



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(Refer to FCC Rules and Regulations Part 95, Subpart C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



MODEL 77-838

MANUFACTURER'S SPECIFICATIONS

Circuitry:	5 ICs, 22 Transistors, 20 Diodes, 2 Zenor Diodes, 1 Vari-cap
Frequency Control:	PLL (Phase Lock Loop) Synthesizer
Channels:	40 channels
Mode of Operation:	AM
Receiver System:	Dual Conversion Superheterodyne
Sensitivity:	Nominal 0.7 μ V (S/N 10 dB)
Selectivity:	More than 55 dB down at $\pm$ 10 KHz
Intermediate Frequency:	1st: 10.695 MHz 2nd: 455 KHz
Frequency Tolerance:	$\pm$ 0.005%
Spurious Rejection:	More than 60 dB
RF Output Power:	Maximum 4.0W (F.C.C. Maximum)
Squelch Range:	0.5 μ V — 500 μ V
Delta Tune:	About $\pm$ 1 KHz (Receiving only)
Audio Output Power:	More than 3W (EXT. SP at 8 ohms)
Controls (Main Unit):	VOLUME CONTROL/POWER SWITCH, SQUELCH CONTROL, CHANNEL SELECTOR BUTTONS (MAIN UNIT), ANL-OFF SWITCH, EXT. CB-OFF SWITCH, NB-OFF SWITCH, CB-PA SWITCH, FILTER-OFF SWITCH, RF GAIN CONTROL, DIMMER CONTROL, CHANNEL SELECTOR BUTTONS (ON MICROPHONE), VOLUME CONTROL (ON MICROPHONE), PUSH-TO-TALK BAR.
Jacks and Connectors:	MICROPHONE, EXT. SP, ANTENNA, EXT. CB/PA SP, DC POWER CORD
Speaker:	3" dynamic, 8 ohms
Microphone:	Dynamic CB mike
Power Source:	DC 13.8 V
Size:	6-3/8 (W) x 7-7/8 (D) x 2-1/4 (H) inches
Weight:	3.8 lbs.

Courtesy of the Manufacturer

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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MIDLAND MODEL 77-838

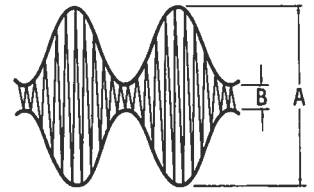
ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with 13.8-volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

Suggested Alignment Tools:

L1, L2, L5, T1 thru T6 9440
L14, T7 thru T10 5009
L7, L11, L12 9304
CT1 8276

GC ELECTRONICS:



$$\text{Modulation Ratio} = \frac{A-B}{A+B} \times 100 (\%)$$

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (Q2, Emitter).	Ch. 19	CT1	Adjust for 10.240MHz $\pm$ 50Hz.
Input of oscilloscope to TP2 (T1, Secondary).	Ch. 19	T1	Adjust for maximum RF at 20.480MHz.
Input of DC meter to TP8 (Junction of R1, R2, and R3).	Ch. 1	L1	Adjust for 3.60 volts $\pm$.1 volt.
Input of oscilloscope to TP3 (IC3, Pin 4).	Ch. 19	L2, T2	Adjust for maximum RF.
Input of frequency counter to TP3 (IC3, Pin 4).	Ch. 1		Check for 37.660MHz. Check all channels. See Truth Chart for correct frequencies.
Input of frequency counter to TP4 (IC3, Pin 3).	Ch. 19, XMT		Check for 10.695MHz.
Input of frequency counter to antenna jack.	Ch. 19, XMT	CT1	Check for 27.185MHz. (If necessary, readjust for 27.185MHz.)

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP10 (Q10, Emitter). 455kHz, 1000Hz @ 30% modulation.	Ch. 19 RF Gain Max Squelch MIN NB Off ANL Off	T10, T9, T8	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19 RF Gain Max Squelch MIN NB Off ANL Off	T7, L14, T6, T5	Adjust for maximum output. If necessary, readjust T10, T9 and T8.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 500uV.	Ch. 19 RF Gain Max Squelch Max NB Off ANL Off	RV1	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19 RF Gain Max Squelch MIN NB Off ANL Off	RV3	SIGNAL METER Adjust for 9 on signal scale of meter.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
	Ch. 19	L5,T3,T4, L7,L11,L12	Adjust for maximum RF output.
	Ch. 19	L7	Readjust for 4.4 watts output.
	Ch. 19	L12	Adjust for 3.8 watts output.

TRANSMITTER ADJUSTMENTS

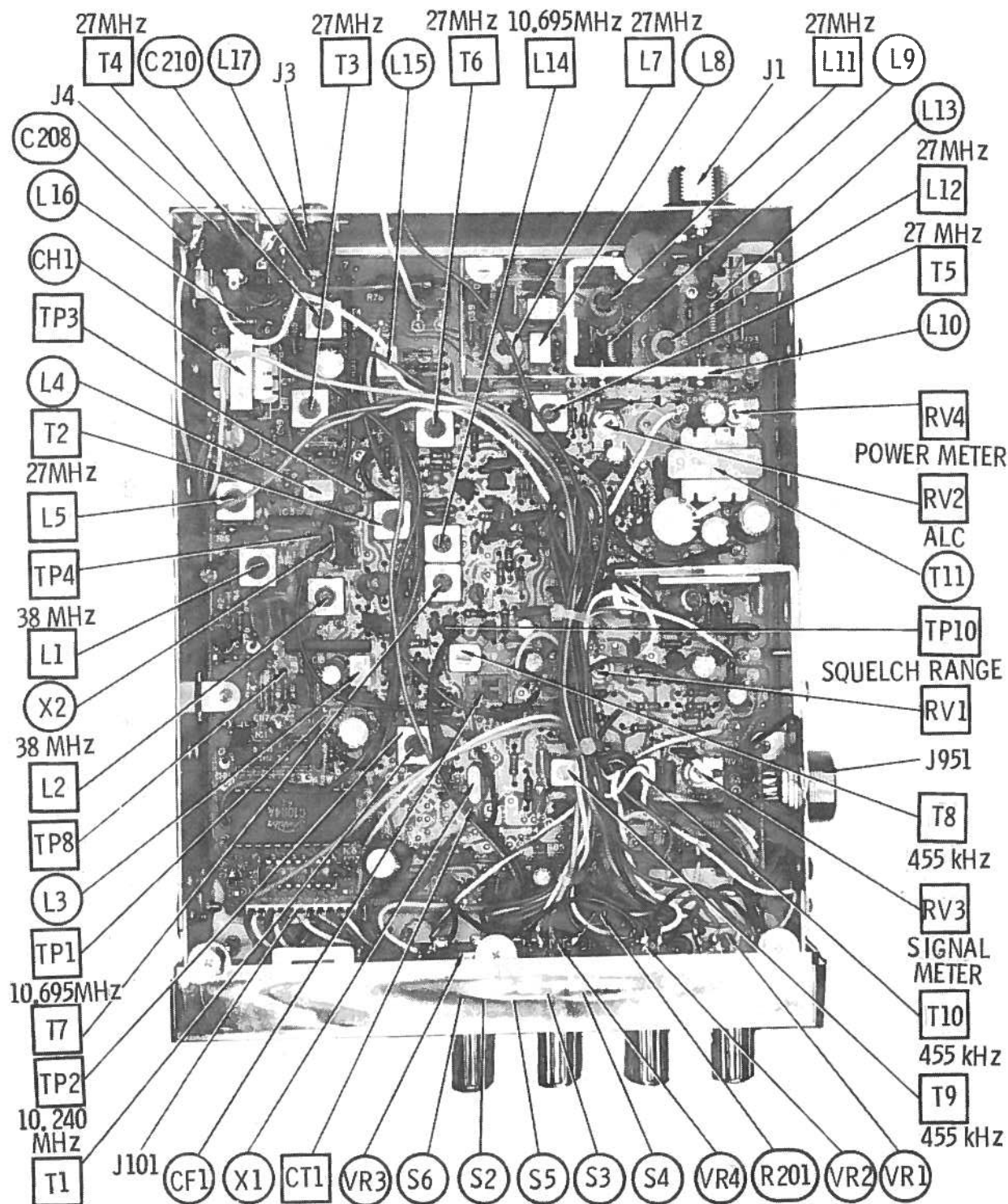
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of modulation meter to antenna jack. Inject a 20mV, 1000Hz signal at mic input.	Ch. 19	RV2	AF ALC Adjust for 85% modulation maximum. See Figure 1.
	Ch. 19	RV4	POWER METER Adjust so that RF panel meter agrees with RF wattmeter.

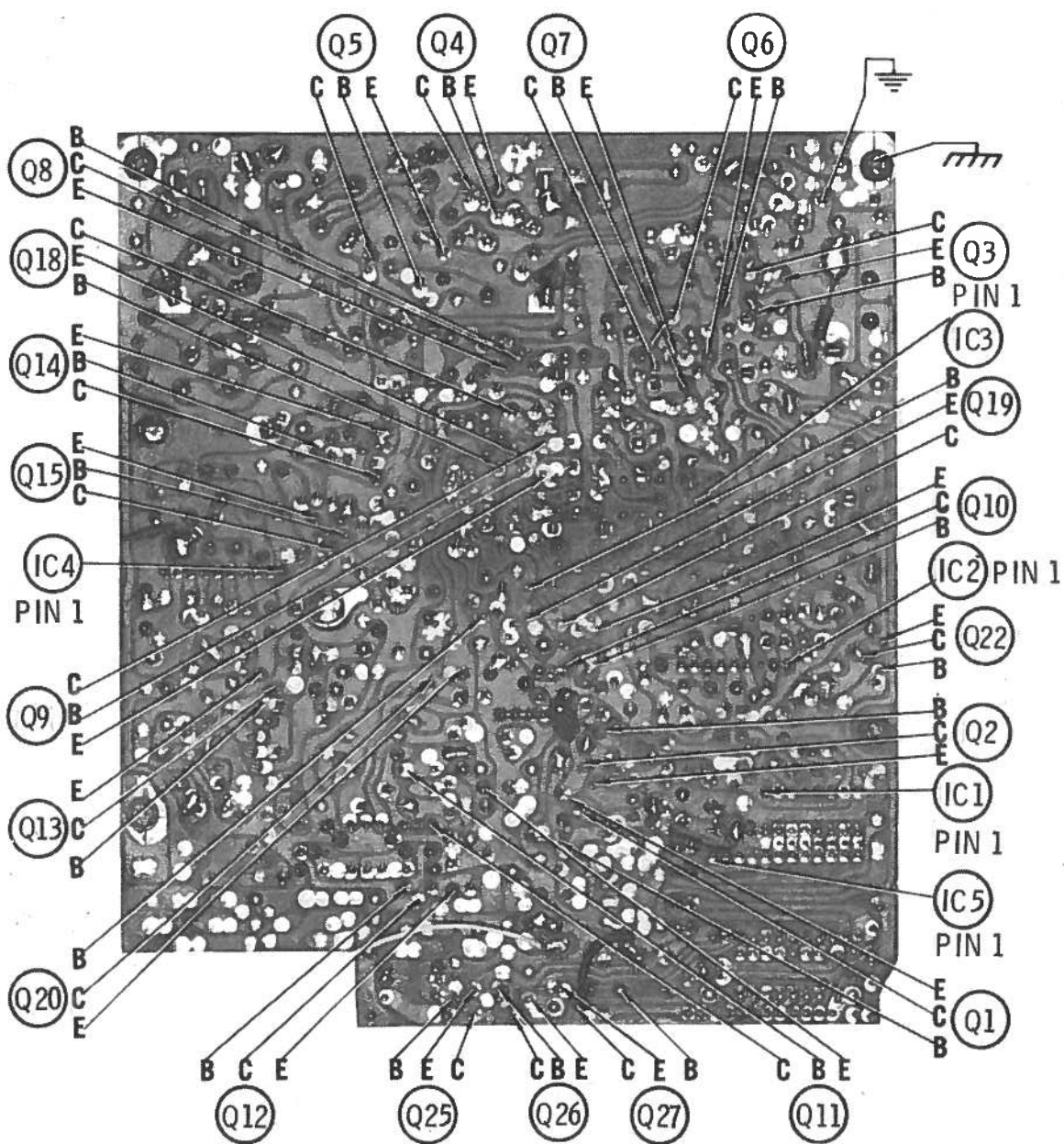
TRUTH CHART

1 = <u>5.06</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC1 PROGRAM DIVIDER							REC & XMT VCO OUTPUT IN MHz AT TP4
	PINS							
	9	10	11	12	13	14	15	
1	1	0	0	1	0	1	0	37.660
2	1	0	0	1	0	0	1	37.670
3	1	0	0	1	0	0	0	37.680
4	1	0	0	0	1	1	0	37.700
5	1	0	0	0	1	0	1	37.710
6	1	0	0	0	1	0	0	37.720
7	1	0	0	0	0	1	1	37.730
8	1	0	0	0	0	0	1	37.750
9	1	0	0	0	0	0	0	37.760
10	0	1	1	1	1	1	1	37.770
11	0	1	1	1	1	1	0	37.780
12	0	1	1	1	1	0	0	37.800
13	0	1	1	1	0	1	1	37.810
14	0	1	1	1	0	1	0	37.820
15	0	1	1	1	0	0	1	37.830
16	0	1	1	0	1	1	1	37.850
17	0	1	1	0	1	1	0	37.860
18	0	1	1	0	1	0	1	37.870
19	0	1	1	0	1	0	0	37.880
20	0	1	1	0	0	1	0	37.900

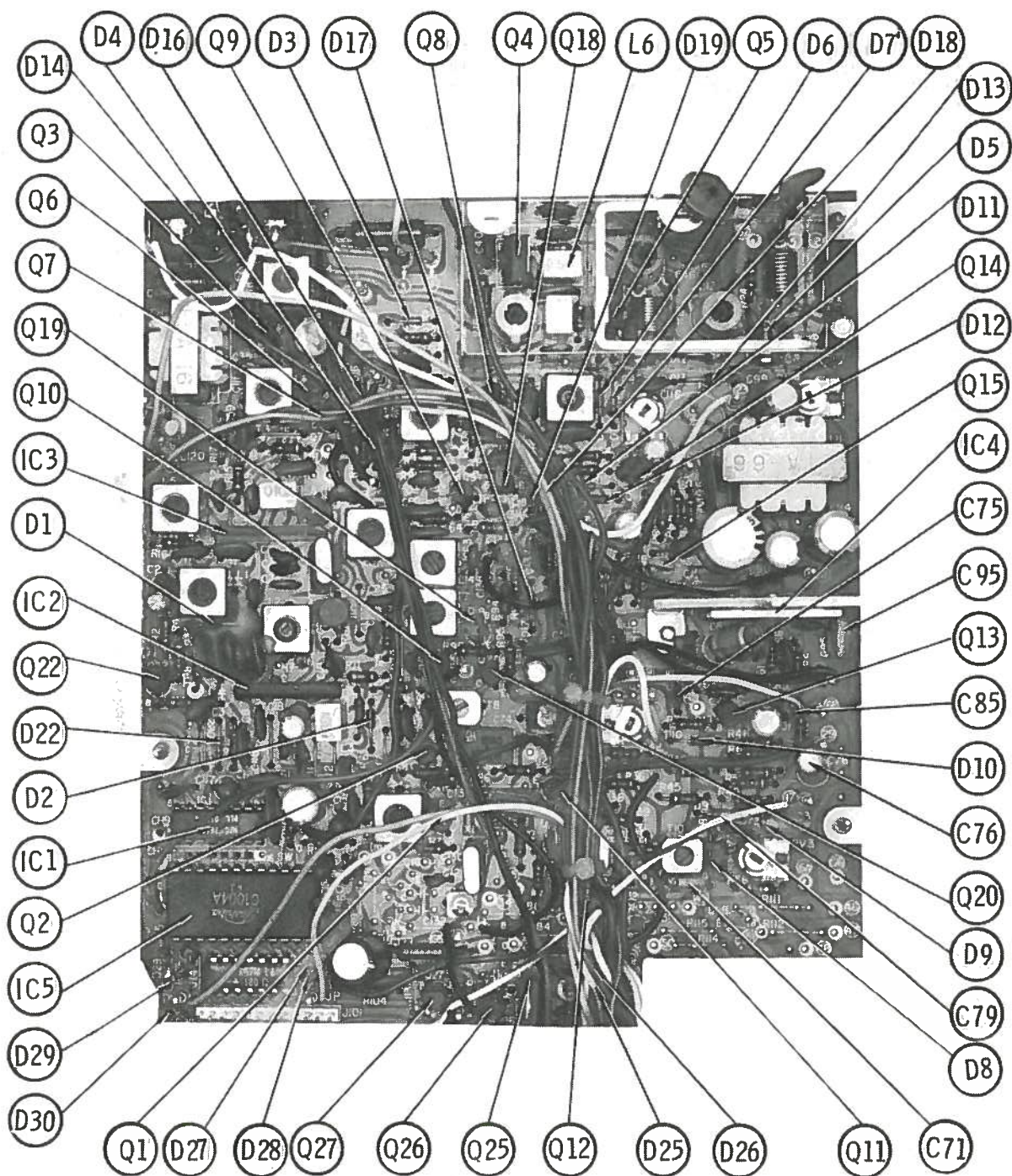
1 = <u>5.06</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC1 PROGRAM DIVIDER							REC & XMT VCO OUTPUT IN MHz AT TP4
	PINS							
	9	10	11	12	13	14	15	
21	0	1	1	0	0	0	1	37.910
22	0	1	1	0	0	0	0	37.920
23	0	1	0	1	1	0	1	37.950
24	0	1	0	1	1	1	1	37.930
25	0	1	0	1	1	1	0	37.940
26	0	1	0	1	1	0	0	37.960
27	0	1	0	1	0	1	1	37.970
28	0	1	0	1	0	1	0	37.980
29	0	1	0	1	0	0	1	37.990
30	0	1	0	1	0	0	0	38.000
31	0	1	0	0	1	1	1	38.010
32	0	1	0	0	1	1	0	38.020
33	0	1	0	0	1	0	1	38.030
34	0	1	0	0	1	0	0	38.040
35	0	1	0	0	0	1	1	38.050
36	0	1	0	0	0	1	0	38.060
37	0	1	0	0	0	0	1	38.070
38	0	1	0	0	0	0	0	38.080
39	0	0	1	1	1	1	1	38.090
40	0	0	1	1	1	1	0	38.100



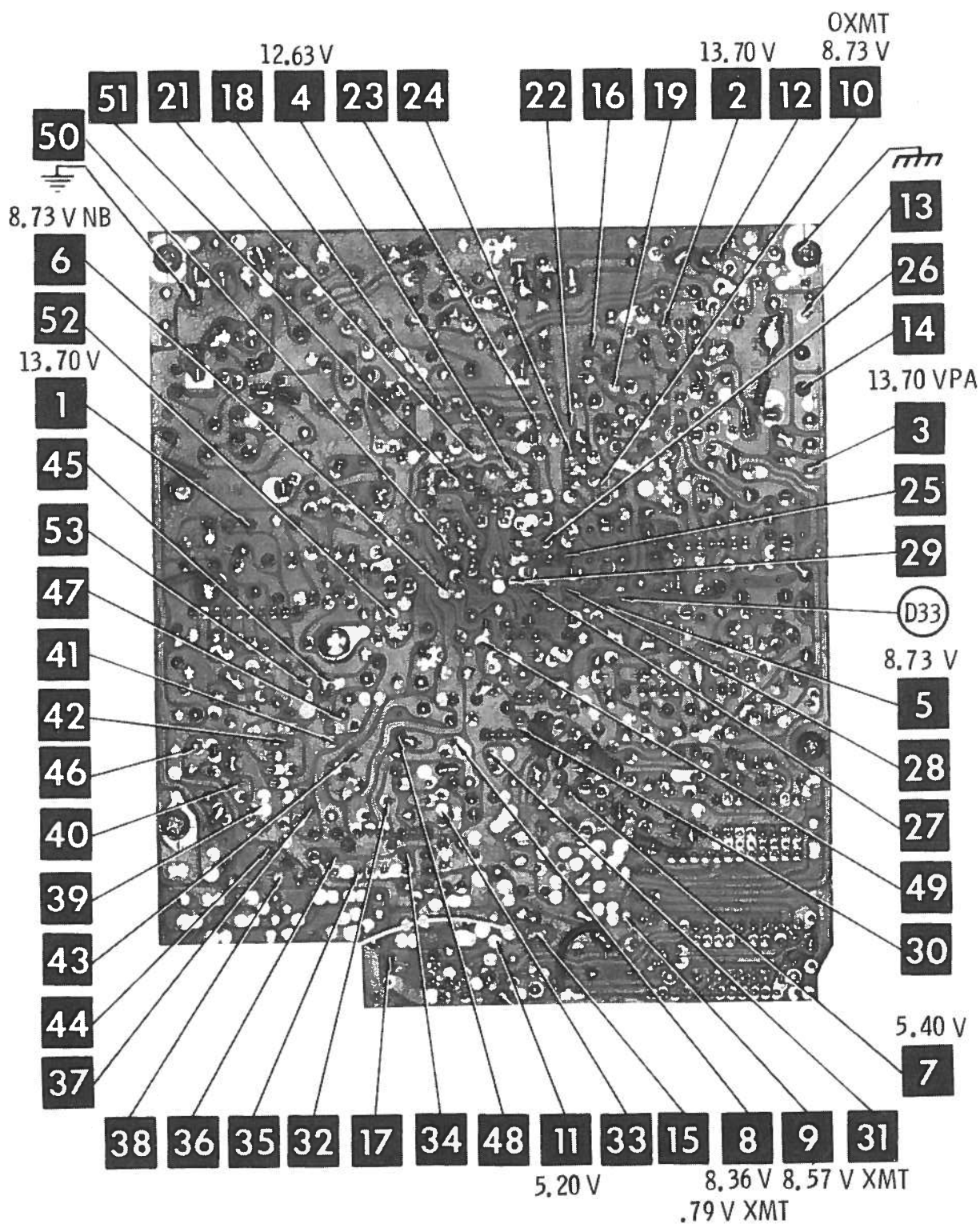
CHASSIS-BOTTOM



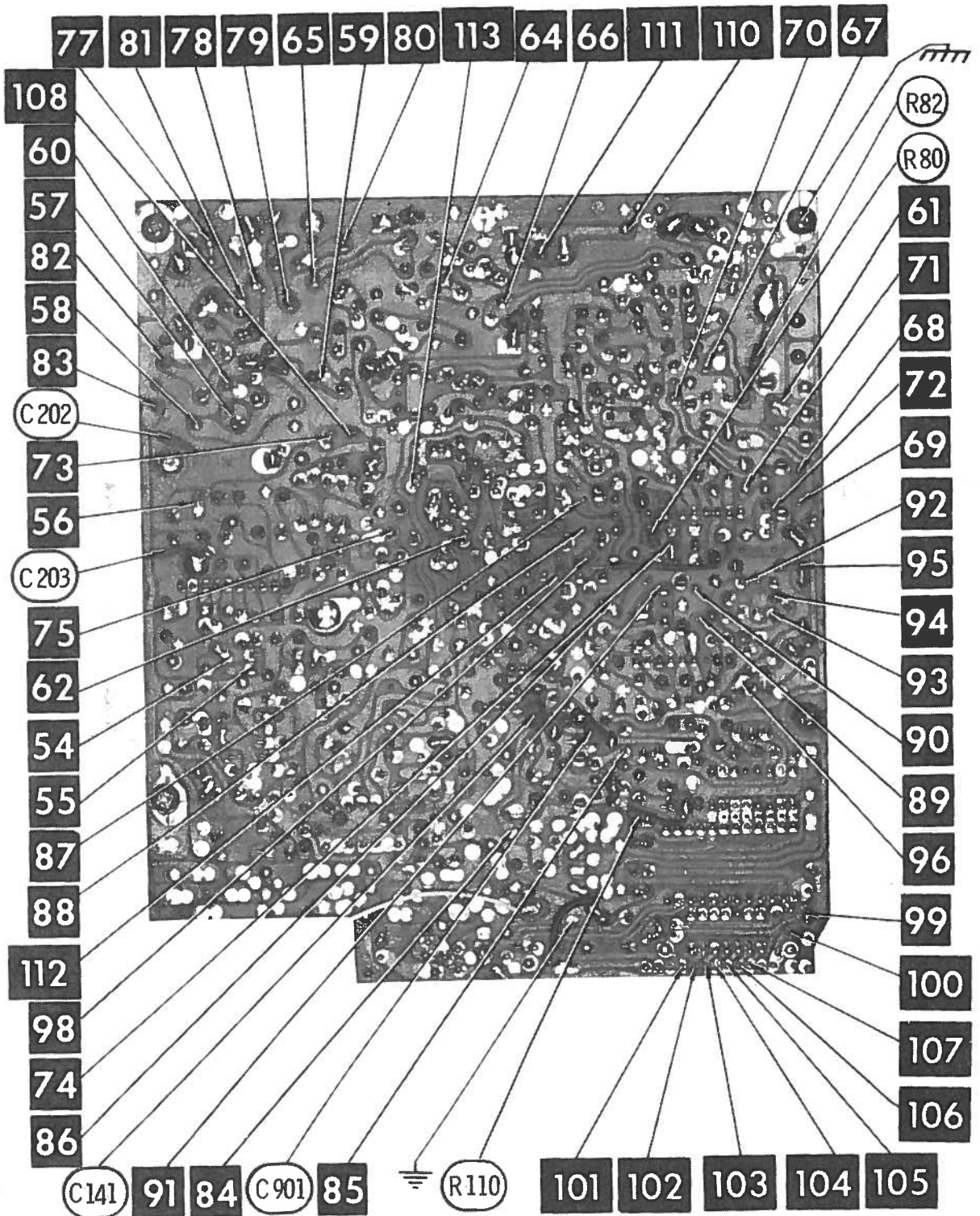
MAIN BOARD

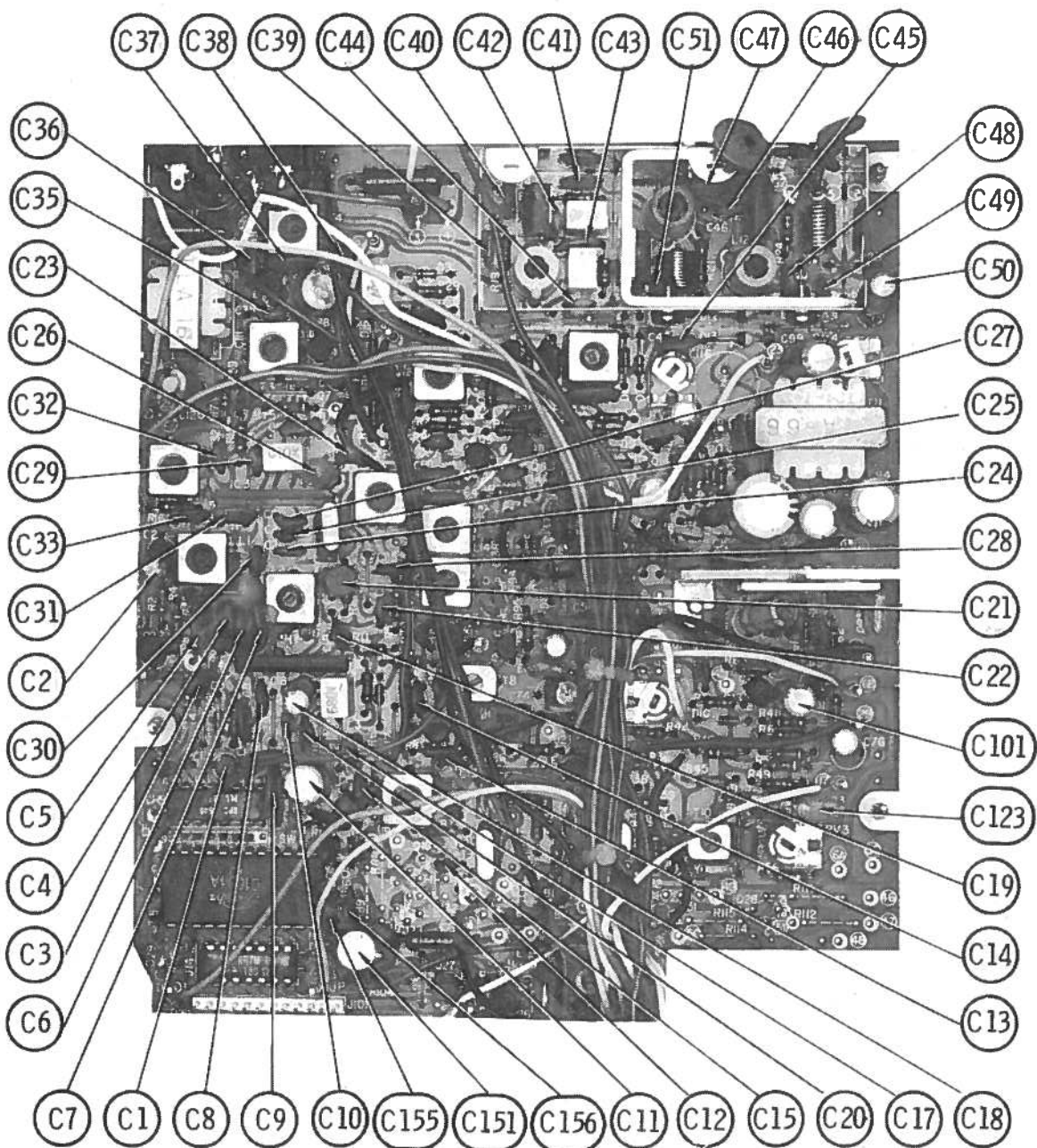


MAIN BOARD

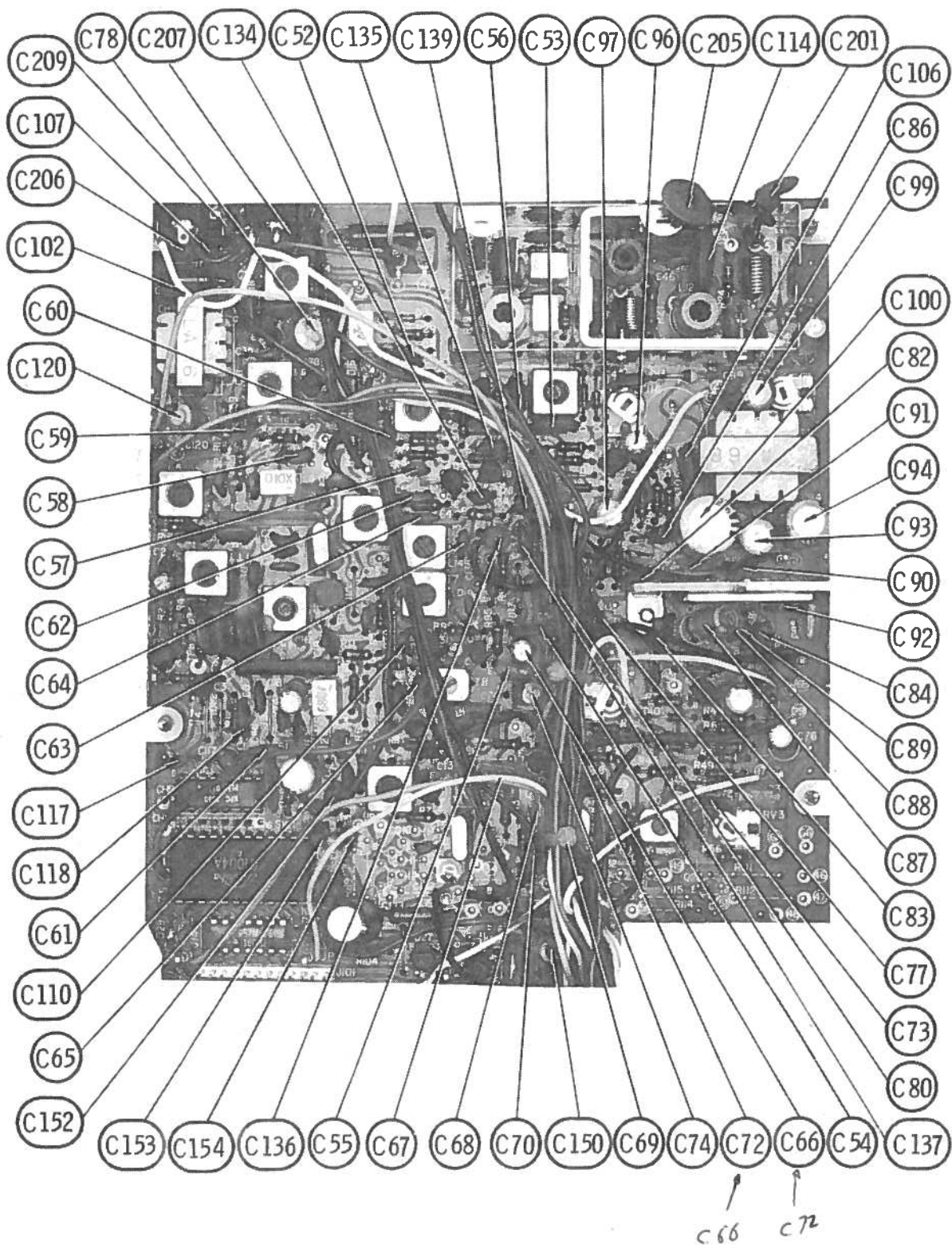


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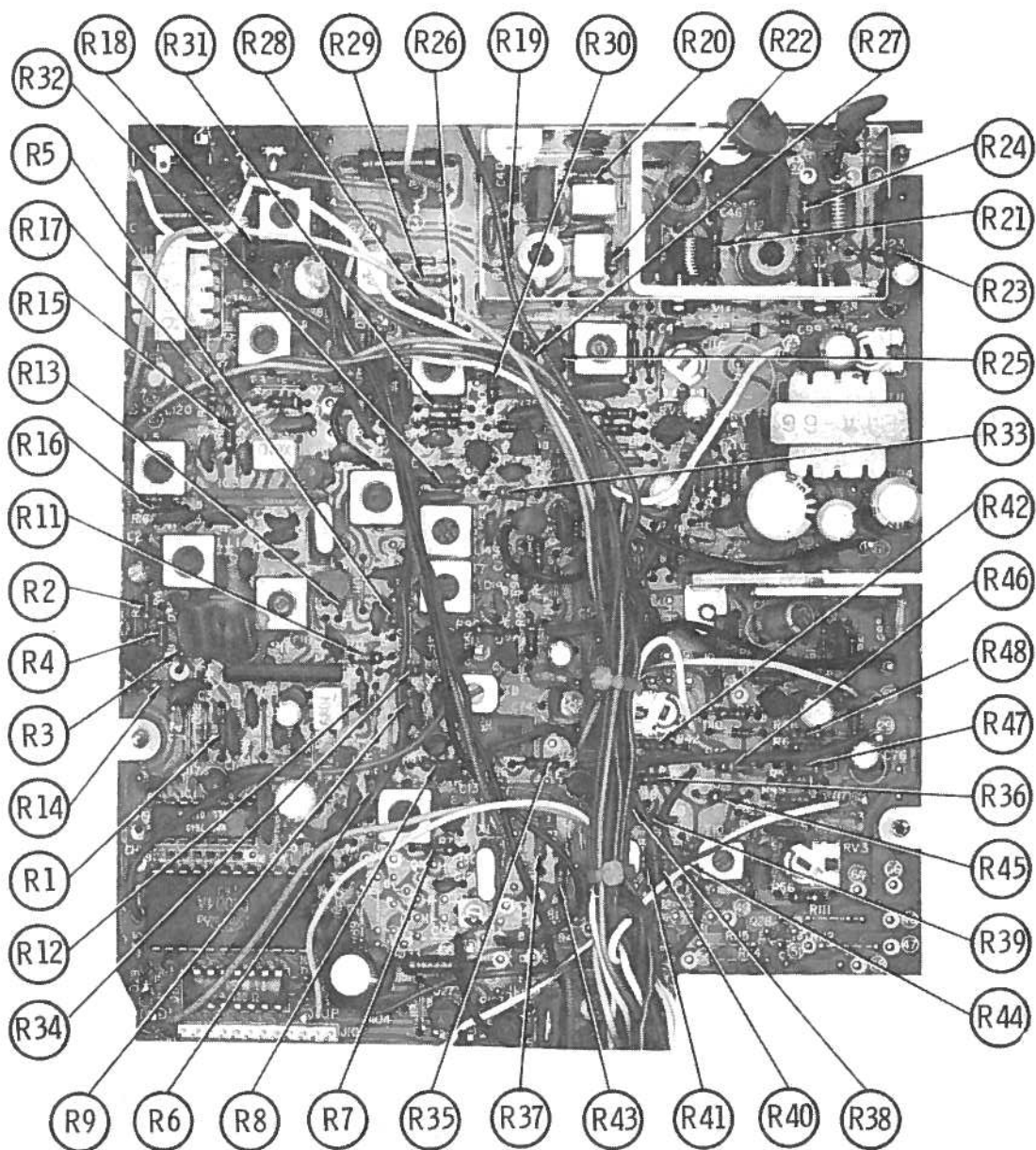




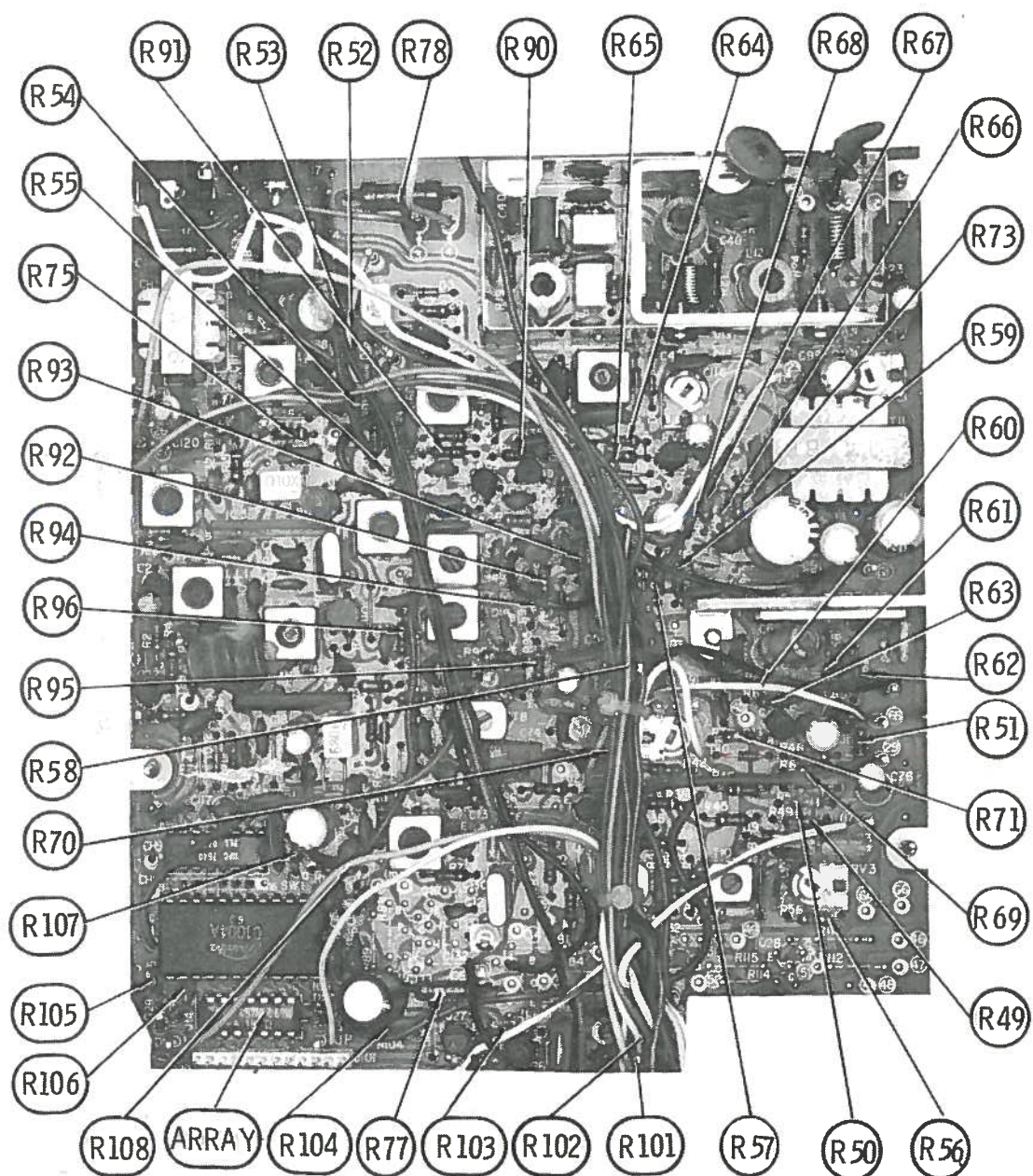
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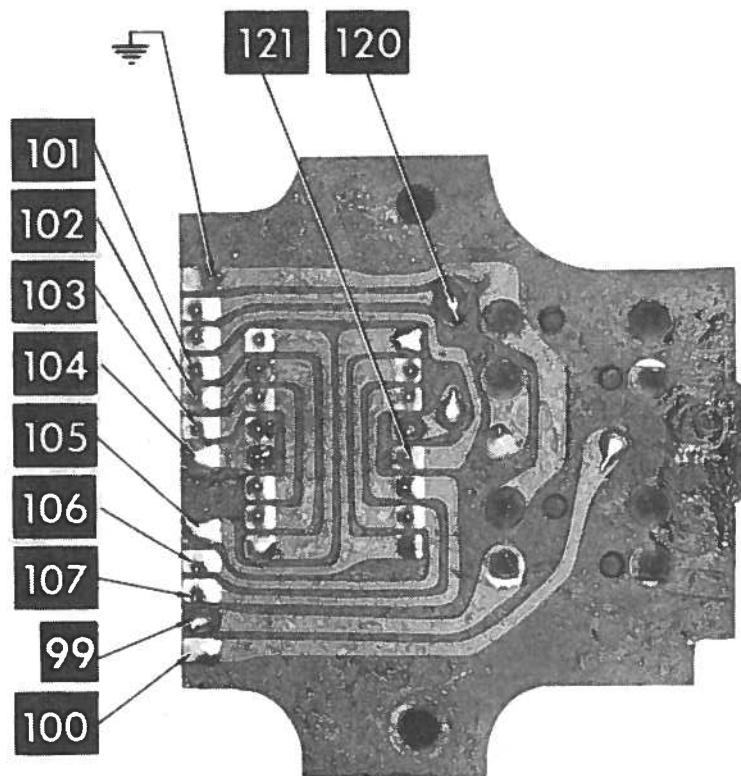
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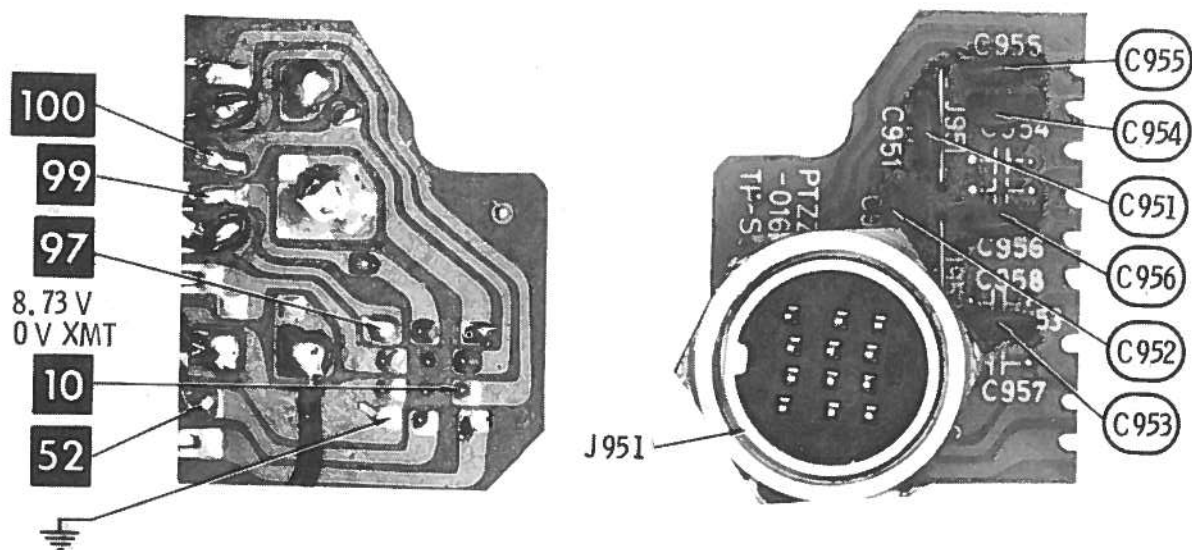
MAIN BOARD



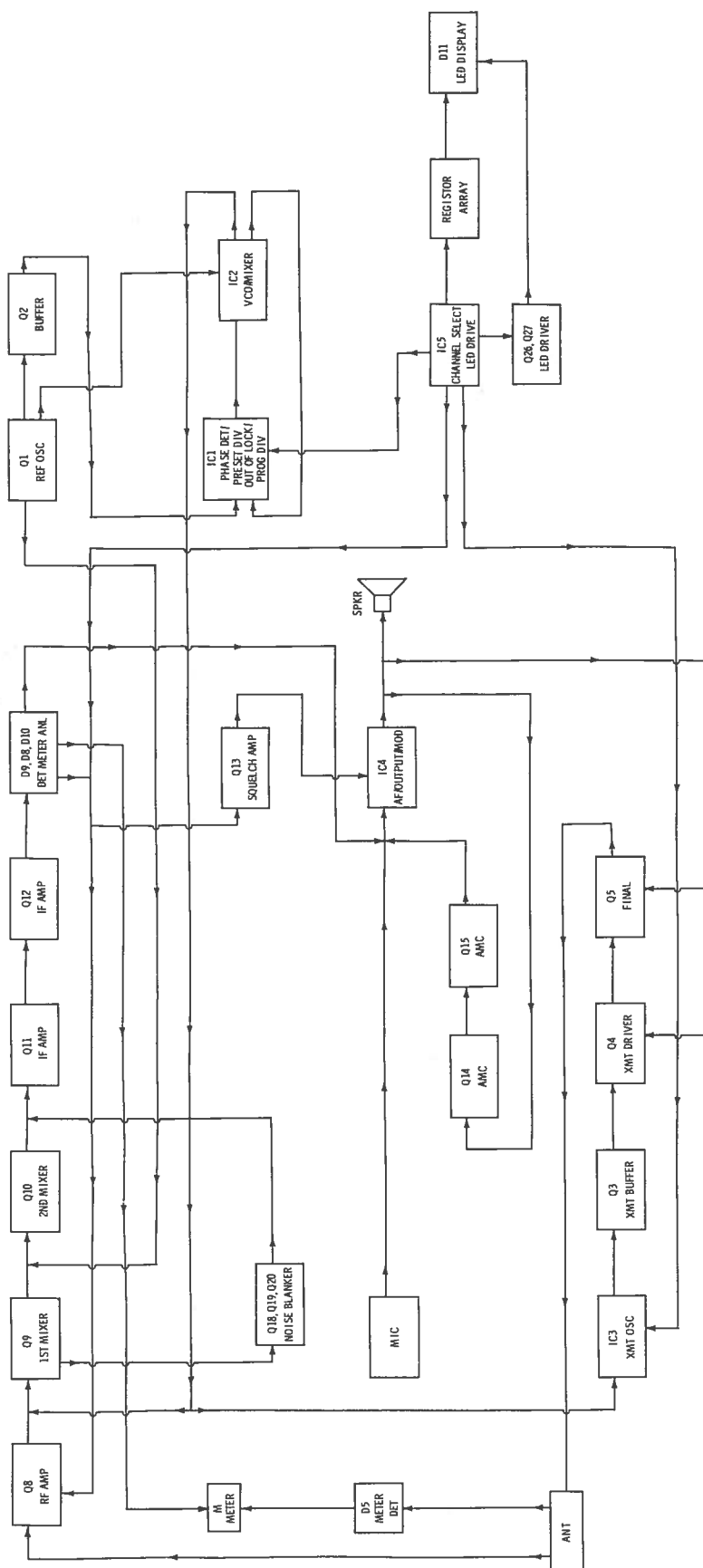
MAIN BOARD



LED BOARD



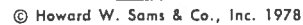
MIC BOARD



BLOCK DIAGRAM







PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

WIRING DATA

General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded) 23AWG	BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 8497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN No. 9472 (7-1/2')
Bonding Strap	BELDEN No. 8672	28AWG	BELDEN No. 9466 (6')
AC Power Cord	(6') BELDEN No. 17106	31AWG	BELDEN No. 9468 (10')
	(9') BELDEN No. 17109	4-conductor (unshielded) 23AWG	BELDEN No. 8415 (6')
		5-conductor (1 shielded) 28AWG	BELDEN No. 9467 (6')
			BELDEN No. 9465 (7-1/2')

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA									
			GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	ITT410 BB122 MV201				HEPR2502 HEPR2502 HEPR2502				ECG612 ECG612 ECG612			ZEN-452 ZEN-452 ZEN-452
D2	MZ250		GEZE-9.1	ZM9.1B		RE 114	SK3060	RT-240	ECG5018	1N4739A	WEP1419	103-279-18
D3	RD9.1E		GEZE-9.1	ZM9.1B		RE 114	SK3060	RT-240	ECG5018	1N4739A	WEP1419	103-279-18
D4	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177	1N4148	WEP1062	
D5	1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430
D6	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D7	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D8	1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430
D9	1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430
D10	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D11	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D12	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D13	V06C		GE-504A	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116	1N4007	WEP158	212-76
D14	1S1885		GE-504A	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116	1N4004	WEP158	212-76
D16	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D17	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D18	1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430
D19	1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430
D22	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D23	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D25	MZ250		GEZE-9.1	ZM9.1B		RE 114	SK3060	RT-240	ECG5018	1N4739A	WEP1419	103-279-18
D26	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D27	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D28	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D29	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D30	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D33	1S1555		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
IC1	PLLO2AG PLLO2A					RE 360-IC RE 360-IC			ECG1167 ECG1167		WEP2007 WEP2007	
IC2	C3001 TA7310P								ECG1192 ECG1192			
IC3	C3001 TA7310P								ECG1192 ECG1192			
IC4	TA7205P		GEIC-179	PTC780		RE 357-IC	SK3231	TVMC-81	ECG1155	TA7205P	WEP949	
IC5	C1004A C1004T C1004											
Q1	2SC710	01-030710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q2	2SC710DE	01-030710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q3	2SC710E	01-030710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q4	2SC1687	01-031687	GE-20*	PTC121*	HEPS0015*	RE 13*	SK3018*	RT-107A*	ECG123A*	2SC535*	WEP736*	
	2SC1760		GE-276	PTC180		RE 224		RT-310	ECG306		WEP771	
	2SC1846QRS	01-031846	GE-336			RE 209			ECG295	2SC496	WEP913	
	2SC1846		GE-336			RE 209			ECG295	2SC496	WEP913	
	2SC2036		GE-336			RE 209			ECG306		WEP771	
Q5	2SC2075	(12)	GE-215	PTC186		RE 203	SK3197	RT-146	ECG235		WEP785	
	2SC1306	01-031306	GE-215	PTC186		RE 203	SK3197	RT-146	ECG235	2SC1306	WEP785	
	2SC1678		GE-322	PTC186		RE 203	SK3197	RT-146	ECG235	2SC1306	WEP785	
Q6	2SC1974		GE-337	PTC186		RE 203	SK3197	RT-146	ECG235	2SC1306	WEP785	
	2SC1318Q	01-031318	GE-210*	PTC178	HEPS0015*	RE 17*	SK3122	RT-302	ECG128*		WEP59*	121-722
	2SC1318QR		GE-210*	PTC178	HEPS0015*	RE 17*	SK3122	RT-302	ECG128*		WEP59*	121-722
	2SC1318		GE-210*	PTC178	HEPS0015*	RE 17*	SK3122	RT-302	ECG128*		WEP59*	121-722
Q7	2SA719Q	01-010719	GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
	2SA719PQR		GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
	2SA719		GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
Q8	2SA720		GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
	2SC1047B	01-031047	GE-60*	PTC132*	HEPS0016*	RE 28*	SK3018*	RT-107	ECG161*	2SC784	WEP63*	ZEN-109
	2SC1047BC		GE-60*	PTC132*	HEPS0016*	RE 28*	SK3018*	RT-107	ECG161*	2SC784	WEP63*	ZEN-109
	2SC1047		GE-60*	PTC132*	HEPS0016*	RE 28*	SK3018*	RT-107	ECG161*	2SC784	WEP63*	ZEN-109
	2SC460		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q9	2SC1359B	01-031359	GE-61*	PTC136*	HEPS0014*	RE 9	SK3018*	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1359C		GE-212	PTC121*	HEPS0014*	RE 192	SK303C*	RT-308	ECG199	2SC710*	WEP66	121-29000
	2SC1359		GE-212	PTC121*	HEPS0014*	RE 192	SK303C*	RT-308	ECG199	2SC710*	WEP66	121-29000
	2SC710		GE-212	PTC121*	HEPS0014*	RE 192	SK303C*	RT-308	ECG199	2SC710*	WEP66	121-29000
Q10	2SC829C		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
	2SC829	01-030710	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710		GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710D		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q11	2SC829C	01-030710	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829		GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q12	2SC710D	01-030710	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829B		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
	2SC829C	01-030829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829		GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710		GE-211*	PTC132	HEPS0016*	RE 13*	SK3018*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
Q13	2SC828P	01-030828	GE-61*	PTC121*	HEPS0015*	RE 192	SK3122	RT-302	ECG199	2SC828	WEP828	ZEN-119
	2SC828		GE-61*	PTC121*	HEPS0015*	RE 192	SK3122	RT-302	ECG199	2SC828	WEP828	ZEN-119
	2SC945		GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC372		GE-61*	PTC121*	HEPS0015*	RE 13*	SK3122	RT-308	ECG123A*	2SC372	WEP372	ZEN-114

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA									
			GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
Q14	2SA719Q	01-010719	GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
	2SA719		GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
Q15	2SA720	01-030945	GE-269	PTC103*	HEPS0019*	RE 26*	SK3114	RT-305	ECG290		WEP911	121-879
	2SA564		GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
Q18	2SC945L	01-030829	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC945PQ		GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q19	2SC945	01-030733	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC900		GE-62	PTC139*	HEPS0015*	RE 192	SK3124	RT-302	ECG199	2SC900	WEP66	121-972
Q20	2SC829C	01-031327	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	121-972
	2SC829		GE-20*	PTC121*	HEPS0015*	RE 9*	SK3122	RT-308	ECG229*	2SC829	WEP829	121-972
Q22	2SA733PQ	01-030900	GE-48	PTC103*	HEPS0019*	RE 219	SK3138	RT-303	ECG294	2SA733	WEP916	121-972
	2SC1327V		GE-48	PTC103*	HEPS0019*	RE 219	SK3138	RT-303	ECG294	2SA733	WEP916	121-972
Q25	2SC1327	01-031096	GE-85*	PTC139*	HEPS0024*	RE 192	SK3124	RT-107A	ECG199	2SC1327	WEP66	121-972
	2SC900		GE-85*	PTC139*	HEPS0024*	RE 192	SK3124	RT-107A	ECG199	2SC900	WEP66	121-972
Q26	2SC900VE	01-030735	GE-62	PTC139*	HEPS0015*	RE 192	SK3124	RT-302	ECG199	2SC900	WEP66	121-972
	2SC2074C		GE-62	PTC139*	HEPS0015*	RE 192	SK3124	RT-302	ECG199	2SC2074C	WEP66	121-972
Q27	2SC2074	01-030735	GE-336	PTC110	HEPS3061	RE 209	SK3197	RT-166	ECG306	2SC2074	WEP771	121-972
	2SC1096		GE-28	PTC123*	HEPS0014*	RE 42	SK3122	RT-308*	ECG186A	2SC1096	WEP1096	121-972
Q28	2SC735Y	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735Y	WEP735A	121-972
	2SC735GR		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735GR	WEP735A	121-972
Q29	2SC735	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735	WEP735A	121-972
	2SC1318		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1318	WEP735A	121-972
Q30	2SC1959	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1959	WEP735A	121-972
	2SC734		GE-212	PTC123*	HEPS5026*	RE 17*	SK3122	RT-302	ECG128*	2SC734	WEP59*	121-972
Q31	2SC735Y	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735Y	WEP735A	121-972
	2SC735GR		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735GR	WEP735A	121-972
Q32	2SC1318	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1318	WEP735A	121-972
	2SC1959		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1959	WEP735A	121-972
Q33	2SC734	01-030735	GE-212	PTC123*	HEPS5026*	RE 17*	SK3122	RT-302	ECG128*	2SC734	WEP59*	121-972
	2SC735Y		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735Y	WEP735A	121-972
Q34	2SC735GR	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC735GR	WEP735A	121-972
	2SC1318		GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1318	WEP735A	121-972
Q35	2SC1959	01-030735	GE-210*	PTC123*	HEPS0014*	RE 13*	SK3122	RT-308*	ECG289	2SC1959	WEP735A	121-972
	2SC734		GE-212	PTC123*	HEPS5026*	RE 17*	SK3122	RT-302	ECG128*	2SC734	WEP59*	121-972

* Lead Configuration may vary from original.
(12) 12 Watts @ 3 Amps.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C1	.1 10V		PC10-25	TDC104M050EL	QDT1-2	SD50-R109
C2	10 16V			VTT10B25	QV1-41	EV-1222
C3	.22 10V			TDC224M050EL	QDT1-10	SD50-R229
C11	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C18	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C50	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C72	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C74	3.3 25V		PC5-50	VTT3R3A50	QV1-23	EV-1318
C76	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C78	47 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C85	3.9 25V			TDC335M035FL		SD35-3R39
C86	.47 10V			TDC474M050EL	QDT1-19	SD50-R479
C87	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C93	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C94	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C96	3.3 25V		PC5-50	VTT3R3A50	QV1-23	EV-1318
C97	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C99	47 25V		PC50-25	VTT47E25	QV1-75	EV-1326
C100	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C101	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C120	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C150	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C151	470 6.3V		PC500-16	VTT470K16	QV1-149	EV-1150
C152	.1 10V			TDC104M050EL	QDT1-2	SD50-R109
C153	.1 10V			TDC104M050EL	QDT1-2	SD50-R109
C154	.1 10V			TDC104M050EL	QDT1-2	SD50-R109

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C4	68 N150 10%		UK50-103		* MAG5011		10TCP-Q68
C5	.01				*		
C6	22 N150		DD-331	GP330	GP333		10TCP-Q22
C7	330 10%		DD-151		GP315		10TS-T33
C8	150 10%		UK25-503		MAG2515		10TS-T15
C9	.047		DTZ-47	NPO47	CN0447		HY-735
C10	47				*		10TCC-Q47
C12	18 N150				*		10TCP-Q18
C13	.001 50V 10%			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C14	68 N150 10%				*		10TCP-Q68
C15	.01		UK50-103		MAG5011		
C17	47 N150 10%				*		10TCP-Q47
C19	.001 50V 10%			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C20	.001 50V 10%			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C21	.001			CD19FD102J03	SK210		MWC-102
C22	2		DTZ-2R2	NPO2P2	CN0522		10TCC-V22

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C23	7	(1)	DTZ-6R8	NP06P8	CN0568	QW1-39	10TCC-V68
C24	33 N150 10%				*		10TCP-Q33
C25	4 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C26	330			CD15FD331J03	SX333		MMA-331
C27	390		DD-391	GP390	GP339		10TS-T39
C28	.001		DD-102		GP210		10TS-D10
C29	68		DTZ-68	NP068	CN0468		10TCC-Q68
C30	56				CN0456		10TCC-Q56
C31	.01		UK50-103		MAG5011	QF1-91	10TCC-V22
C32	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C33	.01		UK50-103		MAG5011		10TCC-Q68
C35	68		DTZ-68	NP068	CN0468		10TCC-Q68
C36	.01		UK50-103		MAG5011		10TCP-T10
C37	100 N150 10%				*		10TCP-T10
C38	.01		UK50-103		MAG5011		1PB-S10
C39	.01 50V 10%			WMF1S1	EWFA1110		10TS-T39
C40	390		DD-391	GP390	GP339		10TCC-T12
C41	.01		UK50-103		MAG5011		10TCC-T22
C42	120 10%		DTZ-120		CN0312	QF1-171	10TCC-T12
C43	220		DTZ-220				10TCC-T12
C44	120		DTZ-120		CN0312		10TCC-T12
C45	.01		UK50-103		MAG5011		10TCC-T12
C46	120 10%		DTZ-120		CN0312		10TCC-T27
C47	270 10%		DTZ-270				10TCC-V22
C48	2		DTZ-2R2	NP02P2	CN0522		5GA-D47
C49	.0047		DD-472	GP4700	GP247		10TCC-Q27
C51	27				CN0427	QF1-171	HY-735
C52	.01		UK50-103		MAG5011		HY-735
C53	.047		UK25-503		MAG2515		1PB-S47
C54	.047		UK25-503		MAG2515		10TCC-Q10
C55	.047 50V 10%			DPMS2S47	EWFA1A47		
C56	.01		UK50-103		MAG5011		
C57	10		DTZ-10	NP010	CN0410		
C58	.01		UK50-103		MAG5011		
C59	.01		UK50-103		MAG5011		
C60	.01		UK50-103		MAG5011		
C61	.01		UK50-103		MAG5011	QF1-91	10TCC-V22
C62	.01		UK50-103		MAG5011		10TCC-Q18
C63	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C64	.01		UK50-103		MAG5011		10TCC-Q18
C65	18 N150				*		10TCC-Q18
C66	2.2		DTZ-2R2	NP02P2	CN0522		1PB-S47
C67	.047 50V 10%			DPMS2S47	EWFA1A47		1PB-S47
C68	.047 50V 10%			DPMS2S47	EWFA1A47		1PB-S47
C69	.047 50V 10%			DPMS2S47	EWFA1A47		1PB-S47
C70	.047 50V 10%			DPMS2S47	EWFA1A47		1PB-S47
C71	.047 50V 10%			DPMS2S47	EWFA1A47		1PB-S47
C73	.0068 50V 10%	(1)		WMF1D68	EWFA268	QF1-73	1PB-D68
C75	.0047 50V 10%				M192P4729R8		192P4729R8
C77	100		DTZ-100	NP0100	CN0310		10TCC-T10
C79	.022 50V 10%				M192P2239R8		192P2239R8
C80	.0022				GP222		10TS-D22
C82	220		DTZ-220			QF1-91	10TCC-T22
C83	.01 50V 10%			WMF1S1	EWFA1A110		1PB-S10
C84	.0022 10%				GP222		10TS-D22
C88	68		DTZ-68	NP068	CN0468		10TCC-Q68
C89	68		DTZ-68	NP068	CN0468		10TCC-Q68
C90	150		DTZ-150		CN0315		10TCC-T15
C91	.068			WMF1S68	EWFA1A68	QF1-195	1PB-S68
C92	100		DTZ-100	NP0100	CN0310		10TCC-T10
C95	.068 50V 10%			WMF1S68	EWFA1A68		1PB-S68
C102	.01		UK50-103		MAG5011		HY-735
C106	.047		UK25-503		MAG2515		
C107	.01		UK50-103		MAG5011		10TCC-Q18
C110	18				CN0418	QF1-195	10TS-T39
C111	2						192P4729R8
C114	390		DD-391	GP390	GP339		10TS-D20
C117	.0047 50V				M192P4729R8		1PB-S68
C118	.002				GP220		10TCC-V33
C123	.068			WMF1S68	EWFA1A68		10TS-T22
C134	3		DTZ-3R3	NP03P3	CN0533	(1)	MNC-332
C135	220 10%		DD-221		GP322		
C136	.0033			CD19FD332J03	SX233		
C137	.01		UK50-103		MAG5011		10TS-T22
C139	220 10%		DD-221		GP322		HY-350
C141	.01						HY-350
C155	.047 12V		UK12-503		MAG1215		10TS-T15
C156	.047 12V		UK12-503		MAG1215	(1)	
C201	150 10%		DD-151		GP315		
C202	.01		UK50-103		MAG5011		
C203	.01		UK50-103		MAG5011		
C205	.047		UK25-503		MAG2515		
C206	.01		UK50-103		MAG5011		
C207	.01		UK50-103		MAG5011		
C208	.0047		DD-472	GP4700	GP247		5GA-D47
C209	.0047		DD-472	GP4700	GP247		5GA-D47
C210	.0047		DD-472	GP4700	GP247		5GA-D47
C211	390		DD-391	GP390	GP339	(1)	10TS-T39
C901	100		DTZ-100	NP0100	CN0310		10TCC-T10
C951	.0047		DD-472	GP4700	GP247		5GA-D47
C952	.0047		DD-472	GP4700	GP247		5GA-D47
C953	.0047		DD-472	GP4700	GP247		5GA-D47
C954	.0047		DD-472	GP4700	GP247		5GA-D47
C955	.0047		DD-472	GP4700	GP247		5GA-D47
C956	.0047		DD-472	GP4700	GP247		5GA-D47
CT1	20		DD-472	GP4700	GP247		5GA-D47

(1) Used in some versions.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
RV1	Squelch Range	10K	13-164132	T-10K (3)	C-103 (3)	MTC14L1 (3)	U260R103B
RV2	ALC	5000	13-164146				U260R502B
RV3	Signal Meter	20K	13-164134				U260R253B
RV4	Power Meter	20K	13-164134				U260R253B
VR1	Volume/Switch	50K	13-160138				
VR2	Squelch	10K	13-165042				
VR3	Dimmer	1000	77-165001				
VR4	RF Gain	100K	13-165044				
VR5	Mic Volume	50K					

(3) For horizontal mounting, bend the two outside terminals to fit PC board. Use jumper to connect center terminal to PC board.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
RARRY	Resistor Network		77-140004(1)				

(1) Consists of seven 180-ohm resistors.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	VCO (18MHz)	77-176001			
L2	VCO Mixer (37MHz)	77-176009			
L3	RF Choke (68mH)	13-178210			
L4	RF Choke (1mH)	77-178007			
L5	Xmt Mixer (27MHz)	77-176003			
L6	RF Choke (2.2mH)	13-176564			
L7	Xmt Driver (27MHz)	13-176508			
L8	RF Choke (68mH)	13-178210			
L9	RF Choke (.55mH)	13-176567			
L10	RF Choke (1mH)	13-176565			
L11	Final (27MHz)	13-176509			
L12	Antenna Matching (27MHz)	13-176510			
L13	Pi Filter (.4mH)	77-176004			
L14	IF (10.695MHz)	77-090003			
L15	RF Choke (68mH)	13-178210			
L16	RF Choke (.75mH)	77-178003			
L17	RF Choke (.75mH)	77-178003			
T1	Ref Osc (20.480MHz)	77-176010			
T2	VCO Mixer (38MHz)	77-176011			
T3	Xmt Mixer (27MHz)	13-176580			
T4	Xmt Buffer (27MHz)	13-176581			
T5	Rec Antenna (27MHz)	13-176511			
T6	RF Amp (27MHz)	13-176512			
T7	IF (10.695MHz)	77-090003			
T8	IF (455kHz)	13-090371			
T9	IF (455kHz)	13-090375			
T10	IF (455kHz)	13-090372			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
CH1	1.775A	.116	1.14mH	13-178208 ELA-16(1)			(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T11	2.88	1 8 2 13.52	13-096200 ETA-66(1)			(1) Number on unit.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM, 8 Ohms	13-060118	30A052BR	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2A Quick Acting			AGC2	HDJ	312002	150145	FG2-2

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFGR. PART No.	GC PART No.	GC NOISE CANCEL	GC POWER	GC CONNECTOR	GC Red	GC Shield	GC Yellow	GC Blue	GC White	GC Black
MIC	77-038005										

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	77-179001	455kHz
J1	Jack	13-159220	Antenna
J3	Jack	13-153168	PA
J4	Jack	13-153168	External Speaker
J5	Jack	13-159235	DC Power
J101	Jack	77-159013	LED (12 Pin)
J951	Jack	77-159012	Microphone
LED301	LED		Channel Readout
M	Meter	13-200078	S/R/F
P101	Socket	77-159014	LED (12 Pin)
S1	Switch		Power (Part of Volume Control)
S2	Switch	13-183236	External CB
S3	Switch	13-183236	ANL
S4	Switch	13-183236	CB-PA
S5	Switch	13-183236	NB
S6	Switch	13-183236	Filter
SW301	Switch	77-188001	Channel Selector Up
SW302	Switch	77-188001	Channel Selector Down
X1	Crystal	77-128001	10.24000MHz
X2	Crystal	77-128002	10.69500MHz
	DC Power Cord	13-034097	
	Printed Circuit Board	77-070006	LED Channel Display
	Printed Circuit Board	77-070005	Microphone Jack

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Case, Bottom	77-013004	Knob, Control	13-110204
Case, Top	77-010007	Knob, Up Channel/Down Channel	77-115007
Escutcheon	77-011008		