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 87GTL

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER

Power Output	4 watts.
Modulation	High and low-level Class B amplitude modulation.
Frequency Response	300 to 2500 Hz.
Output Impedance	50 ohms, unbalanced.
Output Indicators	Meter indicates relative RF output power and ON THE AIR indicator.

RECEIVER

Sensitivity	Less than 1μV for 10 dB (S+N)/N.
Selectivity	6 dB @ 7 KHz, 60 dB @ 10 KHz.
Image Rejection	80 dB.
IF Frequencies	Double conversion, 1st: 10.695 MHz. 2nd: 455 KHz.
Adjacent Channel Rejection	60 dB.
RF Gain Control	Variable type.
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 1μV.
Audio Output Power	5 watts.
Frequency Response	300 to 2500 Hz.
Distortion	Less than 10% @ 4 watts @ 1000 Hz.
Built-in Speaker	8 ohms.
External Speaker (Not Supplied)	8 ohms; disables internal speaker when connected.
Indicator	RECEIVE and Signal strength indicators.

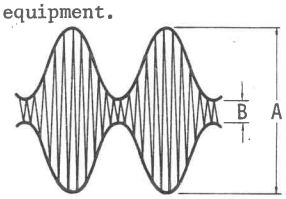
Courtesy of the Manufacturer

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

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.
Adjust VR201 for 13.8 volts DC output at TP10 (TR201 emitter).
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,L2,L3,L5,L17 thru L21,L23,L24,L25.	9440
L6,L7,L8.	5000,5009,8276,8728,9089
L10,L13,L16	8728,9304,9089



Modulation Ratio = $\frac{A - B}{A + B}$ x 100 (%)

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP6.	Ch. 19	L23	Adjust for maximum RF (720mV p-p typical).
Input of frequency counter to TP6.	Ch. 19	L21	Adjust for 10.240MHz.
Input of frequency counter to TP9 (IC4 pin 10).	Ch. 19		Check for 5.120MHz.
Input of DC meter to TP4.	Ch. 1	L20	Adjust for 1.30 volts. Check for approx. 2.10 volts on channel 40.
Input of DC meter to TP4.	Ch. 1, XMT		Check for approx. 2.10 volts. Check for approx. 3.30 volts on channel 40.
Input of oscilloscope to TP5.	Ch. 19	L19	Adjust for maximum RF (550mV p-p typical).
Input of frequency counter to TP5.	Ch. 1		Check for .910MHz. Check all channels (See Truth Chart for correct frequencies.)
Input of frequency counter to TP5.	Ch. 1, XMT		Check for 1.365MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of oscilloscope to TP2.	Ch. 19	L18	Adjust for maximum RF (108mV p-p typical).
Input of frequency counter to TP2.	Ch. 1		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of oscilloscope to TP1.	Ch. 19, XMT	L24,L25	Adjust for maximum RF (530mV p-p typical).
Input of frequency counter to TP1.	Ch. 1, XMT		Check for 26.965MHz. Check all channels. (See Truth Chart for correct frequencies.)

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. Preset controls as follows, unless otherwise noted:
RF Gain Max, Squelch MINIMUM, Tone Hi, ANL Off.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP11 (TR4 gate). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L8,L7,L6	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L5,L3,L2,L1	Adjust for maximum output. Readjust L6,L7 and L8 for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Preset controls as follows, unless otherwise noted:
RF Gain Max, Squelch MINIMUM, Tone Hi, ANL Off.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1uV.	Ch. 19 Volume Max	VR1	IF GAIN Adjust for 2.00 volts RMS (.5watt) audio output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Max	VR3	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR2	SIGNAL METER Adjust for 9 on SIGNAL scale of meter

TRANSMITTER ALIGNMENT

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19	L17,L16	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19	L13	Adjust for 4.0 watts RF output maximum.
Input of spectrum analyzer or harmonic meter to antenna input.	Ch. 19	L10	Adjust for MINIMUM at 54MHz (2nd harmonic).

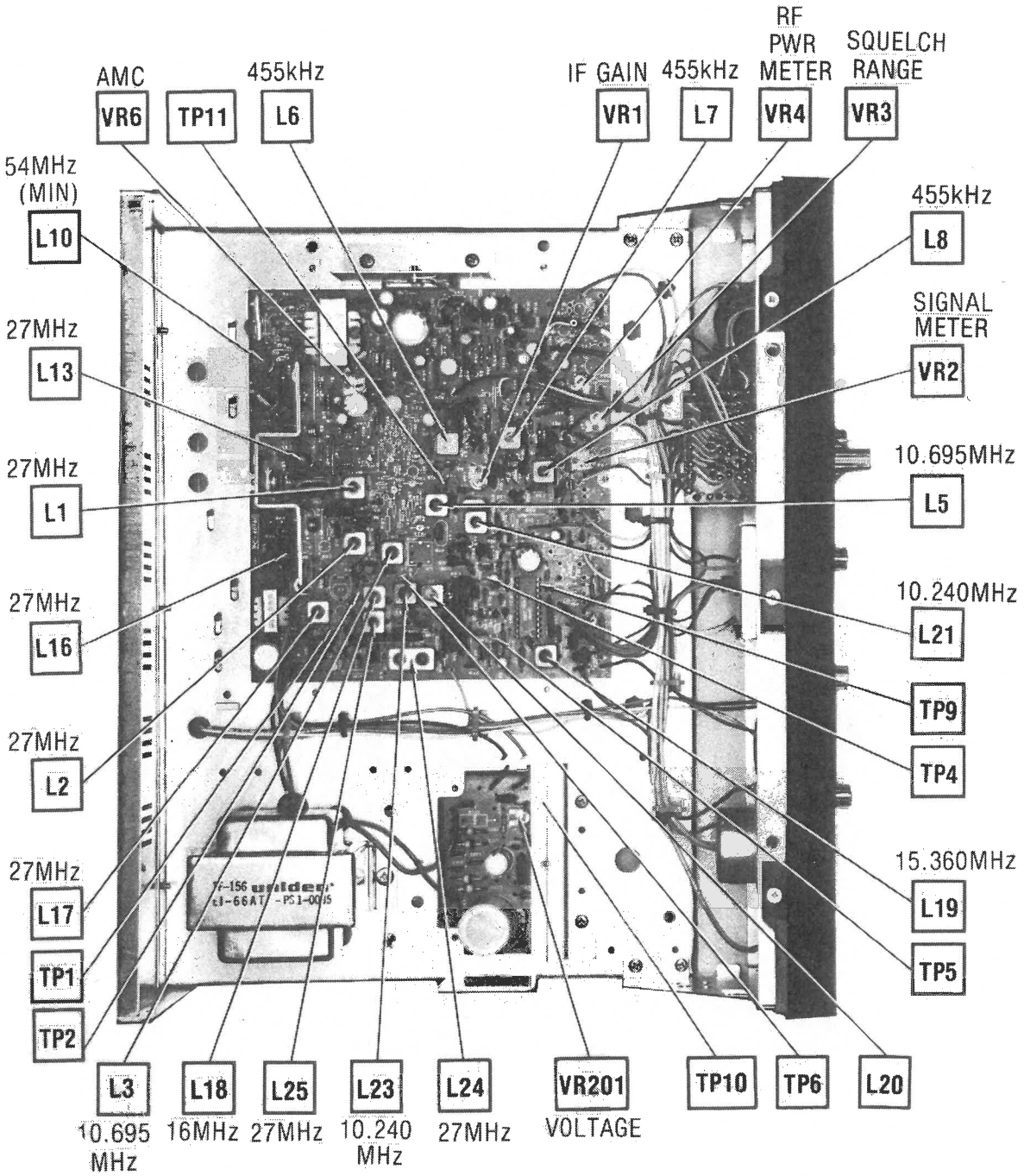
TRANSMITTER ADJUSTMENTS

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

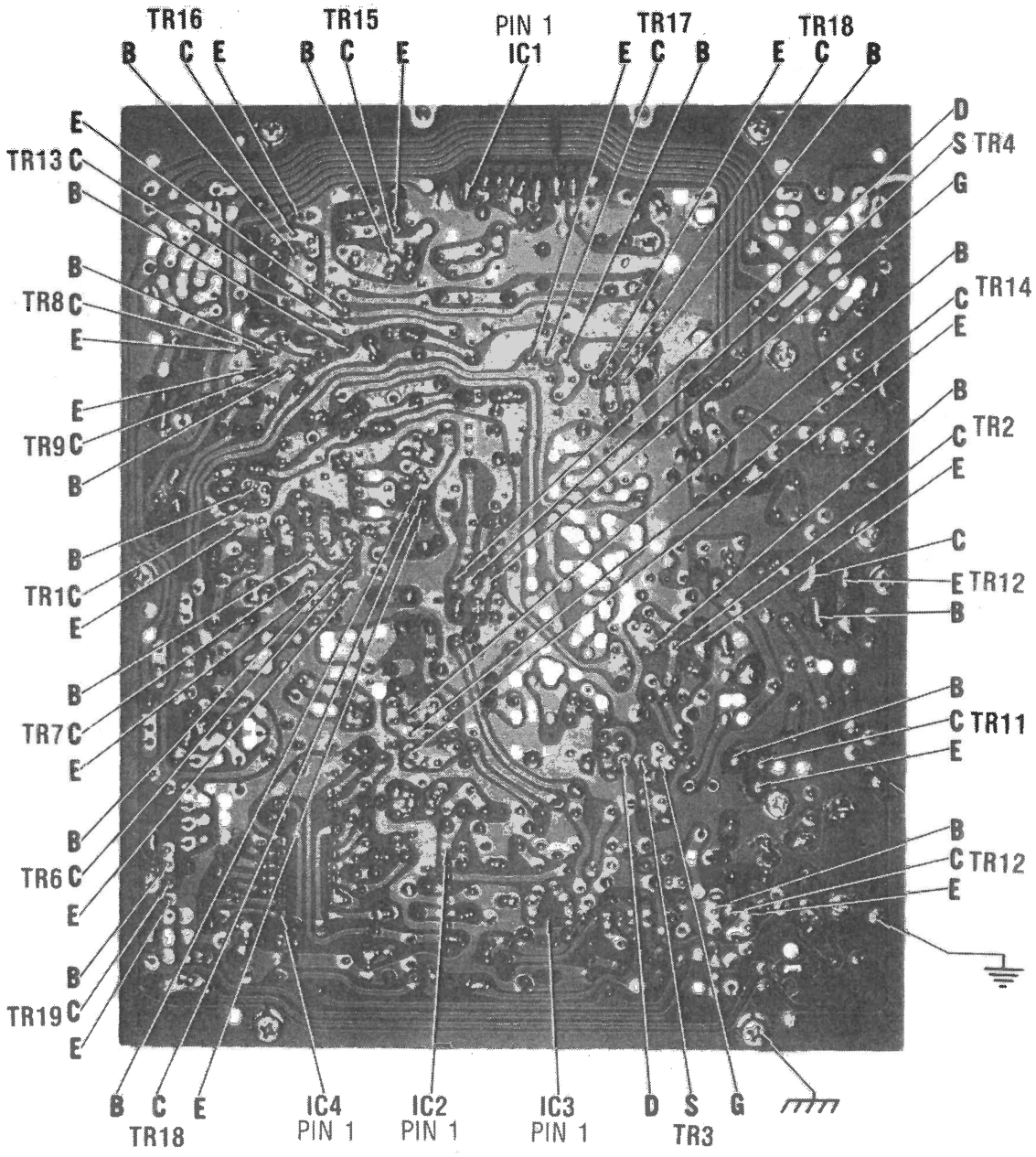
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 100mV audio signal at mic input.	Ch. 19 Dynamike Max	VR6	AMC Adjust for 100% modulation maximum. (See Figure 1.)
Input of RF wattmeter to antenna input.	Ch. 19 MINIMUM	VR4	RF PWR METER At 4.0 watts RF output, adjust so RF PWR meter agrees with RF wattmeter.

TRUTH CHART

CHANNEL	1 = 4.70 Volts 0 = 0 Volts CHANNEL INPUT CODES PINS								REC DIVIDER INPUT IN MHz AT TP5	XMT DIVIDER INPUT IN MHz AT TP5	REC VCO OUTPUT IN MHz AT TP2	XMT SYNTH OUTPUT IN MHz AT TP1
			6	5	4	3	2	1				
1			0	0	0	0	0	1	.910	1.365	16.270	26.965
2			0	0	0	0	1	0	.920	1.375	16.280	26.975
3			0	0	0	0	1	1	.930	1.385	16.290	26.985
4			0	0	0	1	0	0	.950	1.405	16.310	27.005
5			0	0	0	1	0	1	.960	1.415	16.320	27.015
6			0	0	0	1	1	0	.970	1.425	16.330	27.025
7			0	0	0	1	1	1	.980	1.435	16.340	27.035
8			0	0	1	0	0	0	1.000	1.455	16.360	27.055
9			0	0	1	0	0	1	1.010	1.465	16.370	27.065
10			0	1	0	0	0	0	1.020	1.475	16.380	27.075
11			0	1	0	0	0	1	1.030	1.485	16.390	27.085
12			0	1	0	0	1	0	1.050	1.505	16.410	27.105
13			0	1	0	0	1	1	1.060	1.515	16.420	27.115
14			0	1	0	1	0	0	1.070	1.525	16.430	27.125
15			0	1	0	1	0	1	1.080	1.535	16.440	27.135
16			0	1	0	1	1	0	1.100	1.555	16.460	27.155
17			0	1	0	1	1	1	1.110	1.565	16.470	27.165
18			0	1	1	0	0	0	1.120	1.575	16.480	27.175
19			0	1	1	0	0	1	1.130	1.585	16.490	27.185
20			1	0	0	0	0	0	1.150	1.605	16.510	27.205
21			1	0	0	0	0	1	1.160	1.615	16.520	27.215
22			1	0	0	0	1	0	1.170	1.625	16.530	27.225
23			1	0	0	0	1	1	1.200	1.655	16.560	27.255
24			1	0	0	1	0	0	1.180	1.635	16.540	27.235
25			1	0	0	1	0	1	1.190	1.645	16.550	27.245
26			1	0	0	1	1	0	1.210	1.665	16.570	27.265
27			1	0	0	1	1	1	1.220	1.675	16.580	27.275
28			1	0	1	0	0	0	1.230	1.685	16.590	27.285
29			1	0	1	0	0	1	1.240	1.695	16.600	27.295
30			1	1	0	0	0	0	1.250	1.705	16.610	27.305
31			1	1	0	0	0	1	1.260	1.715	16.620	27.315
32			1	1	0	0	1	0	1.270	1.725	16.630	27.325
33			1	1	0	0	1	1	1.280	1.735	16.640	27.335
34			1	1	0	1	0	0	1.290	1.745	16.650	27.345
35			1	1	0	1	0	1	1.300	1.755	16.660	27.355
36			1	1	0	1	1	0	1.310	1.765	16.670	27.365
37			1	1	0	1	1	1	1.320	1.775	16.680	27.375
38			1	1	1	0	0	0	1.330	1.785	16.690	27.385
39			1	1	1	0	0	1	1.340	1.795	16.700	27.395
40			0	0	0	0	0	0	1.350	1.805	16.710	27.405


AMC
VR6
TP11
455kHz
L6
IF GAIN
VR1
455kHz
L7
RF PWR METER
VR4
SQUELCH RANGE
VR3
54MHz (MIN)
L10
27MHz
L13
27MHz
L1
27MHz
L16
27MHz
L2
27MHz
L17
TP1
TP2
455kHz
L8
SIGNAL METER
VR2
10.695MHz
L5
10.240MHz
L21
TP9
TP4
15.360MHz
L19
TP5
L3
10.695 MHz
L18
16MHz
L25
27MHz
L23
10.240 MHz
L24
27MHz
VR201
VOLTAGE
TP10
TP6
L20

CHASSIS - TOP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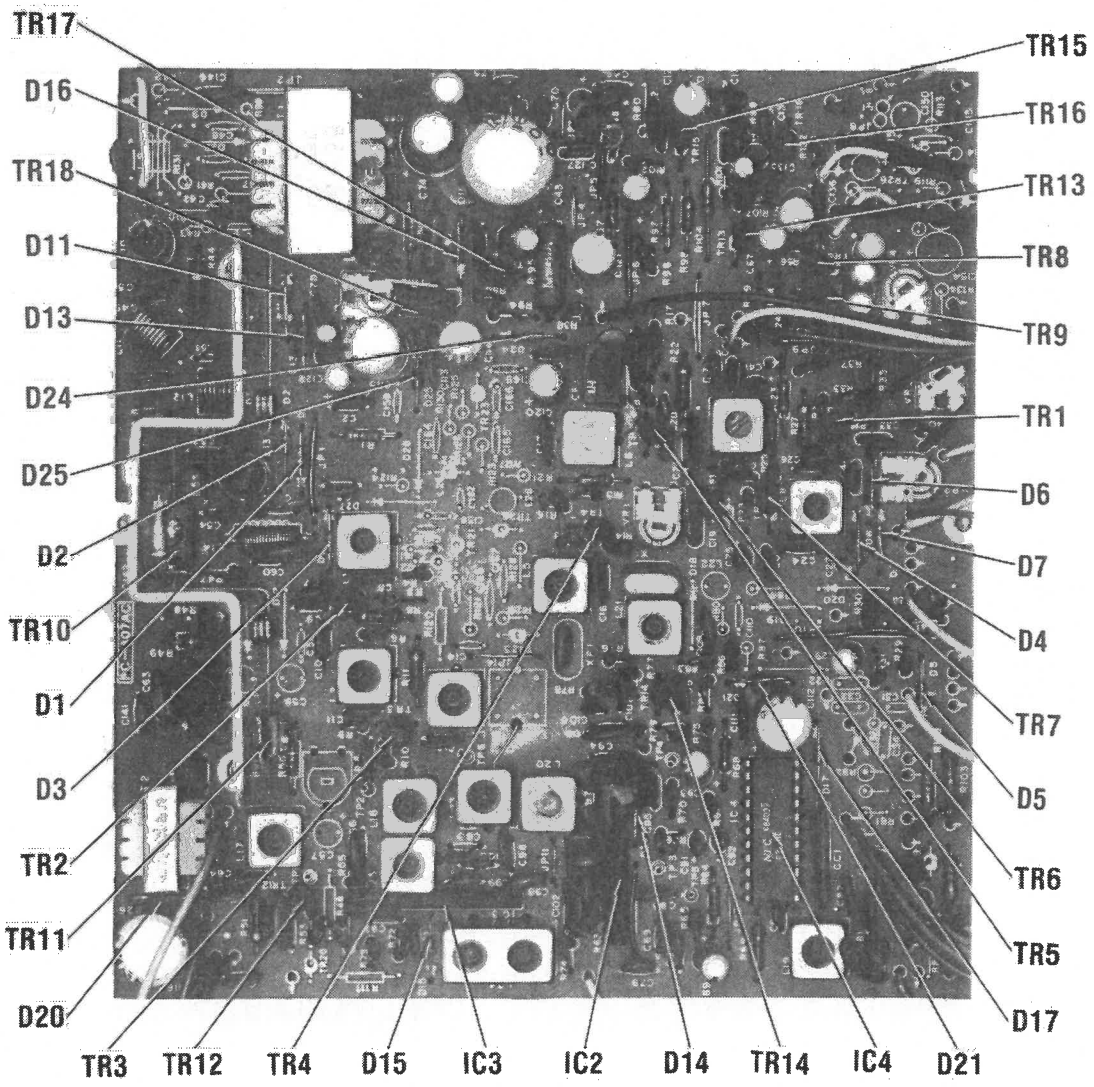
B C E
TR15
B C E
PIN 1
IC1
TR17
E C B
TR18
E C B
E
TR13 C
B
B
TR8 C
E
E
TR9 C
B
B
TR1 C
E
B
TR7 C
E
B
TR6 C
E
B
TR19 C
E
D
S TR4
G
B
C TR14
E
B
C TR2
E
C
E TR12
B
B
C TR11
E
B
C TR12
E
B C E
TR18
IC4
PIN 1
IC2
PIN 1
IC3
PIN 1
D S G
TR3

MAIN BOARD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D11
D13
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D25
D2
TR10
D1
D3
TR2
TR11
D20
TR3
TR12
TR4
D15
IC3
IC2
D14
TR14
IC4
D21
D17
TR5
TR6
D5
TR7
D4
D7
D6
TR1
TR9
TR8
TR13
TR16
TR15

MAIN BOARD

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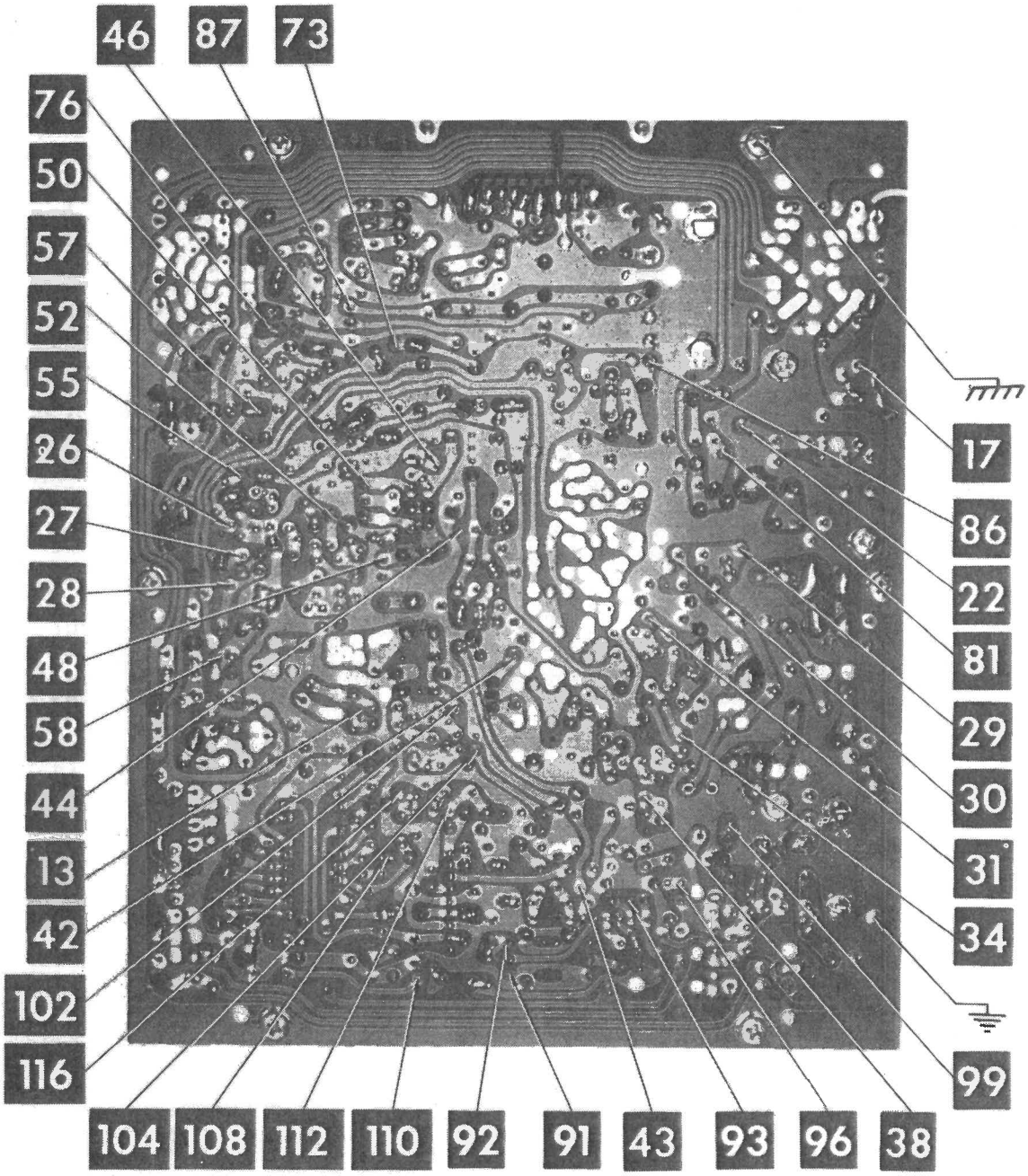

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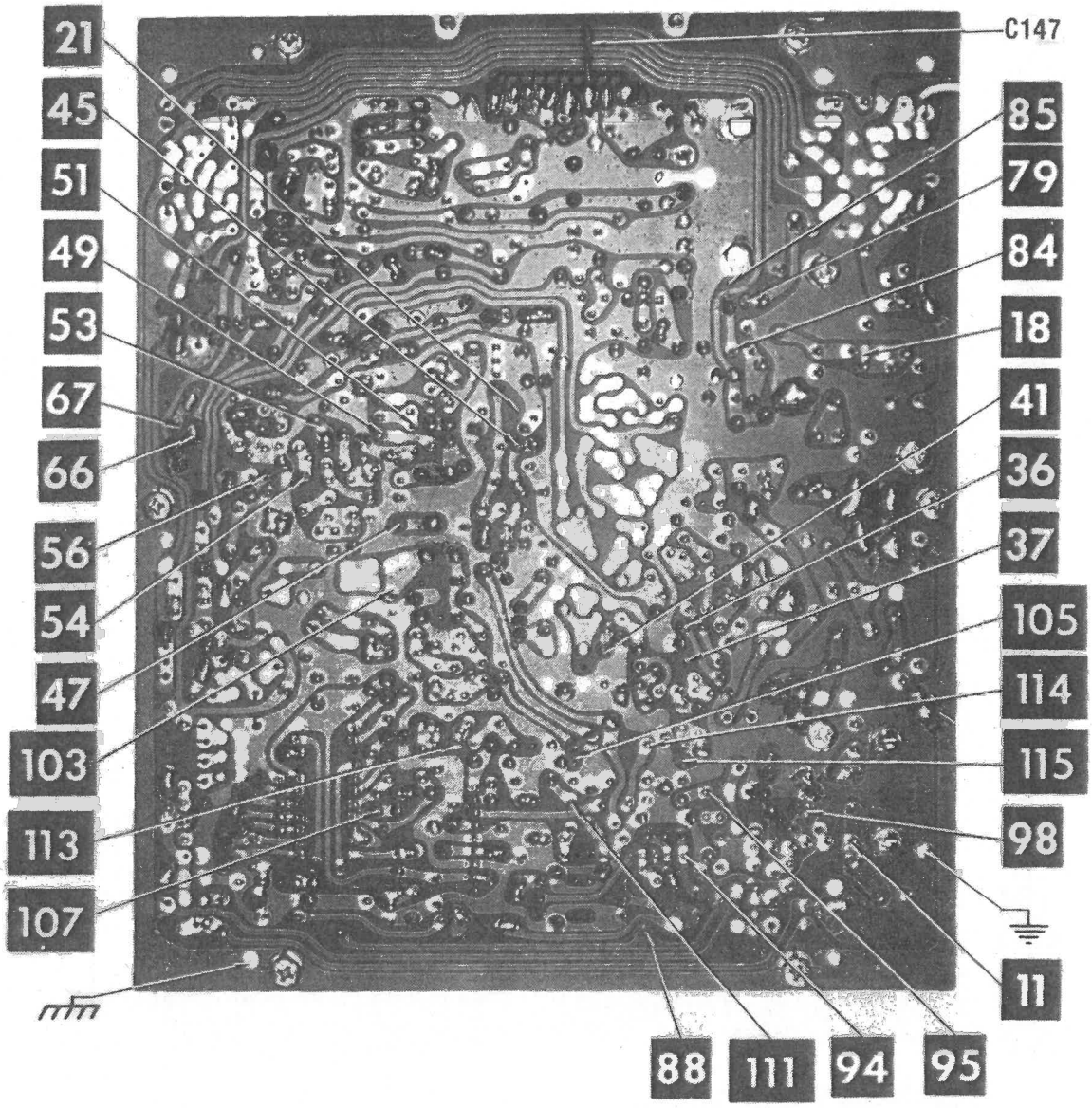
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103
113
107
C147
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111
94
95

MAIN BOARD

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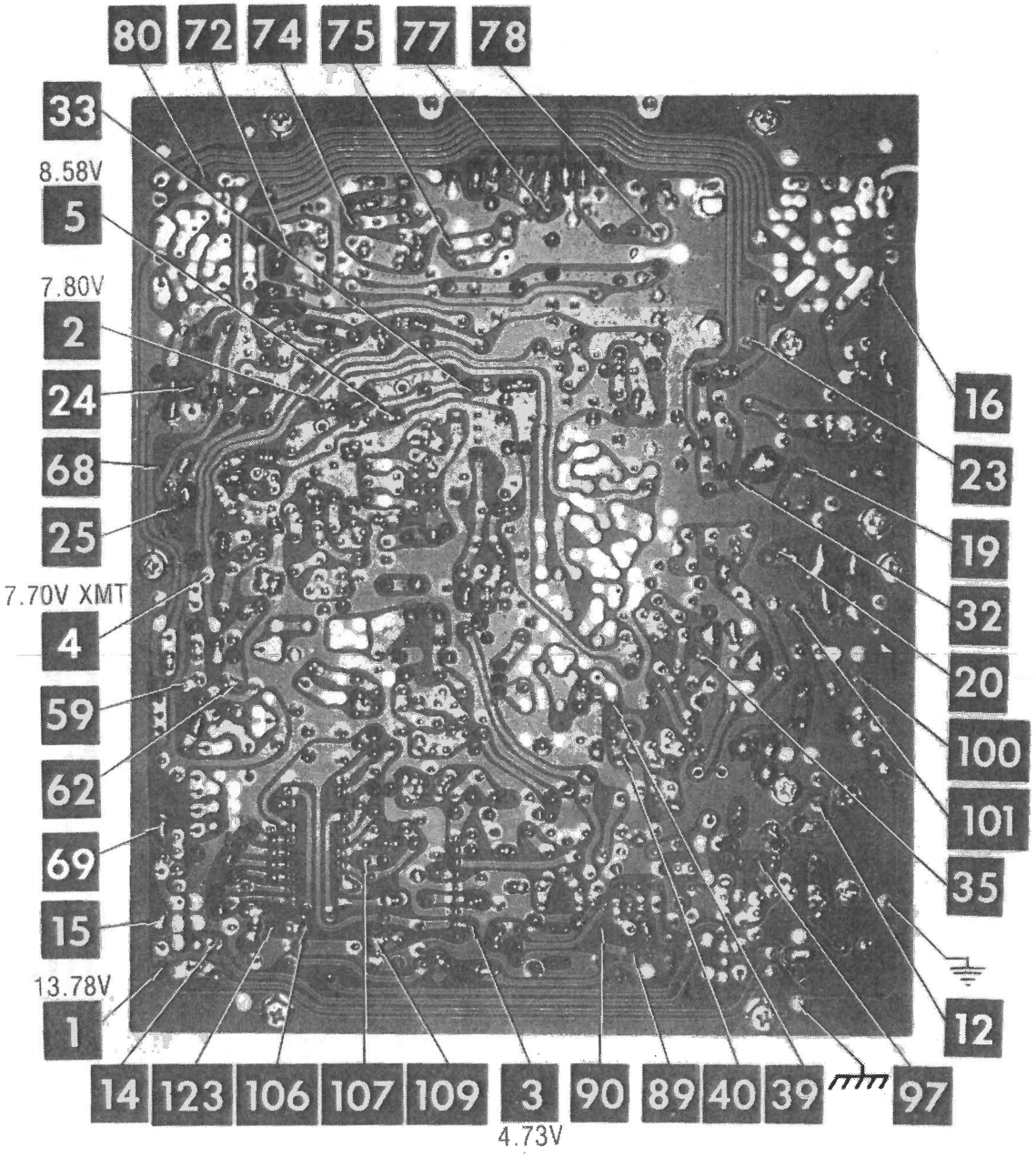

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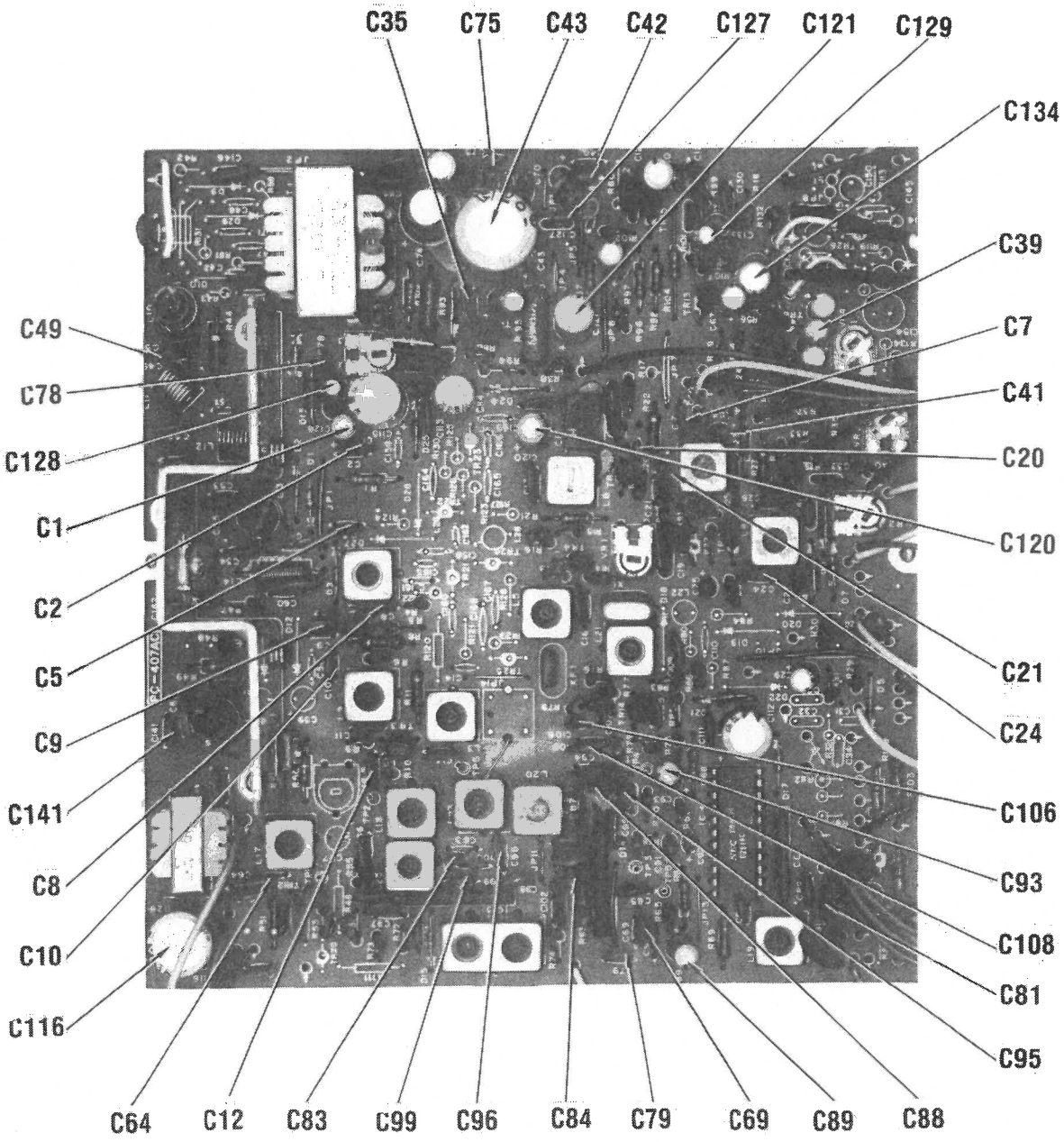
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C43
C42
C127
C121
C129
C134
C39
C7
C41
C20
C120
C21
C24
C106
C93
C108
C81
C95
C88
C89
C69
C79
C84
C96
C99
C83
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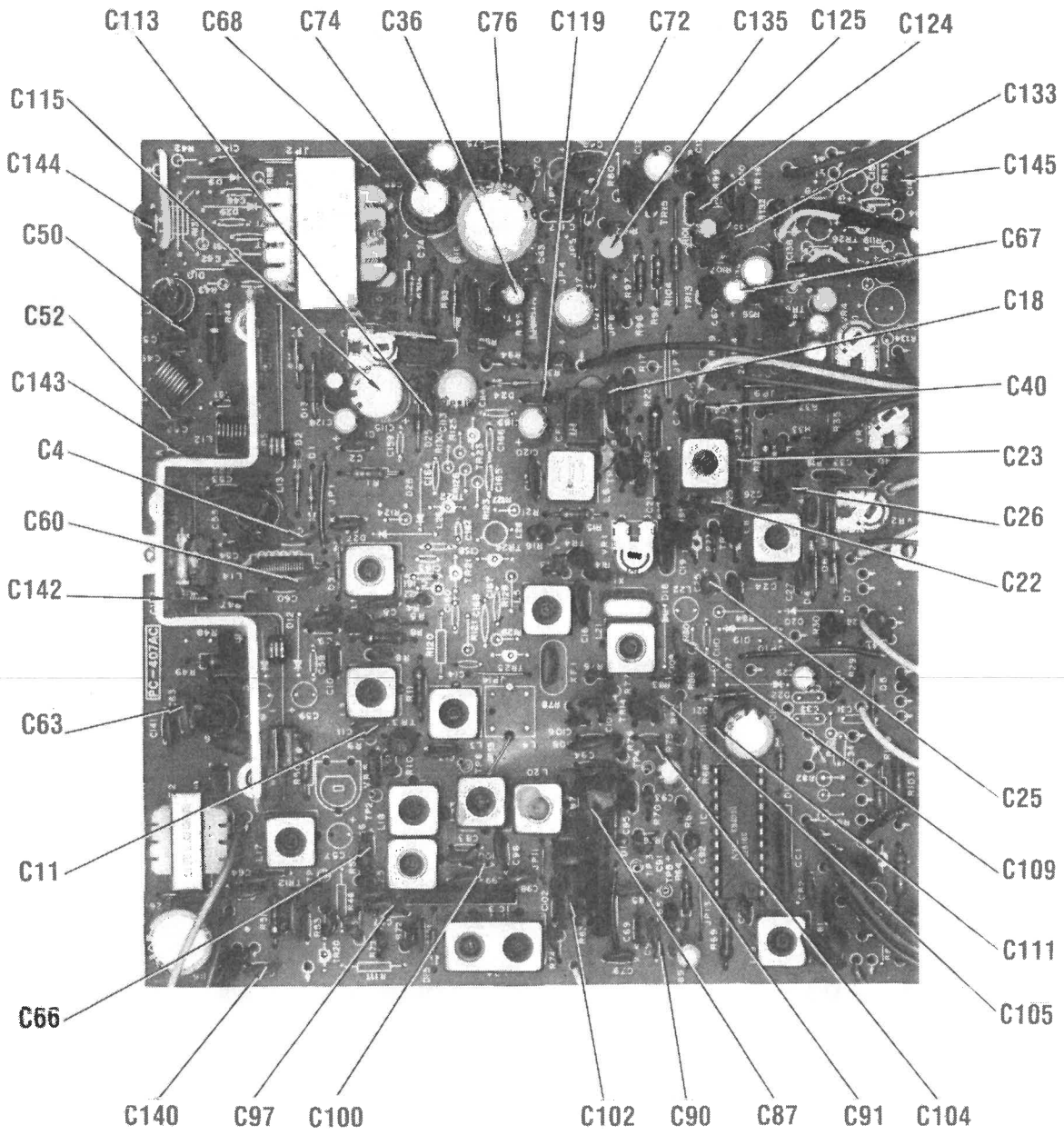
C116
C10
C8
C141
C9
C5
C2
C1
C128
C78
C49

MAIN BOARD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C143
C40
C4
C23
C60
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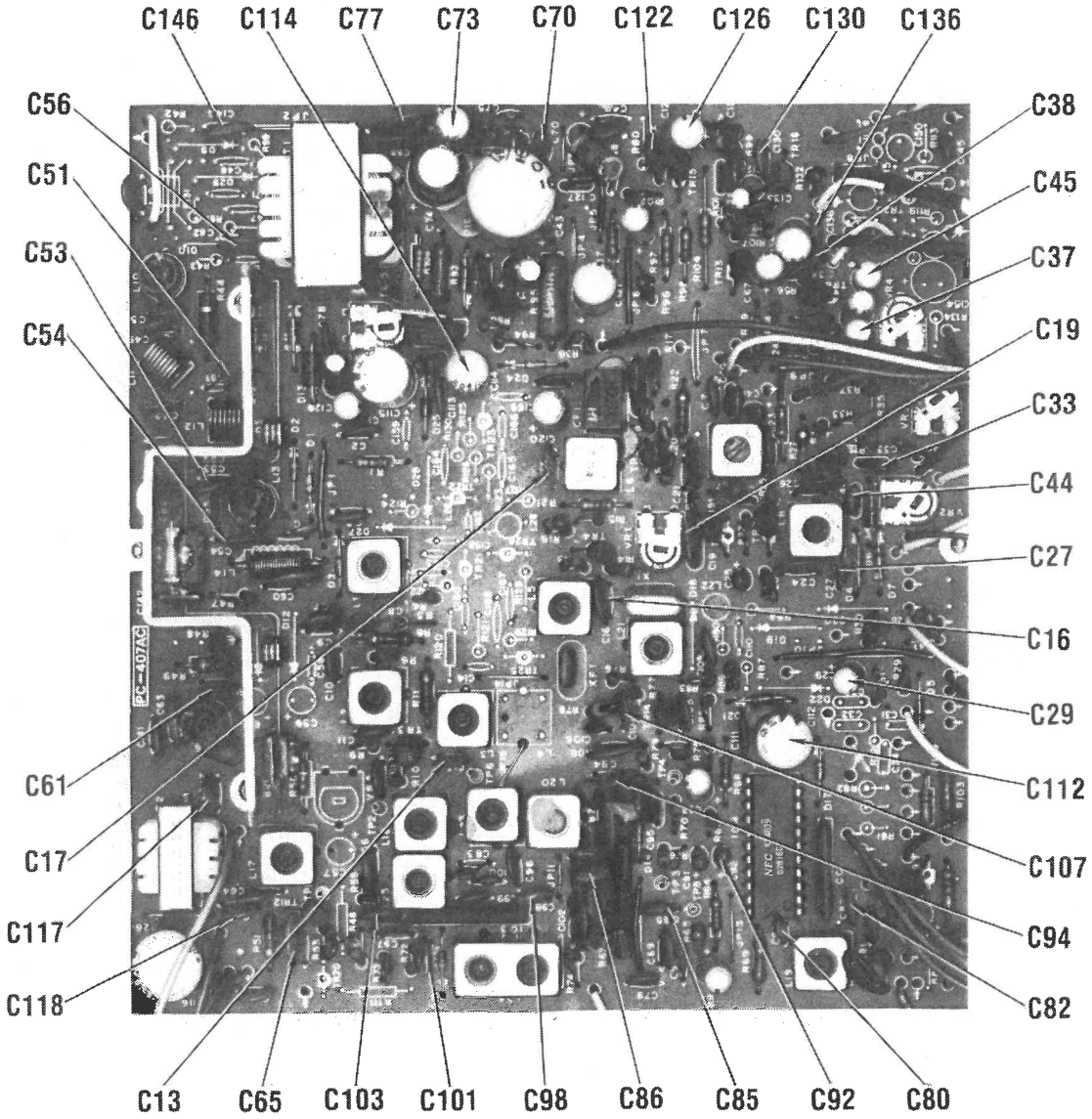
MAIN BOARD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C112
C107
C94
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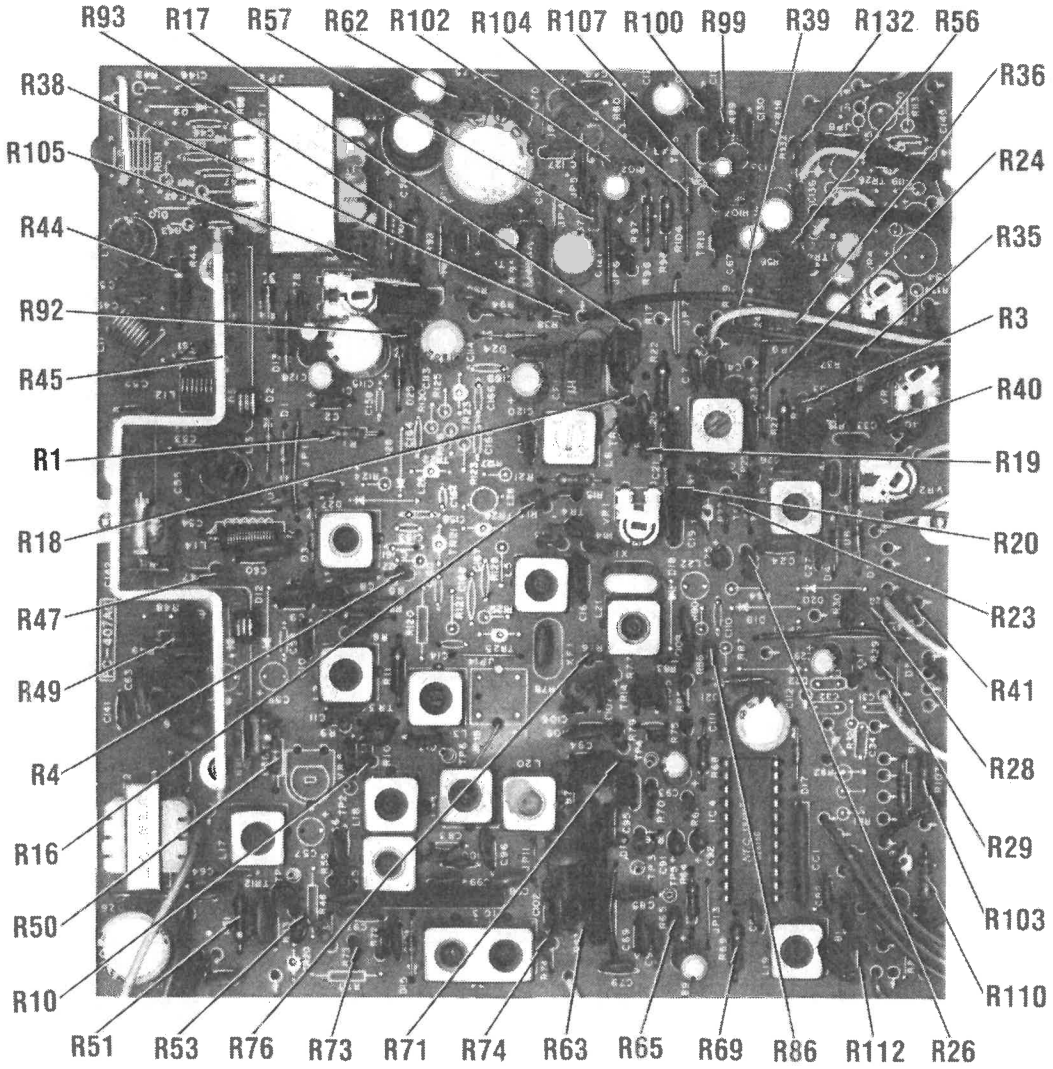
C80

MAIN BOARD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R17
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R62
R102
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R100
R99
R39
R132
R56
R38
R36
R105
R24
R44
R35
R92
R3
R45
R40
R1
R19
R18
R20
R47
R23
R49
R41
R4
R28
R16
R29
R50
R103
R10
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R53
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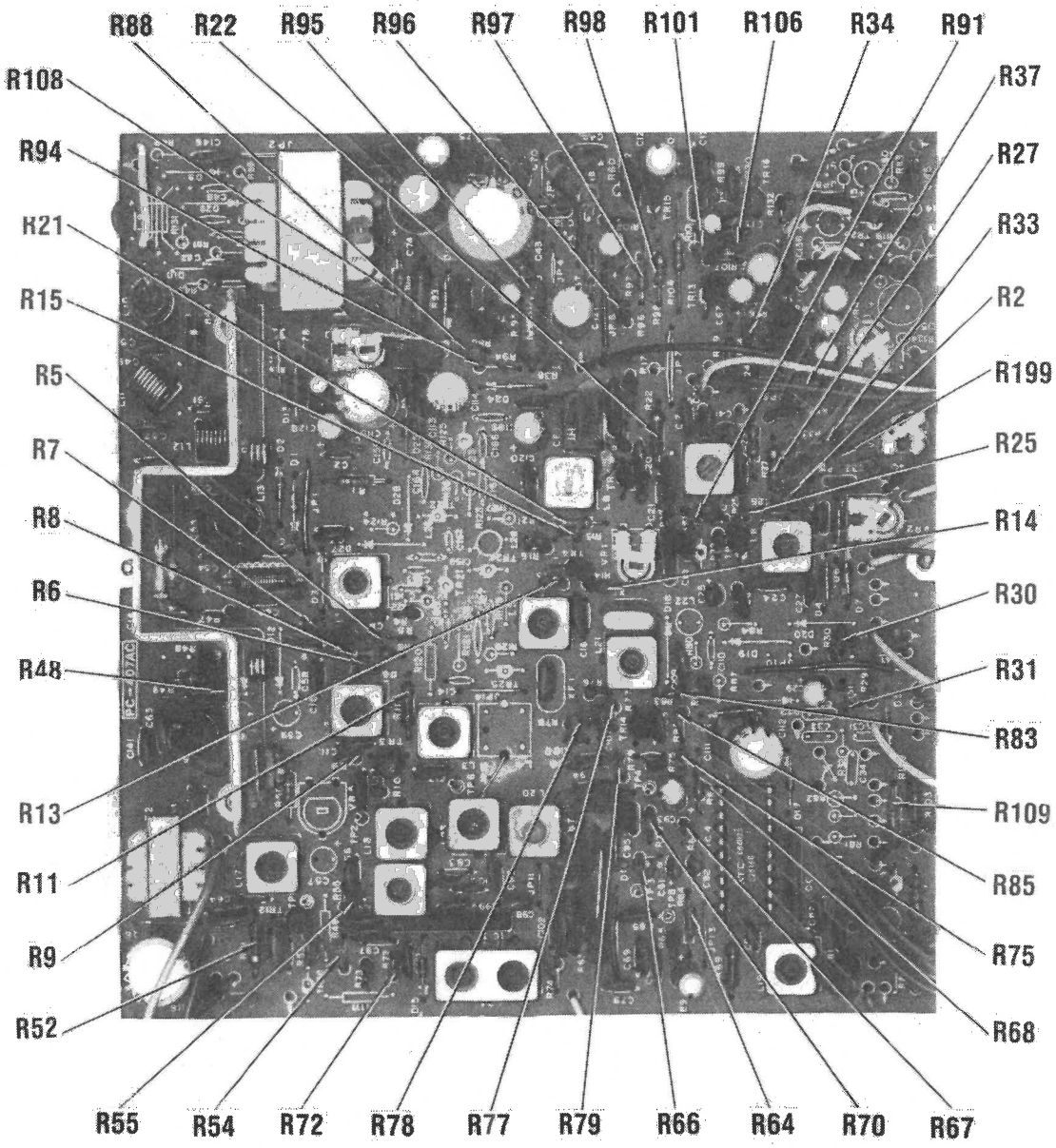
R71
R74
R63
R65
R69
R86
R112
R26

MAIN BOARD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R22
R95
R96
R97
R98
R101
R106
R34
R91
R108
R37
R94
R27
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R15
R2
R5
R199
R7
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R14
R6
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R109
R11
R85
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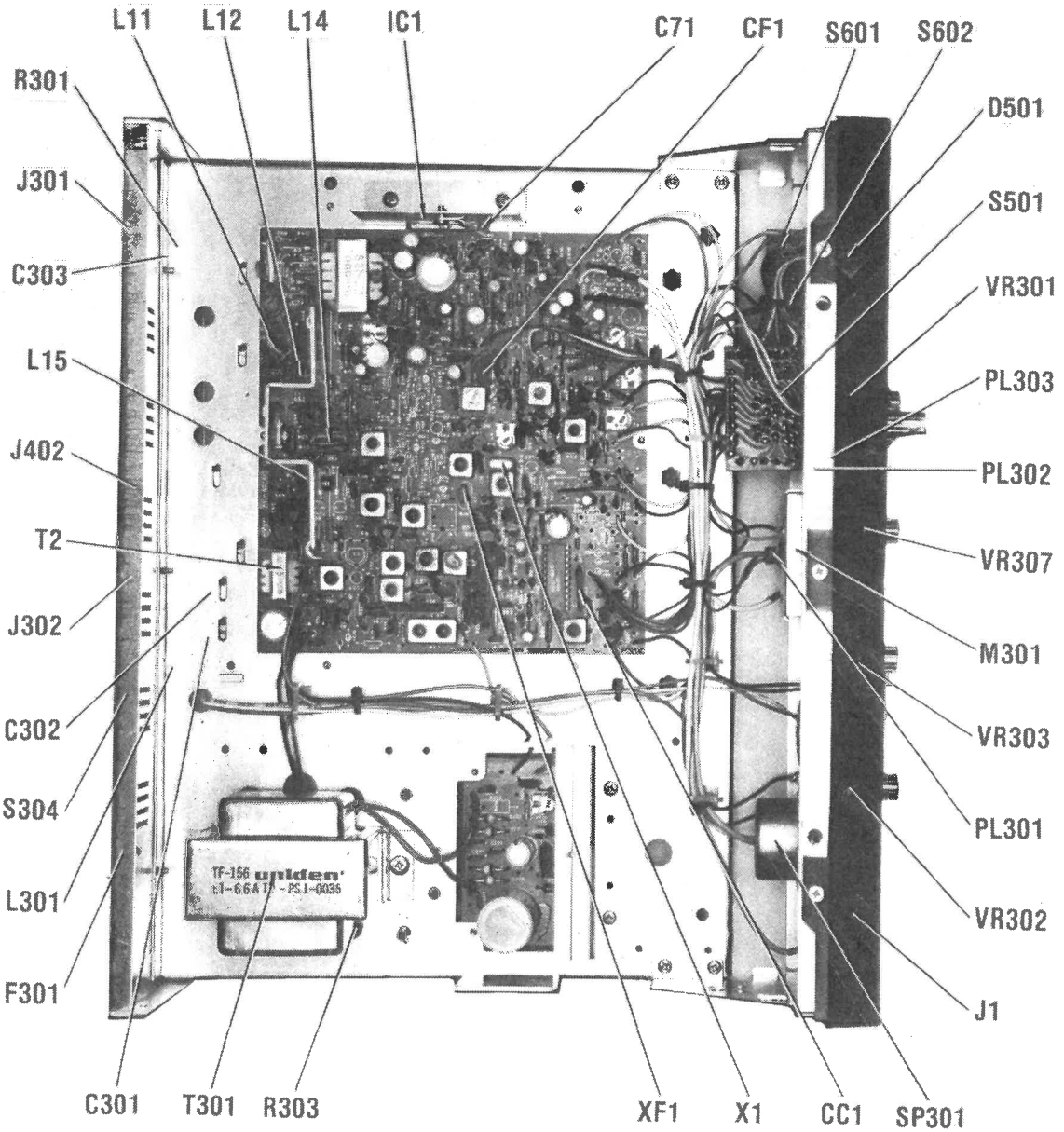
R79
R66
R64
R70
R67

MAIN BOARD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CF1
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S602
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D501
J301
S501
C303
VR301
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J402
PL302
T2
VR307
J302
M301
C302
VR303
S304
PL301
L301
VR302
F301
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C301
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XF1
X1
CC1
SP301

CHASSIS - TOP

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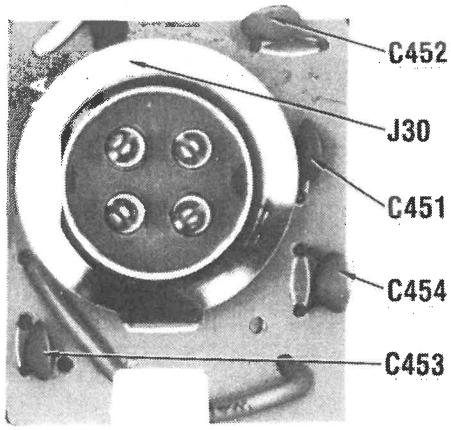

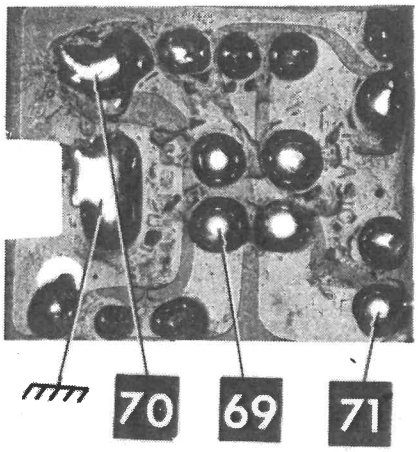

MIC BOARD

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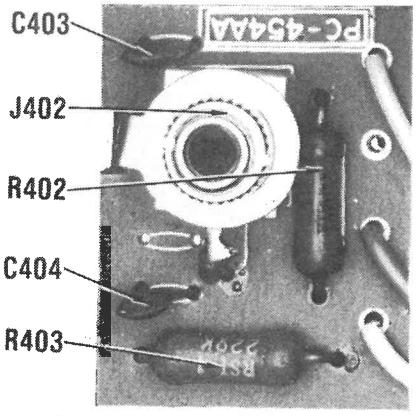

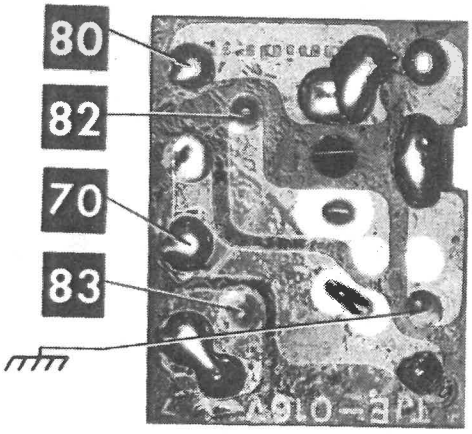

JACK BOARD

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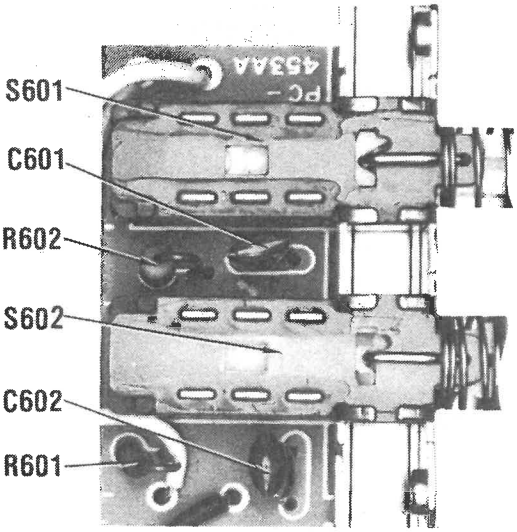

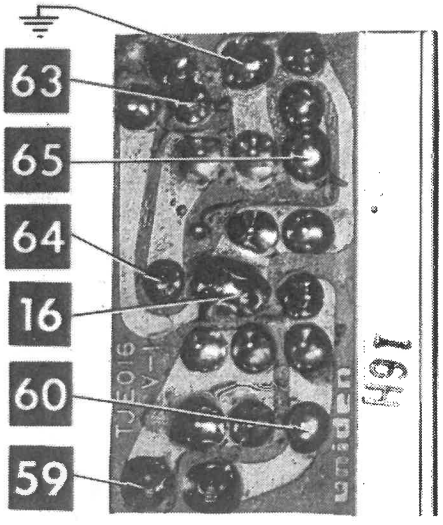

SWITCH BOARD

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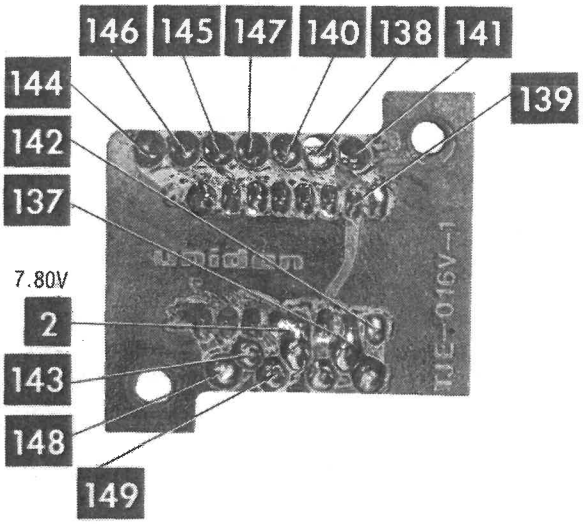

LED BOARD

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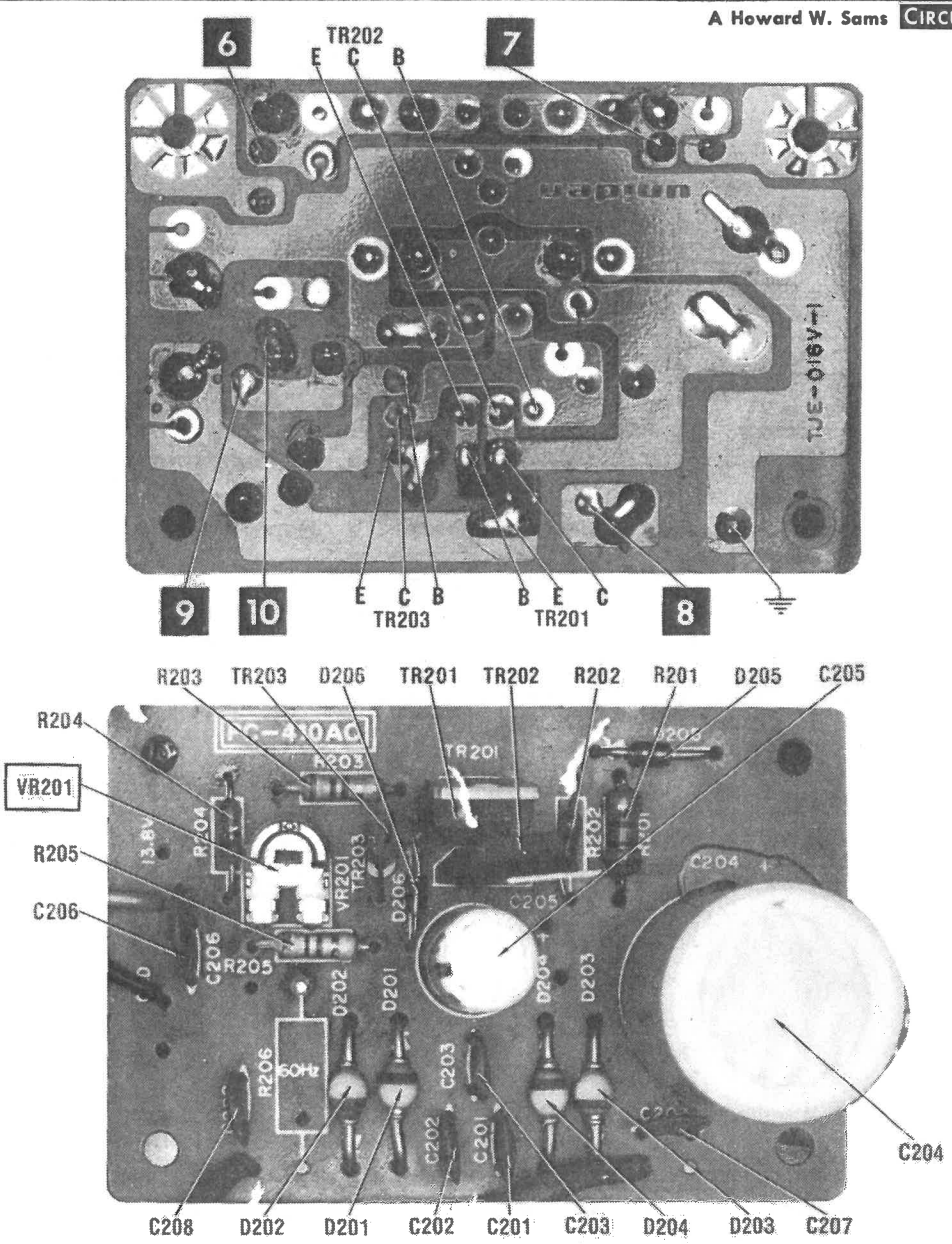
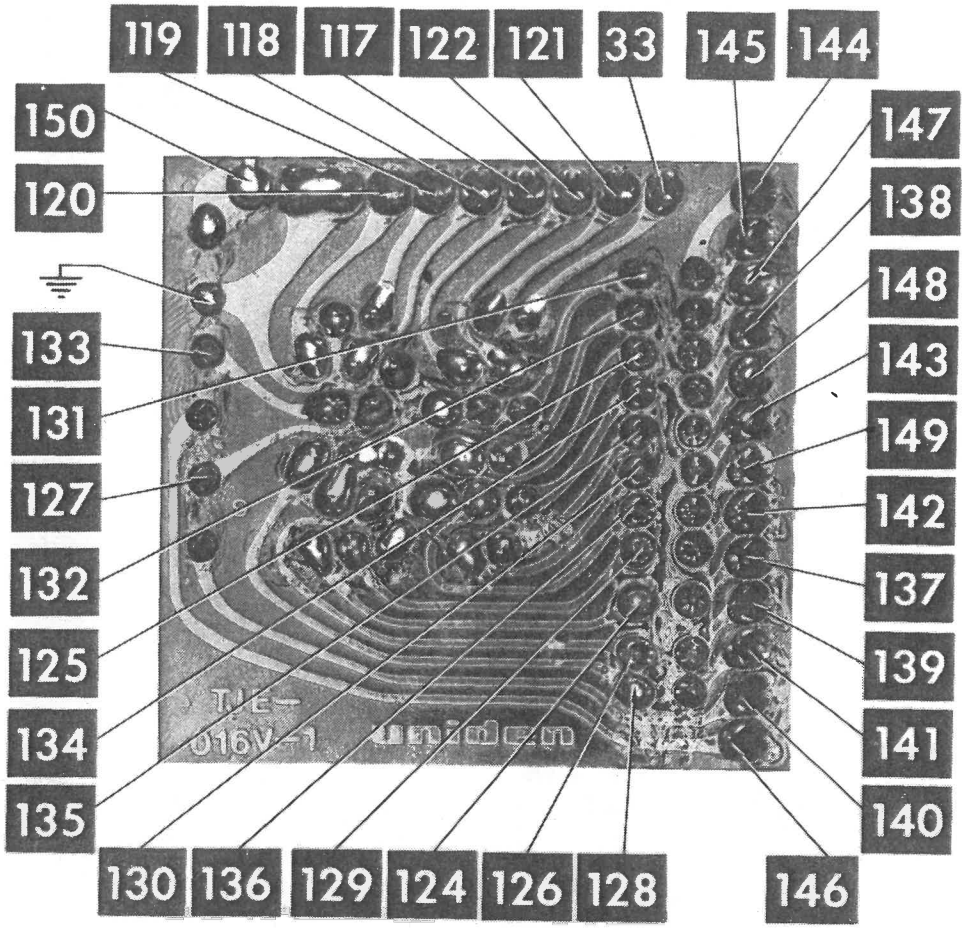
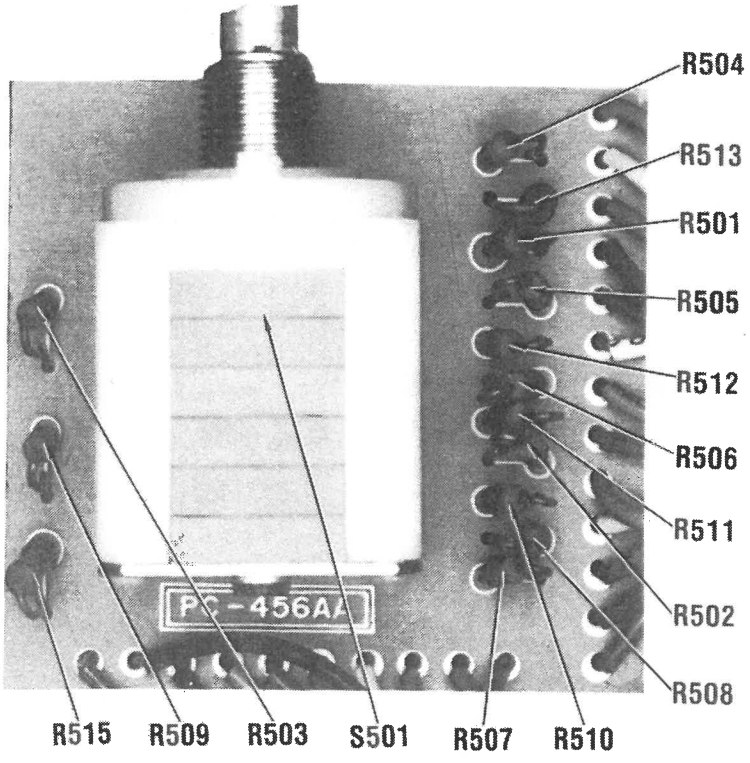


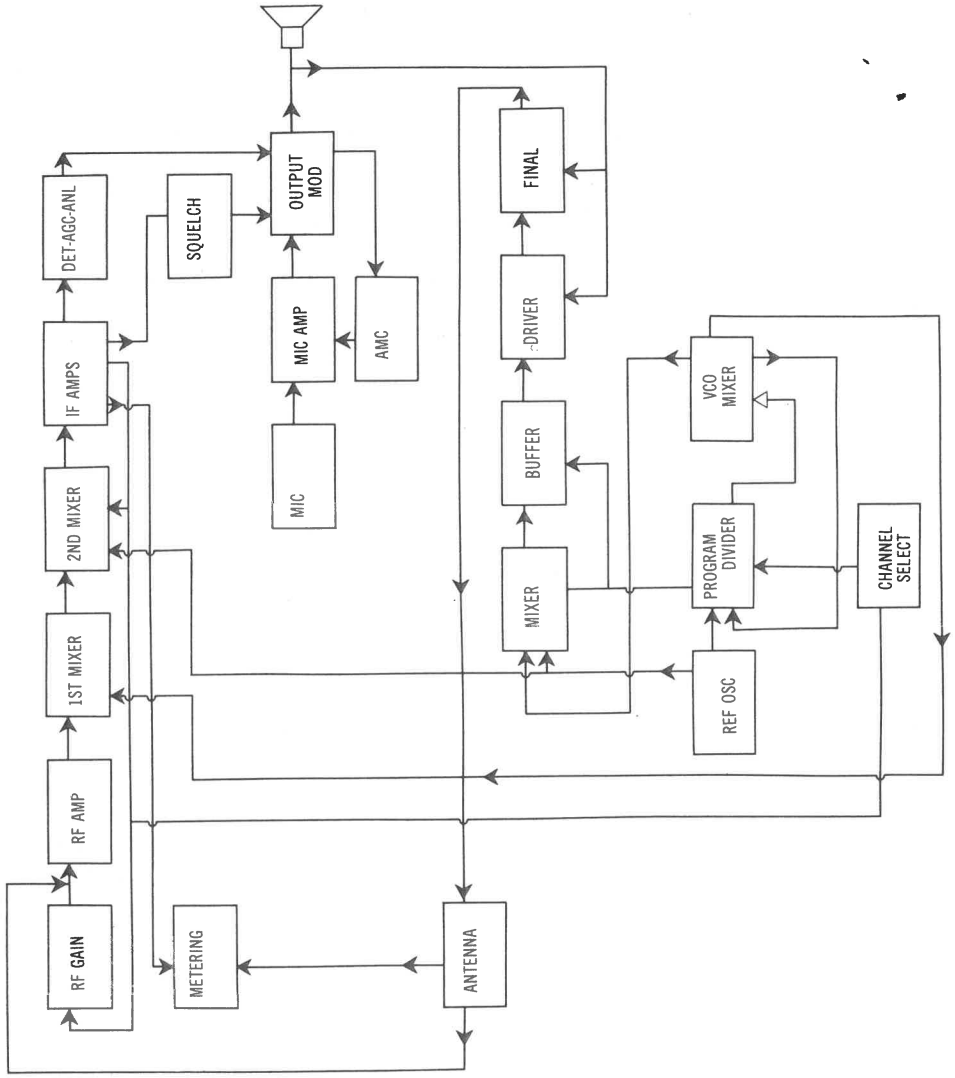
POWER SUPPLY BOARD

A Howard W. Sams CIRCUITRACE® Photo

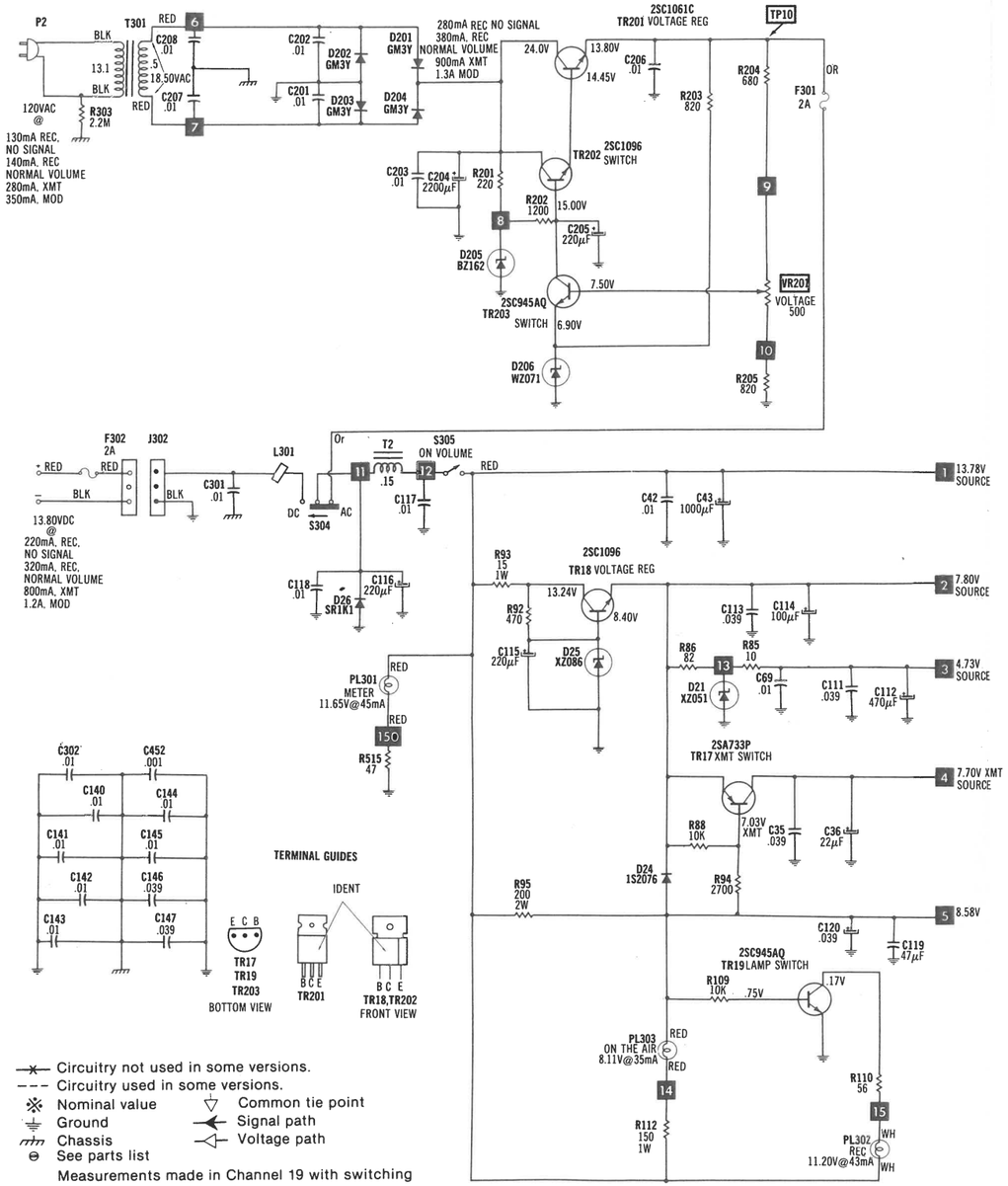




CH. SELECTOR BOARD



BLOCK DIAGRAM

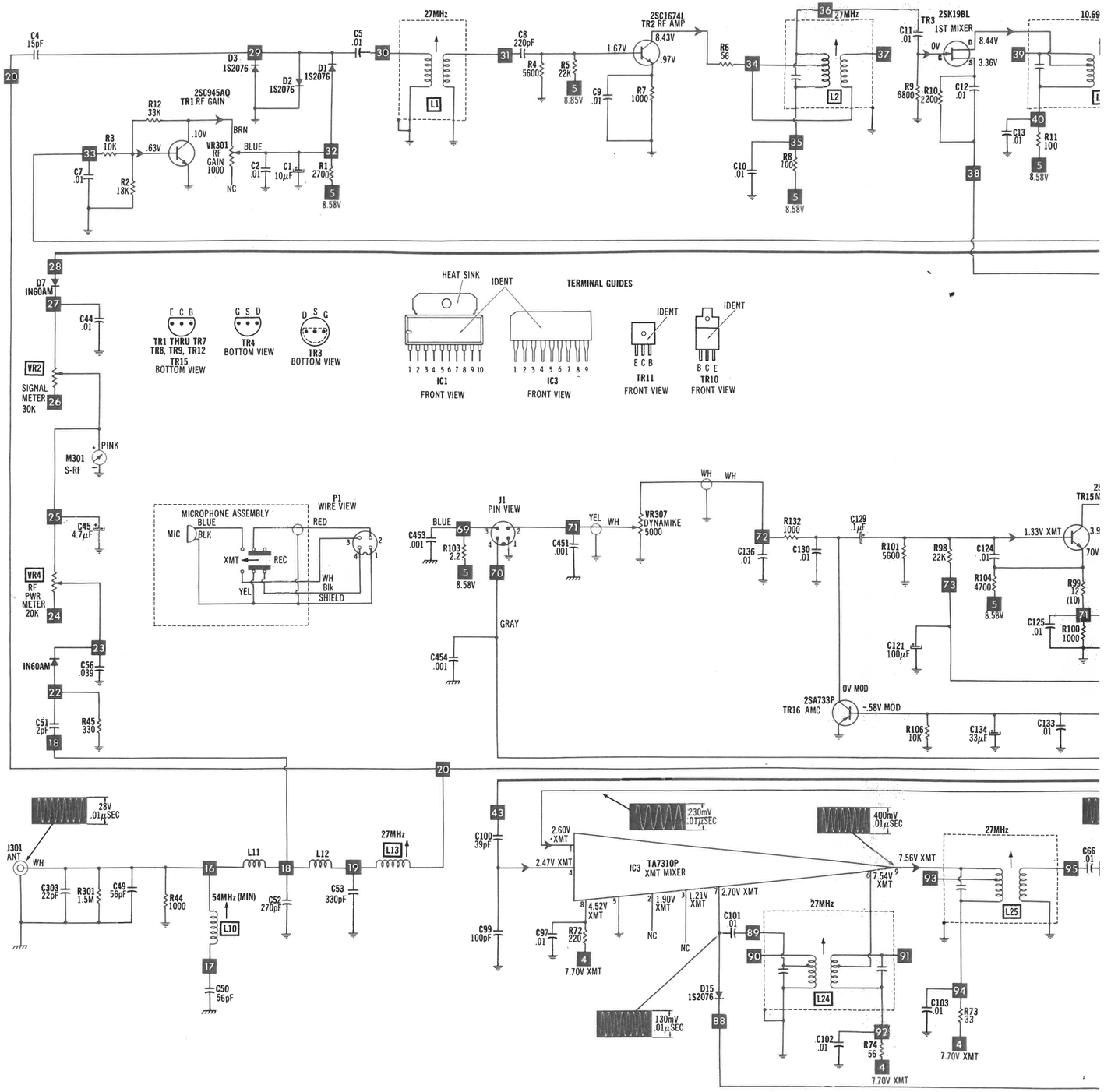


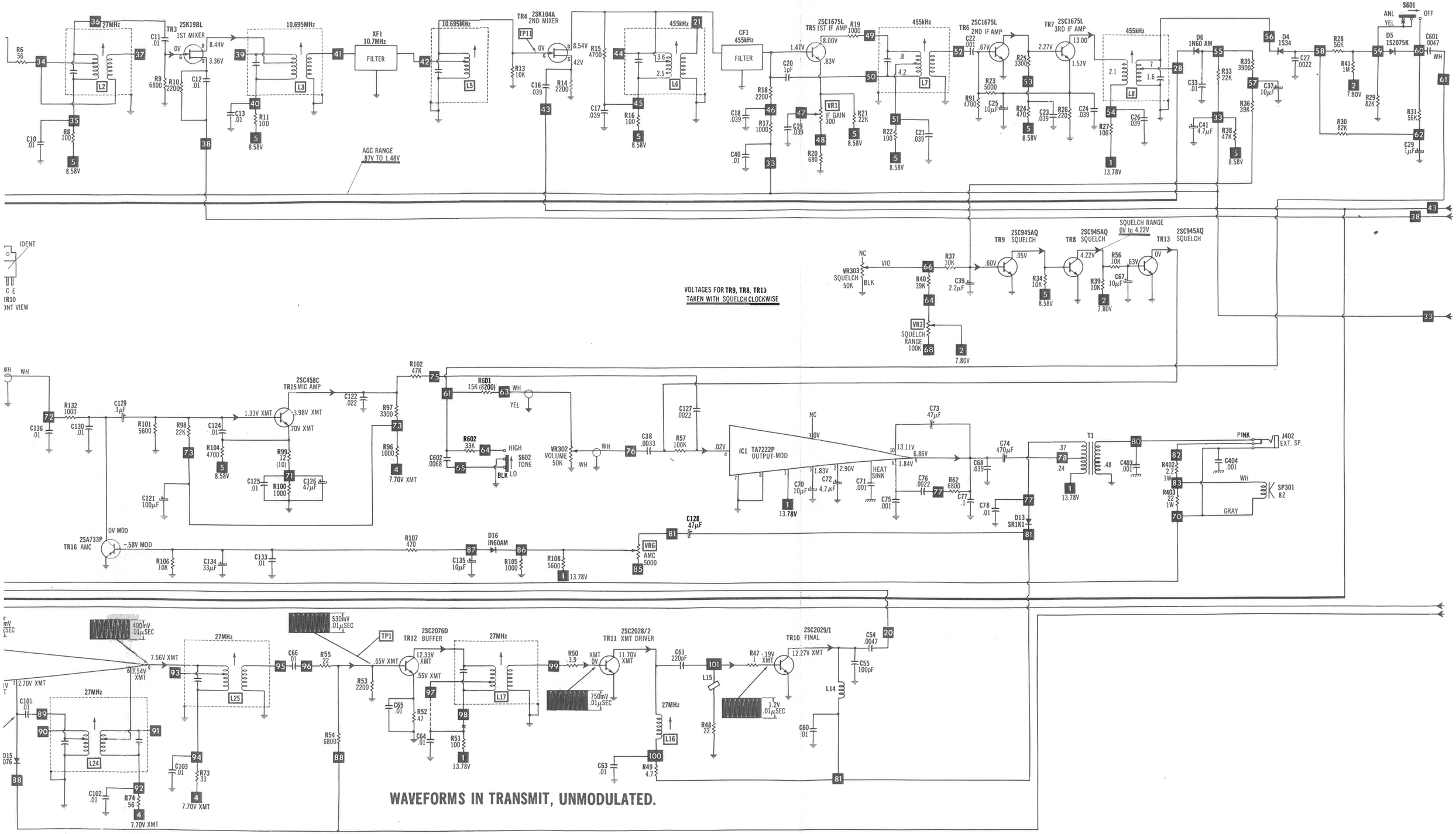
- Circuitry not used in some versions.
- Circuitry used in some versions.
- Nominal value
- Ground
- Chassis
- See parts list
- Common tie point
- Signal path
- Voltage path

Measurements made in Channel 19 with switching in receive 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.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in ( ) used in some versions.
Arrow head(s) at coils and transformers indicates accessibility of tuning slug(s).

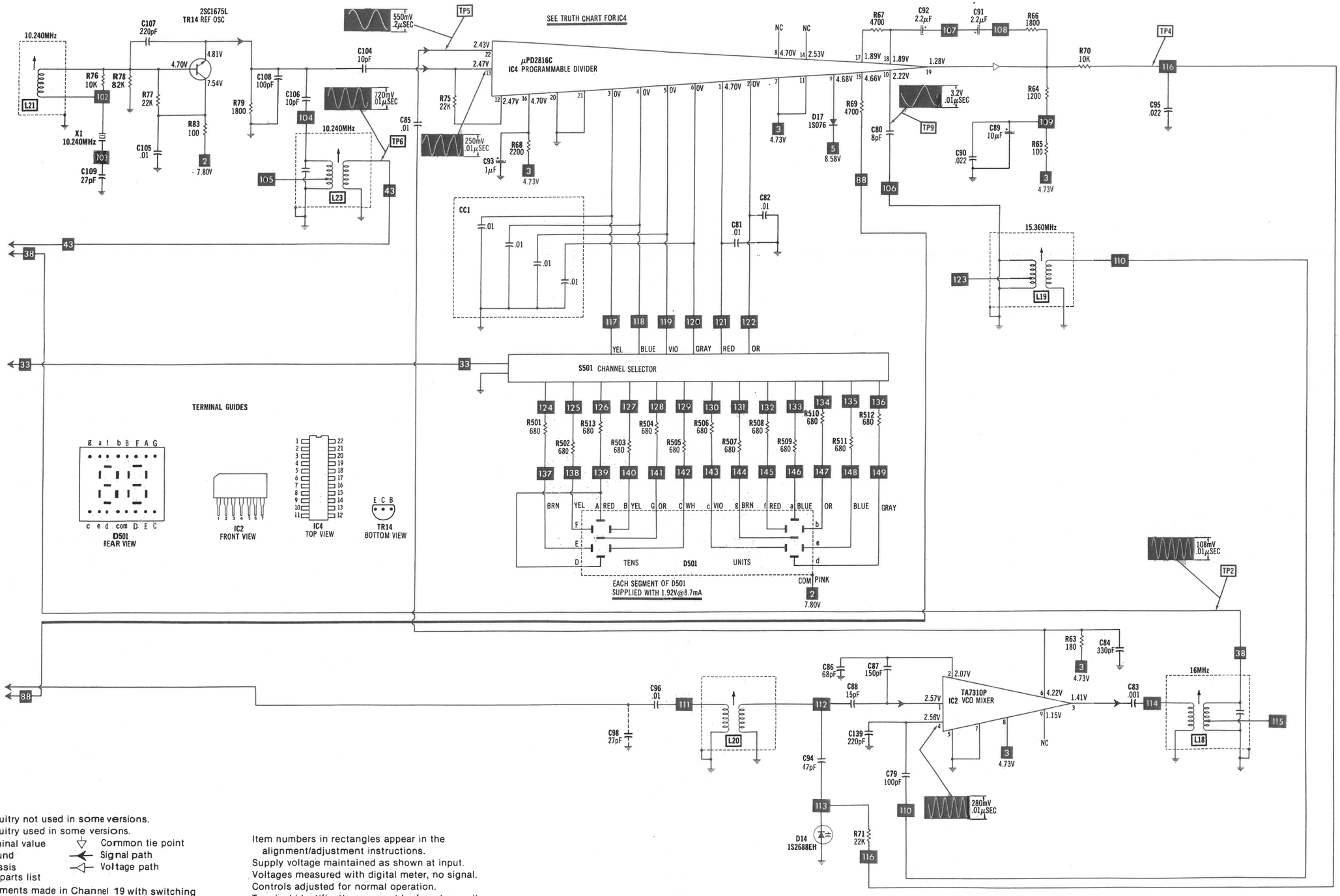
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

POWER SUPPLY SCHEMATIC





MAIN SCHEMATIC



—✕— Circuitry not used in some versions.
– – – Circuitry used in some versions.
※ Nominal value
⏚ Ground
Chassis
Ⓟ See parts list
▽ Common tie point
Signal path
Voltage path

Measurements made in Channel 19 with switching in receive unless noted.

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

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.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in ( ) used in some versions.
Arrow head(s) at coils and transformers indicates accessibility of tuning slug(s).

PLL & CH. SELECTOR SCHEMATIC

PARTS LIST AND DESCRIPTION
(When ordering parts, state Model, Part Number, and Description.)

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. 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	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D2	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D3	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D4	1S34	150-016-9-001	1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	TM109/**	WEP134	103-Z9001
D5	1S2075K	151-028-9-001	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S2473K		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D6	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
D7	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
D11	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
D13	SR1K1	151-040-9-003	GE-500A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
	10D1		GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D14	1S2688EA	154-004-9-001				REN 614	SK3126		ECG613			103-281
	1S2688FA					REN 614	SK3126		ECG613			103-281
D15	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D16	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
	1S34		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	TM109/**	WEP134	103-Z9001
D17	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D21	XZ051	152-088-9-001	GEZD-5.1				SK3056	RT-235		1N4733A	WEP1103	103-290
D24	1S2076	151-067-9-001	GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	1S1588		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPR9137	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D25	XZ086	152-089-9-001	GEZD-8.7				SK3749		ECG5073A	TM5073	WEP1155	103-272
D26	SR1K1	151-040-9-003	GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
	10D1		GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D201	GM3Y	151-079-9-001	GE-512	PTC204	HEPR0098	REN 156	SK3051	RT-201	ECG156	TM156	WEP4008	212-Z9000
D202	GM3Y	151-079-9-001	GE-512	PTC204	HEPR0098	REN 156	SK3051	RT-201	ECG156	TM156	WEP4008	212-Z9000
D203	GM3Y	151-079-9-001	GE-512	PTC204	HEPR0098	REN 156	SK3051	RT-201	ECG156	TM156	WEP4008	212-Z9000
D204	GM3Y	151-079-9-001	GE-512	PTC204	HEPR0098	REN 156	SK3051	RT-201	ECG156	TM156	WEP4008	212-Z9000
D205	BZ162	152-057-9-001	GEZD-16	ZB16B		REN 5075	SK3751	RT-246	ECG5075A	TM5075/**	WEP1160	103-Z9013
D206	WZ071	152-075-9-001	GEZD-7.5	ZB7.5B		REN 138	SK3059	RT-239	ECG138A	TM138/**	WEP1107	103-Z9002
IC1	TA7222P	307-143-9-003										
IC2	TA7310P	307-133-9-004				REN 1192	SK3487		ECG1192		WEP2120	
	AN103					REN 1192	SK3487		ECG1192		WEP2120	
IC3	TA7310P	307-133-9-004				REN 1192	SK3487		ECG1192		WEP2120	
	AN103					REN 1192	SK3487		ECG1192		WEP2120	
IC4	UPD2816C	307-145-9-001										
TR1	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3245	RT-107A	ECG107	TM107	WEP380	121-Z9001*
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
TR2	2SC1674L	176-081-9-002	GE-61	PTC132*	HEPS0010*	REN 229*	SK3246	RT-308	ECG229*	TM229*	WEP784	121-Z9021
	2SC1674		GE-61	PTC132*	HEPS0010*	REN 229*	SK3246	RT-308	ECG229*	TM229*	WEP784	121-Z9021
	2SC668		GE-211	PTC139*	HEPS0024*	REN 229	SK3018	RT-187	ECG229*	TM229*	WEP66	121-Z9021
	2SC787		GE-214	PTC115*	HEPS0020	REN 161	SK3039	RT-113*	ECG161	TM161	WEP63	121-889
	2SC1906		GE-86	PTC132*	HEPS0016*	REN 108*	SK3039*	RT-113*	ECG108*	TM108*	WEP923*	121-Z9021*
TR3	2SK19BL	182-037-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	2SK19		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	2SK104		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
TR4	2SK104H	182-055-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	2SK104		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	2SK19		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
TR5	2SC1675L	176-065-9-001	GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3124	RT-108A*	ECG199*	TM199*	WEP373*	121-972
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-Z9000*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP380	121-Z9021*
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3245	RT-107A	ECG107	TM107	WEP380	121-Z9001*
TR6	2SC1675L	176-065-9-001	GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3124	RT-108A*	ECG199*	TM199*	WEP373*	121-972
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-Z9000*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP380	121-Z9021*
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3245	RT-107A	ECG107	TM107	WEP380	121-Z9001*
TR7	2SC1675L	176-065-9-001	GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3124	RT-108A*	ECG199*	TM199*	WEP373*	121-972
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-Z9000*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP380	121-Z9021*
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	TM107	WEP380	121-Z9001*

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

ITEM No.	TYPE No.	MFGR. 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.
TR8	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1815		GE-62	PTC136*	HEPS0015*	REN 199	SK3245	RT-304	ECG199	TM199	WEP66	121-972
	2SC1359		GE-212	PTC121*	HEPS0014*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP829	121-Z9021
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
TR9	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1815		GE-62	PTC136*	HEPS0015*	REN 199	SK3245	RT-304	ECG199	TM199	WEP66	121-972
	2SC1359		GE-212	PTC121*	HEPS0014*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP829	121-Z9021
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
TR10	2SC2029/1	172-038-9-002	GE-333	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
	2SC2029B/10		GE-333	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
	2SC2029		GE-333	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
	2SC2092		GE-337	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP840*	121-Z9039
	2SC2075		GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
	2SC1909		GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
TR11	2SC2028/2	172-038-9-001	GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP755*	121-880
	2SC2028B/20		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP755*	121-880
	2SC2028		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP755*	121-880
	2SC1760		GE-276	PTC180		REN 306	SK3197	RT-310	ECG306	TM306	WEP771	
	2SC1957		GE-270	PTC180	HEPS3044	REN 295	SK3197		ECG295	TM295	WEP913	121-880
	2SC495T		GE-270	PTC180		REN 295	SK3253	RT-162	ECG295	TM295	WEP913	121-880
	2SC1846		GE-336	PTC904		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	2SC1974		GE-337	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9040
	2SC2091		GE-270	PTC180		REN 295	SK3253		ECG295	TM295	WEP913	121-880
TR12	2SC2076D	176-060-9-004	GE-210	PTC121*	HEPS0015*	REN 295	SK3122	RT-308	ECG295	TM295	WEP784	121-Z9000
	2SC2076C		GE-210	PTC121*	HEPS0015*	REN 295	SK3122	RT-308	ECG295	TM295	WEP784	121-Z9000
	2SC2076		GE-210	PTC121*	HEPS0015*	REN 295	SK3122	RT-308	ECG295	TM295	WEP784	121-Z9000
	2SC735		GE-210	PTC123*	HEPS0014*	REN 289	SK3122	RT-308*	ECG289	TM289/**	WEP735A	121-Z9000A*
	2SC1364		GE-210	PTC121*	HEPS0015*	REN 123A*	SK3124	RT-308	ECG123A*	TM123A*/**	WEP634	121-Z9000A
	2SC933		GE-210	PTC136	HEPS0015	REN 123A	SK3444	RT-308*	ECG123A	TM123A	WEP910*	121-Z9000A*
TR13	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC545		GE-11	PTC132	HEPS0016	REN 107	SK3018	RT-308	ECG107	TM107	WEP63	121-Z9000
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
TR14	2SC1675L	176-065-9-001	GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP773	121-Z9021
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	TM107	WEP380	121-Z9001*
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3124	RT-108A*	ECG199*	TM199*	WEP373*	121-972
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-Z9000*
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP380	121-Z9021*
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3245	RT-107A	ECG107	TM107	WEP380	121-Z9001*
TR15	2SC458C	176-048-9-002	GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
TR16	2SA733P	177-020-9-001	GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP911	121-952
	2SA733		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP911	121-952
	2SA496		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159*/**	WEP495	121-Z9003
	2SA564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	2SA659		GE-89	PTC103	HEPS0029	REN 159	SK3466	RT-103A	ECG159	TM159	WEP62	121-Z9003
	2SA844		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114	RT-126A*	ECG129*	TM129*	WEP564	121-Z9005
TR17	2SA733P	177-020-9-001	GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP911	121-952
	2SA733		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP911	121-952
	2SA495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159*/**	WEP495	121-Z9003
	2SA564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
TR18	2SC1096		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-Z9008
	2SC1096, 3ZL	172-024-9-001	GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-Z9008
	2SC1419		GE-66	PTC167	HEPS5027	REN 152	SK3054	RT-197	ECG152	TM152	WEP745	121-987-02
	2SC1173		GE-215	PTC110		REN 236	SK3197	RT-160	ECG236	TM236/**	WEP745	121-Z9040
TR19	2SC945AQ	172-024-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1815		GE-62	PTC136*	HEPS0015*	REN 199	SK3245	RT-304	ECG199	TM199	WEP66	121-972
	2SC1359		GE-212	PTC121*	HEPS0014*	REN 229*	SK3122	RT-308	ECG229*	TM229*	WEP829	121-Z9021
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
TR201	2SC1061C	172-044-9-001	GE-66	PTC167	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-Z9002
	2SC1061		GE-66	PTC167	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-Z9002
	2SD313		GE-241	PTC154		REN 196	SK3054	RT-154	ECG196	TM196	WEP745	121-987-02
	2SD235		GE-66	PTC154	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-987-02
	2SD570		GE-241	PTC154	HEPS3060	REN 196	SK3054	RT-197	ECG196	TM196	WEP756	121-987-02
TR202	2SC1096		GE-38	PTC146	HEPS5021	REN 165	SK3710	RT-140	ECG165	TM165	WEP740B	121-831
	2SC10963, 3ZL	172-024-9-001	GE-38	PTC146	HEPS5021	REN 165	SK3710	RT-140	ECG165	TM165	WEP740B	121-831
	2SC1419		GE-66	PTC167	HEPS5027	REN 152	SK3054	RT-197	ECG152	TM152	WEP745	121-987-02
	2SC1173		GE-215	PTC110		REN 236	SK3197	RT-160	ECG236	TM236/**	WEP745	121-Z9040
TR203	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC458		GE-210	PTC121*	HEPS0009*	REN 289	SK3122	RT-187	ECG289	TM289/**	WEP458	121-Z9000A*
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A*/**	WEP372	121-Z9000A*
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972

* Lead configuration may vary from original.
/** Also available as exact type replacement.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C1	10 16V	002-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C25	10 10V	027-025-9-001		TDC106M025FL	QDT1-64	SD25-109
C29	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C36	22 16V	022-157-9-005	PC25-25	VTT22B16	QV1-55	EV-1224
C37	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C39	2.2 25V	022-158-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517
C41	4.7 16V	027-026-9-004		TDC105M035EL		SD35-4R79
C43	1000 16V	022-158-9-004	PC1000-16	VTT1000L16	QV1-183	EV-1260
C45	4.7 25V	022-157-9-003	PC5-50	VTT4R7B50	QV1-27	EV-1319
C67	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C70	10 10V	027-025-9-001		TDC106M025FL	QDT1-64	SD25-109
C72	4.7 25V	022-157-9-003	PC5-50	VTT4R7B50	QV1-27	EV-1319
C73	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226
C74	470 16V	022-076-9-008	PC500-16	VTT470K16	QV1-151	EV-1250
C89	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C91	2.2 16V	027-033-9-001		TDC225M035FL		SD35-2R29
C92	2.2 16V	027-033-9-001		TDC225M035FL		SD35-2R29
C93	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C112	470 6.3V	022-158-9-008	PC500-16	VTT470K16	QV1-149	EV-1150
C114	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130
C115	220 16V	022-163-9-003	PC250-25	VTT220H16	QV1-117	EV-1240
C116	220 25V	022-175-9-003	PC250-25	VTT220K25	QV1-119	EV-1340
C120	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226
C121	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130
C126	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226
C128	.47 50V	022-157-9-001	PC1-50	VTTR47A63	QV1-3	EV-1610
C129	.1 16V	022-177-9-001		TDC104M050EL	QDT1-2	SD50-R109
C134	33 16V	022-157-9-006	PC30-25	VTT33D25	QV1-63	EV-1325
C135	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C204	2200 35V	022-175-9-004	WBR2000-50*	TC50200A*	QE1-648*	TVA-1318.3*
C205	220 16V	022-163-9-003	PC250-25	VTT220H16	QV1-117	EV-1240

* Axial replacement for radial device.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C2	.01 50V		UK50-103		MAG5011		
C4	15 N220 10%	020-207-9-006			*		10TCR-Q15
C5	.01 50V		UK50-103		MAG5011		
C7	.01 50V		UK50-103		MAG5011		
C8	220 50V 10%		DTZ-220				10TCC-T22
C9	.01 50V		UK50-103		MAG5011		
C10	.01 50V		UK50-103		MAG5011		
C11	.01 50V		UK50-103		MAG5011		
C12	.01 50V		UK50-103		MAG5011		
C13	.01 50V		UK50-103		MAG5011		
C16	.039 25V				M192P3939R8		192P3939R8
C17	.039 25V				GP140		5GA-S40
C18	.039 50V				M192P3939R8		192P3939R8
C19	.039 50V				M192P3939R8		192P3939R8
C20	1 50V +.25	020-190-9-001					
C21	.039 25V				GP140		5GA-S40
C22	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C23	.039 25V				GP140		5GA-S40
C24	.039 25V				GP140		5GA-S40
C26	.039 25V				GP140		5GA-S40
C27	.0022 50V				M192P2229R8		192P2229R8
C33	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C35	.039 25V				GP140		5GA-S40
C38	.033 50V				M192P3329R8		192P3329R8
C40	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C42	.01 50V		UK50-103		MAG5011		
C44	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C49	56 50V 10%				CN0456		10TCC-Q56
C50	56 N220 5%	020-208-9-002					
C51	2 50V +.25	020-187-9-001					
C52	270 50V 10%		DD-271	GP270	GP327		10TS-T27
C53	330 50V 10%		DD-331	GP330	GP327		10TS-T33
C54	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C55	100 50V 10%		DTZ-100	NP0100	CN0310		10TCC-T10
C56	.039 25V				GP140		5GA-S40
C60	.01 50V		UK50-103		MAG5011		
C61	220 50V 10%		DTZ-220				10TCC-T22
C63	.01 50V		UK50-103		MAG5011		
C64	.01 50V		UK50-103		MAG5011		
C65	.01 50V		UK50-103		MAG5011		
C66	.01 50V		UK50-103		MAG5011		
C68	.039 25V				GP140		5GA-S40
C69	.01 50V		UK50-103		MAG5011		
C71	.001 50V		DD-102		GP210		10TS-D10
C75	.001 50V		DD-102		GP210		10TS-D10
C76	.0022 50V				M192P2229R8		192P2229R8
C77	.1 25V		UK25-104		MAG2501		HY-750
C78	.01 50V		UK50-103		MAG5011		
C79	100		DTZ-100	NP0100	CN0310		10TCC-T10
C80	8 50V +.5	020-213-9-001					
C81	.01 50V		UK50-103		MAG5011		
C82	.01 50V		UK50-103		MAG5011		
C83	.001 50V		DD-102		GP210		10TS-D10
C84	330 50V 10%		DD-331	GP330	GP333		10TS-T33
C85	.01 50V		UK50-103		MAG5011		
C86	68 N220 5%	020-196-9-001			*		10TCR-Q68

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C87	150 N220 10%	020-207-9-008			*		10TCR-T15
C88	15 N220 10%	020-207-9-006			*		10TCR-Q15
C90	.022 25V		UK25-223				HY-725
C94	47 N750 10%		DTN-47	N47	CN7447		10TCU-Q47
C95	.022 50V				M192P2239R8		192P2239R8
C96	.01 50V		UK50-103		MAG5011		
C97	.01 50V		UK50-103		MAG5011		
C98	27 NPO 10%				CN0427		10TCC-Q27
C99	100 50V 10%		DTZ-100	NP0100	CN0310		10TCC-T10
C100	39 50V 10%				CN0439		10TCC-Q39
C101	.01 50V		UK50-103		MAG5011		
C102	.01 50V		UK50-103		MAG5011		
C103	.01 50V		UK50-103		MAG5011		
C104	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C105	.01 50V		UK50-103		MAG5011		
C106	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C107	220 50V 10%		DTZ-220				10TCC-T22
C108	100 N220 10%	020-204-9-010			*		10TCR-T10
C109	27 NPO 10%				CN0427		10TCC-Q27
C111	.039 25V				GP140		5GA-S40
C113	.039 25V				GP140		5GA-S40
C117	.01 50V		UK50-103		MAG5011		
C118	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C119	.039 25V				GP140		5GA-S40
C122	.022				M192P2239R8		192P2239R8
C124	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C125	.01 50V		UK50-103		MAG5011		
C127	.0022 50V				M192P2229R8		192P2229R8
C130	.01 50V		UK50-103		MAG5011		
C133	.01 50V		UK50-103		MAG5011		
C136	.01 50V		UK50-103		MAG5011		
C139	220		DTZ-220				10TCC-T22
C140	.01 50V		UK50-103		MAG5011		
C141	.01 50V		UK50-103		MAG5011		
C142	.01 50V		UK50-103		MAG5011		
C143	.01 50V		UK50-103		MAG5011		
C144	.01 50V		UK50-103		MAG5011		
C145	.01 50V		UK50-103		MAG5011		
C146	.039 25V				GP140		5GA-S40
C147	.039 25V				GP140		5GA-S40
C201	.01 50V		UK50-103		MAG5011		
C202	.01 50V		UK50-103		MAG5011		
C203	.01 50V		UK50-103		MAG5011		
C206	.039 25V				GP140		5GA-S40
C207	.01 50V		UK50-103		MAG5011		
C208	.01 50V		UK50-103		MAG5011		
C301	.01 50V		UK50-103		MAG5011		
C302	.01 50V		UK50-103		MAG5011		
C303	22 50V 10%		DTZ-22	NP022	CN0422		10TCC-Q22
C403	.001 50V		DD-102		GP210		10TS-D10
C404	.001 50V		DD-102		GP210		10TS-D10
C451	.001 50V 10%		DD-102		GP210		10TS-D10
C452	.001 50V		DD-102		GP210		10TS-D10
C453	.001 50V		DD-102		GP210		10TS-D10
C454	.001 50V		DD-102		GP210		10TS-D10
C601	.0047 50V				M192P4729R8		192P4729R8
C602	.0068 50V			WMF1D68	EWF1A268	QF1-73	1PB-D68
CC1	.01	527-077-9-002					

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

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR1	IF Gain	300	008-345-9-001			
VR2	Signal Meter	30K	008-331-0-001			U260R503B
VR3	Squelch Range	100K	008-316-9-001			U260R104B
VR4	RF Power Meter	20K	008-316-9-003			U260R203B
VR6	AMC	5000	008-316-9-004			U260R502B
VR201	Voltage	500	008-342-9-001			U260R502B
VR301	RF Gain	1000	008-350-9-001	F1-1000(1), SSK012(1)	RU13L,SL36,SL1500	BU1(1),CF6,SS1, DC1
VR302	Volume/Power Switch	50K	008-347-9-002	F2-50K(1), SSK012,KR1	RU54A,SL36,SL1500, US41	BU1(1),CF63, SS1,GC
VR303	Squelch	50K	008-347-9-003	F1-50K(1) SSK012	RU54L,SL36,SL1500	BU1(1),CF12,SS1, DC1
VR304	Mike	5000	008-344-9-005	F2-5000(1), SSK012	RU53A,SL36,SL1500	BU1(1),CF60,SS1, DC1

(1) Enlarge mounting hole.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Antenna Matching(27MHz)	060-023-9-001	LA-029	CBS740-T	
L2	RF Amp (27MHz)	046-024-9-001	LA-138		
L3	Mixer (10.695MHz)	060-024-9-002	LA-181		
L5	Mixer (10.695MHz)	046-025-9-002	LA-274		
L6	Mixer (455kHzZ	060-021-9-003	LA-106	8517	
L7	Mixer (455kHz)	046-024-9-003	LA-204		
L8	Mixer (455kHz)	046-025-9-001	LA-207		
L10	TVI Trap (54MHz)	041-056-9-003	LC-018	CB304	
L11	RF Choke	041-104-9-002	LE-089		
L12	Pi Filter	041-104-9-001	LE-088		
L13	Loading Final(27MHz)	041-088-9-001	LC-019	CB305	
L14	Final	041-069-9-004	LD-012	4586	
L16	XMT Driver(27MHz)	041-056-9-003	LC-018	CB304	
L17	Buffer (27MHz)	060-029-9-004	LA-208		
L18	VCO Mixer (16MHz)	046-024-9-002	LA-201		
L19	Programmable Divider (15.360MHz)	066-025-9-005	LA-166		
L20	VCO Mixer	046-025-9-003	LA-275		
L21	Ref Oscillator (10.240MHz)	060-030-9-003	LA-217		
L23	Ref Oscillator (10.240MHz)	060-024-9-003	LA-182		
L24	XMT Mixer (27MHz)	060-029-9-001	LA-198		
L25	XMT Mixer (27MHz)	066-019-9-002	LA-088	CBS717-TC	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	1.3A	.135	.85mH	042-014-9-001 TF-083(1) TF-017(2)	TR507		(1) Number on unit. (2) Used in some versions.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE			REPLACEMENT DATA			NOTES
	PRI.	SEC.		MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	3	1 8	2 5.88	061-041-9-001 TF-129(1) TF-120(2)			(1) Number on unit. (2) Used in some versions.

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T301	120V AC @ .35A AC	18.50V AC @ 1.3A DC	065-144-9-001 TF-156(1) TF-149(2)		PCB-4	(1) Number on unit. (2) Used in some versions.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP301	3 3/8" X 4 1/8 PM 8 Ohms	580-029-9-001		

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F301 F302	2A Quick-Acting 2A Quick-Acting	191-251-3-002 191-251-3-002	FH002	AGC-2 AGC-2	HKP HRK	312002 312002	342013AL 150145	FG2-2 FG2-2

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	562-025-9-001	18-032	18-034	18-010	18-092	2	1	4	3	NC	1

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	140-020-9-001	455kHz (FL-048)
D501	LED	158-014-9-001	Tens & Units (TLR321)(Each segment supplied with 1.92V @ 8.7mA)
J1	Jack	773-073-9-001	Microphone (JK-058)
J301	Jack	772-027-9-001	Antenna, M Type (JK-035)
J302	Jack	762-020-9-001	DC Power (JK-052)
J402	Jack	772-025-9-001	External Speaker (JK-010)
L15	Ferrite Bead	044-048-9-003	(LD-087)
L301	Ferrite Bead	044-051-9-001	(LD-088)
M301	Meter	320-102-9-001	S/RF (MT-145)
PL301	Lamp	400-059-9-001	Meter (11.65V @ 45mA)(PL-068)
PL302	Lamp	400-059-9-002	Receive (11.20V @ 43mA)(PL-076)
PL303	Lamp	400-059-9-003	On-The-Air (8.11V @ 35mA)(PL-076)
S304	Switch	084-065-9-003	DC/AC (Slide)(SW-099)
S305	Switch		Power On/Off (Part of Volume Control)
S501	Switch	083-248-9-001	Channel Selector (Rotary)(SR-152)
S601	Switch	088-049-9-001	ANL On/Off
S602	Switch	088-049-9-001	Tone High/Low
X1	Crystal	132-027-9-001	10.240MHz (QX-074)
XF1	Filter	140-022-9-001	10.7MHz (FL-066)
	Cord	420-027-9-001	AC Power (WZ-022)
	Cord	426-044-9-002	DC Power (W-070101)
	Printed Circuit Board	302-363-9-001	Channel Switch (PC 456AA)
	Printed Circuit Board	302-362-9-001	LED (PC-433AA)
	Printed Circuit Board	306-360-9-001	Main (PC-407AC)
	Printed Circuit Board	302-330-9-001	Microphone Jack (PC-408AA)
	Printed Circuit Board	302-361-9-001	Power Supply
	Printed Circuit Board	302-364-9-001	Speaker/Jack
	Printed Circuit Board	302-365-9-001	Switch

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

ITEM	PART No.
Cabinet, Bottom	252-029-9-001
Cabinet, Top	253-071-9-001
Knobs (4 used)	751-095-9-002
Knob, Channel	751-171-9-001

ITEM	PART No.
Panel, Front Display	260-172-9-001
Panel, Front Display	260-173-9-001
Pushbutton	384-027-9-001

WIRING DATA

General-use Hook-up Wire (available in 5 colors) BELDEN No. 8523
Shielded Hook-up Wire (spiral wrapped) . . . . . BELDEN No. 8421
(braided) . . . . . BELDEN No. 8401
Speaker Cable (available in 4 colors) . . . . . BELDEN No. 8782
Bonding Strap . . . . . BELDEN No. 8672
AC Power Cord . . . . . (6') BELDEN No. 17106
(9') BELDEN No. 17109

Coiled Microphone Cable
3-conductor (1 shielded) 23AWG BELDEN No. 9471 (5')
BELDEN No. 8497 (6')
BELDEN No. 9472 (7-1/2')
28AWG BELDEN No. 9466 (6')
31AWG BELDEN No. 9468 (10')
4-conductor (unshielded) 23AWG BELDEN No. 8415 (6')
5-conductor (1 shielded) 28AWG BELDEN No. 9467 (6')
BELDEN No. 9465 (7-1/2')