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 3-5813A

MANUFACTURER'S SPECIFICATIONS

CHANNELS: 40 channels, PLL digital logic synthesizer circuitry
POWER REQUIREMENT: Consumption: 18 watts; current drain: 1.3 amps (100% mod.) at 13.8-volt DC
POWER SUPPLY: 12 volts DC nominal (positive or negative ground)
SEMICONDUCTORS: Integrated circuits, transistors and diodes
OPERATING TEMPERATURE RANGE: −30 to +50°C
MICROPHONE: Dynamic with push-to-talk switch, 500-ohm
BUILT-IN SPEAKER: 8 ohms impedance, 77mm (3 inches) in size
CONTROLS: Volume with ON/OFF switch, squelch control, channel selector switch, automatic noise limiter switch, CB/PA control.
CONNECTORS: External speaker jack 3.5mm (8 ohms impedance), antenna receptacle to match PL-259 coax plug (50 ohms impedance), 12-volt DC power jack (polarized type)
CIRCUIT PROTECTION: Prevents transistor burn-out when transmitting without antenna (5-minute limit); 2-amp fuse in DC power cord

RECEIVER

SENSITIVITY: Better than 0.5uv for 500 mw audio output at "MIN." position, squelch setting
FREQUENCY COVERAGE: 26.965 to 27.405 MHz
ADJACENT CHANNEL SELECTIVITY: Better than 55 db
AUDIO OUTPUT POWER (power to speaker): @ 10% DIST., better than 2.2. watts
SPURIOUS REJECTION: Better than 40 db
IF FREQUENCIES: 455 KHz, 10.965 MHz
SQUELCH RANGE (SENSITIVITY): 0.5 to 500uv nominal
IMAGE REJECTION RATIO: Better than 60 db

TRANSMITTER

FREQUENCY RESPONSE: 400 Hz to 2.5 KHz
FREQUENCY COVERAGE: 26.965 to 27.405 MHz
TRANSMIT POWER OUTPUT [RF (radio frequency) power to antenna]: 4 watts maximum as limited by FCC Regulations at 13.8 volts DC nominal between 3.5 and 4 watts
MODULATION: Capable of 100%; factory pre-set limit 85-100%
FREQUENCY TOLERANCE: Better than .005% MAX.

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:	GC Electronics:
T6,T7,T8,T9	5009
T1 thru T5,L3	9440
L5,L9,L10	9304
CT1,CT2	5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter thru 47pF capacitor to jumper J4 (Base of Q8).	Ch. 19	CT1	Adjust for 10.240MHz ±50Hz.
Input of DC meter to TP8 (Junction R7, R8 & R9).	Ch. 1	T1	Adjust for 2.0 volts ±.1 volt.
	Ch. 1, XMT	CT2	Adjust for 2.0 volts ±.1 volt.
Input of frequency counter to J5 (Junction C59, C60 & R29).	Ch. 1		Check for 16.270MHz. Repeat for all channels (Channel Frequency - 10.695MHz = frequency on counter).
Input of frequency counter to TP1 (Pin 9 of IC3).	Ch. 1, XMT		Check for 26.965MHz. Repeat for all channels (Should indicate channel frequency).

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.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to J4 (Base of Q8). 455kHz,1000Hz @ 30% modulation.	Ch. 19 Squelch MINIMUM ANL Off	T9,T8,T7	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation.	Ch. 19, Squelch MINIMUM ANL Off	T6,T5,T4,T3	Adjust for maximum output. If necessary readjust T7, T8, and T9.

RECEIVER ADJUSTMENTS

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 500uV.	Ch. 19, ANL Off	RV1	SQUELCH RANGE Set Squelch Control VR2 fully clockwise. Adjust RV1 so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 100uV.	Ch. 19, ANL Off	RV3	S METER Adjust RV3 for 9 on S scale of meter.

TRANSMITTER ALIGNMENT

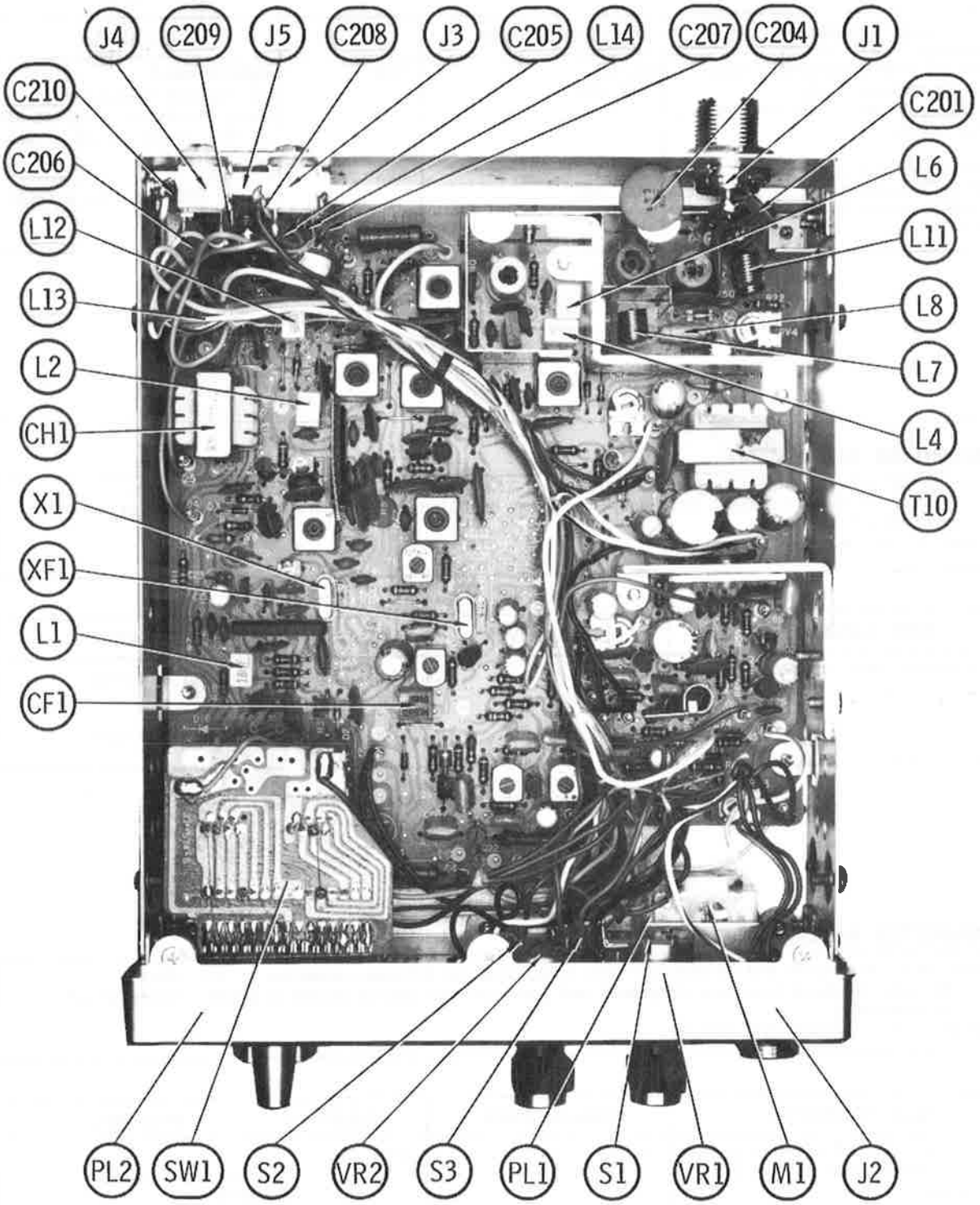
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector at all times.
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
RF Wattmeter (See Connection above)	Ch. 19	T2,L3,L5, L9,L10	Adjust for maximum.
	Ch. 19	L10	Adjust for 3.8 watts.

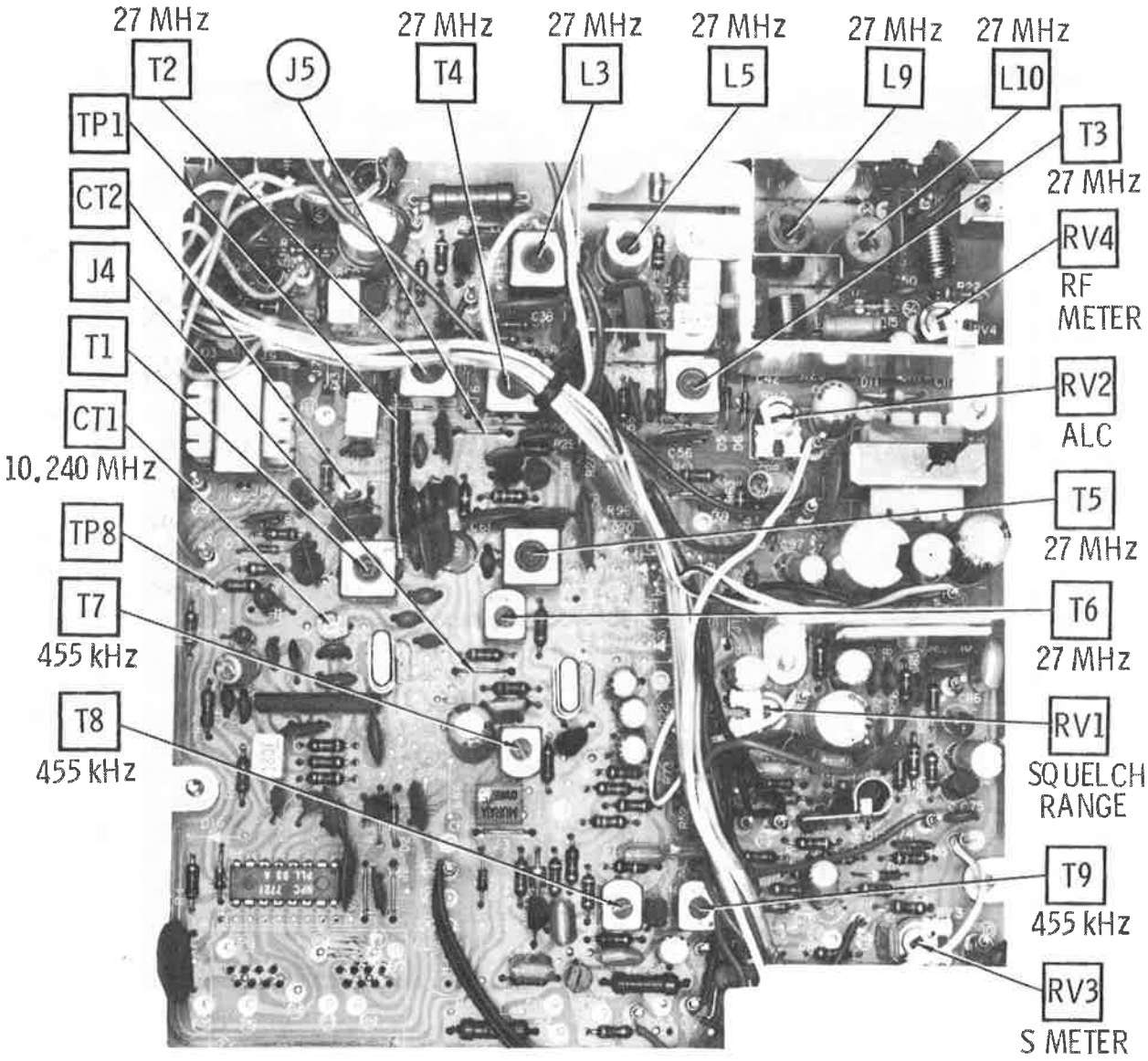
TRANSMITTER ADJUSTMENTS

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

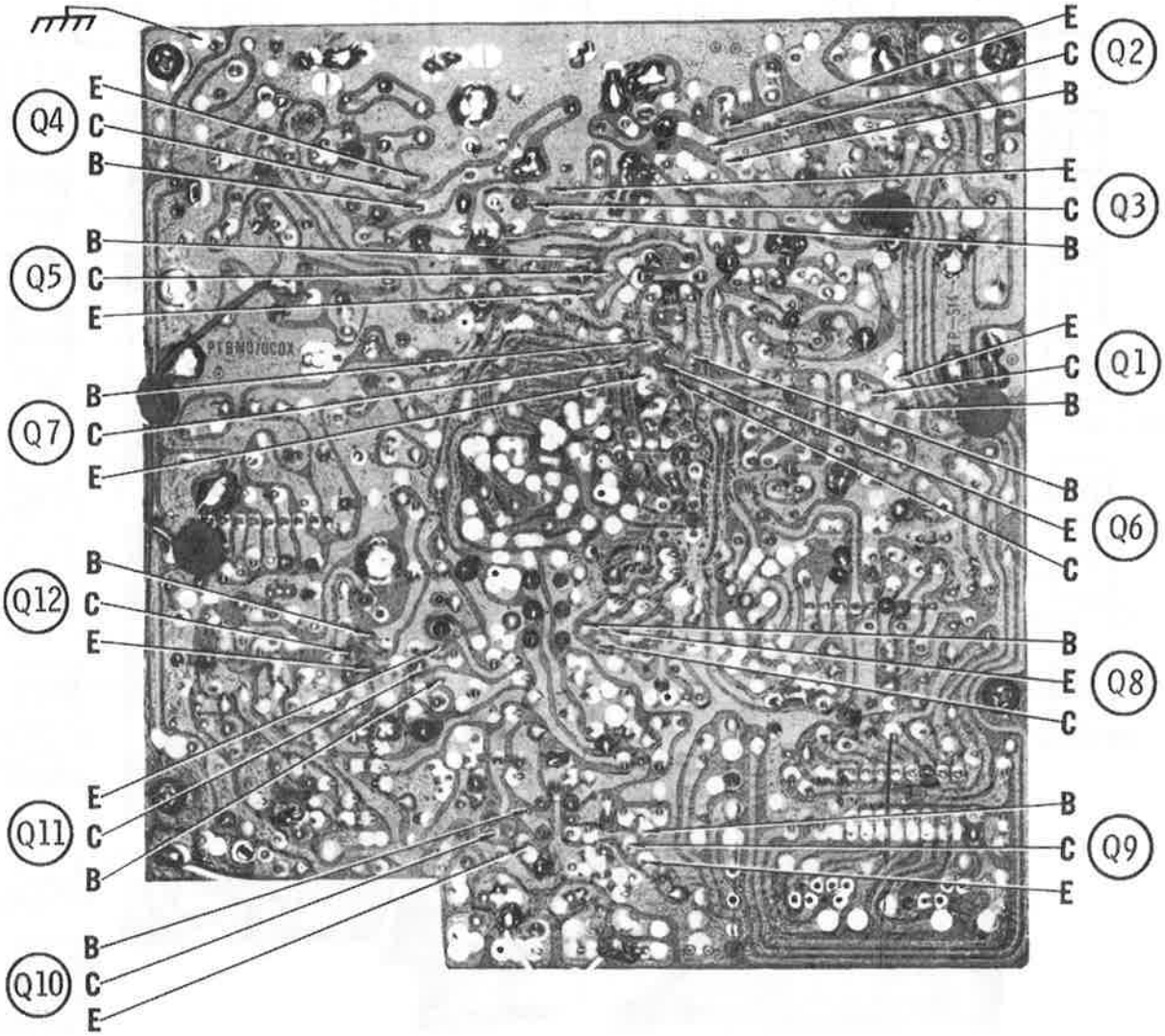
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz,20mV signal at MIC input.	Ch. 19	RV2	ALC Adjust RV2 for 90% modulation.
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.	Ch. 19	RV4	RF PANEL METER Adjust RV4 so that RF panel meter agrees with RF wattmeter.



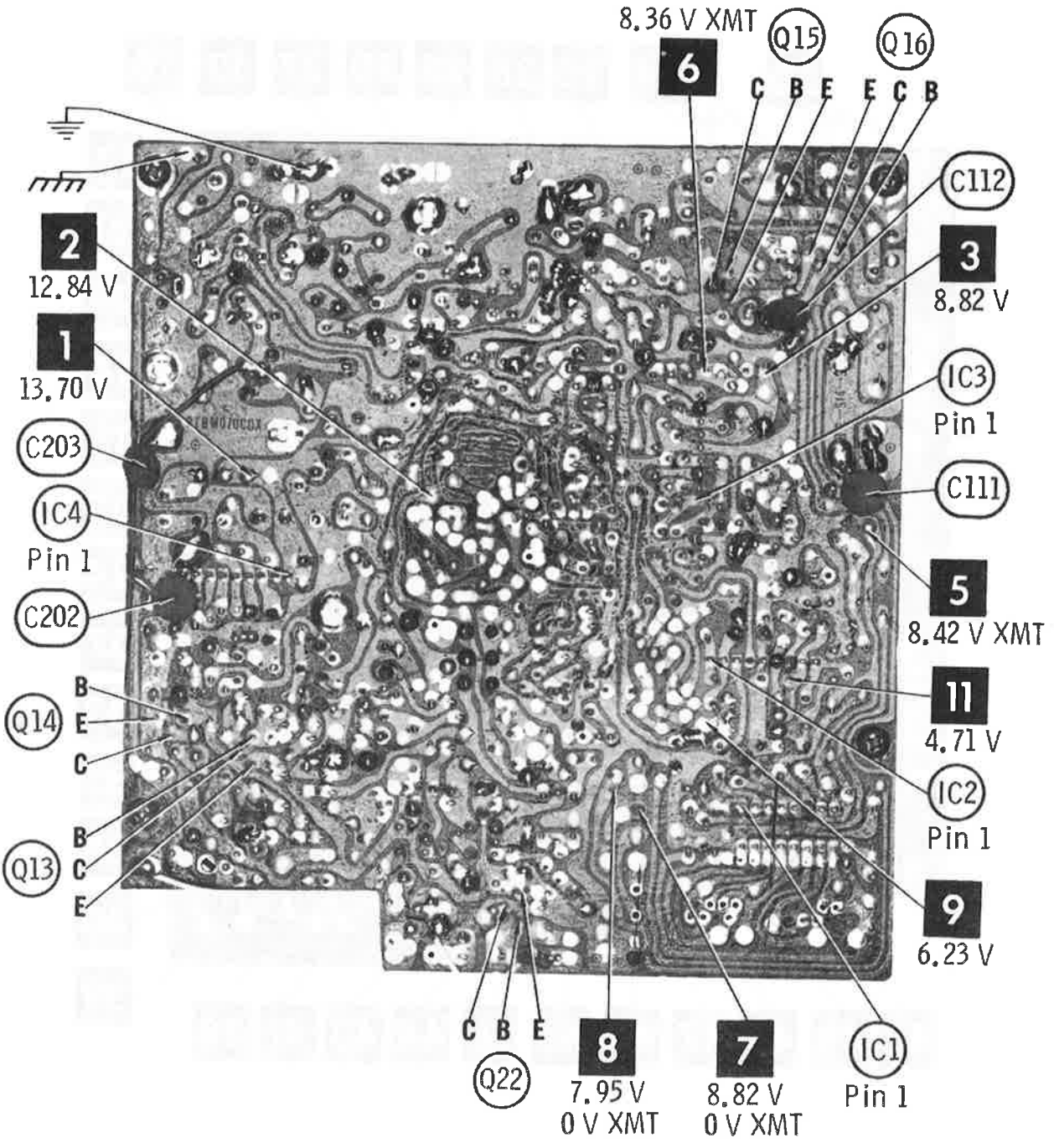
CHASSIS - BOTTOM


27 MHz
T2
J5
27 MHz
T4
27 MHz
L3
27 MHz
L5
27 MHz
L9
27 MHz
L10
T3
27 MHz
TP1
CT2
J4
T1
CT1
10.240 MHz
TP8
T7
455 kHz
T8
455 kHz
RV4
RF
METER
RV2
ALC
T5
27 MHz
T6
27 MHz
RV1
SQUELCH
RANGE
T9
455 kHz
RV3
S METER

MAIN BOARD

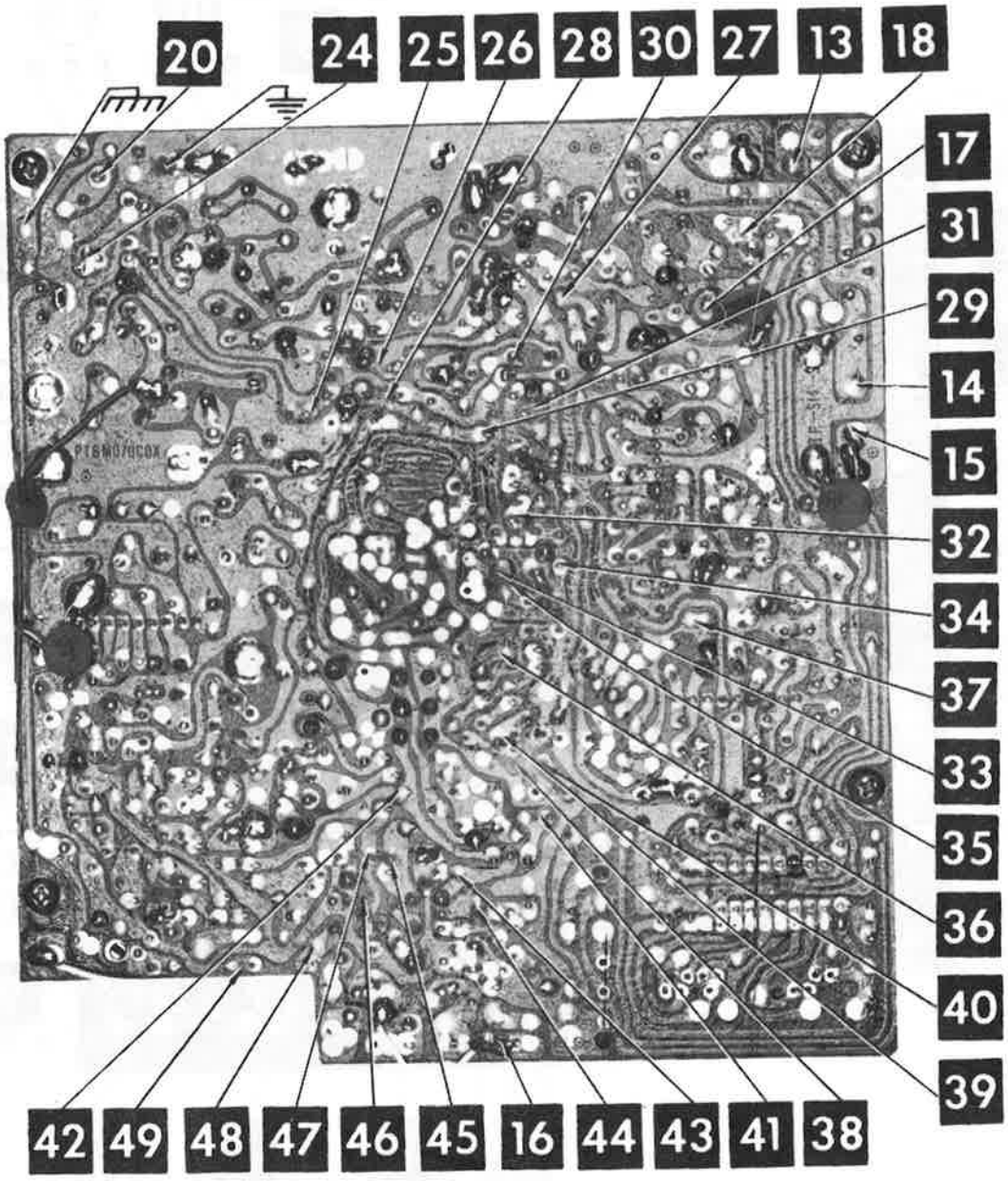

Q4
E
C
B
Q5
B
C
E
Q7
B
C
E
Q12
B
C
E
Q11
E
C
B
Q10
B
C
E
Q2
E
C
B
Q3
E
C
B
Q1
E
C
B
Q6
B
E
C
Q8
B
E
C
Q9
B
C
E

MAIN BOARD

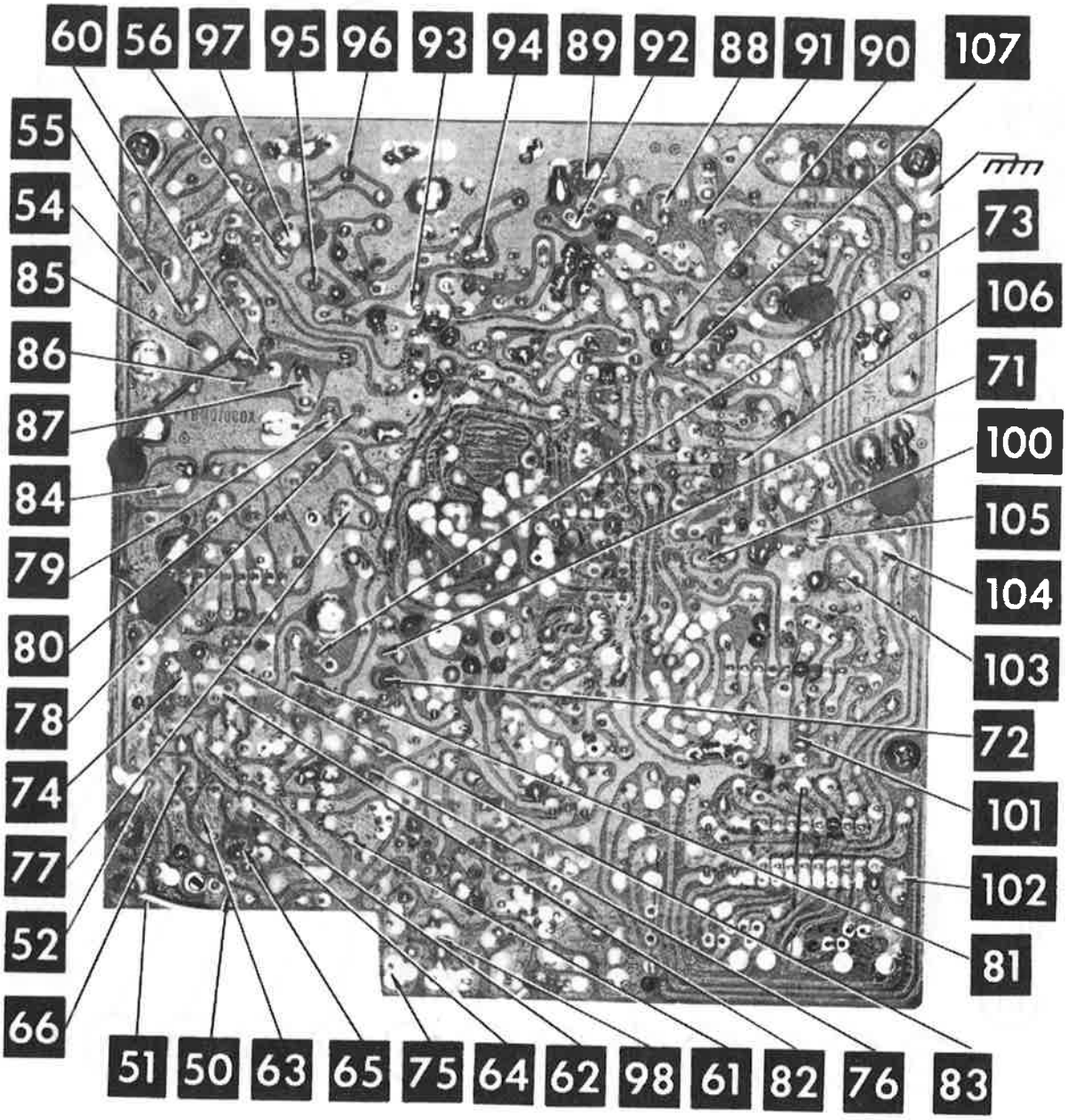

8.36 V XMT
Q15
Q16
C B E E C B
6
2
12.84 V
1
13.70 V
C203
IC4
Pin 1
C202
Q14
B
E
C
Q13
B
C
E
C112
3
8.82 V
IC3
Pin 1
C111
5
8.42 V XMT
11
4.71 V
IC2
Pin 1
9
6.23 V
C B E
Q22
8
7.95 V
0 V XMT
7
8.82 V
0 V XMT
IC1
Pin 1

MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo



MAIN BOARD


60
56
97
95
96
93
94
89
92
88
91
90
107
55
54
85
86
87
84
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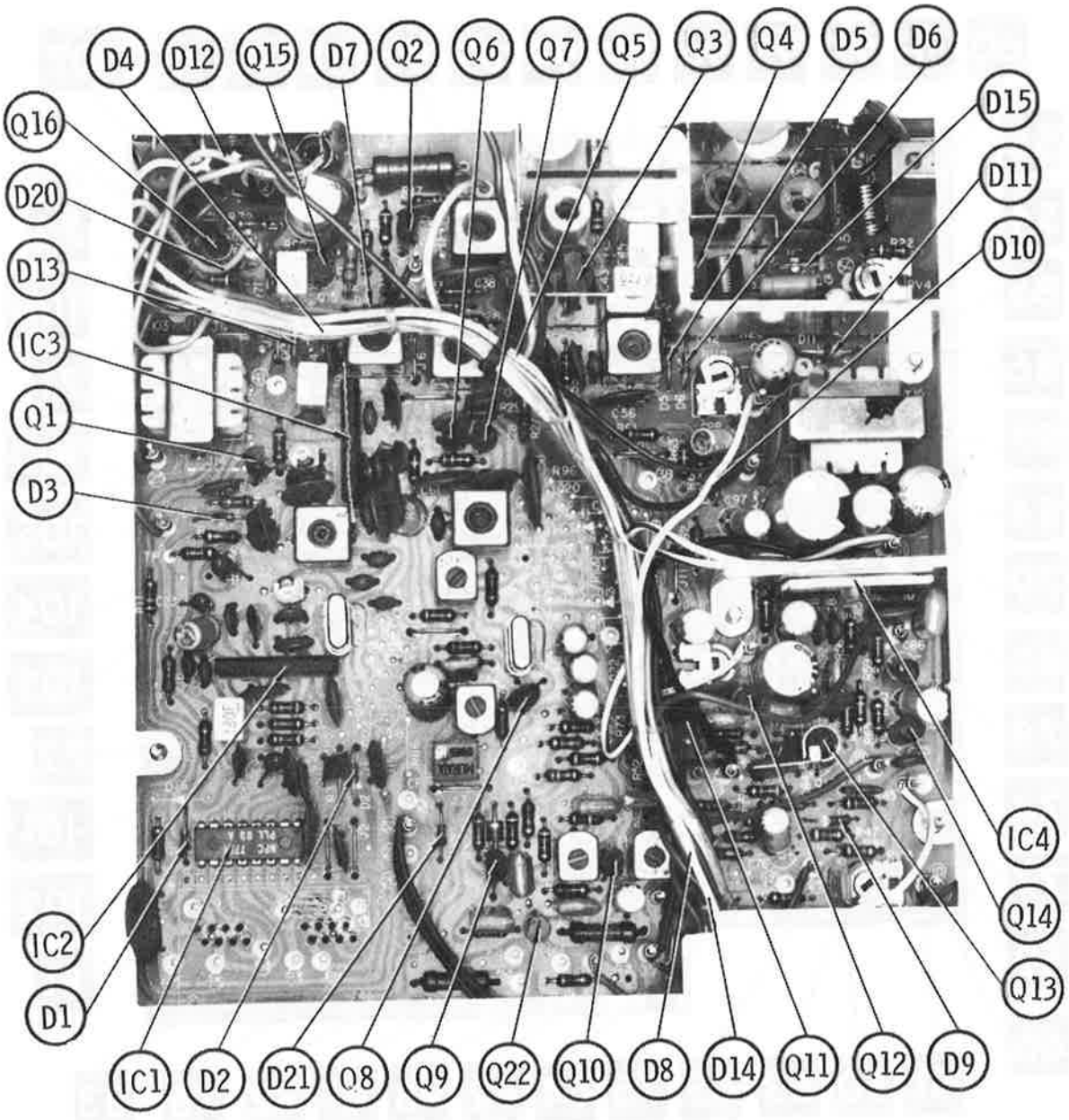
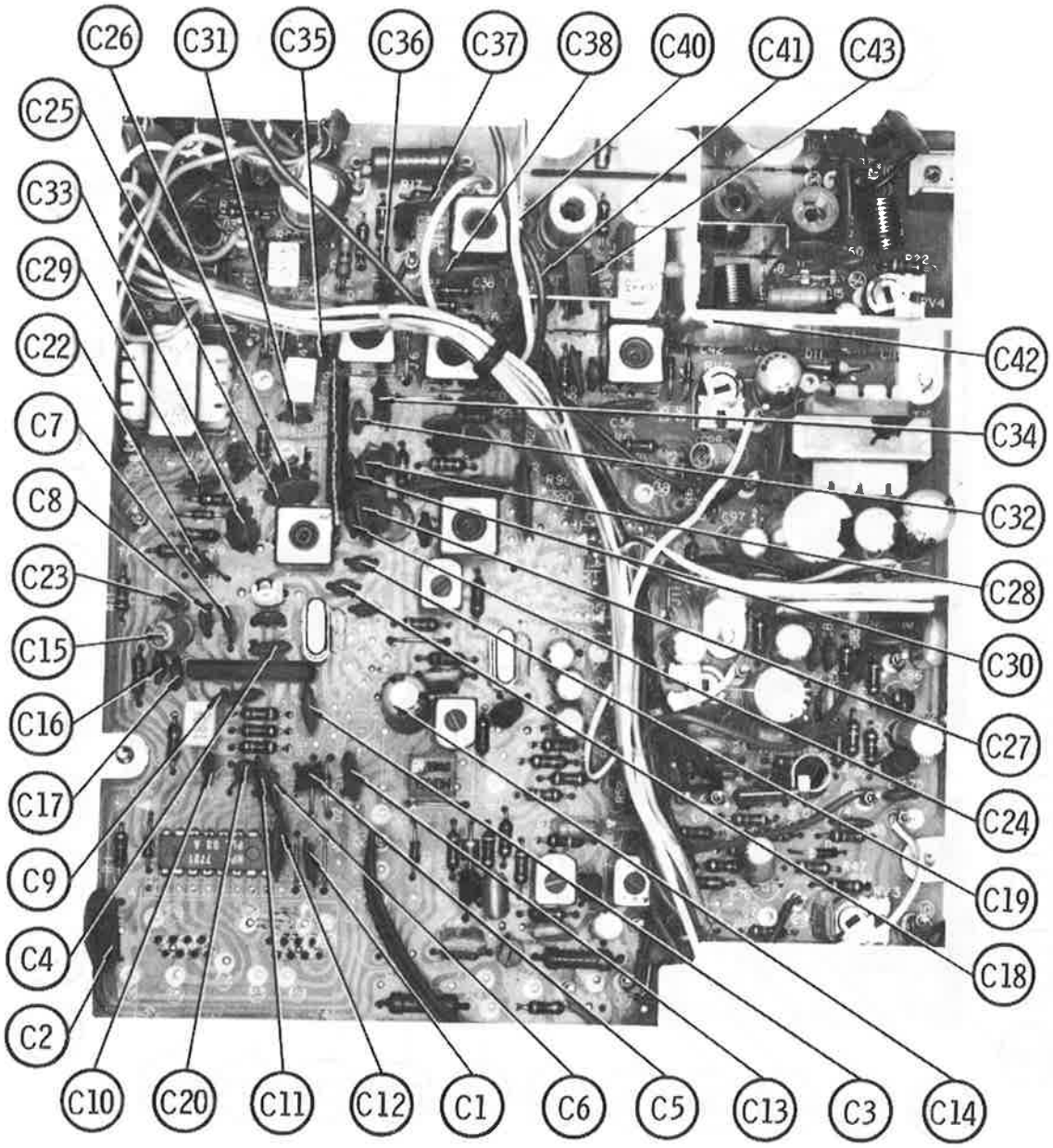
80
78
74
77
52
66
73
106
71
100
105
104
103
72
101
102
81
51
50
63
65
75
64
62
98
61
82
76
83

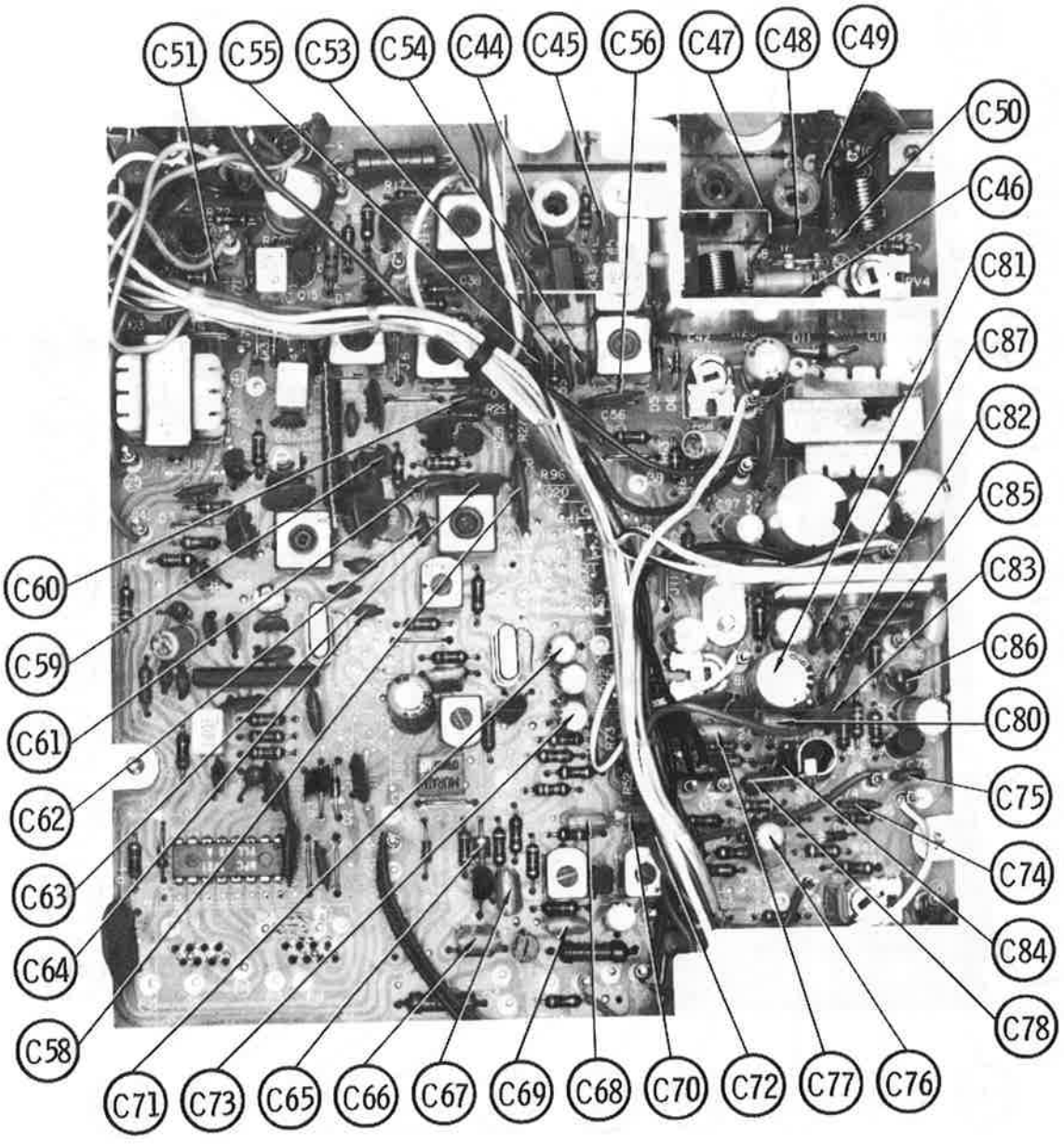
MAIN BOARD


D4
D12
Q15
D7
Q2
Q6
Q7
Q5
Q3
Q4
D5
D6
D15
D11
D10
Q16
D20
D13
IC3
Q1
D3
IC2
D1
IC1
D2
D21
Q8
Q9
Q22
Q10
D8
D14
Q11
Q12
D9
IC4
Q14
Q13

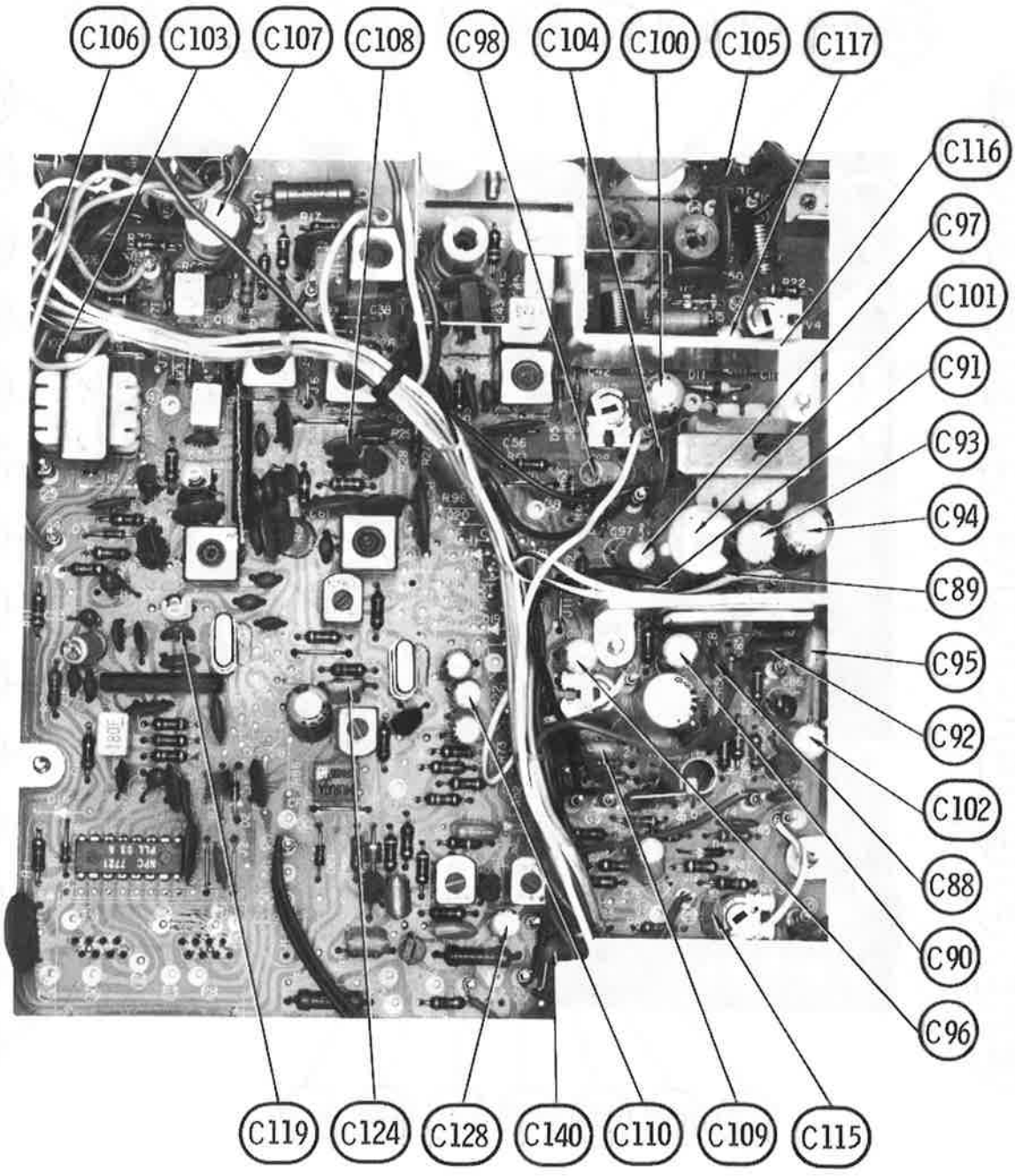
MAIN BOARD


C26
C31
C35
C36
C37
C38
C40
C41
C43
C25
C33
C29
C22
C7
C8
C23
C15
C16
C17
C9
C4
C2
C42
C34
C32
C28
C30
C27
C24
C19
C18
C10
C20
C11
C12
C1
C6
C5
C13
C3
C14

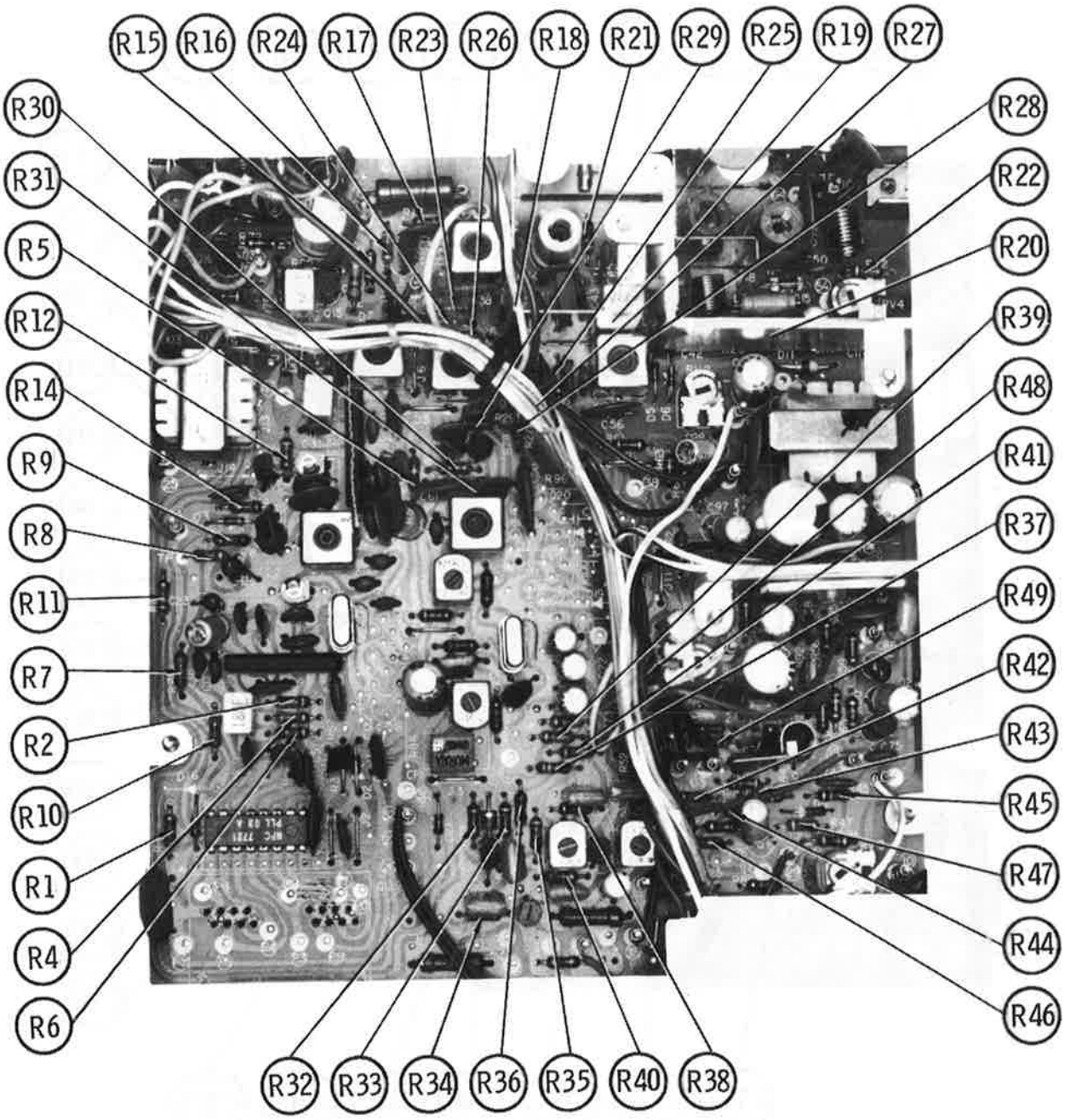
MAIN BOARD


C51
C55
C53
C54
C44
C45
C56
C47
C48
C49
C50
C46
C81
C87
C82
C85
C83
C86
C80
C75
C74
C84
C78
C76
C77
C72
C70
C68
C69
C67
C66
C65
C73
C71
C58
C64
C63
C62
C61
C59
C60

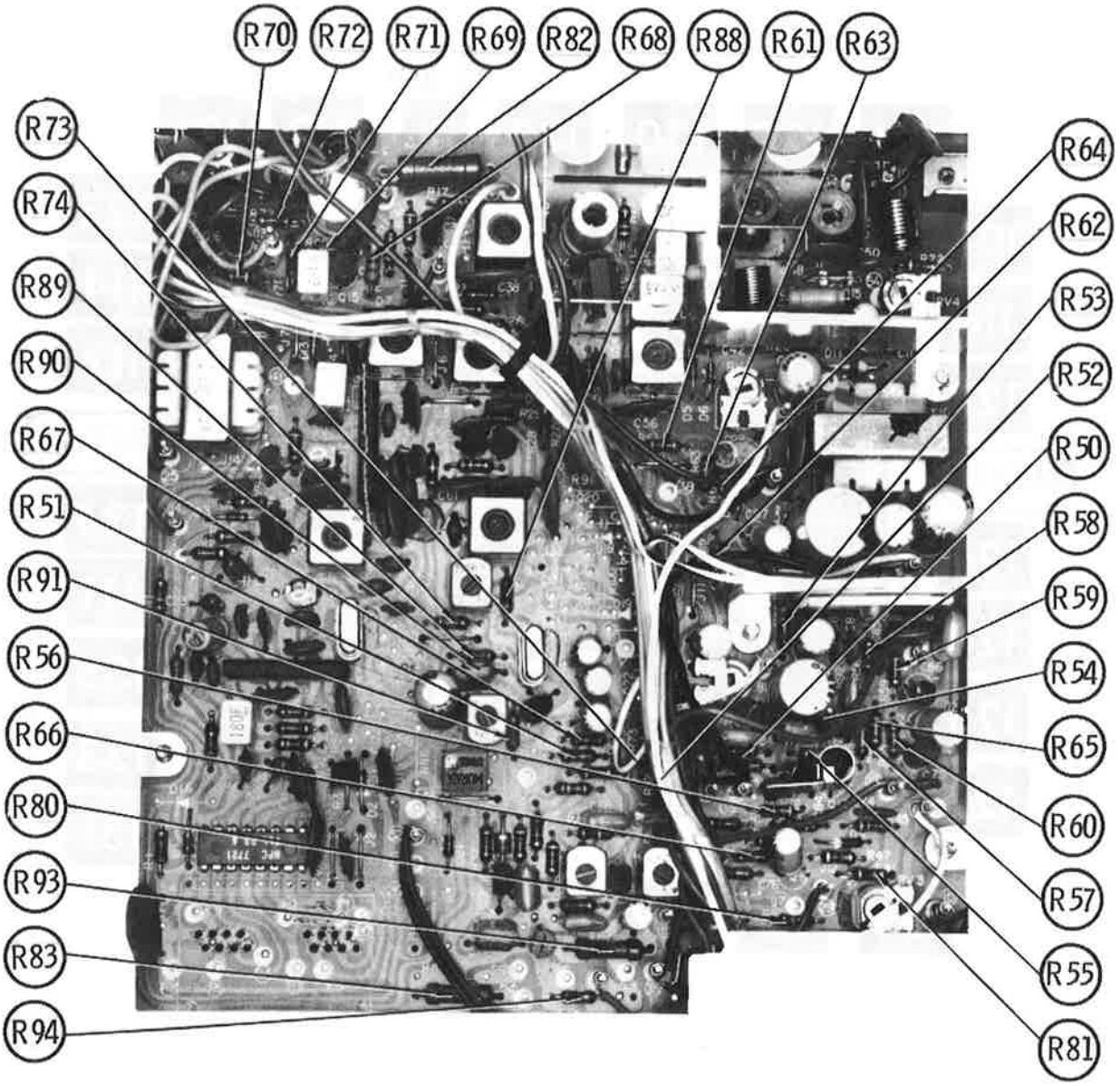
MAIN BOARD


C106
C103
C107
C108
C98
C104
C100
C105
C117
C116
C97
C101
C91
C93
C94
C89
C95
C92
C102
C88
C90
C96
C119
C124
C128
C140
C110
C109
C115

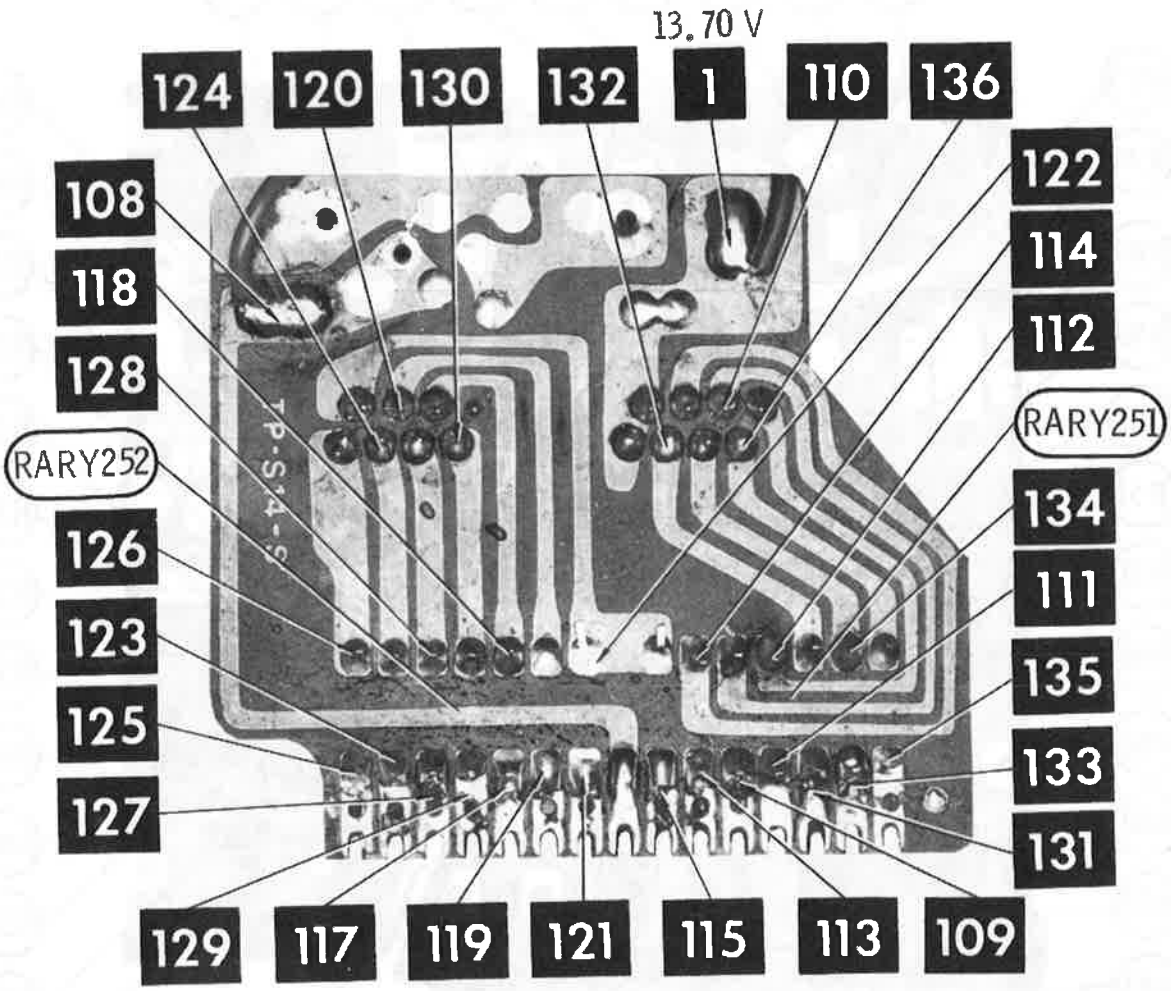
MAIN BOARD


R15
R16
R24
R17
R23
R26
R18
R21
R29
R25
R19
R27
R30
R31
R5
R12
R14
R9
R8
R11
R7
R2
R10
R1
R4
R6
R28
R22
R20
R39
R48
R41
R37
R49
R42
R43
R45
R47
R44
R46
R32
R33
R34
R36
R35
R40
R38

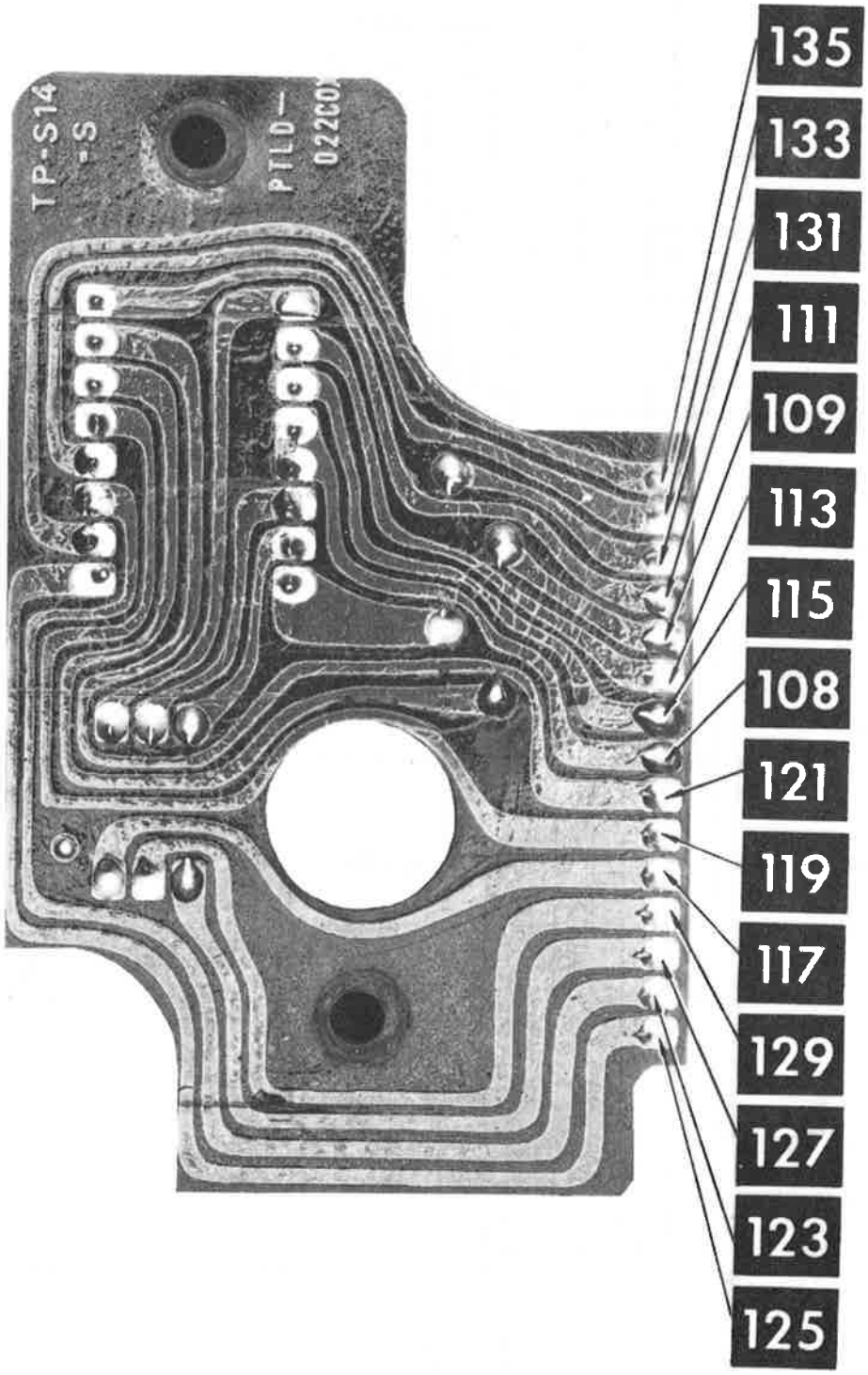
MAIN BOARD


R70
R72
R71
R69
R82
R68
R88
R61
R63
R73
R74
R89
R90
R67
R51
R91
R56
R66
R80
R93
R83
R94
R64
R62
R53
R52
R50
R58
R59
R54
R65
R60
R57
R55
R81

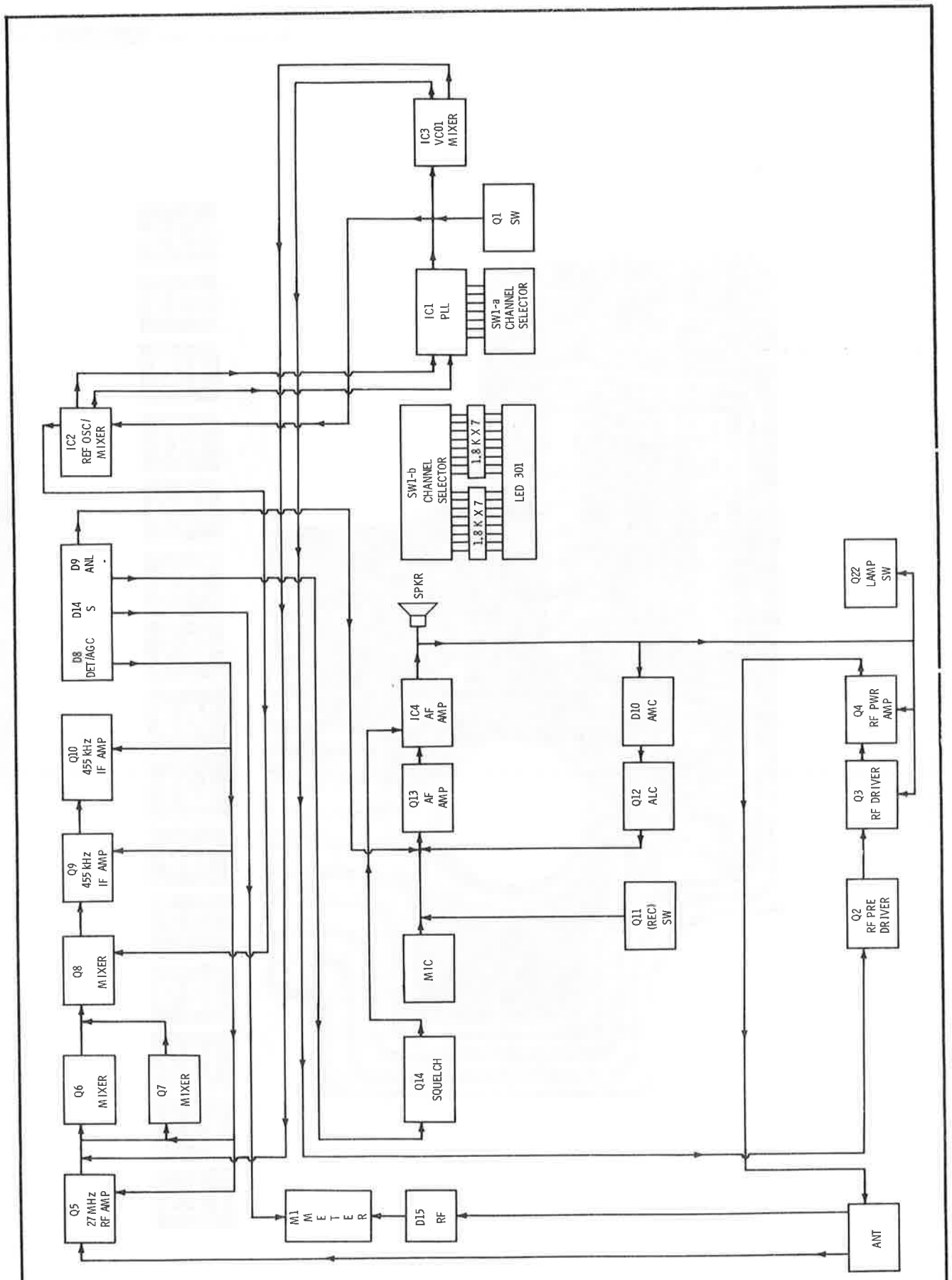
MAIN BOARD



CH. SELECTOR BOARD



LED BOARD



BLOCK DIAGRAM

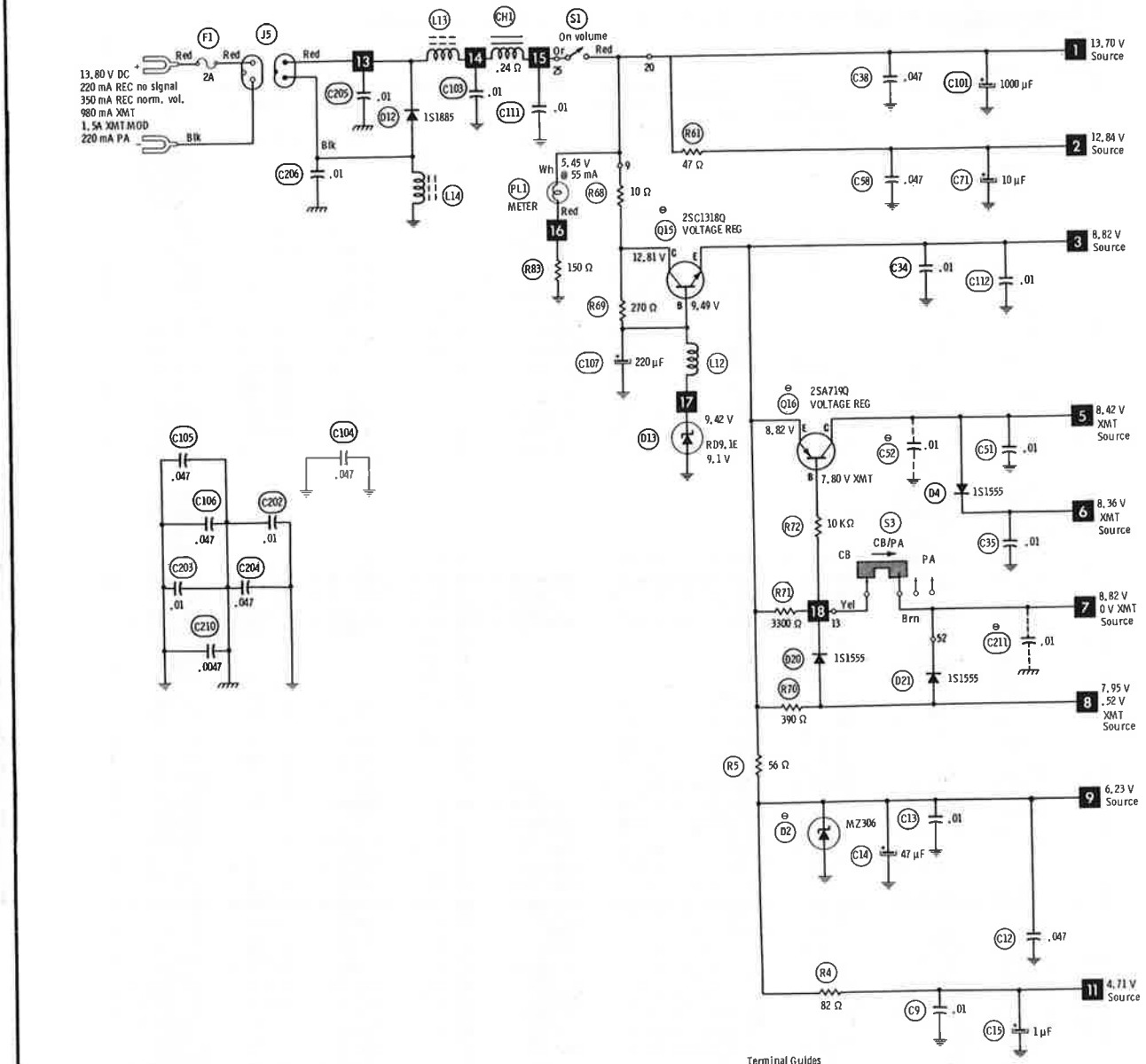
PARTS LIST AND DESCRIPTION

(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.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D2	MZ306						RE 108			ECG5070A
	MZ306C	EA16X163(1)					RE 108			ECG5070A
D3	ITT410	EA16X106				HEPR2502				ECG612
	BB122	(1)			PTC311	HEPR2501				ECG611
	MV201	(1)			PTC311	HEPR2501				ECG611
D4	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D5	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D6	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D7	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D8	1N60	EA16X48	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D9	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D10	1N60	EA16X48	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D11	V06C	EA57X14	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D12	1S1885	RV1189	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D13	RD9.1E	EA16X137	GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139A
D14	1N60	EA16X48	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D15	1N60	EA16X48	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D20	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D21	1S1555	RT5217	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
IC1	PLL03A	EA33X8501								
	PLL03	(1)								
IC2	C3001A	EA33X8394								ECG1192
	TA7310P	EA33X8392(1)								ECG1192
IC3	C3001A	EA33X8394								ECG1192
	TA7310P	EA33X8392(1)								ECG1192
IC4	TA8205P	EA33X8396	GEIC-179	WEP949	PTC780		RE 357-IC	SK3231	TVCM-81	ECG1155
Q1	2SC710D	15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q2	2SC710D	15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q3	2SC1846R	(12)	GE-336				RE 209			ECG295
	2SC1846	15X383(1)	GE-336				RE 209			ECG295
	2SC7160	15X380(1)	GE-276	WEP1014			RE 224		RT-310	ECG306
	2SC2036	(1)	GE-276	WEP1014			RE 224		RT-310	ECG306
Q4	2SC1974	(13)	GE-337	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1306	EA15X381(1)	GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC2075	(1)	GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1678	(1)	GE-322	WEP1678	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1974	(1)	GE-337	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q5	2SC460A	RT6204	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
	2SC460	(1)	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
	2SC1047	RT8527(1)	GE-61 *	(IR)2SC460B	PTC136 *	HEPS0014 *	RE 9	SK3018 *	RT-134	ECG107
Q6	2SC710D	EA15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q7	2SC710D	EA15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q8	2SC710D	EA15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829	(1)	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC829B	RT6732	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
Q9	2SC710D	EA15X364	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC829	(1)	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC829B	RT6732(1)	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
Q10	2SC829B	RT6732	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC829	(1)	GE-20 *	(IR)2SC829B	PTC121 *	HEPS0015 *	RE 9 *	SK3122	RT-308	ECG229 *
	2SC710	(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
	2SC710D	EA15X364(1)	GE-211 *	(IR)2SC710	PTC115	HEPS0016 *	RE 13 *	SK3018 *	RT-308 *	ECG123A *
Q11	2SC828P		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC828	(1)	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC945	(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC828R	EA15X325(1)	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC945Q	EA15X404(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q12	2SA564R		GE-65	(IR)2SA564A	PTC103 *	HEPS0019 *	RE 193	SK3114	RT-303	ECG234
	2SA733	(1)	GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138	RT-303	ECG294
	2SA564	RV2353(1)	GE-65	(IR)2SA564A	PTC103 *	HEPS0019 *	RE 193	SK3114	RT-303	ECG234
	2SA733P	EA15X385(1)	GE-48	TR-31	PTC103 *	HEPS0019 *	RE 26 *	SK3138	RT-303	ECG294
Q13	2SC1327T		GE-85 *	(IR)2SC945	PTC139 *	HEPS0024 *	RE 192	SK3124	RT-107A	ECG199
	2SC1327	(1)	GE-85 *	(IR)2SC945	PTC139 *	HEPS0024 *	RE 192	SK3124	RT-107A	ECG199
	2SC945	(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC900	EA4025(1)	GE-62	(IR)2SC644	PTC139 *	HEPS0015 *	RE 192	SK3124	RT-302	ECG199
	2SC945Q	EA15X404(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q14	2SC828P		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC828		GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC945		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372	EA15X180(1)	GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
	2SC828R	EA15X325(1)	GE-61 *	(IR)2SC828A	PTC121 *	HEPS0015 *	RE 192	SK3122	RT-302	ECG199
	2SC945Q	EA15X404(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q15	2SC1318Q	EA15X378	GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
	2SC1318	(1)	GE-210 *	TR-21 *	PTC178	HEPS0015 *	RE 17 *	SK3122	RT-302	ECG128 *
Q16	2SA719Q	EA15X395	GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
	2SA719	(1)	GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
	2SA720	(1)	GE-269	TR-28 *	PTC103 *	HEPS0019 *	RE 26 *	SK3114	RT-305	ECG290
Q22	2SC945Q	EA15X404(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945	(1)	GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

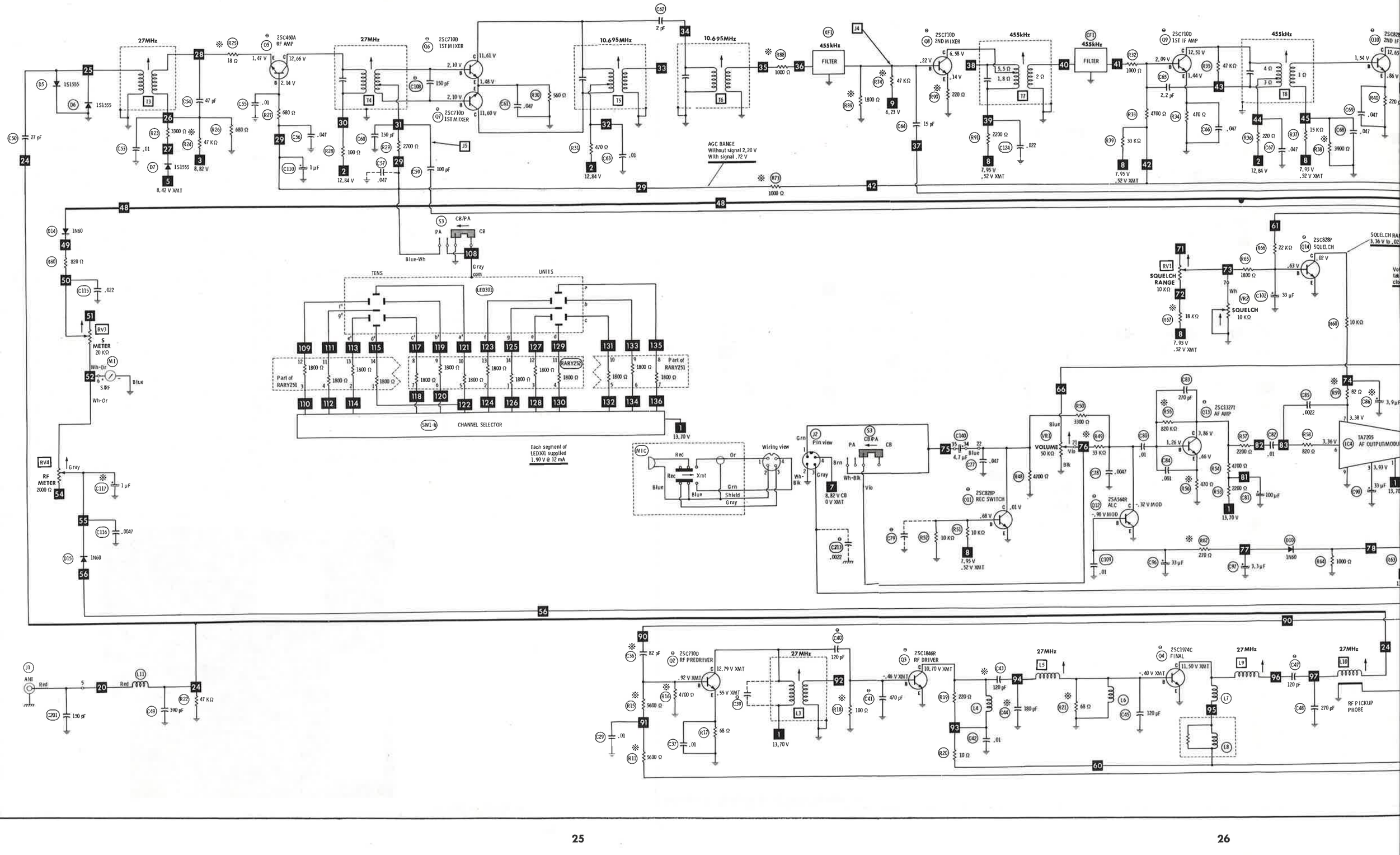
* Lead configuration may vary from original.
(1) Used in some versions.
(12) Rating 12 W @ 1 AMP.
(13) Rating 12W @ 2 AMP.

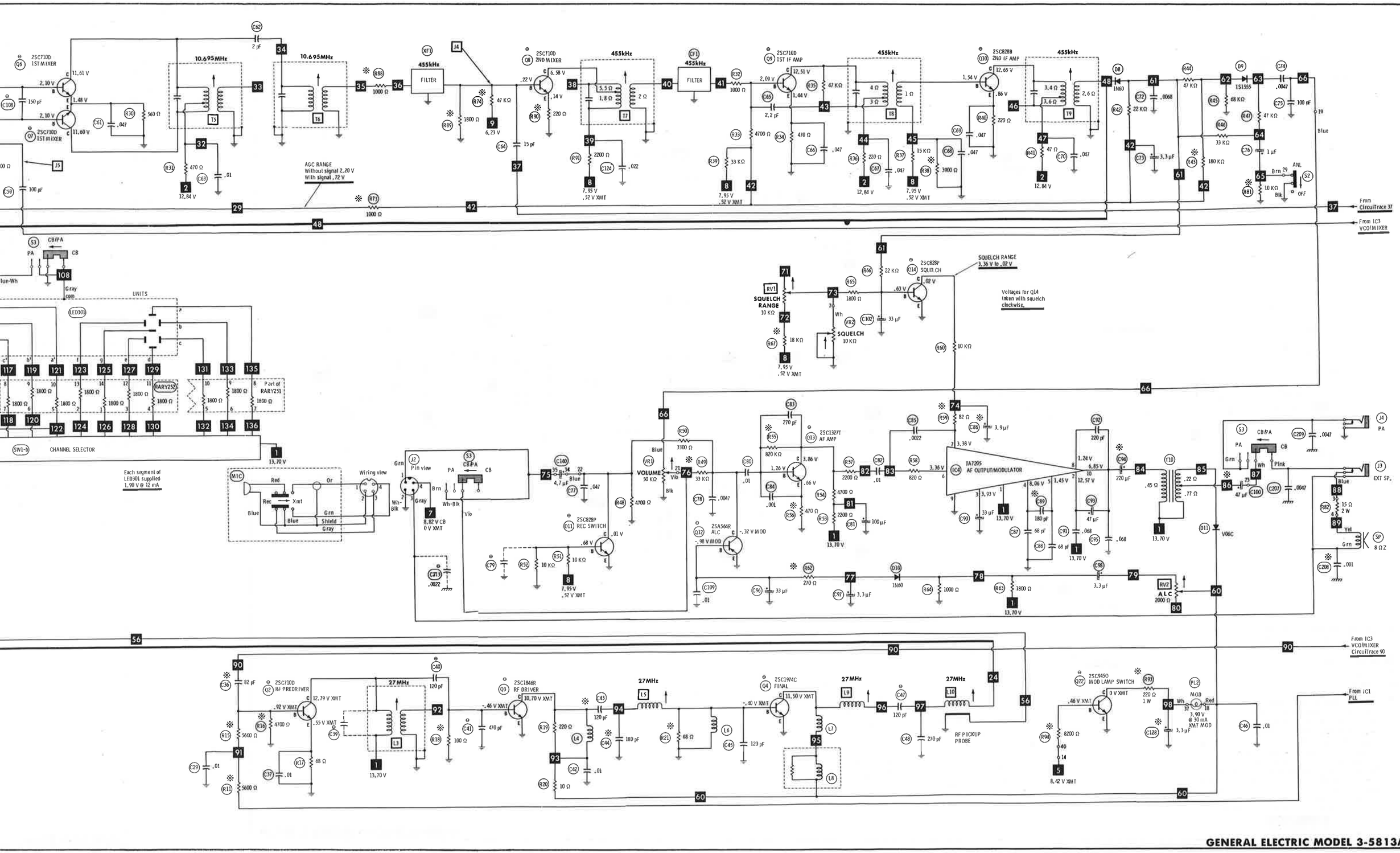


Circuitry not used in some versions
Circuitry used in some versions
⊖ See parts list
※ Nominal value
Ground
Chassis
Common tie point

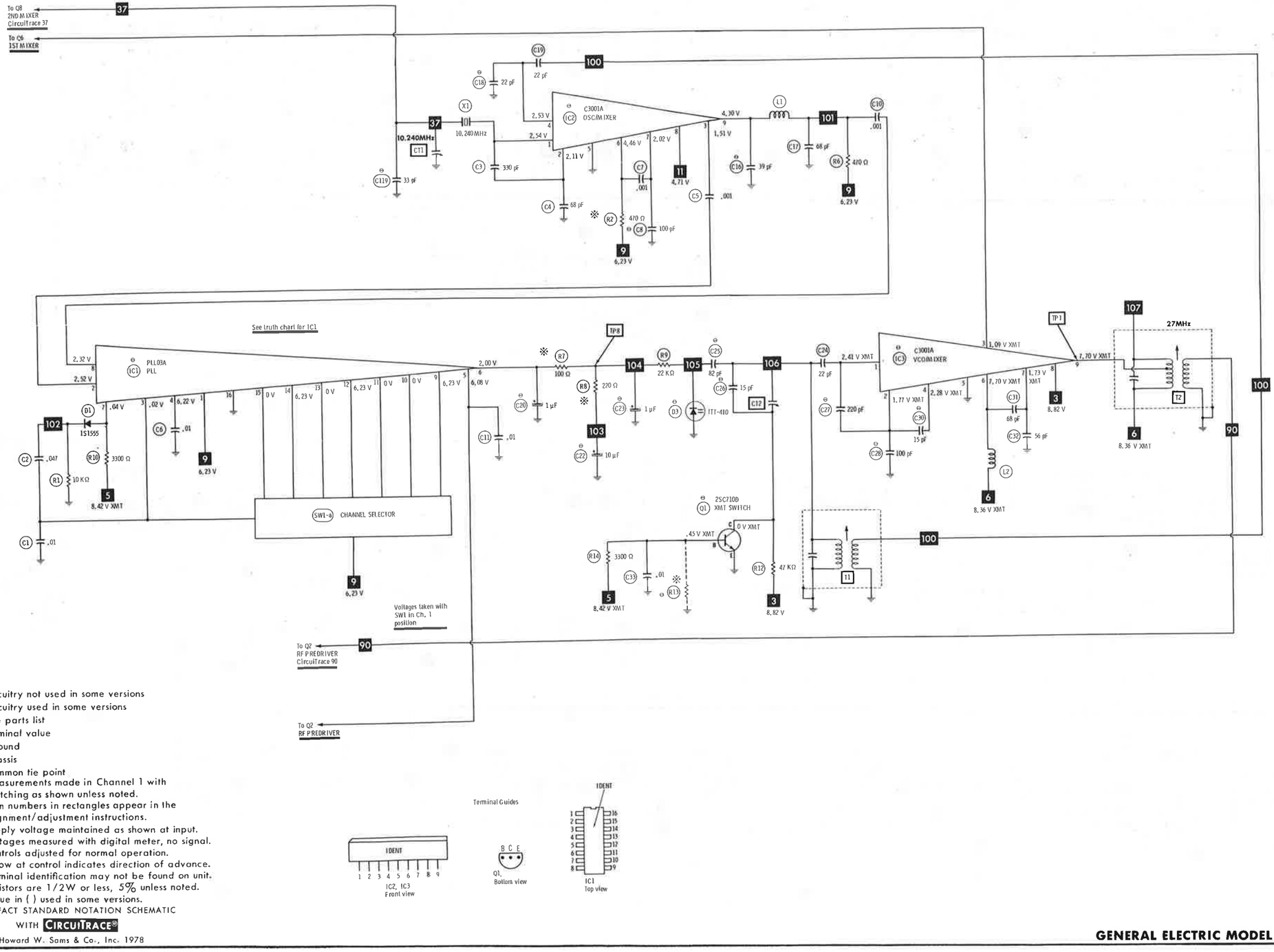
Measurements made in Channel 1 with switching as shown unless noted.
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates 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
2SC460A RF AMP
27MHz
2SC710D 1ST MIXER
10.695MHz
10.695MHz
2SC710D 1ST MIXER
455kHz FILTER
2SC710D 2ND MIXER
455kHz
455kHz FILTER
2SC710D 1ST IF AMP
455kHz
2SC828P 2ND IF
1S1555
1S1555
1S1555
8.42 V XMT
AGC RANGE
Without signal 2.20 V
With signal .72 V
CB/PA
PA
CB
Blue-Wh
Gray
com
TENS
UNITS
LED301
Part of RARY251
RARY252
Part of RARY251
CHANNEL SELECTOR
SW1-B
13.70 V
Each segment of LED301 supplied 1.90 V @ 12 mA
1N60
S METER 20 KΩ
RF METER 2000 Ω
1N60
Wh-Or
Blue
Wh-Or
Gray
Red
Rec
Xmt
Blue
Or
Grn
Shield
Gray
Wiring view
Pin view
Brn
Wh-Blk
Grn
Gray
Vio
8.82 V CB
0 V XMT
SQUELCH RANGE 10 KΩ
SQUELCH 10 KΩ
2SC828P SQUELCH
SQUELCH RANGE 3.36 V to .02
7.95 V .52 V XMT
2SC1327T AF AMP
VOLUME 50 KΩ
Blue
Blk
2SC828P REC SWITCH
2SA564R ALC
-.32 V MOD
-.98 V MOD
TA7205 AF OUTPUT/MODU
2SC710D RF PREDRIVER
2SC1846R RF DRIVER
2SC1974C FINAL
27MHz
27MHz
27MHz
RF PICKUP PROBE
ANT
Red
47 KΩ
150 pF
390 pF



GENERAL ELECTRIC MODEL 3-5813A



— ✕ — 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.

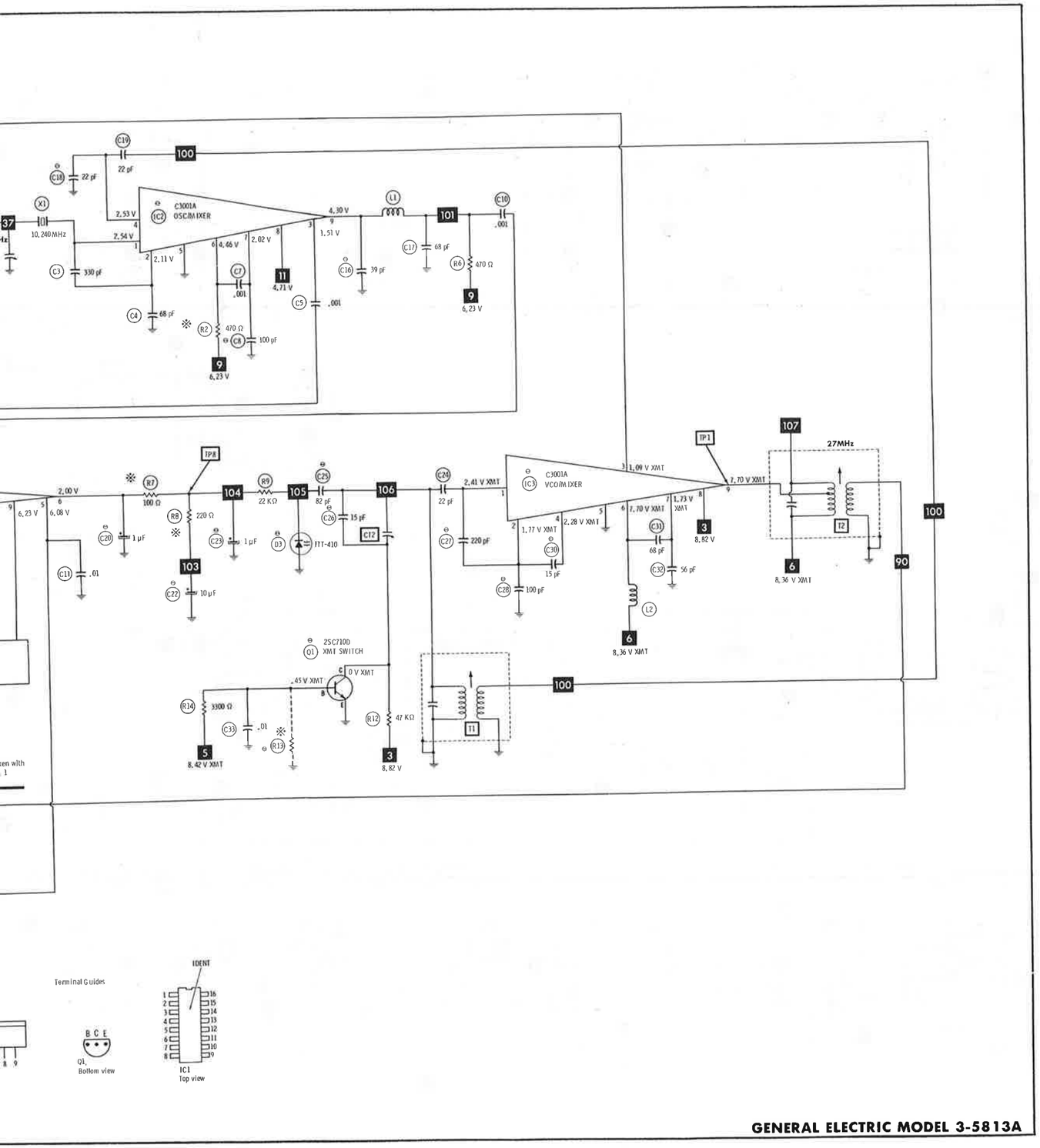
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE®

GENERAL ELECTRIC MODEL 3-5813A

1 = 6.32 Volts 0

CHANNEL	IC1 PROGRAM DIVIDER PINS					
	9	10	11	12	13	14
1	1	0	0	1	0	1
2	1	0	0	1	0	0
3	1	0	0	1	0	0
4	1	0	0	0	1	1
5	1	0	0	0	1	0
6	1	0	0	0	1	0
7	1	0	0	0	0	1
8	1	0	0	0	0	0
9	1	0	0	0	0	0
10	0	1	1	1	1	1
11	0	1	1	1	1	1
12	0	1	1	1	1	0
13	0	1	1	1	0	1
14	0	1	1	1	0	1
15	0	1	1	1	0	0
16	0	1	1	0	1	1
17	0	1	1	0	1	1
18	0	1	1	0	1	0
19	0	1	1	0	1	0
20	0	1	1	0	0	1

SHIELD LOCATION



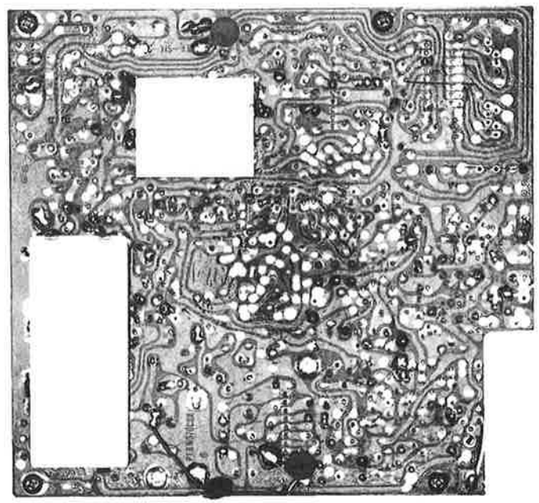
TRUTH CHART

1 = 6.32 Volts 0 = 0 Volts

CHANNEL	IC1 PROGRAM DIVIDER PINS 9	10	11	12	13	14	15	REC VCO OUTPUT IN MHz AT J5	XMT VCO OUTPUT IN MHz AT TP1
1	1	0	0	1	0	1	0	16.270	26.965
2	1	0	0	1	0	0	1	16.280	26.975
3	1	0	0	1	0	0	0	16.290	26.985
4	1	0	0	0	1	1	0	16.310	27.005
5	1	0	0	0	1	0	1	16.320	27.015
6	1	0	0	0	1	0	0	16.330	27.025
7	1	0	0	0	0	1	1	16.340	27.035
8	1	0	0	0	0	0	1	16.360	27.055
9	1	0	0	0	0	0	0	16.370	27.065
10	0	1	1	1	1	1	1	16.380	27.075
11	0	1	1	1	1	1	0	16.390	27.085
12	0	1	1	1	1	0	0	16.410	27.105
13	0	1	1	1	0	1	1	16.420	27.115
14	0	1	1	1	0	1	0	16.430	27.125
15	0	1	1	1	0	0	1	16.440	27.135
16	0	1	1	0	1	1	1	16.460	27.155
17	0	1	1	0	1	1	0	16.470	27.165
18	0	1	1	0	1	0	1	16.480	27.175
19	0	1	1	0	1	0	0	16.490	27.185
20	0	1	1	0	0	1	0	16.510	27.205

1 = 6.32 Volts 0 = 0 Volts

CHANNEL	IC1 PROGRAM DIVIDER PINS 9	10	11	12	13	14	15	REC VCO OUTPUT IN MHz AT J5	XMT VCO OUTPUT IN MHz AT TP1
21	0	1	1	0	0	0	1	16.520	27.215
22	0	1	1	0	0	0	0	16.530	27.225
23	0	1	0	1	1	0	1	16.560	27.255
24	0	1	0	1	1	1	1	16.540	27.235
25	0	1	0	1	1	1	0	16.550	27.245
26	0	1	0	1	1	0	0	16.570	27.265
27	0	1	0	1	0	1	1	16.580	27.275
28	0	1	0	1	0	1	0	16.590	27.285
29	0	1	0	1	0	0	1	16.600	27.295
30	0	1	0	1	0	0	0	16.610	27.305
31	0	1	0	0	1	1	1	16.620	27.315
32	0	1	0	0	1	1	0	16.630	27.325
33	0	1	0	0	1	0	1	16.640	27.335
34	0	1	0	0	1	0	0	16.650	27.345
35	0	1	0	0	0	1	1	16.660	27.355
36	0	1	0	0	0	1	0	16.670	27.365
37	0	1	0	0	0	0	1	16.680	27.375
38	0	1	0	0	0	0	0	16.690	27.385
39	0	0	1	1	1	1	1	16.700	27.395
40	0	0	1	1	1	1	0	16.710	27.405



SHIELD LOCATION

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
C14	47 25V	EA31X213	PC50-25	VTT47E25	QV1-75	EV-1326
C15	1 50V	EA31X204	PC1-50	VTT1A50	QV1-11	EV-1615
C20	1 10V	EA31X254		TDC105M035EL		SD35-19
C22	10 10V	EA31X249		TDC106M025FL	QDT1-64	SD25-109
C23	1 10V	EA31X254		TDC105M035EL		SD35-19
C71	10 16V	EA31X246	PC10-25	VTT10B25	QV1-41	EV-1222
C73	3.3 25V	EA31X260	PC5-50	VTT3R3A50	QV1-23	EV-1318
C76	1 50V	EA31X204	PC1-50	VTT1A50	QV1-11	EV-1615
C81	100 16V	EA31X235	PC100-16	VTT100F16	QV1-95	EV-1230
C86	3.9 25V	EA31X261		TDC475M010EL	QDT1-48	SD10-4R79
C90	33 6.3V	RT5269	PC30-25	VTT33B10	QV1-61	EV-1125
C93	47 16V	EA2510	PC50-16	VTT47D16	QV1-73	EV-1226
C94	220 16V	RT5047	PC250-25	VTT220H16	QV1-117	EV-1240
C96	33 10V	RT2315	PC30-25	VTT33B10	QV1-61	EV-1125
C97	3.3 25V	EA31X260	PC5-50	VTT3R3A50	QV1-23	EV-1318
C98	3.3 25V	EA31X260	PC5-50	VTT3R3A50	QV1-23	EV-1318
C100	47 25V	RT4632	PC50-25	VTT47E25	QV1-75	EV-1326
C101	1000 16V	EA31X200	PC1000-16	VTT1000L16	QV1-183	EV-1260
C102	33 6.3V	RT5269	PC30-25	VTT33B10	QV1-61	EV-1125
C107	220 10V	EA2777	PC250-10	VTT220F10	QV1-115	EV-1140
C110	1 50V	EA31X204	PC1-50	VTT1A50	QV1-11	EV-1615
C117	1 50V	EA31X204	PC1-50	VTT1A50	QV1-11	EV-1615
C128	3.3 50V	EA31X260	PC5-50	VTT3R3A50	QV1-25	EV-1618
C140	4.7 25V	EA31X211	PC5-50	VTT4R7B50	QV1-27	EV-1319

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
C1	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C2	.047 50V		UK50-503		MAG5015		
C3	330 50V		DD-331	GP330	GP333		10TS-T33
C4	68 N150 50V	EA18X173			*		10TCP-Q68
C5	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C6	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C7	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C8	100 50V		DD-101	GP100	GP310		10TS-T10
C9	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C10	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C11	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C12	.047 50V		UK50-503		MAG5015		
C13	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C16	39 50V				CN0439		10TCC-Q39
C17	68 N150 50V	EA18X173			*		10TCP-Q68
C18	22 N150 50V	EA18X151			*		10TCP-Q22
C19	22 N150 50V	EA18X151			*		10TCP-Q22
C24	22 N150 50V	EA18X151			*		10TCP-Q22
C25	82 N150 50V	EA18X234			*		10TCP-Q22
C26	15 N150 50V	EA18X152			*		10TCP-Q15
C27	220 50V		DD-221		GP322		10TS-T22
C28	100 50V		DD-101	GP100	GP310		10TS-T10
C29	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C30	15 50V		DTZ-15	NP015	CN0415		10TCC-Q15
C31	68 N150 50V	EA18X173			*		10TCP-Q68
C32	56 50V		DD-560		GP456		10TS-Q56
C33	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C34	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C35	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C36	82 N150 50V	EA18X234			*		10TCP-Q82
C37	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C38	.047 50V		UK50-503		MAG5015		
C39		(1)(2)					
C40	120 50V		DTZ-120		CN0312		10TCC-T12
C41	470 50V		DD-471	GP470	GP347		10TS-T47
C42	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C43	120 50V		DTZ-120		CN0312		10TCC-T12
C44	150 50V		DD-181		GP318		10TS-T18
C45	120 50V		DTZ-120		CN0312		10TCC-T12
C46	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C47	120 50V		DTZ-120		CN0312		10TCC-T12
C48	270 50V		DD-271	GP270	GP327		10TS-T27
C49	330 50V		DD-331	GP330	GP333		10TS-T33
C50	27 50V				CN0427		10TCC-Q27
C51	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C52	.01 50V	(1)	DC-103	MGP01	TA110	QC2-141	TG-S10
C53	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C54	47 50V		DTZ-47	NP047	CN0447		10TCC-Q47
C55	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C56	.047 50V		UK50-503		MAG5015		
C57	.047 50V	(1)	UK50-503		MAG5015		
C58	.047 50V		UK50-503		MAG5015		
C59	100 50V		DD-101	GP100	GP310		10TS-T10
C60	150 50V		DD-151		GP315		10TS-T15
C61	.047 50V		UK50-503		MAG5015		

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
C62	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C63	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C64	15 50V		DTZ-15	NP015	CN0415		10TCC-Q15
C65	2.2 500V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C66	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C67	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C68	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C69	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C70	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C72	.0068 50V			WMF1D68	EWF1A268	QF1-73	1PB-D68
C74	.0047 50V			WMF1D47	EWF1A247	QF1-57	1PB-D47
C75	100 50V		DD-101	GP100	GP310		10TS-T10
C77	.047 50V			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C78	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C80	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C82	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C83	270 50V		DD-271	GP270	GP327		10TS-T27
C84	.001 50V			DPMS6D1	EWF1A210	QF1-1	1PB-D10
C85	.0022 50V		DD-222		GP222	QC2-97	5GA-D22
C87	68 N150 50V	EA18X173			*		10TCP-Q68
C88	68 N150 50V	EA18X173			*		10TCP-Q68
C89	180 50V		DD-181		GP318		10TS-T18
C91	.068 50V			WMF1S68	EWF1A168	QF1-195	1PB-S68
C92	220 50V		DD-221		GP322		10TS-T22
C95	.068 50V			WMF1S68	EWF1A168	QF1-195	1PB-S68
C103	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C104	.047 50V		UK50-503		MAG5015		
C105	.047 50V		UK50-503		MAG5015		
C106	.047 50V		UK50-503		MAG5015		
C108	150 50V		DD-151		GP315		10TS-T15
C109	.01 50V			WMF1S1	EWF1A110	QF1-91	1PB-S10
C111	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C112	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C115	.022 50V			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C116	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C119	33 N150 50V	EA18X232			*		10TCP-Q33
C124	.022 50V			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C201	150 50V		DD-151		GP315		10TS-T15
C202	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C203	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C204	.047 50V		UK50-503		MAG5015		
C205	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C206	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C207	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C208	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C209	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C210	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C211	.001 50V	(1)	DC-103	MGP01	TA110	QC2-141	TG-S10
C213	.0047 50V	(1)	DD-472	GP4700	GP247		5GA-D47
CT1	20 50V	EA30X52					
CT2	20 50V	EA30X52					

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
(1) Used in some versions.
(2) Value may vary replace with original value.

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
RV1	Squelch Range	10K	EA49X330				
RV2	ALC	2000	EA49X331				
RV3	S Meter	20K	EA49X332				
RV4	RF Meter	2000	EA49X331				
VR1	Volume/Switch	50K	EA49X392				
VR2	Squelch	10K	EA49X393				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
RARY251	Resistor Network		EA62X167 (1)

ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.
RARY252	Resistor Network		EA62X167 (1)

(1) Consists of seven 1800 Ohm resistors.

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	RF Choke (18uH)	EA36X334			
L2	RF Choke (1uH)	EA36X335			
L3	RF Pre Driver (27MHz)	EA36X248			
L4	RF Choke (2.2uH)	EA36X237			
L5	RF Driver (27MHz)	EA36X238			
L6	RF Choke (68uH)	EA36X239			
L7	RF Choke (.55uH)	EA36X245			
L8	RF Choke (1uH)	EA36X240			
L9	Final (27MHz)	EA36X241			
L10	Pi Filter (27MHz)	EA36X242			
L11	RF Choke (.4uH)	EA36X336			
L12	RF Choke (68uH)	EA36X239			
L13	RF Choke (1.15uH)	EA36X263			
L14	RF Choke (1.15uH)	EA36X263			
T1	VCO (18MHz)	EA36X337			
T2	VCO Mixer (27MHz)	EA36X260			
T3	Rec Antenna (27MHz)	EA36X249			
T4	Rec RF (27MHz)	EA36X339			
T5	IF (10.695MHz)	EA36X340			
T6	IF (10.695MHz)	EA61X204			
T7	IF (455kHz)	EA61X188			
T8	IF (455kHz)	EA61X189			
T9	IF (455kHz)	EA61X190			

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.	
CH1	1.45A	.24	3.72mH	EA36X256 LJ119H004W(1)			(1) Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE			REPLACEMENT DATA			NOTES
	PRI.	SEC.		MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T10	2.88	1 8	2 13.52	EA64X30 ETA-66 (1)	TR723	MCB-16	(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM 8 Ohms	EA95X115	30A05Z8R	

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	2Amp	EA68X64	EA68X119	AGC2	HDJ	312002	150145	FG2-2

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA						
	MFGR. PART No.	GC PART No.	GC NOISE CANCEL	GC POWER	GC CONNECTOR	GC Red	GC Shield	GC Yellow	GC Blue	GC White	GC Black
MIC	EA68X123B	18-032	18-034	18-010	18-092	1	2	4	3	NC	2

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Ceramic Filter	EA36X332	455kHz
J1	Jack	EA41X155	Antenna
J2	Jack	EA41X175	Microphone
J3	Jack	EA41X135	External Speaker
J4	Jack	EA41X135	PA
J5	Jack	EA41X136	Power
LED301	LED		Channel Display (TR3207D)
M1	Meter	EA62X164	S/RF
PL1	Lamp	EA41X145	Meter (55mA @ 5.45V)
PL2	Lamp	EA41X145	Mod Indicator (30mA @ 3.90V)
S1	Switch		Power (Part of Volume Control)
S2	Switch	EA39X225	ANL
S3	Switch	EA55X133	CB/PA
SW1	Switch	EA55X140	Channel Selector
X1	Crystal	EA75X6	10.24MHz
XF1	Crystal Filter	EA36X333	10.695MHz
	Flex Cable	EA65X9	15 Conductor
	Printed Circuit Board	EA93X316	Main (PTBM070COX)
	Printed Circuit Board	EA93X320	Channel Selector Switch (PTSW033COX)
	Printed Circuit Board	EA93X321	Channel Indicator (PTLD022COX)

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

ITEM	PART No.
Escutcheon	EA89X262
Knob, Control	EA43X727
Knob, Channel Selector	EA43X728
Cabinet Top	EA98X542

ITEM	PART No.
Cabinet Bottom	EA98X543
Microphone Hanger	EA68X65
Mobile Mounting Kit	EA68X121

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')