

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 13-857B

MODEL 13-857B

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

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7CY573

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:
 L112, T106, T107, T108, T109 5009
 L106, L109, L110 9304
 L103, L104, T101, T102, T103, T104, T105, T111 9440
 CT101 5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to TP1.	Ch. 13		Check for 10.2392MHz +0.4kHz.
Input of frequency counter to TP2.	Ch. 1, Delta Tune-Center.	CT101	Adjust for 37.6592MHz.
Input of VTVM to TP8.	Ch. 1	T101	Adjust for 1.5V $\pm$.01 volt.
Input of RF VTVM to TP3.	Ch. 13	T111	Adjust for maximum.
Input of frequency counter to TP4.	Ch. 13, Xmit		Check for 10.6942MHz +0.4kHz.

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 TP5. 455kHz, 1000Hz @ 30% modulation.	Ch. 13	T109, T108, T107	Adjust for maximum output.
Output of signal generator thru .01uF to TP3. 10.694200MHz, 1000Hz @ 30% modulation.	Ch. 13	T106, L112	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation.	Ch. 13, Delta Tune-Center.	T105, T104	Adjust for maximum output. 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	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 500uV.	Ch. 13, Delta Tune-Center.	RV101	SQUELCH RANGE Set squelch control VR2 fully clockwise. Adjust RV101 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.115MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 13	RV103	S METER Adjust for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

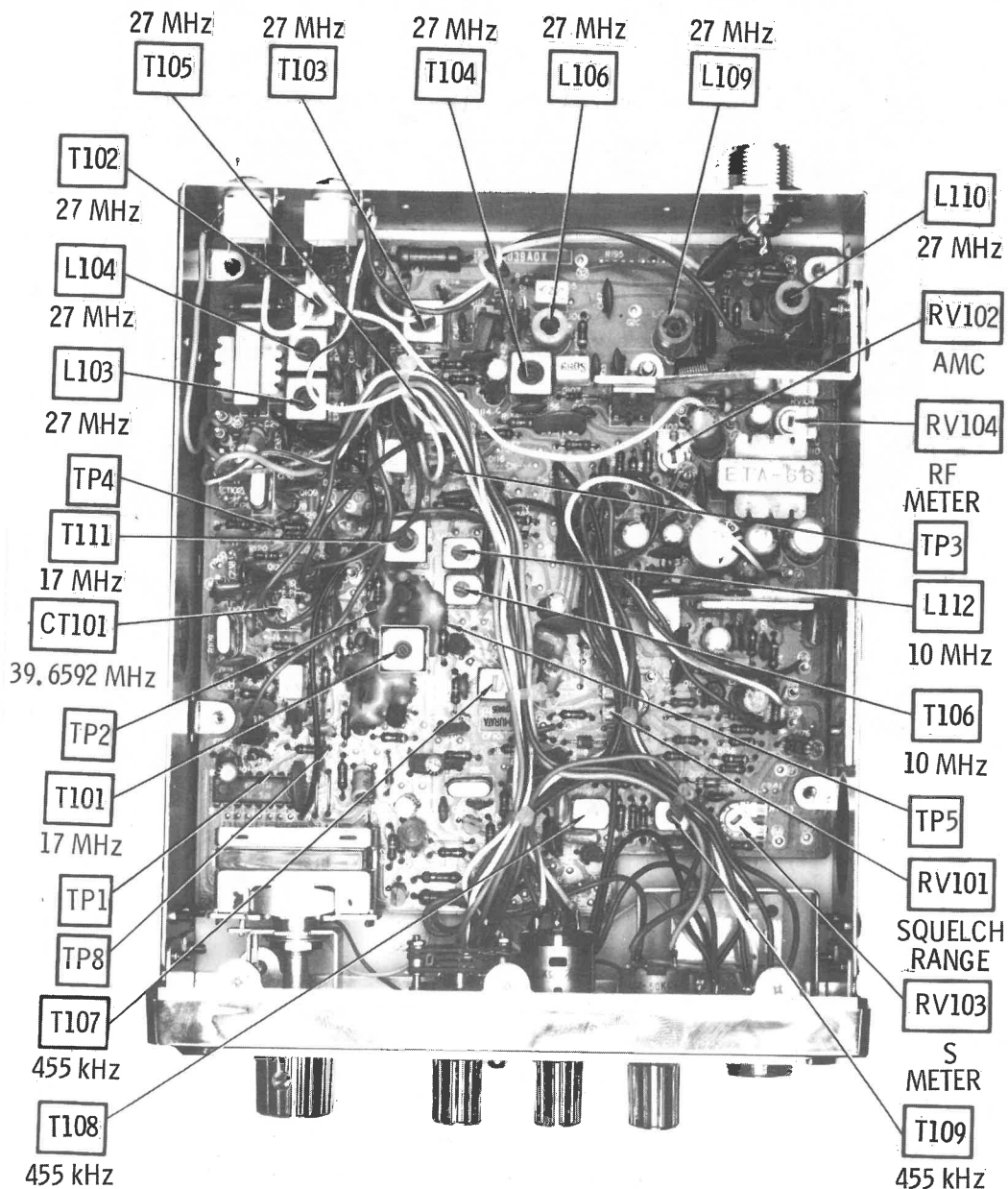
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector. NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter. See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
	Ch. 13	L103, L104, T102, T103, L106, L109, L110.	Adjust for maximum.
	Ch. 13	L110, L109	Adjust for 4 watts maximum.

TRANSMITTER ADJUSTMENTS

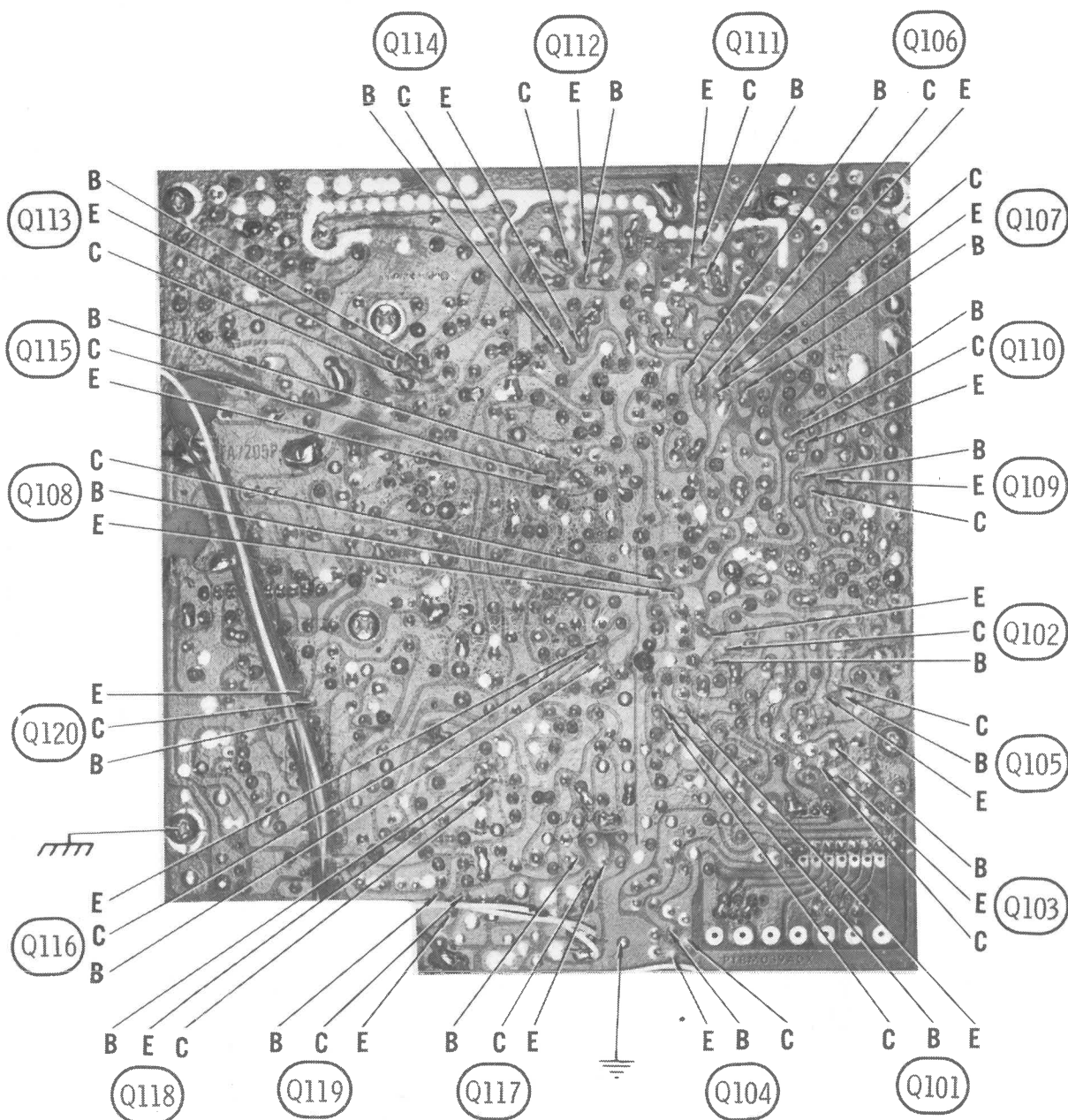
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
 NOTE: Be sure to check transmit frequency and power on all active channels
 after adjustments of transmitter.
 See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz signal at mic input.	Ch. 13	RV102	AMC Disconnect C209 to disable AMC. Adjust signal for over- modulation. Restore AMC operation. Adjust RV102 for 100% modulation maximum.
	Ch. 13	RV104	RF PANEL METER Adjust RV104 so that RF panel meter agrees with RF wattmeter.

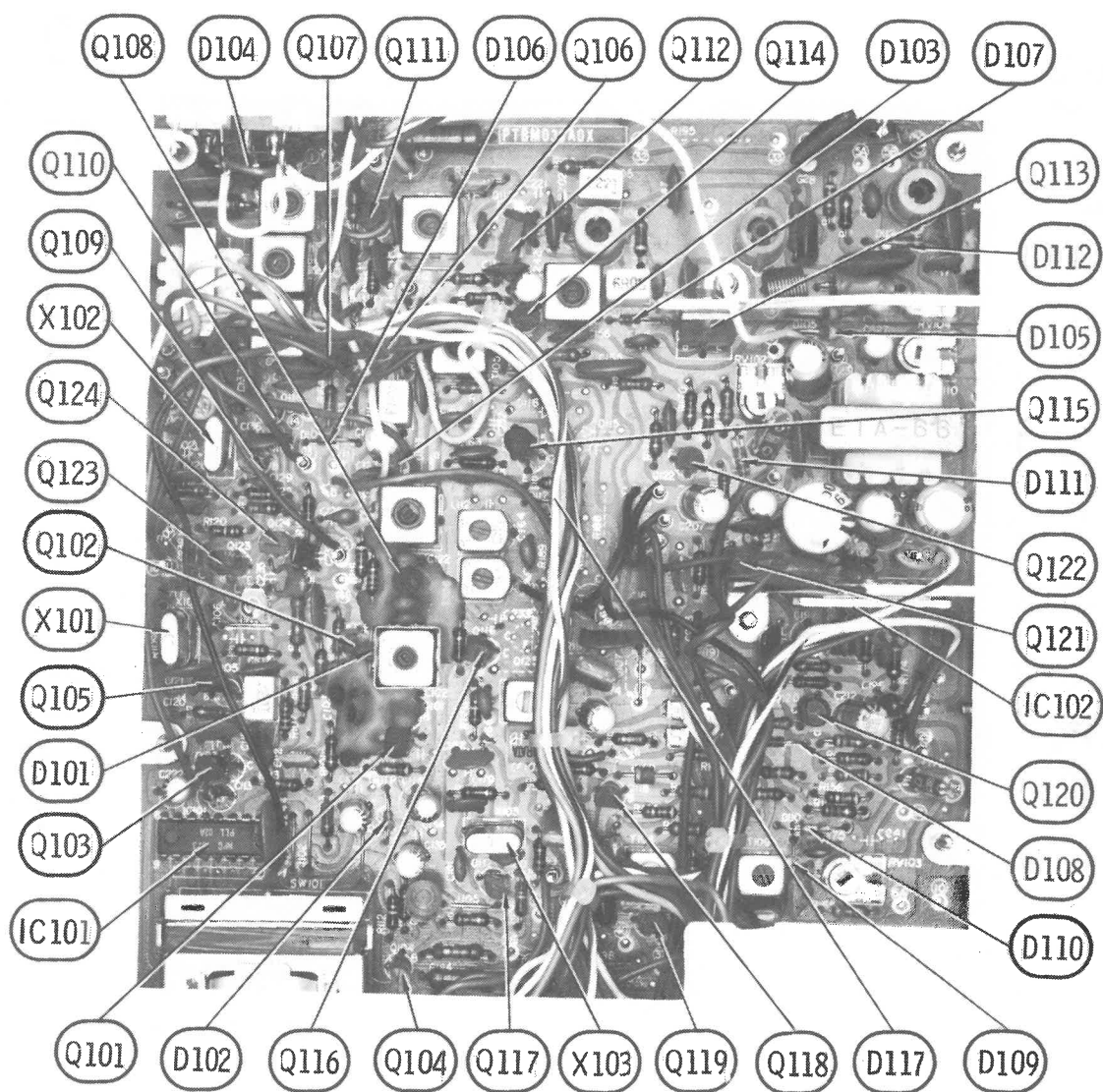


CHASSIS-BOTTOM

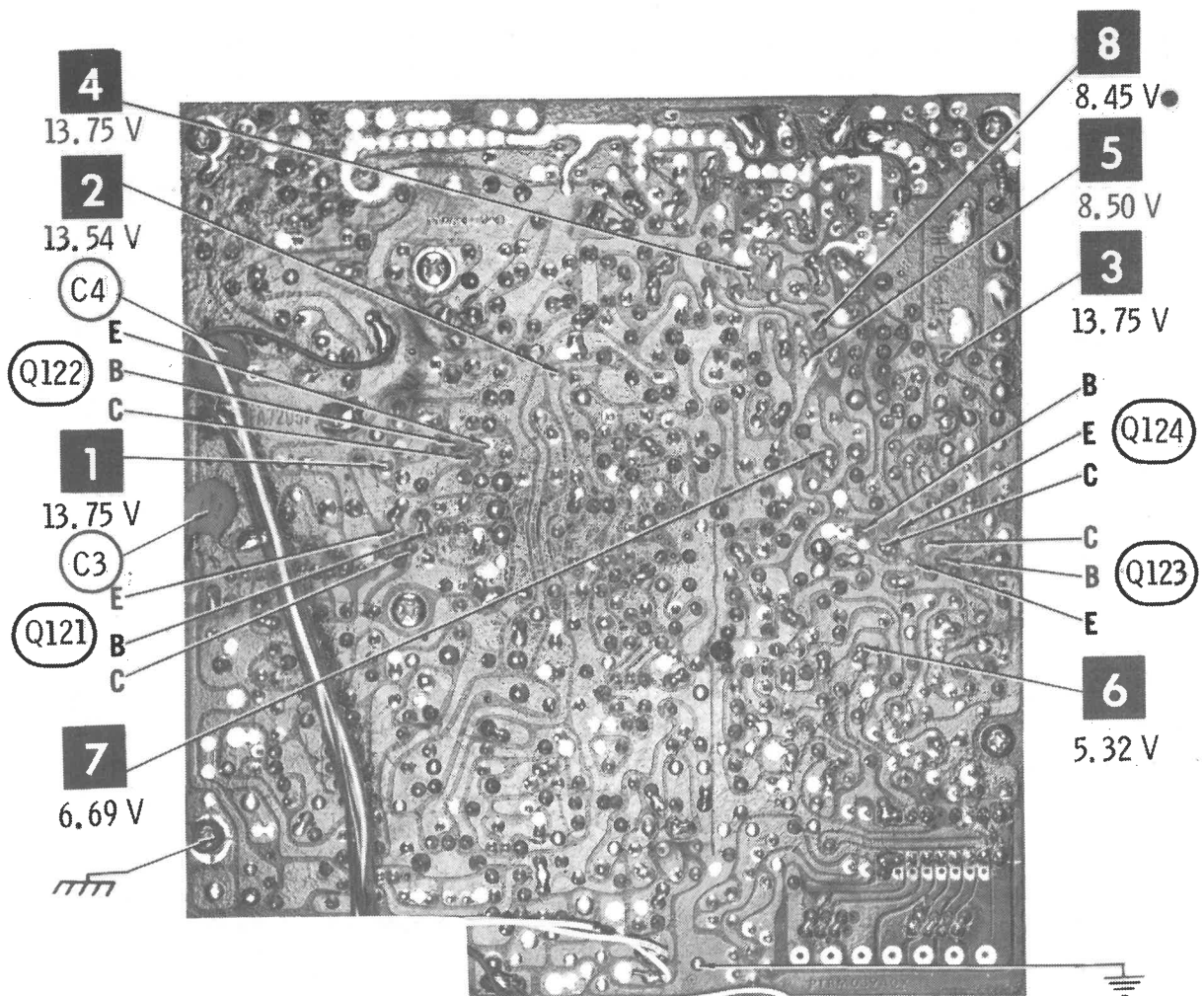
MIDLAND MODEL 13-857B



MAIN BOARD



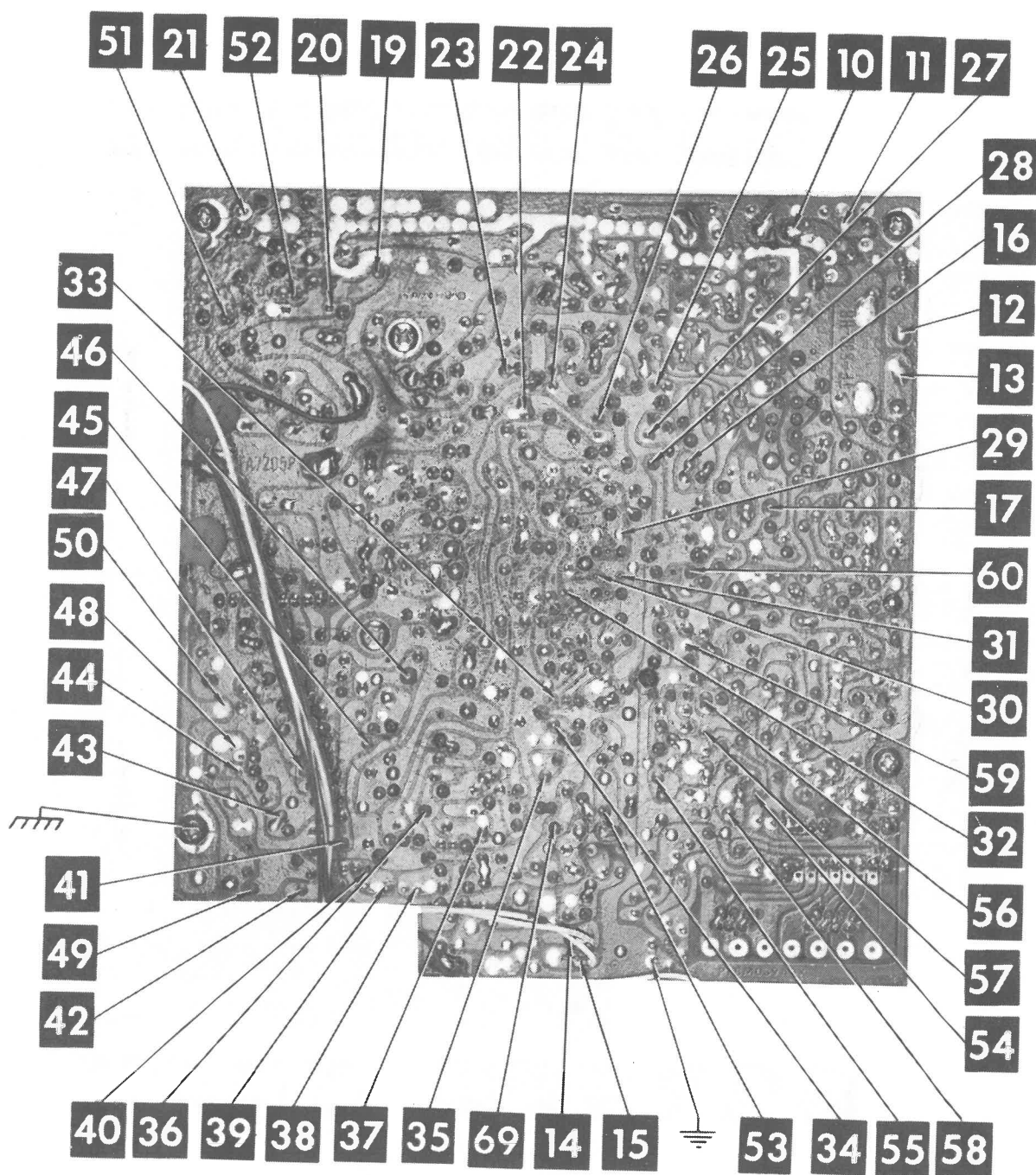
MAIN BOARD



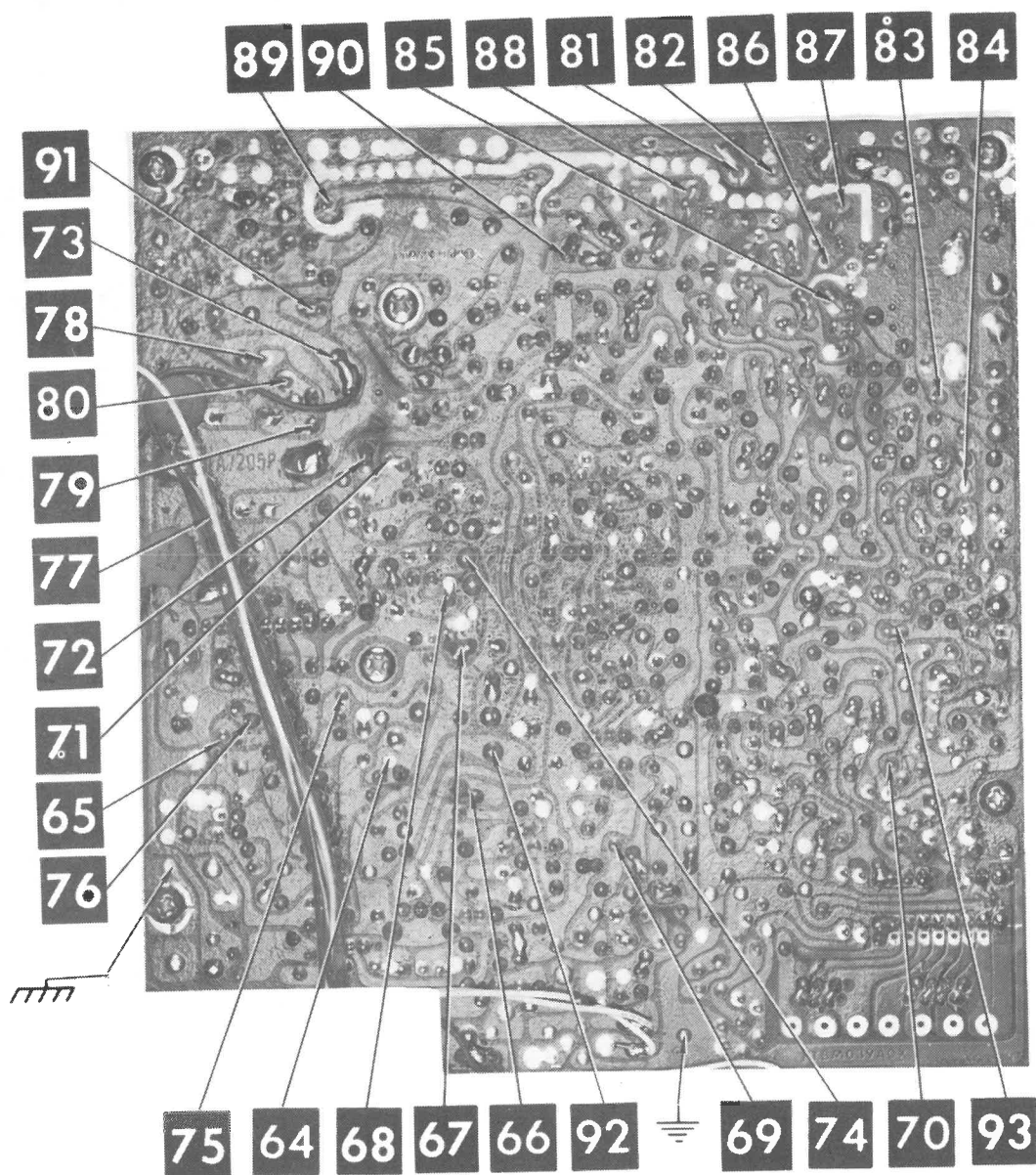
● Transmit

MAIN BOARD

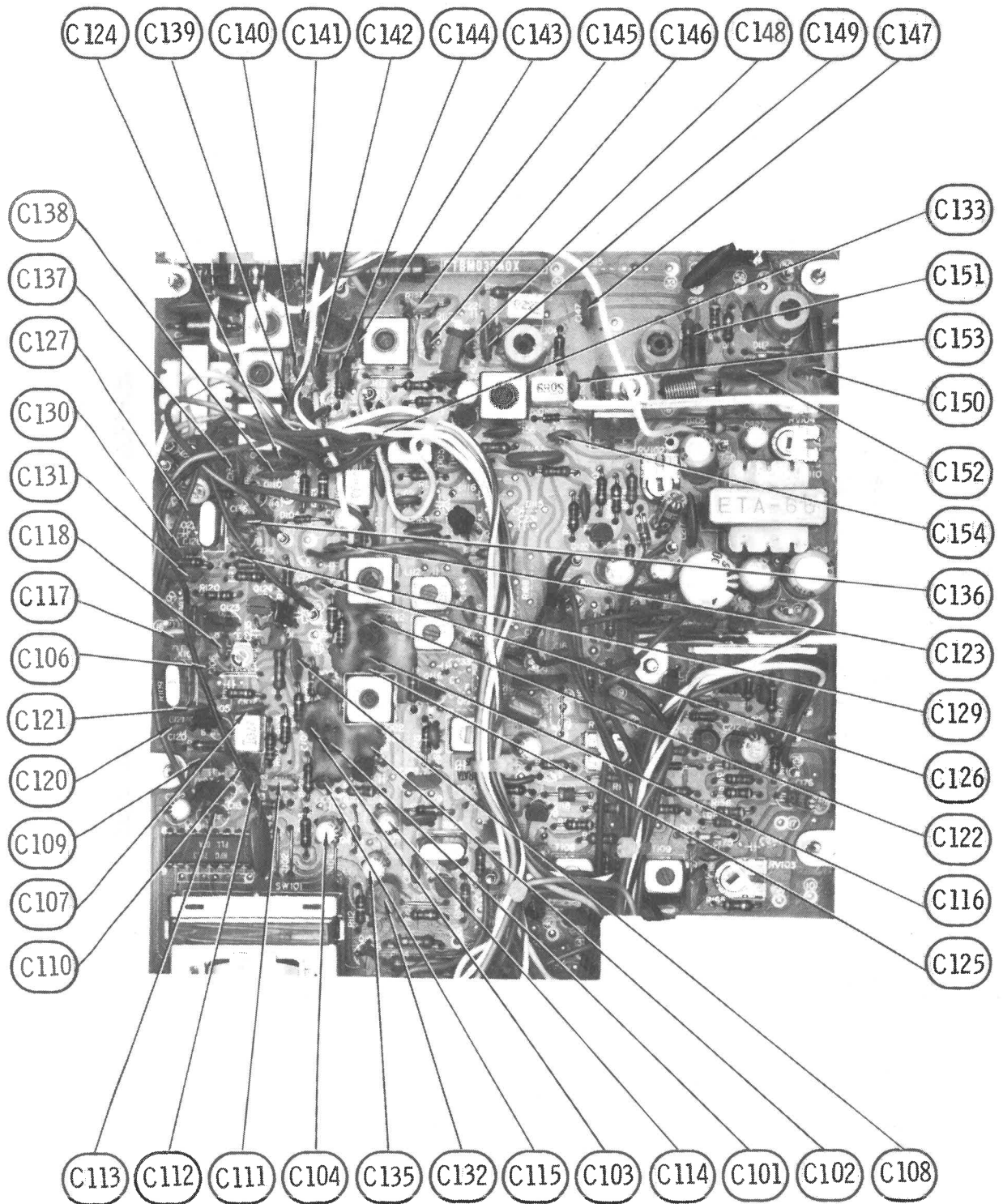
MIDLAND MODEL 13-857B



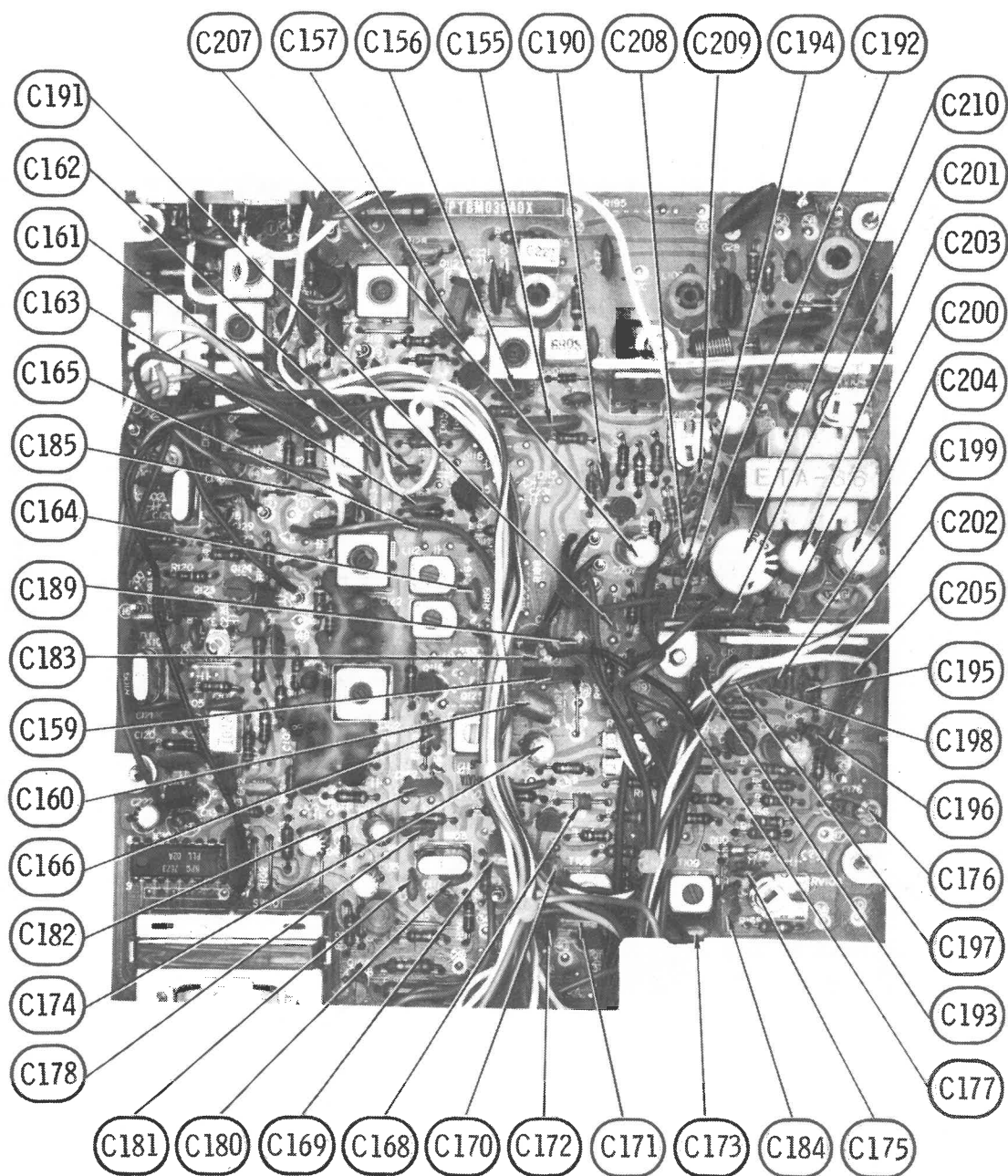
MAIN BOARD



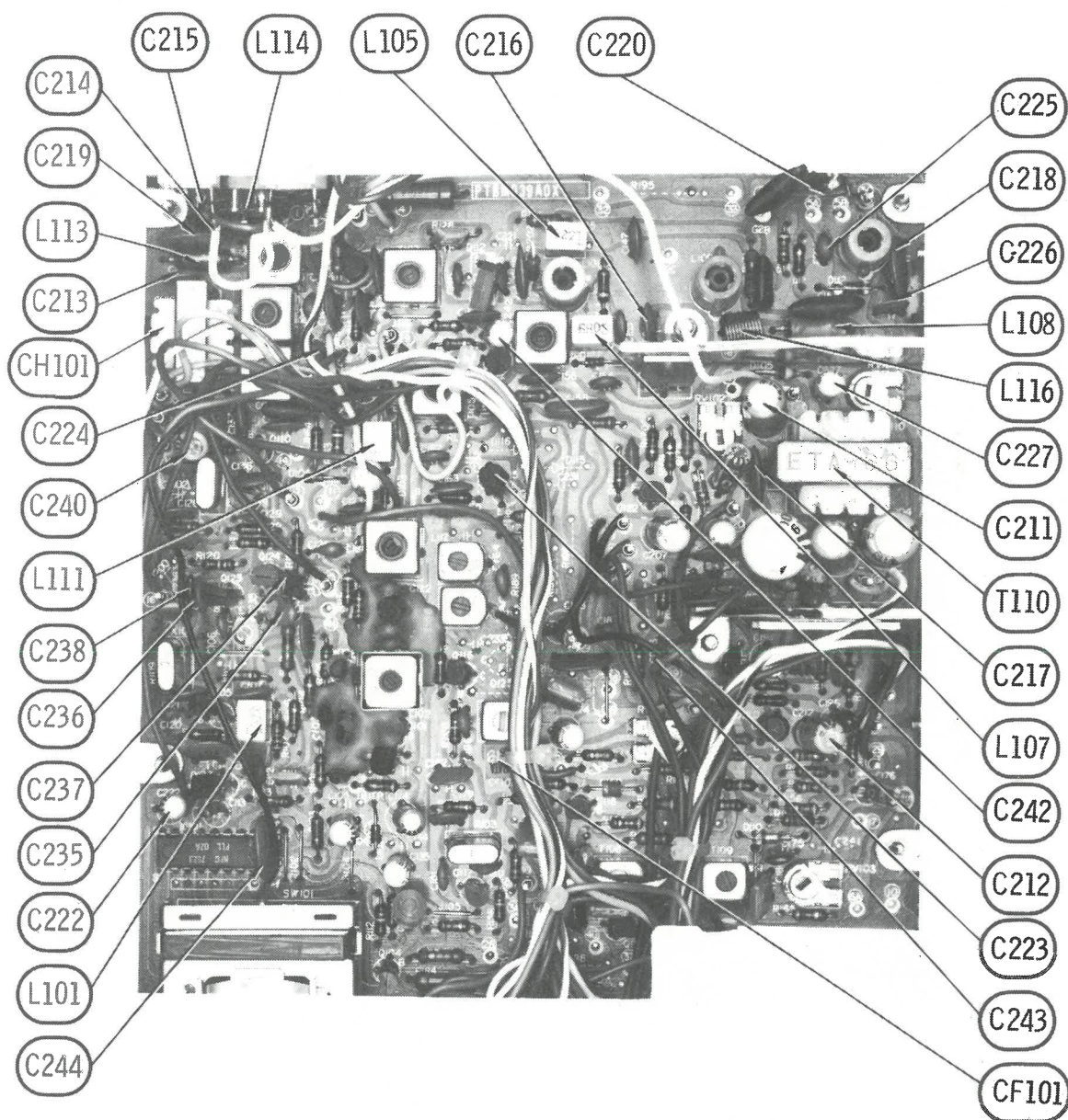
MAIN BOARD



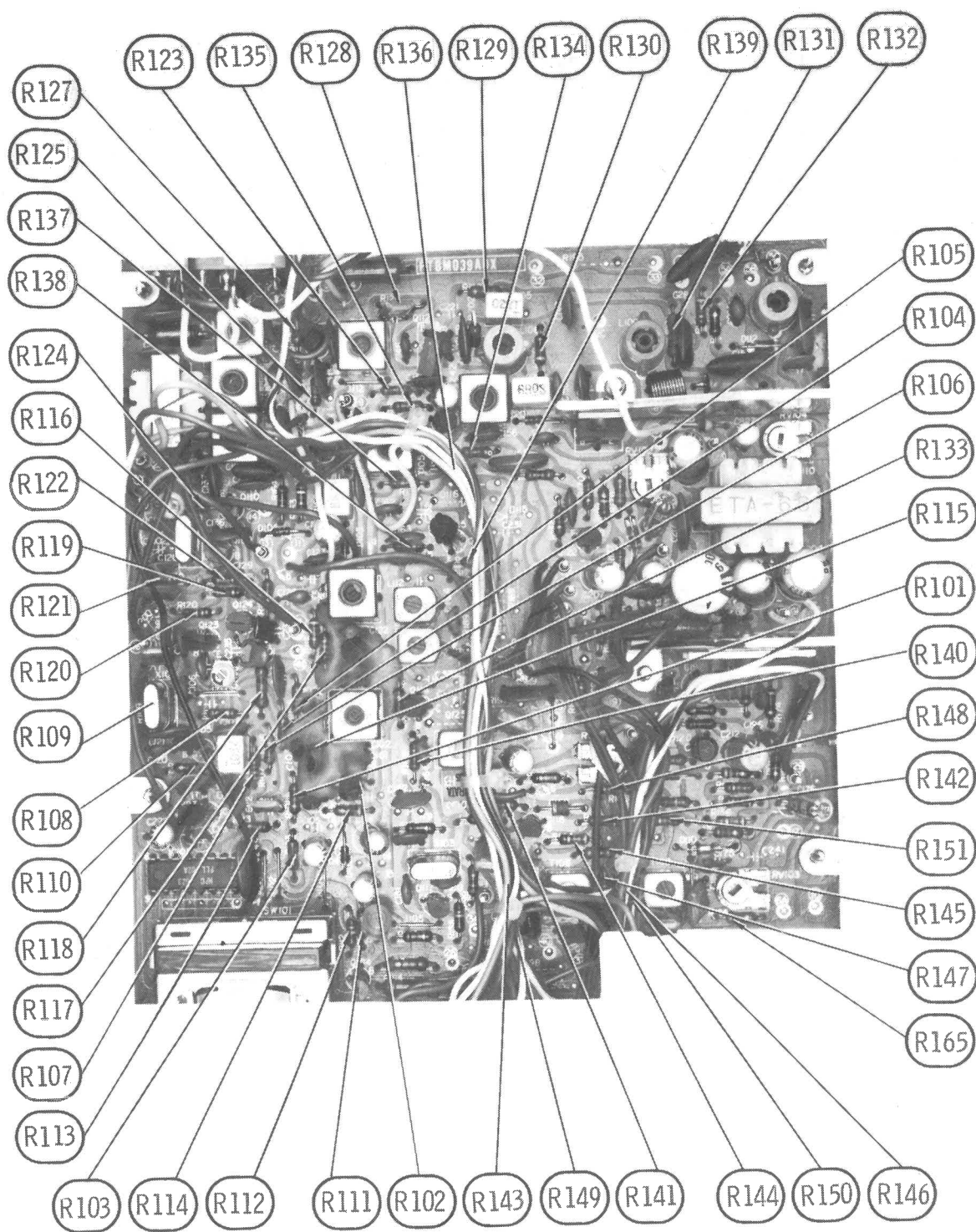
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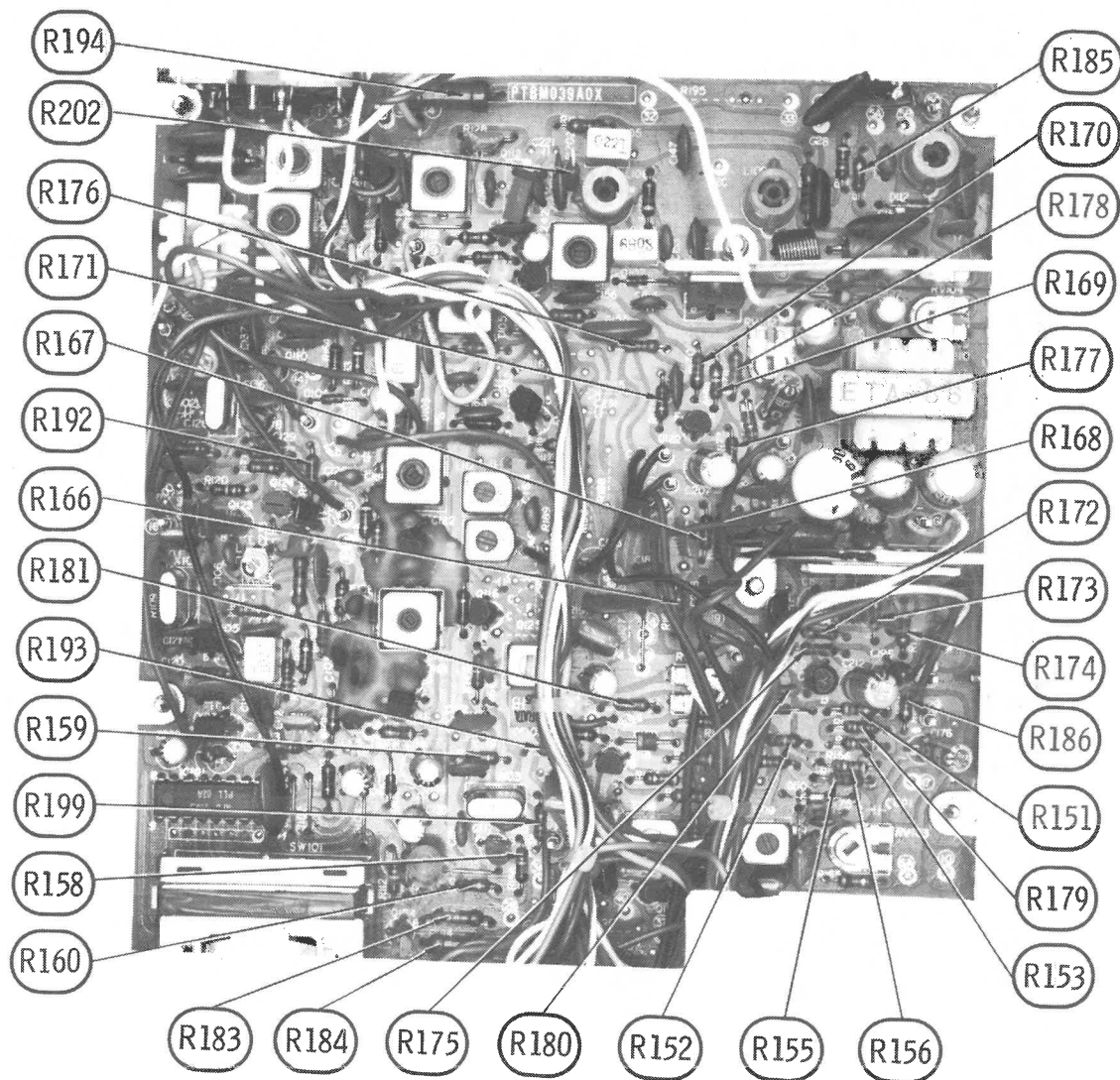
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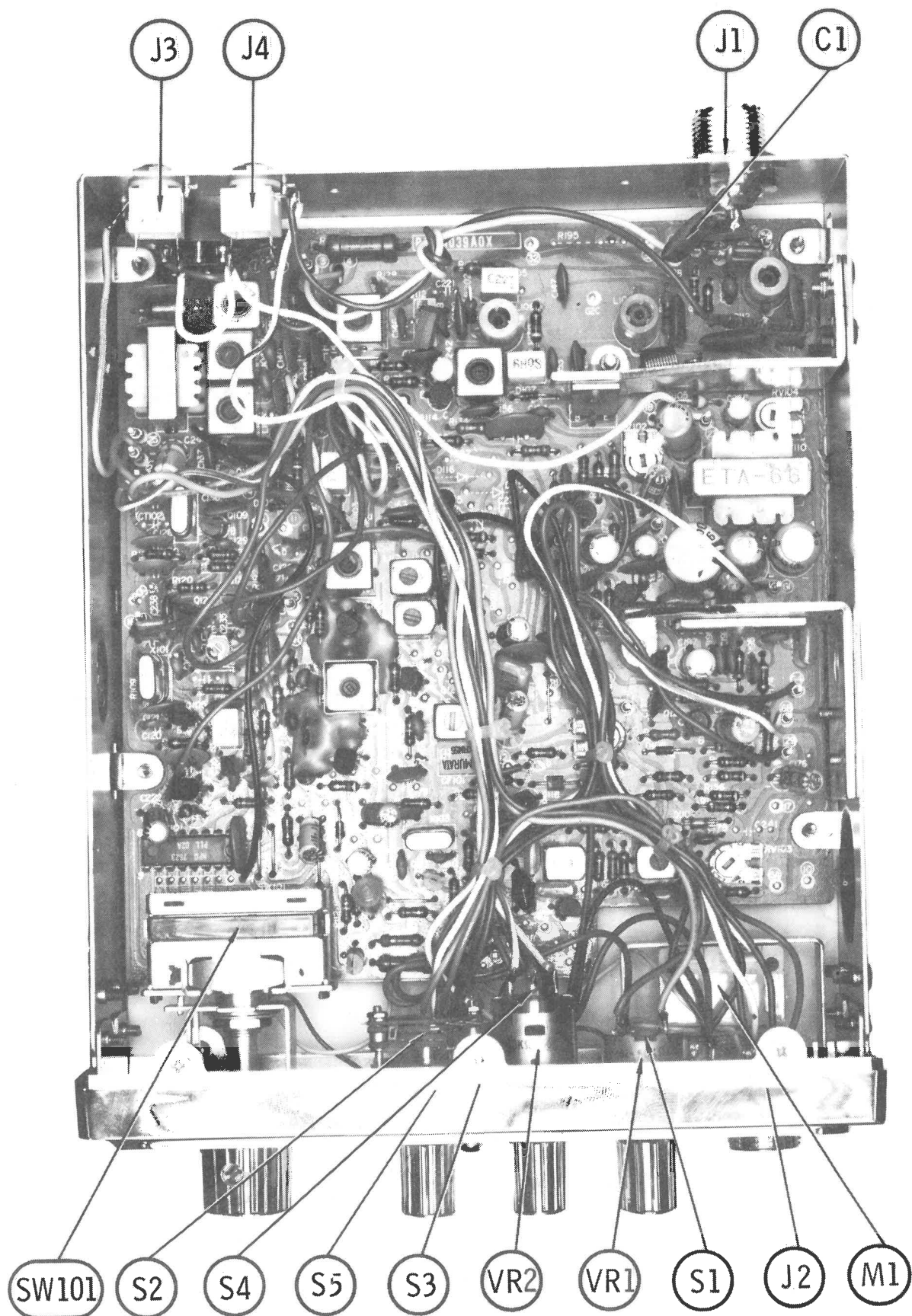
MAIN BOARD



MAIN BOARD



MAIN BOARD



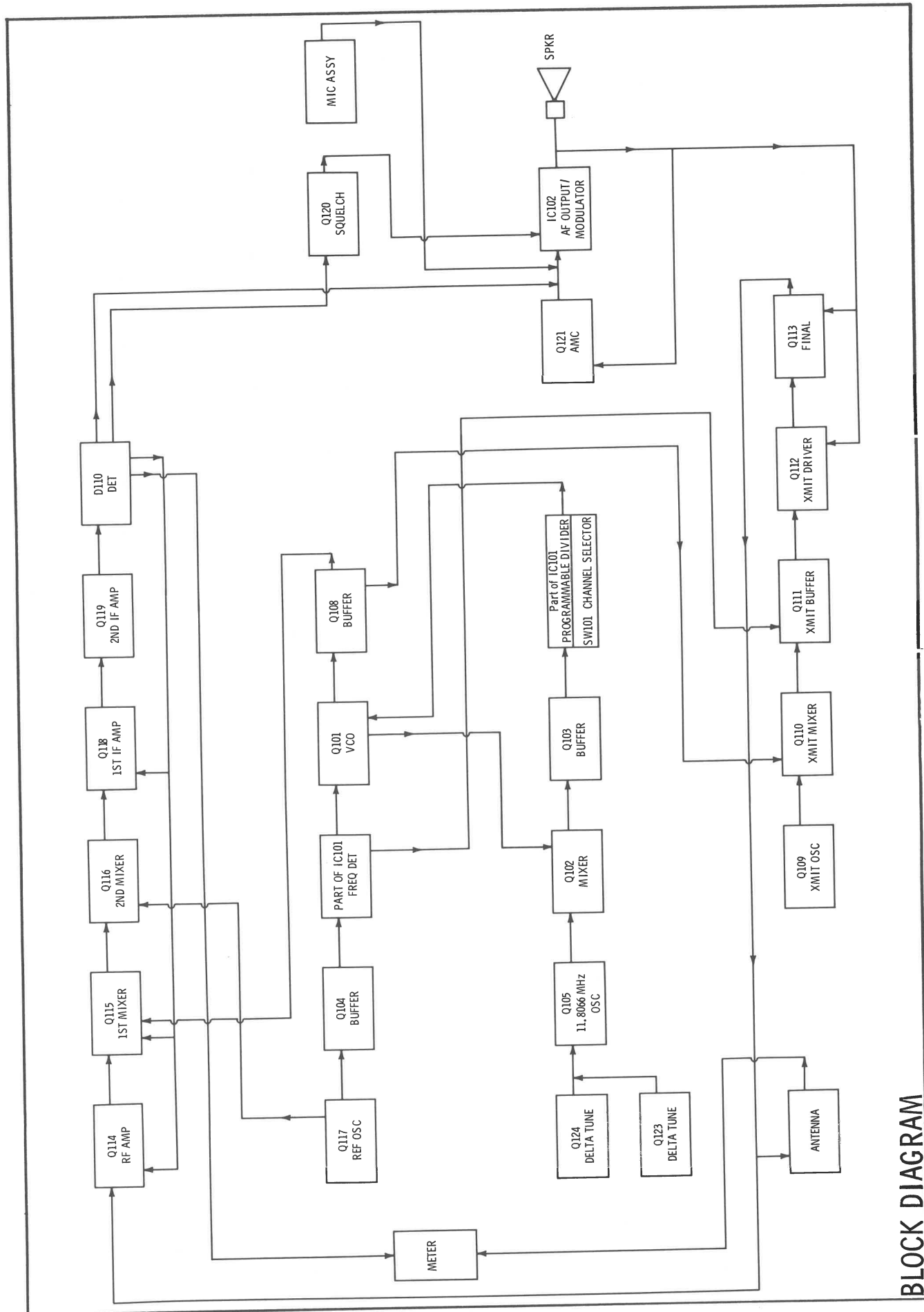
CHASSIS-BOTTOM

TRUTH CHART

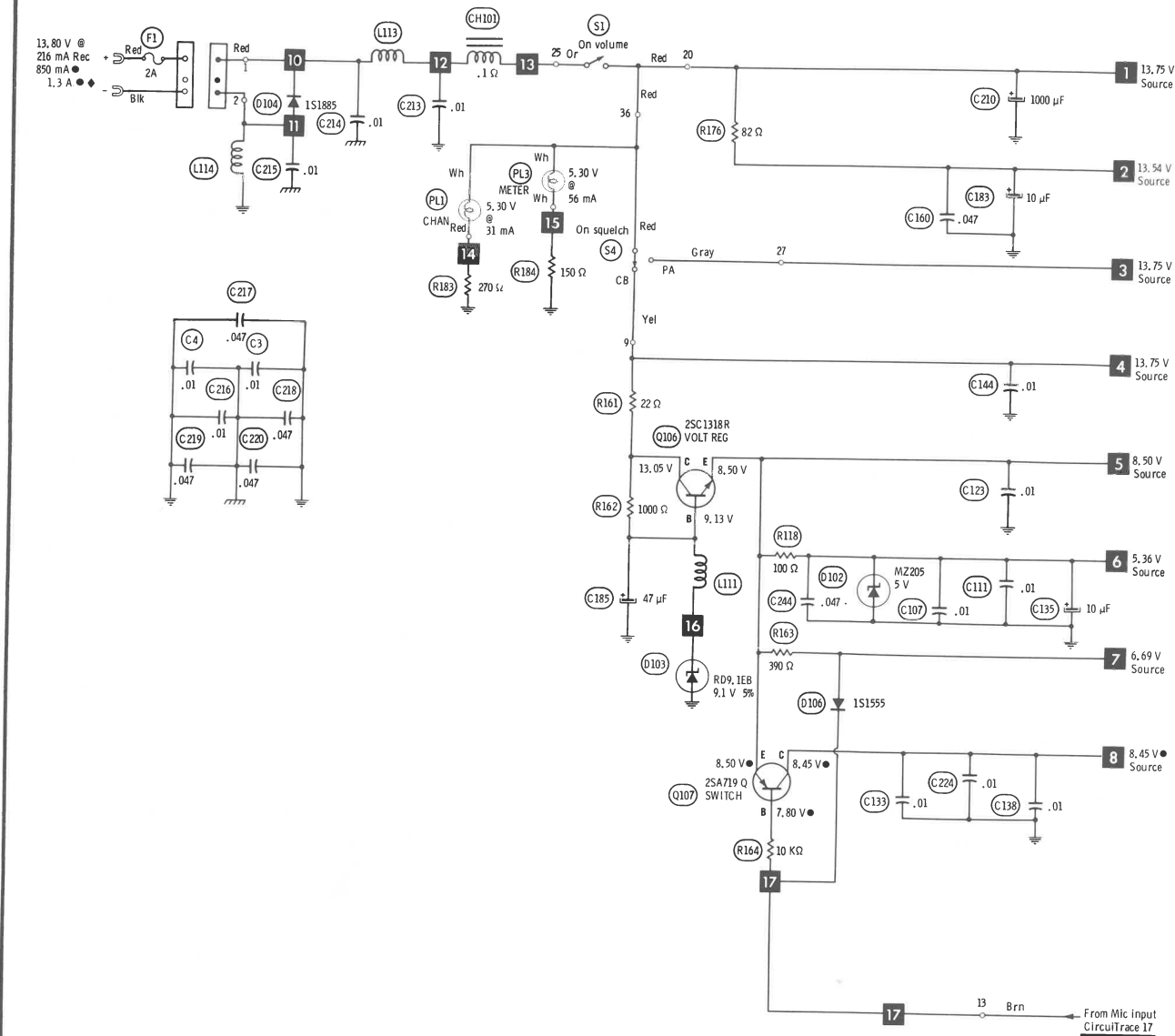
1 = 5.46 Volts 0 = 0 Volts

CHANNEL	IC101 PROGRAM DIVIDER							REC. VCO OUTPUT IN MHz AT TP2	
	PINS								
	11	12	13	14	15				
1	0	0	0	0	0			37.6592	
2	0	0	0	0	1			37.6692	
3	0	0	0	1	0			37.6792	
4	0	0	1	0	0			37.6992	
5	0	0	1	0	1			37.7092	
6	0	0	1	1	0			37.7192	
7	0	0	1	1	1			37.7292	
8	0	1	0	0	1			37.7492	
9	0	1	0	1	0			37.7592	
10	0	1	0	1	1			37.7692	
11	0	1	1	0	0			37.7792	
12	0	1	1	1	0			37.7992	
13	0	1	1	1	1			37.8092	
14	1	0	0	0	0			37.8192	
15	1	0	0	0	1			37.8292	
16	1	0	0	1	1			37.8492	
17	1	0	1	0	0			37.8592	
18	1	0	1	0	1			37.8692	
19	1	0	1	1	0			37.8792	
20	1	1	0	0	0			37.8992	
21	1	1	0	0	1			37.9092	
22	1	1	0	1	0			37.9192	
23	1	1	1	0	1			37.9492	

MIDLAND MODEL 13-857B



BLOCK DIAGRAM



— Circuitry not used in some versions

--- Circuitry used in some versions

⊙ See parts list

⊛ Nominal value

⊕ Ground

⊞ Chassis

Measurements with switching as shown unless noted:

■ Squelch fully clockwise ◆ 100% modulation

● Transmit

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE™

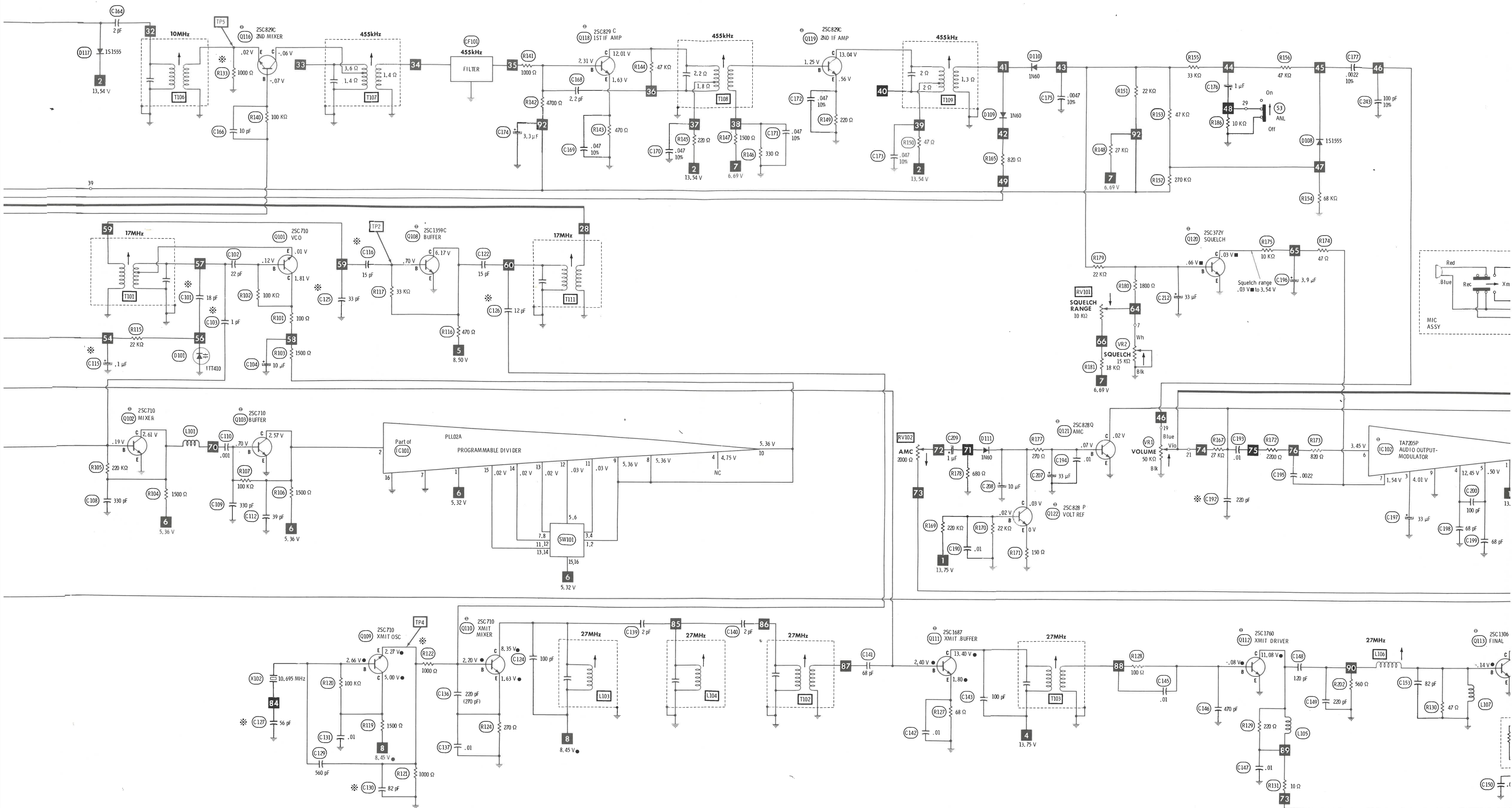
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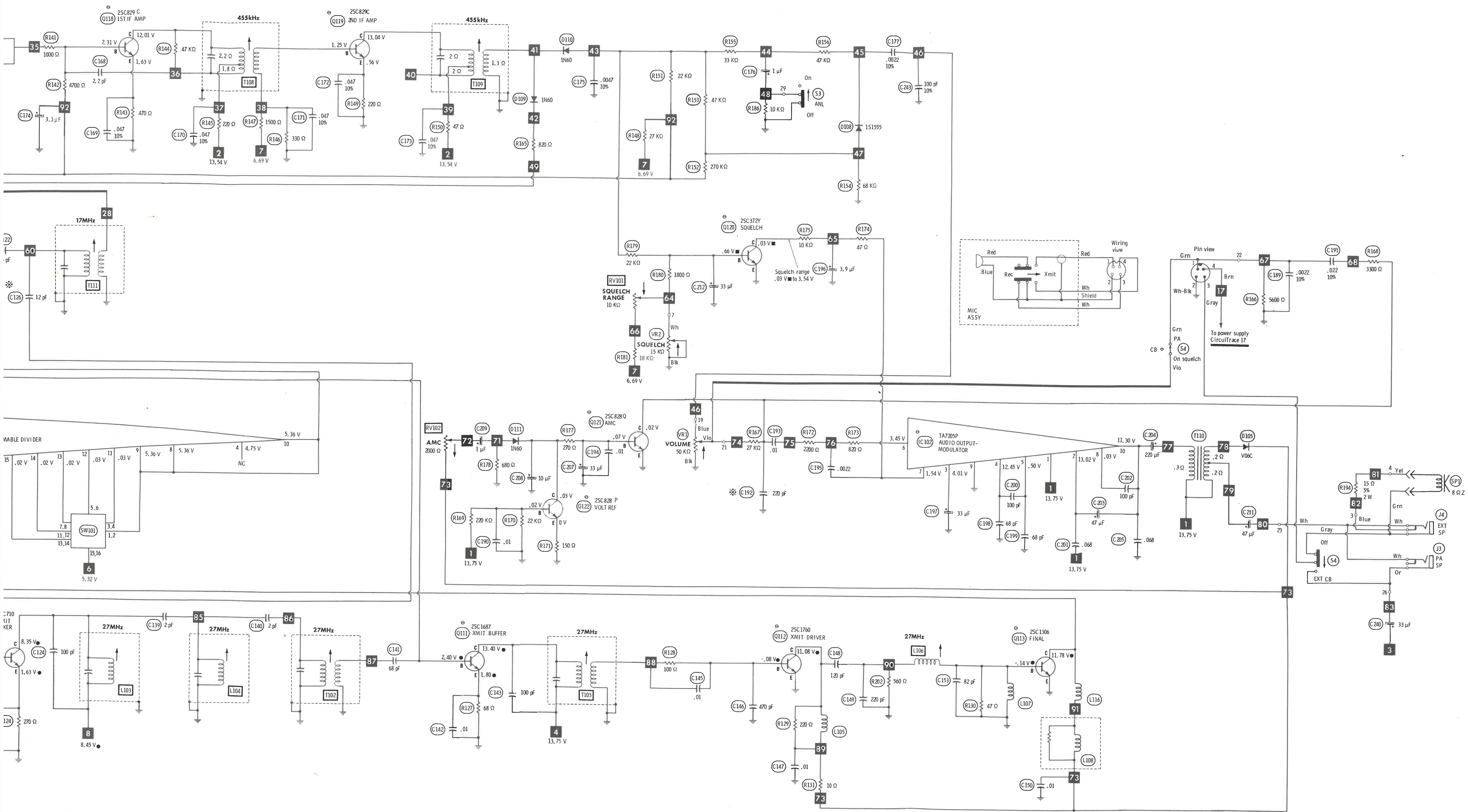
Terminal Guide



Q106, Q107







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.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D101	ITT410		GE-90	D201		HEPR2503	RE 195	SK3126	RT-262	ECG610
D102	MZ205			WEP602			RE 105			ECG135
D103	RD9.1E		GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139A
D104	1S1885		GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D105	V06C		GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
D106	1S1555		GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D107	1S1555		GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D108	1S1555		GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D109	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D110	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D111	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D112	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D117	1S1555		GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
IC101	PLL02A									ECG1167
IC102	TA7205P		GEIC-79	WEP949	PTC780		RE 357-IC	SK3231	TVCM-81	ECG1155
Q101	2SC710		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q102	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710D (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 *
Q103	2SC710		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 *
Q104	2SC710		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 *
Q105	2SC710		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 *
Q106	2SC1318Q		GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
	2SC1318 (1)		GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
Q107	2SA719Q		GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
	2SA719 (1)		GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
Q108	2SC1359C		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC1359 (1)		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC1047 (1)		GE-60 *	(IR)2SC829B	PTC132 *	HEPS0016 *	RE 28 *	SK3018 *	RT-107	ECG161 *
Q109	2SC710		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q110	2SC710		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC1687 (1)		GE-20 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3018 *	RT-107A *	ECG123A *
Q111	2SC1687		GE-20 *	TR-24 *	PTC121 *	HEPS0015 *	RE 13 *	SK3018 *	RT-107A *	ECG123A *
	2SC1688 (1)		GE-81 *	TR-24 *	PTC121 *	HEPS0027 *	RE 13 *	SK3137 *	RT-172 *	ECG123A *
	2SC1215 (1)		GE-61 *	(IR)2SC717	PTC133 *	HEPS0020 *	RE 9	SK3039 *	RT-107A	ECG107
Q112	2SC1760		GE-276				RE 224		RT-310	ECG306
	2SC1846 (1)		GE-336				RE 224			ECG306
Q113	2SC1957 (1)		GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
	2SC1306		GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1678 (1)		GE-322	WEP1678	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1816 (1)		GE-216	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q114	2SC1047C		GE-60 *	(IR)2SC829B	PTC132 *	HEPS0016 *	RE 28 *	SK3018 *	RT-107	ECG161 *
	2SC1047 (1)		GE-60 *	(IR)2SC829B	PTC132 *	HEPS0016 *	RE 28 *	SK3018 *	RT-107	ECG161 *
	2SC784 (1)		GE-60 *	(IR)2SC380A0	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
Q115	2SC1359 (1)		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC1359C		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
	2SC1359 (1)		GE-212	(IR)2SC380A0	PTC121 *	HEPS0014 *	RE 192	SK3038 *	RT-308	ECG199
Q116	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC828C		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC828 (1)		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC710 (1)		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q117	2SC710		GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q118	2SC829C		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	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 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q119	2SC829C		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	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 *
	2SC839 (1)		GE-61 *	(IR)2SC644	PTC132 *	HEPS0015 *	RE 13 *	SK3018 *	RT-308	ECG123A *
Q120	2SC372V		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC372 (1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC828 (1)		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC945 (1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q121	2SC828Q		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	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 (1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q122	2SC828P		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	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 (1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q123	2SC839		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 *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
Q124	2SC839		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 *
	2SC829 (1)		GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *

* 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
C104	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C113	.22 50V			TDC224M050EL	QDT1-10	SD50-R229
C114	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C115	.1 50V			TDC104M050EL	QDT1-2	SD50-R109
C135	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C174	3.3 25V		PC5-50	VTT3R3A50	QV1-23	EV-1318
C176	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C183	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C185	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C196	3.9 10V			TDC335M015FL	QDT1-41	SD15-3R39
C197	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C203	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C204	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C207	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C208	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C209	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C210	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C211	47 25V		PC50-25	VTT47E25	QV1-75	EV-1326
C212	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C222	4.7 25V		PC5-50	VTT47R850	QV1-27	EV-1319
C227	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C240	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C242	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615

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
C1	220			CD15FD221J03	SX322	QW1-35	MMA-221
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	18 NPO				CN0418		10TCC-Q18
C102	22		DTZ-22	NP022	CN0422		10TCC-Q22
C103	1 NPO				CN0510		10TCC-V10
C106	10		DTZ-10	NP010	CN0410		10TCC-Q10
C107	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C108	330		DD-331	GP330	GP333		10TS-T33
C109	330		DD-331	GP330	GP333		10TS-T33
C110	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C111	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C112	39				CN0439		10TCC-Q39
C116	15		DTZ-15	NP015	CN0415		10TCC-Q15
C117	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C118	22 N150				*		10TCP-Q22
C120	560		DD-561		GP356		10TS-T56
C121	100 N150				*		10TCP-T10
C122	15		DTZ-15	NP015	CN0415		10TCC-Q15
C123	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C124	100			CD15FD101J03	SX310	QW1-27	MWA-101
C125	33		DTZ-33	NP033	CN0433		10TCC-Q33
C126	12 N150				*		10TCP-Q12
C127	56 N150				*		10TCP-Q56
C129	560		DD-561		GP356		10TS-T56
C130	82 N150				*		10TCP-Q82
C131	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C132	560			CD19FD561J03	SX356		MWC-561
C133	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C136	220		DD-221		GP322		10TS-T22
C137	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C138	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C139	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C140	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C141	68		DD-680	GP68	GP468		10TS-Q68
C142	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C143	100 N150				*		10TCP-T10
C144	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C145	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C146	470		DD-471	GP470	GP347		10TS-T47
C147	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C148	120		DTZ-120		CN0312		10TCC-T12
C149	220		DD-221		GP322		10TS-T22
C150	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C151	100			CD15FD101J03	SX310	QW1-27	MWA-101
C152	270			CD15FD271J03	SX327	QW1-37	MWB-271
C153	82		DD-820		GP482		10TS-Q82
C154	27				CN0427		10TCC-Q27
C155	.047		UK25-503		MAG2515		HY-735
C156	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C157	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C159	.047		UK25-503		MAG2515		HY-735
C160	.047			DPMS2547	EWFA1A147	QF1-171	1PB-S47

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C104	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C113	.22 50V			TDC224M050EL	QDT1-10	SD50-R229
C114	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C115	.1 50V			TDC104M050EL	QDT1-2	SD50-R109
C135	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C174	3.3 25V			VTT3R3A50	QV1-23	EV-1318
C176	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C183	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C185	47 10V		PC50-16	VTT47D16	QDT1-41	SD15-3R39
C196	3.9 10V			TDC335M015FL	QV1-73	EV-1226
C197	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C203	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C204	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C207	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C208	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C209	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C210	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C211	47 25V		PC50-25	VTT47E25	QV1-75	EV-1326
C212	33 6.3V		PC30-25	VTT33B10	QV1-61	EV-1125
C222	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C227	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C240	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C242	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C1	220			CD15FD221J03	SX322	QW1-35	MWA-221
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	18 NPO				CN0418		10TCC-Q18
C102	22		DTZ-22	NPO22	CN0422		10TCC-Q22
C103	1 NPO				CN0510		10TCC-V10
C106	10		DTZ-10	NPO10	CN0410		10TCC-Q10
C107	.01		DC-103	MGP01	TA110		TG-S10
C108	330		DD-331	GP330	GP333	QC2-141	10TS-T33
C109	330		DD-331	GP330	GP333		10TS-T33
C110	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C111	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C112	39				CN0439		10TCC-Q39
C116	15		DTZ-15	NPO15	CN0415		10TCC-Q15
C117	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C118	22 N150				*		10TCP-Q22
C120	560		DD-561		GP356		10TS-T56
C121	100 N150				*		10TCP-T10
C122	15		DTZ-15	NPO15	CN0415		10TCC-Q15
C123	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C124	100		DC-103	CD15FD101J03	SX310	QW1-27	MWA-101
C125	33		DTZ-33	NPO33	CN0433		10TCC-Q33
C126	12 N150				*		10TCP-Q12
C127	56 N150				*		10TCP-Q56
C129	560		DD-561		GP356		10TS-T56
C130	82 N150				*		10TCP-Q82
C131	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C132	560			CD19FD561J03	SX356		MWC-561
C133	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C136	220		DD-221		GP322	QC2-141	10TS-T22
C137	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C138	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C139	2		DTZ-2R2	NPO2P2	CN0522		10TCC-V22
C140	2		DTZ-2R2	NPO2P2	CN0522		10TCC-V22
C141	68		DD-680	GP68	GP468	QC2-141	10TS-Q68
C142	.01		DC-103	MGP01	TA110		TG-S10
C143	100 N150				*		10TCP-T10
C144	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C145	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C146	470		DD-471	GP470	GP347		10TS-T47
C147	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C148	120		DTZ-120		CN0312		10TCC-T12
C149	220		DD-221		GP322		10TS-T22
C150	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C151	100			CD15FD101J03	SX310	QW1-27	MWA-101
C152	270			CD15FD271J03	SX327	QW1-37	MWB-271
C153	82		DD-820		GP482		10TS-Q82
C154	27				CN0427		10TCC-Q27
C155	.047		UK25-503		MAG2515		HY-735
C156	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C157	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C159	.047		UK25-503		MAG2515		HY-735
C160	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C161	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C162	33 N150				*		10TCP-Q33
C163	.01				TA110	QC2-141	TG-S10
C164	2		DC-103	MGP01	CN0522		10TCC-V22
C165	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C166	10		DTZ-10	NPO10	CN0410		10TCC-Q10
C168	2.2		DTZ-2R2	NPO2P2	CN0522		10TCC-V22
C169	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C170	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C171	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C172	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C173	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C175	.0047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C177	.0022			DPMS2S47	EWFA147	QF1-171	1PB-S47
C178	56 N150			DPMS6D22	EWFA147	QF1-171	1PB-S47
C180	560				*		6PS-D22
C181	100		DD-561		GP356		10TCP-Q56
C182	68 N150		DD-101	GP100	GP310		10TS-T56
C184	.022				*		10TS-T10
C189	.0022			DPMS2S22	EWFA122	QF1-127	10TCP-Q68
C190	.01		DD-222		GP222	QF1-127	1PB-S22
C191	.022		DC-103	MGP01	TA110	QC2-97	5GA-D22
C192	.220			DPMS2S22	EWFA122	QC2-141	TG-S10
C193	.01		DD-221		GP322	QF1-127	1PB-S22
C194	.01			WMF1S1	EWFA1110		10TS-T22
C195	.0022		DC-103	MGP01	TA110	QF1-91	1PB-S10
C198	68		DD-222		GP222	QC2-141	TG-S10
C199	68		DD-680	GP68	GP468	QC2-97	5GA-D22
C200	100		DD-680	GP68	GP468		10TS-Q68
C201	.068		DTZ-100	NPO100	CN0310		10TS-Q68
C202	100			WMF1S68	EWFA168	QF1-195	10TCC-T10
C205	.068			NPO100	CN0310		1PB-S68
C213	.01		DTZ-100	WMF1S68	EWFA168	10TCC-T10	
C214	.01		DC-103	MGP01	TA110	QF1-195	1PB-S68
C215	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C216	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C217	.047		UK25-503	MGP01	TA110	QC2-141	TG-S10
C218	.047		UK25-503		MAG2515		HY-735
C219	.047		UK25-503		MAG2515		HY-735
C220	.047		UK25-503		MAG2515		HY-735
C223	39				MAG2515		HY-735
C224	.01		DC-103	MGP01	CN0439	QC2-141	10TCC-Q39
C225	3		DTZ-3R3	NPO3P3	TA110		TG-S10
C226	.0047		DD-472	GP4700	CN0533		10TCC-V33
C235	15 N150				GP247		5GA-D47
C236	39 N150				*		10TCP-Q15
C237	.0022			DPMS6D22	EWFA147		10TCP-Q39
C238	.0022			DPMS6D22	EWFA147		6PS-D22
C243	100		DTZ-100	NPO100	CN0310		6PS-D22
C244	.01		DC-103	MGP01	TA110	QC2-141	10TCC-T10
CT101	20	18-123019					TG-S10

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

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
RV101	Squelch Range	10K	13-164132	T-10K (3)	C-103 (3)	MTC14L4	U201R103B
RV102	AMC	2000	13-164133				
RV103	S Meter	20K	13-164134				
RV104	RF Meter	20K	13-164134				
VR1	Volume/Power Switch	50K	13-160139				
VR2	Squelch/PA Switch	10K	13-166068				

(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.	
L101	RF Choke (22uH)	13-178227			
L103	Xmit Mixer (27MHz)	13-176562			
L104	Xmit Mixer (27MHz)	13-176563			
L105	RF Choke (2.2uH)	13-176564			
L106	Xmit Buffer (27MHz)	13-176508			
L107	RF Choke (68uH)	13-178210			
L108	RF Choke	13-176565			
L109	Final (27MHz)	13-176509			
L110	Pi Network (27MHz)	13-176510			
L111	RF Choke (68uH)	13-178210			
L112	IF (10.7MHz)	13-176615			
L113	RF Choke	13-178209			
L114	RF Choke	13-178209			
L116	RF Choke	13-176567			
T101	VCO (17MHz)	13-094237			
T102	Xmit Mixer (27MHz)	13-094232			
T103	Xmit Buffer (27MHz)	13-094233			
T104	Rec Antenna (27MHz)	13-094234			
T105	Rec RF (27MHz)	13-094235			
T106	IF (10.7MHz)				
T107	IF (455kHz)	13-090371			
T108	IF (455kHz)	13-090375			
T109	IF (455kHz)	13-090372			
T111	VCO (17MHz)	13-090405			

MIDLAND MODEL 13-857B

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.	
CH101	1.6A	.12	.48mH	13-178241 ELA-16 (1)	TR523		(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T110	2.8	1 8 2 13.5	13-096200 ETA-66 (1)	TR723	MCB-14	(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	3" PM, 8 Ohms	13-060118	30A0528R	

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		13-034097	AGC2	HDJ	312002	150145	FG2-2

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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	13-038075	18-032	18-034	18-010	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
X101	11.8066	13-128382	CA23W11.8066	PLL Osc.	X103	10.240	13-128384	CB140W10.240	Ref. Osc.
X102	10.695	13-128383	CB140W10.695	Xmit Osc.					

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF101	Ceramic Filter	13-179059	455kHz
J1	Jack	13-159220	Antenna
J2	Jack	13-159234	Microphone
J3	Jack	13-153168	PA
J4	Jack	13-153168	External Speaker
J5	Jack	13-159235	Power
M1	Meter	13-200078	S/Rf
PL1	Lamp	13-201076	Channel Indicator
PL2	Lamp	13-201076	Meter
S1	Switch		Power (On Volume Control)
S2	Switch	13-183236	Delta Tune
S3	Switch	13-180117	ANL
S4	Switch		PA (On Squelch Control)
S5	Switch	13-180117	External CB
SW101	Switch	13-180123	Channel Selector

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

ITEM	PART No.	ITEM	PART No.
Escutcheon	13-011032	Disc, Channel	13-115142
Knob, Control	13-110204	Bracket, Mounting	13-158510
Knob, Channel	13-115141	Microphone Holder	13-158509

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')