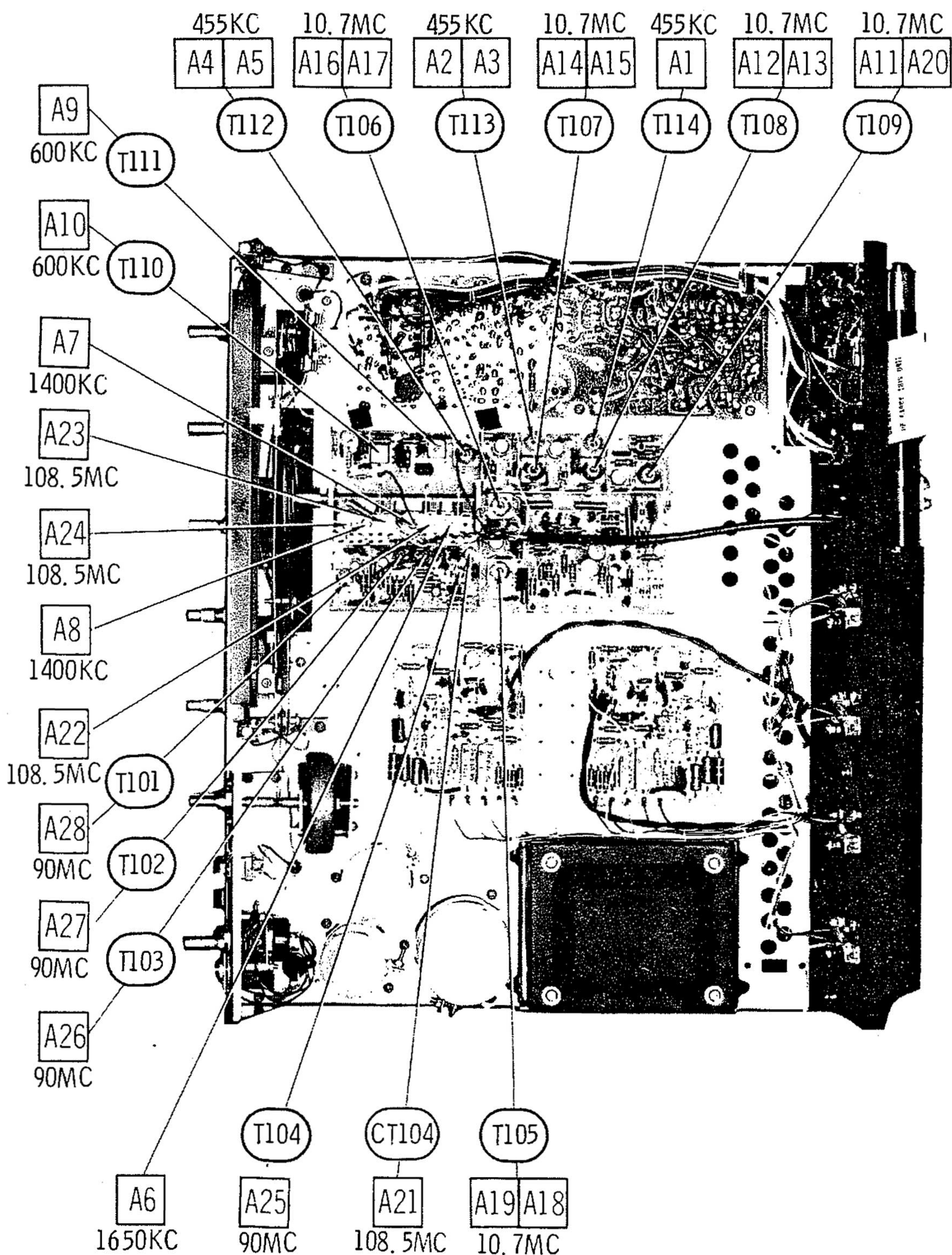
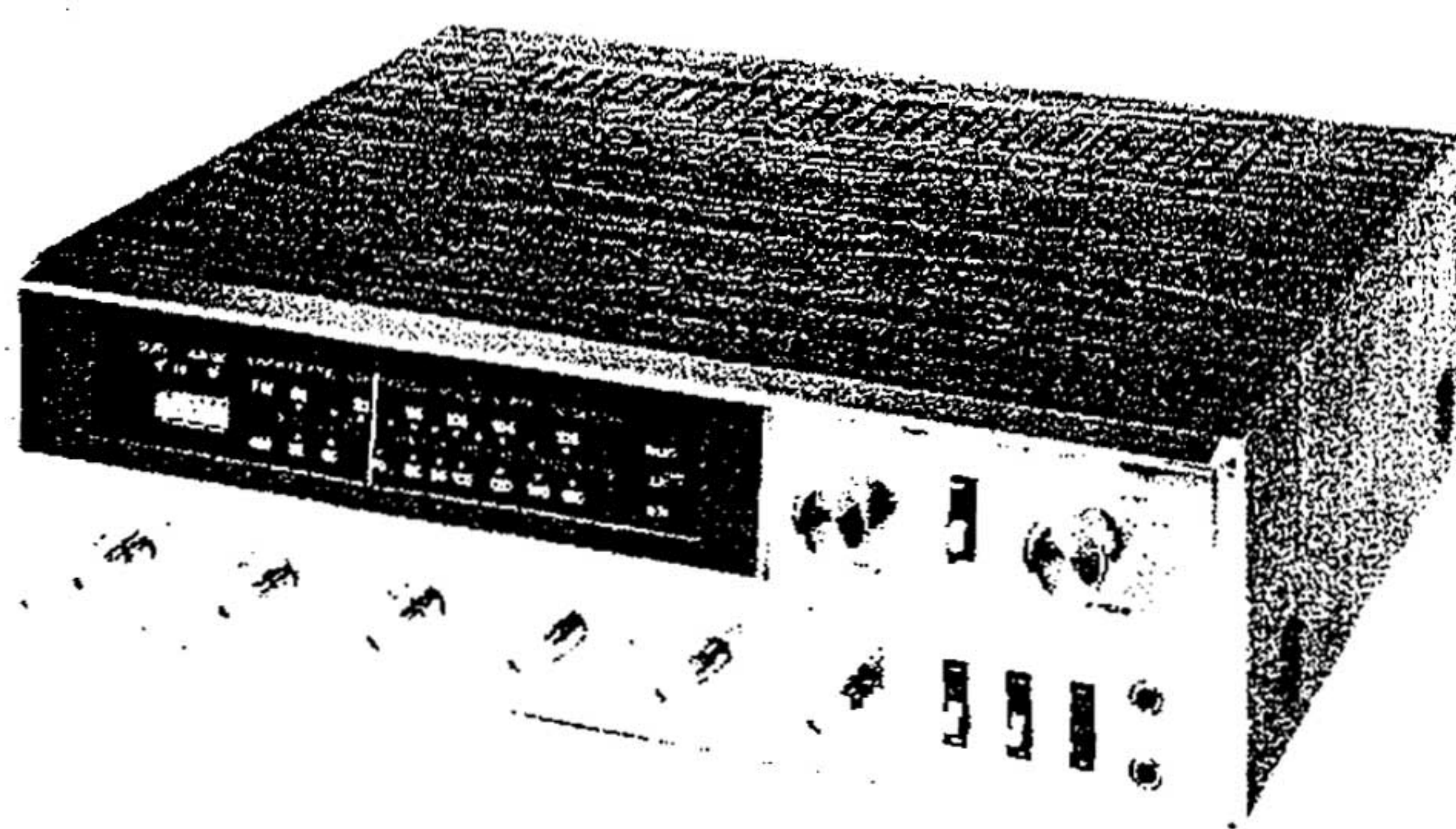
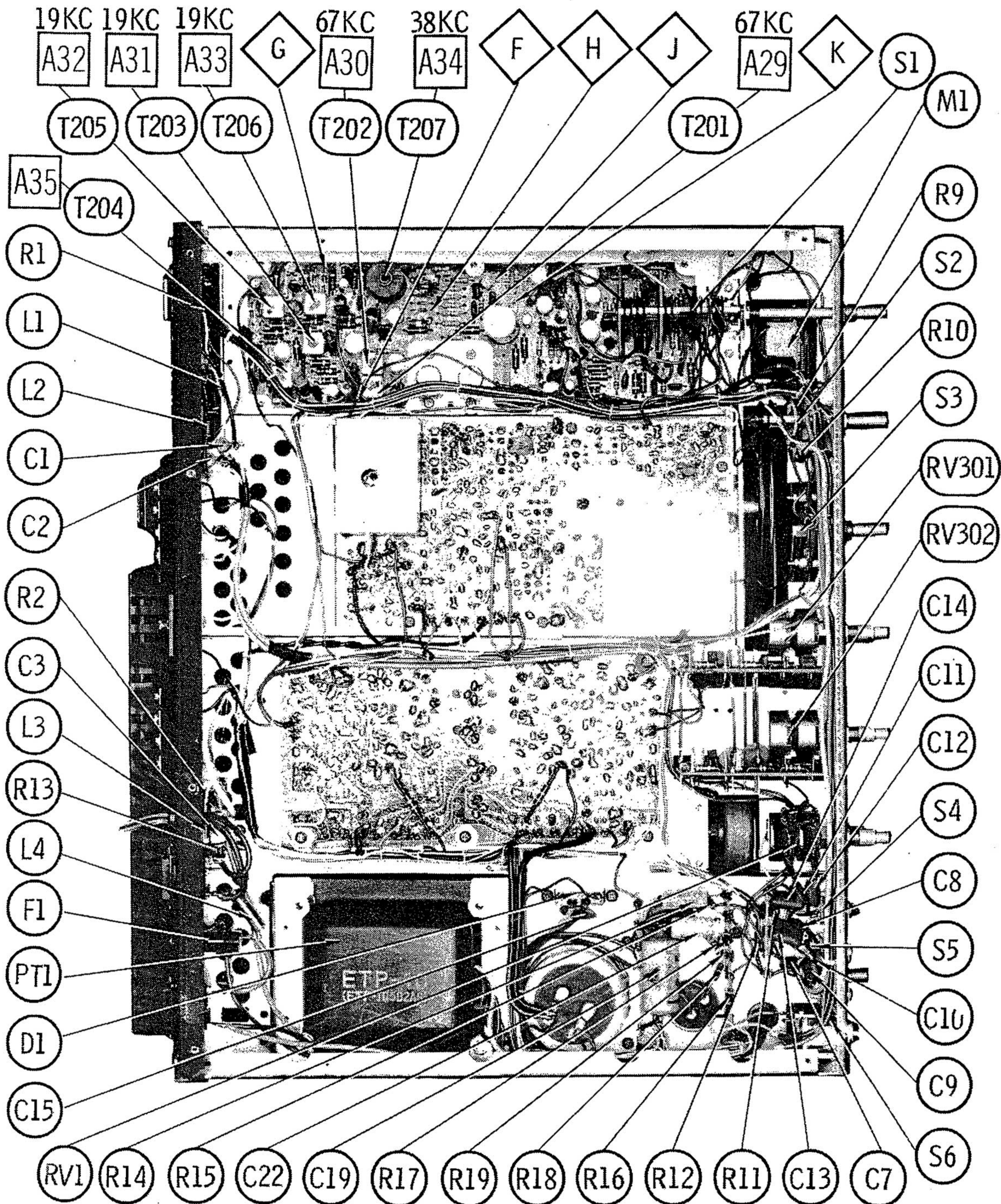
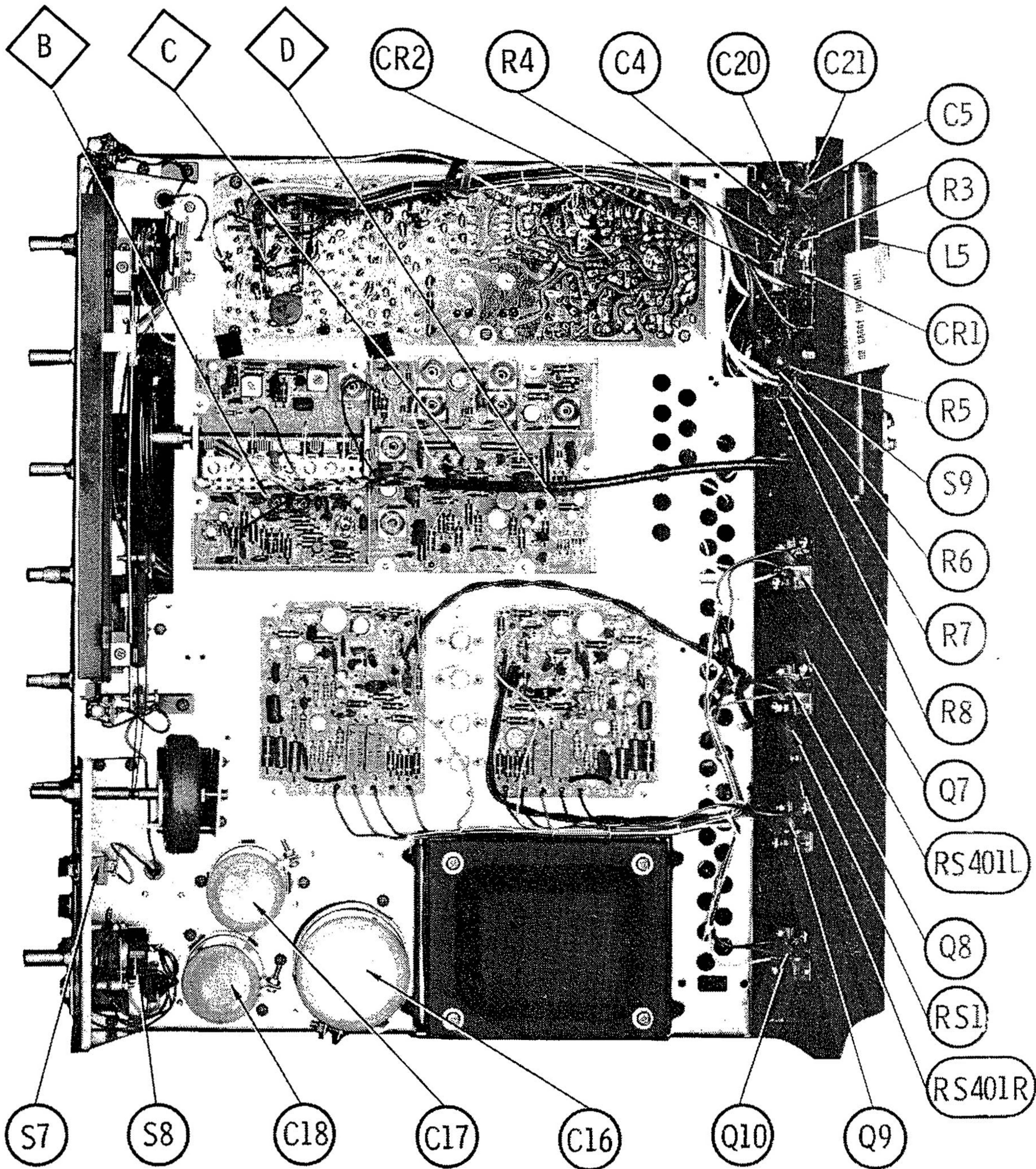
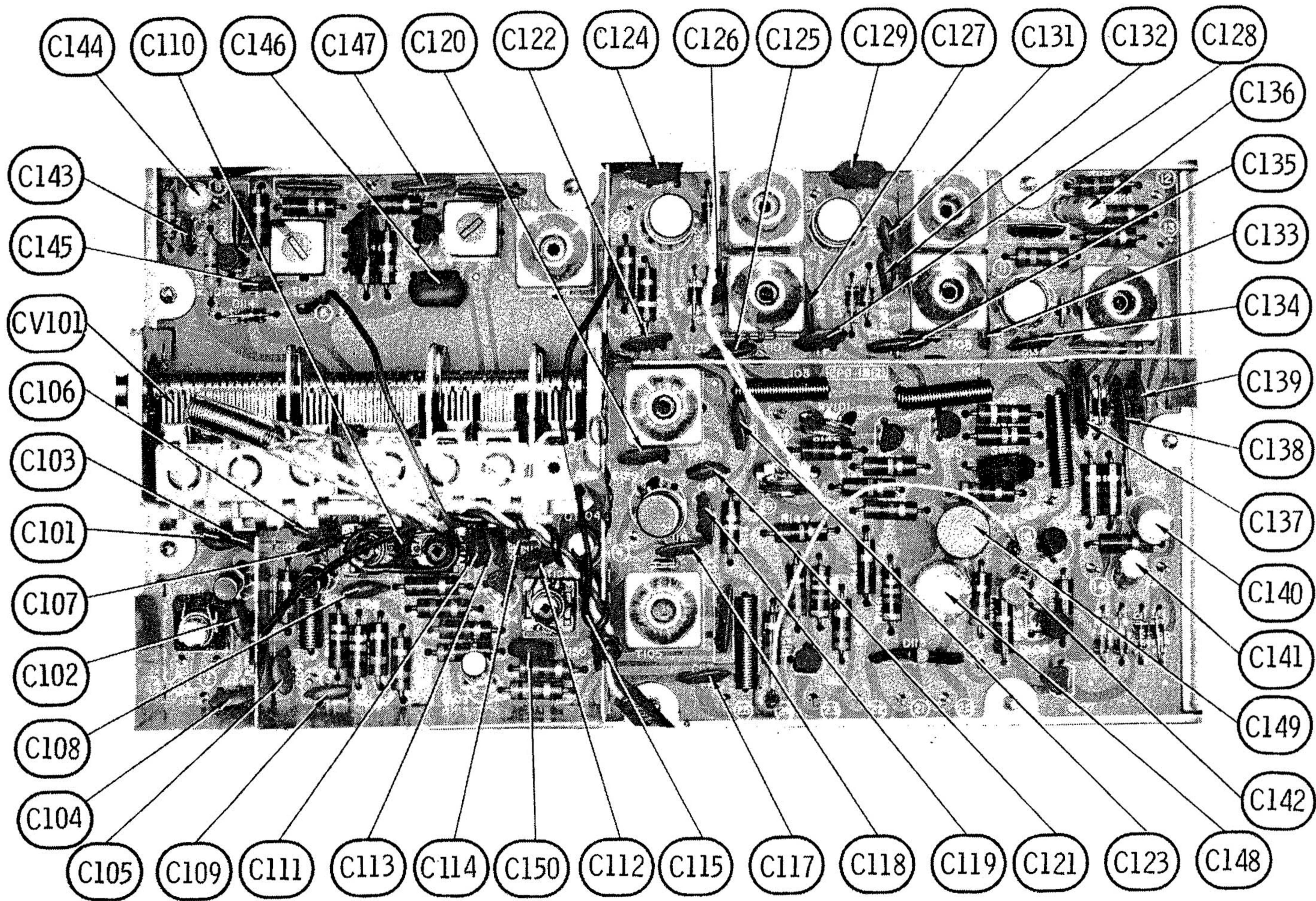


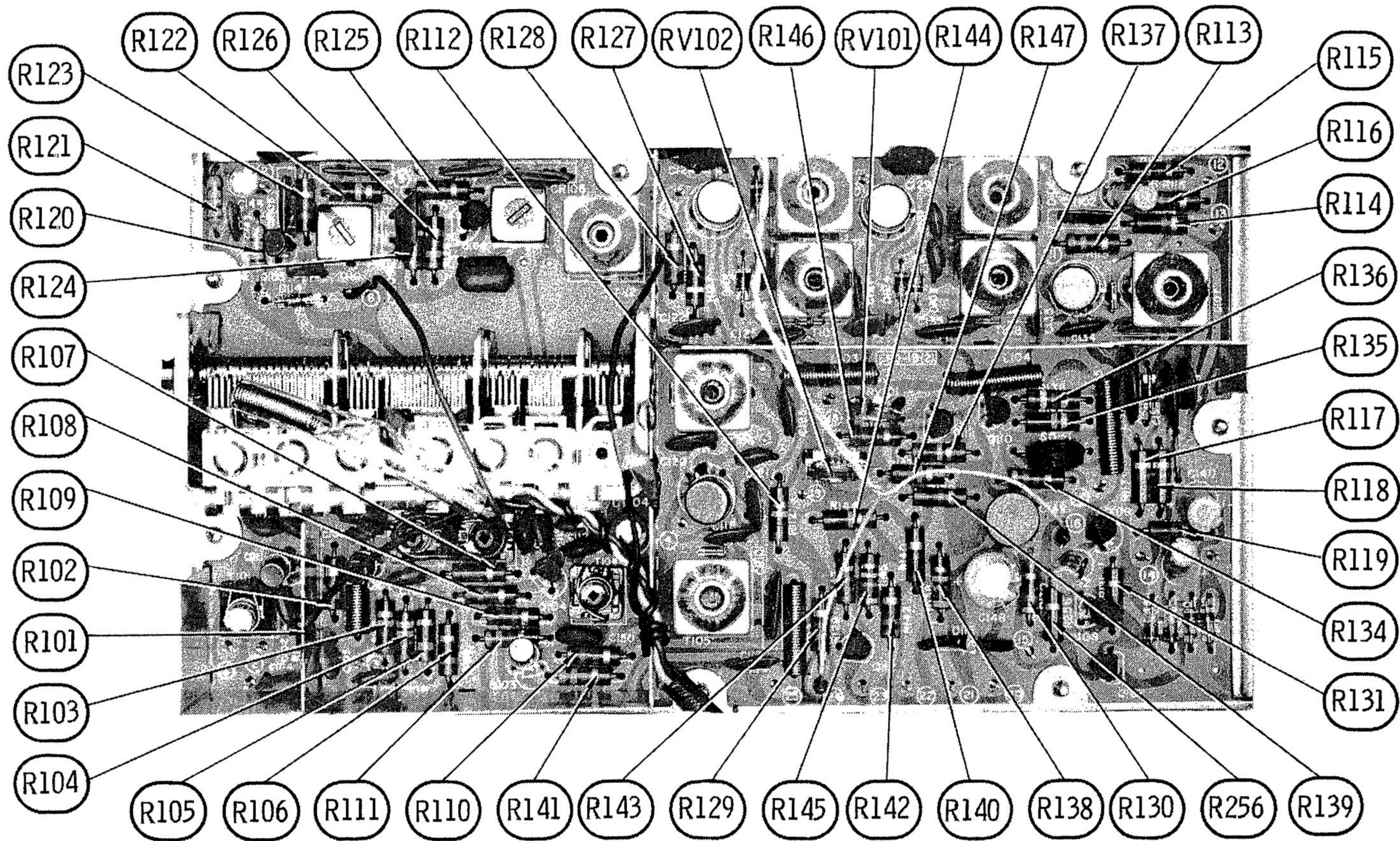
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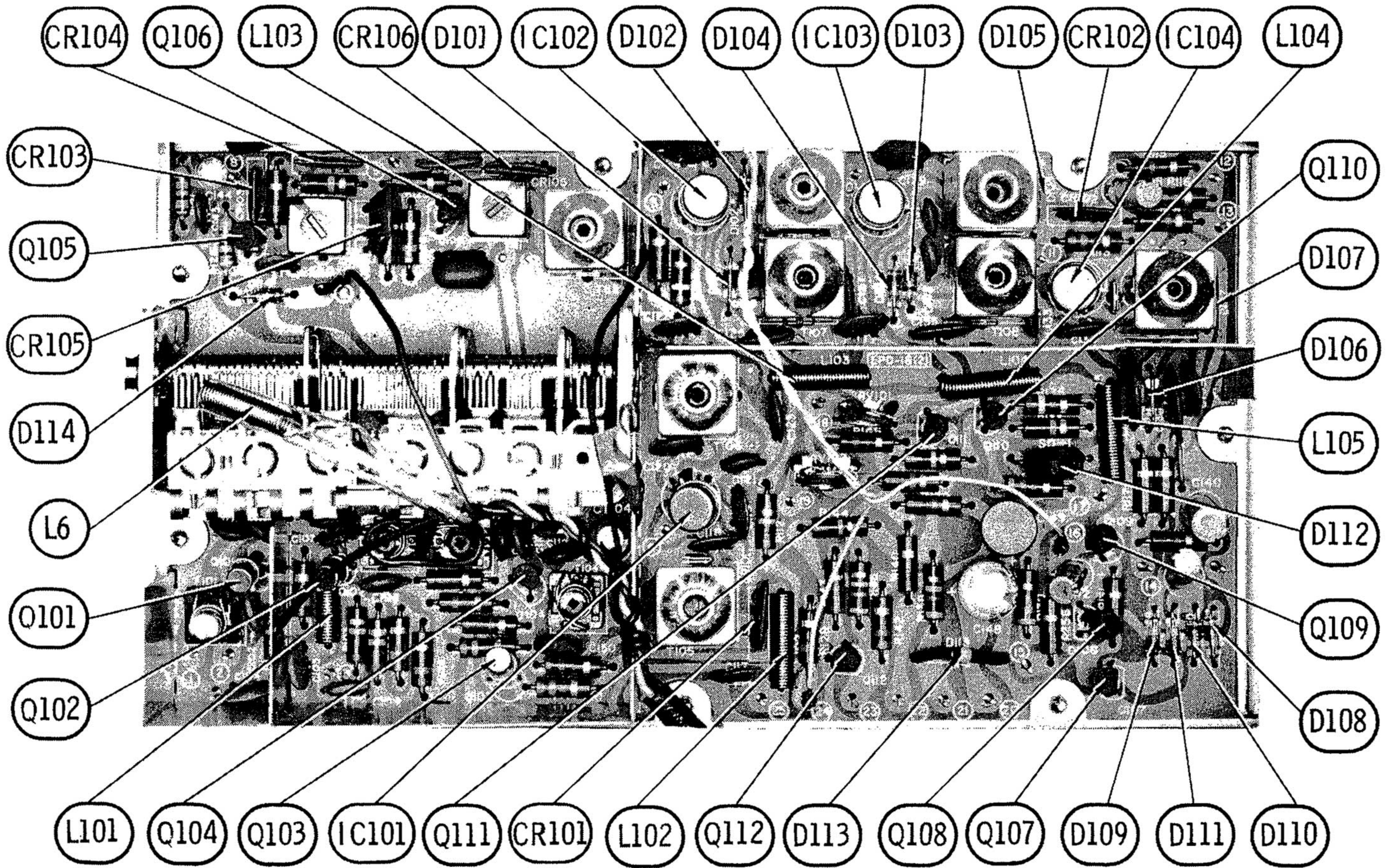


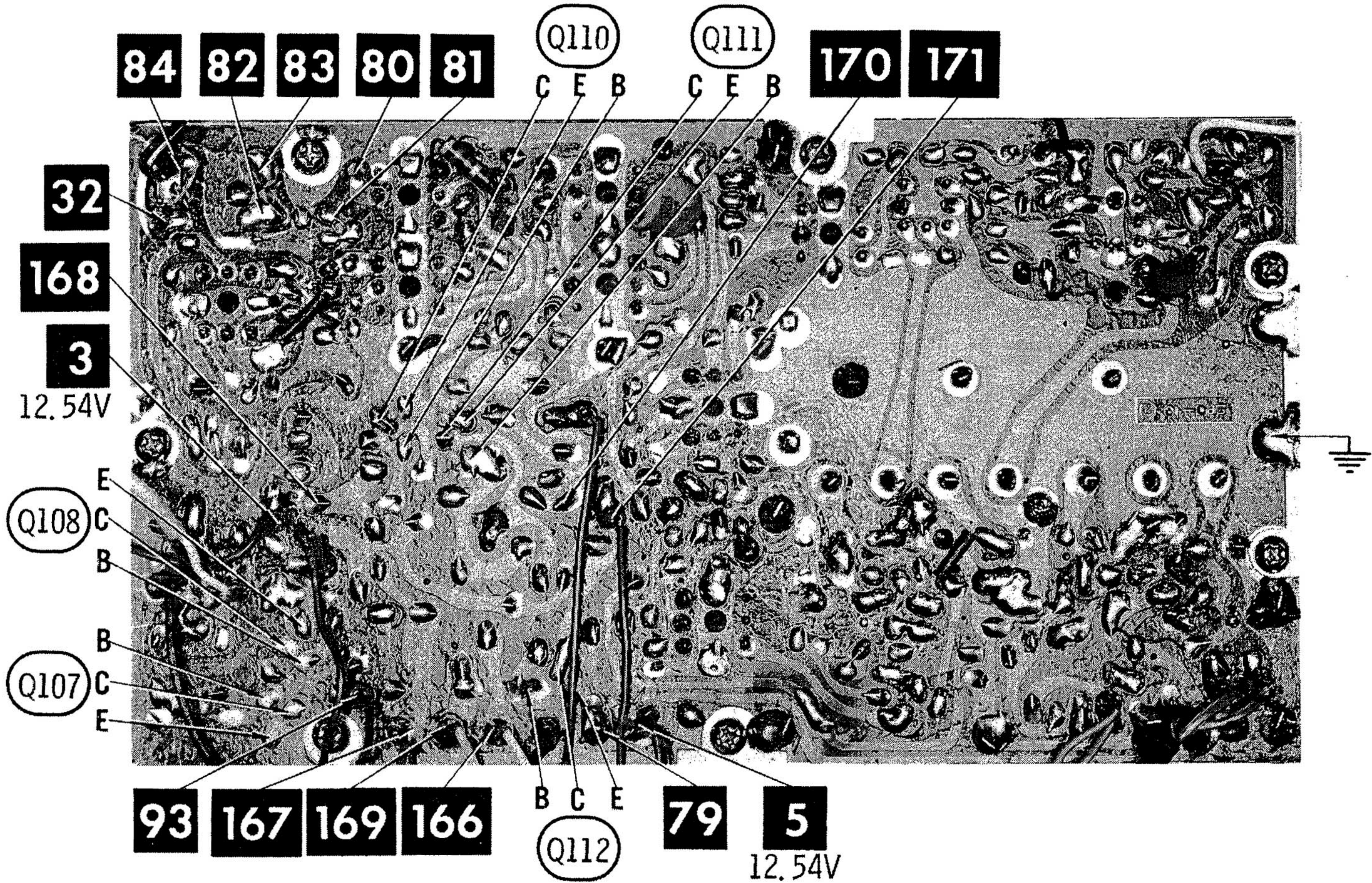


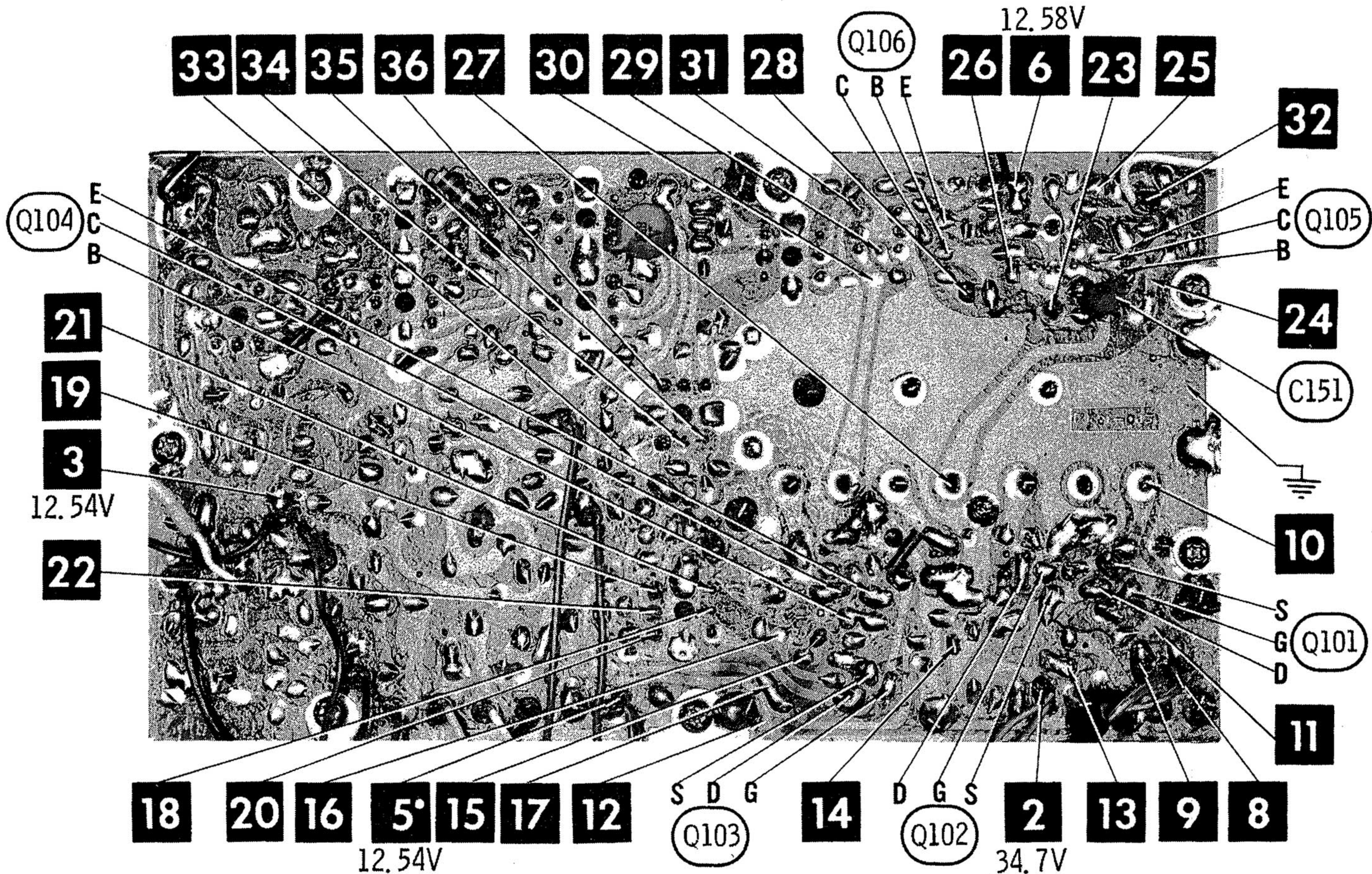












70 71 66 68 60 (R148) 63 52 50 47 49 (C130) 43 40 44

69

72

73

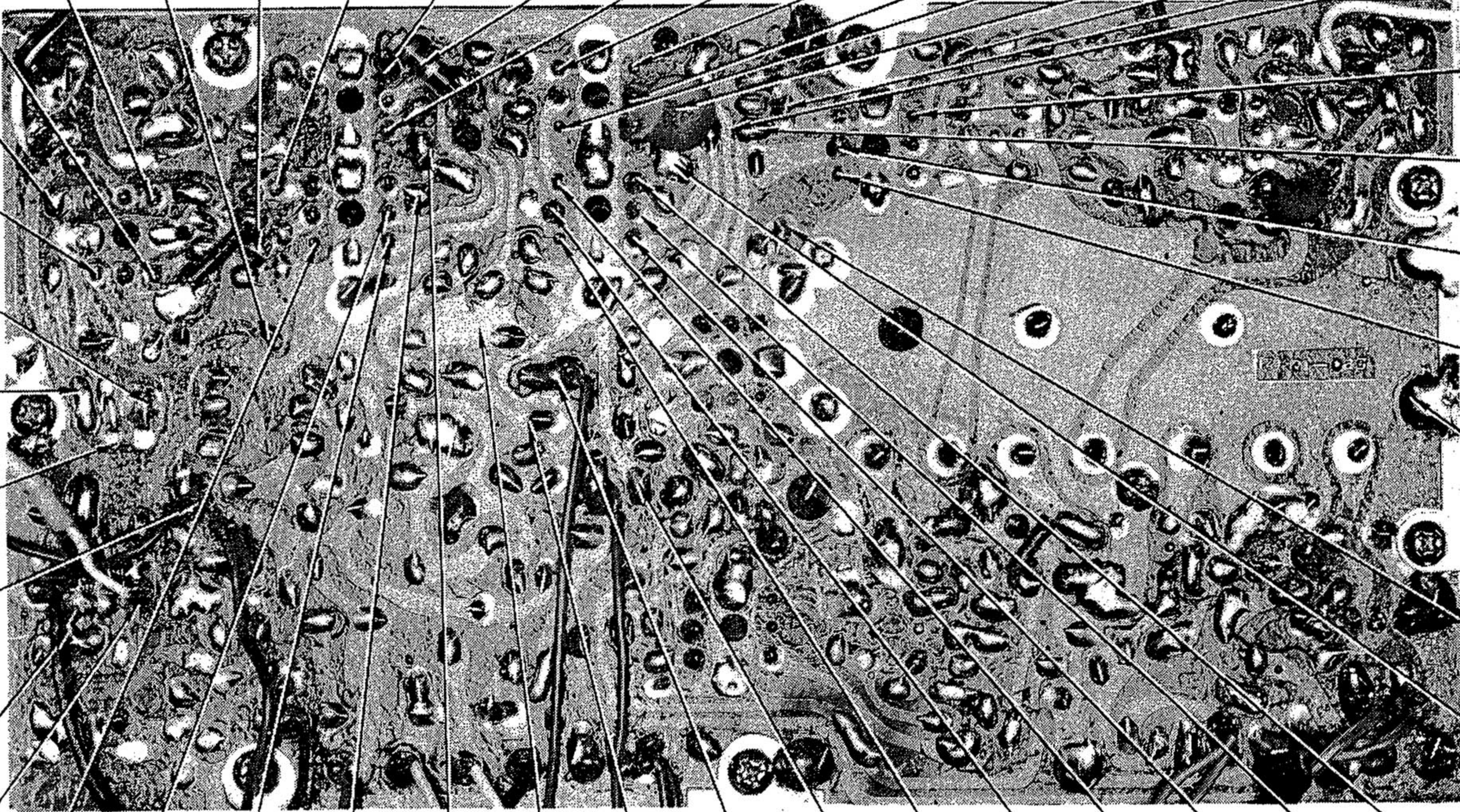
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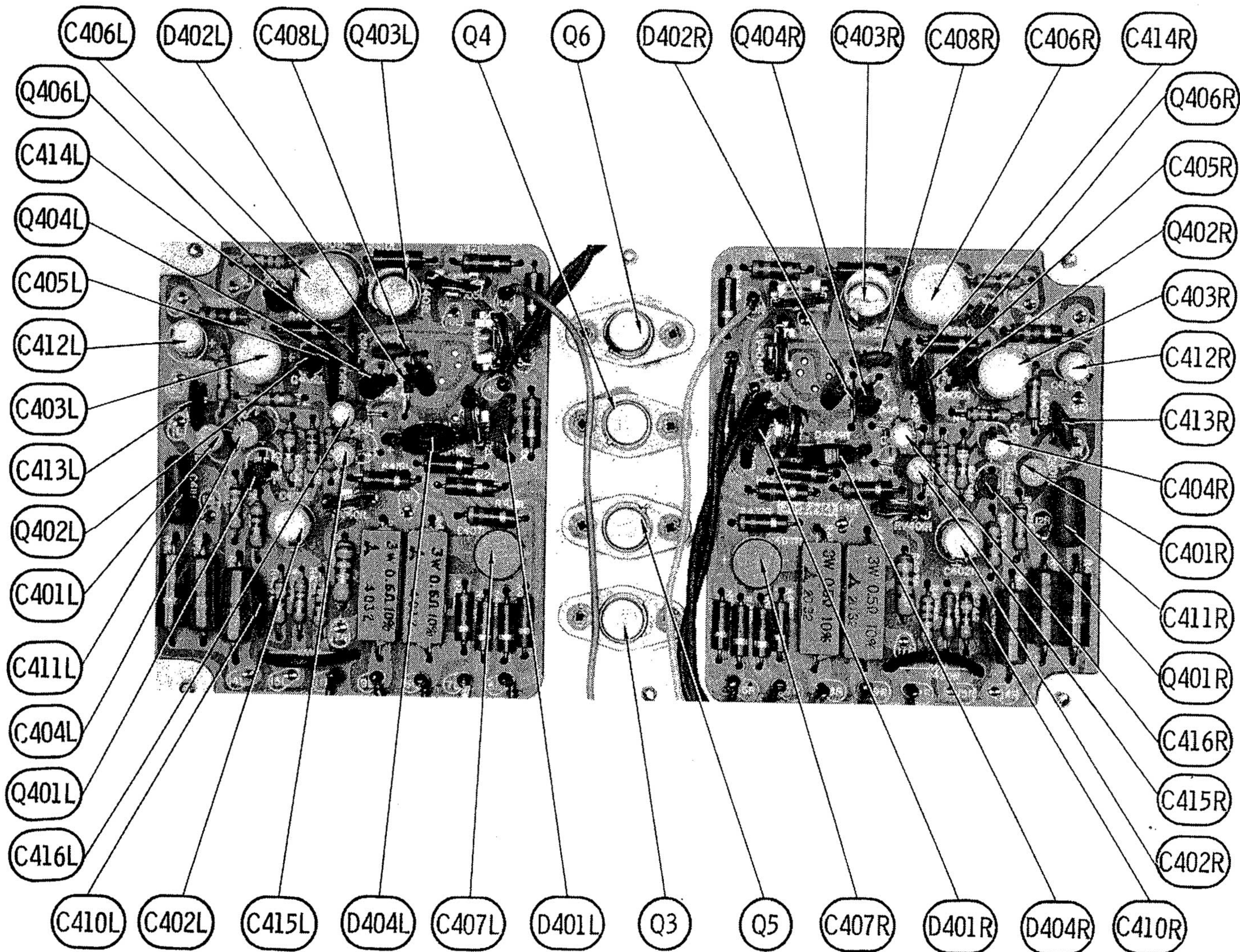
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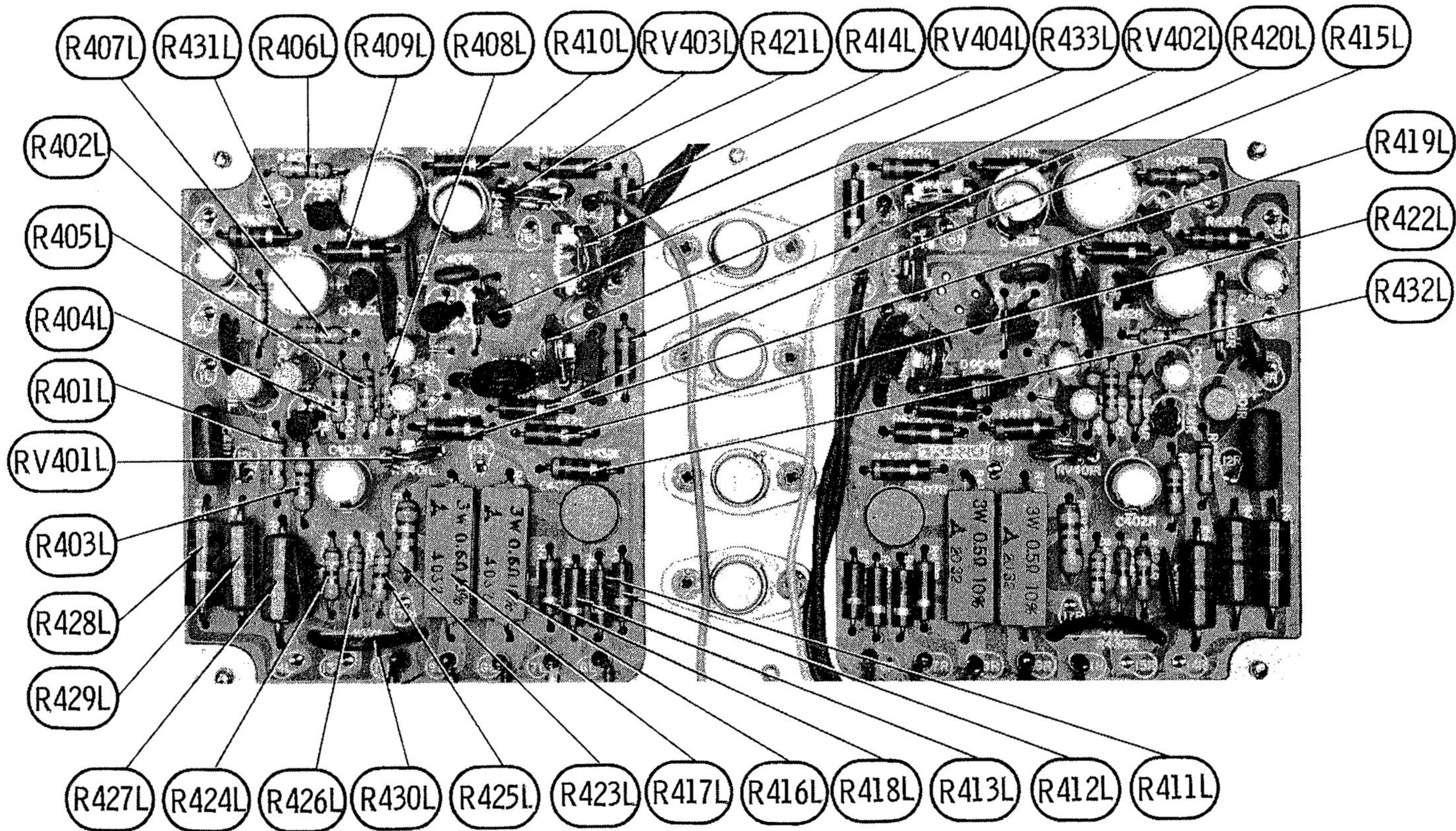
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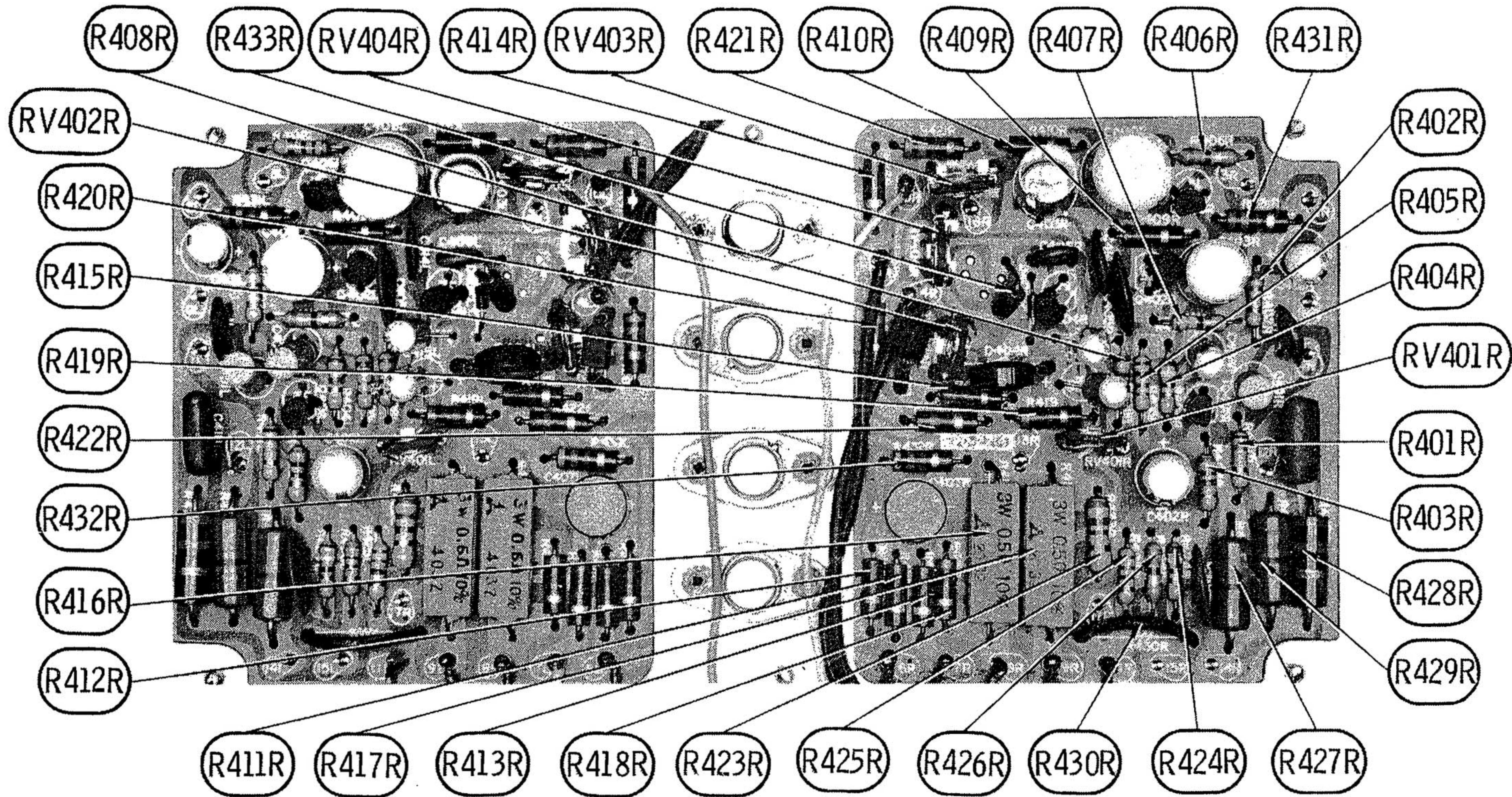
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12.54V

76 59 61 58 67 62 57 64 65 56 46 53 51 45 48 54







12.54V

166

3

182

184

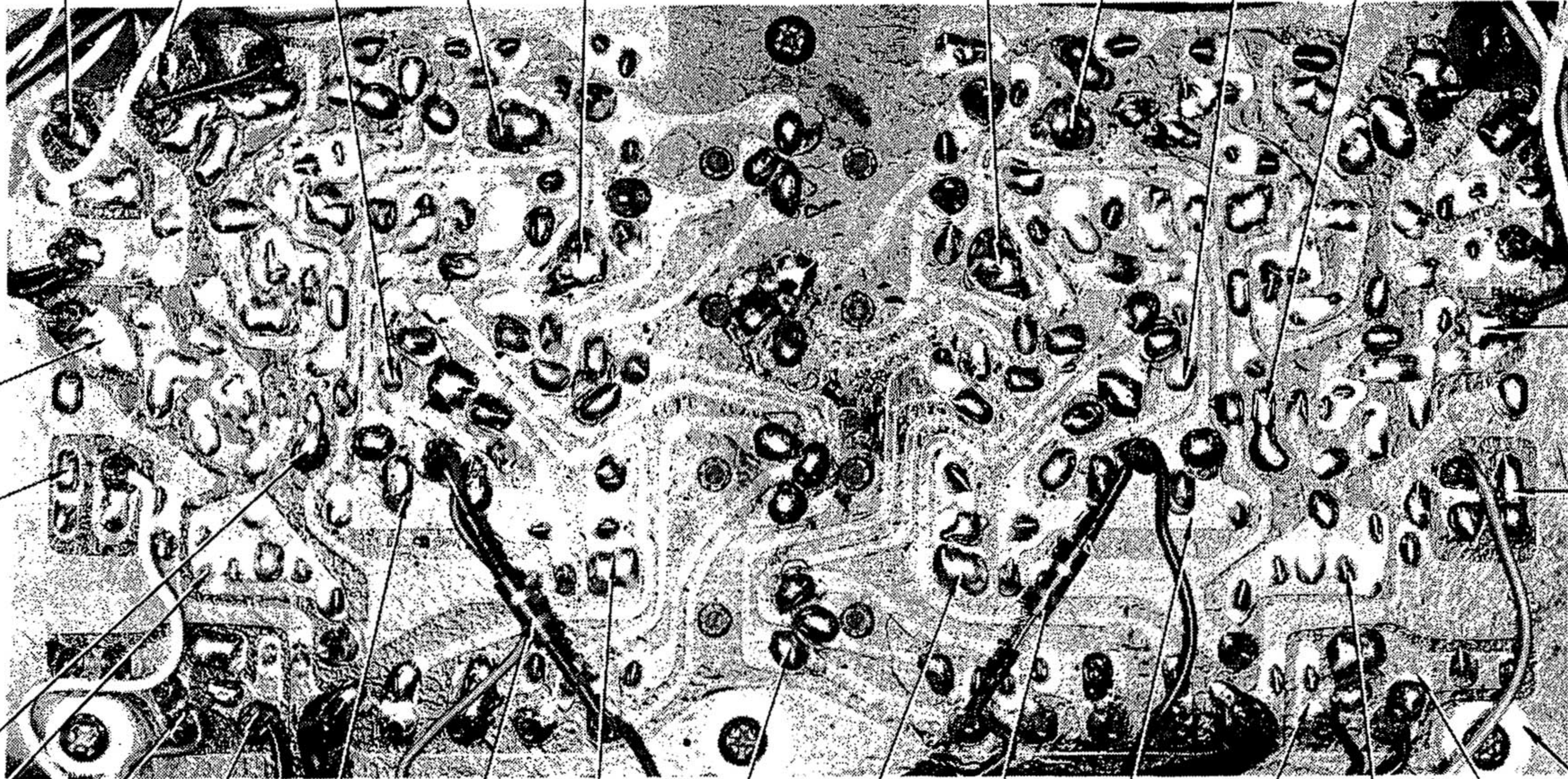
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R434R

183

1

173

R434L

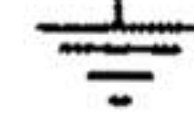
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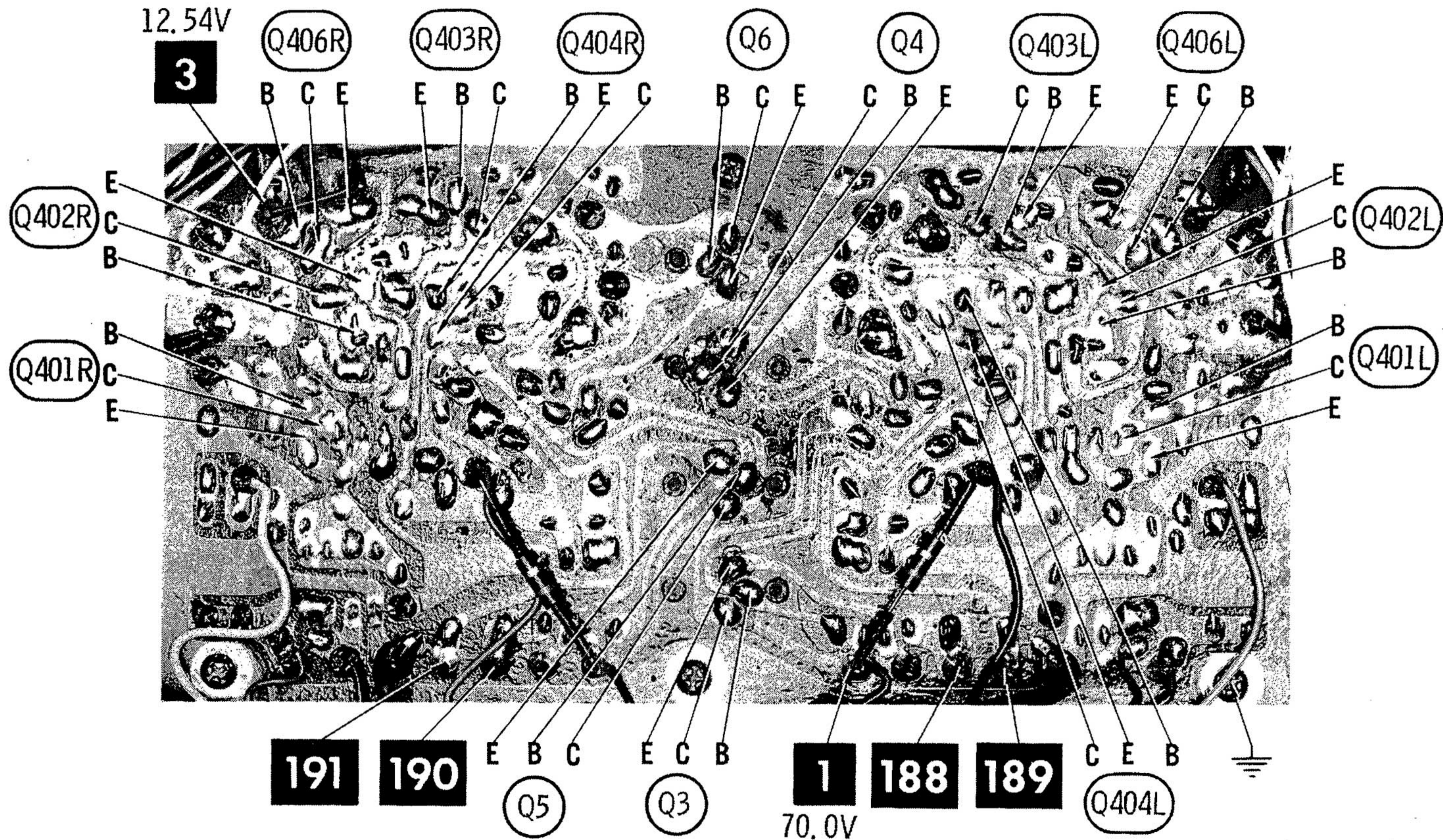
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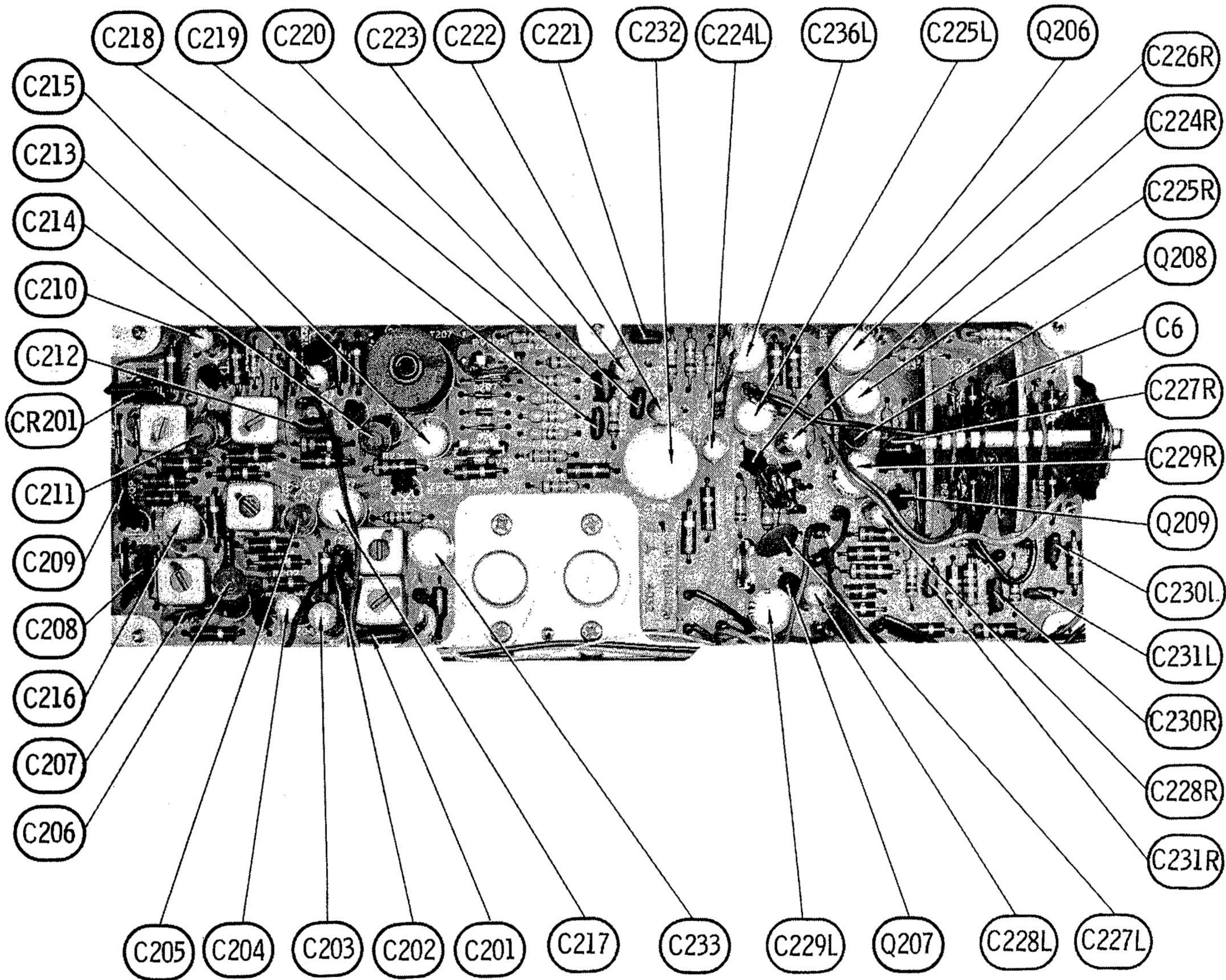
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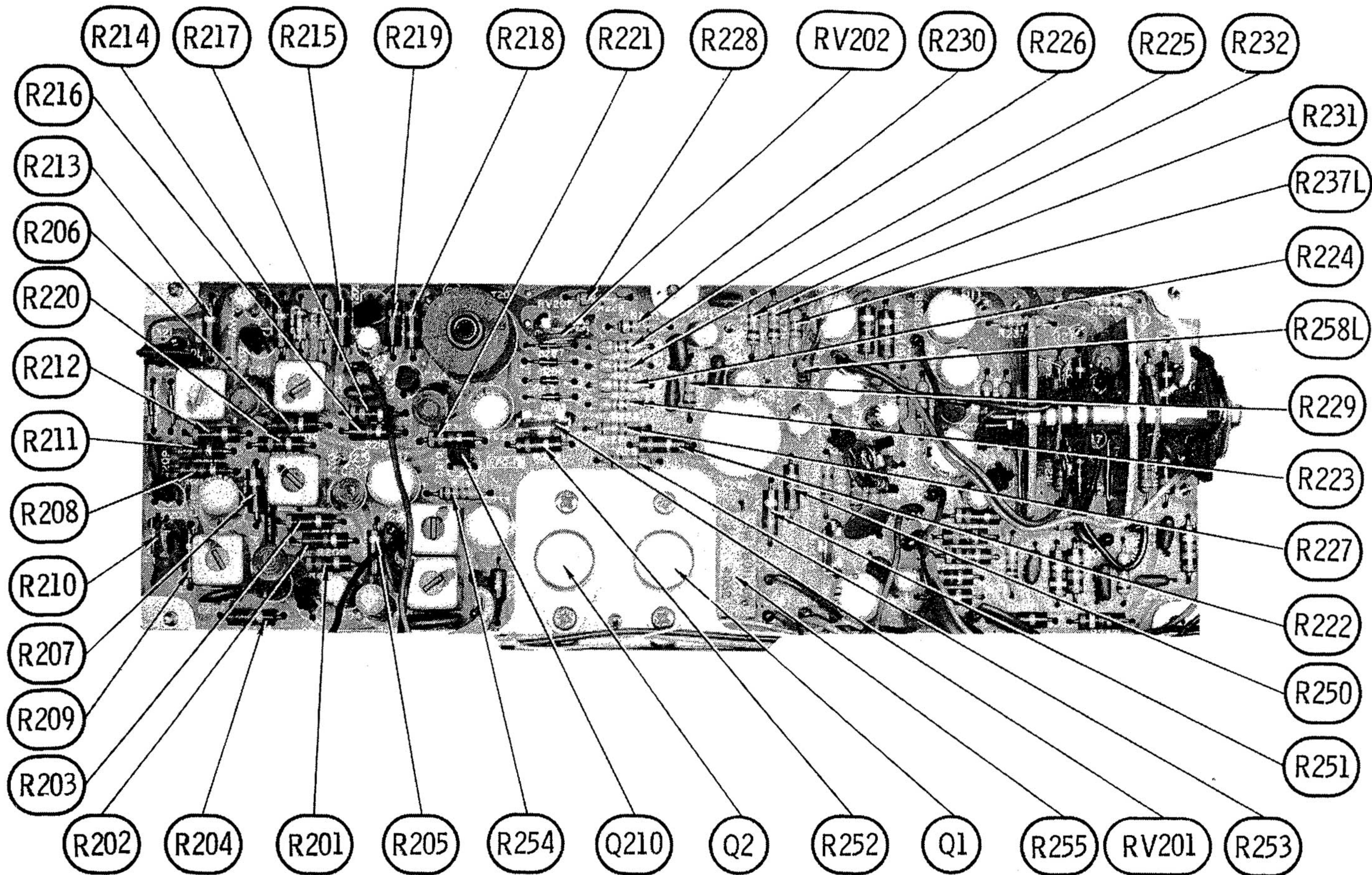
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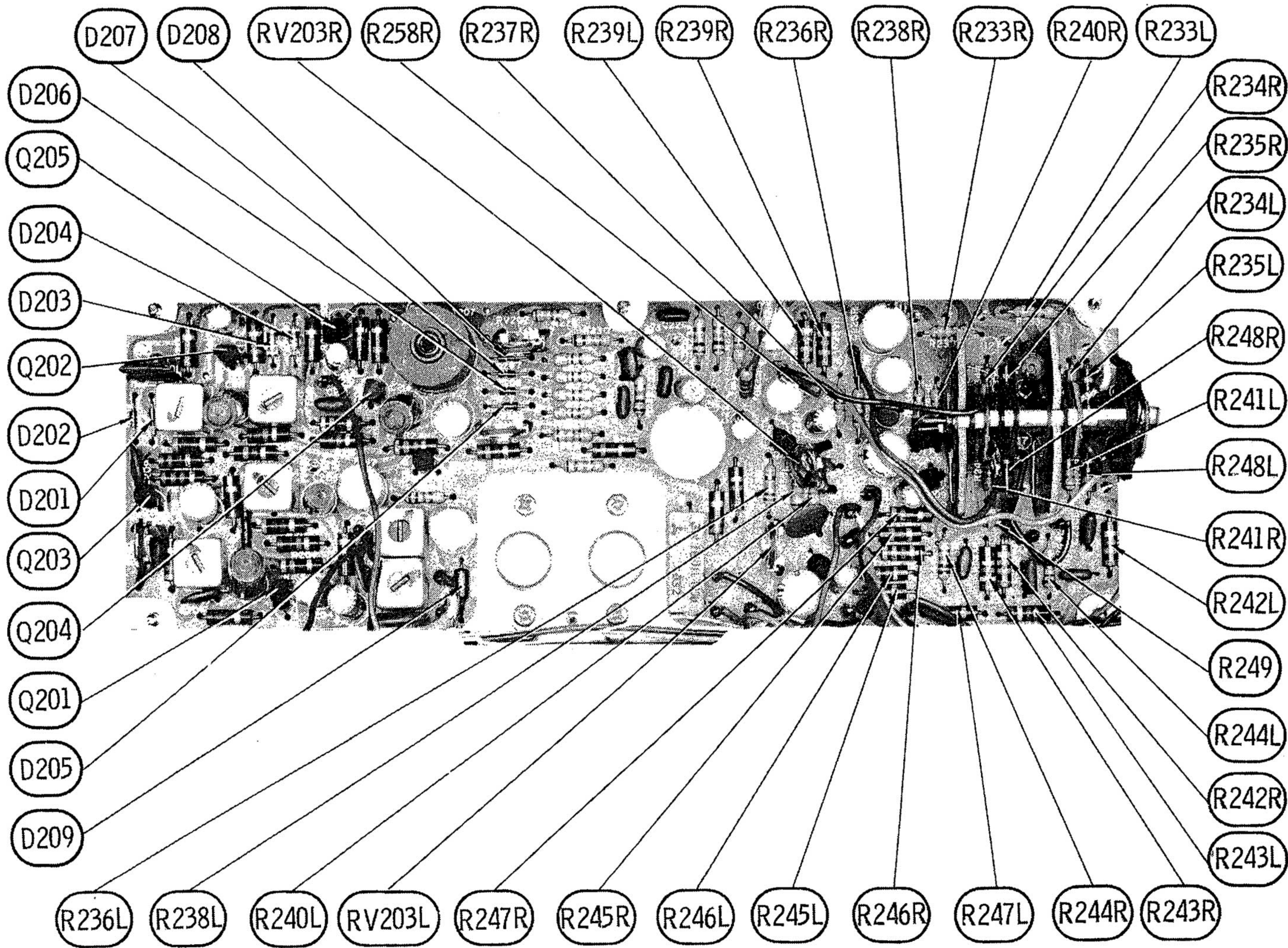
70.0V

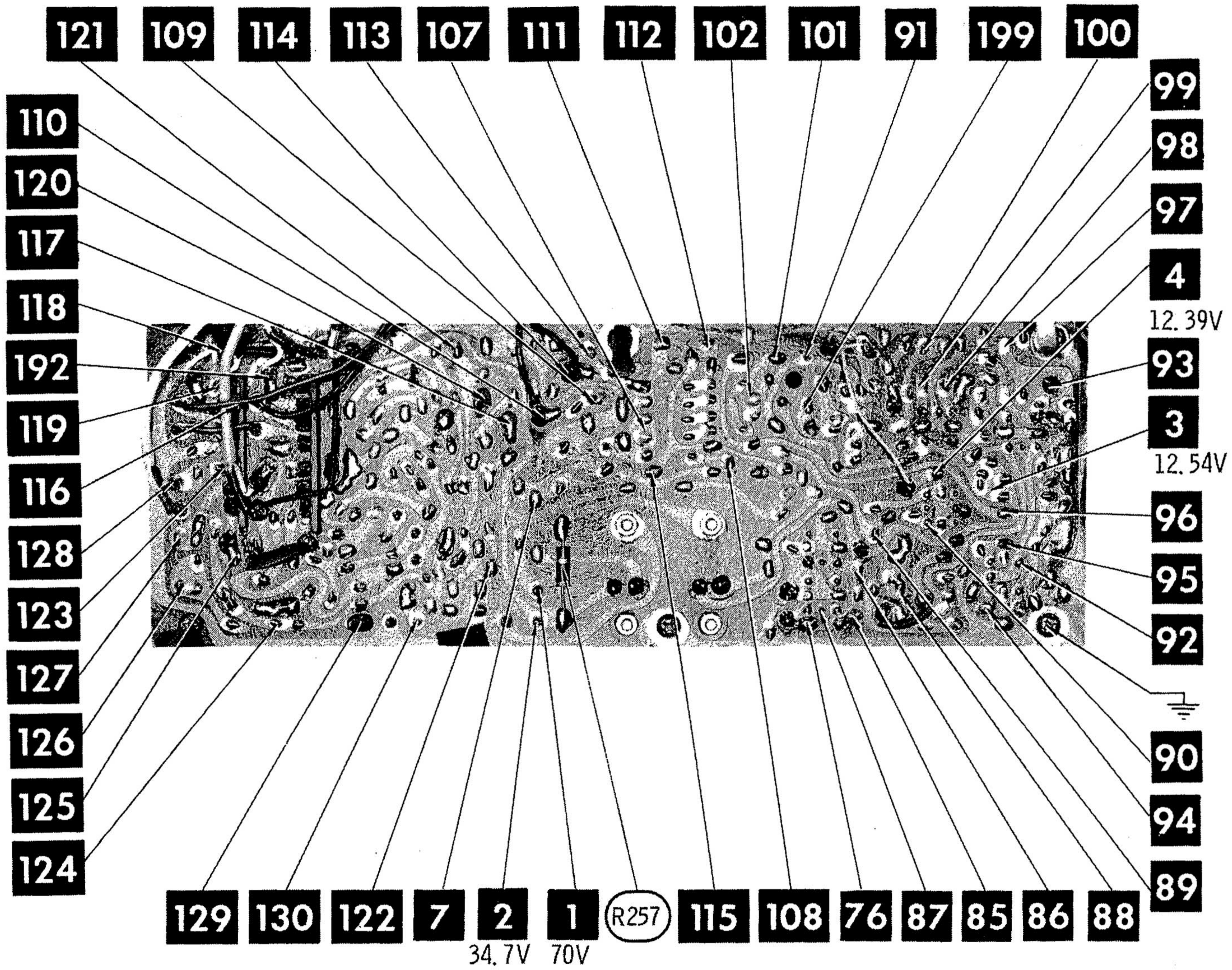


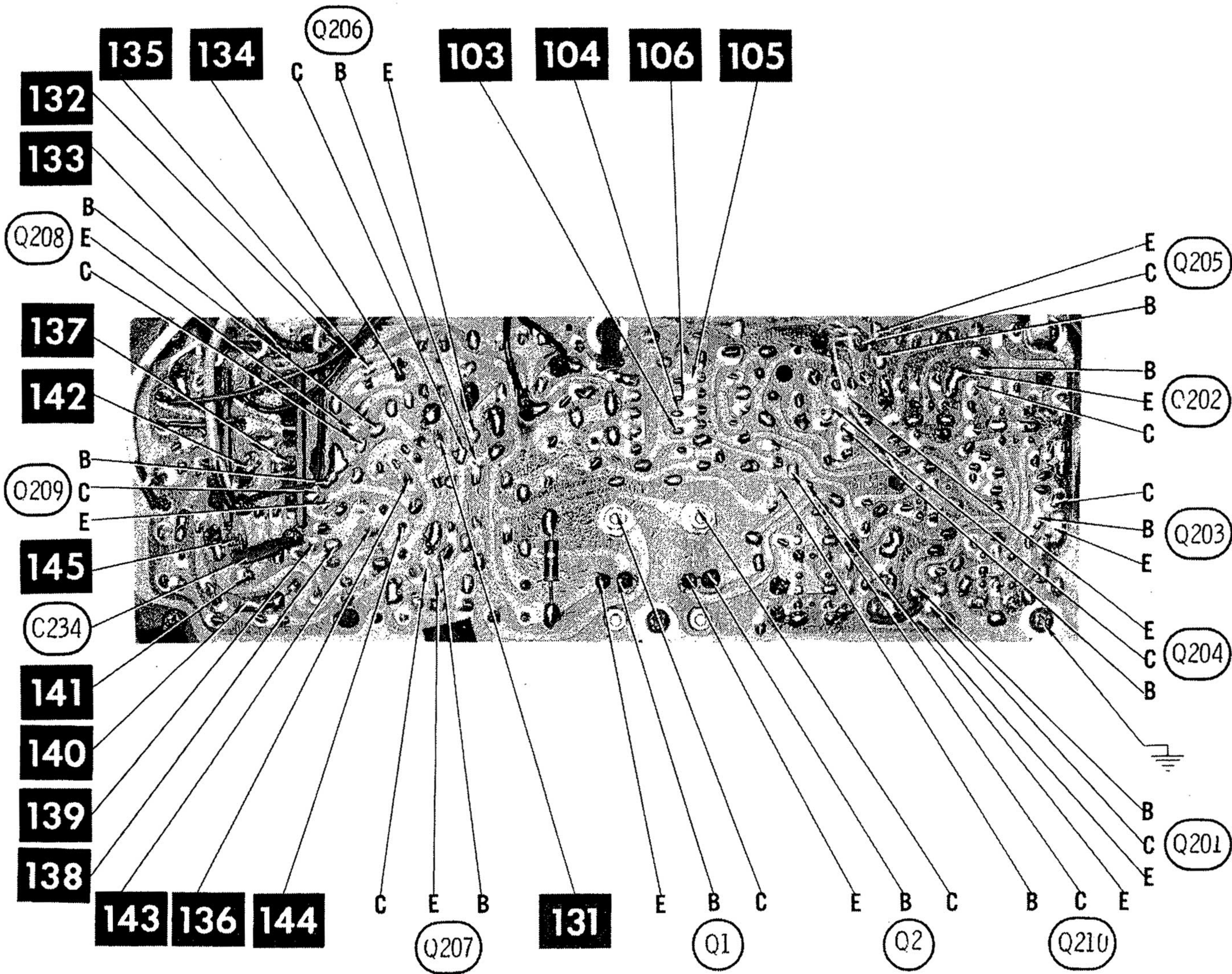


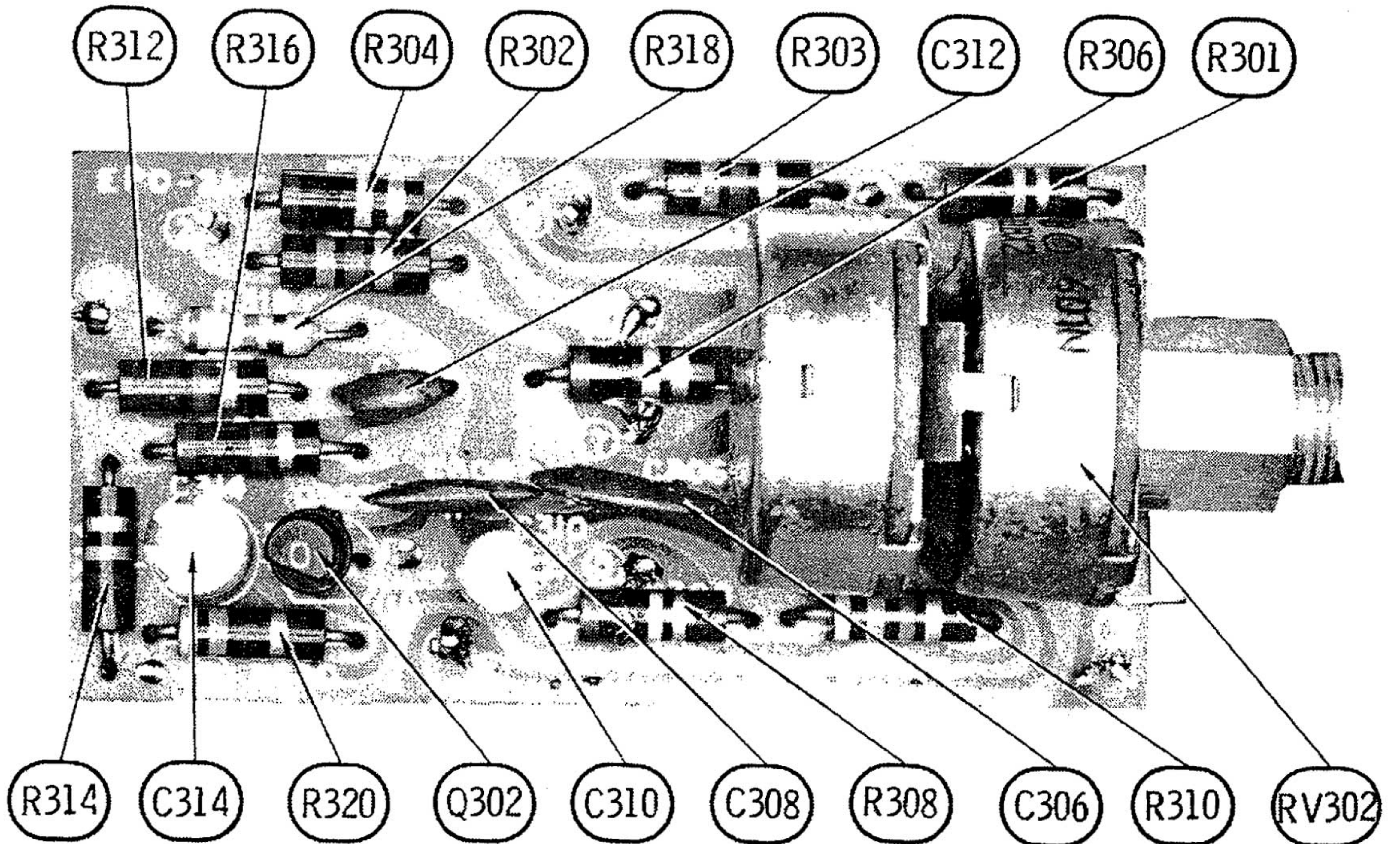
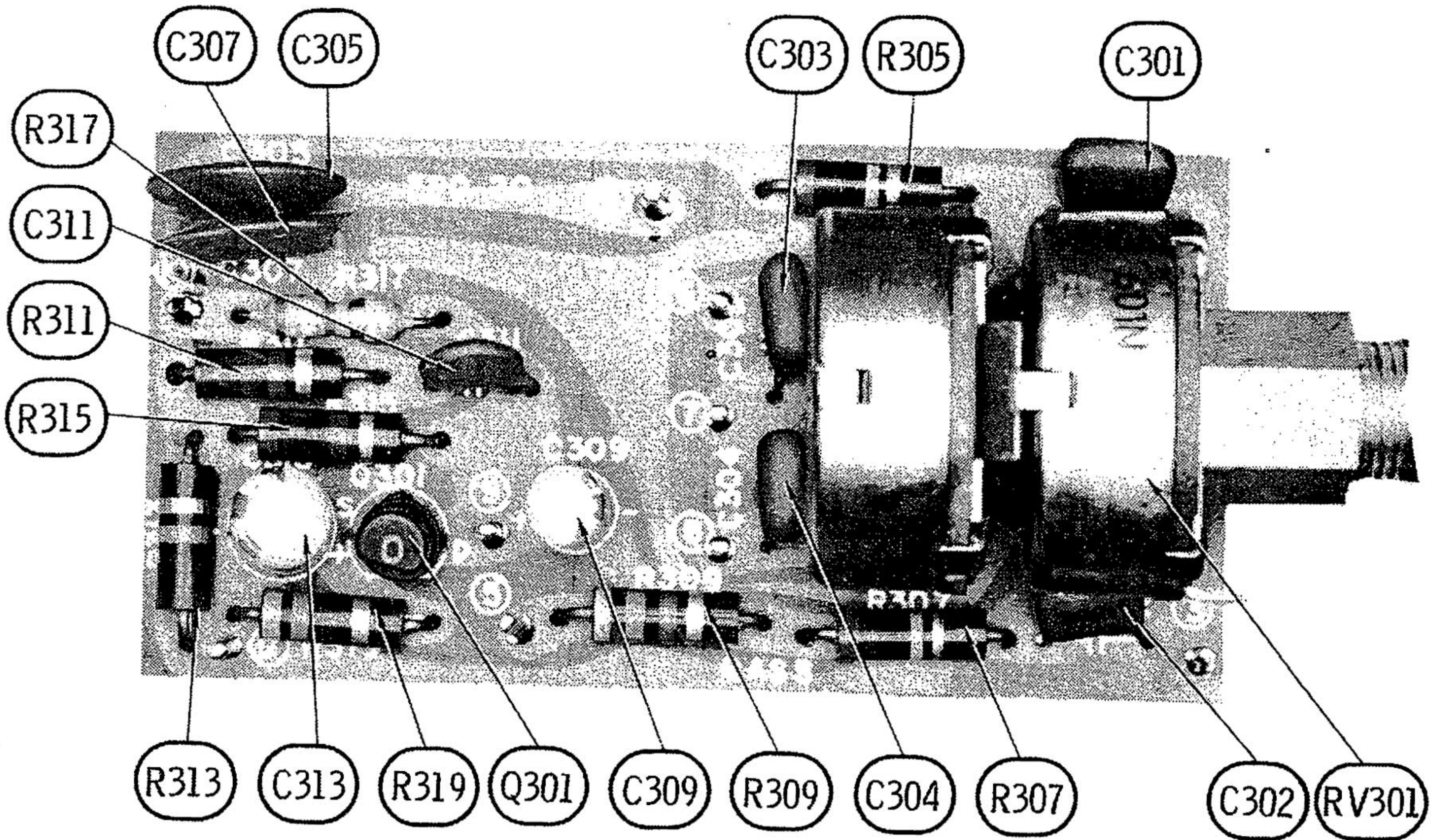




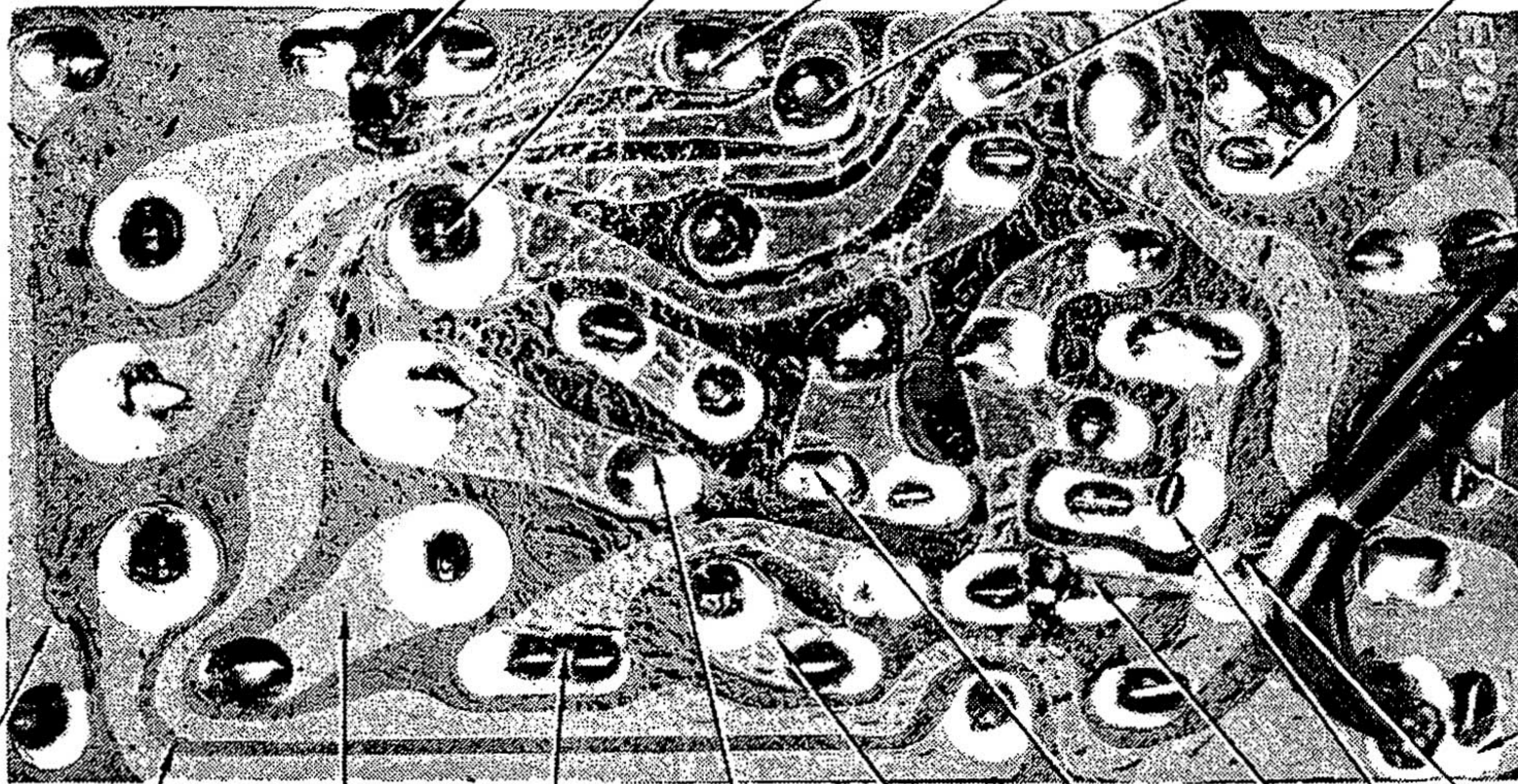








146 193 148 163 156 155



2  
34.7V

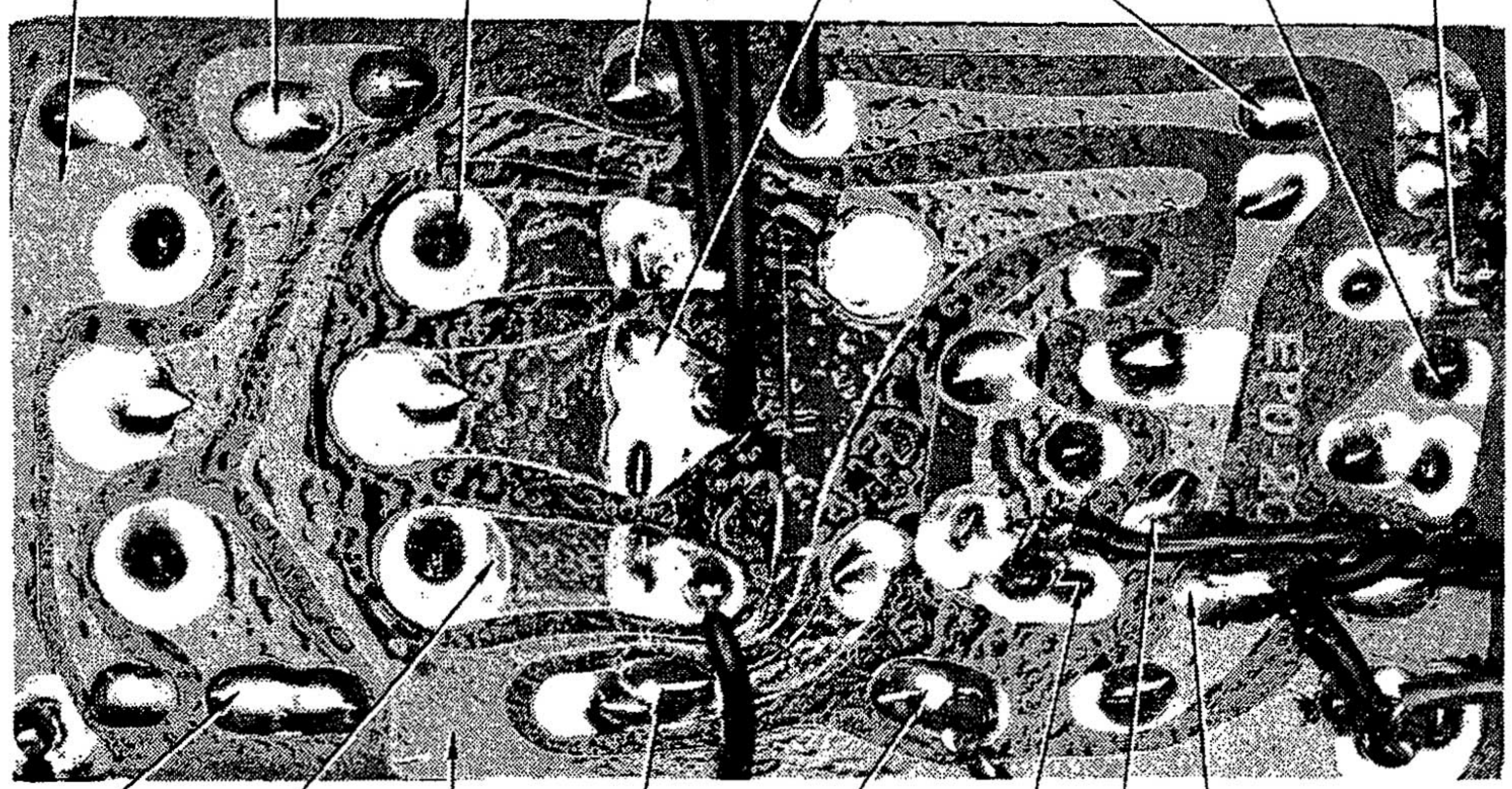
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147 150 158 159 164 157 161

D G S  
Q302

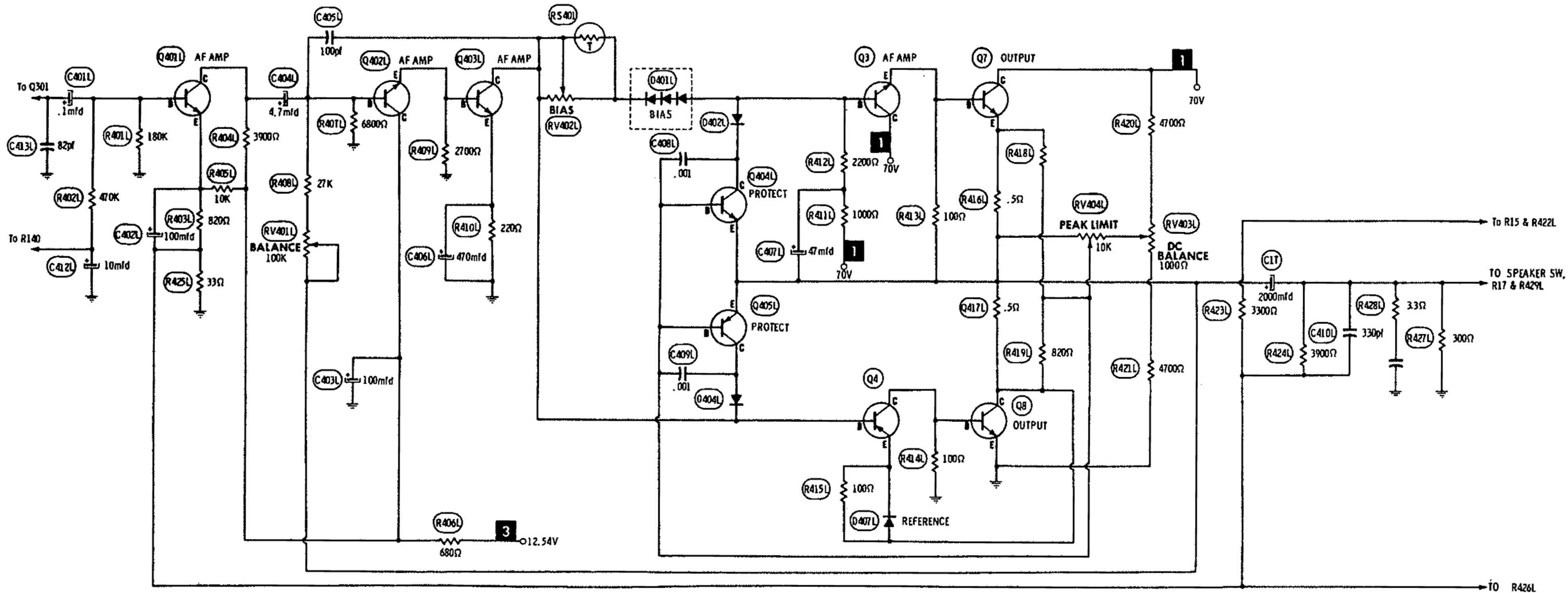
34.7V

147 152 156 153 160 164 154 2



149 157 151 150

D G S  
Q301



ALTERNATE POWER AMP MAY BE USED IN SOME VERSIONS  
 LEFT CHANNEL SHOWN RIGHT CHANNEL IDENTICAL

TO R426L

## ALIGNMENT INSTRUCTIONS

**CAUTION:** Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 117VAC. Allow a 15-minute warm-up period. Use only enough generator output to obtain a suitable indication.

Suggested Alignment Tools:

A1 thru A5 .....	GENERAL CEMENT: #9296, 9297, 9300
A6 thru A9, A20 thru A23, A28 thru A32, A34 .....	#8868, 8987, 9089
A10 thru A19, A24 thru A27, A33 .....	#9440

### AM ALIGNMENT—SELECTOR IN AM POSITION

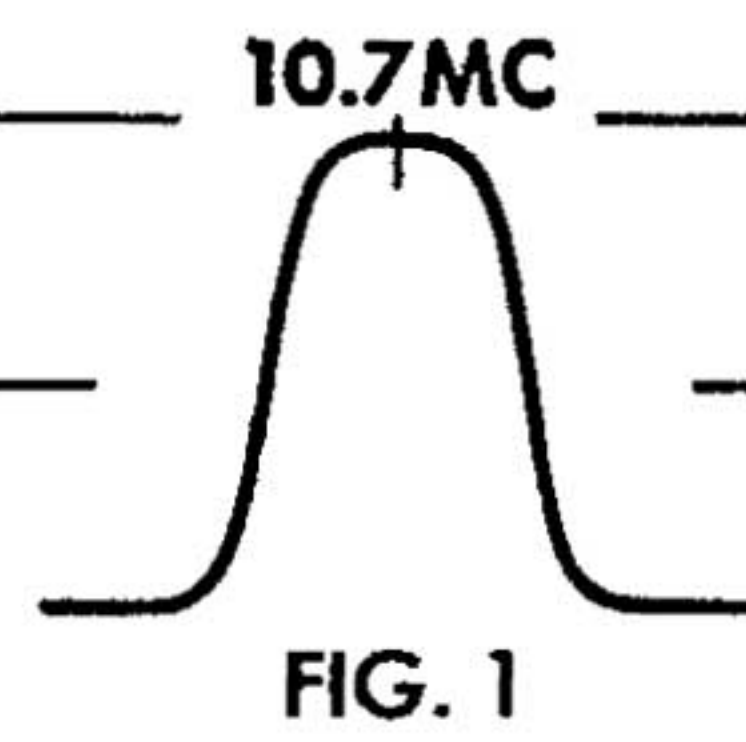
Connect generator across loop fashioned of several turns of wire. Set volume at maximum.

#	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	455KC 400 cycle modulation	Tuning gang fully open.	Output Meter across voice coil.	A1 Thru A5	Adjust for maximum. Repeat until no further improvement can be made.
2.	1650KC	"	"	A6	Adjust for maximum.
3.	1400KC	Tune to signal	"	A7,A8	"
4.	600KC	"	"	A9, A10	Rock tuning gang and adjust for maximum. Repeat steps 2 thru 4 until no further improvement can be made.

### FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001mfd to point  $\diamond B$ , low side to ground.

#	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
5.	10.7MC Unmodulated	Point of non-interference	DC probe of VTVM to point $\diamond C$ , common to ground.	A12 Thru A19	Adjust for maximum.
6.	"	"	DC probe of VTVM to point $\diamond D$ , common to ground.	A20	Adjust for zero reading. A positive or negative reading will be obtained on either side of the correct setting.



### FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

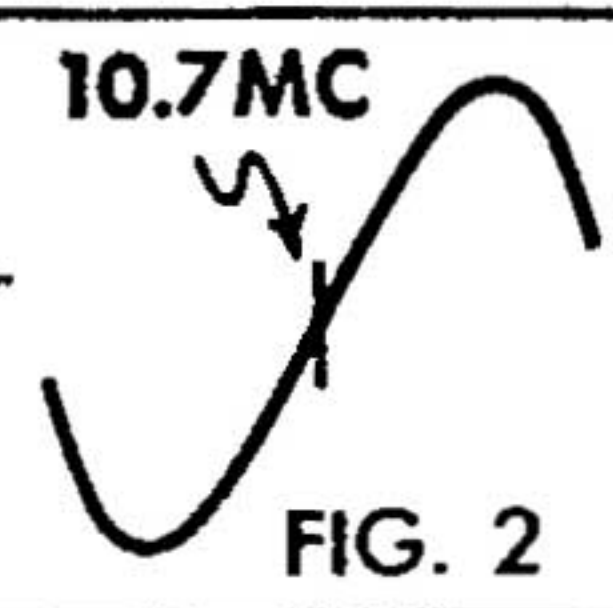
High side of generator thru .001mfd to point  $\diamond B$ , low side to ground. Use only enough marker signal for indication. Use 60 cycle frequency modulated signal with 450KC sweep. Use 60 cycle sawtooth voltage in scope for horizontal deflection.

#	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
5.	10.7MC 450KC Sweep	Point of non-interference	Vert. amp of scope to point $\diamond C$ , low side to ground.	A12 Thru A19	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
6.	"	"	Vert. amp of scope to point $\diamond D$ , low side to ground.	A20	Adjust A20 (secondary) to place marker at center of "S" curve similar to Fig. 2. Adjust A11 (primary) for maximum amplitude and straightness of line.

### FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead.

#	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
7.	108.5MC	High freq. end	DC probe of VTVM to point $\diamond C$ , common to ground.	A21 Thru A24	Adjust for maximum.
8.	90MC Unmodulated	Tune to signal.	"	A25 Thru A28	Rock tuning and adjust for maximum. Repeat steps 7 and 8 until no further improvement can be made.



## ALIGNMENT INSTRUCTIONS (Continued)

### FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ( $\pm .0001\%$ ACCURACY)

High side of generator thru 47K to point $\diamond D$ , low side to ground.			
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
9. 67KC	Vert. amp of scope thru 47K to point $\diamond F$ , low side to ground.	A29, A30	Adjust for MINIMUM
10. 19KC	Vert. amp of scope thru 47K to point $\diamond G$ , low side to ground.	A31,A32, A33	Adjust for maximum.
11. "	Vert. amp of scope thru 47K to point $\diamond H$ , low side to ground.	A34	Adjust for maximum 38KC response.
12. Modulated Left Channel	Vert. amp of scope to point $\diamond J$ , low side to ground.	A31 thru A34,RV201 RV202	Adjust for MINIMUM. This step should require only slight adjustment.
13. Modulated Right Channel	Vert. amp of scope to point $\diamond K$ , low side to ground		Check for MINIMUM. If necessary make compromise adjustment of A31 thru A34, RV201 & RV202.

## MISCELLANEOUS ADJUSTMENTS

NOTE: For adjustment of L11 refer to Step 6 of FM IF Alignment using FM Signal Generator.

#### THRESHOLD CONTROL ADJUST (A35, R210)

Tune receiver to a weak stereo station and adjust A35 for maximum stereo indicator lamp intensity. Tune across dial noting operation of stereo indicator lamp and adjust R210 until lamp glows on weak stereo stations but does not glow on noise pulses.

#### TUNING METER ADJUST (RV101)

Tune receiver to strongest FM station in area and adjust RV101 for a tuning meter indication of 10.

#### MUTE SENSITIVITY CONTROL ADJUST (RV102)

Tune across dial (with Mute switch On) noting operation of off-station muting. Adjust RV102 until receiver is quiet between stations and audio switches on for weakest desired station.

#### PREAMP BALANCE CONTROL ADJUST (RV203L, RV203R)

Connect Vertical amp of scope to Left Channel Tape Record jack, low side to ground. Set selector switch to Aux and apply a 1,000-cycle signal to Left Aux Input jack. Increase audio generator output level until clipping just occurs. Adjust RV203L for symmetrical clipping as shown in Fig. 3. Repeat procedure for right channel, adjusting RV203R.

#### OUTPUT BALANCE CONTROL ADJUST (RV401L, RV401R)

Adjust RV401L and RV401R for one-half the output transistor supply voltage at Test Points 17L and 17R respectively.

#### IDLE CURRENT ADJUST (RV402L, RV402R)

Adjust RV402L and RV402R for 30ma idle current at emitters of Q8 and Q10 respectively.

#### OVERLOAD PROTECTION ADJUST (RV403L/R, RV404L/R)

Connect a DC voltmeter between Test Points 16L and 13L. Adjust RV403L for zero voltmeter reading. Repeat procedure for right channel, adjusting RV403R for zero volts between Test Points 16R and 13R.

Connect an 8 ohm 50W load resistor across left channel output. Connect scope across load resistor. Set Selector switch to Phono and apply a 1,000-cycle signal to Left Phono Input jack. Set Left Volume control to maximum and increase audio generator output level until output waveform just begins to clip. Disconnect scope and connect between Test Points 17L and 13L. Adjust RV404L for minimum (null) on scope. Repeat procedure for right channel, adjusting RV404R for minimum (null) between Test Points 17R and 13R.

# PARTS LIST AND DESCRIPTION

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

## WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Power Cord .....	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft. 17109 (Plastic) or 17129 (Rubber) - 9 Ft.
Low-loss Shielded Lead (Interconnecting) .....	Use BELDEN No. 8401 or 8421

## TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA					
			MFGR. PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SD238	Voltage Regulator				HEP241		
Q2	2SD236	Voltage Regulator				HEP703		
Q3	2SC485	AF Amp		GE-18	TR-25	HEP713	SK3024	ECG 128
Q4	2SA485	AF Amp			TR-28	HEP242	SK3025	ECG 129
Q5	2SC485	AF Amp		GE-18	TR-25	HEP713	SK3024	ECG 128
Q6	2SA485	AF Amp			TR-28	HEP242	SK3025	ECG 129
Q7	DF-2	Output		GE-15		HEP247	SK3029	ECG 130
Q8	DF-2	Output		GE-15		HEP247	SK3029	ECG 130
Q9	DF-2	Output		GE-15		HEP247	SK3029	ECG 130
Q10	DF-2	Output		GE-15		HEP247	SK3029	ECG 130
Q101	MPF107	FM RF Amp		GE-FET-1	TRFE-100	HEP802		ECG 132
Q102	MPF107	FM RF Amp		GE-FET-1	TRFE-100	HEP802		ECG 132
Q103	MPF107	FM Mixer		GE-FET-1	TRFE-100	HEP802		ECG 132
Q104	2SC829(B)	FM Oscillator		GE-17	TR-22	HEP50	SK3018	ECG 107
Q105	2SC829(C)	AM RF Amp		GE-17	TR-22	HEP50	SK3018	ECG 107
Q106	2SC828(O)	AM Converter	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q107	2SC828(P)	Indicator Switch	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q108	2SA564(P)	Indicator Switch		GE-21	TR-19	HEP57	SK3025	ECG 159
Q109	2SC828(S)	Indicator Control	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q110	2SC828(O)	Switch	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q111	2SC828(O)	Trigger	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q112	2SC828(O)	Trigger	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q201	2SC829(C)	Mono Preamp-MPX Input Amp		GE-17	TR-22	HEP50	SK3018	ECG 107
Q202	2SC828(P)	19KC Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q203	2SC828(P)	Noise Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q204	2SC828(O)	38KC Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q205	2SC828(S)	MPX Switch	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q206	2SC644(S)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q207	2SC644(T)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q208	2SC644(S)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q209	2SC644(T)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q210	2SC828A(S)	Error Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q301	2SK30(O) (2SK17)	AF Amp				HEP801		ECG 133
Q302	2SK30(O) (2SK17)	AF Amp				HEP801		ECG 133
Q401L	2SC644(T)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q401R	2SC644(T)	AF Amp		GE-18	TR-25	HEP55	SK3020	ECG 108
Q402L	2SC828(S)	AF Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q402R	2SC828(S)	AF Amp	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q403L	2SD221	AF Amp				HEP714		
Q403R	2SD221	AF Amp				HEP714		
Q404L	2SC828(S)	Protection	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q404R	2SC828(S)	Protection	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q406L	2SC828(P)	Squelch	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A
Q406R	2SC828(P)	Squelch	1751-17	GE-10	TR-21	HEP55	SK3020	ECG 123A

## POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT DATA				NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SYLVANIA PART No.	
D1	5B3	GE504A (1)	8D4 or 5A4-D (1)	SK3D30 (1) or SK3031 (1)	ECG 166	(1) 4 Required.
D101	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D102	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D103	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D104	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D105	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D106	1012-17 (1S446)	1N60	1N60	1N60	ECG 110 (6)	(6) Matched pair.
D107	1012-17 (1S446)	1N60	1N60	1N60		
D108	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D109	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D110	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D111	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D112		GE-504A	8D4 or 5A4D	SK3030 or SK3031	ECG 116 or ECG 117	
D113	V06C	GE-504A	8D4 or 5A40	SK3030 or SK3031	ECG 116 or ECG 117	
D114	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D201	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### POWER RECTIFIERS & SIGNAL DIODES (cont)

ITEM No.	MFR. PART OR TYPE No.	REPLACEMENT DATA				NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	RCA PART No.	SYLVANIA PART No.	
D202	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	Zener
D203	1012-17 (1S446)	1N60	1N60	1N60	ECG 110 (6)	
D204	1012-17 (1S446)	1N60	1N60	1N60		
D205	1S1555	1N34AS	1N34A	1N34A	ECG 110 (6)	
D206	1S1555	1N34AS	1N34A	1N34A		
D207	1S1555	1N34AS	1N34A	1N34A	ECG 110 (6)	
D208	1S1555	1N34AS	1N34A	1N34A		
D209	RD-13A					
D401L	SV03					
D401R	SV03					
D402L	SV03					
D402R	SV03					
D404L	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	
D404R	1012-17 (1S446)	1N60	1N60	1N60	ECG 109	

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		LAFAYETTE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	5000 70V	1932-12 (ECE-M70R5000E)						TVL-1295 (3)
C17	2000 50V	1931-12 (ECE-M50R2000E)	AF113-03-70(1) (3)			CC0014A (1)(3)	FP070A (3)	TVL-2335.4(2)(3)
C18	200D 50V	1931-12 (ECE-M50R2000E)	AF113-03-70(1) (3)			CC0014A (1)(3)	FP070A (3)	TVL-2335.4(2)(3)
C22	47 50V		MCD-140	EP50-50	WBR60-50	MT1-17	MTV50DB50	TE-1307
C136	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C140	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C141	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C142	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C144	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C148	47 50V		MCD-140	EP50-50	WBR60-50	MT1-17	MTV50DB50	TE-1307
C149	10 50V		MCD-70	EP50-10	WBR10-50	MT1-6	MTV10CB50	TE-1304
C203	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C204	33 10V		MCD-110	EP15-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1132.1
C210	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C213	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C215	47 16V		MCD-130	EP15-50	WBR50-25	MT1-16	MTV50CB15	TE-1160
C216	33 16V		MCD-110	EP15-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1158
C217	100 16V		MCD-180	EP15-100	WBR100-16	MT1-19	MTV100CF15	TE-1162
C222	.1 25V						TAS104K035POA	196D104X0035DB
C223	.1 25V						TAS104K035POA	196D104X0035DB
C224L	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C224R	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C225L	33 16V		MCD-110	EP15-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1158
C225R	33 16V		MCD-110	EP15-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1158
C226L	33 25V		MCD-110	EP30-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1207.5
C226R	33 25V		MCD-110	EP30-25	WBR35-50	MT1-13.5	MTV30CB25	TE-1207.5
C228L	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C228R	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C229L	220 6.3V		MCD-210	EA6-250	WBR250-6	MT1-23	MTV200DB10	TE-1104
C229R	220 6.3V		MCD-210	EA6-250	WBR250-6	MT1-23	MTV200DB10	TE-1104
C232	220 50V		PRS1530	EA50-250	WBR250-50	QT1-27	TC50025A	TL-1312
C233	100 16V		MCD-180	EP15-100	WBR100-16	MT1-19	MTV100CF15	TE-1162
C309	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C310	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C313	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C314	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C401L	.1 25V						TAS104K035POA	196D104X0035DB
C401R	.1 25V						TAS104K035POA	196D104X0035DB
C402L	100 6.3V		MCD-170	EP6-100	WBR100-16	MT1-21	MTV100CB6	TE-1102
C402R	100 6.3V		MCD-170	EP6-100	WBR100-16	MT1-21	MTV100CB6	TE-1102
C403L	100 16V		MCD-180	EP15-100	WBR100-16	MT1-19	MTV100CF15	TE-1162
C403R	100 16V		MCD-180	EP15-100	WBR100-16	MT1-19	MTV100CF15	TE-1162
C404L	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C404R	4.7 25V		MCD-50	EP30-5	WBR5-50	MT1-3	MTV5CB50	TE-1202
C406L	470 10V		PRS1170	EA15-500	WBR500-16	QT1-30A	MTV500DN15	TL-1141
C406R	470 10V		PRS1170	EA15-500	WBR500-16	QT1-30A	MTV500DN15	TL-1141
C407L	10 50V		MCD-70	EP50-10	WBR10-50	MT1-6	MTV10CB50	TE-1304
C407R	10 50V		MCD-70	EP50-10	WBR10-50	MT1-6	MTV10CB50	TE-1304
C412L	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C412R	10 16V		MCD-70	EP15-10	WBR10-25	MT1-5	MTV10CB50	TE-1155
C415L	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C415R	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C416L	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300
C416R	1 50V		MCD-10	EP50-2	WBR1-50	MT1-1	MTV1CB50	TE-1300

(1) Parallel 3 sec. unit.

(2) Parallel 2 sec. unit.

(3) Use insulated sleeve.

# PARTS LIST AND DESCRIPTION (CONTINUED)

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

## CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	10pf	50V		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C2	10pf	50V		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C3	.001	50V		OBE6D1	CPR-1000J	DPMS6D1	6DP-1-102	PVC621	225P10291WD3
C4	.0047	50V		GPD X5R472K	DD-472G	GP4700	CCD-472	JF247	10TS-D47
C5	.0047	50V		GPD X5R472K	DD-472G	GP4700	CCD-472	JF247	10TS-D47
C6	.0022	50V			CPR-2200J	CD19F222J500	DM-19-222J	SX222	424ME2201J501
C7	.033	50V 10%		GPD Z5V303P	DD-303			GP130	
C8	.033	50V 10%		GPD Z5V303P	DD-303			GP130	
C9	.01	50V 10%		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C10	.01	50V 10%		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C11	680	50V		GPD X5F681K	DD-681	GP680	CCD-681	GP368	10TS-T68
C12	680	50V		GPD X5F681K	DD-681	GP680	CCD-681	GP368	10TS-T68
C13	.15	50V 10%		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C14	.15	50V 10%		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C15	.0047	1KV		HVD-154700	DD30-472				30GA-D47
C19	2mfd	150V				WMF1W2			
C20	.0047	50V		DBE6D47		DMS6D47	6DP-1-472	PVC6247	6PS-D47
C21	.0047	50V		DBE6D47		DMS6D47	6DP-1-472	PVC6247	6PS-D47
C101	10pf	10%		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C102	.001	10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C103	.001	10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C104	.022	10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C105	.001	40V 10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C106	.001	40V 10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C107	10pf	40V 10%		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C108	.001	40V 10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C109	.001	10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C110	10pf	10%		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C111	5pf N150	10%					*	*	10TCP-V50
C112	5pf N150	10%					*	*	10TCP-V50
C113	.001	30V 10%		GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C114	15 N750	10%		N750-DI 15	DTN-15	N15	CCTN-150	CN7415	10TCU-Q15
C115	.0047	10%		GPD X5R472K	DD-472G	GP4700	CCD-472	JF247	10TS-D47
C117	.002	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C118	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C119	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C120	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C121	10pf	10%		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C122	.022	60V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C123	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C124	.022	10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C125	.022	60V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C126	5pf	60V 10%		NPO-DI 5.0		NP05			10TCC-V50
C127	.022	10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C128	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C129	.022	60V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C131	68	10%			DTZ-68			CN0468	10TCC-Q68
C132	15	10%			DTZ-15			CN0415	10TCC-Q15
C133	.022	50V 10%		NPO-DI 15	DTZ-15	NP015	CCTO-150	CN0415	10TCC-Q15
C134	.022	60V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C135	.047	60V 10%		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C137	220	10%		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C138	220	10%		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C139	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C143	.01	50V 10%		TTP-01	CK-103	MGP01	CCD-103	TA110	TG-S10
C145	10pf	10%		NPO-DI 10	DTZ-10	NP010	CCTO-100	CN0410	10TCC-Q10
C146	.022	50V 10%		TTP-02	CK-203	MGP02	CCD-203	TA120	TG-S20
C147	.047	60V 10%		TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C150	.01	10%		V1612S1	CPR-10000J	DPMS6S1	1DP-1-103	PVC211	225P10391WD3
C151	2pf			NPO-DI 2.2	OTZ-2R2	NP02P2		CN0522	10TCC-V22
C201	680	10%		GPD X5F681K	DD-681	GP680	CCD-681	GP368	10TS-T68
C202	150	10%		GPD X5F151K	DD-151	GP150	CCD-151	GP315	10TS-T15
C205	.0022	125V 10%			CPR-2200J	CD19F222J500	DM-19-222J	SX222	424ME2201J501
C206	.0056	125V 10%			CPR-5600J		DM-20-562	SX256	MS-256
C207	120	10%		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10
C208	.0022	10%		DBE6D22		DPMS6D22	6DP-1-222	PVC6222	6PS-D22
C209	120	10%		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10
C211	.0056	125V 10%			CPR-5600J		DM-20-562	SX256	MS-256
C212	.0033	50V 10%		DBE6D33		DMF6D33	6DP-1-332	PVC6233	6PS-D33
C214	.0033	125V 10%		DBE6D33		DMF6D33	6DP-1-332	PVC6233	6PS-D33
C218	.0047	50V 10%		DBE6D47		DMS6D47	6DP-1-472	PVC6247	6PS-D47
C219	.0047	50V 10%		DBE6D47		DMS6D47	6DP-1-472	PVC6247	6PS-D47
C220	.0022	50V 10%		DBE6D22		DPMS6D22	6DP-1-222	PVC6222	6PS-D22
C221	.0022	50V 10%		DBE6D22		OPMS6D22	6DP-1-222	PVC6222	6PS-D22
C227L	100	10%		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10
C227R	100	10%		GPD X5F101K	DD-101	GP100	CCD-101	GP310	10TS-T10
C230L	.0056	50V 10%		GPD X5R562K	DD-562		CCD-562		10TS-D56
C230R	.0056	50V 10%		GPD X5R562K	DD-562		CCD-562		10TS-D56
C231L	.0015	50V 10%		DBE6D15		DPMS6D15	6DP-1-152	PVC6215	6PS-D15
C231R	.0015	50V 10%		DBE6D15		DPMS6D15	6DP-1-152	PVC6215	6PS-D15
C301	.0039	50V 10%		DBE6D39		DPMS6D39	6DP-1-392	PVC6239	6PS-D39
C302	.0039	50V 10%		DBE6D39		DPMS6D39	6DP-1-392	PVC6239	6PS-D39
C303	.0039	50V 10%		DBE6D39		DPMS6D39	6DP-1-392	PVC6239	6PS-D39
C304	.0039	50V 10%		DBE6D39		DPMS6D39	6DP-1-392	PVC6239	6PS-D39
C305	220	10%		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C306	220	10%		GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22
C307	.047	60V 10%			DD-403			GP140	
C308	.047	60V 10%			DD-403			GP140	

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C311	10pf	10%	NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10
C312	10pf	10%	NPO-DI 10	DTZ-10	NP010	CCT0-100	CN0410	10TCC-Q10
C405L	100 N150	10%				*	*	10TCP-T10
C405R	100 N150	10%				*	*	10TCP-T10
C408L	.001 30V	10%	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C408R	.001 30V	10%	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C409L	.001	10%	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C409R	.001	10%	GPD X5F102K	DM-102	GP1000	CCD-102	SM210	2SS-D10
C410L	330	10%	GPD X5F331K	DD-331	GP330	CCD-331	GP333	10TS-T33
C410R	330	10%	GPD X5F331K	DD-331	GP330	CCD-331	GP333	10TS-T33
C411L	.1 50V	10%	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C411R	.1 50V	10%	TTP-05	CK-503	MGP05	CCD-503	TA150	TGL-S50
C413L	82	10%		OTZ-82	NP082	CCT0-820	CN0482	10TCC-Q82
C413R	82	10%		DTZ-82	NP082	CCT0-820	CN0482	10TCC-Q82
C414L	220	10%	GPD X5F221K	DD-221	GP220	CCO-221	GP322	10TS-T22
C414R	220	10%	GPD X5F221K	DD-221	GP220	CCD-221	GP322	10TS-T22

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

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA					
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1a	Volume, Right	50K Tap @ 7500	ERV-12					
b	Volume, Left	50K Tap @ 7500						
R210	Threshold	5000		TSV-5K (1) or T-5000 (1)		X201R502B (1)		MTC53L1 (1)
RV101	Meter Adjust	20K		T-20K (1) or TSV-25K (1)		X201R253B (1)		MTC24L1 (1)
RV102	Sensitivity	5000		TSV-5K or T-5000		X201R502B		MTC53L1
RV201	Separation	5000		TSV-5K or T-5000		X201R502B		MTC53L1
RV202	Separation	5000		TSV-5K or T-5000		X201R502B		MTC53L1
RV203L	Balance, Left	1000		TSV-1K or T-1000		X201R102B		MTC13L1
RV203R	Balance, Right	1000		TSV-1K or T-1000		X201R102B		MTC13L1
RV301a	Bass, Left	500K	ERV-13B					
b	Bass, Right	500K						
RV302a	Treble, Left	500K	ERV-13B					
b	Treble, Right	500K						
RV401L	Balance	100K		TSV-100K (1) or T-100K (1)		X201R104B (1)		MTC15L1 (1)
RV401R	Balance, Right	100K		TSV-100K (1) or T-100K (1)		X201R104B (1)		MTC15L1 (1)
RV402L	Bias, Left	500		TSV-500 (1) or T-500 (1)		X201R501B (1)		MTC52L1 (1)
R402R	Bias, Right	500		TSV-500 (1) or T-500 (1)		X201R501B (1)		MTC52L1 (1)
RV403L	DC Balance, Left	1000		TSV-1K or T-1000		X201R102B		MTC13L1
RV403R	DC Balance, Right	1000		TSV-1K or T-1000		X201R102B		MTC13L1
RV404L	Peak Limit, Left	10K		TSV-10K or T-10K		X201R103B		MTC14L1
RV404R	Peak Limit, Right	10K		TSV-10K or T-10K		X201R103B		MTC14L1

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

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
R14	180 5W	5W-SQ-200	
R255	180 3W	5W-SQ-200	
R416L	.5 3W	WM47	
R416R	.5 3W	WM47	
R417L	.5 3W	WM47	
R417R	.5 3W	WM47	
R428L	3.3 1W	WS-3.3	
R428R	3.3 1W	WS-3.3	

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
R430L	.1 Wirewound		
R430R	.1 Wirewound		
RS1	Thermistor (100 Cold)		
RS401L	Thermistor (36 Cold)		
RS401R	Thermistor (36 Cold)		

### COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke (7 Turns)	1674-23			
L2	RF Choke (7 Turns)	1674-23			
L3	RF Choke (35 Turns)	1678-23			
L4	RF Choke (35 Turns)	1678-23			
L5	Loopstick	1127-39			
L6	R.F. Choke (33 Turns)				
L101	RF Choke (16 Turns)				
L102	RF Choke (30 Turns)				
L103	RF Choke (30 Turns)				
L104	RF Choke (30 Turns)				
L105	RF Choke (30 Turns)				
T101	FM Antenna	1625-23			
T102	1st FM RF	1626-23			
T103	2nd FM RF	1627-23			
T104	FM Oscillator	1628-23			
T105	FM Input IF	ETI-29			
T106	FM Interstage IF	ETI-29			
T107	FM Interstage IF	ETI-29			
T108	FM Interstage IF	ETI-29			
T109	Ratio Detector	ETI-306			
T110	AM RF	ELD-13		2069	
T111	AM Oscillator	ELL-89		2069	
T112	AM Input IF	ETI-31			
T113	AM Interstage IF	ETI-31			
T114	AM Output IF	ETI-15			
T201	67KC Trap	ELM-129		1360	
T202	67KC Trap	ELM-134			
T203	19KC Trap	ELM-134			
T204	Noise	ELM-129		1360	
T205	19KC Input	ELM-130			
T206	19KC Doubler	ELM-131			
T207	38KC Output	ELM-71145			

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### TRANSFORMER (Power)

ITEM No.	RATING			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
PT1	117VAC @.24AAC	52VAC @1.5ADC Max.	8.2VAC @.9AAC Max.	1219-15 (ETP105B2AS)				

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						WORKMAN PART No.
		PART No.		BUSS PART No.		LITTELFUSE PART No.		
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	
F1	2A Quick Acting			AEC2	HKP	312002.	342014	

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CR1	Component Combination	P301M334	Decoupling (330K, 300pf)
CR2	Component Combination	P301M334	Decoupling (330K, 300pf)
CR101	Component Combination	S203Z391M	Coupling (390, .022)
CR102	Component Combination	F203Z561	AM Detector/AGC Filter (560, .01, .01)
CR103	Component Combination	P103Z102	Emitter Stabilizer (1000, .01)
CR104	Component Combination	S203Z391M	Decoupling (390, .02)
CR105	Component Combination	S103Z472	Coupling (4700, .01)
CR106	Component Combination	S203Z391M	Decoupling (390, .022)
CR201	Component Combination	P203Z273M	Coupling (27K, .02)
M1	Meter	1035-27	Tuning
S1	Switch	1496-14	Selector (Aux-Phono-FM-MPX Filter-AM)
S2	Switch	1498-14	Tape Monitor (Off-Stereo, Left, Right)
S3	Switch	1340-14	Mode (Balance Left-Balance Right-Mono-Stereo-Reverse-Input Left-Input Right)
S4	Switch	1342-14	Loudness (On-Off)
S5	Switch	1342-14	Low Filter (On-Off)
S6	Switch	1342-14	High Filter (On-Off)
S7	Switch	1342-14	Mute (On-Off)
S8	Switch	1340-14	Speaker Mode (Off-Main-Main/Remote-Remote-Phones)
S9	Switch	1215-14	Phono Sensitivity (High-Medium-Low)
	Printed Circuit Board	1232-16	FM (Complete)
		1233-16	FM MPX (Complete)
		1234-16	Preamp (Complete)
	Printed Circuit Board	1235-16	FM IF/AM
	Printed Circuit Board	1236-16	Amp

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