



MT500 SERIES

"Handie-Talkie" FM Two-Way Radios

403-512 MHz

SPECIFICATIONS

GENERAL

Model Series:	H24BBU', H24BBB', H34BBU', H34BBB'					
Frequency:	403 - 512 MHz					
Power Supply:	One rechargeable nickel-cadmium battery or one mercury battery					
Dimensions: less antenna & knobs (H x W x D in inches):	"OMNI"				"SLIM-LINE"	
	SHORT		EXTENDED		SHORT	EXTENDED
	6.97 x 2.73 x 1.85 (177 x 69 x 47 mm)		7.62 x 2.73 x 1.85 (193 x 69 x 47 mm)		6.97 x 2.73 x 1.59 (177 x 69 x 40 mm)	7.62 x 2.73 x 1.59 (193 x 69 x 40 mm)
Weight (ounces)	4W	1.5W	4W	1.5W	1.5W	1.5W
Nickel-Cadmium Battery:	25.3 (717g)	24.9 (706g)	25.9 (734g)	25.5 (723g)	19.9 (564g)	20.4 (578g)
Mercury Battery:	26.8 (760g)	26.4 (748g)	27.4 (777g)	27.0 (766g)	20.9 (593g)	21.4 (607g)
Battery Life (hours)						
Nickel-Cadmium Battery:	8	14 or 9*	8	14 or 9*	8	8
Mercury Battery:	25	30*	25	30*	18	18
Current Drain: (Using 15 Vdc Supply)						
Transmit 1.5 W:	H24BBB' H34BBB'			H24BBU' H34BBU'		
4.0 W:	405 mA 970 mA			425 mA 990 mA		
**Receive:	70 mA			70 mA		
**Standby:	11 mA			11 mA		

FCC DESIGNATION:

RECEIVER RC0150

TRANSMITTER

4 W CC4254 BBU'

CC4253 BBB'

1.5 W CC4252 BBU'

CC4251 BBB'

* 10 - 10 - 80 duty cycle — all others have a 5 - 5 - 90 duty cycle.
** Add 3 mA for Tone PL and 4 mA for Digital PL.

RECEIVER

Frequency Stability — (-30° C to +60° C; +25° C Ref):	± .0005%
Channel Spacing:	25 kHz
Sensitivity —	
20 dB Quieting:	0.50 μ V
12 dB SINAD:	0.35 μ V
Squelch/PL:	0.25 μ V
Modulation Acceptance:	7.5 kHz
Intermodulation (EIA SINAD):	70 dB
Spurious/Image Rejection:	70/60 dB
Selectivity (EIA SINAD):	70 dB
	75 dB (optional)
Frequency Separation —	
No Degradation:	1 MHz
3 dB Sensitivity Degradation:	2 MHz
Audio Output — (At less than 5% distortion):	500 mW

TRANSMITTER

RF Power Output —	H24BBB'	H34BBB'
	H24BBU'	H34BBU'
15 Vdc Nickel-Cadmium Battery:	1.5 W	4.0 W
12.7 Vdc Mercury Battery NLN6762, NLN6936:	1.0 W	2.0 W
12.0 Vdc Mercury Battery NLN6683:	0.7 W	—
Modulation:	16F3	
Frequency Stability — (-30° C to +60° C; +25° C Ref):	± .0005%	
FM Noise:	55 dB	
Audio Distortion — (At 1000 Hz, 3 kHz deviation):	3%	
Frequency Spacing — (No Degradation):	6 MHz	

MODEL TYPES				NUMBER OF CHANNELS	TYPE OF SQUELCH
BBB SERIES		BBU SERIES			
1.5 W	4 W	1.5 W	4 W		
H24BBB'	H34BBB'	H24BBU'	H34BBU'		
1111A	---	1111A	---	1	Carrier
1112A	---	1112A	---	1	
1113A	1113A	1113A	1113A	1	
1114A	1114A	1114A	1114A	1	
1121A	---	1121A	---	2	
1122A	---	1122A	---	2	
1123A	1123A	1123A	1123A	2	
1124A	1124A	1124A	1124A	2	
1143A	1143A	1143A	1143A	4	
1144A	1144A	1144A	1144A	4	
1164A	1164A	1164A	1164A	6	
1184A	1184A	1184A	1184A	8	
3112A	---	3112A	---	1	Tone PL
3113A	3113A	3113A	3113A	1	
3114A	3114A	3114A	3114A	1	
3122A	---	3122A	---	2	
3123A	3123A	3123A	3123A	2	
3124A	3124A	3124A	3124A	2	
3143A	3143A	3143A	3143A	4	
3144A	3144A	3144A	3144A	4	
3154A	3154A	3154A	3154A	5	
3164A	3164A	3164A	3164A	6	
3184A	3184A	3184A	3184A	8	

NOTE: All of the below-listed publications have been discontinued and are NLA.

Related Publications Available Separately:
Operating Instructions 68P81012C50
Theory/Maintenance Manual 68P81012C55
Digital PL (Model A) Supplement . . . 68P81018C45
Digital PL (Model B) Supplement . . . 68P81018C40

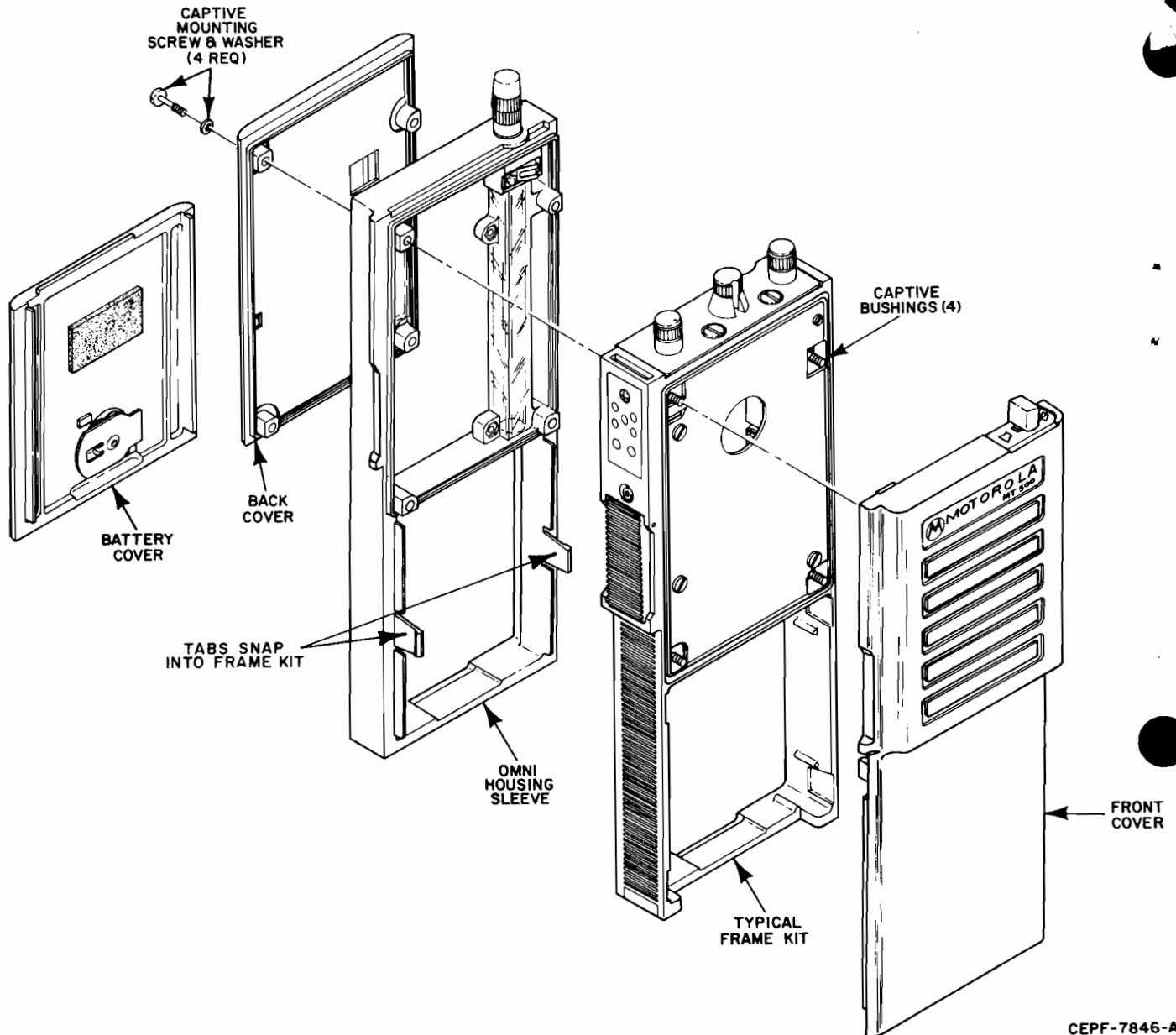
Service Manual

68P81012C58-B

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

THIS MANUAL HAS BEEN DISCONTINUED

DISASSEMBLY PROCEDURE



CEPF-7846-A

PROCEDURE

1. TURN THE SLOTTED SCREW HEAD ON THE BATTERY COVER ONE QUARTER TURN COUNTERCLOCKWISE AND REMOVE THE BATTERY COVER.
2. REMOVE THE BATTERY.
3. LOOSEN THE FOUR CAPTIVE SCREWS HOLDING THE BACK COVER AND REMOVE THE BACK COVER.
4. REMOVE SNAP-ON SLEEVE (OMNI-HOUSING ONLY).
5. LOOSEN THE FOUR CAPTIVE BUSHINGS HOLDING THE CHASSIS FRAME TO THE FRONT COVER.
6. SEPARATE THE FRONT COVER FROM THE FRAME.
7. UNPLUG THE WIRES CONNECTING THE FRONT COVER TO THE CHASSIS FRAME.

EPF-7847-O



Service Sheet No. 68P81012C58-B

MT500 SERIES

"Handie-Talkie" FM Two-Way Radios

403-512 MHz

GENERAL

This revision outlines changes that have occurred since the printing of your service 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	General Information	-----	----

CHANGES

- 1 On page 5 (Second Oscillator Crystal Frequencies), add the following table:

SECOND OSCILLATOR CRYSTAL FREQUENCIES



Carrier Frequency f_c	First Oscillator Crystal Frequency f_{01}	Second Oscillator Crystal Frequency f_{02}
403.000-405.410	48.1375-48.4399	17.865
405.420-406.299	48.4400-48.5499	17.935
406.300-410.459	48.5500-49.0699	17.865
410.460-411.419	49.0700-49.1899	17.935
411.420-417.659	49.1900-49.9699	17.865
417.660-418.539	49.9700-50.0799	17.935
418.540-422.379	50.0800-50.5599	17.865
422.380-423.259	50.5600-50.6699	17.935
423.260-425.819	50.6700-50.9899	17.865
425.820-426.699	50.9900-51.0999	17.935
426.700-428.469	51.1000-51.3199	17.865
428.460-429.259	51.3200-51.4199	17.935
429.260-445.970	51.4200-53.5099	17.865
445.980-447.339	53.5100-53.6799	17.935
447.340-460.779	53.6800-55.3599	17.865

GENERAL

This radio has been factory aligned and does not require any adjustments. Realignment may be required if components are replaced or have aged. If it is necessary to realign the radio, perform the following procedures:

- 1. Remove the battery and disassemble the radio as shown in the "Disassembly Procedure." Do not disconnect the front cover receptacle from the interconnect board plug.
- 2. Connect a dc power supply to the front cover battery contacts: power supply negative to radio negative charging contact and power supply positive to radio positive charging contact (see "Disassembly Procedure").
- 3. Adjust the power supply output for 15 volts dc.
- 4. Perform either the "Receiver Alignment" procedure or "Transmitter Alignment" procedure or both procedures as required.

RECEIVER ALIGNMENT

- Preliminary Adjustments:
- 1. Set PL switch S401 to its off () position (if applicable).
 - 2. Set squelch () control R201 to its maximum counterclockwise position.
 - 3. Set frequency switch S201 to the lowest frequency channel.
 - 4. Preposition slug of selector cavity Z1, Z2, Z3, Z4, Z5, Z6, and Z7 one-quarter inch above circuit board solder side.
 - 5. Preposition slug of L4 one turn out of the circuit board solder side.
 - 6. Connect an ac voltmeter to metering point M1 and a frequency counter to the output of the ac voltmeter.
 - 7. Inject a signal from a 17.9 MHz ± 100 Hz crystal oscillator into FL1 to produce at least a -30 dBm output at M1; then adjust meter to pin the needle by turning output knob down two levels. This is necessary in order to drive the frequency counter.
 - 8. Count the low i-f frequency through the ac voltmeter and frequency counter at M1. Record the reading within ± 10 Hz; this reference must read 35 kHz ± 1.5 kHz. Then turn off the 17.9 MHz oscillator.

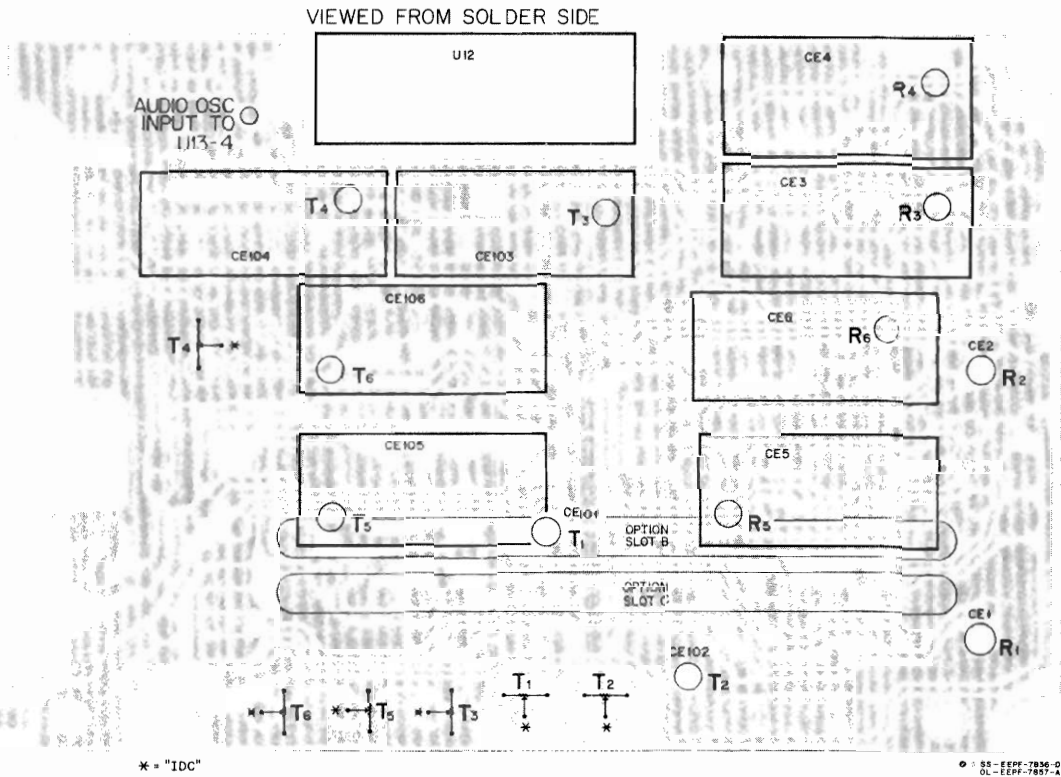
STEP	ADJUST	FOR	MEASURED AT	USING	NOTE
1	Service Monitor Frequency & Output Level Adjustment dials, & adjust L4, Z1 through Z5	Exact frequency marked on channel element and -30 dBm	M1	Service Monitor or Signal Generator, AC Voltmeter, Frequency Counter	Adjust signal generator for maximum output; if output at M1 is not -30 dBm, adjust L4, Z1, Z2, Z3, Z4, and Z5 until it is, then adjust meter to pin the needle by turning output knob down two levels. This is necessary in order to drive the frequency counter.
2	Lowest Frequency Channel Element Warp Coil	Recorded frequency in preliminary adjustment step (8) ± 250 Hz	M1	Frequency Counter	---
2A	Lowest Frequency Channel Element Warp Coil	Exact channel element frequency ± 100 Hz	M1	AC Voltmeter, 17.9 MHz Oscillator, Signal Generator, Oscilloscope	Warp the unit to carrier frequency as follows: a. Set power supply to 15 V dc. b. Reduce signal generator output to minimum and inject signal from a 17.9 MHz ± 100 Hz crystal oscillator at FL1 and adjust output level for a -30 dBm M1 reading. c. Connect the output of the ac voltmeter to the oscilloscope and set the time base to 5 ms per division and gain to display signal amplitude of approximately 3 divisions. d. Set the signal generator to the exact carrier frequency and increase the output until the waveform on the oscilloscope appears as an amplitude modulated signal. This signal is the resultant of 17.9 MHz crystal oscillator mixing with the first i-f signal which will not be exactly 17.9 MHz until the channel element is warped to the precise frequency by adjusting the channel element warp coil. e. Adjust warp coil while viewing the signal on the oscilloscope for a zero beat or the lowest possible amplitude modulating frequency. This method will provide an accuracy of ± 100 Hz adjustment of the channel element.
2B	Lowest Frequency Channel Element Warp Coil	Exact channel element frequency	M1	AC Voltmeter, 17.9 MHz Oscillator, Signal Generator	Warp the unit to carrier frequency as follows: a. Set power supply to 15 V dc. b. Reduce signal generator output to minimum and inject a signal from the 17.9 MHz crystal oscillator at FL1 and adjust output level for a -30 dBm M1 reading. c. Adjust volume control to listen to the audio output. d. Set the signal generator to the exact carrier frequency and increase the output until an audio tone is heard. This tone is the product of the mixing signals described in step 2A, Note d. e. Adjust channel element CE1 for a zero beat (no audio tone is heard when properly adjusted).

(Cont'd)

STEP	ADJUST	FOR	MEASURED AT	USING	NOTE
3	Volume Control R202	2.2 volts ac	Speaker Jack J201	AC Voltmeter, Tuneup Cable NKN6248	Establish reference noise level. Also make sure the 17.9 MHz oscillator is turned off.
4	Service Monitor Frequency & Output Adjustment Controls	Carrier frequency & maximum output	Antenna Jack J202	Service Monitor, Tuneup Cable NKN6248	---
5	When using the preferred method to align the channel elements, repeat step 4 first and then step 2 for each channel element in the radio. When using an alternate method, repeat that step (2A or 2B) for each channel element in the radio. Be sure to set the frequency switch to the channel being aligned (CE1/F1, CE2/F2, CE3/F3, CE4/F4, CE5/F5, CE6/F6, CE7/F7, and CE8/F8).				
6	L4, Z7, Z6, Z1, Z2, Z3, Z4, Z5	Best quieting (lowest ac voltage) with frequency switch S201 set to channel used in step 1.	Antenna Jack J202	Service Monitor, AC Voltmeter, Tuneup Cable NKN6248	Inject carrier frequency at antenna jack to produce 20 dB quieting. Adjust L4, Z7, Z6, Z1, Z2, Z3, Z4, Z5. Maintain the ac voltmeter reading for a 20 dB quieting by reducing the injected signal.
20 dB QUIETING TEST (Perform on each channel)					
1	Volume Control R202	2.2 volts ac	Speaker Jack J201	AC Voltmeter, Tuneup Cable NKN6248	Establishes reference noise level.
2	Service Monitor Frequency & Output Adjustment Controls	Carrier frequency & maximum output	Antenna Jack J202	Service Monitor, Tuneup Cable NKN6248	Reduce service monitor output level to zero after setting frequency.
3	Service Monitor Output Level	Slowly increase until noise decreases 20 dB	Speaker Jack J201	AC Voltmeter, Tuneup Cable NKN6248	Signal level must be less than 0.5 uV for 20 dB quieting.

NOTE: CHANNEL ELEMENT (CE1, CE2, ETC.) FREQUENCY
 f_c = carrier frequency, f_o = oscillator frequency, $f_c = 8f_o + 17.9$ MHz

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* = "10C"

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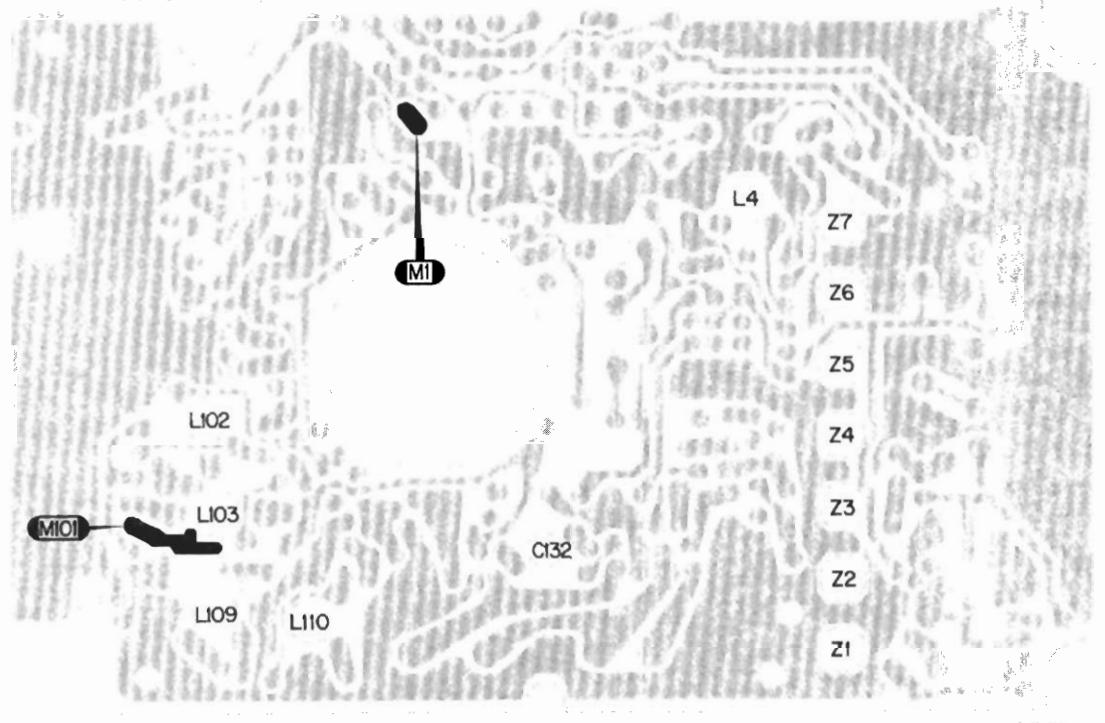
TRANSMITTER ALIGNMENT

- Preliminary Adjustments:
- 1. Connect a 50-ohm load to external antenna jack J202.
 - 2. Set frequency switch S201 to the lowest frequency channel.
 - 3. Preposition slugs of L102, L103, L109, and L110 one-eighth inch above circuit board solder side.
 - 4. Preposition "Instantaneous Deviation Control" (IDC) controls R206 through R213 to midrange.
 - 5. Adjust Service Monitor to channel selected.
 - 6. Make all measurements with radio "keyed."

STEP	ADJUST	TEST EQUIPMENT USED		MEASUREMENT	
		TYPE	CONNECTED AT	CONDITIONS	DESCRIPTION AND LEVEL
1	L103, L102	DC Voltmeter	M101	Preliminary Adjustment	Tune for maximum dc voltage (typically 1.7 V dc).
2	L110	Ammeter	Power Supply	Preliminary Adjustment	Tune for maximum radio current.
3	C132	Ammeter	Power Supply	Preliminary Adjustment	Tune for maximum radio current.
4	L109 and repeak L110	Ammeter	Power Supply	Preliminary Adjustment	Tune for maximum radio current.
5	C132	Ammeter	Power Supply	Readjust C132 only if after step 4 current is above rated specifications.	Adjust for rated current drain. NOTE: For 1-watt models, if power output is greater than 1 watt, readjust C132 for 1 watt.
6	Lowest Frequency Channel Element Warp Coil	Service Monitor	Antenna Jack J202 through a 30 dB attenuating pad and Tuneup Cable NKN6248	No change	Adjust for zero error (transmitter frequency)
7	"Private-Line" Deviation Control (Tone PL - R504; Digital PL - R604), if applicable.	Service Monitor	Antenna Jack J202 through a 30 dB attenuating pad and Tuneup Cable NKN6248	---	On PL models, Tone or Digital PL deviation should be ± 500 to ± 1000 Hz (± 750 Hz nominal).
8	Repeat steps 6 and 7 for each channel in the radio; be sure to set the frequency switch to the channel being aligned (CE101/F1, CE102/F2, CE103/F3, CE104/F4, CE105/F5, CE106/F6, CE107/F7, and CE108/F8).				
9	F1 IDC Control R206	Service Monitor	Antenna Jack J202 through a 30 dB attenuating pad and Tuneup Cable NKN6248	Audio input signal of 50 mV rms (1000 Hz) at IDC Module U13, Pin 4	± 5 kHz maximum carrier deviation.
10	Repeat step 9 for each channel (R207/F2, R208/F3, R209/F4, R210/F5, R211/F6, R212/F7, and R213/F8).				
11	---	RF Wattmeter	Antenna Jack J202 through a 30 dB attenuating pad and Tuneup Cable NKN6248	---	Check for rated power and rated current on all channels.

NOTE: CHANNEL ELEMENT (CE101, CE102, ETC.) FREQUENCY
 f_c = carrier frequency, f_o = oscillator frequency, $f_c = 9f_o$

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ALIGNMENT
PROCEDURE

Typical Transmitter-Receiver Alignment Points

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
A1	5105177D55 5105177D56	PRESELECTOR: 450-482 MHz 482-512 MHz CAPACITOR, Fixed: pF $\pm 10\%$; 75 V unless stated C1 2182358G23 68 $\pm 5\%$; 100V; N4700 C2 2100861429 8; N150 C3, 4, 5 2182358G95 30; N750 C6 2100861428 6; N150 C7 2184008H16 .01 μ F $\pm 5\%$; 50 V; Y5F C10 2182213E21 .002 μ F C11 2182877B52 11 $\pm 5\%$; 50 V; N150 (NUE6242A & NUE6243A) or 2182358G66 18 $\pm 5\%$; 50 V; N150 (NUE6292A & NUE6293A) C13 2305612E02 68 μ F $\pm 20\%$; 2 V C15, 16 2305612E01 22 μ F $\pm 20\%$; 2 V C17 2382397D28 3.3 μ F $\pm 20\%$; 20 V C19 2382397D36 1 μ F; 20 V C20 2382397D16 22 μ F $\pm 20\%$; 15 V C22 2382397D04 15 μ F $\pm 20\%$; 15 V C23 2382397D17 15 μ F $\pm 20\%$; 20 V C25 2182213E03 .0055 μ F -0+100%; 75 V C26, 27 2182358G95 30; N750 C29 2184008H16 .01 μ F $\pm 5\%$; 50 V; Y5F C30 2182358G23 68 $\pm 5\%$; 100 V; N4700 C31 2182213E08 1000 $\pm 5\%$; 100 V; Y5D C32 2182358G23 68 $\pm 5\%$; 100 V; N4700 C33 2382397D28 3.3 μ F $\pm 20\%$; 20 V C34 2182358G95 30; N750 C35 2182877B09 3.8 ± 0.25 pF; NPO (NUE6292A & NUE6293A) C36 2182358G66 18 $\pm 5\%$; 50 V; N150 (NUE6292A & NUE6293A) C101 or 2100861429 8; N150 (M) C102 or 2100861428 6; N150 (H) C103 2182358G95 30; N750 C104 or 2100861429 8; N150 (M only) C105 2105311E04 10 $\pm 5\%$; 100 V; N150 (M) C106 or 2100861429 8; N150 (H) C107 2182213E29 100 $\pm 20\%$; 100 V C108 2382397D19 2.2 μ F -20+40%; 10 V C109 2105311E11 40; 100 V; N150 C110 2182450B22 0.75; 500 V (M) or 2182450B40 0.56; 500 V (H) C111 2105311E09 120; 100 V; N150 C112 or 2105311E29 22 $\pm 5\%$; 25 V (M) or 2105311E15 40 $\pm 5\%$; 25 V (H) C113 2105311E11 40 $\pm 10\%$; 50 V (M) or 2182358G95 30; N750 (H) C114, 115 or 2182358G61 13.5; N150 (M) C116 or 2182877B52 11; N150 (H) C117 2182213E29 100 $\pm 20\%$; 100 V C118 2182358G95 30; N750 C119 2100861462 15; N150 (M) or 2100861432 20; N150 (H) C120 2182450B41 0.62; 500 V (M) or 2182450B24 0.47; 500 V (H) C121 2100861603 3.3 ± 0.25 pF; NPO (M) or 2105311E18 7 $\pm 5\%$; 25 V; N150 (H) C122 2182358G97 2.4 ± 0.1 pF; 100 V; NPO (M) or 2182877B07 2.2 ± 0.25 pF; N150 (H) C123 2100861429 8; N150 (M) or 2105311E18 7 $\pm 5\%$; 25 V; N150 (H) C124 2382397D36 1 μ F; 20 V C125 2182213E21 .002 μ F -20+100%; K6000 C126 2182213E30 220; 100 V C127 2182358G95 30; N750 C130 2100861427 4; N150 (M) or 2100861603 3.3 ± 0.25 pF; NPO (H) C131 2182358G95 30; N750 C132 2005372C03 trimmer, 2-10; 100 V C133 2182358G84 1.7 ± 0.1 pF; 50 V; N150 (M) C134 2100861428 6; N150 (H) C135 or 2100861429 8; N150 (M) C136 2100861603 3.3 ± 0.25 pF; NPO (M) or 2182358G97 2.4 ± 0.1 pF; 100 V; NPO (H) C201 2182213E21 .002 μ F -20+100%; K6000 C202 2182358G95 30; N750 C203 2184008H14 .0047 μ F $\pm 10\%$; 100 V C204 2382397D12 0.12 μ F; 20 V C205 2184008H01 .01 μ F; 50 V; Y5F C206 2182358G95 30; N750 C207 2182213E21 .002 μ F -20+100%; K6000 C210 2182358G95 30; N750 C217 2182877B17 5 ± 0.25 pF; N150 (M only) C218 2182358G86 1.5 ± 0.1 pF; 50 V; N150 (M only) C219 2105271F02 120 (H) or 2105271F01 120 (H) C220, 222, 225 2182358G95 6.8 μ F $\pm 20\%$; 10 V C226 2382397D09 30 pF $\pm 10\%$; 75 V N750 C227, 228 2182358G95

CE1 thru 8	KXN1034A	CHANNEL ELEMENT: Receiver, use as required depending on model Transmitter, use as required depending on model DIODE: See Note I Silicon CR1 4882363E01 CR2 4805275E01 CR3 4882363E01 CR203 4882466H10 CR401 4882466H10 E1, 2, 3 7683960B01 E104, 105, 107, 108, 109, 110, 111 7683960B01 E106 7683960B01 F401 6505214E01 FL1, FL2, & FL3 package or FL1, FL2, FL3, & FL4 package J1 0105959C40 J2 0105950D32 J201 0905657G01 J202 0905657G01 J401 0105958C87 L1 2484545H01 L2 2482723H28 L3 2484565H01 L4 2405262E02 L5 2482723H27 L6, 7 2482723H28 L101 2482723H27 L102, 103 2405262E02 L104 2482723H28 L105 2405652E02 L106 2482723H28 L109 2405262E10 L110 2405262E01 or 2405262E12 L113, 114 2482723H11 L115 2405027E21 or 2405027E24 L116 2482723H27 L117 2482723H28 L118 2405027E17 L119 2482723H18 L121 2405486C34 L201 2482723H04 L202 2482723H04 L203 2405027E17 L204 2482723H04 LS401 5005334D01 MK401 5982575J02	
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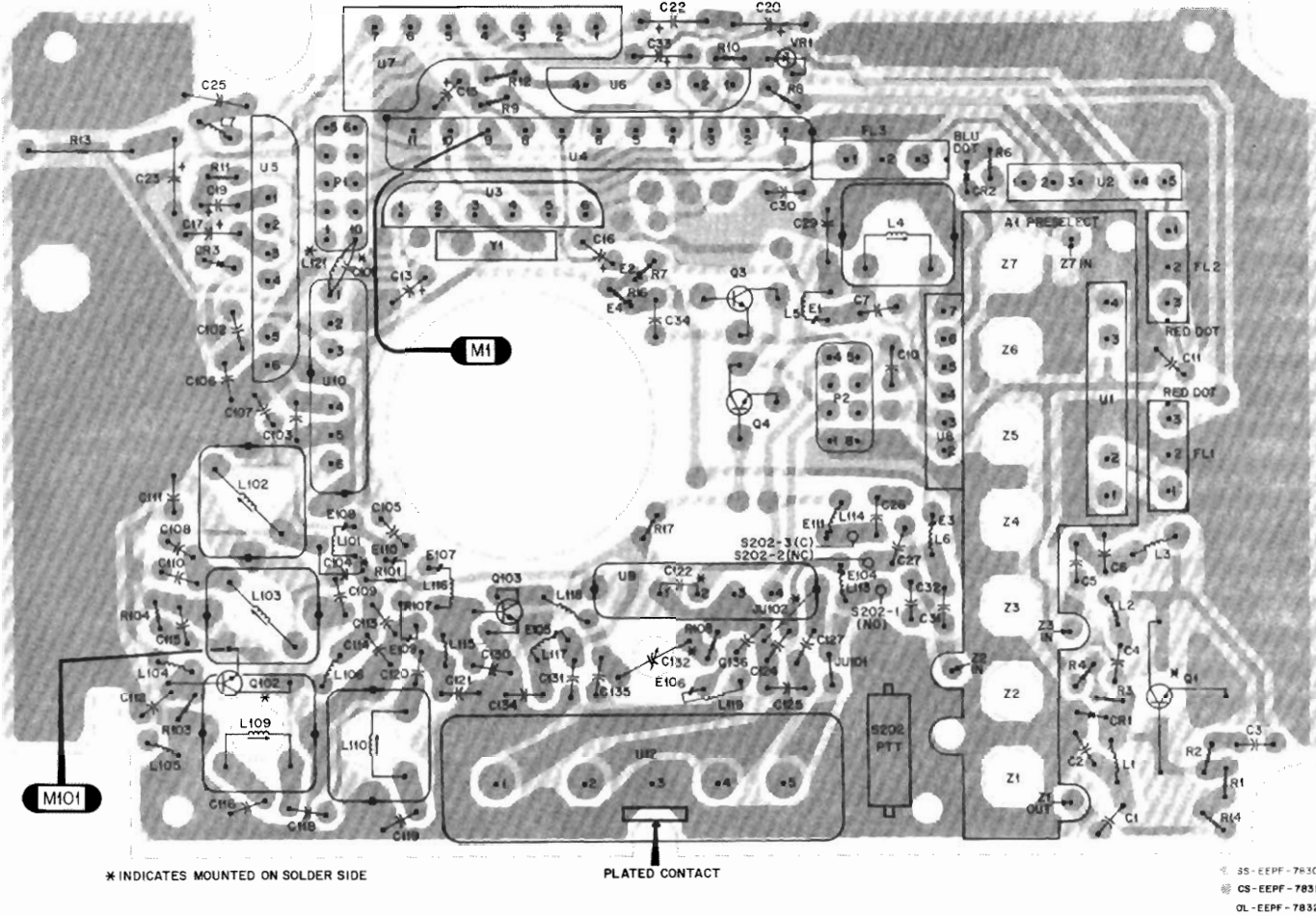
P1 0105958C97 P2 0105958C96 P201 0105953E40 Q1 4805235C12 Q3, 4 4800869809 Q102 4800869757 Q103 4800869927 R1 0600185A70 R2 0600185A55 R3 0600185A85 R4 0600185A53 R6 0600185B57 R7 0600185B67 R8 0600185B64 R9 0600185B71 R10 0600185B68 R11 0600185C05 R12 0600185B83 R13 0600185B55 R14 0600185A41 R16 0600185B83 R17 0600185B77 R101 0600185B80 R103 0600185B83 R104 0600185B66 or 0600185B67 R107 0600185B64 R108 0600185B60 R201 1805333E01 R202 1805370E01 R203 0600185B64 R204 1705787D01 R205 0600185B93 R206 0600185B95 R207 1805501C04 R214 0600185B96 S201 4005120E01 or 4005119E01 or 4005053E01 S202 4005265E01 S203 4005061E01 S401 4005061E01 U1 5105177D07 U2 5184333G07 U3 5184333G08 U4 5184333G37 U5 5105177D22 U6 5105177D02 U7 5105177D05 U8 5105177D16 or 5105177D36 U9 5105177D20 U10 5105177D21 U12 NLE8362A or NLE8363A or NLE8372A or NLE8373A U13 5105177D04 VR1 4882256C61 Y1 4805713B01 or 4805713B02 NONREFERENCED ITEMS 2605685B01 2605820D05 2684800H03 1505895D01 1505941D01 1505165D01 0305627D01 0300138643 7505295B03 PLUG: Interconnect Bd Conn Block; 10-pin Interconnect Bd Conn Block; 8-pin Front Cover Connector Block TRANSISTOR: See Note I NPN; Silicon NPN; type M9809 NPN; type M9757 NPN; type M9927 RESISTOR, Fixed: $\pm 10\%$; 1/8 W unless stated 7.5 k $\pm 5\%$ 1.8 k $\pm 5\%$ 33 k $\pm 5\%$ 1.5 k $\pm 5\%$ 15 100 56 220 120 120 k 2.2 k 10 470 $\pm 5\%$ 2.2 k 680 1.2 k 2.2 k 82 (M) 100 (H) 56 27 Pot., 25k; squelch control Pot., 25k; vol. control; p/o S203 56 39.2 $\pm 1\%$; 1/2 W 15 k $\pm 10\%$; 1/8 W (C1R1) 22 k $\pm 10\%$; 1/8 W (C2R2) Pot., 50 k 27 k SWITCH: Toggle, DPDT (2-freq. models) Rotary, 5-pos. (4-freq. models) Rotary, 8-pos. (6- & 8-freq. models) Micro, PTT ON-OFF (p/o R202) Toggle, SPDT, "PL" HYBRID, Encapsulated: Mixer I-F Amplifier Low Conversion Detector Squelch Audio Pre-Amplifier Audio Injection (M) Injection (H) Regulator Buffer Tripler 1.5 W Power Amplifier 450-482 MHz 1.5 W Power Amplifier 482-512 MHz 4 W Power Amplifier 450-482 MHz 4 W Power Amplifier 482-512 MHz IDC DIODE: See Note I 5.8 V Zener CRYSTAL: See Note II 17.865 MHz 17.935 MHz SHIELD (for Detector U4) SHIELD, Coil (for L102, 103, 109, 110) SHIELD, Coil (for L4) COVER (for Buffer Tripler U10) COVER (for Regulator U9) COVER (for Mixer U1) SCREW, Special; 2 req'd (U1) SCREW, Machine; 2-56 x 3/16"; 2 req'd (A1) PAD, Insulator (for FL1, FL2, FL3)

7505176E01 7505248G01 3905806E04 4205229F01 1505894D01 7505506D02 7505506D03 7505506D04 7505506D06 7505506D07 7505506D08 7505506D09 1405575F01 1405611F01 7584257401	PAD, Foam (for channel elements) PAD, Lg. Foam (channel elements) CONTACT, Plated (U12) STRAP, Ground (A1) COVER, IDC (p/o Interconnect Board) MODULE PAD (for U4) MODULE PAD (for U3) MODULE PAD (for U2) MODULE PAD (for U6) MODULE PAD (for U7) MODULE PAD (for U8, U10) MODULE PAD (for U9) BOOT, Crystal Filter (for FL1, FL2, FL3, & Y1) INSULATOR (for U13) PAD, Insulator (for Y1)
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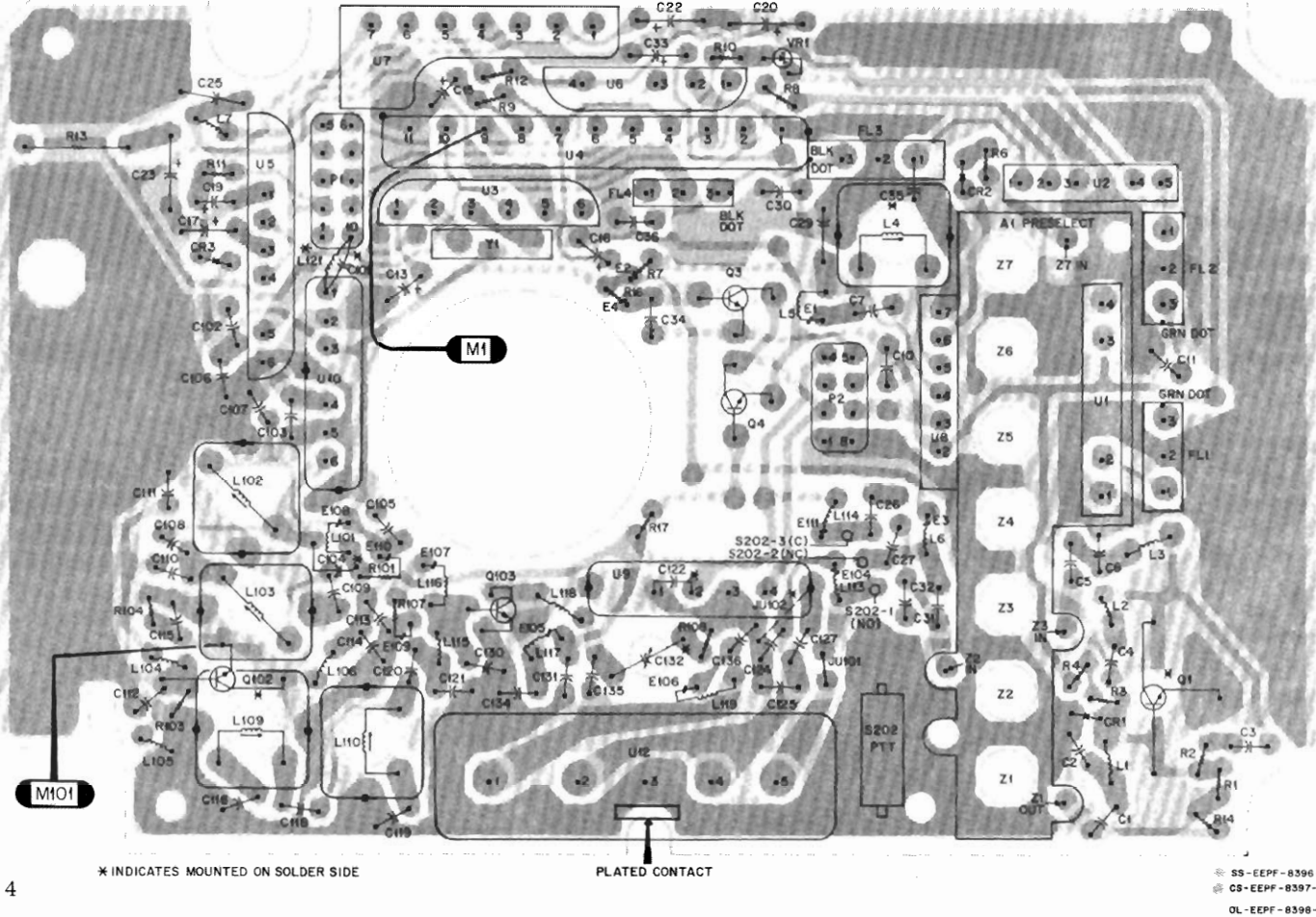
NOTES: 1. For optimum performance, order replacement diodes and transistors by Motorola part number only.
II. When ordering crystal units, specify crystal frequency and Motorola part number. Gold faced FL1, FL2 and FL3 crystal filters cannot be mixed with silver can FL1, FL2, and FL3 crystal filters.

KIT AND SUFFIX NO.	REF SYM	CHANGE
NHE6041A, NHE6051A NHE6061A, NHE6071A NHE6111A, NHE6121A NHE6131A, NHE6141A NHE6001A, NHE6011A NHE6081A, NHE6091A NHE6151A, NHE6161A NHE6021A, NHE6031A	---	Interconnect Circuit Board Part No. was 8405062E01-O
NHE6041A-1, NHE6051A-1 NHE6061A-1, NHE6071A-1 NHE6111A-1, NHE6121A-1 NHE6131A-1, NHE6141A-1 NHE6001A-1, NHE6011A-1 NHE6081A-1, NHE6091A-1 NHE6151A-1, NHE6161A-1 NHE6021A-1, NHE6031A-1	C201	Was Part No. 2382397D12; 0.12 μ F, 20 V
NHE6041A-2, NHE6051A-2 NHE6061A-2, NHE6071A-2 NHE6111A-2, NHE6121A-2 NHE6131A-2, NHE6141A-2 NHE6001A-2, NHE6011A-2 NHE6081A-2, NHE6091A-2 NHE6151A-2, NHE6161A-2 NHE6021A-2, NHE6031A-2	C201	Change to 2184008H14
NHE6001A-3 NHE6011A-3 NHE6021A-3 NHE6031A-3 NHE6081A-3 NHE6091A-3 NHE6151A-3 NHE6161A-3	C201 C201	Added Was 0105953E40
NHE6041A-3 NHE6051A-3 NHE6061A-3 NHE6071A-3 NHE6111A-3 NHE6121A-3 NHE6131A-3 NHE6141A-3	C201 C201	Added Added
NHE6041A-4 NHE6051A-4 NHE6061A-4 NHE6071A-4 NHE6111A-4 NHE6121A-4 NHE6131A-4 NHE6141A-4	CR204 P201	Deleted was located in parallel with CR204 (univ). Was 0105953E40
NUE6232A-1 NUE6233A-1 NUE6242-1 NUE6243-1 NUE6282-1 NUE6283-1 NUE6292-1 NUE6293-1	C101	Added
NUE6242A-1 NUE6292A-1 NUE6242A-2 NUE6292A-2	C101 C101 L101	Was 2100861432 Was 2105311E10 Deleted was located in parallel with U101.
NUE6232-1 NUE6282-1 NUE6212-1	C101 C101 C101	Was 2100861432 Was 2105311E10 Was 2105311E10

NUE6242A & NUE6243A (Viewed from Solder Side)

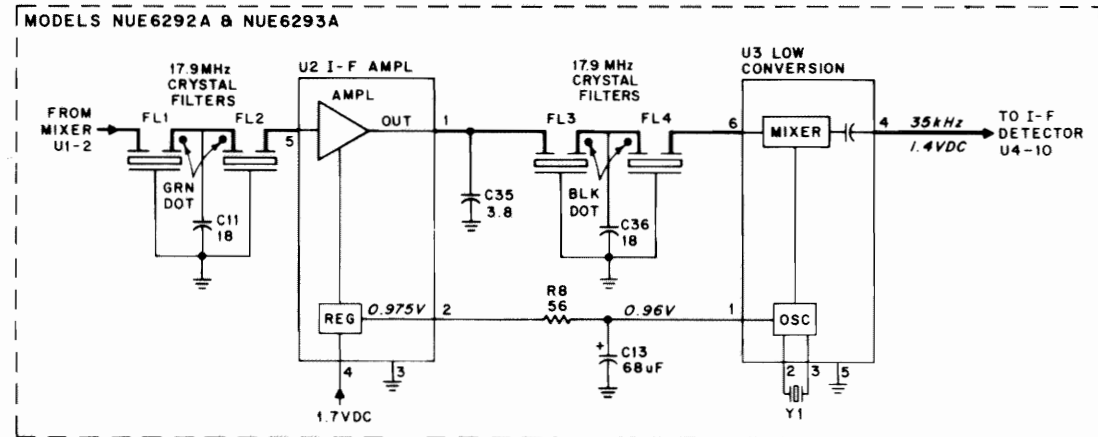


NUE6292A & NUE6293A (Viewed from Solder Side)

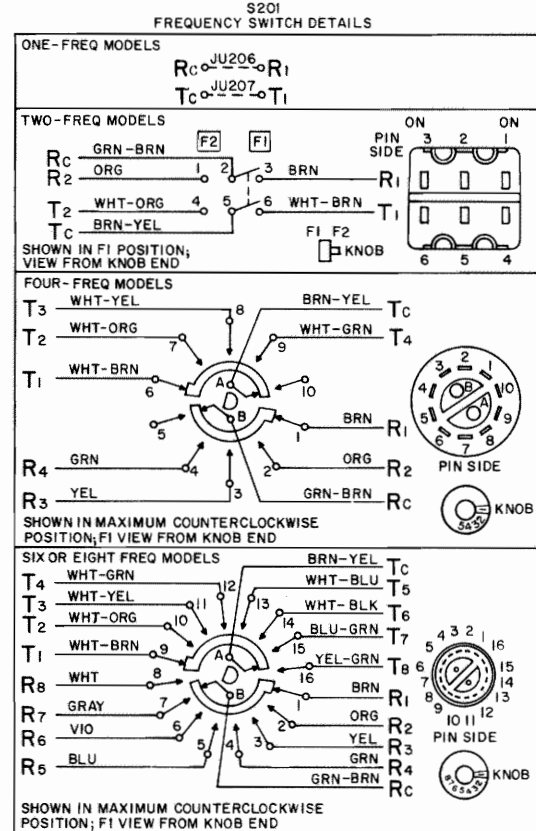


"BBB" SERIES CIRCUIT BOARD DETAIL AND PARTS LIST

NUE6292A AND NUE6293A



- NOTES:
A. 1000uV CARRIER SIGNAL WITH 1kHz TONE AT 3Hz DEVIATION.
B. MEASUREMENT MADE WITH MOTOROLA MODEL S-1339 ANALOG NO SIGNAL REFERENCE AT PIN 1, U7.
C. MEASUREMENT MADE WITH MOTOROLA MODEL S-1053 AC VOLTMETER.
D. USE VOLUME CONTROL TO SET -40 dBm REFERENCE AT PIN 1, U7.
E. MEASUREMENT MADE WITH NO CARRIER SIGNAL, FULLY SQUELCHED.
F. STAGE GAINS ARE FOR REFERENCE ONLY. SEE THE TROUBLESHOOTING SECTION OF THE INSTRUCTION MANUAL 68P8101C55 FOR CORRECT MEASUREMENT PROCEDURES.

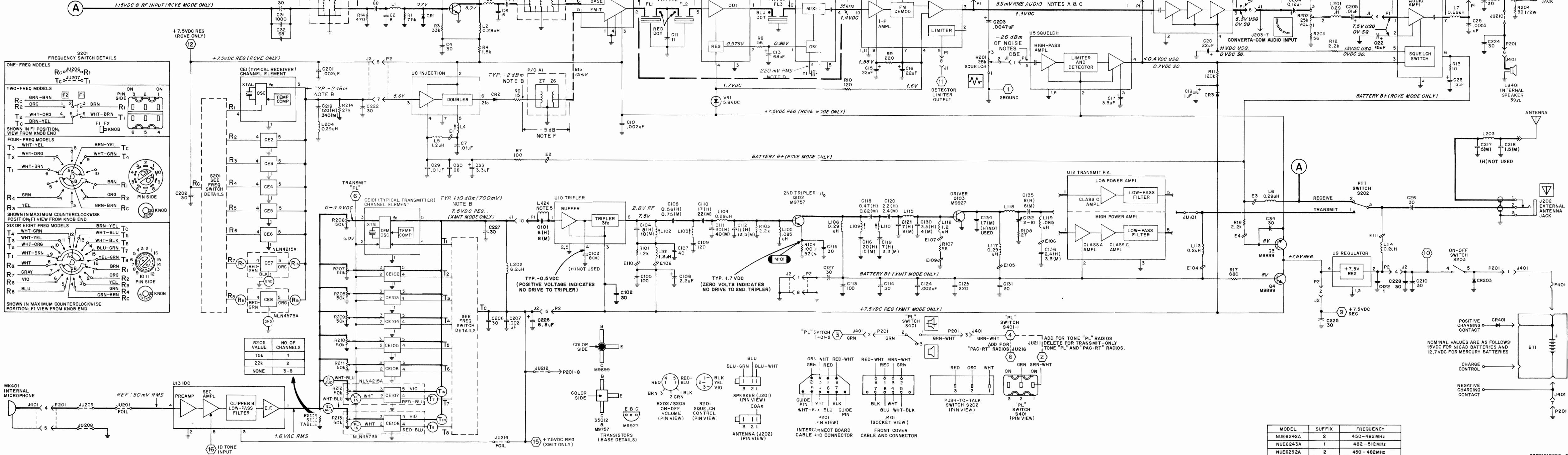


SECOND OSCILLATOR CRYSTAL FREQUENCIES

CARRIER FREQUENCY f_c	FIRST OSCILLATOR CRYSTAL FREQUENCY f_{01}	SECOND OSCILLATOR CRYSTAL FREQUENCY f_{02}
450.0-460.8	54.0125-55.3625	17.865
460.8-461.0	55.3625-55.3875	17.935
461.0-462.4	55.3875-55.5625	17.865
462.4-462.6	55.5625-55.5875	17.935
462.6-464.4	55.5875-55.8125	17.865
464.4-464.6	55.8125-55.8375	17.935
464.6-467.0	55.8375-56.1375	17.865
467.0-467.2	56.1375-56.1625	17.935
467.2-470.4	56.1625-56.5625	17.865
470.4-470.6	56.5625-56.5875	17.935
470.6-475.1	56.5875-57.1500	17.865
475.1-475.4	57.1500-57.1875	17.935
475.4-478.3	57.1875-57.5500	17.865
478.3-478.5	57.5500-57.5750	17.935
478.5-482.3	57.5750-58.0500	17.865
482.3-482.5	58.0500-58.0750	17.935
482.5-487.4	58.0750-58.6875	17.865
487.4-487.6	58.6875-58.7125	17.935
487.6-489.5	58.7125-58.9500	17.865
489.5-490.0	58.9500-59.0125	17.935
490.0-494.2	59.0125-59.5375	17.865
494.2-494.4	59.5375-59.5625	17.935
494.4-500.2	59.5625-60.2875	17.865
500.2-500.3	60.2875-60.3000	17.935
500.3-503.7	60.3000-60.7250	17.865
503.7-503.9	60.7250-60.7500	17.935
503.9-506.1	60.7500-61.0250	17.865
506.1-506.3	61.0250-61.0500	17.935
506.3-507.8	61.0500-61.2375	17.865
507.8-508.0	61.2375-61.2625	17.935
508.0-510.1	61.2625-61.5250	17.865
510.1-510.3	61.5250-61.5500	17.935
510.3-512.0	61.5500-61.7625	17.865

CRYSTAL FORMULA: $f_c = 8f_{01} + 17.9 \text{ MHz}$

EPF-8201-O



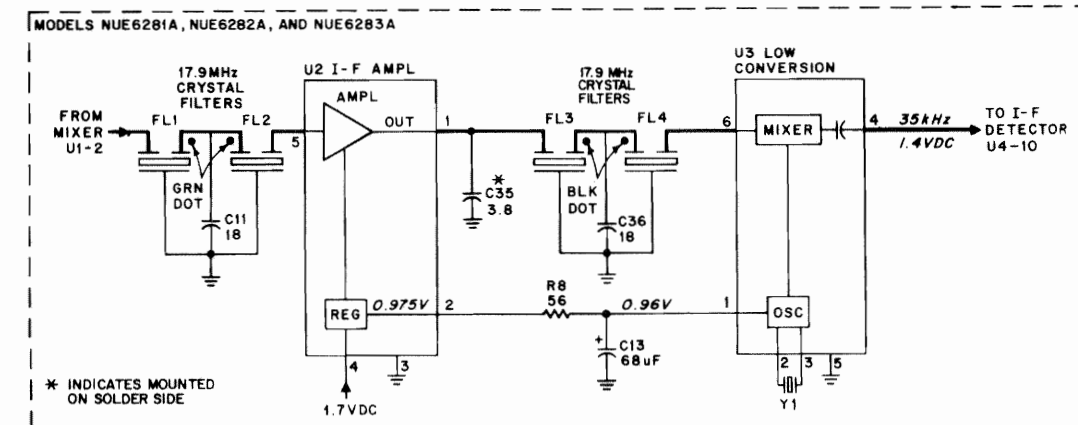
SCHEMATIC NOTES

- UNLESS OTHERWISE STATED, RESISTANCES ARE IN OHMS AND CAPACITANCES ARE IN PICOFARADS.
- DC VOLTAGES ARE MEASURED FROM POINT INDICATED TO CHASSIS GROUND USING MOTOROLA DC MULTIMETER OR EQUIVALENT.
- INDICATES CONNECTION POINT TO INTERCONNECT CIRCUIT BOARD.
- REFERENCE DESIGNATIONS ARE ASSIGNED IN THE FOLLOWING MANNER:
UNIT SERIES = RECEIVER
100 SERIES = TRANSMITTER
200 SERIES = INTERCONNECT BOARD
400 SERIES = FRONT COVER
- L121 AND C101 USED ONLY ON MODELS WITH ISSUE O AND A U10'S.

MODEL	SUFFIX	FREQUENCY
NUE6242A	2	450-482 MHz
NUE6243A	1	482-512 MHz
NUE6292A	2	450-482 MHz
NUE6293A	1	482-512 MHz

EPF-7878-B

NUE6281A, NUE6282A AND NUE6283A



NOTES:

A. 1000uV CARRIER SIGNAL WITH 1kHz TONE AT 3kHz DEVIATION.

B. MEASUREMENT MADE WITH MOTOROLA MODEL S-1339 ANALOG RF MILLIVOLT METER WITH HIGH IMPEDANCE PROBE.

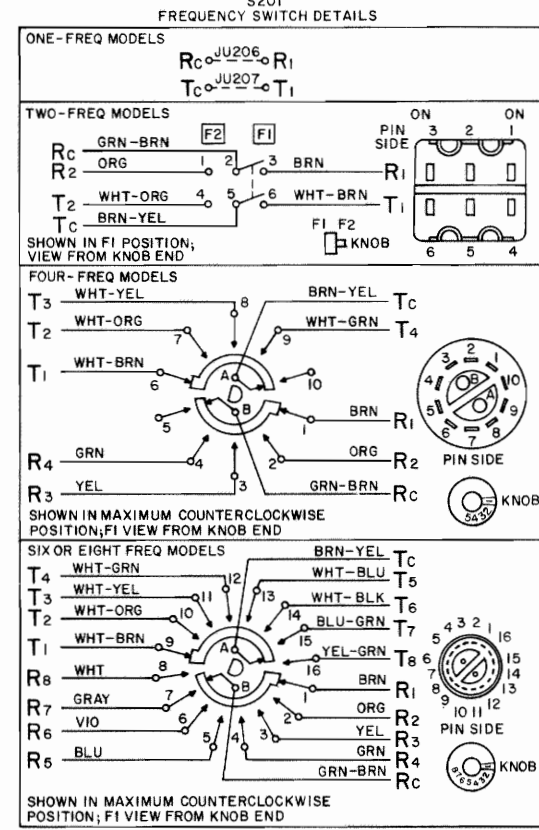
C. MEASUREMENT MADE WITH MOTOROLA MODEL S-1053 AC VOLTMETER.

D. USE VOLUME CONTROL TO SET -40 dBm REFERENCE AT PIN 1, U7.

E. MEASUREMENT MADE WITH NO CARRIER SIGNAL, FULLY SQUELCHED.

F. STAGE GAINS ARE FOR REFERENCE ONLY, SEE THE TROUBLESHOOTING SECTION OF THE INSTRUCTION MANUAL 68P81012C55 FOR CORRECT MEASUREMENT PROCEDURES.

+15VDC & RF INPUT (RCVE MODE ONLY)

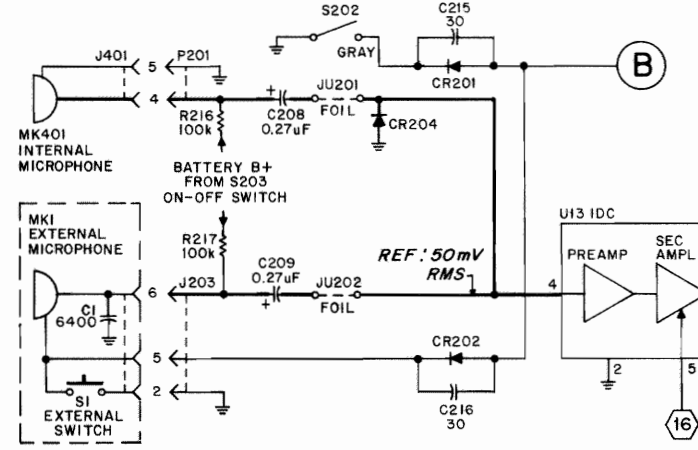


SECOND OSCILLATOR CRYSTAL FREQUENCIES

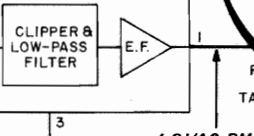
CARRIER FREQUENCY f_c	FIRST OSCILLATOR CRYSTAL FREQUENCY f_{o1}	SECOND OSCILLATOR CRYSTAL FREQUENCY f_{o2}
450.0 - 460.8	54.0125 - 55.3625	17.865
460.8 - 461.0	55.3625 - 55.3875	17.935
461.0 - 462.4	55.3875 - 55.5625	17.865
462.4 - 462.6	55.5625 - 55.5875	17.935
462.6 - 464.4	55.5875 - 55.8125	17.865
464.4 - 464.6	55.8125 - 55.8375	17.935
464.6 - 467.0	55.8375 - 56.1375	17.865
467.0 - 467.2	56.1375 - 56.1625	17.935
467.2 - 470.4	56.1625 - 56.5625	17.865
470.4 - 470.6	56.5625 - 56.5875	17.935
470.6 - 475.1	56.5875 - 57.1500	17.865
475.1 - 475.4	57.1500 - 57.1875	17.935
475.4 - 478.3	57.1875 - 57.5500	17.865
478.3 - 478.5	57.5500 - 57.5750	17.935
478.5 - 482.3	57.5750 - 58.0500	17.865
482.3 - 482.5	58.0500 - 58.0750	17.935
482.5 - 487.4	58.0750 - 58.6875	17.865
487.4 - 487.6	58.6875 - 58.7125	17.935
487.6 - 489.5	58.7125 - 58.9500	17.865
489.5 - 490.0	58.9500 - 59.0125	17.935
490.0 - 494.2	59.0125 - 59.5375	17.865
494.2 - 494.4	59.5375 - 59.5625	17.935
494.4 - 500.3	59.5625 - 60.2875	17.865
500.3 - 500.3	60.2875 - 60.3000	17.935
500.3 - 503.7	60.3000 - 60.7250	17.865
503.7 - 503.9	60.7250 - 60.7500	17.935
503.9 - 506.1	60.7500 - 61.0250	17.865
506.1 - 506.3	61.0250 - 61.0500	17.935
506.3 - 507.8	61.0500 - 61.2375	17.865
507.8 - 508.0	61.2375 - 61.2625	17.935
508.0 - 510.1	61.2625 - 61.5250	17.865
510.1 - 510.3	61.5250 - 61.5500	17.935
510.3 - 512.0	61.5500 - 61.7625	17.865

CRYSTAL FORMULA: $f_c = 8f_{o1} + 17.9 \text{ MHz}$

EPF-8201-0



R205 VALUE	NO. OF CHANNELS
15k	1
22k	2
NONE	3-8



Electrical Parts List
403-430 MHz (L)
450-482 MHz (M)
482-512 MHz (H)
PLF-1270-B

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
A1	5105177D65 5105177D55 5105177D56	PRESELECTOR: 403-430 MHz (L) 450-482 MHz (M) 482-512 MHz (H) CAPACITOR, Fixed: pF ±10%: 75 V unless stated 68 ±5%; 100 V; N4700 8; N150 30; N750 6; N150 .01 uF ±5%; 50 V; Y5F 11 ±5%; 50 V; N150 18 ±5%; 50 V; N150 (NUE6281A, NUE6282A & NUE6283A) 68 uF ±20%; 2 V 22 uF ±20%; 2 V 3.3 uF ±20%; 20 V 1 uF; 20 V 22 uF ±20%; 15 V 15 uF ±20%; 15 V 15 uF ±20%; 20 V -0055 uF -0+100%; 75 V 30; N750 .01 uF ±5%; 50 V; Y5F 68 ±5%; 100 V; N4700 1000 ±5%; 100 V; Y5D 68 ±5%; 100 V; N4700 3.3 uF ±20%; 20 V 3.8 ±0.25 pF; NPO (NUE6281A, NUE6282A, & NUE6283A) 18 ±5%; 50 V; N150 (NUE6281A, NUE6282A & NUE6283A) 11 ±5%; 50 V; N150 (L) 8; N150 (M) 30; N750 8; N150 (M) Not Used (H) 15; N150 (L) 10; N150 (M) 8; N150 (H) 100 ±20%; 100 V 2.2 uF ±20 + 40%; 10 V 50; 100 V; N3300 (L) 40; 100 V; N150 (M), (H) 1.0; 500 V; (L) 0.75; 500 V (M) 0.56; 500 V (H) 180; 100 V; NPO (L) 120; 100 V; N150 (M), (H) 25; N150 (L) 22 ±5%; 25 V (M) 17 ±5%; 100 V; NPO (H) 47 ±5%; 50 V; N150 (L) 40 ±10%; 50 V (M) 30; N750 (H) 15; N150 (L) 13.5; N150 (M) 11; N150 (H) 100 ±20%; 100 V 30; N750 36; 100 V; N220 (L) 30; N750 (M), (H) 12; N150 (L) 15; N150 (M) 20; N150 (H) 0.75; 500 V; (L) 0.62; 500 V (M) 0.47; 500 V (H) 6; N150 (L) 3.3 ±0.25 pF; NPO (M) 7 ±5%; 25 V; N150 (H) 2.4 ±0.1 pF; 100 V; NPO (L), (M) 2.2 ±0.25 pF; N150 (L) 4; 20; 25; 25 V; N150 (L) 8; N150 (M) 7 ±5%; 25 V; N150 (H) 1 uF; 20 V (L) .002 uF -20+100% K6000 220; 100 V 1 uF; 20 V (L) 30; N750 (M), (H) 30; N750 (L only) 30; N750 6; N150 (L) 4; N150 (M) 3.3 ±0.25 pF; N ±0 (H)
C1	2182358G23	
C2	2100861429	
C3, 4, 5	2182358G95	
C6	2100861428	
C7	2184008H16	
C11	2182877B52 or 2182358G66	
C13	2305612E02	
C15, 16	2305612E01	
C17	2382397D28	
C19	2382397D36	
C20	2382397D16	
C22	2382397D04	
C23	2382397D17	
C25	2182213E03	
C26, 27	2182358G95	
C29	2184008H16	
C30	2182358G23	
C31	2182213E08	
C32	2182358G23	
C33	2382397D28	
C35	2182877B09	
C36	2182358G66	
C101	2812877B52 or 2100861429 or 2100861428	
C102	2182358G95	
C103	2182358G95 or 2100861429 or -----	
C104	2100861462 or 2105311E04 or 2100861429 or 2182213E29 2382397D10 2182358B15 or 2105311E11 2182450B28 or 2182450B22 or 2182450B40 2183162H31 or 2105311E09 2100861497 or 2105311E29 or 2105311E15 2105529B11 or 2105311E11 or 2182358G95 2100861462 or 2182358G61 or 2182877B52 2182213E29 2182358G95 or 2105311E10 or 2182358G95 2182358G91 or 2100861462 or 2100861432 2182450B22 or 2182450B41 or 2182450B24 2100861428 or 2100861603 or 2105311E18 2182358G97 or 2182877B07 2182358G80 or 2100861429 or 2104211E18 2382397D36 2182213E21 2182213E30 2382397D36 or 218235G95 218235G95 218235G95 2100861428 or 2100861427 or 2100861603	

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C131	2182358G95	30; N750
C132	2005372C03	Trimmer; 2-10; 100 V
C133	2182358G95	30; N750 (L) 1 uF; 20 V (M), (H) 1.7 ±0.1 pF; 50 V; N150 (L and M only)
C134	2182358G84	6; N150 (L), (M) 8; N150 (H)
C135	2100861428 or 2100861429 2182877B17 or 2100861603 or 2182358G97	540, 25 uF; N150 (L) 3.3 ±0.25 pF; NPO (M) 2.4 ±0.1 pF; 100 V; NPO (H) .002 uF -20+100%; K6000 30; N750
C201	2182358G09	.0047 uF ±10%; 100 V
C202	2182358G09	0.12 uF; 20 V
C203	2184008H14	.01 uF; 50 V; Y5F
C204	2382397D12	30; N750
C205	2184008H01	.002 uF -20+100%; K6000
C206	2182358G95	0.27 uF; 20 V
C207	2182213E21	30; N750
C208, 209	2382397D25	1.0 ±.1 pF; 50 V; NPO (L) 0.6 ±0.1 pF; 50 V; NPO (M)(H) 30; N750
C210	2182358G95	9 ±.25 pF; 25 V; N150 (L) 5 ±0.25 pF; N150 (M) (H) Not Used
C214	2182358G77 or 2105930A02	2.4 ±0.1 pF; 100 V; NPO (L) 1.5 ±0.1 pF; 50 V; N150 (M) (H) Not Used
C215, 216	2182358G95	340 (H) 120 (H)
C217	2182358G80 or 2182877B17 or ----- 2182358G97 or 2182358G86 or ----- 2105271F02 or 2105271F01 2182358G95	30; N750
C218	2182358G97 or 2182358G86 or ----- 2105271F02 or 2105271F01 2182358G95	6.8 uF ±20%; 10 V 30 pF ±10%; 75 V; N750 CHANNEL ELEMENT Receiver, use as required depending on model Transmitter, use as required depending on model
C219	2105271F02 or 2105271F01 2182358G95	DIODE ; See Note I
C220, 222, 224, 225	2382397D09	Silicon
C226	2182358G95	Step Recovery
C227, 228	2182358G95	Silicon
CE1 thru 8	KXN1034A	Silicon
CE101 thru 108	KXN1035A	Silicon
CR1	4882363E03	Silicon
CR2	4805275E01	Silicon
CR3	4882363E03	Silicon
CR101	4883654H01	Silicon
CR201, 202	4883461E26	Silicon
CR203	4882466H03	Silicon
CR204	4883641E12	Silicon
CR401	4882466H13	Silicon
E1, 2, 3	7683960B06	CORE
E104, 105, 107, 108, 109, 110, 111	7683960B05	Ferrite Bead
E106	7683960B04	Ferrite Bead
E112	7683960B06	Ferrite Bead (L)
F401	6505214E01	FUSE 2-Amp
FL1, 2 & FL3 package	4805915D03 or 4805269F03 or 4805259F03	FILTER ; See Note II Crystall, 6-pole; (silver can), Matched set Crystall, 6-pole; (gold faced), Matched set Crystall, 8-pole; (silver can), Matched set (NUE6281A, NUE66382A & NUE6283A)
or FL1, 2, FL3 & FL4 package	4805259F03	
J1	0105959C40	JACK
J2	0105950D32	Interconnect Board Connector Block, 10-pin
J201	0905657G01	Interconnect Board Connector Block, 8-pin
J202	0905657G01	Micro, speaker
J203	0905677D01	Micro, antenna
J401	0105958C87 or 0105956C63 or 0105957C95 or 0105958C86	Receptacle, Universal connector Receptacle, Conn Assy, CS Long Receptacle, Conn Assy, CS Short Receptacle, Conn Assy, PL Long Receptacle, Conn Assy, PL Short

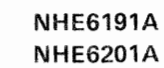
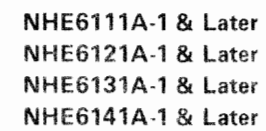
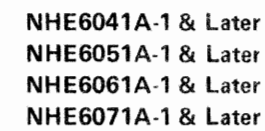
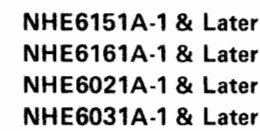
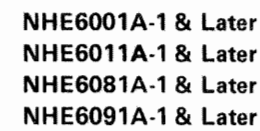
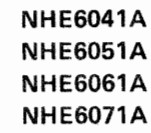
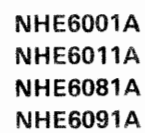
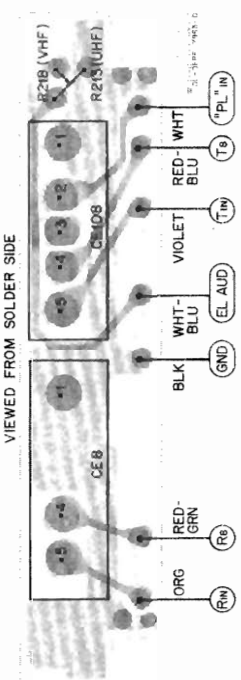
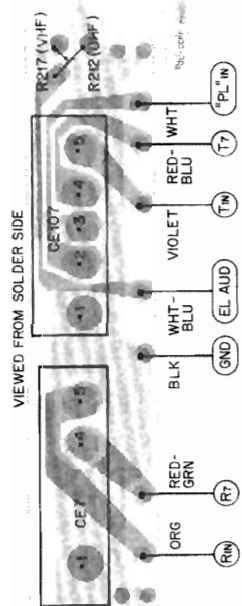
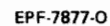
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
K101	8005300E01	RELAY: 1/6 Crystal Can, DPDT COIL, RF: unless stated 1-1/4 turns airwound 0.29 uH choke 2-3/4 turns airwound Coded: CLEAR, 8-1/4 turns closewound; includes: 7605374B03 CORE 1.2 uH choke 0.29 uH choke 3-turn bead 1.2 uH choke Coded: YEL, 4-1/2 turns spacewound; includes: 7605374B03 CORE 0.29 uH choke 0.085 uH choke 0.29 uH choke Coded: GRN, 4-1/4 turns closewound; includes: 7683419G02 CORE (L) Coded: BRN, 3-3/4 turns closewound; includes: 7683419G02 CORE (M) Coded: CLEAR, 2-3/4 turns closewound; includes: 7683419G02 CORE (H) Coded: GRN, 4-1/4 turns closewound; includes: 7683419G02 CORE (M), (L) Coded: BLK, 3-3/4 turns spacewound; includes: 7683419G02 CORE (H) 0.2 uH choke 3-1/2 turns airwound (L) 2-1/2 turns airwound (M) 2-1/2 turns airwound (H) 1.2 uH choke 7-1/2 turns airwound (L) 5-1/2 turns airwound (M), (H) .085 uH choke 4 turns airwound 2 turns airwound (1.5 W models only) (L) 3 turns airwound (1.5 W models only) (M), (H) 0.29 uH choke (L) 0.29 uH choke 6.2 uH choke 5-1/2 turns airwound 0.29 uH choke SPEAKER: Dynamic, 2"; frequency response: 300 to 3500 Hz MICROPHONE: Cartridge, res: 700 ±20%; Impedance: 5000 ±30% PLUG: Interconnect Board Connector Block, 10-pin Interconnect Board Connector Block, 8-pin Front Cover Connector Block TRANSISTOR: See Note I NPN; Silicon NPN; type M-757 NPN; type M-927 RESISTOR, Fixed: ±10%: 1/8 W unless stated 7.5 k ±5% 1.8 k ±5% 33 k ±5% 1.5 k ±5% 15 100 56 220 7505176E01 120 (Delete for DPL) 120 k 2.2 k
L1	2484545H01	
L2	2482723H28	
L3	2484565H01	
L4	2405262E02	
L5	2482723H27	
L6, 7	2482723H28	
L8	2405711B05	
L101	2482723H27	
L102, 103	2405262E08	
L104	2482723H28	
L105	2405652E02	
L106	2482723H28	
L109	2405262E01	
L113, 114	2482723H11	
L115	2405027E38 2405027E21 or 2405027E24 2482723H27 2405027E37 or 2405027E17 2482723H18 2405486C31 2405027E06 or 2405027E30 2482723H28 2482723H28 L202 2405027E19 2482723H28	
L116	2482723H27	
L118	2405027E37	
L119	or 2405027E17	
L121	2405486C31	
L122	2405027E06	
L123	2482723H28	
L201	2482723H28	
L202	2482723H28	
L203	2405027E19	
L204	2482723H28	
LS401	5005334D01	
MK401	5982575J02	
P1	0105958C97	
P2	0105958C96	
P201	0105958H40	
Q1	4805235C12	
Q102	4800869757	
Q103	4800869727	
R1	0600185A70	
R2	0600185A55	
R3	0600185A85	
R4	0600185A53	
R6	0600185B57	
R7	0600185B67	
R8	0600185B64	
R9	0600185B71	
R10	0600185B68	
R11	0600185C05	
R12	0600185B83	
R13	0600185B55	
R14	0600185A41	
R101	0600185B80	
R103	0600185B83	
R104	0600185B66 or 0600185B67 0600185B64 0600185B60 27 Pot., 25 k; squelch control Pot., 25 k; vol. control; p/o S203 56 39.2 ±1%; 1/2 W 15 k ±10%; 1/8 W (C1R1) 22 k ±10%; 1/8 W (C2R2) Pot., 50 k 27 k 330 100 k	
R107	0600185B67	
R108	0600185B60	
R201	1805333E01	
R202	1805370E01	
R203	0600185B64	
R204	1705787D01	
R205	0600185B93 or 0600185B95 1805501C04 0600185B96 0600185B73 0600185A97	
R206-213	1805501C04	
R214	0600185B96	
R215	0600185B73	
R216, 217	0600185A97	
S201	4005120E01 or 4005199E01 or 4005053E01	
S202	3905684E01 3905681E01	
S203	4005061E01	
S401	4005061E01	
U1	5105177D07	
U2	5184333G07	
U3	5184333G08	
U4	5184333G37	
U5	5105177D22	
U6	5105177D02	
U7	5105177D05	
U8	5105177D63 or 5105177D16 or 5105177D36 5105177D20 5105177D21 NLE8361A NLE8362A or NLE8363A or NLE8371A or NLE8372A or NLE8373A	
U9	5105177D07	
U10	5105177D21	
U12	NLE8361A NLE8362A or NLE8363A or NLE8371A or NLE8372A or NLE8373A	
VR1, 2	4882256C61	
Y1	4805713B01 or 4805713B02	

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R13	0600185B55	10 (NUE6231A, NUE6232A, NUE6233A, NUE6281A, NUE6282A, & NUE6283A) Jumper (NUE6312A & NUE6313A)
R14	0600185A41	
R101	0600185B80	
R103	0600185B83	
R104	0600185B66 or 0600185B67 0600185B64 0600185B60 27 Pot., 25 k; squelch control Pot., 25 k; vol. control; p/o S203 56 39.2 ±1%; 1/2 W 15 k ±10%; 1/8 W (C1R1) 22 k ±10%; 1/8 W (C2R2) Pot., 50 k 27 k 330 100 k	
R107	0600185B67	
R108	0600185B60	
R201	1805333E01	
R202	1805370E01	
R203	0600185B64	
R204	1705787D01	
R205	0600185B93 or 0600185B95 1805501C04 0600185B96 0600185B73 0600185A97	
R206-213	1805501C04	
R214	0600185B96	
R215	0600185B73	
R216, 217	0600185A97	
S201	4005120E01 or 4005199E01 or 4005053E01	
S202	3905684E01 3905681E01	
S203	4005061E01	
S401	4005061E01	
U1	5105177D07	
U2	5184333G07	
U3	5184333G08	
U4	5184333G37	
U5	5105177D22	
U6	5105177D02	
U7	5105177D05	
U8	5105177D63 or 5105177D16 or 5105177D36 5105177D20 5105177D21 NLE8361A NLE8362A or NLE8363A or NLE8371A or NLE8372A or NLE8373A	
U9	5105177D07	
U10	5105177D21	
U12	NLE8361A NLE8362A or NLE8363A or NLE8371A or NLE8372A or NLE8373A	
VR1, 2	4882256C61	
Y1	4805713B01 or 4805713B02	
NONREFERENCED ITEMS		
U101	1405601C01	PAD, Insulator (for K101)
U102	2605685B01	SHIELD (for Detector U4)
U103	2605820D05	SHIELD, Coil (for L102, 103, 109, 110)
U104	2684800H03	SHIELD, Coil (for L4)
U105	1505895D01	COVER (for Buffer Tripler U10)
U106	150541D01	COVER (for Regulator U9)
U107	1505165D01	COVER (for Mixer U1)
U108	0305627D01	SCREW, Special; 2 req'd (U1)
U109	0300131323	SCREW, Machine; 2-56x3/16"; 2 req'd (A1)
U110	7505295B03	PAD, Insulator (for FL1, FL2, FL3, & Y1)
U111	7505176E01	PAD, Foam (for channel elements)
U112	3905806E01	CONTACT, Plated (U12)
U113	4205229F01	STRAP, Ground (A1)

1505894D01	COVER, IDC (p/o Interconnect Board)
7505506D02	MODULE PAD (for U4)
7505506D03	MODULE PAD (for U3)
7505506D04	MODULE PAD (for U2)
7505506D06	MODULE PAD (for U6)
7505506D07	MODULE PAD (for U7)
7505506D08	MODULE PAD (for U8, U10)
7505506D09	MODULE PAD (for U9)
1405575F01	BOOT, Crystal Filter (for FL1, 2, 3)
1405611F01	INSULATOR (for U13)

*OTE: I. For optimum performance, order replacement diodes and transistors by Motorola part number only.
II. When ordering crystal units, specify crystal frequency and Motorola part number. Gold faced FL1, FL2, and FL3 crystal filters cannot be mixed with silver can FL1, FL2, and FL3 crystal filters.

BACK-DATING INFORMATION		
KIT AND SUFFIX NO.	REF SYM	CHANGE
"HE60041A, NHE6051A "HE6061A, NHE6071A "HE6111A, NHE6121A "HE6131A, NHE6141A "HE6001A, NHE6011A "HE6081A, NHE6091A "HE6151A, NHE6161A "HE6021A, NHE6031A	---	Interconnect Circuit Board Part No. was 8405062E01-O
"HE60041A-1, NHE6051A-1 "HE6061A-1, NHE6071A-1 "HE6111A-1, NHE6121A-1 "HE6131A-1, NHE6141A-1 "HE6001A-1, NHE6011A-1 "HE6081A-1, NHE6091A-1 "HE6151A-1, NHE6161A-1 "HE6021A-1, NHE6031A-1	C203	Was Part No. 2382397D12; 0.12 uF; 20 V
"HE60041A-2, NHE6051A-2 "HE6061A-2, NHE6071A-2 "HE6111A-2, NHE6121A-2 "HE6131A-2, NHE6141A-2 "HE6001A-2, NHE6011A-2 "HE6081A-2, NHE6091A-2 "HE6151A-2, NHE6161A-2 "HE6021A-2, NHE6031A-2	C203	Change to 2184008H14
"HE6001A-3 "HE6011A-3 "HE6021A-3 "HE6031A-3 "HE6081A-3 "HE6091A-3 "HE6151A-3 "HE6161A-3	C227, C228 P201	Added Was 0105953E40
"HE6041A-3 "HE6051A-3 "HE6061A-3 "HE6071A-3 "HE6111A-3 "HE6121A-3 "HE6131A-3 "HE6141A-3	C227, C228	Added
"HE6041A-4 "HE6051A-4 "HE6061A-4 "HE6071A-4 "HE6111A-4 "HE6121A-4 "HE6131A-4 "HE6141A-4	CR204 P201	Deleted was located in parallel with CR204 (univ). Was 0105953E40
"NUE6232A-1 "NUE6233A-1 "NUE6242-1 "NUE6243-1 "NUE6282-1 "NUE6283-1 "NUE6292-1 "NUE6293-1	C122	Added
"NUE6242A-1 "NUE6292A-1 "NUE6242A-2 "NUE6292A-2	C110 L120	Was 2100861432 Was 2105311E10 Deleted was located in parallel with J1101.
"NUE6232-1 "NUE6282-1 "NUE6212-1	C110 C111	Was 2100861432 Was 2105311E10



PARTS LIST

Exploded View Parts List

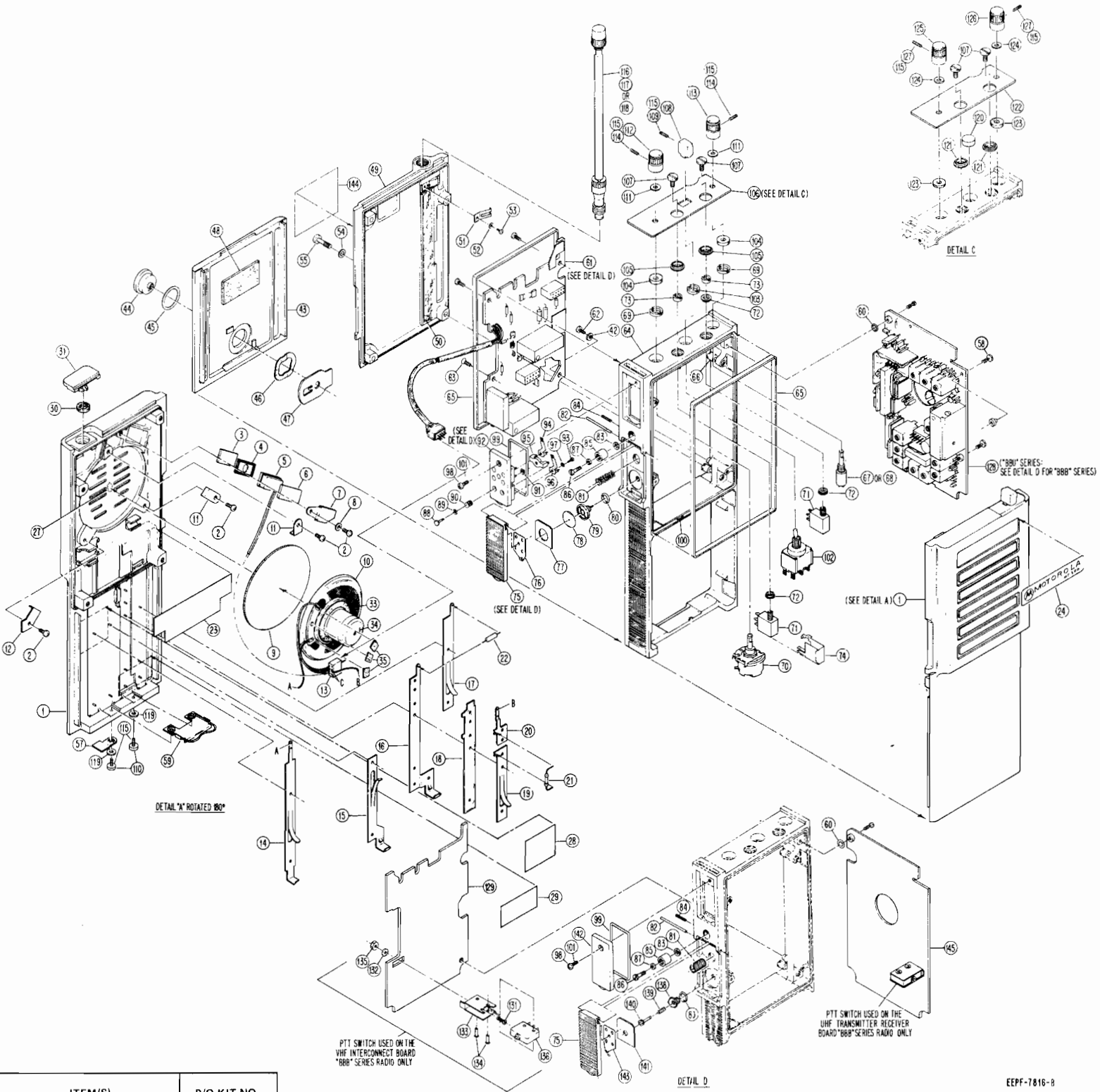
PLF-1303-B

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
1	COVER, Front, Extended	1505633D01
2	SCREW, Mach(2-56x1/8 Phil Pan)	0300138651
3	PAD, Mic	7505577F01
4	PAD, Mic	7505577F01
5	CARTRIDGE, Mic	5982575J02
6	PAD, Clamp	7582745J01
7	BRACKET, Mic	0705672D01
8	WASHER, Spring	0405314E01
9	CLOTH, Felt Grill	3505370C01
10	SPEAKER	5005334D01
11	CLAMP, Speaker	4205670D01
12	CLAMP, Speaker	4205671D01
13	RECEPT, Conn Assy, CS	0105956C63
14	STRAP, Contact, Neg	4205573A01
15	STRAP, Contact, Sen	4205575A01
16	STRAP, Contact, Charge	4205283E01
17	STRAP, Contact	4205576A01
18	INSULATOR, Contact	1405282E01
19	STRAP, Contact, Pos	4205269G01
20	STRAP, Contact, Pos	4205270G01
21	FUSE	6505214E01
22	RECTIFIER, Silicon	4882466H13
23	INSULATOR, Paper	1405547G01
24	NAMEPLATE	3305537E01
25	Not Used	
26	Not Used	
27	ADHES, Silicone Rubber	1110019A88
28	LABEL, Patent	1305436E01
29	LABEL, FCC	5400865436
30	GASKET, Plug	3205315E01
31	PLUG, Cover	3805115E01
32	Not Used	
33	INSULATOR, Speaker	1405311G01
34	TAPE, Insulator	1110003E58
35	INSULATOR, Paper	1482392E05
36	Not Used	
37	Not Used	
38	Not Used	
39	Not Used	
40	Not Used	
41	Not Used	
42	WASHER, Insulated	0400474215
43	COVER, Battery	1505697D01
44	BUTTON	3805908D01
45	WASHER, Button	0405910D01
46	WASHER, Spring	0405316E01
47	LATCH	5505907D01
48	PAD	7505083E01
49	COVER, Rear	1505698D01
50	SHIELD, Antenna Tube	2605045E01
51	CLIP, Antenna	4205860D01
52	WASHER, Spring	0405314E03
53	SCREW, Antenna Clip	0305044E01
54	WASHER, Seal	0484345A06
55	SCREW, Captive	0305662D09
56	Not Used	
57	INSULATOR, Contact	1405359E01
58	SCREW, Captive	0305864D01
59	LATCH Assy	NLN4181A
60	"O" Ring	3205082E06
61	INTERCONNECT Bd. Assy	
62	SCR, Mach(#2-56 x 3/16 Phil Pan)	0300138661
63	SCR, Mach(#2-56x1/4 Slot Flt Hd)	0300136666
64	FRAME, Short	0705547D03
65	GASKET, Frame	3205520G01
66	BUSHING, Cover Mtg	4305661D01
67	POT, Cermet	1805055E01
68	POT, Cermet Alternate	1805333E01
69	NUT, Special	0282653D03
70	POTENTIOMETER, Control Sw.	1805370E01
71	JACK, Micro	0905657G01
72	BUSHING, Shoulder	4305052E01
73	NUT, Special	0205050E01
74	SHIELD, Antenna	2605054E01
75	LEVER	4505784D01
76	SPRING, Actuator (PTT)	4105783D03
77	GASKET (PTT)	3205378G01
78	CONTACT, Disc (PTT)	3905196G01
79	CONTACT, Feed-Thru (PTT)	3905195G01
80	SEAL, "O" Ring	3205082E02
81	SPRING, Compression (PTT)	4105267E01
82	PIN, Spring	2205084E01
83	WASHER, Insert	0405249E01
84	SCREW, Set	0305246E01
85	INSERT, Threaded	4305781D01
86	STUD	4605154E01
87	WASHER, Stud	0405248E01

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
88	PIN, Contact	3905456F01
89	GASKET, "O" Ring	3205082E03
90	SPRING, Compression	4105424F01
91	RING, Retaining	4205463E02
92	RECEPTACLE	0905677D01
93	SCREW (#0-80x1/8 Fill Hd)	0300139684
94	CONTACT	4105197G03
95	BLOCK	4605072E01
96	CONTACT	4105197G01
97	WASHER	0400134190
98	SCR, Mach(#2-56x3/16 SST)	0300138661
99	SEAL, "O" Ring	3205661G01
100	ADHESIVE, RTV Silicone Rubber	1110019A88
101	SEALANT, Compound (PURP)	1110019A63
102	SWITCH, Toggle	4005120E01
103	NUT, Special	0282653D07
104	PAD, Rubber	7583562H02
105	BUSHING, Insulator	4305051E01
106	ESCUTCHEON, 2 freq	1305621D03
107	SCREW, Jack	0310129A24
108	KNOB, Switch	3605114E01
109	SCREW, Set	0383174C04
110	SCREW, Latch	0300139982
111	WASHER, Nylon	0405935F01
112	KNOB, Vol	3605927D01
113	KNOB, Squelch	3605927D03
114	SCREW	0383174C02
115	GLYPOTOL	1100008675
116	ANTENNA, Telescopic(2 Section)	8505550E01
117	ANTENNA, Telescopic(5 Section)	8505549E01
118	ANTENNA, Telescopic(6 Section)	8505509E01
119	WASHER, Latch	0400120581
120	PAD, Rubber	7583562H01
121	BUSHING, Insulating	4305051E01
122	ESCUTCHEON, 1 freq	1305621D01
123	PAD, Rubber	7583562H02
124	WASHER, Nylon	0405935F01
125	KNOB, Voi	3605927D01
126	KNOB, Squelch	3605927D03
127	SCREW, Set	0383174C02
128	TRANSCEIVER Bd Assy ("BBU" Series)	NUE6231A NUE6232A NUE6233A NUE6272A NUE6281A NUE6282A NUE6283A NUE6302A NUE6312A NUE6313A
129	INTERCONNECT Bd Assy	
130	Not Used	
131	SCREW, Special	0305525G01
132	WASHER	0400140015
133	BRACKET, Switch	0705261E01
134	EYELET	0505095E09
135	NUT	0200400865
136	SWITCH, Mirco	4005265E01
137	Not Used	
138	NUT, PTT	0205250E01
139	SPRING, PTT	4105252E01
140	ACTUATOR, PTT	4705251E01
141	GASKET, Switch	3205077E01
142	COVER, Receptacle	1505212E01
143	SPRING, Actuator	4105783D01
144	PLATE, Information	6405538E01
145	TRANSCEIVER Bd Assy ("BBB" Series)	NUE6242A NUE6243A NUE6292A NUE6293A

ITEM(S)	P/O KIT NO.
1 thru 31	NLN4207A
1 thru 30 & 36 thru 42	NLN4183A
43 thru 48	NLN4180A
49 thru 55	NLN4176A
57	NLN4194A
61 thru 101	NHD6081A
61 thru 103	NHD6001A
61 thru 75, 80 thru 84, 98 thru 103, & 130 thru 144	NHD6101A/ NHD6041A
104 thru 115	NLN4189A
116	NAE6271A
117	NAD6324A
118	NAD6322A
119 thru 127	NLN4188A

FPF-8117-0



SLIM-LINE, SHORT
C1R1, C2R2

PARTS LIST

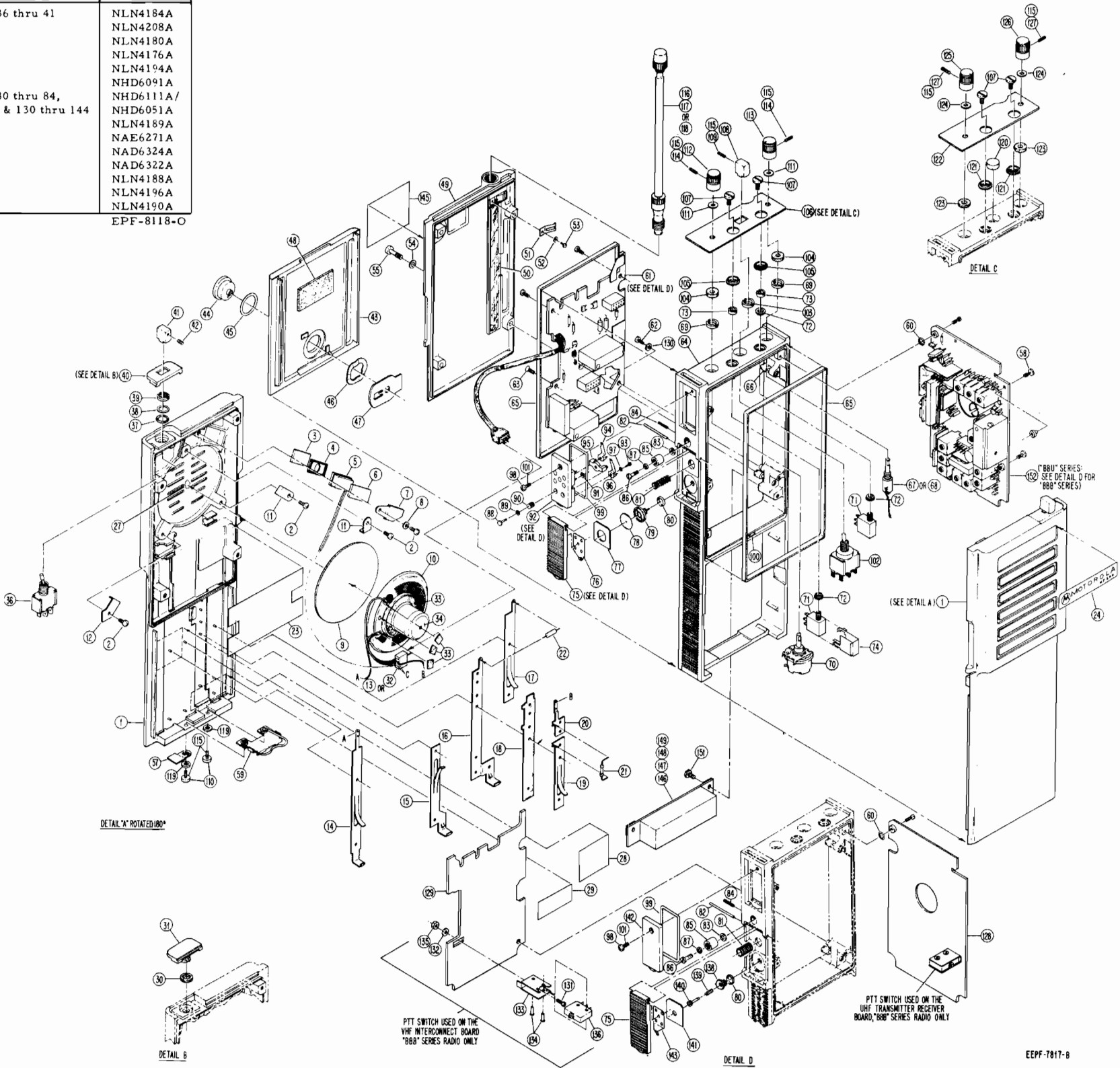
Exploded View Parts List

PLF-1304-B

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
1	COVER, Front, Extended	1505660D01
2	SCREW, Mach 2-56x1/8Phl Pan	0300138651
3	PAD, Mic	3505450B01
4	GASKET, Mic	7505577F01
5	CARTRIDGE, Mic	5982575J02
6	PAD, Clamp	7582745J01
7	BRACKET, Mic	0705672D01
8	WASHER, Spring	0405314E01
9	CLOTH, Felt Grill	3505370C01
10	SPEAKER	5005334D01
11	CLAMP, Speaker	4205670D01
12	CLAMP, Speaker	4205671D01
13	RECEPT, Conn Assy (PL)	0105958C86
14	STRAP, Contact, Neg	4205573A01
15	STRAP, Contact, Sen	4205575A01
16	STRAP, Contact, Charge	4205283E01
17	STRAP, Contact	4205576A01
18	INSULATOR, Contact	1405282E01
19	STRAP, Contact, Pos	4205269G01
20	STRAP, Contact, Pos	4205270G01
21	FUSE	6505214E01
22	RECTIFIER, Silicon	4882466H13
23	INSULATOR, Paper	1405447G02
24	NAMEPLATE	3305537E01
25	Not Used	
26	Not Used	
27	ADHES, Silicone Rubber	1110019A88
28	LABEL, Patent	1305436E01
29	LABEL, FCC	5400865436
30	GASKET, Plug	3205315E01
31	PLUG, Cover	3805115E01
32	RECEPT, Conn Assy CS	0105958C87
33	INSULATOR, Speaker	1405311G01
34	TAPE, Insulator	1110003E58
35	INSULATOR, Paper	1482392E05
36	SWITCH, Toggle, SPDT	4005061E01
37	GASKET, "O" Ring	3205082E01
38	WASHER, Special	0405081E01
39	NUT, Mtg	0205050E03
40	ESCUTCHEON, Switch	1305057E01
41	KNOB, Switch	3605114E01
42	SCREW, Set	0383174C04
43	COVER, Battery	1505697D01
44	BUTTON	3805908D01
45	WASHER	0405910D01
46	WASHER, Spring	0405316E01
47	LATCH	5505907D01
48	PAD	7505083E01
49	COVER, Rear, Extended (SL)	1505039E01
50	SHIELD, Antenna Tube	2605045E01
51	CLIP, Antenna	4205860D01
52	WASHER, Spring	0405314E03
53	SCREW, Antenna Clip	0305044E01
54	WASHER, Seal	0484345A06
55	SCREW, Captive	0305662D09
56	Not Used	
57	INSULATOR, Contact	1405359A01
58	SCREW, Captive	0305864D01
59	LATCH Assy	NLN4181A
60	"O" Ring	3205082E06
61	INTERCONNECT Bd. Assy	
62	SCR, Mach(#2-56x3/16Phl Pan)	0300138661
63	SCR, Mach(#2-56x1/4 Slot Flt Hd)	0300136666
64	FRAME, Extended	0705640D03
65	GASKET, Frame	3205520G01
66	BUSHING, Cover Mtg	4305661D01
67	POT, Cermet	1805055E01
68	POT, Cermet Alternate	1805333E01
69	NUT, Special	0282653D03
70	POTENTIOMETER, Control Sw	1805370E01
71	JACK, Micro	0905657G01
72	BUSHING, Shoulder	4305052E02
73	NUT, Special	0205050E01
74	SHIELD, Antenna	260505E01
75	LEVER	4505784D01
76	SPRING, Actuator (PTT)	4105783D03
77	GASKET (PTT)	3205378G01
78	CONTACT, Disc (PTT)	3905196G01
79	CONTACT, Feed-Thru (PTT)	3905195G01
80	SEAL "O" Ring	3205082E02
81	SPRING, Compression (PTT)	4105267E01
82	PIN, Spring	2205084E01
83	WASHER, Insert	0405249E01
84	SCREW, Set	0305246E01
85	INSERT, Threaded	4305781D01
86	STUD	4605154E01
87	WASHER, Stud	0405248E01

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
88	PIN, Contact	3905456F01
89	GASKET, "O" Ring	3205082E03
90	SPRING, Compression	4105424F01
91	RING, Retaining	4205463E02
92	RECEPTACLE	0905677D01
93	SCREW(#0-80x1/8 Fill Hd.)	0300139684
94	CONTACT	4105197G03
95	BLOCK	4605072E01
96	CONTACT	4105197G01
97	WASHER	0400134190
98	SCR, Mach(#2-56x3/16 SST)	0300138661
99	SEAL "O" Ring	3205661G01
100	ADHESIVE, RTV Silicone Rubber	1110019A63
101	SEALANT, Compound (PURP)	1110019A63
102	SWITCH, Toggle	4005120E01
103	NUT, Special	0282653D07
104	PAD, Rubber	7583562H02
105	BUSHING, Insulator	4305051E01
106	ESCUTCHEON, 2 freq	1305621D03
107	SCREW, Jack	0310129A24
108	KNOB, Switch	3605114E01
109	SCREW, Set	0383174C04
110	SCREW, Latch	0300139982
111	WASHER, Nylon	0405935F01
112	KNOB, Vol	3605927D01
113	KNOB, Squelch	3605927D03
114	SCREW, Set	0383174C02
115	GLYPHOL	1100008675
116	ANTENNA, Telescopic	8505550E01
117	ANTENNA, Telescopic(5 Section)	8505549E01
118	ANTENNA, Telescopic(6 Section)	8505509E01
119	WASHER, Latch	0400120581
120	PAD, Rubber	7583562H01
121	BUSHING, Insulating	4305051E01
122	ESCUTCHEON	1305621D01
123	PAD, Rubber	7583562H02
124	WASHER, Nylon	0405935F01
125	KNOB, Vol	3605927D01
126	KNOB, Squelch	3605927D03
127	SCREW, Set	0383174C02
128	TRANSCIVER Bd. Assy ("BBB" Series)	NUE6242A NUE6243A NUE6292A NUE6293A
129	INTERCONNECT Bd. Assy	
130	WASHER, Insulated	0400474215
131	SCREW, Special	0305525G01
132	WASHER	0400140015
133	BRACKET, Switch	0705261E01
134	EYELET	0505095E09
135	NUT	0200400865
136	SWITCH, Micro	4005265E01
137	Not Used	
138	NUT, PTT	0205250E01
139	SPRING, PTT	4105252E01
140	ACTUATOR, PTT	4705251E01
141	GASKET, Switch	3205077E01
142	COVER, Receptacle	1505212E01
143	SPRING, Actuator	4105783D01
144	Not Used	
145	PLATE, Information	6405538E01
146	OPTION Deck (Tone PL)	NLN4211A NLN4646A NLN4212A
147	OPTION Deck (Digital PL)	NLN4213A
148	OPTION Deck (Selective Call)	NLN4723A
149	OPTION Deck (Single-Tone)	
150	Not Used	
151	SCREW, Hex (#2-56x3/16)	0305493F01
152	TRANSCIVER Bd. Assy ("BBU" Series)	NUE6231A NUE6232A NUE6233A NUE6272A NUE6281A NUE6282A NUE6283A NUE6302A NUE6312A NUE6313A

ITEM(S)	P/O KIT NO.
1 thru 29 & 36 thru 41	NLN4184A
1 thru 31	NLN4208A
43 thru 48	NLN4180A
49 thru 55	NLN4176A
57	NLN4194A
60 thru 101	NHD6091A
60 thru 75, 80 thru 84,	NHD6111A/
98 thru 103, & 130 thru 144	NHD6051A
104 thru 115	NLN4189A
116	NAE6271A
117	NAD6324A
118	NAD6322A
119 thru 127	NLN4188A
145	NLN4196A
151	NLN4190A
	EPF-8118-O



PARTS LIST

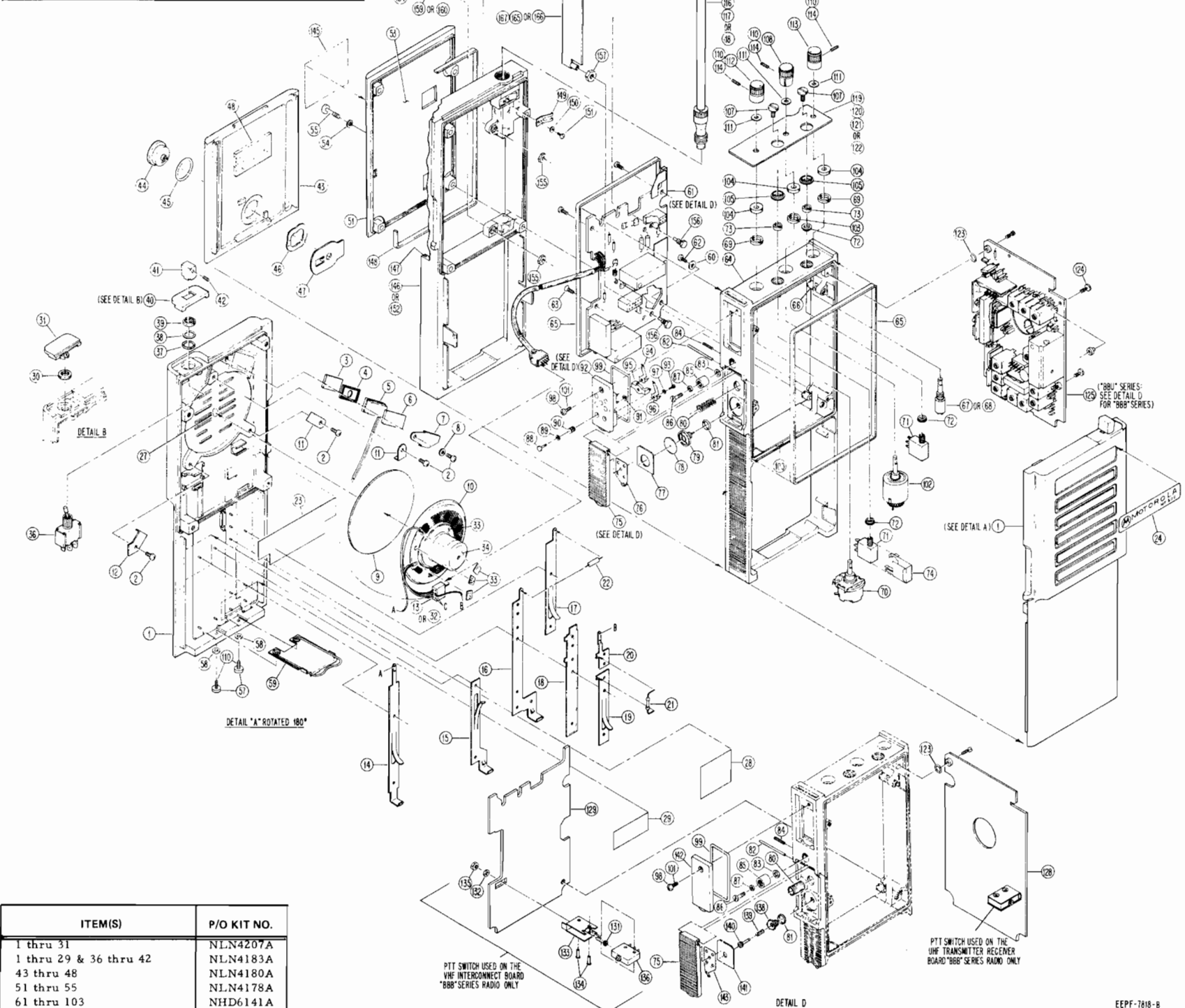
Exploded View Parts List

PLF-1305-B

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
1	COVER, Front, Short	1505633D01
2	SCREW, Mach(2-56x1/8 Phil Pan)	0300138651
3	PAD, Mic	3505450B01
4	GASKET, Mic	7505577F01
5	CARTRIDGE, Mic	5982575J02
6	PAD, Clamp	7582745J01
7	BRACKET, Mic	0705672D01
8	WASHER, Spring	0405314E01
9	CLOTH, Felt Grill	3505370C01
10	SPEAKER	5005334D01
11	CLAMP, Speaker	4205670D01
12	CLAMP, Speaker	4205671D01
13	RECEPT, Conn Assy CS	0105956C63
14	STRAP, Contact, Neg	4205573A01
15	STRAP, Contact, Sen	4205575A01
16	STRAP, Contact, Charge	4205283E01
17	STRAP, Contact	4205576A01
18	INSULATOR, Contact	1405282E01
19	STRAP, Contact, Pos	4205269G01
20	STRAP, Contact, Pos	4205270G01
21	FUSE	6505214E01
22	RECTIFIER, Silicon	4882466H13
23	INSULATOR, Paper	1405447G01
24	NAMEPLATE	3305537E01
25	Not Used	
26	Not Used	
27	ADHES, Silicone Rubber	1110019A88
28	LABEL, Patent	1305436E01
29	LABEL, FCC	54865436
30	GASKET, Plug	3205315E01
31	PLUG, Cover	3805115E01
32	RECEPT, Conn Assy PL	0105957C95
33	INSULATOR, Speaker	1405311G01
34	TAPE, Insulator	1110003E58
35	INSULATOR, Paper	1482392E05
36	SWITCH, Toggle SPDT	4005061E01
37	GASKET, "O" Ring	3205082E01
38	WASHER, Special	0405081E01
39	NUT, Mtg	0205050E03
40	ESCUTCHEON, Switch	1305057E01
41	KNOB, Switch	3605114E01
42	SCREW, Set	0383174C04
43	COVER, Battery	1505697D01
44	BUTTON	3805908D01
45	WASHER	0405910D01
46	WASHER, Spring	0405316E01
47	LATCH	5505907D01
48	PAD	7505083E01
49	Not Used	
50	Not Used	
51	COVER, Rear, Short	1505699D01
52	Not Used	
53	PAD, Cover	7505533F02
54	WASHER, Seal	0484345A06
55	SCREW, Captive	0305662D10
56	Not Used	
57	SCREW, Latch	0300139982
58	WASHER, Latch	0400120581
59	LATCH, Assy	NLN4182A
60	WASHER, Insulated	0400474215
61	INTERCONNECT Bd Assy	
62	SCR, Mach(#2-56x3/16 Phil Pan)	0300138661
63	SCR, Mach(#2-56x1/4 Slot Flt Hd)	0300136666
64	FRAME, Short	705547D03
65	GASKET, Frame	3205520G01
66	BUSHING, Cover Mtg	4305661D01
67	POT, Cermet	1805055E01
68	POT, Cermet Alternate	1805333E01
69	NUT, Special	0282653D03
70	POTENTIOMETER, Control Sw.	1805370E01
71	JACK, Micro	0905657G01
72	BUSHING, Shoulder	4305052E02
73	NUT, Special	0205050E01
74	SHIELD, Antenna	2605054E01
75	LEVER	4505784D01
76	SPRING, Actuator (PTT)	4105783D03
77	GASKET (PTT)	3205378G01
78	CONTACT, Disc (PTT)	3905196G01
79	CONTACT, Feed-Thru (PTT)	3905195G01
80	SPRING, Compression (PTT)	4105267E01
81	SEAL "O" Ring	3205082E02
82	PIN, Spring	2205084E01
83	WASHER, Insert	0405249E01
84	SCREW, Set	0305246E01
85	INSERT, Threaded	4305781D01
86	STUD	4605154E01
87	WASHER, Stud	0405248E01

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
88	PIN, Contact	3905456F01
89	GASKET "O" Ring	3205082E03
90	SPRING, Compression	4105424F01
91	RING, Retaining	4205463E02
92	RECEPTACLE	0905677D01
93	SCREW, (#0-80 x 1/8 Fill Hd)	0300139684
94	CONTACT	4105197G03
95	BLOCK	4605072E01
96	CONTACT	4105197G01
97	WASHER	0400134190
98	SCR, Mach(#2-56x3/16 SST)	0300138661
99	SEAL "O" Ring	3205075E01
100	ADHESIVE, RTV Silicone Rubber	1110019A88
101	SEALANT, Compound	1110019A63
102	SWITCH, Rotary, 4 freq or. SWITCH, Rotary 5 freq or. SWITCH, Rotary 6 freq or. SWITCH, Rotary 8 freq	4005119E01 4005119E02 4005053E03 4005053E01
103	NUT, Special	0282653D05
104	PAD, Rubber	7583562H02
105	BUSHING, Insulator	4305051E01
106	Not Used	
107	SCREW, Jack	0310129A24
108	KNOB, Control	3605926D05
109	SCREW, Latch	0300139982
110	GLYPHOL	1100008675
111	WASHER, Nylon	0405935F01
112	KNOB, Vol	3605927D01
113	KNOB, Squelch	3605927D03
114	SCREW, Set	0383174C02
115	Not Used	
116	ANTENNA, Telescopic(2 Section)	8505550E01
117	ANTENNA, Telescopic(5 Section)	8505549E01
118	ANTENNA, Telescopic(6 Section)	8505509E01
119	ESCUTCHEON, 4 freq	1305621D09
120	ESCUTCHEON, 5 freq	1305621D05
121	ESCUTCHEON, 6 freq	1305621D15
122	ESCUTCHEON, 8 freq	1305621D07
123	"O" Ring	3205082E06
124	SCREW, Captive	0305864D01
125	TRANSCIEVER Bd. Assy ("BBU" Series)	NUE6231A NUE6232A NUE6233A NUE6272A NUE6281A NUE6282A NUE6283A NUE6302A NUE6312A NUE6313A
126	Not Used	
127	Not Used	
128	TRANSCIEVER Bd. Assy ("BBB" Series)	NUE6242A NUE6243A NUE6292A NUE6293A
129	INTERCONNECT Bd. Assy	
130	Not Used	
131	SCREW, Special	0305525G01
132	WASHER	0400140015
133	BRACKET, Switch	0705261E01
134	EYELET	0505095E09
135	NUT	0200400865
136	SWITCH, Micro	4005265E01
137	Not Used	
138	NUT, PTT	0205250E01
139	SPRING, PTT	4105252E01
140	ACTUATOR, PTT	4705251E01
141	GASKET, Switch	3205077E01
142	COVER, Receptacle	1505212E01
143	SPRING, Actuator	4105783D01
144	Not Used	
145	PLATE, Information	6405538E01
146	HOUSING, Sleeve, Short	1505651D01
147	ADHESIVE, RTV Silicon Rubber	1110019A76
148	GASKET, Frame	3205520G01
149	CLIP, Antenna	4205860D01
150	WASHER, Spring	0405314E03
151	SCREW, Special	0305044E01
152	HOUSING, Sleeve	1505651D02
153	SCREW, Mach (2-56 x 5/16 Slgt Bnd)	0300115356
154	LK Wash (#2 Split)	0400400139
155	NUT (#2 Hex)	0200115676
156	POST, Guide	4605798E01
157	NUT	0205797E01
158	CLIP, Option Bd.	4205445E04
159	CLIP, Option Bd.	4205445E03
160	CLIP, Option Bd.	4205445E02

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
161	CLIP, Option Bd.	4205445E01
162	Not Used	
163	Not Used	
164	Not Used	
165	TONE PL Deck	NLN4645A NLN4644A NLN4476A NLN4475A
166	DPL-TPL Deck	
167	TIME Out Timer Deck	



ITEM(S)	P/O KIT NO.
1 thru 31	NLN4207A
1 thru 29 & 36 thru 42	NLN4183A
43 thru 48	NLN4180A
51 thru 55	NLN4178A
61 thru 103	NHD6141A
61 thru 75, 80 thru 84, 98 thru 103, & 129 thru 144	NHD6121A
104 thru 114	NLN4643A
116	NAE6271A
117	NAD6324A
118	NAD6322A
145	NLN4196A
146 thru 151	NLN4172A
147 thru 152	NLN4173A
153 thru 157 & 160, 161	NLN4187A
153 thru 159	NLN4195A

EPP-8119-0

OMNI, SHORT
C4R4, C6R6, C8R8

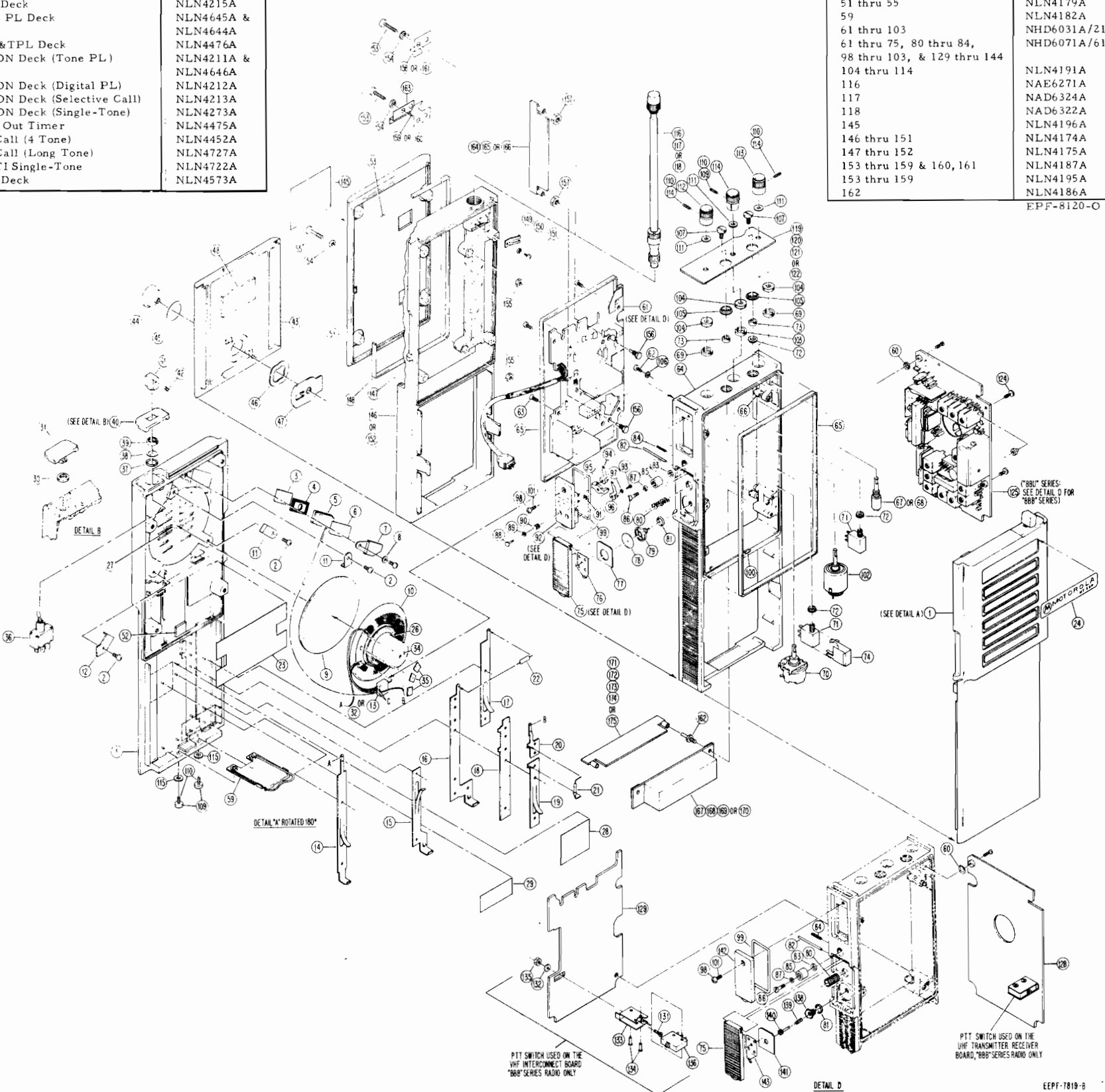
PARTS LIST

Exploded View Parts List PLF-1306-B

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
1	COVER, Front, Extended	1505660D01
2	SCREW, Mach(2-56x1/8 Phl-Pan)	0300138651
3	PAD, Mic	3505450B01
4	GASKET, Mic	7505577F01
5	CARTRIDGE, Mic	5982575J02
6	PAD, Clamp	7582745J01
7	BRACKET, Mic	0705672D01
8	WASHER, Spring	0405314E01
9	CLOTH, Felt Grill	3505370C01
10	SPEAKER	5005334D01
11	CLAMP, Speaker	4205670D01
12	CLAMP, Speaker	4205671D01
13	RECEPT, Conn Assy CS	0105956C87
14	STRAP, Contact, Neg	4205573A01
15	STRAP, Contact, Sen	4205575A01
16	STRAP, Contact, Charge	4205283E01
17	STRAP, Contact	4205576A01
18	INSULATOR, Contact	1405282E01
19	STRAP, Contact, Pos	4205269G01
20	STRAP, Contact, Pos	4205270G01
21	FUSE	6505214E01
22	RECTIFIER, Silicon	4882466H13
23	INSULATOR, Paper	1405547G02
24	NAMEPLATE	3305537E01
25	Not Used	
26	INSULATOR, Speaker	1405311G01
27	ADHES, Silicone Rubber	1110019A88
28	LABEL, Patent	1305436E01
29	LABEL, FCC	54865436
30	GASKET, Plug	3205315E01
31	PLUG, Cover	3805115E01
32	RECEPT, Conn Assy PL	0105958C87
33	INSULATOR, Speaker	1405311G01
34	TAPE, Insulator	1110003E58
35	INSULATOR, Paper	1482392E05
36	SWITCH, Toggle, SPDT	4005061E01
37	GASKET, "O" Ring	3205082E01
38	WASHER, Special	0405081E01
39	NUT, Mtg	0205050E03
40	ESCUTCHEON, Switch	1305057E01
41	KNOB, Switch	3605114E01
42	SCREW, Set	0383174C04
43	COVER, Battery	1505697D01
44	BUTTON	3805908D01
45	WASHER	0405910D01
46	WASHER, Spring	0405316E01
47	LATCH	5505907D01
48	PAD	7505083E01
49	Not Used	
50	Not Used	
51	COVER, Rear	1505943D01
52	Not Used	
53	PAD, Cover	7505533F01
54	WASHER, Seal	0484345A06
55	SCREW, Captive	0305662D11
56	Not Used	
57	Not Used	
58	Not Used	
59	LATCH Assy	NLN4182A
60	"O" Ring	3205082E06
61	INTERCONNECT Bd Assy	
62	SCR, Mach(#2-56x3/16 Phl Pan)	0300138661
63	SCR, Mach(#2-56x1/4 Slot Flt Hd)	0300138661
64	FRAME, Long	705640D03
65	GASKET, Frame	3205520G01
66	BUSHING, Cover Mtg	4305661D01
67	POT, Cermet	1805055E01
68	POT, Cermet Alternate	1805333E01
69	NUT, Special	0282653D03
70	POTENTIOMETER, Control Sw.	1805370E01
71	JACK, Micro	0905657G01
72	BUSHING, Shoulder	4305052E02
73	NUT, Special	0205050E01
74	SHIELD, Antenna	2605054E01
75	LEVER	4505784D01
76	SPRING, Actuator (PTT)	4105783D03
77	GASKET (PTT)	3205378G01
78	CONTACT, Disc (PTT)	3905196G01
79	CONTACT, Feed-Thru (PTT)	3905195G01
80	SPRING, Compression (PTT)	4105267E01
81	SEAL "O" Ring	3205082E02
82	PIN, Spring	2205084E01
83	WASHER, Insert	0405249E01
84	SCREW, Set	0305246E01
85	INSERT, Threaded	4305781D01
86	STUD	4605154E01
87	WASHER, Stud	0405248E01

ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
88	PIN, Contact	3905456F01
89	GASKET, "O" Ring	3205082E03
90	SPRING, Compression	4105424F01
91	RING, Retaining	4205463E02
92	RECEPTACLE	0905677D01
93	SCR, Mach(#0-80x1/8 Fill Hd)	0300139684
94	CONTACT	4105197G03
95	BLOCK	4605072E01
96	CONTACT	4105197G01
97	WASHER	0400134190
98	SCREW, Mach(#2-56 x 3/16 SST)	0300138661
99	SEAL "O" Ring	3205661G01
100	ADHESIVE, RTV Silicone Rubber	1110019A88
101	SEALANT, Compound	1110019A63
102	SWITCH, Rotary, 4 freq	4005119E01
	or SWITCH, Rotary, 5 freq	4005119E02
	or SWITCH, Rotary, 6 freq	4005053E03
	or SWITCH, Rotary, 8 freq	4005053E01
103	NUT Special	0282653D05
104	WASHER, Rubber	7583562H02
105	BUSHING, Insulator	4305051E01
106	WASHER, Insulated	0400474215
107	SCREW, Jack	0310129A24
108	KNOB, Control	3605927D05
109	SCREW, Latch	
110	GLYPTOL	1100008675
111	WASHER, Nylon	0405935F01
112	KNOB, Vol	3605927D01
113	KNOB, Squelch	3605927D03
114	SCREW, Set	0383174C02
115	WASHER, Latch	0400120581
116	ANTENNA, Telescopic(2 Section)	8505550E01
117	ANTENNA, Telescopic(5 Section)	8505549E01
118	ANTENNA, Telescopic(6 Section)	8505762A01
119	ESCUTCHEON, 4 freq	1305621D09
120	ESCUTCHEON, 5 freq	1305621D05
121	ESCUTCHEON, 6 freq	1305621D15
122	ESCUTCHEON, 8 freq	1305621D07
123	Not Used	
124	SCREW, Captive	0305864D01
125	TRANSCEIVER Bd. Assy ("BBU" Series)	NUE6231A NUE6232A NUE6233A NUE6272A NUE6281A NUE6282A NUE6283A NUE6302A NUE6312A NUE6313A
126	Not Used	
127	Not Used	
128	TRANSCEIVER Bd. Assy ("BBB" Series)	NUE6242A NUE6243A NUE6292A NUE6293A
129	INTERCONNECT Bd. Assy	
130	Not Used	
131	SCREW, Special	0305525G01
132	WASHER	0400140015
133	BRACKET, Switch	0705261E01
134	EYELET	0505095E09
135	NUT	0200400B65
136	SWITCH, Micro	4005265E01
137	Not Used	
138	NUT, PTT	0205250E01
139	SPRING, PTT	4105252E01
140	ACTUATOR, PTT	4705251E01
141	GASKET, Switch	3205077E01
142	COVER, Receptacle	1505212E01
143	SPRING, Actuator	4105783D01
144	Not Used	
145	PLATE, Information	6405538E01
146	HOUSING, Sleeve, Extended	1505858D02
147	ADHESIVE, RTV Silicone Rubber	1110019A88
148	GASKET, Frame	3205520G01
149	CLIP, Antenna	4205860D01
150	WASHER, Spring	0405314E03
151	SCREW, Special	0305044E01
152	HOUSING, Sleeve	1505858D01
153	MACH, Screw(#2-56x3/8 Slot Bind)	0300136745
154	LK Wash (#2 Split)	0400400139
155	NUT (#2 Hex)	0200115676
156	POST, Guide	4605798E01
157	NUT	0205797E01
158	CLIP, Option Bd.	4205445E04
159	CLIP, Option Bd.	4205445E03
160	CLIP, Option Bd.	4205445E02
161	CLIP, Option Bd.	4205445E01

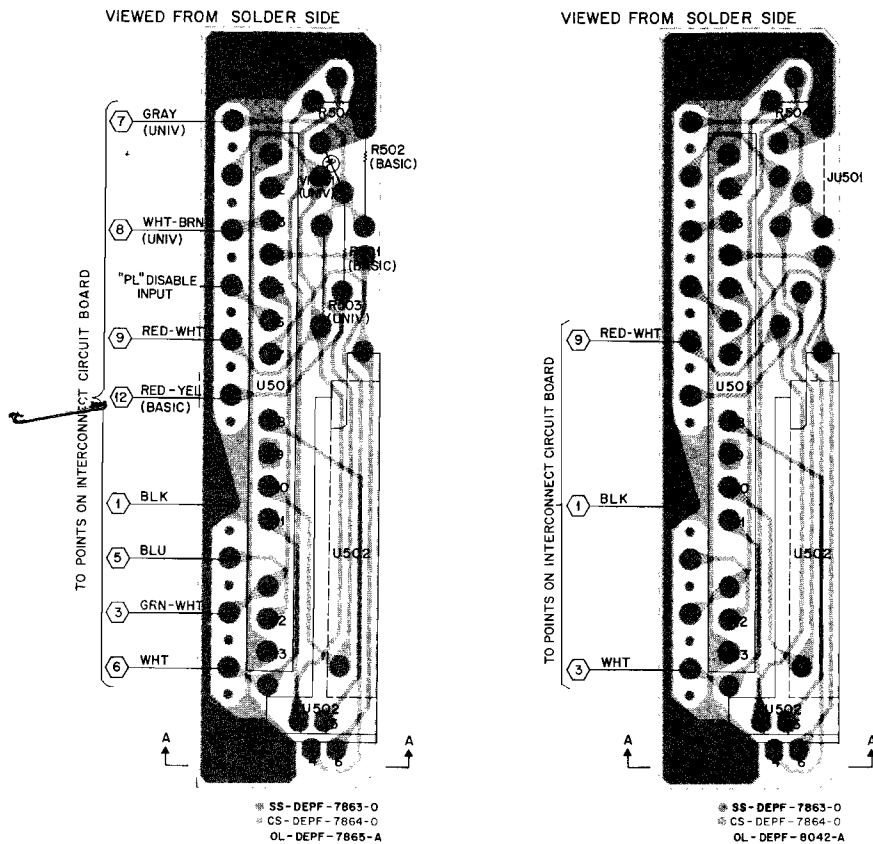
ITEM NO.	NOMENCLATURE	MOTOROLA PART NO.
162	SCREW, Guide	4605800E01
163	CLIP, Option Bd.	04205529F01
164	C7R7 Deck	NLN4215A
165	tone PL Deck	NLN4645A & NLN4644A
		NLN4476A
166	DPL &TPL Deck	NLN4211A & NLN4646A
167	OPTION Deck (Tone PL)	NLN4212A
168	OPTION Deck (Digital PL)	NLN4213A
169	OPTION Deck (Selective Call)	NLN4273A
170	OPTION Deck (Single-Tone)	NLN4475A
171	TIME Out Timer	NLN4452A
172	SEL Call (4 Tone)	NLN4727A
173	SEL Call (Long Tone)	NLN4722A
174	MULTI Single-Tone	NLN4573A
175	C8R8 Deck	



ITEM(S)	P/O KIT NO.
1 thru 29 & 36 thru 42	NLN4184A
1 thru 31	NLN4208A
43 thru 48	NLN4180A
51 thru 55	NLN4179A
59	NLN4182A
61 thru 103	NHD6031A/21A
61 thru 75, 80 thru 84, 98 thru 103, & 129 thru 144	NHD6071A/61A
104 thru 114	NLN4191A
116	NAE6271A
117	NAD6324A
118	NAD6322A
145	NLN4196A
146 thru 151	NLN4174A
147 thru 152	NLN4175A
153 thru 159 & 160, 161	NLN4187A
153 thru 159	NLN4195A
162	NLN4186A
EPF-8120-O	

NLN4211A, NLN4644A,
NLN4645A, NLN4646A

NLN4768A



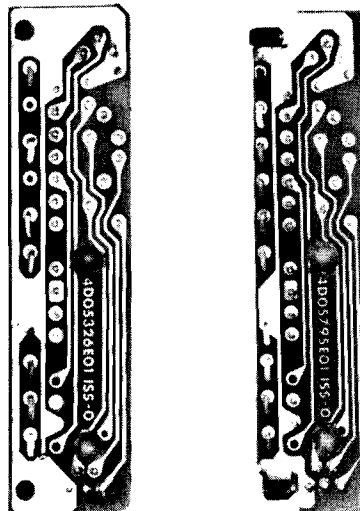
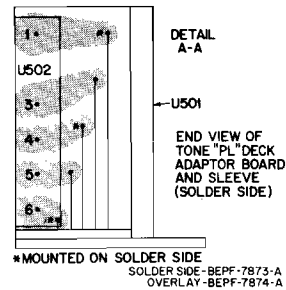
Tone PL Decks

NLN4211A "BBU" Series Extended Frame
NLN4644A "BBB" Series Short Frame
NLN4645A "BBU" Series Short Frame
NLN4646A "BBB" Series Extended Frame
NLN4768A "BBB" Series Extended Frame (PAC•RT)
NLN5487A "BBB" Series Extended Frame (Low Band)
NLN5696A "BBU" Series Extended Frame (Low Band) PLF-1243-B

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R501	0600185C04	RESISTOR, Fixed: 100 k $\pm 10\%$; 1/8 W (NLN4644A, NLN4646A, & NLN5487A)
R502	0600185C06	150 k $\pm 10\%$; 1/8 W (NLN4644A, NLN4646A, & NLN5487A)
R503	0600185B87	4.7 k $\pm 10\%$; 1/8 W (NLN4211A, NLN4645A, & NLN5696A)
R504	1805501C04	Pot., 50 k
U501	5105177D23	INTEGRATED CIRCUIT: PL Processor and Low-Pass Filter
U502	NFN6010A	PL Tone Filter (Not part of Tone PL Decks)
VR501	4883461E26	DIODE: See Note 23 V Zener (NLN4211A, NLN4645A, & NLN5696A)
NONREFERENCED ITEMS		
	0105950D70	Assembly, Adapter; contains circuit board & bracket (NLN4644A, NLN4645A)
	0105959C02	Assembly, Adapter; contains circuit bd. & bracket (NLN4211A, NLN4646A, NLN4768A, NLN5487A, & NLN5696A)
	0905287C05	SOCKET, Berg; circuit board
	0905604C06	SOCKET, Spring
	3005373E01	CABLE, Circuit Board (NLN4644A, NLN4645A)
	4205796E01	CLIP (NLN4644A, NLN4645A)
	8405335E01	CIRCUIT, Module mounting

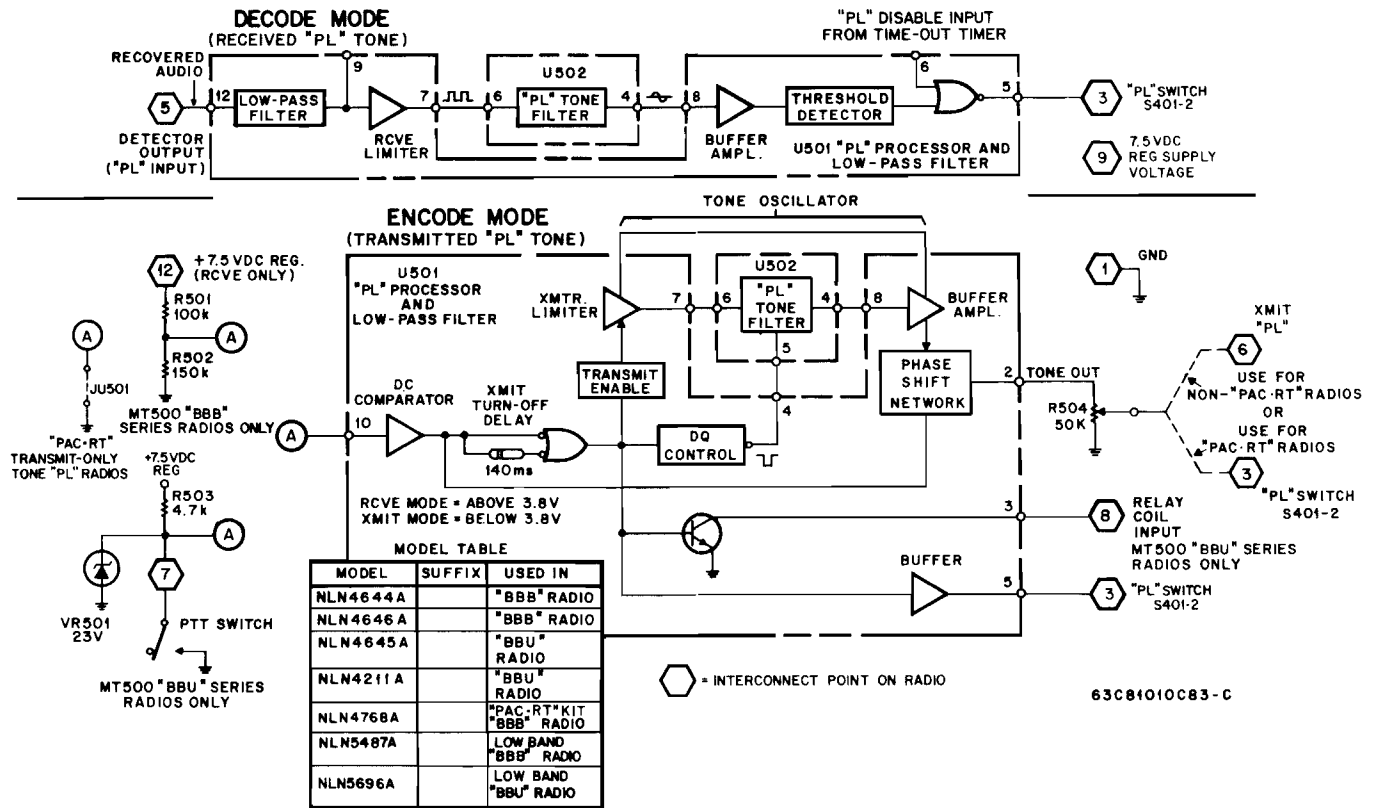
NOTE: For optimum performance, order replacement diodes by Motorola part number only.

VIEWED FROM SOLDER SIDE



EXTENDED FRAME

SHORT FRAME



TEST MEASUREMENTS

PIN NO.	ENCODE		DECODE	
	DC VOLTS	AC VOLTS	DC VOLTS	AC VOLTS
PL Processor and Low Pass Filter U501				
2	---	250 mV (3)	---	---
3	< 1.5	---	15	---
5	---	---	< 0.6 (open) > 0.8 (closed) (1)	---
7	7.4	100 mV rms (< -15 dBm)	7.2 (2)	350 mV rms (> -15 dBm)
8	1.7	80 mV rms (3)	1.7	160 mV rms (3)
9	---	---	---	280 mV rms (typical)
10	< 3.8	---	> 3.8	---
11	7.5	---	7.5	---
PL Tone Filter U502				
3	7.5	---	7.5	---
4	1.7	---	1.7	---
5	> 6	---	> 6	---
6	7.4	---	7.2 (2)	---

Test measurements are nominal. DC voltages are with 15 VDC power supply, and AC voltages are with radio fully quieted and 500 Hz deviation on generator. PL switch is on or off and no carrier input.

Numbers in () refer to the following notes:

- (1) PL switch on (4).
- (2) No modulation; radio fully quieted.
- (3) Depends upon PL Tone Filter U502.

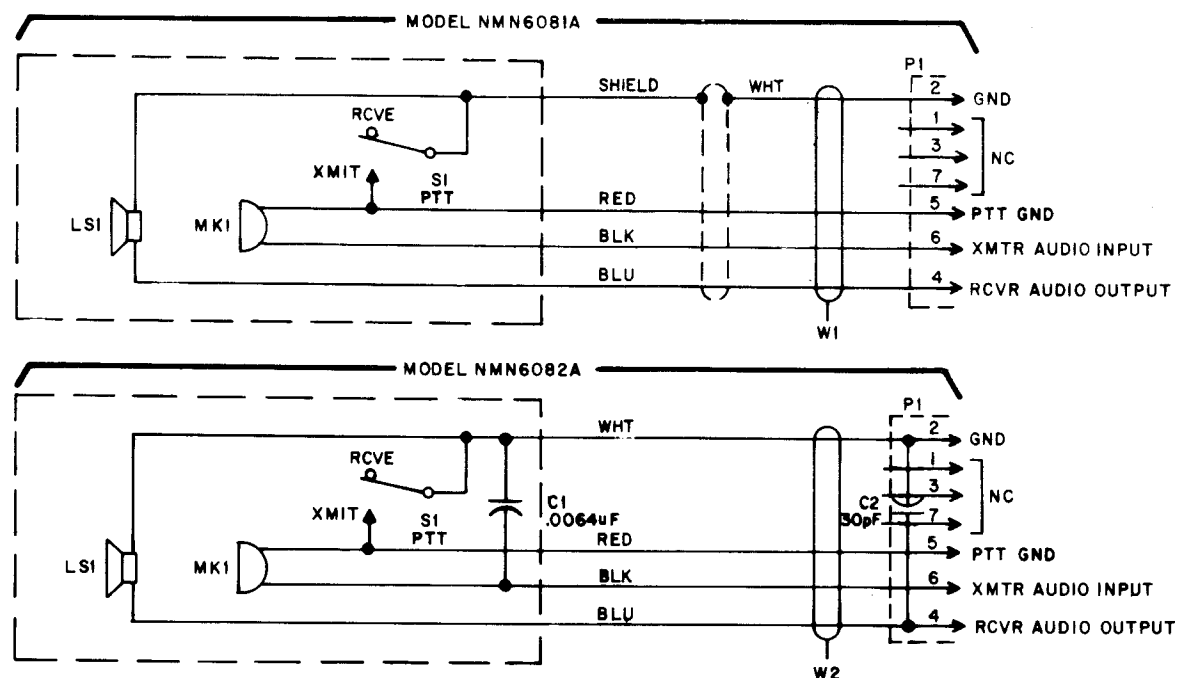
EPF-7866-0

"PL" SQUELCH SENSITIVITY CHECK

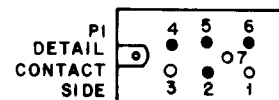
("PL" MODELS ONLY)

- SET THE SQUELCH CONTROL (R201) TO THE THRESHOLD POSITION WITH THE "PL" SWITCH OFF (4).
- TURN THE "PL" SWITCH ON (4), AND APPLY AN ON-FREQUENCY CARRIER SIGNAL FROM THE SIGNAL GENERATOR. MODULATE THE SIGNAL GENERATOR WITH THE PROPER "PL" TONE, AT ± 0.5 kHz DEVIATION.
- THE SQUELCH CIRCUIT SHOULD "OPEN" WHEN THE SIGNAL GENERATOR OUTPUT IS INCREASED ABOVE 0.18 μ V (VHF) OR 0.25 μ V (UHF).

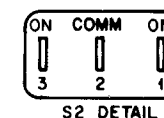
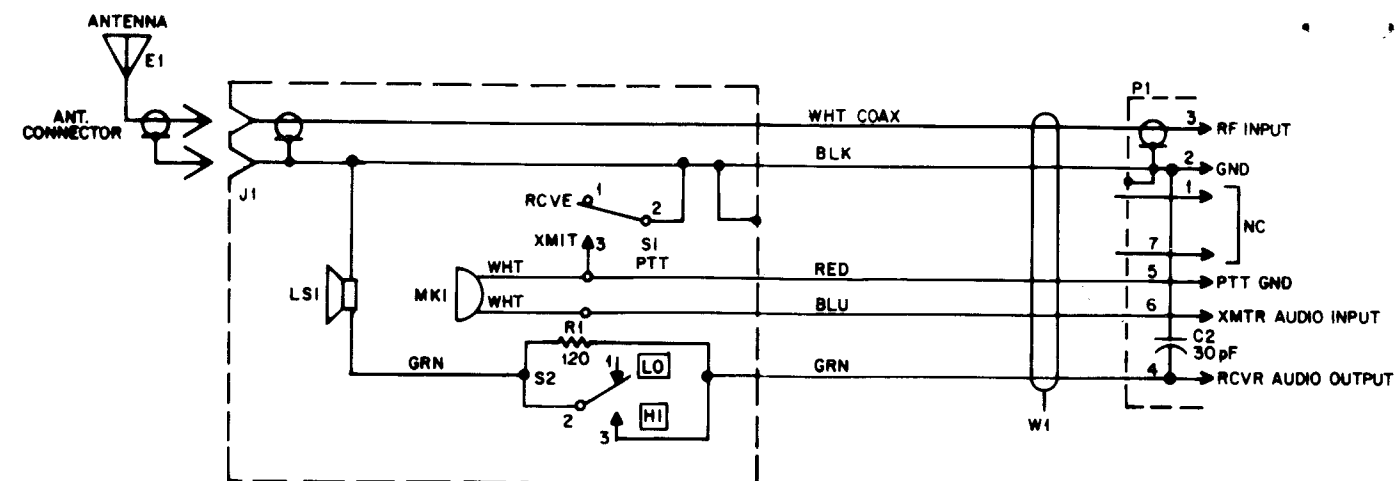
EPF-7867-0



MODELS	SUFFIX
NMN6081A	1
NMN6082A	1

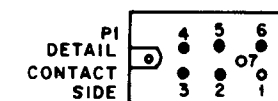


63B81102C46-B



NOTE:
INSIDE OF SPEAKER-MICROPHONE HOUSING IS ELECTRICALLY CONDUCTIVE.
COAXIAL SHIELD OF CABLE IS ELECTRICALLY GROUND TO SHROUD.

MODELS	SUFFIX
NMN6083A	1



63B81102C50-A

Speaker-Microphone Kits:
NMN6081A Straight Cord
NMN6082A Coiled Cord

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C1	2184008H05	CAPACITOR, Fixed: .0064 uF ±10%; 50 V (NMN6082A only)
C2	2182358G95	30 pF ±10%; 75 V; N750
LS1	5005334D01	SPEAKER, Dynamic: 39 Ω, 2-inch diameter
MK1	5982575J02	MICROPHONE: Minature; Res: 700 Ω, Imped: 5000 Ω ±30%
P1	2805646F02	PLUG: Connector, 7-contact
S1	4082159D02	SWITCH: Micro; PTT, SPDT
W1	3084048H02	CORD: Straight, 48"
W2	3084123H02	Coiled

PLF-1238-B

NMN6083A External Speaker-Microphone-Antenna PLF-1251-B

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
E1*	NAE6132A	ANTENNA: ANTENNA, Helical; 440-470 MHz
	NAE6133A	ANTENNA, Helical; 470-512 MHz
C2	2182358G95	CAPACITOR: 30 pF ±10%; 75 V; N750
J1	0905261B01	JACK: Connector, RF
LS1	5083466D02	SPEAKER, Dynamic: 2", 300-3500 Hz, res: 39 Ω ±10%
MK1	5082162D01	MICROPHONE: Cartridge; res: 585 Ω, imped: 1650 Ω @ 1 kHz
P1	2805646F02	PLUG: Connector, 7-contact
R1	0600125A27	RESISTOR, Fixed: 120 Ω ±5%; 1/2 W
S1	4084289H01	SWITCH: PTT, SPDT
S2	4082085J03	Toggle, SPDT
W1	3005652F01	CABLE: Multi-Conductor

* Not part of PSR Speaker-Microphone Kit, order separately