

SAMS PHOTOFACT[®] CB RADIO SERIES



CB-217
217
SEPTEMBER 1978



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



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

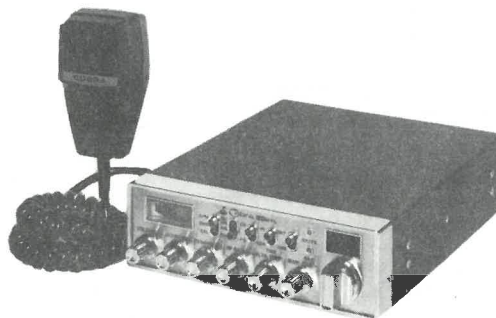
Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(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 29GTL

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER

Power Output:	4 watts.
Modulation:	High- and low-level, Class B amplitude modulation.
Frequency Response:	300 — 3000 Hz.
Output Impedance:	50 ohms, unbalanced.
Output Indicators:	Meter shows relative RF output power; standing wave ratio.

RECEIVER

Sensitivity:	Less than $1\mu\text{V}$ for $10\text{dB}(\text{S}+\text{N})/\text{N}$.
Selectivity:	6dB @ 7KHz, 60dB @ 10KHz.
Image Rejection:	50dB.
Adjacent-Channel Rejection:	60dB.
I.F. Frequencies:	Double conversion, 1st: 10.695MHz. 2nd: 455KHz.
Automatic Gain Control: (AGC):	Less than 10dB change in audio output for inputs from 10 to 50,000 microvolts.
RF Gain Control:	Adjustable for optimum signal reception.
Noise Planker:	RF type.
Delta Tune Range:	$\pm 1.5\text{KHz}$, continuously adjustable.
Squelch:	Adjustable; threshold less than $1\mu\text{V}$.
Audio Output Power:	4 watts.
Frequency Response:	300 — 3000 Hz.
Distortion:	Less than 7% @ 3 watts @ 1000 Hz.
Built-in Speaker:	16 ohms, round.
External Speaker: (Not Supplied)	8 ohms; disables internal speaker when connected.

Courtesy of the Manufacturer

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

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COBRA MODEL 29GTL

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:
 L1 thru L6, L17 thru L24 9440
 L7, L8, L9 5009,8728,8728-A
 L11, L14, L16 9091,8728,8728-A

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to TP10 (L23, Secondary).	Ch. 19 Delta Tune Detent	L23	Adjust for maximum.
Input of frequency counter to TP10 (L23, Secondary).	Ch. 19 Delta Tune Detent	L24	Adjust for 10.240MHz.
Input of DC meter to TP2.	Ch. 1 Ch. 1, XMT	L19	Adjust for 1.25 volts. Check for 2.10 volts.
Input of oscilloscope to TP11 (IC2, Pin 4).	Ch. 1	L22	Adjust for maximum.
Input of oscilloscope to TP5.	Ch. 19 Delta Tune Detent	L18	Adjust for maximum.
Input of frequency counter to TP5.	Ch. 1 Delta Tune Detent Ch. 1, XMT		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.) Check for 16.725MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3.	Ch. 1 Delta Tune Detent Ch. 1, XMT		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.) Check for 1.365MHz. 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. NB/ANL Off, Squelch MINIMUM, RF Gain Maximum, Delta Tune Detent.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP12 (FET1, Gate). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L9,L8,L7	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L6,L5,L4, L3,L2	Adjust for maximum output. If necessary, readjust L7, L8 and L9.
Input of oscilloscope to TP13 (TR4, Base). Inject a 100pps, 1uSec. pulse width signal.	Ch. 19 NB/ANL/ANL NB/ANL	L1	Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
NB/ANL Off, Squelch MINIMUM, RF Gain Maximum, Delta Tune Detent.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output .4uV.	Ch. 19 Volume Maximum	VR1	IF GAIN Adjust for 2 volts audio.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	VR3	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR2	SIGNAL METER Adjust 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	TRANSCIVER	ADJUST	REMARKS
Input of spectrum analyzer or harmonic meter to antenna jack.	Ch. 19	L21,L20,L17, L16,L14	Adjust for maximum.
	Ch. 19	L14	Adjust for 4 watts maximum.
	Ch. 19	L11	Adjust for MINIMUM at 54MHz.

TRANSMITTER ADJUSTMENTS

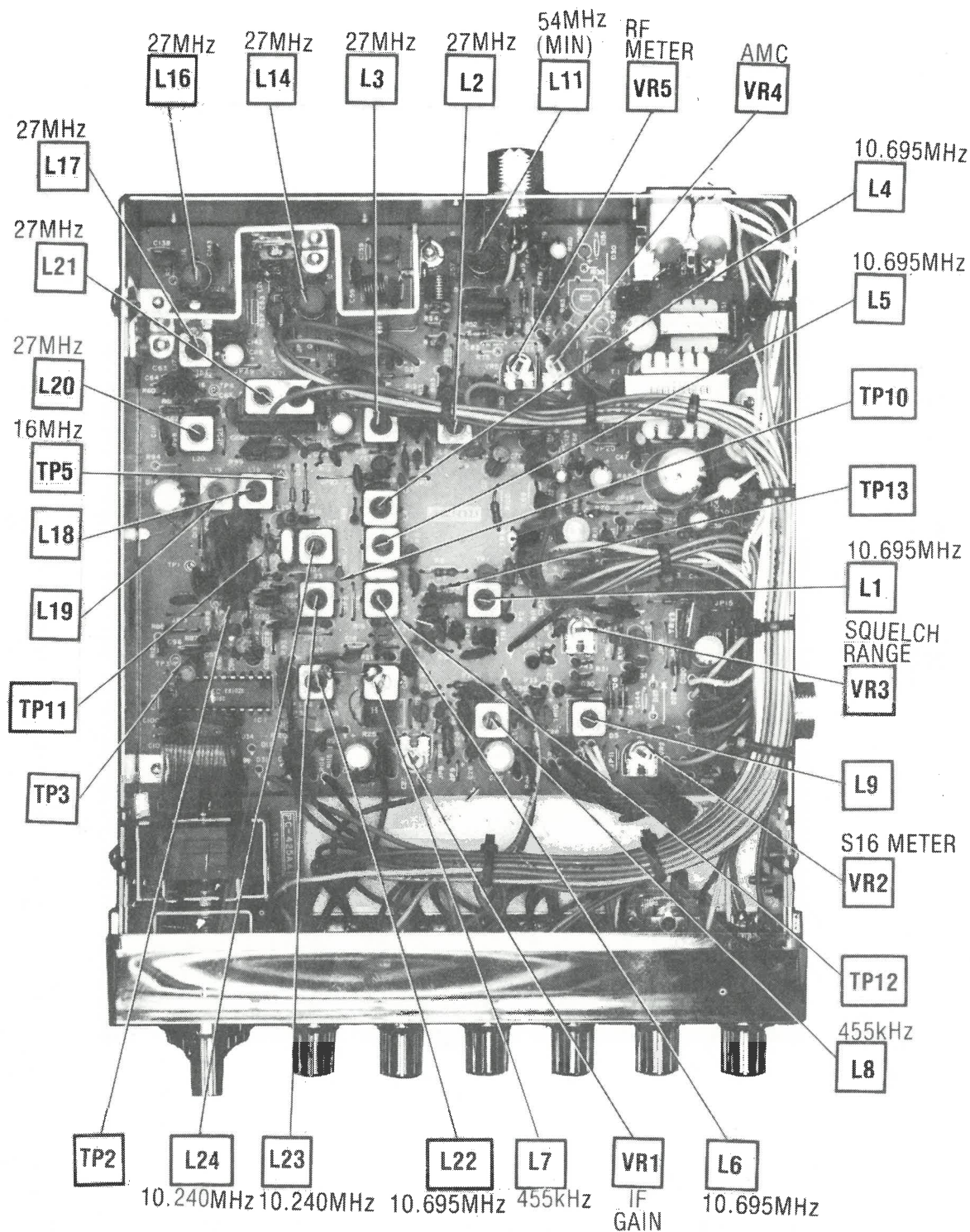
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna jack. Inject a 1000Hz, 100mV signal to mic input.	Ch. 19 Dynamike Maximum	VR4	AMC Adjust for 95% modulation maximum.
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna jack.	Ch. 19	VR5	RF METER Adjust so that RF meter reads just below to red on the RF scale of meter.

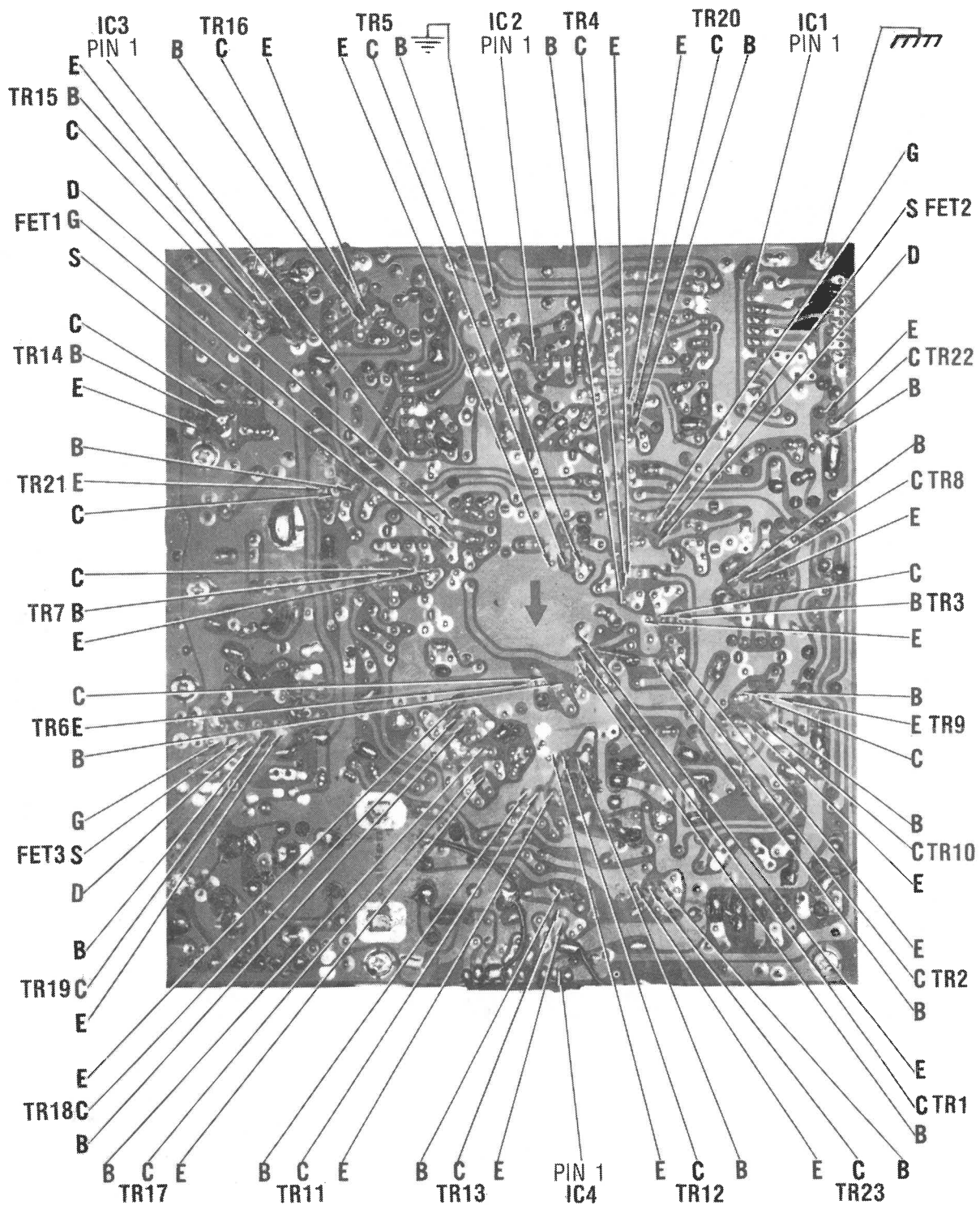
COBRA MODEL 29GTL

TRUTH CHART

FROM CHANNEL													
C H A N N E L	1 = 4.78 Volts							0 = 0 Volts		REC SYNTHESIZER OUTPUT IN MHz AT TP5	REC DIVIDER INPUT IN MHz AT TP3	XMT SYNTHESIZER OUTPUT IN MHz AT TP5	XMT DIVIDER INPUT IN MHz AT TP3
	IC1 PROGRAM DIVIDER												
	PINS												
	6	5	4	3	2	1							
1	0	0	0	0	0	1			16.270	.910	16.725	1.365	
2	0	0	0	0	1	0			16.280	.920	16.735	1.375	
3	0	0	0	0	1	1			16.290	.930	16.745	1.385	
4	0	0	0	1	0	0			16.310	.950	16.765	1.405	
5	0	0	0	1	0	1			16.320	.960	16.775	1.415	
6	0	0	0	1	1	0			16.330	.970	16.785	1.425	
7	0	0	0	1	1	1			16.340	.980	16.795	1.435	
8	0	0	1	0	0	0			16.360	1.000	16.815	1.455	
9	0	0	1	0	0	1			16.370	1.010	16.825	1.465	
10	0	1	0	0	0	0			16.380	1.020	16.835	1.475	
11	0	1	0	0	0	1			16.390	1.030	16.845	1.485	
12	0	1	0	0	1	0			16.410	1.050	16.865	1.505	
13	0	1	0	0	1	1			16.420	1.060	16.875	1.515	
14	0	1	0	1	0	0			16.430	1.070	16.885	1.525	
15	0	1	0	1	0	1			16.440	1.080	16.895	1.535	
16	0	1	0	1	1	0			16.460	1.100	16.915	1.555	
17	0	1	0	1	1	1			16.470	1.110	16.925	1.565	
18	0	1	1	0	0	0			16.480	1.120	16.935	1.575	
19	0	1	1	0	0	1			16.490	1.130	16.945	1.585	
20	1	0	0	0	0	0			16.510	1.150	16.965	1.605	
21	1	0	0	0	0	1			16.520	1.160	16.975	1.615	
22	1	0	0	0	1	0			16.530	1.170	16.985	1.625	
23	1	0	0	0	1	1			16.560	1.200	17.015	1.655	
24	1	0	0	1	0	0			16.540	1.180	16.995	1.635	
25	1	0	0	1	0	1			16.550	1.190	17.005	1.645	
26	1	0	0	1	1	0			16.570	1.210	17.025	1.665	
27	1	0	0	1	1	1			16.580	1.220	17.035	1.675	
28	1	0	1	0	0	0			16.590	1.230	17.045	1.685	
29	1	0	1	0	0	1			16.600	1.240	17.055	1.695	
30	1	1	0	0	0	0			16.610	1.250	17.065	1.705	
31	1	1	0	0	0	1			16.620	1.260	17.075	1.715	
32	1	1	0	0	1	0			16.630	1.270	17.085	1.725	
33	1	1	0	0	1	1			16.640	1.280	17.095	1.735	
34	1	1	0	1	0	0			16.650	1.290	17.105	1.745	
35	1	1	0	1	0	1			16.660	1.300	17.115	1.755	
36	1	1	0	1	1	0			16.670	1.310	17.125	1.765	
37	1	1	0	1	1	1			16.680	1.320	17.135	1.775	
38	1	1	1	0	0	0			16.690	1.330	17.145	1.785	
39	1	1	1	0	0	1			16.700	1.340	17.155	1.795	
40	0	0	0	0	0	0			16.710	1.350	17.165	1.805	

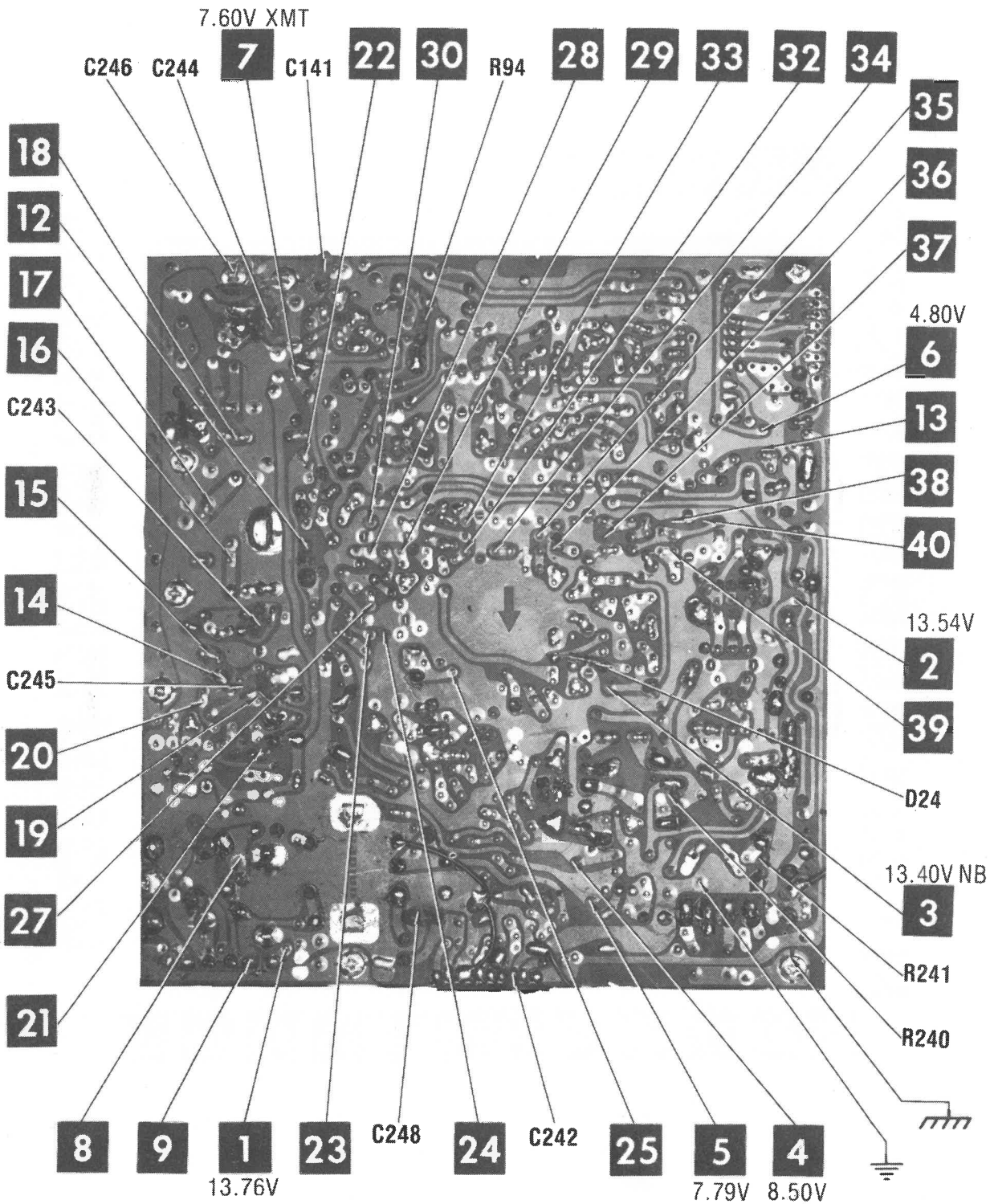


CHASSIS - BOTTOM

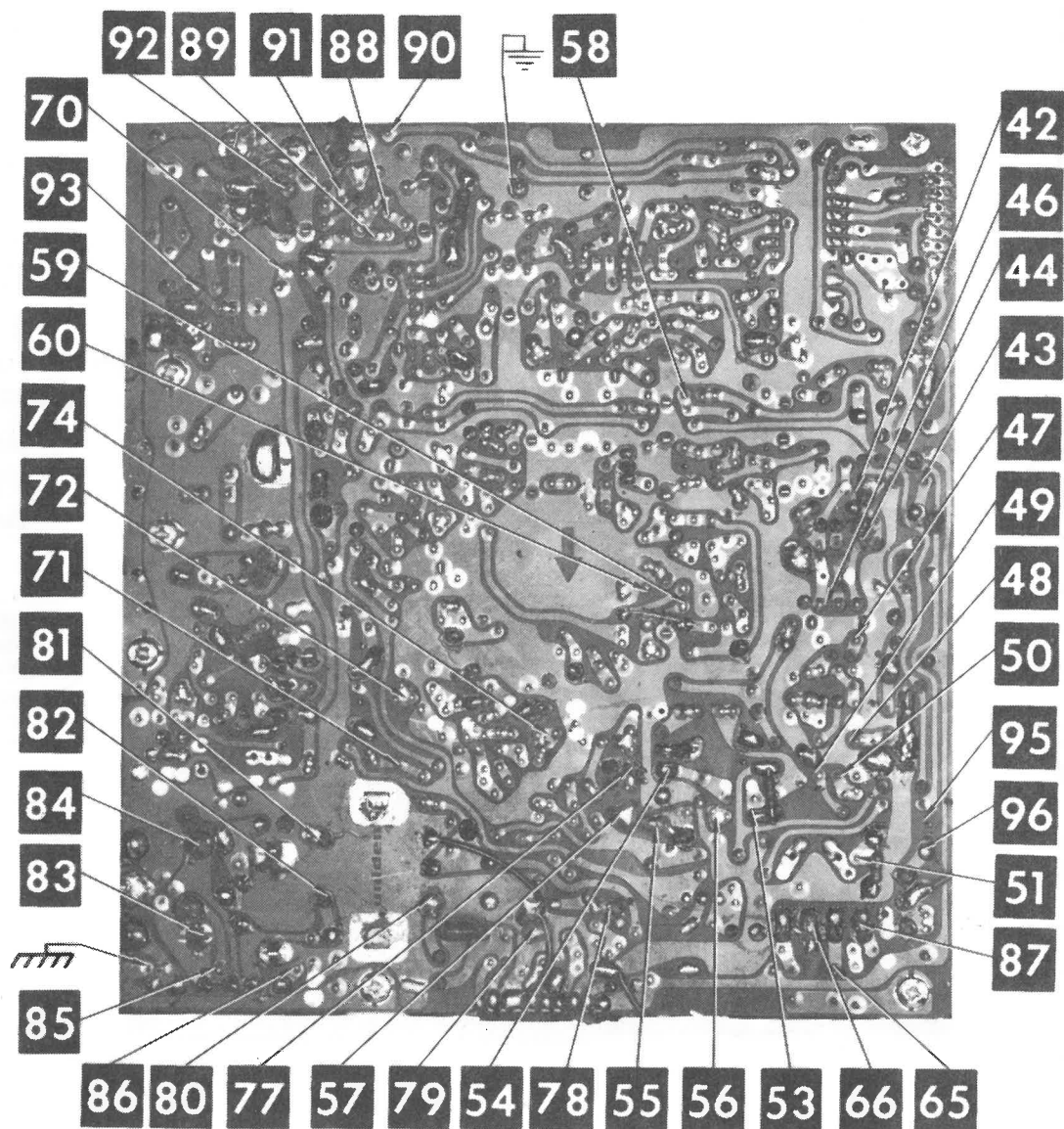


MAIN BOARD

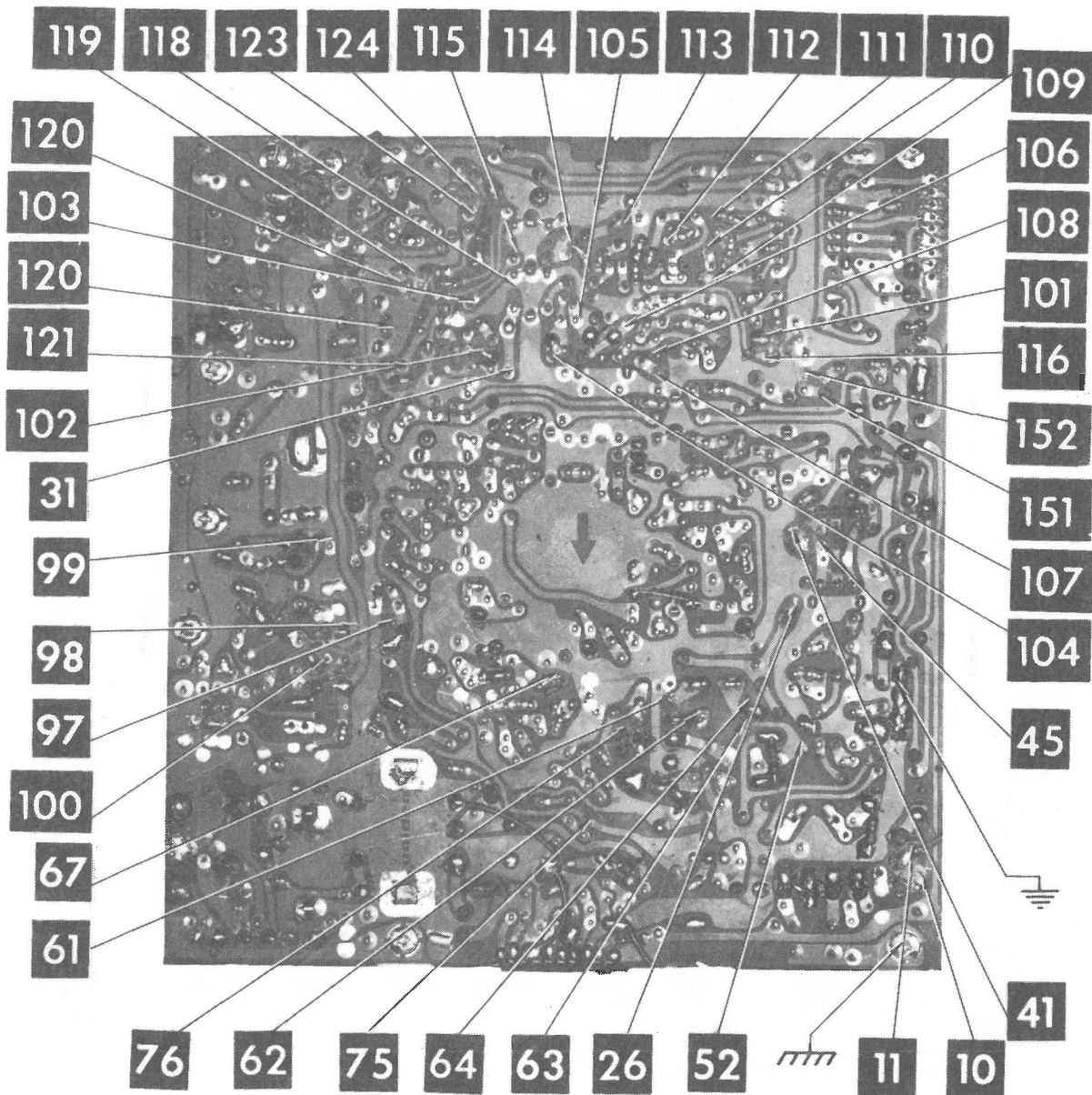
COBRA MODEL 29GTL



MAIN BOARD

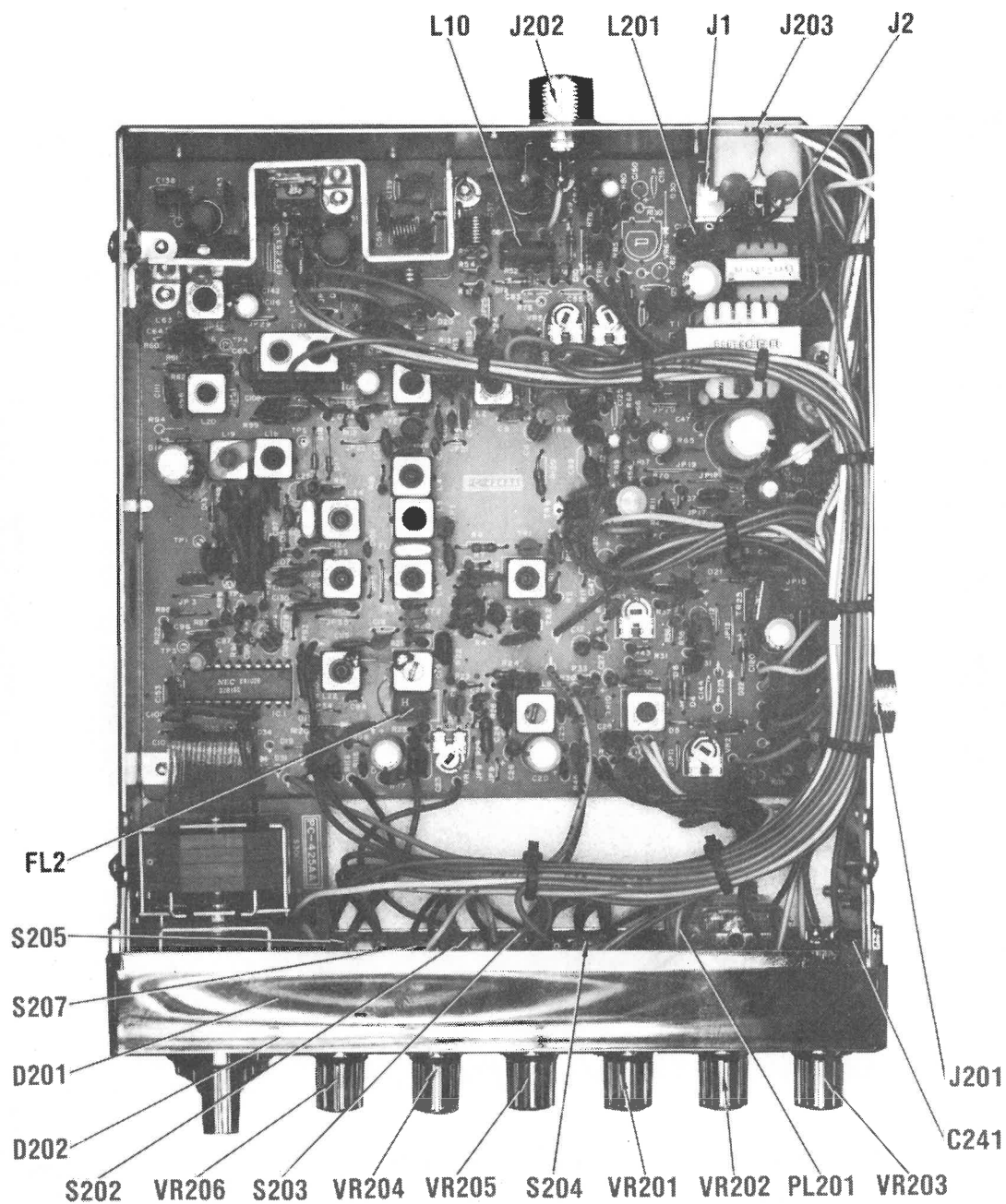


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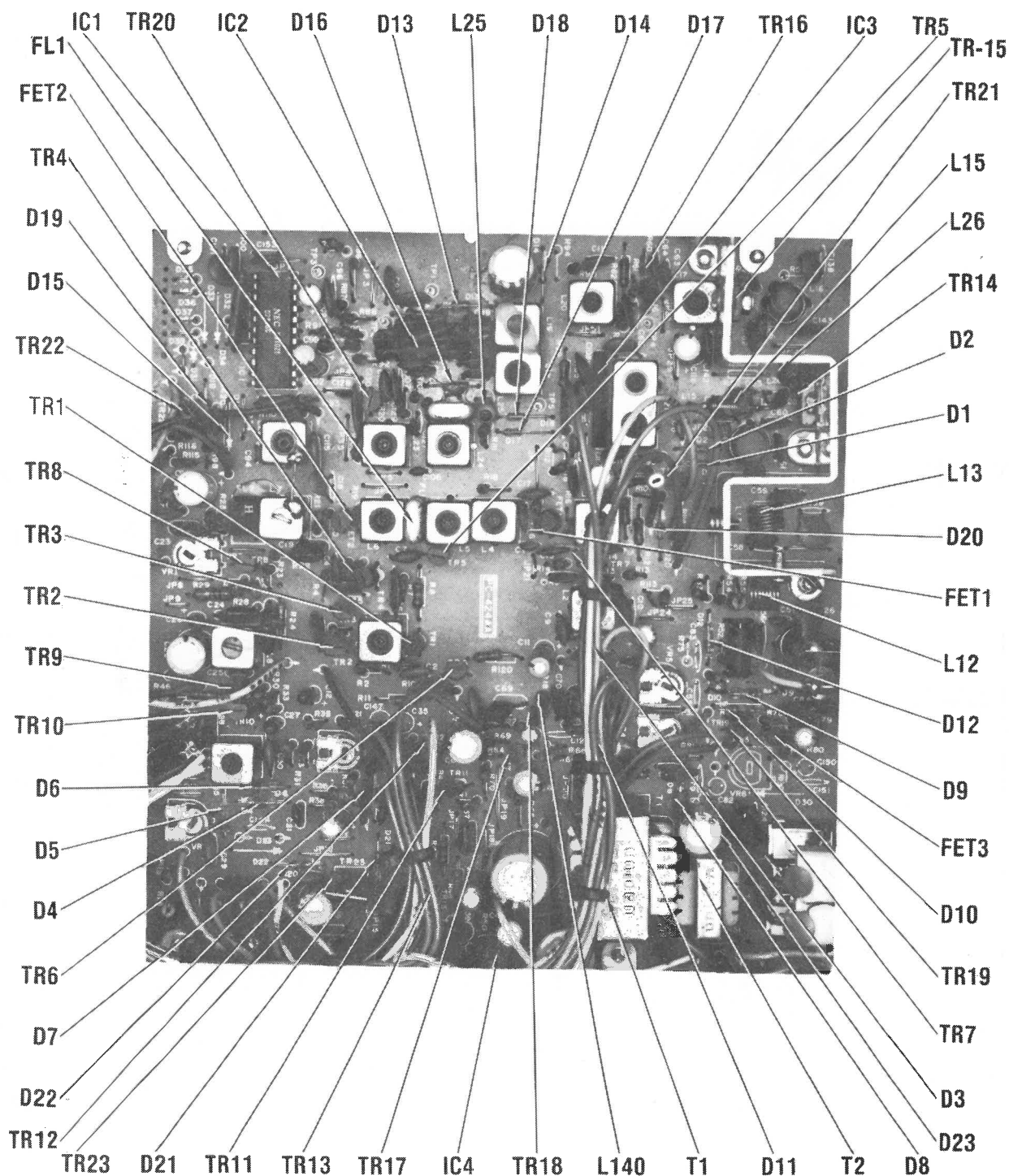


COBRA MODEL 29GTL

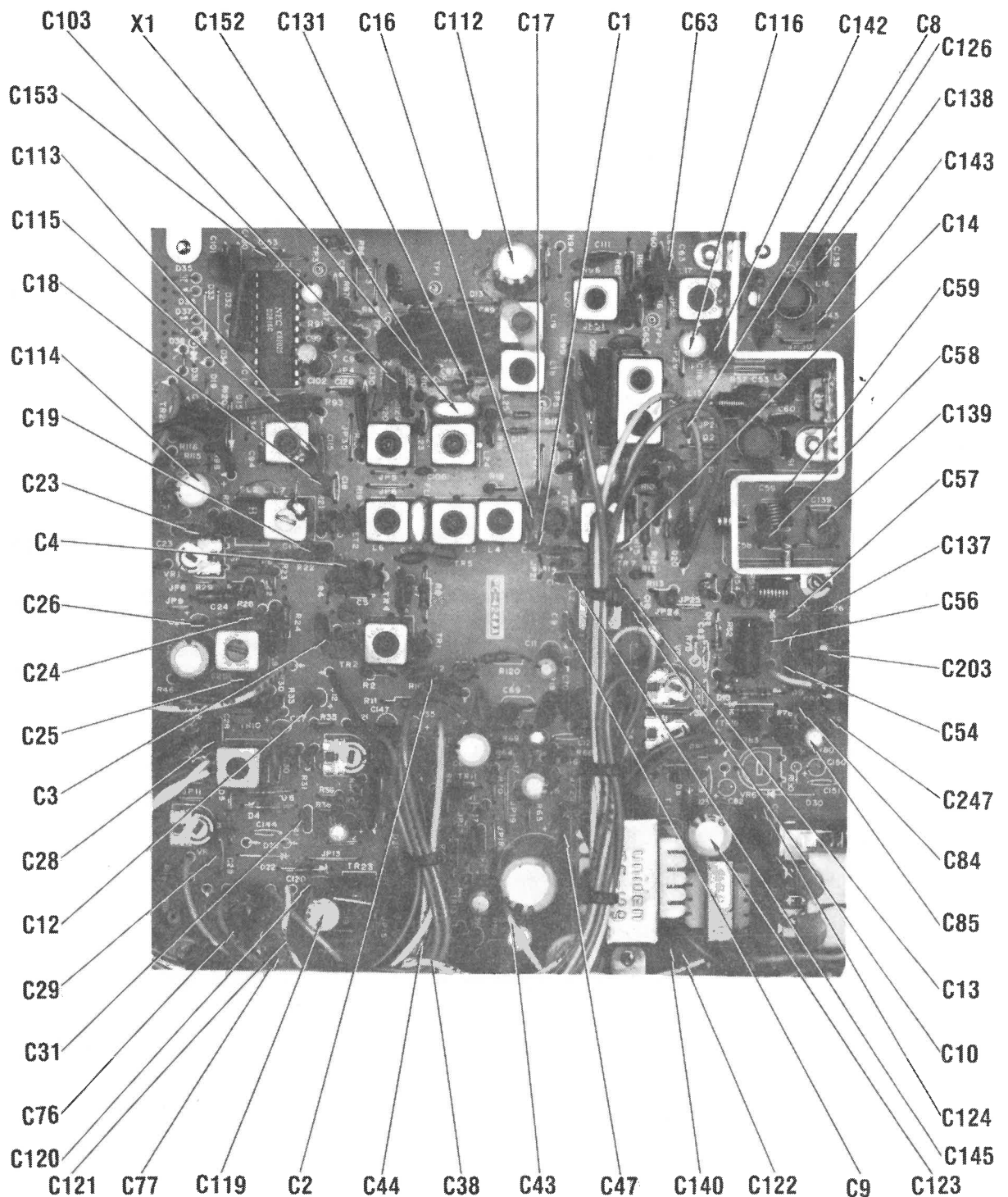
MAIN BOARD



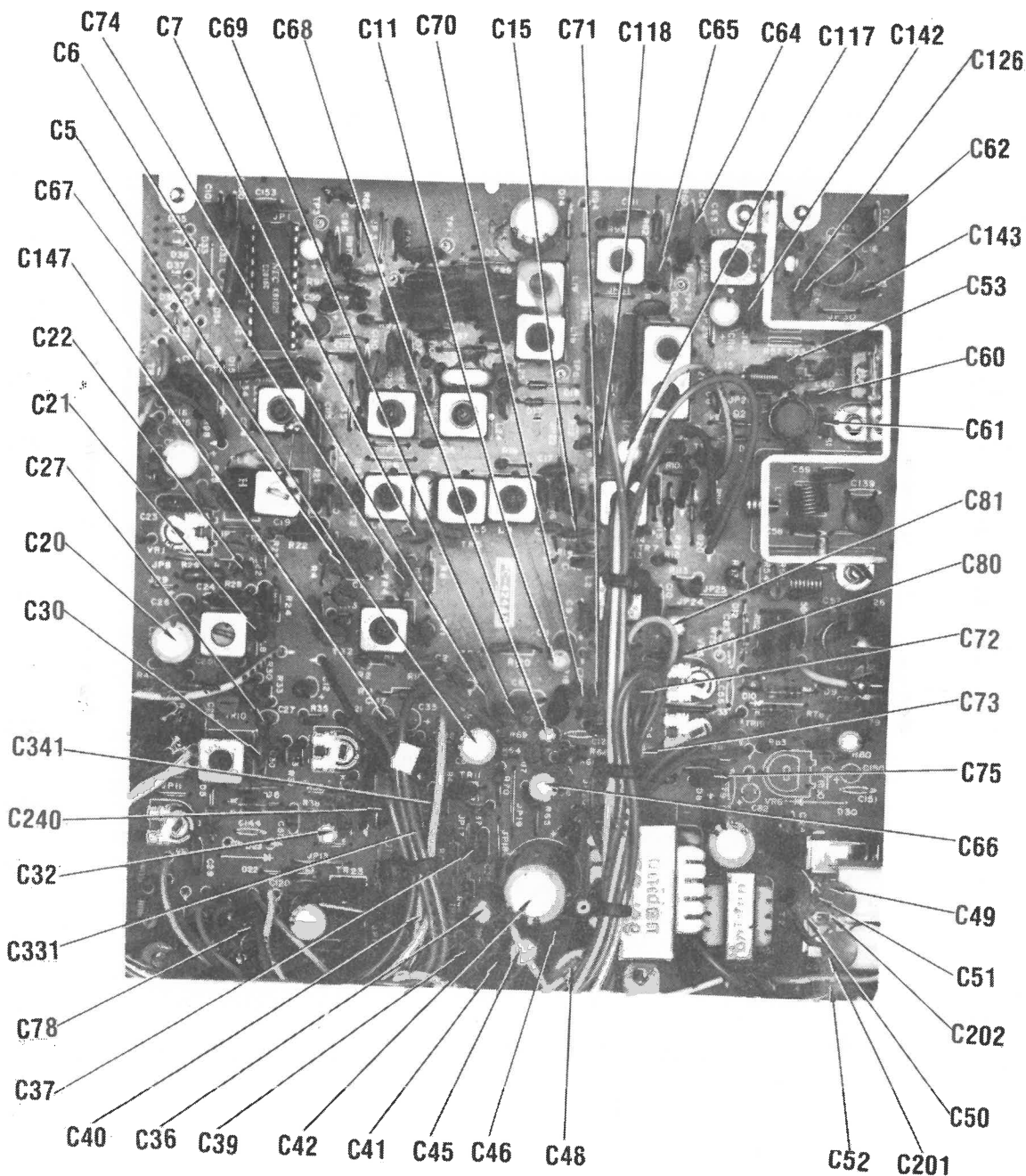
CHASSIS - BOTTOM



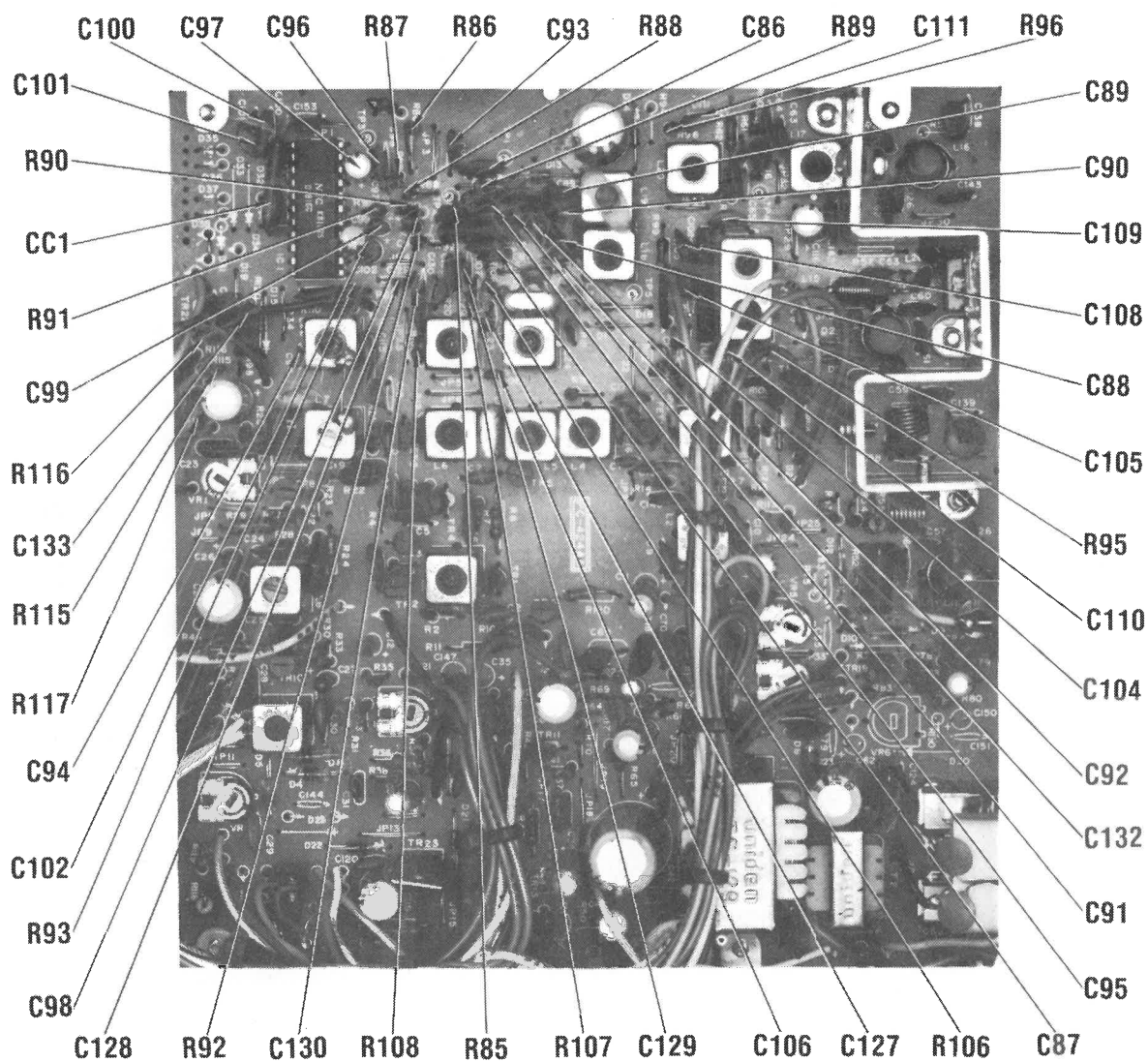
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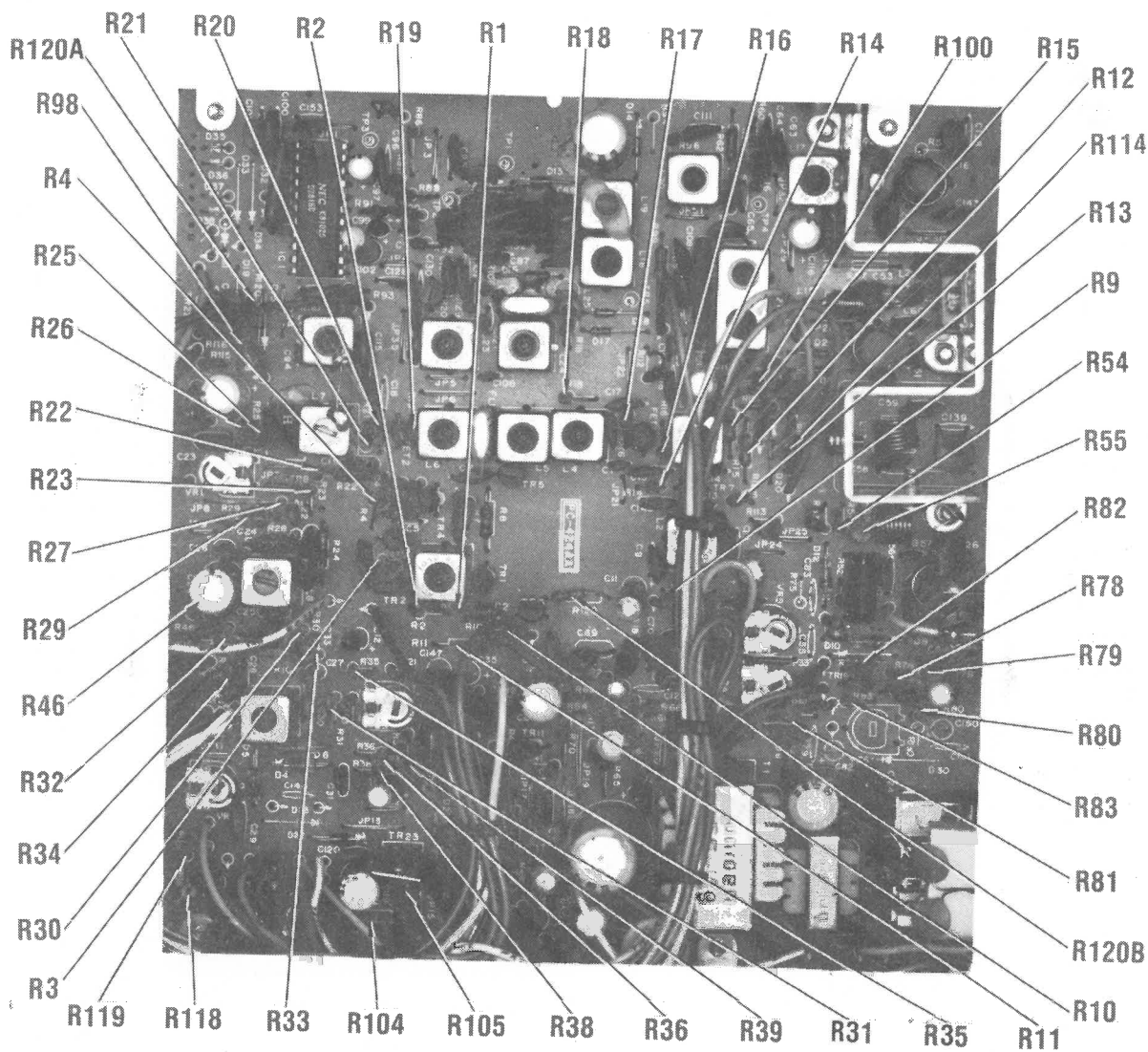
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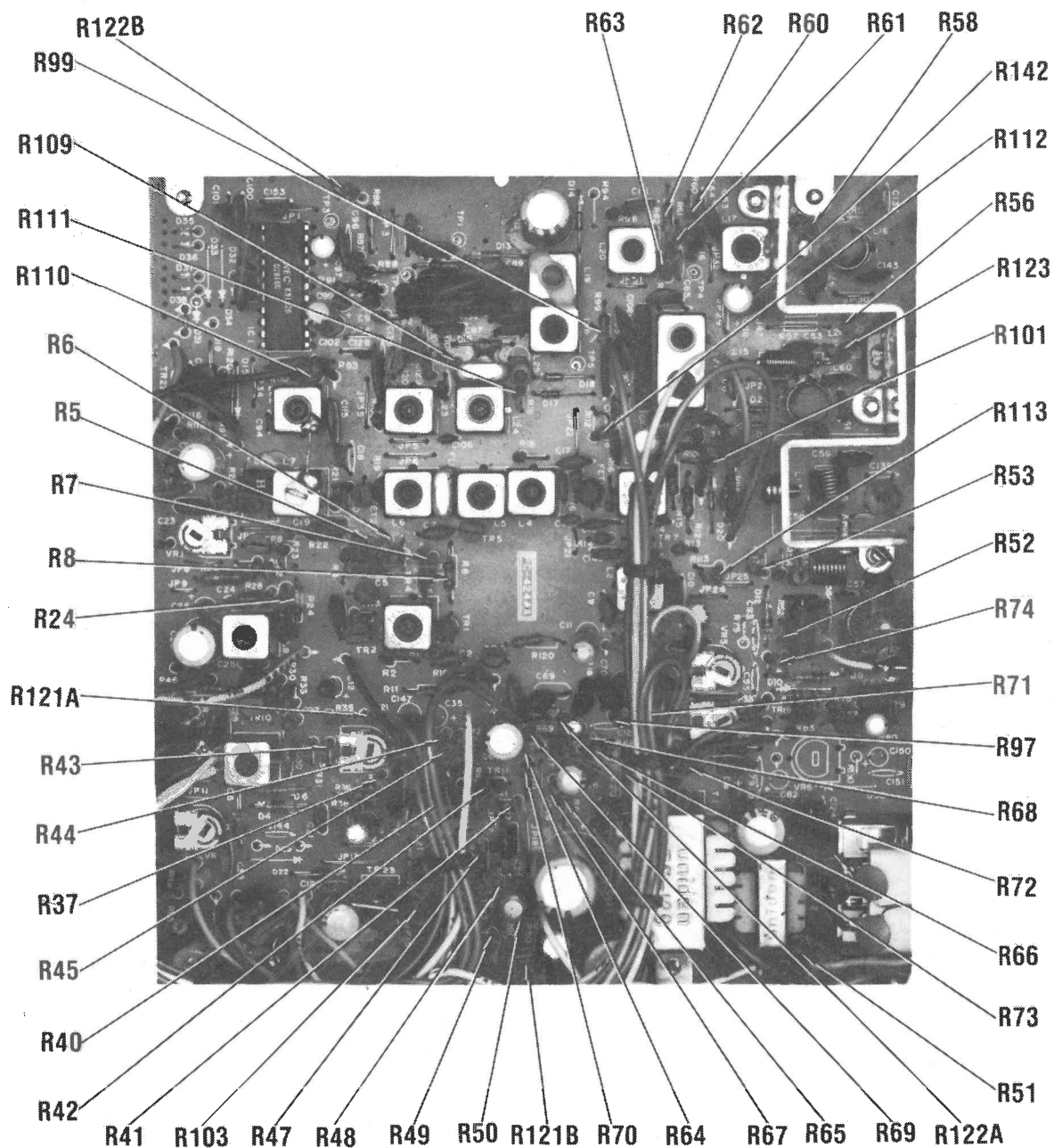
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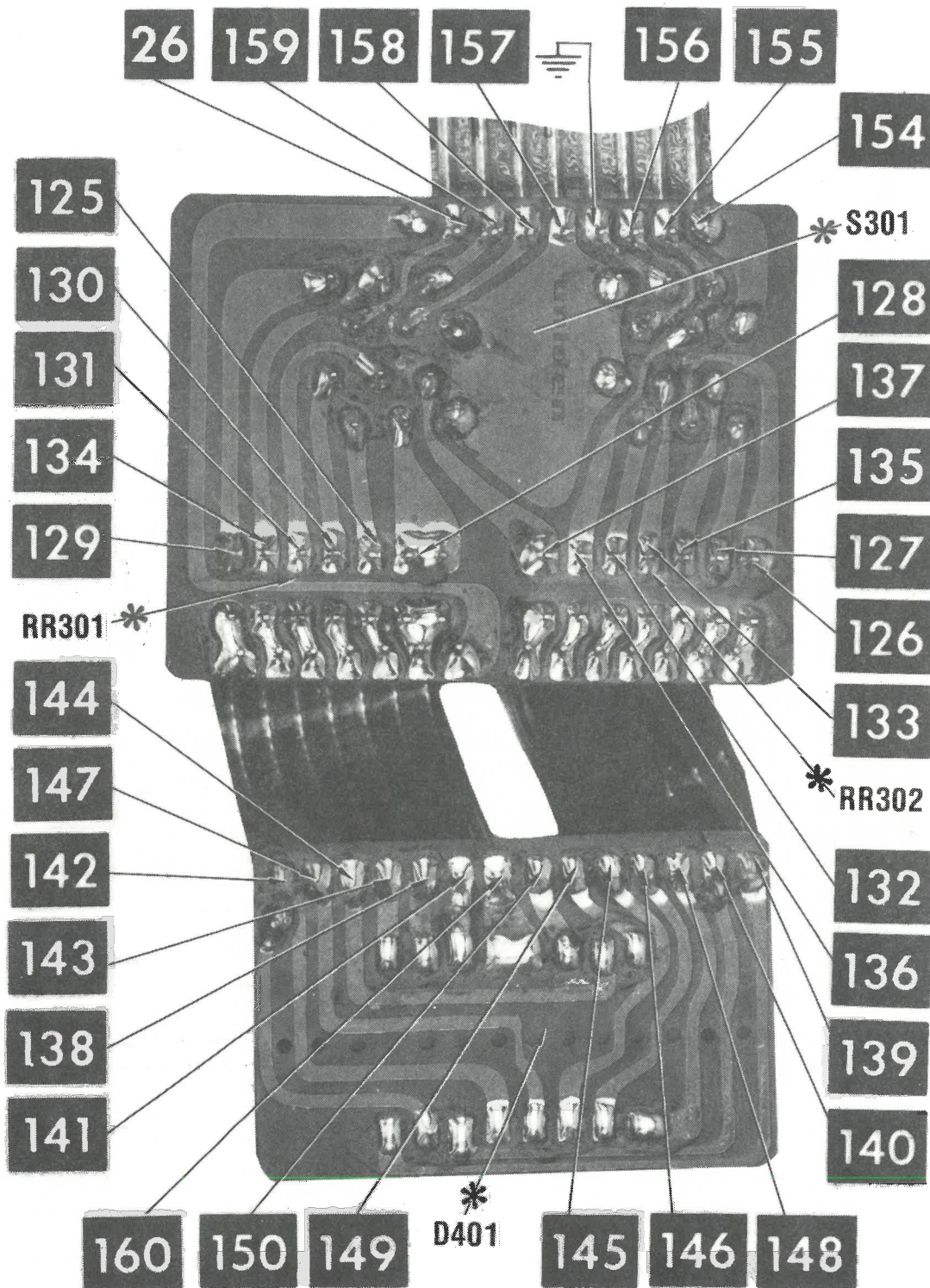
MAIN BOARD



MAIN BOARD

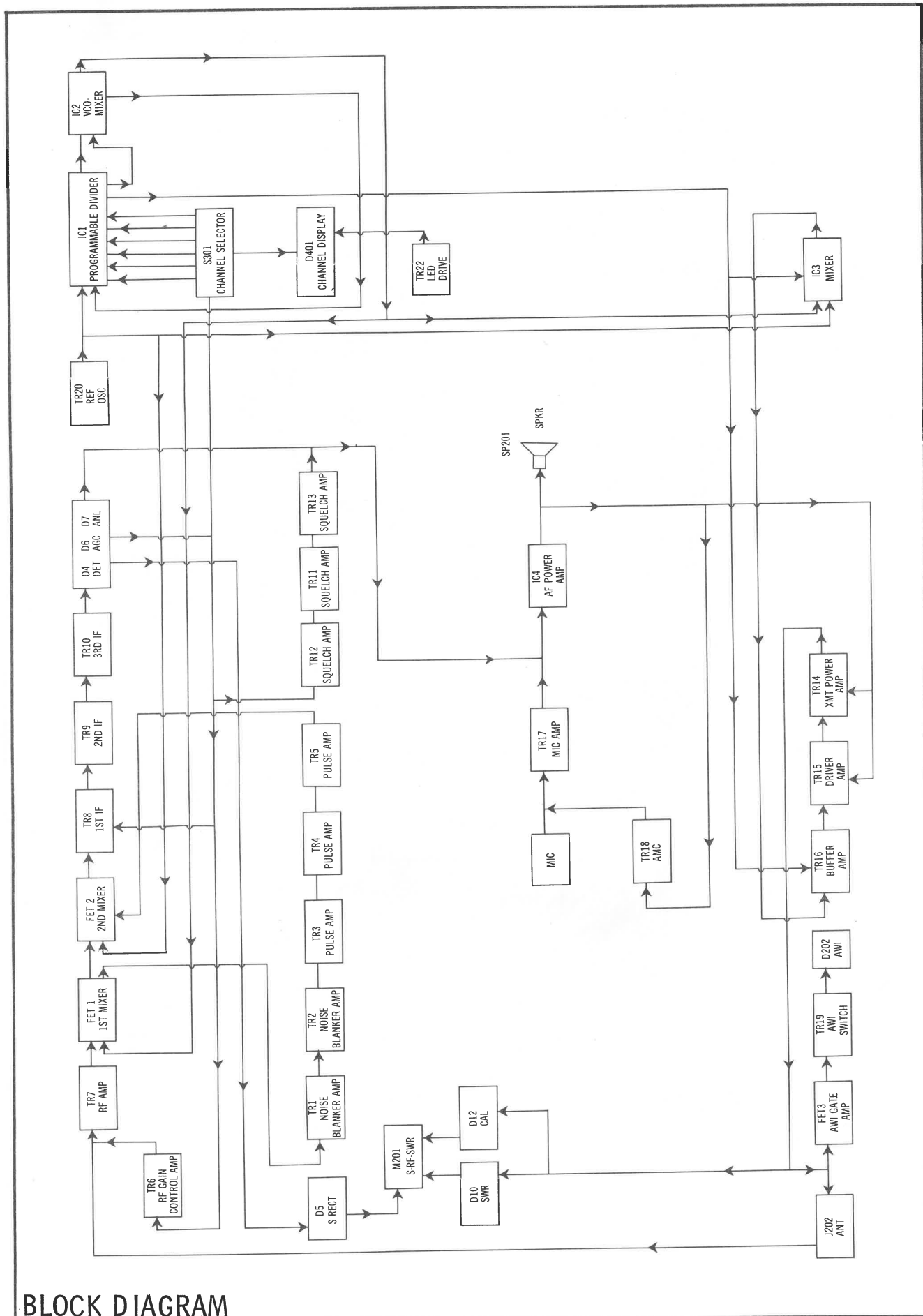


MAIN BOARD



* LOCATED ON TOP OF BOARD

CH. SELECTOR BOARD



BLOCK DIAGRAM

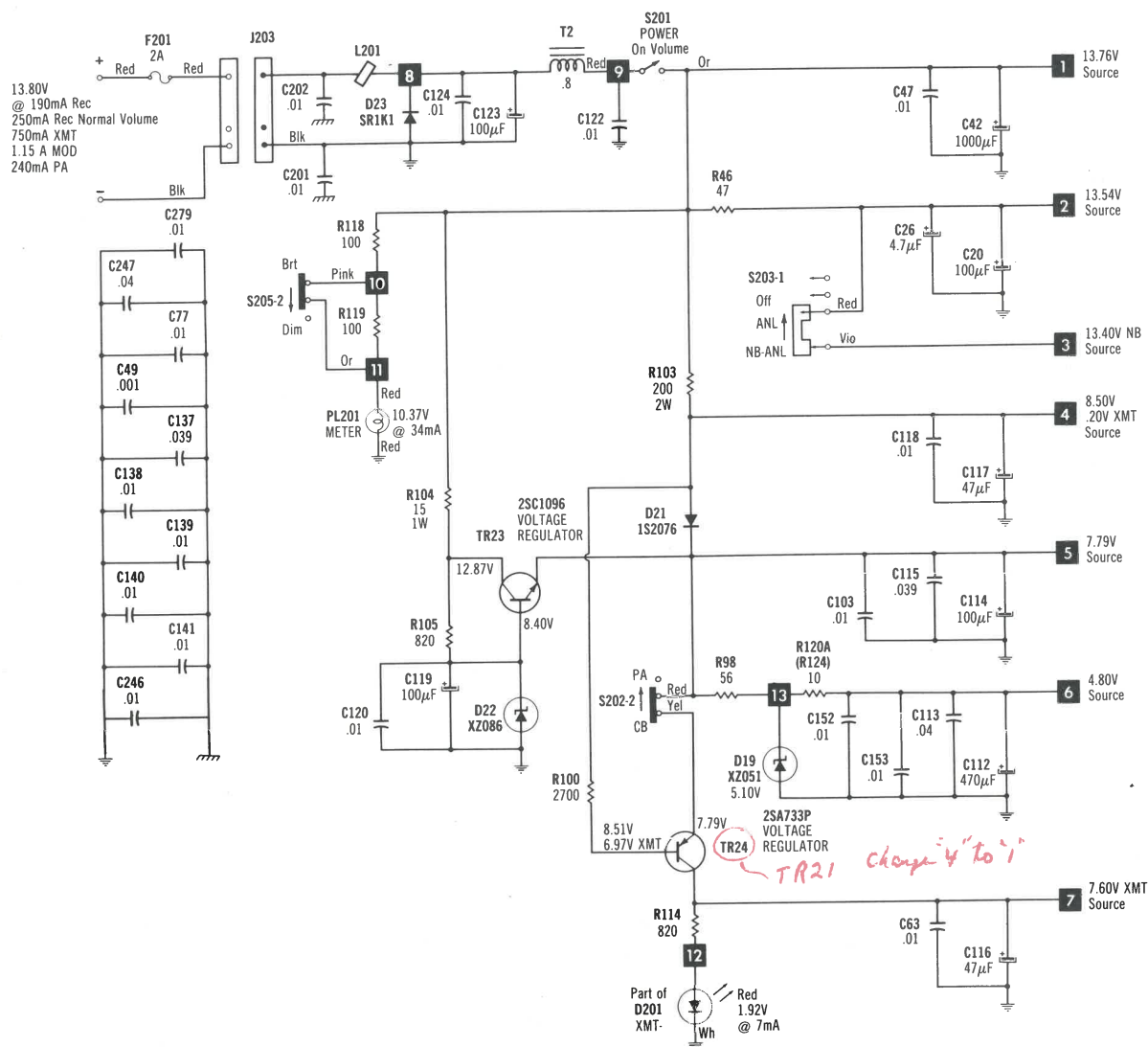
PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA										ZENITH PART No.
			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.		
D1	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D2	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D3	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D4	1S34	150-016-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
	1S2075K		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S2473K		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D5	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	SR1K1		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
D6	1S2075K	151-061-9-001	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	1N4148	WEP925		
	1S2473K		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
D7	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
	1S2075K		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S2473K		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D8	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	SR1K1		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
	1N60AM		1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109		WEP134		
D9	1S2075K	151-061-9-001	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	1N4148	WEP925		
	1S2473K		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
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D11	1S2688EA	154-004-9-001	GE-90	HEPR2503	REN 614			RT-262	ECG614	1N60	WEP200	ZEN-453	
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	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D12	1N4448	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D13	1S2687D	153-008-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D14	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D15	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D16	1S2687D	153-008-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D17	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D18	1S2076	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1N4448		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D19	XZ051	152-088-9-001	GEZD-5.1	PTC214	HEPR0602	REN 177	SK3056	RT-235	ECG519	1N4733A	WEP1103		
	1S2076		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D20	1N4448	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	1S2076		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	WG713		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S1588		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
	1S2473		GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519		WEP925		
D21	1N4448	151-067-9-001	GE-514	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG519	1N4148	WEP925		
	1S2076		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	WG713		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S1588		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
	1S2473		GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177		WEP1062		
D22	1N4448	151-089-9-001	GE-300	PTC214	HEPR0602	REN 177	SK3100	RT-218	ECG177	1N4739A	WEP1109	103-272	
	XZ086		GEZD-9.1	ZB9.1B	HEPR0052	REN 139	SK3060	RT-240	ECG139A		WEP1109		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
	SR1K1		GE-504A	PTC201	HEPR0052	REN 116	SK3030	RT-213	ECG116		WEP156		
D23	2SK19BL	182-037-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	1N4004	WEP156	ZEN-123	
	2SK19		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP156		
	2SK104		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP156		
	2SK104H		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP156		
	2SK104		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP156		

COBRA MODEL 29GTL



- ✖ 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

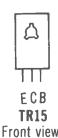
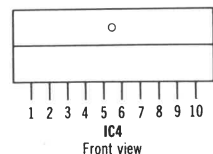
Measurements made in Channel 1 with switching as shown unless noted.
 Item numbers in rectangles appear in the alignment/adjustment instructions.
 Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow at control 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.

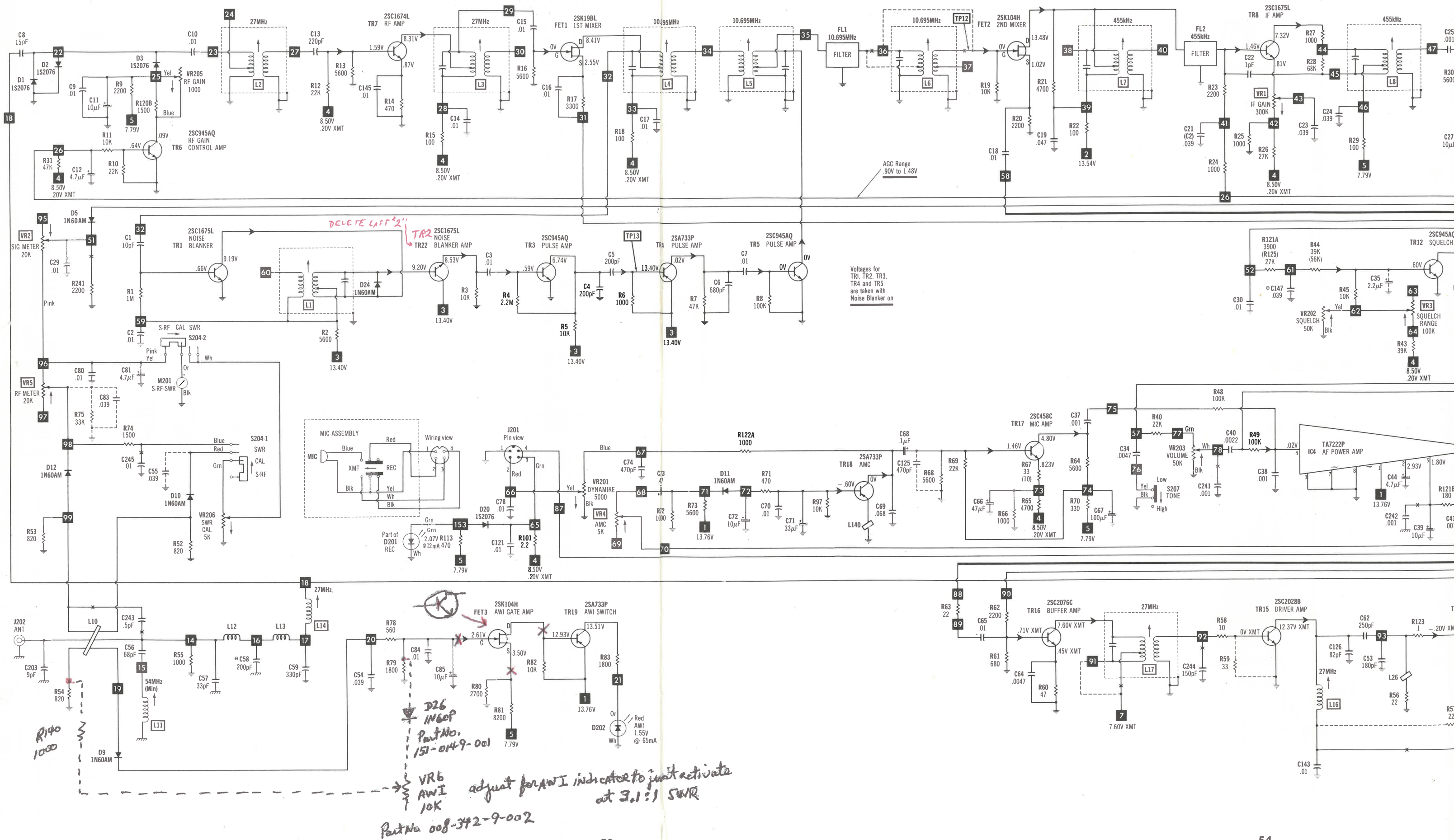
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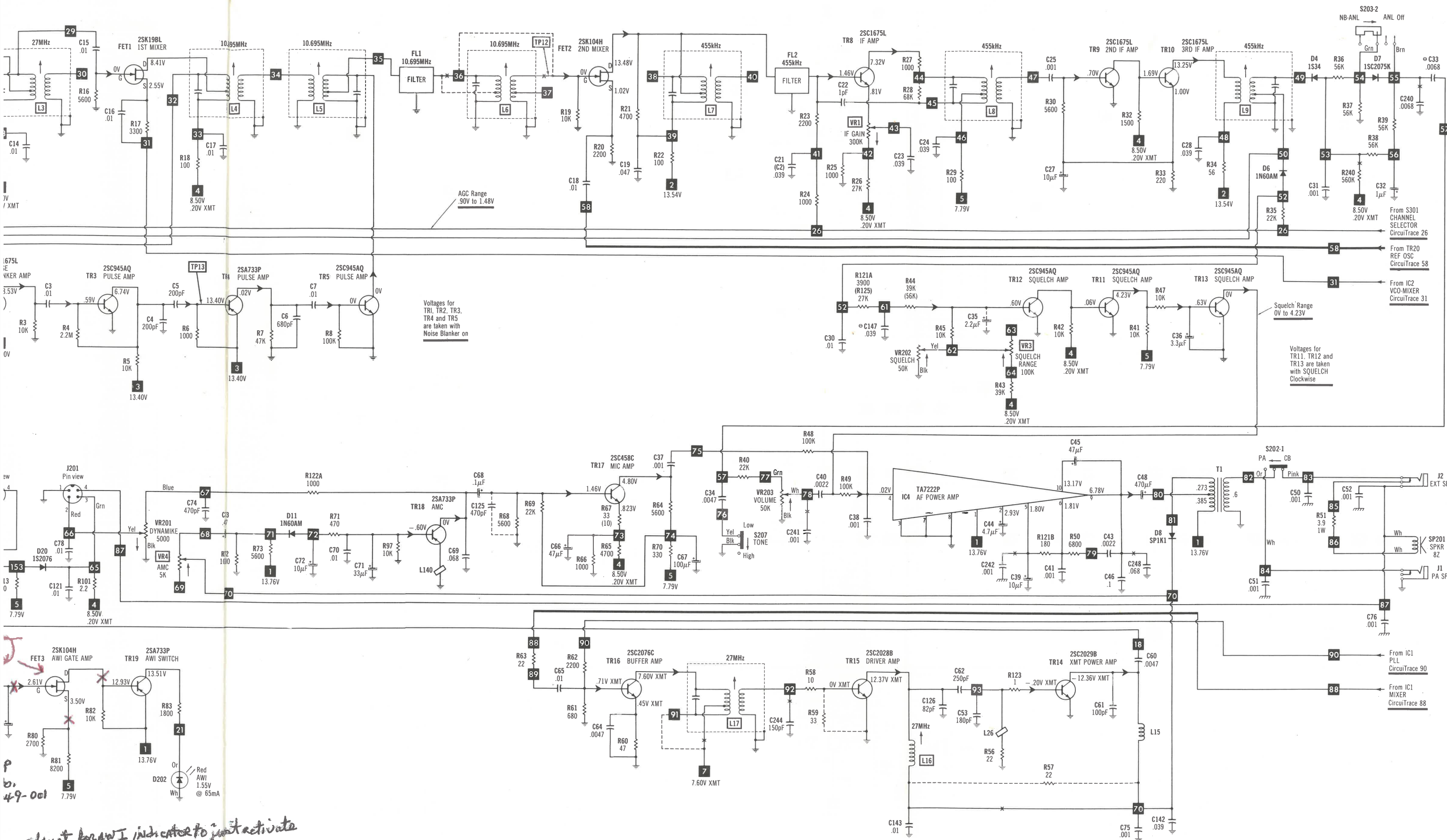
WITH **CIRCUITRACE®**

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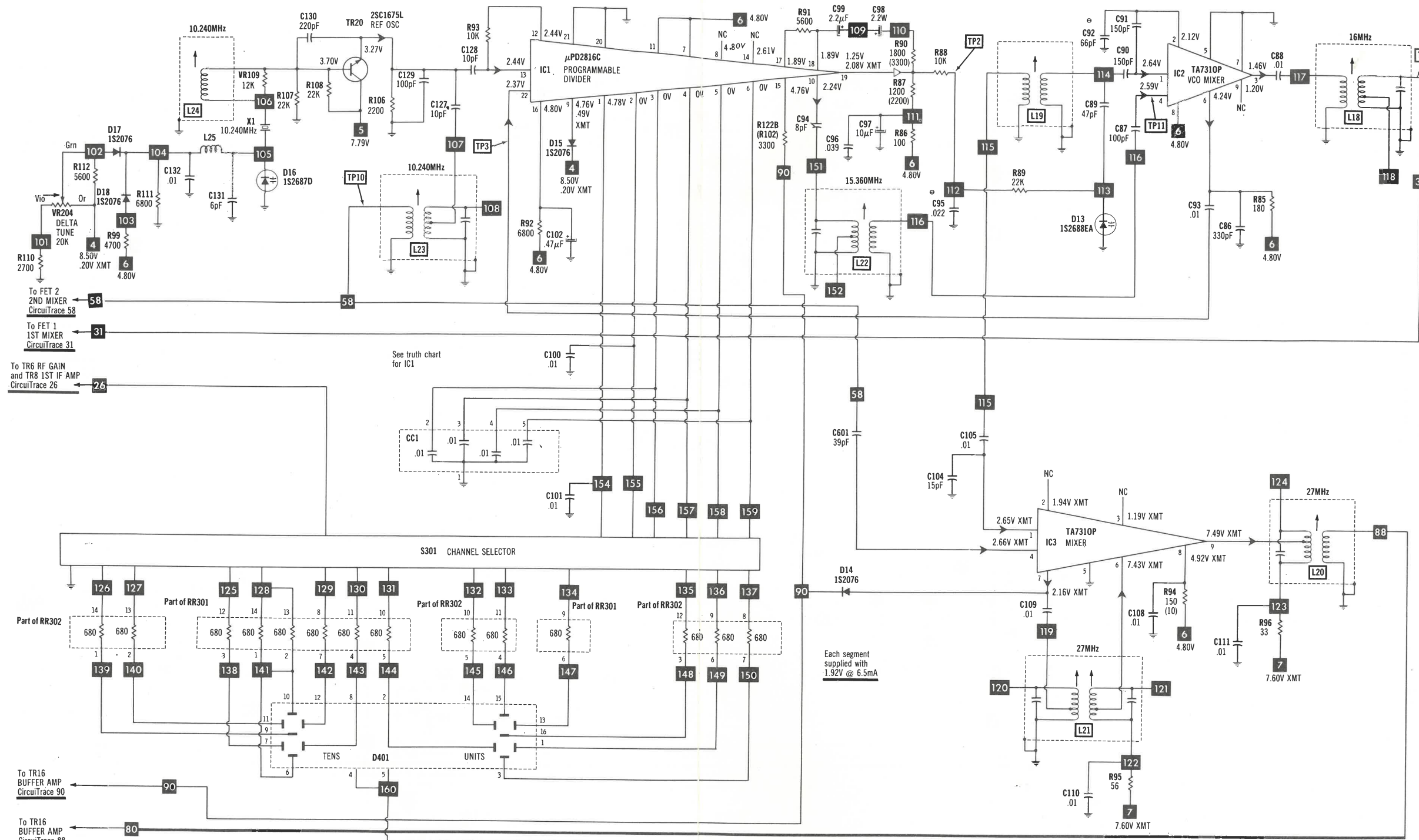
Terminal Guides







49-001



COBRA MODEL 29GTL

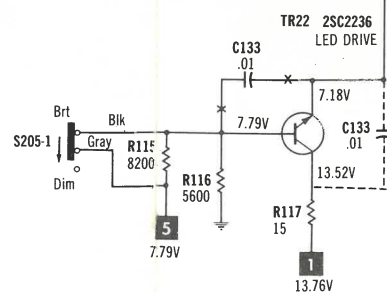
PARTS LIST AND DI (When ordering parts, state Mode SEMICONDUCTORS (Select

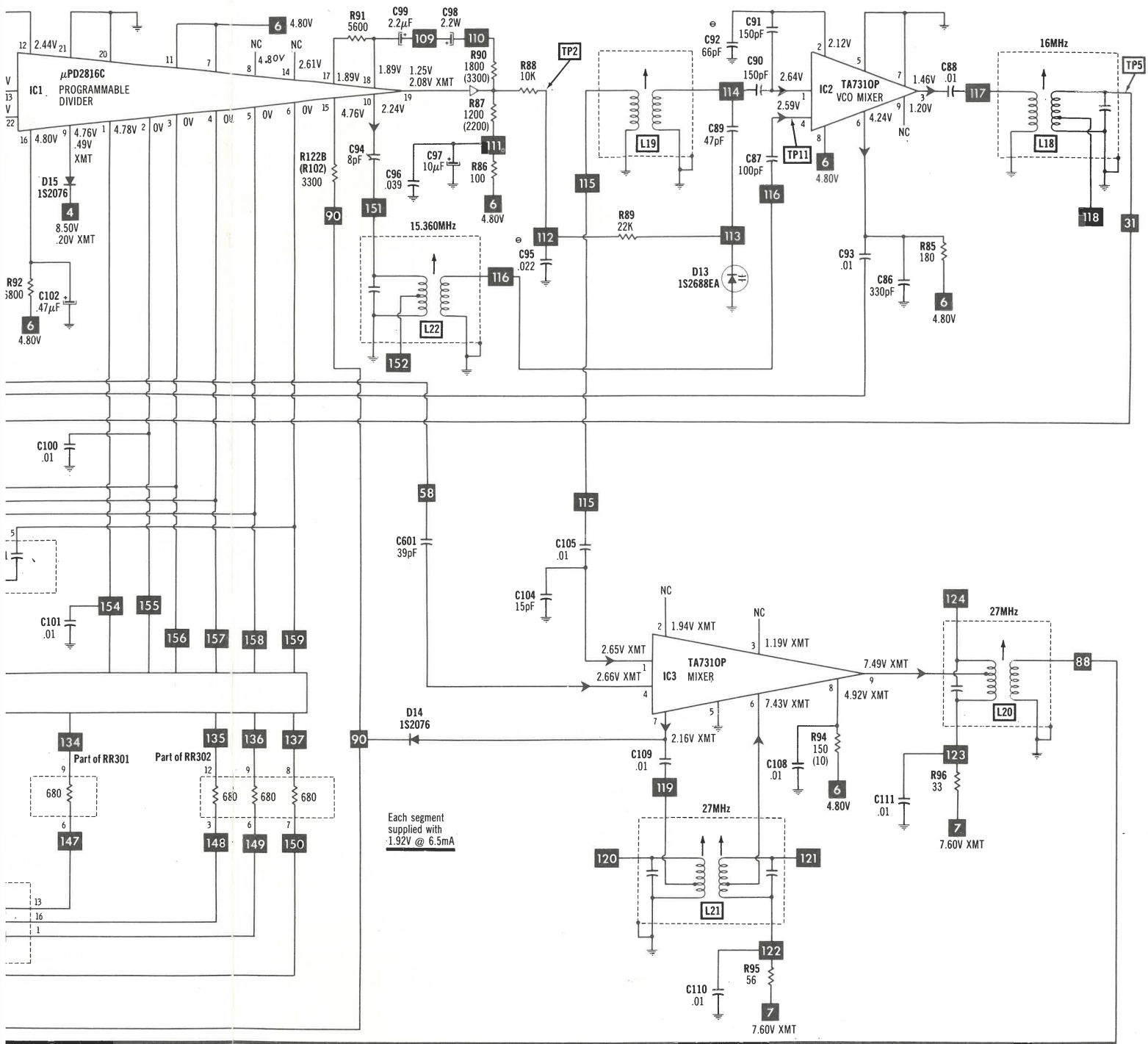
ITEM No.	TYPE No.	MFGR. PART No.	GEN ELEC PART
TR5	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1675		GE-21
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR6	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC380		GE-61
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR7	2SC1674L	176-081-9-002	GE-61
	2SC1674		GE-61
	2SC668		GE-21
	2SC787		GE-21
	2SC1906		GE-86
TR8	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC460		GE-61
	2SC930		GE-61
	2SC380		GE-61
	2SC1684		GE-21
TR9	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-21
	2SC930		GE-61
	2SC460		GE-61
TR10	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-21
	2SC930		GE-61
	2SC460		GE-61
TR11	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1815		GE-62
	2SC1359		GE-21
	2SC536		GE-21
	2SC458		GE-21
TR12	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1815		GE-62
	2SC1359		GE-21
	2SC536		GE-21
	2SC458		GE-21
TR13	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC545		GE-11
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR14	2SC2029	172-038-9-002	GE-33
	2SC2029B		GE-33
	2SC2092		GE-33
	2SC2075		GE-33
	2SC1909		GE-21
TR15	2SC2028	172-038-9-001	GE-27
	2SC2028B		GE-27
	2SC1760		GE-27
	2SC1957		GE-27
	2SC495T		GE-27
	2SC1846		GE-33
	2SC1974		GE-33
	2SC2091		GE-27
TR16	2SC2076C	176-060-9-004	GE-21
	2SC2076		GE-21
	2SC735		GE-21
	2SC1364		GE-21
	2SC933		GE-21
TR17	2SC458C	176-048-9-002	GE-21
	2SC458		GE-21
	2SC945		GE-21
	2SC828		GE-61
	2SC536		GE-21
TR18	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
	2SA659		GE-89
	2SA844		GE-24
TR19	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
	2SA659		GE-89
	2SA844		GE-24
TR20	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-62
	2SC903		GE-22
	2SC460		GE-61
TR21	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
TR22	2SC2236-0	176-089-9-005	GE-27
	2SC2236		GE-27
	2SC2028	172-038-9-001	GE-27
	2SC2091		GE-27
	2SC1957		GE-27

- 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

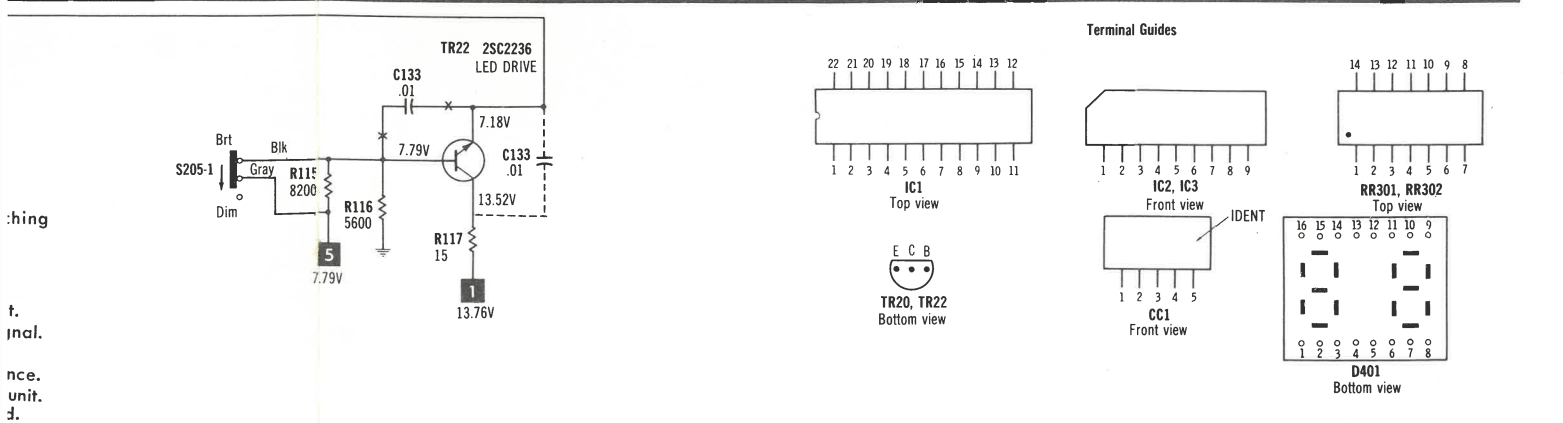
A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE**
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Measurements made in Channel 1 with switching as shown unless noted.
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltage maintained as shown at input.
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.





COBRA MODEL 29GTL



PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

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.
TR5	2SC945AQ 2SC945 2SC1675 2SC828 2SC536 2SC458	176-062-9-001	GE-212 GE-212 GE-213 GE-61* GE-212 GE-210*	PTC121* PTC121* PTC132* PTC139* PTC121* PTC121*	HEPS0015* HEPS0015* HEPS0025* HEPS0015* HEPS0016* HEPS0009*	REN 199 REN 199 REN 123A* REN 199 REN 199 REN 123A*	SK3124 SK3124 SK3246 SK3444 SK3124 SK3122	RT-107A RT-107A RT-308 RT-302 RT-107A RT-187	ECG199 ECG199 ECG229* ECG199 ECG199 ECG289	2SC945 2SC945 2SC945 2SC828 2SC945 2SC458	WEP1945 WEP1945 WEP956* WEP828 WEP536 WEP458	121-29000 121-29000 ZEN-127 ZEN-119 ZEN-119 121-29000*
TR6	2SC945AQ 2SC945 2SC380 2SC828 2SC536 2SC458	176-062-9-001	GE-212 GE-212 GE-213 GE-61* GE-212 GE-210*	PTC121* PTC121* PTC132* PTC139* PTC121* PTC121*	HEPS0015* HEPS0015* HEPS0015* HEPS0016* HEPS0016* HEPS0009*	REN 199 REN 199 REN 199 REN 107 REN 199 REN 123A*	SK3124 SK3124 SK3124 SK3018* SK3124 SK3122	RT-107A RT-107A RT-107A RT-107A RT-107A RT-187	ECG199 ECG199 ECG199 ECG107 ECG199 ECG289	2SC945 2SC945 2SC945 2SC380 2SC945 2SC828	WEP1945 WEP1945 WEP1945 WEP380 WEP536 WEP828	121-29000 121-29000 121-29000 ZEN-127 ZEN-119 121-29000*
TR7	2SC1674L 2SC1674 2SC668 2SC787 2SC1906	176-081-9-002	GE-61 GE-61 GE-211* GE-214 GE-86	PTC132* PTC132* PTC139* PTC115* PTC132*	HEPS0010* HEPS0010* HEPS0024* HEPS0020 HEPS0016*	REN 107 REN 107 REN 229 REN 161 REN 108*	SK3246 SK3246 SK3018 SK3039 SK3039*	RT-308 RT-308 RT-187 RT-113* RT-113*	ECG229* ECG229* ECG229* ECG161 ECG108*	2SC535 2SC535 2SC684 2SC717*	WEP956* WEP956* WEP956* WEP66 WEP56*	121-925 121-883 ZEN-104 ZEN-127 ZEN-127
TR8	2SC1675L 2SC1675 2SC460 2SC930 2SC380 2SC1684	176-065-9-001	GE-213 GE-213 GE-61* GE-60* GE-61* GE-62*	PTC132* PTC132* PTC136* PTC132* PTC136* PTC139*	HEPS0025* HEPS0025* HEPS0014* HEPS0016* HEPS0016* HEPS0024*	REN 123A* REN 123A* REN 107 REN 229 REN 107 REN 199*	SK3246 SK3246 SK3122 SK3018 SK3018* SK3122*	RT-308 RT-308 RT-134 RT-308 RT-107A RT-108A*	ECG229* ECG229* ECG107 ECG229* ECG107 ECG199*	2SC945 2SC945 2SC460 2SC930 2SC380 2SC735*	WEP956* WEP956* WEP460 WEP956* WEP380 WEP66*	121-29000 121-29000 ZEN-127 ZEN-127 ZEN-127 ZEN-127
TR9	2SC1675L 2SC1675 2SC380 2SC1684 2SC930 2SC460	176-065-9-001	GE-213 GE-213 GE-61* GE-62* GE-60* GE-61*	PTC132* PTC132* PTC136* PTC139* PTC132* PTC136*	HEPS0025* HEPS0025* HEPS0016* HEPS0024* HEPS0016* HEPS0014*	REN 123A* REN 123A* REN 107 REN 199* REN 229 REN 107	SK3246 SK3246 SK3018* SK3122* SK3018 SK3122	RT-308 RT-308 RT-107A RT-108A* RT-308 RT-134	ECG229* ECG229* ECG107 ECG199* ECG229* ECG107	2SC945 2SC945 2SC380 2SC735* 2SC930 2SC460	WEP956* WEP956* WEP380 WEP66* WEP956* WEP460	121-29000 121-29000 ZEN-127 ZEN-127 ZEN-127 ZEN-127
TR10	2SC1675L 2SC1675 2SC380 2SC1684 2SC930 2SC460	176-065-9-001	GE-213 GE-213 GE-61* GE-62* GE-60* GE-61*	PTC132* PTC132* PTC136* PTC139* PTC132* PTC136*	HEPS0025* HEPS0025* HEPS0016* HEPS0024* HEPS0016* HEPS0014*	REN 123A* REN 123A* REN 107 REN 199* REN 229 REN 107	SK3246 SK3246 SK3018* SK3122* SK3018 SK3122	RT-308 RT-308 RT-107A RT-108A* RT-308 RT-134	ECG229* ECG229* ECG107 ECG199* ECG229* ECG107	2SC945 2SC945 2SC380 2SC735* 2SC930 2SC460	WEP956* WEP956* WEP380 WEP66* WEP956* WEP460	121-29000 121-29000 ZEN-127 ZEN-127 ZEN-127 ZEN-127
TR11	2SC945AQ 2SC1815 2SC1359 2SC536 2SC458	176-062-9-001	GE-212 GE-212 GE-62 GE-212 GE-210*	PTC121* PTC121* PTC136* PTC121* PTC121*	HEPS0015* HEPS0015* HEPS0015* HEPS0016* HEPS0009*	REN 199 REN 199 REN 199 REN 199 REN 123A*	SK3124 SK3124 SK3245 SK3122 SK3122	RT-107A RT-107A RT-304 RT-107A RT-187	ECG199 ECG199 ECG199 ECG199 ECG289	2SC945 2SC945 2SC945 2SC945 2SC458	WEP1945 WEP1945 WEP66 WEP536 WEP458	121-29000 121-29000 ZEN-127 ZEN-127 121-29000*
TR12	2SC945AQ 2SC1815 2SC1359 2SC536 2SC458	176-062-9-001	GE-212 GE-212 GE-62 GE-212 GE-210*	PTC121* PTC121* PTC136* PTC121* PTC121*	HEPS0015* HEPS0015* HEPS0015* HEPS0016* HEPS0009*	REN 199 REN 199 REN 199 REN 199 REN 123A*	SK3124 SK3124 SK3245 SK3122 SK3122	RT-107A RT-107A RT-304 RT-107A RT-187	ECG199 ECG199 ECG199 ECG199 ECG289	2SC945 2SC945 2SC945 2SC945 2SC458	WEP1945 WEP1945 WEP66 WEP536 WEP458	121-29000 121-29000 ZEN-127 ZEN-127 121-29000*
TR13	2SC945AQ 2SC545 2SC828 2SC536 2SC458	176-062-9-001	GE-212 GE-212 GE-11 GE-212 GE-210*	PTC121* PTC121* PTC132* PTC121* PTC121*	HEPS0015* HEPS0015* HEPS0016* HEPS0015* HEPS0009*	REN 199 REN 199 REN 161 REN 199 REN 123A*	SK3124 SK3124 SK3018 SK3444 SK3124	RT-107A RT-107A RT-308 RT-302 RT-107A	ECG199 ECG199 ECG107 ECG199 ECG199	2SC945 2SC945 2SC945 2SC828 2SC945	WEP1945 WEP1945 WEP63 WEP928 WEP536	121-29000 121-29000 ZEN-127 ZEN-119 ZEN-127
TR14	2SC2029 2SC2029B 2SC2092 2SC2075 2SC1909	172-038-9-002	GE-333 GE-333 GE-337 GE-215 GE-215	PTC186 PTC186 PTC186 PTC186 PTC186	HEPS3044 HEPS3044 HEPS3044 HEPS3044 HEPS3044	REN 235 REN 235 REN 235 REN 235 REN 235	SK3197 SK3197 SK3197 SK3197 SK3197	RT-146 RT-146 RT-146 RT-146 RT-146	ECG235 ECG235 ECG235 ECG235 ECG235	2SC1306 2SC1306 2SC1306 2SC1306 2SC1306	WEP785 WEP785 WEP785 WEP785 WEP785	121-29000 121-29000 ZEN-127 ZEN-127 ZEN-127
TR15	2SC2028 2SC2028B 2SC1760 2SC1957 2SC495T 2SC1846	172-038-9-001	GE-270 GE-270 GE-276 GE-270 GE-270 GE-336	PTC180 PTC180 PTC180 PTC180 PTC180 PTC904	HEPS3044 HEPS3044 HEPS3044 HEPS3044 HEPS3044 HEPS3044	REN 295 REN 295 REN 306 REN 295 REN 295 REN 295	SK3253 SK3253 SK3197 SK3253 SK3253 SK3197	RT-310 RT-310 RT-162 RT-162 RT-162 RT-146	ECG295 ECG295 ECG295 ECG295 ECG295 ECG235	2SC1018* 2SC1018* 2SC1018* 2SC1018* 2SC1018* 2SC1306	WEP913 WEP913 WEP771 WEP913 WEP913 WEP785	200-767 200-767 ZEN-209 ZEN-209 ZEN-209 ZEN-209
TR16	2SC2076C 2SC2076 2SC735 2SC1364 2SC933	176-060-9-004	GE-210* GE-210* GE-210* GE-210 GE-210	PTC121* PTC121* PTC123* PTC121* PTC136	HEPS0015* HEPS0015* HEPS0014* HEPS0015* HEPS0015	REN 123A* REN 123A* REN 289 REN 123A* REN 123A	SK3122 SK3122 SK3122 SK3124 SK3444	RT-308 RT-308 RT-308* RT-308 RT-308*	ECG295 ECG295 ECG289 ECG123A* ECG123A*	2SC735 2SC735 2SC735 2SC1364 2SC773	WEP736 WEP736 WEP736 WEP736* WEP736	121-722 121-722 ZEN-127 121-29000 121-1014
TR17	2SC458C 2SC458 2SC945 2SC828 2SC536	176-048-9-002	GE-210* GE-210* GE-212 GE-61* GE-212	PTC121* PTC121* PTC121* PTC139* PTC121*	HEPS0009* HEPS0009* HEPS0015* HEPS0015* HEPS0016*	REN 123A* REN 123A* REN 199 REN 199 REN 199	SK3122 SK3122 SK3124 SK3444 SK3124	RT-187 RT-187 RT-107A RT-302 RT-107A	ECG289 ECG289 ECG199 ECG199 ECG199	2SC458 2SC458 2SC945 2SC828 2SC945	WEP458 WEP458 WEP1945 WEP828 WEP536	121-29000* 121-29000* 121-29000 ZEN-119 ZEN-127
TR18	2SC733P 2SA733 2SA495 2SA564 2SA659	177-020-9-001	GE-48 GE-48 GE-221* GE-65 GE-89	PTC127 PTC103* PTC103* PTC103* PTC103	HEPS0019* HEPS0013* HEPS0019* HEPS0019* HEPS0029	REN 294 REN 159* REN 234 REN 159 REN 129*	SK3138 SK3466 SK3114 SK3466 SK3114	RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG294 ECG159* ECG234 ECG159 ECG129*	2SA733 2SA495 2SA564 2SA733 2SA733	WEP916 WEP916 WEP916 WEP916 WEP916	121-933 121-933 ZEN-106 ZEN-106 ZEN-106
TR19	2SA733P 2SA733 2SA495 2SA564 2SA659	177-020-9-001	GE-48 GE-48 GE-221* GE-65 GE-89	PTC127 PTC103* PTC103* PTC103* PTC103	HEPS0019* HEPS0013* HEPS0019* HEPS0019* HEPS0029	REN 294 REN 159* REN 234 REN 159 REN 129*	SK3138 SK3466 SK3114 SK3466 SK3114	RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG294 ECG159* ECG234 ECG159 ECG129*	2SA733 2SA495 2SA564 2SA733 2SA733	WEP916 WEP916 WEP916 WEP916 WEP916	121-933 121-933 ZEN-106 ZEN-106 ZEN-106
TR20	2SC1675L 2SC1675 2SC380 2SC1684 2SC903	176-065-9-001	GE-213 GE-213 GE-61* GE-62* GE-220	PTC132* PTC132* PTC136* PTC139* PTC123	HEPS0025* HEPS0025* HEPS0016* HEPS0024* HEPS0014*	REN 123A* REN 123A* REN 107 REN 199* REN 123A	SK3246 SK3246 SK3018* SK3122* SK3244	RT-308 RT-308 RT-107A RT-108A* RT-102A	ECG229* ECG229* ECG107 ECG199* ECG287	2SC735* 2SC735* 2SC380 2SC735* 2SC460	WEP956* WEP956* WEP380 WEP66* WEP735A	ZEN-127 ZEN-127 ZEN-127 ZEN-127 ZEN-119
TR21	2SC460 2SA733P 2SA733 2SA495 2SA564	177-020-9-001	GE-61* GE-48 GE-48 GE-221* GE-65	PTC136* PTC127 PTC103* PTC103* PTC103	HEPS0014* HEPS0019* HEPS0013* HEPS0019* HEPS0019*	REN 107 REN 294 REN 294 REN 159* REN 234	SK3122 SK3138 SK3138 SK3466 SK3114	RT-134 RT-303 RT-303 RT-303 RT-303	ECG107 ECG294 ECG294 ECG159* ECG234	2SC460 2SA733 2SA733 2SA495 2SA564	WEP460 WEP916 WEP916 WEP916 WEP564	121-722 121-933 121-933 ZEN-106 ZEN-106
TR22	2SC2236-0 2SC2236 2SC2028 2SC2091 2SC1957	176-089-9-005 172-038-9-001	GE-270 GE-270 GE-270 GE-270 GE-270	PTC180 PTC180 PTC180 PTC180 PTC180	HEPS3044 HEPS3044 HEPS3044 HEPS3044 HEPS3044	REN 295 REN 295 REN 295 REN 295 REN 295	SK3253 SK3253 SK3253 SK3253 SK3197	RT-303 RT-303 RT-303 RT-303 RT-303	ECG295 ECG295 ECG295 ECG295 ECG295	2SC1018* 2SC1018* 2SC1018* 2SC1018* 2SC1018*	WEP913 WEP913 WEP913 WEP913 WEP913	200-767 200-767 200-767 200-767 200-767

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	TYPE No.	MFR. 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.
TR23	2SC1846	172-024-9-001	GE-336	PTC904	HEPS3041	REN 295	SK3253	RT-146 RT-310 RT-166 RT-166	ECG295	2SC496	WEP913	800-767
	2SC1974		GE-337	PTC186		REN 235	SK3197		ECG235	2SC1306	WEP785	
	2SC1760		GE-276	PTC180		REN 306	SK3197		ECG306		WEP771	
	2SC1096L		GE-28	PTC110		REN 186	SK3197		ECG186A	2SC1096	WEP1096	
	2SC1096-3ZL		GE-28	PTC110		REN 186	SK3197		ECG186A	2SC1096	WEP1096	
	2SC2236		GE-270	PTC180	HEPS3044	REN 295	SK3253	RT-146 RT-310 RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG295	2SC1018*	WEP913	200-767 200-767 800-767
	2SC2028		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	2SC1018*	WEP913	
	2SC2091		GE-270	PTC180		REN 295	SK3253		ECG295		WEP913	
	2SC1957		GE-270	PTC180	HEPS3044	REN 295	SK3197		ECG295		WEP913	
	2SC1846		GE-336	PTC904		REN 295	SK3253		ECG295	2SC496	WEP913	
TR24	2SC1974	177-020-9-001	GE-337	PTC186	HEPS0019*	REN 235	SK3197		ECG235	2SC1306	WEP785	121-933 121-933 ZEN-106 121-879
	2SC1760		GE-276	PTC180		REN 306	SK3197		ECG306		WEP771	
	2SA733P		GE-48	PTC127		REN 294	SK3138		ECG294	2SA733	WEP916	
	2SA733		GE-48	PTC127		REN 294	SK3138		ECG294	2SA733	WEP916	
	2SA495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3466		ECG159*	2SA495	WEP495	
	SA564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114		ECG234	2SA564	WEP564	
	2SA659		GE-89	PTC103	HEPS0029	REN 159	SK3466		ECG159		WEP62	
	2SA844		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114		ECG129*		WEP60*	

* Lead configuration may vary from original.

delete
TR24
(ALL)
NOT IN
CLASSIC

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		MFRG. PART No.	CORNELL- DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.			
					Q-LINE	GENERAL LINE		
C11	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222		
C12	4.7 16V	027-026-9-004	PC100-16	TDC475M010EL	QDT1-48	SD10-4R79		
C20	100 16V	022-157-9-009		VTT100F16	QV1-95	EV-1230		
C26	4.7 16V	027-026-9-004		TDC475M010EL	QDT1-48	SD10-4R79		
C27	10 6.3V	027-036-9-001		TDC106M025FL	QDT1-64	SD25-109		
C32	1 50V	022-157-9-002		PC1-50	VTT1A50	QV1-11	EV-1615	
C35	2.2 16V	022-173-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517		
C36	33 6.3V	022-173-9-003	PC30-25	VTT33B10	QV1-61	EV-1125		
C39	10 10V	027-025-9-001	PC1000-16	TDC106M025FL	QDT1-64	SD25-109		
C42	1000 16V	022-158-9-004		VTT100L16	QV1-183	EV-1260		
C44	4.7 25V	022-157-9-003		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C45	47 10V	022-160-9-002		PC50-16	VTT47D16	QV1-73	EV-1226	
C48	470 16V	022-076-9-008		PC500-16	VTT470K16	QV1-151	EV-1250	
C66	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226		
C67	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130		
C68	.1 16V	022-157-9-006	PC30-25	TDC104M050EL	QDT1-2	SD50-R109		
C71	33 16V			VTT33D25	QV1-63	EV-1325		
C72	10 16V			TDC106M025FL	QDT1-64	SD25-109		
C73	.47 50V			VTT47A63	QV1-3	EV-1610		
C81	4.7 16V			VTT4R7B50	QV1-27	EV-1319		
C85	10 16V	022-157-9-001	PC10-25	VTT10B25	QV1-41	EV-1222		
C97	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222		
C98	2.2 16V	027-033-9-001	PC1-50	TDC225M035FL	QV1-3	SD35-2R29		
C99	2.2 16V	027-033-9-001		TDC225M035FL		SD35-2R29		
C102	.47 50V	022-157-9-001		VTT47A63		EV-1610		
C112	470 6.3V	022-158-9-008		PC500-16		VTT470K16	QV1-149	EV-1150
C114	100 10V	022-157-9-008		PC100-10		VTT100E10	QV1-93	EV-1130
C116	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226		
C117	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226		
C119	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130		
C123	100 25V	022-173-9-001	PC100-25	VTT100G25	QV1-97	EV-1330		
C147	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222		

COBRA MODEL 29GTL

CAPACITORS

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
C1	10 50V	020-207-9-006	DTZ-10	NP010	CNO410		10TCC-Q10
C2	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C3	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	200 50V		DD-201	GP200	GP320		10TS-T20
C5	200 50V		DD-201	GP200	GP320		10TS-T20
C6	680 50V		DD-681	GP680	GP368		10TS-T68
C7	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C8	15 N220 50V				*		10TCR-Q15
C9	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C10	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C13	220 50V		DD-221		GP322		10TS-T22
C14	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C15	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C16	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C17	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C18	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C19	.047 50V			DPMS2S47	EWFI1A147	QF1-171	1PB-S47
C21	.039 50V			DPMS6S39	PVC6139		6PS-S39
C22	1 50V				CNO510		10TCC-V10
C23	.039 25V			DPMS6S39	PVC6139		6PS-S39
C24	.039 25V			DPMS6S39	PVC6139		6PS-S39
C25	.001 50V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C28	.039 25V			DPMS6S39	PVC6139		6PS-S39
C29	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C30	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C31	.001 25V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C33	.0068 50V			WMF1D68	EWFI1A268	QF1-73	1PB-D68
C34	.0047 25V			WMF1D47	EWFI1A247	QF1-57	1PB-D47
C37	.001 25V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C38	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10

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
C40	.0022 50V	020-196-9-001	DD-102G	DPMS6D22	EW6222	QC2-81	6PS-D22
C41	.001 50V			GP1000	GP210		5GA-D10
C43	.0022 25V			DPMS6D22	EW6222		6PS-D22
C46	.1 25V		UK25-104		MAG2501		HY-750
C47	.1 50V		UK25-104		MAG2501		HY-750
C49	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C50	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C51	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C52	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C53	180 50V		DD-181		GP318		10TS-T18
C54	.039 25V				GP140		5GA-S40
C55	.039 25V				GP140		5GA-S40
C56	68 N220 50V				*		10TCR-Q68
C57	33 50V		DTZ-33	NP033	CN0433		10TCC-Q33
C58	220 50V		DD-201	GP200	GP320		10TS-T20
	180 50V		DD-181		GP318		10TS-T18
C59	330 50V		DD-331	GP330	GP333		10TS-T33
C60	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C61	100 50V		DD-101	GP100	GP310		10TS-T10
C62	250 50V		DD-271	GP270	GP327		10TS-T27
C63	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C64	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C65	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C69	.068 50V			WMF1S68	EW61A168	QF1-195	1PB-S68
C70	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C74	470 50V		DD-471	GP470	GP347		10TS-T47
C75	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C76	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C77	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C78	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C80	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C83	.039 25V	020-207-9-006			GP140		5GA-S40
C84	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C86	330 50V		DD-331	GP330	GP333		10TS-T33
C87	100 50V		DD-101	GP100	GP310		10TS-T10
C88	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C89	47 N750 50V		DTN-47	N47	CN7447		10TCU-Q47
C90	15 N220 50V				*		10TCR-Q15
C91	150 NPO 50V		DTZ-150		CN0315		10TCC-T15
C92	68 N220 50V				*		10TCR-Q68
C93	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C94	8 50V	020-196-9-001	DTZ-6R8	NP06P8	CN0568		10TCC-V68
C95	.022 50V				GP120		5GA-S20
	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C96	.039 25V				GP140		5GA-S40
C100	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C101	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C103	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C104	15 50V		DTZ-15	NP015	CN0415		10TCC-Q15
C105	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C106	39 50V				CN0439		10TCC-Q39
C108	.01 50V	020-204-9-010	DC-103	MGP01	TA110	QC2-141	TG-S10
C109	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C110	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C111	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C113	.039 25V				GP140		5GA-S40
C115	.039 25V				GP140		5GA-S40
C118	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C120	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C121	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C122	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C124	.01 50V	020-207-9-009	DC-103	MGP01	TA110	QC2-141	TG-S10
C125	470 50V		DD-471	GP470	GP347		10TS-T47
C126	82 50V		DD-820		GP482		10TS-Q82
C127	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C128	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C129	100 N220 50V				*		10TCR-T10
C130	220 N220 50V				*		10TCR-T22
C131	68 N220 50V				*		10TCR-Q68
C132	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C133	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C137	.039 25V	020-196-9-001			GP140		5GA-S40
C138	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C139	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C140	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C141	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C142	.039 50V				GP140		5GA-S40
C143	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C145	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C147	.039 50V			DPMS6S39	PVC6139		6PS-S39
C152	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C153	.01 50V	527-027-9-002(1)	DC-103	MGP01	TA110	QC2-141	TG-S10
C201	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C202	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C203	9 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C240	.0068 50V			WMF1D68	EW61A268	QF1-73	1PB-D68
C241	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C242	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C243	.5 50V						
C244	150 50V		DD-151		GP315		10TS-T15
C245	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C246	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C247	.04 50V	527-027-9-002(1)			GP140		5GA-S40
C248	.068 50V			WMF1S68	EW61A168	QF1-195	1PB-S68
C249	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10

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

(1) Consists of four .01 capacitors.

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	RESISTANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR1	IF Gain	300	008-345-9-001			
VR2	Signal Meter	20K	008-316-9-003			
VR3	Squelch Range	100K	008-316-9-001			U260R253B
VR4	AMC	5000	008-316-9-004			U260R104B
VR5	RF Meter	20K	008-316-9-003			U260R502B
VR201	Dynamike	5000	008-345-9-002			U260R253B
VR202	Squelch	50K	008-345-9-006			
VR203	Volume/Switch	50K	008-345-9-005			
VR204	Delta Tune	20K	008-345-9-003			
VR205	RF Gain	1000	008-331-9-003			
VR206	SWR/CAL	5000	008-345-9-004			

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.
RR301	Resistor Network		527-076-9-002(1)	RR302	Resistor Network		527-076-9-002(1)

(1) Consists of seven 680-ohm resistors.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Noise Blanker	060-024-9-001	LA181		
L2	Rec Ant (27MHz)	066-023-9-001	LA029		
L3	Rec RF (27MHz)	046-024-9-001	LA138		
L4	IF (10.695MHz)	060-024-9-001	LA180		
L5	IF (10.695MHz)	046-025-9-004	LA277		
L6	IF (10.695MHz)	046-025-9-002	LA274		
L7	IF (455kHz)	060-019-9-002	LA106		
L8	IF (455kHz)	046-024-9-003	LA204		
L9	IF (455kHz)	046-025-9-001	LA207		
L11	TVI Trap (54MHz)	041-056-9-003	LC018		
L12	RF Choke	041-104-9-002	LE089		
L13	RF Choke	041-104-9-001	LE088		
L14	Final (27MHz)	041-056-9-003	LC018		
L15	RF Choke	041-069-9-004	LD012		
L16	XMT Driver (27MHz)	044-028-9-004	LC017		
L17	XMT Buffer (27MHz)	060-029-9-004	LA208		
L18	Ref Osc (16MHz)	046-024-9-002	LA201		
L19	VCO	046-025-9-003	LA275		
L20	XMT Mixer (27MHz)	066-019-9-002	LA088		
L21	XMT Mixer (27MHz)	060-029-9-001	LA198		
L22	PLL Osc (15.360MHz)	066-025-9-005	LA166		
L23	Ref Osc (10.240MHz)	060-024-9-003	LA182		
L24	Ref Osc (10.240MHz)	060-030-9-003	LA217		
L25	RF Choke (100uH)	041-078-9-002	LZ001		

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.	
T2	1.15A	.8	.86mH	042-021-9-001			TF-083 Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	18	8	061-039-9-001			TF-129 Number on unit.

COBRA MODEL 29GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP201	4" PM, 16 Ohms	580-028-9-001	4A1Z16	10P03G Number on unit.

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
F201	2A	191-251-3-002	426-020-9-001	AGC2	HDJ	312002	150145	FG2-2

MICROPHONE

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	562-025-9-001	18-032	18-034	18-010	18-092	2	1	3	4	NC	1

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D201	LED	158-020-9-001	TX/RX (1.92V @ 7mA) TLRG101
D202	LED	158-021-9-001	AWI (1.55V @ 6.5mA) TLR124
D401	LED	158-014-9-001	Channel Display TLR321
FL1	Ceramic Filter	148-009-9-001	10.695MHz FL-055
FL2	Ceramic Filter	140-009-9-001	455kHz FL-009
M201	Meter	320-096-9-001	S/R/F/SWR
S202	Switch	084-064-9-001	CB/PA
S203	Switch	084-064-9-002	ANL/NB
S204	Switch	084-064-9-002	SWR/CAL/S-RF
S205	Switch	084-064-9-001	Brf/Dim
S207	Switch	084-064-9-001	Tone
S301	Switch	083-240-9-001	Channel Selector
X1	Crystal	132-027-9-001	10.240MHz
	Printed Circuit Board	302-318-9-001	Main (PC-424AA)
	Printed Circuit Board	302-319-9-001	Channel Selector (PC-428AA)
	Printed Circuit Board	302-320-9-001	LED (PC-421AA)

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

ITEM	PART No.	ITEM	PART No.
Cabinet, Top	272-132-9-001	Jack, J1 (PA)	773-086-9-001
Cabinet, Bottom	272-132-9-002	Jack, J2 (External Speaker)	773-086-9-001
Mounting Bracket	251-353-9-001	Jack, J201 (Microphone)	772-038-9-001
Microphone Hanger	741-074-9-001	Jack, J202 (Antenna)	772-027-9-001
Escutcheon	380-306-9-001	Jack, J203 (Power)	762-020-9-001
Knob, Channel Selector	751-151-9-001	Ferrite Bead, L10	044-054-9-001
Knob, Control	751-095-9-002	Ferrite Bead, L26	044-048-9-003
Display Window	380-304-9-001	Ferrite Bead, L201	044-051-9-001

SAMS PHOTOFACT CB RADIO SERIES



CB-217
217
SEPTEMBER 1978



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CORRECTION BULLETIN PAGE 5

TRADE NAME	MODEL	PAGE
AUDIOVOX	MCB-3000	7
COBRA	29GTL	33
COLT	390	63
PACE	8014	91



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

SAMS PHOTOFACT CB RADIO SERIES



CB-217
217
SEPTEMBER 1978



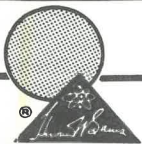
CONTENTS

CORRECTION BULLETIN PAGE 5

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



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

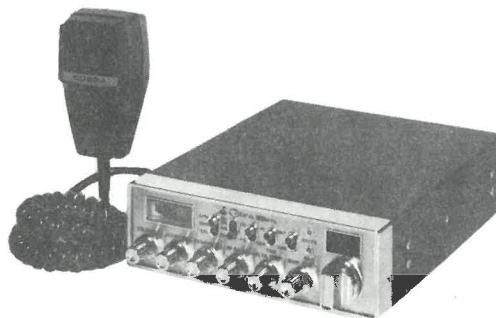
Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(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 29GTL

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER

Power Output:	4 watts.
Modulation:	High- and low-level, Class B amplitude modulation.
Frequency Response:	300 — 3000 Hz.
Output Impedance:	50 ohms, unbalanced.
Output Indicators:	Meter shows relative RF output power; standing wave ratio.

RECEIVER

Sensitivity:	Less than $1\mu\text{V}$ for 10dB(S+N)/N.
Selectivity:	6dB @ 7KHz, 60dB @ 10KHz.
Image Rejection:	50dB.
Adjacent-Channel Rejection:	60dB.
I.F. Frequencies:	Double conversion, 1st: 10.695MHz. 2nd: 455KHz.
Automatic Gain Control: (AGC):	Less than 10dB change in audio output for inputs from 10 to 50,000 microvolts.
RF Gain Control:	Adjustable for optimum signal reception.
Noise Planker:	RF type.
Delta Tune Range:	$\pm 1.5\text{KHz}$, continuously adjustable.
Squelch:	Adjustable; threshold less than $1\mu\text{V}$.
Audio Output Power:	4 watts.
Frequency Response:	300 — 3000 Hz.
Distortion:	Less than 7% @ 3 watts @ 1000 Hz.
Built-in Speaker:	16 ohms, round.
External Speaker: (Not Supplied)	8 ohms; disables internal speaker when connected.

Courtesy of the Manufacturer

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

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COBRA MODEL 29GTL

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:
 L1 thru L6, L17 thru L24 9440
 L7, L8, L9 5009,8728,8728-A
 L11, L14, L16 9091,8728,8728-A

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to TP10 (L23, Secondary).	Ch. 19 Delta Tune Detent	L23	Adjust for maximum.
Input of frequency counter to TP10 (L23, Secondary).	Ch. 19 Delta Tune Detent	L24	Adjust for 10.240MHz.
Input of DC meter to TP2.	Ch. 1 Ch. 1, XMT	L19	Adjust for 1.25 volts. Check for 2.10 volts.
Input of oscilloscope to TP11 (IC2, Pin 4).	Ch. 1	L22	Adjust for maximum.
Input of oscilloscope to TP5.	Ch. 19 Delta Tune Detent	L18	Adjust for maximum.
Input of frequency counter to TP5.	Ch. 1 Delta Tune Detent Ch. 1, XMT		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.) Check for 16.725MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP3.	Ch. 1 Delta Tune Detent Ch. 1, XMT		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.) Check for 1.365MHz. 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. NB/ANL Off, Squelch MINIMUM, RF Gain Maximum, Delta Tune Detent.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP12 (FET1, Gate). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L9,L8,L7	Adjust for maximum output.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L6,L5,L4, L3,L2	Adjust for maximum output. If necessary, readjust L7, L8 and L9.
Input of oscilloscope to TP13 (TR4, Base). Inject a 100pps, 1uSec. pulse width signal.	Ch. 19 NB/ANL/ANL NB/ANL	L1	Adjust for maximum.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication.
NB/ANL Off, Squelch MINIMUM, RF Gain Maximum, Delta Tune Detent.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output .4uV.	Ch. 19 Volume Maximum	VR1	IF GAIN Adjust for 2 volts audio.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19 Squelch Maximum	VR3	SQUELCH RANGE Adjust so that squelch just breaks.
Output of signal generator thru .01uF to antenna jack. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR2	SIGNAL METER Adjust 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
Input of spectrum analyzer or harmonic meter to antenna jack.	Ch. 19	L21,L20,L17, L16,L14	Adjust for maximum.
	Ch. 19	L14	Adjust for 4 watts maximum.
	Ch. 19	L11	Adjust for MINIMUM at 54MHz.

TRANSMITTER ADJUSTMENTS

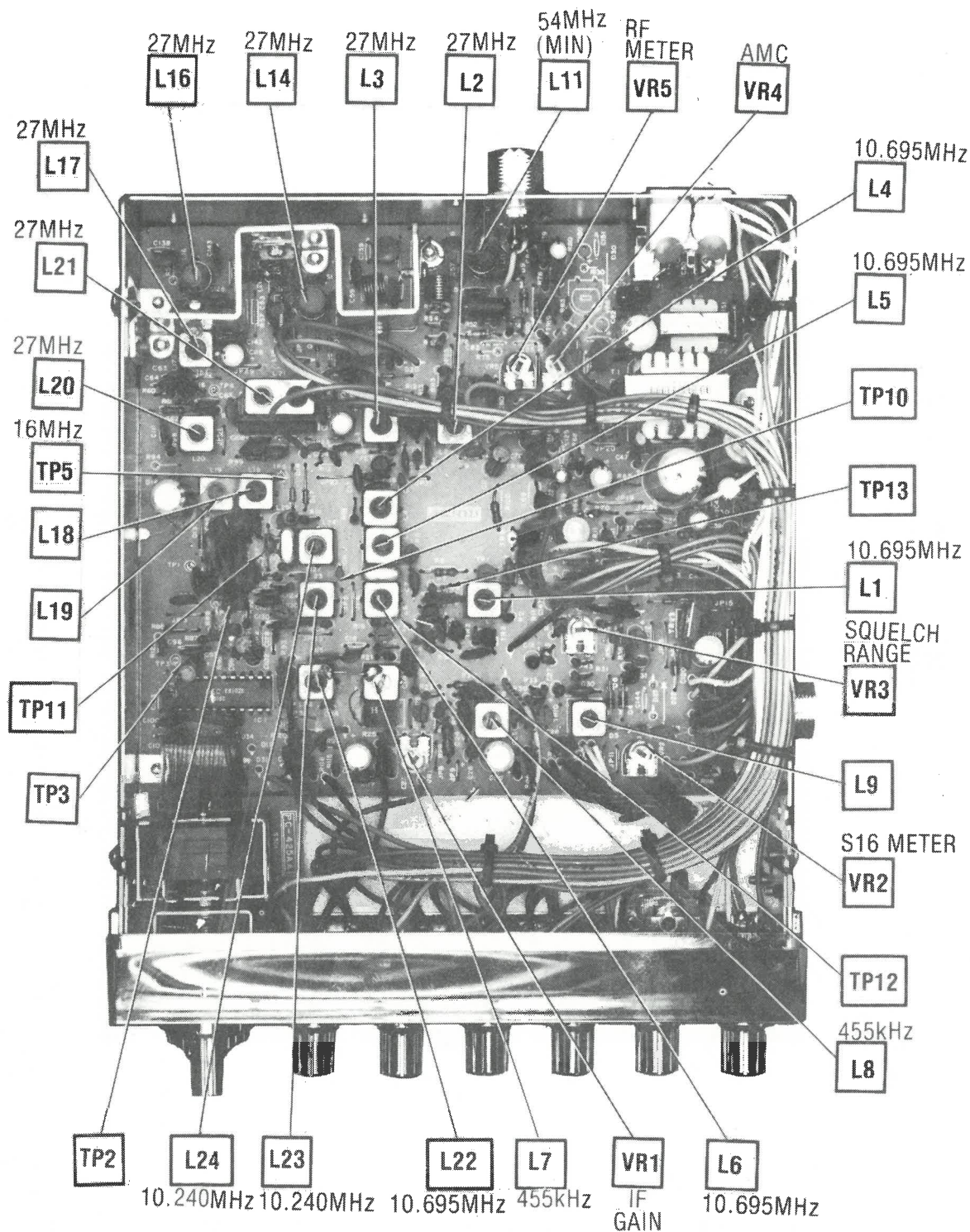
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna jack. Inject a 1000Hz, 100mV signal to mic input.	Ch. 19 Dynamike Maximum	VR4	AMC Adjust for 95% modulation maximum.
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna jack.	Ch. 19	VR5	RF METER Adjust so that RF meter reads just below to red on the RF scale of meter.

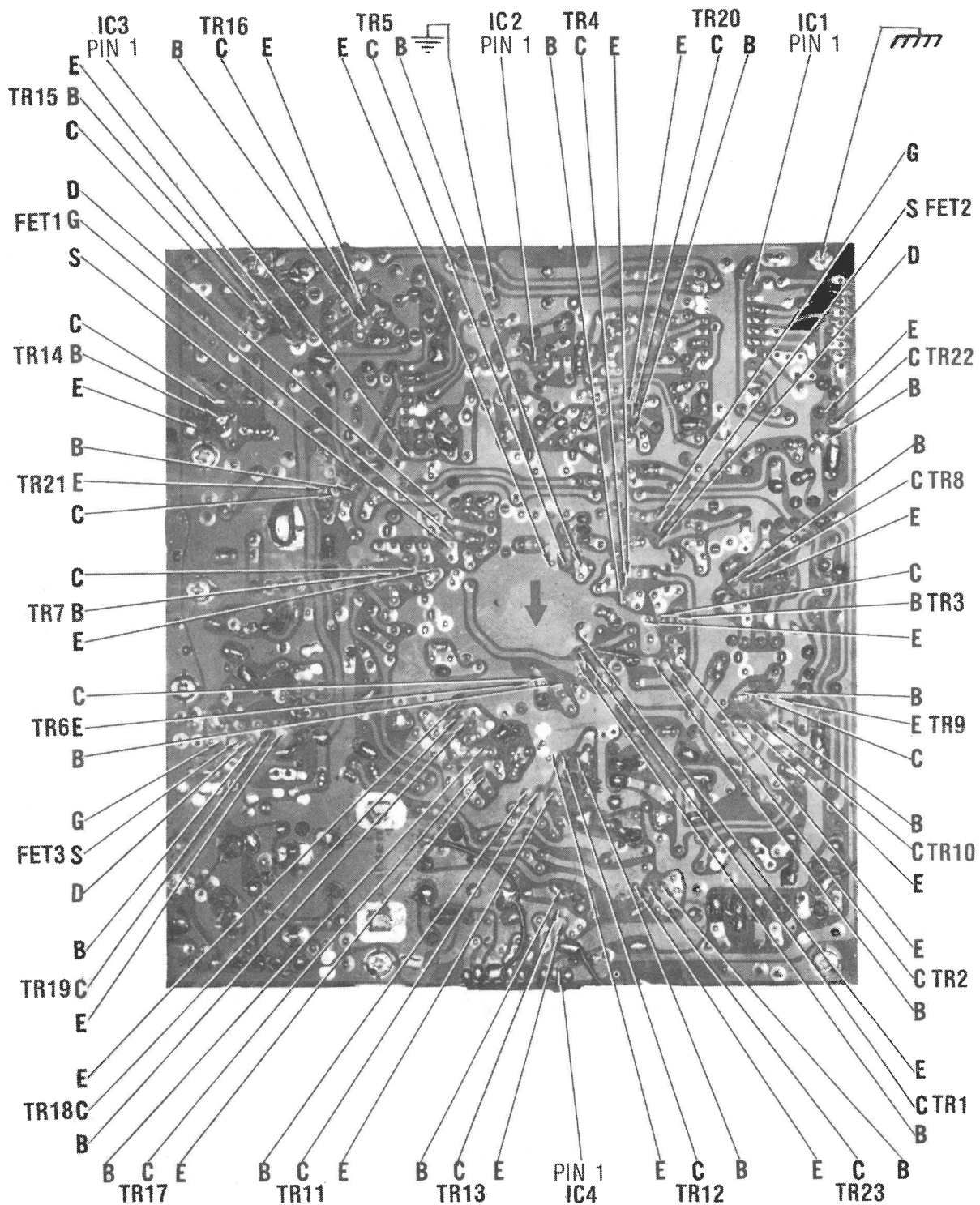
COBRA MODEL 29GTL

TRUTH CHART

C H A N N E L	1 = 4.78 Volts							0 = 0 Volts		REC SYNTHESIZER OUTPUT IN MHz AT TP5	REC DIVIDER INPUT IN MHz AT TP3	XMT SYNTHESIZER OUTPUT IN MHz AT TP5	XMT DIVIDER INPUT IN MHz AT TP3
	IC1 PROGRAM DIVIDER												
	PINS												
	6	5	4	3	2	1							
1	0	0	0	0	0	1			16.270	.910	16.725	1.365	
2	0	0	0	0	1	0			16.280	.920	16.735	1.375	
3	0	0	0	0	1	1			16.290	.930	16.745	1.385	
4	0	0	0	1	0	0			16.310	.950	16.765	1.405	
5	0	0	0	1	0	1			16.320	.960	16.775	1.415	
6	0	0	0	1	1	0			16.330	.970	16.785	1.425	
7	0	0	0	1	1	1			16.340	.980	16.795	1.435	
8	0	0	1	0	0	0			16.360	1.000	16.815	1.455	
9	0	0	1	0	0	1			16.370	1.010	16.825	1.465	
10	0	1	0	0	0	0			16.380	1.020	16.835	1.475	
11	0	1	0	0	0	1			16.390	1.030	16.845	1.485	
12	0	1	0	0	1	0			16.410	1.050	16.865	1.505	
13	0	1	0	0	1	1			16.420	1.060	16.875	1.515	
14	0	1	0	1	0	0			16.430	1.070	16.885	1.525	
15	0	1	0	1	0	1			16.440	1.080	16.895	1.535	
16	0	1	0	1	1	0			16.460	1.100	16.915	1.555	
17	0	1	0	1	1	1			16.470	1.110	16.925	1.565	
18	0	1	1	0	0	0			16.480	1.120	16.935	1.575	
19	0	1	1	0	0	1			16.490	1.130	16.945	1.585	
20	1	0	0	0	0	0			16.510	1.150	16.965	1.605	
21	1	0	0	0	0	1			16.520	1.160	16.975	1.615	
22	1	0	0	0	1	0			16.530	1.170	16.985	1.625	
23	1	0	0	0	1	1			16.560	1.200	17.015	1.655	
24	1	0	0	1	0	0			16.540	1.180	16.995	1.635	
25	1	0	0	1	0	1			16.550	1.190	17.005	1.645	
26	1	0	0	1	1	0			16.570	1.210	17.025	1.665	
27	1	0	0	1	1	1			16.580	1.220	17.035	1.675	
28	1	0	1	0	0	0			16.590	1.230	17.045	1.685	
29	1	0	1	0	0	1			16.600	1.240	17.055	1.695	
30	1	1	0	0	0	0			16.610	1.250	17.065	1.705	
31	1	1	0	0	0	1			16.620	1.260	17.075	1.715	
32	1	1	0	0	1	0			16.630	1.270	17.085	1.725	
33	1	1	0	0	1	1			16.640	1.280	17.095	1.735	
34	1	1	0	1	0	0			16.650	1.290	17.105	1.745	
35	1	1	0	1	0	1			16.660	1.300	17.115	1.755	
36	1	1	0	1	1	0			16.670	1.310	17.125	1.765	
37	1	1	0	1	1	1			16.680	1.320	17.135	1.775	
38	1	1	1	0	0	0			16.690	1.330	17.145	1.785	
39	1	1	1	0	0	1			16.700	1.340	17.155	1.795	
40	0	0	0	0	0	0			16.710	1.350	17.165	1.805	

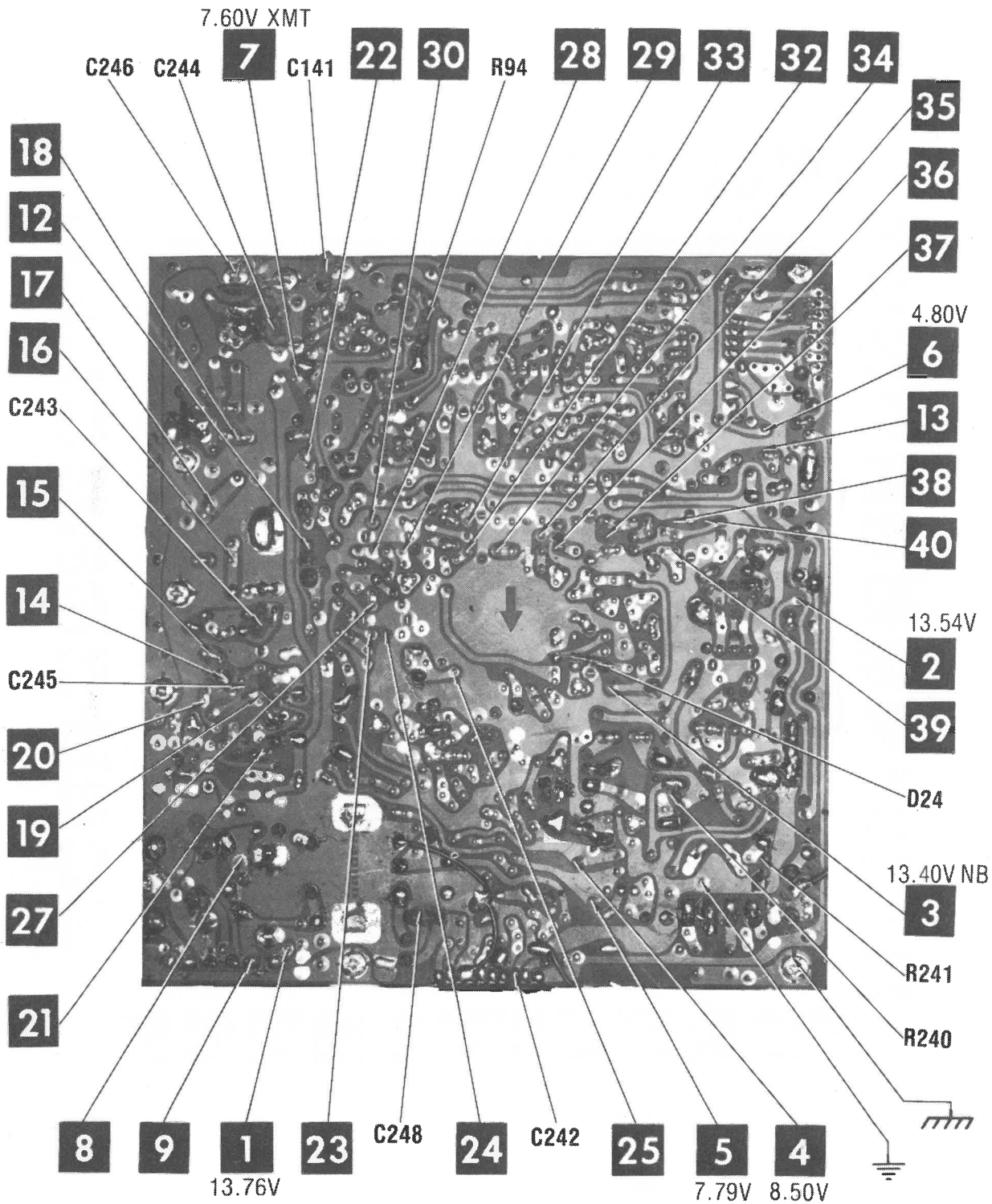


CHASSIS - BOTTOM

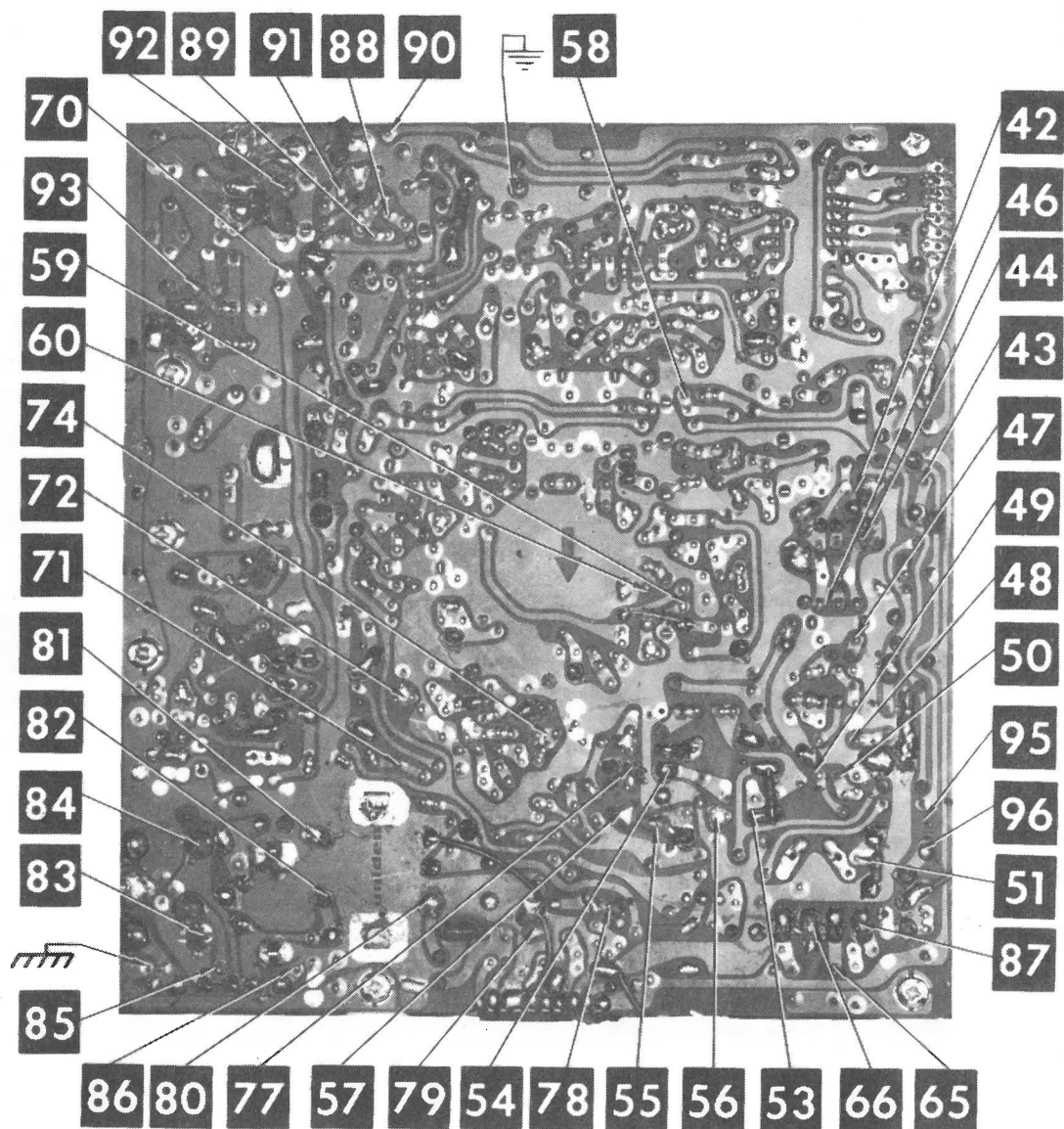


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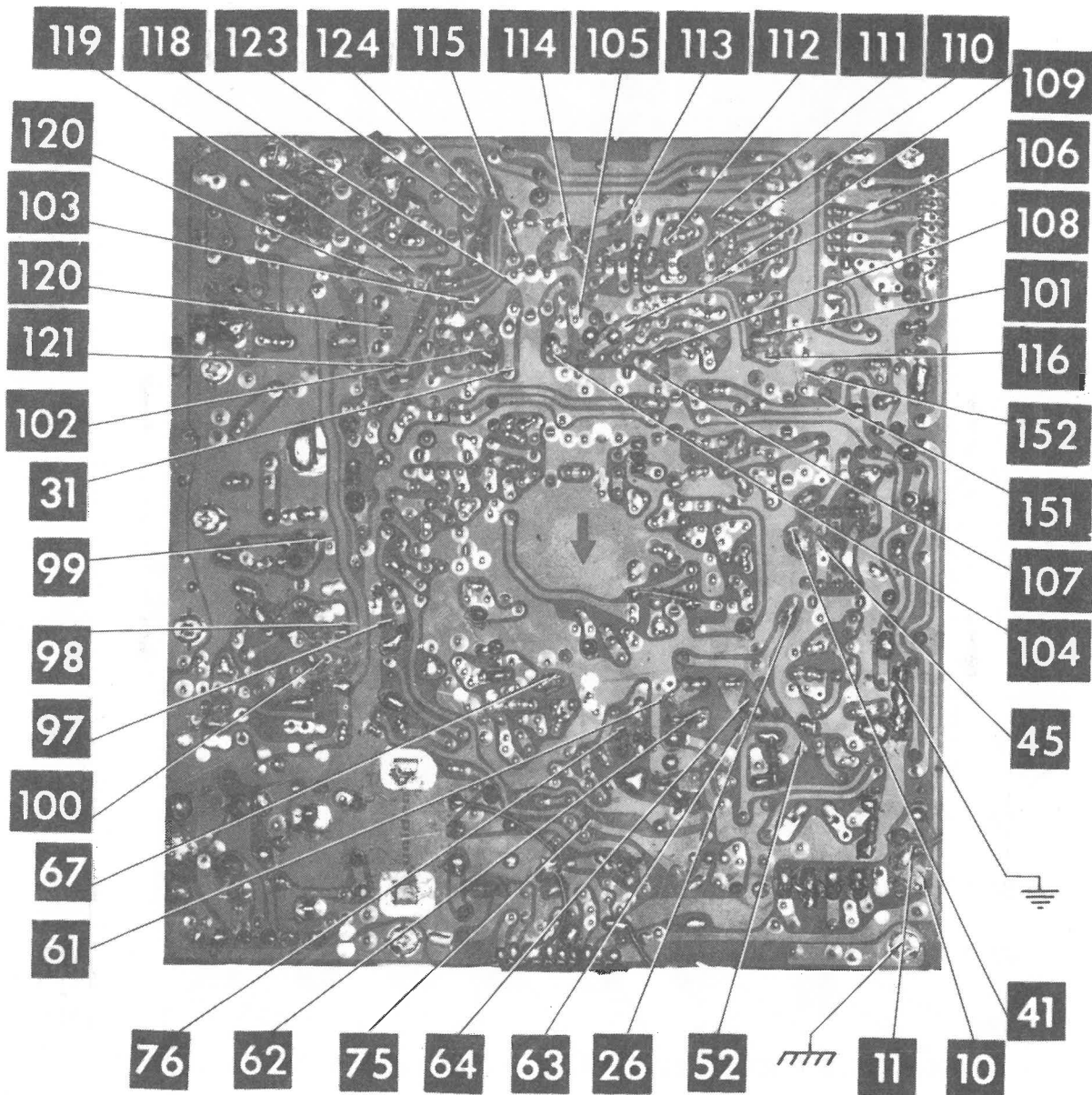
COBRA MODEL 29GTL



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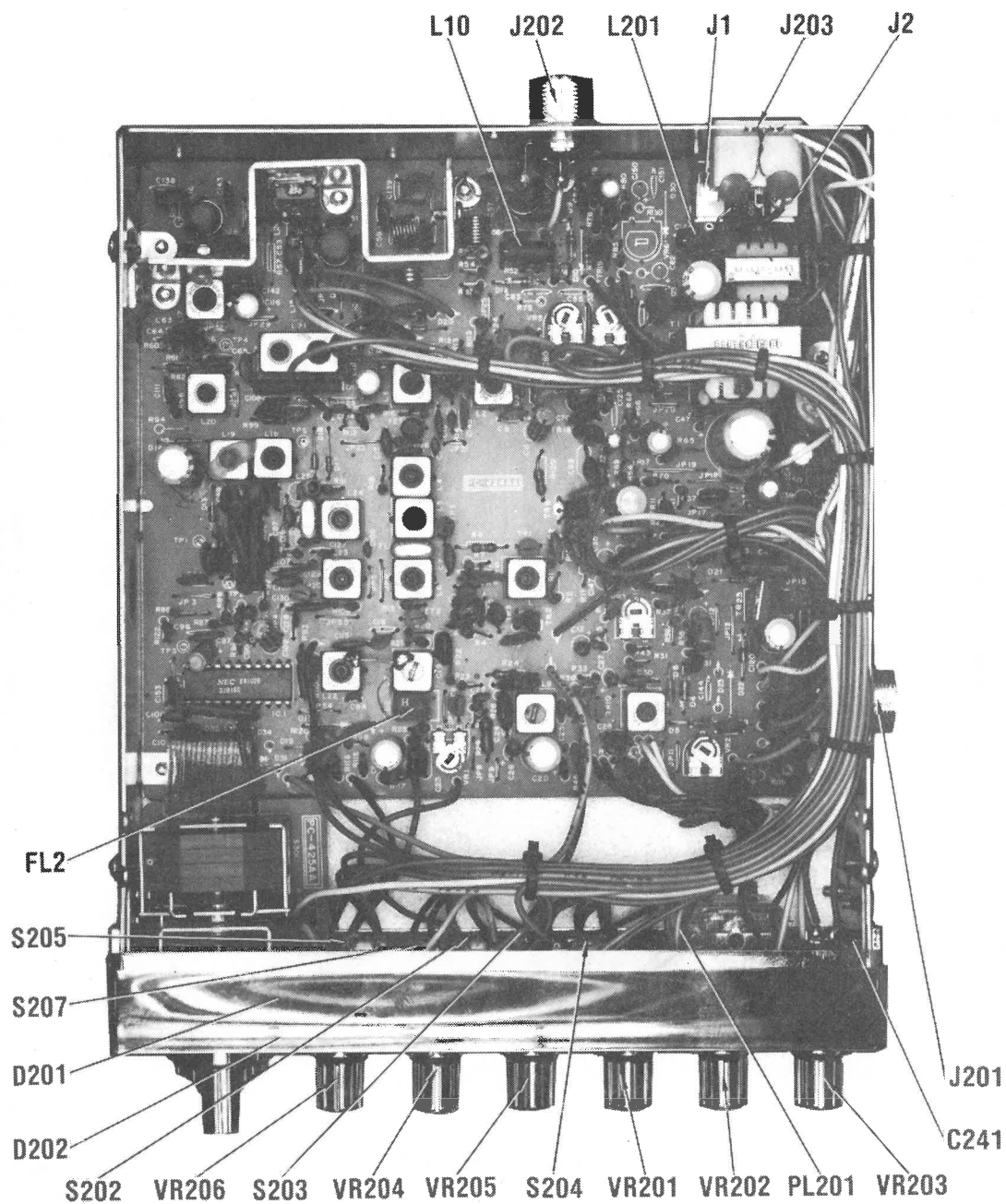


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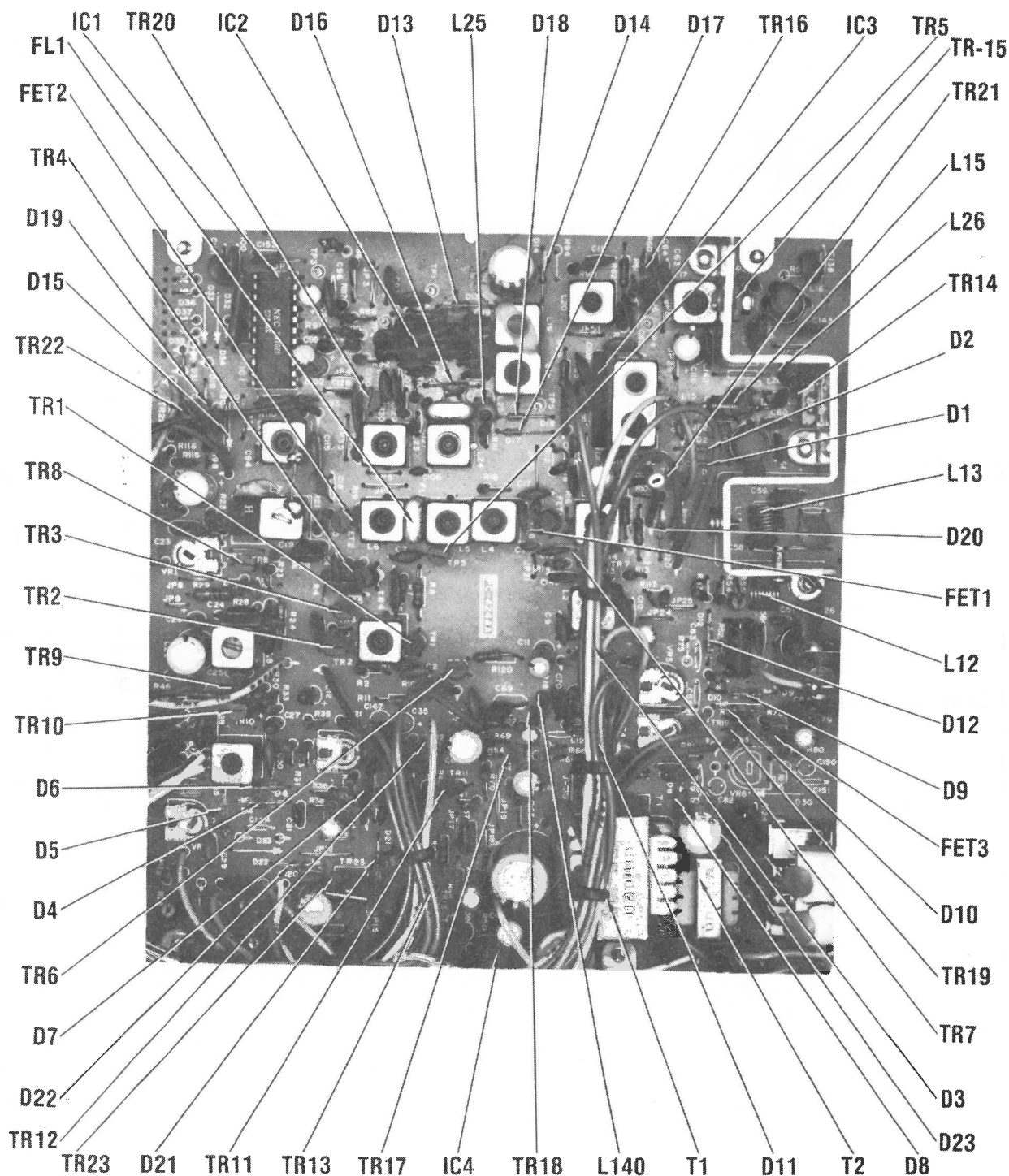


COBRA MODEL 29GTL

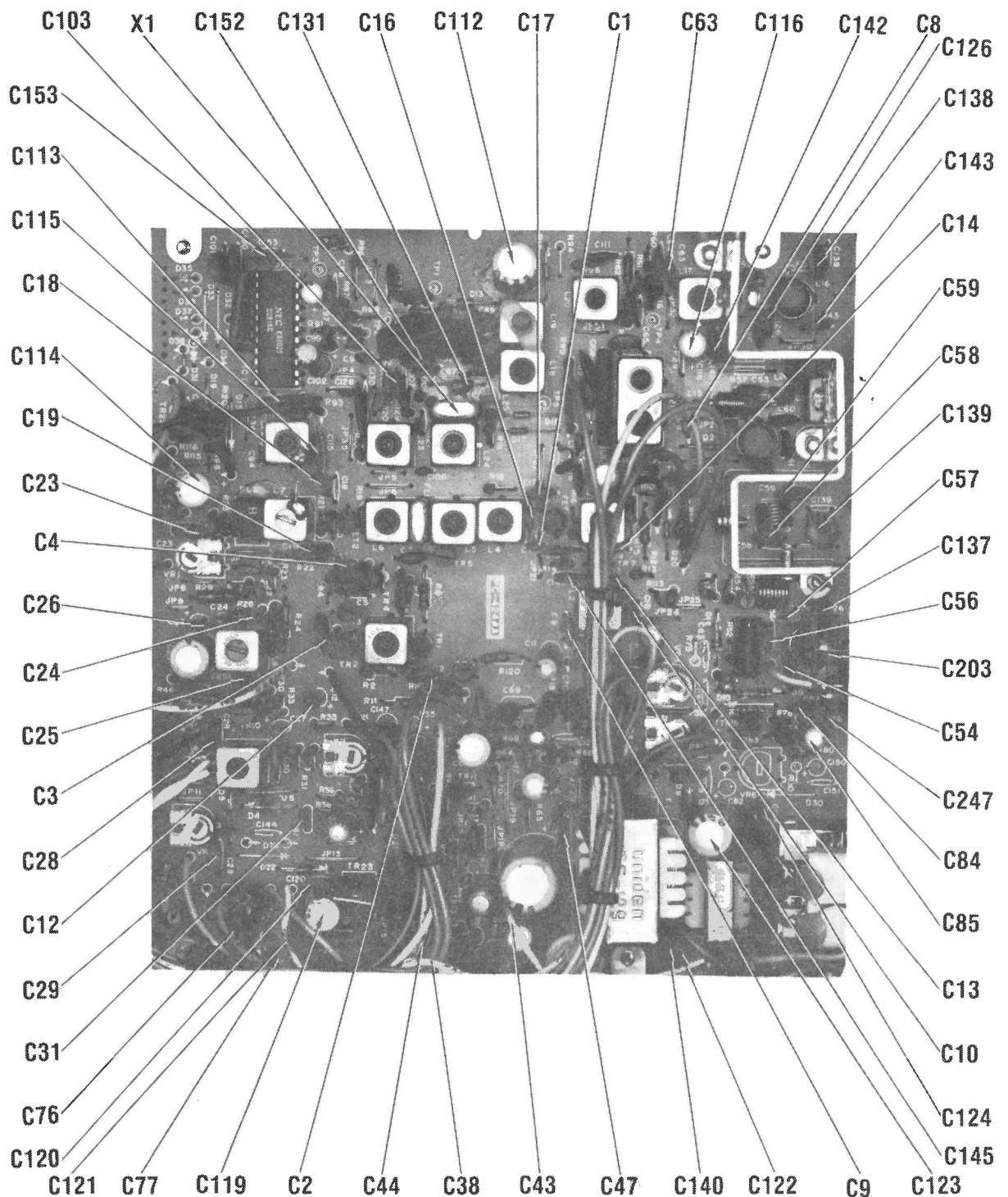
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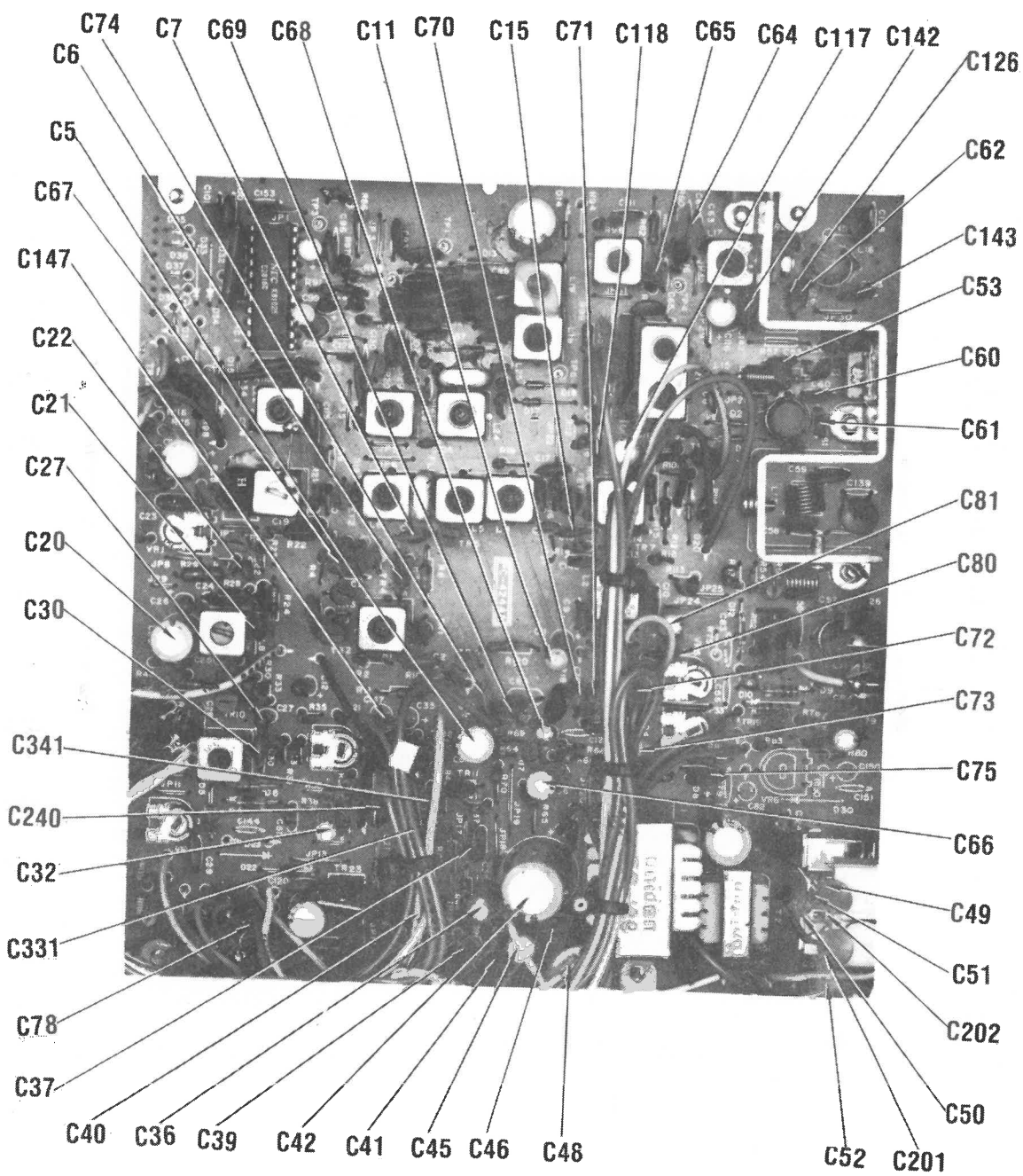
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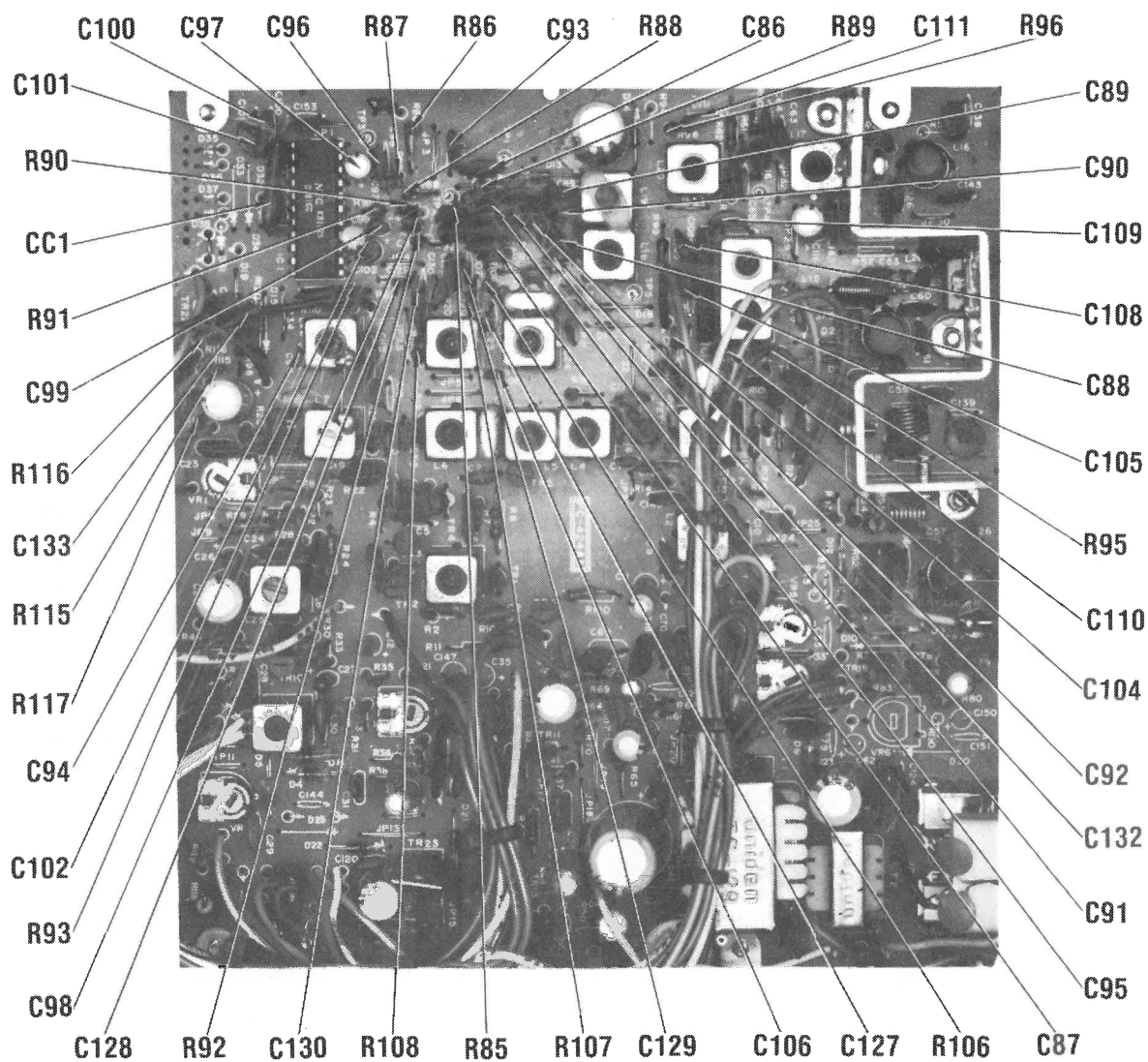
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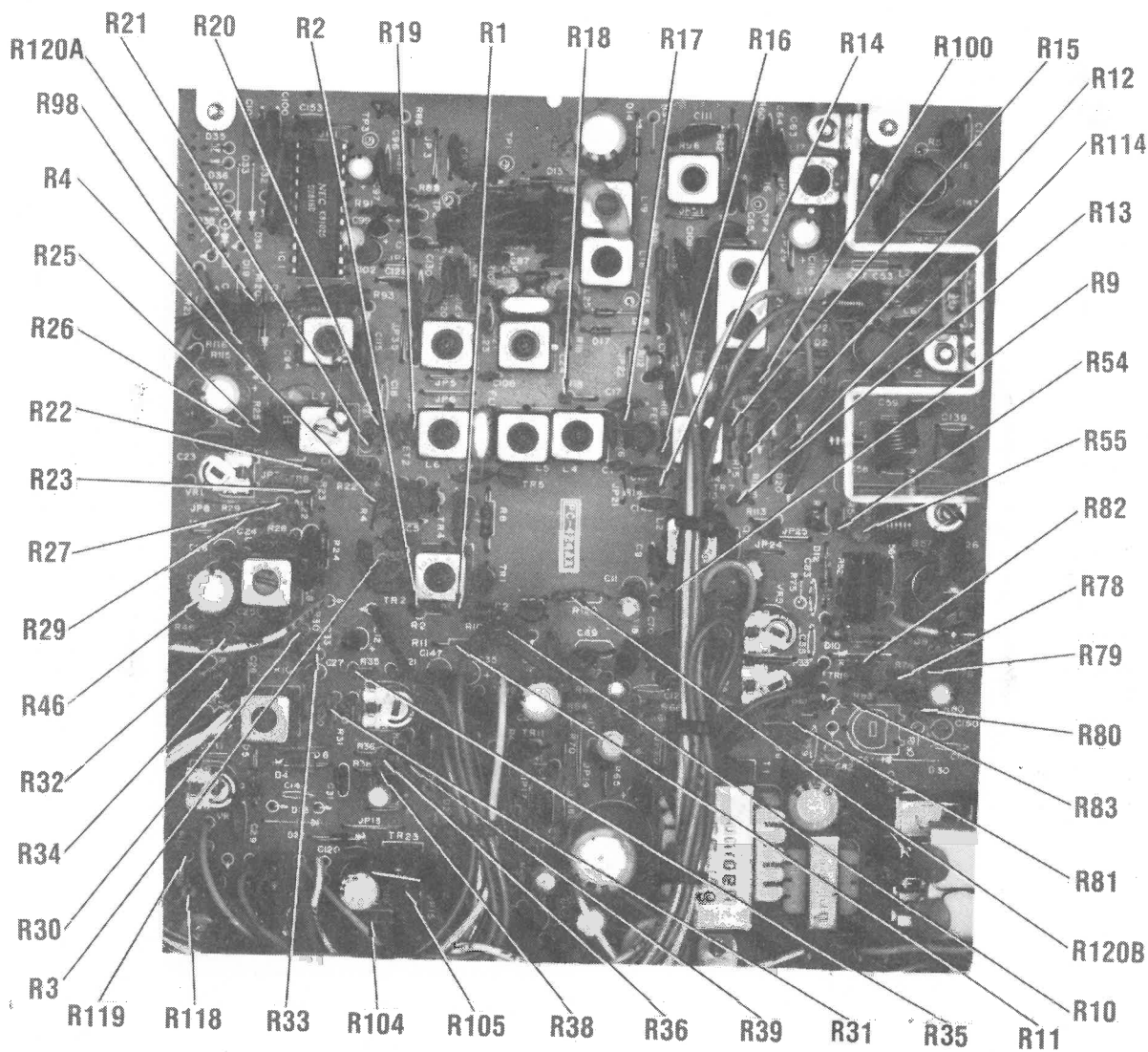
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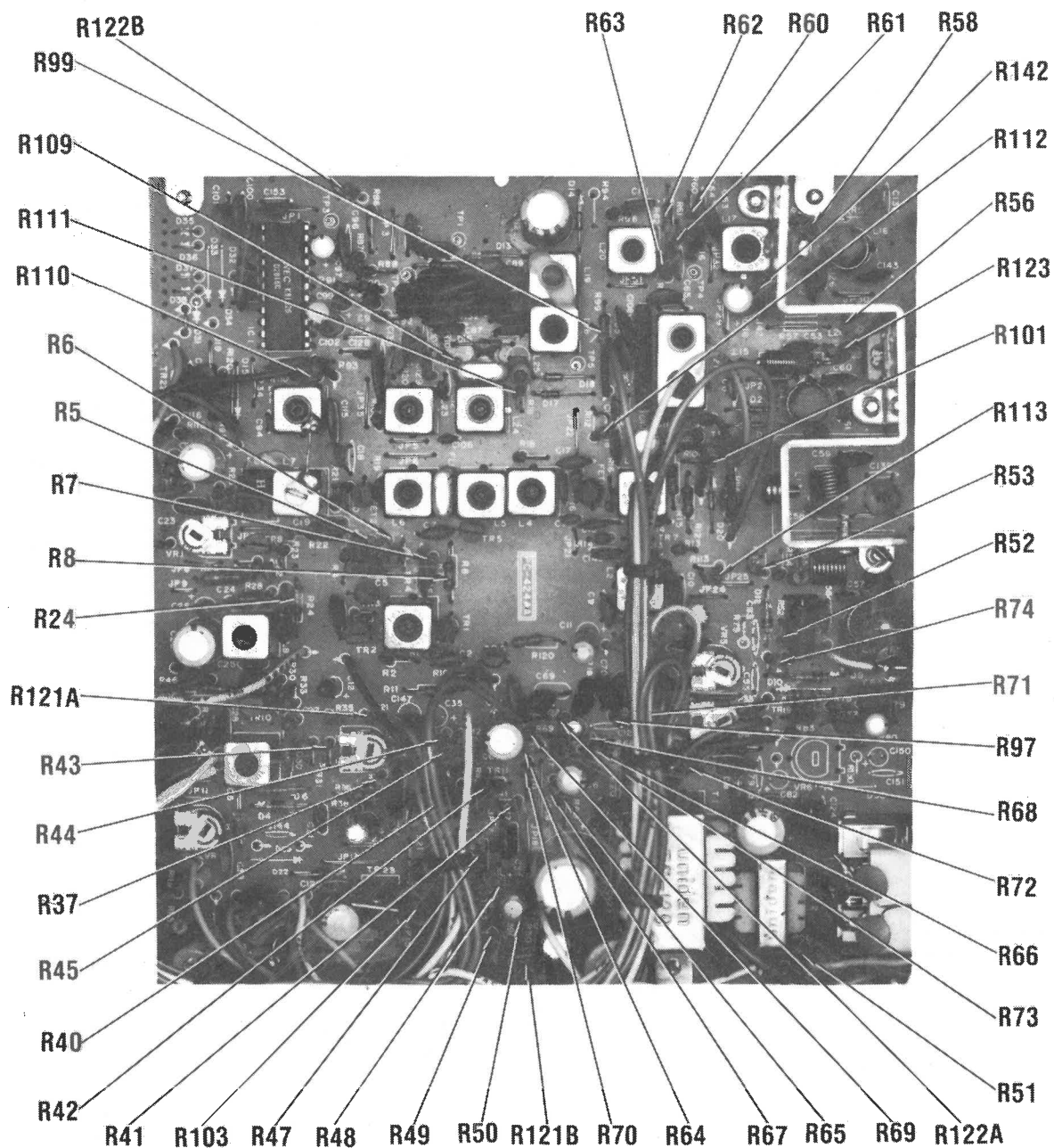
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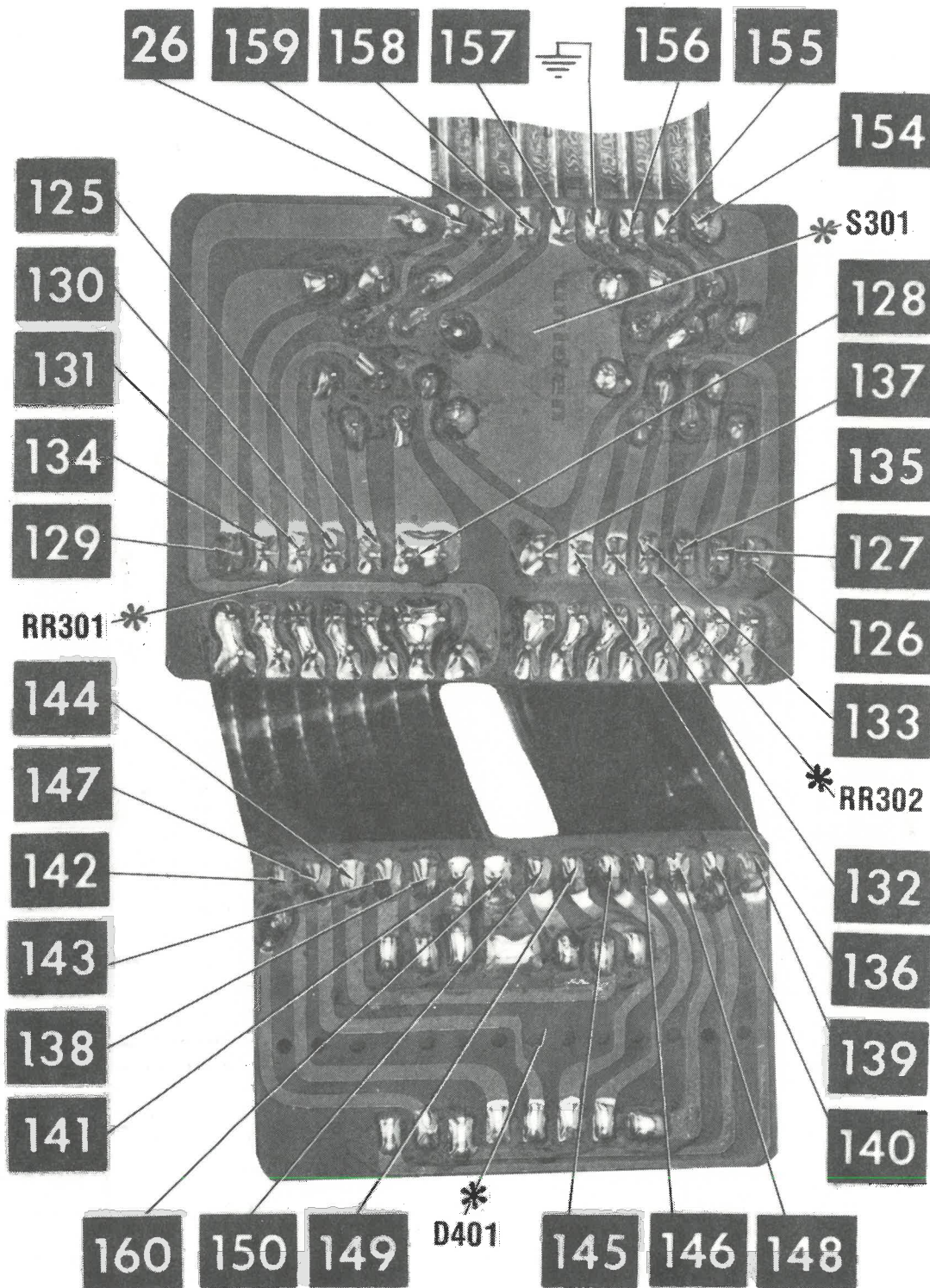
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MAIN BOARD

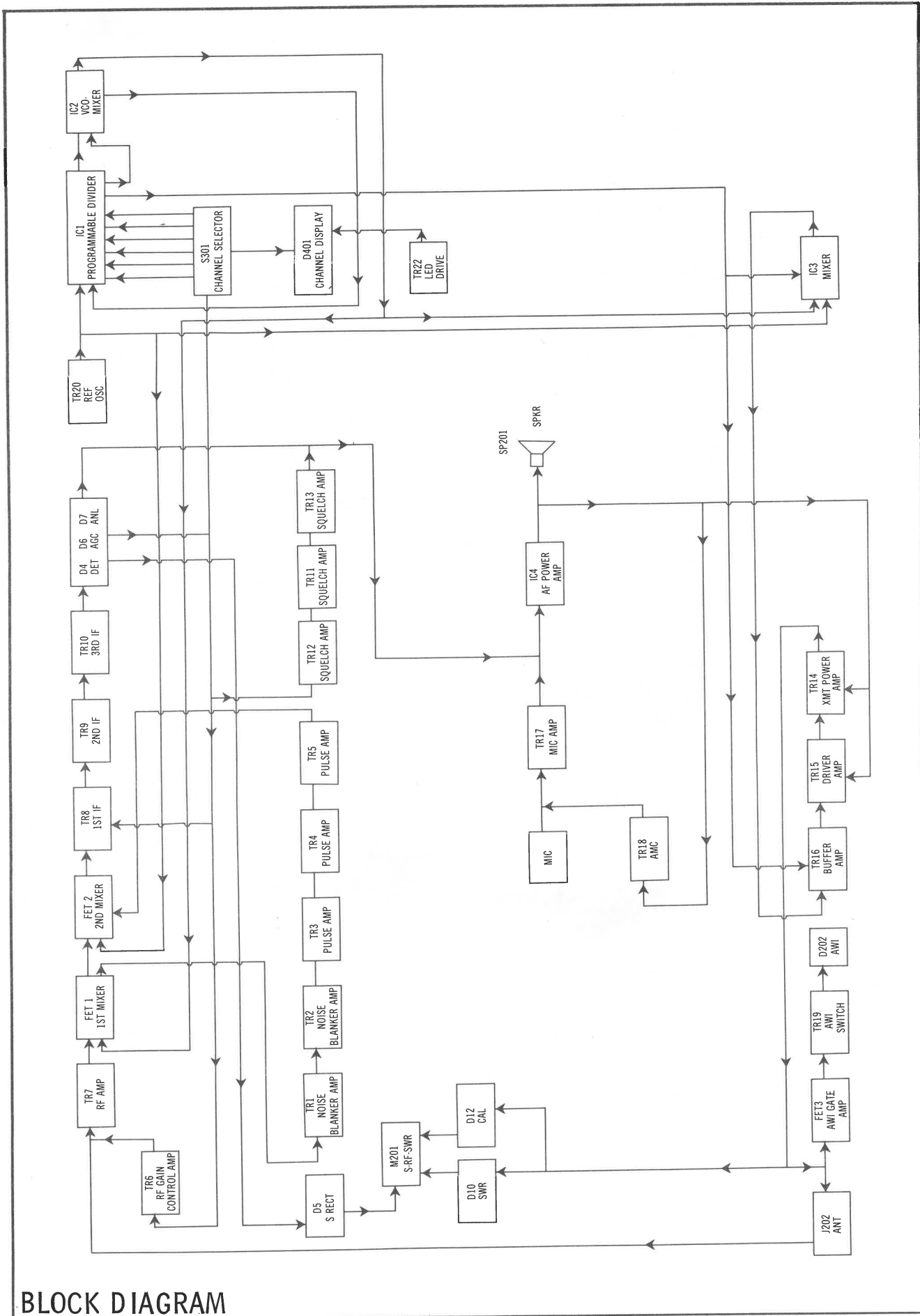


MAIN BOARD



* LOCATED ON TOP OF BOARD

CH. SELECTOR BOARD



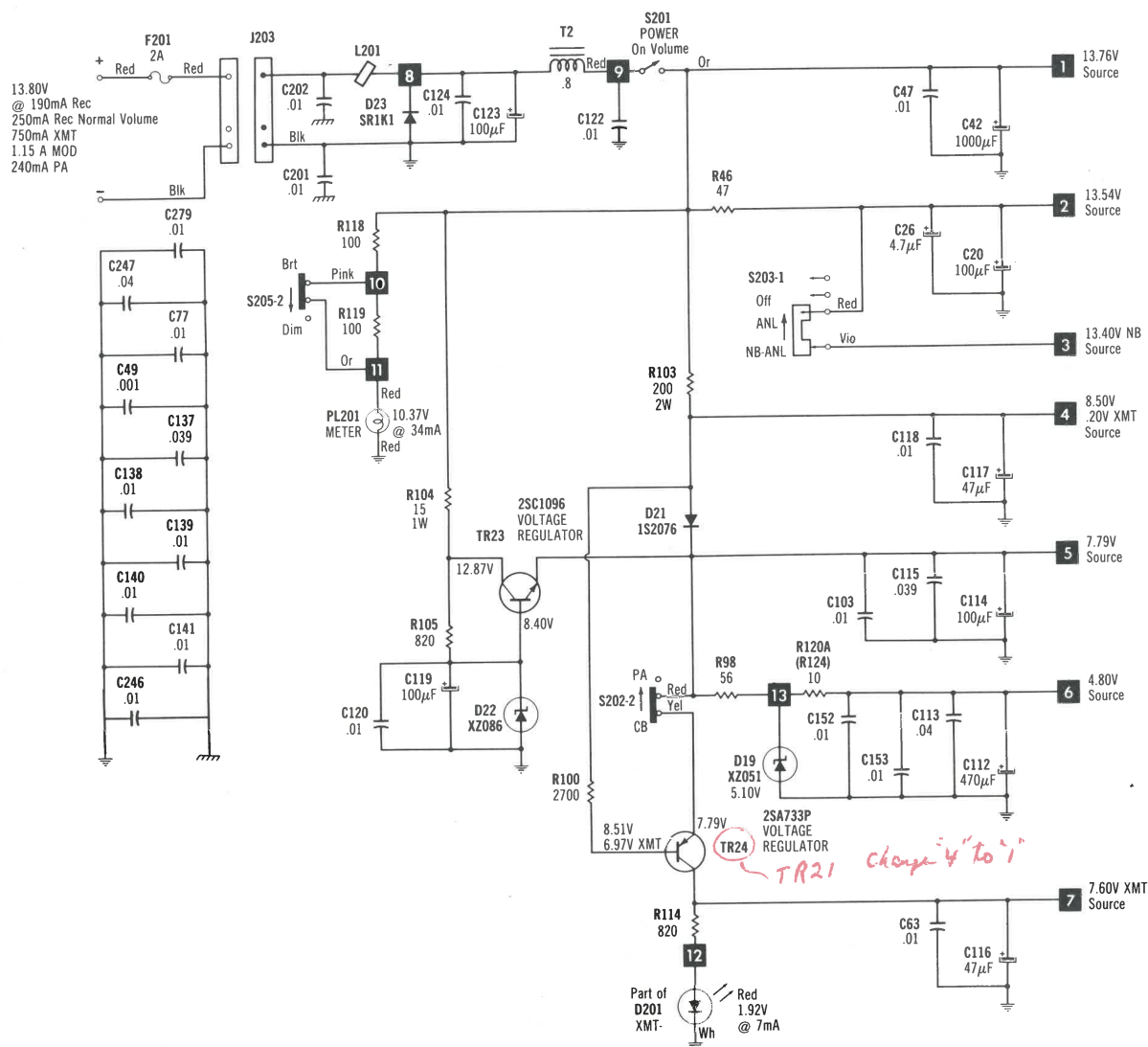
PARTS LIST AND DESCRIPTION

(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										ZENITH PART No.
			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.		
D1	1S2076 1S2473 WG713 1S1588 1N4448	151-067-9-001	GE-514 GE-514 GE-300 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG519 ECG6177 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148	WEP925 WEP925 WEP1062 WEP925 WEP925		
D2	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG519 ECG6177 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D3	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG519 ECG6177 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D4	1S34	150-016-9-001	1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430	
D5	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D6	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D7	1S2075K 1S2473K	151-061-9-001	GE-300 GE-514 GE-514	PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177	SK3100 SK3100 SK3100	RT-218 RT-218 RT-218	ECG177 ECG519 ECG519	1N4148 1N4148 1N4148	WEP1062 WEP925 WEP925		
D8	1S2076 SR1K1 SR1K1	151-067-9-001	GE-514 GE-504A GE-504A	PTC214 PTC201 PTC201	HEPRO602 HEPRO052 HEPRO052	REN 177 REN 116 REN 116	SK3100 SK3030 SK3030	RT-218 RT-218 RT-213	ECG519 ECG116 ECG116	1N4148 1N4004 1N4004	WEP925 WEP156 WEP156	212-76-02	
D9	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D10	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D11	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D12	1N60AM	150-014-9-001	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	1N60	WEP134	ZEN-430	
D13	1S2688EA	154-004-9-001	GE-90	HEPR2503	REN 614			RT-262	ECG614	1N60	WEP200	ZEN-453	
D14	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D15	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D16	1S2687D	153-008-9-001	GE-514	PTC214	HEPR2502	REN 612		RT-218	ECG612		WEP925	ZEN-452	
D17	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D18	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D19	XZ051	152-088-9-001	GEZD-5.1				SK3056	RT-235		1N4733A	WEP1103		
D20	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP925 WEP925 WEP925		
D21	1S2076 WG713 1S1588 1S2473 1N4448	151-067-9-001	GE-514 GE-300 GE-514 GE-514 GE-514	PTC214 PTC214 PTC214 PTC214 PTC214	HEPRO602 HEPRO602 HEPRO602 HEPRO602 HEPRO602	REN 177 REN 177 REN 177 REN 177 REN 177	SK3100 SK3100 SK3100 SK3100 SK3100	RT-218 RT-218 RT-218 RT-218 RT-218	ECG519 ECG177 ECG519 ECG519 ECG519	1N4148 1N4148 1N4148 1N4148 1N4148	WEP925 WEP1062 WEP1062 WEP1062 WEP1062		
D22	XZ086	151-089-9-001	GEZD-9.1	ZB9.1B		REN 139	SK3060	RT-240	ECG139A	1N4739A	WEP1109	103-272	
D23	SR1K1	151-040-9-003	GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02	
FET1	2SK19BL	182-037-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	1N4004	WEP156	ZEN-123	
FET2	2SK19	182-055-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP925	ZEN-123	
FET3	2SK104H	182-055-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP925	ZEN-123	
IC1	D2816C	307-145-9-001	GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312		WEP925	ZEN-123	
IC2	UPD2816C	307-133-9-004				REN 1192	SK3445		ECG1192				
IC3	TA7310P	307-133-9-004				REN 1192	SK3445		ECG1192				
IC4	TA7222P	307-143-9-003				REN 1192	SK3445		ECG1192				
TR1	2SC1675L	176-065-9-001	GE-213 GE-213 GE-61* GE-62 GE-20* GE-60* GE-213 GE-213 GE-61* GE-62 GE-20* GE-60* GE-212 GE-212 GE-61* GE-210*	PTC132* PTC132* PTC136* PTC136* PTC139* PTC132* PTC132* PTC132* PTC136* PTC136* PTC139* PTC132* PTC132* PTC121* PTC121* PTC139* PTC121*	HEPS0025* HEPS0025* HEPS0014* HEPS0015* HEPS0015* HEPS0016* HEPS0025* HEPS0025* HEPS0014* HEPS0015* HEPS0015* HEPS0016* HEPS0015* HEPS0015* HEPS0009* HEPS0015* HEPS0015*	REN 123A* REN 123A* REN 107 REN 199 REN 123A REN 229 REN 123A* REN 123A* REN 107 REN 199 REN 123A REN 229 REN 199 REN 199 REN 199 REN 123A*	SK3246 SK3246 SK3122 SK3245 SK3444 SK3018 SK3246 SK3246 SK3122 SK3245 SK3444 SK3018 SK3124 SK3124 SK3444 SK3122 SK3124 SK3245 SK3138 SK3138 SK3466 SK3114 SK3466 SK3114	RT-308 RT-308 RT-134 RT-304 RT-308 RT-308 RT-308 RT-308 RT-134 RT-304 RT-308 RT-308 RT-107A RT-107A RT-302 RT-187 RT-302 RT-304 RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG229* ECG229* ECG107 ECG199 ECG229* ECG229* ECG229* ECG229* ECG107 ECG199 ECG229* ECG229* ECG199 ECG199 ECG199 ECG289 ECG199 ECG199 ECG294 ECG294 ECG294 ECG159* ECG234 ECG159 ECG129*	2SC460 2SC460 2SC829 2SC930 2SC829 2SC930 2SC945 2SC945 2SC828 2SC458 2SC900 2SC1815 2SA733P 2SA733 2SA495 2SA564 2SA659 2SA844	WEP956* WEP956* WEP460 WEP66 WEP829 WEP956* WEP956* WEP956* WEP460 WEP66 WEP829 WEP956* WEP1945 WEP1945 WEP828 WEP458 WEP66 WEP916 WEP916 WEP495 WEP564 WEP62 WEP60*	ZEN-127 ZEN-127 121-722 121-29000 121-29000* ZEN-127 ZEN-127 121-722 121-29000 121-29000* ZEN-127 ZEN-127 121-29000 121-29000 ZEN-119 121-29000* ZEN-119 121-29000 121-933 ZEN-106 121-879	
TR2	2SC1675L 2SC1675 2SC460 2SC1815 2SC829 2SC930	176-065-9-001	GE-213 GE-213 GE-61* GE-62 GE-20* GE-60*	PTC132* PTC132* PTC136* PTC136* PTC139* PTC132*	HEPS0025* HEPS0025* HEPS0014* HEPS0015* HEPS0015* HEPS0016*	REN 123A* REN 123A* REN 107 REN 199 REN 123A REN 229	SK3246 SK3246 SK3122 SK3245 SK3444 SK3018	RT-308 RT-308 RT-134 RT-304 RT-308 RT-308	ECG229* ECG229* ECG107 ECG199 ECG229* ECG229*	2SC460 2SC460 2SC829 2SC930	WEP956* WEP956* WEP460 WEP66 WEP829 WEP956*	ZEN-127 ZEN-127 121-722 121-29000 121-29000* ZEN-127	
TR3	2SC945AQ 2SC945 2SC828 2SC458 2SC900 2SC1815	176-062-9-001	GE-212 GE-212 GE-61* GE-210* GE-62 GE-62	PTC121* PTC121* PTC139* PTC121* PTC139* PTC136*	HEPS0015* HEPS0015* HEPS0015* HEPS0009* HEPS0015* HEPS0015*	REN 199 REN 199 REN 199 REN 199 REN 199 REN 199	SK3124 SK3124 SK3444 SK3122 SK3124 SK3245	RT-107A RT-107A RT-302 RT-187 RT-302 RT-304	ECG199 ECG199 ECG199 ECG289 ECG199 ECG199	2SC829 2SC930 2SC945 2SC945 2SC828 2SC458 2SC900	WEP829 WEP956* WEP1945 WEP1945 WEP828 WEP458 WEP66	ZEN-127 ZEN-127 121-29000 121-29000 ZEN-119 121-29000* ZEN-119	
TR4	2SA733P 2SA733 2SA495 2SA564 2SA659 2SA844	177-020-9-001	GE-48 GE-48 GE-221* GE-65 GE-89 GE-244*	PTC127 PTC127 PTC103* PTC103* PTC103 PTC103*	HEPS0019* HEPS0019* HEPS0013* HEPS0019* HEPS0029 HEPS0019*	REN 294 REN 294 REN 159* REN 234 REN 159 REN 129*	SK3138 SK3138 SK3466 SK3114 SK3466 SK3114	RT-303 RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG294 ECG294 ECG159* ECG234 ECG159 ECG129*	2SA733 2SA733 2SA495 2SA564	WEP916 WEP916 WEP495 WEP564 WEP62 WEP60*	121-933 121-933 ZEN-106 121-879	

COBRA MODEL 29GTL



- ✖ 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

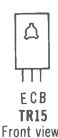
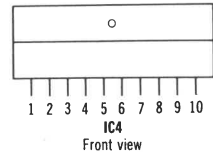
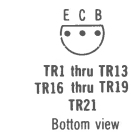
Measurements made in Channel 1 with switching as shown unless noted.
 Item numbers in rectangles appear in the alignment/adjustment instructions.
 Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow at control 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.

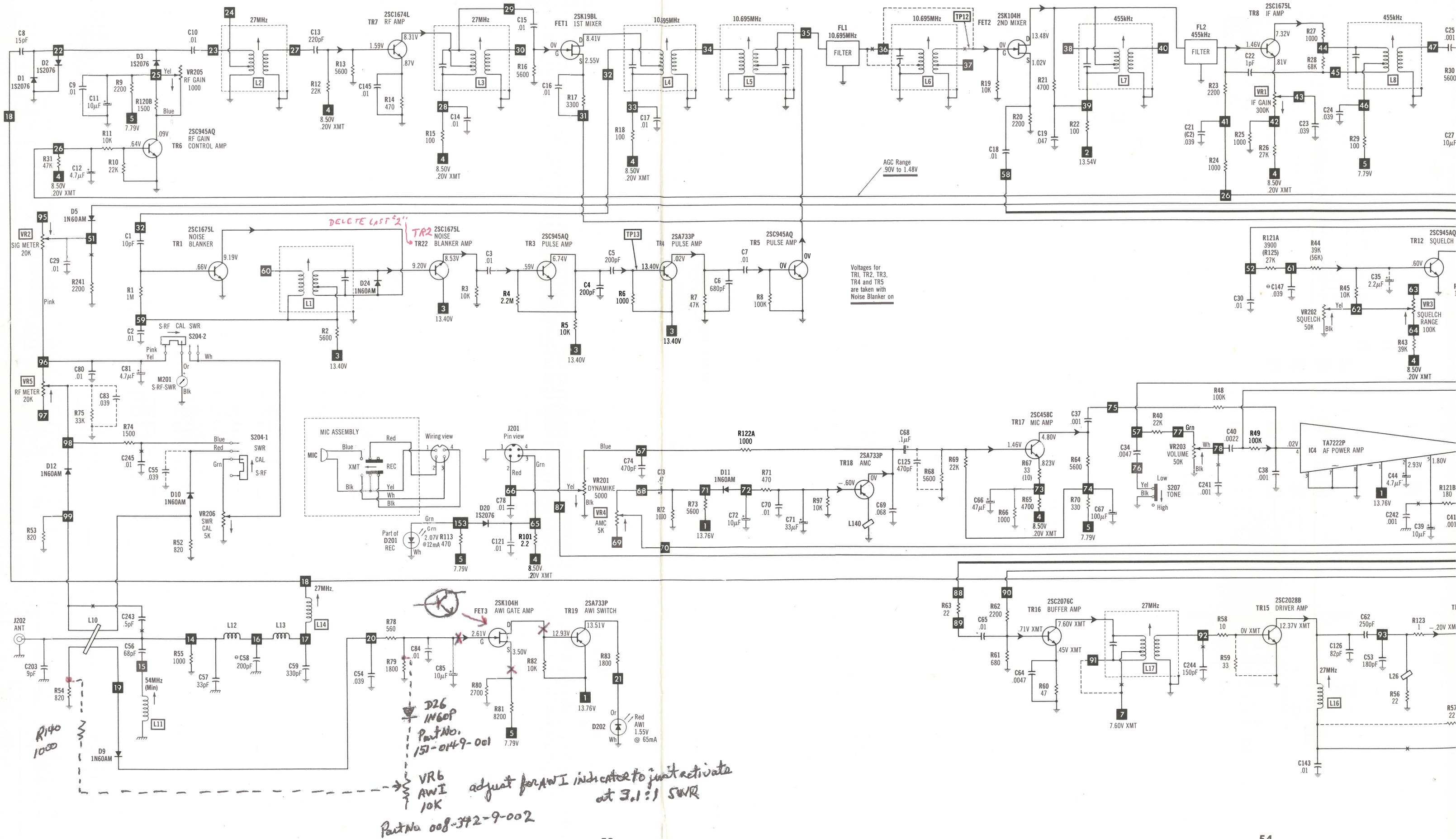
A PHOTOFAC STANDARD NOTATION SCHEMATIC

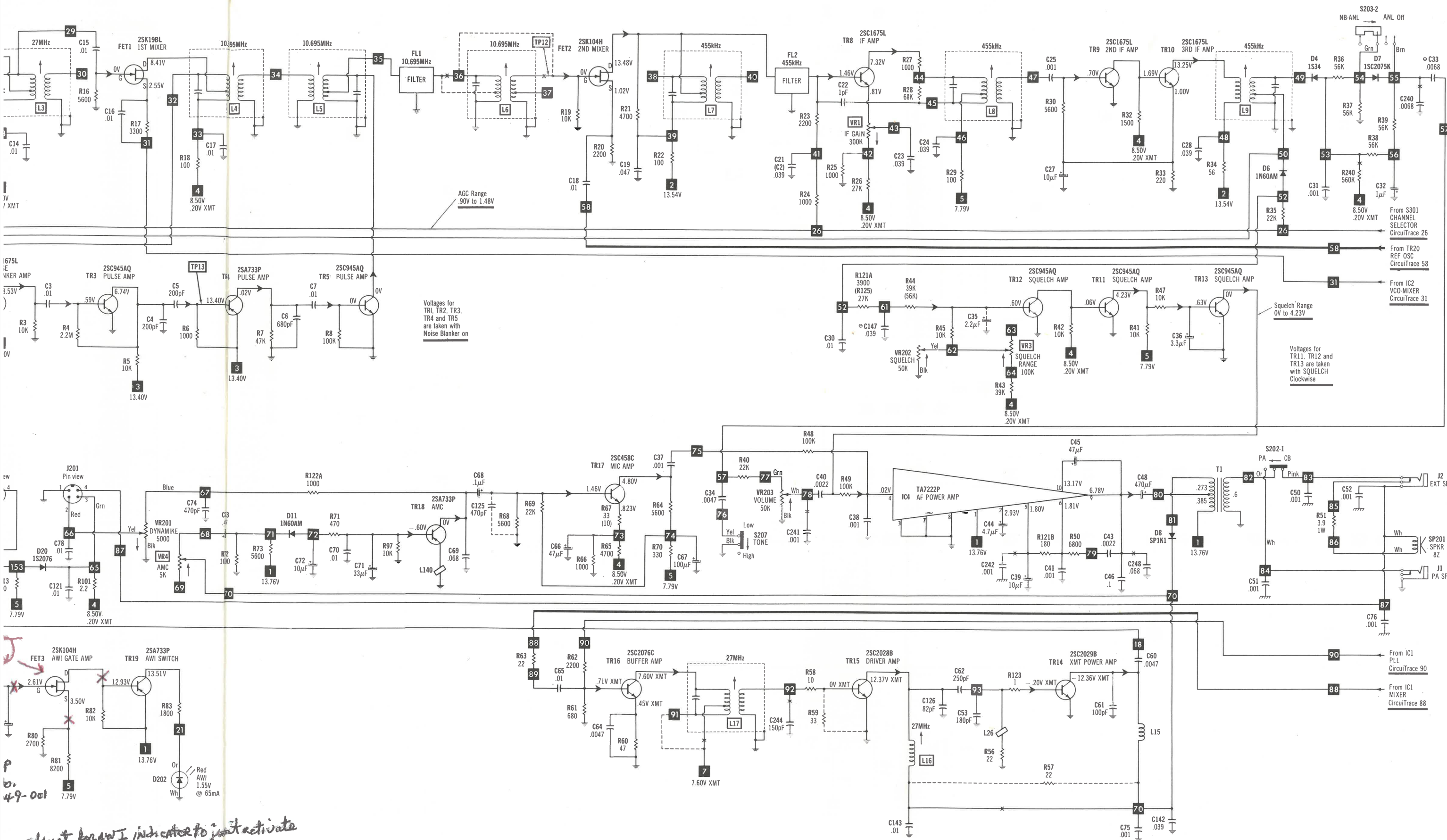
WITH **CIRCUITRACE®**

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Terminal Guides

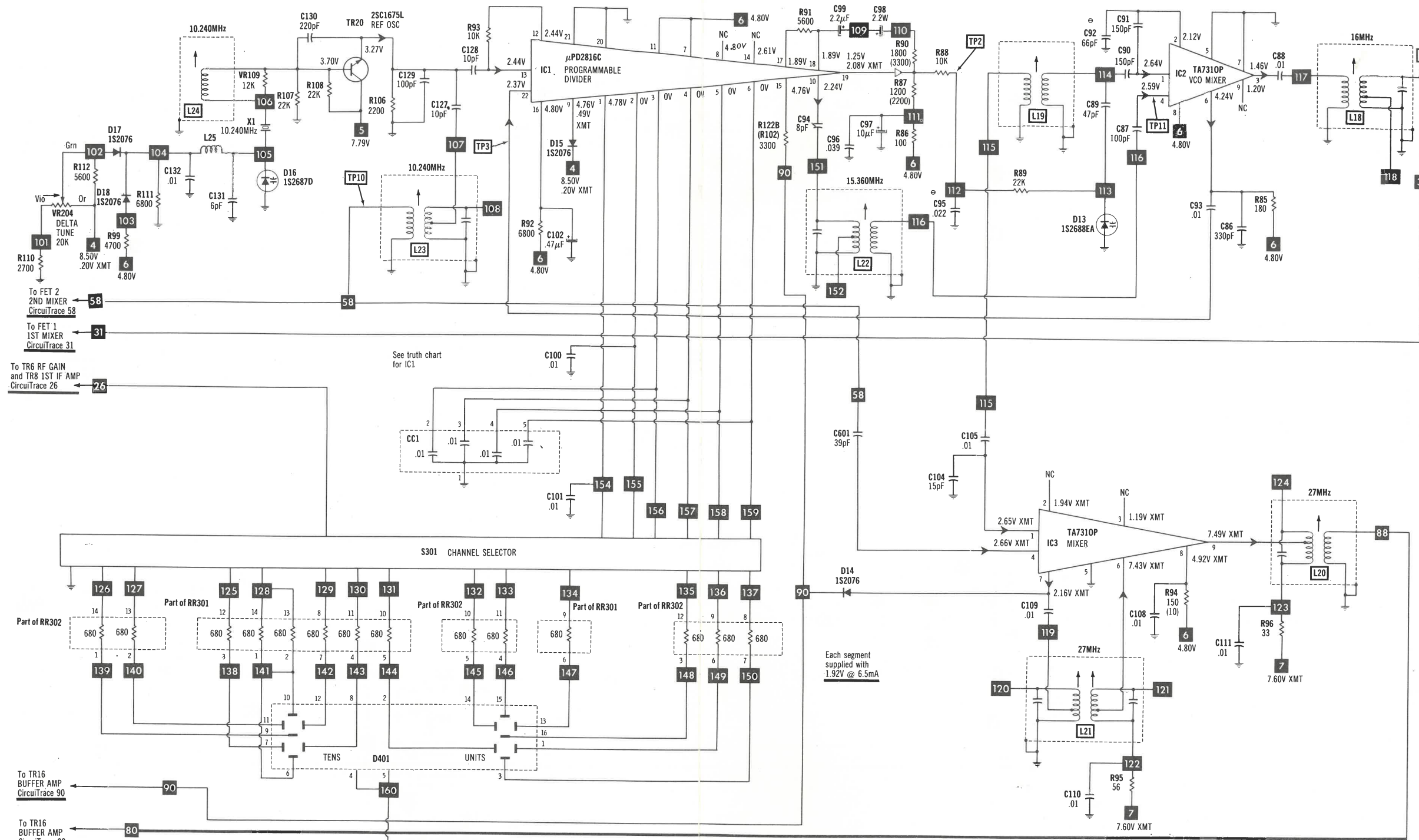






49-002

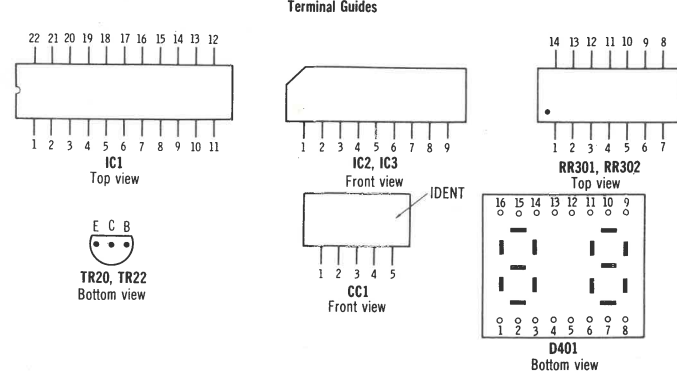
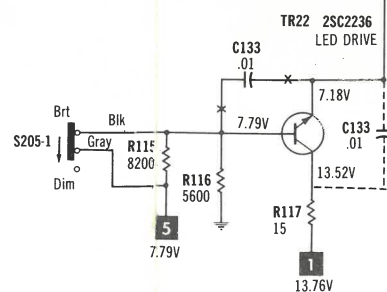
COBRA MODEL 29GTL



COBRA MODEL 29GTL

* Circuitry not used in some versions
 --- Circuitry used in some versions
 e See parts list
 * Nominal value
 G Ground
 Chassis
 Common tie point
 Signal path
 Voltage path
 A PHOTOFACT STANDARD NOTATION SCHEMATIC
 WITH **CircuitTrace**
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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.

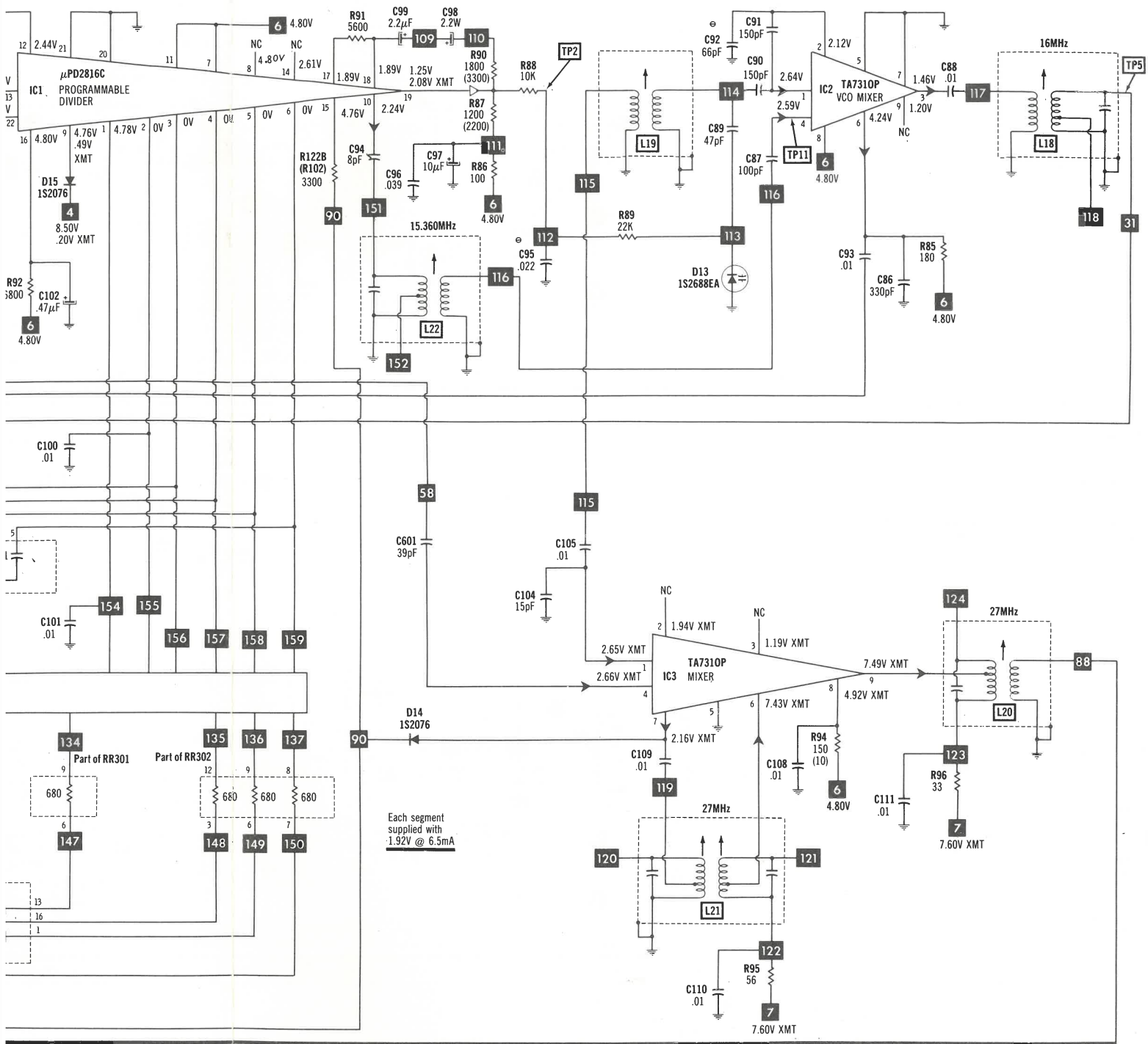


PARTS LIST AND DI

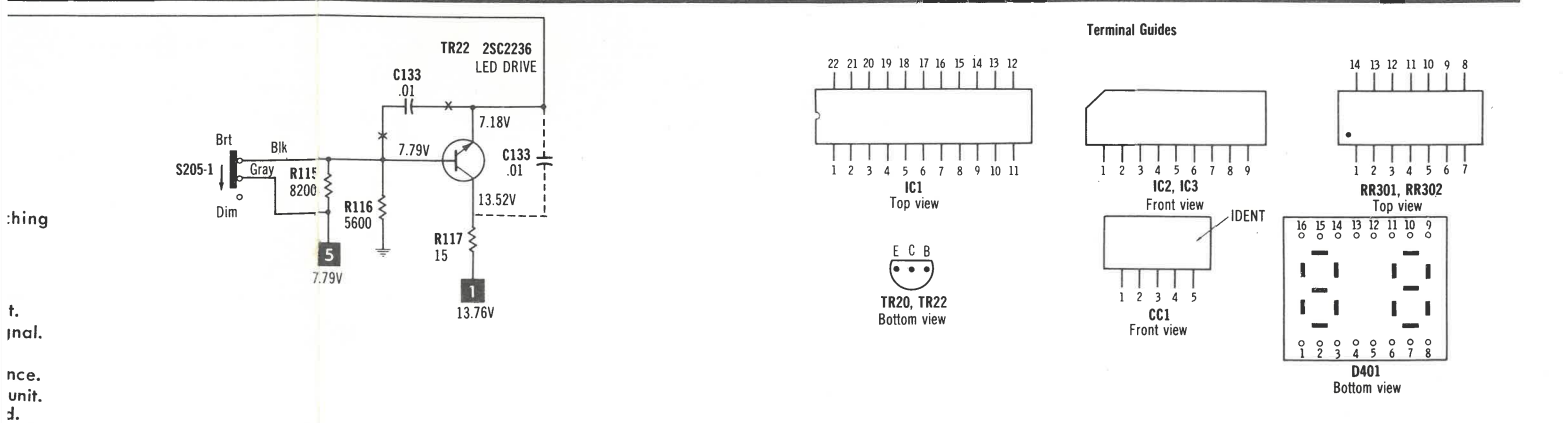
(When ordering parts, state Model)

SEMICONDUCTORS (Select

ITEM No.	TYPE No.	MFGR. PART No.	GEN. ELEC. PART
TR5	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1675		GE-21
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR6	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC380		GE-61
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR7	2SC1674L	176-081-9-002	GE-61
	2SC1674		GE-61
	2SC668		GE-21
	2SC787		GE-21
	2SC1906		GE-86
TR8	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC460		GE-61
	2SC930		GE-61
	2SC380		GE-61
	2SC1684		GE-21
TR9	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-21
	2SC930		GE-61
	2SC460		GE-61
TR10	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-21
	2SC930		GE-61
	2SC460		GE-61
TR11	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1815		GE-62
	2SC1359		GE-21
	2SC536		GE-21
	2SC458		GE-21
TR12	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC1815		GE-62
	2SC1359		GE-21
	2SC536		GE-21
	2SC458		GE-21
TR13	2SC945AQ	176-062-9-001	GE-21
	2SC945		GE-21
	2SC545		GE-11
	2SC828		GE-61
	2SC536		GE-21
	2SC458		GE-21
TR14	2SC2029	172-038-9-002	GE-33
	2SC2029B		GE-33
	2SC2092		GE-33
	2SC2075		GE-33
	2SC1909		GE-21
TR15	2SC2028	172-038-9-001	GE-27
	2SC2028B		GE-27
	2SC1760		GE-27
	2SC1957		GE-27
	2SC495T		GE-27
	2SC1846		GE-33
	2SC1974		GE-33
	2SC2091		GE-27
TR16	2SC2076C	176-060-9-004	GE-21
	2SC2076		GE-21
	2SC735		GE-21
	2SC1364		GE-21
	2SC933		GE-21
TR17	2SC458C	176-048-9-002	GE-21
	2SC458		GE-21
	2SC945		GE-21
	2SC828		GE-61
	2SC536		GE-21
TR18	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
	2SA659		GE-89
	2SA844		GE-24
TR19	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
	2SA659		GE-89
	2SA844		GE-24
TR20	2SC1675L	176-065-9-001	GE-21
	2SC1675		GE-21
	2SC380		GE-61
	2SC1684		GE-62
	2SC903		GE-22
	2SC460		GE-61
TR21	2SA733P	177-020-9-001	GE-48
	2SA733		GE-48
	2SA495		GE-22
	2SA564		GE-65
TR22	2SC2236-0	176-089-9-005	GE-27
	2SC2236		GE-27
	2SC2028	172-038-9-001	GE-27
	2SC2091		GE-27
	2SC1957		GE-27



COBRA MODEL 29GTL



PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	TYPE No.	MFR. 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.
TR5	2SC945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC945	WEP1945	121-29000
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	2SC828	WEP828	121-119
	2SC536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	2SC536	WEP536	121-29000*
TR6	2SC458	176-062-9-001	GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	2SC458	WEP458	121-29000*
	2SC945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	2SC828	WEP828	121-119
TR7	2SC536	176-081-9-002	GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	2SC536	WEP536	121-29000
	2SC458		GE-210*	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	2SC458	WEP458	121-29000*
	2SC1674L		GE-61	PTC132*	HEPS0010*	REN 107	SK3246	RT-308	ECG229*	2SC1674	WEP1674	121-925
	2SC1674		GE-211*	PTC139*	HEPS0024*	REN 229	SK3018	RT-187	ECG229*	2SC1674	WEP1674	121-883
	2SC787		GE-214	PTC115*	HEPS0020	REN 161	SK3039	RT-113*	ECG161	2SC787	WEP787	121-883
TR8	2SC1906	176-065-9-001	GE-86	PTC132*	HEPS0016*	REN 108*	SK3039*	RT-113*	ECG108*	2SC1906	WEP1906	121-104
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
TR9	2SC380	176-065-9-001	GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
TR10	2SC1684	176-065-9-001	GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
TR11	2SC380	176-062-9-001	GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
TR12	2SC1675	176-062-9-001	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
TR13	2SC1675L	176-062-9-001	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
TR14	2SC460	176-062-9-001	GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
TR15	2SC930	176-062-9-001	GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
TR16	2SC1684	176-062-9-001	GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
TR17	2SC380	176-062-9-001	GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
TR18	2SC1675	176-062-9-001	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
TR19	2SC1675L	177-020-9-001	GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
	2SC930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
TR20	2SC460	177-020-9-001	GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-29000
	2SC1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675	WEP1675	121-29000
	2SC380		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	2SC380	WEP380	121-29000
	2SC1684		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	2SC1684	WEP1684	121-972
TR21	2SC930	177-020-9-001	GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	2SC930	WEP930	121-29000
	2SC460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	2SC460	WEP460	121-722
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3246	RT-308	ECG229*	2SC1675L	WEP1675L	121-2

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	TYPE No.	MFR. 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.
TR23	2SC1846	172-024-9-001	GE-336	PTC904	HEPS3041	REN 295	SK3253	RT-146 RT-310 RT-166 RT-166	ECG295	2SC496	WEP913	800-767
	2SC1974		GE-337	PTC186		REN 235	SK3197		ECG235	2SC1306	WEP785	
	2SC1760		GE-276	PTC180		REN 306	SK3197		ECG306		WEP771	
	2SC1096L		GE-28	PTC110		REN 186	SK3197		ECG186A	2SC1096	WEP1096	
	2SC1096-3ZL		GE-28	PTC110		REN 186	SK3197		ECG186A	2SC1096	WEP1096	
	2SC2236		GE-270	PTC180	HEPS3044	REN 295	SK3253	RT-146 RT-310 RT-303 RT-303 RT-303 RT-103A RT-126A*	ECG295	2SC1018*	WEP913	200-767
	2SC2028		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	2SC1018*	WEP913	
	2SC2091		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295		WEP913	200-767
	2SC1957		GE-270	PTC180		REN 295	SK3197		ECG295		WEP913	
	2SC1846		GE-336	PTC904		REN 295	SK3253		ECG295		WEP913	800-767
TR24	2SC1974	177-020-9-001	GE-337	PTC186		REN 235	SK3197		ECG235	2SC496	WEP913	
	2SC1760		GE-276	PTC180		REN 306	SK3197		ECG235	2SC1306	WEP785	
	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138		ECG306	2SA733	WEP771	
	2SA733		GE-48	PTC127	HEPS0019*	REN 294	SK3138		ECG294	2SA733	WEP916	
	2SA495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3466		ECG159*	2SA495	WEP495	
	SA564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114		ECG234	2SA564	WEP564	
	2SA659		GE-89	PTC103	HEPS0029	REN 159	SK3466		ECG159		WEP62	
	2SA844		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114		ECG129*		WEP60*	

* Lead configuration may vary from original.

delete
TR24
(ALL)
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CLASSIC

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFRG. PART No.	CORNELL- DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
					Q-LINE	GENERAL LINE	
C11	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222	
C12	4.7 16V	027-026-9-004	PC100-16	TDC475M010EL	QDT1-48	SD10-4R79	
C20	100 16V	022-157-9-009		VTT100F16	QV1-95	EV-1230	
C26	4.7 16V	027-026-9-004		TDC475M010EL	QDT1-48	SD10-4R79	
C27	10 6.3V	027-036-9-001		TDC106M025FL	QDT1-64	SD25-109	
C32	1 50V	022-157-9-002		PC1-50	VTT1A50	QV1-11	EV-1615
C35	2.2 16V	022-173-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517	
C36	33 6.3V	022-173-9-003	PC30-25	VTT33B10	QV1-61	EV-1125	
C39	10 10V	027-025-9-001	PC1000-16	TDC106M025FL	QDT1-64	SD25-109	
C42	1000 16V	022-158-9-004		VTT100L16	QV1-183	EV-1260	
C44	4.7 25V	022-157-9-003		VTT4R7B50	QV1-27	EV-1319	
C45	47 10V	022-160-9-002		PC50-16	VTT47D16	QV1-73	EV-1226
C48	470 16V	022-076-9-008		PC500-16	VTT470K16	QV1-151	EV-1250
C66	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226	
C67	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130	
C68	.1 16V		PC30-25	TDC104M050EL	QDT1-2	SD50-R109	
C71	33 16V	022-157-9-006		VTT33D25	QV1-63	EV-1325	
C72	10 16V	022-157-9-004		TDC106M025FL	QDT1-64	SD25-109	
C73	.47 50V	022-157-9-001		PC1-50	VTT47A63	QV1-3	EV-1610
C81	4.7 16V	022-165-9-001		PC5-50	VTT4R7B50	QV1-27	EV-1319
C85	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222	
C97	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222	
C98	2.2 16V	027-033-9-001	PC1-50	TDC225M035FL		SD35-2R29	
C99	2.2 16V	027-033-9-001		TDC225M035FL		SD35-2R29	
C102	.47 50V	022-157-9-001		VTT47A63	QV1-3	EV-1610	
C112	470 6.3V	022-158-9-008	PC500-16	VTT470K16	QV1-149	EV-1150	
C114	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130	
C116	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226	
C117	47 10V	022-160-9-002	PC50-16	VTT47D16	QV1-73	EV-1226	
C119	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130	
C123	100 25V	022-173-9-001	PC100-25	VTT100G25	QV1-97	EV-1330	
C147	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222	

COBRA MODEL 29GTL

CAPACITORS

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
C1	10 50V	020-207-9-006	DTZ-10	NP010	CNO410		10TCC-Q10
C2	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C3	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C4	200 50V		DD-201	GP200	GP320		10TS-T20
C5	200 50V		DD-201	GP200	GP320		10TS-T20
C6	680 50V		DD-681	GP680	GP368		10TS-T68
C7	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C8	15 N220 50V				*		10TCR-Q15
C9	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C10	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C13	220 50V		DD-221		GP322		10TS-T22
C14	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C15	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C16	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C17	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C18	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C19	.047 50V			DPMS2S47	EWFI1A147	QF1-171	1PB-S47
C21	.039 50V			DPMS6S39	PVC6139		6PS-S39
C22	1 50V				CNO510		10TCC-V10
C23	.039 25V			DPMS6S39	PVC6139		6PS-S39
C24	.039 25V			DPMS6S39	PVC6139		6PS-S39
C25	.001 50V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C28	.039 25V			DPMS6S39	PVC6139		6PS-S39
C29	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C30	.01 50V			MGP01	TA110	QC2-141	TG-S10
C31	.001 25V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C33	.0068 50V			WMF1D68	EWFI1A268	QF1-73	1PB-D68
C34	.0047 25V			WMF1D47	EWFI1A247	QF1-57	1PB-D47
C37	.001 25V			DPMS6D1	EWFI1A210	QF1-1	1PB-D10
C38	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10

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
C40	.0022 50V	020-196-9-001	DD-102G	DPMS6D22	EW6222	QC2-81	6PS-D22
C41	.001 50V			GP1000	GP210		5GA-D10
C43	.0022 25V			DPMS6D22	EW6222		6PS-D22
C46	.1 25V		UK25-104		MAG2501		HY-750
C47	.1 50V		UK25-104		MAG2501	QC2-81	HY-750
C49	.001 50V		DD-102G	GP1000	GP210		5GA-D10
C50	.001 50V		DD-102G	GP1000	GP210		5GA-D10
C51	.001 50V		DD-102G	GP1000	GP210		5GA-D10
C52	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C53	180 50V		DD-181		GP318		10TS-T18
C54	.039 25V				GP140		5GA-S40
C55	.039 25V				GP140		5GA-S40
C56	68 N220 50V				*	QC2-141	10TCR-Q68
C57	33 50V		DTZ-33	NP033	CN0433		10TCC-Q33
C58	220 50V		DD-201	GP200	GP320		10TS-T20
	180 50V		DD-181		GP318		10TS-T18
C59	330 50V		DD-331	GP330	GP333	QC2-141	10TS-T33
C60	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C61	100 50V		DD-101	GP100	GP310		10TS-T10
C62	250 50V		DD-271	GP270	GP327		10TS-T27
C63	.01 50V	020-207-9-006	DC-103	MGP01	TA110	QC2-141	TG-S10
C64	.0047 50V		DD-472	GP4700	GP247		5GA-D47
C65	.01 50V		DC-103	MGP01	TA110		TG-S10
C69	.068 50V			WMF1S68	EW61A168		1PB-S68
C70	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C74	470 50V		DD-471	GP470	GP347		10TS-T47
C75	.01 50V		DC-103	MGP01	TA110		TG-S10
C76	.001 50V		DD-102G	GP1000	GP210		5GA-D10
C77	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C78	.01 50V		DC-103	MGP01	TA110		TG-S10
C80	.01 50V		DC-103	MGP01	TA110		TG-S10
C83	.039 25V				GP140		5GA-S40
C84	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C86	330 50V		DD-331	GP330	GP333		10TS-T33
C87	100 50V		DD-101	GP100	GP310		10TS-T10
C88	.01 50V		DC-103	MGP01	TA110		TG-S10
C89	47 N750 50V	020-196-9-001	DTN-47	N47	CN7447	QC2-141	10TCU-Q47
C90	15 N220 50V				*		10TCR-Q15
C91	150 NPO 50V		DTZ-150		CN0315		10TCC-T15
C92	68 N220 50V				*		10TCR-Q68
C93	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C94	8 50V		DTZ-6R8	NP06P8	CN0568		10TCC-V68
C95	.022 50V				GP120		5GA-S20
	.01 50V		DC-103	MGP01	TA110		TG-S10
C96	.039 25V				GP140	QC2-141	5GA-S40
C100	.01 50V		DC-103	MGP01	TA110		TG-S10
C101	.01 50V		DC-103	MGP01	TA110		TG-S10
C103	.01 50V		DC-103	MGP01	TA110		TG-S10
C104	15 50V		DTZ-15	NP015	CN0415	QC2-141	10TCC-Q15
C105	.01 50V		DC-103	MGP01	TA110		TG-S10
C106	39 50V				CN0439		10TCC-Q39
C108	.01 50V		DC-103	MGP01	TA110		TG-S10
C109	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C110	.01 50V		DC-103	MGP01	TA110		TG-S10
C111	.01 50V		DC-103	MGP01	TA110		TG-S10
C113	.039 25V				GP140		5GA-S40
C115	.039 25V				GP140	QC2-141	5GA-S40
C118	.01 50V		DC-103	MGP01	TA110		TG-S10
C120	.01 50V		DC-103	MGP01	TA110		TG-S10
C121	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C122	.01 50V		DC-103	MGP01	TA110		TG-S10
C124	.01 50V		DC-103	MGP01	TA110		TG-S10
C125	470 50V		DD-471	GP470	GP347		10TS-T47
C126	82 50V	020-204-9-010	DD-820		GP482	QC2-141	10TS-Q82
C127	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C128	10 NPO 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C129	100 N220 50V				*		10TCR-T10
C130	220 N220 50V	020-207-9-009			*	QC2-141	10TCR-T22
C131	68 N220 50V				*		10TCR-Q68
C132	.01 50V		DC-103	MGP01	TA110		TG-S10
C133	.01 50V		DC-103	MGP01	TA110		TG-S10
C137	.039 25V				GP140	QC2-141	5GA-S40
C138	.01 50V		DC-103	MGP01	TA110		TG-S10
C139	.01 50V		DC-103	MGP01	TA110		TG-S10
C140	.01 50V		DC-103	MGP01	TA110		TG-S10
C141	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C142	.039 50V				GP140		5GA-S40
C143	.01 50V		DC-103	MGP01	TA110		TG-S10
C145	.01 50V		DC-103	MGP01	TA110		TG-S10
C147	.039 50V			DPMS6S39	PVC6139	QC2-141	6PS-S39
C152	.01 50V		DC-103	MGP01	TA110		TG-S10
C153	.01 50V		DC-103	MGP01	TA110		TG-S10
C201	.01 50V		DC-103	MGP01	TA110		TG-S10
C202	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
C203	9 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C240	.0068 50V			WMF1D68	EW61A268		1PB-D68
C241	.001 50V		DD-102G	GP1000	GP210	QC2-81	5GA-D10
C242	.001 50V		DD-102G	GP1000	GP210		5GA-D10
C243	.5 50V						
C244	150 50V		DD-151		GP315		10TS-T15
C245	.01 50V	527-027-9-002(1)	DC-103	MGP01	TA110	QC2-141	TG-S10
C246	.01 50V		DC-103	MGP01	TA110		TG-S10
C247	.04 50V				GP140		5GA-S40
C248	.068 50V			WMF1S68	EW61A168		1PB-S68
C249	.01 50V		DC-103	MGP01	TA110	QC2-141	TG-S10
CCT							

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

(1) Consists of four .01 capacitors.

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	RESISTANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR1	IF Gain	300	008-345-9-001			
VR2	Signal Meter	20K	008-316-9-003			
VR3	Squelch Range	100K	008-316-9-001			U260R253B
VR4	AMC	5000	008-316-9-004			U260R104B
VR5	RF Meter	20K	008-316-9-003			U260R502B
VR201	Dynamike	5000	008-345-9-002			U260R253B
VR202	Squelch	50K	008-345-9-006			
VR203	Volume/Switch	50K	008-345-9-005			
VR204	Delta Tune	20K	008-345-9-003			
VR205	RF Gain	1000	008-331-9-003			
VR206	SWR/CAL	5000	008-345-9-004			

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.
RR301	Resistor Network		527-076-9-002(1)	RR302	Resistor Network		527-076-9-002(1)

(1) Consists of seven 680-ohm resistors.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Noise Blanker	060-024-9-001	LA181		
L2	Rec Ant (27MHz)	066-023-9-001	LA029		
L3	Rec RF (27MHz)	046-024-9-001	LA138		
L4	IF (10.695MHz)	060-024-9-001	LA180		
L5	IF (10.695MHz)	046-025-9-004	LA277		
L6	IF (10.695MHz)	046-025-9-002	LA274		
L7	IF (455kHz)	060-019-9-002	LA106		
L8	IF (455kHz)	046-024-9-003	LA204		
L9	IF (455kHz)	046-025-9-001	LA207		
L11	TVI Trap (54MHz)	041-056-9-003	LC018		
L12	RF Choke	041-104-9-002	LE089		
L13	RF Choke	041-104-9-001	LE088		
L14	Final (27MHz)	041-056-9-003	LC018		
L15	RF Choke	041-069-9-004	LD012		
L16	XMT Driver (27MHz)	044-028-9-004	LC017		
L17	XMT Buffer (27MHz)	060-029-9-004	LA208		
L18	Ref Osc (16MHz)	046-024-9-002	LA201		
L19	VCO	046-025-9-003	LA275		
L20	XMT Mixer (27MHz)	066-019-9-002	LA088		
L21	XMT Mixer (27MHz)	060-029-9-001	LA198		
L22	PLL Osc (15.360MHz)	066-025-9-005	LA166		
L23	Ref Osc (10.240MHz)	060-024-9-003	LA182		
L24	Ref Osc (10.240MHz)	060-030-9-003	LA217		
L25	RF Choke (100uH)	041-078-9-002	LZ001		

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.	
T2	1.15A	.8	.86mH	042-021-9-001			TF-083 Number on unit.

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	18	8	061-039-9-001			TF-129 Number on unit.

COBRA MODEL 29GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP201	4" PM, 16 Ohms	580-028-9-001	4A1Z16	10P03G Number on unit.

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
F201	2A	191-251-3-002	426-020-9-001	AGC2	HDJ	312002	150145	FG2-2

MICROPHONE

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	562-025-9-001	18-032	18-034	18-010	18-092	2	1	3	4	NC	1

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D201	LED	158-020-9-001	TX/RX (1.92V @ 7mA) TLRG101
D202	LED	158-021-9-001	AWI (1.55V @ 6.5mA) TLR124
D401	LED	158-014-9-001	Channel Display TLR321
FL1	Ceramic Filter	148-009-9-001	10.695MHz FL-055
FL2	Ceramic Filter	140-009-9-001	455kHz FL-009
M201	Meter	320-096-9-001	S/R/F/SWR
S202	Switch	084-064-9-001	CB/PA
S203	Switch	084-064-9-002	ANL/NB
S204	Switch	084-064-9-002	SWR/CAL/S-RF
S205	Switch	084-064-9-001	Brf/Dim
S207	Switch	084-064-9-001	Tone
S301	Switch	083-240-9-001	Channel Selector
X1	Crystal	132-027-9-001	10.240MHz
	Printed Circuit Board	302-318-9-001	Main (PC-424AA)
	Printed Circuit Board	302-319-9-001	Channel Selector (PC-428AA)
	Printed Circuit Board	302-320-9-001	LED (PC-421AA)

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

ITEM	PART No.	ITEM	PART No.
Cabinet, Top	272-132-9-001	Jack, J1 (PA)	773-086-9-001
Cabinet, Bottom	272-132-9-002	Jack, J2 (External Speaker)	773-086-9-001
Mounting Bracket	251-353-9-001	Jack, J201 (Microphone)	772-038-9-001
Microphone Hanger	741-074-9-001	Jack, J202 (Antenna)	772-027-9-001
Escutcheon	380-306-9-001	Jack, J203 (Power)	762-020-9-001
Knob, Channel Selector	751-151-9-001	Ferrite Bead, L10	044-054-9-001
Knob, Control	751-095-9-002	Ferrite Bead, L26	044-048-9-003
Display Window	380-304-9-001	Ferrite Bead, L201	044-051-9-001