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 D40

MANUFACTURER'S SPECIFICATIONS

GENERAL

Ciruitry:	11 Transistors, 4 ICs, 18 Diodes
Frequency Control:	P.L.L. (Phase Locked Loop) Frequency Sythesizing System
Channels:	40 Channels Installed
Mode of Operation:	AM
Power Source Voltage:	13.8V DC
Speaker:	3" Dynamic, 8 ohm
Microphone:	Dynamic 500 ohm

RECEIVER SECTION

Receiving System:	Dual Conversion System
Sensitivity:	1.0 μV for 10 dB S/N
Selectivity:	More than 60 dB down at $\pm$10 kHz
Spurious Rejection:	More than 50 dB down
Audio Output Power:	2.5 Watts at 8 ohm
Squelch Range:	1.0 μV to 1,000 μV
RF Gain Control:	30 dB or more
IF 1st:	9.785 MHz
2nd:	455 kHz

TRANSMITTER SECTION

Modulation System:	High Level Class B, Power IC
RF Output Power (at 13.8V):	4 Watts (F.C.C. Maximum)
Frequency Tolerance:	$\pm$0.005%
Spurious Rejection:	Exceeds $-$60 dB

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:
T101, T102	9440
T601	5009, 8728A, 8728
L303, T301, T302	9091, 8728A, 8728

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (PLL Pin 1).	Ch. 1		Check for 10.240MHz.
Input of frequency counter to TP2 (PLL Pin 11).	Ch. 1		Check for 17.180MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3 (PLL Pin 14).	Ch. 1		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, Squelch MINIMUM, ANL Off

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP4 (Q101 Pin 12). 455kHz,1000Hz @ 30% modulation.	Ch. 19	T601	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation.	Ch. 19	T102,T101, VR101	Adjust for maximum output. If necessary readjust T601.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
RF Gain Maximum, ANL Off

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 1,000uV.	Ch. 19 Squelch Maximum	VR102	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz,1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR104	SIG METER Adjust for 9 on SIG scale of meter.

TRANSMITTER ALIGNMENT

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19	T301,T302, L303	Adjust for maximum.
	Ch. 19	L303	Adjust for 4 watts maximum.

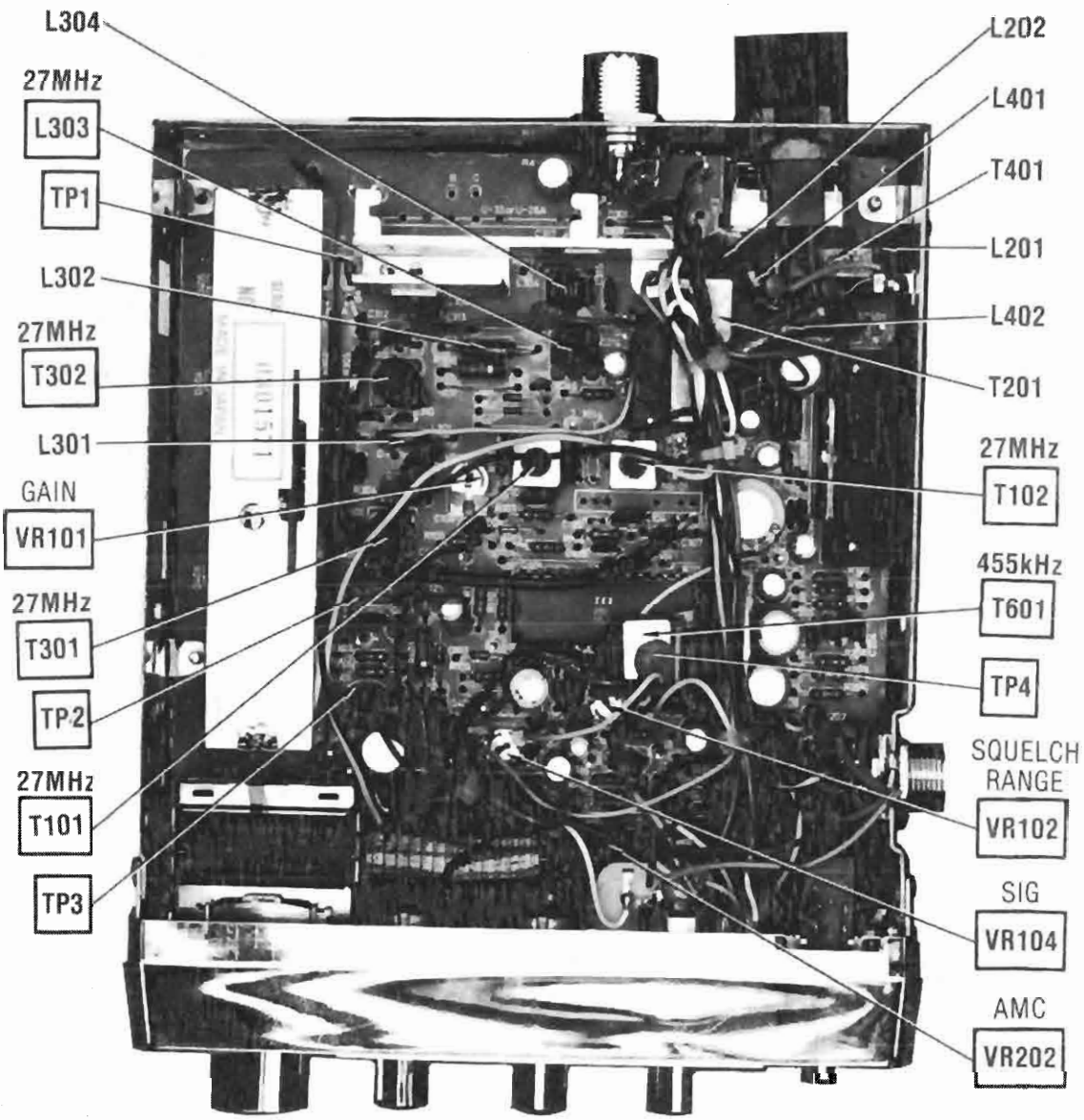
TRANSMITTER ADJUSTMENTS

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.

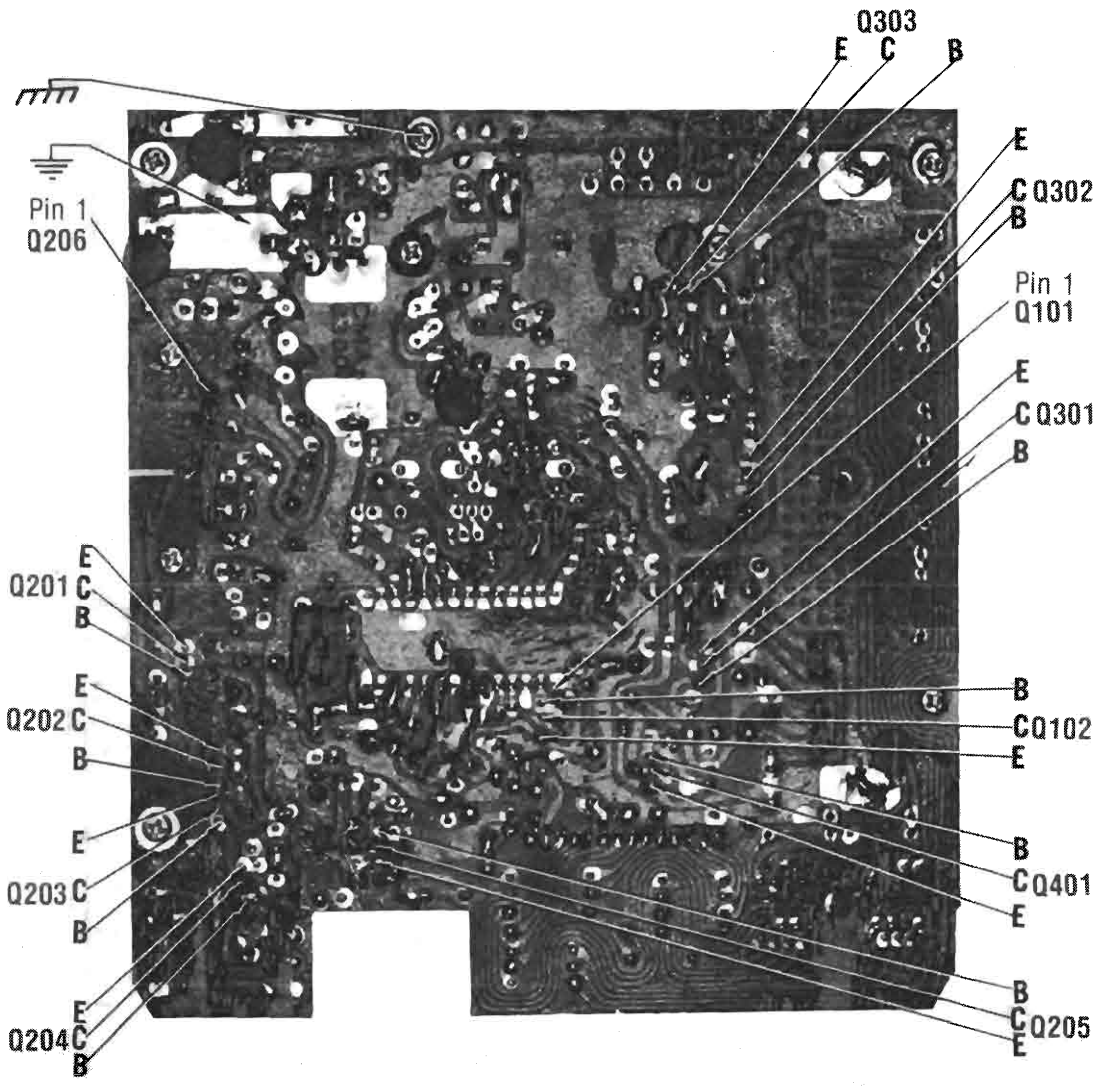
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna jack. Inject a 1000Hz, 100mV signal at Mic input.	Ch. 19	VR202	AMC Adjust VR202 for 100% modulation maximum.

TRUTH CHART

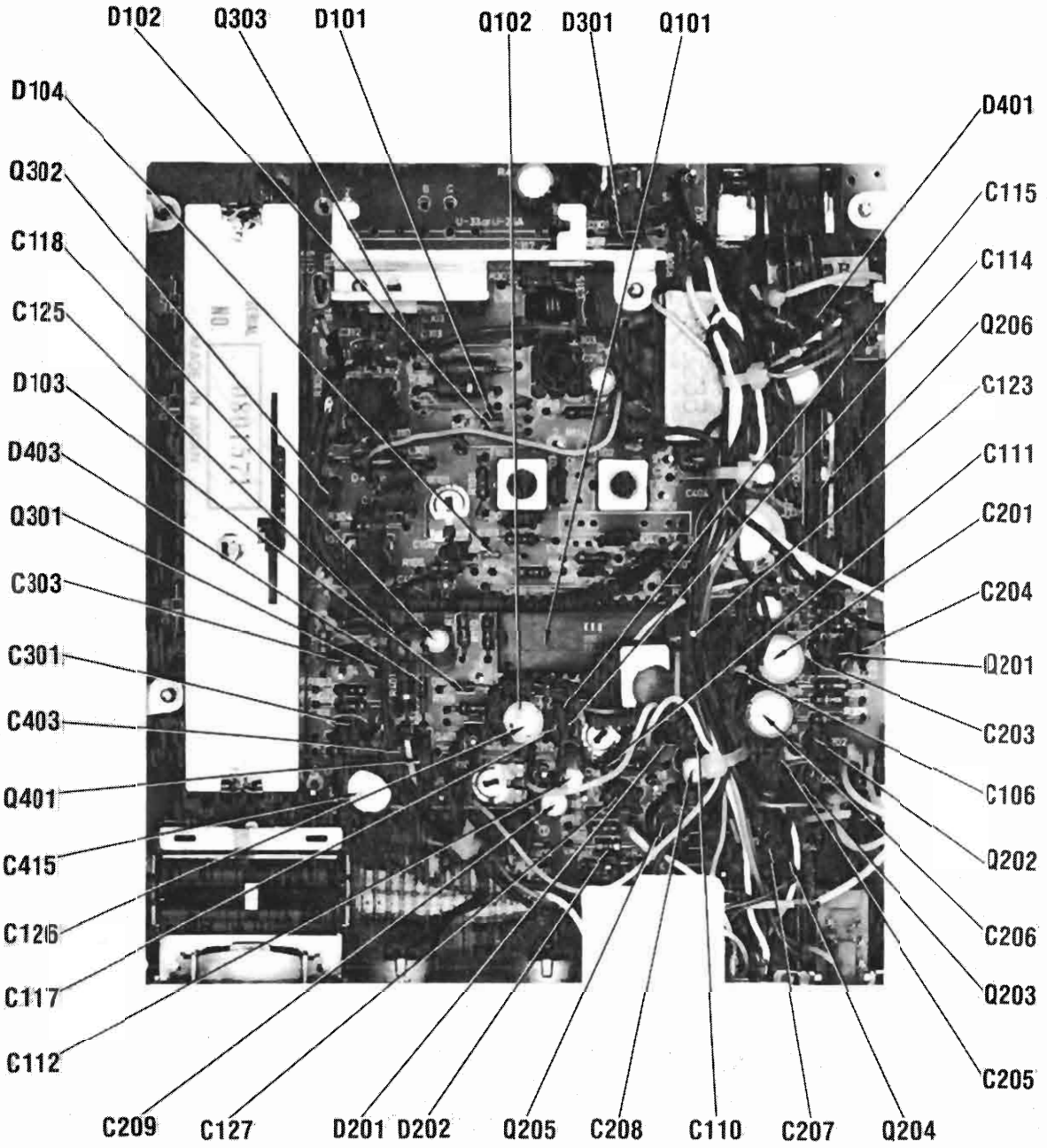
CHANNEL			PLL PROGRAM DIVIDER PINS 3	4	5	6	7	8	REC SYNTHESIZER OUTPUT IN MHz AT TP2 (PLL,PIN 11)	XMT SYNTHESIZER OUTPUT IN MHz AT TP3 (PLL,PIN 14)	
			1 = 5.80 Volts			0 = 0 Volts					
1			0	0	0	0	0	0	17.180	26.965	
2			0	0	0	0	0	1	17.190	26.975	
3			0	0	0	0	1	0	17.200	26.985	
4			0	0	0	1	0	0	17.220	27.005	
5			0	0	0	1	0	1	17.230	27.015	
6			0	0	0	1	1	0	17.240	27.025	
7			0	0	0	1	1	1	17.250	27.035	
8			0	0	1	0	0	1	17.270	27.055	
9			0	0	1	0	1	0	17.280	27.065	
10			0	0	1	0	1	1	17.290	27.075	
11			0	0	1	1	0	0	17.300	27.085	
12			0	0	1	1	1	0	17.320	27.105	
13			0	0	1	1	1	1	17.330	27.115	
14			0	1	0	0	0	0	17.340	27.125	
15			0	1	0	0	0	1	17.350	27.135	
16			0	1	0	0	1	1	17.370	27.155	
17			0	1	0	1	0	0	17.380	27.165	
18			0	1	0	1	0	1	17.390	27.175	
19			0	1	0	1	1	0	17.400	27.185	
20			0	1	1	0	0	0	17.420	27.205	
21			0	1	1	0	0	1	17.430	27.215	
22			0	1	1	0	1	0	17.440	27.225	
23			0	1	1	1	0	1	17.470	27.255	
24			0	1	1	0	1	1	17.450	27.235	
25			0	1	1	1	0	0	17.460	27.245	
26			0	1	1	1	1	0	17.480	27.265	
27			0	1	1	1	1	1	17.490	27.275	
28			1	0	0	0	0	0	17.500	27.285	
29			1	0	0	0	0	1	17.510	27.295	
30			1	0	0	0	1	0	17.520	27.305	
31			1	0	0	0	1	1	17.530	27.315	
32			1	0	0	1	0	0	17.540	27.325	
33			1	0	0	1	0	1	17.550	27.335	
34			1	0	0	1	1	0	17.560	27.345	
35			1	0	0	1	1	1	17.570	27.355	
36			1	0	1	0	0	0	17.580	27.365	
37			1	0	1	0	0	1	17.590	27.375	
38			1	0	1	0	1	0	17.600	27.385	
39			1	0	1	0	1	1	17.610	27.395	
40			1	0	1	1	0	0	17.620	27.405	



CHASSIS-BOTTOM

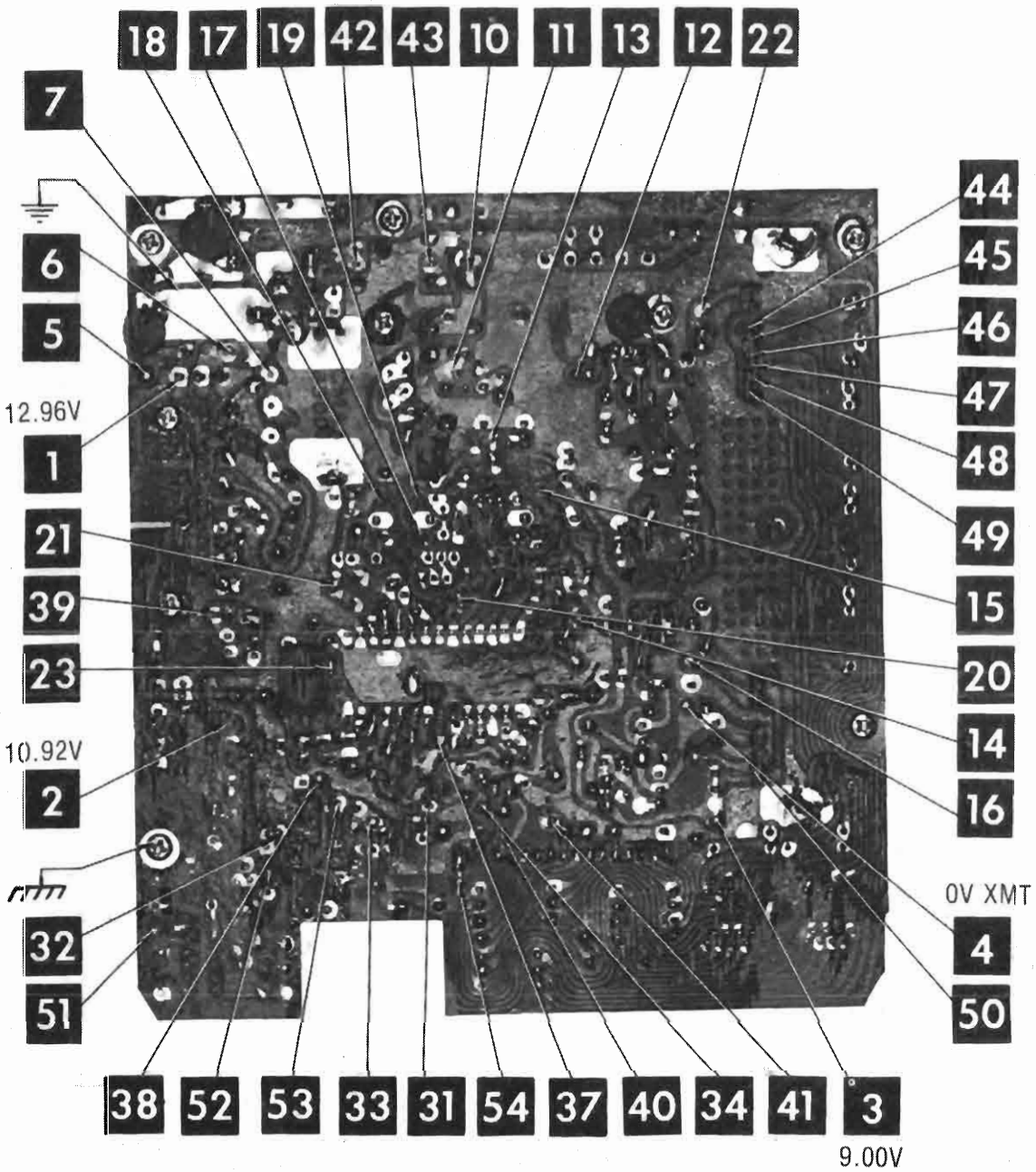

Q303
E C B
E
C Q302
B
Pin 1
Q206
Pin 1
Q101
E
C Q301
B
E
Q201 C
B
E
Q202 C
B
E
Q203 C
B
E
Q204 C
B
B
C Q102
E
B
C Q401
E
B
C Q205
E

MAIN BOARD

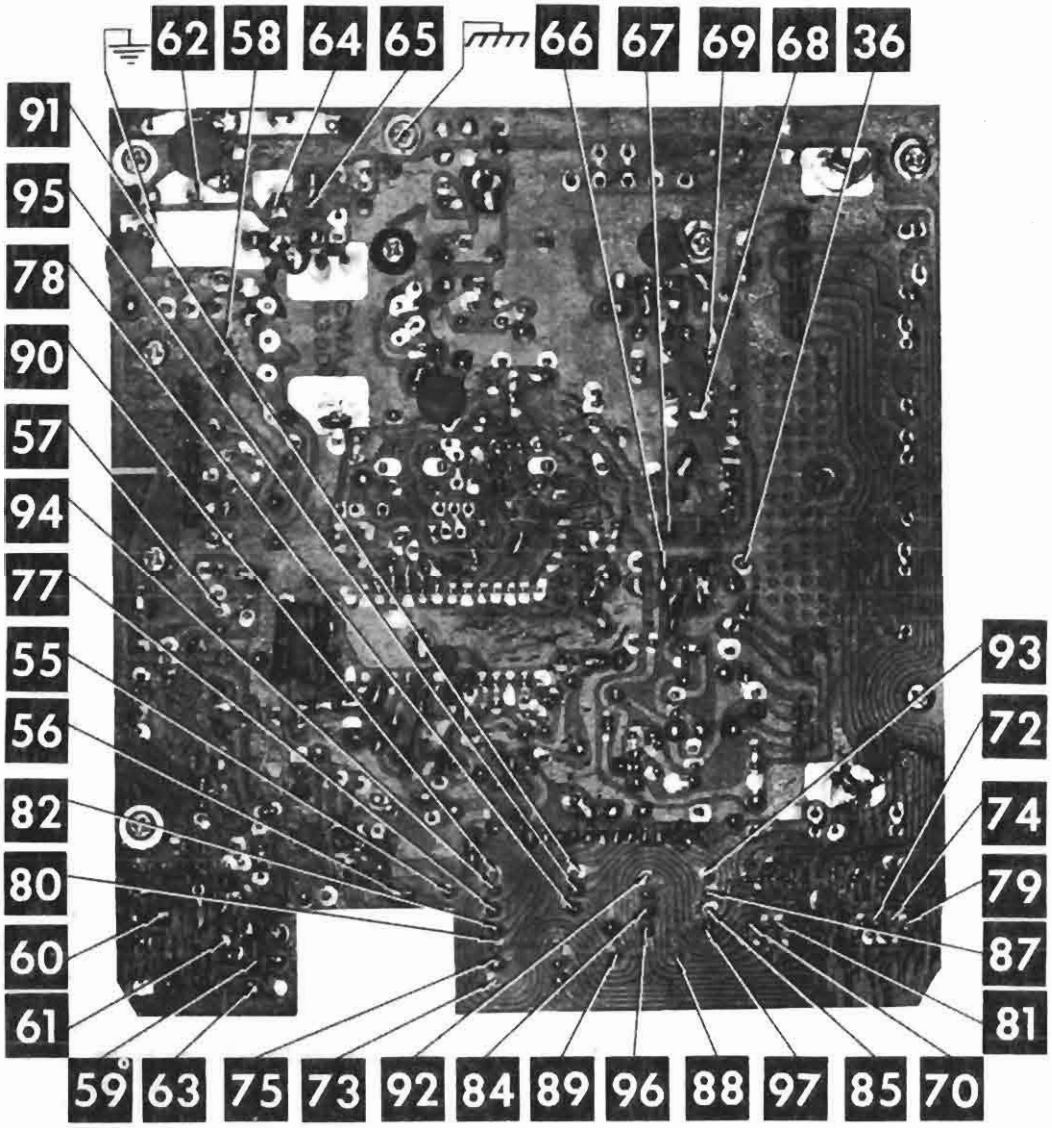

D102
Q303
D101
Q102
D301
Q101
D104
D401
Q302
C115
C118
C114
C125
Q206
D103
C123
D403
C111
Q301
C201
C303
C204
C301
Q201
C403
C203
Q401
C106
C415
Q202
C126
C206
C117
Q203
C112
C205
C209
C127
D201
D202
Q205
C208
C110
C207
Q204

MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo



MAIN BOARD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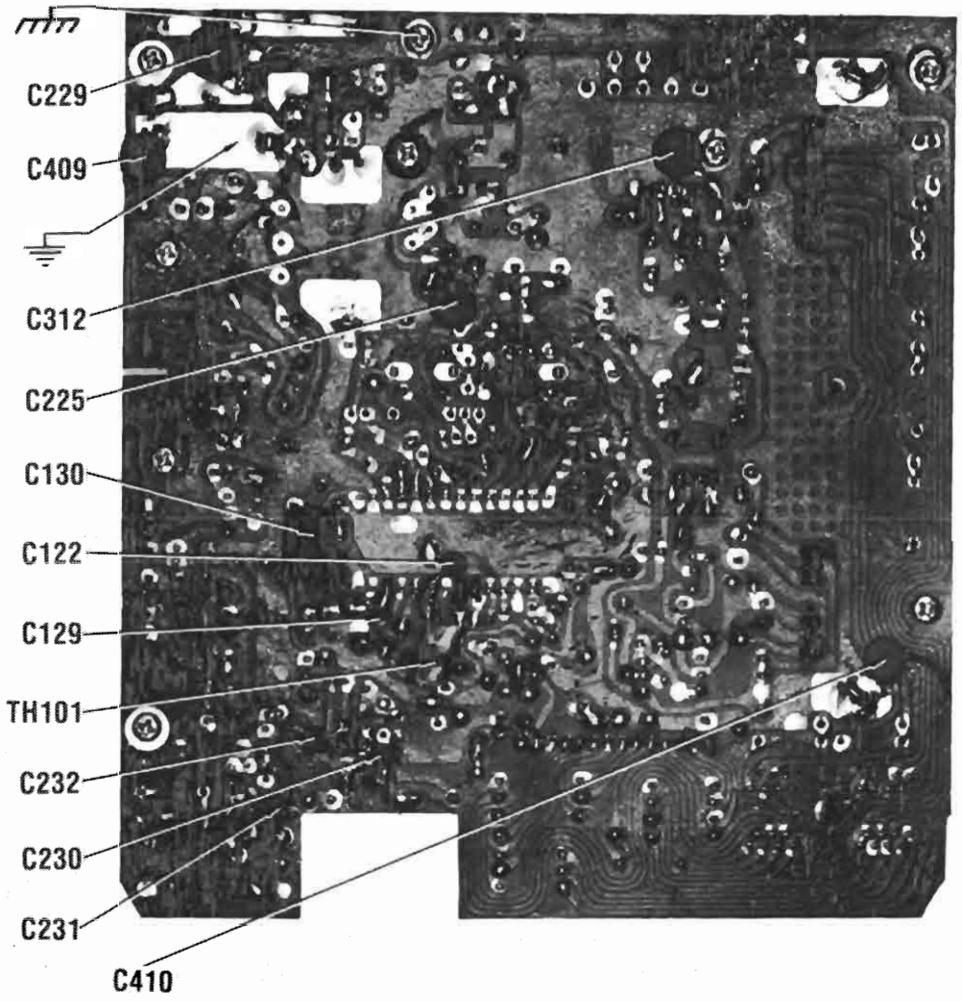
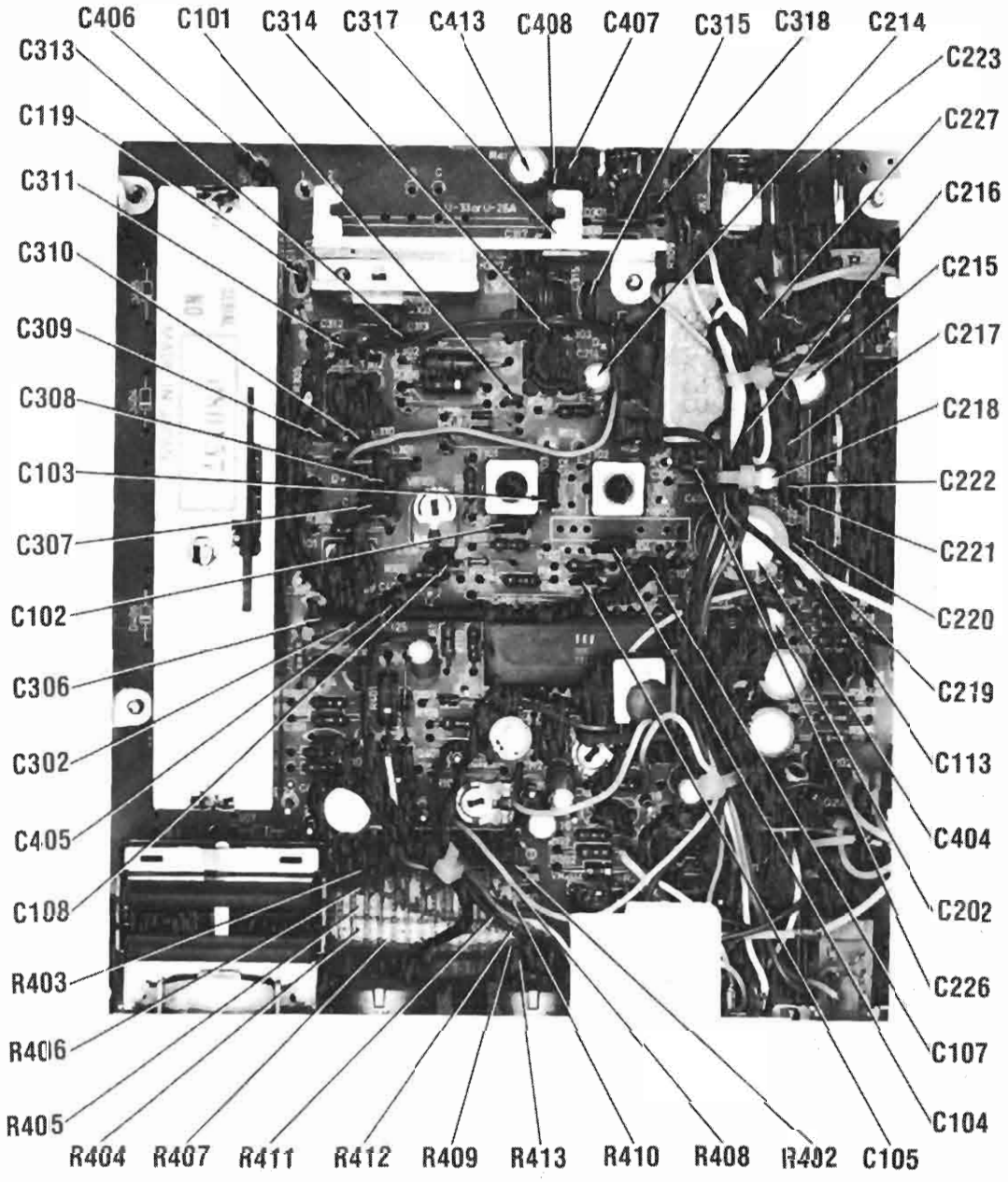
MAIN BOARD



MAIN BOARD


C406
C101
C314
C317
C413
C408
C407
C315
C318
C214
C313
C223
C119
C227
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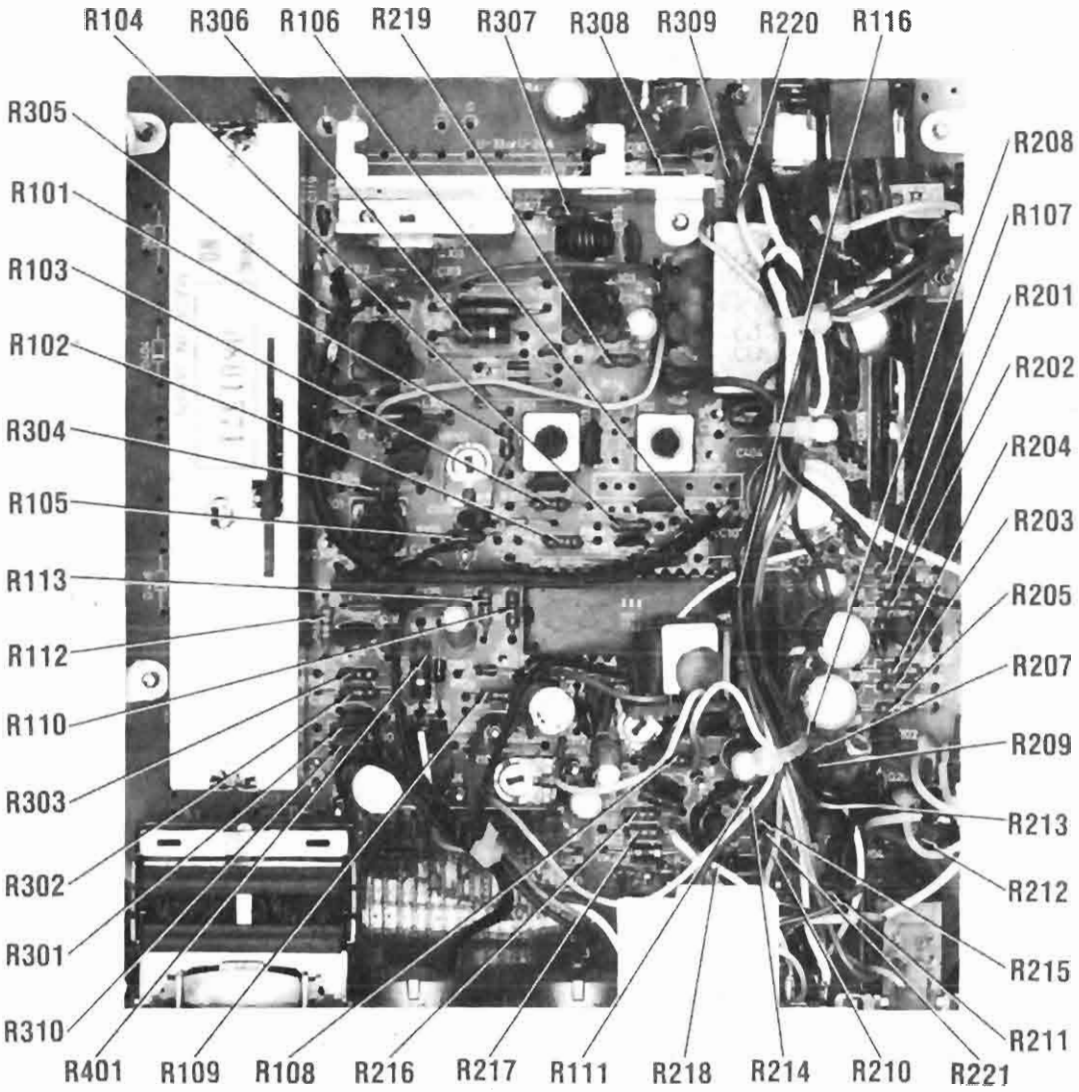
C216
C310
C215
C309
C217
C308
C218
C103
C222
C307
C221
C102
C220
C306
C219
C302
C113
C405
C404
C108
C202
R403
C226
R406
C107
R405
C104
R404
R407
R411
R412
R409
R413
R410
R408
R402
C105

MAIN BOARD


R104
R306
R106
R219
R307
R308
R309
R220
R116
R305
R101
R103
R102
R304
R105
R113
R112
R110
R303
R302
R301
R310
R401
R109
R108
R216
R217
R111
R218
R214
R210
R221
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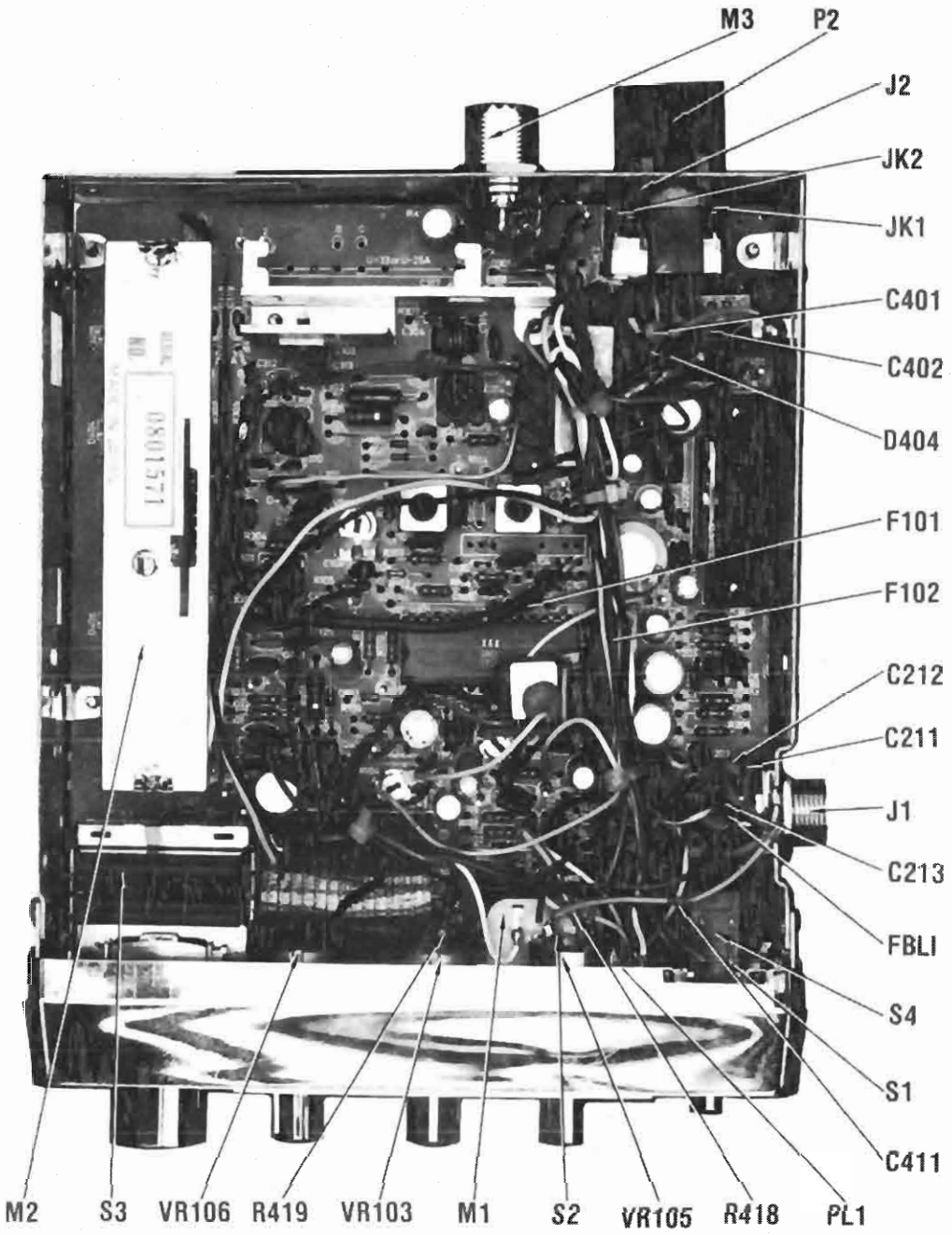
R209
R213
R212
R215
R211

MAIN BOARD



CHASSIS-BOTTOM

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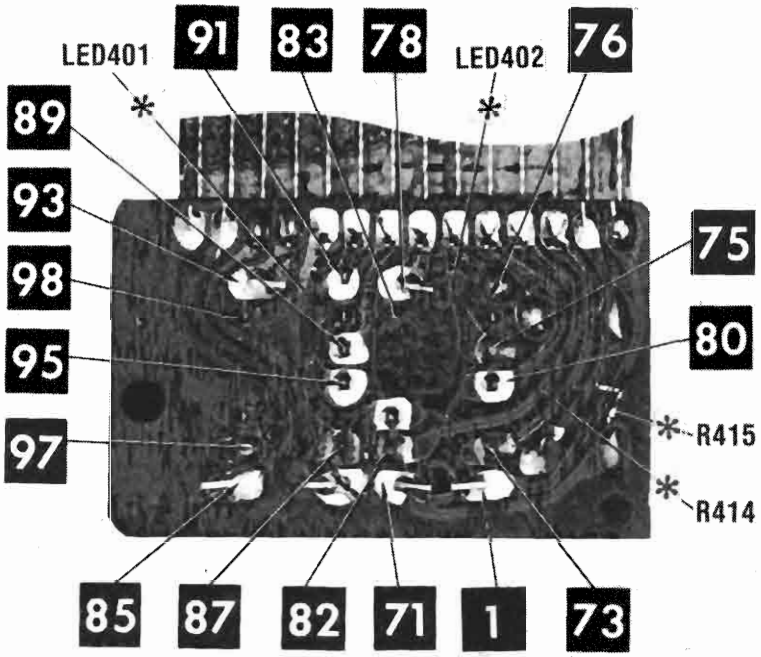

* Located on bottom of board

LED BOARD

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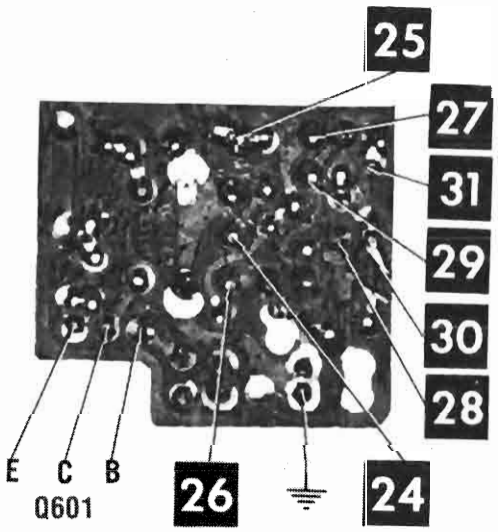
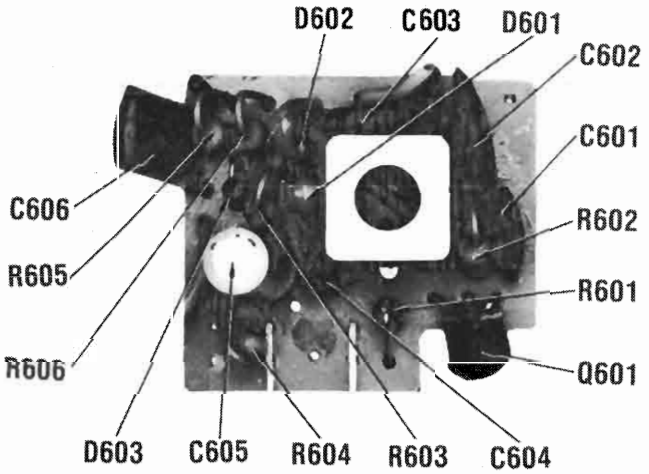
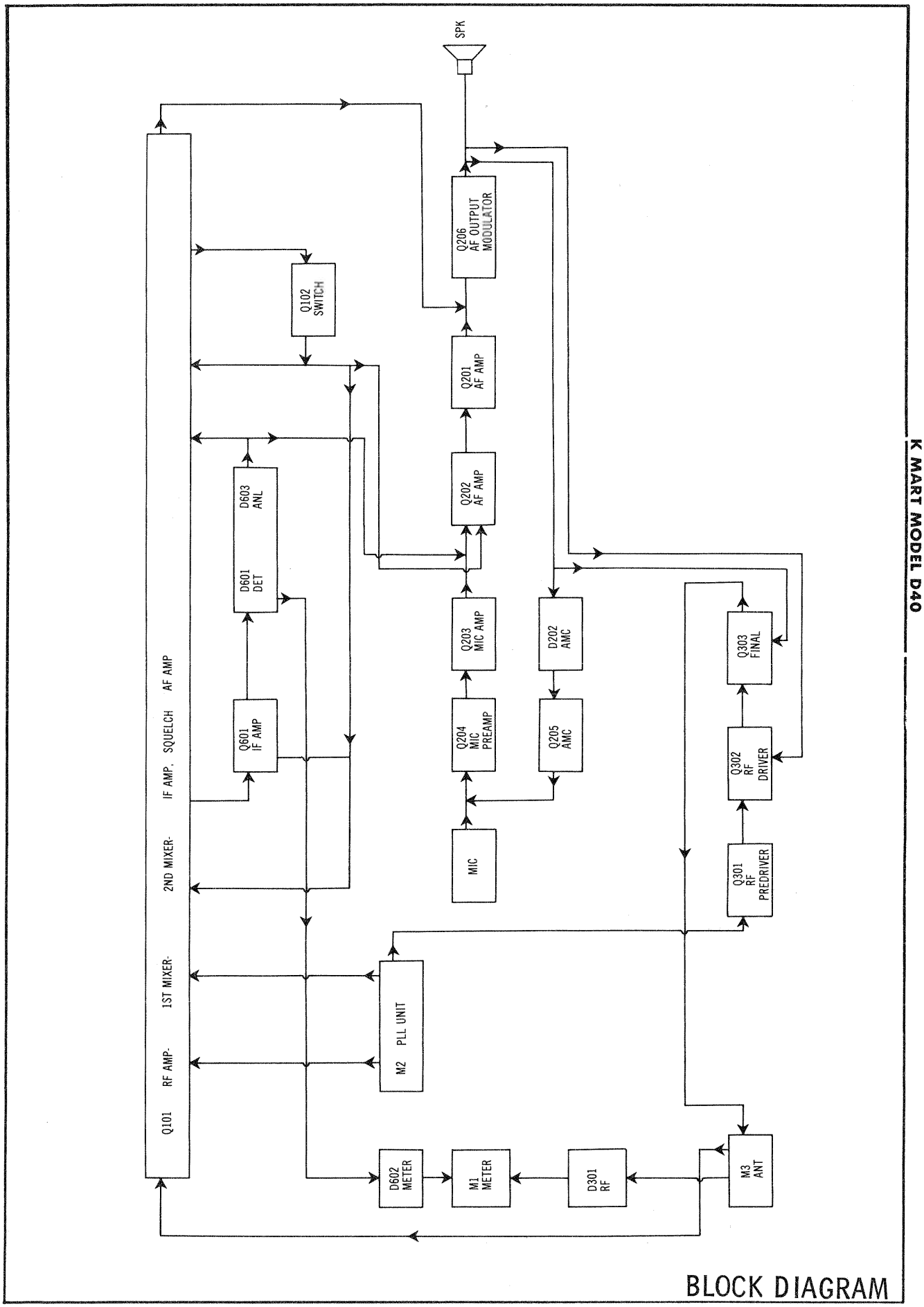
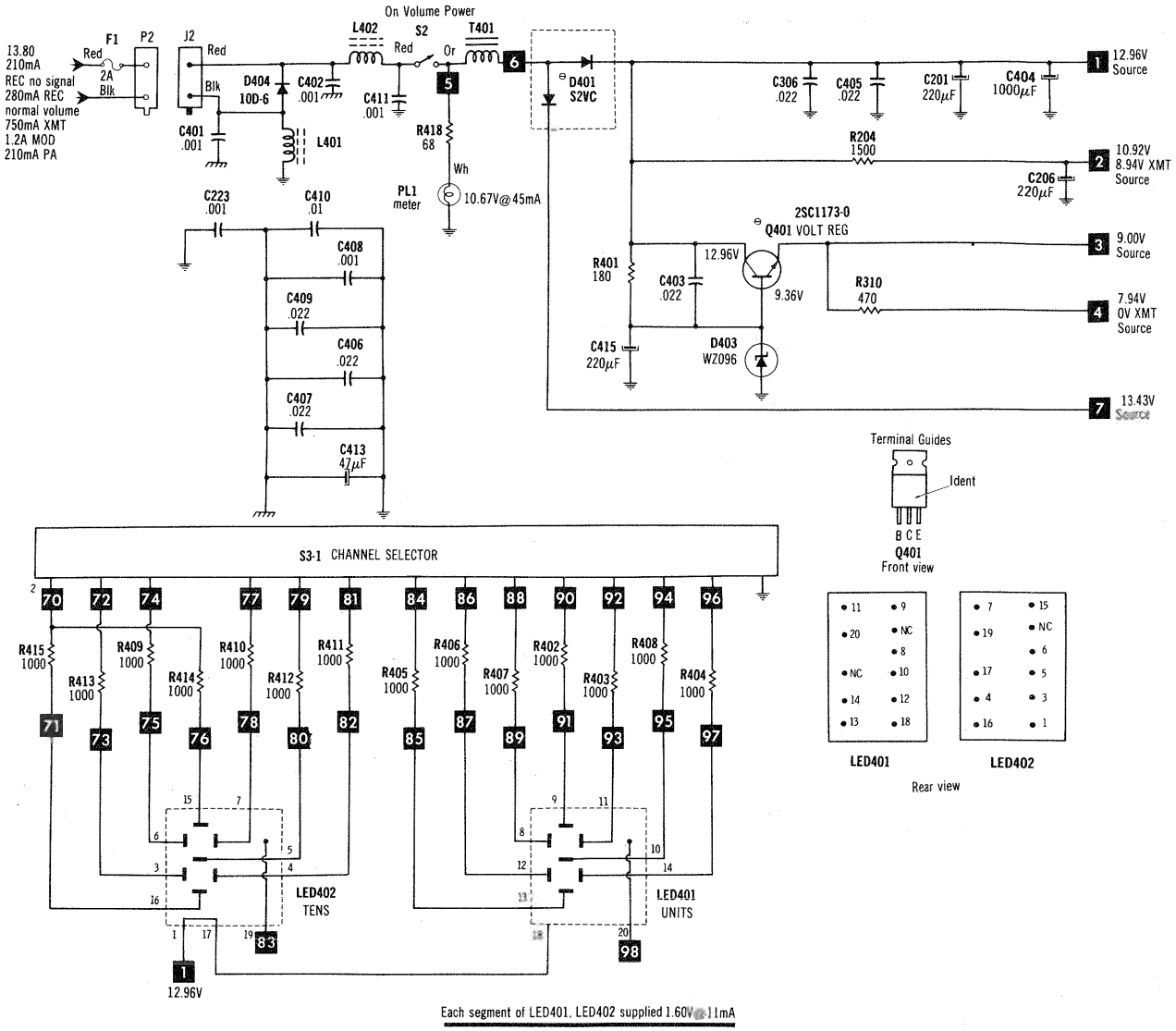




IF AMP-ANL BOARD



BLOCK DIAGRAM



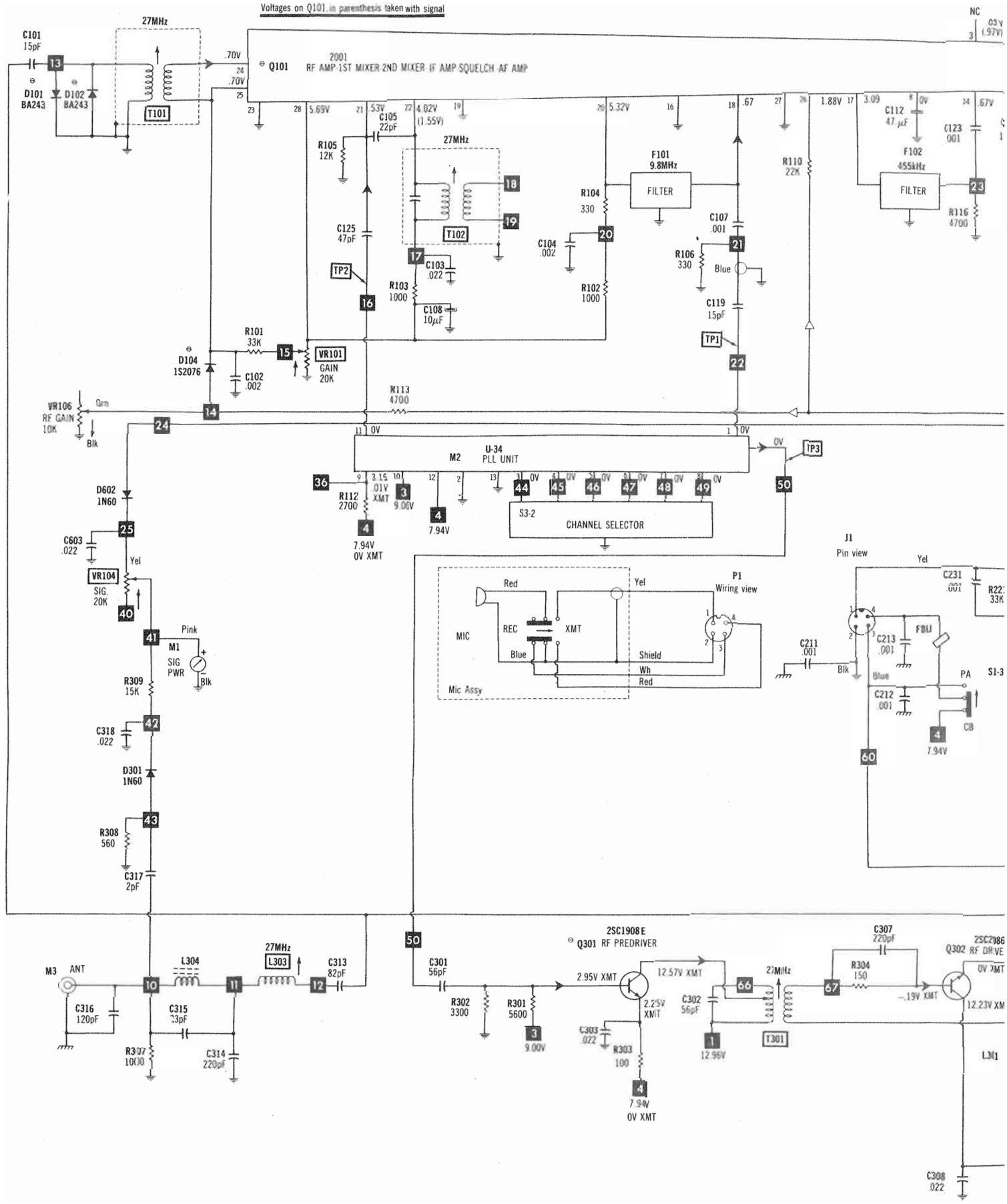
Each segment of LED401, LED402 supplied 1.60V@11mA

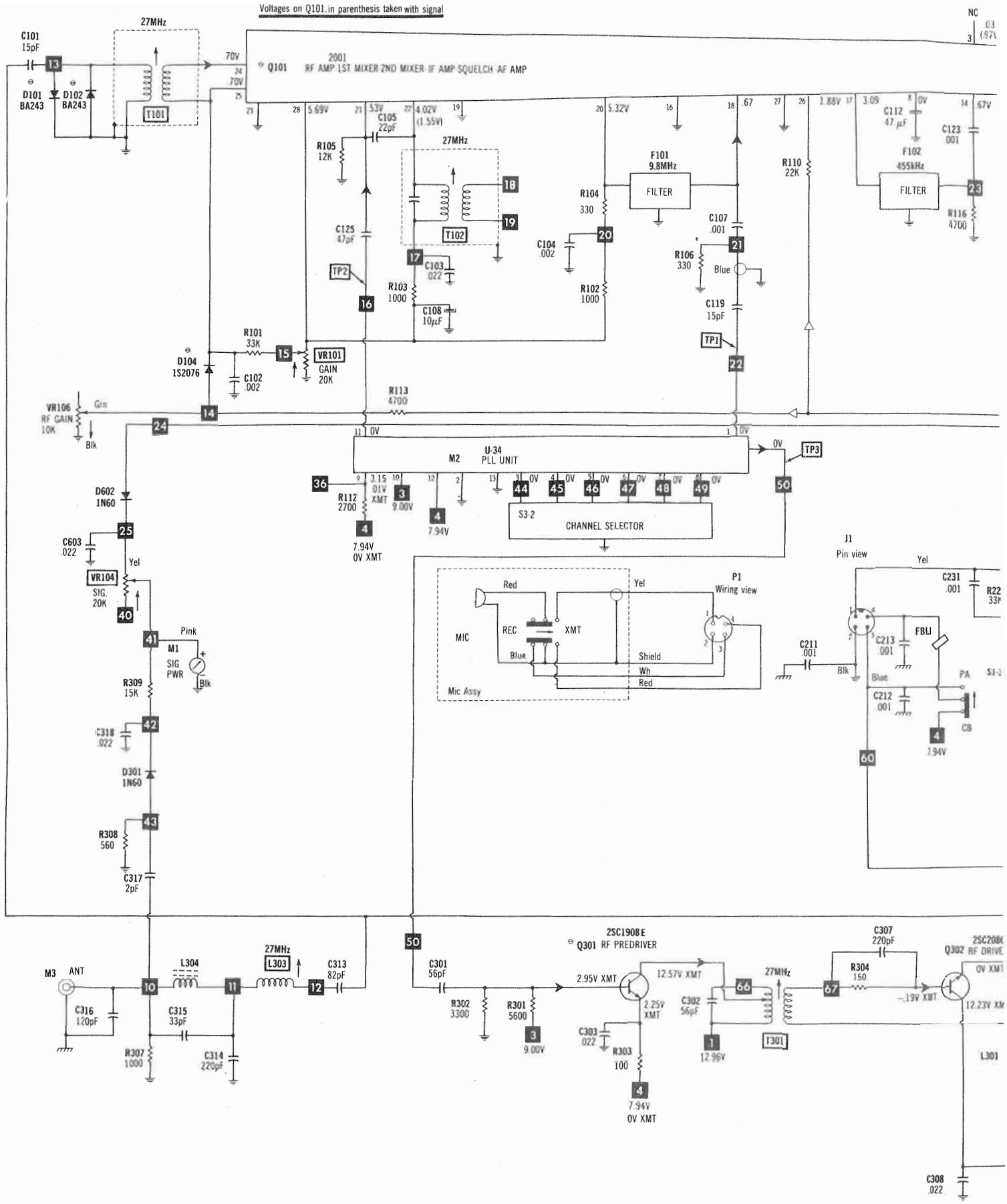
—✕— Circuitry not used in some versions
– – – Circuitry used in some versions
⊖ See parts list
※ Nominal value
⏚ Ground
Chassis
▽ Common tie point
← Signal path
◁ Voltage path

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

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®

POWER SUPPLY SCHEMATIC


Voltages on Q101 in parenthesis taken with signal
27MHz
C101 15pF
D101 BA243
D102 BA243
T101
Q101 2001 RF AMP 1ST MIXER 2ND MIXER IF AMP SQUELCH AF AMP
C105 22pF
R105 12K
C125 47pF
TP2
R103 1000
C103 .022
C108 10μF
T102
R104 330
C104 .002
R102 1000
F101 9.8MHz FILTER
C107 .001
R106 330
Blue
C119 15pF
TP1
R110 22K
C112 47μF
F102 455kHz FILTER
C123 .001
R116 4700
D104 1S2076
R101 33K
C102 .002
VR101 GAIN 20K
R113 4700
VR106 RF GAIN 10K
Grn
Blk
U-34 M2 PLL UNIT
TP3
R112 2700
S3-2 CHANNEL SELECTOR
D602 1N60
C603 .022
VR104 SIG. 20K
Yel
Pink
M1 SIG PWR
Blk
R309 15K
C318 .022
D301 1N60
R308 560
C317 2pF
P1 Wiring view
Red
Yel
MIC
REC
XMT
Blue
Shield
Wh
Red
Mic Assy
J1 Pin view
C231 .001
C213 .001
FBU
C211 .001
Blk
PA
S1-3
C212 .001
CB
M3 ANT
L304
27MHz
L303
C313 82pF
C316 120pF
C315 33pF
R307 1000
C314 220pF
2SC1908E Q301 RF PREDRIVER
C301 56pF
R302 3300
R301 5600
2.95V XMT
12.57V XMT
2.25V XMT
C303 .022
R303 100
C302 56pF
T301
C307 220pF
R304 150
2SC2086 Q302 RF DRIVE
0V XMT
12.23V XM
L301
C308 .022


Voltages on Q101.in parenthesis taken with signal
27MHz
C101 15pF
D101 BA243
D102 BA243
T101
70V
Q101 2001 RF AMP 1ST MIXER 2ND MIXER IF AMP SQUELCH AF AMP
C105 22pF
R105 12K
C125 47pF
TP2
T102
C103 .022
R103 1000
C108 10μF
R101 33K
D104 1S2076
C102 .002
VR101 GAIN 20K
R104 330
C104 .002
R102 1000
F101 9.8MHz FILTER
C107 .001
R106 330
Blue
C119 15pF
TP1
R110 22K
C112 47μF
F102 455kHz FILTER
C123 .001
R116 4700
NC
VR106 RF GAIN 10K
Blk
R113 4700
M2 U-34 PLL UNIT
S3-2 CHANNEL SELECTOR
TP3
R112 2700
7.94V 0V XMT
D602 1N60
C603 .022
VR104 SIG. 20K
Yel
Pink
M1 SIG PWR
R309 15K
C318 .022
D301 1N60
R308 560
C317 2pF
MIC
REC
XMT
Red
Blue
Shield
Wh
Red
Mic Assy
P1 Wiring view
J1 Pin view
C231 .001
C211 .001
C213 .001
FBLI
C212 .001
PA
CB
7.94V
M3 ANT
C316 120pF
L304
C315 33pF
R307 1000
C314 220pF
27MHz
L303
C313 82pF
2SC1908E
Q301 RF PREDRIVER
C301 56pF
R302 3300
R301 5600
9.00V
2.95V XMT
12.57V XMT
2.25V XMT
C303 .022
R303 100
7.94V 0V XMT
C302 56pF
12.96V
T301
C307 220pF
R304 150
-.19V XMT
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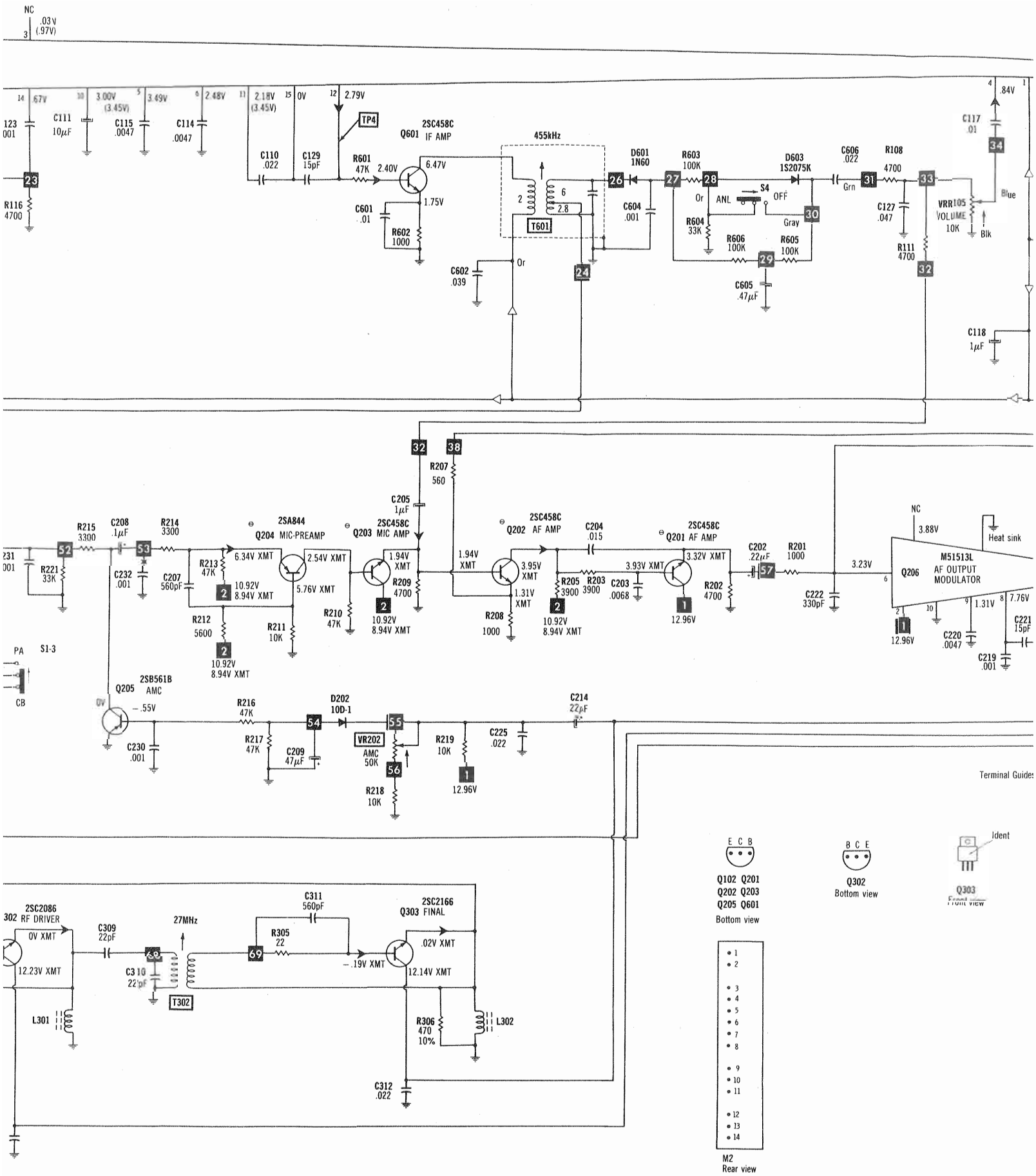
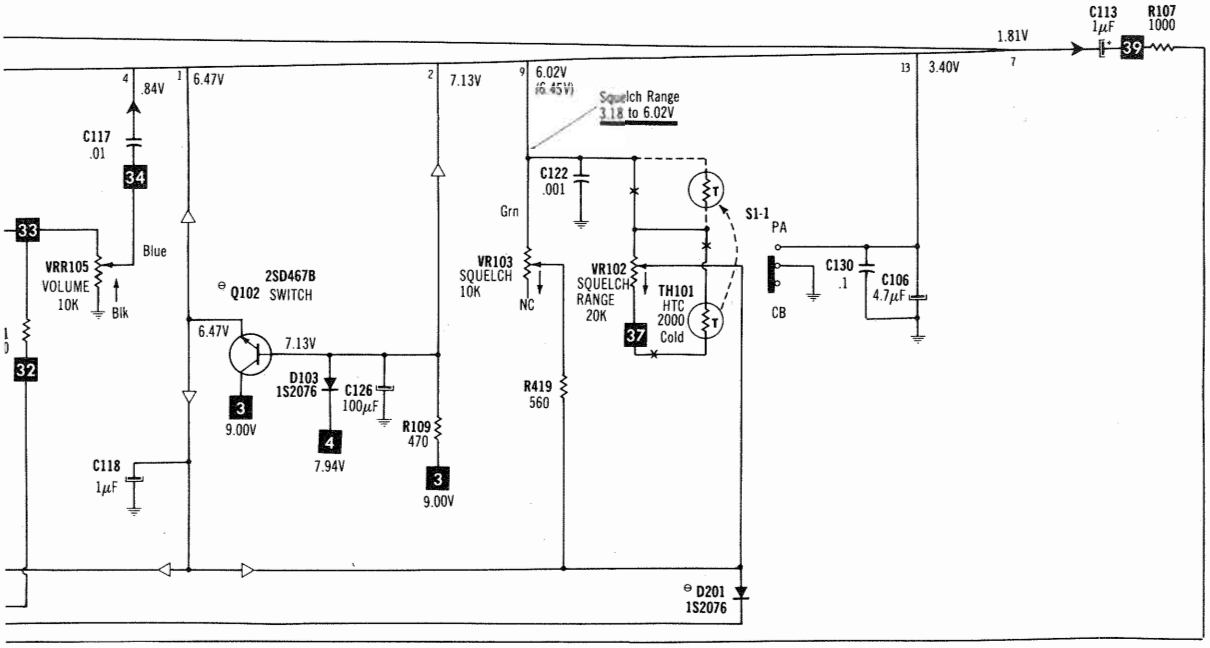
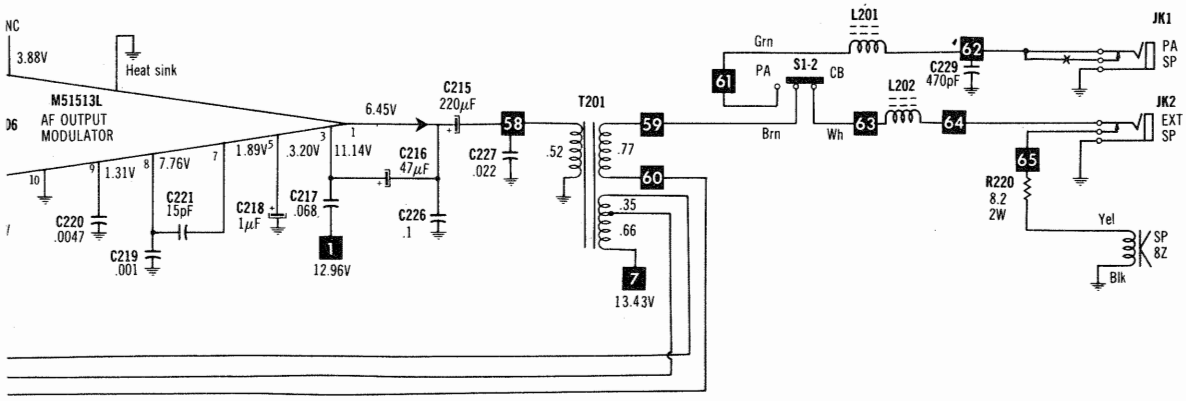
Q302 RF DRIVE
0V XMT
12.23V XM
L301
C308 .022

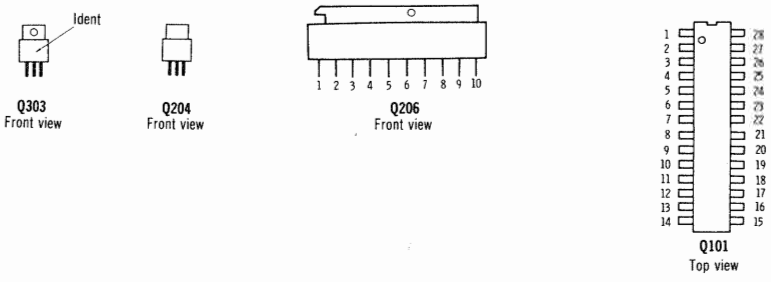


MAIN SCHEMATIC





Terminal Guides



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.
D101	BA243		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA244		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	MC301		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D102	BA243		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	BA244		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
	MC301		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
D103	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D104	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D201	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
D202	10D1		GE-504A	PTC201	HEPR0052	REN 116	SK3311	RT-213	ECG116	TM116	WEP156	212-76-02
D301	1N60		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-Z9001
D401	S2VC		GE-504A(2)	PTC201(2)	HEPR0052(2)	REN 116(2)	SK3311(2)	RT-213(2)	ECG116(2)	TM116(2)	WEP157(2)	212-76-02(2)
	10DC1		GE-504A(2)	PTC201(2)	HEPR0052(2)	REN 116(2)	SK3311(2)	RT-213(2)	ECG116(2)	TM116(2)	WEP157(2)	212-76-02(2)
	S3VC		GE-504A(2)	PTC201(2)	HEPR0052(2)	REN 116(2)	SK3311(2)	RT-213(2)	ECG116(2)	TM116(2)	WEP157(2)	212-76-02(2)
D403	WZ096		GEZD-10	ZB10B		REN 140	SK3061	RT-241	ECG140A	1N4740A	WEP1110	103-Z9010
D404	10D-6		GE-504A	PTC202	HEPR0054	REN 116	SK3313	RT-215	ECG116	TM116	WEP158	212-76-02
D601	1N60		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-Z9001
D602	1N60		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109	WEP134	103-Z9001
D603	1S2075K		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	TM177	WEP1062	103-131
Q101	2001											
	CC12001											
Q102	2SD467B		GE-243*	PTC178	HEPS3001*	REN 128	SK3020	RT-114*	ECG128*	TM128*	WEP59*	121-792
	2SD467C		GE-243*	PTC178	HEPS3001*	REN 128	SK3020	RT-114*	ECG128*	TM128*	WEP59*	121-792
Q201	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458D		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
Q202	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458D		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
Q203	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458D		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
Q204	2SA844C		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114	RT-126A*	ECG129*	TM129*	WEP60*	121-Z9005
	2SA844D		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114	RT-126A*	ECG129*	TM129*	WEP60*	121-Z9005
Q205	2SB561B		GE-82*	PTC103	HEPS0019*	REN 159	SK3466	RT-103A*	ECG159*	TM159	WEP62	121-Z9003
Q206	M51513L											
Q301	2SC1908E		GE-20*	PTC136*	HEPS0015*	REN 107	SK3124*	RT-107A*	ECG229*	TM229*	WEP535*	121-Z9021*
	2SC1908		GE-20*	PTC136*	HEPS0015*	REN 107	SK3124*	RT-107A*	ECG229*	TM229*	WEP535*	121-Z9021*
Q302	2SC2086		GE-47*	PTC143*	HEPS3001*	REN 293*			ECG293*	TM293*	WEP912*	
Q303	2SC2166		GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-Z9039
Q401	2SC1173-O		GE-215	PTC110		REN 236	SK3197	RT-160	ECG236	TM236/**	WEP840	121-Z9040
	2SC1173Y		GE-215	PTC110		REN 236	SK3197	RT-160	ECG236	TM236/**	WEP840	121-Z9040
Q601	2SC458C		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773

* Lead configuration may vary from original.
/** Also available as exact type replacement.
(2) Two required.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C108	10 10V			TDC106M025FL	QDT1-64	SD25-109
C111	10 10V			TDC106M025FL	QDT1-64	SD25-109
C112	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319
C113	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C118	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C126	100 10V		PC100-10	VTT100E10	QV1-93	EV-1130
C201	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C202	.22 50V			TDC224M050EL	QDT1-10	SD50-R229
C205	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C206	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C208	.1 50V		WNP1-50	TCN501A	QEN1-10	TVAN-1200
C209	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C214	.22 50V		WNP1-50	TCN501A	QEN1-10	TVAN-1200
C215	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C216	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C218	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C404	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C413	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C415	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C605	.47 50V		PC1-50	VTTR47A63	QV1-3	EV-1610

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
C101	15 N220				*		10TCR-Q15
C102	.022		DC-253	MGP025	TA125		TG-S25
C103	.022		DC-253	MGP025	TA125		TG-S25
C104	.022		DC-253	MGP025	TA125		TG-S25
C105	22 NPO 10%				*		10TCC-Q22
C107	.001		DD-102		GP210		10TS-D10
C110	.022 50V 10%			DPMS2S22	M192P2239R8	QFT2-127	1FT-S22
C114	.0047 10%				JL247		2SS-D47
C115	.0047 10%				JL247		2SS-D47
C117	.01 50V 10%			WMF1S1	EWF1A110	QFT2-91	1FT-S10
C119	15 N220				*		10TCR-Q15
C122	.001		DD-102		GP210		10TS-D10
C123	.001		DD-102		GP210		10TS-D10
C125	47 N220 10%				*		10TCR-Q47
C127	.047 50V 10%			DPMS2S47	EWF1A147	QFT2-171	1FT-S47
C129	15 N220				*		10TCR-Q15
C130	.1 50V 10%			WMF05P1	EWF05010	QFT2-215	1FT-P10
C203	.0068 50V 10%			WMF1D68	EWF1A268	QFT2-73	1FT-D68
C204	.015 50V 10%			WMF1S15	M192P1539R8	QFT2-105	1FT-S15
C207	560		DD-561		GP356		10TS-T56
C211	.001		DD-102		GP210		10TS-D10
C212	.001		DD-102		GP210		10TS-D10
C213	.001		DD-102		GP210		10TS-D10
C217	.068 50V 10%			WMF1S68	EWF1A168	QF1-195	1PB-S68
C219	.001		DD-102		GP210		10TS-D10
C220	.0047		DD-472	GP4700	GP247		5GA-D47
C221	15 N220				*		10TCR-Q15
C222	330		DD-331	GP330	GP333		10TS-T33
C223	.001		DD-102		GP210		10TS-D10
C225	.022		DC-253	MGP025	TA125		TG-S25
C226	.1 50V 10%			WMF05P1	EWF05010	QFT2-215	1FT-P10
C227	.022		DC-253	MGP025	TA125		TG-S25
C229	470		DD-471	GP470	GP347		10TS-T47
C230	.001		DD-102		GP210		10TS-D10
C231	.001		DD-102		GP210		10TS-D10
C232	.001		DD-102		GP210		10TS-D10
C301	56 N750 5%				*		10TCU-Q56
C302	56 N220 10%						
C303	.022		DC-253	MGP025	TA125		TG-S25
C306	.022		DC-253	MGP025	TA125		TG-S25
C307	220 N750 5%		DTN-220	N220	CN7322		10TCU-T22
C308	.022		DC-253	MGP025	TA125		TG-S25
C309	22 10%			GP22	GP422	QCS-19	5GAQ22
C310	22 N750		DTN-22	N22	CN7422		10TCU-Q22
C311	560		DD-561		GP356		10TS-T56
C312	.022		DC-253	MGP025	TA125		TG-S25
C313	82 N750 10%				CN7482		10TCU-Q82
C314	220 N750 10%		DTN-220	N220	CN7322		10TCU-T22
C315	33 N220 10%				*		10TCR-Q33
C317	2				MAG32P2		
C318	.022		DC-253	MGP025	TA125		TG-S25
C401	.001		DD-102		GP210		10TS-D10
C402	.001		DD-102		GP210		10TS-D10
C403	.022		DC-253	MGP025	TA125		TG-S25
C405	.022		DC-253	MGP025	TA125		TG-S25
C406	.022		DC-253	MGP025	TA125		TG-S25
C407	.022		DC-253	MGP025	TA125		TG-S25
C408	.001		DD-102		GP210		10TS-D10
C409	.022		DC-253	MGP025	TA125		TG-S25
C410	.01		UK50-103		MAG5011		
C411	.001		DD-102		GP210		10TS-D10
C601	.01		UK50-103		MAG5011		
C602	.039				GP140		5GA-S40
C603	.022		DC-253	MGP025	TA125		TG-S25
C604	.001		DD-102		GP210		10TS-D10
C606	.022 50V 10%			DPMS2S22	M192P2239R8	QFT2-127	1FT-S22

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

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR101	Gain	20K	FR085-20K			U260R253B
VR102	Squelch Range	20K	FR085-20K			U260R253B
VR103	Squelch	10K	ETV-83059			
VR104	SIG	20K	FR085-20K			U260R253B
VR105	Volume/Switch	10K	ETV-85051			
VR106	RF Gain	10K	ETV-70040			
VR202	AMC	50K	FRA-1024	T-50K(2)	MTC54L1(2)	X260R503B(2)

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

PARTS LIST AND DESCRIPTION (CONTINUED)

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

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
TH101	2000 Ohms Cold NTC		TD5-225				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L201	RF Choke				
L202	RF Choke				
L301	RF Driver				
L302	Final				
L303	Loading Final				
L304	Pi Filter				
L401	RF Choke				
L402	RF Choke				
T101	Antenna Tuning (27MHz)	ETC-15089	ETC-15089		
T102	RF Amp (27MHz)	ETC-15061	ETC-15061		
T301	RF Predriver (27MHz)				
T302	RF Driver				
T601	IF Amp (455kHz)	ETC-73194	ETC-73194		

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.	
T401	1.15A	.1	1.45mA	ETT-1002B	TR509		

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE			REPLACEMENT DATA			NOTES
	PRI.	SEC.		MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T201	5.12	1 28.88	2 8	ETT-83023B			

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM 8 Ohms	77-97P	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	2A Quick Acting			AGC(2)	HDJA	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	CB-EAM-0034	18-032	18-034	18-010	18-092	1	2	4	3	NC	2

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
FBL1	Ferrite Bead	ETC-83200	
F101	Filter	SFE9.8MJ	9.8MHz
F102	Filter	CFW-455HT	455kHz
J1	Connector	FS214-4SS(C2)	Microphone
J2	Connector	4-83112	DC Power
JK1	Jack		PA Speaker
JK2	Jack		External Speaker
LED401	LED	DI-5082-7730	Channel Indicator, Units (1.60V @ 11mA; Each segment)
LED402	LED	DI-5082-7730	Channel Indicator, Tens (1.60V @ 11mA; Each segment)
M1	Meter	CB-CB-740	S/PWR
M3	Connector	FM-MR-M2	Antenna
PL1	Lamp	CB-4001	Meter (10.67V @ 45mA)
P1	Plug	CB-EAM-0034	Microphone
P2	Plug	1-480359-0	DC Power
S1	Switch		PA/CB
S2	Switch		Power, On/Off (Part of Volume Control)
S3	Switch	ETS-83059	Channel Selector
S4	Switch		ANL, On/Off
	Cord	CB-12-4605	Power Source Assembly

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

ITEM	PART No.
Case, Bottom	2-83004
Case, Top	2-83003
Knob, Channel	3101007
Plate, Channel Knob	4101010
Chassis Assembly	2101002
Knob, Control	3101008
Plate, Control Knob	4101011
Control Plate, Bottom	4101004

ITEM	PART No.
Control Plate, Left	4101005
Control Plate, Right	4101006
Control Plate, Top	4101003
Front Panel	2101001
PLL, Cover	3-034001-0
PLL, Frame	3-027001-0
Push Knob	4101009
Push Switch Knob, Plate	4101012

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		23AWG	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')