

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 D201

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

T100, T300, L301, T301, T400, T401, T500, T501, T502 8606, 9295

ALL other tunable coils and transformers 9296, 9300

ALL Trimmers 5000, 8290

GC ELECTRONICS

SYNTHESIZER

INDICATOR	CHANNEL	ADJUST	FREQUENCY	REMARKS
FREQUENCY COUNTER DC VTVM	1	C102	4.40000MHz	Connect counter to Q103 gate. Remove X104 and X105. Set Crystal-Manual Switch to Crystal. Note: Be sure to install X104 and X105 after making adjustments.
	2	C104	4.41000MHz	
	3	C106	4.42000MHz	
	4	C108	4.44000MHz	
	1	R145		Connect counter to Q103 gate. Remove X100. Set Crystal-Manual Switch to Crystal. Set clarifier to 12 o'clock. Adjust for +1.5V DC on PIN 1 of synthesizer board.
	1	C137	16.311500 MHz	Set mode switch to USB.
	1	C136	16.308500 MHz	Set mode switch to LSB.
	5	C135	16.361500 MHz	Set mode switch to USB.
	5	C134	16.358500 MHz	Set mode switch to LSB.
	9	C133	16.411500 MHz	Set mode switch to USB.
	9	C132	16.408500 MHz	Set mode switch to LSB.
	13	C131	16.461500 MHz	Set mode switch to USB.
	13	C130	16.458500 MHz	Set mode switch to LSB.
	17	C129	16.511500 MHz	Set mode switch to USB.

TRAM MODEL D201

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

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SYNTHESIZER(cont)

INDICATOR	CHANNEL	ADJUST	FREQUENCY	REMARKS
FREQUENCY COUNTER DC VTVM	17	C128	16,508500 MHz	Set mode switch to LSB.
	21	C127	16,561500 MHz	Set mode switch to USB.
	21	C126	16,558500 MHz	Set mode switch to LSB. Note: Be sure to install X100 after making adjustments.
	17	T100,T101 Top, T101 Bottom		Connect DC-VTVM to V301 Pin 8. Adjust for maximum voltage.
	12	R143	16,408500 MHz	Remove P100A cable from T100A. Connect counter to Q103 gate. Set Crystal-Manual Switch to Manual. Set mode switch to LSB.
	Manual Dial to 9	L301	4.400MHz	Connect P100A cable to J100A. Connect counter thru a 5pF to J100A. Set Crystal-Manual Switch to Manual. Set crystal selector and manual tuning to Channel 9. Pull cal button out (On). Adjust L301 for zero beat.
	Manual Dial to 27.450MHz	C319	4.785MHz	Adjust C319. Repeat above steps until each is correct.

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
Adjustments made with 120-volt AC input to power supply.
Adjust volume control to obtain suitable reading.

AM

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to V302 Pin 2, low side to ground.	455kHz, 1000Hz @ 30% modulation.	Any	L400,T400 (Top),T400 (Bottom), T401 (Top), T401 (Bottom)	Set mode switch to AM. Set RF gain fully clockwise. Set generator output low enough to prevent AGC limiting. Adjust for maximum.
High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation.	13	T300,T301 (Top),T301 (Bottom), T302 (Top), T302 (Bottom)	Set Crystal-Manual Switch to Crystal. Set mode switch to AM. Set RF gain fully clockwise. Set clarifier to 12 o'clock. Set generator output low enough to prevent AGC limiting. Adjust for maximum.

RECEIVER

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
Adjustments made with 120-volt AC input to power supply.
Adjust volume control to obtain suitable reading.

SSB

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
High side thru .01uF to antenna jack, low side to ground.	27.1135MHz, 1000Hz @ 30% modulation.	13	T500,T501, T502	Set mode switch to LSB. Set RF gain fully clockwise. Set clarifier at 12 o'clock. Set generator output low enough to prevent AGC limiting. Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF Wattmeter across speaker voice coil.
These adjustments made with 120-volt AC input to power supply.
Adjust volume control to obtain a suitable reading.

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
NOISE BLANKER High side thru .01uF to antenna jack, low side to ground.	24.8MHz	Any	T801,T802	Set limiter switch out (On). Connect scope to Q802 collector. Adjust for maximum amplitude.
			R804	Connect DC-VTVM to Q800 base. Adjust for 0.46V.

RECEIVER ADJUSTMENTS(cont)

SIGNAL GENERATOR	GEN FREQ	CHANNEL	ADJUST	REMARKS
"S" METER High side thru .01uF to antenna jack, low side to ground.	27.115MHz, 1000Hz @ 30% modulation, output 50uV.	13	R422	Set RF gain counterclockwise. Set mode switch to AM. Set meter switch to S/PWR with no input signal. Adjust for meter zero.
		13	R429	Set RF gain clockwise. Inject signal. Adjust for S9 reading.

TRANSMITTER

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 120-volt AC input to power supply.

SSB

INDICATOR	ADJUST	REMARKS
USB CARRIER OSC. Connect frequency counter from Pin 7 of balanced modulator board to ground.	C227	Set mode switch to USB. Adjust for 6.2535MHz.
LSB CARRIER OSC. Connect frequency counter from Pin 7 of balanced modulator board to ground.	C230	Set mode switch to LSB. Adjust for 6.2565MHz.
BALANCED MODULATOR Connect oscilloscope from to V701 Pin 5 to ground.	T201 Top, T201 Bottom, T202,T700	Remove neutralizing link. Channel 13 mode switch to AM. Key transmitter. Adjust for maximum. Make note of amplitude.
	T200,T700, T201 Bottom, T201 Top, T202	Set mode switch in LSB. Inject 1500Hz audio at mic jack. Adjust mic gain and generator levels to maintain about 1/3 amplitude observed in above step. Adjust for maximum. Remove 1500Hz audio and set mic gain counterclockwise.
CARRIER BALANCE Connect oscilloscope (usable to 30MHz) from V701 Pin 5 to ground.	R214,C207	Remove neutralizing link. Short mic input. Set mode switch to LSB or USB. Key transmitter and adjust for MINIMUM on scope.
BIAS Remove neutralizing link and connect a 0-50V DC voltmeter between junction of L702, R709 and ground.	R708	Short mic input. Mode switch to AM receive. Adjust bias for -25V DC.
BIAS Remove neutralizing link and connect 0-50V DC voltmeter between junction of L702, R709 and ground.	R707	Short mic input. Mode switch in LSB receive. Adjust bias for -32V DC.
	T700	Set mode switch to AM. Key transmitter. Retune for maximum DC indication.
FINAL-NEUTRALIZATION RF Wattmeter	C706	Remove neutralizing link. Set meter switch to SWR CAL. Set SWR CAL control fully clockwise. Set C712 one turn from maximum capacitance. Set C711 for maximum reading on panel meter. Adjust C706 for null on panel meter. Connect neutralizing link.

TRANSMITTER

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
Adjustments made with 120-volt AC input to power supply.

AM

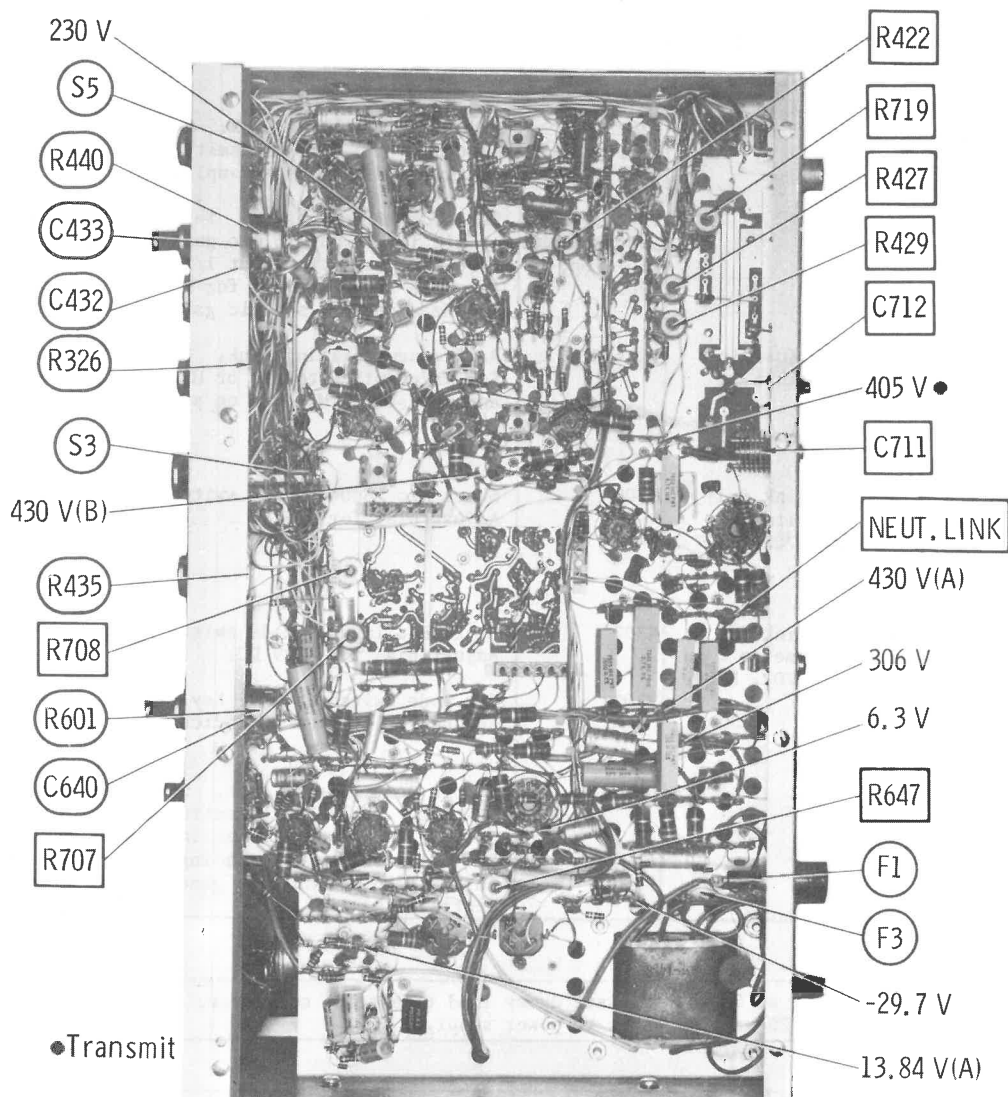
INDICATOR	ADJUST	REMARKS
FINAL OUTPUT POWER RF Wattmeter	C711,C712	Be sure neutralizing link is installed. Mode switch to AM. Channel selector to Channel 13. Key transmitter. Set meter switch in S/PWR position. Adjust for 3.8-4.2 watts output.

TRAM MODEL D201

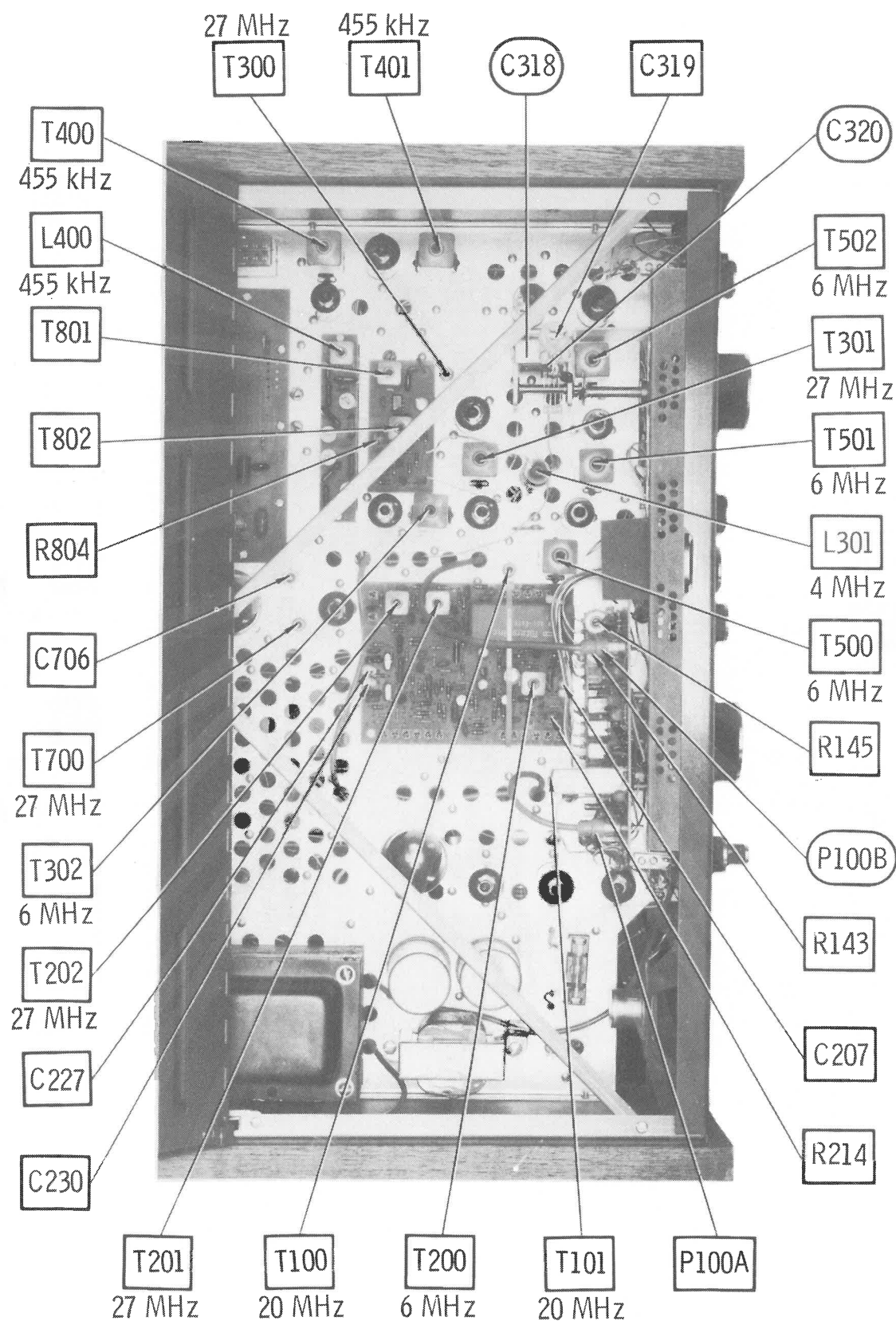
TRANSMITTER ADJUSTMENTS

Connect an RF Wattmeter or 50-ohm, 25-watt dummy load to antenna connector.
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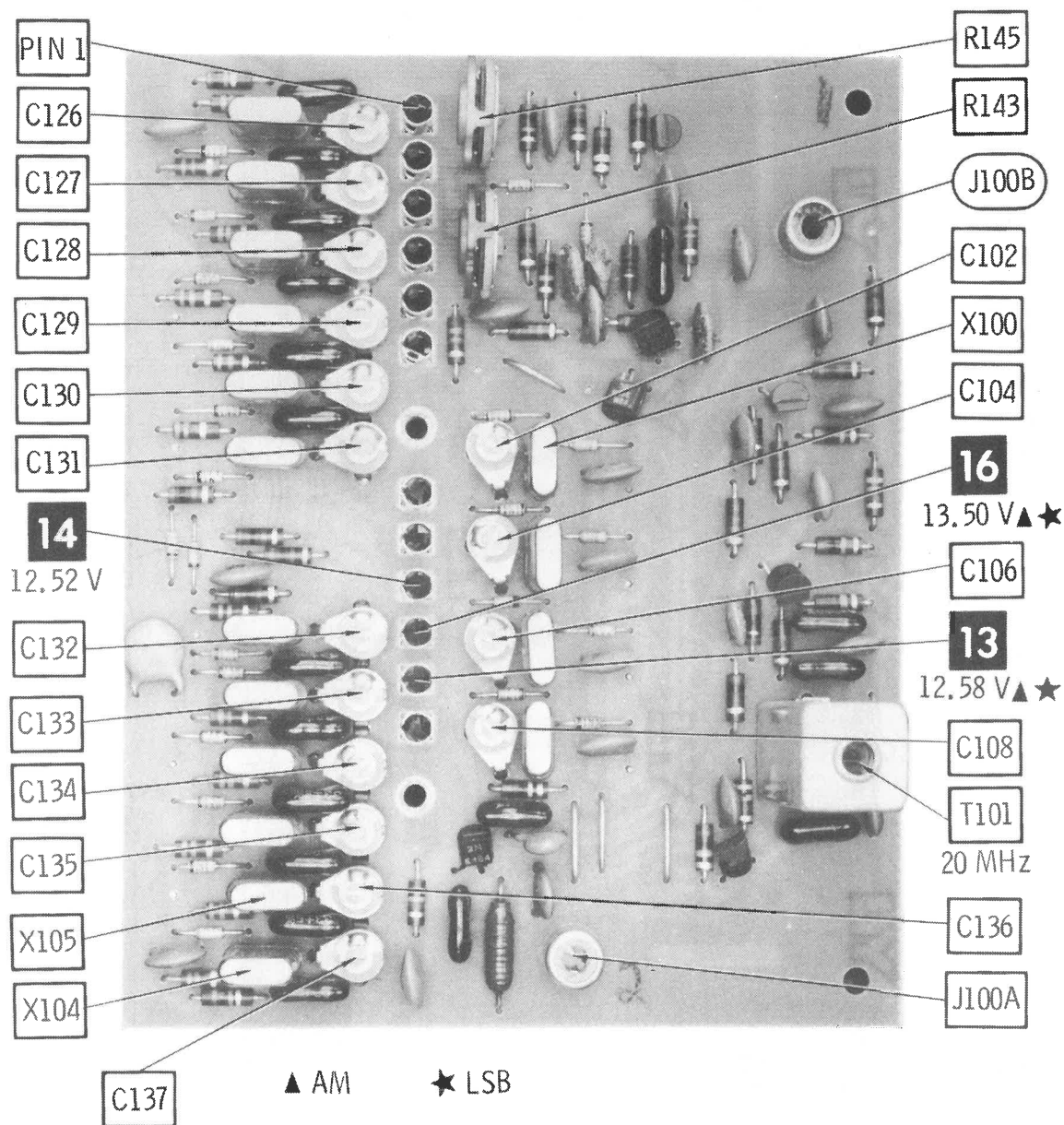
INDICATOR	ADJUST	REMARKS
ALC RF Wattmeter	R719	Set mode switch to LSB. Inject a 1500Hz audio signal at mic input. Key transmitter. Set generator for 12 watts. Increase generator level 10dB. Adjust for 12 watts.
AMC Modulation meter connected to antenna jack.	R647	Set mode switch to AM. Inject a 1500Hz, 10dB over 100% modulation audio signal at mic input. Key transmitter. Adjust for 95% modulation maximum.
RF PANEL METER RF Wattmeter	R427	Set mode switch to AM. Key transmitter. Adjust so that panel RF meter agrees with RF wattmeter.



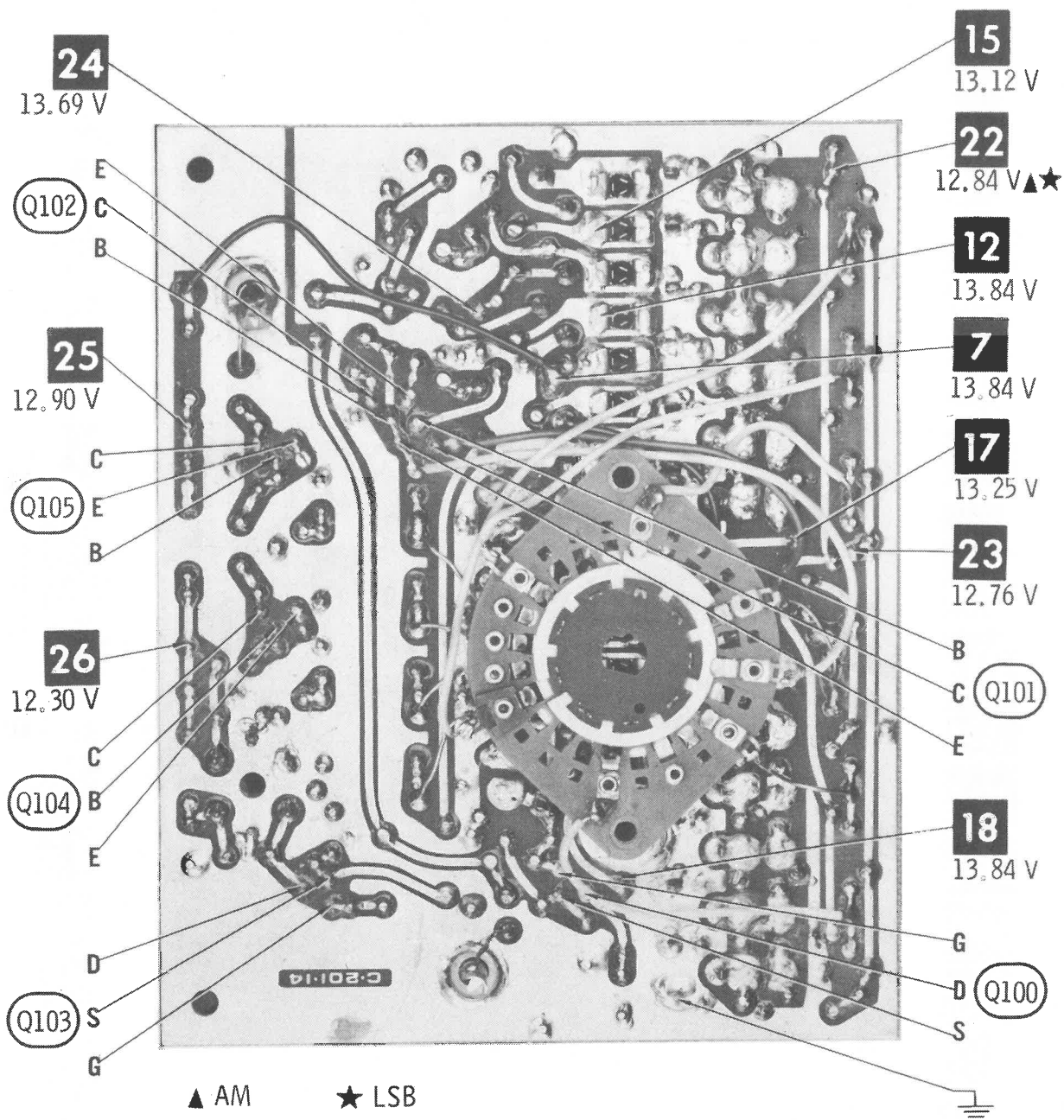
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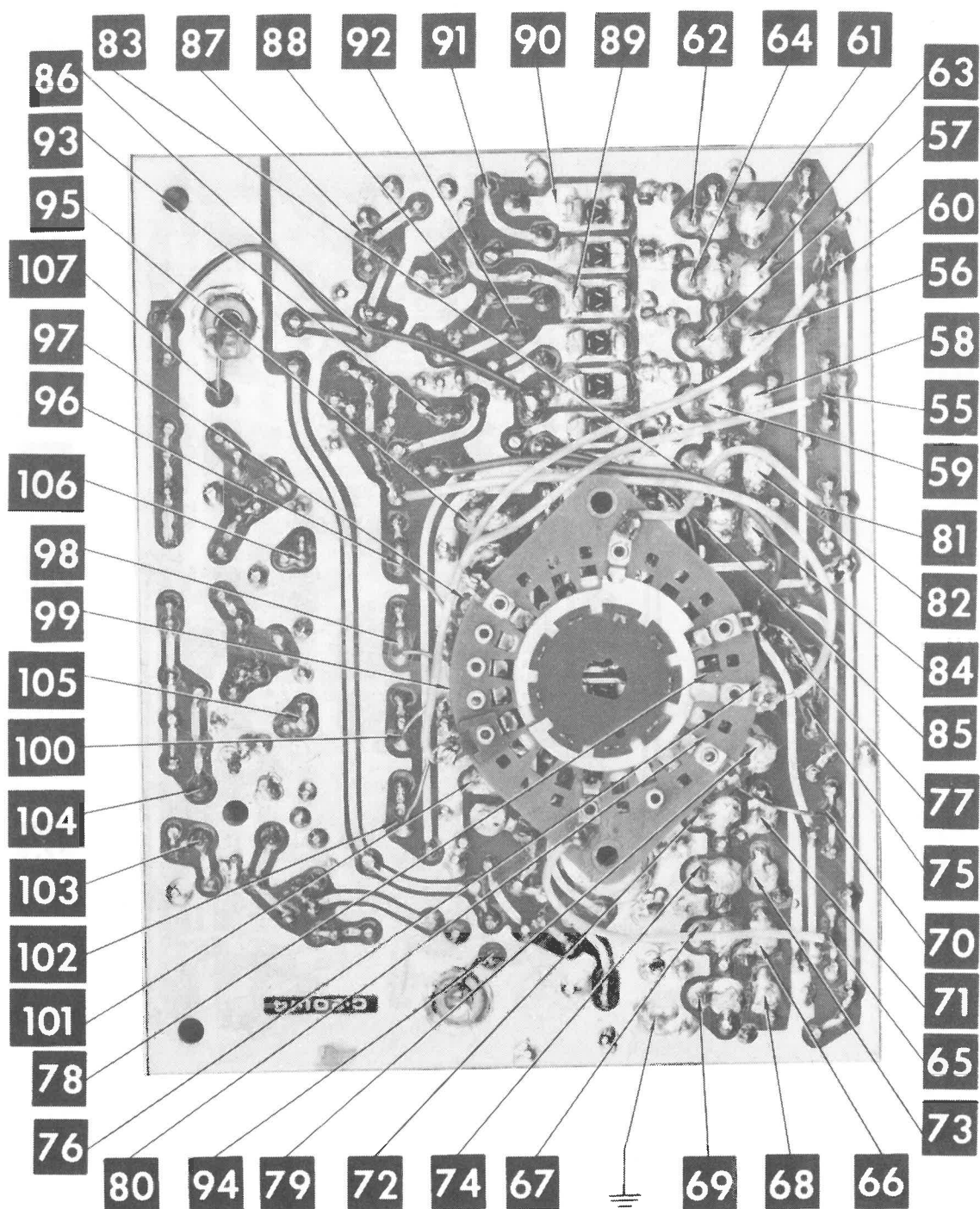
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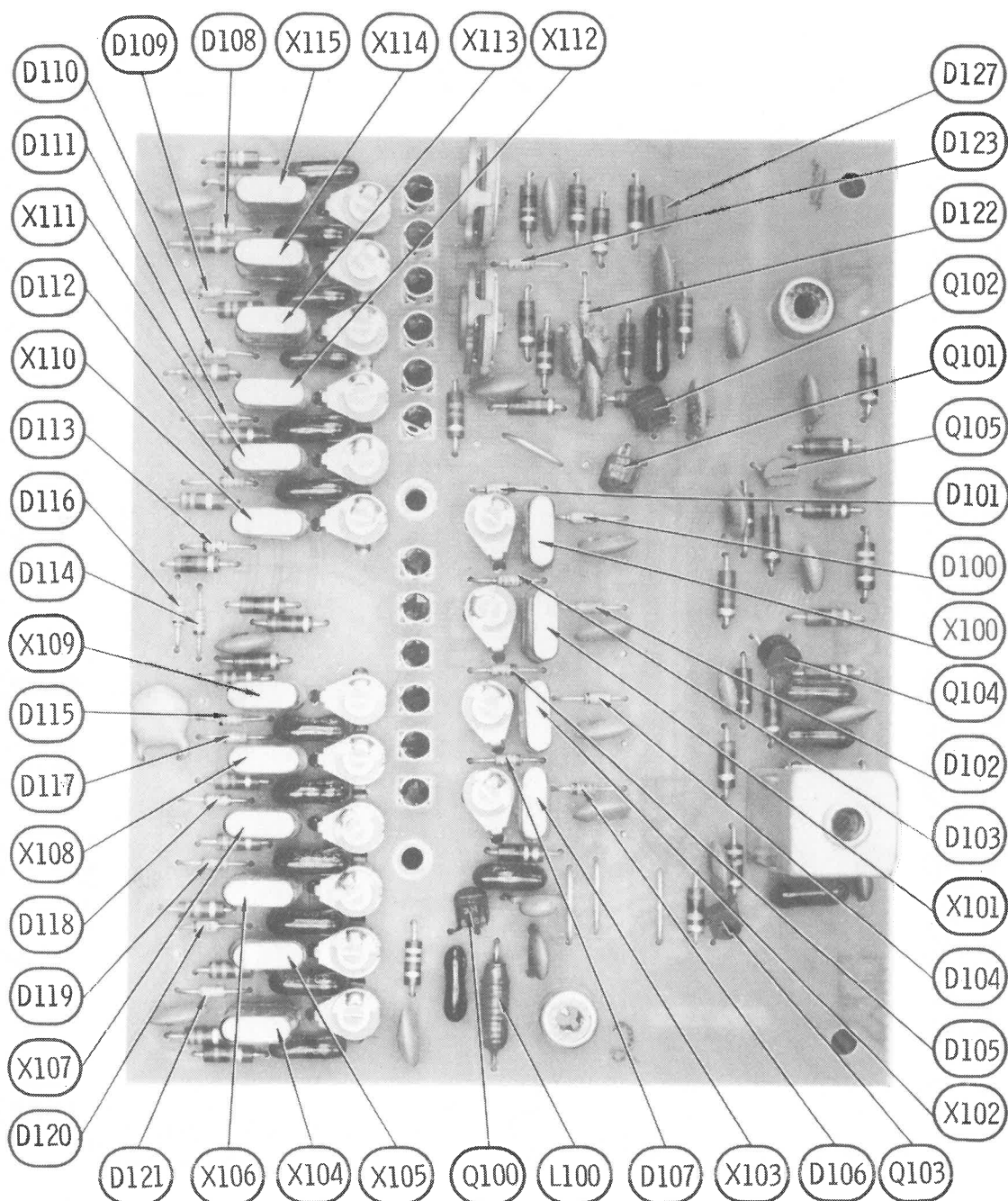
SYNTHESIZER BOARD



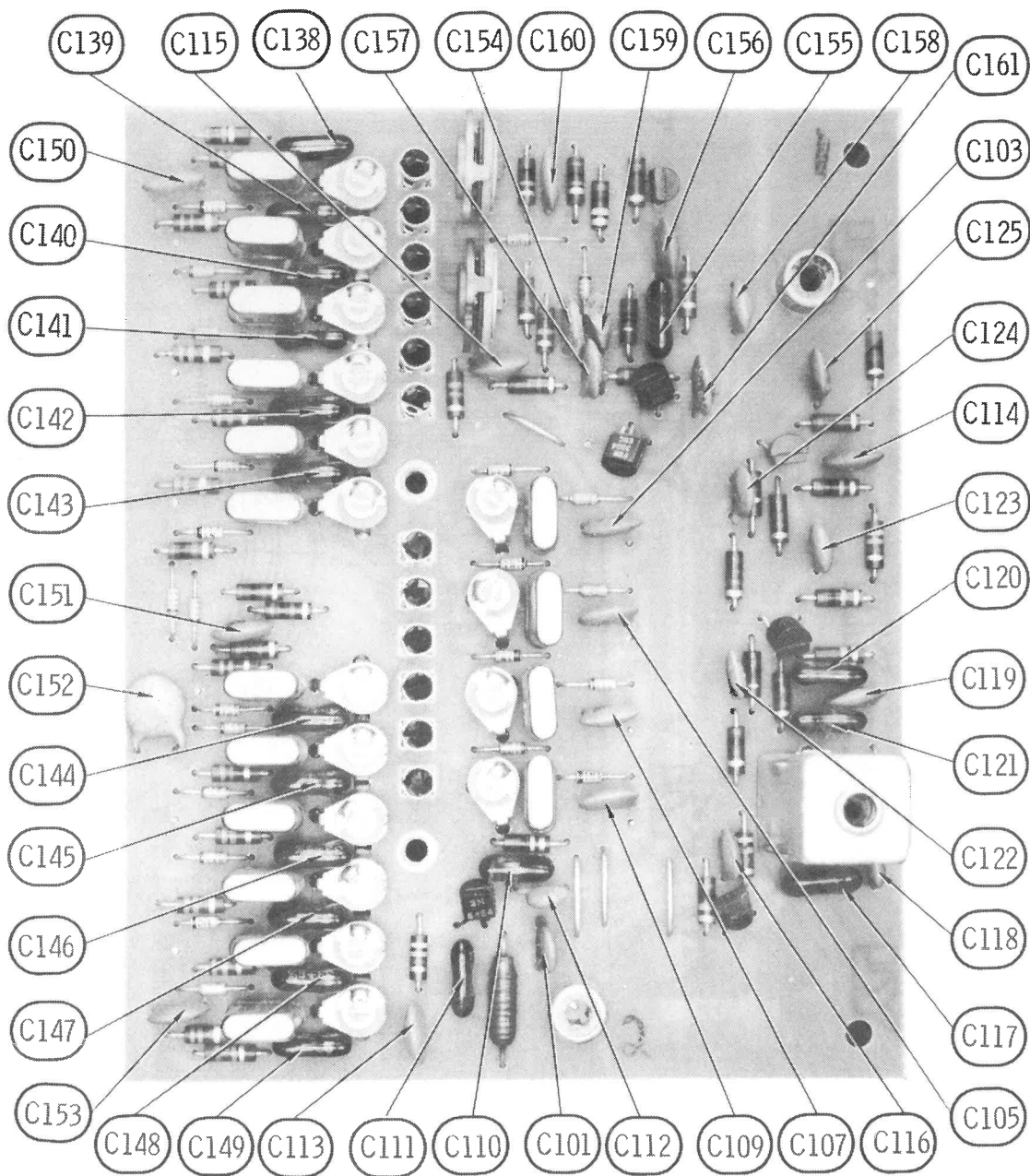
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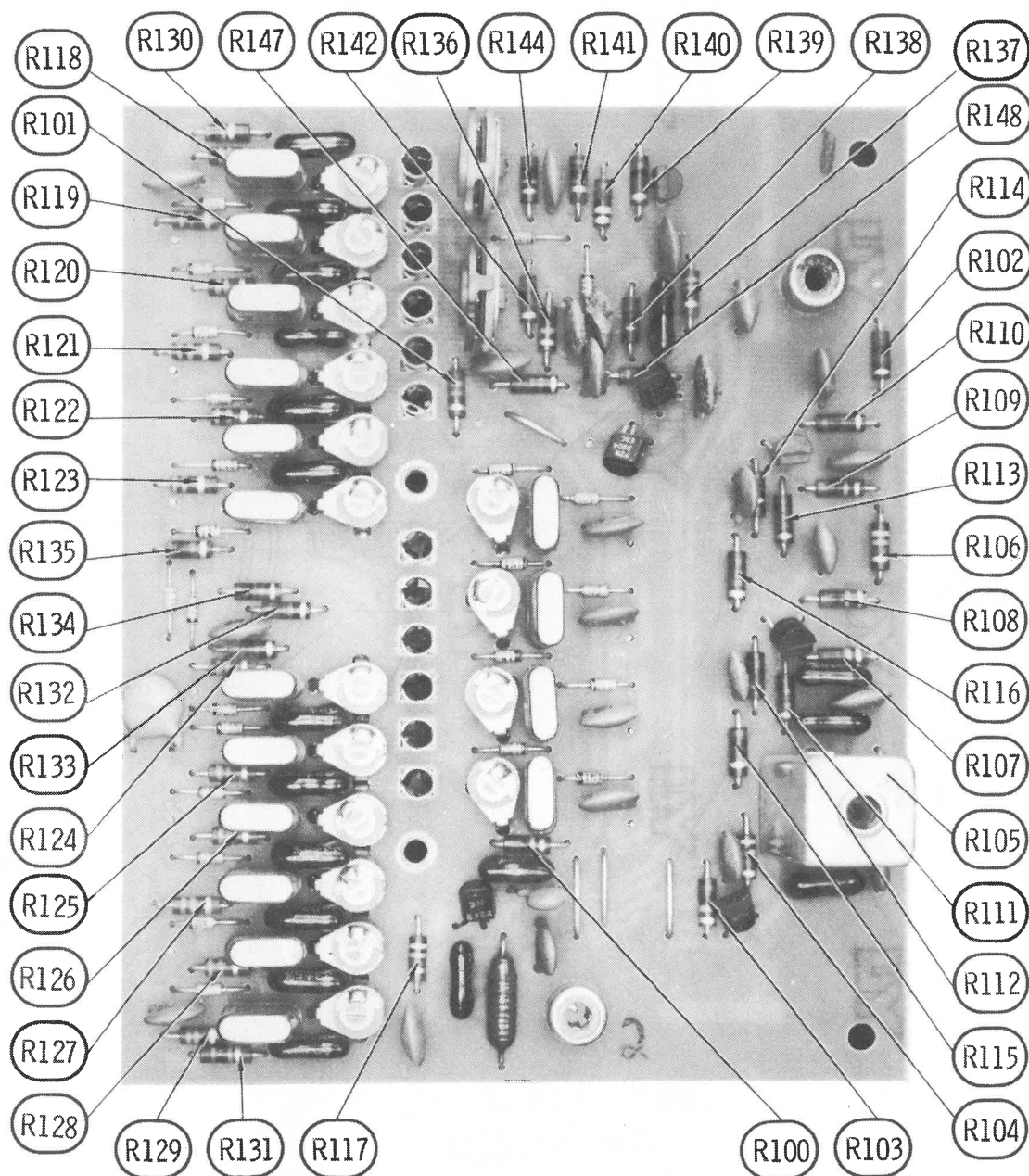
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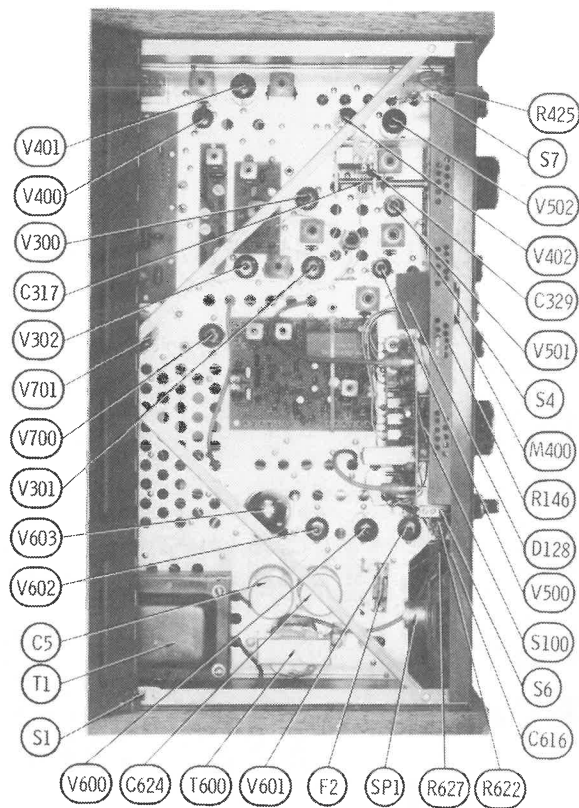
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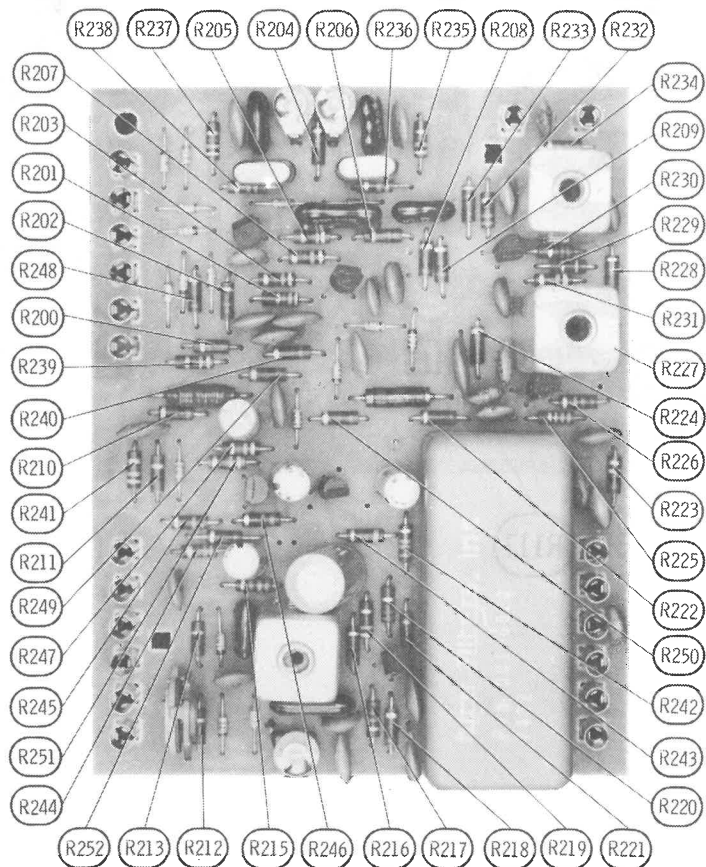
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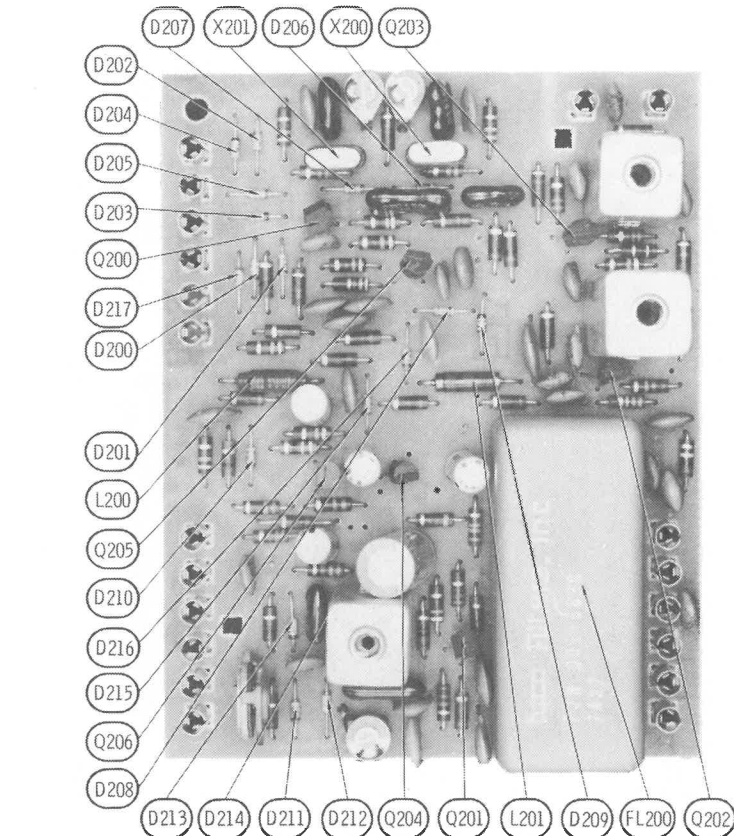
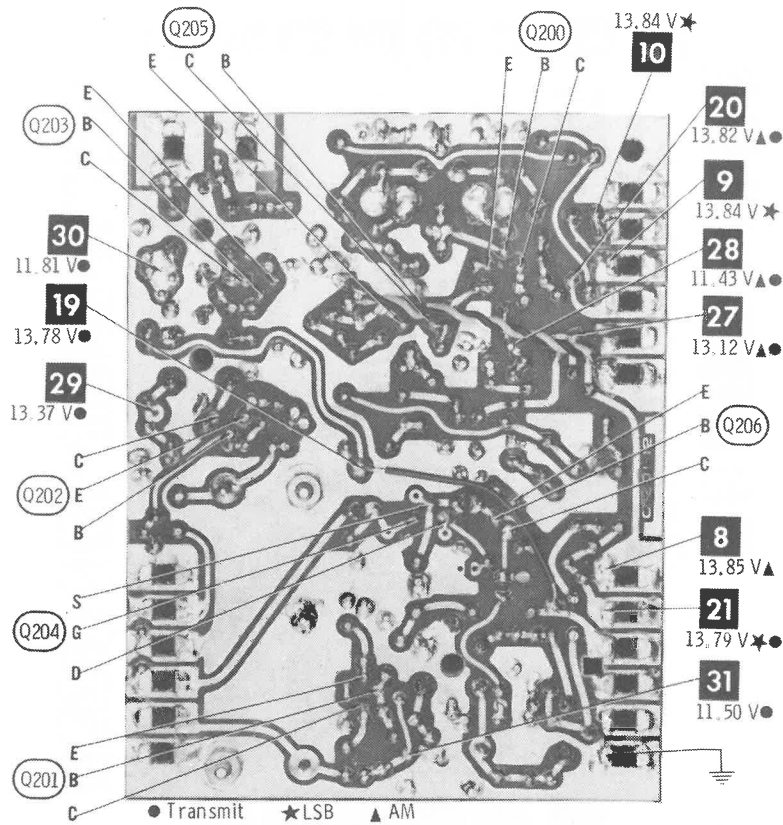
SYNTHESIZER BOARD



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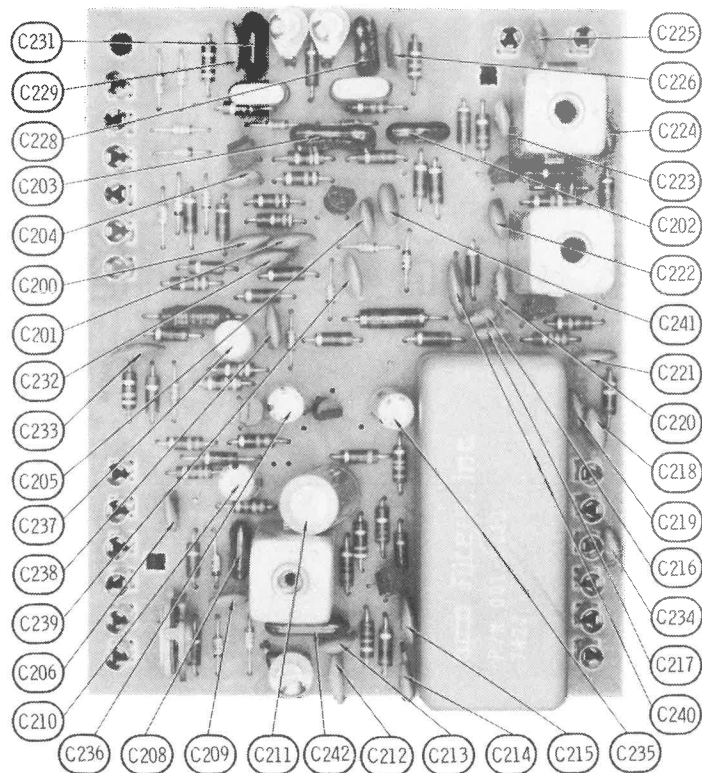
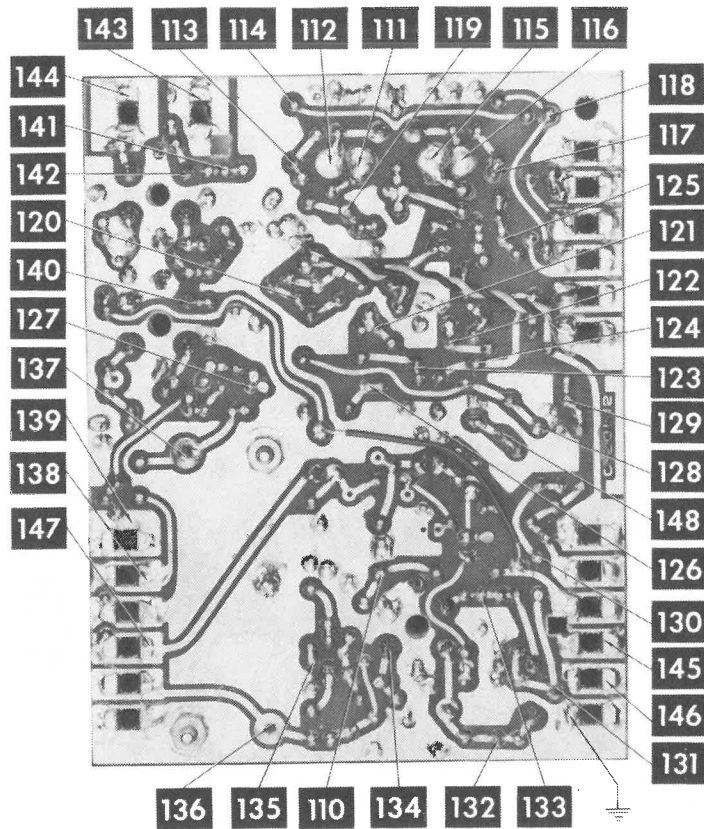


BALANCED MODULATOR BOARD

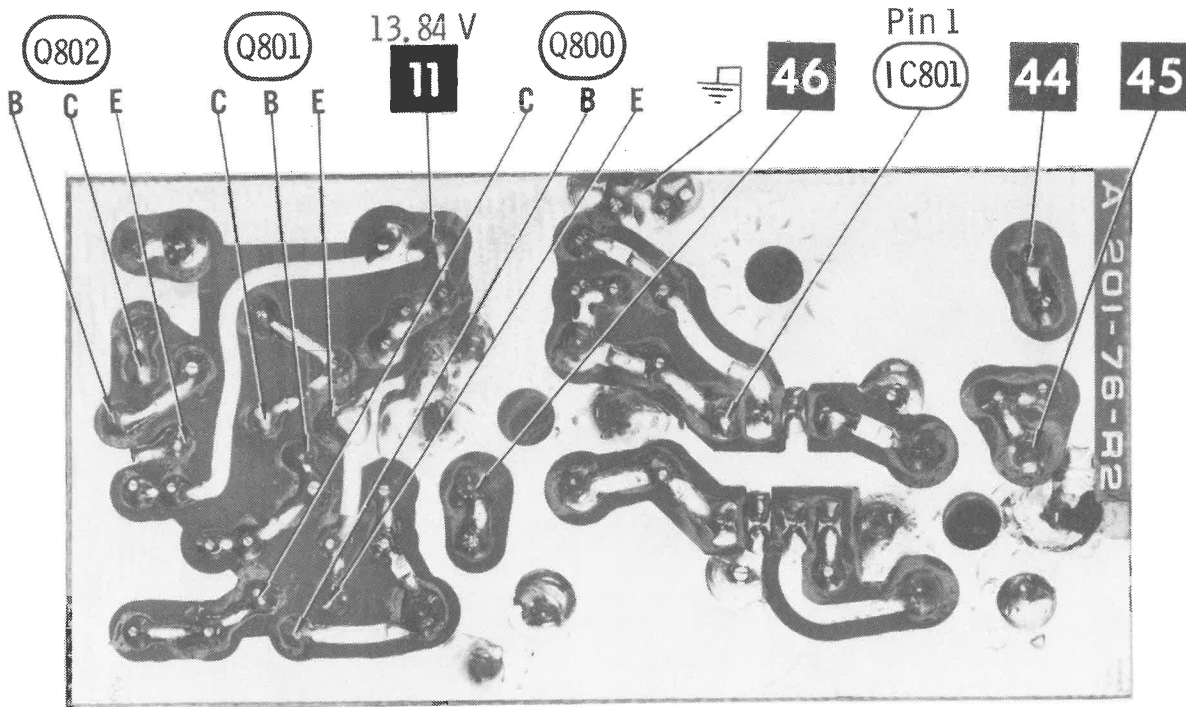


BALANCED MODULATOR BOARD

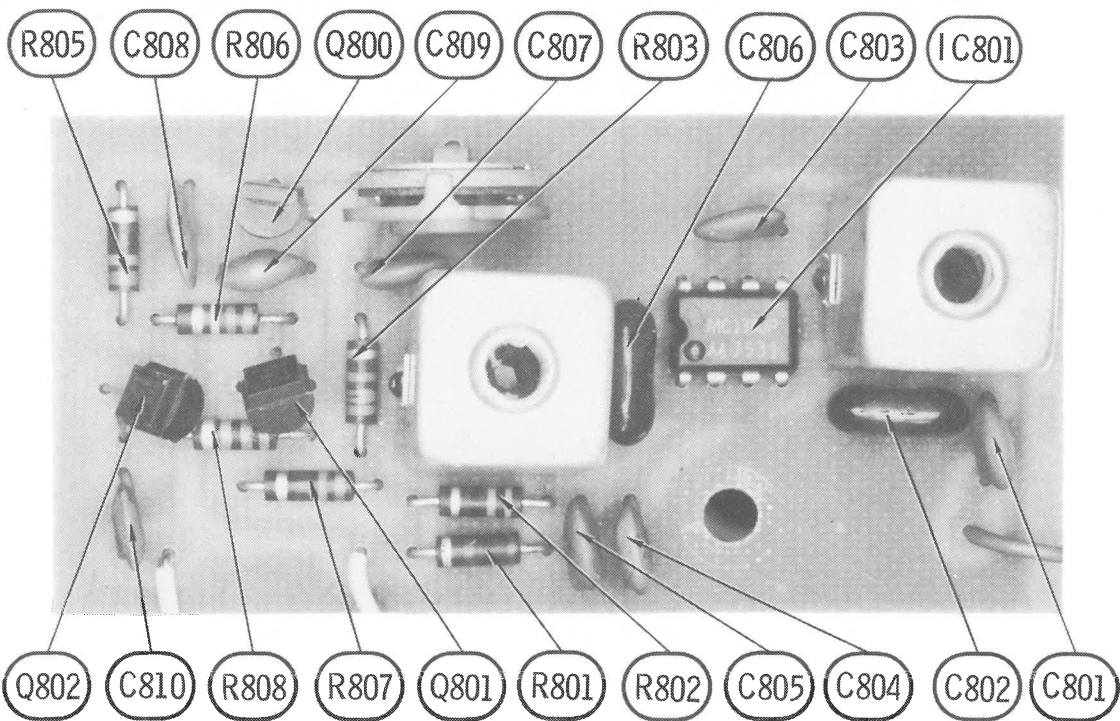
TRAM MODEL D201



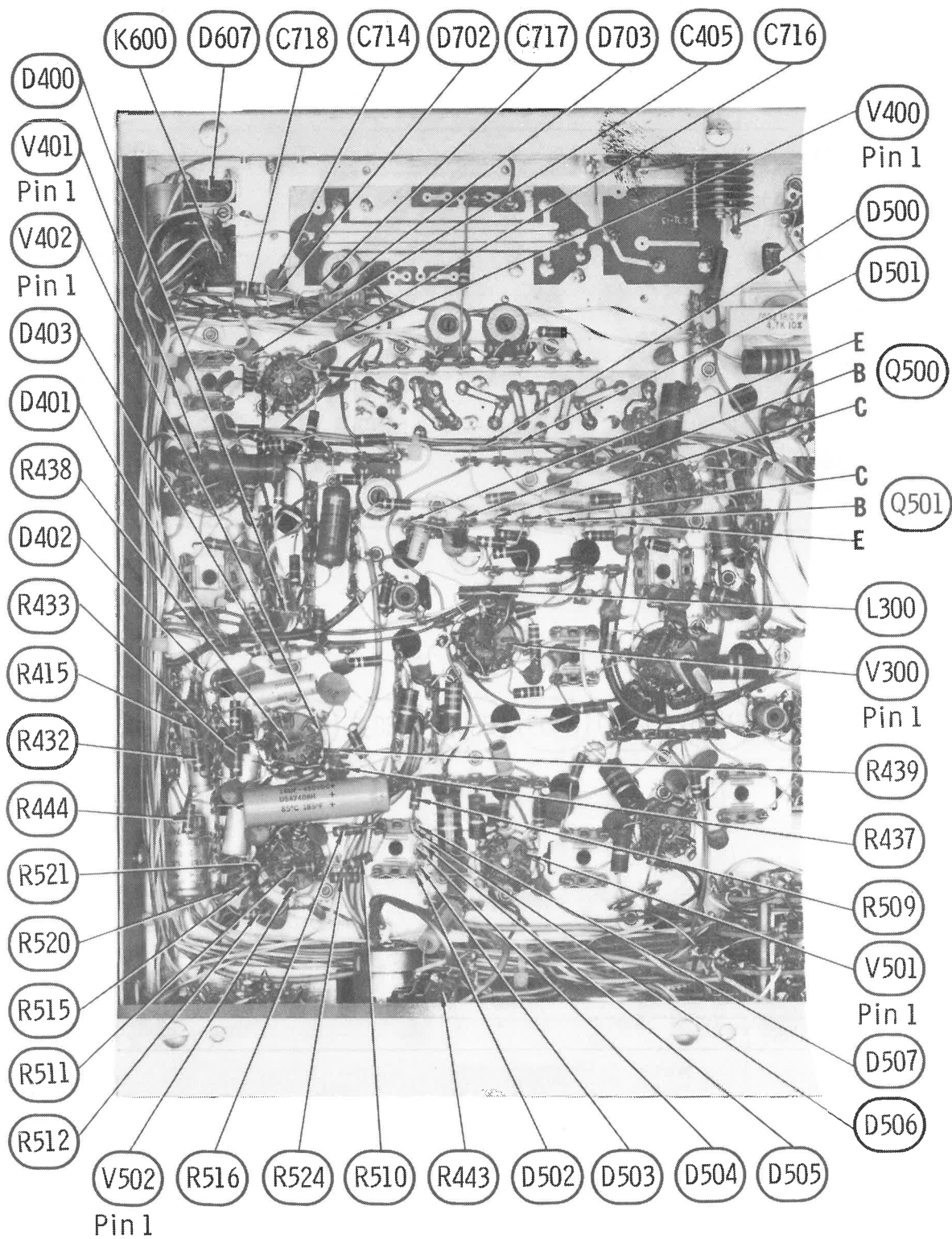
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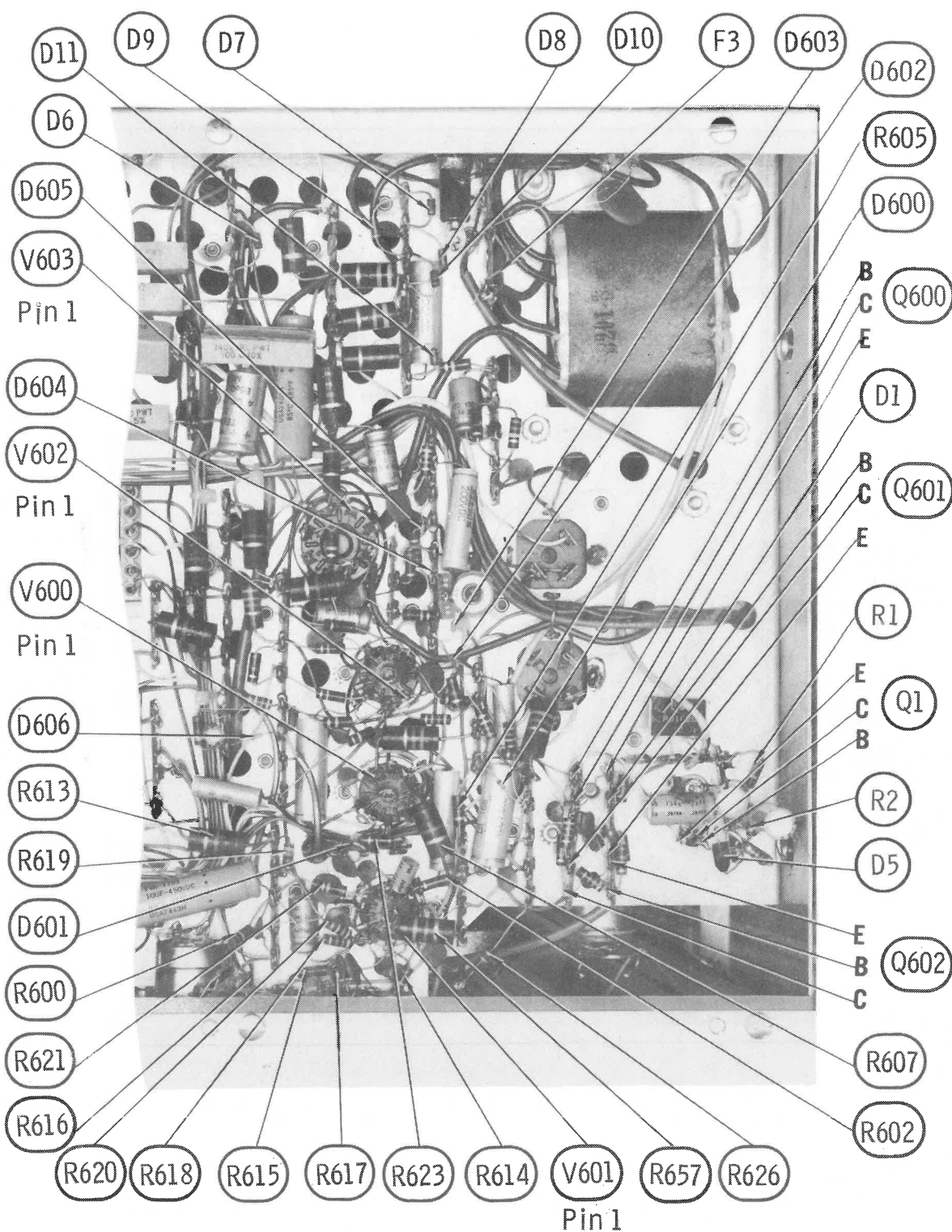
TRAM MODEL D201



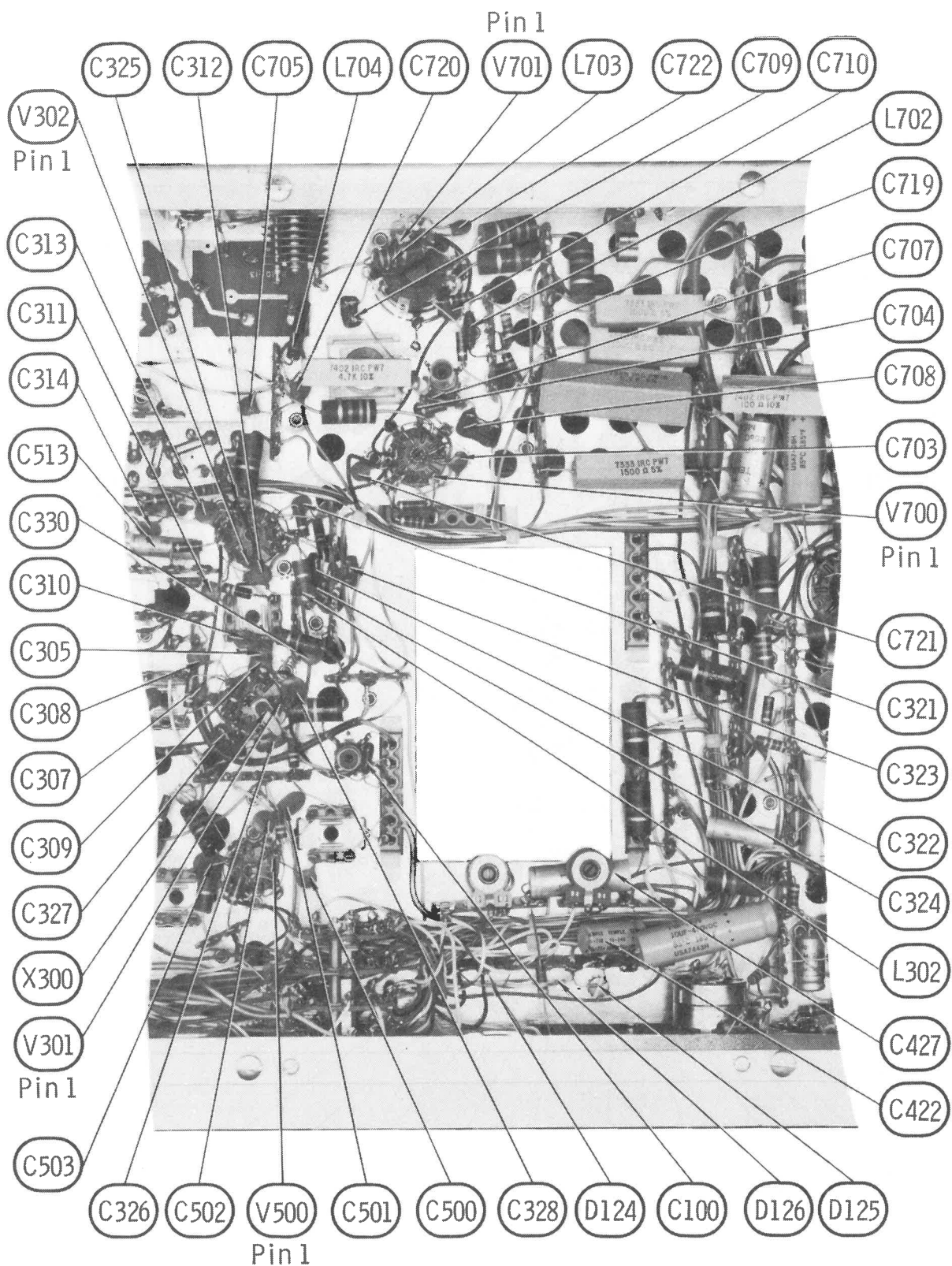
NOISE BLANKER BOARD



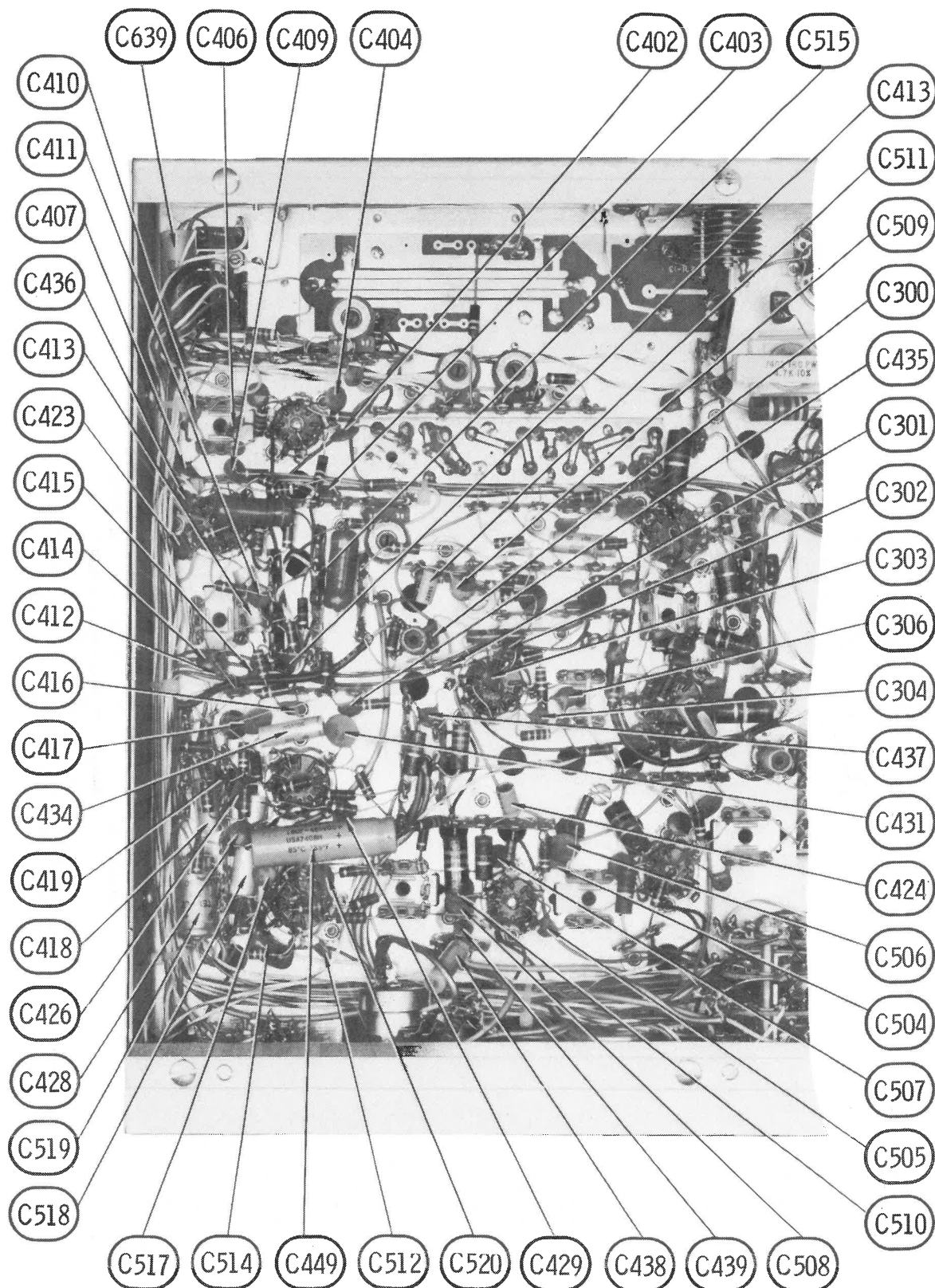
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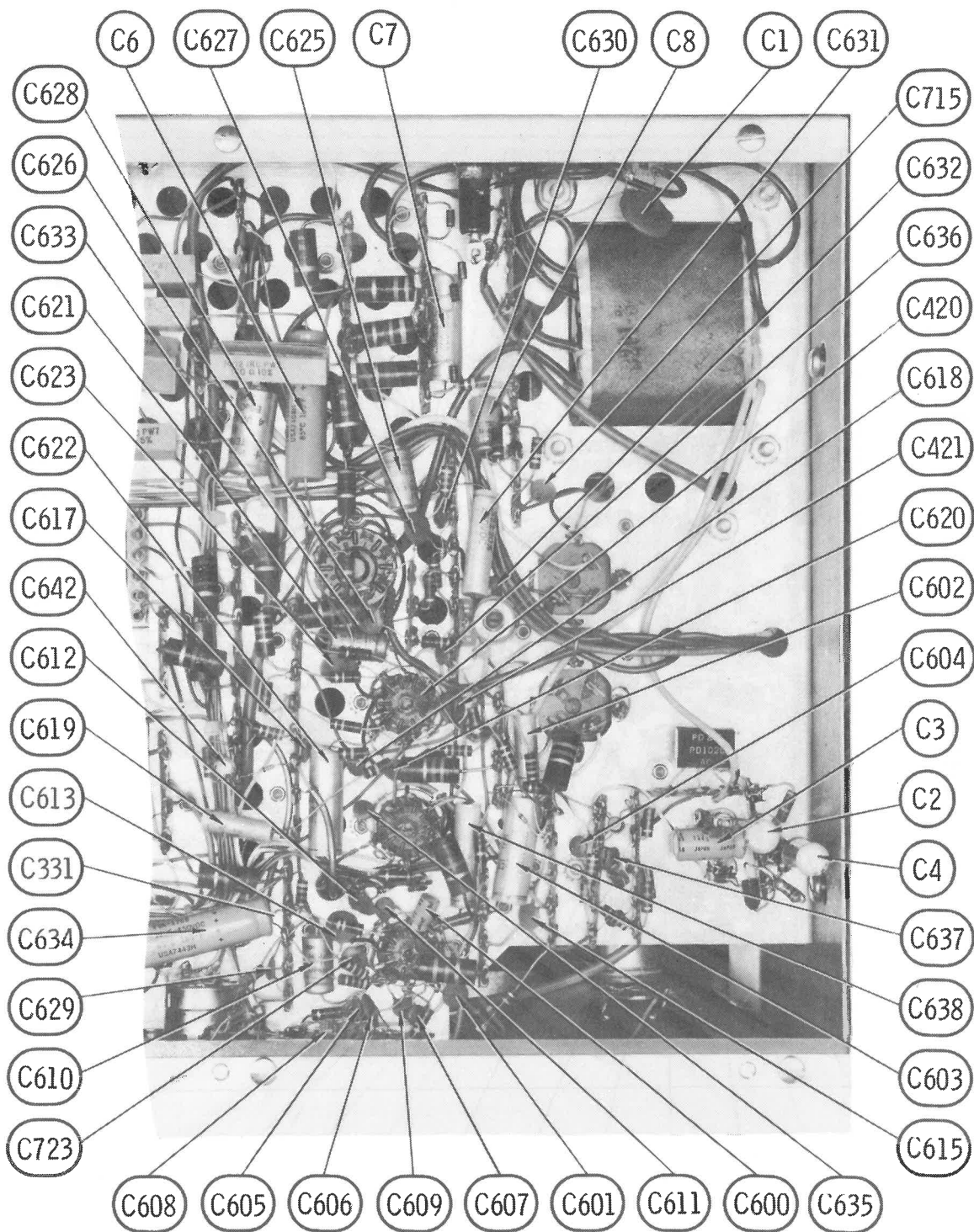
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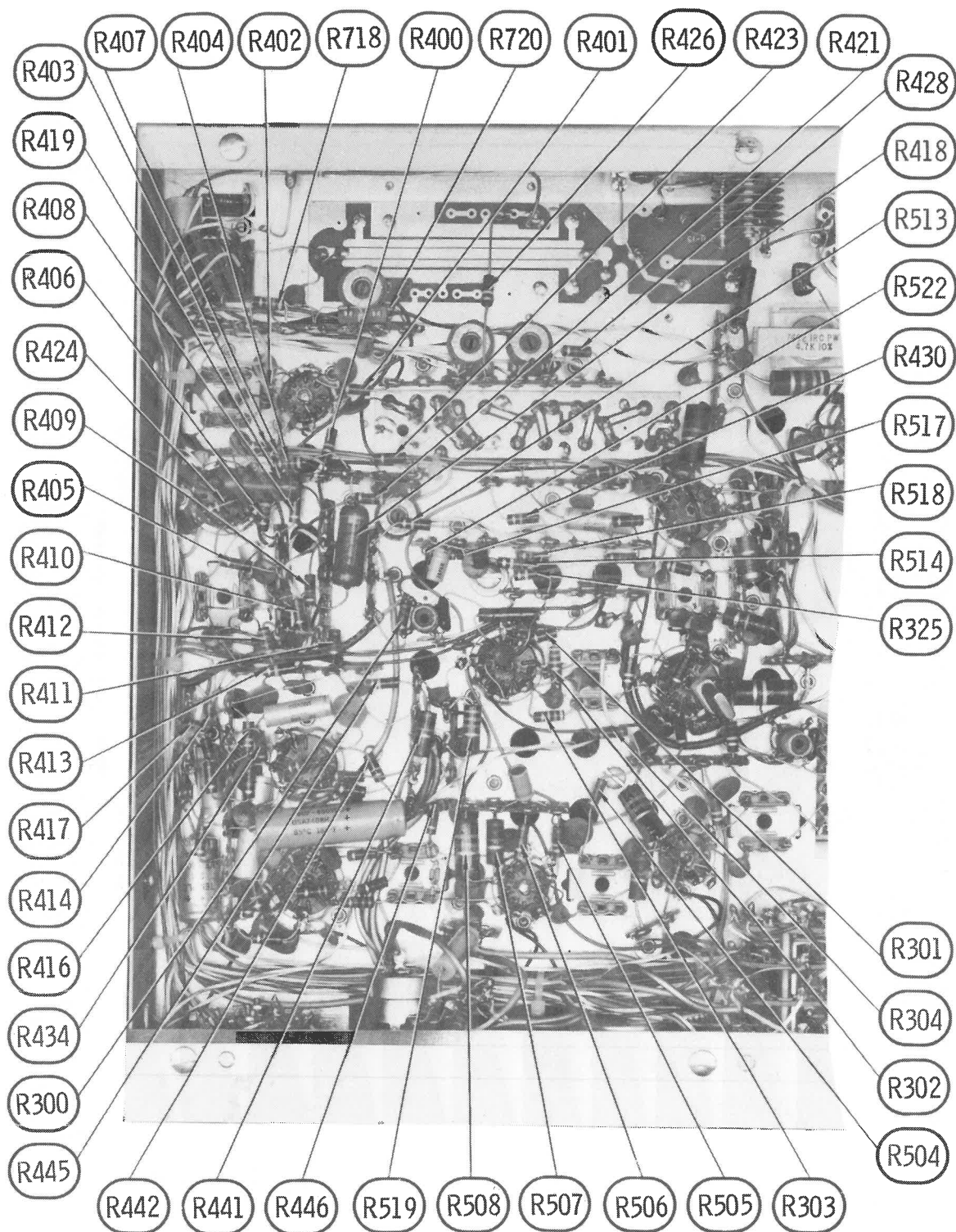
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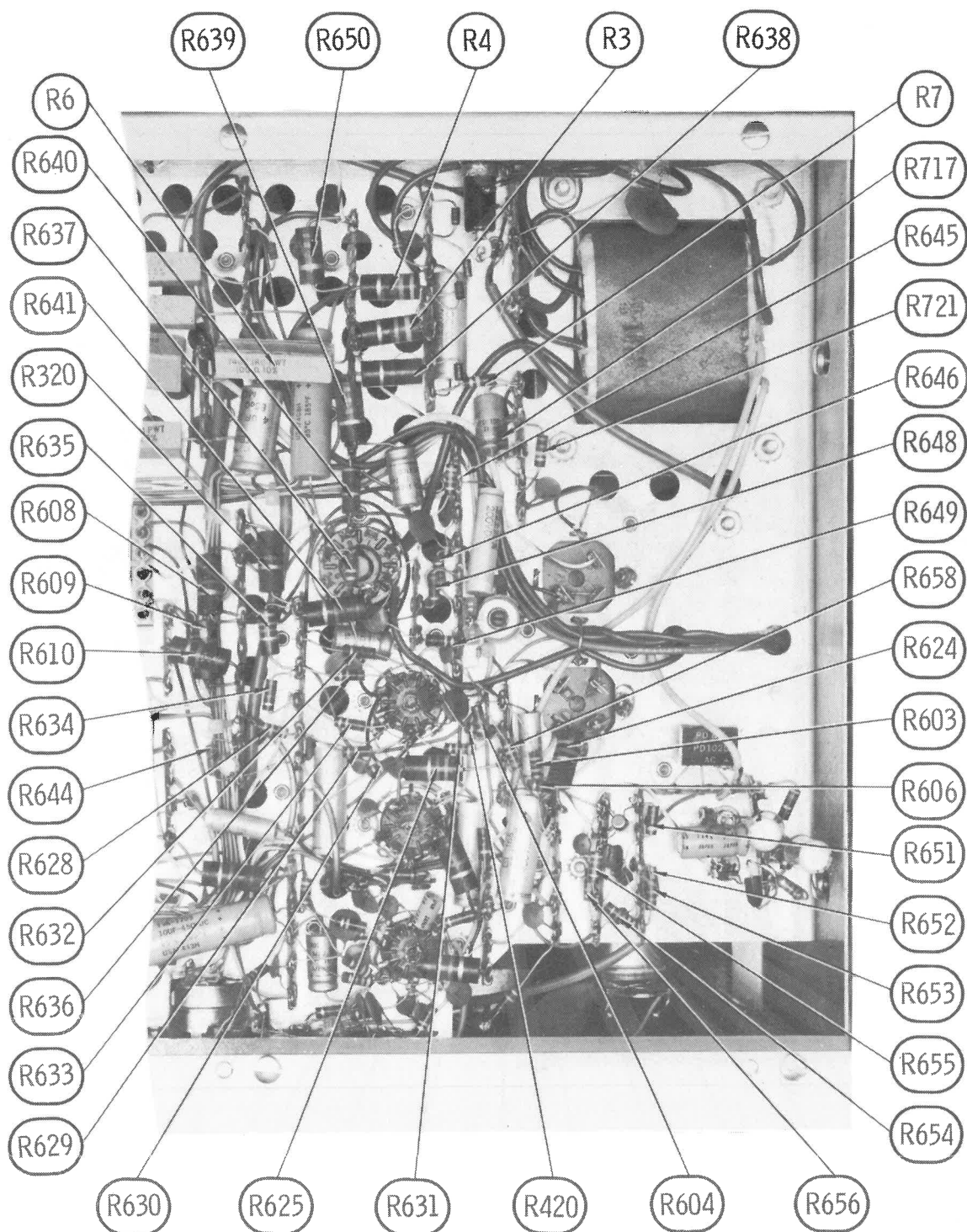
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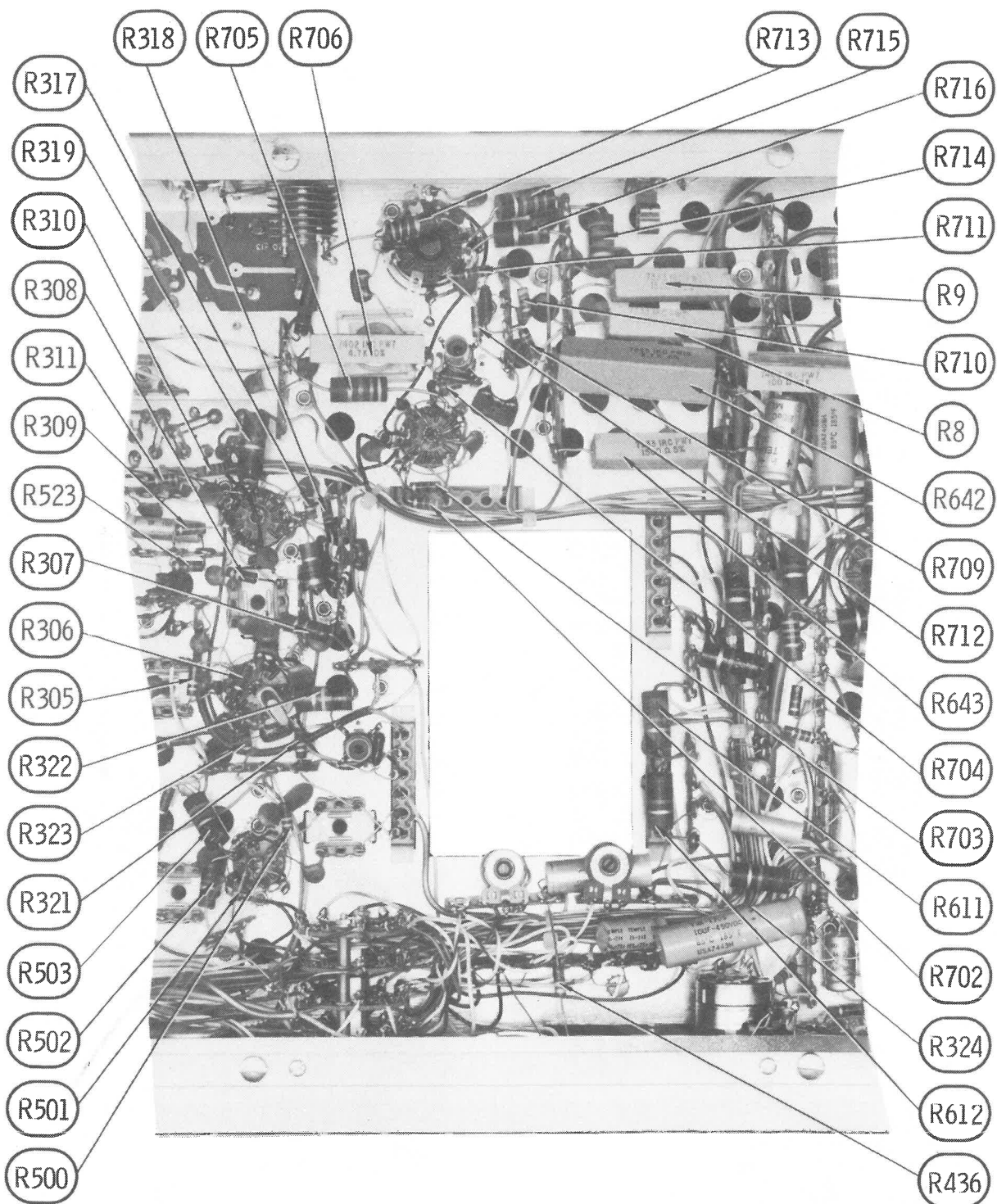
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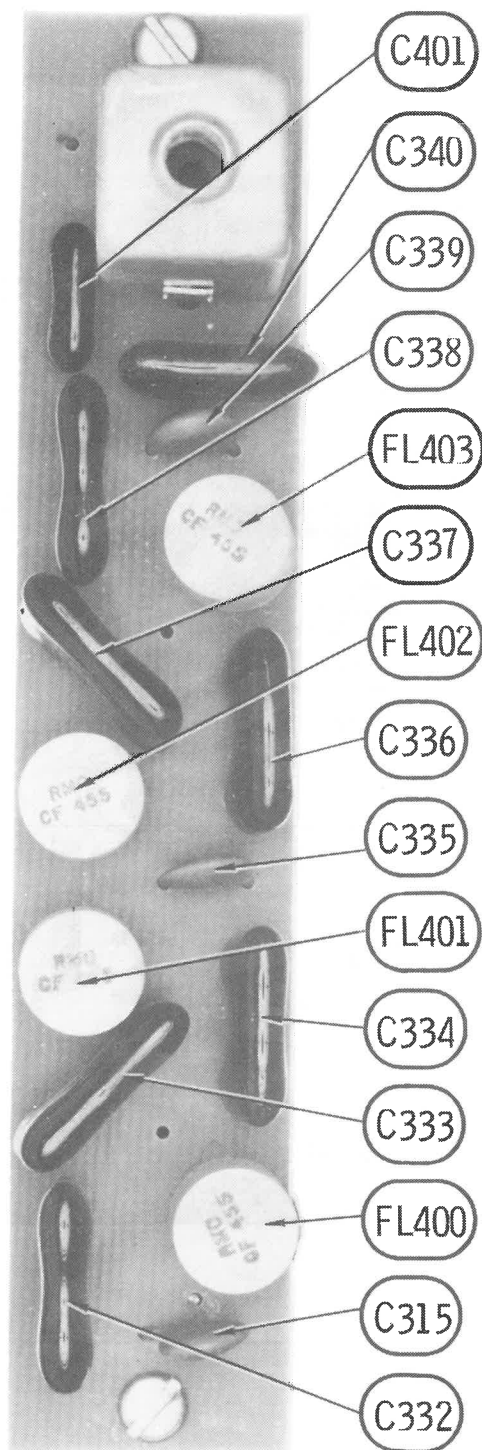
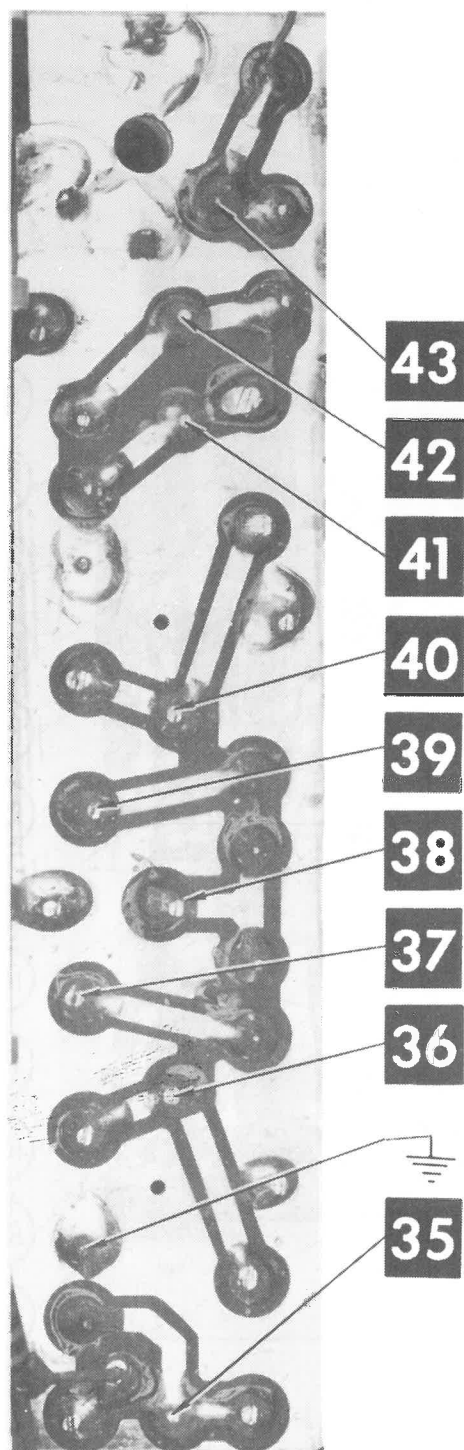
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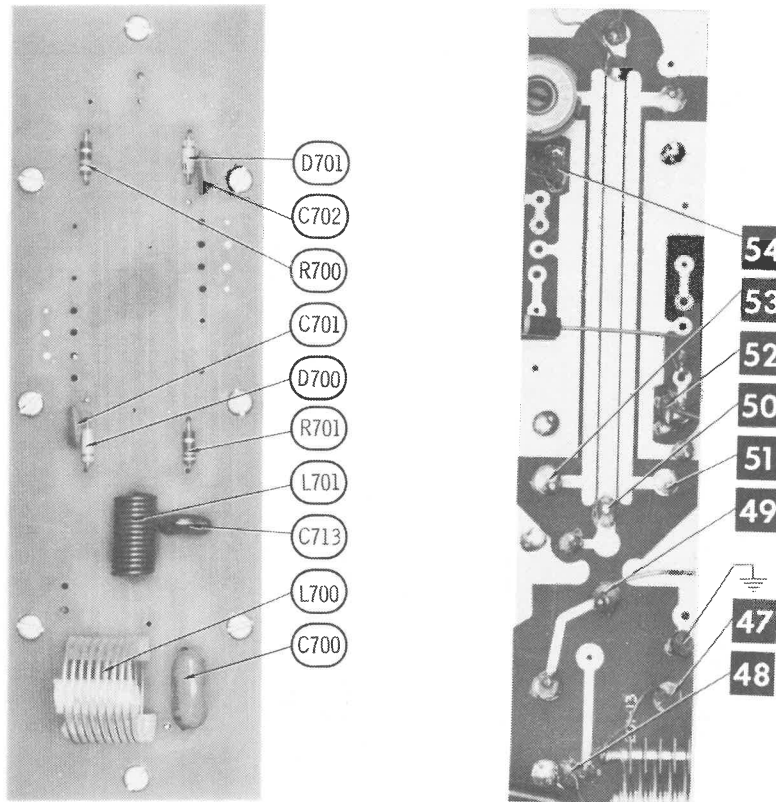
CHASSIS - BOTTOM



CHASSIS - BOTTOM



AM IF FILTER BOARD



TRAM MODEL D201

SWR BOARD

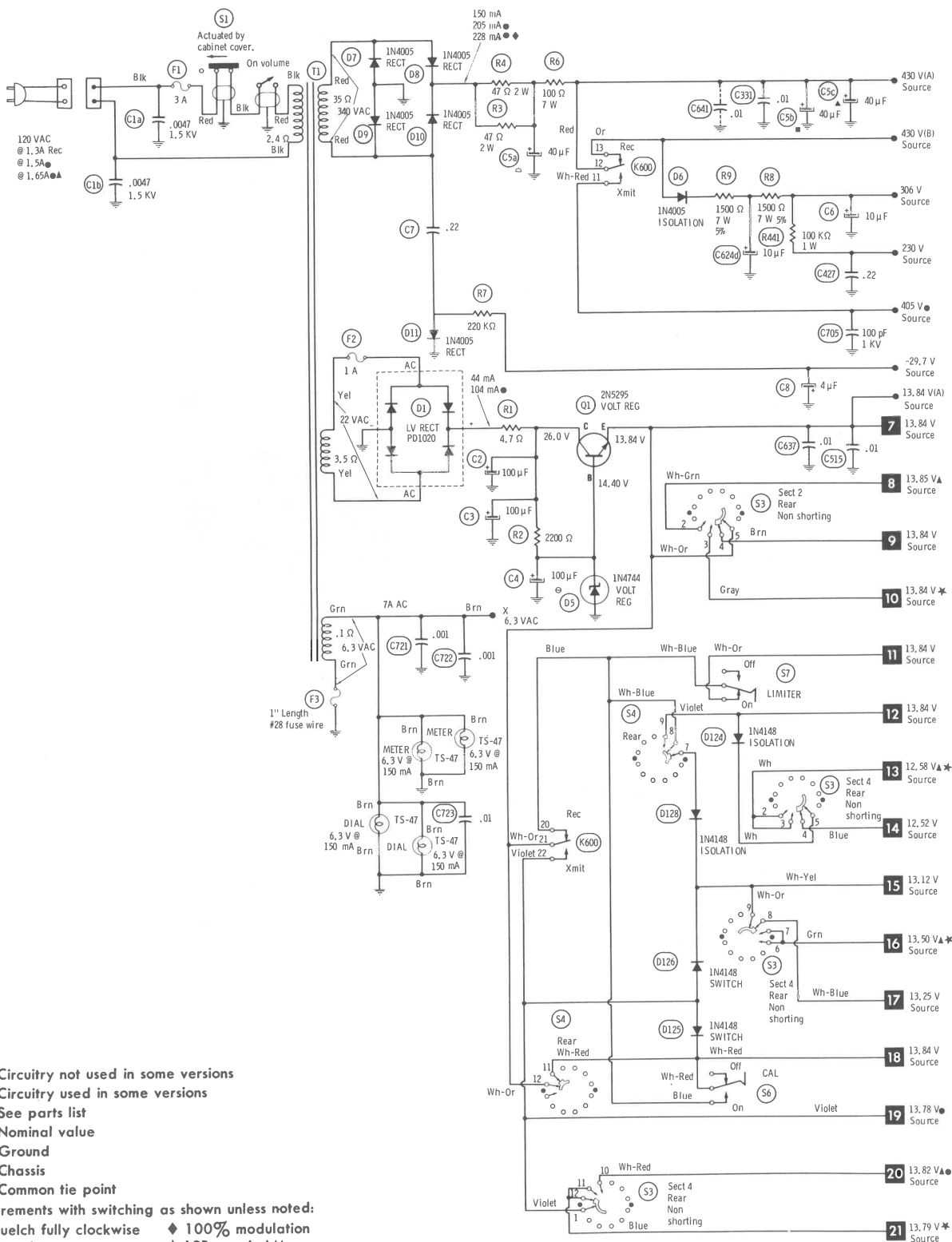
RESISTANCE MEASUREMENTS

ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V300	49 K Ω †	259 K	1NF	FIL	FIL	1NF	754 K Ω	754 Ω	0 Ω
V301	111.8 K Ω †	107 K Ω	2.3 K Ω	FIL	FIL	108 K Ω †	104 K Ω	2.3 K Ω	0 Ω
V302	100 K Ω †	97.7 K Ω	1.45 K Ω	FIL	FIL	49 K Ω †	24 K Ω	26 Ω (2)	0 Ω
V400	852 K Ω	0 V	FIL	FIL	50 K Ω †	97 K Ω †	754 Ω		
V401	24 K Ω †	799 K Ω	62 K Ω †	FIL	FIL	50 K Ω †	235 Ω	150 Ω	175 K Ω
V402	145 K Ω †	1.36 M Ω	80 K Ω	FIL	FIL	1.2 M Ω †	1.2 M Ω	11.2 K Ω	FIL
V500	643 K Ω †	0 Ω	FIL	FIL	50.5 K Ω †	41.8 K Ω †	611 Ω		
V501	646 K Ω †	0 V	FIL	FIL	50 K Ω †	42 K Ω †	99 Ω		
V502	197 K Ω †	224 K Ω	1.17 M Ω †	FIL	FIL	220 K Ω †	1500 Ω	6.85 K Ω	140 Ω
V600	160 K Ω †	11 K Ω	26 K Ω †	FIL	FIL	4.41 M Ω †	1NF	1NF	54 Ω
V601	27 K Ω †	1.55 M Ω	70.4 K Ω †	FIL	FIL	144 K Ω †	0 Ω	983 Ω	7 Ω
V602	24 K Ω †	515 K Ω	1.22 M Ω †	FIL	FIL	147 K Ω †	2.08 K Ω	162 Ω	217 K Ω
V603	NC	FIL	457 Ω †	11 K Ω †	230 K Ω	NC	FIL	523 Ω	
V700	96 Ω	72 K Ω	0 Ω	FIL	FIL	0 Ω	99.7 K Ω †	155 K Ω †	0 Ω
V701		FIL	94.8 K Ω †	92.7 K Ω †	91.3 K Ω	NC	FIL	0 Ω	

† To power supply diodes D8 and D10.

(1) AM

(2) Manual



- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊗ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ▽ Common tie point

Measurements with switching as shown unless noted:

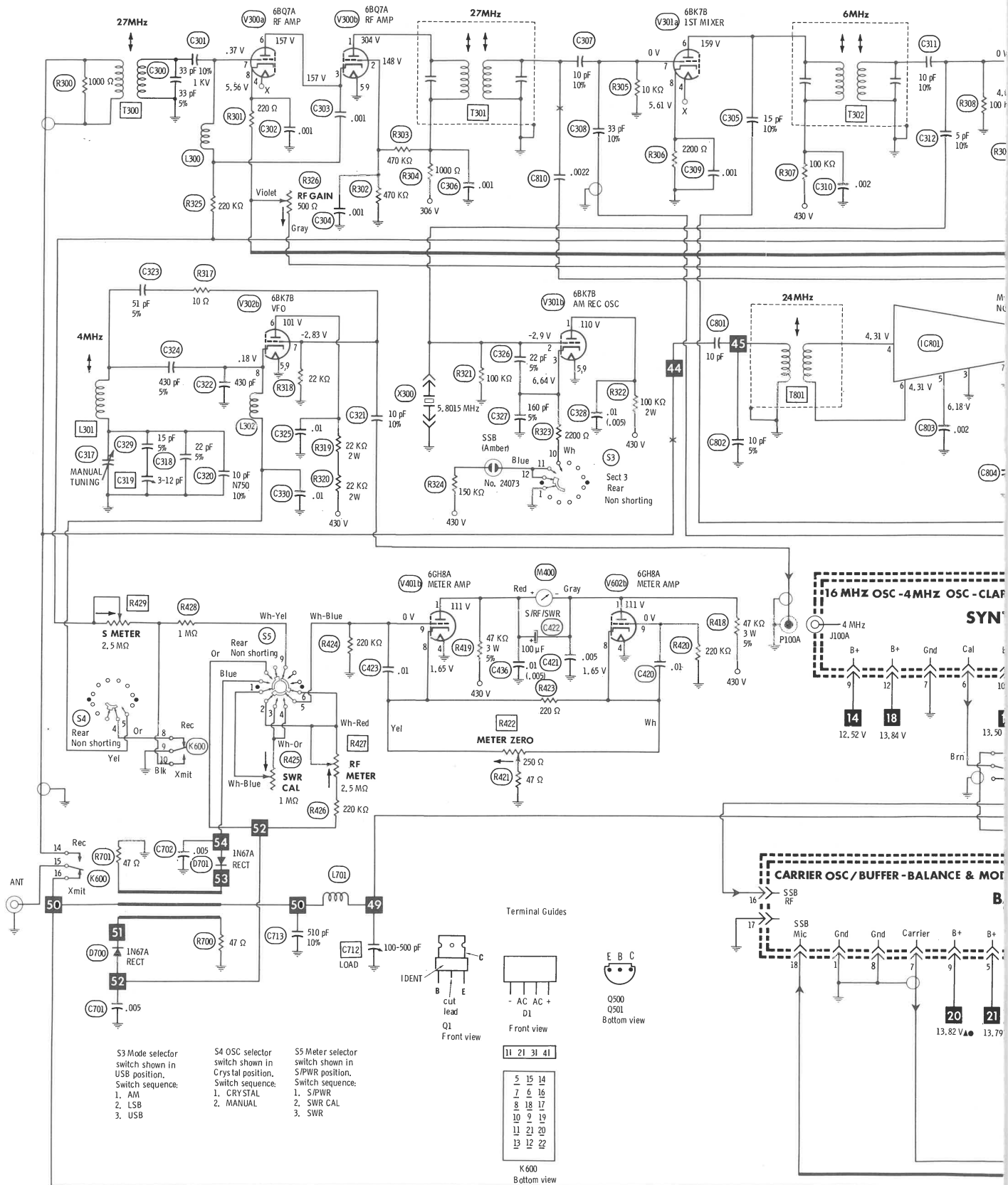
- Squelch fully clockwise
- ◆ 100% modulation
- Transmit
- ★ LSB
- ▲ AM

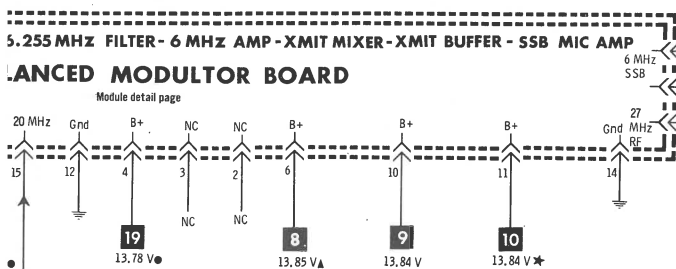
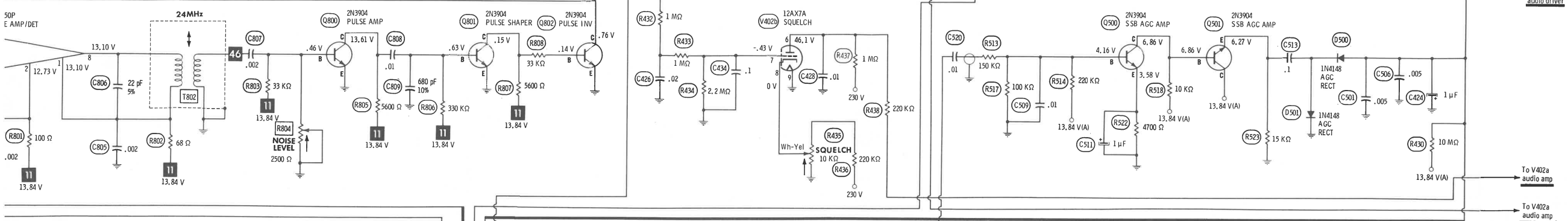
Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow at control indicates direction of advance.
 Terminal identification may not be found on unit.
 Resistors are 1/2W or less, 10% unless noted.
 Value in () used in some versions.

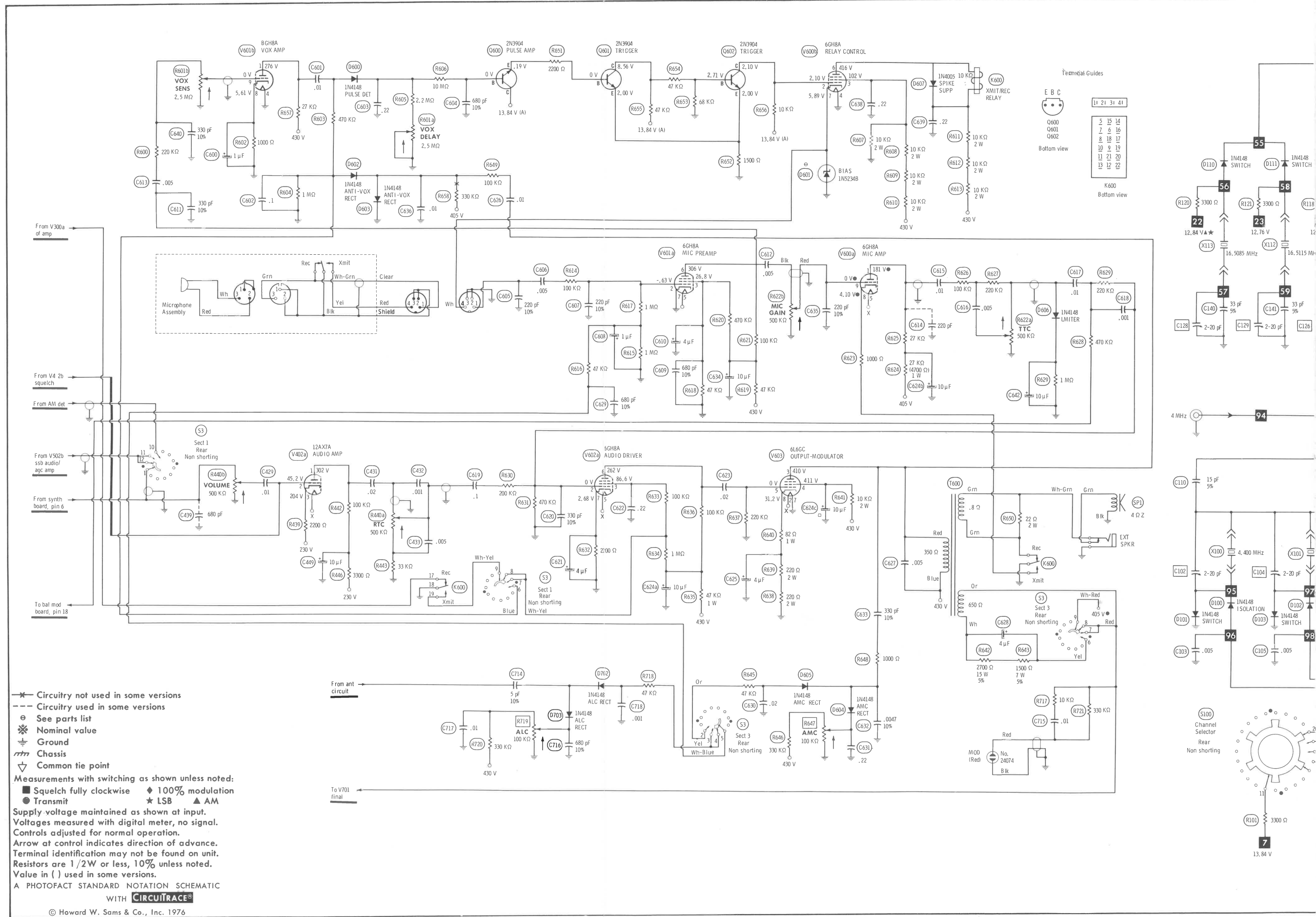
A PHOTOFACT STANDARD NOTATION SCHEMATIC

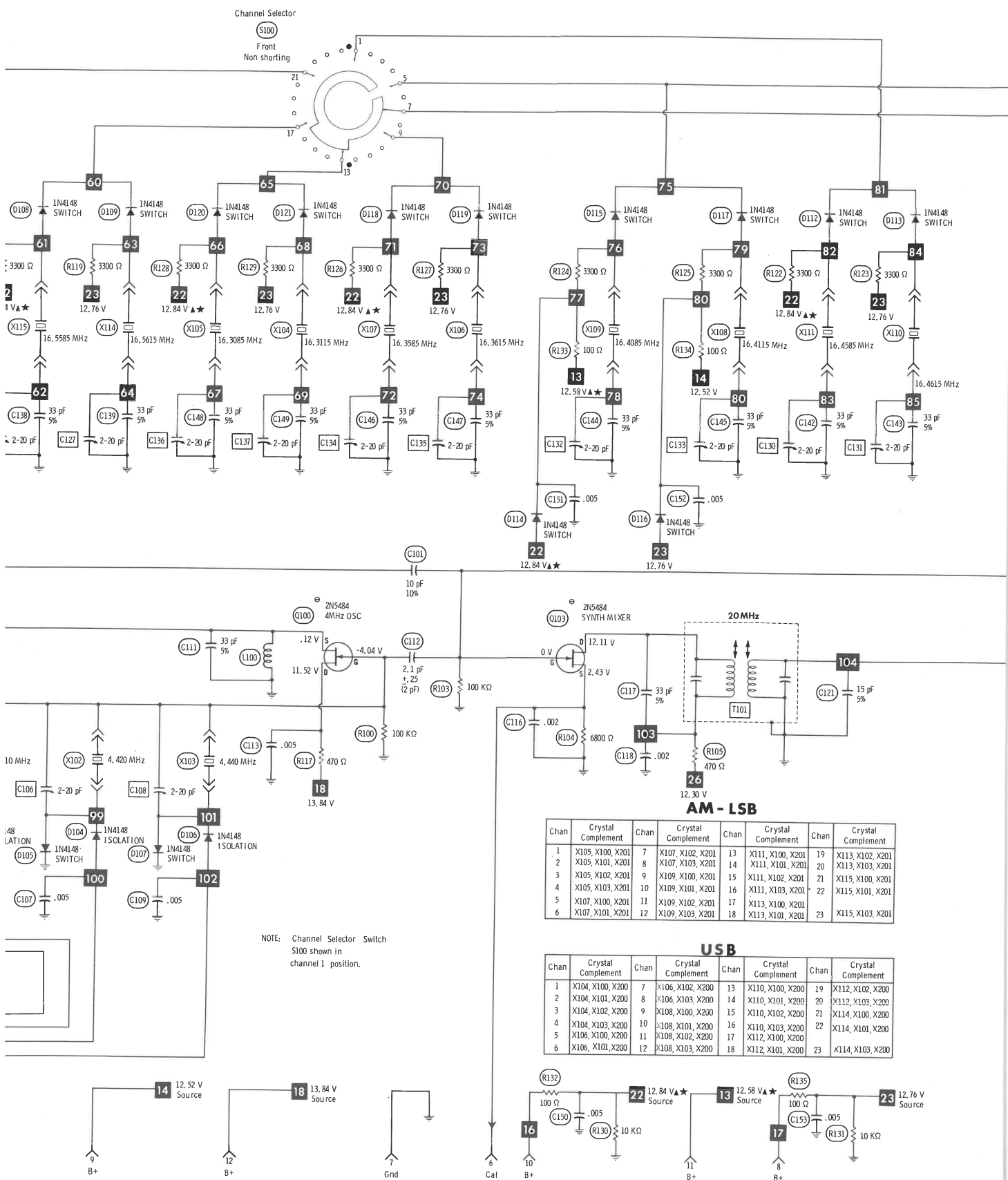
WITH **CIRCUITRACE®**

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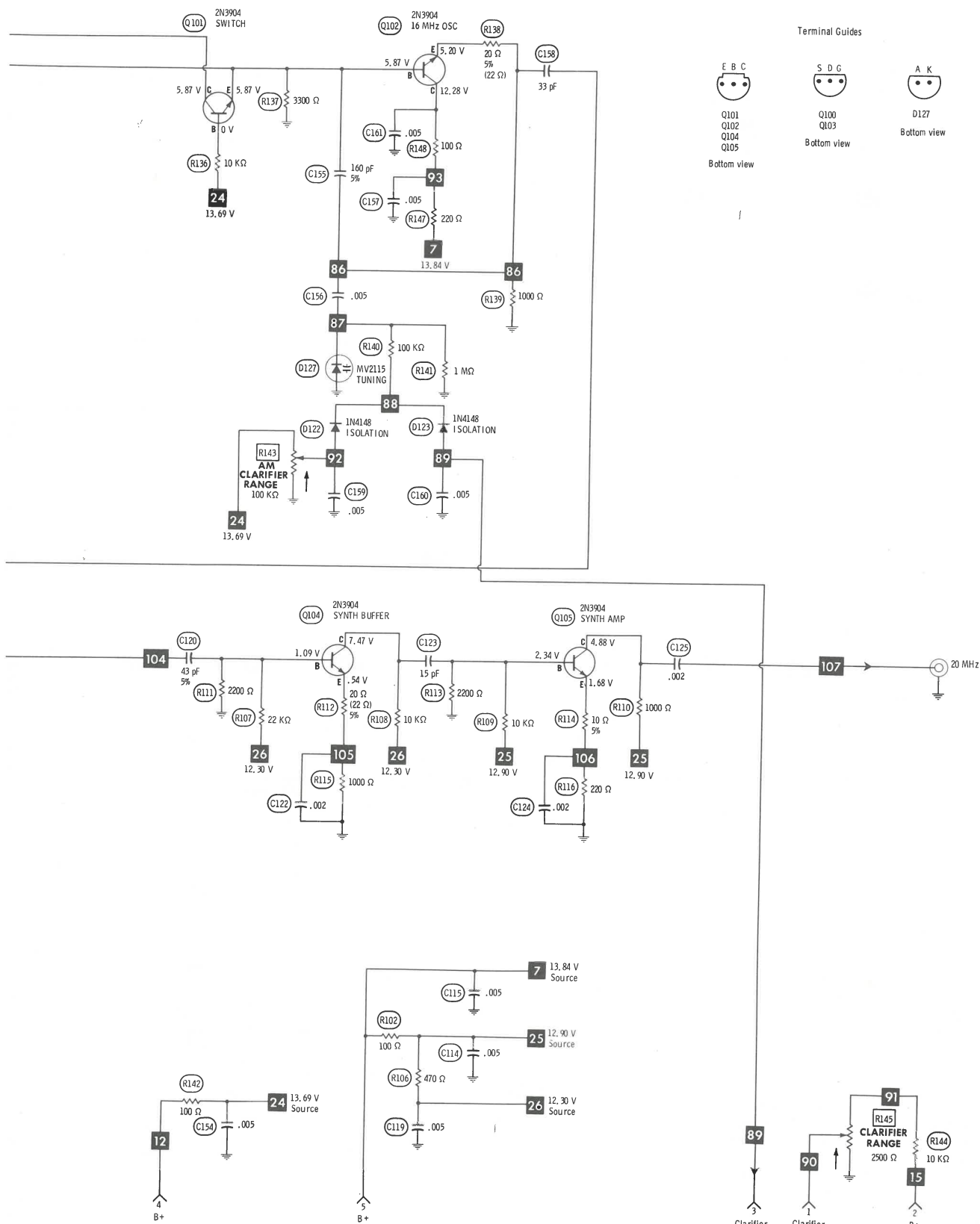
AM - LSB

Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement
1	X105, X100, X201	7	X107, X102, X201	13	X111, X100, X201	19	X113, X102, X201
2	X105, X101, X201	8	X107, X103, X201	14	X111, X101, X201	20	X113, X103, X201
3	X105, X102, X201	9	X109, X100, X201	15	X111, X102, X201	21	X115, X100, X201
4	X105, X103, X201	10	X109, X101, X201	16	X111, X103, X201	22	X115, X101, X201
5	X107, X100, X201	11	X109, X102, X201	17	X113, X100, X201	23	X115, X103, X201
6	X107, X101, X201	12	X109, X103, X201	18	X113, X101, X201		

USB

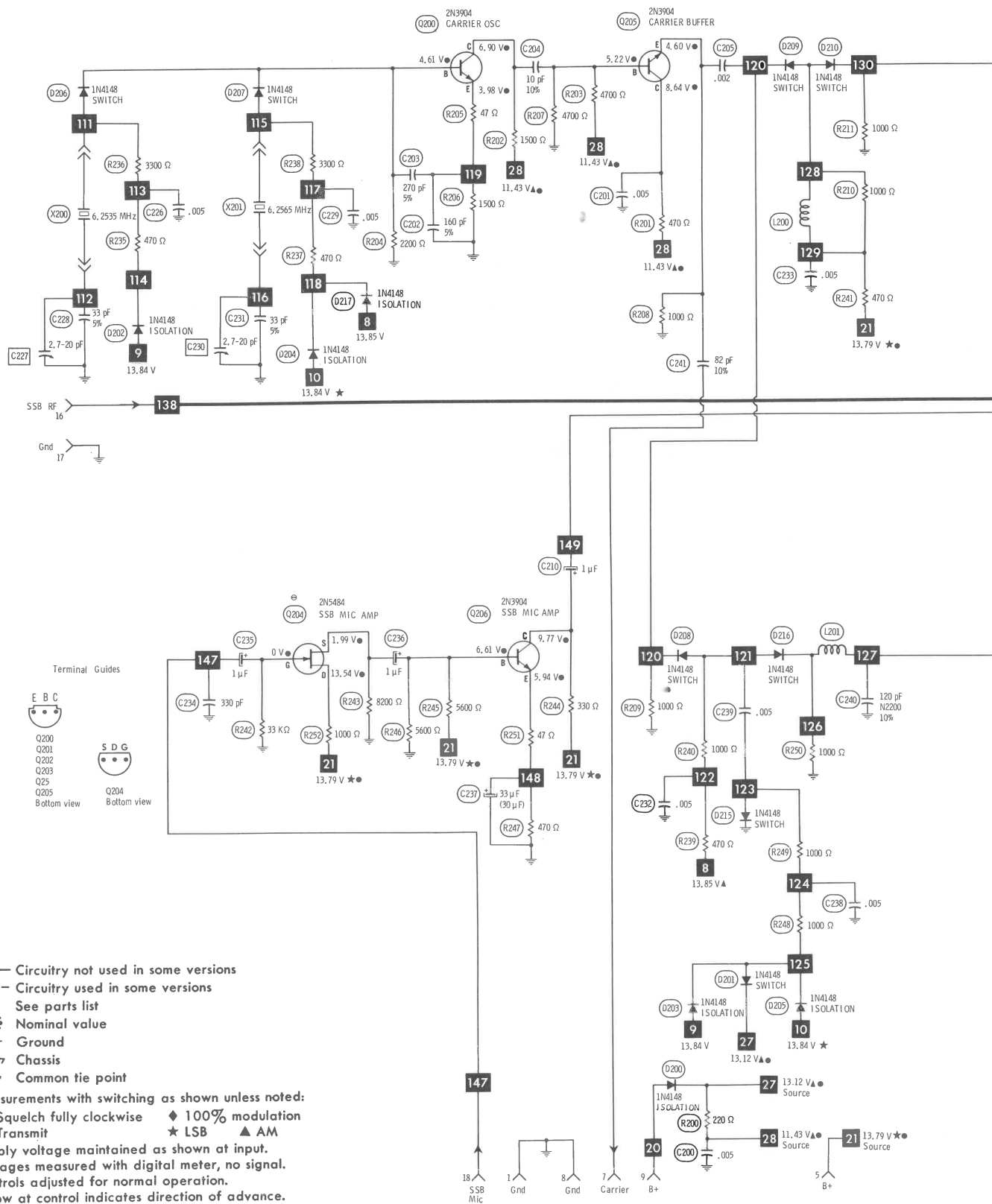
Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement
1	X104, X100, X200	7	X106, X102, X200	13	X110, X100, X200	19	X112, X102, X200
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3	X104, X102, X200	9	X108, X100, X200	15	X110, X102, X200	21	X114, X100, X200
4	X104, X103, X200	10	X108, X101, X200	16	X110, X103, X200	22	X114, X101, X200
5	X106, X100, X200	11	X108, X102, X200	17	X112, X100, X200		
6	X106, X101, X200	12	X108, X103, X200	18	X112, X101, X200	23	X114, X103, X200

SYNTHESIZER



BOARD

TRAM MODEL D201



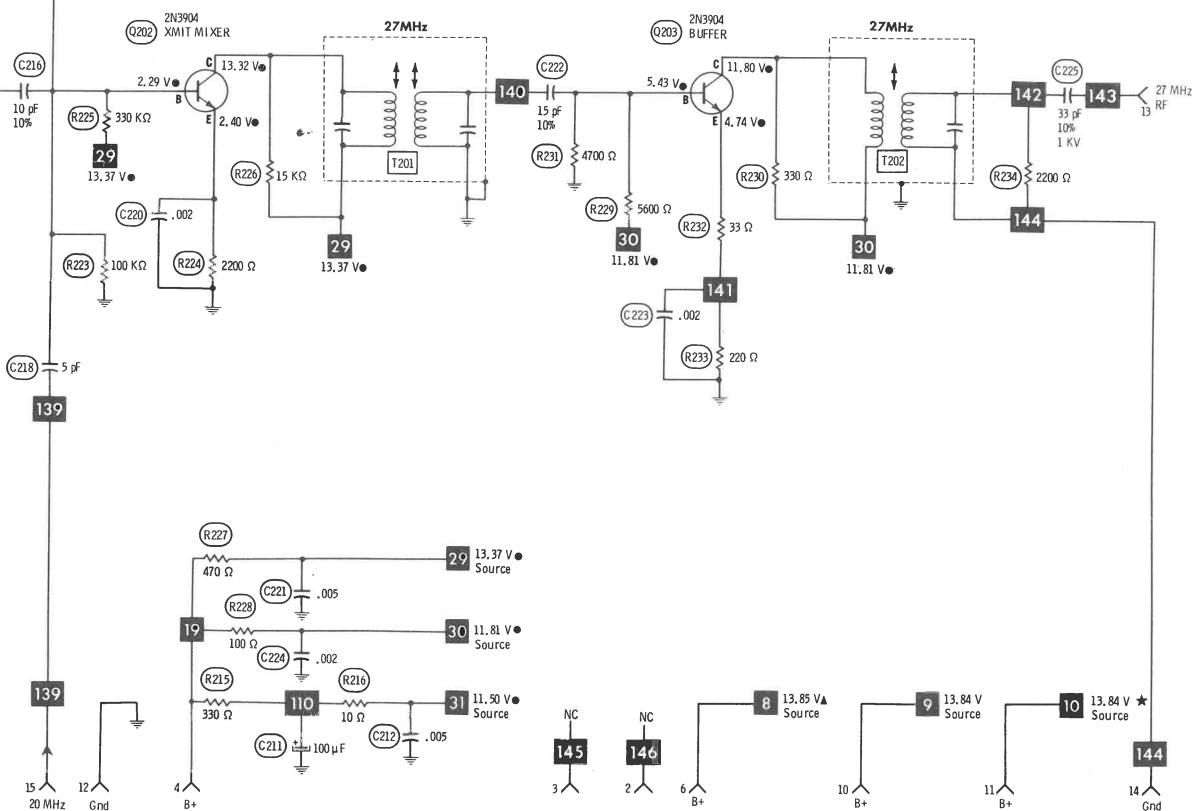
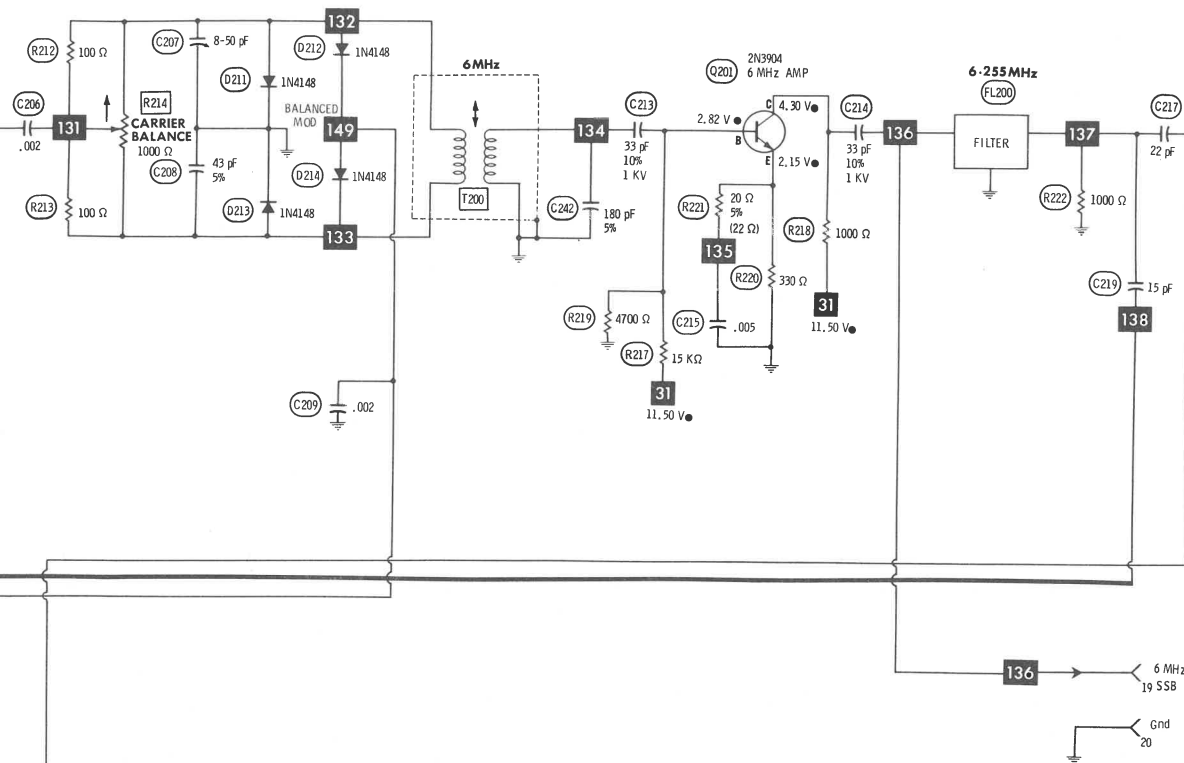
* Circuitry not used in some versions
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 ⊖ See parts list
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 ● Transmit ★ LSB ▲ AM

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A PHOTOFAC STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE®**
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BALANCED



MODULATOR BOARD

PARTS LIST AND DESCRIPTION

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

TUBES

AMPEREX			GENERAL ELECTRIC		RCA		SYLVANIA	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V300	RF Amp	6BQ7A	V502	Product Det-SSB AGC Amp	6GH8A	V501	1st SSB IF	6BA6
V301	1st Rec Mixer-AM Rec Osc	6BK7B	V600	Mic Amp-Vox Relay Control	6GH8A	V501	2nd SSB IF	6BA6
V302	2nd Rec Mixer-Man Osc	6BK7B	V601	Mic Pre Amp-Vox Amp	6GH8A			
V400	1st AM IF	6BA6	V602	Audio Driver-Meter Amp	6GH8A			
V401	2nd AM IF-Meter Amp	6GH8A	V603	Audio Output-Modulator	6L6GC			
V402	1st Audio-Squelch	12AX7A	V700	Xmit Driver	12BY7			
V500	1st SSB IF	6BA6	V701	Xmit Final	6L6GC			
V501	2nd SSB IF	6BA6						

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	PD1020	48106 (15 Volt Zener)	GE-504A(4)	8D6(4)	PTC202(4)	HEPR0054(4)	RE 49(4)	SK3017A(4)	RT-215(4)	ECG116(4)
D5	1N4744		GEZD-15	Z1214	PTC509	HEP20418	RE 121	SK3063	RT-245	ECG145
D6	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D7	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D8	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D9	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D10	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D11	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D100	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D101	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D102	1N4148	48159	GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D103	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D104	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D105	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D106	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D107	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D108	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D109	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D110	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D111	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D112	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D113	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D114	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D115	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D116	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D117	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D118	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D119	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D120	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D121	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D122	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D123	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D124	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D125	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D126	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D127	MV-2115					HEPR2505			RT-262	
D128	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D200	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D201	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D202	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D203	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D204	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D205	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D206	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D207	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D208	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D209	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D210	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D211	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D212	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D213	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D214	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D215	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D216	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D217	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D400	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D401	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D402	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D403	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D500	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D501	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D502	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D503	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177

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.	INTERNATIONAL RECTIFIER PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D504	1N4148	(6.2 Volt Zener)	GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D505	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D506	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D507	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D600	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D601	1N5234B		GEZD-6.2		PTC503	HEPZ0408	RE 109	SK3058	RT-237	ECG137
D602	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D603	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D604	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D605	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D606	1N4148	48009(1)	GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D607	1N4005		GE-504A	8D6	PTC202	HEPR0054	RE 49	SK3017A	RT-215	ECG116
D700	1N67A		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D701	1N67A		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D702	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D703	1N4148		GE-514	IR914	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
IC801	MC1350P					HEPC6059P			TVM-59	ECG746
Q1	2N5295		GE-66	TR-76	PTC137		RE 21	SK3054	RT-197	ECG152
Q100	2N5484		GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
	2N5485		GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
Q101	2N3904	48009(1)	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q102	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q103	2N5484		GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
	2N5485		GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
Q104	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q105	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q200	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q201	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q202	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q203	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q204	2N5484	48009(1)	GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
	2N5485		GE-FET-2	FE-100	PTC152	HEPF0021	RE 45	SK3116	RT-175	ECG312
Q205	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q206	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q500	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q501	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q600	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q601	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q602	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q800	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q801	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A
Q802	2N3904		GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122	RT-107A	ECG123A

(1) Used in some versions.

(4) Four required.

(10) Rating, 36 watts @ 4.0 amps.

TRAM MODEL D201

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	100 25V	15268	PC100-25	VTT100G25	EV-1330
C3	100 25V		PC100-25	VTT100G25	EV-1330
C4	100 25V		PC100-25	VTT100G25	EV-1330
C5a	40 450V		CC0350A	FP33.1A	TVL3787
b	40 450V				
c	40 450V				
C6	10 450V		WBR10-450	TC72B	TVA-1705
C8	4 150V		WBR5-450	TC50XB	TVA-1502
C210	1 50V		PC1-50	MTV1CB50	EV-1615
C211	100 25V		PC100-25	VTT100G25	EV-1330
C235	1 50V		PC1-50	MTV1CB50	EV-1615
C236	1 50V		PC1-50	MTV1CB50	EV-1615
C237	33 16V		PC30-25	VTT33D25	EV-1325
C422	100 25V		PC100-25	VTT100G25	EV-1330
C424	1 50V		PC1-50	MTV1CB50	EV-1615
C449	10 450V		WBR10-450	TC72B	TVA-1705
C511	1 50V		PC1-50	MTV1CB50	EV-1615
C518	4 250V		WBR5-450	TC50XB	TVA-1502
C600	1 50V		PC1-50	MTV1CB50	EV-1615
C608	1 50V		PC1-50	MTV1CB50	EV-1615
C610	4 150V		WBR5-450	TC50XB	TVA-1502
C621	4 150V		WBR5-450	TC50XB	TVA-1502
C624a	10 450V		DD0180A	FP434	TVL4760
b	10 450V				
c	10 450V				
d	10 450V				
C625	4 150V		WBR5-450	TC50XB	TVA-1502
C628	4 250V		WBR5-450	TC50XB	TVA-1502
C634	10 450V		WBR10-450	TC72B	TVA-1705
C642	10 15V		PC10-25	VTT10A25	EV-1222

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1a	.0047 1.5KV	15098				
C1b	.0047 1.5KV	15098				
C7	.22 400V					
C100	33 5%			DPMS6P22	EW66022	6PS-P22
C101	10 10%			CD6ED330J03	SX433	
C102	2-20	16033	DTZ-10	NP010	CN0410	10TCC-Q10
C103	.005					
C104	2-20	16033	DC-502	GP5000	TA250	2SS-D50
C105	.005					
C106	2-20	16033	DC-502	GP5000	TA250	2SS-D50
C107	.005					
C108	2-20	16033	DC-502	GP5000	TA250	2SS-D50
C109	.005					
C110	15 5%			GP5000	TA250	2SS-D50
C111	33 5%			CD6CD150J03		
C112	2.1 +.25			CD6ED330J03	SX433	
C113	.005		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C114	.005		DC-502	GP5000	TA250	2SS-D50
C115	.005		DC-502	GP5000	TA250	2SS-D50
C116	.002		DC-502	GP5000	TA250	2SS-D50
C117	33 5%				GP220	10TS-D20
C118	.002			CD6ED330J03	SX433	
C119	.005				GP220	10TS-D20
C120	43 5%		DC-502	GP5000	TA250	2SS-D50
C121	15 5%			CD6ED430J03	SX443	
C122	.002			CD6CD150J03		
C123	15		DTZ-15	NP015	GP220	10TS-D20
C124	.002				CN0415	10TCC-Q15
C125	.002				GP220	10TS-D20
C126	2-20	16033			GP220	10TS-D20
C127	2-20	16033				
C128	2-20	16033				
C129	2-20	16033				
C130	2-20	16033				
C131	2-20	16033				
C132	2-20	16033				
C133	2-20	16033				
C134	2-20	16033				
C135	2-20	16033				
C136	2-20	16033				
C137	2-20	16033				
C138	33 5%			CD6ED330J03	SX433	
C139	33 5%			CD6ED330J03	SX433	
C140	33 5%			CD6ED330J03	SX433	
C141	33 5%			CD6ED330J03	SX433	
C142	33 5%			CD6ED330J03	SX433	
C143	33 5%			CD6ED330J03	SX433	
C144	33 5%			CD6ED330J03	SX433	
C145	33 5%			CD6ED330J03	SX433	
C146	33 5%			CD6ED330J03	SX433	
C147	33 5%			CD6ED330J03	SX433	
C148	33 5%			CD6ED330J03	SX433	
C149	33 5%			CD6ED330J03	SX433	
C150	.005					10TS-D50
C151	.005					10TS-D50
C152	.005					10TS-D50
C153	.005					10TS-D50
C154	.005					10TS-D50
C155	160 5%			CD7FD161J03	SX316	424MC1600J501
C156	.005					10TS-D50
C157	.001		DD-102		GP210	10TS-D10
C158	33		DTZ-33	NP033	CN0433	10TCC-Q33
C159	.005					10TS-D50
C160	.005					10TS-D50
C161	.005					10TS-D50
C200	.005					10TS-D50
C201	.005					10TS-D50
C202	160 5%			CD7FD161J03	SX316	424MC1600J501
C203	270 5%			CD15FD271J03	SX327	424ME2700J501
C204	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C205	.002				GP220	10TS-D20
C206	.002				GP220	10TS-D20
C207	8-50	16034				
C208	43 5%			CD6ED430J03	SX443	
C209	.002				GP220	10TS-D20
C212	.005					10TS-D50
C213	33 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C214	33 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C215	.005					10TS-D50
C216	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C217	22		DTZ-22	NP022	CN0422	10TCC-Q22
C218	5					10TCC-V50
C219	15		DTZ-15	NP015	CN0415	10TCC-Q15
C220	.002				GP220	10TS-D20
C221	.005					10TS-D50
C222	15 10%		DTZ-15	NP015	CN0415	10TCC-Q15
C223	.002				GP220	10TS-D20
C224	.002				GP220	10TS-D20
C225	33 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C226	.005					10TS-D50
C227	2.7-20	16033				
C228	33 5%			CD6ED330J03	SX433	
C229	.005					10TS-D50

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.
C230	2.7-20	16033		CD6ED330J03	SX433	
C231	33 5%					10TS-D50
C232	.005					10TS-D50
C233	.005		DD-331	GP330	GP333	10TS-T33
C234	330					10TS-D50
C238	.005					10TS-D50
C239	.005				*	
C240	120 10% N2200		DD-820		GP482	10TS-Q82
C241	82 10%			CD7FD181J03	SX318	424ME1800J501
C242	180 5%			CD6ED330J03	SX433	
C300	33 5%		DTZ-33	NP033	CN0433	10TCC-Q33
C301	33 10% 1KV		DD-102		GP210	10TS-D10
C302	.001		DD-102		GP210	10TS-D10
C303	.001		DD-102		GP210	10TS-D10
C304	.001		DD-102		GP210	10TS-D10
C305	15 10%		DTZ-15	NP015	CN0415	10TCC-Q15
C306	.001		DD-102		GP210	10TS-D10
C307	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C308	33 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C309	.001		DD-102		GP210	10TS-D10
C310	.002				GP220	10TS-D20
C311	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C312	5 10%					10TCC-V50
C313	.01					10TS-S10
C314	.01					10TS-S10
C315	220 10%		DD-221		GP322	10TS-T22
C317		16001				
C318	22 5%		DTZ-22	NP022	CN0422	10TCC-Q22
C319	3-12	16022				
C320	10 10% N75V		DTN-10	N10	CN7410	10TCU-Q10
C321	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C322	430 5%		DD-471	GP470	GP347	10TS-T47
C323	51 5%			CD6ED240J03	SX424	MS-424
C324	430 5%			CD15FD431J03	SX343	424ME4300J501
C325	.01					10TS-S10
C326	22 5%			CD6CD220J03	SX422	
C327	160 5%			CD7FD161J03	SX316	424MC1600J501
C328	.01					10TS-S10
C329	15 5%			CD6CD150J03		
C330	.01					10TS-S10
C331	.01					10TS-S10
C332	510 5%			CD15FD511J03	SX351	424ME5100J501
C333	.0015 5%			CD19FD152J03	SX215	424ME1501J501
C334	820 5%			CD19FD821J03	SX382	424ME8200J501
C335	.002				GP220	10TS-D20
C336	820 5%			CD19FD821J03	SX382	424ME8200J501
C337	.0015 5%			CD19FD152J03	SX215	424ME1501J501
C338	510 5%			CD15FD511J03	SX351	424ME5100J501
C339	220 10%		DD-221		GP322	10TS-T22
C340	820 5%			CD19FD821J03	SX382	424ME8200J501
C401	160 5%			CD7FD161J03	SX316	424MC1600J501
C402	.005					10TS-D50
C403	.01					10TS-S10
C404	.01					10TS-S10
C405	.01					10TS-S10
C406	.01					10TS-S10
C407	.01					10TS-S10
C408	.1 200V			DPMS2P1	EW2010	2PB-P10
C409	.01					10TS-S10
C410	10 10%		DTZ-10	NP010	CN0410	10TCC-Q10
C411	.01					10TS-S10
C412	50 10%		DTZ-50	NP050	CN0450	10TCC-Q50
C413	.01					10TS-S10
C414	220 10%		DD-221		GP322	10TS-T22
C415	15 10%		DTZ-15	NP015	CN0415	10TCC-Q15
C416	330 10%		DD-331	GP330	GP333	10TS-T33
C417	.02				GP120	5GA-S20
C418	.1 200V			DPMS2P1	EW2010	2PB-P10
C419	.02				GP120	5GA-S20
C420	.02				GP120	5GA-S20
C421	.005					10TS-D50
C423	.01					10TS-S10
C426	.02			DPMS6P22	GP120	5GA-S20
C427	.22 400V				EW2022	6PS-P22
C428	.01					10TS-S10
C429	.01					10TS-S10
C431	.02				GP120	5GA-S20
C432	.001		DD-102		GP210	10TS-D10
C433	.005			CD6ED330J03	SX433	
C434	.1 200V			DPMS2P1	EW2010	2PB-P10
C435	.01					10TS-S10
C436	.01					10TS-S10
C437	.002				GP220	10TS-D20

TRAM MODEL D201

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.	
C438	.1 200V	16011	DD-681 DTZ-33	DPMS2P1	EW2010	2PB-P10	
C439	680 10%			GP680	GP368	10TS-T68	
C500	33 10%			NP033	CN0433	10TCC-Q33	
C501	.005					10TS-D50	
C502	.01					10TS-S10	
C503	.005					10TS-D50	
C504	.005					10TS-D50	
C505	33 10%		DTZ-33	NP033	CN0433	10TCC-Q33	
C506	.005					10TS-D50	
C507	.01					10TS-S10	
C508	.005					10TS-D50	
C509	.01					10TS-S10	
C510	.005					10TS-D50	
C512	680 10%					DD-681	GP680
C513	.1 200V		DPMS2P1	EW2010	2PB-P10		
C514	.001		DPMS6D1	EW1A210	1PB-D10		
C515	.01				10TS-S10		
C517	.22 200V		DPMS6P22	EW6022	6PS-P22		
C519	.01				10TS-S10		
C520	.01				10TS-S10		
C601	.01				10TS-S10		
C602	.1 200V		DPMS2P1	EW2010	2PB-P10		
C603	.22 400V		DPMS6P22	EW6022	6PS-P22		
C604	680 10%		DD-681	GP680	GP368	10TS-T68	
C605	220 10%				GP322	10TS-T22	
C606	.005				10TS-D50		
C607	220 10%		DD-221		GP322	10TS-T22	
C609	680 10%		DD-681	GP680	GP368	10TS-T68	
C611	330 10%		DD-331	GP330	GP333	10TS-T33	
C612	.005				10TS-D50		
C613	.005				10TS-D50		
C614	220				10TS-D50		
C615	.01				10TS-S10		
C616	.005				10TS-D50		
C617	.01				10TS-S10		
C618	.001		DD-102		GP210	10TS-D10	
C619	.1 200V		DPMS2P1	EW2010	2PB-P10		
C620	330 10%		DD-331	GP330	GP333	10TS-T33	
C622	.22 400V		DPMS6P22	EW6022	6PS-P22		
C623	.04			GP140	5GA-S40		
C626	.01				10TS-S10		
C627	.005				10TS-D50		
C629	680 10%		DD-681	GP680	GP368	10TS-T68	
C630	.02				GP120	5GA-S20	
C631	.22 200V			DPMS6P22	EW6022	6PS-P22	
C632	.0047 10%			DPMS6D47	EW1A247	1PB-D47	
C633	330 10%		DD-331	GP330	GP333	10TS-T33	
C635	220 10%		DTZ-220			10TCC-T22	
C636	.01		DC-103	GP10000	MAG5011	2SS-S10	
C637	.01		DC-103	GP10000	MAG5011	2SS-S10	
C638	.22 200V		DPMS6P22	EW6022	6PS-P22		
C639	.22 400V		DPMS6P22	EW6022	6PS-P22		
C640	330 10%		DD-331	GP330	GP333	10TS-T33	
C700	.001 10% 1KV		DD-102		GP210	10TS-D10	
C701	.005		DC-502	GP5000	TA250	2SS-D50	
C702	.005		DC-502	GP5000	TA250	2SS-D50	
C703	.001		DD-102		GP210	10TS-D10	
C704	.001		DD-102		GP210	10TS-D10	
C705	100 1KV		DD-101	GP100	GP310	10TS-T10	
C706	33-150	16013					
C707	15 5%			CD6CD150J03			
C708	270 5%			CD15FD271J03			
C709	10 5%			NP010	SX327 CN0410 GP210	424ME2700J501 10TCC-Q10 10TS-D10	
C710	.001	16006	DTZ-10				
C711	5-25		DD-102				
C712	100-500						
C713	510 10%						
C714	5 10%	16013		CD15FD511J03	SX351	424ME5100J501	
C715	.01					10TCC-V50	
C716	680 10%	DC-103	GP10000	MAG5011	2SS-S10		
C717	.01	DD-681	GP680	GP368	10TS-T68		
C718	.001	DC-103	GP10000	MAG5011	2SS-S10		
		DD-102		GP210	10TS-D10		
C719	.001	DD-102		GP210	10TS-D10		
C720	100 1KV	DD-101	GP100	GP310	10TS-T10		
C721	.001	DD-102		GP210	10TS-D10		
C722	.001	DD-102		GP210	10TS-D10		
C723	.01	DC-103	GP10000	MAG5011	2SS-S10		
C801	10	DTZ-10	NP010	CN0410	10TCC-Q10		
C802	10 5%	16013		CD6CD100D03			
C803	.002			DD-202	GP2000	GP220	2SS-D20
C804	.002			DD-202	GP2000	GP220	2SS-D20
C805	.002			DD-202	GP2000	GP220	2SS-D20
C806	22 5%			CD6CD220J03	SX422		
C807	.002	DD-202	GP2000	GP220	2SS-D20		
C808	.01	DC-103	GP10000	MAG5011	2SS-S10		
C809	680 10%	DD-681	GP680	GP368	10TS-T68		
C810	.002	DD-202	GP2000	GP220	2SS-D20		

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

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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.	MALLORY PART No.	TRW PART No.
R143	AM Clarifier Range	100K	47004	T-100K or TSC1BB104C	C-104	MTC15L1	X 01R104B
R145	Clarifier Range	2500	47003	T-2500 or TSC1BB252C	C-252	MTC23L1	X201R252B
R146	Clarifier	100K	47063	F1-100K, SRS010	A47-100K-S, RS-2 or [NP-100K-S, UP-A-400]	UA15L, SN750 or [RU15L, SL38, SN750] or U41	BU1, CF13, SS1, DC1
R214	Carrier Balance	1000	47002	T-1000 or TSC1BB102C	C-102	MTC13L1	X201R102B
R326	RF Gain	500 2WW	47050	WW-501 or [WP-500, WSK104]	A43-500, RS-2 or [NPW-500, UP-A-400]	VW500 or MB500B	BU1, WF20, SS3
R422	Meter Zero	250	47001	T-250 or TSC1BB251C	C-251	MTC251L1	X201R251B
R425	SWR Cal.	1meg	47066 A-201-21 (5)	F1-1Meg, SRS010	A47-1Meg-S, RS-2 or [NP-1Meg-S, UP-A-400]	UA16L, SN750 or [RU16L, SL38, SN750] or U54	BU1, CF17, SS1, DC1
R427	RF Meter	2.5meg	47005	T-2.5Meg or TSC1BB225C		MTC355L1	
R429	S Meter	2.5meg	47005	T-2.5Meg or TSC1BB225C		MTC355L1	
R435	Squelch	10K	47051	F1-10K, SRS010	A47-10K-S, RS-2 or [NP-10K-S, UP-A-400]	UA14L, SN750 or [RU14L, SL38, SN750] or U20	BU1, CF9, SS1, DC1
R440a	RTC	500K	47062				
b	Volume/Power Switch	500K					
R601a	Vox Delay	2.5meg	47049				
b	Vox Sens/Vox Switch	2.5meg					
R622a	TTC	500K	47067				
b	Mic Gain	500K	A-201-15 (5)				
R647	AMC	100K	47004	T-100K or TSC1BB104C	C-104	MTC15L1	X201R104B
R707	SSB Bias	100K	47004	T-100K or TSC1BB104C	C-104	MTC15L1	X201R104B
R708	AM Bias	100K	47004	T-100K or TSC1BB104C	C-104	MTC15L1	X201R104B
R719	ALC	100K	47004	T-100K or TSC1BB104C	C-104	MTC15L1	X201R104B
R804	Noise Level	2500		T-2500 or TSC1BB252C	C-252	MTC23L1	X201R252B

(5) Number on unit.

TRAM MODEL D201

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
R6	100 7W WW	20-103	46212	R419	47K 3W Oxide 5%	20-119	46212
R8	1500 5% 7W WW			R642	2700 5% 15W WW		
R9	1500 5% 7W WW			R643	1500 5% 7W WW		
R418	47K 3W Oxide 5%			R706	4700 7W WW		

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS			
		PART No.	OTHER IDENTIFICATION	MILLER PART No.				
L100	RF Choke	18117						
L200	RF Choke							
L201	RF Choke							
L300	RF Choke							
L301	VFO (4MHz)	56152						
L302	RF Choke							
L400	IF (455kHz)							
L700	RF Choke							
L701	Pi Filter	18206-Y						
L702	RF Choke	18200						
L703	RF Choke	46039-1-X						
L704	RF Choke							
T100	Synthesizer (20MHz)	18101	90018R1					
T101	Synth Mixer (20MHz)	56107						
T200	Carrier (6MHz)	56108						
T201	Xmit Mixer (27MHz)	56107						
T202	Xmit Buffer (27MHz)	56104	M133775					
T300	Rec Ant (27MHz)	18101						
T301	Rec RF (27MHz)	56150						
T302	Rec Mixer (27MHz)	56154				A20172		

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.	
T400	IF (455kHz)	56151	A20135		
T401	IF (455kHz)	56151			
T500	SSB IF (6MHz)	56153			
T501	SSB IF (6MHz)	56153			
T502	SSB IF (6MHz)	56153			
T700	Xmit Driver (27MHz)	18101	A0259		
T801	Noise Amp Input				
T802	Noise Amp Output				

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T600	4096	4	56156			

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	120V AC @ 1.55A AC 2.4 Ohms	6.3V AC @ 7A AC .1 Ohm	56155 B201-3 (1)			(1) Number on unit.
	SEC. 2	SEC. 3				
	22V AC @ 150mA AC 3.5 Ohms	340V AC @ 370mA AC 35 Ohms				

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	4" X 6" PM, 4 Ohms		46A1	

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	3 Amp Slow Blow			MDL3	HKP	313003	342012AL	F61-2
F2	1 Amp Fast Acting			AGC1	4406	312001	350244	F28
F3	#28 Wire 1"							

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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
X100	4.400	23044	AXC20 M4.400	1,5,9,13,17,21	X110	16.4615	23039	AXA55 M16.4615	13,14,15,16
X101	4.410	23045	AXC20 M4.410	2,6,10,14,18,22	X111	16.4585	23038	AXA55 M16.4585	17,18,19,20
X102	4.420	23046	AXC20 M4.420	3,7,11,15,19	X112	16.5115	23041	AXA55 M16.5115	21,22,23
X103	4.440	23047	AXC20 M4.440	4,8,12,16,20,23	X113	16.5085	23040	AXB55 M16.5085	17,18,19,20
X104	16.3115	23033	AXA55 M16.3115	1,2,3,4	X114	16.5615	23043	AXB55 M16.5615	21,22,23
X105	16.3085	23032	AXB55 M16.3085	1,2,3,4	X115	16.5585	23042	AXA55 M16.5585	21,22,23
X106	16.3615	23035	AXA55 M16.3615	5,6,7,8	X200	6.2535	23035	AXDS M6.2535	USB
X107	16.3585	23034	AXB55 M16.3585	5,6,7,8	X201	6.2565	23027	AXDS M6.2565	AM-LSB
X108	16.4115	23037	AXA55 M16.4115	9,10,11,12	X300	5.8015	23048	AXD20 M5.8015	AM Rec. Osc.
X109	16.4085	23036	AXB55 M16.4085	9,10,11,12					

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
FL200	Filter	27001	6.255MHz
FL400	Filter	17013-X	455kHz
FL401	Filter		455kHz
FL402	Filter		455kHz
FL403	Filter		455kHz
K600	Relay	45002	
M400	Meter	24104	SWR/Power/RF
S1	Switch	51012	Cover Interlock
S3	Switch	51003	Modulation
S4	Switch	15009	Crystal/Manual
S5	Switch	51010	Meter
S6	Switch	51103	Calibration
S7	Switch	51103	Limiter
S100	Switch	S1007-Y	Crystal Selector
	Printed Circuit Board	17011	Synthesizer
	Printed Circuit Board	17011-X	Synthesizer, Complete
	Printed Circuit Board	17010	Balanced Modulator
	Printed Circuit Board	17010X	Balanced Modulator, Complete
	Printed Circuit Board	17009	SWR Bridge
	Printed Circuit Board	17009-X	SWR Bridge, Complete

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

ITEM	PART No.	ITEM	PART No.
Cabinet, End (2 Used)	14039	Knob, SWR, Clarifier, RF Gain, Squelch, Crystal-Manual	24036
Top Cover	14030-X	Knob, TTC, VOX Delay, RTC	24036X
Bottom Cover	14019	Knob, Mic Gain, VOX, Sens, Volume	24039
Knobs, Manual Tuning, Crystal Selector	24035	Dial, Crystal Selector W/Hub	24012-X
Knob, AM, LSB, USB	24041		

ACCESSORIES

ITEM	MFGR. PART No.	REMARKS
Microphone W/Plug	55050-X	

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Power Cord, 2-Wire	Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) -6 feet
	17109 (Plastic) or 17129 (Rubber) -9 feet
Shielded Antenna Lead	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

TRAM MODEL D201