimeter)	See Preliminary Adjustments
2	Freq. dial on service monitor	Carrier freq. of F1 minus 21.4 MHz	Pin 7 of preselector	Service monitor	Connect a Motorola TEK-10 probe to the PRESELECTOR input on the service monitor
3	CE1	Zero error	Pin 7 of preselector	Freq. meter on service monitor	Freq. select switch (FS) set at F1
4	Repeat steps 2 and 3 for each channel in the radio as applicable; CE2/F2, CE3/F3, CE4/F4, etc.				
5	Z1 thru Z5	Best quieting (lowest ac voltage) with freq. select sw. set to channel used in step 1	J402, pin 10 to pin 2 (Accessory connector)	AC voltmeter with ST-1349 or RTX4005 Portable Test Sets	Inject carrier freq. at J401 to produce 20 dB quieting. While tuning Z1 thru Z5, adjust the input to maintain 20 dB quieting.

20 dB QUIETING TEST (Perform on each channel)					
1	Volume Control	1.73 Vac noise out	J402, pin 10 to pin 2	AC voltmeter with ST-1349 or RTX4005 Portable Test Sets	Establishes reference noise level for no signal input
2	Signal generator	Carrier freq., 0 output level	Gen. output connector	Signal generator on service monitor	Connect signal gen. to J401 (Ext. Ant. Jack)
3	Signal generator output level	Slowly increase until noise decreases 20 dB	J402, pin 10 to pin 2	AC voltmeter with ST-1349 or RTX4005 Portable Test Sets	Signal must be less than 0.5 uV at J401 for 20 dB quieting

NOTE: Channel element (CE1, CE2, etc.) frequency = (f_c - 21.4 MHz) /6

TRANSMITTER ALIGNMENT

NOTES:
1. Align the receiver before adjusting channel elements CE101 or CE102.
2. Refer to the instruction manual for radios with expanded offsets; i.e., offsets other than 0, 3, 5, or 5.0125 MHz.
3. Measurements are made with transmitter keyed and a 50-ohm load connected at J401.

STEP	ADJUST	TEST EQUIPMENT USED		MEASUREMENT	
		TYPE	CONNECTED AT	CONDITIONS	DESCRIPTION & LEVEL
1	R107	Wattmeter	J401	Set frequency select switch (FS) to lowest power channel.	1 W (H24AAU) or 2 W (H34AAU) or 5 W (H44AAU)
		Ammeter (DC Multimeter)	DC supply		820 mA (1 W) or 1225 mA (2 W) or 2740 mA (5 W)
2	CE101	Freq. meter (on service monitor)	Radiated	FS set to position using CE101	Transmit carrier freq.
3	CE102	Freq. meter (on service monitor)	Radiated	FS set to position using CE102	Transmit carrier freq.
4	R102	Deviation meter (on service monitor)	Radiated	FS set to the channel having the highest deviation	±5 kHz max carrier dev.
		Audio oscillator	J402, pin 3	Set to 1 kHz, 0.025 V	
5	none	Deviation meter (on service monitor)	Radiated	FS set to the channel having the highest deviation	On PL models, tone or digital PL deviation should be ±500 to ±1000 Hz

TYPICAL TEST AND ADJUSTMENT PROCEDURES FOR MX300 SERIES RADIOS USING RTX4005 PORTABLE TEST SET

TEST OR ADJUSTMENT	MT B+	AC/DC MTR	AUDIO IN	METER SELECTOR	SPKR LOAD	MT MX	MX PL	PTT
Receiver Alignment	Not Used	To ac voltmeter	Not Used	AUDIO PA	Any	MX	Not Used	Center
NOTE: Receiver audio output measured on ac voltmeter. Adjust for best quieting.								
Receiver Sensitivity	Not Used	To ac voltmeter or SINAD meter	Not Used	AUDIO PA	Any	MX	Not Used	Center
NOTE: Receiver audio output measured on ac voltmeter. Check for 20 dB quieting or 12 dB SINAD.								
Receiver Audio Output	Not Used	To ac voltmeter	Not Used	AUDIO PA	Any	MX	Not Used	Center
NOTE: Apply a 1000 uV on-frequency carrier modulated with 1000 Hz tone @ ±3 kHz deviation to the radio. Set VOLUME control to maximum. The ac voltmeter should indicate no less than 3.74 V ac.								
Transmitter Frequency and Power Output	Not Used	Not Used	Not Used	Any	Any	MX	Not Used	CONT or MOMT
NOTE: Makes it possible to key transmitter for test purposes.								
Transmitter Deviation Adjustment	Not Used	To ac voltmeter	Audio Oscillator at 1000 Hz and 25 mV	MIC	Any	MX	Not Used	CONT or MOMT
NOTE: Adjust "IDC" for ±5 kHz deviation.								
Transmitter Modulation Sensitivity	Not Used	To ac voltmeter	Audio Osc. at 1000 Hz and 3.5 mV	MIC	Any	MX	Not Used	CONT or MOMT
NOTE: With PL tone filter removed, deviation should be no less than ±3 kHz.								
Discriminator Output Measurement	Not Used	To ac voltmeter and then to a dc voltmeter	Not Used	DISC	Any	MX	Not Used	Center
NOTE: ACVM should indicate 250 to 400 mV of noise (audible from speaker) or recovered audio if 1000 uV carrier frequency is applied with a 1000 Hz tone @ ±3 kHz deviation. The dc voltmeter should indicate 1.2 to 1.8 V dc with no carrier applied.								
Audio Filter and Regulator Module U7 Output Check	Not Used	To ac voltmeter	Not Used	VOL	Any	MX	Not Used	Center
NOTE: Apply a 1000 uV on-frequency carrier modulated with 1000 Hz tone @ ±3 kHz. The ac voltmeter should indicate an output of more than 62 mV ac.								
To inject Audio into Audio Power Amplifier	Not Used	To ac voltmeter	Audio Oscillator at 1000 Hz and 40 mV	VOL	Any	MX	Not Used	Center
NOTE: Apply a 1000 uV on-frequency carrier (unmodulated) to the radio. Set audio oscillator level to 40 mV. Adjust volume control to maximum. Verify 3.74 V ac minimum (rated audio output) is available at output.								
Microphone Output Measurement	Not Used	To ac voltmeter	Not Used	MIC	Any	MX	Not Used	Center
NOTE: Key transmitter with PTT switch on *radio*. AC voltmeter measures microphone output. A loud whistle or "four" into microphone should cause a meter indication of 25 mV minimum.								

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SCHEMATIC DIAGRAM NOTES

NOTES:

1. ⬡ INDICATES CONNECTION POINT TO INTERCONNECT FLEXIBLE CIRCUIT.
2. UNLESS OTHERWISE STATED, RESISTANCES ARE IN OHMS, CAPACITANCES ARE IN pF.
3. CHANNEL ELEMENT APPLICATION FOR 1- AND 2-CHANNEL RADIOS:

H24AAU--- H34AAU--- H44AAU---	NO. XMIT CHANNELS	NO. REC. CHANNELS	CE102	CE2	JU1	JU2	JU3	JU4
-1110, -3110, -6110	1	1	out	out	in	in	out	out
-1120, -3120, -6120	2	2	out	in	out	in	out	out
---	2	1	in	out	in	out	out	out

4. JUMPER INFORMATION:

REF. DESIG.	JUMPER CUT FOR:
JU1 - JU4	SEE NOTE 3
JU5	SEE NOTE 10
JU6, JU7	NOT USED
JU8	ALL RADIOS EXCEPT SELECTIVE CALL OPTIONS H701, H702, & H703
JU9	"PL" OR "DPL" MODELS (3000 OR 6000 SERIES MODELS)
JU10	"PL" OR "DPL" ON TRANSMIT ONLY (OPTION H820 OR H850)
JU11 - JU17	NOT USED
JU18, JU19	SEE NOTE 5
JU20	NOT USED
JU21, JU22	ALL 4-, 6-, AND 8-CHANNEL MODELS, EXCEPT TRANSMITTERS WITH EXPANDED (NON-STANDARD) OFFSET, USING KXN1067 CHANNEL ELEMENTS (NOT USED ON 1- AND 2-CHANNEL MODELS)
JU23 - JU59	NOT USED
JU60 - JU71	USED FOR EXPANDED OFFSET OPTIONS H568 - H571; REFER TO INSTRUCTION MANUAL 68P81011C61
JU301	RADIOS EQUIPPED WITH U301 (SEE NOTE 5)

5. U301, C303, C305, C306, C307, JU18, AND JU19 ADDED FOR TIME-OUT OPTION H901.
6. SEE PARTS LIST FOR VALUE.
7. JUMPERS MAY BE ADDED AS REQUIRED WHEN SAME RECEIVER FREQUENCY (CE1 - CE8) IS REQUIRED IN MORE THAN ONE POSITION OF S501. HOLES 1 THROUGH 16 ARE USED FOR RECEIVER STRAPPING.
   EXAMPLE: IF RECEIVE FREQUENCY FOR F1, F2, & F3 IS THE SAME, USE JUMPERS IN HOLES 1 TO 3 AND HOLES 4 TO 6. ONLY ONE CHANNEL ELEMENT IS REQUIRED FOR THESE 3 POSITIONS.
8. DIODES CR509 - CR516 MAY BE CONNECTED AS REQUIRED TO SELECT CE101 OR CE102. DIODE CR516 IS SHOWN SELECTING CE101 FOR CHANNEL POSITION F8.
9. FREQUENCY SELECT SWITCH SHOWN FOR 8-CHANNEL RADIO. FOUR- AND SIX-CHANNEL RADIOS USE PROPORTIONALLY LESS DIODES. FLEXIBLE CIRCUIT IS CUT AS REQUIRED FOR THE RADIO.
10. JU5 IS CUT AND CR7 IS ADDED WITH UNIT ID OR UNIT ID/EMERGENCY OPTIONS, WHEN USED WITH ANY SWITCHABLE CHANNEL ELEMENTS (KXN1067) FOR NON-STANDARD OFFSET.
11. 1 W MODELS ONLY.
12. 2 W MODELS ONLY.
13. 5 W MODELS ONLY.
14. USED ONLY ON 4-, 6-, AND 8-CHANNEL MODELS.
15. USED ONLY ON 1- AND 2-CHANNEL MODELS.
16. C133 AND C134 USED ON 2-WATT MODELS, 440-470 MHz BAND ONLY.

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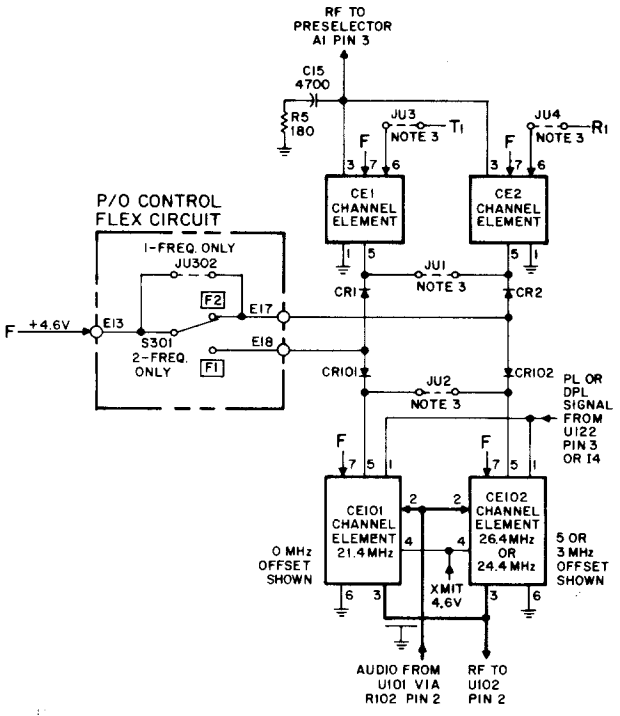
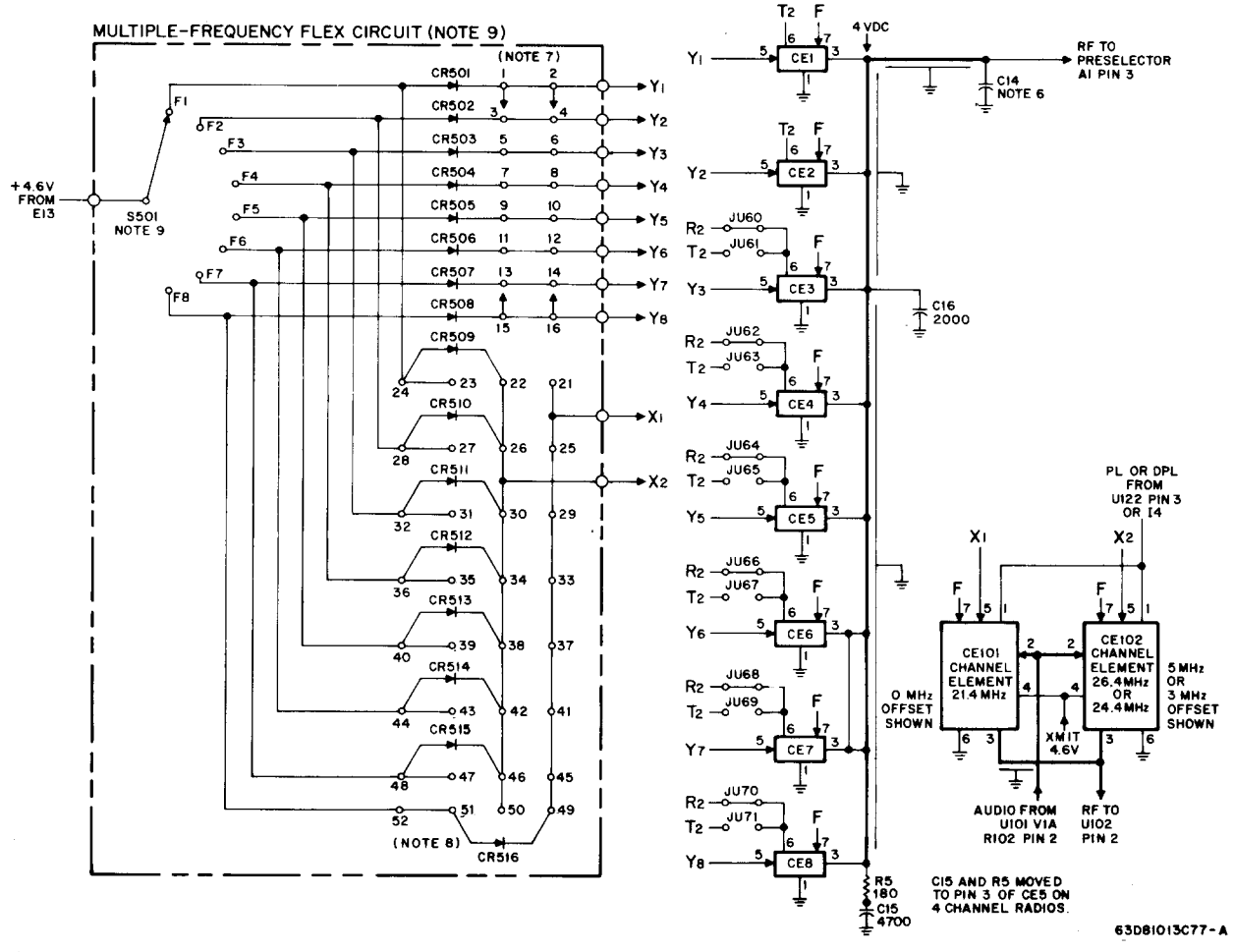
1 AND 2 CHANNEL RADIOS



4,6 AND 8 CHANNEL RADIOS



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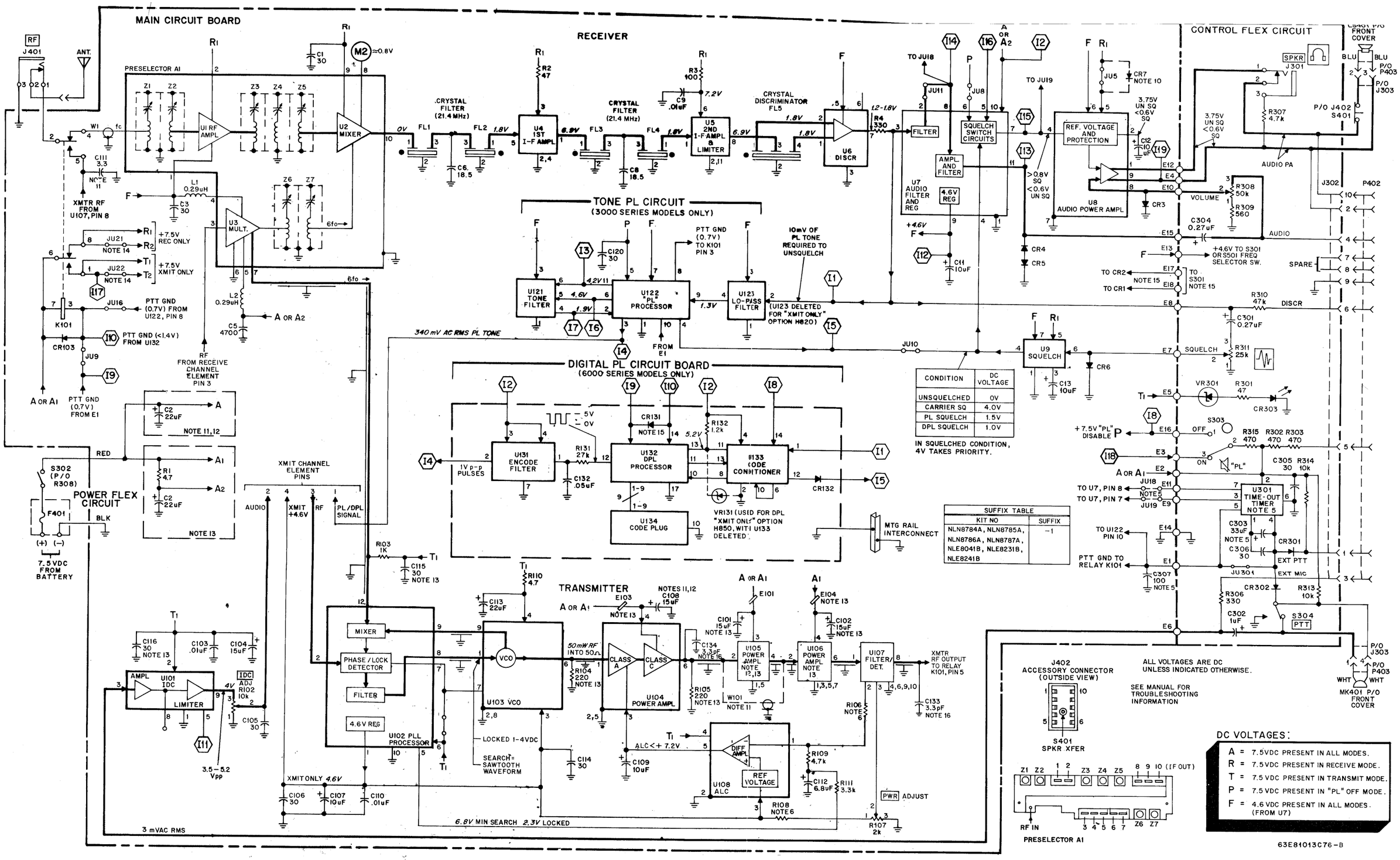
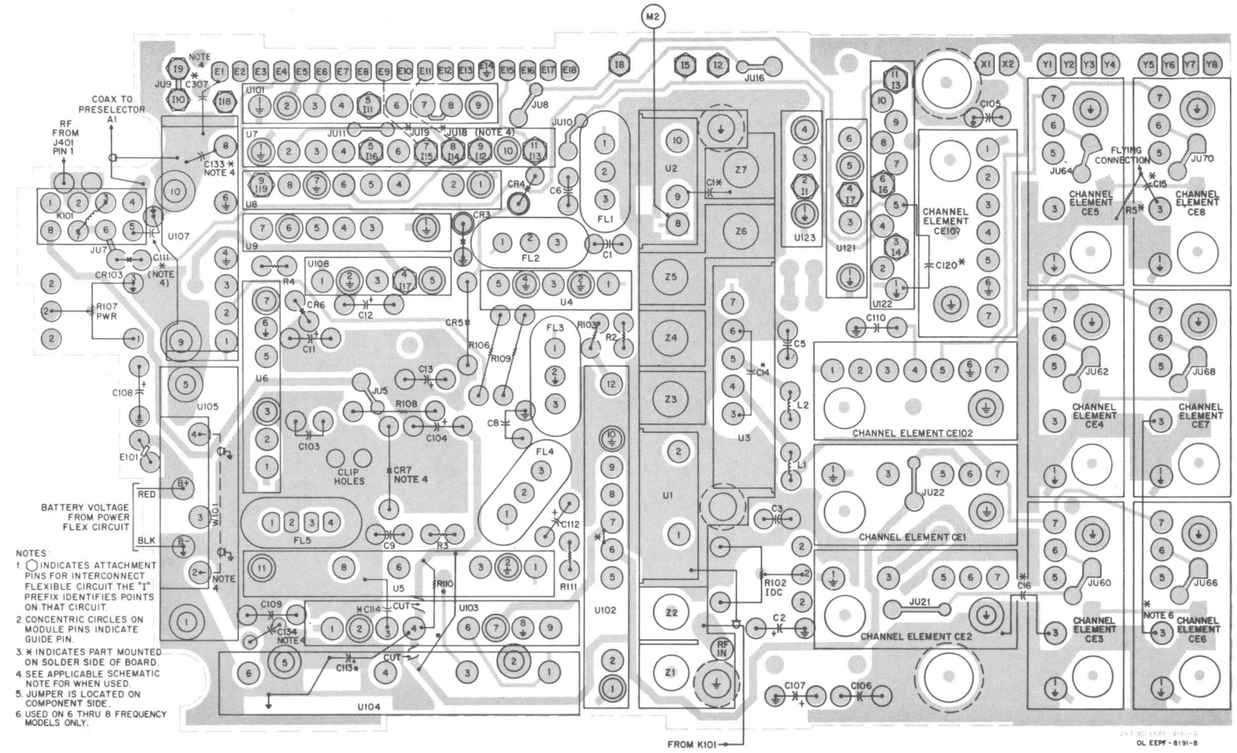
SCHEMATIC DIAGRAM



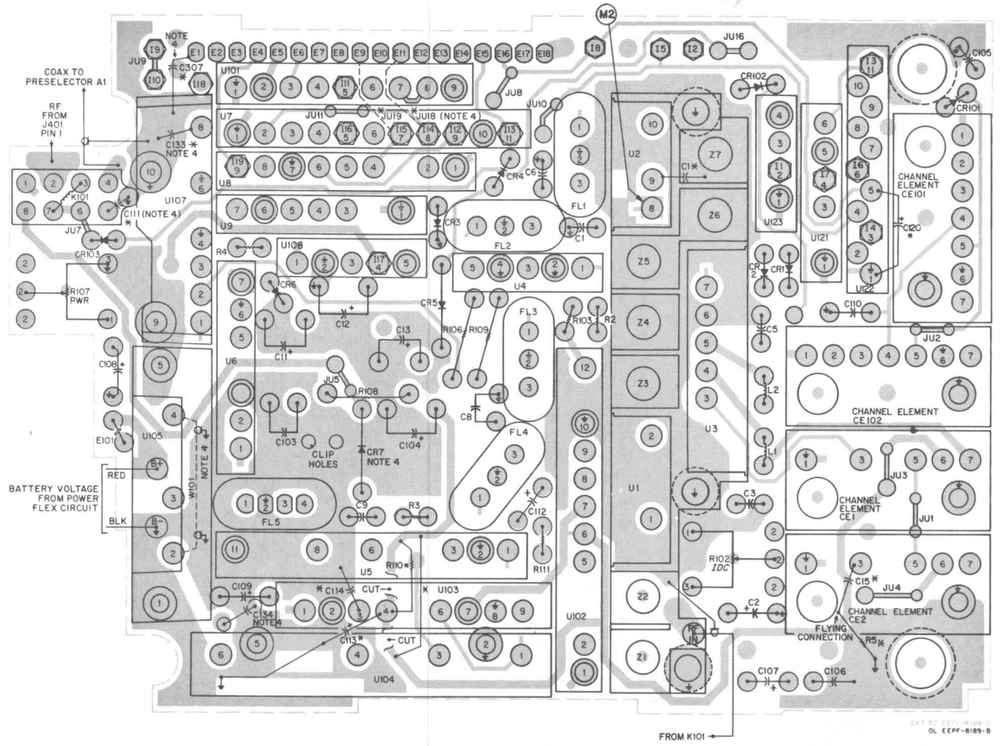
CONDITION	DC VOLTAGE
UNSQUELCHED	0V
CARRIER SQ	4.0V
PL SQUELCH	1.5V
DPL SQUELCH	1.0V

MAIN CIRCUIT BOARDS

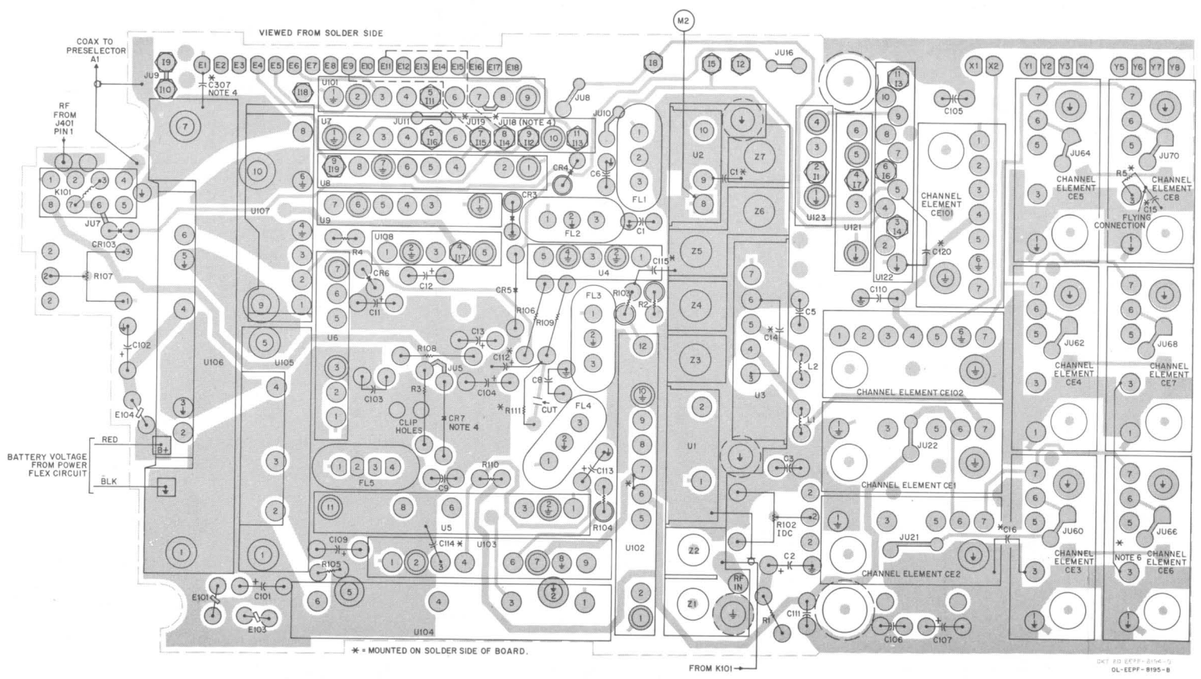
4 TO 8 CHANNELS, 1 & 2 W



1 & 2 CHANNELS, 1 & 2 W

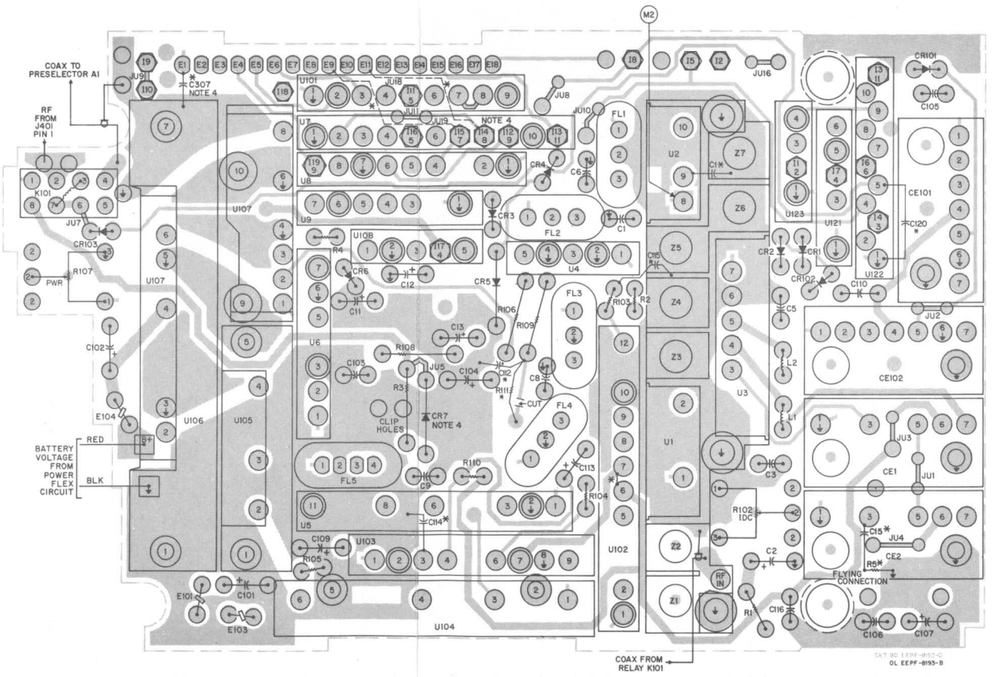


4 TO 8 CHANNELS, 5 W



BOARDS VIEWED FROM SOLDER SIDE

1 & 2 CHANNELS, 5 W



ELECTRICAL PARTS LIST

PLF-1328-B

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
A1	NLE6931A	PRESELECTOR: 403-430 MHz; contains U1, U2, & U3
	or NLE6932A	PRESELECTOR: 440-470 MHz; contains U1, U2, & U3
	or NLE6933A	PRESELECTOR: 470-512 MHz; contains U1, U2, & U3
		CAPACITOR, Fixed: pF ±10%; 20 V unless stated
C1	2182358G96	30; 75 V; N150
C2	2382397D16	22 uF ±20%; 15 V
C3	2182358G95	30; 75 V; N750
C4		Not Used
C5	2182213E06	4700 ±20%; 100 V
C6	2182358G76	18.5 ±2%; 25 V
C7		Not Used
C8	2182358G76	18.5 ±2%; 25 V
C9	2184008H01	.01 uF; 50 V
C10		Not Used
C11, 12, 13	2382397D03	10 uF ±20%; 6 V
C14	2100865197	25; 75 V (403-430 MHz, 5 W, 4-, 6-, &8-Freq. Models)
	or 2182358G51	20 ±3%; (403-430 MHz, 1 W & 2 W, 4-, 6-, &8-Freq. Models)
	or 2182358G76	18.5 ±2%; 25 V (440-470 MHz, 5 W, 4-Freq. Models)
	or 2182877B19	15 ±5%; 75 V (440-470 MHz, 1 W & 2 W, 4-Freq. Models) & (470-512 MHz, 5 W, 4-Freq. Models)
	or 2182877B11	10.5 ±5%; 75 V (440-470 MHz, 1 W, 2 W, & 5 W; 6-&8-Freq. Models) & (470-512 MHz, 5 W, 6-&8-Freq. Models) & (470-512 MHz, 1 W, 2 W, 4-Freq. Models)
	or 2182358G21	7 ±0.25 pF; 25 V (470-512 MHz 1 W, 2 W, 6-&8-Freq. Models); not used on 1-&2-Freq. Models
C15	2184008H14	4700; 100 V
C16	2182213E21	2000 +100%-20%; 25 V (4-, 6- & 8-Freq. Models only; critical lead length of 0.22 inch)
C101, 102	2382397D04	15 uF ±20%; 15 V (5 W models only)
C103	2184008H01	.01 uF; 50 V
C104	2382397D04	15 uF ±20%; 15 V
C105, 106	2182358G95	30; 75 V; N750
C107	2382397D03	10 uF ±20%; 6 V
C108	2382397D04	15 uF ±20%; 15 V (1 W & 2 W Models only)
C109	2382397D15	10 uF ±20%
C110	2184008H01	.01 uF; 50 V
C111	2182358G01	3.3 ±0.25 pF; 50 V (1 W Models only)
C112	2382397D09	6.8 uF ±20%; 10 V
C113	2382397D16	22 uF ±20%; 15 V
C114	2105311E49	30; 75 V; N750
C115, 116	2105311E49	30; 75 V; N750 (5 W Models only)
C117, 118, 119		Not Used
C120	2182358G96	30; 75 V; N150
C121 thru 131		Not Used
C132	2184008H13	0.05 uF ±20%; 25 V
C133, 134	2182358G01	3.3 ±0.25 pF; 50 V; NPO (2 W Models, 440-470 MHz only)
C301	2382397D25	0.27 uF
C302	2382397D36	1 uF
C303	2382397D18	33 uF ±20%; 10 V (TOT option only)
C304	2382397D25	0.27 uF
C305, 306	2182358G95	30; 75 V; N750 (TOT option only)
C307	2182358G94	100; 75 V (TOT option only)
		CHANNEL ELEMENT:
CE1 thru 8	KXN1039B	Receiver, use as required
	or KXN1067B	Used with options H568 thru H571. Refer to Manual 68P81011C61.
CE101	NLE6975A	Transmitter, 21.4 MHz (0 MHz offset)
CE102	NLE6972A	Transmitter, 26.4 MHz (5 MHz offset)
	or NLE6973A	Transmitter, 24.4 MHz (3 MHz offset)
	or NLE6976A	Transmitter, 26.4125 MHz (5.0125 MHz offset)
		DIODE: See Note
CR1, 2	4805824C01	Silicon (1-&2-Freq. Models only)
CR3 thru 6	4805824C01	Silicon
CR7	4805893D01	Silicon
CR101, 102	4805824C01	Silicon (1-&2-Freq. Models only)
CR103	4805824C01	Silicon
CR104 thru 130		Not Used
CR131, 132	4883654H01	Silicon
CR301, 302	4805824C01	Silicon
CR303	0105952G54	ASSEMBLY, LED & Seal
CR501 thru 516	4805824C01	Silicon; 4-, 6-, & 8-Freq. Models, use as required
		CORE:
E101	2405913C04	Ferrite Bead (1 & 2 W Models only)
E101	2405913C01	Ferrite Bead (5 W Models only)
E103	2405913C04	Ferrite Bead (5 W Models only)
E104	2405913C01	Ferrite Bead (5 W Models only)
		FUSE:
F401	0105950E50	5-Amp, cartridge
		FILTER:
FL1/FL2	4805535C05	Matched pair; FL1 coded BLK, FL2 coded ORG
FL3/FL4	4805535C07	Matched pair; FL3 coded BLU, FL4 coded VIO
FL5	4805530C01	Discriminator, crystal, coded GRN
		JACK:
J301	0905537F01	Speaker, 2-conductor
J302	0905675C01	Socket, miniature accessory connector
J303	0105957D83	ASSEMBLY, Cable; Speaker-Microphone
J401	0905505C02	Antenna, 2-conductor
J402	1505673C01	Accessory Connector, housing portion; contains S401
		RELAY:
K101	8005037E01	8-pin DPDT
		COIL, RF: unless stated
L1, 2	2482723H04	Choke, 0.29 uH
		SPEAKER:
LS401	5005181E02	2-inch dynamic, freq. response 300-3500 Hz
		MICROPHONE:
MK401	0105953D67	ASSEMBLY, Microphone (for Low & Medium Power Models) includes exploded view items 55, 58, 59, 60, 100, and 101
	or 0105954C39	ASSEMBLY, Microphone (for High Power Models); includes exploded view items 55, 58, 59, 60, 100, and 101
		RESISTOR, Fixed: Ω ±10%; 1/8 W unless stated
R1	0605139G02	4.7 (5 W Models only) ±5%; 1/4 W
R2	0605139G10	47 ±5%
R3	0600185B67	100
R4	0600185B73	330
R5	0600185B70	180
R101		Not Used
R102	1805310C01	pot. 10 k
R103	0600185B79	1 k
R104, 105	0600185B71	220 (5 W Models only)
R106	0600185B90	8.2 k (5 W Models)
	or 0600185B83	2.2 k (2 W Models)
	or ----------	jumper (1 W Models)
R107	0105951F28	pot. 2 k ±20%; 1/2 W & Insulator
R108	0600185B83	2.2 k (1 W & 2 W Models)
	or 0600185B79	1 k (5 W Models)
R109	0600185B87	4.7 k
R110	0605139G02	4.7 ±5%, 1/4 W
R111	0600185B85	3.3 k
R112 thru 130		Not Used
R131	0600185A83	27 k ±5%
R132	0600185B80	1.2 k
R301	0605139G12	47 ±5%; 1/4 W
R302, 303	0600185B75	470
R304, 305		Not Used
R306	0600185B73	330
R307	0600185B87	4.7 k
R308	1805602C02	pot. 50 k; contains S302
R309	0600185B76	560
R310	0600185B99	47 k
R311	1805430C02	pot. 25 k
R312		Not Used
R313, 314	0600185B91	10 k
R315	0600185B75	470
		SWITCH:
S301	0105952E63	Assembly, Rotary, 2-position, two-freq. ON/OFF, part of R308
S302		
S303	4005190D01	Toggle, SPDT "PL"
S304	4082159D01	Sub-miniature, SPDT; push-to-talk
S401		p/o J402
S501	0105952E64	Assembly, Single-pole, 4-position (4-Freq. Models)
	or 0105952E66	Assembly, Single-pole, 6-position (6-Freq. Models)
	or 0105952E67	Assembly, Single-pole 8-position (8-Freq. Models)
		HYBRID, Encapsulated:
U1, 2, 3		p/o A1
U4	NLN8917A	First I-F Amplifier
U5	NLN8773A	Second I-F Amplifier
U6	NLN5925A	Discriminator
U7	NLN8777B	Audio Filter & Regulator
U8	NLN8775B	Audio Power Amplifier
U9	NLN8776A	Squelch
U101	NLN5832A	IDC
U102	NLE8342A	Phase Lock Loop Processor
U103	NLE8801A	VCO (403-430 MHz)
	or NLE8802A	VCO (440-470 MHz)
	or NLE8803A	VCO (470-512 MHz)
U104	NLE8181A	Power Amplifier (403-430 MHz, 2 W & 5 W Models)
	or NLE8182A	Power Amplifier (440-470 MHz, 2 W & 5 W Models)
	or NLE8183A	Power Amplifier (470-512 MHz, 2 W & 5 W Models)
	or NLE8331A	Power Amplifier (403-430 MHz, 1 W Models)
	or NLE8332A	Power Amplifier (440-470 MHz, 1 W Models)
	or NLE8333A	Power Amplifier (470-512 MHz, 1 W Models)
U105	----------	Not used on 1 W Models
	or NLE8001A	Power Amplifier (403-430 MHz, 2 W & 5 W Models)
	or NLE8002A	Power Amplifier (440-470 MHz, 2 W & 5 W Models)
	or NLE8003A	Power Amplifier (470-512 MHz, 2 W & 5 W Models)
U106	----------	Not used on 1 W & 2 W Models
	or NLE8011A	Power Amplifier (403-430 MHz, 5 W Models only)
	or NLE8012A	Power Amplifier (440-470 MHz, 5 W Models only)
	or NLE8013A	Power Amplifier (470-512 MHz, 5 W Models only)
U107	NFE6041A	Filter & Detector(403-430 MHz, 1 W & 2 W Models)
	or NFE6042A	Filter & Detector(440-512 MHz, 1 W & 2 W Models)
	or NFE6052A	Detector (5 W Models)
U108	NLN8779A	Automatic Level Control
U109 thru 120		Not Used
U121	NFN6010A	Tone Filter
U122	NLN4052B	PL Processor
U123	NFN6009A	Lo-Pass Filter
U124 thru 130		Not Used
U131	NFN6011B	Encoder Filter
U132	NLN8921B	DPL Processor
U133	NFN6012B	Code Conditioner
U134	NLN8922A	Code Plug
U301	NLN8947A	Time-Out Timer (Option H901)
		DIODE: See Note
VR131	4883461E47	5.2 V Zener (DPL Xmit only, option H850)
VR301	4883461E48	4.75 V Zener
		CABLE:
W1	0105952D58	Assembly, Coax (1 W & 2 W Models)
	or 0105953D84	Assembly, Coax (5 W Models)
W101	0105952D59	Assembly, Coax (1 W Models only)

NONREFERENCED ITEMS

	0305628C01	SLUG and Mounting Stud for Preselector A1
	1405601C01	INSULATOR, for K101
	1405736C01	INSULATOR, for Crystal (3-spot) FL5
	7505295B01	PAD, for crystal FL1-FL4
	7605445C01	SLUG, for channel elements
	0705196A02	BOOT, Crystal FL1-FL5
	0705778D01	BOOT, for U108
	0905604C06	SOCKET, Guide Pin
	0905287C06	SOCKET, Module
	2205794E01	PIN, for option flex connection
	4705598C01	SOCKET, Post; option (e.g. 111-117)
	4205360E01	CLIP, Grounding; for U102 can to preselector
	NAE6222A	ANTENNA, Whip (403-512 MHz)
	0205863A01	NUT, for preselector
	0400115361	LOCKWASHER, for pre-selector
	0300140107	SCREW, for Filter U107
	0405683D02	LOCKWASHER, for Filter U107
	0400474215	WASHER, Insulating; for preselector
	2905254F01	LUG, Grounding (between Antenna Jack J401 and P.C. Board)

NOTE: Since the diodes used in this radio are often selected for specific characteristics, replacement diodes should be ordered from Motorola using the Motorola part number listed to ensure optimum performance.

Antennas

PLF-939-B

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	NAE6131A	ANTENNA, Helical; 403-430 MHz (GRN dot)
	NAE6132A	ANTENNA, Helical; 440-470 MHz (YEL dot)
	NAE6133A	ANTENNA, Helical; 470-512 MHz (PURPLE dot)

Back-Dating Information

KIT AND SUFFIX NO.	REF. SYM.	CHANGE
NLN8784A, NLN8785A, NLN8786A, NLN8787A	F401	Was Part No. 6500139554; value unchanged.
NLE8041B, NLE8231B, NLE8241B	C133 C134	Did not exist Did not exist
NLN8784A-1, NLN8785A-1, NLN8786A-1, NLN8787A-1, NLE8041B-1, NLE8231B-1, NLE8241B-1	---	As shown

DIGITAL PL VOLTAGE MEASUREMENTS

TEST PRECAUTION

FOR ENCODE (XMIT) TESTS, DO NOT TRANSMIT INTO SERVICE MONITOR RF INPUT. USE WATTMETER AND MONITOR ON RECEIVE PORTION OF SERVICE MONITOR VIA ANTENNA.

PIN NO.	ENCODE (XMIT) DC VOLTAGE	ENCODE (XMIT) WAVEFORM & AC V	DECODE (RECEIVE) DC VOLTAGE	DECODE (RECEIVE) WAVEFORM & AC V
CODE CONDITIONER MODULE U133 (2)				
1	---	---	---	135 Hz @ 120-270 mV p-p
2	Ground	---	Ground	
3	N/A	---	---	---
4	7.5 V	---	7.5 V	---
5	3.75 V	---	3.75 V	135 Hz @ 0.6 - 1.35 V p-p
6	3.75 V	---	3.75 V	135 Hz@ 6.1 V p-p
7	N/A	---	---	---
8	---	---	2.6 V	135 Hz @ 5.2 V p-p
10	3.75 V	---	3.75 V	135 Hz @ 6.1 V p-p
11	5.2 V	---	5.2 V	---
12	5.2 V (3) or <0.2 V (4)	---	5.2 V (3) or <0.2 V (4)	---
13	<0 V	---	0, 5.2 V (5)	---
14	≈0 V (3)	---	≈0 V (3)	---
	7.5 V (4)	---	7.5 V (4)	---
SOCKET FOR CODE PLUG (U134 REMOVED)				
1-9	5.2 V	---	5.2 V	---
10	0 V		0 V	

DIGITAL "PL" PROCESSOR MODULE U132				
1 thru 9	0 V or 5.2 V (1)	---	0V or 5.2 V (1)	---
10	---	---	2.6 V	135 Hz@ 5.2 V p-p
11	0 V	---	0, 5.2 V (5)	---
12	2.6 V	Random 5.2 V p-p	2.6 V	135 Hz@ 5.2 V p-p
13	5.2 V	---	5.2 V	---
14	Less than .8 V	---	7.5 V	---
15	0 V	---	6.8 V	---
17	0 V	---	0 V	---
ENCODER FILTER MODULE U131				
1	2.6 V	Random 3.0 V p-p	2.6 V	135 Hz@ 3.0 V p-p
2	0 V	Random 1.0 V p-p	0V	135 Hz@ 1.0 V p-p
3	7.5 V	---	7.5 V	---
4	7.5 V	---	7.5 V	---
5	3.5 V	Same as pin 2 but inverted	3.5 V	Same as pin 2 but inverted
6	N/A	---	N/A	---
7	Ground	---	Ground	---

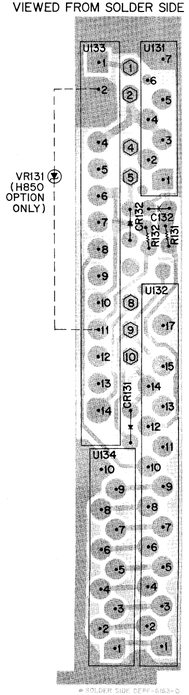
TEST MEASUREMENTS ARE NOMINAL; "PL" SWITCH ON OR OFF AND NO CARRIER INPUT. NUMBERS IN ( ) REFER TO THE FOLLOWING NOTES:

(1) DETERMINED BY CODE PLUG U134.
(2) SLN-6413A DIGITAL ENCODER-DECODER SHOULD BE IN THE DECODE (RECEIVE) MODE WITH PTT ON FIXTURE NOT DEPRESSED.
(3) "PL" SWITCH ON.
(4) "PL" SWITCH OFF.
(5) "PL" SWITCH ON AND PROPER DPL CODE INPUT.

EPF-7459-C

DIGITAL PRIVATE-LINE BOARD

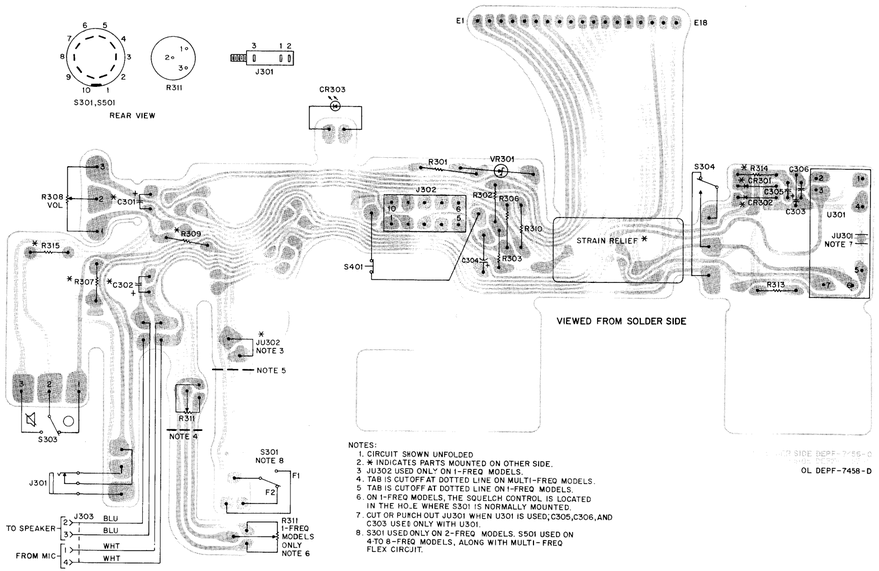
VIEWED FROM SOLDER SIDE



OVERLAY DEPF-6165-A

CONTROL FLEXIBLE CIRCUIT

(NLN4171B)

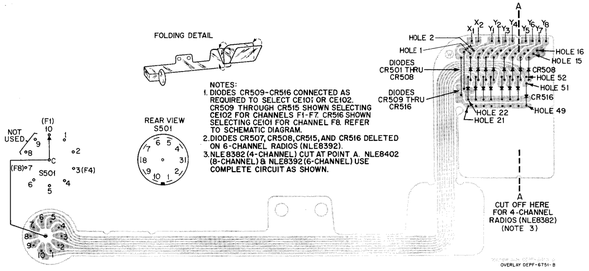


VIEWED FROM SOLDER SIDE

OL DEPF-7458-D

NOTES:
1. CIRCUIT SHOWN UNFOLDED
2. * INDICATES PARTS MOUNTED ON OTHER SIDE.
3. JU302 USED ONLY ON 1-FREQ MODELS.
4. TAB IS CUTOFF AT DOTTED LINE ON MULTI-FREQ MODELS.
5. TAB IS CUTOFF AT DOTTED LINE ON 1-FREQ MODELS.
6. ON 1-FREQ MODELS, THE SQUELCH CONTROL IS LOCATED IN THE HOLE WHERE S301 IS NORMALLY MOUNTED.
7. CUT OR PUNCH OUT JU301 WHEN U301 IS USED; C305, C306, AND C303 USED ONLY WITH U301.
8. S301 USED ONLY ON 2-FREQ MODELS. S501 USED ON 4 TO 8-FREQ MODELS, ALONG WITH MULTI-FREQ FLEX CIRCUIT.

MULTIPLE FREQUENCY FLEXIBLE CIRCUIT



NOTES:
1. DIODES CR509-CR516 CONNECTED AS REQUIRED TO SELECT CE101 OR CE102. CR509 THROUGH CR515 SHOWN SELECTING CE102 FOR CHANNELS F1-F7. CR516 SHOWN SELECTING CE101 FOR CHANNEL F8. REFER TO SCHEMATIC DIAGRAM.
2. DIODES CR507, CR508, CR515, AND CR516 DELETED ON 6-CHANNEL RADIOS (NLE8392).
3. NLE8382 (4-CHANNEL) CUT AT POINT A. NLE8402 (8-CHANNEL) & NLE8392 (6-CHANNEL) USE COMPLETE CIRCUIT AS SHOWN.

OVERLAY DEPF-6751-B

NOTES:
1. THE NUMBERED TERMINALS ON THE INTERCONNECT FLEX CIRCUITS CONNECT TO THE CORRESPONDING NUMBER (PREFIXED WITH THE LETTER "I") ON THE CIRCUIT BOARDS AND SCHEMATIC DIAGRAMS.
2. CUT CIRCUIT AS FOLLOWS:

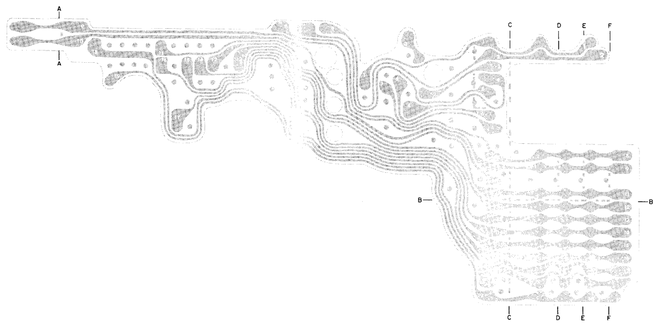
POINT CUT ON CIRCUIT	APPLICATION
A - A	ALL 1-WATT, 2-WATT AND 2.5-WATT RADIOS.
B - B	WHEN RADIO CONTAINS ONLY THE DIGITAL "PRIVATE-LINE" BOARD AT THE BOTTOM.
C - C	WHEN RADIO CONTAINS ANY SINGLE BOARD ADDED TO THE RADIO.
D - D	WHEN RADIO CONTAINS A 2-UNIT BOARD, FOLLOWED BY ANY OTHER OPTION BOARD.
E - E	WHEN RADIO CONTAINS A 3-UNIT BOARD FOLLOWED BY ANY OTHER OPTION BOARD.
F - F	WHEN RADIO CONTAINS THREE 2-UNIT OPTION BOARDS.

WHEN THE CIRCUIT IS CUT, THE EDGE MUST BE SEALED. FOLD A THIN STRIP OF MYLAR TAPE OVER THE CUT EDGE AND PRESS TIGHT ALONG BOTH SIDES OF THE FLEX CIRCUIT.

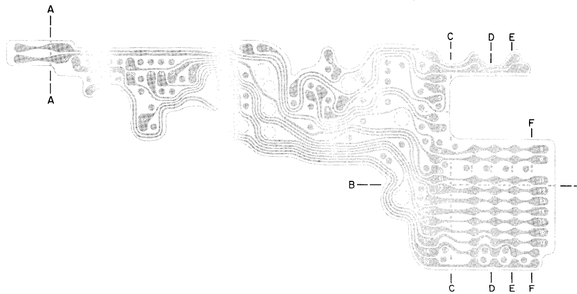
EPF-7500-A

INTERCONNECT FLEXIBLE CIRCUITS

1- & 2-CHANNEL RADIOS (NLN4107A)

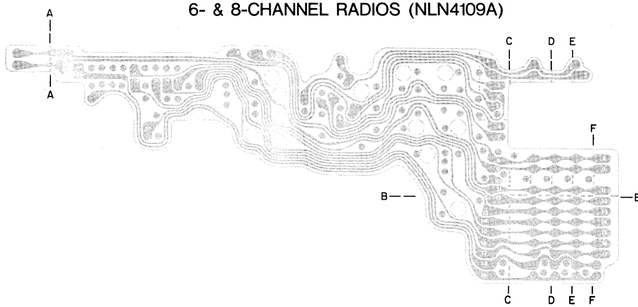


4-CHANNEL RADIOS (NLN4108A)



OL DEPF-7214-B

6- & 8-CHANNEL RADIOS (NLN4109A)



OL DEPF-7217-B

EXPLODED VIEW PARTS LIST

PLF-1821-O

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
1	PLATE, Serial	
	MX320 Series	NLN7080A
	MX330 Series	NLN7081A
	MX340 Series	NLN7082A
	MX350 Series	NLN7083A
	MX360 Series	NLN7084A
2	* BACK COVER KITS: include a. COVER, Back; (item 2)	
	MX320 Series (NLN7311A)	15-05392C02
	MX330 Series (NLN7312A)	15-05393C02
	MX340 Series (NLN7313A)	15-05860C02
	MX350 Series (NLN7314A)	15-05859C02
	MX360 Series (NLN7315A)	15-05861C02
	b. Items 3,4,5,6,8,33,68,87, & 99	
3	SCREW, Captive	0382210E15
4	WASHER, Seal; .112x.245x .012	0405465C01
5	WASHER, Flat;.180x.096x.010	0405818D01
6	GASKET, "O" Ring:	
	MX320 Series	0105957C65
	MX330 Series	0105957C66
	MX340 Series	0105957C67
	MX350 Series	0105957C68
	MX360 Series	0105957C69
7	NUT, Retainer; special	0205785C01
8	LABEL, Intrinsically safe	5405171E01
9	HOUSING, Connector; J402	See Note
10	BOOT	3205427C04
11	ACTUATOR	4505509C02
12	SCREW, Phillips; 2-64	0305685F01
13	SPRING, Latch	4105414C01
14	LATCH, Battery	5505417C01
15	BASE, Frame Support	0705528C01
16	SUPPORT, Battery Contact	0705830C01
17	CONTACT, Battery	3905421C01
18	SCREW	0300138651
19	SCREW, Slotted; 2-56 x 1/8"	0300138651
20	FUSE (F401)	See Note
21	CAP, Fuse	3805881D01
22	FLEX CIRCUIT, Control	NLN4171B
23	CONNECTOR, Plug (J303)	See Note
24	SOCKET (J302)	See Note
25	WASHER	0405342C03
27	STRAIN RELIEF, Snap-in	4205506C01
28	PLATE, Nut	6405683F01
29	SWITCH (S501) or (S301)	See Note
30	RESISTOR (R308)	See Note
31	SWITCH (S303)	See Note
32	WASHER	0405342C03
33	INSULATOR, Ground Shield	6405535D06
34	GASKET	3205295F01
35	JACK (J301)	See Note
36	RESISTOR (R311)	See Note
37	FRONT COVER KITS: Include items 6,19,44,49,50,51,52, 53,54,57,58,59,60,61,95,100, 101, and 102	
	MX320 Series	NLN8790A
	MX330 Series	NLN8791A
	MX340 Series	NLN8792A
	MX350 Series	NLN8793A
	MX360 Series	NLN8794A
	MX330 Series (High Power)	NLN8796A
	MX340 Series (High Power)	NLN8797A
	MX350 Series (High Power)	NLN8798A
	MX360 Series (High Power VHF)	NLN8799A
38	PAD, Contour	7505589E01
39	SOCKET, Fuse	0905604C07
40	STUD, Battery Contact	4605461C01
41	NUT, Mounting; special	0282653D05
42	SCREW, Phillips; 2-56	0305686A01
43	FLEX CIRCUIT, Power:	
	MX320 Series	0105953C37
	MX330 Series	0105953C38
	MX340 Series	0105953C39
	MX350 Series	0105953C40
	MX360 Series	0105953C41
44	INSULATOR, Teflon	1405424D04
45	NUT, Mounting	0205543E01
46	LUG, Antenna	2905548E01
47	LOCKWASHER	0400139740
48	* FRAME,	
	MX320 Series (NLN8784A)	0105953B81
	MX330 Series (NLN8785A)	0105957B50
	MX340 Series (NLN8786A)	0105959B35
	MX350 Series (NLN8787A)	0105959B36
	MX360 Series (NLN8788A)	0105959B37
49	SCREW, 4-40	0305466C01
50	WASHER, #4 split	0400009743
51	BRACKET, Ring; for Low & Med. Pwr. Models or BRACKET, Ring; for Hi Pwr. Models	0705423C01 0705875C01
52	SPEAKER (LS401)	See Note
53	COVER, Speaker; felt	7505396C01
54	COVER and GRILLE Assembly	
	MX320 Series	0105953B83
	MX330 Series	0105957B51
	MX340 Series	0105959B38
	MX350 Series	0105959B39
	MX360 Series	0105959B40
55	CONNECTOR, Plug (P403)	2805551D01
56	SETSCREW	0305480E02
57	CLIP, Mounting	0705462C01
58A	INSULATOR (for High Power Models)	1405445G02
58B	INSULATOR (for Low & Medium Power Models)	1405445G01
59	MICROPHONE (MK401)	See Note
60	WASHER, Rubber Seal	0405342C04
61	SPACER, Stand-off	4305467C02
62	WASHER	0400139731
63	LABEL, Knob	3305484G01
64	WASHER, Mylar	0405342C05
65	KNOB	3605510C01
66	WASHER, Thrust	0405555C02
67	Not Used	
68	DECAL, Patent No.	1305436E01
69	ESCUTCHEON;	
	1-Channel Carrier Squelch Models, with LED	1305107E12
	Multi-Channel Carrier Squelch Models, with LED	1305107E11
	1-Channel Carrier Squelch Models, without LED	1305107E16
	Multi-Channel Carrier Squelch Models, without LED	1305107E15
	1-Channel "Private-Line" Models, with LED	1305107E10
	Multi-Channel "Private-Line" Models, with LED	1305107E09
	1-Channel "Private-Line" Models, without LED	1305107E14
	Multi-Channel "Private-Line" Models, without LED	1305107E13
70	SCREW, Cap	0305857C01
71	WASHER, Insulating	0483799H04
72	ADHESIVE TAPE, Escutcheon	1105092E02
73	NUT, Speaker Jack	0205256C02
74	KNOB	3605577C01
75	WASHER, Thrust	0405342C01
76	ANTENNA, Refer to Electrical Parts List (NONREFERENCED ITEMS)	
77	Not Used	
78	DIODE (CR303)	See Note
79	INSULATOR	1405545E01
80	BUSHING, Antenna	4305544E02
81	p/o item 48	----------
82	SHIELD, Jack	2605767C01
83	WASHER	0405294F01
84	JACK (J401)	See Note
85	ASSEMBLY; Plug, Spring, and Insulator	0105585H01
86	LOCKWASHER	0400120088
87	PAD, Pressure	7505585C01
88	SWITCH (S304)	See Note
89	PAD, Channel Element	
	MX320 Series, Lo & Hi Pwr and MX330 Series, High Pwr	7505606E01
	MX330 Series, Lo Power and MX340 Series, High Pwr	7505606E02
	MX340 Series, Low Power	7505606E03
	MX350 Series, High Power	7505606E04
	MX350 Series, Low Power	7505606E06
	MX360 Series, High Power	7505606E05
	MX360 Series, Low Power	7505606E07
90	INSULATOR	1405939D01
91	SPRING, Grounding	3905188D03
92	FLEX CIRCUIT, Digital "PL":	
	1- & 2-Freq. Models	NLN4107A
	4-Freq. UHF Models	NLN4108A
	6- & 8-Freq. UHF Models	NLN4109A
93	BRACKET, Rail Mounting	
	1-Unit length (0.93")	0705829C01
	2-Unit length (1.125")	0705829C02
	3-Unit length (1.320")	0705829C03
	4-Unit length (1.515")	0705829C04
	5-Unit length (1.710")	0705829C05
	6-Unit length (1.905")	0705829C06
	7-Unit length (2.100")	0705829C07
	8-Unit length (2.295")	0705829C08
	9-Unit length (2.490")	0705829C09
	10-Unit length (2.685")	0705829C10
	11-Unit length (2.880")	0705829C11
94	FLEX, Freq. Select Switch:	
	UHF	
	2-Freq. Models	NLN8819A
	4-Freq. Models	NLE8251A
	6-Freq. Models	NLE8301A
	8-Freq. Models	NLE8311A
	4-Freq. Hi Pwr. Models	NLE8382A
	6-Freq. Hi Pwr. Models	NLE8392A
	8-Freq. Hi Pwr. Models	NLE8402A
95	LOCKWASHER, Ext Tooth	0400002625
96	PAD, Digital "PL" Contour	7505890C01
97	BOOT	3205428C01
98	SPACER, Channel Element:	
	MX320 Series	1405576E01
	MX330 Series	1405576E02
	MX340 Series	1405576E03
	MX350 Series	1405576E04
	MX360 Series	1405576E05
99	WASHER, Nylon	0484345A06
100	TUBING, Flexible (for High Power Models) or TUBING, Flexible (for Low & Medium Power Models)	3705144E01 3705412F01
101	PIPE, Sound	4705143E01
102	PAD	7505705D01
103	INSERT, Seal	4305930C04
104	LABEL, FCC	5400865436
105	SEAL	0405757E02
106	SEAL	0405757E03
107	SEAL, Rubber	0405757E01
108	SEAL	3205255G01
109	BOOT, Speaker	7505191E01
110	WASHER, Sponge Seal	0482519J01
111	INSULATOR, Speaker Lug	1482392E07
112	SEAL, Insert (for Squelch Control)	4305358G01
113	SEAL, Insert (for PL Switch)	4305359G01
114	PLUG, Insert (for LED & screw hole)	4305360G01

NOTE: See Electrical Parts List for part number and description.

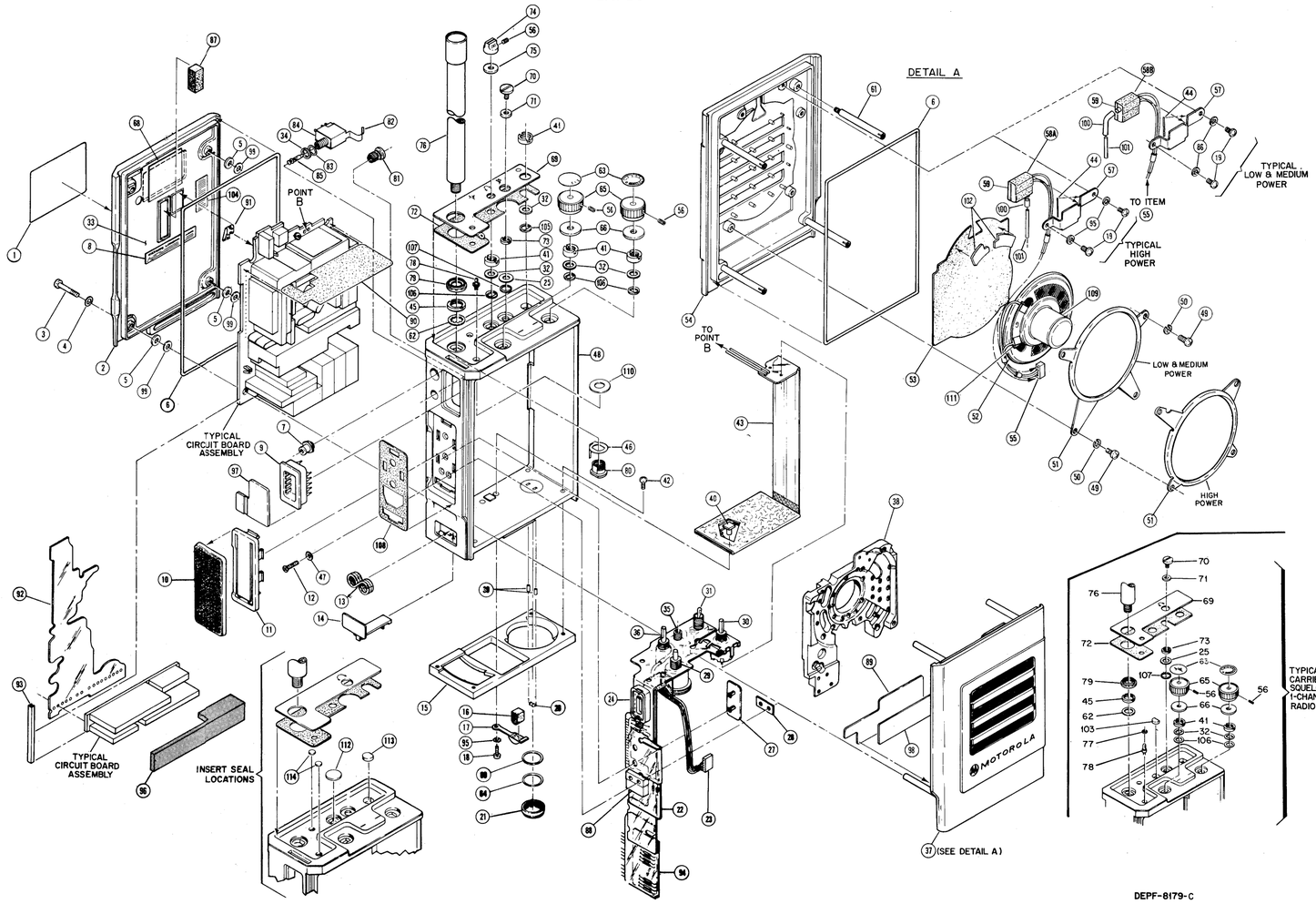
* High-power radios with Unit ID option require different Frame and Back Cover Kits. Refer to Unit ID Manual.

Filler pads listed in the following table are used to fill empty areas (missing channel elements, etc.) in the radio.

PLF-1130-A

MOTOROLA PART NO.	DESCRIPTION AND APPLICATION
7505117E01	1-Unit length (0.93"), for growth in frame
7505117E02	2-Unit length (1.125"), for growth in frame
7505117E03	3-Unit length (1.320"), for growth in frame
7505117E04	4-Unit length (1.515"), for growth in frame
7505117E05	5-Unit length (1.710"), for growth in frame
7505117E06	6-Unit length (1.905"), for growth in frame
7505117E07	7-Unit length (2.100"), for growth in frame
7505117E08	8-Unit length (2.295"), for growth in frame
7505118E01	One channel-element size
7505118E02	Two channel-element size (e.g. CE3 & CR4)
7505118E03	Three channel-element size (e.g. CE3, CE4, & CE5)
7505118E04	Two of the 3-element size (fills 6 channel elements spaces)
7505118E05	Two channel-element size (e.g. CE1 & CE2)
7505118E06	Fills space for U121, U122, & U123 in radios w/o tone "PL"
7505118E08	Fills space 0.85" by 0.1"

EXPLODED VIEW



MOTOROLA

INSTRUCTION MANUAL REVISION

FMR- 977
Issue- 3

for

Manual No. 68P 81013C75-B
"MX300" SERIES "Handie-Talkie"
FM Two-Way Radios 403-512 MHz

GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to supplement your manual. Installation of these changes in earlier equipment is not necessary except as recommended in Motorola Service and Repair Notes (SRN's).

REVISION DETAILS

Item No.	Change Affects	Kit Number	New Suffix
1	Parts List	NLE8040A	---
		NLE8041B	---
		NLE8042A	---
		NLE8230A	---
		NLE8231B	---
		NLE8232A	---
		NLE8240A	---
		NLE8242A	---
		NLE8241B	---
2	Control Flexible Circuit Detail, Schematic Diagram and Parts List	NLN4171B	1
3	Electrical Parts List (Page 8)	---	---

CHANGES

Item No.	Ref. Sym.	Action	Part Number	Description
1	R102	changed to	1805690G03	Pot.; 10k
	R107	changed to	1805690G01	Pot.; 2k
2	R302	deleted	0600185B75	RESISTOR, Fixed: 470Ω ±10%; 1/8W (replaced with an insulated wire jumper)
	R303	changed to	0660075A49	1k ±5%; 1/8W RESISTOR, Fixed: Ω ±5%; 1/8W unless stated
3	R303		0660075A49	
	R306		0660075A37	NOTE: Only part numbers have changed. Values remain the same
	R307		0660075A65	
	R309		0660075A43	
	R310		0660075A89	
	R313,314		0660075A73	
	R315		0660075A41	