



# 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 KCB-2320A

## MANUFACTURER'S SPECIFICATIONS

### GENERAL

|                            |                                                     |
|----------------------------|-----------------------------------------------------|
| Circuitry                  | 24 Transistors, 2 IC<br>12 Diodes                   |
| Frequency Control          | PLL (Phase Lock Loop) Frequency synthesizing system |
| Channels                   | 23 channels all installed                           |
| Mode of Operation          | AM                                                  |
| Power Source Voltage Range | 11.5–14.5 V DC                                      |
| Speaker                    | 3" dynamic 8 ohm                                    |
| Microphone                 | Dynamic 500 ohm                                     |
| Power Source               | DC 12.6 volts                                       |

### RECEIVER SECTION

|                    |                                      |
|--------------------|--------------------------------------|
| Receiving System   | Dual conversion system               |
| Sensitivity        | 0.7 $\mu$ V for 10 dB S/N            |
| Selectivity        | More than 45 dB down at $\pm$ 10 KHz |
| Delta Tune         | About $\pm$ 1 KHz                    |
| Spurious Rejection | –50 dB                               |
| Audio Output Power | 3.0 watts at 8 ohm                   |
| Squelch Range      | 0.7 $\mu$ V to 300 $\mu$ V           |
| IF                 | 1st 5.945 MHz<br>2nd 455 KHz         |

### TRANSMITTER SECTION

|                             |                          |
|-----------------------------|--------------------------|
| Modulation System           | High level class B       |
| RF Output Power (at 13.8 V) | 4 watts (F.C.C. Maximum) |
| Frequency Tolerance         | $\pm$ 0.005%             |
| Spurious Rejection          | –50 dB                   |

Courtesy of the Manufacturer

KRACO MODEL KCB-2320A

**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.  
Suggested Alignment Tools: GC ELECTRONICS;  
L112, T106 thru T109 ..... 5009  
L106, L109, L110 ..... 9304  
L103, L104, L105, T101 thru T105 ..... 9440  
CT101 ..... 5000

## SYNTHESIZER ALIGNMENT

| TEST EQUIPMENT                      | TRANSCIVER                  | ADJUST | REMARKS                                  |
|-------------------------------------|-----------------------------|--------|------------------------------------------|
| Input of frequency counter to TP10. | Ch. 13<br>Delta Tune center | CT101  | Adjust for 9.510MHz.                     |
| Input of VTVM to TP8.               | Ch. 1                       | T101   | Check for 1.50 volts $\pm 0.1$ volt.     |
| Input of frequency counter to TP11. | Ch. 13                      |        | Check for 21.0195MHz<br>$\pm 0.38$ kHz.  |
| Input of frequency counter to TP12. | Ch. 13                      |        | Check for 6.400500MHz<br>$\pm 0.13$ kHz. |
| Input of RF VTVM to TP15.           | Ch. 13                      | L115   | Adjust for maximum output.               |
| Input of frequency counter to TP13. | Ch. 13, Xmit                |        | Check for 5.945300MHz<br>$\pm 0.12$ kHz. |

## 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.

| TEST EQUIPMENT                                                                                | TRANSCIVER                  | ADJUST              | REMARKS                                                         |
|-----------------------------------------------------------------------------------------------|-----------------------------|---------------------|-----------------------------------------------------------------|
| Output of signal generator thru .01uF to TP14.<br>455kHz, 1000Hz @ 30% modulation.            | Ch. 13<br>Delta Tune center | T109, T108,<br>T107 | Adjust for maximum output.                                      |
| Output of signal generator thru .01uF to TP15.<br>5.945MHz, 1000Hz @ 30% modulation.          | Ch. 13<br>Delta Tune center | T106, L112          | Adjust for maximum output.                                      |
| Output of signal generator thru .01uF to antenna jack.<br>27.115MHz, 1000Hz @ 30% modulation. | Ch. 13<br>Delta Tune center | T105, T104          | Adjust for maximum output.<br>Repeat above steps, if necessary. |

## RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil.  
Adjust volume control to obtain a suitable indication.

| TEST EQUIPMENT                                                                                                 | TRANSCEIVER | ADJUST | REMARKS                                                                                                |
|----------------------------------------------------------------------------------------------------------------|-------------|--------|--------------------------------------------------------------------------------------------------------|
| Output of signal generator thru .01uF to antenna jack.<br>27.115MHz, 1000Hz @ 30% modulation.<br>Output 500uV. | Ch. 13      | RV101  | SQUELCH RANGE<br>Set squelch control VR2 fully clockwise.<br>Adjust VR101 so that squelch just breaks. |
| Output of signal generator thru .01uF to antenna jack.<br>27.115MHz, 1000Hz @ 30% modulation.<br>Output 100uV. | Ch. 13      | RV103  | S METER<br>Adjust for 9 on S scale of meter.                                                           |

## TRANSMITTER ALIGNMENT

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

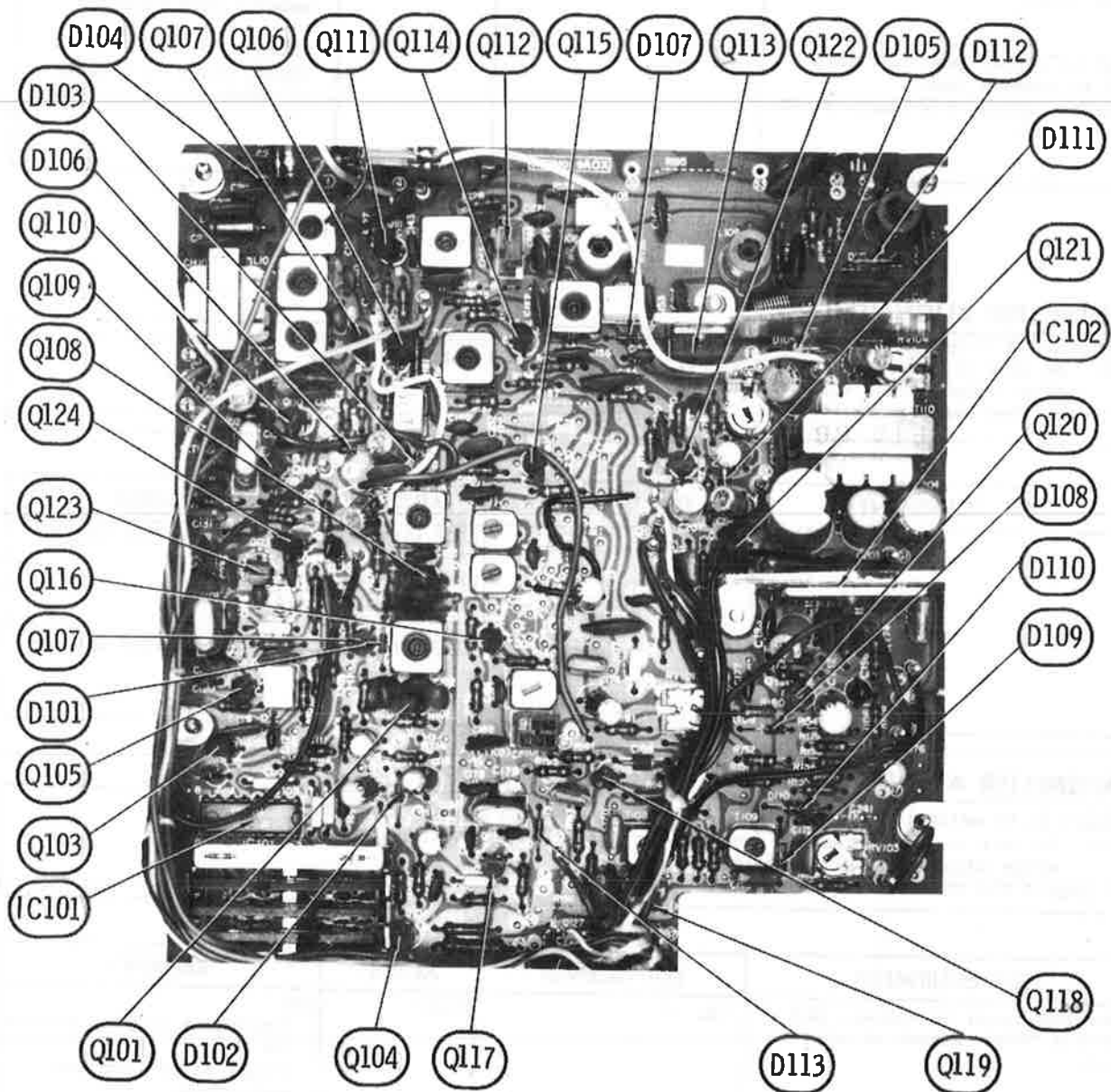
| TEST EQUIPMENT | TRANSCEIVER | ADJUST                                         | REMARKS                     |
|----------------|-------------|------------------------------------------------|-----------------------------|
|                | Ch. 13      | L103,L104,<br>T102,T103,<br>L106,L109,<br>L110 | Adjust for maximum output.  |
|                | Ch. 13      | L110,L109                                      | Adjust for 4 watts maximum. |

## TRANSMITTER ADJUSTMENTS

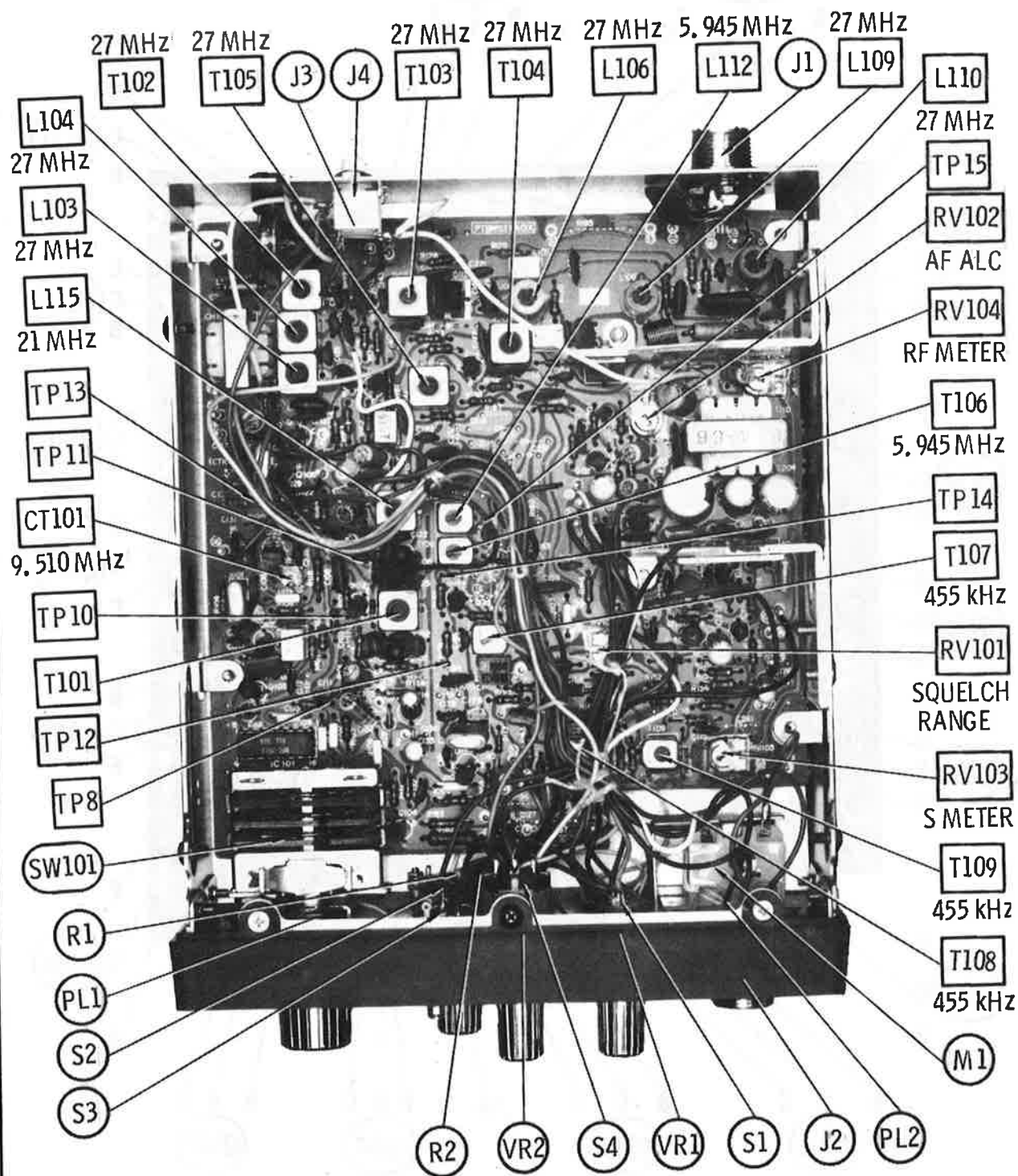
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.  
NOTE: Be sure to check transmit frequency and power on all active channels after adjustments of transmitter.  
See page 4 for channel frequencies.

| TEST EQUIPMENT                                                            | TRANSCEIVER | ADJUST | REMARKS                                                                                                                                             |
|---------------------------------------------------------------------------|-------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Modulation meter to antenna jack.<br>Inject a 1000Hz signal at mic input. | Ch. 13      | RV102  | AMC<br>Disconnect C209 to disable AMC.<br>Adjust signal for over-modulation.<br>Restore AMC operation.<br>Adjust RV102 for 100% modulation maximum. |
|                                                                           | Ch. 13      | RV104  | RF PANEL METER<br>Adjust RV104 so that RF panel meter agrees with RF wattmeter.                                                                     |

KRACO MODEL KCB-2320A

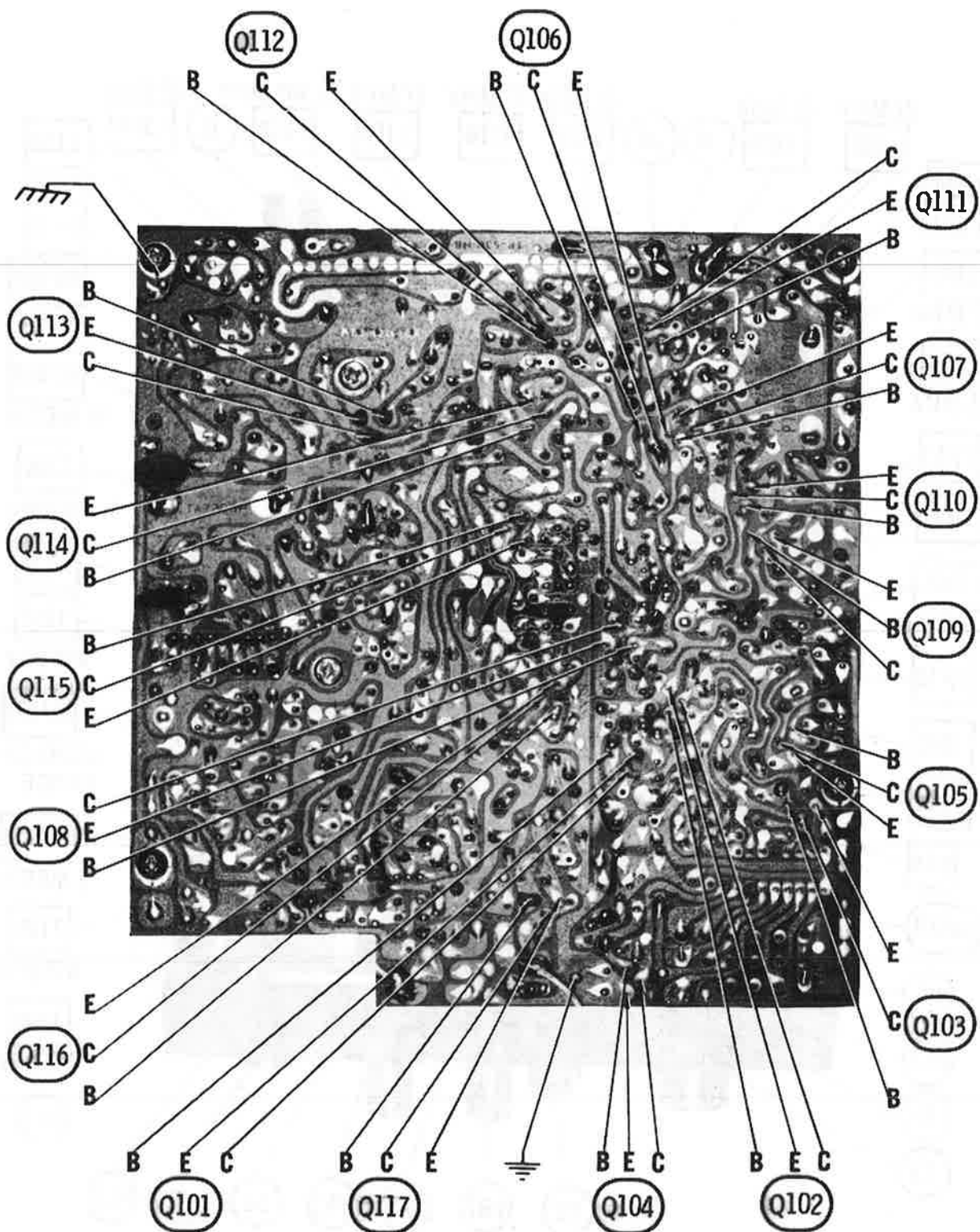


MAIN BOARD



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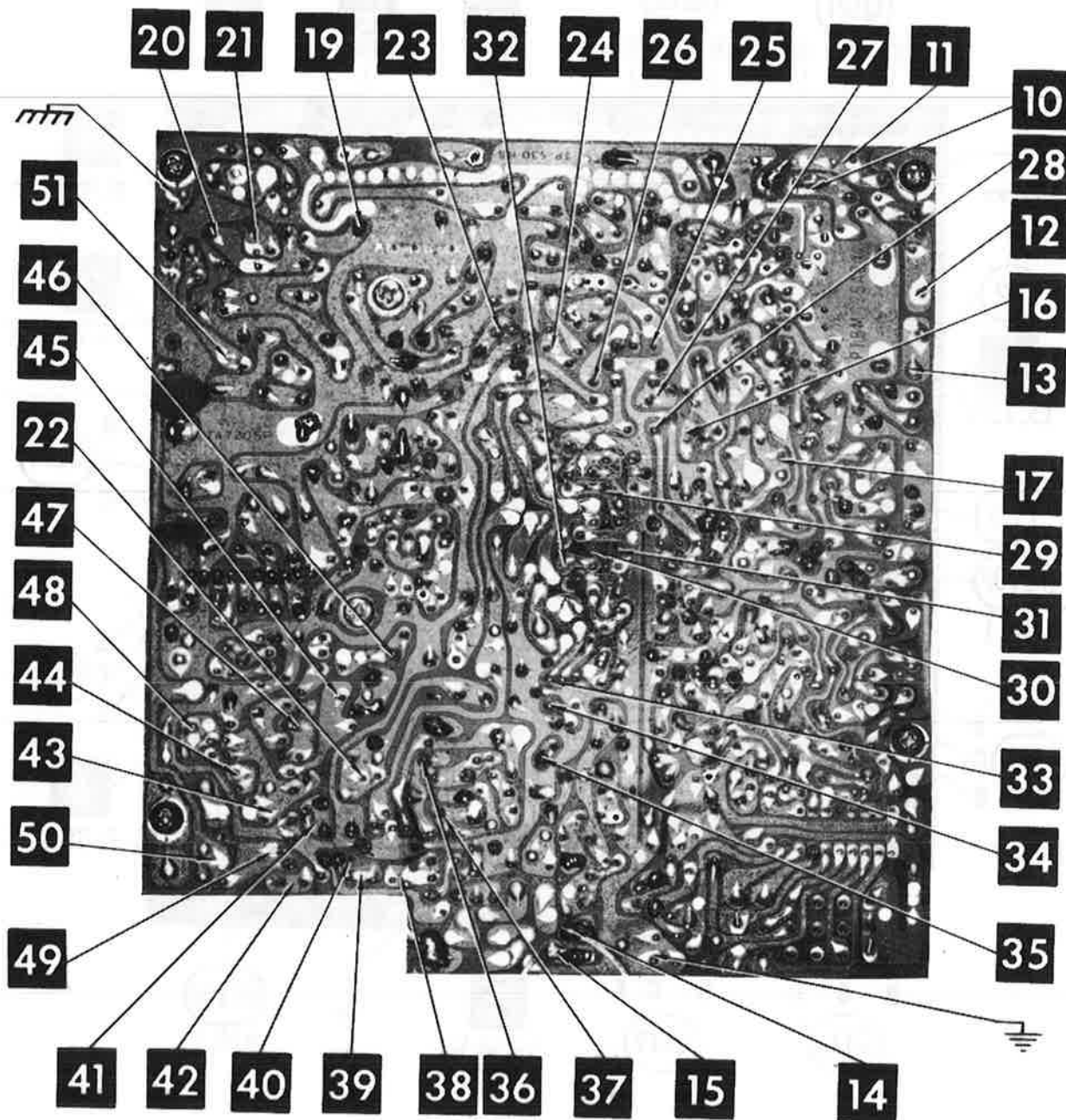
CHASSIS-BOTTOM

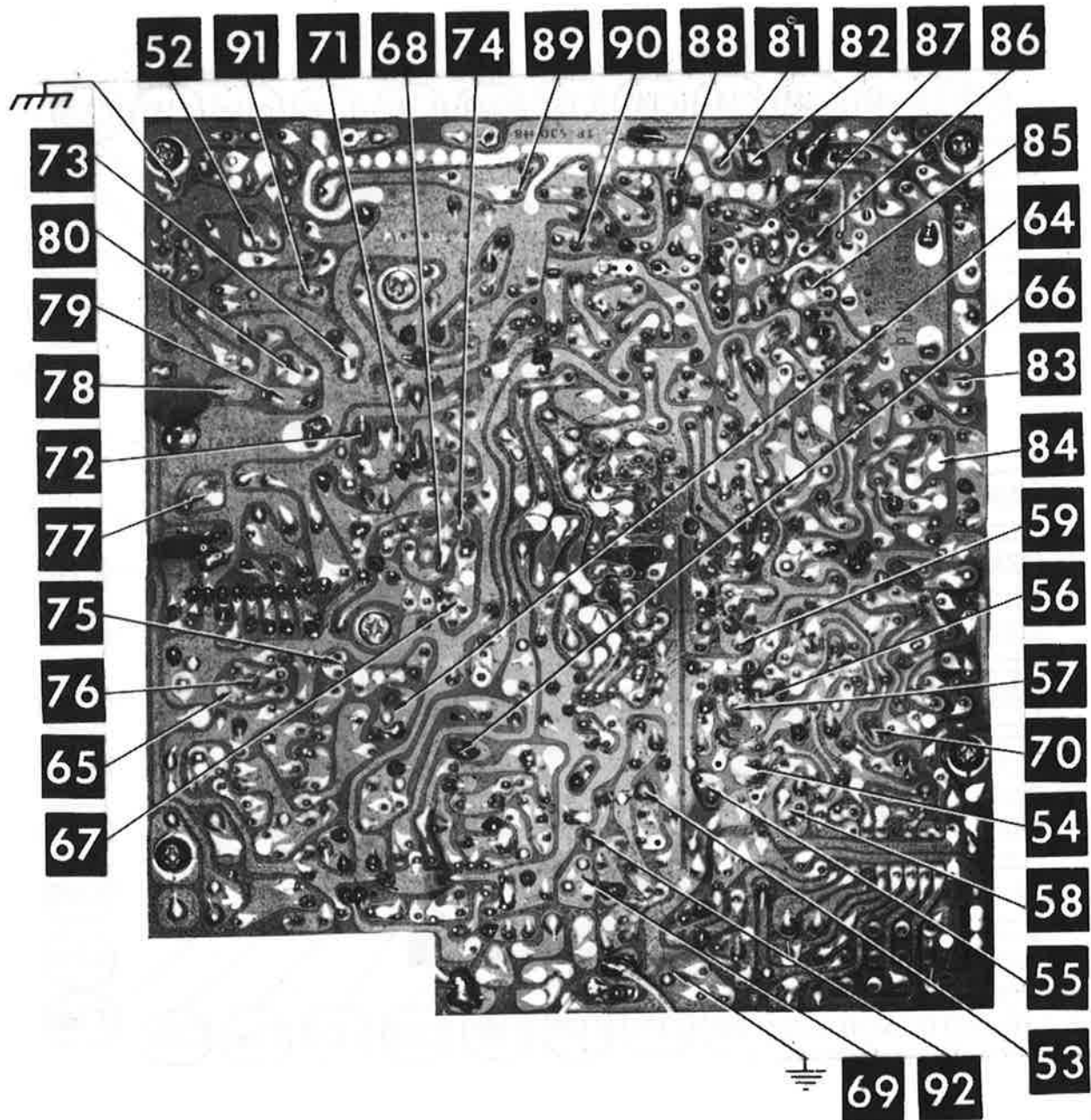


MAIN BOARD



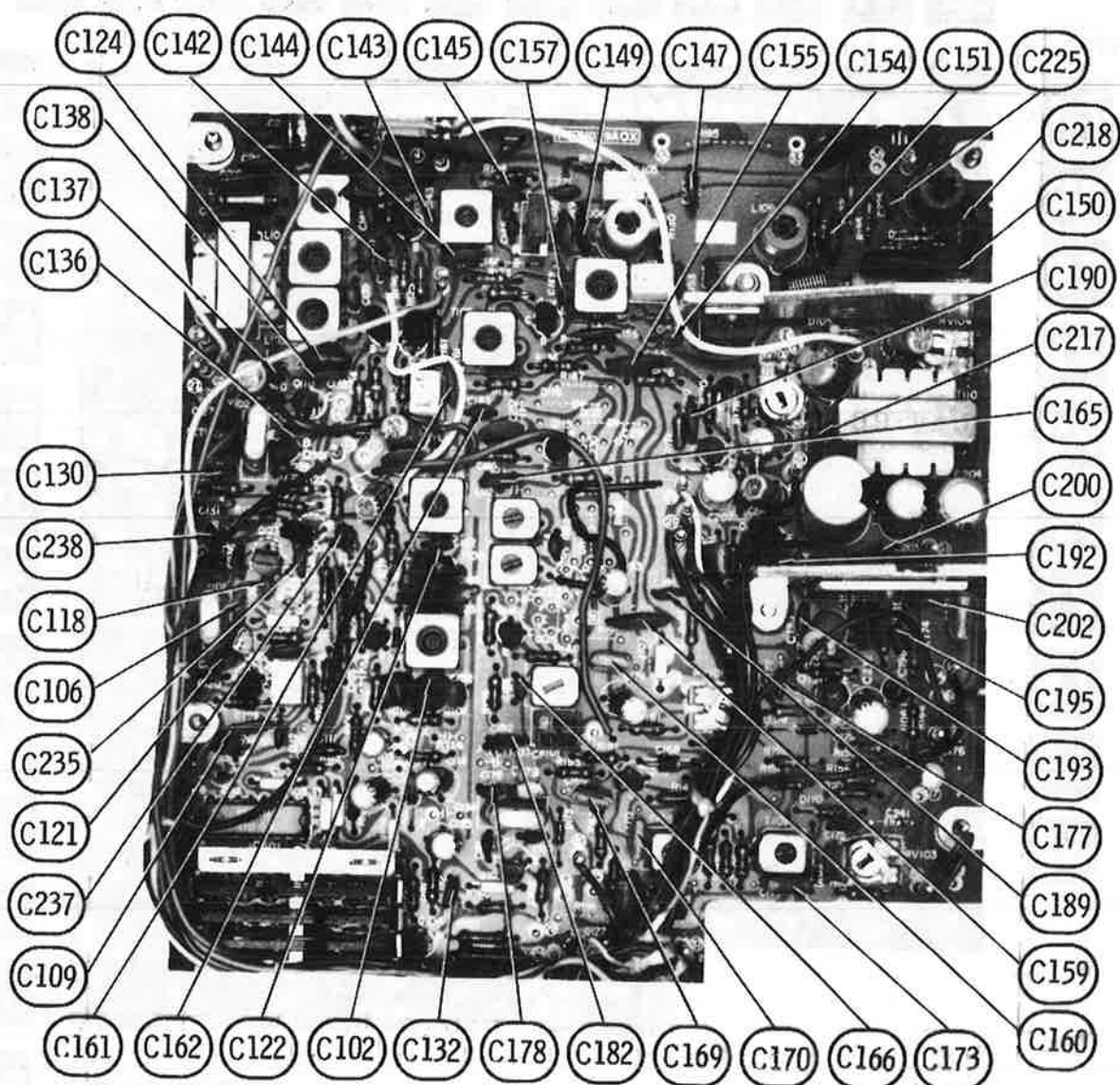
## MAIN BOARD



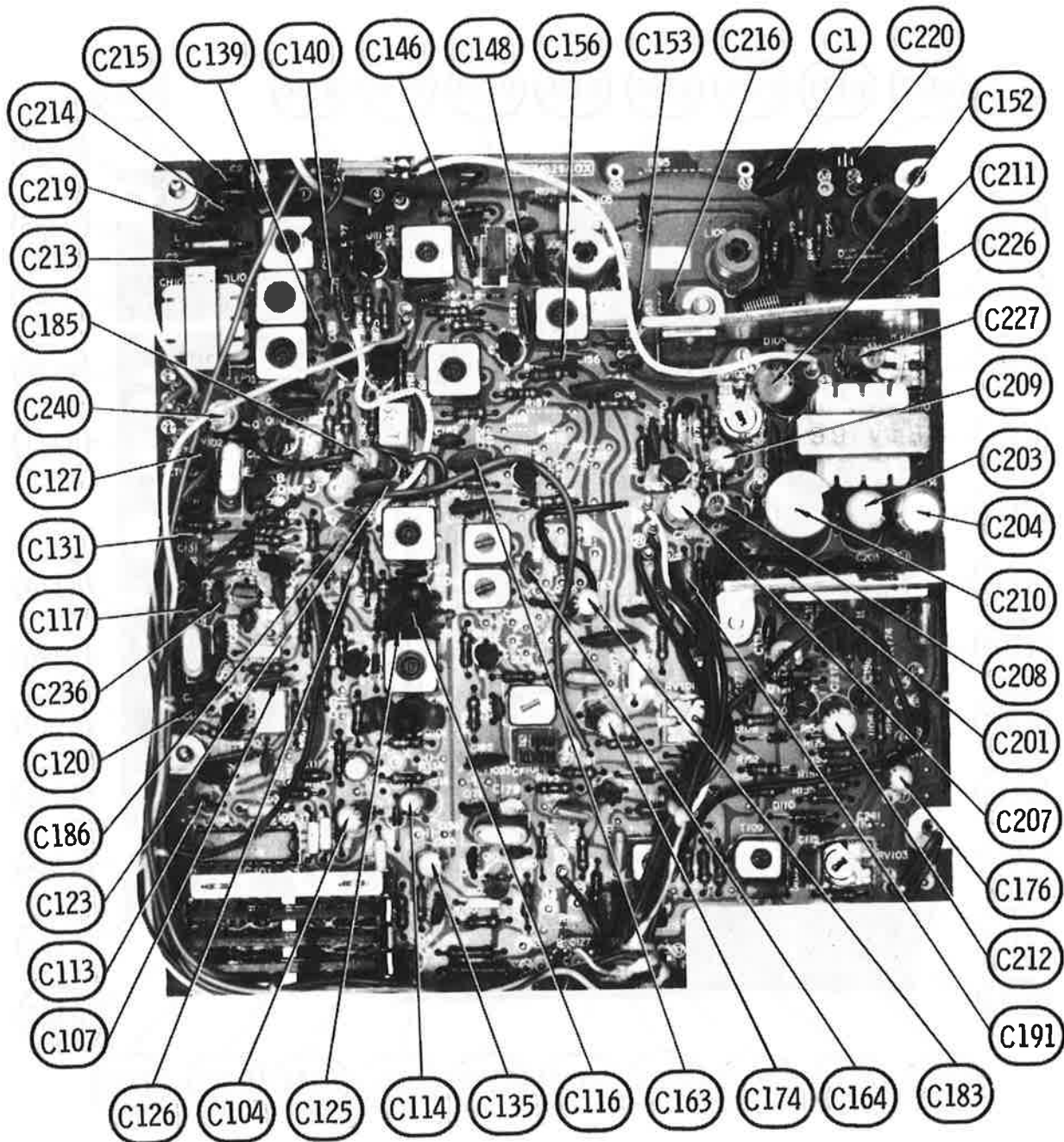


KRACO MODEL KCB-2320A

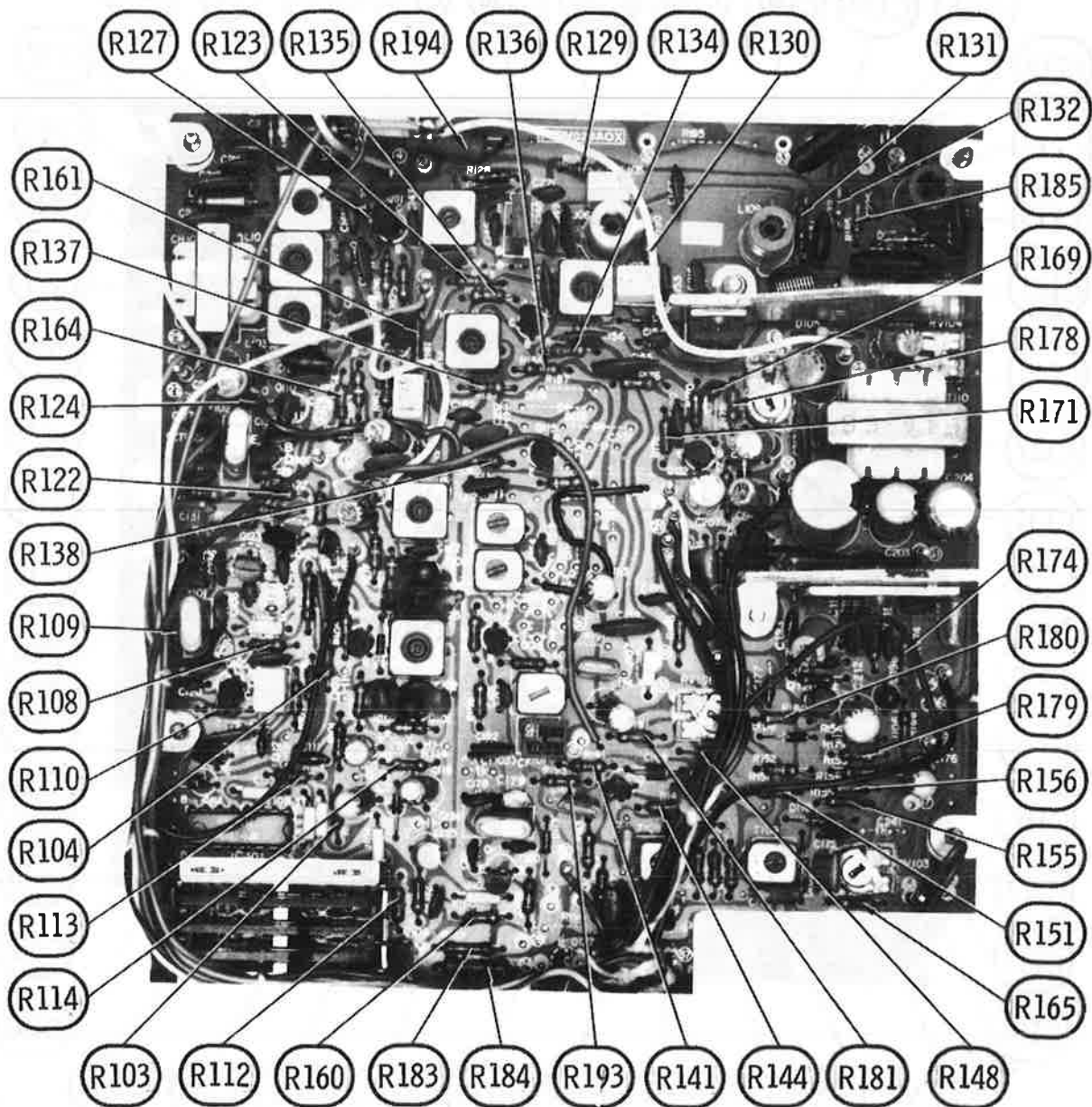
MAIN BOARD



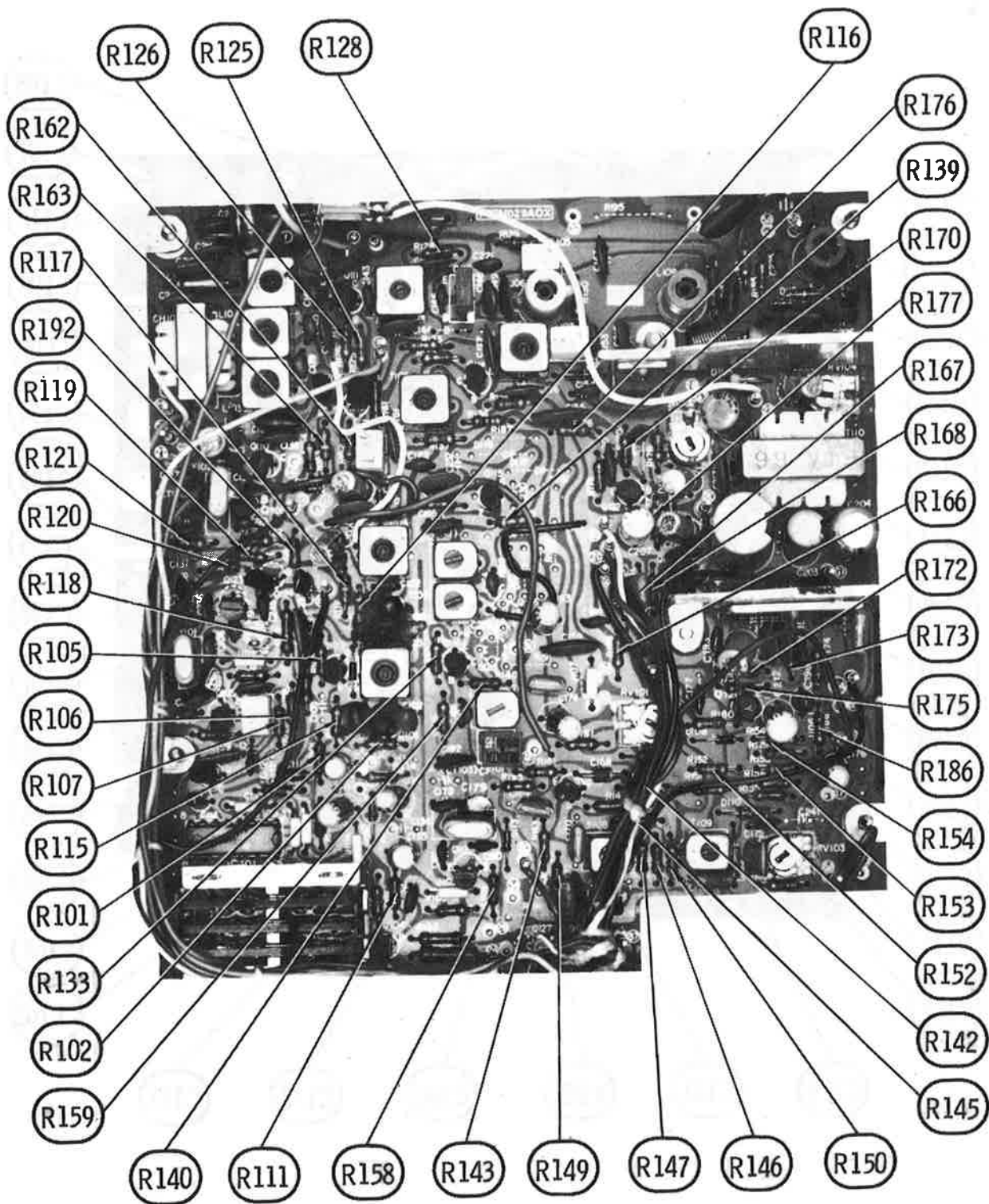
MAIN BOARD



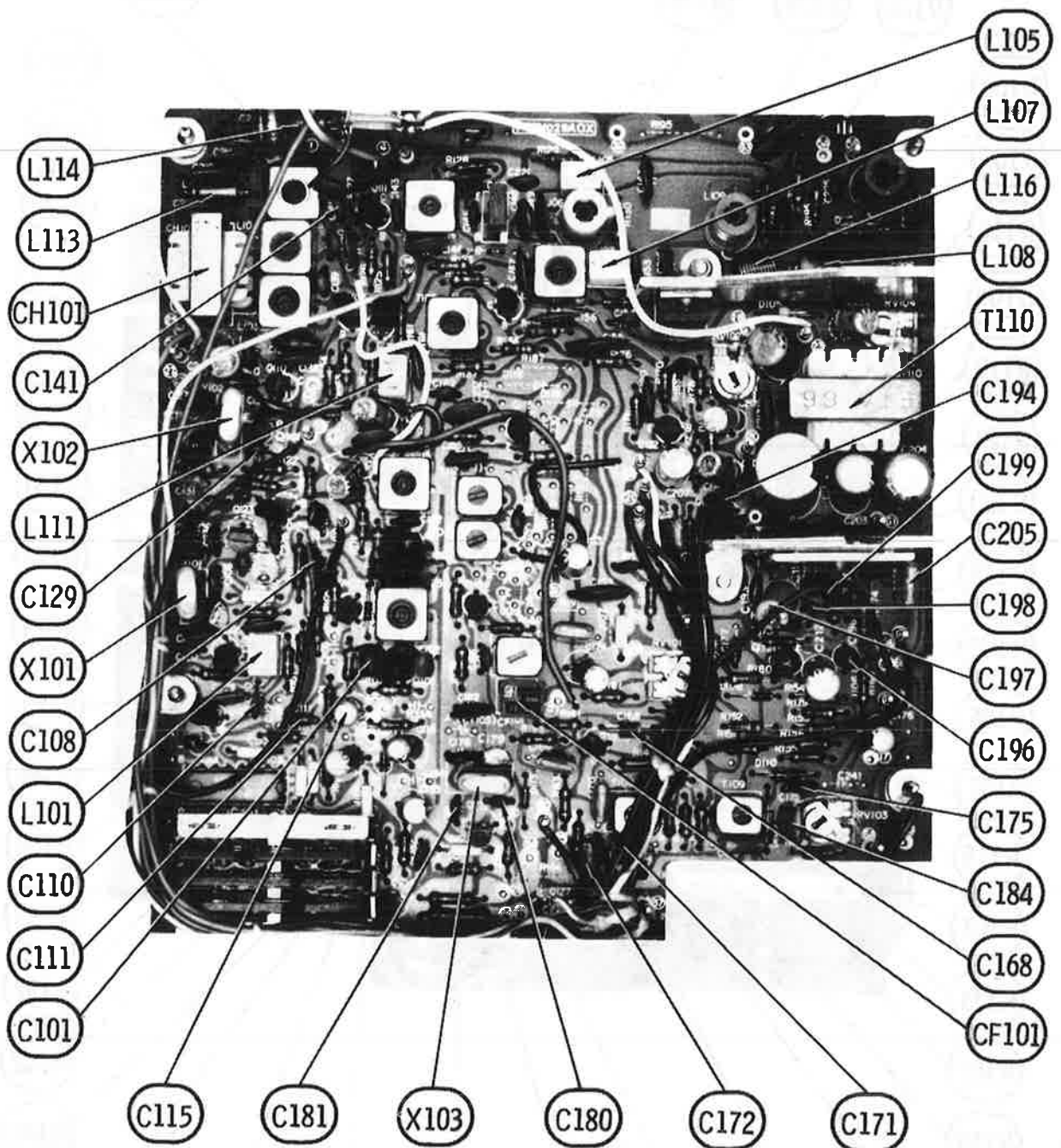
MAIN BOARD



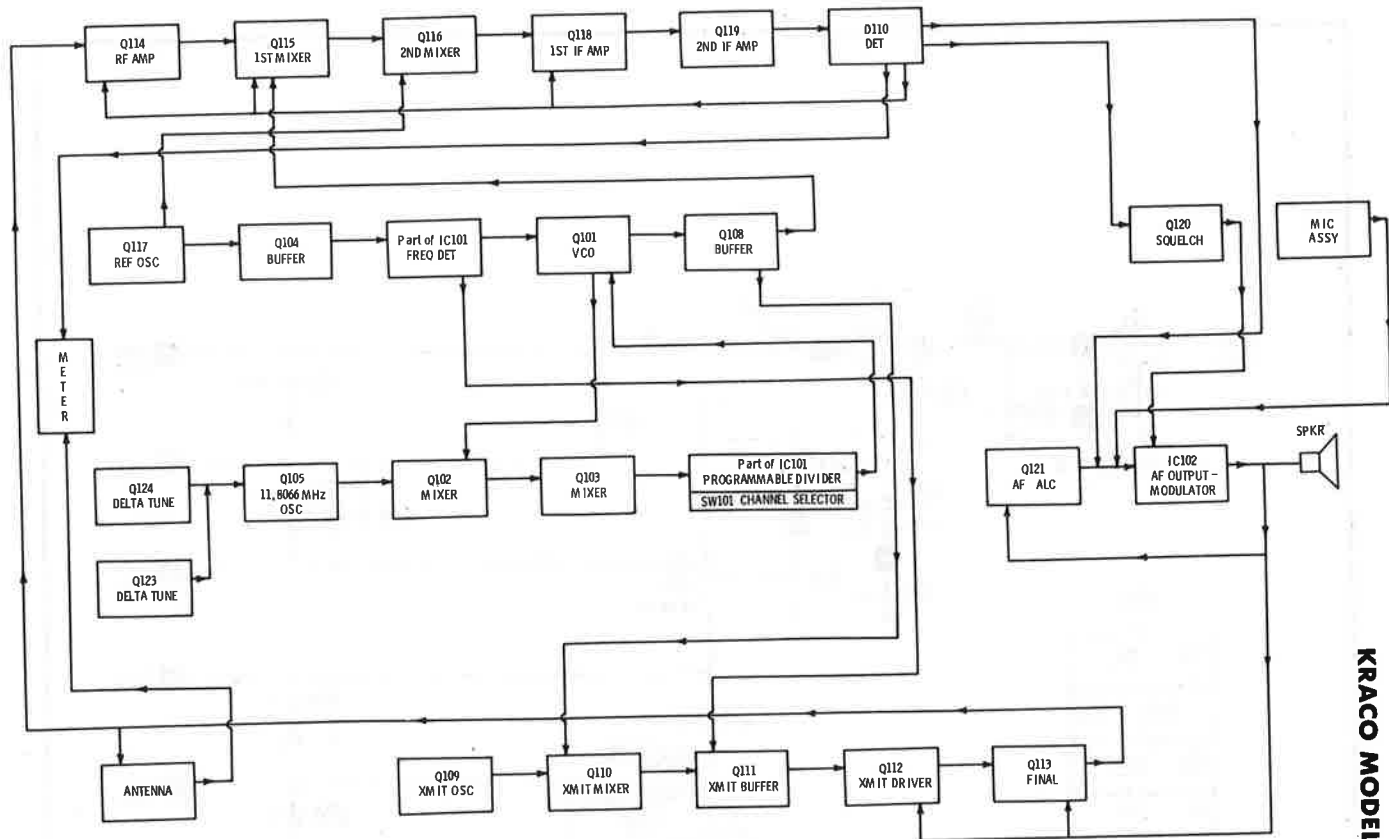
MAIN BOARD



MAIN BOARD



MAIN BOARD



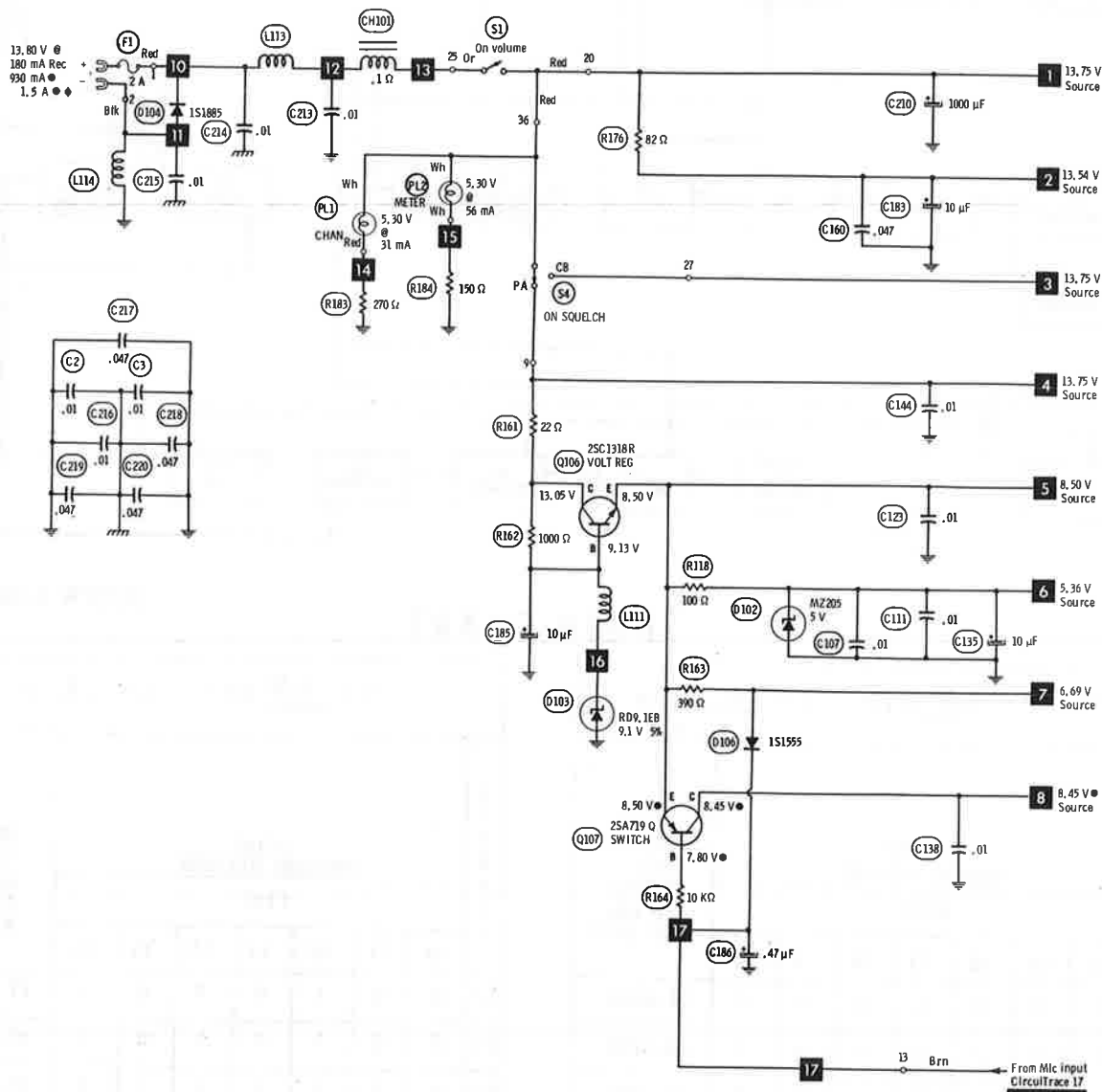
KRACO MODEL KCB-2320A

## TRUTH CHART

## BLOCK DIAGRAM

| 1 = <u>5.36</u> Volts      0 = <u>0</u> Volts |                          |    |    |    |    |    |    |                                           |
|-----------------------------------------------|--------------------------|----|----|----|----|----|----|-------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC101<br>PROGRAM DIVIDER |    |    |    |    |    |    | REC<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP11 |
|                                               | PINS                     |    |    |    |    |    |    |                                           |
|                                               | 10                       | 11 | 12 | 13 | 14 | 15 | 16 |                                           |
| 1                                             | 0                        | 0  | 0  | 0  | 0  | 0  | 0  | 21.0195                                   |
| 2                                             | 0                        | 0  | 0  | 0  | 0  | 0  | 1  | 21.0295                                   |
| 3                                             | 0                        | 0  | 0  | 0  | 0  | 1  | 0  | 21.0395                                   |
| 4                                             | 0                        | 0  | 0  | 0  | 1  | 0  | 0  | 21.0595                                   |
| 5                                             | 0                        | 0  | 0  | 0  | 1  | 0  | 1  | 21.0695                                   |
| 6                                             | 0                        | 0  | 0  | 0  | 1  | 1  | 0  | 21.0795                                   |
| 7                                             | 0                        | 0  | 0  | 0  | 1  | 1  | 1  | 21.0895                                   |
| 8                                             | 0                        | 0  | 0  | 1  | 0  | 0  | 1  | 21.1095                                   |
| 9                                             | 0                        | 0  | 1  | 0  | 0  | 0  | 0  | 21.1195                                   |
| 10                                            | 0                        | 0  | 1  | 0  | 0  | 0  | 1  | 21.1295                                   |
| 11                                            | 0                        | 0  | 1  | 0  | 0  | 1  | 0  | 21.1395                                   |

| 1 = <u>5.36</u> Volts      0 = <u>0</u> Volts |                          |    |    |    |    |    |    |                                           |
|-----------------------------------------------|--------------------------|----|----|----|----|----|----|-------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC101<br>PROGRAM DIVIDER |    |    |    |    |    |    | REC<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP11 |
|                                               | PINS                     |    |    |    |    |    |    |                                           |
|                                               | 10                       | 11 | 12 | 13 | 14 | 15 | 16 |                                           |
| 12                                            | 0                        | 0  | 1  | 0  | 1  | 0  | 0  | 21.1595                                   |
| 13                                            | 0                        | 0  | 1  | 0  | 1  | 0  | 1  | 21.1695                                   |
| 14                                            | 0                        | 0  | 1  | 0  | 1  | 1  | 0  | 21.1795                                   |
| 15                                            | 0                        | 0  | 1  | 0  | 1  | 1  | 1  | 21.1895                                   |
| 16                                            | 0                        | 0  | 1  | 1  | 0  | 0  | 1  | 21.2095                                   |
| 17                                            | 0                        | 1  | 0  | 0  | 0  | 0  | 0  | 21.2195                                   |
| 18                                            | 0                        | 1  | 0  | 0  | 0  | 0  | 1  | 21.2295                                   |
| 19                                            | 0                        | 1  | 0  | 0  | 0  | 1  | 0  | 21.2395                                   |
| 20                                            | 0                        | 1  | 0  | 0  | 1  | 0  | 0  | 21.2595                                   |
| 21                                            | 0                        | 1  | 0  | 0  | 1  | 0  | 1  | 21.2695                                   |
| 22                                            | 0                        | 1  | 0  | 0  | 1  | 1  | 0  | 21.2795                                   |
| 23                                            | 0                        | 1  | 0  | 1  | 0  | 0  | 1  | 21.3095                                   |



✱ Circuitry not used in some versions

--- Circuitry used in some versions

○ See parts list

✱ Nominal value

⬆ Ground

⬆ Chassis

Measurements with switching as shown unless noted:

■ Squelch fully clockwise ♦ 100% modulation

● Transmit

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

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

Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

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Terminal Guide



Q106, Q107

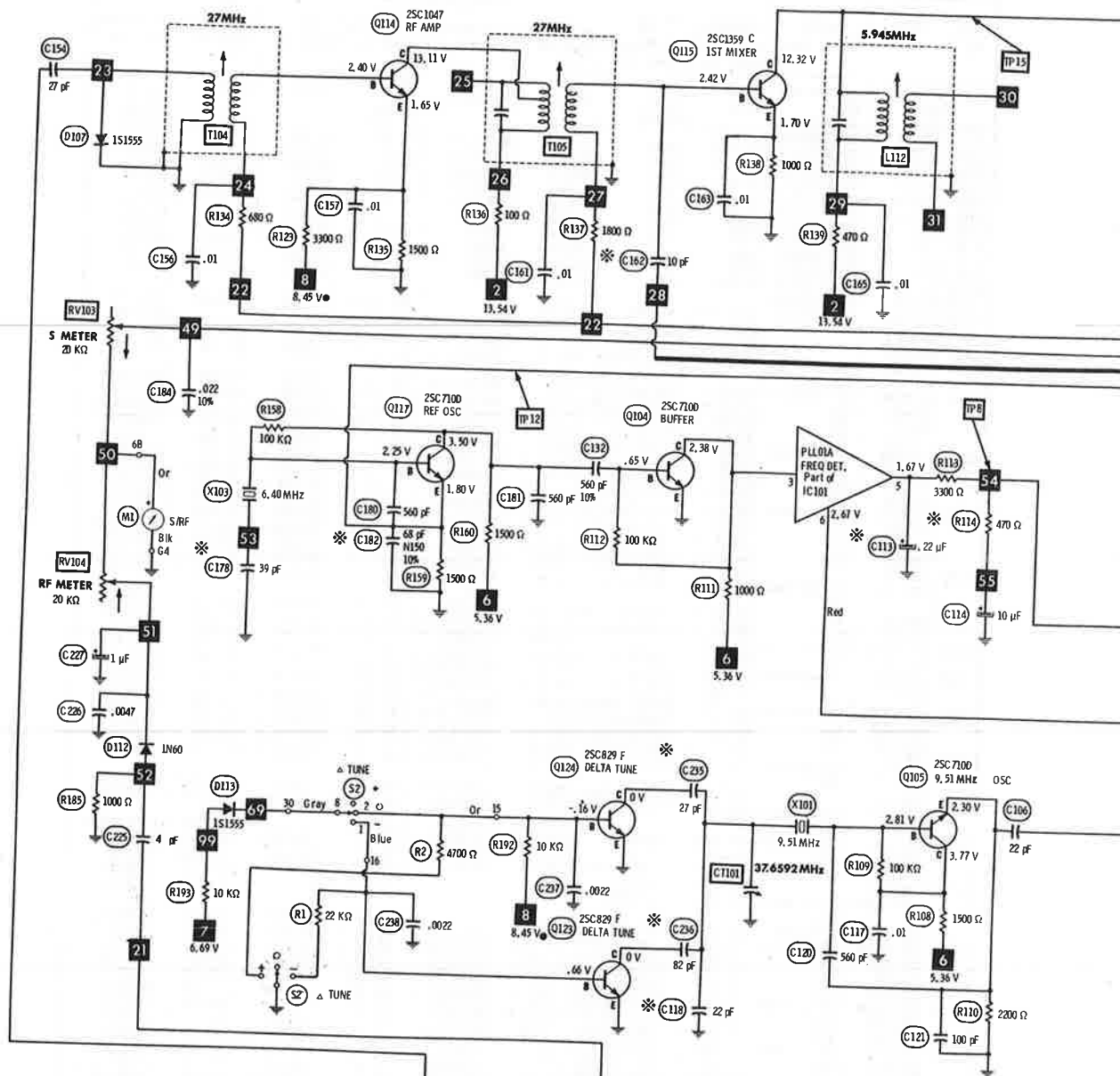
# PARTS LIST AND DESCRIPTION

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

## SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No.                                          | MFR. PART No.                                  | REPLACEMENT DATA                           |                                                            |                                              |                                                      |                                          |                                        |                                       |                                             |
|----------|---------------------------------------------------|------------------------------------------------|--------------------------------------------|------------------------------------------------------------|----------------------------------------------|------------------------------------------------------|------------------------------------------|----------------------------------------|---------------------------------------|---------------------------------------------|
|          |                                                   |                                                | GENERAL ELECTRIC PART No.                  | IR WORKMAN PART No.                                        | MALLORY PART No.                             | MOTOROLA PART No.                                    | RAYTHEON PART No.                        | RCA PART No.                           | SPRAGUE PART No.                      | SYLVANIA PART No.                           |
| D101     | ITT410<br>BB142                                   | QD-CTT410XQ<br>(1)                             | GE-90<br>GE-90                             | D201<br>D201<br>WEP602                                     | PTC311<br>PTC311                             | HEPR2503<br>HEPR2503                                 | RE 195<br>RE 195<br>RE 105<br>RE 114     | SK3126<br>SK3126                       | RT-262<br>RT-262                      | ECG610<br>ECG610<br>ECG135<br>ECG139A       |
| D102     | MZ205                                             | QD-ZM205XE                                     | GE-2D-9.1                                  | 5A4D                                                       | ZB9.1B                                       | HEPR0052                                             | RE 49                                    | SK3030                                 | RT-240                                | ECG116                                      |
| D103     | RD9.1E                                            | QD-ZRD9EXAA                                    | GE-504A                                    | 5A4D                                                       | PTC201                                       | HEPR0052                                             | RE 49                                    | SK3030                                 | RT-213                                | ECG116                                      |
| D104     | 1S1885                                            | QD-SS1885XT                                    | GE-504A                                    | D200                                                       | PTC201                                       | HEPR0602                                             | RE 52                                    | SK3100                                 | RT-218                                | ECG177                                      |
| D105     | V06C                                              | QD-SV06CXXB                                    | GE-300                                     | D200                                                       | PTC214                                       | HEPR0602                                             | RE 52                                    | SK3100                                 | RT-218                                | ECG177                                      |
| D106     | 1S1555                                            | QD-SS1555XT                                    | GE-300                                     | D200                                                       | PTC214                                       | HEPR0602                                             | RE 52                                    | SK3100                                 | RT-218                                | ECG177                                      |
| D107     | 1S1555                                            | QD-SS1555XT                                    | GE-300                                     | D200                                                       | PTC214                                       | HEPR0602                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D108     | 1S1555                                            | QD-SS1555XT                                    | GE-300                                     | D200                                                       | PTC206                                       | HEPR9135                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D109     | 1N60                                              | QD-G1N60XXT                                    | 1N60                                       | 1N60                                                       | PTC206                                       | HEPR9135                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D110     | 1N60                                              | QD-G1N60XXT                                    | 1N60                                       | 1N60                                                       | PTC206                                       | HEPR9135                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D111     | 1N60                                              | QD-G1N60XXT                                    | 1N60                                       | 1N60                                                       | PTC206                                       | HEPR9135                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D112     | 1N60                                              | QD-G1N60XXT                                    | 1N60                                       | 1N60                                                       | PTC206                                       | HEPR9135                                             | RE 47                                    | SK3088                                 | RT-263                                | ECG109                                      |
| D113     | 1S1555                                            | QD-SS1555XT                                    | GE-300                                     | D200                                                       | PTC214                                       | HEPR0602                                             | RE 52                                    | SK3100                                 | RT-218                                | ECG177                                      |
| IC101    | PLL01A                                            | QQ-0PLL01A0                                    | GEIC-179                                   | WEP949                                                     | PTC780                                       |                                                      | RE 357-IC<br>RE 359IC                    | SK3231                                 | TVOM-81                               | ECG1155<br>ECG1166                          |
| IC102    | TA7205P                                           | QQ-M07205AT                                    | GEIC-282                                   | WEP2003                                                    |                                              |                                                      | RE 13 *<br>RE 13 *                       | SK3018 *                               | RT-308 *                              | ECG123A *                                   |
| Q101     | 25C710<br>25C710D                                 | QT-C0710XBE<br>(1)                             | GE-211 *<br>GE-211 *                       | (IR)25C710<br>(IR)25C710                                   | PTC115<br>PTC115                             | HEPS0016 *<br>HEPS0016 *                             | RE 13 *<br>RE 13 *                       | SK3018 *                               | RT-308 *                              | ECG123A *                                   |
| Q102     | 25C829B<br>25C829<br>25C710<br>25C839             | QT-C0829XAN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-20 *<br>GE-211 *<br>GE-61 *  | (IR)25C829B<br>(IR)25C710<br>(IR)25C644<br>(IR)25C829B     | PTC121 *<br>PTC121 *<br>PTC115<br>PTC132 *   | HEPS0015 *<br>HEPS0015 *<br>HEPS0016 *<br>HEPS0015 * | RE 9 *<br>RE 9 *<br>RE 13 *<br>RE 13 *   | SK3122<br>SK3122<br>SK3018 *           | RT-308<br>RT-308<br>RT-308            | ECG229 *<br>ECG229 *<br>ECG123A *           |
| Q103     | 25C829B<br>25C829<br>25C710<br>25C839             | QT-C0829XAN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-20 *<br>GE-211 *<br>GE-61 *  | (IR)25C829B<br>(IR)25C710<br>(IR)25C644<br>(IR)25C829B     | PTC121 *<br>PTC121 *<br>PTC115<br>PTC132 *   | HEPS0015 *<br>HEPS0015 *<br>HEPS0016 *<br>HEPS0015 * | RE 9 *<br>RE 9 *<br>RE 13 *<br>RE 13 *   | SK3122<br>SK3122<br>SK3018 *           | RT-308<br>RT-308<br>RT-308            | ECG229 *<br>ECG229 *<br>ECG123A *           |
| Q104     | 25C829B<br>25C829<br>25C710<br>25C839             | QT-C0829XAN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-20 *<br>GE-211 *<br>GE-61 *  | (IR)25C829B<br>(IR)25C710<br>(IR)25C644<br>(IR)25C829B     | PTC121 *<br>PTC121 *<br>PTC115<br>PTC132 *   | HEPS0015 *<br>HEPS0015 *<br>HEPS0016 *<br>HEPS0015 * | RE 9 *<br>RE 9 *<br>RE 13 *<br>RE 13 *   | SK3122<br>SK3122<br>SK3018 *           | RT-308<br>RT-308<br>RT-308            | ECG229 *<br>ECG229 *<br>ECG123A *           |
| Q105     | 25C710<br>25C710D                                 | QT-C0710XBE<br>(1)                             | GE-211 *<br>GE-211 *                       | (IR)25C710<br>(IR)25C710                                   | PTC115<br>PTC115                             | HEPS0016 *<br>HEPS0016 *                             | RE 13 *<br>RE 13 *                       | SK3018 *                               | RT-308 *                              | ECG123A *                                   |
| Q106     | 25C829<br>25C839<br>25C1318Q<br>25C1318           | QT-C1318XAN<br>(1)<br>(1)<br>(1)               | GE-20 *<br>GE-20 *<br>GE-210 *<br>GE-210 * | (IR)25C829B<br>(IR)25C644<br>TR-21 *<br>TR-21 *            | PTC132 *<br>PTC178<br>PTC178<br>PTC103 *     | HEPS0015 *<br>HEPS0015 *<br>HEPS0015 *<br>HEPS0019 * | RE 13 *<br>RE 17 *<br>RE 17 *<br>RE 26 * | SK3018 *<br>SK3122<br>SK3122<br>SK3114 | RT-308<br>RT-302<br>RT-302<br>RT-305  | ECG123A *<br>ECG128 *<br>ECG128 *<br>ECG290 |
| Q107     | 25A719Q<br>25A719                                 | QT-A0719XAN<br>(1)                             | GE-269<br>GE-269                           | TR-28 *<br>TR-28 *                                         | PTC103 *<br>PTC103 *                         | HEPS0019 *                                           | RE 26 *                                  | SK3114                                 | RT-305                                | ECG290                                      |
| Q108     | 25C1359B<br>25C1359<br>25C1047                    | QT-C1359XAN<br>(1)<br>(1)<br>(1)               | GE-212<br>GE-212<br>GE-60 *                | (IR)25C380A0<br>(IR)25C380A0<br>(IR)25C829B                | PTC121 *<br>PTC121 *<br>PTC132 *             | HEPS0014 *<br>HEPS0014 *<br>HEPS0016 *               | RE 192<br>RE 192<br>RE 28 *              | SK3038 *<br>SK3038 *<br>SK3018 *       | RT-308<br>RT-107<br>RT-308            | ECG199<br>ECG199<br>ECG161 *                |
| Q109     | 25C710<br>25C710D                                 | QT-C0710XBE<br>(1)                             | GE-211 *<br>GE-211 *                       | (IR)25C710<br>(IR)25C710                                   | PTC115<br>PTC115                             | HEPS0016 *<br>HEPS0016 *                             | RE 13 *<br>RE 13 *                       | SK3018 *                               | RT-308 *                              | ECG123A *                                   |
| Q110     | 25C710<br>25C1687                                 | QT-C1687XAN<br>(1)                             | GE-211 *<br>GE-20 *                        | (IR)25C710<br>TR-24 *                                      | PTC115<br>PTC121 *                           | HEPS0016 *<br>HEPS0015 *                             | RE 13 *<br>RE 13 *                       | SK3018 *                               | RT-107A *                             | ECG123A *                                   |
| Q111     | 25C1687<br>25C1688<br>25C1215                     | QT-C1687XAN<br>(1)<br>(1)<br>(1)               | GE-20 *<br>GE-81 *<br>GE-61 *              | TR-24 *<br>TR-24 *<br>(IR)25C717                           | PTC121 *<br>PTC121 *<br>PTC133 *             | HEPS0015 *<br>HEPS0027 *<br>HEPS0020 *               | RE 13 *<br>RE 13 *<br>RE 9               | SK3018 *<br>SK3137 *<br>SK3039         | RT-107A *<br>RT-172 *<br>RT-107A      | ECG123A *<br>ECG123A *<br>ECG107            |
| Q112     | 25C1760<br>25C1760-3                              | QT-C1760XAS<br>(1)                             | GE-276<br>GE-276                           | WEP1014<br>WEP1014                                         |                                              |                                                      | RE 224<br>RE 224                         | SK3039                                 | RT-310<br>RT-310                      | ECG306<br>ECG306                            |
| Q113     | 25C1306                                           | QT-C1306XZA                                    | GE-215                                     | WEP1306                                                    | PTC186                                       | HEPS0016 *                                           | RE 203                                   | SK3197                                 | RT-146                                | ECG235                                      |
| Q114     | 25C1047B<br>25C1047<br>25C784<br>25C1359          | QT-C1047XAN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-60 *<br>GE-60 *<br>GE-60 *<br>GE-212    | (IR)25C829B<br>(IR)25C829B<br>(IR)25C380A0<br>(IR)25C380A0 | PTC132 *<br>PTC132 *<br>PTC132 *<br>PTC121 * | HEPS0016 *<br>HEPS0016 *<br>HEPS0008 *<br>HEPS0014 * | RE 28 *<br>RE 28 *<br>RE 28 *<br>RE 192  | SK3018 *<br>SK3018 *<br>SK3018 *       | RT-107<br>RT-107<br>RT-187            | ECG161 *<br>ECG161 *<br>ECG229 *            |
| Q115     | 25C1359B<br>25C1359<br>25C710                     | QT-C1359XAN<br>(1)<br>(1)<br>(1)               | GE-212<br>GE-212<br>GE-211 *               | (IR)25C380A0<br>(IR)25C380A0<br>(IR)25C710                 | PTC121 *<br>PTC121 *<br>PTC115               | HEPS0014 *<br>HEPS0014 *<br>HEPS0016 *               | RE 192<br>RE 192<br>RE 13 *              | SK3038 *<br>SK3038 *<br>SK3018 *       | RT-308<br>RT-308<br>RT-308            | ECG199<br>ECG199<br>ECG123A *               |
| Q116     | 25C829C<br>25C710<br>25C829                       | QT-C0829XBN<br>(1)<br>(1)<br>(1)               | GE-20 *<br>GE-211 *<br>GE-20 *             | (IR)25C829B<br>(IR)25C710<br>(IR)25C829B                   | PTC121 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 9 *<br>RE 13 *<br>RE 9 *              | SK3122<br>SK3018 *                     | RT-308<br>RT-308                      | ECG229 *<br>ECG123A *                       |
| Q117     | 25C829<br>25C839<br>25C710<br>25C710D             | QT-C0829XBN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-211 *<br>GE-20 *             | (IR)25C829B<br>(IR)25C710<br>(IR)25C829B                   | PTC121 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 9 *<br>RE 13 *<br>RE 13 *             | SK3122<br>SK3018 *                     | RT-308<br>RT-308                      | ECG229 *<br>ECG123A *                       |
| Q118     | 25C829C<br>25C710<br>25C829<br>25C839             | QT-C0829XBN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-211 *<br>GE-20 *             | (IR)25C829B<br>(IR)25C710<br>(IR)25C829B                   | PTC121 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 9 *<br>RE 13 *<br>RE 9 *              | SK3122<br>SK3018 *                     | RT-308<br>RT-308                      | ECG229 *<br>ECG123A *                       |
| Q119     | 25C829C<br>25C710<br>25C829<br>25C839             | QT-C0829XBN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-20 *<br>GE-211 *<br>GE-20 *             | (IR)25C829B<br>(IR)25C710<br>(IR)25C829B                   | PTC121 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 9 *<br>RE 13 *<br>RE 9 *              | SK3122<br>SK3018 *                     | RT-308<br>RT-308                      | ECG229 *<br>ECG123A *                       |
| Q120     | 25C372Y<br>25C372<br>25C945<br>25C828             | QT-C0372XAT<br>(1)<br>(1)<br>(1)<br>(1)        | GE-61 *<br>GE-61 *<br>GE-212<br>GE-61 *    | (IR)25C372<br>(IR)25C372<br>(IR)25C945<br>(IR)25C828A      | PTC121 *<br>PTC121 *<br>PTC121 *<br>PTC121 * | HEPS0015 *<br>HEPS0015 *<br>HEPS0015 *<br>HEPS0015 * | RE 13 *<br>RE 13 *<br>RE 192<br>RE 192   | SK3122<br>SK3122<br>SK3122<br>SK3122   | RT-308<br>RT-107A<br>RT-302<br>RT-302 | ECG123A *<br>ECG199<br>ECG199<br>ECG199     |
| Q121     | 25C828P<br>25C828PQ<br>25C945<br>25C828<br>25C372 | QT-C0828XDN<br>(1)<br>(1)<br>(1)<br>(1)<br>(1) | GE-61 *<br>GE-61 *<br>GE-212<br>GE-61 *    | (IR)25C828A<br>(IR)25C828A<br>(IR)25C945<br>(IR)25C828A    | PTC121 *<br>PTC121 *<br>PTC121 *<br>PTC121 * | HEPS0015 *<br>HEPS0015 *<br>HEPS0015 *<br>HEPS0015 * | RE 192<br>RE 192<br>RE 192<br>RE 192     | SK3122<br>SK3122<br>SK3122<br>SK3122   | RT-302<br>RT-107A<br>RT-302<br>RT-302 | ECG199<br>ECG199<br>ECG199<br>ECG199        |
| Q122     | 25C828P<br>25C945<br>25C828<br>25C372             | QT-C0828XAN<br>(1)<br>(1)<br>(1)<br>(1)        | GE-61 *<br>GE-61 *<br>GE-212<br>GE-61 *    | (IR)25C828A<br>(IR)25C828A<br>(IR)25C945<br>(IR)25C828A    | PTC121 *<br>PTC121 *<br>PTC121 *<br>PTC121 * | HEPS0015 *<br>HEPS0015 *<br>HEPS0015 *<br>HEPS0015 * | RE 192<br>RE 192<br>RE 192<br>RE 192     | SK3122<br>SK3122<br>SK3122<br>SK3122   | RT-302<br>RT-107A<br>RT-302<br>RT-302 | ECG199<br>ECG199<br>ECG199<br>ECG199        |
| Q123     | 25C839F<br>25C710<br>25C829<br>25C839             | QT-C0839XCA<br>(1)<br>(1)<br>(1)<br>(1)        | GE-61 *<br>GE-211 *<br>GE-20 *             | (IR)25C644<br>(IR)25C710<br>(IR)25C829B                    | PTC132 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 13 *<br>RE 9 *<br>RE 13 *             | SK3122<br>SK3018 *                     | RT-308<br>RT-308                      | ECG123A *                                   |
| Q124     | 25C839F<br>25C710<br>25C829                       | QT-C0839XCA<br>(1)<br>(1)<br>(1)               | GE-61 *<br>GE-211 *<br>GE-20 *             | (IR)25C644<br>(IR)25C710<br>(IR)25C829B                    | PTC132 *<br>PTC115<br>PTC121 *               | HEPS0015 *<br>HEPS0016 *<br>HEPS0015 *               | RE 13 *<br>RE 13 *<br>RE 9 *             | SK3018 *                               | RT-308                                | ECG123A *                                   |

\* Lead configuration may vary from original. (2) Used in some versions. Check pin identification before installing.  
(1) Used in some versions.



- Circuitry not used in some versions
- Circuitry used in some versions
- See parts list
- \* Nominal value
- ⊕ Ground
- Chassis

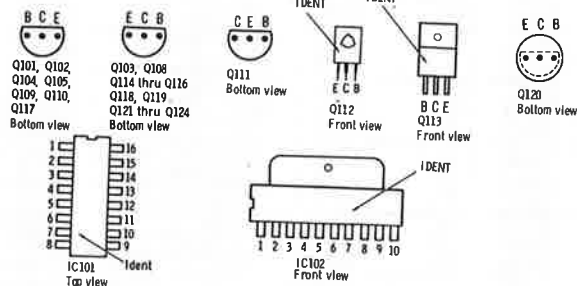
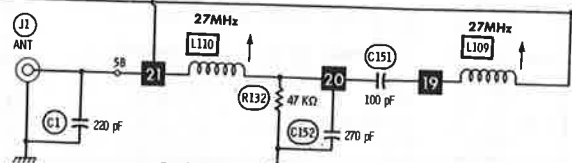
Measurements with switching as shown unless noted:

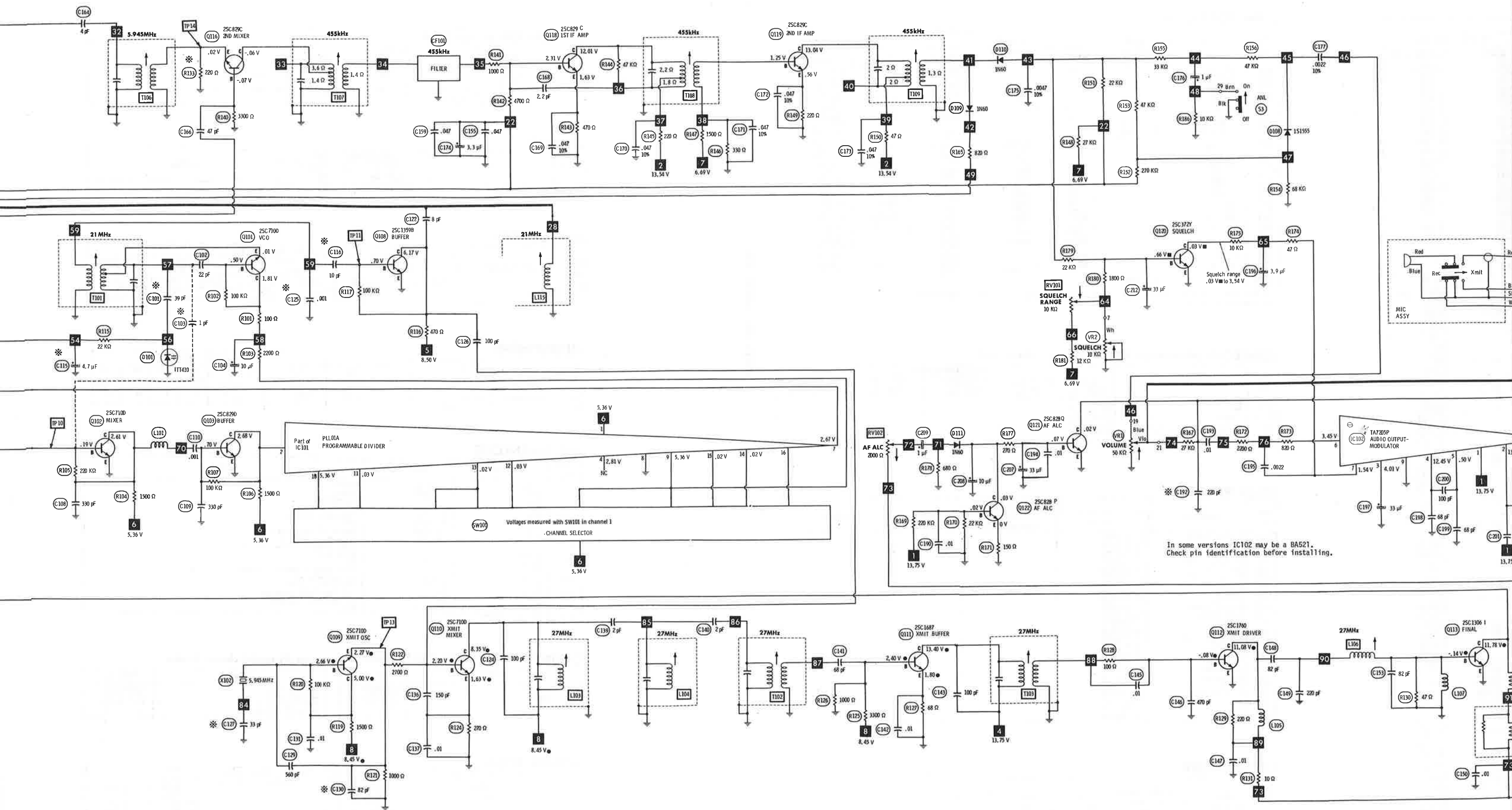
- Squelch fully clockwise
- ◆ 100% modulation
- Transmit

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH CIRCUITRACE

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PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING   | REPLACEMENT DATA |                           |                  |                  |              |
|----------|----------|------------------|---------------------------|------------------|------------------|--------------|
|          |          | MFR. PART No.    | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |          |                  |                           |                  | Q-LINE           | GENERAL LINE |
| C104     | 10 16V   | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C113     | .22 50V  | CE-EGR22ZMN      |                           | TDC224M050EL     | QDT1-10          | SD50-R229    |
| C114     | 10 16V   | CE-ED100ZMN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C115     | 4.7 25V  | CE-EE4R7ZMN      | PC5-50                    | VTT4R7B50        | QV1-27           | EV-1319      |
| C135     | 10 16V   | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C174     | 3.3 25V  | CE-EE3R3ALN      | PC5-50                    | VTT3R3A50        | QV1-23           | EV-1318      |
| C176     | 1 50V    | CE-EG010ALN      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615      |
| C183     | 10 16V   | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C185     | 10 16V   | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C186     | .47 50V  | CE-EGR47ALN      | PC1-50                    | VTT4R7A63        | QV1-3            | EV-1610      |
| C196     | 3.9 10V  | CS-SE5R6MDN      |                           | TDC475M010EL     | QDT1-48          | SD10-4R79    |
| C197     | 33 6.3V  | CE-EB330ANN      | PC30-25                   | VTT33B10         | QV1-61           | EV-1125      |
| C203     | 47 16V   | CE-ED470ALN      | PC50-16                   | VTT47D16         | QV1-73           | EV-1226      |
| C204     | 220 16V  | CE-AD221ZLS      | PC250-25                  | VTT220H16        | QV1-117          | EV-1240      |
| C207     | 33 6.3V  | CE-EB330ALN      | PC30-25                   | VTT33B10         | QV1-61           | EV-1125      |
| C208     | 10 16V   | CE-ED100ALN      | PC10-25                   | VTT10B25         | QV1-41           | EV-1222      |
| C209     | 1 50V    | CE-EG010ALN      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615      |
| C210     | 1000 16V | CE-ED102ZMN      | PC1000-16                 | VTT1000L16       | QV1-183          | EV-1260      |
| C211     | 47 25V   | CE-AE470ZLS      | PC50-25                   | VTT47E25         | QV1-75           | EV-1326      |
| C212     | 33 6.3V  | CE-EB330ALN      | PC30-25                   | VTT33B10         | QV1-61           | EV-1125      |
| C227     | 1 50V    | CE-EG010ALN      | PC1-50                    | VTT1A50          | QV1-11           | EV-1615      |
| C240     | 33 16V   | CE-ED330ALN      | PC30-25                   | VTT33D25         | QV1-63           | EV-1325      |

CAPACITORS

| ITEM No. | RATING       | MFR. PART No. | REPLACEMENT DATA   |                           |                  |                  |              |
|----------|--------------|---------------|--------------------|---------------------------|------------------|------------------|--------------|
|          |              |               | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |              |               |                    |                           |                  | Q-LINE           | GENERAL LINE |
| C1       | 220 500V     | CC-CB390KOM   | DC-103             | CD15FD221J03              | SX322            | QW1-35           | MMA-221      |
| C2       | .01 50V      |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C3       | .01 50V      |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C101     | 39 N150 50V  |               |                    |                           | *                |                  | 10TCP-Q39    |
| C102     | 22 N150 50V  |               | DTZ-2R2            | NPO2P2                    | CNO522           |                  | 10TCP-Q22    |
| C103     | 2 50V        |               |                    |                           | *                |                  | 10TCC-V22    |
| C106     | 22 N150 50V  |               | DC-103             | MGP01                     | TA110            | QC2-141          | 10TCP-Q22    |
| C107     | .01 50V      |               |                    |                           |                  |                  | TG-S10       |
| C108     | 330 N750 50V |               | DTN-390            |                           |                  |                  | 10TCU-T39    |
| C109     | 330 N750 50V |               |                    |                           |                  |                  | 10TCU-T39    |
| C110     | .001 50V     | CC-CB220KOM   | DTZ-10             | DPMS6D1                   | EWFA1A210        | QF1-1            | 1PB-D10      |
| C111     | .01 50V      |               |                    | WMF1S1                    | EWFA1A110        | QF1-91           | 1PB-S10      |
| C116     | 10 50V       |               | DTZ-10             | NPO10                     | CNO410           |                  | 10TCC-Q10    |
| C117     | .01 50V      |               |                    | WMF1S1                    | EWFA1A110        | QF1-91           | 1PB-S10      |
| C118     | 22 N150 50V  |               | DD-561             |                           | *                |                  | 10TCP-Q22    |
| C120     | 560 50V      |               |                    |                           |                  |                  | 10TS-T56     |
| C121     | 100 50V      |               | DD-101             | GP100                     | GP356            | QC2-141          | 10TS-T10     |
| C122     | 8 50V        |               |                    | NPO6P8                    | CNO568           |                  | 10TCC-V68    |
| C123     | .01 50V      | CC-CB220KPM   | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C124     | 100 500V     |               |                    | CD15FD101J03              | SX310            | QW1-27           | MMA-101      |
| C125     | .001 50V     |               | DD-101             | DPMS6D1                   | EWFA1A210        | QF1-1            | 1PB-D10      |
| C126     | 100 50V      |               |                    | GP100                     | GP310            |                  | 10TS-T10     |
| C127     | 33 N150 50V  |               | DD-561             |                           | *                |                  | 10TCP-Q33    |
| C129     | 560 50V      |               |                    |                           |                  |                  | 10TS-T56     |
| C130     | 82 50V       |               | DD-820             |                           |                  |                  | 10TS-Q82     |
| C131     | .01 50V      |               |                    |                           |                  |                  | 1PB-S10      |
| C132     | 560 50V      |               | DD-151             | WMF1S1                    | EWFA1A110        | QF1-91           | 10TS-T56     |
| C136     | 150 50V      |               |                    |                           |                  |                  | 10TS-T15     |
| C137     | .01 50V      | CC-CB330KPM   | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C138     | .01 50V      |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C139     | 2 50V        |               | DTZ-2R2            | NPO2P2                    | CNO522           |                  | 10TCC-V22    |
| C140     | 2 50V        |               |                    | NPO2P2                    | CNO522           |                  | 10TCC-V22    |
| C141     | 68 50V       |               | DC-103             | GP68                      | GP468            | QC2-141          | 10TS-Q68     |
| C142     | .01 50V      |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C143     | 100 50V      |               | DD-101             | GP100                     | GP310            |                  | 10TS-T10     |
| C144     | .01 50V      |               |                    |                           |                  |                  | 10TS-T56     |
| C145     | .01 50V      |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C146     | 470 50V      |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C147     | .01 50V      | CC-CB330KPM   | DD-471             | GP470                     | GP347            | QC2-141          | 10TS-T47     |
| C148     | 82 50V       |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C149     | 220 50V      |               | DD-820             |                           |                  |                  | 10TS-Q82     |
| C150     | .01 50V      |               |                    |                           |                  |                  | 10TS-T22     |
| C151     | 100 500V     |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C152     | 270 500V     |               |                    | CD15FD101J03              | SX310            | QW1-27           | MMA-101      |
| C153     | 82 50V       |               | DD-820             | CD15FD271J03              | SX327            | QW1-37           | MMA-271      |
| C154     | 27 50V       |               |                    |                           | GP482            |                  | 10TS-Q82     |
| C155     | .047 50V     |               | DC-503             |                           | CNO427           |                  | 10TCC-Q27    |
| C156     | .01 50V      |               |                    | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C157     | .01 50V      | CC-CB390KPM   | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C158     | .01 50V      |               |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C159     | .047 50V     |               | DC-503             | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C160     | .047 50V     |               |                    | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C161     | .01 50V      |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C162     | 10 50V       |               |                    | NPO10                     | CNO410           |                  | 10TCC-Q10    |
| C163     | .01 50V      |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C164     | 4 50V        |               |                    | NPO4P7                    | CNO547           |                  | 10TCC-V47    |
| C165     | .01 50V      |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C166     | 47 50V       |               |                    | NPO47                     | CNO447           |                  | 10TCC-Q47    |
| C168     | 2.2 500V     | CC-CB390KPM   | DTZ-2R2            | NPO2P2                    | CNO522           |                  | 10TCC-V22    |
| C169     | .047 50V     |               |                    | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C170     | .047 50V     |               | DC-103             | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C171     | .047 50V     |               |                    | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C172     | .047 50V     |               | DC-103             | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C173     | .047 50V     |               |                    | DPMS2S47                  | EWFA1A147        | QF1-171          | 1PB-S47      |
| C175     | .0047 50V    |               | DC-103             | WMF1D47                   | EWFA1A247        | QF1-57           | 1PB-D47      |
| C177     | .0022 50V    |               |                    | DPMS6D22                  | EWFA1A22         |                  | 6PS-D22      |
| C178     | 39 N150 50V  |               | DD-561             |                           | *                |                  | 10TCP-Q39    |
| C180     | 560 50V      |               |                    |                           | GP356            |                  | 10TS-T56     |
| C181     | 560 50V      | CC-CB680KPM   | DD-561             |                           | GP356            |                  | 10TS-T56     |
| C182     | 68 N150 50V  |               |                    |                           | *                |                  | 10TCP-Q68    |
| C184     | .022 50V     |               |                    | DPMS2S22                  | EWFA1A22         | QF1-127          | 1PB-S22      |

PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

| ITEM No. | RATING      | MFR. PART No.              | REPLACEMENT DATA   |                           |                  |                  |              |
|----------|-------------|----------------------------|--------------------|---------------------------|------------------|------------------|--------------|
|          |             |                            | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |             |                            |                    |                           |                  | Q-LINE           | GENERAL LINE |
| C189     | .0022 50V   | CC-CB680KOM<br>CC-CB680KOM | DD-222             |                           | GP222            | QC2-97           | 56A-D22      |
| C190     | .01 50V     |                            | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C191     | .022 50V    |                            |                    | DPMS2S22                  | EWFA1A122        | QF1-127          | 1PB-S22      |
| C192     | 220 50V     |                            | DD-221             |                           | GP322            |                  | 10TS-T22     |
| C193     | .01 50V     |                            |                    | WMF1S1                    | EWFA1A110        | QF1-91           | 1PB-S10      |
| C194     | .01 50V     |                            | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C195     | .0022 50V   |                            |                    |                           | GP222            | QC2-97           | 56A-D22      |
| C198     | 68 N150 50V |                            | DD-222             |                           | *                |                  | 10TCP-Q68    |
| C199     | 68 N150 50V |                            |                    |                           |                  |                  | 10TCP-Q68    |
| C200     | 100 50V     |                            | DD-101             | GP100                     | GP310            |                  | 10TS-T10     |
| C201     | .068 50V    |                            |                    | WMF1S68                   | EWFA1A168        | QF1-195          | 1PB-S68      |
| C202     | 100 50V     |                            | DD-101             | GP100                     | GP310            |                  | 10TS-T10     |
| C205     | .068 50V    |                            |                    | WMF1S68                   | EWFA1A168        | QF1-195          | 1PB-S68      |
| C213     | .01 50V     |                            | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C214     | .01 50V     |                            |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C215     | .01 50V     |                            | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C216     | .01 50V     |                            |                    | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C217     | .047 50V    |                            | DC-503             | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C218     | .047 50V    |                            |                    | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C219     | .047 50V    |                            | DC-503             | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C220     | .047 50V    |                            |                    | MGP05                     | TA150            | QC2-207          | TG-S50       |
| C225     | 4 50V       | CT-Z7200H01                | DTZ-4R7            | NP04P7                    | CNO547           |                  | 10TCC-V47    |
| C226     | .0047 50V   |                            |                    | GP4700                    | GP247            |                  | 56A-D47      |
| C235     | 27 50V      |                            | DD-820             |                           | CNO427           |                  | 10TCC-Q27    |
| C236     | 82 50V      |                            |                    |                           | GP482            |                  | 10TS-Q82     |
| C237     | .0022 50V   |                            | DD-222             |                           | GP222            | QC2-97           | 56A-D22      |
| C238     | .0022 50V   |                            |                    |                           | EWFA1A222        |                  | 6PS-D22      |
| CT101    | 20          |                            |                    | DPMS6D22                  |                  |                  |              |

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
(1) Used in some versions.

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

| ITEM No. | FUNCTION            | RESISTANCE | REPLACEMENT DATA |                    |                    |                  |              |
|----------|---------------------|------------|------------------|--------------------|--------------------|------------------|--------------|
|          |                     |            | MFR. PART No.    | CENTRALAB PART No. | CLAROSTAT PART No. | MALLORY PART No. | TRW PART No. |
| RV101    | Squelch Range       | 10K        | RP-GBN10301      |                    |                    |                  |              |
| RV102    | AMC                 | 2000       | RP-GBN20201      |                    |                    |                  |              |
| RV103    | S Meter             | 20K        | RP-GBN20301      |                    |                    |                  |              |
| RV104    | RF Meter            | 20K        | RP-GBN20301      |                    |                    |                  |              |
| VR1      | Volume/Power Switch | 50K        | RVB503A01        |                    |                    |                  |              |
| VR2      | Squelch/PA Switch   | 10K        | RVJE103B03       |                    |                    |                  |              |

COILS (RF-IF)

| ITEM No. | FUNCTION           | REPLACEMENT DATA |                      |                 | REMARKS |
|----------|--------------------|------------------|----------------------|-----------------|---------|
|          |                    | PART No.         | OTHER IDENTIFICATION | MILLER PART No. |         |
| L101     | RF Choke (22uH)    | LF-220KD01N      |                      |                 |         |
| L103     | Xmit Mixer         | TR-10CD004S      |                      |                 |         |
| L104     | Xmit Mixer         | TR-10CD005S      |                      |                 |         |
| L105     | RF Choke (2.2uH)   | LF-2R2KD01N      |                      |                 |         |
| L106     | Xmit Driver        | TR-A5C2001M      |                      |                 |         |
| L107     | RF Choke (68uH)    | LF-680KD01N      |                      |                 |         |
| L108     | RF Choke           | LD-ADX3825N      |                      |                 |         |
| L109     | Final              | TR-A5C2002M      |                      |                 |         |
| L110     | Pi Filter          | TR-A5C2003M      |                      |                 |         |
| L111     | RF Choke (68uH)    | LF-680KD01N      |                      |                 |         |
| L112     | IF (5.945MHz)      | TR-07MB007N      |                      |                 |         |
| L113     | RF Choke           | LD-ADB4024B      |                      |                 |         |
| L114     | RF Choke           | LD-ADB4024B      |                      |                 |         |
| L115     | VCO Buffer (21MHz) | TR-10MD006S      |                      |                 |         |
| L116     | RF Choke           | LA-1KE1011A      |                      |                 |         |
| T101     | VCO (21MHz)        | TR-10CA004S      |                      |                 |         |
| T102     | Xmit Mixer         | TR-10CB001S      |                      |                 |         |
| T103     | Xmit Buffer        | TR-10CP005S      |                      |                 |         |
| T104     | Rec Antenna        | TR-10MP003T      |                      |                 |         |
| T105     | Rec RF             | TR-10CA005S      |                      |                 |         |
| T106     | IF (5.945MHz)      | TR-07MB007N      |                      |                 |         |
| T107     | IF                 | TR-07LA004N      |                      |                 |         |
| T108     | IF                 | TR-07LA005N      |                      |                 |         |
| T109     | IF                 | TR-07LA023N      |                      |                 |         |

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     |          |           |
| C189     | .0022 50V   | CC-CB680KOM<br>CC-CB680KOM | DD-222                                                                                                                           | NGP01<br>DPMS2S22         | GP222                                                                                                                                                | QC2-97           | 5GA-D22          |          |           |
| C190     | .01 50V     |                            | DC-103                                                                                                                           |                           | TA110                                                                                                                                                | QC2-141          | TG-S10           |          |           |
| C191     | .022 50V    |                            | DD-221                                                                                                                           |                           | WMF1S1<br>MGP01                                                                                                                                      | EWFA1A122        | QF1-127          | 1PB-S22  |           |
| C192     | 220 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      | GP322            | QF1-91           | 10TS-T22 |           |
| C193     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      | EWFA1A110        |                  | 1PB-S10  |           |
| C194     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      | TA110            |                  | TG-S10   |           |
| C195     | .0022 50V   |                            | DC-103                                                                                                                           |                           | GP222                                                                                                                                                | QC2-141          |                  | 5GA-D22  |           |
| C198     | 68 N150 50V |                            | DD-222                                                                                                                           | *                         | QC2-97                                                                                                                                               | 10TCP-Q68        |                  |          |           |
| C199     | 68 N150 50V |                            | GP100<br>WMF1S68<br>GP100<br>WMF1S68<br>MGP01<br>MGP01<br>MGP01<br>MGP01<br>MGP05<br>MGP05<br>MGP05<br>MGP05<br>NP04P7<br>GP4700 | *                         | GP310<br>EWFA1A168<br>GP310<br>EWFA1A168<br>TA110<br>TA110<br>TA110<br>TA110<br>TA150<br>TA150<br>TA150<br>TA150<br>TA150<br>TA150<br>TA150<br>TA150 | QF1-195          | 10TCP-Q68        |          |           |
| C200     | 100 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | 10TS-T10         |          |           |
| C201     | .068 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | 1PB-S68          |          |           |
| C202     | 100 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | 10TS-T10         |          |           |
| C205     | .068 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QF1-195          | 1PB-S68  |           |
| C213     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-141          | TG-S10   |           |
| C214     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-141          | TG-S10   |           |
| C215     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-141          | TG-S10   |           |
| C216     | .01 50V     |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-141          | TG-S10   |           |
| C217     | .047 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-207          | TG-S50   |           |
| C218     | .047 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-207          | TG-S50   |           |
| C219     | .047 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-207          | TG-S50   |           |
| C220     | .047 50V    |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | QC2-207          | TG-S50   |           |
| C225     | 4 50V       |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | DTZ-4R7          | CN0547   | 10TCC-V47 |
| C226     | .0047 50V   |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | DD-472           | GP247    | 5GA-D47   |
| C235     | 27 50V      |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  | DD-820<br>DD-222 | CN0427   | 10TCC-Q27 |
| C236     | 82 50V      |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  |                  | GP482    | 10TS-Q82  |
| C237     | .0022 50V   |                            |                                                                                                                                  |                           |                                                                                                                                                      |                  |                  | GP222    | 5GA-D22   |
| C238     | .0022 50V   |                            | DPMS6D22                                                                                                                         | EWFG222                   | QC2-97                                                                                                                                               | 6PS-D22          |                  |          |           |
| CT101    | 20          | CT-Z7200H01                |                                                                                                                                  |                           |                                                                                                                                                      |                  |                  |          |           |

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.  
(1) Used in some versions.

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

| ITEM No. | FUNCTION            | RESIST-ANCE | REPLACEMENT DATA |                    |                    |                  |              |
|----------|---------------------|-------------|------------------|--------------------|--------------------|------------------|--------------|
|          |                     |             | MFCR. PART No.   | CENTRALAB PART No. | CLAROSTAT PART No. | MALLORY PART No. | TRW PART No. |
| RV101    | Squelch Range       | 10K         | RP-GNB10301      |                    |                    |                  |              |
| RV102    | AMC                 | 2000        | RP-GNB20201      |                    |                    |                  |              |
| RV103    | S Meter             | 20K         | RP-GNB20301      |                    |                    |                  |              |
| RV104    | RF Meter            | 20K         | RP-GNB20301      |                    |                    |                  |              |
| VR1      | Volume/Power Switch | 50K         | RVNB503A01       |                    |                    |                  |              |
| VR2      | Squelch/PA Switch   | 10K         | RVJE103B03       |                    |                    |                  |              |

COILS (RF-IF)

| ITEM No. | FUNCTION           | REPLACEMENT DATA |                      |                 | REMARKS |
|----------|--------------------|------------------|----------------------|-----------------|---------|
|          |                    | PART No.         | OTHER IDENTIFICATION | MILLER PART No. |         |
| L101     | RF Choke (22uH)    | LF-220KD01N      |                      |                 |         |
| L103     | Xmit Mixer         | TR-10CD004S      |                      |                 |         |
| L104     | Xmit Mixer         | TR-10CD005S      |                      |                 |         |
| L105     | RF Choke (2.2uH)   | LF-2R2KD01N      |                      |                 |         |
| L106     | Xmit Driver        | TR-A5CZ001M      |                      |                 |         |
| L107     | RF Choke (68uH)    | LF-680KD01N      |                      |                 |         |
| L108     | RF Choke           | LD-ADX3825N      |                      |                 |         |
| L109     | Final              | TR-A5CZ002M      |                      |                 |         |
| L110     | Pi Filter          | TR-A5CZ003M      |                      |                 |         |
| L111     | RF Choke (68uH)    | LF-680KD01N      |                      |                 |         |
| L112     | IF (5.945MHz)      | TR-07MB007N      |                      |                 |         |
| L113     | RF Choke           | LD-ADB4024B      |                      |                 |         |
| L114     | RF Choke           | LD-ADB4024B      |                      |                 |         |
| L115     | VCO Buffer (21MHz) | TR-10MD006S      |                      |                 |         |
| L116     | RF Choke           | LA-1KE1011A      |                      |                 |         |
| T101     | VCO (21MHz)        | TR-10CA004S      |                      |                 |         |
| T102     | Xmit Mixer         | TR-10CB001S      |                      |                 |         |
| T103     | Xmit Buffer        | TR-10CP005S      |                      |                 |         |
| T104     | Rec Antenna        | TR-10MP003T      |                      |                 |         |
| T105     | Rec RF             | TR-10CA005S      |                      |                 |         |
| T106     | IF (5.945MHz)      | TR-07MB007N      |                      |                 |         |
| T107     | IF                 | TR-07LA004N      |                      |                 |         |
| T108     | IF                 | TR-07LA005N      |                      |                 |         |
| T109     | IF                 | TR-07LA023N      |                      |                 |         |

FILTER CHOKE

| ITEM No. | RATINGS            |         |                              | REPLACEMENT DATA         |                     |                | NOTES               |
|----------|--------------------|---------|------------------------------|--------------------------|---------------------|----------------|---------------------|
|          | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000~) | MFCR. PART No.           | THORDARSON PART No. | TRIAD PART No. |                     |
| CH101    | 1.5A               | .12     | .48mH                        | LJ-119H001Y<br>ELA-16(1) | TR523               |                | (1) Number on unit. |

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.       | MFCR. PART No.           | THORDARSON PART No. | TRIAD PART No. |                     |
| T110     | 2.88      | 1 8 2 13.5 | TB-G25B001W<br>ETA-66(1) | TR723               | MCB-16         | (1) Number on unit. |

SPEAKER

| ITEM No. | TYPE          | REPLACEMENT DATA |               | NOTES |
|----------|---------------|------------------|---------------|-------|
|          |               | MFCR. PART No.   | QUAM PART No. |       |
| SP1      | 3" PM, 8 Ohms | ZQA0770802       | 30A0528R      |       |

FUSE DEVICES

| ITEM No. | DESCRIPTION | REPLACEMENT DATA |            |               |        |                     |        |
|----------|-------------|------------------|------------|---------------|--------|---------------------|--------|
|          |             | PART No.         |            | BUSS PART No. |        | LITTELFUSE PART No. |        |
|          |             | DEVICE           | HOLDER     | DEVICE        | HOLDER | DEVICE              | HOLDER |
| F1       | 2A          |                  | ACDC028GEA | AGC2          | HDJ    | 312002              | 150145 |

MICROPHONE

| ITEM No. | REPLACEMENT DATA |             |                 |          | CONNECTION DATA |        |           |           |         |          |
|----------|------------------|-------------|-----------------|----------|-----------------|--------|-----------|-----------|---------|----------|
|          | MFCR. PART No.   | GC PART No. | GC NOISE CANCEL | GC POWER | GC CONNECTOR    | GC Red | GC Shield | GC Yellow | GC Blue | GC Black |
| MIC      | ZG-AAZ50103      | 18-032      | 18-034          | 18-010   | 18-092          | 1      | 2         | 4         | 3       | NC       |

MISCELLANEOUS

| ITEM No. | PART NAME             | PART No.    | NOTES                           |
|----------|-----------------------|-------------|---------------------------------|
| CF101    | Filter                | FB-R455A08H | 455kHz                          |
| J1       | Jack                  | YJC02S002Z  | Antenna                         |
| J2       | Jack                  | YJC04S002Z  | Microphone                      |
| J3       | Jack                  | YJT03S003Z  | PA                              |
| J4       | Jack                  | YJT03S003Z  | External Speaker                |
| M1       | Meter                 | ZMJ2028N02  | S/RF                            |
| PL1      | Lamp                  | ZPA064105U  | Channel (5.30V @ 31mA)          |
| PL2      | Lamp                  | ZPA064105U  | Meter (5.00V @ 32mA)            |
| S1       | Switch                | SR0303102   | Power (Part of Volume Control)  |
| S2       | Switch                | ST020201ZM  | Delta Tune                      |
| S3       | Switch                |             | ANL                             |
| S4       | Switch                |             | CB/PA (Part of Squelch Control) |
| SW101    | Switch                | SR-0724301H | Channel Selector                |
| X101     | Crystal               | XA-S1B2001T | Oscillator (9.51MHz)            |
| X102     | Crystal               | XG-S1A1001T | Xmit Oscillator (5.945MHz)      |
| X103     | Crystal               | XG-S1A2001T | Ref Oscillator (6.40MHz)        |
|          | Printed Circuit Board | APTBM029BT  | Main                            |

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

| ITEM          | PART No.   | ITEM              | PART No.    |
|---------------|------------|-------------------|-------------|
| Knob, Channel | AVKN08Q018 | Cabinet, Top      | MU775S2002  |
| Knob, Control | VN276SP003 | Cabinet, Bottom   | MU772S2002  |
| Escutcheon    | MB726S2011 | Mounting Bracket  | MU-376SB001 |
|               |            | Microphone Holder | MZ-331SN001 |

WIRING DATA

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