

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.



MIDLAND MODEL 13-863B

MODEL 13-863B

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

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7CY538

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:
L12 thru L16 5009
L1 thru L6, L10, L11 9440
L7, L8, L9 9304

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of RF VTVM to TP1.	Ch. 13	L1	Turn L1 core fully counter-clockwise. Turn core clockwise until a sharp jump in RF voltage. Then turn core 1/2 turn clockwise.
Input of frequency counter to TP1.	Ch. 13 Ch. 17 Ch. 21 Ch. 1 Ch. 5 Ch. 9		Check for 23.440MHz $\pm 300\text{Hz}$. Check for 23.490MHz $\pm 300\text{Hz}$. Check for 23.540MHz $\pm 300\text{Hz}$. Check for 23.290MHz $\pm 300\text{Hz}$. Check for 23.340MHz $\pm 300\text{Hz}$. Check for 23.390MHz $\pm 300\text{Hz}$.
Input of frequency counter to TP2.	Ch. 13 Ch. 14 Ch. 15 Ch. 16		Check for 14.950MHz $\pm 300\text{Hz}$. Check for 14.960MHz $\pm 300\text{Hz}$. Check for 14.970MHz $\pm 300\text{Hz}$. Check for 14.990MHz $\pm 300\text{Hz}$.
Input of RF VTVM to TP3.	Ch. 13	L2,L3	Adjust for maximum.
Input of frequency counter to TP4.	Ch. 13		Check for 11.730MHz.
Input of frequency counter to TP5.	Ch. 13		Check for 11.275MHz.

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	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP6. 455kHz, 1000Hz @ 30% modulation.	Ch. 13	L16,L15,L14	Adjust for maximum.
Output of signal generator thru .01uF to TP7. 11.275MHz, 1000Hz @ 30% modulation.	Ch. 13	L13,L12	Adjust for maximum.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation.	Ch. 13	L11,L10	Adjust for maximum. Repeat above steps, if necessary.

RECEIVER ADJUSTMENTS

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 500uV.	Ch. 13	RV1 (Main Board)	SQUELCH RANGE Set squelch control VR2 fully clockwise. Adjust RV1 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 13	RV3 (Main Board)	S METER Adjust for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

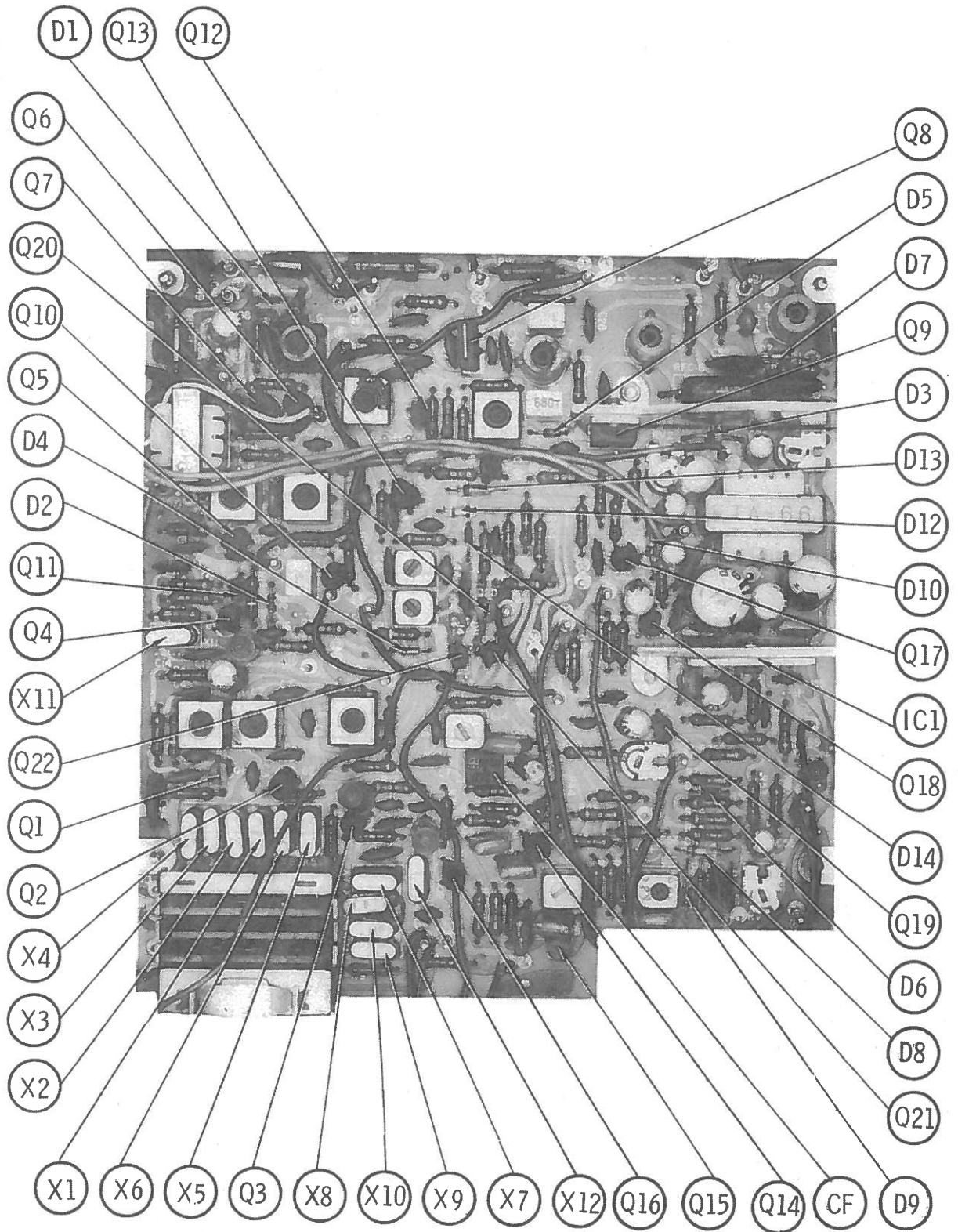
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
	Ch. 13	L4, L5, L6, L7, L8, L9	Adjust for maximum.
	Ch. 13	L9	Adjust for 4 watts maximum.

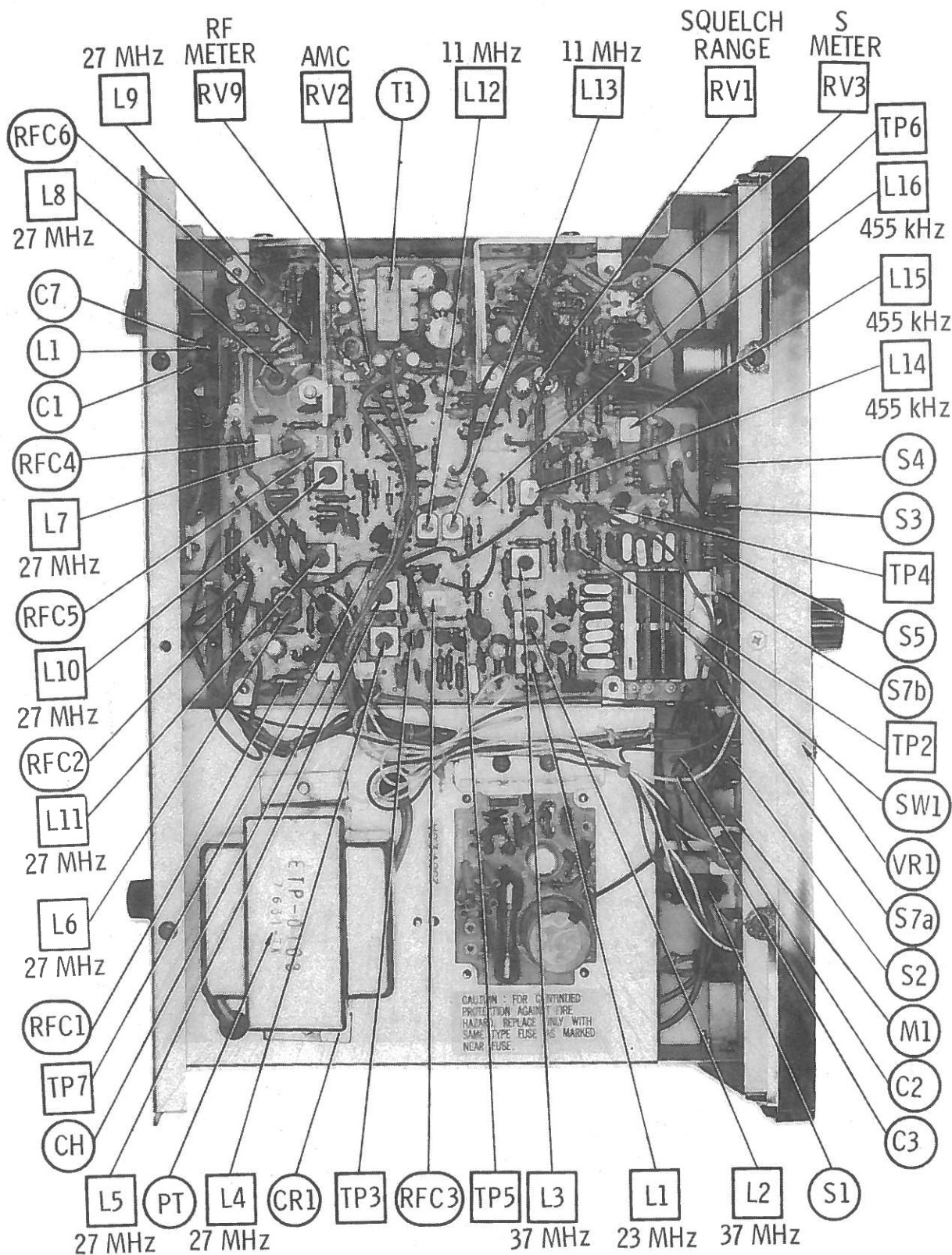
TRANSMITTER ADJUSTMENTS

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 adjustments of transmitter.
See page 4 for channel frequencies.

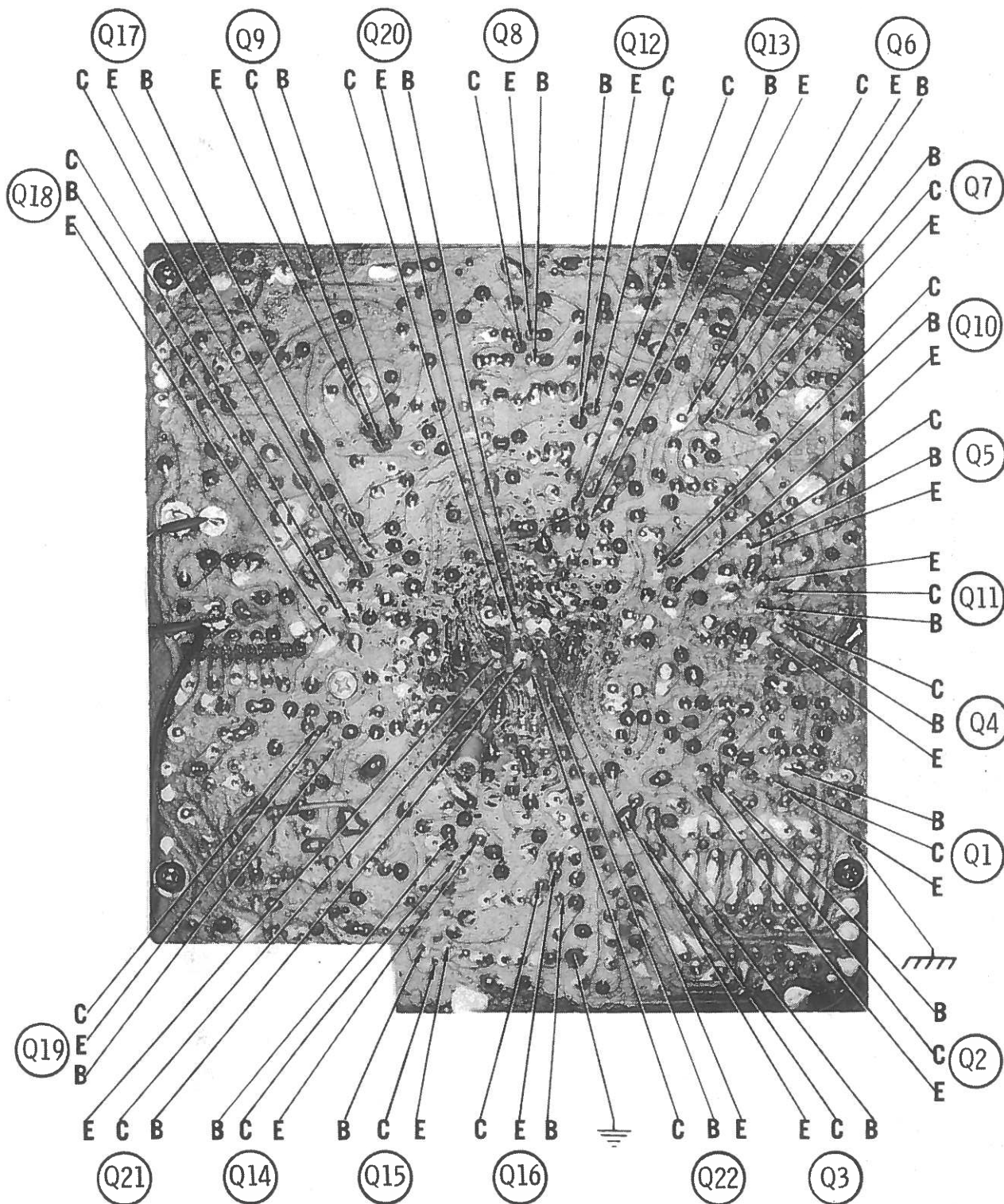
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of DC meter to TP8.	Ch. 13	RV1 (Power Supply Board)	VOLT REGULATOR Adjust RV1 for 13.8V DC. Voltage should not vary when keying transmitter.
Modulation meter to antenna jack. Inject a 1000Hz signal at mic input.	Ch. 13	RV2 (Main Board)	AMC Disconnect C84 to disable AMC. Adjust signal for overmodulation. Restore AMC operation. Adjust RV2 for 100% modulation maximum.
	Ch. 13	RV4 (Main Board)	RF PANEL METER Adjust RV4 so that panel RF meter agrees with RF wattmeter.
Connect a 250-ohm non-inductive resistor to antenna jack.	Ch. 13	RV1 (Antenna Warning Board)	ANT WARNING Adjust RV1 so that antenna warning indicator lights.



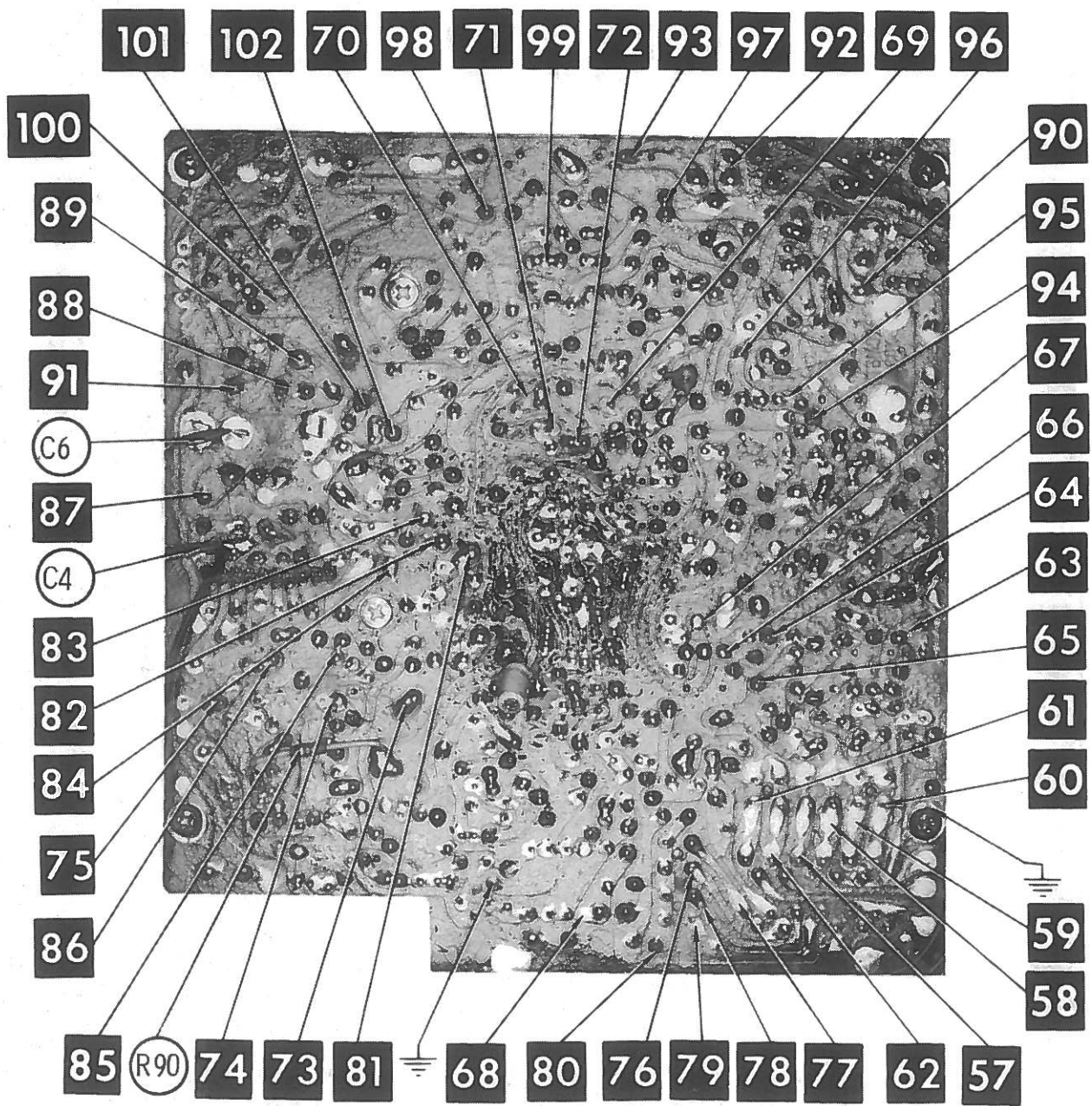
MAIN BOARD



CHASSIS-TOP

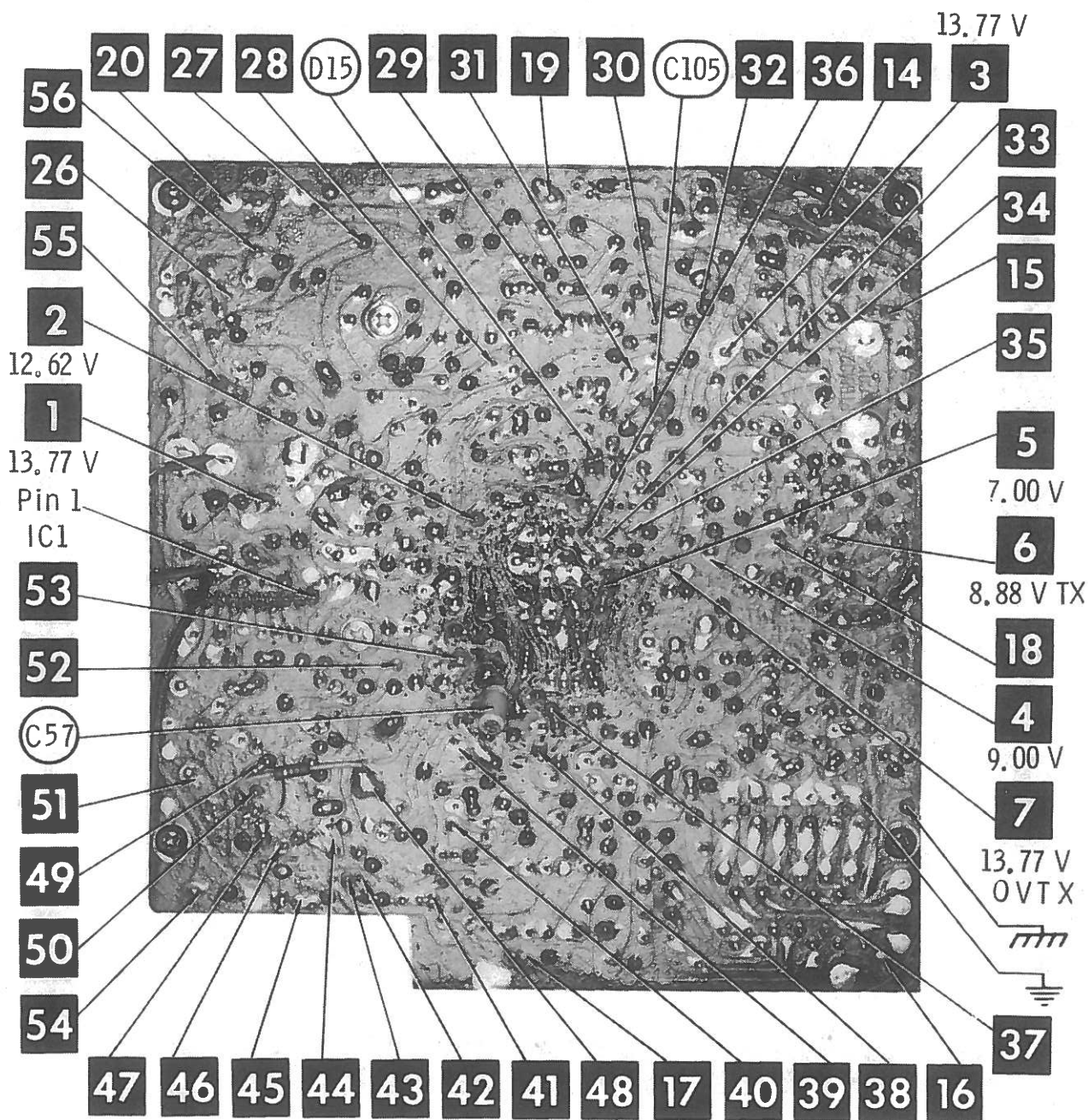


MAIN BOARD

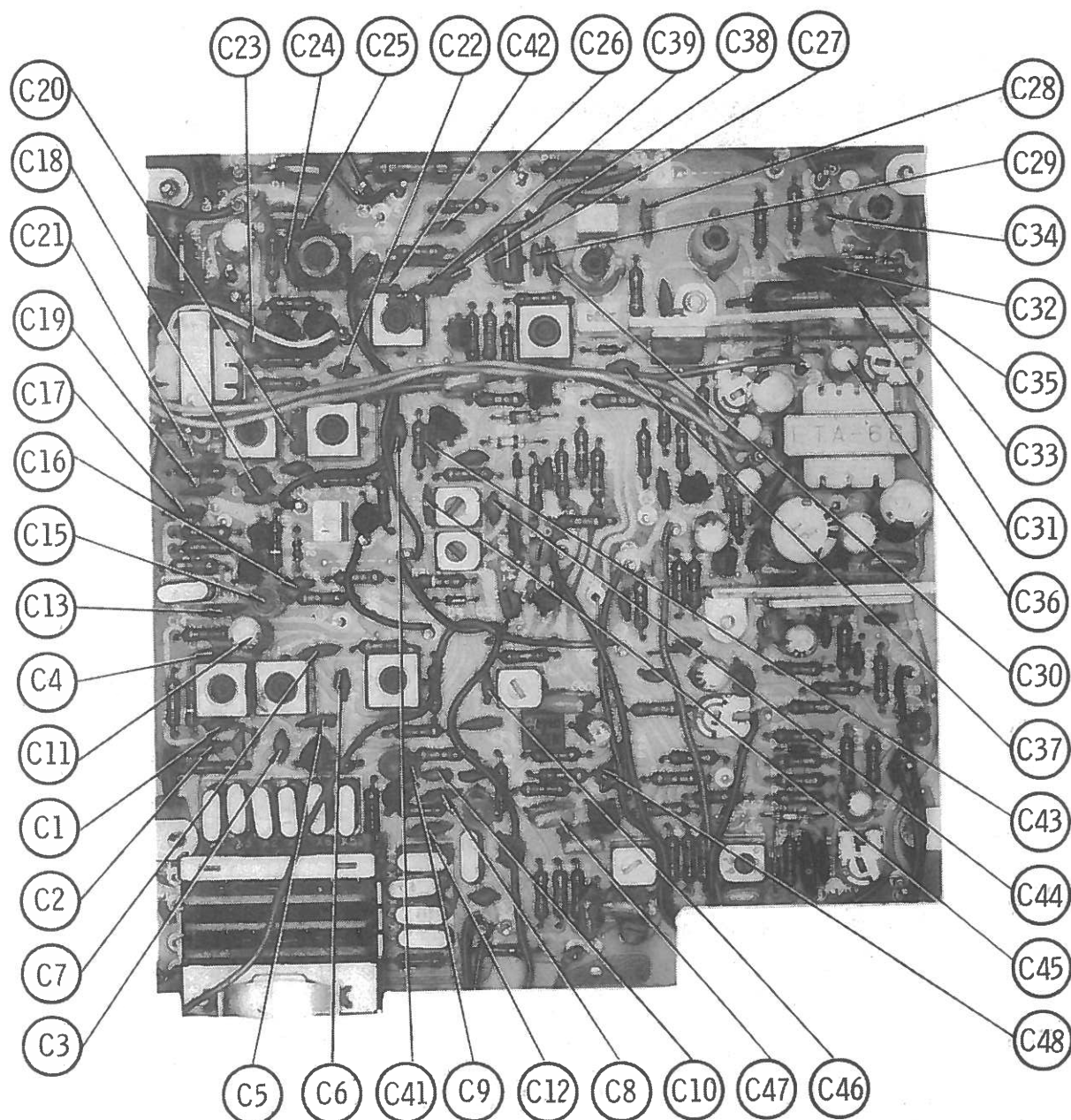


MIDLAND MODEL 13-863B

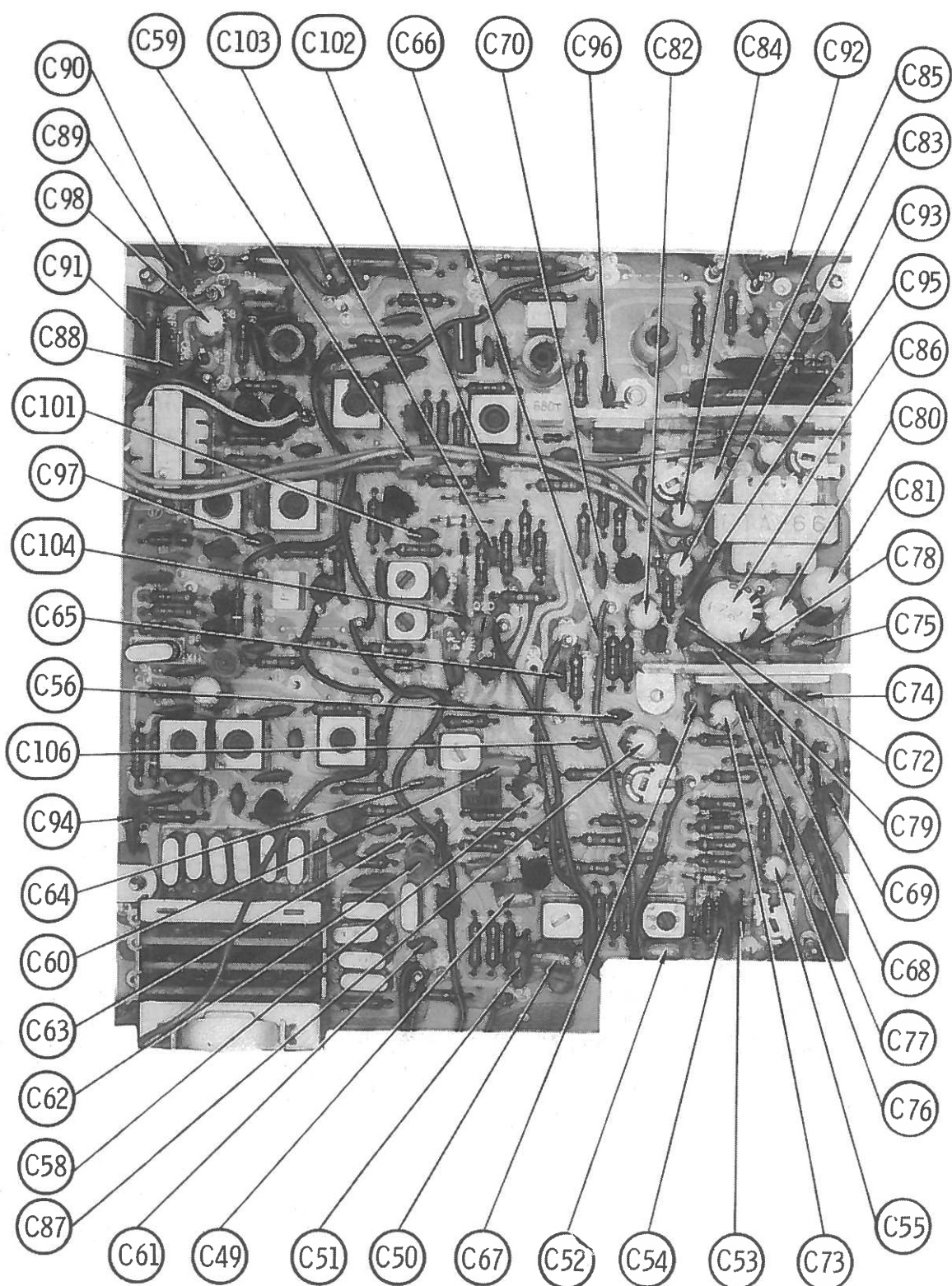
MAIN BOARD



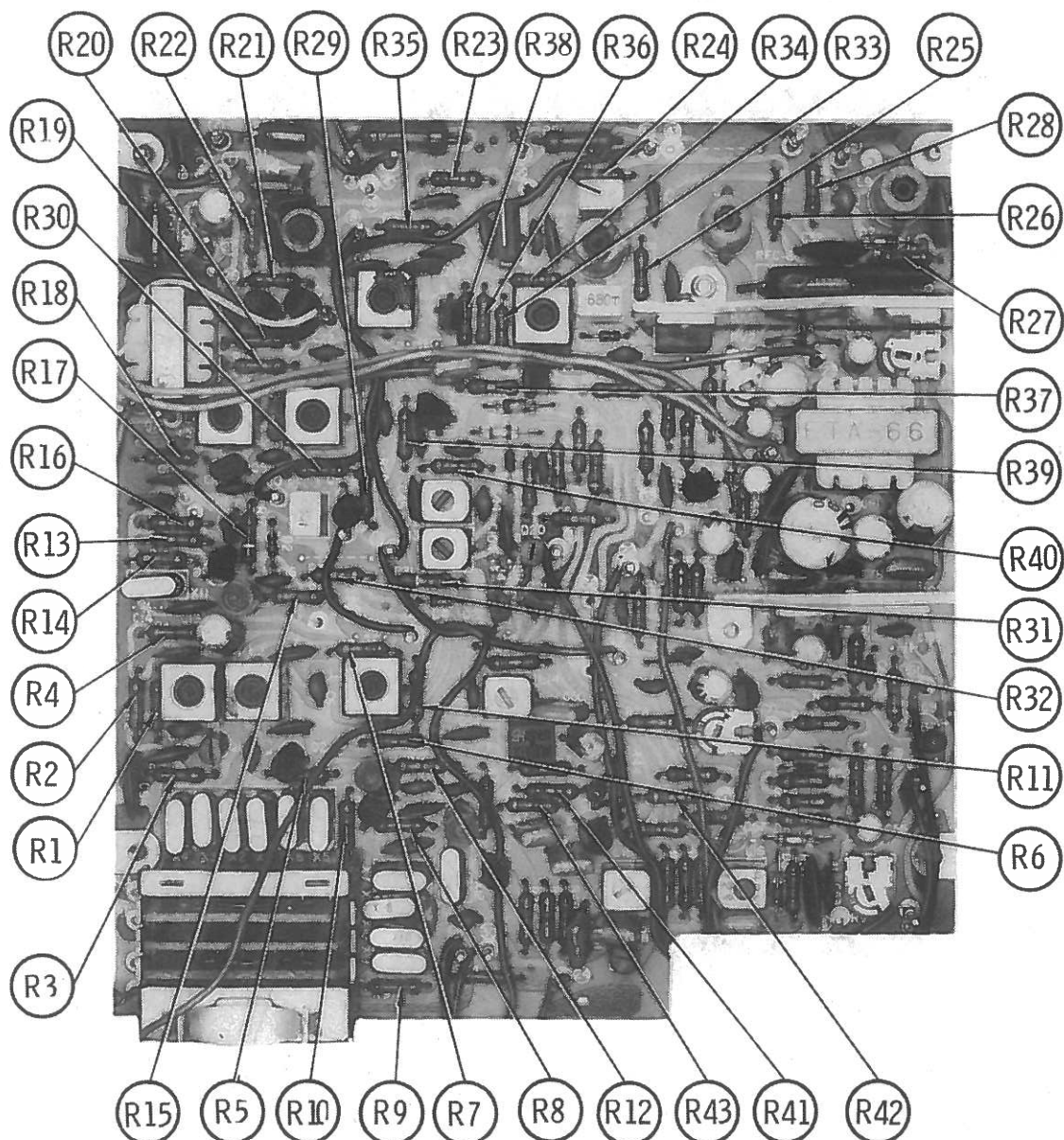
MAIN BOARD



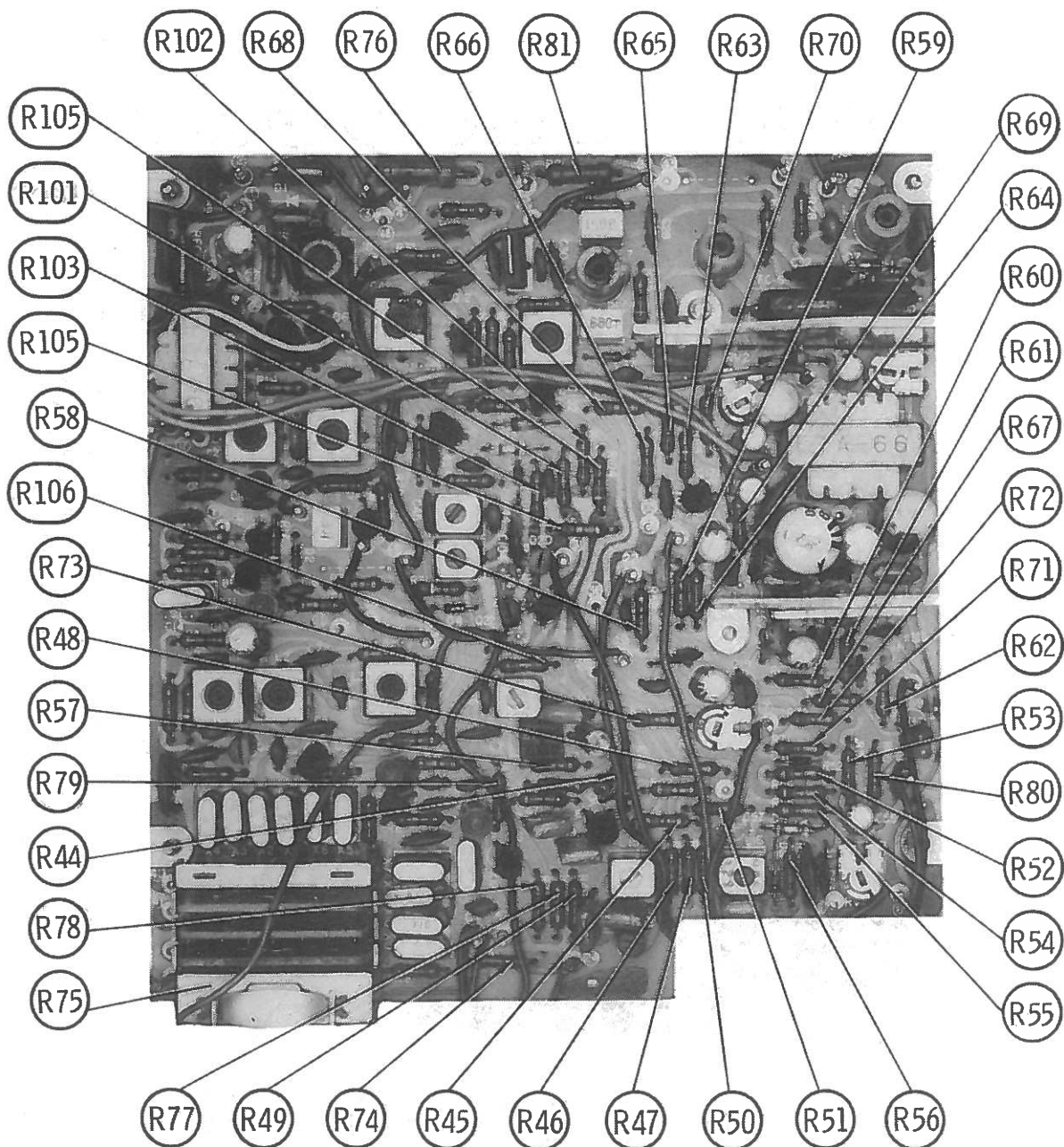
MAIN BOARD



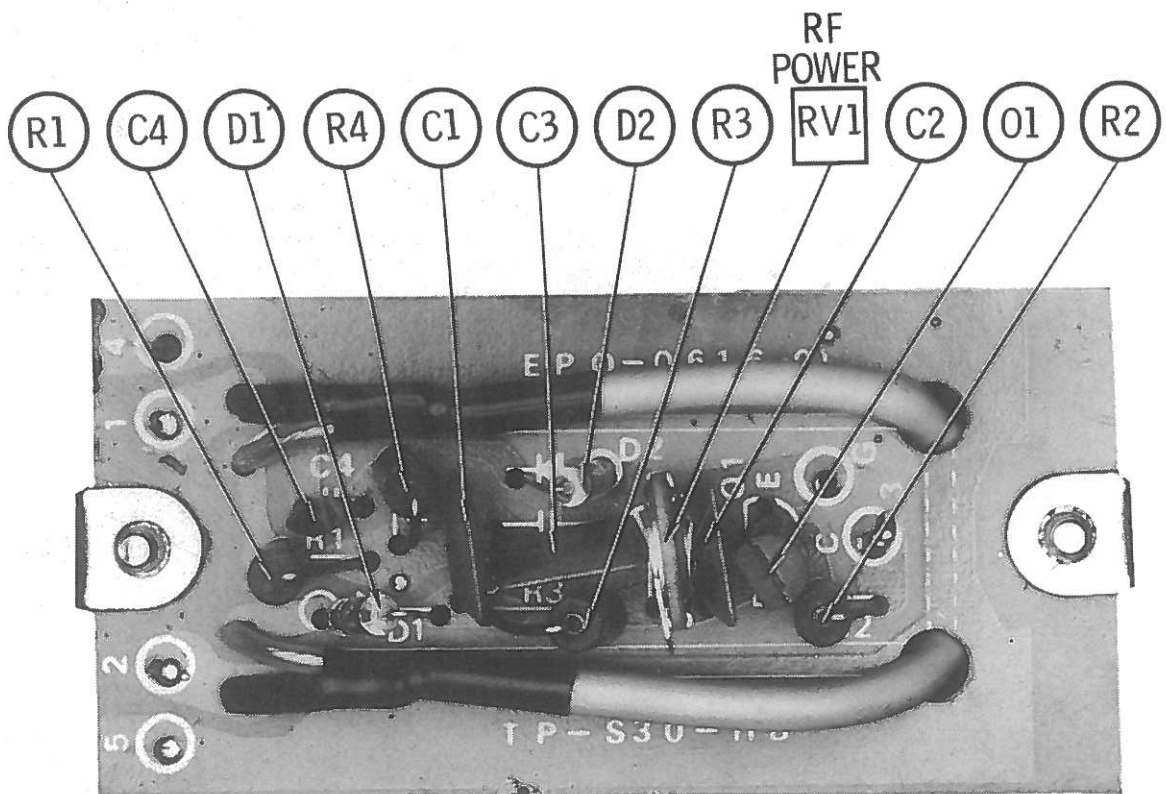
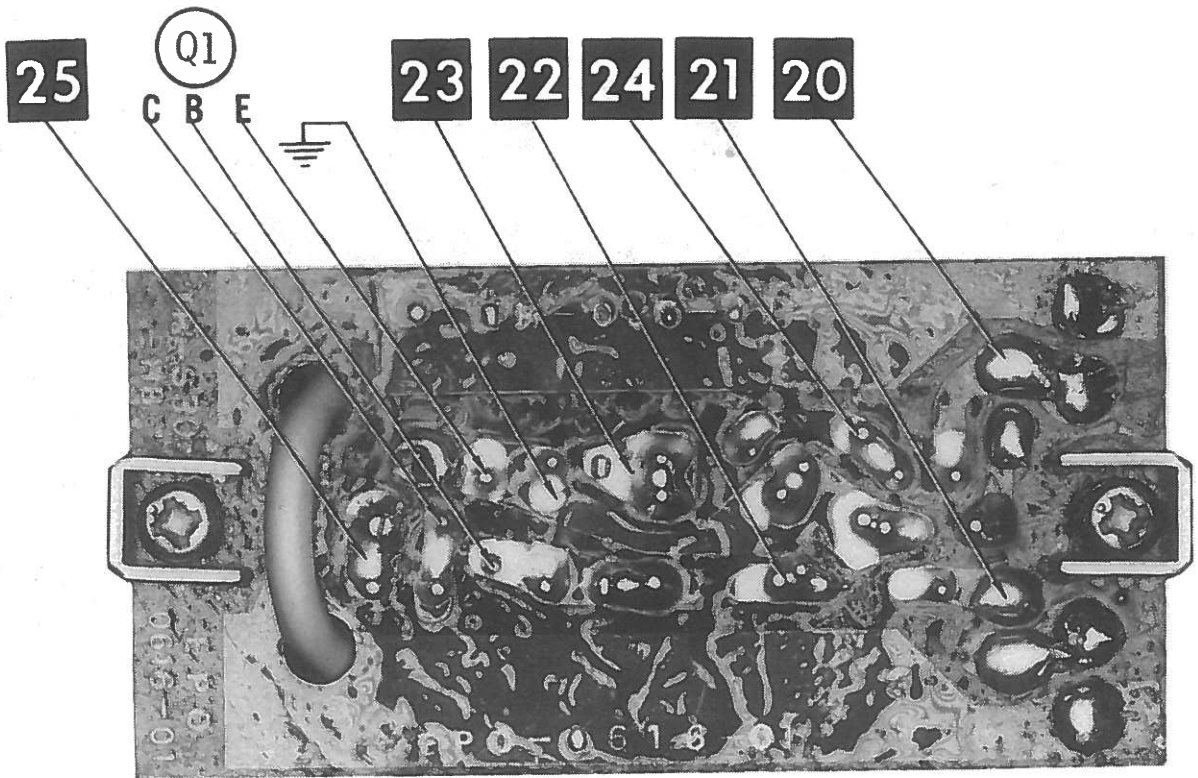
MAIN BOARD



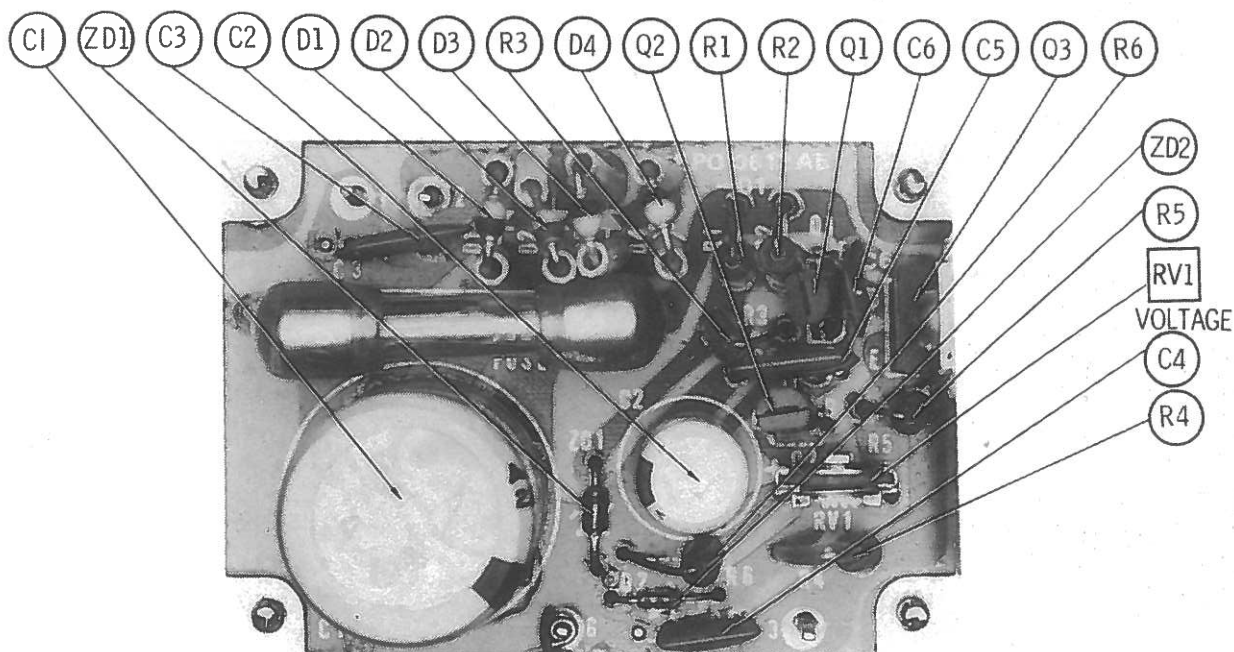
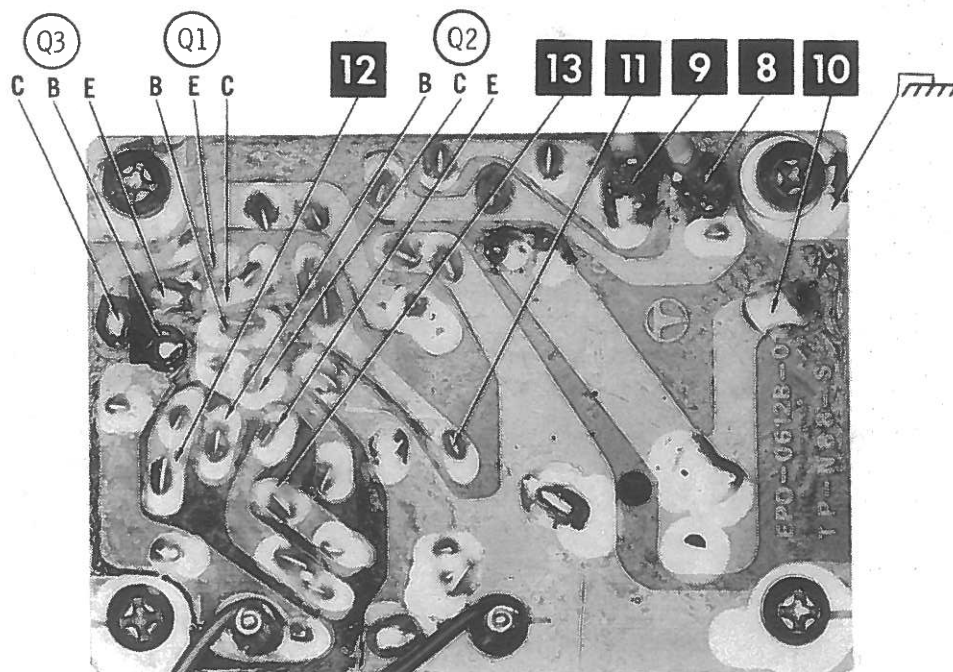
MAIN BOARD



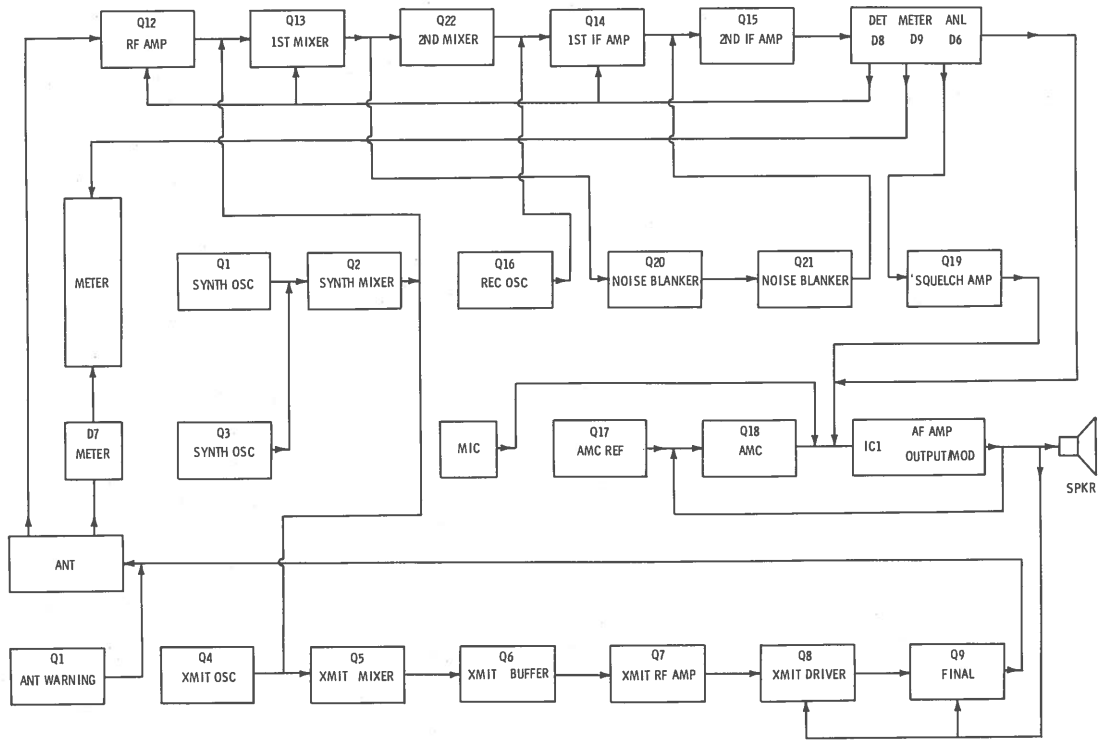
MAIN BOARD



ANT. WARNING BOARD



POWER SUPPLY BOARD



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTION

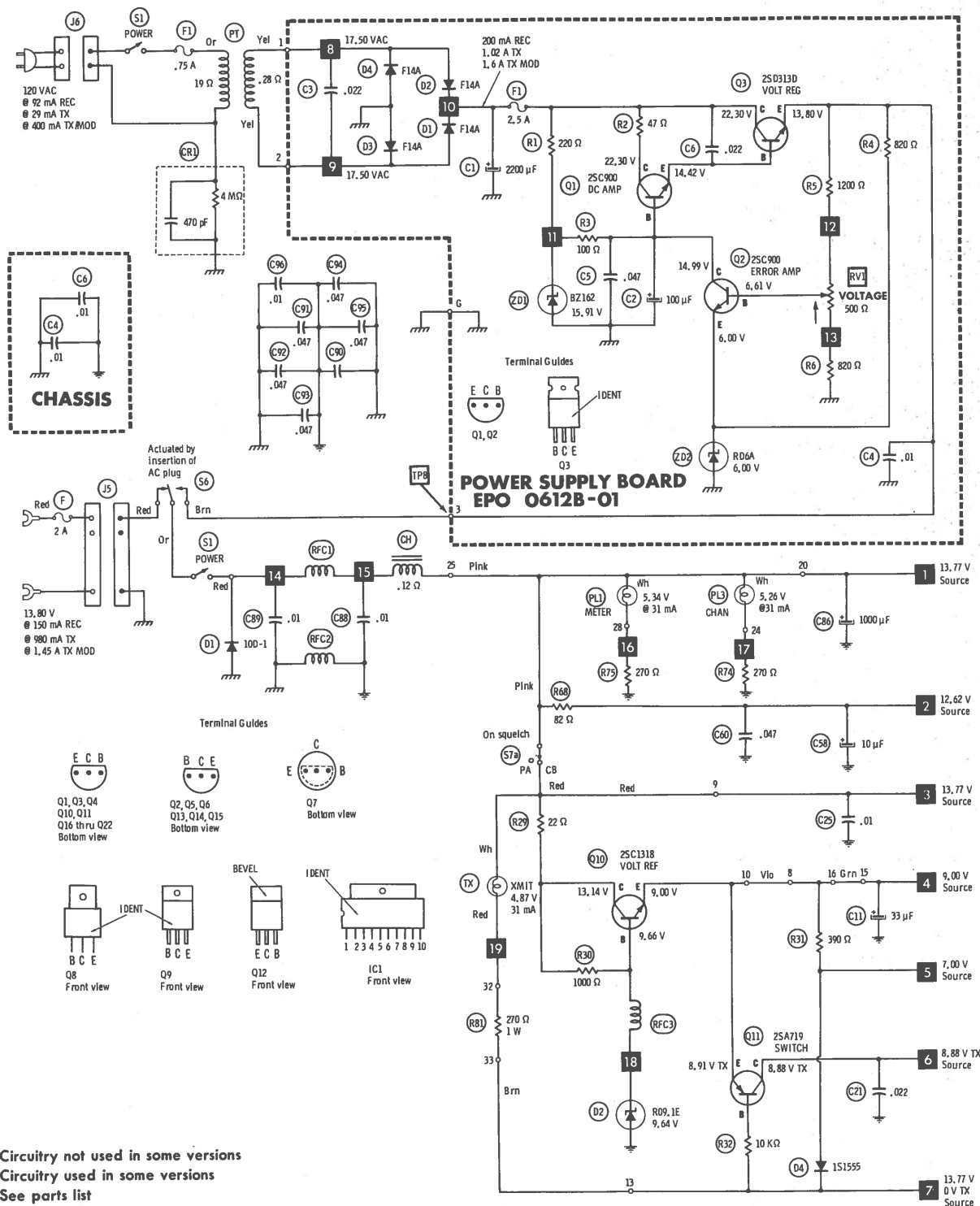
(When ordering parts, state Model, Part Number, and Description.)

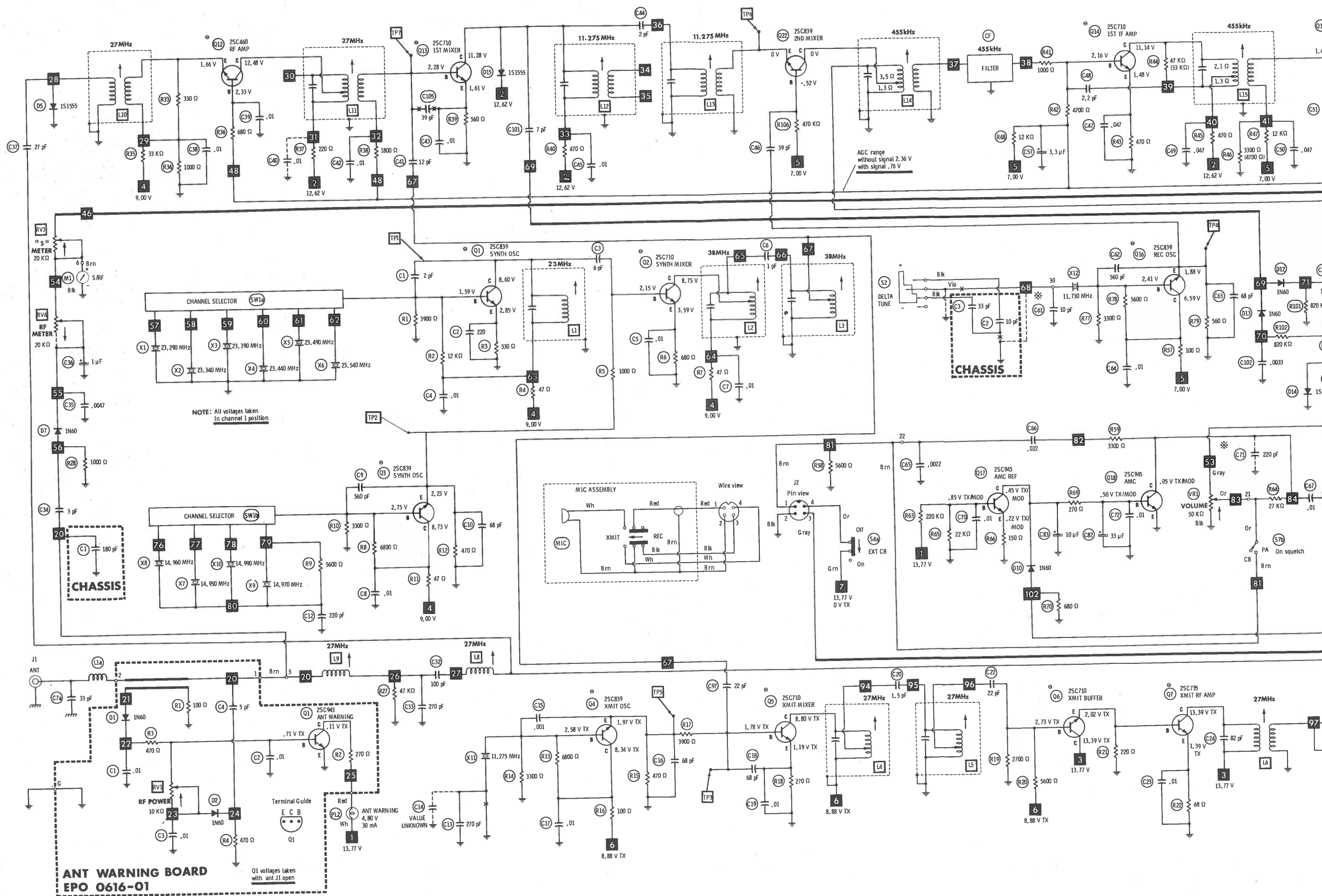
WIRING DATA

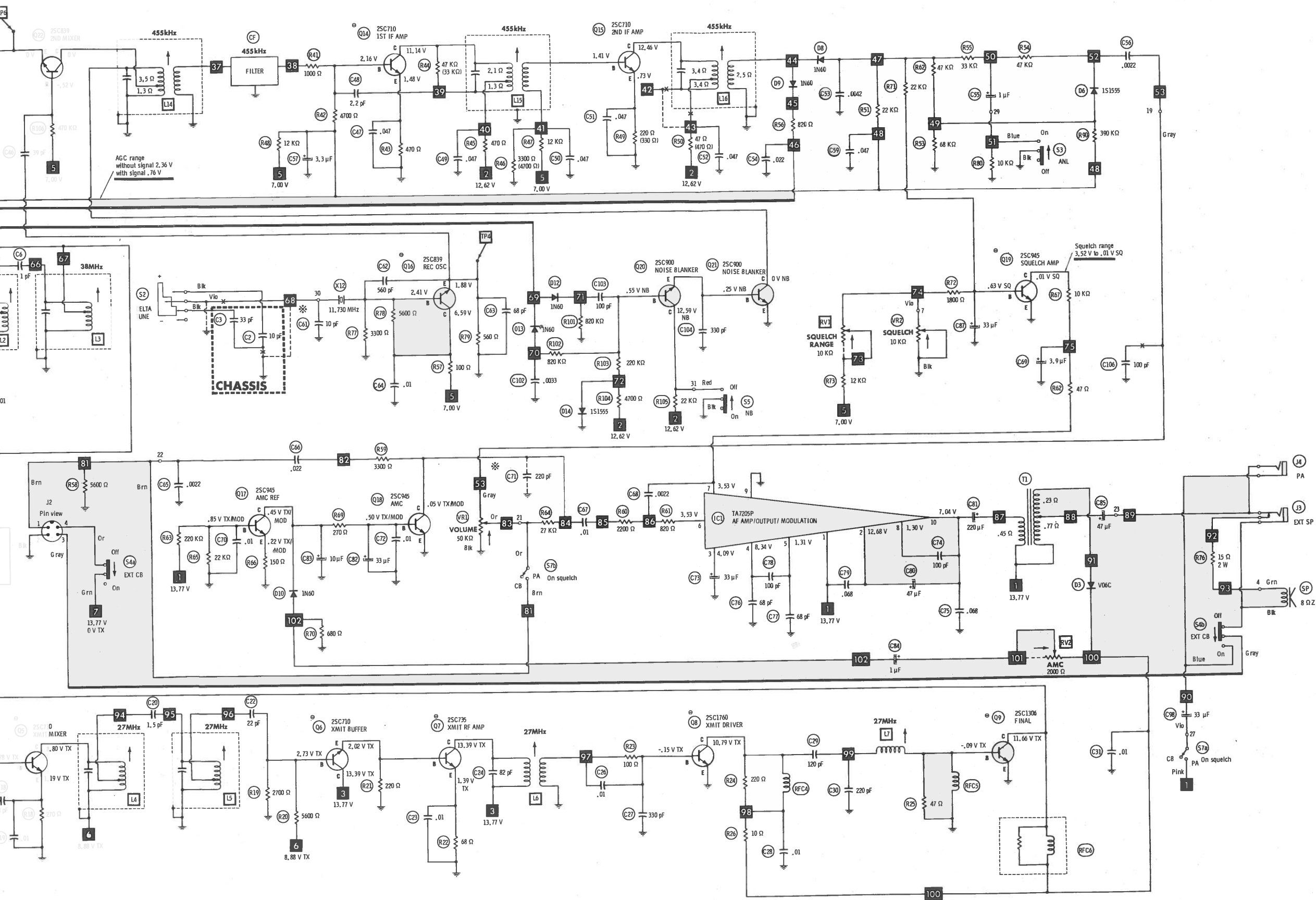
General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded)	23AWG BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 8497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN 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)

			REPLACEMENT DATA							
ITEM No.	TYPE No.	MFR. PART No.	GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
ANTENNA WARNING BOARD										
D1	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D2	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
Q1	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
MAIN BOARD										
D1	10D1		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D2	R09.1E		GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139A
D3	V06C		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D4	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D5	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D6	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D7	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D8	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D9	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D10	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D11	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D12	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D13	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D14	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D15	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
IC1	TA7205P		GEIC-179	WEP949	PTC780			SK3231	TVMC-81	ECG1155
Q1	2SC839		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC710		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829 (1)		GE-20 *	(IR)2SC829	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC1908 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC2012 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *







MIDLAND MODEL 13-863B

PARTS LIST AND DESCRIPTION (CONTINUED)

(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.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
Q2	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q3	2SC1908 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC2012 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q4	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC1908 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
Q5	2SC2012 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q6	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC1908 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
Q7	2SC2012 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC735-0		GE-210 *	TR-21 *	PTC123 *	HEPS0014 *	RE 13 *	SK3122	RT-308 *	ECG289
	2SC735 (1)		GE-210 *	TR-21 *	PTC123 *	HEPS0014 *	RE 13 *	SK3122	RT-308 *	ECG289
Q8	BC548 (1)		GE-210 *	TR-21 *	PTC123 *	HEPS0014 *	RE 13 *	SK3122	RT-308 *	ECG289
	2SC1760		GE-276		PTC180		RE 209		RT-310	ECG306
	2SC1857 (1)									ECG295
Q9	2SC1973 (1)		GE-335	WEP922				SK3250		ECG315
	2SC1306		GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1816 (1)		GE-216	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q10	2SC1678 (1)		GE-322	WEP1678	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1318		GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
	2SA719		GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
Q11	2SC460		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9 *	SK3018 *	RT-134	ECG107
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC460 (1)		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9 *	SK3018 *	RT-134	ECG107
Q12	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC460 (1)		GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9 *	SK3018 *	RT-134	ECG107
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q13	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q14	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q15	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q16	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
Q17	2SC1908 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC2012 (1)		GE-20 *	TR-21 *	PTC136 *	HEPS0015 *	RE 9 *	SK3124 *	RT-107A *	ECG107 *
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q18	2SC828 (1)		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC372 (1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q19	2SC828 (1)		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC372 (1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q20	2SC828 (1)		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC372 (1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q21	2SC900		GE-62	(IR)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
	2SC900		GE-62	(IR)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
	2SD313		GE-241	TR-76	PTC154		RE 205	SK3054	RT-154	ECG196
Q22	2SC839		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
POWER SUPPLY BOARD										
D1	A-1.5-01		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
D2	F14A (1)		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
	A-1.5-01		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
D3	F14A (1)		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
	A-1.5-01		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
D4	F14A (1)		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
	A-1.5-01		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
ZD1	F14A (1)		GE-504A	5A4D	PTC201	HEPRO0052	RE 49	SK3030	RT-213	ECG116
ZD2	BZ162		GEZD-16		ZB16B		RE 122		RT-246	ECG5075A
Q1	RD-6AM						RE 108			ECG5070A
Q2	2SC900		GE-62	(IR)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
Q3	2SC900		GE-62	(IR)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
Q4	2SD313		GE-241	TR-76	PTC154		RE 205	SK3054	RT-154	ECG196

* Lead configuration may vary from original.
(1) Used in some versions.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
MAIN BOARD						
C11	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C36	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C55	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C57	3.3 25V		PC5-50	VTT3R3A50	QV1-23	EV-1318
C58	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C69	3.9 25V			TDC335M035FL		SD35-3R39
C73	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C80	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C81	220 10V		PC250-10	VTT220F10	QV1-115	EV-1140
C82	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C83	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C84	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C85	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C86	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C87	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C98	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
POWER SUPPLY BOARD						
C1	2200 25V		WBR2000-25	TC2520A	QE1-629	TVA-1213
C2	100 25V		PC100-25	VTT100G25	QV1-97	EV-1330

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	
ANTENNA WARNING BOARD								
C1	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C2	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C4	5 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47	
MAIN BOARD								
C1	2	(1)	DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C2	220 10%		DD-221		GP322		10TS-T22	
C3	6							
C4	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C5	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C6	1				CN0510		10TCC-V10	
C7	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C8	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C9	560 10%				CD19FD561J03	SX356		MWC-561
C10	68			DD-680	GP68	GP468		10TS-Q68
C12	220 10%			DD-221		GP322		10TS-T22
C13	270 10%			DD-271	GP270	GP327		10TS-T27
C14	UNKNOWN							
C15	.001 10%				CD19FD102J03	SX210		MWC-102
C16	68			DD-680	GP68	GP468		10TS-Q68
C17	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C18	68			DD-680	GP68	GP468		10TS-Q68
C19	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C20	1.5							
C21	.022 10%					M192P2239R8		192P2239R8
C22	22			DTZ-22	NP022	CN0422		10TCC-Q22
C23	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C24	82 10% N150					*		10TCP-Q82
C25	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C26	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C27	330 10%			DD-331	GP330	GP333		10TS-T33
C28	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C29	120 10%			DTZ-120		CN0312		10TCC-T12
C30	220 10%			DD-221		GP322		10TS-T22
C31	.01			DC-103	MGP01	TA110	QC2-141	TG-S10
C32	100 10%				CD15FD101J03	SX310	QW1-27	MWA-101
C33	270 10%				CD15FD271J03	SX327	QW1-37	MWB-271
C34	3		(1)	DTZ-3R3	NP03P3	CN0533		10TCC-V33
C35	.0047							
C37	27		DD-472	GP4700	GP247		5GA-D47	
C38	.01		DC-103	MGP01	CN0427		10TCC-Q27	
C39	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C40	.01	(1)	DC-103	MGP01	TA110	QC2-141	TG-S10	
C41	12				CN0412		10TCC-Q12	
C42	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C43	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C44	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C45	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C46	39				CN0439		10TCC-Q39	
C47	.047 10%				EWFTA147	QF1-171	1PB-S47	
C48	2.2							
C49	.047 10%				EWFTA147	QF1-171	1PB-S47	
C50	.047 10%				EWFTA147	QF1-171	1PB-S47	
C51	.047 10%				EWFTA147	QF1-171	1PB-S47	
C52	.047 10%				EWFTA147	QF1-171	1PB-S47	
C53	.0047 10%				M192P4729R8		192P4729R8	
C54	.022		DC-203	MGP02	TA120	QC2-157	TG-S20	
C56	.0022 10%				M192P2229R8		192P2229R8	
C59	.047 10%				EWFTA147	QF1-171	1PB-S47	

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	
C60	.047 10%	(1)	DD-680 DC-103 DD-222	CD19FD561J03 GP68 MGP01	EWFI1A147 *	QF1-171	1PB-S47 10TCP-Q10	
C61	10 N150				SX356		MWC-561	
C62	560 10%				GP468		10TS-Q68	
C63	68				TA110	QC2-141	TG-S10	
C64	.01		DD-222	WMF1S1	GP222	QC2-97	56A-D22	
C65	.0022				M192P2239R8		192P2239R8	
C66	.022 10%				EWFI1A110	QF1-91	1PB-S10	
C67	.01 10%		DD-103	MGP01	GP222	QC2-97	56A-D22	
C68	.0022				TA110	QC2-141	TG-S10	
C70	.01				GP322		10TS-T22	
C71	220				TA110	QC2-141	TG-S10	
C72	.01		DD-101	MGP01	GP310	QC2-141	10TS-T10	
C74	100 10%				GP310		10TS-T10	
C75	.068				EWFI1A168	QF1-195	1PB-S68	
C76	68				GP468		10TS-Q68	
C77	68		DD-101	WMF1S68	GP468		10TS-Q68	
C78	100 10%				GP100		10TS-T10	
C79	.068				EWFI1A168	QF1-195	1PB-S68	
C88	.01				GP310	QC2-141	TG-S10	
C89	.01		DC-103	MGP01	TA110	QC2-141	TG-S10	
C90	.01				TA110	QC2-141	TG-S10	
C91	.047				TA110			
C92	.047				MAG5015			
C93	.047		UK50-503	MGP01	MAG5015			
C94	.047				MAG5015			
C95	.047				MAG5015			
C96	.01				MAG5015			
C97	22		DC-103	MGP01	TA110	QC2-141	TG-S10	
C101	7				CN0422		10TCC-Q22	
C102	.047 10%				CN0568		10TCC-V68	
C103	100 10%				EWFI1A147	QF1-171	1PB-S47	
C104	330 10%		DD-101	GP100	GP310		10TS-T10	
C105	39				GP330		10TS-T33	
C106	100 10%				CN0439		10TCC-Q39	
					GP310		10TS-T10	
POWER SUPPLY BOARD			DC-203	MGP02	TA120	QC2-157	TG-S20	
C3	.022				TA110	QC2-141	TG-S10	
C4	.01				MAG5015			
C5	.047				TA120	QC2-157	TG-S20	
C6	.022							
CHASSIS			DC-103	MGP01	CD15FD181J03	QW1-33	MWA-181	
C1	180 10%				SX318		10TCP-Q10	
C2	10 N150				*		10TCP-Q33	
C3	33 10% N150				*			
C4	.01	TA110			QC2-141	TG-S10		
C5	.01	TA110			QC2-141	TG-S10		
C6	.01	TA110			QC2-141	TG-S10		
C7	33 10% N150	*				10TCP-Q33		

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

(1) Used in some versions.

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

REPLACEMENT DATA							
ITEM No.	FUNCTION	RESIST-ANCE	MFRG. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
ANTENNA WARNING BOARD			13-164126	T-10K	C-103	MTC14L1	X201R103B
RV1	RF Power	10K					
MAIN BOARD			13-164132 13-164133 13-164134 13-164134	T-10K (3)	C-103 (3)	MTC14L1 (3)	X201R103B (3)
RV1	Squelch Range	10K					
RV2	AMC	2000					
RV3	S Meter	20K					
RV4	RF Meter	20K					
POWER SUPPLY BOARD			13-164115	T-5000	C-502	MTC53L1	X201R502B
RV1	Voltage	5000					
CHASSIS			13-160136 13-166068				
RV1	Volume	50K					
VR2	Squelch/Switch	10K					

(2) Cut off one of the end terminals and bend to fit PC board.

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

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.		FUNCTION	REPLACEMENT DATA			REMARKS
			PART No.	OTHER IDENTIFICATION	MILLER PART No.	
MAIN BOARD						
L1	Synth Osc (23MHz)	13-170216		ETR-0336-63E3		
L2	Synth Mixer (38MHz)	13-176503				
L3	Synth Mixer (38MHz)	13-176504		ETR-0338-61CV		
L4	Xmit Mixer (27MHz)	13-176505				
L5	Xmit Mixer (27MHz)	13-176506				
L6	Xmit RF (27MHz)	13-176507				
L7	Xmit Driver (27MHz)	13-176508				
L8	Final Amp (27MHz)	13-176509				
L9	Antenna Match (27MHz)	13-176510				
L10	Rec Antenna (27MHz)	13-176511		ETR-0333-63EV		
L11	Rec RF (27MHz)	13-176512		ETR-0334-61GV		
L12	Rec Mixer (11.275MHz)	13-176513				
L13	Rec Mixer (11.275MHz)	13-176513				
L14	IF (455kHz)	13-090371				
L15	IF (455kHz)	13-090375				
L16	IF (455kHz)	13-090372				
RFC1	RF Choke	13-178209				
RFC2	RF Choke	13-178209				
RFC3	RF Choke	13-178210				
RFC4	RF Choke	13-178211				
RFC5	RF Choke	13-178210				
RFC6	RF Choke	13-178212				
CHASSIS						
L1	Antenna Lead	13-178201				

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.	
CH	1600mA	.12	.48mH	13-178208 ELA-16 (1)	TR523		(1) Number on unit.

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
PT	120V AC @ 400mA AC	17.5V AC @ 2.88A AC	13-098023 ETP-0103 (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.	
T1	2.9	1 8 2 13	13-096200 ETA-66 (1)	TR723		(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM 8 Ohms	13-060105	30A0528R	

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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
POWER SUPPLY BOARD								
F1	.75A AC Fast Acting			AGC3/4	HKP	312.750	342012AL	
CHASSIS								
F	2A DC Fast Acting			AGC2	HDJ	312002	150145	FG2-2
F1	2.5A AC Fast Acting	13-204011		GJV2-1/2		31802.5		

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	13-038074	18-032	18-034	18-000	18-092	1	2	4	3	NC	2

CRYSTALS

ITEM No.	CRYSTAL FREQUENCY IN MHz	MFGR. PART No.	CTS KNIGHTS PART No.	CHANNEL	ITEM No.	CRYSTAL FREQUENCY IN MHz	MFGR. PART No.	CTS KNIGHTS PART No.	CHANNEL
X1	23.290	13-128114	MA20W23290	1,2,3,4	X7	14.950	13-128120	MB60W14950	1,5,9,13,17,21
X2	23.340	13-128115	MA20W23340	5,6,7,8	X8	14.960	13-128121	MB60W14960	2,6,10,14,18,22
X3	23.390	13-128116	MA20W23390	9,10,11,12	X9	14.970	13-128122	MB60W14970	3,7,11,15,19
X4	23.440	13-128117	MA20W23440	13,14,15,16	X10	14.990	13-128123	MB60W14990	4,8,12,16,20,23
X5	23.490	13-128118	MA20W23490	17,18,19,20	X11	11.275	13-128124	MC80W11275	TX Osc
X6	23.540	13-128119	MA20W23540	21,22,23	X12	11.730	13-128125	MC80W11730	Rec Osc

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
MAIN BOARD			
CF	Filter	13-179059	455kHz
CR1	Component Combination	13-130013	R-C Combination (MU-C471-R2.5-4M-125VAC65)
M1	Meter	13-200076	S/R
SW1	Switch	13-180105	Channel Selector
CHASSIS			
J1	Jack	13-153138	Antenna
J2	Jack	13-153116	Mike
J3	Jack	13-153140	Ext. Speaker
J4	Jack	13-153140	PA
J5	Jack	13-153124	Power, DC
J6	Jack	13-153152	Power, AC
PL1	Lamp	13-201067	Meter Illumination (5.34V @ 31mA)
PL2	Lamp	13-020698	Antenna Warning Indicator (4.80V @ 30mA)
PL3	Lamp	13-020700	Channel Indicator (5.26V @ 31mA)
S1	Switch	13-183198	Power
S2	Switch	13-180092	Delta Tune
S3	Switch	13-180093	ANL
S4	Switch	13-180093	Ext. CB
S5	Switch	13-180093	NB
S6	Switch		AC/DC
S7	Switch		Squelch/Off (Part of VR2)
TX	Lamp	13-120699	Xmit Indicator (4.87V @ 31mA)

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

ITEM	PART No.	ITEM	PART No.
Case, Main	13-010311	Button, Control	13-113004
Panel, Front	13-010313	Knob, Channel Selector	13-115139
Panel, Rear	13-013142	Knob, Control	13-110201
Escutcheon	13-011026		