



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.



JOHNSON MODEL MESSENGER 4250

MODEL MESSENGER 4250(242-4250)

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

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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.

Suggested Alignment Tools: GC ELECTRONICS:
 T1, T2, T5, T6, T10, T101..... 9440
 Z1A, Z1B, T3, T4..... 5009, 8728, 8728A
 T7, T8, L3..... 8282, 8606, 9302, 9440
 L4, L5, L7..... 9300, 9302, 9304
 L6..... 9440

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to TP2 (Q102 Gate 2).	Ch. 19		Check for 5.120MHz.
Input of frequency counter to TP3 (Q105 Base).	Ch. 19		Check for 30.820MHz.
Input of DC meter to TP1.	Ch. 1	T101	Adjust for 3.00 volts.
Input of oscilloscope to TP4 (Junction of CR102 and CR103).	Ch. 19	T10	Adjust for maximum RF output.
Input of frequency counter to TP4 (Junction of CR102 and CR103).	Ch. 1		Check for 26.510MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3 (Q105 Base).	Ch. 19, XMT		Check for 31.275MHz.
Input of frequency counter to TP4 (Junction of CR102 and CR103).	Ch. 1, XMT		Check for 26.965MHz. Check all channels. (See Truth Chart for correct frequencies.)

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.
Squelch MINIMUM.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP5 (Q2 Base). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	T4, T3, Z1A, Z1B	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	T2, T1	Adjust for maximum output. If necessary readjust Z1A, Z1B, T3 and T4.

RECEIVER ADJUSTMENTS

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

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	R202	SIGNAL METER Adjust for 9 on signal scale of meter.

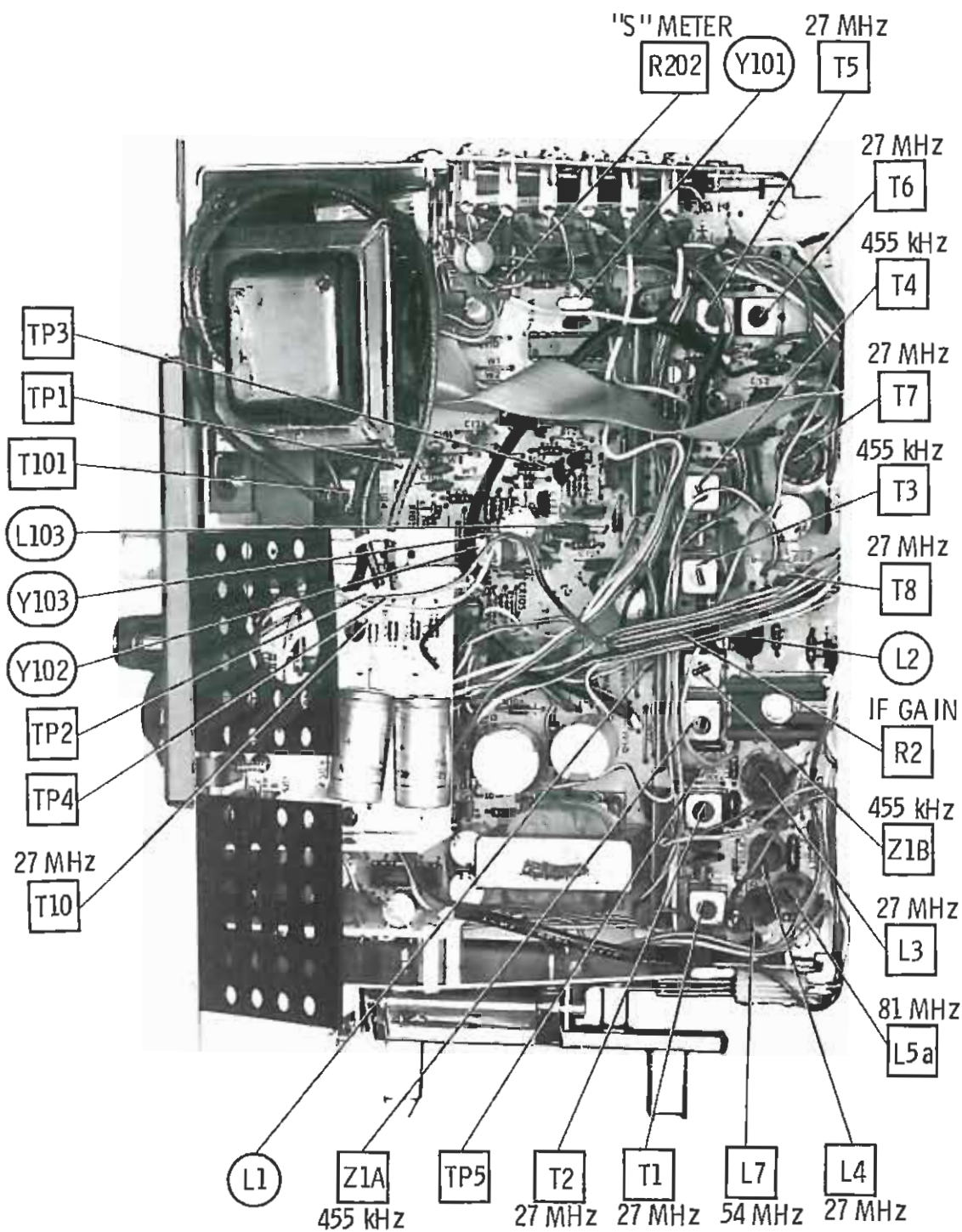
TRANSMITTER ALIGNMENT

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.

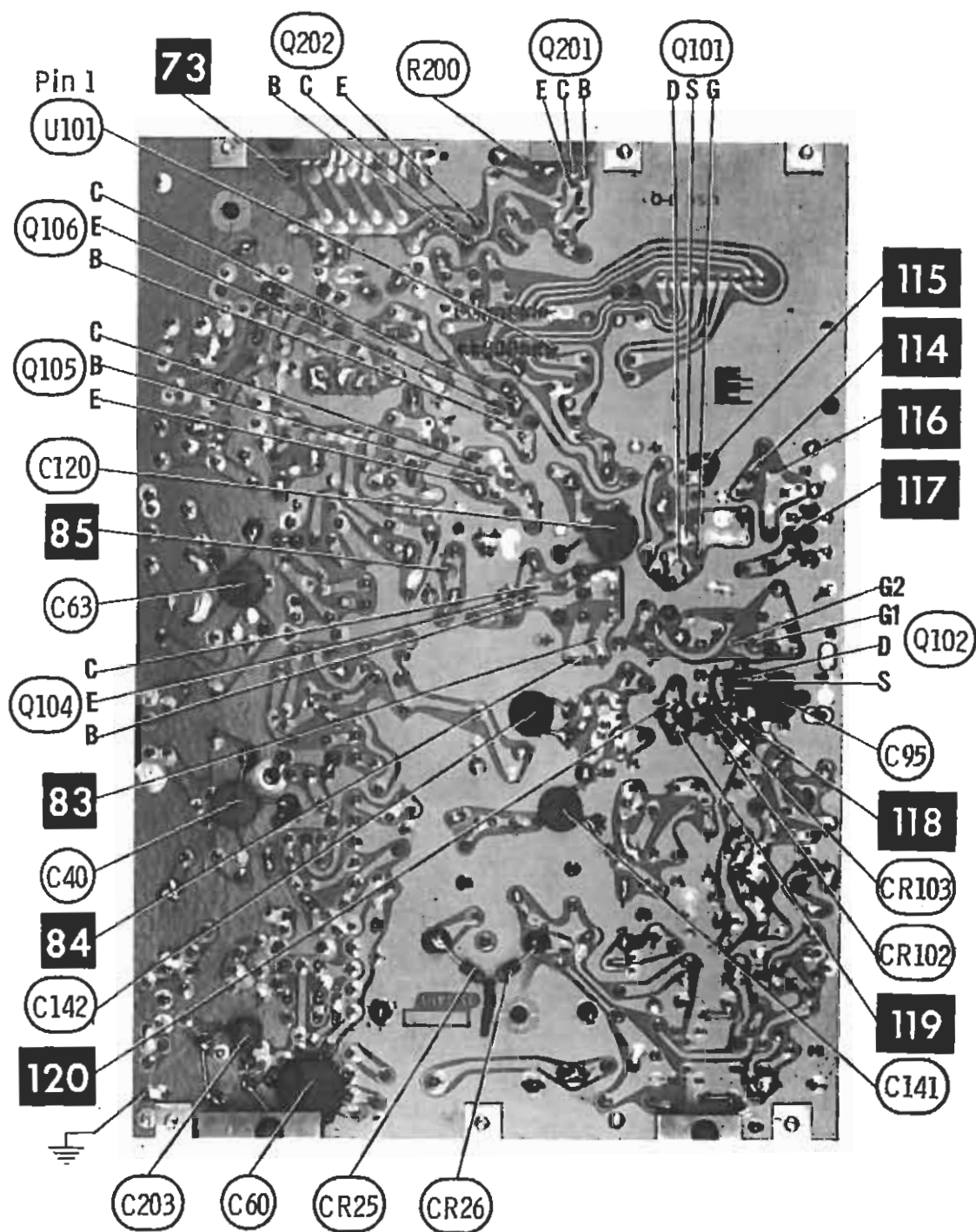
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of spectrum analyzer or harmonic meter to antenna jack.	Ch. 19	T5, T6, T7, T8, L3, L4 L6	Adjust for maximum RF output.
	Ch. 19	L4, L6	Adjust for 3.8 watts RF output maximum.
	Ch. 19	L7	Adjust for MINIMUM at 54MHz (Second harmonic).
	Ch. 19	LSa	Adjust for MINIMUM at 81mH (Third harmonic).

TRUTH CHART

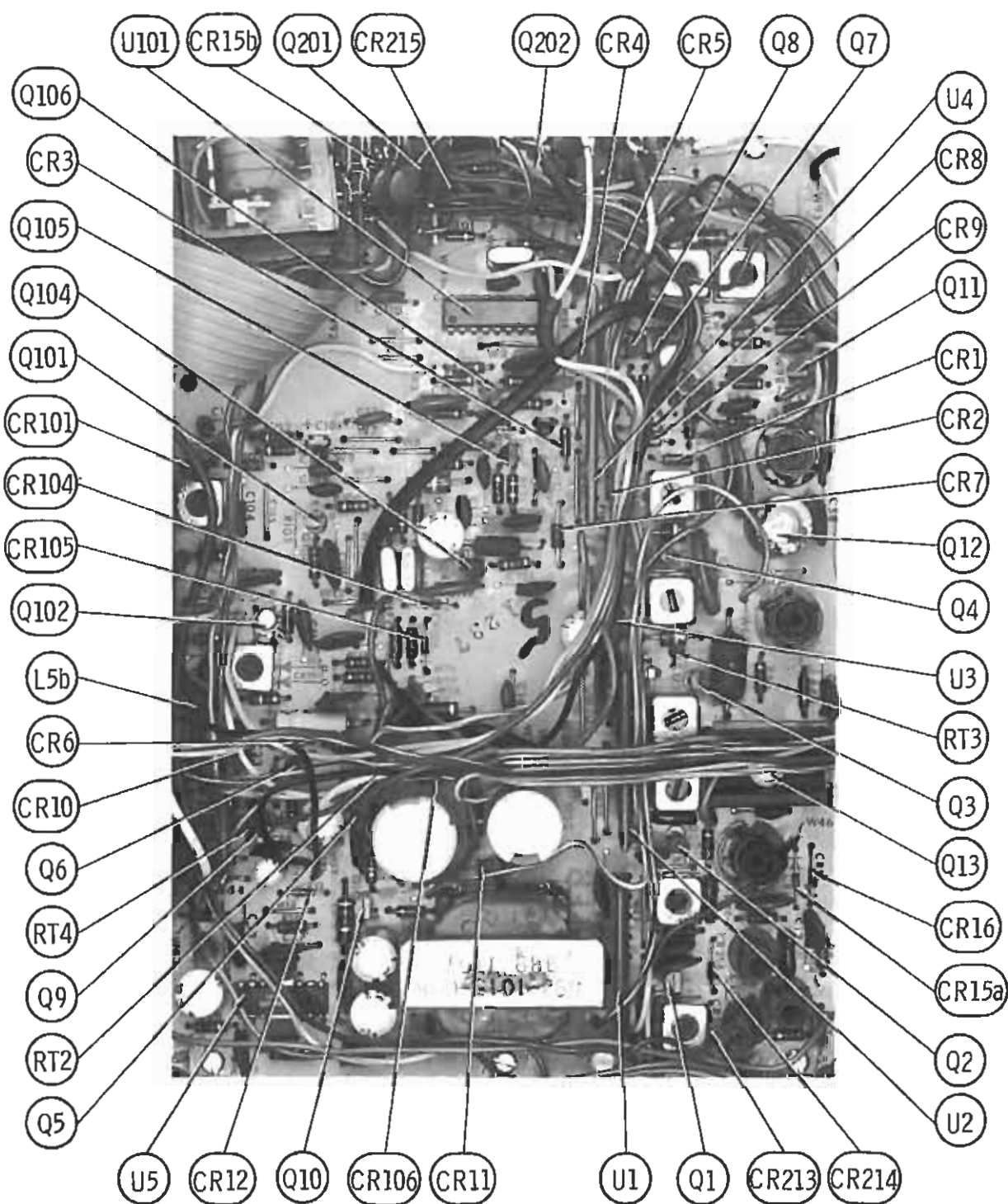
C H A N N E L	1 = 10.30 Volts 0 = 0 Volts								REC VCO OUTPUT IN MHz AT TP4	XMT VCO OUTPUT IN MHz AT TP4	
	U101 PROGRAM DIVIDER										
	PINS										
	13	14	15	2	3	4	5				
1	0	0	0	0	0	0	1		26.510	26.965	
2	0	0	0	0	0	1	0		26.520	26.975	
3	0	0	0	0	0	1	1		26.530	26.985	
4	0	0	0	0	1	0	1		26.550	27.005	
5	0	0	0	0	1	1	0		26.560	27.015	
6	0	0	0	0	1	1	1		26.570	27.025	
7	0	0	0	1	0	0	0		26.580	27.035	
8	0	0	1	0	0	0	0		26.590	27.055	
9	0	0	1	0	0	0	1		26.610	27.065	
10	0	0	1	0	0	1	0		26.620	27.075	
11	0	0	1	0	0	1	1		26.630	27.085	
12	0	0	1	0	1	0	1		26.650	27.105	
13	0	0	1	0	1	1	0		26.660	27.115	
14	0	0	1	0	1	1	1		26.670	27.125	
15	0	0	1	1	0	0	0		26.680	27.135	
16	0	1	0	0	0	0	0		26.700	27.155	
17	0	1	0	0	0	0	1		27.710	27.165	
18	0	1	0	0	0	1	0		26.720	27.175	
19	0	1	0	0	0	1	1		26.730	27.185	
20	0	1	0	0	1	0	1		26.750	27.205	
21	0	1	0	0	1	1	0		26.760	27.215	
22	0	1	0	0	1	1	1		26.770	27.225	
23	0	1	1	0	0	0	0		26.800	27.255	
24	0	1	0	1	0	0	0		26.780	27.235	
25	0	1	0	1	0	0	1		26.790	27.245	
26	0	1	1	0	0	0	1		26.810	27.265	
27	0	1	1	0	0	1	0		26.820	27.275	
28	0	1	1	0	0	1	1		26.830	27.285	
29	0	1	1	0	1	0	0		26.840	27.295	
30	0	1	1	0	1	0	1		26.850	27.305	
31	0	1	1	0	1	1	0		26.860	27.315	
32	0	1	1	0	1	1	1		26.870	27.325	
33	0	1	1	1	0	0	0		26.880	27.335	
34	0	1	1	1	0	0	1		26.890	27.345	
35	1	0	0	0	0	0	0		26.900	27.355	
36	1	0	0	0	0	0	1		26.910	27.365	
37	1	0	0	0	0	1	0		26.920	27.375	
38	1	0	0	0	0	1	1		26.930	27.385	
39	1	0	0	0	1	0	0		26.940	27.395	
40	1	0	0	0	1	0	1		26.950	27.405	



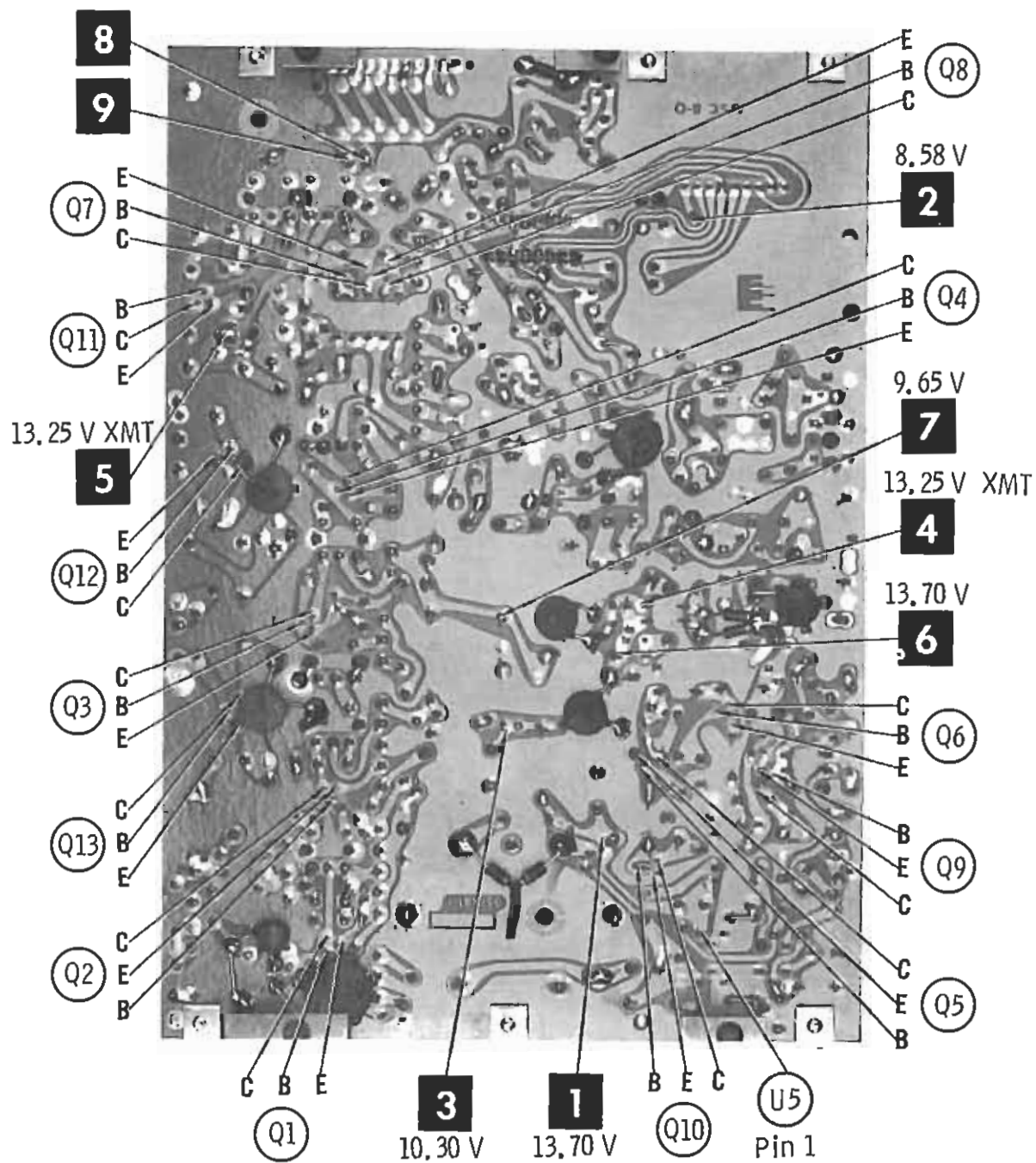
CHASSIS-TOP



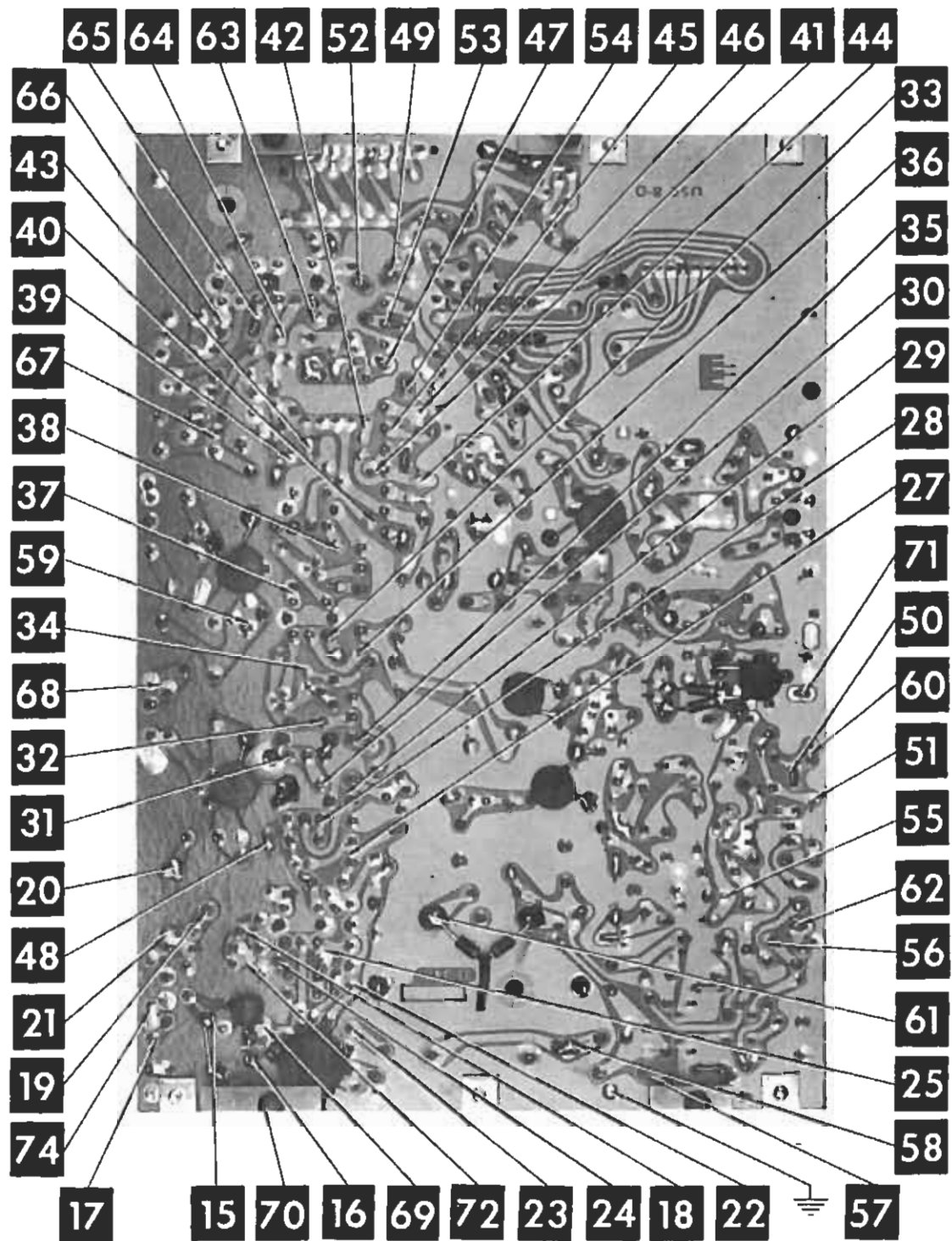
MAIN BOARD



MAIN BOARD

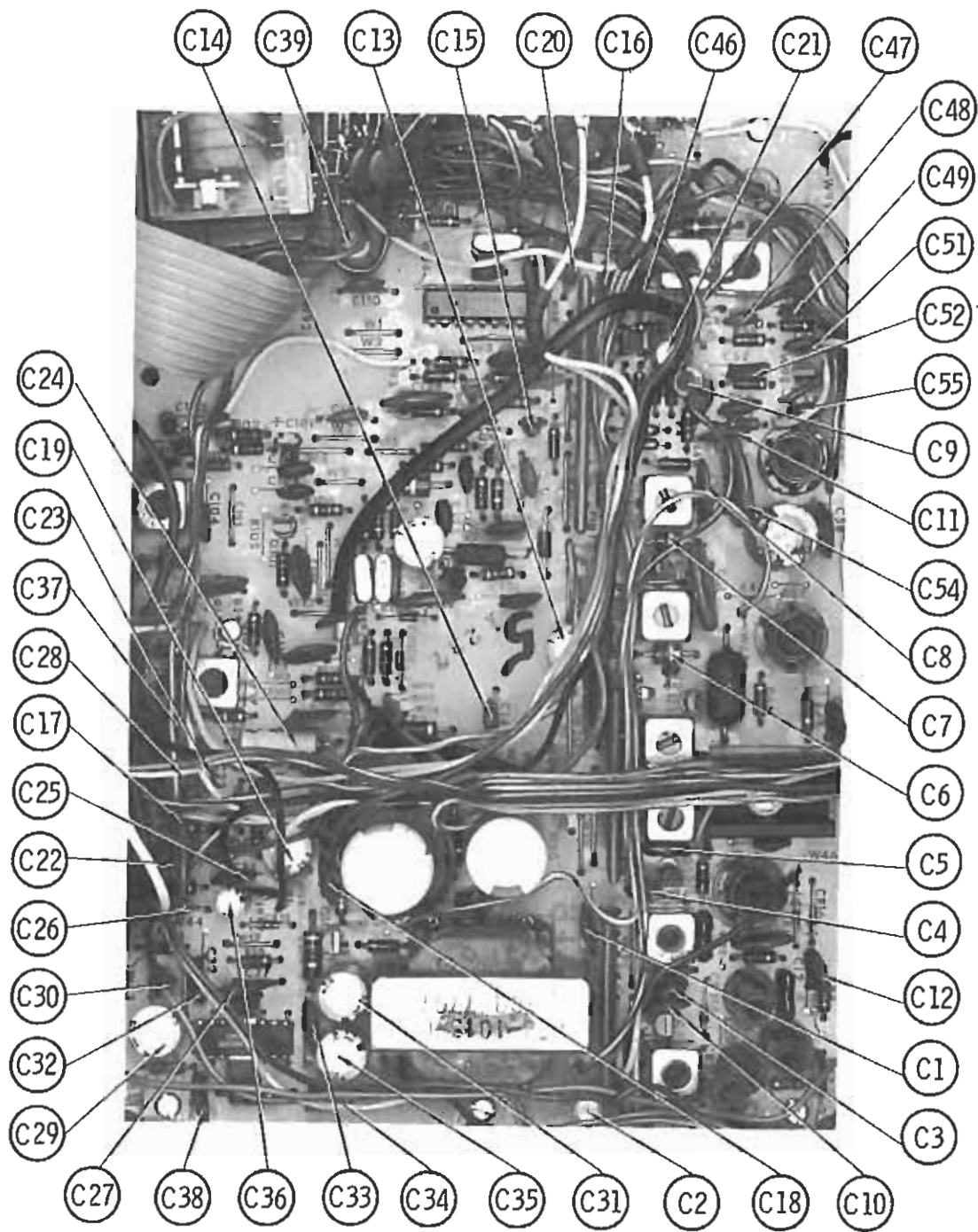


MAIN BOARD

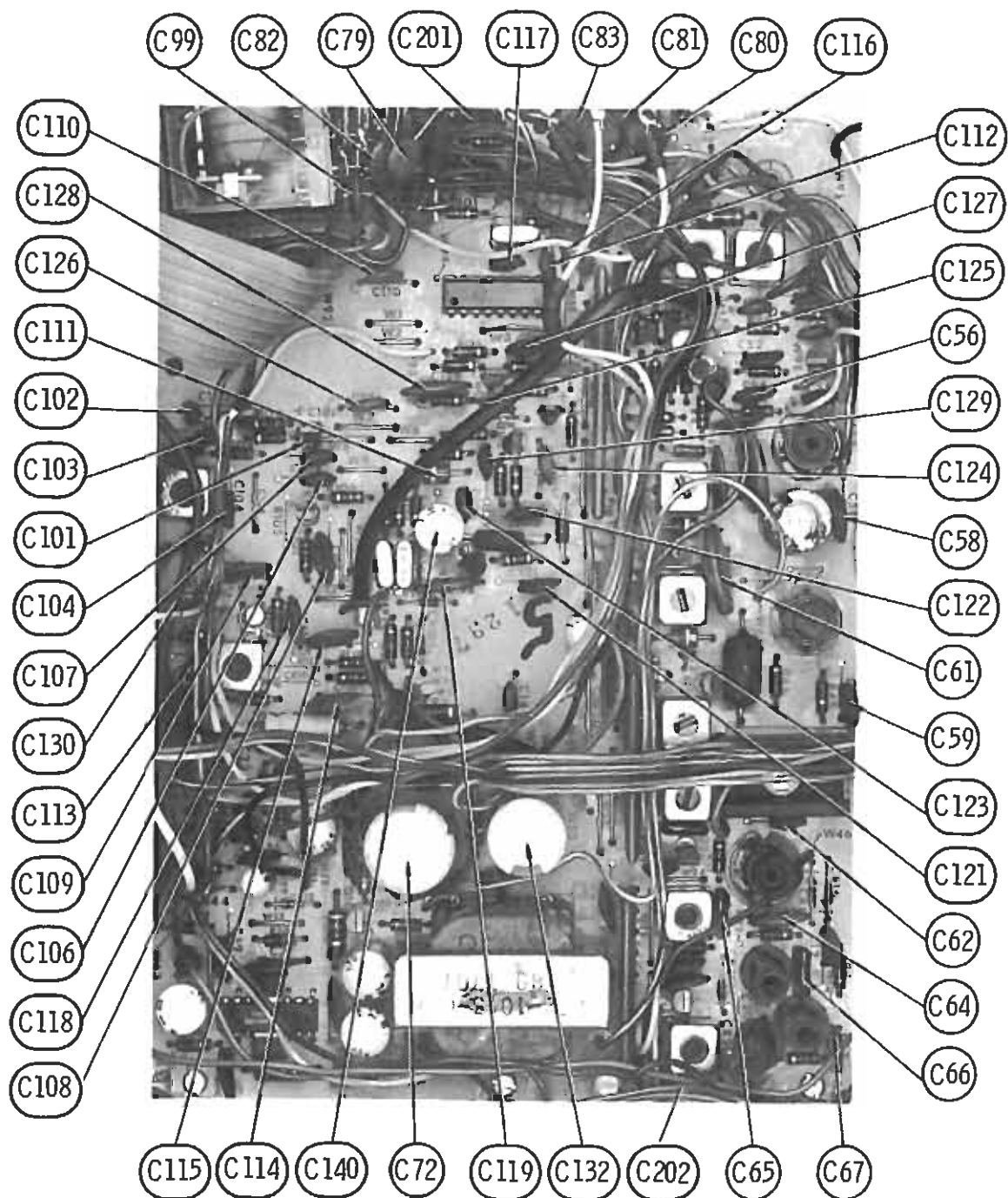


JOHNSON MODEL MESSENGER 4250

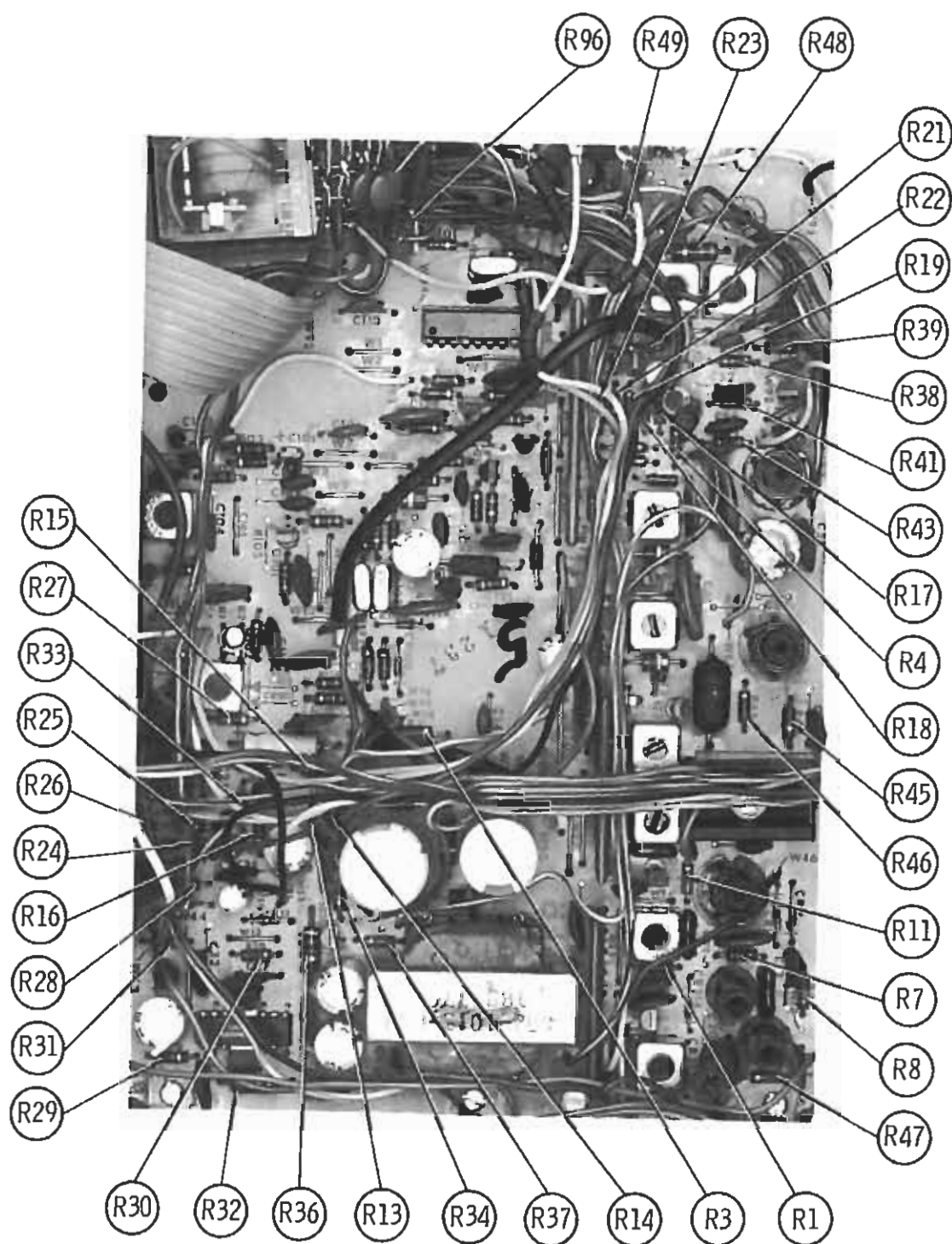
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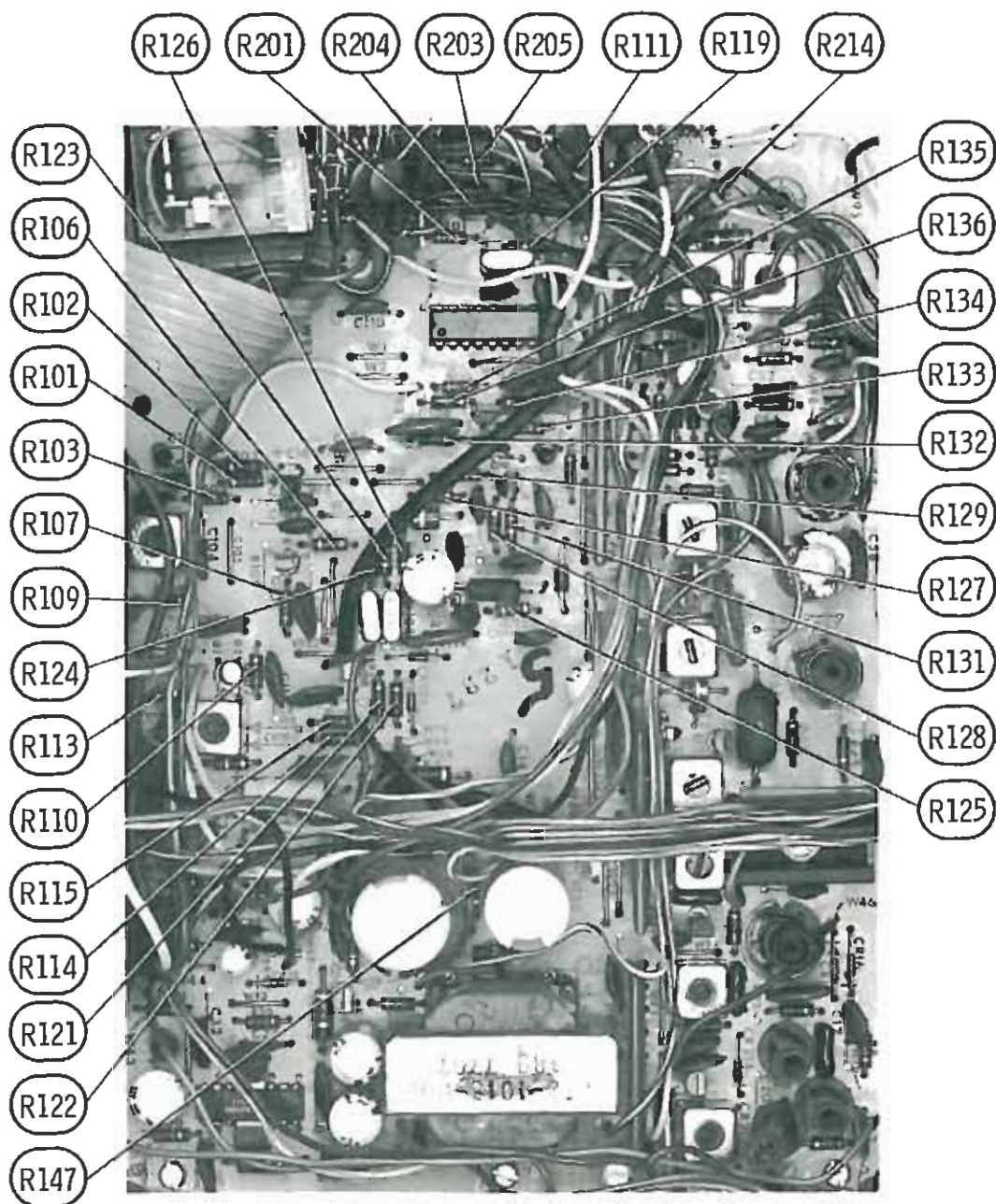
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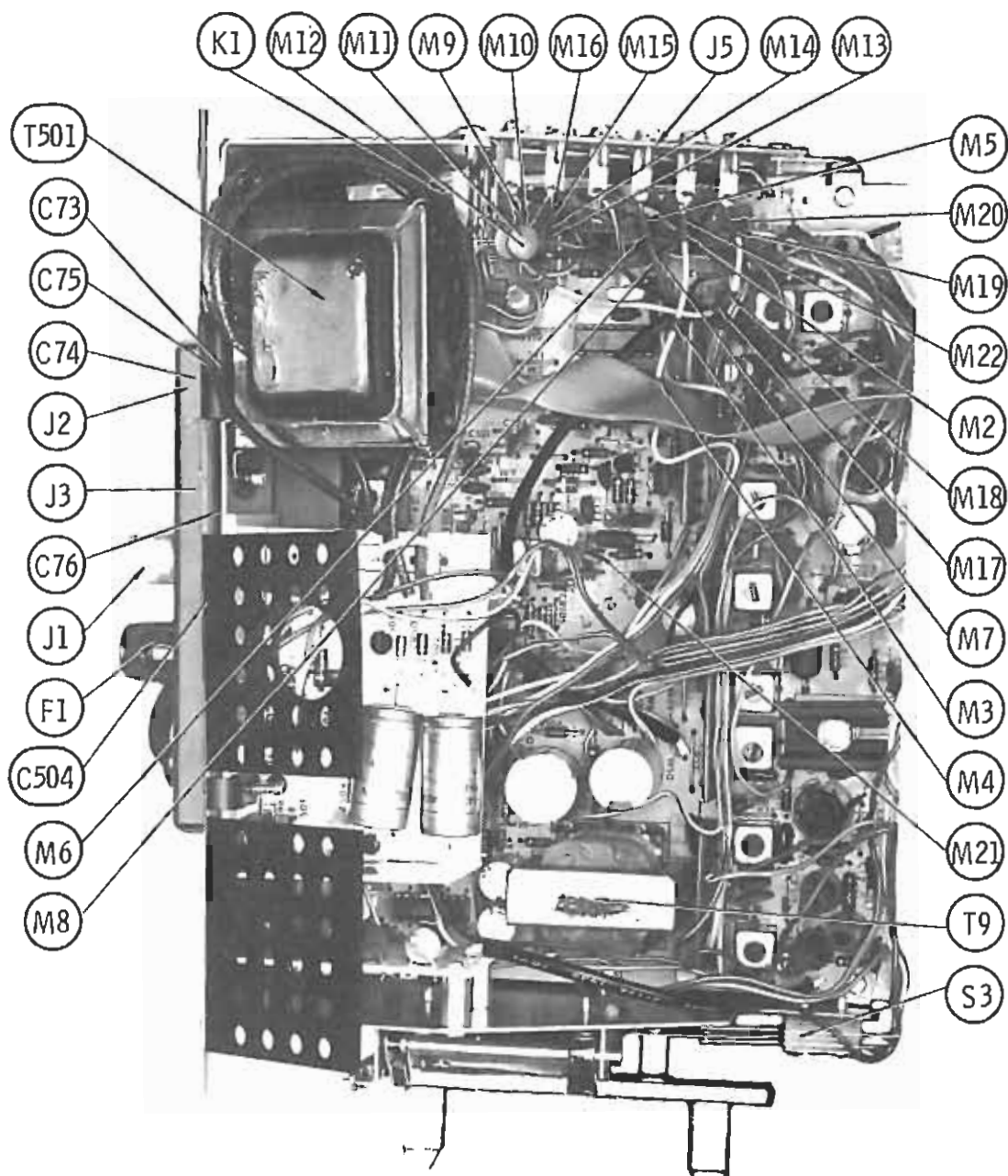
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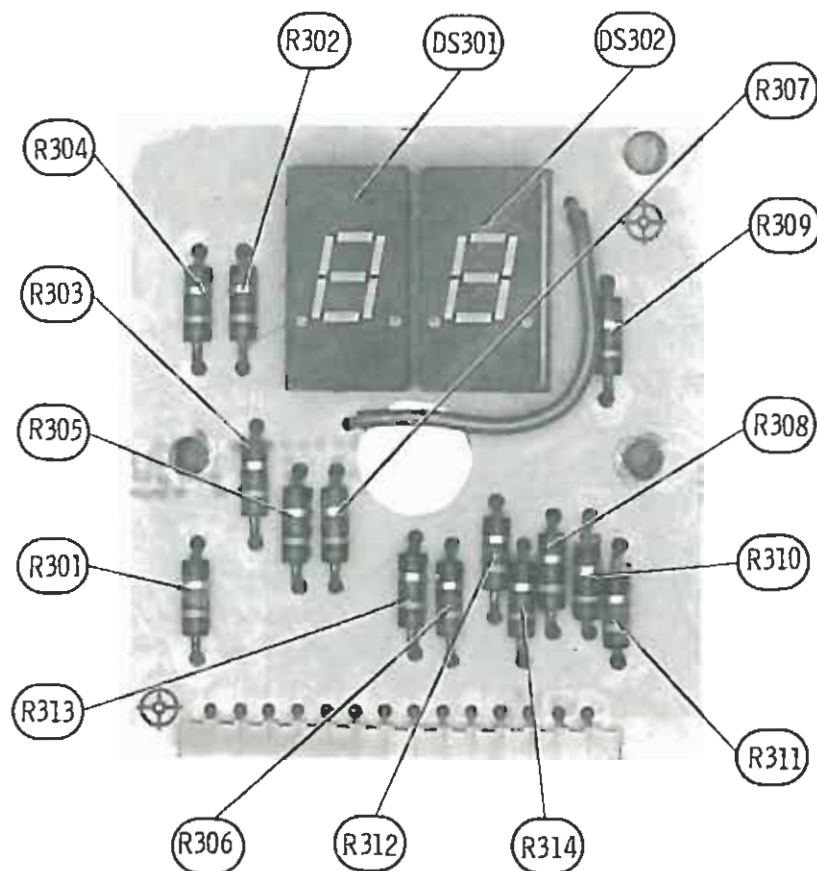
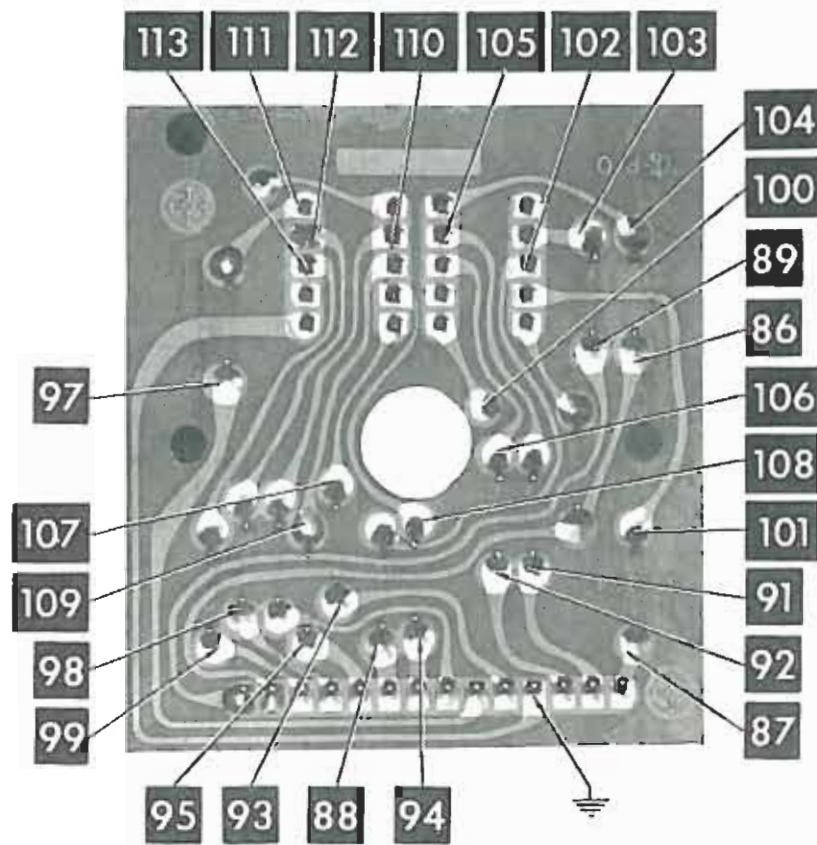
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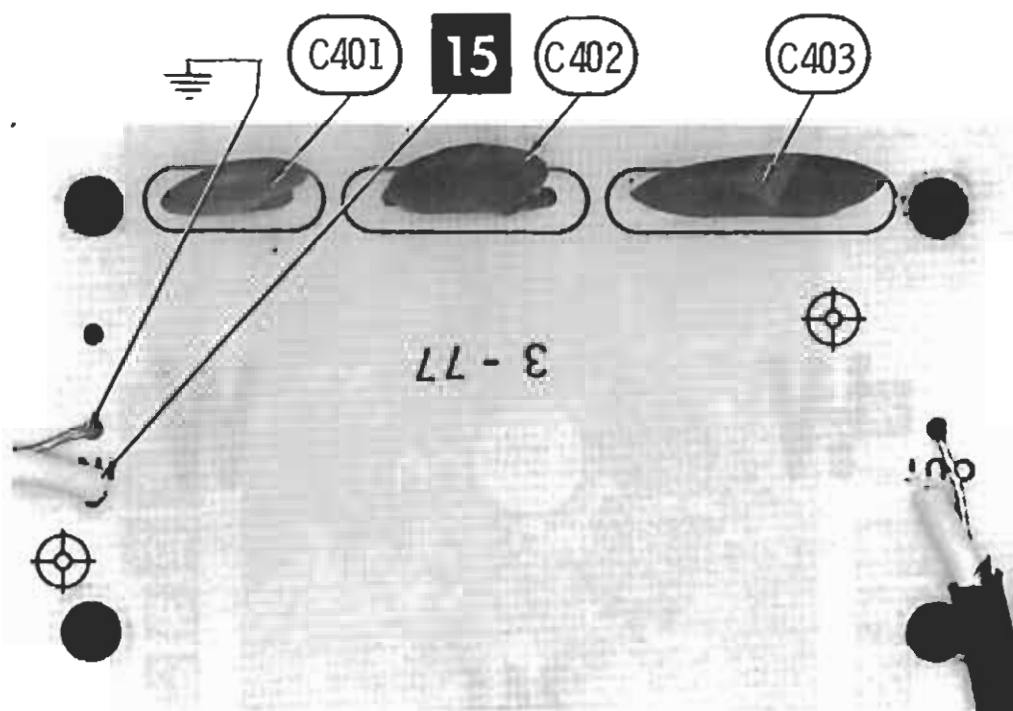
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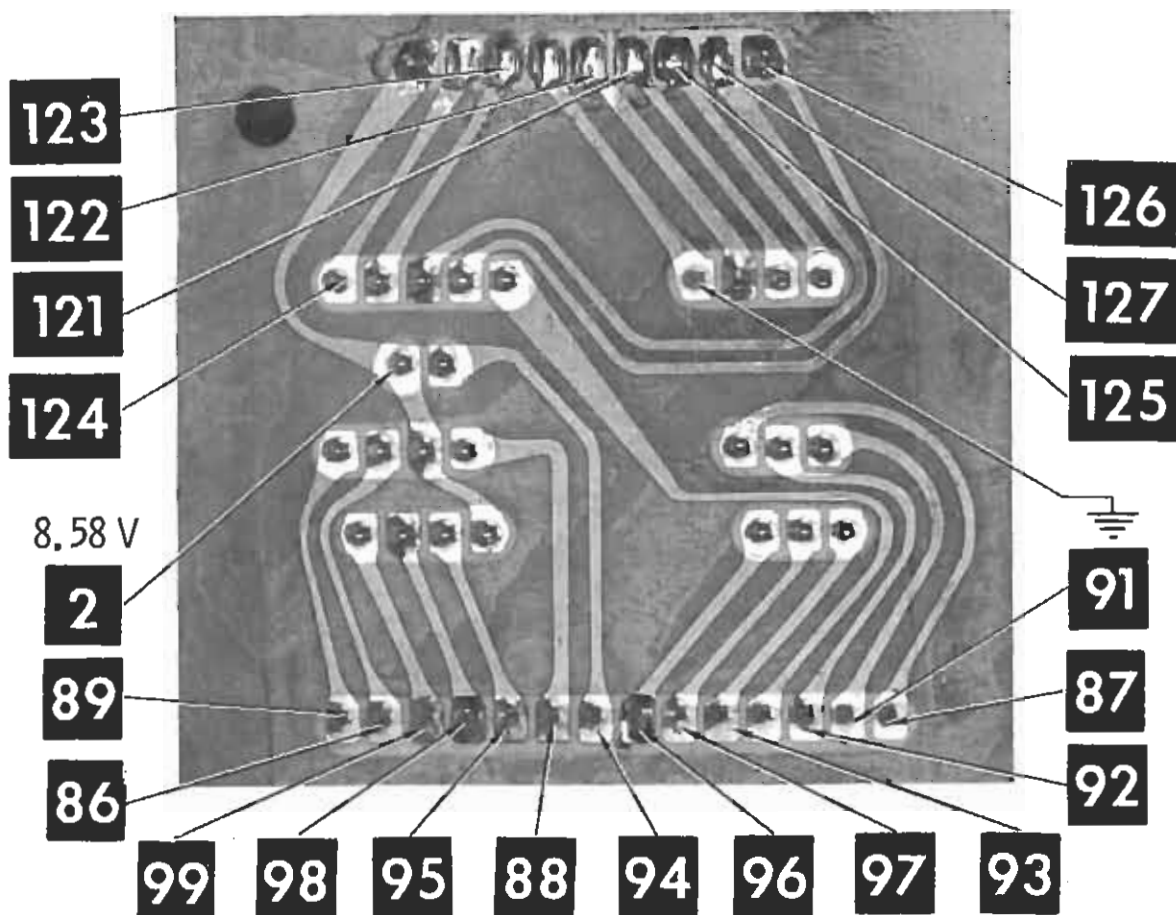
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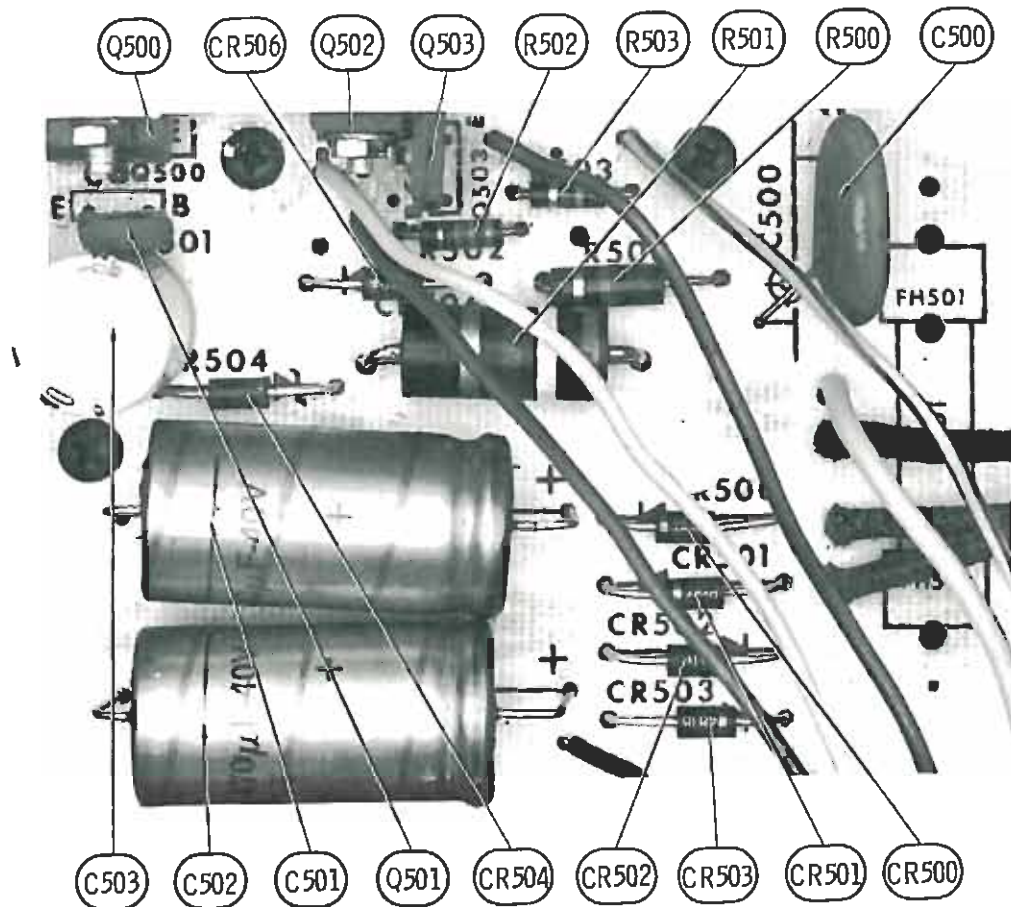
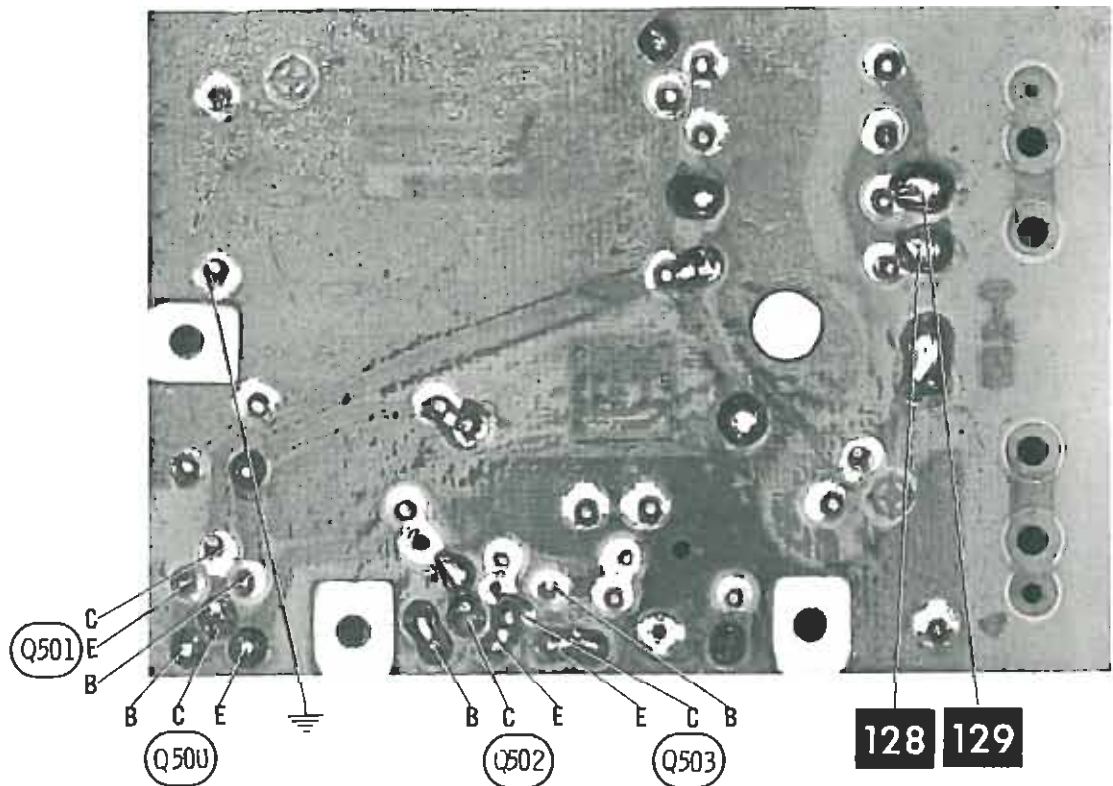
LED READOUT BOARD



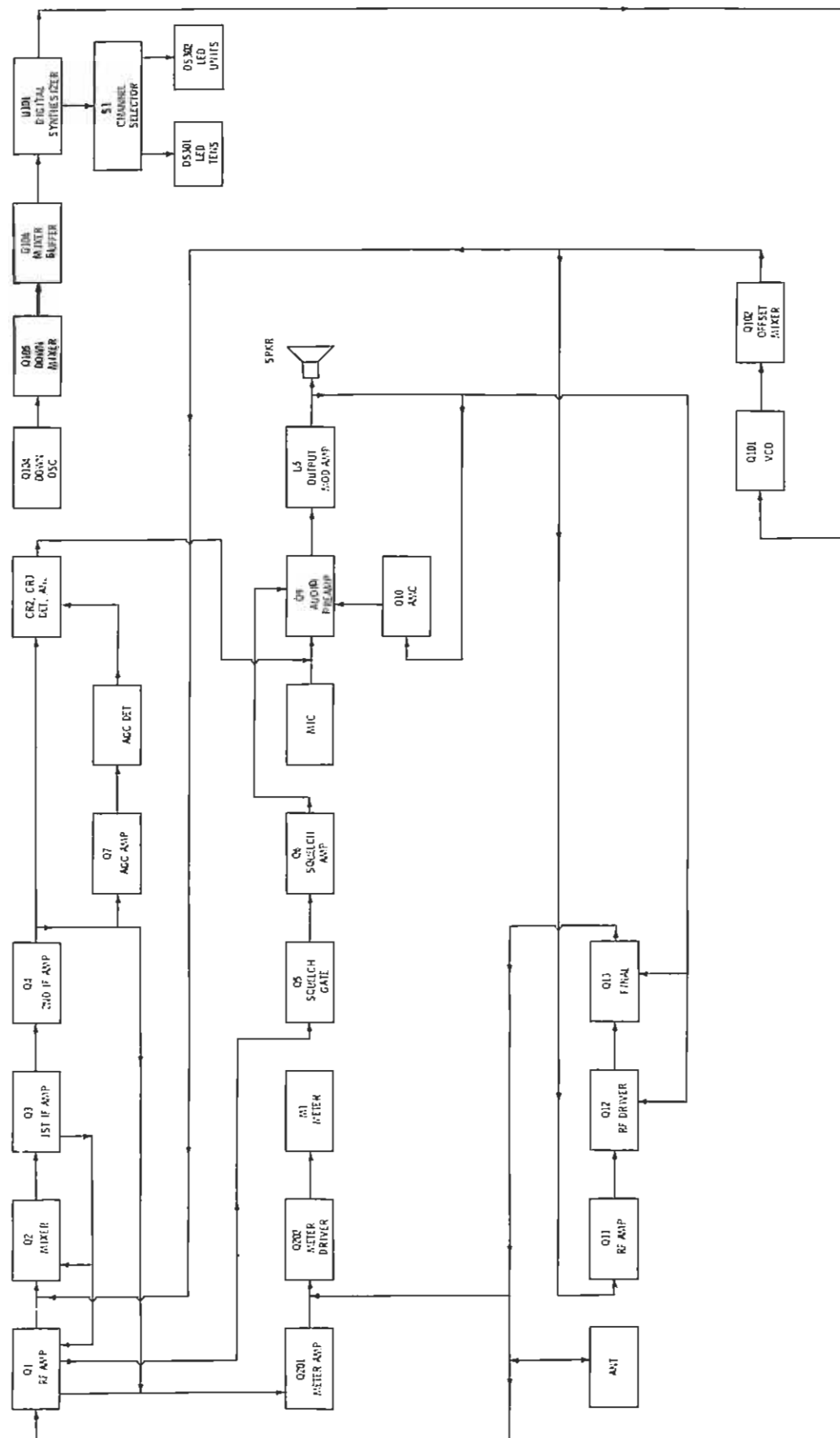
ANT. BOARD



CH. SELECTOR BOARD



AC POWER SUPPLY BOARD



PARTS LIST AND DESCRIPTION

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

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.
CR1			1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-130
CR2	1N67A	523-1500-067	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR3	1N645(12)	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
	1N881	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR4			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR5			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR6			1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR7			GE2D-9.1	ZB9.1D		RE 114		RT-240	ECG139A	1N4739A	WEPI109	103-272
CR8	1N645(12)	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
	1N881	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR9	1N645(12)	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
	1N881	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR10	1N67A	523-1500-067	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR11			GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR12			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR15A			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR15D			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR16			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR25			GE2D-13	ZB13B		RE 119	SK3093	RT-244	ECG143A	1N4743A	WEPI150	ZEN-506
CR26			GE2D-13	ZB13B		RE 119	SK3093	RT-244	ECG143A	1N4743A	WEPI150	ZEN-506
CR101	MY2209		GE-90		HEPR2503			RT-262	ECG614		WEPI200	ZEN-453
CR102	1N645(12)	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
	1N881	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR103	1N645(12)	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
	1N881	523-1500-081	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEPI56	212-76
CR104	1N67A	523-1500-067	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR105	1N67A	523-1500-067	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR213			GE2D-10	ZB10B		RE 115	SK3061	RT-241	ECG140A	1N4740A	WEPI110	
CR214			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR215			GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-210	ECG177		WEPI062	
CR500	1N4818	523-0013-201	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEPI34	ZEN-430
CR501	1N4818	523-0013-201	GE-510	PTC205	HEPR0170	RE 51	SK3081	RT-201	ECG125		WEPI70	
CR502	1N4818	523-0013-201	GE-510	PTC205	HEPR0170	RE 51	SK3081	RT-201	ECG125		WEPI70	
CR503	1N4818	523-0013-201	GE-510	PTC205	HEPR0170	RE 51	SK3081	RT-201	ECG125		WEPI70	
CR504		523-20013-150	GE2D-15	ZB15A	HEPR0418	RE 121	SK3063	RT-245	ECG145	1N4744A	WEPI114	ZEN-500
CR505	1N4818	523-0013-201	GE-510	PTC205	HEPR0170	RE 51	SK3081	RT-201	ECG125		WEPI70	
Q1	3011	576-0003-018	GE-85	PTC123	HEPS0016	RE 9	SK3452	RT-107A	ECG108		WEPI56	ZEN-104
Q2	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3018	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q3	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q4	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q5	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q6	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q7	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q8	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q9	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q10	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q11	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3010	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q12	4004		GE-219	PTC158	HEPS3004	RE 79A	SK3048	RT-182	ECG329		WEPI75	
Q13	4013	576-0004-013	GE-82	PTC103	HEPS0019	RE 26	SK3138	RT-115	ECG159		WEPI62	
Q101	6013	576-0005-013	GE-FET-2	PTC161	HEPF0021	RE 45	SK3448	RT-175	ECG312		WEPI905	
Q102	WEF130-1-172	576-0006-223	GE-FET-4	PTC182	HEPF2007	RE 199	SK3065	RT-181	ECG222		WEPI905	
Q104	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3018	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q105	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3018	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q106	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3018	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q201	3011	576-0003-011	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3018	RT-102	ECG123A*	25C372*	WEPI36	ZEN-120
Q202	2027	576-0002-027	GE-220*	PTC123*	HEPS0015*	RE 13*	SK3124	RT-102	ECG123A*	25C372*	WEPI634	ZEN-120
Q503	25C2029		GE-333	PTC186		RE 203	SK3197	RT-146	ECG235		WEPI785	
Q501	20294		GE-66	PTC169		RE 21	SK3041	RT-154	ECG241		WEPI745	
Q502	20295							RT-154	ECG241		WEPI745	
Q503	20294							RT-154	ECG241		WEPI880	ZEN-209
US	TBA310DS	544-2006-001							ECG1115A			
U101	SC42502P	544-3001-201										

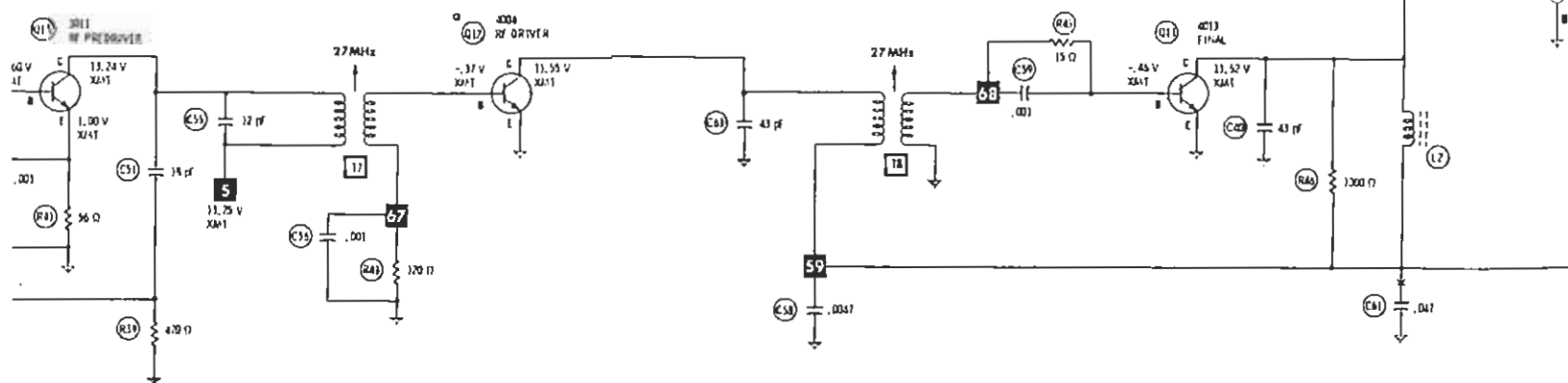
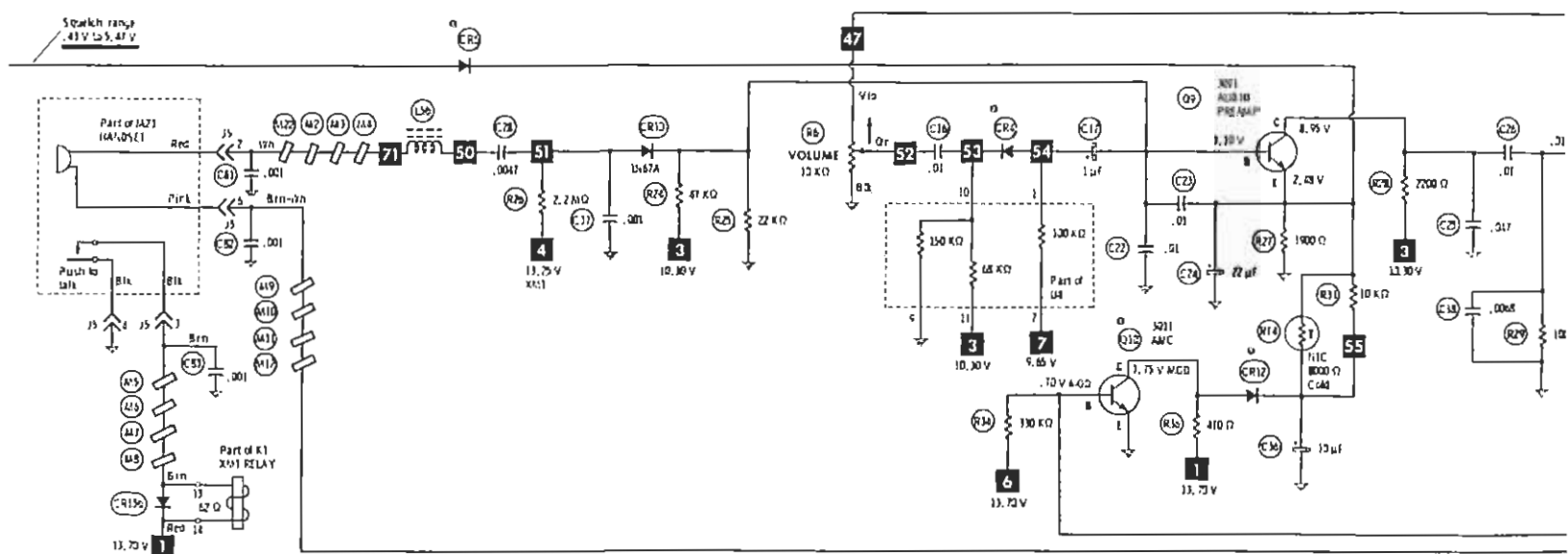
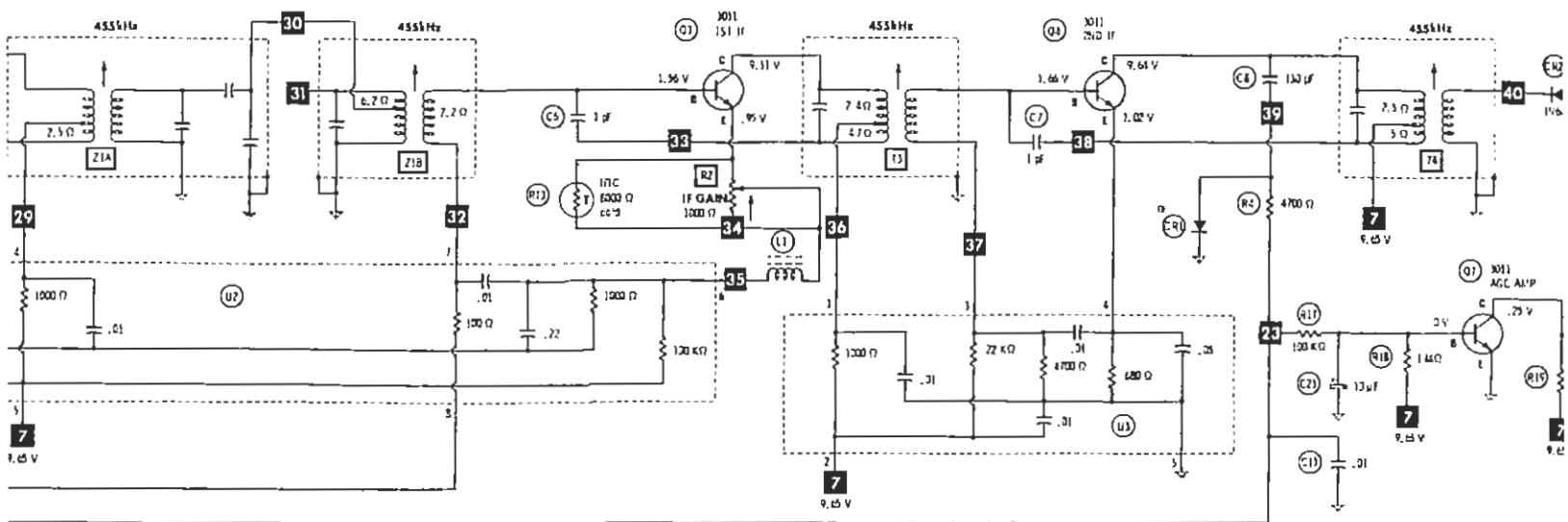
* Load configuration may vary from original.

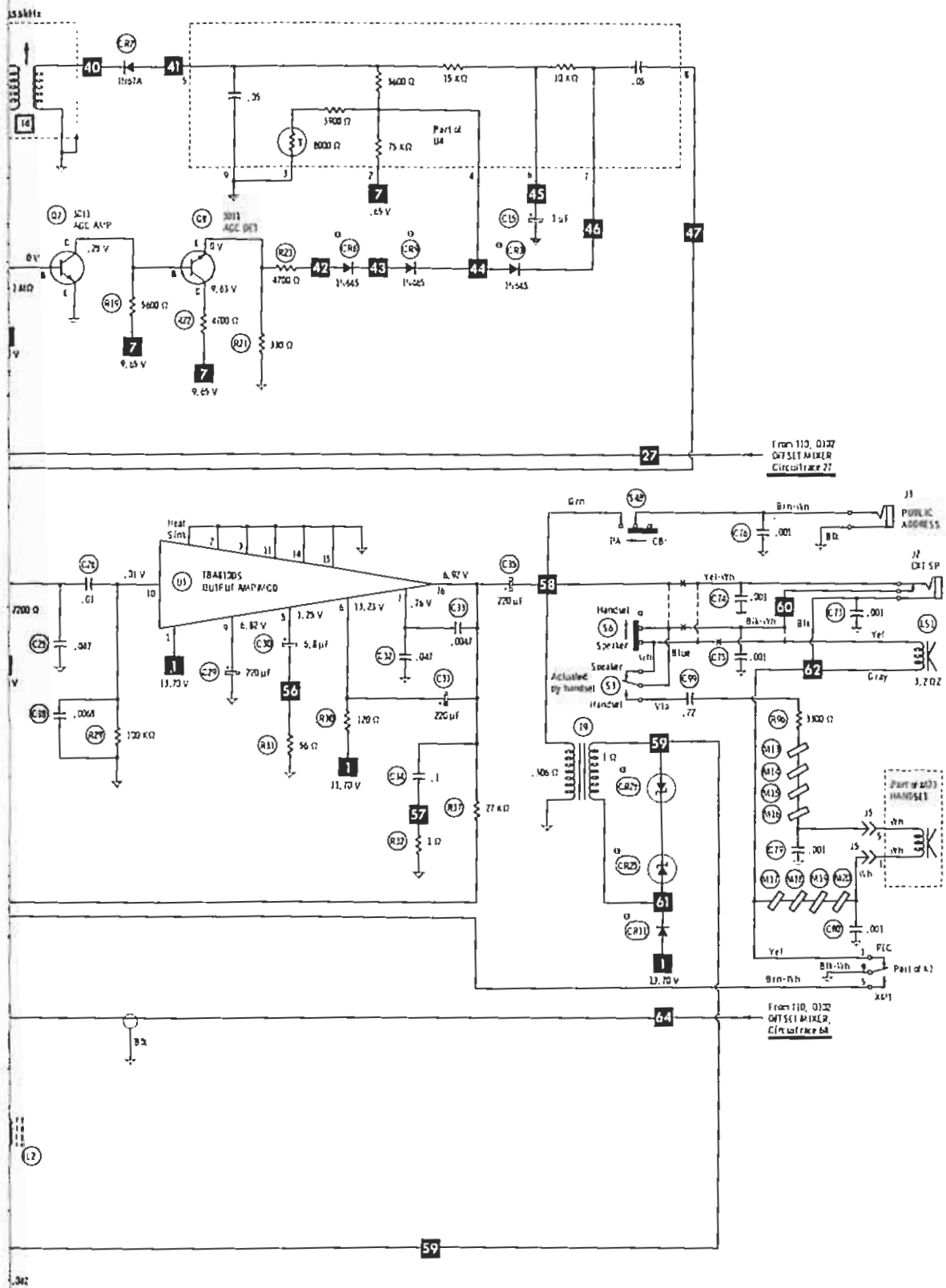
ELECTROLYTIC CAPACITORS

		REPLACEMENT DATA				
ITEM No.	RATING	MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C2	10 25V	510-4125-100	PC10-25	VTT10825	QV1-43	EV-1322
C9	10 25V	510-4125-100	PC10-25	VTT10825	QV1-43	EV-1322
C13	47 25V	510-4125-470	PC50-25	VTT47E25	QV1-75	EV-1326
C15	1 35V	510-2045-109		TDC105H035EL		S035-19
C17	1 35V	510-2045-109		TDC105H035EL		S035-19
C19	47 25V	510-4125-470	PC50-25	VTT47E25	QV1-75	EV-1326
C21	10 25V	510-4125-100	PC10-25	VTT10825	QV1-43	EV-1322
C24	22 25V	510-4095-009	WR25-25	TC26C	QV1-293	TVA-1205
C29	220 16V	510-4116-221	PC250-25	VTT220H16	QV1-117	EV-1240
C30	6.8 35V	510-2045-609		TDC68H035FL		S035-6889
C31	220 16V	510-4116-221	PC250-25	VTT220H16	QV1-117	EV-1240
C35	220 16V	510-4116-221	PC250-25	VTT220H16	QV1-117	EV-1240
C36	10 25V	510-4125-100	PC10-25	VTT10825	QV1-43	EV-1322
C39	10 25V	510-4125-100	PC10-25	VTT10825	QV1-43	EV-1322
C72	2200 16V	510-4116-222	WR2000-16*	TC1520C*	QV1-643*	TVA-1175.3*
C101	1 35V	510-2045-109		TDC105H035EL		S035-19
C102	.56 35V	510-2045-568		TDC68H050EL		S050-8689
C132	1000 16V	510-4116-102	PC1000-16	VTT1000H16	QV1-183	EV-1260
C140	220 16V	510-4116-221	PC250-25	VTT220H16	QV1-117	EV-1240
C501	470 40V	510-4C09-001	WR500-50	TC500S0C	QV1-553	TVA-1315
C502	470 40V	510-4C09-001	WR500-50	TC500S0C	QV1-553	TVA-1315
C503	220 25V		PC250-25	VTT220K25	QV1-119	EV-1340

* Axial replacement for radial device.

JOHNSON MODEL MESSENGER 4250





JOHNSON MODEL MESSENGER 4250



05.001
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PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA					
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
						Q-LINE	GENERAL LINE	
C1	.0047	510-3216-270	DD-472	GP4700	GP247	QW1-42	5GA-D47	
C3	27 H150		DTZ-4R7	HPD4P7 C015FD471J03	* CN0547		10TCP-Q27	
C4	5.1 HPD				SX347		10TCC-V47	
C5	470				CN0510		MAA-471	
C6	1				CN0510		10TCC-V10	
C7	1				CN0312		10TCC-V10	
C8	130 HPD				CN0312		10TCC-T12	
C10	.01		DTZ-120		MGP01	TA110	QC2-141	TG-S10
C11	.01		DC-103	TA110		QC2-141	TG-S10	
C12	.001		DD-102G	GP210		QC2-01	5GA-D10	
C14	.01		DC-103	TA110		QC2-141	TG-S10	
C16	.01		DC-103	TA110		QC2-141	TG-S10	
C18	.01		DC-103	TA110		QC2-141	TG-S10	
C20	.01		DC-103	TA110		QC2-141	TG-S10	
C22	.01		DC-103	TA110		QC2-141	TG-S10	
C23	.01		DC-103	TA110		QC2-141	TG-S10	
C25	.047		DC-503	MGP05		TA150	QC2-207	TG-S50
C26	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C27	1		DC-104	MGP1	TA010	QC2-233	TG-P10	
C28	.0047		DD-472	GP4700	GP247	QC2-207	5GA-D47	
C32	.047		CC-503	MGP05	TA150		TG-S50	
C33	.0047		DD-472	GP4700	GP247	5GA-D47		
C34	1		DC-104	MGP1	TA010	QC2-233	TG-P10	
C37	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10	
C38	.0068		DD-682	GP6800	GP268		5GA-D68	
C40	43 H150	510-3216-430				10TCP-Q47		
C46	33 H150	510-3216-330				10TCP-Q33		
C47	.75				CN0510	10TCC-V10		
C48	33 H750		DTN-33	H33	CN7433	10TCU-Q33		
C49	.001		DC-102G	GP1000	GP210	5GA-D10		
C51	18 H150	510-3216-180				10TCP-Q10		
C52	.001		DD-102G	GP1000	GP210	QC2-01		
C54	.047		DC-503	MGP05	TA150	QC2-207		
C55	12 H150	510-3216-120						
C56	.001		DD-102G	GP1000	GP210	QC2-01		
C58	.0047		DD-472	GP4700	GP247	5GA-D47		
C59	.001		DD-102G	GP1000	GP210	5GA-D10		
C60	150 H150	510-3216-151				QC2-81		
C61	.047		DC-503	MGP05	TA150	10TCP-T15		
C62	27 H150	510-3216-270				TG-S50		
C63	43 H150	510-3216-430				10TCP-Q27		
C64	82 H150	510-3216-820				10TCP-Q47		
C65	300					10TCP-Q82		
C66	330			C015FD301J03	SX330	QW1-38		
C67	68 H750			C015FD301J03	SX330	QW1-38		
C70	.01		DTN-68	H68	CN7468			
C73	.001		DC-103	MGP01	TA110	QC2-141		
C74	.001		DD-102G	GP1000	GP210	QC2-01		
C75	.001		CC-102G	GP1000	GP210	QC2-01		
C76	.001		DD-102G	GP1000	GP210	QC2-01		
C77	.001		DD-102G	GP1000	GP210	QC2-01		
C78	.001		DD-102G	GP1000	GP210	QC2-01		
C79	.001		DD-102G	GP1000	GP210	QC2-01		
C80	.001		DD-102G	GP1000	GP210	QC2-01		
C81	.001		DD-102G	GP1000	GP210	QC2-01		
C82	.001		DD-102G	GP1000	GP210	QC2-01		
C83	.001		DD-102G	GP1000	GP210	QC2-01		
C85	33 H150	510-3216-330				QC2-81		
C89	.22		UK25-204		MAG25022	10TCP-Q33		
C103	18 H750		DTN-20	H20	CN7420	HY-770		
C104	56 H750		DTN-60	H68	CN7468	10TCU-Q20		
C106	27 H750				CN7427	10TCU-Q68		
C107	10 H750				CN7420	10TCU-Q27		
C108	.0047		DTN-20	H20	CN7420	10TCU-Q20		
C109	.0047		DD-472	GP4700	GP247	5GA-D47		
C110	.01		DD-472	GP4700	GP247	5GA-D47		
C111	1.5		CC-103	MGP01	TA110	5GA-D10		
C112	15 HPD		DTZ-1R5	HPD1P5	CN0515	10TCC-V15		
C113	.01		DTZ-15	HPD15	CN0415	10TCC-Q15		
C114	.0047		DC-103	MGP01	TA110	TG-S10		
C115	.0047		DD-472	GP4700	GP247	5GA-D47		
C116	39 HPD		DD-472	GP4700	GP247	5GA-D47		
C117	18 H750				CN0439	10TCC-Q39		
C118	.0047		DTN-20	H20	CN7420	10TCU-Q20		
C119	100 H150	510-3216-101	DD-472	GP4700	GP247	5GA-D47		
C120	.01					10TCP-T10		
C121	33 H150	510-3216-330	DC-103	MGP01	TA110	TG-S10		
C122	33 H150	510-3216-330			*	10TCP-Q33		
C123	5.1 HPD		DTZ-4R7	HPD4P7	CN0547	10TCP-Q33		
C124	.01		DC-103	MGP01	TA110	10TCC-V47		
C125	.01		DC-103	MGP01	TA110	TG-S10		
C126	.01		DC-103	MGP01	TA110	TG-S10		
C127	.01		DC-103	MGP01	TA110	TG-S10		
C128	100 H150	510-3216-101			*	10TCP-T10		
C129	470		DC-471	GP470	GP347	10TS-T47		
C130	39 HPD				CN0439	10TCC-Q39		
C141	.001		DD-102G	GP1000	GP210	5GA-D10		
C142	.001		DD-102G	GP1000	GP210	5GA-D10		
C201	.01		DC-103	MGP01	TA110	QC2-81		
C202	.01		DC-103	MGP01	TA110	QC2-141		
C203	1.8 HPD		DTZ-1R5	HPD1P5	CN0515	QC2-141		
C401	27 HPD				CN0427	TG-S10		
C402	47 HPD		DTZ-47	HPD47	CN0447	10TCP-T10		
C403	82 HPD		DTZ-82	HPD82	CN0482	10TCC-Q27		
C500	.0047		DD-472	GP4700	GP247	10TCC-Q47		
C504	.001		DD-102G	GP1000	GP210	10TCC-Q82		
						5GA-D47		
						5GA-D10		

*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.	MALLORY PART No.	TRW PART No.
R2	IF Gain	100K	562-0019-102	T-10C0	HTC13L1	X201R102B
R6	Volume/Power Switch	10K	562-0002-021			
R12	Squelch/Disarm Switch	10K	562-0002-041			
R202	S Meter	50K	562-0004-503	T-50K	HTC54L1	X201R503B

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.
RT2	8000 HTC Cold		569-3001-001	RT4	8000 HTC Cold		569-3001-001
RT3	8000 HTC Cold		569-3001-001				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	RF Choke (5.BuH)	542-3504-689			(1) Includes Z1A & Z1B
L2	RF Choke (13uH)	542-3001-001		4624	
L3	Final (27MHz)	542-1005-010		7515-E	
L4	PI Filter (27MHz)	542-1015-002			
L5A	TVI Trap (81MHz)	542-1015-002			
L5D	RF Choke (20uH)	542-3502-002			
L7	TVI Trap (54MHz)	542-1015-002			
L103	RF Choke (6.BuH)	542-3504-609			
T1	Rec Antenna (27MHz)	592-5015-001		CD5731	
T2	Rec RF (27MHz)	592-5015-002		CD5739-T	
T3	IF (455kHz)	592-5015-024			
T4	IF (455kHz)	592-5015-024			
T5	XMT Mixer (27MHz)	592-5015-005			
T6	XMT Mixer (27MHz)	592-5015-005			
T7	XMT Pre Driver (27MHz)	592-5014-001		CD5107-T	
T8	XMT Driver (27MHz)	592-5014-001		CD909	
T10	Offset Mix (27MHz)	592-5015-005		CD5107-T	
T101	VCO (22MHz)	592-5015-005		CD5107-T	
Z1A	IF (455kHz)	532-1004-001 (1)		CD5603-ATCC	
Z1B	IF (455kHz)			CD5505-4TC	

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.	
L6	1.350-A	.299	.49uH	542-5007-021			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T9	4	1		592-1013-008	MCR-31		

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T501	120V AC @ 500mA AC	21.6V AC @ 2.43A AC	592-3001-C01			

SPEAKER

ITEM No.	TYPE		REPLACEMENT DATA		NOTES
			MFGR. PART No.	QUAM PART No.	
LS1	3 3/8" FH	3.2 Ohms	589-1013-001	3A05	

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	0.5 Amp AGC	534-0603-017	534-1002-001	AG1/2	HKP	312-500	342031AL	FG1/2-2

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	023-3267-002										

Set is base only and has hand set.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
DS1	Lamp		XMT (10.90V @ 64mA)
DS2	Lamp		Rec (10.86V @ 65mA)
DS301	LED		Channel Display Tens (TIL313P)
DS302	LED		Channel Display Units (TIL313P)
J1	Jack	142-0101-002	Antenna
J2	Jack	515-2C01-011	External Speaker
J3	Jack	515-2C01-011	PA
J5	Jack	586-1037-006	Hand Set
K1	Relay	567-0020-001	XMT
M1	Meter	554-0017-001	Signal/Output
M2 thru M22	Ferrite Bead	517-2032-002	
S1	Switch		Channel Selector
S2	Switch		Power (Part of Volume Control)
S3	Switch	583-1002-001	Speaker/Hand Set
S4	Switch	583-3004-003	CB/PA
S5	Switch		Bright/Dim (Part of Squelch Control)
S6	Switch	583-3004-003	Hand Set/Speaker
U1	Component Combination	544-0002-040	Rec RF
U2	Component Combination	544-0002-044	Rec Mixer/IF
U3	Component Combination	544-0002-042	Rec IF
U4	Component Combination	544-0002-043	Det./AHL/Audio
Y101	Crystal	519-0008-002	5.120MHz
Y102	Crystal	519-0005-202	30.820MHz
Y103	Crystal	519-0005-203	31.275MHz
	Printed Circuit Board	035-0341-001	Main
	Printed Circuit Board	035-0341-031	Power Supply
	Printed Circuit Board	035-0343-001	Harmonic Filter
	Power Cord	597-1001-002	

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

ITEM	PART No.	ITEM	PART No.
Cabinet	032-0386-002	Knob, Channel	032-0470-007
Cradle, Handset	537-9026-001	Knob, Control	032-0470-001

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. 9497 (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')