PORTABLE

TRANSISTORIZED



MODEL P31DDC-1030AM



COMMUNICATIONS DIVISION

Engineering Publications

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THIS MANUAL HAS BEEN DISCONTINUED

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GUARANTEED PERFORMANCE SPECIFICATIONS

GENERAL

MODELS		P31DDC-1000 Series	P31DDC-3000 Series	P21DDC-1000 Series	P21DDC-3000 Series						
POWER SUPPLY		Eleven #1050 Industrial "D" cells or one 14.0 v nickel-cadmium battery.									
BATTERY	Standby	4 ma at 14.0 v	10 ma at 14.0 v	4 ma at 14.0 v	10 ma at 14.0 v						
DRAIN	Receive	55 ma at 14.0 v	62 ma at 14.0 v	55 ma at 14.0 v (12 ma**)							
	Transmit	900 ma at 13.5 v	900 ma at 13.5 v	410 ma at 14.0 v	62 ma at 14.0 v (19 ma**) 415 ma at 14.0 v						
DIMENSIONS	Speaker-				TIO ma at 14,0 V						
(excluding antenna)	microphone	9" x 7-3/4" x 3-3/4"									
(with dry cell	Speaker-Handset	9" x 8-3/4" x 3-3/4"									
batteries)	Handset	9" x 8-3/4" x 3-3/4"									
DIMENSIONS	Speaker-										
(excluding antenna)	microphone	9" x 6-3/8" x 3-3/4"									
(with nickel-	Speaker-Handset	9" x 7-3/8" x 3-3/4"									
cadmium batteries)	Handset	9" x 7-3/8" x 3-3/4"									
WEIGHT*	Speaker-microphone	7# 14 oz.	8#	7.4.7.							
(with dry cell	Speaker-Handset	8# 7 oz.	8# 9 oz.	7# 7 oz.	7# 9 oz.						
batteries)	Handset	8# 4 oz.	8# 6 oz.	7# 15 oz.	8# 1 oz.						
WEIGHT*				7# 12 oz.	7# 14 oz.						
	Speaker-microphone		6# 10 oz.	6# 1 oz.	6# 3 oz.						
(with nickel-	Speaker-Handset Handset	7#	7# 2 oz.	6# 9 oz.	6# 11 oz.						
cadmium batteries)		6# 13 oz.	6# 15 oz.	6# 6 oz.	4						

Itage (13.5 v) m -30°C to +60°C (+25°C reference) 0 cps; or 36F3: ±15 kc for 100% at 1000 cps	1. 4 w at nominal battery voltage (14.0 v) NTB6050 Series ±. 0025% from -30°C to +60°C (+25°C reference)				
) cps; or 36F3: ±15 kc for 100% at 1000 cps	Train 30 0 to 100 0 (125 C reference)				
16 times					
ier	more than 45 db below carrier				
deviation at 1000 cps, or at least 40 db below	y ±10 kc deviation at 1000 cps				
+1, -3 db of 6 db/octave pre-emphasis characteristic from 300 to 3000 cps					
Less than 8% at 1000 cps, 2/3 rated maximum deviation					
:	deviation at 1000 cps, or at least 40 db below -emphasis characteristic from 300 to 3000 cp				

RECEIVER

MODULATION ACCEPTANCE*	±5 kc (split channel models) or ±15 kc (wide band models)							
SENSITIVITY	Less than 0.35 microvolt for 20 db quieting							
SPURIOUS AND IMAGIE REJECTION	More than 70 db below carrier							
NOISE SQUELCH SENSITIVITY	Noise compensated type: adjustable sensitivity, will open at less than 0.18 microvolt							
TONE CODED SQUEL(CH SENSITIVITY		Fixed sensitivity will open at less than 0.18 microvolt	Fixed sensitivity will open at less than 0.18 microvolt					
AUDIO OUTPUT	500 milliwatts to speaker or 3	milliwatts to handset at less than 10% distortion	3.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1					
FREQUENCY STABILITY		±0.0025% from -30°C to +60°C (+25°C reference)						
SELECTIVITY	More than 60 db at ±20 kc or ±40 kc measured by the 20 db quieting method							
CHANNEL SPACING*	20 kc (±5 kc Bandwidth) 40 kc (±15 kc Bandwidth)							

^{*}Tone-coded squeich awailable in split-channel models only

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

FCC LICENSE DESIGNATION: P31 Series CC1505
P21 Series CC1504B

^{**}Applies to handset models without loudspeaker

														1														
	MOTOROLA			OUELCH	OUELCH OUELCH OUELCH	CARRIER SQUELCH CARRIER SQUELCH CARRIER SOIIELCH	OUELCH LCH	нотапс тсн	OUELCH OUELCH	OUELCH OUELCH	UELCH UELCH	UELCH	LCH LCH LCH	гсн	UELCH UELCH	NUELCH NUELCH	LCH LCH LCH	LCH	OVELCH QUELCH	QUELCH QUELCH OUELCH	OUELCH OUELCH	VUELCH VUELCH VUELCH	LCH	LCH	UELCH	OELCH OELCH	NELCH LCH	HOH HOH LICH
	MODEL CHART FM "HANDIE-TALKIE" RADIOPHONES		PES OF JELCH	RIER SC	KRIER SC KRIER SC KRIER SC	RRIER SCRIER SCRIER SC	RIER SO I SOUF	AL SQUE URIER SC	REER SC	RRIER SC	RIER SC	RIER SC	AL SOUE	AL SQUE	URIER SC URIER SC URIER SC	REER SC	AL SOUE	AL SQUE	REER SC RRIER SC	RIER SC RIER SC RIER SC	RIER SC RIER SC RIER SC	RIER SC	L SOUE	T SQUE	RIER SC	RIER SC	RIER SC L SQUE	L SQUE L SQUE L SQUE
	25-54 MC 1.4 & 5.0 W RF POWER		TYF	CAR	CAR	CAR	CAR	DUA	CAR	CAR	CAR	CAR	DUA DUA	DUA	CAR	CAR	DUA DUA	DUAL	CAR	CAR	CAR	CAR	DUA	DUA	CAR	CAR	CAR DUA	DUA DUA DUA
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				> 6	SR Y	SRY		ERY E MODE	SRY	SRY	SRY	SRY	SRY	ODELS				E MODE	SRY	er y er y	SRY	SK Y	CRY	DELS	SRY	ir y		CRY
			TYPES	ELS	M BATT	SRY DMIUM BATTI SRY		M BATTI ROPHON	M BATTI	M BATTI	M BATTI	M BATTI	M BATTI	DSET MO				ROPHON	M BATT	M BATTI M BATTI	M BATTI	A BATTE	A BATTE	SET MO	4 BATTE	4 BATTE		A BATTE
			POWER	ET MOD	TERY TERY	TERY CADMIUI TERY	TERY TERY	CADMIU ER-MIC TERY	CADMIU TERY	CADMIU TERY CADMIU	TERY	CADMIU	TERY	TERY TERY ER-HAN	TERY TERY TERY	TERY	TERY TERY	TERY ER-MIC TERY	CADMIU TERY	CADMIU TERY CADMIU	TERY CADMIU TERY	TERY ADMIU	TERY CADMIUI	TERY SR-HANI	ADMIUI TERY	TERY TERY SADMIUN	TERY TERY TERY	TERY TERY TERY
	LEGEND			RY BAT	RY BAT	ORY BAT	ORY BAT	VICKEL- SPEAR SRY BAT	NCKEL-	NEX BAT	RY BAT	ICKEL- ORY BAT	NRY BAT	ORY BAT ORY BAT SPEAK	RY BAT RY BAT RY BAT	ORY BAT	RY BAT	SPEAR SPEAR SRY BAT	VICKEL-	VICKEL- ORY BAT VICKEL-	NRY BAT VICKEL- ORY BAT	RY BAT	RY BAT	SPEAKI	ICKEL-(RY BAT	RY BAT	RY BAT	ICKEL-(RY BAT RY BAT
	X FONE ITEM INCLUDED =ONE ITEM INCLUDED WITH EWERY 5 (OR LESS) RADIO SETS.			OUTPUT		НАЬ		OUTPUT				2 11 2	. 1-12-1	I TUGTTO	lacksquare			OUTPUT		4 14 2		N D Z	DISIE	POWER			3 0 0	
alakana aya mala	ONE ALTERNATE ITEM INCLUDED. CHOICE DEPENDENT UPON FREQUENCY.	TOWN IN TO STORY IN THE PROPERTY SERVICE AND ADMINISTRAL PROPERTY AND ADMINISTRATION ADMINISTRAL PROPERTY AND ADMINISTRATION ADMINISTRATION ADMINISTRATION AND ADMINISTRATION ADMINISTRATION ADMINISTRATION ADMINISTRATION AND ADMINISTRATION ADMINISTR	CHANNE. SPACING	40 KC	40 KC 40 KC	20 KC 20 KC 20 KC	20 KC 20 KC	20 KC 3 W RF 40 KC	40 KC	40 KC 40 KC	20 KC	20 KC 20 KC 20 KC	20 KC 20 KC	20 KC 20 KC	26 6 27 X 27 X 27 X 27 X	20 KC 20 KC	20 KC 20 KC	20 KC 0 W RF 40 KC	40 KC	40 KC 40 KC	20 KC 20 KC 20 KC	20 KC 20 KC	20 KC 20 KC	20 KC .0 W RF	6 6 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	20 KC 20 KC 20 KC	20 KC	20 KC 20 KC 20 KC 20 KC
	2 al no li mino monde		RCVR FREQ.		1 2		2			2 2		2 2		2	2		3	2		1 2 2		1 2 2		2			2	7 - 2 -
	*REPRESENTS A SERIES OF MODELS AND NOT A SPECIFIC MODEL. THE SPECIFIC MODEL, AS STAMPED ON THE CHASSIS, IS DETERMINED BY ITS APPLICATION.	s	XMTR RO		22.			┪╂	12	2 2 3		2 0 5		7 2	22 20	1 2 2	2 1 2	7	2	2 2 2 2	1	12 02 02		2				
	APPLICATION.		XM	AH	АН АН	AH AH AH	A.H.	AM	AM AM	AM AM	AM	AM AM	ΣΣ	AM	AR AR	AR	AR	AR	AM	AM AM	AM AM AM	ANG AM AM	AM	AM	AR AR	AR AR	4R 4R 2 4R 1	AR 2 AR 2 AR 1
			MODEL NUMBER	DC-1000	DC-1002 DC-1010 DC-1030	DC-1100 DC-1102 DC-1110	DC-1130 DC-3100	DC-3102 DC-1000	DC-1002 DC-1010	IDDC-1012 IDDC-1030 IDDC-1032	DC-1100	DDC-1112 DDC-1130 DDC-1132	P21DDC-3100A P21DDC-3102A	DC-3110	DC-1000 DC-1010 DC-1030	DC-1100	DC-3100	DC-3130 DC-1000	DC-1010	DC-1012 DC-1030 DC-1032	DC-1100 DC-1102 DC-1110	DC-1112 DC-1130 DC-1132	DC-3100 DC-3102	DC-3130	DC-1002 DC-1010	DC-1100 DC-1100	DC-1110, DC-1130, DC-3100,	DC-3102 DC-3110 DC-3130
ITEM	DESCRIPTION	REFERENCE DIAGRAM		P21D	P21D P21D P21D	P21D P21D P21D	P21D P21D	P21D	P21D P21D	P21D P21D P21D	P2.	P2.1 P2.1		Ш	P2.10 P2.10	PZID	P21D P21D	P21D	P31D F31D	F31D F31D F31D	0189 0189 0189	P31D P31D	P31D P31D	P31D	P31D	P31D P31D	P31DI P31DI	P31D P31D P21D
*NRB1150AA *NRB1150AB *NRB1150AC *NRB1150AD	RECEIVER (1-FREQ) WIDE CHANNEL.; CARRIER SQUELCH RECEIVER (1-FREQ) SPLIT CHANNEL.; CARRIER SQUELCH RECEIVER (2-FREQ) WIDE CHANNEL.; CARRIER SQUELCH RECEIVER (2-FREQ) SPLIT CHANNEL.; CARRIER SQUELCH	63E81017A21 63E81017A21 63E81017A21 63E81017A21	***************************************	X 2	X	xxx	x																					
*NRB1150AF *NRB1120AA *NRB1120AB *NRB1120AC	RECEIVER (1-FREQ) SPLIT CHANNELL; DUAL SQUELCH RECEIVER (1-FREQ) WIDE CHANNELL; CARRIER SQUELCH RECEIVER (1-FREQ) SPLIT CHANNELL; CARRIER SQUELCH RECEIVER (2-FREQ) WIDE CHANNELL; CARRIER SQUELCH	63E81017A22 63E81017A21 63E81017A21 63E81017A21					Х	X	х×	x x	X X 2	х			X	хх		x	ХX	x x x	x x x	X		X	CXX	XXX	X I	
*NRB1120AD *NRB1120AF *NRB1120AH *NTB6050AA	RECEIVER (2-FREQ) SPLIT CHANNELL; CARRIER SQUELCH RECEIVER (1-FREQ) SPLIT CHANNELL; DUAL SQUELCH RECEIVER (2-FREQ) SPLIT CHANNELL; DUAL SQUELCH TRANSMITTER (1-FREQ) CARRIER SQUELCH	63E81017A21 63E81017A22 63E81017A22 63E81017A21		X	x	хх		x	x		хx	XX	хх	X X		X	XX	X				XX	XXX	X				x x x
*NTB6050AB *NTB6050AC *NTB6050AD *NTB6060AA	TRANSMITTER (2-FREQ) CARRIER SQUELCH TRANSMITTER (1-FREQ) "PRIVATE-LLINE" MODEL TRANSMITTER (2-FREQ) "PRIVATE-LLINE" MODEL TRANSMITTER (1-FREQ) CARRIER SQUELCH	63E81017A21 63E81017A22 63E81017A22 63E81017A21			XX	T X	X	х	×	XXX	2	XXX	XX	X X	XX	X	X	x x	X		xx			X	X	ХX		x
*NTB6060AB *NTB6060AC *NTB6060AD NLB6141A	TRANSMITTER (2-FREQ) CARRIER SQUELCH TRANSMITTER (1-FREQ) "PRIVATE-ILINE" MODEL TRANSMITTER (2-FREQ) "PRIVATE-ILINE" MODEL "PRIVATE-LINE" SQUELCH BOARD (225-42 MC)	63E81017A21 63E81017A22 63E81017A22 63E81017A22																	X	XXX	ı x	XXX	XX	X	XX			XXX
NLB6142A NLB6120A NGN6023A NCN6039A	"PRIVATE-LINE" SQUELCH BOARD (-42-54 MC) HI POWER FINAL AMPLIFIER TOP PANEL KIT CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH	63E81017A22 63E81017A21 & 63E81017A21 63E81017A21	22	X 2	x x x	XXX	ХX	x x	x		хх		///				77		хх	x x x	XXX	ххх	XXX	(X)	(XX)	CXX	XXX	XXX
NCN6040A NCN6041A NCN6042A NCN6043A	CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC CARRIER SQUELCH	63E81017A21 63E81017A21 63E81017A22 63E81017A21							×	x x x	×	X	XX	x														
NCN6044A NCN6045A NCN6046A NCN6047A	CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH	63E81017A21 63E81017A21 63E81017A22 63E81017A21													X	X		х	х	x	x x	X	ХX					
NCN6048A NCN6049A NCN6050A NCN6051A	CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC DUAL SQUELCH	63E81017A22 63E81017A21 63E81017A22 63E81017A22												х						хx		хx	×	X			剒	
NCN6052A NCN6053A NCN6054A NCN6055A	CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 2-FREQ REC DUAL SQUELCH	63E81017A21 63E81017A22 63E81017A21 63E81017A22													X - 2	X	X S	x									\blacksquare	
NCN6056A NCN6057A NCN6058A NCN6059A	CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC DUAL SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC CARRIER SQUELCH CONTROL PANEL, 2-FREQ XMIT, 1-FREQ REC DUAL SQUELCH	63E81017A21 63E81017A22 63E81017A21 63E81017A22													H									X	X	X X	x :	X
NCN6060A NCN6061A NCN6065A NPN6030AB	CONTROL PANEL. 2-FREO XMIT. 2-FREO REC CARRIER SOUELCH CONTROL PANEL, 2-FREQ XMIT. 2-FREQ REC DUAL SQUELCH CONTROL PANEL, 1-FREQ XMIT, 1-FREQ REC DUAL SQUELCH POWER SUPPLY (LESS DRY BATTERHES)	63E81017A21 63E81017A22 63E81017A22		x		x x	хх	x	×	x	X	d x		XX			х				XX		V				X	XXX
NPN6031A NLN6310A NLN6267A NLN6129A	POWER SUPPLY (LESS NICKEL-CADMIUM BATTERIES) BATTERY KIT (DRY) BATTERY KIT (NICKEL-CADMIUM) CARRYING STRAP			x	XXX	x x	хх	X	X X	X X	X X	X	X X	хx	XX	x x	(XX	х х	X X	X X	XXX	XX	XX	< X ()	X X	XX.	XXX	X X X X X X X X X X X X X X X X X X X
NLN6306A NLN6307A NLN6252A NMN6017A	UNIT HARDWARE KIT UNIT HARDWARE KIT TUNING TOOL HANDSET			X	XXX	XXX	XX	XXX	XX	XXX	XX		X X	XX	XXX	XXX	XX	X	XX	XXX	XXX	XXX	XXX	(X)	X X X	XXXX	XXX	XXX
NMN6011A NMN6018A YM45 YM46 YN	MICROPHONE RECEIVER CONTROL CRYSTAL RECEIVER CONTROL CRYSTAL RECEIVER IF CRYSTAL				1/2			X	XX	XXX	XXX	XXX	XX	XX	1/2			ZX	XX	X X X	$\mathbf{x} \mathbf{x} \mathbf{x}$	XXX	XXX	X				^ ^ ^
AB-2 ABX-2 TLN6492AA NAB6141A	TRANSMITTER CRYSTAL TRANSMITTER CRYSTAL "VIBRASENDER-SPONDER" UNIT ANTENNA			X	X 2 2	X X 2	2 X	X X	X 2	2 2 2	XX	2 2 2	XX	2 2 X X	X 2 2	X 2 7	X X	2 X X	X 2	2 2 2	X X 2	2 2 2	X X 2 X X X	2 3	x x 2 2	XX Z	2 2 X X	X 2 2
NAB6142A NAB6143A NAB6144A NAB6145A	ANTENNA ANTENNA ANTENNA ANTENNA ANTENNA				////		1//				1///	7////		$AA \cup A$	/ / / /	1/1/1	4/1//	// 1/	4/1/		////				<i>A A A</i> .	A	777	
NLN6241A NLD6315B	"PRIVATE-LINE" HARDWARE KIT BOTTOM PLATE KIT			X.	XIXIX	XIXIX	XX	X X	XIX	XIXIX	XXX	IXIXIX	(X X)	XX	XIX	XX	XXX	XI X	XX	X X X	XXX	XXX	XXX	X	CXXX	(XXX	XXXX	XXXX
					-1-1									111		1 1 1									TTT			PD-8834-C

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ACCESSORY TABLE

MODEL	DESCRIPTION
NPN6032A	117 V AC Power Supply
NLN6268A	Shock Mount Rack
NLN6129A	Carrying Strap
NLN6262A	Carrying Bag
P-7208-A	RF Dummy Load for P21 Series Radiophone
P-7208	RF Dummy Load for P31 Series Radiophone
NLN6145A	Dummy Load Antenna for P21 Series Radiophone
NLN6040A	Dummy Load Antenna for P31 Series Radiophone
NLN6311A	Back Pack Harness complete with microphone, earpiece and volume control
NLN6312A	Back Pack Harness less microphone, earpiece and volume control
NMN6009A	Headset and Microphone
NLN6029A	Nickel-Cadmium Battery Charger (Requires NKN6077A Battery Charger Adapter)
NKN6079A	Battery Charger Cable Kit (for NPN6031A Power Supply and NLN6029A Battery Charger)
NKN6080A	Battery Charger Cable Kit (for NLN6267A Battery Kit and NLN6029A Battery Charger)
TEKA-40	Power extension cable for easy repair and/or alignment
NLN6270A	6/12 V DC Vehicular Charging Unit
NKN6074A	6 V DC Vehicular Cable for NLN6270A Charging Unit
NKN6075A	12 V DC Vehicular Cable for NLN6270A Charging Unit
NKN6076A	12 V DC Cigarette Lighter Cable for NLN6270A Charging Unit
NKN6042A	Antenna Extension Cable (20" RG-58 A/U)
NAB6101A	Long Wire Antenna 25-30 mc
NAB6102A	Long Wire Antenna 30-36 mc
NAB6103A	Long Wire Antenna 36-42 mc
NAB6104A	Long Wire Antenna 42-48 mc
NAB6105A	Long Wire Antenna 48-54 mc
NEN6048A	Test Jig for Servicing Radiophone

ACCESSORIES

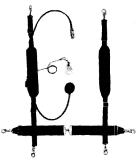


CARRYING CASE Model NLN6262A Weather resistant case

DUMMY LOAD ANTENNA Model NLN6145A For P21 Series units Model NLD6040A For P31 Series units



RF DUMMY LOAD Model P-7208 For P31 Series units Model P-7208-A For P21 Series units



BACK PACK HARNESS Model NLN6311A Kit is complete with microphone, earpiece and volume control. Model NLN6312A Same as NLN6311A less microphone and earpiece.



HEADSET AND MICROPHONE Model NMN6009A



NICKEL-CADMIUM BATTERY CHARGER Model NLN6029A

DESCRIPTION AND OPERATION

1. DESCRIPTION

The Motorola "Handie-Talkie" FM radiophone is a completely transistorized and weatherproof portable communications radio set. The radiophones are complete, self-powered, portable FM transmitter and receiver units for two-way communication. The advantages of the transistor -reliability, lightweight, compact size, reduced maintenance and operating costs -- are fully utilized.

Motorola dual squelch "Private-Line" radios are especially useful when operating under crowded channel conditions. Several networks may share the same carrier frequency in the same area with a minimum of interference when each network uses a different "Private-Line" tone frequency.

Dual squelch "Private-Line" radios and carrier squelch radios are available in two series of models. The lighter weight P21 series for maximum portability and the P31 series where higher r-f power output is required. The P21 series units deliver 1.4 watts of r-f power at nominal battery voltage throughout the 25-54 mc band and weigh as little as 6 lbs. 1 oz. The P31 series units deliver 5 watts of r-f power output and weigh as little as 6 lbs. 8 oz. Both series of radiophones are available in one or two frequency models. Refer to the Model Chart in the front of this manual for a complete listing of the models available.

a. Power Supplies

All types of units are available with dry batteries, nickel-cadmium batteries or a 117 volt a-c power supply (accessory item). Operation is also possible from either a 6 or 12 volt external battery when the nickel-cadmium power supply is used.

Power packs are changed by unsnapping two spring snaps located at the ends of the unit and separating the power pack from the radio section. Another power pack (dry battery, nickel-cadmium or the 117 volta-c power supply) can then be attached to the radio section to again form one integral package.

b. Antennas

The NAB6040A Series Antenna consists of a stainless steel whip 42" long and a removable loading coil. The loading coil consists of a series

resonant tunable inductance. The combination of whip and loading coil produces a 1/4 wavelength antenna tunable within a given band of the 25-54 mc range. Refer to the Model Chart for the specific frequency ranges of the antennas.

NOTE

The Motorola "Handie-Talkie" radiophone may be used with a fixed or elevated antenna. The antenna circuit provides a 50-ohm termination at the antenna receptacle; therefore, any 50-ohm antenna resonant to the transmitter frequency can be used. The higher the antenna, the greater the area that can be covered.

c. <u>Handset</u>

The NMN6017A Handset is supplied complete with a rubber covered coiled cord, which extends to about 5 ft., and a weatherproof connector. A push-to-talk bar on the handset turns the transmitter on. The handset connector plugs into a four-prong receptacle on top of the unit housing.

d. Microphone

The NMN6018A Microphone is supplied with a rubber covered coiled cord, which can be extended to about 5 ft., and a weatherproof connector. This palm type microphone is provided with a push-to-talk button which turns on the transmitter. The microphone connector plugs into a four-prong receptacle located on top of the unit housing.

2. PRE-OPERATIONAL NOTES

Use care when unpacking and handling the "Handie-Talkie" FM radiophone. Open the shipping carton and carefully removeallitems. Check the contents to be sure that all items have been included.

Inspect the equipment thoroughly as soon as possible after delivery. If any part of the equipment has been damaged in transit, report the extent of damage to the transportation company immediately.

IMPORTANT

This equipment contains batteries. Extended storage of the equipment will reduce the operating performance due to reduction in battery voltage and life. Partially used dry batteries, if left standing for long

periods, will leak electrolyte and may result in damage to the radio equipment. If equipment is to be stored for a long period of time, remove the batteries and store them in a cool place.

The Motorola "Handie-Talkie" radiophone is shipped direct from the factory completely assembled, ready for use, except for the installation of the antenna.

3. OPERATION

CAUTION

Do not key transmitter unless antenna, dummy load or equivalent is connected to the antenna receptacle.

a. To Turn On

Remove the microphone or handset from the mounting bracket. The ON-OFF switch is located under the microphone or mouthpiece end of the handset. Press down on the side of the switch labeled PUSH ON. This places the receiver in operation.

NOTE

All power supplies except the a-c power supplies, turn on and off with the ON-OFF switch on the radiophone housing. To turn on the a-c power supply, always use the ON-OFF switch on the power supply housing.

b. To Adjust Receiver Audio Volume

Turn the squelch control fully counterclockwise. On dual squelch models, turn the "PL" OFF switch to the OFF position. Adjust the volume control until the desired volume is obtained from the speaker.

c. To Adjust Squelch Control

Turn the squelch control fully counterclock-wise. On dual squelch models, turn the "PL" OFF switch to the OFF position. With no signal being received, turn the squelch control clockwise until the noise just cuts out (squelches).

d. "Private-Line" Operation (dual squelch models only)

For "Private-Line" operation, place the "PL" OFF switch in the "PL" position. All non-"Private-Line" and incorrectly coded "Private-Line"

signals will then be blocked from the speaker. The squelch control is inoperative when the "PL" OFF switch is in the "PL" position and does not require adjustment.

NOTE

Before transmitting, momentarily place the "PL" OFF switch in the OFF position. This enables the operator to check for a clear channel and thus avoid breaking in on the transmission of another on-frequency unit.

e. To Monitor

To monitor all on-frequency transmissions, turn the unit on and adjust the volume and squelch controls to the proper levels. On dual squelch models, the "PL" OFF switch must be OFF. To monitor only properly coded "Private-Line" transmissions, the "PL" OFF switch must be in the "PL" position.

NOTE

All models feature a semi-automatic ON-OFF switch that automatically turns the radiophone off when the microphone or handset is replaced in its holder. Continuous monitoring of the receiver in microphone equipped models may be accomplished by placing the microphone in its holder face up. Placing the microphone in its holder face down turns the radiophone off.

f. To Transmit

Hold the mouthpiece 1 to 2 inches from lips. Press the push-to-talk button in firmly and hold it. Speak slowly and clearly across the mouthpiece in a normal-to-loud voice. Release the button to listen. The receiver becomes inoperative when the push-to-talk button is pressed, therefore, the button must be released at the end of a transmission to receive.

NOTE

Additional range may be obtained when the radiophone is placed on the hood or top of a car. This furnishes a good ground plane for the antenna.

g. Frequency Selection (Two-Frequency Models Only)

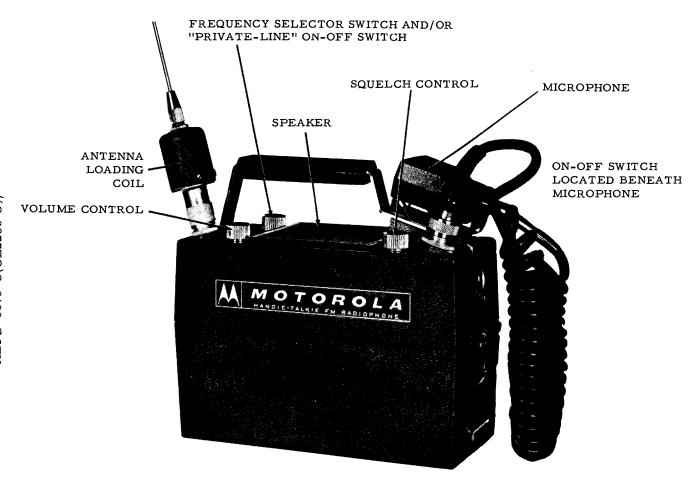
The rotary switch on the top of the unit may be turned to position F1 or F2 to select either of the two operating frequencies.

h. To Turn Off

Replacing the microphone or handset in the mounting bracket automatically turns the receiver off.

i. Storage

Remove the batteries before storing the unit for a long period of time. If the radiophone is equipped with nickel-cadmium batteries, refer to the BATTERY REPLACEMENT AND CHARGING SECTION for care and storage of the batteries.



CONTROL LOCATION DETAIL

BATTERY REPLACEMENT AND CHARGING

1. BATTERY REPLACEMENT PROCEDURE

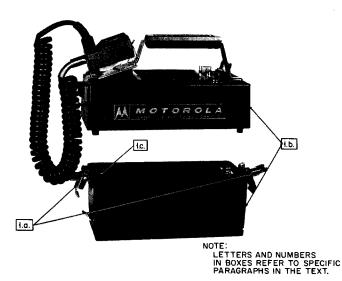


Figure 1

To replace all types of batteries, dry or nickel-cadmium type: (Refer to Fig. 1)

- a. Unsnap the spring snap at each end of the radiophone.
- b. Pull bottom section of radio (battery section) down and away from upper section.
- c. Remove the battery compartment cover by unscrewing the 1/4 turn captive screw and lifting the cover up.
- d. To replace dry batteries, first remove the old batteries by turning the battery compartment upside down. Replace the new batteries in the compartment so the flat (negative) end of the batteries are making contact with the springs and the tip (positive) end of the batteries are making contact with the flat contact surfaces.
- e. To replace nickel-cadmium battery, proceed as follows:
- (1) Remove two screws from corners of battery.
 - (2) Lift battery out of battery compartment.

- (3) Remove three-prong plug from battery.
- (4) Insert new battery by reversing this procedure.

Fast battery replacement can be accomplished by changing the entire power supply and replacing the batteries in the used supply at some later time. Additional power supplies can be purchased as separate accessories for fast changeover.

2. DRY BATTERIES

a. General

All batteries, dry and wet, have a finite shelf life. Storing them for long periods of time reduces their closed circuit voltage and operating life. In some cases, when stored too long, dry batteries may leak electrolyte after partial use and damage the radio. Therefore, if radio equipment is to be stored for long periods of time, remove the batteries and store separately in a cool place. Never store batteries in a warm place as heat increases their chemical action and shortens life.

Shelf life of a dry battery is approximately 3-6 months. Therefore, they should be put into use within 3 months after purchase.

The batteries can be tested at the battery terminals under transmit load conditions.

The batteries should be replaced when the voltage under transmit load conditions is below 11 volts.

IMPORTANT

BATTERY VOLTAGES AND CAPACITY DECREASE MARKEDLY DURING LOW TEMPERATURE PERIODS.

b. Fuse Replacement

To replace the fuse in the battery compartment, proceed as follows:

- (1) Unsnap the spring snap at each end of the radiophone.
- (2) Pull bottom section of radio (battery section) down and away from upper section.

- (3) Remove the battery compartment cover by unscrewing the 1/4 turn captive screw and lifting the cover up.
 - (4) Remove all batteries.
- (5) Remove the screws from the battery separator and lift out.
- (6) Unsolder the pigtail fuse from the under side of the battery separator.
 - (7) Solder a new fuse in place and reassemble.

3. NICKEL-CADMIUM BATTERIES

a. General

The battery comprises 11 hermetically sealed cells which are series connected to provide a nominal 14 volt output. The cells are cased, and fitted with a cable and connector.

The voltage of a nickel-cadmium battery remains approximately constant under load until the battery approaches the discharged condition. At this time, a marked decrease in this voltage occurs and the discharged condition (1.0 v per cell) is reached abruptly. These batteries should be recharged when the voltage under transmit load reaches 11.0 v.

NOTE

Battery voltage can <u>not</u> be measured at charging contacts.

b. Charging

The Motorola battery chargers and cables listed under ACCESSORIES at the front of this manual are recommended for charging these batteries. The use of other chargers will void the battery guarantee and may result in permanent damage to the batteries. Follow the charging instructions which accompany the charger.

c. Storage

The batteries may be stored at room temperature, in any state of charge without damage. These batteries are subject to self discharge however, and should be recharged after extended storage.

4. BATTERY LIFE

Under operating conditions of 10% transmit, 10% receive at rated audio output and 80% receive standby, dry batteries will give approximately the following life:

P21 Series NPN6030B - Standard Power Pack W/NLN6310A Batt. - fourteen 8 hour working days, each separated by a 16 hour OFF period.

NPN6031A - Nickel-Cadmium Power Pack (with one NLN6267A Batt. Kit) - one 8 hour working day before recharging is necessary.

P31 Series NPN6030B - Standard Power Pack W/NLN6310A Batt. - six 8 hour working days, each separated by a 16 hour OFF period.

NPN6031A - Nickel-Cadmium Power Pack (with one NLN6267A Batt. Kit) - one 8 hour working day before recharging is necessary.

Note that most actual transmit duty cycles are much smaller and approach 2% rather than 10%. Also in many types of operation, the unit is not kept turned on continuously. If this type of service is prevalent, battery life may be extended to many times those mentioned previously.

THEORY OF OPERATION

1. GENERAL

The "Handie-Talkie" radiophone consists of a crystal controlled transmitter and receiver operating in the 25-54 mc frequency range. The transmitter contains an audio section and an r-f section. The audio section consists of an amplifier-limiter and an integrator stage. In P21 series models, the r-f section consists of a crystal-

controlled oscillator, a modulator, two frequency doublers, one frequency quadrupler, a driver amplifier, a power amplifier stage and a current limiter stage. In P31 series models, an additional chassis containing a power amplifier is added.

The receiver is a double-conversion, superheterodyne unit consisting of one r-famplifier, two oscillators, two mixers, one first i-f amplifier, five second i-f amplifiers, a 455 kc filter, a limiter, discriminator, squelch amplifier, noise rectifier and two audio amplifiers. Speaker versions use a third stage of audio amplification.

Dual squelch "Private-Line" models include additional stages, some of which are shared by both the transmitter and receiver. The common stages are a "Vibrasender-sponder" circuit, tone amplifier circuits and a "Vibrasender-sponder" driver. High and low pass filters are unique to the receiver and a diode modulator is unique to the P21 series transmitter.

2. CIRCUIT THEORY

a. Transmitter

A reluctance microphone produces a low level audio output which is directly coupled to a preamplifier, Q501, which is contained in the microphone housing. The output from this stage is capacitively coupled to the amplifier-clipper stage, Q110.

The amplifier-clipper and the integrator stages are part of the "Instantaneous Deviation Control" (IDC) circuit. Since the transmitter is phase modulated, the frequency deviation is dependent upon both the amplitude and frequency of the audio signal applied to the modulator. combination of the integrator and the phase modulator has a "flat" response since the preemphasis characteristic of the phase modulator is offset by the de-emphasis of the integrator. Therefore, the frequency deviation of the modulator system is only dependent upon the amplitude of the input to the integrator. The amplitude of the audio signal is limited in the amplifier-clipper stage before reaching the integrator, thereby, limiting maximum deviation to a fixed value within the desired frequency range. Audio frequencies above 3000 cps are attenuated in the "splatter" filter before reaching the integrator.

Oscillator stage, Q101 (and Q201 in 2-frequency units) is a fundamental, crystal-controlled, anti-resonant oscillator circuit. It generates a radio frequency which is multiplied 16 times in the succeeding stages to produce the desired carrier frequency. A variable capacitor across the crystal permits a fine tuning adjustment (warping) for the proper operating frequency. The oscillator output is coupled to the modulator stage Q102.

RF is applied to the base and collector while audio is applied to the emitter of the modulator transistor. The internal r-f gain of transistor, Q102, is varied by the applied audio voltage. With a fixed phase shift circuit shunting the transistor and a variable phase shift through the transistor, an overall variable phase shift is obtained at the output. The variable inductance in the output of the modulator stage allows matching of the output reactance of the stage to insure minimum distortion and maximum linear deviation. Generally, phase modulators are capable of modulating with low distortion over a small phase angle. This necessitates the addition of frequency multiplier stages which increase the frequency deviation to the desired value.

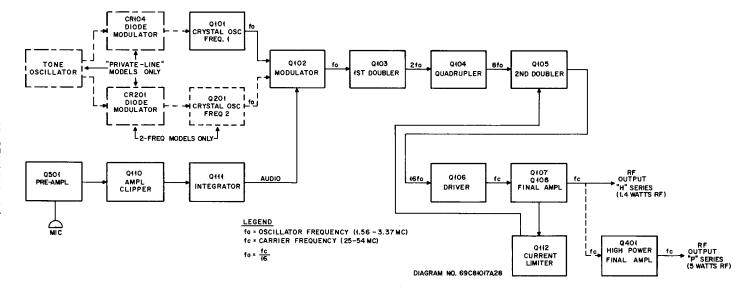
Transistor frequency multipliers, or class B amplifiers, in general do not require forward biasing. Without signal drive, zero-biased class B frequency multiplier stages will not draw any emitter current. With drive present, the transistor will draw current and this current is easily monitored by measuring the d-c voltage developed across the emitter resistor. An exception to this is the first doubler stage, Q103, where since the signal input level is very low, a small amount of forward bias is supplied to increase the gain of the stage.

The driver, Q106, provides the proper amount of r-f voltage to drive Q107 and Q108, the power amplifier. In P21 series units, the output power from this stage is coupled directly to the antenna.

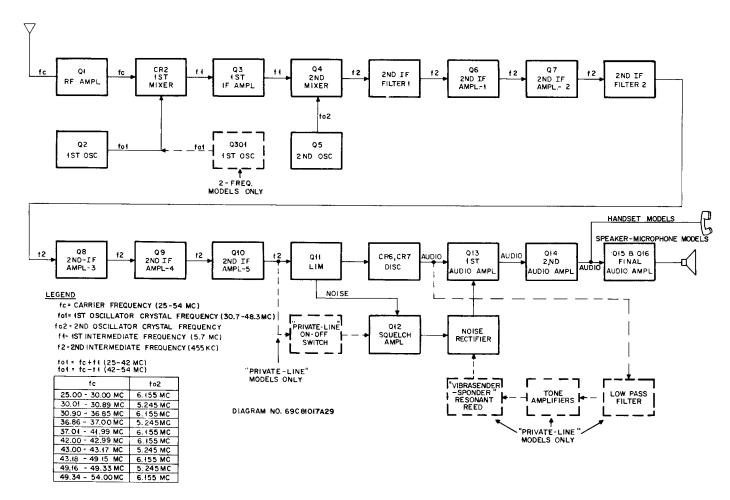
In P31 series units, Q107 and Q108 function as an intermediate power amplifier. The output from Q107 and Q108 is coupled to final power amplifier Q401. This higher output is then coupled to the antenna via the transmit-receive relay.

b. Receiver

The signal from the antenna is coupled to the r-f amplifier, Q1, where it is amplified before being injected into the first mixer. The oscillator Q2, is a crystal-controlled, series-resonant type. The crystal frequency is multiplied three times before being injected into the mixer. There, the incoming r-f signal and the oscillator frequency mix to produce the first intermediate frequency.



TRANSMITTER BLOCK DIAGRAM



RECEIVER BLOCK DIAGRAM

The first i-f signal is amplified in the next stage, Q3, and fed to the second mixer. The second mixer combines the first i-f signal and the output of the 2nd oscillator to produce the second i-f signal of 455 kc.

The 455 kc signal is selected in the first section of the "Permakay" filter, amplified in the two following stages, Q6 and Q7, and selected again in the second section of the "Permakay" filter. The 455 kc signal is then amplified in the next three stages.

The limiter stage removes any AM noise present on the incoming signal. The discriminator translates the variations of frequency of the i-f signal to an audio frequency signal which is then coupled to the first audio amplifier.

Squelch action is provided by taking the noise produced at the supply voltage decoupling point of the limiter, removing the residual 455 kc signal, amplifying that portion of the noise above the normal voice frequency range, rectifying this noise and applying it as positive bias to the base of the audio output stage. When the receiver is not quieted (in the absence of an r-f carrier), this bias cuts off the audio output stage and eliminates the speaker noise. The degree of squelch action is regulated by a potentiometer.

The audio section consists of two low power amplifier stages in series where the recovered audio is amplified to 3 milliwatts. These two stages are directly coupled so that when the first stage is back biased by the squelch rectifier circuit, the second stage is also turned off. The output of the second stage is coupled to the handset earpiece and provides 3 milliwatts of audio power.

In versions using a speaker, the audio output of the second stage is coupled to a power stage which amplifies the audio signal to 500 milliwatts.

c. <u>Dual Squelch "Private-Line" Transmitters</u> And Receivers

The controlling element in the "Private-Line" circuit is the "Vibrasender-sponder" unit. The unit acts similar to a control crystal in an oscillator stage. When the transmitter is keved a resonant reed inside the unit vibrates at a predetermined frequency. The resulting tone is then amplified in tone amplifiers which raise the signal to the proper level to drive the diode modulator, CR104. The diode modulator varies the first oscillator frequency at the tone frequency rate. Modulation is accomplished by varying the effective resistance of the modulator diode. This in turn, varies the effective reactance of a capacitor in parallel with the crystal which modulates the oscillator frequency.

In the receive mode of operation with the "Private-Line" switch in the OFF position, the squelch circuit detects noise on the receiver channel. This noise is amplified in the squelch amplifier and rectified. The resulting current overcomes the forward bias to turn off the 1st audio transistor. Moving the "Private-Line" switch to the ON position changes the bias on the 1st audio transistor to a condition where it is biased off. The normal squelch circuitry now has no effect for it can only bias the transistor off further.

When a properly coded "Private-Line" carrier comes on the air, the tone signal is sent to the "Private-Line" circuitry where it is amplified by the three transistor stages which drive the "Vibrasender-sponder" unit. The contacts in this reed will then close and a negative d-c voltage is sent to the 1st audio transistor where it is used to bias this transistor to a conducting condition, unsquelching the audio amplifiers.

This receiver makes use of two separate and distinct squelch circuits, i.e., tone-coded squelch and noise squelch. On dual squelch receivers, when the incoming signal is properly tone-coded, the squelch sensitivity is never greater than the tone-coded squelch sensitivity.

MAINTENANCE

1. TEST EQUIPMENT

All the required test equipment for aligning and testing the "Handie-Talkie" FM radiophone

is listed in the following TEST EQUIPMENT CHART. The listed items or their equivalents may be used.

TEST EQUIPMENT CHART

EQUIPMENT	USED FOR
Motorola DC Multimeter with r-f probe.	All d-c and r-f measurements. Monitoring the input current when external power supply is used.
Motorola AC Voltmeter FM signal generator - Motorola T1034C Signal Generator.	All a-c signal measurements. Alignment of all r-f and first i-f stages, 20 db quieting sensitivity measurements.
455 kc crystal-controlled oscillator - Motorola S1056A-9A or TU546 Series Test Set with 455 kc crystal.	Alignment of 455 kc i-f limiter and discriminator stages.
Audio generator - Motorola TEK-1A Transistorized Tone Generator, 1000 cps	IDC Adjustment
Oscilloscope - Motorola T1015A General Purpose Oscilloscope or Motorola T1014B Precision Wide Band Oscilloscope.	IDC Adjustment
Motorola Model P-7208 or P-7208-A RF Dummy Load and a field strength meter.	All r-f output power measurements:
Motorola NLN6252A Alignment Tool (supplied with the radiophone)	Adjusting the variable capacitors and tuning coil slugs.
DC power supply capable of supplying -14 v d-c at 1.5 amperes (optional) Motorola TEK-23 Power Supply.	Supplying d-c power to the unit during extended servicing.
Motorola Model TEKA-40 Power Extension Cable.	Connecting batteries to radio for servicing.
Motorola NEN6048A Test Jig	Holding the radiophone for alignment or testing.

2. TEST PROCEDURE

When a radiophone requires servicing, use the following procedures to localize the fault.

a. Check Batteries

The first step in localizing the trouble is to check the battery voltage under load. With the transmitter turned on (keyed), check the battery voltage. A convenient way to do this is to separate the battery compartment and radio compartment. Using the TEKA-40 Power Extension Cable (or equivalent), connect the batteries to the radio.

CAUTION

Do not key transmitter unless antenna, dummy load, or equivalent is connected to the antenna receptacle.

RECOMMENDED TEST EQUIPMENT



S1059A TEST SET



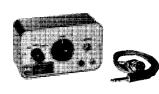
P-7208 for P31 Series units P-7208-A for P21 Series units RF DUMMY LOAD



S1063A DC MULTIMETER



S1051B TRANSISTORIZED AC VOLTMETER



TEK-1A TRANSISTORIZED TONE GENERATOR



T1034C SIGNAL GENERATOR



T1015A GENERAL PURPOSE OSCILLOSCOPE



T1014B PRECISION WIDE BAND OSCILLOSCOPE



NLN6252A TUNING TOOL



NLN6145A for P21 Series units NLD6060A for P31 Series units DUMMY LOAD ANTENNA

Place the voltmeter ground lead on a convenient ground and measure the voltage at the transmitter A- input while the transmitter is keyed. The measured loaded voltage should be not less then 11 volts for either the dry or nickel-cadmium batteries. Even though the transmitter may operate at this lower voltage, its operation would be marginal and for only a short additional period of time. The recommended procedure is to replace, or recharge, the batteries if the voltage is below 11 volts under load. Refer to the BATTERY REPLACEMENT AND CHARGING section of this manual for additional information.

NOTE

Only the nickel-cadmium batteries are rechargeable.

b. Check Overall Transmitter Operation

If the battery voltage is sufficient, check the overall performance of the transmitter. A good overall check of the transmitter is the r-f power output measurement. This one check indicates the proper operation of all the transmitter stages (oscillator, frequency multipliers, drivers and final amplifier) with the exception of the modulator and audio circuitry. A P31 series transmitter, when properly tuned and operating at 13.5 v d-c, will produce 5.0 w r-f output into a 50-ohm load. A P21 series transmitter, when properly tuned and operating at 14.0 v d-c, will produce 1.4 w r-f output into a 50-ohm load. It may be necessary to retune the output circuits slightly to match the 50-ohm load. This measurement should be made using a 50-ohm wattmeter connected to one end of the 50-ohm test cable with the other end connected to the antenna receptacle.

For further details, refer to the Transmitter Alignment Procedure. If the power output is less than indicated in the chart, further checking is required. Refer to paragraph 5. TRANSMITTER SERVICE NOTES.

c. Check Overall Receiver Operation

(1) 20 DB Quieting Sensitivity Check

A good overall check of the receiver operation is the 20 db quieting sensitivity measurement. This check will indicate that the receiver has sufficient gain and that all the included circuitry is working properly. The quieting signal is that r-f signal input necessary to reduce the audio output at the speaker by 20 decibels. The measurement should be made in the absence of extraneous signals. Since the receiver squelch

circuitry reduces the noise at the speaker, the squelch control should be set for maximum noise while making this measurement.

The actual measurement is made by observing the noise voltage at the microphone connector on an a-c voltmeter with no r-f signal received at the antenna.

NOTE

On handset models not incorporating a speaker, a 120-ohm resistor must be connected across the a-c voltmeter terminals.

Sufficient carrier signal from a recommended signal generator is then introduced via the antenna receptacle to reduce the noise output voltage to 1/10 of the previous reading. If all circuitry is operating properly, the quieting signal should be 0.35 microvolts or less. Refer to the Alignment Procedure.

(2) Squelch Check

With no r-f input signal, set the squelch control until the speaker noise just cuts out (threshold squelch). Sufficient carrier signal from a recommended signal generator is then introduced until speaker noise is just heard. The signal level at which the squelch begins to open should be less than one-half the 20 db quieting sensitivity voltage measured in subparagraph (1).

(3) Audio Check

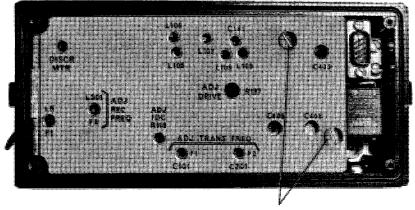
The last check to be made is the audio check. This procedure will test the audio circuits exclusive of the squelch circuitry. Refer to the AUDIO AMPLIFIER MEASUREMENTS CHART, which appears later in this manual, for typical measurements and procedures.

3. DISASSEMBLY PROCEDURE (Refer to Fig. 1-4)

To gain access to the transmitter and receiver printed circuit boards, proceed as follows:

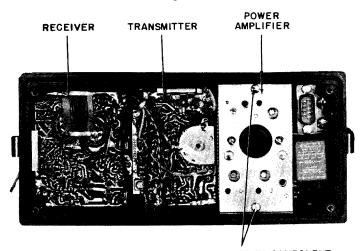
- a. Remove the battery compartment as described in the BATTERY REPLACEMENT AND CHARGING SECTION.
- b. Turn the radiophone upside down and loosen the two captive cover screws.
- c. Lift the radio compartment cover up.

- d. The transmitter and receiver printed circuit boards are now accessible. They may be lifted up and out for access to the component side.
- e. Access to the power amplifier (P31 series only) is accomplished by loosening two additional captive mounting screws.



TO GAIN ACCESS TO PLATED SIDE OF CHASSIS, REMOVE SCREWS.

Figure 2.



TO GAIN ACCESS TO COMPONENT SIDE OF CHASSIS, REMOVE SCREWS.

Figure 3.

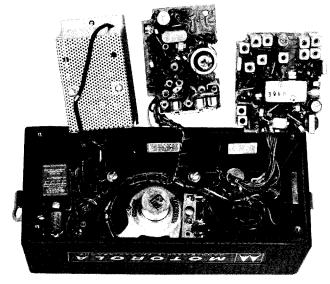


Figure 4.

NOTE

To aid circuit tracing, the components side of the circuit board is screened in the pattern of the etched circuitry. This paint does not conduct and has no electrical function.

4. RECEIVER STAGE ANALYSIS

The information contained in the following paragraphs will aid the serviceman in localizing the trouble to a particular stage.

a. Test Points

The test points on the printed circuitry are color coded for easy location. The locations of these test points may be seen on the alignment chart, the schematic diagram, and the wiring diagrams at the back of this manual.

b. Stage Measurements Charts

In addition to the 20 db quieting sensitivity measurement, all stage gain measurements can be checked against those shown in the following RF AND IF STAGE MEASUREMENTS CHART and AUDIO AMPLIFIER MEASUREMENTS CHART.

RF AND IF STAGE MEASUREMENTS CHART

NOTES

- 1. Output readings taken with a Motorola Transistorized AC Voltmeter, or equivalent.
- 2. The carrier frequency is injected at the antenna receptacle using an adapter cable coupled to a Motorola Model T1034C Signal Generator, or equivalent.
- 3. The 1st i-f signal is injected at the points indicated in the chart using a 50 ohm coaxial cable and a series connected .02 uf capacitor.
- 4. All readings taken with -14.0 volts d-c input.

	~			
FREQUENCY	UV INPUT	PROCEDURE	OUTPUT AT	READING (NOTE 1)
-	Noise		Base of Q8 (M1)	-55 dbm (0.0014 v)
-	Noise	-	Base of Q10 (M2)	-5 dbm (0.44 v)
_	Noise	-	Base of Q11 (M3)	-10 dbm (0.245 v)
-	Noise	(Short collector of Q1 to collector coil ground with .002 uf capacitor)	Base of Q8 (M1)	-59 dbm (0.0009 v)
-	Noise	(Short collector of Q3 to ground with .02 uf capacitor)	Base of Q8 (M1)	-70 dbm (0.00025 v)
Carrier	3	Connect input to external antenna connector	Base of Q8 (M1)	-30 dbm (0.025 v)
Carrier	3	Connect input to exter- nal antenna connector	Input to second section of 455 kc filter	-25 dbm (0.045 v)
Carrier	20	Connect input to exter- nal antenna connector	Output of 1st section of 455 kc filter	-50 dbm (0.0025 v)
5.7 mc	3	Connect input to top of T3 (primary)	Base of Q8 (M1)	-40 dbm (0.0077 v)
5.7 mc	10,000	Connect input to top of T5 (primary)	Base of Q8 (M1)	-30 dbm (0.025 v)

AUDIO AMPLIFIER MEASUREMENTS CHART

NOTES

- 1. Remove the GRN-RED lead from test point M4.
- Connect an audio oscillator capable of generating 1000 cps, to this GRN-RED lead with a 47K ohm resistor in series.
- Set the frequency and voltage according to the chart below. The input voltage is measured at the junction of the 47K ohm resistor and GRN-RED lead.
- 4. The output readings are referenced to ground unless otherwise indicated and are taken with a Motorola transistorized a-c voltmeter, or equivalent.
- 5. All measurements made with -14.0 volts d-c input.

FREQUENCY	VOLTS INPUT	INPUT TO	OUTPUT AT	READING	REMARKS
			Base of Q13	-41 dbm (0.007 v)	
			Collector of Q13	-9 dbm (0.28 v)	Volume control set at maximum
			Base of Q14	-21 dbm (0.07 v)	
1000 cps	. 02	GRN-RED lead (top of volume control)	Collector of Q14	+17 dbm (5.6 v)	Volume control set at maximum. Spkr-mic & Spkr-handset models
	(-32 dbm)		Bases of Q15 and Q16	+17 dbm (5.6 v)	only
				Emitters of Q15 and Q16	+16 dbm (5.0 v)
	Collector of Q14 +10 dbm (2.4 v)		+10 dbm (2.4 v)	Handset models only. Volume control set at	
			Secondary of transformer (T3)	-2 dbm (0.6 v)	maximum. A 120 ohm resistor connected from pin 4 to pin 1 of the mic receptacle.

5. TRANSMITTER SERVICE NOTES

The following information will aid the serviceman in troubleshooting the radiophone transmitter.

CAUTION

Do not key transmitter unless antenna, dummy load or equivalent is connected to the antenna receptacle.

a. Metering Points

The test points on the printed circuit board are supplied for ease in checking. These points are indicated on the schematic diagram, wiring diagrams, and the photograph on the Alignment

Procedure. The chart on the Alignment Procedure provides nominal voltage readings corresponding to these test points for a fully tuned transmitter with -14 volts d-c input.

b. DC Voltage Measurements

If the r-f power output is lower than normal for a fully tuned transmitter, the d-c voltages on the printed circuit board should be checked. These voltages should all be referenced to ground.

CAUTION

When checking a transistor, either in or out of the circuit, do not use an ohmmeter having more than 1.5 volts d-c appearing across the test leads.

The transistor is a dependable component and is not subjected to replacement as frequently as tubes. Therefore, the serviceman is cautioned not to replace transistors before a thorough check is made. The transistor terminal voltages should be checked first. If these voltages are not reasonably close to those specified, the associated components should be checked. A low impedance meter should not be used for measurement. If all d-c voltages are correct, the signal should be traced through the circuit to show any possibility of breaks in the signal path.

c. RF Signal Tracing

An r-f probe attachment for a d-c multimeter may be used to good advantage in checking the radiophone transmitter. The presence of r-f can be checked throughout the r-f circuitry for continuity of signal path. This would include the oscillator, modulator, frequency multipliers, and the driver and final amplifier. Following the heavy signal flow line through the r-f stages, as indicated on the schematic diagram, is recommended.

d. Frequency Multipliers

Transistor frequency multipliers, or class B amplifiers in general, do not require forward biasing. Without signal drive, a zero-biased, class B frequency multiplier stage will not draw any emitter current. With drive present, the transistor will draw current and this current is monitored best by measuring the d-c voltage developed across the emitter resistor. In the transmitter, these checks are made using test points M1 and M2. The 1st doubler stage Q103 operates at a very low signal level. Therefore, a small amount of forward bias is supplied to increase the gain of this stage.

e. Driver and Final Amplifiers

When tuning up the driver, the intermediate power amplifiers and the final amplifiers, it may be necessary to retune previously tuned circuits. This includes coils L107, L108, L109 and capacitor C141, (all models) C403, C406 and C408 (P31 series only). All these components interact to some extent. By using care intuning these stages, rated power output will be obtained with minimum current drain.

f. Audio Circuits

If the transmitter does not modulate properly, the audio circuits should be checked to make sure that the audio modulating voltage is reaching the modulator. The audio circuit is a transistorized version of the Motorola audio and IDC circuit. External audio test signals can be coupled into the amplifier-clipper stage, Q110, through a 0.1 microfarad capacitor. In this manner, the audio circuitry can be signal traced.

The IDC control is a printed circuit potentiometer. Care should be taken when setting this control for the proper deivation.

CAUTION

Do not use a sharp metallic tool to adjust the IDC control. This may result in damage to the carbon track which could alter the resistance of the control.

6. REPAIR

The information contained in the following paragraphs will aid the serviceman in repairing the "Handie-Talkie" FM radiophone.

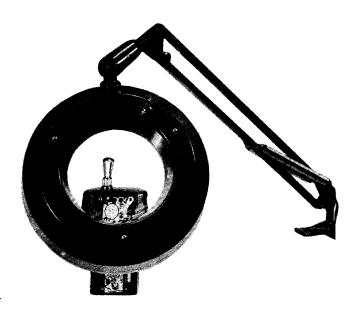
a. Construction

The various stages of the receiver and transmitter are built on printed circuit boards. The power amplifier is built on a standard metal chassis. These printed circuit boards and chassis mount and interconnect the components which comprise the radiophone. The boards may be easily removed from the housing for servicing. Refer to the paragraph on disassembly procedure. Components may be located by referring to the wiring diagrams and the parts location details at the back of this manual.

Do not apply the soldering iron repeatedly to the same spot in the printed circuit board as this will break down the plating. If a break exists in a printed circuit, it can be repaired by the addition of a jumper across the break. If a printed circuit should be damaged, refer to the TEK-4 Printed Circuit Repair Kit instruction manual for information on printed circuit repair practices.

b. Servicing Aids

Motorola has available several items which can be used to aid in parts replacement and repair of the printed circuit board.



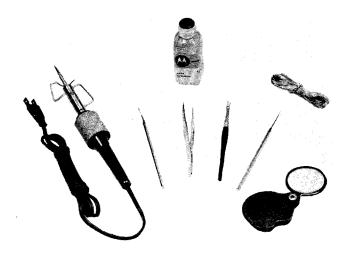
TEKA-12 MAGNIFYING GLASS & BUILT-IN LIGHT SOURCE

(1) Magnifying Glass

Miniaturization requires precision work both in manufacture and in field service. Adequate concentration of light and magnification are aids to service by enabling a visual examination of connections and miniature parts. The TEKA-27 or TEKA-12 Magnifying Glass & Built-In Light Sources are most satisfactory devices for use in servicing miniature equipment in the shop. This large illuminated magnifying glass makes it easy to see any portion of the small components found on the printed circuit board. Refer to the accompanying illustration.

(2) Printed Circuit Repair Kit

The TEK-4A Printed Circuit Repair Kit supplies most of the basic tools needed for work



TEK-4A PRINTED CIRCUIT
REPAIR KIT

on printed circuitry and miniature components. Refer to the accompanying illustration.

NOTE

The needle point tiplet for the soldering element may be filed to an even finer point to avoid damaging the closely knit printed circuitry.

c. Alignment Notes

If any element in a tunable stage is replaced or repaired, the associated stage should be aligned along with the stage that precedes and follows it. The alignment information is contained on the Alignment Procedure sheet toward the back of this manual. Refer to the Alignment Procedure sheet when a crystal is replaced or a new carrier frequency is required.

TEST EQUIPMENT REQUIRED FOR TRANSMITTER ALIGNMENT

- Motorola NLN6252A Alignment Tool (supplied) or equivalent.
- 2. Motorola DC Multimeter with r-f probe or equivalent.
- 3. RF Wattmeter (50-ohm impedance).
- 4. Motorola TEK-23 Power Supply or equivalent.
- 5. Motorola Model T1100A Series FM Station Monitor or equivalent.
- 6. Motorola TEK-1A Transistorized Tone Oscillator or equivalent.
- 7. Motorola T1014B Precision Wide Band Oscilloscope or Model T1015A General Purpose Oscilloscope or equivalent.

NOMINAL VOLTAGE READINGS

NOTE

The following readings apply to a fully tuned transmitter with -13.5 v d-c input.

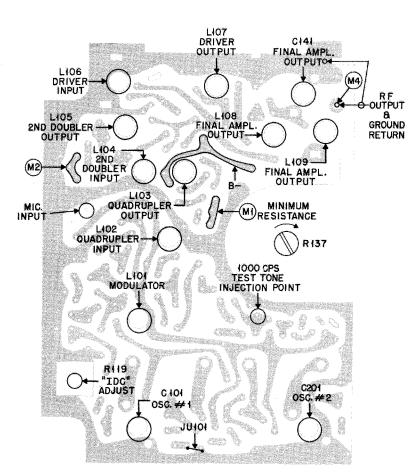
METER POINT	M1 BRN	M2 RED
READING (V DC)	-1.7	-2.5

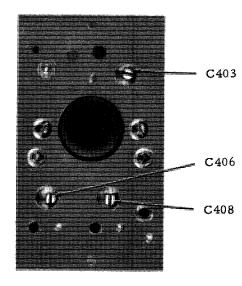
PRELIMINARY SET-UP FOR TRANSMITTER ALIGNMENT

- 1. Remove the cover from the radio section of the unit.
- 2. When aligning a two-frequency unit, align on the primary or higher of the two frequencies.
- 3. The d-c multimeter ground lead should be connected to a convenient ground.
- 4. For complete alignment, the battery should be removed and a 15 volt d-c power supply and ammeter connected to the battery plug. All tuning slugs except L101 should be unscrewed so they protrude 1/8 inch above the printed circuit board.
- 5. Remove the antenna by unscrewing it from the receptacle. Connect a wattmeter to the external antenna receptacle.
- 6. Tuning capacitors on power amplifier should be set as shown in the photograph.
- 7. The drive adjustment, R137, should be set for minimum resistance (fully clockwise).

FREQUENCY CALCULATIONS

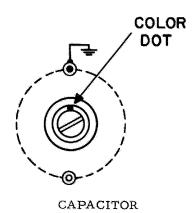
 $f_o = \frac{f_c}{16}$ where: $f_o = oscillator frequency and <math>f_c = carrier frequency$





POWER AMPLIFIER

METERING AND ALIGNMENT POINTS



DETAIL

NOTETo adjust ©141, C101 or C201 for maximum capacity, turn screwdriver slott so color dot is nearest the grounded side of the capacitor housing.

ALIGNMENT PROCEDURE

			ALIGHMENT FI	MOCEPORE
STEP	TEST EQUIPMENT	METER POINT & COLOR	ADJUSTMENT	PROCEDURE
1	w :	** ** ** **		Key the transmitter and adjust the power supply voltage to -12 volts d-c.
2	DC multimeter	M1(BRN)	L102 1st Doubler	Adjust L102 for a maximum reading. This circuit is tuned to twice the crystal frequency.
3	DC multimeter	M2 (RED)	L103 L104 Quadrupler	QUADRUPLER: NOTE - When aligning the Quadrupler coil L103 in the 30-42 mc and the 42-54 mc band, it is possible to tune the coil to the incorrect harmonic at the upper and lower ends of the frequency range. Place the multimeter probe on meter point M2 At 30 mc in the 30-42 mc (M) band, or 42 mc in the 42-54 mc (H) band tune to 4th peak At 33 mc in the 30-42 mc (M) band, or 45 mc in the 42-54 mc (H) band tune to 3rd peak At 36 mc in the 30-42 mc (M) band, or 48 mc in the 42-54 mc (H) band tune to 2nd peak At 42 mc in the 30-42 mc (M) band, or 54 mc in the 42-54 mc (H) band tune to 1st peak At a frequency between those given above, tur to the peak(s) for the next higher frequency, fexample: at 50 mc tune to 1st real peak. (If no peaks are obtained, turn the slug of L104 into the coil about 1/8".) Adjust L104 for a maximum reading.
4	DC multimeter	M2 (RED)	L105 2nd Doubler	Adjust Li05 for a minimum reading. This circuit is tuned to 16 times the crystal frequency.
5	RF probe	M4	C141, L 105, L106	Adjust C141 for maximum output. (If no reading can be obtained, tune L106 for a max mum reading and readjust C141.) Peak L105 and L106 for a maximum reading.
6	RF probe	M4	L107, L108, L109	Adjust L107, L108, L109 for a maximum reading. (If L108 and L109 cannot be adjuste for such a reading turn the slugs of each coil into the form about 1/8", and readjust them.)
7	RF wattmeter		C406, C408, C403	Adjust C406, C408 and C403, in that order fo maximum power output.
8	RF wattmeter	<u></u>	L106, L107, L108, C141, C403, C406, C408	Replace the cover plate and repeak L106, L107, L108, C141, C403, C406 and C408 for maximum power output

ALIGNMENT PROCEDURE (CONT'D)

STEP	TEST EQUIPMENT	METER POINT & COLOR	ADJUSTMENT	PROCEDURE
9	RF wattmeter		L108, L109, C403, C406, C408	Increase the power supply voltage to -13.5 volts d-c and adjust L108, L109, C403, C406, and C408 for 5.0 watts output while minimizing current. NOTE: For optimum performance, adjust C408 for proper current while peaking C406 for power output. Once proper power and current levels are reached, do not repeak C408. DO NOT EXCEED 900 MA TOTAL CURRENT DRAIN INCLUDING RELAY CURRENT.
10	RF wattmeter	Thing lake take their laye	L108, L109, C403, C406, C408, R137	If current drain exceeds 900 ma total, decrease current by rotating drive adjusting resistor, R137, and repeating STEP 9.
11				OSCILLATOR: C101 is preset to the assigned frequency at the factory. Do not readjust unless the crystal is replaced or the setting was accidentally changed. If it is necessary to readjust C101, set up the frequency monitor for frequency measurement and replace the cover plate on the unit and tighten securely. Adjust C101 for zero reading on the monitor CARRIER FREQUENCY meter. IMPORTANT - When the cover plate is attached, the frequency may shift; therefore, always set the carrier frequency on the frequency monitor with the cover plate attached. TWO-FREQUENCY TRANSMITTERS ONLY OSCILLATOR NO. 2: Use the same procedure as above, substituting C201 for C101.
12		Mark - Sales -	L101	DEVIATION CHECK: See "IDC" ADJUSTMENT PROCEDURE on the reverse side of this chart.
13	W. W. W. W.	AND SAN WAS SAN	****	ANTENNA PEAKING: Completely assemble unit. Connect loading coil and antenna to antenna receptacle and turn the core in the antenna loading coil clockwise until it is stopped. Slowly adjust the core in the loading coil counterclockwise until a peak is reached on the field strength meter.

Model NTB6060 Series Transmitter Alignment Procedure Motorola No. EPD-8878-B

"IDC" ADJUSTMENT (PREFERRED METHOD USING OSCILLOSCOPE)

1. INTRODUCTION

Accuracy of test equipment is of prime importance to any user of radio communications equipment; but of equal importance is a knowledge of the characteristics of the measuring equipment under various conditions. The Motorola Model T1100A Series FM Station Monitor is the leader in the field with respect to sensitivity, accuracy under conditions of variation in r-f signal level lime voltage, and other environmental conditions. In common with most other meters, however, they have the characteristic of responding differently to different wave shapes. Therefore, the use of most present-day deviation meters can lead to confusion and errors in deviation setting, if the pitfalls are unknown or disregarded.

The "ideal" deviation indicator would be one which would respond instantaneously to the peak value of the modulation deviation, regardless of waveform. The only device which meetts all these requirements is an oscilloscope. It responds instantaneously, and it shows the peak value of any waveform, no matter how complex. Properly calibrated, an oscilloscope is the most accurate and reliable means for measuring and setting transmitter deviation.

The oscilloscope must be used in conjunction with a receiver which has a stable disscriminator characteristic, since the oscilloscope displays the demodulated signal. In addition to the oscilloscope a receiver and a means to accurately calibrate the system is required. The Motorola monitors fill these requirements, since they provide both a sensitive receiver with the proper discriminator characteristic and a reliable means of calibrating the oscilloscope. They have convenient terminals on the front panel for connection of the oscilloscope. Furthermore, the Motorola FM Sitation Monitor is provided with two modulation meter scales, 0-20 kc for wide-band systems, and 0-10 kc for splitchannel systems.

Split-channel conversion kits are available for modification of older models, so that they too are provided with convenient oscilloscope terminals and can be more accurate measurement devices for such systems.

2. TEST EQUIPMENT REQUIRED

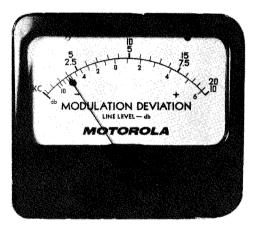
- a. Motorola T1100A Series FM Station Monitor (or equivalent)
- b. Motorola Transistorized AC Voltmeter (or equivalent)
- c. Motorola Model TEK-lA Transistorized Tone Generator, 400 & 1000 cps (or equivalent)
- d. Motorola Model T1015A General Purpose Oscilloscope, Motorola Model T1014B Precision Wide Band Oscilloscope (or equivalent)
- e. Motorola Model S1056A-9A or TU546 Series Portable Test Set (or equivalent) for "Private-Line" models only

3. OSCILLOSCOPE CALIBRATION

The first step in the measurement of transmitter deviation is to calibrate the oscilloscope. This can be done by using the transmitter which is to be measured. A "Private-Line" unit can be used for this purpose if the tone oscillator is disabled by removal of the "Vibrasender-sponder" unit. This is necessary since the "Private-Line" tone contributes to the maximum deviation.

25-54 MC "Handie-Talkie" R FM Radiophone IDC Adjustment Procedure Motorola No. EPD-9994-O

- a. The oscilloscope should be connected to the monitor oscilloscope terminals, and the monitor controls should be set up in accordance with the monitor instruction manuls.
- b. Turn the IDC control on the transmitter chassis to the full clockwise position.
- c. Feed a 1000 cps test tone into pin 2 of the microphone input jack (base of the amplifier-clipper stage Q110 in the IDC circuit). A 0.33 uf capacitor should be placed in series with the tone generator output. Modulate the transmitter with this tone so adjusted that the deviation as read on the FM monitor deviation meter is 2 kc (6 kc in a wide-band system). An audio oscillator must be used for generation of this tone, since a sinusoidal waveform is very important. The Motorola TEK-1A Transistorized Tone Generator is excellent for this purpose.
- d. Adjust the vertical gain of the oscilloscope so that the total recovered audio pattern occupies some convenient height, e.g., four small squares. (12 squares in a wide-band system.) The splitchannel indication is shown in figure 1.



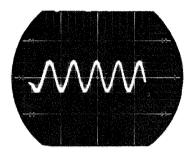


Figure 1.
Oscilloscope Calibration for
Split-Channel Transmitter

Having calibrated the oscilloscope, there is no further need for the modulation deviation meter and its reading should be ignored from this point on. It has already performed its important function of calibrating the oscilloscope.

With the oscilloscope calibrated as indicated, a recovered signal which occupies 10 squares (peak-to-peak) is equivalent to ±5 kc deviation. For wide-band systems, a recovered signal occupying 30 squares (peak-to-peak) is equivalent to ±15 kc deviation.

4. MEASUREMENT AND SETTING OF TRANSMITTER DEVIATION

a. Models for Carrier Squelch Application

Once the oscilloscope has been calibrated the transmitter deviation can be properly adjusted by the following method:

(1) Adjust the 1000 cps input signal to 1.5 volt. This should drive the IDC circuit into full clip See Figure 2.

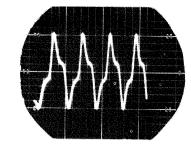


Figure 2.

5 KC Peak Deviation as seen on the Oscilloscope
(NOTE: Waveform is clipped fully)

- (2) With this input signal level adjust the IDC control on the transmitter to provide a peak-to-peak recovered signal on the oscilloscope of 10 squares, which is equivalent to ±5 kc deviation as shown in figure 2. A wide-band system should be adjusted for 30 squares (±15 kc). If the waveform under the above conditions does not resemble the waveform shown in figure 2 adjust L101 until a symmetrical waveform is obtained. Re-adjust the IDC control.
- (3) Reduce 1000 cps input to 0.3 volt. Essentially full deviation should still be observed on the oscilloscope. Less than full deviation may indicate a weak audio transistor or other lack of audio gain.

b. "Private-Line" Models

- (1) Remove "Vibrasender-sponder" resonant reed from its socket.
- (2) Adjust the 1000 cps input signal to 1.5 volts. This should drive the IDC circuit into full clip. See Figure 2.
- (3) With this input signal level adjust the IDC control on the transmitter to provide a peak-to-peak recovered signal on the oscilloscope of 10 squares, which is equivalent to ±5 kc deviation as shown in figure 2. If the waveform under the above conditions does not resemble the waveform shown in figure 2, adjust L101 until a symmetrical waveform is obtained. Re-adjust the IDC control.
- (4) Reduce 1000 cps input to 0.3 volt. Essentially full deviation should still be observed on the oscilloscope. Less than full deviation may indicate a weak audio transistor or other lack of audio gain.
 - (5) Remove the 1000 cps tone signal. Insert the "Vibrasender-sponder" unit in its socket.
- (6) Check the "Private-Line" tone deviation. This may be read directly from the oscilloscope by pressing the transmitter on switch on the test set. The tone deviation should be 0.5 to 1 kc.

NO.

If the tone deviation is less than 0.5 kc with jumper JU1 on position 2 (see circuit board diagram), move the jumper to position 3. If the deviation is greater than 1.0 kc, move the jumper to position 1M for the 30-42 mc band or 1H for the 42-54 mc band. Always choose the jumper position which produces a tone deviation between 0.5 and 1.0 kc.

Due to a slight increase in discriminator response at the lower frequencies, the oscilloscope will read high, thus, an indication of 1.4 to 2.8 squares (peak-to-peak) is equivalent to 0.5 to 1 kc. This slight variation is only important when checking tone deviation. When setting maximum transmitter deviation as described in the following paragraphs, it may be ignored.

- (7) Apply a 1000 cps test tone to pin 2 of the microphone input jack (base of the amplifier-clipper stage Q110). Place a 0.33 uf capacitor in series with the tone generator output.
- (8) Adjust the 1000 cps input signal level for 1 volt and note the resultant combined deviation of the 1000 cps modulation and tone signal modulation on the oscilloscope.
- (9) The IDC control on the transmitter should be adjusted to provide a peak-to-peak combined signal of 10 squares, equivalent to full 5 kc as shown in figure 3.

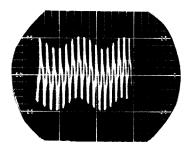


Figure 3.
5 KC Peak Deviation for Combined PL Tone and 1000 CPS Modulation

(10) Reduce the 1000 cps input to 0.35 volt. Essentially full combined 1000 cps tone and "Private-Line" tone deviation should still be observed on the oscilloscope. Less than full combined deviation may indicate a defective transistor or other lack of audio gain.

5. EMERGENCY MEASUREMENT OF DEVIATION

If an audio oscillator is not available, a loud sustained whistle of approximately 1000 cycles can be used for a rough measurement of deviation. If this rough check indicates the need for resetting deviation, do so only under controlled conditions, using a 1000 cps tone as previously indicated. The calibration of the oscilloscope should always be performed with a steady controlled signal. Do not attempt to calibrate the oscilloscope with a sustained whistle as waveform distortion will prevent an accurate calibration.

6. OTHER MEANS FOR MEASUREMENT OF DEVIATION

Another accurate means of measuring transmitter deviation is to use the Motorola T1020A Portable Frequency and Deviation Meter. This unit, properly used, permits the accurate measurement and setting of transmitter deviation from a peak-reading meter which is unaffected by waveform. An oscilloscope is not required with this instrument. With this device, the transmitter deviation can be measured accurately even with voice modulation.

7. MICROPHONE LEVELS

If the modulation level in the system still appears to be too low after setting deviation as indicated above, check the microphone and audio amplifier.

The foregoing procedure will insure that the transmitter will comply with FCC requirements for maximum deviation.

The importance of the correct deviation setting can not be overemphasized. Optimum system performance demands accurate deviation setting, both from the standpoint that over deviation will interfere with the user on the adjacent channel, and underdeviation may reduce system range.

TEST EQUIPMENT REQUIRED FOR TRANSMITTER ALIGNMENT

- 1. Motorola NLN6252A Alignment Tool (supplied) or equivalent.
- 2. Motorola DC Multimeter with r-f probe or equivalent.
- 3. RF Wattmeter (50-ohm impedance).
- 4. Motorola TEK-23 Power Supply or equivalent.
- 5. Motorola Model T1100A Series FM Station Monitor or equivalent.
- 6. Motorola TEK-1A Transistorized Tone Oscillator or equivalent.
- Motorola T1014B Precision Wide Band Oscilloscope or Model T1015A General Purpose Oscilloscope or equivalent.

NOMINAL VOLTAGE READINGS

NOTE

The following readings apply to a fully tuned transmitter with -14 v d-c input.

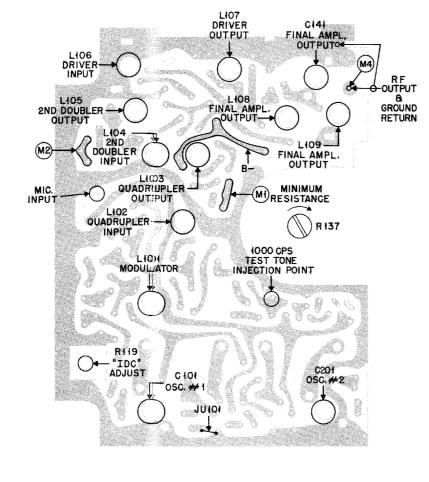
METER POINT	MI BRN	M2 RED
READING (V DC)	-1.7	-2.5

PRELIMINARY SET-UP FOR TRANSMITTER ALIGNMENT

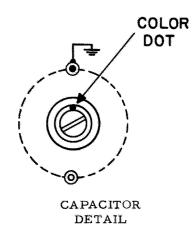
- 1. Remove the cover from the radio section of the unit.
- 2. When aligning a two-frequency unit, align on the primary or higher of the two frequencies.
- 3. The d-c multimeter ground lead should be connected to a convenient ground.
- 4. For complete alignment, the battery should be removed and a 15 volt d-c power supply and ammeter connected to the battery plug. All tuning slugs except L101 should be unscrewed so they protrude 1/8 inch above the printed circuit board.
- 5. Remove the antenna by unscrewing it from the receptacle. Connect a wattmeter to the external antenna receptacle.

FREQUENCY CALCULATIONS

$$f_o = \frac{f_c}{16}$$
 where: $f_o = \text{oscillator frequency and } f_c = \text{carrier frequency}$



METERING AND ALIGNMENT POINTS



NOTE

To adjust C141, C101 or C201 for maximum capacity, turn screw-driver slot so color dot is nearest the grounded side of the capacitor housing.

ALIGNMENT PROCEDURE

STEP	TEST EQUIPMENT	METER POINT & COLOR	ADJUSTMENT	PROCEDURE	
1				Key the transmitter and adjust the power supply voltage to -12 volts d-c.	
2	DC multimeter	M1 (BRN)	L102 1st Doubler	Adjust L102 for a maximum reading. This circuit is tuned to twice the crystal frequency.	
3	DC multimeter	M2 (RED)	L103 L104 Quadrupler	QUADRUPLER: NOTE - When aligning the Quadrupler coil L103 in the 30-42 mc and the 42-54 mc band, it is possible to tune the coil to the incorrect harmonic at the upper and lower ends of the frequency range. Place the multimeter probe on meter point M2. At 30 mc in the 30-42 mc (M) band, or 42 mc in the 42-54 mc (H) band tune to 4th peak At 33 mc in the 30-42 mc (M) band, or 45 mc in the 42-54 mc (H) band tune to 3rd peak At 36 mc in the 30-42 mc (M) band, or 48 mc in the 42-54 mc (H) band tune to 2nd peak At 42 mc in the 30-42 mc (M) band, or 54 mc in the 42-54 mc (H) band tune to 1st peak At a frequency between those given above, tune to the peak(s) for the next higher frequency, for example; at 50 mc tune to 1st real peak. (If no peaks are obtained, turn the slug of L104 into the coil about 1/8".) Adjust L104 for a maximum reading.	
4	DC multimeter	M2 (RED)	L105 2nd Doubler	Adjust L105 for a minimum reading. This circuit is tuned to 16 times the crystal frequency.	
5	RF wattmeter	407. Mil. Mil. Mil.	C141, L105, L106	Adjust C141 for maximum output. (If no reading can be obtained, tune L106 for a maximum reading and readjust C141.) Peak L105 and L106 for a maximum reading.	
6	RF wattmeter	•••	L107, L108, L109	Adjust L107, L108, L109 for a maximum reading. (If L108 and L109 cannot be adjusted for such a reading turn the slugs of each coil into the form about 1/8", and readjust them.)	
7		** ** ** **	L108, L109	Increase the power supply voltage to -14 v d-c and adjust L108 and L109 for a maximum reading.	
8			** ** **	Replace the cover plate and repeat Step 6.	
9				ANTENNA PEAKING: Completely assemble unit. Connect loading coil and antenna to antenna receptacle and turn the core in the antenna loading coil clockwise until it is stopped. Slowly adjust the core in the loading coil counterclockwise until a peak is reached on the field strength meter.	
10				OSCILLATOR: C101 is preset to the assigned frequency at the factory. Do not readjust unless the crystal is replaced or the setting was accidentally changed. If it is necessary to readjust C101, set up the frequency monitor for frequency measurement and replace the cover plate on the unit and tighten securely. Adjust C101 for zero reading on the monitor CARRIER FREQUENCY meter. Replace the back cover on the transmitter unit and tighten securely. IMPORIANT - When the cover plate is attached, the frequency may shift; therefore, always set the carrier frequency on the frequency monitor with the cover plate attached. TWO-FREQUENCY TRANSMITTERS ONLY OSCILLATOR No. 2: Use the same procedure as above, substituting G201 for C101.	
11	المحاصرة		L101	DEVIATION CHECK: See "IDC" ADJUSTMENT PROCEDURE on the reverse side of this chart.	

Model NTB6050 Series Transmitter Alignment Procedure Motorola No. EPD-8976-A

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"IDC" ADJUSTMENT (PREFERRED METHOD USING OSCILLOSCOPE)

1. INTRODUCTION

Accuracy of test equipment is of prime importance to any user of radio communications equipment; but of equal importance is a knowledge of the characteristics of the measuring equipment under various conditions. The Motorola Model T1100A Series FM Station Monitor is the leader in the field with respect to sensitivity, accuracy under conditions of variation in r-f signal level lime voltage, and other environmental conditions. In common with most other meters, however, they have the characteristic of responding differently to different wave shapes. Therefore, the use of most present-day deviation meters can lead to confusion and errors in deviation setting, if the pitfalls are unknown or disregarded.

The "ideal" deviation indicator would be one which would respond instantaneously to the peak value of the modulation deviation, regardless of waveform. The only device which meets all these requirements is an oscilloscope. It responds instantaneously, and it shows the peak value of any waveform, no matter how complex. Properly calibrated, an oscilloscope is the most accurate and reliable means for measuring and setting transmitter deviation.

The oscilloscope must be used in conjunction with a receiver which has a stable discriminator characteristic, since the oscilloscope displays the demodulated signal. In addition to the oscilloscope a receiver and a means to accurately calibrate the system is required. The Motorola monitors fill these requirements, since they provide both a sensitive receiver with the proper discriminator characteristic and a reliable means of calibrating the oscilloscope. They have convenient terminals on the front panel for connection of the oscilloscope. Furthermore, the Motorola FM Station Monitor is provided with two modulation meter scales, 0-20 kc for wide-band systems, and 0-10 kc for splitchannel systems.

Split-channel conversion kits are available for modification of older models, so that they too are provided with convenient oscilloscope terminals and can be more accurate measurement devices for such systems.

2. TEST EQUIPMENT REQUIRED

- a. Motorola T1100A Series FM Station Monitor (or equivalent)
- b. Motorola Transistorized AC Voltmeter (or equivalent)
- c. Motorola Model TEK-1A Transistorized Tone Generator, 400 & 1000 cps (or equivalent)
- d. Motorola Model T1015A General Purpose Oscilloscope, Motorola Model T1014B Precision Wide Band Oscilloscope (or equivalent)
- e. Motorola Model S1056A-9A or TU546 Series Portable Test Set (or equivalent) for "Private-Line" models only

3. OSCILLOSCOPE CALIBRATION

The first step in the measurement of transmitter deviation is to calibrate the oscilloscope. This can be done by using the transmitter which is to be measured. A "Private-Line" unit can be used for this purpose if the tone oscillator is disabled by removal of the "Vibrasender-sponder" unit. This is necessary since the "Private-Line" tone contributes to the maximum deviation.

25-54 MC "Handie-Talkie" R FM Radiophone
IDC Adjustment Procedure
Motorola No. EPD-9994-O

Proceed as follows:

- a. The oscilloscope should be connected to the monitor oscilloscope terminals, and the monitor controls should be set up in accordance with the monitor instruction manuls.
- b. Turn the IDC control on the transmitter chassis to the full clockwise position.
- c. Feed a 1000 cps test tone into pin 2 of the microphone input jack (base of the amplifier-clipper stage Q110 in the IDC circuit). A 0.33 uf capacitor should be placed in series with the tone generator output. Modulate the transmitter with this tone so adjusted that the deviation as read on the FM monitor deviation meter is 2 kc (6 kc in a wide-band system). An audio oscillator must be used for generation of this tone, since a sinusoidal waveform is very important. The Motorola TEK-1A Transistorized Tone Generator is excellent for this purpose.
- d. Adjust the vertical gain of the oscilloscope so that the total recovered audio pattern occupies some convenient height, e.g., four small squares. (12 squares in a wide-band system.) The splitchannel indication is shown in figure 1.



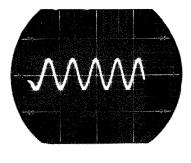


Figure 1.
Oscilloscope Calibration for Split-Channel Transmitter

Having calibrated the oscilloscope, there is no further need for the modulation deviation meter and its reading should be ignored from this point on. It has already performed its important function of calibrating the oscilloscope.

With the oscilloscope calibrated as indicated, a recovered signal which occupies 10 squares (peak-to-peak) is equivalent to ±5 kc deviation. For wide-band systems, a recovered signal occupying 30 squares (peak-to-peak) is equivalent to ±15 kc deviation.

4. MEASUREMENT AND SETTING OF TRANSMITTER DEVIATION

a. Models for Carrier Squelch Application

Once the oscilloscope has been calibrated the transmitter deviation can be properly adjusted by the following method:

(1) Adjust the 1000 cps input signal to 1.5 volt. This should drive the IDC circuit into full clip See Figure 2.

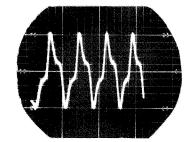


Figure 2.

5 KC Peak Deviation as seen on the Oscilloscope
(NOTE: Waveform is clipped fully)

- (2) With this input signal level adjust the IDC control on the transmitter to provide a peak-to-peak recovered signal on the oscilloscope of 10 squares, which is equivalent to ±5 kc deviation as shown in figure 2. A wide-band system should be adjusted for 30 squares (±15 kc). If the waveform under the above conditions does not resemble the waveform shown in figure 2 adjust L101 until a symmetrical waveform is obtained. Re-adjust the IDC control.
- (3) Reduce 1000 cps input to 0.3 volt. Essentially full deviation should still be observed on the oscilloscope. Less than full deviation may indicate a weak audio transistor or other lack of audio gain.

b. "Private-Line" Models

- (1) Remove "Vibrasender-sponder" resonant reed from its socket.
- (2) Adjust the 1000 cps input signal to 1.5 volts. This should drive the IDC circuit into full clip. See Figure 2.
- (3) With this input signal level adjust the IDC control on the transmitter to provide a peak-to-peak recovered signal on the oscilloscope of 10 squares, which is equivalent to ±5 kc deviation as shown in figure 2. If the waveform under the above conditions does not resemble the waveform shown in figure 2, adjust L101 until a symmetrical waveform is obtained. Re-adjust the IDC control.
- (4) Reduce 1000 cps input to 0.3 volt. Essentially full deviation should still be observed on the oscilloscope. Less than full deviation may indicate a weak audio transistor or other lack of audio gain.
 - (5) Remove the 1000 cps tone signal. Insert the "Vibrasender-sponder" unit in its socket.
- (6) Check the "Private-Line" tone deviation. This may be read directly from the oscilloscope by pressing the transmitter on switch on the test set. The tone deviation should be 0.5 to 1 kc.

NO.

If the tone deviation is less than 0.5 kc with jumper JU1 on position 2 (see circuit board diagram), move the jumper to position 3. If the deviation is greater than 1.0 kc, move the jumper to position 1M for the 30-42 mc band or 1H for the 42-54 mc band. Always choose the jumper position which produces a tone deviation between 0.5 and 1.0 kc.

Due to a slight increase in discriminator response at the lower frequencies, the oscilloscope will read high, thus, an indication of 1.4 to 2.8 squares (peak-to-peak) is equivalent to 0.5 to 1 kc. This slight variation is only important when checking tone deviation. When setting maximum transmitter deviation as described in the following paragraphs, it may be ignored.

- (7) Apply a 1000 cps test tone to pin 2 of the microphone input jack (base of the amplifier-clipper stage Q110). Place a 0.33 uf capacitor in series with the tone generator output.
- (8) Adjust the 1000 cps input signal level for 1 volt and note the resultant combined deviation of the 1000 cps modulation and tone signal modulation on the oscilloscope.
- (9) The IDC control on the transmitter should be adjusted to provide a peak-to-peak combined signal of 10 squares, equivalent to full 5 kc as shown in figure 3.

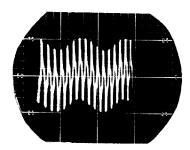


Figure 3.
5 KC Peak Deviation for Combined PL Tone and
1000 CPS Modulation

(10) Reduce the 1000 cps input to 0.35 volt. Essentially full combined 1000 cps tone and "Private-Line" tone deviation should still be observed on the oscilloscope. Less than full combined deviation may indicate a defective transistor or other lack of audio gain.

5. EMERGENCY MEASUREMENT OF DEVIATION

If an audio oscillator is not available, a loud sustained whistle of approximately 1000 cycles can be used for a rough measurement of deviation. If this rough check indicates the need for resetting deviation, do so only under controlled conditions, using a 1000 cps tone as previously indicated. The calibration of the oscilloscope should always be performed with a steady controlled signal. Do not attempt to calibrate the oscilloscope with a sustained whistle as waveform distortion will prevent an accurate calibration.

6. OTHER MEANS FOR MEASUREMENT OF DEVIATION

Another accurate means of measuring transmitter deviation is to use the Motorola T1020A Portable Frequency and Deviation Meter. This unit, properly used, permits the accurate measurement and setting of transmitter deviation from a peak-reading meter which is unaffected by waveform. An oscilloscope is not required with this instrument. With this device, the transmitter deviation can be measured accurately even with voice modulation.

7. MICROPHONE LEVELS

If the modulation level in the system still appears to be too low after setting deviation as indicated above, check the microphone and audio amplifier.

The foregoing procedure will insure that the transmitter will comply with FCC requirements for maximum deviation.

The importance of the correct deviation setting can not be overemphasized. Optimum system performance demands accurate deviation setting, both from the standpoint that over deviation will interfere with the user on the adjacent channel, and underdeviation may reduce system range.

TEST EQUIPMENT REQUIRED FOR TRANSMITTER ALIGNMENT

- Motorola NLN6252A Alignment Tool (supplied) or equivalent.
- 2. Motorola DC Multimeter with r-f probe or equivalent.
- 3. RF Wattmeter (50-ohm impedance).
- 4. Motorola TEK-23 Power Supply or equivalent.
- 5. Motorola Model T1100A Series FM Station Monitor or equivalent.
- 6. Motorola TEK-1A Transistorized Tone Oscillator or equivalent.
- 7. Motorola T1014B Precision Wide Band Oscilloscope or Model T1015A General Purpose Oscilloscope or equivalent.

NOMINAL VOLTAGE READINGS

NOTE

The following readings apply to a fully tuned transmitter with -14 v d-c input.

METER POINT	M1 BRN	M2 RED
READING (V DC)	-1.7	-2.5

PRELIMINARY SET-UP FOR TRANSMITTER ALIGNMENT

- 1. Remove the cover from the radio section of the unit.
- 2. When aligning a two-frequency unit, align on the primary or higher of the two frequencies.
- 3. The d-c multimeter ground lead should be connected to a convenient ground.
- 4. For complete alignment, the battery should be removed and a 15 volt d-c power supply and ammeter connected to the battery plug. All tuning slugs except L101 should be unscrewed so they protrude 1/8 inch above the printed circuit board.
- 5. Remove the antenna by unscrewing it from the receptacle. Connect a wattmeter to the external antenna receptacle.

FREQUENCY CALCULATIONS

$$f_0 = \frac{f_c}{16}$$
 where: $f_0 = \text{oscillator frequency and } f_c = \text{carrier frequency}$

TEST EQUIPMENT REQUIRED FOR RECEIVER ALIGNMENT

- 1. Motorola DC Multimeter with r-f probe.
- 2. Motorola Transistorized AC Voltmeter or equivalent.
- 3. Motorola T1034C Signal Generator or equivalent.
- 4. Motorola S1056A-9A or TU546 Series Test Set with 455 kc crystal or equivalent crystal-controlled oscillator.
- 5. Motorola NLN6252A Alignment Tool (supplied).

PRELIMINARY SET-UP FOR RECEIVER ALIGNMENT

- 1. Remove the cover from the radio section of the unit.
- 2. When aligning a two-frequency unit, align on the primary or higher of the two frequencies.
- 3. The d-c multimeter ground lead should be connected to a convenient ground.
- 4. For complete alignment, the battery should be removed and a 15 volt d-c power supply and ammeter connected to the battery plug. All tunning slugs should be unscrewed so they protrude 1/8 inch above the printed circuit board.
- 5. Remove the antenna by unscrewing it from the receptacle. Connect a signal generator to the antenna receptacle.

FREQUENCY CALCULATIONS

LEGEND

f_c = carrier frequency (25-54 mc)

f₀₁ = 1st oscillator crystal frequency (30.7-48.3 mc)

 $f_{02} = 2nd$ oscillator frequency

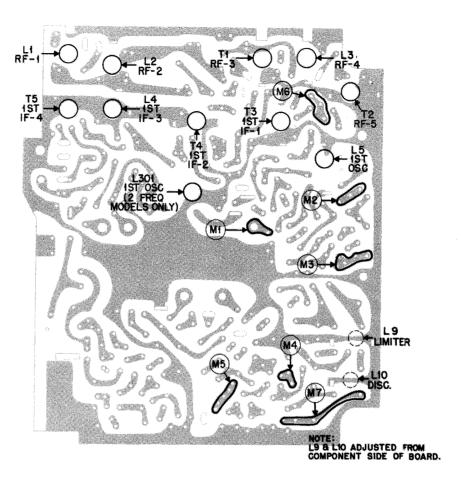
 $f_1 = 1$ st intermediate frequency (5.7 mc)

 $f_2 = 2nd$ intermediate frequency (455 kc)

$$f_{01} = f_c + f_1 ((25-42 \text{ mc}))$$

$$f_{01} = f_c - f_1 (42-54 \text{ mc})$$

f _c	f ₀₂
25,00-30.00 mc	6.155 mc
30,02-30,86 mc	5,245 mc
30.90-36.84 mc	6.155 mc
36.86-37.00 mc	5,245 mc
37.02-41.98 mc	6.155 mc
42.00-42.98 mc	6.155 mc
43.00-43.16 mc	5,245 mc
43.18-49.14 mc	6.155 mc
49.16-49.32 mmc	5,245 mc
49.34-54.00 mc	6.155 mc



METERING AND ALIGNMENT POINTS

ALIGNMENT PROCEDURE

NOT

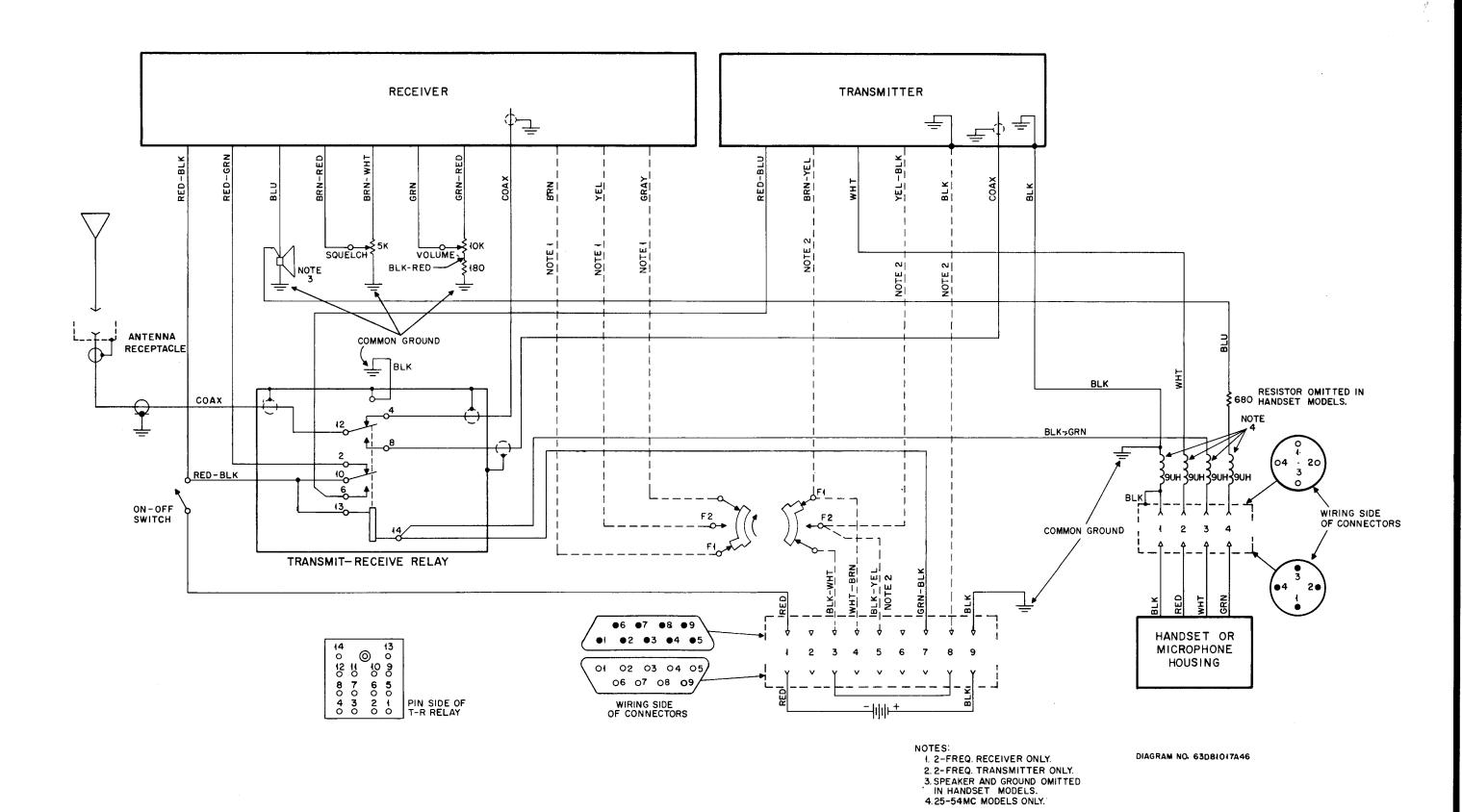
- 1. All slugs should be tuned to the peak nearest the printed circuit board end of the coil.
- 2. Turn on the radiophone and set the squelch control for maximum noise.

STEP	TEST EQUIPMENT	METER POINT & COLOR CODE	ADJUSTMENT	PROCEDURE
1	DC multimeter with r-f probe	M-6 (BLU)	L5 1st Osc	Tune L5 for max. d-c reading on the meter.
2	DC multimeter and 455 kc crystal osc	M-7 (VIO)	L9 Limiter	Couple a 455 kc signal into the 455 kc filter input terminals Tune L9 for a maximum positive d-c reading.
3	DC multimeter and 455 kc crystal osc	M-4 (YEL)	L10 Disc.	Tune L10 for a zero d-c meter reading. NOTE: As the slug is moved into the discriminator coil, the meter reading may move slowly through zero and then sharply return through zero again. Tune the slug to the latter point.
4	T1034C Signal Generator and d-c multi- meter	M-4 (YEL)	Signal Generator to carrier frequency	Connect the signal generator to the test jig. Set the attenuator for 5,000 microvolts and adjust the signal frequency for a zero d-c reading on the meter. *Do not set the frequency to the 2nd i-f image frequency.
5	T1034C Signal Generator and a-c voltmeter	M-1 (TAN)	L1, L2, T1, L3, T2, T3, T4, L4, T5	Tune these slugs successively for a maximum meter reading. Keep the meter reading below -30 dbm on the a-c voltmeter.
6	DC multimeter	M-4 (YEL)	L5 lst Osc	Use the base station transmitter or a frequency standard as a signal source and adjust L5 for a zero d-c reading. NOTE: Set JU2 (and JU3 on 2-freq.) to tap ① or ② to obtain proper frequency.
7	T1034C Signal Generator and a-c voltmeter. A 120 ohm resistor must be connected a- cross the a-c voltmeter (handset only models).	Pin #4 of Mic. connector	Signal Generator	Set squelch control for maximum noise. Connect the adapter cable from the voltmeter to the antenna receptacle. Adjust the volume control for an output voltage of 0.44 v a-c (noise only-no signal input) for receivers with speakers and 0.12 v a-c for handset only models. Using the test set this reading should be about 50 ua with the multiplier switch in the 0.2 v a-c position. Zero the signal generator on the discriminator. Increase the signal intensity until the noise reading is reduced to one-tenth of the reading with no signal (maximum noise). Read the attenuator scale in microvolts (should be less than 0.35 microvolts). This is the 20 db quieting sensitivity.

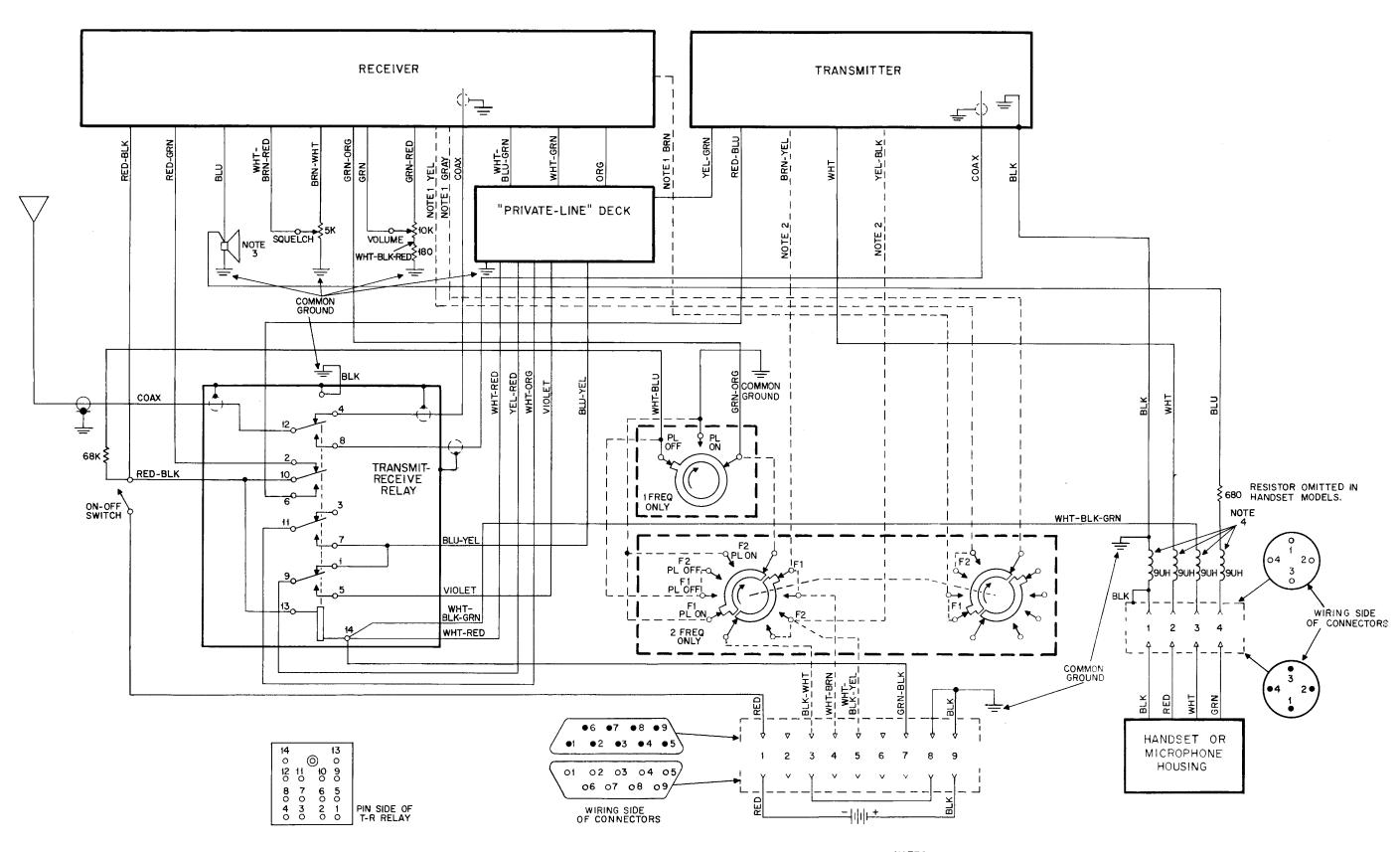
*CAUTION: After adjusting the signal generator to the carrier in the 42-54 mc (H) band look for the image frequency at 910 kc below this setting if the 2nd oscillator frequency is 5.245 mc or 910 kc above this setting if the 2nd oscillator frequency is 6.155 mc. After adjusting the signal generator to the carrier in 25-30 mc (L) band or 30-42 mc (M) band look for the image frequency 910 kc above this setting if the 2nd oscillator frequency is 5.245 mc or 910 kc below this setting if the 2nd oscillator frequency is 6.155 mc. This is a check on the accuracy of the setting. Upon locating the image, return to the proper setting for the carrier frequency.

Receiver Alignment Procedure Motorola No. EPD-8845-B

(Page 24 is blank) 23



P21DDC-1000 Series Intercabling Diagram Motorola No. 63D81017A46-A



P21DDC-3000 Series Intercabling Diagram Motorola No. 63D81017A47-B NOTES:

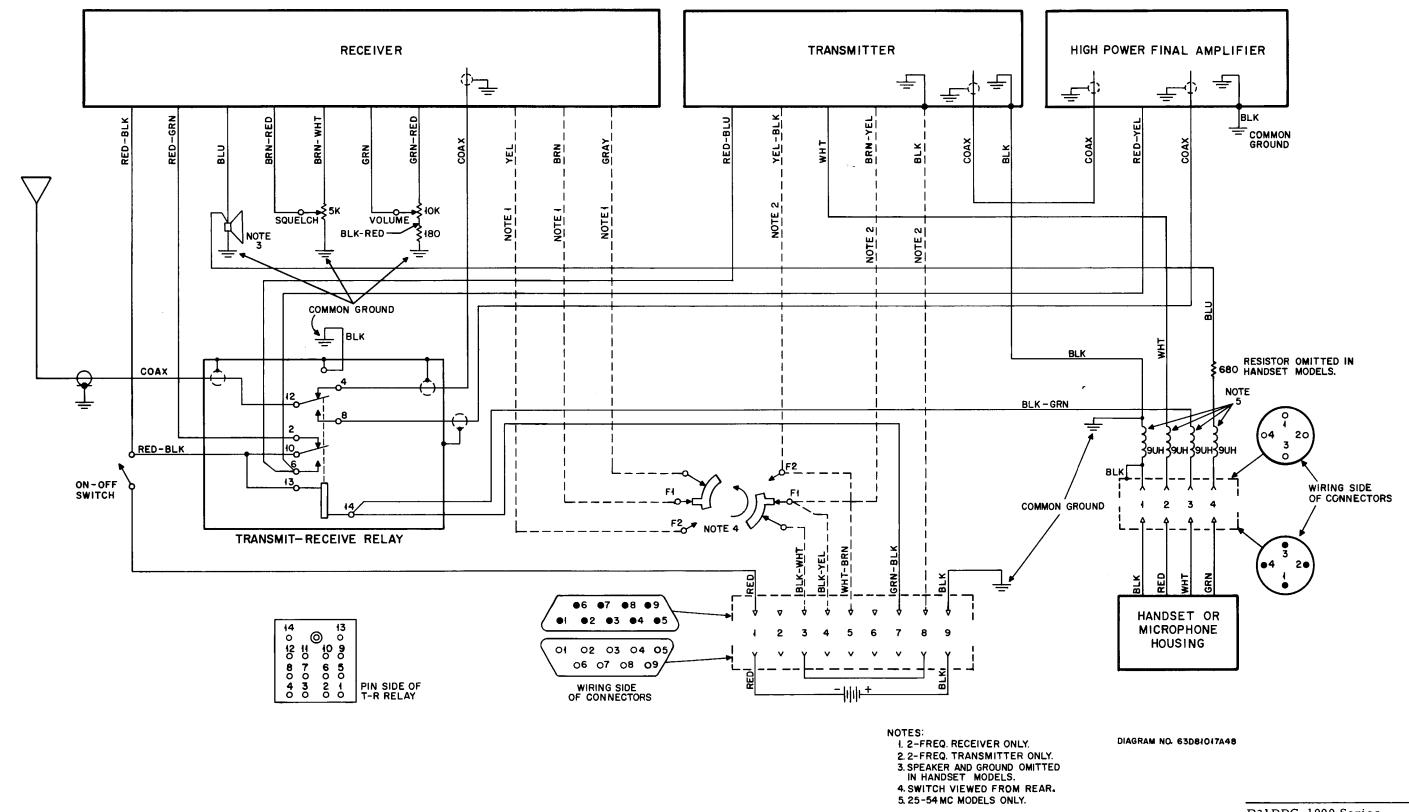
1. 2-FREQ. RECEIVER ONLY.

2. 2-FREQ. TRANSMITTER ONLY.

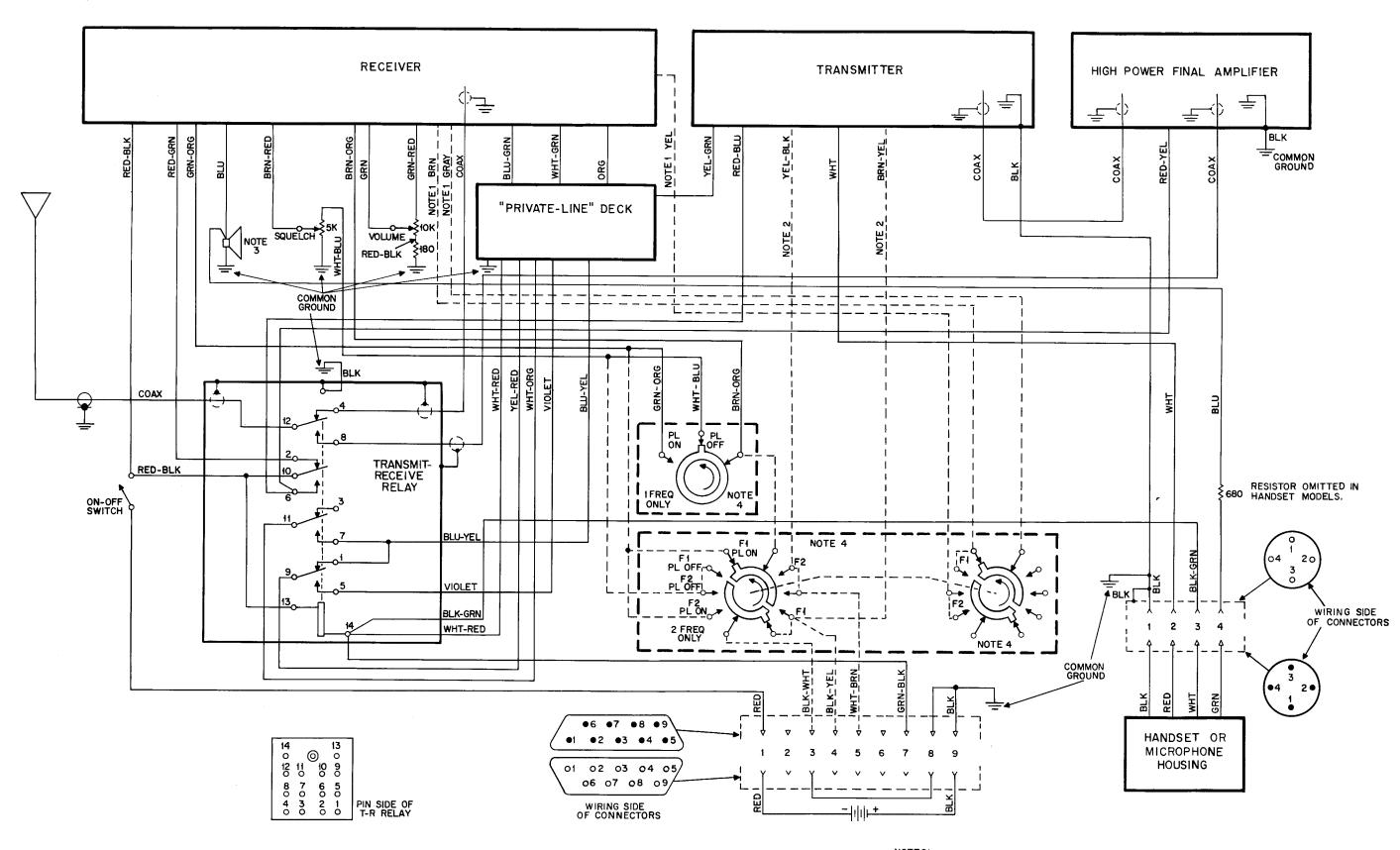
3. SPEAKER AND GROUND OMITTED IN HANDSET MODELS.

4. 25-54 MC MODELS ONLY.

DIAGRAM NO. 63D81017A47



P31DDC-1000 Series Intercabling Diagram Motorola No. 63D81017A48-D

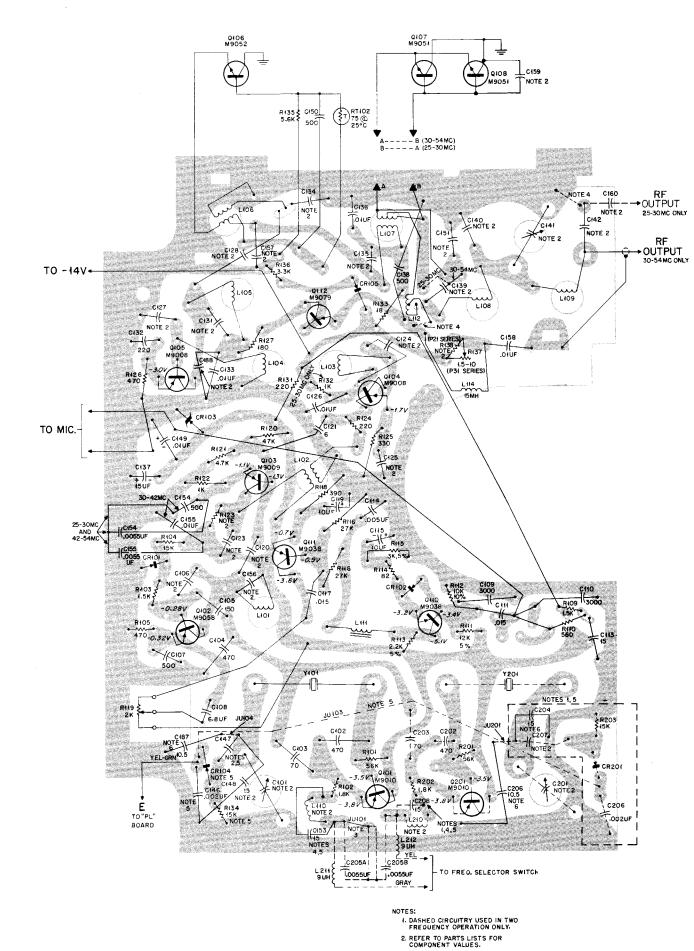


P31DDC-3000 Series Intercabling Diagram Motorola No. 63D81017A49-C

NOTES: 1. 2-FREQ. RECEIVER ONLY, 2.2-FREQ. TRANSMITTER ONLY, 3. SPEAKER AND GROUND OMITTED IN HANDSET MODELS.

4. SWITCH VIEWED FROM REAR,

DIAGRAM NO. 63D81017A49



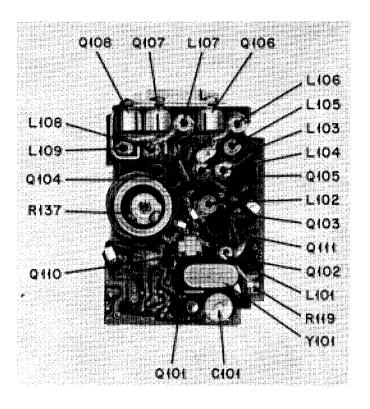
3. USED ON 1-FREQ. MODELS ONLY.

7. USED IN NTB6060 SERIES ONLY.

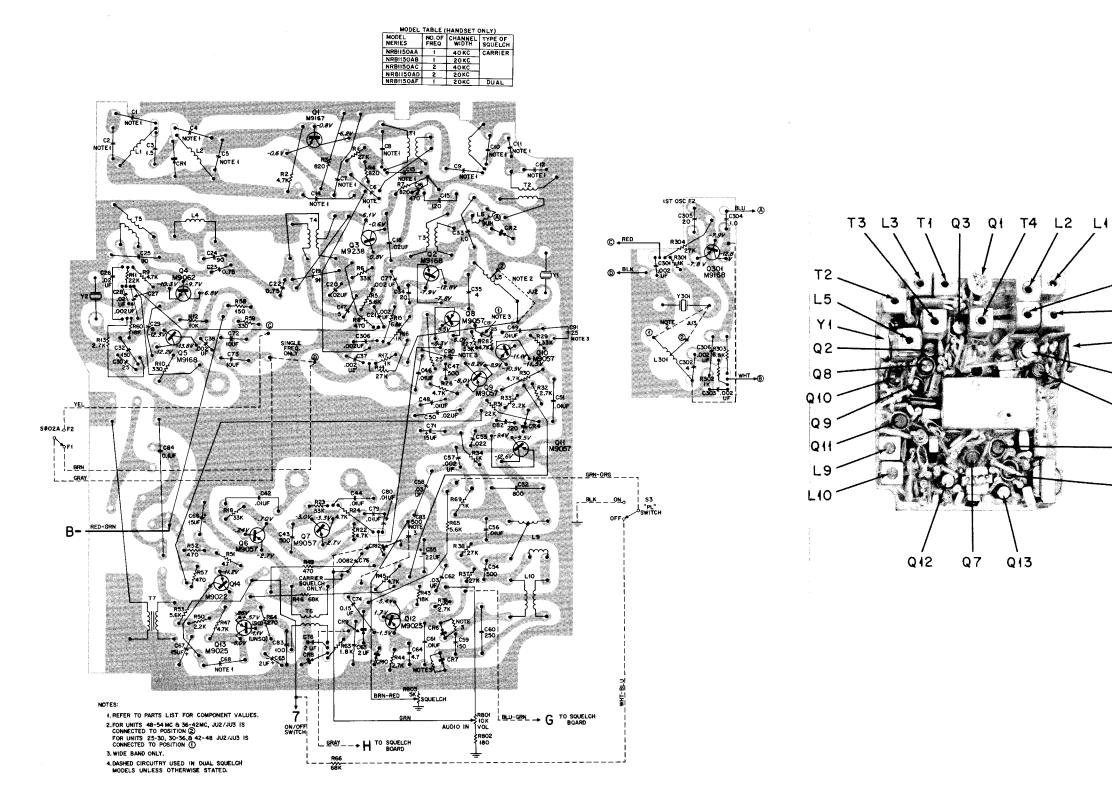
4. APPEARS ON 30-42 MC UNITS ONLY. 5. USED IN "PRIVATE-LINE" MODELS ONLY. 6. USED IN CARRIER SQUELCH MODELS ONLY.

REVISIONS

DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
A	NTB6061AA NTB6062AA NTB6063AA NTB6061AB NTB6062AB NTB6063AB	C109, 110 L211, 212	WERE 21D82428D10 (.0033 ut) ADDED 24C82000E03 (9 uh)	LOWER LEFT OF BOARD
В	NTB6051AA-1 NTB6052AA-1 NTB6053AA-2 NTB6051AB-1 NTB6052AB-1 NTB6053AB-2 NTB6061AA-1 NTB6062AA-1 NTB6063AA-2 NTB6061AB-1 NTB6062AB-1 NTB6062AB-1	C187, 206	ADDED 21D82877B11 (10.5 uuf)	BOTTOM OF BOARD
С	NTB6051AA, AB-1 NTB6052AA, AB-2 NTB6053AA, AB-3 NTB6061AA, AB-1	C106L, M, H C138	WAS C106 21D82877B02 (150 uuf) WAS 21K861443 (.01 uf)	PARTS LIST
	NTB6062AA, AB-2 NTB6063AA, AB-3	C156L C157L	ADDED 21K861435 (70 uf) ADDED 21K861432	Q102 COLLECTOR Q106 BASE
		C158	(20 uuf) ADDED 21K861443 .01 uf ADDED 24D82549D01	Q108 BASE
D	NTB6051AA, AB-1 NTB6061AA, AB-1	C139L C141L	(15 uh) WAS 21K861436 (100 uuf) WAS 20C82399D04,	PARTS LIST
		C141M C141H C142L C151L	VAR 5,5-18 uuf WERE 20C82399D05 VAR 9-35 uuf REMOVED 21D82877B18, 30 uuf WAS C151 21K861430 10 uuf	
		C160L C159	ADDED 21K861432 (20 uuf) ADDED 21K861434 (40 uuf)	L109 RF OUTPUT Q108 BASE
		R132L	WAS 6R129617, (120)	L103
E	NTB6051AC-1 NTB6051AD-1 NTB6061AC-1	C151L R139L	WAS 21 K861432, 20 uuf ADDED 6 K12 7802, 1 K	PARTS LIST
	NTB6061AD-1	C159L	REMOVED 21K861434, 40 uuf. WAS BETWEEN Q108 BASE AND GROUND	Q108 BASE
F	NTB6051AC-1 NTB6051AD-1	C188	ADDED 1.0 uf	RIGHT OF Q105
	NTB6061AC-1 NTB6061AD-1	C159L R139	REMOVED 1K, WAS CONNECTED ACROSS Q112 COL- LECTOR AND EMITTER	RIGHT OF Q108 Q112
G	NTB6051AA-3 NTB6053AA-4 NTB6061AA-3	C151L C154L, 154H,	REMOVED WERE 21B861469, DUAL .01 uf	PARTS LIST Q103 EMIT- TER
	NTB6063AA-4 NTB6053AB-3 NTB6052AB-3 NTB6053AB-4 NTB6061AB-3 NTB6062AB-3 NTB6063AB-4	155L, 155H C205A, 205B		BELOW Q101



Transmitter Printed Circuit Board and Wiring Diagram Motorola No. EPD-8838-G

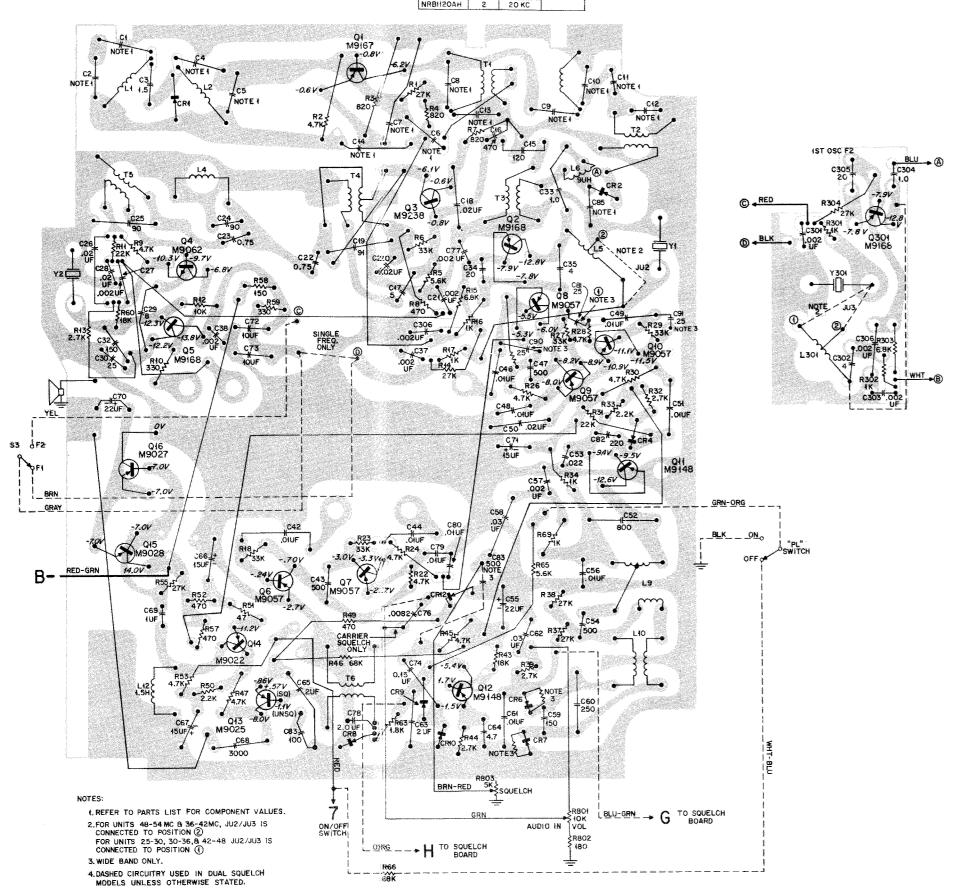


Handset Models Only
Receiver Printed Circuit
Board and Wiring Diagram
Motorola No. EPD-8978-J

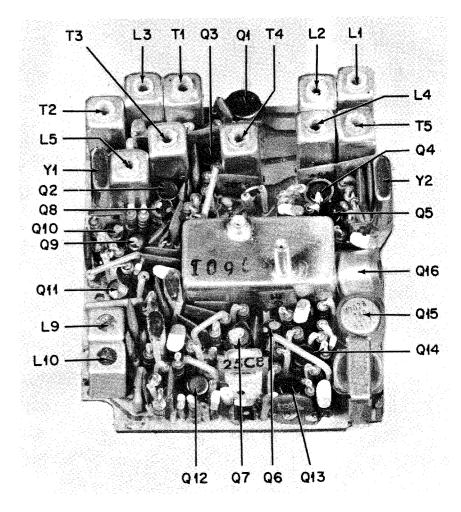
REVISIONS

DIAG.	BOARD AND	REF. SYMBOL	CHANGE	LOCATION
ISSUE	SUFFIX NO.	C34L, M,	WAS C34, 305	PARTS LIST
A	NRB1151AF-1	34H,	21D82877B06 (30 uuf)	
	[305L,M,		
		305H	WAS 6K129752, 270	Q13 EMITTER
В	NRB1151,52,53AA-1 NRB1151,52,53AB-1	R64 R66	ADDED 6K129144, 68K	S3 "PL"
	NRB1151,52,53AC-1			SWITCH
	NRB1151,52,53AD-1			
	NRB1151,52,53AF-2			
Bīl	NRB1151,52,53AH-1 NRB1151AA-2	C6L	WAS 21K861426	PARTS LIST
ы	NRB1151AB-2	002	(2,2 uuf)	
	NRB1151AC-2			
	NRB1151AD-2			
С	NRB1151AF-3 NRB1151AA-3	L11	REMOVED	BELOW Q11
Ü	NRB1152AA-2		24V80900A61, 0, 62 mh;	-
	NRB1153AA-2		(WAS BETWEEN JUNC-	
	NRB1151AB-3		TIONS OF L9, C56 AND C57, 58).	
	NRB1152AB-2 NRB1153AB-2		Mid Colly Soft	
	NRB1151AC-3		1	
	NR B1152AC-2			
	NRB1153AC-2			
	NRB1151AD-3 NRB1152AD-2	R69	ADDED 6K127802, 1K	İ
	NR B1153AD-2	1,	(REPLACES L11)	
	NRB1151AF-4			
	NRB1152AF-3			
D	NRB1153AF-3 NRB1151AA-4	Q12, 13	WERE 48R869025,	Q12, 13
	NRB1152AA-3	1 2 2 2 2	M9025	~,
	NR BI 153 A.A 3			
	NRB1151AB-4			l
	NRB1152AB-3 NRB1153AB-3			
	NRB1151AC-4			
	NRB1152AC-3	1		
	NRB1153AC-3			
	NRB1151AD-4 NRB1152AD-3	i		
	NRB1153AD-3	1		
E	NRB1151AA-5	C63	WAS 23D82397D07,	LOWER LEF
	NR B1152AA-4	D/3	6.8 uf	OF Q12
	NRB1153AA-4 NRB1151AB-5	R63 C78	WAS 6K128545, 470 WAS 23D82397D07,	BELOW T6
•	NRB1152AB-4	1	6.8 uf	
	NRB1153AB-4	1		
	NRB1151AC-5			
	NRB1152AC-4 NRB1153AC-4	1	1	ļ
	NR B1151AD-5			
	NRB1152AD-4			
	NRB1153AD-4			
F	NRB1151AA-6 NRB1152AA-5	C35	WAS 21K861428, 6 uuf	Q2 COLLEC-
	NRB1153AA-5	R14	WAS 6K127807, 33K	Q2 BASE
	NRB1151AB-6	R15	WAS 6K127804, 4.7K	1
	NRB1152AB-5	Q2, 301	WERE TYPE M9047	4
	NRB1153AB-5 NRB1151AC-6	Q3, 5 C302	WERE TYPE M9031 WAS 21K861428, 6 uuf	BELOW Q30
	NRB1152AC-5	R304	WAS 6K127807, 33K	1 2220 " 330.
	NRB1153AC-5	R303	WAS 6K127804, 4.7K	7
	NRB1151AD-6	1	1	
	NRB1152AD-5 NRB1153AD-5	1		ŀ
G	NRB1151AA-6	Ql	WAS TYPE M4576	
	NRB1152AA-5	1		
	NRB1153AA-5			
	NRB1151AB-6 NRB1152AB-5	1		
	NRB1153AB-5	1	1	
	NRB1151AC-6	1		1
	NRB1152AC-5			
	NRB1153AC-5 NRB1151AD-6			
	NRB1152AD-5	1		1
	NRB1153AD-5	1		L
н	NRB1151AA-7 NRB1152AA-6	C17	WAS 21K861603, 3.3	Q3 BASE
	NRB1152AA-6	Q3	WAS 48R869169;	TOP CEN-
	NRB1151AB-7		M9169	TER OF
	NRB1153AB-6	1		BOARD
	NRB1151AC-7			
	NRB1152AC-6 NRB1153AC-6			
	NRB1153AC-6 NRB1151AD-7			İ
	NRB1153AD-6			
Ĵ	NRB1151AA-8	C81	WAS 21K864013	Q9 BASE TO
	NRB1152AA-7	C00 01	ADDED	COLL,
	NRB1153AA-7	C90, 91	ADDED	Q8 AND Q10 BASE TO
	INRBIL51AC-R			
	NRB1151AC-8 NRB1152AC-7			COLL.

MODEL TA	MODEL TABLE (SPEAKER MODELS)						
MODEL SERIES	NO. OF	CHANNEL WIDTH	TYPE OF SQUELCH				
NRBII20AA		40 KC	CARRIER				
NRB1120AB		20 KC					
NRBI120AC		40 KC					
IRBI120AD		20 KC					
IRBI120AF	1	20 KC	DUAL				
IRRUZOAH	2	20 KC	1				



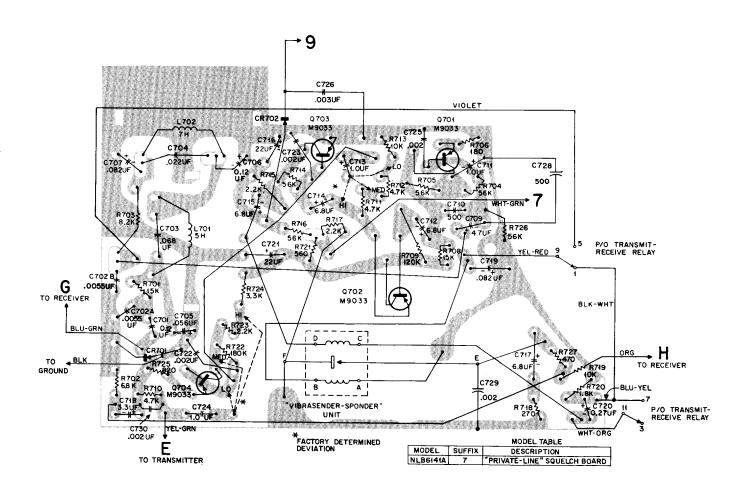
		REVIS	IUNS	
DAG. Isbue	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
ý	NRB112IAF+2	C83	ADDED 21K861437	ВОТТОМ
	NRB1122AF-7 NRB1123AF-6		(100 uuf)	LEFT OF BOARD
	NRB1121AA-2	C85L	ADDED 21K861426	TOP RIGHT
	NRB1121AB-2 NRB1121AC-2		(2. Z uuf)	OF BOARD
	NRB1121AD-2			
	NRB1121AF-3			
ŝ	NRB1121AA-3	C34L,	WERE REF. ITEM	PARTS LIST
	NRB1121AB-3		C34, C305	
	NRB1121AC-3 NRB1121AD-3	305L, 305M,		
		305H		
		C35L, M 35H,	WERE REF, ITEM C35, C302	
		302L,		
		302M, 302H		
Ç	NRB1121AF-5	R61	REMOVED 6K127804	S 3
	NRB1122AF-9		(4,7K) WAS BETWEEN	
	NRB1123AF-8 NRB1121AH-1		ON POSITION OF "PL" SWITCH AND GROUND	
	NRB1122AH-1	C86	REMOVED	Q10
	NRB1123AH-1		21D82877B02 (150 uuf)	COLLECTOR
			WAS BETWEEN Q10 COLLECTOR AND ON	
			POSITION OF "PL"	
		77.40	SWITCH	Q13 EMITTE
		R49 R65	WAS 6K127803 (1.5K) ADDED 6K129433(5.6K)	ABOVE Q12
-		CR12	ADDED 48C82392B03	
),	NRB1121AH-2	Lll	REMOVED	BELOW Q11
	NRB1122AH-2 NRB1123AH-2		24V80900A61, 0.62 mh; (WAS BETWEEN JUNC-	
	TOO TOO TOO TOO TOO TOO TOO TOO TOO TOO		TIONS OF L9, C56	
		R69	AND C57, 58). ADDED 6K127802, 1K	
		LOA	(REPLACES L11)	
2	NRB1121AA-6	Q12,13	WERE 48R869025,	Q12, 13
	NRB1122AA-9 NRB1123AA-9		M9025	
	NRB1121AB-6			
	NRB1122AB-9			
	NRB1123AB-8 NRB1121AC-6			
	NRB1122AC-9			
	NRB1123AG-9			
	NRB1121AD-6 NRB1122AD-9			
7	NRB1123AD-8 NRB1121AA-7	C63	WAS 23D82397D09,	LOWER LEF
-	NRB1122AA-10	1003	6, 8 uf	OF Q12
	NRB1123AA-10	R63	WAS 6K128545, 470	BELOW T6
	NRB1121AB-7 NRB1122AB-10	C78	WAS 23D82397D09, 6.8 uf	BETOM 10
	NRB1123AB-9			
	NRB1121AC-7 NRB1122AC-10			
	NRB1123AC-10			
	NRB1121AD-7			
	NRB1122AD-10 NRB1123AD-9			ration of the state of the stat
G	NRB1121AA-8	C35	WAS21K861428, 6 uuf	Q2 COLLEC
	NRB1122AA-11 NRB1123AA-11	R14	WAS 6K127807, 33K	TOR O2 BASE
	NRB1121AB-8	R15	WAS 6K127804, 4.7K	1 2 2 3 3 3
	NRB1122AB-11 NRB1123AB-10	Q2,301	WERE TYPE M9047]
	NRB1121AC-8	Q3, 5 C302	WERE TYPE M9031 WAS 21K861428, 6 uuf	BELOW Q30
	NRB1122AC-11	R304	WAS 6K127807, 33K	
	NRB1123AC-11 NRB1121AD-8	R303	WAS 6K127804, 4.7K	
	NRB1122AD-11			
H	NRB1123AD-10 NRB1121AA-8	QI	WAS TYPE M4576	
13	NRB1122AA-11			
	NRB1123AA-11			
	NRB1121AB-8 NRB1122AB-11			1
	NRB1123AB-10			Į
	NRB1121AC-8 NRB1122AC-11			
	NRB1123AC-11			
	NRB1121AD-8	-		
	NRB1122AD-11 NRB1123AD-10		barre some	<u></u>
J	NRB1121AA-9	C17	WAS 21K861603,	Q3 BASE
-	NRB1122AA-12		3.3 uuf	TOP OF THE
	NRB1123AA-12 NRB1121AB-9	Q3	WAS 48R869169, M-9169	OF BOARD
	NRB1121AB-9 NRB1122AB-12		NA- / 2 M Z	1
	NRB1123AB-11			
	NRB1121AC-9 NRB1122AC-12			1
	NRB1123AC-12			1
	NRB1121AD-9			
	NRB1122AD-12 NRB1123AD-11			
K	NRB1123AD-11	C81	WAS 21K860413	Q9 BASE TO
6.5		1 501		COLL.
	NRB1122AA-13			
	NRB1123AA-13	C90, 91	ADDED	Q8 AND Q10 BASE TO COL
		C90, 91	ADDED	BASE TO COI



RECEIVER PRINTED CIRCUIT BOARD

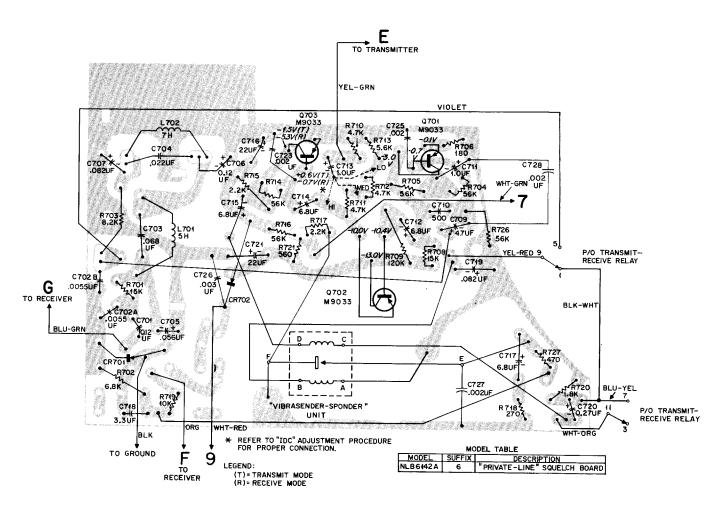
Speaker-Microphone and Speaker-Handset Models Receiver Printed Circuit Board and Wiring Diagram Motorola No. EPD-8841-K

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DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. Symbol	CHANGE	LOCATION
A	NLB6141A-1	C727	ADDED 21K831126 .02 uf	"VIBRA- SENDER- SPONDER" UNIT CONTACT A
В	NLB6141A-2	R719	WAS 6K127806 (27K)	"VIBRA- SENDER- SPONDER" RESONANT REED CONTACT E
С	NLB6141A-3	C718	WAS 23D82397D07	LOWER LEFT OF BOARD
D	NLB6141A-3	C729	ADDED	"VIBRA- SENDER- SPONDER" UNIT CONTACT E
E	NLB6141A-4	R706	WAS 6K129862, 150 OHMS	Q701 EMIT- TER
F	NLB6141A-5	R727	ADDED 56K OHMS ADDED 470 OHMS	Q701 BASE LOWER RIGHT OF BOARD
G	NLB6141A-6	C702A, 702B	WAS 21B861469, DUAL .01 uf	LOWER LEFT OF BOARD
н	NLB6141A-7	C730	ADDED	LOWER LEFT OF BOARD

Model NLB6141A 25-42 MC "Private-Line" Printed Circuit Board and Wiring Diagram Motorola No. EPD-9204-H



DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
A	NLB6142A-1	C727	ADDED 21K831126 .02 uf	"VIBRA- SENDER- SPONDER" UNIT CONTACT A
В	NLB6142A-2	R719	WAS 6K127906 (27K)	"VIBRA- SENDER- SPONDER" RESONANT REED CONTACT E
С	NLB6142A-3	C718	WAS 23D82397D07 l uf	LOWER LEFT OF BOARD
D	NLB6142A-4 .	R706	WAS 6K129862, 150 OHMS	Q701 EMIT- TER
		R726	ADDED 56K OHMS	Q701 BASE
E	NLB6142A-5	R727	ADDED 470 OHMS	LOWER RIGHT OF BOARD
F	NLB6142A-6	C702A, 702B	WAS 21B861469, DUAL .01 uf	LOWER LEFT OF BOARD

	REVISIONS					
DIAG.	CHASSIS AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION	REFER TO CIRCUIT BOARD	
v	NTB6051AA-3	C154L,	WERE 21B861469,	PARTS LIST	XMTR. BD.	
	NTB6053AA-4	154H,	DUAL .01 uf		EPD-8838-G	
	NTB6061AA-3 NTB6063AA-4	155L, 155H				
ŀ	NTB6051AB-3	C205A,		XMTR F2		
	NTB6052AB-3	205B		OSC, S802B SWITCH		
	NTB6053AB+4			3.11.611		
	NTB6061AB+3 NTB6062AB-3			1		
	NTB6063AB-4				RCVR. BD.	
Vl	NRB1151AA-6	Qł	WAS 48R134576	PARTS LIST	EPD-8978-G	
1	NRB1152AA-5 NRB1153AA-5				EPD-8841-H	
	NRB1151AB-6					
	NRB1152AB+5				1	
	NRB1153AB-5					
	NRB1151AC-6 NRB1152AC-5					
	NRB1153AC-5	1		1	1	
	NRB1151AD-6	1				
	NRB1152AD-5			-		
V2	NRB1153AD-5 NTB6051AA-3	L110M,	WERE 24D82549D02	PARTS LIST	NONE	
V-6	NTB6052AA-2	110H,				
	NTB6053AA-4	210M.				
	NTB6051AB-3	Z10H	W A C 2 4 D C 2 5 4 D D C 1	-		
	NTB6052AB-3 NTB6053AB-4	L114	WAS 24D82549D01			
	NTB6061AA-3	ļ		1		
	NTB6062AA-2					
	NTB6063AA-4	1				
	NTB6061AB-3					
	NTB6062AB-3 NTB6063AB-4					
224		G 1 0 0 7	W. 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	PARTS LIST	NONE	
W	NTB6052AA-3 NTB6052AB-4	C188L, M	WAS REF, C188	PARIS LIST	NONE	
	NTB6062AA-3	1				
	NTB6062AB-4					
	NLB6121A-2	R401L,	ADDED 6R6330, 150	RF INPUT TO		
	NLB6122A-2	M		POWER AMP	1	
				P31DDC SER-		
				IES ONLY)		
Y	NRB1121AB-9		REPLACE THE 455	PARTS LIST	NONE	
	NRB1122AB-1Z		KC FILTERS, MOD-			
	NRB1123AB-11 NRB1121AA-9		ELS NFN6004HS & NFN6004AW WITH	1	1	
	NRB1122AA-12		NFN6006AS AND			
	NRB1123AA-12		NFN6006AW RE-			
	NRB1121AD-9		SPECTIVELY	l		
	NRB1122AD-12 NRB1123AD-11					
	NRB1121AC-9					
	NRB1122AC=12					
	NRB1123AC-12		W 1 5 3 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	03 8455	DCMD DD	
Yl	NRB1121AA-9 NRB1122AA-12	C17	WAS 21K861603, 3,3 uuf	Q3 BASE	RCVR, BD, EPD-8841-J	
	NRB1123AA-12	Q3.	WA5 48R869169,	IF AMP,	1	
	NRB1121AB-9		M9169		1	
	NRB1122AB-12	1		1	[
	NRB1123AB-11			1	-	
	NRB1121AC-9 NRB1122AC-12			ŧ.	ł	
	NRB1123AC-12	1		1		
	NRB1121AD-9			1		
	NRB1122AD-12			į.		
	NRB1123AD-11 NRB1151AA-7	-1		4	RCVR, BD.	
	NRB1151AA-1 NRB1153AA-6			***************************************	EPD-8978-H	
	NRB1151AB-7					
	NRB1153AB-6					
	NRB1151AC-7	1				
	NRB1153AC-6 NRB1151AD-7	1				
	NRB1153AD-6					
AΛ	NRB1121AA-10	C81	WAS 21K864013	PARTSLIST	EPD-8841	
	NRB1122AA-13	C90, 91	ADDED	Q8 AND Q10	EPD-8978	
	NRB1123AA-13	ĺ		BASE TO	1	
	NRB1121AC-10 NRB1122AC-13	1		COLL.	1	
	NRB1122AG-13 NRB1123AG-13					
	NRB1151AA-8	1				
	NRB1152.AA-7					
	NRB1153AA-7			1		
	NRB1151AC-8			-		
	NRB1152AC-7 NRB1153AG-7	1				
			4			

PARTS LIST for Schematic Diagram 63E81017A21-AA

LEGEND L = 25-30 MC M = 30-42 MC H = 42-54 MC

RECEIVER NRB1121AD NRB1122AD NRB1123AD NRB1151AA NRB1152AA NRB1151AC NRB1152AC NRB1153AC NRB1151AD NRB1152AD NRB1121AA NRB1122AA NRB1123AA NRB1121AB NRB1122AB

NRB1122AB NRB1123AB	NRB1152AA	NRB1152AD
NRB1123AB	NRB1153AA NRB1151AB	NRB1153AD
NRB1122AC	NRB1152AB	
NRB1123AC	NRB1153AB	
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		CAPACITOR. fixed: uuf ±10%;
C1L, 1M, 10M	21K861433	75 v; unl. stated 36; N150
C1H, 10H, 12H	21K861462	15; N150
C2L, 2H, 32, 59 C2M, 82	21D82877B02 21K868829	150; N1400
C3	21C82450B27	220; N1400 1.5; 500 v
C4L	21K861433	36; N150; handset models
C4M, 5M, 81	or21K861434	40; N150; speaker models
C4M, 3M, 81 C4H, 34, 305	21K864013 21K861432	50; N150 20; N150
C5L	21K861435	70; N150
С5Н, 8М, 12М	21D82877B06	30; N150
С6L, 6М, 6Н,	21C82450B30	1.8 ±5%
9L, 11L C7L, 7M, 13L,	21K861442	.002 uf +100-20%
13M, 14L, 14M,		2
21, 27, 31, 37,		
75, 77, 301, 303, 306		
C7H, 13H, 14H, 43, 47, 54, 83	21K847065	500 GMV; 250 v
C8L	21D82877B01	24; N150
С8Н	21K861431	12; N150
C9H, 11H	21C82450B24 21C82450B28	0.47; 500 v 1.0; 500 v
C9M, 11M, 33,	21002430020	1, 0, 300 ¥
C10L, 12L	21D82877B01	24; N150; handset models
C15	or21D82877B06 21D82877B15	30; N150; speaker models 120; N150
C16	21K861440	470; N2200
C17	21D82877B17	5 ±5%; N150
C18, 20, 26, 28, 50	21K861444	.02 uf +100-20%
C19	21D82877B14	91; N470
C22, 23 C24, 25	21C82450B22 21K864522	0.75; 500 v 90; N080
C29	21K861429	8; N150
C30	21K865197	25; N150
C33, 304 C35, 302	21C82450B28	1.0; 500 v 4: N150
C42, 44, 46, 48,	21K861427 21K861443	.01 uf +100-20%
49, 51, 56, 61,		
79, 80 C52	21D82239E02	800 ±5%; 200 v
C52 C53	23D82397D06	0.22 uf +40-20%; 35 v
C55	23D82397D16	22 uf ±20%; 15 v
C57 C58, 62	21K864457 8C82317B03	.002 uf +100-20% .03 uf; 50 v
C58, 62 C60	21D82239E03	250 ±5%; 200 v
C63, 78	23D82397D19	2 uf +40-20%; 8 v
C64	23D82397D05 23D82397D19	4.7 uf +40-20%; 3 v
C65 C66, 67, 71	23D82397D19 23D82397D17	2 uf +40-20%; 8 v 15 uf ±20%; 20 v
C68	21C82187B16	3000; 100 v (speaker models)
C40	or21D82428B09	
C69 C70	23D82397D07 23D82397D16	1 uf +40-20%; 15 v 22 uf ±20%; 15 v (speaker
C72, 73	23D82397D15	models) 10 uf ±20%; 20 v
G74	23D82397D08	0. 15 uf +40-20%; 35 v
C84	8C82317B01	0.1 uf; 100 v
C85L, 85M	21K861426	2, 2; N150
1	1	

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		SEMICONDUCTOR DEVICE,
CR1	48C82363E03	diode: NOTE I
CR2	48C859464	silicon germanium
CR4, 6, 7	48C82178A01	germanium
CR8, 9, 10	48C82363E02	silicon
L1L, 2L, 3L	24C8 2 765D07	COIL, RF: GRN-RED; does not incl
		76K861425 CORE, tuning
L1M, 1H, 2M, 2H, 3M, 3H	Z4C82765D06	GRN-BRN; does not incl 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron
Ľ4	24C82765D05	GRN-GRA; does not incl 76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron
L5M, 301M	24C82766D08	BLU-RED; does not incl 76A82686D02 CORE, tuning
L5L, 5H, 3010. 301H	24C82766D04	BLU-GRA; does not incl 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron
L6	24C847920	choke; 9 uh
L9	24B82695D01	limiter; c/o;
		pri: term. no. 1 and 2 with no. 5 center tap; sec: term. no. 3 and 4
L10	24B82696D01	discriminator; 455 kc; incl tuning core
L12	25B82751D01	choke; 1,5 h
61	400004034=	TRANSISTOR: NOTE 1
Q1 Q2,5, 301	48R869167 48R869168	P-N-P; type M9167 P-N-P; type M9168
Q3	48R 869238	N-P-N; type M9238
Q4	48K869062	N-P-N; type M9062 BLU
Q6, 7, 8, 9, 10,	48R869057	P-N-P; type M9057
Q12, 13	48R869148	P-N-P; type M9148
Q14	48R869022	N-P-N; type M9022
Q15 Q16	48R869028 48R869027	P-N-P; type M9028 N-P-N; type M9027
R1,14,37,38,364 R2, 9, 22, 24, 26, 28, 30,	6K127806 6K127804	RESISTOR, fixed: ±10%; 1/4 w; unl stated 27K 4.7K
45, 47 R3, 4, 7	6K129432	820
R5, 4, 7	6K129433	5, 6K
R6, 21, 23, 25, 27, 29		33K
R8, 52, 57	6K127801	470
R10, 59 R11, 31	6K129775 6K128685	330 22K
R12	6K129225	10K
R13,32,39,44	6K128688	2,7K
R15, 303	6K128687	6.8K
R16, 17, 34,6%, 301, 302	6K127802	1K
R33, 50	6K128689	2.2K
R43, 60	6K128904	18K
R46	6K129144	68K
R49 R51	6K127803 6K129233	1.5K 47
R53	6K129433	5.6K; handset models
	or6K127804	4.7K; speaker models-
R54, 55	6K127806	27K; speaker models
R58 R63	6K129862 6K129269	150 1,8K; 1/10 w
R64	6K129753	100; handset models
TIL	24C82767D06	TRANSFORMER: GRN-BLK; does not incl 76K861425 CORE, tuning
TIM, IH	24C82767D03	GRN-ORG; does not incl 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron
T2L	24C82767D07	GRN-VIO; does not incl 76K861425 CORE, tuning
T2M, 2H	24C82767D04	GRN-GRN; does not incl 76K861425 CORE, tuning or
T3, 5	24C82767D05	76A82686D02 SLEEVE, iron GRN-BLU; does not incl 76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
Т4	24C82207G01	RED-RED; does not incl 76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron
т6	25B82699D01	audio input; BLU dot; c/o; pri: coil res. 1340; imped. 10; sec: coil res. 348; imped. 1K
Т7	25B82893E01	audio; pri: imped. 1200; res. 125; sec: imped. 120; res. 12
		CRYSTAL UNIT, quartz: NOTE II
Y1, 301	YM45	25-42 mc
	orYM46	42-54 mc
Y2	YN	5.245 or 6.155 mc

NLN6234A Resistor Kit (Wide Channel Spacing)

C81, 90, 91 C83	21K865197 21K847065	<u>CAPACITOR</u> , fixed; 50 ±10%; 75 v; N150 500 GMV; 250 v
R35, 36	6K128563	RESISTOR, fixed: ±10%; 1/10 w unl stated 15K

FILTER

Z 1	NFN6006AS NFN6006AW	FILTER, IF: bandpass; 20 kc bandpass; 40 kc
	NON-REFEREN	CED ITEMS
	26B82671D01 14A82271E01	SHIELD, coil: 10 req'd INSULATOR, coil shield; used with L1, 2, 3, 5, T1, 2

NOTES:

- UNLESS OTHERWISE STATED: RESISTOR VALUES ARE IN OHMS, ±10%, 1/4 WATT, K=1000. ALL CAPACITOR VALUES ARE IN MICROMICROFARADS.
- 2. REFER TO PARTS LIST FOR COMPONENT VALUE.
- 3. USED IN SINGLE FREQUENCY MODELS ONLY.
- 4. PART OF HOUSING.
- 5. REFER TO RECEIVER PRINTED CIRCUIT BOARD AND WIRING DIAGRAM FOR PROPER TAP,
- ALL VOLTAGE READINGS REFERENCED TO CHASSIS GROUND, DC READINGS TAKEN WITH A MOTOROLA DC MULTIMETER.
- 7. FREQUENCY CALACULATIONS:

TRANSMITTER: $f_0 = \frac{c}{16}$

RECEIVER: f = CARRIER FREQUENCY (25-54 MC)

 f_{01} =1ST OSCILLATOR CRYSTAL FREQUENCY (30, 7-48, 3 MC)

 $\rm f_{\rm 02}^{\rm =}$ 2ND OSCILLATOR CRYSTAL FREQUENCY (REFER TO CHART ON BLOCK DIAGRAM)

f₁ = 1ST INTERMEDIATE FREQUENCY (5.7 MG)

f₂ = 2ND INTERMEDIATE FREQUENCY (455 KC)

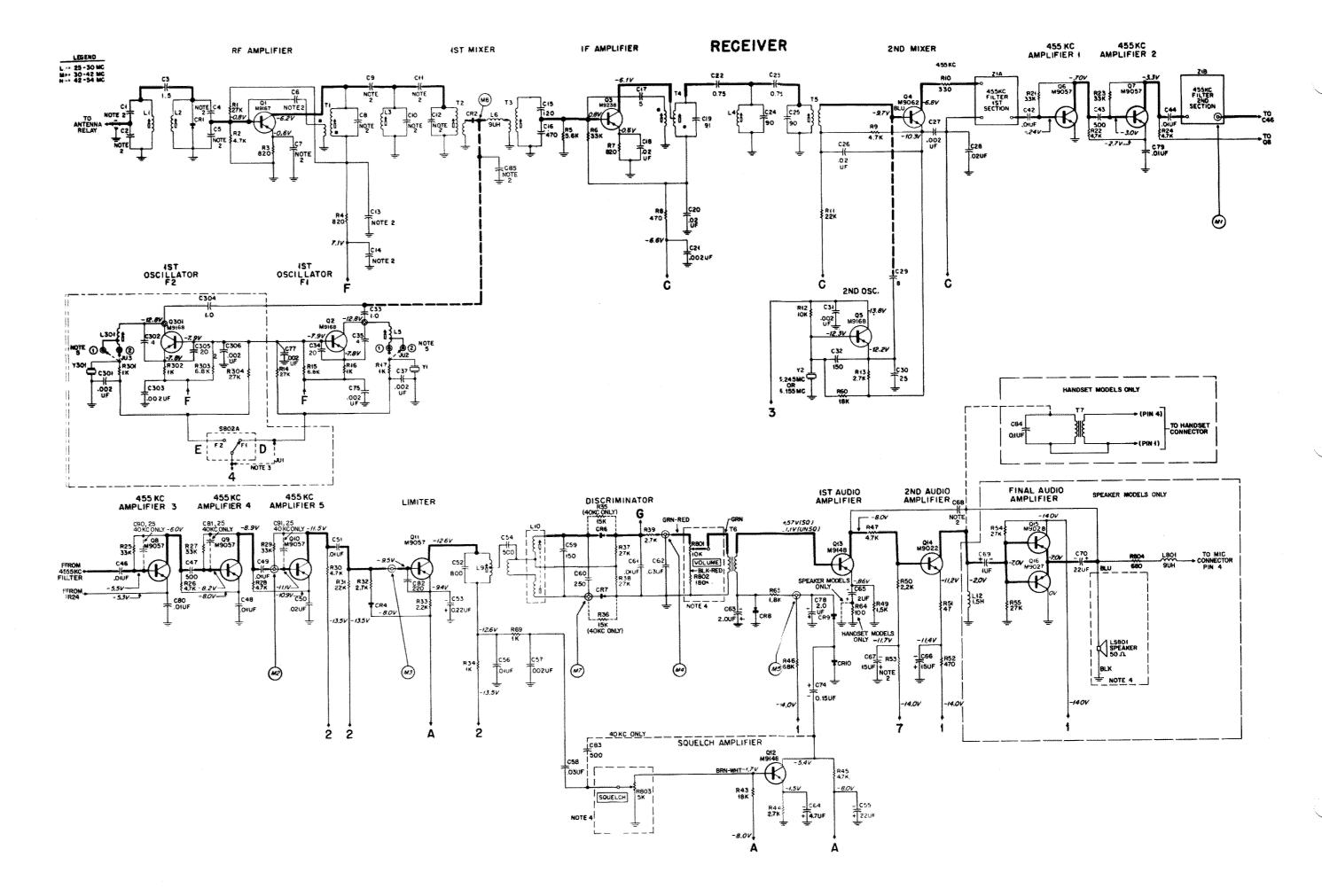
 $f_{01} = f_c + f_1 (25-42 MC)$ $f_{02} = f_c - f_1 (42-54 MC)$

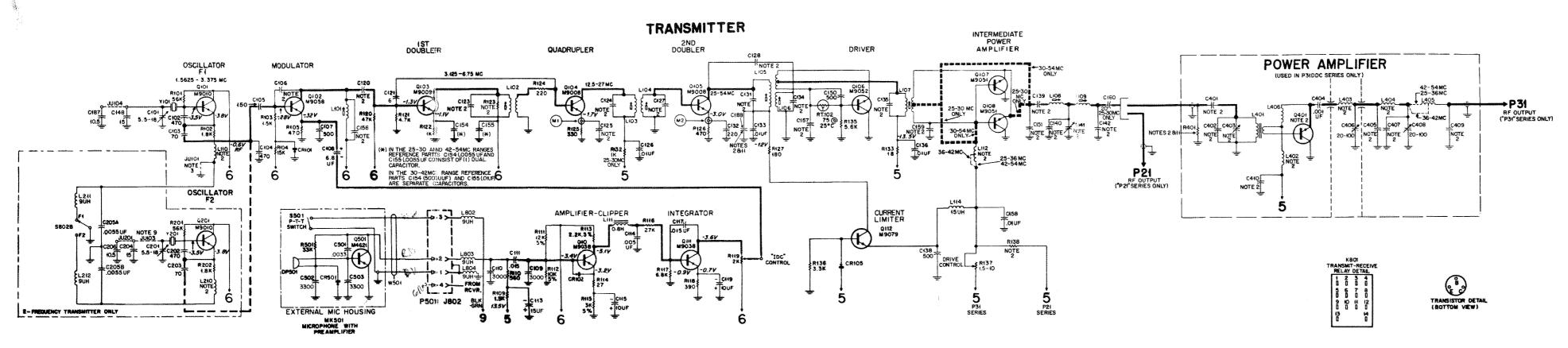
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- 8. HANDSET MODELS ONLY.
- 9. JU103 MAY OR MAY NOT EXIST DEPENDING UPON OPERATING FREQUENCY.
- REFER TO BATTERY REPLACEMENT AND CHARGING SECTION OF THE INSTRUCTION MANUAL FOR LOCATION OF FUSE.
- 11. NOT USED IN 42-54 MC RANGE.

EPD-8874-C

Carrier Squelch Schematic Diagram Motorola No. 63E81017A21-AA (Sheet 1 of 2)





TRANSMITTER	-	ΓR	AN	SA	41	ГΤ	ER
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SERIES	MODEL NO.	CHASSIS SUFFIX	NO. OF FREQ.	FREQUENCY RANGE	RF POWER OUTPUT
	NTB6051AA	3	1	25-30 MC	1.4 W
NTB6050AA	NTB6052AA	3	1	30+42 MC	1. 4 W
	NTB6053AA	4	l	42-54 MC	1.4 W
	NTB6051AB	3.	2	25-30 MC	1. 4 W
NTB6050AB	NTB6052AB	4	2	30-42 MC	1, 4 W
	NTB6053AB	4	2	42-54 MC	1, 4 W
	NTB6061AA	3	l	25-30 MC	5 W
NTB6060AA	NTB6062AA	3	1	30-42 MC	5 W
	NTB6063AA	4	1	42-54 MC	5 W
NTB6060AB	NTB6061AB	4	2	25-30 MC	5 W.
	NTB6062AB	3	2	30-42 MC	5 W
	NTB6063AB	4	2	42-54 MC	5 W

CONTROL PANELS

MODEL NUMBER	SUFFIX	XMTR. FREQ.	RCVR. FREQ.	HANDSET	SPEAKER	MICROPHONE	RF POWE
NGN6023A		1	1	х			1.4 W
NGN6025A		2	1	x		The state of the s	1.4 W
NGN6026A		2.	2	Х			1.4 W
NCN6039A		l	1		х	х	1,4 W
NCN6041A		2	1		х	x	1.4 W
NCN6043A		2:	2		х	Х	1, 4 W
NCN6044A		1	1	Х	X		1.4 W
NCN6045A		1	1		X	X	5 W
NCN6047A		2	1		х	X	5 W.
NCN6049A		2	2		Х	x	5 W
NCN6052A		1	1	Х	Х		1.4 W
NCN6054A		2	2	х	Х		1,4 W
NCN6056A		1	1	х	Х		5 W
NCN6058A		2	1	Х	Х		5 W
NCN6060A		2	2	x	X		5 W

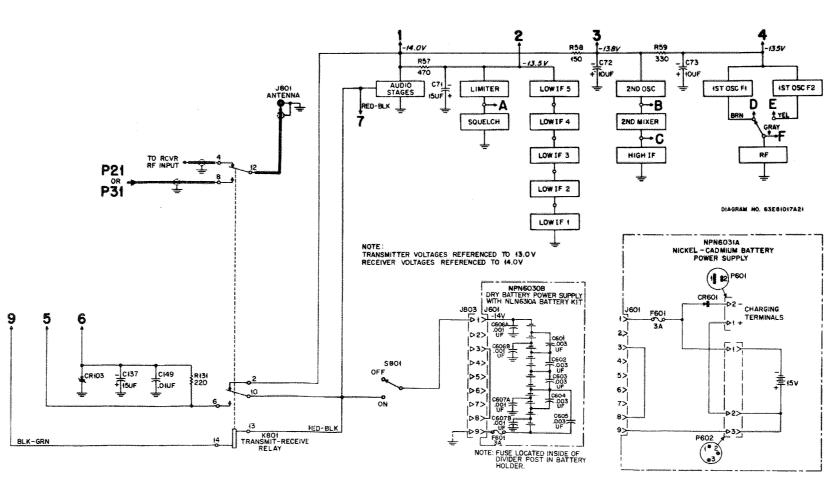
RECEIVERS

SERIES	MODEL NO.	CHASSIS SUFFIX	NO. OF FREQ.	CHANNEL SPACING	FREQUENCY RANGE	USED WITH
ł	NRB1121AA	10	1	40 KC	25~30 MC	SPEAKER
	NRB1122AA	13	1	40 KC	30-42 MC	SPEAKER
	NRB1123AA	13	1	40 KC	42-54 MC	SPEAKER
	NRB1121AB	9	1	20 KC	25-30 MC	SPEAKER
NRB1120AB	NRB1122AB	12	1	20 KC	30-52 MC	SPEAKER
	NRB1123AB	11	I	20 KC	42-54 MC	SPEAKER
	NRB1121AC	10	2	40 KC	25-30 MC	SPEAKER
NRB1120AC	NRB1122AC	13	2	40 KC	30-42 MC	SPEAKER
	NRB1123AC	13	2	40 KC	42-54 MC	SPEAKER
	NRB1121AD	9	2	20 KC	25-30 MG	SPEAKER
NRB1120AD	NRB1122AD	12	2	20 KC	30+42 MC	SPEAKER
	NRB1123AD	11	2	20 KC	42-54 MC	SPEAKER
	NRB1151AA	8	1	40 KC	25-30 MC	HANDSET ONLY
NRB1150AA	NRB1152AA	7	1	40 KC	30-42 MC	HANDSET ONLY
	NRB1153AA	7	1	40 KC	42-54 MC	HANDSET ONLY
	NRB 115 IAB	7	1	20 KC	25-30 MC	HANDSET ONLY
NRB1150AB	NRB1152AB	6	1	20 KC	30-42 MC	HANDSET ONLY
	NRB1153AB	6	1	20 KC	42-54 MC	HANDSET ONLY
	NRB1151AC	8.	2	40 KC	25-30 MC	HANDSET ONLY
NRB1150AC	NRB1152AC	7	2:	40 KC	30-42 MC	HANDSET ONLY
	NRB1153AC	7	2	40 KC	42-50 MC	HANDSET ONLY
	NRB1151AD	7	2	20 KC	25-30 MC	HANDSET ONLY
NRB1150AD	NRB1152AD	6	2	20 KC	30-42 MC	HANDSET ONLY
Ī	NRB1153AD	6	2	20 KC	42-54 MG	HANDSET ONLY

POWER AMPLIFIERS

MODEL NO.	CHASSIS SUFFIX	FREQUENCY RANGE	MODEL NO.	CHASSIS SUFFIX	TYPE OF BATTERIE
NLB6121A	2	25-30 MC	NPN6030B		DRY
NLB6122A	2	30-42 MC	NPN6031A		NICKEL-CADM
NLB6123A	1	42-54 MC]		EPD-88

POWER SUPPLIES



Carrier Squelch
Schematic Diagram
Motorola No. 63E81017A21-AA
(Sheet 2 of 2)

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REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	REFERI SYME
NTB6051AA	LEGEND L = 25-30 MC M = 30-42 MC H = 42-54 MC TRANSMITTE NTB6061AA	GR.	C127H, C128H C131L C134M C135L C135M C135H, C139L,
NTB6052AA NTB6053AA NTB6051AB NTB6052AB NTB6053AB	NTB6062AA NTB6063AA NTB6061AB NTB6062AB NTB6063AB		157L, 16 C138, 1 154M C140M, 140H, 26 C141L
C101, 141, 201	20C82399D04	CAPACITOR, fixed: uuf ±10%; 75 v; unl. stated var; 5.5-18; 200 v; NP0	C141M, C151M, C152 C154L,
C102, 104, 202 C103, 131M, 140L, 142M,	21K861440 21K861435	470; N2200 70; N150	155L, 15 C187, 20 C188L, 1 C205 C205A
156L, 203 C105L, 105H, 106M, 106H,	21D82877B02	150; N1400	C205B
C105M C107, 125M, 125H, 150 C108	21K865922 21K847065 23C82397D09		CR101, CR103 CR105
C109, 110 C111 C113, 137 C114 C115, 119 C117 C120L, 120H, 139H	21K858108 8K854329 23C82397D17 8C82548E03 23C82397D03 8C82548E02 21K861436	.005 uf; 100 v	L101L L101M L101H L102 L103L,
C120M, 132 C121, 128M C123L, 124L, 127L, 127M C123M C123H, 131H,	21K861438 21K861428 21D82877B35 21K868384 21K864013	220; N1400 6; N150 220; N470 100; N150 50; N150	L103M, L104M, L105L L105M, L106L
134H C124M C125L C126, 133, 136, 138, 149, 155M, 158	21D82239E03 21K831126 21K861443	250 ±5%; 200 v .002 uf GMV; 300 v .01 uf +100-20%	L106M, 106H, 10 L107L L108H, 109L, 10 L108H, L110L, L110M, 210M, 2 L111 L112L L112M L112H L112H L114 L211, 2
			Q101, 20 Q102 Q103 Q104, 10 Q106 Q107, 10 Q110, 11 Q112
			R101, 20 R102, 20 R103, 10 R104, 12 123M R105, 12 R110 R111 R112 R113 R114 R115 R116 R117

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C127H, 134L	21D82877B15	120; N150
C128H	21K861427	4; N150
C131L	21K864012	60; N150
C134M	21K864067	80; N150
C135L	21K868384	100; N150
C135M	21K864522	90; N080
C135H, 159L	21K861434	40; N150
C139L, 157L, 160L	21K861432	20; N150
C138, 139M,	21K861441	500; N4700
154M	5111001111	
C140M, 148,		
140H, 204	21D82877B19	15 ±5%; NP0
C141L	20C82399D07	var; 15-60; 200 v; N1500
C141M, 141H	20C82399D04	var; 5, 5-18; 2000 v; NP0
C151M, 151H	21K861430	10; N150
C152	21K861462	15; N150
C154L, 154H,	21C82724H01	dual sect.; c/o:: each sect;
155L, 155H	21002077011	5500 +100-20%
C187, 206	21D82877B11	10.5 ±5%; NP0 1.0 uf +40~10%;: 15 v
C188L, M	23D82397D07 21C82724H01	dual sect.; c/o::
C205 C205A	210024241101	5500 +100-20%
C205A C205B		5500 +100-20%; 5500 +100+20%;
25035		5540 (100-60/0)
		SEMICONDUCTOR DEVICE,
		diode: NOTE I
CR 101, 102	48C82178A01	germanium
CR 103	48C82256C08	zener type
CR 105	48C82392B03	silicon
		COLV. D.D.
		COIL, RF: does not incl.
T 1017	24C82901B04	76K835565 CORRE, tuning modulator
L101L L101M	24C82901B04 24C82901B02	modulator
L101M L101H	24C82901B02	modulator; GRIN-YEL
L102	24B8Z194C01	lst doubler; RED
L103L, 104L	24C82904B19	quadrupler output; 2nd doubler
•		input
L103M, 103H	24C82904B14	quadrupier output; 2nd doubler
L104M, 104H	24C82904B15	output 2nd doubler input
L104M, 104H	24C82904B20	2nd doubler
L105M, 105H	24C82904B12	2nd doubler outtput
L106L	24B82648G01	driver input
L106M, 107M,	24B82209E01	driver input; final ampl. input
106H, 107H		and any and any
L107L	24B82737E01	final ampl. input
L108L, 108M,	24C82904B21	final ampl, out;put
109L, 109M		
L108H, 109H	24C82904B01	final ampl, out;put
L110L, 210L	24D82549D03	choke; 1 mh
L110M, 110H,	24D82549D10	choke; 390 uh
210M, 210H	250020555	.1.10.01
L111	25B82872B01	choke; 0.8 h
L112L	24A890687	choke; 2 uh
L112M L112H	24A82228G01 24C82000E08	choke; 0.31 uh; sleeved
	24C82000E08 24D82549D09	choke: 15 uh
L114 L211, 212	24C82000E03	choke; 9 uh
		TRANSISTOR: NOTE I
Q101, 201	48R869010	P-N-P; type Mr9010
Q102	48R869058	P-N-P; type M'9058
Q103	48R869009	P-N-P; type M'9009
Q104, 105	48R869008	P-N-P; type M:9008
Q106	48R869052	N-P-N; type M9052
Q107, 108	48R869051	N-P-N; type M'9051
Q110, 111 Q112	48R869038 48R869079	P-N-P; type M'9038 N-P-N; type M'9079
~~~~	202000 2017	** * **** *** **** *** *** *** *** ***
		RESISTOR, fixced: ±10%; 1/4 w;
	**************************************	unl. stated
R101, 201	6K129242	56K
R102, 202	6R 129269	1, 8K
R 103, 109	6K127803	1.5K
R104, 123L, 123M	6K127805	15 <b>K</b>
R105, 126	6K127801	470
R110	6K129620	560
R111	6K129887	12K ±5%
R112	6K129668	10K ±5%
	6R 129804	2.2K ±5%
R113		27
R113 R114	6S131594	[ - '
R114 R115	6S124A60	3K ±5%
R114 R115 R116	6S124A60 6K127806	3K ±5% 27K
R114 R115	6S124A60	3K ±5%

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120	6K128902	47K
R121	6K127804	4.7K
R122,132L	6R127802	1K
R123H R124, 131	6K129225 6R127800	10K 220
R125	6R 127775	330
R127	6R 129662	180
R133	6R131650	18
R135	6K129433	5, 6K
R136	6R 129231	3.3K
R137	18C82035B10	var; 10
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
RT102	6B859699	THERMISTOR: 75 ohms @ 25°C
Y101, 201	ABX-2	CRYSTAL UNIT, quartz; NOTE II xmtr. control
	NON-REFEREN	CED ITEMS
	26A82609E01	HEAT SINK; 3 req'd
NGN6023A	NCN6043A	NCN6052A
NGN6025A	NCN6044A	NCN6054A
NGN6026A	NCN6045A	NCN6056A
NCN6039A	NCN6047A	NCN6058A
NCN6041A	NCN6049A	NCN6060A
		CONNECTOR, receptacle:
J801	9C82817E01	female; coaxial; uhf type
J803	28C82846E01	male; 9 contact
K801	80C82860E01	RELAY, armature; hermetically sealed; 13.6 v d-c; 4 form "C"; coil res. 160 LOUDSPEAKER, permanent
LS801	50D82808E01	magnet; 3", square; 50 ohms impedance RESISTOR,
R801	18C82816E02	var; 10K ±10%; weatherproof
R802	6K129662	fixed; 180 ±10%; 1/4 w
R803	18C82816E01	var; 15K ±10%; weatherproof
R804	6R 6040	fixed: 680 ±10%; 1/2 w
)		SWITCH:
\$801	40B82851E01	toggle; spst; weather-resistant
\$802	40C82843E01	rotary; 2 pole; 2 position;
		non-shorting (2-freq.)
	NON-REFEREN	
	1V80727A11	HANDLE ASSY. incl. mic. holding clip (for models NCN6039A, NCN6041A, NCN6043A, NCN6045A, NCN6047A and NCN6049A) HANDLE ASSY.: incl. handset
	42K861179	holder (for models NCN6044A, NCN6052A, NCN6054A, NCN6056A, NCN6058A, NCN6060A, NGN6023A, NGN6025A and NGN6026A) CLAMP, cable: 2 req'd
	42A82143C02	CLAMP, cable
	32B82855E01	GASKET, rubber: housing seal
	36B82812E03	KNOB, control: 2 req'd, (vol. & sq.)
	36B82804E01	GASKET: (speaker mtg.)
1	35B82803E01 13C82815E01	CLOTH, grille GRILLE (1-freq. models)
	13C82815E01	GRILLE (2-freq. models)
ese un comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la comingionidade de la co	1V80727A10	HOUSING ASSY.: incl handle (for models NCN6041A,
en para de la companya  1V80731A68	NCN6043A and NCN6045A) HOUSING ASSY.: incl. handle (for models NCN6041A, NCN6047A and NCN6049A)	
The Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Co	1V80729A94	HOUSING ASSY.: incl. handle (for models NCN6044A, NCN6056A and NGN6023A)
Para vice fur to a fa	1V80731A67	HOUSING ASSY.: incl. handle (for models NCN6052A,

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R119 R120	18B82876B04 6K128902	var; 2K ±15%; 1/20 w 47K
R121	6K127804	4.7K
R122,132L	6R127802	1K
R123H	6K129225	10K
R124, 131	6R127800	220
R125	6R 127775	330
R127	6R 129662	180
R133	6R 131650	18
R135	6K129433	5.6K 3.3K
R136 R137	6R 129231 18C82035B 10	var; 10
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
-		
RT102	6B859699	THERMISTOR: 75 ohms @ 25°C
		CDVCTAI HNIT
		CRYSTAL UNIT, quartz;
Y101, 201	ABX-2	xmtr. control
	L.1235	Land, Comitor
	NON-REFEREN	ICED ITEMS
	26A82609E01	HEAT SINK; 3 req'd
IGN6023A	NCN6043A	NCN6052A
IGN6025A	NCN6044A	NCN6054A
GN6026A	NCN6045A	NCN6056A
ICN6039A	NCN6047A	NCN6058A NCN60604
ICN6041A	NCN6049A	NCN6060A
		CONNECTOR, receptacle:
J801	9C82817E01	female; coaxial; uhf type
J803	28C82846E01	male; 9 contact
K801	80C82860E01	RELAY, armature; hermetically sealed; 13.6 v d-c; 4 form "C"; coil
		res. 160 LOUDSPEAKER, permanent
LS801	50D82808E01	magnet; 3", square; 50 ohms impedance
R801	18C82816E02	RESISTOR, var; 10K ±10%; weatherproof
R802	6K129662	fixed; 180 ±10%; Weatherproof
R803	18C82816E01	var; 15K ±10%; weatherproof
R804	6R 6040	fixed: 680 ±10%; 1/2 w
	1	SWITCH:
\$801	40B82851E01	toggle; spst; weather-resistant
\$802	40C82843E01	rotary; 2 pole; 2 position;
		non-shorting (2-freq.)
	NON-REFEREN	NCED ITEMS
TTT ALS ASSUMENTS OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE	1V80727A11	HANDLE ASSY, incl. mic.
		holding clip (for models
		NCN6039A, NCN6041A,
		NCN6043A, NCN6045A,
		NCN6047A and NCN6049A)
	1V80729A93	HANDLE ASSY .: incl. handset
		holder (for models NCN6044A,
	1	NCN6052A, NCN6054A,
	Į.	NCN6056A, NCN6058A,
		NCN6060A, NGN6023A, NGN6025A and NGN6026A)
	42K861179	CLAMP, cable: 2 req'd
	42A82143C02	CLAMP, cable
	32B82855E01	GASKET, rubber: housing seal
	36B82812E03	KNOB, control: 2 req'd,
		(vol. & sq.)
	36B82804E01	GASKET: (speaker mtg.)
	35B82803E01	CLOTH, grille
	13C82815E01	GRILLE (1-freq. models)
	13C82815E04	GRILLE (2-freq. models)
	1V80727A10	HOUSING ASSY: incl handle (for models NCN6041A,
		NCN6043A and NCN6045A)
	1V80731A68	HOUSING ASSY,: incl. handle
		(for models NCN6041A,
		NCN6047A and NCN6049A)
	1V80729A94	HOUSING ASSY.: incl. handle
	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	(for models NCN6044A,
	17700721447	NCN6056A and NGN6023A) HOUSING ASSY.: incl. handle
	1V80731A67	(for models NCN6052A,
	tina and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the same and an analysis of the sa	NCN6054A, NCN6058A,
		NCN6060A, NGN6025A
	1	and NGN6026A)

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120	6K128902	47K
R121	6K127804	4.7K
R122,132L	6R127802	1K
R123H	1	
	6K129225	10K 220
R124, 131	6R 127800	
R 125	6R 127775	330
R127	6R 129662	180
R133	6R131650	18
R135	6K129433	5.6K
R136	6R 129231	3.3K
R137	18C82035B10	var; 10
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
RT102	6B859 <b>6</b> 99	THERMISTOR: 75 ohms @ 25°C
		CRYSTAL UNIT, quartz; NOTE II
Y101, 201	ABX-2	xmtr, control
	NON-REFEREN	ICED ITEMS
<del></del>	26A82609E01	HEAT SINK; 3 req'd
IGN6023A	NCN6043A	NCN6052A
IGN6025A	NCN6044A	NCN6054A
IGN6026A	NCN6045A	NCN6056A
ICN6039A	NCN6047A	NCN6058A
ICN6041A	NCN6049A	NCN6060A
		CONNECTOR, receptacle:
J801 J803	9C82817E01 28C82846E01	female; coaxial; uhf type male; 9 contact
K801	80C82860E01	RELAY, armature; hermetically sealed; 13.6 v d-c; 4 form "C"; coil res. 160 LOUDSPEAKER, permanent
LS801	50D82808E01	magnet;  3", square; 50 ohms impedance RESISTOR,
R801	18C82816E02	var; 10K ±10%; weatherproof
R802	6K129662	fixed; 180 ±10%; 1/4 w
	18C82816E01	var; 15K ±10%; weatherproof
R803	1	
R804	6R 6040	fixed: 680 ±10%; 1/2 w SWITCH:
S801	40B82851E01	toggle; spst; weather-resistant
\$802	40C82843E01	rotary; 2 pole; 2 position;
5002	40002013201	non-shorting (2-freq.)
***************************************	NON-REFEREN	NCED ITEMS
<del></del>	1V80727A11	HANDLE ASSY, incl. mic.
	1V80729A93	holding clip (for models NCN6039A, NCN6041A, NCN6043A, NCN6045A, NCN6047A and NCN6049A) HANDLE ASSY.: incl. handset holder (for models NCN6044A, NCN6052A, NCN6054A, NCN6056A, NCN6058A, NCN6060A, NGN6023A,
	42K861179 42A82143C02	NGN6025A and NGN6026A) CLAMP, cable: 2 req'd CLAMP, cable
	32B82855E01	GASKET, rubber: housing seal
	36B82812E03	KNOB, control: 2 req'd.
		(vol. & sq.)
	36B82804E01	GASKET: (speaker mtg.)
	35B82803E01	CLOTH, grille
	13C82815E01	GRILLE (1-freq. models)
	13C82815E04	GRILLE (2-freq. models)
	1V80727A10	HOUSING ASSY .: incl handle
	1	(for models NCN6041A,
		NCN6043A and NCN6045A)
l	1V80731A68	HOUSING ASSY, : incl. handle

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120	6K128902	47K
R121	6K127804	4.7K
122,132L	6R127802	1K
R123H	6K129225	10K
R124, 131	6R 127800	220
R125	6R 127775	330
R127	6R 129662	180
R133	6R131650	18
R135	6K129433	5, 6K
R136	6R 129231	3, 3K
R137	18C82035B10	var; 10
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
.,,	1,110200,401	
		THERMISTOR:
RT102	6B859699	75 ohms @ 25°C
		CRYSTAL UNIT, quartz;
		NOTE II
Y101, 201	ABX-2	xmtr. control
1101, 501	LADA-2	Amer, control
	NON-REFEREN	ICED ITEMS
	26A82609E01	HEAT SINK; 3 req'd
GN6023A	NCN6043A	NCN6052A
GN6025A	NCN6044A	NCN6054A
GN6026A	NCN6045A	NGN6056A
CN6039A	NCN6047A	NCN6058A
CN6041A	NCN6049A	NCN6060A
**************************************	T	CONNECTOR recentagles
T00.1	0000017501	CONNECTOR, receptacle:
J801 J803	9C82817E01 28C82846E01	female; coaxial; uhf type male; 9 contact
1602	20C02040E01	male, 7 contact
		RELAY, armature;
		hermetically sealed;
W201	90C93960E01	13.6 v d-c; 4 form "C"; coil
K801	80C82860E01	res. 160
	1	t e
		LOUDSPEAKER, permanent
		magnet;
LS801	50D82808E01	3", square; 50 ohms impedance
		RESISTOR,
R801	18C82816E02	var; 10K ±10%; weatherproof
R802	6K129662	fixed; 180 ±10%; 1/4 w
R803	18C82816E01	var; 15K ±10%; weatherproof
R804	6R 6040	fixed: 680 ±10%; 1/2 w
	1	SWITCH:
\$801	40B82851E01	toggle; spst; weather-resistant
\$802	40C82843E01	rotary; 2 pole; 2 position;
5002	400020431501	non-shorting (2-freq.)
<del></del>	.1	
	NON-REFEREN	NCED ITEMS
<del></del>	1V80727A11	HANDLE ASSY, incl. mic.
	1,00,2(811	holding clip (for models
	1	NCN6039A, NCN6041A,
		NCN6039A, NCN6041A, NCN6043A, NCN6045A,
		NCN6043A, NCN6043A, NCN6047A and NCN6049A)
	13700700100	
	1V80729A93	HANDLE ASSY,: incl. handset
		holder (for models NCN6044A,
		NCN6052A, NCN6054A,
		NCN6056A, NCN6058A,
	1	NCN6060A, NGN6023A,
	-	NGN6025A and NGN6026A)
	1	

IPTION	SYMBOL	PART NO.	
/20 w	NLN6306A Unit (	. 4	
	J802	1V80715A85	CONNECTOR, receptacle: female; 4 contact; does not inc 2A81180 NUT, knurled
	L801 thru 804	24C847920	COIL, RF; choke: 9 uh
	NMN6018A Micr	ophone (plug-in	transistorized) MK501
		1	AMDIJETER AF:

REFERENCE MOTOROLA

 A501	1V80727A19	AMPLIFIER, AF: incl C501, C502, C503, CR501, Q501, R501 and 1V80727A20 BOARD, circuit component mtg
C501, 502, 503	21D82428B10	CAPACITOR, fixed: .0033 ±10%; 100 v
CR501	48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I germanium
DP501	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type
P501		CONNECTOR, plug: p/o W501
Q501	48R134621	TRANSISTOR, NOTE I P-N-P; type M4621
R501	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w
S501	40C82863E01	SWITCH, push; single pole normally ope
W501	30D82565B04	CORD, microphone, incl ref part P501 and a coiled 4 conductor; stranded cord
	NON-REFEREN	ICED ITEMS
	15C82828E01	HOUSING, microphone: (front)

15C82827E01	HOUSING, microphone (rear
41B82856E01	SPRING, backup
38B82833E01	BUTTON, push
35A82853E01	DIAPHRAGM, microphone
4C82418B22	WASHER, insulating
75A82852E01	PAD, rubber; 1.24" dia.
75A82192A02	PAD, rubber; 0.562" dia.
64A82826E01	PLATE, tapped
7B82801E01	BRACKET, hold-down
32A82661C02	GASKET
42B82831E01	CLAMP, cable
1V80727A18	SPRING AND BUSHING ASSY
43K475873	SPACER

# NLB6121A RF Amplifier (25-30 MC) NLB6122A RF Amplifier (30-42 MC) NLB6123A RF Amplifier (42-54 MC)

		CAPACITOR, fixed: uuf unl
1		stated
C401L	21K855809	33 ±5%; 250 v; N150
C401M	21D82610C07	51; 200 v; N150
C401H	21K410089	27 ±10%; 500 v
C402L, 402M	21K840365	24 ±5%; 500 v
C402H, 407H	21K859211	47 ±5%; 300 v
C403L, 403M,	20C82109C01	var: 20-100; 350 v; N2100
406L, 406,		
408		
C403H	20K840719	var: 8-50; 200 v
C404	21C82187B14	.001 uf ±10%; 200 v
C405, 405M	21K861435	70 ±10%; 75 v; N150
C405H	21D82610C05	57 ±5%; 200 v; N150
C407L, 407M	21K861436	100 ±10%; 75 v; N750
C409L, 409M	21D82355B13	51 ±5%; 500 v; N1500
C409H	21D82355B14	62 ±5%; 500 v; N1500
C410L	21D82426B10	.0033 ±10%; 100 v
C410M	21K858108	3000 ±25%; 250 v
C410H	21K858107	1500 ±25%; 250 v
		COIL, RF:
L401L, 401M	24V82643G01	input coil assembly
L401H	24B82640G01	input coil assembly

REFERENCE MOTOROLA SYMBOL PART NO.		DESCRIPTION	
L402L, 402M, 402H	24V80900A86	choke; 1,02 uh	
L403L, 403M	24A82813E01	coil, output	
L403H	24A82818G01	coil, output	
L404	24A82819G01	coil, output	
L405L, 405M	24C82000E15	choke; tapped output	
L405H	24C82000E14	choke, output	
L406L	24B8212ZD06	choke; filter .0872 uh	
L406M	24B82122D04	3 turns	
L406H	24B82122D07	2 turns	
		TRANSISTOR: NOTE I	
Q401L, 401M	48R869101	P-N-P; type M9101	
Q401H	48R869102	P-N-P; type M9102	
AL	101(00)102		
	/	RESISTOR, fixed: ±10%; 1 w	
R401L, M	6R6330	150	

NPN6031A I	Power Supply (less b	attery) Nickel-Cadmium
CR601	48C82095C01	SEMICONDUCTOR DEVICE, diode: NOTE I silicon
F601	65A82496G01	FUSE, cartridge; 3 amp/32 v; 1/4" x 5/8"
J601	9C82847E01	CONNECTOR, receptacle: female; 9 contact
P601 P602	28A82488G01 28A16313	CONNECTOR, plug: male; 2 contact male; 3 contact
XF601	1V80731A0 <b>3</b>	FUSEHOLDER ASSY.: single fuse mounting
	NON-REFEREN	NCED ITEMS
	1V80731A01 64B82653G01 41A82652G01 22A82651G01 14A82650G01	HOUSING ASSY. (riveted) PLATE, door SPRING, torsion PIN; pivot INSULATOR
	20 10 / 0270	iman i u

#### NPN6030B Power Supply (less battery) Dry

38A868379

NPN 6030B Pow	er Supply (less b	attery) Dry
C601, 602, 603, 604, 605 C606, 607 C606A, 607A,	21C82187B16 21K800802	CAPACITOR, fixed: .003 uf ±5%; 100 v  dual sect; c/o; .001 uf GMV +100% max; 500 v
C606B, 607B		.001 uf GMV +100% max; 500 v
F 60 1	65R132923	FUSE, cartridge: 3 amp/250 v
J601	9C82847E01	CONNECTOR, receptacle: female; 9 contact
	NON-REFERE	NCED ITEMS
	1V80731A83 1V80731A85 1V80731A87	HOUSING ASSY, (riveted) BATTERY HOLDER ASSY, (riveted) BATTERY COVER ASSY.
		(riveted)

TAB, battery plug

#### NLN6310A Battery Kit (dry)

	60B82455G01	BATTERY, dry; 1.5 v; 11 req'd.
L		

#### NMN6017A Handset

	55P82446G01	HANDLE, handset		
		CAP, transmitter		
	15P82446G03	CAP, receiver		
	40P82446G04	SWITCH, push-to-talk		
	59P82446G05	CARTRIDGE, receiver		
	59P82446G06	CARTRIDGE, transmitter		
		SLEEVE, strain relief		
	30D82565B19	CORD, handset		

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION				
NMN6018A Mic	NMN6018A Microphone (plug-in; transistorized) MK501					
A501	1V80727A19	AMPLIFIER, AF; incl C501, C502, C503, CR501, Q501, R501 and 1V80727A20 BOARD, circuit component mtg				
C501, 502, 503	21D82428B10	CAPACITOR, fixed: ,0033 ±10%; 100 v				
CR501	48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I germanium				
DP501	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type				
P501		CONNECTOR, plug: p/o W501				
Q501	48R134621	TRANSISTOR, NOTE I P-N-P; type M4621				

6K127807

40C82863E01

48C82418B22

75A8Z852E01

64A82826E01 7B82801E01

NON-REFERENCED ITEMS

32A82661C02 GASKET

### NOTES;

R501

S501

I. Replacement transistors and diodes must be ordered by Motorola part number only for optimum performance.

RESISTOR, fixed:

push; single pole normally open

33K ±10%; 1/4 w

30D82565B04 CORD, microphone, incl ref part P501 and a coiled 4 conductor; stranded cord

15C82828E01 HOUSING, microphone: (front) 15C82827E01 HOUSING, microphone: (rear) 41B82856E01 SPRING, backup 15C82827E01 HOUSING, microphone: (res 41B82856E01 SPRING, backup 38B82833E01 BUTTON, push 35A82853E01 DIAPHRAGM, microphone

75A82192A02 PAD, rubber; 0.562"dia.

42B82831E01 CLAMP, cable
1V80727A18 SPRING AND BUSHING ASSY,
43K475873 SPACER

WASHER, insulating

PLATE, tapped BRACKET, hold-down

PAD, rubber; 1.24" dia.

II. Crystals are part of the Radio Set Model only. When ordering crystal units specify car. freq.(s), crystal freq.(s) and crystal type number.

DIAG.	CHASSIS AND SUFFIX NO.	REF.	CHANGE	LOCATION	REFER TO CIRCUIT BOARD
V	NRB1121AF-9	C63, 78	WERE 23D82397D07,	Q13 BASE	EPD-8978-E
	NRB1122AF-12 NRB1123AF-11	R63	6.8 uf WAS 6K128545, 470	CIRCUIT	
	NRB1151AF-6	1.03	((115 (1115)(313) 1(0		
	NRB1152AF-5 NRB1153AF-5				
<b>V</b> 1	NLB6141A-3	C728	ADDED 21K861441,	Q701 BASE	EPD-9204-D
		C729	500 uuf ADDED 21K861442	"VIBRA-	
				SENDER - SPONDER"	
				UNIT	
w	NTB6051AC-1 NTB6051AD-1	C151L	WAS 21K861432, 20 uuf	PARTS LIST	EPD-8838-E
	NTB6061AC-1	R139L	ADDED 6K127802, 1K	Q112	
	NTB6061AD-1	C159L	REMOVED	COLLECTOR Q108 BASE	
			21K861434, 40 uuf;		
			WAS BETWEEN Q108 BASE AND		
Wı	NTB6051AC-1	C151L	GROUND REMOVED	PARTS LIST	EPD-8838-F
	NTB6051AD-1	R139L	REMOVED 1K; WAS	Q112	
	NTB6061AC-1 NTB6061AD-1		CONNECTED ACROSS Q112 EMITTER AND	CURRENT LIMITER	
		21501	COLLECTOR	Q108 BASE	
		C159L	ADDED	CIRCUIT	
		C188	ADDED	Q105 COLLECTOR	
				CIRCUIT	
Y	NLB6141A-4 NLB6142A-4	R706	WAS 6K129862, 150 OHMS	Q701 EMITTER	"PL" SQUELCH
	TILLUTTERS	R726	ADDED 56K	Q701 BASE	EPD-9204-E,
z	NLB6141A-5	R727	ADDED 470 OHMS	"VIBRASEND-	EPD-9206-D
~	NLB6142A-5	****	xiv Onivid	ER-SPOND-	BD.
				ER"	EPD-9204-F, EPD-9206-E
AA	NRB1121AF-10	C34	WAS C34L, 20 uuf	PARTS LIST	RCVR, BD
	NRB1122AF-13 NRB1123AF-12		C34M, 30 uuf C34H, 30 uuf		EPD-8841-G
	NRB1121AH-6	C35	WAS 21K861428, 6 uuf	Q2 EMITTER	
	NRB1122AH-5 NRB1123AH-5	R14	WAS 6K127807, 33K	Q2 BASE	10.000000
	NRB1151AF-7 NRB1152AF-6	R15	WAS 6K127804, 4.7K		RCVR, BD, EPD-8978-F
	NRB1153AF-6	Q2, 301	WERE 48R869047	PARTS LIST	EFD-09/0-F
		Q3, 5 C305	WERE 48R869031 WAS C305L, 20 uuf		
		0303	C305M, 30 uuf		
		C302	C305H, 30 uuf WAS 21K861428, 6 uuf	Q301 EMITTER	
		R304	WAS 6K127807, 33K	Q301 BASE	
AB	NLB6141A-6	R303 C702A,	WAS 6K127804, 4.7K WAS 21B861469, DUAL	Q701 BASE	"PL" SQUELCE
	NLB614ZA-6	702B	.01 uf	CIRCUIT	BD. EPD-9204-G,
	NTB6061AC-Z	G154L,	WERE 21B861469,	PARTS LIST	EPD-9206-F XMTR, BD.
	NTB6063AC-3	154H,	DUAL .01 uf	TAKIS DIST	EPD-8838-G
	NTB6061AD-2 NTB6062AD-2	155L, 155H			
	NTB6063AD-3	C205A,		XMTR F2	
	NTB6051AD-2 NTB6052AD-2	205B		OSC, S802B SWITCH	
	NTB6053AD-3	<u> </u>			BANK EV
ABI	NRB1121AH-6 NRB1122AH-5	Q1	WAS 48R134576	PARTS LIST	RCVR. BD EPD-8841-H
A 73/2	NRB1123AH-5	7.1103-0	WFDF 24D62540D0*	PARTS LIST	
AB2	NTB6051AC-2 NTB6052AC-1	L110M,	WERE 24D82549D02	PARIS LIST	NONE
	NTB6053AC-3 NTB6061AC-2	210M,			
	NTB6062AC-1	210H L114	WAS 24D82549D01	İ	
<del>omice exercio.</del>	NTB6063AC-3	<b></b>			
AC	NLD6141A-7	C730	ADDED .002 uf	Q704 COLLEC-	
				TOR CIRCUIT-	LINE" BD. EPD-9204-H
AD	NTB6052AC-2 NTB6052AD-3	C188L,	WAS REF, C188	PARTS LIST	NONE
	VI D DU5/AD=3	M			
	NTB6062AC-2	1		I	İ
	NTB6062AC-2 NTB6062AD-3	94017	ADDED 484220 150	DE Printin mo	ł
	NTB6062AC-2	R401L, M	ADDED 6R6330, 150	RF INPUT TO POWER AMP.	
	NTB6062AC-2 NTB6062AD-3 NLB6121A-2		ADDED 6R6330, 150	POWER AMP. (USED IN	
	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2			POWER AMP, (USED IN P31DDC SER- IES ONLY)	
AE	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NRB1121AF-11		REPLACED 455 KC	POWER AMP. (USED IN P31DDC SER-	NONE
AE	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NRB1121AF-11 NRB1122AF-14 NRB1123AF-13		REPLACED 455 KC IF FILTER NFN6004AS WITH	POWER AMP, (USED IN P31DDC SER- IES ONLY)	NONE
AE	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NRB1121AF-11 NRB1121AF-11		REPLACED 455 KC	POWER AMP, (USED IN P31DDC SER- IES ONLY)	NONE
AE.	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NLB6122A-1 NRB1121AF-11 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1122AH-6 NRB1123AH-6		REPLACED 455 KC IF FILTER NFN6004AS WITH	POWER AMP, (USED IN P31DDC SER- IES ONLY)	NONE
AE	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NRB1121AF-11 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1122AH-6 NRB1123AH-6 NRB1123AH-6 NRB1151AF-8		REPLACED 455 KC IF FILTER NFN6004AS WITH	POWER AMP, (USED IN P31DDC SER- IES ONLY)	NONE
	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NLB6122A-14 NRB1122AF-14 NRB1123AF-13 NRB1122AH-6 NRB1123AH-6 NRB1123AH-6 NRB1152AF-7 NRB1152AF-7	М	REPLACED 455 KC IF FILTER NFN6004AS WITH NFN6006AS	POWER AMP. (USED IN P31DDC SER- IES ONLY) PARTS LIST	
	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NLB6122A-1 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1122AH-6 NRB1123AH-6 NRB1151AF-8 NRB1151AF-8 NRB1152AF-7		REPLACED 455 KC IF FILTER NFN6004AS WITH	POWER AMP, (USED IN P31DDC SER- IES ONLY)	NONE  RCVR. BD. EPD-8841-J
	NTB6062AC-2 NTB6062AC-3 NLB6121A-2 NLB6122A-2 NLB6122A-14 NRB1122AF-14 NRB1123AF-13 NRB1122AH-6 NRB1123AH-6 NRB1123AH-6 NRB1152AF-7 NRB1123AF-7 NRB1123AF-7 NRB1123AF-7 NRB1123AF-11 NRB1123AF-14 NRB1123AF-14	М	REPLACED 455 KC IF FILTER NFN6004AS WITH NFN6006AS  WAS 21K861603, 3.3 uuf WAS 48R869169,	POWER AMP. (USED IN P31DDC SER- IES ONLY) PARTS LIST	RCVR, BD.
	NTB6062AC-2 NTB6062AC-3 NLB6121A-2 NLB6122A-2 NLB6122A-14 NRB1122AF-14 NRB1122AF-13 NRB1122AH-6 NRB1122AH-6 NRB1152AF-7 NRB1152AF-7 NRB1152AF-7 NRB1152AF-7 NRB1152AF-7 NRB1152AF-1	M C17	REPLACED 455 KC IF FILTER NFM6004AS WITH NFM6006AS  WAS 21K861603, 3.3 uuf	POWER AMP. (USED IN P31DDC SER- IES ONLY) PARTS LIST	RCVR, BD.
AE1	NTB6062AC-2 NTB6062AD-3 NLB6121A-2 NLB6122A-2 NLB6122A-14 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1123AH-6 NRB1123AH-6 NRB1153AF-8 NRB1153AF-7 NRB1153AF-7 NRB1152AF-11 NRB1122AF-14 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7	M C17	REPLACED 455 KC IF FILTER NFN6004AS WITH NFN6006AS  WAS 21K861603, 3.3 uuf WAS 48R869169,	POWER AMP. (USED IN P31DDC SER- IES ONLY) PARTS LIST	RCVR, BD.

PARTS LIST for Schematic Diagram 63E81017A22- AE1

<u>LEGEND</u> L = 25-30 MC M = 30-42 MC H = 42-54 MC

NRB1121AF, NRB1151AF Receiver Circuit Board (25-30 MC) 1-Freq. NRB1122AF, NRB1152AF Receiver Circuit Board (30-42 MC) 1-Freq. NRB1123AF, NRB1153AF Receiver Circuit Board (42-54 MC) 1-Freq. NRB1151AH Receiver Circuit Board (25-30 MC) 2-Freq. NRB1152AH Receiver Circuit Board (30-42 MC) 2-Freq.

C1L, 1M, 13M			ard (42-54 MC) 2-Freq.
C1L, 1M, 13M, 12H, 21K861433			DESCRIPTION
C1L, 1M, 11M, 12H, 31K861432			CAPACITOR, fixed: uuf ±10%;
C2LL, 2H, 3Z, 59  C2LL, 2H, 3Z, 59  C2LL, 2H, 3Z, 59  C3			
30 C2L, 2H, 3Z, 59 C2M, 82 C18868829 C2 (20, N1400			
C2L, 2H, 3Z, 9C2, 2LK868829		21K861462	15; N150
59 C2M, 82 C3 C3 C4L C3 C4L C3 C4M, 5M C4M, 5M C4M, 34, 305 C5L C5L C5L C5L C5L C7L, 7M, 13L, 13M, 14L, 14M, 13M, 14L, 14M, 13M, 14L, 14M, 12M, 12K861431 C6L, 6M, 6H, 9L, 11L C9M, 11M, 333, 304 C9H, 11H C10L, 12L C15 C15 C15 C16 C15 C16 C17 C18, 20, 26, 21K861442 C101 C17 C18, 20, 26, 21K861440 C17 C18, 33, 304 C21, 27, 31, 37, 30, 30, 30, 30, 30, 30, 30, 30, 30, 30		21502077502	170. 311400
C2M, 82 C3 C4L C4L C4L C4L C4K C4H C5H C5H C5H C5H C5H C5H C5H C5H C5H C5		Z1D82811B02	150; N1400
C3L C4L C2L861433		218868820	220 · N1400
C4L			
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C35, 302  C42, 44, 4f, 48, 49, 51, 56, 61, 79, 80  C52  C53  C55  C55  C57  C1R864457  C68  C66, 67, 71  C68  C72, 73  C74  C72, 73  C74  C72, 73  C84  C84  C21K861447  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861443  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K861445  C1K8614			
C42, 44, 46, 48, 49, 51, 56, 61, 79, 80  C52 C53 C53 C55 C56 C57 C58, 62 C60 C60 C60 C61, 78 C64 C64 C64 C64 C65 C65 C65 C65 C66 C65 C66 C67 C66 C67 C67 C68 C66 C67 C68 C67 C68 C60 C69 C69 C69 C69 C69 C69 C69 C69 C69 C69			
48, 49, 51, 56, 61, 79, 80  C52  C53  C55  C55  C57  C58, 62  C60  C60  C61  C64  C65  C65  C65  C65  C66, 77  C68  C67  C68  C67  C68  C69  C69  C69  C69  C72, 73  C70  C70  C70  C70  C70  C70  C70  C	<b>₹</b> 5 5 5 5		-
48, 49, 51, 56, 61, 79, 80  C52  C53  C55  C55  C57  C58, 62  C60  C60  C61  C64  C65  C65  C65  C65  C66, 77  C68  C67  C68  C67  C68  C69  C69  C69  C69  C72, 73  C70  C70  C70  C70  C70  C70  C70  C			
48, 49, 51, 56, 61, 79, 80  C52  C53  C55  C55  C57  C58, 62  C60  C60  C61  C64  C65  C65  C65  C65  C66, 77  C68  C67  C68  C67  C68  C69  C69  C69  C69  C72, 73  C70  C70  C70  C70  C70  C70  C70  C	C42, 44, 4t.	21K861443	.01 uf +100-20%
61, 79, 80 C52 C53 C53 C55 C23C82397D06 C55 C23C82397D16 C57 C1K864457 C58, 62 C60 C21D82239E03 C63, 78 C3D82397D19 C64 C55 C65 C23D82397D19 C66, 67, 71 C21C82187B16 D721D82428B09 C69 C3D82397D07 C70 C3D82397D17 C70 C70 C70 C70 C70 C70 C70 C70 C70 C7	48, 49, 51, 56.		
C52 C53 C53 C3282397D16 C55 C55 C31824457 C58, 62 C60 C60 C61, 78 C64 C64 C64 C65 C65 C65 C65 C66, 67, 71 C68 C66 C67 C68 C66 C67 C68 C67 C68 C68 C69 C69 C72 C70 C70 C70 C70 C70 C70 C70 C70 C70 C70			
C53 C55 C55 C56 C23C82397D16 C23C82397D16 C24 #40-20%; 35 v C25R C58, 62 C60 C1B82239E03 C63, 78 C23D82397D19 C64 C23D82397D19 C65 C33D82397D17 C68 C66, 67, 71 C23D82397D17 C68 C69 C23D82397D17 C70 C70 C70 C70 C70 C70 C70 C70 C70 C7		21D82239E02	
C57 C58, 62 C58, 62 C60 C63, 78 C58, 62 C64 C65 C65 C65 C66, 67, 71 C68 C67 C68 C69 C69 C69 C72, 73 C70 C70 C70 C70 C70 C70 C70 C70 C70 C70		23C82397D06	
C58, 62 8C82317B03 21B82239E03 23D82397D19 23D82397D17 21C82187B16 or21D82428B09 23D82397D16 23D82397D17 C70 23D82397D15 21S2397D16 C72, 73 23D82397D15 C74 23D82397D15 C74 23D82397D15 C74 23D82397D15 C74 23D82397D15 C74 23D82397D08 C76 8C82317B06 C83 21K861437 C84 8C82317B01 0.1 uf; 100 v	C55	1	
C60 21D82239E03 250 ±5%; 200 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 4.7 uf +40-20%; 3 v 2 uf +40-20%; 8 v 4.7 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 8 v 2 uf +40-20%; 20 v 3 uf +20%; 20 v 3 uf +20%; 20 v 3 uf +20%; 20 v 3 uf +40-20%; 15 v 2 uf +40-20%; 15 v 2 uf +20%; 20 v 2 uf +20%; 15 v 2 uf +20%; 15 v 2 uf +20%; 15 v 2 uf +20%; 15 v 3 uf +20%; 20 v 2 uf +20%; 20 v 2 uf +20%; 20 v 2 uf +20%; 20 v 2 uf +20%; 20 v 2 uf +20%; 20 v 2 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 v 3 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-20%; 35 uf +40-	C57		1
C63, 78 C64 C65 C65 C66, 67, 71 C68 C67 C69 C72 C72 C72 C74 C74 C75 C74 C75 C74 C76 C76 C76 C77 C77 C78 C78 C78 C78 C78 C78 C78 C78			<b>1</b>
C64 C65 C3D82397D05 C66, 67, 71 C68 C69 C23D82397D17 C70 C70 C72 C72 C74 C74 C74 C75 C74 C75 C76 C76 C76 C77 C77 C78 C78 C78 C78 C78 C78 C78 C78			
C65 C66, 67, 71 C68 C67 C68 C69 C69 C70 C70 C70 C70 C70 C70 C70 C70 C70 C70			
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C68 21C82187B16 or21D82428B09 4700; 100 v (speaker models) 4700; 100 v (handset models) 1 uf +40-20%; 15 v 22 uf ±20%; 15 v (speaker models) 23D82397D16 22 uf ±20%; 15 v (speaker models) 10 uf ±20%; 20 v 0.15 uf +40-20%; 35 v 0.082 uf; 100 v 100; N2200 0.1 uf; 100 v	_		
c69 23D82397D07 23D82397D16 22 uf ±20%; 15 v (speaker models)  C72, 73 23D82397D15 23D82397D15  C74 23D82397D08 0.15 uf ±40-20%; 20 v (speaker models)  C76 8C82317B06 0.15 uf ±20%; 20 v (speaker models)  C83 21K861437 0.082 uf; 100 v (speaker models)  C84 8C82317B01 0.1 uf ; 100 v (speaker models)			
C69 23D82397D07 23D82397D16 22 uf ±20%; 15 v (speaker models)  C72, 73 23D82397D15 23D82397D08  C74 23D82397D08  C76 8C82317B06 .0082 uf; 100 v  C83 21K861437 100; N2200  C84 8C82317B01 0.1 uf; 100 v	0.00		
C70 23D82397D16 22 uf ±20%; 15 v (speaker models)  C72, 73 23D82397D15 10 uf ±20%; 20 v  C74 23D82397D08 0.15 uf +40-20%; 35 v  C76 8C82317B06 .0082 uf; 100 v  C83 21K861437 100; N2200  C84 8C82317B01 0.1 uf; 100 v	C69		
C72, 73 23D82397D15 10 uf ±20%; 20 v C74 23D82397D08 0.15 uf +40-20%; 35 v C76 8C82317B06 .0082 uf; 100 v C83 21K861437 100; N2200 C84 8C82317B01 0.1 uf; 100 v		i .	
C72, 73	510	المارد عدسوم	
C74 23D82397D08 0.15 uf +40-20%; 35 v C76 8C82317B06 .0082 uf; 100 v C83 21K861437 100; N2200 C84 8C82317B01 0.1 uf; 100 v	C72, 73	23D82397D15	
C76 8C82317B06 .0082 uf; 100 v C83 21K861437 100; N2200 C84 8C82317B01 0.1 uf; 100 v			
C83 21K861437 100; N2200 C84 8C82317B01 0.1 uf; 100 v		£	I
C84 8C82317B01 0.1 uf; 100 v		1 .	
		1	1
		•	2.2; N150
1 1		1	

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		SEMICONDUCTOR DEVICE,
CR1	48C8Z363E03	diode; NOTE I
CR2	48C859464	germanium
CR4, 6, 7 CR8, 9, 10	48C82178A01 48C82363E02	germanium silicon
CR12	48C82392B03	silicon
L1L, 2L, 3L	24C82765D07	COIL, RF: GRN-RED; does not incl. 76K861425 CORE, tuning or
L1M, 1H, 2M, 2H, 3M, 3H	24C82765D06	76A82686D02 SLEEVE, iron GRN-BRN; does not incl. 76K861425 CORE, tuning or
L4	24C82765D05	76A82686D02 SLEEVE, iron GRN-GRA; does not incl. 76K847160 CORE, tuning or
L5L, 5H, 301L, 301H	24C82766D04	76A82686D01 SLEEVE, iron BLU-GRAY; does not incl. 76K861425 CORE, tuning or
L5M, 301M	24C82766D08	76A82686D02 SLEEVE, iron BLU-RED; does not incl. 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron
L6	24C847920	choke; 9 uh
L9	24B82695D01	limiter; c/o pri: term, No. 1 and 2 with No. 5 center tap sec: term, No. 3 and 4
L10	24B82696D01	discriminator; 455 kc; incl. tuning core
L12 L13	25B82751D01 48C82392B03	choke; 1.5 h silicon
Ql	48R869167	TRANSISTOR: NOTE I P-N-P; type M9167
Q2, 5, 301	48R869168	P-N-P; type M9168
Ω3 Ω4	48R869238 48K869062	P-N-P; type M9238 N-P-N; type M9062; BLU
Q6, 7, 8, 9,	48R869057	P-N-P; type M9057
10, 11	107060140	D 31 D 4 370140
Q12, 13 Q14	48R869148 48R869022	P-N-P; type M9148 N-P-N; type M9022
Q15	48R869028	P-N-P; type M9028
Q16	48R869027	N-P-N; type M9027
		RESISTOR, fixed: ±10%; 1/4 w;
D1142720204	(2512700/	unl stated 27K
R1,14,37,38,304 R2, 9, 22,	6K127806 6K127804	4, 7K
24, 26, 28, 30,		
45, 47 R3, 4, 7	6K129432	820
R5, 65	6K129433	5. 6K
R6, 21, 23,	6K127807	33K
25, 27, 29 R8, 49, 52, 57	6K127801	470
R10, 59	6K129775	330
R11, 31 R12	6K128685 6K129225	22K 10K
R13,32,39,44	6K128688	2.7K
R15, 303 R16,17,34,69,	6K128687 6K127802	6.8K 1K
301, 302	315121002	
R33, 50	6K128689	2. 2K
R43, 60 R46, 68	6K128904 6K129144	18K 68K
R51 R53	6K129233 6K129433	47 5.6K; handset models
	or6K127804	4.7K; speaker models
R54, 55 R58	6K127806 6K129862	27K; speaker models 150
R63	6K129862 6K129269	1, 8K; 1/10 w
R64	6K129753	470; handset models
TIL	24C82767D06	TRANSFORMER, GRN-BLK; does not incl. 76K861425 CORE, tuning or
тім, ін	24C82767D03	76A82686D02 SLEEVE, iron GRN-ORG; does not incl. 76K861425 CORE, tuning or
T2L	24C82767D07	76A82686D02 SLEEVE, iron GRN-VIO; does not incl. 76K861425 CORE, tuning or
TŽM, ŽH	24C82767D04	76A82686D02 SLEEVE, iron GRN-GRN; does not incl. 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
T3, 5	24C82767D05	GRN-BLU; does not incl. 76K847164 CORE, tuning or 76A82686D01 SLEEVE, iron
Т4	24C82207G01	RED-RED; does not incl. 76K847164 CORE, tuning or 76A82686D01 SLEEVE, iron
Т6	1V80729A40	ASSY. audio input; GRN dot; c/o; pri: coil res. 1K; imped. 10K; sec: coil res. 200 imped. 1,2K
T7	25B82893E01	audio: pri: imped. 1200; res. 125; sec: imped. 120; res. 12
		CRYSTAL UNIT, quartz:
Y1	YM45 orYM46	25-42 mc 42-54 mc
YZ	YN	5, 245 or 6, 155 mc

#### FILTER

Z1	NFN6006AS	FILTER, IF: bandpass
	NON-REFEREN	ICED ITEMS
	26B82671D01 14A82271E01	SHIELD, coil: 10 req'd INSULATOR, coil shield: used with L1, 2, 3, 5, T1, 2

NLB6141A "Private-Line" Squelch Deck (25-42 MC)

NLB6142A "Priv	ate-Line" Squel	ch Deck (25-42 MC) ch Deck (42-54 MC)
		CAPACITOR, fixed: uf; ±10%; unl stated
C701	23D82397D20	0.12 ±20%; 35 v; non-polarized
C702	21C82724H01	dual sect.; c/o:
C702A		.0055 +100~20%; 75 v
C702B		.0055 +100-20%; 75 v
C703	23D82397D11	.068; 35 v
C704	23D82397D13	.022; 6 v
C705	23D82397D10	.056; 35 v
C706	23D82397D12	0.12; 20 v
C707, 719	23D82397D14	.082; 20 v
C709	23D82397D05	4.7 +40-20%; 3 v
C710	21K847065	500 uuf GMV; 250 v
C711, 713, 724	23D82397D07	1 +40-20%; 15 v
C712, 714	23D82397D23	6.8 ±20%; 20 v
C715, 717	23D82397D09	6, 8 +40-20%; 10 v
C716, 721	23D82397D16	22 ±20%; 15 v
C718,	23D82397D28	3.3 ±20%; 20 v
C720	23D82397D25	0.27; 20 v
C722,723,729,730		.002 +100-20%; 75 v
C726	21K858108	.003 ±25%; 250 v
C727	21K831126	.002 GMV; 300 v
C728	21K861441	500 uuf; 75 v; N4700 SEMICONDUCTOR DEVICE,
		diode: NOTE I
CR701	48C82392B03	silicon
CR702	48C82187A01	germanium
		COIL, RF: choke:
L701	25C82750D01	5 h
L702	25C82750D02	7 h
		TRANSISTOR: NOTE I
Q701, 702,	48R869033	P-N-P; type M9033
703, 704		RESISTOR, fixed: ±10%; 1/4 w
		unl stated
R701, 708	6S127805	15K
R702	6K128687	6,8K
R703	6S128686	8, 2K
R704, 705,	6K129242	56K
714, 716		
R706	6K129662	180
R709	6K128987	120K
R710,711,712	65127804	4.7K
R713	6K128558	5.6K; 1/10 w
R715,717,723	65128689	2.2K
R718	6S129752	270
R719	6K129225	10K
R720	65129269	1.8K
R721	6K129620	560 180K
R722	6K129229 6K129231	3,3K
R724 R725	6K129231	3, 3K 820
R726	6K129432 6K128570	56K; 1/10 w
R727	6K128545	470; 1/10 w (NLB6141A)
1 **. • *	or6K127801	470; (NLB6142A)
1	1	,

#### TRANSMITTERS

SERIES	MODEL NO	CHASSIS SUFFIX	NO. OF FREQ.	FREQUENCY RANGE	RF POWER OUTPUT
	NTB6051AC	2	ı	25-30 MC	1.4 W
NTB6050AC	NTB6052AC	2	ı	30-42 MC	1,4 W
	NTB6053AC	3	1	42-54 MC	1.4 W
	NTB6051AD	2	2	25-30 MC	1.4 W
	NTB6052AD	3	2	30-42 MC	1. 4 W
	NTB6053AD	3	Z	42-54 MC	1, 4 W
<u> </u>	NTB6061AC	2.	1	25+30 MC	5 W
NTB6060AC	NTB6062AC	2.	1	30-42 MG	5 W
	NTB6063AC	3.	1.	42-54 MC	5 W
	NTB6061AD	2.	2	25-30 MC	5 W
NTB6060AD	NTB6062AD	3	2	30-42 MC	5 W
	NTB6063AD	3	2	42-54 MC	5 W

#### RECEIVERS

SERIES	MODEL NO.	CHASSIS SUFFEX	NO. OF FREQ.	CHANNEL SPACING	FREQUENCY RANGE	USED WITH
	NRB11Z1AF	11	1	20 KC	25-30 MC	HANDSET ONLY
NRB1120AF	NRB1122AF	14	1	20 KC	30-42 MC	HANDSET ONLY
	NRB1123AF	13	1	20 KC	42-54 MC	HANDSET ONLY
	NRB1151AF	8	1	20 KC	25-30 MG	SPEAKER
NRB 1150AF	NRB1152AF	Ť	1	20 KC	30-42 MC	SPEAKER
	NRB1153AF	7	1	20 KC	42-54 MC	SPEAKER
<del></del>	NRB1121AH	7	Ž	20 KC	25-30 MC	SPEAKER
NRB1120AH	NRB 112ZAH	6	2	20 KC	30-42 MC	SPEAKER
	NRB1123AH	6	2	20 KC	42-54 MC	SPEAKER

#### POWER SUPPLIES

MODEL NO.	CHASSIS SUFFIX	TYPE OF BATTERIES
NPN6030B		DRY
NPN6031A		NICKEL-CADMIUM

#### "PRIVATE-LINE" DECK

MODEL	CHASSIS SUFFIX
NLB6141A	6
NLB6142A	6

EPD-9020-J

#### POWER AMPLIFIERS

MODEL NO.	CHASSIS SUFFIX	FREQUENCY RANGE
NLB6121A	2	25-30 MC
NLB6122A	2	30-42 MC
NLB6123A		42-54 MC

#### CONTROL PANELS

MODEL NO.	CHASSIS SUFFIIX	XMTR. FREQ.	RCVR. FREQ.	HANDSET	SPEAKER	MICROPHONE	RF POWER OUTPUT
NGN6024A	1	1	1	X			1.4 W
NCN6040A	1	1	1		ж	х	1.4 W
NCN6042A	1	2	1		х	x	1.4 W
NCN6046A	1	1	1		х	х	5 W
NCN6048A	1	2	1		x	x	5 W
NCN6050A	1	2	Z		х	х	1.4 W
NCN6051A	1	2	2		Х	х	5 W
NCN6053A	1	2	1	х	х		1.4 W
NCN6055A	1	2	2	Х	х		1.4 W
NCN6057A	1	1	1	х	х		5 W
NCN6059A	1	2	1	ж	х		5 W
NCN6061A	1	2	2	ж	x		5 W
NCN6065A	1	2.	2	x	х		1.4 W

#### NOTE

- UNLESS OTHERWISE STATED: RESISTOR VALUES ARE IN OHMS, ±10%, 1/4 WATT, K±1000. ALL CAPPACITOR VALUES ARE IN MICROMICROFARADS.
- 2. REFER TO PARTS LIST FOR COMPONENT VALUE.
- 3. USED IN SINGLE FREQUENCY MODELS ONLY.
- 4. PART OF HOUSING.
- REFER 'TO RECEIVER PRINTED CIRCUIT BOARD AND WIRING IDIAGRAM FOR PROPER TAP.
- ALL VOILTAGE READINGS REFERENCED TO CHASSIS GROUND. DC REALDINGS TAKEN WITH A MOTOROLA DC MULTIMETER.
- 7. FREQUEENCY CALACULATIONS:

TRANSMITTER:  $f_0 = \frac{f_c}{16}$ 

RECEIVIER: f = CARRIER FREQUENCY (25-54 MC)

f₀₁=1ST OSCILLATOR CRYSTAL FREQUENCY (30,7-48.3 MC)

 $f_{02}$ = 2ND OSCILLATOR CRYSTAL FREQUENCY (REFER TO CHART ON BLOCK DIAGRAM)

f, = 1ST INTERMEDIATE FREQUENCY (5.7 MC)

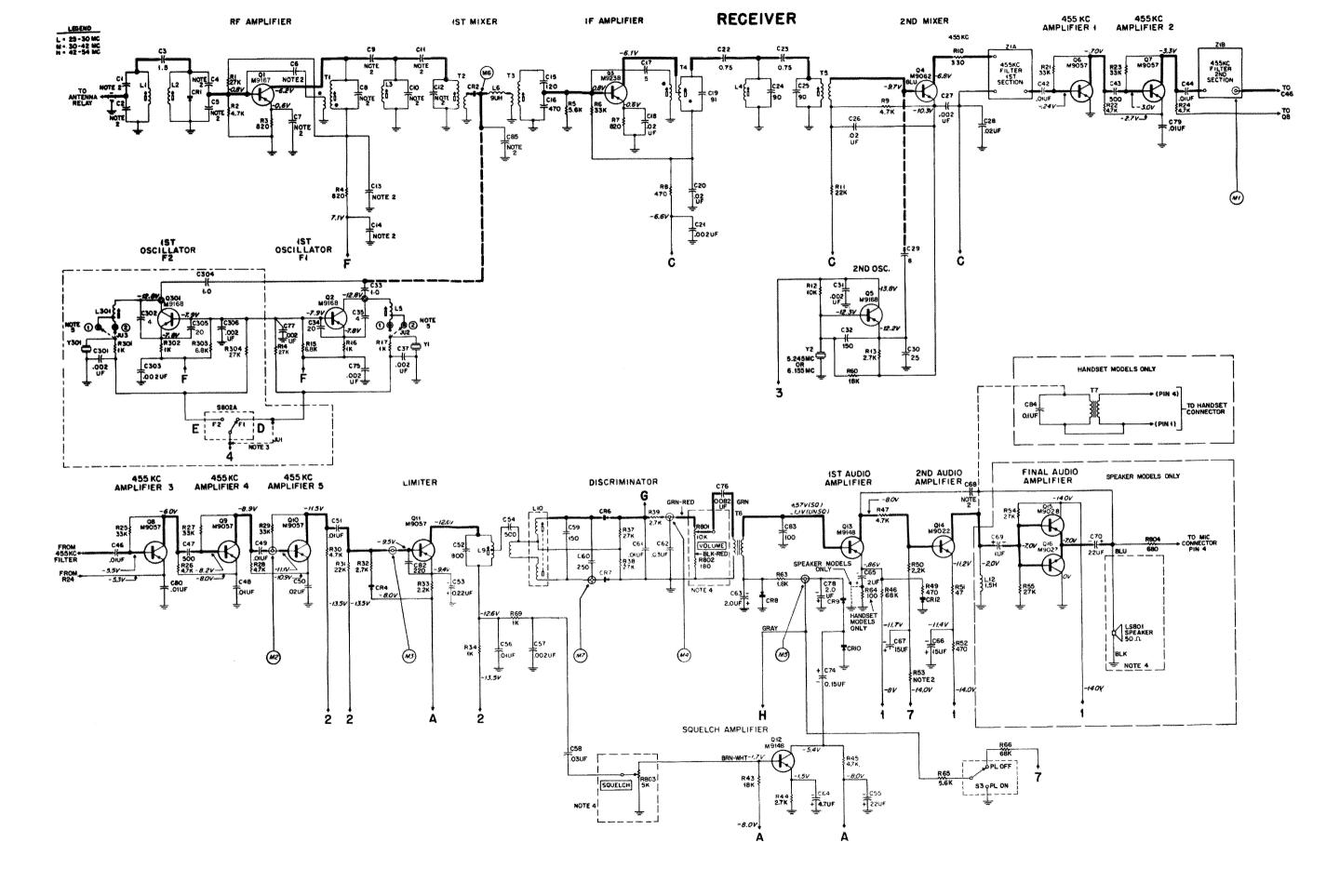
f₂ = 2ND INTERMEDIATE FREQUENCY (455 KC)

f₀₁=f_e+f₁ (25-42 MC)

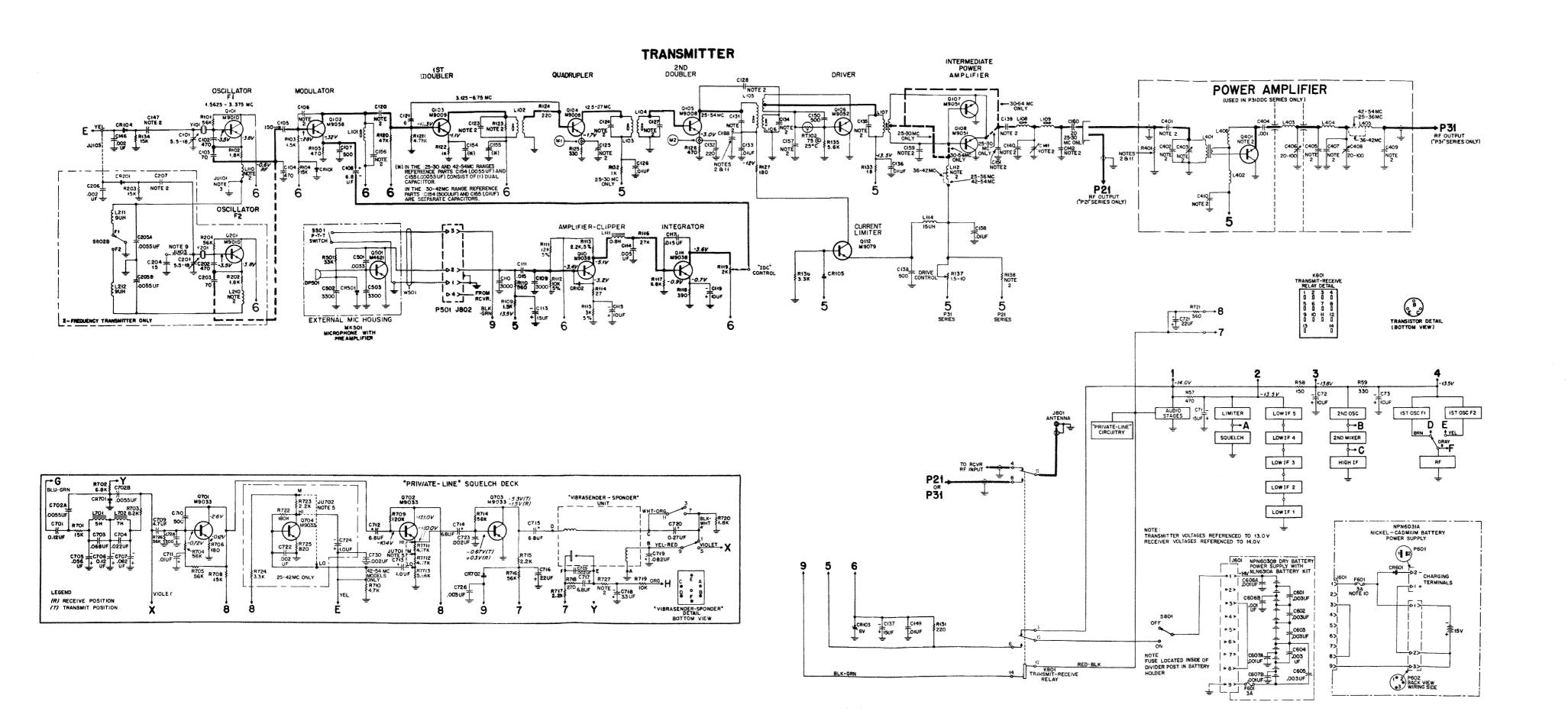
f₀₂=f_c - f₁ (42-54 MC)

- 8. HANDSELT MODELS ONLY.
- 9. JUI03 MIAY OR MAY NOT EXIST DEPENDING UPON OPERATING FREQUENCY.
- 10. REFER TO BATTERY REPLACEMENT AND CHARGING SECTION OF THE INSTRUCTION MANUAL FOR LOCATION OF FUSE.
- 11. NOT USEED IN 42-54 MC RANGE.

EPD-8874-C



25-54 MC "Handie-Talkie" Radio Set Dual Squelch "Private-Line" Schematic Diagram Motorola No. 63E81017A22-AE1 (Sheet 1 of 2)



25-54 MC "Handie-Talkie" Radio Set Dual Squelch "Private-Line" Schematic Diagram Motorola No. 63E81017A22-AE1 (Sheet 2 of 2)

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	NON-REFERE	NCED ITEMS
1V80724A84		PRINTED CIRCUIT BD, ASSY.

NTB6051AC, NTB6061AC Transmitter (25-30 MC) 1-Freq. NTB6052AC, NTB6062AC Transmitter (30-42 MC) 1-Freq. NTB6053AC, NTB6063AC Transmitter (42-54 MC) 1-Freq. NTB6051AD, NTB6061AD Transmitter (25-30 MC) 2-Freq. NTB6052AD, NTB6062AD Transmitter (30-42 MG) 2-Freq. NTB6053AD, NTB6063AD Transmitter (42-54 MG) 2-Freq.

NTB6053AD, N	TB6063AD Tran	smitter (42-54 MC) 2-Freq.
		CAPACITOR, fixed: uuf ±10%;
		75 v; unl stated
C101, 201	20C82399D04	var; 5,5-18; 200 v; NP0
C102, 104, 202	21K861440	470; N2200
C103, 131M,	21K861435	70; N150
140L, 142M, 156L, 203		
C105L, 105H,	21D82877B02	150; N1400
106M, 106H,	21502011502	150, 141400
124H		
C105M	21K865922	390; 500 v
C107, 125M,	21K847065	500 GMV; 250 v
125H, 150	ļ .	
C108	23C82397D09	6.8 uf +40≥20%; 10 v
C109, 110	21K858108	3000 ±25%; 250 v
C111	8K854329	.015 uf; 250 v
C113, 137	23C82397D17	15 uf ±20%; 20 v
C114	8C82548E03	.005 uf; 100 v
C115, 119	23C82397D03	10 uf ±20%; 6 v
C117	8C82548E02	0.15 uf; 100 v
C120L, 120H,	21K861436	100; N750
139H	212061420	220, 311400
C120M, 132,	21K861438	220: N1400
106L C121, 128M	21K861428	6; N150
C123L, 124L,	21D82877B35	220; N470
127L, 127M	21202077255	4 WO, 11-10
C123M	21K868384	100; N150
C123H, 131H,	21K864013	50; N150
134H		, 2
C124M	21D82239E03	250 ±5%; 200 v
C125L	21K831126	.002 uf GMV; 300 v
C126, 133,	21K861443	.01 uf +100-20%
136, 149,		
155M, 158		
C127H, 134L	21D82877B15	120; N150
C128H	21K861427	4; N150
C131L	21K864012	60; N150
C134M	21K864067	80; N150
C135L	21K868384	100; N150
C135M C135H, 159L	21K864522 21K861434	90; N080 40; N150
C139L,	21K861432	20; N150
157L, 160L		20, 14130
C139M, 154M,	21K861441	500; N4700
138		- 7
C140M, 140H,	21D82877B19	15 ±5%; NP0
204		
C141L	20C82399D07	var; 15-60; 200 v N1500
C141M, 141H	20C82399D04	var; 5,5-18; 200 v NP0
C142H	21D82877B18	30 ±5%; NP0
C146, 206	21K861442	.002 uf +100-20%
C147, 207	21D82877B05	150; N750
C151M, 151H C152	21K861430 21K861462	10; N150
C154L, 154H,	21C82724H01	15; N150 dual sect.; c/o; each sect.;
155L, 155H		5500 +100-20%
C188L, M	23D82397D07	1.0 uf +40-10%; 15 v
C205	21C82724H01	dual sect.; c/o;
C205A		5500 +100-20%
G205B		5500 +100-20%
		SEMICONDUCTOR DEVICE,
		diode: NOTE I
CR101, 102	48C82178A01	germanium
CR103	48C82256C08	zener type
CR104, 201	48C863140	silicon
CR105	48C82392B03	silicon
		COIL, RF; does not incl.
1.1017	24082001804	76K835565 CORE, tuning
L101L L101M	24C82901B04 24C82901B02	modulator modulator
LIGIM	24C82901B05	modulator; GRN-YEL
L102	Z4B8Z194C01	1st doubler; RED
L103, 104L	24C82904B19	quadrupler output; 2nd doubler
		input
L103M, 103H	24C82904B14	quadrupler output; 2nd doubler
		output
***************************************		

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCIRIPTION
L104M, 104H L105L L105M, 105H L106L L106M, 106H,	24C82904B15 24C82904B20 24C82904B12 24B82648G01 24B82209E01	2nd doubler input 2nd doubler 2nd doubler output driver input; fiinal ampl. input driver input; fiinal ampl. input
107M, 107H L107L L108L, 108M, 109L, 109M	24B82737E01 24C82904B21	final ampl input final ampl output
L108, 109H L110L, 210L L110M, 110H, 210M, 210H	24C82904B01 24D82549D03 24D82549D10	final ampl. outtput choke; 1 mh choke; 390 uh
L111 L112L L112M L112H L114 L211, 212	25B82872B01 24A890687 24A82228G01 24C82000E08 24D82549D09 24C82000E03	choke; 0.8 h choke; 2 uh choke; 1.2 uh choke; 0.31 uh; sleeved choke; 15 uh choke; 9 uh
Q101, 201 Q102 Q103 Q104, 105 Q106 Q107, 108 Q110, 111 Q112	48R869010 48R869058 48R869009 48R869008 48R869052 48R869051 48R869038 48R869079	TRANSISTOR: NOTE I P-N-P; type M19010 P-N-P; type M19058 P-N-P; type M19009 P-N-P; type M19008 N-P-N; type M19052 N-P-N; type M19051 P-N-P; type M19038 N-P-N; type M19038 N-P-N; type M19079
R101, 201 R102, 202 R103 R104, 123L, 123M, 134,	6K129242 6R129269 6K127803 6K127805	RESISTOR, fixed ±10%; 1/4 w; unl stated 56K 1.8K 1.5K 15K
203 R105, 126 R106, 123H R108 R109 R110 R111 R112 R113 R114 R115 R116 R117 R118 R119 R120 R121 R122,132L	6R127801 6K129225 6R129753 6K128903 6K128689 6K129887 6K129804 6S131594 6S124A60 6K127806 6K127806 6K128687 6K129863 18B82876B04 6K128902 6K127804 6K127804	470 10K 100 39K 2.2K 12K ±5% 10K ±5% 2.2K ±5% 27 3K ±5% 27K 6.8K 390 var; 2K ±15%; 1/20 w 47K 4.7K 1K
R124, 131 R125 R127 R133 R135 R136 R137 R138L R138M, 138H	6R127800 6R127775 6R129662 6R131650 6K129433 6R129231 17A82069G01 17A82069G02	220 330 180 18 5.6K 3.3K 2 ±3%; 1 w 2.5 ±3%; 1 w 2 ±3%; 1 w
RT102	6B859699	THERMISTOR: 75 ohms @ 25°C
¥101, 201	ABS-2	CRYSTAL UNIIT, quartz: NOTE II xmtr. controll
	NON-REFERI	ENCED ITEMS
	26A82609E01	HEAT SINK; 3 req¹d

SYMBOL PART NO. DESCRIPTION
-----------------------------

NLB6122A RF Amplifier (30-42 MC) NLB6123A RF Amplifier (42-54 MC)

		CAPACITOR, fixed: uuf; unl stated
C401L	21K855809	33 ±5%; 250 v; N150
C401M*	21D82610C07	51; 200 v; N150
C401H	21K410089	27 ±10%; 500 v
C402L, 402M	21K840365	24 ±5%; 500 v
C402H, 407H	21K859211	47 ±5%; 300 v
C403L, 403M,	20C82109C01	var: 20-100: 350 v; N2100
406L, 406,		
408		
C403H	20K840719	var: 8-50; 200 v
C404	21C82187B14	.001 uf ±10%; 200 v
C405, 405M	21K861435	70 ±10%; 75 v; N150
C405H	21D82610C05	57 ±5%; 200 v; N150
C407L, 407M	21K861436	100 ±10%; 75 v; N750
C409L, 409M	21D82355B13	51 ±5%; 500 v; N1500
C409H	21D82355B14	62 ±5%; 500 v; N1500
C410L	21D82426B10	.0033 ±10%; 100 v
C410M	21K858108	3000 ±25%; 250 v
C410H	21K858107	1500 ±25%; 250 v
		COIL, RF:
L401L, 401M	24V82643G01	input coil assembly
L401H	24B82640G01	input coil assembly
L402L, 402M,	24V80900A86	choke; 1,02 uh
L402H		
L403L, 403M	24A82813E01	coil, output
L403H	24A82818G01	coil, output
L404	24A82819G01	coil, output
L405L, 405M	24C82000E15	choke; tapped output
L405H	24C82000E14	choke, output
L406L	24B82122D06	choke; filter; .0872 uh
L406M	24B82122D04	3 turns
L406H	24B82122D07	2 turns TRANSISTOR: NOTE I
Q401L, 401M	48R869101	P-N-P; type M9101
Q401H	48R869102	P-N-P; type M9102
		RESISTOR, fixed: ±10%; 1 w
R401L, M	6R6330	150

	CONTROL PAREL		
NGN6024A	NCN6048A	NCN6055A	
NCN6040A	NCN6050A	NCN6057A	
NCN6042A	NCN6051A	NCN6059A	
NCN6046A	NCN6053A	NCN6061A	

1V80729A93

J801 J803	9C82817E01 28C82846E01	CONNECTOR, receptacle: female; coaxial; uhf type male; 9 contact			
K801	80C82860E01	RELAY, armature; hermetically sealed; 13, 6 v d-c; 4 form "C"; coil res 160			
L\$801	50D82808E01	LOUDSPEAKER, permanent magnet; 3", square; 50 ohms imped.			
₹801	18C82816E02	RESISTOR, var; 10K ±10%; weatherproof			
R 802	6K129662	fixed: 180 ±10%; 1/4 w			
R803	18C82816E01	var: 15K ±10%; weatherproof			
R804	6R6040	fixed: 680 ±10%; 1/2 w			
		SWITCH;			
S801	40B82851E01	toggle; spst; weather- resistant			
\$802	40C82843E01	resistant rotary; 2 pole; 2 position; non-shorting (1-freq.)			
	or40C82890E01	•			
	NON-REFERENCED ITEMS				
	1 1 V 80727A11	HANDLE ASSY, : incl. mic.			
1	1	1			

holding clip (for models NCN6040A, NCN6042A, NCN6046A, NCN6048A, NCN6050A and NCN6051A)

NGN6024A)

HANDLE ASSY.: incl. handset holder (for models NCN6053A, NCN6055A, NCN6057A, NCN6059A, NCN6061A,

#### NMN6017A Handset

55P82446G01 15P82446G02 15P82446G03 40P82446G04 59P82446G05 59P82446G06 37A842245	HANDLE, handset CAP, transmitter CAP, receiver SWITCH, push-to-talk CARTRIDGE, receiver CARTRIDGE, transmitter SLEEVE, strain relief
30D82565B19	CORD, handset

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	
	42K861179 42A82143C02 32B82855E01 36B82812E03 36B82812E01 36B82804E01 35B82803E01 13C82815E03 13C82815E02 1V80731A68	CLAMP, cable; 2 req'd CLAMP, cable GASKET, rubber; housing seal KNOB, control; 2 req'd (vol. & sq.) KNOB, control; ("PL" ON-OFF) GASKET; (speaker mtg.) CLOTH, grille GRILLE (1-freq models) GRILLE (2-freq models) HOUSING ASSY.: incl. handle (for models NCN6040A, NCN6042A, NCN6048A, NCN6050A and NCN6051A) HOUSING ASSY.: incl. handle (for models NCN6051A, NCN6057A, NCN6055A, NCN6057A, NCN6059A, NCN6057A, NCN6059A, NCN6061A and NGN6024A)	

NPN6031A Power Supply (less battery) Nickel-Cadmium				
		SEMICONDUCTOR DEVICE,		
CR601	48C82095C01	diode: NOTE I silicon		
F601	65A82496G01	FUSE, cartridge; 3 amp. 32 v; 1/4" x 5/8"		
J601	9C82847E01	CONNECTOR, receptacle: female; 9 contact		
P601 P602	28A82488G01 28A16313	CONNECTOR, plug: male; 2 contact male; 3 contact		
XF601	1V80731A03	FUSEHOLDER ASSY: single fuse mounting		
non-referenced items				
<del>Marian, mangunungun sun ru</del>	1V80731A01 46B82653G01 41A82652G01	HOUSING ASSY. (riveted) PLATE, door SPRING, torsion		

PIN, pivot

INSULATOR

TAB, battery plug

#### NPN6030B Power Supply (less battery) Dry

22A82651G01

14A82650G01

38A868379

	**************************************			
		CAPACITOR, fixed:		
C601, 602,603,	21C82187B16	.003 uf ±5%; 100 v		
604, 605		•		
C606, 607	21K800802	dual sect.: c/o:		
	21X000007	.001 uf GMV +100% max: 500 v		
C606A, 607A				
C606B, 607B		.001 uf GMV +100% max: 500 v		
		FUSE, cartridge:		
F601	65R132923	3 amp. /250 v		
		CONNECTOR receptacle:		
J601	9C82847E01	female; 9 contact		
	NON-REFERE	NCED ITEMS		
	1V80731A83	HOUSING ASSY, (riveted)		
l I	1V80731A85	BATTERY HOLDER ASSY.		
	1,00131103	(riveted)		
l 1	1V80731A87	BATTERY COVER ASSY.		
1	TAGGISTMGI	(riveted)		
<u> </u>		(Livered)		

#### NLN6310A Battery Kit (Dry)

60B82455G01	BATTERY, dry: 1.5 v; ll req [†] d

	r voo (L (AL)	Q501, R501 and 1V80727A20 BOARD, circuit component mtg
3501, 502, 503	21D82428B10	CAPACITOR, fixed: .0033 ±10%; 100 v
CR501	48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I germanium
OP501	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type
P501		CONNECTOR, plug: p/o W501
2501	48R134621	TRANSISTOR, NOTE I P-N-P; type M4621
R501	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w

40C82863E01

30D82565B04

41B82856E01

38B82833E01

35A82853E01

4C82418B22

75A82852E01

75A82192A02

64A82826E01

32A82661C02

7B82801E01

42B82831E01

1V80727A18 43K475873

NON-REFERENCED ITEMS

SWITCH,

15C82828E01 | HOUSING, microphone: (front) 15C82827E01 HOUSING, microphone; (rear)

SPRING, backup

DIAPHRAGM, microphone

WASHER, insulating PAD, rubber, 1.24" dia. PAD, rubber, 0.562" dia.

PLATE, tapped BRACKET, hold-down

SPRING AND BUSHING ASSY.

BUTTON, push

GASKET

SPACER

CLAMP, cable

push; single pole normally open

CORD, microphone, incl ref part P501 and a coiled 4 conductor; stranded cord

MOTOROLA PART NO.

1V80727A19

NMN6018A Microphone (plug-in; transistorized) MK501

DESCRIPTION

'AMPLIFIER, AF: incl C501, C502, C503, CR501,

REFERENCE

SYMBOL

A501

R501

S501

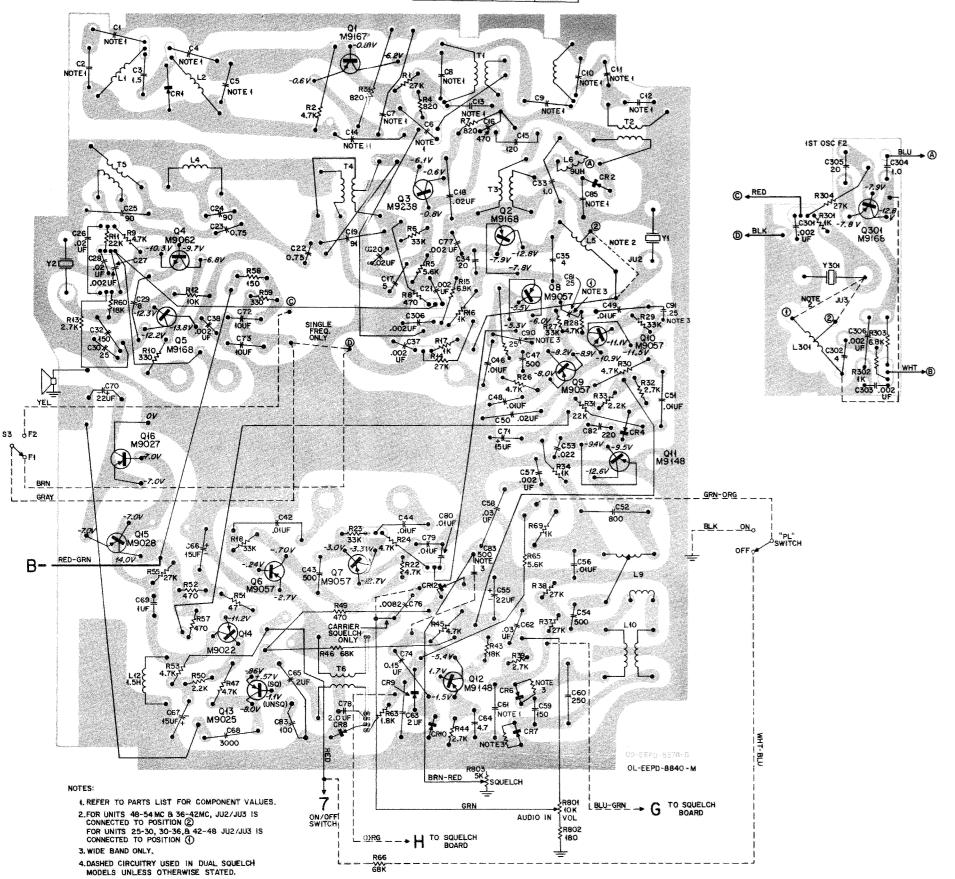
W501

#### NOTES:

- I. Replacement transistors and diodes must be ordered by Motorola part number only for optimum performance.
- Crystals are part of the Radio Set Model only.
   When ordering crystal units specify car. freq.(s), crystal freq. (s) and crystal type number.

# MANUAL REVISIONS AND ADDENDA

MODEL TABLE (SPEAKER MODELS)					
MODEL SERIES	NO. OF	CHANNEL WIDTH	TYPE OF SQUELCH		
NRBI120AA		40 KC	CARRIER		
NRBIIZOAB		20 KC			
NRBII20AC		40 KC	,		
NRB1120AD		20 KC			
NRB1120AF	1	20 KC	DUAL		
NRBI120AH	2	20 KC			

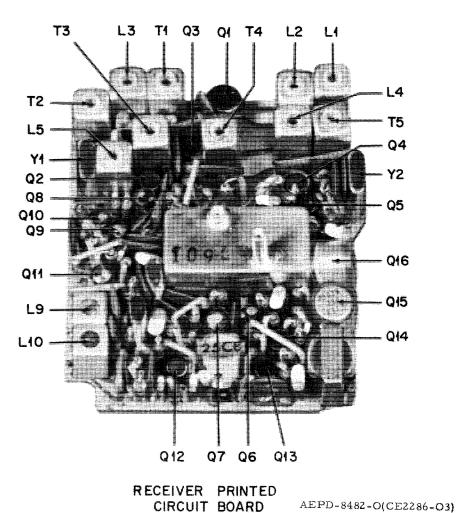


Diag.	BOARD		REF.	CHANGE	LOCATION
ISSUE	SUFFIX	NO.	SYMBOL	CHANGE	LOCATION
B	NRBIIZIAA NRBIIZIAA		C34L,	WERE REF. ITEM C34, C305	PARTS LIST
	NRB1121AC NRB1121AE	-3	305L, 305M,	021, 0303	
	NKBIIZIAL	)-J	305H		
			C35L, M 35H,	WERE REF. ITEM C35, C302	
			302L, 302M,		
C	NRB1121AF	<b>-</b> 5	302H R61	REMOVED 6K127804	S3
	NRB1122AF NRB1123AF			(4.7K) WAS BETWEEN ON POSITION OF 'PL'	
	NRB1121AH NRB1122AH	_	C86	SWITCH AND GROUND REMOVED	
	NRB1123AH			21D82877B02 (150 uuf) WAS BETWEEN Q10	
				COLLECTOR AND ON POSITION OF "PL"	
			R49	SWITCH	013 214 44 44 44 44
			R65	WAS 6K127803 (1.5K) ADDED 6K129433 (5.6K)	Q13 EMITTER ABOVE Q12
D	NRB1121AH	-2	GR12 L11	ADDED 48G82392B03 REMOVED	BELOW Q11
	NRB1122AH NRB1123AH			24V80900A61, 0.62 mh (WAS BETWEEN JUNC	;
		_		TIONS OF L9, C56 AND C57, 58).	
			Rố9	ADDED 6K127802, 1K	•
E	NRB1121AA		Q12,13	WERE 48R869025,	Q12, 13
	NRB1122AA NRB1123AA	-9		M9025	
	NRB1121AB NRB1122AB				
	NRB1123AB NRB1121AC				
	NRB1122AC NRB1123AC				
	NRB1121AD NRB1122AD	-6			
F	NRB1123AD NRB1121AA		C63	WAS 23D82397D09,	LOWERLEFT
	NRB1122AA NRB1123AA		R63	6.8 uf WAS 6K128545, 470	OF Q12
9	NRB1121AB NRB1122AB	e. 7	C78	WAS 23D82397D09, 6.8 uf	BELOW T6
	NRB1123AB NRB1121AC	-9		0.4 41	
	NRB1122AC	-10			
	NRB1123AC NRB1121AD	- 7			
	NRB1122AD NRB1123AD				
	NRB1121AA NRB1122AA	-11	C35	WAS 21K861428, 6 uuf	Q2 COLLEC- TOR
	NRB1123AA NRB1121AB	-8	R14 R15	WAS 6K127807, 33K WAS 6K127804, 4.7K	Q2 BASE
	NRB1122AB NRB1123AB	-10	Q2, 301 Q3, 5	WERE TYPE M9047 WERE TYPE M9031	
1	NRB1121AC NRB1122AC		C302	WAS 21K861428, 6 uuf WAS 6K127807, 33K	BELOW Q301
	NRB1123AC NRB1121AD			WAS 6K127804, 4.7K	
	NRB1122AD NRB1123AD				district of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the st
H	NRB1121AA NRB1122AA		Q1	WAS TYPE M4576	
	NRB1123AA NRB1121AB	-11			
	NRB1122AB NRB1123AB	-11			
	NRB1121AC NRB1122AC	-8			
	NRB1123AC	-11			
	NRB1121AD NRB112ZAD	-11			
J	NRB1123AD NRB1121AA		C17	WAS 21K861603,	Q3 BASE
	NRB1122AA NRB1123AA	12	Q3	3.3 uuf WAS 48R869169,	TOP CENTER
	NRB1121AB NRB1122AB	-9	~-	M-9169	OF BOARD
1	NRB1123AB NRB1121AC	-11			
	NRB1122AC	-12			
	NRB1123AC NRB1121AD	1-9			
	NRB1123AD NRB1123AD	1		***************************************	
K	NRB1121AA NRB1122AA		C81	WAS 21K860413	Q9 BASE TO COLL,
	NRB1123AA NRB1121AC	-13	C90, 91	ADDED	Q8 AND Q10 BASE TO COLL
	NRB1122 AC NRB1123 AC	-13			AVE 14 COTE
L	NRB1121AH	-7	C61	WAS 21K861443, .01 uf	LOWER
	NRB1122 AH NRB1123 AH	-6			RIGHT OF Q12
	NRBI151AF NRBI152AF				
	NRB1153AF	-7			

## instruction manual revision T- 1937C

For 68P81017A20-C

Replace EPD-8841 with this EPD-8841-L.



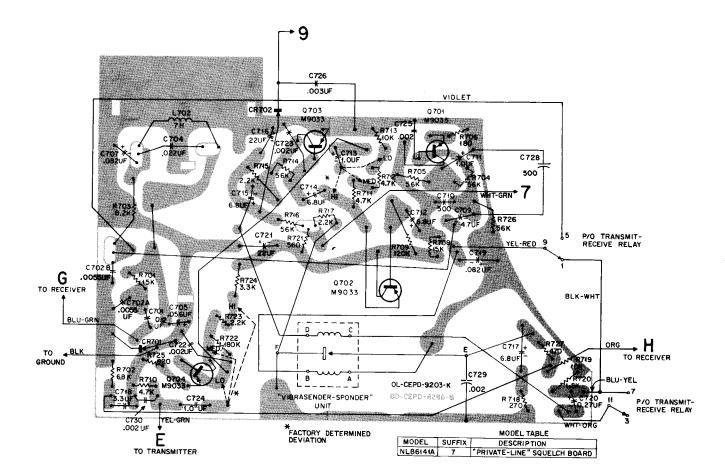
Speaker-Microphone and
Speaker-Handset Models
Receiver Printed Circuit Board
and Wiring Diagram used in
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Motorola No. EPD-8841-L

DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
A	NLB6141A-1	C727	ADDED 21K831126 .02 uf	"VIBRA- SENDER- SPONDER" UNIT CONTACT A
В	NLB6141A-2	R719	WAS 6K127806 (27K)	"VIBRA- SENDER- SPONDER" RESONANT REED CONTACT E
С	NLB6141A-3	C718	WAS 23D82397D07	LOWER LEFT OF BOARD
D	NLB6141A-3	C729	ADDED	"VIBRA - SENDER - SPONDER" UNIT CONTACT E
E	NLB6141A-4	R706	WAS 6K129862, 150 OHMS	Q701 EMIT- TER
F	NLB6141A-5	R726 R727	ADDED 56K OHMS ADDED 470 OHMS	Q701 BASE LOWER RIGHT OF BOARD
G	NLB6141A-6	C702A, 702B	WAS 21B861469, DUAL .01 uf	LOWER LEFT OF BOARD
Н	NLB6141A-7	C730	ADDED	LOWER LEFT OF BOARD
J .	NLB6141A-7	C703 C706 L701	REMOVED 2 3D82 397D11, .068 uf REMOVED 23 2 3D82 397D12, 0.12 uf REPLACED 25C82750D01, CHOKE 5H WITH JUMPER CKT WAS AS SHOWN BELOW	UPPER LEFT OF BD
	c	C707 X .082UF	022UF 0.12 0.12 0.12 0.12 0.13 0.12 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13	221 221 24. 24.
		R701, R708 R703 R704, 705, 714, 716 R726 R706 R709 R710, 711, 712 R713 R721	WERE 6S127805, 1/4 W WAS 6S128686, 1/4 W WERE 6K129242, 1/4 W WAS 6K128570, 1/10 W WAS 6K129662, 1/4 W WAS 6K128987, 1/4 W WERE 6S127804, 1/4 W WAS 6K128558, 1/10 W WAS 6K129620, 1/10 W WAS 6K129620, 1/14 W WAS 6K128545,	PARTS LIST
			1/10 W WERE 6S128689, 1/4 W	

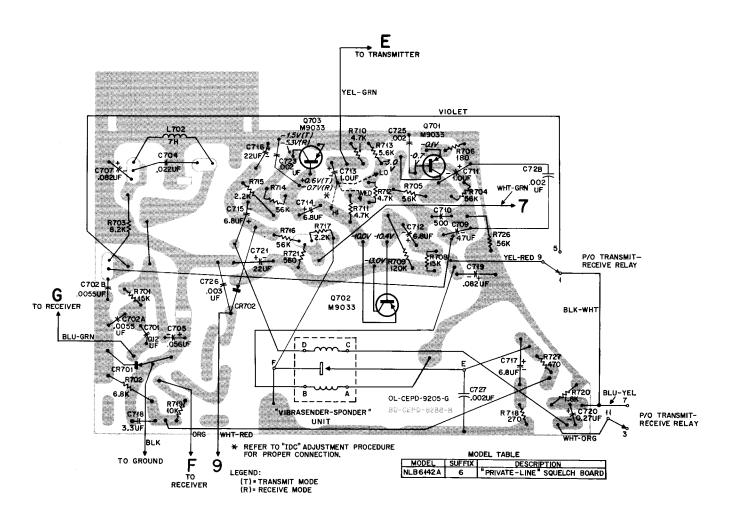
## instruction manual revision T- 1937D

For 68P81017A20-C

Replace EPD-9204 and EPD-9206 with this EPD-9204-J and EPD-9206-G, respectively.



Model NLB6141A
25-42 MC "Private-Line" Printed
Circuit Board and Wiring Diagram used in
25-54 MC "Handie-Talkie" FM
Two-Way Radio Sets
Motorola No. EPD-9204-J

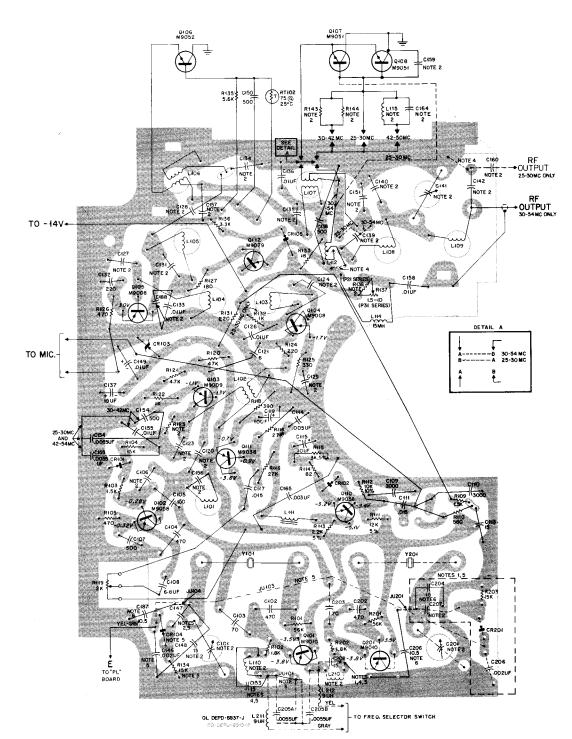


Model NLB6142A
42-54 MC "Private-Line" Printed
Circuit Board and Wiring Diagram used in
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Motorola No. EPD-9206-G

#### REVISIONS

DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
A	NLB6142A-1	C727	ADDED 21K831126 .02 uf	"VIBRA- SENDER- SPONDER" UNIT CONTACT A
В	NLB6142A-2	R719	WAS 6K127906 (27K).	"VIBRA- SENDER- SPONDER" RESONANT REED CONTACT E
С	NLB6142A-3	C718	WAS 23D82397D07 1 uf	LOWER LEFT OF BOARD
D	NLB6142A-4	R706	WAS 6K129862, 150 OHMS	Q701 EMIT- TER
	1	R726	ADDED 56K OHMS	Q701 BASE
Е	NLB6142A-5	R727	ADDED 470 OHMS	LOWER RIGHT OF BOARD
F	NLB6142A-6	C702A, 702B	WAS 21B861469, DUAL .01 uf	LOWER LEFT OF BOARD
G	NLB6142A-6	C703	REMOVED 23D82397D11, .068 uf REMOVED 23D82397D12, 0.12 uf REPLACED 25C8275DD01, CHOKE 5H WITH JUMPER, CKT WAS AS SHOWN BELOW	UPPER LEFT OF BD.
		C707 X .082UF	C704 2 0.704 2 0.705 0.12 0.705 0.12 0.705 0.80F	R 14.
	C70	)2 B.Î.	C726	\ <u></u>
		R701, 708 R703 R704, 705, 714, 716 R726 R706 R709	WERE 6S127805, 1/4 W WAS 6S128686, 1/4 W WERE 6K129242, 1/4 W WAS 6K128570, 1/10 W WAS 6K129662, 1/4 W WAS 6K128987, 1/4 W WERE 6S127804, 1/4 W	PARTS LIST
		712 R713 R721 R715, 717, 723	WAS 6K128558, 1/10 W WAS 6K129620, 1/4 W WERE 6S128689, 1/4 W	

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- NOTES:

  1. DASHED CIRCUITAY USED IN TWO FREQUENCY OPERATION ONLY.

  2. REFER TO PARTS LISTS FOR COMPONENT VALUES.

  3. USED ON 1-FREC. MODELS ONLY.

  4. APPEARS ON 30-42 MC UNITS ONLY.

  5. USED IN "PRIVATE-LINE" MODELS ONLY.

  7. USED IN CARRIER SQUELCH MODELS ONLY.

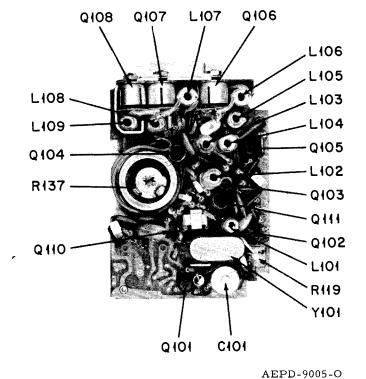
  7. USED IN NTB6060 SERIES ONLY.

			ONS	
DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION
Α .	NTB6061AA	C109,	WERE 21D82428D10	LOWER LEFT
	NTB6062AA NTB6063AA	110 L211,	(.0033 uf) ADDED 24C82000E03	OF BOARD
	NTB6061AB	212	(9 uh)	
]	NTB6062AB NTB6063AB	ļ		
В	NTB6051AA-1 NTB6052AA-1	C187, 206	ADDED 21D82877B11 (10,5 uuf)	BOTTOM OF BOARD
	NTB6053AA-2	200	(	
	NTB6051AB-1 NTB6052AB-1			
	NTB6053AB-2			
	NTB6061AA-1 NTB6062AA-1	1 1		
	NTB6063AA-2 NTB6061AB-1	\		
	NTB6062AB-1			
С	NTB6063AB-2 NTB6051AA, AB-1	C105L,	WAS C106	PARTS LIST
	NTB6052AA, AB-2	M, H C138	21D82877B02 (150 uuf) WAS 21K861443	
	NTB6053AA, AB-3 NTB6061AA, AB-1		(.01 uf)	0100
	NTB6062AA, AB-2 NTB6063AA, AB-3	C156L	ADDED 21K861435 (70 uf)	Q102 COLLECTOR
		C157L	ADDED 21K861432	Q106 BASE
		C158	(20 uuf) ADDED 21K861443	Q108 BASE
	I	L114	.01 uf ADDED 24D82549D01	
	NTR4061	C139L	(15 uh) WAS 21K861436	PARTS LIST
D	NTB6051AA, AB-1 NTB6061AA, AB-1	ł	(100 uuf)	דפות הייייי
		C141L	WAS 20C82399D04, VAR 5,5-18 uuf	
	}	C141M C141H	WERE 20C82399D05	
1	1	C141H C142L	VAR 9-35 uuf REMOVED	1
		C151L	21D82877B18, 30 uuf WAS C151 21K861430	1
	1	C160L	10 uuf ADDED 21K861432	L109 RF
			(20 uuf)	OUTPUT
		C159	ADDED 21K861434 (40 uuf)	Q108 BASE
-	1	R132L	WAS 6R129617, (120)	L103 PARTS LIST
E	NTB6051AC-1 NTB6051AD-1	C151L	WAS 21 K861432, 20 uuf	
	NTB6061AC-1 NTB6061AD-1	R139L	ADDED 6K127802, 1K	Q112 COLLECTOR
		C159L	REMOVED	
1			21K861434, 40 uuf. WAS BETWEEN Q108	Q108 BASE
-	NEDCOST	-	BASE AND GROUND	RIGHT OF
F	NTB6051AC-1 NTB6051AD-1	C188	ADDED 1.0 uf	Q105
	NTB6061AC-1 NTB6061AD-1	C159L	ADDED 40 uuf	RIGHT OF Q108
		R139	REMOVED IK, WAS CONNECTED	Q112
			ACROSS Q112 COL-	
			LECTOR AND EMITTER	
G	NTB6051AA-3	C151L C154L,	REMOVED WERE 21B861469,	PARTS LIST Q103 EMIT-
	NTB6053AA-4	154H,	DUAL .01 uf	TER
	NTB6061AA-3 NTB6063AA-4	155L, 155H		
1	NTB6051AB-3 NTB6052AB-3	C205A, 205B	1	BELOW Q101
	NTB6053AB-4		}	
	NTB6061AB-3 NTB6062AB-3			
***	NTB6063AB-4 NTB6052AA-4	C165H	ADDED .003 uf	LEFT OF
Н	NTB6053AA-5		1	Q110
	NTB6052AB-5 NTB6053AB-5	C164H L115H	ADDED CHOKE	Q107 BASE
	NTB6062AA-4 NTB6063AA-5	R143M	3 TURNS ADDED 10 OHMS	1
	NTB6062AB-5	R143M R144M	I.	
	NTB6063AB-5 NTB6052AC-3	1		
	NTB6053AC-4			
	NTB6052AD-4 NTB6053AD-4			
	NTB6062AC-3 NTB6063AC-4	1		
	NTB6062AD-4			
L	NTB6063AD-4			

#### instruction manual revision MR-1746L

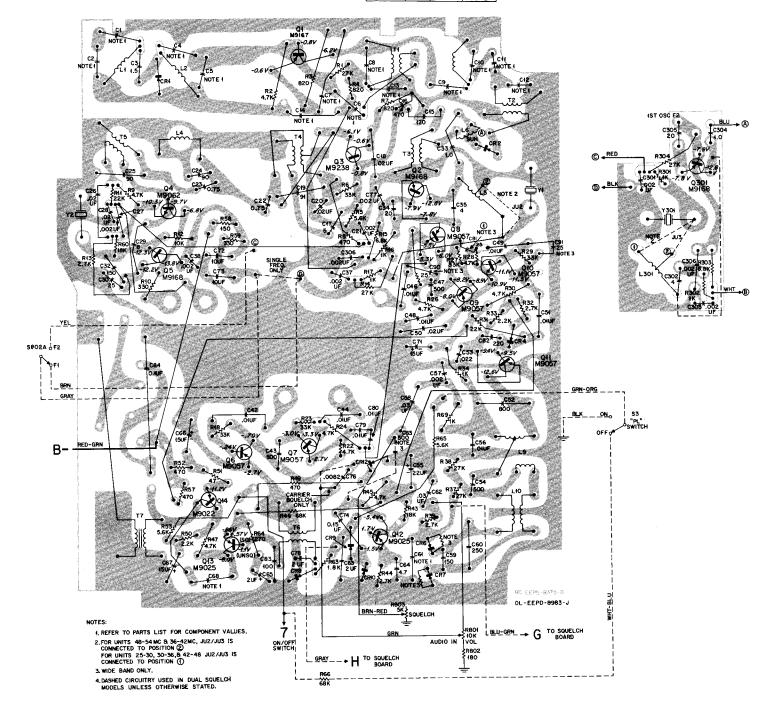
For 68P81017A20-C

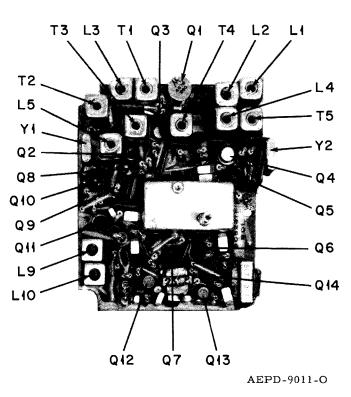
Replace EPD-8838 and EPD-8978 with this EPD-8838-H and EPD-8978-K, respectively.



Transmitter Printed Circuit Board and Wiring Diagram used in 25-54 MC "Handie-Talkie" FM Two-Way Radio Sets Motorola No. EPD-8838-H

MODEL TABLE (HANDSET ONLY)					
MODEL NERIES	NO OF FREO	CHANNEL	TYPE OF SQUELCH		
NRBII50AA	1	40 KC	CARRIER		
NRB1150AB	1	20KC	1		
NRBH150AC	2	40 KC	1		
NRBH50AD	2	2DKC	1		
NRB1150AF	1	20KC	DUAL		





Handset Models Only
Receiver Printed Circuit
Board and Wiring Diagram used in
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Motorola No. EPD-8978-K

#### REVISIONS

REVISIONS					
DIAG. ISSUE	BOARD AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION	
A	NRB1151AF-1	C34L, M, 34H, 305L, M, 305H	WAS C34, 305 21D82877B06 (30 uuf)	PARTS LIST	
В	NRB1151,52,53AA-1 NRB1151,52,53AB-1 NRB1151,52,53AC-1 NRB1151,52,53AD-1 NRB1151,52,53AF-2	R64 R66	WAS 6K129752, 270 ADDED 6K129144, 68K	Q13 EMITTER S3 "PL" SWITCH	
Bl	NPB1151,52,53AH-1 NRB1151AA-2 NRB1151AB-2 NRB1151AC-2 NRB1151AC-2 NRB1151AD-2	C6L	WAS 21K861426 (2.2 uuf)	PARTS LIST	
С	NRB1151AF-3 NRB1151AA-3 NRB1152AA-2 NRB1153AA-2 NRB1151AB-3 NRB1152AB-2 NRB1151AB-3 NRB1151AC-3 NRB1151AC-3 NRB1152AC-2 NRB1153AC-2 NRB1151AC-3	Lll	REMOVED 24V80900A61, 0.62 mh; (WAS BETWEEN JUNC- TIONS OF L9, C56 AND C57, 58).	BELOW QII	
	NRB1152AD-2 NRB1153AD-2 NRB1151AF-4 NRB1152AF-3 NRB1153AF-3	R69	ADDED 6K127802, 1K (REPLACES L11)		
D	NRB1151AA-4 NRB1152AA-3 NRB1153AA-3 NRB1151AB-4 NRB1152AB-3 NRB1153AB-3 NRB1153AC-3 NRB1153AC-3 NRB1151AC-4 NRB1151AD-4 NRB1151AD-3 NRB1153AD-3	Q12, 13	WERE 48R869025, M9025	Q12, 13	
E	NRB1151AA-5 NRB1152AA-4 NRB1153AA-4	C63 R63	WAS 23D82397D07, 6.8 uf WAS 6K128545, 470	LOWER LEFT OF Q12	
•	NRB1151AB-5 NRB1152AB-4 NRB1153AB-4 NRB1151AC-5 NRB1151AC-4 NRB1153AC-4 NRB1151AD-5 NRB1152AD-4 NRB1153AD-4	C 78	WAS 23D82397D07, 6.8 uf	BELOW T6	
F	NRB1151AA-6 NRB1152AA-5	C35	WAS 21 <b>K8</b> 61428, 6 uuf	QZ COLLEC- TOR	
	NRB1153AA-5 NRB1151AB-6 NRB1152AB-5 NRB1153AB-5 NRB1151AC-6 NRB1152AC-5 NRB1153AC-5 NRB1151AD-6 NRB1152AD-5	R14 R15 Q2, 301 Q3, 5 C302 R304 R303	WAS 6K127804, 4.7K WAS 6K127804, 4.7K WERE TYPE M9047 WERE TYPE M9031 WAS 21K861428, 6 uuf WAS 6K127807, 33K WAS 6K127804, 4.7K	Q2 BASE BELOW Q301	
G	NRB1151AD-5 NRB1151AA-6 NRB1152AA-5 NRB1153AA-5 NRB1151AB-6 NRB1152AB-5 NRB1151AB-6 NRB1151AC-6 NRB1151AC-6 NRB1151AC-5 NRB1151AD-6 NRB1151AD-6 NRB1151AD-6	Q1	WAS TYPE M4576		
Н	NRB1153AD-5 NRB1151AA-7 NRB1152AA-6	C17	WAS 21K861603, 3.3	Q3 BASE	
	NRB1153AA-6 NRB1151AB-7 NRB1153AB-6 NRB1153AC-7 NRB1152AC-6 NRB1153AC-6 NRB1153AC-7 NRB1153AD-6	Ω3	WAS 48R869169; M9169	TOP CEN- TER OF BOARD	
J	NRB1151AA-8 NRB1152AA-7 NRB1153AA-7 NRB1151AC-8 NRB1152AC-7	C81	WAS 21K864013 ADDED	Q9 BASE TO COLL. Q8 AND Q10 BASE TO COLL.	
К	NRB1153AC-7 NRB1151AF-8 NRB1152AF-7 NRB1153AF-7	C61	WAS 21K861443, .01 uf	LOWER RIGHT OF Q12	

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#### INSTRUCTION MANUAL REVISION MR-1788

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

#### INSTRUCTION MANUAL(S) AFFECTED:

25-54 MC "Handie-Talkie" FM Radiophone
"HT" & "PT" Series
25-54 MC Selective "Handie-Talkie" FM Radio

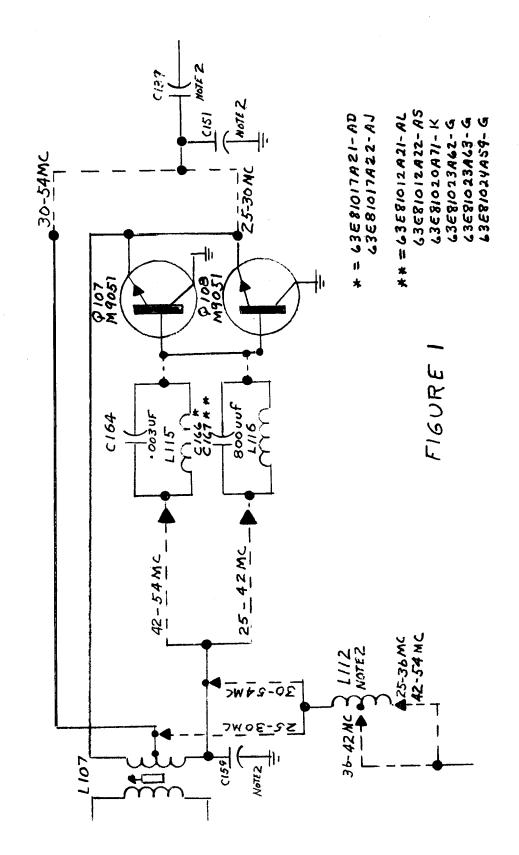
#### REVISION DETAILS

With this change the following becomes effective:

Instruction	Schematic	New	Xmtr.	New	Ckt. Bd.	New	Change
Manual No.	Diagram No.	Issue	Chassis	Suffix	Detail	Issue	Item#
68P81012A20-D	63E81012A21	AM,	NTB6041AA	7,	EPD-8516	N,	2 thru 5
	63E81023A63	H	NTB6042AA	10,	EPD-13427	С	2 thru 5
68P81023A60-O	63E81024A59	H	NTB6043AA	8,			
			NTB6041AB	7,			
			NTB6042AB	12,			
68P81020A70-O	63E81020A71	L	NTB6043AB	8	EPD-9518	F	2 thru 5
68P81012A20-D	63E81012A22	AT	NTB6041AC	7,	EPD-13427	С	2 thru 5
	63E81023A62	H	NTB6042AC	11			
			NTB6043AC	8			
68P81017A20-C	63E81017A21	$\mathbf{AE}$	NTB6051AA	5	EPD-8838	L,	1 thru 4
			NTB6052AA	. 7	EPD-13429	С	l thru 4
_			NTB6053AA	6			
			NTB6051AB	5			
			NTB605 <b>2A</b> B	8			
			NTB6053AB	6			
1			NTB6061AA	5 7			
			NTB6062AA				
			NTB6063AA	6			
•			NTB6061AB	5			
			NTB6062AB	8			
			NTB6063AB	6			

Instruction	Schematic	New	Xmtr.	New	Ckt. Bd.	New
Manual No.	Diagram No.	Issue	Chassis	Suffix	Detail	Issue
	63E81017A22	AK	NTB6051AC	4	<del></del>	<del></del>
			NTB6052AC	7		
			NTB6053AC	5		
			NTB6061AC	4		
			NTB6062AC	7		
			NTB6063AC	5		

	Change	Ref			$\cdot$
]	tem No.	Sym	Action	Part No.	Description
ı	1	C166	Added	21C82040D12	CAPACITOR, fixed: 800 uuf ±5%; 25 v; 25-42 mc only: SEE FIGURE 1
1	2	L116	Added	24C83961B01	COIL, RF: 3 turns; coded BRN; 25-42 mc only: SEE FIGURE 1
ı	3	R143, 144	Removed	6S129755	RESISTOR, fixed; 10 ±10%; 1/4 w; 30-42 mc only: SEE FIGURE 1
ı	4	CR105	Changed to	48C82392B12	SEMICONDUCTOR DEVICE, diode; silicon
	5	C167	Added		Same as change item 1.



REVISED 10/14/65

### INSTRUCTION MANUAL REVISION MR-1784

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

### INSTRUCTION MANUAL(S) AFFECTED:

25-54 MC "Handie-Talkie" FM Two-Way Radio Sets

#### REVISION DETAILS

With this change the following becomes effective:

	Instruction	Schematic Diag.	Xmtr.	New	Ckt. Bd. &	New	Change
	Manual No.	No. & New Issue	${\sf Chassis}$	Suffix			_
	68P81012A20-D	63E81012A21-AL,	NTB6041AA,	6	EPD-13427	B	$\frac{2,3,4}{2,3,4}$
	68P81023A60-O	63E81023A63-G,	NTB6042AA,			_	2,3,4
	68P81020A70-O	63E81020A71-K,	NTB6041AB,		EPD-9518	E	2,3,4
	68P81023A60-O	63E81024A59-G	NTB6042AB		EPD-13427	В	2,3,4
I	68P81012A20-D	63E81012A22-AS,	NTB6041AC.			_	2,3,4
ł	68P81023A60-O	63E81023A62-G	NTB6042AC	10			2,3,4
ı	68P81017A20-C	63E81017A21-AD	NTB6051AA,	4	EPD-13429	В	1,3,4
I			NTB6052AA,	6	- •	_	-,-,-
ı			NTB6051AB,	4			
ı			NTB6052AB,	7			
ı			NTB6061AA,	4			
ı			NTB6062AA,	6			
ı			NTB6061AB,	4			
I			NTB6062AB	7			
ı	68P81017A20-C	63E81017A22-AJ	NTB6051AC,	3			1,3,4
I			NTB6052AC,	6			-,-,-
ı			NTB6061AC,	3			
			NTB6062AC	6			

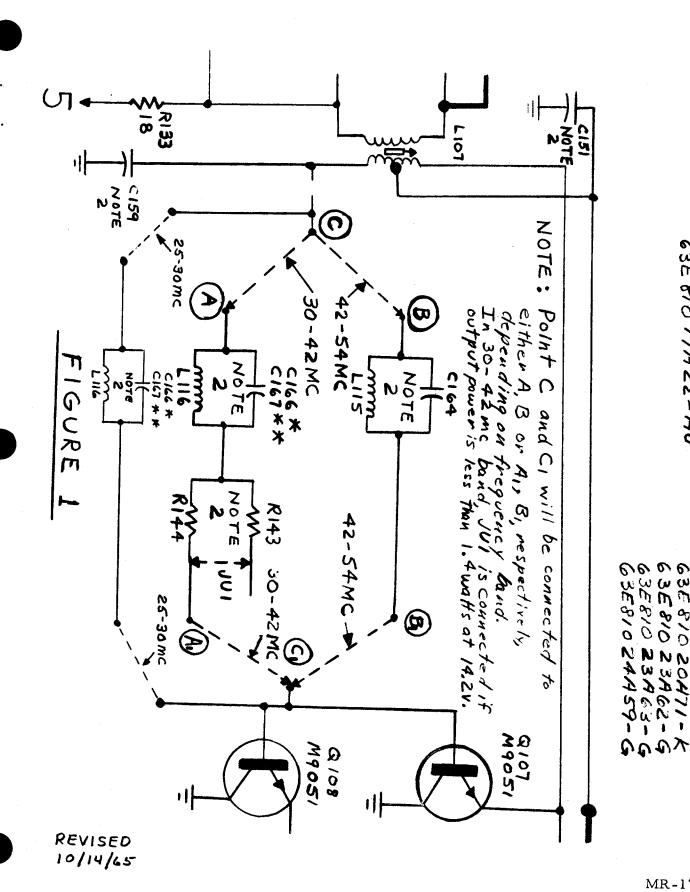
### (1) Component Changes

${\sf Change}$	Ref.			
Item No.	Sym.	Action	Part No.	Description
1	C166	Added	21C82040D12	CAPACITOR, fixed: 800 uuf +5%;
				25 v (SEE FIGURE 1)
2	C167	$\operatorname{Added} olimits$		Same as Change Item No. 1
3	L116	Added	24C83961B01	COIL, RF: choke; coded BRN;
				42-54 MC (SEE FIGURE 1)
4	R143, R144	Changed to	6S185B55	RESISTOR, fixed: 10 ±10%; 1/8 w (SEE FIGURE 1)

### (2) Supplementary Remarks

In ALIGNMENT PROCEDURE under ANTENNA PEAKING, insert the following:

NOTE: Perform antenna peaking procedure while connected to external power supply set for 14.0 v d-c. Each power supply lead must be isolated by an r-f choke (Motorola Part No. 24C83961B01) at the radio.



63E81017AZI-AD 70. 63E81012A21-63E81012A22-63E81020471-63E81023A62-63E81024A59-APPLIES

*

APPLIES

0 N L Y

MR-1784 10/11/65

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual Use this information to correct your manual.

INSTRUCTION MANUAL(S) AFFECTED: 25-54 MC & 136-174 MC "MOTRAC" RADIO SETS

#### REVISION DETAILS

With this change the following becomes effective:

Instruction Manual No	Schematic Diagram No	New <u>Issue</u>	455 KC IF Bd	New Suffix	Ckt Bd Detail	New Issue
68P81014A15	63E81014A16	AB,	TLN6347A	10;	EPD-6375	Т
68P81014A25	63E81014A26	AF,	TLN6532A	4		
68P81014A30	63E81014A31	Υ,				
68P81014A35	63E81014A36	AB,				
68P81014A55	63E81014A56	Υ,				
68P81014A65	63E81014A66	Τ,				
68P81014A70	63E81014A71	Ζ,				
68P81007A45	63E81007A46	AN,				
68P81007A70-A	63E81007A71	K,				
68P81019A01-A	63E81019A02	Μ,				
68P81007A95 [*]	63E81007A91	AA,				
68P81014A45	63E81014A46	Τ,	TLN6347A	10,	EPD-6483	K
68P81014A60	63E81014A61	Ρ,	TLN6348A	7		

#### *NOTE

When the letter "A" follows the suffix number stamped on your unit, it indicates some of the previous changes are not included.

#### Component Changes

Ref.		Part	
Sym	Action	Number	Description
Q11	Changed	48R869376	TRANSISTOR, P-N-P; type M9376

#### INSTRUCTION MANUAL REVISION MR-1846

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

#### INSTRUCTION MANUAL AFFECTED:

25-54 MC "Handie-Talkie" Radio Sets

#### REVISION DETAILS

With this change the following becomes effective:

Instruction Manual No.	Schem. Diag. & New Issue	Rcvr. Chassis	New Suffix	Ckt. Bd.  Detail	New Issue
68P81012A20-D	63E81012A21-AR,	NRB1121AC	12	EPD-8382,	s
	63E81023A63-L,	NRB1122AC	15	EPD-8383,	R
68P81023A60-O	63E81024A59-L,	NRB1123AC	15	EPD-8841	P
68P81017A20-C,	63E81017A21-AH	NRB1121AD	11		
68P81032A45-O		NRB1122AD	14		
68P81032A45-A		NRB1123AD	13		
68P81017A20-C, 68P81032A45-O 68P81032A45-A	63E81017A22-AM	NRB1121AF NRB1122AF		EPD-8841	P
68P81012A20-D	63E81012A22-AV 63E81023A62-K	NRB1123AF	15		
68P81020A70-O	63E81020A71-P	NRB1162AB NRB1163AB NRB1162AD NRB1163AD	6	EPD-9521	G
		1,1,121103111	U		

#### NOTE

When the letter "A" follows the suffix number stamped on your unit, it indicates some of the previous changes are not included.

#### COMPONENT CHANGE

Ref.		Part		
Sym.	Action	Number		Description
R70	Changed to	6S185B84	RESISTOR,	fixed: 2.7K $\pm 10\%$ ; 1/8 w

#### MOTOROLA

#### INSTRUCTION MANUAL REVISION MR-1754

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

INSTRUCTION MANUAL(S) AFFECTED: 25-54 MC "Handie-Talkie"

FM Radiophone,
"HT" & "PT" Series.

25-54 MC Selective

"Handie-Talkie" FM Radio

#### **REVISION DETAILS**

With this change the following becomes effective:

Instruction	Schematic Diagram	Transmitter	New	Ckt. Bd.	New
Manual No.	& New Issue	Chassis	Suffix	Detail	Issue
68P81012A20-D	63E81012A21-AK,	NTB6042AA,	8	EPD-8516	M
•	63E81023A63-E	NTB6042AB	10		
68P81023A60-O	63E81024A59-E				
68P81020A70-O	63E81020A71-J			EPD-9518	D
68P81012A20-D	63E81012A22-AR,	NTB6042AC	9	EPD-8516	M
	63E81023A62-F				
68P81017A20-C	63E81017A21-AC,	NTB6052AA,	5	EPD-8838	K
		NTB6052AB,	6		
		NTB6062AA,	5		
		NTB6062AB	6		
	63E81017A22-AH	NTB6052AC,	5		
		NTB6062AC	5		

#### Component Changes

Ref. Sym.	Action	Part Number	Description
C156M	Changed to	21K861436	CAPACITOR, fixed: 100 uuf ±10%; 75 v; N750
L101M	Changed to	24C82901B04	COIL, RF: modulator

#### MOTOROLA

#### INSTRUCTION MANUAL REVISION MR-1828

#### GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

#### INSTRUCTION MANUAL AFFECTED:

25-54 MC "Handie-Talkie" Radio Sets

#### **REVISION DETAILS**

With this change the following becomes effective:

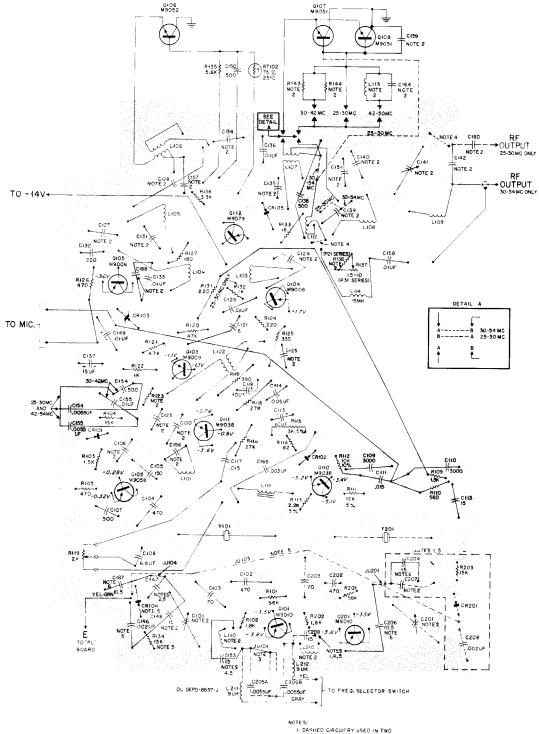
Instruction Manual No.	Schem.Diag. & New Issue	Rcvr. Chassis	New Suffix	Ckt. Bd.  Detail	New Issue
68P81012A20-D	63E81012A21-AP	NRB1121AA	12	EPD-8383	P
	63E81023A63-K	NRB1122AA	15		
68P81023A60-O	63E81024A59-K	NRB1123AA	15		
		NRB1121AB	11		
68P81032A45-A	63E81017A21-AG	NRB1122AB	14	EPD-8841	N
		NRB1123AB	13		

#### *NOTE

When the letter "A" follows the suffix number stamped on your unit, it indicates some of the previous changes are not included.

#### Component Changes

Ref. Sym.	Action	Part No.	Description_
R70	Changed	6S185B84	RESISTOR, fixed: 2.7K $\pm 10\%$ ; 1/8 w



#### I. DASHED CIRCUITRY USED IN TWO FREQUENCY OPERATION ONLY.

- 2. REFER TO PARTS LISTS FOR COMPONENT VALUES.

- COMPONENT VALUES.

  JUSEO DN 1-FRED, MODELS ONLY.

  APPEARS ON 30-42 MC UNITS ONLY.

  USED IN "PRIVATE-LINE" MODELS ONLY.

  SUSED IN CARRIER SOURCH MODELS ONLY.

  JUSED IN NTB6060 SERIES ONLY.

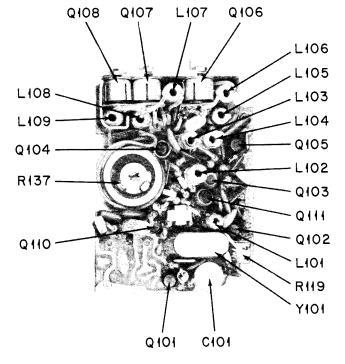
#### REVISIONS

REVISIONS							
DIAG. ISSUE	BOARD AND SUFFIX NO	REF. SYMBOL	CHANGE	LOCATION			
А	NTB6061AA NTB6062AA NTB6063AA NTB6061AB NTB6062AB NTB6063AB	C109, 110 L211, 212	WERE 21D82428D10 (.0033 uf) ADDED 24C82000E03 (9 uh)	LOWER LEFT OF BOARD			
В	NTB6051AA-1 NTB6052AA-1 NTB6053AB-2 NTB6051AB-1 NTB6053AB-2 NTB6061AA-1 NTB6062AA-1 NTB6062AA-1 NTB6061AB-1 NTB6063AB-2 NTB6061AB-1 NTB6063AB-2	C187, 206	ADDED 21D82877B11 (10.5 uuf)	BOTTOM OF BOARD			
С	NTB6051AA, AB-1 NTB6052AA, AB-2 NTB6053AA, AB-3 NTB6061AA, AB-1 NTB6062AA, AB-2	C106L, M, H C138	WAS C106 21D82877B02 (150 uuf) WAS 21K861443 (.01 uf) ADDED 21K861435	PARTS LIST			
	NTB6063AA, AB-3	C156L C157L	(70 uf) ADDED 21K861432 (20 uuf) ADDED 21K861443	COLLECTOR Q106 BASE Q108 BASE			
		L114	.01 uf ADDED 24D82549D01 (15 uh)				
Ď	NTB6051AA, AB-1	C139L C141L C141M C141H C142L C151L	WAS 21K861436 (100 uuf) WAS 20C82399D04, VAR 5.5-18 uuf WERE 20C82399D05 VAR 9-35 uuf REMOVED 21D82877B18, 30 uuf WAS C151 21K861430	PARTS LIST			
		C160L C159 R132L	10 uuf ADDED 21K861432 (20 uuf) ADDED 21K861434 (40 uuf) WAS 6R129617, (120)	L109 RF OUTPUT Q108 BASE L103			
E	NTB6051AC-1 NTB6051AD-1 NTB6061AC-1 NTB6061AD-1	C151L R139L C159L	WAS21K861432, 20 uuf ADDED 6KI27802, 1K REMOVED	PARTS LIST Q112 COLLECTOR			
			21K861434, 40 uuf. WAS BETWEEN Q108 BASE AND GROUND	Q108 BASE			
F	NTB6051AC-1 NTB6051AD-1 NTB6061AC-1 NTB6061AD-1	C188	ADDED 1.0 uf ADDED 40 uuf	RIGHT OF Q105 RIGHT OF Q108			
		R139	REMOVED 1K, WAS CONNECTED ACROSS Q112 COL- LECTOR AND EMITTER	Q112			
G	NTB6051AA-3	C151L C154L,	REMOVED WERE 21B861469,	PARTS LIST Q103 EMIT-			
	NTB6053AA-4 NTB6061AA-3 NTB6063AA-4 NTB6051AB-3	154H, 155L, 155H C205A,	DUAL .01 uf	TER			
	NTB6052AB-3 NTB6053AB-4 NTB6061AB-3 NTB6062AB-3 NTB6063AB-4	205B		BELOW Q101			
Н	NTB6052AA-4 NTB6053AA-5 NTB6052AB-5 NTB6053AB-5	C165H C164H L115H	ADDED .003 uf	LEFT OF Q110 Q107 BASE			
	NTB6062AA-4 NTB6063AA-5 NTB6062AB-5 NTB6062AB-5 NTB6063AC-3 NTB6053AC-4 NTB6053AD-4 NTB6053AD-4 NTB6062AC-3 NTB6062AC-3 NTB6063AC-4 NTB6062AC-3	R143M R144M	ADDED TO OHMS  ADDED 10 OHMS				
J	NTB6063AD-4 NTB6051AC-1 NTB6052AC-3 NTB6061AC-1 NTB6062AC-3		25-42 MC "PRIVATE- LINE" MODELS TRANSFERRED TO NEW BOARD DIA-				
К	NTB6052AA-5 NTB6052AB-6 NTB6062AA-5 NTB6062AB-6	C156M L101M	GRAM EPD-13429 ADDED 100 unf WAS 24C82901B02	CENTER OF BOARD			

## instruction manual revision MR-1754F

For 68P81017A20-C

Replace EPD-8838 and EPD-8978 with these EPD-8838-K and EPD-8978-K, respectively.



AEPD-9005-O

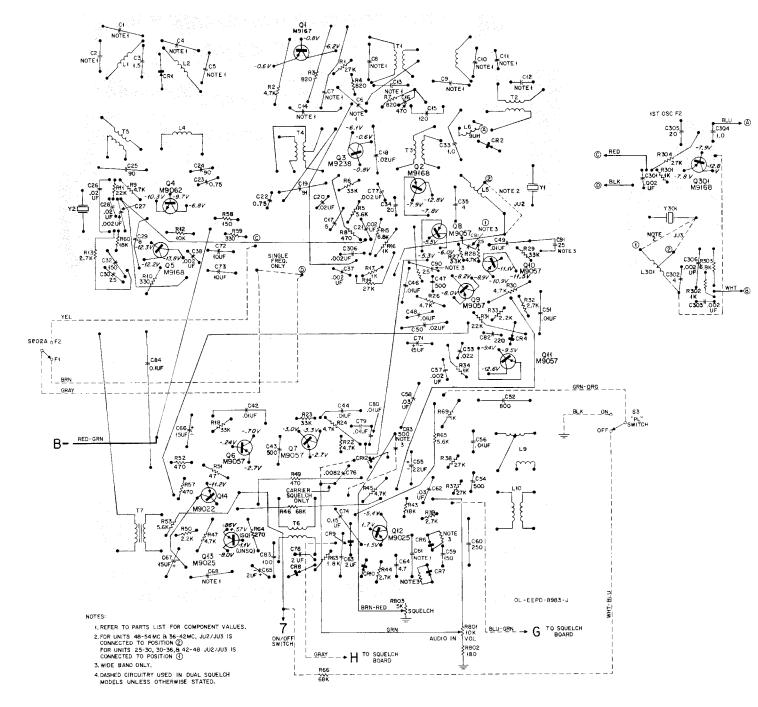
	MODEL	SUFFIX
	NTB6051AC	1
	NTB6052AC	3
1	NTB6061AC	1
	NTB6062AC	3

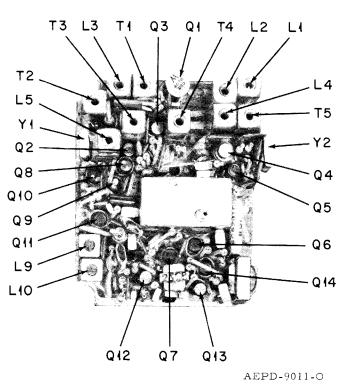
FOR UNITS SUFFIXED LATER THAN INDICATED IN THIS CHART REFER TO CIRCUIT BOARD DIA-GRAM EPD-13429.

EPD-13472-O

Transmitter Printed Circuit Board and Wiring Diagram used in 25-54 MC "Handie-Talkie" FM Two-Way Radio Sets Motorola No. EPD-8838-K

MODEL TABLE (HANDSET ONLY)							
MODEL NERIES	NO OF FREQ	CHANNEL	TYPE OF SQUELCH				
NRBH50AA	1	40 KC	CARRIER				
NRBH50AB	1	20KC					
NRBH50AC	2	40KC					
NRBIISOAD	2	20KC					
NRB1150AF		20KC	DUAL				

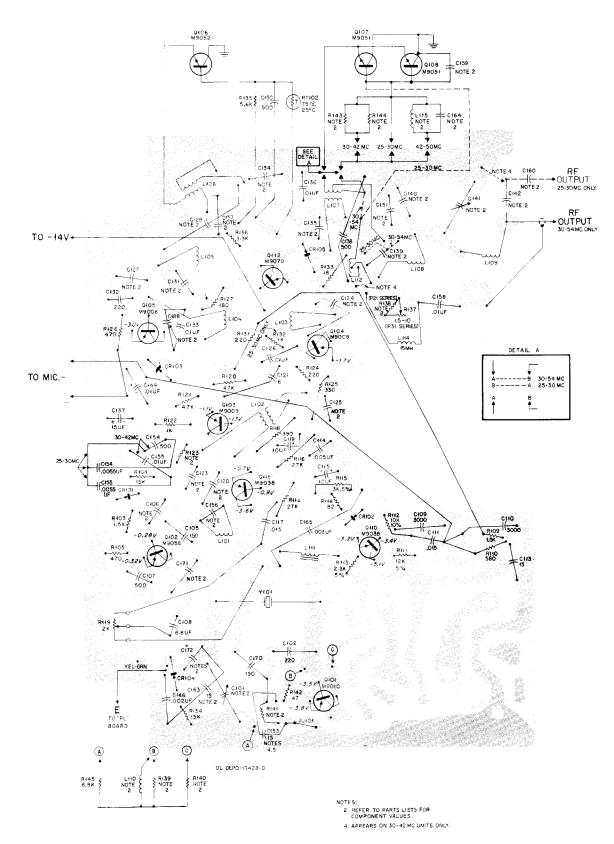




Handset Models Only
Receiver Printed Circuit
Board and Wiring Diagram used in
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Motorola No. EPD-8978-K

#### REVISIONS

REVISIONS						
DIAG. ISSUE	BOARD AND SUFFIX NO.	REF, SYMBOL	CHANGE	LOCATION		
.\	NRB1151AF-1	C34L, M, 34H, 305L, M, 305H	WAS C>1, 305 21D82s77Box (30 Lbt)	PARTS LIST		
В	NRB1151,52,53AA-1 NRB1151,52,53AB-1 NRB1151,52,53AC-1 NRB1151,52,53AC-1 NRB1151,52,53AF-2 NPB1151,52,53AH-1	Róć	WAS 6K129752, 276 ADDED 6K129144, coK	QIS EMITTER SS PL SWITCH		
В1	NRB1151AA-2 NRB1151AB-2 NRB1151AG-2 NRB1151AD-2	Ge!.	WA5 21K8614% (2.2 uur)	PARTS LIST		
С	NRB1151AT-3 NRB1151AA-3 NRB1152AA-2 NRB1153AA-2 NRB1151AB-3 NRB1152AB-2 NRB1153AB-2 NRB1151AC-3 NRB1152AC-2 NRB1151AC-3 NRB1151AC-3 NRB1151AC-3	1.11	REMOVED 24V80906A61, 0, 62 mk (WAS BET WEEN JUNC- TIONS OF 1.9, 656 AND GSV, 58),			
	NRB1152AD=2 NRB1153AD=2 NRB1151AF=4 NRB1152AF=3 NRB1153AF=3	R69	ADDED 6K127862, 1K (REPLACES LII)			
1)	NR B1151AA-3 NR B1152AA-3 NR B1153AA-3 NR B1151AB-4 NR B1152AB-3 NR B1153AB-3 NR B1153AB-3 NR B1153AC-3 NR B1151AC-3 NR B1151AD-3 NR B1151AD-3 NR B1151AD-3	Q12, 13	WERT 4585e4025, M9025	Q12, 13		
E	NRB1151AA-5 NRB1152AA-4 NRB1153AA-4	Cos	WAS 23D82397D07, 6.5 of	LOWER LEFT OF Q12		
÷	NRB1151AB-5 NRB1151AB-4 NRB1151AB-4 NRB1151AC-5 NRB1151AC-5 NRB1151AC-4 NRB1151AD-5 NRB1151AD-5 NRB1152AD-4 NRB1153AD-4	Ro3 C 76	WAS 0K128545, 470 WAS 23D82347D07, 6.6 af	BELOW To		
F.	NRB1151AA-6 NRB1152AA-5	C35	WAS 21K861428, 6 auf	Q2 COLLEC- TOR		
	NRB1153AA-5 NRB1151AB-6 NRB1152AB-5 NRB1153AB-5 NRB1151AC-6 NRB1152AC-5 NRB1153AC-5 NRB1151AD-6 NRB1151AD-6 NRB1152AD-5 NRB1153AD-5	R14 R15 Q2, 301 Q3, 5 C302 R304 R503	WAS 6K127807, 33K WAS 6K127804, 4,7K WERE TYPE M9047 WERE TYPE M9041 WAS 21K861428, 6 unt WAS 6K127807, 33K WAS 6K127804, 4,7K	Q2 BASE BELOW Q301		
G		QΪ	WAS TYPE M4576			
	NRB1151AA-7 NRB1152AA-6 NRB1153AA-6 NRB1151AB-7 NRB1151AB-7 NRB1151AC-7 NRB1152AC-6 NRB1153AC-6 NRB1151AD-7	Q3	WAS 21K861603, 3.3 uur WAS 48R869169; M9169	Q3 BASE TOP CEN- TER OF BOARD		
J	NRB1152AA-7 NRB1153AA-7 NRB1151AC-8 NRB1152AC-7	C81 C90, 91	WAS 21K864013 ADDED	Q9 BASE TO COLL.  Q8 AND Q10 BASE TO COLL.		
K	NRB1153AC-7 NRB1151AF-8 NRB1152AF-7 NRB1153AF-7		WAS 21K86144×, .01 of	LOWER RIGHT OF Q12		



# instruction manual revision MR-1754G

REVISIONS

CHANGE

EXTENSIVE CIRCUIT
BOARD AND COMPONENT CHANGES
C156M ADDED 100 uuf
L101M WAS 24C82901B02

LOCATION

REF. SYMBOL

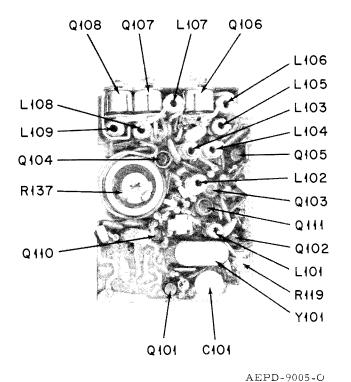
BOARD AND SUFFIX NO.

NTB6052AC-4 NTB6062AC-4

DIAG.

For 68P81017A20-C

Add this Diagram EPD-13429-A to your manual.



MODEL	SUFFIX
NTB6051AC	2
NTB6052AC	4
NTB6061AC	2
NTRAGAZAC	1 4

FOR UNITS SUFFIXED EARLIER THAN INDICATED IN THIS CHART REFER TO CIRCUIT BOARD DIAGRAM EPD-8838.

EPD-13473-O

Transmitter Printed Circuit
Board and Wiring Diagram used in
25-42 MC "Handie-Talkie"
"Private-Line" Dual Squelch
FM Two-Way Radio Sets
Motorola No. EPD-13429-A

			REVISIONS		
DIAG. ISSUE	CHASSIS AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION	REFER TO CIRCUIT BOARD
АE	IRB1121AF-11 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1122AH-6 NRB1123AH-6		REPLACED 455 KC IF FILTER NFN6004AS WITH NFN6006AS	PARTS LIST	NONE
tin.	NRB1151AF-8 NRB1152AF-7 NRB1153AF-7		CONTRACTOR OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF		
AE1	NRB1121AF-11 NRB1122AF-14 NRB1123AF-13	Q3	WAS 21K861603, 3. 3 uuf WAS 48R869169,	Q3 BASE IF AMP.	RCVR. BD. EPD-8841-J
	NRB1121AH-7 NRB1122AH-6 NRB1123AH-6 NRB1151AF-8 NRB1152AF-7		M9169		
AE2	NLB6141A-7	C703	REMOVED	Q701 BASE	EPD-9204-J
	NLB6142A-6	C706	23D82397D11, . 068 uf REMOVED 23D82397D12, 0, 12 uf	CKT.	EPD-9206-G
		L701	REPLACED 25C82750D06 CHOKE, 5 h WITH JUMPER CIRCUIT WAS AS SHOWN BELOW		
		8701 19K 6705 .056 UF .	5H 7H 4.7UF C703 C704 F726 F726 S86 S80	T OZZV	
		R701,	WERE 6S127805, 1/4 W	PARTS LIST	
	****	708 R703	WAS 6S128686, 1/4 W		
			WERE 6K129242, 1/4 W		
		716 R726	WAS 6K128570, 1/10 W		
		R706	WAS 6K129662, 1/4 W		
		R709	WAS 6K128987, 1/4 W WERE 6S127804, 1/4 W		
		R710, 711, 712	WERE 05121604, 1/4 W		
		R713	WAS 6K128558, 1/10 W		
		R717 R721	WAS 6S128689, 1/4 W WAS 6K129620, 1/4 W		
		R727	WAS 6K128545, 1/10 W		
		R715	(NLB6141A ONLY) WERE 65128689,	Q703 COL-	1
			2.2K	LECTOR Q704 COL-	
		R723		LECTOR	
	NRB1121AF-11 NRB1122AF-14 NRB1123AF-13 NRB1121AH-7 NRB1121AH-6 NRB1123AH-6	C61	WAS 21K861443, .01 uf	DISCRIMI- NATOR	EPD-8841-L
	NRB1151AF-8 NRB1152AF-7	1	Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission of the Commission o		EPD-8978-K
AF	NRB1153AF-7 NTB6052AC-3	C165	ADDED . 003 uf	LEFT OF	EPD-8838-H
	NTB6053AC-4			K801; PWR DISTR CKT	
	NTB6052AD-4 NTB6053AD-4	C164H		Q107 BASE	
	NTB6062AC-3	L115H	ADDED CHOKE,	1	
	NTB6063AC-4 NTB6062AD-4	R143M,	3 TURNS ADDED 10 OHMS	Q108 BASE	1
	NTB6063AD-4	144M		<u> </u>	
AG	NTB6052AC-4 NTB6062AC-4		EXTENSIVE CIRCUIT BOARD AND COMPO- NENT CHANGES		EPD-13429-0
AH	NTB6052AC-5 NTB6062AC-5	C156M L101M	ADDED 100 uuf WAS 24C82901B02	PARTS LIST	EPD-13429-A
	Tivi Douge MC-3	12101M	I WAR WAS GRANTED AND WAS A STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PAR	4	<u> </u>

PARTS LIST for Schematic Diagram 63E81017A22-AH

LEGEND L = 25-30 MC M = 30-42 MC H = 42-54 MC

NRB1121AF, NRB12151AF Receiver Circuit Board (25-30 MC) 1-Freq. NRB1122AF, NRB12152AF Receiver Circuit Board (30-42 MC) 1-Freq. NRB1123AF, NRB1215AF Receiver Circuit Board (42-54 MC) 1-Freq. NRB1151AH Receiver Circuit Board (25-30 MC) 2-Freq. NRB1152AH Receiver Circuit Board (30-42 MC) 2-Freq.

IRB 115 IAH Rec IRB 1152AH Rec	eivær Circuit Bo eivær Circuit Bo	ver Circuit Board (42-54 MC) 1-Free pard (25-30 MC) 2-Freq. pard (30-42 MC) 2-Freq. pard (42-54 MC) 2-Freq.			
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION			
C1L, 1M, 10M C1H, 10H, 12H,		CAPACITOR, fixed: uuf ±10%; 75 v; unl stated 36; N150 15; N150			
C2L, 2H, 32, 59	211D82877B02	150; N1400			
C2M, 82 C3 C4L C4M, 5M C4H, 34, 305 C5L C5H, 8M, 12M,	216K868829 211C82450B27 210K861433 or:21K861434 210K864013 216K861432 216K861435 216D82877B06	220; N1400 1.5; 500 v 36; N150; handset models 40; N150; speaker models 50; N150 20; N150 70; N150 30; N150			
C7L, 7M, 13L, 13M, 14L, 14M, 21, 27, 31, 37, 75, 77, 301, 303, 306		.002 uf +100-20%			
C7H, 13H, 14H, 43, 47, 54	21EK847065	500 GMV; 250 v			
CBL	211D82877B01	24; N150 12; N150			
C8H C6L, 6M, 6H, 9L, 11L	211K861431 211C82450B30	1.8 ±5%; 500 v			
С9М, 11М, 33, 304	211C8Z450D28	Į.0; 500 v			
C9H, 11H C10L, 12L	211C82450B24 211D82877B01 or/21D82877B06	0.47; 500 v 24; N150; handset models 30; N150; speaker models			
C15	211D82877B15 211K861440	120; N150 470; N2200			
C16 C17 C18, 20, 26, 28, 50	211D82877B17 211K861444	5 ±5%; N150 .02 uf +100-20%			
C19	2HD82877B14	91; N470			
C22, 23 C24, 25	211C82450B22 211K864522	0,75;500 v 90; N080			
C29	211K <b>86142</b> 9	8; N150			
C30 C33, 304	211K865197 211C82450B28	25; N150 1.0; 500 v			
C34L, 305L	2HK861432	20; N150			
C35, 302 C42, 44, 46,	211K861427 211K861443	4; N150 .01 uf +100-20%			
48, 49, 51, 56,	Z111001143	, 01 da (100 a)			
79, 80 C52	2:1D82239E02	800 ±5%; 200 v			
C53	2:3C82397D06	0. 22 uf +40-20%; 35 v			
C55 C57	2:3C82397D16 2:1K864457	22 uf ±20%; 15 v .002 uf +100-20%			
C58, 62	8(C82317B03	.03 uf; 50 v			
C60 C61	201D82239E03 201K861441	250 ±5%; 200 v 500			
C63, 78	2:3D82397D19	2. uf +40~20%; 8. v			
C64 C65	2:3D82397D05 2:3D82397D19	4.7 uf +40-20%; 3 v 2 uf +40-20%; 8 v			
C66, 67, 71	2:3D82397D17	15 uf ±20%; 20 v			
C68	2:1C82187B16 or:21D82428B09	3000; 100 v (speaker models) 4700; 100 v (handset models)			
<b>C</b> 69	2:3D82397D07	1 uf +40-20%; 15 v			
C70	2:3D82397D16	22 uf ±20%; 15 v (speaker			
C72, 73	2:3D82397D15	models) 10 uf ±20%; 20 v			
C74	2:3D82397D08	0.15 uf +40-20%; 35 v			
C76	81C82317B06	.0082 uf; 100 v 100; N2200			
C83 C84	2:1K861437 83C82317B01	0.1 uf; 100 v			
C85L, 85M	221K861426	2.2; N150			

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		SEMICONDUCTOR DEVICE,
		diode; NOTE I
CRI	48C82363E03	silicon
CR2	48C859464	germanium
CR4, 6, 7	48C82178A01 48C82363E02	germanium silicon
CR8, 9, 10 CR12	48C82392B03	silicon
CRIZ	400.023722003	COIL, RF:
LiL, 2L, 3L	24C82765D07	GRN-RED; does not incl. 76K861425 CORE, tuning or
		76A82686D02 SLEEVE, iron
L1M, 1H, 2M, 2H, 3M, 3H	24C82765D06	GRN-BRN; does not incl. 76K861425 CORE, tuning or
L4	24C82765D05	76A82686D02 SLEEVE, iron GRN-GRA; does not incl. 76K847160 CORE, tuning or
L5L, 5H, 301L, 301H	24C82766D04	76A82686D01 SLEEVE, iron BLU-GRAY; does not incl. 76K861425 CORE, tuning or
L5M, 301M	24C82766D08	76A82686D02 SLEEVE, iron BLU-RED; does not incl. 76K861425 CORE, tuning or
		76A82686D02 SLEEVE, iron
L6	24C847920	choke; 9 uh
L9	24B82695D01	limiter; c/o pri: term. No. 1 and 2 with No. 5 center tap
L10	24B82696D01	sec: term. No. 3 and 4 discriminator; 455 kc; incl. tuning core
L12	25B82751D01	choke; 1.5 h
L13	48C82392B03	silicon TRANSISTOR: NOTE I
0.1	48R869167	P-N-P; type M9167
Q1 O2 5 301	48R869168	P-N-P; type M9168
Q2, 5, 301 Q3	48R869238	P-N-P; type M9238
Q4	48K869062	N-P-N; type M9062; BLU
Q6, 7, 8, 9,	48R869057	P-N-P; type M9057
10, 11		
Q12, 13	48R869148	P-N-P; type M9148
Q14	48R869022	N-P-N; type M9022
Q15	48R869028	P-N-P; type M9028
Q16	48R869027	N-P-N; type M9027
		RESISTOR, fixed: ±10%; 1/4 w; unl stated
51142729204	6K127806	27K
R1,14,37,38,304 R2, 9, 22,	6K127804	4.7K
24, 26, 28, 30,		7
45, 47		
R3, 4, 7	6K129432	820
R5, 65	6K129433	5.6K
R6, 21, 23,	6K127807	33K
25, 27, 29	/	470
R8, 49, 52, 57	6K127801	470
R10, 59	6K129775 6K128685	330 22K
R11, 31 R12	6K129225	10K
R12 R13,32,39,44	6K128688	2.7K
R15, 303	6K128687	6.8K
R16,17,34,69,	6K127802	1K
301, 302		
R33, 50	6K128689	2,2K
R43, 60	6K128904 6K129144	18K 68K
R46, 68	DE 144	1 551
R51	6K129233	47
R53	6K129433	5.6K; handset models
1	or6K127804	4.7K; speaker models
R54, 55	6K127806	27K; speaker models
R58	6K129862	150
R63	6K129269	1.8K; 1/10 w
R64	6K129753	470; handset models
TIL	24C82767D06	TRANSFORMER, GRN-BLK; does not incl. 76K861425 CORE, tuning or
TIM, IH	24C82767D03	76A82686D02 SLEEVE, iron
T2L	24C82767D07	76A82686D02 SLEEVE, iron
T2M, 2H	24C82767D04	76A82686D02 SLEEVE, iron

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
T3, 5	24C82767D05	GRN-BLU; does not incl. 76k847164 CORE, tuning or 76k82686D01 SLEEVE, iron
T4	24C82207G01	RED-RED; does not incl. 76/847164 CORE, tuning or 76/32686D01 SLEEVE, iron
Т6	1V80729A40	AS&Y, audio input; GRN dot; c/c; pri: coil res. 1K; imped. 10k; sec: coil res. 200 imped. 1.2k
Т7	25B82893E01	aucio: pri: imped. 1200; res. 125; sec: imped. 120; res. 12
		CRYSTAL UNIT, quartz:
Y 1	YM45	25-42 mc
<b>У</b> 2	orYM46 YN	42-54 mc 5,245 or 6,155 mc

#### FILTER

ZI	NFN6006AS	FIRTER, IF: bardpass
	NON-REFEREN	ICED ITEMS
	26B82671D01 14A82271E01	SHELD, coil: 10 req'd INSULATOR, coil shield: used with L1, 2, 3, 5, T1, 2

NLB6141A "Private-Line" Squelch Deck (25-42 MC) NLB6142A "Private-Line" Squelch Deck (42-54 MC)

		CAPACITOR, fixed: uf; ±10%;
		un) stated
C701	23D82397D20	0. 2 ±20%; 35 v; non-polarized
C702	21C82724H01	dual sect.; c/o:
C702A		.065 +100-20%; 75 v
C702B		.0055 +100-20%; 75 v
C704	23D82397D13	.022; 6 v
C705	23D82397D10	. 096; 35 v
C707, 719	23D82397D14	.0&2; 20 v
G709	23D82397D05	4.7 +40-20%; 3 v
G710	21K847065	50 uuf GMV; 250 v
C711, 713,	23D82397D07	1 +40-20%; 15 v
724	Espaes, Es	2 120 2 6 703 12 T
C712, 714	23D82397D23	6. ½ ±20%; 20 v
C715, 717	23D82397D09	6. : +40-20%; 10 v
C716, 721	23D82397D16	22 ±20%; 15 v
C718,	23D82397D28	3. 1 ±20%; 20 v
C720	23D82397D25	0.17; 20 v
072 <b>2,723,729,73</b> 0	{	.012 +100-20%; 75 v
C726	21K858108	.013 ±25%; 250 v
C727	21K831126	.0%2 GMV; 300 v
C728	21K861441	50) uuf; 75 v; N4700
		SEMICONDUCTOR DEVICE,
		dide: NOTE I
CR701	48C82392B03	silicon
CR702	48C82187A01	geemanium
L702	25C82750D02	Coil, RF: choke:
2102	23 302 13 32 32	TRANSISTOR: NOTE I
Q701, 702,	48R869033	P-N-P; type M9033
703, 704	401000000	1 1101, type 11,000
103, 104		RESISTOR, fixed: ±10%; 1/8 w
		un stated
R701, 708	6S185B93	15K
R702	6K128687	6.8K; 1/4 w
R703	6S185B90	8.2K
R704, 705,	6S185C01	56K
714, 716, 726		
R706	6S185B70	180
R709	6S185C05	120 <b>K</b>
R710,711,712	6S185B87	4.7K
R713	6S185B88	5.6K
R715,717,723	6S185B83	2.2K
R718	6S129752	270; 1/4 w
		10K; 1/4 w
R719	6K129225	
R720	6K129225 6S129269	1.3K; 1/4 w
R720	3	1.3 <b>K;</b> 1/4 w 560
R720 R721	6S129269	560
R720 R721 R722	6S129269 6S185B76	560 180 <b>K;</b> 1/4 w
R720 R721	6S129269 6S185B76 6K129229	560
R720 R721 R722 R724 R725	6S129269 6S185B76 6K129229 6K129231 6K129432	560 160K; 1/4 w 3.3K; 1/4 w 820; 1/4 w
R720 R721 R722 R724	6S129269 6S185B76 6K129229 6K129231	560 160K; 1/4 w 3.3K; 1/4 w

## instruction manual revision MR-1754C

For 68P81017A20-C

Replace Schematic Diagram 63E81017A22 with this Diagram 63E81017A22-AH.

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#### TRANSMITTERS

SERIES	MODEL NO	CHASSIS SUFFIX	NO. OF FREQ.	FREQUENCY RANGE	RF POWER
	NTB6051AC	2	1	25-30 MC	1.4 W
NTB6050AC	NTB6052AC	5	1	30-42 MC	1.4 W
	NTB6053AC	4	1	42-54 MC	1.4 W
	NTB6051AD	2.	2	25-30 MC	1.4 W
NTB6050AD	NTB6052AD	4	2	30-42 MC	1.4 W
	NTB6053AD	4	2	42-54 MC	1.4 W
NTB6060AC	NTB6061AC	2	1	25-30 MC	5 W
	NTB6062AC	5.	1	30-42 MC	5 W
	NTB6063AC	4	1	42-54 MC	5 W
	NTB6061AD	2	2.	25-30 MC	5 W
NTB6060AD	NTB6062AD	4	2	30-42 MC	5 ₩
	NTB6063AD	4	2	42-54 MC	5 W

#### RECEIVERS

SERIES	MODEL NO.	CHASSIS SUFFIX	NO. OF FREQ.	CHANNEL SPACING	FREQUENCY RANGE	USED WITH
	NRB1121AF	11	1	20 KC	25-30 MC	HANDSET ONLY
NRB1120AF	NRB1122AF	14	1	20 KC	30-42 MC	HANDSET ONLY
-	NRB1123AF	13	1	20 KC	42-54 MC	HANDSET ONLY
NRB1150AF	NRB1151AF	8	1	20 KC	25-30 MC	SPEAKER
	NRB1152AF	7	1	20 KC	30-42 MC	SPEAKER
	NRB1153AF	7	1	20 KC	42-54 MC	SPEAKER
	NRB1121AH	7	2	20 KC	25-30 MC	SPEAKER
NRB1120AH	NRB1122AH	6	2	20 KC	30-42 MC	SPEAKER
	NRB1123AH	6	2	20 KC	42-54 MC	SPEAKER

#### POWER SUPPLIES

MODEL NO.	CHASSIS SUFFIX	TYPE OF BATTERIES
NPN6030B		DRY
NPN6031A		NICKEL-CADMIUM

#### "PRIVATE-LINE" DECK

MODEL	GHASSIS SUFFIX
NLB6141A	7
NLB6142A	6

EPD-9020-L

#### POWER AMPLIFIERS

MODEL NO.	CHASSIS SUFFIX	FREQUENCY RANGE
NLB6121A	Z	25-30 MC
NLB6122A	2	30-42 MC
NLB6123A		42-54 MC

MODEL NO.	CHIASSIS SUIFFIX	XMTR. FREQ.	RCVR. FREQ.	HANDSET	SPEAKER	MICROPHONE	RF POWER OUTPUT
NGN6024A	1	1	1	х		-	1.4 W
NCN6040A	1	1	1		x	x	l. 4 W
NCN6042A	1	2	1		х	х	1, 4 W
NCN6046A	1	1	1		х	x	5. W
NCN6048A	1	2	1		х	x	5 W
NCN6050A	l	Z	2		х	х	1.4 W
NCN6051A	1	2	2		Х	X	5. W
NCN6053A	ı	2	1	х	х		1.4 W
NCN6055A	1	2	2	X	х		1.4 W
NCN6057A	1	1	1	x	х		5 W
NCN6059A	1	2	1	х	х		5 W
NCN6061A	1	2	2	x	x		5 W
NCN6065A	1	2	2	х	х		I.4 W

CONTROL PANELS

#### NOTE

- UNLESS OTHERWISE STATED: RESISTOR VALUES ARE IN OHMS, ±10%, 1/4 WATT, K=1000. ALL CAPACITOR VALUES ARE IN MICROMICROFARADS.
- 2. REFEIR TO PARTS LIST FOR COMPONENT VALUE.
- 3. USED IN SINGLE FREQUENCY MODELS ONLY.
- 4. PART OF HOUSING.
- 5. REFEIR TO RECEIVER PRINTED CIRCUIT BOARD AND WIRING DIAGRAM FOR PROPER TAP.
- ALL WOLTAGE READINGS REFERENCED TO CHASSIS GROUND, DC READINGS TAKEN WITH A MOTOROLA DC MULTIMETER.
- 7. FREQUENCY CALACULATIONS:

TRANSSMITTER:  $f_0 = \frac{c}{16}$ 

RECENVER: f = CARRIER FREQUENCY (25-54 MC)

 $\mathbf{f}_{0.1} \!\!=\! 1ST$  OSCILLATOR CRYSTAL FREQUENCY (30.7-48.3 MC)

 ${\rm f_{02}}^{}^{}$  = 2ND OSCILLATOR CRYSTAL FREQUENCY (REFER TO CHART ON BLOCK DIAGRAM)

f, = IST INTERMEDIATE FREQUENCY (5.7 MC)

f₂ = 2ND INTERMEDIATE FREQUENCY (455 KC)

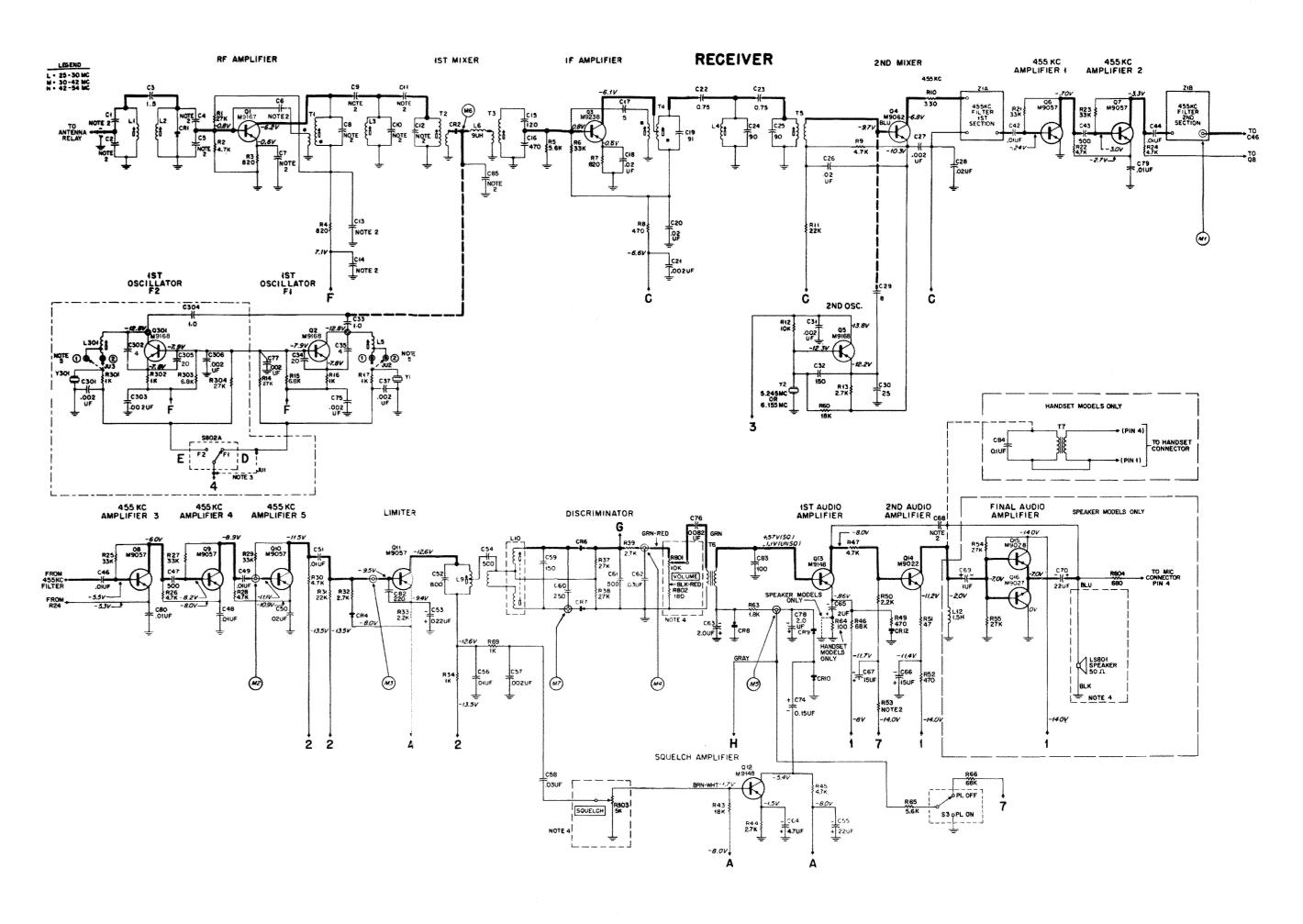
 $f_{01} = f_c + f_1 (25-42 \text{ MC})$ 

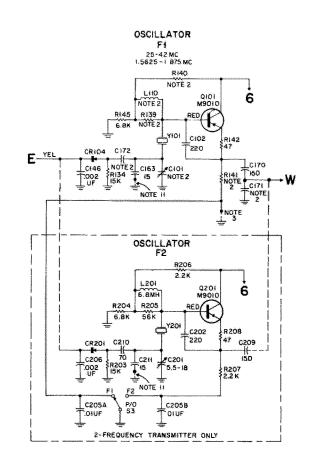
 $f_{02} = f_c - f_1 (42-54 \text{ MC})$ 

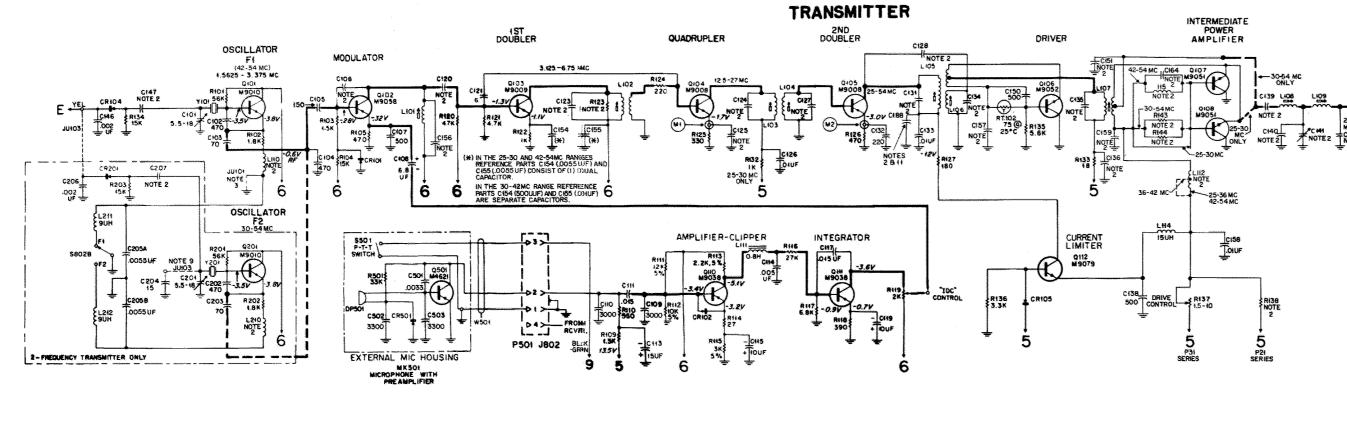
- 8. HAND:SET MODELS ONLY.
- 9. JU103 MAY OR MAY NOT EXIST DEPENDING UPON OPERATING FREQUENCY.
- REFEIR TO BATTERY REPLACEMENT AND CHARGING SECTION OF THE INSTRUCTION MANUAL FOR LOCATION OF FUSE.
- 11, NOT UISED IN 42-54 MC RANGE.

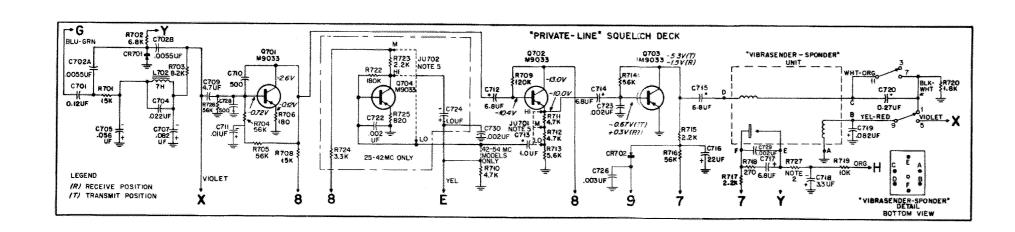
EPD-8874-C

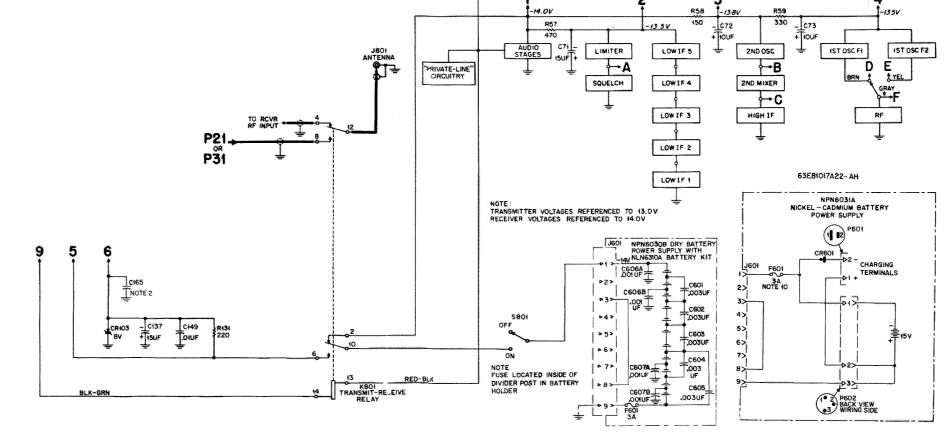
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Dual Squelch "Private-Line"
Schematic Diagram
Motorola No. 63E81017A22-AH
(Sheet 1 of 2)











POWER AMPLIFIER

## instruction manual revision MR-1754C

For 68P81017A20-C

Replace Schematic Diagram 63E81017A22 with this Diagram 63E81017A22-AH.

25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Dual Squelch "Private-Line"
Schematic Diagram
Motorola No. 63E81017A22-AH
(Sheet 2 of 2)

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	NON-REFERE	NCED ITEM
	1V80724A84	PRINTED CIRCUIT BD, ASS'Y.

NTB6051AC, NTB6061AC Transmitter (25-30 MC) 1-Freq. NTB6052AC, NTB6062AC Transmitter (30-42 MC) 1-Freq. NTB6053AC, NTB6063AC Transmitter (42-54 MC) 1-Freq. NTB6051AD, NTB6061AD Transmitter (25-30 MC) 2-Freq. NTB6052AD, NTB6062AD Transmitter (30-42 MC) 2-Freq. NTB6053AD, NTB6063AD Transmitter (42-54 MC) 2-Freq.

	<u> </u>	CAPACITOR, fixed: uuf ±107 75 v; unl stated
C101L, 141M, 141H, 201L	20C82399D04	var; 5,5-18; 200 v; NP0
C101M C101H, 201M,	20C82399D05 20C82399D06	var; 9-35; 200 v; N650 var; 3-15; 200 v; N650
201H	20002377000	101, 5-15, 200 1, 11050
C102L, 102M, 202L, 202M	21K868829	220; N1400
C102H, 104	21K861440	470; N2200
C103, 131M,	21K861435	70; N150
140L, 142M, 156L, 203		
C105L, 105H,	21D82877B02	150; N1400
106M, 106H, 124H		
C105M	21K865922	390; 500 v
C107, 125M, 125H, 150	21K847065	500 GMV; 250 v
C108	23C82397D09	6.8 uf +40-20%; 10 v
C109, 110 C111	21K858108 8K854329	3000 ±25%; 250 v .015 uf; 250 v
C113, 137	23C82397D17	15 uf ±20%; 20 v
C114 C115, 119	8C82548E03 23C82397D03	.005 uf; 100 v 10 uf ±20%; 6 v
C115, 119 C117	8C82548E02	0.15 uf; 100 v
C120L, 120H,	21K861436	100; N750
139H, 156M C120M, 132,	21K861438	220; N1400
106L C121, 128M	21K861428	6: N150
C123L, 124L,	21D82877B35	220; N470
127L, 127M	21K868384	100; N150
C123M C123H, 131H,	21K864013	50; N150
134H	21 502220502	250 ±5%; 200 v
C124M C125L	21D82239E03 21K831126	.002 uf GMV; 300 v
C126, 133, 136,	21K861443	.01 uf +100-20%
149, 155M, 158 C127H, 134L	21D82877B15	120; N150
C128H	21K861427	4; N150
C131L C134M	21K864012 21K864067	60; N150 80; N150
C135L	21K868384	100; N150
C135M C135H, 159L	21K864522 21K861434	90; N080 40; N150
C139L, 157L,	21K861432	20; N150
160L C138, 139M, 154M	21K861441	500; N4700
C140M, 140H,	21D82877B19	15 ±5%; NP0
204 C141L	20C82399D07	var; 15-60; 200 v N1500
C142H	21D82877B18	30 ±5%; NP0
C146, 206 C147, 207	21K861442 21D82877B05	.002 uf +100-20% 150; N750
C147, 207 C151M, 151H	21K861430	10; N150
C152 C154L, 154H,	21K861462 21C82724H01	15; N150 dual sect.; c/o; each sect.;
155L, 155H, 205A, 205B	210021241101	5500 +100-20%
C164H, 165H	21K858108	.003 uf ±25%; 250 v
C170, 172M, C171L	21D82877B34 21D82239E03	150; NP0 250; N150
C171M	21K861436	100
C172L C188L, 188M	21K861435 23D82397D07	70 1.0 uf +40-10%; 15 v
		SEMICONDUCTOR DEVICE,
CR101, 102	48C82178A01	diode: NOTE I germanium
CR101, 102 CR103	48C82256C08	zener type
CR104, 201	48C863140	silicon
CR105	48C82392B03	silicon

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		COIL, RF; does not incl.
* 1017 10116	24602001004	76K835565 CORE, tuning
L101L, 101M L101H	24C82901B04 24C82901B05	modulator modulator; GRN-YEL
L101H L102	24B82194C01	1st doubler; RED
L103, 104L	24C82904B19	quadrupler output; 2nd doubler
		input
L103M, 103H	24C82904B14	quadrupler output; 2nd doubler
		output
L104M, 104H	24C82904B15	2nd doubler input
L105L	24C82904B20	2nd doubler 2nd doubler output
L105M, 105H L106L	24C82904B12 24B82648G01	driver input; final ampl, input
L106M, 106H,	24B82209E01	driver input; final ampl. input
107M, 107H	DIDOMOO, DV.	
L107L	24B82737E01	final ampl input
L108L, 108M,	24C82904B21	final ampl output
109L, 109M		
L108, 109H	24C82904B01	final ampl. output
L110L	24D82549D08	choke; 6.8 uh
L110M	24D82549D03	choke; 1 mh
L110H L111	24D82549D10 25B82872B01	choke; 390 uh choke; 0.8 h
L112L	24A890687	choke; 2 uh
L112M	24A82228G01	choke; 1.2 uh
L112H	24C82000E08	choke; 0.31 uh; sleeved
L114	24D82549D09	choke; 15 uh
L115H	24C83961B01	choke; 3 turns; coded BRN
L211, 212	24C8200E03	choke; 9 uh
0101 001	4000/0030	TRANSISTOR: NOTE I
Q101, 201 Q102	48R869010 48R869058	P-N-P; type M9010 P-N-P; type M9058
Q102 Q103	48R869009	P-N-P; type M9009
Q104, 105	48R869008	P-N-P; type M9008
Q106	48R869052	N-P-N; type M9052
Q107, 108	48R869051	N-P-N; type M9051
Q110, 111	48R869038	P-N-P; type M9038
Q112	48R869079	N-P-N; type M9079
		RESISTOR, fixed ±10%; 1/4 w
		unl stated
R101, 139L,	6K129242	56K
201		
R102, 141M,	6R129269	1.8K
202	1	
R103	6K127803	1.5K
R104, 123L,	6K127805	15K
123M, 134, 203 R105, 126	6R127801	470
R106, 123H	6K129225	10K
R108	6R129753	100
R109	6K128903	39K
R110	6K128689	2.2K
R111	6K129887	12K ±5%
R112	6K129668	10K ±5%
R113	6R129804	2.2K ±5%
R114	6S131594	27
R115	6S124A60	3K ±5%
R116, 139M R117, 140M,	6K127806 6K128687	27K 6.8K
145	017150001	V. V.
R118	6K129863	390
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120	6K128902	47K
R121	6K127804	4.7K
R122, 132L	6R127802	1K
R124, 131	6R127800	220
R125	6R127775 6R129662	330 180
R127 R133	6R131650	18
R135	6K129433	5.6K
R136	6R129231	3.3K
R137	17A82069G01	2 ±3%; 1 w
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
R143M, 144M	6S129755	10
		THERMISTOR:
RT102	6B859699	75 ohms @ 25°C
<del></del>	1	
		CRYSTAL UNIT, quartz:
	1,000	NOTE II
Y101, 201	ABS-2	xmtr. control
	NON-REFERE	NCED TEM
		TWI. 6 2.4 1.1 P. D.C.
	T	
	26A82609E01	HEAT SINK; 3 req'd

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		COIL, RF; does not incl. 76K835565 CORE, tuning
L101L, 101M	24C82901B04	modulator
_101H	24C82901B05	modulator; GRN-YEL
L102	Z4B82194C01	lst doubler; RED
103, 104L	24C82904B19	quadrupler output; 2nd doubler
L103M, 103H	24C82904B14	input quadrupler output; 2nd doubler
2103MI, 103II	21002/0121	output
L104M, 104H	24C82904B15	2nd doubler input
L105L	24C82904B20	2nd doubler
L105M, 105H L106L	24C82904B12 24B82648G01	2nd doubler output driver input; final ampl, input
L106M, 106H,	24B82209E01	driver input; final ampl. input
107M, 107H		
L107L	24B82737E01	final ampl input
L108L, 108M, 109L, 109M	24C82904B21	final ampl output
L108, 109H	24C82904B01	final ampl. output
L110L	24D82549D08	choke; 6.8 uh
L110M	24D82549D03	choke; 1 mh
L110H	24D82549D10 25B82872B01	choke; 390 uh choke; 0.8 h
L111 L112L	24A890687	choke; 2 uh
L112M	24A82228G01	choke; 1. 2 uh
L112H	24C82000E08	choke; 0.31 uh; sleeved
L114	24D82549D09	choke; 15 uh
L115H	24C83961B01 24C8200E03	choke; 3 turns; coded BRN choke; 9 uh
L211, 212	5-00500E03	Constituting to service
		TRANSISTOR: NOTE I
Q101, 201	48R869010	P-N-P; type M9010
Q102	48R869058 48R869009	P-N-P; type M9058 P-N-P; type M9009
Q103 Q104, 105	48R869009	P-N-P; type M9009 P-N-P; type M9008
Q104, 103	48R869052	N-P-N; type M9052
Q107, 108	48R869051	N-P-N; type M9051
Q110, 111	48R869038	P-N-P; type M9038
Q112	48R869079	N-P-N; type M9079
		RESISTOR, fixed ±10%; 1/4 w;
<b></b>	(70.000000	unl stated
R101, 139L,	6K129242	56K
201 R102, 141M,	6R129269	1.8K
202	//	
R103	6K127803	1.5K
R104, 123L,	6K127805	15K
123M, 134, 203 R105, 126	6R127801	470
R106, 123H	6K129225	10K
R108	6R129753	100
R109	6K128903	39K
R110	6K128689	2.2K 12K ±5%
R111 R112	6K129887 6K129668	10K ±5%
R113	6R129804	2.2K ±5%
R114	6S131594	27
R115	6S124A60	3K ±5%
R116, 139M R117, 140M,	6K127806 6K128687	27K 6.8K
R117, 140M, 145	1	
R118	6K129863	390
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120 R121	6K128902 6K127804	47K 4.7K
R122, 132L	6R127802	1K
R124, 131	6R127800	220
R125	6R127775	330
R127	6R129662	180 18
R133 R135	6R131650 6K129433	5.6K
R136	6R129231	3.3K
R137	17A8Z069G01	2 ±3%; 1 w
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H R143M, 144M	17A82069G01 6S129755	2 ±3%; 1 w 10
LUTURE, L'TTIVE		
		THERMISTOR:
RT102	6B859699	75 ohms @ 25°C
		CRYSTAL UNIT, quartz:
	1	NOTE II
Y101, 201	ABS-2	xmtr. control
	1	
	NON-REFERE	NCED ITEM

	EFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
L			

NLB6121A RF Amplifier (25-30 MC) NLB6122A RF Amplifier (30-42 MC) NLB6123A RF Amplifier (42-54 MC)

		CAPACITOR, fixed: uuf; unl
C401L	21K855809	33 ±5%; 250 v; N150
C401M	21D82610C07	51; 200 v; N150
C401H	21K410089	27 ±10%; 500 v
C402L, 402M	21K840365	24 ±5%; 500 v
C402H, 407H	21K859211	47 ±5%; 300 v
C403L, 403M,	20C82109C01	var: 20-100; 350 v; N2100
406L, 406,		
408		
C403H	20K840719	var: 8-50; 200 v
C404	21C82187B14	.001 uf ±10%; 200 v
C405, 405M	21K861435	70 ±10%; 7.5 v; N150
C405H	21D82610C05	57 ±5%; 200 v; N150
C407L, 407M	21K861436	100 ±10%; 75 v; N7500
C409L, 409M	21D82355B13	51 ±5%; 500 v; N15000
C409H	21D82355B14	62 ±5%; 500 v; N1500
C410L	21D82426B10	.0033 ±10%; 100 v
C410M	21K858108	3000 ±25%; 250 v
C410H	Z1K858107	1500 ±25%; 250 v
,		COIL, RF:
L401L, 401M	24V82643G01	input coil assembly
L401H	24B82640G01	input coil assembly
L402L, 402M,	24V80900A86	choke; 1,02 uh
L402H		'
L403L, 403M	24A82813E01	coil, output
L403H	24A82818G01	coil, output
L404	24A82819G01	coil, output
L405L, 405M	24C82000E15	choke; tapped output:
L405H	24C82000E14	choke, output
L406L	24B82122D06	choke; filter; .0872 uh
L406M	24B82122D04	3 turns
L406H	24B82122D07	2 turns TRANSISTOR: NOTJE I
Q401L, 401M	48R869101	P-N-P; type M9101
Q401H	48R869102	P-N-P; type M9102
		RESISTOR, fixed: ±10%; 1 w
R401L,M	6R6330	150
**************************************	A	· · · · · · · · · · · · · · · · · · ·

#### CONTROL PANEL

NCN6055A

NCN6048A

1V80729A93

NGN6024A

MOHOULTA	1401400401	11011005511
NCN6040A	NCN6050A	NCN6057A
NCN6042A	NCN6051A	NCN6059A
NCN6046A	NCN6053A	NCN6061A
		CONNECTOR, receptacle:
J801	9C82817E01	female; coaxial; uhif type
.T803	28C82846E01	male; 9 contact
0000		
K801	80C82860至01	RELAY, armature;; hermetically sealed; 13.6 v d-c; 4 form "C"; coil res 160
LS801	50D82808E01	LOUDSPEAKER, permanent magnet;  3", square; 50 ohmis imped.
		RESISTOR,
R801	18C82816E02	var; 10K ±10%; weatherproof
R802	6K129662	fixed: 180 ±10%; 1//4 w
R803	18C82816E01	var: 15K ±10%; weatherproof
R804	6R6040	fixed: 680 ±10%; 1//2 w
		SWITCH;
	40B82851E01	toggle; spst; weather-
S801	40B02021E01	resistant
2000	40C82843E01	rotary; 2 pole; 2 prosition;
S802	40C020#3F01	non-shorting (1-freq.)
ļ	or40C82890E01	F
	0F-0C02070E01	non-shorting (2-freq.)
	1	
	NON-REFEREN	CED ITEMS
***************************************	1V80727A11	HANDLE ASSY,: intel. mic.
1	1	3 - 2 3 3 - 1 - 3 2 - 1 d a sa maria d a 4 m

holding clip (for models NCN6040A, NCN6042A, NCN6046A, NCN60:48A, NCN6050A and NCN6051A) HANDLE ASSY .: imcl. handset

NGN6024A)

holder (for models NCN6053A, NCN6055A, NCN6037A, NCN6059A, NCN60361A,

SYMBOL PART NO.	DESCRIPTION
42K861179 42A82143C02 32B82855E01 36B82812E03 36B82812E01 36B82804E01 35B82803E01 13C82815E03 13C82815E02 1V80731A68	CLAMP, cable; 2 req'd CLAMP, cable GASKET, rubber; housing seal KNOB, control; 2 req'd (vol. & sq.) KNOB, control; ("PL" ON-OFF; GASKET; (speaker mtg.) CLOTH, grille GRILLE (1-freq models) GRILLE (2-freq models) HOUSING ASSY.: incl. handle (for models NCN6040A, NCN6042A, NCN6048A, NCN6050A and NCN6051A) HOUSING ASSY.: incl. handle (for models NCN6051A,

NPN6031A Power Supply (less battery) Nickel-Cadmium

		SEMICONDUCTOR DEVICE,		
		diode: NOTE I		
CR601	48C82095C01	silicon		
		•		
		FUSE, cartridge;		
F601	65A82496G01	3 amp. 32 v; 1/4" x 5/8"		
The same of		CONNECTOR, receptacle:		
J601	9C82847E01	female; 9 contact		
		CONNECTOR, plug:		
77/01	28A82488G01	male; 2 contact		
P601				
P602	28A16313	male; 3 contact		
		FUSEHOLDER ASSY:		
		T		
XF601	1V80731A03	single fuse mounting		
	NON-REFERENCED ITEMS			

1V80731A01	HOUSING ASSY. (riveted)
46B82653G01	PLATE, door
41A82652G01	SPRING, torsion
22A82651G01	PIN, pivot
14A82650G01	INSULATOR
384868379	TAB, battery plug

NPN6030B Power Supply (less battery) Dry

C601, 602,603,	21C82187B16	CAPACITOR, fixed: .003 uf ±5%; 100 v	
C606, 607 C606A, 607A C606B, 607B	21K800802	dual sect.: c/o: .001 uf GMV +100% max: 500 v .001 uf GMV +100% max: 500 v	
F601	65R132923	FUSE, cartridge: 3 amp./250 v	
J601	9C82847E01	CONNECTOR receptacle: female; 9 contact	
NON-REFERENCED ITEMS			
	1V80731A83 1V80731A85	HOUSING ASSY. (riveted) BATTERY HOLDER ASSY. (riveted)	
	1V80731A87	BATTERY COVER ASSY, (riveted)	

NLN6310A Battery Kit (Dry)

60B8	2455G01	BATTERY,	dry:	1.5	v; 11	req'	'd
				*****	***************************************	*********	

#### NMN6017A Handset

55P82446G01 15P82446G02 15P82446G03 40P82446G04 59P82446G05 59P82446G06 37A842245 30D82565B19	HANDLE, handset CAP, transmitter CAP, receiver SWITCH, push-to-talk CARTRIDGE, receiver CARTRIDGE, transmitter SLEEVE, strain relief CORD, handset

FERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
N6018A Mic	rophone (plug-ir	n; transistorized) MK501

NMN6018A Mic	ophone (plug-in	; transistorized) MK501
A501	1V80727A19	AMPLIFIER, AF: incl C501, C502, C503, CR501, Q501, R501 and 1V80727A20 BOARD, circuit component mtg
C501, 502, 503	21D82428B10	<u>CAPACITOR</u> , fixed: .0033 ±10%; 100 v
CR501	48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I germanium
DP501	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type
P501		CONNECTOR, plug: p/o W501
Q501	48R134621	TRANSISTOR, NOTE I P-N-P; type M4621
R501	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w
S501	40C82863E01	SWITCH, push; single pole normally open
W501	30D82565B04	CORD, microphone, incl ref part P501 and a coiled 4 conductor; stranded cord
	NON-REFERE	NCED ITEMŠ
	15C82828E01 15C82827E01 41B82856E01 38B82833E01 35A82853E01 4C82418B22 75A82852E01 75A82192A02 64A82826E01 7B82801E01 32A82661C02 42B82831E01 1V80727A18 43K475873	HOUSING, microphone: (front) HOUSING, microphone; (rear) SPRING, backup BUTTON, push DIAPHRAGM, microphone WASHER, insulating PAD, rubber, 1.24" dia. PAD, rubber, 0.562" dia. PLATE, tapped BRACKET, hold-down GASKET CLAMP, cable SPRING AND BUSHING ASSY. SPACER

#### NOTES:

- I. Replacement transistors and diodes must be ordered by Motorola part number only for optimum performance.
- II. Crystals are part of the Radio Set Model only. When ordering crystal units specify car. freq.(s), crystal freq.(s) and crystal type number.

			REVISIONS		
DIAG. ISSUE	CHASSIS AND SUFFIX NO.	REF. SYMBOL	CHANGE	LOCATION	REFER TO CIRCUIT BOARD
V	NTB6051AA-3 NTB6053AA-4 NTB6061AA-3 NTB6063AA-4 NTB6051AB-3 NTB6052AB-3 NTB6053AB-4	C154L, 154H, 155L, 155H C205A, 205B	WERE 21B861469, DUAL .01 uf	PARTS LIST  XMTR F2 OSC, \$802B SWITCH	XMTR. BD. EPD-8838-G
V1	NTB6061AB-3 NTB6062AB-3 NTB6063AB-4 NRB1151AA-6	Q1	WAS 48R134576	PARTS LIST	RCVR, BD,
	NRB1152AA-5 NRB1153AA-5 NRB1153AB-5 NRB1153AB-5 NRB1153AB-5 NRB1153AC-6 NRB1152AC-5 NRB1153AC-5 NRB1151AD-6 NRB1152AD-5 NRB1153AD-5				EPD-8978-G EPD-8841-H
VZ	NTB6051AA-3 NTB6052AA-2 NTB6053AA-4 NTB6051AB-3	L110M, 110H, 210M, 210H	WERE 24D82549D02	PARTS LIST	NONE
	NTB6052AB-3 NTB6053AB-4 NTB6061AA-3 NTB6062AA-2 NTB6063AA-4 NTB6061AB-3 NTB6062AB-3 NTB6063AB-4	1.114	WAS 24D82549D01		
W	NTB6052AA-3 NTB6052AB-4 NTB6062AA-3 NTB6062AB-4	C188L, M	WAS REF, C188	PARTS LIST	NONE
	NLB6121A-2 NLB6122A-2	R401L, M	ADDED 6R6330, 150	RF INPUT TO POWER AMP. (USED IN P31DDC SER- IES ONLY)	NONE
Y	NRB1121AB-9 NRB1122AB-12 NRB1123AB-11 NRB1121AA-9 NRB1123AA-12 NRB1123AA-12 NRB1123AD-11 NRB1123AD-11 NRB1123AD-11 NRB1121AC-9 NRB1123AC-12 NRB1123AC-12		REPLACE THE 455 KC FILTERS, MOD- ELS NFN6004HS & NFN6004AW WITH NFN6006AS AND NFN6006AW RE- SPECTIVELY	PARTS LIST	NONE
Yl	NRB1121AA-9 NRB1122AA-12	C17	WAS 21K861603, 3,3 uuf	Q3 BASE	RCVR. BD. EPD-8841-J
	NRB1123AA-12 NRB1121AB-9 NRB1123AB-11 NRB1123AB-11 NRB1123AC-12 NRB1123AC-12 NRB1123AC-12 NRB1121AD-9 NRB1122AD-12 NRB1123AD-11	Q3	WAS 48R869169, M9169	IF AMP.	
	NRB1151AA-7 NRB1153AA-6 NRB1151AB-7 NRB1153AB-6 NRB1151AC-7 NRB1153AC-6 NRB1151AD-7 NRB1153AD-6				RGVR, BD. EPD-8978-H
AA	NRB1121AA-10 NRB1122AA-13 NRB1123AA-13 NRB1121AC-10 NRB1122AC-13 NRB1123AC-13 NRB1151AA-8 NRB1152AA-7 NRB1151AC-8 NRB1152AC-7 NRB1151AC-7	C81 C90, 91	WAS 21K864013 ADDED	PARTS LIST Q8 AND Q10 BASE TO COLL.	EPD-8841 EPD-8978
AB	NTB6052AA-4 NTB6053AA-5 NTB6052AB-5 NTB6053AB-5 NTB6062AA-4	C165H C164H L115H	ADDED , 003 uf	LEFT OF K801; PWR DISTR, CKT. Q107 BASE	EPD-8838-H
	NTB6062AA-4 NTB6063AA-5 NTB6062AB-5 NTB6063AB-5	R143M, 144M	3 TURNS ADDED 10 OHMS	Q108 BASE	

PA	RTS LI	ST four	Schematic	Diagram	63E81017A21-AB
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LEGEND L = 25-30 MC M = 30-42 MC H = 42-54 MC

RECEIVER

 NRB1121AA
 NRB1121AD
 NRB1151AC

 NRB1122AA
 NRB1122AD
 NRB1152AC

 NRB1123AA
 NRB1123AD
 NRB1153AC

 NRB1121AB
 NRB1151AA
 NRB1151AD

 NRB1122AB
 NRB1152AA
 NRB1152AD

 NRB1123AB
 NRB1153AA
 NRB1153AD

 NRB1121AC
 NRB1151AB

 NRB1122AC
 NRB1152AB

RB1121AC	NRB1151AB	
IRB1122AC IRB1123AC	NRB I 152AB NRB I 153AB	
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		CAPACITOR, fixed; uuf ±10%;
		75 v; unl. stated
C1L, 1M, 10M	21K861433	36; N150
C1H, 10H, 12H	21K861462	15; N150
C2L, 2H, 32, 549		150; N1400
C2M, 82 C3	21K868829	220; N1400
C4L	21C82450B27 21K861433	1, 5; 500 v 36; N150; handset models
O-FE	or21K861434	40; N150; speaker models
C4M, 5M, 81	21K864013	50; N150
C4H, 34, 305	21K861432	20; N150
C5L	21K861435	70; N150
C5H, 8M, 12M	21D82877B06	30; N150
	21202011200	30, 11, 130
С6L, 6М, 6Н,	21092450830	1 0 ±20f
9L, 11L	21C82450B30	1.8 ±5%
C7L, 7M, 13L,	21K861442	.002 uf +100-20%
13M, 14L, 14Mi,		
21, 27, 31, 37,		
75, 77, 301, 30:3,		
306	237/0422/2	500 6304-350
C7H, 13H, 14H.,	21K847065	500 GMV; 250 v
43, 47, 54, 83	21092977001	24· N150
C8L	21D82877B01	24; N150
C8H	21K861431	12; N150
С9Н, 11Н	21C82450B24	0.47; 500 v
C9M, 11M, 33,	21C82450B28	1.0; 500 v
304	21002 100040	, 500
C10L, 12L	21D82877B01	24; N150; handset models
,	or21D82877B06	
C15	21D82877B15	120; N150
C16	21K861440	470; N2200
C17	21D82877B17	5 ±5%; N150
C18, 20, 26, 28,	•	.02 uf +100-20%
50		·
C19	21D82877B14	91; N470
C22, 23	21C82450B22	0.75; 500 v
C24, 25	21K864522	90; N080
C29	21K861429	8; N150
C30	21K865197	25; N150
C33, 304	21C82450B28	1.0;500 v
C35, 302	21K861427	4; N150
C42, 44, 46, 483,	21K861443	.01 uf +100-20%
49, 51, 56, 61,		Revenue Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of the Control of th
79, 80		
C52	21D82239E02	800 ±5%; 200 v
C53	23D82397D06	0.22 uf +40-20%; 35 v
C55	23D82397D16	22 uf ±20%; 15 v
C57	21K864457	.002 uf +100~20%
C58, 62	8C82317B03	.03 uf; 50 v
C60	21D82239E03	250 ±5%; 200 v 2 uf +40-20%; 8 v
C63, 78	23D82397D19	
C64	23D82397D05	4.7 uf +40-20%; 3 v 2 uf +40-20%; 8 v
C65.	23D82397D19 23D82397D17	2 ur +40-20%; 8 v 15 uf ±20%; 20 v
C66, 67, 71 C68	21C82187B16	3000; 100 v (speaker models)
000	or21D82428B09	•
C69	23D82397D07	1 uf +40-20%; 15 v
C70	23D82397D07 23D82397D16	22 uf ±20%; 15 v (speaker
0.0	23202377210	models)
C72, 73	23D82397D15	10 uf ±20%; 20 v
G74	23D82397D08	0. 15 uf +40-20%; 35 v
C84	8C82317B01	0. 1 uf; 100 v
C85L, 85M	21K861426	2, 2; N150
	1	
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REFERENCE	MOTOROLA	DESCRIPTION
SYMBOL	PART NO.	
CR1 CR2 CR4, 6, 7	48C82363E03 48C859464 48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I silicon germanium germanium
CR8, 9, 10	48C82363E02 24C82765D07	Silicon  COIL, RF: GRN-RED; does not incl
L1L, 2L, 3L L1M, 1H, 2M,	24C82765D06	76K861425 CORE, tuning GRN-BRN; does not incl
2H, 3M, 3H L4	24C82765D05	76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron GRN-GRA; does not incl
L5M, 301M	24C82766D08	76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron BLU-RED; does not incl
L5L, 5H, 301L, 301H	24C82766D04	76A82686D02 CORE, tuning BLU-GRA; does not incl 76K861425 CORE, tuning or
L6 L9	24C847920 24B82695D01	76A82686D02 SLEEVE, iron choke; 9 uh limiter; c/o; pri: term. no. 1 and 2 with no. 5 center tap; sec: term. no. 3
L10	24B82696D01	and 4 discriminator; 455 kc; incl tuning core
L12	25B82751D01	choke; 1.5 h
Q1 Q2,5,301 Q3 Q4 Q6,7,8,9,10,	48R869167 48R869168 48R869238 48K869062 48R869057	TRANSISTOR: NOTE I P-N-P; type M9167 P-N-P; type M9168 N-P-N; type M9238 N-P-N; type M9062 BLU P-N-P; type M9057
11 Q12, 13 Q14 Q15 Q16	48R 86 91 48 48R 86 90 22 48R 86 90 28 48R 86 90 27	P-N-P; type M9148 N-P-N; type M9022 P-N-P; type M9028 N-P-N; type M9027
R1,14,37,38,304 R2, 9, 22, 24, 26, 28, 30,	6K127806 6K127804	RESISTOR, fixed: ±10%; 1/4 w; unl stated 27K 4.7K
45, 47 R3, 4, 7 R5 R6, 21, 23, 25, 27, 29	6K129432 6K129433 6K127807	820 5.6K 33K
R8, 52, 57 R10, 59 R11, 31 R12 R13,32,39,44	6K127801 6K129775 6K128685 6K129225 6K128688	470 330 22K 10K 2.7K
R15, 303 R16, 17, 34,69, 301, 302	6K128687 6K127802	6.8K 1K
R33, 50 R43, 60 R46	6K128689 6K128904 6K129144	2,2K 18K 68K
R49 R51 R53	6K127803 6K129233 6K129433	1,5K 47 5,6K; handset models 4,7K; speaker models
R54, 55 R58 R63 R64	or6K127804 6K127806 6K129862 6K129269 6K129753	27K; speaker models 150 1.8K; 1/10 w 100; handset models
TiL	24C82767D06	TRANSFORMER: GRN-BLK; does not incl 76K861425 CORE, tuning
TIM, IH	24C82767D03	GRN-ORG; does not incl 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron
TZL	24C82767D07 24C82767D04	GRN-VIO; does not incl 76K861425 CORE, tuning GRN-GRN; does not incl
T2M, 2H	24C82767D04 24C82767D05	76K861425 CORE, tuning or 76K861425 CORE, tuning or 76A82686D02 SLEEVE, iron GRN-BLU; does not incl
T3, 5	2200101D03	76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron

	DESCRIPTION	instruction	manual	revision	MR-1746 J
1	RED-RED: does not incl				

For 68P81017A20-C

Replace Schematic Diagram 63E81017A21 with this Diagram 63E81017A21-AB.

#### REFERENCE SYMBOL MOTOROLA PART NO. T4 24C82207G01 RED-RED; does not incl 76K847160 CORE, tuning or 76A82686D01 SLEEVE, iron audio input; BLU dot; c/o; Т6 25B82699D01 pri: coil res. 1340; imped. 10K ses: coil res. 348; imped. 1K **T7** 25B82893E01 audio; pri: imped. 1200; res. 125; sec: imped. 120; res, 12 CEYSTAL UNIT, quartz: NGTE II 25-42 mc Y1, 301 YM45 orYM46 YN 42-54 mc 5.345 or 6, 155 mc

#### NLN6234A Resistor Kit (Wide Channel Spacing)

C81, 90, 91 C83	21K865197 21K847065	<u>C+PACITOR, fixed:</u> 50 ±10%; 75 v; N150 50 GMV; 250 v
R35, 36	6K128563	RUSISTOR, fixed: ±10%; 1/10 w una stated 15K

#### FILTER

<b>Z</b> 1	NFN6006AS NFN6006AW	F)tTER, IF: bandpass; 20 kc bandpass; 40 kc
	NON-REFEREN	CED ITEMS
	26B82671D01 14A82271E01	ShiELD, coil: 10 req'd INSULATOR, coil shield; used with L1, 2, 3, 5, T1, 2

3*5* 

#### NOTES:

- UNLESS OTHERWISE STATED: RESISTOR VALUES ARE IN OHMS, ±10%, 1/4 WATT, K=1000. ALL CAPACITOR VALUES ARE IN MICROMICROFARADS.
- 2. REFER TO PARTS LIST FOR COMPONENT VALUE.
- 3. USED IN SINGLE FREQUENCY MODELS ONLY.
- 4. PART OF HOUSING.
- 5. REFER TO RECEIVER PRINTED CIRCUIT BOARD AND WIRING DIAGRAM FOR PROPER TAP.
- ALL VOLTAGE READINGS REFERENCED TO CHASSIS GROUND. DC READINGS TAKEN WITH A MOTOROLA DC MULTIMETER.
- 7. FREQUENCY CALACULATIONS:

TRANSMITTER: 
$$f_0 = \frac{1}{16}$$

RECEIVER: f = CARRIER FREQUENCY (25-54 MC)

f₀₁=1ST OSCILLATOR CRYSTAL FREQUENCY (30. 7-48. 3 MC)

 $f_{02}^{}$ = 2ND OSCILLATOR GRYSTAL FREQUENCY (REFER TO CHART ON BLOCK DIAGRAM)

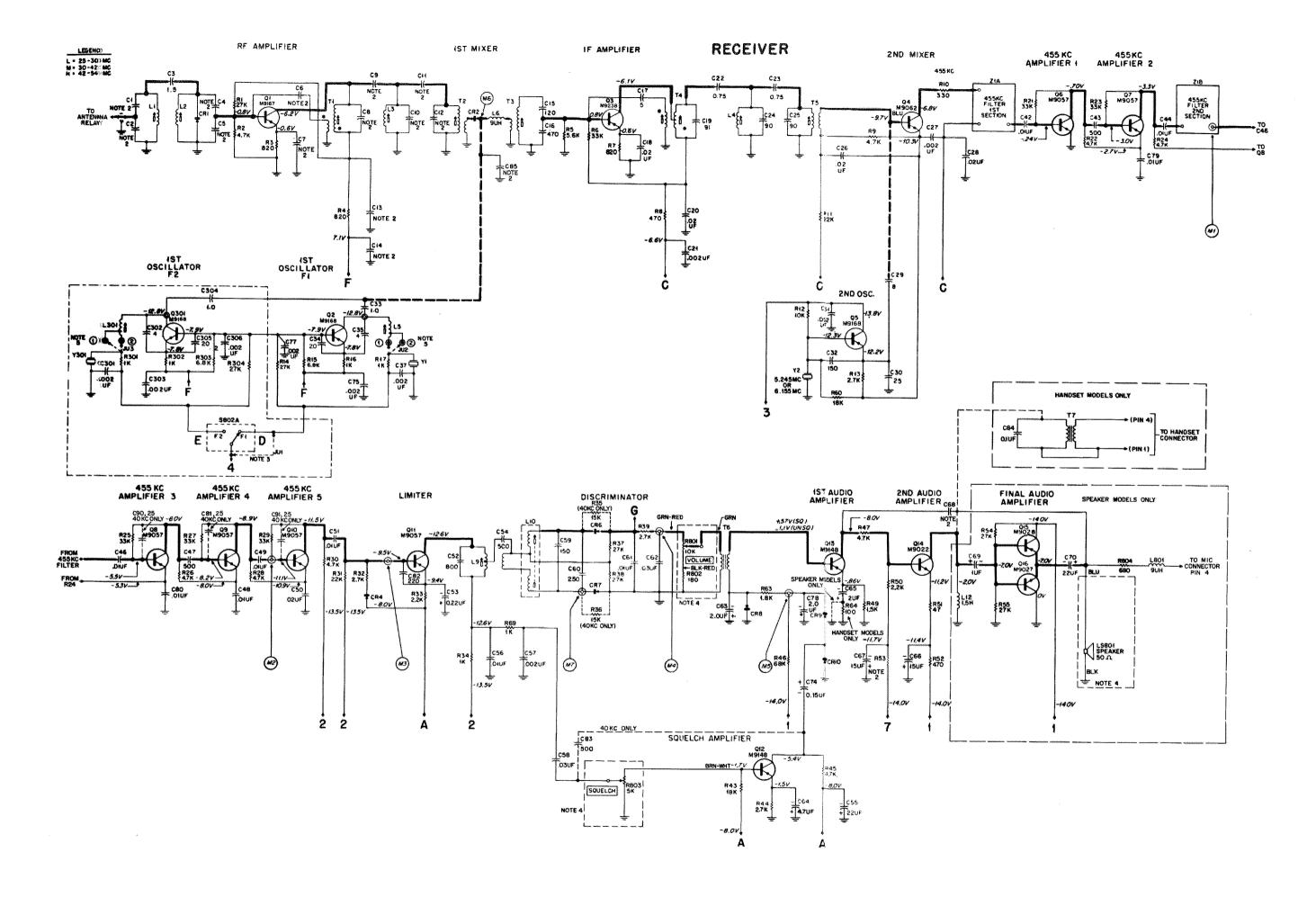
 $f_1 = 1ST$  INTERMEDIATE FREQUENCY (5.7 MC)

f₂ = 2ND INTERMEDIATE FREQUENCY (455 KC)

- 8. HANDSET MODELS ONLY.
- 9. JUI03 MAY OR MAY NOT EXIST DEPENDING UPON OPERATING FREQUENCY.
- 10. REFER TO BATTERY REPLACEMENT AND CHARGING SECTION OF THE INSTRUCTION MANUAL FOR LOCATION OF FUSE.
- 11. NOT USED IN 42-54 MC RANGE.

EPD-8874-C

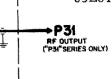
25-54 MC "Handie-Talkie"
FM Two-Way Radio Sets
Carrier Squelch
Schematic Diagram
Motorola No. 63E81017A21-AB
(Sheet 1 of 2)

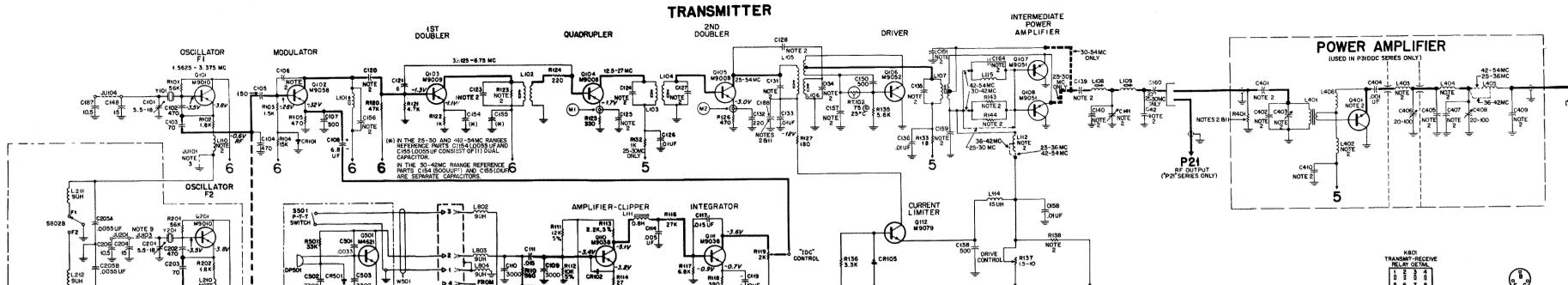


## instruction manual revision MR-1746 J

For 68P81017A20-C

Replace Schematic Diagram 63E81017A21 with this Diagram 63E81017A21-AB.





#### TRANSMITTERS

SERIES	MODEL NO.	CHASSIS SUFFIX	NO. OF FREQ.	FREQUENCY RANGE	RF POWER OUTPUT
	NTB6051AA	3	1	25-30 MC	1.4 W
NTB6050AA	NTB6052AA	4	1	30+42 MC	1.4 W
	NTB6053AA	5	1	42-54 MC	1.4 W
NTB6050AB	NTB6051AB	.3	2	25-30 MC	1.4 W
	NTB6052AB	5	2	30-42 MC	1. 4 W
	NTB6053AB	.5	2	42-54 MC	1, 4 W
<u> </u>	NTB6061AA	3	1	25+30 MC	5 W
NTB6060AA	NTB6062AA	4	1	30-42 MC	5 W
	NTB6063AA	5	1	42-54 MC	5 W
	NTB6061AB	4	2	25=30 MC	5. W
NTB6060AB	NTB6062AB	5	2	30~42 MC	5 W
	NTB6063AB	5	2	42-54 MC	5 W

#### CONTROL PANELS

MODEL NUMBER	SUFFIX	XMTR. FREQ.	RCVR. FREQ.	HANDSET	SPEAKER	MICROPHONE	RF POWER
NGN6023A		1	1	x			1,4 W
NGN6025A		2	1	х			1.4 W
NGN6026A		2	2	х			1, 4 W
NCN6039A		1	1		x	x	1, 4 W
NCN6041A		2	1		х	x	1.4 W
NCN6043A		2	2		х	х	1, 4 W
NCN6044A		1	1	х	х		1.4 W
NCN6045A		1	1		x	x	5 W
NCN6047A		2	1		x	Х	5 W
NCN6049A		2	2		х	х	5 W
NCN6052A	***************************************	1	1	x	х		1.4 W
NCN6054A	***************************************	2	2	x	х		1.4 W
NCN6056A		1	1	×	х		5 W
NCN6058A		2	1	x	Х		5 W
NCN6060A		2	2	х	х		5 W

#### RECEIVERS

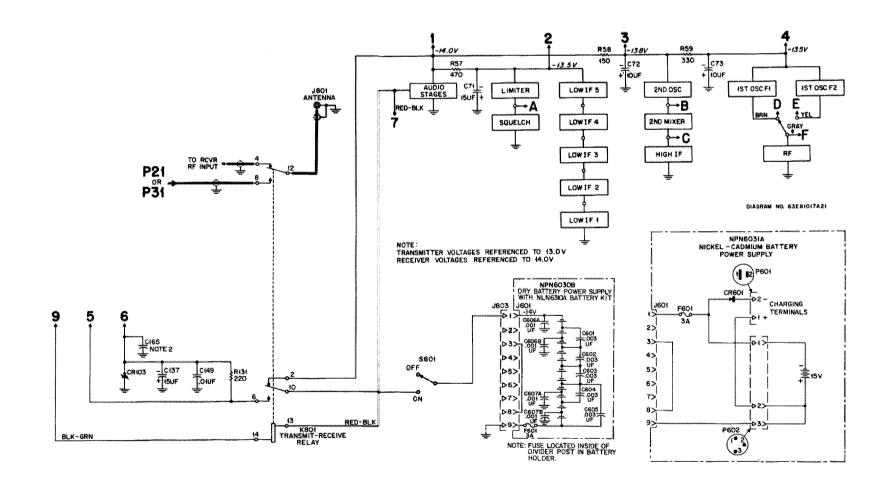
SERIES	MODEL NO.	CHASSIS SUFFIX	NO. OF FREQ.	CHANNEL SPACING	FREQUENCY RANGE	USED WITH
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	NRE: 1121AA	10	1	40 KC	25-30 MC	SPEAKER
NRB1120AA	NRB31122AA	13	1	40 KC	30-42 MC	SPEAKER
	NRB:1123AA	13	1	40 KC	42-54 MC	SPEAKER
	NRB:1121AB	9	1	20 KC	25-30 MC	SPEAKER
NRB1120AB	NRB:1122AB	12	l,	20 KC	30-52 MC	SPEAKER
	NRB:1123AB	11	1	20 KC	42-54 MC	SPEAKER
	NRB: 1121AC	10	2	40 KC	25-30 MC	SPEAKER
NRB1120AC	NRB:1122AC	13	2	40 KC	30+42 MC	<b>S</b> PEAKER
	NRB:1123AC	13	2	40 KC	42-54 MC	SPEAKER
	NRB: 1121AD	9	2	20 KC	25~30 MC	SPEAKER
NRBI120AD	NRB:1122AD	12	2	20 KC	30-42 MC	SPEAKER
	NRB:1123AD	11	2	20 KC	42-54 MC	SPEAKER
	NRB31151AA	8	1	40 KC	25-30 MC	HANDSET ONLY
NRB1150AA	NRB31152AA	7	1	40 KC	30-42 MC	HANDSET ONLY
	NRB51153AA	7	1	40 KC	42-54 MC	HANDSET ONLY
	NRB:1151AB	7	1	20 KC	25-30 MC	HANDSET ONLY
NRB1150AB	NRB31152AB	6.	1	20 KC	30+42 MC	HANDSET ONLY
	NRB: 1153AB	6	1	20 KC	42-54 MC	HANDSET ONLY
	NRB: 1151AC	8	2	40 KC	25=30 MC	HANDSET ONLY
NRB1150AC	NRB 1152AC	7	2	40 KC	30-42 MG	HANDSET ONLY
	NRB:1153AC	7	2	40 KC	42-50 MC	HANDSET ONLY
***************************************	NRB:1151AD	7	2	20 KC	25-30 MC	HANDSET ONLY
NRB1150AD	NRB: 1152AD	6	2	20 KG	30-42 MC	HANDSET ONLY
	NRB31153AD	6	2	20 KC	42-54 MC	HANDSET ONLY

### POWER AMPLIFIERS

FREQUENCY RANGE	MODEL NO.	CH/ SUI	
25+30 MC	NPN6030B		
30-42 MC	NPN6031A		
42-54 MC	7	Lexandre	
	RANGE 25-30 MC 30-42 MC	RANGE         MODEL NO.           25-30 MC         NPN6030B           30-42 MC         NPN6031A	

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	CHASSIS	TYPE OF
MODEL NO.	SUFFIX	BATTERIES
NPN6030B		DRY
NPN6031A		NICKEL-CADMIUM



25-54 MC "Handie-Talkie" FM Two-Way Radio Sets Carrier Squelch
Schematic Diagram
Motorola No. 63E81017A21-AB
(Sheet 2 of 2)

75 v; unl.	CRIPTION
TB6051AA NTB6061AA TB6052AA NTB6062AA TB6053AA NTB6063AA TB6051AB NTB6061AB TB6052AB NTB6063AB  C101, 141, 20C82399D04 var; 5.5-18 201 C102, 104, 21K861440 470; N2200 202 C103, 131M, 140L, 142M, 156L, 203 C105L, 105H, 21D82877B02 150; N1400 106M, 106H, 124H C105M 21K865922 390; 500 v C107, 125M, 125H, 150 C108 23C82397D09 6.8 uf +40- C107, 125M, 125H, 150 C108 23C82397D09 6.8 uf +40- C109, 110 21K858108 3000 ±25%; 2013, 137 C114 8C82548E03 .015 uf; 25 C113, 137 23C82397D03 10 uf ±20% C107, 125H, 150 C110 21K861436 100; N750 C107, 125H, 127M C120L, 120H, 126K61438 220; N1400 C123H, 131H, 134H C124M 21D82239E03 250 ±5%; 20 C126, 133, 136, 138, 149,	
TB6053AA NTB6063AA NTB6061AB TB6052AB NTB6062AB NTB6063AB  C101, 141, 20C82399D04 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5-18 var; 5.5	
C101, 141, 20C82399D04	
C102, 104, 202 C103, 131M, 140L, 142M, 156L, 203 C105L, 105H, 106M, 106H, 124H C105M C107, 125M, 125H, 150 C108 C109, 110 C111 SK854329 C113, 137 C114 C115, 119 C117 C114 C115, 119 C120H, 120H, 139H C120M, 132 C120L, 120H, 139H C123M C123M C123M C124M C124M C124M C124M C124M C125L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L	PR, fixed: uuf ±10% stated 3; 200 v; NP0
C103, 131M, 140L, 142M, 156L, 203  C105L, 105H, 21D82877B02 150; N1400 106M, 106H, 124H C105M 21K865922 390; 500 v C107, 125M, 125H, 150 C108 23C82397D09 6.8 uf +40- C109, 110 21K858108 3000 ±25%; 21C13, 137 23C82397D17 15 uf ±20% C114 8K854329 .015 uf; 25 C113, 137 23C82397D03 10 uf ±20% C117 2014 8C82546E03 23C82397D03 10 uf ±20% C117 21014 139H C120L, 120H, 139H C120M, 132 21K861436 100; N750 C120L, 120H, 127M C123L, 127M C123L, 127M C123H, 131H, 134H C124M 21D82877B35 220; N470 C125L 21K861443 100; N150 C125L 21K861443 250 uf 50; N150 C125L 21K861443 100; N150 C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM C125L 21K861443 .002 uf GM	
C105L, 105H, 106M, 106H, 106M, 106H, 106M, 106H, 1024H C105M C107, 125M, 21K865922 390; 500 v C107, 125M, 125H, 150 C108 C109, 110 C108 C111 SK854329 .015 uf; 25 C113, 137 C114 SC82548E03 .015 uf; 10 C115, 119 C3C82397D07 C120L, 120H, 23C82397D07 C120L, 120H, 23C82397D03 C117 C120L, 120H, 23C82397D03 C120L, 120H, 120H, 120H, 120H, 120H, 120H, 120H, 127L, 127M C123M C123M C123H, 131H, 134H C124M C125L C126, 133, 136, 138, 149,	
C105M	
C108 C109, 110 C109, 110 C111 C111 C111 C113, 137 C114 C114 C115, 119 C115, 119 C117 C120L, 120H, 139H C120M, 132 C121, 128M C123L, 124L, 127L C127L C124M C123H, 131H, 134H C124M C125L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C126L C	250 v
C113, 137 C114 C114 C115, 119 C117 C117 C120L, 120H, 139H C120M, 132 C121, 128M C123L, 124L, 127L, 127M C123M C123H, 131H, C124M C124M C124M C124M C124M C126, 133, 136, 138, 149, C118 C118 C126, 133, C126, 133, C126, 133, C126, 133, C127, C128, C126, 133, C127, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C128, C1	250 v
C115, 119 C117 C120L, 120H, 139H C120M, 132 C121, 128M C123L, 124L, 127L, 127M C123H, 131H, 134H C124M C125L C126L, 133, 136, 138, 149,	; 20 v
C120L, 120H, 139H C120M, 132 C121, 128M C123L, 124L, 127M C123M C123H, 131H, 134H C124M C124M C125L C126, 133, 136, 138, 149,	; 6 <b>v</b>
C120M, 132 C121, 128M C123L, 124L, 127L, 127M C123M C123H, 131H, 134H C124M C125L C126, 133, 136, 138, 149,	0 1
127L, 127M C123M C123H, 131H, 21K868384 C123H, 131H, 21K864013 C124M C125L C126, 133, 136, 138, 149, 21K861443 C127L C128 C126, 133, 136, 138, 149, 21K861443 C128 C126, 133, 136, 138, 149, 21K861443 C127 C128 C129 C129 C129 C129 C129 C129 C129 C129	
C123H, 131H, 21K864013 50; N150 134H 21D82239E03 250 ±5%; 2/ C125L 21K831126 .002 uf GN C126, 133, 136, 138, 149,	
C125L 21K831126 .002 uf GM C126, 133, 21K861443 .01 uf +100	
	IV; 300 v
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REFERENCE	MOTOROLA	DESCRIPTION
SYMBOL	PART NO.	
C127H, 134L	21D82877B15	120; N150
C128H	21K861427	4; N150
C131L	21K864012	60; N150
C134M C135L	21K864067 21K868384	80; N150 100; N150
C135M	21K864522	90; N080
C135H, 159L	21K861434	40; N150
C139L,	21K861432	20; N150
157L, 160L		
C138, 139M,	21K861441	500; N4700
154M		
C140M, 148,		
140H, 204	21D82877B19	15 ±5%; NP(t)
C141L	20C82399D07	var; 15-60; 200 v; N1500
C141M, 141H	20C82399D04	var; 5.5-18;; 200 v; NP0
C151M, 151H	21K861430	10; N150
C152	21K861462	15; N150 dual sect.; cc/o: each sect.
C154L, 154H, 155L, 155H	21C82724H01	5500 +100-2:0%
C164H, 165H	21K858108	.003 uf ±25%; 250 v
C187, 206	21D82877B11	10.5 ±5%; NIP0
C188L, M	23D82397D07	1.0 uf +40-110%; 15 v
C205	21C82724H01	dual sect.; cc/o:
C205A		5500 +100-2:0%
C205B		5500 +100-210%
		SEMICONDUICTOR DEVICE,
		diode: NOTE: I
CR101, 102	48C82178A01	germanium
CR 103	48C82256C08	zener type
CR 105	48C82392B03	silicon
		Mark Wall and Will
		COIL, RF: does not incl.
	2450000000	76K835565 CORE, tuning
L101L	24C82901B04	modulator
L101M	24C82901B02	modulator modulator; (GRN-YEL
L101H L102	24C82901B05 24B82194C01	lst doubler; RED
L103L, 104L	24C82904B19	quadrupler mutput; 2nd doubler
PIONE IOTE	24002704017	input
L103M, 103H	24C82904B14	quadrupler coutput; 2nd doubler
		output
L104M, 104H	24C82904B15	2nd doubler input
L105L	24C82904B20	2nd doubler
L105M, 105H	24C82904B12	2nd doubler output
L106L	24B82648G01	driver input
L106M, 107M,	24B82209E01	driver input;; final ampl. input
106H, 107H		
L107L	24B82737E01	final ampl. input
L108L, 108M,	24C82904B21	final ampl. (output
109L, 109M	24692004801	final same and the
L108H, 109H	24C82904B01	final ampl. output choke; 1 mh
L110L, 210L L110M, 110H,	24D82549D03 24D82549D10	choke; 390 wh
210M, 210H	245025471310	Choke, 570 km
L111	25B82872B01	choke; 0, 8 h
L112L	24A890687	choke; 2 uh
L112M	24A82228G01	choke; 1.2 uih
L112H	24C82000E08	choke; 0.31 uh; sleeved
L114	24D82549D09	choke; 15 th
L115H	24C83961B01	choke; 3 turns, coded BRN
L211, 212	24C82000E03	choke; 9 uh
		TRANSISTOIR: NOTE I
Q101, 201	48R869010	P-N-P; type: M9010
Q102	48R869058	P-N-P; type: M9058
Q103	48R869009	P-N-P; type: M9009
Q104, 105	48R869008	P-N-P; type: M9008
Q106	48R869052	N-P-N; type: M9052
Q107, 108	48R 869051	N-P-N; type M9051
Q110, 111 Q112	48R869038 48R869079	P-N-P; type: M9038
mg 1.16	40V00A01A	N-P-N; type: M9079
		RESISTOR, fixed: ±10%; 1/4 w;
		unl. stated
R101, 201	6K129242	56K
R102, 202	6R 129269	1.8K
R103, 109	6K127803	1.5K
R104, 123L,	6K127805	15K
123M		
R105, 126	6K127801	470
R110	6K129620	560
R111	6K129887	12K ±5%
	6K129668	10K ±5%
R112		2.2K ±5%
R113	6R 129804	2,21, 20,0
R113	6R 129804 6S 131594	27
R113 R114		
R113 R114 R115	6S131594	27
	6S131594 6S124A60	27 3K ±5%

REFERENCE Symbol	MOTOROLA PART NO.	DESCRIPTION
R119	18B82876B04	var; 2K ±15%; 1/20 w
R120	6K128902	47K
R121 R122,132L	6K127804 6R127802	4.7K 1K
R123H	6K129225	10K
R124, 131	6R127800	220
R 125	6R127775	330
R127	6R129662	180
R 133 R 135	6R131650 6K129433	18 5.6K
R136	6R129231	3.3K
R137	18C82035B10	var; 10
R138L	17A82069G02	2.5 ±3%; 1 w
R138M, 138H	17A82069G01	2 ±3%; 1 w
R143M, 144M	6\$129755	10
RT102	6B859699	THERMISTOR: 75 ohms @ 25°C
		CRYSTAL UNIT, quartz; NOTE II
Y101, 201	ABX-2	xmtr. control
	NON-REFEREN	ICED ITEMS
	26A82609E01	HEAT SINK; 3 req'd
NGN6023A	NCN6043A	NCN6052A
NGN6025A	NCN6044A	NCN6054A
NGN6026A NCN6039A	NCN6045A	NCN6056A
NCN6039A NCN6041A	NGN6047A NCN6049A	NCN6058A NCN6060A
J801	9C82817E01	CONNECTOR, receptacle; female; coaxial; uhf type
J803	28C82846E01	male; 9 contact
K801	80C82860E01	RELAY, armature; hermetically sealed; 13.6 v d-c; 4 form "C"; coil res. 160
L\$801	50D82808E01	LOUDSPEAKER, permanent magnet; 3", square; 50 ohms impedance
		RESISTOR,
R801	18C82816E02	var; 10K ±10%; weatherproof
R802 R803	6K129662 18C82816E01	fixed; 180 ±10%; 1/4 w var; 15K ±10%; weatherproof
R804	6R 6040	fixed: 680 ±10%; 1/2 w
		SWITCH:
S801 S802	40B82851E01 40C82843E01	toggle; spst; weather-resistant rotary; 2 pole; 2 position; non-shorting (2-freq.)
NON-REFERENCED ITEMS		
CONCERNIUS CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR	131000000000	TANDY E ACCU. Such accu.
	1V80727A11 1V80729A93	HANDLE ASSY, incl. mic. holding clip (for models NCN6039A, NCN6041A, NCN6045A, NCN6045A, NCN6047A and NCN6049A) HANDLE ASSY.: incl. handset holder (for models NCN6044A, NCN6052A, NCN6058A, NCN6056A, NCN6058A, NCN60603A,
		NGN6025A and NGN6026A)
	42K861179	CLAMP, cable: 2 req'd
	42A82143C02 32B82855E01	CLAMP, cable GASKET, rubber; housing seal
	32B82855E01 36B82812E03	KNOB, control: 2 req'd.
		(vol. & sq.)
	36B82804E01	GASKET: (speaker mtg.)
	35B82803E01	CLOTH, grille
	13C82815E01	GRILLE (1-freq. models)
	13C82815E04 1V80727A10	GRILLE (2-freq. models) HOUSING ASSY.: incl handle
	1V80731A68	for models NCN6041A, NCN6043A and NCN6045A) HOUSING ASSY.: incl. handle (for models NCN6041A,
	1V80729A94	NCN6047A and NCN6049A) HOUSING ASSY.: incl. handle (for models NCN6044A, NCN6056A and NGN6023A)
	1V80731A67	HOUSING ASSY.: incl. handle (for models NCN6052A, NCN6054A, NCN6058A, NCN6060A, NGN6025A and NGN6026A)
L	<u> </u>	THE TABLES OF SELECTION

ENCE BOL	MOTOROLA PART NO.	DESCRIPTION	REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	18B82876B04 6K128902 6K127804	var; 2K ±15%; 1/20 w 47K 4.7K	NLN6306A Unit ( NLN6307A Unit (	•	
L	6R127802 6K129225	1K	7003	1110071710	CONNECTOR, receptade female; 4 contact; does
31	6R127800	10K 220	J802	1V80715A85	2A81180 NUT, knurled
	6R127775 6R129662 6R131650	330 180 18	L801 thru 804	24C847920	COIL, RF; choke:
	6K129433 6R129231	5. 6K 3. 3K	***************************************		transistorized) MK501
	18C82035B10 17A82069G02	var; 10 2.5 ±3%; 1 w			AMPLIFIER, AF:
138H 144M	17A82069G01 6S129755	2 ±3%; 1 w 10 THERMISTOR;	A501	1V80727A19	incl C501, C502, C503, Q501, R501 and 1V8072 BOARD, circuit compo
	6B859699	75 ohms @ 25°C  CRYSTAL UNIT, quartz;	C501, 502, 503	21D82428B10	<u>CAPACITOR</u> , fixed: .0033 ±10%; 100 v
01	ABX-2	NOTE II xmtr. control			SEMICONDUCTOR DEV
	NON-REFEREN	CED ITEMS	CR501	48C82178A01	diode: NOTE I germanium
	26A82609E01	HEAT SINK; 3 req'd			CARTRIDGE, microph
A A	NCN6043A NCN6044A	NCN6052A NCN6054A	DP501	59C82857E01 or59C82864E01	reluctance type
A A A	NCN6045A NCN6047A NCN6049A	NCN6056A NCN6058A NCN6060A	P501		CONNECTOR, plug: p/o W501
	9C82817E01 28C82846E01	CONNECTOR, receptacle: female; coaxial; uhf type male; 9 contact	Q501	48R 134621	TRANSISTOR, NOTE I P-N-P; type M4621
		RELAY, armature; hermetically sealed;	R501	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w
	80C82860E01	13.6 v d-c; 4 form "C"; coil res. 160  LOUDSPEAKER, permanent	S501	40C82863E01	SWITCH, push; single pole norm
	50D82808E01	magnet; 3", square; 50 ohms impedance RESISTOR,	W501	30D82565B04	CORD, microphone, incl ref part P501 and 4 conductor; stranded
	18C82816E02 6K129662 18C82816E01	var; 10K ±10%; weatherproof fixed; 180 ±10%; 1/4 w var; 15K ±10%; weatherproof	1/4 w NON-REFERENCE		ICED ITEMS
	6R 6040	fixed: 680 ±10%; 1/2 w		15C82828E01 15C82827E01	HOUSING, microphone HOUSING, microphone
	40B82851E01	SWITCH: toggle; spst; weather-resistant		41B82856E01	SPRING, backup
	40C82843E01	rotary; 2 pole; 2 position; non-shorting (2-freq.)		38B82833E01 35A82853E01	BUTTON, push DIAPHRAGM, microph
		<u></u>		4C82418B22	WASHER, insulating PAD, rubber; 1.24" di
	NON-REFEREN	CED ITEMS		75A8Z85ZE01 75A8Z19ZA0Z	PAD, rubber; 0.562"
	1V80727A11	HANDLE ASSY, incl. mic.		64A82826E01	PLATE, tapped BRACKET, hold-down
		holding clip (for models NCN6039A, NCN6041A,		7B82801E01 32A82661C02	GASKET
		NCN6043A, NCN6045A,		42B82831E01	CLAMP, cable
	1V80729A93	NCN6047A and NCN6049A) HANDLE ASSY.: incl. handset		1V80727A18 43K475873	SPRING AND BUSHING SPACER
		holder (for models NCN6044A, NCN6052A, NCN6054A, NCN6056A, NCN6058A, NCN6060A, NGN6023A,	NLB6121A RF A NLB6122A RF A NLB6123A RF A	mplifier (30-42	MC)
	42K861179	NGN6025A and NGN6026A) CLAMP, cable: 2 req'd			CAPACITOR, fixed; u
	42A82143C02	CLAMP, cable			stated
	32B82855E01	GASKET, rubber; housing seal	C401L	21K855809	33 ±5%; 250 v; N150
	36B82812E03	KNOB, control: 2 req'd. (vol. & sq.)	C401M C401H	21D82610C07 21K410089	51; 200 v; N150 27 ±10%; 500 v
	36B82804E01	GASKET: (speaker mtg.)	C402L, 402M	21K840365	24 ±5%; 500 v
	35B82803E01	CLOTH, grille	C402H, 407H	21K859211	47 ±5%; 300 v
	13C82815E01 13C82815E04	GRILLE (1-freq. models) GRILLE (2-freq. models)	C403L, 403M, 406L, 406,	20C82109C01	var: 20-100; 350 v; N2
	1V80727A10	HOUSING ASSY,: incl handle	408		
		(for models NCN6041A, NCN6043A and NCN6045A)	C403H	20K840719	var: 8-50; 200 v
	1V80731A68	HOUSING ASSY.: incl. handle (for models NCN6041A,	C404 C405, 405M C405H	21C82187B14 21K861435 21D82610C05	.001 uf ±10%; 200 v 70 ±10%; 75 v; N150 57 ±5%; 200 v; N150
	1V80729A94	NCN6047A and NCN6049A) HOUSING ASSY.: incl. handle (for models NCN6044A, NCN6056A and NGN6023A)	C407L, 407M C409L, 409M C409H C410L	21K861436 21D82355B13 21D82355B14 21D82426B10	100 ±10%; 75 v; N750 51 ±5%; 500 v; N1500 62 ±5%; 500 v; N1500 .0033 ±10%; 100 v
	1V80731A67	HOUSING ASSY.: incl. handle (for models NCN6052A, NCN6054A, NCN6058A,	C410E C410M C410H	21K858108 21K858107	3000 ±25%; 250 v 1500 ±25%; 250 v
		NCN6060A NGN6025A			COIL PE

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
ILN6306A Unit C	Component Kit	***************************************
LN6307A Unit C		
J802	1V80715A85	CONNECTOR, receptacle: female; 4 contact; does not i 2A81180 NUT, knurled
L801 thru 804	24C847920	COIL, RF; choke: 9 uh
MN6018A Micro	ophone (plug-in;	transistorized) MK501
A501	1V80727A19	AMPLIFIER, AF: incl C501, C502, C503, CR50 Q501, R501 and 1V80727A20 BOARD, circuit component
C501, 502, 503	21D82428B10	CAPACITOR, fixed: .0033 ±10%; 100 v
CR501	48C82178A01	<u>SEMICONDUCTOR DEVICE,</u> <u>diode</u> : NOTE I germanium
DP501	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type
P501		CONNECTOR, plug: p/o W501
Q501	48R 134621	TRANSISTOR, NOTE I P-N-P; type M4621
R501	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w
S501	40C82863E01	SWITCH, push; single pole normally o
W501	30D82565B04	CORD, microphone, incl ref part P501 and a coil 4 conductor; stranded cord
erseessaanaan en en en en en en en en en en en en en	NON-REFEREN	ICED ITEMS
- Sandhillandidail	15C82828E01	HOUSING, microphone: (fro
	15C82827E01	HOUSING, microphone (rea
	41B82856E01	SPRING, backup
	38B82833E01 35A82853E01	BUTTON, push DIAPHRAGM, microphone
	4C82418B22	WASHER, insulating
	75A8Z85ZE01	PAD, rubber; 1.24" dia.
	75A82192A02	PAD, rubber; 0.562" dia.
	64A82826E01	PLATE, tapped BRACKET, hold-down
	7B82801E01 32A82661C02	GASKET
	42B82831E01	CLAMP, cable
	1V80727A18	SPRING AND BUSHING ASS
NLB6121A RF A NLB6122A RF A NLB6123A RF A	mplifier (30-42	MC) MC)
		CAPACITOR, fixed; uuf un stated
C401L	21K855809	33 ±5%; 250 v; N150
<b>C</b> 401M	21D82610C07	51; 200 v; N150
C401H	21K410089	27 ±10%; 500 v
C402L, 402M C402H, 407H	21K840365 21K859211	24 ±5%; 500 v 47 ±5%; 300 v
C403L, 403M, 406L, 406, 408	20C82109C01	var: 20-100; 350 v; N2100
C403H	20K840719	var: 8-50; 200 v
C404	21C82187B14	.001 uf ±10%; 200 v
C405, 405M	21K861435	70 ±10%; 75 v; N150
C405H C407L, 407M	21D82610C05 21K861436	57 ±5%; 200 v; N150 100 ±10%; 75 v; N750
C409L, 409M	21D82355B13	51 ±5%; 500 v; N1500
C409H	21D82355B14	62 ±5%; 500 v; N1500

L401L, 401M 24V82643G01

		2A81180 NUT, knurled	L405L, 405M		
.	24C847920	COIL, RF; choke: 9 uh	L405H L406L		
1	L406M crophone (plug-in; transistorized) MK501 L406H				
	<del> </del>	AMDITUTE AF.			
	1V80727A19	AMPLIFIER, AF: incl C501, C502, C503, CR501, Q501, R501 and IV80727A20 BOARD, circuit component mtg	Q401L, 401M Q401H		
3	21D82428B10	CAPACITOR, fixed: .0033 ±10%; 100 v	R401L, M		
	48C82178A01	SEMICONDUCTOR DEVICE, diode: NOTE I germanium	NPN6031A Powe		
TANK TANK TANK TANK TANK TANK	59C82857E01 or59C82864E01	CARTRIDGE, microphone reluctance type	CR601		
		CONNECTOR, plug: p/o W501	F601		
ALDER STREET	48R 134621	TRANSISTOR, NOTE I P-N-P; type M4621	J601		
	6K127807	RESISTOR, fixed: 33K ±10%; 1/4 w	P601 P602		
20 100 01 11 11 11 11 11 11 11 11 11 11 1	40C82863E01	<u>SWITCH,</u> push; single pole normally open	XF601		
	30D82565B04	CORD, microphone, incl ref part P501 and a coiled 4 conductor; stranded cord			
meni	NON-REFEREN	ICED ITEMS			
	15C82828E01	HOUSING, microphone: (front)			
	15C82827E01	HOUSING, microphone (rear)	**************************************		
	41B82856E01	SPRING, backup	NPN6030B Powe		
	38B82833E01	BUTTON, push			
	35A82853E01 4C82418B22	DIAPHRAGM, microphone WASHER, insulating			
i	75A82852E01	PAD, rubber; 1.24" dia.	C601, 602,		
	75A82192A02	PAD, rubber; 0.562" dia.	603, 604, 605		
	64A82826E01	PLATE, tapped	C606, 607		
	7B82801E01	BRACKET, hold-down	C606A, <del>6</del> 07A,		
1	32A82661C02	GASKET			
	42B82831E01	CLAMP, cable	C606B, 607B		
1	1V80727A18 43K475873	SPRING AND BUSHING ASSY. SPACER			
Δ	mplifier (25-30		F 60 I		
Α	mplifier (30-42	MC)	760.		
Α	mplifier (42-54	MC)	J601		
		CAPACITOR, fixed; uuf unl			
	21K855809	stated 33 ±5%; 250 v; N150			
	21D82610C07	51; 200 v; N150			
	21K410089	27 ±10%; 500 v			
ă.	21K840365	24 ±5%; 500 v			
1	21K859211	47 ±5%; 300 v			
1,	20C82109C01	var: 20-100; 350 v; N2100	NLN6310A Bat		
	20K840719	var: 8=50; 200 v			
	21C82187B14	.001 uf ±10%; 200 v			
	21K861435	70 ±10%; 75 v; N150	NTN #377 ( ) 3 m / "-		
1	21D82610C05 21K861436	57 ±5%; 200 v; N150 100 ±10%; 75 v; N750	NMN6017A Ha		
1	21D82355B13	51 ±5%; 500 v; N1500			
	21D82355B14	62 ±5%; 500 v; N1500			
	21D82426B10	.0033 ±10%; 100 v			
	21K858108	3000 ±25%; 250 v			
-	21K858107	1500 ±25%; 250 v			
		COIL, RF:			
4	24V82643G01	input coil assembly			
	24B82640G01	input coil assembly			
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REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
L402L, 402M, 402H	24V80900A86	choke; 1.02 uh
L403L, 403M L403H L404 L405L, 405M	24A82813E01 24A82818G01 24A82819G01 24C82000E15 24C82000E14	coil, output coil, output coil, output choke; tapped output choke, output
L406L L406M L406H	24B82122D06 24B82122D04 24B82122D07	choke; filter .0872 uh 3 turns 2 turns
Q401L, 401M Q401H	48R869101 48R869102	TRANSISTOR: NOTE I P-N-P; type M9101 P-N-P; type M9102
R401L, M	6R6330	RESISTOR, fixed: ±10%; 1 w
NPN 6031A Powe	r Supply (less b	attery) Nickel-Cadmium

NPN6031A 1	Power Supply (less b	attery) Nickel-Cadmium
		SEMICONDUCTOR DEVICE, diode: NOTE I
CR601	48C82095C01	silicon
F601	65A82496G01	FUSE, cartridge; 3 amp/32 v; 1/4" x 5/8"
J601	9C82847E01	CONNECTOR, receptacle: female; 9 contact
P601	28A82488G01	CONNECTOR, plug: male; 2 contact
P602	28A 16313	male; 3 contact
		FUSEHOLDER ASSY.:
XF601	1V80731A03	single fuse mounting
	NON-REFEREN	NCED ITEMS
######################################	IV80731A01	HOUSING ASSY. (riveted)
	64B82653G01	PLATE, door
	41A82652G01	SPRING, torsion
	how on/cross	I market a .

PIN; pivot

INSULATOR

TAB, battery plug

#### 38A868379 wer Supply (less battery) Dry

22A82651G01

14A82650G01

C601, 602, 603, 604, 605 C606, 607 C606A, 607A,	Ž1C8Z187B16 21K800802	CAPACITOR, fixed: .003 uf ±5%; 100 v  dual sect; c/o; .001 uf GMV +100% max; 500 v
C606B, 607B		.001 uf GMV +100% max; 500 v
F 60 I	65R132923	FUSE, cartridge: 3 amp/250 v
J601	9C82847E01	CONNECTOR, receptacle: female; 9 contact
	NON-REFEREN	ICED ITEMS
	1V80731A83 1V80731A85 1V80731A87	HOUSING ASSY, (riveted) BATTERY HOLDER ASSY, (riveted) BATTERY COVER ASSY, (riveted)
L	.E	B

#### attery Kit (dry)

60B82455G01	BATTERY, dry; 1.5 v; 11 req'd.
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#### Iandset

 	**************************************
	HANDLE, handset
15P82446G02	CAP, transmitter
15P82446G03	CAP, receiver
40P82446G04	SWITCH, push-to-talk
59P82446G05	CARTRIDGE, receiver
59P82446G06	CARTRIDGE, transmitter
	SLEEVE, strain relief
30D82565B19	CORD, handset

	REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	
	NMN6018A Microphone (plug-in; transistorized) MK501			
	A501	1V80727A19	AMPLIFIER, AF; incl C501, C502, C503, CR501, Q501, R501 and 1V80727A20 BOARD, circuit component mtg	

C501, 502, 503 21D82428B10

48C82178A01

59C82857E01

48R134621

6K127807

40C82863E01

30D82565B04

35A82853E01

NON-REFERENCED ITEMS

32A82661C02 GASKET

43K475873 SPACER

or59C82864E01

CR501

DP501

P501

Q501

R501

S501

W501

CAPACITOR, fixed: .0033 ±10%; 100 v

diode: NOTE I germanium

reluctance type

CONNECTOR, plug: p/o W501

RESISTOR, fixed:  $33K \pm 10\%$ ; 1/4 w

SWITCH,

15C82828E01 HOUSING, microphone: (front) 15C82827E01 HOUSING, microphone: (rear) 41B82856E01 SPRING, backup 38B82833E01 BUTTON, push

48C82418B22 WASHER, insulating 75A82852E01 PAD, rubber; 1.24" dia.

75A82192A02 PAD, rubber; 0.562"dia. 64A82826E01 PLATE, tapped
7B82801E01 BRACKET, hold-down

42B82831E01 CLAMP, cable 1V80727A18 SPRING AND BUSHING ASSY.

TRANSISTOR, NOTE I P-N-P; type M4621

push; single pole normally open

CORD, microphone, incl ref part P501 and a coiled

4 conductor; stranded cord

DIAPHRAGM, microphone

SEMICONDUCTOR DEVICE,

CARTRIDGE, microphone

NOTES:	
Ï.	Replacement transistors and diodes must be ordered by Motorola part number only for optimum performance
II.	Crystals are part of the Radio Set Model only. When ordering crystal units specify car. freq.(s), crystal freq.(s) and crystal type number.

**END OF DOCUMENT**