



# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

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 981-6247 (981-3080)

## MANUFACTURER'S SPECIFICATIONS

Circuitry : 5 ICs, 45 Transistors,  
51 Diodes

### Receiver

Sensitivity at 10 dB S/N(AM) : 1  $\mu$ V

Sensitivity at 10 dB S/N(SSB) : 0.25  $\mu$ V

Image Rejection Ratio

at fo to 910 MHz : 40 dB

Spurious Rejection Ratio : 40 dB

Squelch Sensitivity

at Maximum (AM) : 500  $\mu$ V

Squelch Sensitivity

at Maximum (SSB) : 20  $\mu$ V

Squelch Sensitivity

at Threshold (AM) : 1  $\mu$ V

Squelch Sensitivity

at Threshold (SSB) : 0.7  $\mu$ V

A.G.C. (As measured

to EIA specs) : 80 dB

I-F Response at 6 dB down

bandwidth (AM) : 6 kHz

I-F Response at 6 dB down

bandwidth (SSB) : 2.4 kHz

Adjacent Channel Selectivity : -40 dB

Frequency Stability : 0.005%

Audio Output Power

at Maximum : 4 W

Audio Output Power

at 10% distortion :

Audio Fidelity at 400 Hz : -15 dB

Audio Fidelity at 3,000 Hz : -15 dB

S-Meter Sensitivity for S-9 : 100  $\mu$ V

Current Drain at no signal : 270 mA

Current Drain at Maximum

Audio Output : 990 mA

Hum & Noise : -45 dB

### Transmitter

RF Output Power (SSB)

at 13.8 Vdc : 12 W PEP

RF Output Power (AM)

at 13.8 V dc : 4 W

Modulation Capability (AM) : +90%, -100%

Frequency Stability : 0.005%

SSB Generation : Double Balanced

Modulator with  
crystal lattice filter

Carrier Suppression (SSB) : 40 dB down

Unwanted Sideband

Suppression (SSB) : 60 dB down

Harmonic Suppression (SSB) : 60 dB down

Current Drain

at no modulation : 1.2 A

### Measurement Condition

Audio Output Power

(AM & SSB) : 0.5 W

Audio Output Load : 8 ohms

Modulation Frequency : 1,000 Hz

Modulation (AM) : 30%

Test Temperature : 25°C

Power Supply : 13.8 V dc

Squelch : Defeated

ANL Switch : OFF Position

NB Switch : OFF Position

PA-CB Switch : CB Position

Antenna Impedance : 50 ohms

### Microphone

Cartridge Type : Dynamic

Output Impedance : 700 ohms

Output Level : 0 dB = 0.4 millivolt/  
microbar at 1 kHz

Frequency Range : 300 Hz - 3.5 kHz

Courtesy of the Manufacturer

JCPenney MODEL 981-6247

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

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## ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with 13.8-volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

Suggested Alignment Tools: GC ELECTRONICS  
L7, L11, L13, T6, T10, T13, T14, T15 . . . . 5009  
T1 thru T5, T7, T8, T9, T11, T12 . . . . 9440  
CT1 thru CT5 . . . . . 5000

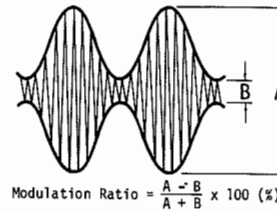


FIGURE 1

## SYNTHESIZER ALIGNMENT

| TEST EQUIPMENT                                                   | TRANSCEIVER                       | ADJUST     | REMARKS                                                              |
|------------------------------------------------------------------|-----------------------------------|------------|----------------------------------------------------------------------|
| Input of frequency counter to TP2.<br>(Junction C28, IC1 Pin 3). | Ch. 19, USB                       | CT3        | Adjust for 10.240MHz $\pm$ 50Hz.                                     |
| Input of oscilloscope to TP3.<br>(IC2 Pin 4).                    | Ch. 19, USB                       | T3         | Adjust for maximum.                                                  |
| Input of frequency counter to TP3.<br>(IC2 Pin 4).               | Ch. 19, USB<br>Fine Tune Midrange | CT1        | Adjust for 20.105MHz $\pm$ 40Hz.                                     |
|                                                                  | Ch. 19, LSB<br>Fine Tune Midrange | CT2        | Adjust for 20.1035MHz $\pm$ 40Hz.                                    |
| Input of frequency counter to TP5.<br>(Junction L15, C70 & C71). | Ch. 19, USB<br>Ch. 19, LSB        | CT5<br>CT4 | Adjust for 10.695MHz $\pm$ 50Hz.<br>Adjust for 10.692MHz $\pm$ 50Hz. |
| Input of DC meter to TP1.<br>(Junction R1 & R2).                 | Ch. 1, USB                        | VCO        | Adjust for 3.6 volt<br>$\pm$ 0.1 volt.                               |
| Inject a 2400Hz, 2.5mV signal at<br>MIC input.                   | Ch. 40, USB XMT                   | T1         | Adjust for maximum.                                                  |
| Input of oscilloscope to antenna<br>jack.                        | Ch. 1, USB XMT                    | T2         | Adjust for maximum.                                                  |

## 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.  
ANL Off, Fine Tune Midrange, NB Off, RF Gain Max, Squelch MINIMUM

### AM

| TEST EQUIPMENT                                                                                             | TRANSCEIVER | ADJUST                 | REMARKS                                                            |
|------------------------------------------------------------------------------------------------------------|-------------|------------------------|--------------------------------------------------------------------|
| Output of signal generator thru<br>.01uF to TP11 (Junction T13 & D22).<br>455kHz, 1000Hz @ 30% modulation. | Ch. 19, AM  | T14, T15               | Adjust for maximum output.                                         |
| Output of signal generator thru<br>.01uF to antenna jack.<br>27.185MHz @ 30% modulation.                   | Ch. 19, AM  | T13, T10, T9<br>T8, T7 | Adjust for maximum output.<br>Repeat above steps, if<br>necessary. |

## 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.  
ANL Off, Fine Tune Midrange, NB Off, RF Gain Max, Squelch MINIMUM

### SSB

| TEST EQUIPMENT                                                                      | TRANSCEIVER | ADJUST | REMARKS                    |
|-------------------------------------------------------------------------------------|-------------|--------|----------------------------|
| Output of signal generator thru .01uF to antenna jack.<br>27.186MHz, no modulation. | Ch. 19, USB | T12    | Adjust for maximum output. |

## RECEIVER ADJUSTMENTS

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

| TEST EQUIPMENT                                                                                                 | TRANSCEIVER | ADJUST | REMARKS                                                                                                   |
|----------------------------------------------------------------------------------------------------------------|-------------|--------|-----------------------------------------------------------------------------------------------------------|
| Input of DC meter to terminal 15 (Base of Q20).<br>No signal input.                                            | Ch. 19, USB | RV8    | SSB AGC<br>Adjust for 2 volts.                                                                            |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation.<br>Output 300uV. | Ch. 19, AM  | RV9    | AM SQUELCH RANGE<br>Set Squelch Control VR2 fully clockwise.<br>Adjust RV9 so that squelch just breaks.   |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, no modulation.<br>Output 300uV.           | Ch. 19, USB | RV10   | SSB SQUELCH RANGE<br>Set Squelch Control VR2 fully clockwise.<br>Adjust VR10 so that squelch just breaks. |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation.<br>Output 100uV. | Ch. 19, AM  | RV6    | AM S METER<br>Adjust for 9 on S scale of meter.                                                           |
| Output of signal generator thru .01uF to antenna jack.<br>27.186MHz, no modulation.<br>Output 100uV.           | Ch. 19, USB | RV7    | SSB S METER<br>Adjust for 9 on S scale of meter.                                                          |

JCPenney MODEL 981-6247

## 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                                                    |
|------------------------------------------------|---------------------------|-------------------|------------------------------------------------------------|
| Inject a 2400Hz, 10mV signal at MIC input.     | Ch. 40, USB<br>Ch. 1, USB | T4<br>T5          | Adjust for maximum.<br>Adjust for maximum.                 |
| Input of oscilloscope to TP10 (Emitter of Q7). | Ch. 19, USB               | T11               | Adjust for maximum.                                        |
| Inject a 2400Hz, 10mV signal at MIC input.     | Ch. 19, USB               | RV11              | Turn core of T6 to top.<br>Adjust RV11 for .150 volts P-P. |
| Inject a 2400Hz, 10mV signal at MIC input.     | Ch. 19, USB               | T6, L7, L11, L13. | Adjust for maximum RF output.                              |

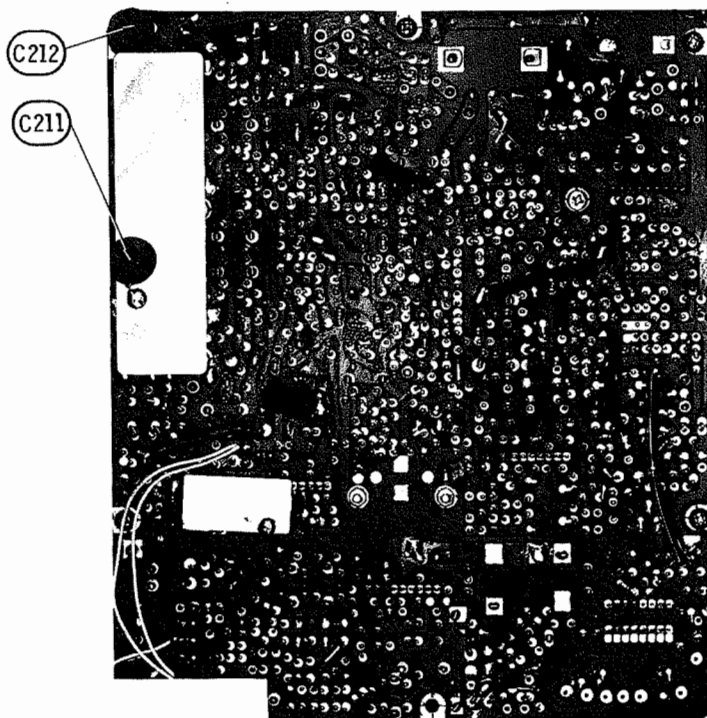
## TRANSMITTER ADJUSTMENTS

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                                                           |
|---------------------------------------------------------------------------------|-------------|----------|-------------------------------------------------------------------|
| Connect a milliammeter between Q10 emitter and ground.<br>No modulation.        | Ch. 19, USB | RV1      | BIAS<br>Adjust for 35mA $\pm$ 10mA.                               |
| RF wattmeter (See connection above).<br>No signal input.                        | Ch. 19, USB | RV4, RV5 | BALANCE<br>Adjust for MINIMUM RF.                                 |
| Output of 2 tone generator to MIC input 500Hz and 2400Hz.<br>Output 100mV.      | Ch. 19, USB | RV2      | SSB POWER<br>Adjust for 11 watts PEP.                             |
| Connect an RF wattmeter and 50-Ohm, 25 watt dummy load to antenna connector.    | Ch. 19, AM  | VR4      | AM POWER<br>Adjust for 3.7 watts.                                 |
| Modulation meter to antenna jack.<br>Inject a 2500Hz, 7 mV signal at MIC input. | Ch. 19, AM  | RV12     | AMC<br>Adjust for 80% modulation.<br>(See figure 1.)              |
| Connect an RF wattmeter and 50-Ohm, 25 watt dummy load to antenna connector.    | Ch. 19, AM  | RV3      | POWER METER<br>Adjust so RF panel meter agrees with RF wattmeter. |



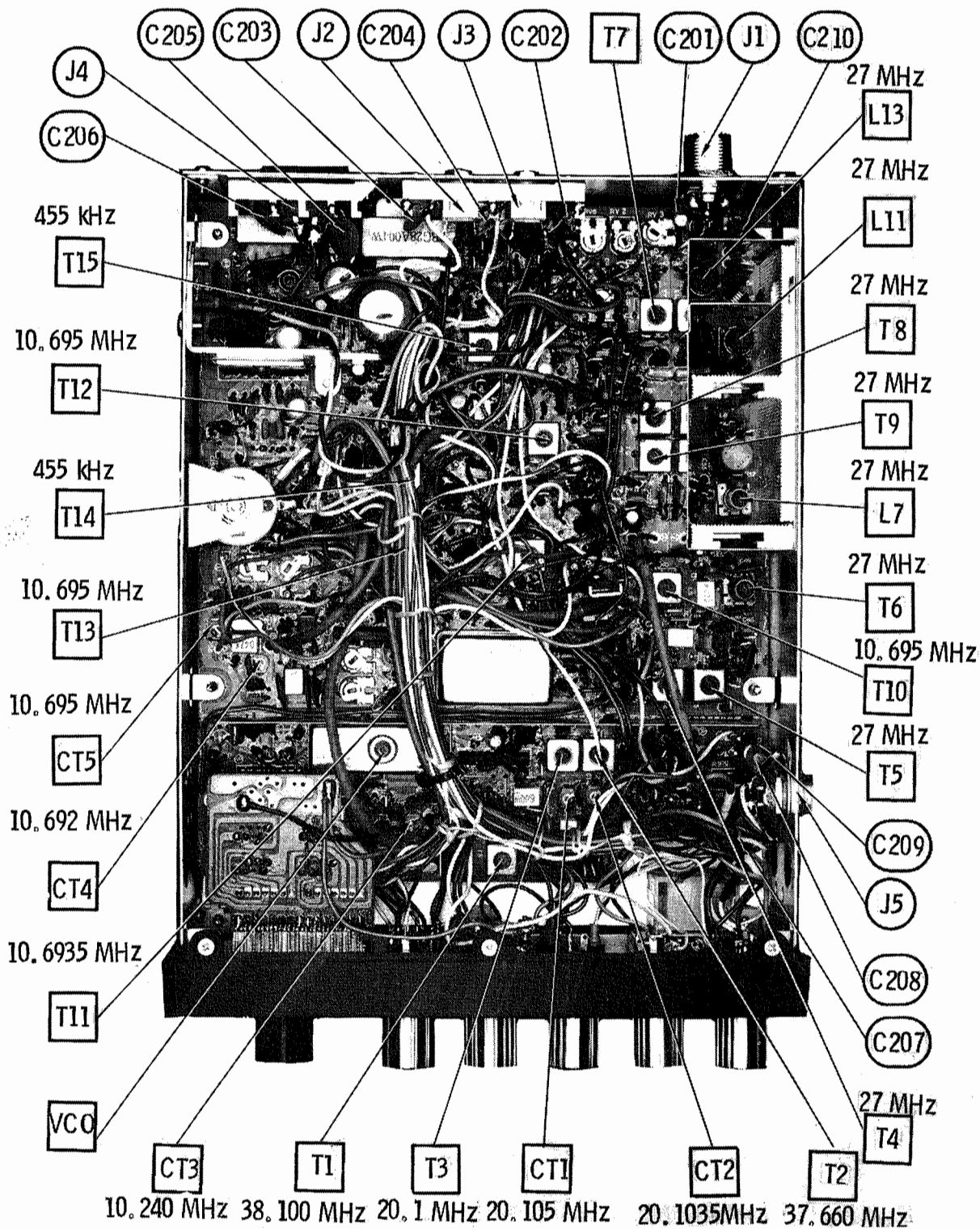
SHIELD LOCATION

# TRUTH CHART

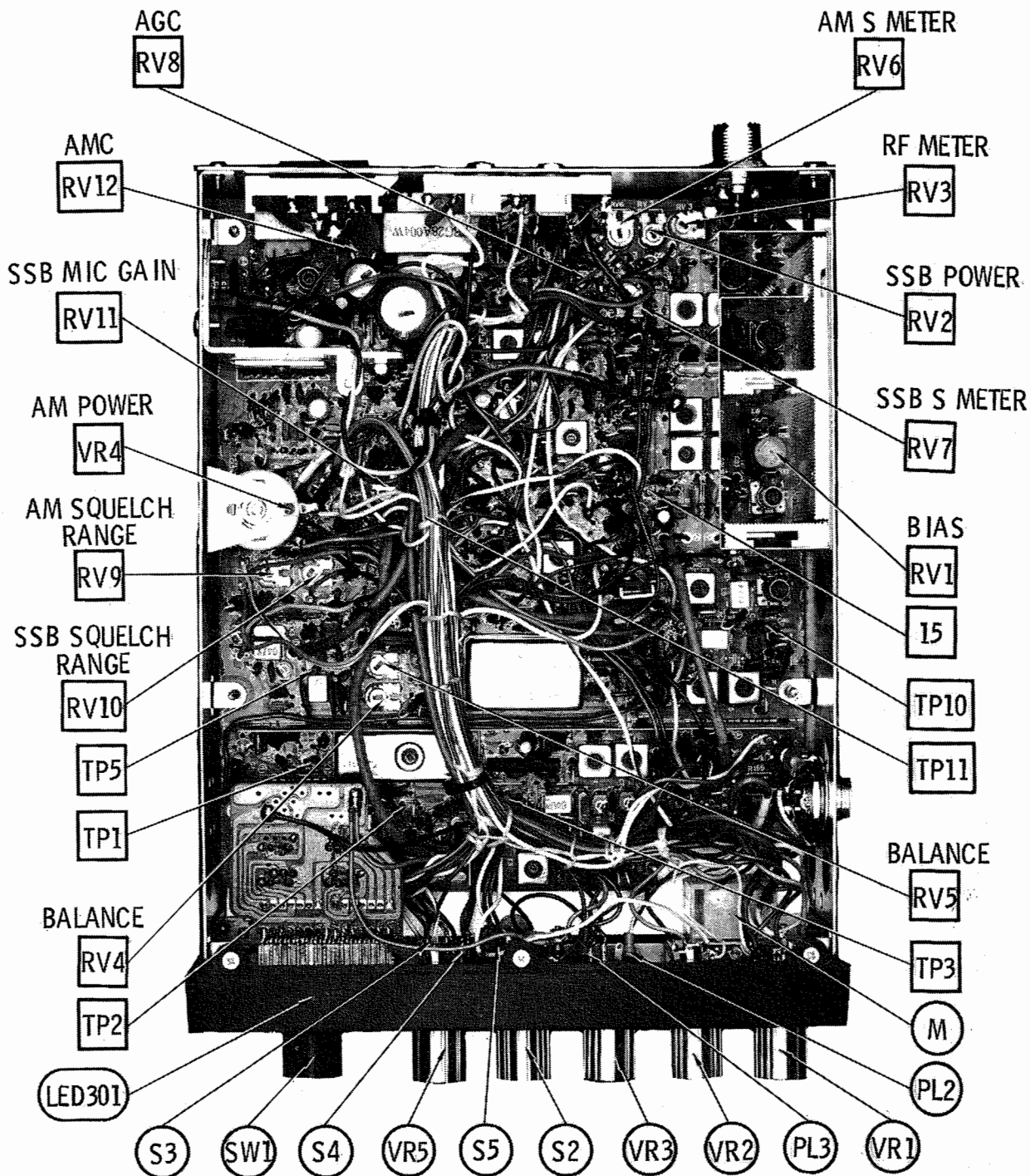
| 1 = <u>5.35V</u> Volts     0 = <u>0</u> Volts |                        |    |    |    |    |    |                                                             |                                                   |
|-----------------------------------------------|------------------------|----|----|----|----|----|-------------------------------------------------------------|---------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC1<br>PROGRAM DIVIDER |    |    |    |    |    | AM<br>&<br>USB<br>REC<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP13 | LSB<br>XMIT<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP13 |
|                                               | PINS                   |    |    |    |    |    |                                                             |                                                   |
|                                               | 10                     | 11 | 12 | 13 | 14 | 15 |                                                             |                                                   |
| 1                                             | 1                      | 1  | 1  | 1  | 1  | 1  | 37.660                                                      | 37.657                                            |
| 2                                             | 1                      | 1  | 1  | 1  | 1  | 0  | 37.670                                                      | 37.667                                            |
| 3                                             | 1                      | 1  | 1  | 1  | 0  | 1  | 37.680                                                      | 37.677                                            |
| 4                                             | 1                      | 1  | 1  | 0  | 1  | 1  | 37.700                                                      | 37.697                                            |
| 5                                             | 1                      | 1  | 1  | 0  | 1  | 0  | 37.710                                                      | 37.707                                            |
| 6                                             | 1                      | 1  | 1  | 0  | 0  | 1  | 37.720                                                      | 37.717                                            |
| 7                                             | 1                      | 1  | 1  | 0  | 0  | 0  | 37.730                                                      | 37.727                                            |
| 8                                             | 1                      | 1  | 0  | 1  | 1  | 0  | 37.750                                                      | 37.747                                            |
| 9                                             | 1                      | 1  | 0  | 1  | 0  | 1  | 37.760                                                      | 37.757                                            |
| 10                                            | 1                      | 1  | 0  | 1  | 0  | 0  | 37.770                                                      | 37.767                                            |
| 11                                            | 1                      | 1  | 0  | 0  | 1  | 1  | 37.780                                                      | 37.777                                            |
| 12                                            | 1                      | 1  | 0  | 0  | 0  | 1  | 37.800                                                      | 37.797                                            |
| 13                                            | 1                      | 1  | 0  | 0  | 0  | 0  | 37.810                                                      | 37.807                                            |
| 14                                            | 1                      | 0  | 1  | 1  | 1  | 1  | 37.820                                                      | 37.817                                            |
| 15                                            | 1                      | 0  | 1  | 1  | 1  | 0  | 37.830                                                      | 37.829                                            |
| 16                                            | 1                      | 0  | 1  | 1  | 0  | 0  | 37.850                                                      | 37.847                                            |
| 17                                            | 1                      | 0  | 1  | 0  | 1  | 1  | 37.860                                                      | 37.857                                            |
| 18                                            | 1                      | 0  | 1  | 0  | 1  | 0  | 37.870                                                      | 37.867                                            |
| 19                                            | 1                      | 0  | 1  | 0  | 0  | 1  | 37.880                                                      | 37.877                                            |
| 20                                            | 1                      | 0  | 0  | 1  | 1  | 1  | 37.900                                                      | 37.897                                            |

| 1 = <u>5.35V</u> Volts      0 = <u>0</u> Volts |                        |    |    |    |    |    |                                                             |                                                   |
|------------------------------------------------|------------------------|----|----|----|----|----|-------------------------------------------------------------|---------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L                | IC1<br>PROGRAM DIVIDER |    |    |    |    |    | AM<br>&<br>USB<br>REC<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP13 | LSB<br>XMIT<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP13 |
|                                                | PINS                   |    |    |    |    |    |                                                             |                                                   |
|                                                | 10                     | 11 | 12 | 13 | 14 | 15 |                                                             |                                                   |
| 21                                             | 1                      | 0  | 0  | 1  | 1  | 0  | 37.910                                                      | 37.907                                            |
| 22                                             | 1                      | 0  | 0  | 1  | 0  | 1  | 37.920                                                      | 37.917                                            |
| 23                                             | 1                      | 0  | 0  | 0  | 1  | 0  | 37.930                                                      | 37.947                                            |
| 24                                             | 1                      | 0  | 0  | 1  | 0  | 0  | 37.930                                                      | 37.924                                            |
| 25                                             | 1                      | 0  | 0  | 0  | 1  | 1  | 37.940                                                      | 37.937                                            |
| 26                                             | 1                      | 0  | 0  | 0  | 0  | 1  | 37.960                                                      | 37.957                                            |
| 27                                             | 1                      | 0  | 0  | 0  | 0  | 0  | 37.970                                                      | 37.967                                            |
| 28                                             | 0                      | 1  | 1  | 1  | 1  | 1  | 37.980                                                      | 37.977                                            |
| 29                                             | 0                      | 1  | 1  | 1  | 1  | 0  | 37.990                                                      | 37.987                                            |
| 30                                             | 0                      | 1  | 1  | 1  | 0  | 1  | 38.000                                                      | 37.997                                            |
| 31                                             | 0                      | 1  | 1  | 1  | 0  | 0  | 38.010                                                      | 38.007                                            |
| 32                                             | 0                      | 1  | 1  | 0  | 1  | 1  | 38.020                                                      | 38.017                                            |
| 33                                             | 0                      | 1  | 1  | 0  | 1  | 0  | 38.030                                                      | 38.027                                            |
| 34                                             | 0                      | 1  | 1  | 0  | 0  | 1  | 38.040                                                      | 38.037                                            |
| 35                                             | 0                      | 1  | 1  | 0  | 0  | 0  | 38.050                                                      | 38.047                                            |
| 36                                             | 0                      | 1  | 0  | 1  | 1  | 1  | 38.060                                                      | 38.054                                            |
| 37                                             | 0                      | 1  | 0  | 1  | 1  | 0  | 38.070                                                      | 38.064                                            |
| 38                                             | 0                      | 1  | 0  | 1  | 0  | 1  | 38.080                                                      | 38.077                                            |
| 39                                             | 0                      | 1  | 0  | 1  | 0  | 0  | 38.090                                                      | 38.087                                            |
| 40                                             | 0                      | 1  | 0  | 0  | 1  | 1  | 38.100                                                      | 38.097                                            |

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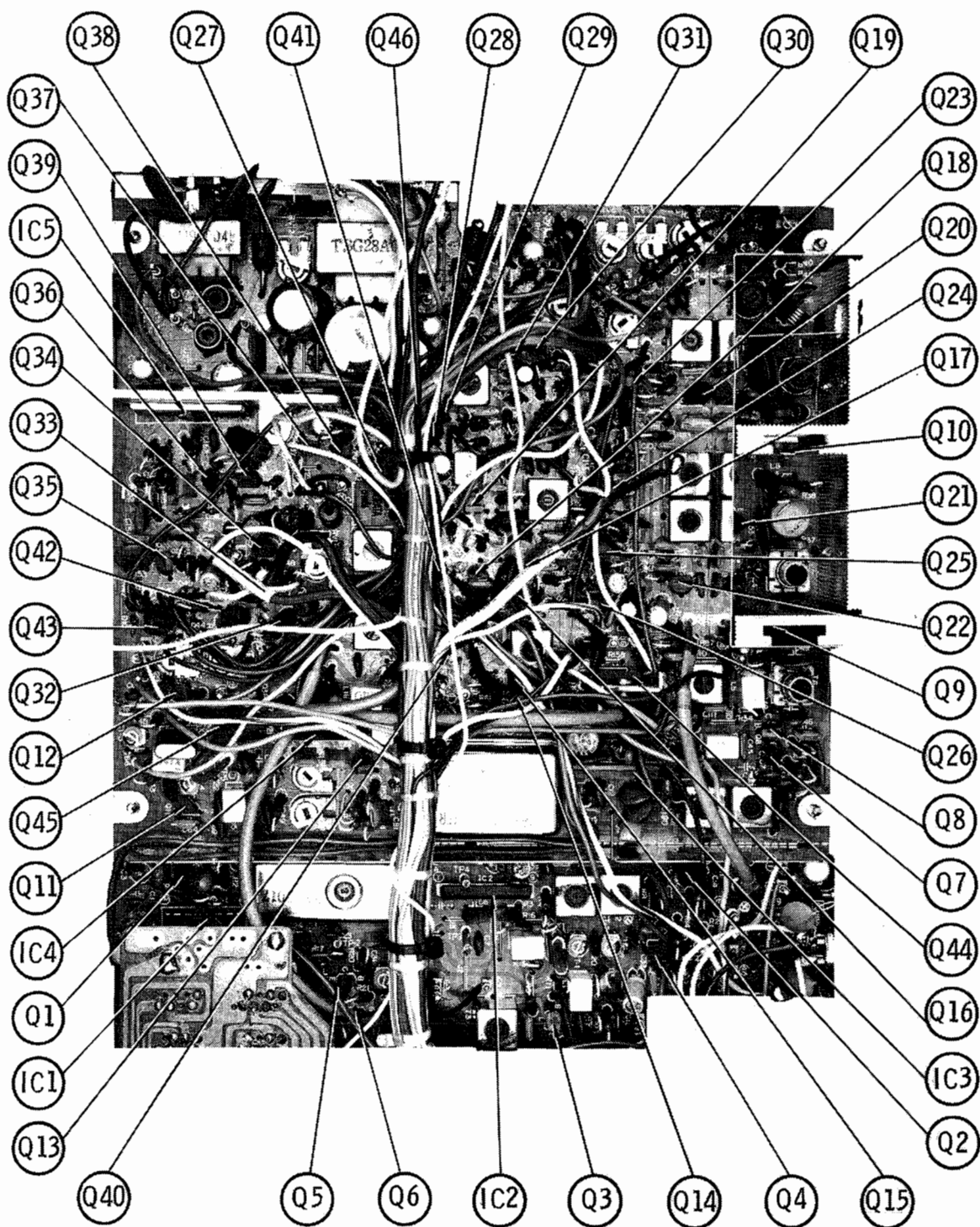


CHASSIS BOTTOM

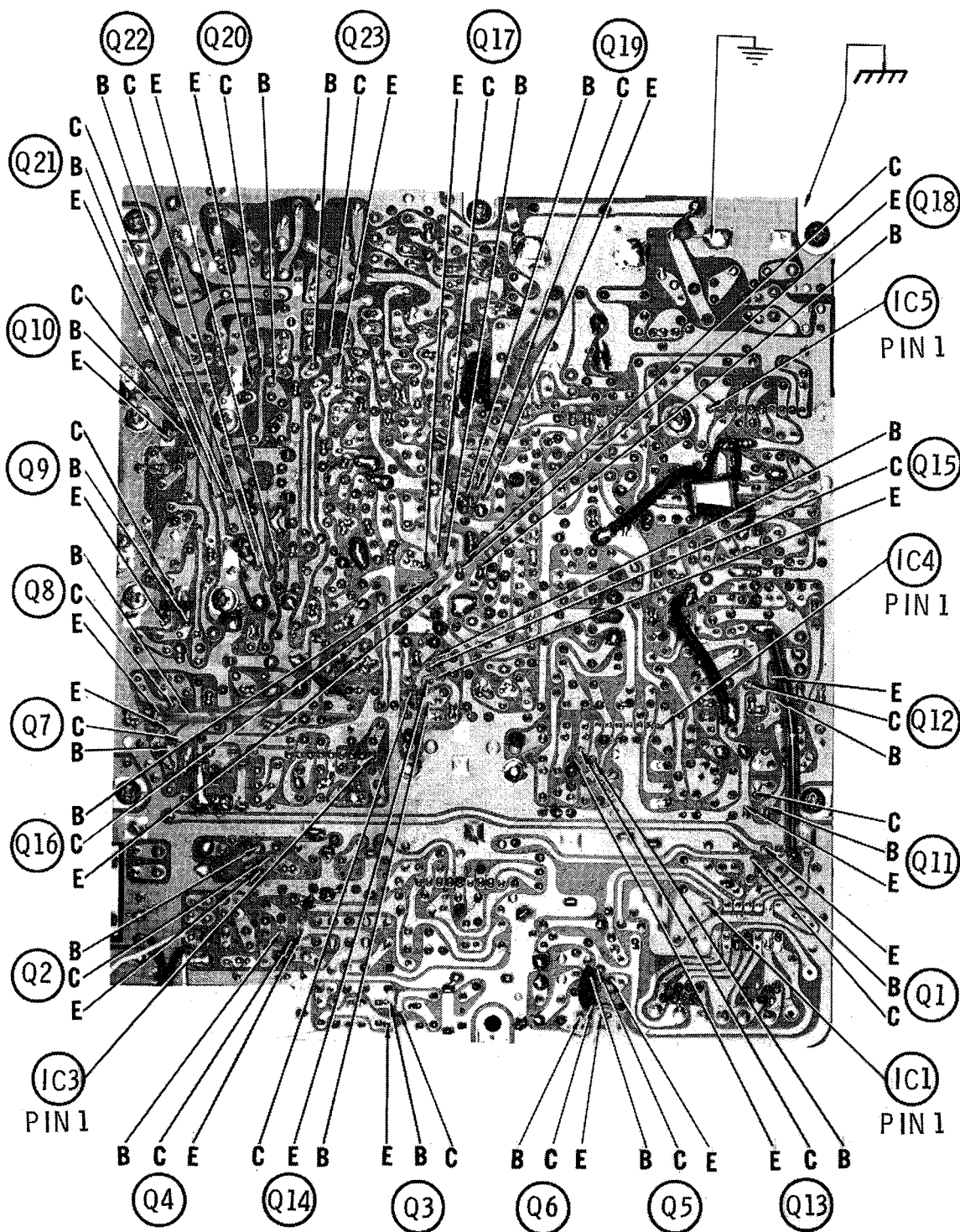


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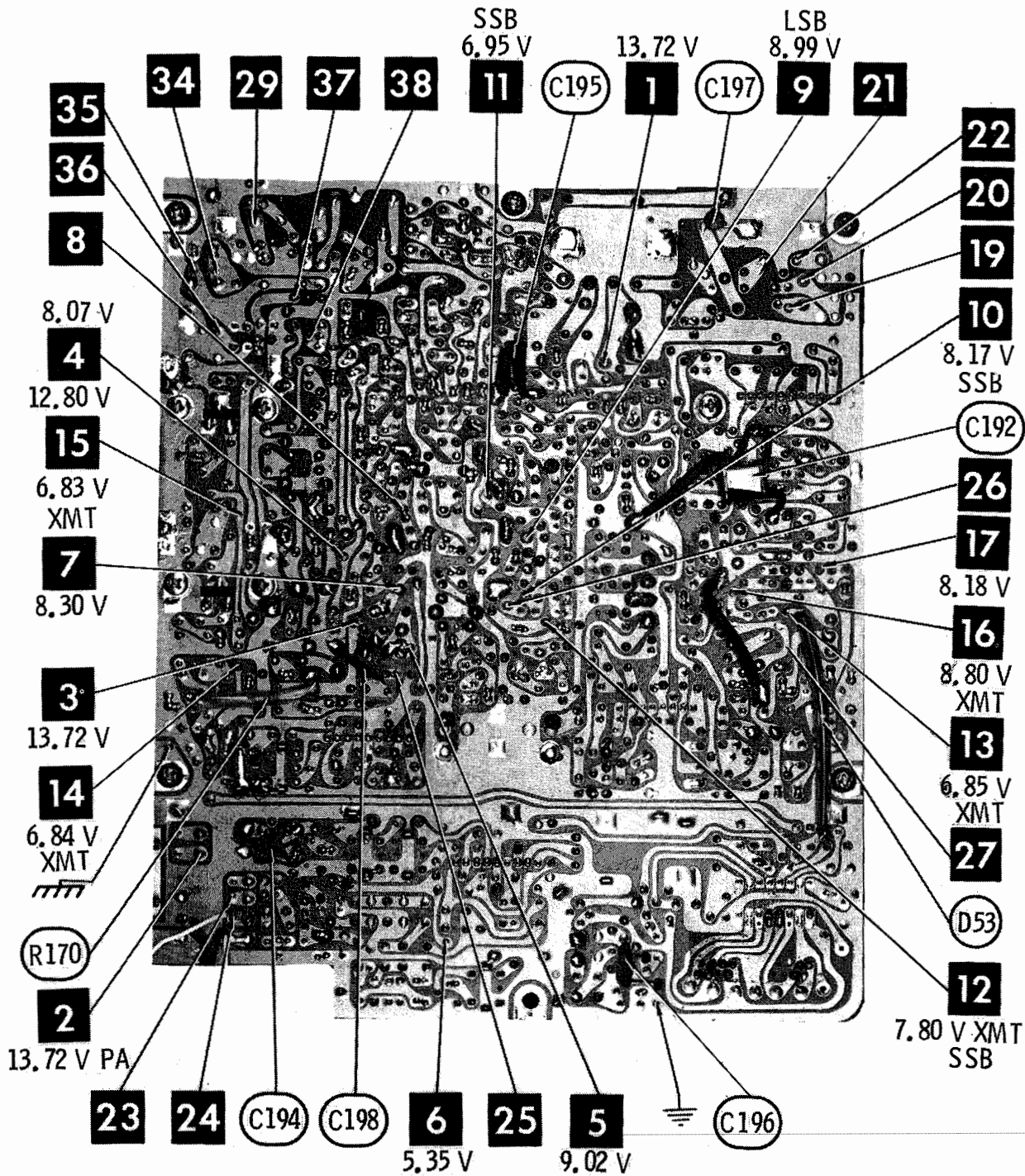


MAIN BOARD



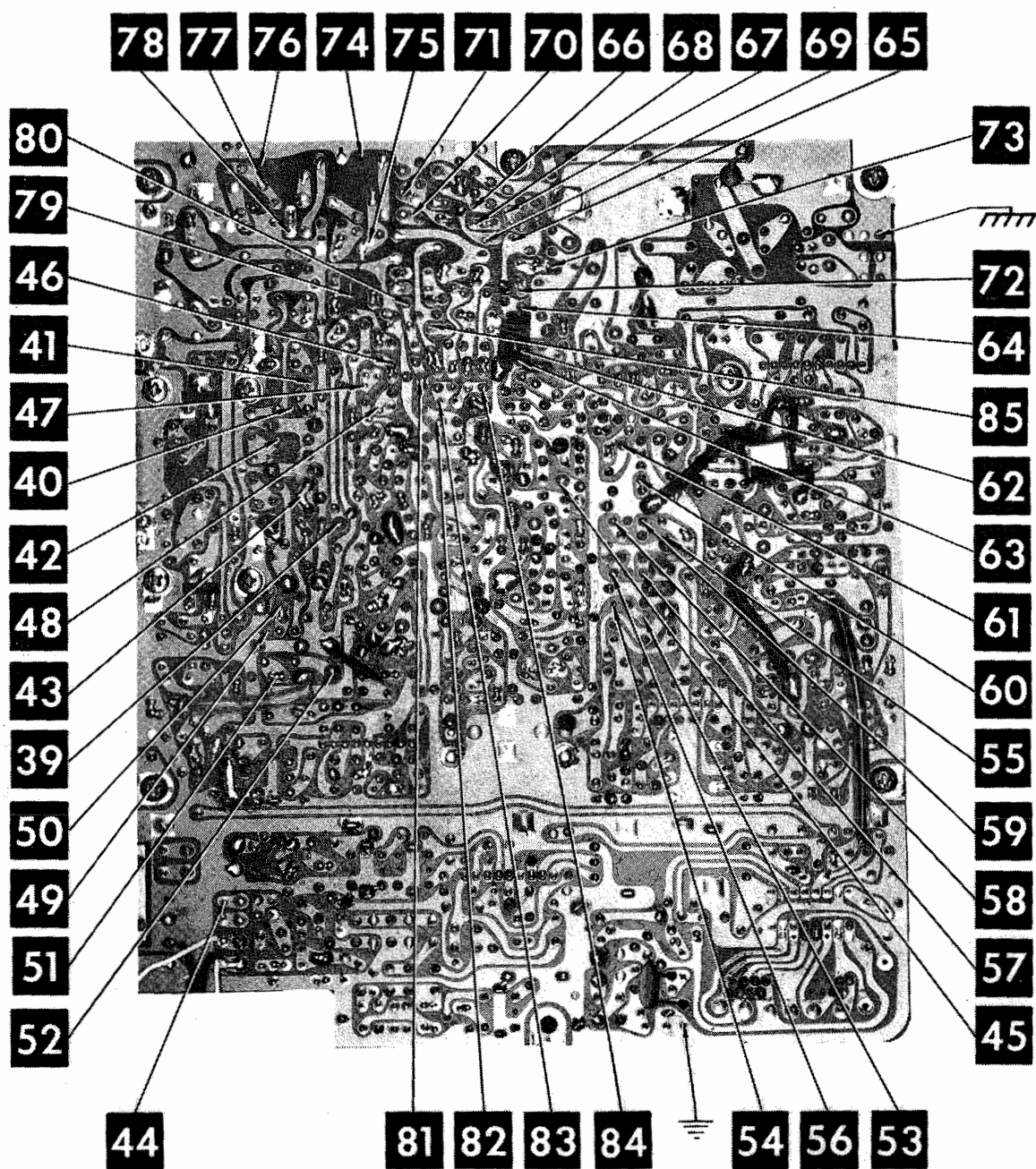
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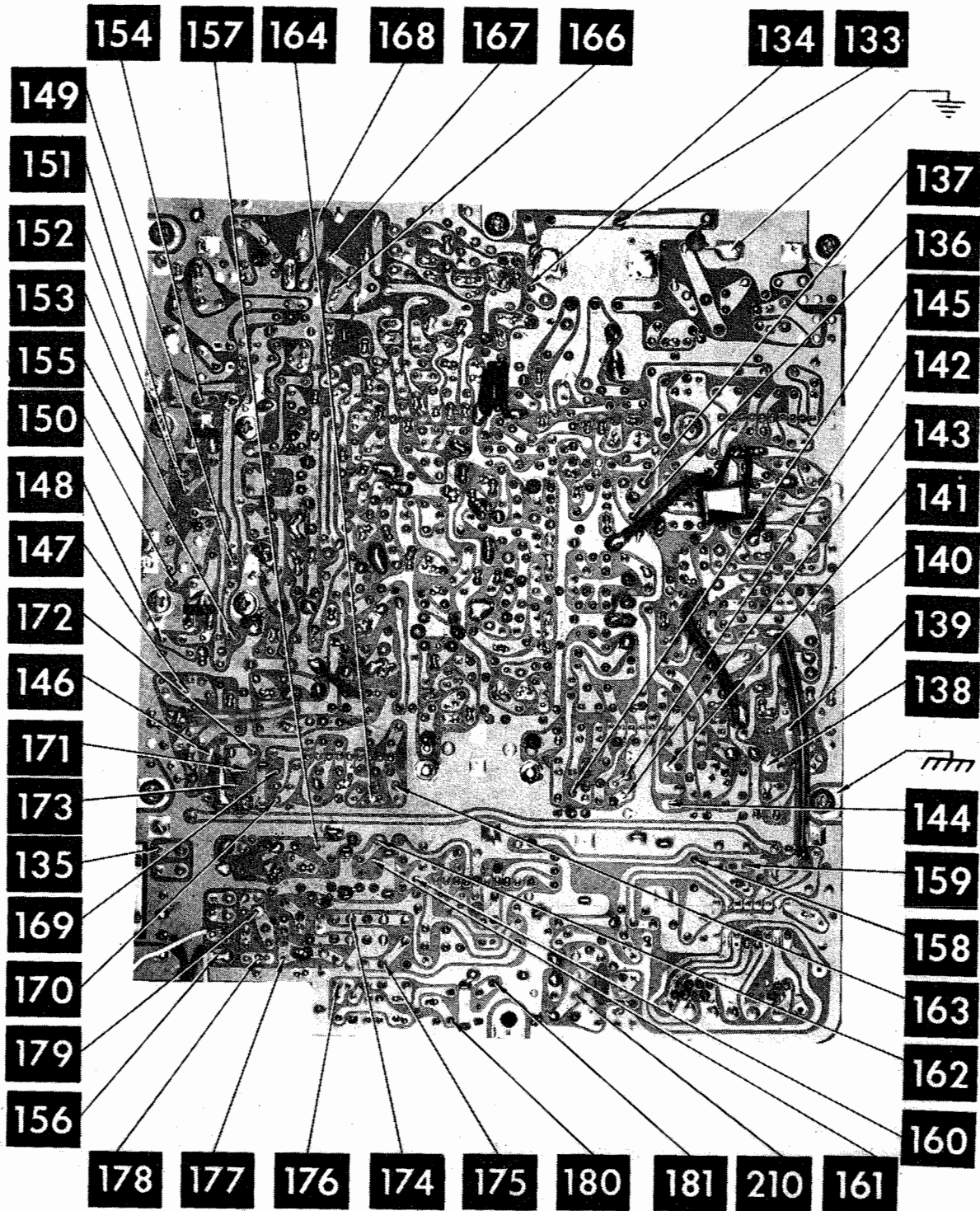


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MAIN BOARD

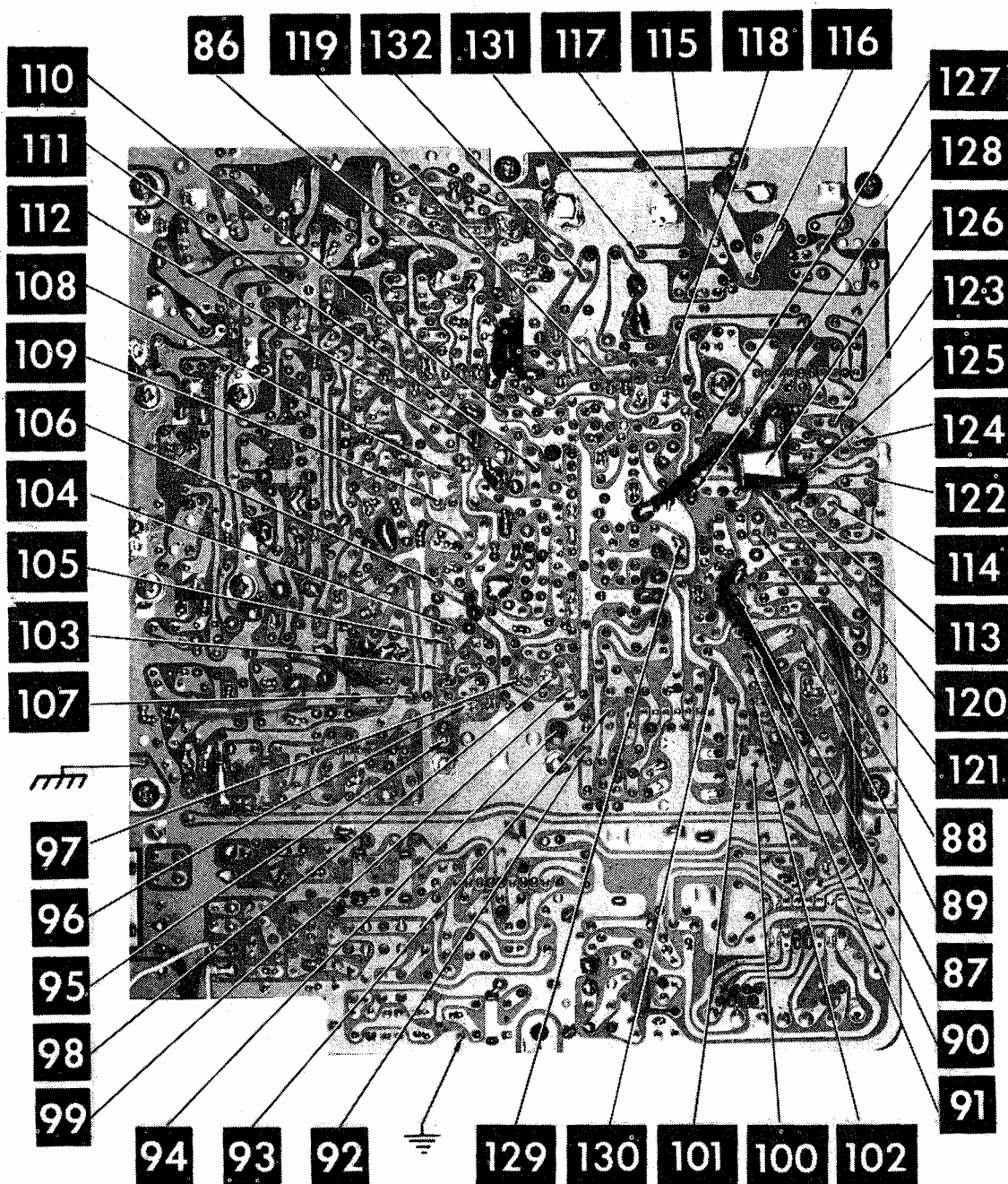


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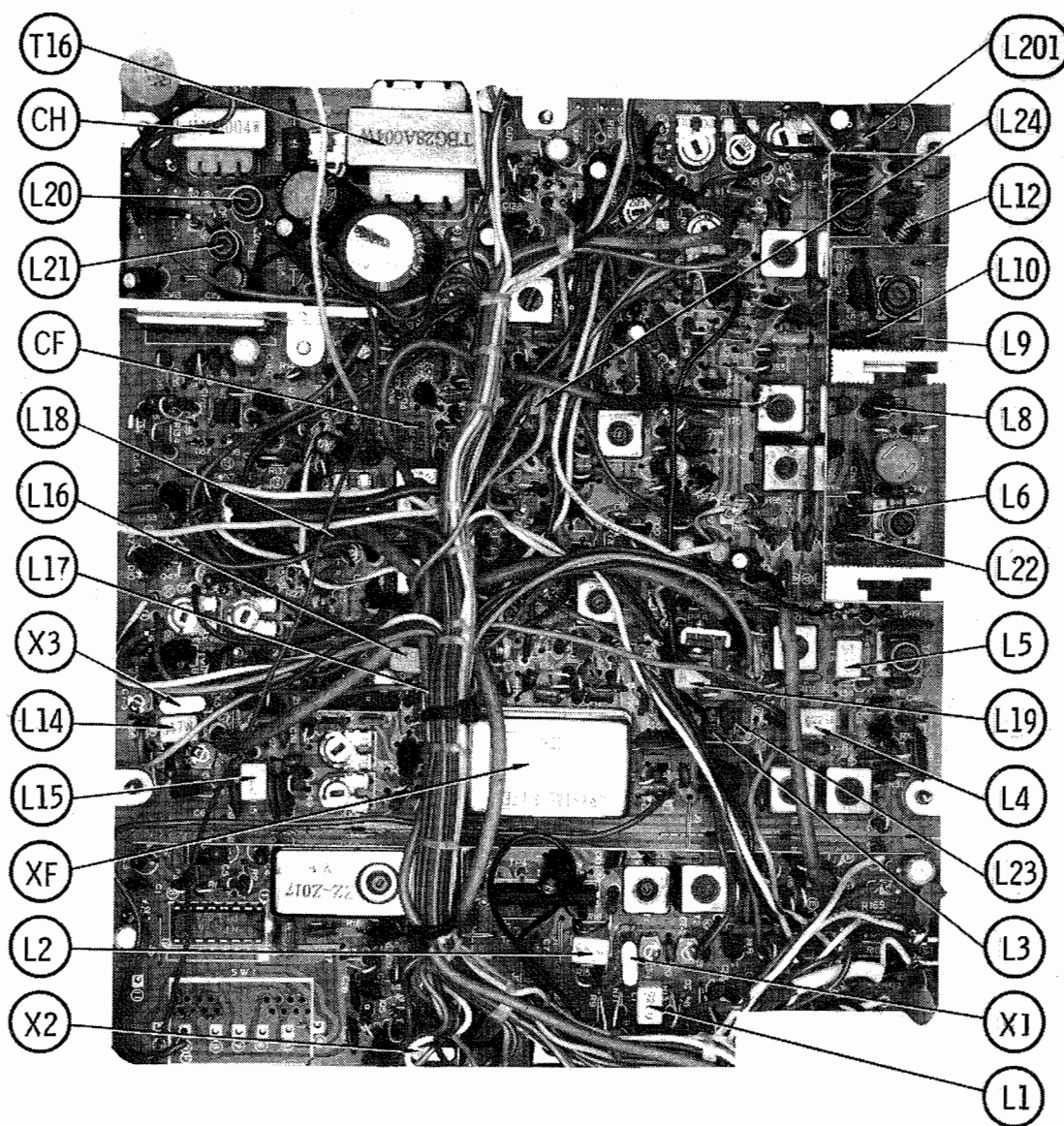


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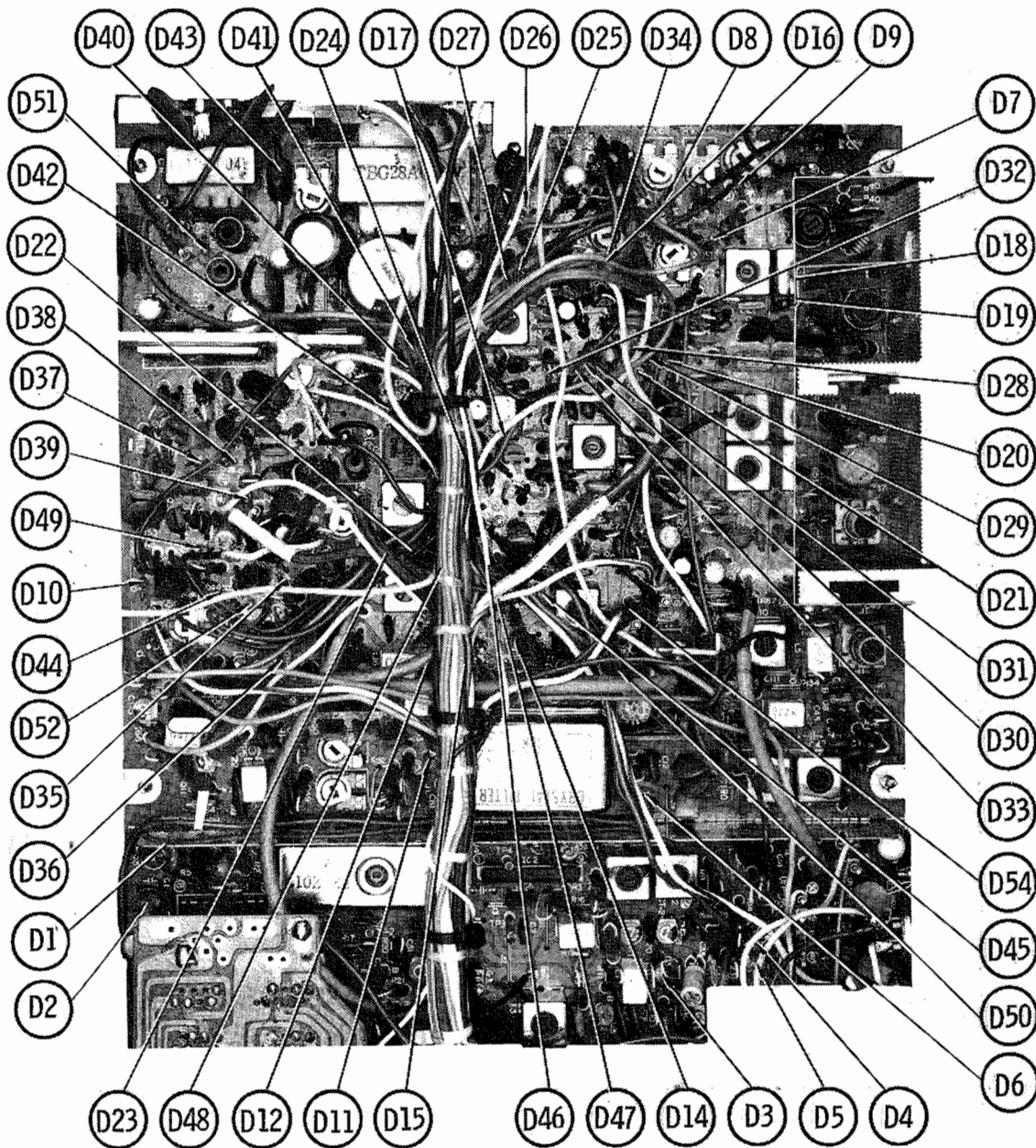
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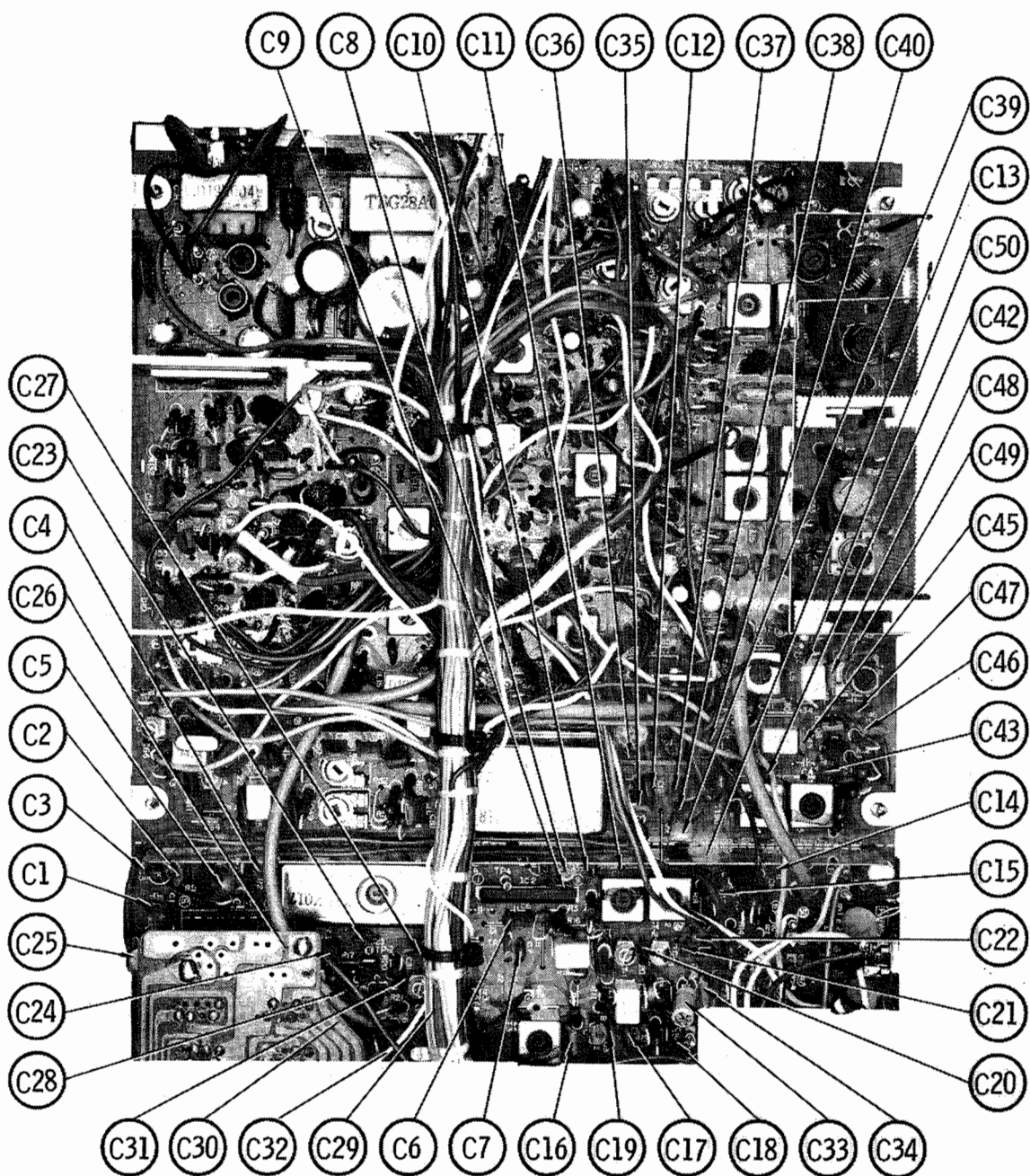
MAIN BOARD



MA IN BOARD

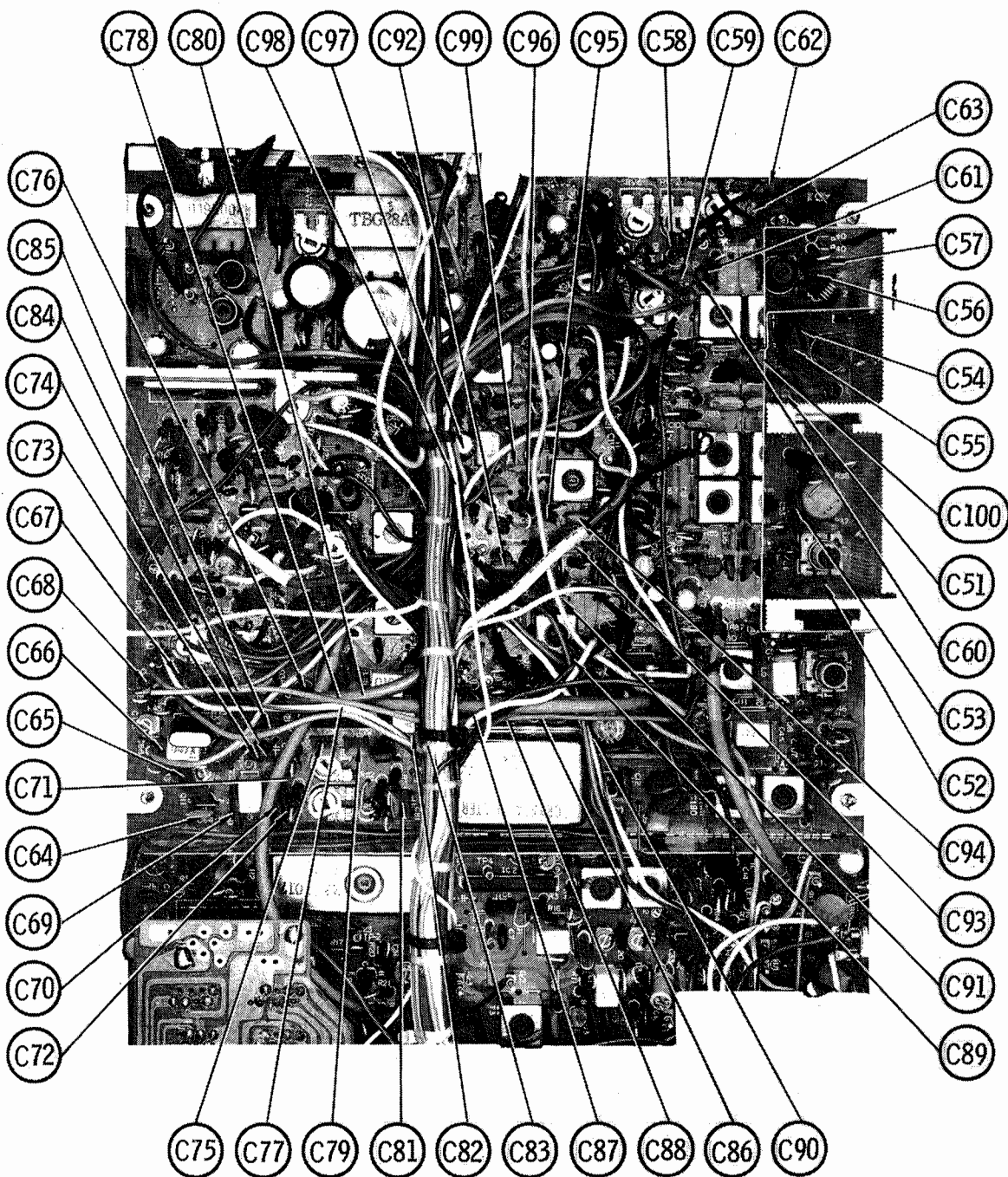


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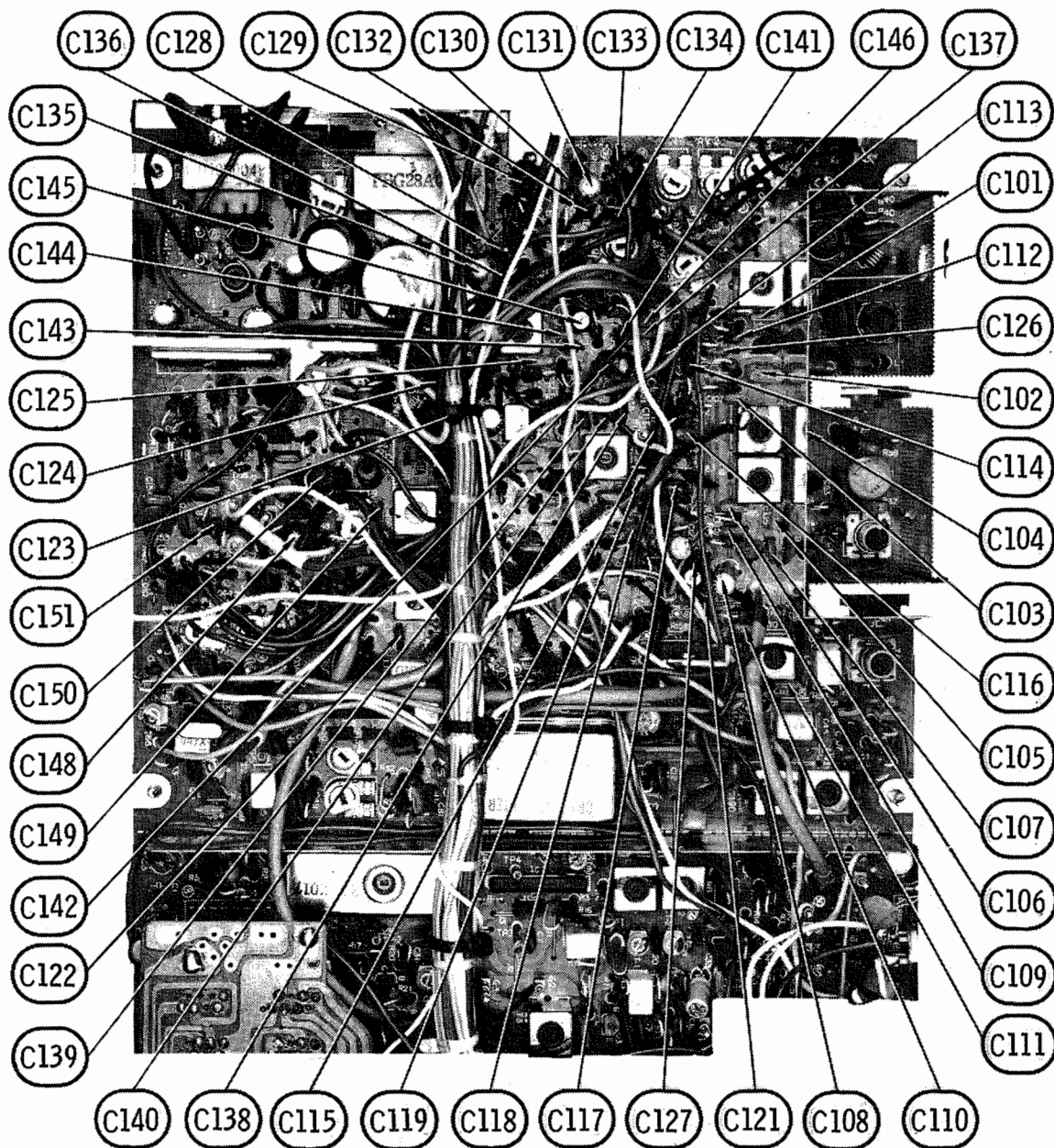


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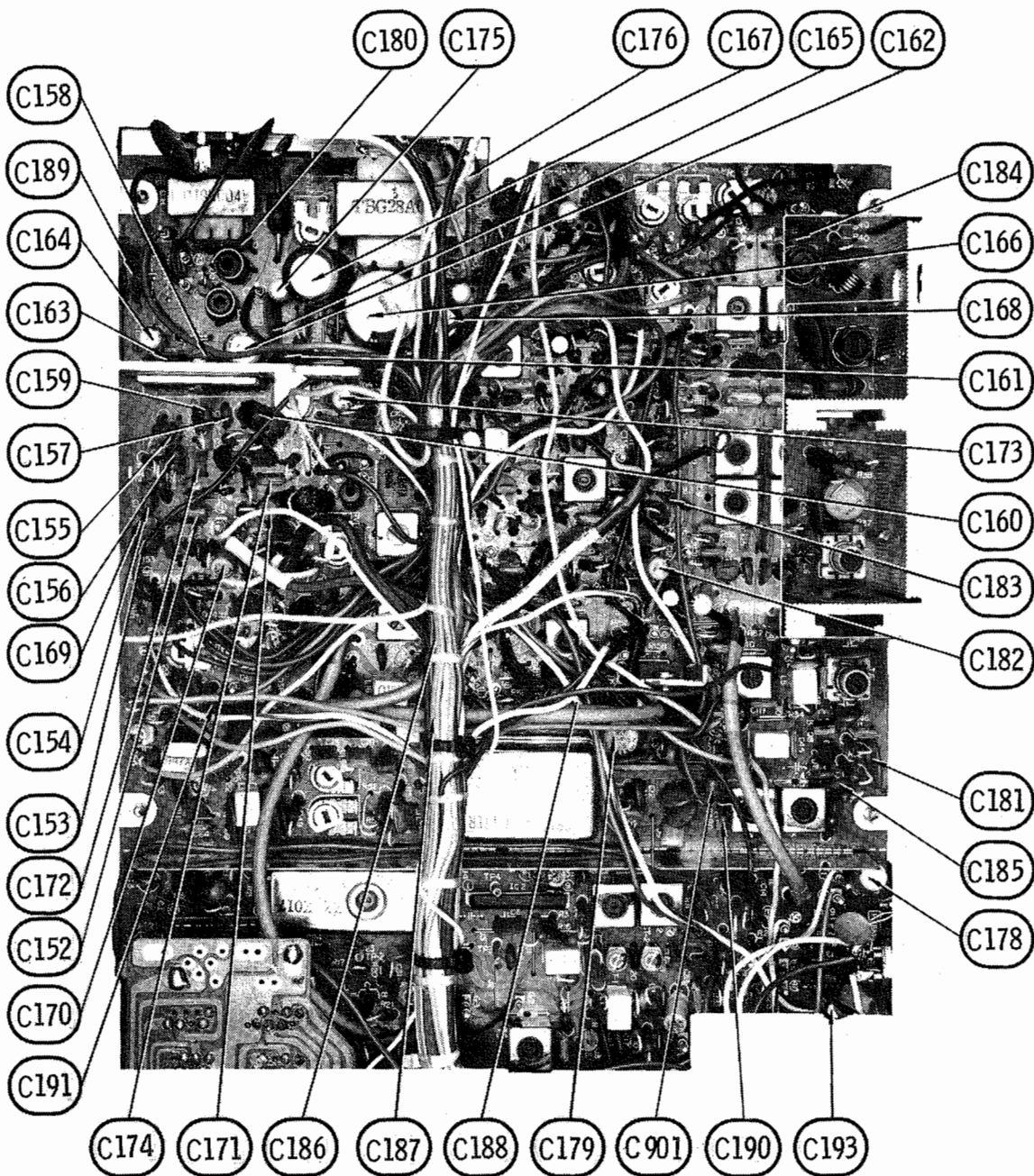
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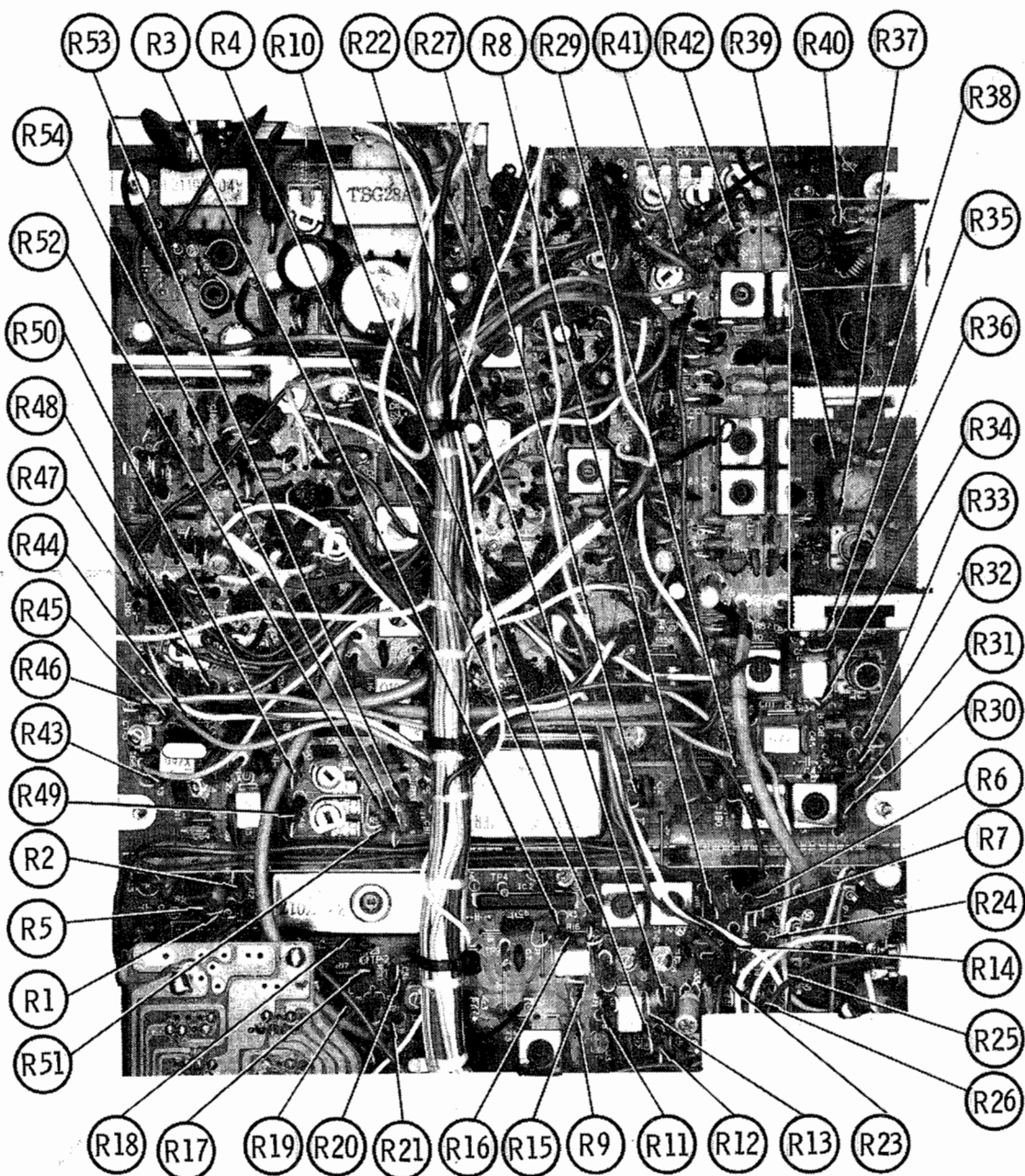
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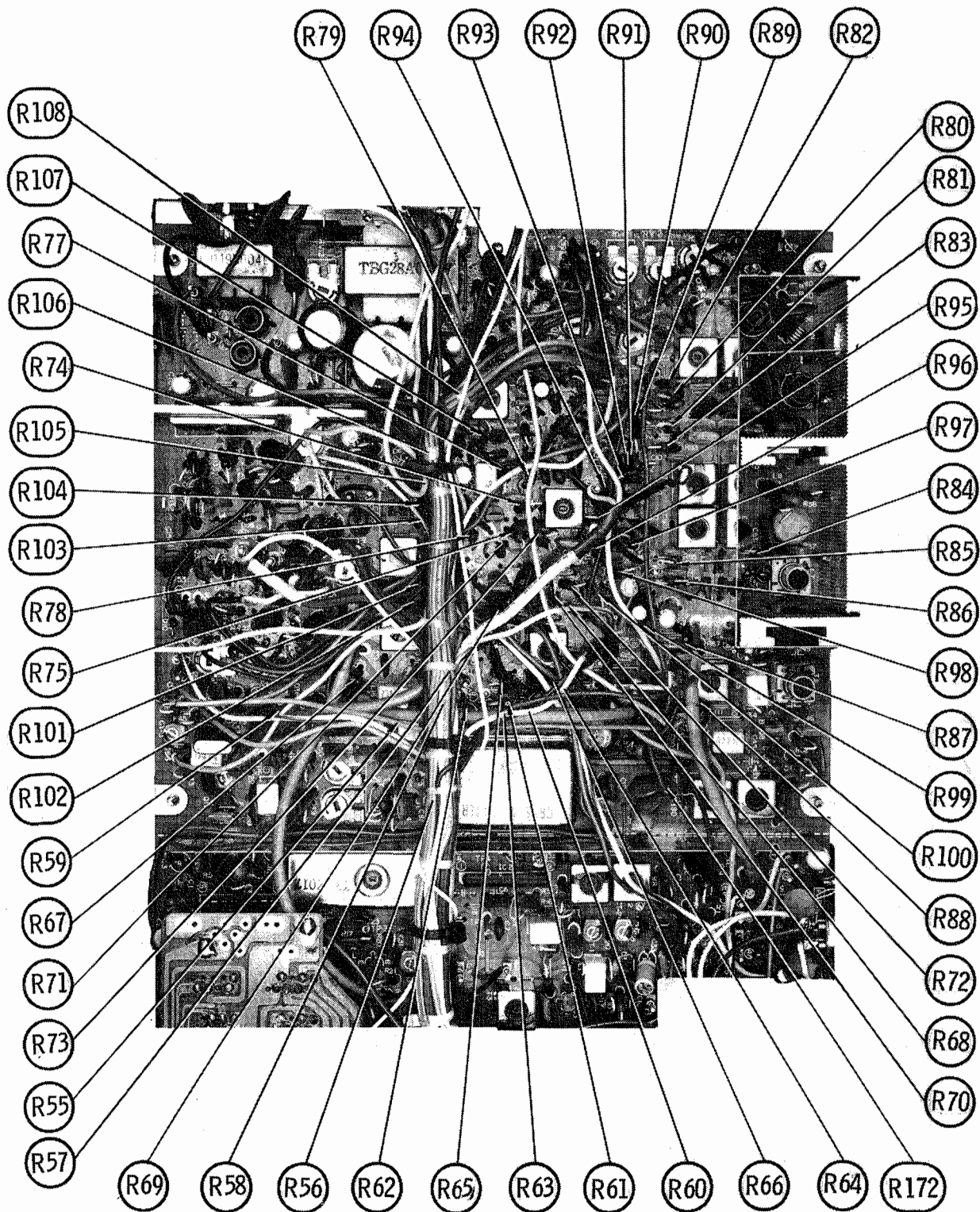
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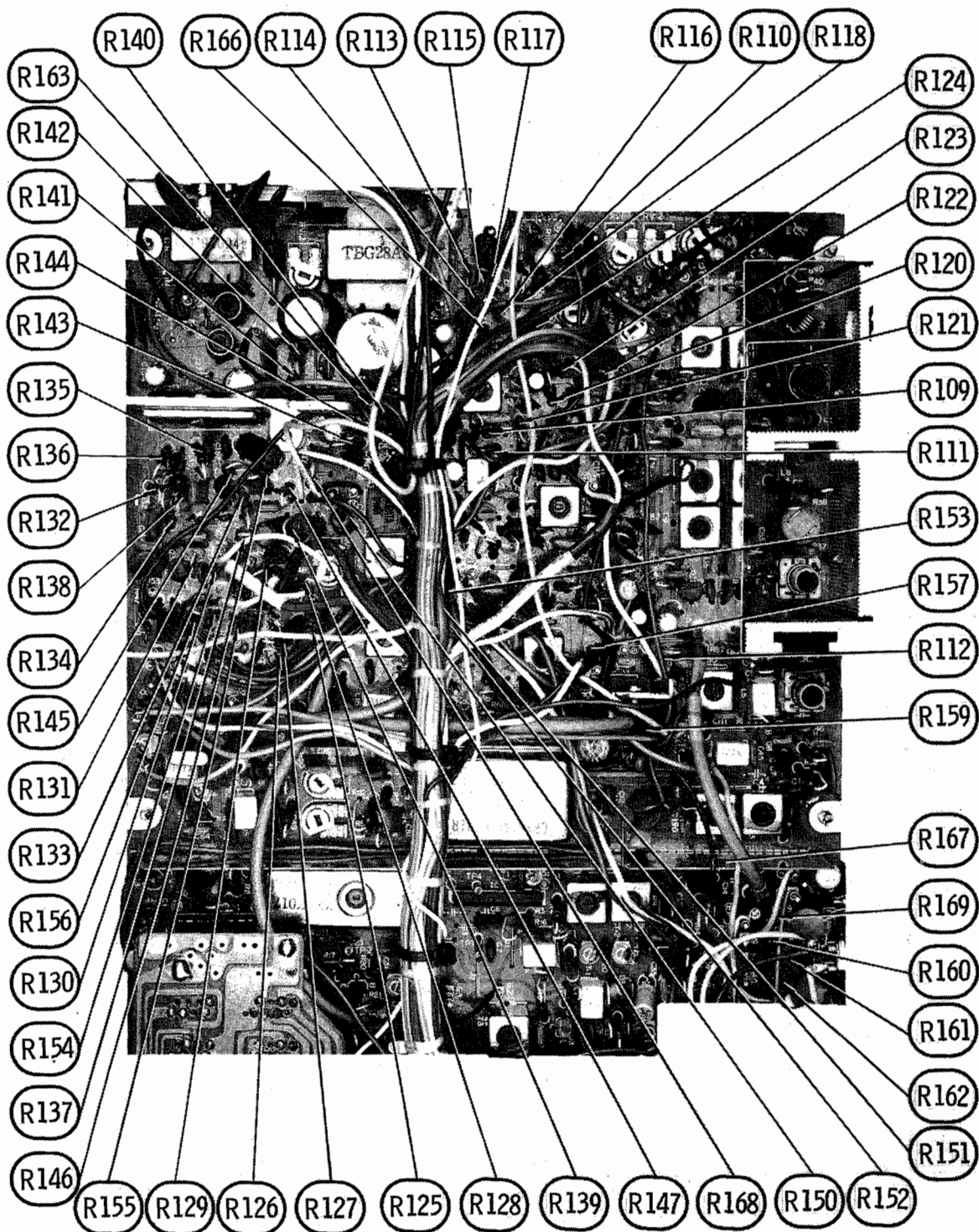
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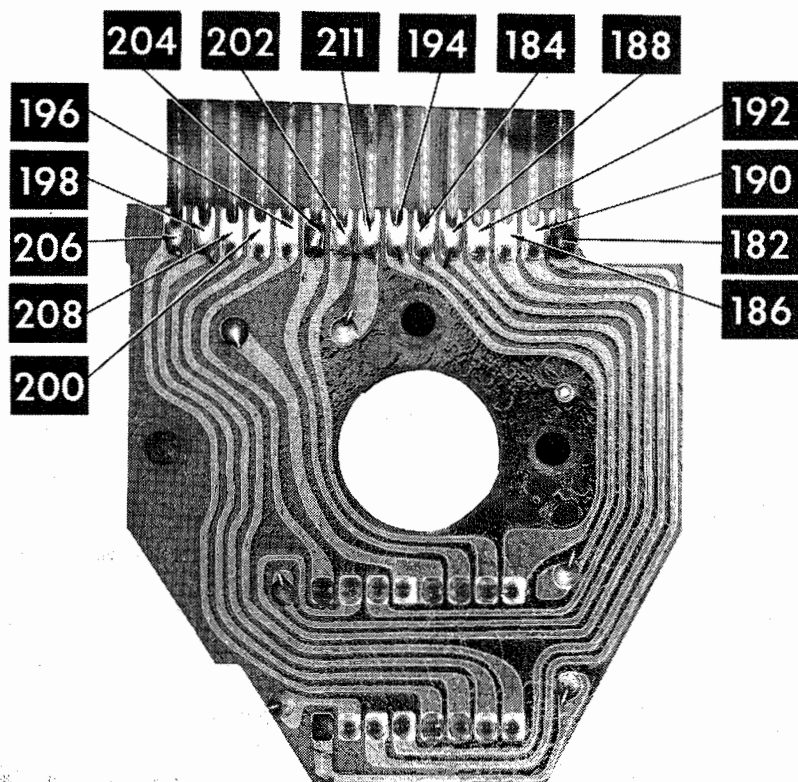


MAIN BOARD

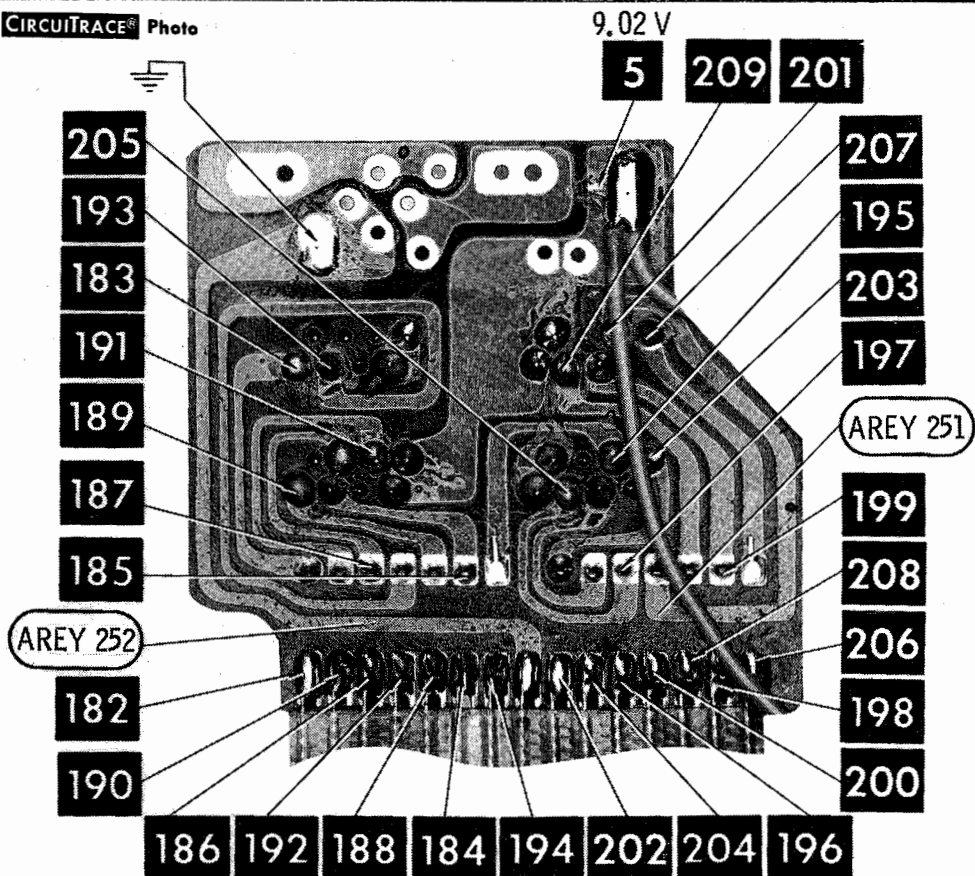


MAIN BOARD

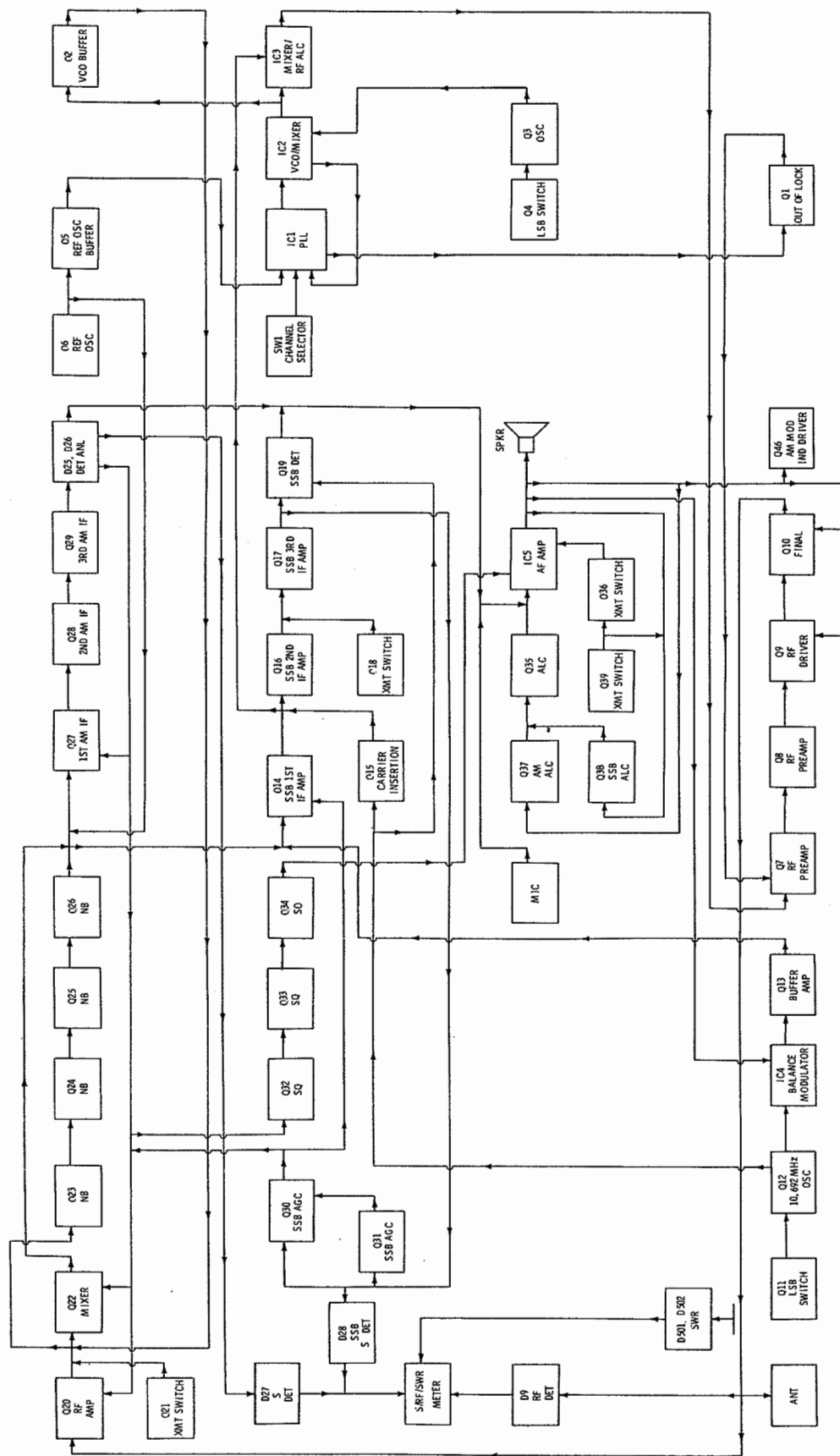




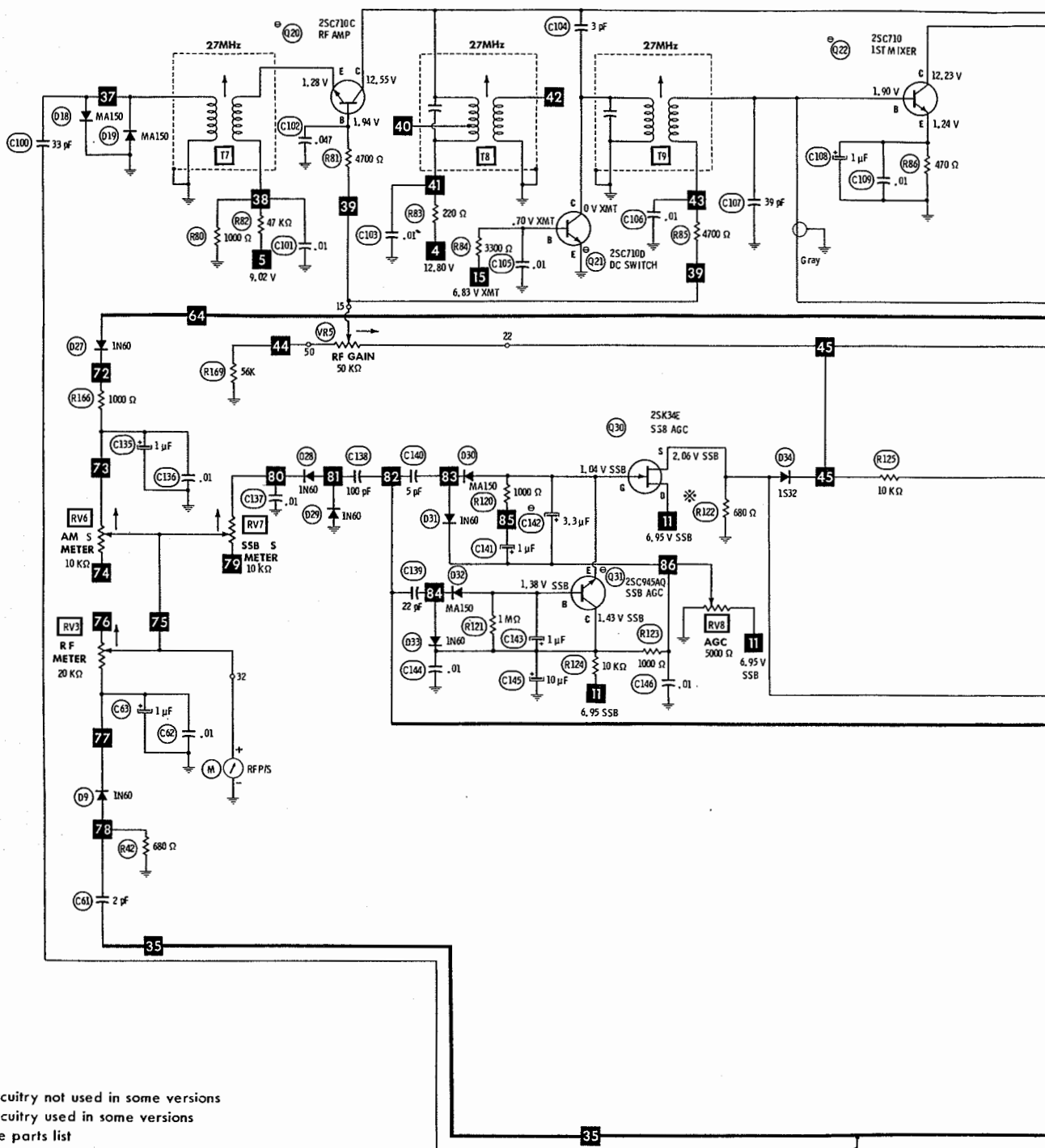
LED READOUT BOARD



CHANNEL SELECTOR BOARD



BLOCK DIAGRAM



—\*— Circuitry not used in some versions

--- Circuitry used in some versions

⊖ See parts list

⊗ Nominal value

⊕ Ground

⊞ Chassis

▽ Common tie point

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.

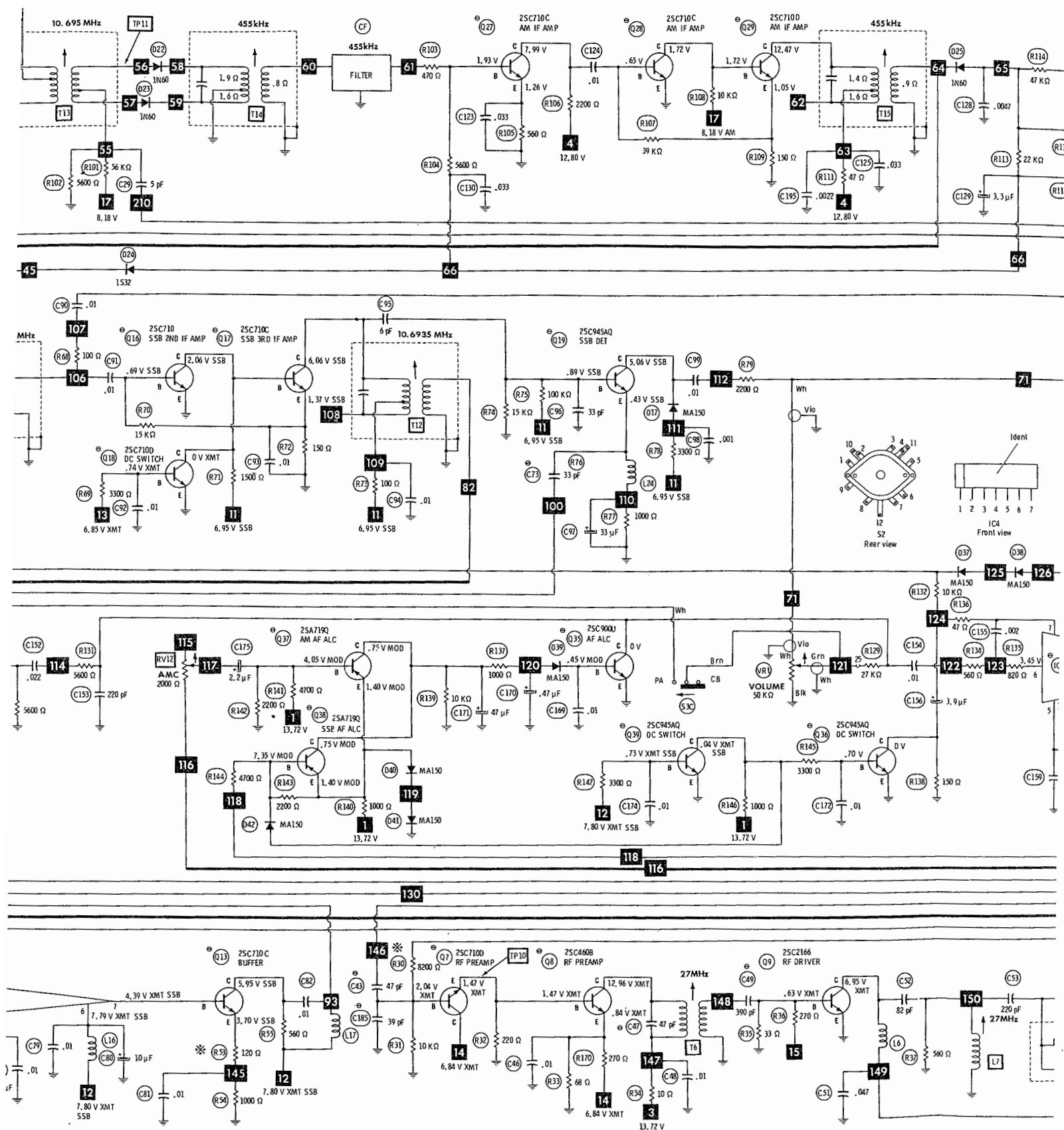
Value in ( ) used in some versions.

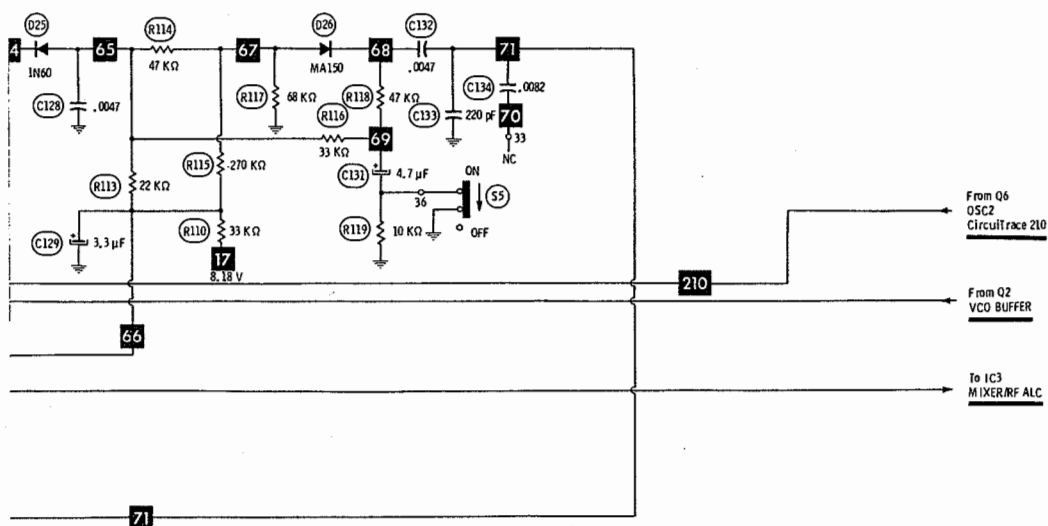
A PHOTOFACT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE®**

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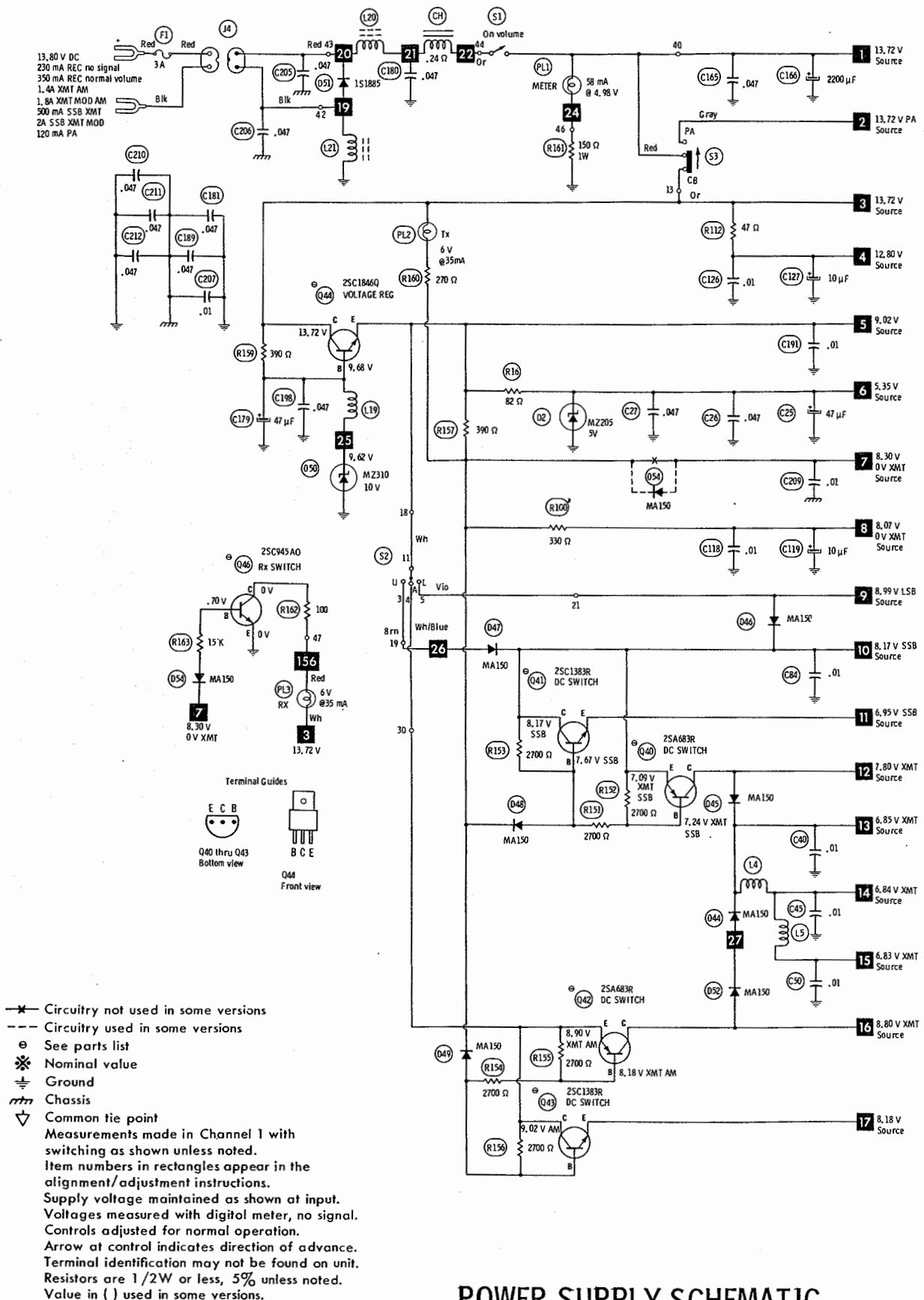












## POWER SUPPLY SCHEMATIC

JCPenney MODEL 981-6247

# PARTS LIST AND DESCRIPTION

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

## WIRING DATA

|                                                  |                       |                                |                          |
|--------------------------------------------------|-----------------------|--------------------------------|--------------------------|
| General-use Hook-up Wire (available in 5 colors) | BELDEN No. 8523       | Coiled Microphone Cable        | BELDEN No. 9471 (5')     |
| Shielded Hook-up Wire (spiral wrapped)           | BELDEN No. 8421       | 3-conductor (1 shielded) 23AWG | BELDEN No. 8497 (6')     |
| (braided)                                        | BELDEN No. 8401       |                                | BELDEN No. 9472 (7-1/2') |
| Speaker Cable (available in 4 colors)            | BELDEN No. 8782       | 28AWG                          | BELDEN No. 9466 (6')     |
| Bonding Strap                                    | BELDEN No. 8672       | 31AWG                          | BELDEN No. 9468 (10')    |
| AC Power Cord                                    | (6') BELDEN No. 17106 | 4-conductor (unshielded) 23AWG | BELDEN No. 8415 (6')     |
|                                                  | (9') BELDEN No. 17109 | 5-conductor (1 shielded) 28AWG | BELDEN No. 9467 (6')     |
|                                                  |                       |                                | BELDEN No. 9465 (7-1/2') |

## SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No. | MFG. PART No. | REPLACEMENT DATA          |                 |                   |                   |              |                  |                   |                     |                  |                 |
|----------|----------|---------------|---------------------------|-----------------|-------------------|-------------------|--------------|------------------|-------------------|---------------------|------------------|-----------------|
|          |          |               | GENERAL ELECTRIC PART No. | MALLOY 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. |
| D1       | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D2       | MZ205    | QD-ZM2205XE   | GEZD-5.0                  |                 |                   | REN 135           |              |                  | ECG135A           | TM135               | WEP1103          | 103-Z9006       |
| D3       | ITT310   | QD-CTT310XQ   | GE-90                     |                 | HEPR2503          | REN 614           |              | RT-262           | ECG614            |                     | WEP200           |                 |
| D4       | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D5       | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D6       | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D7       | MZ205    | QD-ZM2205XE   | GEZD-5.0                  |                 |                   | REN 135           |              |                  | ECG135A           | TM135               | WEP1103          | 103-Z9006       |
| D8       | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D9       | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D10      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D11      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D12      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D13      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D14      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D15      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D16      | 1S32     | QD-G1S32XXT   | 1N34AS                    | PTC207          | HEPR9134A         | REN 109           | SK3087       | RT-200           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D17      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D18      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D19      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D20      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D21      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D22      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D23      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D24      | 1S32     | QD-G1X32XXT   | 1N34AS                    | PTC207          | HEPR9134A         | REN 109           | SK3087       | RT-200           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D25      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D26      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D27      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D28      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D29      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D30      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D31      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D32      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D33      | 1N60     | QD-1N60XXT    | 1N60                      | PTC206          | HEPR9135          | REN 109           | SK3088       | RT-263           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D34      | 1S32     | QD-G1S32XXT   | 1N34AS                    | PTC207          | HEPR9134A         | REN 109           | SK3087       | RT-200           | ECG109            | TM109/**            | WEP134           | 103-Z9001       |
| D35      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D37      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D38      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D39      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D40      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D41      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D42      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D43      | GP256    | QD-SGP256AG   | GE-504A                   | PTC201          | HEPR0052          | REN 116           | SK3311       | RT-213           | ECG116            | TM116               | WEP156           | 212-76-02       |
| D44      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D45      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D46      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D47      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D48      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D49      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D50      | MZ310    | QD-ZM310XE    | GE-90                     |                 | HEPR2503          | REN 614           |              | RT-262           | ECG614            |                     | WEP200           |                 |
| D51      | 1S1885   | QD-SS188XT    | GE-504A                   | PTC201          | HEPR0052          | REN 116           | SK3311       | RT-213           | ECG116            | TM116               | WEP156           | 212-76-02       |
| D52      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D53      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| D54      | MA150    | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
| IC1      | PLL02AG  | QD-SMA150XN   | GE-300                    | PTC214          | HEPR0602          | REN 177           | SK3100       | RT-218           | ECG177            | TM177               | WEP1062          | 103-131         |
|          | PLL02G   | QD-OPLL02AN   |                           |                 |                   | REN 1167          |              |                  | ECG1233           |                     | WEP2007          |                 |
|          | PLL02    |               |                           |                 |                   | REN 1167          |              |                  | ECG1167           | TM1167              | WEP2007          |                 |
| IC2      | C3001A   | QD-MC3001AT   |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
|          | C3001    |               |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
|          | TA7310P  | QD-MC3001AT   |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
| IC3      | C3001A   | QD-MC3001AT   |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
|          | C3001    |               |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
|          | TA7310P  | QD-MC3001AT   |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
| IC4      | AN612    | QD-MAN612AN   |                           |                 |                   | REN 1192          | SK3445       |                  | ECG1192           |                     | WEP2007          |                 |
| IC5      | TA7205P  | QD-M07205AT   | GEIC-179                  | PTC780          |                   | REN 1155          | SK3231       | TVCN-81          | ECG1155           | TA7205P             | WEP949           |                 |
| Q1       | 2SC900F  | QT-C0900XBA   | GE-62                     | PTC139*         | HEPS0015*         | REN 199           | SK3124       | RT-302           | ECG199            | TM199/**            | WEP66            | 121-972         |
|          | 2SC900   |               | GE-62                     | PTC139*         | HEPS0015*         | REN 199           | SK3124       | RT-302           | ECG199            | TM199/**            | WEP66            | 121-972         |
| Q2       | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q3       | 2SC710D  | QT-C0710XBE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q4       | 2SC710D  | QT-C0710XBE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q5       | 2SC710D  | QT-C0710XBE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q6       | 2SC710D  | QT-C0710XBE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q7       | 2SC710D  | QT-C0710XBE   | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
|          | 2SC710   |               | GE-211*                   | PTC132          | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A/**           | WEP710           | 121-Z9000A      |
| Q8       | 2SC460B  | QT-C0460XBB   | GE-61*                    | PTC136*         | HEPS0014*         | REN 107           | SK3122       | RT-134           | ECG107            | TM107/**            | WEP460           | 121-522         |
|          | 2SC460A  |               | GE-61*                    | PTC136*         | HEPS0014*         | REN 107           | SK3122       | RT-134           | ECG107            | TM107/**            | WEP460           | 121-522         |
|          | 2SC460   |               | GE-61*                    | PTC136*         | HEPS0014*         | REN 107           | SK3122       | RT-134           | ECG107            | TM107/**            | WEP460           | 121-522         |
| Q9       | 2SC2166  | QT-C2166XAE   | GE-215                    | PTC186          |                   | REN 235           | SK3197       | RT-146           | ECG235            | TM235               | WEP785           | 121-Z9039       |
| Q10      | 2SC1969  | QT-C1969XAE   | GE-216                    | PTC186          |                   | REN 236           | SK3197       | RT-158           | ECG236            | TM236               | WEP840           | 121-Z9040       |
| Q11      | 2SC710D  | QT-C0         |                           |                 |                   |                   |              |                  |                   |                     |                  |                 |

# PARTS LIST AND DESCRIPTION (CONTINUED)

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

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

| ITEM No. | TYPE No. | MFR. PART No. | REPLACEMENT DATA          |                  |                   |                   |              |                  |                   |                     |                  |                 |
|----------|----------|---------------|---------------------------|------------------|-------------------|-------------------|--------------|------------------|-------------------|---------------------|------------------|-----------------|
|          |          |               | GENERAL ELECTRIC PART No. | MALLORY PART No. | MOTOROLA PART No. | RAYTHEON PART No. | RCA PART No. | SPRAGUE PART No. | SYLVANIA PART No. | THORDARSON PART No. | WORKMAN PART No. | ZENITH PART No. |
| Q14      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q15      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q16      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q17      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q18      | 2SC710C  | QT-C0710XBE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q19      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q20      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q21      | 2SC710C  | QT-C0710XBE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q22      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q23      | 2SC7630  | QT-C0763XAE   | GE-61*                    | PTC115           | HEPS0020*         | REN 229*          | SK3018*      | RT-309           | ECG229*           | TM229*              | WEP56            | 121-29021       |
| Q24      | 2SK34C   | QT-K0034XAE   | GE-FET-2                  | PTC161           | HEPP0021          | REN 132           | SK3448       | RT-175           | ECG312            | TM312               | WEP916           | 121-952         |
| Q25      | 2SA733Q  | QT-A0733XAA   | GE-48                     | PTC127           | HEPS0019*         | REN 294           | SK3138       | RT-303           | ECG294            | TM294/**            | WEP916           | 121-952         |
| Q26      | 2SC7630  | QT-C0763XAE   | GE-61*                    | PTC115           | HEPS0020*         | REN 229*          | SK3018*      | RT-309           | ECG229*           | TM229*              | WEP56            | 121-29021       |
| Q27      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q28      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q29      | 2SC710C  | QT-D0710XBE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q30      | 2SK34    | QT-K0034XBE   | GE-FET-2                  | PTC161           | HEPP0021          | REN 132           | SK3448       | RT-175           | ECG312            | TM312               | WEP916           | 121-952         |
| Q31      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q32      | 2SA733Q  | QT-A0733XAA   | GE-48                     | PTC127           | HEPS0019*         | REN 294           | SK3138       | RT-303           | ECG294            | TM294/**            | WEP916           | 121-952         |
| Q33      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q34      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q35      | 2SC900U  | QT-C0900XCA   | GE-62                     | PTC139*          | HEPS0015*         | REN 199           | SK3124       | RT-302           | ECG199            | TM199/**            | WEP66            | 121-972         |
| Q36      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q37      | 2SA719Q  | QT-A0719XAN   | GE-269                    | PTC103*          | HEPS0019*         | REN 290           | SK3114       | RT-305           | ECG290            | TM290/**            | WEP911           | 121-1019        |
| Q38      | 2SA719Q  | QT-A0719XAN   | GE-269                    | PTC103*          | HEPS0019*         | REN 290           | SK3114       | RT-305           | ECG290            | TM290/**            | WEP911           | 121-1019        |
| Q39      | 2SC945AQ | QT-C0945ABA   | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |
| Q40      | 2SC945   | QT-A0683XBN   | GE-48                     | PTC177           | HEPS5013*         | REN 294           | SK3513       | RT-115*          | ECG294            | TM294               | WEP916           | 121-952         |
| Q41      | 2SC1383R | QT-C1383XDN   | GE-47                     | PTC143*          | HEPS3001*         | REN 293           | SK3024*      | RT-302           | ECG293            | TM293               | WEP912           | 121-952         |
| Q42      | 2SC1383R | QT-A0683XBN   | GE-48                     | PTC177           | HEPS5013*         | REN 294           | SK3513       | RT-115*          | ECG294            | TM294               | WEP916           | 121-952         |
| Q43      | 2SC1383R | QT-C1383XDN   | GE-47                     | PTC143*          | HEPS3001*         | REN 293           | SK3024*      | RT-302           | ECG293            | TM293               | WEP912           | 121-952         |
| Q44      | 2SC1847Q | QT-C1847XAN   | GE-270                    | PTC180           | HEPS3001*         | REN 295           | SK3253       | RT-302           | ECG295            | TM295               | WEP913           | 121-880         |
| Q45      | 2SC710C  | QT-C0710XAE   | GE-211*                   | PTC132           | HEPS0016*         | REN 123A*         | SK3444       | RT-308*          | ECG123A*          | TM123A*/**          | WEP710           | 121-29000A      |
| Q46      | 2SC945AQ |               | GE-212                    | PTC121*          | HEPS0015*         | REN 199           | SK3124       | RT-107A          | ECG199            | TM199/**            | WEP1945          | 121-972         |

\* 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. |           |
| C3       | .1 35V  | CS-SF0R1MLC      |                           | TDC104M050EL     | QDT1-2           | SD50-R109 |
| C4       | .22 35V | CS-SFR22MLC      |                           | TDC224M050EL     | QDT1-10          | SD50-R229 |
| C5       | 10 16V  | CS-SD100MLC      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222   |
| C8       | 1 50V   | CE-EG010ALN      | PC10-16                   | VTT1A50          | QV1-11           | EV-1615   |
| C25      | 47 10V  |                  | PC50-16                   | VTT47D16         | QV1-73           | EV-1226   |
| C33      | 1 50V   |                  | PC1-50                    | VTT1A50          | QV1-11           | EV-1615   |
| C58      | .22 35V | CE-EG010ALN      |                           | TDC224M050EL     | QDT1-10          | SD50-R229 |
| C63      | 1 50V   | CS-SFR22MLC      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615   |
| C76      | .22 35V | CE-EG010ALN      |                           | TDC224M050EL     | QDT1-10          | SD50-R229 |
| C78      | .22 35V | CS-SFR22MLC      |                           | TDC224M050EL     | QDT1-10          | SD50-R229 |
| C80      | 10 16V  | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222   |
| C87      | .22 35V | CS-SFR22MLC      |                           | TDC224M050EL     | QDT1-10          | SD50-R229 |
| C97      | 33 10V  |                  | PC30-25                   | VTT33B10         | QV1-61           | EV-1125   |
| C108     | 1 50V   | CE-EG010ALN      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615   |
| C119     | 10 16V  | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222   |
| C127     | 10 16V  | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222   |
| C129     | 3.3 25V |                  | PC5-50                    | VTT3R3A50        | QV1-23           | EV-1318   |
| C131     | 4.7 25V | CE-EE47AR7ALN    | PC5-50                    | VTT4R7B50        | QV1-27           | EV-1319   |
| C135     | 1 50V   | CE-EG010ALN      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615   |
| C141     | 1 25V   | CS-SE010MLC      |                           | TDC105M035EL     |                  | SD35-19   |
| C142     | 3.3 25V |                  | PC5-50                    | VTT3R3A50        | QV1-23           | EV-1318   |
| C143     | 1 25V   | CS-SE010MLC      |                           | TDC105M035EL     |                  | SD35-19   |

# 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.    | CORNEILL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |          |                  |                            |                  | Q-LINE           | GENERAL LINE |
| C145     | 10 16V   | CE-ED100ALN      | PC10-25                    | VTT10B25         | QV1-41           | EV-1222      |
| C148     | 10 16V   | CE-ED100ALN      | PC10-25                    | VTT10B25         | QV1-41           | EV-1222      |
| C150     | 4.7 25V  | CE-EE4R7ALN      | PC5-50                     | VTT4R7B50        | QV1-27           | EV-1319      |
| C156     | 3.9 25V  | CS-SC3R9MLC      |                            | TIM025K395P0X    | QDT1-46          | SD50-3R99    |
| C160     | 33 6.3V  | CE-EB330ALN      | PC30-25                    | VTT33B10         | QV1-61           | EV-1125      |
| C162     | 47 16V   | CE-ED470ALN      | PC50-16                    | VTT47D16         | QV1-73           | EV-1226      |
| C164     | 1 50V    | CE-EG010ALN      | PC1-50                     | VTT1A50          | QV1-11           | EV-1615      |
| C166     | 2200 16V | CE-ED222AUN      | WBR2000-16*                | TC1520C*         | QE1-643*         | TVA-1175.3*  |
| C167     | 330 16V  | CE-ED331ALN      | WBR300-35*                 | VTT330H16        | QV1-133          | EV-1245      |
| C168     | 100 16V  | CE-ED101ALN      | PC100-16                   | VTT100F16        | QV1-95           | EV-1230      |
| C170     | .47 50V  | CE-EGR47ALN      | PC1-50                     | VTT47A63         | QV1-3            | EV-1610      |
|          | 10 16V   | CE-ED100ALN      | PC1-50                     | VTT1A50          | QV1-11           | EV-1615      |
| C171     | 47 10V   |                  | PC50-16                    | VTT47D16         | QV1-73           | EV-1226      |
| C173     | 1 50V    | CE-EG010ALN      | PC1-50                     | VTT1A50          | QV1-11           | EV-1615      |
| C175     | 2.2 25V  | CE-EE2R2ALN      | PC2-100                    | VTT2R2A50        | QV1-19           | EV-1517      |
| C176     | 47 16V   | CE-ED470ALN      | PC50-16                    | VTT47D16         | QV1-73           | EV-1226      |
| C178     | 33 16V   | CE-ED330ALN      | PC30-25                    | VTT33D25         | QV1-63           | EV-1325      |
| C179     | 47 16V   | CE-ED470ALN      | PC50-16                    | VTT47D16         | QV1-73           | EV-1226      |
| C182     | .47 50V  | CE-EGR47ALN      | PC1-50                     | VTT47A63         | QV1-3            | EV-1610      |
| C901     | .22 35V  | CS-SFR22MLC      |                            | TDC224M050EL     | QDT1-10          | SD50-R229    |

\* Axial replacement for radial device.

## CAPACITORS

| ITEM No. | RATING              | MFR. PART No. | REPLACEMENT DATA   |                            |                  |                  |              |
|----------|---------------------|---------------|--------------------|----------------------------|------------------|------------------|--------------|
|          |                     |               | CENTRALAB PART No. | CORNEILL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |                     |               |                    |                            |                  | Q-LINE           | GENERAL LINE |
| C1       | .0047 10% 50V (1)   |               |                    | WMF1D47                    | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C2       | .022 10% 50V        |               |                    | DPMS2S22                   | M192P2239R8      | QFT2-127         | 1FT-S22      |
| C6       | 33 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q33    |
| C7       | 12 50V N150 (1)     |               |                    |                            | *                |                  | 10TCP-Q12    |
| C9       | .001 10% 50V        |               |                    | DPMS6D1                    | M192P10292       | QFT2-1           | 1FT-D10      |
| C10      | .0012 10% 50V (1)   |               |                    | DPMS6D12                   | PVC6212          |                  | 6PS-D12      |
| C11      | 2 50V N150          |               |                    |                            | *                |                  | 10TCP-V22    |
| C12      | 33 10% 50V N150(1)  |               |                    |                            | *                |                  | 10TCP-Q33    |
| C13      | 33 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q33    |
| C14      | 10 50V N150 (1)     |               |                    |                            | *                |                  | 10TCP-Q10    |
| C15      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C16      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C17      | 33 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q33    |
| C18      | .001 10% 50V        |               |                    | DPMS6D1                    | M192P10292       | QFT2-1           | 1FT-D10      |
| C19      | 220 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T22    |
| C20      | 22 50V NPO (1)      |               | DTZ-22             | NP022                      | CN0422           |                  | 10TCC-Q22    |
| C21      | 15 50V NPO (1)      |               | DTZ-15             | NP015                      | CN0415           |                  | 10TCC-Q15    |
| C22      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C23      | .001 10% 50V        |               |                    | DPMS6D1                    | M192P10292       | QFT2-1           | 1FT-D10      |
| C24      | 68 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q68    |
| C26      | .047 10% 50V        |               |                    | DPMS2S47                   | M192P4739R8      | QFT2-171         | 1FT-S47      |
| C27      | .047                |               | UK50-503           |                            | MAG5015          |                  |              |
| C28      | .001 10% 50V        |               |                    | DPMS6D1                    | M192P10292       | QFT2-1           | 1FT-D10      |
| C29      | 5                   |               | DTZ-4R7            | NP04P7                     | CN0547           |                  | 10TCC-V47    |
| C30      | 68 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q68    |
| C31      | 27 5% 50V NPO(1)    |               |                    |                            | CN0427           |                  | 10TCC-Q27    |
| C32      | 560 10% 50V         |               | DD-561             |                            | GP356            |                  | 10TS-T56     |
| C34      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C35      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C36      | 150 10% 50V N150(1) |               |                    |                            | *                |                  | 10TCP-T15    |
| C37      | 82 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q82    |
| C38      | 56 10% 50V N150(1)  |               |                    |                            | *                |                  | 10TCP-Q56    |
| C39      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C40      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C42      | 3 50V N150(1)       |               |                    |                            | *                |                  | 10TCP-V30    |
| C43      | 47 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-V47    |
| C45      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C46      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C47      | 47 10% 50V N150(1)  |               |                    |                            | *                |                  | 10TCP-Q47    |
| C48      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C49      | 390 10% 50V(1)      |               | DD-391             | GP390                      | GP339            |                  | 10TS-T39     |
| C50      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C51      | .047 10% 50V        |               |                    | DPMS2S47                   | M192P4739R8      | QFT2-171         | 1FT-S47      |
| C52      | 82 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q82    |
| C53      | 220 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T22    |
| C54      | 150 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T15    |
| C55      | 560 10% 50V         |               | DD-561             |                            | GP356            |                  | 10TS-T56     |
| C56      | 47 10% 50V N150     |               |                    |                            | *                |                  | 10TCP-Q47    |
| C57      | 470 50V             |               | DD-471             | GP470                      | GP347            |                  | 10TS-T47     |
| C59      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C60      | 2 50V N150          |               | DTZ-4R7            | NP04P7                     | CN0547           |                  | 10TCC-V47    |
| C61      | 2 50V N150          |               |                    |                            | *                |                  | 10TCP-V22    |
| C62      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C64      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C65      | 39 10% 50V N150(1)  |               |                    |                            | *                |                  | 10TCP-Q39    |
| C66      | 10 50V NPO (1)      |               | DTZ-10             | NP010                      | CN0410           |                  | 10TCC-Q10    |
| C67      | .001 10% 50V        |               |                    | DPMS6D1                    | M192P10292       | QFT2-1           | 1FT-S10      |
| C68      | 22 50V N150         |               |                    |                            | *                |                  | 10TCP-Q22    |
| C69      | 220 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T22    |
| C70      | 220 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T22    |
| C71      | 8 50V N150 (1)      |               |                    |                            | *                |                  | 10TCP-V82    |
| C72      | 100 10% 50V N150    |               |                    |                            | *                |                  | 10TCP-T10    |
| C73      | 33 10% 50V N150(1)  |               |                    |                            | *                |                  | 10TCP-Q33    |
| C74      | 22 50V N150         |               |                    |                            | *                |                  | 10TCP-Q22    |
| C75      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C77      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C79      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C81      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C82      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C83      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C84      | .01 10% 50V         |               |                    | WMF1S1                     | M192P1039R8      | QFT2-91          | 1FT-S10      |

JC Penney MODEL 981-6247

# 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 |
| C85      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C86      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C88      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C89      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C90      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C91      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C92      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C93      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C94      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C95      | 6 50V N150          |               |                    |                           |                  |                  |              |
| C96      | 33 10% 50V N150     |               |                    |                           | *                |                  | 10TCP-Q33    |
| C98      | .001 10% 50V        |               |                    | DPMS601                   | M192P10292       | QFT2-1           | 1FT-D10      |
| C99      | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C100     | 33 10% 50V N150     |               |                    |                           | *                |                  | 10TCP-Q33    |
| C101     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C102     | .047 10% 50V        |               |                    | DPMS2S47                  | M192P4739R8      | QFT2-171         | 1FT-S47      |
| C103     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C104     | 3 50V N150          |               |                    |                           | *                |                  | 10TCP-V30    |
| C105     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C106     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C107     | 39 10% 50V N150     |               |                    |                           | *                |                  | 10TCP-Q39    |
| C109     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C110     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C111     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C112     | 5 50V NPO(1)        |               | DTZ-4R7            | NPO4P7                    | CN0547           |                  | 10TCC-V47    |
| C113     | 220 10% 50V N150    |               |                    |                           | *                |                  | 10TCP-T22    |
| C114     | .0047 10% 50V       |               |                    | WMF1D47                   | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C115     | .001 10% 50V        |               |                    | DPMS601                   | M192P10292       | QFT2-1           | 1FT-D10      |
| C116     | .033 10% 50V        |               |                    | DPMS6S33                  | M192P3339R8      | QFT2-149         | 1FT-S33      |
| C117     | .0047 10% 50V       |               |                    | WMF1D47                   | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C118     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C121     | .001 10% 50V        |               |                    | DPMS601                   | M192P10292       | QFT2-1           | 1FT-D47      |
| C122     | 27 50V N150         |               |                    |                           | *                |                  | 10TCP-Q27    |
| C123     | .033 10% 50V        |               |                    | DPMS6S33                  | M192P3339R8      | QFT2-149         | 1FT-S33      |
| C124     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C125     | .033 10% 50V        |               |                    | DPMS6S33                  | M192P3339R8      | QFT2-149         | 1FT-S33      |
| C126     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C128     | .0047 10% 50V       |               |                    | WMF1D47                   | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C130     | .033 10% 50V        |               |                    | DPMS6S33                  | M192P3339R8      | QFT2-149         | 1FT-S33      |
| C132     | .0047 10% 50V       |               |                    | WMF1D47                   | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C133     | 220 10% 50V         |               | DD-221             |                           | GP322            |                  | 10TS-T22     |
| C134     | .0082 10% 50V       |               |                    | WMF1D82                   | EWFA282          |                  | 1PB-D82      |
| C136     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C137     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C138     | 100 10% 50V N150    |               |                    |                           | *                |                  | 10TCP-T10    |
| C139     | 22 50V N150         |               |                    |                           | *                |                  | 10TCP-Q22    |
| C140     | 5 50V NPO           |               | DTZ-4R7            | NPO4P7                    | CN0547           |                  | 10TCC-V47    |
| C142     | .01 50V             |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C144     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C146     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C149     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C151     | .0022 10% 50V       |               |                    | DPMS6D22                  | M192P2229R8      | QFT2-27          | 1FT-D22      |
| C152     | .022 10% 50V        |               |                    | DPMS2S22                  | M192P2239R8      | QFT2-127         | 1FT-S22      |
| C153     | 220 10% 50V         |               | DD-221             |                           | GP322            |                  | 10TS-T22     |
| C154     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C155     | .0022 10% 50V       |               |                    | DPMS6D22                  | M192P2229R8      | QFT2-27          | 1FT-D22      |
| C157     | 68 50V              |               | DD-680             | GP68                      | GP468            |                  | 10TS-Q68     |
| C158     | 150 10% 50V(1)      |               | DD-151             |                           | GP315            |                  | 10TS-T15     |
| C159     | 68 50V              |               | DD-680             | GP68                      | GP468            |                  | 10TS-Q68     |
| C161     | .068 10% 50V        |               |                    | WMF1S68                   | EWFA168          | QF1-195          | 1PB-S68      |
| C163     | 100                 |               | DD-101             | GP100                     | GP310            |                  | 10TS-T10     |
| C165     | .047                |               | UK50-503           |                           | MAG5015          |                  |              |
| C169     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C172     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C174     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C180     | .047                |               | UK50-503           |                           | MAG5015          |                  |              |
| C181     | .047                |               | UK50-503           |                           | MAG5015          |                  |              |
| C183     | .001 10% 50V        |               |                    | DPMS601                   | M192P10292       | QFT2-1           | 1FT-D10      |
| C184     | 270 10% 50V         |               | DD-221             |                           | GP322            |                  | 10TS-T22     |
| C185     | 39 10% 50V N150(1)  |               |                    |                           | *                |                  | 10TCP-Q39    |
| C186     | 220 10% 50V N150(1) |               |                    |                           | *                |                  | 10TCP-T22    |
| C187     | 18 50V N150 (1)     |               |                    |                           | *                |                  | 10TCP-Q18    |
| C188     | 18 50V N150 (1)     |               |                    |                           | *                |                  | 10TCP-Q18    |
| C189     | .047                |               | UK50-503           |                           | MAG5015          |                  |              |
| C190     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C191     | .01 10% 50V         |               |                    | WMF1S1                    | M192P1039R8      | QFT2-91          | 1FT-S10      |
| C192     | .047 10% 50V        |               |                    | DPMS2S47                  | M192P4739R8      | QFT2-171         | 1FT-S47      |
| C194     | 100 10% 50V         |               | DD-101             | GP100                     | GP310            |                  | 10TS-T10     |
| C195     | .0022 10% 50V       |               |                    | DPMS6D22                  | M192P2229R8      | QFT2-27          | 1FT-D22      |
| C196     | 82 10% 50V          |               | DD-820             |                           | GP482            |                  | 10TS-Q82     |
| C197     | .0022 50V           |               | DD-222             |                           | GP222            | QC2-97           | 5GA-D22      |
| C198     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| C201     | 39 10% 50V N150     |               |                    |                           | *                |                  | 10TCP-Q39    |
| C202     | .01 50V             |               | UK50-103           |                           | MAG5011          |                  |              |
| C203     | .01 50V             |               | UK50-103           |                           | MAG5011          |                  |              |
| C204     | .001 50V            |               | DD-102G            | GP1000                    | GP210            | QC2-81           | 5GA-D10      |
| C205     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| C206     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| C207     | .01 50V             |               | UK50-103           |                           | MAG5011          |                  |              |
| C208     | .001 50V            |               | DD-102G            | GP1000                    | GP210            | QC2-81           | 5GA-D10      |
| C209     | .01 50V             |               | UK50-103           |                           | MAG5011          |                  |              |
| C210     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| C211     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| C212     | .047 50V            |               | UK50-503           |                           | MAG5015          |                  |              |
| CT1      | 20                  | CT-Z7200H01   |                    |                           |                  |                  |              |
| CT2      | 20                  | CT-Z7200H01   |                    |                           |                  |                  |              |
| CT3      | 20                  | CT-Z7200H01   |                    |                           |                  |                  |              |
| CT4      | 20                  | CT-Z7200H01   |                    |                           |                  |                  |              |
| CT5      | 20                  | CT-Z7200H01   |                    |                           |                  |                  |              |

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

(1) Manufacturer indicates value may vary.

## 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. |
| RV1      | Bias                | 100         | RP-JNB10101      |                    |                  |              |
| RV2      | SSB Power           | 5000        | RP-GNB50201      |                    |                  | U260R502B    |
| RV3      | RF Meter            | 20K         | RP-GNB20301      |                    |                  | U260R253B    |
| RV4      | Balance             | 1000        | RP-GNB10201      |                    |                  | U260R102B    |
| RV5      | Balance             | 10K         | RP-GNB10301      |                    |                  | U260R103B    |
| RV6      | AM S Meter          | 10K         | RP-GNB10301      |                    |                  | U260R103B    |
| RV7      | SSB S Meter         | 10K         | RP-GNB10301      |                    |                  | U260R103B    |
| RV8      | AGC                 | 5000        | RP-GNB50201      |                    |                  | U260R502B    |
| RV9      | AM Squelch Range    | 20K         | RP-GNB20301      |                    |                  | U260R253B    |
| RV10     | SSB Squelch Range   | 200K        | RP-GNB20401      |                    |                  | U260R254B    |
| RV11     | SSB Mic Gain        | 500         | RP-GNB50101      |                    |                  | U260R501B    |
| RV12     | AMC                 | 2000        | RP-GNB20201      |                    |                  | U260R252B    |
| VR1      | Volume/Power Switch | 50K         | RV-NB503A04      |                    |                  |              |
| VR2      | Squelch             | 50K         | RV-NA503B05      |                    |                  |              |
| VR3      | Fine Tune           | 50K         | RV-NA503A03      |                    |                  |              |
| VR4      | AM Power            | 6 10W       |                  |                    |                  |              |
| VR5      | RF Gain             | 50K         | RV-NA503B05      |                    |                  |              |

### 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. |
| AREY 251 | Resistor Network |                  | RA-C182M07N(1) | AREY 252 | Resistor Network |                  | RA-C182M07N(1) |

(1) Consists of seven 1.8K resistors.

### COILS (RF-IF)

| ITEM No. | FUNCTION                          | REPLACEMENT DATA |                      |                 | REMARKS |
|----------|-----------------------------------|------------------|----------------------|-----------------|---------|
|          |                                   | PART No.         | OTHER IDENTIFICATION | MILLER PART No. |         |
| L1       | RF Choke (2.2uH)                  | LF-2R2KD01N      |                      | 70F226A1        |         |
| L2       | RF Choke (68uH)                   | LF-680KD01N      |                      |                 |         |
| L3       | RF Choke                          | LD-ADA3538G      |                      |                 |         |
| L4       | RF Choke (2.2uH)                  | LF-2R2KD01N      |                      | 70F226A1        |         |
| L5       | RF Choke (2.2uH)                  | LF-2R2KD01N      |                      | 70F226A1        |         |
| L6       | RF Choke (2.35uH)                 | LD-ADA3038J      |                      |                 |         |
| L7       | XMT Driver (27MHz)(15uH)          | TR-10CZ003S      |                      |                 |         |
| L8       | RF Choke (.75uH)                  | LD-ADB3524M      |                      |                 |         |
| L9       | RF Choke (.75uH)                  | LD-ADB4024B      |                      |                 |         |
| L10      | RF Choke (.75uH)                  | LD-ADB3524M      |                      |                 |         |
| L11      | Final tuning(27MHz) (.335uH)      | 7R-10CZ005S      |                      |                 |         |
| L12      | Pi Filter                         | LA-1JG1004A      |                      |                 |         |
| L13      | Antenna Matching (27MHz) (.113uH) | TR-10CZ004S      |                      |                 |         |
| L14      | RF Choke (4.7uH)                  | LF-4R7KD01N      |                      |                 |         |
| L15      | RF Choke (2.2uH)                  | LF-2R2KD01N      |                      | 70F226A1        |         |
| L16      | RF Choke (1uH)                    | LF-1R0KD01N      |                      | 4602            |         |
| L17      | RF Choke (68uH)                   | LF-680KD01N      |                      |                 |         |
| L18      | RF Choke                          |                  |                      |                 |         |
| L19      | RF Choke (68uH)                   | LF-680KD01N      |                      |                 |         |
| L20      | RF Choke (1.15uH)                 | LB-BJE1008A      |                      |                 |         |
| L21      | RF Choke (1.15uH)                 | LB-BJE1008A      |                      |                 |         |
| L22      | RF Choke (.75uH)                  | LD-ADB4024B      |                      |                 |         |
| L23      | RF Choke (.75uH)                  | LD-ADB4024B      |                      |                 |         |
| L24      | RF Choke                          |                  |                      |                 |         |
| L201     | Antenna Matching                  | LA-2JG1503A      |                      |                 |         |
| T1       | VCO Mixer (38.100MHz)             | TR-10MB003T      |                      |                 |         |
| T2       | VCO Mixer (37.000MHz)             | TR-10MB005S      |                      |                 |         |
| T3       | Doubler (20.1MHz)                 | TR-10DB002S      |                      |                 |         |
| T4       | XMT Mixer (27MHz)                 | TR-10CA006T      |                      |                 |         |
| T5       | XMT Mixer (27MHz)                 | TR-10CB003T      |                      |                 |         |
| T6       | XMT Preamp (27MHz)                | TR-10CP006S      |                      |                 |         |
| T7       | Rec Antenna (27MHz)               | TR-10MP003T      |                      |                 |         |
| T8       | Rec RF (27MHz)                    | TR-10CA006T      |                      |                 |         |
| T9       | Rec RF (27MHz)                    | TR-10CB001S      |                      |                 |         |
| T10      | IF (10.695MHz)                    | TR-10MA013S      |                      |                 |         |
| T11      | SSB IF (10.6935MHz)               | TR-10MA015S      |                      |                 |         |
| T12      | SSB IF (10.6935MHz)               | TR-10MA015S      |                      |                 |         |
| T13      | IF (10.695MHz)                    | TR-10MA014S      |                      |                 |         |
| T14      | IF (455kHz)                       | TR-10LA021S      |                      |                 |         |
| T15      | IF (455kHz)                       | TR-10LA022S      |                      |                 |         |

### 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. |       |
| CH       | 1.8A               | .241    | 3.72mH                       | LJT19H004W       |                     |                |       |

JCPenney MODEL 981-6247

## 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. | MFGR. PART No.   | THORDARSON PART No. | TRIAD PART No. |       |
| T16      | 8         | 8    | TBG28A004W       |                     | MCB26          |       |

### SPEAKER

| ITEM No. | TYPE             | REPLACEMENT DATA |               | NOTES |
|----------|------------------|------------------|---------------|-------|
|          |                  | MFGR. PART No.   | QUAM PART No. |       |
| SP       | 3-1/2" PM 8 Ohms | ZG-A0920801      | 3A05Z8R       |       |

### FUSE DEVICES

| ITEM No. | DESCRIPTION     | REPLACEMENT DATA |        |               |        |                     |        |
|----------|-----------------|------------------|--------|---------------|--------|---------------------|--------|
|          |                 | PART No.         |        | BUSS PART No. |        | LITTELFUSE PART No. |        |
|          |                 | DEVICE           | HOLDER | DEVICE        | HOLDER | DEVICE              | HOLDER |
| F1       | 3A Quick Acting |                  |        | AGC3          | HRK    | 312003              | 150145 |

### 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      | ZG-AAZ7011       | 18-032      | 18-034          | 18-010   | 18-092          | 2      | 1         | 3         | 4       | NC       | 1        |

### MISCELLANEOUS

| ITEM No. | PART NAME   | PART No.    | NOTES                                       |
|----------|-------------|-------------|---------------------------------------------|
| CF       | Filter      | FB-R455A13M | 455kHz                                      |
| J1       | Connector   | YJ-C02S009Z | Antenna                                     |
| J2       | Jack        | YJ-T03S002Z | PA Speaker                                  |
| J3       | Jack        | YJ-T03S002Z | Ext. Speaker                                |
| J4       | Jack        | YJ-B02S007Z | DC Power                                    |
| J5       | Connector   | YJ-Z04S002Z | Microphone                                  |
| LED301   | LED Display | QL-#SL1222C | Channel Readout (each segment 1.91V @ 14mA) |
| M        | Meter       | ZJ-J2030N12 | Signal/Power                                |
| PL1      | Lamp        |             | Meter Illumination (4.98V @ 58mA)           |
| PL2      | Lamp        | ZP-A064101U | TX Indicator (6V @ 35mA)                    |
| PL3      | Lamp        | ZP-A064101U | RX Indicator (6V @ 35mA)                    |
| S1       | Switch      |             | Power (Part of volume control)              |
| S2       | Switch      | SR-0303103E | Mode                                        |
| S3       | Switch      | SS-020226ZL | PA/CB                                       |
| S4       | Switch      | SS-020226ZL | NB                                          |
| S5       | Switch      | SS-020226ZL | ANL                                         |
| SW1      | Switch      | SR-2040302H | Channel Selector                            |
| X1       | Crystal     | XA-S1C1001T | 10.0525MHz                                  |
| X2       | Crystal     | XA-S1B9001T | 10.240MHz                                   |
| X3       | Crystal     | XA-Z1A8001T | 10.692MHz                                   |
| XF       | Filter      | FF-10R7S01G | 10.6935MHz                                  |
|          | Cord        | AC-DC046GEA | DC Power                                    |
|          | PC Board    | PT-LDD10COX | LED                                         |
|          | PC Board    | PT-BM048A0X | Main                                        |
|          | PC Board    | PT-SW020COX | Switch                                      |
|          | VCO Block   | ZZ-Z0000017 | 17MHz                                       |

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

| ITEM                   | PART No.    | ITEM              | PART No.    |
|------------------------|-------------|-------------------|-------------|
| Cabinet, Bottom        | MU-873SX006 | Knob, Control     | MN-276XA007 |
| Cabinet, Top           | MU-876SX002 | Panel, Front      | MB-762SZ061 |
| Frame Assembly         | AM-6247**01 | Panel, Left Side  | ML-681SZ015 |
| Knob, Channel Selector | MN-276XA008 | Panel, Rear       | MS-766SZ020 |
|                        |             | Panel, Right Side | ML-681SZ016 |