

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 1001002, WASHINGTON

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER

Power Output

AM, 4 watts
SSB, 12 watts, P.E.P.

Modulation

AM, high and low level Class B.

Intermodulation Distortion

SSB: 3rd and 5th order, more than -25 dB.
7th and 9th order, more than -35 dB.

SSB Carrier Suppression

More than -45 dB

Unwanted Sideband

More than -45 dB

Frequency Response

AM and SSB: 300 to 3000 Hz.

Output Impedance

52 ohms, unbalanced

SSB Filter

7.8 MHz, crystal lattice type

6 dB @ 4.2 KHz

60 dB @ 7.0 KHz

Output Indicator

Meter shows relative RF output power.

RECEIVER

Sensitivity

SSB: Less than 0.25 μ V for 10 dB (S+N)/N at greater than 1/2 watt of audio output.

AM: Less than 0.5 μ V for 10 dB (S+N)/N at greater than 1/2 watt of audio output

Selectivity

SSB and AM: 6 dB @ 4.2 KHz, 60 dB @ 7.9 KHz

Cross Modulation

Better than -55 dB

Image Rejection

Better than -60 dB

I.F. Frequency

AM and SSB: 7.8 MHz

AM and SSB RF Gain Control

Adjustable for optimum signal reception

Automatic Gain Control

(AGC): Less than 10 dB change in audio output for inputs from 10 to 500,000 microvolts.

Squelch

Adjustable; threshold less than .5 μ V

Noise Blanker

RF type, effective on AM and SSB.

Clarifier Range

$\pm$ 1.25 KHz

Audio Output Power

4 watts into 8 ohms

Frequency Response

300 to 2500 Hz

Distortion

Less than 10% at 3 watts output.

Built-in Speaker

8 ohms

External Speaker (Not Supplied) 8 ohms, disables internal speaker when connected.

Courtesy of the Manufacturer

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

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PRESIDENT MODEL 1001002, WASHINGTON

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period.

Adjustments made with 13.8-volt DC at TP15.

Connect low sides of test equipment to ground unless specified otherwise.

Connect 50-ohm dummy load or antenna before keying transmitter.

Connect microphone.

Suggested Alignment Tools:

GC ELECTRONICS:

L1 thru L10, L13, L14, L17 thru L20, L26 thru L29 ... 9440

L36, L39 8728, 8728A, 9304

CT1, CT2, CT3 5000, 8276

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP12 (IC2 Pin 8).	Ch. 19, AM		Check for 10.240MHz.
Input of oscilloscope to TP16 (L18 Secondary).	Ch. 19, AM Clarifier Midrange	L18	Adjust for maximum RF.
Input of DC meter to TP9.	Ch. 40, AM	L13	Adjust for 5.00 volts.
Input of oscilloscope to TP1.	Ch. 19, USB	L14	Adjust for maximum RF.
Input of frequency counter to TP1.	Ch. 19, USB Clarifier Midrange	CT3	Adjust for 34.9875MHz +20Hz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP1.	Ch. 19, LSB Clarifier Midrange	L19	Adjust for 37.9825MHz +20Hz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP1.	Ch. 19, AM Clarifier Midrange	L20	Adjust for 34.9850MHz +20Hz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP1.	Ch. 19, XMT, LSB	VR3	Adjust for 34.9825MHz +20Hz.
Input of frequency counter to TP10.	Ch. 1, USB		Check for 1.430MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3.	Ch. 19, USB	CT1	Adjust for 7.8025MHz +5Hz or -0Hz.
Input of frequency counter to TP3.	Ch. 19, USB	CT2	Adjust for 7.7975MHz +0Hz or -5Hz.
Input of frequency counter to TP3. Disconnect TP7 and TP8.	Ch. 19, XMT, AM	L17	Adjust for 7.8000MHz +5Hz.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enough to prevent AGC limiting.
Mode AM, RF Gain Maximum, Squelch MINIMUM, Clarifier Midrange, NB Off

AM

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP13 (TR10 Collector). 7.8MHz, 1000Hz @ 30% modulation.	Ch. 19	L3,L4	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.185MHz,1000Hz @ 30% modulation.	Ch. 19	L5,L6,L7, L8,L9,L10	Adjust for maximum output. If necessary readjust L3 and L4 for maximum.
Output of signal generator thru .01uF to antenna input. 27.185MHz,1000Hz @ 30% modulation. Input of oscilloscope to TP14 (TR6 Emitter).	Ch. 19	L1,L2	Set generator output for 10db signal to noise plus noise ratio of receiver. Inject a 100pps, 1uSec pulse width signal at antenna input. Switch Noise Blanker on and adjust for maximum amplitude pulses.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Mode AM, RF Gain Maximum, Squelch MINIMUM, Clarifier Midrange, NB Off

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna input. 27.185MHz,1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	VR2	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna input. 27.185MHz,1000Hz @ 30% modulation. Output 100uV.	Ch. 19 S/RF/MOD S/RF	VR1	SIG METER Adjust for 9 on sig scale of meter.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Set generator output low enough to prevent AGC limiting.
Mode USB, RF Gain Maximum, Squelch MINIMUM, Clarifier Midrange, NB Off

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP13 (TR10 Collector). 7.8025MHz, no modulation.	Ch. 19	L3,L4	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.186MHz, no modulation.	Ch. 19	L5,L6,L7, L8,L9,L10	Adjust for maximum output. If necessary readjust L3 and L4 for maximum.

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TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of RF wattmeter and 50-ohm, 25 watt dummy load to antenna input. Inject a two tone 50mV signal at Mic input.	Ch. 19, USB Mike Gain Maximum	L26,L27, L28,L29, L36	Set VR7 to MINIMUM. Adjust for maximum RF output.
Input of spectrum analyzer or harmonic meter to antenna input.	Ch. 19, AM Mike Gain MINIMUM	L39	Adjust for MINIMUM at 54MHz (2nd harmonic).

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

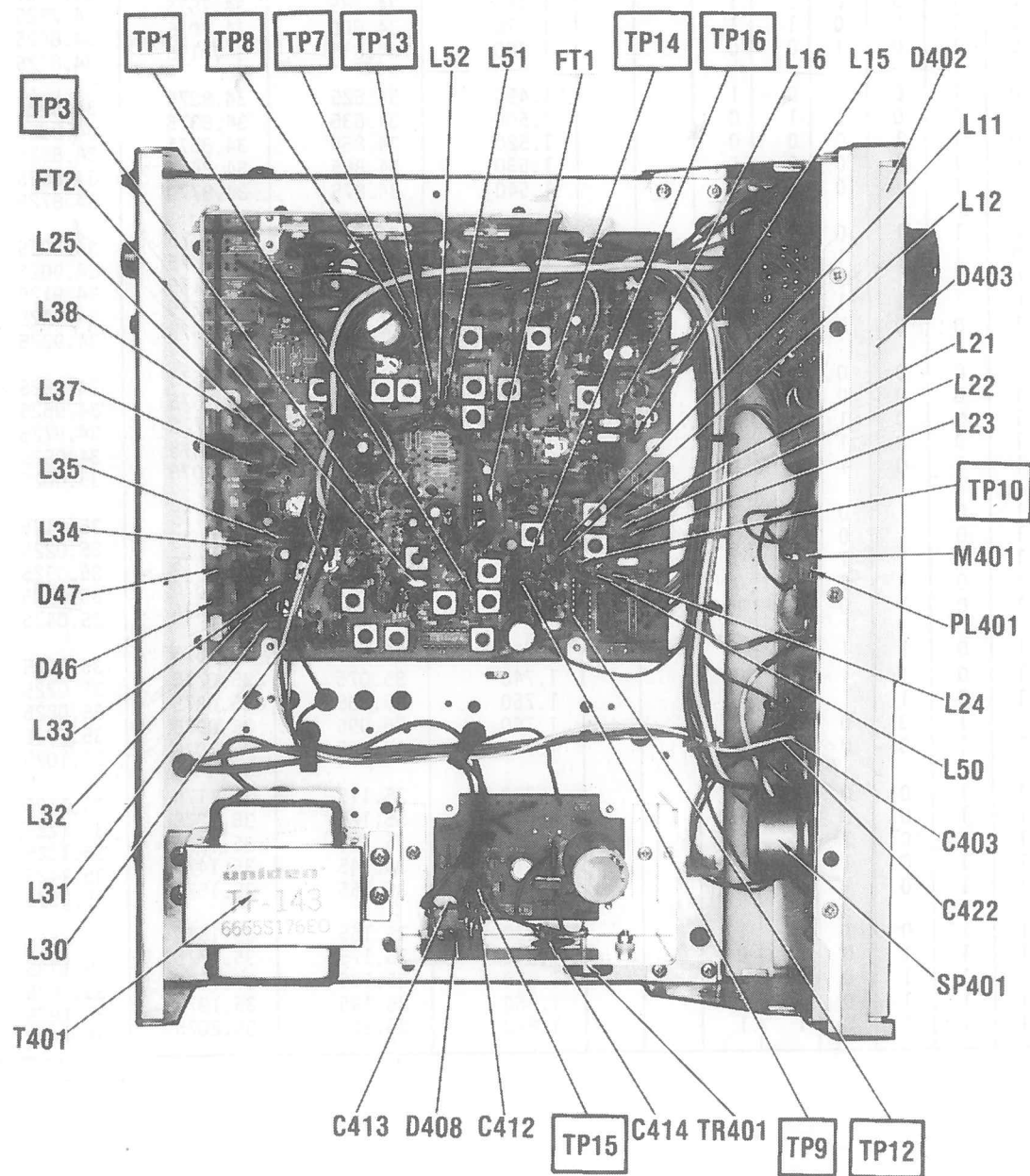
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of DC meter to TP15.	Ch. 19, AM	RT301	VOLT REGULATOR Adjust for 13.80 volts.
Input of oscilloscope or modulation meter to antenna input.	Ch. 19, AM S/RF/MOD MOD	VR12	MOD METER Adjust so that MOD meter agrees with external modulation meter.
Insert a 0-150mA DC current meter at TP8. No modulation.	Ch. 19, USB Mike Gain MINIMUM	VR8	RF DRIVER BIAS Adjust for 35mA idle current. Reconnect TP8.
Insert a 0-150mA DC current meter at TP7. No modulation.	Ch. 19, USB Mike Gain MINIMUM	VR9	RF FINAL BIAS Adjust for 45mA idle current. Reconnect TP7.
Input of RF wattmeter and 50-ohm, 25 watt dummy load to antenna input. No modulation.	Ch. 19, USB Mike Gain MINIMUM	VR5	CARRIER BALANCE Adjust for MINIMUM RF output. Check LSB and readjust if necessary for MINIMUM RF output.
Input of RF wattmeter and 50-ohm, 25 watt dummy load to antenna input. Inject a two tone, 50mV signal at Mic input.	Ch. 19, USB Mike Gain Maximum	VR7	RF ALC Adjust for 11.0 watts PEP RF output maximum.
Input of RF wattmeter and 50-ohm, 25 watt dummy load to antenna input. No modulation.	Ch. 19, AM Mike Gain MINIMUM	VR6	AM POWER Adjust for 4.0 watts RF output maximum.
Input of RF wattmeter and 50-ohm, 25 watt dummy load to antenna input. No modulation.	Ch. 19, AM Mike Gain MINIMUM S/RF/MOD S/RF	VR10	RF PWR METER Adjust so that PWR meter agrees with RF wattmeter.

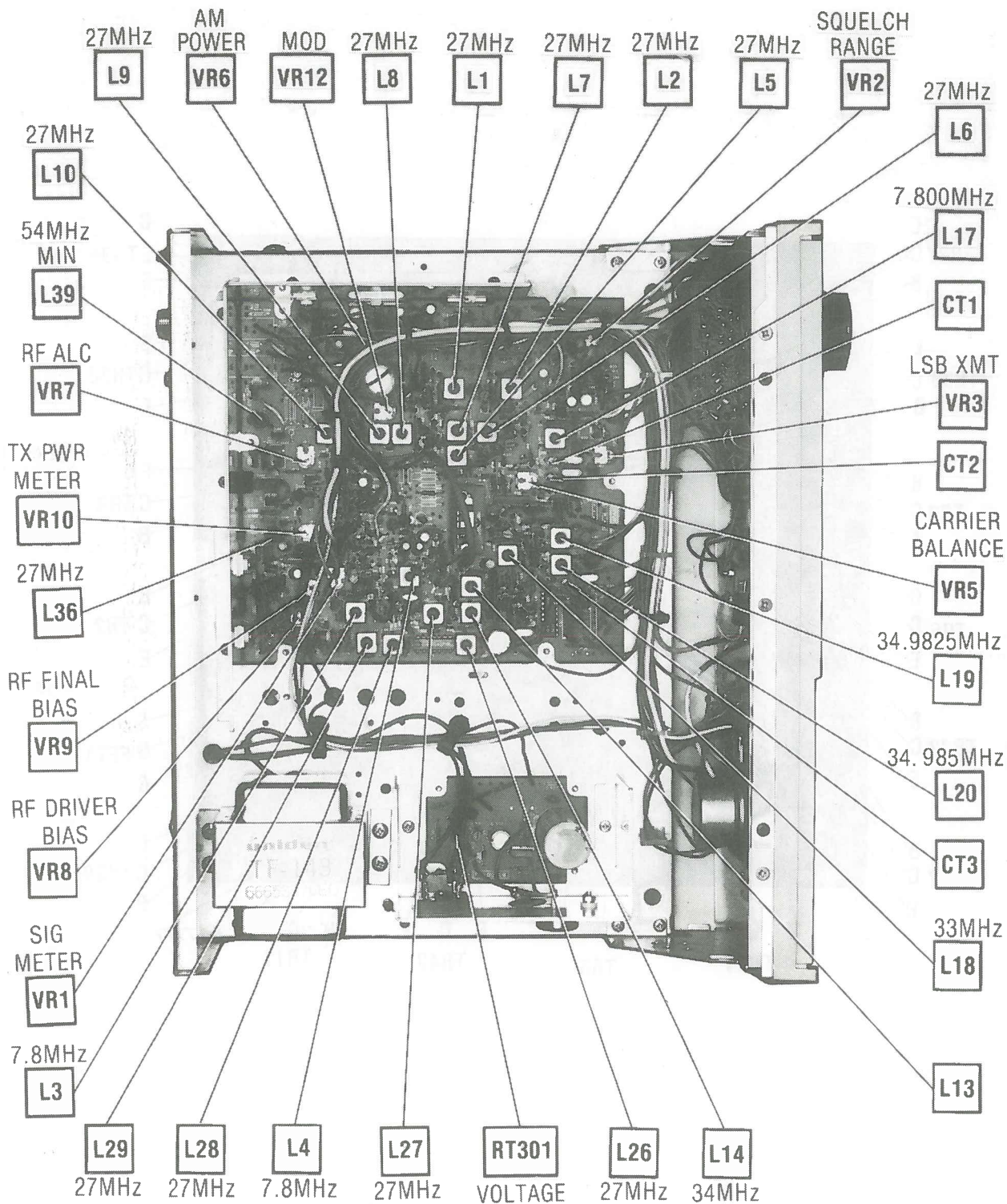
TRUTH CHART

CHANNEL	1 = 7.98 Volts 0 = 0 Volts								DIVIDER INPUT IN MHz AT TP10	AM REC VCO OUTPUT IN MHz AT TP1	USB REC VCO OUTPUT IN MHz AT TP1	LSB REC VCO OUTPUT IN MHz AT TP1
	IC2 PROGRAM DIVIDER											
	PINS											
	11	12	13	14	15	16						
1	0	0	1	1	1	1			1.430	34.765	34.7675	34.7625
2	0	1	0	0	0	0			1.440	34.775	34.7775	34.7725
3	0	1	0	0	0	1			1.450	34.785	34.7875	34.7825
4	0	1	0	0	1	1			1.470	34.805	34.8075	34.8025
5	0	1	0	1	0	0			1.480	34.815	34.8175	34.8125
6	0	1	0	1	0	1			1.490	34.825	34.8275	34.8225
7	0	1	0	1	1	0			1.500	34.835	34.8375	34.8325
8	0	1	1	0	0	0			1.520	34.855	34.8575	34.8525
9	0	1	1	0	0	1			1.530	34.865	34.8675	34.8625
10	0	1	1	0	1	0			1.540	34.875	34.8775	34.8725
11	0	1	1	0	1	1			1.550	34.885	34.8875	34.8825
12	0	1	1	1	0	1			1.570	34.905	34.9075	34.9025
13	0	1	1	1	1	0			1.580	34.915	34.9175	34.9125
14	0	1	1	1	1	1			1.590	34.925	34.9275	34.9225
15	1	0	0	0	0	0			1.600	34.935	34.9375	34.9325
16	1	0	0	0	1	0			1.620	34.955	34.9575	34.9525
17	1	0	0	0	1	1			1.630	34.965	34.9675	34.9625
18	1	0	0	1	0	0			1.640	34.975	34.9775	34.9725
19	1	0	0	1	0	1			1.650	34.985	34.9875	34.9825
20	1	0	0	1	1	1			1.670	34.005	35.0075	35.0025
21	1	0	1	0	0	0			1.680	35.015	35.0175	35.0125
22	1	0	1	0	0	1			1.690	35.025	35.0275	35.0225
23	1	0	1	1	0	0			1.720	35.055	35.0575	35.0525
24	1	0	1	0	1	0			1.700	35.035	35.0375	35.0325
25	1	0	1	0	1	1			1.710	35.045	35.0475	35.0425
26	1	0	1	1	0	1			1.730	35.065	35.0675	35.0625
27	1	0	1	1	1	0			1.740	35.075	35.0775	35.0725
28	1	0	1	1	1	1			1.750	35.085	35.0875	35.0825
29	1	1	0	0	0	0			1.760	35.095	35.0975	35.0925
30	1	1	0	0	0	1			1.770	35.105	35.1075	35.1025
31	1	1	0	0	1	0			1.780	35.115	35.1175	35.1125
32	1	1	0	0	1	1			1.790	35.125	35.1275	35.1225
33	1	1	0	1	0	0			1.800	35.135	35.1375	35.1325
34	1	1	0	1	0	1			1.810	35.145	35.1475	35.1425
35	1	1	0	1	1	0			1.820	35.155	35.1575	35.1525
36	1	1	0	1	1	1			1.830	35.165	35.1675	35.1625
37	1	1	1	0	0	0			1.840	35.175	35.1775	35.1725
38	1	1	1	0	0	1			1.850	35.185	35.1875	35.1825
39	1	1	1	0	1	0			1.860	35.195	35.1975	35.1925
40	1	1	1	0	1	1			1.870	35.205	35.2075	35.2025

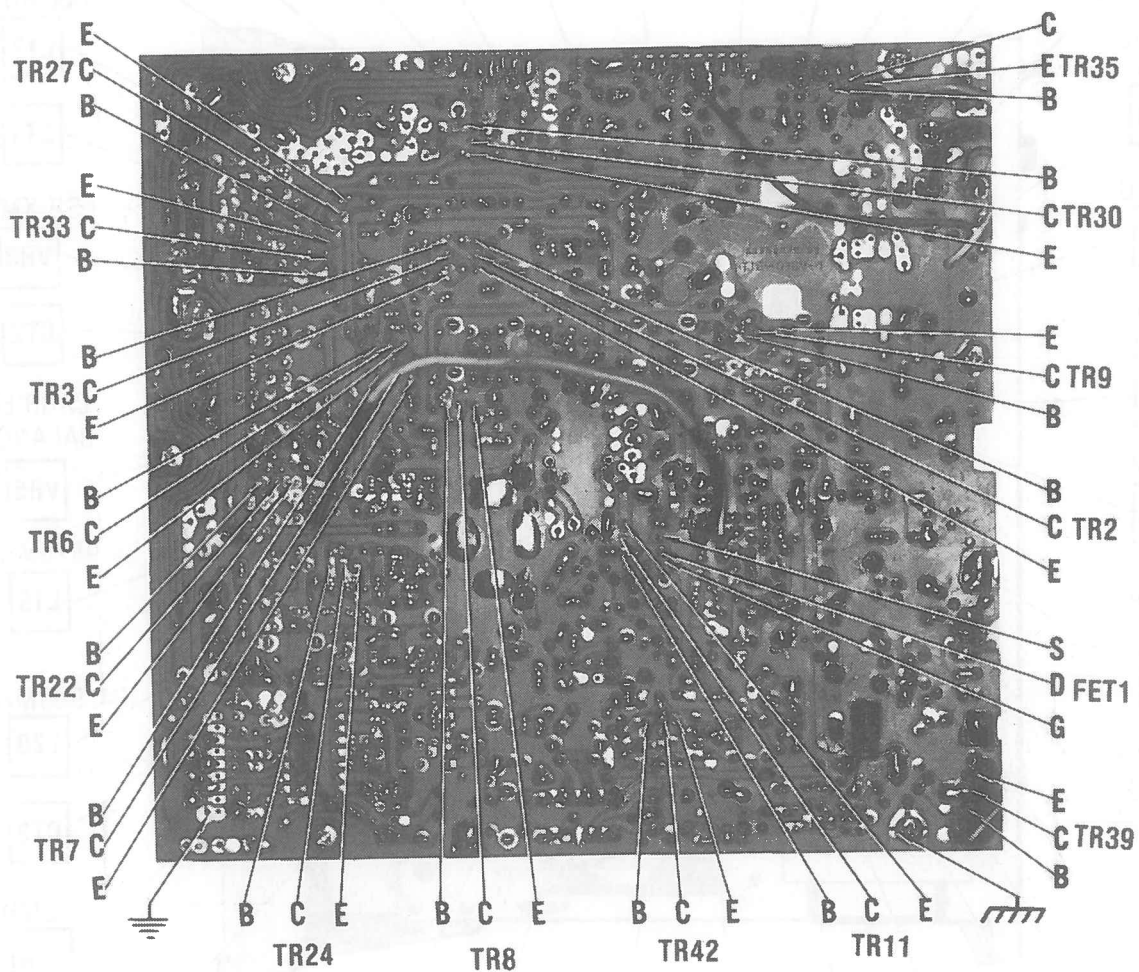
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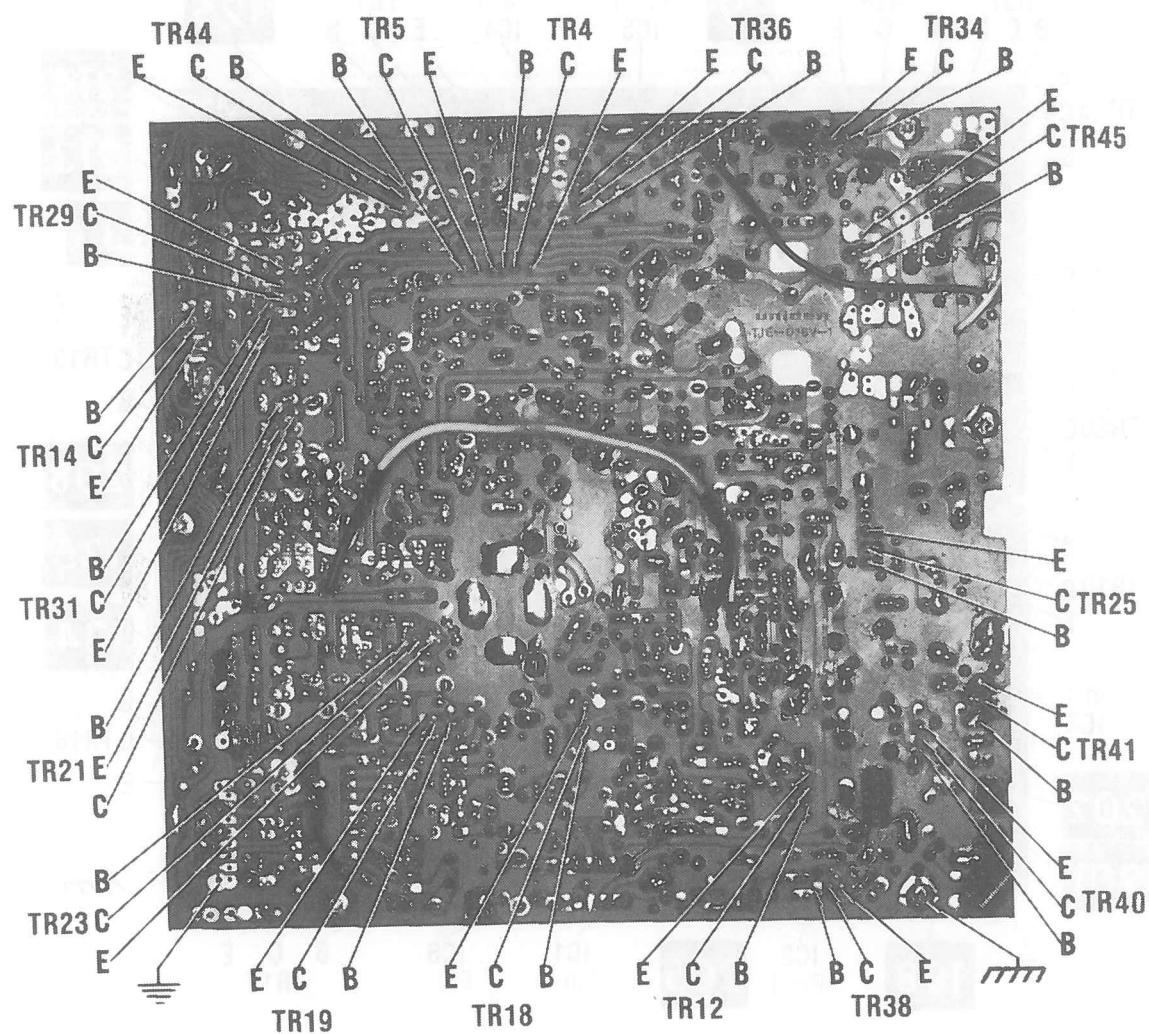


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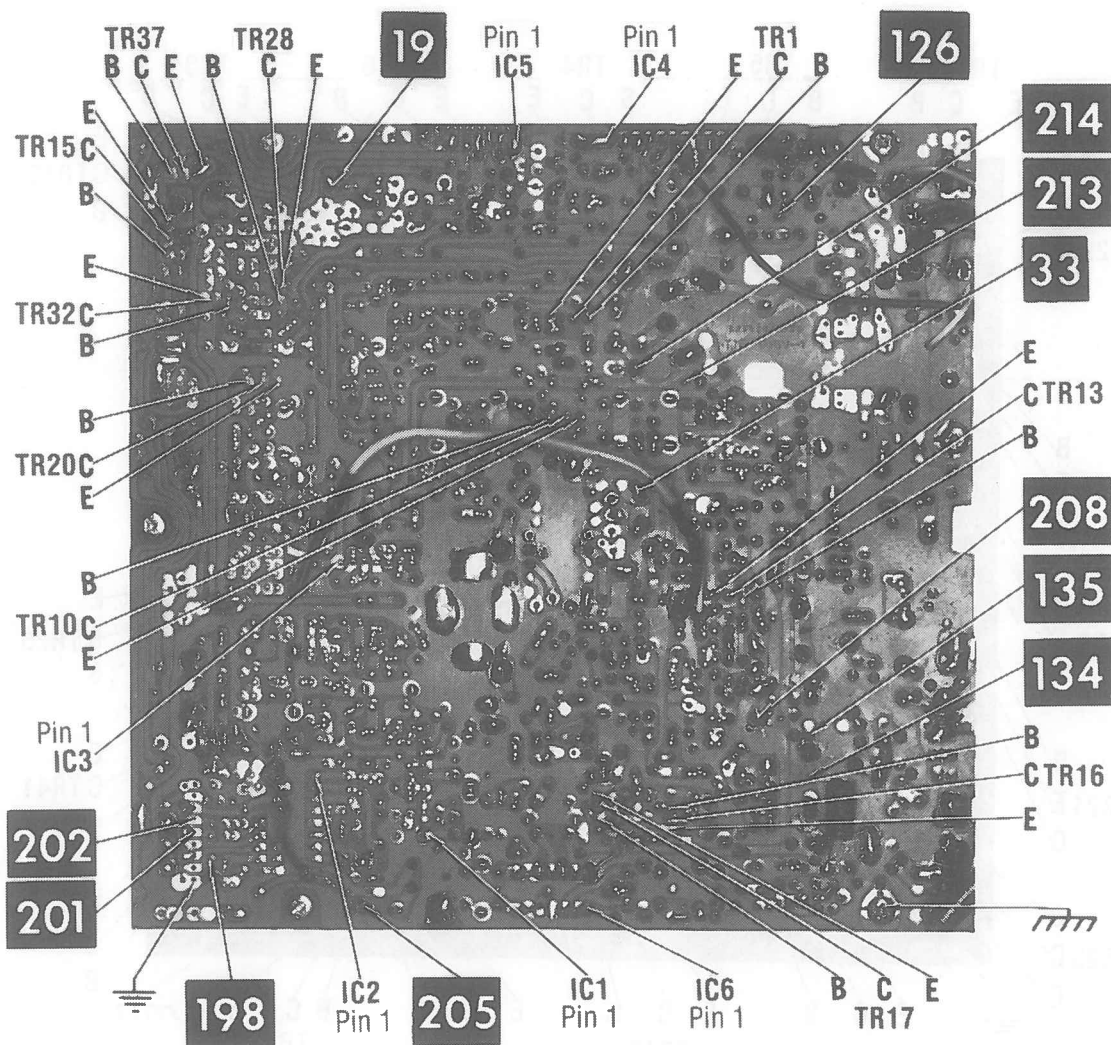


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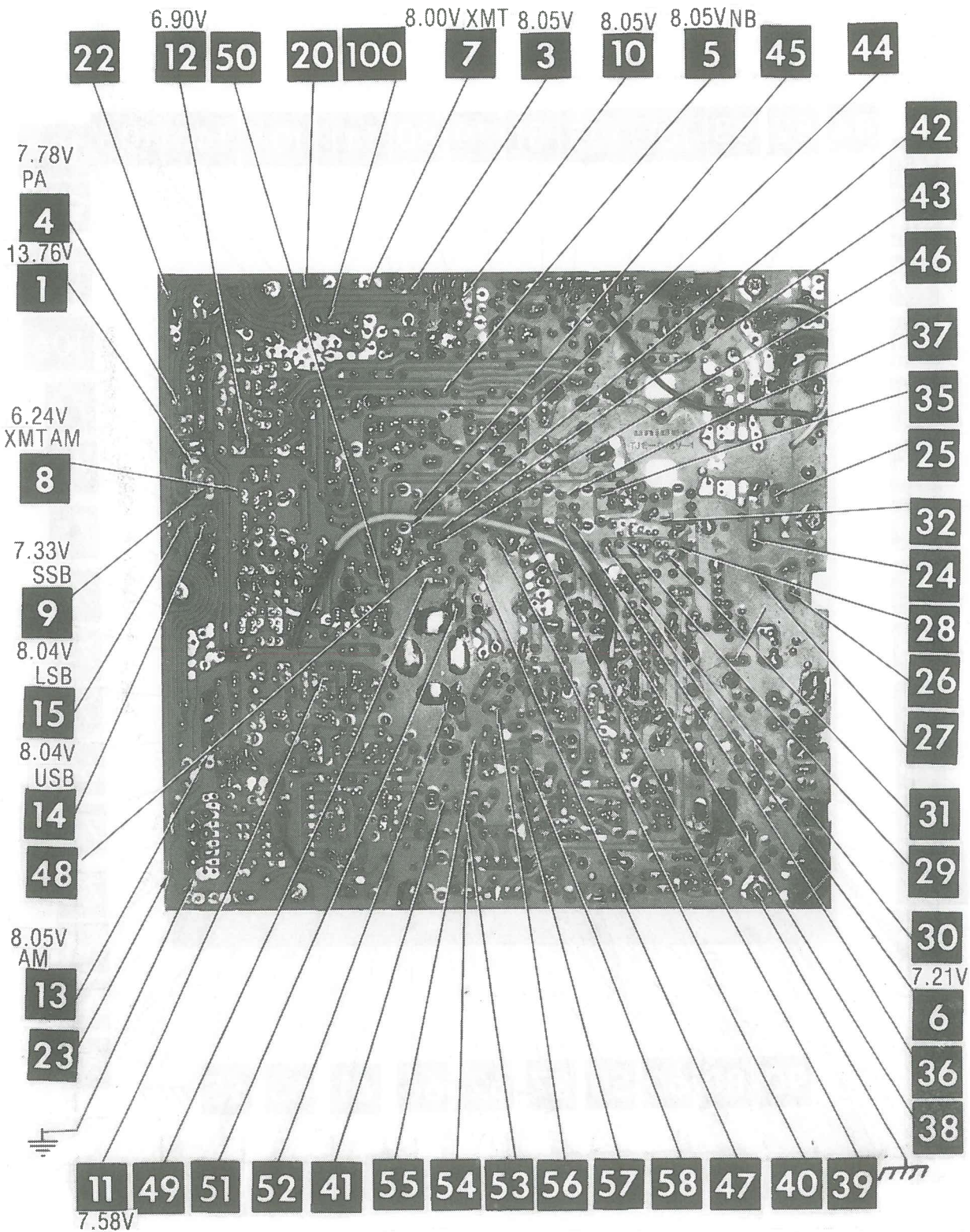




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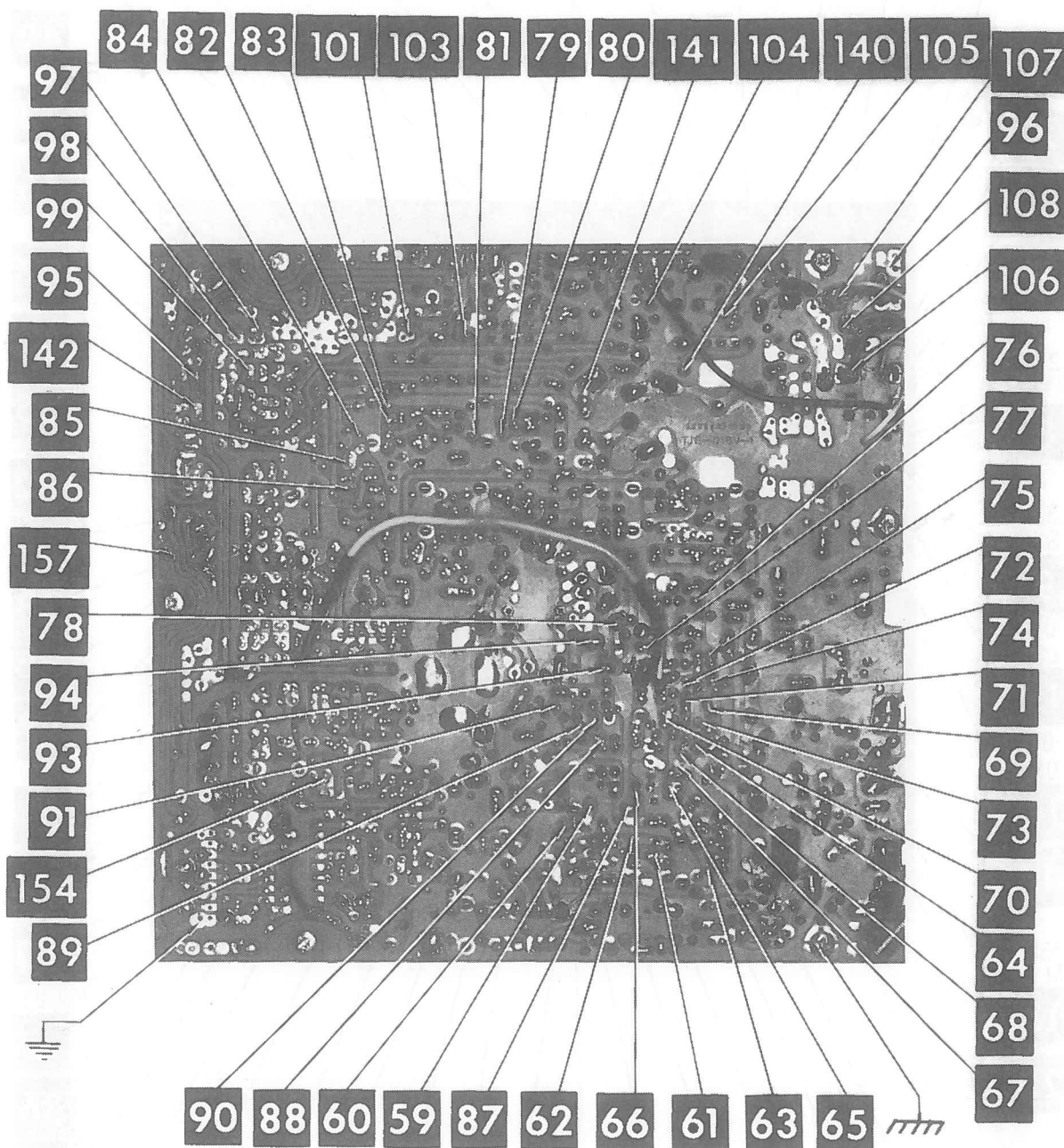


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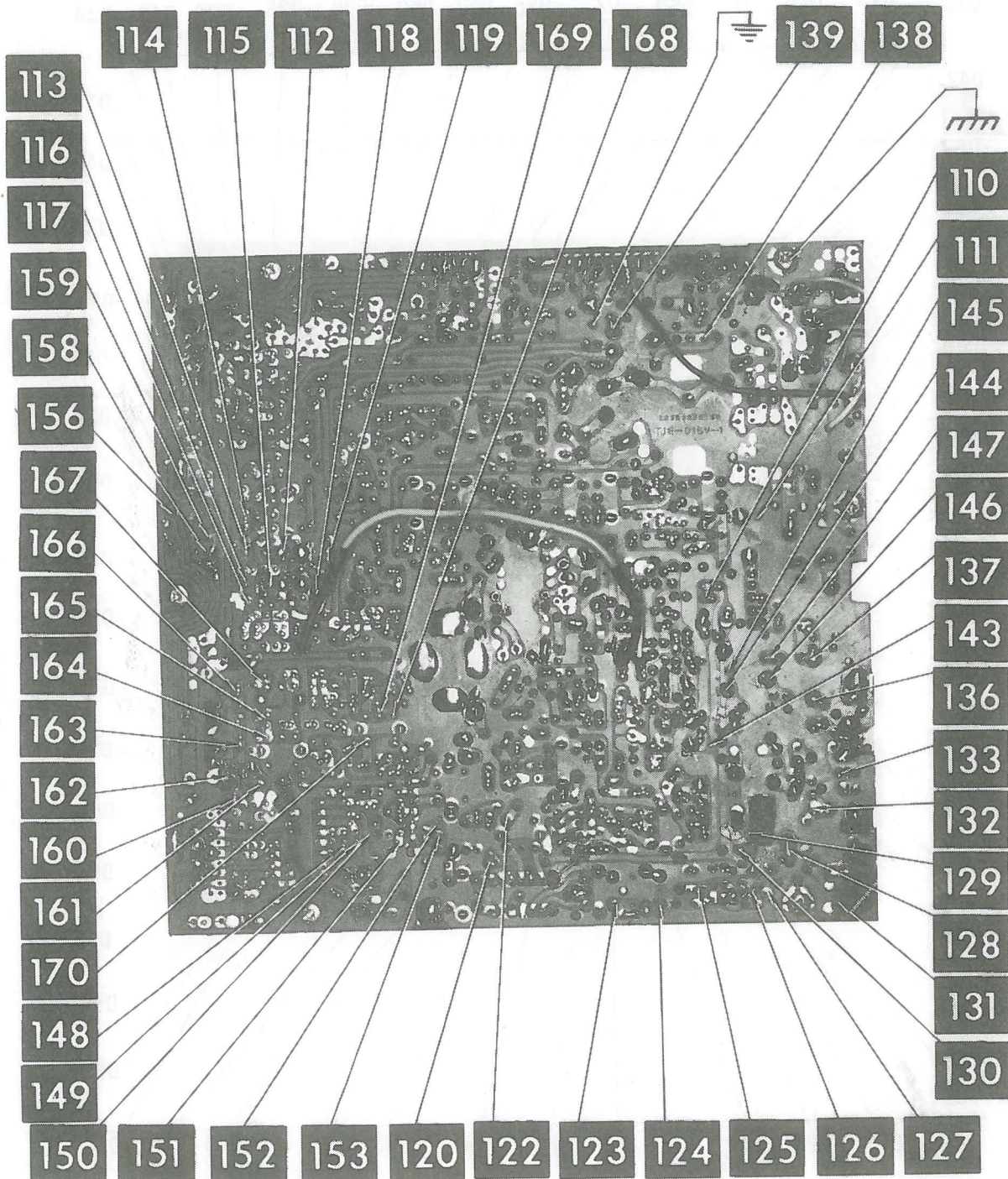


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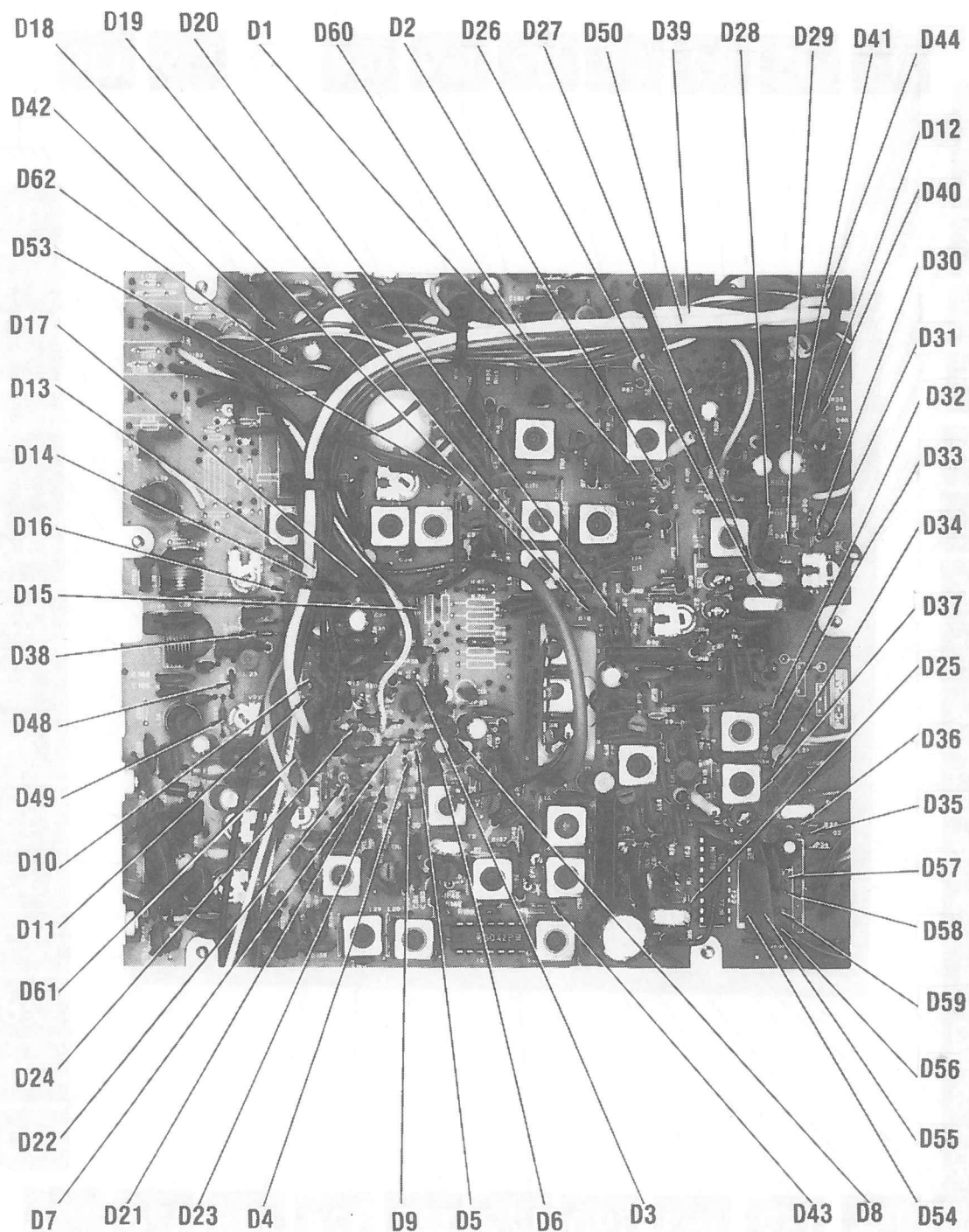


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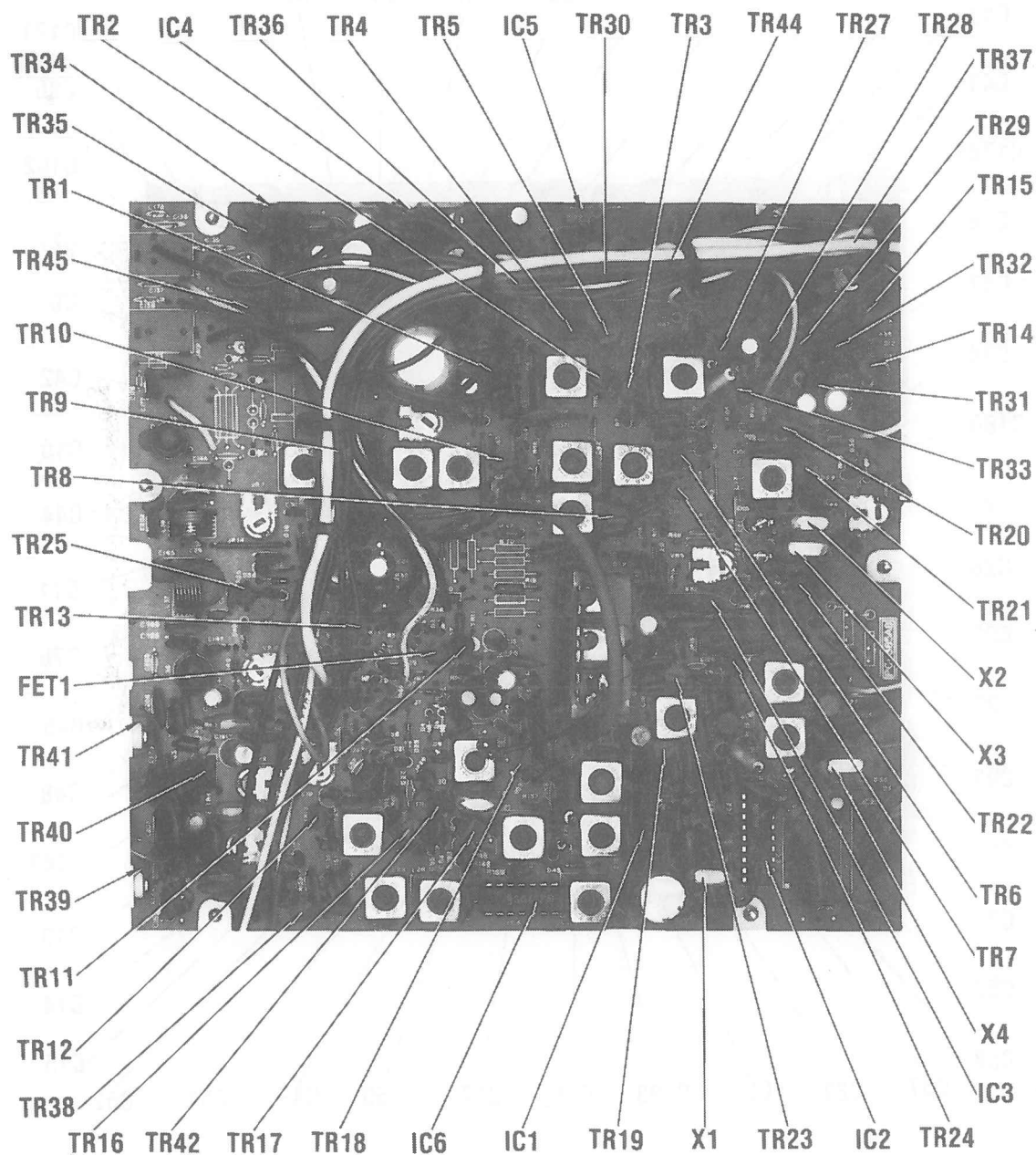


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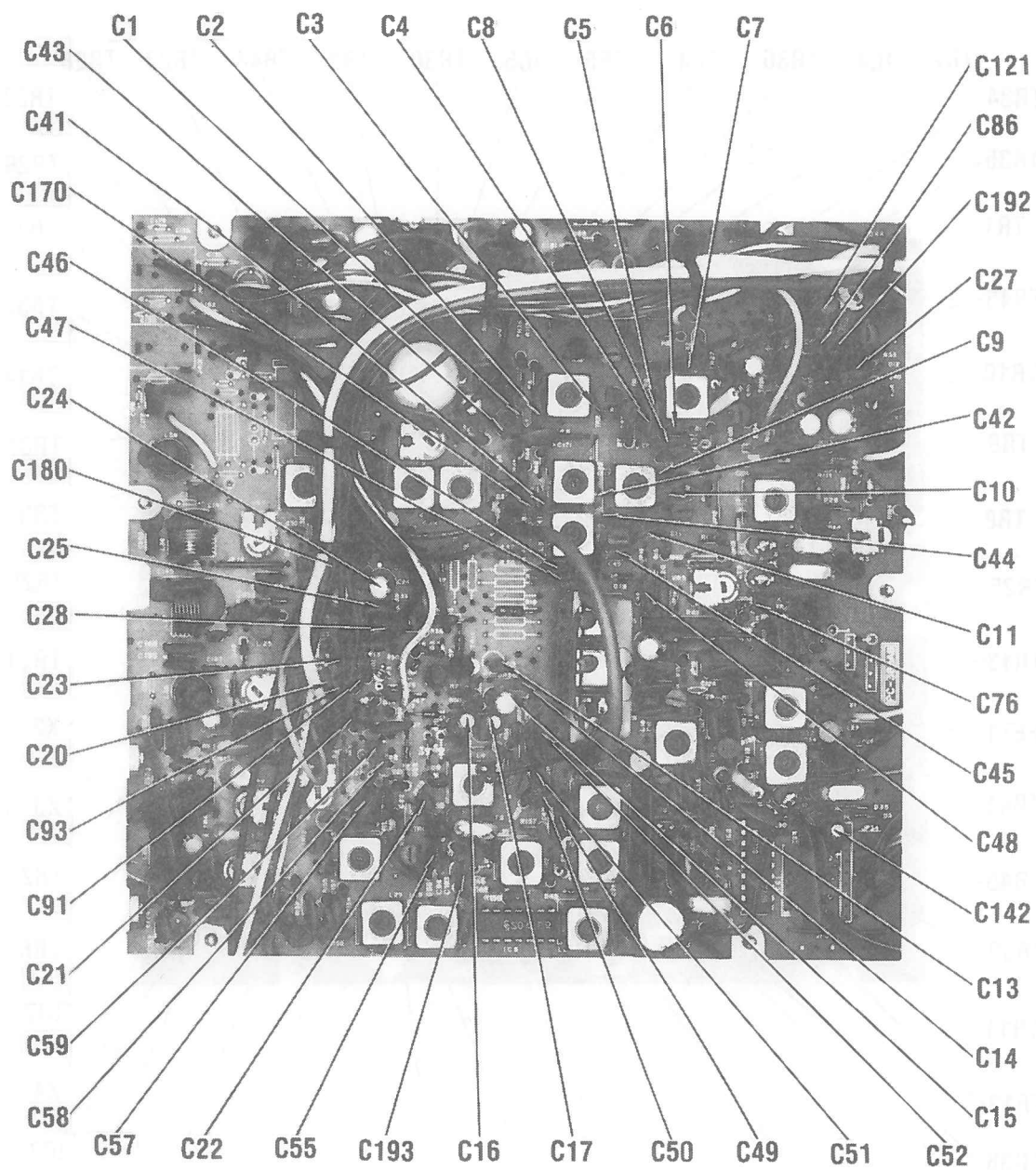
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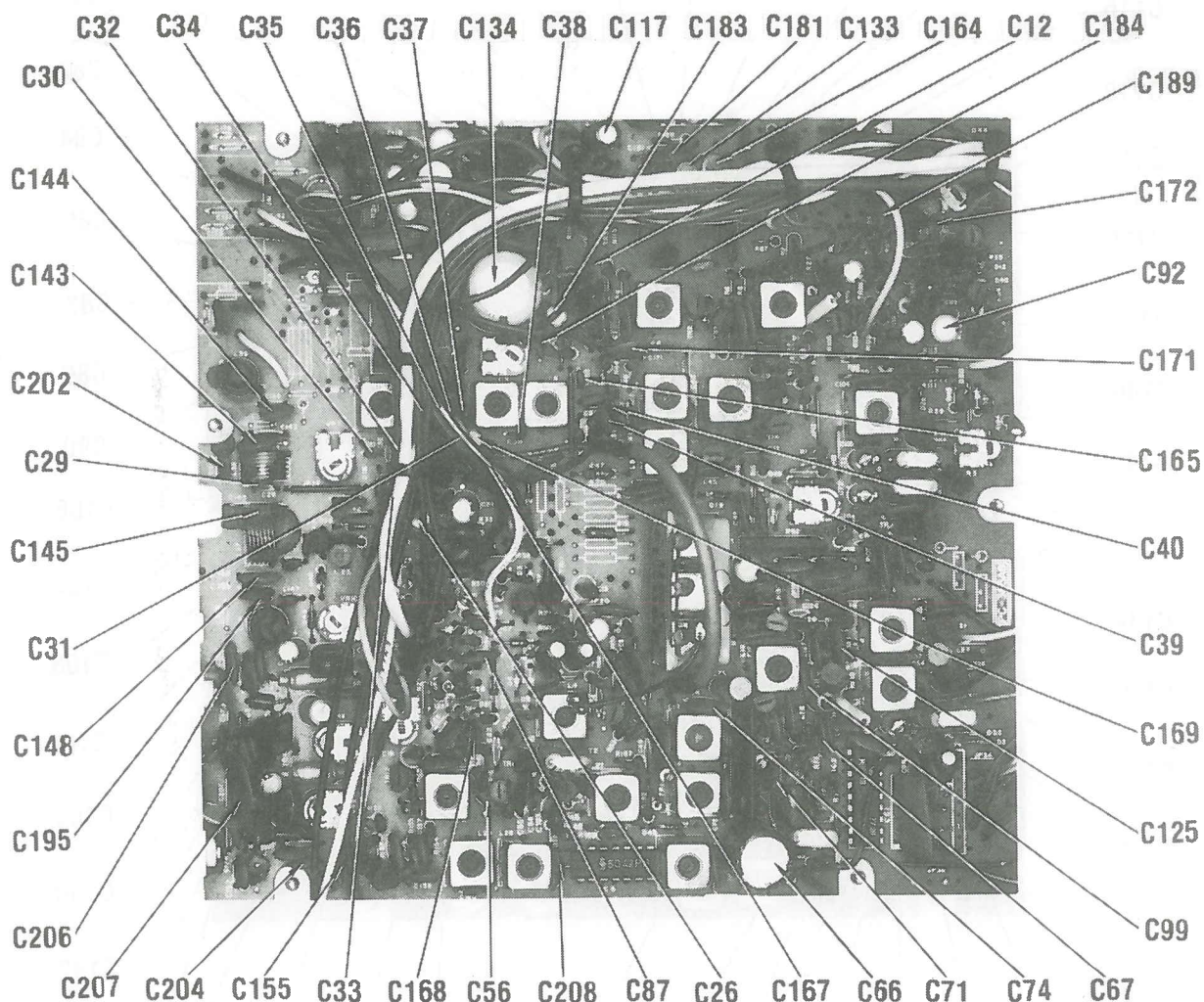
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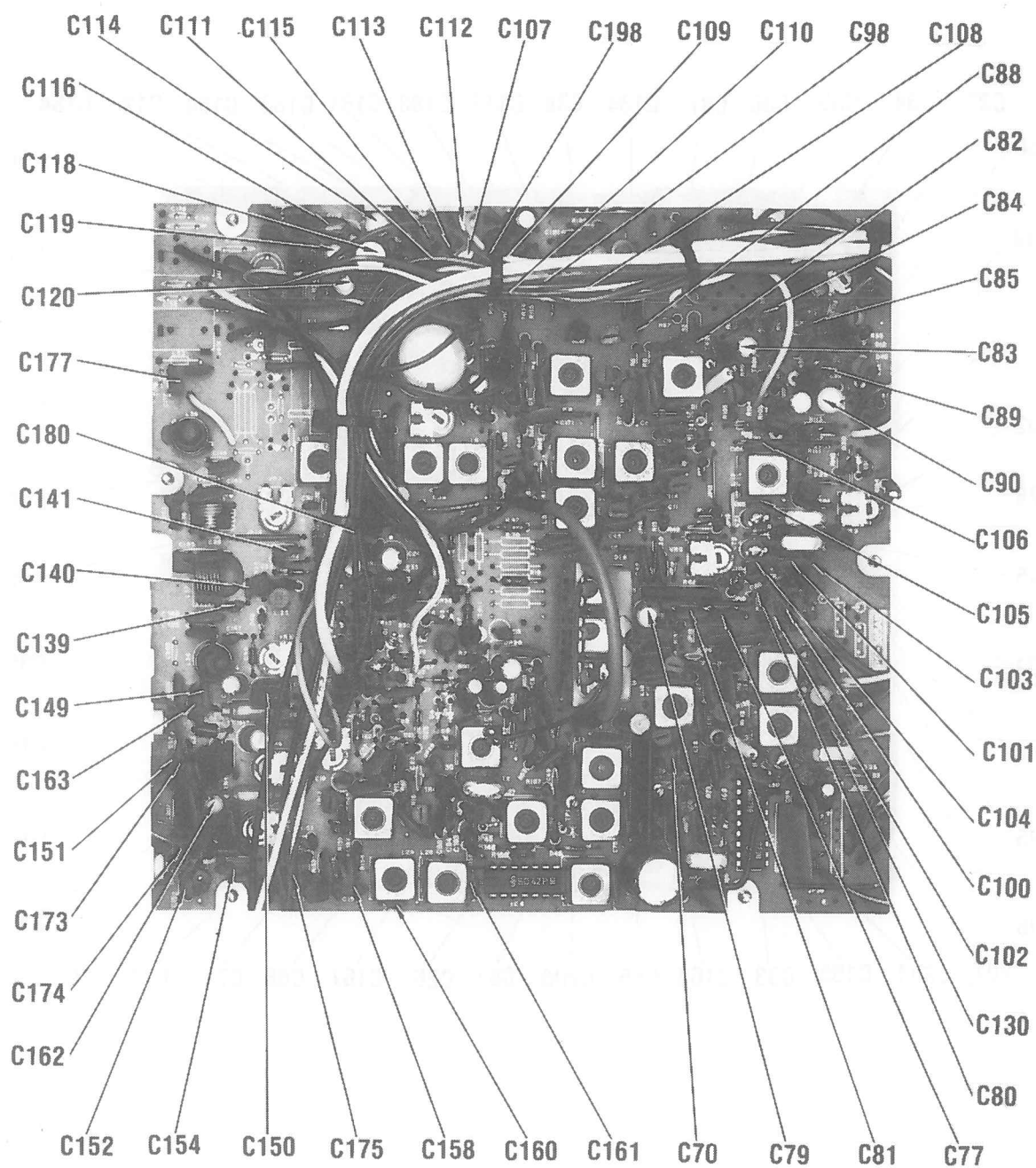
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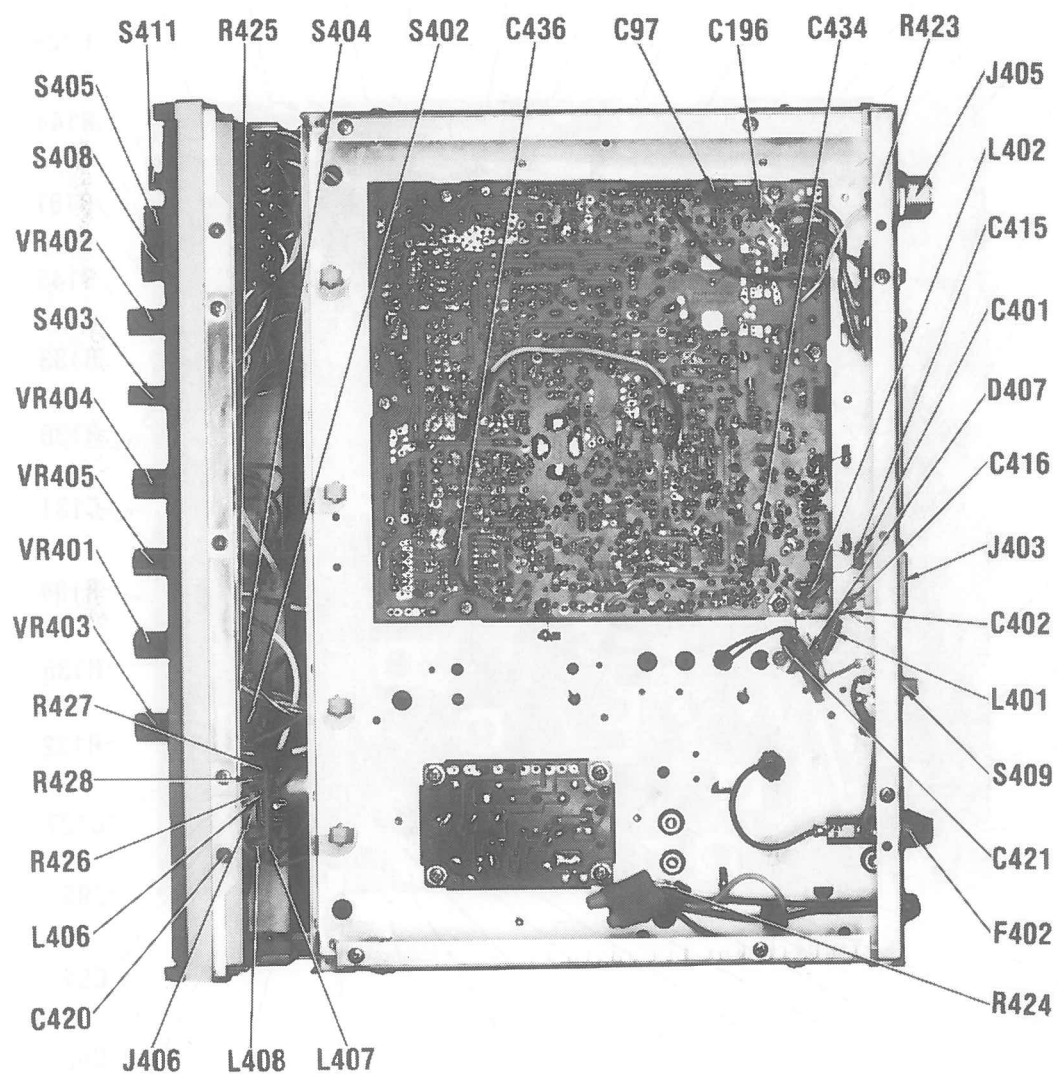
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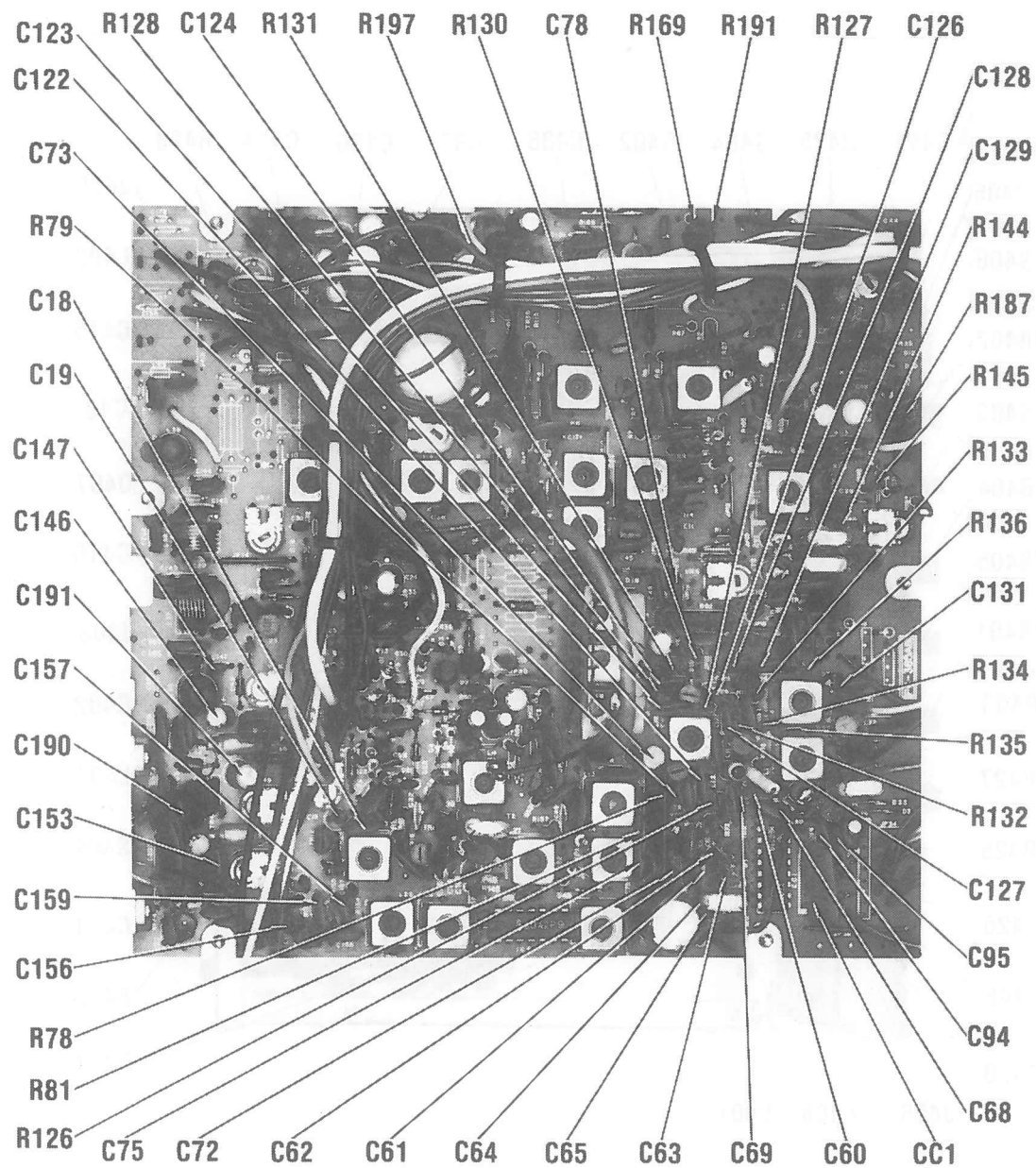
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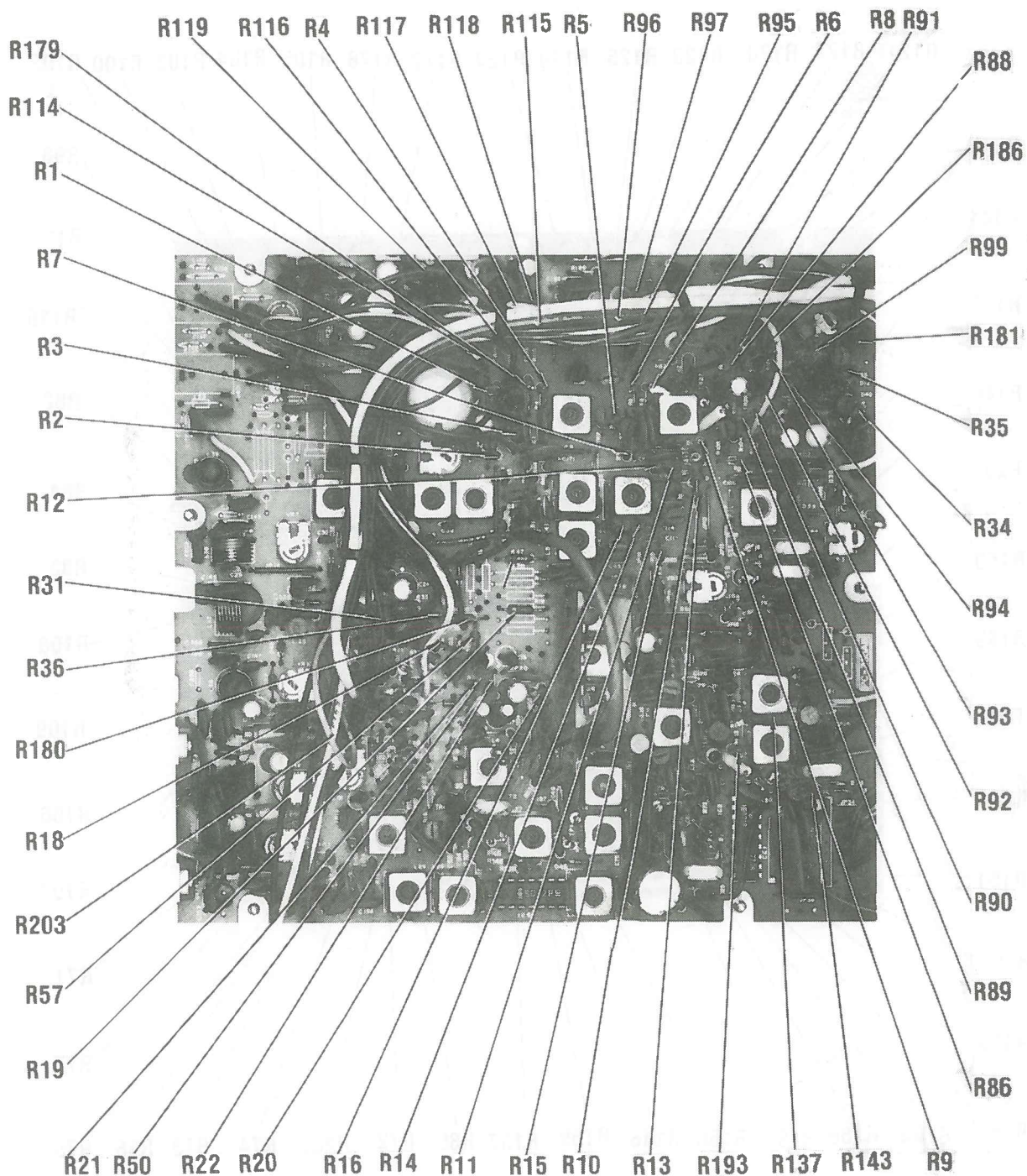
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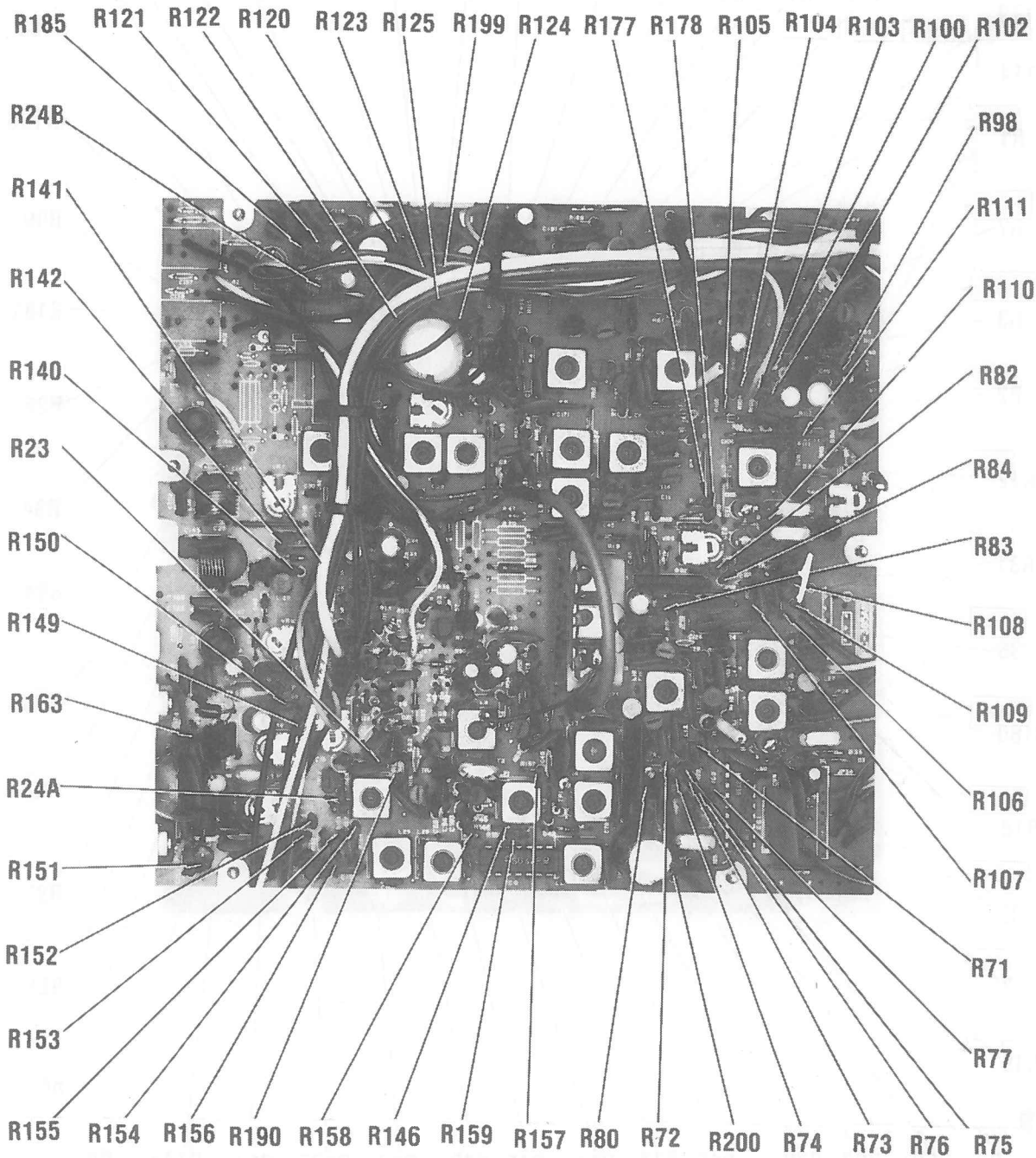
CHASSIS-BOTTOM



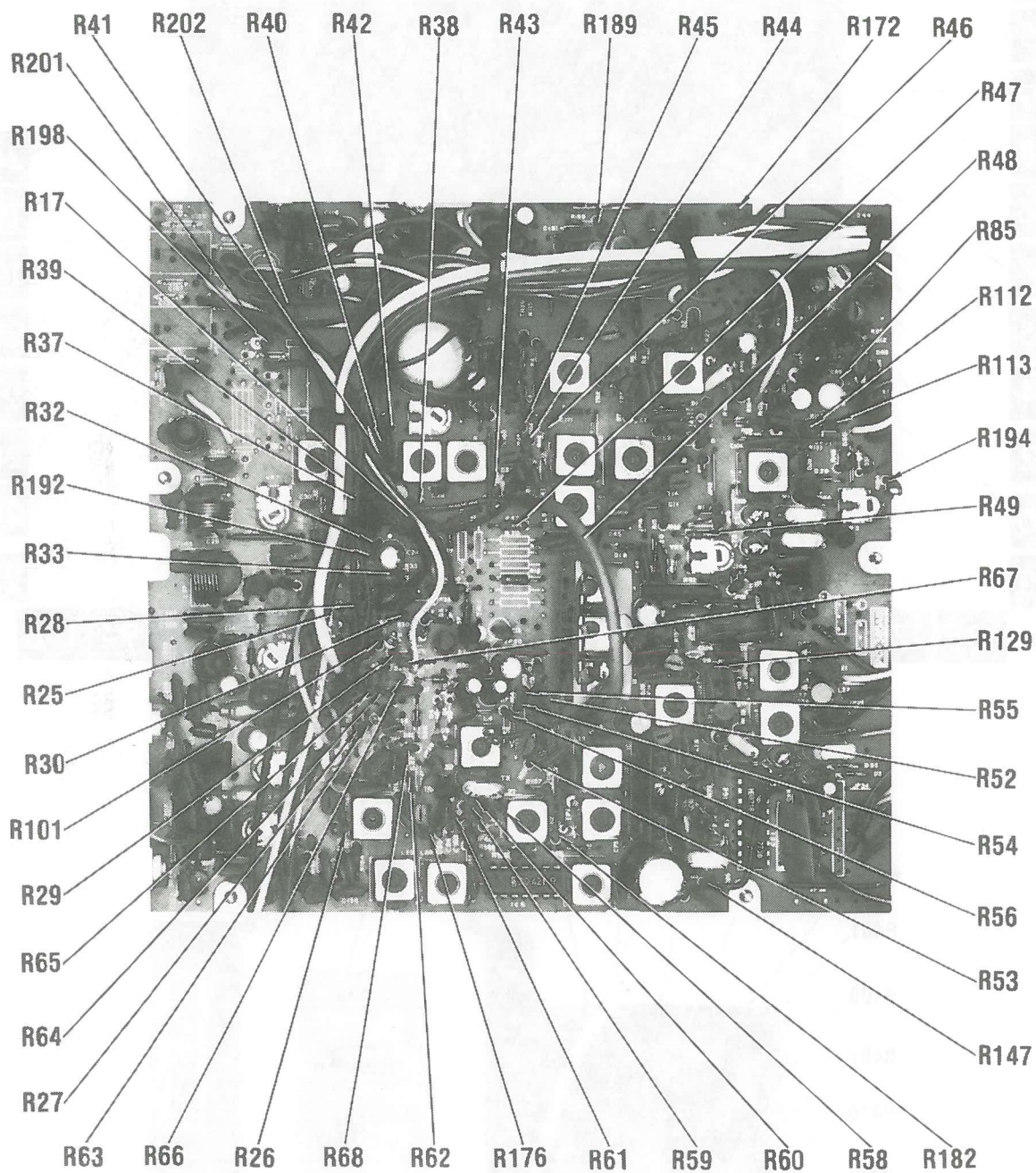
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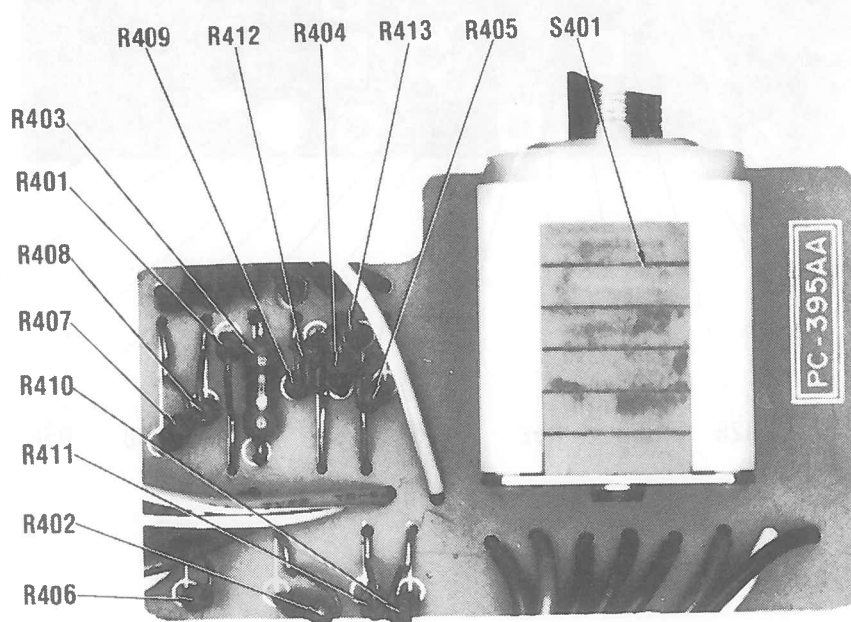
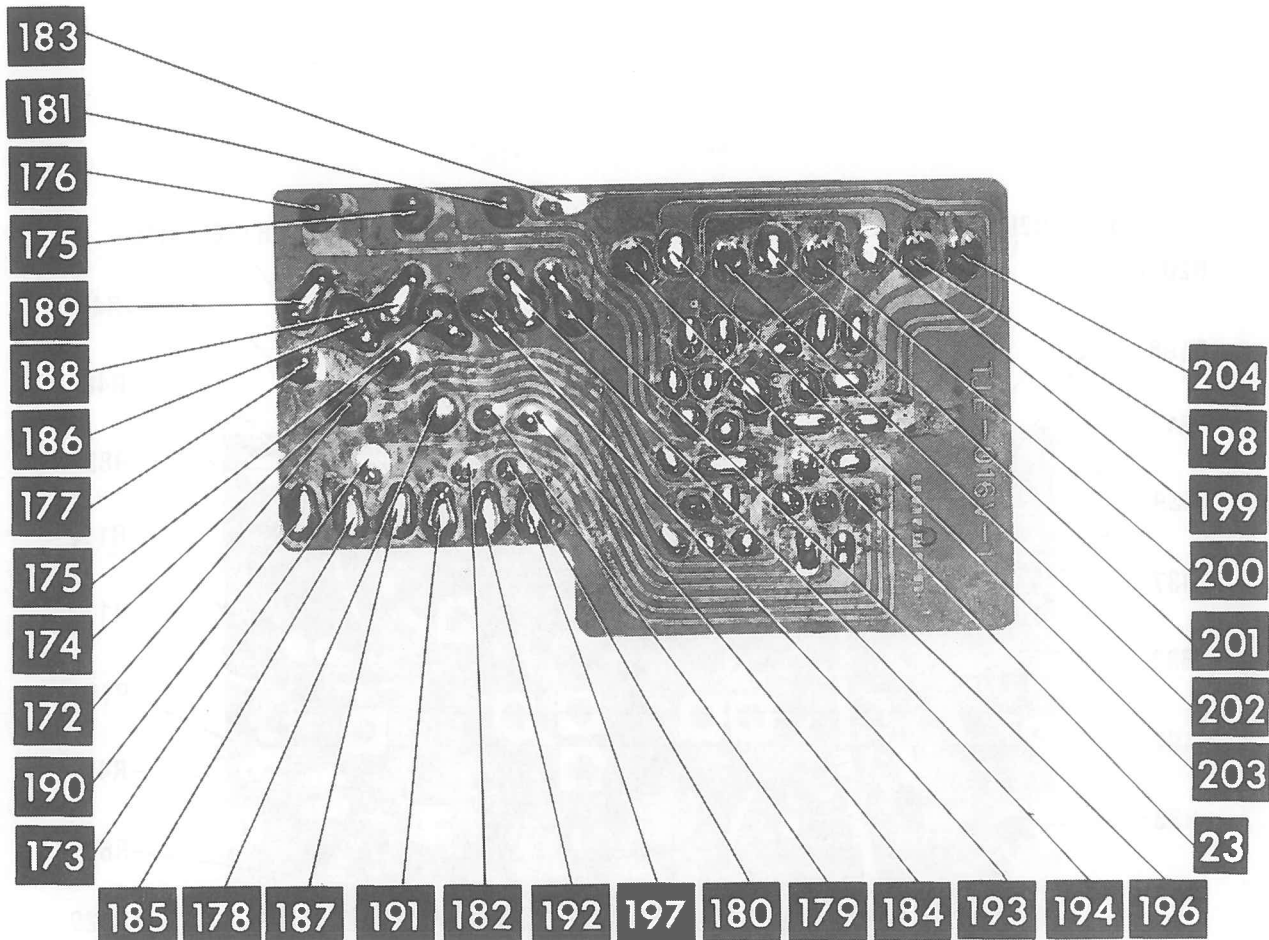
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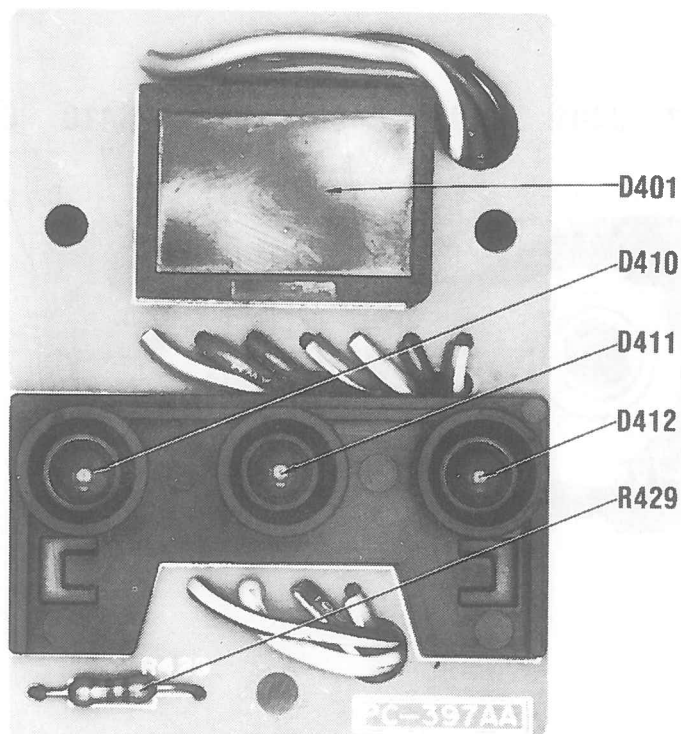
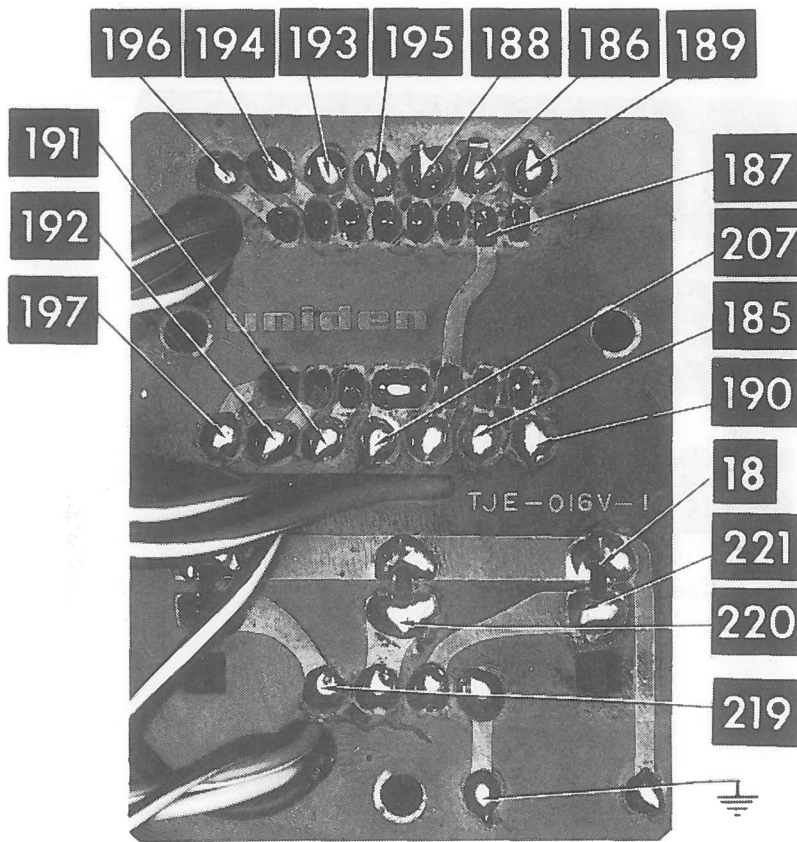
MAIN BOARD



MAIN BOARD

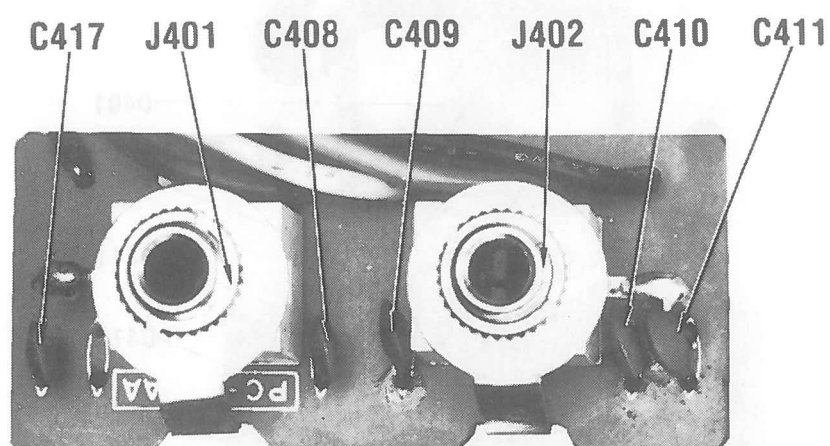
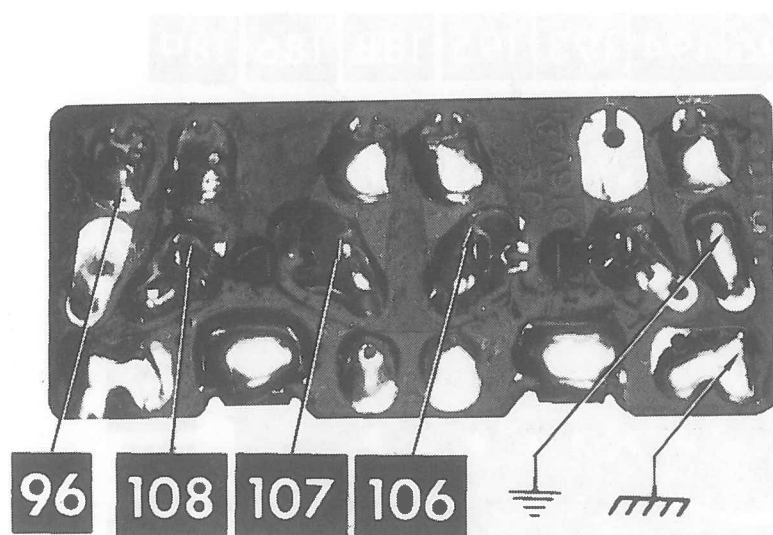


CH. SELECTOR BOARD

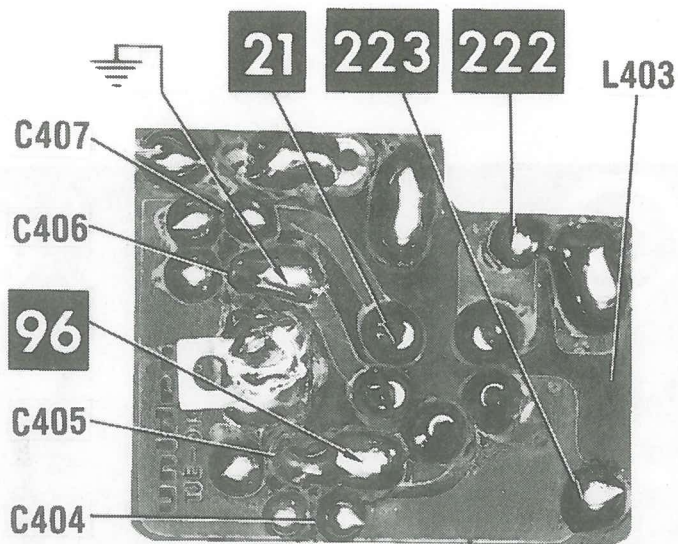


CH. READOUT BOARD

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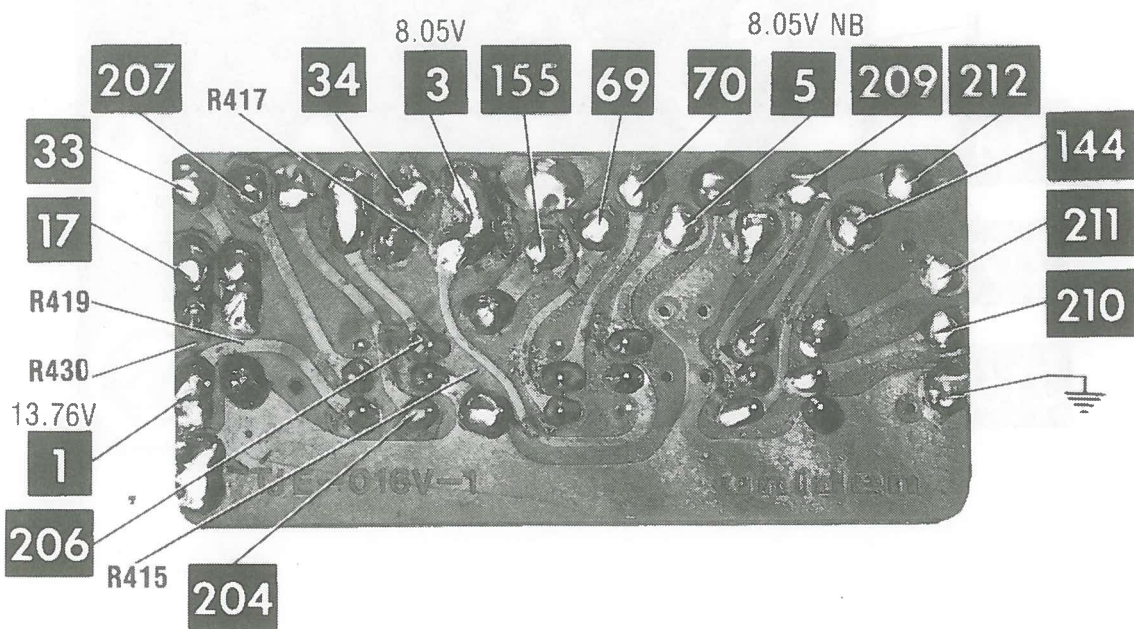


PA-SPEAKER BOARD



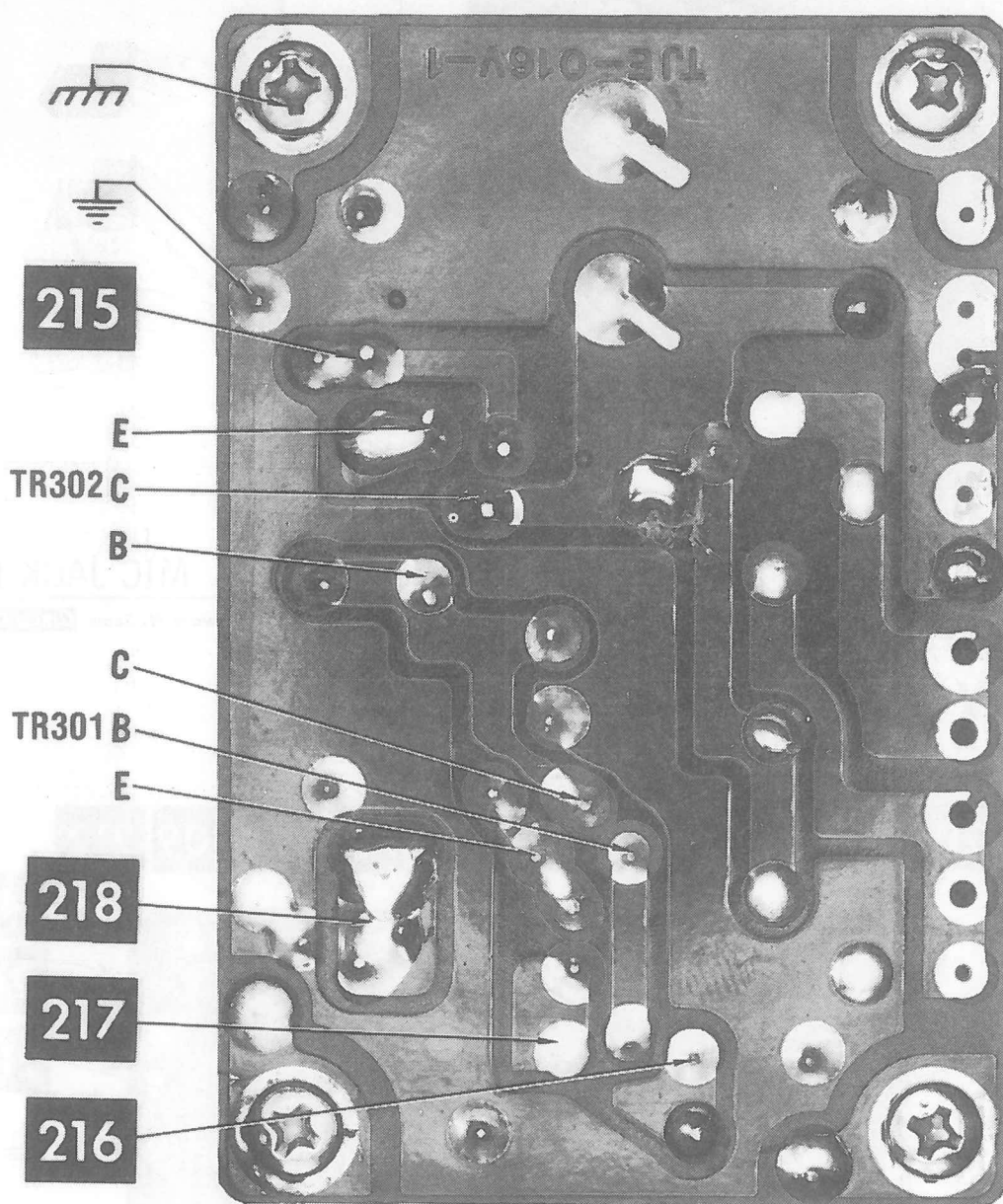
MIC JACK BOARD

A Howard W. Sams CIRCUITRACE® Photo

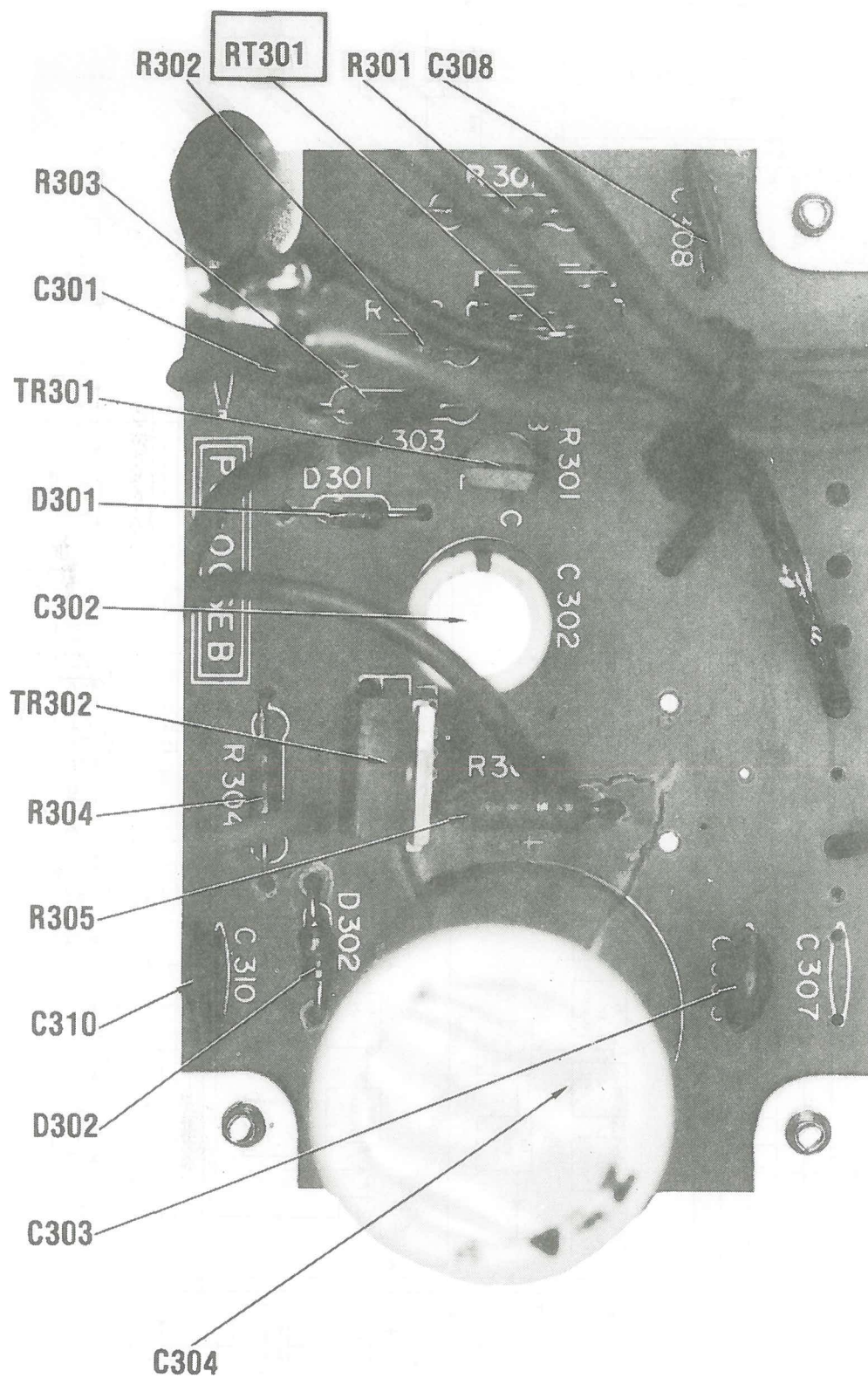


CONTROL SWITCH BOARD

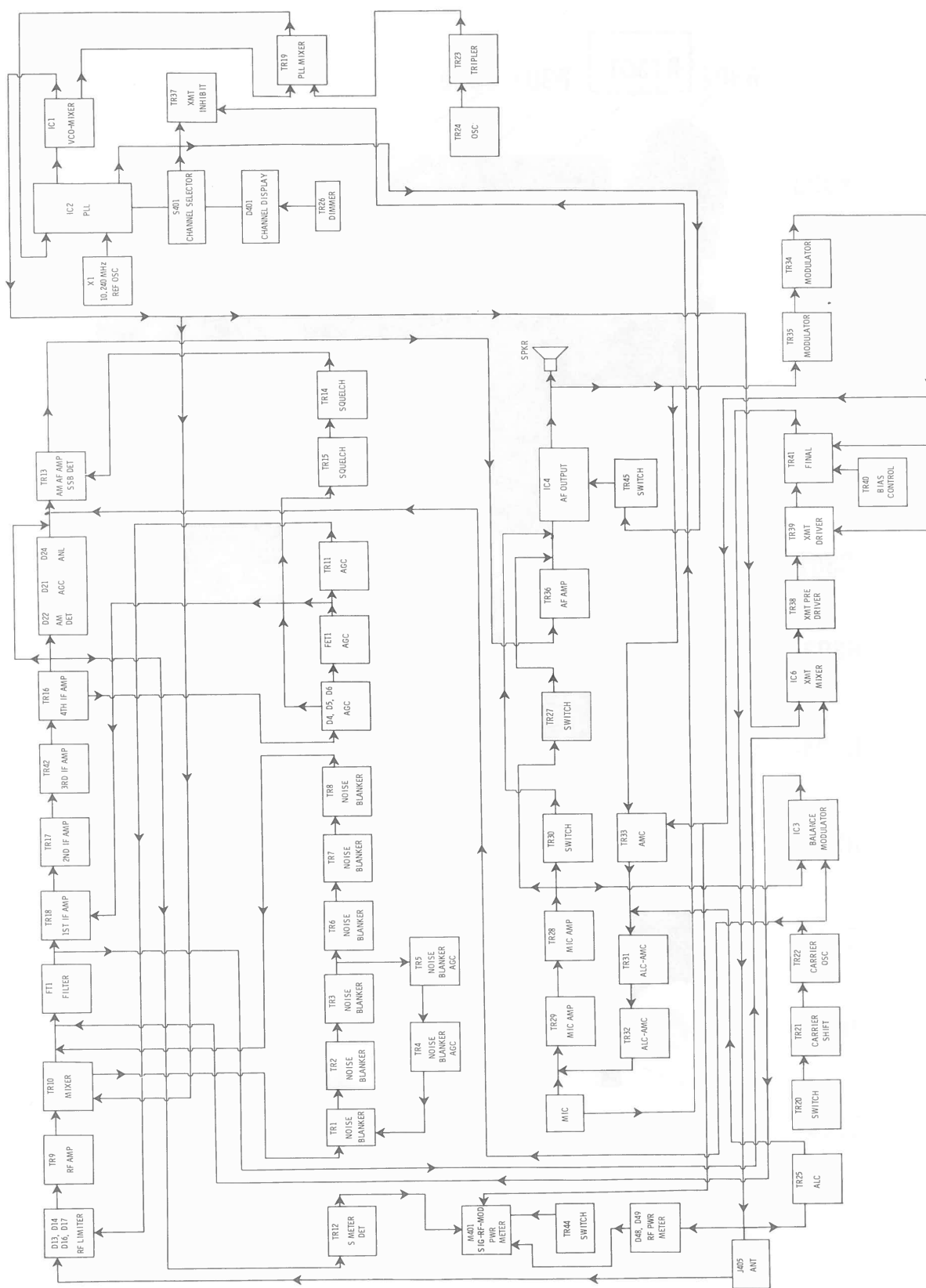
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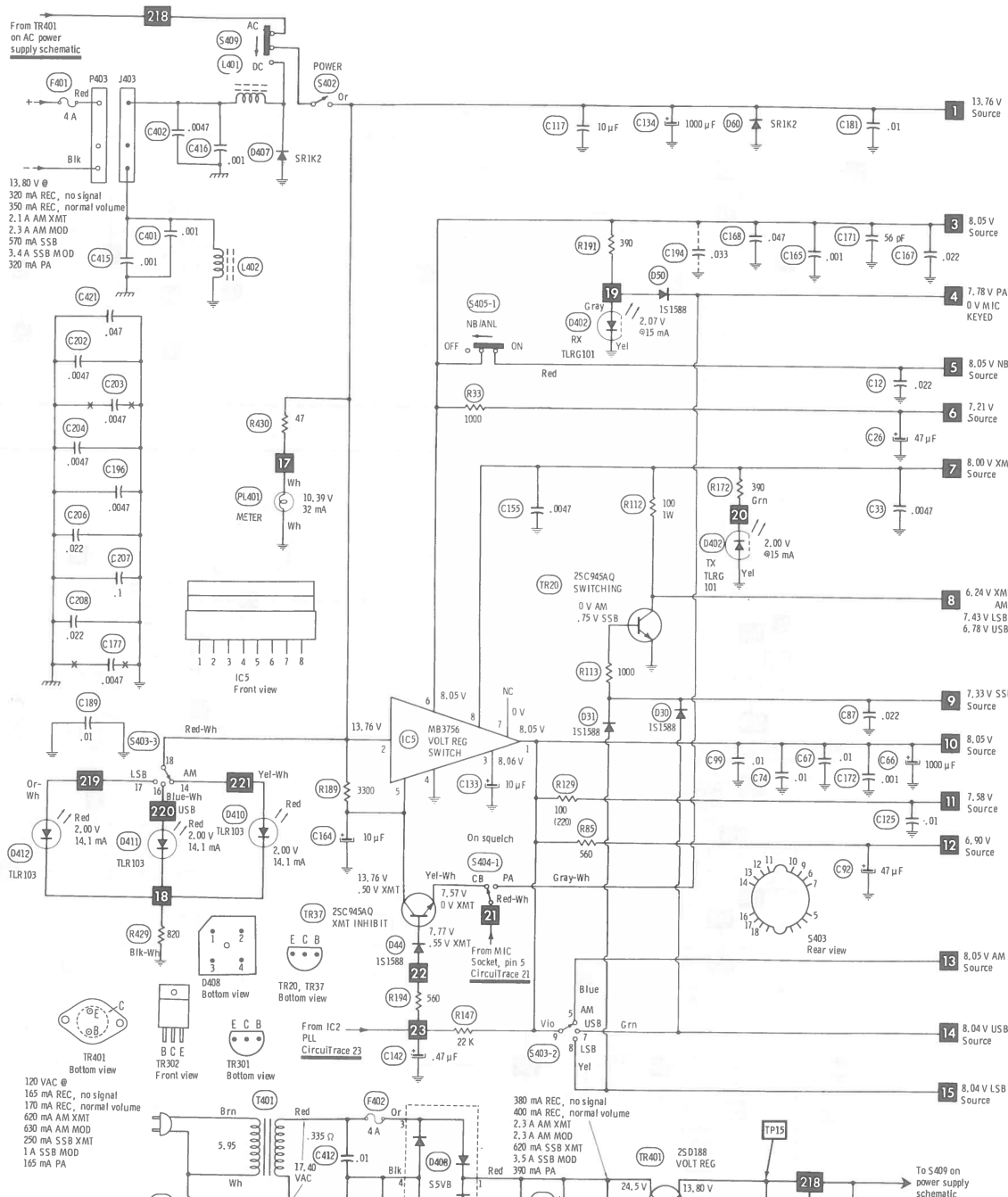
POWER SUPPLY BOARD



POWER SUPPLY BOARD



BLOCK DIAGRAM



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✖ Circuitry not used in some versions

--- Circuitry used in some versions

⊖ See parts list

✱ Nominal value

⊥ Ground

⏏ Chassis

∇ Common tie point

→ Signal path

⤵ Voltage path

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

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

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

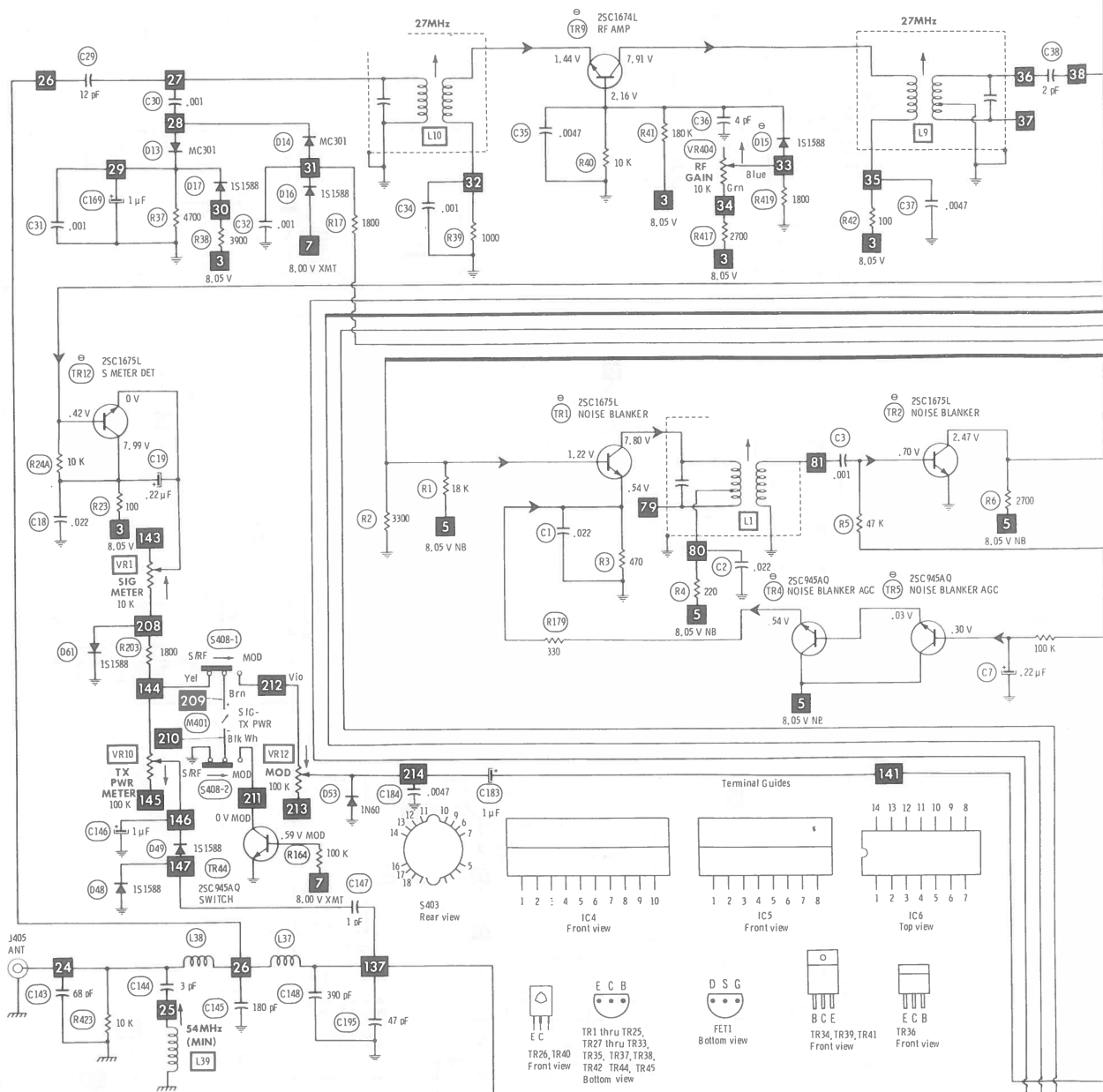
Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH **CIRCUITTRACE**

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✱ Circuitry not used in some versions

--- Circuitry used in some versions

⊙ See parts list

✱ Nominal value

⊕ Ground

⏏ Chassis

▽ Common tie point

→ Signal path

⤴ Voltage path

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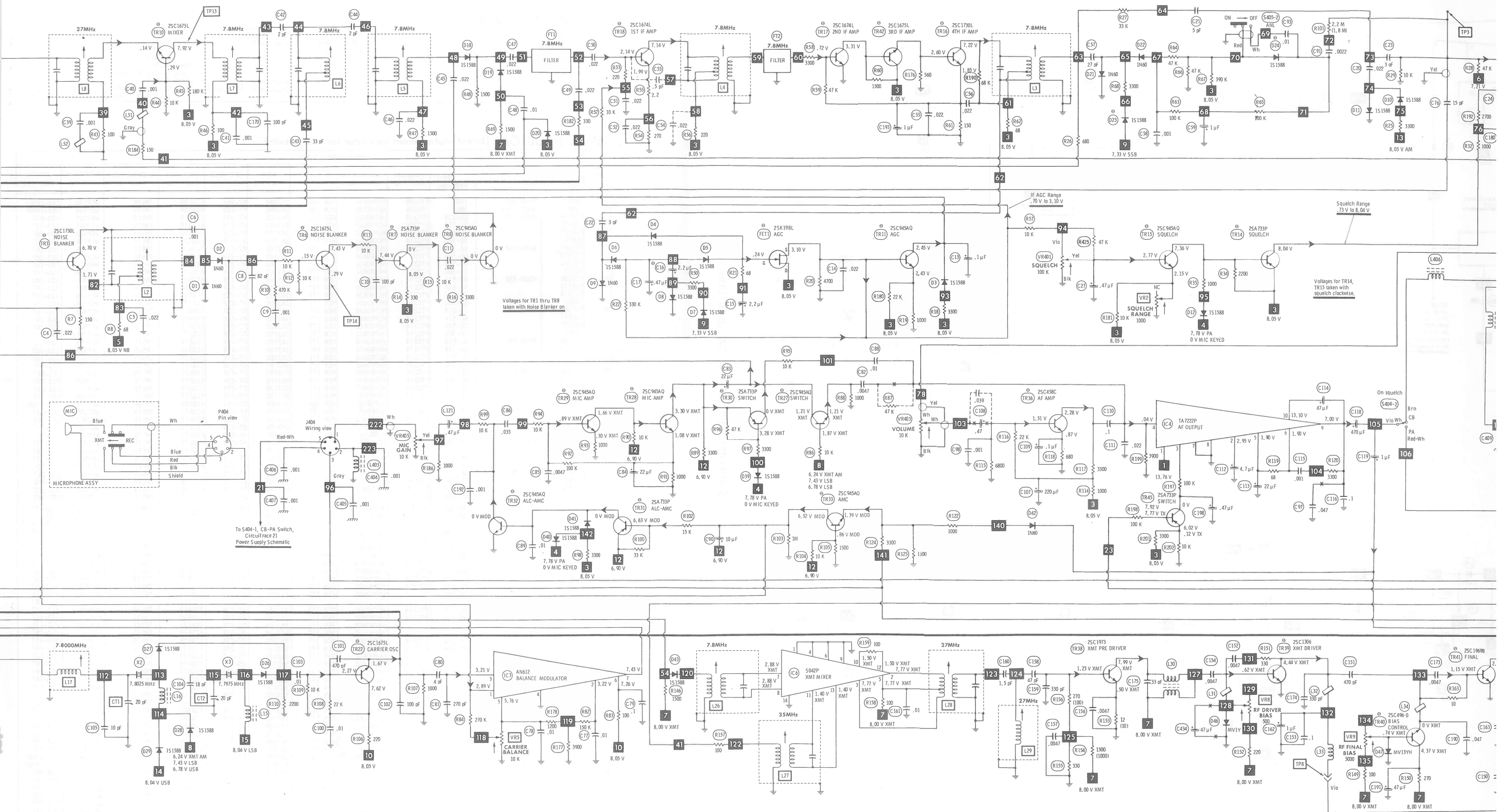
Resistors are 1/2W or less, 5% unless noted.

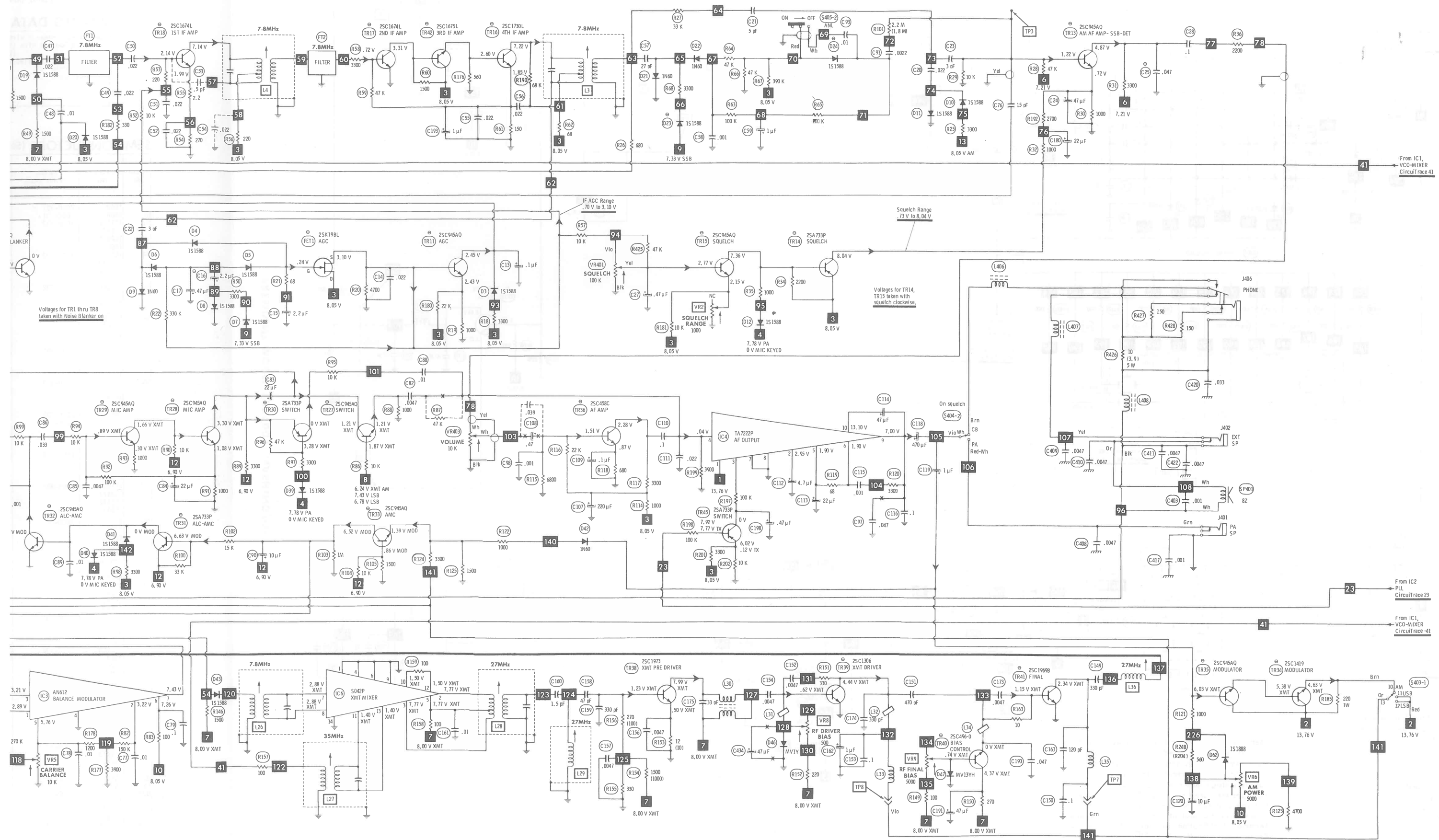
Value in () used in some versions.

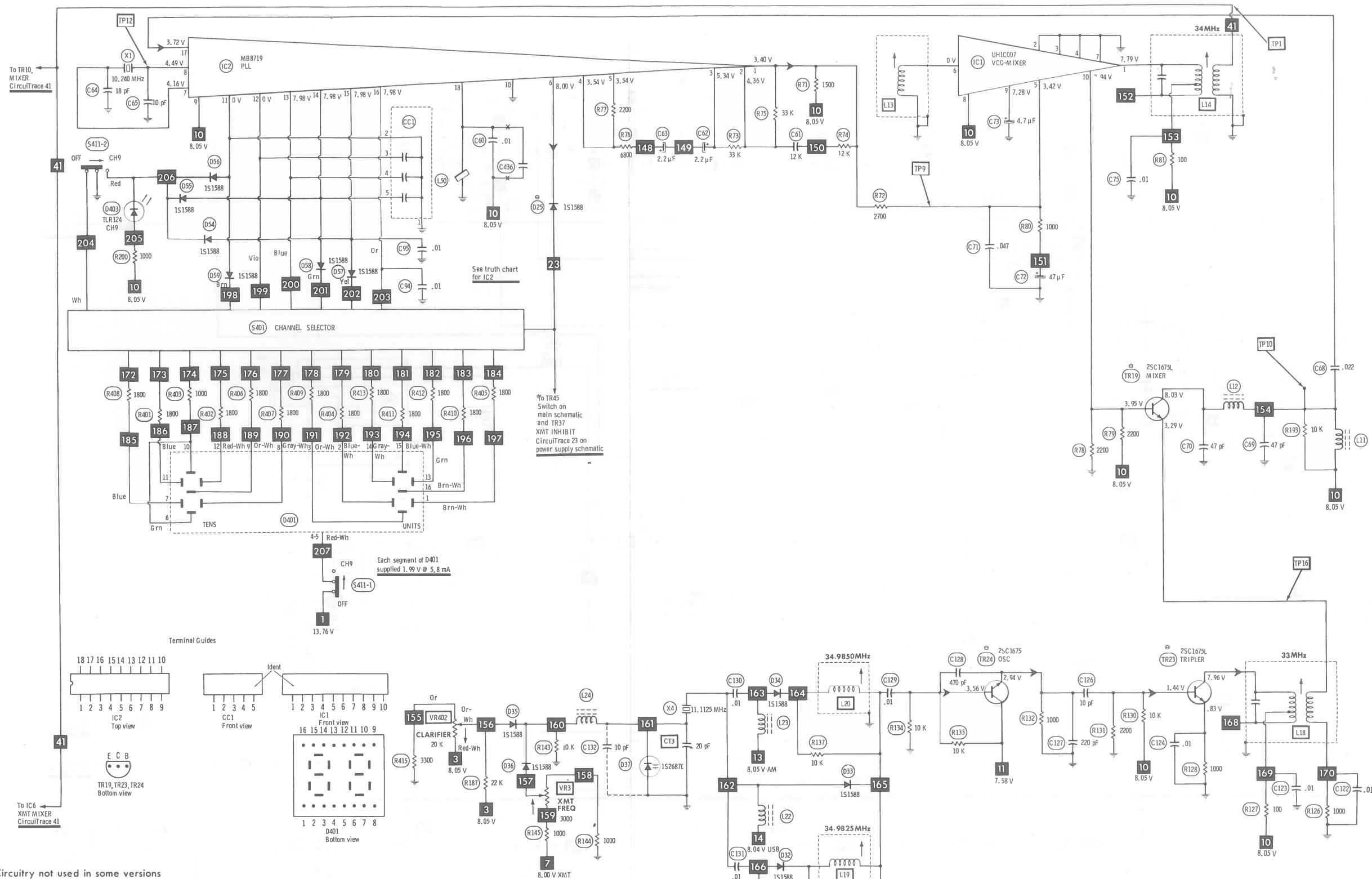
A PHOTOFAC STANDARD NOTATION SCHEMATIC

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

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Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH **CIRCUITTRACE**

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PARTS LIST AND DESCRIPTION

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

WIRING DATA

General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded) 23AWG	BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 8497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8672		BELDEN No. 9472 (7-1/2')
Bonding Strap	BELDEN No. 8672		28AWG BELDEN No. 9466 (6')
AC Power Cord	(6') BELDEN No. 17106	4-conductor (unshielded) 23AWG	31AWG BELDEN No. 9468 (10')
	(9') BELDEN No. 17109	5-conductor (1 shielded) 28AWG	BELDEN No. 8415 (6')
			BELDEN No. 9467 (6')
			BELDEN No. 9465 (7-1/2')

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.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1N60	2000-301	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-29001
D2	1N60	2000-301	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-29001
D3	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D4	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D5	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D6	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D7	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D8	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D9	1N60	2000-301	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-29001
D10	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D11	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D12	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D13	MC301	2000-341	GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S2186		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA243		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA244		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D14	MC301	2000-341	GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S2186		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA243		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA244		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D15	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D16	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D17	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D18	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D19	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D20	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D21	1N60	2000-301	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-29001
D22	1N60	2000-301	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-29001
D23	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D24	1S1588	2000-332	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S2472		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP225	103-287
	1S953		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

			REPLACEMENT DATA									
ITEM No.	TYPE No.	MFR. PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
TR8	2SC945AQ	2000-235	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
TR9	2SC1342	2000-240	GE-61*	PTC132	HEPS0014*	REN 229*	SK3018*	RT-108A*	ECG229*	TM229*	WEP956*	121-29021
	2SC1856		GE-86	PTC121	HEPS0010	REN 108	SK3018	RT-107	ECG108	TM108	WEP56	121-522
	2SC710		GE-211*	PTC132	HEPS0016*	REN 123A*	SK3444	RT-308*	ECG123A*	TM123A/**	WEP710	121-29021*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229/**	WEP956*	121-29021*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1738		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
TR10	2SC945AQ	2000-213	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
TR11	2SC945AQ	2000-235	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
TR12	2SC945AQ	2000-213	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
TR13	2SC945AQ	2000-235	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA733		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3466	RT-303	ECG159*	TM159/**	WEP495	121-29003
TR14	2SA564	2000-213	GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR15	2SC1730	2000-240	GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC1342		GE-61*	PTC132	HEPS0014*	REN 229*	SK3018*	RT-108A*	ECG229*	TM229*	WEP956*	121-29021
	2SC1856		GE-86	PTC121	HEPS0010	REN 108	SK3018	RT-107	ECG108	TM108	WEP56	121-522
	2SC710		GE-211*	PTC132	HEPS0016*	REN 123A*	SK3444	RT-308*	ECG123A*	TM123A/**	WEP710	121-29021*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229/**	WEP956*	121-29021*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
TR16	2SC1674	2000-235	GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR17	2SC1675	2000-213	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK307					

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.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
TR22	2SC1675L	2000-213	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR23	2SC1730	2000-213	GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
TR24	2SC1674	2000-213	GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
TR25	2SC839	2000-213	GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR27	2SC460	2000-235	GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR28	2SC458	2000-235	GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
TR29	2SC945AQ	2000-235	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC372		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC900		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR30	2SC1740	2000-218	GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR31	2SC1740	2000-218	GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR32	2SC1740	2000-218	GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR33	2SC1740	2000-235	GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC372		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
TR34	2SC900	2000-220	GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
TR35	2SC900	2000-235	GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
TR36	2SC900	2000-203	GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC372		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR37	2SC945A	2000-235	GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR38	2SC1740	2000-215	GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A/**	WEP736*	121-29000A*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*

PRESIDENT MODEL 1001002, WASHINGTON

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.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
TR39	2SC1306	2000-211	GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235/**	WEP785	121-29039
	2SC2020		GE-329	PTC186		REN 235	SK3197	RT-146	ECG285	TM235	WEP785	
	2SC2184		GE-329	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	2SC2166		GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
TR40	2SC496-0	2000-241	GE-57	PTC163	HEPS5000	REN 295	SK3253	RT-162	ECG295	TM295/**	WEP880	121-880
	2SC496		GE-57	PTC163	HEPS5000	REN 295	SK3253	RT-162	ECG295	TM295/**	WEP880	121-880
	2SC1846		GE-336	PTC904		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	2SD471		GE-268	PTC144*	HEPS3001*	REN 289	SK3124	RT-114*	ECG289	TM289	WEP910	121-773
TR41	2SC1969B	2000-242	GE-216	PTC186		REN 236	SK3197	RT-158	ECG236	TM236	WEP840	121-29040
	2SC1969		GE-216	PTC186		REN 236	SK3197	RT-158	ECG236	TM236	WEP840	121-29040
	2SC1307		GE-216	PTC186		REN 236	SK3239	RT-158	ECG236	TM236	WEP840	121-29040
	2SC1817		GE-332			REN 236	SK3239	RT-158	ECG236	TM236	WEP840	121-29040
TR42	2SC2043	2000-213	GE-332			REN 236	SK3239	RT-158	ECG236	TM236	WEP840	121-29040
	2SC2195		GE-332			REN 236	SK3239	RT-158	ECG236	TM236	WEP840	121-29040
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR44	2SC460	2000-235	GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	2SC839		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A*/**	WEP736*	121-29000A*
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	TM229*	WEP956*	121-29021
	2SC1730		GE-17*	PTC136*	HEPS0025*	REN 107	SK3018*	RT-107A	ECG316*	TM316*	WEP535	121-972*
TR45	2SC945AQ	2000-218	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945A		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A*/**	WEP372	121-29000A*
TR301	2SC900	2000-235	GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A*	WEP736*	121-29000A*
	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
TR302	2SA733	2000-220	GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3466	RT-303	ECG159*	TM159/**	WEP495	121-29003
	2SA564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR401	2SC945A	2000-252	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A*/**	WEP372	121-29000A*
	2SC900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
TR401	2SC828	2000-252	GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC1740		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*	TM123A*	WEP736*	121-29000A*
	2SC1419C		GE-66	PTC167	HEPS5027	REN 152	SK3054	RT-197	ECG152	TM152	WEP745	121-987-02
	2SC1419		GE-66	PTC167	HEPS5027	REN 152	SK3054	RT-197	ECG152	TM152	WEP745	121-987-02
TR401	2SD325	2000-252	GE-28	PTC110	HEPS5041	REN 186	SK3197	RT-166	ECG186	TM186/**	WEP751	121-29008
	2SC1096		GE-28	PTC110	HEPS5041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
	2SD235		GE-66	PTC154	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-987-02
	2SD188		GE-75	PTC118	HEPS7004	REN 130	SK3027	RT-131	ECG130	TM130	WEP704	121-29011
TR401	2SD188M	2000-252	GE-75	PTC118	HEPS7004	REN 130	SK3027	RT-131	ECG130	TM130	WEP704	121-29011
	2SC1618		GE-14	PTC140	HEPS7004	REN 130	SK3027	RT-131	ECG130	TM130	WEP704	121-29011
	2SC1777		GE-14	PTC129A	HEPS7004	REN 130	SK3027	RT-131	ECG130	TM130	WEP704	121-29011

* Lead configuration may vary from original.

** Also available as exact type replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C7	.22 16V	1800-608		TDC224M050EL	QDT1-10	SD50-R229
C13	.1 25V	1800-609		TDC104M050EL	QDT1-2	SD50-R109
C15	2.2 25V	1800-303	PC2-100	VTT2R2A50	QV1-19	EV-1517
C16	2.2 50V		PC2-100	VTT2R2A50	QV1-19	EV-1517
	.47 50V	1800-301	PC1-50	VTT4R7A63	QV1-3	EV-1610
	4.7 25V	1800-304	PC5-50	VTT4R7B50	QV1-27	EV-1319
C17	.47 50V	1800-301	PC1-50	VTT4R7A63	QV1-3	EV-1610
C19	.22 16V	1800-608		TDC224M050EL	QDT1-10	SD50-R229
C24	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226
C26	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226
C27	.47 50V	1800-301	PC1-50	VTT4R7A63	QV1-3	EV-1610
C59	1 25V	1800-606		TDC105M035EL		SD35-19
C62	2.2 25V	1800-603		TDC225M035FL		SD35-2R29
C63	2.2 25V	1800-603		TDC225M035FL		SD35-2R29
C66	1000 10V	1800-332	PC1000-16	VTT1000L10	QV1-179	EV-1160*
C72	4.7 25V	1800-607		TDC475M010EL	QDT1-48	SD10-4R79
C73	4.7 25V	1800-304	PC5-50	VTT4R7B50	QV1-27	EV-1319
C83	2.2 25V	1800-303	PC2-100	VTT2R2A50	QV1-19	EV-1517
C84	22 6.3V	1800-610		TDC226M015FL	QDT1-82	SD15-229
C90	10 16V	1800-306	PC10-25	VTT10B25	QV1-41	EV-1222
C92	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226
C107	220 10V	1800-325	PC250-10	VTT220F10	QV1-115	EV-1140
C108	.47 50V	1800-301	PC1-50	VTT4R7A63	QV1-3	EV-1610

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C109	.1 25V	1800-09		TDC104M050EL	QDT1-2	SD50-R109
C112	4.7 25V	1800-304	PC5-50	VTT4R7B50	QV1-27	EV-1319
C113	22 6.3V	1800-610		TDC226M015FL	QDT1-82	SD15-229
C114	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226
C117	10 25V	1800-330	PC10-25	VTT10B25	QV1-43	EV-1322
C118	470 10V	1800-327	PC500-16	VTT470K16	QV1-149	EV-1150
C119	1 50V	1800-302	PC1-50	VTT1A50	QV1-11	EV-1615
C120	10 16V	1800-306	PC10-25	VTT10B25	QV1-41	EV-1222
C121	.47 50V	1800-301	PC1-50	VTT47A63	QV1-3	EV-1610
C133	10 16V	1800-306	PC10-25	VTT10B25	QV1-41	EV-1222
C134	1000 25V	1800-333	WBR1000-25*	VTT1000M25	QV1-185	EV-1360
C142	.47 50V	1800-301	PC1-50	VTT47A63	QV1-3	EV-1610
C146	1 50V	1800-302	PC1-50	VTT1A50	QV1-11	EV-1615
C162	1 50V	1800-302	PC1-50	VTT1A50	QV1-11	EV-1615
C164	10 25V	1800-330	PC10-25	VTT10B25	QV1-43	EV-1322
C169	1 50V	1800-302	PC1-50	VTT1A50	QV1-11	EV-1615
C180	22 10V	1800-331	PC25-25	VTT22B16	QV1-55	EV-1224
C183	1 50V	1800-302	PC1-50	VTT1A50	QV1-11	EV-1615
C191	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226
C193	1 25V	1800-606		TDC105M035EL		SD35-19
C198	.47 50V	1800-301	PC1-50	VTT47A63	QV1-3	EV-1610
C302	220 16V	1800-308	PC250-25	VTT220H16	QV1-117	EV-1240
C304	3300 35V	1800-329	WBR3000-35*	TC50300*		TVA-1318.A*
C434	47 10V	1800-324	PC50-16	VTT47D16	QV1-73	EV-1226

*Axial replacement for radial device.

PRESIDENT MODEL 1001002, WASHINGTON

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C1	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C2	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C3	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C4	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C5	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C6	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C8	82 NPO		DTZ-82	NP082	CN0482		10TCC-Q82
C9	.001		DC-103	MGP01	TA110	QC2-141	TG-S10
C10	100 N220	1800-009			*		10TCR-T10
C11	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C12	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C14	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C18	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C20	.022			DPMS2S22	EWFI1A122	QF1-127	1PB-S22
C21	5 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C22	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C23	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C25	.047			DPMS2S47	EWFI1A147	QF1-171	1PB-S47
	.022			DPMS2S22	EWFI1A122	QF1-127	1PB-S22
C28	.1			DPMS2P1	EWFI1A010	QF1-215	1PB-P10
C29	12 NPO				CN0412		10TCC-Q12

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C30	.001	1800-002	DD-102G	GP1000	GP210	QC2-81	5GA-D10
C31	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C32	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C33	.0047		DD-472	GP4700	GP247	QC2-81	5GA-D47
C34	.001		DD-102G	GP1000	GP210		5GA-D10
C35	.0047		DD-472	GP4700	GP247		5GA-D47
C36	4 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C37	.0047		DD-472	GP4700	GP247		5GA-D47
C38	2 NPO		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C39	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C40	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C41	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C42	2 NPO		DTZ-2R2	NP02P2	CN0522	QC2-157	10TCC-V22
C43	33 NPO		DTZ-33	NP033	CN0433		10TCC-Q33
C44	2 NPO		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C45	.022		DC-203	MGP02	TA120		TG-S20
C46	.022		DC-203	MGP02	TA120		TG-S20
C47	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C48	.01		DC-103	MGP01	TA110		TG-S10
C49	.022		DC-203	MGP02	TA120		TG-S20
C50	.022		DC-203	MGP02	TA120		TG-S20
C51	.022		DC-203	MGP02	TA120		TG-S20
C52	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C53	.5pF						
C54	.022			DPMS2S22	EWFA1A22	QF1-127	1PB-S22
C55	.022			DPMS2S22	EWFA1A22	QF1-127	1PB-S22
C56	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C57	27 NPO				CN0427		10TCC-Q27
C58	.001			DPMS6D1	EWFA210	QF1-1	1PB-D10
C60	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C61	.1			DPMS2P1	EWFA010	QF1-215	1PB-P10
C64	18 NPO				CN0418		10TCC-Q18
C65	10 NPO				CN0410		10TCC-Q10
C67	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C68	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C69	47 NPO		DTZ-47	NP047	CN0447		10TCC-Q47
C70	47 NPO		DTZ-47	NP047	CN0447		10TCC-Q47
C71	.047			DPMS2S47	EWFA1A47	QF1-171	1PB-S47
C74	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C75	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C76	15 NPO		DTZ-15	NP015	CN0415		10TCC-Q15
C77	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C78	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C79	.1			DPMS2P1	EWFA010	QF1-215	1PB-P10
C80	4 NPO		DTZ-4R7	NP04P7	CN0547		10TCC-V47
C81	270 N750				CN7327		10TCU-T27
C82	.0047			WMF1D47	EWFA247	QF1-57	1PB-D47
C85	.0047			WMF1D47	EWFA247	QF1-57	1PB-D47
C86	.033			DPMS6S33	EWFA133		6PS-S33
C87	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
C88	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C89	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C91	.0022			DPMS6D22	EWFA222		6PS-D22
C93	.01			WMF1S1	EWFA110	QF1-91	1PB-S10
C94	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C95	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C98	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C99	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C100	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C102	100 NPO		DTZ-100	NP0100	CN0310		10TCC-T10
C103	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C104	18 NPO				CN0418		10TCC-Q18
C105	10 NPO		DTZ-10	NP010	CN0410		10TCC-Q10
C106	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C108	.039			DPMS6S39	PVC6139		6PS-S39
C110	.1			DPMS2P1	EWFA010	QF1-215	1PB-P10
C111	.022			DPMS2S22	EWFA1A22	QF1-127	1PB-S22
C115	.001			DPMS6D1	EWFA210	QF1-1	1PB-D10
C116	.1			DPMS2P1	EWFA010	QF1-215	1PB-P10
C122	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C123	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C124	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C125	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C126	10 NPO		DTZ-10	NP010	CN0410		10TCC-Q10
C127	220		DD-221		GP322		10TS-T22
C128	470		DD-471	GP470	GP347		10TS-T47
C129	.01		DC-103	MGP01	TA110	QC2-141	TG-S10

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C130	.01	1800-116	DC-103	MGP01	TA110	QC2-141	TG-S10
C131	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C132	10		DTZ-10	NP010	CN0410		10TCC-Q10
C139	1 NPO				CN0510		10TCC-V10
C140	10 NPO		DTZ-10	NP010	CN0410		10TCC-Q10
C141	.0047		DD-472	GP4700	GP247		5GA-D47
C143	68 NPO		DTZ-68	NP068	CN0468		10TCC-Q68
C144	39 NPO				CN0439		10TCC-Q39
C145	180 N220				*		10TCR-Q18
C147	1 NPO				CN0510		10TCC-V10
C148	390 N750		DTN-390				10TCU-T39
C149	330 N750			DPMS6D1	EW6210		6PS-D10
C150	.1			DPMS2P1	EW1A010	QF1-215	1PB-P10
C151	470 N750		DTN-470				10TCU-T47
C152	.0047		DD-472	GP4700	GP247		5GA-D47
C153	.1			DPMS2P1	EW1A010	QF1-215	1PB-P10
C154	.0047		DD-472	GP4700	GP247		5GA-D47
C155	.0047		DD-472	GP4700	GP247		5GA-D47
C156	.0047		DD-472	GP4700	GP247		5GA-D47
C157	.0047		DD-472	GP4700	GP247		5GA-D47
C158	47 NPO		DTZ-47	NP047	CN0447		5GA-D47
C159	330 N750		DTN-330	N330	CN7333		10TCC-Q47
C160	1.5 NPO		DTZ-1R5	NP01P5	CN0515		10TCU-T33
C161	.01	1800-121		WMF1S1	EW1A110	QF1-91	10TCC-V15
C163	120 N220				*		1PB-S10
C165	.001		DD-102G	GP1000	GP210	QC2-81	10TCR-T12
C167	.022		DC-203	MGP02	TA120	QC2-81	5GA-D10
C168	.047			DPMS2S47	EW1A147	QC2-157	TG-S20
C170	100		DD-101	GP100		QF1-171	1PB-S47
C171	56 NPO				GP310		10TS-T10
C172	.001		DD-102G	GP1000	CN0456		10TCC-Q56
C173	.0047		DD-472	GP4700	GP210	QC2-81	5GA-D10
C174	330 N750		DTN-330	N330	GP247		5GA-D47
C175	33 NPO		DTZ-33	NP033	CN7333		10TCU-T33
C177	.022		DC-203	MGP02	CN0433		10TCC-Q33
C181	.01		DC-103	MGP01	TA120	QC2-157	TG-S20
C184	.0047		DD-472	GP4700	TA110	QC2-141	TG-S10
C189	.01		DC-103	MGP01	GP247		5GA-D47
C190	.047		DC-503	MGP05	TA110	QC2-141	TG-S10
C192	.001		DD-102G	GP1000	TA150	QC2-207	TG-S50
C194	.033			DPMS6S33	GP210	QC2-81	5GA-D10
C195	47 NPO		DTZ-47	NP047	EW6133		6PS-S33
C196	.0047		DD-472	GP4700	CN0447		10TCC-Q47
C197	.0047		DD-472	GP4700	GP247		5GA-D47
C202	.0047	1800-103(1)	DD-472	GP4700	GP247		5GA-D47
C203	.0047		DD-472	GP4700	GP247		5GA-D47
C204	.0047		DD-472	GP4700	GP247		5GA-D47
C206	.022		DD-472	GP4700	GP247		5GA-D47
C207	.1		DC-203	MGP02	TA120	QC2-157	5GA-D47
C208	.022		DC-104	MGP1	TA010	QC2-233	TG-S20
C301	.039		DC-203	MGP02	TA120	QC2-157	TG-P10
C303	.039			DPMS6S39	PVC6139		TG-S20
C308	.01			DPMS6S39	PVC6139		6PS-S39
C310	.01		DC-103	MGP01	TA110	QC2-141	6PS-S39
C401	.0047		DC-103	MGP01	TA110	QC2-141	TG-S10
C402	.0046		DD-472	GP4700	GP247		TG-S10
C403	.001		DD-472	GP4700	GP247		5GA-D47
C404	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D47
C405	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C406	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C407	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C408	.0047		DD-472	GP4700	GP247	QC2-81	5GA-D10
C409	.0047		DD-472	GP4700	GP247		5GA-D47
C410	.0047		DD-472	GP4700	GP247		5GA-D47
C411	.0047		DD-472	GP4700	GP247		5GA-D47
C412	.01		DC-103	MGP01	TA110	QC2-141	5GA-D47
C413	.01		DC-103	MGP01	TA110	QC2-141	5GA-D47
C414	.1		DC-104	MGP1	TA010	QC2-233	5GA-D47
C415	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C416	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C417	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C420	.0033		DD-332	GP3300	GP210	QC2-81	5GA-D10
C421	.047		DC-503	MGP05	GP233	QC2-107	5GA-D33
C422	.0047		DD-472	GP4700	TA150	QC2-207	TG-S50
C436	.0047		DD-472	GP4700	GP247		5GA-D47
CC1			DD-472	GP4700	GP247		5GA-D47
CT1	20	1800-203					
CT2	20	1800-203					
CT3	20	1800-203					

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
(1) Consists of four .01 caps.

PRESIDENT MODEL 1001002, WASHINGTON

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	RESIST-ANCE	REPLACEMENT DATA			
			MFR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
RT301	Voltage	300	1900-221	T-300	MTC52L1	X201R501B
VR1	Sig Meter	10K	1900-203			U260R103B
VR2	Squelch Range	1000	1900-220			U260R102B
VR3	XMT Frequency	3000	1900-215			U260R502B
VR5	Carrier Balance	10K	1900-203			U260R103B
VR6	AM Power	5000	1900-201			U260R502B
VR7	RF ALC	10K	1900-203			U260R103B
VR8	RF Driver Bias	500	1900-205			U260R501B
VR9	RF Final Bias	5000	1900-201			U260R502B
VR10	TX Power Meter	100K	1900-211			U260R104B
VR12	Mod	100K	1900-211			U260R104B
VR401	Squelch/CB-PA Switch/CB-PA Switch	100K	1900-139			
VR402	Clarifier	20K	1900-126	F1025K(1), SSK012	RU253L, SL36, SL1500 or UA24L(1), SK750	BU1(1), CF62, SS1, DC.
VR403	Volume/Power Switch	10K	1900-137	F1-10K(1), SSK012	RU14, SL36, SL1500 or UA14L(1), SK750	BU1(1), CF35, SS1, DC1
VR404	RF Gain	10K	1900-141	F2-10K(1), SSK012	RU14A, SL36, SL1500 or UA14A(1), SK750	BU1(1), CF61, SS1, DC1
VR405	Mic Gain	10K	1900-102			

(1) Enlarge mounting hole.

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.
R426	10 Ohms 5W WW	5W-SQ-10	1900-086				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Noise Blanker (23mH)	2200-022	LA038	CBS512- 7TC	
L2	Noise Blanker (23mH)	2200-029	LA179		
L3	IF (7.8MHz)	2200-064	LA255		
L4	IF (7.8MHz)	2200-065	LA263		
L5	IF (7.8MHz)	2200-066	LA262		
L6	IF (7.8MHz)	2200-067	LA257		
L7	IF (7.8MHz)	2200-068	LA258		
L8	Rec RF (27MHz)	2200-069	LA259		
L9	Rec RF (27MHz)	2200-070	LA260		
L10	Rec Antenna (27MHz)	2200-071	LA261		
L11	RF Choke (270uH)	2200-040	LZ012		
L12	RF Choke (100uH)	2200-202	LZ012		
L13	VCO	2200-072	LA216		
L14	VCO (34MHz)	2200-055	LA195		
L15	RF Choke (470uH)	2200-040	LZ012		
L16	RF Choke (470uH)	2200-040	LZ012		
L17	Carrier Shift (7.8MHz)	2200-073	LA223		
L18	Tripler (33MHz)	2200-074	LA256		
L19	Osc (11.1125MHz)	2200-075	LA217		
L20	Osc (11.1125MHz)	2200-076	LA218		
L21	RF Choke (470uH)	2200-040	LZ012		
L22	RF Choke (470uH)	2200-040	LZ012		
L23	RF Choke (470uH)	2200-040	LZ012		
L24	RF Choke (470uH)	2200-040	LZ012		
L25	RF Choke (100uH)	2200-202	LZ012		
L26	Balance Mixer (7.8MHz)	2200-077	LA219		
L27	Balance Mixer (35MHz)	2200-028	LA160		
L28	Mixer (27MHz)	2200-078	LA220		
L29	Mixer (27MHz)	2200-079	LA254		
L30	XMT Driver (27MHz)	2200-061	LD096		
L33	RF Choke	2200-080	LD098		
L35	RF Choke	2200-080	LD098		

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.	
L36	Final	2200-034	LC019	CB305	
L37	RF Choke	2200-038	LE051		
L38	RF Choke	2200-038	LE051		
L39	TVI Trap (54MHz)	2200-034	LC019	CB305	
L401	RF Choke	2200-035	LD013		
L402	RF Choke	2200-035	LD013		
L403	RF Choke	2200-059	LD089		
L406	RF Choke	2200-059	LD089		
L407	RF Choke	2200-059	LD089		
L408	RF Choke	2200-059	LD089		

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T401	120V AC @ 1A AC	17.40V AC @ 3.78A AC	2600-010 TF-143(1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP401	2 3/4" X 4" PM 8 Ohms	3100-002		

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	
F401	4 Amp		2700-001	AGC 4	HRK	311004	150145		
F402	4 Amp		1100-816	AGC 4	HKP	311004	342104		

PRESIDENT MODEL 1001002, WASHINGTON

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFGR. PART No.	GC PART No.	GC NOISE CANCEL	GC POWER	GC CONNECTOR	GC Red	GC Shield	GC Yellow	GC Blue	GC White	GC Black
Mic	3200-004	18-032	18-034	18-010		1	2	5	3	NC	4

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D401	LED	2000-306	Channel Display (TLR321)
D402	LED	2000-343	RX/TX
D402	LED	2000-347	Channel 9
D410	LED	2000-349	AM Indicator
D411	LED	2000-344	USB Indicator
D412	LED	2000-344	LSB Indicator
FT1	Filter	2200-306	7.8MHz
FT2	Filter	2200-310	7.8MHz
J401	Jack	1100-001	PA
J402	Jack	1100-001	External Speaker
J403	Jack	1100-003	DC Power
J404	Jack	1100-023	Microphone
J405	Jack	1100-002	Antenna
J406	Jack	1100-009	Head Phone
L31	Ferrite Bead	2200-052	(LD087)
L32	Ferrite Bead	2200-108	(LD101)
L34	Ferrite Bead	2200-052	(LD087)
L50	Ferrite Bead	2200-103	(LD077)
L51	Ferrite Bead	2200-103	(LD077)
L52	Ferrite Bead	2200-103	(LD077)
M401	Meter	2900-010	S/R/Mod
PL401	Lamp	2500-003	Meter (10.39V @ 32mA)
S401	Switch	3000-110	Channel Selector
S402	Switch		Power (Part of Volume Control)
S403	Switch	3000-111	Mode Selector
S404	Switch		CB/PA (Part of Squelch Control)
S405	Switch	3000-008	NB/ANL
S408	Switch	(1)	S/R/Mod (Part of Assembly S404)
S409	Switch	3000-112	AC/DC Power Conversion
S411	Switch		Channel 9 (Part of Assembly S404)
X1	Crystal	2100-001	10.240MHz
X2	Crystal	2100-010	7.8025MHz
X3	Crystal	2100-011	7.7975MHz
X4	Crystal	2100-012	11.1125MHz

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

ITEM	PART No.	ITEM	PART No.
Knob, Channel Selector	1300-004	Knob, Push Switch	1300-003
Knob, Control	1300-002	Microphone Hanger	3300-401
Knob, Mode	1300-005	Cabinet Top	3300-124