



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 GTX-66

MANUFACTURER'S SPECIFICATIONS

Circuitry	20 Transistors, 4 ICs, 18 Diodes, 2 Zener-diodes, 1 Vari-cap.
Frequency Control	PLL (Phase Locked Loop) Synthesizer
Channels	40 channels all installed
Mode of Operation	AM
Receiver System	Dual conversion superheterodyne
Sensitivity	0.7 μ V for 10 dB S/N
Selectivity	More than 50 dB down
Intermediate Frequency	1st: 10.695 MHz / 2nd: 455 KHz
Frequency Tolerance	0.005 %
Spurious Rejection (TX)	More than 60 dB down
RF Output Power	4 watts, FCC maximum, at 117 V AC, 50/60 Hz or 13.8 V DC
Squelch Range	0.5 μ V to 500 μ V
Audio Output Power	3 watts to 8 ohms
Controls	CB-PA switch, Tone/Hi-Lo switch, ANL switch, Volume control/Power switch, Squelch control
Jacks and Connectors	Microphone connector, Phone jack, Antenna connector, External speaker jack, PA speaker jack, DC power connector, AC power connector
Other Facilities	S/P-RF meter, AC fuse, LED Channel Indicator, TX Lamp
Speaker	Oval, dynamic type, 8 ohms
Microphone	Dynamic type, 500 – 600 ohms, with PTT bar
Power Source	117 V AC 50/60 Hz or 13.8 V DC

Courtesy of the Manufacturer

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

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GEMTRONICS MODEL GTX-66

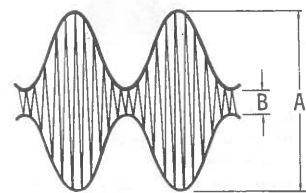
ALIGNMENT INSTRUCTIONS

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.

Before adjustment or alignment, adjust RV1a for 13.8-volts at Pin 3 of power supply board.

Suggested Alignment Tools:

GC ELECTRONICS
 L14, T7 thru T105009, 8728A, 8728
 L7, L11, L129304, 9300, 9302
 L1, L2, L5, T1 thru T69440
 CT15000, 8276



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

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (Q1, Emitter).	Ch. 19 Delta Tune 0	CT1	Adjust for 10.240MHz $\pm$ 50Hz.
Input of oscilloscope to TP2 (T1, Secondary).	Ch. 19 Delta Tune 0	T1	Adjust for maximum.
Input of DC meter to TP8.	Ch. 1	L1	Adjust for 3.60V $\pm$.1V.
Input of oscilloscope to TP4 (IC3, Pin 4).	Ch. 19	L2,T2	Adjust for maximum.
Input of frequency counter to TP4 (IC3, Pin 4).	Ch. 1		Check for 37.660MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3 (IC3, Pin 1).	Ch. 19, XMT		Check for 10.695MHz.

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.
 Delta Tune 0, Squelch MINIMUM, Dist/Loc Loc, ANL Switch Off, NB Switch Off, Tone Hi.

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

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Delta Tune 0, Dist/Loc Loc, ANL Switch Off, NB Switch Off, Tone Hi.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	RV1b	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	RV3	S METER Adjust for 9 on signal scale of meter.

TRANSMITTER ALIGNMENT

Connect a 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
Input of RF wattmeter to antenna input.	Ch. 19	L5,T3,T4, L7,L11,L12	Adjust for maximum.
Input of RF wattmeter to antenna input.	Ch. 19	L7	Adjust for 4.0 watts maximum.

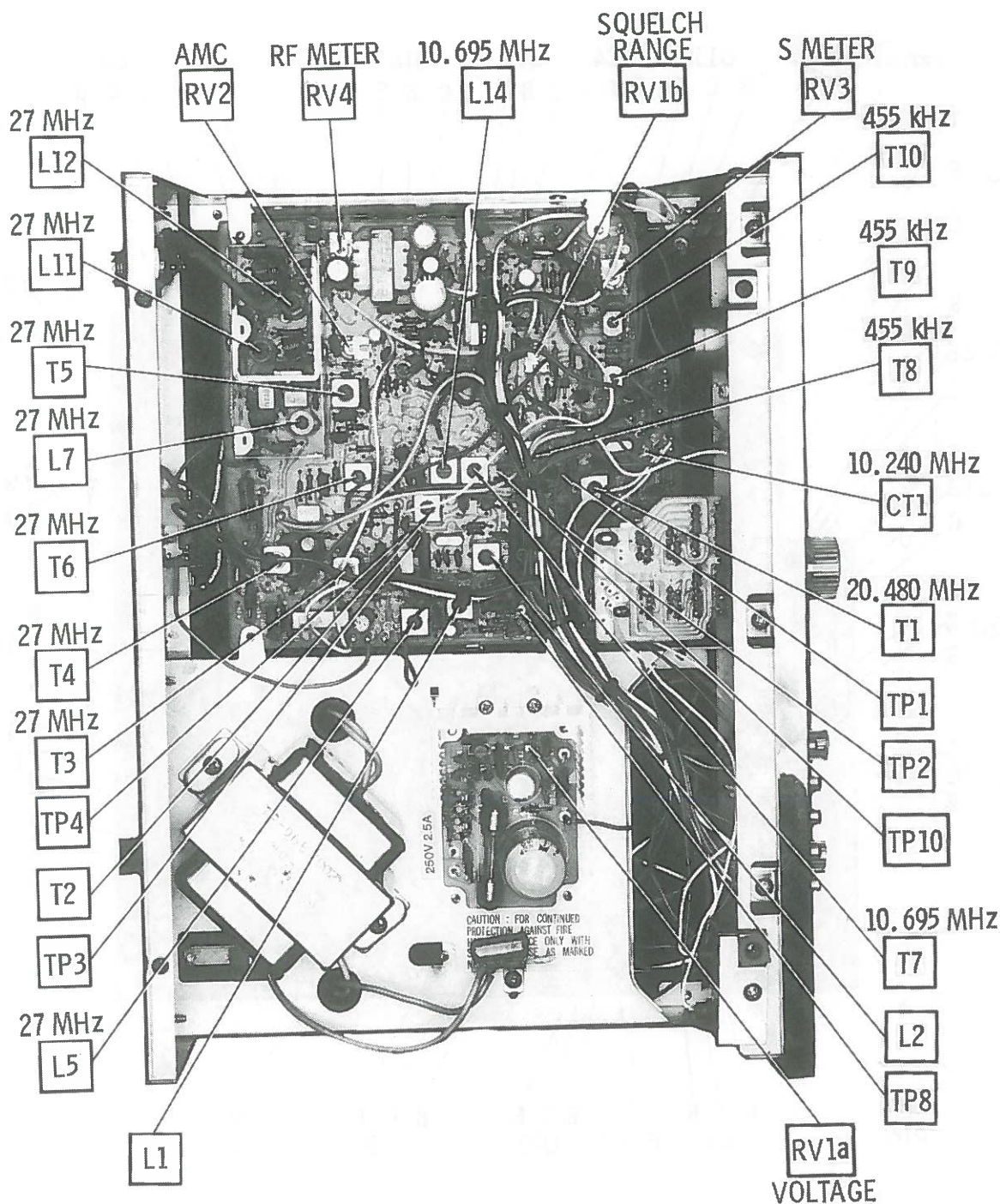
TRANSMITTER ADJUSTMENTS

Connect a 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	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna jack. Inject a 10mV, 1000Hz signal at Mic input.	Ch. 19	RV2	AMC Adjust for 80% modulation. See Figure 1.
Connect an RF wattmeter and 50-ohm, 25 watt dummy load to antenna connector.	Ch. 19	RV4	RF PANEL METER Adjust so that RF meter agrees with RF wattmeter.

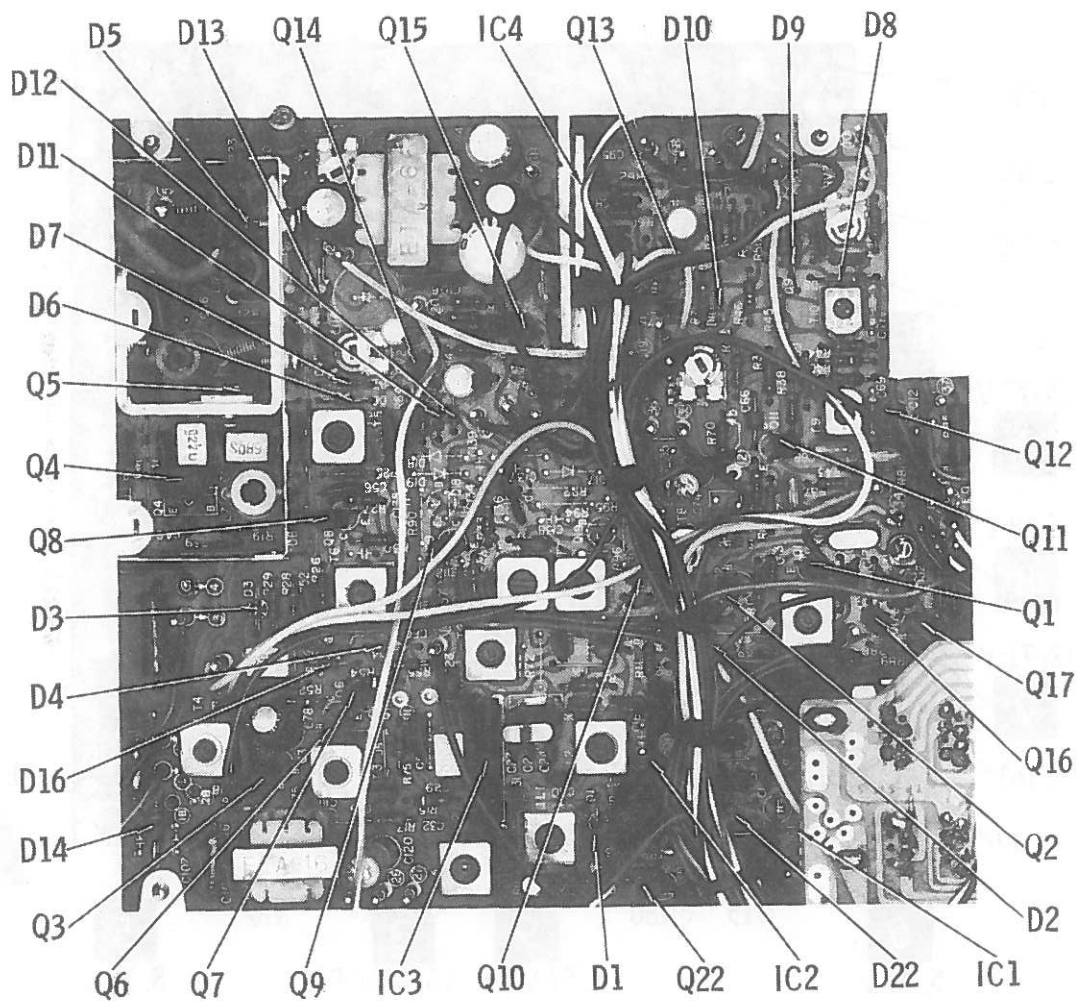
TRUTH CHART

C H A N N E L	1 = 5.33 Volts 0 = 0 Volts 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		
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		

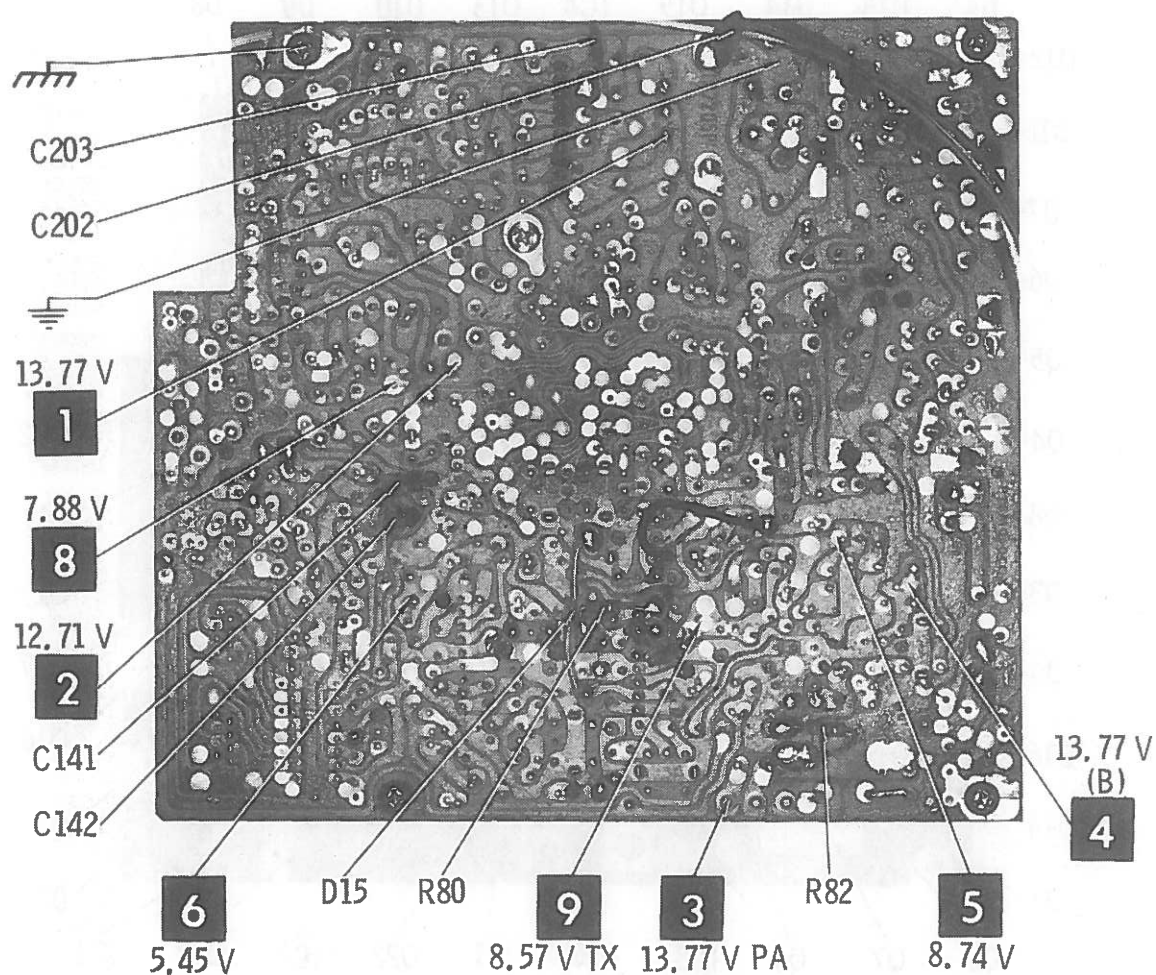


CHASSIS - TOP

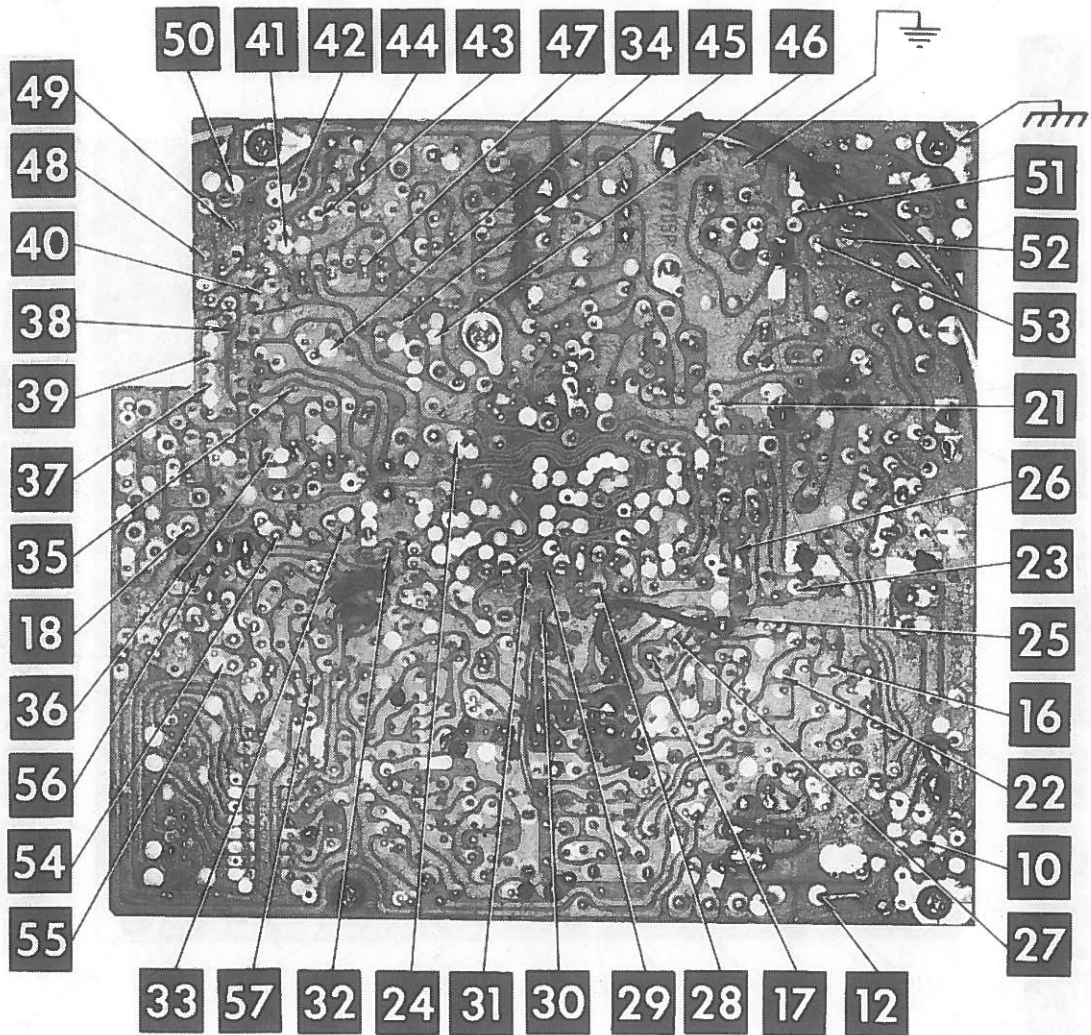




MAIN BOARD

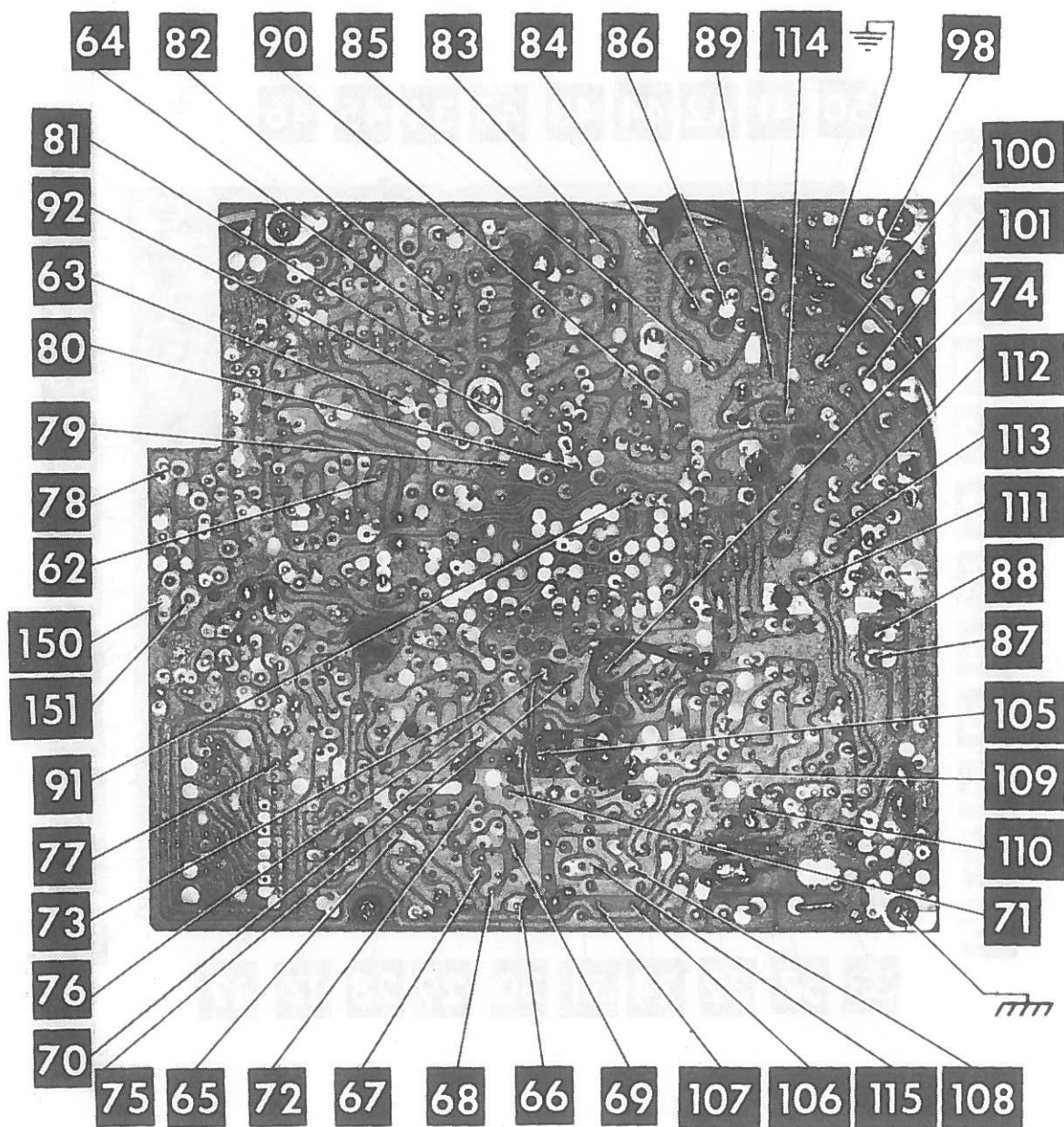


MAIN BOARD

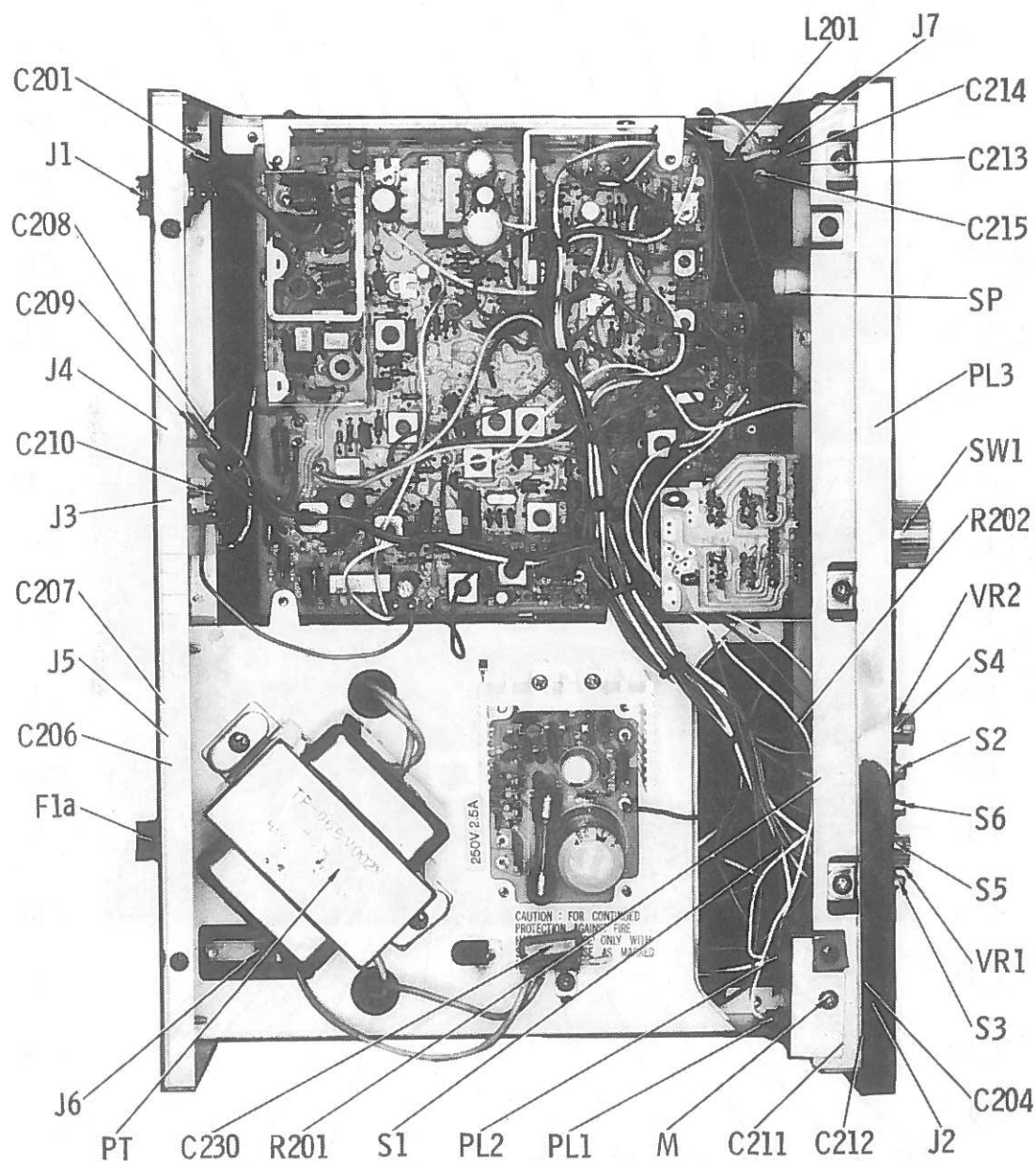


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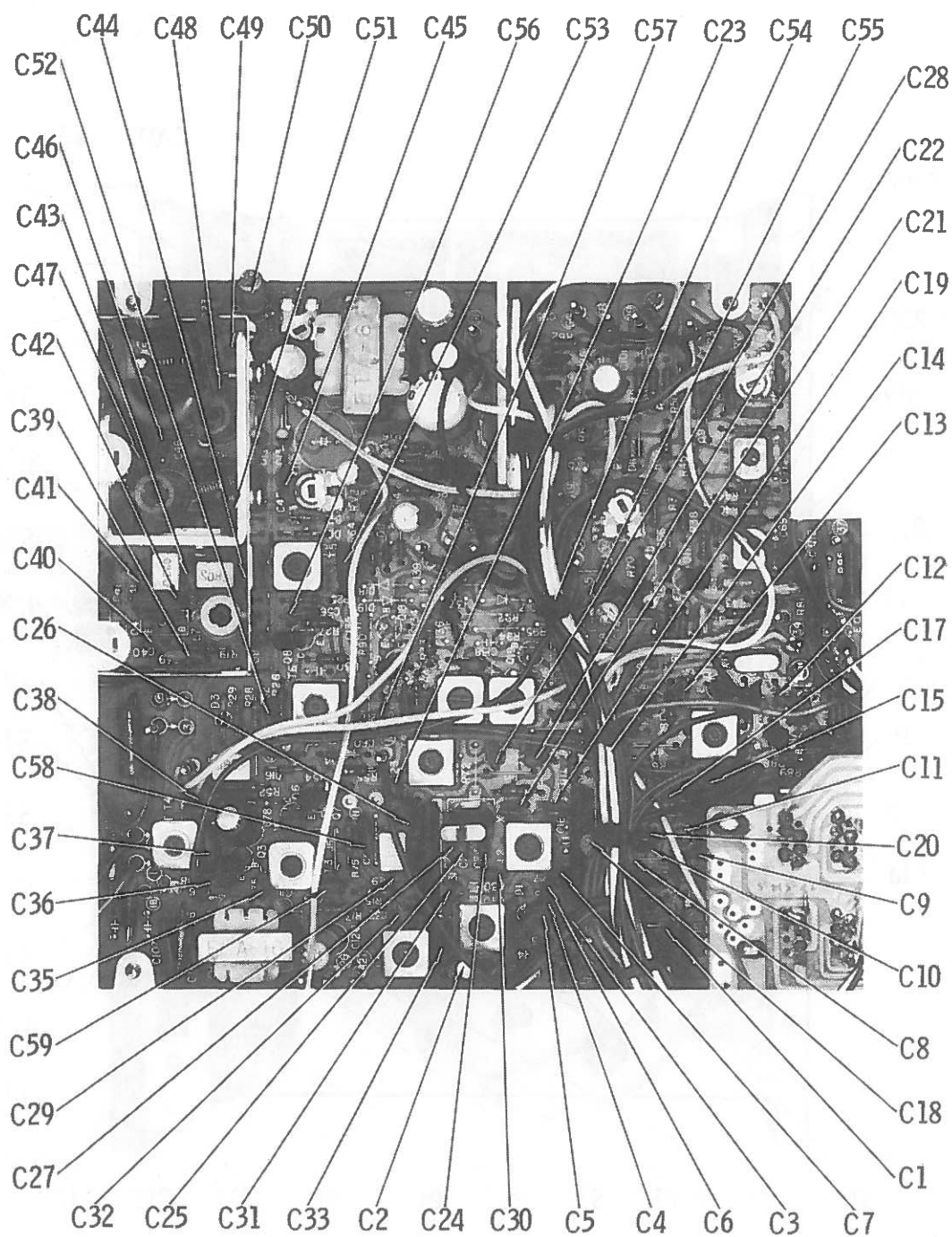
MAIN BOARD



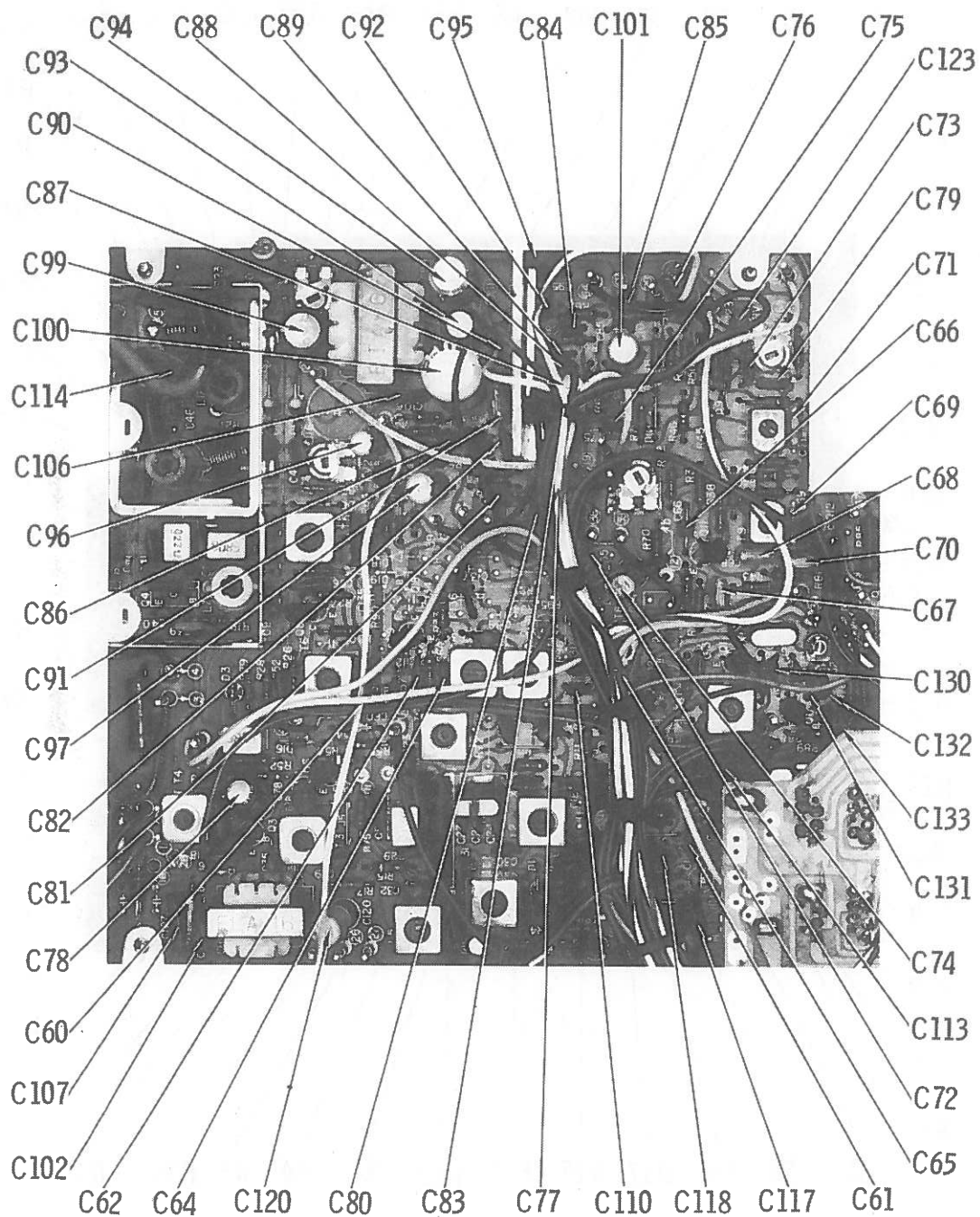
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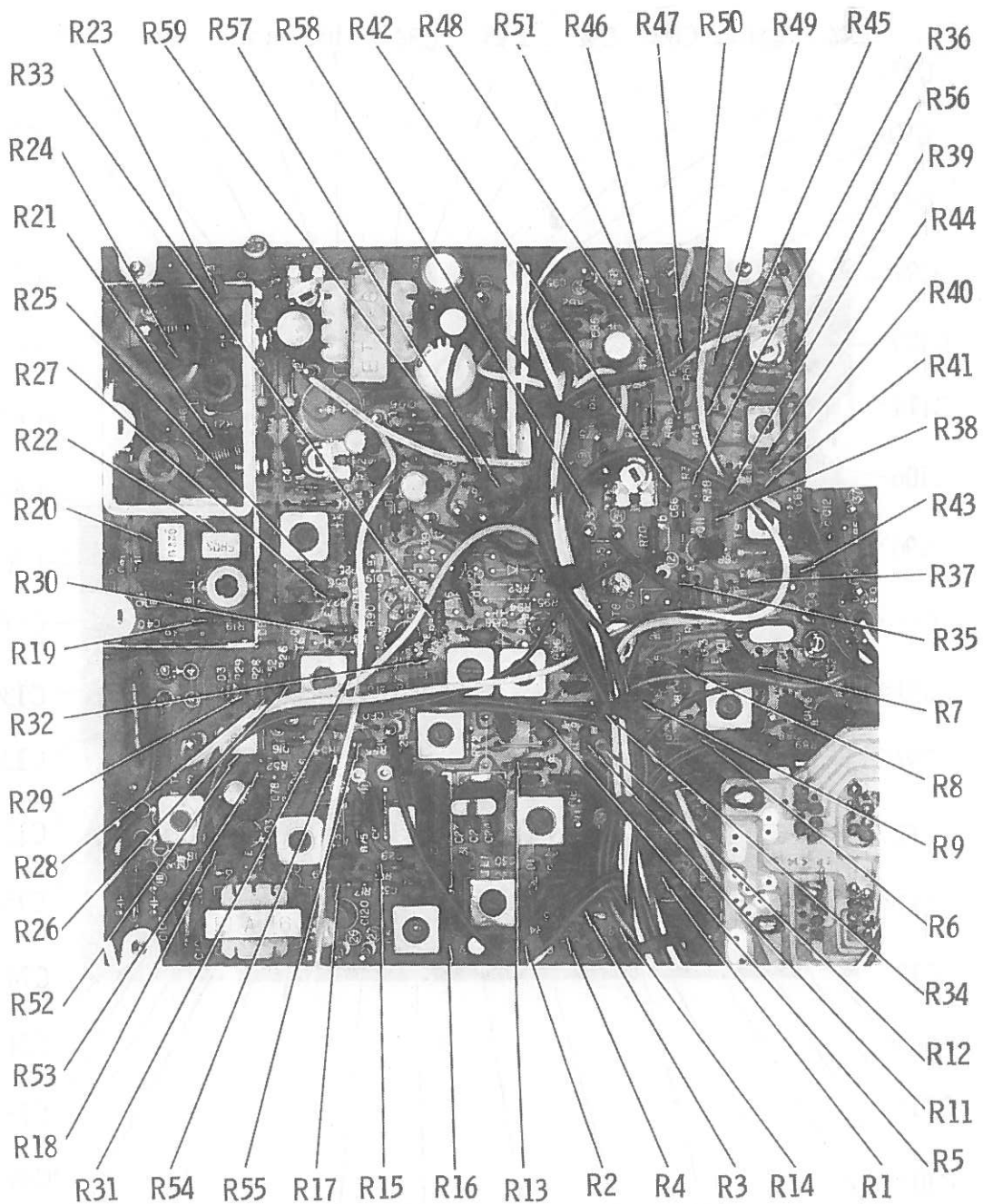
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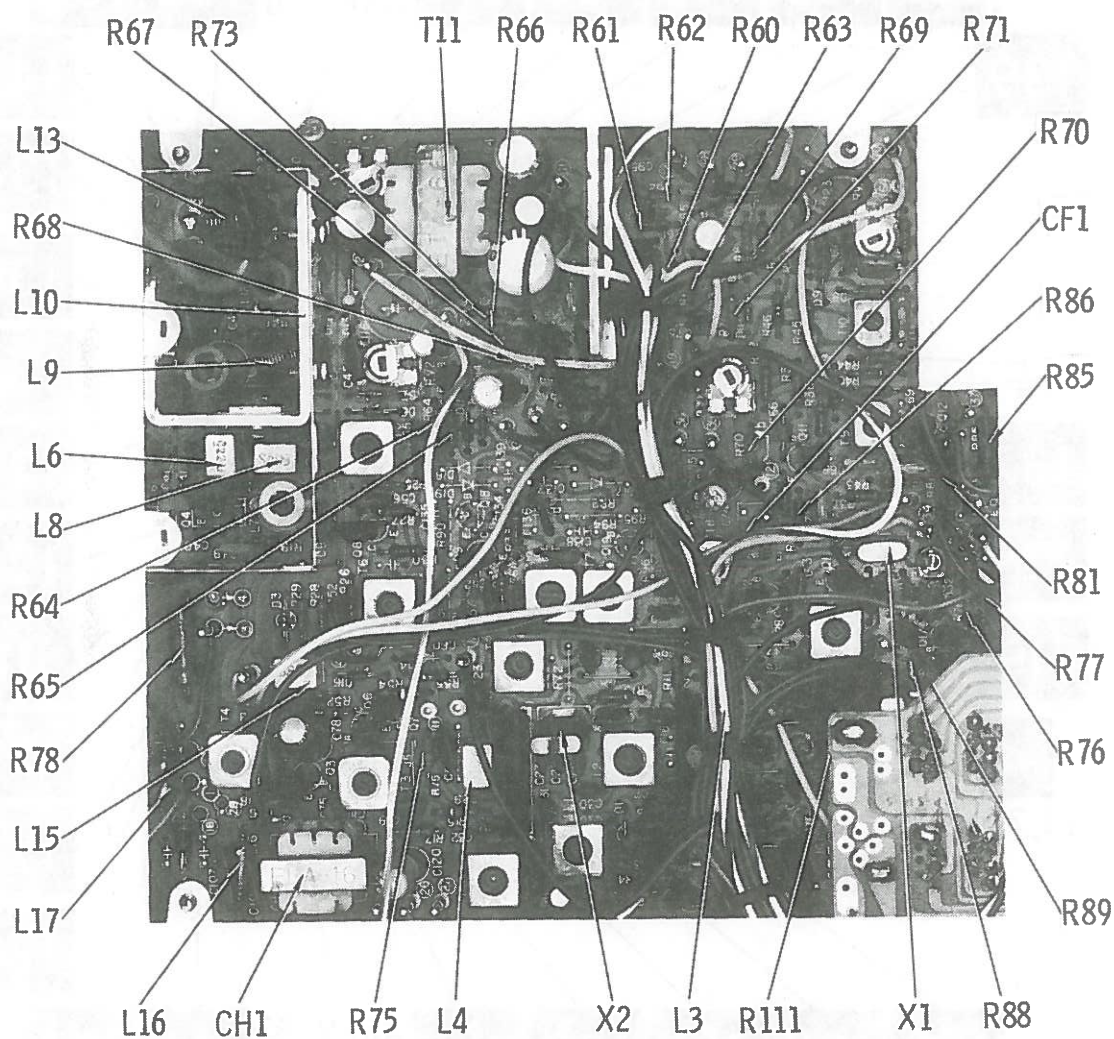
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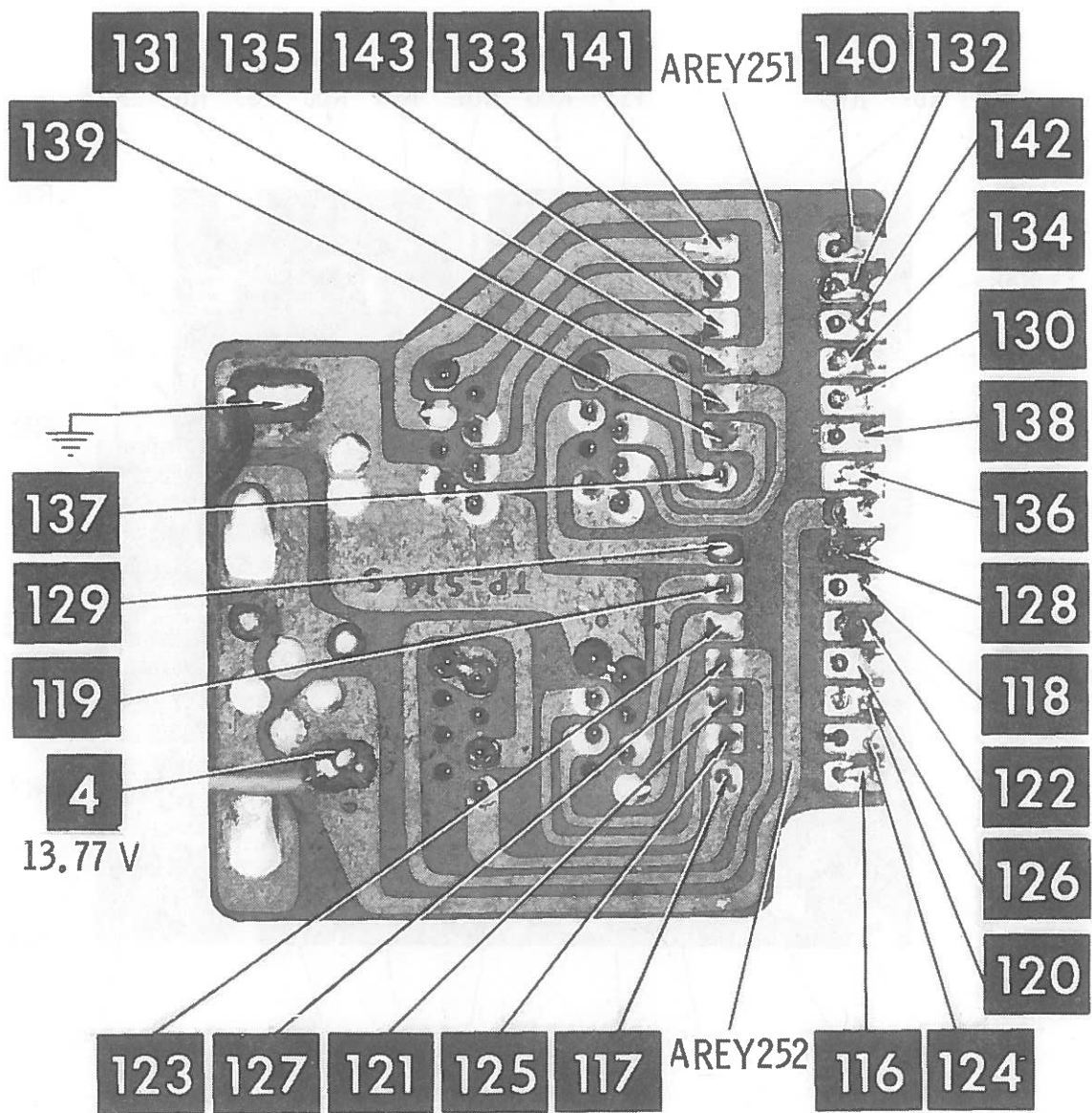
MAIN BOARD



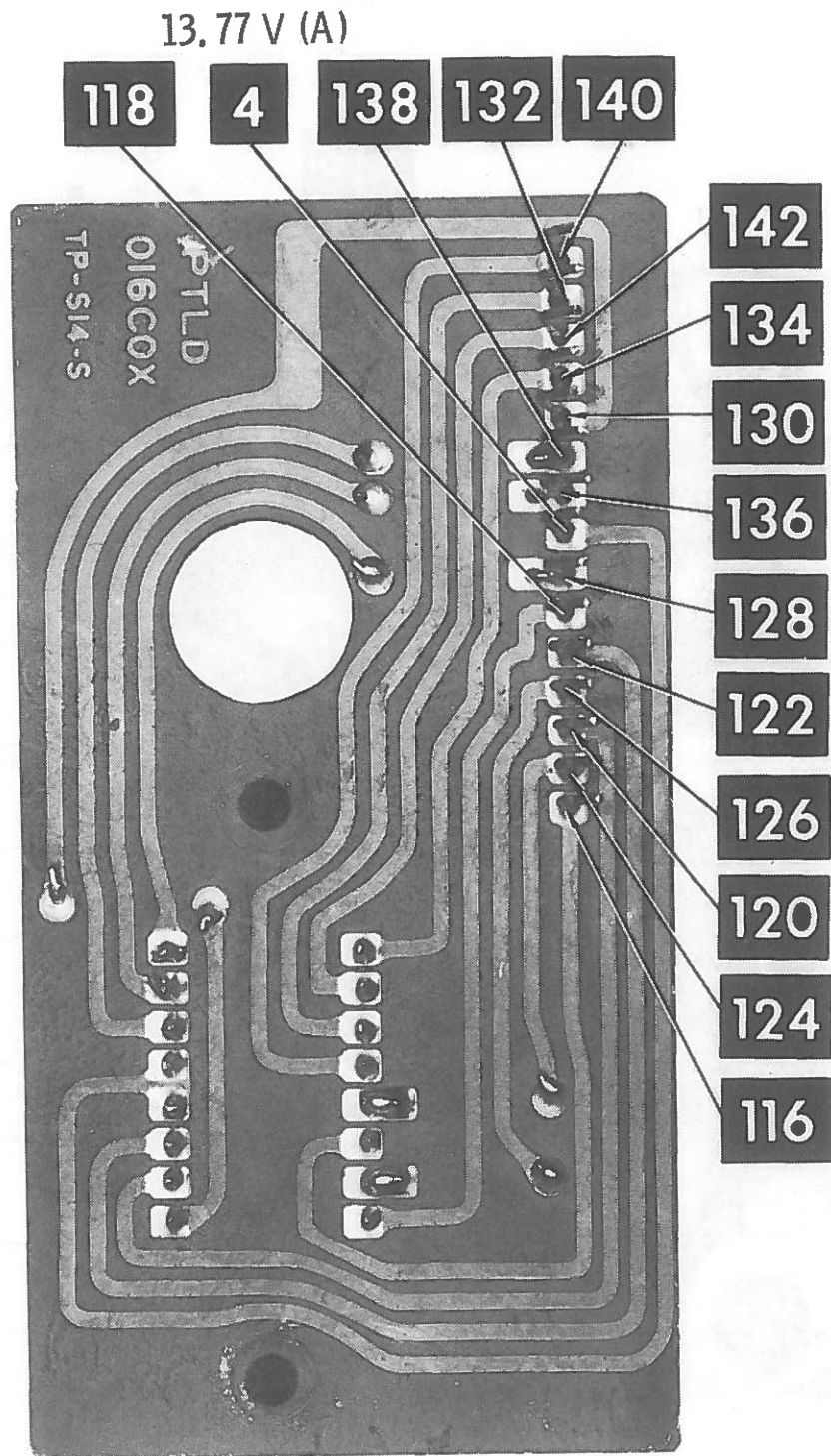
MAIN BOARD



MAIN BOARD

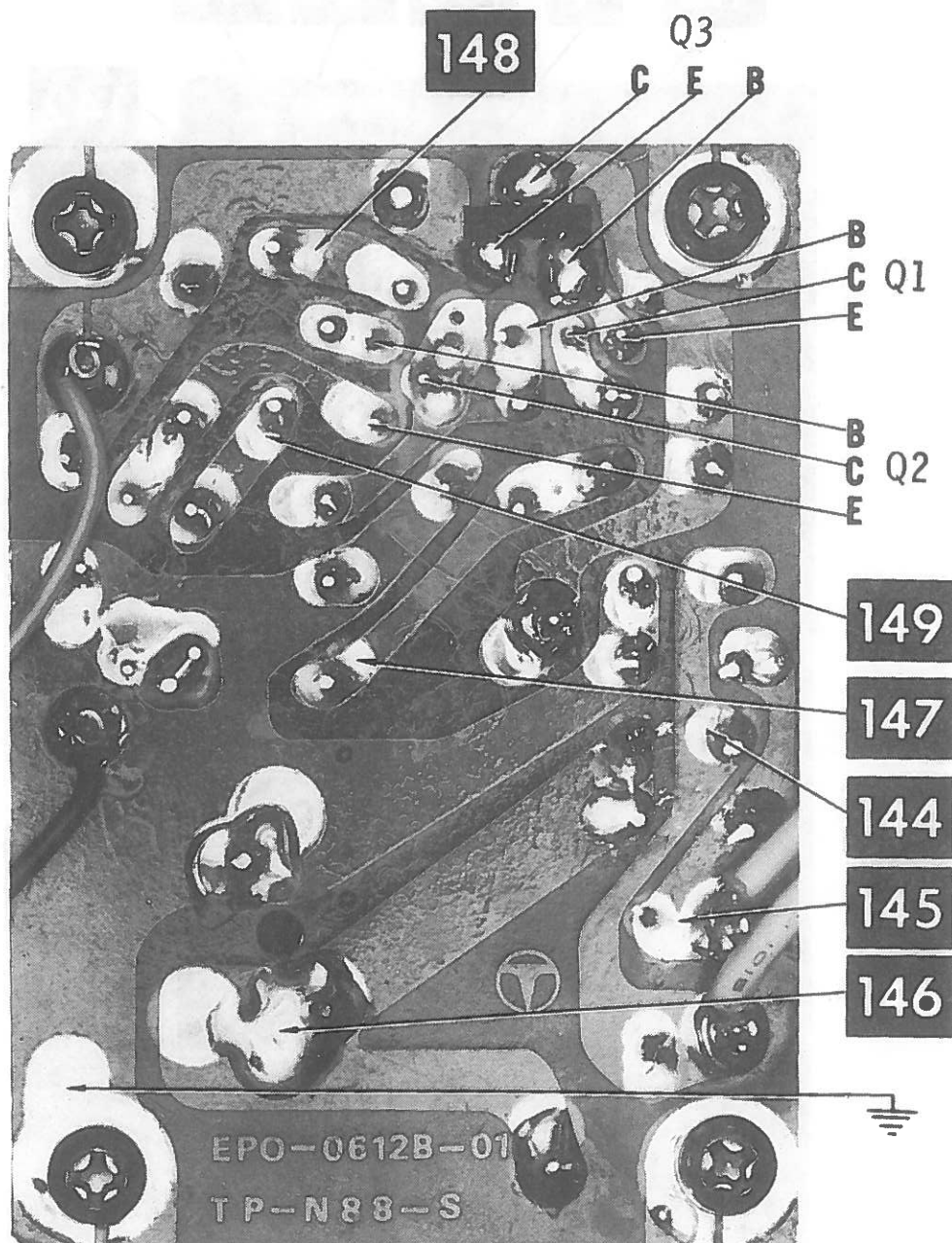


CH. SELECTOR BOARD

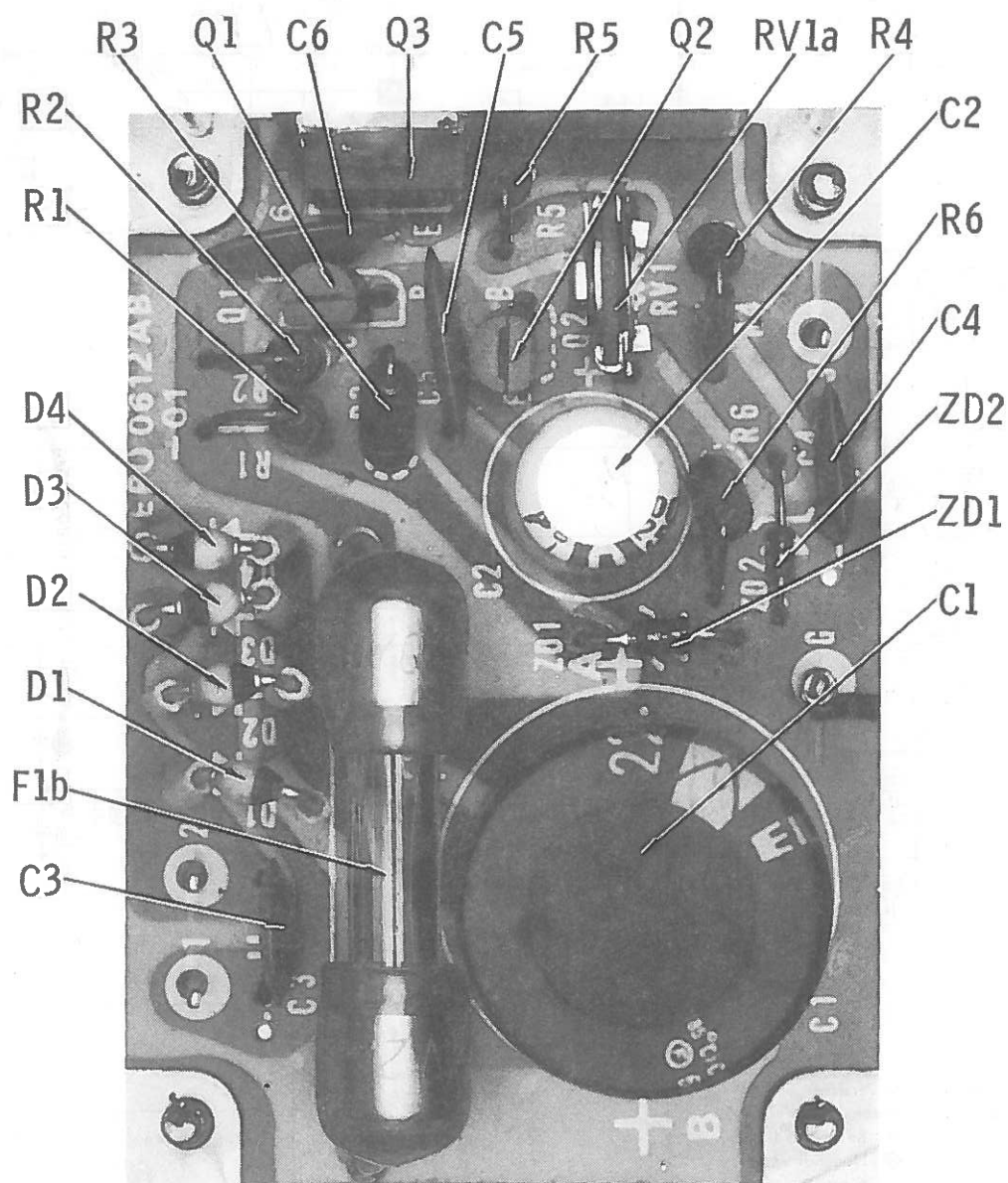


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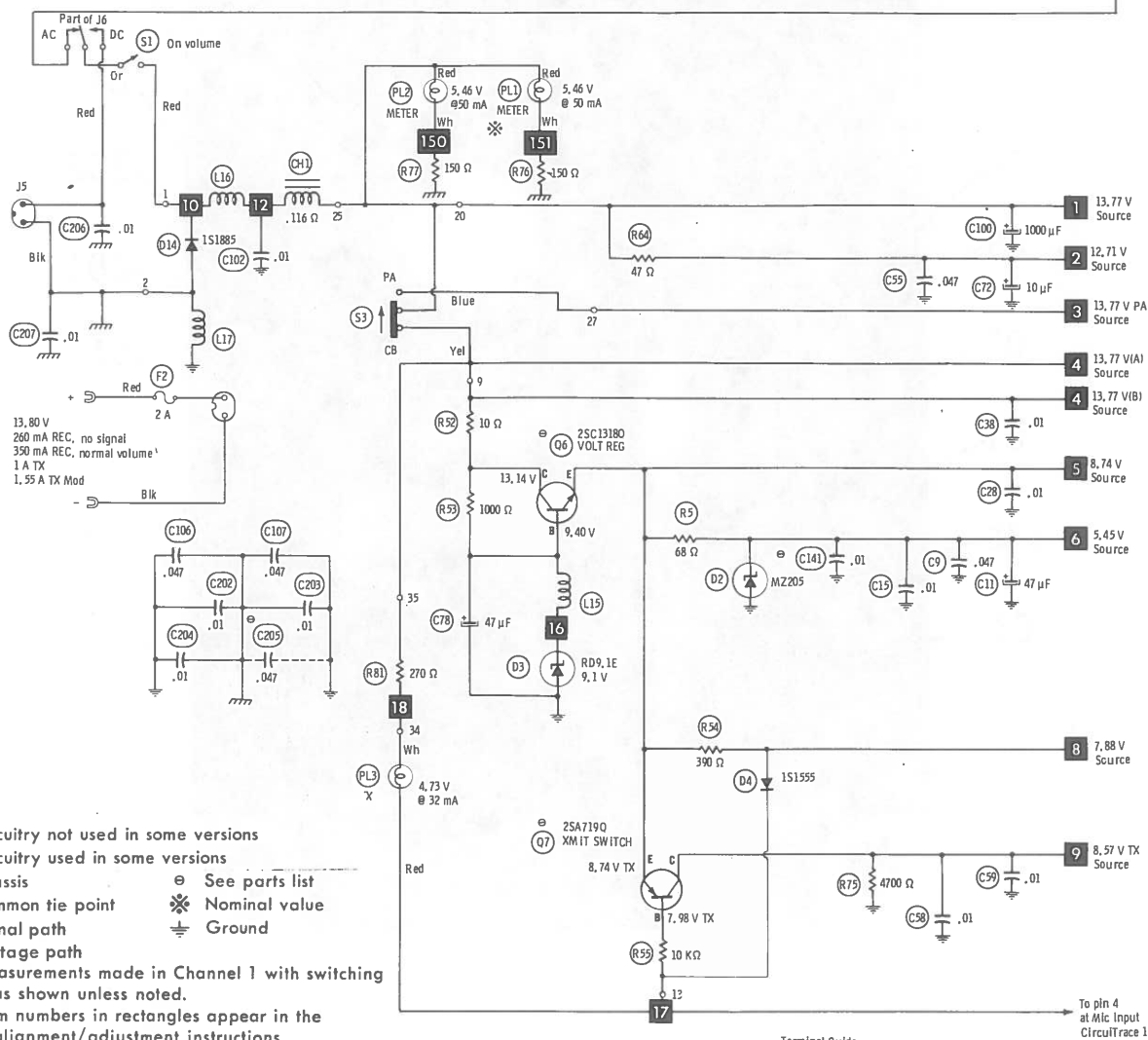
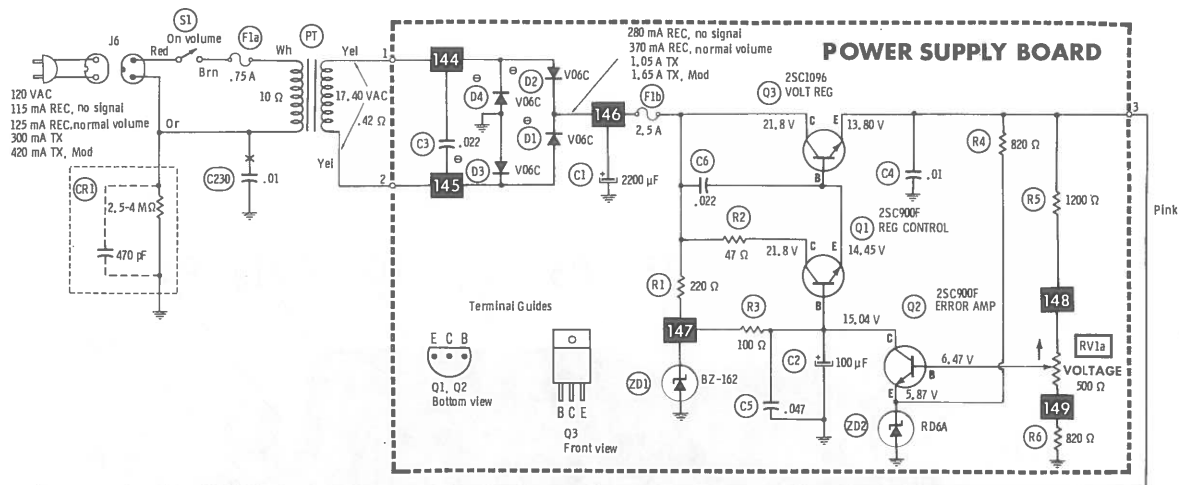
LED BOARD



POWER SUPPLY BOARD



POWER SUPPLY BOARD



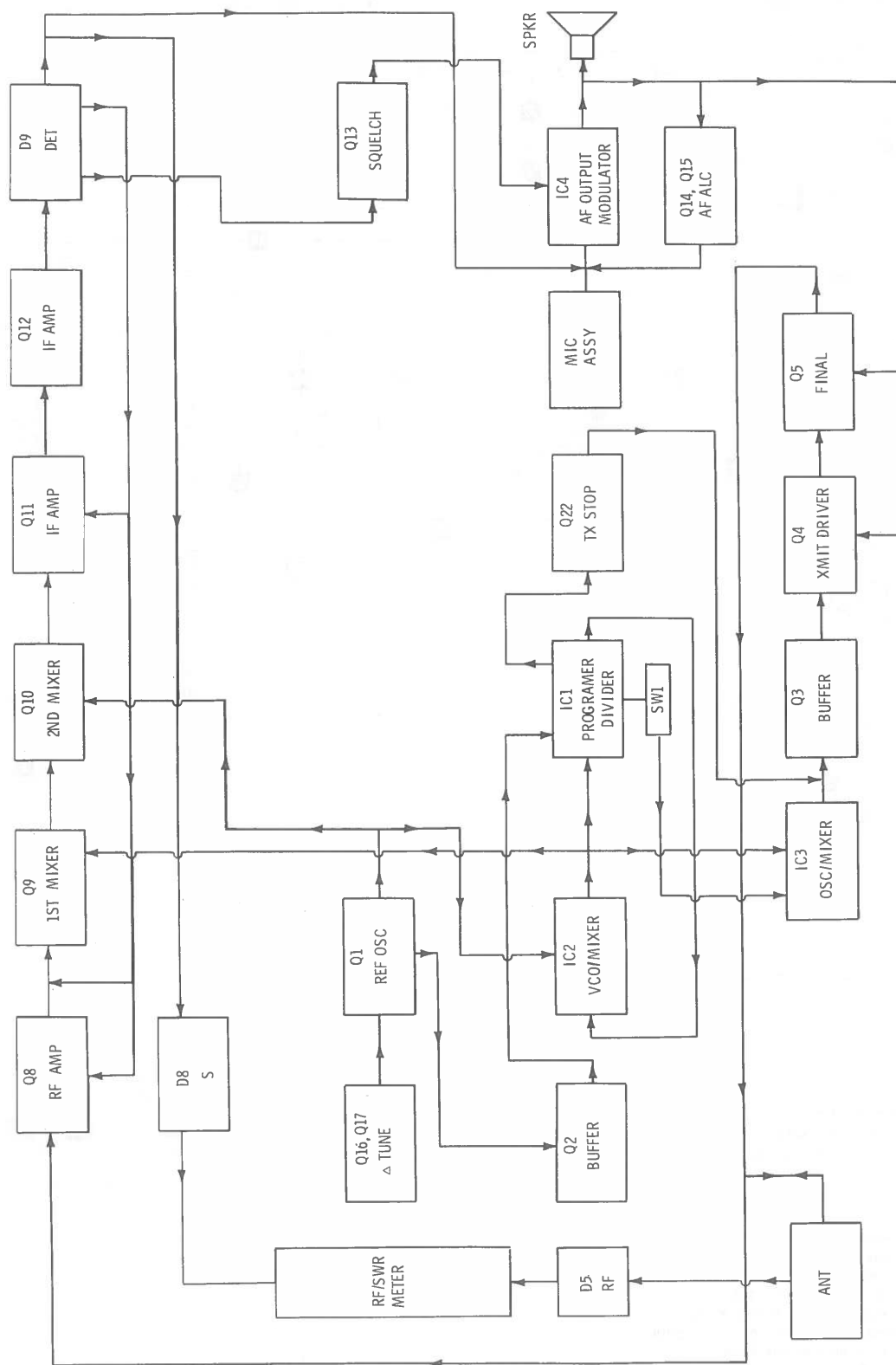
- ✱ Circuitry not used in some versions
- Circuitry used in some versions
- Chassis
- Common tie point
- Signal path
- Voltage path
- Measurements made in Channel 1 with switching as shown unless noted.
- Item numbers in rectangles appear in the alignment/adjustment instructions.
- Supply voltage maintained 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 PHOTOFACIT STANDARD NOTATION SCHEMATIC

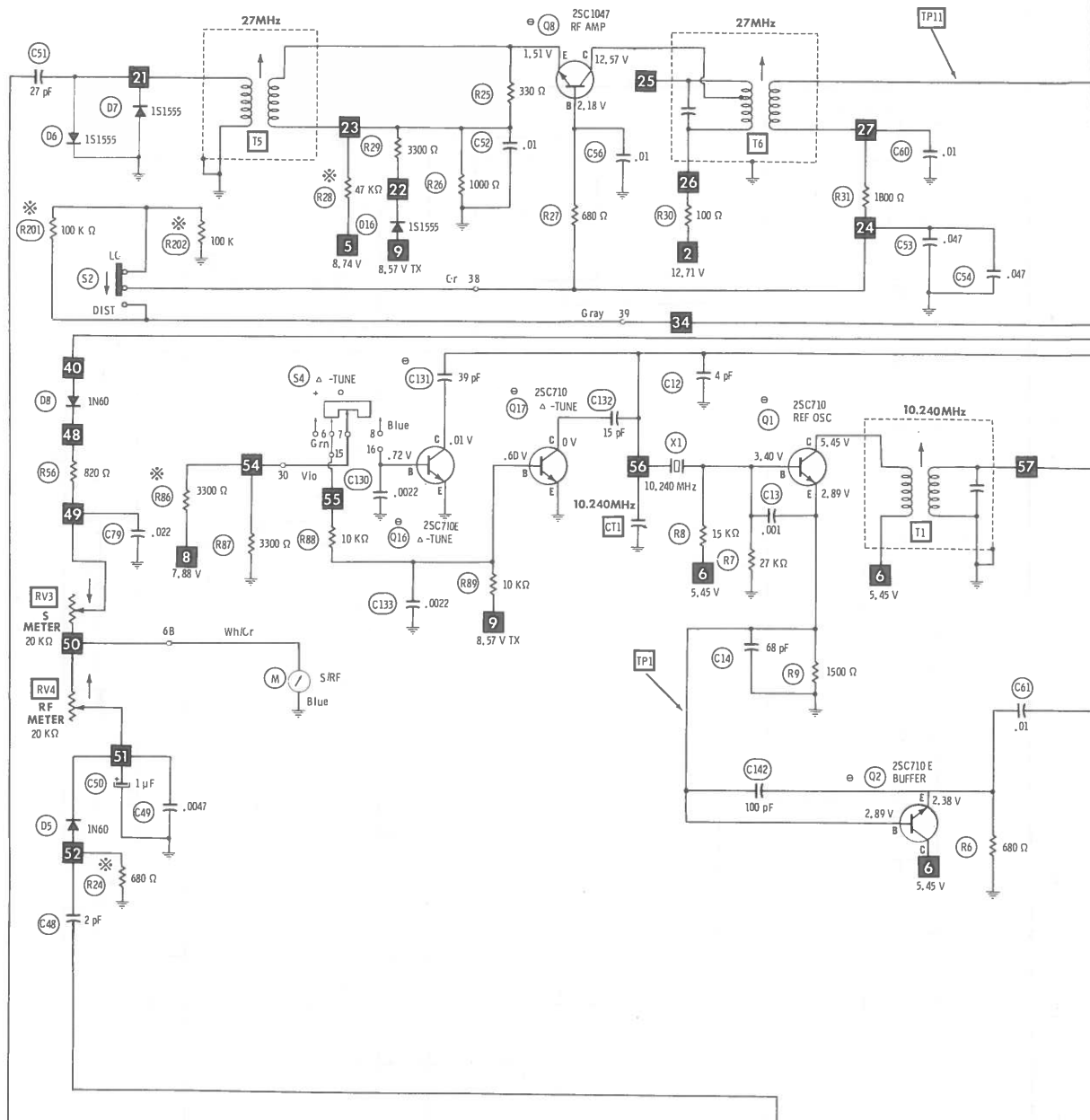
WITH **CIRCUITRACE**

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POWER SUPPLY SCHEMATIC



BLOCK DIAGRAM



- ✖ Circuitry not used in some versions
- Circuitry used in some versions
- Chassis
- Common tie point
- Signal path
- Voltage path
- See parts list
- Nominal value
- Ground

Measurements made in Channel 1 with switching as shown unless noted.

Item numbers in rectangles appear in the alignment/adjustment instructions.

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.

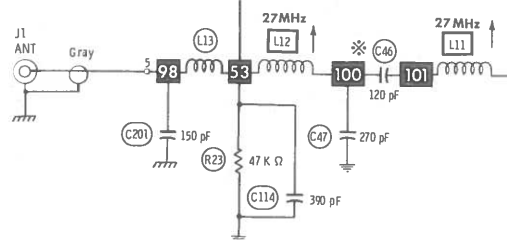
Resistors are 1/2W or less, 5% unless noted.

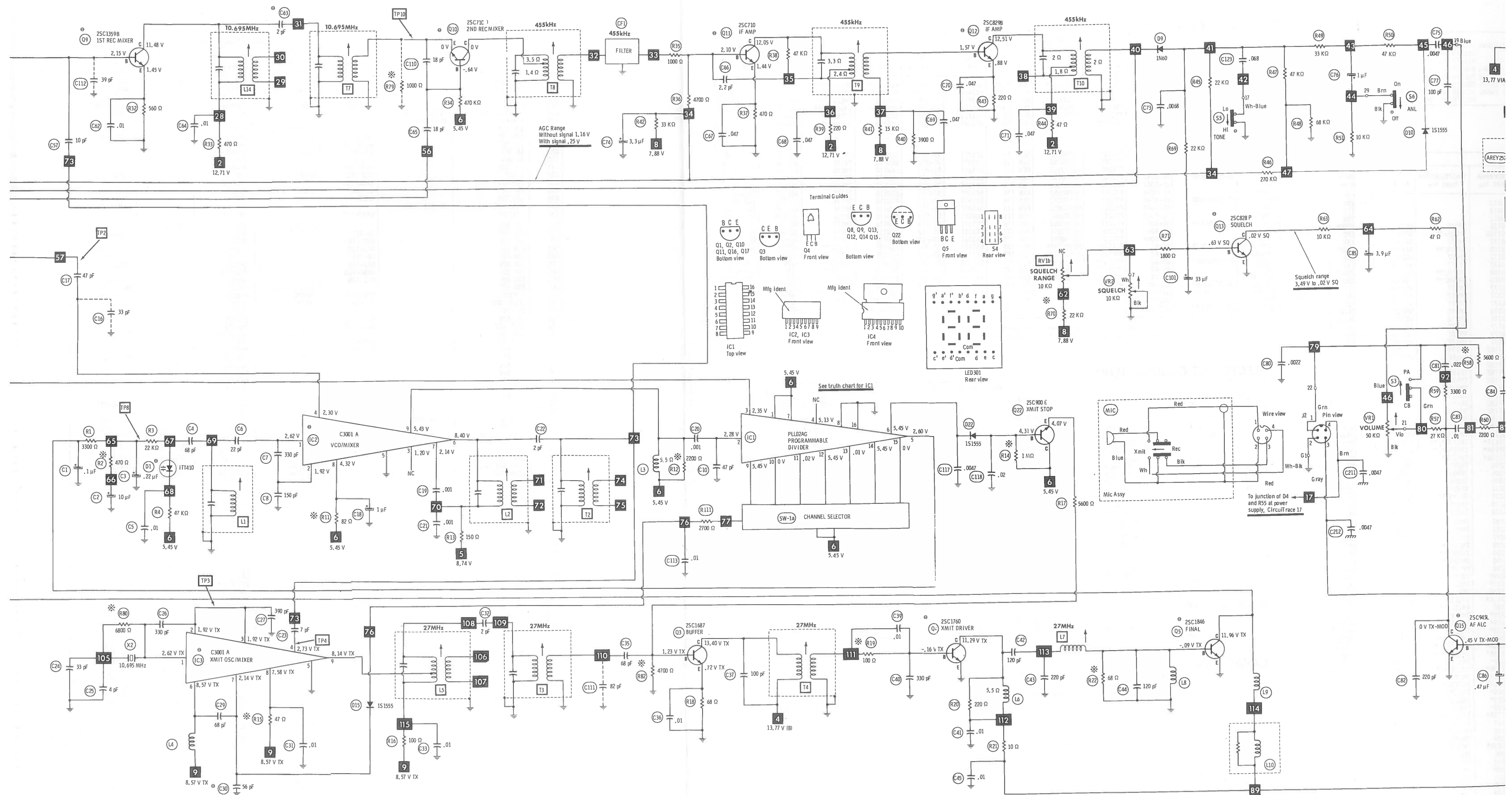
Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH **CIRCUITACE**

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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.	MFG. 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.
MAIN BOARD												
D1	1T7410 BB122 MV201	QD-CTT410XQ			HEPR2502 HEPR2502 HEPR2502	REN 612 REN 612 REN 612				ECG612 ECG612 ECG612		103-176 103-176 103-176
D2	MZ205	QD-ZM205XE	GEZD-5.0			REN 135				ECG135		
D3	RD9.1E	QD-ZR99EXAA	GEZD-9.1	ZB9.1B		REN 139	SK3060	RT-240	ECG139A	TM135	WEP1103	103-29006
D4	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D5	1N60	QD-G1N50XXT	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-29001
D6	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D7	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D8	1N60	QD-G1N50XXT	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-29001
D9	1N60	QD-G1N60XXT	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-29001
D10	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D11	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D12	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D13	V06C	QD-SV06CX8B	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D14	1S1885	QD-S11885XT	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D15	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D16	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D22	1S1555	QD-S1555XT	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
IC1	PLL02A PLL02	QQ-OPLL02AO				REN 1167 REN 1167	SK3732 SK3732		ECG1167 ECG1167	TM1167 TM1167	WEP2007 WEP2007	
IC2	C3001A C3001					REN 1192 REN 1192	SK3445 SK3445		ECG1192 ECG1192	TM1192 TM1192		
IC3	TA7310P C3001-0 C3001	QQ-MC3001AT				REN 1192 REN 1192	SK3445 SK3445		ECG1192 ECG1192	TM1192 TM1192		
IC4	TA7310P AN103	QQ-MC3001AT				REN 1192 REN 1192	SK3445 SK3445		ECG1192 ECG1192	TM1192 TM1192		
Q1	TA7205P 2SC710	QQ-M07205AT	GEIC-179	PTC780		REN 1155	SK3231		ECG1155	TM1155	WEP949	
Q2	2SC710E 2SC710	QT-C0710XEE	GE-211*	PTC132	HEPS0016*	REN 123A*	SK3444	RT-308*	ECG123A*	TM123A/**	WEP710	121-Z9000A
Q3	2SC710E 2SC1687	QT-C0710XEE	GE-211*	PTC132	HEPS0016*	REN 123A*	SK3444	RT-308*	ECG123A*	TM123A/**	WEP710	121-Z9000A
Q4	2SC1846 2SC1760 2SC2036	QT-C1846XAN	GE-20*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-107A*	ECG123A*	TM123A/**	WEP710	121-Z9000A
Q5	2SC1678 2SC1306 2SC2075 2SC1974	QT-C1306XZA	GE-336 GE-276 GE-336 GE-322 GE-215 GE-215 GE-337	PTC904 PTC180 PTC186 PTC186 PTC186 PTC186		REN 295 REN 306 REN 295 REN 295 REN 295 REN 295 REN 295	SK3253 SK3197 SK3518 SK3197 SK3197 SK3197 SK3197		ECG295 ECG306 ECG306 ECG235 ECG235 ECG235 ECG235	TM295 TM306 TM306 TM235 TM235 TM235 TM235	WEP913 WEP771 WEP771 WEP785 WEP785 WEP785 WEP785	121-880 121-Z9039 121-Z9039 121-Z9039 121-Z9039
Q6	2SC1318Q 2SC1318Q,R 2SC1318	QT-C1318XDN	GE-210 GE-210 GE-210	PTC123 PTC123 PTC123	HEPS0015* HEPS0015* HEPS0015*	REN 128 REN 128 REN 128	SK3122 SK3122 SK3122	RT-302 RT-302 RT-302	ECG297 ECG297 ECG297	TM297 TM297 TM297	WEP59* WEP59* WEP59*	121-1007 121-1007 121-1007
Q7	2SA719Q 2SA719Q,R 2SA719 2SA720	QT-A0719XHN	GE-269 GE-269 GE-269 GE-272	PTC103* PTC103* PTC103* PTC103	HEPS0019* HEPS0019* HEPS0019* HEPS0019	REN 290 REN 290 REN 290 REN 298	SK3114 SK3114 SK3114 SK3450	RT-305 RT-305 RT-305 RT-103A	ECG290 ECG290 ECG290 ECG298	TM290/** TM290/** TM290/** TM298	WEP911 WEP911 WEP911 WEP915	121-1019 121-1019 121-1019 121-Z9003
Q8	2SC1047C 2SC1047B,C 2SC1047 2SC710 2SC460	QT-C1047XBN	GE-60* GE-60* GE-60* GE-211* GE-61*	PTC132* PTC132* PTC132* PTC132 PTC136*	HEPS0016* HEPS0016* HEPS0016* HEPS0016* HEPS0014*	REN 229* REN 229* REN 229* REN 123A* REN 107	SK3018* SK3018* SK3018* SK3444 SK3122	RT-107 RT-107 RT-107 RT-308* RT-134	ECG229* ECG229* ECG229* ECG123A* ECG107	TM229* TM229* TM229* TM123A/** TM107/**	WEP63* WEP63* WEP63* WEP710 WEP460	121-Z9021 121-Z9021 121-Z9021 121-Z9000A 121-522
Q9	2SC1359B 2SC1359B,C 2SC1359 2SC710 2SC710	QT-1359XBN	GE-212 GE-212 GE-212 GE-211* GE-211*	PTC121* PTC121* PTC121* PTC132 PTC132	HEPS0014* HEPS0014* HEPS0014* HEPS0016* HEPS0016*	REN 199 REN 199 REN 199 REN 123A* REN 123A*	SK3122 SK3122 SK3122 SK3444 SK3444	RT-308 RT-308 RT-308 RT-308* RT-308*	ECG229* ECG229* ECG229* ECG123A* ECG123A*	TM229* TM229* TM229* TM123A/** TM123A/**	WEP66 WEP66 WEP66 WEP710 WEP710	121-Z9021 121-Z9021 121-Z9021 121-Z9000A 121-Z9000A
Q10	2SC829 2SC829B 2SC829B,C 2SC710 2SC829	QT-C0710XBE	GE-20* GE-61* GE-211* GE-211* GE-20*	PTC139* PTC132* PTC132 PTC132 PTC139*	HEPS0015* HEPS0015* HEPS0016* HEPS0016* HEPS0015*	REN 123A* REN 123A* REN 123A* REN 123A* REN 123A*	SK3444 SK3444 SK3444 SK3444 SK3444	RT-308 RT-308 RT-308 RT-308* RT-308*	ECG229* ECG123A* ECG123A* ECG123A* ECG229*	TM229* TM123A/** TM123A/** TM123A/** TM229* TM		

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.	MFG. 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.
Q17	2SC839	QT-C0710XEE	GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
Q22	2SC829	QT-C0900XEA	GE-21*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308*	ECG123A*	TM123A/**	WEP710	121-29000A*
	2SC839		GE-20*	PTC139*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP829	121-29021*
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC900E		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC900U,E		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
POWER SUPPLY BOARD												
D1	V06C	QD-SV05CXXB	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D2	F14A	QD-SV06CXXB	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D3	V06C	QD-SV06CXXB	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D4	F14A	QD-SV06CXXB	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
Q1	1S1885	QT-C0900XBA	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
Q2	2SC900F	QT-C0900XBA	GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
Q3	2SC900F	QT-C0900XBA	GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
ZD1	2SC900	QT-D0313XAC	GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
ZD2	BZ-162	QD-ZB2162XJ	GE-241	PTC154		REN 196	SK3054	RT-154	ECG196	TM196	WEP756	121-987-02
	RD6A	QD-ZRD56EAA	GEZD-16	ZB16B		REN 5075	SK3751	RT-246	ECG5075A	TM5075/**	WEP1160	103-29008
	RD5.6EC		GEZD-6.0			REN 5070			ECG5070A	TM5070	WEP1153	103-29008

*Lead configuration may vary from original.
**/Also available as exact type replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
					Q-LINE	GENERAL LINE	
MAIN BOARD							
C1	.1 10V	CD-A1A0R1ME	PC10-25	TDC104M050EL	QDT1-2	SD50-R109	
C2	10 16V	CE-ED100ZMH		VTT10B25	QV1-41	EV-1222	
C3	.22 10V	CD-A1AR2ZME		TDC224M050EL	QDT1-10	SD50-R229	
C11	47 10V	CE-EC470ALN		PC50-16	VTT47D16	QV1-73	EV-1226
C18	1 50V	CE-EG010ALN		PC1-50	VTT1A50	QV1-11	EV-1615
C50	1 50V	CE-EG010ALN	PC1-50	VTT1A50	QV1-11	EV-1615	
C72	10 16V	CE-ED100ALN	PC10-25	VTT10B25	QV1-41	EV-1222	
C74	3.3 25V	CE-EE3R3ALN	PC5-50	VTT3R3A50	QV1-23	EV-1318	
C76	1 50V	CE-EG010ALN	PC1-50	VTT1A50	QV1-11	EV-1615	
C78	47 16V	CE-ED470ALN	PC50-16	VTT47D16	QV1-73	EV-1226	
C85	3.9 25V	CS-SE3R9MDH	PC30-25	TDC475M010EL	QDT1-48	SD10-4R79	
C86	.47 10V	CD-A1AR47ME		TDC474M050EL	QDT1-19	SD50-R479	
C87	33 6.3V	CE-EB330ALN		VTT33B10	QV1-61	EV-1125	
C93	47 16V	CE-ED470ALN		PC50-16	VTT47D16	QV1-73	EV-1226
C94	220 16V	CE-AD221ZLS		PC250-25	VTT220H16	QV1-117	EV-1240
C96	3.3 25V	CE-EE3R3ALN	PC5-50	VTT3R3A50	QV1-23	EV-1318	
C97	47 10V	CE-EC470ALN	PC50-16	VTT47D16	QV1-73	EV-1226	
C99	47 25V	CE-AE470ZLS	PC50-25	VTT47E25	QV1-75	EV-1326	
C100	1000 16V	CE-ED102ZUN	PC1000-16	VTT1000L16	QV1-183	EV-1260	
C101	33 6.3V	CE-EB330ALN	PC30-25	VTT33B10	QV1-61	EV-1125	
C120	33 16V	CE-ED330ALN	PC30-25	VTT33D25	QV1-63	EV-1325	
C215	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
POWER SUPPLY BOARD							
C1	2200 25V	CE-T1E22201	WBR2000-25	TC2520A	QE1-645	TVA-1213.5	
C2	100 25V	CE-AE101ALN	PC100-25	VTT100G25	QV1-97	EV-1330	

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
MAIN BOARD							
C4	68 N150 10%	CC-CB680KPM	UK50-103		*		10TCP-Q68
C5	.01 50V				MAG5011		
C6	22 N150	CC-CB220KPM					
C7	330 50V		DD-331	GP330	GP333		10TS-T33
C8	150 50V 10%			CD15FD151J03	SX315		MWA-151
C9	.047 50V		UK50-503		MAG5015	QW1-31	
C10	47 50V		DTZ-47	NP047	CN0447		10TCC-Q47
C12	4 N150	CC-CB040CPM			*		10TCP-V47
C13	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C14	68 N150	CC-CB680KPM			*		10TCP-Q68
C15	.01 50V		UK50-103		MAG5011		
C16	33		DTZ-33	NP033	CN0433		10TCC-Q33
C17	47 N150	CC-CB470KPM			*		10TCP-Q47
C19	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10

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	
C20	.001 50V	CC-CB330KPM CC-CB040CPM	DTZ-2R2 DTZ-6R8	DPMS6D1	EWFA1A210	QF1-1	1PB-D10	
C21	.001 100V			CD19FD102J03	SX210		MWC-102	
C22	2 50V 5%			NP02P2	CN0522		10TCC-V22	
C23	7 50V			NP06P8	CN0568		10TCC-V68	
C24	33 N150 10%				*		10TCP-Q33	
C25	4 N150							
C26	330 50V 10%				CD15FD331J03	SX333	QW1-39	MWA-331
C27	390 50V				GP390	GP339		10TS-T39
C28	.01 50V					MAG5011		
C29	68 50V				DD-680	GP468		10TS-Q68
C30	56 50V		DD-560	GP456		10TS-Q56		
C31	.01 50V		UK50-103	MAG5011				
C32	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C33	.01 50V		UK50-103		MAG5011			
C35	68 50V		DD-680	GP68	GP468		10TS-Q68	
C36	.01 50V		UK50-103		MAG5011			
C37	100 N150 10%	CC-CB101KPM			*		10TCP-T10	
C38	.01 50V		UK50-103		MAG5011			
C39	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10	
C40	330 50V		DD-331	GP330	GP333		10TS-T33	
C41	.01 50V		UK50-103		MAG5011			
C42	120 50V		DTZ-120		CN0312		10TCC-T12	
C43	220 50V		DD-221		GP322		10TS-T22	
C44	120 50V		DTZ-120		CN0312		10TCC-T12	
C45	.01 50V		UK50-103		MAG5011			
C46	120 50V		DTZ-120		CN0312		10TCC-T12	
C47	270 50V			CD15FD271J03	SX327	QW1-37	MWB-271	
C48	2 500V		DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C49	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C51	27 50V				CN0427		10TCC-Q27	
C52	.01 50V		UK50-103		MAG5011			
C53	.047 50V		UK50-503		MAG5015			
C54	.047 50V			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C55	.047 50V		UK50-503		MAG5015			
C56	.01 50V		UK50-103		MAG5011			
C57	10 50V		DTZ-10	NP010	CN0410		10TCC-Q10	
C58	.01 50V		UK50-103		MAG5011			
C59	.01 50V		UK50-103		MAG5011			
C60	.01 50V		UK50-103		MAG5011			
C61	.01 50V		UK50-103		MAG5011			
C62	.01 50V		UK50-103		MAG5011			
C63	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C64	.01 50V		UK50-103		MAG5011			
C65	18 N150	CC-CB180KPM			*		10TCP-Q18	
C66	2.2 500V		DTZ-2R2	NP02P2	CN0522		10TCC-V22	
C67	.047 50V 10%			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C68	.047 50V 10%			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C69	.047 50V 10%			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C70	.047 50V 10%			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C71	.047 50V 10%			DPMS2S47	EWFA1A147	QF1-171	1PB-S47	
C73	.0068 50V			WMF1D68	EWFA1A268	QF1-73	1PB-D68	
C75	.0047 50V			WMF1D47	EWFA1A247	QF1-57	1PB-D47	
C77	100 50V		DD-101	GP100	GP310		10TS-T10	
C79	.022 50V			DPMS2S22	EWFA1A122	QF1-127	1PB-S22	
C80	.0022 50V		DD-222		GP222	QC2-97	5GA-D22	
C81	.022 50V			DPMS2S22	EWFA1A122	QF1-127	1PB-S22	
C82	220 50V		DD-221		GP322		10TS-T22	
C83	.01 50V			WMF1S1	EWFA1A110	QF1-91	1PB-S10	
C84	.0022 50V		DD-222		GP222	QC2-97	5GA-D22	
C88	68 50V		DD-680	GP68	GP468		10TS-Q68	
C89	68 50V		DD-680	GP68	GP468		10TS-Q68	
C90	100 50V		DD-101	GP100	GP310		10TS-T10	
C91	.068 50V			WMF1S68	EWFA1A168	QF1-195	1PB-S68	
C92	100 50V		DD-101	GP100	GP310		10TS-T10	
C95	.068 50V			WMF1S68	EWFA1A168	QF1-195	1PB-S68	
C102	.01 50V		UK50-103		MAG5011			
C106	.047 50V		UK50-503		MAG5015			
C107	.047 50V		UK50-503		MAG5015			
C110	18 50V	CC-CB820KOM			CN0418		10TCC-Q18	
C111	82		DD-820		GP482		10TS-Q82	
C112	39				CN0439		10TCC-Q39	
C113	.01 50V		UK50-103		MAG5011			
C114	390 500V		DD-391	GP390	GP339		10TS-T39	
C117	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C118	.022 50V		DC-253	MGP025	TA125		TG-S25	
C123	.068 50V 10%			WMF1S68	EWFA1A168	QF1-195	1PB-S68	
C130	.0022		DD-222		GP222	QC2-97	5GA-D22	
C131	39 50V				CN0439		10TCC-Q39	
C132	15 N150	CC-CB150KPM			*		10TCP-Q15	
C133	.0022 50V		DD-222		GP222	QC2-97	5GA-D22	
C141	.01 50V		UK50-103		MAG5011			
C142	100		DTZ-100	NP0100	CN0310		10TCC-T10	
C201	150 500V 10%			CD15FD151J03	SX315	QW1-31	MWA-151	
C202	.01 50V		UK50-103		MAG5011			
C203	.01 50V		UK50-103		MAG5011			
C204	.01 50V		UK50-103		MAG5011			
C205	.047 50V		UK50-503		MAG5015			
C206	.01 50V		UK50-103		MAG5011			
C207	.01 50V		UK50-103		MAG5011			
C208	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C209	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C210	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C211	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C212	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C213	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C214	.0047 50V		DD-472	GP4700	GP247		5GA-D47	
C230	.01 600V DC 10%			GP4700	GP247		5GA-D47	
CT1		CT-77200H01						

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
POWER SUPPLY BOARD							
C3	.022 50V		DC-253	MGP025	TA125		TG-S25
C4	.01 50V		UK50-103		MAG5011		
C5	.047 50V		UK50-503		MAG5015		
C6	.022 50V		DC-253	MGP025	TA125		TG-S25

*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)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA			
			MFR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
RV1a	Voltage	500	RP-GNB10301		(1)	U260R103B
RV1b	Squelch Range	10K	RP-GNB50202			U260R502B
RV2	AMC	5000	RP-GNB20301			U260R253B
RV3	S Meter	20K	RP-GNB20301			U260R253B
RV4	RF Meter	20K	RP-GNB20301			
VR1	Volume/Switch	50K	RV-AD503A05			
VR2	Squelch	10K	RV-NA103B04			

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFR. PART No.			WORKMAN PART No.	MFR. PART No.
AREY251	Resistor Network		RA-C182M07N(1)	AREY252	Resistor Network		RA-C182M07N(1)

(1) Consist of seven 1800 ohm resistors.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	VCO (18MHz)	TR-10DD003S			
L2	VCO Mixer (37MHz)	TR-10MB003T			
L3	Peaking (68uH)	LF-68CKD01N			
L4	RF Choke (1uH)	LF-1R0KD01N			
L5	XMT OSC. (27MHz)	TR-10CB002M			
L6	RF Choke (2.2uH)	LF-2R2KD01N			
L7	XMT Driver (27MHz)	TR-A5CZD01M			
L8	Peaking (68uH)	LF-680KD01N			
L9	Peaking (68uH)	LA-1KE1011A			
L10	RF Choke (1uH)	LD-ADX3825M			
L11	Final (27MHz)	TR-A5CZ002M			
L12	Pi Filter (27MHz)	TR-A5CZ003M			
L13	RF Choke (.4uH)	LA-1JG1010A			
L14	IF (10.695MHz)	TR-10MA017S			
L15	Peaking (68uH)	LF-680KD01N			
L16	RF Choke (.75uH)	LD-ADB4024B			
L17	RF Choke (.75uH)	LD-ADB4024B			
L201	RF Choke (1.95uH)	LD-ADA3038J			
T1	Rec OSC (20.480MHz)	TR-10DB002S			
T2	VCO Mixer (38MHz)	TR-10MB005S			
T3	XMT Mixer (27MHz)	TR-10CB001S			
T4	XMT Mixer (27MHz)	TR-10CP005S			
T5	Rec Antenna (27MHz)	TR-10MP003T			
T6	Rec RF (27MHz)	TR-10CA003T			
T7	IF (10.695MHz)	TR-10MA017S			
T8	IF (455kHz)	TR-07LA004N			
T9	IF (455kHz)	TR-07LA005N			
T10	IF (455kHz)	TR-07LA023N			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
CH1	1.3A	.116	.48mH	LJ-119H001V ELA-16(1)	TR523		(1) Number on unit.

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
PT	120V AC @ 420mA AC	17.40V AC @ 2.79A AC	TP-D68V002Y			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T11	2.88	1 2 8 13.52	TB-G25B001W ETA-66(1)	TR723	MCB-16	(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM 8 ohms	ZQ-A0770802	30A05ZBR	

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
F1a	.75A 250V Quick-Acting	ZF-BQ75101U	YH-F1S3001U	AGC3/4	HKP	312.750	342001A	
F1b	2.5A 250V Pigtail	ZF-AQ25201U		GJV2 1/2		31802.5		
F2	2A 250V Quick-Acting			AGC2	HDJ	312002	150145	F62-2

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	ZG-AAZ60113	18-032	18-034	18-010	18-092	1	2	4	3	NC	2

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	FB-R455A08M	455kHz
CR1	Comp Comb	CR-E471A01M	
J1	Jack	YJ-C02S002Z	Antenna
J2	Jack	YJ-Z04S002Z	Mic
J3	Jack	YJ-T03S003Z	PA
J4	Jack	YJ-T03S003Z	Ext Spk
J5	Jack	YJ-B02S001U	DC Power
J6	Jack	YJ-A02S001U	AC Power
J7	Jack	YJ-S03S010Z	Phone
LED301	LED	QL-SL1221C	Channel Readout
M1	Meter	ZM-J2036N04	S/Rf
PL1	Lamp	ZP-A064102U	Meter (5.45V @ 50mA)
PL2	Lamp	ZP-A064102U	Meter (5.45V @ 50mA)
PL3	Lamp	ZP-A064101U	Tx (4.73V @ 32mA)
S2	Switch	SS-020220ZL	Lq/Dist
S3	Switch	SS-020220ZL	CB/PA
S4	Switch	SS-020303ZL	Tune
S5	Switch	SS-020220ZL	Tone
S6	Switch	SS-020220ZL	ANL
SW1	Switch	SR-2240302H	Channel Selector
X1	Crystal	XA-S1B9001T	10.240MHz
X2	Crystal	XA-S1B9002T	10.695MHz
	Cord	AC-AC0080ULA	AC
	Cord	AC-DC0340ULA	DC
	P.C. Board	AP-TLD016AA	LED
	P.C. Board	AP-TBM050TT	Main
	P.C. Board	AP-TSM020AA	Switch

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

ITEM	PART No.	ITEM	PART No.
Chassis	MB-876SZ011	Knob, Control	VN-226SH001
Cover	MU-886SM001	Panel, Rear	MB-862SZ037
Knob, Channel	AV-KNOB*069		