

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 MARK V

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER SECTION

POWER OUTPUT.	4Watt Max(AT 13.8V DC)
EMISSION.	6A3
SPURIOUS RESPONSE REJECTION. .	All harmonic and spurious suppression greater than FCC and D. O. C. requirements
MODULATION.	AM, 100% typical

RECEIVER SECTION

CIRCUIT TYPE.	Dual conversion superheterodyne with RF stage and 455 KHz ceramic filter
FREQUENCY.	40 channel phase LOCK system 26,965-27.405 MHz.
SENSITIVITY.	1.0 μ V for 10dB S/N
SQUELCH RANGE.	0-1mV
SELECTIVITY.	70 dB down at $\pm$ 10 KHz
IF FREQUENCY.	1st IF: 10.695 MHz 2nd IF: 455 KHz
IMAGE REJECTION.	55dB
AUDIO OUTPUT.	2.5W maximum at 8 ohm load
CURRENT DRAIN.	250mA on standby [no signal]
CURRENT DRAIN (MAXIMUM).	Less than 1.5A
ANTENNA.	Nominal 50 ohms impedance
POWER SOURCE.	Operates from nominal 12.6 volts DC, negative or positive ground system
DIMENSIONS [OVERALL].	7 $\frac{1}{8}$ " [W] $\times$ 9" [D] $\times$ 2 $\frac{1}{4}$ " [H]
WEIGHT.	6.5lbs

DAK MODEL MARK V

Courtesy of the Manufacturer

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

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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:
L101 thru L104, L301 thru L306, L401 thru L404 .. 9440
L105, L106, L107 5000,5009,8276,8728,9089
L307, L308 8728,9304,9089
C402, C427 5000,8276,9089

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to TP3 (P401 PLL).	Ch. 19	L401	Adjust for maximum RF (120mV p-p typical). (See Figure 2.)
Input of frequency counter to TP3 (P401 PLL).	Ch. 19 Delta Tune Midrange	C402	Adjust for 10.240MHz.
Input of DC meter to TP1 (Junction of R410 and R411 PLL).	Ch. 40 XMT	L403	Adjust for 7.00 volts. Check for approximately 3.30 volts on Channel 1.
Input of frequency counter to TP11 (IC401 Pin 5 PLL).	Ch. 19 Delta Tune Midrange		Check for 5.120MHz.
Input of frequency counter to TP12 (Q406 Base PLL).	Ch. 19 XMT		Check for 5.211MHz.
Input of oscilloscope to TP13 (IC401 Pin 2 PLL).	Ch. 19	L404	Adjust for maximum RF (5.5V p-p typical). (See Figure 3.)
Input of frequency counter to TP13 (IC401 Pin 2 PLL).	Ch. 1 Delta Tune Midrange		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of oscilloscope to TP14 (Junction of L301 and R301 PLL).	Ch. 19	L301	Adjust for maximum RF (300mV p-p typical). (See Figure 4.)
Input of frequency counter to TP2 (P408 PLL).	Ch. 1 Delta Tune Midrange		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP15 (Q402 Emitter PLL).	Ch. 19 XMT	C427A	Adjust for 10.422MHz.
Input of frequency counter to TP2 (P408 PLL).	Ch. 1 XMT		Check for 16.543MHz. If necessary, readjust C427 for correct frequency. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to antenna input.	Ch. 1 XMT	RV402	Adjust for 26.965MHz. If necessary, readjust C427 for correct frequency. Check all channels. (See page 4 for channel frequencies.)

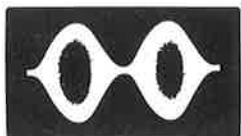


FIG. 1

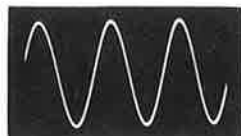


FIG. 2

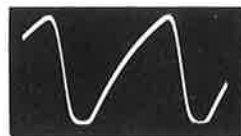


FIG. 3

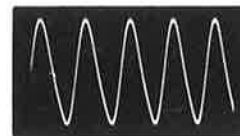


FIG. 4

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. Preset controls as follows, unless otherwise noted:
RF Gain Maximum, Delta Tune Midrange, Squelch MINIMUM, Noise Blanker Off, ANL Off, Tone High.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP3 (D109 Anode). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L107,L106, L105	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L104,L103, L102,L101	Adjust for maximum output.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
Preset controls as follows, unless otherwise noted:
RF Gain Maximum, Delta Tune Midrange, Squelch MINIMUM, Noise Blanker Off, ANL Off, Tone High.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	RV101	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	RV102	SIGNAL STRENGTH METER Adjust for 9 on signal strength 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.

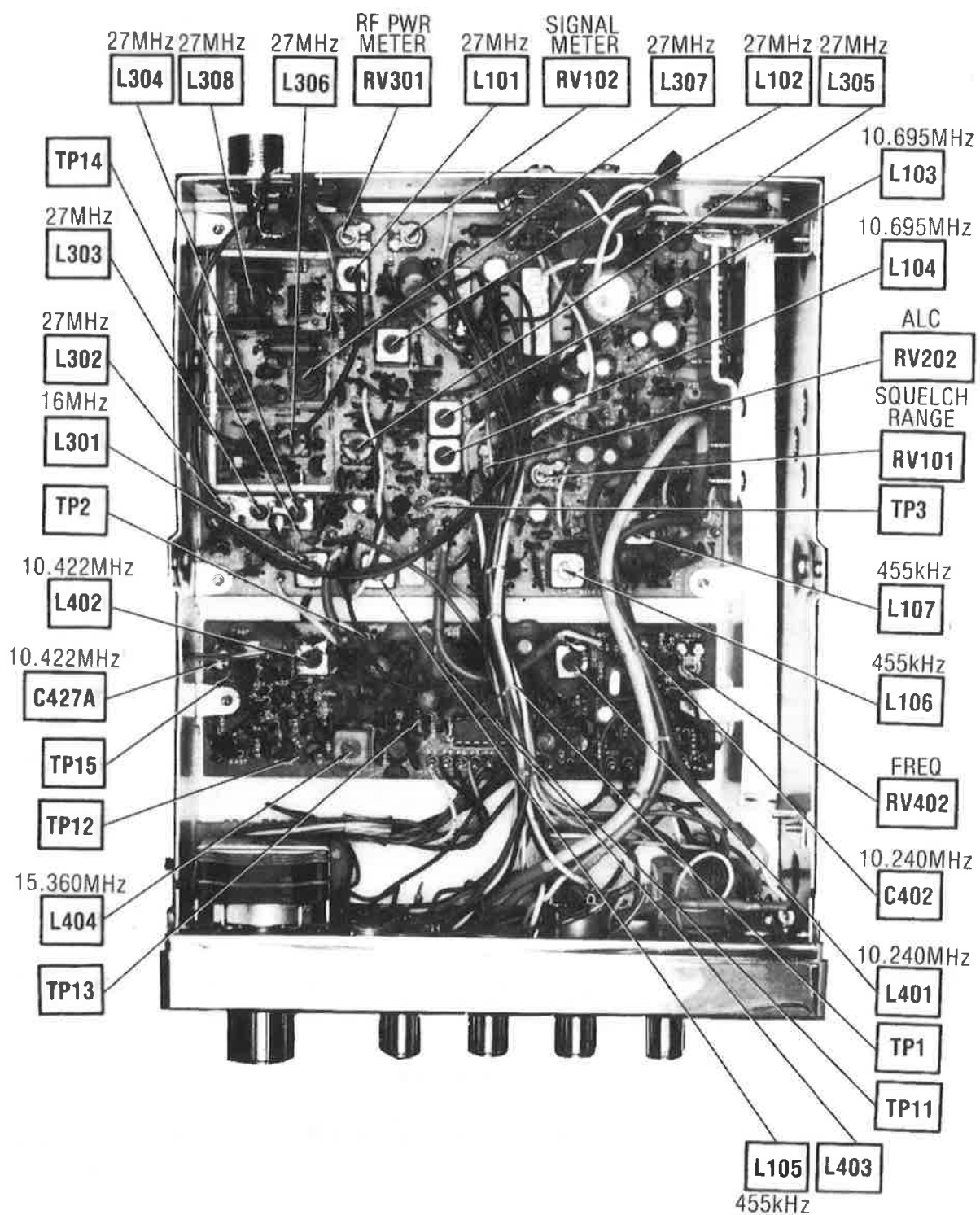
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19 XMT	L402,L302, L303,L304, L305,L306	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19 XMT	L307,L308	Adjust for 4.0 watts RF output maximum.

TRANSMITTER ADJUSTMENTS

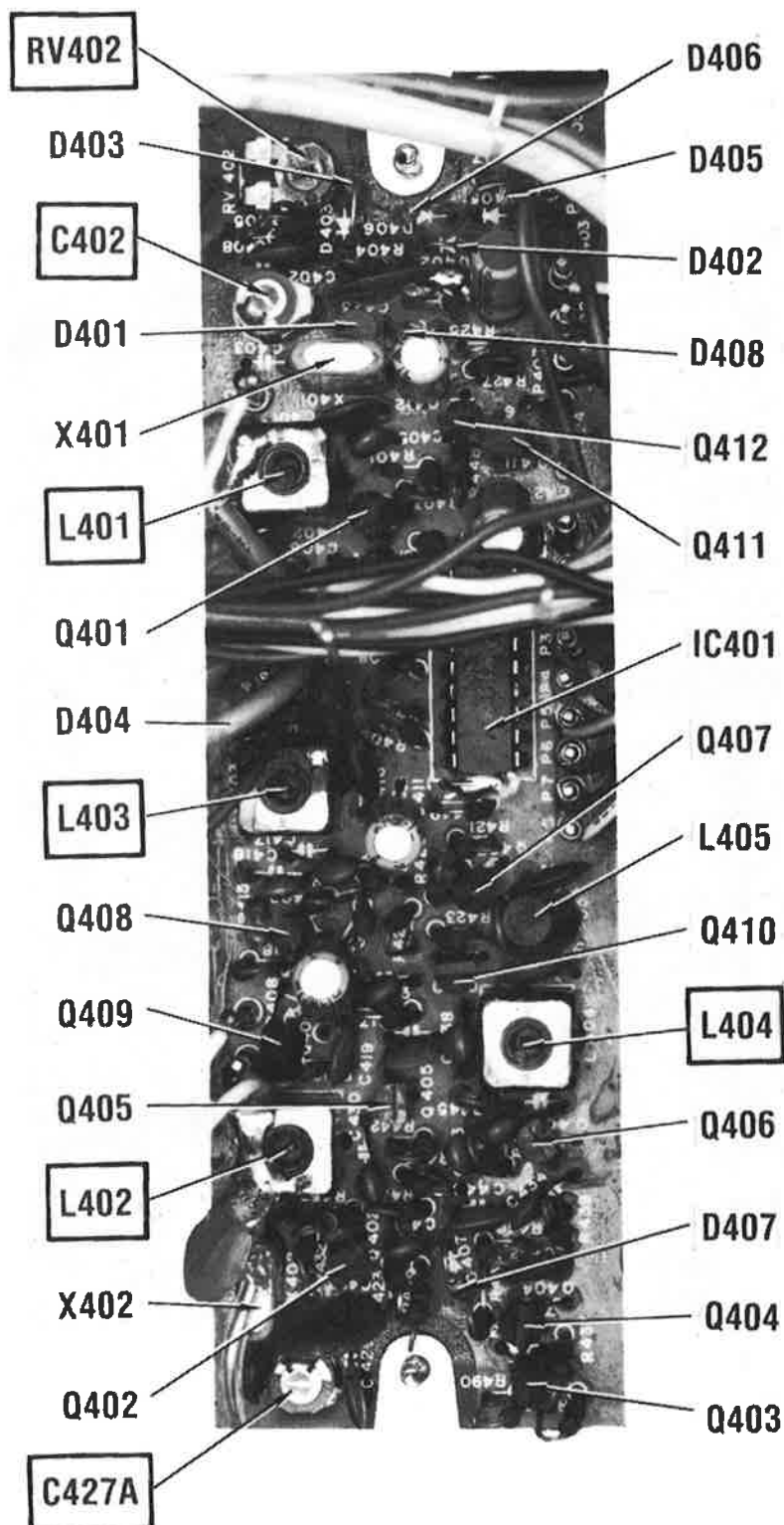
Connect a 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19 XMT	RV301	RF OUTPUT POWER METER At 4.0 watts RF output, adjust so RF power meter agrees with RF wattmeter.
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 100mV audio signal at Mic input.	Ch. 19 XMT	RV202	AMC Adjust for 100% modulation maximum. (See Figure 1.)

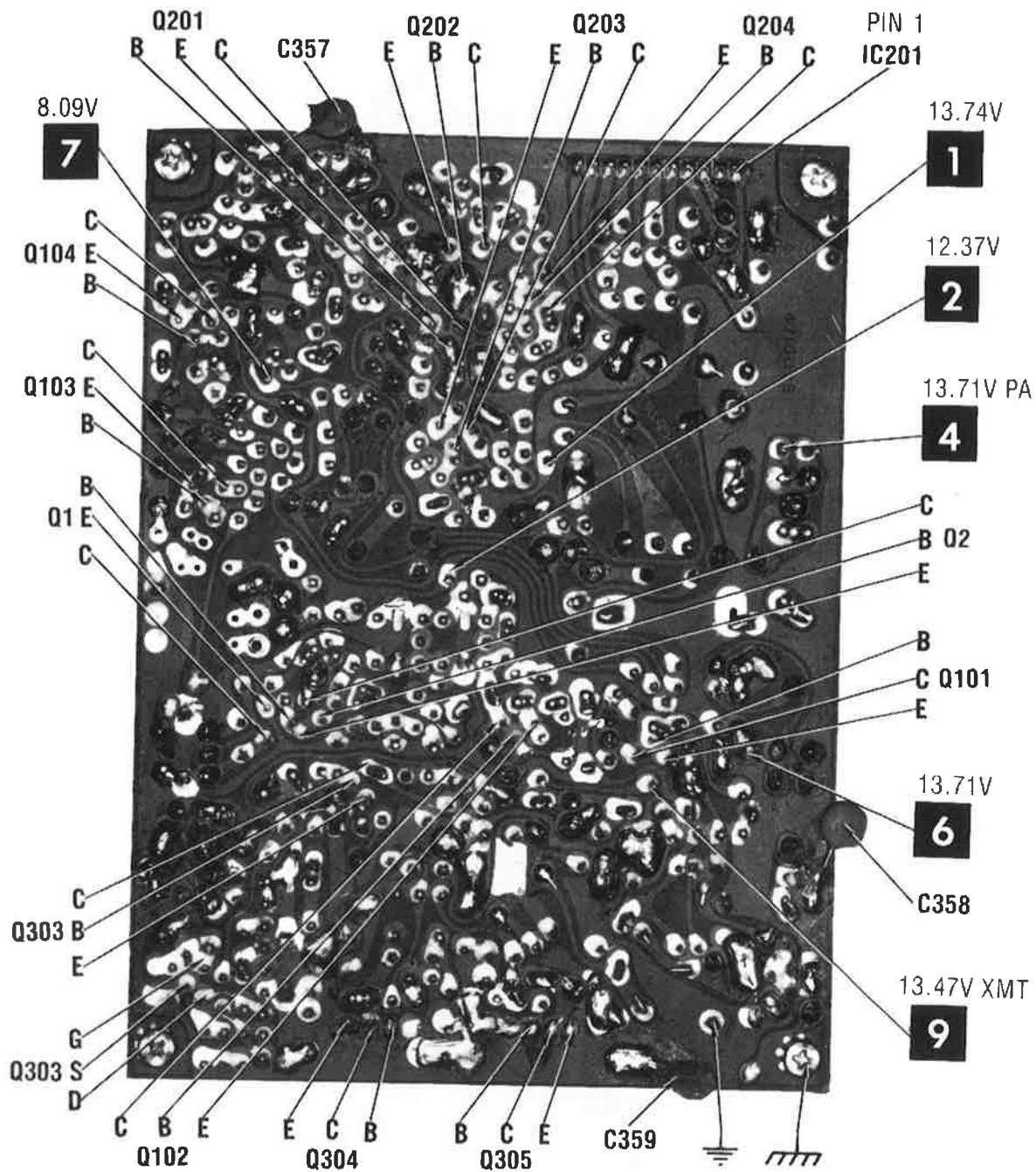
DAK MODEL MARK V



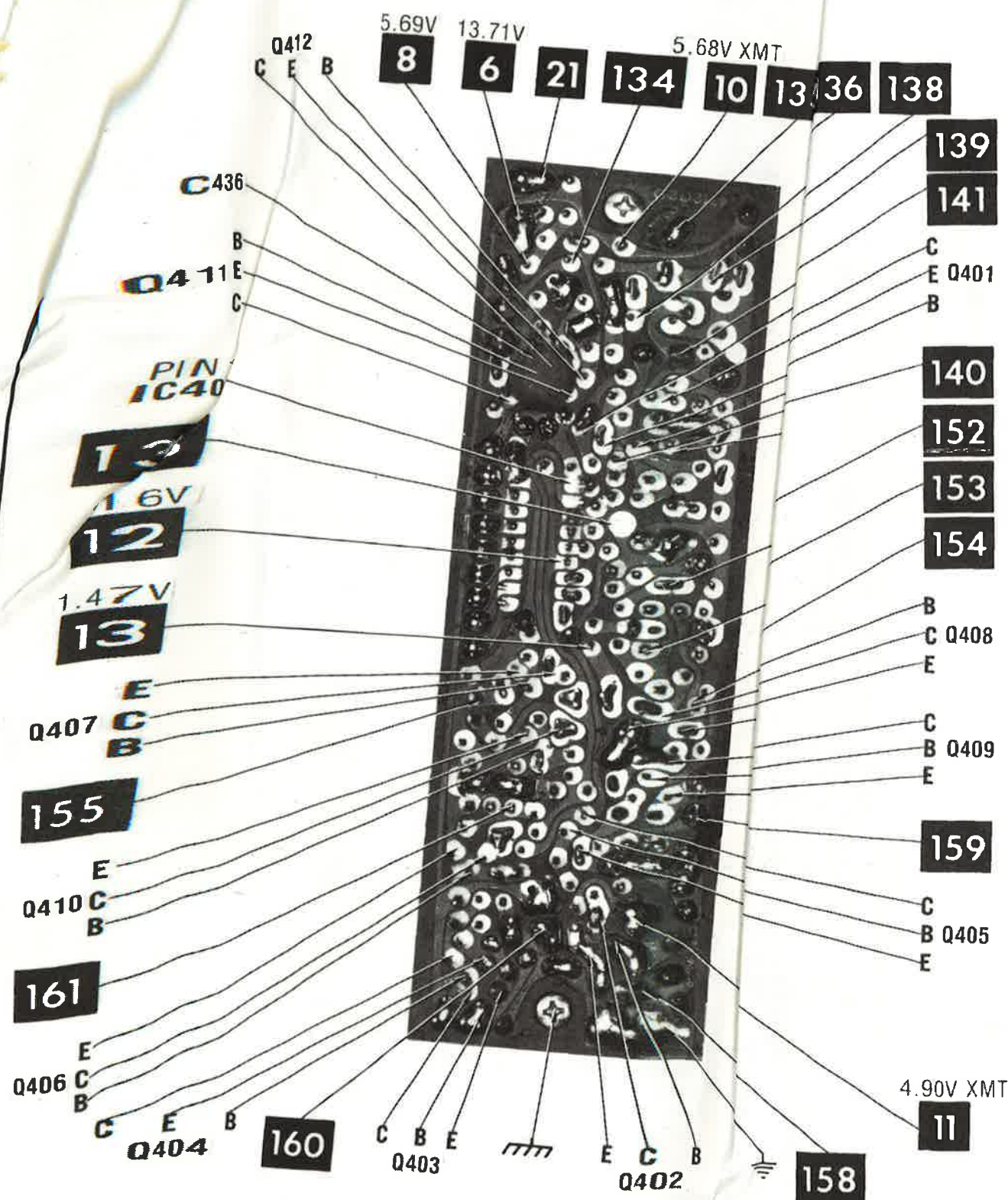
CHASSIS-BOTTOM

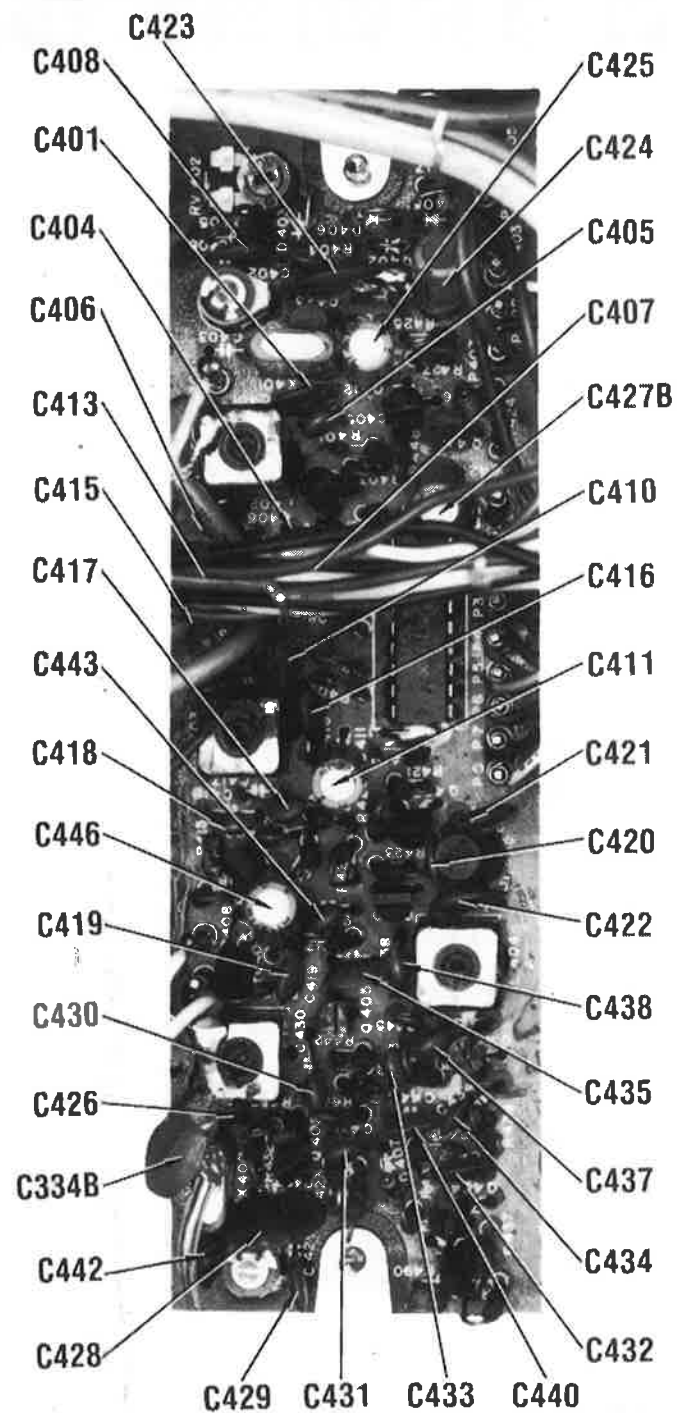


PLL BOARD

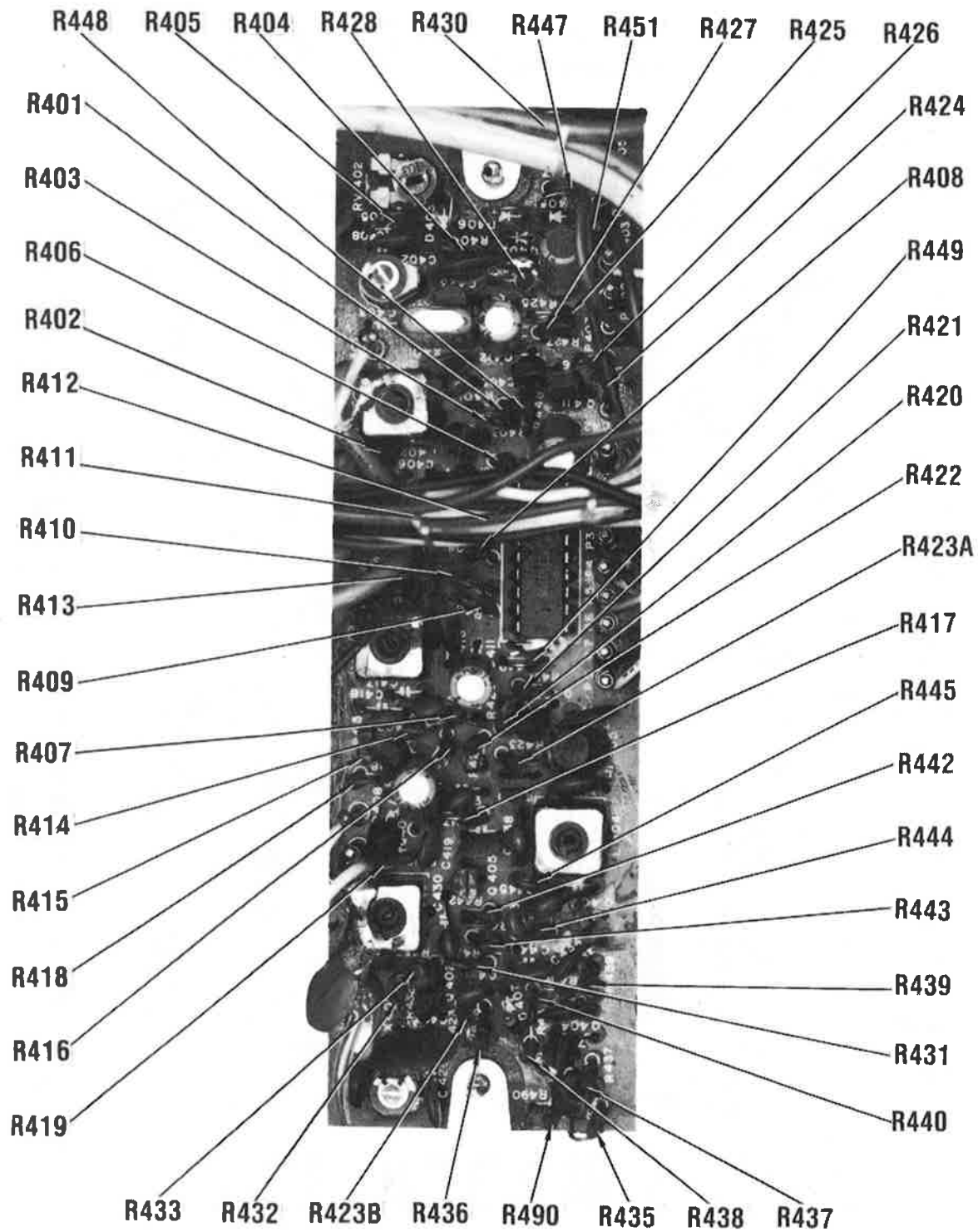


MAIN BOARD

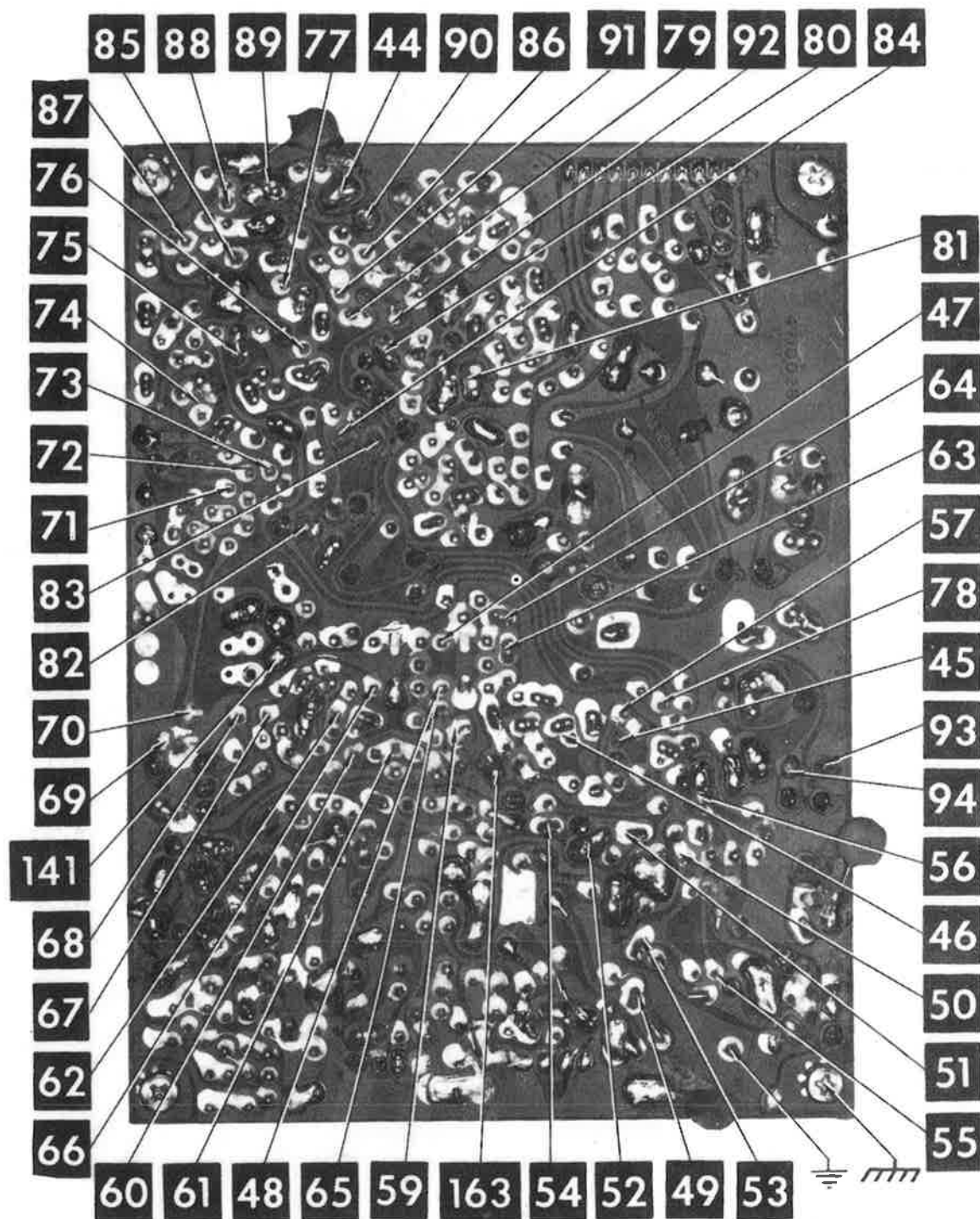




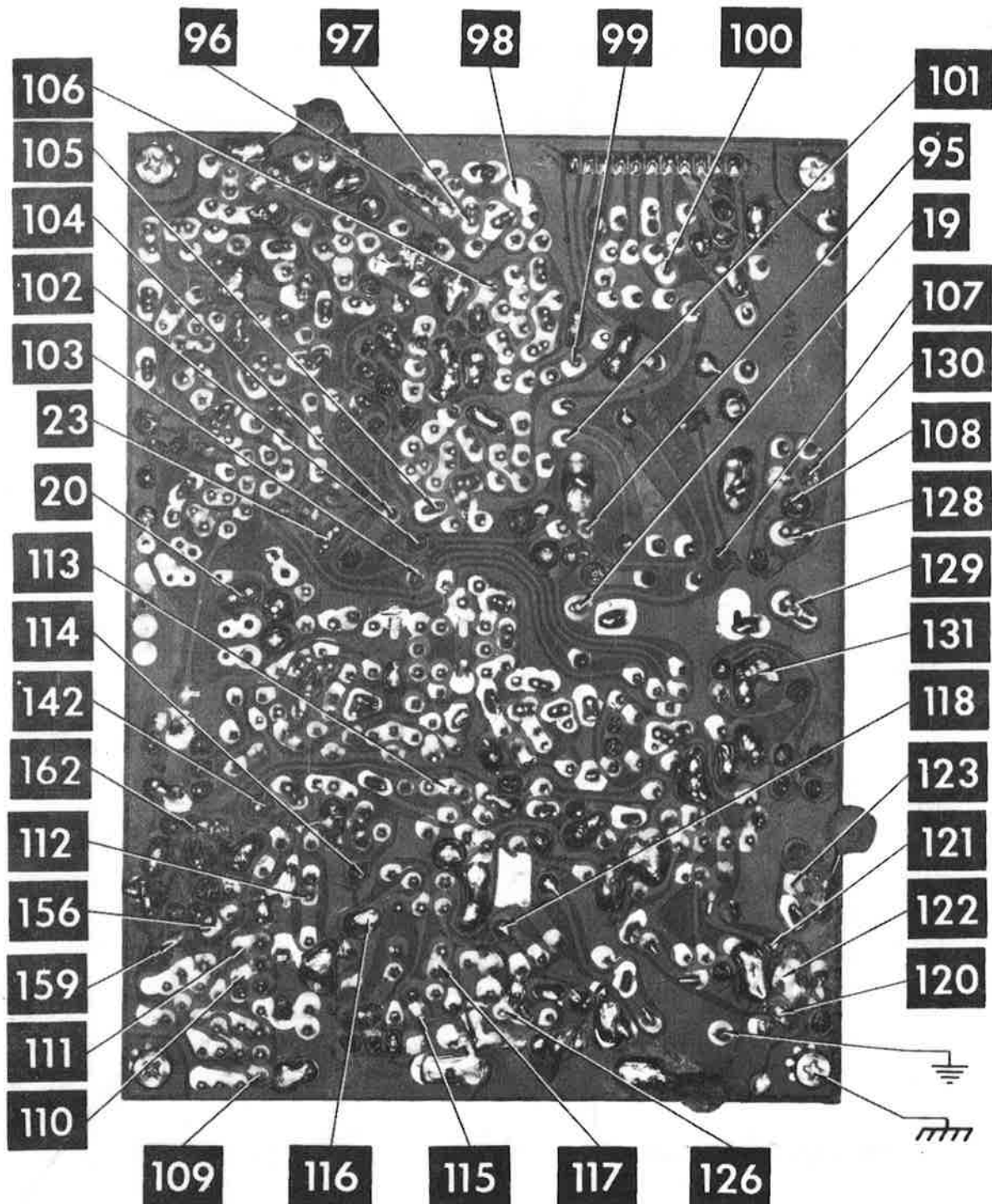
PLL BOARD



PLL BOARD

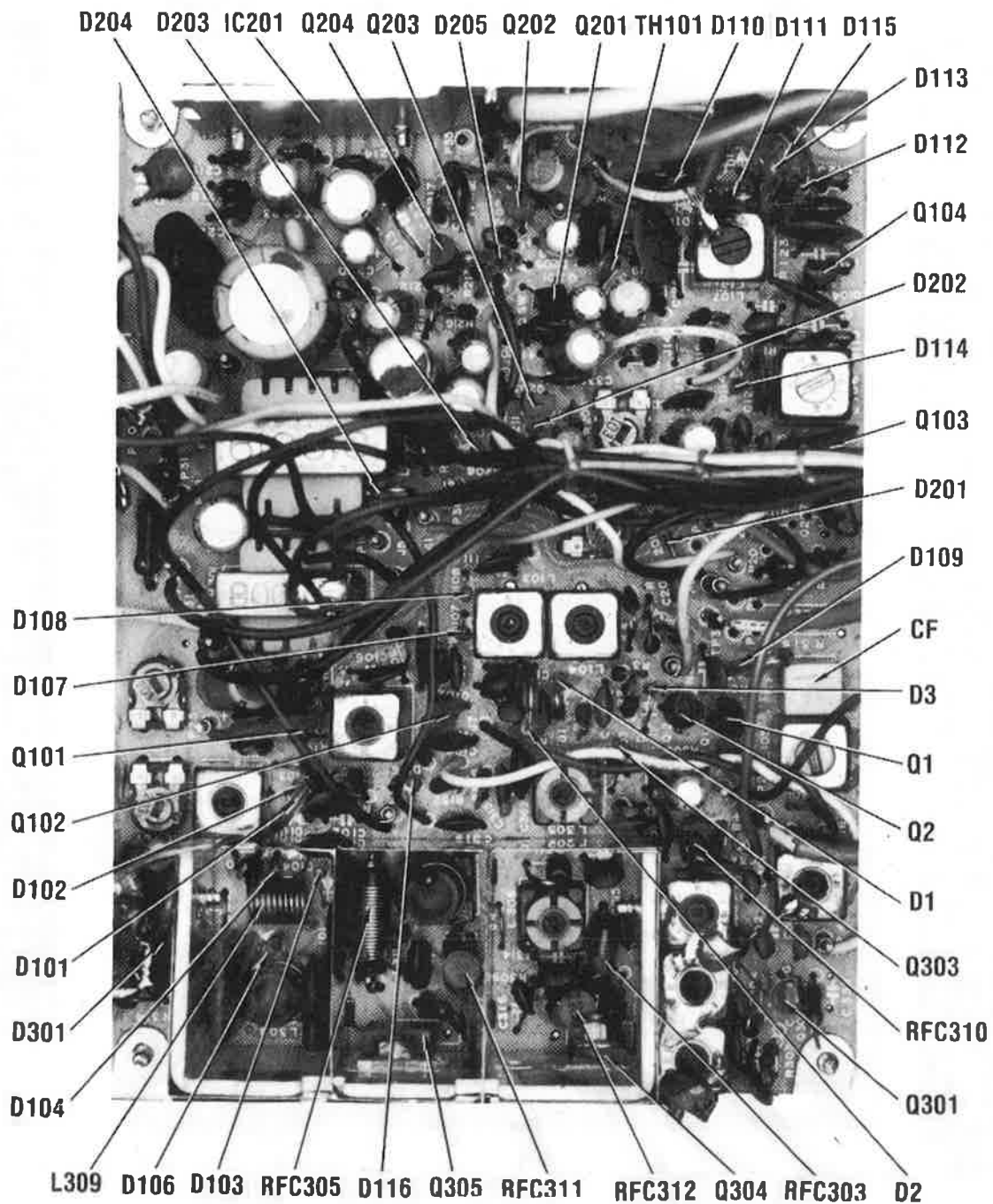


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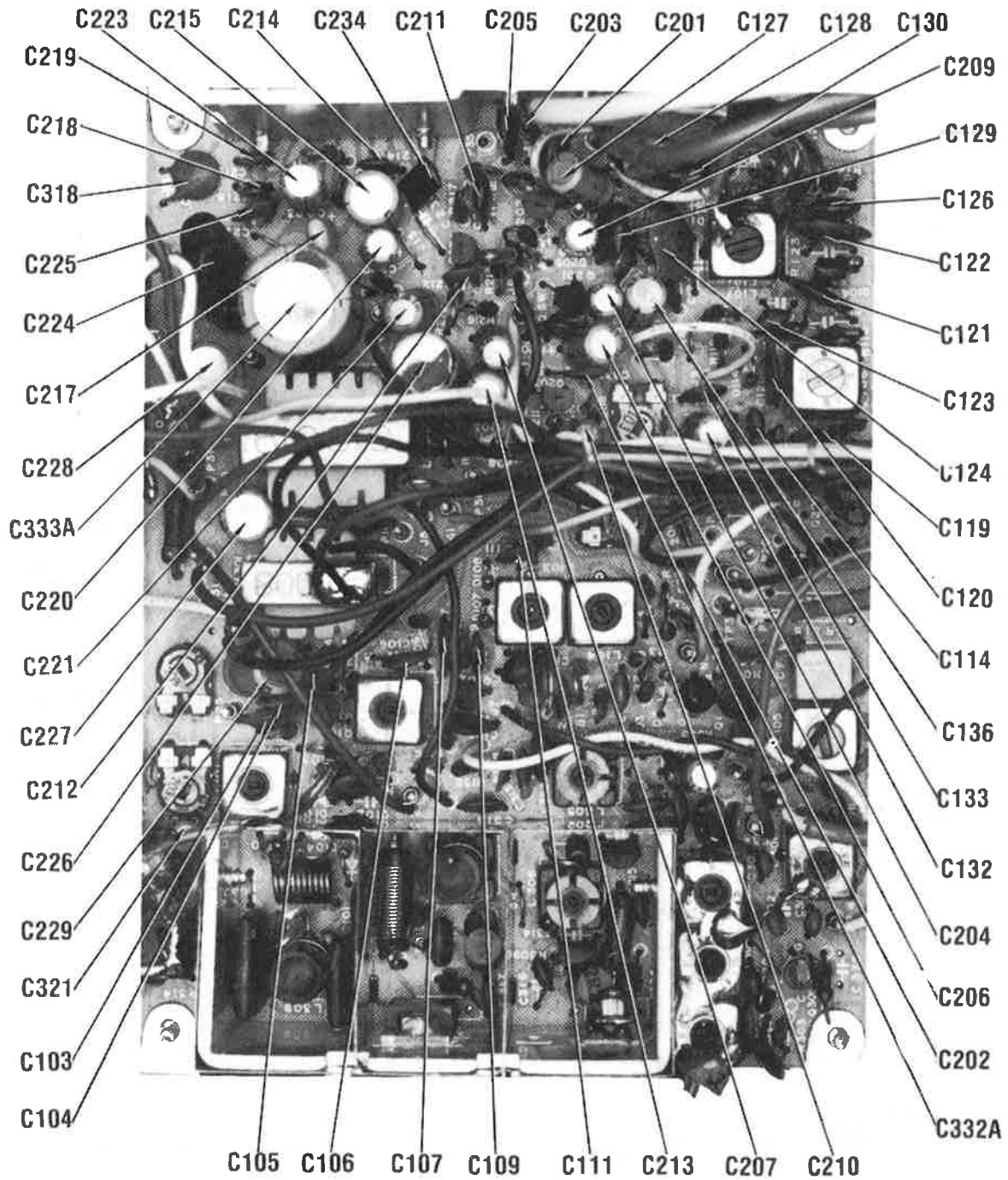


DAK MODEL MARK V

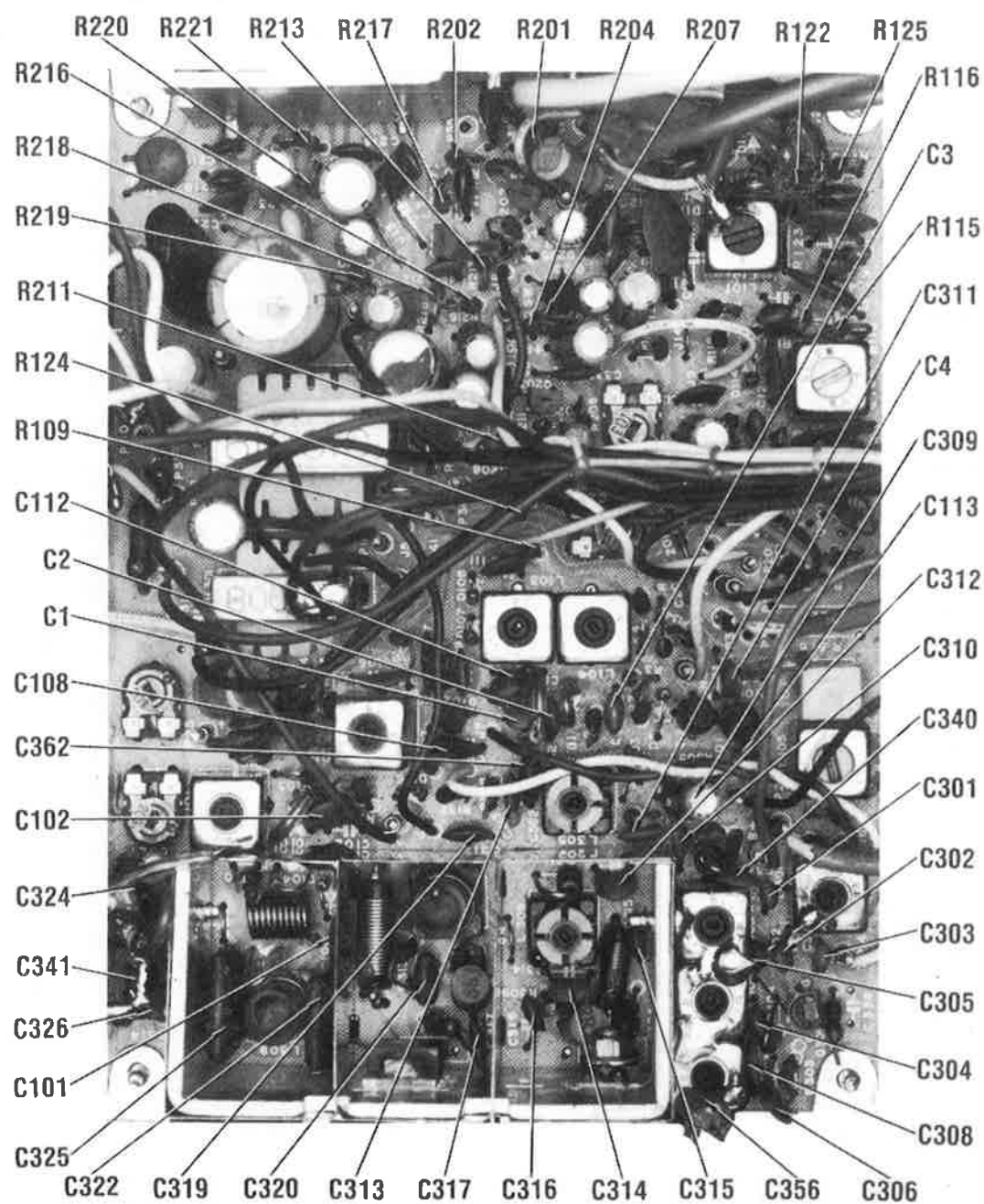
MAIN BOARD



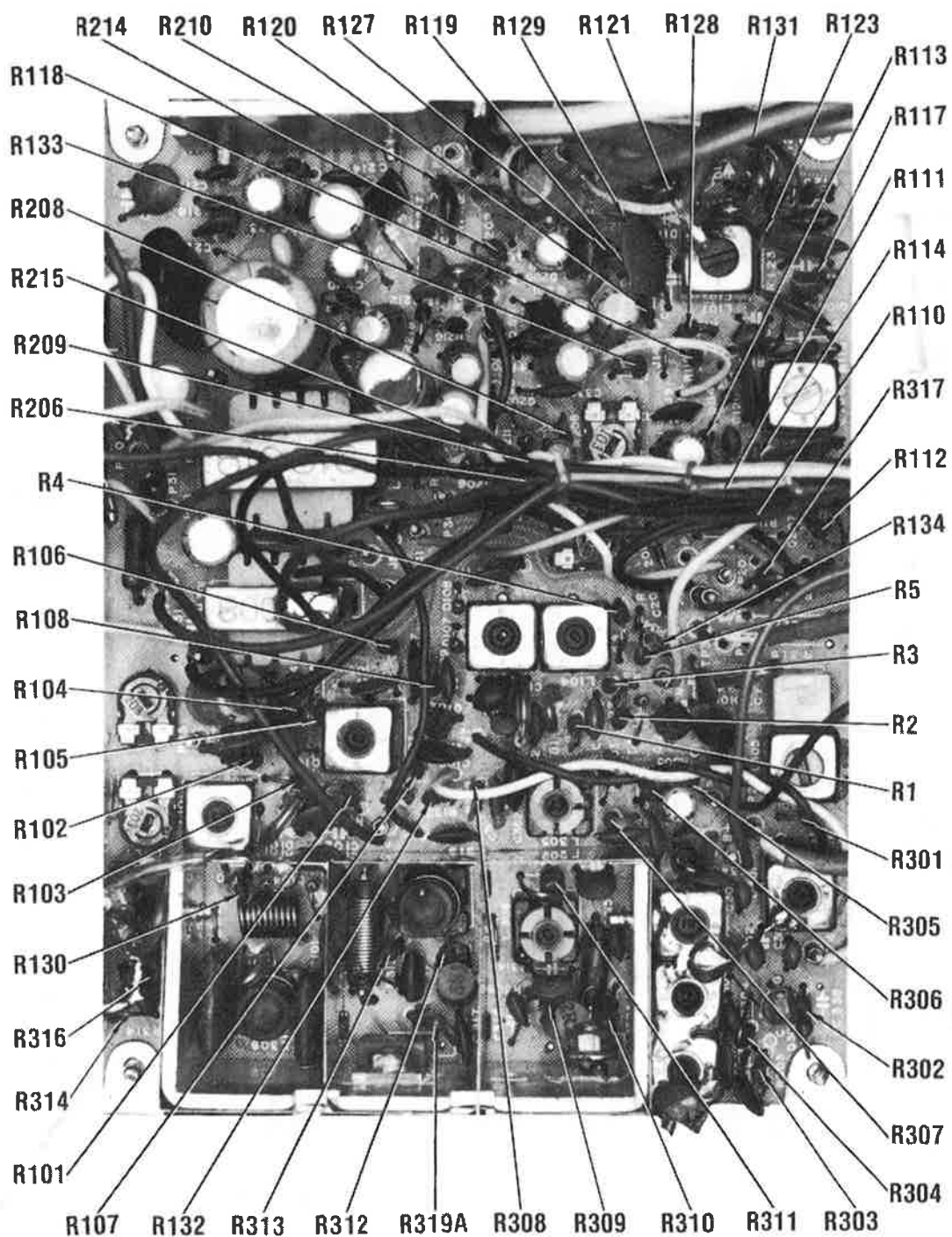
MAIN BOARD



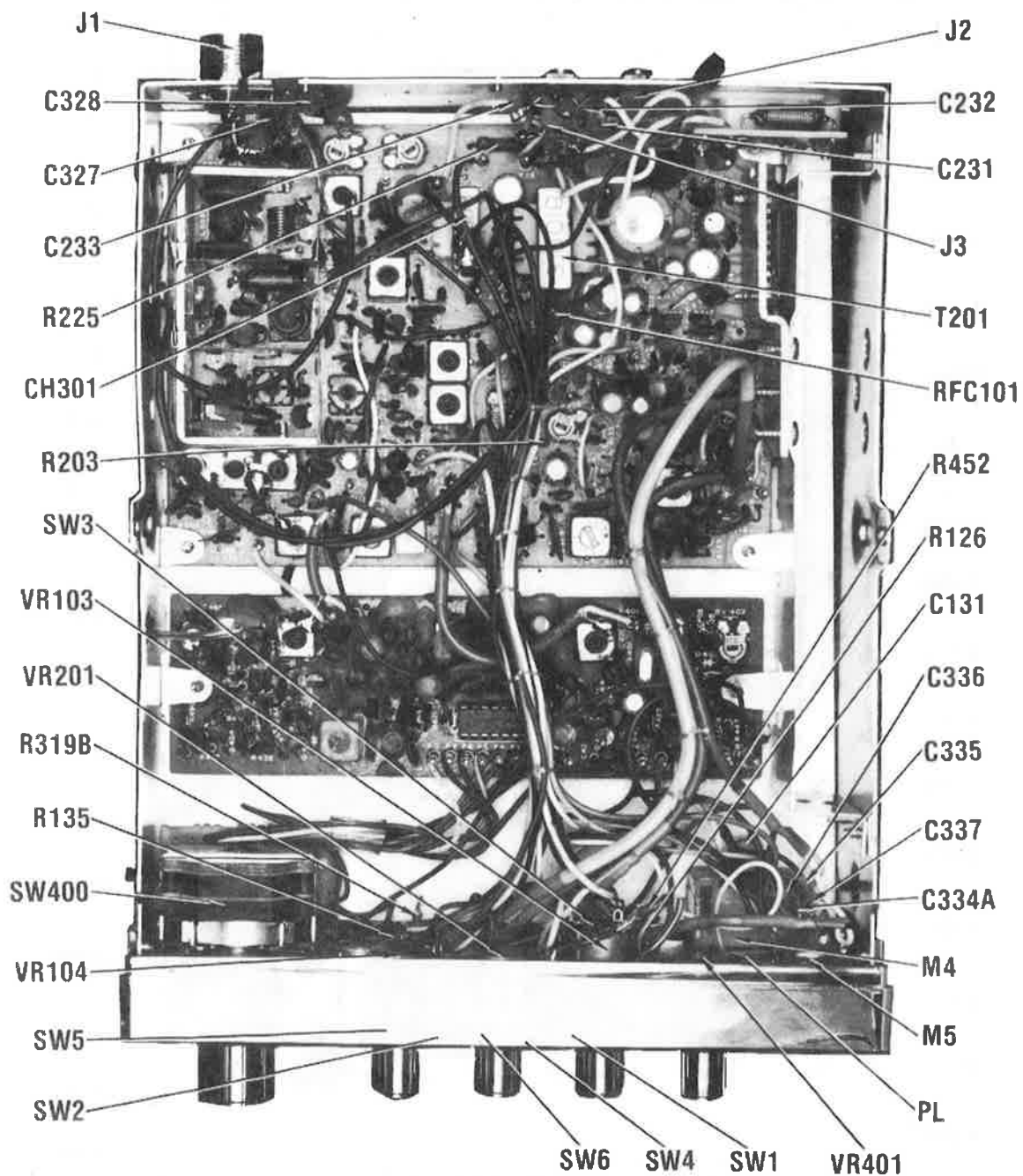
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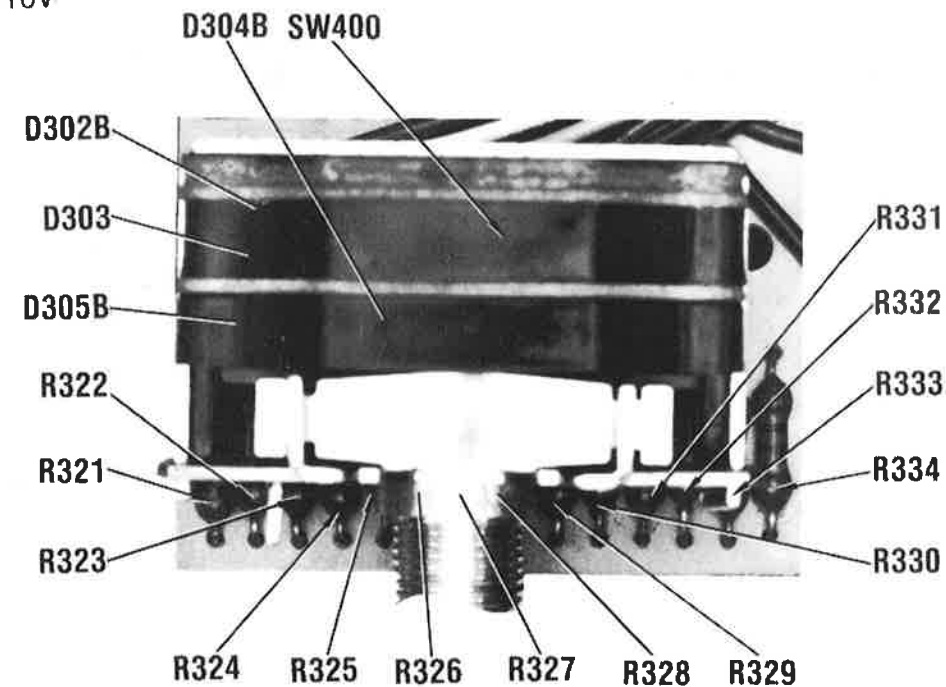
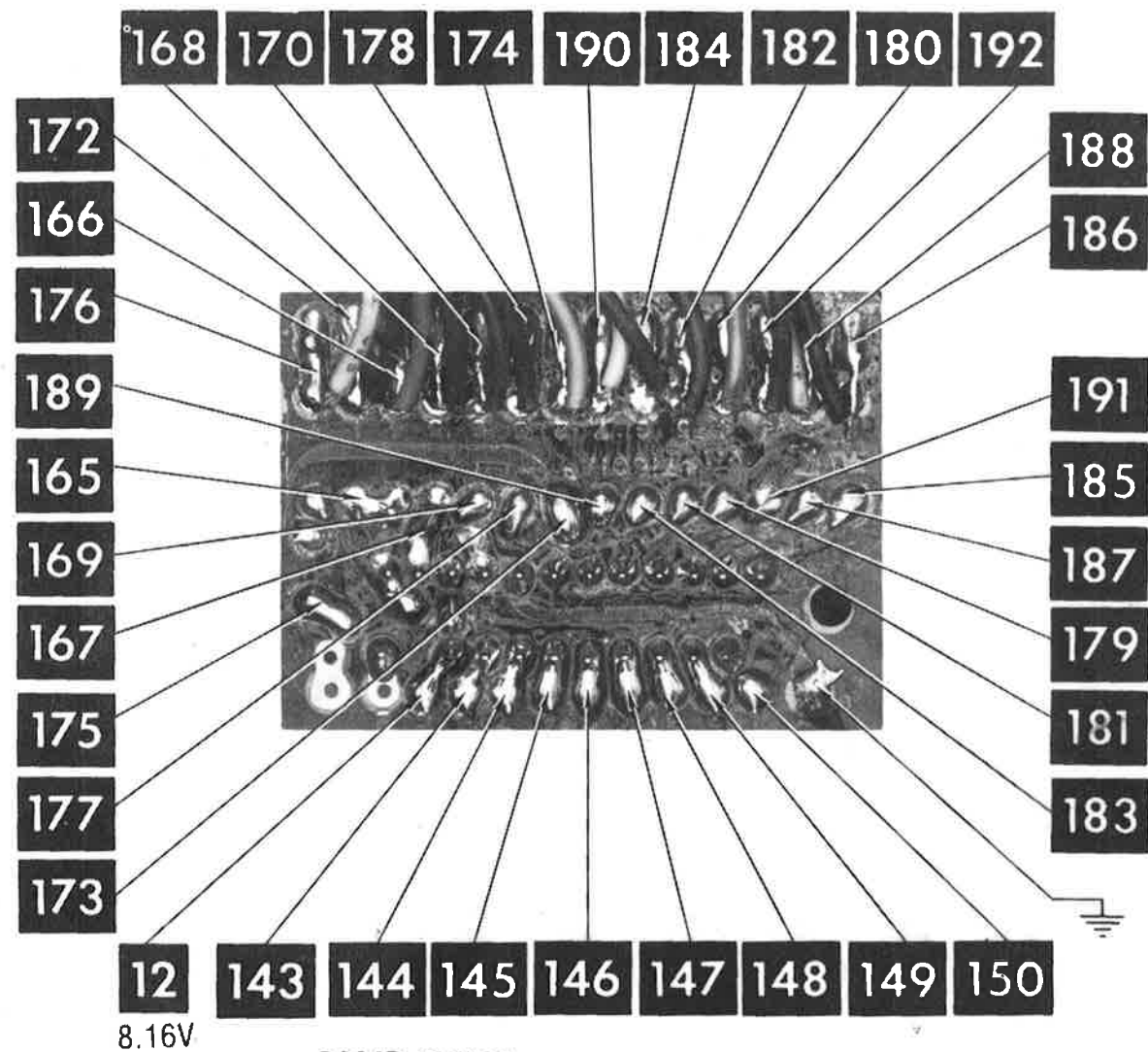
MAIN BOARD



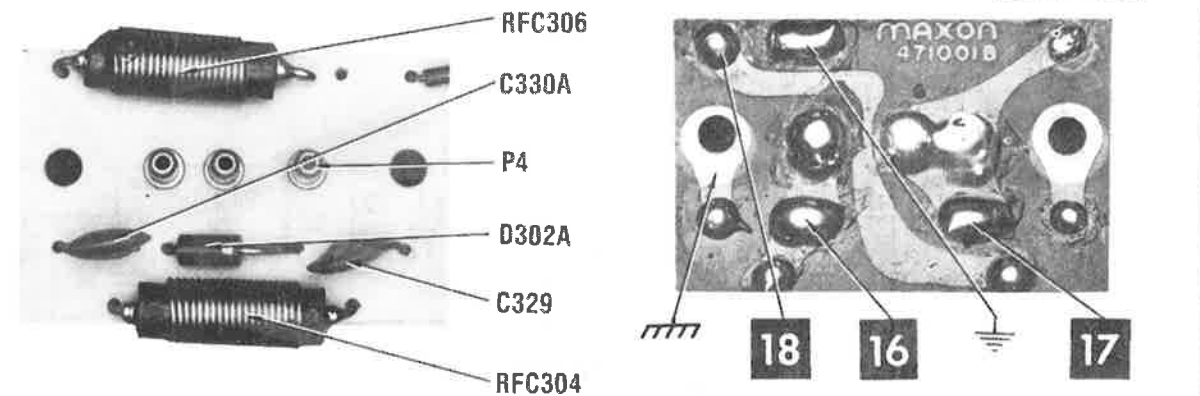
MAIN BOARD



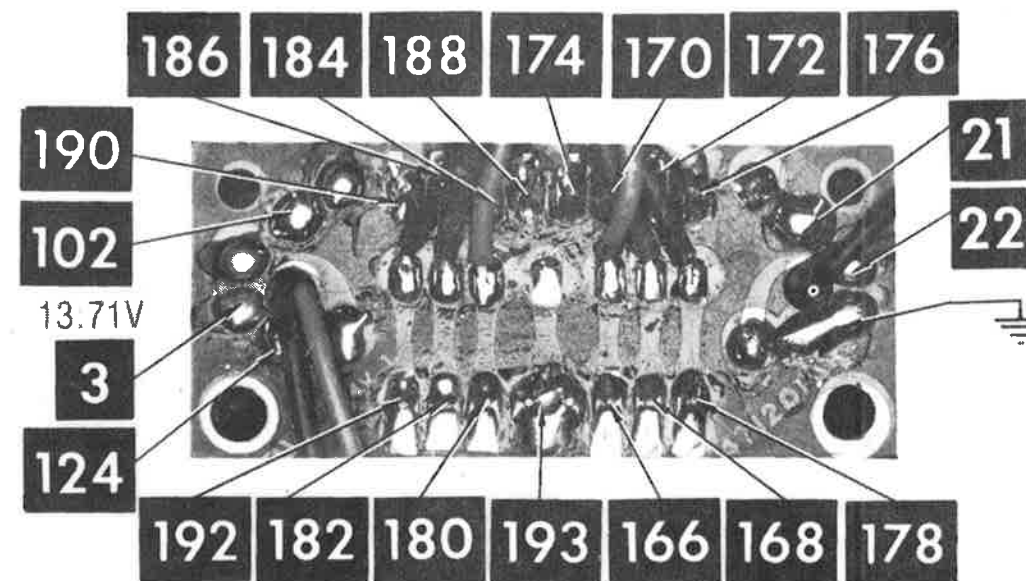
CHASSIS-BOTTOM



CHANNEL SELECTOR BOARD



DC PWR INPUT BOARD



CHANNEL READOUT BOARD

TRUTH CHART

C H A N N E L	1 = 8.15 Volts				CHANNE
	IC				
	10	11	12	1	
1	0	1	0		
2	0	1	0		
3	0	1	0		
4	0	1	0		
5	0	1	1		
6	0	1	1		
7	0	1	1		
8	0	1	1		
9	0	1	1		
10	0	1	1		
11	0	1	1		
12	0	1	1		
13	0	1	1		
14	0	1	1		
15	0	1	1		
16	0	1	1		
17	0	1	1		
18	0	1	1		
19	0	1	1		
20	0	1	1		
21	0	1	1		
22	0	1	1		
23	0	1	1		
24	0	1	1		
25	0	1	1		
26	0	1	1		
27	0	1	1		
28	0	1	1		
29	0	1	1		
30	0	1	1		
31	0	1	1		
32	0	1	1		
33	1	0	0		
34	1	0	0		
35	1	0	0		
36	1	0	0		
37	1	0	0		
38	1	0	0		
39	1	0	0		
40	1	0	0		



16 17

DC PWR INPUT BOARD

72 176



21 22

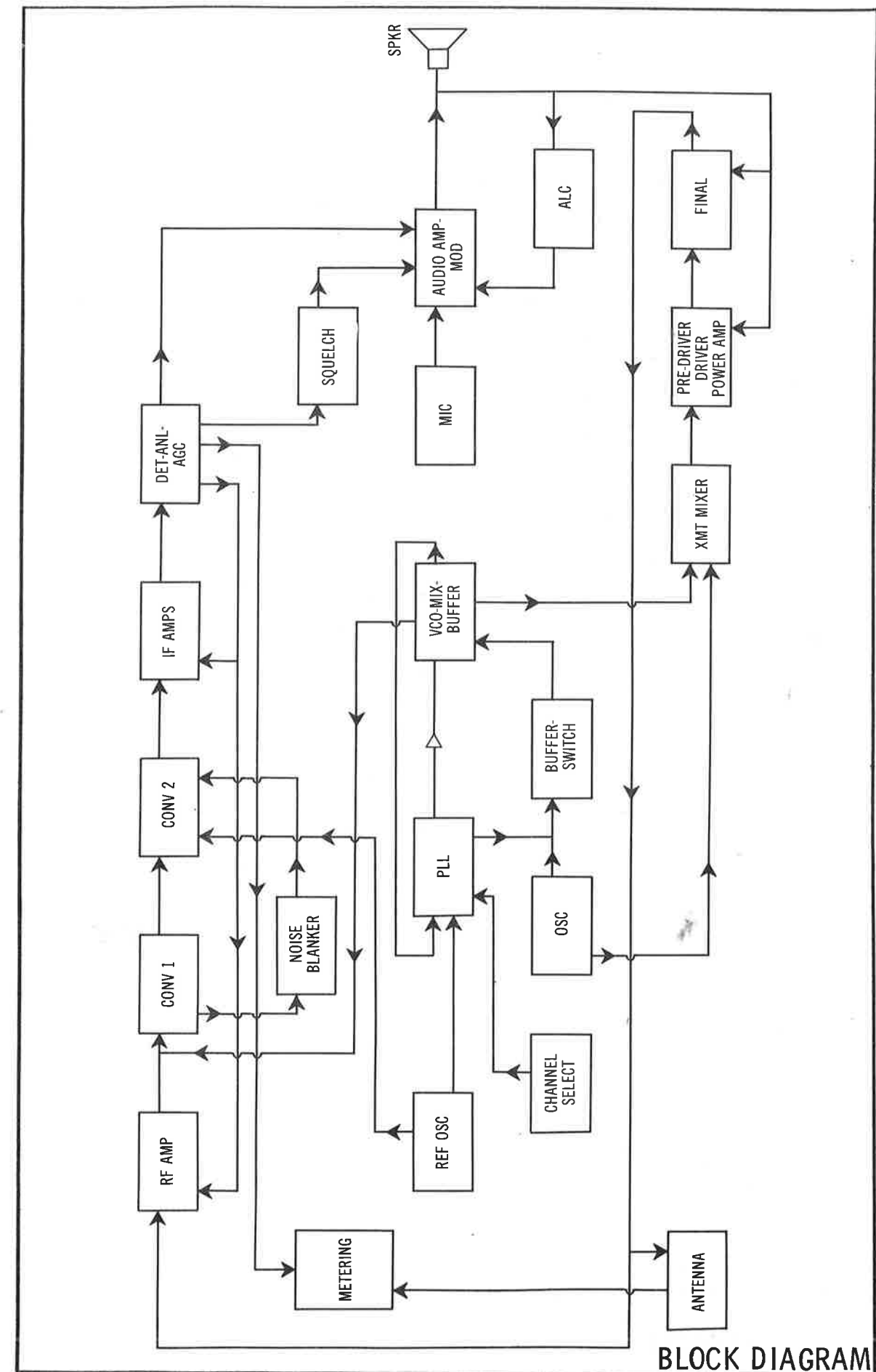
8 178



CHANNEL READOUT BOARD

TRUTH CHART

C H A N N E L	1 = 8.15 Volts 0 = 0 Volts								REC & XMT DIVIDER INPUT IN MHz AT TP13	REC VCO OUTPUT IN MHz AT TP2	XMT VCO OUTPUT IN MHz AT TP2
	CHANNEL INPUT CODES										
	IC401 PINS										
	10	11	12	13	14	15	16	17			
1	0	1	0	1	1	0	1	1	.910	16.270	16.543
2	0	1	0	1	1	1	0	0	.920	16.280	16.553
3	0	1	0	1	1	1	0	1	.930	16.290	16.563
4	0	1	0	1	1	1	1	1	.950	16.310	16.583
5	0	1	1	0	0	0	0	0	.960	16.320	16.593
6	0	1	1	0	0	0	0	1	.970	16.330	16.603
7	0	1	1	0	0	0	1	0	.980	16.340	16.613
8	0	1	1	0	0	1	0	0	1.000	16.360	16.633
9	0	1	1	0	0	1	0	1	1.010	16.370	16.643
10	0	1	1	0	0	1	1	0	1.020	16.380	16.653
11	0	1	1	0	0	1	1	1	1.030	16.390	16.663
12	0	1	1	0	1	0	0	1	1.050	16.410	16.683
13	0	1	1	0	1	0	1	0	1.060	16.420	16.693
14	0	1	1	0	1	0	1	1	1.070	16.430	16.703
15	0	1	1	0	1	1	0	0	1.080	16.440	16.713
16	0	1	1	0	1	1	1	0	1.100	16.460	16.733
17	0	1	1	0	1	1	1	1	1.110	16.470	16.743
18	0	1	1	1	0	0	0	0	1.120	16.480	16.753
19	0	1	1	1	0	0	0	1	1.130	16.490	16.763
20	0	1	1	1	0	0	1	1	1.150	16.510	16.783
21	0	1	1	1	0	1	0	0	1.160	16.520	16.793
22	0	1	1	1	0	1	0	1	1.170	16.530	16.803
23	0	1	1	1	1	0	0	0	1.200	16.560	16.833
24	0	1	1	1	0	1	1	0	1.180	16.540	16.813
25	0	1	1	1	0	1	1	1	1.190	16.550	16.823
26	0	1	1	1	1	0	0	1	1.210	16.570	16.843
27	0	1	1	1	1	0	1	0	1.220	16.580	16.853
28	0	1	1	1	1	0	1	1	1.230	16.590	16.863
29	0	1	1	1	1	1	0	0	1.240	16.600	16.873
30	0	1	1	1	1	1	0	1	1.250	16.610	16.883
31	0	1	1	1	1	1	1	0	1.260	16.620	16.893
32	0	1	1	1	1	1	1	1	1.270	16.630	16.903
33	1	0	0	0	0	0	0	0	1.280	16.640	16.913
34	1	0	0	0	0	0	0	1	1.290	16.650	16.923
35	1	0	0	0	0	0	1	0	1.300	16.660	16.933
36	1	0	0	0	0	0	1	1	1.310	16.670	16.943
37	1	0	0	0	0	1	0	0	1.320	16.680	16.953
38	1	0	0	0	0	1	0	1	1.330	16.690	16.963
39	1	0	0	0	0	1	1	0	1.340	16.700	16.973
40	1	0	0	0	0	1	1	1	1.350	16.710	16.983

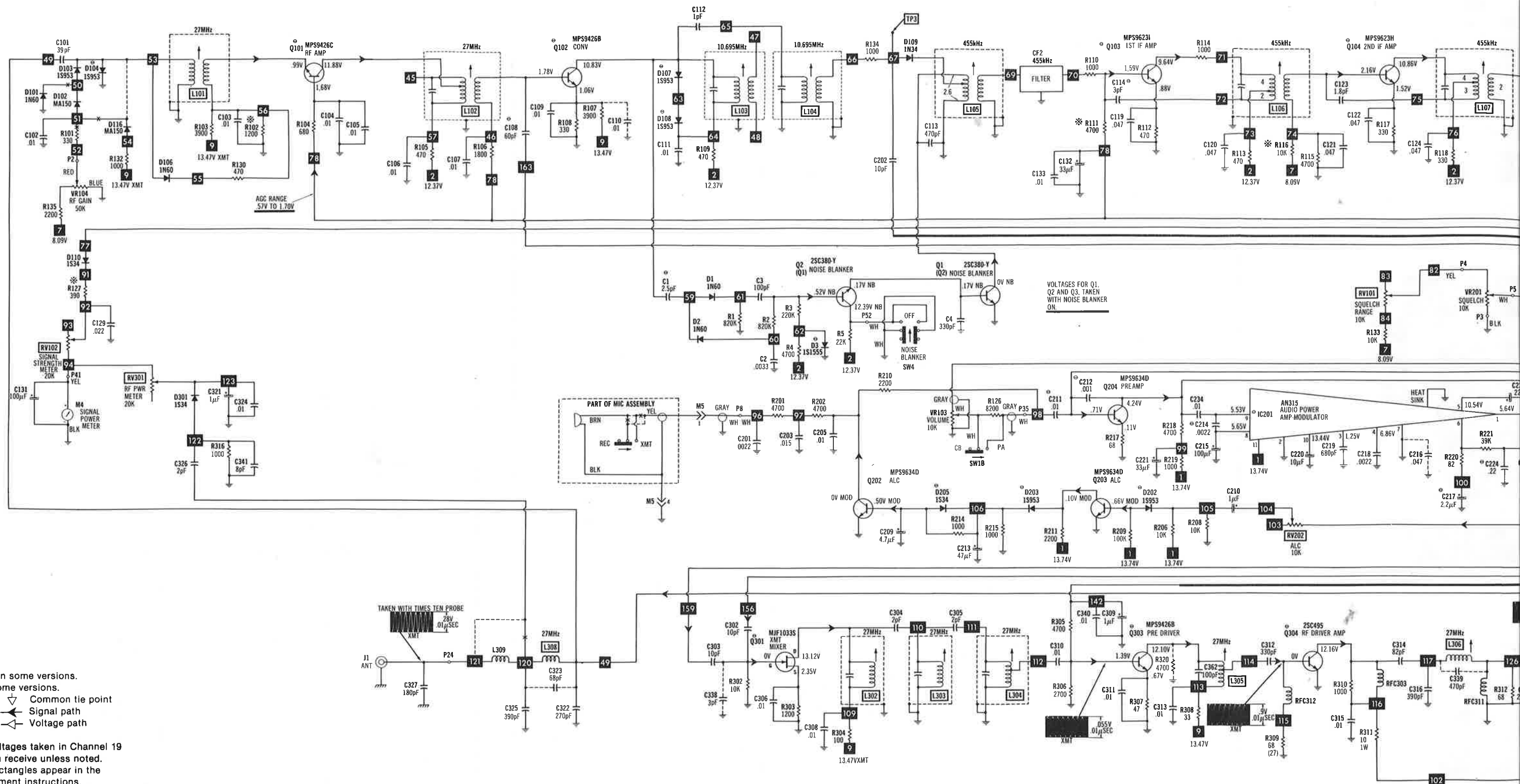


- Circuitry not used in some versions.
 - - - Circuitry used in some versions.
 - * Nominal value
 - ⊥ Ground
 - ⏏ Chassis
 - ⊙ See parts list
 - ▽ Common tie point
 - Signal path
 - ⤴ Voltage path
- Waveforms and Voltages taken in Channel 19 with switching in receive unless noted. Item numbers in rectangles 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. 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).

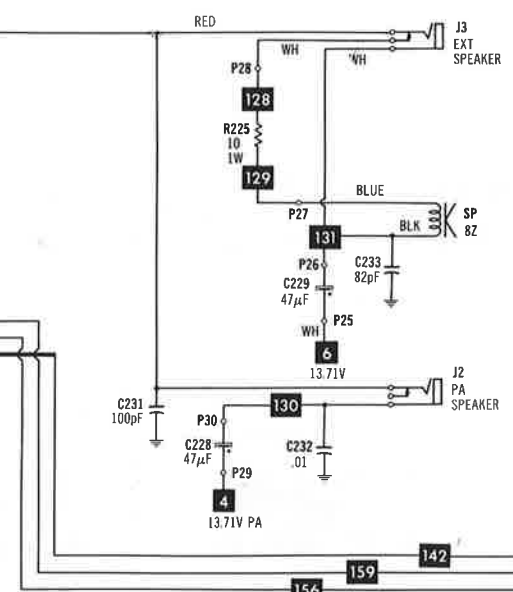
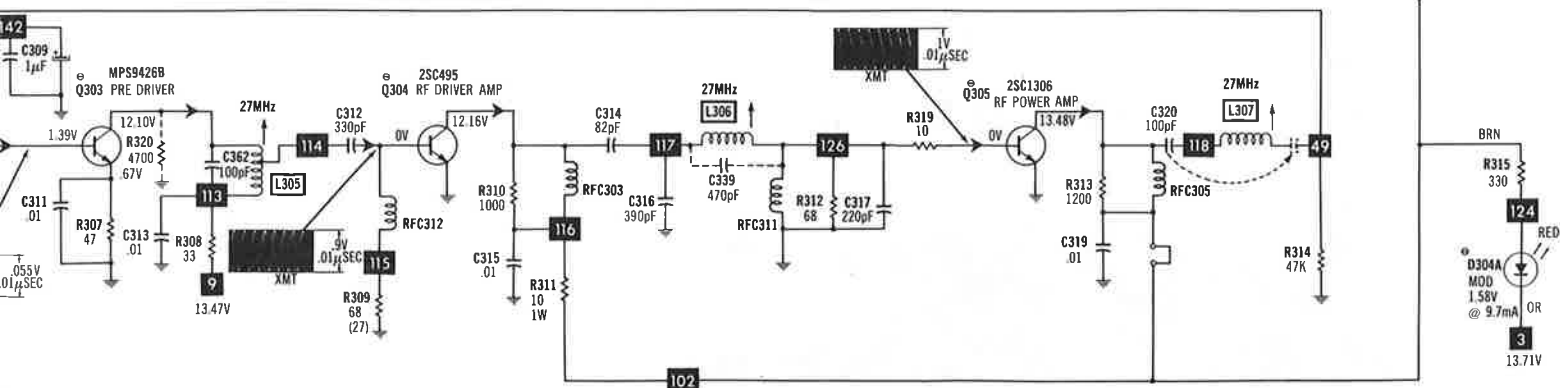
A PHOTOFACT STANDARD NOTATION SCHEMATIC

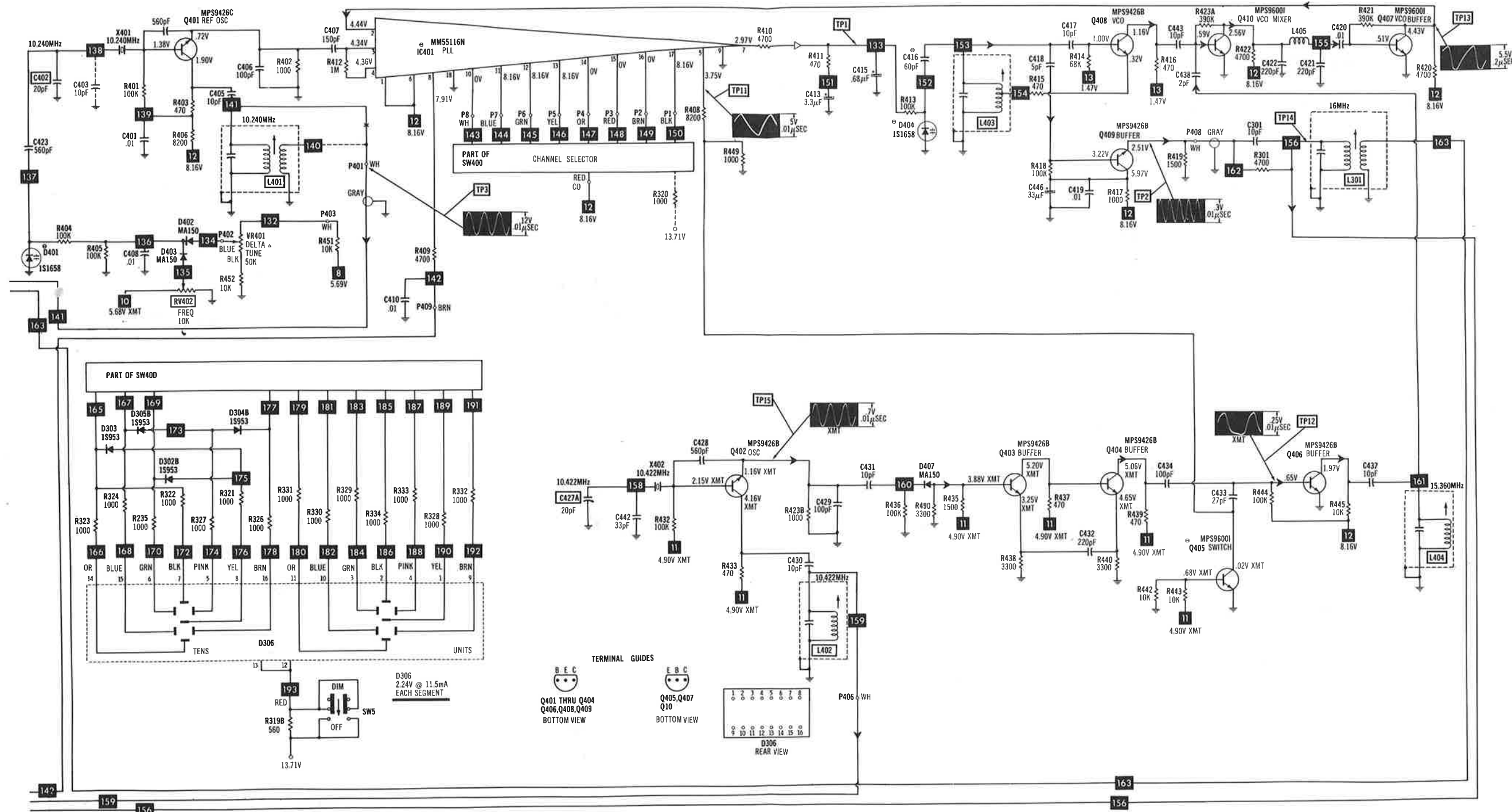
WITH **CIRCUITRACE**

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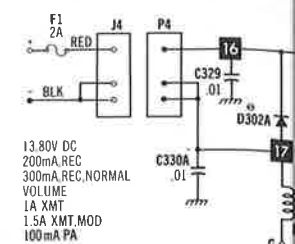
MAIN SCHEMATIC





- ✕ Circuitry not used in some versions.
- Circuitry used in some versions.
- ✱ Nominal value
- ⊥ Ground
- ⏏ Chassis
- Ⓢ See parts list
- Ⓢ Common tie point
- Ⓢ Signal path
- Ⓢ Voltage path

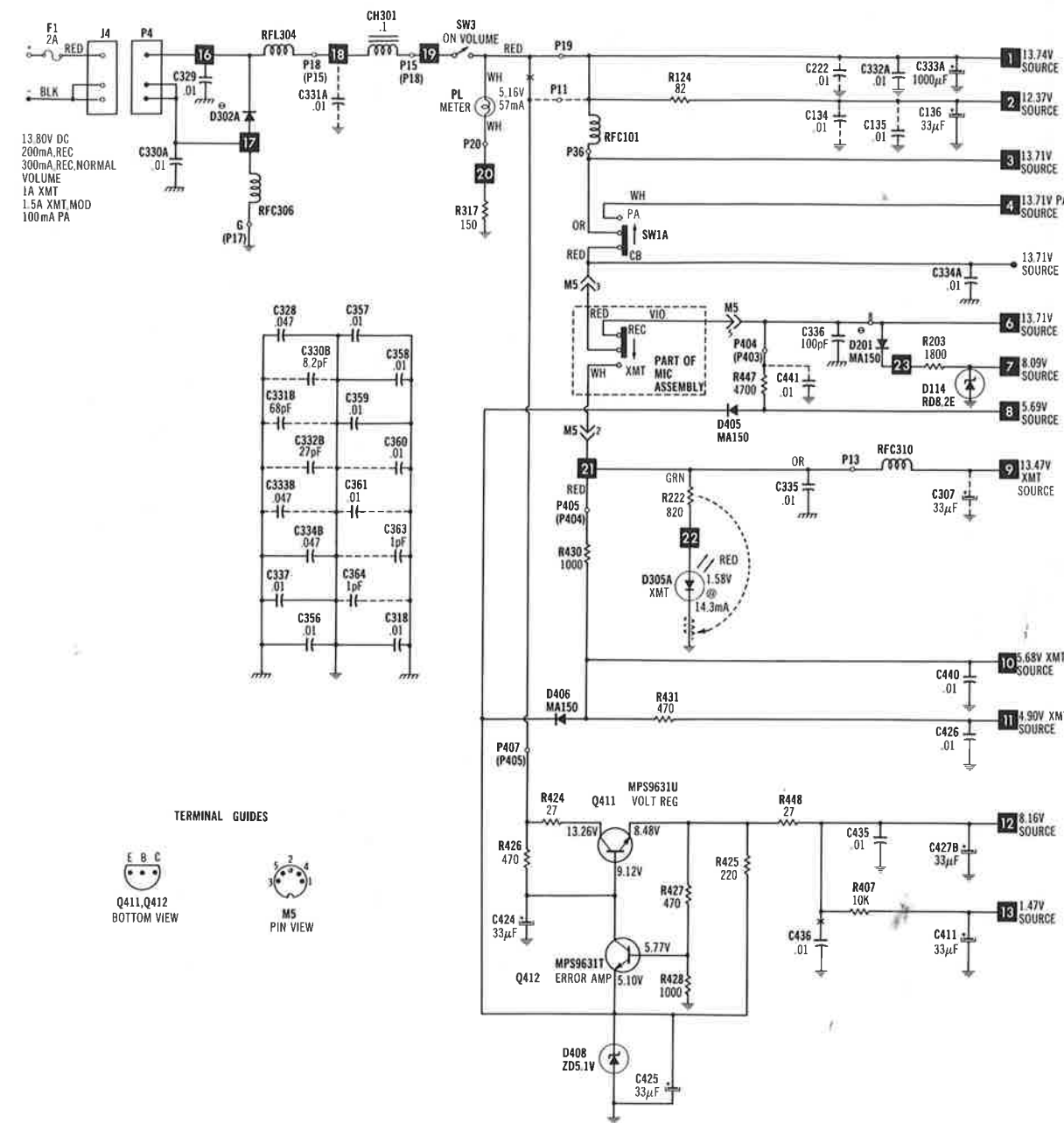
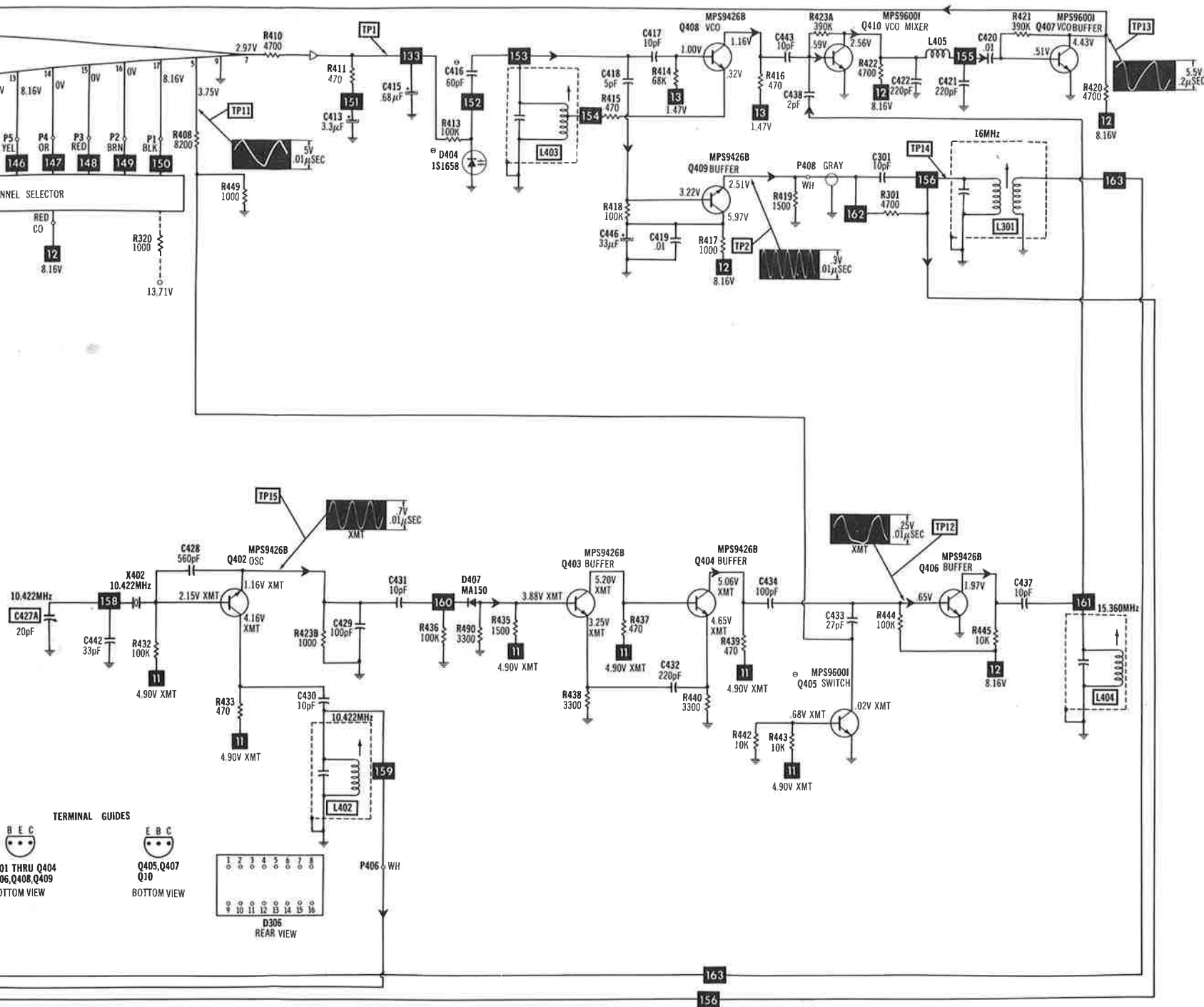
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TERMINAL GUIDE



Q411, Q412
BOTTOM VIEW



PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1N60		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
D2	1N60		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
D3	1S1555		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D101	1N60		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
D102	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D103	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D104	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D106	1N60		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
D107	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D108	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D109	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D110	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D111	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D112	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D113	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D114	RD8, 2E		GEZD-8, 2	ZB8, 2B	REN 5072	SK3136/5072A	ECG5072A	TM5072/**	WEP1108	103-Z9001
D115	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
D116	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D201	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D202	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D203	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D204			GE-504A	PTC201	REN 116	SK3311	ECG116	TM116	WEP156	212-76-02
D205	1N60		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
	1S34		1N34AS	PTC207	REN 109	SK3087	ECG109	TM109/**	WEP134	103-Z9001
	1S34		1N60	PTC206	REN 109	SK3088	ECG109	TM109/**	WEP134	103-Z9001
D301			GE-504A	PTC201	REN 116	SK3311	ECG116	TM116	WEP156	212-76-02
D302A	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D302B	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D303B	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D304B	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D305B	1S953		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D401	MV2209		GE-90	REN 614		ECG614				103-219
D402	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D403	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D404	MV2209		GE-90	REN 614		ECG614				103-219
D405	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D406	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D407	MA150		GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177	WEP1062	103-131
D408	ZD5, 1V		GEZD-5, 1			SK3056/135A		1N4733A	WEP1103	103-290
IC201	AN315						ECG1240			
	AN7150									
IC401	MC145106									
Q1	2SC380Y		GE-61*	PTC136*	REN 107	SK3245/199	ECG107	TM107	WEP380	121-Z9001*
Q2	2SC380Y		GE-61*	PTC136*	REN 107	SK3245/199	ECG107	TM107	WEP380	121-Z9001*
Q101	MPS9426C		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	MPS9426		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	2SC784-0		GE-60*	PTC132*	REN 229*	SK3246/229*	ECG229*	TM229*/**	WEP956	121-Z9021
Q102	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	MPS9426		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	2SC784-0		GE-60*	PTC132*	REN 229*	SK3246/229*	ECG229*	TM229*/**	WEP956	121-Z9021
Q103	MPS96231		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
	MPS9623		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q104	2SC380-0		GE-61*	PTC136*	REN 107	SK3245/199	ECG107	TM107	WEP380	121-Z9001*
	MPS9623H		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
	MPS9623		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
	2SC380-0		GE-61*	PTC136*	REN 107	SK3245/199	ECG107	TM107	WEP380	121-Z9001*
Q201	MPS9631I		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
	MPS9631		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
	2SC372		GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A*/**	WEP372	121-Z9000A*
Q202	MPS9634D		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q203	MPS9634D		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q204	MPS9634D		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q301	JF1033S		GE-FET-2	PTC161	REN 132*	SK3834/132	ECG312	TM312	WEP920	121-766
	2SK19		GE-FET-2	PTC161	REN 132*	SK3834/132	ECG312	TM312	WEP920	121-766
Q303	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	MPS9426C		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
	2SC1854		GE-62	PTC136	REN 199	SK3122	ECG199	TM199	WEP66	121-972
	2SC394		GE-61*	PTC121*	REN 229*	SK3124/289	ECG229*	TM229*	WEP394	121-Z9021
Q304	2SC1957		GE-270	PTC186	REN 295	SK3253/295	ECG295	TM295	WEP913	121-880
	2SC1846		GE-336	PTC904	REN 295	SK3253/295	ECG295	TM295	WEP913	121-880
	2SC1847		GE-270	PTC186	REN 295	SK3253/295	ECG295	TM295	WEP913	121-880
	2SC495		GE-270	PTC186	REN 295	SK3253/295	ECG295	TM295	WEP913	121-880
	LM8000		GE-81	PTC136	REN 195A	SK3250	ECG195A	TM195A	WEP774	121-Z9027
Q305	2SC1306		GE-215	PTC186	REN 235	SK3239/236	ECG235	TM235/**	WEP785	121-Z9039
	2SC1678		GE-322	PTC186	REN 235	SK3197/235	ECG235	TM235	WEP785	121-Z9039
	2SC2075		GE-215	PTC186	REN 235	SK3197/235	ECG235	TM235	WEP785	121-Z9039
	2SC1974		GE-337	PTC186	REN 235	SK3239/236	ECG235	TM235	WEP785	121-Z9040
	2SC1975		GE-338	PTC186	REN 235	SK3197/235	ECG235	TM235	WEP785	121-Z9039
	MPSU31		GE-275		REN 322	SK3252	ECG322	TM322	WEP918	121-Z9037
	MRF472		GE-215	PTC186	REN 235	SK3197	ECG235	TM235	WEP785	121-Z9002
Q401	MPS9426C		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
Q402	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
Q403	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
Q404	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
Q405	MPS96001		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q406	MPS9426B		GE-61	PTC121	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021
Q407	MPS96001		GE-20	PTC136	REN 123A	SK3444	ECG123A	TM123A	WEP736	121-Z9000A
Q408	MPS9426B		GE-61	PTC171	REN 229	SK3246	ECG229	TM229	WEP956	121-Z9021

* Lead configuration may vary from original.
/** Also available as exact type replacement.
(1) No information available.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C127	3.3 10V		PC5-50	VTT3R3A50	QV1-25	EV-1618.1
C128	1 50V			TDC105M050EL	QDT1-25	SD50-19
C131	100 6.3V		WBR100-16	TT6X100A		TVA-1101
C132	33 10V		PC30-25	VTT33B10		EV-1225
C136	33 10V		PC30-25	VTT33B10		EV-1225
C204	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C206	33 10V		PC30-25	VTT33B10		EV-1225
C207	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C209	4.7 25V		PC5-50	VTT4R7B50	QV1-31	EV-1619.1
C210	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C213	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C215	100 10V		PC100-10	VTT100E10	QV1-93	EV-1131
C217	2.2 50V			TDC225M050FL	QDT1-37	SD50-2R29
C220	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C221	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C223	22 16V		PC25-25	VTT22B16	QV1-55	EV-1224
C226	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C227	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C228	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C229	47 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C307	33 16V		PC1-50	VTT1A50	QV1-11	EV-1615
C309	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C321	1 50V		PC1000-16	VTT1000L16	QV1-183	EV-1261
C333A	1000 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C411	33 16V		PC5-50	VTT3R3A50	QV1-25	EV-1618.1
C413	3.3 50V			TDC684M050EL	QDT1-22	SD50-R689
C415	.68 50V			VTT33D25	QV1-63	EV-1325
C424	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C425	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C427B	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C446	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325

PARTS LIST AND DESCRIPTION (CONTINUED)

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

N	WORKMAN PART No.	ZENITH PART No.
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP1062	103-131	
WEP1062	103-131	
WEP134	103-Z9001	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP134	103-Z9001	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP1108	103-Z9001	
WEP134	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP156	212-76-02	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP134	103-Z9001	
WEP156	212-76-02	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP1062	103-131	
WEP200	103-219	
WEP1062	103-131	
WEP1062	103-131	
WEP200	103-219	
WEP1062	103-131	
WEP1062	103-131	
WEP1103	103-290	
WEP380	121-Z9001*	
WEP380	121-Z9001*	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP736	121-Z9000A	
WEP736	121-Z9000A	
WEP380	121-Z9001*	
WEP736	121-Z9000A	
WEP380	121-Z9001*	
WEP736	121-Z9000A	
WEP736	121-Z9000A	
WEP372	121-Z9000A*	
WEP736	121-Z9000A	
WEP736	121-Z9000A	
WEP736	121-Z9000A	
WEP736	121-Z9000A	
WEP920	121-756	
WEP920	121-756	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP66	121-972	
WEP394	121-Z9021	
WEP913	121-880	
WEP913	121-880	
WEP913	121-880	
WEP913	121-880	
WEP774	121-Z9027	
WEP785	121-Z9039	
WEP785	121-Z9039	
WEP785	121-Z9039	
WEP785	121-Z9040	
WEP785	121-Z9039	
WEP918	121-Z9037	
WEP785	121-Z9002	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP956	121-Z9021	
WEP736	121-Z9000A	
WEP956	121-Z9021	
WEP736	121-Z9000A	
WEP956	121-Z9021	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFRG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C127	3.3 10V		PC5-50	VTT3R3A50	QV1-25	EV-1618.1
C128	1 50V			TDG105M050EL	QDT1-25	SD50-19
C131	100 6.3V		WBR100-16	TG6X100A		TVA-1101
C132	33 10V		PC30-25	VTT33B10		EV-1225
C136	33 10V		PC30-25	VTT33B10		EV-1225
C204	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C206	33 10V		PC30-25	VTT33B10		EV-1225
C207	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C209	4.7 25V		PC5-50	VTT4R7B50	QV1-31	EV-1619.1
C210	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C213	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C215	100 10V		PC100-10	VTT100E10	QV1-93	EV-1131
C217	2.2 50V			TDG225M050FL	QDT1-37	SD50-2R29
C220	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C221	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C223	22 16V		PC25-25	VTT22B16	QV1-55	EV-1224
C226	220 16V		PC250-25	VTT220H16	QV1-117	EV-1240
C227	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C228	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C229	47 16V		PC50-16	VTT47D16	QV1-73	EV-1226
C307	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C309	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C321	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C333A	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1261
C411	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C413	3.3 50V		PC5-50	VTT3R3A50	QV1-25	EV-1618.1
C415	.68 50V			TDG68M050EL	QDT1-22	SD50-R689
C424	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C425	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C427B	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325
C446	33 16V		PC30-25	VTT33D25	QV1-63	EV-1325

CAPACITORS

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C1	2.5 50V		DD-332	GP3300	GP233	QC2-107	10TCC-V27
C2	.0033 50V		DD-101	GP100	GP310		5GA-D33
C3	100 50V 10%		DD-331	GP330	GP333		10TS-T10
C4	330 10%				GP333		10TS-T33
C101	39 NP0 50V 10%				CN0439		10TCC-Q39
C102	.01 50V		UK50-103		MAG5011		
C103	.01 50V		UK50-103		MAG5011		
C104	.01 50V		UK50-103		MAG5011		
C105	.01 50V		UK50-103		MAG5011		
C106	.01 50V		UK50-103		MAG5011		
C107	.01 50V		UK50-103		MAG5011		
C108	60 NP0 50V 5%		DTZ-68	NP060	CN0468		10TCC-Q68
C109	.01 50V		UK50-103		MAG5011		
C110	.01 50V		UK50-103		MAG5011		
C111	.01 50V		UK50-103		MAG5011		
C112	1 50V			CD15CD010D03		QW1-1	MMA-010
C113	470 50V		DD-471	GP470	GP347		10TS-T47
C114	3 50V		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C119	.047 50V		UK50-503		MAG5015		
C120	.047 50V		UK50-503		MAG5015		
C121	.047 50V		UK50-503		MAG5015		
C122	.047 50V		UK50-503		MAG5015		
C123	1.8 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C124	.047 50V		UK50-503		MAG5015		
C126	.022 50V 10%			DPMS2S22	M192P2239RB	QFT2-127	1FT-S22
C129	.022 50V 10%			DPMS2S22	M192P2239RB	QFT2-127	1FT-S22
C130	.047 50V			DPMS2S47	EWFTA147	QF1-171	1PB-S47
C133	.01 50V		UK50-103		MAG5011		
C134	.01 50V		UK50-103		MAG5011		
C135	.01 50V		UK50-103		MAG5011		
C201	.0022 50V				GP222		10TS-D22
C202	10 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C203	.015 50V 10%			WMF1S15	M192P1539RB	QFT2-105	1FT-S15
C205	.01 50V			WMF1S1	M192P1039RB	QFT2-91	1FT-S10
C211	.01 50V			WMF1S1	M192P1039RB	QFT2-91	1FT-S10

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C212	.001 50V		DD-102		GP210		10TS-D10
C214	.0022 50V			DPMS6D22	M192P2229RB	QFT2-27	1FT-D22
C216	.047 50V		UK50-503		MAG5015		
C218	.0022 50V 5%			WMF1D22(1)			
C219	680 50V		DD-681	GP680	GP368		10TS-T68
C222	.01 50V		UK50-103		MAG5011		
C224	.22 50V			WMF05P22	EWFO5022		431P2249R5
C225	.01 50V		UK50-103		MAG5011		
C231	100 50V 10%		DD-101	GP100	GP310		10TS-T10
C232	.01 50V		UK50-103		MAG5011		
C233	82 50V 10%		DD-820		GP482		10TS-Q82
C234	.01 50V 10%			WMF1S1	M192P1039RB	QFT2-91	1FT-S10
C301	10 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C302	10 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C303	10 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C304	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C305	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C306	.01 50V		UK50-103		MAG5011		
C308	.01 50V		UK50-103		MAG5011		
C310	.01 50V		UK50-103		MAG5011		
C311	.01 50V		UK50-103		MAG5011		
C312	330 50V 10%		DD-331	GP330	GP333		10TS-T33
C313	.01 50V		UK50-103		MAG5011		
C314	82 50V 10%		DD-820		GP482		10TS-Q82
C315	.01 50V		UK50-103		MAG5011		
C316	390 50V		DD-391	GP390	GP339		10TS-T39
C317	220 50V 10%		DD-221		GP322		10TS-T22
C318	.01 50V		UK50-103		MAG5011		
C319	.01 50V		UK50-103		MAG5011		
C320	100 50V 10%			CD15FD101J03	SX310	QW1-27	MMA-101
C322	270 50V 10%			CD15FD271J03	SX327	QW1-37	MWB-271
C323	68 50V		DD-680	GP68	GP468		10TS-Q68
C324	.01 50V		UK50-103		MAG5011		
C325	390 50V			CD15FD391J03	SX339	QW1-41	MMA-391
C326	2 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C327	180 50V 10%			CD15FD181J03	SX318	QW1-33	MMA-181
C328	.047 50V		UK50-503		MAG5015		
C329	.01 50V		UK50-103		MAG5011		
C330A	.01 50V		UK50-103		MAG5011		
C330B	8.2 50V				*		10TCC-V82
C331A	.01 50V		UK50-103		MAG5011		
C331B	68 50V		DD-680	GP68	GP468		10TS-Q68
C332A	.01 50V		UK50-103		MAG5011		
C332B	27 50V				CN0427		10TCC-Q27
C333B	.047 50V		UK50-503		MAG5015		
C334A	.01 50V		UK50-103		MAG5011		
C334B	.047 50V		UK50-503		MAG5015		
C335	.01 50V		UK50-103		MAG5011		
C336	100 50V 5%		DTZ-100	NP0100	CN0310		10TCC-T10
C337	100 50V		DD-101	GP100	GP310		10TS-T10
C338	3 50V		DTZ-3R3	NP03P3	CN0533		10TCC-V33
C339	470 50V		DD-471	GP470	GP347		10TS-T47
C340	.01 50V		UK50-103		MAG5011		
C341	8 50V				*		10TCC-V82
C356	.01 50V		UK50-103		MAG5011		
C357	.01 50V		UK50-103		MAG5011		

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.	MALLORY PART No.	TRW PART No.
RV101	Squelch Range	10K				U260R103B
RV102	Signal Meter	20K				U260R253B
RV202	ALC	10K				U260R103B
RV301	RF Pwr Meter	20K				U260R253B
RV402	XMT Freq	10K				U260R103B
VR103	Volume/Power Switch	10K				
VR104	RF Gain	50K				
VR201	Squelch	10K				
VR401	Delta Tune	50K				

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	Rec Antenna (27MHz)		340-006		
L102	RF Amp (27MHz)		340-007		
L103	Converter (10.695MHz)				
L104	Converter (10.695MHz)				
L105	IF (455kHz)		340-008		
L106	IF (455kHz)		340-009		
L107	IF (455kHz)		340-010		
L301	Buffer (16MHz)		340-037		
L302	XMT Mixer (27MHz)		340-012A		
L303	XMT Mixer (27MHz)		340-012A		
L304	XMT Mixer (27MHz)		340-013		
L305	Pre Driver (27MHz)				
L306	RF Driver Amp (27MHz)				
L307	RF Power Amp (27MHz)				
L308	Loading Final (27MHz)				
L309	Ant Matching				
L401	Ref Oscillator (10.240MHz)		340-007		
L402	Oscillator (10.422MHz)		340-007		
L403	VCO		340-035		
L404	Buffer (15.360MHz)		340-034		
L405	RF Choke		25J		
RFC101	RF Choke				
RFC303	RF Choke				
RFC304	RF Choke				
RFC305	RF Choke				
RFC306	RF Choke				
RFC310	RF Choke				
RFC311	RF Choke		68J		
RFC312	RF Choke		2R2	70F226A1	

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
TH101	Thermistor NTC 250 Cold						

DAK MODEL MARK V

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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.	
CH301	1.5A	.07	.52mH	310008(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.	
T201	26	1 8 2 5	310019(1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP	3" PM, 8 Ohms		30A05ZBR	

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	HRK	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	18-105	4	1	2	5	NC	3

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF	Filter		(455kHz)
D304A	LED		Modulation (1.58V @ 9.7mA)
D305A	LED		XMT (1.58V @ 14.3mA)
D306	LED		Tens & Units (Each segment supplied with 2.24V @ 11.5mA)
M4	Meter		Signal/Power
PL	Lamp		Meter (5.16V @ 57mA)
SW1	Switch		PA/CB
SW2	Switch		ANL/Off
SW3	Switch		On/Volume (Part of VR103)
SW4	Switch		Off/Noise Blanker
SW5	Switch		Dim/Off
SW6	Switch		Tone/Off
SW400	Switch		Channel Selector
X401	Crystal		10.240MHz
X402	Crystal		10.422MHz

WIRING DATA

Cable (Speaker)(Unshielded).....	Use BELDON No. 8782 (AWG24)(4 colors)
Shielding Strap.....	Use BELDON No. 8660 (3/16" width)
Hook-up Wire (General Use).....	Use BELDON No. 8524 (AWG22)(13 colors)
Hook-up Wire (Shielded).....	Use BELDON No. 8401 (Braided Shield)(1 conductor)(AWG25)
	Use BELDON No. 8421 (Spiral Shield)(1 conductor)(AWG25)
	Use BELDON No. 8737 (Spiral Shield)(2 conductor)(AWG22)
Microphone Cable (Coiled).....	Use BELDON No. 9467 (5 conductor-1 shielded)(6 ft.)(AWG28)