

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 1000GTL

MANUFACTURER'S SPECIFICATIONS

TRANSMITTER

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

RECEIVER

Sensitivity	0.5 μ V for 10 dB (S+N)/N.
Selectivity	6 dB @ 7 KHz. 60 dB @ 10 KHz.
Image Rejection	80 dB.
IF Frequencies	Double conversion, 1st: 10.695 MHz. 2nd: 455 KHz.
Adjacent Channel Rejection	-60 dB
RF Gain Control	40 dB.
Automatic Gain Control (AGC)	Less than 10 dB change in audio output for inputs from 10 to 500,000 microvolts.
Delta Tune Range	± 1.5 KHz continuously adjustable.
Squelch	Adjustable, threshold less than 1 μ V.
Audio Output Power	4 watts.
Frequency Response	300 to 3000 Hz.
Distortion	Less than 7% @ 3 watts @ 1000 Hz.
External Speaker	8 ohms.

Courtesy of the Manufacturer

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

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COBRA MODEL 89GTL, 1000GTL

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. Adjust VR201 for 13.8 volts DC at TP10. Connect low sides of test equipment to ground unless specified otherwise. Connect 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

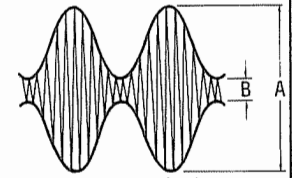
Suggested Alignment Tools:

GC ELECTRONICS

L1 thru L5, L17 thru L21, L23, L24, L25. . . .9440

L6, L7, L85000, 5009, 8276, 8278, 8278A

L10, L13, L16.8728, 8728A, 9304



$$\text{Modulation Ratio} = \frac{A - B}{A + B} \times 100 (\%)$$

FIGURE 1

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope to TP6.	Ch. 19	L23	Adjust for maximum RF.
Input of frequency counter to TP7 (IC4 pin 12).	Ch. 19 Delta Tune Detent	L21	Adjust for 10.240MHz.
Input of DC meter to TP4.	Ch. 40	L20	Adjust for 2.10 volts. Check for approx. 1.30 volts on Channel 1.
Input of oscilloscope to TP8 (IC2 pin 4).	Ch. 19	L19	Adjust for maximum RF.
Input of frequency counter to TP8 (IC2 pin 4).	Ch. 19		Check for 15.360MHz.
Input of frequency counter to TP5 (IC4 pin 22).	Ch. 1		Check for .910MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to TP5 (IC4 pin 22).	Ch. 1, XMT		Check for 1.365MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of oscilloscope to TP2.	Ch. 19	L18	Adjust for maximum RF.
Input of frequency counter to TP2.	Ch. 1		Check for 16.270MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of oscilloscope to TP1.	Ch. 19, XMT	L24, L25	Adjust for maximum RF.
Input of frequency counter to TP1.	Ch. 1, XMT		Check for 26.965MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter to antenna input.	Ch. 1, XMT		Check for 26.965MHz. If necessary readjust L21 for correct frequency. Check all channels. (See page 4 for channel 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. Preset controls as follows, unless otherwise noted:

RF Gain Max, Squelch MINIMUM, Delta Tune Detent, Tone fully clockwise, ANL Off, NB Off.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP9 (TR4 gate). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L8, L7, L6	Adjust for maximum output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L5, L4, L3, L2 L1	Adjust for maximum output. Readjust L6, L7 and L8 for maximum. (L4 not used in Model 89GTL.)

RECEIVER ADJUSTMENTS

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output .5uV.	Ch. 19, Volume Max	VR1	IF GAIN Adjust for 2.00 volts RMS audio output.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19, Squelch Max	VR3	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator thru .01uF to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR2	SIGNAL METER Adjust for 9 on SIGNAL scale of meter.

TRANSMITTER ALIGNMENT

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

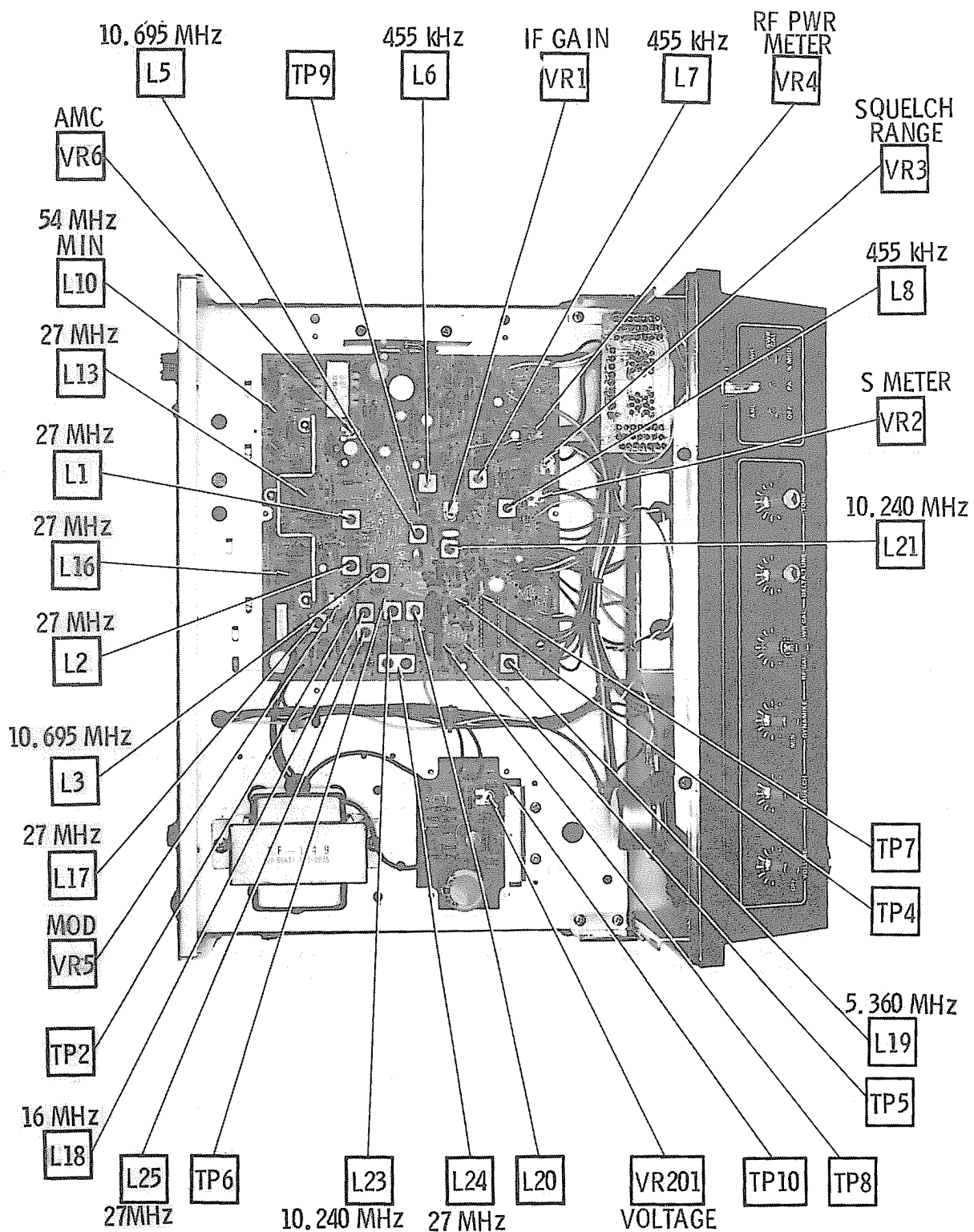
TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19	L17, L16	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19	L13	Adjust for 4.0 watts RF output.
Input of spectrum analyzer or harmonic meter to antenna input.	Ch. 19	L10	Adjust for MINIMUM at 54MHz (2nd harmonic).

TRANSMITTER ADJUSTMENTS

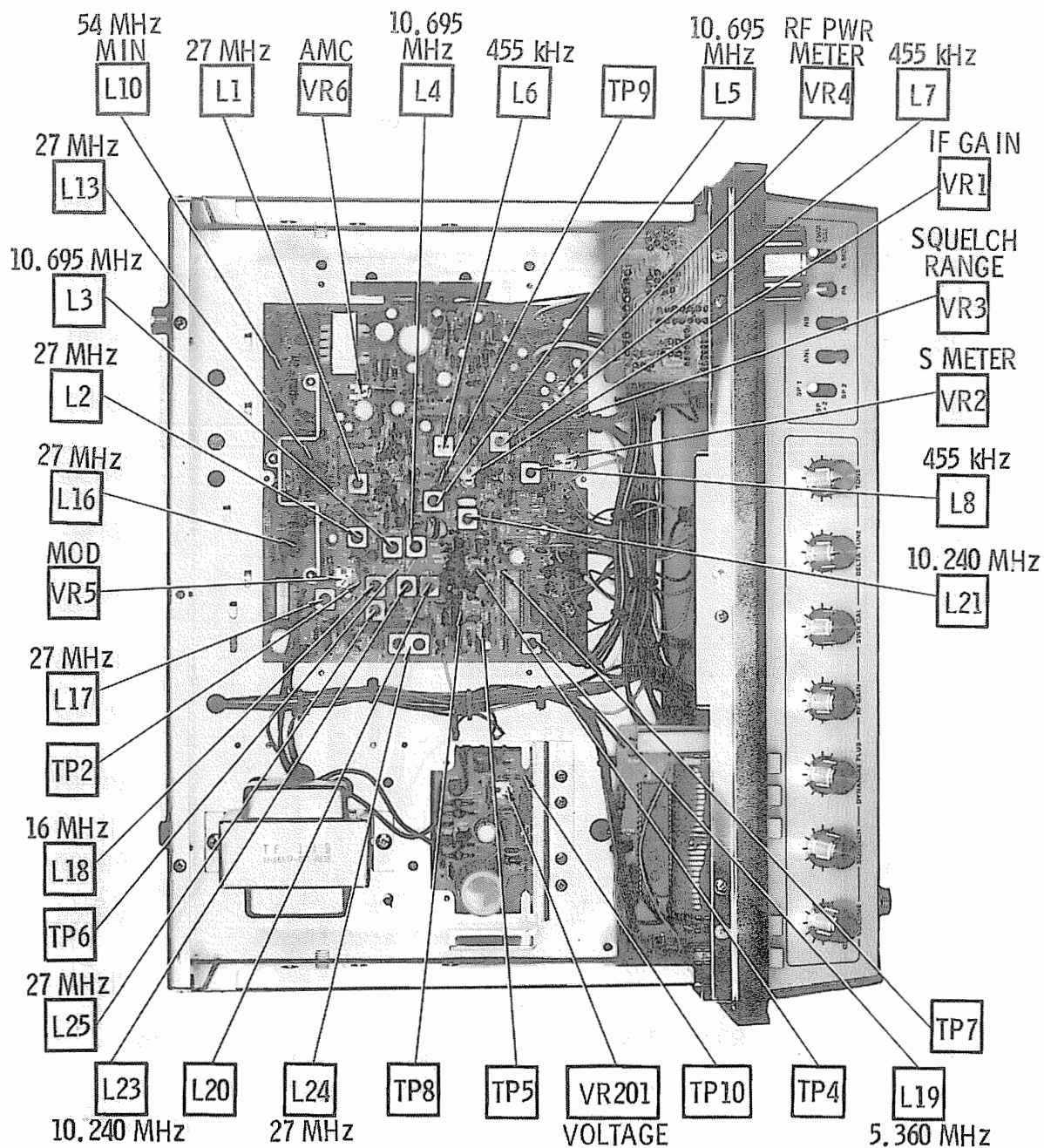
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.
See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 100mV signal at Mic input.	Ch. 19 SWR/SWR Cal/Mod Mod Dynamike Max	VR6	AMC Adjust for 95% modulation maximum. (See Figure 1.)
Input of oscilloscope or modulation meter to antenna input. Inject 1000Hz signal at Mic input. Set output level to produce 100% modulation.	Ch. 19 SWR/SWR Cal/Mod Mod Dynamike Max	VR5	MOD METER Adjust so MOD METER indicates 100% modulation.
Input of RF wattmeter to antenna input.	Ch. 19 SWR/SWR CAL/MOD Mod	VR4	RF PWR METER Adjust so RF METER agrees with RF wattmeter.

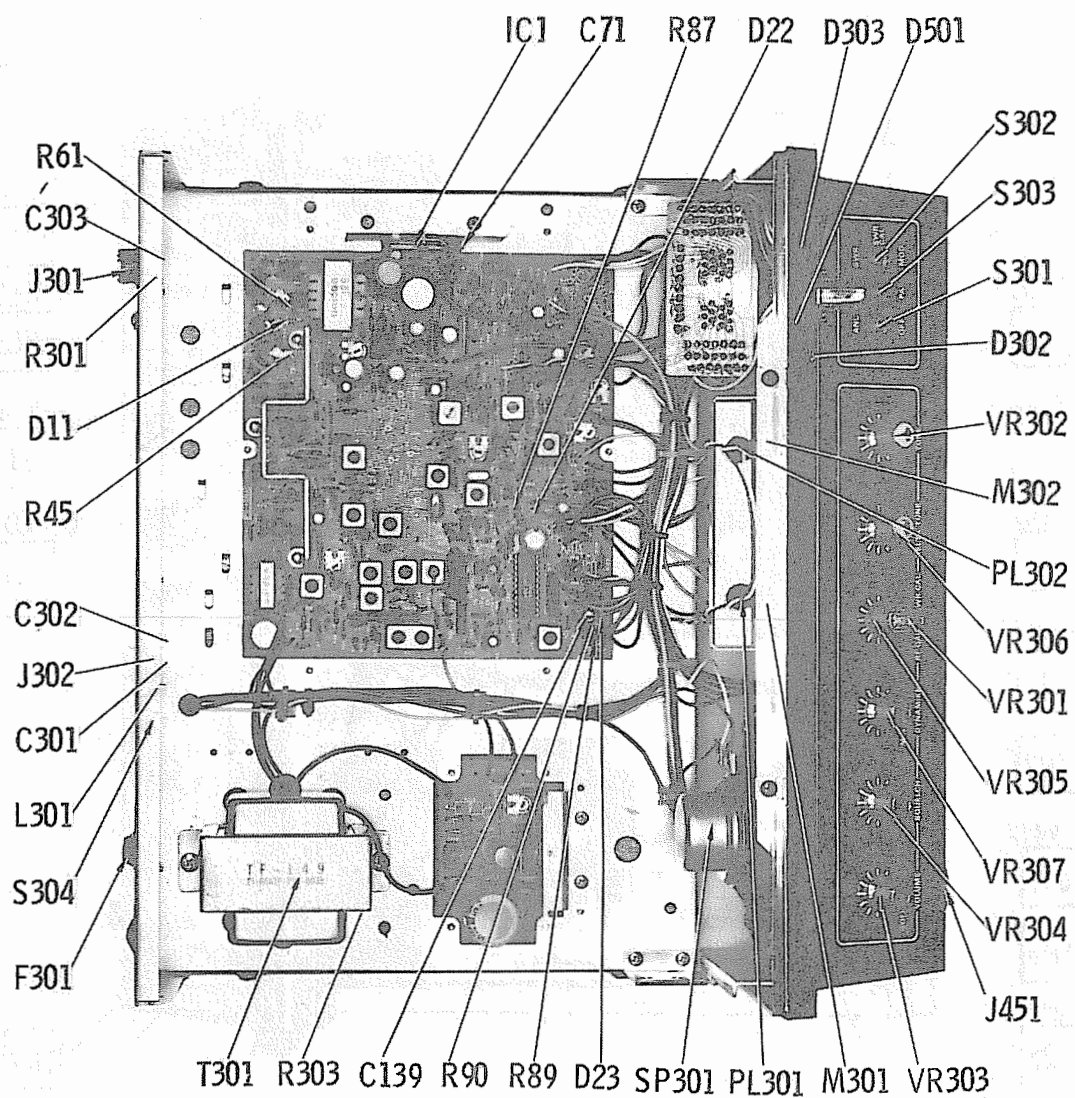
COBRA MODEL 89GTL, 1000GTL



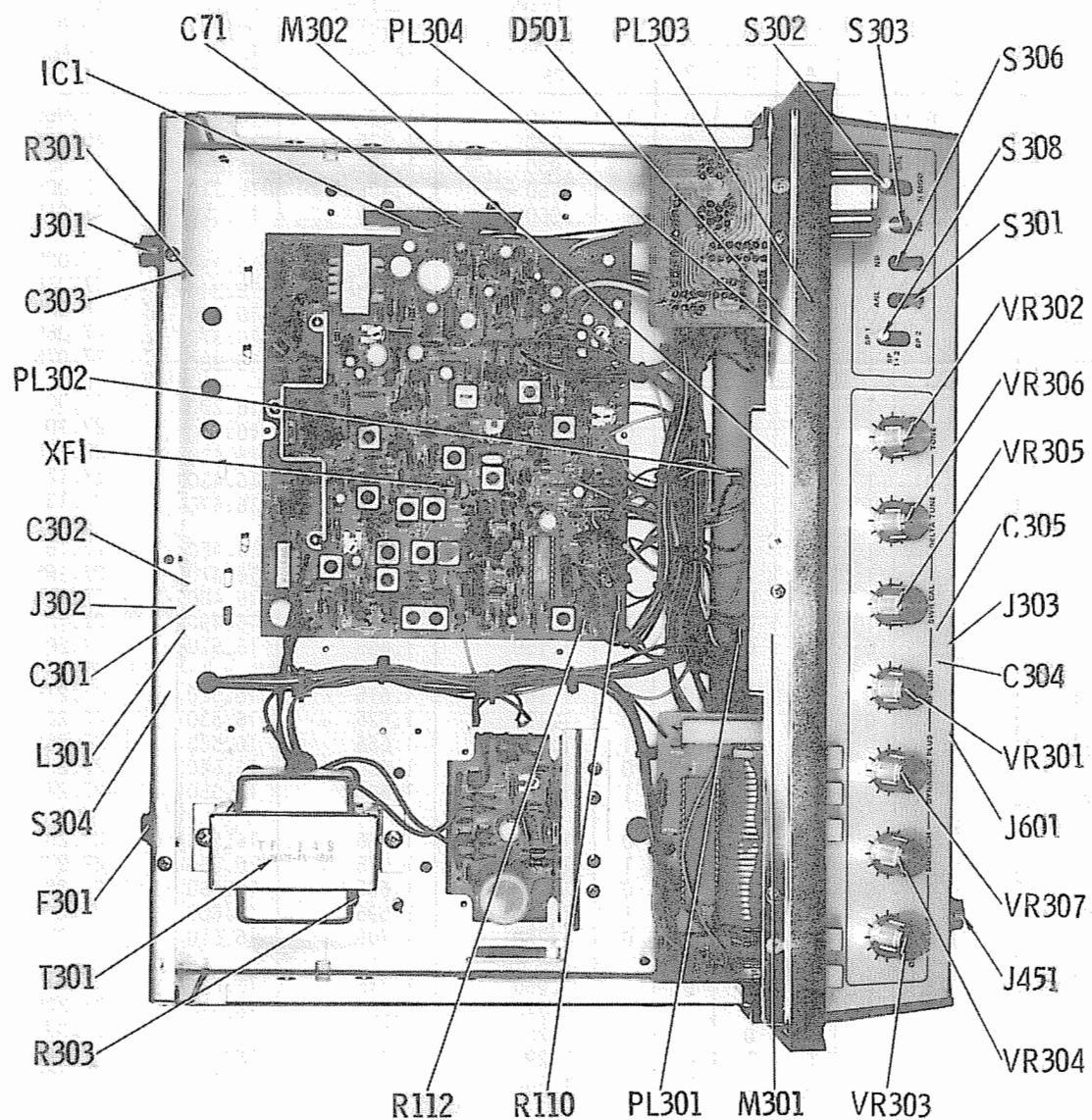
CH. TOP (MODEL 89GTL)



CH. TOP (MODEL 1000GTL)



CH. TOP (MODEL 89GTL)

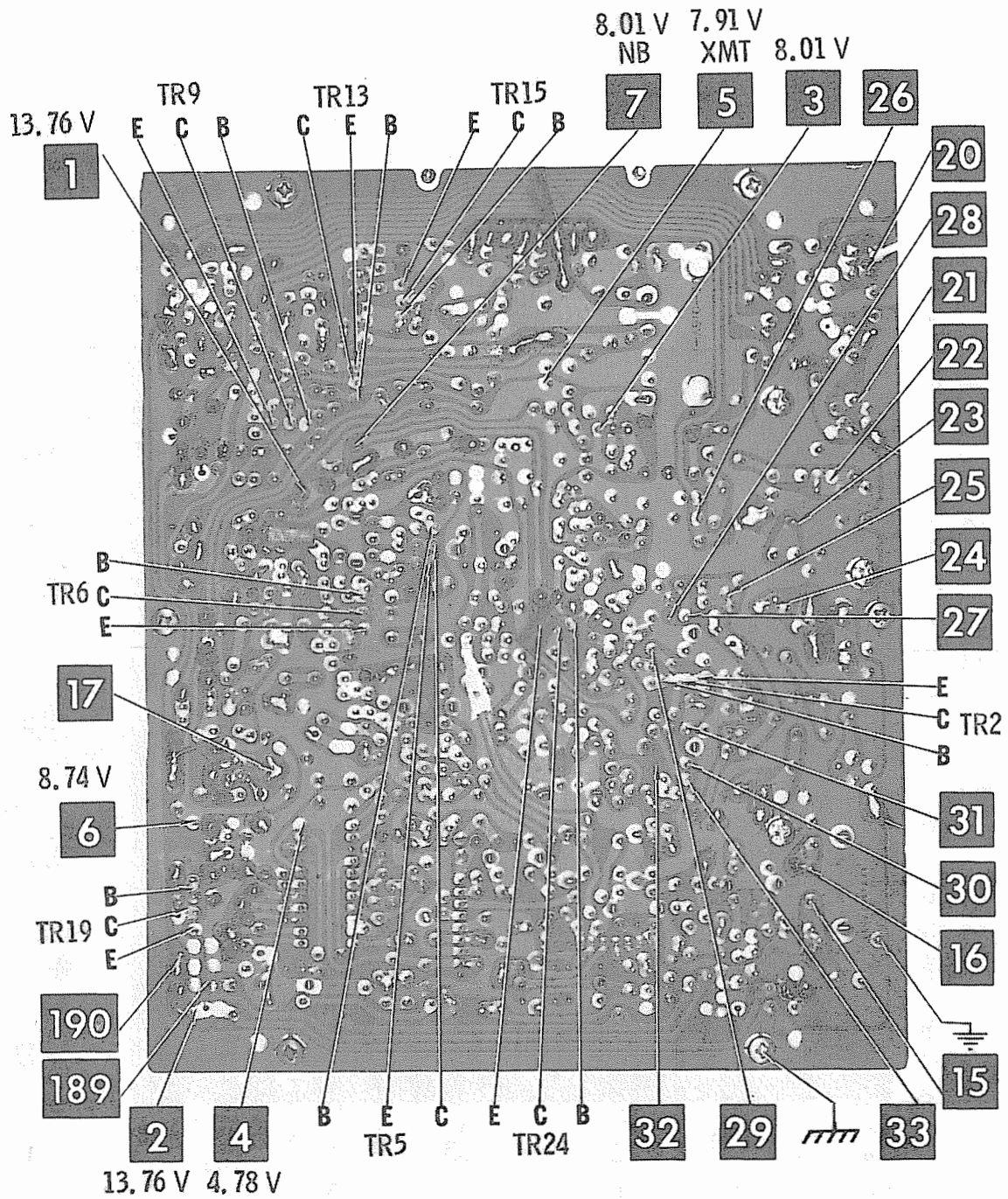


CH. TOP (MODEL 1000GTL)

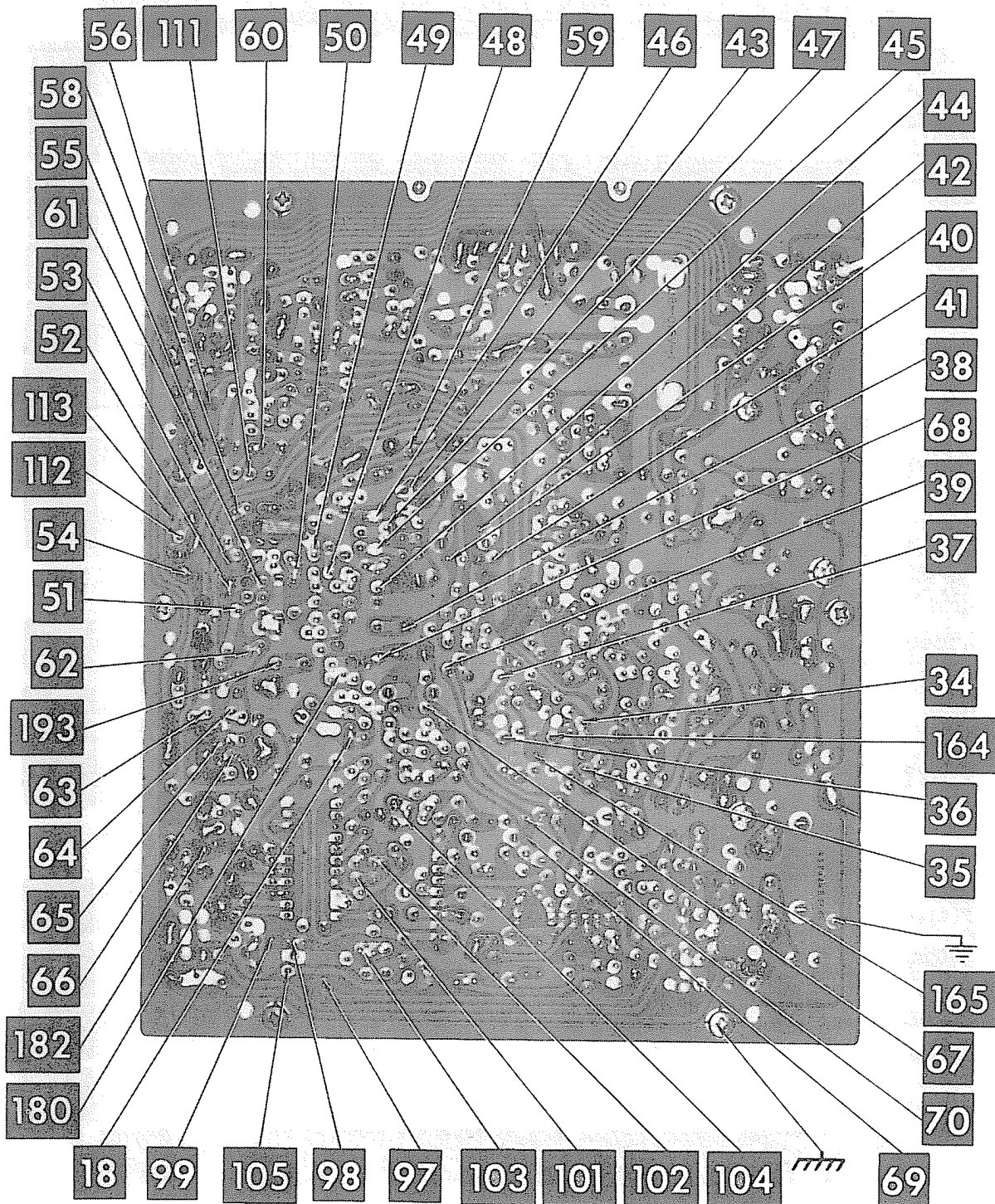
TRUTH CHART

C H A N N E L	1 = 4.80 Volts 0 = 0 - .50 Volts IC4 PROGRAM DIVIDER							REC DIVIDER INPUT IN MHz AT TP5	XMT DIVIDER INPUT IN MHz AT TP5	REC SYNTH OUTPUT IN MHz AT TP2	XMT SYNTH OUTPUT IN MHz AT TP1	
	PINS											
			6	5	4	3	2					1
1			0	0	0	0	0	1	.910	1.365	16.270	26.965
2			0	0	0	0	1	0	.920	1.375	16.280	26.975
3			0	0	0	0	1	1	.930	1.385	16.290	26.985
4			0	0	0	1	0	0	.950	1.405	16.310	27.005
5			0	0	0	1	0	1	.960	1.415	16.320	27.015
6			0	0	0	1	1	0	.970	1.425	16.330	27.025
7			0	0	0	1	1	1	.980	1.435	16.340	27.035
8			0	0	1	0	0	0	1.000	1.455	16.360	27.055
9			0	0	1	0	0	1	1.010	1.465	16.370	27.065
10			0	1	0	0	0	0	1.020	1.475	16.380	27.075
11			0	1	0	0	0	1	1.030	1.485	16.390	27.085
12			0	1	0	0	1	0	1.050	1.505	16.410	27.105
13			0	1	0	0	1	1	1.060	1.515	16.420	27.115
14			0	1	0	1	0	0	1.070	1.525	16.430	27.125
15			0	1	0	1	0	1	1.080	1.535	16.440	27.135
16			0	1	0	1	1	0	1.100	1.555	16.460	27.155
17			0	1	0	1	1	1	1.110	1.565	16.470	27.165
18			0	1	1	0	0	0	1.120	1.575	16.480	27.175
19			0	1	1	0	0	1	1.130	1.585	16.490	27.185
20			1	0	0	0	0	0	1.150	1.605	16.510	27.205
21			1	0	0	0	0	1	1.160	1.615	16.520	27.215
22			1	0	0	0	1	0	1.170	1.625	16.530	27.225
23			1	0	0	0	1	1	1.200	1.655	16.560	27.255
24			1	0	0	1	0	0	1.180	1.635	16.540	27.235
25			1	0	0	1	0	1	1.190	1.645	16.550	27.245
26			1	0	0	1	1	0	1.210	1.665	16.570	27.265
27			1	0	0	1	1	1	1.220	1.675	16.580	27.275
28			1	0	1	0	0	0	1.230	1.685	16.590	27.285
29			1	0	1	0	0	1	1.240	1.695	16.600	27.295
30			1	1	0	0	0	0	1.250	1.705	16.610	27.305
31			1	1	0	0	0	1	1.260	1.715	16.620	27.315
32			1	1	0	0	1	0	1.270	1.725	16.630	27.325
33			1	1	0	0	1	1	1.280	1.735	16.640	27.335
34			1	1	0	1	0	0	1.290	1.745	16.650	27.345
35			1	1	0	1	0	1	1.300	1.755	16.660	27.355
36			1	1	0	1	1	0	1.310	1.765	16.670	27.365
37			1	1	0	1	1	1	1.320	1.775	16.680	27.375
38			1	1	1	0	0	0	1.330	1.785	16.690	27.385
39			1	1	1	0	0	1	1.340	1.795	16.700	27.395
40			0	0	0	0	0	0	1.350	1.805	16.710	27.405

13.

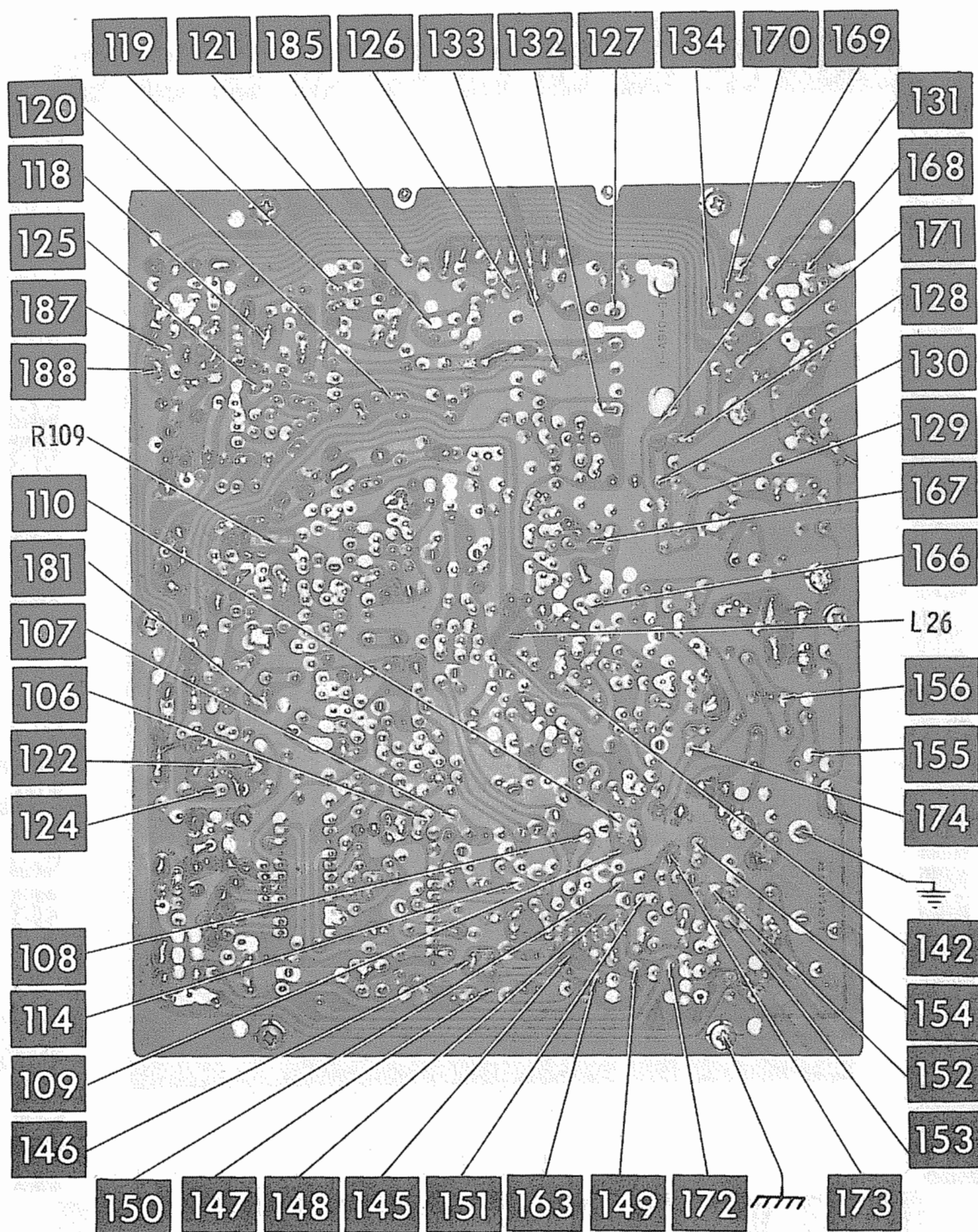


MAIN BOARD

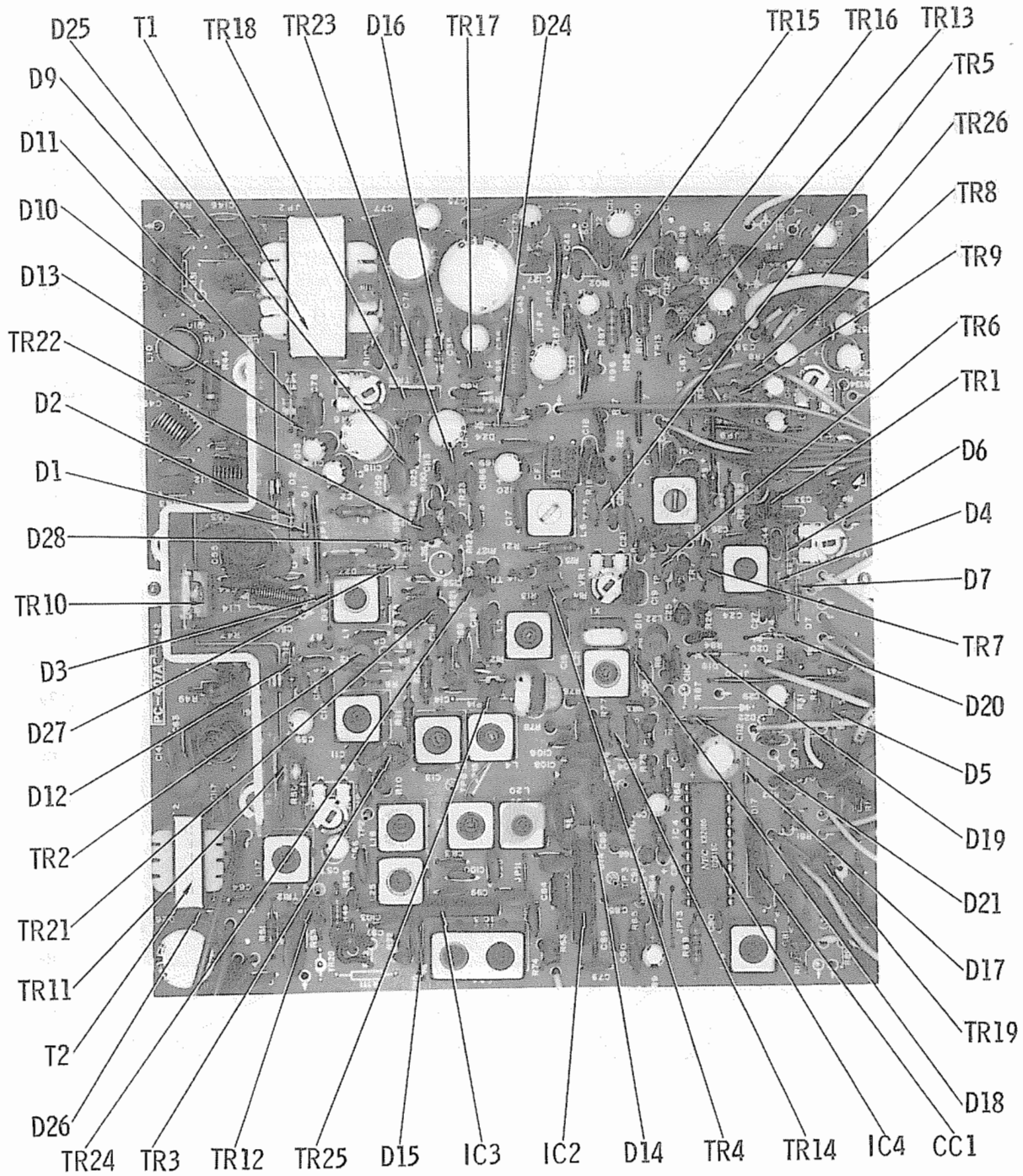


COBRA MODEL 89GTL, 1000GTL

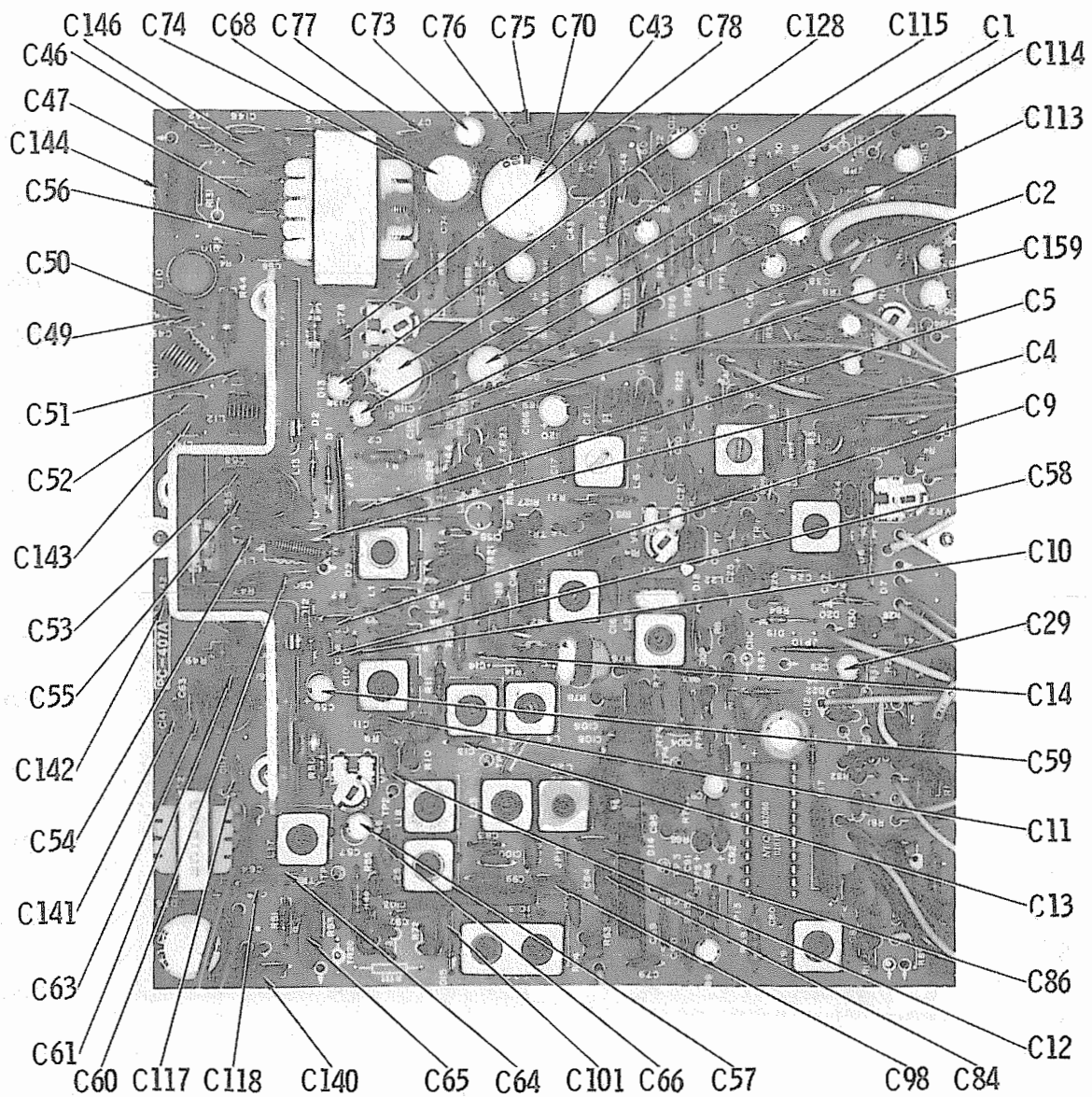
MAIN BOARD



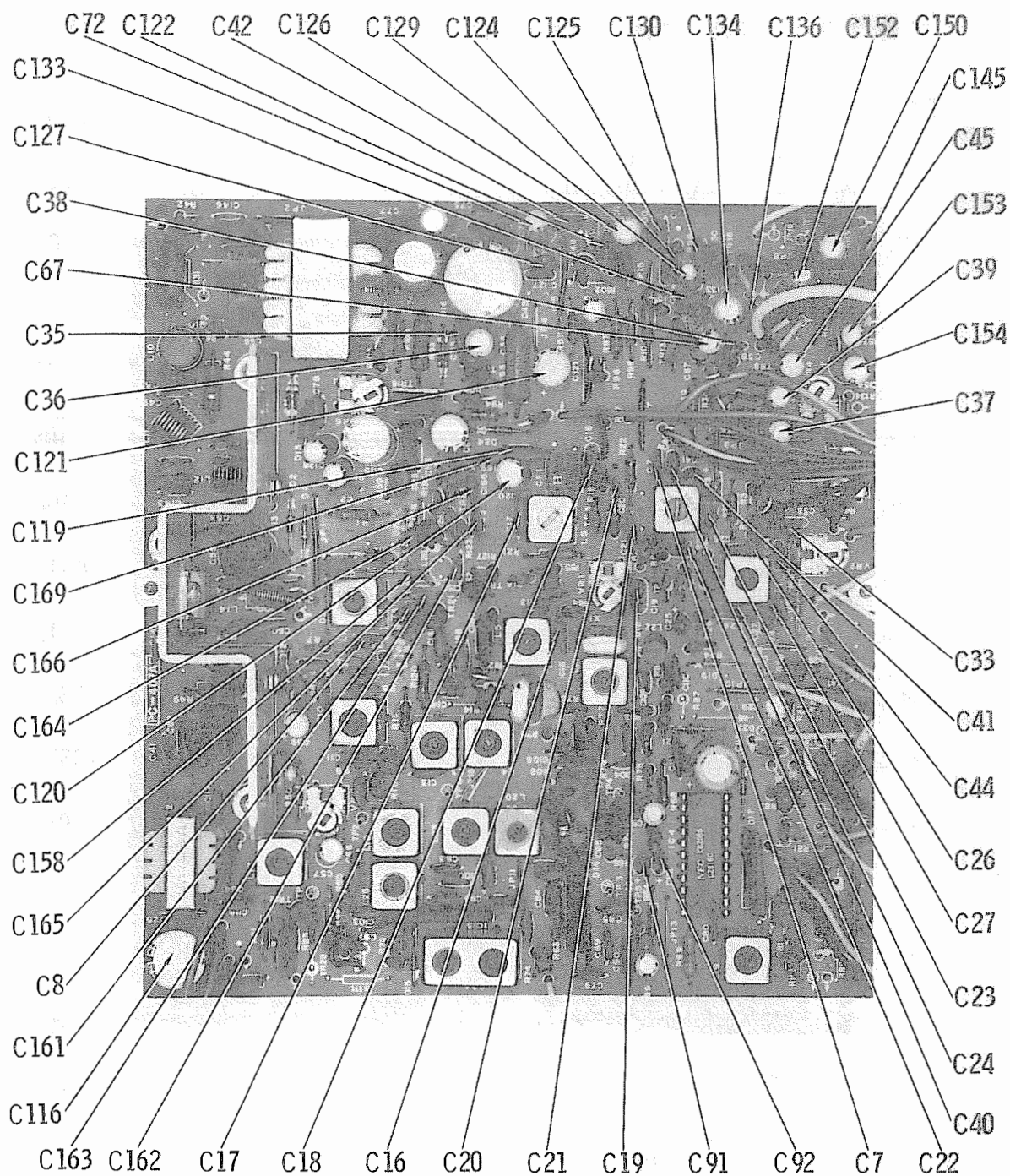
MAIN BOARD



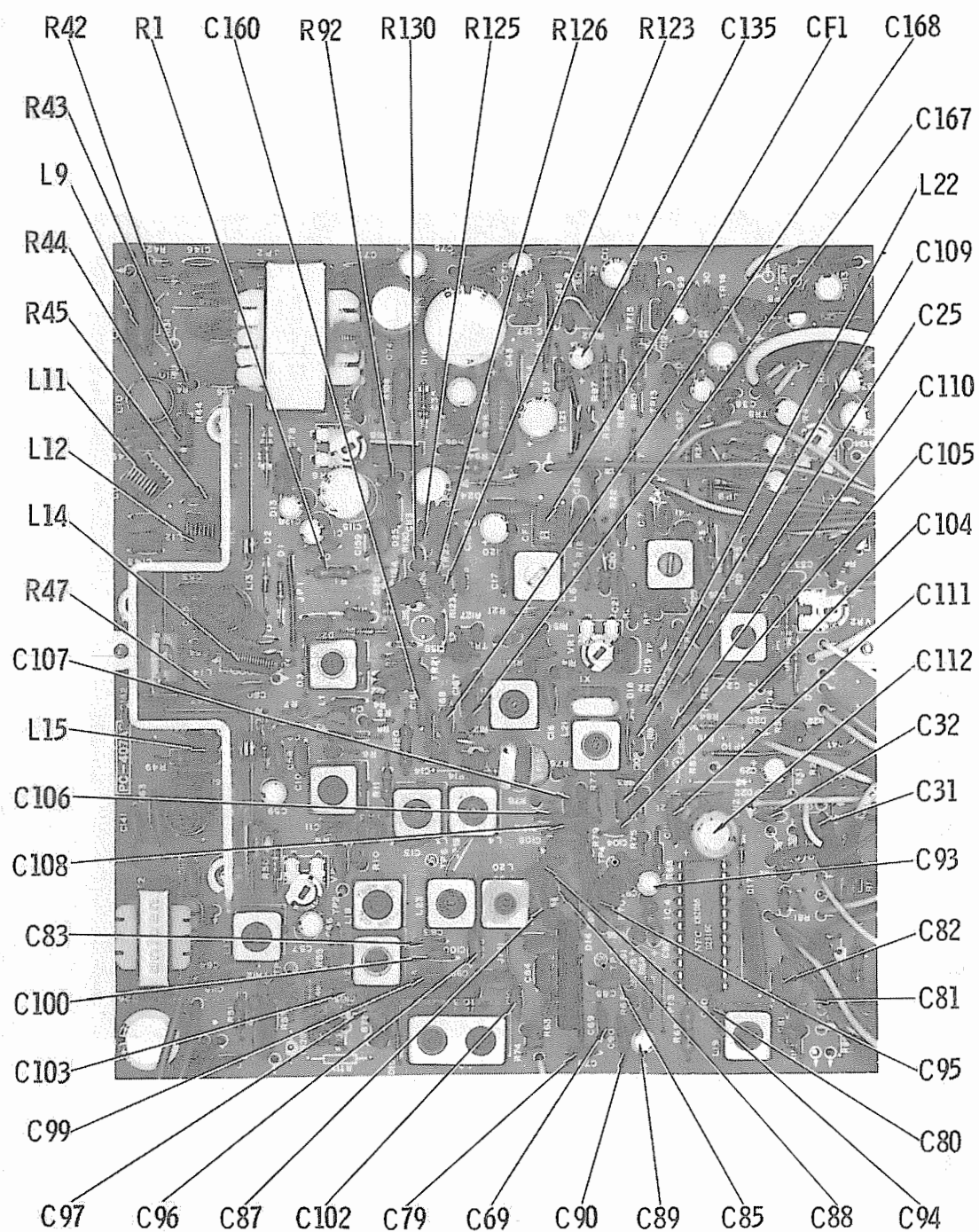
MAIN BOARD



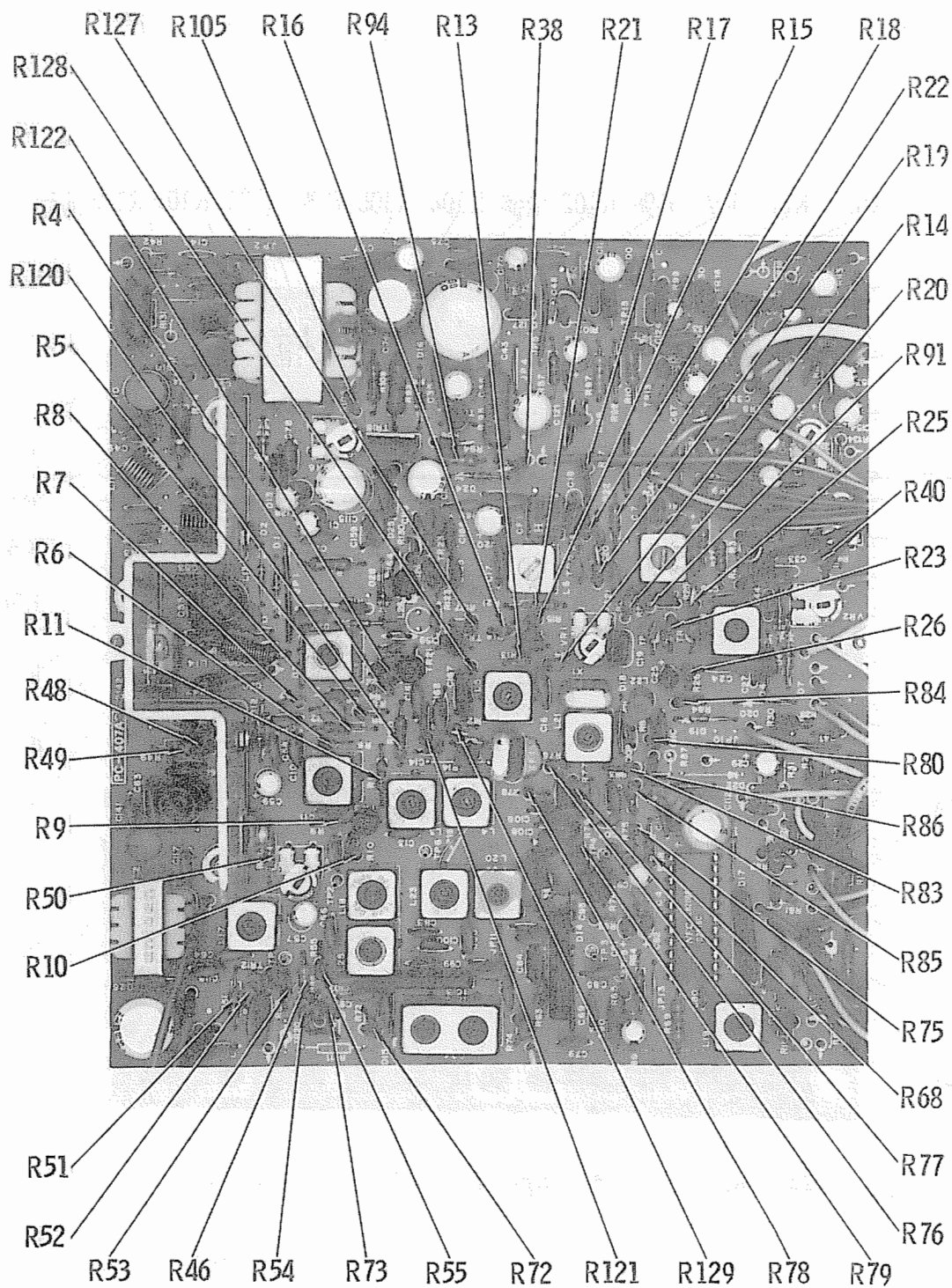
MAIN BOARD



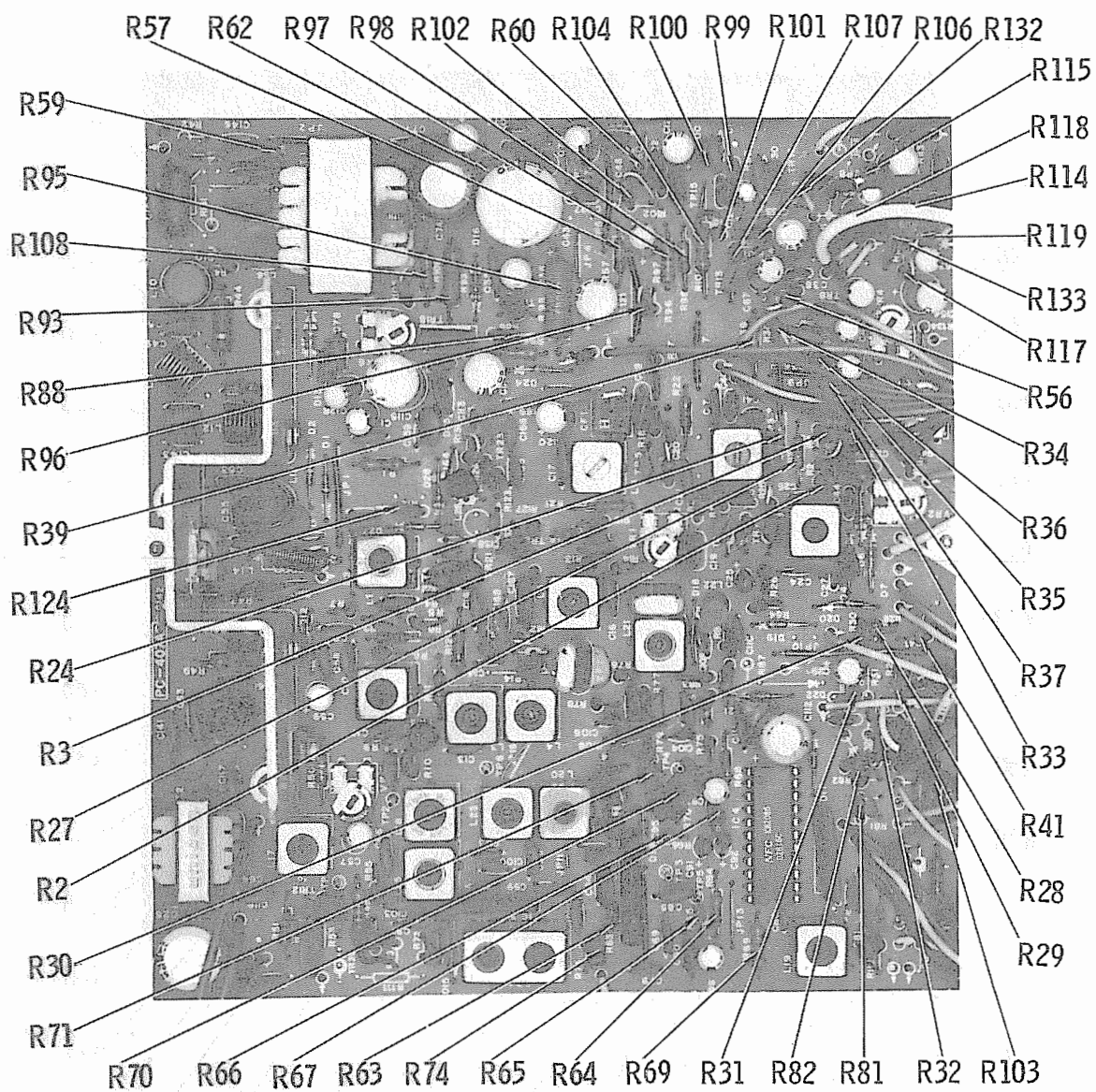
MAIN BOARD



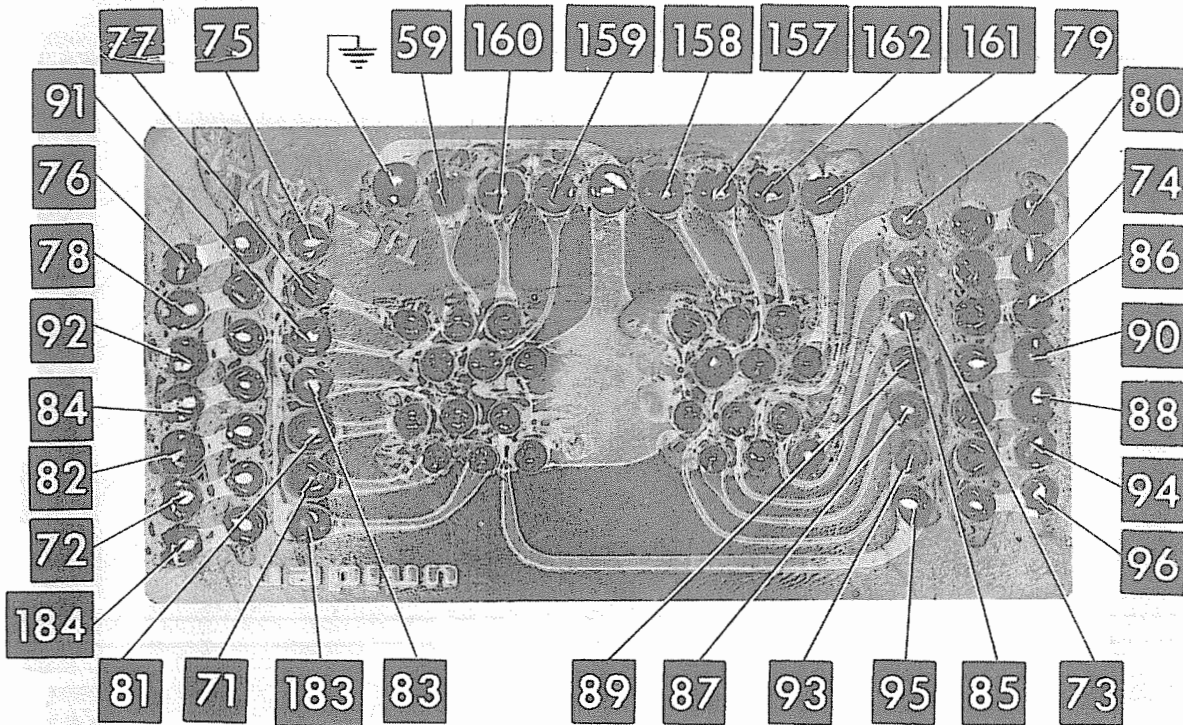
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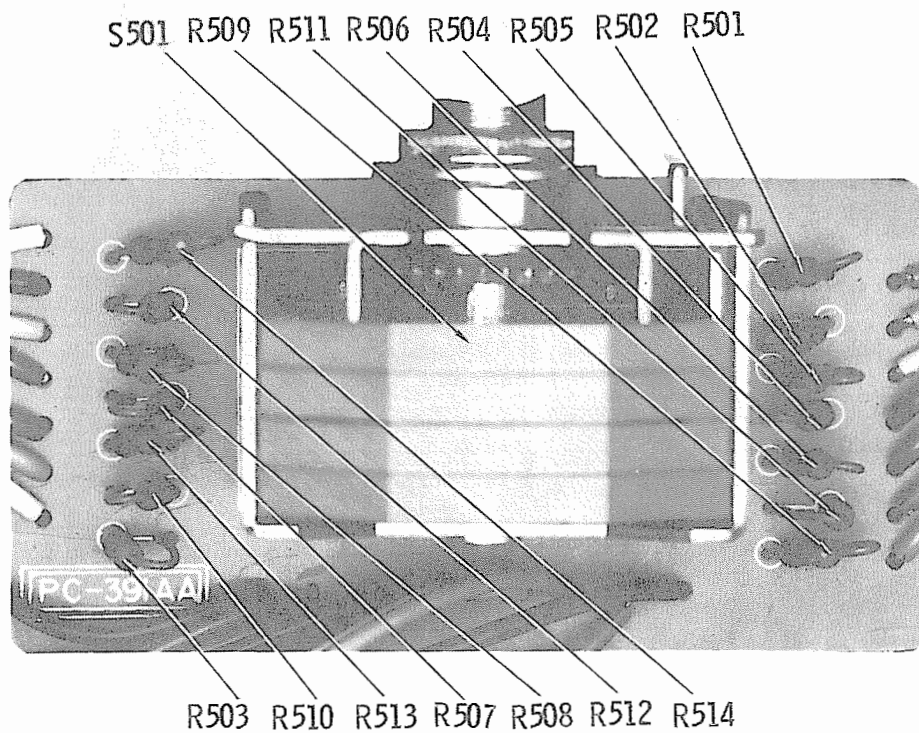
MAIN BOARD



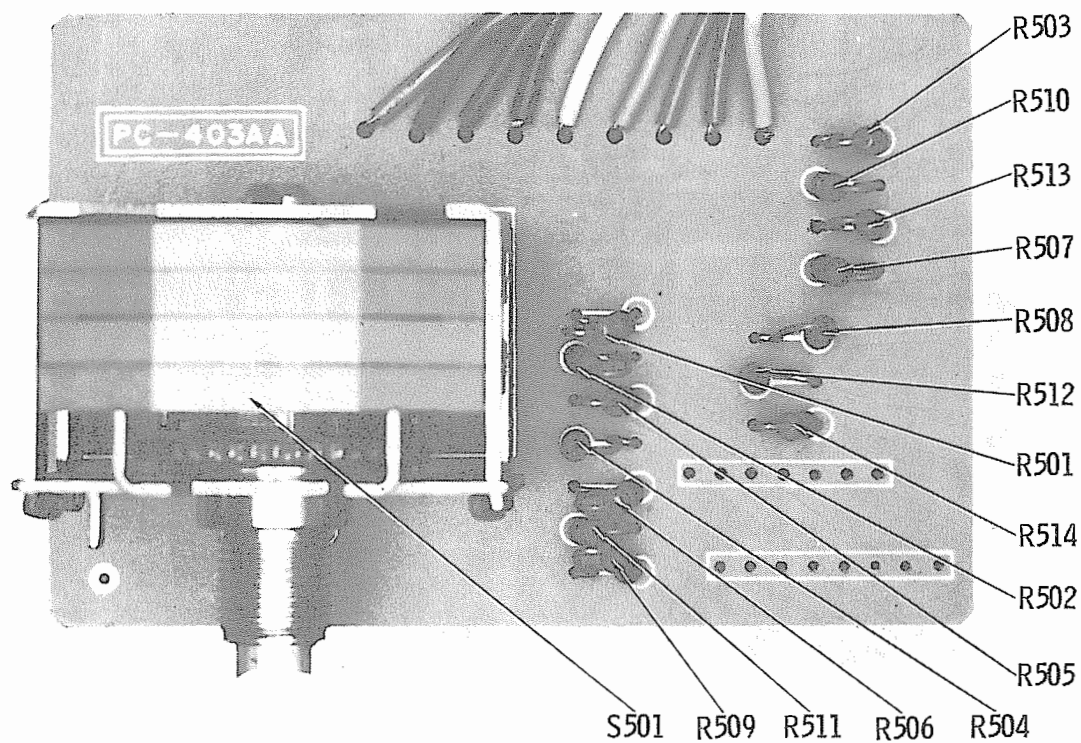
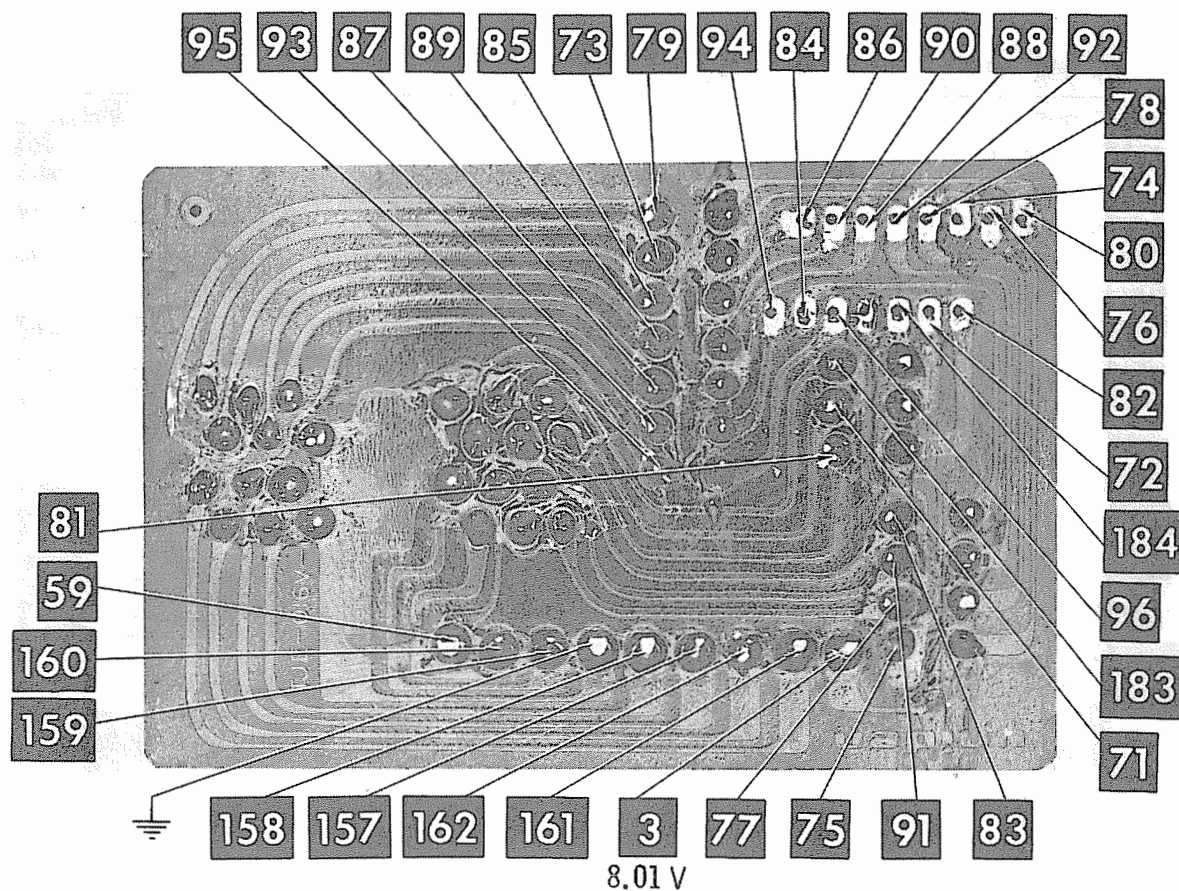
MAIN BOARD



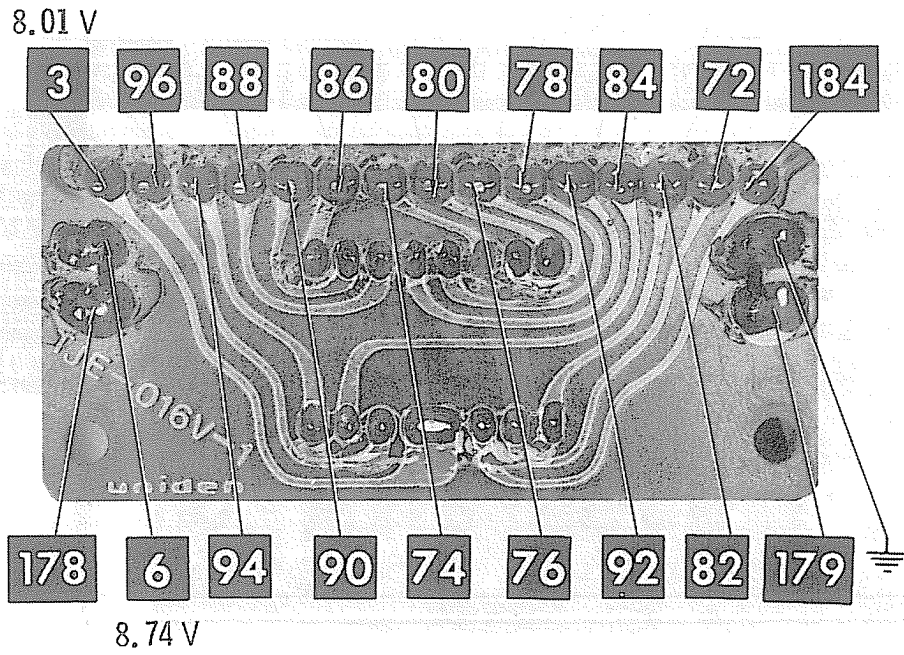
COBRA MODEL 89GTL, 1000GTL



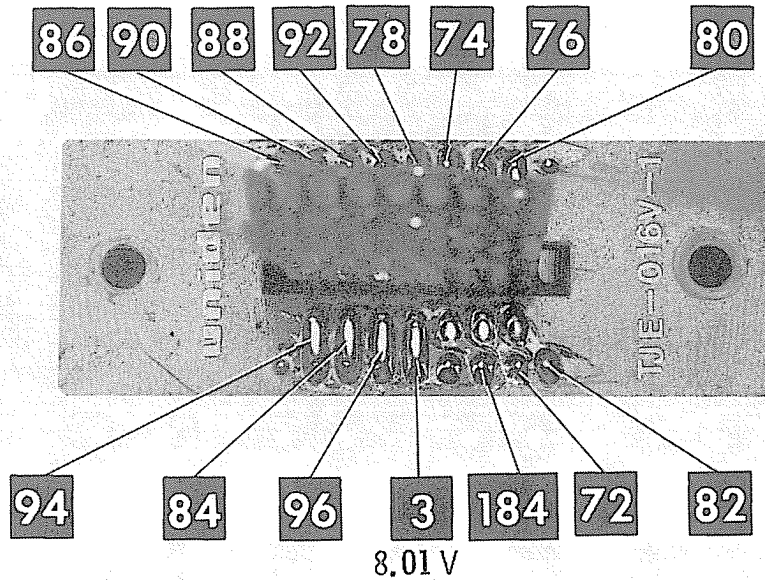
CH. SELECTOR BOARD (MODEL 89GTL)



CH. SELECTOR BOARD (MODEL I000GTL)

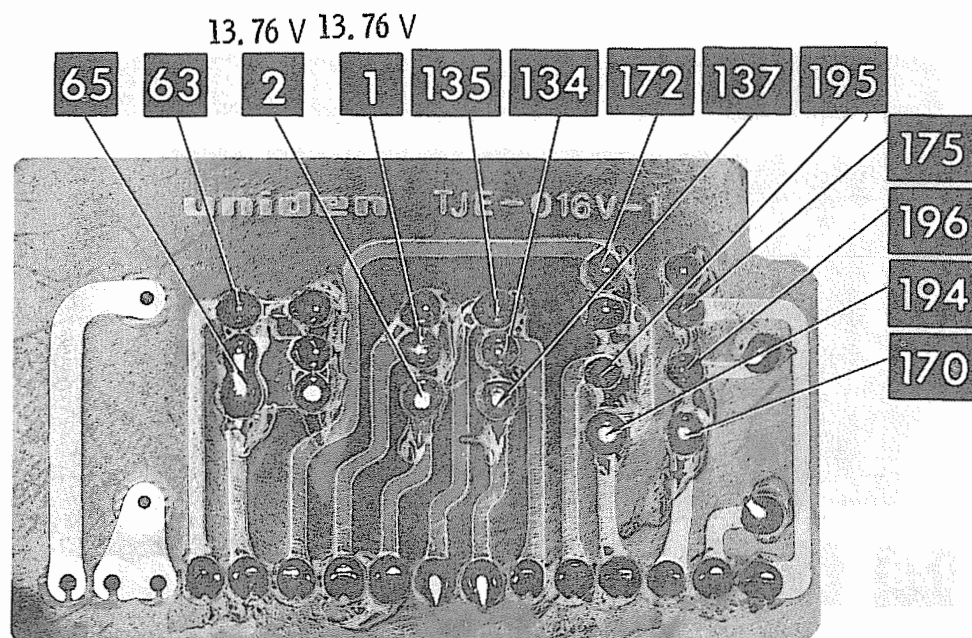


LED BOARD (MODEL 89GTL)



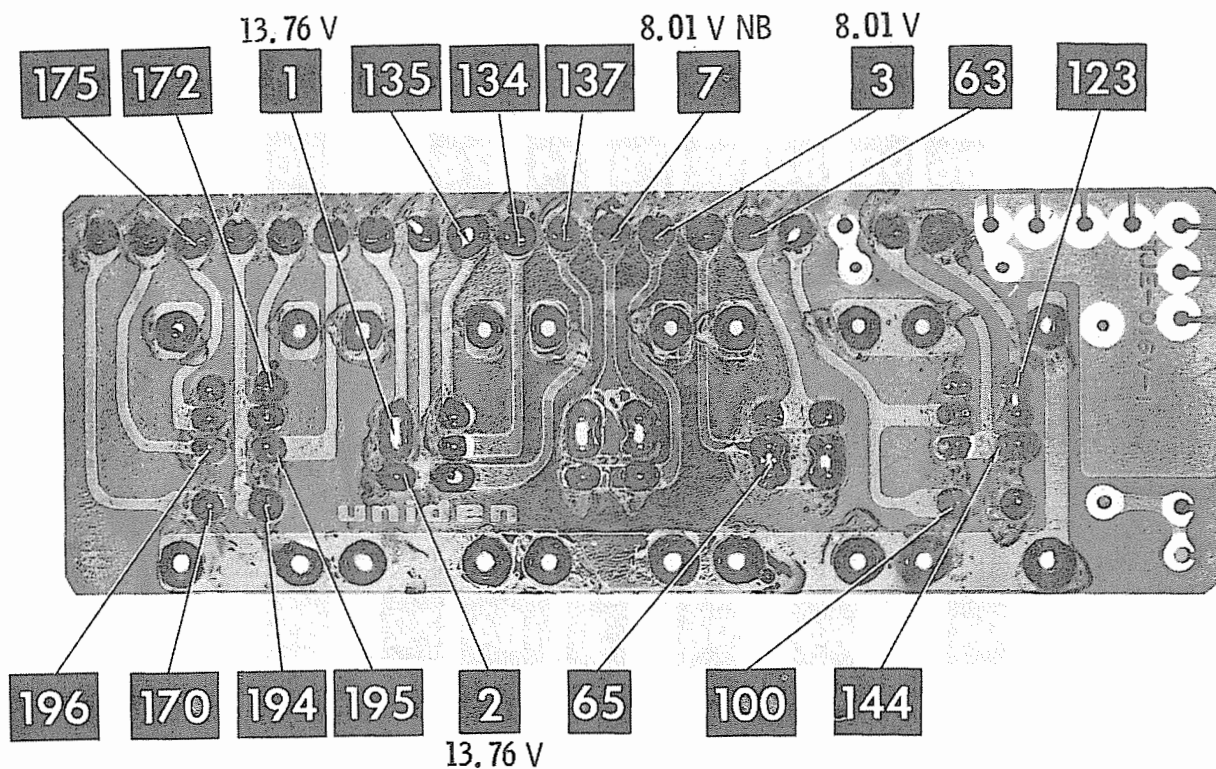
LED BOARD (MODEL 1000GTL)

COBRA MODEL 89GTL, 1000GTL

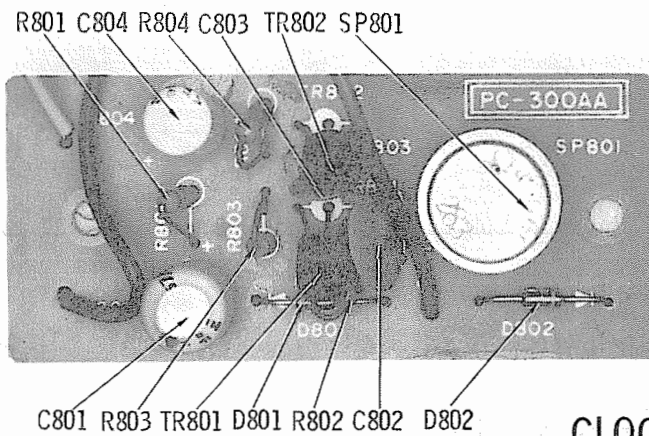
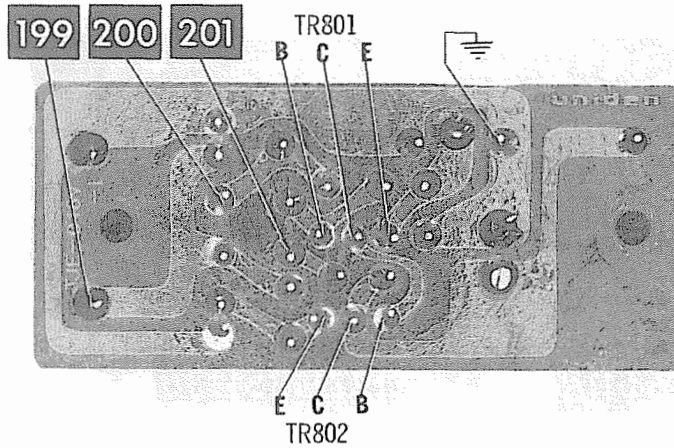


SWITCH BOARD (MODEL 89GTL)

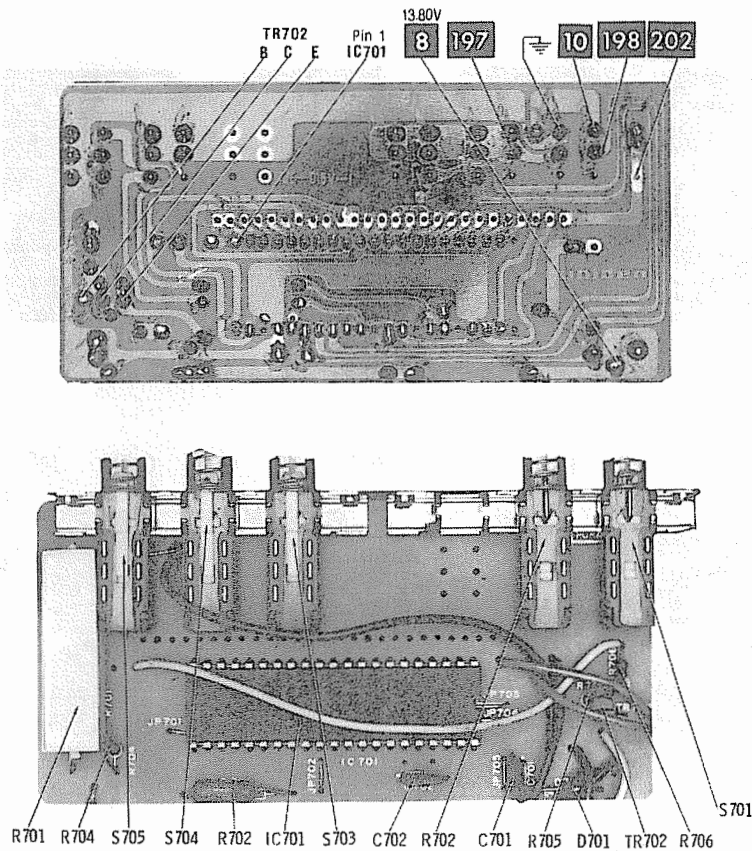
A Howard W. Sams **CIRCUITRACE** Photo



SWITCH BOARD (MODEL 1000GTL)

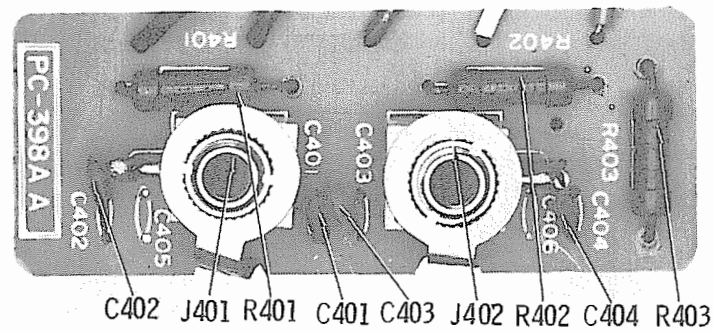
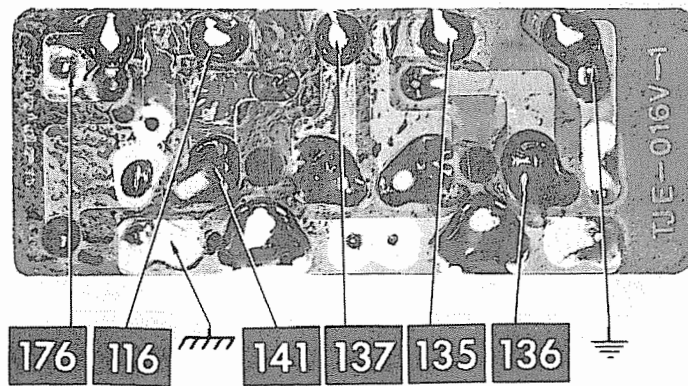


CLOCK ALARM BOARD

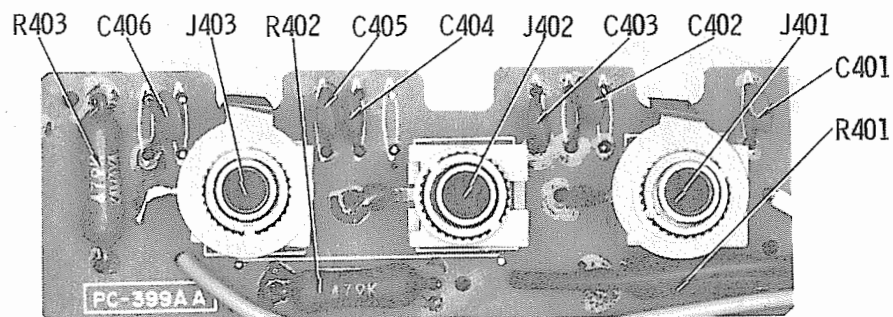
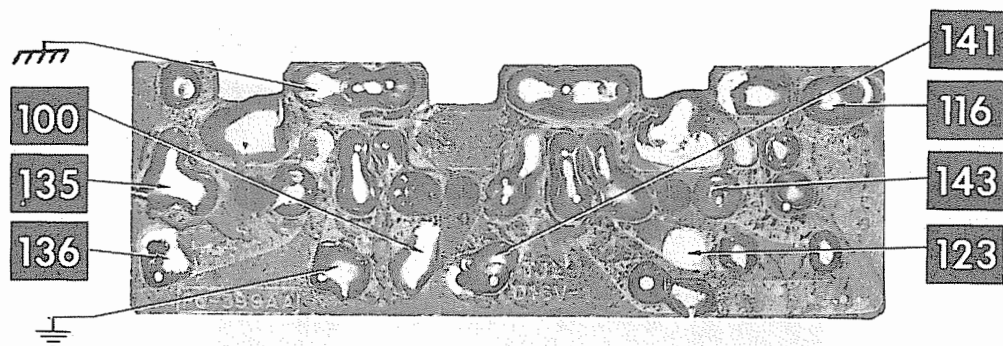


CLOCK BOARD

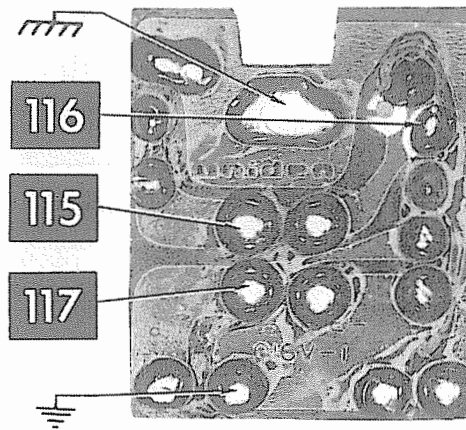
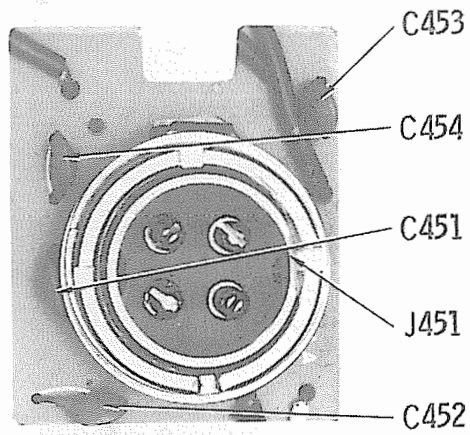
COBRA MODEL 89GTL, 1000GTL



PA & SPEAKER BOARD (MODEL 89GTL)

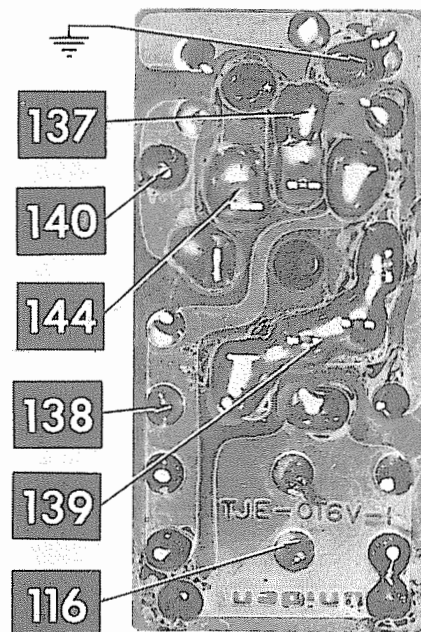
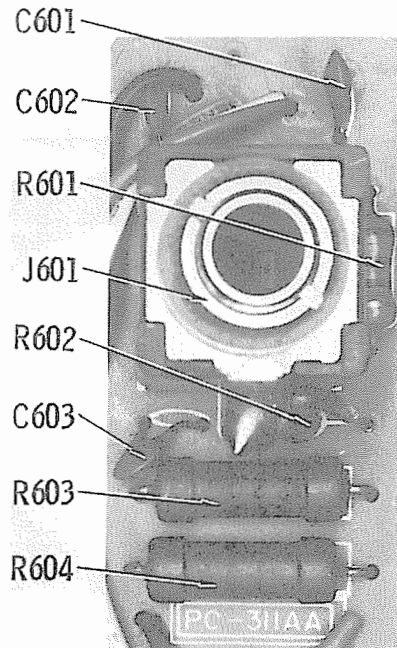


PA & SPEAKER BOARD (MODEL 1000GTL)



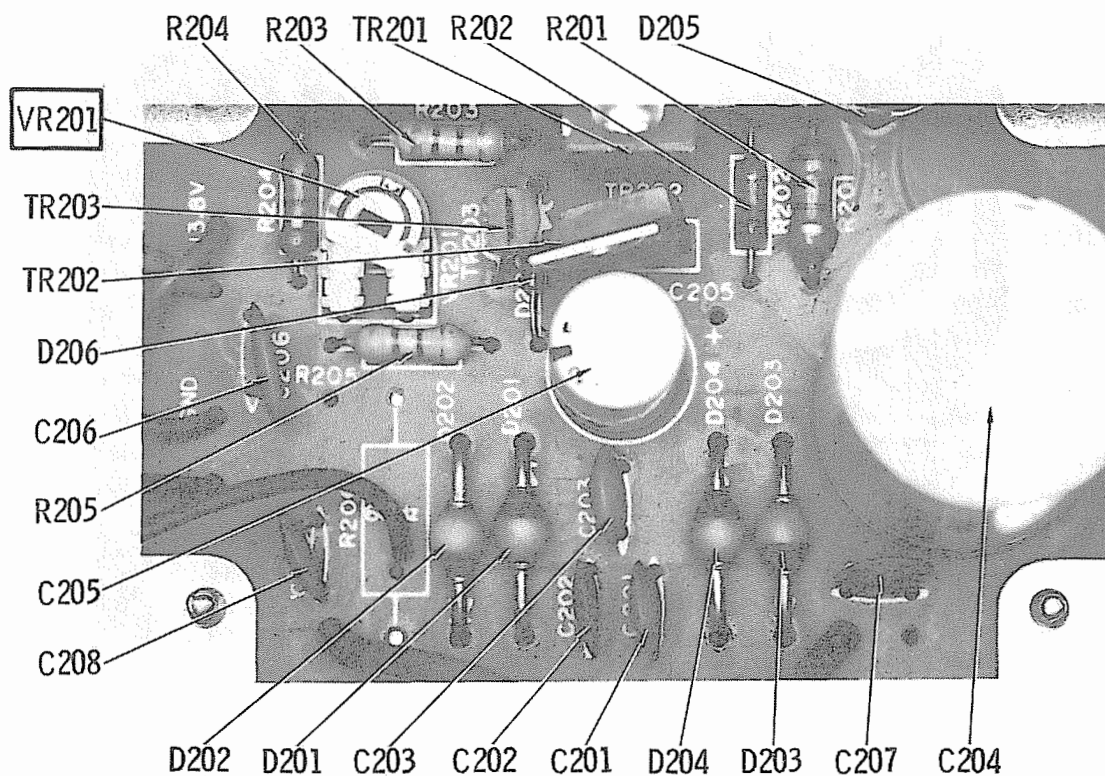
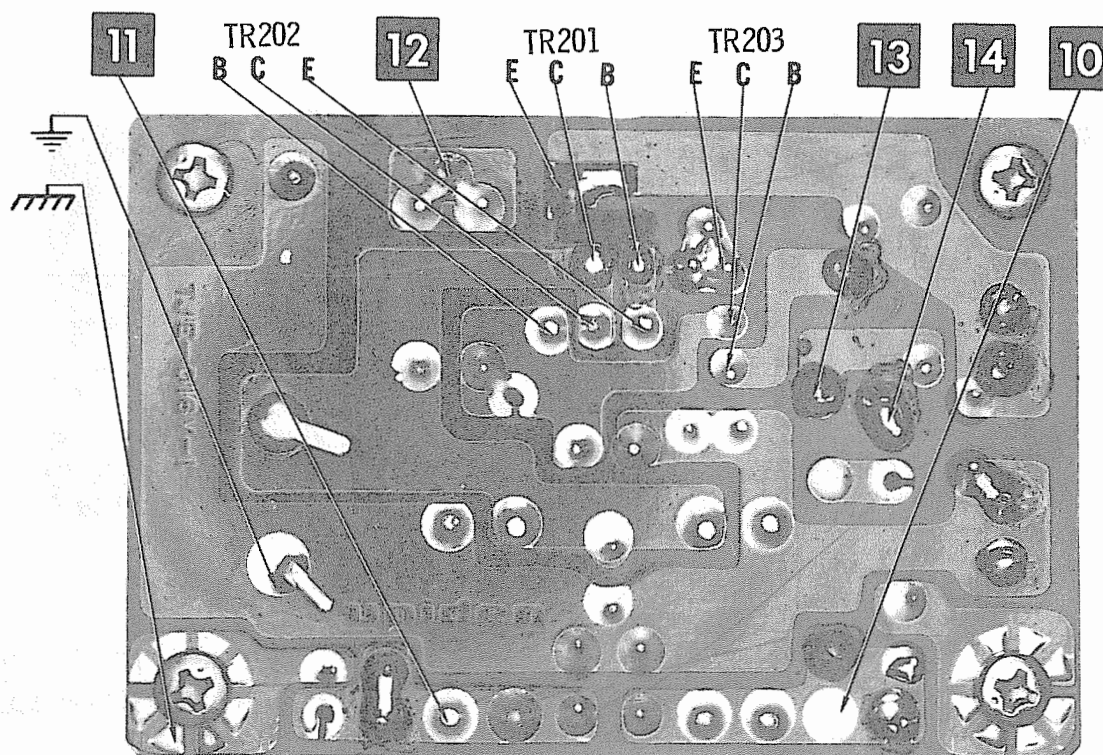
MIC BOARD

A Howard W. Sams **CIRCUITRACE** Photo

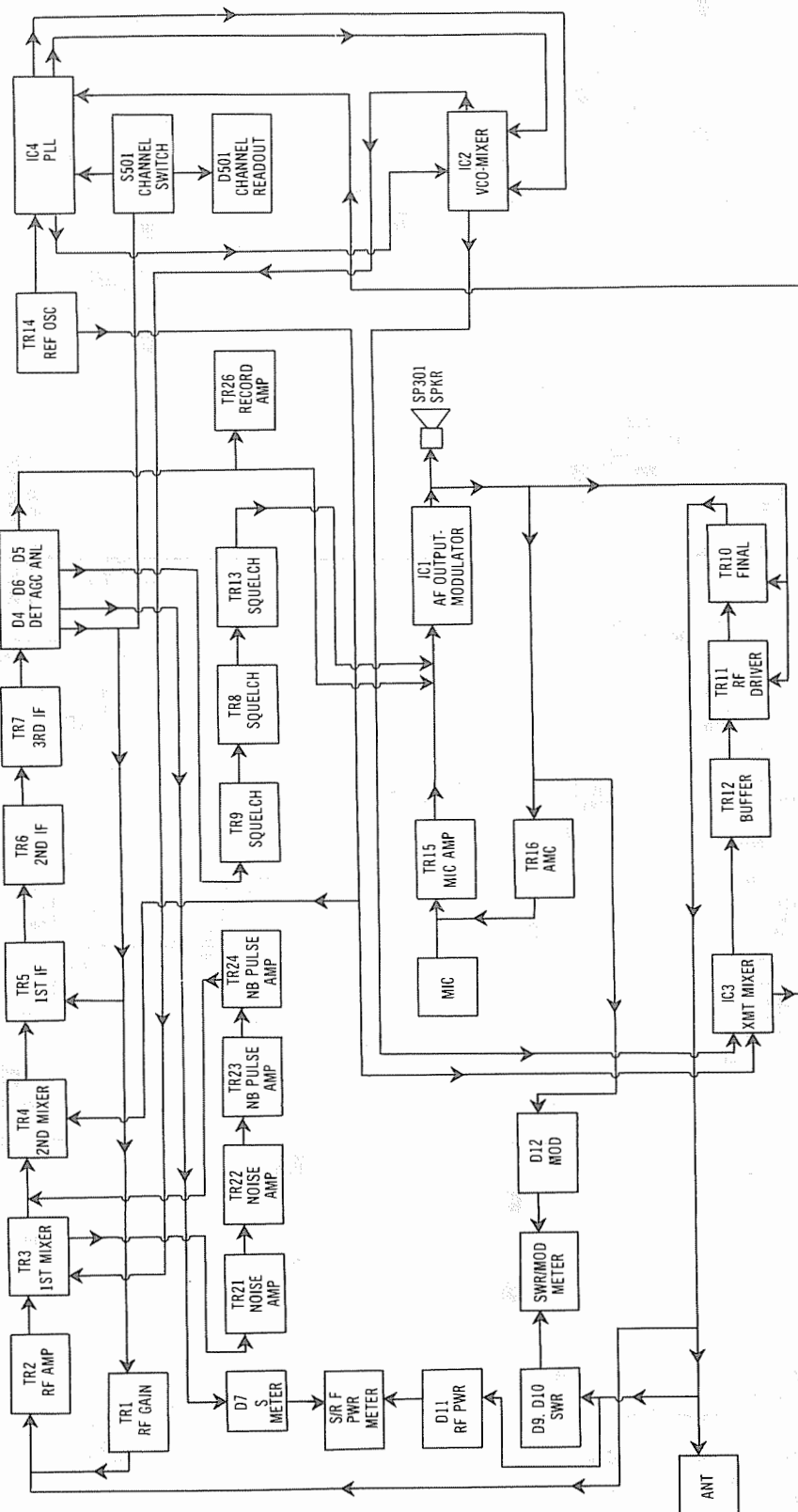


PHONE JACK BOARD

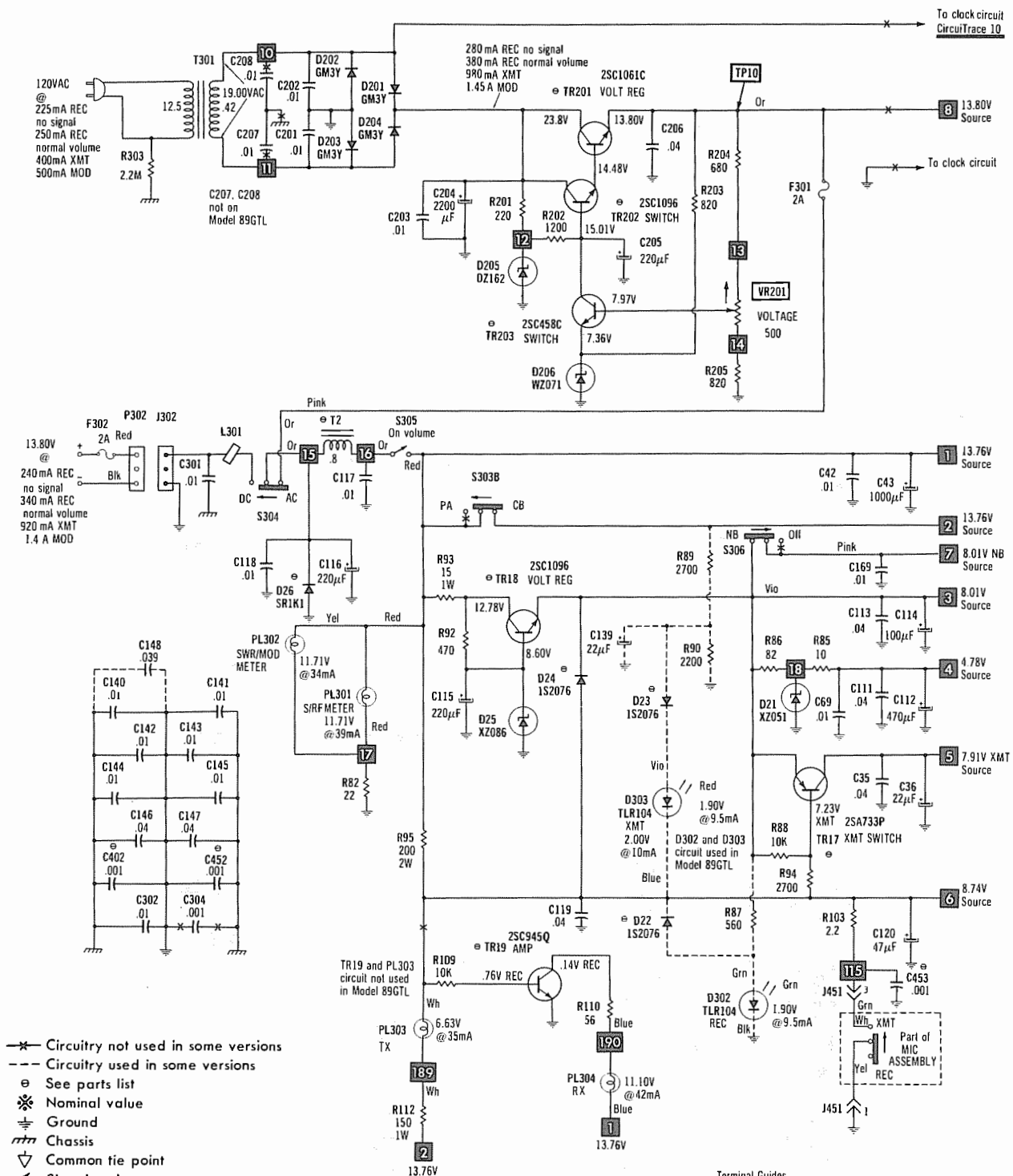
COBRA MODEL 89GTL, 1000GTL

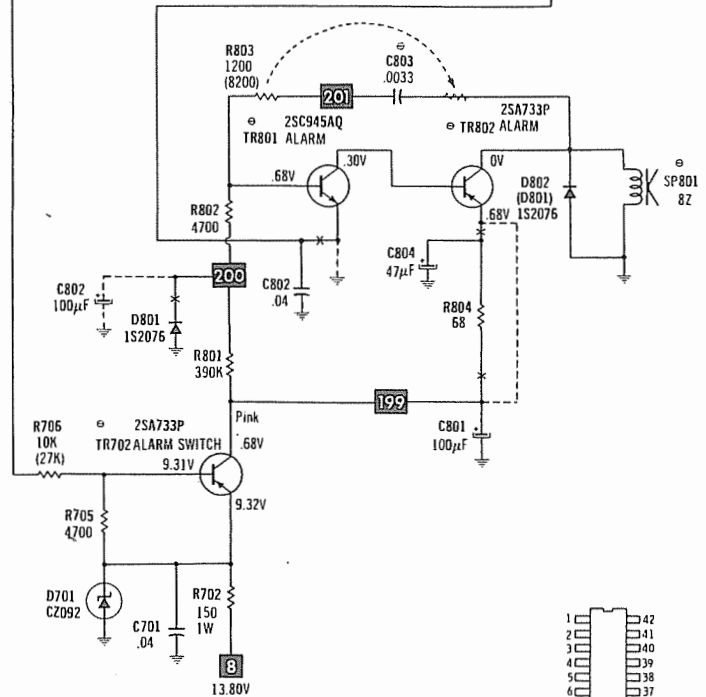
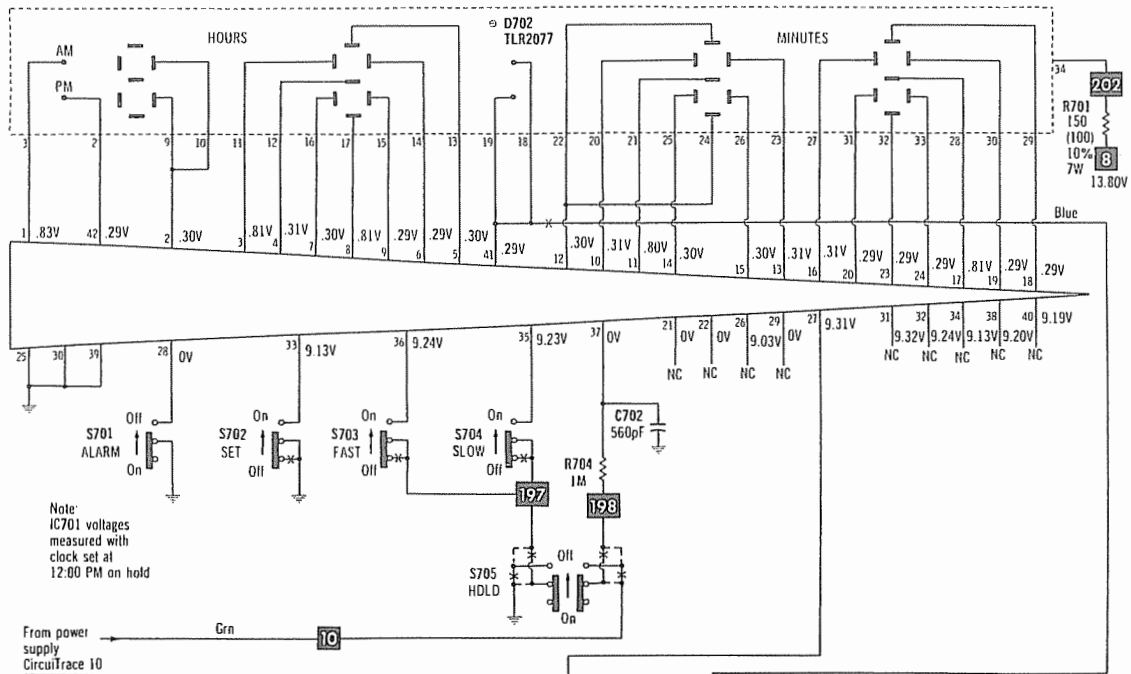


POWER SUPPLY SCHEMATIC



BLOCK DIAGRAM





- *— 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.

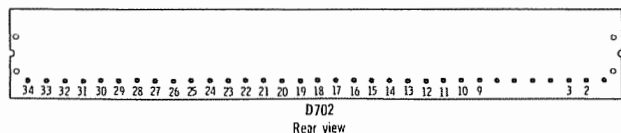
Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

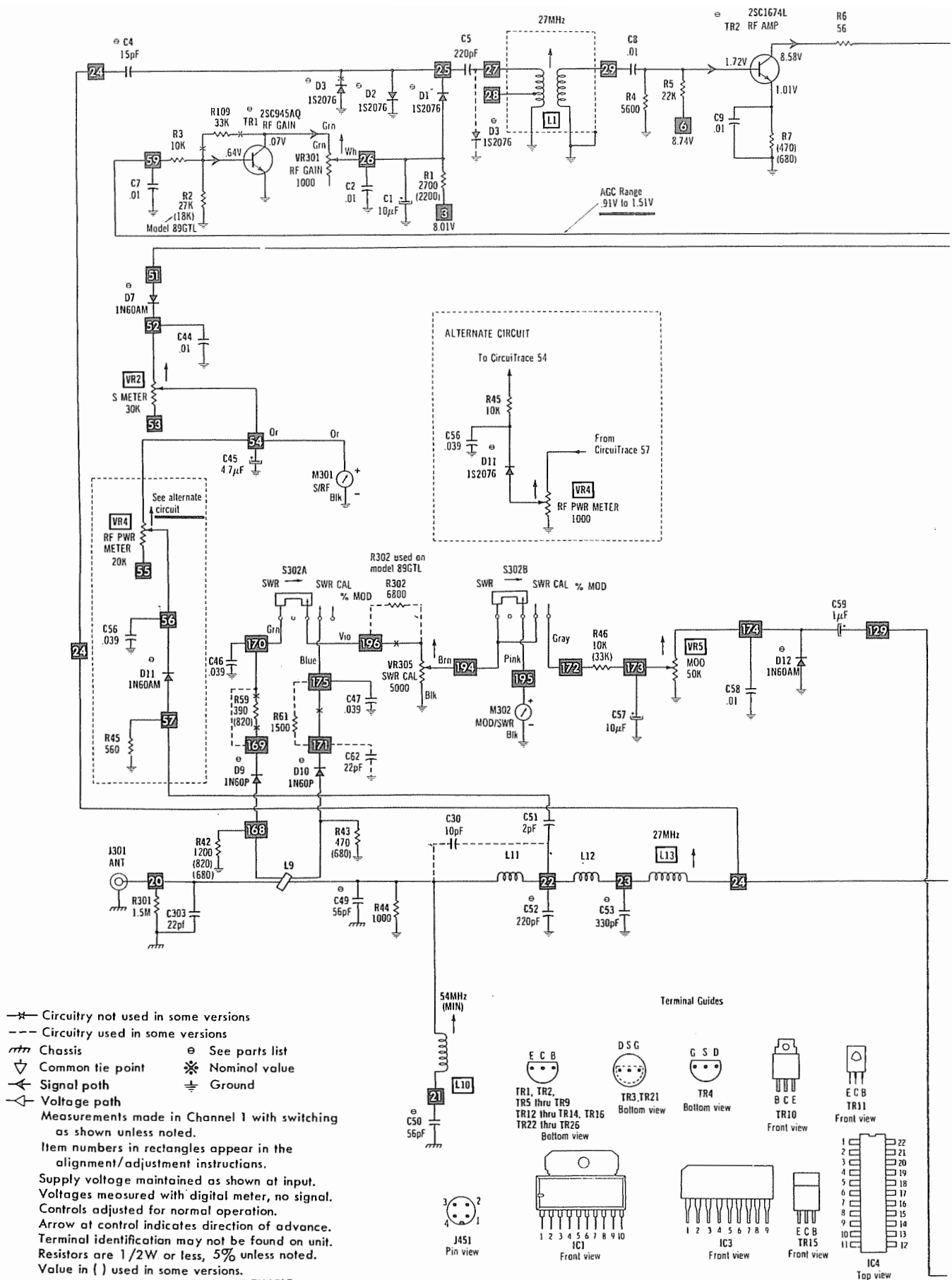
A PHOTOFAC STANDARD NOTATION SCHEMATIC

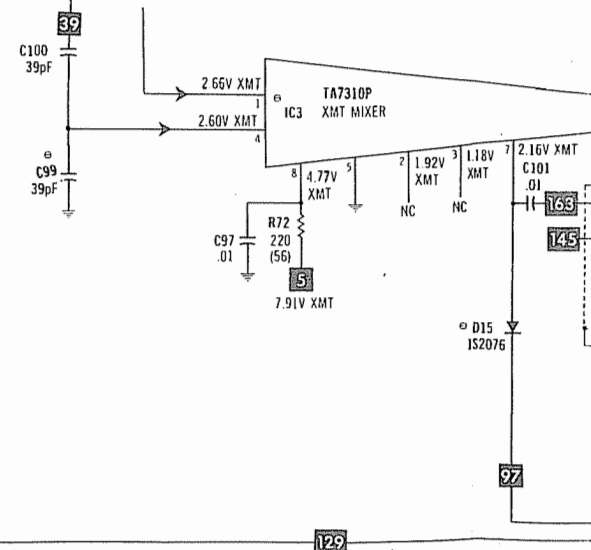
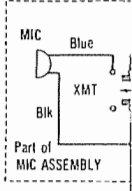
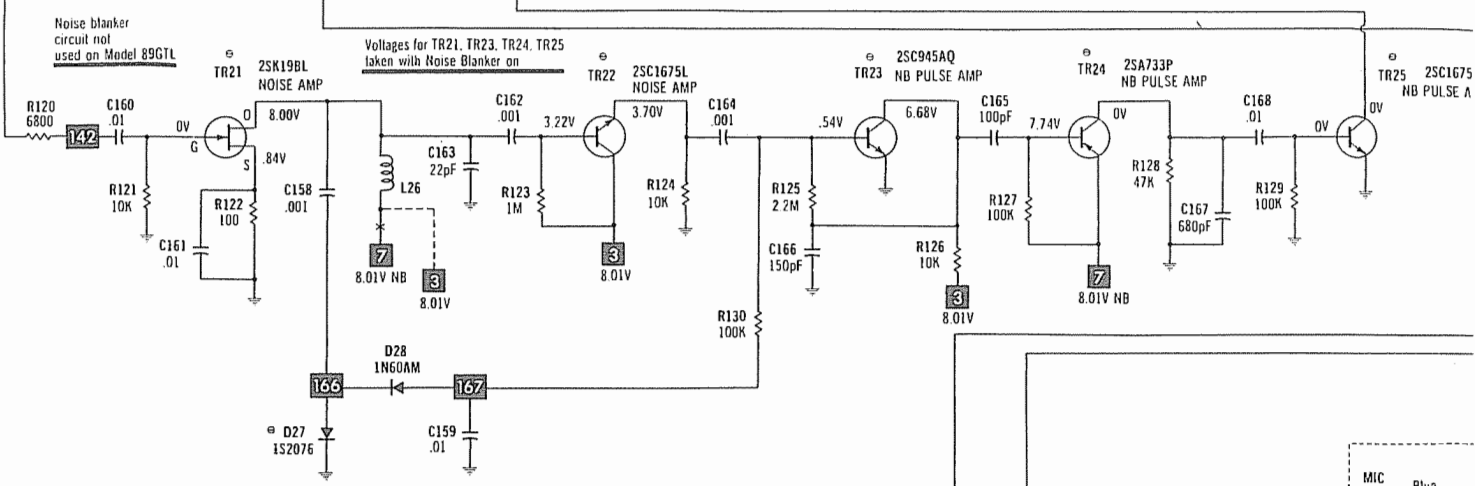
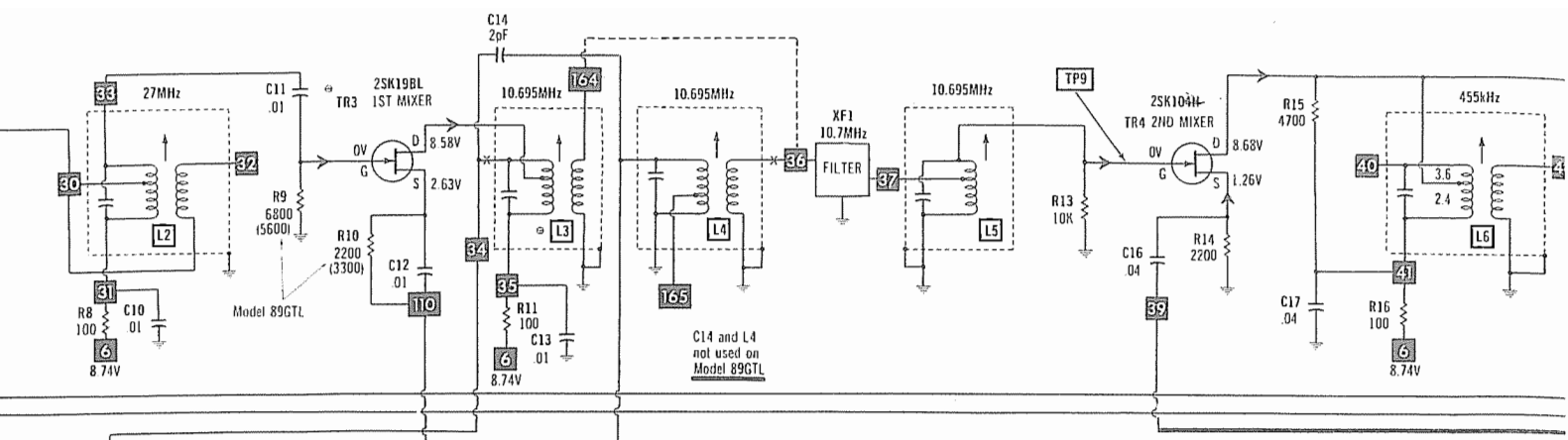
WITH **CIRCUITTRACE**

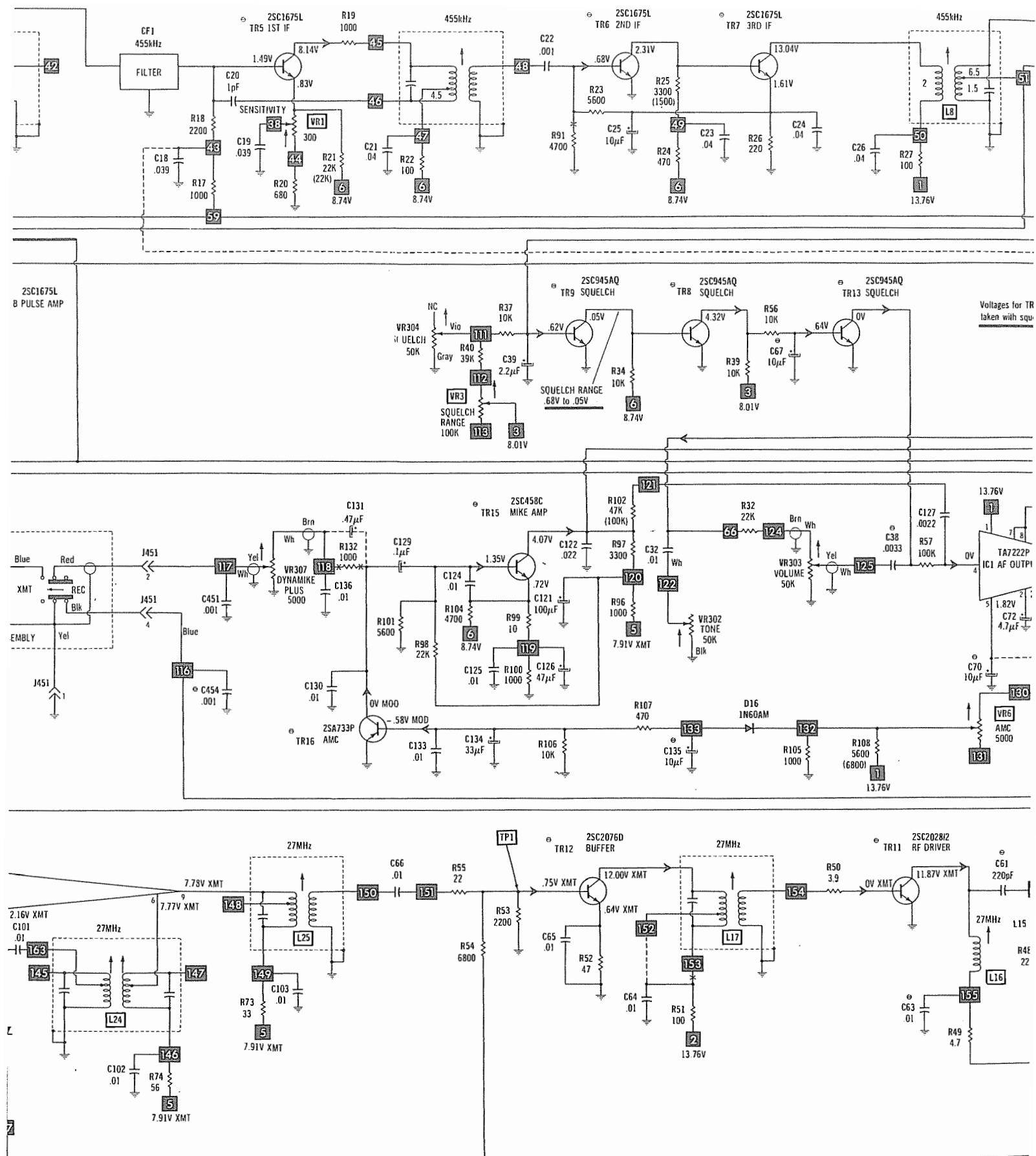
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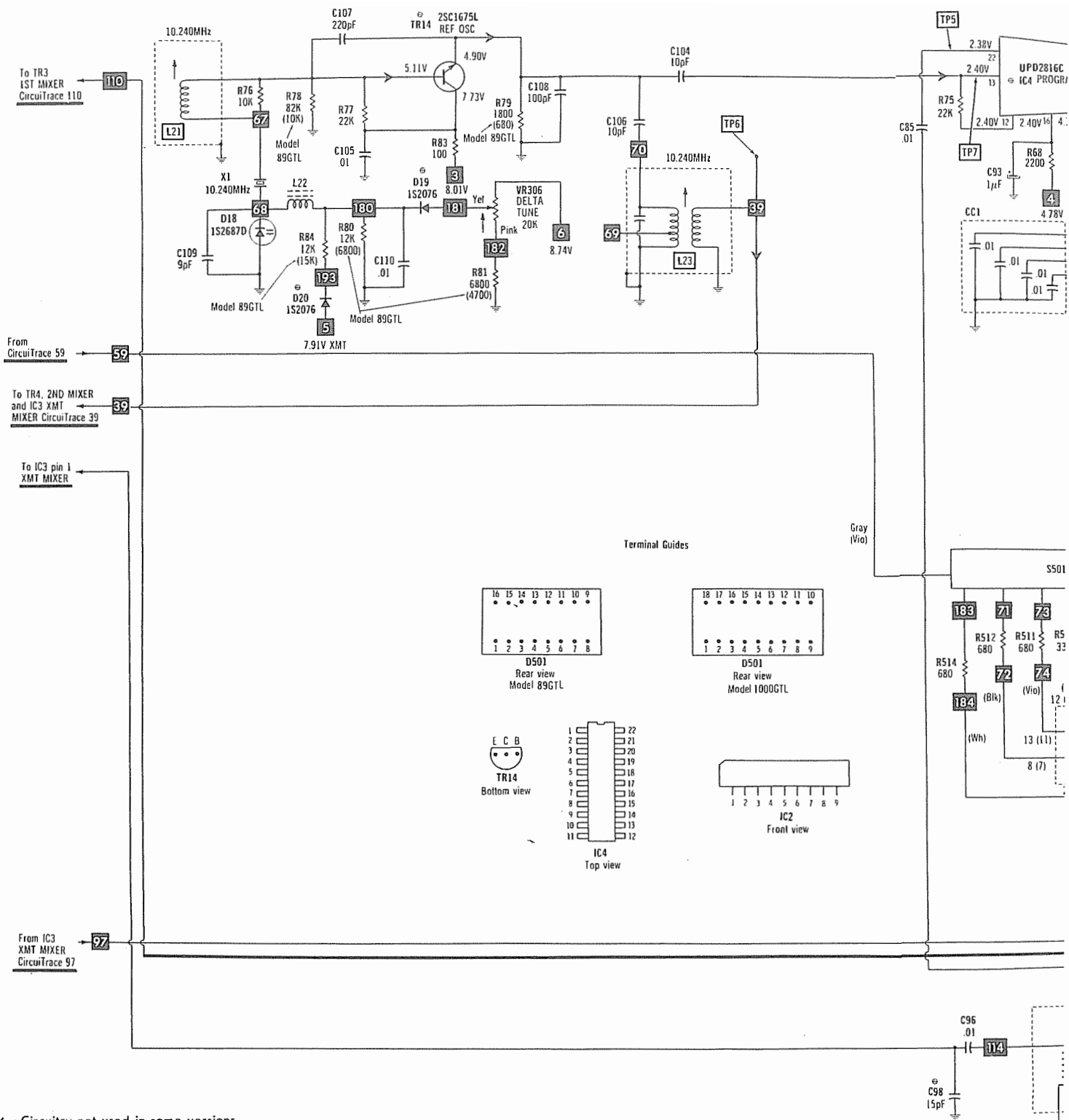
CLOCK SCHEMATIC







MAIN SCHEMATIC



✗ 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 PHOTOFAC 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.

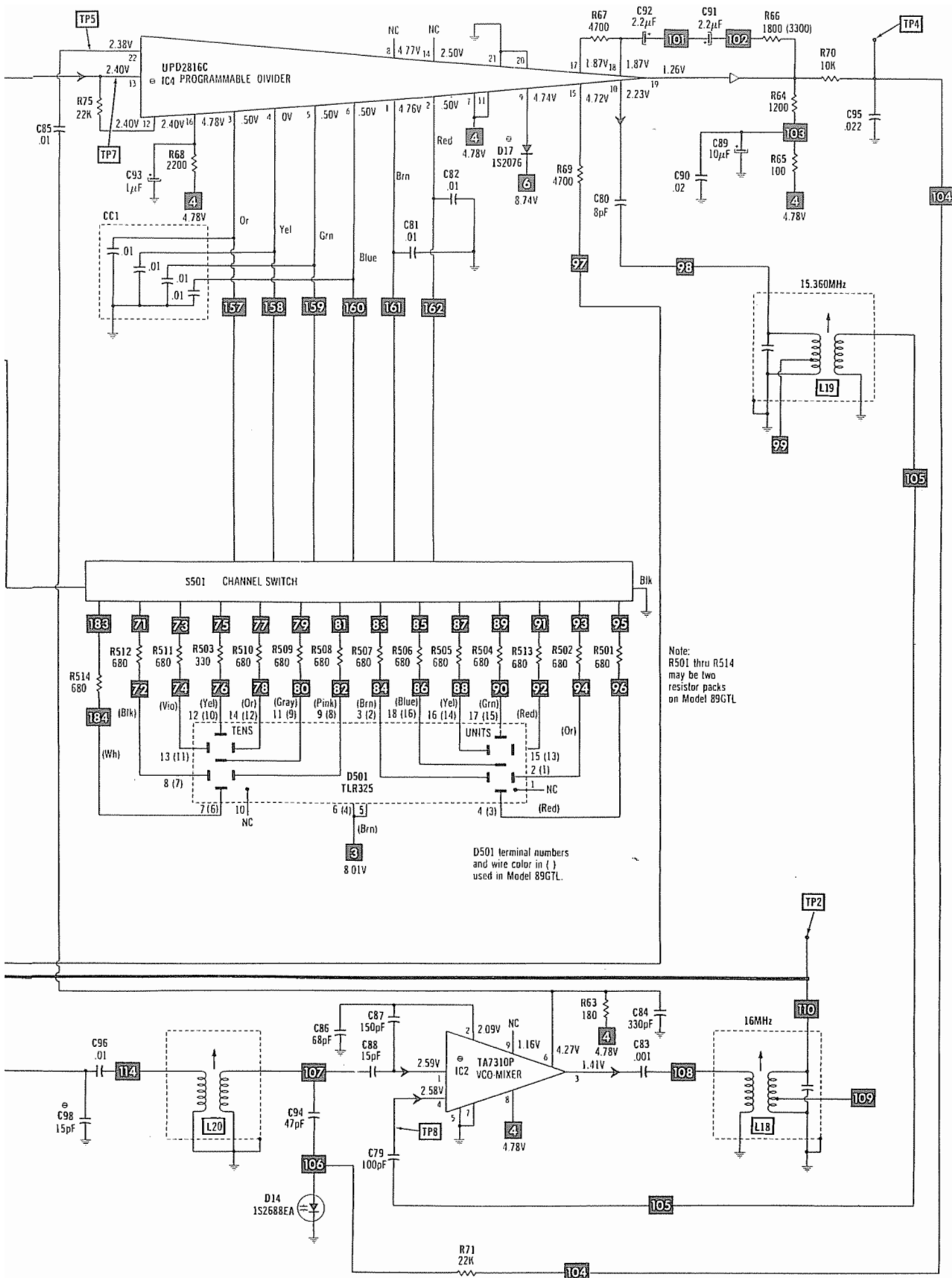
Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

PLL SCHEMATIC



SCHEMATIC

COBRA MODEL 89GTL, 1000GTL

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

General-use Hook-up Wire (available in 5 colors)	BELDEN No. 8523	Coiled Microphone Cable	
Shielded Hook-up Wire (spiral wrapped)	BELDEN No. 8421	3-conductor (1 shielded) 23AWG	BELDEN No. 9471 (5')
(braided)	BELDEN No. 8401		BELDEN No. 9497 (6')
Speaker Cable (available in 4 colors)	BELDEN No. 8782		BELDEN No. 9472 (7'-1/2')
	BELDEN No. 8672	28AWG	BELDEN No. 9466 (6')
Winding Strap		31AWG	BELDEN No. 9468 (10')
AC Power Cord (6')	BELDEN No. 17106	4-conductor (unshielded) 23AWG	BELDEN No. 9415 (6')
(9')	BELDEN No. 17109	5-conductor (1 shielded) 28AWG	BELDEN No. 9467 (6')
			BELDEN No. 9465 (7'-1/2')

ITEM No.	TYPE No.	MFG. 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.
01	1S2076	153-008-9-001 (12)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	151-067-9-001 (13)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S1588		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
02	1N4448		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	153-008-9-001 (12)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	151-067-9-001 (13)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S1588		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
03	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	153-008-9-001 (12)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076	151-067-9-001 (13)	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	WG713		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
04	1S1588		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2473		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N4448		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S34	150-016-9-001	1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	TM109/**	WEP134	103-Z9001
	1S2075K	151-028-9-001	GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
05	1S2473K		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1S2076		GE-514	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG519	TM519	WEP925	103-287
	1N60AM	150-014-9-001 (12)	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
	1N60AM	150-001-9-005 (13)	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
	1N60AM	150-014-9-001 (12)	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
06	1N60AM	150-001-9-005 (13)	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109	TM109/**	WEP134	103-Z9001
	1N60AM	150-014-9-001 (12)	1N60	PTC206	HEPR9135	REN 109	SK3088	RT-263	ECG109			

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

REPLACEMENT DATA			

COBRA MODEL 89GTL, 1000GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

			REPLACEMENT DATA									
ITEM No.	TYPE No.	MFR. 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.	ZENITH PART No.
TR9	25C945AQ	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C1815		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C1359		GE-212	PTC121*	HEPS0014*	REN 199	SK3122	RT-308	ECG229*	TM229*	WEP66	121-29021
	25C536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
TR10	25C458	172-038-9-002	GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25C2029/1		GE-333	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	25C2029B/10		GE-333	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	25C2029		GE-337	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	25C2075		GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
TR11	25C1909	172-038-9-001	GE-215	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	25C2028/2		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C2028B/20		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C2028		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C1760		GE-270	PTC180	HEPS3044	REN 306	SK3197	RT-310	ECG306	TM306	WEP771	121-880
TR12	25C1957	176-060-9-004	GE-270	PTC180		REN 295	SK3197		ECG295	TM295	WEP913	121-880
	25C1957		GE-270	PTC180		REN 295	SK3197		ECG295	TM295	WEP913	121-880
	25C495T		GE-270	PTC180		REN 295	SK3253	RT-162	ECG295	TM295	WEP913	121-880
	25C1846		GE-336	PTC904		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C1974		GE-337	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
TR13	25C2091	176-062-9-001	GE-270	PTC180		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C20760		GE-210	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-308	ECG295	TM295	WEP736	121-722
	25C2076C		GE-210	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-308	ECG295	TM295	WEP736	121-722
	25C735		GE-210	PTC123*	HEPS0014*	REN 289	SK3122	RT-308*	ECG289	TM289/**	WEP735A	121-773
	25C1364		GE-210	PTC121*	HEPS0015*	REN 123A*	SK3124	RT-308	ECG123A*	TM123A/**	WEP736*	121-29000A
TR14	25C933	176-062-9-001	GE-210	PTC136	HEPS0015*	REN 123A	SK3444	RT-308*	ECG123A	TM123A	WEP736	121-29000A
	25C945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C545		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR15	25C536	176-065-9-001	GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	25C458		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25C1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3122	RT-308	ECG229*	TM229*	WEP956*	121-29021
	25C1675		GE-61*	PTC136*	HEPS0016*	REN 107	SK3018*	RT-107A	ECG107	TM107/**	WEP380	121-522
	25C380		GE-62*	PTC139*	HEPS0024*	REN 199*	SK3122*	RT-108A*	ECG199*	TM199*	WEP66*	121-972
TR16	25C930	177-020-9-001(12)	GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP56*	121-29021*
	25C460		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	25C458C		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25C458		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25C945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR17	25C828	177-020-9-001(12)	GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	25C536		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	25A733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	25A733		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	25A495		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159*/**	WEP495	121-29003
TR18	25A564	177-020-9-001	GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	25A659		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	25A844		GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114	RT-126A*	ECG129*	TM129*	WEP60*	121-29005
	25A733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	25A733AP		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
TR19	25A495	177-020-9-001	GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159*/**	WEP495	121-29003
	25A564		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	25C1096		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
	25C2236		GE-336	PTC180		REN 295	SK3518		ECG306	TM306	WEP771	121-880
	25C2028		GE-270	PTC180	HEPS3044	REN 295	SK3253		ECG295	TM295	WEP913	121-880
TR20	25C2091	172-024-9-001	GE-270	PTC180		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C1846		GE-336	PTC904		REN 295	SK3253		ECG295	TM295	WEP913	121-880
	25C1974		GE-337	PTC186		REN 235	SK3197	RT-146	ECG235	TM235	WEP785	121-29039
	25C1760		GE-276	PTC180		REN 306	SK3197	RT-310	ECG306	TM306	WEP771	121-880
	25C1096-3ZL		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
TR21	25C945AQ	176-062-9-001 (12)	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C945 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C1815 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C1359 (12)		GE-212	PTC121*	HEPS0014*	REN 199	SK3122	RT-308	ECG229*	TM229*	WEP66	121-29021
	25C536 (12)		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
TR22	25C458 (12)	182-037-9-001 (12)	GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25K198L		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	25K104		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312	TM312	WEP920	121-756
	25C1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3122	RT-308	ECG229*	TM229*	WEP956*	121-29021
	25C1675		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3122	RT-308	ECG229*	TM229*	WEP956*	121-29021
TR23	25C460	176-065-9-001	GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	25C1815		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C829		GE-20*	PTC139*	HEPS0015*	REN 123A	SK3444	RT-308	ECG229*	TM229*/**	WEP829	121-29021*
	25C930		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP956*	121-29021*
	25C945AQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR24	25C945	176-062-9-001	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	25C828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
	25C458		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	25C900		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	TM199/**	WEP66	121-972
	25C1815		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR25	25A733P	177-020-9-001 (12)	GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	25A733 (12)		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	25A495 (12)		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159*/**	WEP495	121-29003
	25A564 (12)		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
	25A659 (12)		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
TR26	25A844 (12)	176-065-9-001 (12)	GE-244*	PTC103*	HEPS0019*	REN 129*	SK3114	RT-126A*	ECG129*	TM129*	WEP60*	121-29005
	25C1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3122	RT-308	ECG229*	TM229*	WEP956*	121-29021
	25C1675 (12)		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3122	RT-308	ECG229*	TM229*	WEP956*	121-29021
	25C460 (12)		GE-61*	PTC136*	HEPS0014*	REN 107	SK3122	RT-134	ECG107	TM107/**	WEP460	121-522
	25C1815 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
TR27	25C829 (12)	176-062-9-001	GE-20*	PTC139*	HEPS0015*	REN 123A	SK3444	RT-308	ECG229*	TM229*/**	WEP829	121-29021*
	25C930 (12)		GE-60*	PTC132*	HEPS0016*	REN 229	SK3018	RT-308	ECG229*	TM229*/**	WEP956*	121-29021*
	25C945AQ		GE-212	PTC121*								

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.	MFG. 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.
TR26	2SC945AQ	176-062-9-001 (12)	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1815 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC536 (12)		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SC458 (12)		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
TR201	2SC1359 (12)	176-044-9-001	GE-212	PTC121*	HEPS0014*	REN 199	SK3122	RT-308	ECG229*	TM229*	WEP66	121-29021
	2SC1061C		GE-66	PTC167	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-987-02
	2SC1061		GE-66	PTC167	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-987-02
	2S0313		GE-241	PTC154		REN 196	SK3054	RT-154	ECG196	TM196	WEP756	121-987-02
	2S0235		GE-66	PTC154	HEPS3061	REN 152	SK3054	RT-197	ECG152	TM152/**	WEP745	121-987-02
TR202	2SD570	172-024-9-001	GE-241	PTC154	HEPS3060	REN 196	SK3054	RT-197	ECG196	TM196	WEP756	121-987-02
	2SC1096		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
	2SC1096-3ZL		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	TM186A/**	WEP1096	121-29008
	2SC1419		GE-66	PTC167	HEPS5027	REN 152	SK3054	RT-197	ECG152	TM152	WEP745	121-987-02
	2SC1173		GE-215	PTC110		REN 236	SK3197	RT-160	ECG236	TM236/**	WEP840	121-29040
TR203	2SC458C	176-048-9-002	GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC458		GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC372		GE-61*	PTC121*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	TM123A/**	WEP372	121-29000A*
	2SC828		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	TM199/**	WEP828	121-972
TR702	2SC536	177-020-9-001	GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA733 (12)		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA495 (12)		GE-221*	PTC103*	HEPS0013*	REN 159*	SK3114	RT-303	ECG159*	TM159/**	WEP495	121-29003
	2SA564 (12)		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	TM234	WEP564	121-879
TR801	2SC945AQ	176-062-9-001 (12)	GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC945 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1815 (12)		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	TM199/**	WEP1945	121-972
	2SC1359 (12)		GE-212	PTC121*	HEPS0014*	REN 199	SK3122	RT-308	ECG229*	TM229*	WEP66	121-29021
	2SC536 (12)		GE-212	PTC121*	HEPS0016*	REN 199	SK3124	RT-107A	ECG199	TM199	WEP536	121-972
TR802	2SC458 (12)	177-020-9-001	GE-210	PTC121*	HEPS0009*	REN 123A*	SK3122	RT-187	ECG289	TM289/**	WEP458	121-773
	2SA733P (12)		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952
	2SA733 (12)		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	TM294/**	WEP916	121-952

COBRA MODEL 89GTL, 1000GTL

* Lead configuration may vary from original.
 /** Also available as exact type replacement.
 (12) Use in 1000GTL.
 (13) Use in 89GTL.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C1	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C25	10 10V	027-025-9-001		TDC106M025FL	QOT1-64	S025-109
C29	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C36	22 16V	022-157-9-005	PC25-25	VTT22B16	QV1-55	EV-1224
C37	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C39	2.2 25V	022-158-9-002	PC2-100	VTT2R2A50	QV1-19	EV-1517
C41	4.7 16V	027-026-9-004		TDC685M006EL	QOT1-54	S06-6RB9
C43	1000 16V	022-158-9-004	PC1000-16	VTT1000L16	QV1-183	EV-1260
C45	4.7 25V	022-157-9-003	PC5-50	VTT4R7B50	QV1-27	EV-1319
C57	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C59	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C67	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C70	3.3 25V	022-172-9-001(1)	PC5-50	VTT3R3A50	QV1-23	EV-1318
	10 10V	027-025-9-001		TDC106M025FL	QOT1-64	S025-109
	4.7 16V	027-026-9-004(1)	PC5-50	VTT4R7B50	QV1-27	EV-1319
	4.7 25V	022-157-9-003	PC5-50	VTT4R7B50	QV1-27	EV-1319
	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226
C74	10 16V	022-076-9-008	PC500-16	VTT470K16	QV1-151	EV-1250
C89	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
C91	2.2 16V	027-033-9-001		TDC225M035FL		S035-2R29
C92	2.2 16V	027-033-9-001		TDC225M035FL		S035-2R29
C93	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
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
C115	220 16V	022-163-9-003	PC250-25	VTT220H16	QV1-117	EV-1240
C116	220 25V	022-175-9-003	PC250-25	VTT220K25	QV1-119	EV-1340
C120	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226
C121	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130
C126	22 16V	022-157-9-005(1)	PC25-25	VTT22B16	QV1-55	EV-1224
	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226
	.47 50V	022-157-9-001	PC1-50	VTT47A63	QV1-3	EV-1610
	.1 16V	022-177-9-001		TDC104M050EL	QOT1-2	S050-R109
	.47 50V	022-157-9-001(1)	PC1-50	VTT47A63	QV1-3	EV-1610
C134	4.7 25V	022-157-9-003(2)				
	33 16V	022-157-9-006	PC30-25	VTT33025	QV1-63	EV-1325
	10 16V	022-157-9-004	PC10-25	VTT10B25	QV1-41	EV-1222
	3.3 25V	027-033-9-002(1)	PC5-50	VTT3R3A50	QV1-23	EV-1318
	22 16V	022-157-9-005(2)	PC25-25	VTT22B16	QV1-55	EV-1224
C150	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226
C152	1 50V	022-157-9-002	PC1-50	VTT1A50	QV1-11	EV-1615
C153	2.2 25V		PC2-100	VTT2R2A50	QV1-19	EV-1517
C154	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226
C204	2200 35V	022-175-9-004	WBR2000-50	TC50200A	QEI-648	TVA-1318.3
C205	220 16V	022-163-9-003	PC250-25	VTT220H16	QV1-117	EV-1240
C801	100 10V	022-157-9-008	PC100-10	VTT100E10	QV1-93	EV-1130
C802	100 10V	022-157-9-008(1)	PC100-10	VTT100E10	QV1-93	EV-1130
C804	47 10V	022-160-9-002	PC50-16	VTT47016	QV1-73	EV-1226

(1) Used in some versions.
 (2) Used in Model 89GTL.

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
C2	.01 10% 50V	(1)	UK50-103		MAG5011		
C4	15 N220				*		10TCR-Q15
	22 50V 10%	(2)	0TZ-22	NP022	CN0422		10TCC-Q22
	27 50V 10%				CN0427		10TCC-Q27
C5	.01 10% 50V	(2)	UK50-103		MAG5011		
C7	.01 10% 50V		UK50-103		MAG5011		
C8	.01 10% 50V	(2)	UK50-103		MAG5011		
C9	.01 10% 50V		UK50-103		MAG5011		
C10	.01 10% 50V	(1)	UK50-103		MAG5011		
C11	.01 10% 50V		UK50-103		MAG5011		
C12	.01 10% 50V	(1)	UK50-103		MAG5011		
C13	.01 10% 50V		UK50-103		MAG5011		
C14	2 NP0 +.25 50V	(1)	0TZ-2R2	NP02P2	MAG5011		
C16	.039 10% 25V				CN0522		10TCC-V22
C17	.039 10% 25V	(1)			GP140		5GA-S40
C18	.039 10% 25V				GP140		5GA-S40
C19	.039 10% 25V	(1)		DPMS6S39	M192P3939R8	QFT2-159	1FT-S39
C20	1 +.25 50V			DPMS6S39	M192P3939R8	QFT2-159	1FT-S39
C21	.039 10% 25V	(1)			CN0510		10TCC-V10
C22	.001 25V				GP140		5GA-S40
C23	.039 10% 25V	(1)	00-102G	GP1000	GP210	QC2-81	5GA-010
C24	.039 10% 25V				GP140		5GA-S40
C26	.039 10% 25V	(1)			GP140		5GA-S40
C27	.04				GP140		5GA-S40
	.0047 25V	(1)		OPMS6S39	M192P3939R8	QFT2-159	1FT-S39
	.0022 25V			WMF0147	M192P4729R8	QFT2-63	1FT-047
C30	10 10% 50V	(1)		OPMS6022	M192P2229R8	QFT2-27	1FT-022
C31	.0047 25V		0TZ-10	NP010	CN0410		10TCC-010
C32	.01 25V	(1)		WMF1047	M192P4729R8	QFT2-63	1FT-047
C33	.01 25V			WMF1S1	EWFTA110	QFT2-91	1FT-S10
C35	.02	(1)	UK50-223	WMF1S1	EWFTA110	QFT2-91	1FT-S10
	.039 25V				MAG5012		
C38	.033 25V	(1)			GP140		5GA-S40
	.0022 25V			WMF1033	M192P3329R8	QFT2-43	1FT-D33
C40	.01 25V	(1)		DPMS6022	M192P2229R8	QFT2-27	1FT-022
	.01 25V			WMF1S1	EWFTA110	QFT2-91	1FT-S10
C42	.01 10% 50V	(1)	UK50-103		MAG5011		
C44	.01 25V			WMF1S1	EWFTA110	QFT2-91	1FT-S10
C46	.039 10% 25V	(1)			GP140		5GA-S40
C47	.039 10% 25V				GP140		5GA-S40
C49	56 10% 50V	(1)	0TZ-47	NP047	CN0456		10TCC-Q56
	47 10% 50V				CN0447		10TCC-Q47
C50	56 10% 50V	(1)			CN0456		10TCC-Q56
C51	2 +.25 50V		DTZ-2R2	NP02P2	CN0522		10TCC-V22
C52	220 10% 50V	(1)	DTZ-220				10TCC-T22
	390 10% 50V		DTZ-1R5	NP01P5	CN0515		10TCC-V15
C53	330 10% 50V	(1)	00-331	GP330	GP333		10TS-T33
	390 10% 50V		00-391	GP390	GP339		10TS-T39
C54	.0047 10% 50V	(1)	DTZ-6R8	NP06P8	CN0568		10TCC-V68
C55	100 10% 50V		DTZ-100	NP0100	CN0310		10TCC-T10
C56	.039 10% 25V	(1)			GP140		5GA-S40
C58	.01 10% 50V		UK50-103		MAG5011		
C60	.01 50V	(1)	UK50-103		MAG5011		
	.039 10% 25V				GP140		5GA-S40
C61	220	(1)	DTZ-220				10TCC-T22
	270 10% 50V		DTZ-270				10TCC-T27
C62	22 10% 50V	(1)	DTZ-22	NP022	CN0422		10TCC-Q22
C63	.01 50V		UK50-103		MAG5011		
C64	.01 10% 50V	(1)	UK50-103		MAG5011		
C65	.01 50V		UK50-103		MAG5011		
C66	.01 10% 50V	(1)	UK50-103		MAG5011		
C67	.01 10% 50V						
C68	.039 10% 25V	(1)			GP140		5GA-S40
C69	.01 10% 50V		UK50-103		MAG5011		
C71	.001 10% 50V	(1)	00-102G	GP1000	GP210	QC2-81	5GA-010
C75	.001 10% 50V		00-102G	GP1000	GP210	QC2-81	5GA-010
C76	.0022	(2)	00-222		GP222	QC2-97	5GA-D22
	.001 25V		00-102G	GP1000	GP210	QC2-81	5GA-D10
C77	.1 25V	(2)	UK25-104		MAG2501		HY-750
C78	.01 10% 50V			WMF1S1	EWFTA110	QFT2-91	1FT-S10
C79	100 10% 50V	(2)	DTZ-100	NP0100	CN0310		10TCC-T10
	.01 10%		UK50-103		MAG5011		
C80	8 +.5 50V	(2)	DTZ-10	NP010	CN0410		10TCC-Q10
	1 +.25 50V				CN0510		10TCC-V10
C81	.01 10% 50V	(1)	UK50-103		MAG5011		
C82	.01 10% 50V		UK50-103		MAG5011		
C83	.001 10% 50V	(1)	00-102G	GP1000	GP210	QC2-81	5GA-010
C84	330 10% 50V		00-331	GP330	GP333		10TS-T33
C85	.01 10% 50V	(1)	UK50-103		MAG5011		
C86	68 10% 50V		DTZ-68	NP068	CN0468		10TCC-Q68
C87	150 10% 50V	(1)	DTZ-150		CN0315		10TCC-T15
C88	15 N220 10% 50V				*		10TCR-Q15
C90	.022 10% 25V	(1)	UK25-223		CN7447		HY-725
C94	47 N750 5% 50V		DTN-47	N47	M192P2239R8	QFT2-127	10TCU-Q47
C95	.022 10% 25V	(1)		OPMS2S22			1FT-S22
C96	.01 10% 50V		UK50-103		MAG5011		
C97	.01 10% 50V	(1)	UK50-103		MAG5011		
C98	15 10% 50V		DTZ-15	NP015	CN0415		10TCC-Q15

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C99	39 10% 50V	(3)			CN0439		10TCC-Q39
	220 10% 50V	(2)	DTZ-220				10TCC-T22
C100	39 10% 50V						10TCC-Q39
C101	.01 10% 50V		UK50-103		CN0439		
C102	.01 10% 50V		UK50-103		MAG5011		
C103	.01 10% 50V		UK50-103		MAG5011		
C104	10 10% 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C105	.01 10% 50V		UK50-103		MAG5011		
C106	10 10% 50V		DTZ-10	NP010	CN0410		10TCC-Q10
C107	220 10% 50V		DTZ-220				10TCC-T22
C108	100 10% 50V		DTZ-100	NP0100	CN0310		10TCC-T10
C109	9 M220 10% 50V				*		10TCR-Q10
C110	.01 10% 50V		UK50-103		MAG5011		
C111	.039 10% 25V				GP140		5GA-S40
C113	.039 10% 25V				GP140		5GA-S40
C116	.039 25V		UK50-103		MAG5011		
C117	.01 10% 50V				GP140		5GA-S40
C118	.01 10% 50V		UK50-103		MAG5011		
C119	.039 10% 25V				GP140		5GA-S40
C122	.022 25V		UK25-223				HY-725
C124	.01 25V			WMF1S1	EW1A110	QFT2-91	1FT-S10
C125	.01 10% 50V		UK50-103		MAG5011		
C127	.0022 10% 25V			OPMS6022	M192P2229R8	QFT2-27	1FT-022
C130	.01 10% 50V		UK50-103		MAG5011		
C133	.01 10% 50V		UK50-103		MAG5011		
C136	.01 10% 50V		UK50-103		MAG5011		
C140	.01 10% 50V		UK50-103		MAG5011		
C141	.01 10% 50V		UK50-103		MAG5011		
C142	.01 10% 50V		UK50-103		MAG5011		
C143	.01 10% 50V		UK50-103		MAG5011		
C144	.01 10% 50V		UK50-103		MAG5011		
C145	.01 10% 50V		UK50-103		MAG5011		
C146	.01		UK50-103		MAG5011		
	.039 25V	(2)			GP140		5GA-S40
C147	.01		UK50-103		MAG5011		
	.039 25V	(2)			GP140		5GA-S40
C148	.039 25V				GP140		5GA-S40
C158	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C159	.01	(3)	UK50-103		MAG5011		
C160	.01	(3)	UK50-103		MAG5011		
C161	.01	(3)	UK50-103		MAG5011		
C162	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C163	22 10% 50V	(3)	DTZ-22	NP022	CN0422		10TCC-Q22
C164	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C165	100 10% 50V	(3)	DTZ-100	NP0100	CN0310		10TCC-T10
C166	150 10% 50V	(3)	DTZ-150		CN0315		10TCC-T15
C167	680 10% 50V	(3)	00-681	GP680	GP368		10TS-T68
C168	.01	(3)	UK50-103		MAG5011		
C169	.01	(3)	UK50-103		MAG5011		
C201	.01 10% 50V		UK50-103		MAG5011		
C202	.01 10% 50V		UK50-103		MAG5011		
C203	.01 10% 50V		UK50-103		MAG5011		
C206	.039 10% 25V				GP140		5GA-S40
C207	.01	(3)	UK50-103		MAG5011		
C208	.01	(3)	UK50-103		MAG5011		
C301	.01 10% 50V		UK50-103		MAG5011		
C302	.01 10% 50V		UK50-103		MAG5011		
C303	22 10% 50V		DTZ-22	NP022	CN0422		10TCC-Q22
C304	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
C305	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C401	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(1)	UK50-103		MAG5011		
C402	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(1)	UK50-103		MAG5011		
C403	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(2)	UK50-103		MAG5011		
C404	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(2)	UK50-103		MAG5011		
C405	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
C406	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
C451	.001 10% 50V		00-102G	GP1000	GP210	QC2-81	5GA-D10
C452	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(2)	UK50-103		MAG5011		
C453	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(2)	UK50-103		MAG5011		
C454	.001		00-102G	GP1000	GP210	QC2-81	5GA-D10
	.01 10% 50V	(2)	UK50-103		MAG5011		
C601	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C602	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C603	.001	(3)	00-102G	GP1000	GP210	QC2-81	5GA-D10
C701	.04	(3)			GP140		5GA-S40
C702	560 10% 50V	(3)	00-561		GP356		10TS-T56
C802	.04	(3)			GP140		5GA-S40
C803	.0033	(3)	00-332	GP3300	GP233	QC2-107	5GA-D33
	.0022 50V	(1)(3)	00-222		GP222	QC2-97	5GA-D22
CC1		527-077-9-002(4)					

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

(1) Used in some versions.

(2) Used in Model 89GTL.

(3) Used in Model 10DDGTL.

(4) Consists of four .01 capacitors.

COBRA MODEL 89GTL, 1000GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR1	Sensitivity	300	008-345-9-001(19) 008-347-9-001(20)			
VR2	S Meter	30K	008-331-9-001			U260R503B
VR3	Squelch Range	100K	008-316-9-001			U260R104B
VR4	RF Meter	20K	008-316-9-003			U260R253B
VR5	RF Meter	1000				
VR6	Mod Meter	50K	008-316-9-002			U260R503B
VR201	AMC	5000	008-316-9-004			U260R502B
VR301	B+ Voltage Adjust	500	008-342-9-001			U260R501B
VR301	RF Gain	1000	008-350-9-001(19)			
VR301	SWR Cal	5000	008-347-9-005(18)			
VR301	RF Gain	1000				
VR302	Tone	50K	008-347-9-004	F2-50K(1), SSK012	RU54A, SL36(1), SL1500	BU1(1), CF63, SS1, DC1
VR303	Volume/Switch	50K	008-347-9-002	F2-50K(1), SSK012, KR1	RU54A, SL36(1), SL1500, US41	BU1(1), CF63, SS1, GC
VR304	Squelch	50K	008-347-9-003	F1-50K(1), SSK012	RU54L, SL36(1), SL1500	BU1(1), CF12, SS1, DC1
VR305	SWR Cal	5000	008-350-9-002(19)	F1-5000(1), SSK012	RU53L, SL36(1), SL1500	BU1(1), CF8, SS1, DC1
VR306	Delta Tune	20K	008-350-9-003(19)	F1-25K(1), SSK012	P24L, SL36(1), SL1500	BU1(1), CF62, SS1, DC1
VR307	Dynamike Plus	5000	008-345-9-003(20) 008-344-9-005			

(1) Enlarge mounting hole.

(18) Used in Model 896TL, Includes VR301 and VR305

(19) Used in Model 1000GTL

(20) Used in Model 89GTL

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.
R701	150 5% 7W		013-039-9-003(1)				

(1) Used in Model 1000GTL.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Rec RF (27MHz)	060-023-9-001	LLAY029001 LA02978084	CBS740-T	(1) Model 1000GTL only.
L2	RF Amp (27MHz)	046-024-9-001	LLAY138001 LA13878164		
L3	IF (10.695MHz)	046-025-9-004	LLAY277001 LA-277		
L4	IF (10.695MHz)	060-024-9-001(1)	LLAY180001 LA18078134		
L5	IF (10.695MHz)	046-025-9-002	LLAY274001 LA27478184		
L6	IF (455kHz)	060-019-9-002	LLAY106001 LA10678152	8517	
L7	IF (455kHz)	046-024-9-003	LLAY204001 LA20478152		
L8	IF (455kHz)	046-025-9-001	LLAY207001 LA20778142		
L10	TVI Trap (54MHz)	041-056-9-003	LLCY018001 LC-018	C8304	
L11	Antenna Loading	041-104-9-002	LLEY089001 LE-089		
L12	Pi Filter	041-104-9-001	LLEY088001 LE-088		
L13	Final Loading (27MHz)	041-088-9-001	LLCY019001 LC-019	C8305	
L14	RF Choke	041-069-9-004	LLDY012001 LD-012	4588	
L16	Final (27MHz)	041-056-9-003	LLCY018001 LC-018	C8304	
L17	RF Driver (27MHz)	060-029-9-004	LLAY208001 LA20878164		
L18	VCO (16MHz)	046-024-9-002	LLAY201001 LA20178164		
L19	Driver (15.360MHz)	066-025-9-005	LLAY166001		
L19	Driver (15.360MHz)	066-025-9-005	LLAY166001 LA16678164		
L20	VCO	046-025-9-003	LLAY275001 LA27578154		
L21	Ref Oscillator (10.240MHz)	060-030-9-003	LLAY217001 LA21778124		
L22	RF Choke (100uH)	041-062-9-002	LLZY001013 LZ-001	9250-104	
L23	Divider (10.240MHz)	060-024-9-003	LLAY182001 LA18278134		
L24	XMT Mixer (27MHz)	060-029-9-001	LLAY198001 LA19878174		
L25	Buffer (27MHz)	066-019-9-002	LLAY088001 LA-088	CBS717-TC	
L26	RF Choke (10uH)	041-105-9-001(1)	LLZY001001 LZ-001		

PARTS LIST AND DESCRIPTION (CONTINUED)

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

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	1.45A	.8	.86mH	042-021-9-001 TF-803(1)	TR507		(1) 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	061-039-9-001 061-041-9-001(2) TF-129(1)			(1) Number on unit. (2) Used in some versions.

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T301	120V AC @ 500mA AC	19.00V AC @ 2.61A AC	065-144-9-001 065-143-9-001(2) TF-149(1)		PCB-2	(1) Number on unit. (2) Used in some versions.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP301	4" PM 8 Ohms	580-013-9-001(1) 580-015-9-001(2)	4A1Z8	(1) Used in 1000GTL
SP801	3" X 4" PM 8 Ohms	583-001-9-001(1)		(2) Used in 89GTL

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	
F301	2A Quick Acting	191-251-3-002	742-035-9-001	AGC2	HKP	312002	342048	FG2-2	
F302	2A Quick Acting	191-251-3-002	742-035-9-001	AGC2	HDJ	312002	150145	FG2-2	

MICROPHONE

ITEM No.	REPLACEMENT DATA				CONNECTION DATA							
	MFGR. PART No.	GC PART No.	GC NOISE CANCEL	GC POWER	GC CONNECTOR	GC Red	GC Shield	GC Yellow	GC Blue	GC White	GC Black	
MIC	562-025-9-001	18-032	18-034	18-010	18-092	2	1	3	4	NC	1	

COBRA MODEL 89GTL, 1000GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	140-009-9-001	455kHz
O302	LEO	158-022-9-002(1)	Rec (1.90V @ 9.5mA)
O303	LEO	158-008-9-001(1)	XMT (1.90V @ 9.5mA)
O501	LEO	158-014-9-001(1)	Channel Readout
	LED	158-023-9-001(2)	Channel Readout
O702	LEO	158-023-9-002(2)	Clock Readout
J301	Jack	772-027-9-001	Antenna
J302	Jack	762-020-9-001	DC Power
J303	Jack	773-077-9-001(2)	Record
J401	Jack	773-077-9-001	PA
J402	Jack	773-077-9-001	External Speaker
J403	Jack	773-077-9-001(2)	External Speaker
J451	Jack	773-073-9-001	Mic
J601	Jack	773-094-9-001(2)	Phone
L9	Ferrite Bead	044-043-9-006	
L15	Ferrite Bead	044-048-9-003	
L301	Ferrite Bead	044-051-9-001	
M301	Meter	320-097-9-001(1)	S/Rf
	Meter	320-100-9-001(2)	S/Rf
M302	Meter	320-098-9-001(1)	Mod/SWR
	Meter	320-100-9-002(2)	Mod/SWR
P301	Jack	775-034-9-001(2)	External Speaker
PL301	Lamp	400-057-9-001	Meter S/Rf (11.71V @ 39mA)
PL302	Lamp	400-057-9-002(1)	Meter SWR/Mod (11.71V @ 34mA)
	Lamp	400-058-9-001(2)	Meter SWR/Mod (11.71V @ 34mA)
PL303	Lamp	400-057-9-002(2)	TX (7.63V @ 35mA)
PL304	Lamp	400-058-9-002(2)	RX (11.10V @ 42mA)
S301	Switch	084-066-9-002(1)	ANL
	Switch	080-010-9-002(2)	ANL
S302	Switch	084-066-9-003(1)	SWR/SWR Ca1
	Switch	080-010-9-001(2)	SWR/SWR Ca1
S303	Switch	084-066-9-002(1)	CB/PA
	Switch	080-010-9-002(2)	CB/PA
S304	Switch	084-066-9-001(1)	AC/OC
	Switch	084-065-9-003(2)	AC/OC
S306	Switch	080-010-9-002(2)	NB
S308	Switch	080-010-9-001(2)	Speaker
S501	Switch	083-243-9-001	Channel Selector
S701	Switch	088-047-9-001(2)	Alarm
S702	Switch	088-047-9-001(2)	Set
S703	Switch	088-047-9-002(2)	Fast
S704	Switch	088-047-9-002(2)	Slow
S705	Switch	088-047-9-002(2)	Hold
X1	Crystal	132-027-9-001	10.240MHz
XF1	Filter	143-009-9-001(1)	10.7MHz
	Filter	143-011-9-001(2)	10.7MHz
	Cord	426-044-9-001(1)	AC
	Cord	420-027-9-001(2)	AC
	Cord	426-044-9-002	DC
	Printed Circuit Board	302-345-9-001(2)	Alarm
	Printed Circuit Board	302-332-9-001(1)	Channel LED
	Printed Circuit Board	302-343-9-001(2)	Channel LED
	Printed Circuit Board	302-344-9-001(2)	Clock
	Printed Circuit Board	302-333-9-001(1)	Channel Switch
	Printed Circuit Board	302-342-9-001(2)	Channel Switch
	Printed Circuit Board	302-331-9-001	DC Power Supply
	Printed Circuit Board	302-329-9-001	Main
	Printed Circuit Board	302-330-9-001	Mic Jack
	Printed Circuit Board	302-346-9-001(2)	Phone
	Printed Circuit Board	302-334-9-001(1)	Speaker Jack
	Printed Circuit Board	302-340-9-001(2)	Speaker Jack
	Printed Circuit Board	302-335-9-001(1)	Switch
	Printed Circuit Board	302-341-9-001(2)	Switch

(1) Used in Model 89GTL.

(2) Used in Model 1000GTL.

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

ITEM	PART No.	ITEM	PART No.
Cabinet, Wood	290-004-9-001(2)	Panel, Rear	262-022-9-001(2)
Cover, Top	253-068-9-001(2)	Panel, Rear	262-021-9-001(1)
Cover, Top	253-057-9-001(1)	Knob, Channel	751-168-9-001(2)
Cover, Bottom	252-026-9-001(2)	Knob, Channel	751-147-9-003(1)
Cover, Bottom	252-022-9-001(1)	Knob, Clock	751-168-9-007(2)
Panel, Front	255-174-9-001(2)	Cabinet, Wood (Speaker)	290-004-9-002(2)
Panel, Front	255-171-9-001(1)	Cover, Bottom (Speaker)	253-068-9-002(2)
Panel, Right	263-009-9-001(2)	Cover, Rear (Speaker)	253-068-9-003(2)
Panel, Left	263-009-9-002(2)	Panel, Front (Speaker)	255-174-9-002(2)

(1) Used in Model 89GTL (2) Used in Model 1000GTL