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 SX-402D

MANUFACTURER'S SPECIFICATIONS

GENERAL

Dimensions	:	2-⅝"H × 8-⅝"W × 8-¾" D
Weight	:	approx. 5.4 lbs.
DC Power consumption	:	a) Receive (stand by) 300 mA b) Transmit (100% Mod.) 1.3A
Channels	:	40
Semi-conductors	:	32 Transistors 2 FET 28 diodes and 4 IC.
Operating condition	:	a) Ambient temperature −10℃ ~ +50℃ b) Releative humidity +35℃ 95% or less.

RECEIVER

Receiving system	:	Double conversion superheterodyne.
Intermediate freq	:	1st 10.695 MHz, 2nd....455 KHz
Sensitivity	:	S+N/N 10db or more at 1 μV input.
Adjacent channel rejection	:	50dB or more.
Image rejection	:	50dB or more.
Power output (Audio)	:	4 watts.
AGC		80db or more.

TRANSMITTER

Transmit frequency	:	26.965~ 27.405 MHz
Power input	:	5 watts.
Power output	:	60% or more with upward modulation.
Modulation	:	100%
Spurious and harmonics	:	60 dB or more.
Frequency tolerance	:	±0.005% or less.
Antenna coupling	:	50 ohms.

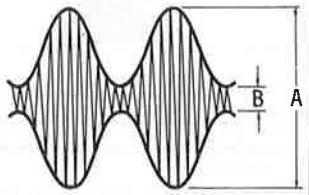
Courtesy of the Manufacturer

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.
Adjustments made with 13.8 volt DC input.
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:	G.C. Electronics
L1,L2,L4,L5,L6-(PLL), L1,L2,L3,L11 thru L14	9440
L15,L18 thru L22.	9091,8728-A,8728
L4 thru L8.	5009,8728-A,8728



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

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (TR1 (PLL), Emitter).	Ch. 19 Delta Tune Midrange	L1(PLL) VR6	Adjust for 10.240MHz.
Input of frequency counter to TP2 (TR2 (PLL), Collector).	Ch. 19		Check for 36.380MHz.
Input of DC meter to TP3 (IC-1 (PLL), pin 6).	Ch. 1	L2(PLL)	Adjust for 2.30 volts.
Input of oscilloscope to TP4 (L6 (PLL), Secondary).	Ch. 19 Delta Tune Midrange	L6(PLL)	Adjust for maximum RF.
Input of frequency counter to TP4 (L6, Secondary).	Ch. 1 Delta Tune Midrange		Check for 37.660MHz. Check all channels. (See Truth Chart for connect frequencies).
Input of frequency counter to TP5, (TR8 (PLL), Emitter).	Ch. 19, XMT		Check for 10.695MHz.
Input of oscilloscope to TP6 (L5 (PLL), Secondary).	Ch. 19, XMT	L4,L5 (PLL)	Adjust for maximum RF.
Input of frequency counter to TP6 (L5 (PLL), Secondary).	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.
RF Gain Maximum, ANL switch off.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP7 (TR3,base). 455kHz, 1000Hz @ 30% modulation.	Ch. 19 Delta Tune Midrange Squelch MINIMUM	L8,L7,L6	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19 Delta Tune Midrange Squelch MINIMUM	L5,L4,L3,L2, L1	Adjust for maximum output. If necessary readjust L6, L7 and L8.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
ANL switch off.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation Output 50,000uV.	Ch. 19 Delta Tune Midrange Squelch MINIMUM RF Gain Maximum	VR1	AGC RANGE Adjust volume for 0db. Decrease generator output to 50uV. Adjust VR1 so that audio does not drop more than 10db.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation Output 50,000uV.	Ch. 19 Delta Tune Midrange Squelch MINIMUM RF Gain MINIMUM	VR10	RF GAIN RANGE Adjust volume for 0db. Decrease generator output to 50uV. Adjust so that audio drops 10db.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV	Ch. 19 Delta Tune Midrange Squelch Maximum RF Gain Maximum	VR7	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation Output 100uV	Ch. 19 Delta Tune Midrange Squelch MINIMUM RF Gain Maximum	VR2	RX METER Adjust for 9 on SIG scale of meter.

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 transmitters.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
	Ch. 19	L11,L12,L13 L14,L15,L18 L19,L120,L21	Adjust for Maximum.
	Ch. 19	L15	Adjust for 4 watts maximum.
Input of Spectrum analyzer or Harmonic meter to antenna jack.	Ch. 19	L22	Adjust for MINIMUM at 54MHz. (2nd Harmonic)

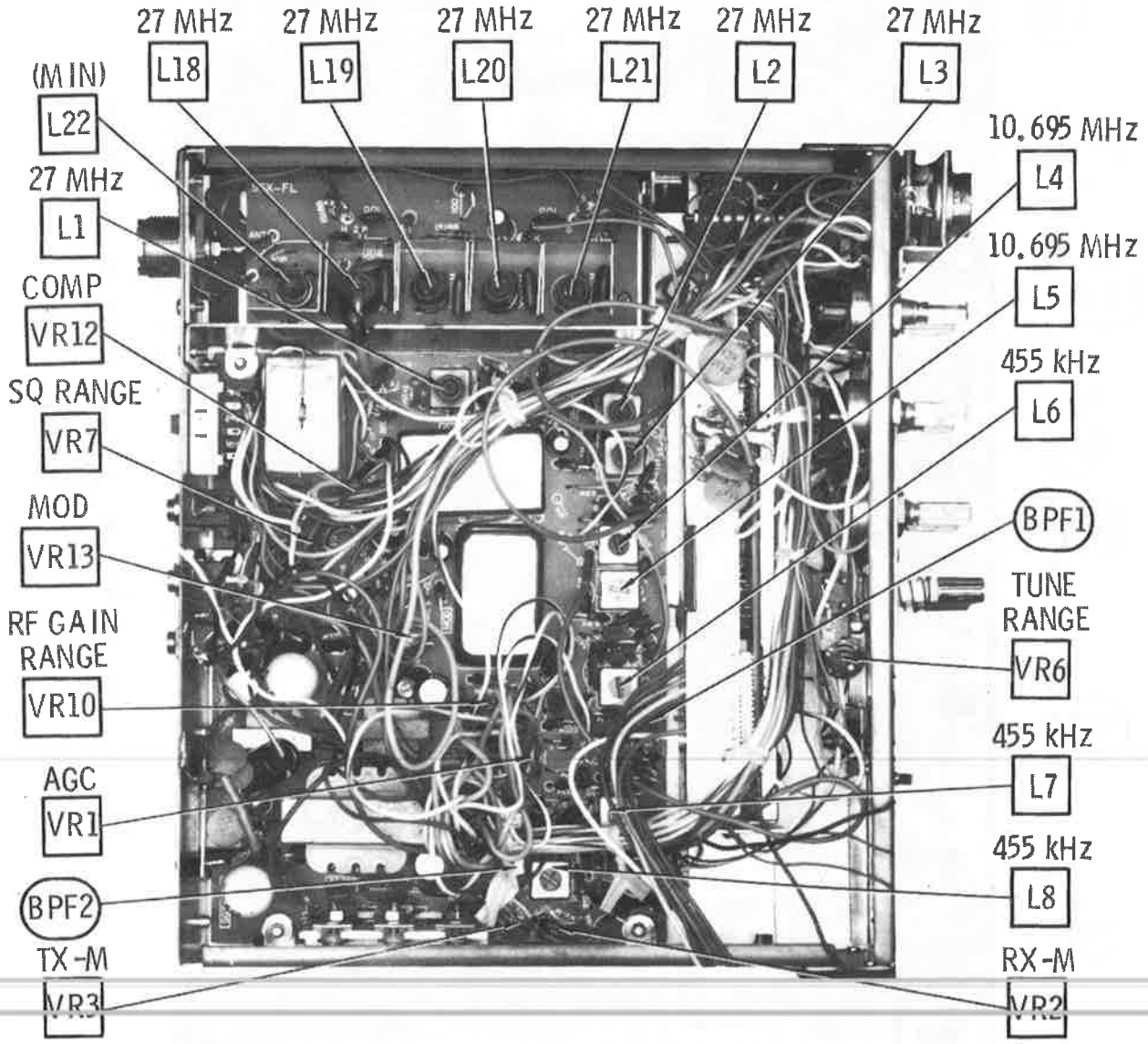
TRANSMITTER ADJUSTMENTS

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.

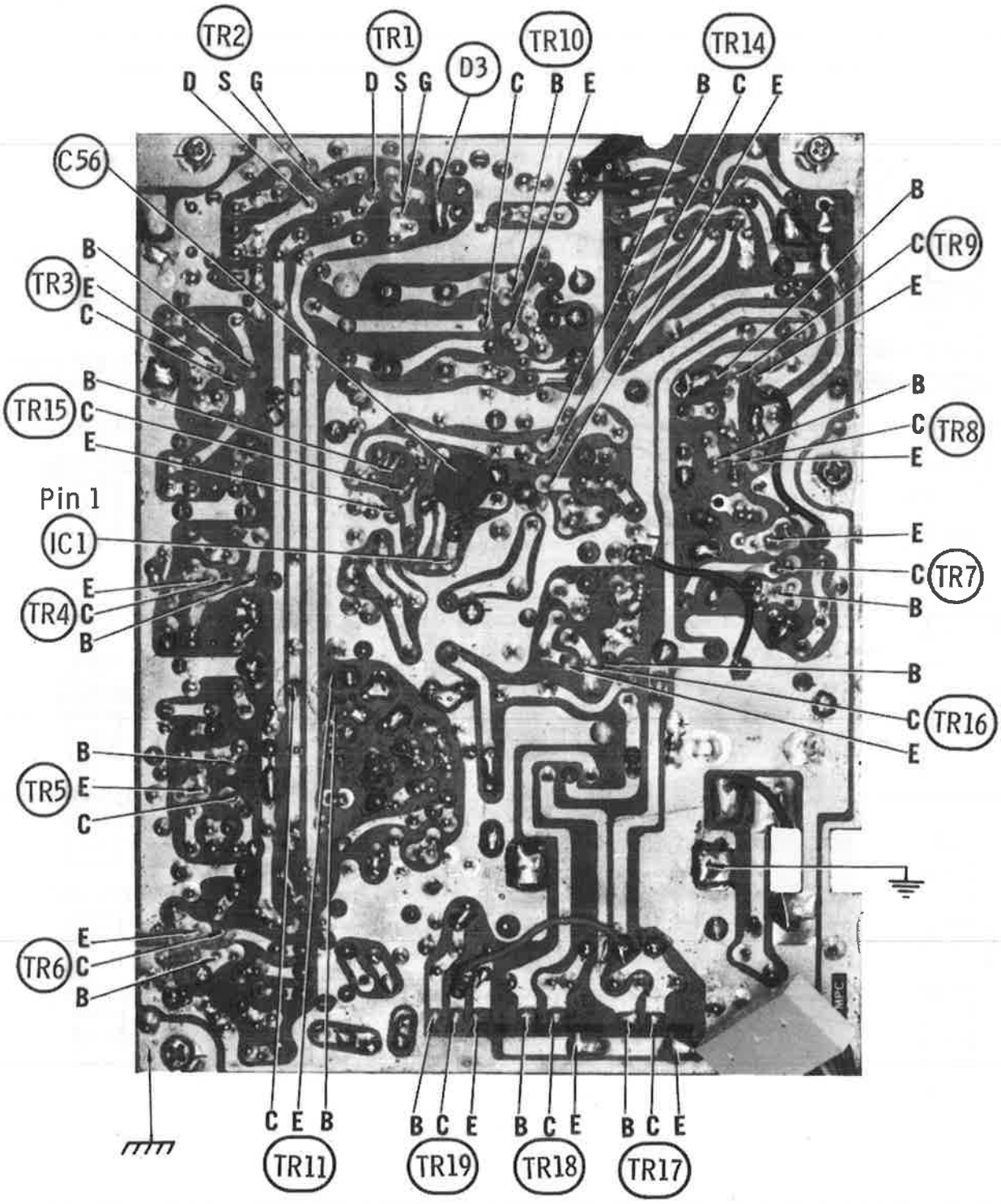
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Oscilloscope or modulation meter to antenna jack. Inject a 1000Hz 5mV signal at MIC input.	Ch. 19 MIC GAIN CONTROL Maximum (Located on MIC).	VR13	MOD. Adjust for 50% modulation. (See FIG. 1)
Oscilloscope or modulation meter to antenna jack. Inject a 1000Hz 30mV signal at MIC input.	Ch. 19 MIC GAIN CONTROL Maximum (Located on MIC).	VR12	COMP Adjust for 100% modulation maximum. (See FIG 1).
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector	Ch. 19	VR3	TX METER Adjust so RF PWR meter agrees with RF wattmeter.

TRUTH CHART

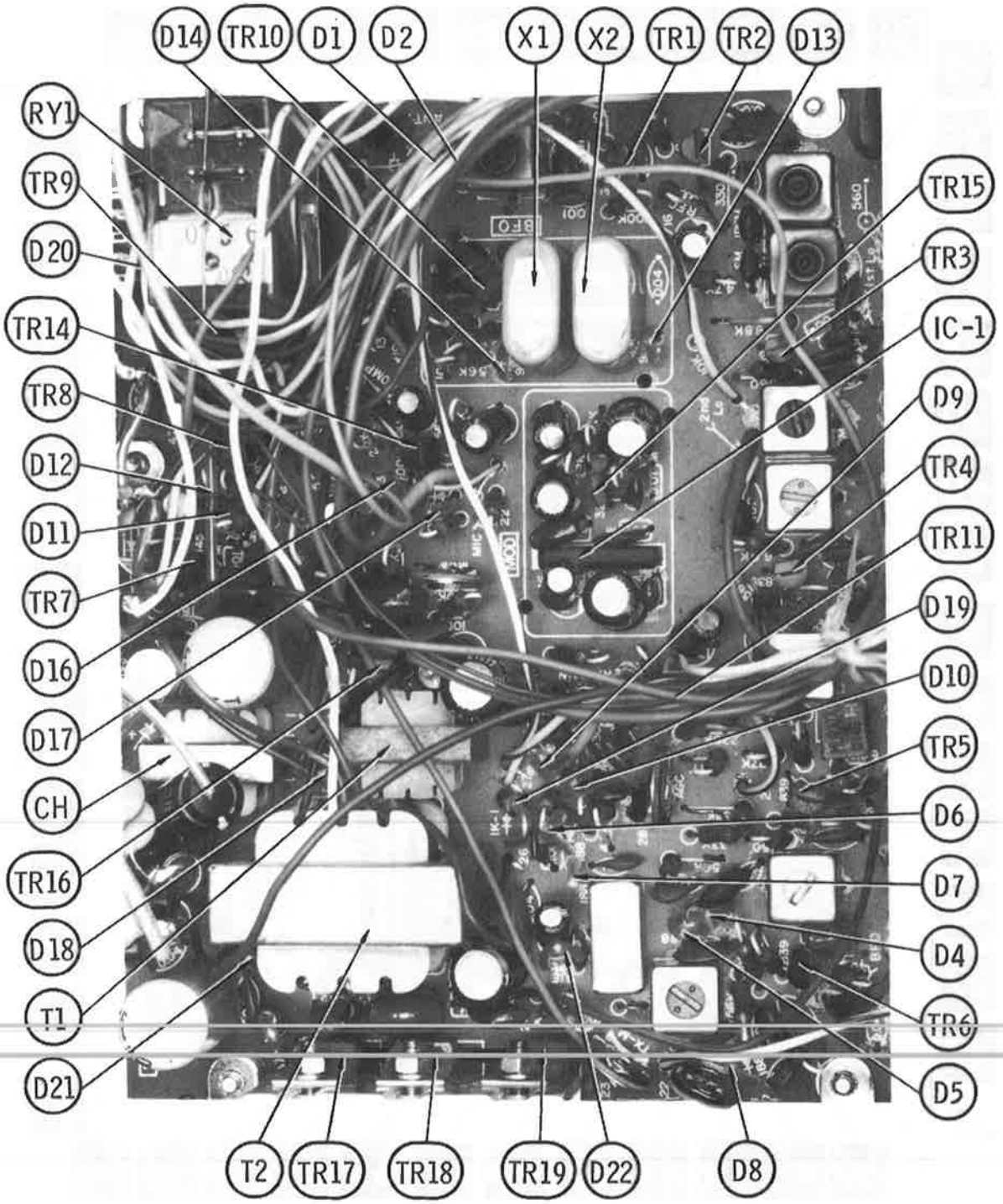
CHANNEL	1 = 5.46 Volts 0 = 0 Volts IC-1 PROGRAM DIVIDER PINS								REC VCO OUTPUT IN MHz AT TP4	XMT VCO OUTPUT IN MHz AT TP6	
			10	11	12	13	14	15			
1			0	0	0	0	0	0	37.660	26.965	
2			0	0	0	0	0	1	37.670	26.975	
3			0	0	0	0	1	0	37.680	26.985	
4			0	0	0	1	0	0	37.700	27.005	
5			0	0	0	1	0	1	37.710	27.015	
6			0	0	0	1	1	0	37.720	27.025	
7			0	0	0	1	1	1	37.730	27.035	
8			0	0	1	0	0	1	37.750	27.055	
9			0	0	1	0	1	0	37.760	27.065	
10			0	0	1	0	1	1	37.770	27.075	
11			0	0	1	1	0	0	37.780	27.085	
12			0	0	1	1	1	0	37.800	27.105	
13			0	0	1	1	1	1	37.810	27.115	
14			0	1	0	0	0	0	37.820	27.125	
15			0	1	0	0	0	1	37.830	27.135	
16			0	1	0	0	1	1	37.850	27.155	
17			0	1	0	1	0	0	37.860	27.165	
18			0	1	0	1	0	1	37.870	27.175	
19			0	1	0	1	1	0	37.880	27.185	
20			0	1	1	0	0	0	37.900	27.205	
21			0	1	1	0	0	1	37.910	27.215	
22			0	1	1	0	1	0	37.920	27.225	
23			0	1	1	1	0	1	37.950	27.255	
24			0	1	1	0	1	1	37.930	27.235	
25			0	1	1	1	0	0	37.940	27.245	
26			0	1	1	1	1	0	37.960	27.265	
27			0	1	1	1	1	1	37.970	27.275	
28			1	0	0	0	0	0	37.980	27.285	
29			1	0	0	0	0	1	37.990	27.295	
30			1	0	0	0	1	0	38.000	27.305	
31			1	0	0	0	1	1	38.010	27.315	
32			1	0	0	1	0	0	38.020	27.325	
33			1	0	0	1	0	1	38.030	27.335	
34			1	0	0	1	1	0	38.040	27.345	
35			1	0	0	1	1	1	38.050	27.355	
36			1	0	1	0	0	0	38.060	27.365	
37			1	0	1	0	0	1	38.070	27.375	
38			1	0	1	0	1	0	38.080	27.385	
39			1	0	1	0	1	1	38.090	27.395	
40			1	0	1	1	0	0	38.100	27.405	



CHASSIS - BOTTOM


TR2
D S G
TR1
D S G
D3
TR10
C B E
TR14
B C E
C56
TR3
B
E
C
TR15
B
C
E
Pin 1
IC1
TR4
E
C
B
TR5
B
E
C
TR6
E
C
B
B
C TR9
E
B
C TR8
E
E
C TR7
B
B
C TR16
E
C E B
TR11
B C E
TR19
B C E
TR18
B C E
TR17

MAIN BOARD


D14
TR10
D1
D2
X1
X2
TR1
TR2
D13
RY1
TR9
D20
TR14
TR8
D12
D11
TR7
D16
D17
CH
TR16
D18
T1
D21
TR15
TR3
IC-1
D9
TR4
TR11
D19
D10
TR5
D6
D7
D4
TR6
D5
T2
TR17
TR18
TR19
D22
D8

MAIN BOARD

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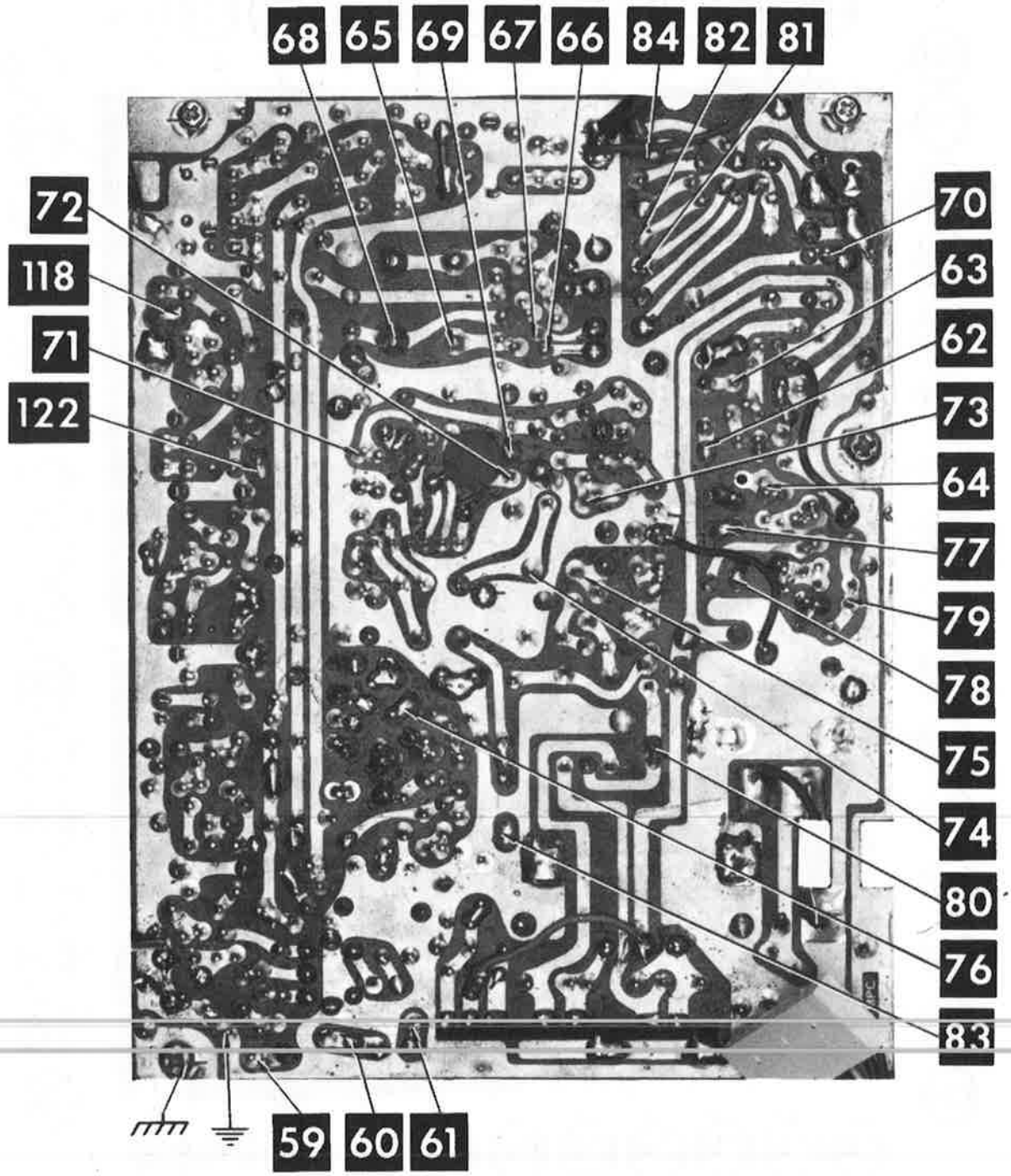
MAIN BOARD


68
65
69
67
66
84
82
81
72
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122
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74
80
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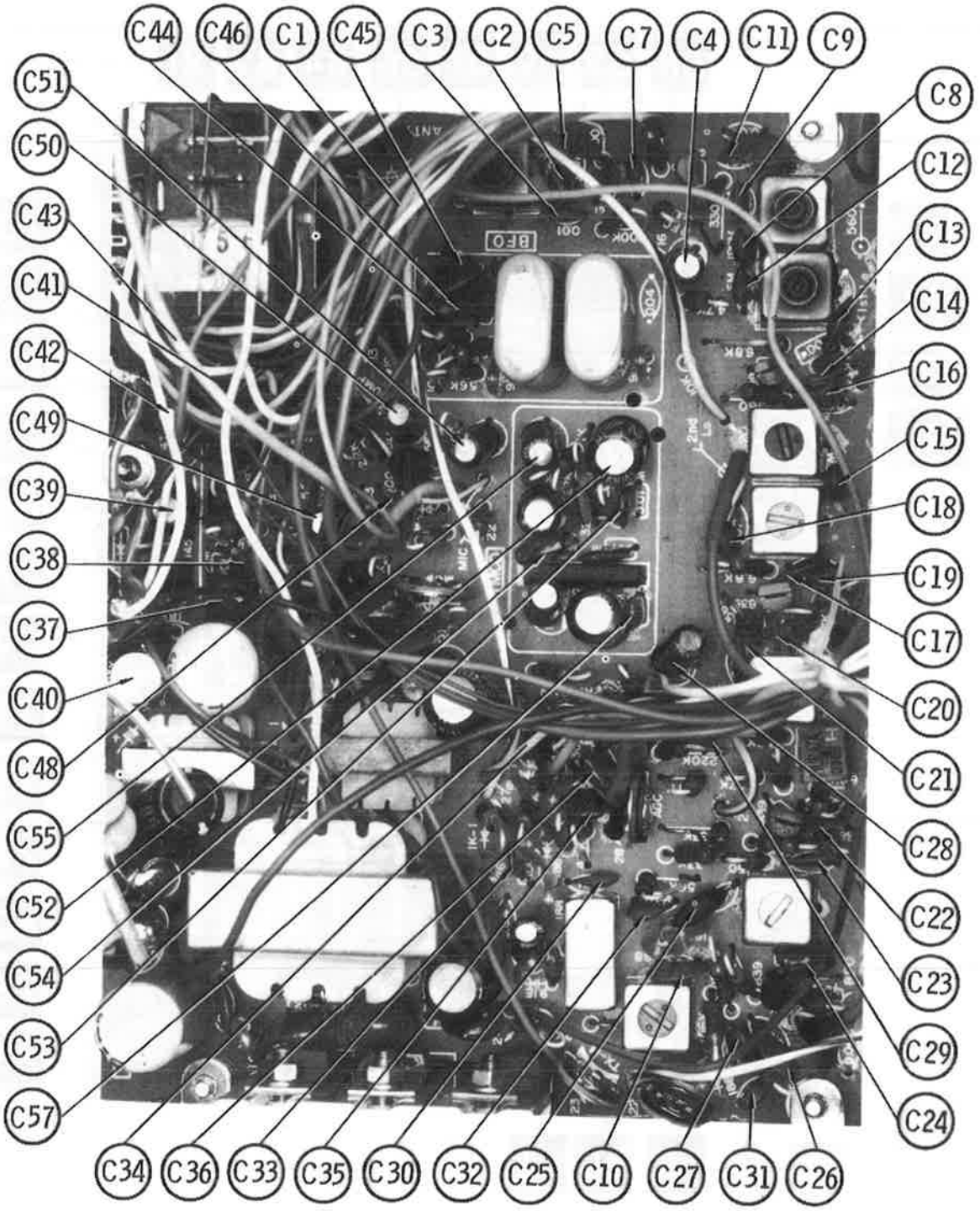
83
59
60
61

MAIN BOARD


C44
C46
C1
C45
C3
C2
C5
C7
C4
C11
C9
C51
C8
C50
C12
C43
C13
C41
C14
C42
C16
C49
C15
C39
C18
C38
C19
C37
C17
C40
C20
C48
C21
C55
C28
C52
C22
C54
C23
C53
C29
C57
C24
C34
C36
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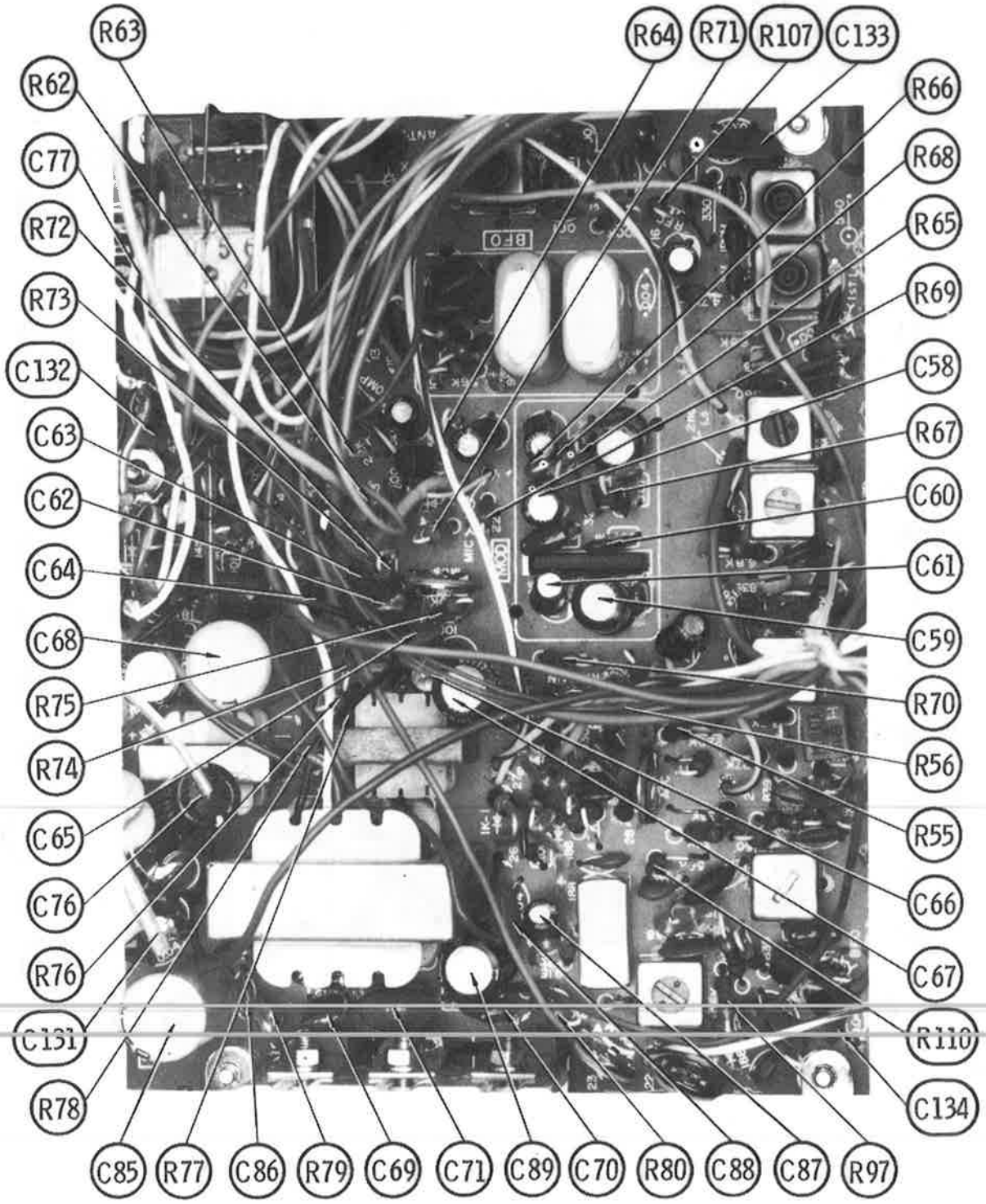
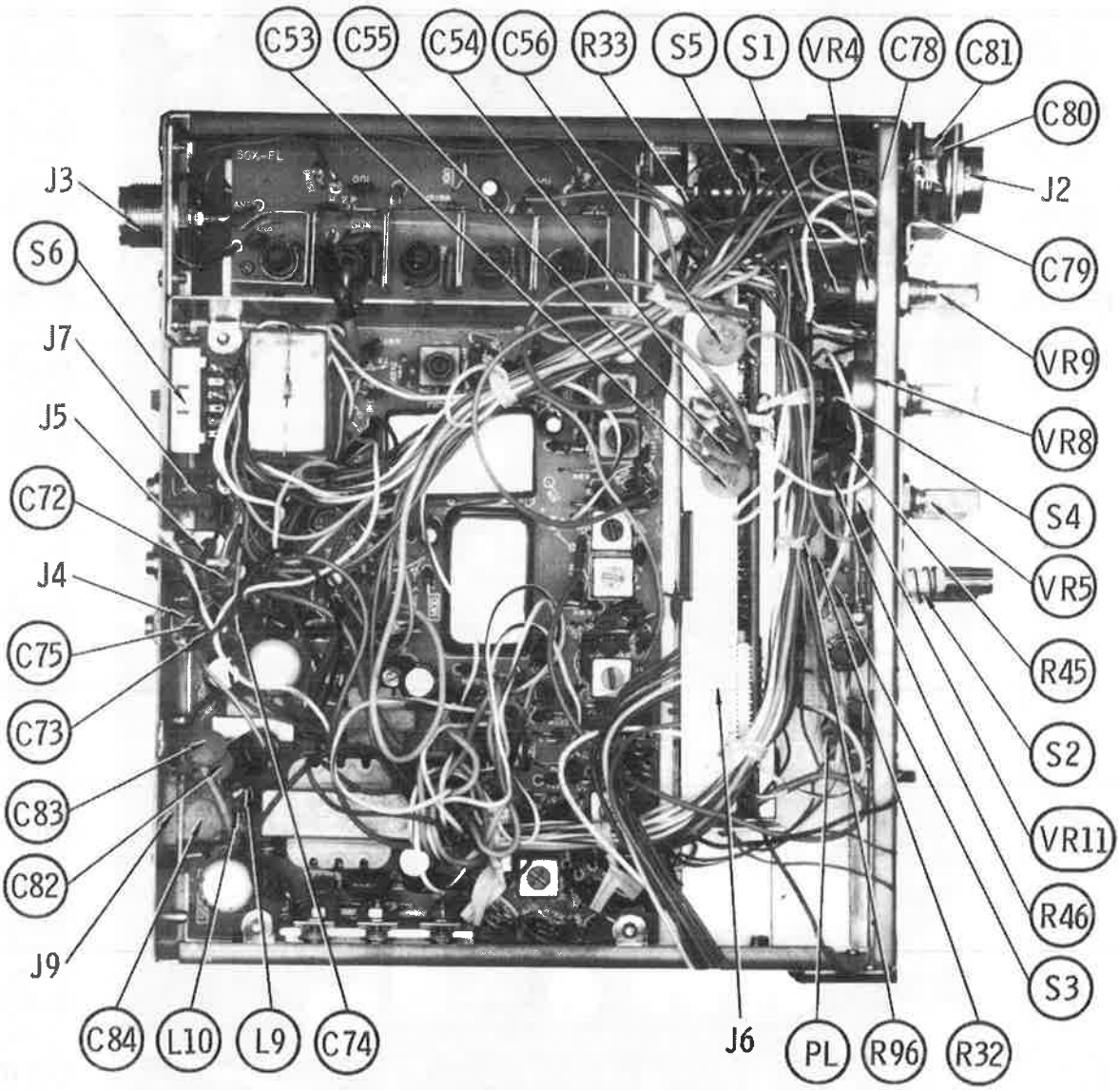
C35
C30
C32
C25
C10
C27
C31
C26

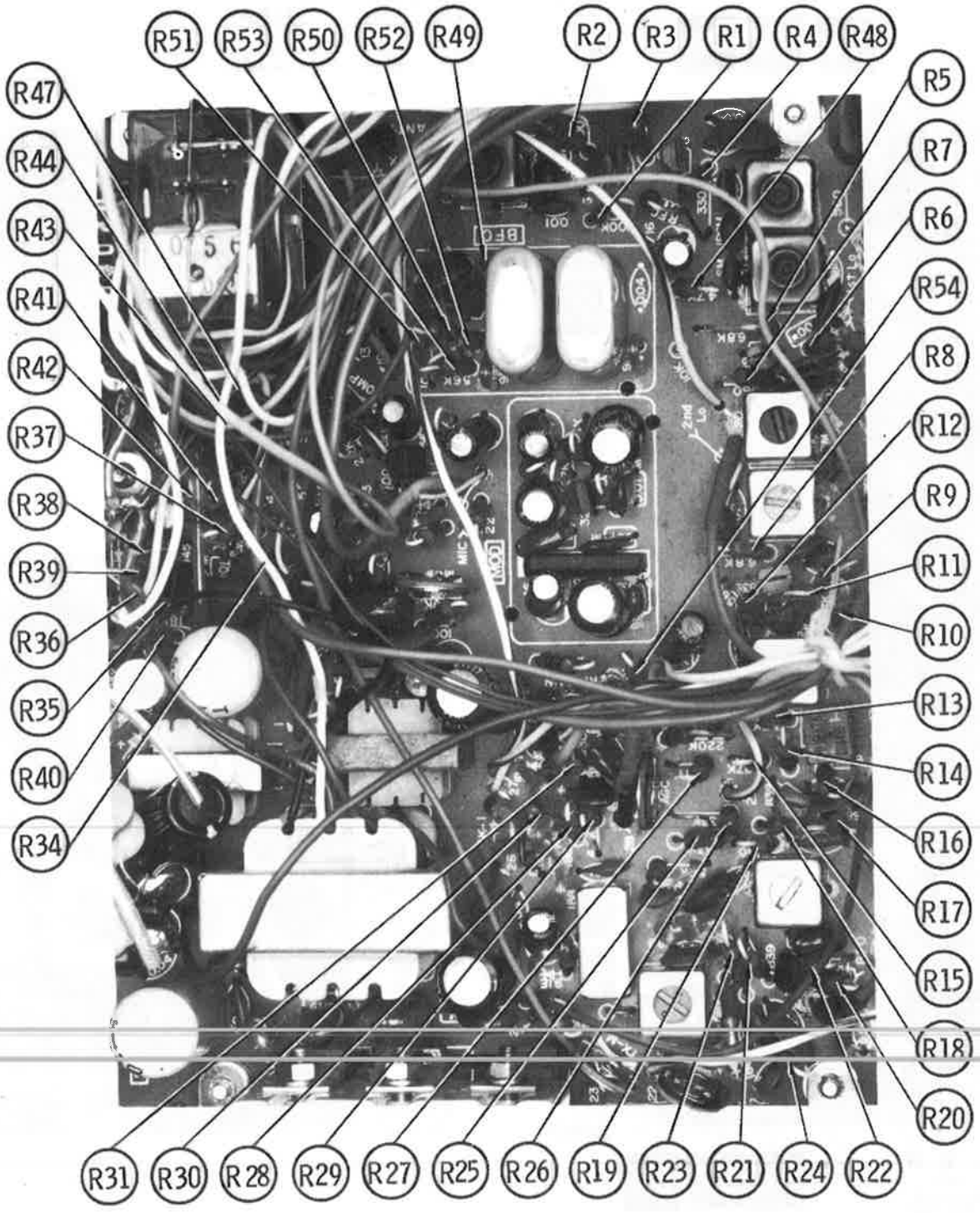
MAIN BOARD


R63
R64
R71
R107
C133
R62
R66
C77
R68
R72
R65
R73
R69
C132
C58
C63
R67
C62
C60
C64
C61
C68
C59
R75
R70
R74
R56
C65
R55
C76
C66
R76
C67
C131
R110
R78
C134
C85
R77
C86
R79
C69
C71
C89
C70
R80
C88
C87
R97

MAIN BOARD



CHASSIS - BOTTOM


R51
R53
R50
R52
R49
R2
R3
R1
R4
R48
R47
R44
R43
R41
R42
R37
R38
R39
R36
R35
R40
R34
R5
R7
R6
R54
R8
R12
R9
R11
R10
R13
R14
R16
R17
R15
R18
R20
R31
R30
R28
R29
R27
R25
R26
R19
R23
R21
R24
R22

MAIN BOARD

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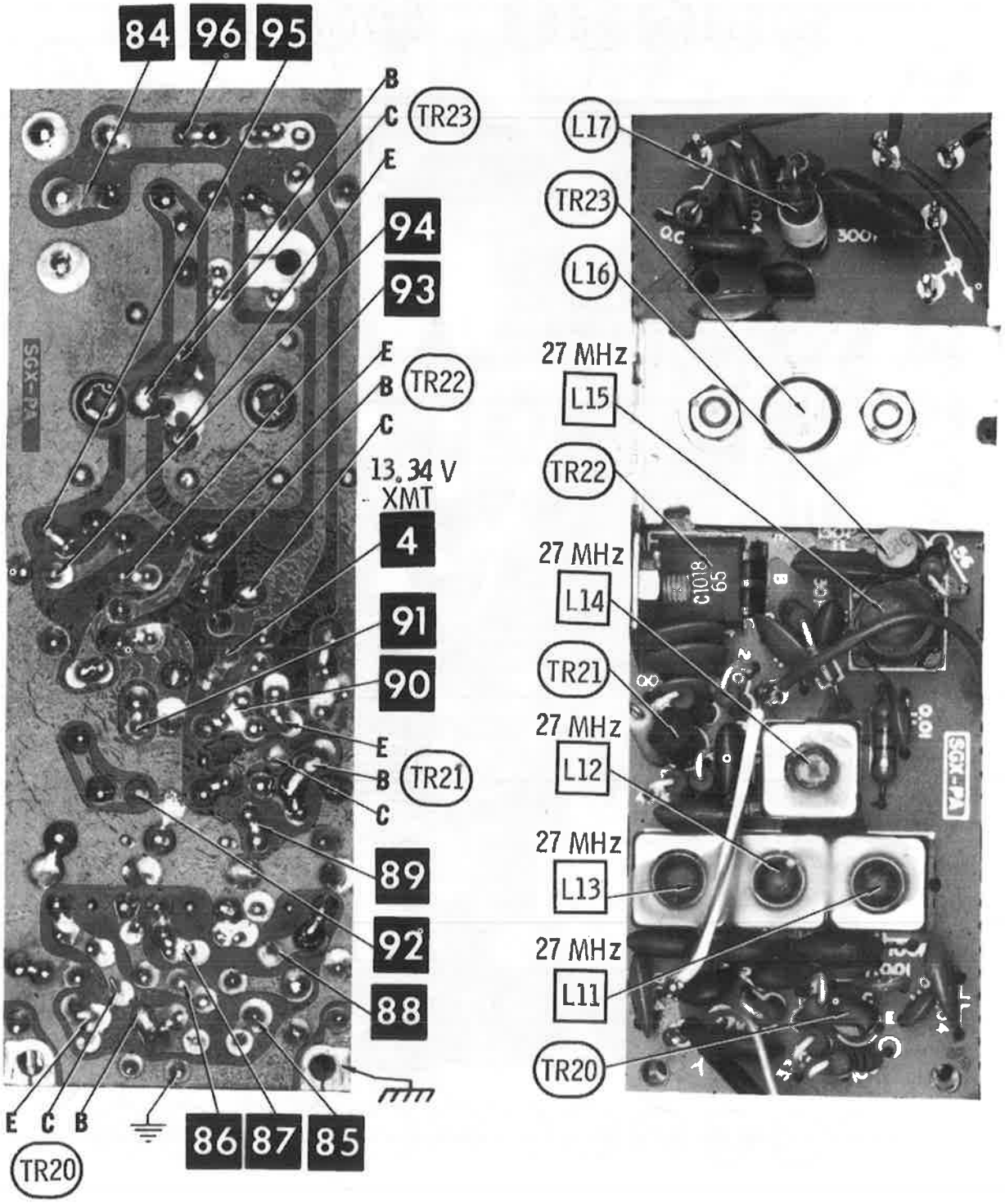
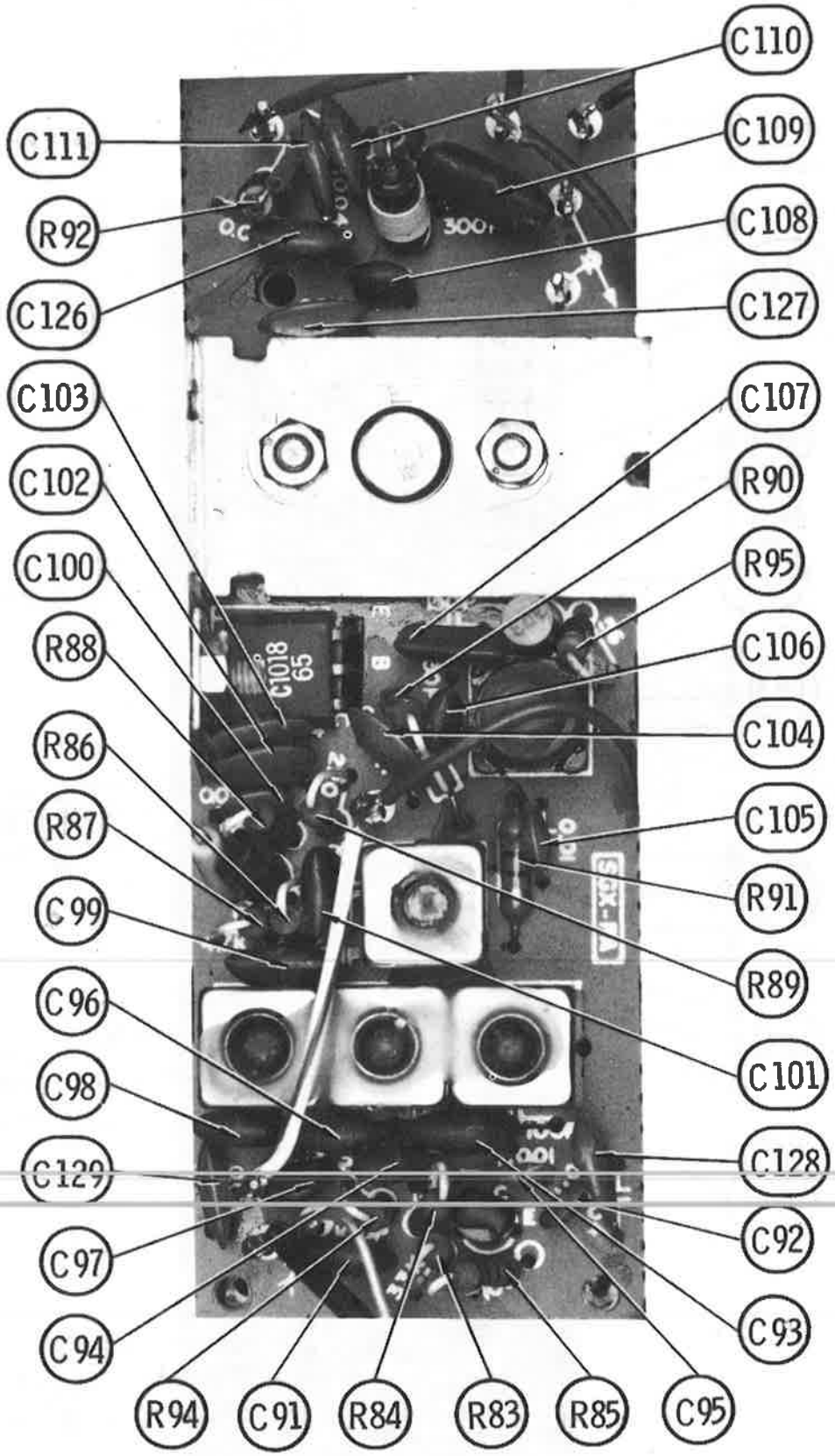
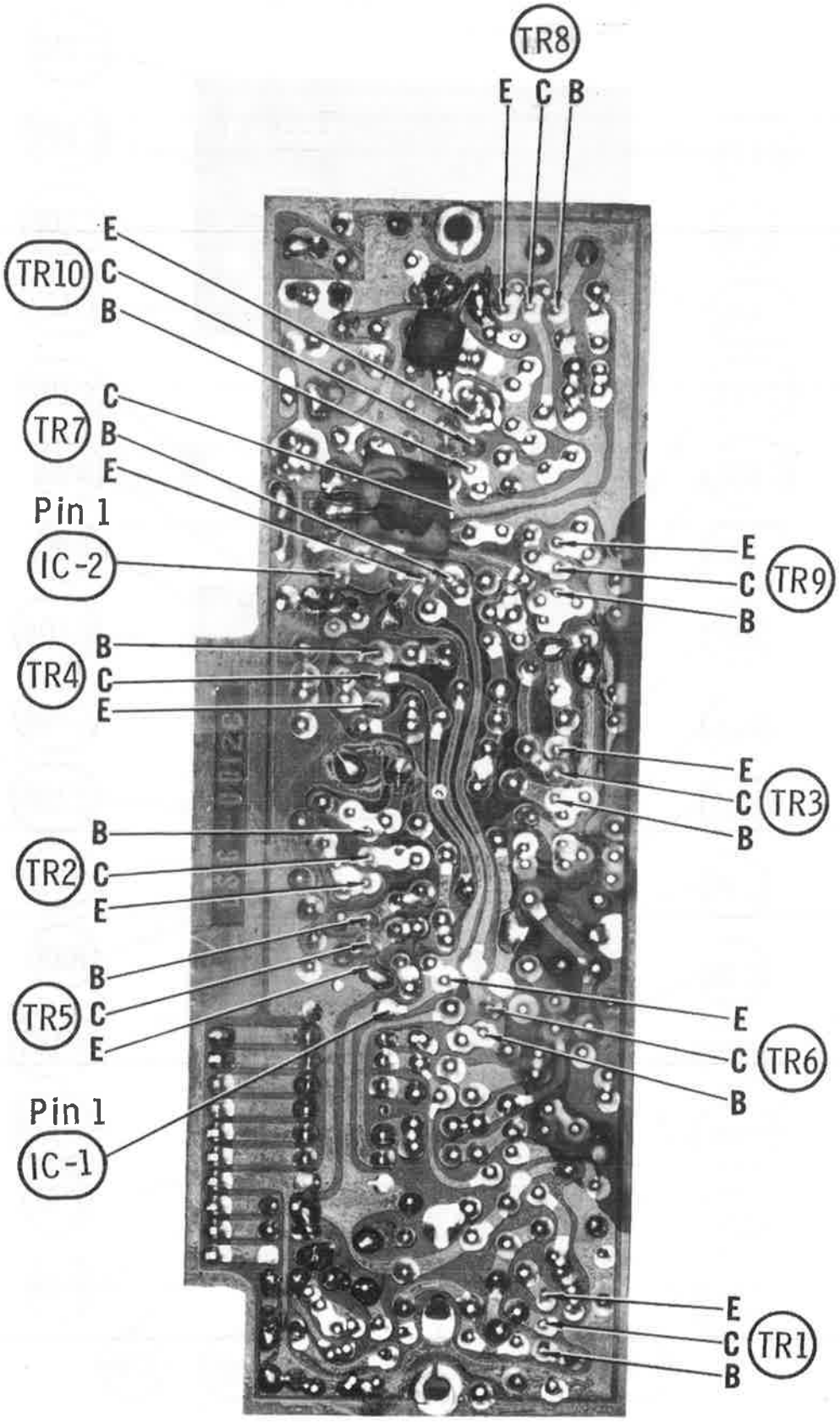


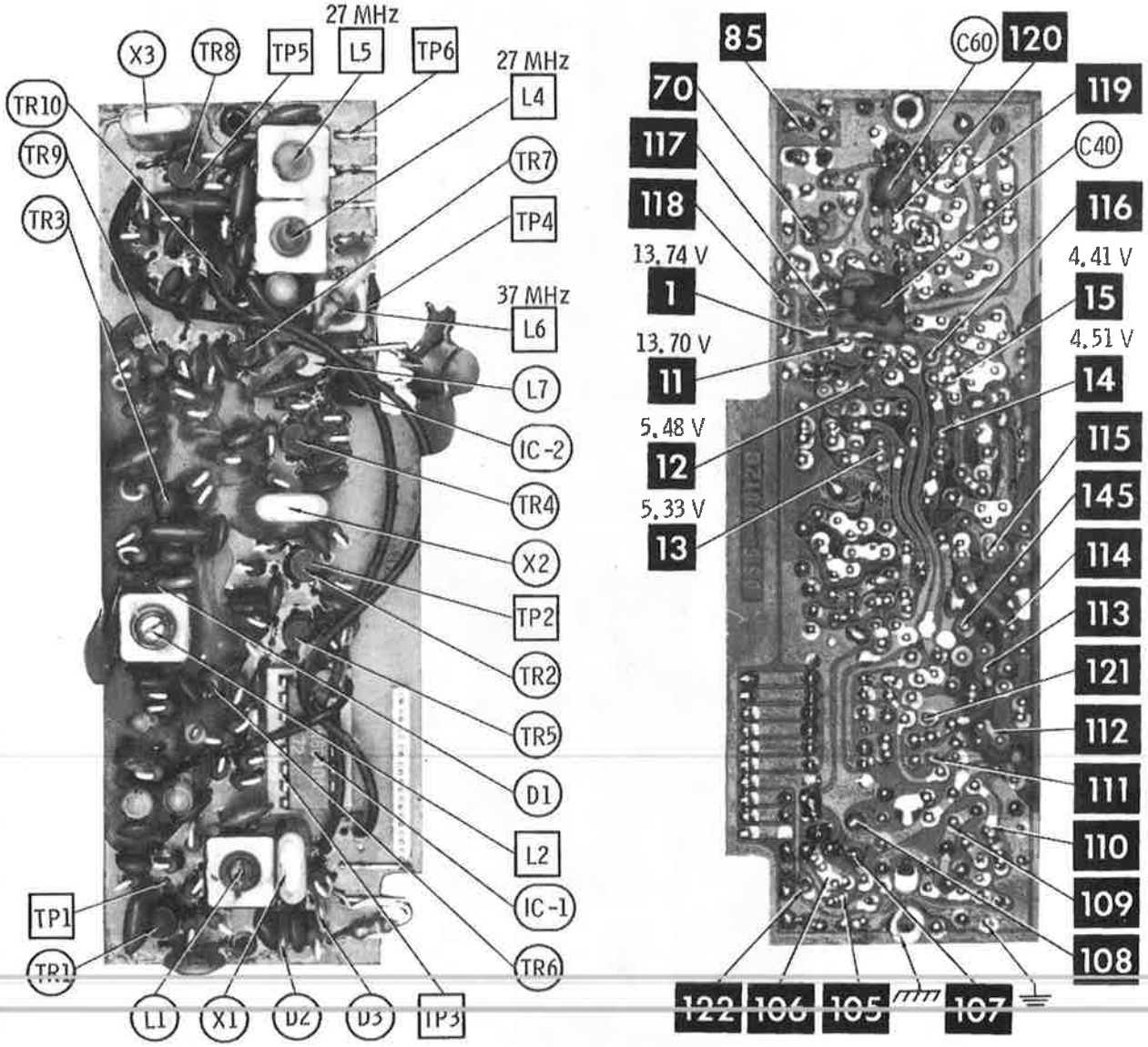
XMT BOARD


C110
C111
C109
R92
C108
C126
C127
C103
C107
C102
R90
C100
R95
R88
C106
R86
C104
R87
C105
C99
R91
C96
R89
C98
C101
C129
C128
C97
C92
C94
C93
R94
C91
R84
R83
R85
C95

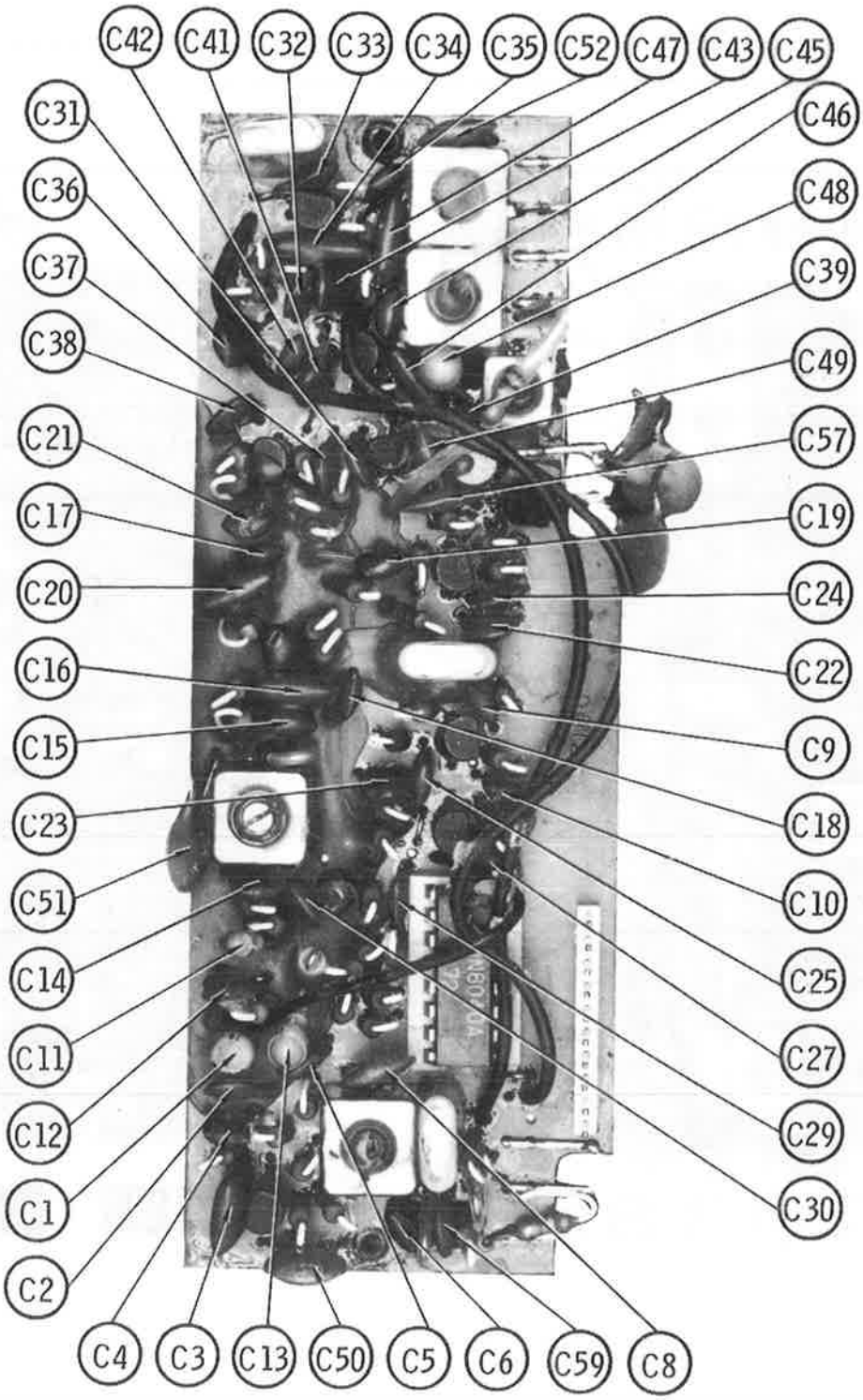
XMT BOARD


TR8
E C B
TR10
E C B
TR7
C B E
Pin 1
IC-2
TR4
B C E
TR2
B C E
TR5
B C E
Pin 1
IC-1
TR9
E C B
TR3
E C B
TR6
E C B
TR1
E C B

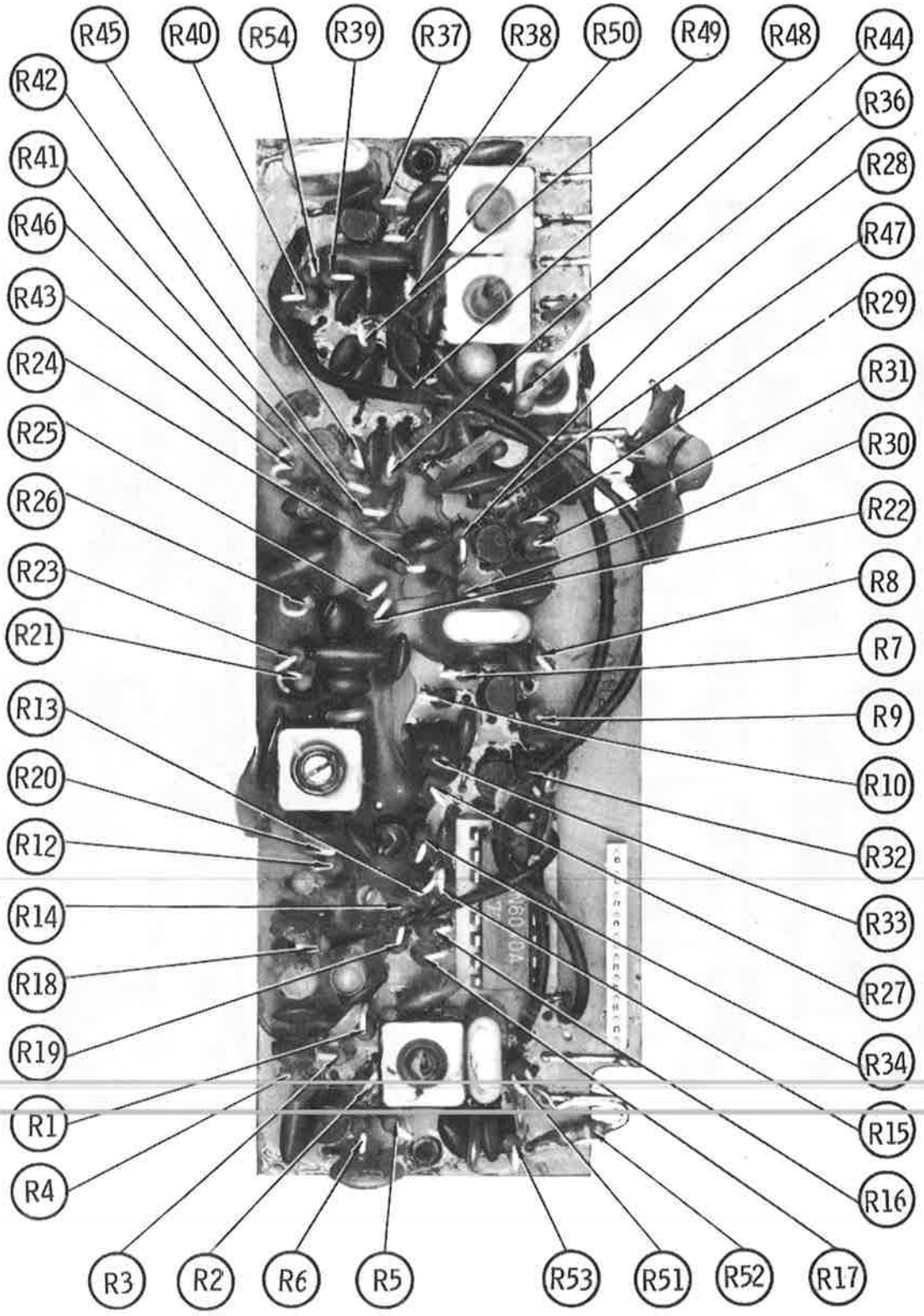
PLL BOARD


27 MHz
X3
TR8
TP5
L5
TP6
27 MHz
L4
TR10
TR9
TR7
TR3
TP4
37 MHz
L6
L7
IC-2
TR4
X2
TP2
TR2
TR5
D1
L2
IC-1
TR6
TP1
TP1
L1
X1
D2
D3
TP3
85
C60
120
70
119
117
C40
118
116
13.74 V
4.41 V
1
15
13.70 V
4.51 V
11
14
5.48 V
115
12
145
5.33 V
114
13
113
121
112
111
110
109
108
122
106
105
107

PLL BOARD


C42
C41
C32
C33
C34
C35
C52
C47
C43
C45
C31
C46
C36
C48
C37
C39
C38
C49
C21
C57
C17
C19
C20
C24
C16
C22
C15
C9
C23
C18
C51
C10
C14
C25
C11
C27
C12
C29
C1
C30
C2
C4
C3
C13
C50
C5
C6
C59
C8

PLL BOARD


R45
R40
R54
R39
R37
R38
R50
R49
R48
R44
R42
R36
R41
R28
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R47
R43
R29
R24
R31
R25
R30
R26
R22
R23
R8
R21
R7
R13
R9
R20
R10
R12
R32
R14
R33
R18
R27
R19
R34
R1
R15
R4
R16
R3
R2
R6
R5
R53
R51
R52
R17

PLL BOARD

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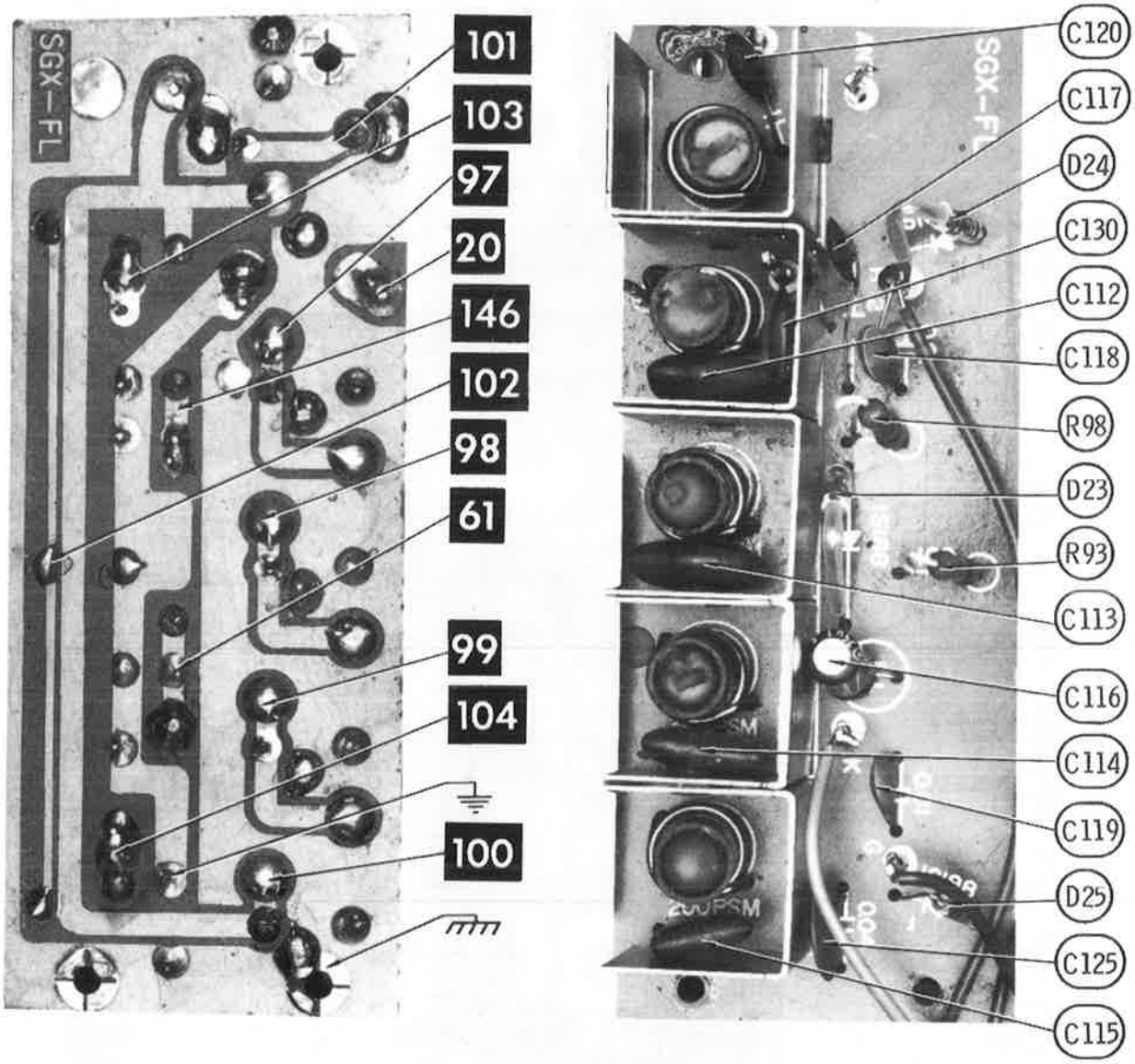

ANT. BOARD

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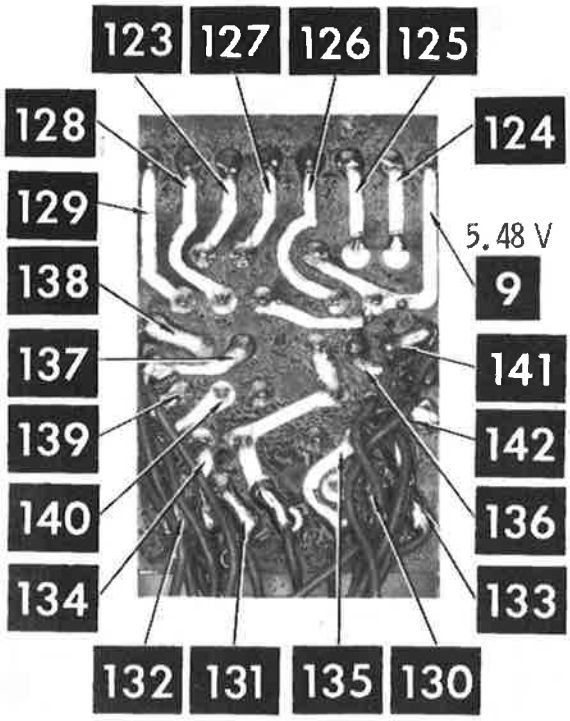

LED SWITCH BOARD

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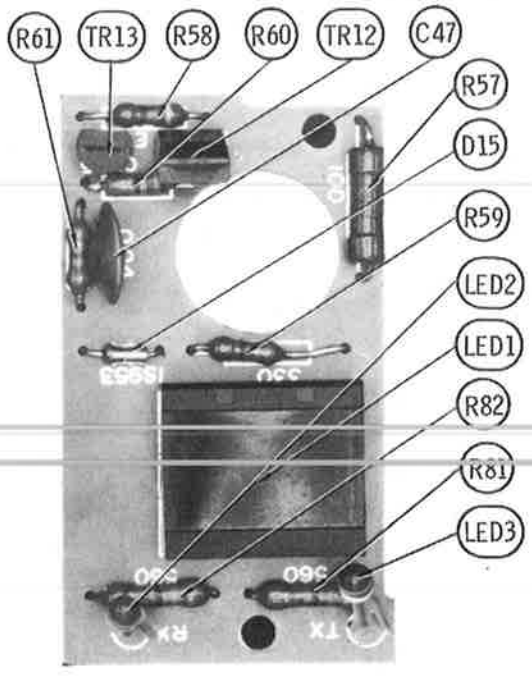
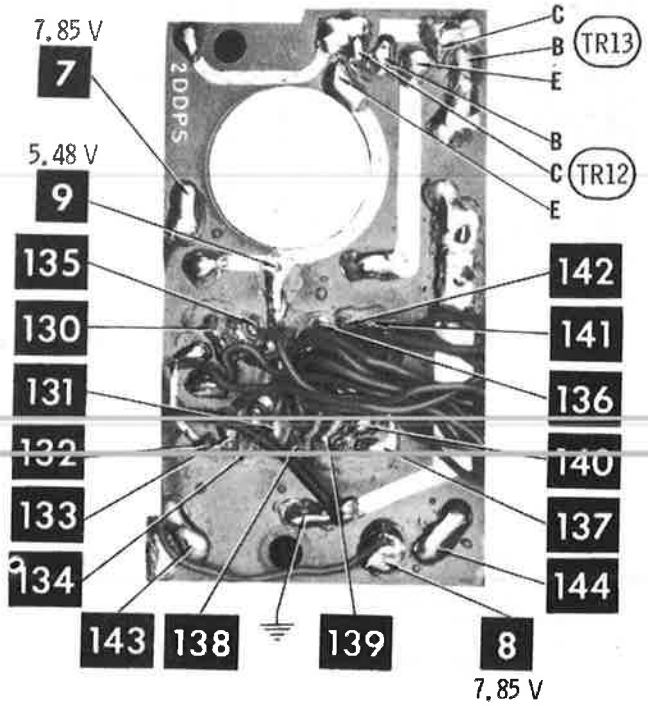
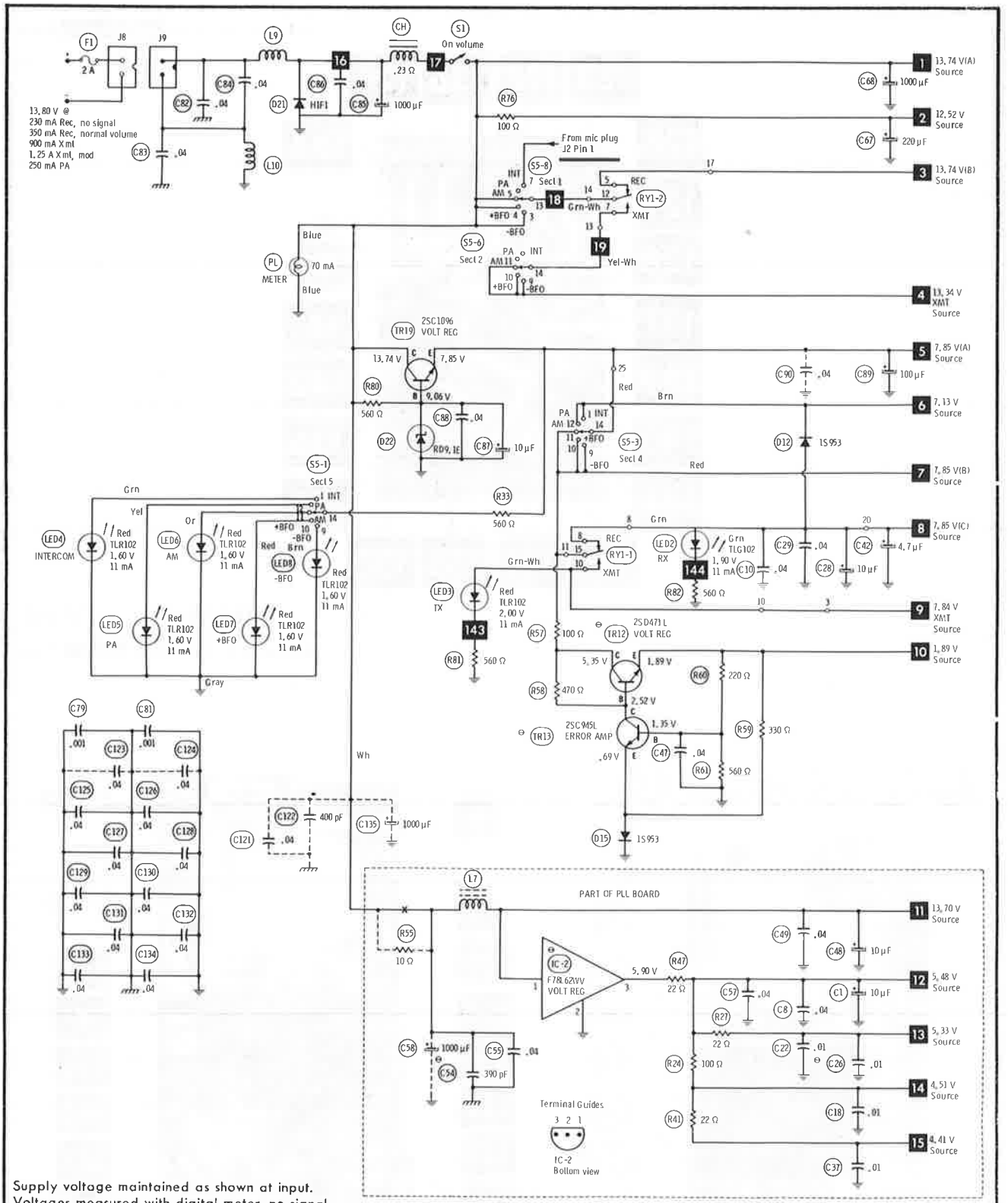




LED READOUT BOARD



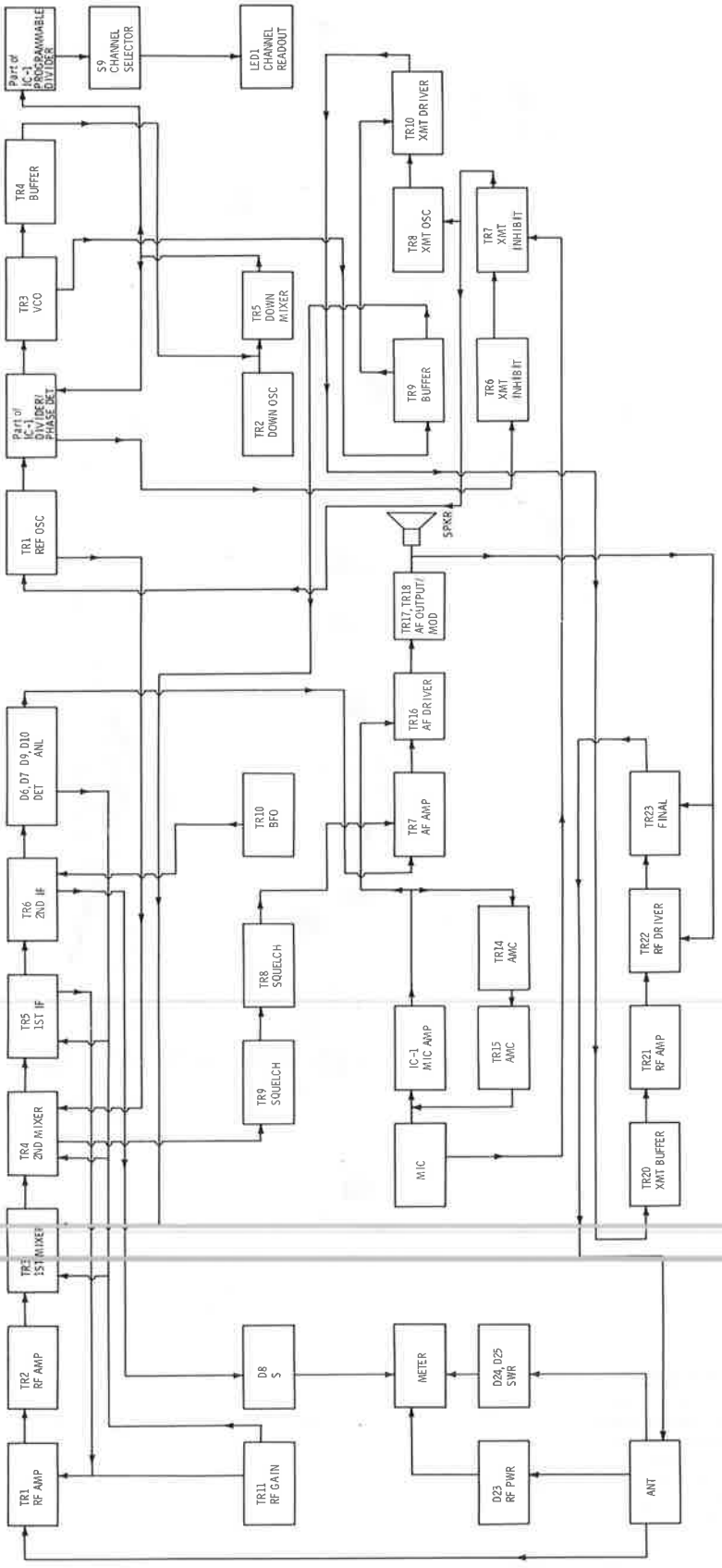
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates direction of advance.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in ( ) used in some versions.

- Circuitry not used in some versions
- Circuitry used in some versions
- ⊖ See parts list
- ※ Nominal value

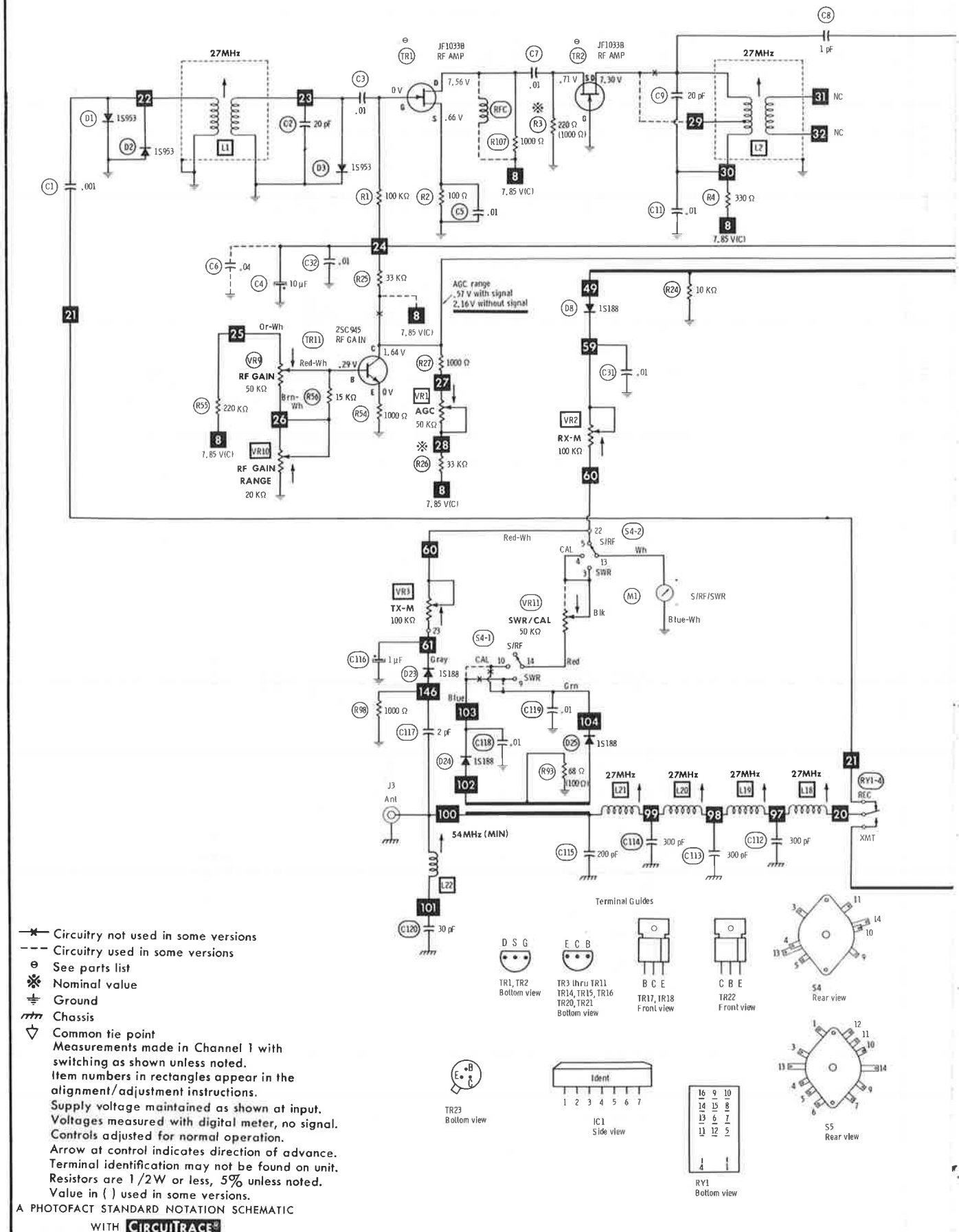
⏚ Ground
Chassis
▽ Common tie point

Measurements made in Channel 1 with switching as shown unless noted.
Item numbers in rectangles appear in the alignment/adjustment instructions.

'A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®



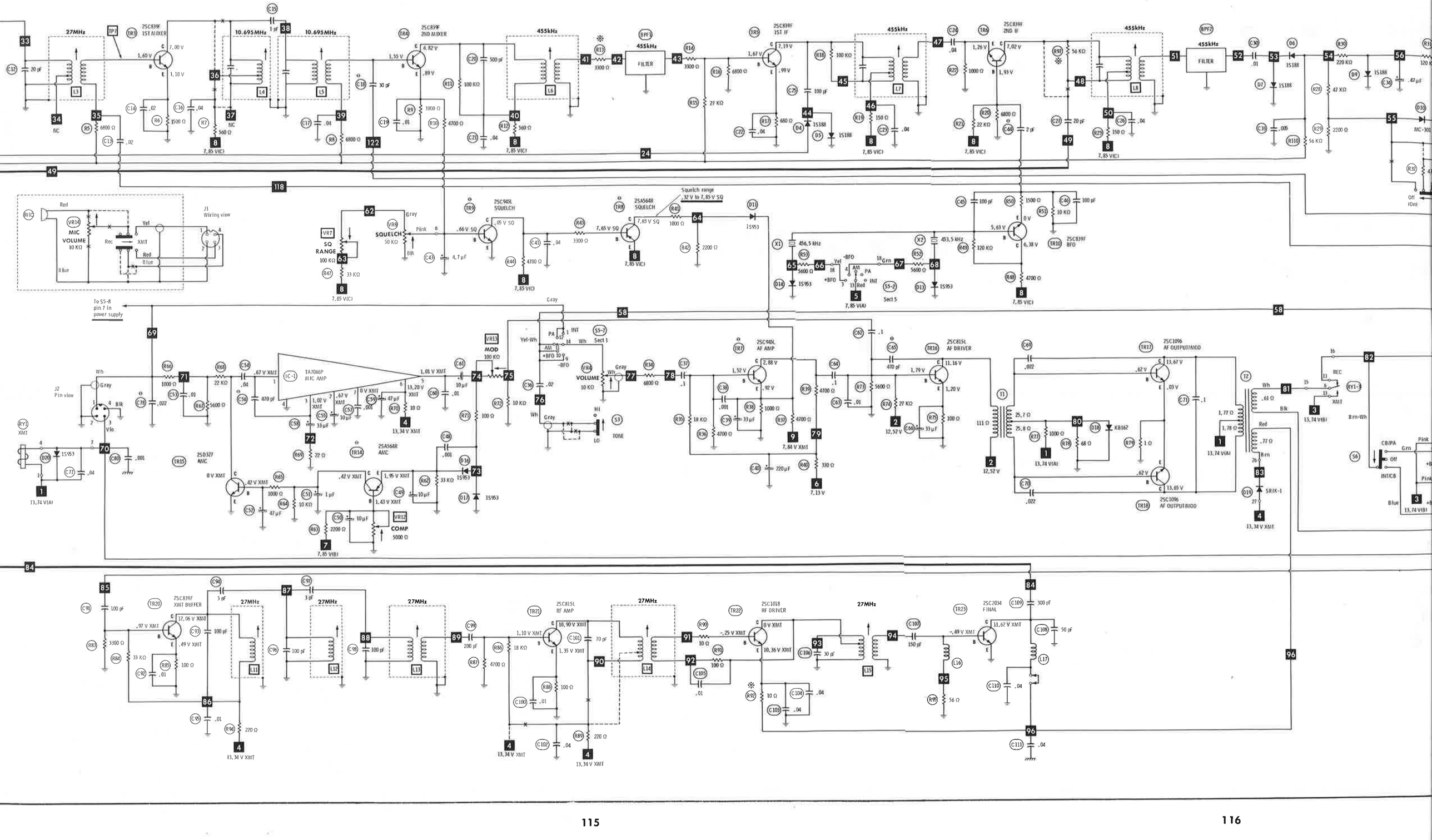
BLOCK DIAGRAM

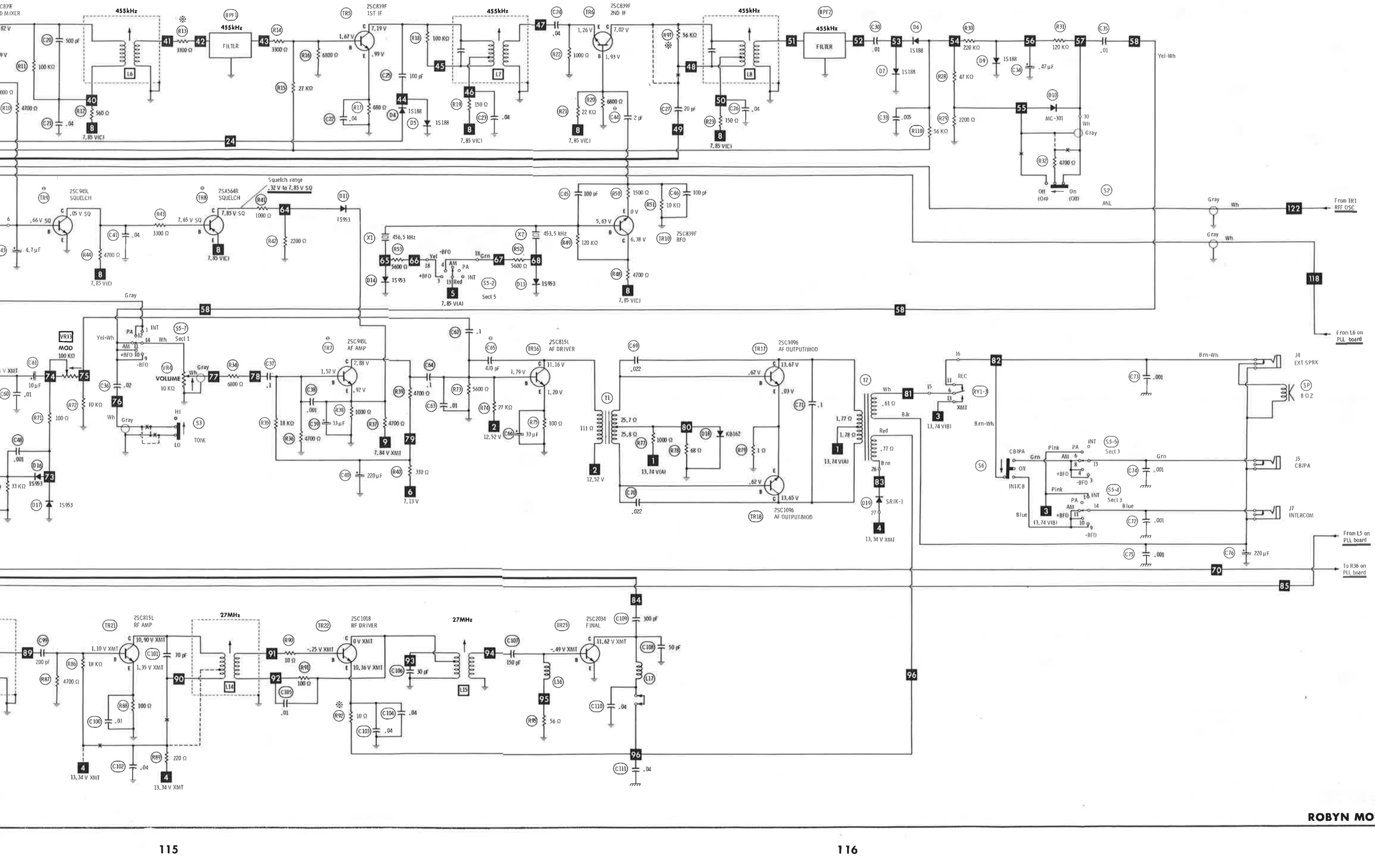


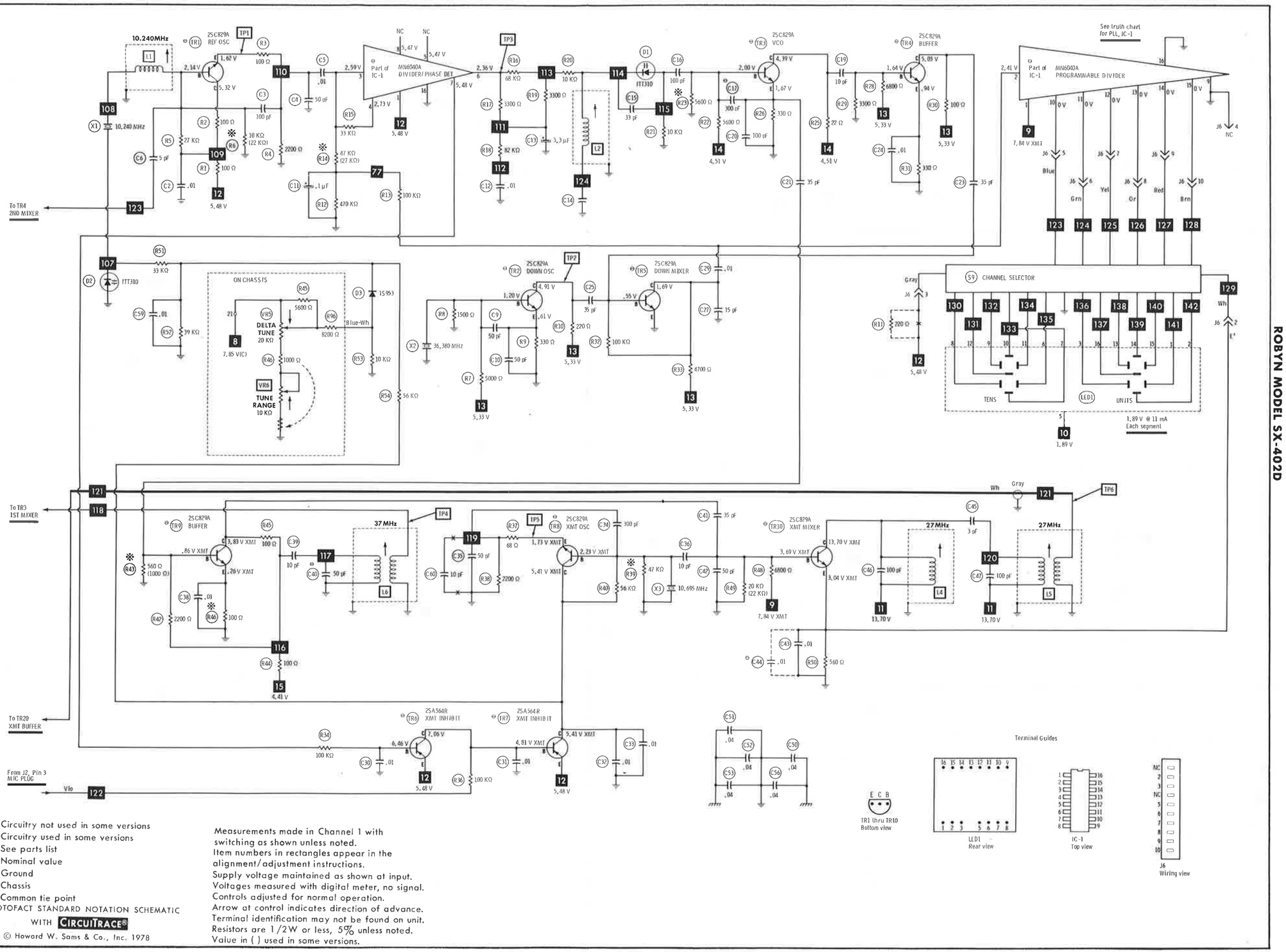
—✕— Circuitry not used in some versions
– – – Circuitry used in some versions
⊖ See parts list
※ Nominal value
⏚ Ground
Chassis
▽ Common tie point

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 PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®


27MHz
10.695MHz
455kHz
2SC839F 1ST MIXER
2SC839F 2ND MIXER
2SC839F 1ST IF
2SC839F 2ND IF
FILTER
2SC945L SQUELCH
2SA564R SQUELCH
Squelch range .32 V to 7.85 V SQ
MIC VOLUME 10 KΩ
SQ RANGE 100 KΩ
SQUELCH 50 KΩ
456.5 kHz
453.5 kHz
2SC839F BFO
TA7066P MIC AMP
2SC945L AF AMP
2SC815L AF DRIVER
2SC1096 AF OUTPUT/MOD
MOD 100 KΩ
VOLUME 10 KΩ
COMP 5000 Ω
TONE
2SD327 AMC
2SA564R AMC
2SC839F XMT BUFFER
2SC815L RF AMP
2SC1018 RF DRIVER
2SC2034 FINAL
KB162
SR1K-1
REC
XMT
CB/PA
INT/CB
To S5-8 pin 7 in power supply
J1 Wiring view
J2 Pin view
NC
Sect 1
Sect 5


455kHz
FILTER
2SC839F 1ST IF
2SC839F 2ND IF
2SC839F D MIXER
2SC945L SQUELCH
2SA564R SQUELCH
Squelch range .32 V to 7.85 V SQ
2SC945L AF AMP
2SC815L AF DRIVER
2SC1096 AF OUTPUT/MOD
2SC815L RF AMP
2SC1018 RF DRIVER
2SC2034 FINAL
27MHz
VOLUME
MOD
TONE
INT
ANL
REC
XMT
CB/PA
INT/CB
EXT SPRK
CB/PA
INTERCOM
From TR1 REF OSC
From L6 on PLL board
From L5 on PLL board
To R36 on PLL board
ROBYN MODEL SX-402D



— Circuitry not used in some versions
– – – Circuitry used in some versions
⊖ See parts list
※ Nominal value
⏚ Ground
Chassis
▽ Common tie point

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®

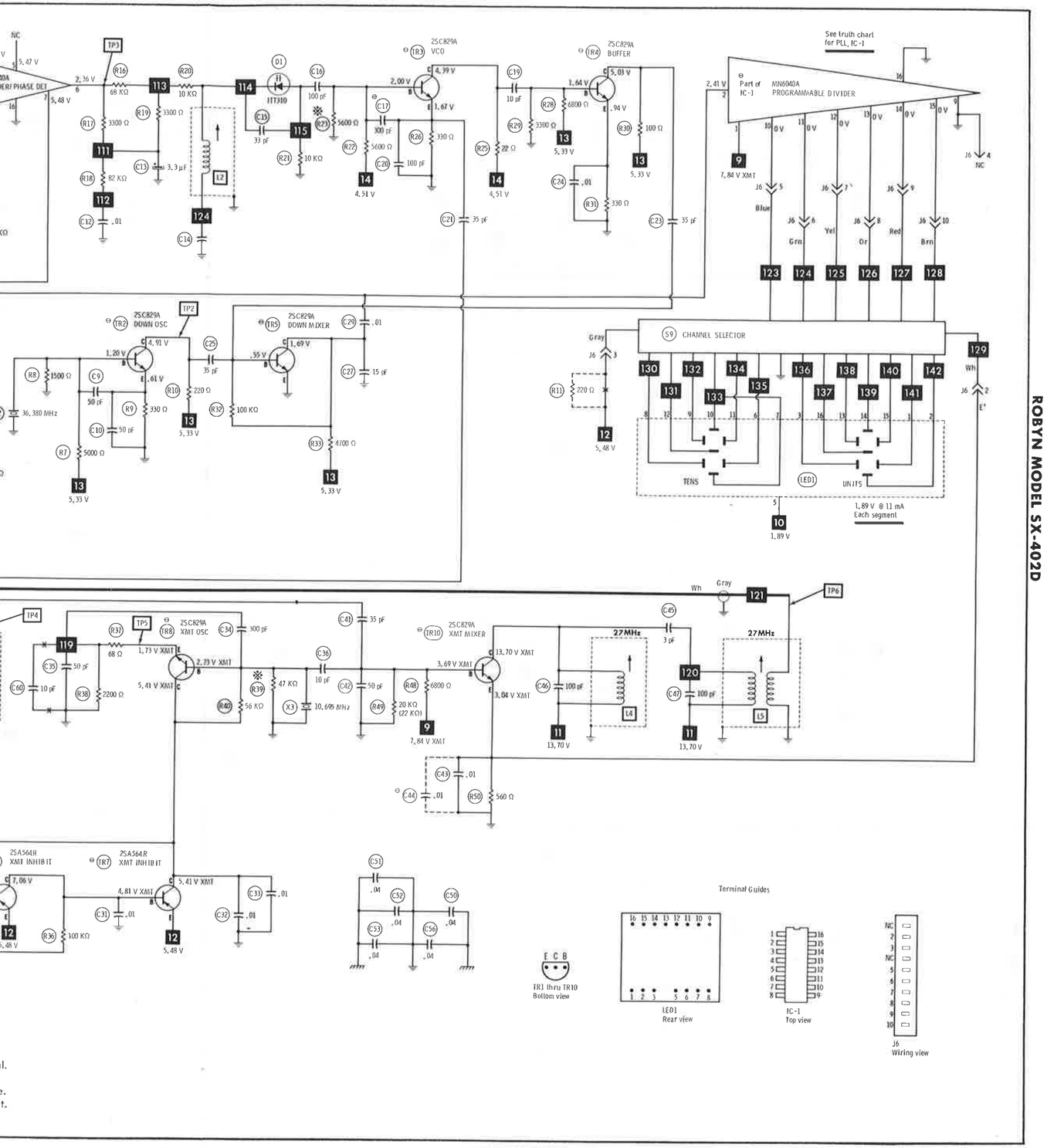
Measurements made in Channel 1 with switching as shown unless noted.
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates 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.

PARTS LIST AND D

(When ordering parts, state Mo

SEMICONDUCTORS (Selec

ITEM No.	TYPE No.	MFGR. PART No.		G EL PA
MAIN BOARD				
D1	1S953	DSS953		GE-
D2	1S953	DSS953		GE-
D3	1S953	DSS953		GE-
D4	1S188	DSS188		1N3
D5	1S188	DSS188		1N3
D6	1S188	DSS188		1N3
D7	1S188	DSS188		1N3
D8	1S188	DSS188		1N3
D9	1S188	DSS188		1N3
D10	MC301	DAC301		GE-
D11	1S953	DSS953		GE-
D12	1S953	DSS953		GE-
D13	1S953	DSS953		GE-
D14	1S953	DSS953		GE-
D15	1S953	DSS953		GE-
D16	1S953	DSS953		GE-
D17	1S953	DSS953		GE-
D18	KB-162	DEB162		
D19	SR1K-1	DR1100		GE-
D20	1S953	DSS953		GE-
D21	HIFI	DR3100		GE-
D22	RD9.1E	DZ0910		GEZ
D23	1S188	DSS188		1N3
D24	1S188	DSS188		1N3
D25	1S188	DSS188		1N3
IC1	TA7066P	NA066F		
TR1	JF1033B	QF1033		GE-
	2SK19	QF19GR		GE-
TR2	JF1033B	QF1033		GE-
	2SK19	QF19GR		GE-
TR3	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR4	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR5	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR6	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR7	2SC945L	QSC945		GE-
	2SC945	QSC945		GE-
TR8	2SA564R	QTA564		GE-
	2SA564	QTA564		GE-
TR9	2SC945L	QSC945		GE-
	2SC945	QSC945		GE-
TR10	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR11	2SC945L	QSC945		GE-
	2SC945	QSC945		GE-
TR12	2SD471L	QSD471		GE-
	2SD261	QSD261		GE-
TR13	2SC945L	QSC945		GE-
	2SC945	QSC945		GE-
TR14	2SA564R	QTA564		GE-
	2SA564	QTA564		GE-
TR15	2SD327V	QSD327		GE-
	2SD327	QSD327		GE-
TR16	2SC815L	QSC815		GE-
	2SC815	QSC815		GE-
TR17	2SC1096	QS1096		GE-
TR18	2SC1096	QS1096		GE-
TR19	2SC1096	QS1096		GE-
TR20	2SC839F	QSC839		GE-
	2SC839	QSC839		GE-
TR21	2SC815L	QSC815		GE-
	2SC815	QSC815		GE-
TR22	2SC1018	(14) QS1018		GE-
TR23	2SC2034	(15) QS2034		GE-
	2SC756	QSC756		GE-
PLL BOARD				
D1	1T310	DCT310		GE-
D2	1T310	DCT310		GE-
D3	1S953	PSS953		GE-
IC1	MN6040A	NC6040		
	SM5104F	NC5104		
	SM5104G	NC5104		
	MM5510A	NC5104		
IC2	F78L62WV			
	MC78L06AV	ND8L06		
	F78L06	ND8L06		
	UA78L062W	ND8L06		
TR1	2SC829A	QSC829		GE-2
	2SC829	QSC829		GE-2
	2SC710	QSC710		GE-2
TR2	2SC829A	QSC829		GE-2
	2SC829	QSC829		GE-2
	2SC710	QSC710		GE-2
TR3	2SC829A	QSC829		GE-2
	2SC829	QSC829		GE-2
	2SC710	QSC710		GE-2
TR4	2SC829A	QSC829		GE-2
	2SC829	QSC829		GE-2
	2SC710	QSC710		GE-2
TR5	2SC829A	QSC829		GE-2
	2SC829	QSC829		GE-2
	2SC710	QSC710		GE-2
TR6	2SA564R	QTA564		GE-6
	2SA564	QTA564		GE-6
	2SA733	QTA733		GE-4
TR7	2SA564R	QTA564		GE-6
	2SA564	QTA564		GE-6
	2SA733	QTA733		GE-4



ROBYN MODEL SX-402D

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.
MAIN BOARD												
D1	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D2	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D3	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D4	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D5	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D6	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D7	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D8	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D9	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D10	MC301	DAC301	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D11	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D12	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D13	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D14	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D15	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D16	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D17	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D18	KB-162	DEB162		PTC301		RE 250	SK3463		ECG601			
D19	SR1K-1	DR1100	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEP156	212-76
D20	1S953	DSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
D21	HIFI	DR3100	GE-504A	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116	1N4004	WEP156	212-76
D22	RD9.1E	DZ0910	GEZD-9.1	ZB9.1B		RE 114		RT-240	ECG139A	1N4739A	WEP1109	103-272
D23	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D24	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D25	1S188	DSS188	1N34AS	PTC207	HEPR9134A	RE 47	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
IC1	TA7066P	NA066F										
TR1	JF1033B	QF1033	GE-FET-2	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312			ZEN-123
	2SK19	QF19GR	GE-FET-2	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312			ZEN-123
TR2	JF1033B	QF1033	GE-FET-2	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312			ZEN-123
	2SK19	QF19GR	GE-FET-2	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312			ZEN-123
TR3	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
TR4	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
TR5	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
TR6	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
TR7	2SC945L	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
	2SC945	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
TR8	2SA564R	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
	2SA564	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
TR9	2SC945L	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
	2SC945	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
TR10	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	**WEP736***	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	**WEP736***	ZEN-120
TR11	2SC945L	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	**WEP1945**	121-Z9000
	2SC945	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
TR12	2SD471L	QSD471	GE-268	PTC144*	HEPS3001*	RE 196*	SK3124	RT-114*	ECG289		WEP910	121-1014
	2SD261	QSD261	GE-63*	PTC178		RE 196*	SK3137		ECG192*		WEP753*	121-1014
TR13	2SC945L	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
	2SC945	QSC945	GE-212	PTC121*	HEPS0015*	RE 192	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-Z9000
TR14	2SA564R	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
	2SA564	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
TR15	2SD327V	QSD327	GE-10	PTC121	HEPS0015	RE 13	SK3122	RT-105	ECG123A		WEP736	121-Z9000
	2SD327	QSD327	GE-10	PTC121	HEPS0015	RE 13	SK3122	RT-105	ECG123A		**WEP736**	121-Z9000
TR16	2SC815L	QSC815	GE-210*	PTC121*	HEPS0015*	RE 13*	SK3038*	RT-302	ECG123A*	2SC815	**WEP736***	121-1014
	2SC815	QSC815	GE-210*	PTC121*	HEPS0015*	RE 13*	SK3038*	RT-302	ECG123A*	2SC815	WEP736*	121-1014
TR17	2SC1096	QS1096	GE-28	PTC110	HEPS3041	RE 42	SK3197	RT-166	ECG186A	2SC1096	WEP1096	
TR18	2SC1096	QS1096	GE-28	PTC110	HEPS3041	RE 42	SK3197	RT-166	ECG186A	2SC1096	WEP1096	
TR19	2SC1096	QS1096	GE-28	PTC110	HEPS3041	RE 42	SK3197	RT-166	ECG186A	2SC1096	WEP1096	
TR20	2SC839F	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
	2SC839	QSC839	GE-61*	PTC132*	HEPS0015*	RE 13*	SK3444*	RT-308	ECG123A*	2SC839	WEP736*	ZEN-120
TR21	2SC815L	QSC815	GE-210*	PTC121*	HEPS0015*	RE 13*	SK3038*	RT-302	ECG123A*	2SC815	WEP736*	121-1014
	2SC815	QSC815	GE-210*	PTC121*	HEPS0015*	RE 13*	SK3038*	RT-302	ECG123A*	2SC815	WEP736*	121-1014
TR22	2SC1018	(14) QS1018	GE-236	PTC192		RE 212	SK3298	RT-143	ECG299	2SC1018	WEP1018	
TR23	2SC2034	(15) QS2034	GE-46	PTC176		RE 202	SK3049	RT-307	ECG234		WEP224	
	2SC756	QSC756	GE-46	PTC158		RE 206		RT-306F	ECG282		WEP909	
PLL BOARD												
D1	ITT310	DCT310	GE-90		HEPR2503			RT-262	ECG614		WEP200	ZEN-453
D2	ITT310	DCT310	GE-90		HEPR2503			RT-262	ECG614		WEP200	ZEN-453
D3	1S953	PSS953	GE-300	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177		WEP1062	
IC1	MN6040A	NC6040										
	SM5104F	NC5104										
	SM5104G	NC5104										
	MM55104	NC5104										
IC2	F78L62WV											
	MC78L06AV	**ND8L06**										
	F78L06	**ND8L06**										
	UA78L062W	**ND8L06**										
TR1	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR2	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR3	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	**WEP829**	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	**WEP829**	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	**WEP710**	ZEN-114
TR4	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR5	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR6	2SA564R	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	**WEP564**	121-879
	2SA564	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	**WEP564**	121-879
TR7	2SA733	QTA733	GE-48	PTC103*	HEPS0019*	RE 219	SK3138	RT-303	ECG294	2SA733	WEP916	
	2SA564R	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
	2SA564	QTA564	GE-65	PTC103*	HEPS0019*	RE 193	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
	2SA733	QTA733	GE-48	PTC103*	HEPS0019*	RE 219	SK3138	RT-303	ECG294	2SA733	WEP916	

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.	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	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR9	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114
TR10	2SC829A	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC829	QSC829	GE-20*	PTC121*	HEPS0015*	RE 9*	SK3444	RT-308	ECG229*	2SC829	WEP829	ZEN-127
	2SC710	QSC710	GE-211*	PTC132	HEPS0016*	RE 13*	SK3444*	RT-308*	ECG123A*	2SC710	WEP710	ZEN-114

* Lead configuration may vary from original.
(14) 4.0 Watt @ 1.0 Amp.
(15) 12 Watt @ 2.0 Amp.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
MAIN BOARD						
C4	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C28	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C34	.47 16V			TDC474M050EL	QDT1-19	SD50-R479
C39	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C40	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C42	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C43	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C49	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C50	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C51	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C52	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C55	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C58	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C59	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C61	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C66	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C67	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C68	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C76	220 16V		WBR250-16	TT15X200A	QE1-479	TVA-1160.6
C85	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C87	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C89	100 16V		PC100-16	VTT100F16	QV1-95	EV-1230
C116	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C135	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
PLL BOARD						
C1	10 10V			TDC106M025FL	QDT1-64	SD25-109
C11	.1 25V			TDC104M050EL	QDT1-2	SD50-R109
C13	3.3 10V			TDC335M015FL	QDT1-41	SD15-3R39
C48	10 16V			TDC106M025FL	QDT1-64	SD25-109
C58	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260

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
MAIN BOARD							
C1	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C2	20			CD15ED200J03	SX420	QW1-10	MWA-200
C3	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C5	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C6	.04				GP140		5GA-S40
C7	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C8	1			CD15CD010D03		QW1-1	MWA-010
C9	20			CD15ED200J03	SX420	QW1-10	MWA-200
C10	.04				GP140		5GA-S40
C11	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C12	20			CD15ED200J03	SX420	QW1-10	MWA-200
C13	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C14	.02		DC-203	MGP02	TA120	QC2-157	TG-S20
C15	1			CD15CD010D03		QW1-1	MWA-010
C16	.04				GP140		5GA-S40
C17	.04				GP140		5GA-S40
C18	30			CD15ED300J03	SX430	QW1-14	MWA-300
C19	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C20	500			CD15FD511J03	SX351	QW1-43	MWA-511
C21	.04				GP140		5GA-S40
C22	.04				GP140		5GA-S40
C23	.04				GP140		5GA-S40
C24	.04			DPMS6S39	PVC6139		6PS-S39
C25	100			CD15FD101J03	SX310	QW1-27	MWA-101
C26	.04				GP140		5GA-S40
C27	20			CD15ED200J03	SX420	QW1-10	MWA-200
C29	.04				GP140		5GA-S40
C30	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C31	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C32	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C33	.005			WMF1D5	EWF1A250		
C35	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C36	.02			DPMS6S2	PVC612		6PS-S20
C37	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C38	.001			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C41	.04				GP140		5GA-S40
C44	2			CD15CD010D03		QW1-1	MWA-010
C45	100			CD15FD101J03	SX310	QW1-27	MWA-101
C46	100			CD15FD101J03	SX310	QW1-27	MWA-101
C47	.04				GP140		5GA-S40
C48	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C53	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C54	.04			DPMS6D3	PVC623		6PS-D30

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
C56	470		DD-471	GP470	GP347		10TS-T47
	500		DD-501	GP500	GP350		10TS-T50
C57	.001			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C60	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C62	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C63	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C64	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C65	470		DD-471	GP470	GP347		10TS-T47
	500		DD-501	GP500	GP350		10TS-T50
C69	.022			DPMS6S2	PVC612		6PS-S20
C70	.022			DPMS6S2	PVC612		6PS-S20
C71	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C72	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C73	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C74	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C75	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C77	.04				GP140		5GA-S40
C78	.022		DC-203	MGP02	TA120	QC2-157	TG-S20
	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C79	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C80	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C81	.001		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C82	.04				GP140		5GA-S40
C83	.04				GP140		5GA-S40
C84	.04				GP140		5GA-S40
C86	.04				GP140		5GA-S40
C88	.04				GP140		5GA-S40
C90	.04				GP140		5GA-S40
C91	100			CD15FD101J03	SX310	QW1-27	MWA-101
C92	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C93	100			CD15FD101J03	SX310	QW1-27	MWA-101
C94	3			CD15CD050D03		QW1-2	MWA-050
C95	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C96	100			CD15FD101J03	SX310	QW1-27	MWA-101
C97	3			CD15CD050D03		QW1-2	MWA-050
C98	100		DC-203	MGP02	TA120	QC2-157	TG-S20
C99	200			CD15FD201J03	SX320	QW1-34	MWA-201
C100	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	70			CD15ED680J03	SX468	QW1-23	MWA-680
C102	.04				GP140		5GA-S40
C103	.04				GP140		5GA-S40
C104	.04				GP140		5GA-S40
C105	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C106	30			CD15ED300J03	SX430	QW1-14	MWA-300
C107	150			CD15FD151J03	SX315	QW1-31	MWA-151
C108	50			CD15ED510J03		QW1-20	MWA-510
C109	300			CD15FD301J03	SX330	QW1-38	MWA-301
C110	.04				GP140		5GA-S40
C111	.04				GP140		5GA-S40
C112	300			CD15FD301J03	SX330	QW1-38	MWA-301
C113	300			CD15FD301J03	SX330	QW1-38	MWA-301
C114	300			CD15FD301J03	SX330	QW1-38	MWA-301
C115	200			CD15FD201J03	SX320	QW1-34	MWA-201
C117	2			CD15CD010D03		QW1-1	MWA-010
C118	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C119	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C120	30			CD15ED300J03	SX430	QW1-14	MWA-300
C121	.04				GP140		5GA-S40
C122	400		DD-391	GP390	GP339		10TS-T39
C123	.04				GP140		5GA-S40
C124	.04				GP140		5GA-S40
C125	.04				GP140		5GA-S40
C126	.04				GP140		5GA-S40
C127	.04				GP140		5GA-S40
C128	.04				GP140		5GA-S40
C129	.04				GP140		5GA-S40
C130	.04				GP140		5GA-S40
C131	.04				GP140		5GA-S40
C132	.04				GP140		5GA-S40
C133	.04				GP140		5GA-S40
C134	.04				GP140		5GA-S40
PLL BOARD							
C2	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C3	100			CD15FD101J03	SX310	QW1-27	MWA-101
C4	50			CD15ED510J03		QW1-20	MWA-510
C5	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C6	5			CD15CD050D03		QW1-2	MWA-050
C8	.04				GP140		5GA-S40
C9	50			CD15ED510J03		QW1-20	MWA-510
C10	50			CD15ED510J03		QW1-20	MWA-510
C12	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C14	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C15	30			CD15ED300J03	SX430	QW1-14	MWA-300
C16	100			CD15FD101J03	SX310	QW1-27	MWA-101
C17	300			CD15FD301J03	SX330	QW1-38	MWA-301
	50			CD15ED510J03		QW1-20	MWA-510
C18	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C19	10			CD15CD100J03		QW1-6	MWA-100
C20	100			CD15FD101J03	SX310	QW1-27	MWA-101
C21	35			CD15ED360J03	SX436		MWA-360
C22	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C23	35			CD15ED360J03	SX436		MWA-360
C24	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C25	35			CD15ED360J03	SX436		MWA-360
C26	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C27	15			CD15CD150J03		QW1-8	MWA-150
C29	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C30	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C31	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C32	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C33	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C34	300			CD15FD301J03	SX330	QW1-38	MWA-301

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
C35	50		DTZ-50	NP050	CN0450		10TCC-Q50
C36	10			CD15CD100J03		QW1-6	MWA-100
C37	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C38	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C39	10 NPO		DTZ-10	NP010	CN0410		10TCC-Q10
C40	50			CD15ED510J03		QW1-20	MWA-510
C41	35			CD15ED360J03	SX436		MWA-360
C42	50			CD15ED510J03		QW1-20	MWA-510
C43	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C44	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C45	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C46	100			CD15FD101J03	SX310	QW1-27	MWA-101
C47	100			CD15CD100J03		QW1-6	MWA-100
C49	.04				GP140		5GA-S40
C50	.04				GP140		5GA-S40
C51	.04				GP140		5GA-S40
C52	.04				GP140		5GA-S40
C53	.04				GP140		5GA-S40
C54	390		DD-391	GP390	GP339		10TS-T39
C55	.04				GP140		5GA-S40
C56	.04				GP140		5GA-S40
C57	.04				GP140		5GA-S40
C59	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C60	10			CD15CD100J03		QW1-6	MWA-100

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1	AGC	50K	RS5032				X260R503B(2)
VR2	RX M	100K	RS1042	T-100K(2)	C-104(2)	MTC15L1(2)	
VR3	TX M	100K	RS1042	T-100K(2)	C-104(2)	MTC15L1(2)	
VR4	Volume/Switch	10K	401001				
VR5	Delta Tune	20K	402001				
VR6	Tune Range	10K	RS1032				X260R103B(2)
VR7	Squelch Range	100K	RS1042	T-100K(2)	C-104(2)	MTC15L1(2)	
VR8	Squelch	50K	401002				
VR9	RF Gain	50K	401002				
VR10	RF Gain Range	20K	RS2032				X260R253B(2)
VR11	Swr/Cal	50K	401002				
VR12	Comp	500	RS5012	T-5000(2)	C-502(2)	MTC53L1(2)	X201R502(2)
VR13	Mod	100K	RS1042	T-100K(2)	C-104(2)	MTC15L1(2)	
VR14	Mic Vol	10K	M5X001	B16-116(18)			

(2) Cut off one of the end terminals and bend to fit PC board. (18) Use orginal knob.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
MAIN BOARD					
L1	Rec Ant (27MHz)	LL0001	T-60		
L2	Rec RF (27MHz)	LL0016	T-63		
L3	Rec RF (27MHz)	LL0016	T-63		
L4	IF (10.695MHz)	LL0003	T-56		
L5	IF (10.695MHz)	LL0004	T-57		
L6	IF (455kHz)	LL0017	N-50A		
L7	IF (455kHz)	LL0005	N-47B		
L8	IF (455kHz)	LL0018	N-50C		
L9	RF Choke	LL0015	NS1724S		
L10	RF Choke	LL0015	NS1724S		
L11	XMT Buffer(27MHz)	LL0014	T-52		
L12	XMT Buffer(27MHz)	LL0014	T-52		
L13	XMT Buffer (27MHz)	LL0013	T-58		
L14	XMT Amp (27MHz)	LL0019	N-1801S		
L15	XMT Driver (27MHz)	LL0020	N-1807B		
L16	RF Choke	LL0021	3R3	9230-32	
L17	RF Choke	LL0010	NS1726		
L18	Final (27MHz)	LL0009	NS1752		
L19	Pi Filter (27MHz)	LL0009	NS1752		
L20	Pi Filter (27MHz)	LL0009	NS1752		
L21	Ant Matching (27MHz)	LL0009	NS1752		
L22	TVI Trap (54MHz)	LL0022	NS1753		
RFC	RF Choke	LL0030	4R7		
PLL BOARD					
L1	REF Osc (10.240MHz)	LL0025	T69 (NS1984)		
L2	Divider	LL026	T66 (NS1981)		
L4	XMT Mixer (27MHz)	LL027	T67 (NS1982)		
L5	XMT Mixer (27MHz)	LL028	T68 (NS1983)		
L6	Buffer (37MHz)	LL029	K58		
L7	RF Choke	LL024	LF1-120uH		

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.	
CH0	1.25A	232	.73mH	110005			

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2	1.1		401004			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE			REPLACEMENT DATA			NOTES
	PRI.	SEC.		MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	32	1 61	2 .77	401005			

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3 1/2" PM 8 ohms	110019	3A05Z8	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2 amp	110042		AGC2	HPJ	312002	150145	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	401015				18-092	1	2	3	4	NC	2

MIC includes Gain Control.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
MAIN BOARD			
BPF1	Ceramic Filter	110008	455kHz CFU455H
BFF2	Ceramic Filter	402002	455kHz EFCL45513A
J1	Jack	110030	Microphone Socket
J2	Jack	110047	Microphone
J3	Jack	110013	Antenna
J4	Jack	110018	Ext Speaker
J5	Jack	110018	PA
J6	Jack	PLA011	Selector Switch
J7	Jack	110018	Intercom
J8	Jack	110015	Power Socket
J9	Jack	110038	Power
LED1	LED	DN1271	Channel Display
LED2	LED	DPG102	Rec (1.90V @ 11mA)
LED3	LED	DLR102	TX (2.00V @ 11mA)
LED4	LED	DLR102	Intercom (1.60V @ 11mA)
LED5	LED	DLR102	PA (1.60V @ 11mA)
LED6	LED	DLR102	AM (1.60V @ 11mA)
LED7	LED	DLR102	+BFO (1.60V @ 11mA)
LED8	LED	DLR102	-BFO (1.60V @ 11mA)
M1	Meter	401016	S/RF/Swr
PL	Lamp	130005	Meter (13.74V @ 70mA)
RY1	Relay	401013	Xmit-Rec
S1	Switch	401001	Power (Part of Volume Control)
S2	Switch	402011	ANL
S3	Switch	402011	Tone
S4	Switch	402008	S-RF/Cal/Swr
S5	Switch	402007	AM/PA/INT/+BFO/-BFO
S6	Switch	402010	CB/PA - INT/CB
S9	Switch	402009	Channel Selector
X1	Crystal	X04565	456.5kHz
X2	Crystal	X04535	453.5kHz
	PC Board	401006	Main
	PC Board	401010	RF
	PC Board	402003	Switch
	PC Board	402006	LED
	PC Board	401009	RF Power
	PC Board	PLA002	PLL
	PLL Unit	PLB001	
PLL BOARD			
X1	Crystal	XD2400	10.240MHz
X2	Crystal	XK3800	36.380MHz
X3	Crystal	XD6950	10.695MHz

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

ITEM	PART No.
Escutcheon	402024
Knob, Control	110023
Knob, Channel Selector	110022
Faceplate, Woodgrain	402015
Faceplate, Plastic	402016

ITEM	PART No.
Cabinet Top	401022
Cabinet Botton	401023
Mobile Mounting Bracket	401024
Microphone Hanger	110035

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')