



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 XL-70

ALIGNMENT INSTRUCTIONS

SUGGESTED ALIGNMENT TOOLS:

L101, L102, L103, L215, L216, L217, L218, L225, L226.....9440
L301.....9300
ALL other tunable Coils and Transformers.....5000, 3290
ALL Variable Caps.....5000

GC ELECTRONICS:

SYNTHESIZER

INDICATOR	CHANNEL	ADJUST	FREQUENCY	REMARKS
Frequency Counter	2	VC112	11.705MHz	Connect frequency counter between TP2-2 and ground. Set mode switch to AM. Set Fine Tune (VR301) and Fine Tune Range (VR105) to mid-range.
	6	VC113	11.755MHz	
	10	VC114	11.805MHz	
	14	VC115	11.855MHz	
	18	VC116	11.905MHz	
	22	VC117	11.955MHz	
	13	VC104	7.4615MHz	Connect frequency counter between Q212 emitter and ground. Set mode switch to USB.
	14	VC105	7.4715MHz	
	15	VC106	7.4815MHz	
	16	VC107	7.5015MHz	
	13	VC108	7.4585MHz	Set mode switch to LSB.
	14	VC109	7.4685MHz	
	15	VC110	7.4785MHz	
	16	VC111	7.4985MHz	
Oscilloscope (Response to 30MHz)	16	L210, L211, L212, L213, L214, L115		Set mode switch to AM. Connect oscilloscope between Q212 emitter and ground. Adjust for maximum amplitude. Check all channels. Should be within 3db, if not readjust.

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

© 1976 Howard W. Sams & Co., Inc.

Printed in U. S. of America

6CZ326

KRIS MODEL XL-70

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
Adjustments made with 14-volt DC input.
Adjust volume control to obtain suitable reading.

AM

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to Junction of C113 and R111, low side to ground.	7.8MHz 1000Hz @ 30% modulation, output 20uV.	Any	L202, L204, L206, L207, L208	Set mode switch to AM. Adjust for maximum.
High side thru .01uF to secondary of L214, low side to ground.	7.8MHz, 1000Hz @ 30% modulation, output 20uV.	Any	L104, L105	Set mode switch to AM. Adjust for maximum.
High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 1uV.	13	L101, L102, L103	Set mode switch to AM. Adjust for maximum.
High side thru .01uF to antenna jack, low side to ground.	27.105MHz, 1000Hz @ 30% modulation, output 1.5uV.	12	L209	Adjust for maximum.

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
Adjustments made with 14-volt DC input.
Adjust volume control to obtain suitable reading.

2-21-77

SSB

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to Junction of C113 and R111, low side to ground.	7.8MHz, 2 1000Hz @ 30% No modulation, output 20uV.	Any	L201, L203, L205	Set mode switch to LSB. Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
Adjustments made with 14-volt DC input.
Adjust volume control to obtain suitable reading.

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
SQUELCH RANGE High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 200uV.	13	VR202	Set squelch control fully clockwise. Adjust so the squelch just breaks.
NOISE BLANKER High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 1.5uV.	13	VR101	Inject a noise generator signal to antenna jack. NB on. Adjust for MINIMUM noise.
PANEL S METER High side thru .01uF to antenna jack, low side to ground.	27.115MHz 1000Hz @ 30% modulation, output 100uV.	13	VR201	Adjust for S9 reading on panel meter.

KRIS MODEL XL-70

TRANSMITTER

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 14-volt DC input.

AM

INDICATOR	ADJUST	REMARKS
OSCILLATOR, MIXER, BUFFER, DRIVER, FINAL RF Wattmeter	L109, L215, L216, L217, L218, L221, L225, L226	Mode switch to AM. Channel selector to Ch. 13. Key transmitter. Adjust for maximum.
TVI TRAP TV (Ch. 2)	L301	Mode switch to AM. Key transmitter. Adjust for MINIMUM interference on TV.
FINAL INPUT POWER Remove jumper at TP1 and connect 0-1500 DC milliammeter.	VC201	Adjust for 5 watts. (Maximum).

TRANSMITTER

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 14-volt DC input.

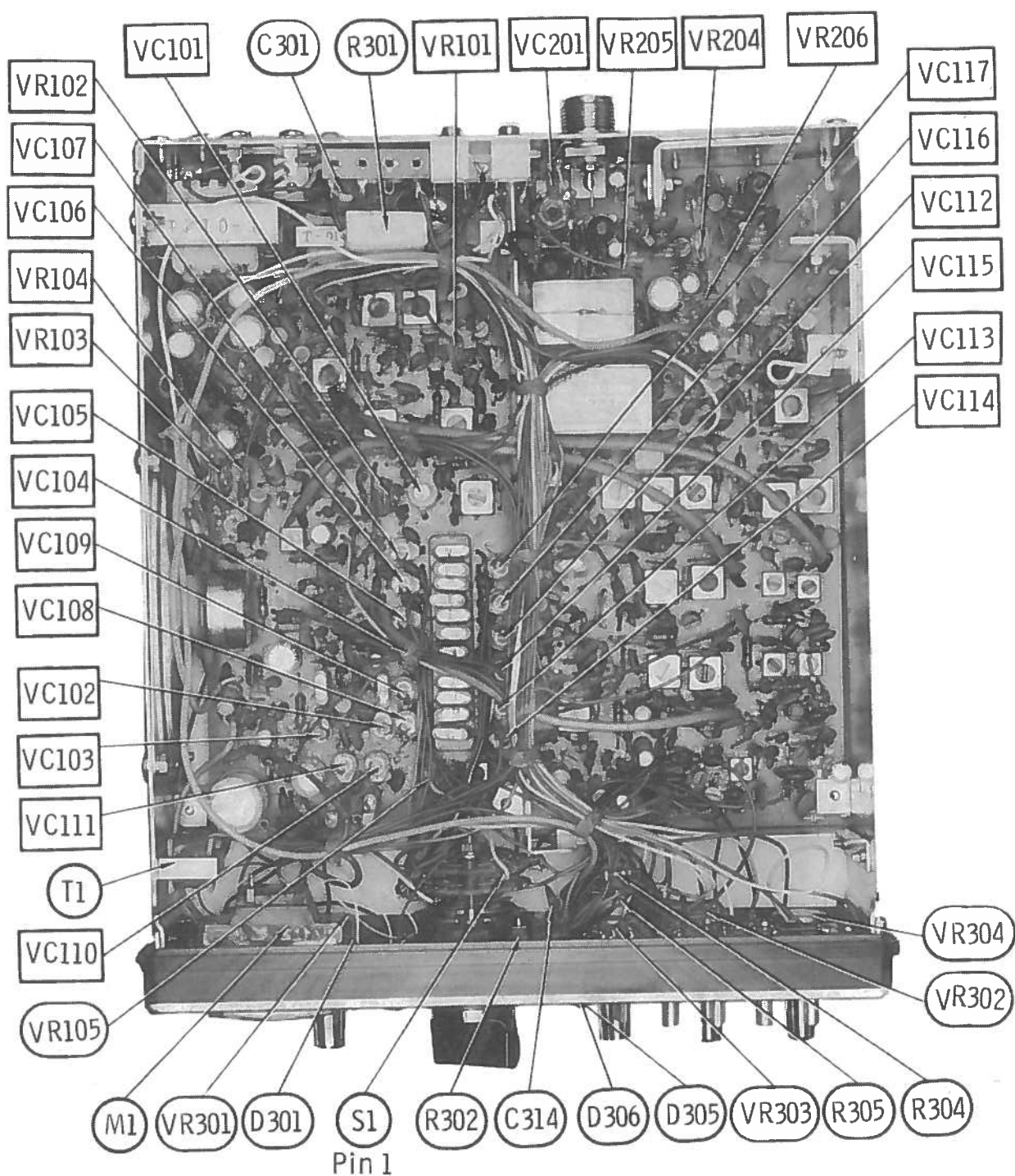
SSB

INDICATOR	ADJUST	REMARKS
USB CARRIER OSC. Connect frequency counter from L108 to ground.	VC103	Set mode switch to USB. Adjust for 7.7985MHz.
LSB CARRIER OSC. Connect frequency counter from L108 to ground.	VC102	Set mode switch to LSB. Adjust for 7.8015MHz.
CARRIER BALANCE Connect oscilloscope from antenna jack to ground.	VR102, VC101, L107	Short mic input. Set mode switch to LSB or USB. Key transmitter and adjust for MINIMUM on scope. Adjust L201 for maximum.
BIAS Remove jumper at TP1 and connect a 0-50DC milliammeter.	VR204	Short mic input. Key transmitter. Adjust bias for 35mA. Reconnect jumper.
FINAL OUTPUT POWER RF Wattmeter	VR104	Connect two-tone generator with 2.3mV to mic input. Key transmitter. Adjust for less than 12 watts P.E.P. NOTE: After SSB transmitter alignment is completed, check AM mode for maximum watts DC input to final. Readjust VC201 if necessary.

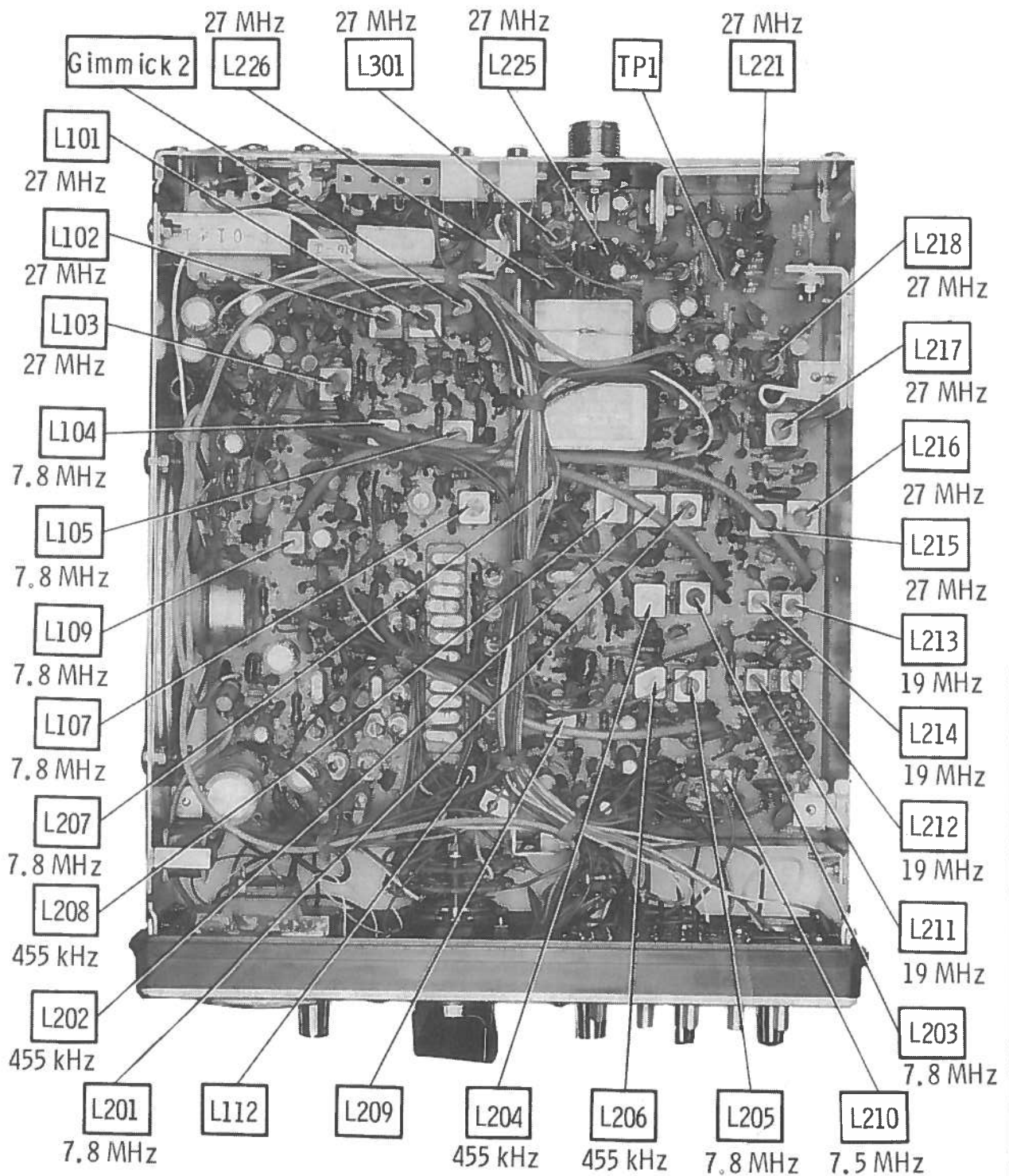
TRANSMITTER ADJUSTMENTS

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 14-volt DC input.

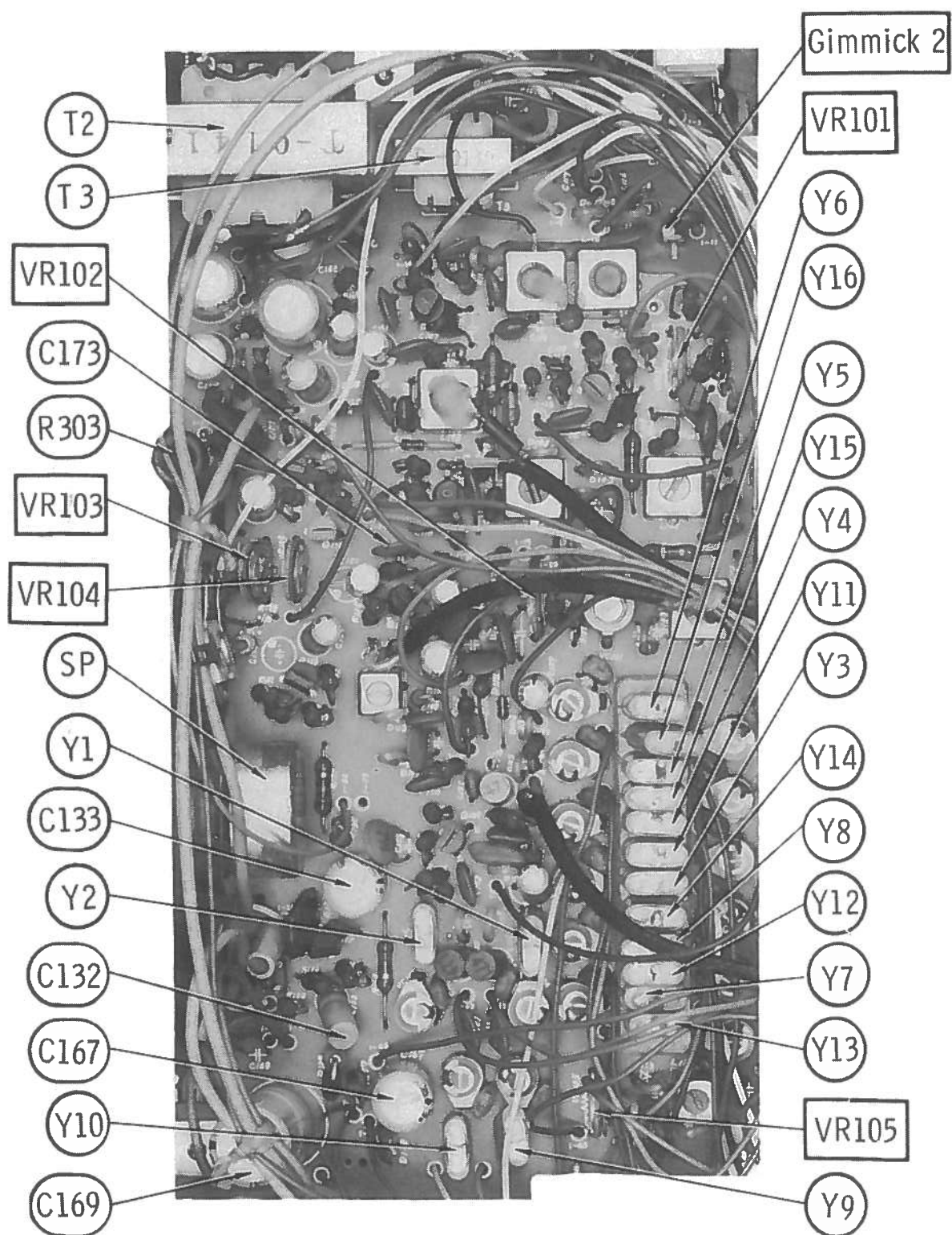
INDICATOR	ADJUST	REMARKS
ALC RF Wattmeter Oscilloscope connected to antenna jack.	VR205	Inject 2-tone generator to mic input. Key transmitter. Set for 6 watts P.E.P. Increase generator level 16db above 6-watt setting. Adjust for MINIMUM distortion.
MOD Modulation Meter connected to antenna jack.	VR103	Set mode switch to AM. Inject a 1000Hz 0.7mV audio signal at mic input. Key transmitter. Adjust for 50% modulation maximum.
RF PANEL METER RF Wattmeter	Gimmick 2	Set mode switch to AM. Key transmitter. Adjust Gimmick so that panel RF meter reads 6 to 7 on scale.
AM ALC Modulation meter connected to antenna jack.	VR206	Set mode switch to AM. Inject a 1000MHz 4mV audio signal at mic input. Key transmitter. Adjust for 95% modulation maximum.
FINE TUNING RANGE Frequency Counter	VR105	Connect counter to emitter of Q211 and ground. Channel 13 Key transmitter. Adjust for 11.855MHz.



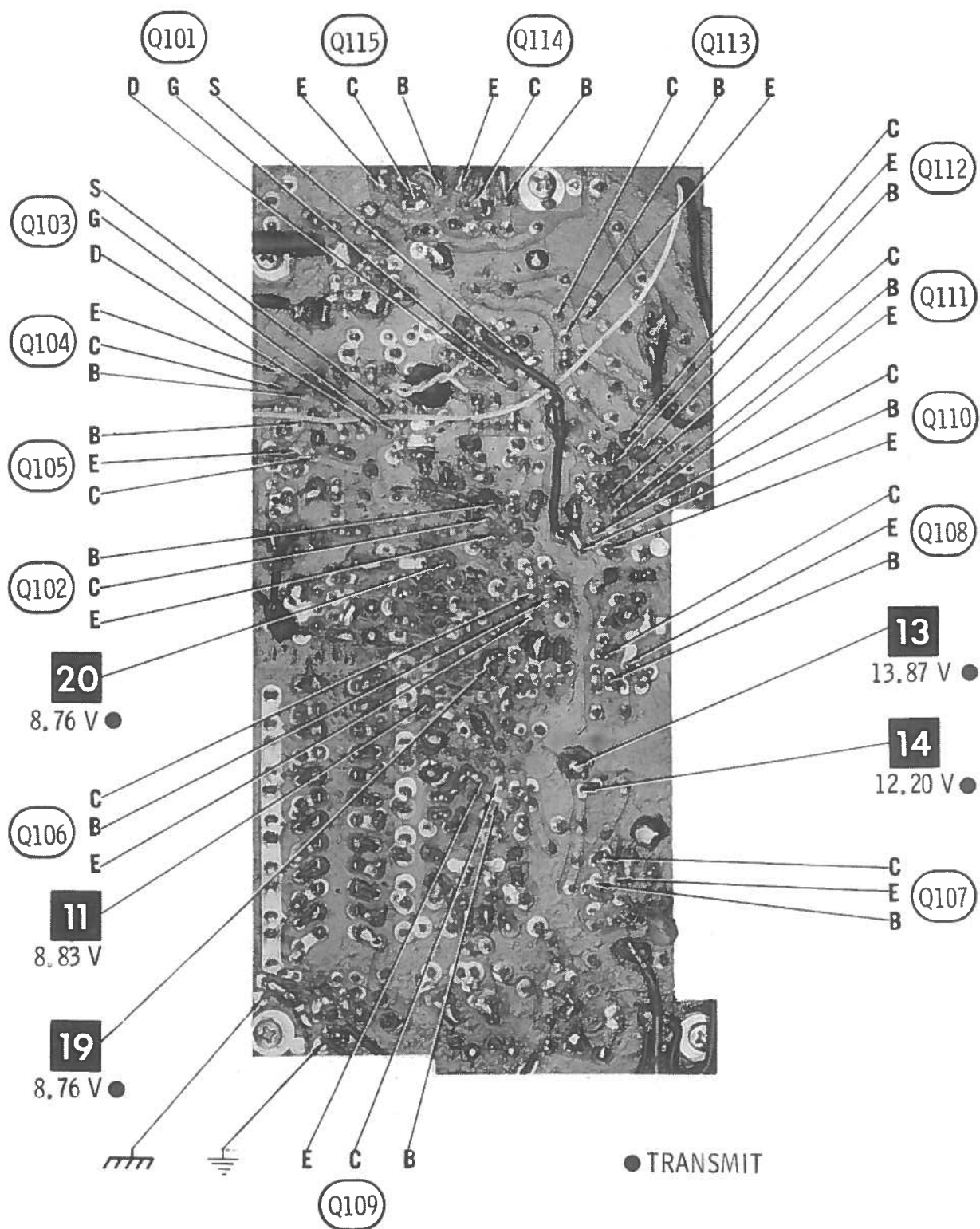
CHASSIS - TOP



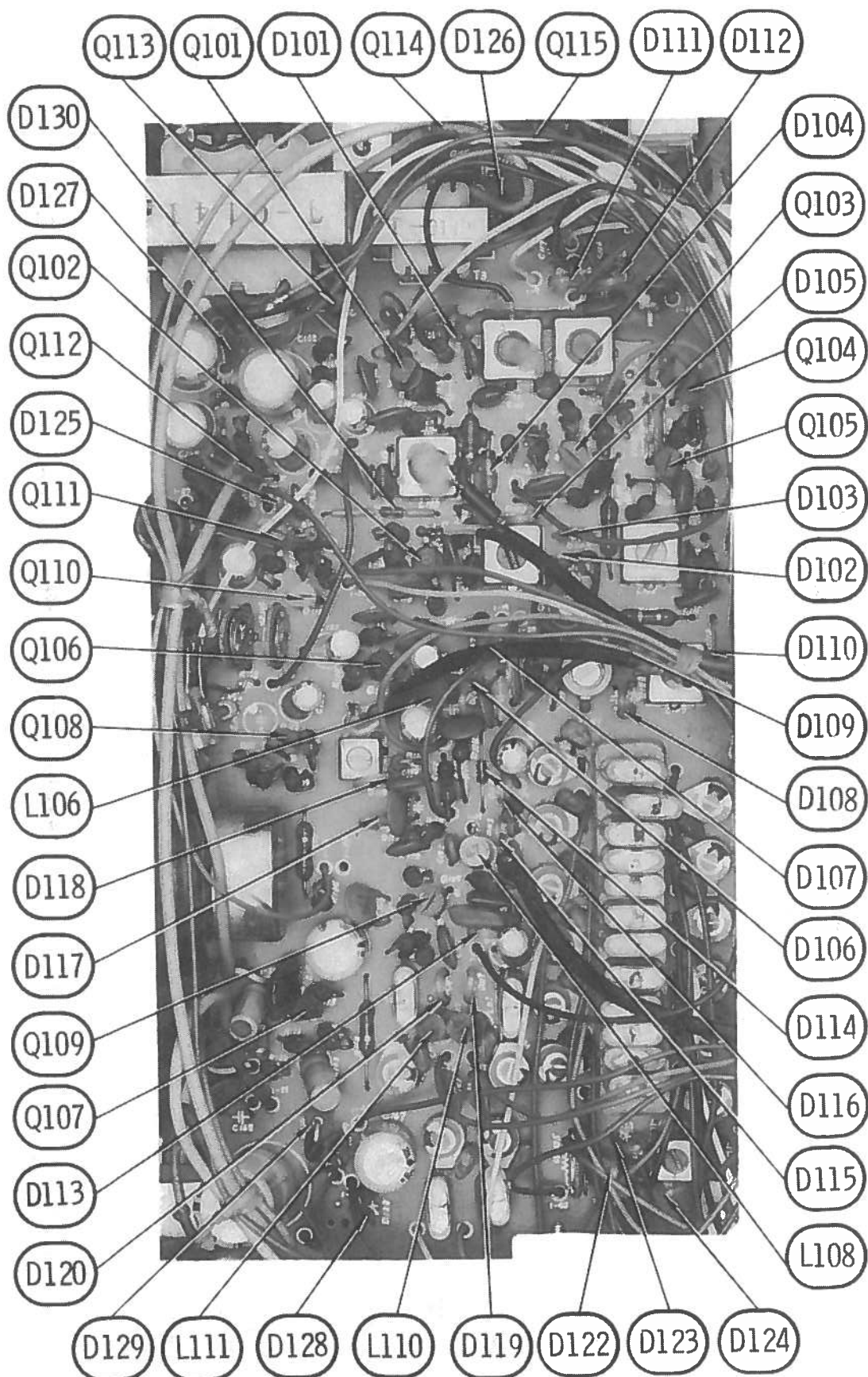
CHASSIS - TOP



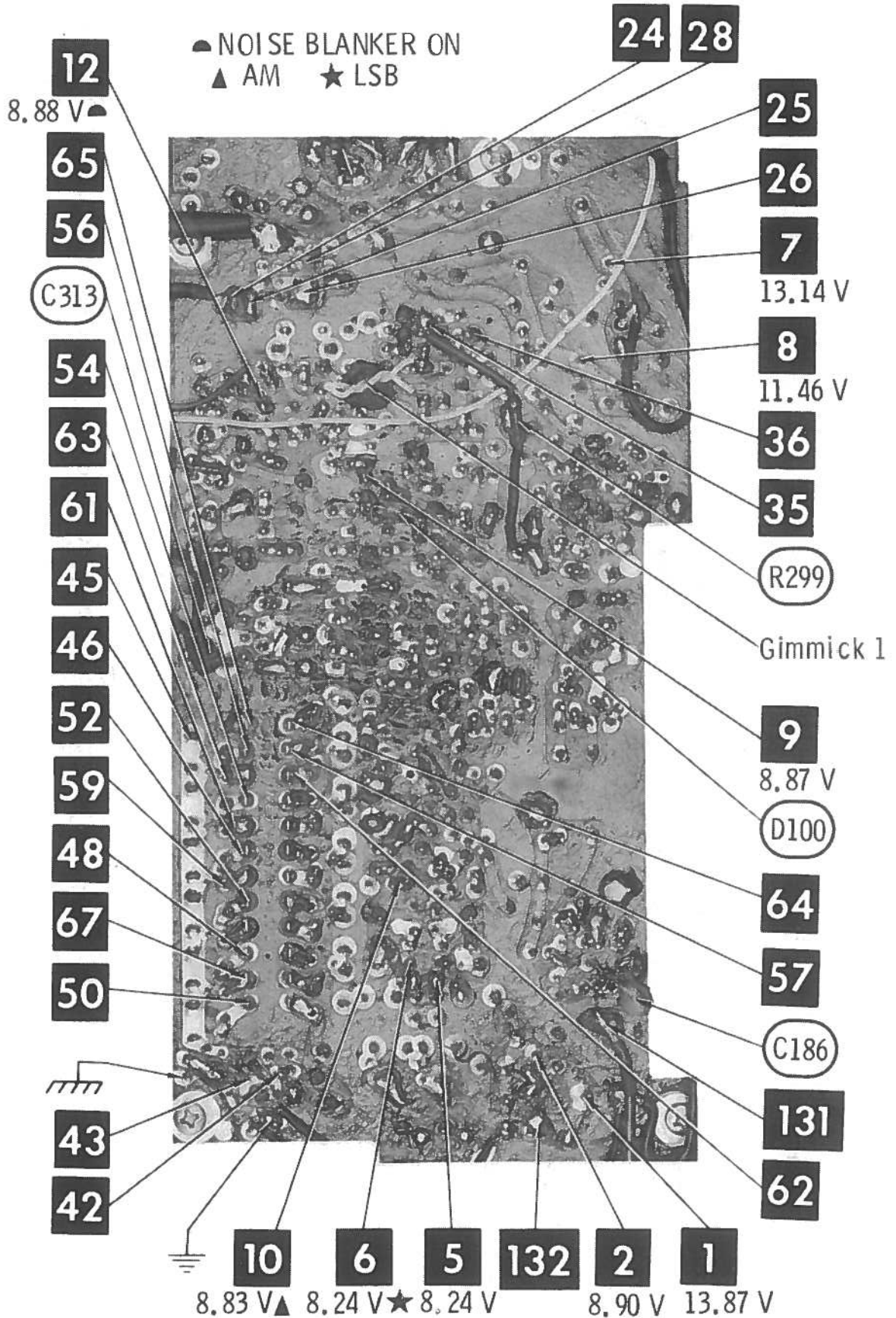
REC. RF - AUDIO BOARD



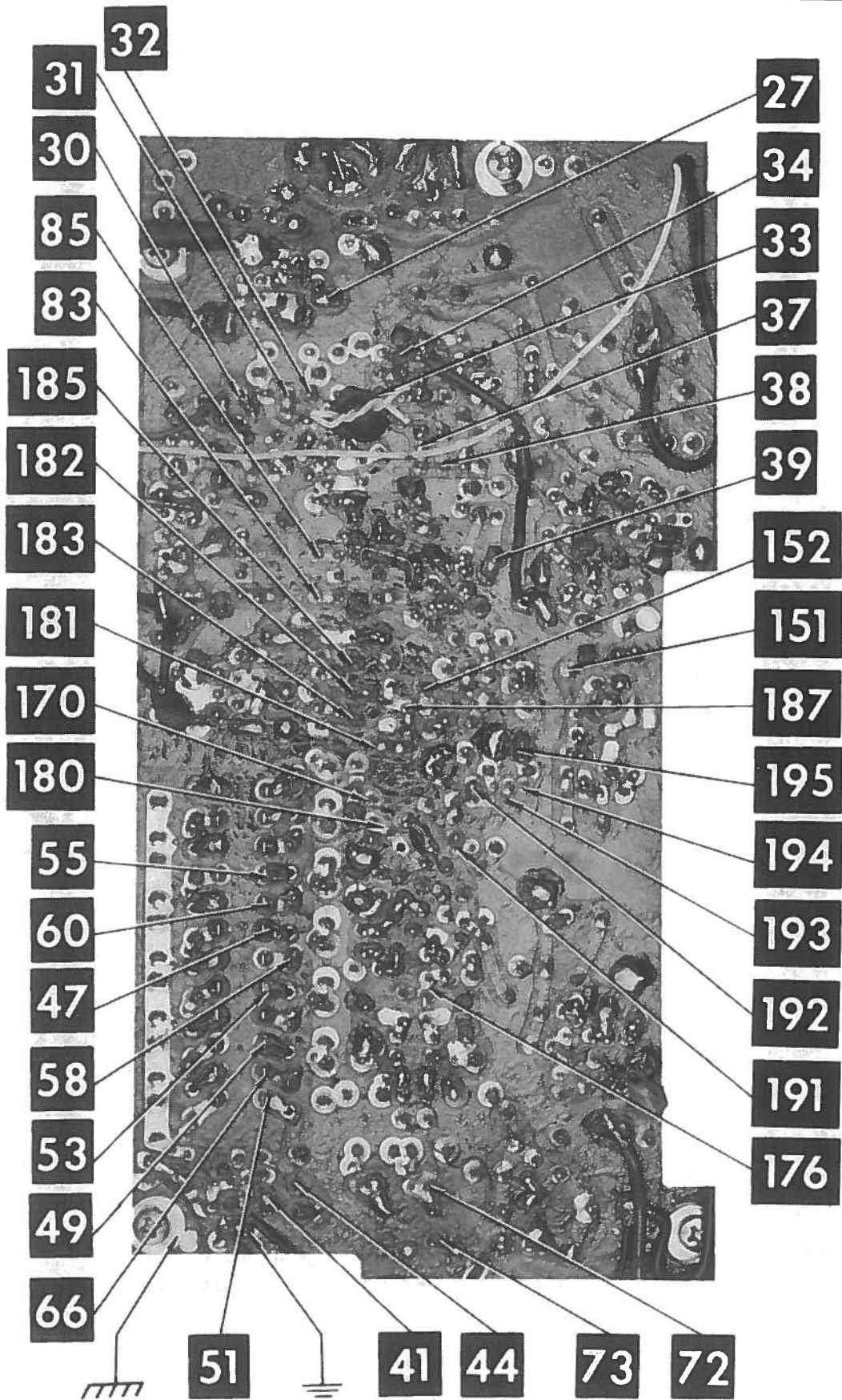
REC. RF - AUDIO BOARD



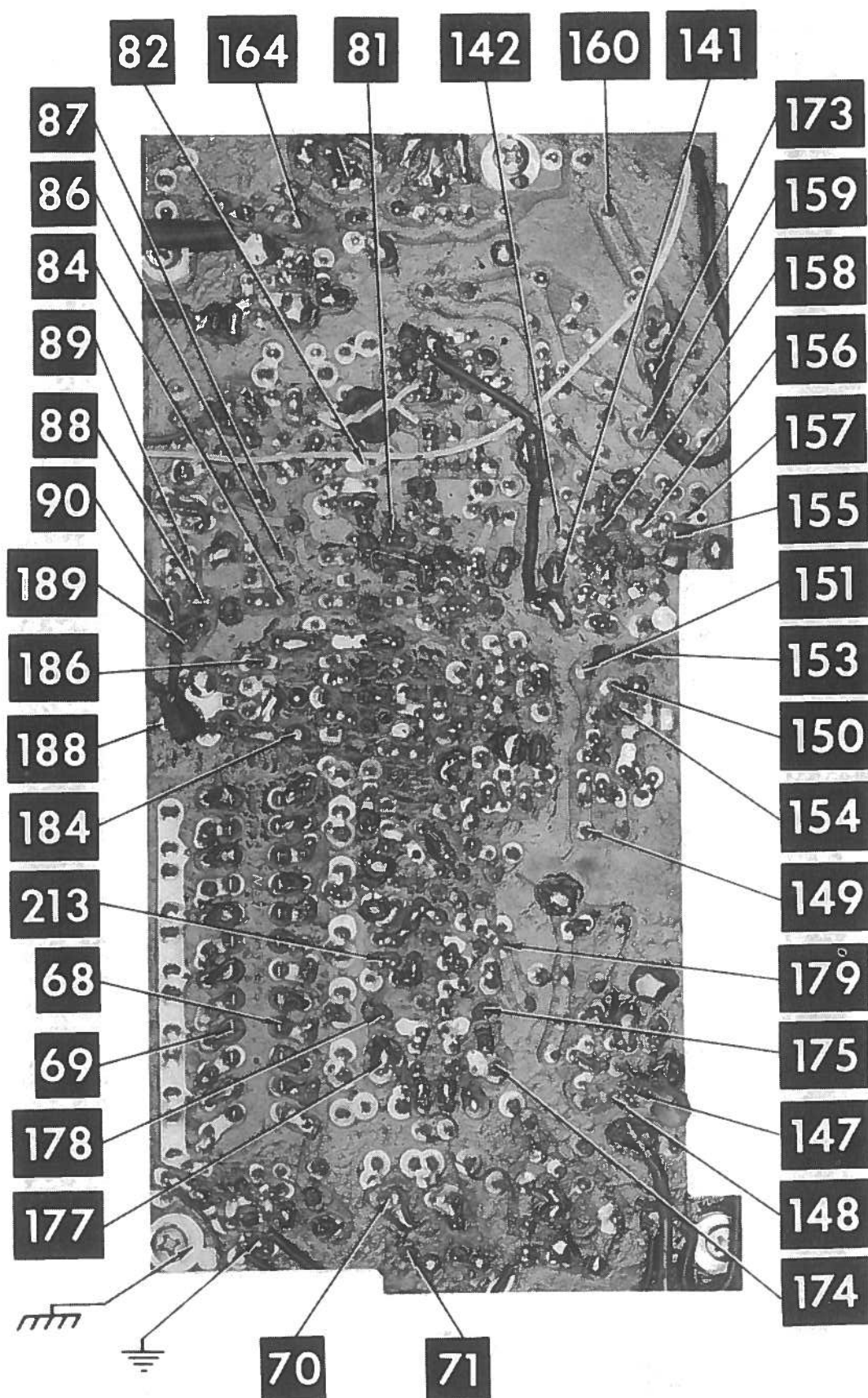
REC. RF - AUDIO BOARD



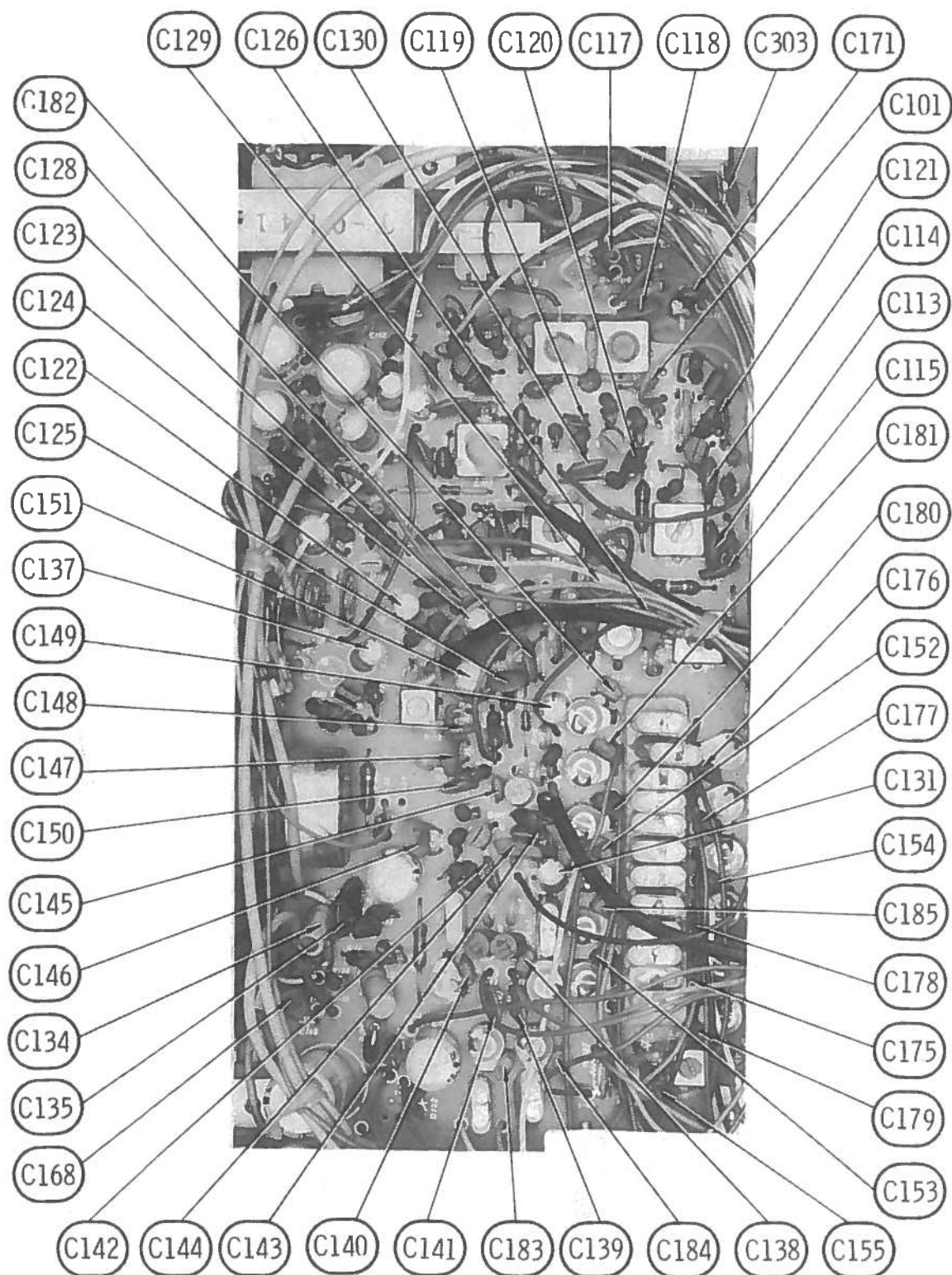
REC. RF - AUDIO BOARD



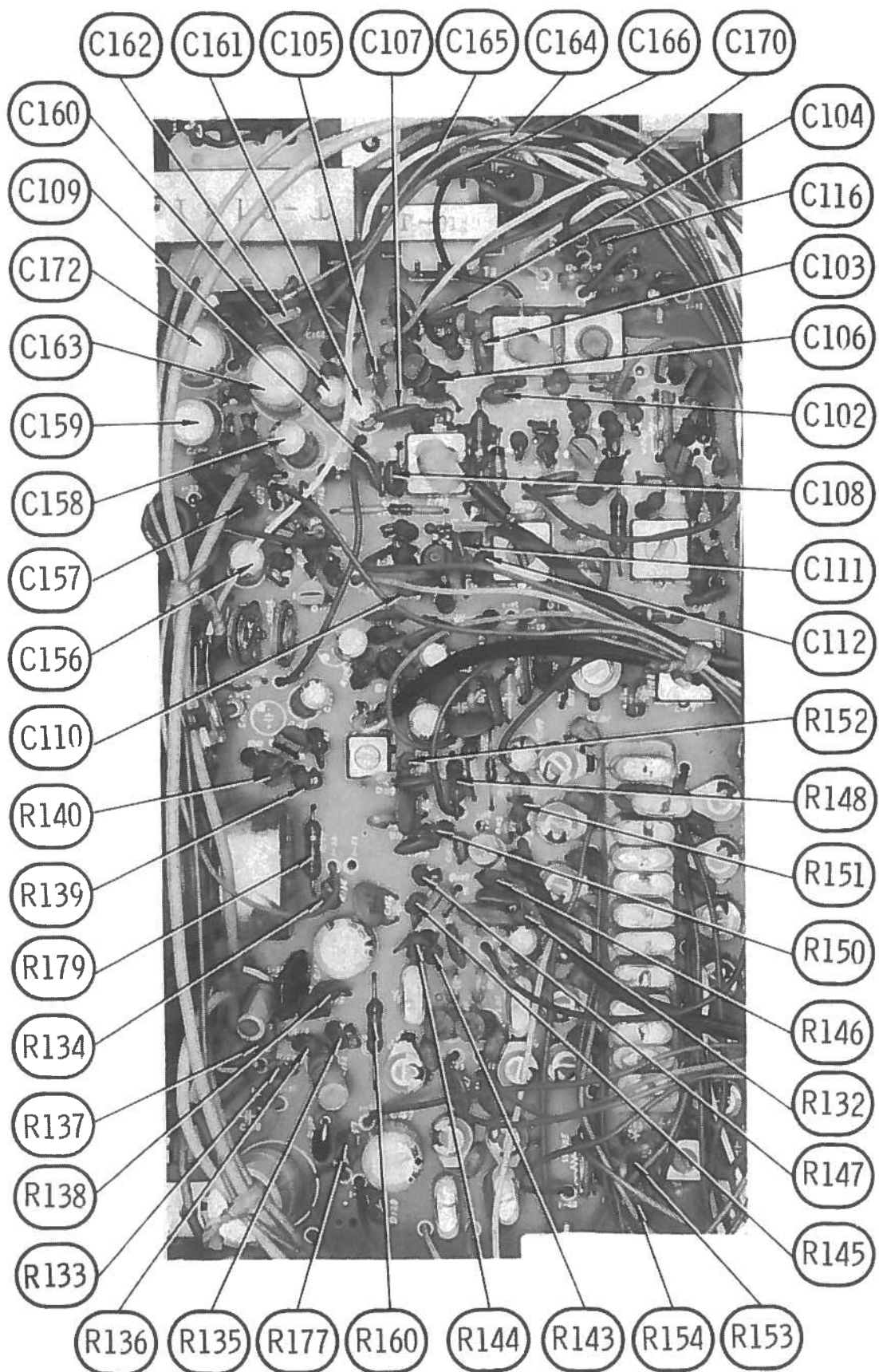
REC. RF - AUDIO BOARD



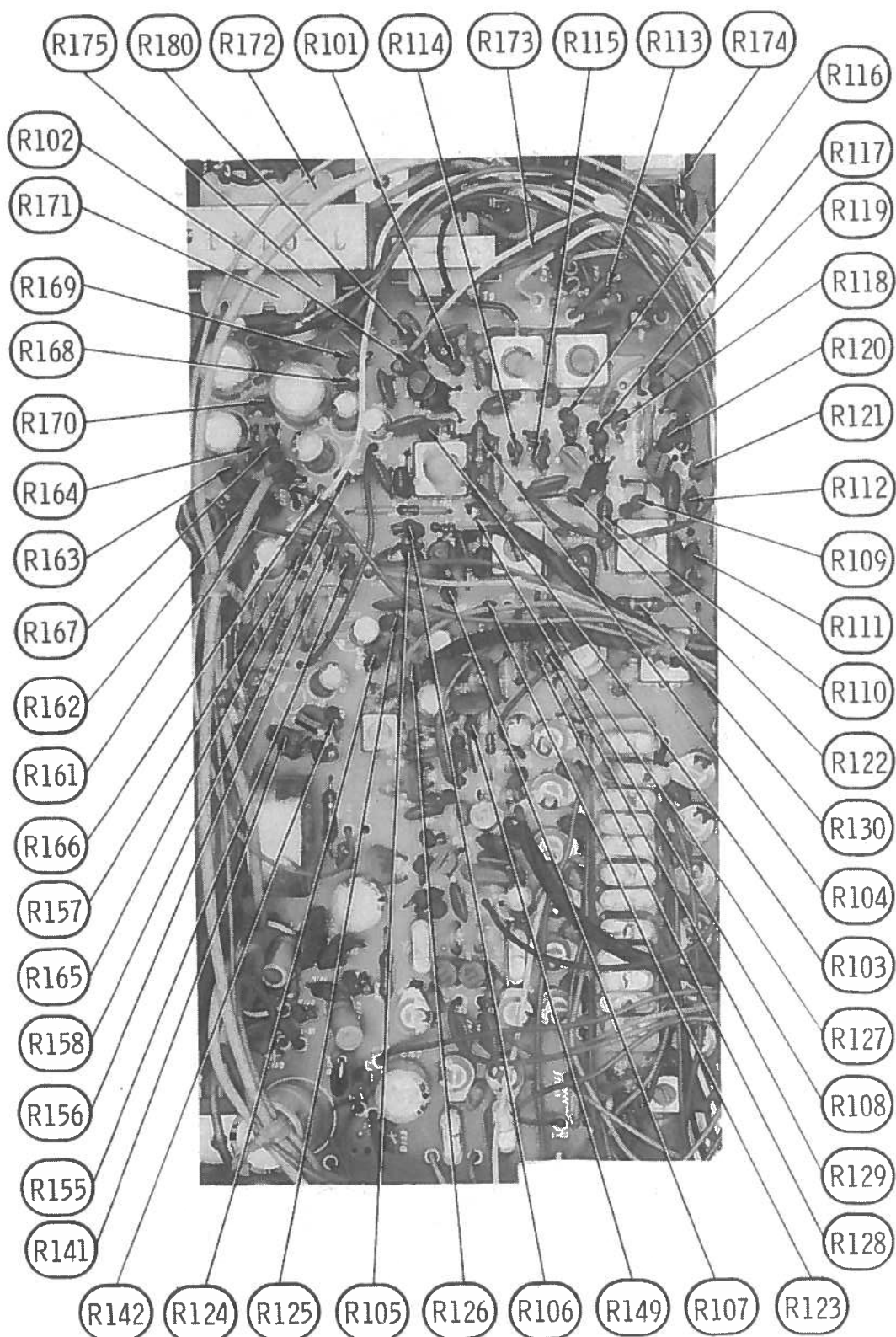
REC. RF - AUDIO BOARD



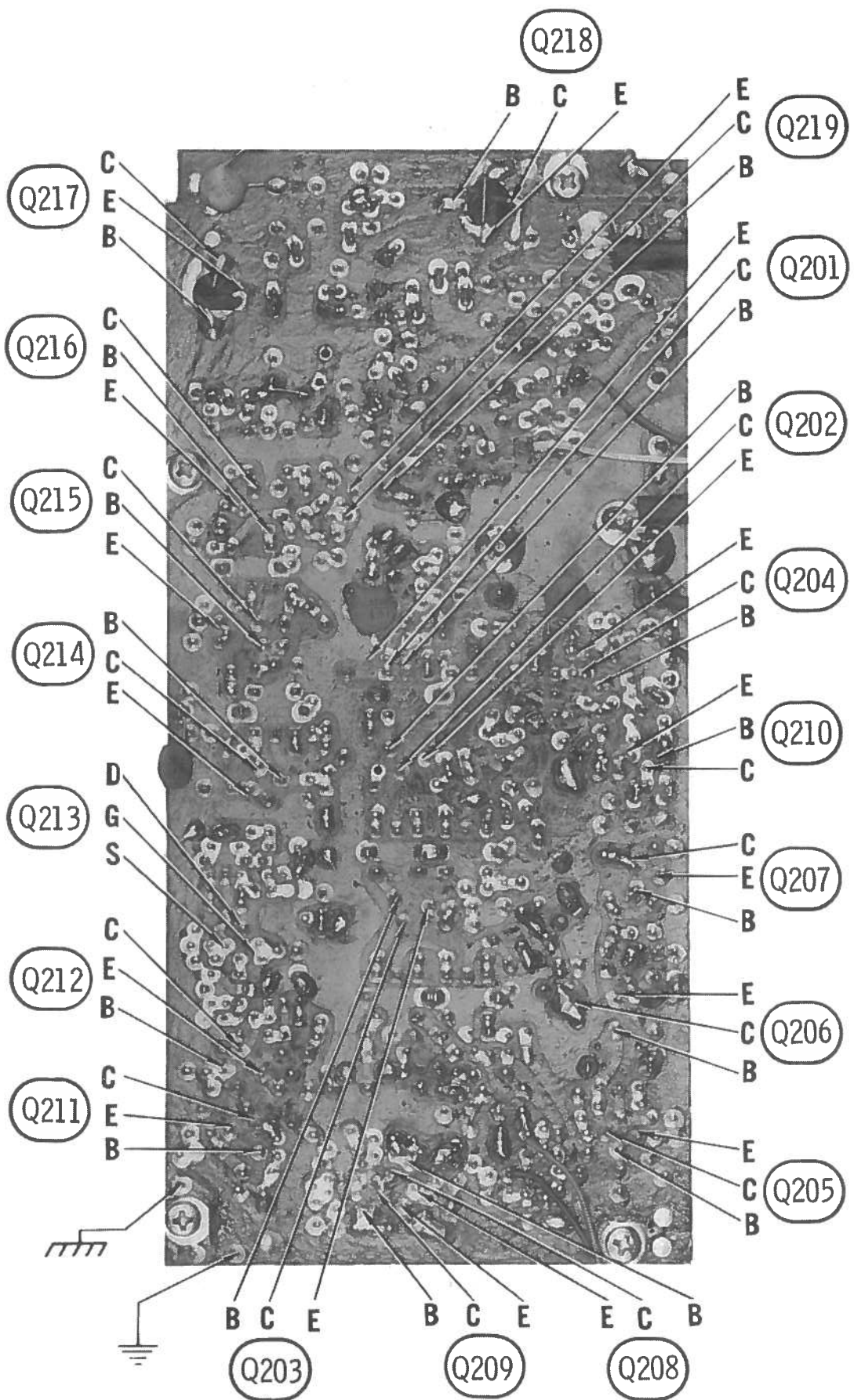
REC. RF - AUDIO BOARD

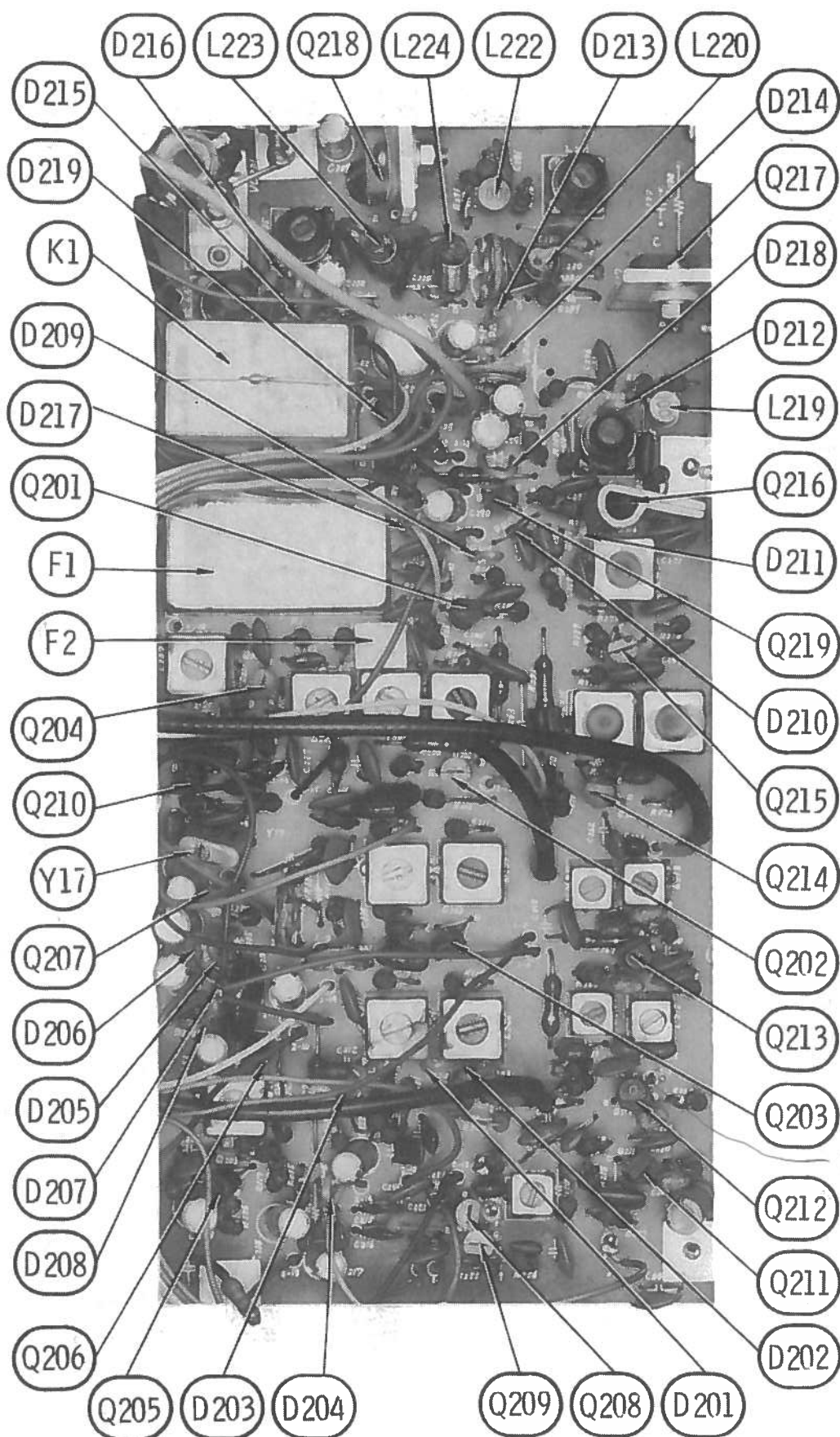


REC. RF - AUDIO BOARD

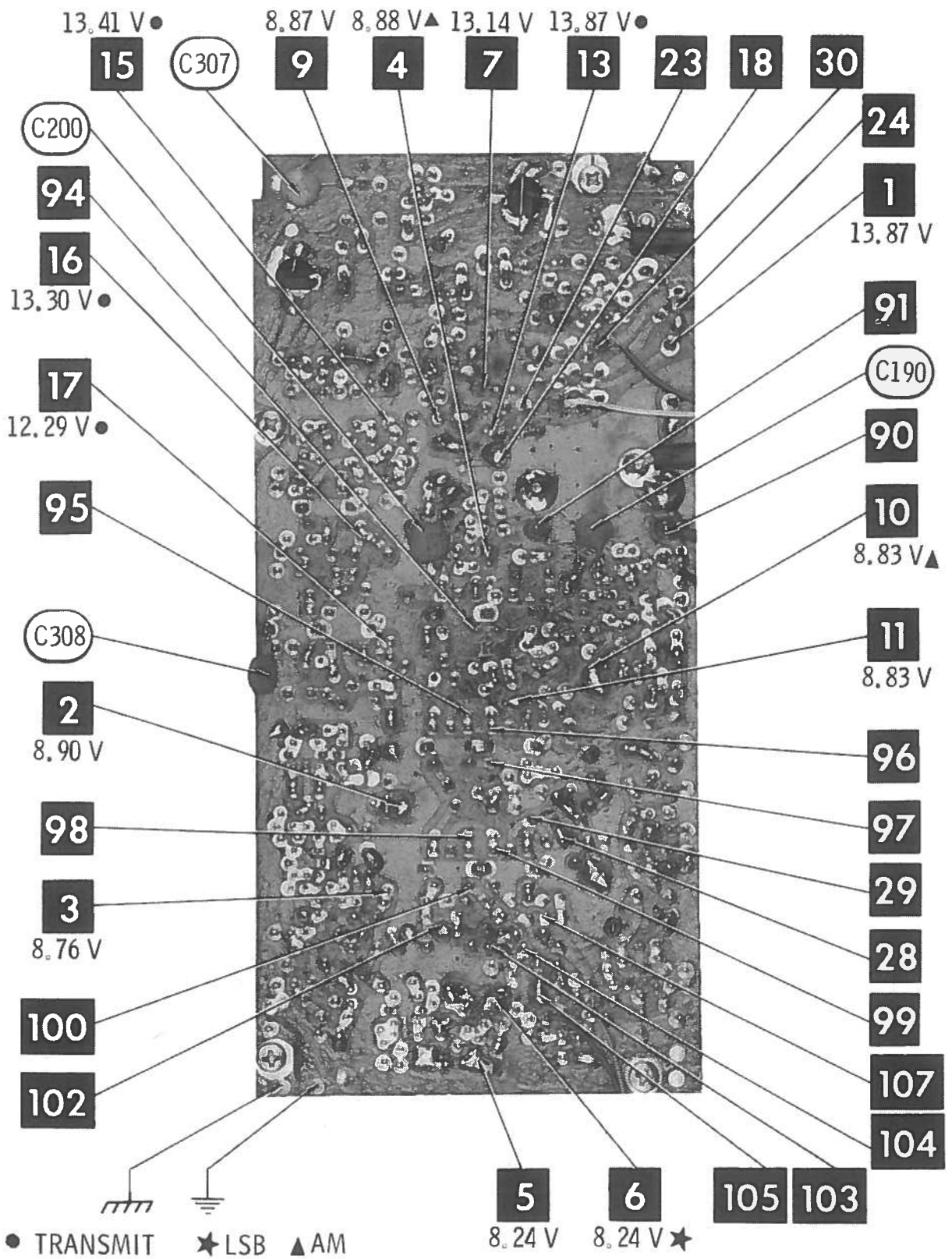


REC. RF - AUDIO BOARD

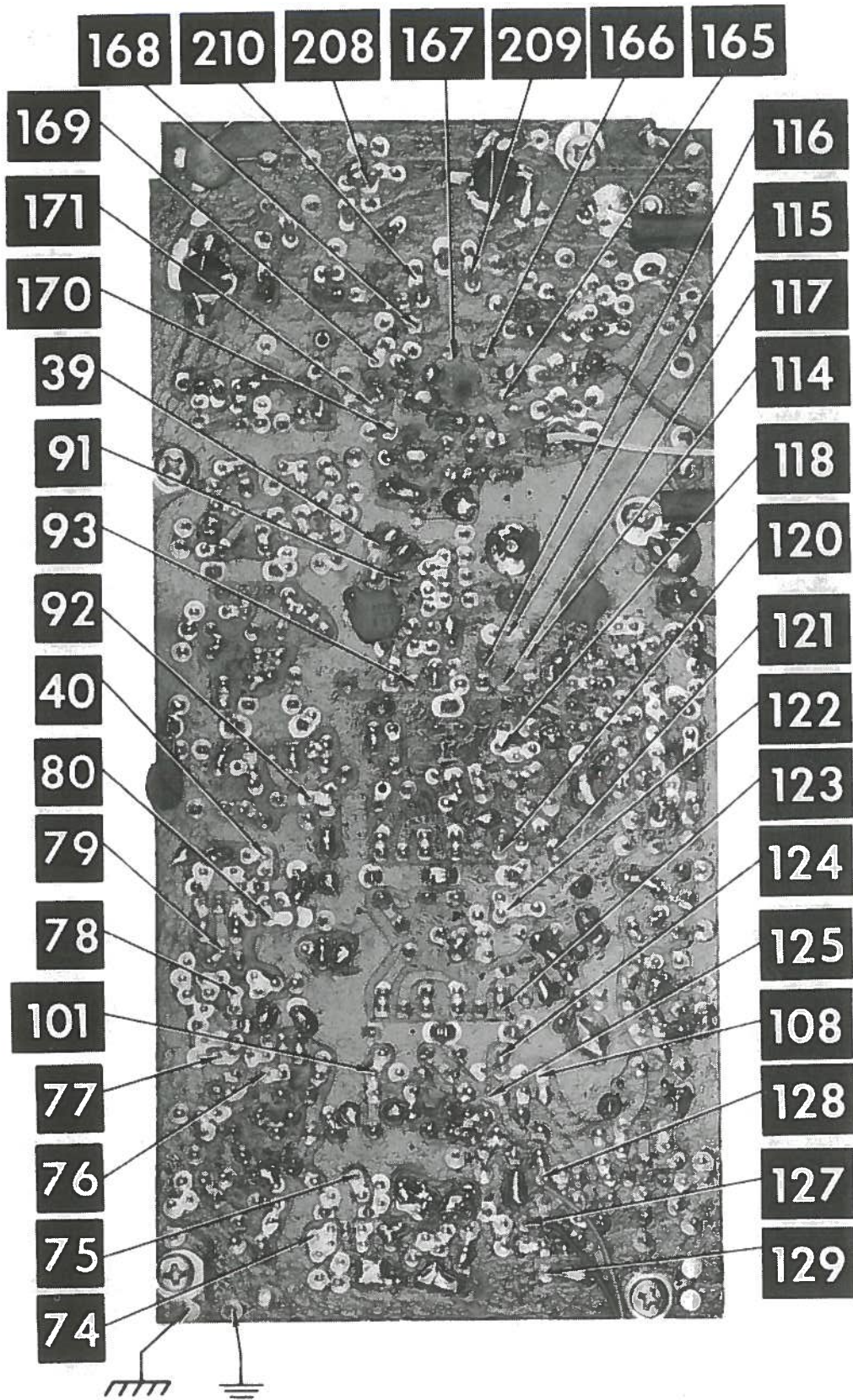




REC. IF - XMIT BOARD



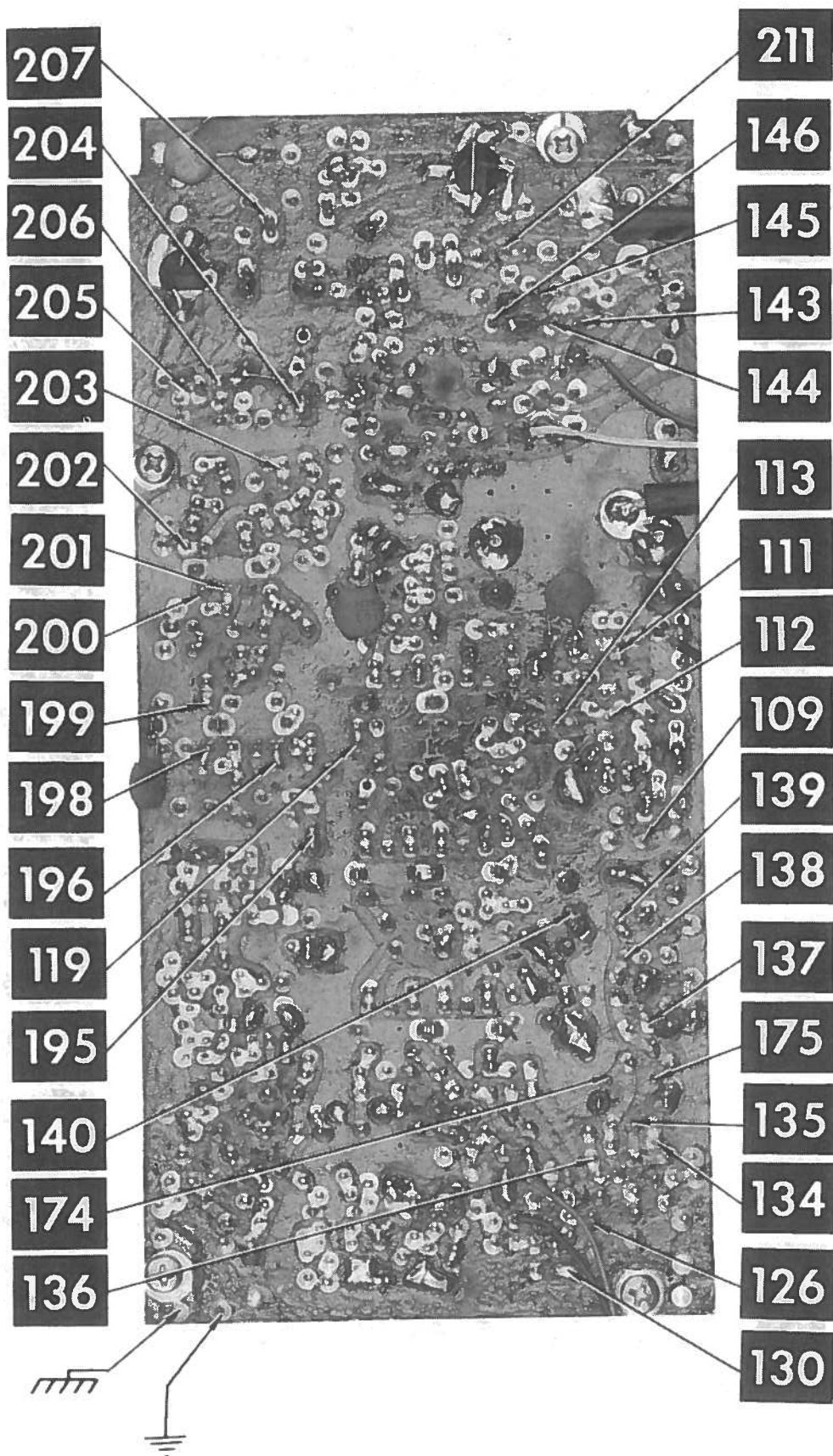
REC. IF - XMIT BOARD



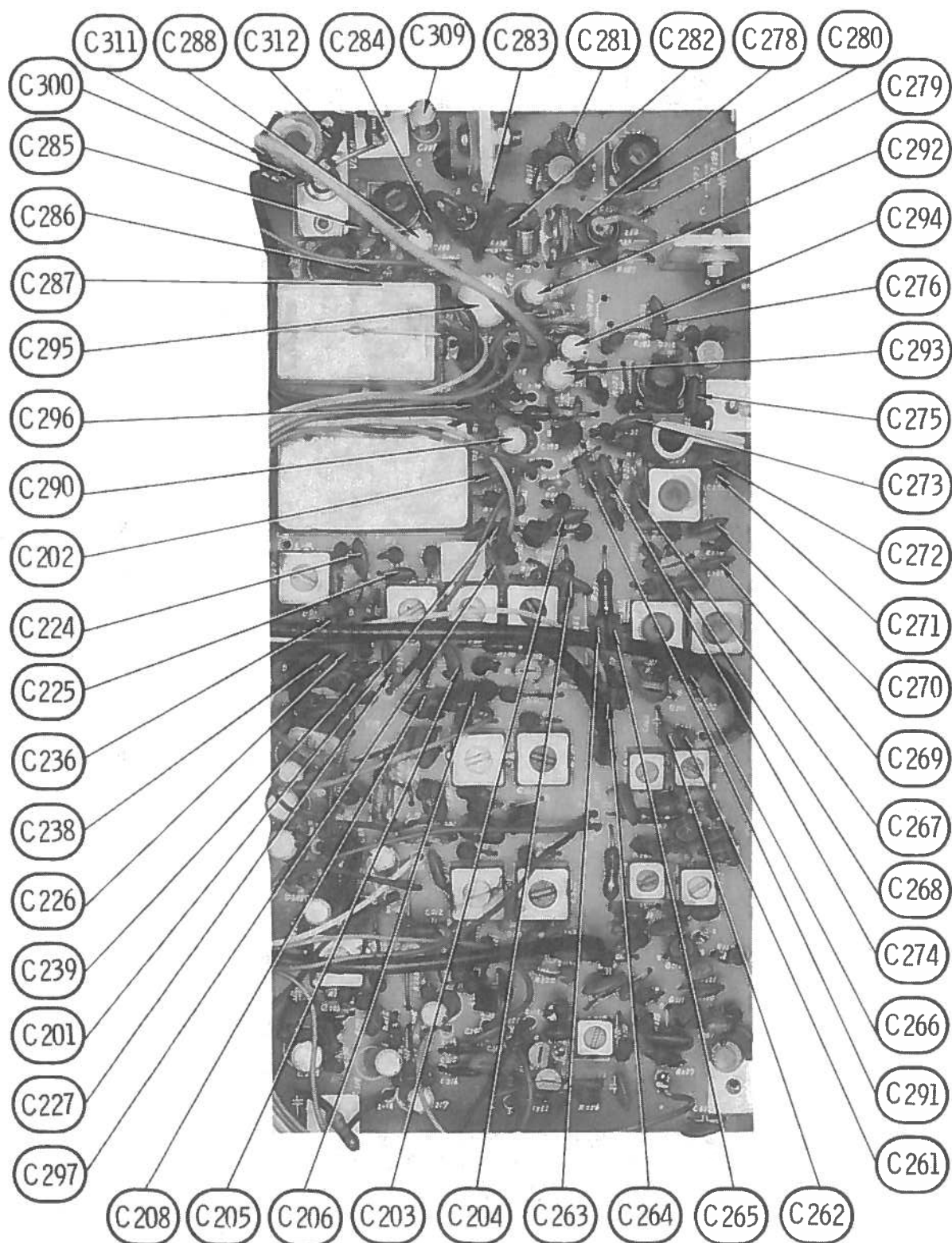
KRIS MODEL XL-70

7 P2

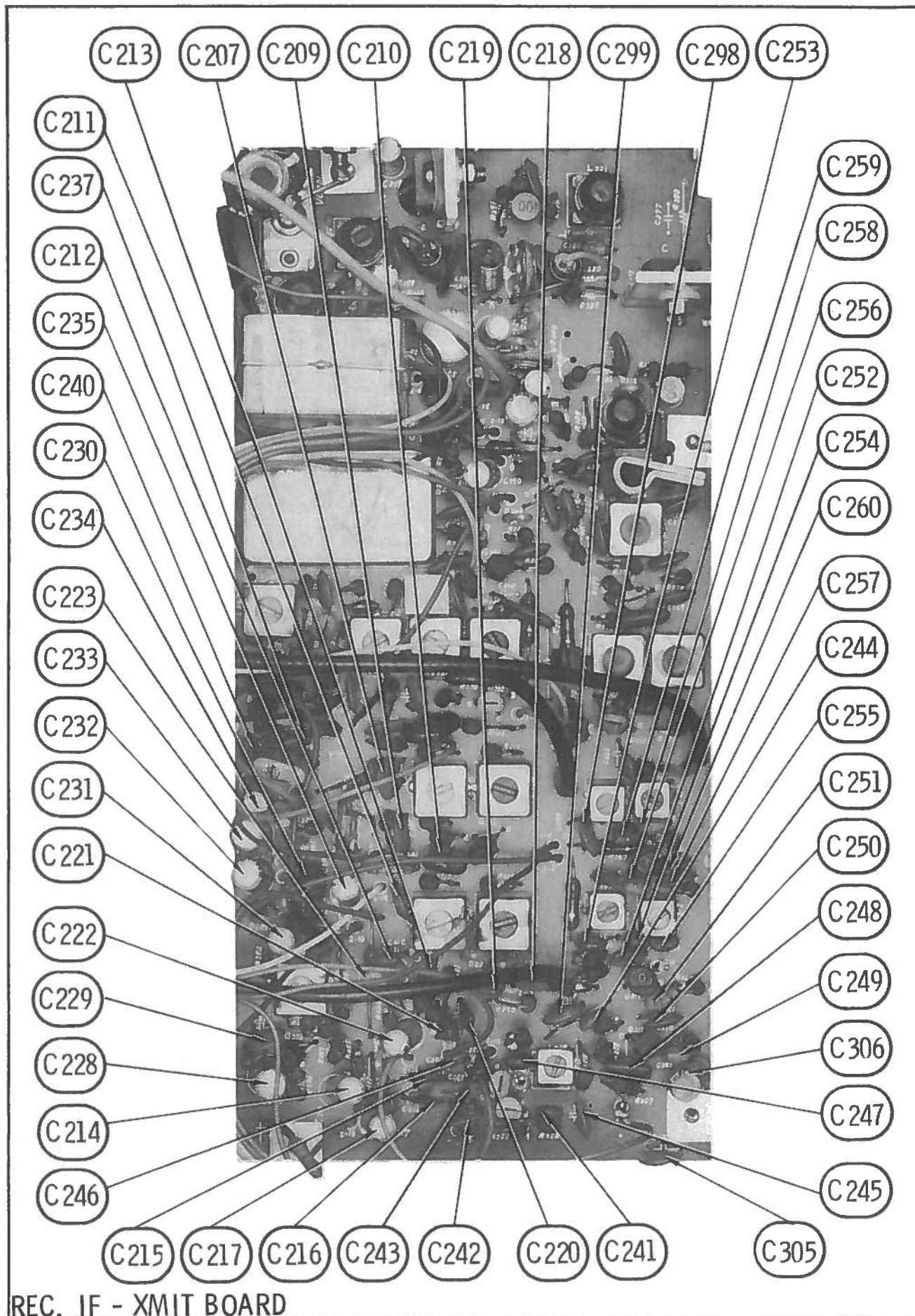
REC. IF - XMIT BOARD

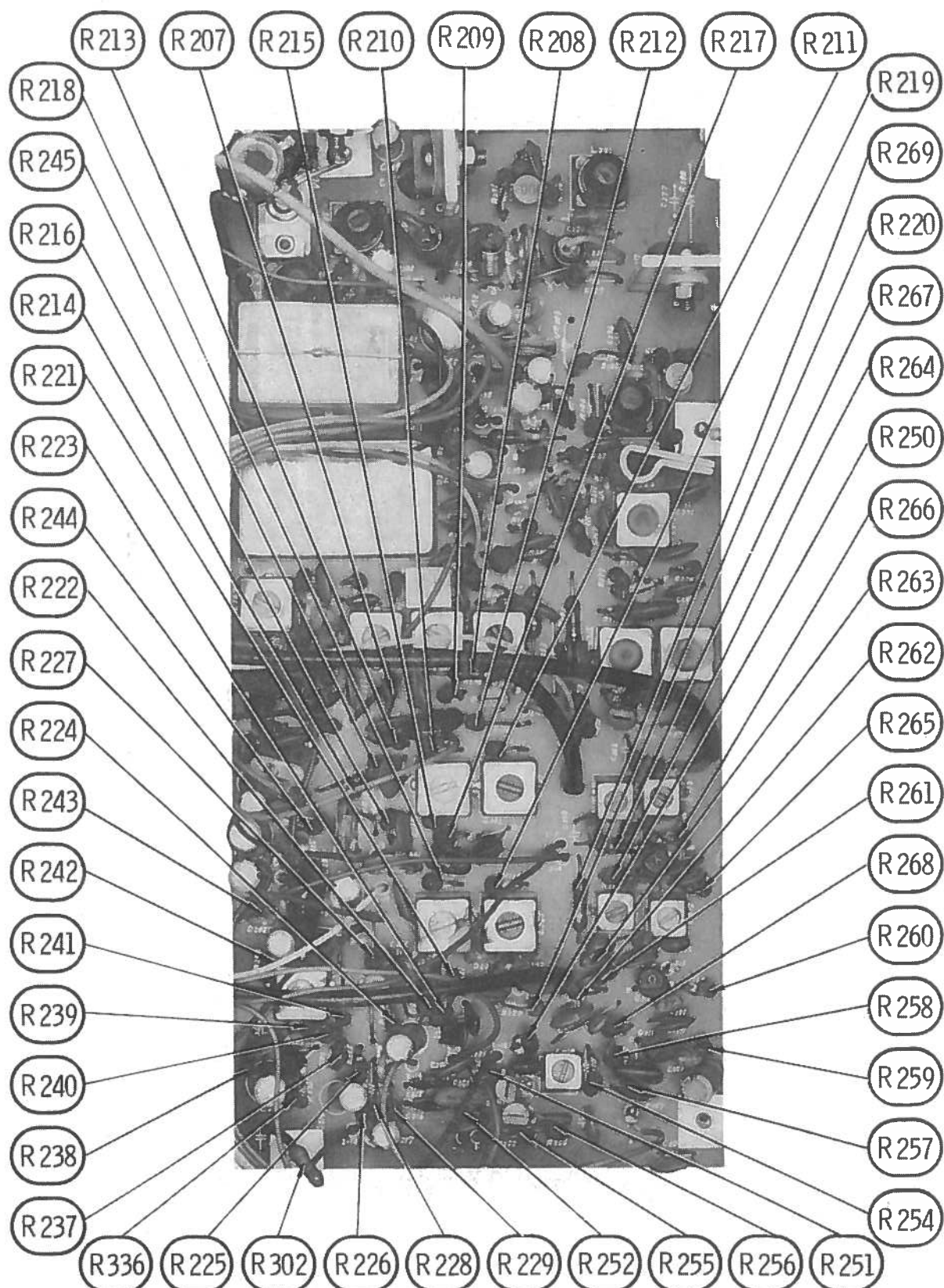


REC. IF - XMIT BOARD

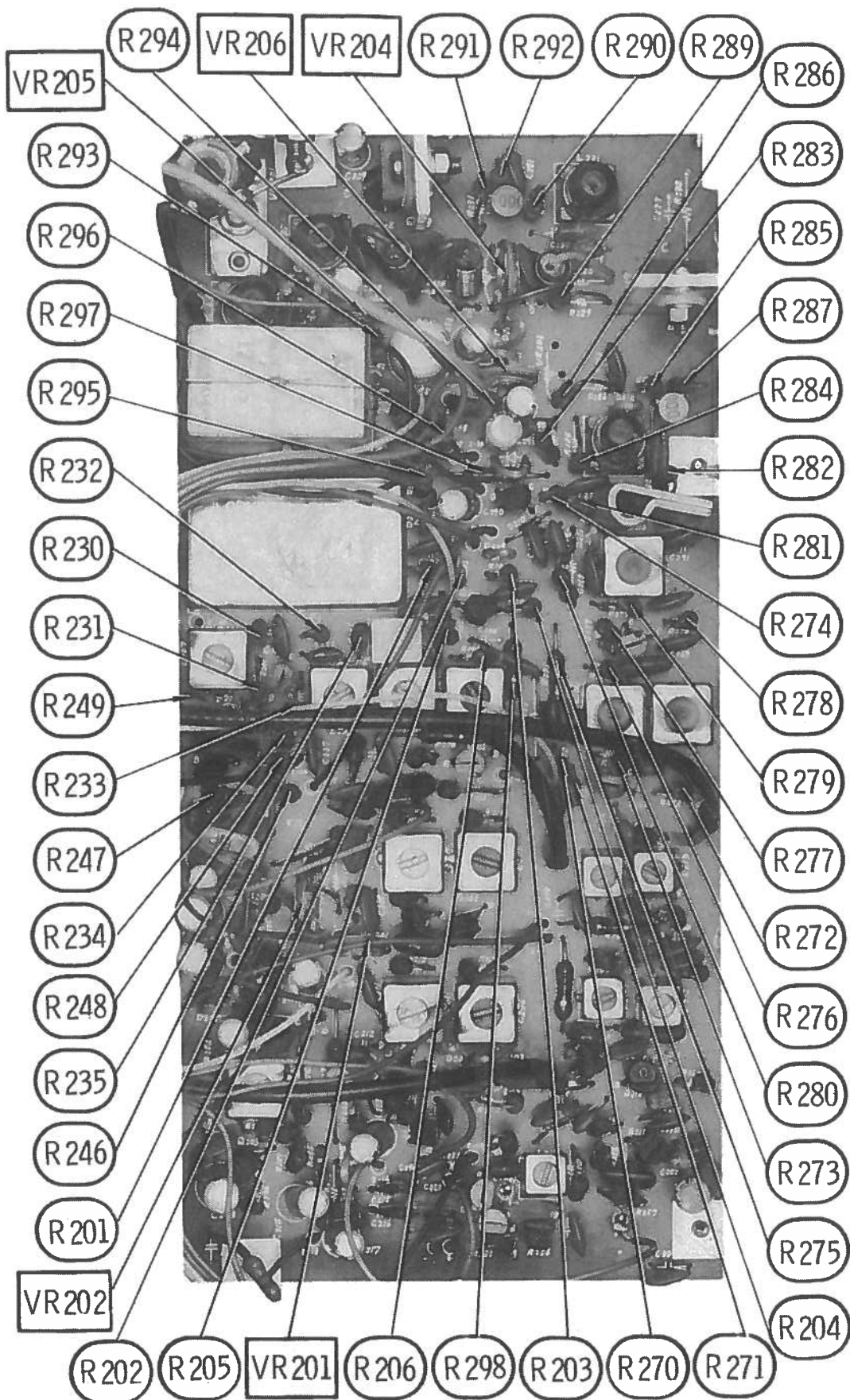


REC. IF - XMIT BOARD

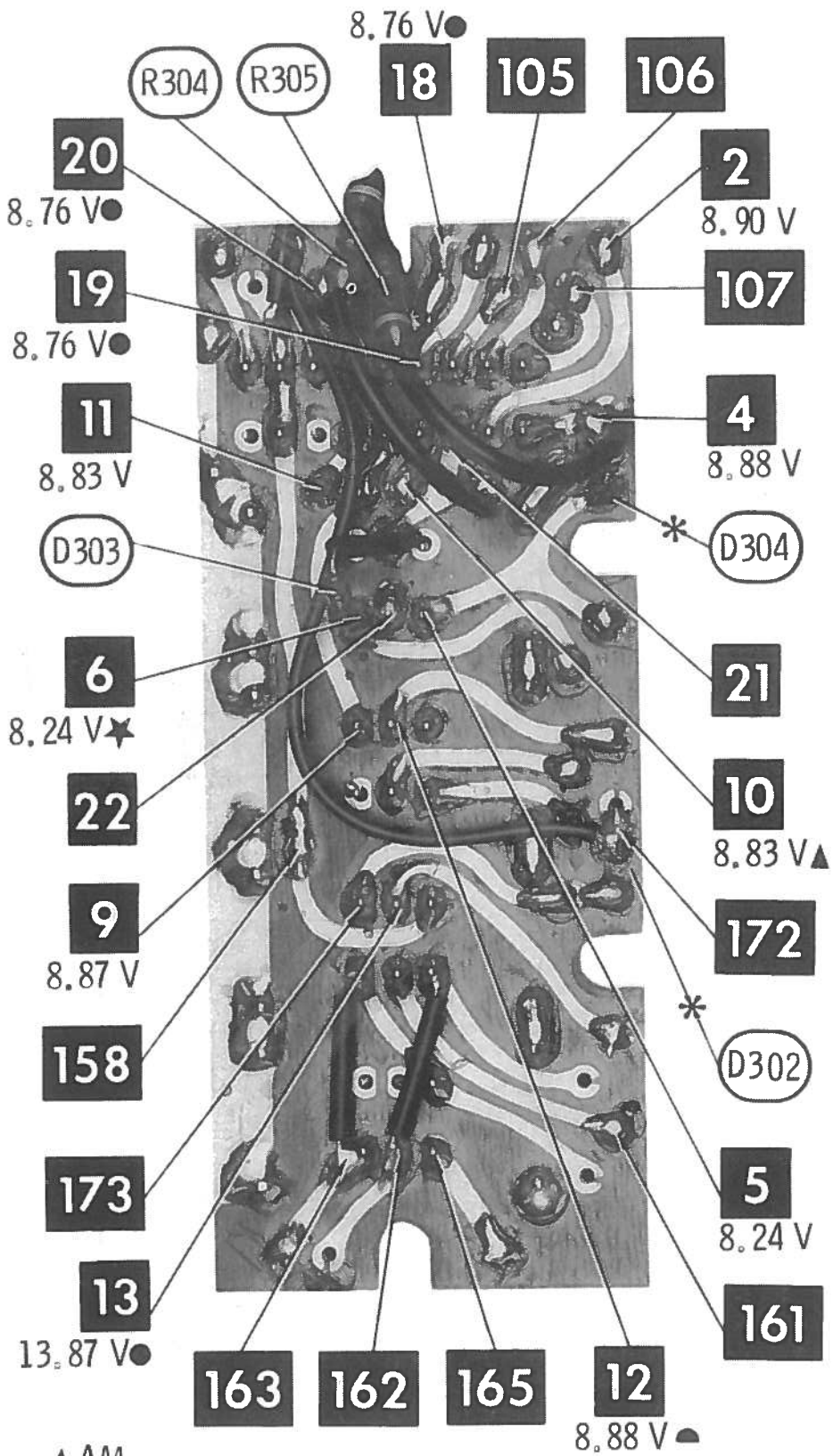




REC. IF - XMIT BOARD



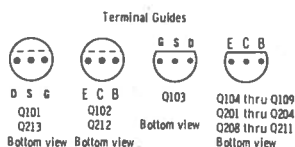
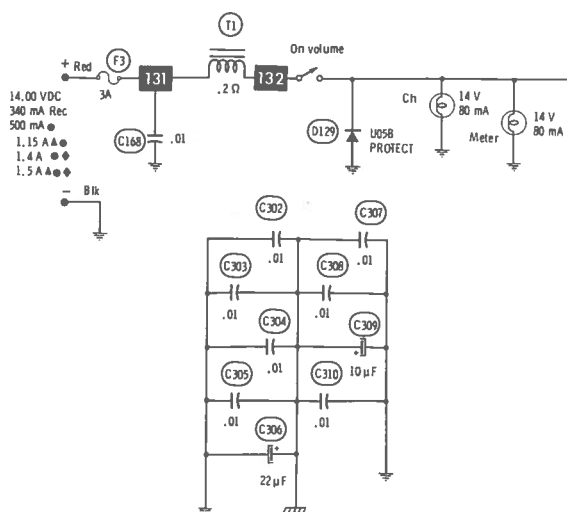
REC. IF - XMIT BOARD



▲ AM
 ★ LSB
 ● TRANSMIT

◐ NOISE BLANKER ON
 * LOCATED ON BOTTOM OF BOARD.

SWITCH BOARD



—* Circuitry not used in some versions

--- Circuitry used in some versions

⊙ See parts list

⊕ Ground

⏏ Chassis

Measurements with switching as shown unless noted:

■ Squelch fully clockwise ◆ 100% modulation
● Transmit ★ LSB ▲ AM

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.

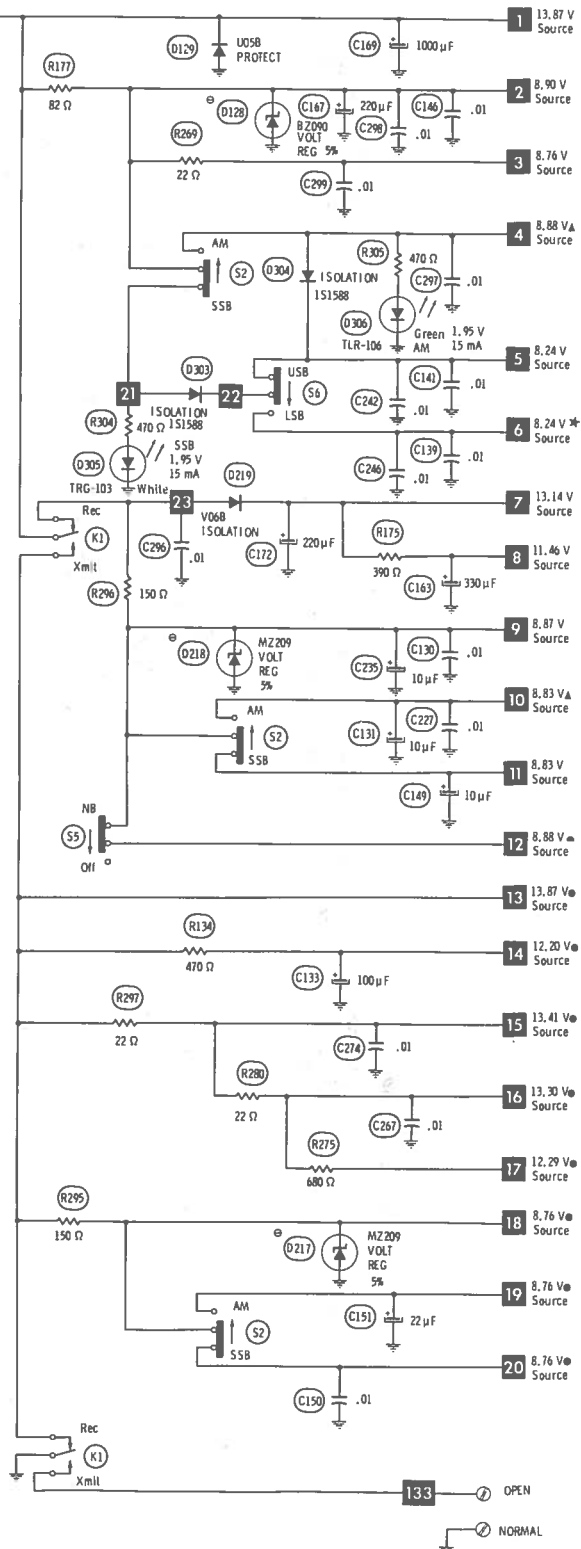
Resistors are 1/2W or less, 5% unless noted.

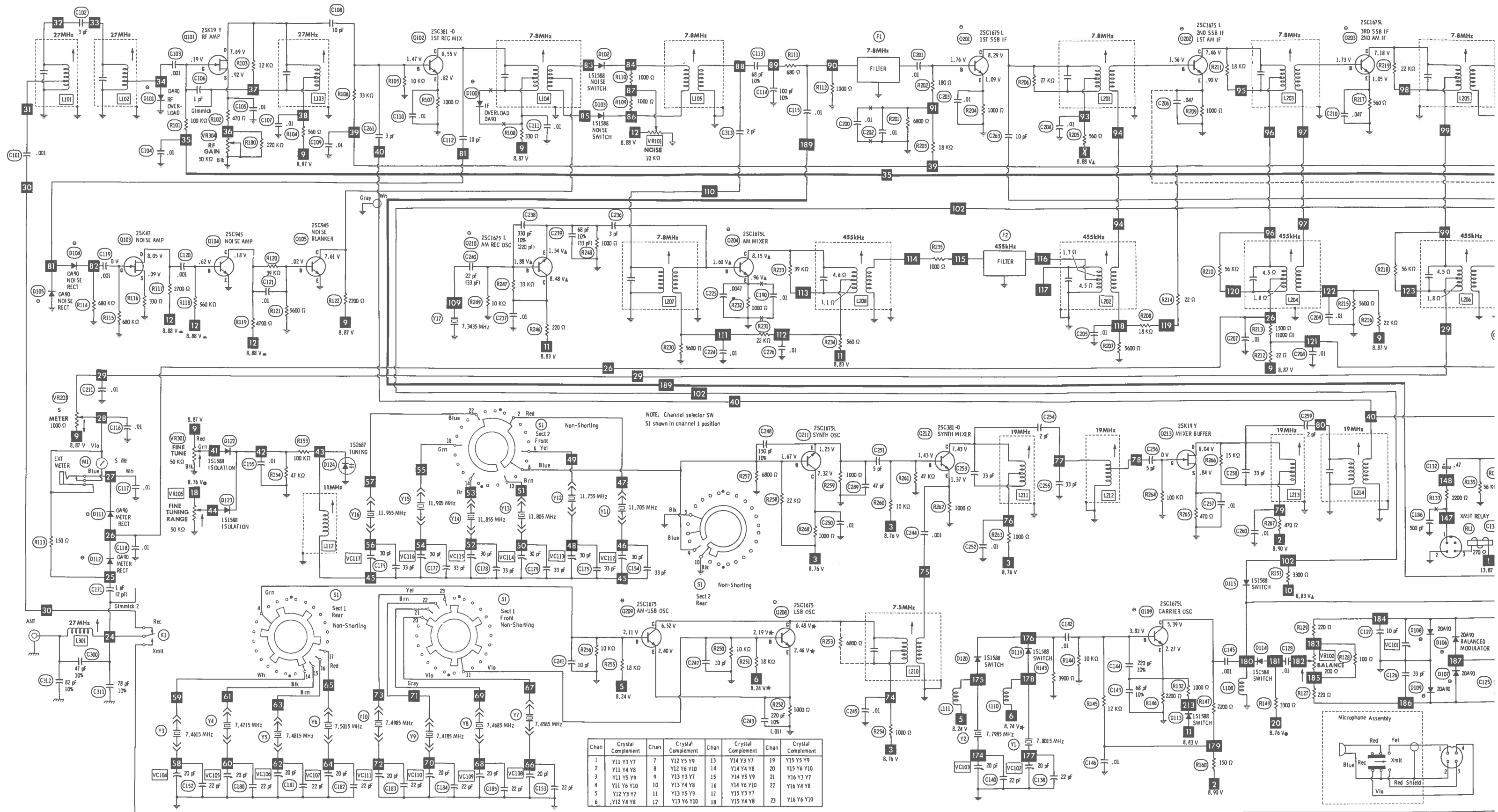
Value in () used in some versions.

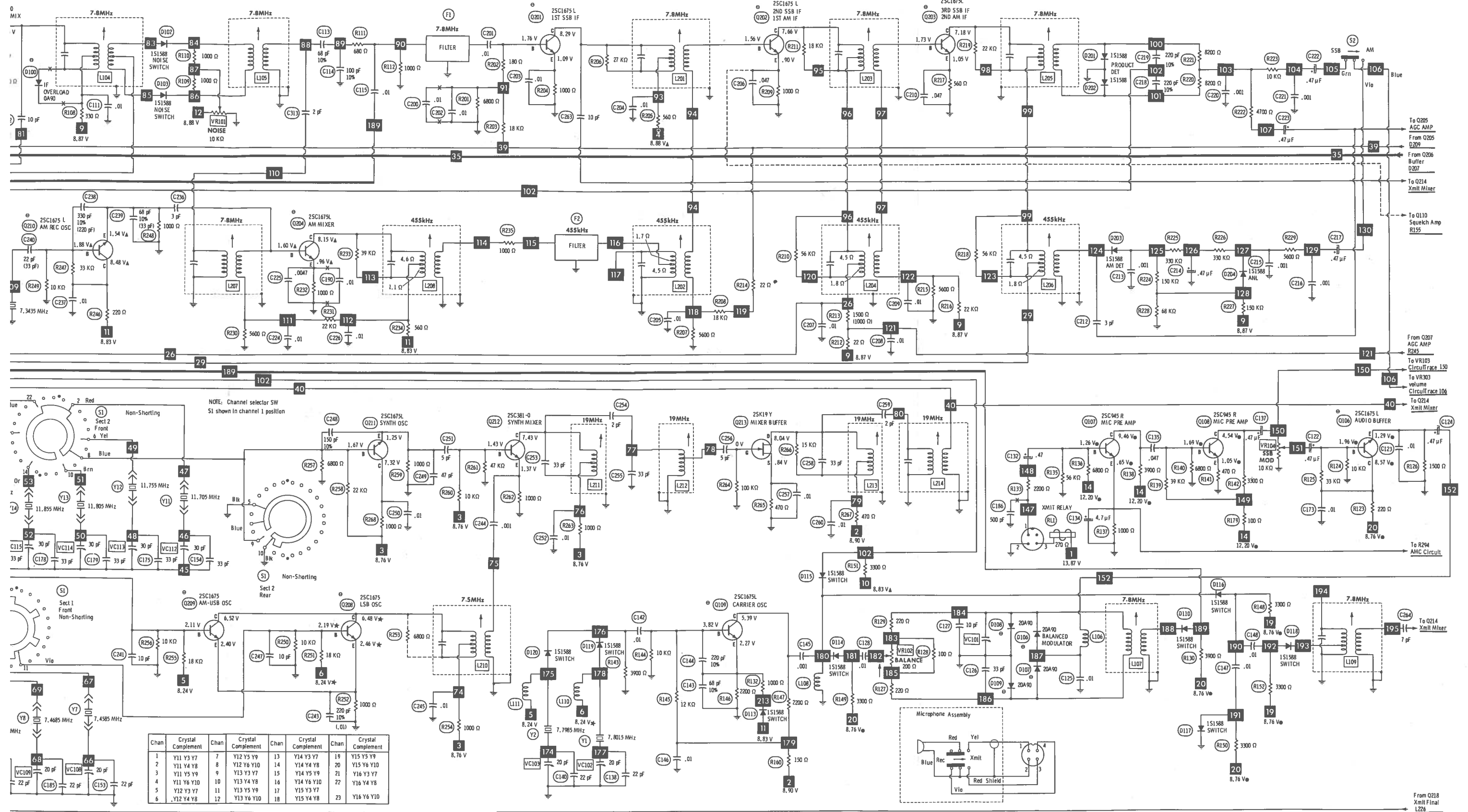
A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITACE®

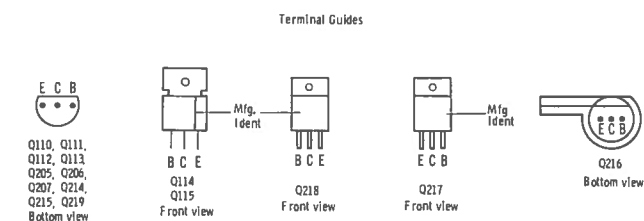
© Howard W. Sams & Co., Inc. 1976











PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D100	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D101	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
	1S1588(1)		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D102	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D103	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D104	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D105	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D106	20A90		1N60(7)	PTC206M(6)	HEPR9135(7)	RE 86(6)	SK3088(7)	RT-263(7)	ECG110(6)
D107	20A90								
D108	20A90		1N60(7)	PTC206M(6)	HEPR9135(7)	RE 86(6)	SK3088(7)	RT-263(7)	ECG110(6)
D109	20A90								
D110	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D111	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D112	0A90/1N60		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D113	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D114	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D115	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D116	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D117	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D118	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D119	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D120	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D122	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D123	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D124	1S2687		GE-90		HEPR2503	RE 195	SK3126	RT-262	
D125	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D126	V06B		GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D127	V06B		GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D128	BZ090		GEZ0-9.1	ZB9.1B		RE 114		RT-240	ECG139
	(9.0 Volt 5% Zener)								
D129	U058		GE-512	PTC204	HEPR0092	RE 92	SK3051	RT-201	ECG156
D130	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D201	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D202	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D203	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D204	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D205	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D206	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D207	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D208	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D209	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D210	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D211	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D212	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D213	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D214	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D215	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D216	0A90		1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D217	MZ209		GEZ0-9.1	ZB9.1B		RE 114		RT-240	ECG139
	(9.0 Volt 5% Zener)								
D218	MZ209		GEZ0-9.1	ZB9.1B		RE 114		RT-240	ECG139
	(9.0 Volt 5% Zener)								
D219	V06B		GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D301	TLR-103								
D302	V06B		GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D303	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D304	1S1588		GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D305	TRG-103								
D306	TLR-106								
Q101	2SK19Y		GE-FET-2	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG132
Q102	2SC381-0		GE-20	PTC121	HEPS0011	RE 9	SK3018	RT-108A	ECG107
Q103	2SK49		GE-FET-2	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG132
Q104	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q105	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q106	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q107	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q108	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q109	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q110	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q111	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q112	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q113	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q114	2SC10964ZL	(10)	GE-28	PTC110	HEPS5027	RE 42	SK3054	RT-197	ECG186A
Q115	2SC10964ZL	(10)	GE-28	PTC110	HEPS5027	RE 42	SK3054	RT-197	ECG186A
Q201	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q202	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	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.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
Q203	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q204	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q205	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q206	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
Q207	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q208	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q209	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q210	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q211	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q212	2SC381-0		GE-20	PTC121	HEPS0011	RE 9	SK3018	RT-108A	ECG107
Q213	2SK19Y		GE-FET-2	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG132
Q214	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q215	2SC1675L		GE-20	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG229
	2SC839(1)		GE-61	PTC121	HEPS0015	RE 13	SK3018	RT-107A	ECG123A
Q216	2SC1330L		GE-63	PTC178			SK3137		ECG192
Q217	2SC1306(11)		GE-215	PTC186		RE 203			ECG235
	2SC799(1)(12)		GE-46	PTC158				RT-182	ECG282
Q218	2SC1307(13)		GE-216	PTC186		RE 201			ECG236
	2SC1239(1)(14)		GE-46	PTC176		RE 198		RT-182	ECG237
Q219	2SC945R		GE-210	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199

(1) Used in some versions.

(6) Matched pair.

(7) Two required - select matched pair.

(10) Rating, 10 watts @ 2.0 amp.

(11) Rating, 12 watts @ 3.0 amp.

(12) Rating, 10 watts @ 3.0 amp.

(13) Rating, 25 watts @ 8.0 amp.

(14) Rating, 12 watts @ 4.0 amp.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C122	.47 50V		PC1-50	VTTR47B63	EV-161D
C124	.47 50V		PC1-50	VTTR47B63	EV-1610
C151	22 16V		PC25-25	VTT22A16	EV-1224
C156	22 16V		PC25-25	VTT22A16	EV-1224
C158	47 6.3V		PC50-10	VTT47A6	EV-1026
C159	47 16V		PC50-16	VTT47D16	EV-1226
C160	.47 50V		PC1-50	VTTR47B63	EV-1610
C161	.47 50V		PC1-50	VTTR47B63	EV-1610
C162	100 6.3V		PC100-10	MTV100CB6	EV-1030
C163	330 16V		WBR300-35	VTT330H16	EV-1245
C167	220 16V		PC250-25	VTT220G16	EV-1240
C169	1000 16V		PC1000-16	VTT1000L16	EV-1260
C170	100 16V		PC100-10	MTV100CB6	EV-1030
C172	220 16V		PC250-25	VTT220G16	EV-1240
C214	.47 50V		PC1-50	VTTR47B63	EV-1610
C217	.47 50V		PC1-50	VTTR47B63	EV-1610
C222	.47 50V		PC1-50	VTTR47B63	EV-1610
C223	.47 50V		PC1-50	VTTR47B63	EV-1610
C228	47 6.3V		PC50-10	VTT47A6	EV-1026
C231	1 25V		PC1-50	TT25X1	EV-1315
C232	33 6.3V		PC30-25	VTT33A10	EV-1125
C233	22 16V		PC25-25	VTT22A16	EV-1224
C234	4.7 16V		PC5-50	VTT47A50	EV-1319
C235	10 16V		PC10-25	VTT10A25	EV-1222
C288	10 16V		PC10-25	VTT10A25	EV-1222
C290	10 16V		PC10-25	VTT10A25	EV-1222
C292	1 25V		PC1-50	TT25X1	EV-1315
C293	33 6.3V		PC30-25	VTT33A10	EV-1125
C294	10 16V		WBR10-150	MTV10C0100	TVA-1337
C295	100 16V		PC100-16	VTT100F16	EV-1230
C301	100 16V		PC100-16	VTT100F16	EV-1230
C306	22 16V		PC25-25	VTT22A16	EV-1224
C309	10 16V		PC10-25	VTT10A25	EV-1222

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C101	.001		DD-102		GP210	10TS-D10
C102	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C103	.001		DD-102		GP210	10TS-D10
C104	.01		DC-103	GP10000	MAG5011	2SS-S10
C105	.01		DC-103	GP10000	MAG5011	2SS-S10
C106	1				CN0510	10TCC-V10
C107	.01		DC-103	GP10000	MAG5011	2SS-S10
C108	10		DTZ-10	NP010	CN0410	10TCC-Q10
C109	.01		DC-103	GP10000	MAG5011	2SS-S10
C110	.01		DC-103	GP10000	MAG5011	2SS-S10
C111	.01		DC-103	GP10000	MAG5011	2SS-S10
C112	10			CD6C01000J03		
C113	68 10%			CD6E0680J03	SX468	424MC680J501
C114	100 10%			CD10F0101J03	SX310	424MC1000J501
C115	.01		DC-103	GP10000	MAG5011	2SS-S10
C116	.01		DC-103	GP10000	MAG5011	2SS-S10
C117	.01		DC-103	GP10000	MAG5011	2SS-S10
C118	.01		DC-103	GP10000	MAG5011	2SS-S10
C119	.001			DPMS601	EWFTA210	1PB-D10
C120	.001			DPMS601	EWFTA210	1PB-D10
C121	.01			DPMS4S1	EWFTA110	1PB-S10
C123	.01		DC-103	GP10000	MAG5011	2SS-S10
C125	.01		DC-103	GP10000	MAG5011	2SS-S10
C126	33			CD6E0330J03	SX433	
C127	10			CD6C01000J03		
C128	.01		DC-103	GP10000	MAG5011	2SS-S10
C130	.01		DC-103	GP10000	MAG5011	2SS-S10
C135	.047			DPMS2S47	EWFTA147	1PB-S47
C138	22			CD6C0220J03	SX422	
C139	.01		DC-103	GP10000	MAG5011	2SS-S10
C140	22			CD6C0220J03	SX422	
C141	.01		DC-103	GP10000	MAG5011	2SS-S10
C142	.01		DC-103	GP10000	MAG5011	2SS-S10
C143	68 10%			CD6E0680J03	SX468	424MC680J501
C144	220 10%			CD10F0221J03	SX322	424ME2200J501
C145	.001		DD-102		GP210	10TS-D10
C146	.01		DC-103	GP10000	MAG5011	2SS-S10
C147	.01		DC-103	GP10000	MAG5011	2SS-S10
C148	.01		DC-103	GP10000	MAG5011	2SS-S10
C150	.01		DC-103	GP10000	MAG5011	2SS-S10
C152	22			CD6C0220J03	SX422	
C153	22			CD6C0220J03	SX422	
C154	33			CD6E0330J03	SX433	
C155	.01		DC-103	GP10000	MAG5011	2SS-S10
C157	.047			DPMS2S47	EWFTA147	1PB-S47
C164	1		DC-104	MGP1	MAG5001	TG-P10
C165	.01		DC-103	GP10000	MAG5011	2SS-S10
C166	.01		DC-103	GP10000	MAG5011	2SS-S10
C168	.01		DC-103	GP10000	MAG5011	2SS-S10
C171	1				CN0510	10TCC-V10
C173	.01		DC-103	GP10000	MAG5011	2SS-S10
C175	33			CD6E0330J03	SX433	
C176	33			CD6E0330J03	SX433	
C177	33			CD6E0330J03	SX433	
C178	33			CD6E0330J03	SX433	
C179	33			CD6E0330J03	SX433	
C180	22			CD6C0220J03	SX422	
C181	22			CD6C0220J03	SX422	
C182	22			CD6C0220J03	SX422	
C183	22			CD6C0220J03	SX422	
C184	22			CD6C0220J03	SX422	
C185	22			CD6C0220J03	SX422	
C186	500			CD15F0501J03		
C190	.01		DC-103	GP10000	MAG5011	2SS-S10
C200	.01		DC-103	GP10000	MAG5011	2SS-S10
C201	.01		DC-103	GP10000	MAG5011	2SS-S10
C202	.01		DC-103	GP10000	MAG5011	2SS-S10
C203	.01		DC-103	GP10000	MAG5011	2SS-S10
C204	.01		DC-103	GP10000	MAG5011	2SS-S10
C205	.01		DC-103	GP10000	MAG5011	2SS-S10

KRIS MODEL XL-70

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.
C206	.047			DPMS2547	EWFA1A147	1PB-S47
C207	.01		DC-103	GP10000	MAG5011	2SS-S10
C208	.01		DC-103	GP10000	MAG5011	2SS-S10
C209	.01		DC-103	GP10000	MAG5011	2SS-S10
C210	.047			DPMS2547	EWFA1A147	1PB-S47
C211	.01		DC-103	GP10000	MAG5011	2SS-S10
C212	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C213	.001			DPMS601	EWFA1A210	1PB-D10
C215	.001			DPMS601	EWFA1A210	1PB-D10
C216	.001			DPMS601	EWFA1A210	1PB-D10
C218	220 10%			CD10F0221J03	SX322	424ME2200J501
C219	220 10%			CD10F0221J03	SX322	424ME2200J501
C220	.001			DPMS601	EWFA1A210	1PB-D10
C221	.001			DPMS601	EWFA1A210	1PB-D10
C224	.01		DC-103	GP10000	MAG5011	2SS-S10
C225	.0047			OPMS6D47	EWFA1A247	1PB-047
C226	.01		DC-103	GP10000	MAG5011	2SS-S10
C227	.01		DC-103	GP10000	MAG5011	2SS-S10
C229	.01		DC-103	GP10000	MAG5011	2SS-S10
C230	.1			DPMS2P1	EWFA1A010	1PB-P10
C236	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C237	.01		DC-103	GP10000	MAG5011	2SS-S10
C238	330 10%			CD15FD331J03	SX333	424ME3300J501
C239	68			CD6ED680J03	SX468	424MC68R0J501
C240	22			CD6C0220J03	SX422	
C241	10			CD6CD100003		
C242	.01		DC-103	GP10000	MAG5011	2SS-S10
C243	220 10%			CD10F0221J03	SX322	424ME2200J501
C244	.001		DC-102	GP210	GP210	10TS-D10
C245	.01		DC-103	GP10000	MAG5011	2SS-S10
C246	.01		DC-103	GP10000	MAG5011	2SS-S10
C247	10			C06C0050003		
C248	47 10%			C06ED470J03	SX447	424MC47R0J501
C249	47 10%			C06E0470J03	SX447	424MC47R0J501
C250	.01		DC-103	GP10000	MAG5011	2SS-S10
C251	5			CD6C0050003		
C252	.01		DC-103	GP10000	MAG5011	2SS-S10
C253	33			C06ED330J03	SX433	
C254	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C255	33			CD6ED330J03	SX433	
C256	5			CD6C0050003		
C257	.01		DC-103	GP10000	MAG5011	2SS-S10
C258	33			C06ED330J03	SX433	
C259	2		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C260	.01					10TS-S10
C261	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C262	.001		DC-102		GP210	10TS-D10
C263	10			C06C0100003		
C264	7		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C265	.01		DC-103	GP10000	MAG5011	2SS-S10
C266	3		DTZ-3R3	NP03P3	CN0533	10TCC-V33
C267	.01		DC-103	GP10000	MAG5011	2SS-S10
C268	220 10%			CD10F0221J03	SX322	424ME2200J501
C269	.01		DC-103	GP10000	MAG5011	2SS-S10
C270	.01		DC-103	GP10000	MAG5011	2SS-S10
C271	.01		DC-103	GP10000	MAG5011	2SS-S10
C272	.01		DC-103	GP10000	MAG5011	2SS-S10
C273	.01		DC-103	GP10000	MAG5011	2SS-S10
C274	.01		DC-103	GP10000	MAG5011	2SS-S10
C275	68 10%			C06ED680J03	SX468	424MC68R0J501
C276	.01		DC-103	GP10000	MAG5011	2SS-S10
C277	.01		DC-103	GP10000	MAG5011	2SS-S10
C278	.01		DC-103	GP10000	MAG5011	2SS-S10
C279	47			C06ED470J03	SX447	424MC47R0J501
C280	100 10%			CD10F0101J03	SX310	424MC1000J501
C281	.01		DC-103	GP10000	MAG5011	2SS-S10
C282	.01		DC-103	GP10000	MAG5011	2SS-S10
C283	.01		DC-103	GP10000	MAG5011	2SS-S10
C284	.01		DC-103	GP10000	MAG5011	2SS-S10
C285	100 10%		DC-103	GP10000	MAG5011	2SS-S10
C286	78 10%		DC-103	GP10000	MAG5011	2SS-S10
				C06E0750J03	SX475	424MC75R0J501

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.
C287	1				CN0510	10TCC-V1D
C289	.01		DC-103	GP10000	MAG5011	2SS-S10
C291	.01		DC-103	GP10000	MAG5011	2SS-S10
C296	.01		DC-103	GP10000	MAG5011	2SS-S10
C297	.01		DC-103	GP10000	MAG5011	2SS-S10
C298	.01		DC-103	GP10000	MAG5011	2SS-S10
C299	.01		DC-103	GP10000	MAG5011	2SS-S10
C300	.47 10%			CD6E0470J03	SX447	424MC47RDJ501
C302	.01		DC-103	GP10000	MAG5011	2SS-S10
C303	.01		DC-103	GP10000	MAG5011	2SS-S10
C304	.01		DC-103	GP10000	MAG5011	2SS-S10
C305	.01		DC-103	GP10000	MAG5011	2SS-S10
C307	.01		DC-103	GP10000	MAG5011	2SS-S10
C308	.01		DC-103	GP10000	MAG5011	2SS-S10
C310	.01		DC-103	GP10000	MAG5011	2SS-S10
C311	78 10%			CD6E0750J03	SX475	424MC75RQJ501
C312	82 10%			CO10E0820J03	SX482	424MC82RQJ501
C313	2		OTZ-2R2	NP02P2	CN0522	10TCC-V22
VC101	20					
VC102	20					
VC103	20					
VC104	20					
VC105	20					
VC106	20					
VC107	20					
VC108	20					
VC109	20					
VC110	20					
VC111	20					
VC112	30					
VC113	30					
VC114	30					
VC115	30					
VC116	30					
VC117	30					
VC201	280					

KRIS MODEL XL-70

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR101	Noise	10K		T-10K	C-103	MTC14L1	X201R103B
VR102	Balance	200		T-200		MTC251L1	X201R251B
VR103	AM Mod.	10K		T-10K	C-103	MTC14L1	X201R103B
VR104	SSB Mod.	10K		T-10K	C-103	MTC14L1	X201R103B
VR105	Fine Tuning Range	50K		T-50K	C-503	MTC54L1	X201R503B
VR201	S Meter	1000		T-1000	C-102	MTC13L1	X201R102B
VR202	Squelch Range	100K		T-100K	C-104	MTC15L1	X201R104B
VR204	Bias	1000		T-1000	C-102	MTC13L1	X201R102B
VR205	SSB ALC	10K		T-10K	C-103	MTC14L1	X201R103B
VR206	AMC	10K		T-10K	C-103	MTC14L1	X201R103B
VR301	Fine Tune	50K					
VR302	Squelch	10K					
VR303	Volume/Power Switch	10K					
VR304	RF Gain	50K					

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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.
R301	5 5W WW	WR5					

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	Rec Ant (27MHz)		L0332		
L102	Rec Ant (27MHz)		L0333		
L103	Rec RF (27MHz)		L0334		
L104	Rec Mixer (7.8MHz)		L0335		
L105	Rec Mixer (7.8MHz)		L0335		
L106	RF Choke				
L107	SSB Mixer (7.8MHz)				
L108	RF Choke (470uH)				
L109	SSB Mixer (27MHz)		L0445		
L110	RF Choke (470uH)				
L111	RF Choke (470uH)				
L112	Tuning (11MHz)				
L201	IF (7.8MHz)		L0337		
L202	IF (455kHz)		L0338		
L203	IF (7.8MHz)		L0337		
L204	IF (455kHz)		L0338		
L205	IF (7.8MHz)		L0337		
L206	IF (455kHz)		L0338		
L207	AM Rec Osc (7.8MHz)		L0337		
L208	AM Mixer (455kHz)		L0338		
L209	AGC		L0338		
L210	LSB Osc (7.5MHz)		L0440		
L211	Synth Mixer (19MHz)		L0452		
L212	Synth Mixer (19MHz)		L0453		
L213	Buffer Mixer (19MHz)		L0452-1		
L214	Buffer Mixer (19MHz)		L005D4		
L215	Xmit Mixer (27MHz)				
L216	Xmit Mixer (27MHz)		L0-295		
L217	Xmit Buffer (27MHz)		L0-445		
L218	Xmit Amp (27MHz)				
L219	RF Choke (10uH)				
L220	RF Choke				
L221	Xmit Driver (27MHz)				
L222	RF Choke (10uH)				
L223	RF Choke				
L224	RF Choke				
L225	Final Tank (27MHz)				
L226	Pi Filter (27MHz)				
L301	Ant Load (27MHz)				

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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.	
T1	1.5A	.2	2.2mH	T-0139 (1)			(1) Number on unit.

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T3	2	1		T-0140 (1)			(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	16	4	T-0141 (1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	2" X 3 3/4" PM 4 ohms	EAS-9D75SA		

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F5	3 Amp Fast acting			AGC3	HDJ	312003	150145	FG3-2

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
K1	7.8015		AP090M7.8015		X9	7.4785		APC40M7.4785	3,7,11,15,19
K2	7.7985		APD90M7.7985		X10	7.4985		APC40M7.4985	4,8,12,16,20,23
X3	7.4615		APB40M7.4615	1,5,9,13,17,21	X11	11.705		APA50M11.705	1,2,3,4
X4	7.4715		APB40M7.4715	2,6,10,14,18,22	X12	11.755		APA50M11.755	5,6,7,8
X5	7.4815		APB40M7.4815	3,7,11,15,19	X13	11.805		APA50M11.805	9,10,11,12
K6	7.5015		APB40M7.5015	4,8,12,16,20,23	X14	11.855		APA50M11.855	13,14,15,16
K7	7.4585		APC40M7.4585	1,5,13,17,21	X15	11.905		APA50M11.905	17,18,19,20
K8	7.4685		APC40M7.4685	2,6,10,14,18,22	X16	11.955		APA50M11.955	21,22,23

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
F1	Filter	SF0724A	7.8MHz
F2	Filter	LF-86	455kHz
M1	Meter		S/R/F/Power
RL1	Relay		Xmit/Rec
S1	Switch		Channel Selector
S2	Switch	SLE16201	Mode (AM-SSB)
S3	Switch	SLE122201	PA-CB
S5	Switch	SLE12201	N8
S6	Switch	SLE12201	Mode (LSB-USB)

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
Power Cord, 2-Wire	8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) -6 feet
	17109 (Plastic) or 17129 (Rubber) -9 feet
	Use BELDEN No. 8214 Lowest-loss (RG-8/U Type)
	8237 Low-loss (RG-8/U)
	8240 (Solid) Miniature (RG-58/U)
	8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable	Use BELDEN No. 8497 3-Conductor (1 shielded for Press-to-Talk) Neoprene
	8491 4-Conductor (2 shielded, 2 unshielded) Neoprene