



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.



KRIS MODEL XL-50

MODEL XL-50

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

© 1977 Howard W. Sams & Co., Inc.

Printed in U. S. of America

7CE615

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:
L10 thru L15, T1 thru T4 5009
L1, L2, T101 thru T106 9440
TC101 5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1.	Ch. 19 Delta Tune-Midrange.	SVR102	Adjust for 10.240MHz.
Inputs of frequency counter and RF VTVM to TP2.	Ch. 19	T103	Adjust for maximum at 35.740MHz.
Input of DC meter to TP3.	Ch. 1	T101	Adjust for 2.00 volts.
Input of RF VTVM to TP7.	Ch. 19	T102	Adjust for maximum.
Input of frequency counter to TP5.	Ch. 19, Xmit	TC101	Adjust for 10.695MHz.
Input of frequency counter to antenna jack.	Ch. 19, Xmit	SVR101	Adjust for 27.185MHz.
Input of frequency counter to TP7.	Ch. 1		Check for 37.660MHz. Repeat for all channels. (Channel frequency + 10.695MHz = frequency on counter.)

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
Input of spectrum analyzer to antenna jack.	Ch. 19	T104, T105, T106, L10, L11, L12, L13	Adjust for maximum.
	Ch. 19	L13	Adjust for 4 watts maximum.
	Ch. 19	L15	Adjust for MINIMUM at 54MHz.

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. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19 Delta Tune-Midrange. RF Gain-Maximum.	SVR1	S METER Adjust for 9 on S scale of meter.

RECEIVER ALIGNMENT

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

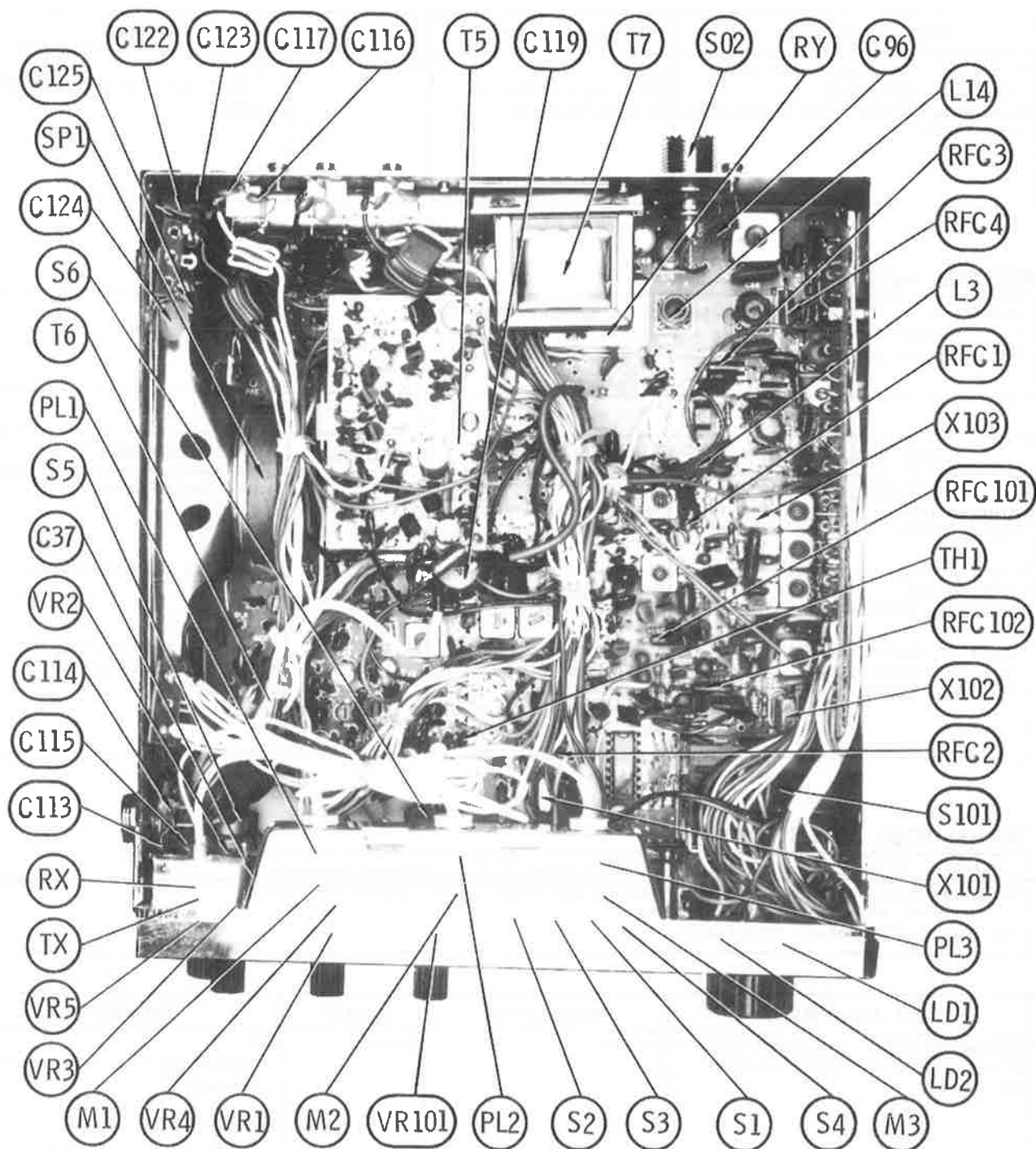
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP6. 455kHz, 1000Hz @ 30% modulation.	Ch. 19 Delta Tune-Midrange. RF Gain-Maximum.	T4,T3	Adjust for maximum output.
Output of signal generator thru .01uF to TP4. 10.695MHz, 1000Hz @ 30% modulation.	Ch. 19 Delta Tune-Midrange. RF Gain-Maximum.	T2,T1	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19 Delta Tune-Midrange. RF Gain-Maximum.	L2,L1	Adjust for maximum output. Repeat above steps, if necessary.

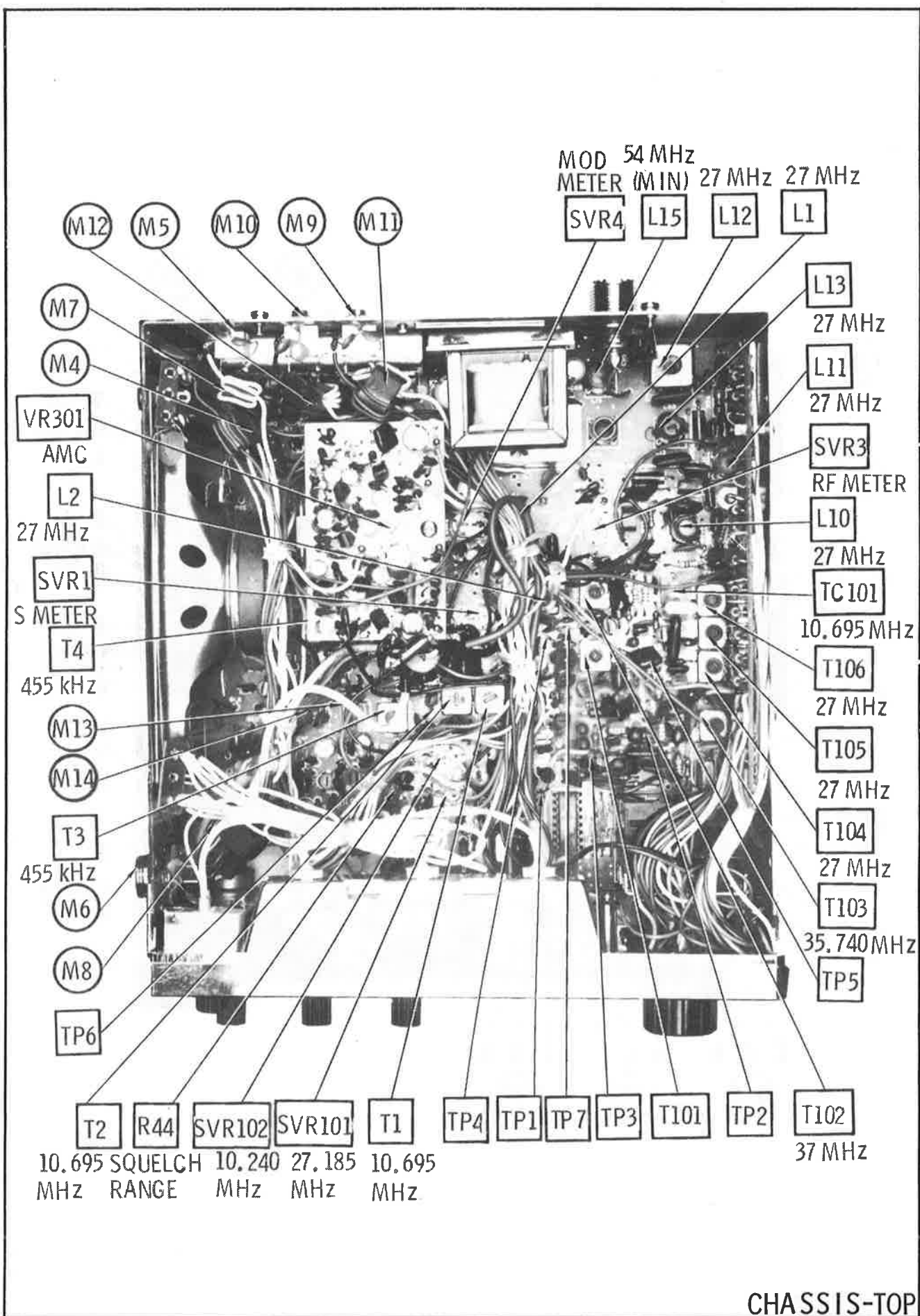
KRIS MODEL XL-50

TRANSMITTER ADJUSTMENTS

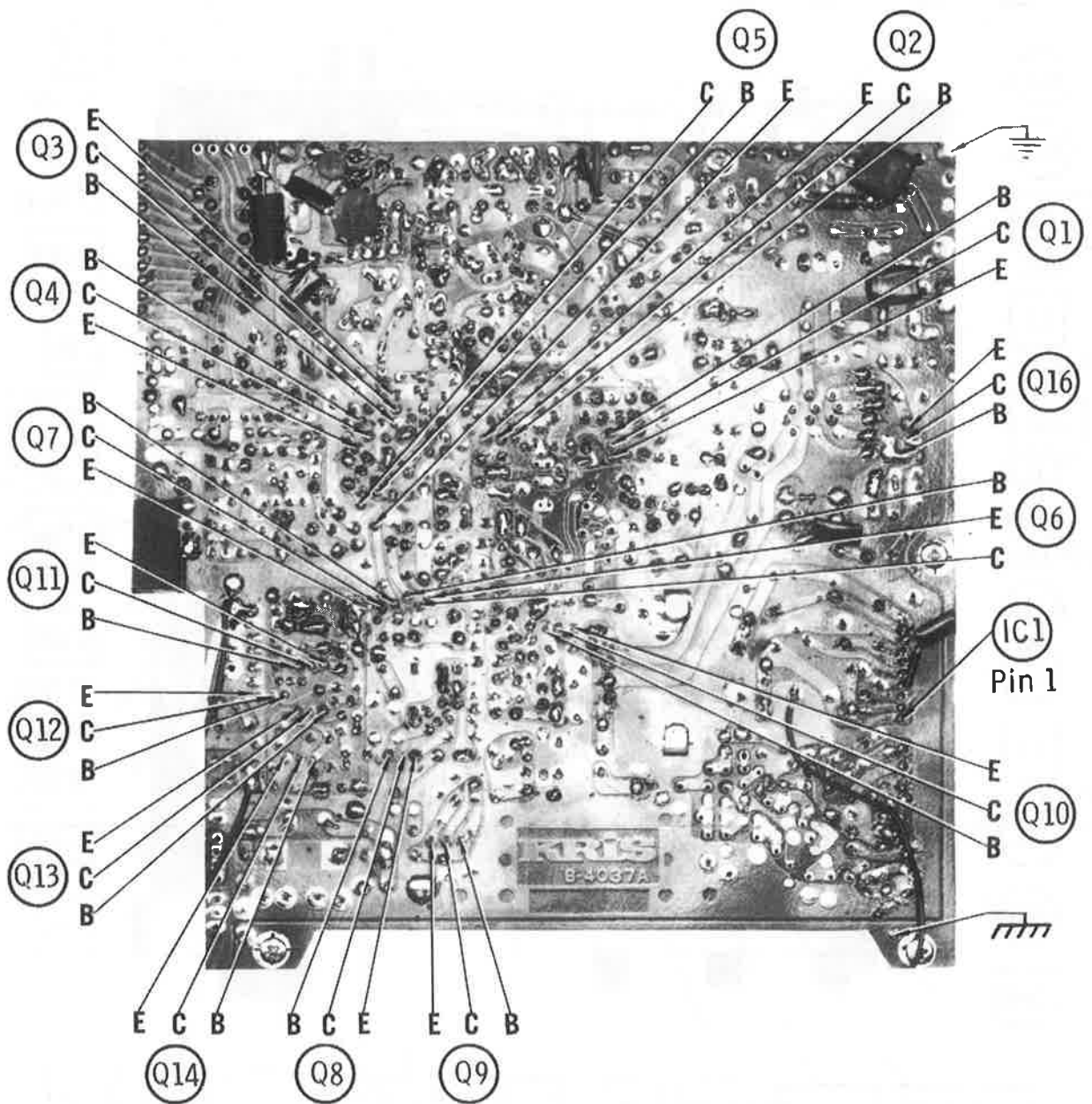
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels ,
after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz, 100mV signal at mic input.	Ch. 19	VR301	AMC Adjust for 100% modulation maximum.
	Ch. 19	SVR3	RF PANEL METER Adjust SVR3 so that RF panel meter agrees with RF wattmeter.
Modulation meter to antenna jack.	Ch. 19	SVR4	MODULATION METER Adjust SVR4 so that modulation meter agrees with external modulation meter.

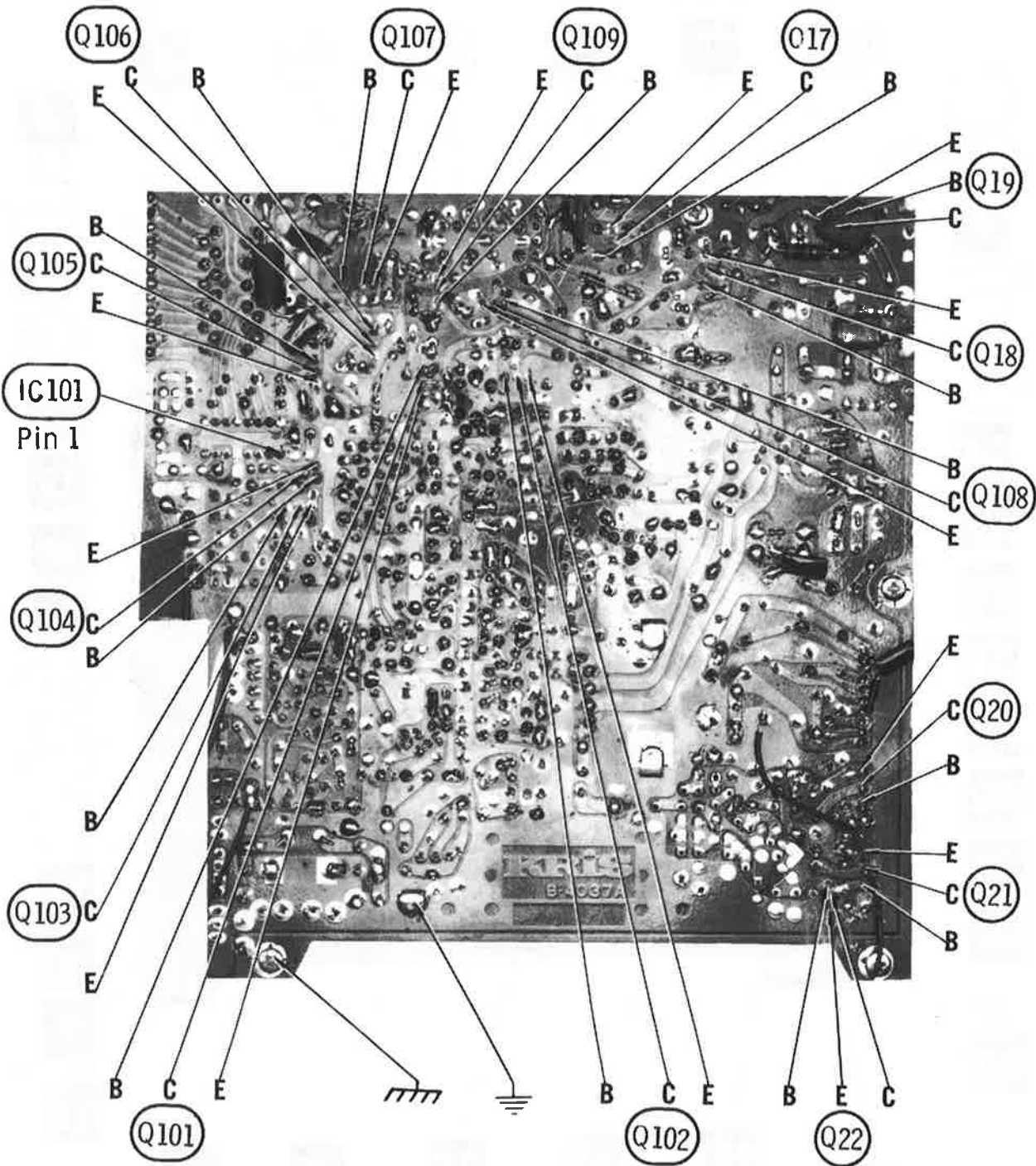


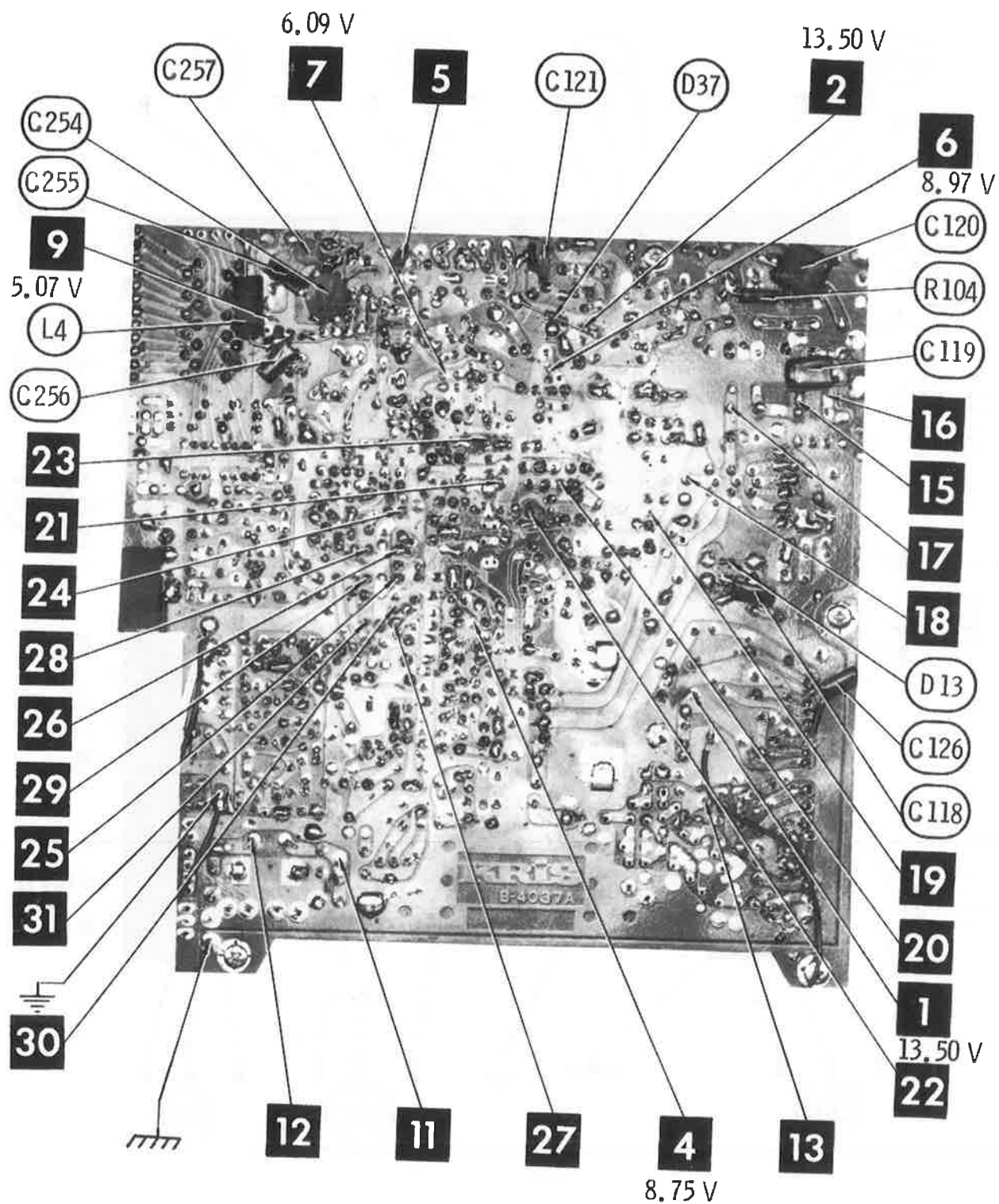


KRIS MODEL XL-50

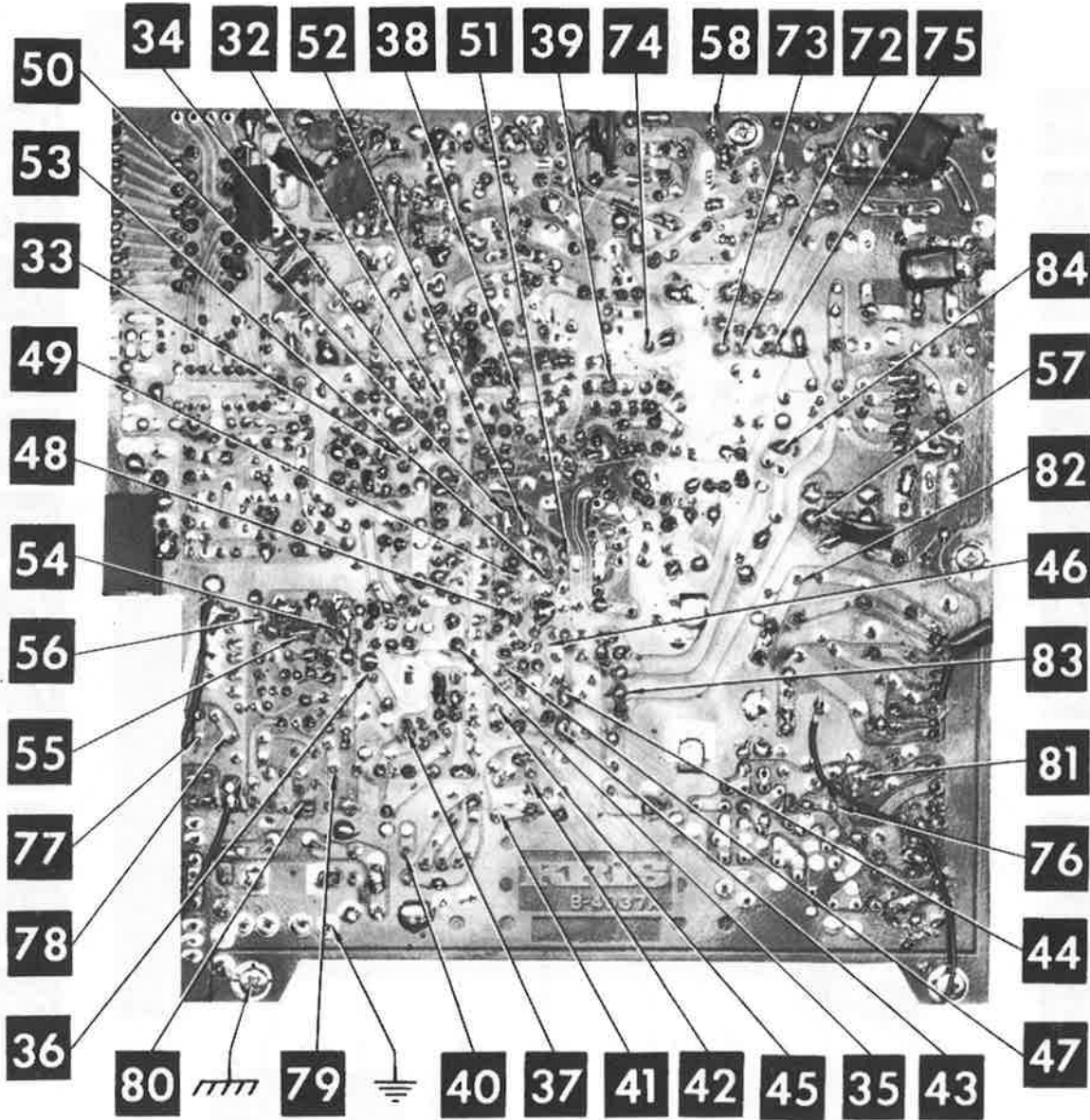


MAIN BOARD



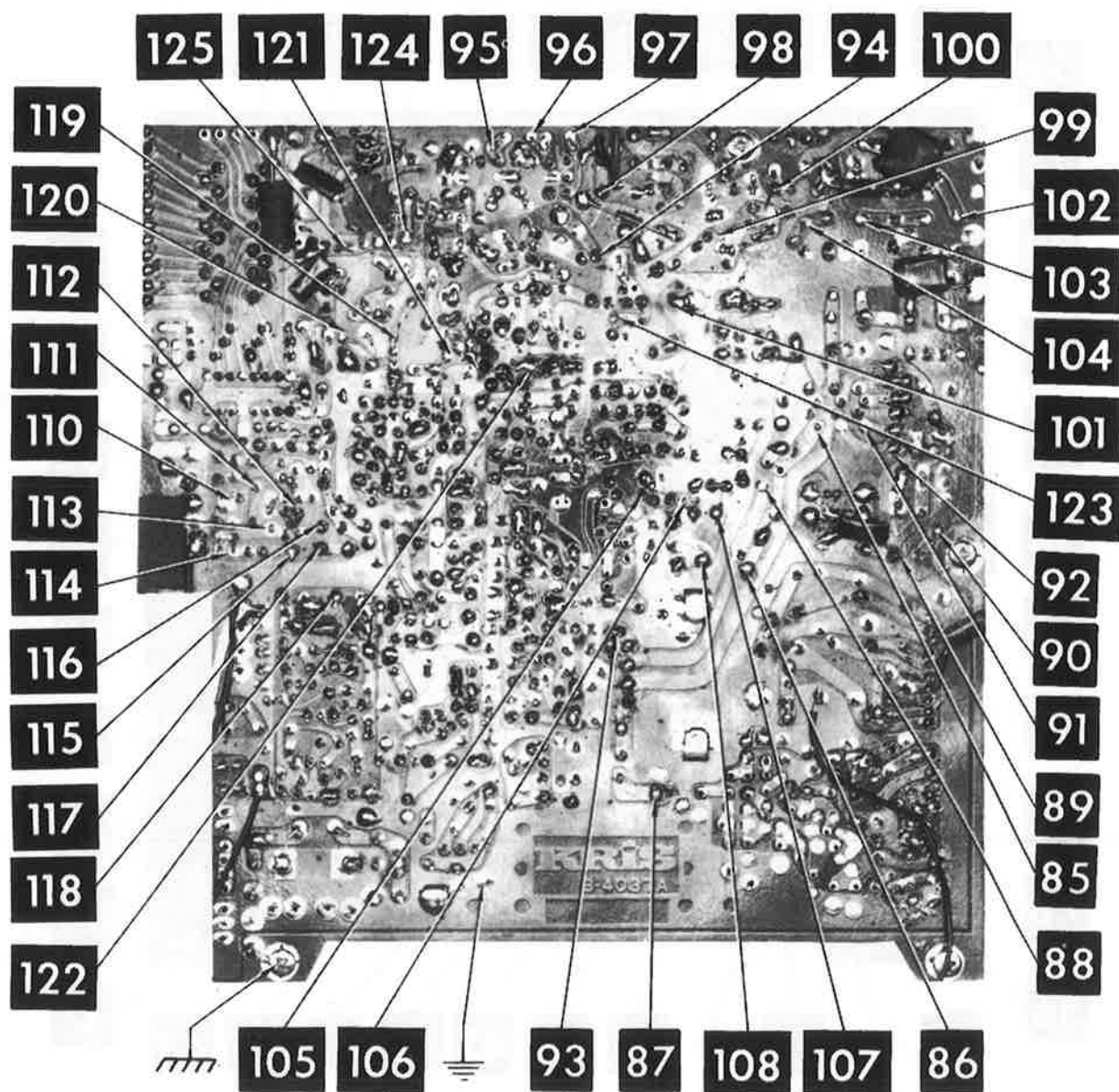


MAIN BOARD

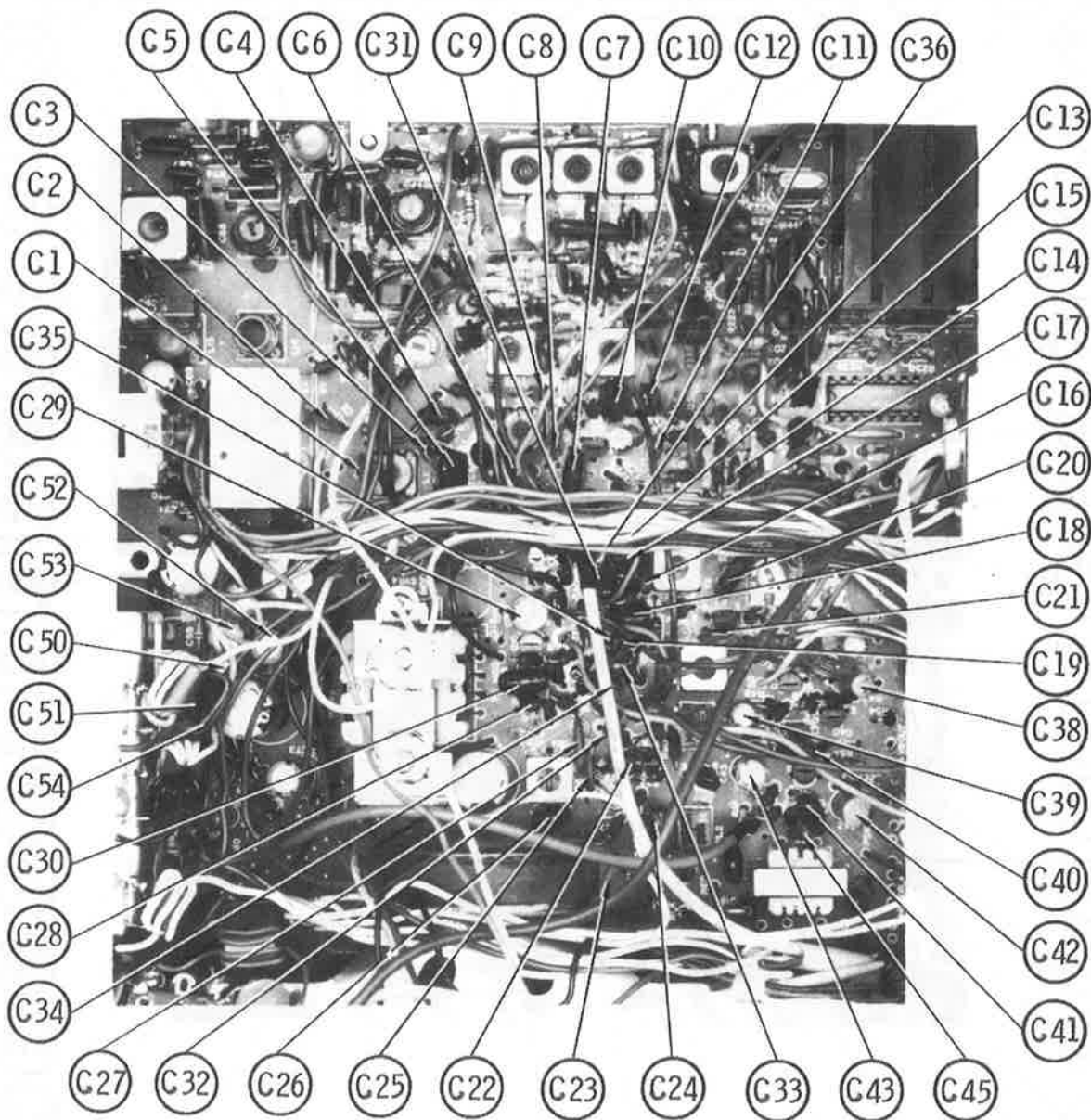


KRIS MODEL XL-50

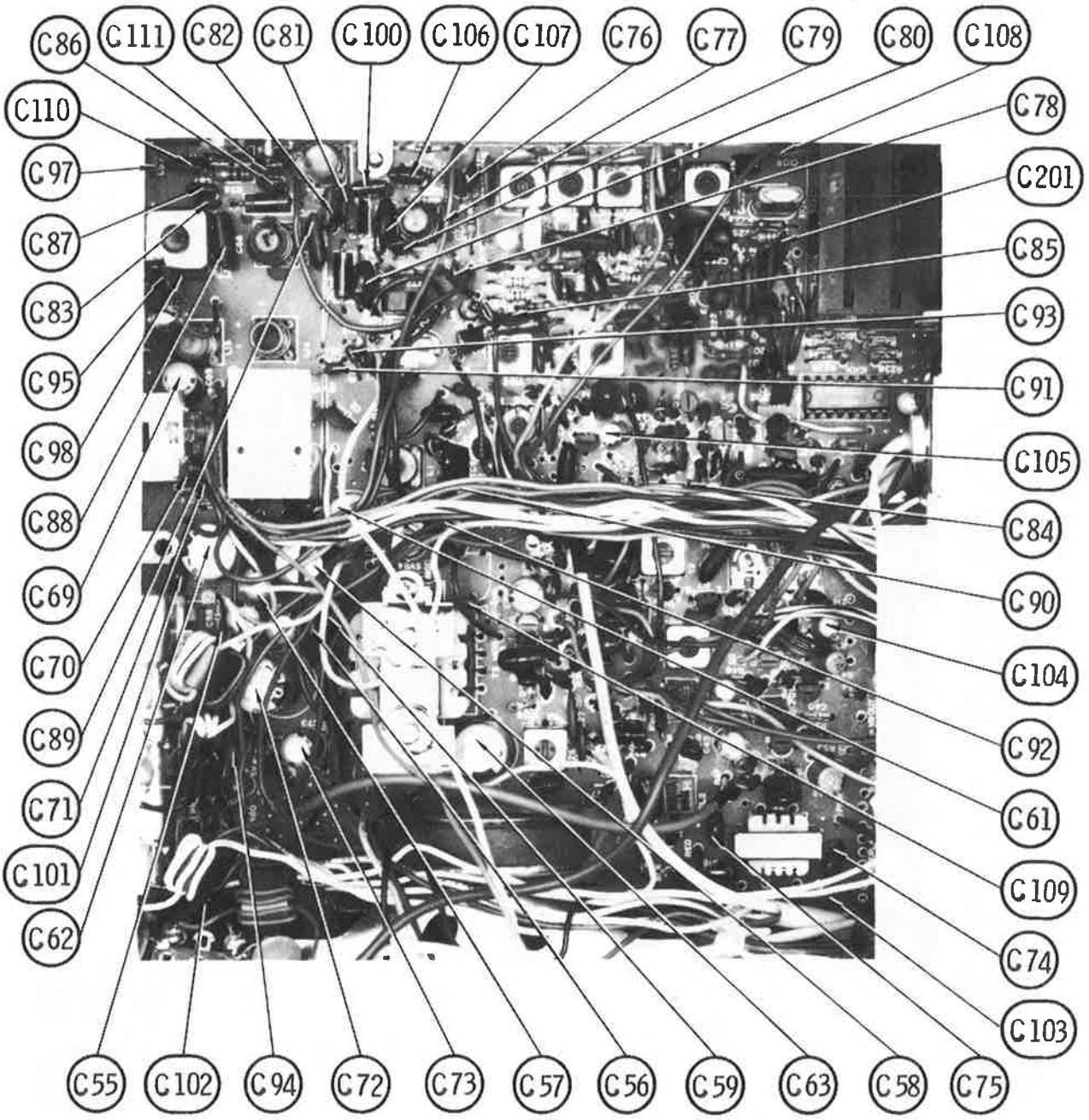
MAIN BOARD



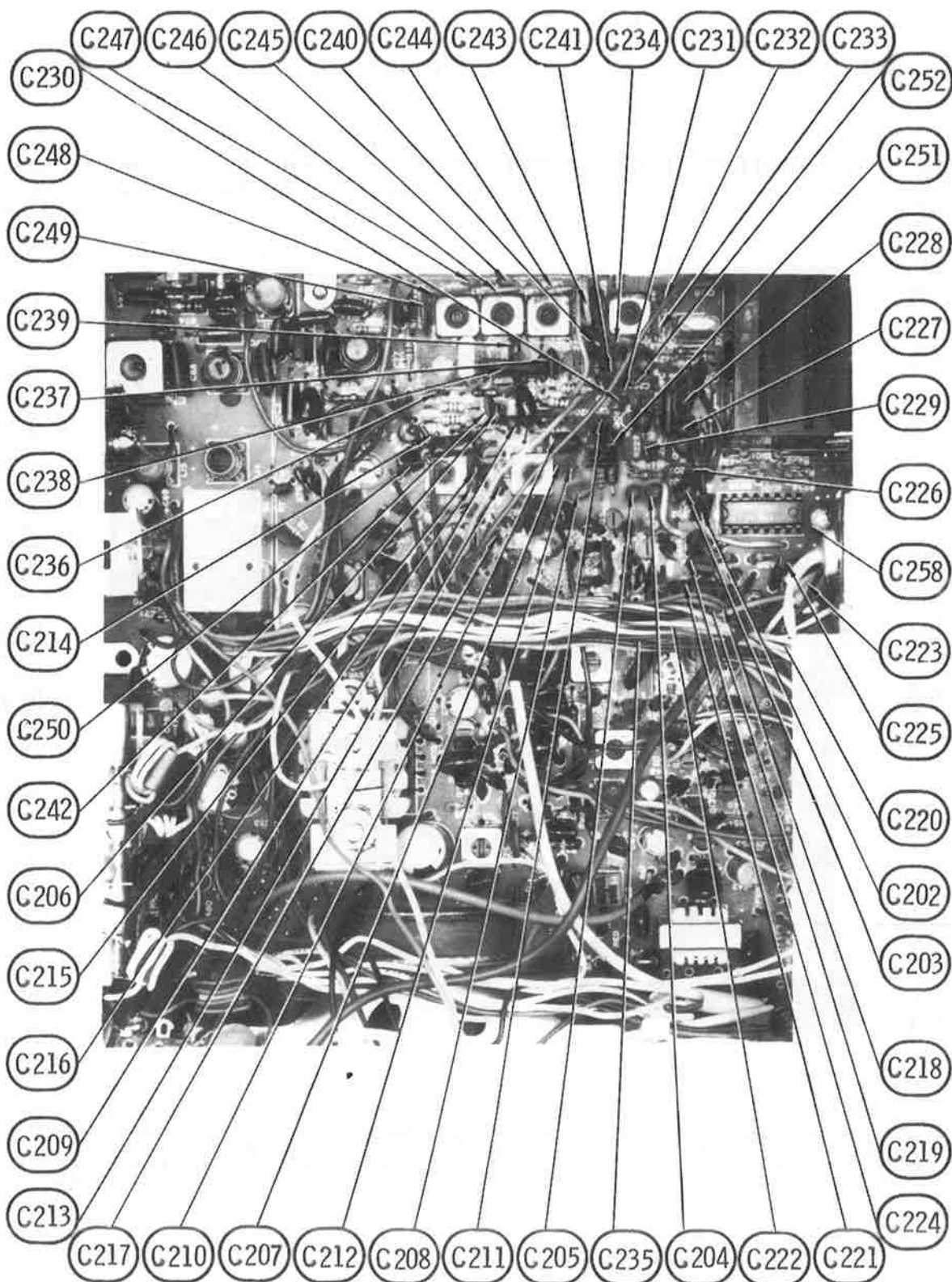
MAIN BOARD



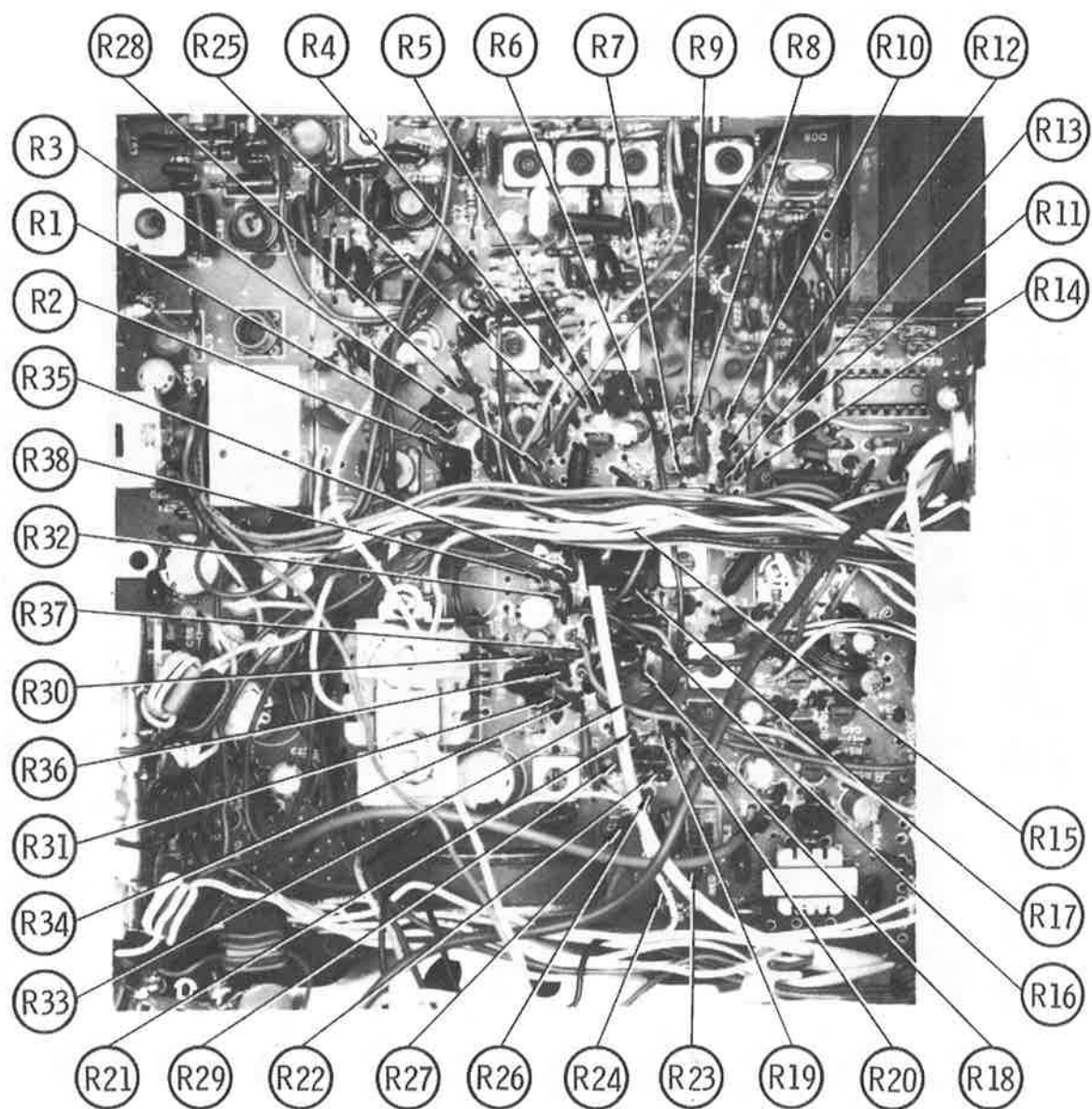
MAIN BOARD



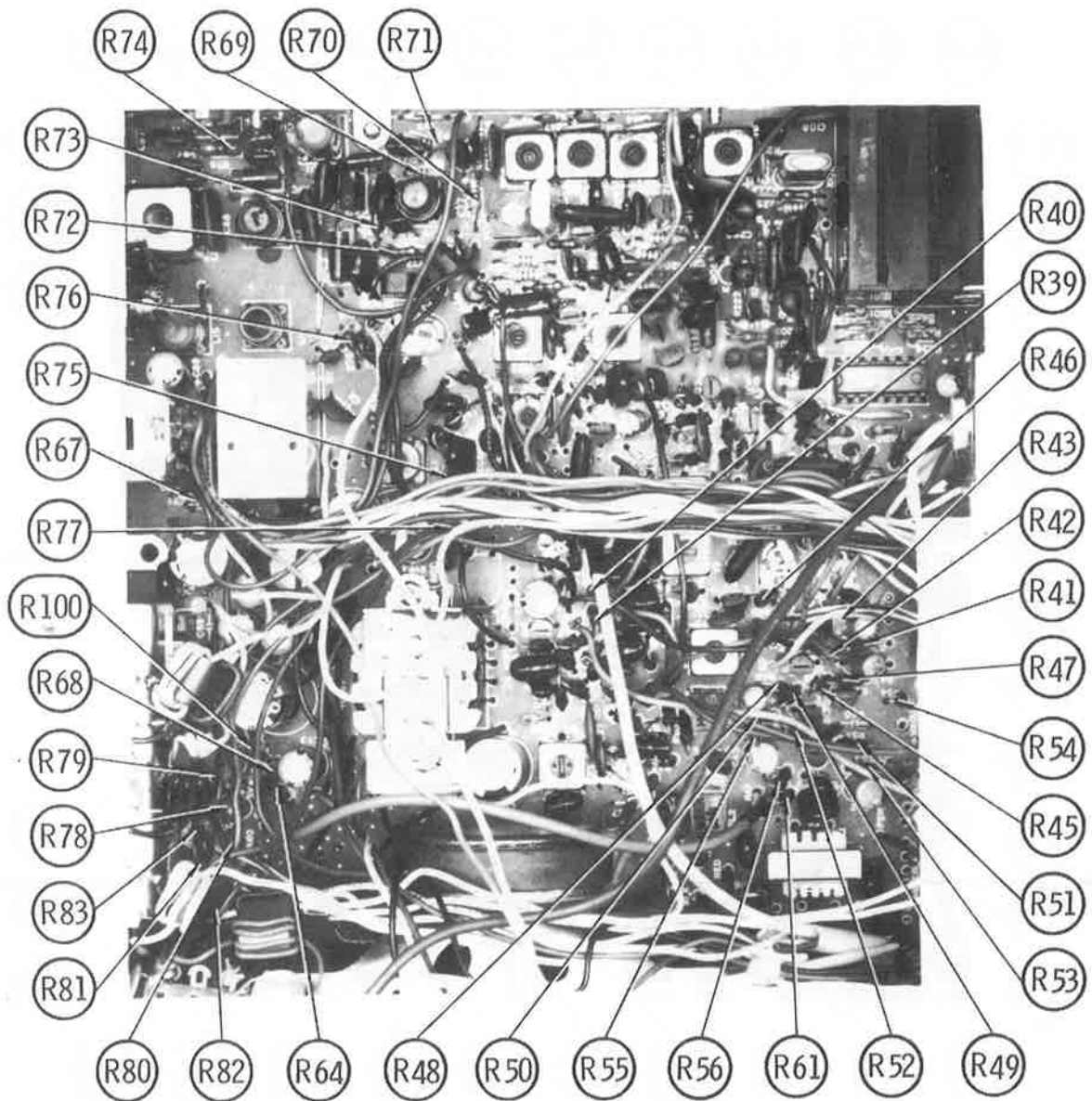
MAIN BOARD



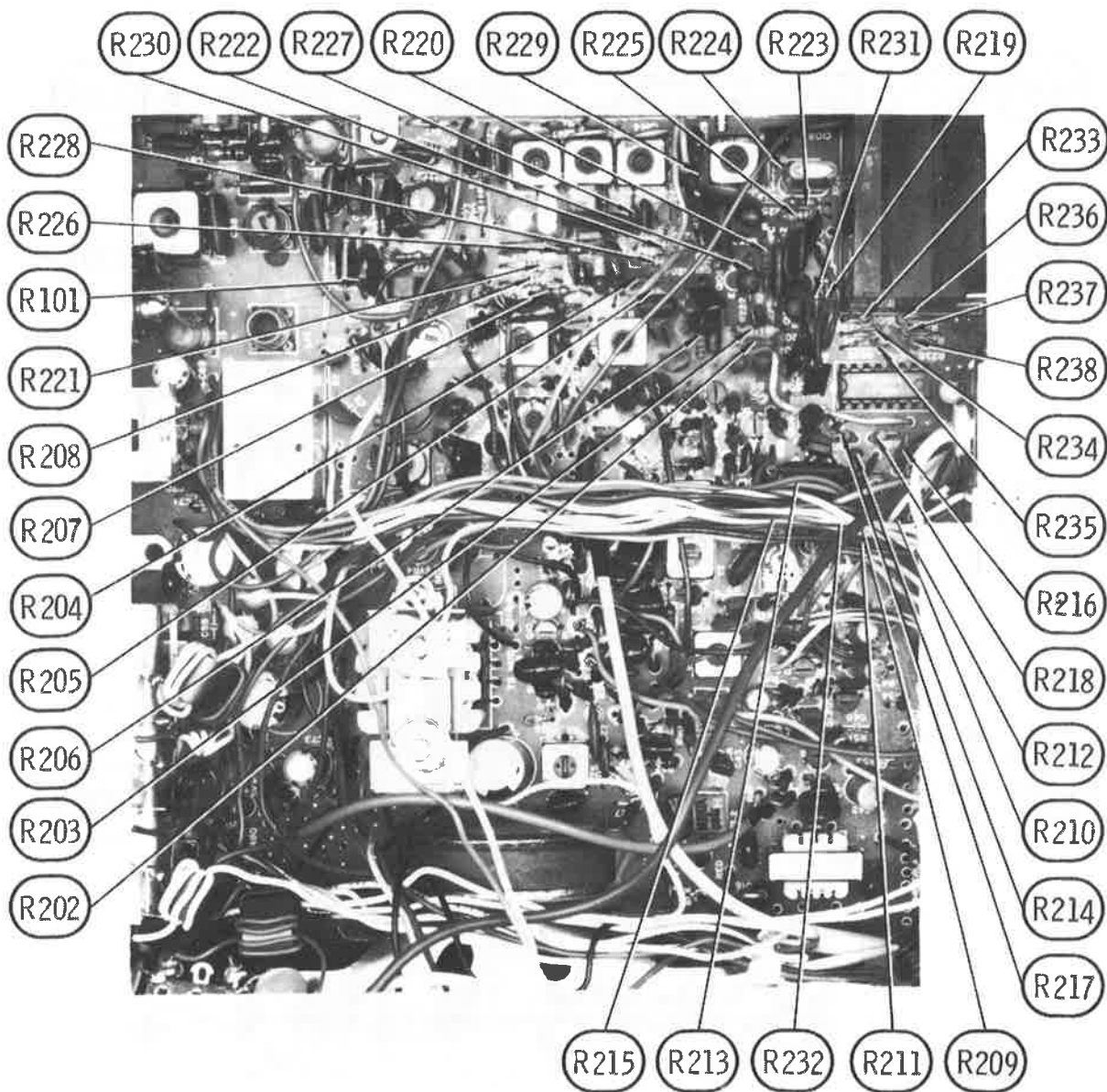
MAIN BOARD



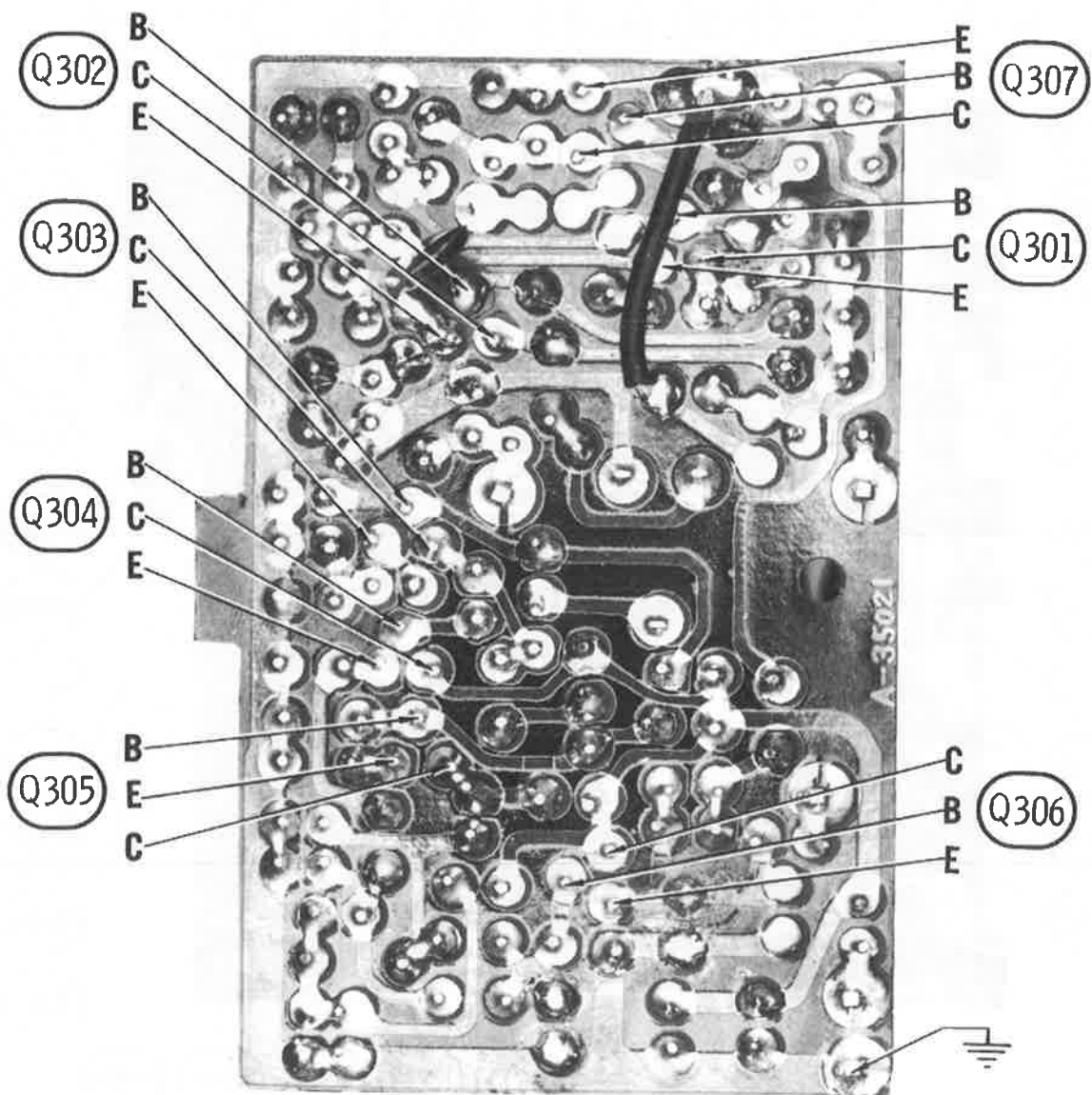
MAIN BOARD



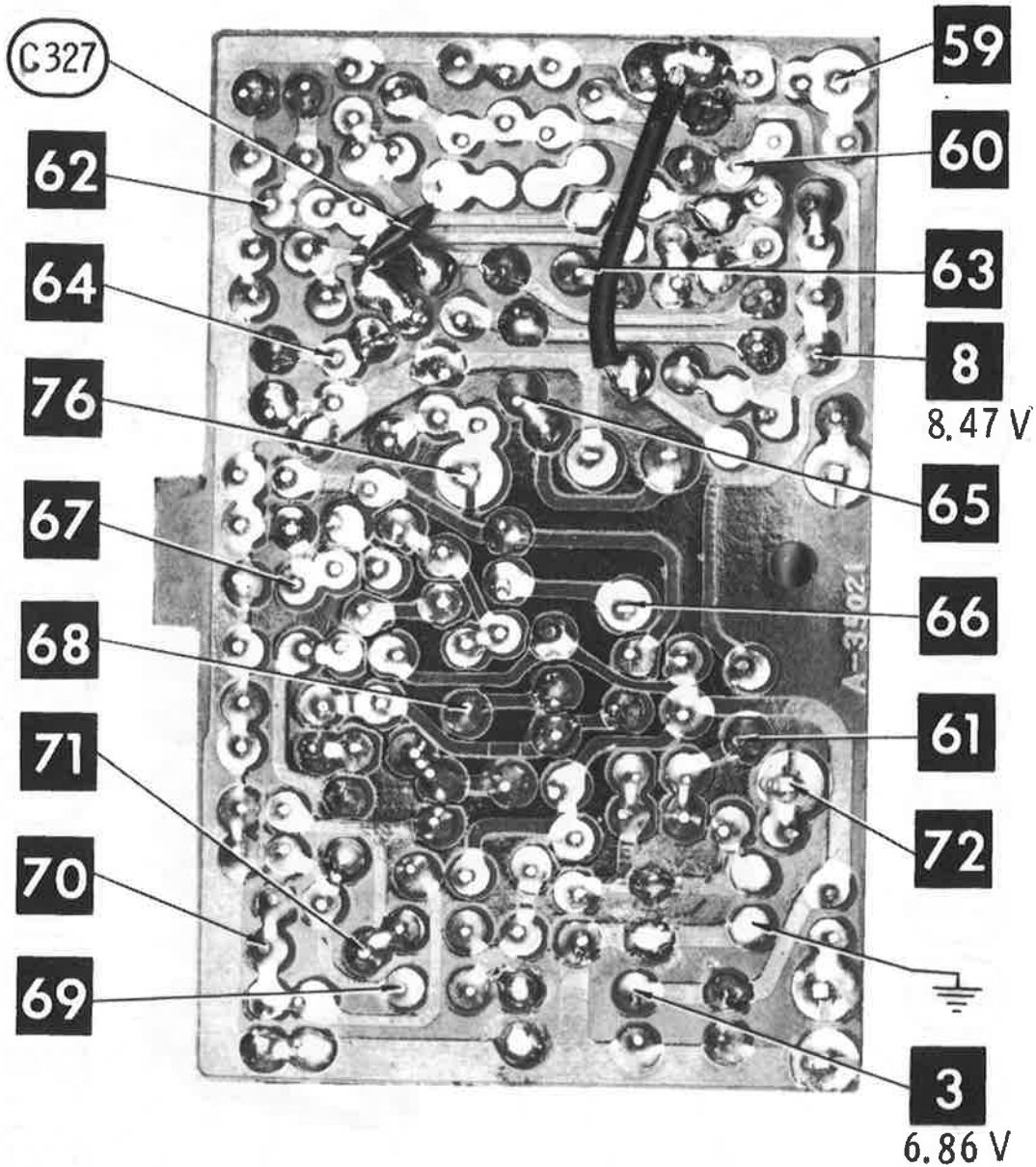
MAIN BOARD



MAIN BOARD

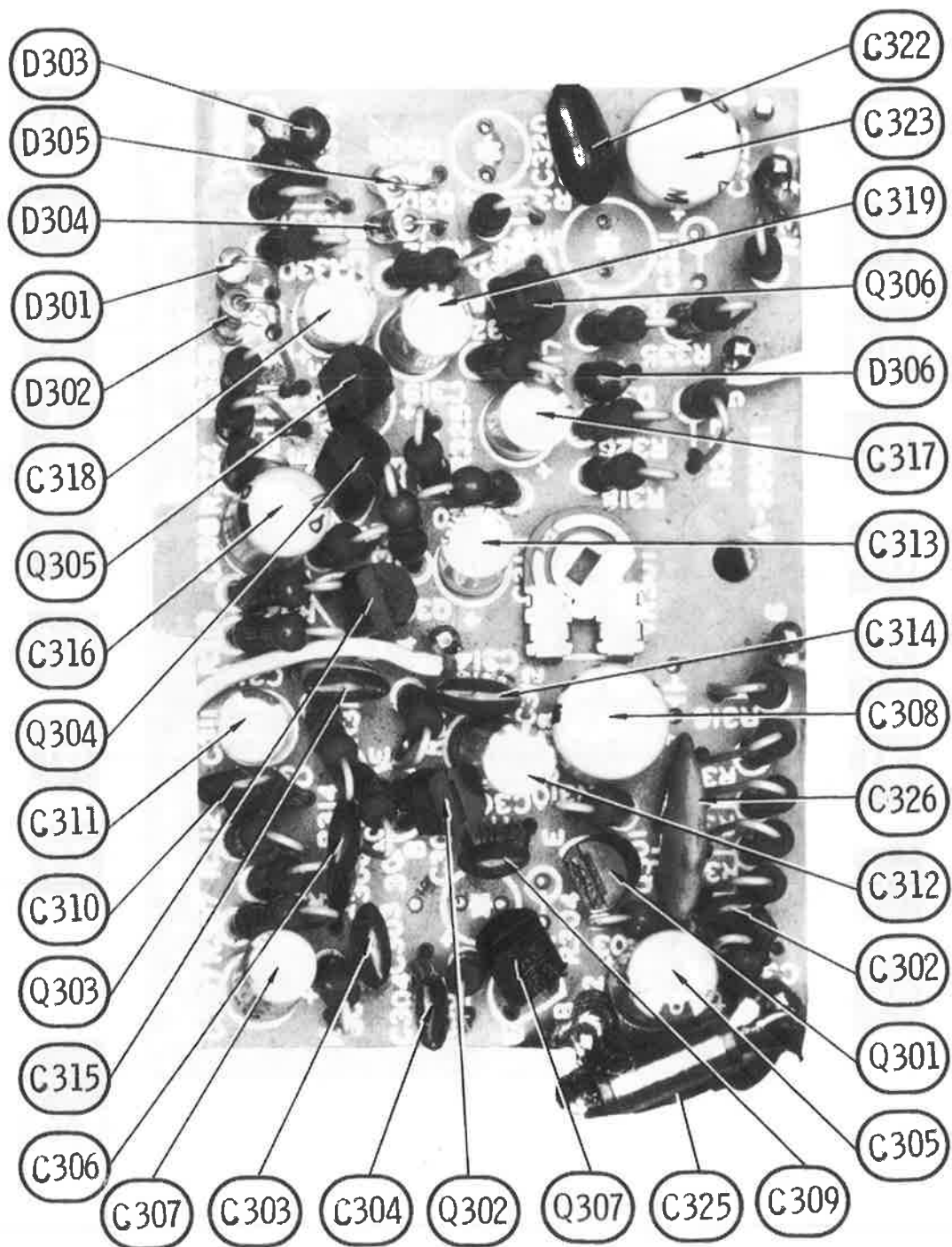


AMC BOARD

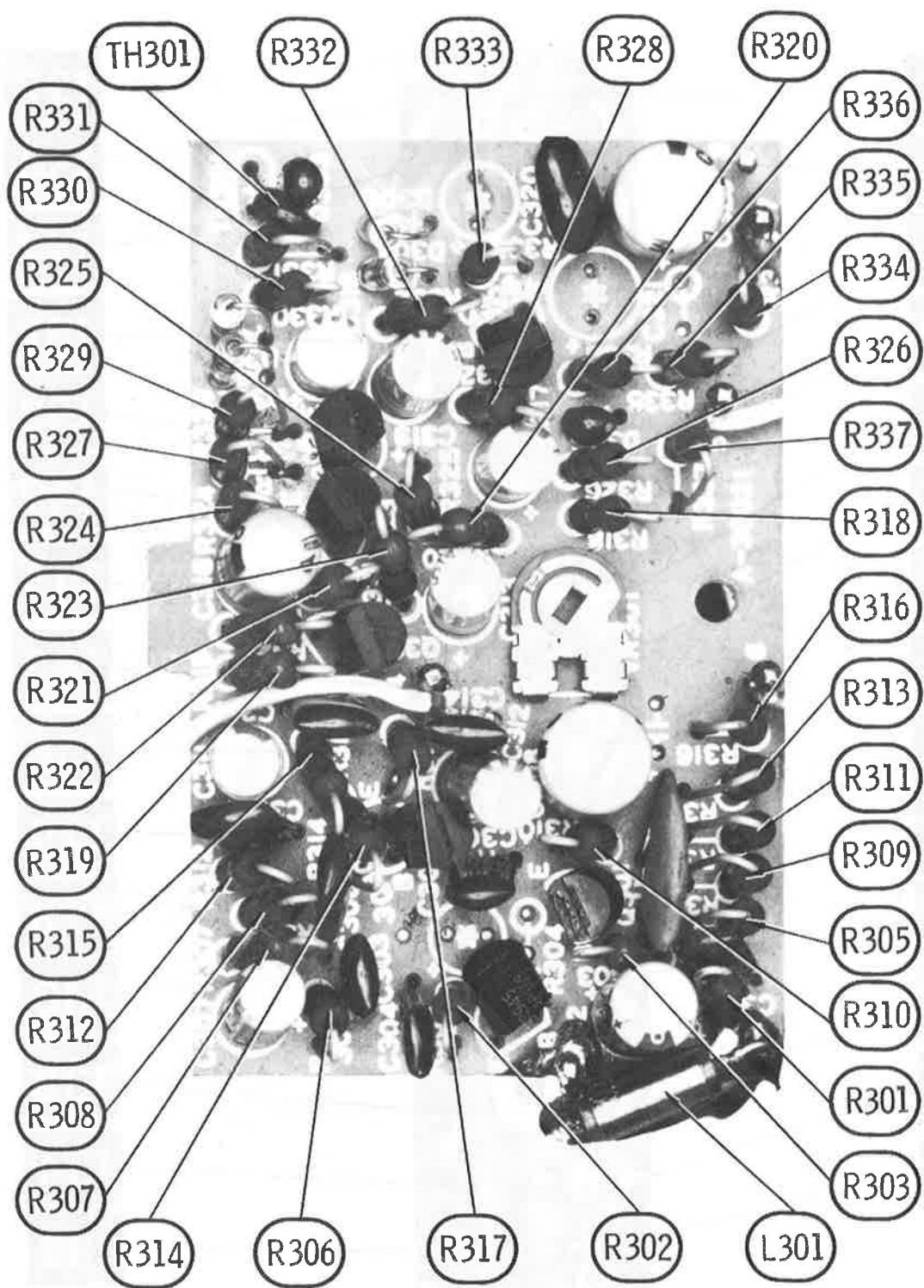


KRIS MODEL XL-50

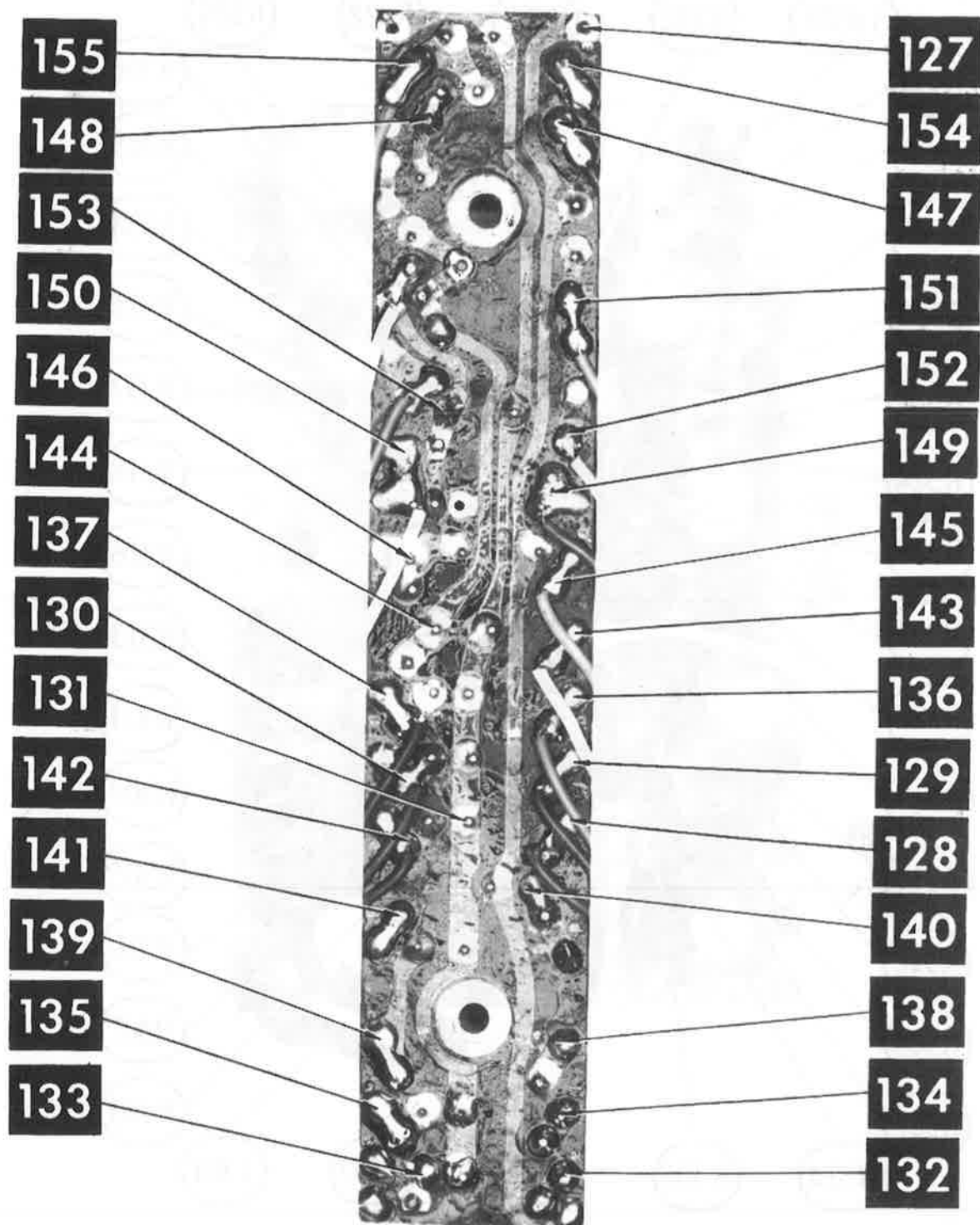
AMC BOARD



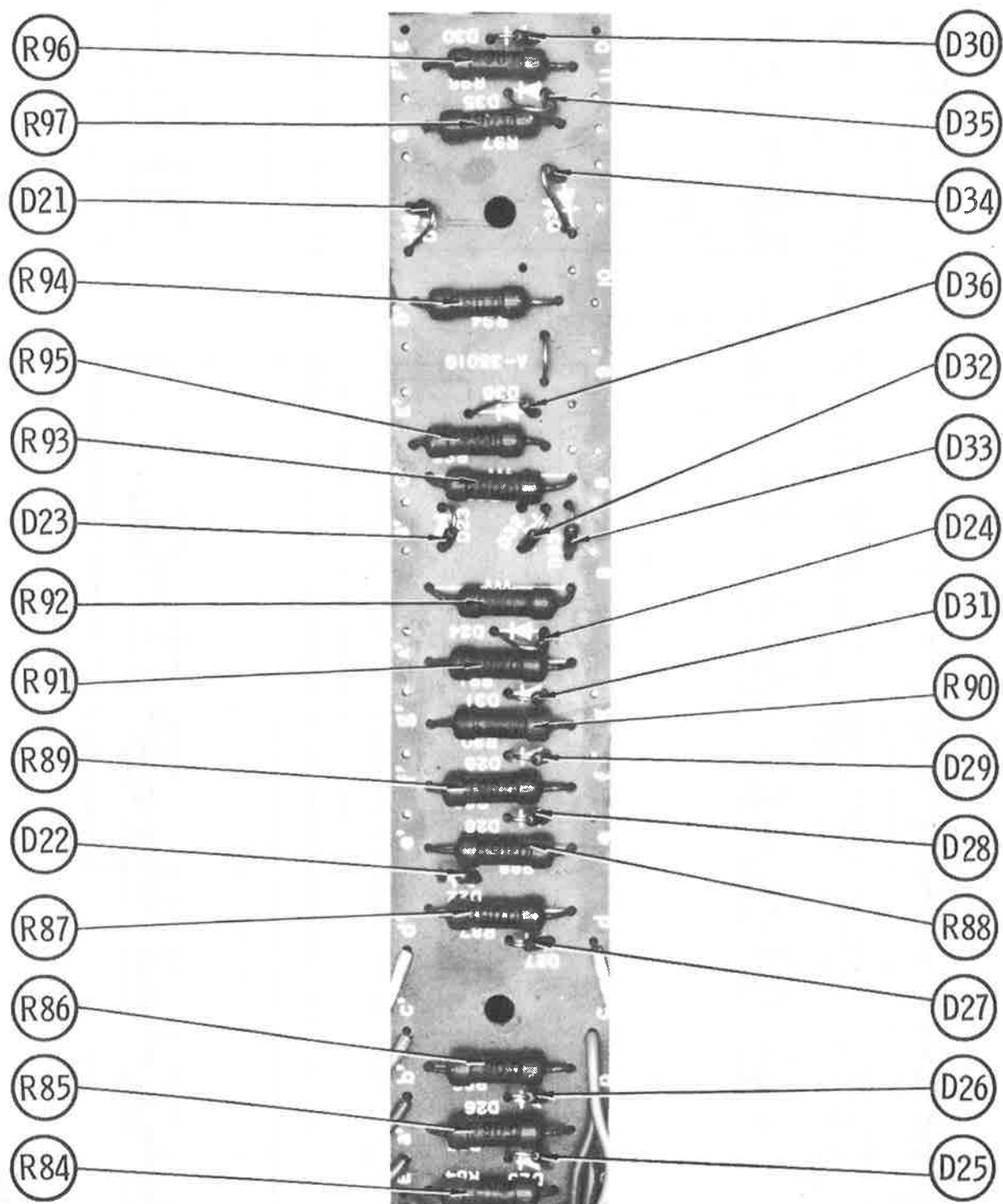
AMC BOARD

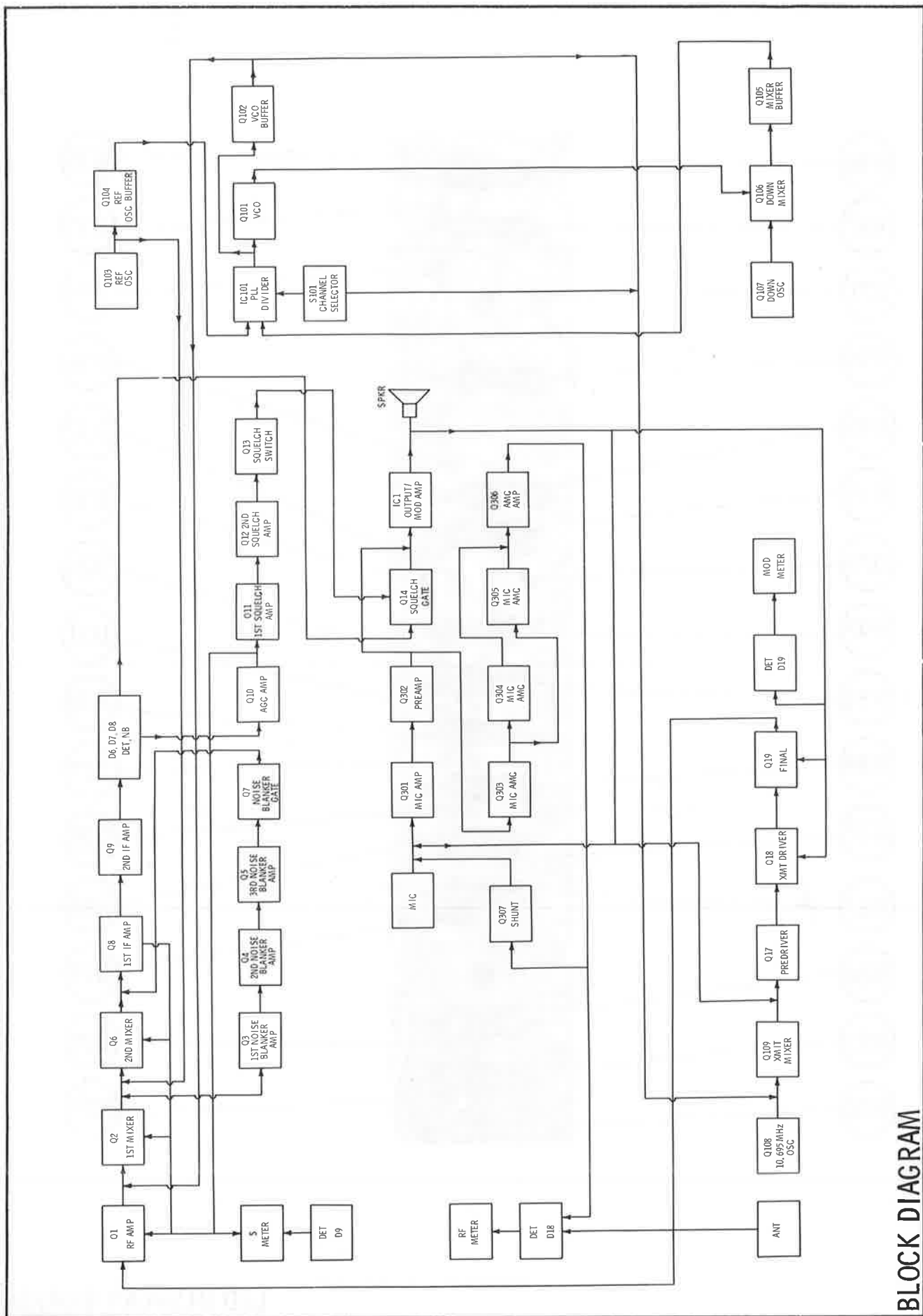


AMC BOARD



LED DISPLAY BOARD





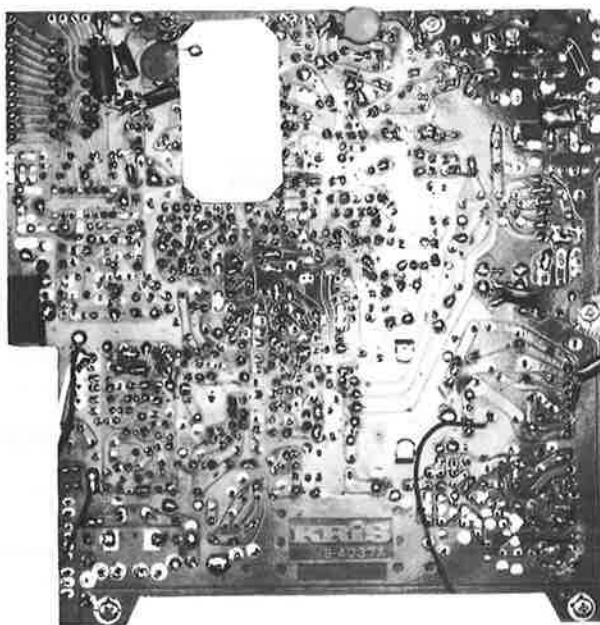
BLOCK DIAGRAM

TRUTH CHART

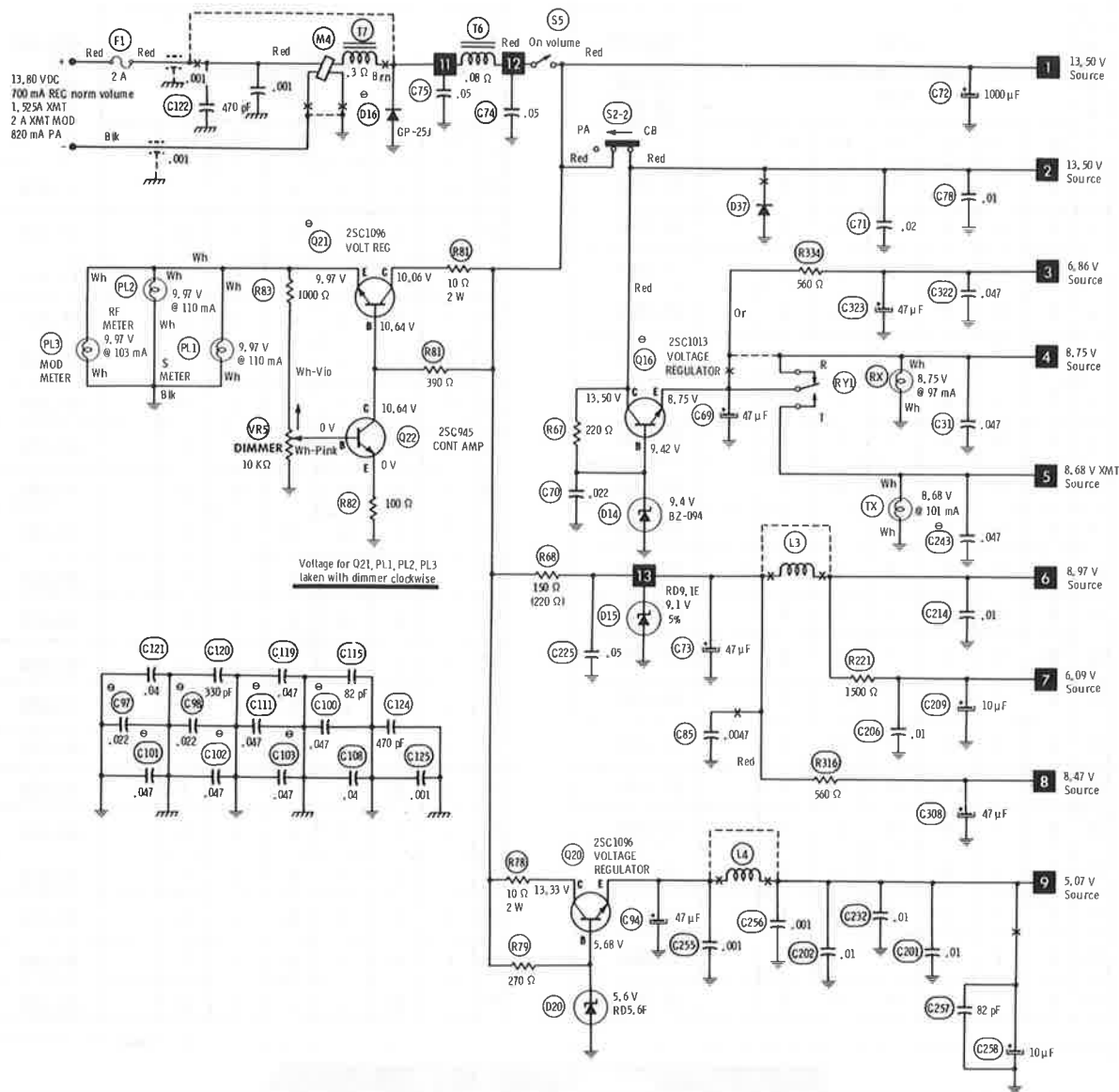
1 = <u>5.06</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC101 PROGRAM DIVIDER							REC/XMT VCO OUTPUT IN MHz AT TP4
	PINS							
	10	11	12	13	14	15		
1	0	0	0	0	0	0		37.660
2	0	0	0	0	0	1		37.670
3	0	0	0	0	1	0		37.680
4	0	0	0	1	0	0		37.700
5	0	0	0	1	0	1		37.710
6	0	0	0	1	1	0		37.720
7	0	0	0	1	1	1		37.730
8	0	0	1	0	0	1		37.750
9	0	0	1	0	1	0		37.760
10	0	0	1	0	1	1		37.770
11	0	0	1	1	0	0		37.780
12	0	0	1	1	1	0		37.800
13	0	0	1	1	1	1		37.810
14	0	1	0	0	0	0		37.820
15	0	1	0	0	0	1		37.830
16	0	1	0	0	1	1		37.850
17	0	1	0	1	0	0		37.860
18	0	1	0	1	0	1		37.870
19	0	1	0	1	1	0		37.880
20	0	1	1	0	0	0		37.900

1 = <u>5.06</u> Volts 0 = <u>0</u> Volts								
C H A N N E L	IC101 PROGRAM DIVIDER						REC/XMT VCO OUTPUT IN MHz AT TP4	
	PINS							
	10	11	12	13	14	15		
21	0	1	1	0	0	1		37.910
22	0	1	1	0	1	0		37.920
23	0	1	1	1	0	1		37.950
24	0	1	1	0	1	1		37.930
25	0	1	1	1	0	0		37.940
26	0	1	1	1	1	0		37.960
27	0	1	1	1	1	1		37.970
28	1	0	0	0	0	0		37.980
29	1	0	0	0	0	1		37.990
30	1	0	0	0	1	0		38.000
31	1	0	0	0	1	1		38.010
32	1	0	0	1	0	0		38.020
33	1	0	0	1	0	1		38.030
34	1	0	0	1	1	0		38.040
35	1	0	0	1	1	1		38.050
36	1	0	1	0	0	0		38.060
37	1	0	1	0	0	1		38.070
38	1	0	1	0	1	0		38.080
39	1	0	1	0	1	1		38.090
40	1	0	1	1	0	0		38.100

KRIS MODEL XL-50



SHIELD LOCATION



✱ Circuitry not used in some versions

--- Circuitry used in some versions

⊕ See parts list

⊕ Ground

⊕ Chassis

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

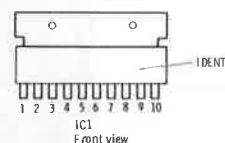
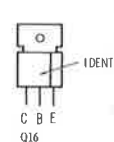
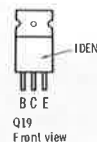
Value in () used in some versions.

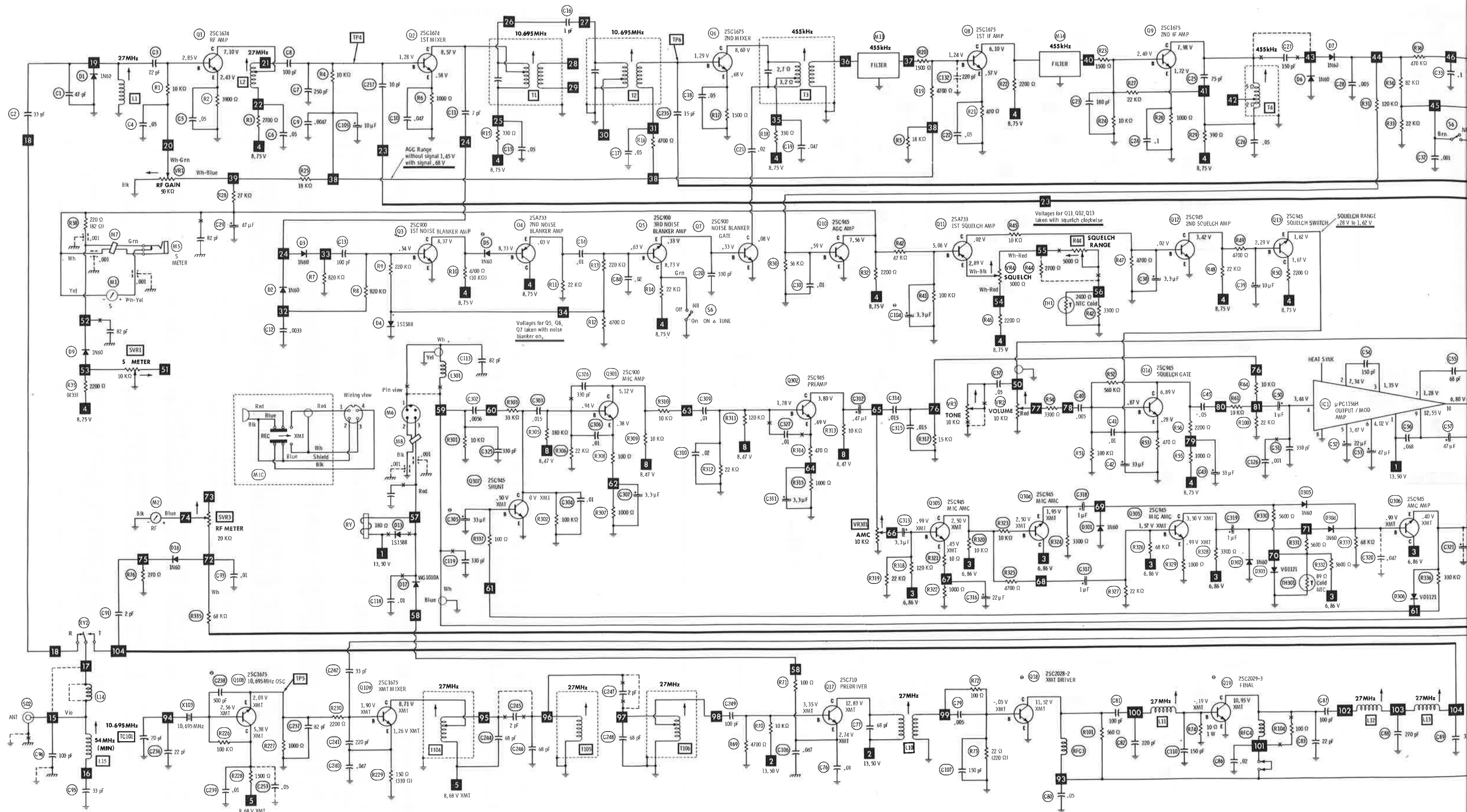
A PHOTOFAC STANDARD NOTATION SCHEMATIC

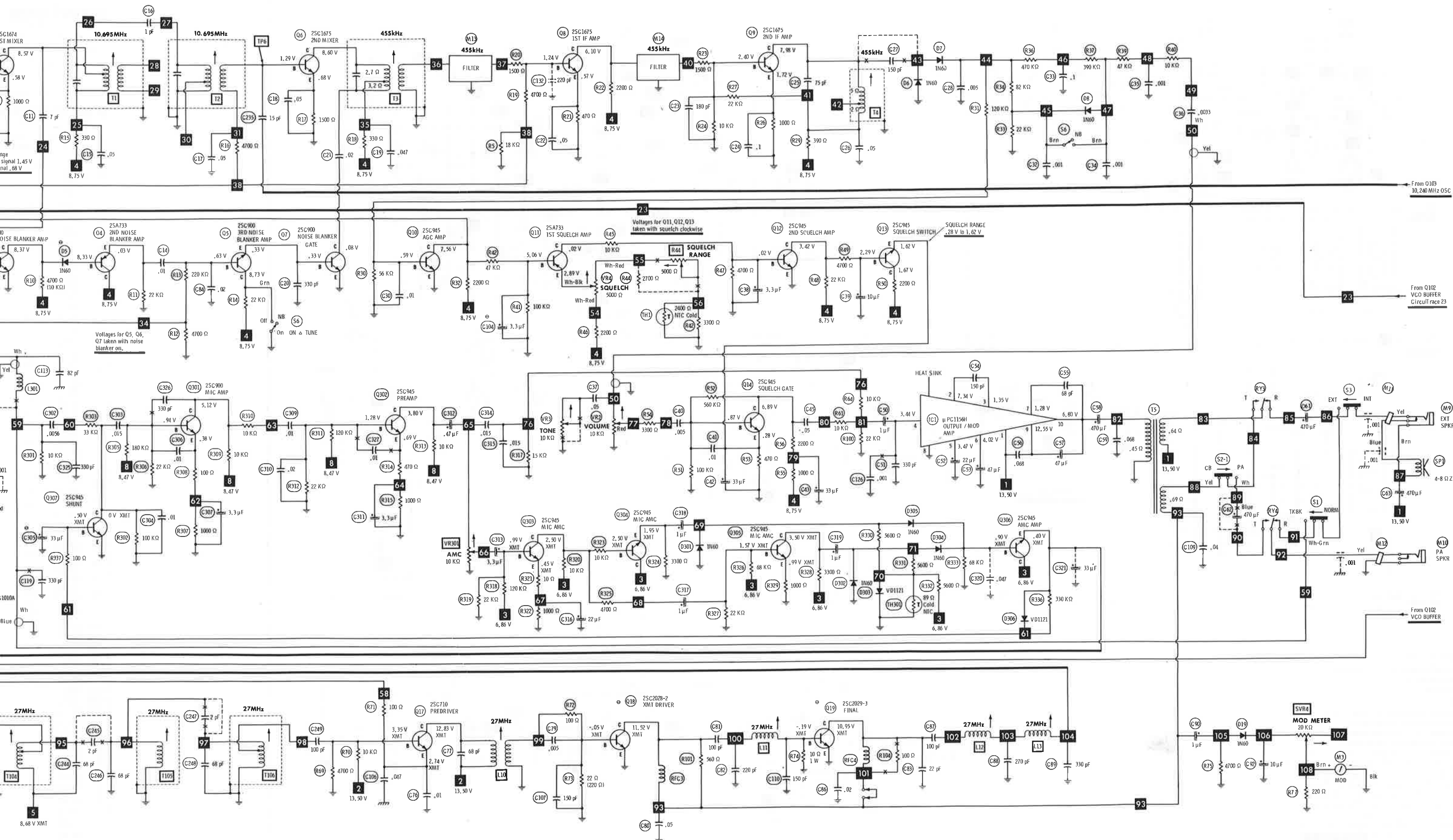
WITH **CIRCUITRACE**

© Howard W. Sams & Co., Inc. 1977

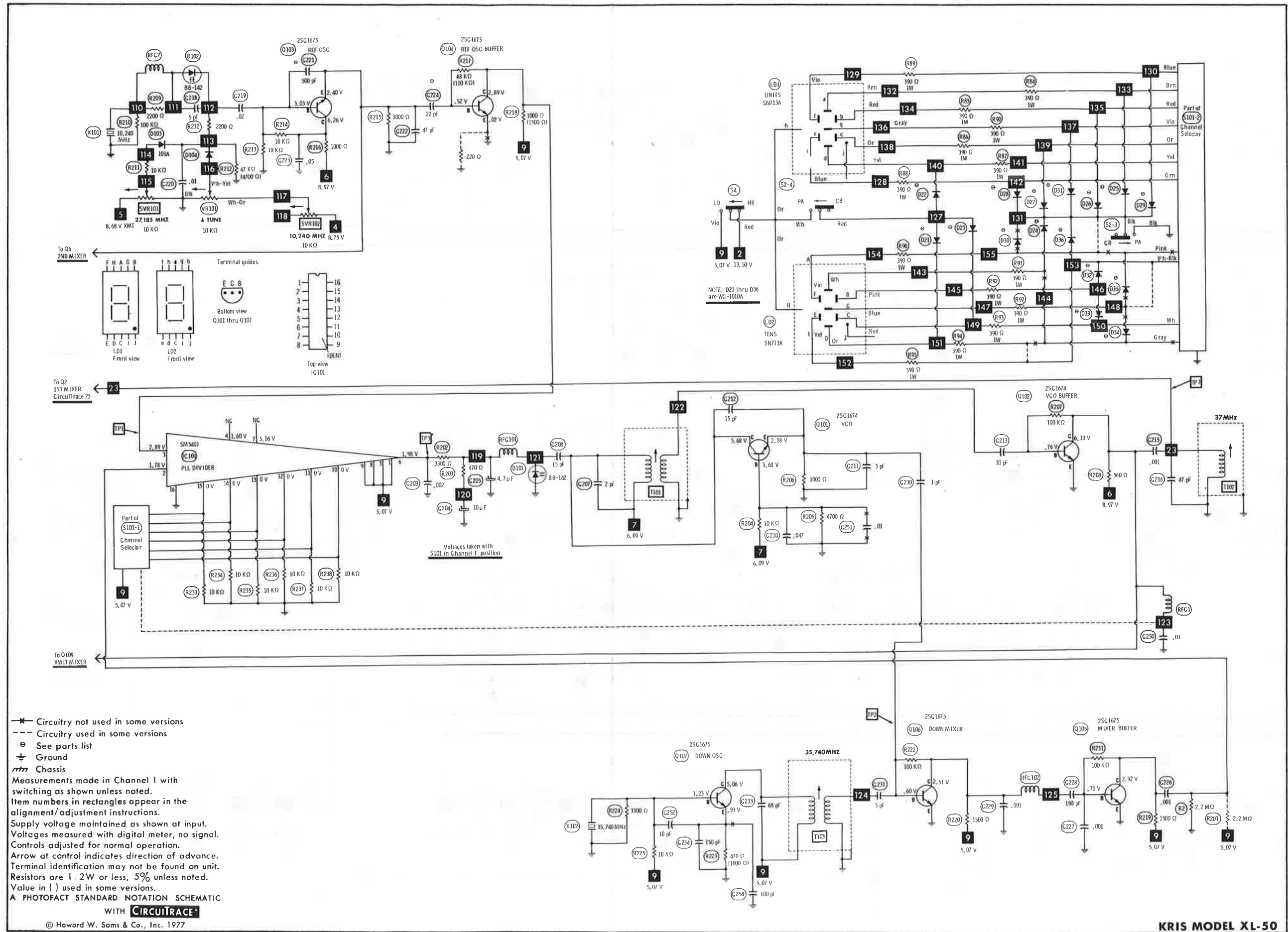
Terminal Guides







KRIS MODEL XL-50



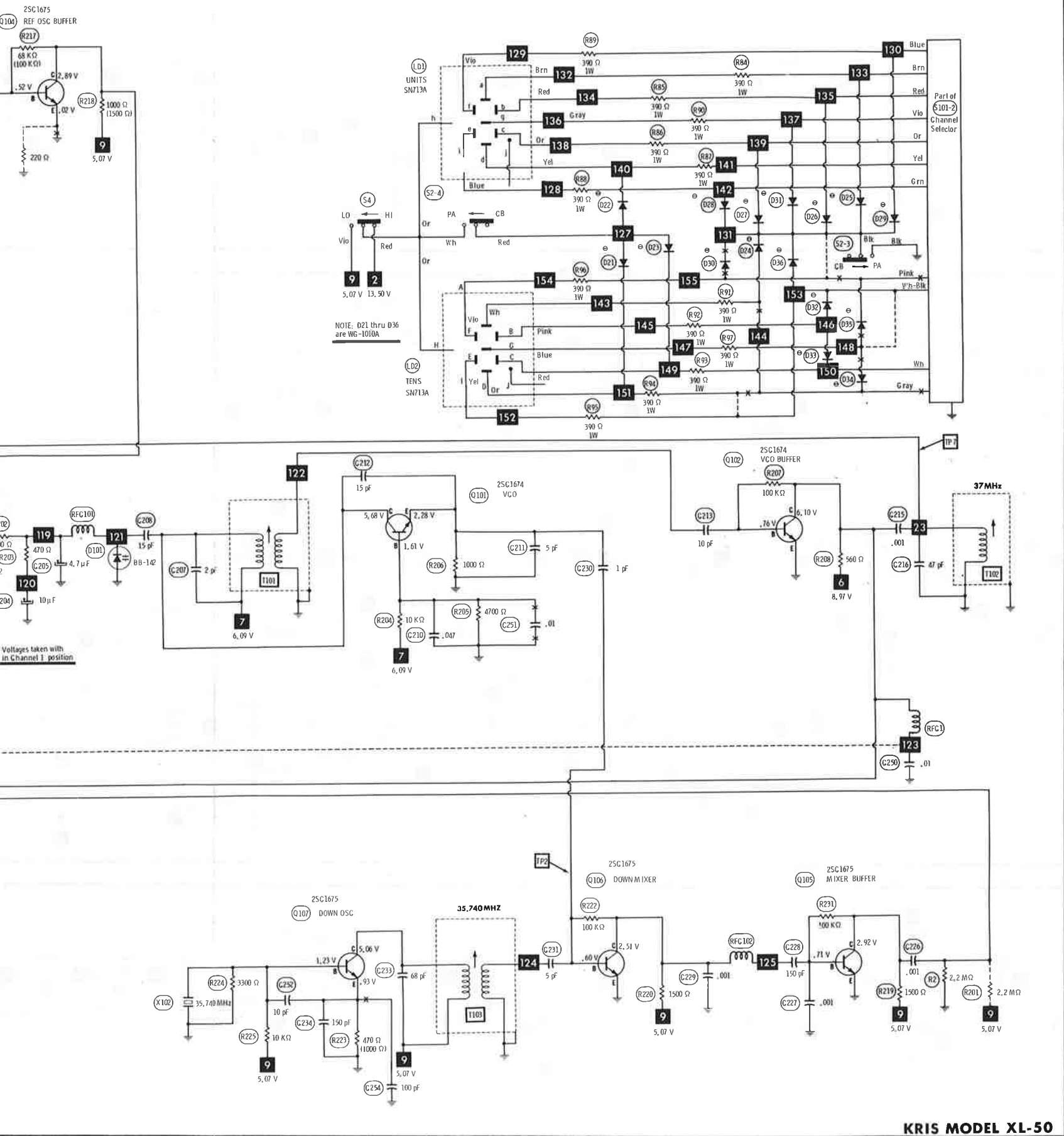
PARTS LIST AND D
(When ordering parts, state Mo

WIRING DATA

General-use Hook-up Wire (ava
Shielded Hook-up Wire (spiral
Speaker Cable (available in 4
Bonding Strap
AC Power Cord

SEMICONDUCTORS

ITEM No.	TYPE No.	MFR. PART No.
D1	1N60	
D2	1N60	
D3	1N60	
D4	1N60	(1)
D5	1N60	
D6	1N60	
D7	1N60	
D8	1N60	(1)
D9	1N60	
D10	1N60	
D11	1N60	
D12	1N60	
D13	(1)	
D14	BZ-094	
D15	RD9-1E	
D16	1N5400	(1)
D17	GP-25J	
D18	WG1010A	
D19	1N60	
D20	RD5-6F	
D21	WG1010A	(1)
D22	1S1588	(1)
D23	WG1010A	(1)
D24	WG1010A	(1)
D25	WG1010A	(1)
D26	WG1010A	(1)
D27	WG1010A	(1)
D28	WG1010A	(1)
D29	WG1010A	(1)
D30	WG1010A	(1)
D31	WG1010A	(1)
D32	WG1010A	(1)
D33	WG1010A	(1)
D34	WG1010A	(1)
D35	WG1010A	(1)
D36	WG1010A	(1)
D37	1S1588	(1)
D38	RD19A	(1)
D101	BB-142	
D102	BB-142	
D103	WG1010A	
D104	WG1010A	
D301	1N60	
D302	1N60	
D303	VD1129	(1)
D304	1N60	
D305	1N60	
D306	VD1121	
IC1	UPC1156H	
IC101	SM5104	
Q1	2SC1674	
Q2	2SC1674	
Q3	2SC900	
Q4	2SA733	
Q5	2SC900	
Q6	2SC1675	
Q7	2SC900	
Q8	2SC1675	
Q9	2SC1675	
Q10	2SC945	
Q11	2SA733	
Q12	2SC945	
Q13	2SC945	
Q14	2SC945	
Q16	2SC1013	
Q17	2SC1096	(1)
	2SC710	



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	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.	MFGR. 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.
D1	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D2	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D3	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D4	1N60	(1)	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D5	1S1588		GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D6	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
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	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	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	BZ-094		GEZD-9.1	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D15	RD9-1E		GEZD-9.1	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D16	1N5400		GE-512	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D17	GP-25J	(1)	GE-512	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D18	WG1010A		GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D19	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D20	RD5-6F		GEZD-5.6	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D21	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D22	1S1588		GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D23	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D24	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D25	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D26	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D27	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D28	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D29	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D30	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D31	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D32	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D33	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D34	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D35	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D36	WG1010A	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D37	1S1588	(1)	GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D38	RD19A	(1)	GEZD-19	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D101	BB-142		GE-90	D201	PTC311	HEPR2503	RE 125	SK3335	RT-247	ECG5079
D102	BB-142		GE-90	D201	PTC311	HEPR2503	RE 125	SK3335	RT-247	ECG5079
D103	WG1010A		GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D104	WG1010A		GE-300	D200	PTC214	HEPR9135	RE 52	SK3100	RT-218	ECG109
D301	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D302	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D303	V01129	(1)	1N60	1N60	PTC301	HEPR9135	RE 47	SK3088	RT-263	ECG109
D304	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D305	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D306	V01121		1N60	1N60	PTC301	HEPR9135	RE 47	SK3088	RT-263	ECG109
IC1	UPC1156H		1N60	1N60	PTC301	HEPR9135	RE 47	SK3088	RT-263	ECG109
IC101	SM5104		1N60	1N60	PTC301	HEPR9135	RE 47	SK3088	RT-263	ECG109
Q1	25C1674		GE-61	TR-95 *	PTC132 *	HEPS0010 *	RE 9 *	SK3018 *	RT-308	ECG229 *
Q2	25C1674		GE-61	TR-95 *	PTC132 *	HEPS0010 *	RE 9 *	SK3018 *	RT-308	ECG229 *
Q3	25C900		GE-62	(IR)25C644	PTC139 *	HEPS0015 *	RE 192	SK3124 *	RT-302	ECG199
Q4	25A733		GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138 *	RT-303	ECG294
Q5	25C900		GE-62	(IR)25C644	PTC139 *	HEPS0015 *	RE 192	SK3124 *	RT-302	ECG199
Q6	25C1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124 *	RT-308	ECG229 *
Q7	25C900		GE-213	(IR)25C644	PTC139 *	HEPS0015 *	RE 192	SK3124 *	RT-302	ECG199
Q8	25C1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124 *	RT-308	ECG229 *
Q9	25C1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124 *	RT-308	ECG229 *
Q10	25C945		GE-212	(IR)25C945	PTC121 *	HEPS0015 *	RE 192	SK3124 *	RT-107A	ECG199
Q11	25A733		GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138 *	RT-303	ECG294
Q12	25C945		GE-212	(IR)25C945	PTC121 *	HEPS0015 *	RE 192	SK3124 *	RT-107A	ECG199
Q13	25C945		GE-212	(IR)25C945	PTC121 *	HEPS0015 *	RE 192	SK3124 *	RT-107A	ECG199
Q14	25C945		GE-212	(IR)25C945	PTC121 *	HEPS0015 *	RE 192	SK3124 *	RT-107A	ECG199
Q16	25C1013		GE-83	PTC193	PTC193	HEPS0015 *	RE 213	SK3124 *	RT-137	ECG210
Q17	25C1096	(1)	GE-28	WEP1096	PTC110	HEPS0027	RE 42	SK3197	RT-166	ECG186A
	25C710		GE-211 *	(IR)25C710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
Q18	2SC2029-2	(1)	GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
	2SC2028	(1)	GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
	2SC1957	(1)	GE-270	WEP913	PTC180	HEPS3044	RE 209			ECG295
Q19	2SC2029-3	(1)	GE-333	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC2029	(1)	GE-333	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1909	(1)	GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q20	2SC1096		GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
Q21	2SC1096		GE-28	WEP1096	PTC110	HEPS5027	RE 42	SK3197	RT-166	ECG186A
Q22	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q101	2SC1674		GE-61	TR-95 *	PTC132 *	HEPS0010 *	RE 9 *	SK3018 *	RT-308	ECG229 *
Q102	2SC1674		GE-61	TR-95 *	PTC132 *	HEPS0010 *	RE 9 *	SK3018 *	RT-308	ECG229 *
Q103	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q104	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q105	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q106	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q107	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q108	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q109	2SC1675		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
Q301	2SC900		GE-62	(1R)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
Q302	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q303	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q304	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q305	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q306	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q307	2SC945		GE-212	(1R)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

* Lead configuration may vary from original.

(1) Used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C29	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C38	3.3 16V		PC50-50	VTT3R3A50	QV1-23	EV-1318
C39	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C42	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C43	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C50	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C52	22 16V		PC25-25	VTT22B16	QV1-55	EV-1224
C53	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C57	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C58	440 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C61	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C62	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C63	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C69	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C72	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C73	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C90	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C92	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C94	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C104	3.3 16V		PC50-50	VTT3R3A50	QV1-23	EV-1318
C105	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C204	10 10V			TDC106M025FL	QDT1-64	SD25-109
C205	4.7 10V			TDC475M010EL	QDT1-48	SD10-4R79
C209	10 10V			TDC106M025FL	QDT1-64	SD25-109
C258	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C305	33 50V	(1)	PC30-50	VTT33B50	QV1-67	EV-1525
	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C307	3.3 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C308	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C311	3.3 25V		PC50-50	VTT3R3A50	QV1-23	EV-1318
C312	.47 50V		PC1-50	VTT47A63	QV1-3	EV-1610
C313	3.3 25V		PC50-50	VTT3R3A50	QV1-23	EV-1318
C316	22 16V		PC25-25	VTT22B16	QV1-55	EV-1224
C317	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C318	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C319	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C321	33 16V	(1)	PC30-25	VTT33D25	QV1-63	EV-1325
C323	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226

(1) Used in some versions.

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	47		DTZ-47	NP047	CN0447	10TCC-Q47
C2	33 NPO 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C3	22 NPO 10%		DTZ-22	NP022	CN0422	10TCC-Q22
C4	.05			DPMS2S5	EWFTA150	2PS-S50
C5	.05			DPMS2S5	EWFTA150	2PS-S50
C6	.05			DPMS2S5	EWFTA150	2PS-S50
C7	250 10%			CD15FD241J03	SX324	MMA-241
C8	100 NPO 10%		DTZ-100	NP0100	CN0310	10TCC-T10
C9	.0047				M192P4729R8	192P4729R8
C10	.047			DPMS2S47	EWFTA147	1PB-S47
C11	7 NPO		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C12	.0033				M192P3329R8	192P3329R8
C13	100 NPO 10%		DTZ-100	NP0100	CN0310	10TCC-T10
C14	.01 5%			WMF1S1	EWFTA110	1PB-S10

KRIS MODEL XL-50

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
C15	.05	(1)	DC-203	DPMS2S5	EWFA150		2PS-S50
C16	1 NPO				CN0510		10TCC-V10
C17	.05			DPMS2S5	EWFA150		2PS-S50
C18	.05			DPMS2S5	EWFA150		2PS-S50
C19	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C20	330 10%			CD15FD331J03	SX333	QW1-39	MMA-331
C21	.02			MGP02	TA120	QC2-157	TG-S20
C22	.05			DPMS2S5	EWFA150		2PS-S50
C23	180 NPO 10%				GP318		10TS-T18
C24	.1		DD-181	WMF05P1	EWFO5010		431P1049R5
C25	75 NPO 10%		DTZ-75	NP075	CN0475		10TCC-Q75
C26	.05			DPMS2S5	EWFA150		2PS-S50
C27	150 NPO 10%		DTZ-150		CN0315		10TCC-T15
C28	.005			WMF1D5	EWFA1250		431P1049R5
C30	.1			WMF05P1	EWFO5010		1PB-S47
C31	.047			DPMS2S47	EWFA147	QF1-171	1PB-D10
C32	.001			DPMS6D1	EWFA1210	QF1-1	431P1049R5
C33	.1			WMF05P1	EWFO5010		1PB-D10
C34	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C35	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C36	.0033				M192P3329R8		192P3329R8
C37	.05			DPMS2S5	EWFA150		2PS-S50
C40	.005			WMF1D5	EWFA1250		1PB-S10
C41	.01 5%			WMF1S1	EWFA1110	QF1-91	2PS-S50
C45	.05			DPMS2S5	EWFA150		MMA-331
C51	330 10%		DD-680	CD15FD331J03	SX333	QW1-39	MMA-151
C54	150 10%			CD15FD151J03	SX315	QW1-31	10TS-Q68
C55	68 NPO 10%			GP68	GP468		1PB-S68
C56	.068			WMF1S68	EWFA168	QF1-195	1PB-S68
C59	.068			WMF1S68	EWFA168	QF1-195	1PB-S68
C70	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C71	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C74	.05			DPMS2S5	EWFA150		2PS-S50
C75	.05			DPMS2S5	EWFA150		2PS-S50
C76	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C77	68 NPO 10%		DTZ-68	NP068	CN0468		10TCC-Q68
C78	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C79	.005			WMF1D5	EWFA1250		1PB-S47
C80	.047			DPMS2S47	EWFA147	QF1-171	1PB-S10
	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C81	100 10%			CD15FD101J03	SX310	QW1-27	MMA-101
C82	220 10%			CD15FD221J03	SX322	QW1-35	MMA-221
C83	22			CD15ED220J03	SX422	QW1-11	MMA-220
C84	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C85	.0047				M192P4729R8		192P4729R8
C86	.02			DPMS2S2	PVC212		2PS-S20
C87	100 10%			CD15FD101J03	SX310	QW1-27	MMA-101
C88	270 10%			CD15FD271J03	SX327	QW1-37	MMA-271
C89	330 10%			CD15FD331J03	SX333	QW1-39	MMA-331
C91	2 NPO		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C93	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C95	33 NPO 10%		DTZ-33	NP033	CN0433		10TCC-Q33
C96	100 10%		DC-203	CD15FD101J03	SX310	QW1-27	MMA-101
C97	.02			MGP02	TA120	QC2-157	TG-S20
C98	.02	(1)	DC-203	MGP02	TA120	QC2-157	TG-S20
C99	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C100	.05			DPMS2S5	EWFA150		2PS-S50
C101	.05			DPMS2S5	EWFA150		2PS-S50
C102	.05			DPMS2S5	EWFA150		2PS-S50
C103	.05			DPMS2S5	EWFA150		2PS-S50
C106	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
C107	150 10%			CD15FD151J03	SX315	QW1-31	MMA-151
C108	.04						
C109	.04						
C110	150 10%	(1)	DC-203	CD15FD151J03	SX315	QW1-31	MMA-151
C111	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C113	82 N750 10%				CN7482		10TCU-Q82
C114	82 N750 10%				CN7482		10TCU-Q82
C115	82 N750 10%				CN7482		10TCU-Q82
C116	82 N750 10%				CN7482		10TCU-Q82
C117	82 N750 10%				CN7482		10TCU-Q82
C118	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C119	330 10%		DD-331	CD15FD331J03	SX333	QW1-39	MMA-331
C120	330 10%			GP330	GP333		10TS-T33
C121	.04	(1)	DD-471				10TS-T47
C122	470			GP470	GP347	QF1-1	1PB-D10
C123	.001		DD-471	DPMS6D1	EWFA1210		10TS-T47
C124	470			GP470	GP347		1PB-D10
C125	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C126	.001			DPMS6D1	EWFA1210	QF1-1	1PB-D10
C132	220		DTZ-2R2	CD15FD221J03	SX322	QW1-35	MMA-221
C201	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C202	.01		DTZ-15	WMF1S1	EWFA1110	QF1-91	1PB-S10
C203	.002			DPMS6D2	PVC622		6PS-D20
C206	.01	(1)	DTZ-2R2	WMF1S1	EWFA1110	QF1-91	1PB-S10
C207	2 NPO			NP02P2	CN0522		10TCC-V22
C208	15 NPO 10%		DTZ-15	NP015	CN0415		10TCC-Q15
C210	.047			DPMS2S47	EWFA147	QF1-171	1PB-S47
	.01		DTZ-4R7	WMF1S1	EWFA1110	QF1-91	1PB-S10
C211	5 NPO			NP04P7	CN0547		10TCC-V47
C212	15 NPO 10%		DTZ-15	NP015	CN0415		10TCC-Q15
C213	1 NPO				CN0510		10TCC-V10
C214	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C215	.001		DTZ-47	DPMS6D1	EWFA1210	QF1-1	1PB-D10
C216	47 NPO 10%			NP047	CN0447		10TCC-Q47
C217	10 NPO	(1)	DTZ-10	NP010	CN0410		10TCC-Q10
C218	5 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C219	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C220	.01			WMF1S1	EWFA1110	QF1-91	1PB-S10
C221	500 10%			CD15FD511J03	SX351	QW1-43	MMA-511

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
C222	47	(1)	DTZ-22 DTZ-10	CD15ED470J03	SX447	QW1-19	MMA-470
C223	.05			DPMS2S5	EWFA1A150		2PS-S50
C224	22 NPO 10%			NPO22	CN0422		10TCC-Q22
	10			NPO10	CN0410		10TCC-Q10
C225	.05	(1)	DTZ-10 DTZ-4R7	DPMS2S5	EWFA1A150	QF1-1	2PS-S50
C226	.001			DPMS6D1	EWFA2A10		1PB-D10
C227	.001			DPMS6D1	EWFA2A10		1PB-D10
C228	150 10%			CD15FD151J03	SX315		MMA-151
	220	(1)	DTZ-10 DTZ-4R7	CD15FD221J03	SX322	QW1-35 QF1-1	MMA-221
C229	.001			DPMS6D1	EWFA2A10		1PB-D10
C230	1 NPO			NPO10	CN0410		10TCC-Q10
C231	5 NPO			NPO4P7	CN0547		10TCC-V47
C232	.01	(1)	DD-680 DTZ-150 DTZ-15 DTZ-22	WMF1S1	EWFA1A110	QF1-91	1PB-S10
C233	68			GP68	GP468		10TS-Q68
C234	150 NPO 10%				CN0315		10TCC-T15
C235	15 NPO 10%			NPO15	CN0415		10TCC-Q15
C236	22 NPO 10%	(1)	DTZ-22	NPO22	CN0422	QW1-25 QW1-43 QF1-91 QF1-171 QF1-91 QW1-35	10TCC-Q22
C237	82 5%			CD15ED820J03	SX482		MMA-820
C238	500 10%			CD15FD511J03	SX351		MMA-511
C239	.01			WMF1S1	EWFA1A110		1PB-S10
C240	.047	(1)	DTZ-33	DPMS2S47	EWFA1A147	QF1-171 QF1-91	1PB-S47
	.01			WMF1S1	EWFA1A110		1PB-S10
C241	220 10%			CD15FD221J03	SX322		MMA-221
C242	33 NPO 10%			NPO33	CN0433		10TCC-Q33
C243	.047	(1)	DD-680 DTZ-2R2 DD-680 DTZ-2R2 DD-680 DD-101	DPMS2S47	EWFA1A147	QF1-171 QF1-91	1PB-S47
	.01			WMF1S1	EWFA1A110		1PB-S10
C244	68			GP68	GP468		10TS-Q68
C245	2 NPO			NPO2P2	CN0522		10TCC-V22
C246	68	(1)	DD-680 DTZ-2R2 DD-680 DD-101	GP68	GP468	QF1-91 QF1-91	10TS-Q68
C247	2 NPO			NPO2P2	CN0522		10TCC-V22
C248	68			GP68	GP468		10TS-Q68
C249	100 NPO 10%			GP100	GP310		10TS-T10
C250	.01	(1)	DTZ-10	WMF1S1	EWFA1A110	QF1-91 QF1-91	1PB-S10
C251	.01			WMF1S1	EWFA1A110		1PB-S10
C252	10 NPO			NPO10	CN0410		10TCC-Q10
C253	.05			DPMS2S5	EWFA1A150		2PS-S50
C254	100 NPO 10%	(1)	DD-101	GP100	GP310	QF1-1 QF1-1	10TS-T10
C255	.001			DPMS6D1	EWFA2A10		1PB-D10
C256	.001			DPMS6D1	EWFA2A10		1PB-D10
C257	82				GP482		10TS-Q82
C302	.0056	(1)	DD-820		M192P5629R8	QF1-91 QF1-91 QF1-91	192P5629R8
C303	.015				M192P1539R8		192P1539R8
C304	.01			WMF1S1	EWFA1A110		1PB-S10
C306	.01			WMF1S1	EWFA1A110		1PB-S10
C309	.01	(1)	DD-331	WMF1S1	EWFA1A110	QF1-91 QF1-171 QF1-171	1PB-S10
C310	.02			DPMS2S2	PVC212		2PS-S20
C314	.015				M192P1539R8		192P1539R8
C315	.015				M192P1539R8		192P1539R8
C320	.047	(1)	DD-331	DPMS2S47	EWFA1A147	QW1-39	MMA-331
C322	.047			DPMS2S47	EWFA1A147		1PB-S47
C325	330			CD15FD331J03	SX333		GKR20000
C326	330 10%			GP330	GP333		10TS-T33
C327	.01	(1)	DD-331	WMF1S1	EWFA1A110	QF1-91	1PB-S10
TC101	20						

(1) Used in some versions.

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R44	Squelch Range	5000	(18)	T-5000 (2)	C-502 (2)	MTC53L1 (2)	X201R502B (2)
SVR1	S Meter	10K					
SVR3	RF Meter	20K					
SVR101	27.185MHz	10K					
SVR102	10.240MHz	10K					
VR1	RF Gain	50K					
VR4	Squelch	5000					
VR2	Volume/Power Switch	10K					
VR3	Tone	10K					
VR5	Dimmer	10K					
VR101	Delta Tune/NB Switch	10K	(19)				
VR301	AMC	10K					

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

(18) Includes VR1 and VR4.

(19) Includes VR2 and VR3.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Rec. Ant. (27MHz)				
L2	Rec. RF (27MHz)				
L3	RF Choke				
L4	RF Choke				
L10	Predriver (27MHz)				
L11	Xmt Driver (27MHz)				
L12	Final Amp (27MHz)				
L13	Pi Filter (27MHz)				
L14	RF Choke				
L15	TVI Trap (54MHz)				
L301	RF Choke				
RFC1	RF Choke				
RFC2	RF Choke				
RFC3	RF Choke				
RFC4	RF Choke				
RFC101	RF Choke				
RFC102	RF Choke				

KRIS MODEL XL-50

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF) (cont)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
T1	Rec. Mixer (10.7MHz)				
T2	Rec. Mixer (10.7MHz)				
T3	IF (455kHz)				
T4	IF (455kHz)				
T101	PLL				
T102	VCO Buffer (10.7MHz)				
T103	Down Osc. (35.7MHz)				
T104	Harmonic Suppressor (27MHz)				
T105	Harmonic Suppressor (27MHz)				
T106	Xmt Mixer (27MHz)				

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.	
T6	2A	.3	10.5mH				

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T5	3.9	1 8 2 3.9				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	2" X 6" PM, 8 Ohms		26A07UZ8	

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 Fast Acting			AGC2	HDJ	312002	150145	HDJ

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		18-032	18-034	18-010	18-092	1	2	3	4	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	10.240		CA32W10240	Ref. Osc.	X103	10.695		CB110W10695	Xmt. Osc.
X102	35.740		CC15W37740	Down Osc.					

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
LD1	LED		Channel Readout (Units)
LD2	LED		Channel Readout (Tens)
M1	Meter		S
M2	Meter		RF
M3	Meter		MOD
M6	Jack		Microphone
M9	Jack		Ext. Spkr.
M10	Jack		PA Spkr.
M13	Filter		455kHz
PL1	Lamp		Meter Illumination (9.97V @ 110mA)
PL2	Lamp		Meter Illumination (9.97V @ 110mA)
PL3	Lamp		Meter Illumination (9.97V @ 103mA)
RX	Lamp		Rec. Indicator (8.75V @ 97mA)
RY	Relay		Xmt/Rec (180 Ohms)
S02	Jack		Antenna
S1	Switch		TKBK/Normal
S2	Switch		PA/CB
S3	Switch		Ext./Int.
S4	Switch		Lo/Hi
S5	Switch		Power (Part of Volume Control)
S101	Switch		Channel Selector