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 CB-515

MANUFACTURER'S SPECIFICATIONS

RECEIVER SECTION

CIRCUIT TYPE	:	Dual conversion superheterodyne with RF stage and 455 kHz mechanical filter
FREQUENCY	:	Up to 23 crystal-controlled channels in the 27MHz Citizens Band
SENSITIVITY	:	1μV for 10dB S/N at 500mW
SQUELCH RANGE	:	0–10mV
INTERMEDIATE FREQUENCY	:	1st IF : 10.595–10.635MHz 2nd IF : 455kHz
AUDIO OUTPUT	:	More than 2W at 10% distortion
CURRENT DRAIN	:	200mA on standby [no signal]

TRANSMITTER SECTION

POWER INPUT	:	5 Watts
SPURIOUS RESPONSE REJECTION	:	All harmonic and spurious suppression greater than FCC –50dB
MODULATION	:	AM, 90% typical
CURRENT DRAIN	:	Less than 1A. at no modulation
ANTENNA	:	Nominal 50 ohms impedance
POWER SOURCE	:	Operates from nominal 13.8 volts DC, negative or positive ground or with optional 117 volts AC power supply
DIMENSIONS [OVERALL]	:	5-3/16"(132mm)W x 2"(50mm)H x 9"(225mm)D
WEIGHT	:	1.35 k grms. (3 lbs.)

Courtesy of the Manufacturer

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

 Printed in U. S. of America 8CY653

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:

L5,T1,T13 thru T17.....5009
T2 thru T7,T11,T12,T18.....9440
CV1,CV2.....5000

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF VTVM to TP1.	Ch. 13	T18	Adjust for maximum RF voltage.
Input of frequency counter to TP1.	Ch. 13		Check for 37.750MHz.
	Ch. 17		Check for 37.800MHz.
	Ch. 21		Check for 37.850MHz.
	Ch. 1		Check for 37.600MHz.
	Ch. 5		Check for 37.650MHz.
	Ch. 9		Check for 37.700MHz.
Input of RF VTVM to TP2.	Ch. 13	T14	Adjust for maximum RF voltage.
Input of frequency counter to TP2.	Ch. 13		Check for 10.180MHz.
	Ch. 14		Check for 10.170MHz.
	Ch. 15		Check for 10.160MHz.
	Ch. 16		Check for 10.140MHz.
Input of RF VTVM to TP3.	Ch. 13, Xmit	T1	Adjust for maximum RF voltage.
Input of frequency counter to TP3.	Ch. 13, Xmit		Check for 10.635MHz.
	Ch. 14, Xmit		Check for 10.625MHz.
	Ch. 15, Xmit		Check for 10.615MHz.
	Ch. 16, Xmit		Check for 10.595MHz.

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 TP4. 455kHz,1000Hz @ 30% modulation.	Ch. 13, Squelch MINIMUM	T17,T16,T15	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.115MHz,1000Hz @ 30% modulation.	Ch. 13, Squelch MINIMUM	T13,T12,T11	Adjust for maximum output. If necessary readjust T15, T16, and T17.

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. 27.115MHz,1000Hz @ 30% modulation. Output 100uV.	Ch. 13	RV2	S METER Adjust RV2 for 9 on S 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 transmitter.

See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
	Ch. 19	T2,T3,T4, T5,T6,T7, L5,CV1	Adjust for maximum.
	Ch. 19	CV1	Adjust for 4 watts maximum.
Tunable field strength meter set at 54MHz.	Ch. 19	CV2	Adjust for MINIMUM signal.

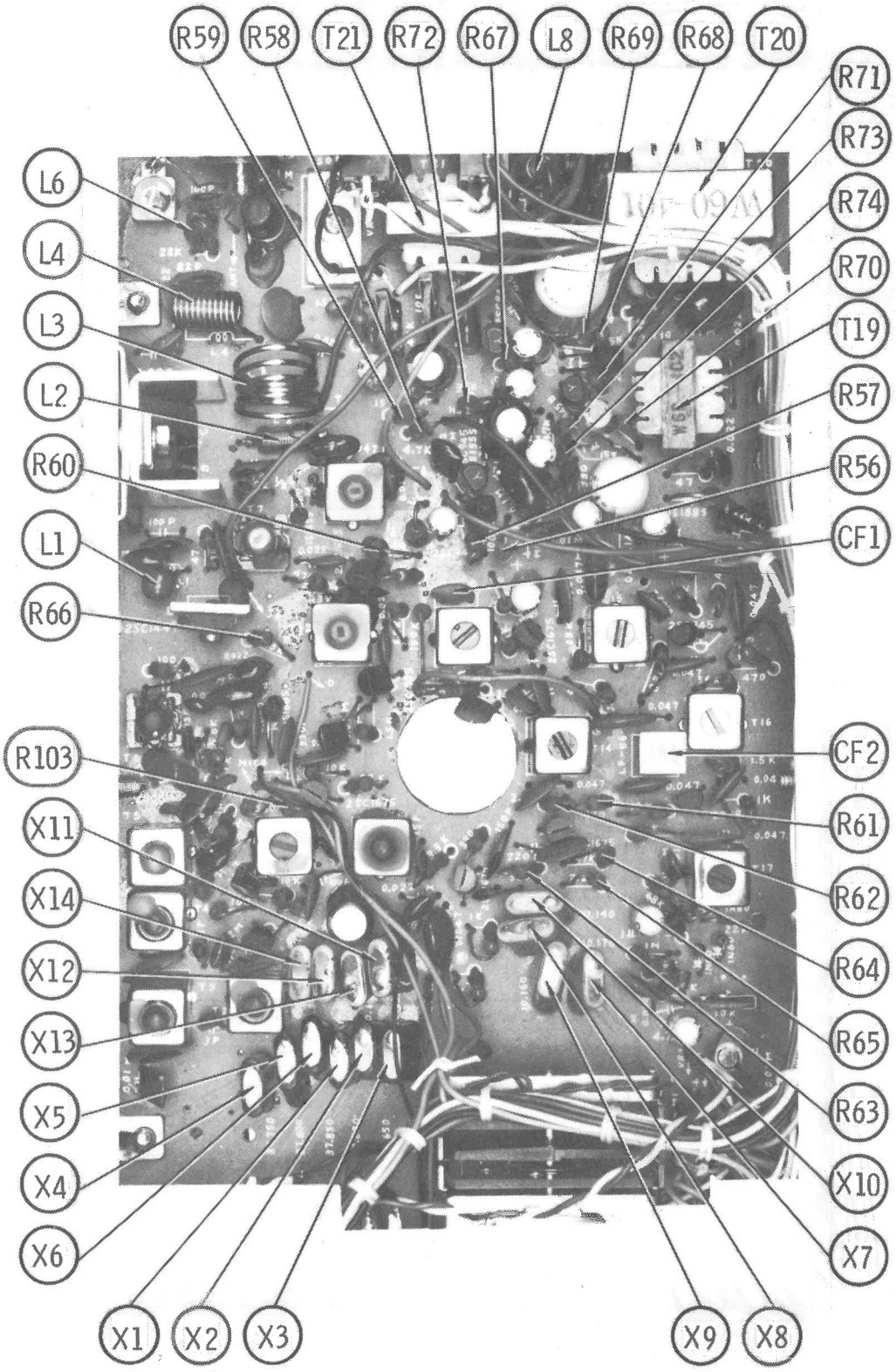
TRANSMITTER ADJUSTMENTS

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

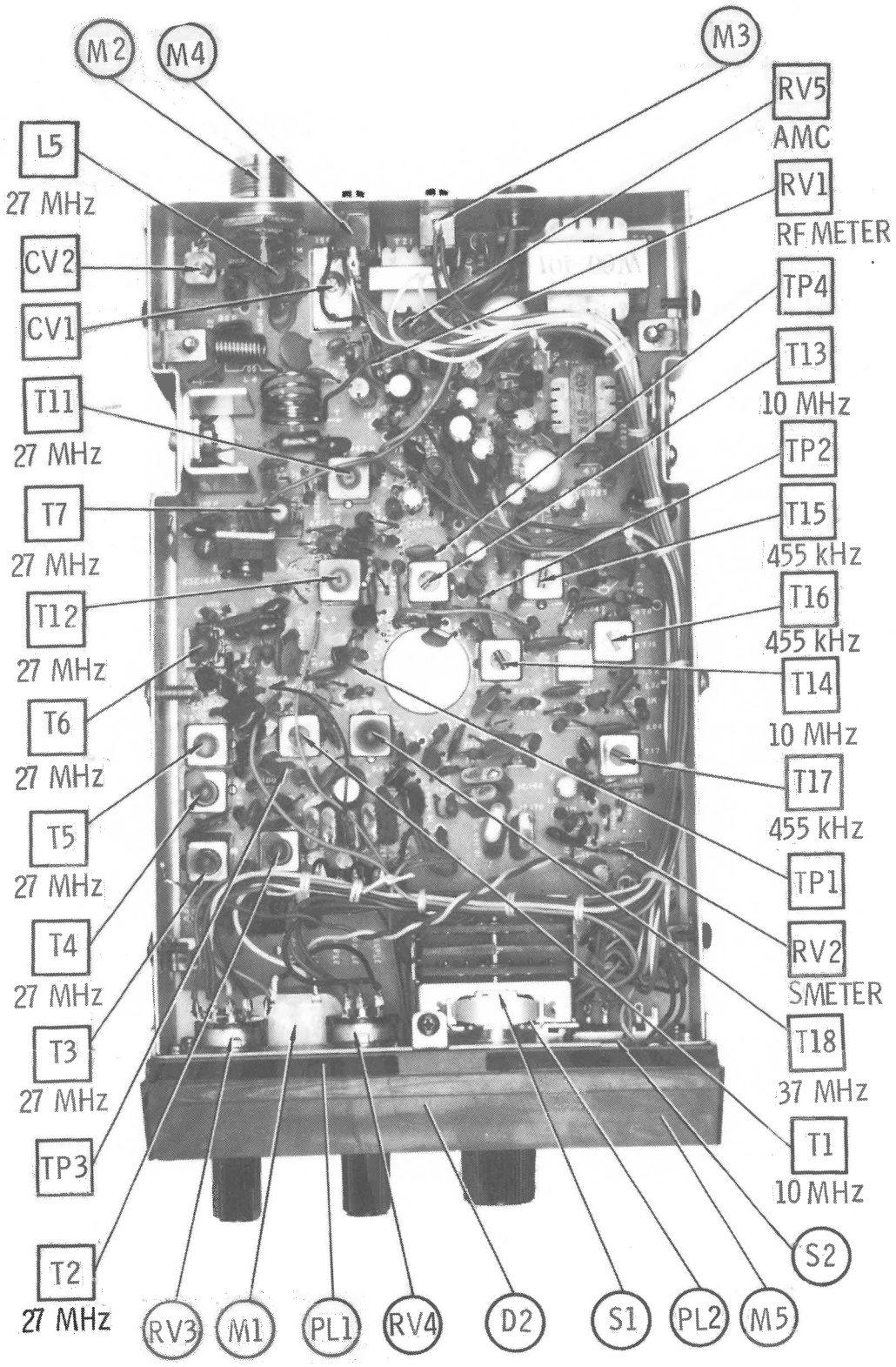
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

See page 4 for channel frequencies.

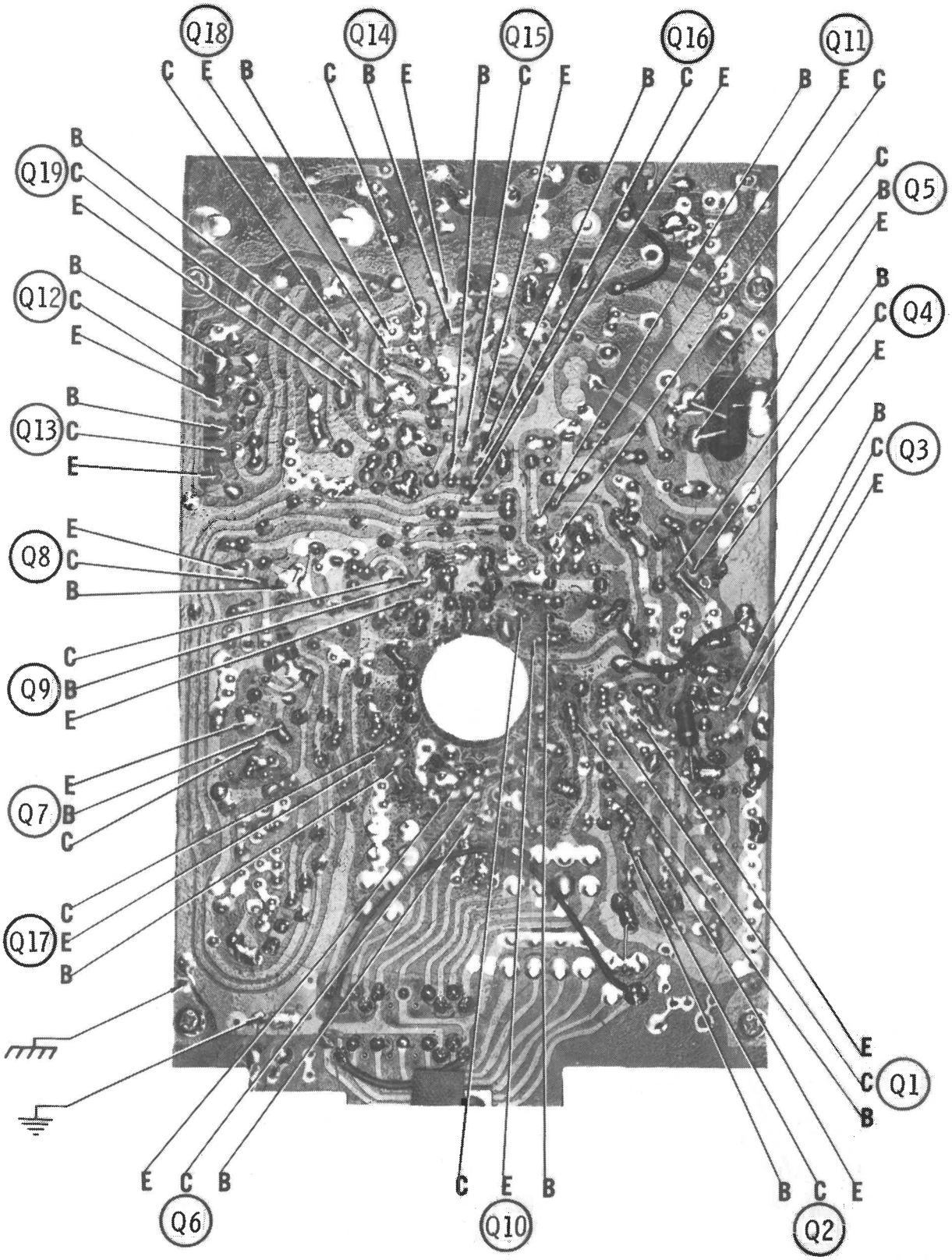
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Modulation meter to antenna jack. Inject a 1000Hz,15mV signal at MIC input.	Ch. 19	RV5	AMC Adjust for 100% modulation maximum.
Connect an RF wattmeter and 50-ohm, 25 watt dummy load to antenna connector.	Ch. 19	RV1	RF PANEL METER Adjust RV1 so that RF panel meter agrees with RF wattmeter.


R59
R58
T21
R72
R67
L8
R69
R68
T20
R71
R73
R74
R70
T19
R57
R56
CF1
CF2
R61
R62
R64
R65
R63
X10
X7
X9
X8
X1
X2
X3
X6
X4
X5
X13
X12
X14
X11
R103
R66
L1
L2
L3
L4
L6

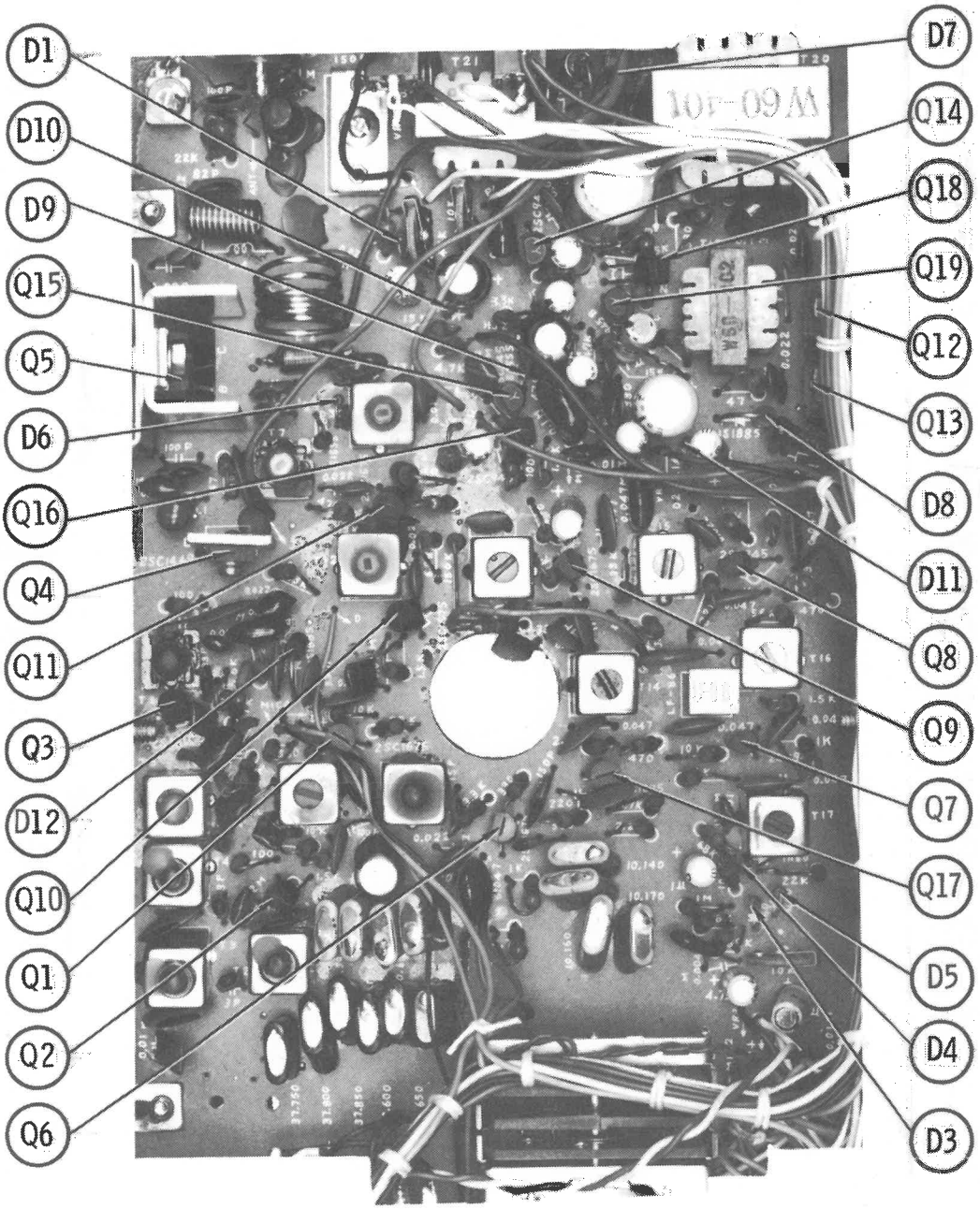
MAIN BOARD



CHASSIS - BOTTOM

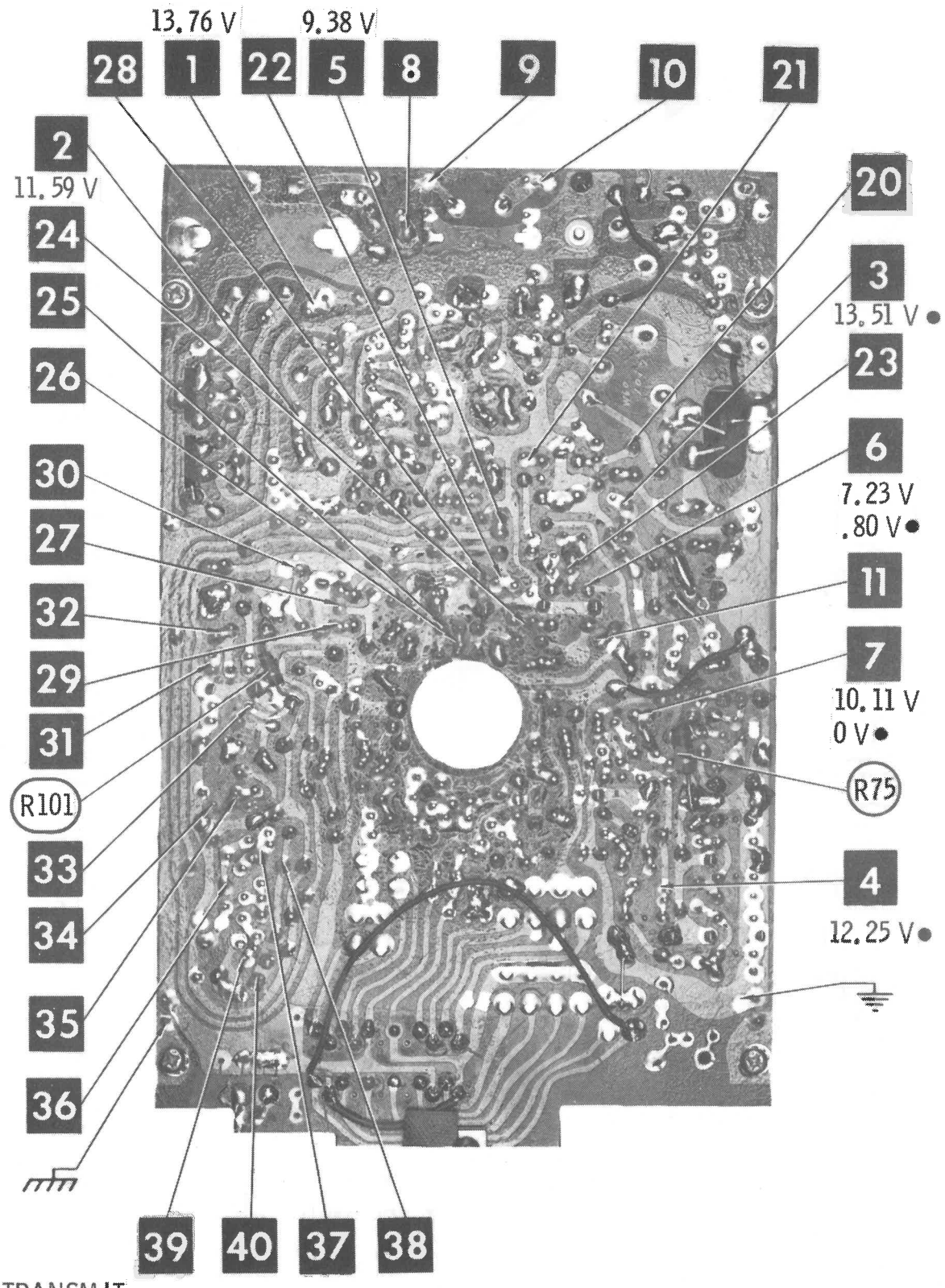

Q18
C E B
Q14
C B E
Q15
B C E
Q16
B C E
Q11
B E C
Q19
B C E
Q5
C B E
Q12
B C E
Q4
B C E
Q13
B C E
Q3
B C E
Q8
E C B
Q9
C B E
Q7
E B C
Q17
C E B
Q1
E C B
Q6
E C B
Q10
C E B
Q2
B C E

MAIN BOARD

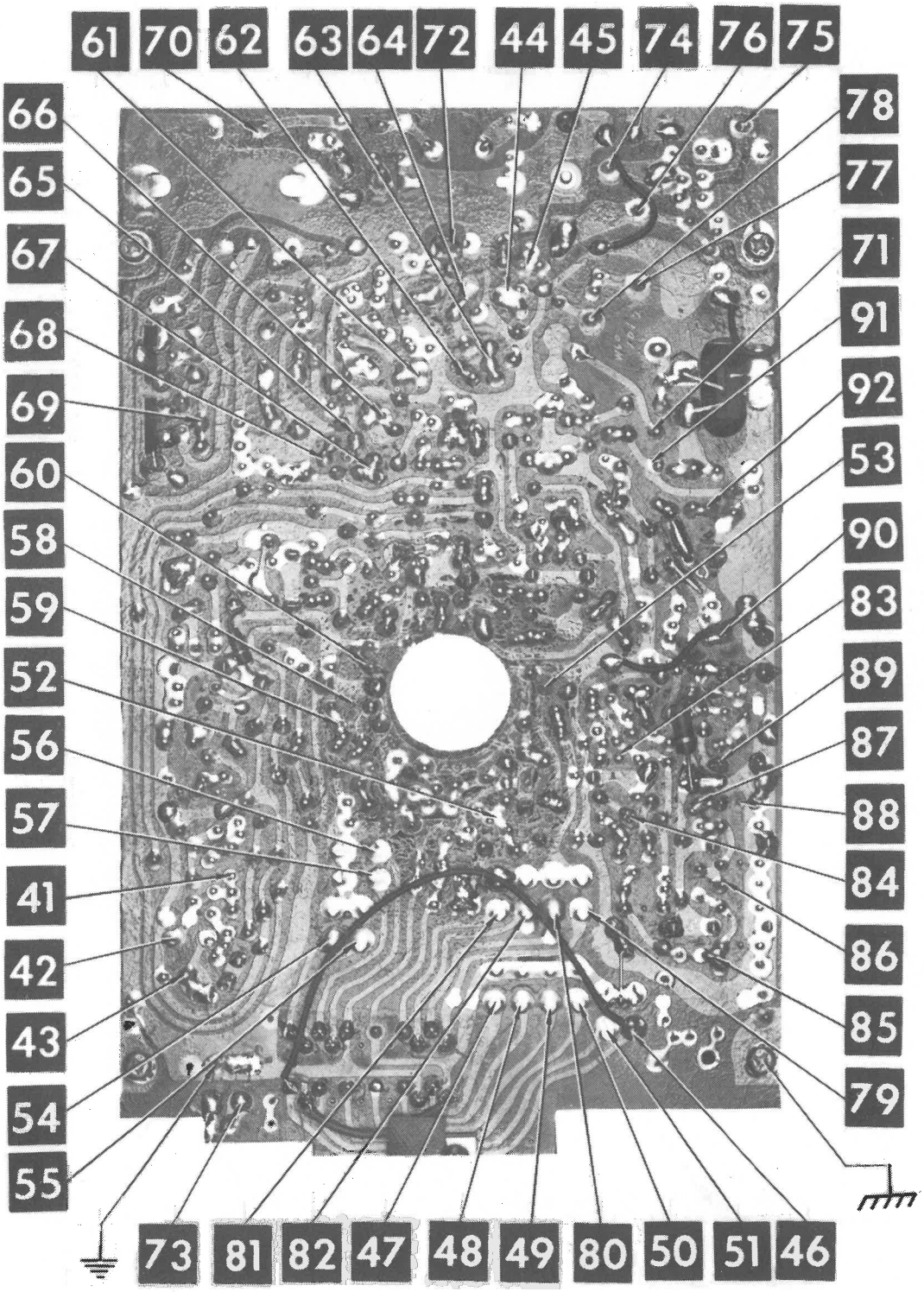

D1
D10
D9
Q15
Q5
D6
Q16
Q4
Q11
Q3
D12
Q10
Q1
Q2
Q6
D7
Q14
Q18
Q19
Q12
Q13
D8
D11
Q8
Q9
Q7
Q17
D5
D4
D3

MAIN BOARD

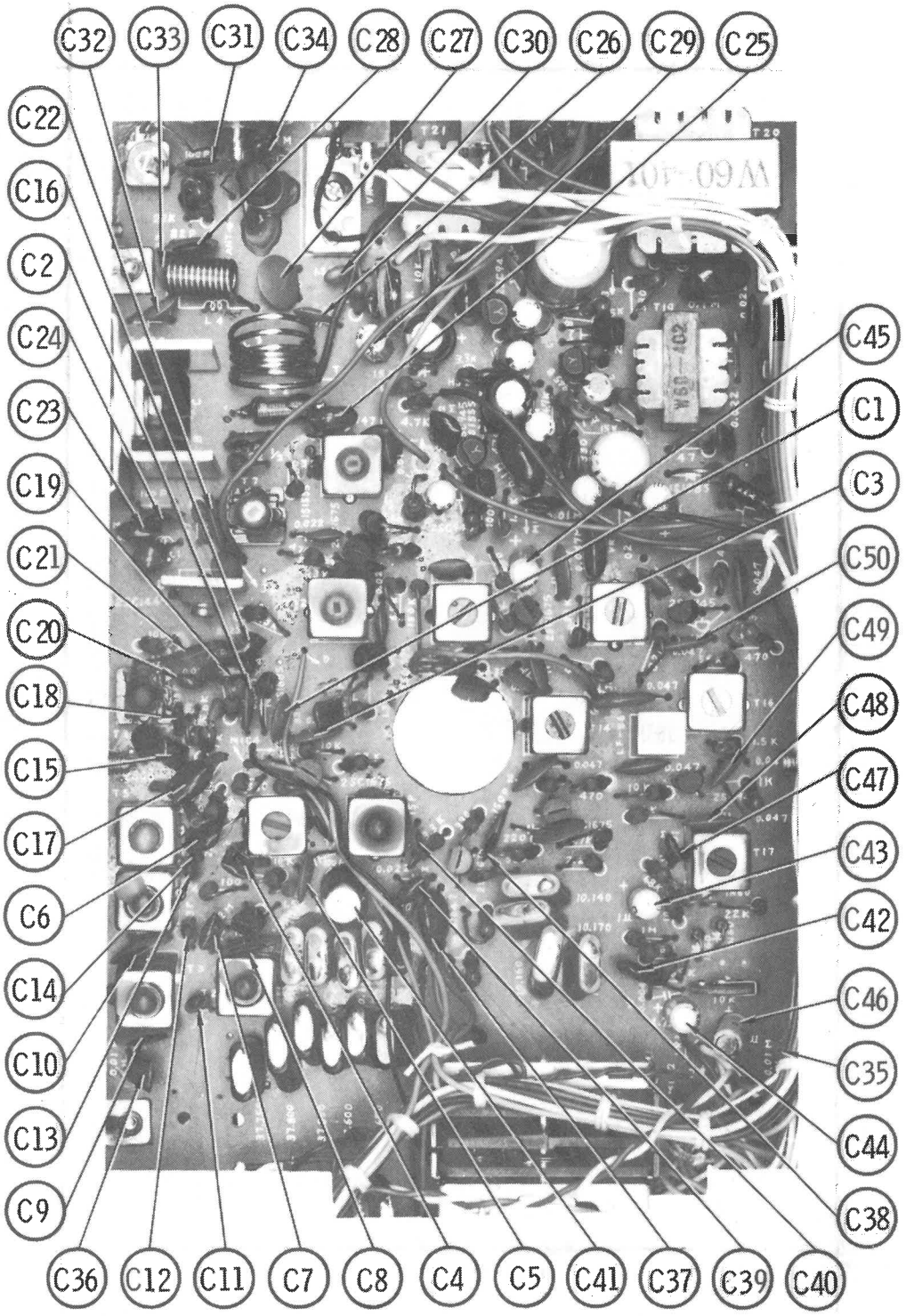
A Howard W. Sams CIRCUITRACE® Photo



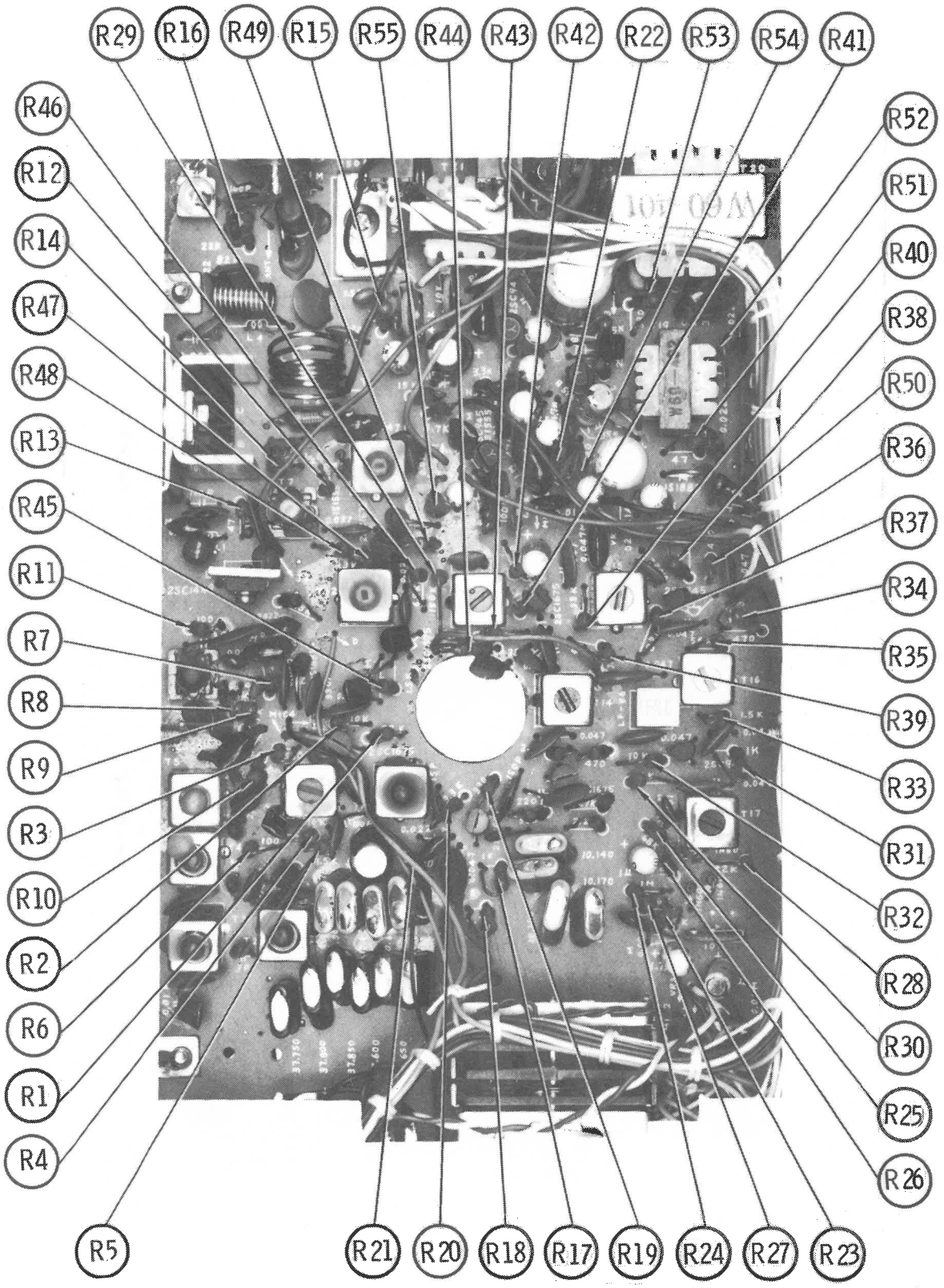
MAIN BOARD


61
70
62
63
64
72
44
45
74
76
75
66
65
67
68
69
60
58
59
52
56
57
41
42
43
54
55
78
77
71
91
92
53
90
83
89
87
88
84
86
85
79
73
81
82
47
48
49
80
50
51
46

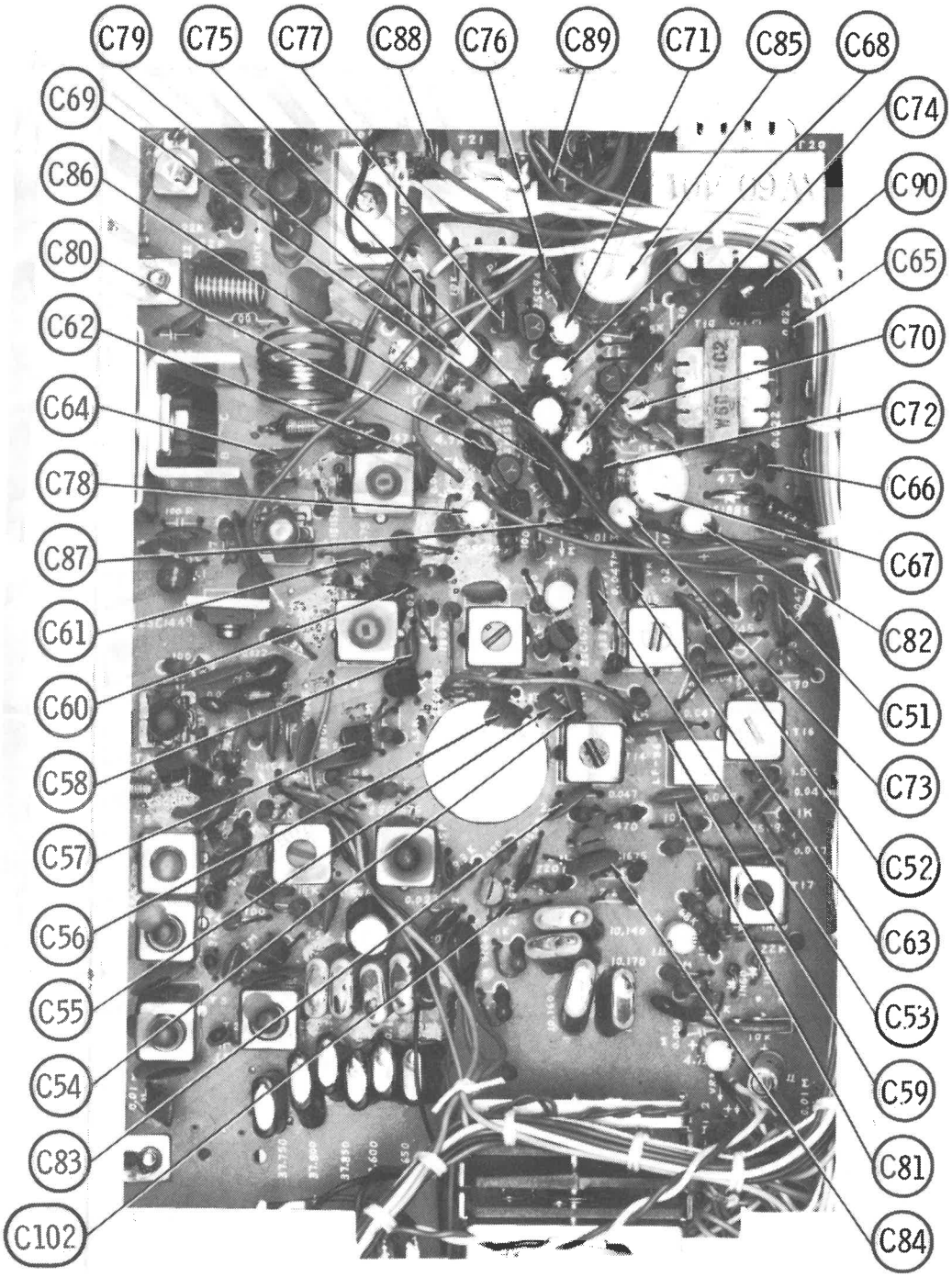
MAIN BOARD


C32
C33
C31
C34
C28
C27
C30
C26
C29
C25
C22
C16
C2
C24
C23
C19
C21
C20
C18
C15
C17
C6
C14
C10
C13
C9
C45
C1
C3
C50
C49
C48
C47
C43
C42
C46
C35
C44
C38
C36
C12
C11
C7
C8
C4
C5
C41
C37
C39
C40

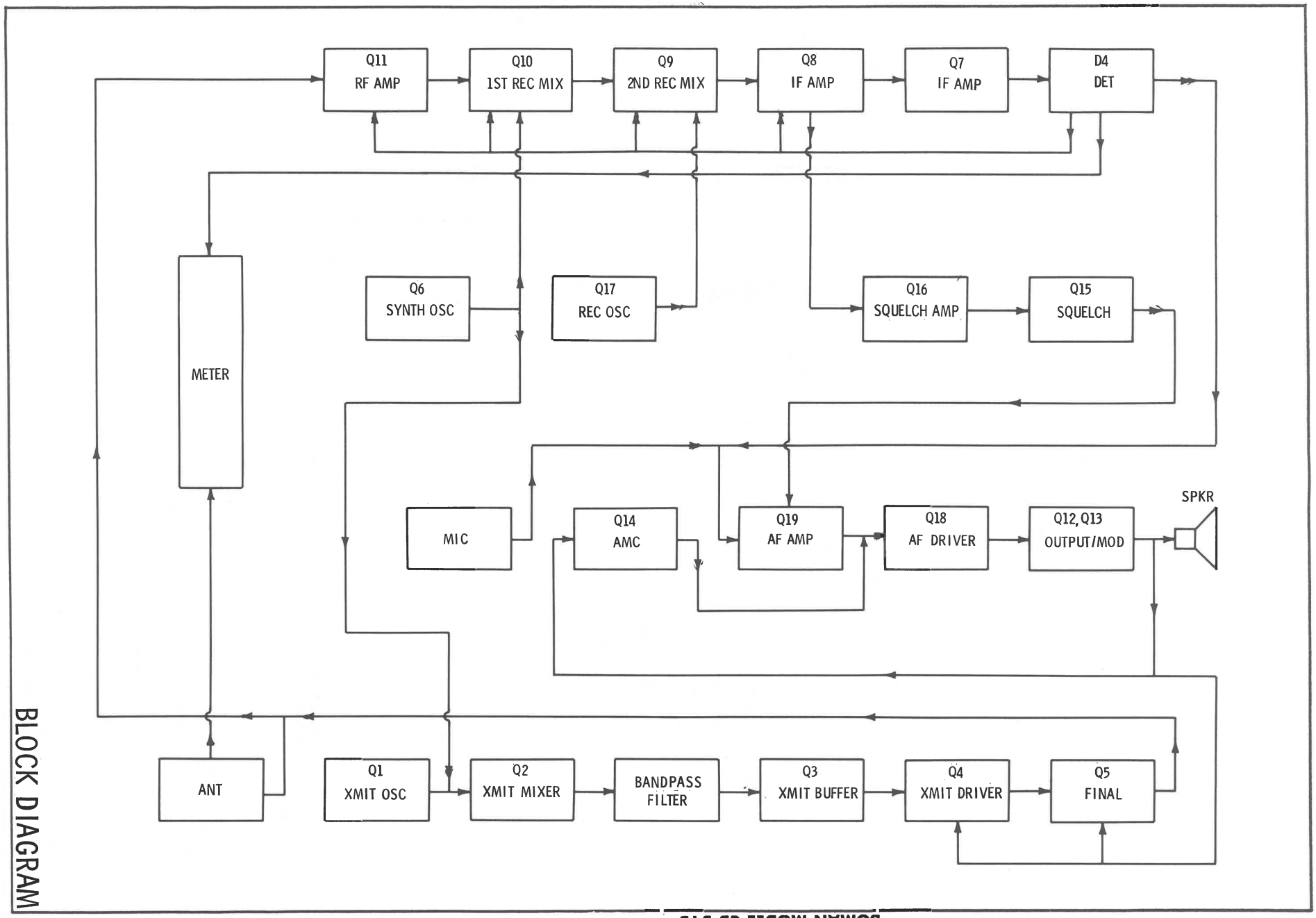
MAIN BOARD


R29
R16
R49
R15
R55
R44
R43
R42
R22
R53
R54
R41
R46
R12
R14
R47
R48
R13
R45
R11
R7
R8
R9
R3
R10
R2
R6
R1
R4
R5
R52
R51
R40
R38
R50
R36
R37
R34
R35
R39
R33
R31
R32
R28
R30
R25
R26
R21
R20
R18
R17
R19
R24
R27
R23

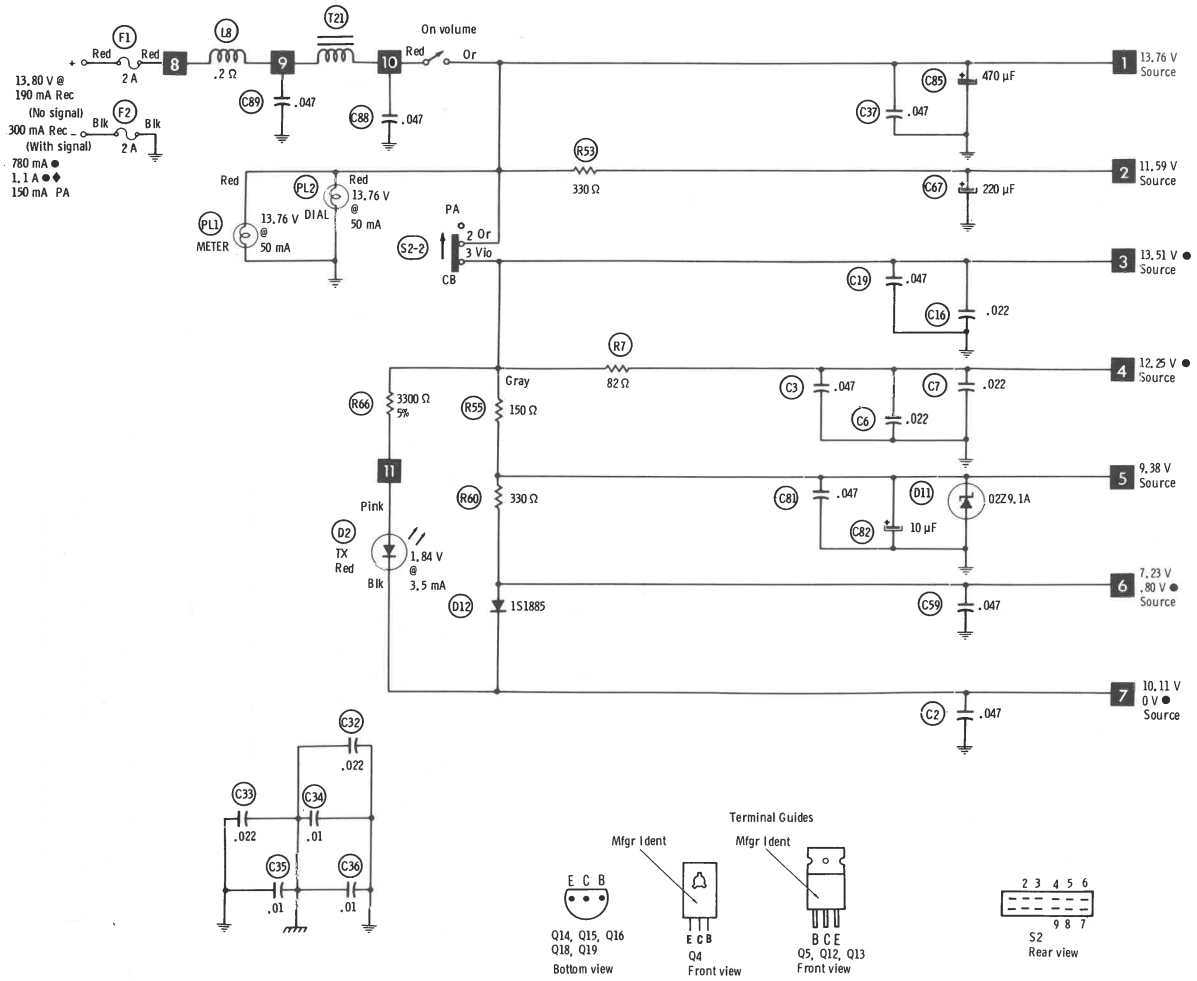
MAIN BOARD


C79
C75
C77
C88
C76
C89
C71
C85
C68
C69
C74
C86
C90
C80
C65
C62
C70
C64
C72
C78
C66
C87
C67
C61
C82
C60
C51
C58
C73
C57
C52
C56
C63
C55
C53
C54
C59
C83
C81
C102
C84

MAIN BOARD



BLOCK DIAGRAM



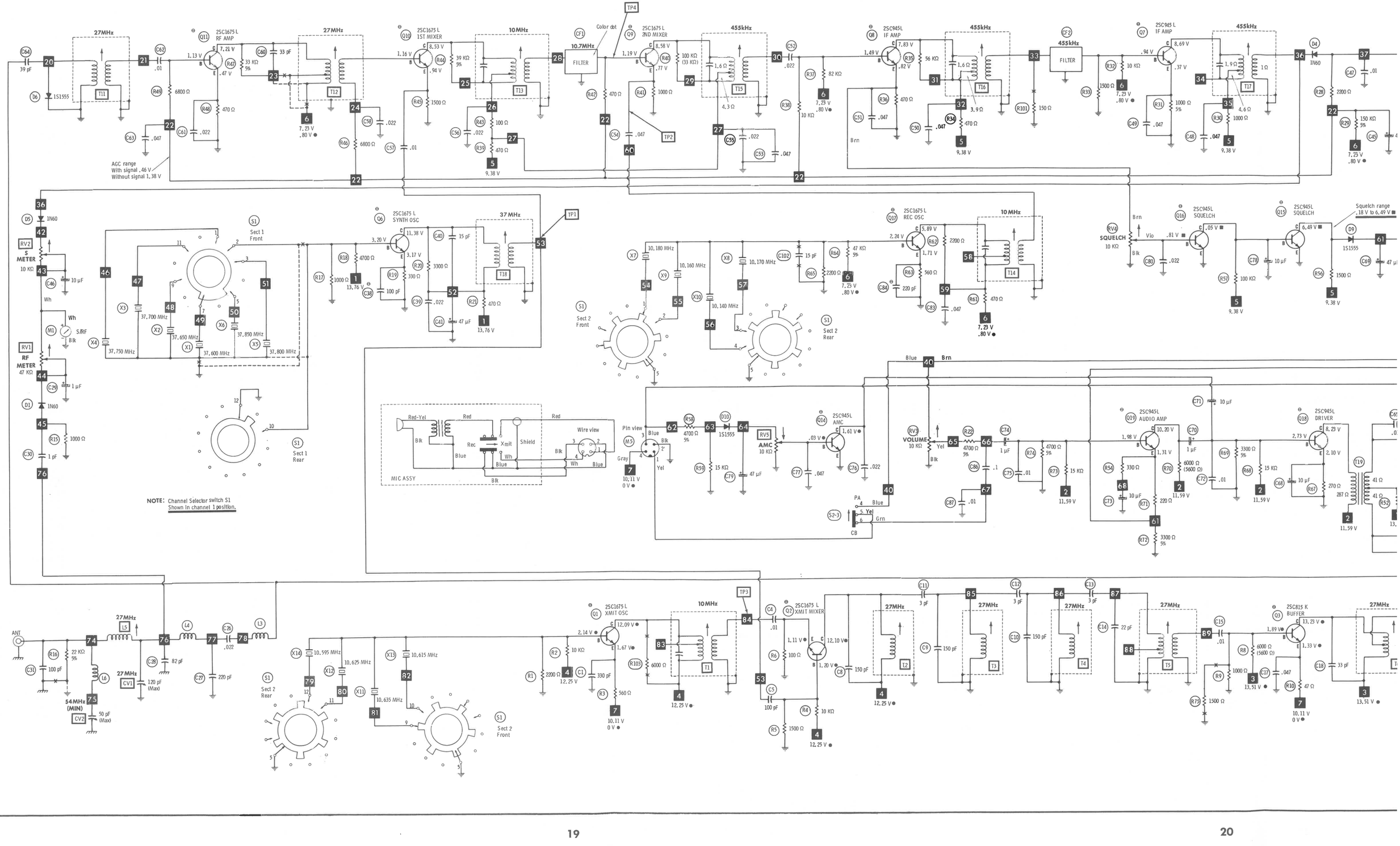
Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement	Chan	Crystal Complement
1	X1, X7, X11	7	X2, X9, X13	13	X4, X7, X11	19	X5, X9, X13
2	X1, X8, X12	8	X2, X10, X14	14	X4, X8, X12	20	X5, X10, X14
3	X1, X9, X13	9	X3, X7, X11	15	X4, X9, X13	21	X6, X7, X11
4	X1, X10, X14	10	X3, X8, X12	16	X4, X10, X14	22	X6, X8, X12
5	X2, X7, X11	11	X3, X9, X13	17	X5, X7, X11		
6	X2, X8, X12	12	X3, X10, X14	18	X5, X8, X12	23	X6, X10, X14

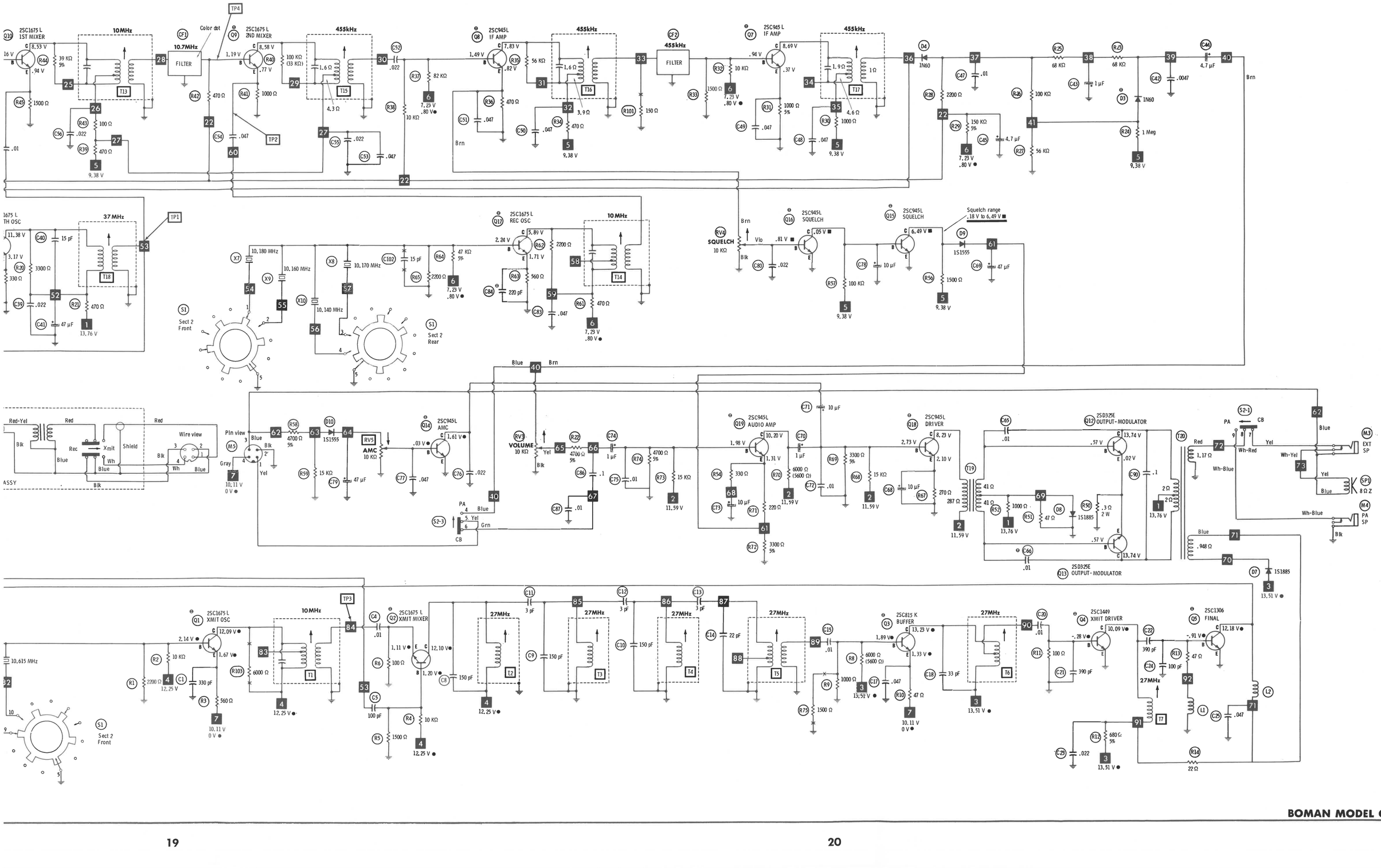
—✕— Circuitry not used in some versions
– – – Circuitry used in some versions
⊖ See parts list
※ Nominal value
⏚ Ground
Chassis
▽ Common tie point

Measurements with switching as shown unless noted:
■ Squelch fully clockwise ♦ 100% modulation
● Transmit

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

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®


27MHz
T11
T12
10MHz
T13
10.7MHz
FILTER
Color dot
455kHz
T15
T16
T17
FILTER
455kHz
2SC1675 L RF AMP
2SC1675 L 1ST MIXER
2SC1675 L 2ND MIXER
2SC945L IF AMP
2SC945 L IF AMP
1S1555
1N60
AGC range
With signal .46 V
Without signal 1.38 V
2SC1675 L SYNTH OSC
37 MHz
T18
Sect 1 Front
Sect 1 Rear
Sect 2 Front
Sect 2 Rear
37.700 MHz
37.650 MHz
37.600 MHz
37.750 MHz
37.850 MHz
37.800 MHz
2SC1675 L REC OSC
10 MHz
T14
10.180 MHz
10.160 MHz
10.170 MHz
10.140 MHz
2SC945L SQUELCH
SQUELCH 10 KΩ
Squelch range .18 V to 6.49 V
RV1 RF METER 47 KΩ
RV2 S METER 10 KΩ
S/RF
Wh
Blk
Brn
Vio
Red-Yel
Red
Blk
Blue
Rec
Xmit
Shield
Wh
Gray
Pin view
MIC ASSY
Wire view
2SC945L AMC
AMC 10 KΩ
RV3 VOLUME 10 KΩ
2SC945L AUDIO AMP
2SC945L DRIVER
PA
CB
Yel
Grn
ANT
27MHz
T1
T2
T3
T4
T5
54MHz (MIN)
50 pF (Max)
120 pF (Max)
82 pF
2SC1675 L XMIT OSC
2SC1675 L XMIT MIXER
2SC815 K BUFFER
10.595 MHz
10.625 MHz
10.615 MHz
10.635 MHz
NOTE: Channel Selector switch S1 Shown in channel 1 position.



BOMAN MODEL CB-515

WIRING DATA

General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded) 23AWG	BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 8497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN No. 9472 (7-1/2')
Bonding Strap	BELDEN No. 8672	28AWG	BELDEN No. 9466 (6')
AC Power Cord (6')	BELDEN No. 17106	31AWG	BELDEN No. 9468 (10')
(9')	BELDEN No. 17109	4-conductor (unshielded) 23AWG	BELDEN No. 8415 (6')
		5-conductor (1 shielded) 28AWG	BELDEN No. 9467 (6')
			BELDEN No. 9465 (7-1/2')

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	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D3	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D4	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D5	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D6	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D7	1S1885		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D8	1S1885		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D9	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D10	1S1555		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D11	02Z9.1A		GEZD-9.1	Z1209	ZB9.1A	HEPZ0412	RE 114	SK3060	RT-240	ECG139
D12	1S1885		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
Q1	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q2	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q3	2SC815K		GE-210 *	TR-21 *	PTC121 *	HEPS0015 *	RE 13 *	SK3038 *	RT-302	ECG123A *
	2SC815(1)		GE-210 *	TR-21 *	PTC121 *	HEPS0015 *	RE 13 *	SK3038 *	RT-302	ECG123A *
	2SC734Y(1)		GE-212	TR-87 *	PTC123 *	HEPS5026 *	RE 17 *	SK3122	RT-302	ECG128 *
Q4	2SC1449		GE-270	WEP913	PTC180		RE 209		RT-162	ECG295
	2SC1449L (1)		GE-270	WEP913	PTC180		RE 209		RT-162	ECG295
	2SC495(1)		GE-270	WEP913	PTC180		RE 209		RT-162	ECG295
Q5	2SC1306		GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1678(1)		GE-322	WEP1678	PTC186		RE 203	SK3197	RT-146	ECG235
	2SC1909(1)		GE-215	WEP1306	PTC186		RE 203	SK3197	RT-146	ECG235
Q6	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q7	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q8	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *

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

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.
Q9	2SC1675K		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q10	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC7840(1)		GE-60 *	(IR)2SC380AQ	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
Q11	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC7840(1)		GE-60 *	(IR)2SC380AQ	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
Q12	2SD325E		GE-28	WEP1306	PTC110		HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SD325(1)		GE-28	WEP1306	PTC110		HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SC1096E (1)		GE-28	WEP1096	PTC110		HEPS3061	RE 42	SK3197	RT-166	ECG186A
Q13	2SD325E		GE-28	WEP1306	PTC110		HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SD325(1)		GE-28	WEP1306	PTC110		HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SC1096E (1)		GE-28	WEP1096	PTC110		HEPS3061	RE 42	SK3197	RT-166	ECG186A
Q14	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *		HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q15	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *		HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q16	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *		HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q17	2SC1675L		GE-213	TR-33	PTC139 *		HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *		HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *		HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q18	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q19	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *		HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

* Lead configuration may vary from original.
(1) Used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C29	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C41	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C43	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C44	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C45	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C46	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C67	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C68	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C69	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C70	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C71	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C73	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C74	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C78	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C79	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C82	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C85	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250

BOMAN MODEL CB-515

CAPACITORS

ITEM No.	RATING
C1	330
C2	.047
C3	.047
C4	.01
C5	100 NPO
C6	.022
C7	.022
C8	150 NPO
C9	150 NPO
C10	150 NPO
C11	3 NPO
C12	3 NPO
C13	3 NPO
C14	22 NPO
C15	.01
C16	.022
C17	.047
C18	33 NPO
C19	.047
C20	.01
C21	390
C22	390
C23	.022
C24	100 NPO
C25	.047
C26	.022
C27	220
C28	82 NPO
C30	1
	1.5
C31	100 NPO
C32	.022
C33	.022
C34	.01
C35	.01
C36	.01
C37	.047
C38	100 NPO
	150
C39	.022
C40	15 NPO
C42	.0047
C47	.01
C48	.047
C49	.047
C50	.047
C51	.047
C52	.022
C53	.047
C54	.047
C55	.022
C56	.022
C57	.01
C58	.022
C59	.047
C60	33 NPO
C61	.022
C62	.01
C63	.047
C64	39 NPO
C65	.01
C66	.01
C72	.01
C75	.01
C76	.022
C77	.047
C80	.022
C81	.047
C83	.047
C84	220
C86	.1
C87	.01
C88	.047
C89	.047
C90	.1
C102	15 NPO
CV1	120
CV2	50

(1) Used in some versions.

l) 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')
l) 23AWG	BELDEN No. 8415 (6')
l) 28AWG	BELDEN No. 9467 (6')
	BELDEN No. 9465 (7-1/2')

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

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.
Q9	2SC1675K		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q10	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC7840(1)		GE-60 *	(IR)2SC380AQ	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
Q11	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC7840(1)		GE-60 *	(IR)2SC380AQ	PTC132 *	HEPS0008 *	RE 28 *	SK3018 *	RT-187	ECG229 *
Q12	2SD325E		GE-28	WEP1306	PTC110	HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SD325(1)		GE-28	WEP1306	PTC110	HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SC1096E (1)		GE-28	WEP1096	PTC110	HEPS3061	RE 42	SK3197	RT-166	ECG186A
Q13	2SD325E		GE-28	WEP1306	PTC110	HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SD325(1)		GE-28	WEP1306	PTC110	HEPS5027	RE 42	SK3197	RT-197	ECG186
	2SC1096E (1)		GE-28	WEP1096	PTC110	HEPS3061	RE 42	SK3197	RT-166	ECG186A
Q14	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q15	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q16	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC372(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0015 *	RE 13 *	SK3122	RT-308	ECG123A *
Q17	2SC1675L		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC1675(1)		GE-213	TR-33	PTC139 *	HEPS0025 *	RE 13 *	SK3124	RT-308	ECG229 *
	2SC394Y(1)		GE-61 *	(IR)2SC372	PTC121 *	HEPS0014 *	RE 9	SK3018 *	RT-309	ECG229 *
Q18	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
Q19	2SC945L		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
	2SC945T(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199
	2SC945Q(1)		GE-212	(IR)2SC945	PTC121 *	HEPS0015 *	RE 192	SK3124	RT-107A	ECG199

No.	SPRAGUE PART No.	SYLVANIA PART No.
	RT-263	ECG109
	RT-263	ECG109
	RT-263	ECG109
	RT-263	ECG109
	RT-218	ECG177
	RT-213	ECG116
	RT-213	ECG116
	RT-218	ECG177
	RT-218	ECG177
	RT-240	ECG139
	RT-213	ECG116
	RT-308	ECG229 *
	RT-308	ECG229 *
*	RT-309	ECG229 *
	RT-308	ECG229 *
	RT-308	ECG229 *
*	RT-309	ECG229 *
*	RT-302	ECG123A *
*	RT-302	ECG123A *
	RT-302	ECG128 *
	RT-162	ECG295
	RT-162	ECG295
	RT-162	ECG295
	RT-146	ECG235
	RT-146	ECG235
	RT-146	ECG235
	RT-308	ECG229 *
	RT-308	ECG229 *
*	RT-309	ECG229 *
	RT-107A	ECG199
	RT-107A	ECG199
	RT-107A	ECG199
	RT-107A	ECG199
*	RT-309	ECG229 *
	RT-107A	ECG199
	RT-107A	ECG199
	RT-107A	ECG199
	RT-107A	ECG199
*	RT-309	ECG229 *

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C29	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C41	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C43	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C44	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C45	4.7 16V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C46	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C67	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C68	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C69	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C70	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C71	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C73	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C74	1 16V		PC1-50	VTT1A50	QV1-9	EV-1315
C78	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C79	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C82	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C85	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250

* Lead configuration may vary from original.
(1) Used in some versions.

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

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	330		DD-331	GP330	GP333		10TS-T33
C2	.047		UK25-503		MAG2515		HY-735
C3	.047		UK25-503		MAG2515		HY-735
C4	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C5	100 NPO		DTZ-100	NP0100	CN0310		10TCC-T10
C6	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C7	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C8	150 NPO		DTZ-150		CN0315		10TCC-T15
C9	150 NPO		DTZ-150		CN0315		10TCC-T15
C10	150 NPO		DTZ-150		CN0315		10TCC-T15
C11	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C12	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C13	3 NPO		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C14	22 NPO		DTZ-22	NP022	CN0422		10TCC-Q22
C15	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C16	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C17	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C18	33 NPO		DTZ-33	NP033	CN0433		10TCC-Q33
C19	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C20	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C21	390		DD-391	GP390	GP339		10TS-T39
C22	390		DD-391	GP390	GP339		10TS-T39
C23	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C24	100 NPO		DTZ-100	NP0100	CN0310		10TCC-T10
C25	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C26	.022		UK25-223				HY-725
C27	220		DD-221		GP322		10TS-T22
C28	82 NPO		DTZ-82	NP082	CN0482		10TCC-Q82
C30	1				CN0510		10TCC-V10
	1.5	(1)	DTZ-1R5	NP01P5	CN0515		10TCC-V15
C31	100 NPO		DTZ-100	NP0100	CN0310		10TCC-T10
C32	.022		UK25-223				HY-725
C33	.022		UK25-223				HY-725
C34	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C35	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C36	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C37	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C38	100 NPO		DTZ-100	NP0100	CN0310		10TCC-T10
	150	(1)	DTZ-150		CN0315		10TCC-T15
C39	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C40	15 NPO		DTZ-15	NP015	CN0415		10TCC-Q15
C42	.0047			WMF1D47	EWF1A247	QF1-57	1PB-D47
C47	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C48	.047		UK25-503		MAG2515		HY-735
C49	.047		UK25-503		MAG2515		HY-735
C50	.047		UK25-503		MAG2515		HY-735
C51	.047		UK25-503		MAG2515		HY-735
C52	.022		UK25-223				HY-725
C53	.047		UK25-503		MAG2515		HY-735
C54	.047		UK25-503		MAG2515		HY-735
C55	.022		UK25-223				HY-725
C56	.022		UK25-223				HY-725
C57	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C58	.022		UK25-223				HY-725
C59	.047		UK25-503		MAG2515		HY-735
C60	33 NPO		DTZ-33	NP033	CN0433		10TCC-Q33
C61	.022		UK25-223				HY-725
C62	.01		DC-103	MGP01	TA110	QC2-141	TG-S10
C63	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C64	39 NPO				CN0439		10TCC-Q39
C65	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C66	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C72	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C75	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C76	.022		UK25-223				HY-725
C77	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C80	.022			DPMS2S22	EWF1A122	QF1-127	1PB-S22
C81	.047		UK25-503		MAG2515		HY-735
C83	.047		UK25-503		MAG2515		HY-735
C84	220		DD-221		GP322		10TS-T22
C86	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C87	.01			WMF1S1	EWF1A110	QF1-91	1PB-S10
C88	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C89	.047			DPMS2S47	EWF1A147	QF1-171	1PB-S47
C90	.1			DPMS2P1	EWF1A010	QF1-215	1PB-P10
C102	15 NPO		DTZ-15	NP015	CN0415		10TCC-Q15
CV1	120						
CV2	50						

(1) Used in some versions.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
RV1	RF Meter	47K		T-50K (2)	C-503 (2)	MTC54L1 (2)	X201R503B (2)
RV2	S Meter	10K		T-10K (2)	C-103 (2)	MTC14L1 (2)	X201R103B (2)
RV3	Volume/Power Switch	10K					
RV4	Squelch	10K					
RV5	AMC	10K					

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

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	RF Choke (2.2uH)		W60-414		
L2	RF Choke		W60-415		
L3	RF Choke		W60-416		
L4	RF Choke		W60-417		
L5	Final (27MHz)		W60-418		
L6	RF Choke		W60-419		
L8	RF Choke		W60-406		
T1	Xmit Oscillator(10MHz)		W60-410		
T2	Xmit Mixer (27MHz)		W60-410		
T3	Xmit Mixer (27MHz)		W60-410		
T4	Xmit Mixer (27MHz)		W60-411		
T5	Xmit Mixer (27MHz)		W60-412		
T6	Xmit Buffer (27MHz)		W60-413		
T7	Xmit Driver (27MHz)		W60-404		
T11	Rec Antenna (27MHz)		W60-405		
T12	Rec RF (27MHz)		W60-406		
T13	IF (10MHz)		W60-408		
T14	Rec Oscillator (10MHz)		W60-407		
T15	IF (455kHz)		W60-407		
T16	IF (455kHz)		W60-407		
T17	IF (455kHz)		W60-409		
T18	Synth Oscillator (37MHz)				

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.	
T21	1.1A	.2	.3mH	W60-403 (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.	
T20	32	1 8	2 23	W60-401 (1)			(1) Number on unit.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T19	2	1		W60-402 (1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM 8 Ohms		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			AGC2	HDJ	312002	150145	FG2-2
F2	2Amp			AGC2	HDJ	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		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		10.7MHz (10.7MF-W)
CF2	Ceramic Filter		455kHz (LF-B6)
D2	LED		TX Indicator (3.5mA @ 1.84V)
M1	Meter		S/RF
S1	Switch		Channel Selector
S2	Switch		PA/CB
X1	Crystal		37.600MHz
X2	Crystal		37.650MHz
X3	Crystal		37.700MHz
X4	Crystal		37.750MHz
X5	Crystal		37.800MHz
X6	Crystal		37.850MHz
X7	Crystal		10.180MHz
X8	Crystal		10.170MHz
X9	Crystal		10.160MHz
X10	Crystal		10.140MHz
X11	Crystal		10.635MHz
X12	Crystal		10.625MHz
X13	Crystal		10.615MHz
X14	Crystal		10.595MHz