



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

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 611

MANUFACTURER'S SPECIFICATIONS

RECEIVER

- | | |
|---------------------------|------------------------------------|
| 1. Frequency Range (MHz) | : 26.965—27.405 |
| 2. Sensitivity | : 0.5 μ V for 10dB S+N/N |
| 3. Selectivity | : 5KHz minimum at 6dB down |
| 4. Adj. channel rejection | : More than 60dB |
| 5. Audio power output | |
| at 8 ohms | : More than 2.5W at 10% distortion |
| at 4 ohms | : More than 4W at 10% distortion |
| 6. Audio fidelity | : 400Hz—2000Hz |
| (1KHz=0dB. 6dB down) | |
| 7. AGC figure of merit | : More than 80dB |
| 8. Squelch Sensitivity | : Less than 0.5 μ V |
| (Threshold) | |
| 9. Spurious Rejection | : More than 45dB |

TRANSMITTER

- | | |
|--------------------------|------------------|
| 1. Frequency Range (MHz) | : 26.965—27.405 |
| 2. RF Power Output | : 4W |
| 3. Modulation Capability | : More than 80% |
| 4. Spurious Suppression | : More than 60dB |
| 5. Frequency Tolerance | : $\pm$ 0.005% |

Courtesy of the Manufacturer

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

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ROYCE MODEL 611

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, T103	9440
T601	5009,8728-A,8728
L303, T301, T302	9091,8728-A,8728
VC1, VC2	5000,8276

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter to TP1 (PLL Pin 1).	Ch. 1 Tune Midrange		Check for 10.240MHz.
Input of frequency counter to TP2 (PLL Pin 11).	Ch. 1 Tune Midrange		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, NB Off, Tune Midrange.

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	T103,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, NB Off, Tune Midrange.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	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.
No signal input.	Ch. 19 Off/Scan/Ch. 9	VR1	CHANNEL 9 ALERT Adjust for desired volume of Alert tone.

ROYCE MODEL 611

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,VC1	Adjust for maximum.
	Ch. 19	L303	Adjust for 4 watts maximum.

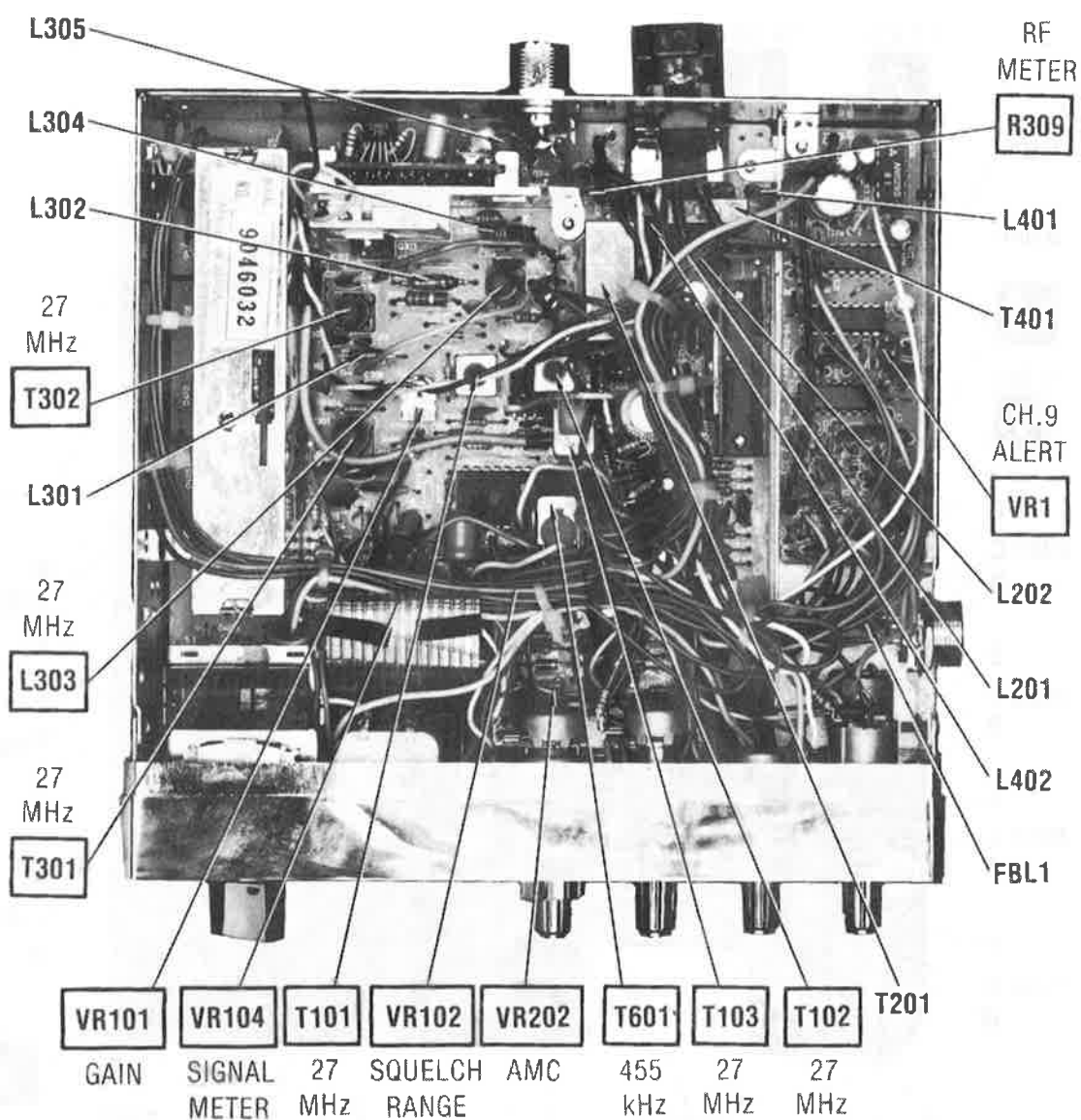
TRANSMITTER ADJUSTMENTS

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.

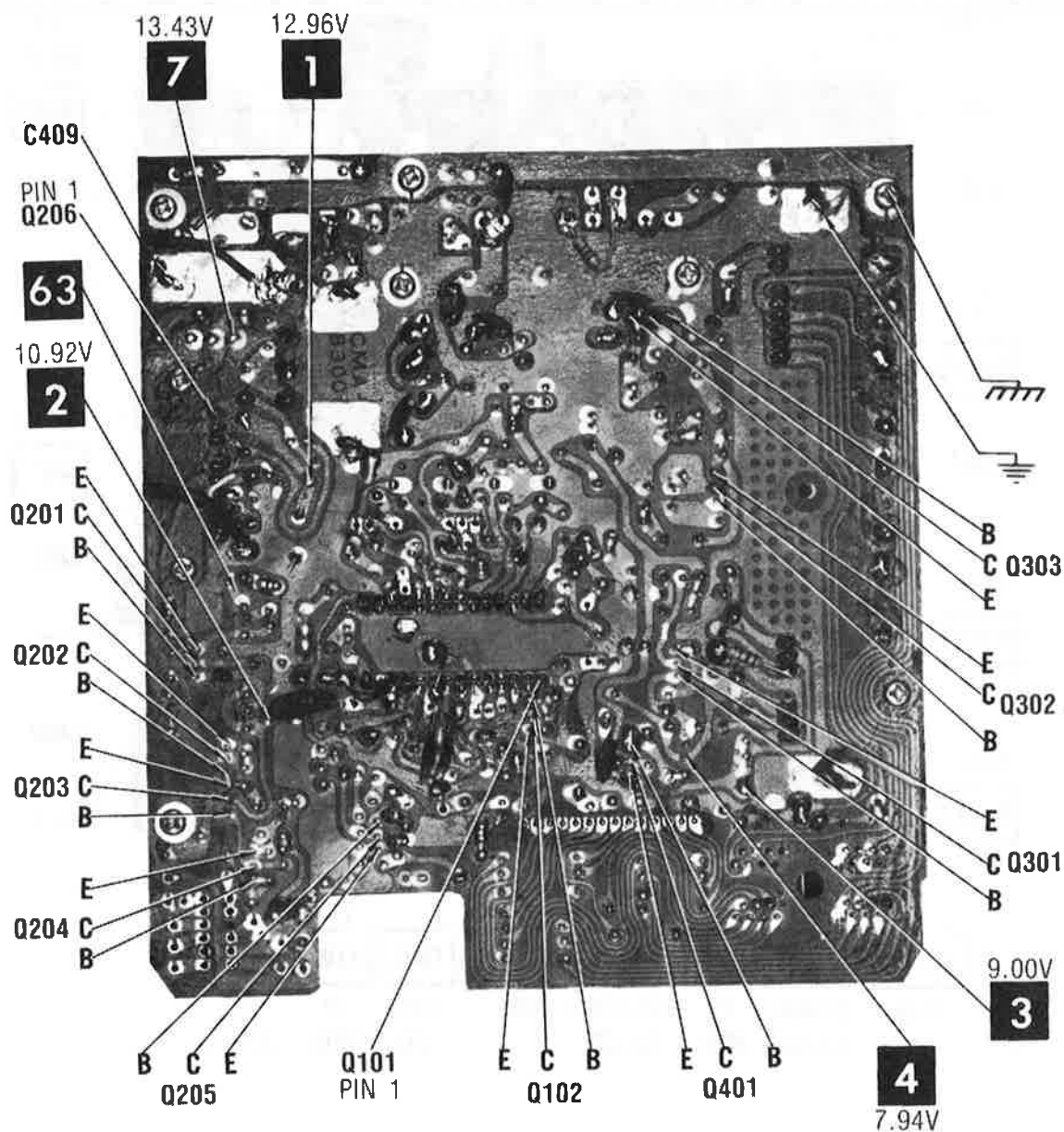
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna jack. Inject a 1000Hz, 100mV signal at mic input.	Ch. 19	VR202	AMC Adjust VR202 for 100% modulation maximum.
Connect a 150-ohm, 5-watt non-inductive resistor to antenna input.	Ch. 19	VC2,VR	AWI Adjust VC2 for maximum brilliance of AWI indicator, while adjusting VR so the AWI indicator just lights.

TRUTH CHART

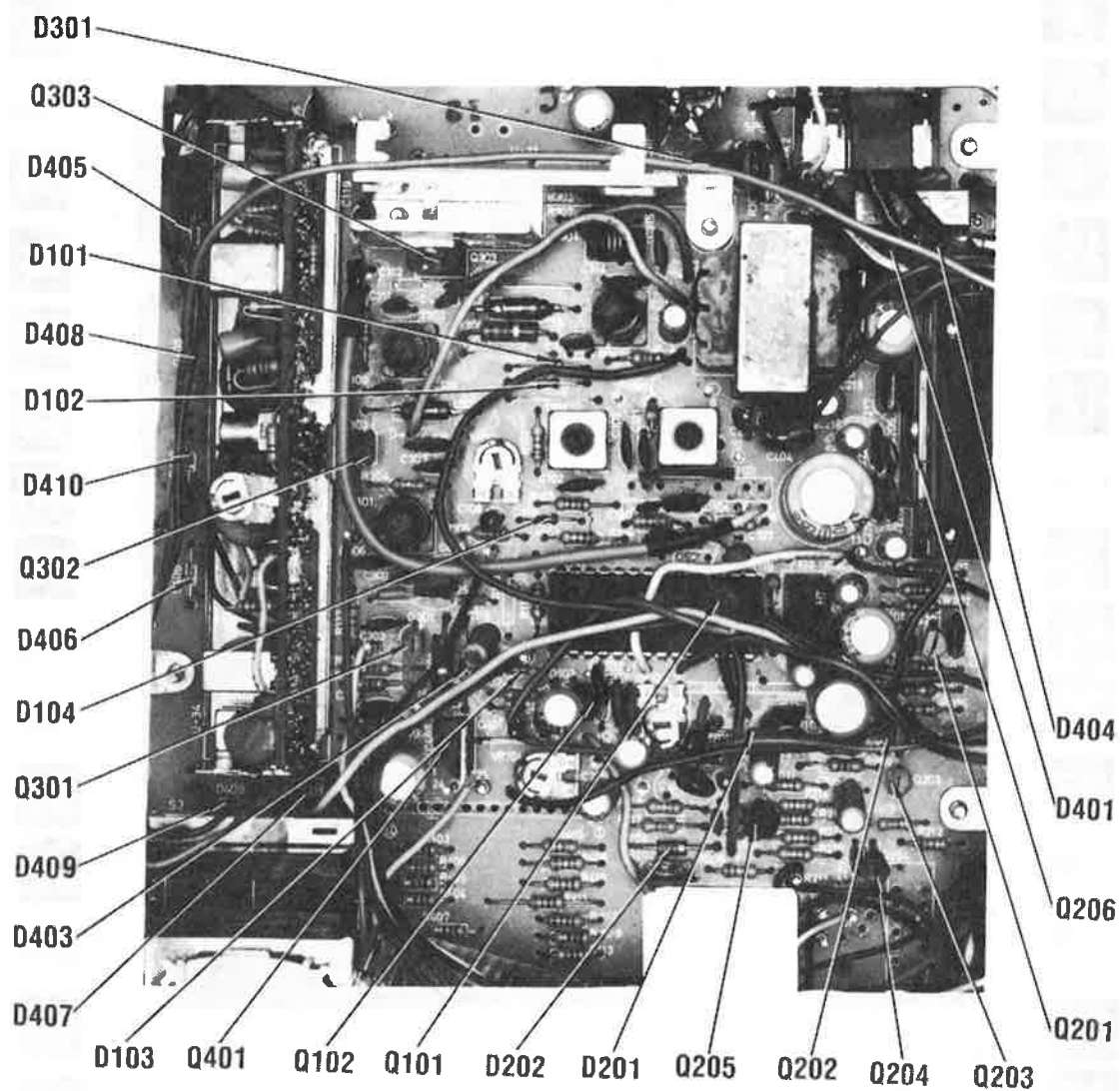
C H A N N E L	1 = 5.80 Volts 0 = 0 Volts								REC SYNTHESIZER OUTPUT IN MHz AT TP2 (PLL,PIN 11)	XMT SYNTHESIZER OUTPUT IN MHz AT TP3 (PLL,PIN 14)	
	PLL PROGRAM DIVIDER										
	PINS										
			3	4	5	6	7	8			
1			0	0	0	0	0	0	17.180	26.965	
2			0	0	0	0	0	1	17.190	26.975	
3			0	0	0	0	1	0	17.200	26.985	
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	



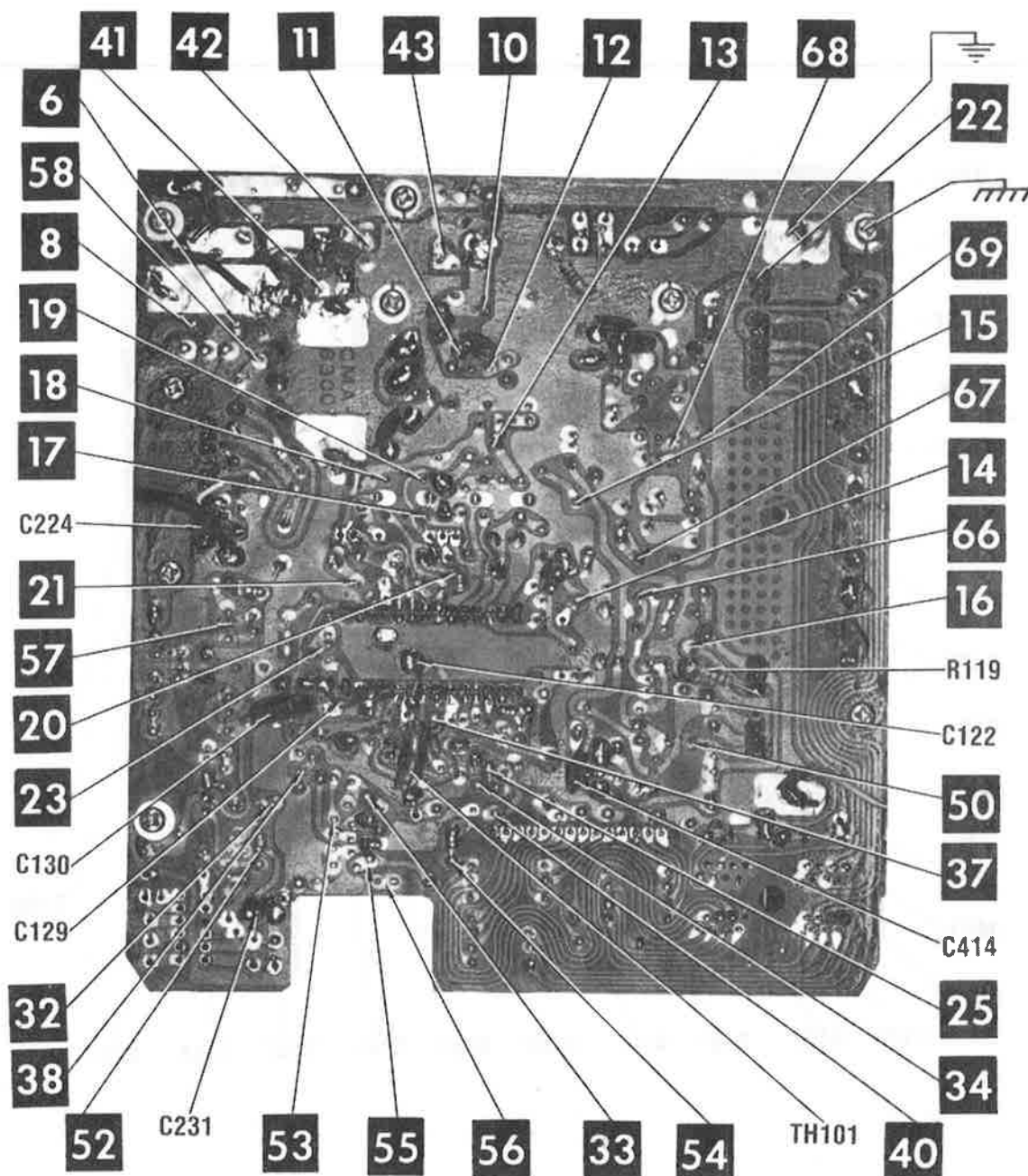
CHASSIS-BOTTOM



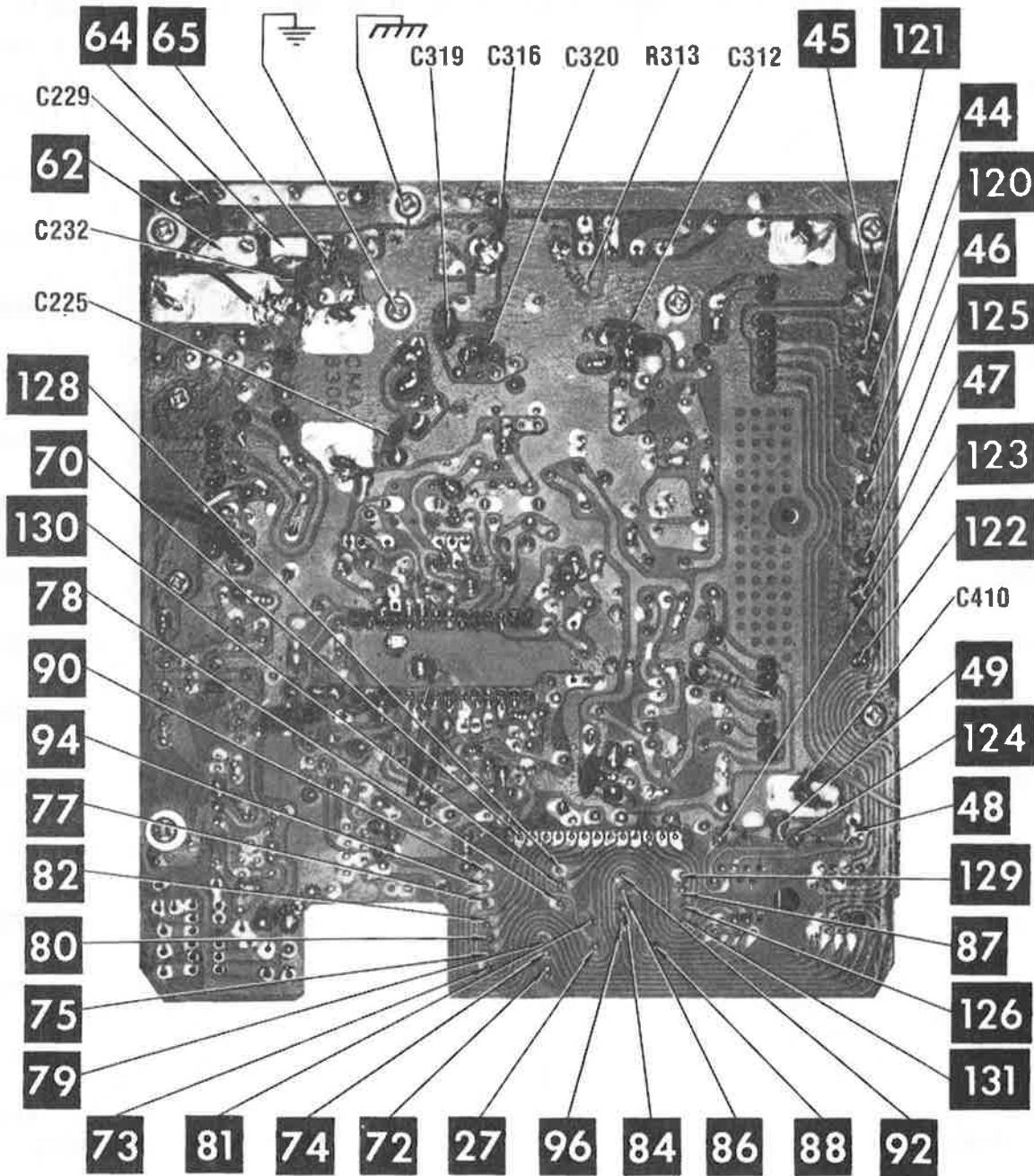
MAIN BOARD



MAIN BOARD

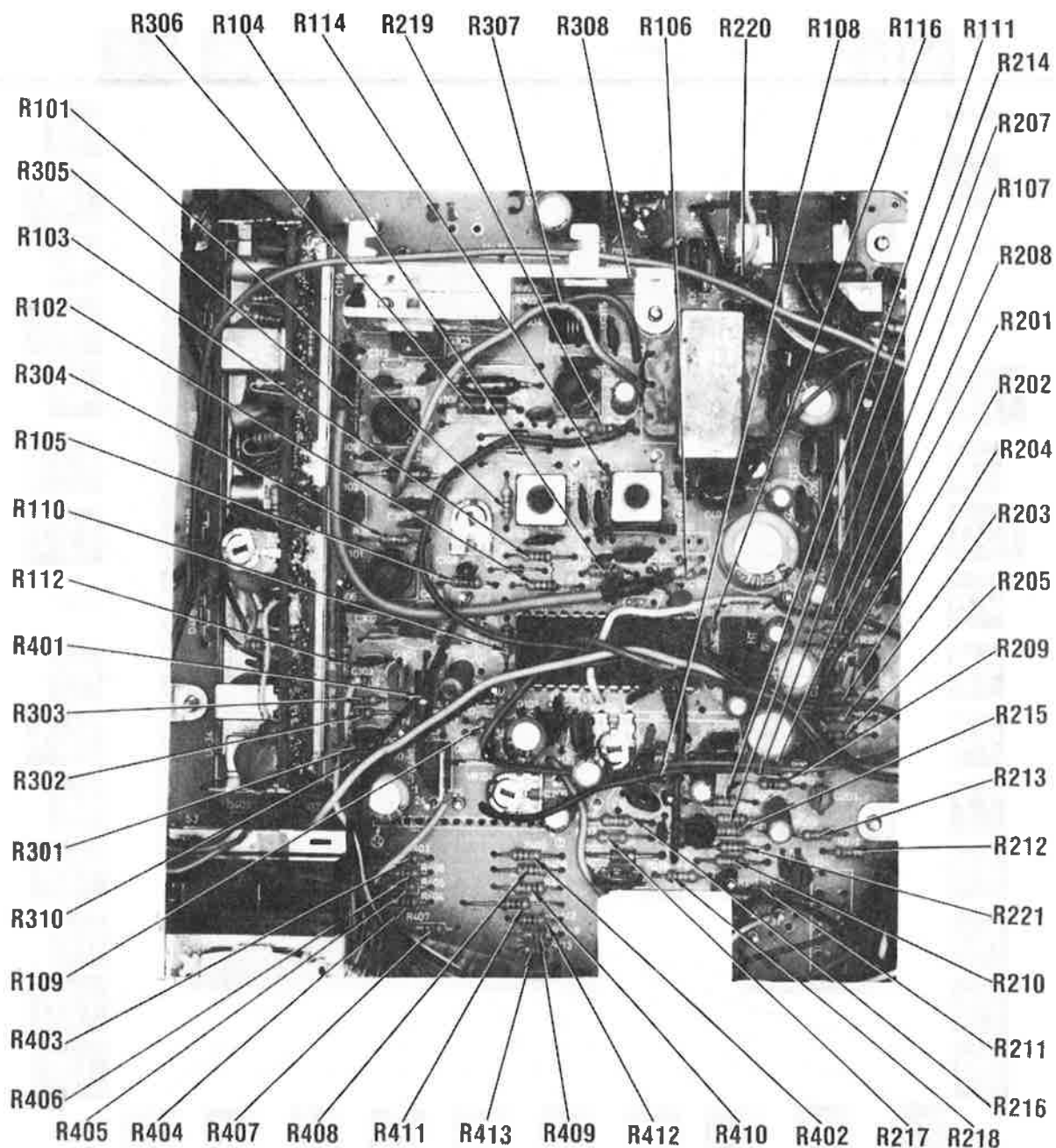


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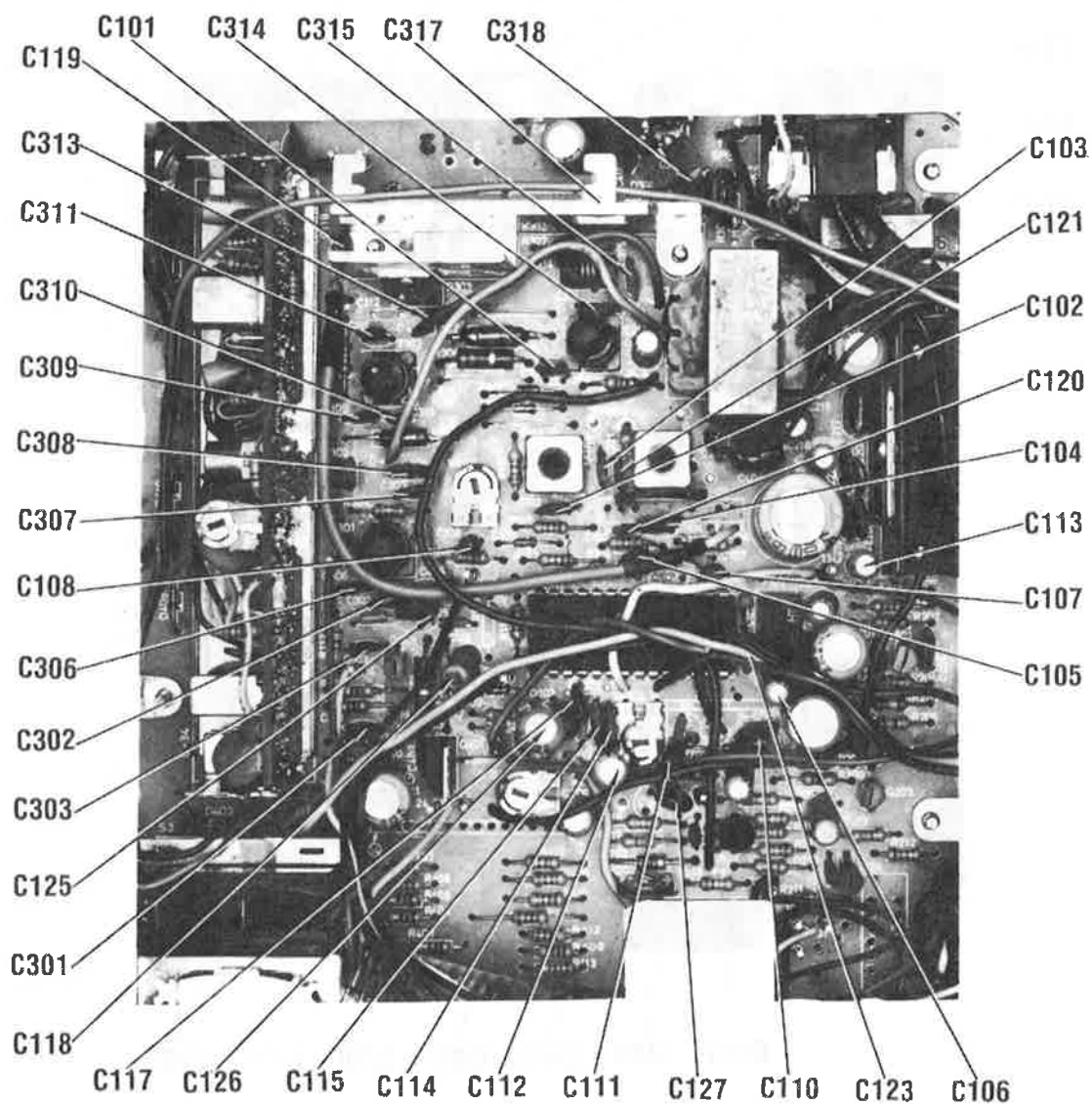


ROYCE MODEL 611

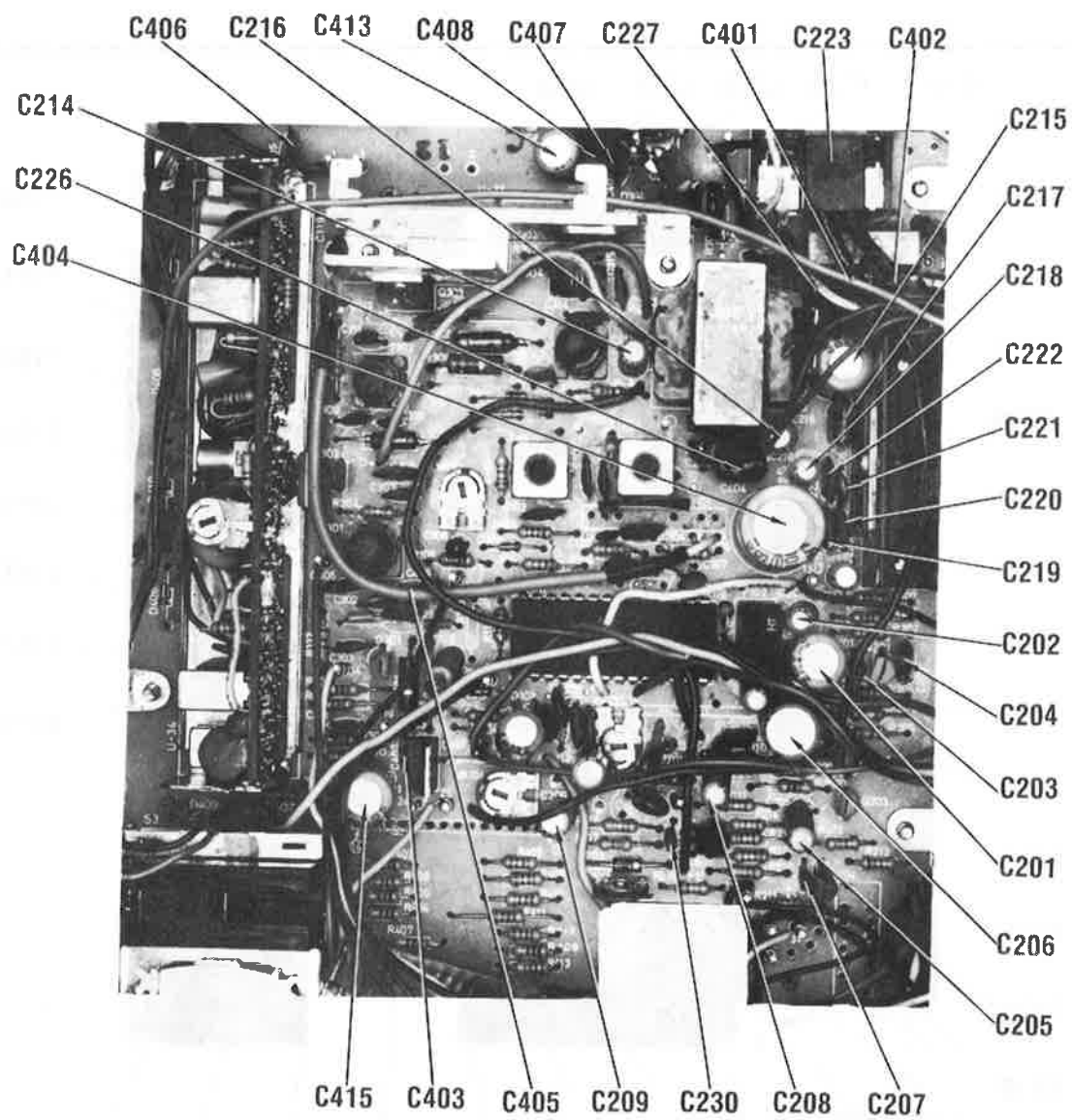
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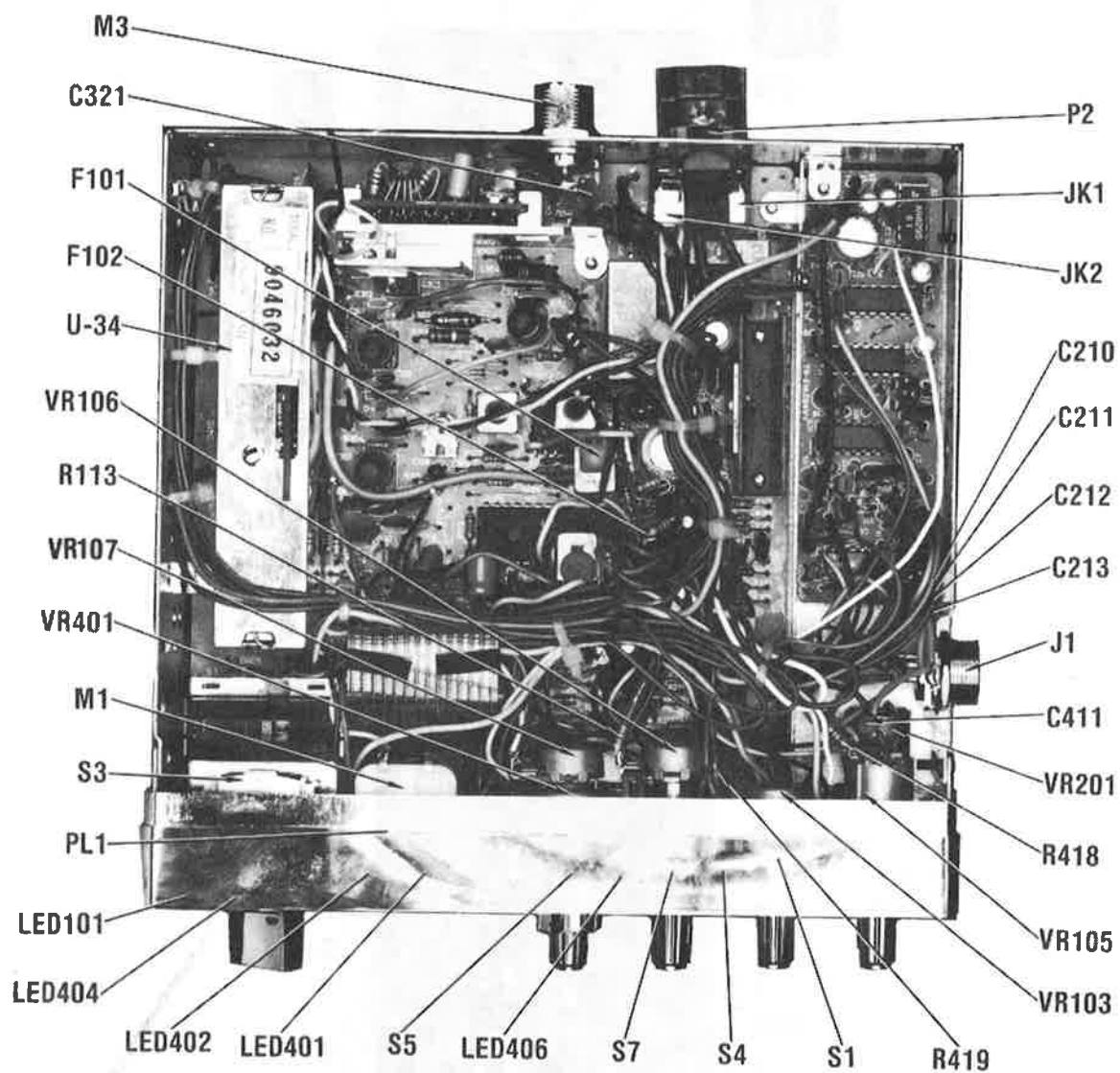
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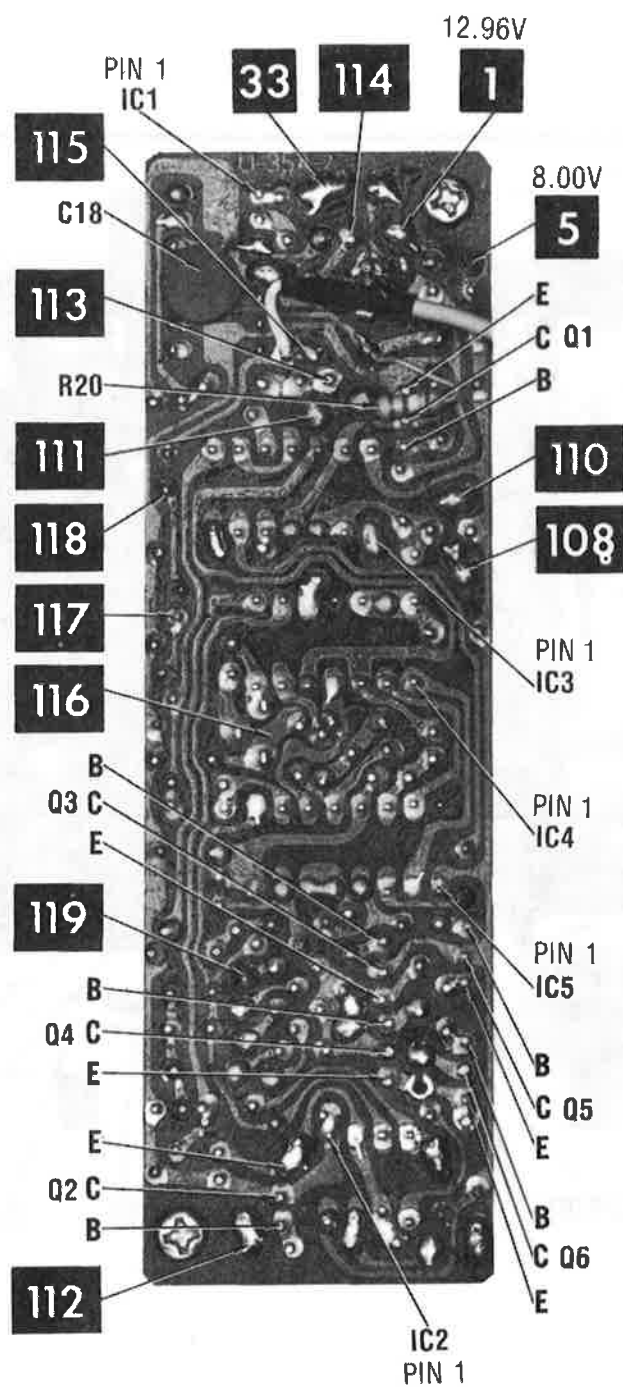
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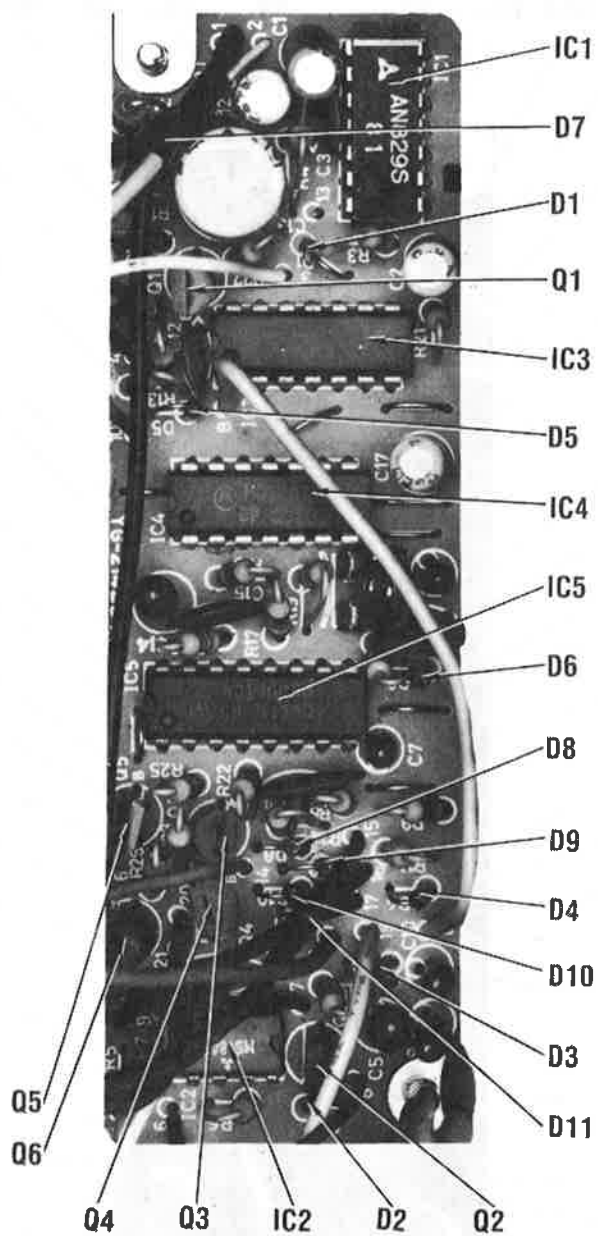
MAIN BOARD



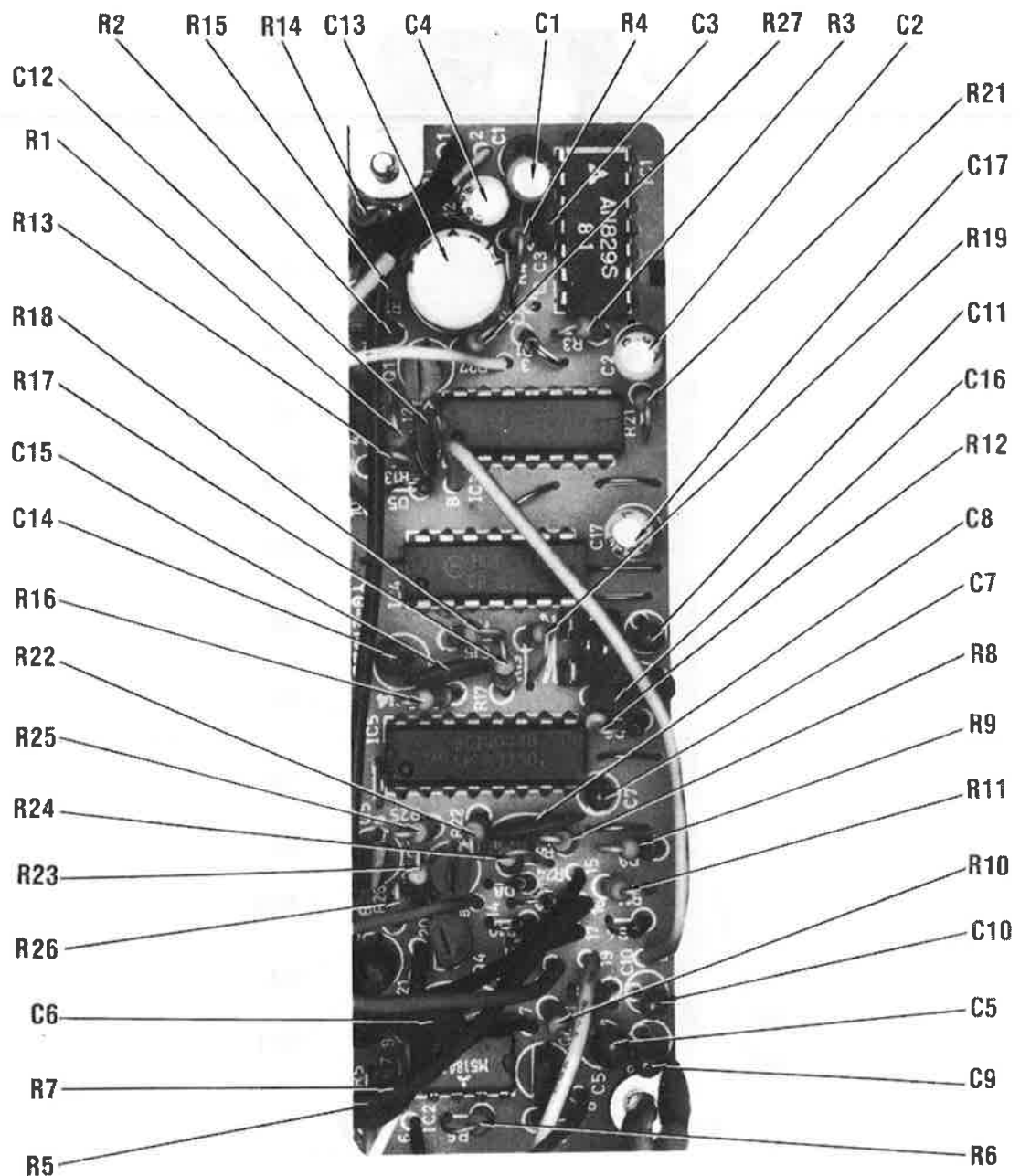
CHASSIS-BOTTOM



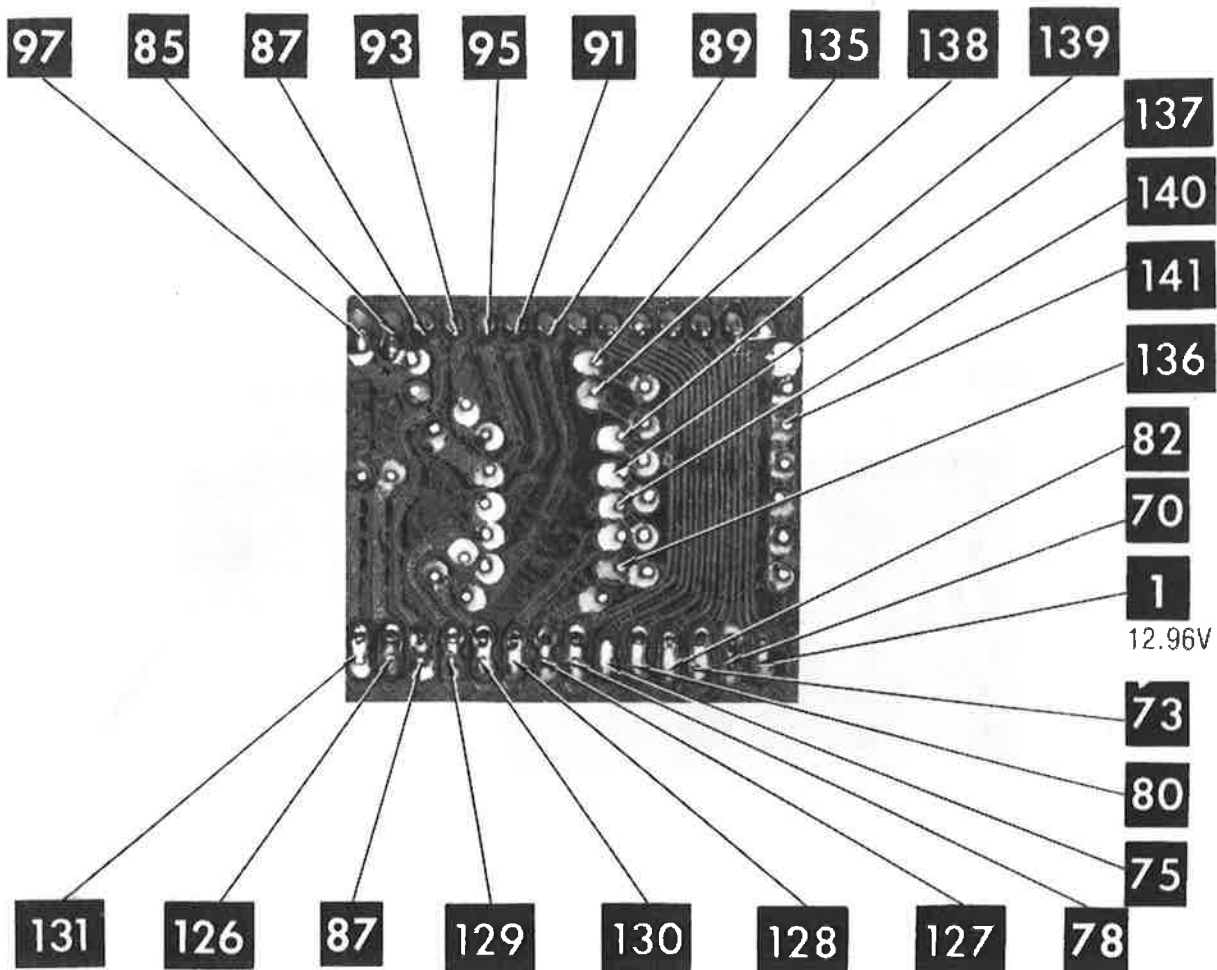
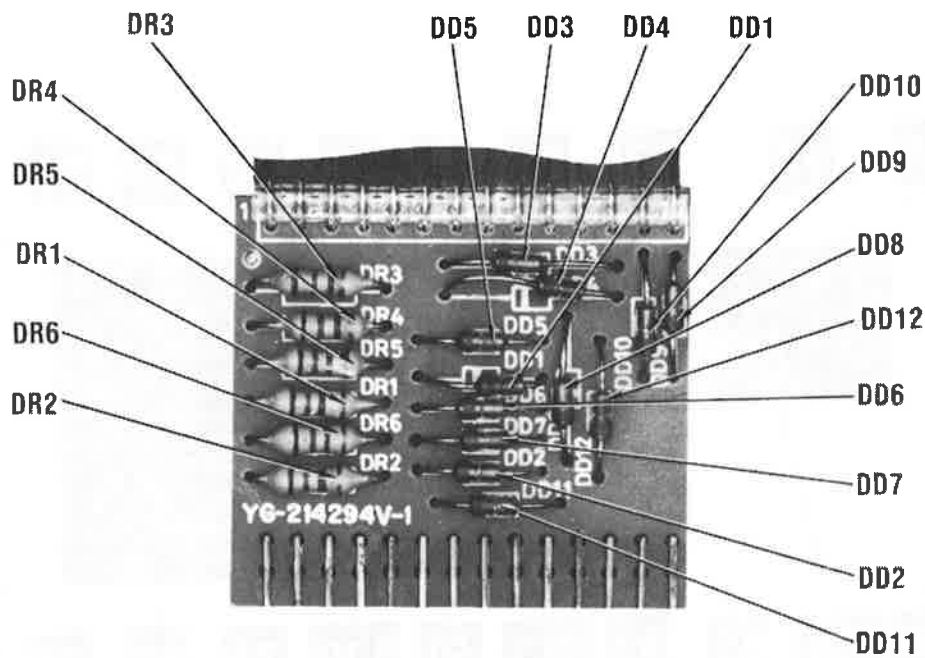
CHANNEL 9 SCAN BOARD



CHANNEL 9 SCAN BOARD

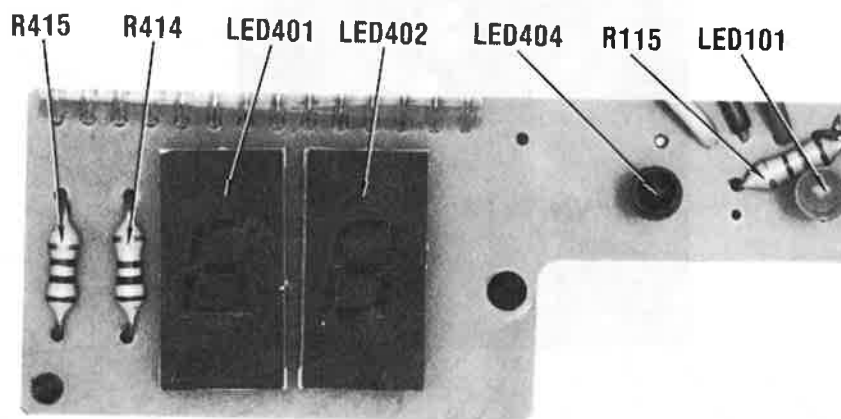
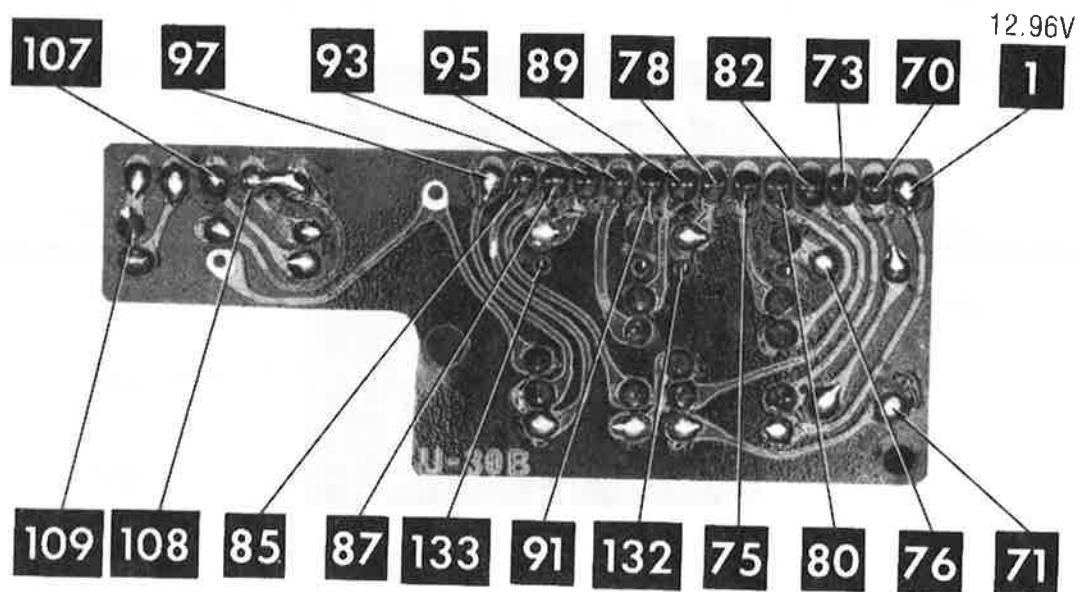


CHANNEL 9 SCAN BOARD

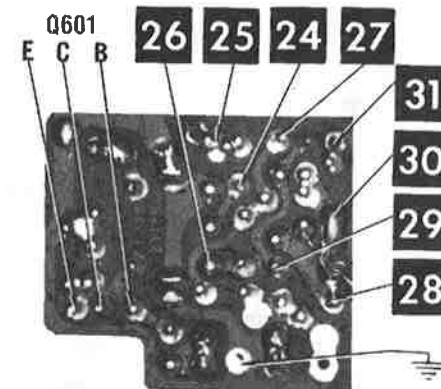
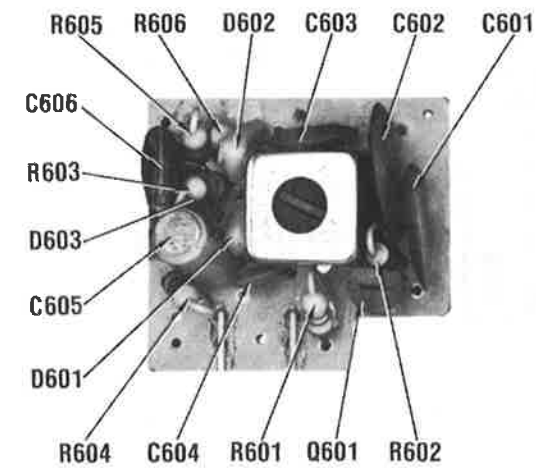


CHANNEL LED SWITCH BOARD

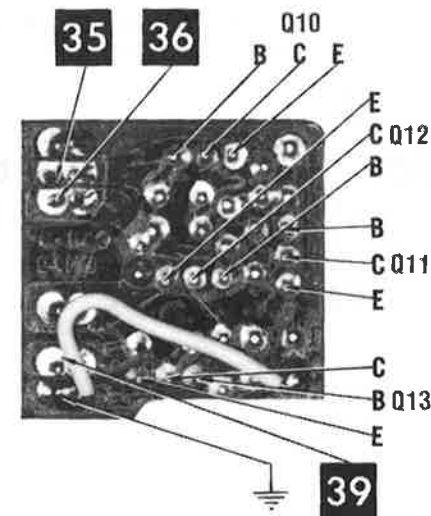
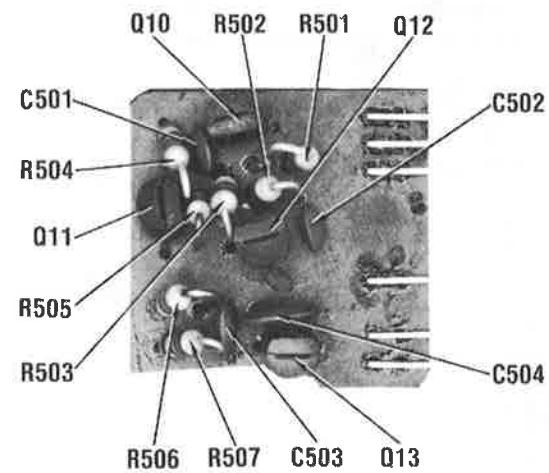
ROYCE MODEL 611



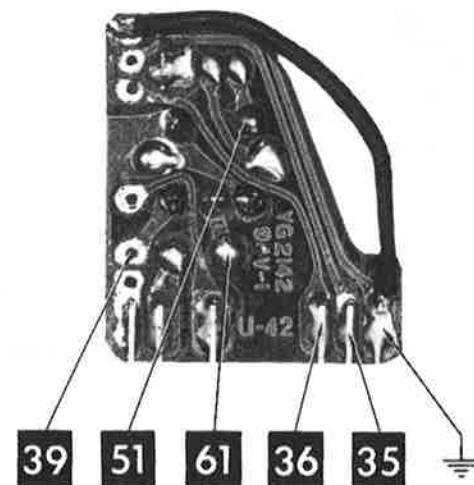
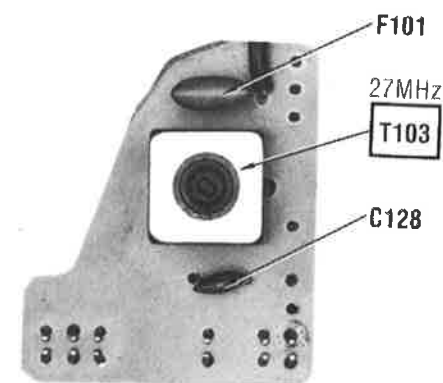
CHANNEL LED BOARD



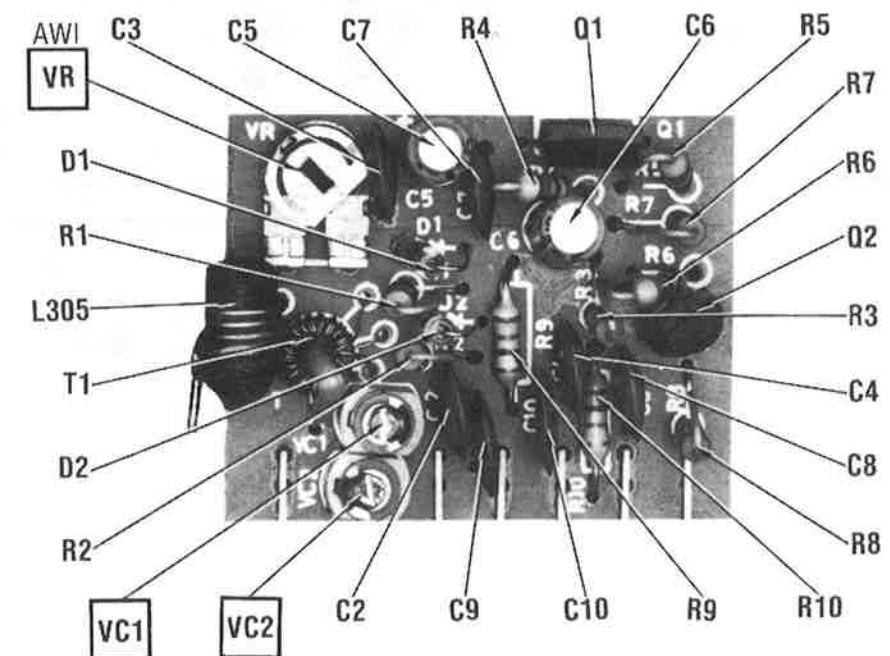
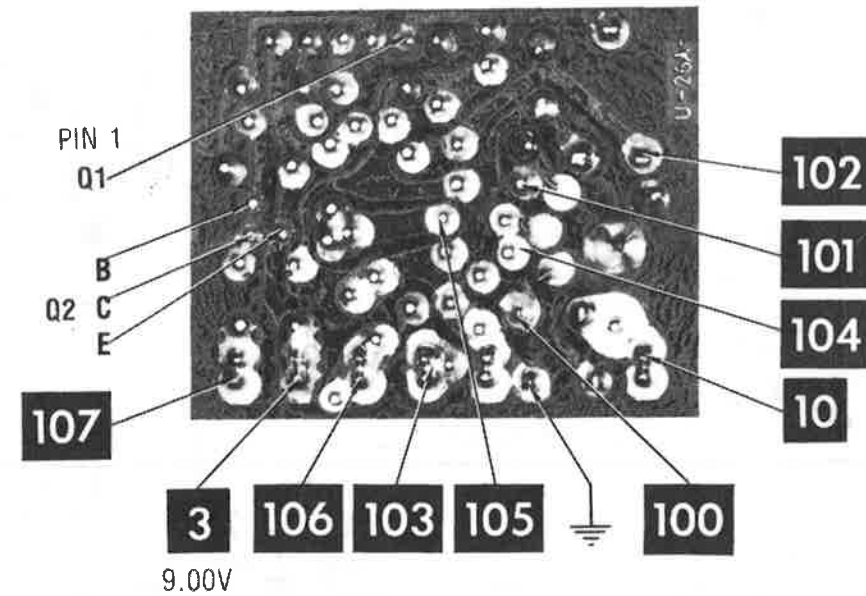
IF DETECTOR BOARD



NOISE BLANKER SUB BOARD

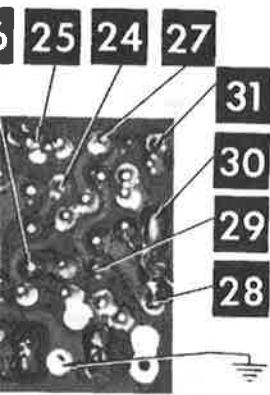


NOISE BLANKER BOARD

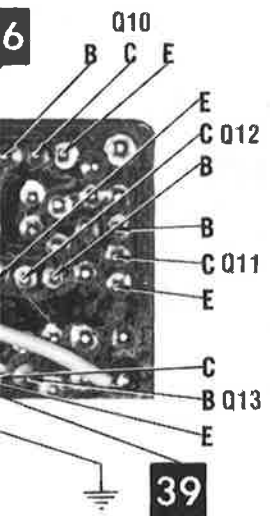


ANTENNA BOARD

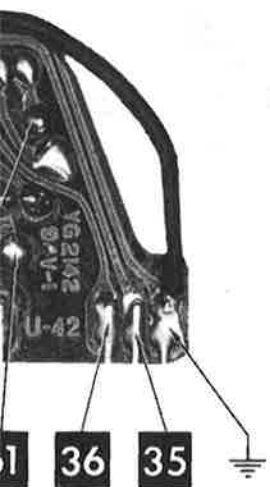
Q101 RF AMP. 1ST MIXER- 2ND MIXER- IF AMP. SQUELCH AF AMP



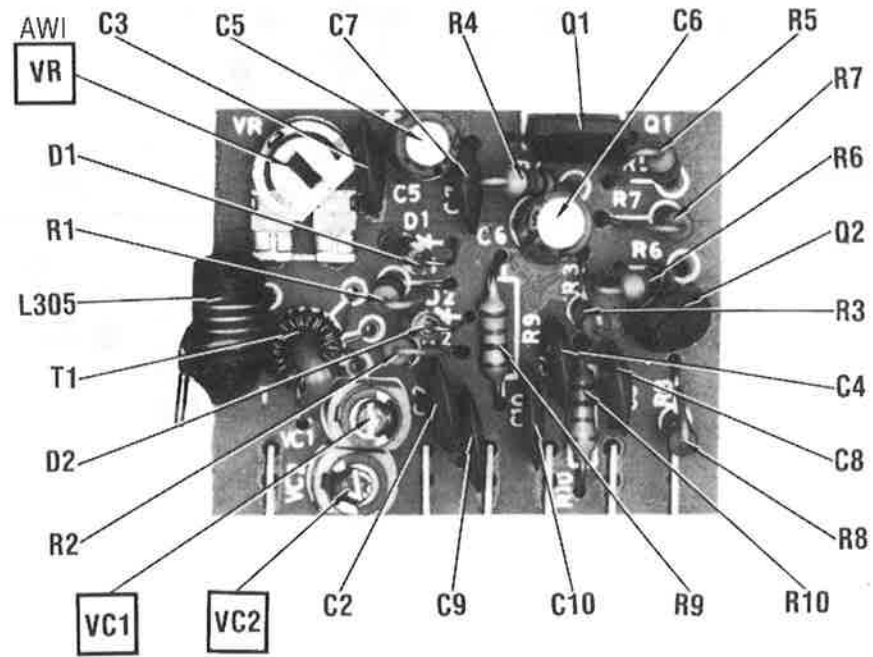
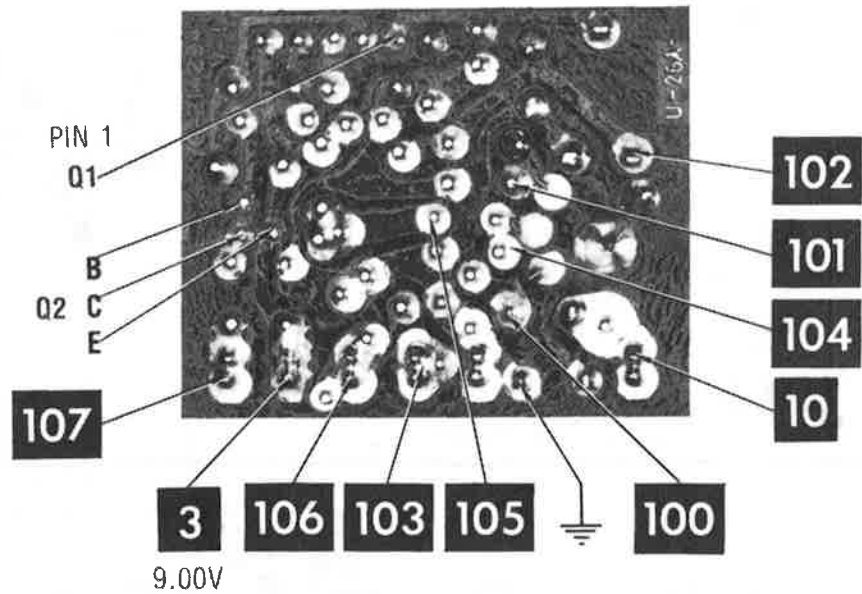
AF DETECTOR BOARD



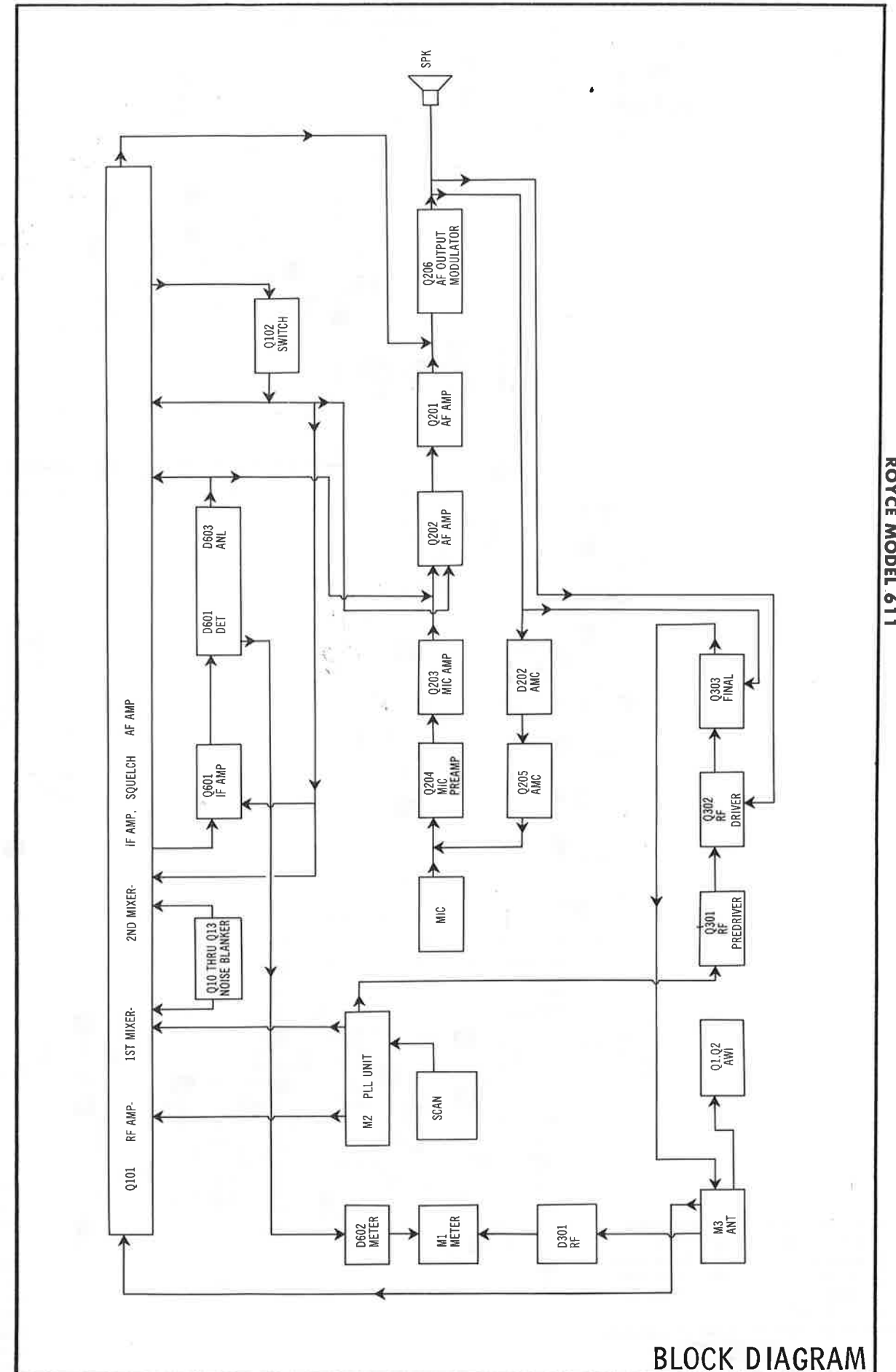
TUNER SUB BOARD



RF BLANKER BOARD



ANTENNA BOARD



BLOCK DIAGRAM

Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in () used in some versions.
Arrow head(s) at coils and transformers
indicates accessibility of tuning slug(s).

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C302	56 N220 10%		UK25-223				HY-725
C303	.022		UK25-223				HY-725
C306	.022		DTN-220	N220	CN7322		10TCU-T22
C307	220 N750 10%						
C308	.022		UK25-223				HY-725
C309	22 NP0 10%		DTZ-22	NP022	CN0422		10TCC-Q22
C310	22 N750		DTN-22	N22	CN7422		10TCU-Q22
C311	560		DD-561		GP356		10TS-T56
C312	.022		UK25-223				HY-725
	100 N750 10%		DTN-100	N100	CN7310		10TCU-T10
C313	82		DTZ-82	NP082	CN0482		10TCC-Q82
	150 N750 10%		DTN-150	N150	CN7315		10TCU-T15
C314	220		DTZ-220				10TCC-T22
C315	33 N220 10%				*	*	10TCR-Q33
C316	150 N750 10%		DTN-150	N150	CN7315		10TCU-T15
C317	2		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C318	.022		UK25-223				HY-725
C319	10 N220				*	*	10TCR-Q10
C320	39 N220 10%				*	*	10TCR-Q39
C321	56 N220 10%						
C401	.001		DD-102		GP210		10TS-D10
C402	.001		DD-102		GP210		10TS-D10
C403	.022		UK25-223				HY-725
C405	.022		UK25-223				HY-725
C406	.022		UK25-223				HY-725
C407	.022		UK25-223				HY-725
C408	.001		DD-102		GP210		10TS-D10
C409	.022		UK25-223				HY-725
C410	.01		UK50-103		MAG5011		
C411	.001		DD-102		GP210		10TS-D10
C414	.022		UK25-223				HY-725
C501	.001		DD-102		GP210		10TS-D10
C502	.001		DD-102		GP210		10TS-D10
C503	.0022				GP222		10TS-D22
C504	.01		UK50-103		MAG5011		
C601	.01 10%						
C602	.039				GP140		5GA-S40
C603	.022		UK25-223				HY-725
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.

ROYCE MODEL 611

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA			
			MFR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
R309	RF Meter	20K				X260R253B(2)
VR	AWI	10K				U260R103B
VR1	Ch. 9 Alert	10K				X260R103B
VR101	Gain	20K				U260R253B
VR102	Squelch Range	20K				U260R253B
VR103	Squelch	10K				
VR104	Signal Meter	20K				U260R253B
VR105	Volume/Power Switch	10K				
VR106	RF Gain	10K				
VR107	Tune	10K	(18)			
VR401	Scan Rate	2M				
VR201	Mic Gain	50K				
VR202	AMC	50K		T-50K(2)	MTC54L1(2)	X260R503B(2)
VRM1	Volume Range	50K				

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

(18) Includes VR107 and VR401.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
TH101	2000 Co1d NTC		FR1014				

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.	
L201	RF Choke				
L202	RF Choke				
L301	RF Choke				
L302	RF Choke				
L303	Final Loading (27MHz)				
L304	P1 Filter				
L305	Antenna Matching				
L401	RF Choke				
L402	RF Choke				
T101	Rec RF (27MHz)		ETC15089	CBS774	7811L
T102	RF Amp (27MHz)		ETC15061	CBS708-TC	7811L
T103	Noise Blanking		ETC15062	CBS508-1TC	7812L
T301	Pre Driver (27MHz)				
T302	Driver (27MHz)				
T601	IF Amp (455kHz)				

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	1.2A	.096	1.3mH		TR509		

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T201	22.2	1 20 2 8				

SPEAKER

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

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2A Quick Acting			AGC2	H0J	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											

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
F101	Filter		9.8MHz
F102	Filter		455kHz
LED101	LED		RX Indicator, Green (2.12V @ 16mA)
LED401	LED		Channel Readout, TENS (1.6V @ 11mA)
LED402	LED		Channel Readout, UNITS (1.6V @ 11mA)
LED404	LED		AWI, Red (1.53V @ 9.5mA)
LED406	LED		Scan Indicator, Red (1.59V @ 11mA)
M1	Meter		SIG/PMR
S1	Switch		PA/CB
S3	Switch		Channel Select
S4	Switch		ANL/Off
S5	Switch		Off/Scan-Ch. 9
S7	Switch		NB/Off