

SAMS PHOTOFACT CB-283



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.)

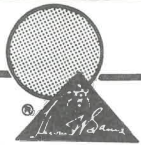
The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

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 PC-200



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COBRA MODEL 19GTL

MODEL 19GTL

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

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80CE1105

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 a 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, L2, L3, L9, L10, L11 9440

L4, L6, L7, L8 5000, 5009, 8276, 8728, 8728A

L12, L15 8282, 9304, 8728, 8728A

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to TP4 (IC3 Pin 2).	Ch. 19		Check for 10.240MHz.
Input of DC meter to TP1 (IC3 Pin 7).	Ch. 19	L9	Adjust for 3.00 volts. Check for approx. 4.00 volts on channel 40.
Input of DC meter to TP1 (IC3 Pin 7).	Ch. 1, XMT		Check for 1.85 volts. Check for approx. 4.48 volts on channel 40.
Input of oscilloscope to TP3 (L3 Secondary).	Ch. 19	L3	Adjust for maximum RF. (80mV typical.) (See Figure 1.)
Input of frequency counter to TP5 (IC2 Pin 3).	Ch. 1		Check for 16.270MHz. Check all channels. See Synthesizer Chart for correct frequencies.
Input of frequency counter to TP6 (IC2 Pin 6).	Ch. 1, XMT		Check for 26.965MHz. Check all channels. See Synthesizer 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.

Preset controls as follows unless otherwise noted: Squelch MINIMUM, ANL Off.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF to TP7 (D4 anode). 455kHz, 1000Hz @ 30% modulation.	Ch. 19	L8,L7,L6	Adjust for maximum output.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19	L4,L2,L1	Adjust for maximum output. Readjust L6, L7 and L8.

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:
Squelch MINIMUM, ANL Off.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 200uV.	Ch. 19 Volume Maximum	VR7	RF GAIN (IF GAIN) Adjust for 2.00 volts RMS (500mw) audio output.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 700uV	Ch. 19 Squelch Maximum	VR3	T. SQ. (SQUELCH RANGE) Adjust so that squelch just breaks.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19	VR4	SIG METER Adjust for 9 on SIG 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 RF wattmeter to antenna input.	Ch. 19	L10, L11, L12	Adjust for maximum RF output.
Input of RF wattmeter to antenna input.	Ch. 19	L15	Adjust for 4.0 watts RF output maximum.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.

NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

See page 4 for channel frequencies.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 30mV signal at mic input.	Ch. 19	VR6	AMC Adjust for 95% modulation maximum. (See Figure 2.)
Input of RF wattmeter to antenna input.	Ch. 19	VR5	TX PWR METER Adjust so that TX PWR meter agrees with RF wattmeter.

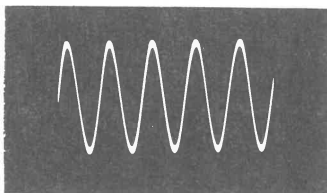


Figure 1

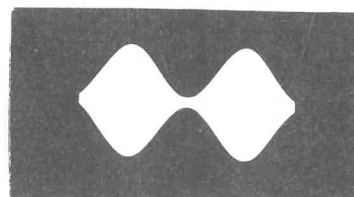
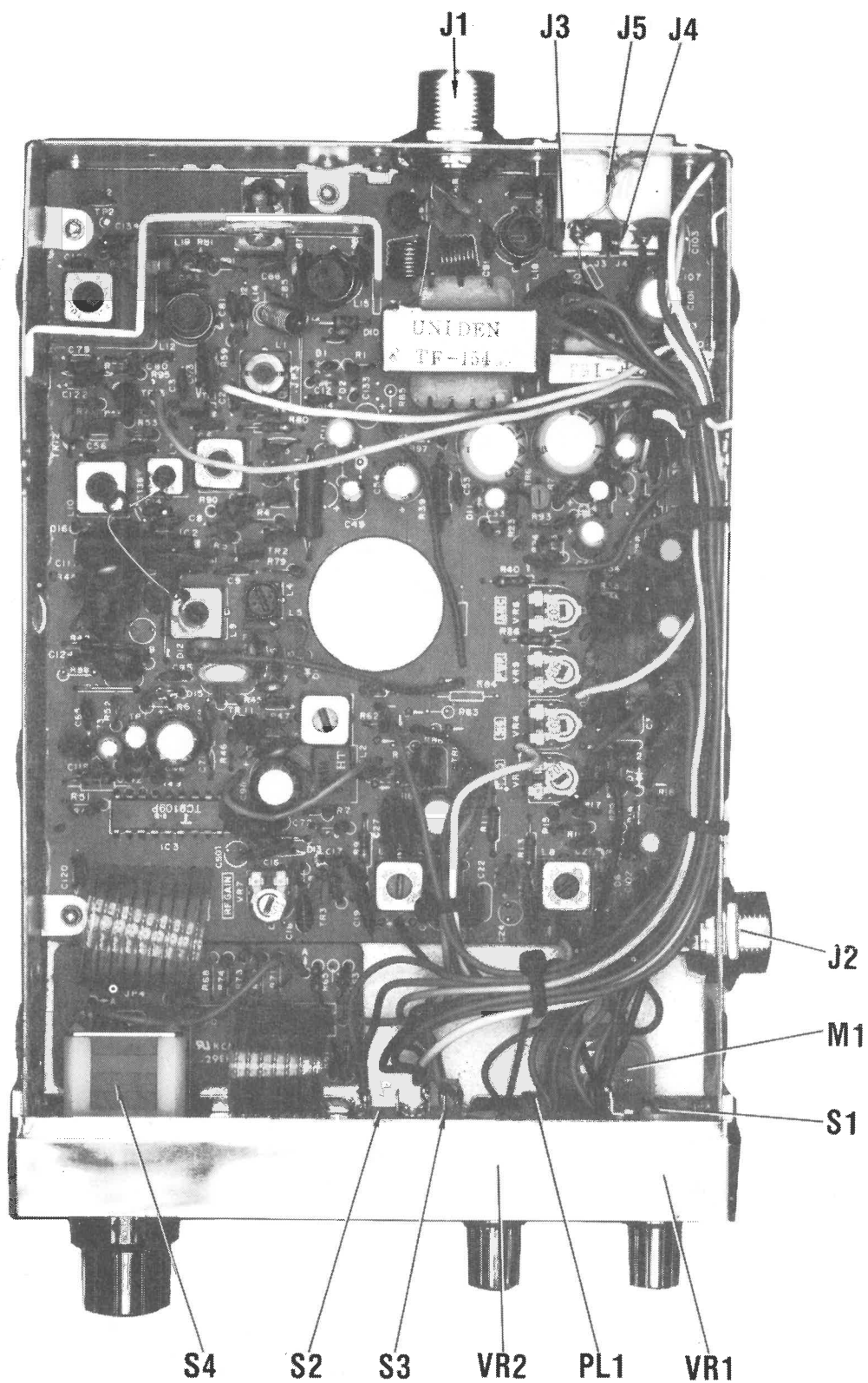


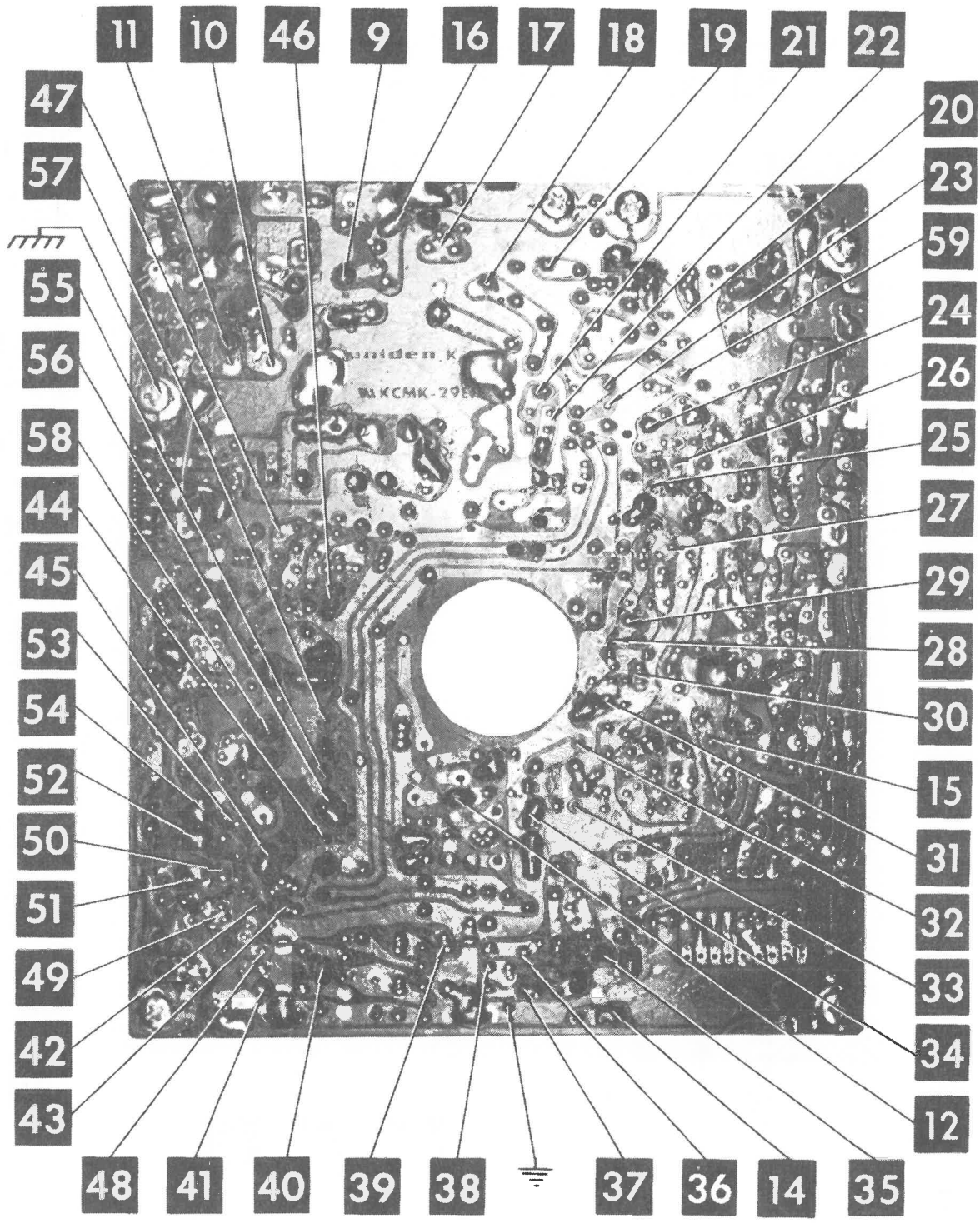
Figure 2

TRUTH CHART

C H A N N E L	1 = 7.50 Volts 0 = 0 Volts								REC VCO OUTPUT IN MHz AT TP5	XMT SYNTH OUTPUT IN MHz AT TP6	
	CHANNEL INPUT CODES IC3										
	PINS										
	17	16	15	14	13	12	11	10			
1	1	1	1	1	1	1	1	1	16.270	26.965	
2	1	1	1	0	0	0	0	1	16.280	26.975	
3	1	1	1	0	1	0	0	1	16.290	26.985	
4	1	1	1	1	1	0	1	0	16.310	27.005	
5	1	1	1	0	1	0	0	0	16.320	27.015	
6	1	1	1	0	0	0	1	0	16.330	27.025	
7	1	1	1	1	1	1	0	1	16.340	27.035	
8	1	1	1	0	0	0	0	0	16.360	27.055	
9	1	1	1	1	1	0	0	0	16.370	27.065	
10	1	1	0	0	0	1	0	0	16.380	27.075	
11	1	1	0	1	1	1	1	1	16.390	27.085	
12	1	1	0	0	0	0	0	1	16.410	27.105	
13	1	1	0	0	1	0	0	1	16.420	27.115	
14	1	1	0	1	1	0	1	0	16.430	27.125	
15	1	1	0	0	1	0	0	0	16.440	27.135	
16	1	1	0	0	0	0	1	0	16.460	27.155	
17	1	1	0	1	1	1	0	1	16.470	27.165	
18	1	1	0	0	0	0	0	0	16.480	27.175	
19	1	1	0	1	1	0	0	0	16.490	27.185	
20	1	0	1	0	0	1	0	0	16.510	27.205	
21	1	0	1	1	1	1	1	1	16.520	27.215	
22	1	0	1	0	0	0	0	1	16.530	27.225	
23	1	0	1	0	1	0	0	1	16.560	27.255	
24	1	0	1	1	1	0	1	0	16.540	27.235	
25	1	0	1	0	1	0	0	0	16.550	27.245	
26	1	0	1	0	0	0	1	0	16.570	27.265	
27	1	0	1	1	1	1	0	1	16.580	27.275	
28	1	0	1	0	0	0	0	0	16.590	27.285	
29	1	0	1	1	1	0	0	0	16.600	27.295	
30	1	0	0	0	0	1	0	0	16.610	27.305	
31	1	0	0	1	1	1	1	1	16.620	27.315	
32	1	0	0	0	0	0	0	1	16.630	27.325	
33	1	0	0	0	1	0	0	1	16.640	27.335	
34	1	0	0	1	1	0	1	0	16.650	27.345	
35	1	0	0	0	1	0	0	0	16.660	27.355	
36	1	0	0	0	0	0	1	0	16.670	27.365	
37	1	0	0	1	1	1	0	1	16.680	27.375	
38	1	0	0	0	0	0	0	0	16.690	27.385	
39	1	0	0	1	1	0	0	0	16.700	27.395	
40	0	1	0	0	0	1	0	0	16.710	27.405	

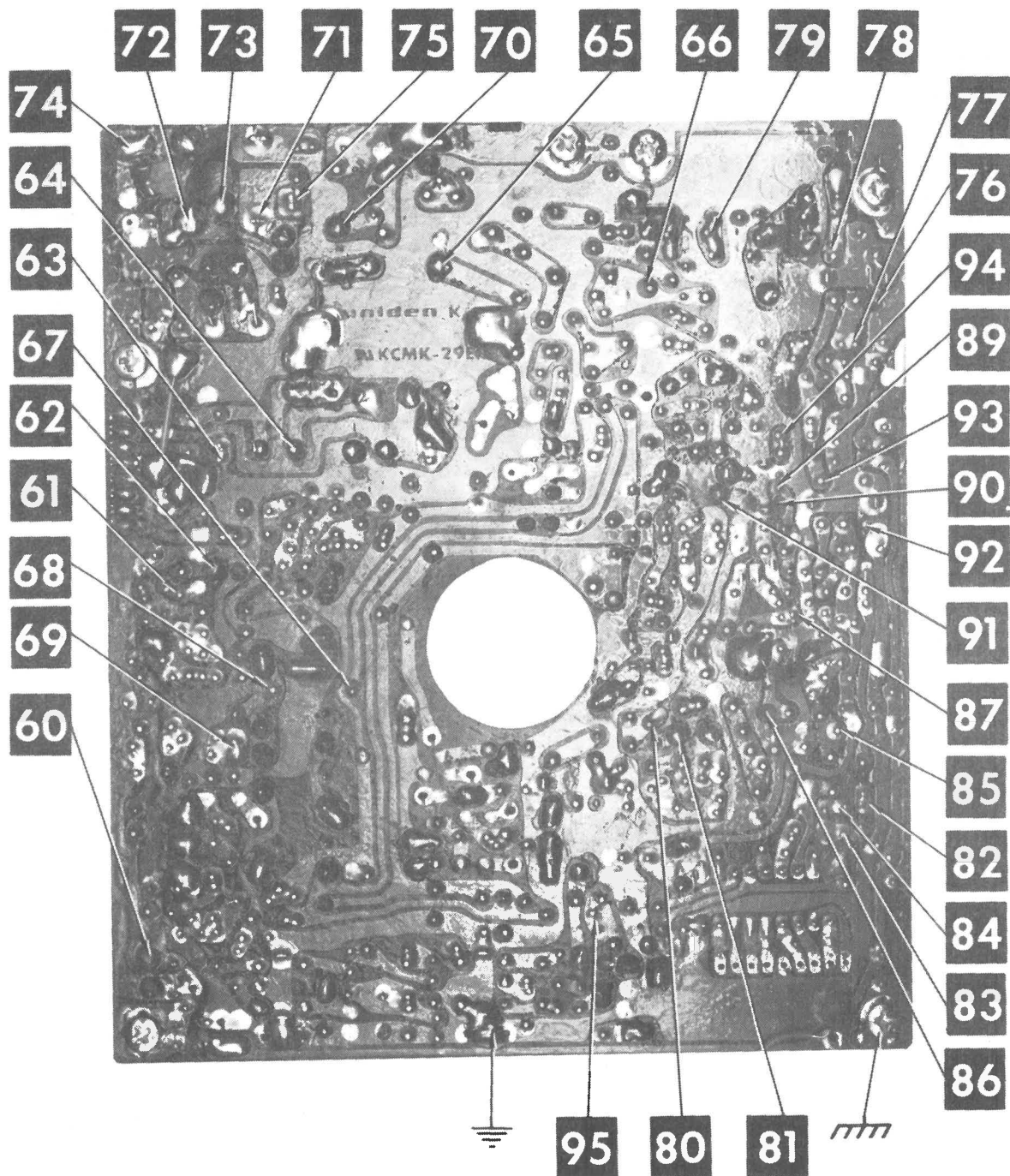


CHASSIS-BOTTOM VIEW

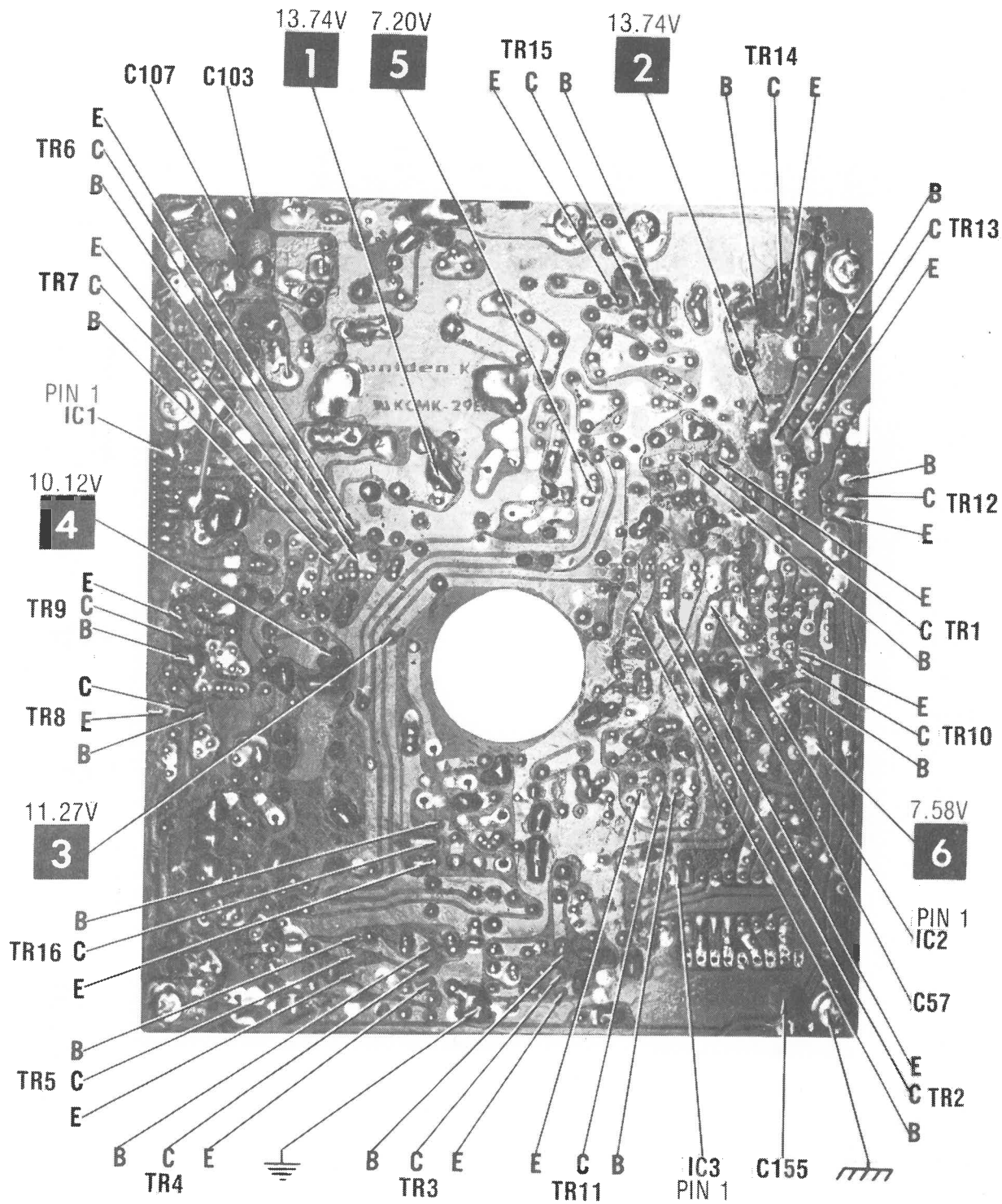


COBRA MODEL 19GTL

MAIN BOARD

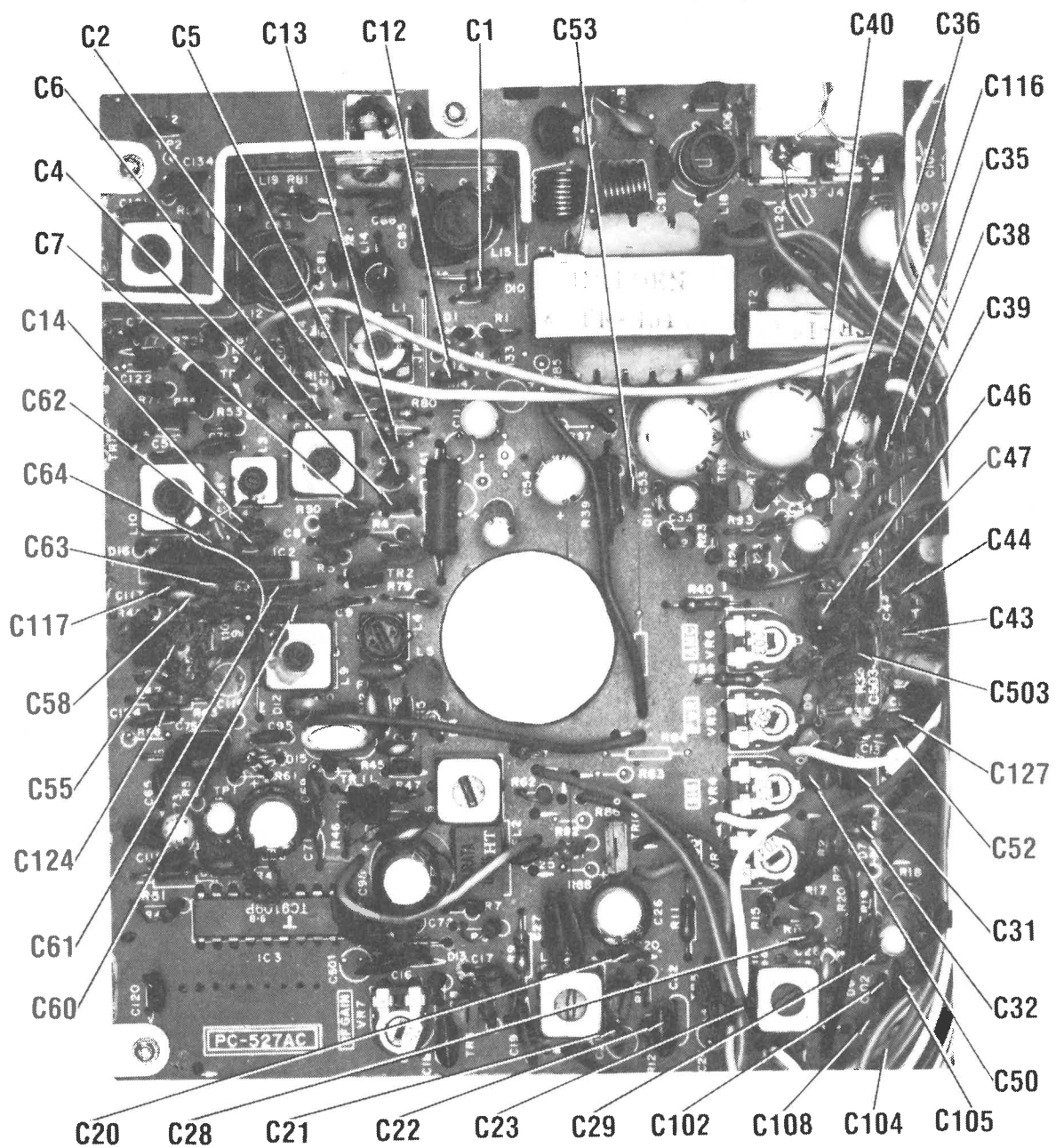


MAIN BOARD

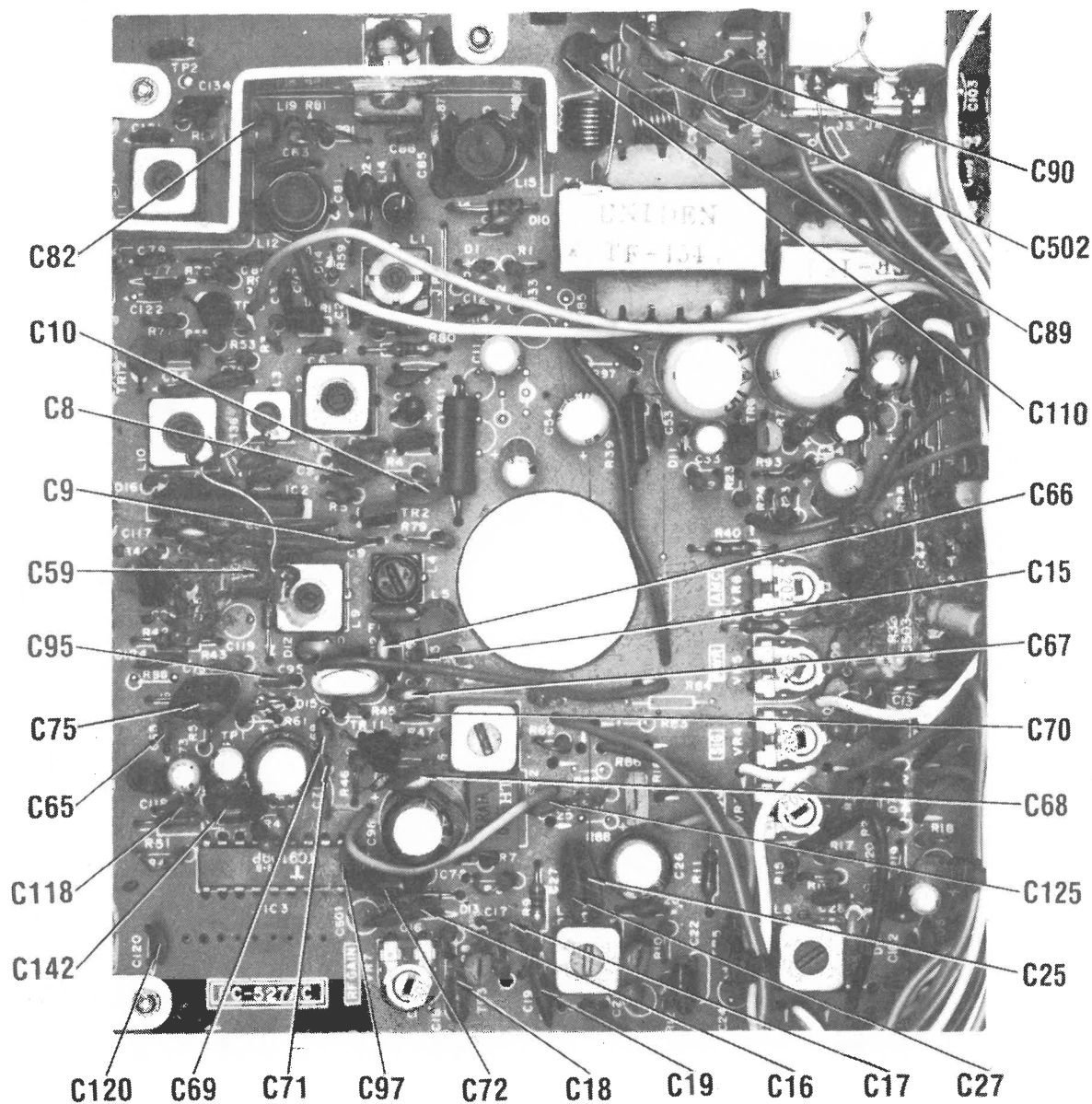


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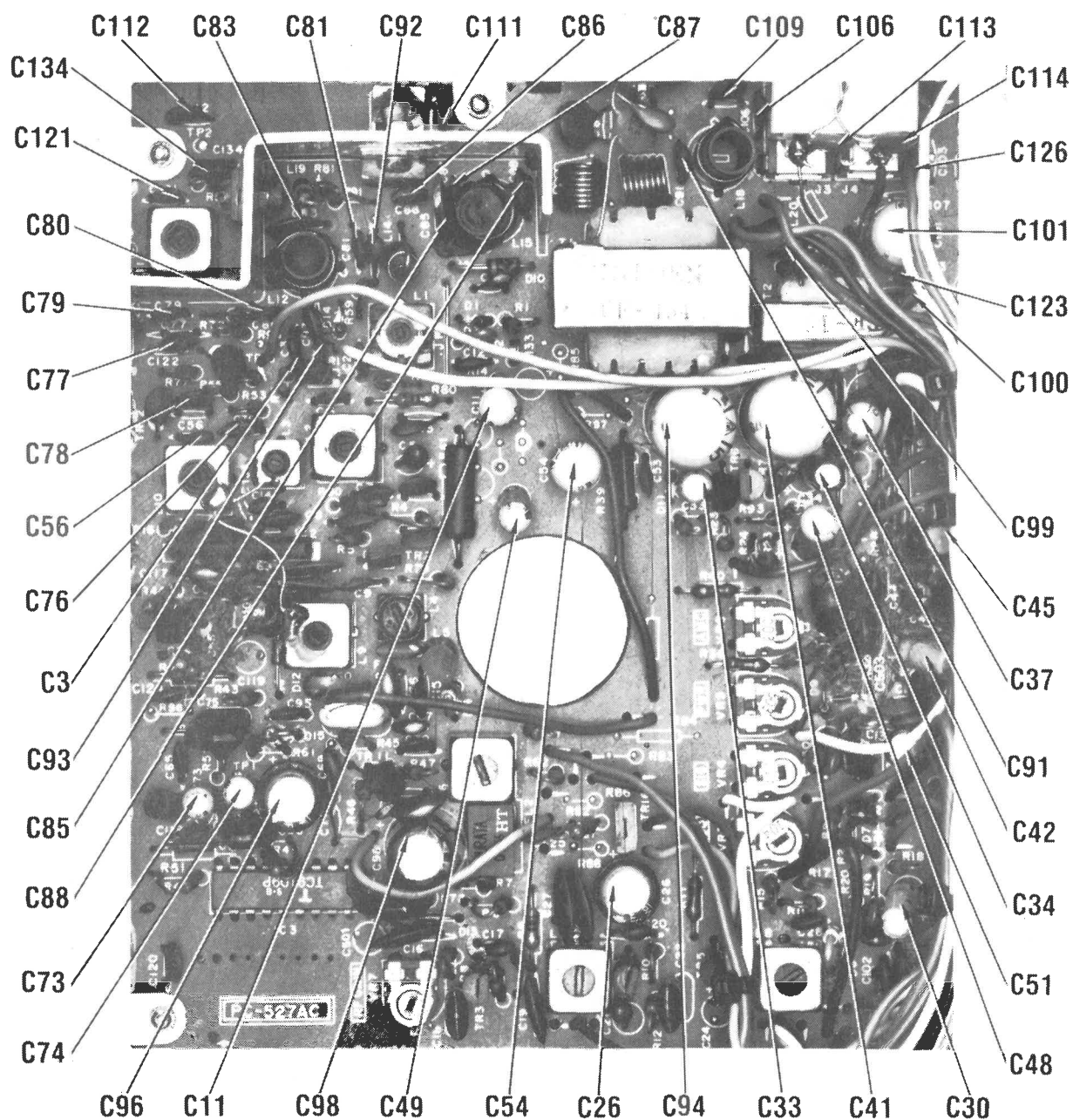
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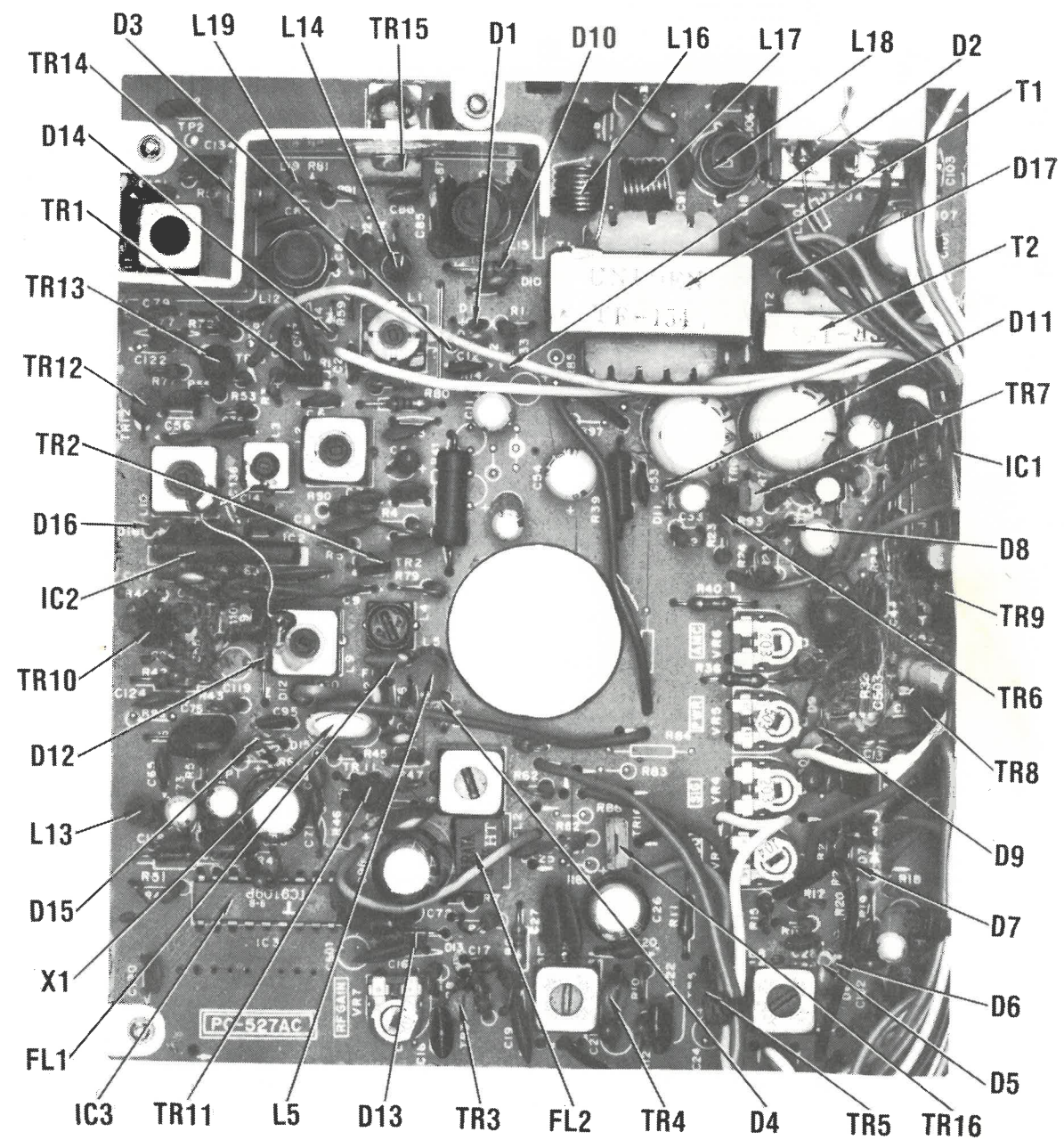
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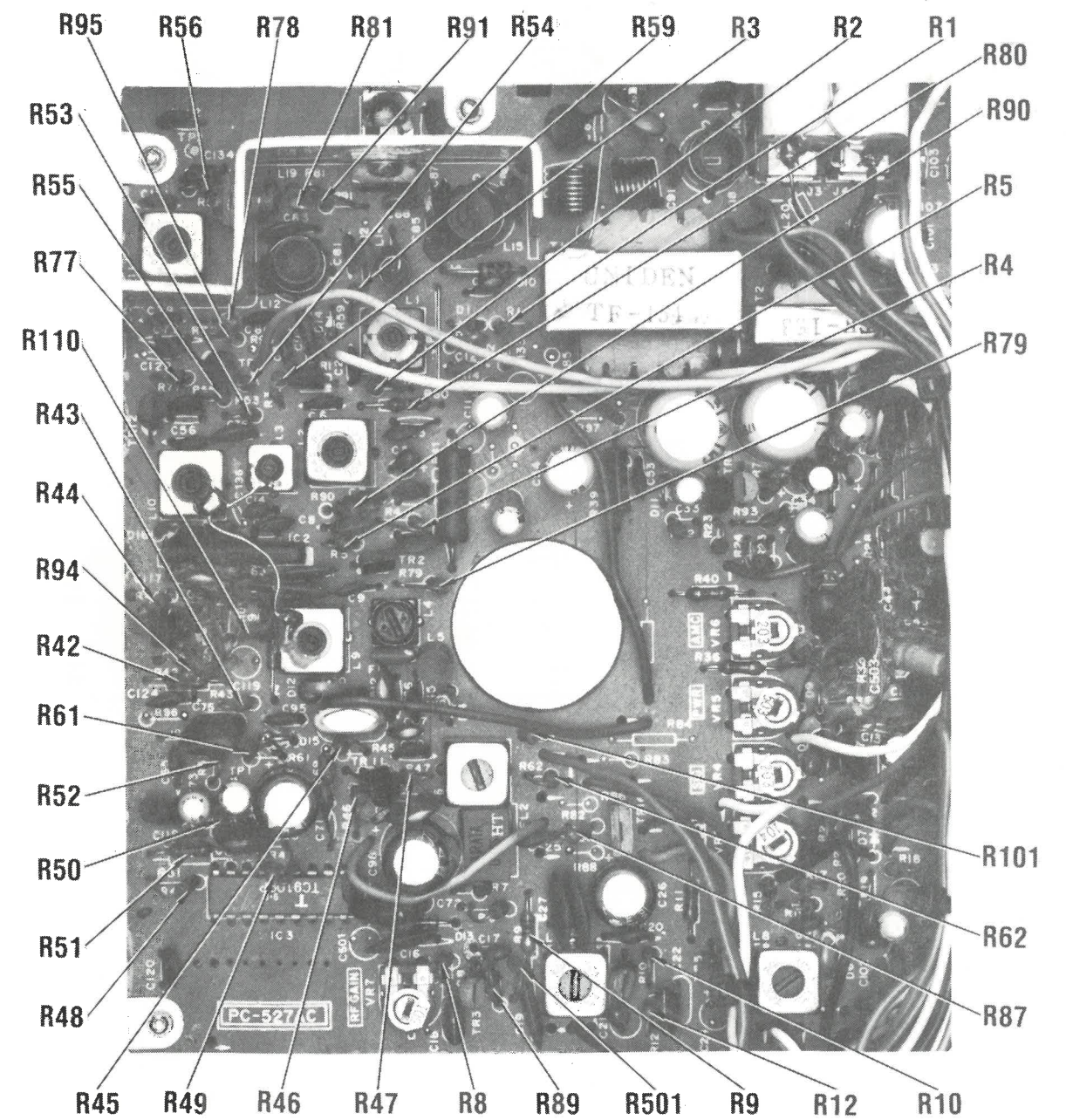
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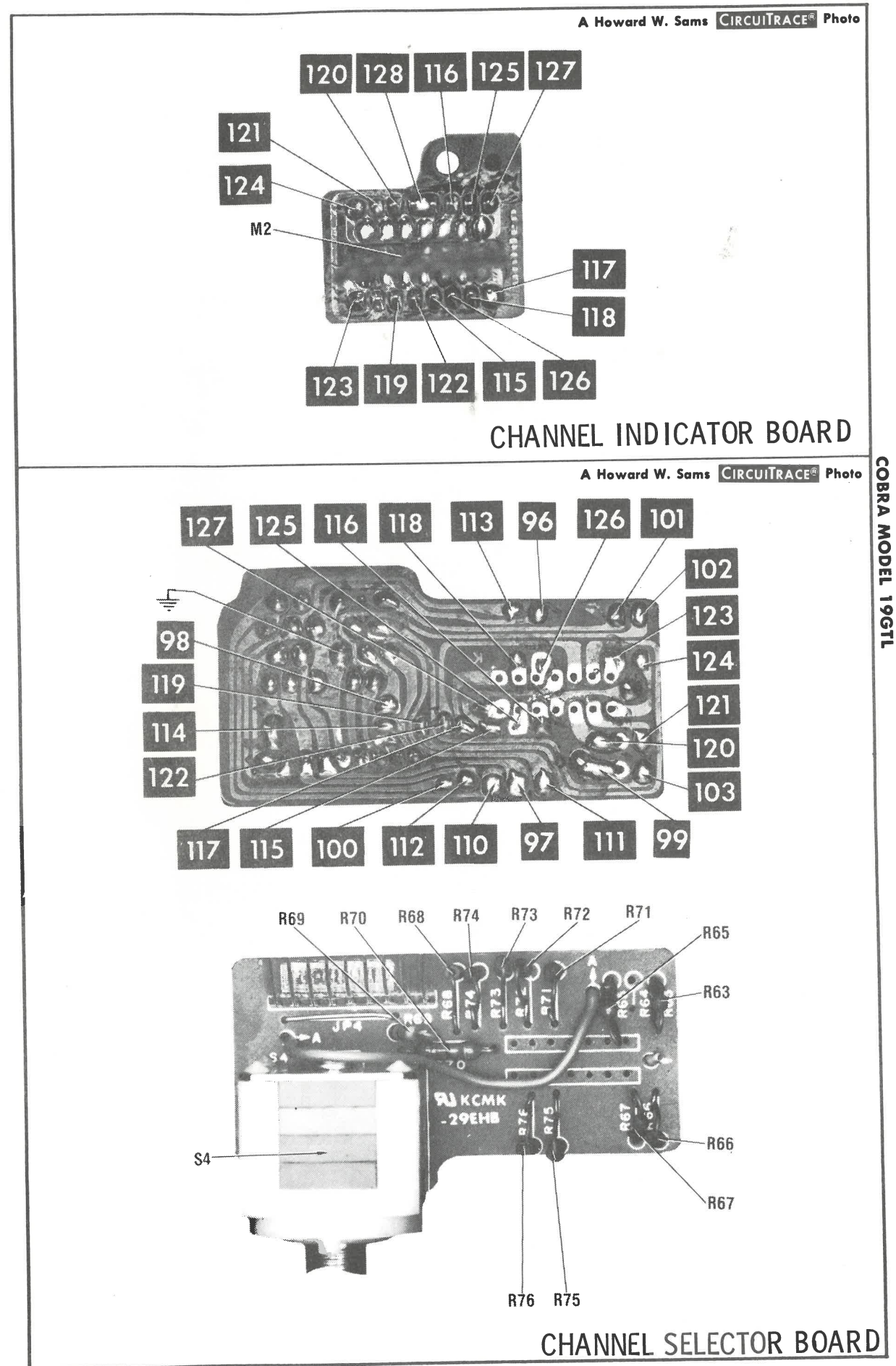
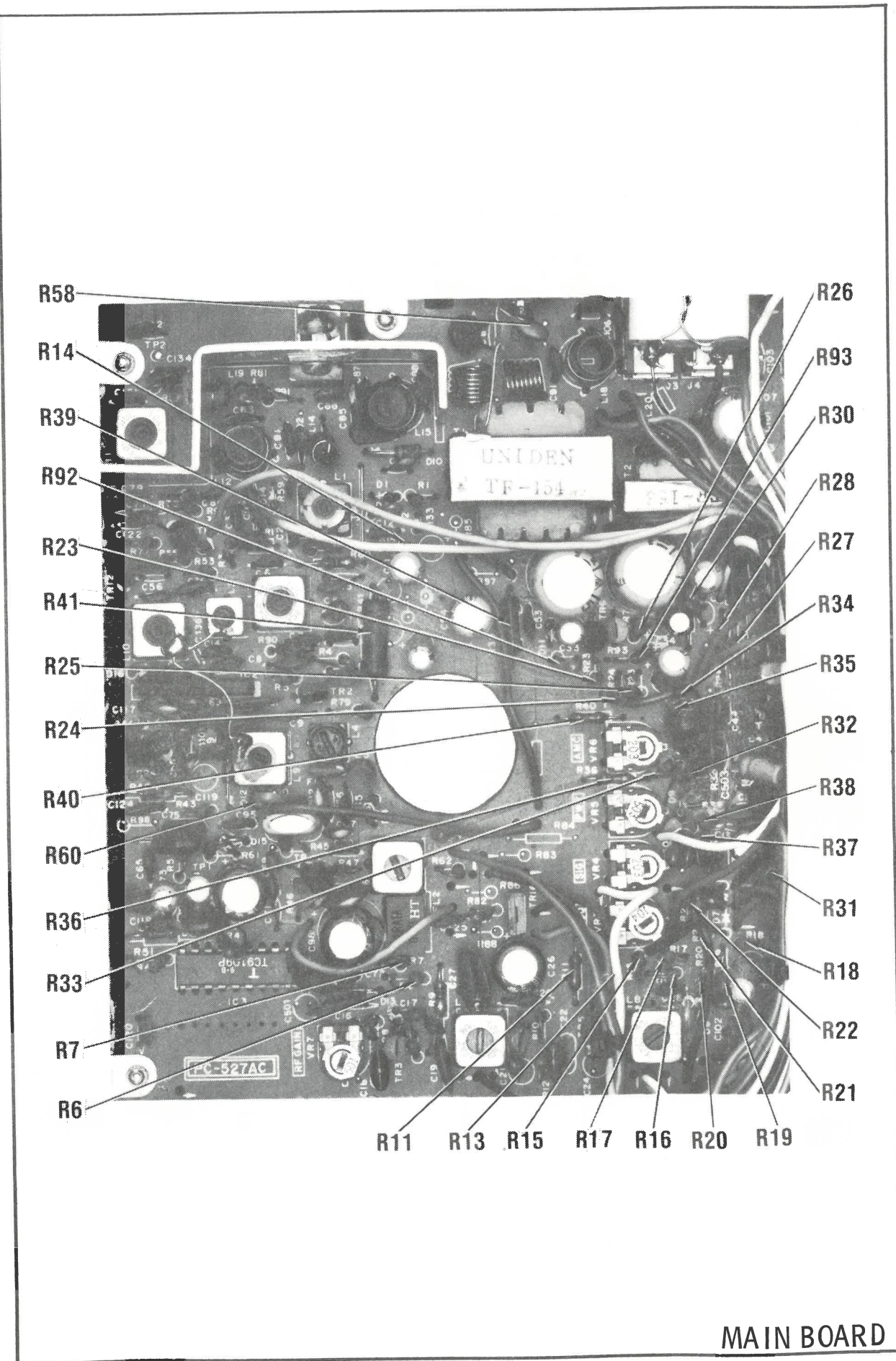
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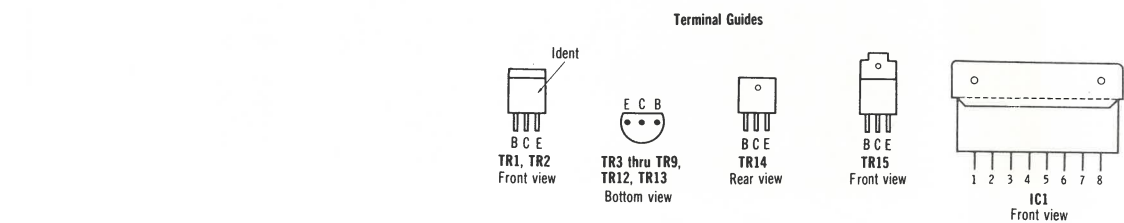
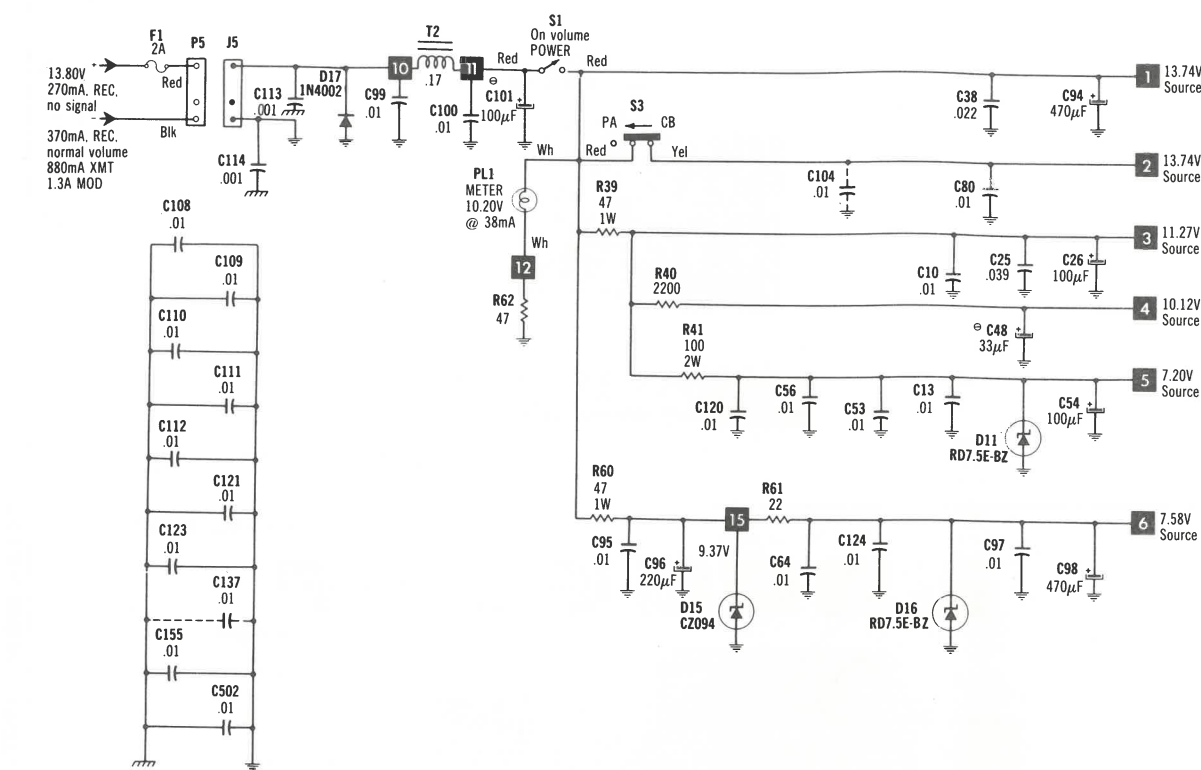


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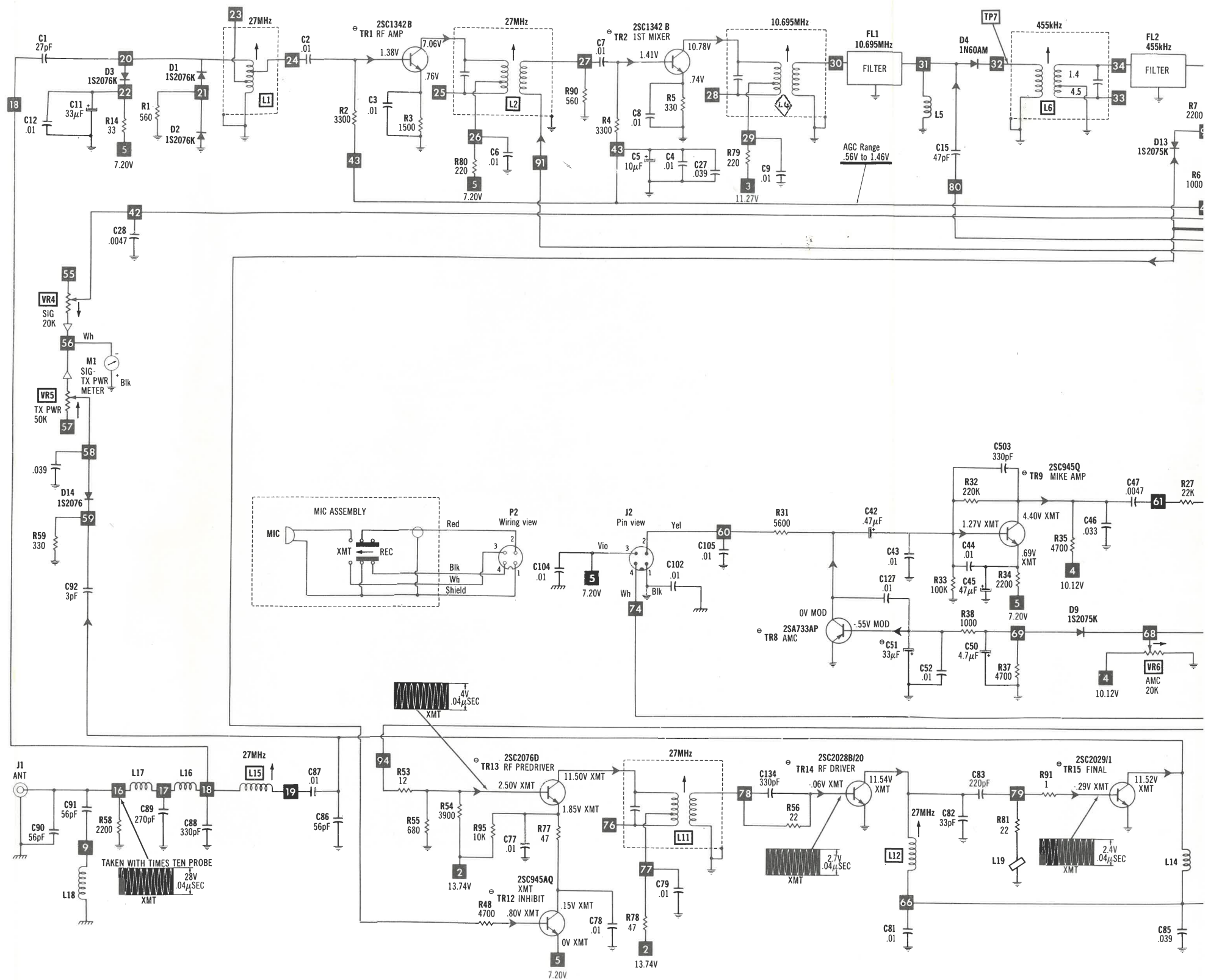


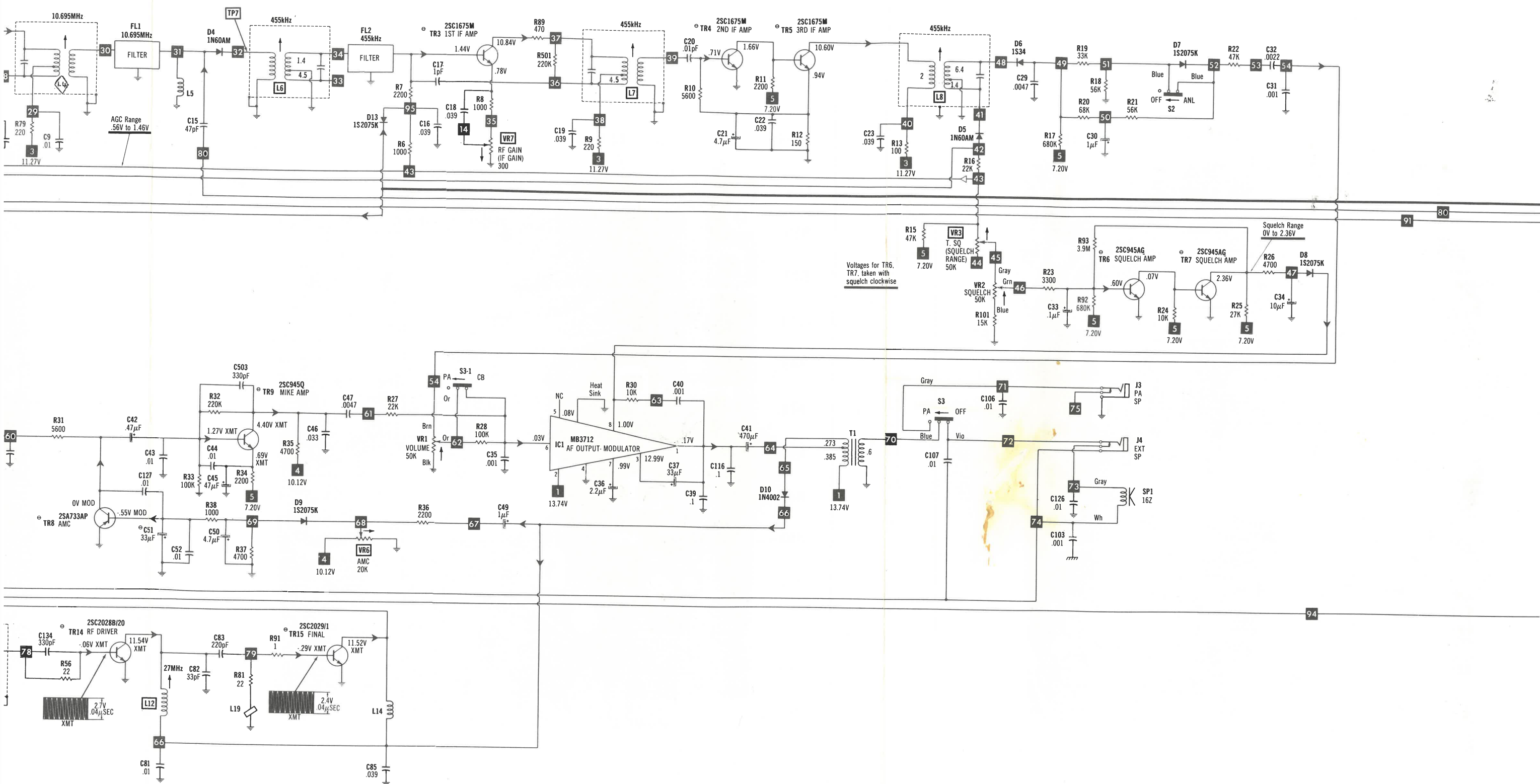


✕ Circuitry not used in some versions.
 --- Circuitry used in some versions.
 ✱ Nominal value ▽ Common tie point
 ⊥ Ground
 Chassis
 See parts list
 Waveforms and Voltages taken in Channel 19 with switching in receive unless noted. Item numbers in rectangles appear in the alignment/adjustment instructions. Supply voltage maintained as shown at input. Voltages measured with digital meter, no signal. Controls adjusted for normal operation. Terminal identification may not be found on unit. Resistors are 1/2W or less, 5% unless noted. Value in () used in some versions. Arrow head(s) at coils and transformers indicates accessibility of tuning slug(s).

A PHOTOFAC STANDARD NOTATION SCHEMATIC WITH **CIRCUITRACE**
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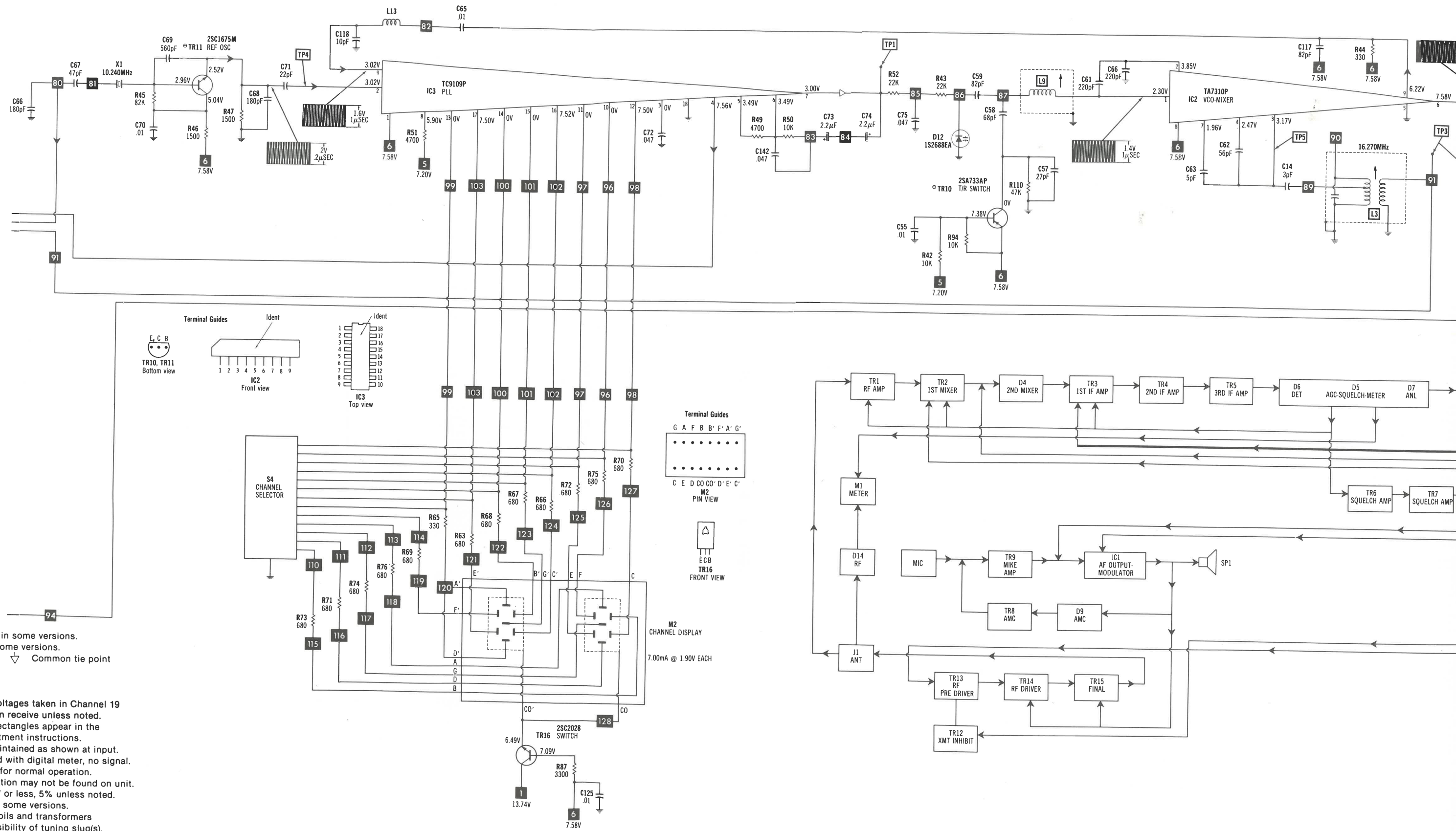
POWER SUPPLY

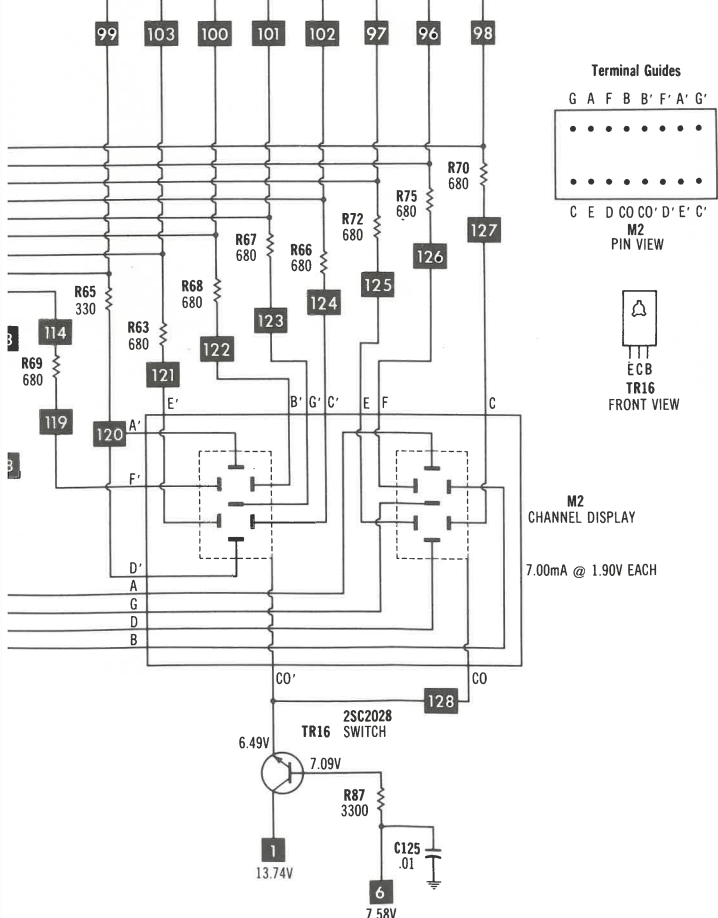




MAIN SCHEMATIC

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The block diagram illustrates the architecture of a 100-watt VHF FM transmitter. The signal flow is as follows:

- Antenna Input:** J1 ANT connects to TR13 RF PRE DRIVER.
- RF Stages:** TR13 RF PRE DRIVER → TR14 RF DRIVER → TR15 FINAL.
- Transmit Inhibit:** TR12 XMT INHIBIT is connected to the final stage.
- Microphone Path:** MIC → TR9 MIKE AMP → IC1 AF OUTPUT-MODULATOR.
- AF Output Modulator:** IC1 AF OUTPUT-MODULATOR outputs to a speaker (SP1) and also to TR8 AMC and D9 AMC.
- Antenna Tuning Circuit (ATC):** J1 ANT is connected to D14 RF, which is connected to TR1 RF AMP.
- RF Amplification and Mixing:** TR1 RF AMP → TR2 1ST MIXER → D4 2ND MIXER → TR3 1ST IF AMP → TR4 2ND IF AMP → TR5 3RD IF AMP.
- Detector and AGC:** TR5 3RD IF AMP → D6 DET → D5 AGC-SQUELCH-METER → D7 ANL.
- Squelch and Metering:** D5 AGC-SQUELCH-METER outputs to TR6 SQUELCH AMP and TR7 SQUELCH AMP. D6 DET outputs to M1 METER.
- Reference and PLL:** TR11 REF OSC is connected to IC3 PLL and TR10 T/R SWITCH.
- Channel Selection:** S4 CHANNEL SELECTOR is connected to IC3 PLL.
- VCO and Rec Inhibit:** IC3 PLL outputs to IC2 VCO-MIXER and D13 REC INHIBIT.
- Transmit Inhibit Logic:** D13 REC INHIBIT is connected to TR12 XMT INHIBIT.

COBRA MODEL 19GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Rec Antenna (27MHz)	0460279001	LA-279	CBS717-TC	
L2	RF Amp (27MHz)	0660199002	LA-088		
L3	Mixer (16.270MHz)	0460309002	LB-127		
L4	1st Mixer (10.695MHz)	0460279007	LB-119		
L5	RF Choke (10uH)	0410629001	LZ-002		
L6	IF (455kHz)	0460279003	LA-281	4622	
L7	IF (455kHz)	0460249003	LA-204		
L8	IF (455kHz)	0460259001	LA-207		
L9	VCO	0460309001	LA-307		
L10	Mixer (27MHz)	0460279005	LA-283		
L11	RF Predriver (27MHz)	0600299004	LA-208	CB305	
L12	RF Driver	0411149001	LC-133		
L13	RF Choke (4.7uH)	0410939004	LZ-002		
L14	Final	0440569001	LD-105		
L15	XMT Antenna	0410889001	LC-019		
L16	Pi	0411149002	LE-097		
L17	RF Choke	0411149003	LE-098		
L18	TVI Trap	0410949001	LC-051		

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	1.3A	.17	.92mH	0420339001 TF-153(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	7	16	0610429001 TF-154(1)			(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	4" PM 16 Ohms	580031901	4A1Z16	

COBRA MODEL 19GTL

PARTS LIST AND DESCRIPTION (CONTINUED)

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FUSE DEVICES

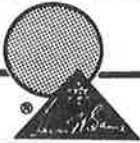
ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2A Quick-Acting	1912513002	7420189001	AGC2	HRK	312002	150145	FG2-2

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

ITEM	PART No.	ITEM	PART No.
Cover, Bottom	2520339001	Knob, Channel	7511859001
Cover, Top	2530809001	Panel, Front	2551849001
Knob	7511859002	Panel, Front Plate	2602029001

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
D18	LED	1580149001	Ribbon 10.695MHz 455kHz Antenna Microphone PA Speaker External Speaker DC Power SIG/PWR Display, Channel 7.00mA @ 1.90V Part of Volume Control (VR1) Off/ANL PA/CB Channel Selector 10.240MHz
FC1	Cable	4260619001	
FL1	Filter	1400209001	
FL2	Filter	1400229001	
J1	Connector	7720279001	
J2	Jack	7720389001	
J3	Jack	7730869001	
J4	Jack	7730869001	
J5	Jack	7620209001	
L19	Ferrite Bead	0440489003	
M1	Meter	3200959001	
M2	LED		
S1	Switch		
S2	Switch	0840519001	
S3	Switch	0840779001	
S4	Switch	0832539001	
X1	Crystal	1320279001	
	Microphone	5620259001	



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Connect either 50-ohm dummy load or the normally used antenna system.



MODEL PC-200

NDI MODEL PC-200

MANUFACTURER'S SPECIFICATIONS

GENERAL

Channels	40 channels
FREQUENCY RANGE	29.965 to 27.405 MHz
FREQUENCY CONTROL	Digitally synthesized
FREQUENCY TOLERANCE	0.003%
OPERATING TEMPERATURE RANGE	-30°C to +50°C
HUMIDITY	95%
MICROPHONE	Dynamic W/Push-To-Talk switch and coiled cord
SUPPLY VOLTAGE	13.8V DC positive or negative ground $\pm$ 2.1V
CURRENT DRAIN	Transmit;

AM95% MOD. carrier 2 amps.
SSB 12W PEP output 2.5 amps.

Receive:

Squelched 0.35 amps
2 W audio output 0.8A
Mm: 189W 60H 255D
Inches: 7.4W 2.3H 10.0D

SIZE

WEIGHT
Kgs: 9.9
Lbs: 4.5

TRANSMITTER

POWER INPUT	AM: 6 watts SSB: 25 watts
POWER OUTPUT	AM: 4 watts SSB: 12 watts

MODULATION CAPABILITY	100%
INTERMODULATION DISTORTION	SSB: 3rd order -25 dB
CARRIER SUPPRESSION	SSB: -40 dB
UNWANTED SIDEBAND	-50 dB
FREQUENCY RESPONSE	AM & SSB: 350-2500 Hz

OUTPUT IMPEDANCE	50 ohms, unbalanced
SSB FILTER	7.8 MHz, Crystal Lattice 6 dB @4.0 KHz, 50 dB @5.5 KHz

RECEIVER

SENSITIVITY	SSB: 0.25 μ V for 10 dB S + N/N AM: 0.7 μ V for 10 dB S + N/N
SELECTIVITY	SSB: 6 dB @2.4 KHz, 50 dB @5.5 KHz AM: 6 dB @ $\pm$ 2 KHz, 50 dB @5.5 KHz

IMAGE REJECTION	50 dB
IF FREQUENCY	7.8 MHz
AGC (AUTOMATIC GAIN CONTROL)	Less than 10 dB increase in audio
SQUELCH	Adjustable. Threshold less than 1 μ V
NOISE LIMITER	SERIES GATE TYPE
CLARIFIER RANGE	$\pm$ 1000 Hz minimum
AUDIO OUTPUT POWER	4.0 W with 10% THD into a 4 ohm load
Hum & Noise	-40 dB

Courtesy of the Manufacturer

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

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9CF1069

ALIGNMENT INSTRUCTIONS

CAUTION: Use an 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 a 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

Suggested Alignment Tools:

GC ELECTRONICS:

L01, L04, L05, L301, L302, T301 thru T307,

L301, L302, L401, L402, T401, T402, T403.....9440

C605, C607.....5000, 8276, 9089

L702, L709.....5000, 5009, 8276, 8728, 8728A, 9089

L704, L706.....9300, 9302, 9304

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of frequency counter thru 10pF to TP9 (Q04 Emitter).	Ch. 19, AM Clarifier Midrange	L05	Adjust for 10.000MHz.
Input of frequency counter thru 10pF to TP9 (Q04 Emitter).	Ch. 19, AM XMT	R106	FINE TUNE RANGE Adjust for 10.000MHz.
Input of frequency counter thru 10pF to TP9 (Q04 Emitter).	Ch. 19, LSB Clarifier Midrange	L04	Adjust for 9.9987MHz.
Input of DC meter to TP13 (Junction of R03 and R04).	Ch. 1	L01	Adjust for 3.63 Volts. Check for approximately 2.87 Volts on channel 40.
Input of frequency counter to TP3 (IC02 Pin 9).	Ch. 1		Check for .835MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter thru 10pF to TP4 (Q02 Collector).	Ch. 1		Check for 19.165MHz. Check all channels. (See Truth Chart for correct frequencies.)
Input of frequency counter thru 10pF to TP5 (Q604 Emitter).	Ch. 19, LSB	C607	Adjust for 7.8025MHz.
Input of frequency counter thru 10pF to TP5 (Q604 Emitter).	Ch. 19, USB	L601	Adjust for 7.7975MHz.
Input of frequency counter thru 10pF to TP5 (Q604 Emitter).	Ch. 19, AM XMT	C605	Adjust for 7.8000MHz.

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.

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of RF wattmeter to antenna input.	Ch. 19, AM XMT	T701,T702, L702,L704, L706,L709	Adjust for maximum RF output.

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 RF wattmeter to antenna input.	Ch. 19, AM XMT	R207	AM POWER Adjust for 4.0 watts RF output maximum.
Input of oscilloscope or modulation meter to antenna input. Inject a 1000Hz, 10mV signal at Mic input.	Ch. 19, AM XMT Mic Gain Maximum	R217	AM AMC Adjust for 100% modulation maximum. (See Figure 2.)
Input of DC meter to TP11 (IC601 Pin 7).	Ch. 19, USB	R616	BALANCE BIAS Adjust for 2.68 Volts.
Input of RF wattmeter to antenna input.	Ch. 19, USB XMT Mic Gain MINIMUM	R611	CARRIER BALANCE Adjust for MINIMUM RF output.
Input of RF wattmeter to antenna input. Inject a 1000Hz, 20mV signal at Mic input.	Ch. 19, USB XMT Mic Gain Maximum	R721	SSB ALC Adjust for 12 watts RF output maximum.
Input of RF wattmeter to antenna input.	Ch. 19, AM XMT	R726	RF METER Adjust so RF meter agrees with RF wattmeter.
Input of DC meter to TP12 (Q706 Base).	Ch. 19, AM XMT	R723	SWR CAL Adjust for MINIMUM voltage (.28 volts typical).
Connect a 150 ohm, 25 watt dummy load to antenna connector.	Ch. 19, AM XMT	R728	AWI Adjust so AWI light comes on.

NDI MODEL PC-200

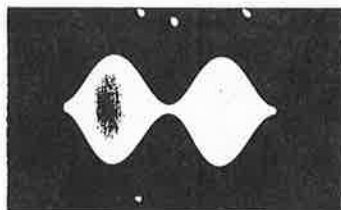


Figure 2.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil.
Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting. RF Gain Maximum, Clarifier Midrange, Squelch MINIMUM, ANL Off, NB Off.

SSB

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Output of signal generator to TP6 (CR304 Cathode). 7.80MHz, 1000Hz @ 30% modulation.	Ch. 19, AM	T307, T306, T305	Adjust for maximum audio output.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation.	Ch. 19, AM	T304, T303, T302, T301, L301, L302	Adjust for maximum audio output. Readjust T305, T306, T307 for maximum.
Input of oscilloscope to TP7 (CR403 Anode). Inject a 100pps, 1uSec. pulse width signal at antenna input.	Ch. 19, AM NB On	T402, T401, L402, L401	Adjust for maximum pulse amplitude. (1.75V peak typical). (See Figure 1.)
Input of oscilloscope to TP8 (CR406 Cathode). Inject a 100pps, 1uSec. pulse width signal at antenna input.	Ch. 19, AM NB On	T403	Adjust for maximum pulse amplitude. (30mV peak typical).

RECEIVER ADJUSTMENTS

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

TEST EQUIPMENT	TRANSCEIVER	ADJUST	REMARKS
Input of DC meter to TP1 (Q502 Source).	Ch. 19, AM	R517	AGC Adjust for 1.56 volts.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 1000uV.	Ch. 19, AM	R518	SQUELCH RANGE Adjust so squelch just breaks.
Output of signal generator to antenna input. 27.185MHz, 1000Hz @ 30% modulation. Output 100uV.	Ch. 19, AM	R507	S METER Adjust for 9 on S scale of meter.
Input of DC meter to TP10 (Q102 Base).		R103	AUTO DIMMER Cover RP1 (Dim) to dim display and adjust for 4.00 volts.

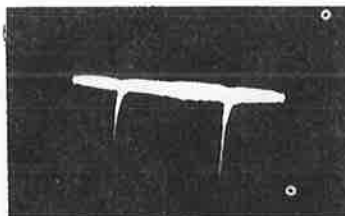
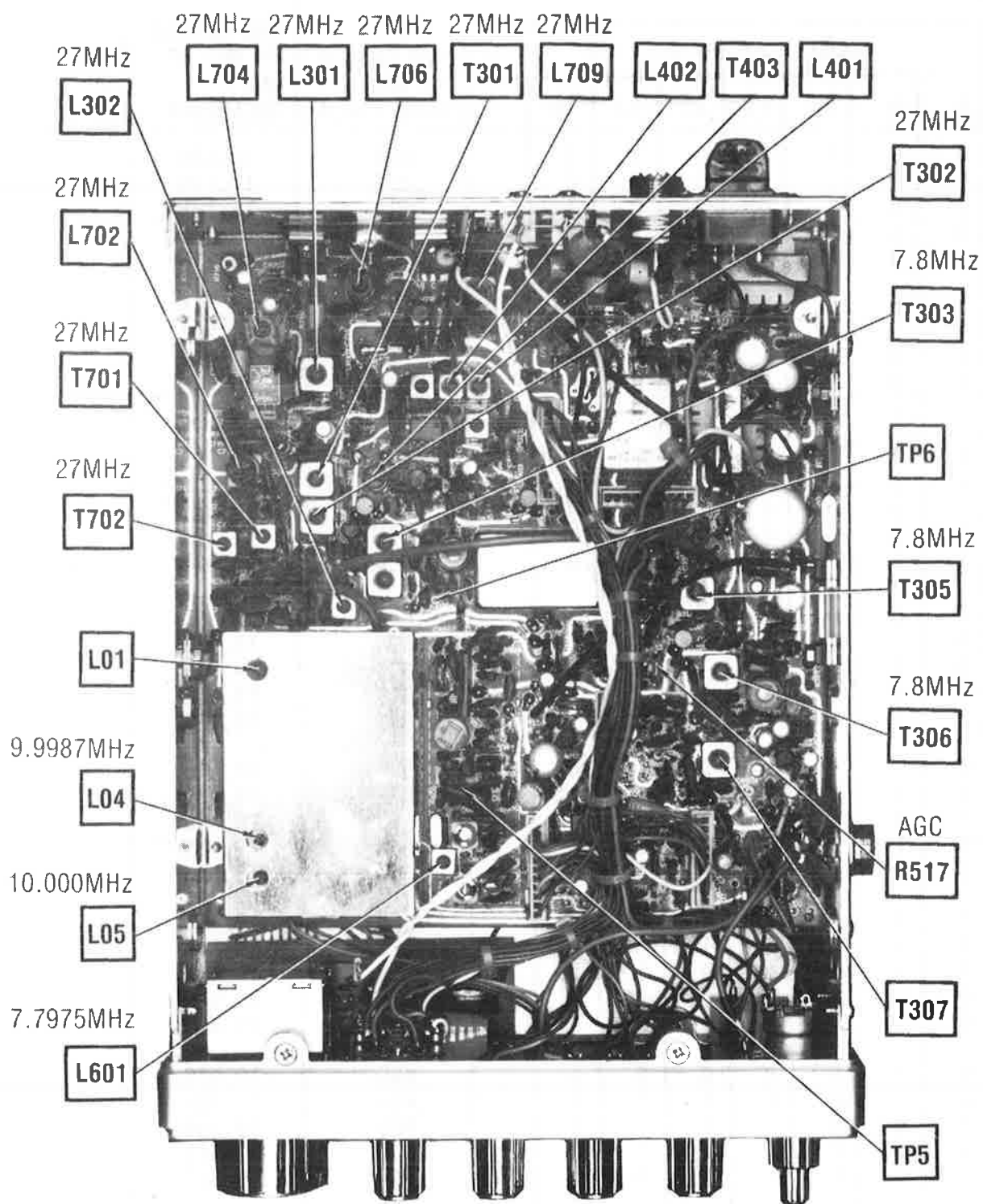


Figure 1.

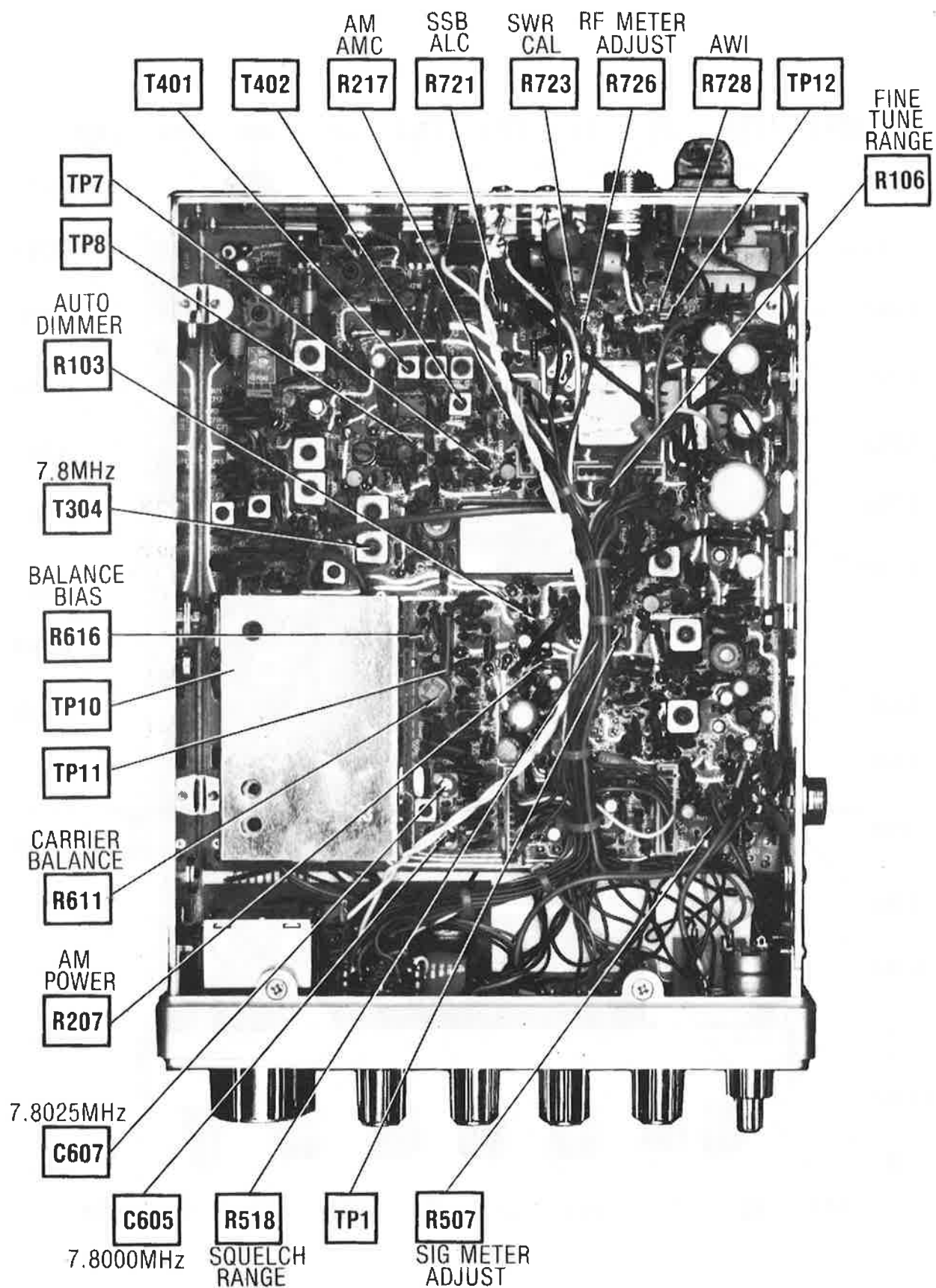
TRUTH CHART

C H A N N E L	1 = 4.75 Volts 0 = .01 Volts								VCO OUTPUT IN MHz AT IC02 Pin 9	VCO OUTPUT IN MHz AT Q02 COLLECTOR	
	CHANNEL INPUT CODES										
	IC03 PINS										
	8	9	10	11	12	13	14				
1	1	0	1	0	0	1	1		.835	19.165	
2	1	0	1	0	0	1	0		.825	19.175	
3	1	0	1	0	0	0	1		.815	19.185	
4	1	0	0	1	1	1	1		.795	19.205	
5	1	0	0	1	1	1	0		.785	19.215	
6	1	0	0	1	1	0	1		.775	19.225	
7	1	0	0	1	1	0	0		.765	19.235	
8	1	0	0	1	0	1	0		.745	19.255	
9	1	0	0	1	0	0	1		.735	19.265	
10	1	0	0	1	0	0	0		.725	19.275	
11	1	0	0	0	1	1	1		.715	19.285	
12	1	0	0	0	1	0	1		.695	19.305	
13	1	0	0	0	1	0	0		.685	19.315	
14	1	0	0	0	0	1	1		.675	19.325	
15	1	0	0	0	0	1	0		.665	19.335	
16	1	0	0	0	0	0	0		.645	19.355	
17	0	1	1	1	1	1	1		.635	19.365	
18	0	1	1	1	1	1	0		.625	19.375	
19	0	1	1	1	1	0	1		.615	19.385	
20	0	1	1	1	0	1	1		.595	19.405	
21	0	1	1	1	0	1	0		.585	19.415	
22	0	1	1	1	0	0	1		.575	19.425	
23	0	1	1	0	1	1	0		.545	19.455	
24	0	1	1	1	0	0	0		.565	19.435	
25	0	1	1	0	1	1	1		.555	19.445	
26	0	1	1	0	1	0	1		.535	19.465	
27	0	1	1	0	1	0	0		.525	19.475	
28	0	1	1	0	0	1	1		.515	19.485	
29	0	1	1	0	0	1	0		.505	19.495	
30	0	1	1	0	0	0	1		.495	19.505	
31	0	1	1	0	0	0	0		.485	19.515	
32	0	1	0	1	1	1	1		.475	19.525	
33	0	1	0	1	1	1	0		.465	19.535	
34	0	1	0	1	1	0	1		.455	19.545	
35	0	1	0	1	1	0	0		.445	19.555	
36	0	1	0	1	0	1	1		.435	19.565	
37	0	1	0	1	0	1	0		.425	19.575	
38	0	1	0	1	0	0	1		.415	19.585	
39	0	1	0	1	0	0	0		.405	19.595	
40	0	1	0	0	1	1	1		.395	19.605	

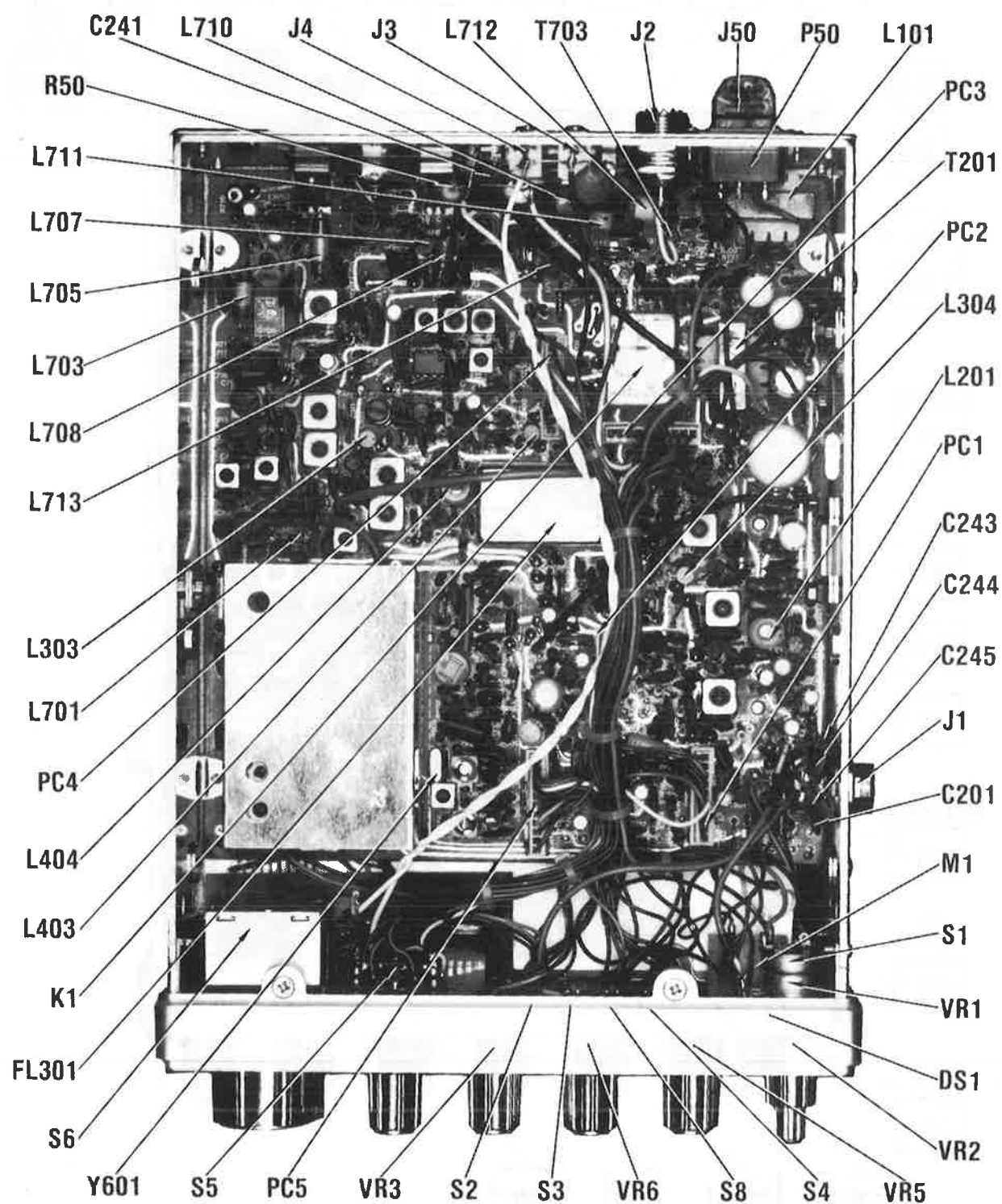
NDI MODEL PC-200



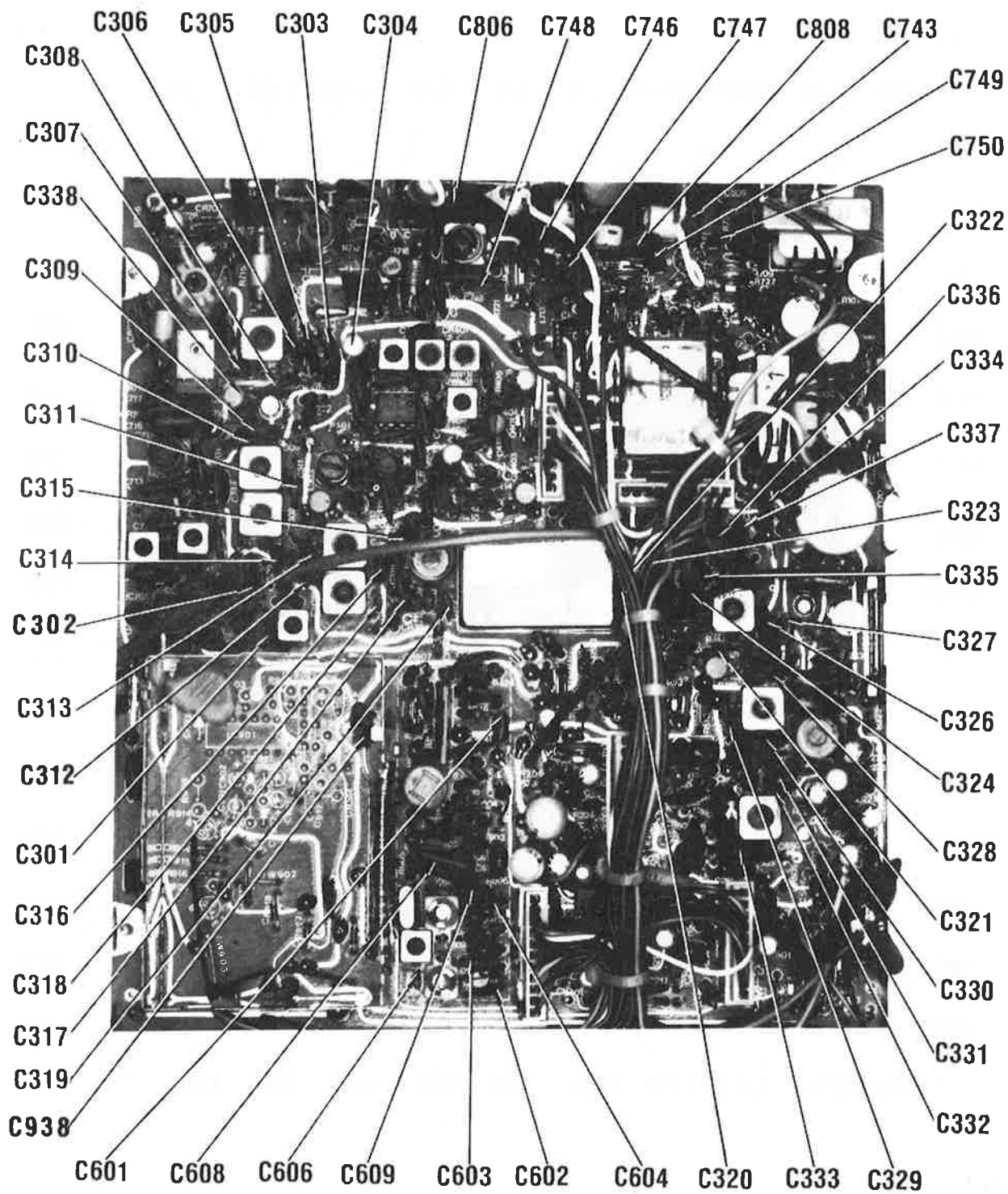
CHASSIS-BOTTOM VIEW



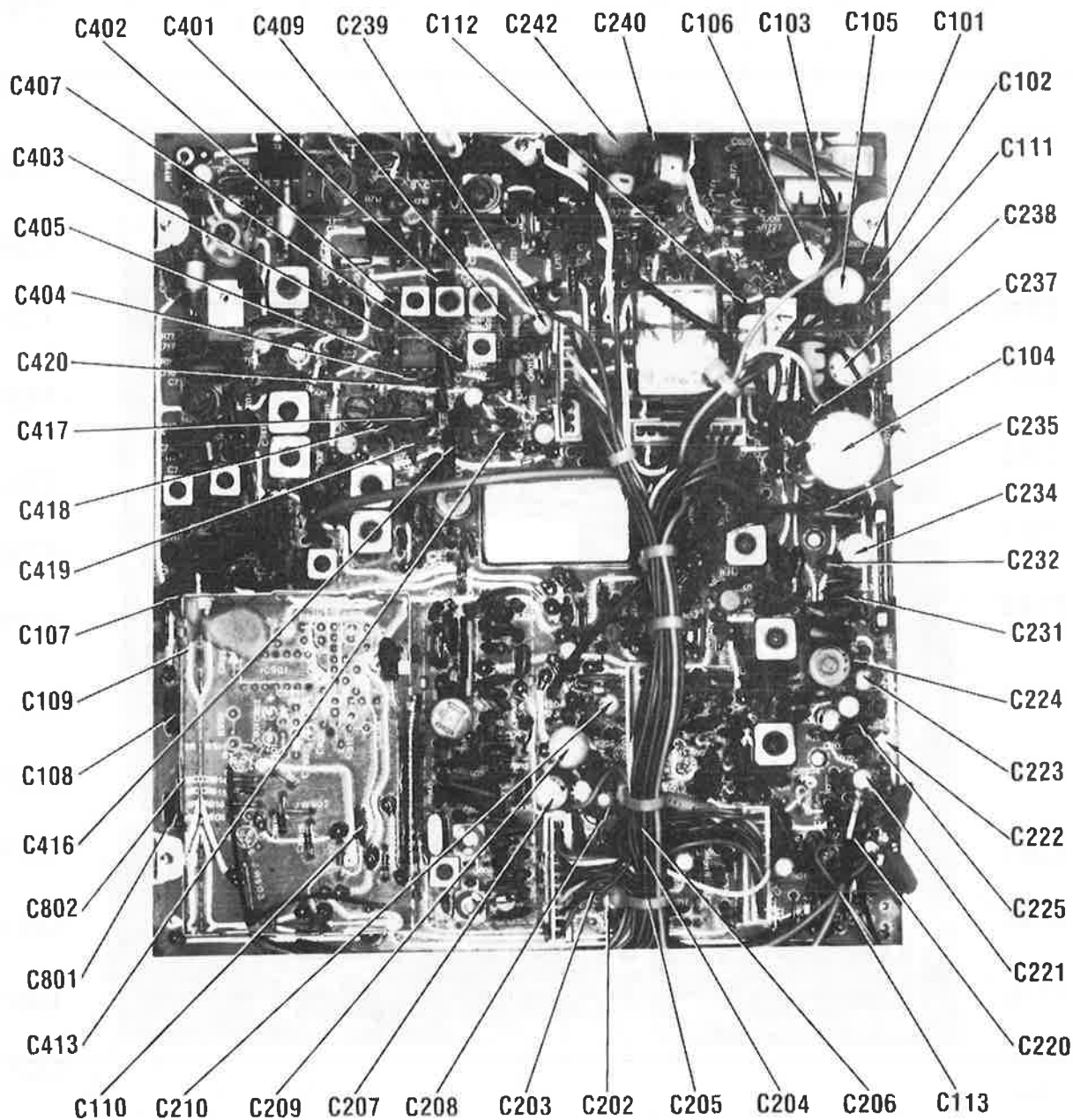
CHASSIS-BOTTOM VIEW



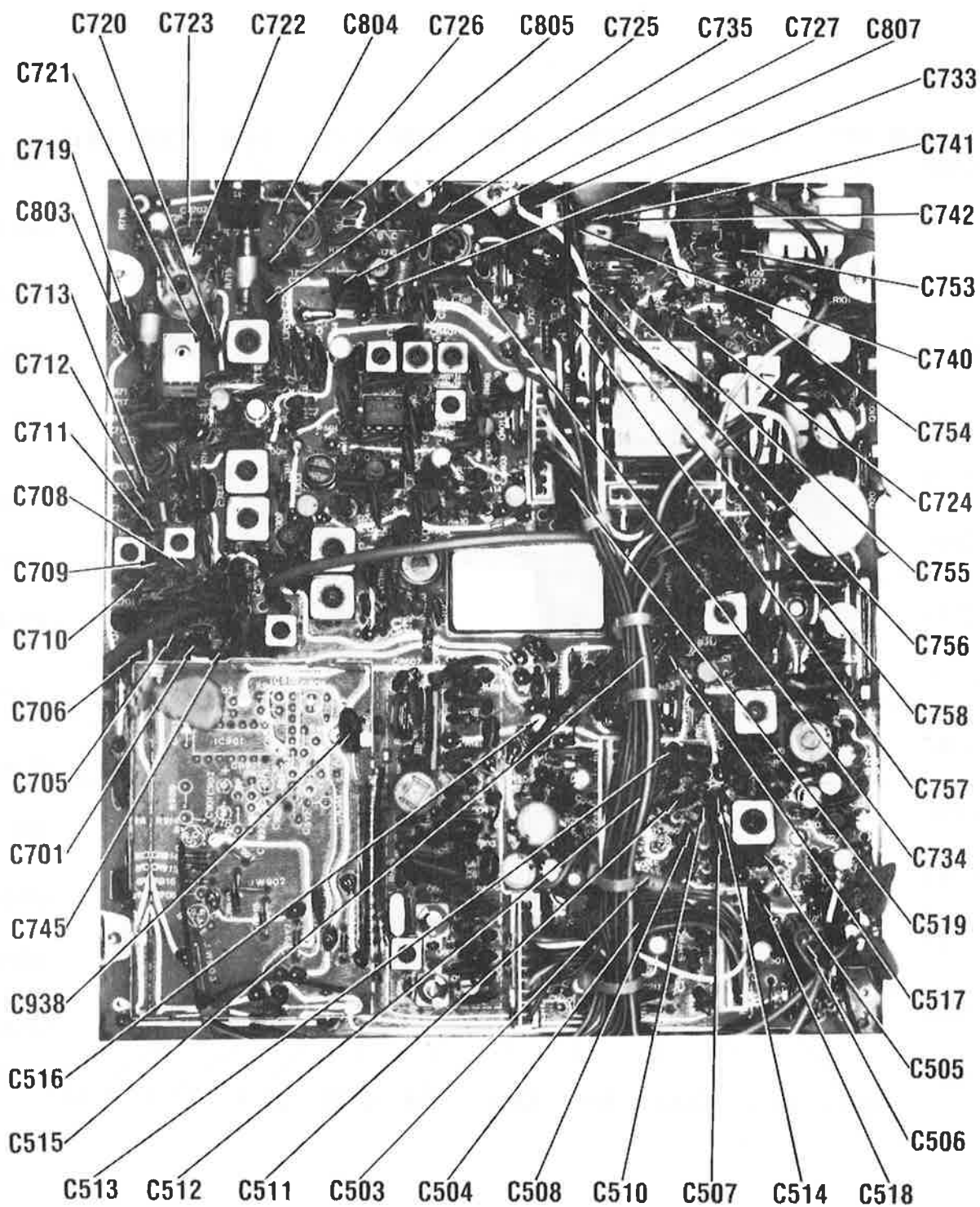
CHASSIS-BOTTOM VIEW



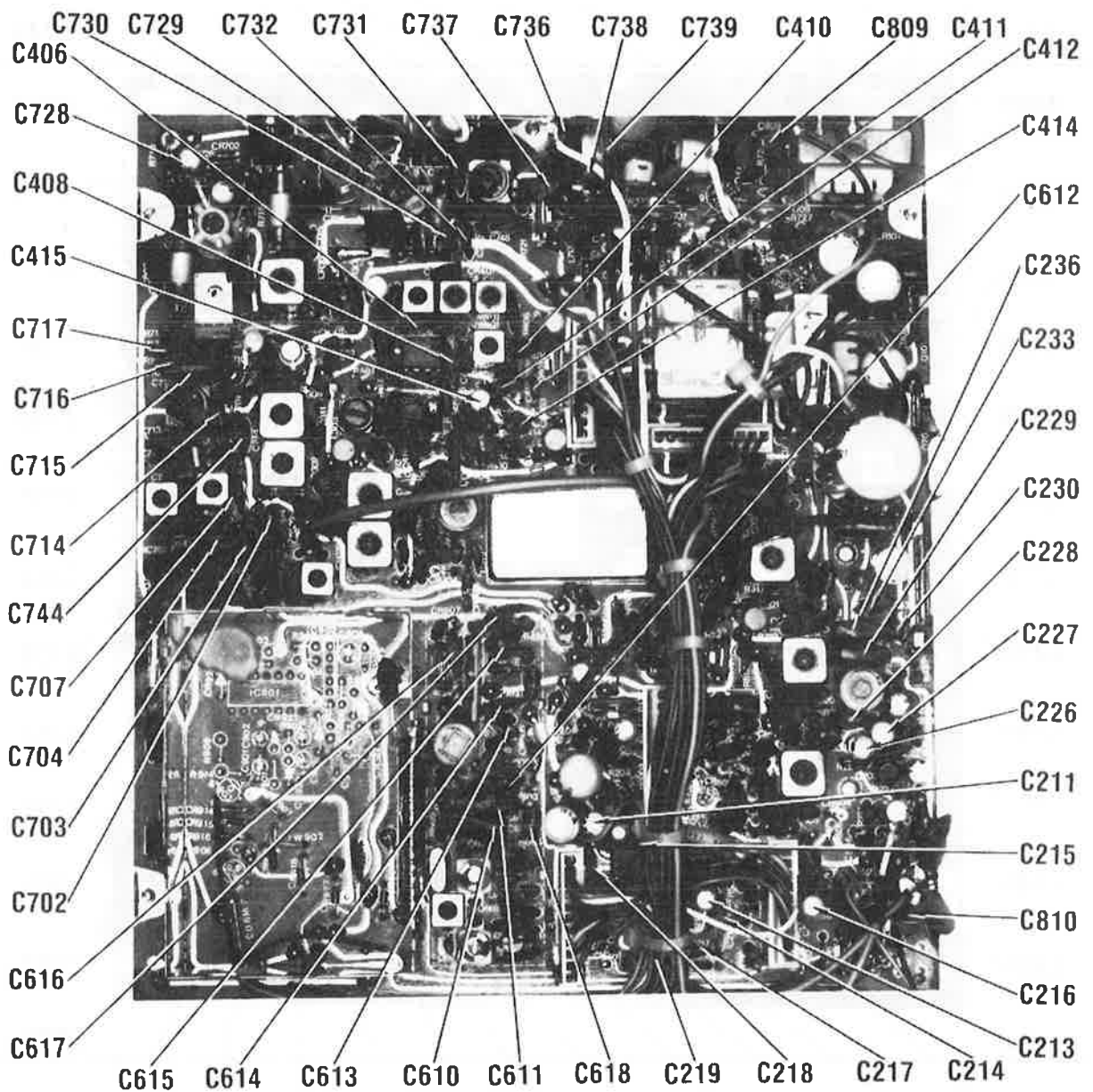
MAIN BOARD



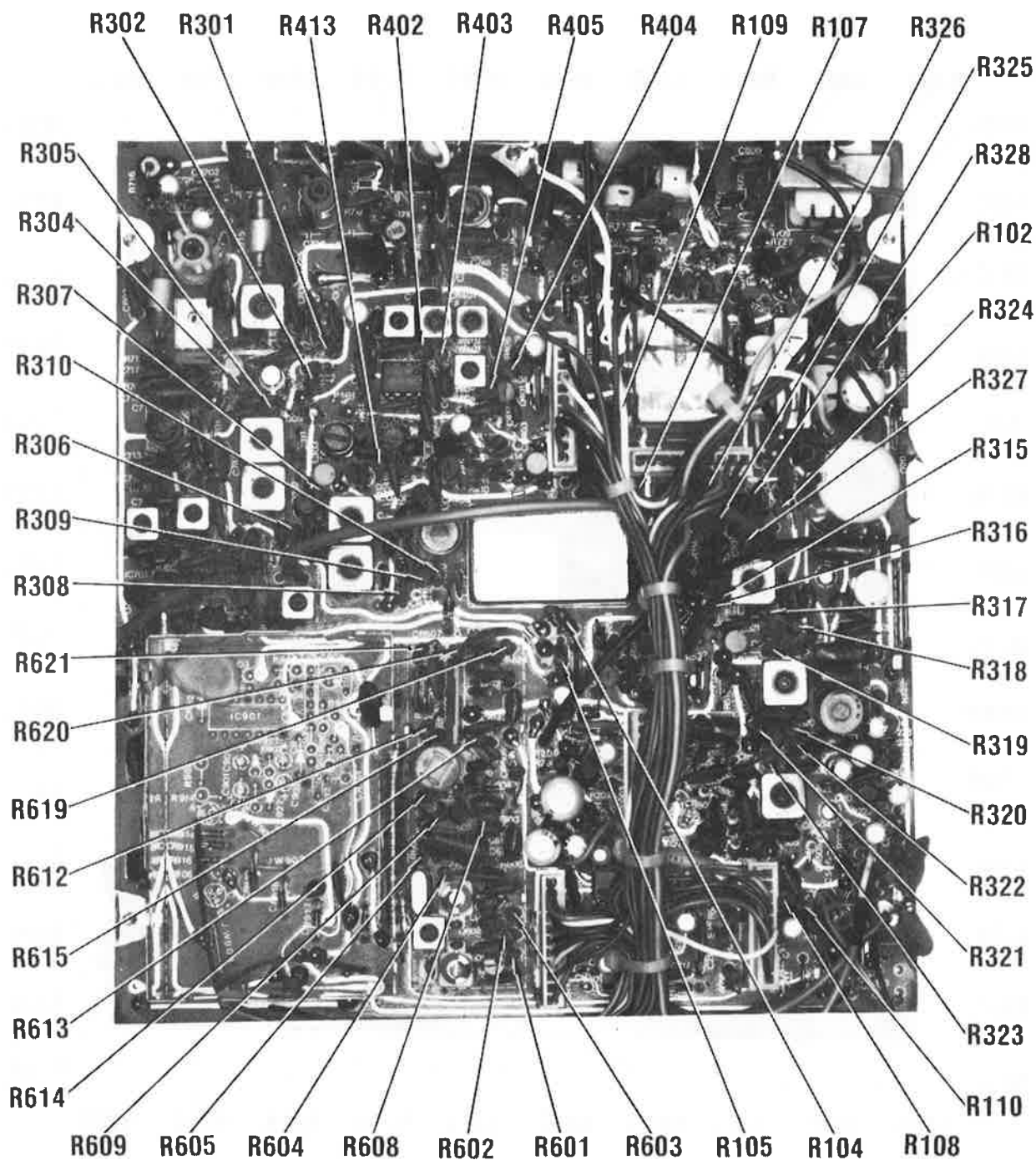
MAIN BOARD



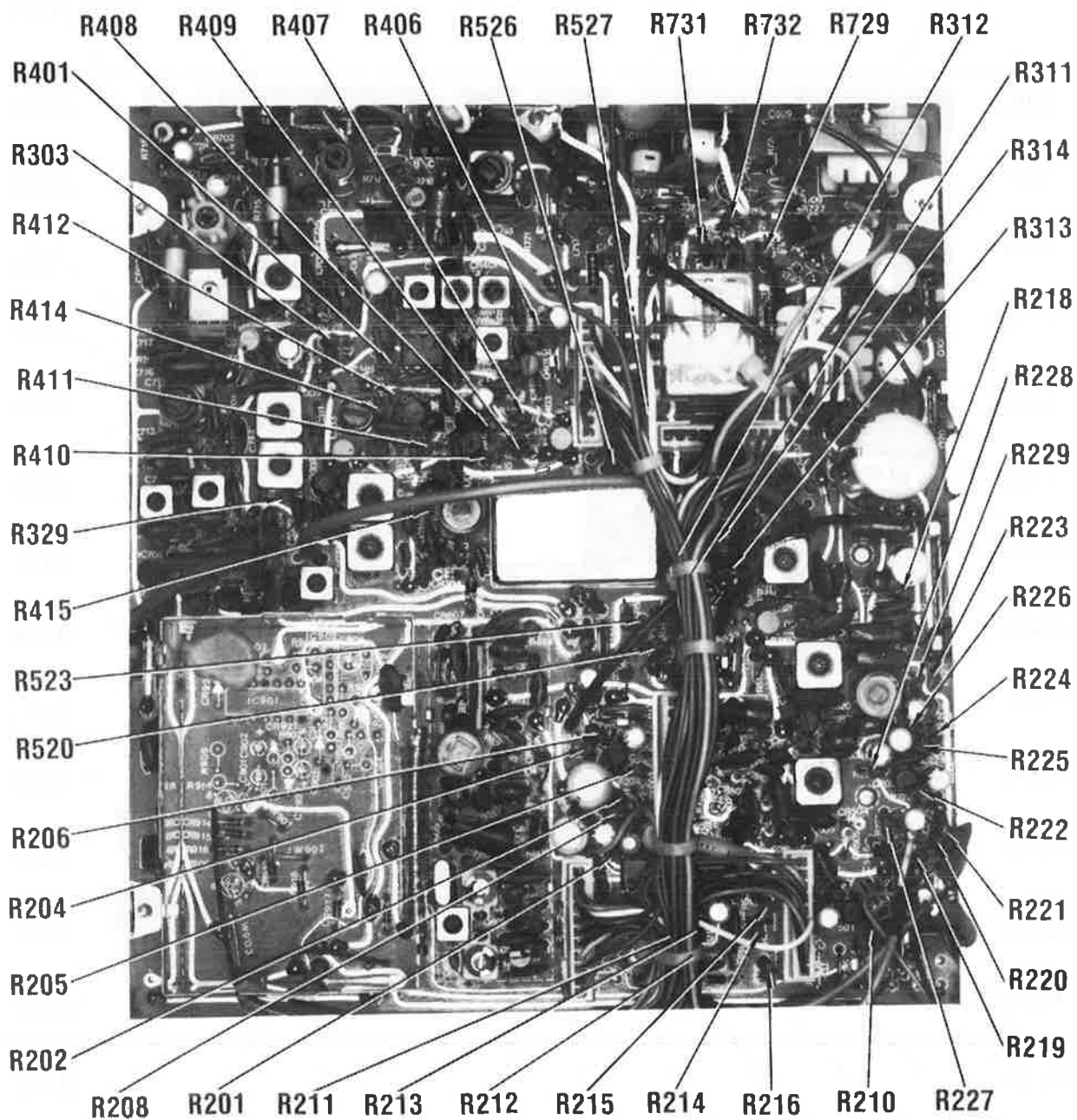
MAIN BOARD



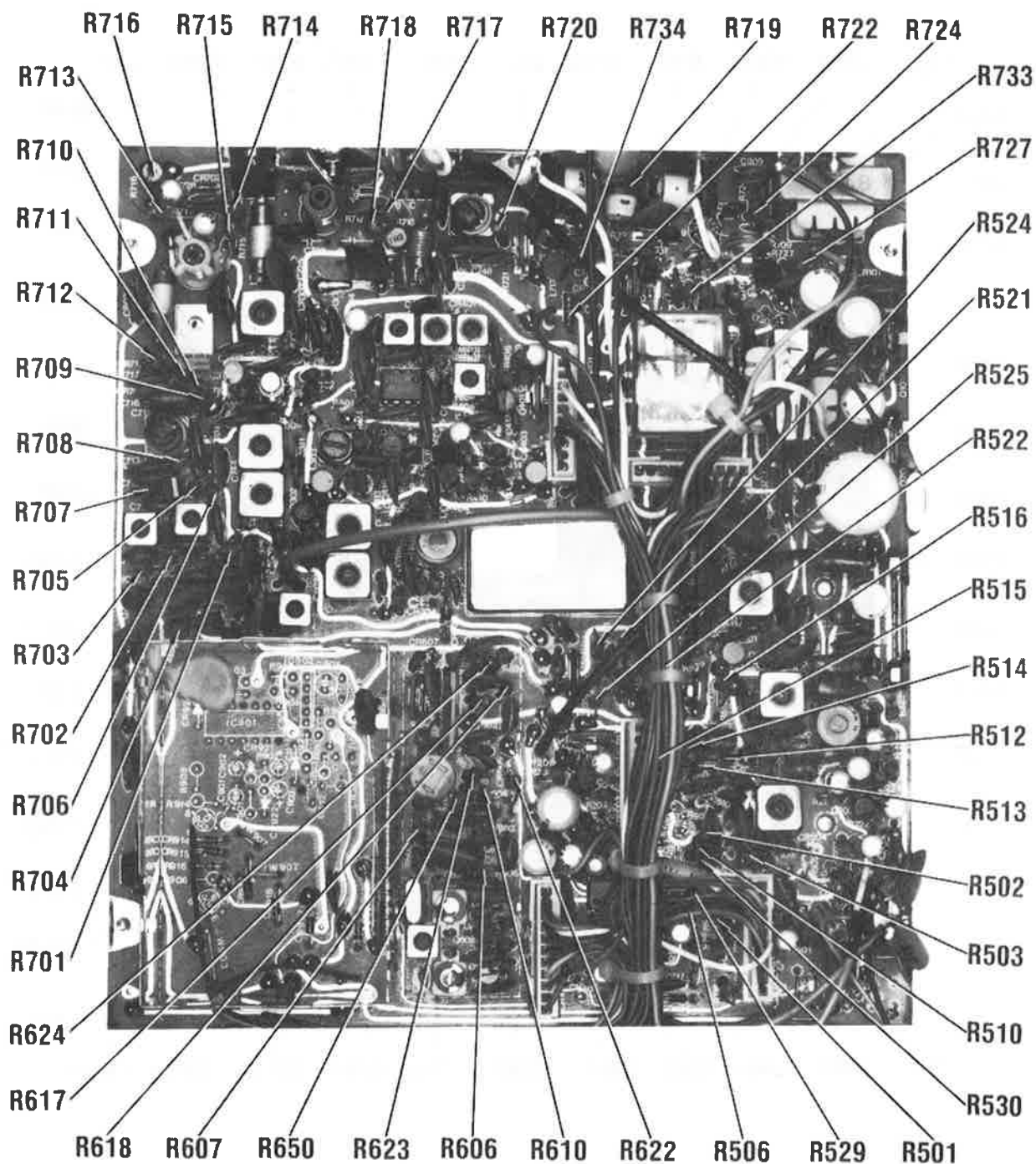
MAIN BOARD



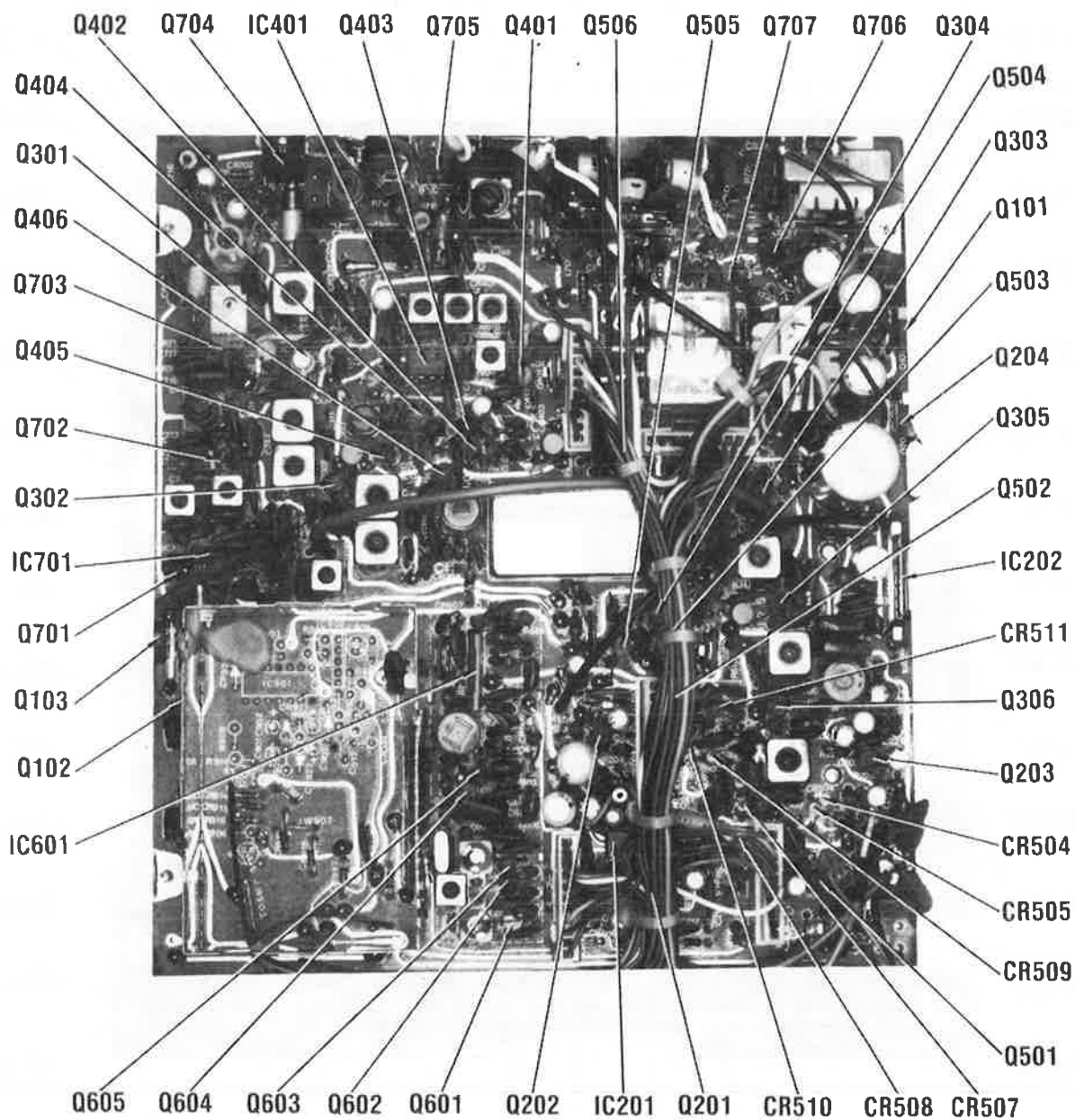
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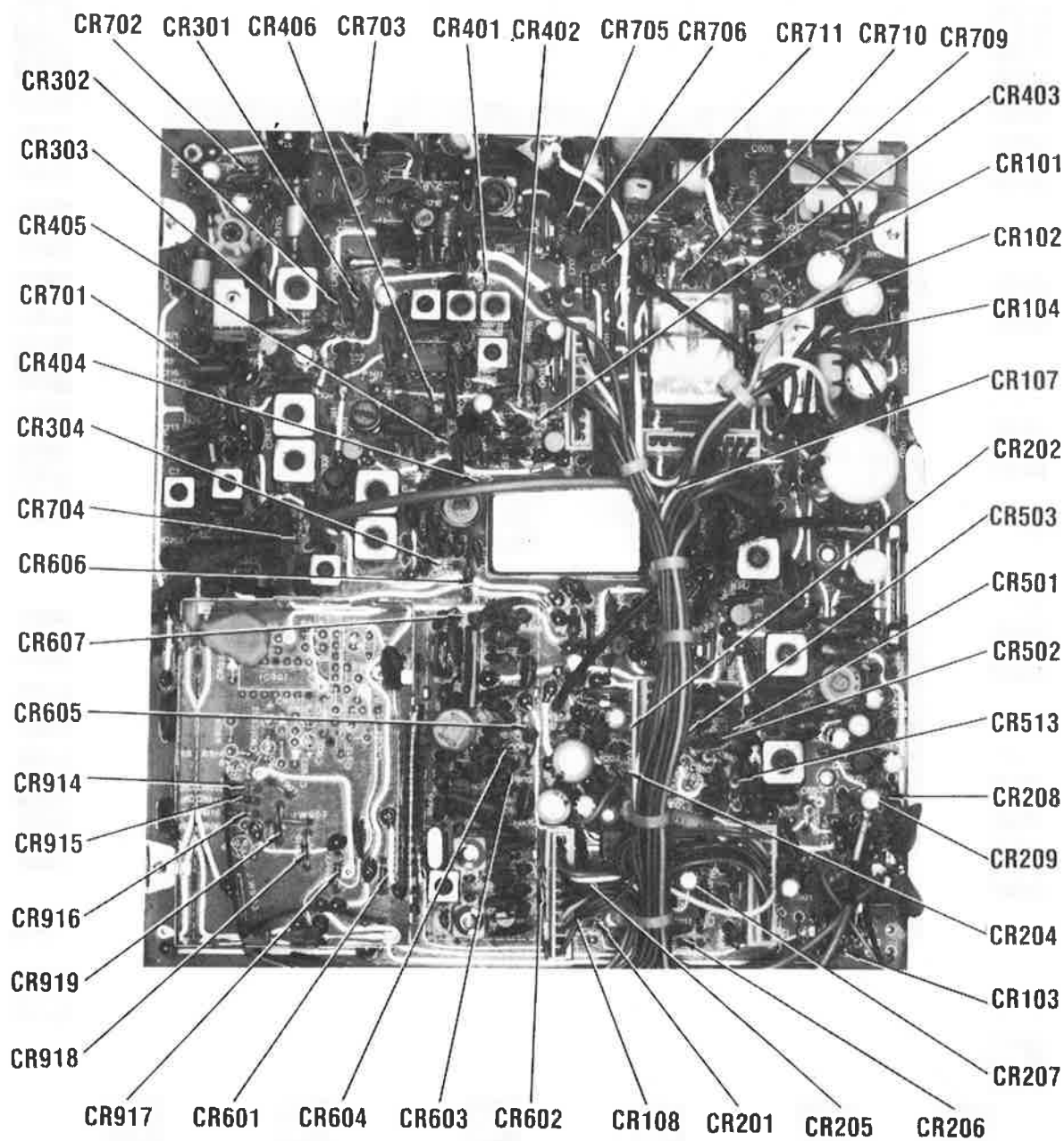
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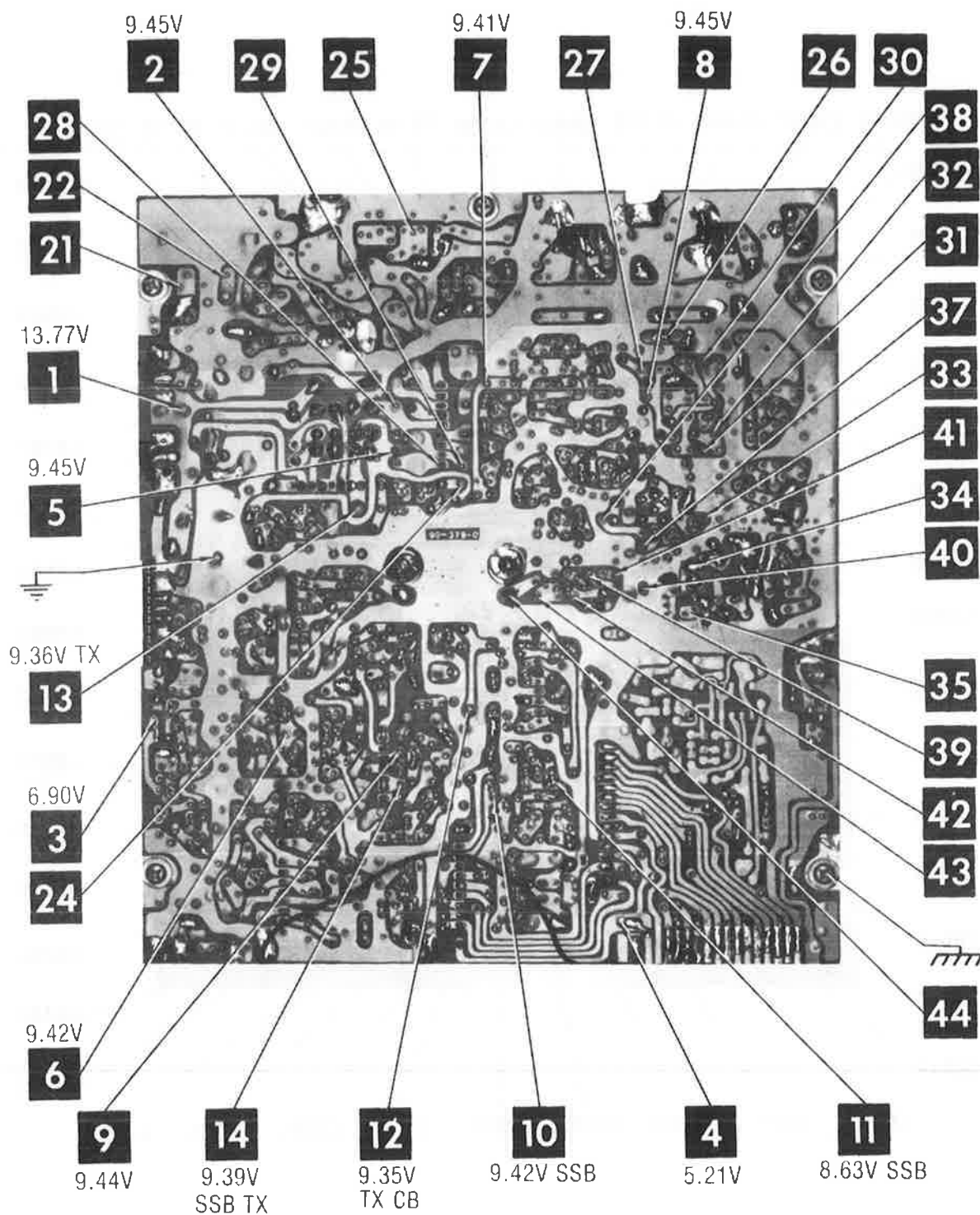
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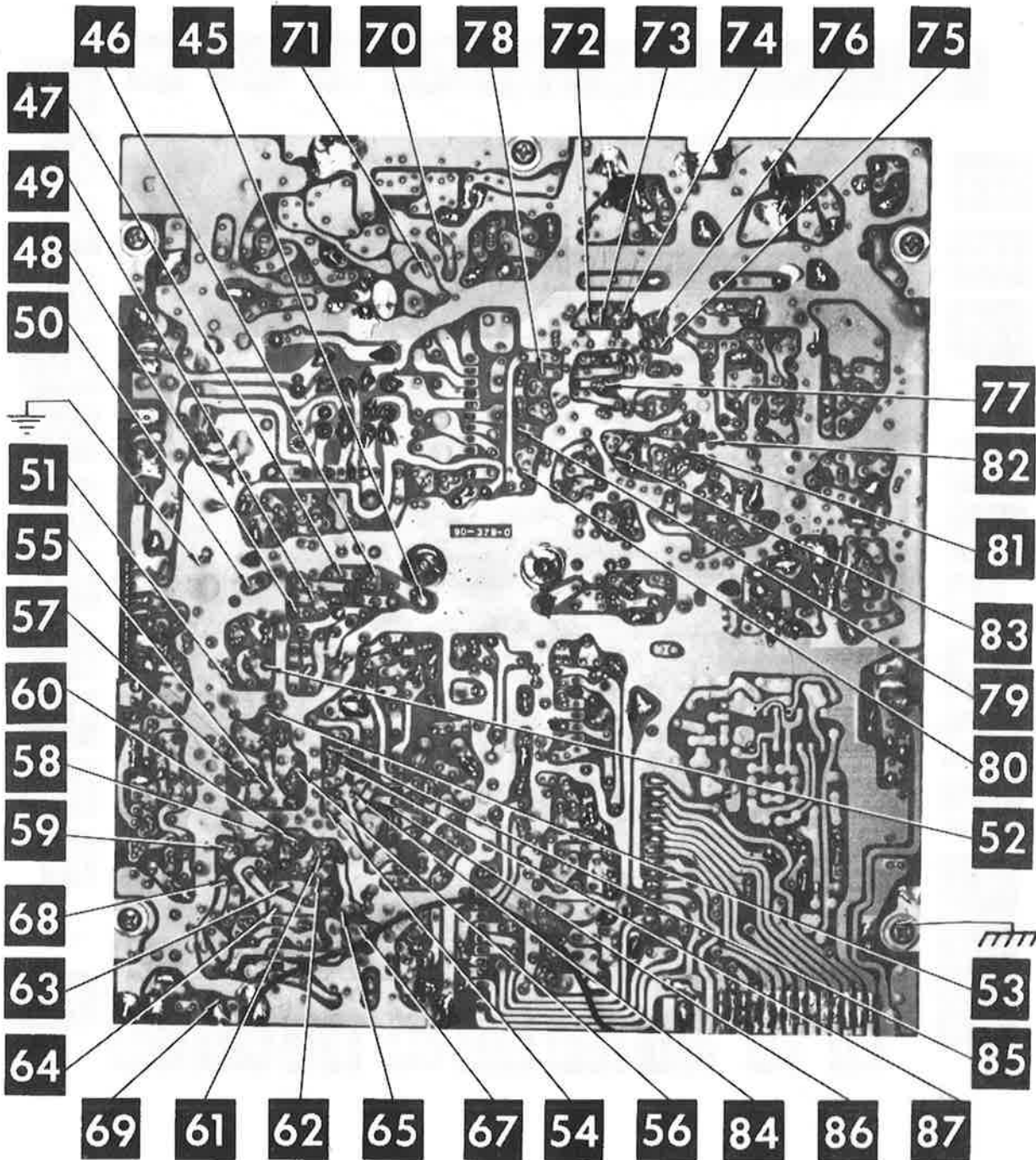
MAIN BOARD



MAIN BOARD

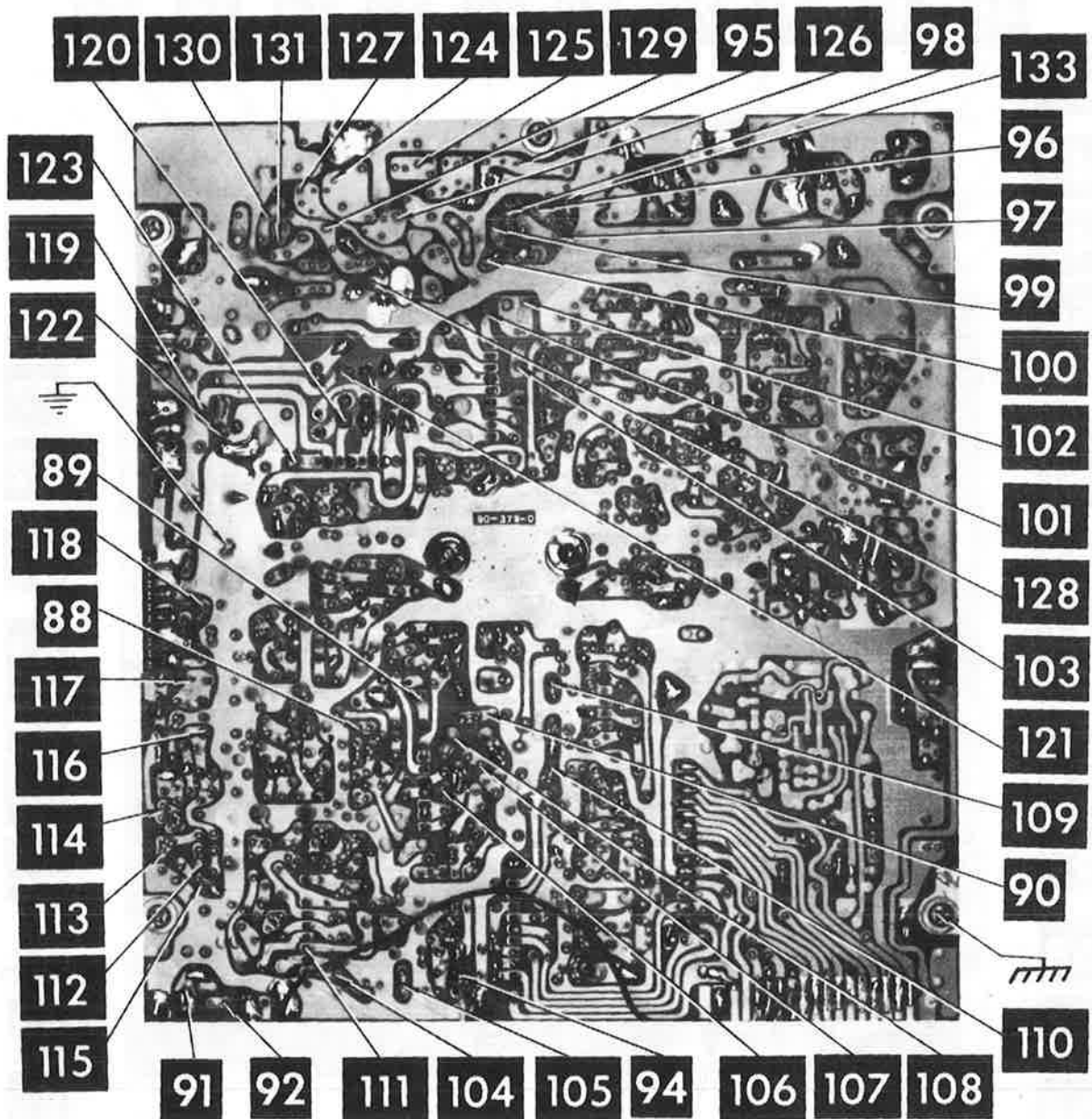


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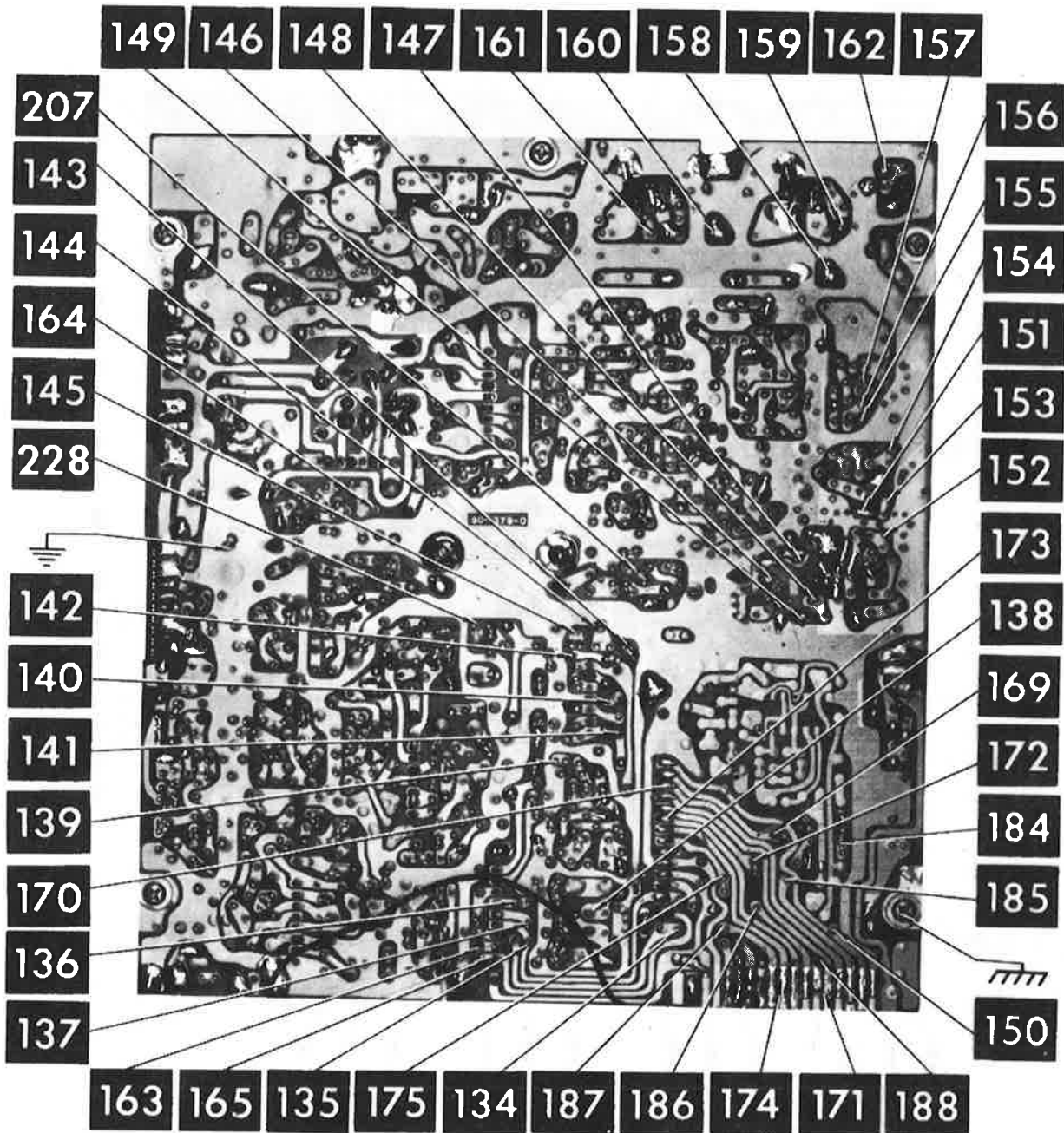


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MAIN BOARD

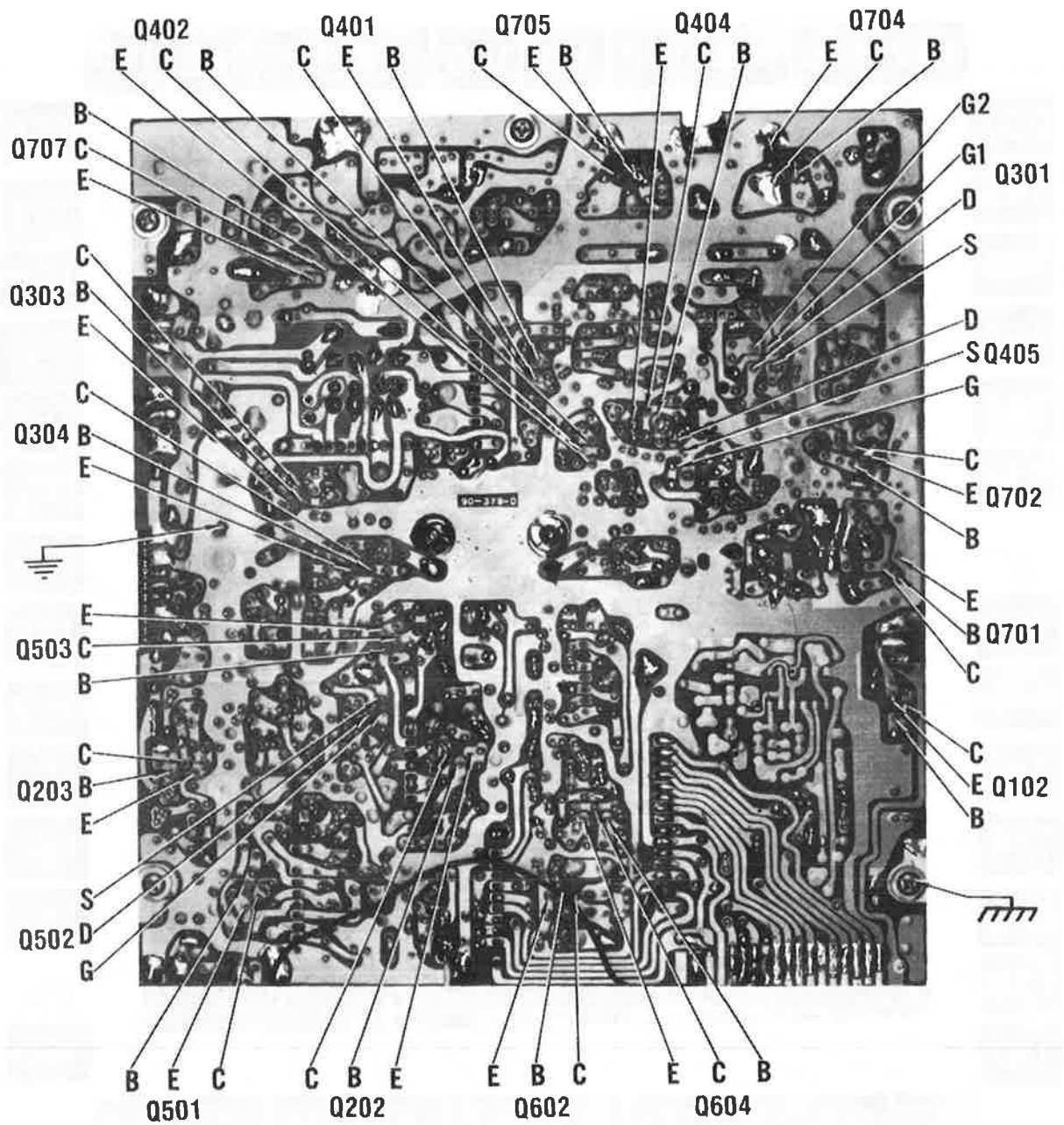


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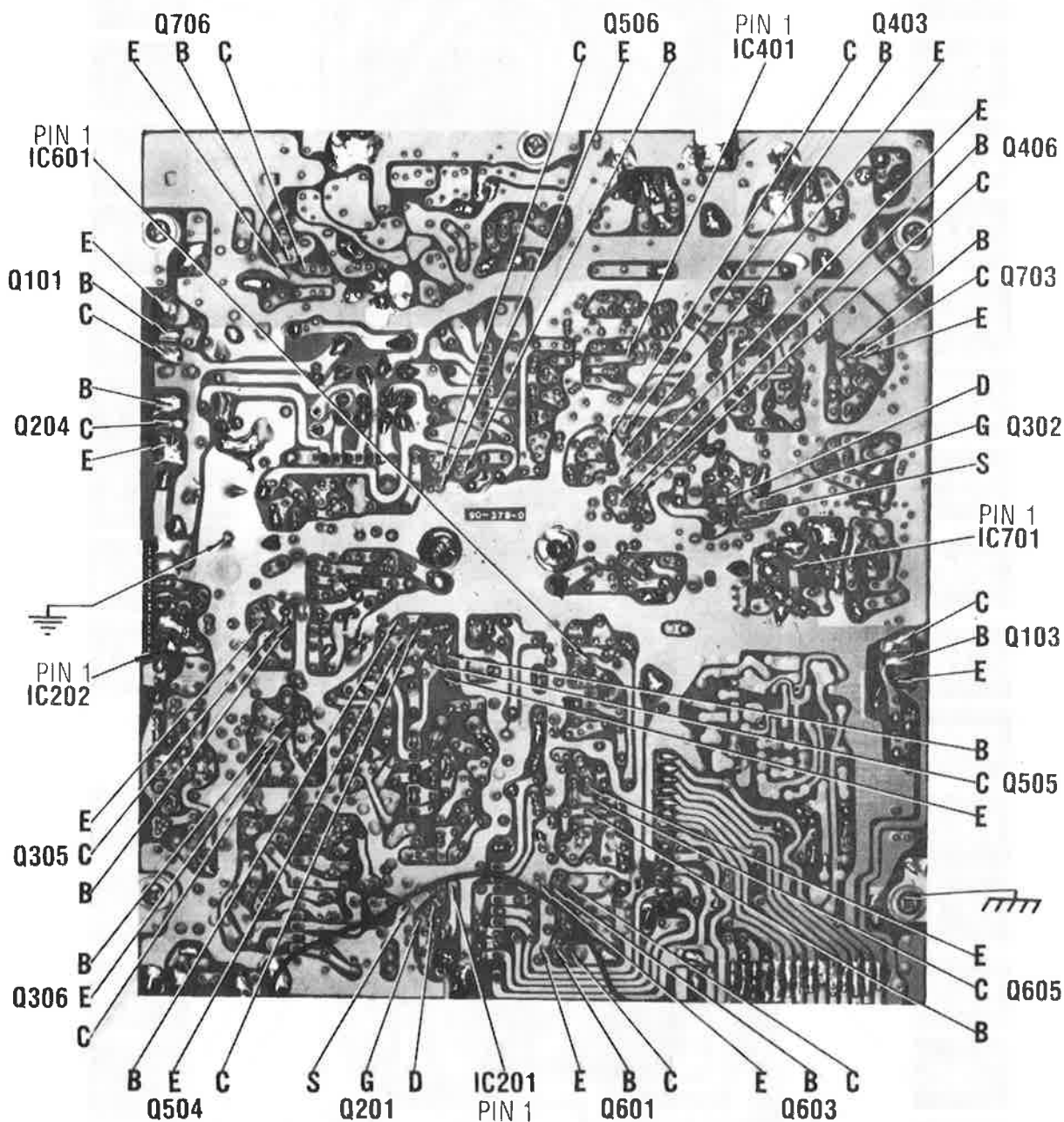


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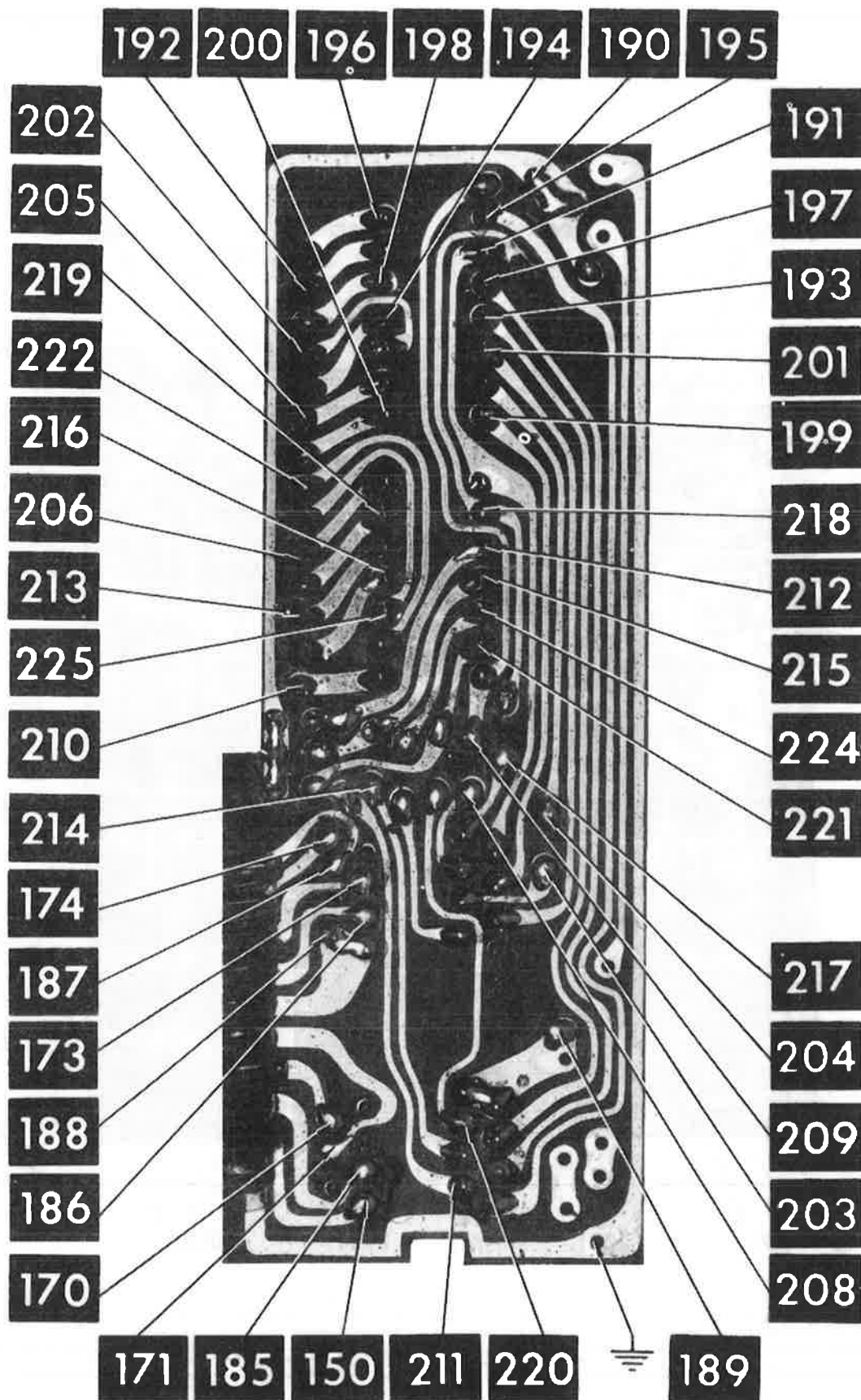
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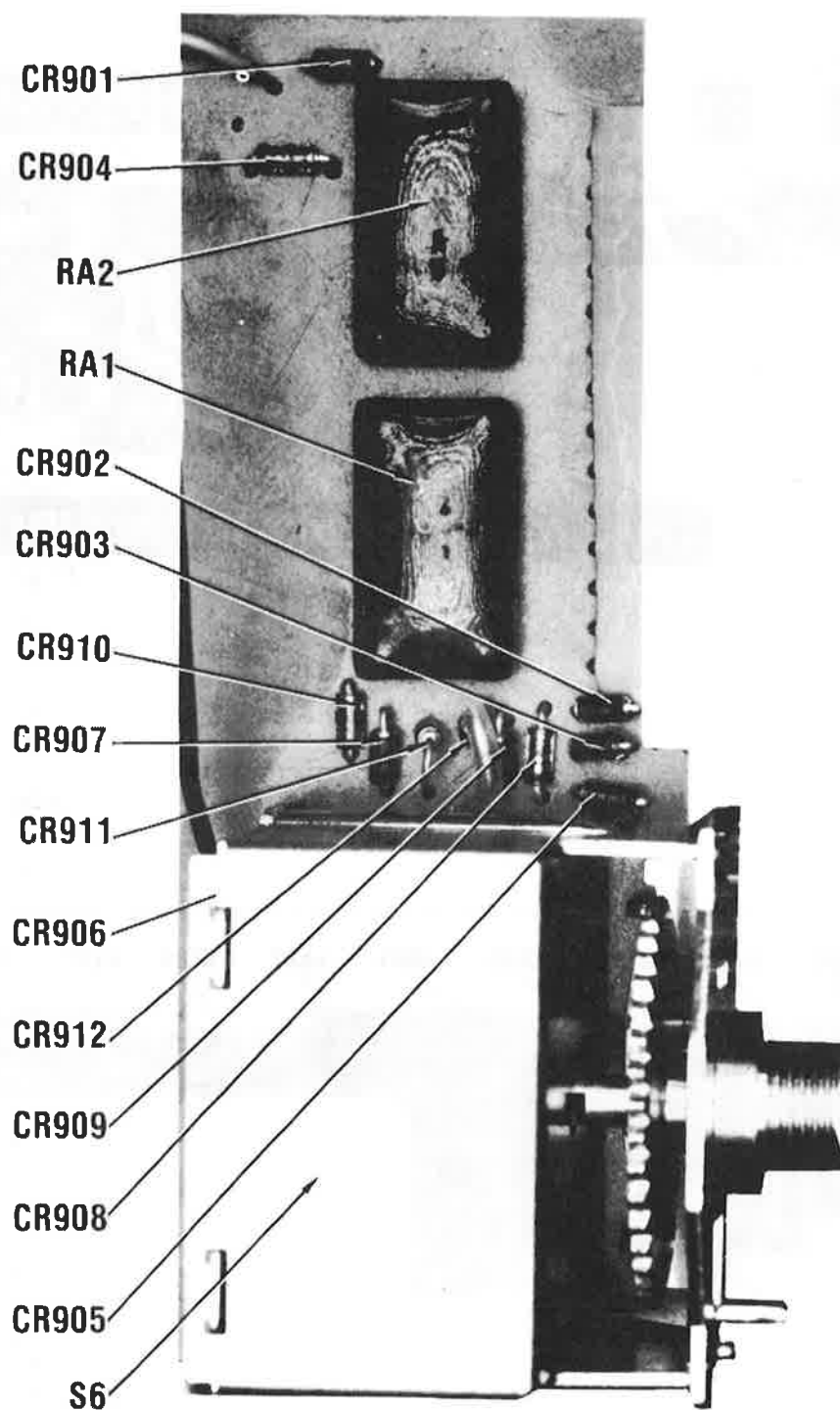
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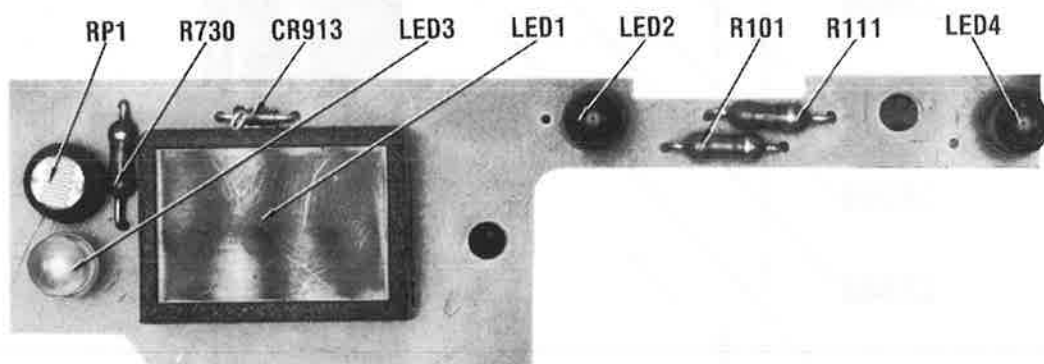
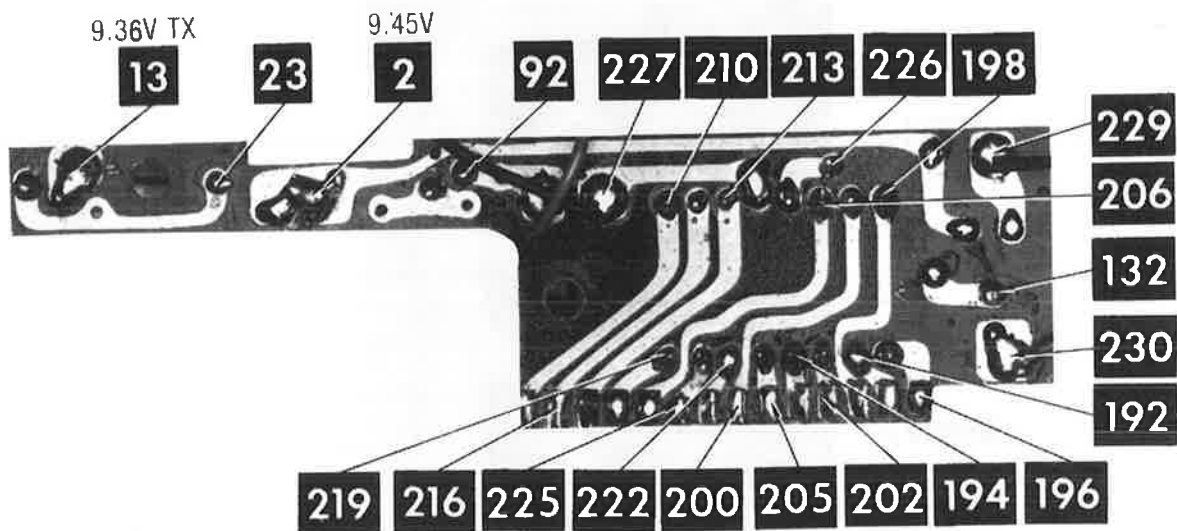
MAIN BOARD



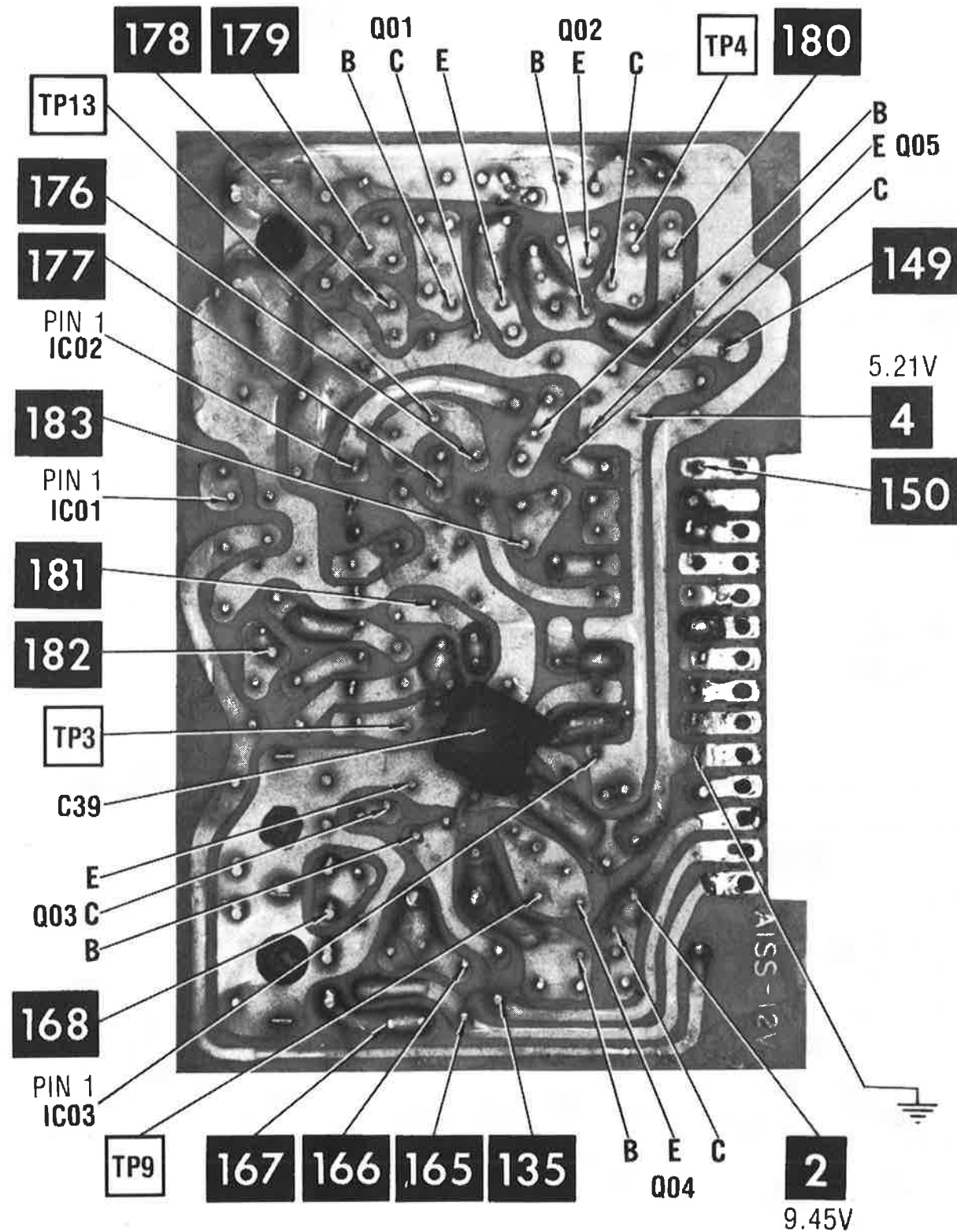
CHANNEL SWITCH BOARD



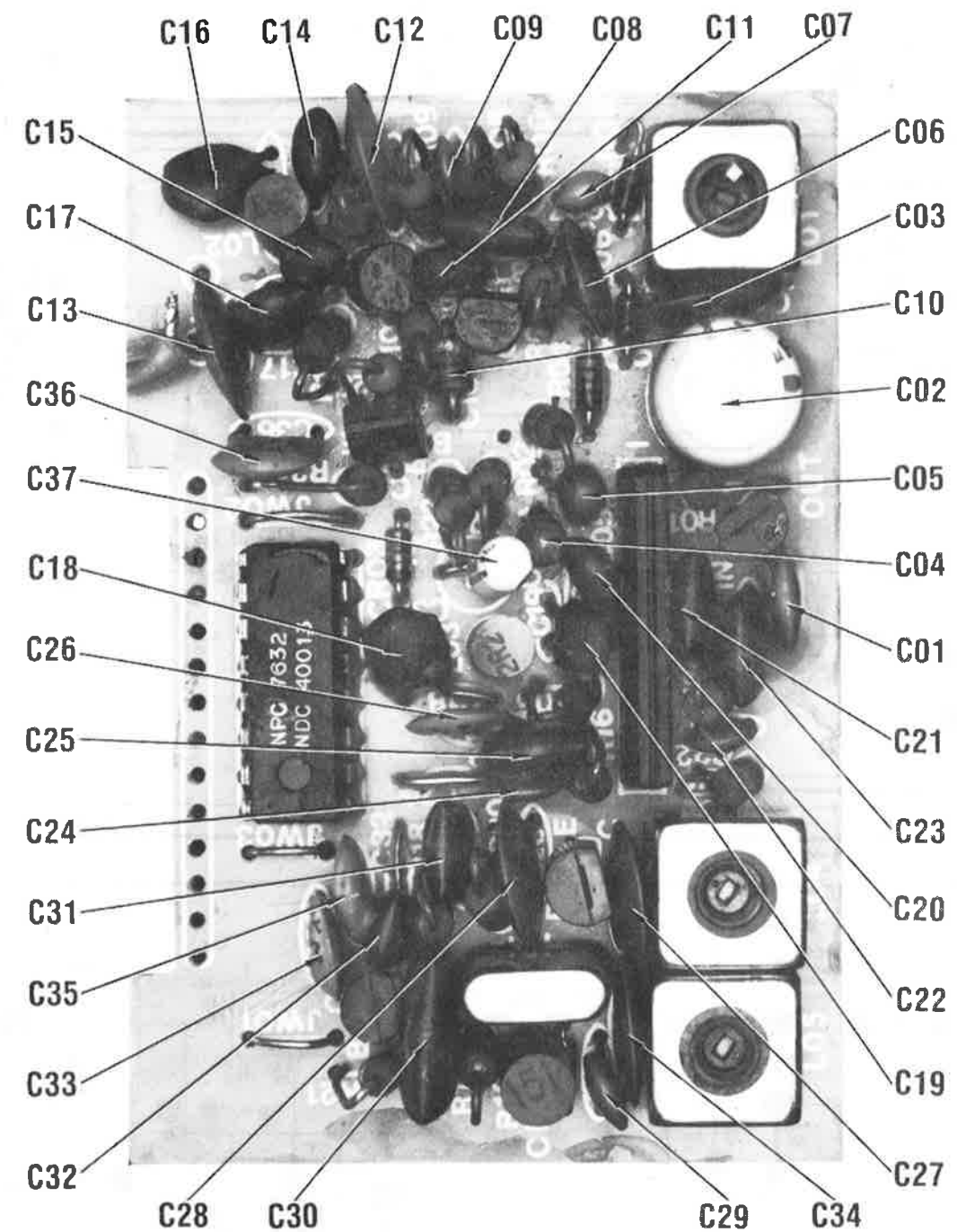
CHANNEL SWITCH BOARD



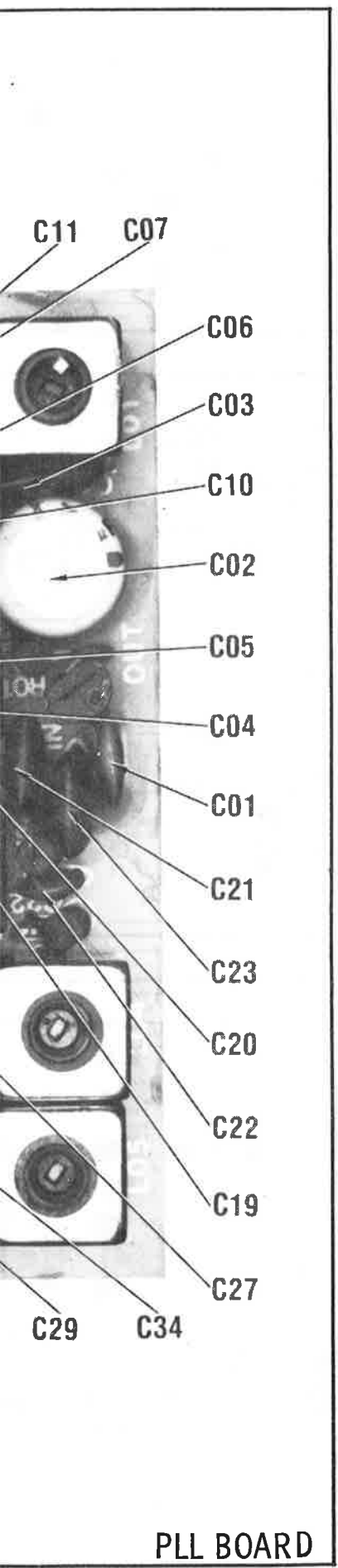
LED DISPLAY BOARD



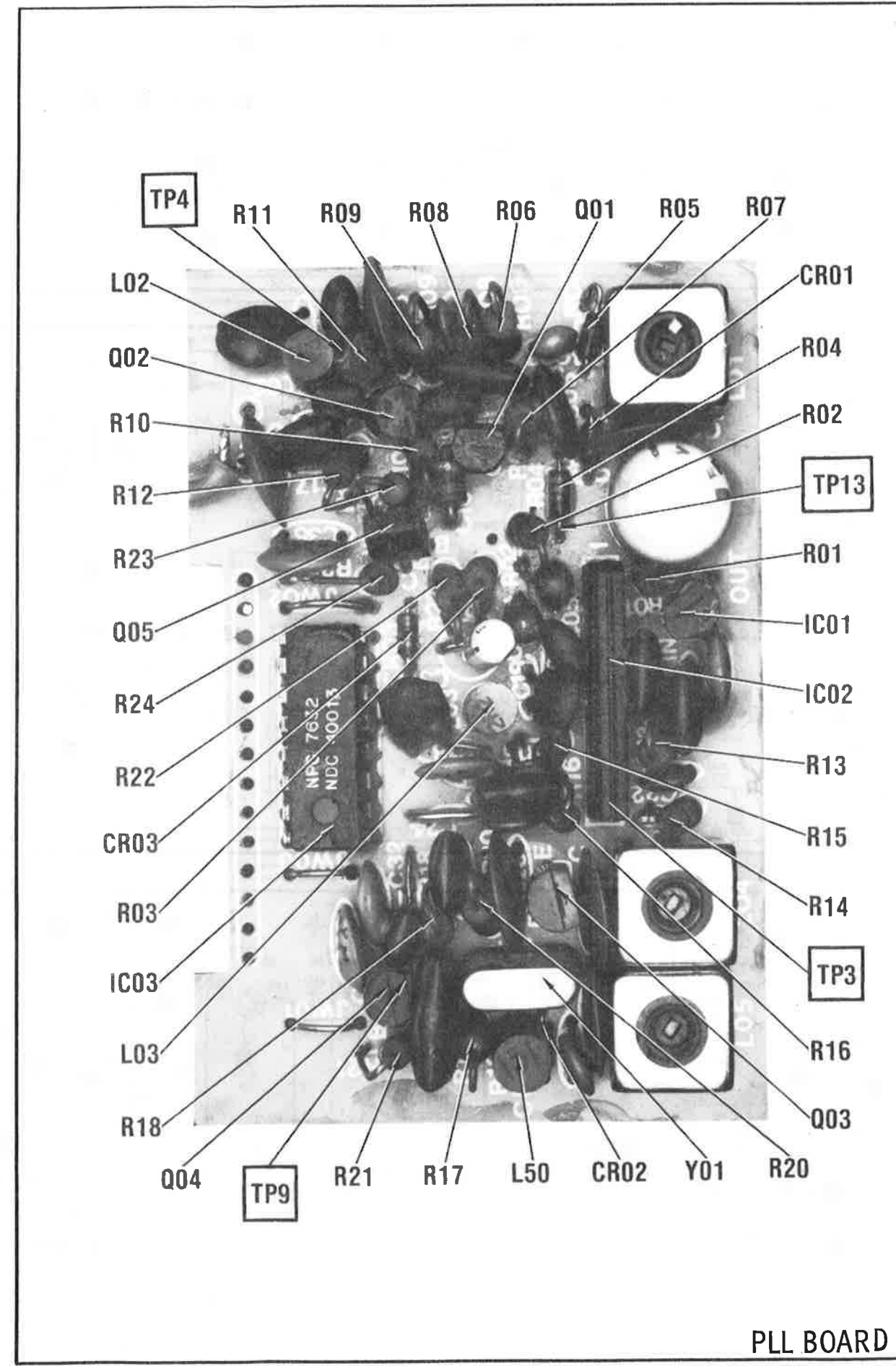
PLL BOARD



PLL BOARD

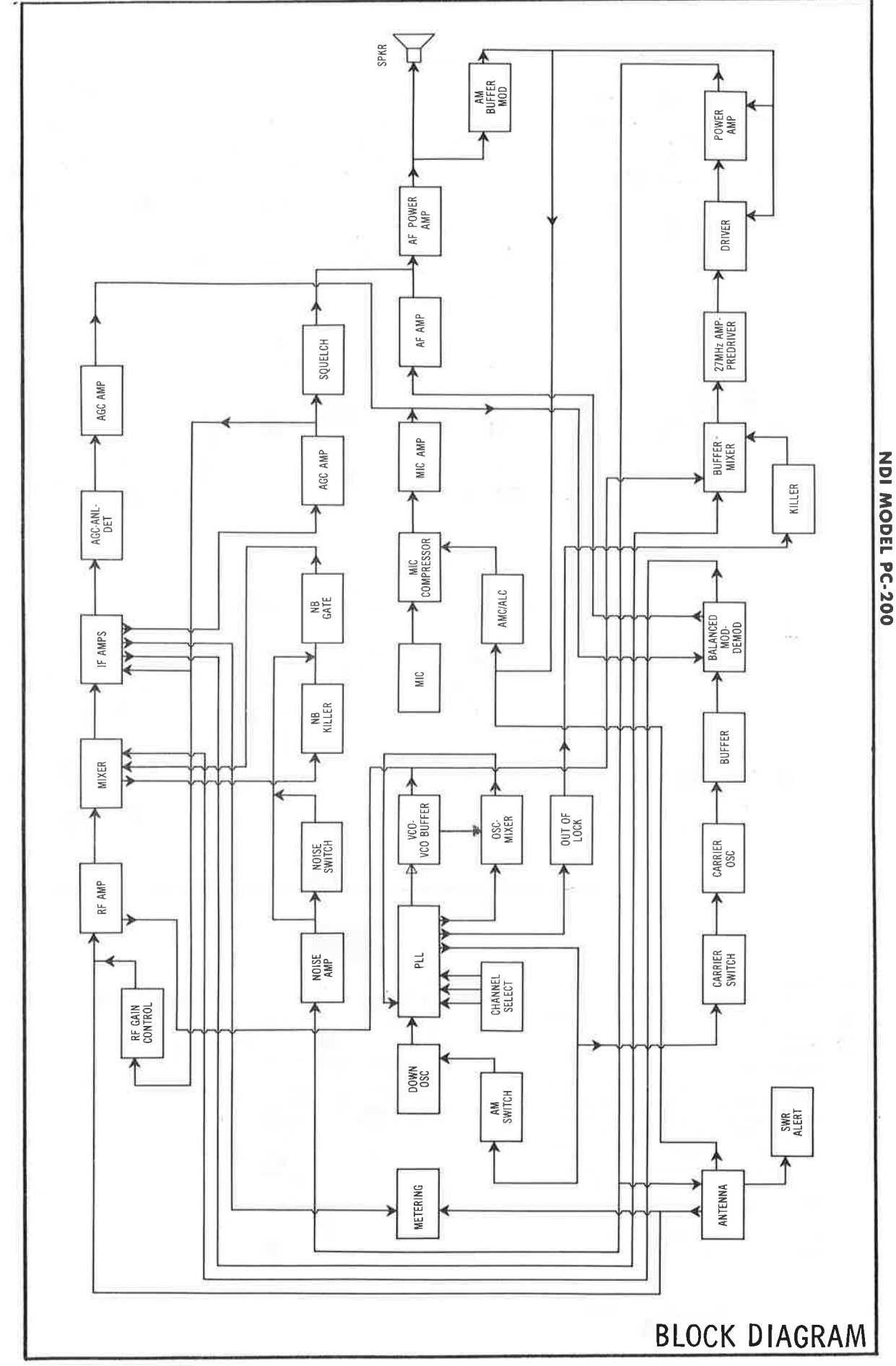


PLL BOARD



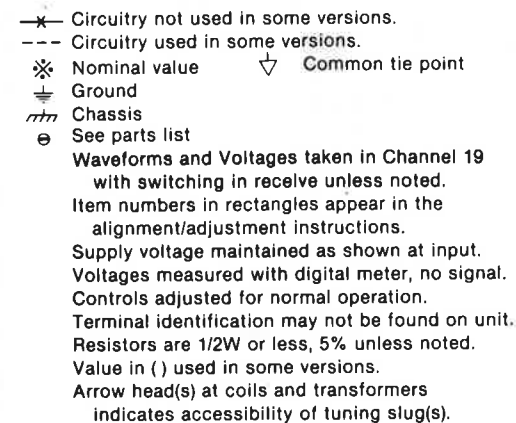
PLL BOARD

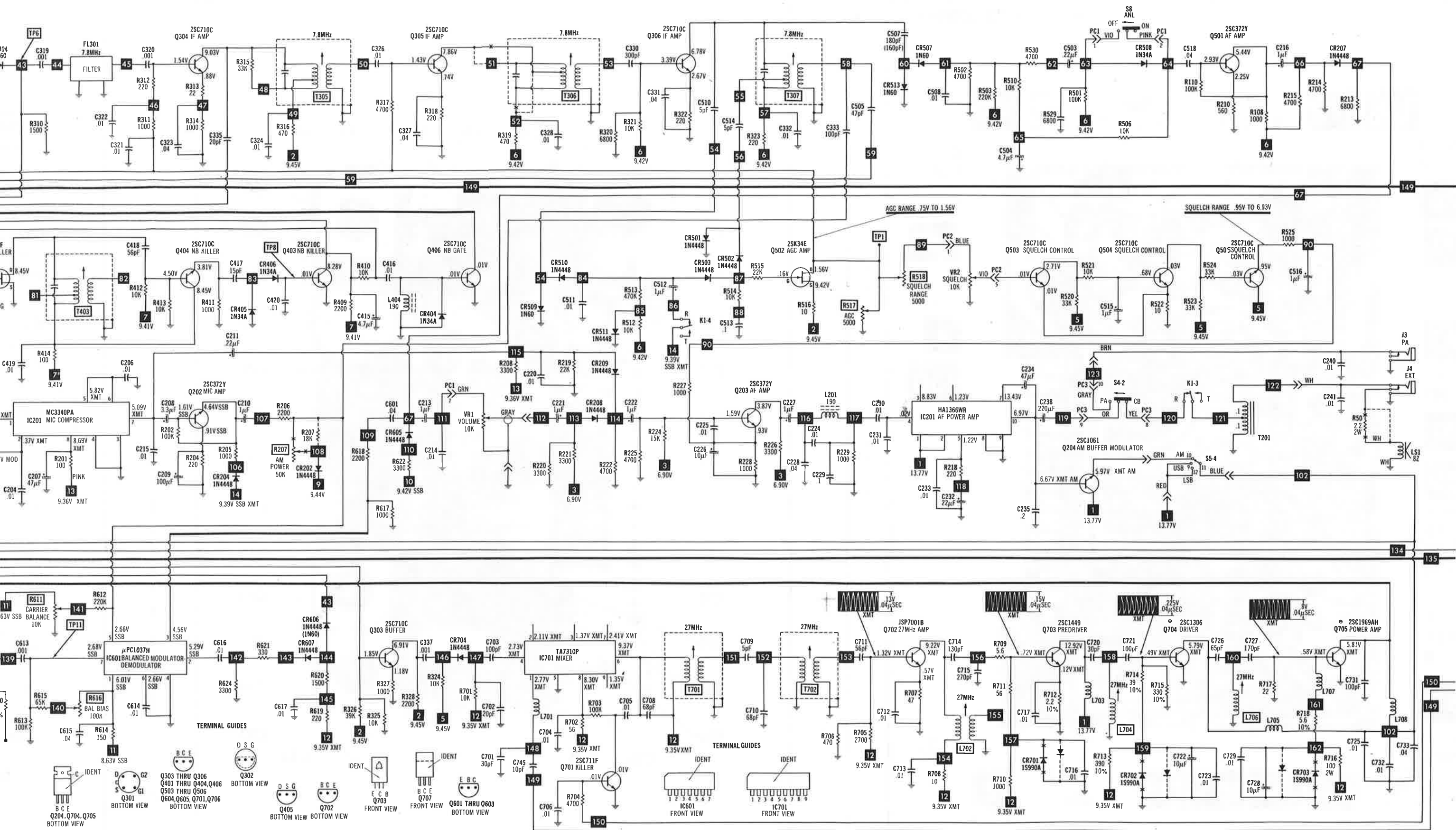
NDI MODEL PC-200



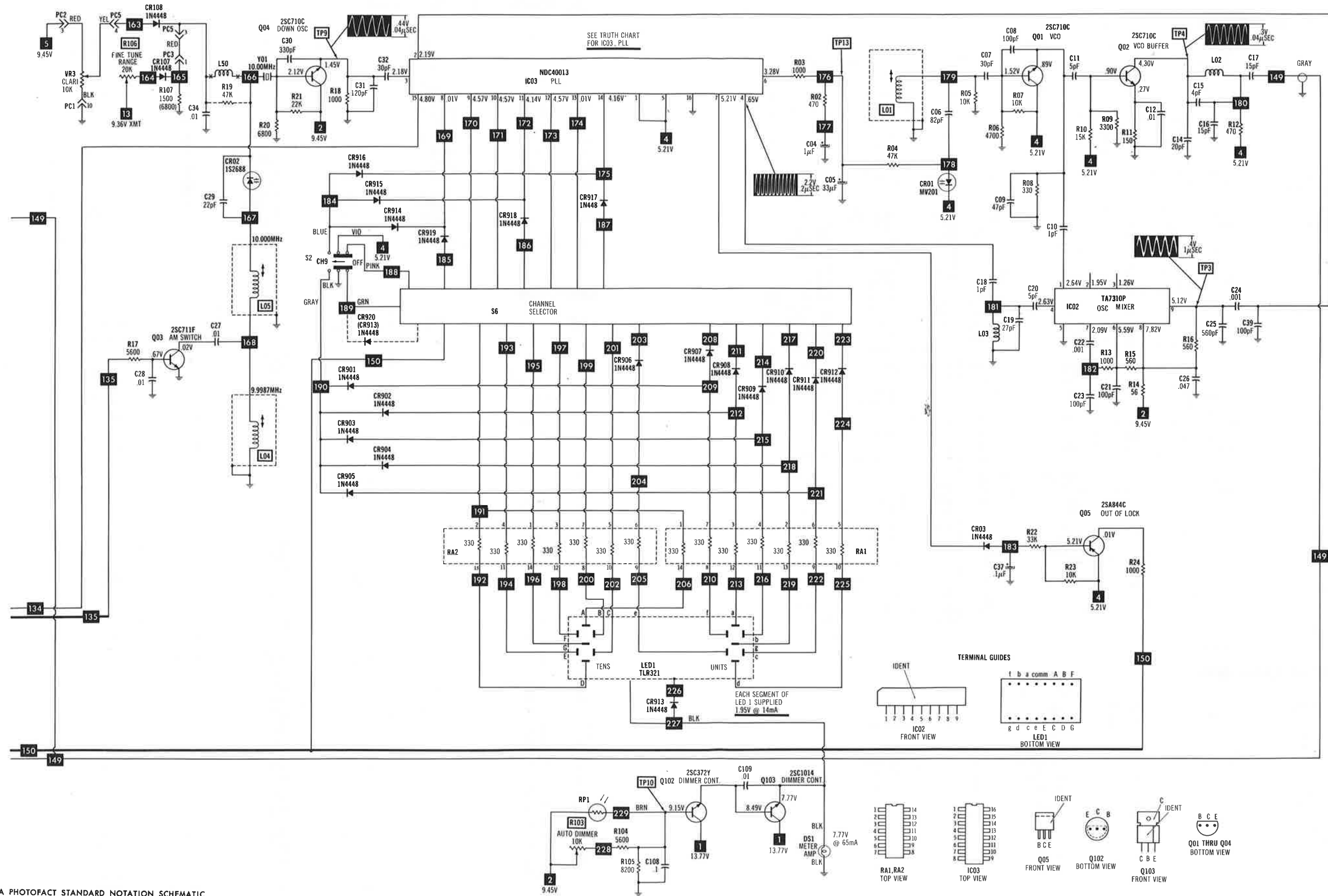
BLOCK DIAGRAM

NDI MODEL PC-200

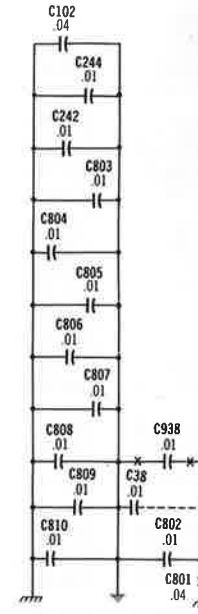




CB SCHEMATIC

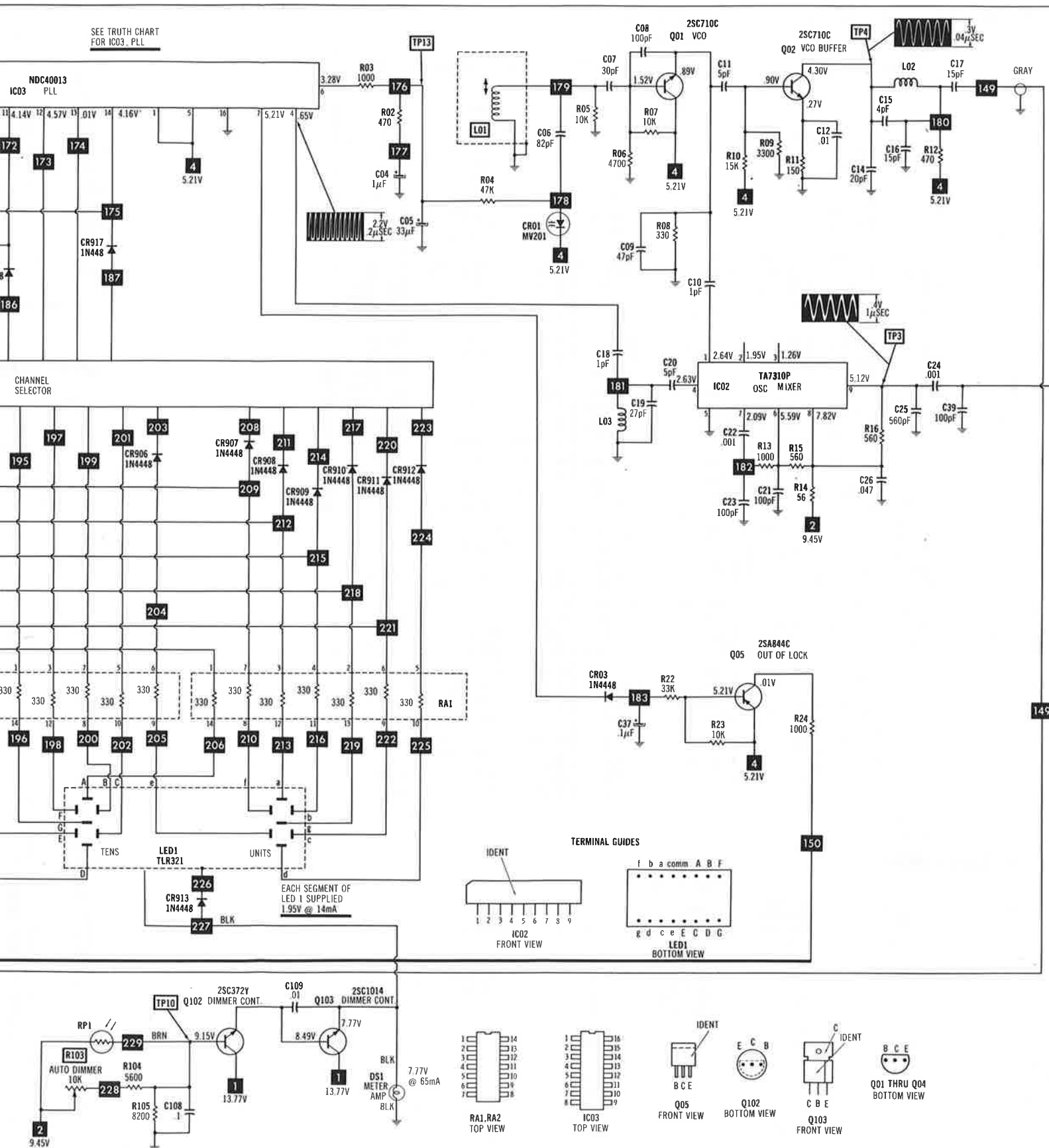


13.80V @ 300mA REC NO SIGNAL
550mA REC NORMAL VOLUME
1.65A XMT
1.75A XMT MOD
320mA REC SSB NO SIGNAL
500mA REC SSB NORMAL VOLUME
700mA XMT SSB
2.3A XMT MOD SSB
300mA PA

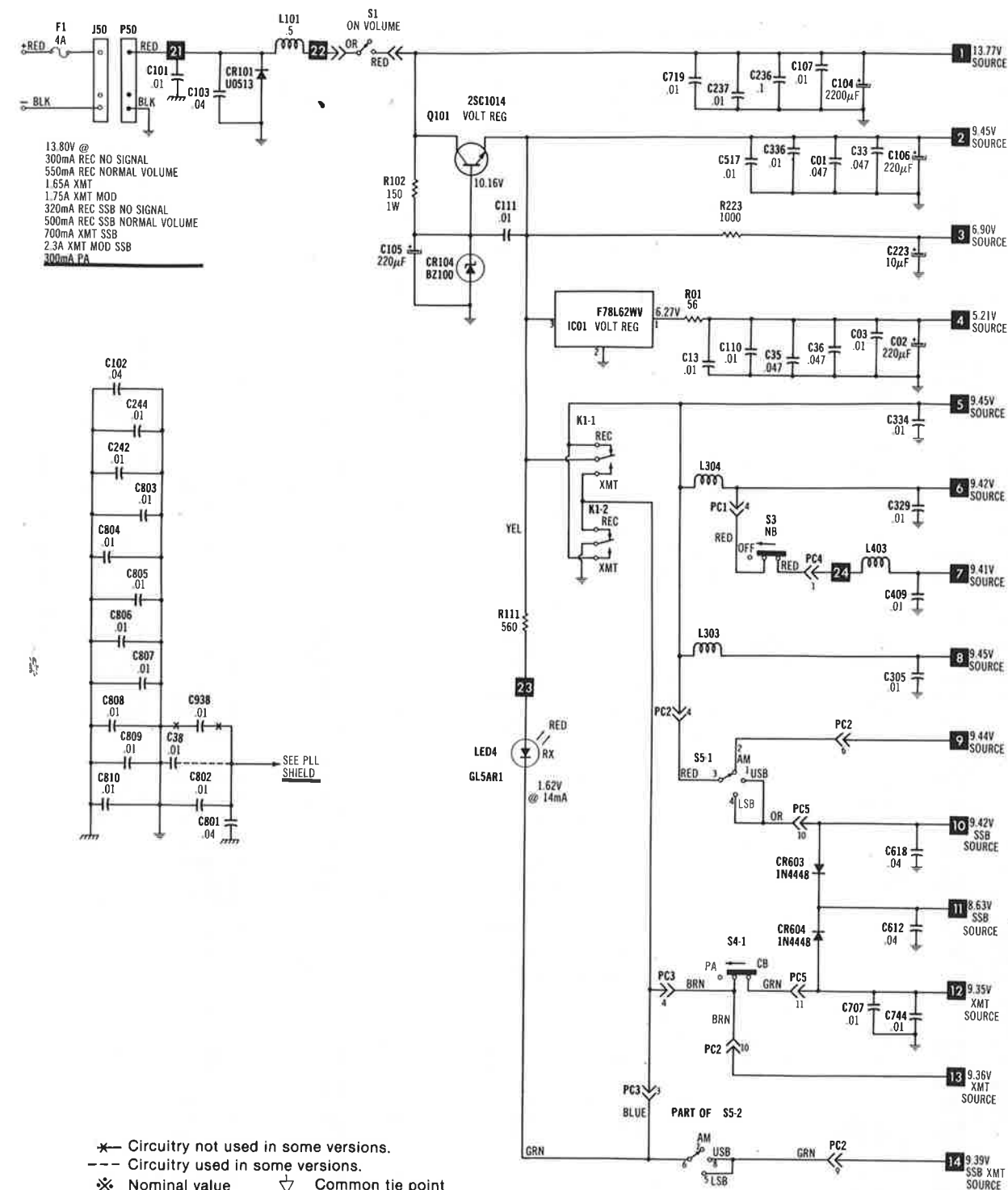


PLL SCHEMATIC

- Circuitry not used
- - - Circuitry used
- ⊗ Nominal value
- ⊕ Ground
- ⏏ Chassis
- ⦿ See parts list
- Waveforms and
- with switching
- Item numbers for
- alignment/ad
- Supply voltage
- Volts meas
- Controls adjust
- Terminal identi
- Resistors are 1
- Value in () used
- Arrow head(s) a
- indicates acc



PLL SCHEMATIC



- * Circuitry not used in some versions.
 - Circuitry used in some versions.
 - ⊗ Nominal value
 - ⊕ Common tie point
 - ⊥ Ground
 - ⊥ Signal path
 - ⊥ Chassis
 - ⊥ Voltage path
 - ⊙ See parts list
- Waveforms and Voltages taken in Channel 19 with switching in receive unless noted. Item numbers in rectangles appear in the alignment/adjustment instructions. Supply voltage maintained as shown at input. Voltages measured with digital meter, no signal. Controls adjusted for normal operation. Terminal identification may not be found on unit. Resistors are 1/2W or less, 5% unless noted. Value in () used in some versions. Arrow head(s) at coils and transformers indicates accessibility of tuning slug(s).

NDI MODEL PC-200
POWER SUPPLY SCHEMATIC

PARTS LIST AND DESCRIPTION
(When ordering parts, state Model, Part Number, and Description.)

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
CR01	MV201	035-013-0		PTC301	REN 601	SK3463/601	ECG601	TM601		
CR02	1S2688	034-029-0			REN 614	SK3126	ECG613	TM613		
CR03	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-281
CR101	U05B	034-014-0	GE-512	PTC204	REN 156	SK3051/156	ECG156	TM156		103-131
CR102	1001	035-025-0	GE-504A	PTC201	REN 116	SK3311	ECG116	TM116		212-29000
CR103	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		212-76-02
CR104	BZ100	035-004-0	GE-514	ZB10B	REN 140	SK3061/140A	ECG140A	TM140A		103-131
CR107	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-29010
CR108	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR201	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR202	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR204	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR205	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR206	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR207	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR208	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR209	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR301	M1301	035-011-0	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177		103-131
CR302	M1301	035-011-0	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177		103-131
CR303	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR304	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR401	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR402	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR403	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR404	1N34A	034-001-0	1N34AS	PTC207	REN 109	SK3087	ECG109	TM109		103-29001
CR405	1N34A	034-001-0	1N34AS	PTC207	REN 109	SK3087	ECG109	TM109		103-29001
CR406	1N34A	034-001-0	1N34AS	PTC207	REN 109	SK3087	ECG109	TM109		103-29001
CR501	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR502	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR503	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR504	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR505	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR507	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR508	1N34A	034-001-0	1N34AS	PTC207	REN 109	SK3087	ECG109	TM109		103-29001
CR509	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR510	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR511	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR513	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR601	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR602	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR603	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR604	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR605	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR606	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR607	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR701	1S990A	034-033-0	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177		103-131
CR702	1S990A	034-033-0	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177		103-131
CR703	1S990A	034-033-0	GE-300	PTC214	REN 177	SK3175/177	ECG177	TM177		103-131
CR704	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR705	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR706	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR709	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR710	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR711	1N60	034-028-0	1N60	PTC206	REN 109	SK3088	ECG109	TM109		103-29001
CR901	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR902	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR903	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR904	1N4148	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR905	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR906	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR907	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR908	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR909	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR910	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR911	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR912	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR913	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR914	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR915	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR916	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR917	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR918	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR919	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
CR920	1N4448	034-032-0	GE-514	PTC214	REN 177	SK3100/519	ECG519	TM519		103-131
IC01	F78L62WV	39-033-0					ECG988	TM988		
IC02	78L62WV	39-061-0					ECG988	TM988		
IC03	ND40013	40-013-0			REN 1192	SK3445/1192	ECG1192	TM1192		221-29061
IC201	MC3340PA	39-047-1					ECG829			
IC202	HA1366WR	39-060-0					ECG1261	TM1261		221-29071
IC401	MC1350P	40-031-0	GEIC-217				ECG746	TM746		221-29028
	MC1350		GEIC-217				ECG746	TM746		221-29028

NDI MODEL PC-200

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.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
IC601 IC701	UPC1037H TA7310P	39-062-0 39-061-0			REN 1192	SK3445/1192	ECG1192	TM1192	WEP2120/1192	221-29061
Q01	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q02	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q03	2SC711F	031-027-0	GE-62*	PTC121	REN 199*	SK3245/199	ECG199*	TM199**	WEP372*	121-972
Q04	2SC710C	031-027-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q05	2SA844C	030-007-0	GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-29005
Q101	2SC1014	031-058-0	GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-29092
	2SC1014D		GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-29092
Q102	2SC372Y		GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-29000A*
Q103	2SC1014	031-058-0	GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-29092
	2SC1014D		GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-29092
Q201	2SK30AY	033-005-0	GE-FET-1	PTC151*	REN 132*	SK3112	ECG132*	TM132*	WEP801/133*	121-756*
	2SK30Y		GE-FET-1	PTC151*	REN 132*	SK3112	ECG132*	TM132*	WEP801/133*	121-756*
Q202	2SC372Y		GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-29000A*
Q203	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-29000A*
Q204	2SC1061	031-061-0	GE-66	PTC167	REN 152	SK3054/196	ECG152	TM152**	WEP745/152	121-29002
	2SC1061D		GE-66	PTC167	REN 152	SK3054/196	ECG152	TM152**	WEP745/152	121-29002
Q301	3SK59GR	033-012-0	GE-FET-4	PTC182*	REN 222	SK3050/221	ECG222	TM222	WEP905/222	121-826
	3SK41L		GE-FET-4	PTC182*	REN 222	SK3050/221	ECG222	TM222	WEP905/222	121-826
Q302	2SK196R		GE-FET-2	PTC161	REN 132*	SK3834/132	ECG312*	TM312*	WEP920/312*	121-756
Q303	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q304	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q305	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q306	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q401	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q402	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q403	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q404	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q405	2SC41F	033-022-0	GE-FET-2	PTC161	REN 132*	SK3834/132	ECG312*	TM312*	WEP920/312*	121-756
Q406	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q501	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-29000A*
Q502	2SK34E	033-007-0	GE-FET-2*	PTC161*	REN 132*	SK3448	ECG312*	TM312*	WEP920/312*	121-756*
Q503	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q504	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q505	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q506	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q601	JA1350W	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
	JA1350		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q602	JA1350W	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
	JA1350		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
	JA1350W		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q603	JA1350W	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
	JA1350		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
	JA1350		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q604	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q605	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q701	2SC711F	031-016-0	GE-62*	PTC121	REN 199*	SK3245/199	ECG199*	TM199**	WEP372*	121-972
Q702	JSP7001B	032-005-0	GE-20*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-29000A*
Q703	2SC1449L	031-073-0	GE-270	PTC180	REN 295	SK3253/295	ECG295	TM295	WEP701	121-880
	2SC1449		GE-270	PTC180	REN 295	SK3253/295	ECG295	TM295	WEP701	121-880
Q704	2SC1306	031-069-0	GE-215	PTC186	REN 235	SK3239/236	ECG235	TM235**	WEP785/235	121-29039
Q705	2SC2092	031-091-0	GE-337	PTC186	REN 235	SK3197/235	ECG235	TM235	WEP840/236*	121-29039
	GE-216		PTC186	REN 236	SK3239/236	ECG236	TM236	WEP840/236	121-29040	
	2SC1969H		GE-216	PTC186	REN 236	SK3239/236	ECG236	TM236	WEP840/236	121-29040
Q706	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-29000A
Q707	2SA844C	030-007-0	GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-29005

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.	RAYTHEON PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
1C601 1C701	UPC1037H TA7310P	39-062-0 39-061-0			REN 1192	SK3445/1192	ECG1192	TM1192	WEP2120/1192	221-Z9061
Q01	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q02	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q03	2SC711F	031-027-0	GE-62*	PTC121	REN 199*	SK3245/199	ECG199*	TM199**	WEP372*	121-972
Q04	2SC712C	031-027-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q05	2SA844C	030-007-0	GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-Z9005
Q101	2SC1014		GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-Z9092
Q102	2SC1014D	031-058-0	GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-Z9092
Q103	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-Z9000A*
Q103	2SC1014		GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-Z9092
Q103	2SC1014D	031-058-0	GE-273	PTC193	REN 300	SK3464/300	ECG300	TM300	WEP1014	121-Z9092
Q201	2SK30AY		GE-FET-1	PTC151*	REN 132*	SK3112	ECG132*	TM132*	WEP801/133*	121-756*
Q202	2SK30Y	033-005-0	GE-FET-1	PTC151*	REN 132*	SK3112	ECG132*	TM132*	WEP801/133*	121-756*
Q202	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-Z9000A*
Q203	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-Z9000A*
Q204	2SC1061		GE-66	PTC167	REN 152	SK3054/196	ECG152	TM152**	WEP745/152	121-Z9002
Q204	2SC1061D	031-061-0	GE-66	PTC167	REN 152	SK3054/196	ECG152	TM152**	WEP745/152	121-Z9002
Q301	3SK59GR		GE-FET-4	PTC182*	REN 222	SK3050/221	ECG222	TM222	WEP905/222	121-826
Q302	3SK41L	033-012-0	GE-FET-4	PTC182*	REN 222	SK3050/221	ECG222	TM222	WEP905/222	121-826
Q302	2SK19GR	033-001-0	GE-FET-2	PTC161	REN 132*	SK3834/132	ECG132*	TM312*	WEP920/312*	121-756
Q303	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q304	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q305	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q306	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q401	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q402	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q403	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q404	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q405	2SK41F	033-022-0	GE-FET-2	PTC161	REN 132*	SK3834/132	ECG132*	TM312*	WEP920/312*	121-756
Q406	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q501	2SC372Y	031-002-0	GE-61*	PTC121*	REN 123A*	SK3245/199	ECG123A*	TM123A**	WEP372	121-Z9000A*
Q502	2SK34E	033-007-0	GE-FET-2*	PTC161*	REN 132*	SK3448	ECG132*	TM312*	WEP920/312*	121-756*
Q503	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q504	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q505	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q506	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q601	JAI350W		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q601	JAI350	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q602	JAI350W		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q602	JAI350	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q603	JAI350W		GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q603	JAI350	032-016-0	GE-62*	PTC136*	REN 199*	SK3444/123A	ECG199*	TM199*	WEP66/199*	121-972*
Q604	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q605	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q701	2SC711F	031-016-0	GE-62*	PTC127	REN 199*	SK3245/199	ECG199*	TM199**	WEP372*	121-972
Q702	JSP7001B	032-005-0	GE-20*	PTC136*	REN 123A*	SK3246/229	ECG123A*	TM123A*	WEP736/123A*	121-Z9000A*
Q703	2SC1449L		GE-270	PTC180	REN 295	SK3253/295	ECG295	TM295	WEP701	121-880
Q703	2SC1449	031-073-0	GE-270	PTC180	REN 295	SK3253/295	ECG295	TM295	WEP701	121-880
Q704	2SC1306	031-069-0	GE-215	PTC186	REN 235	SK3239/236	ECG235	TM235/**	WEP785/235	121-Z9039
Q705	2SC2092		GE-337	PTC186	REN 235	SK3197/235	ECG235	TM235	WEP840/236*	121-Z9039
Q705	2SC1969AH	031-091-0	GE-216	PTC186	REN 236	SK3239/236	ECG236	TM236	WEP840/236	121-Z9040
Q706	2SC1969H		GE-216	PTC186	REN 236	SK3239/236	ECG236	TM236	WEP840/236	121-Z9040
Q706	2SC710C	031-025-0	GE-211*	PTC132*	REN 123A*	SK3356	ECG123AP*	TM123AP**	WEP710	121-Z9000A
Q707	2SA844C	030-007-0	GE-244*	PTC103*	REN 129*	SK3114/290	ECG129*	TM129*	WEP564	121-Z9005

* Lead configuration may vary from original.
/** Also available as exact type replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C02	220 16V	614-010-0	PC250-25	VTT220H16	QV1-117	EV-1240
C04	1 25V	014-055-0		TDC105M035EL		SD35-19
C05	.33 35V	014-054-0		TDC334M050EL	QDT1-14	SD50-R339
C37	.1 25V	614-039-0		TDC104M050EL	QDT1-2	SD50-R109
C104	2200 16V	614-013-0 (1)		WBR2000-16 (1)	QEI-643 (1)	TVA-1175.3 (1)
C105	220 16V	614-010-0		PC250-25	QV1-117	EV-1240
C106	220 16V	614-010-0		PC250-25	QV1-117	EV-1240
C202	1 50V	614-022-0		PC1-50	QV1-11	EV-1615
C207	47 16V	614-008-0		PC50-16	QV1-73	EV-1226
C208	3.3 50V	614-028-0		NLW4-50	QV1-25	EV-1618.1
C209	100 16V	614-009-0		PC100-16	QV1-95	EV-1231
C210	1 50V	614-022-0		PC1-50	QV1-11	EV-1615
C211	.22 50V	614-005-0		TDC224M050EL	QDT1-10	SD50-R229
C213	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C216	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C219	10 16V	014-081-0		TDC106M025FL	QDT1-64	SD25-109
C221	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C222	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615

PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA				
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C223	10 16V	614-006-0	PC10-25	VTT10B25	QV1-41	EV-1222
C226	10 16V	614-006-0	PC10-25	VTT10B25	QV1-41	EV-1222
C227	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C232	22 16V	014-070-0		TDC226M035GL	QDT1-83	SD35-229
C234	47 16V	614-008-0		VTT47D16	QV1-73	EV-1226
C238	220 16V	614-010-0	PC50-16	VTT220H16	QV1-117	EV-1240
C239	4.7 25V	614-015-0	PC50-50	VTT47R750	QV1-31	EV-1619.1
C304	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C338	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C415	4.7 25V	614-015-0	PC5-50	VTT47R750	QV1-31	EV-1619.1
C503	.22 50V	614-005-0	PC5-50	TDC224M050EL	QDT1-10	SD50-R229
C504	4.7 25V	614-015-0	PC5-50	VTT47R750	QV1-31	EV-1619.1
C506	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C512	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C515	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C516	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615
C722	10 16V	614-006-0	PC10-25	VTT10B25	QV1-41	EV-1222
C728	10 16V	614-006-0	PC10-25	VTT10B25	QV1-41	EV-1222
C758	1 50V	614-022-0	PC1-50	VTT1A50	QV1-11	EV-1615

(1) A1x1 replacement used as a radial device.

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C01	.047 50V			MAG5015		
C03	.01 50V			MAG5011		
C06	82 NPO 50V		NP082	CN0482		10TCC-Q82
C07	30 N750 50V		N33	CN7433		10TCU-Q33
C08	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C09	47 N750 50V		N47	CN7447		10TCU-Q47
C10	1			CN0510		10TCC-V10
C11	5		CD15CD050D03		QW1-2	MMA-050
C12	.01 50V			MAG5011		
C13	.01 50V			MAG5011		
C14	20		CD15ED200J03	SX420	QW1-10	MMA-200
C15	4		CD15CD050D03		QW1-2	MMA-050
C16	15		CD15CD150J03		QW1-8	MMA-150
C17	15		CD15CD150J03		QW1-8	MMA-150
C18	1		CD15CD010D03		QW1-1	MMA-010
C19	27		CD15ED270J03	SX427	QW1-13	MMA-270
C20	5		CD15CD050D03		QW1-2	MMA-050
C21	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C22	.001 50V			GP210	QCT2-41	10TS-D10
C23	100 50V 10%			SX310	QW1-27	MMA-101
C24	.001 50V			GP210	QCT2-41	10TS-D10
C25	560 50V 10%		CD19FD561J03	SX356 *	QW1-45	MMA-561
C26	.047 50V			MAG5015		
C27	.01 50V			MAG5011		
C28	.01 50V			MAG5011		
C29	22 N750 50V		N22	CN7422		10TCU-Q22
C30	330 50V 10%		CD15FD331J03	SX333	QW1-39	MMA-331
C31	120 50V 10%		CD15FD121J03	SX312	QW1-29	MMA-121
C32	30		CD15ED300J03	SX430	QW1-14	MMA-300
C33	.047 50V			MAG5015		
C34	.01 50V			MAG5011		
C35	.047 50V			MAG5015		
C36	.047 50V			MAG5015		
C39	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C101	.01 50V			MAG5011		
C102	.04 10%		DPMS2S47	EWFA1A147	QFT2-171	1FT-S47
C103	.04 10%		DPMS2S47	EWFA1A147	QFT2-171	1FT-S47
C107	.01 50V			MAG5011		
C108	.01 50V			MAG5011		
C109	.01 50V			MAG5011		
C110	.01 50V			MAG5011		
C111	.01 50V			MAG5011		
C112	.01 50V			MAG5011		
C113	.01 50V			MAG5011		
C201	.01 50V			MAG5011		
C203	.01 50V			MAG5011		
C204	.1 10%		WMF05P1	EWFO5010	QFT2-215	1FT-P10
C205	.01 50V			MAG5011		
C206	.01 10%		WMFTS1	EWFA1A110	QFT2-91	1FT-S10
C214	.01 50V			MAG5011		
C215	.01 50V			MAG5011		
C217	.01 50V			MAG5011		
C218	.01 50V			MAG5011		
C220	.01 50V			MAG5011		
C224	.01 10%		WMFTS1	EWFA1A110	QFT2-91	1FT-S10
C225	.01 50V			MAG5011		
C228	.04 10%		DPMS2S47	EWFA1A147	QFT2-171	1FT-S47
C229	.1 10%		WMF05P1	EWFO5010	QFT2-215	1FT-P10
C230	.01 10%		WMFTS1	EWFA1A110	QFT2-91	1FT-S10
C231	.01 50V			MAG5011		
C233	.01 50V			MAG5011		
C235	.2 10%		WMF05P22	EWFO5022	QFT2-253	1FT-P22
C236	.1 10%		WMF05P1	EWFO5010	QFT2-215	1FT-P10

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS. (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C237	.01 50V			MAG5011		
C240	.01 50V			MAG5011		
C241	.01 50V			MAG5011		
C242	.01 50V			MAG5011		
C243	.01 50V			MAG5011		
C244	.01 50V			MAG5011		
C245	.01 50V			MAG5011		
C301	15					
C302	33		CD15CD150J03		QW1-8	MWA-150
C303	.01 50V		CD15ED330J03	SX433	QW1-15	MWA-330
C305	.01 50V			MAG5011		
C306	.01 50V			MAG5011		
C307	.01 50V			MAG5011		
C308	.01 50V			MAG5011		
C309	.01 50V			MAG5011		
C310	.01 50V			MAG5011		
C311	1			CN0510		10TCC-V10
C312	.01 50V			MAG5011		
C313	.01 50V					
C314	5		CD15CD050D03		QW1-2	MWA-050
C315	15		CD15CD150J03		QW1-8	MWA-150
C316	15		CD15CD150J03		QW1-8	MWA-150
C317	.01 50V			MAG5011		
C318	.001 50V			GP210	QCT2-41	10TS-D10
C319	.001 50V			GP210	QCT2-41	10TS-D10
C320	.001 50V			GP210	QCT2-41	10TS-D10
C321	.01 50V			MAG5011		
C322	.01 50V			MAG5011		
C323	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C324	.01 50V			MAG5011		
C326	.01 50V			MAG5011		
C327	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C328	.01 50V			MAG5011		
C329	.01 50V			MAG5011		
C330	300 50V 10%		CD15FD301J03	SX330	QW1-38	MWB-301
C331	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C332	.01 50V			MAG5011		
C333	100 50V 10%		CD15FD101J03	SX310	QW1-27	MWA-101
C334	.01 50V			MAG5011		
C335	20		CD15ED200J03	SX420	QW1-10	MWA-200
C336	.01 50V			MAG5011		
C337	.001 50V			GP210	QCT2-41	10TS-D10
C401	33			SX433	QW1-15	MWA-330
C402	30		CD15ED330J03	SX430	QW1-14	MWA-300
C403	.01 50V			MAG5011		
C404	.01 50V			MAG5011		
C405	.01 50V			MAG5011		
C406	.01 50V			MAG5011		
C407	30			MAG5011		
C408	.01 50V		CD15ED300J03	SX430	QW1-14	MWA-300
C409	.01 50V			MAG5011		
C410	.001 50V			GP210	QCT2-41	10TS-D10
C411	.01 50V			MAG5011		
C412	.001 50V			GP210	QCT2-41	10TS-D10
C413	.001 50V			GP210	QCT2-41	10TS-D10
C414	.001 50V			GP210	QCT2-41	10TS-D10
C416	.01 50V			MAG5011		
C417	15		CD15CD150J03		QW1-8	MWA-150
C418	56 50V 10%		CD15ED560J03	SX456	QW1-21	MWA-560
C419	.01 50V			MAG5011		
C420	.01 50V			MAG5011		
C505	47 50V		CD15ED470J03	SX447	QW1-19	MWA-470
C507	180 10%		CD15FD181J03	SX318	QW1-33	MWA-181
C508	.01 50V			MAG5011		
C510	5		CD15CD050D03		QW1-2	MWA-050
C511	.01 50V			MAG5011		
C513	.1 10%		WMF05P1	EWFO5010	QFT2-215	1FT-P10
C514	5		CD15CD050D03		QW1-2	MWA-050
C517	.01 50V			MAG5011		
C518	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C519	.01 50V			MAG5011		
C601	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C602	.01 50V			MAG5011		
C603	.01 50V			MAG5011		
C604	.01 50V			MAG5011		
C605	20	620-014-0				
C606	20 N750		N20	CN7420		10TCU-Q20
C607	10	620-013-0				
C608	510 10%		CD15FD511J03	SX351	QW1-43	MWB-511
C609	150 50V 10%		CD15FD151J03	SX315	QW1-31	MWA-151
C610	10		CD15CD100J03		QW1-6	MWA-100
C611	.01 50V			MAG5011		
C612	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C613	.001 50V			GP210	QCT2-41	10TS-D10
C614	.01 50V			MAG5011		
C615	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C616	.01 50V			MAG5011		
C617	.01 50V			MAG5011		
C618	.04 10%		DPMS2S47	EWFTA147	QFT2-171	1FT-S47
C701	30		CD15ED300J03	SX430	QW1-14	MWA-300
C702	20		CD15ED200J03	SX420	QW1-10	MWA-200
C703	100 50V 10%		CD15FD101J03	SX310	QW1-27	MWA-101
C704	.01 50V			MAG5011		
C705	.01 50V			MAG5011		
C706	.01 50V			MAG5011		
C707	.01 50V			MAG5011		

NDI MODEL PC-200

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C708	68 50V 10%	612-037-0	CD15ED680J03	SX468	QW1-23	MMA-680
C709	5		CD15CD050D03		QW1-2	MMA-050
C710	68 50V 10%		CD15ED680J03	SX468	QW1-23	MMA-680
C711	56 50V 10%		CD15ED560J03	SX456	QW1-21	MMA-560
C712	.01 50V			MAG5011		
C713	.01 50V			MAG5011		
C714	130 50V 10%		CD15FD131J03	SX313	QW1-30	MMA-131
C715	270 10%		CD15FD271J03	SX327	QW1-37	MMA-271
C716	.01 50V			MAG5011		
C717	.01 50V			MAG5011		
C719	.01 50V			MAG5011		
C720	30		CD15ED300J03	SX430	QW1-14	MMA-300
C721	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C723	.01 50V			MAG5011		
C724	.01 50V			MAG5011		
C725	.01 50V			MAG5011		
C726	62 50V 10%	612-046-0	CD15ED620J03	SX462	QW1-22	MMA-620
C727	170 50V 10%					
C729	.01 50V		CD15ED330J03	MAG5011	QW1-15	MMA-330
C730	33		CD15FD101J03	SX310	QW1-27	MMA-101
C731	100 50V 10%		DPMS2S47	EW1A147	QFT2-171	1FT-S47
C732	.01 50V					
C733	.04 10%					
C734	400 50V 5%		CD15FD101J03	SX310	QW1-27	MMA-101
C735	400 50V 5%					
C736	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C737	15	612-002-0	CD15CD150J03		QW1-8	MMA-150
C738	15		CD15CD150J03		QW1-8	MMA-150
C739	220 50V 10%		CD15FD221J03	SX322	QW1-35	MMA-221
C740	24		CD15ED240J03	SX424	QW1-12	MMA-240
C741	35 50V		CD15ED360J03	SX436		MMA-360
C742	200 10%		CD15FD201J03	SX320	QW1-34	MMA-201
C743	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C744	.01 50V			MAG5011		
C745	10		CD15CD100J03		QW1-6	MMA-100
C746	100 50V 10%		CD15FD101J03	SX310	QW1-27	MMA-101
C747	.01 50V			MAG5011		
C748	.01 50V			MAG5011		
C749	1.5					
C750	1.5					
C753	30		CD15ED300J03	SX430	QW1-14	MMA-300
C754	.01 50V			MAG5011		
C755	47 50V		CD15ED470J03	SX447	QW1-19	MMA-470
C756	3		CD15CD050D03		QW1-2	MMA-050
C757	.01 50V		DPMS2S47	MAG5011	QFT2-171	1FT-S47
C801	.04 10%			EW1A147		
C802	.01 50V			MAG5011		
C803	.01 50V			MAG5011		
C804	.01 50V			MAG5011		
C805	.01 50V			MAG5011		
C806	.01 50V			MAG5011		
C807	.01 50V			MAG5011		
C808	.01 50V			MAG5011		
C809	.01 50V			MAG5011		
C810	.01 50V			MAG5011		
C938	.01 50V			MAG5011		

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
R103	Auto Dimmer	10K	610-004-0	MTC13L1(3)	X201R103B(3)
R106	Fine Tune Range	20K	610-005-0	MTC24L1(3)	X201R253B(3)
R207	AM Power	50K	610-006-0	MTC54L1(3)	X201R503B(3)
R217	AM AMC	1000	610-002-0	MTC13L1(3)	X201R102B(3)
R507	Sig Meter Adjust	10K	610-004-0	MTC13L1(3)	X201R103B(3)
R517	AGC	5000	610-003-0	MTC53L1(3)	X201R502B(3)
R518	Squelch Range	5000	610-003-0	MTC53L1(3)	X201R502B(3)
R611	Carrier Balance	10K	010-023-0	RVA0911H103	U260R103B
R616	Balance Bias	100K	610-007-0	MTC15L1(3)	X201R104B(3)
R721	SSB ALC	10K	010-014-0	MTC14L1	X201R103B
R723	SWR CAL	500	610-001-0	MTC52L1(3)	X201R501B(3)
R726	RF Meter Adjust	100K	610-007-0	MTC15L1(3)	X201R104B(3)
R728	AWI	10K	010-014-0	MTC14L1(3)	X201R103B(3)
VR1	Volume	10K	09-001-0(18)		
VR2	Squelch/Power Switch	10K			
VR3	Clarifier	10K	08-032-0		
VR5	RF Gain	10K	08-027-0		
VR6	Mic Gain	10K	08-013-0		

(3) For horizontal mounting, bend the two outside terminals to fit P.C. board. Use jumper to connect center terminal to P.C. board.

(18) Includes VR1, VR2 and Power Switch.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFG. PART No.	WORKMAN PART No.			MFG. PART No.	WORKMAN PART No.
RP1 RA1	LDR Resistor Array	019-005-0(1)		RA2	Resistor Array	019-005-0(1)	

(1) Consists of seven 300 Ohm Resistors.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L01	VCO	41-240-0			
L02	RF Choke (3.3uH)	45-023-0	3R3	9230-32	
L03	RF Choke (2.2uH)	45-022-0	2R2	70F226A1	
L04	AM Switch (9.9987MHz)	41-259-0			
L05	Down Oscillator (10.000MHz)	41-241-0			
L50	RF Choke		151		
L201	RF Choke	046-049-0			
L301	Receive Antenna (27MHz)	41-236-0			
L302	RF Amp (27MHz)	42-042-0			
L303	RF Choke (22uH)	45-028-0	220	9330-32	
L304	RF Choke (22uH)	45-028-0	220	9330-32	
L401	Noise Amp	42-009-0			
L402	Noise Amp	42-011-0			
L403	RF Choke (22uH)	45-028-0	220	9330-32	
L404	RF Choke (22uH)	046-049-0			
L601	Carrier Oscillator (7.7975MHz)	42-042-0			
L701	RF Choke (3.3uH)	45-023-0	3R3	9230-32	
L702	27MHz Amp (27MHz)	41-006-0			
L703	RF Choke	45-004-0			
L704	Predriver (27MHz)	43-039-0			
L705	RF Choke	45-004-0			
L706	Driver (27MHz)	43-047-0			
L707	RF Choke (1.2uH)	45-021-0	1R2		
L708	RF Choke (1.2uH)	45-002-0			
L709	Loading Final (27MHz)	41-007-0		CB140(34)	
L710	P1 Filter (.22uH)	45-058-0			
L711	P1 Filter (.22uH)	45-058-0			
L712	Antenna Matching (.42uH)	45-053-0			
L713	RF Choke (22uH)	45-028-0	220	9330-32	
T301	RF Amp (27MHz)	41-110-0		CB5136-TC	
T302	RF Amp (27MHz)	41-110-0		CB5136-TC	
T303	Mixer (7.8MHz)	41-101-0		CB5516-7TC	
T304	Mixer (7.8MHz)	41-101-0		CB5516-7TC	
T305	IF Amp (7.8MHz)	41-101-0		CB5516-7TC	
T306	IF Amp (7.8MHz)	41-101-0		CB5516-7TC	
T307	IF Amp (7.8MHz)	41-107-0		CB5516-7TC	
T401	Noise Amp	42-028-0		CB5517-7TC	
T402	Noise Amp	42-028-0			
T403	HB Killer	42-001-0			
T701	Mixer (27MHz)	42-043-0			
T702	Mixer (27MHz)	42-043-0			
T703	SWR Alert	43-150-0			

(34) Cut off unwanted terminals and rotate replacement to use the two terminals required.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
L101	2.7A	.5'	1.6mH	46-015-0	TR555		

NDI MODEL PC-200

PARTS LIST AND DESCRIPTION (CONTINUED)

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

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA			NOTES
	PRI.	SEC.	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
T201	2	8	46-051-0			

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFG. PART No.	QUAM PART No.	
LS1	2 3/4" PM 8 Ohms	54-001-0	27A05Z8	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	4A Quick Acting			AGC4	HRK	311004	150145	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
DS1	Lamp		Meter (7.77V @ 65mA)
FL301	Filter	25-003-0	7.8MHz Crystal
J1	Jack	60-031-0	Mic
J2	Jack	60-132-0	Antenna
J3	Jack	60-043-0	PA
J4	Jack	60-043-0	External Speaker
J50	Jack		DC Power
K1	Relay	53-006-0	XMT
LED1	LED		Channel Display, Tens and Units (TLR321)(Each segment of LED1 supplied with 1.95V @ 14mA)
LED2	LED		XMT (GL5AR1) (1.64V @ 14mA)
LED3	LED		AWI (GL5PY1) (1.66V @ 14mA)
LED4	LED		Receive (GL5AR1) (1.62V @ 14mA)
M1	Meter		Signal/Rf
P1	Plug		Mic
P50	Plug		DC Power
S1	Switch		Part of Volume Control (VR1)
S2	Switch	49-023-0	CH9/Off, Slide
S3	Switch	49-023-0	NB/Off, Slide
S4	Switch	49-023-0	PA/CB, Slide
S5	Switch	48-039-0	AM/LSB/USB
S6	Switch	48-126-1	Channel Selector
S8	Switch	49-023-0	ANL/Off, Slide
Y01	Crystal	22-316-0	10.000MHz
Y601	Crystal	22-319-0	7.8015MHz

WIRING DATA

Cable (Speaker)(Unshielded).....	Use BELDEN No. 8782 (AWG24)(4 colors)
Shielding Strap.....	Use BELDEN No. 8660 (3/16" width)
Hook-up Wire (General Use).....	Use BELDEN No. 8524 (AWG22)(13 colors)
Hook-up Wire (Shielded).....	Use BELDEN No. 8401 (Braided Shield)(1 conductor)(AWG25)
	Use BELDEN No. 8421 (Spiral Shield)(1 conductor)(AWG25)
	Use BELDEN No. 8737 (Spiral Shield)(2 conductor)(AWG22)
Microphone Cable (Coiled).....	Use BELDEN No. 8497 (3 conductor-1 shielded)(6 ft.)(AWG22)
Microphone Cable (Coiled).....	Use BELDEN No. 9466 (3 conductor-1 shielded)(6 ft.)(AWG28)
Microphone Cable (Coiled).....	Use BELDEN No. 9468 (3 conductor-1 shielded)(6 ft.)(AWG31)