

# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

For Supplier Address See PHOTOFACT Index

## NOTE

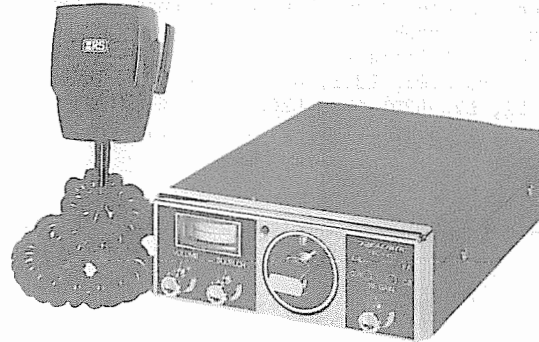
Repair or adjustment of transmitter circuits must be under supervision of a person with first-or second-class radiotelephone license.

(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 TRC-452 (21-1521)

## MANUFACTURER'S SPECIFICATIONS

### RECEIVER

|                              |                                                         |
|------------------------------|---------------------------------------------------------|
| Frequency Coverage:          | All 40 channels 26.965 to 27.405 MHz                    |
| Sensitivity:                 | 0.5 $\mu$ V for 10 dB S + N/N                           |
| Adjacent Channel Rejection:  | Greater than 65 dB                                      |
| Audio Distortion at 1000 Hz: | Less than 10% at 4 watts output                         |
| Intermediate Frequency:      | 9.785 MHz and 455 kHz                                   |
| Squelch:                     | Adjustable from 1 $\mu$ V to about 300 $\mu$ V          |
| Spurious Rejection:          | Greater than 40 dB                                      |
| Image Rejection:             | 45 dB                                                   |
| I.F. Rejection:              | 90 dB 1st IF (9.785 MHz)<br>100 dB 2nd IF (455 kHz)     |
| Current Drain:               | 0.5 to 1.8A (from no signal to max volume,<br>13.8V DC) |

### TRANSMITTER

|                             |                                                                    |
|-----------------------------|--------------------------------------------------------------------|
| Frequency Coverage:         | All 40 channels<br>26.965 to 27.405 MHz                            |
| RF output power:            | 4 watts Max.                                                       |
| Frequency Tolerance:        | Better than $\pm 0.002\%$                                          |
| Spurious Radiation:         | Less than 60 dB                                                    |
| Antenna Impedance Required: | 50 ohms (SO-239 connector mates with PL-259<br>cable plug)         |
| Current Drain:              | 1.0 to 2.3A (from no modulation to full mod-<br>ulation, 13.8V DC) |

Courtesy of the Manufacturer

REALISTIC MODEL TRC-452

**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:  
L204 thru L206, L211, L212, L214 ..... 5009  
L1, L2, L7, L201 thru L203, L207 thru L210 ..... 5440  
VC1 ..... 5000

## SYNTHESIZER ALIGNMENT

| TEST EQUIPMENT                                      | TRANSCIVER   | ADJUST | REMARKS                                                                                 |
|-----------------------------------------------------|--------------|--------|-----------------------------------------------------------------------------------------|
| Input of frequency counter to TP10 (IC4 Pin 9).     | Ch. 19       | VC1    | Adjust for 10.240MHz.                                                                   |
| Input of RF VTVM to TP11 (L7 tap).                  | Ch. 19       | L7     | Adjust for maximum.                                                                     |
| Input of DC meter to TP1.                           | Ch. 1        | L2     | Adjust for 3.00 volts.                                                                  |
| Input of RF VTVM to TP12 (L1, Secondary).           | Ch. 19       | L1     | Adjust for maximum.                                                                     |
| Input of frequency counter to TP12 (L1, Secondary). | Ch. 1        |        | Check for 17.180MHz.<br>Check all channels.<br>See Truth Chart for correct frequencies. |
| Input of frequency counter and RF VTVM to TP201.    | Ch. 19, Xmit | L207   | Adjust for maximum at 9.785MHz.                                                         |

## 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 TP13 (TR203, Base).<br>455kHz, 1000Hz @ 30% modulation. | Ch. 19<br>RF Gain Max<br>Squelch MIN<br>ANL Out | L206, L205,<br>L204 | Adjust for maximum output.                                                 |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation.    | Ch. 19<br>RF Gain Max<br>Squelch MIN<br>ANL Out | L203, L202,<br>L201 | Adjust for maximum output.<br>If necessary, readjust L204, L205, and L206. |

## RECEIVER ADJUSTMENTS

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

| TEST EQUIPMENT                                                                                                    | TRANSCIVER                                      | ADJUST | REMARKS                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation.<br>Output 50,000uV. | Ch. 19<br>RF Gain Max<br>Squelch MIN<br>ANL Out | VR201  | AGC<br>Adjust volume VR202 to obtain 0db.<br>Decrease generator to 50uV.<br>Adjust VR201 so that audio level does not drop more than 10db. |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation.<br>Output 1000uV.   | Ch. 19<br>RF Gain Max<br>ANL Out                | VR204  | SQUELCH RANGE<br>Set squelch control VR203 fully clockwise.<br>Adjust VR204 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                                          | VR205  | RX SIGNAL METER<br>Adjust VR205 for 9 on RX signal scale of meter.                                                                         |

REALISTIC MODEL TRC-452

## TRANSMITTER ALIGNMENT

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

| TEST EQUIPMENT | TRANSCIVER | ADJUST                                | REMARKS                       |
|----------------|------------|---------------------------------------|-------------------------------|
|                | Ch. 19     | L208,L209,<br>L210,L211,<br>L212,L214 | Adjust for maximum.           |
|                | Ch. 19     | L212                                  | Adjust for 4.0 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 adjustment of transmitter.  
See page 4 for channel frequencies.

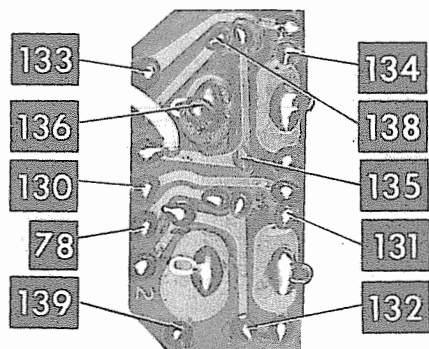
| TEST EQUIPMENT                                                                  | TRANSCIVER | ADJUST | REMARKS                                                                         |
|---------------------------------------------------------------------------------|------------|--------|---------------------------------------------------------------------------------|
| Modulation meter to antenna jack.<br>Inject a 1000Hz, 20mV signal at mic input. | Ch. 19     | VR207  | AMC<br>Adjust VR207 for 100% modulation maximum.                                |
| Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.    | Ch. 19     | VR206  | RF PANEL METER<br>Adjust VR206 so that RF panel meter agrees with RF wattmeter. |

# TRUTH CHART

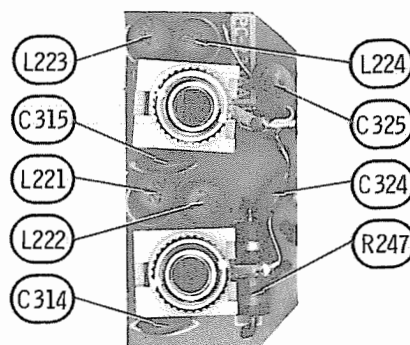
| 1 = <u>4.90</u> Volts      0 = <u>0</u> Volts |                                                                                  |    |    |    |    |    |    |                                                                             |
|-----------------------------------------------|----------------------------------------------------------------------------------|----|----|----|----|----|----|-----------------------------------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC4<br>PROGRAM DIVIDER<br>10kHz Pins 1,2,3,5,6 of IC4.<br>5.120kHz Pin 8 of IC4. |    |    |    |    |    |    | REC &<br>XMIT<br>VCO<br>OUTPUT<br>IN MHZ<br>AT TP12<br>(Secondary<br>of L1) |
|                                               | PINS                                                                             |    |    |    |    |    |    |                                                                             |
|                                               | 22                                                                               | 18 | 17 | 16 | 15 | 14 | 13 |                                                                             |
| 1                                             | 0                                                                                | 0  | 0  | 0  | 0  | 1  | 0  | 17.180                                                                      |
| 2                                             | 0                                                                                | 0  | 0  | 0  | 0  | 1  | 1  | 17.190                                                                      |
| 3                                             | 0                                                                                | 0  | 0  | 0  | 1  | 0  | 0  | 17.200                                                                      |
| 4                                             | 0                                                                                | 0  | 0  | 0  | 1  | 1  | 0  | 17.220                                                                      |
| 5                                             | 0                                                                                | 0  | 0  | 0  | 1  | 1  | 1  | 17.230                                                                      |
| 6                                             | 0                                                                                | 0  | 0  | 1  | 0  | 0  | 0  | 17.240                                                                      |
| 7                                             | 0                                                                                | 0  | 0  | 1  | 0  | 0  | 1  | 17.250                                                                      |
| 8                                             | 0                                                                                | 0  | 1  | 0  | 0  | 0  | 1  | 17.270                                                                      |
| 9                                             | 0                                                                                | 0  | 1  | 0  | 0  | 1  | 0  | 17.280                                                                      |
| 10                                            | 0                                                                                | 0  | 1  | 0  | 0  | 1  | 1  | 17.290                                                                      |
| 11                                            | 0                                                                                | 0  | 1  | 0  | 1  | 0  | 0  | 17.300                                                                      |
| 12                                            | 0                                                                                | 0  | 1  | 0  | 1  | 1  | 0  | 17.320                                                                      |
| 13                                            | 0                                                                                | 0  | 1  | 0  | 1  | 1  | 1  | 17.330                                                                      |
| 14                                            | 0                                                                                | 0  | 1  | 1  | 0  | 0  | 0  | 17.340                                                                      |
| 15                                            | 0                                                                                | 0  | 1  | 1  | 0  | 0  | 1  | 17.350                                                                      |
| 16                                            | 1                                                                                | 0  | 0  | 0  | 0  | 0  | 1  | 17.370                                                                      |
| 17                                            | 1                                                                                | 0  | 0  | 0  | 0  | 1  | 0  | 17.380                                                                      |
| 18                                            | 1                                                                                | 0  | 0  | 0  | 0  | 1  | 1  | 17.390                                                                      |
| 19                                            | 1                                                                                | 0  | 0  | 0  | 1  | 0  | 0  | 17.400                                                                      |
| 20                                            | 1                                                                                | 0  | 0  | 0  | 1  | 1  | 0  | 17.420                                                                      |

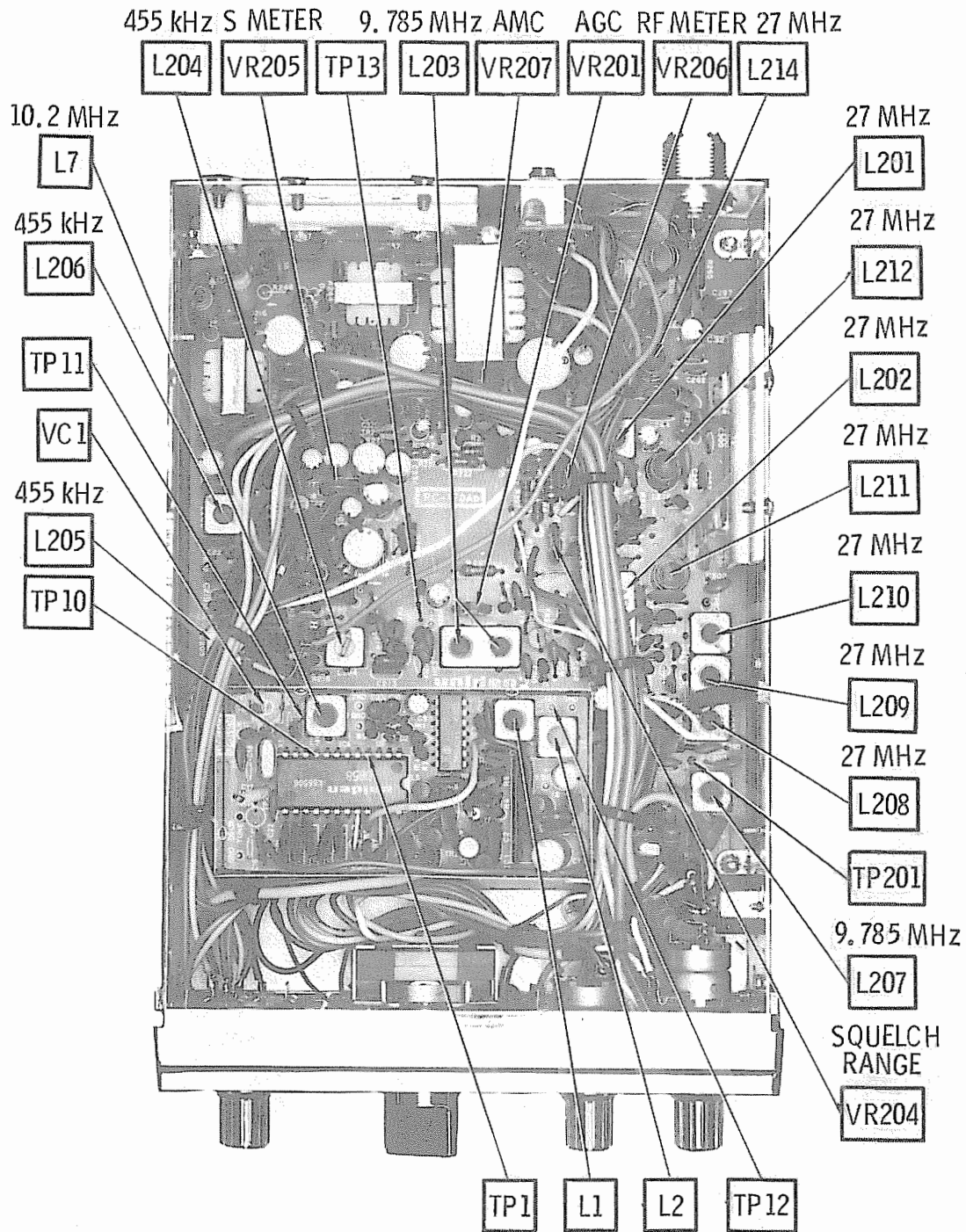
| 1 = <u>4.90</u> Volts      0 = <u>0</u> Volts |                                                                                  |    |    |    |    |    |    |                                                                             |
|-----------------------------------------------|----------------------------------------------------------------------------------|----|----|----|----|----|----|-----------------------------------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC4<br>PROGRAM DIVIDER<br>10kHz Pins 1,2,3,5,6 of IC4.<br>5.120kHz Pin 8 of IC4. |    |    |    |    |    |    | REC &<br>XMIT<br>VCO<br>OUTPUT<br>IN MHZ<br>AT TP12<br>(Secondary<br>of L1) |
|                                               | PINS                                                                             |    |    |    |    |    |    |                                                                             |
|                                               | 22                                                                               | 18 | 17 | 16 | 15 | 14 | 13 |                                                                             |
| 21                                            | 1                                                                                | 0  | 0  | 0  | 1  | 1  | 1  | 17.430                                                                      |
| 22                                            | 1                                                                                | 0  | 0  | 1  | 0  | 0  | 0  | 17.440                                                                      |
| 23                                            | 1                                                                                | 0  | 1  | 0  | 0  | 0  | 1  | 17.470                                                                      |
| 24                                            | 1                                                                                | 0  | 0  | 1  | 0  | 0  | 1  | 17.450                                                                      |
| 25                                            | 1                                                                                | 0  | 1  | 0  | 0  | 0  | 0  | 17.460                                                                      |
| 26                                            | 1                                                                                | 0  | 1  | 0  | 0  | 1  | 0  | 17.480                                                                      |
| 27                                            | 1                                                                                | 0  | 1  | 0  | 0  | 1  | 1  | 17.490                                                                      |
| 28                                            | 1                                                                                | 0  | 1  | 0  | 1  | 0  | 0  | 17.500                                                                      |
| 29                                            | 1                                                                                | 0  | 1  | 0  | 1  | 0  | 1  | 17.510                                                                      |
| 30                                            | 1                                                                                | 0  | 1  | 0  | 1  | 1  | 0  | 17.520                                                                      |
| 31                                            | 1                                                                                | 0  | 1  | 0  | 1  | 1  | 1  | 17.530                                                                      |
| 32                                            | 1                                                                                | 0  | 1  | 1  | 0  | 0  | 0  | 17.540                                                                      |
| 33                                            | 1                                                                                | 0  | 1  | 1  | 0  | 0  | 1  | 17.550                                                                      |
| 34                                            | 1                                                                                | 1  | 0  | 0  | 0  | 0  | 0  | 17.560                                                                      |
| 35                                            | 1                                                                                | 1  | 0  | 0  | 0  | 0  | 1  | 17.570                                                                      |
| 36                                            | 1                                                                                | 1  | 0  | 0  | 0  | 1  | 0  | 17.580                                                                      |
| 37                                            | 1                                                                                | 1  | 0  | 0  | 0  | 1  | 1  | 17.590                                                                      |
| 38                                            | 1                                                                                | 1  | 0  | 0  | 1  | 0  | 0  | 17.600                                                                      |
| 39                                            | 1                                                                                | 1  | 0  | 0  | 1  | 0  | 1  | 17.610                                                                      |
| 40                                            | 1                                                                                | 1  | 0  | 0  | 1  | 1  | 0  | 17.620                                                                      |

A Howard W. Sams **CIRCUITRACE** Photo

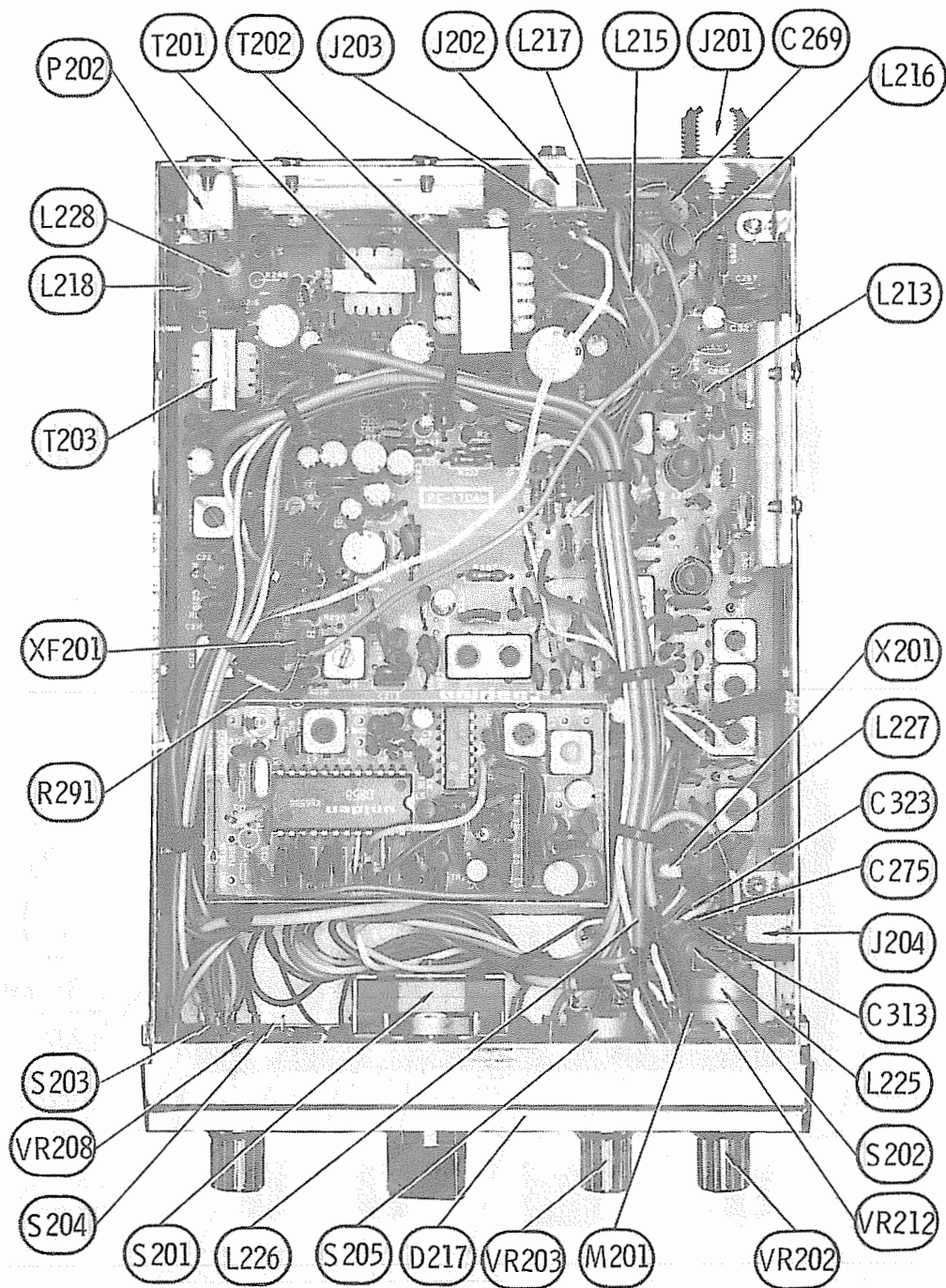


JACK BOARD

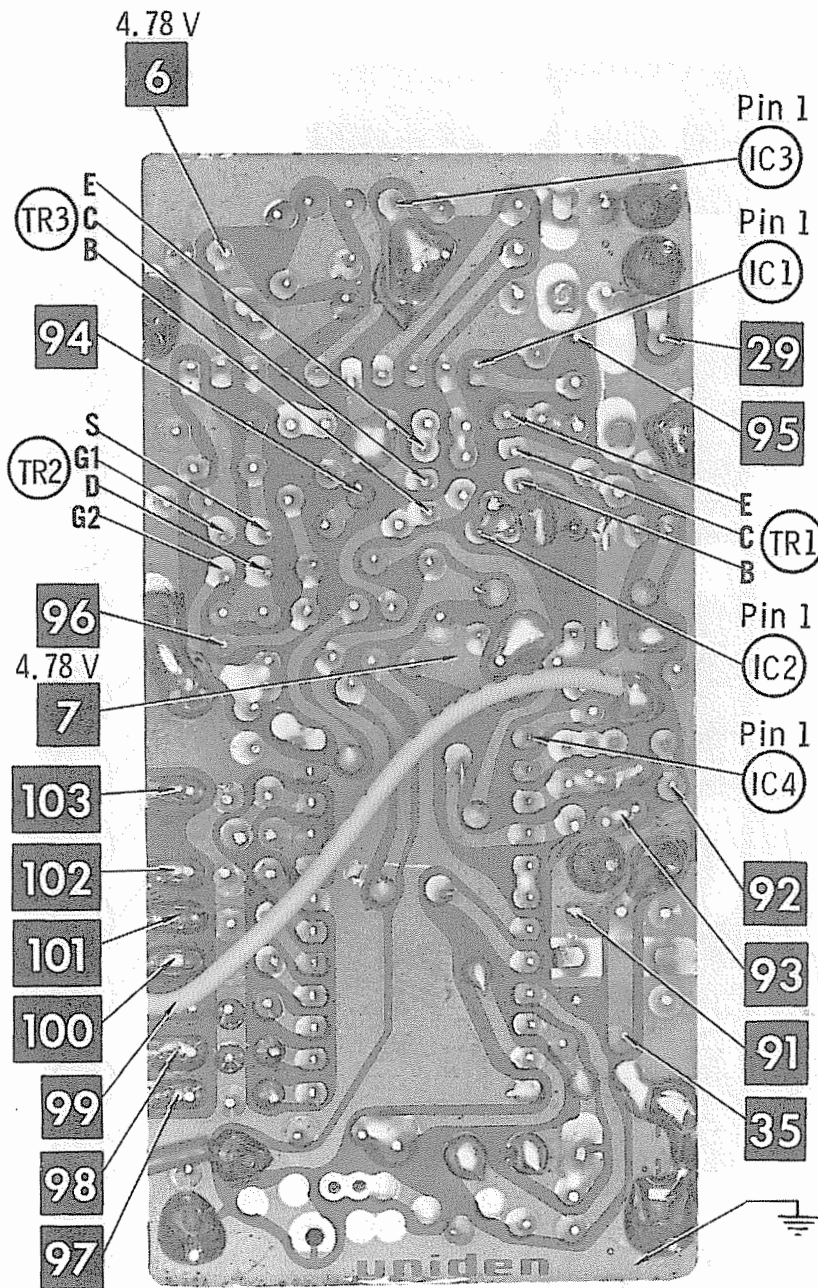




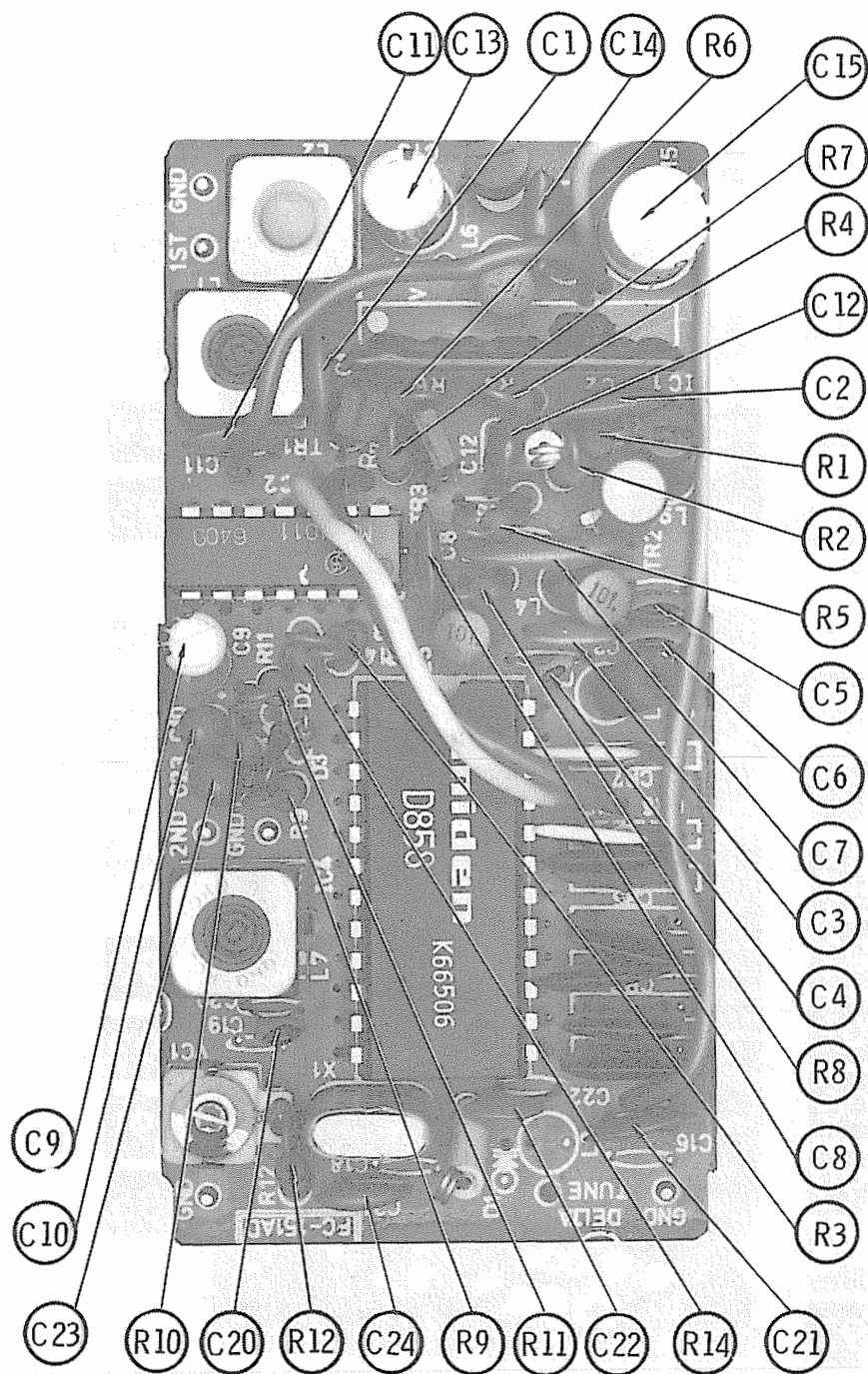
CHASSIS-BOTTOM



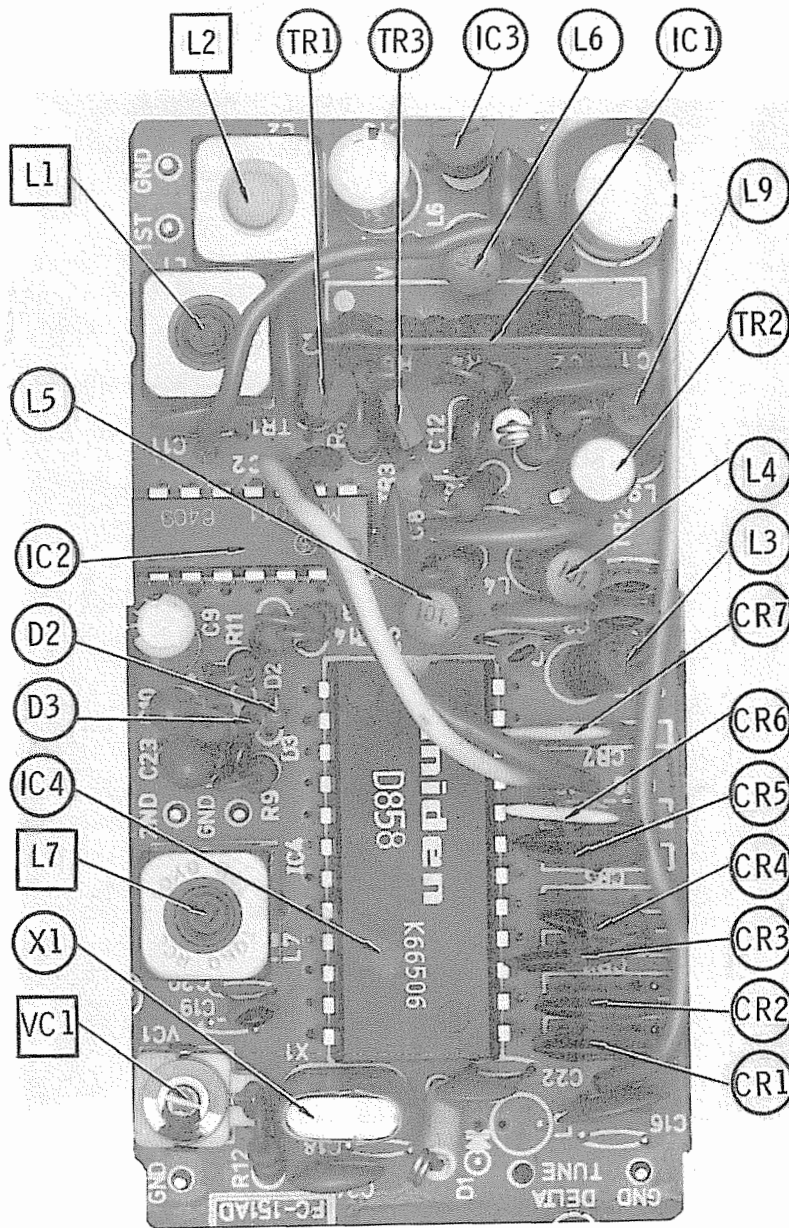
CHASSIS-BOTTOM



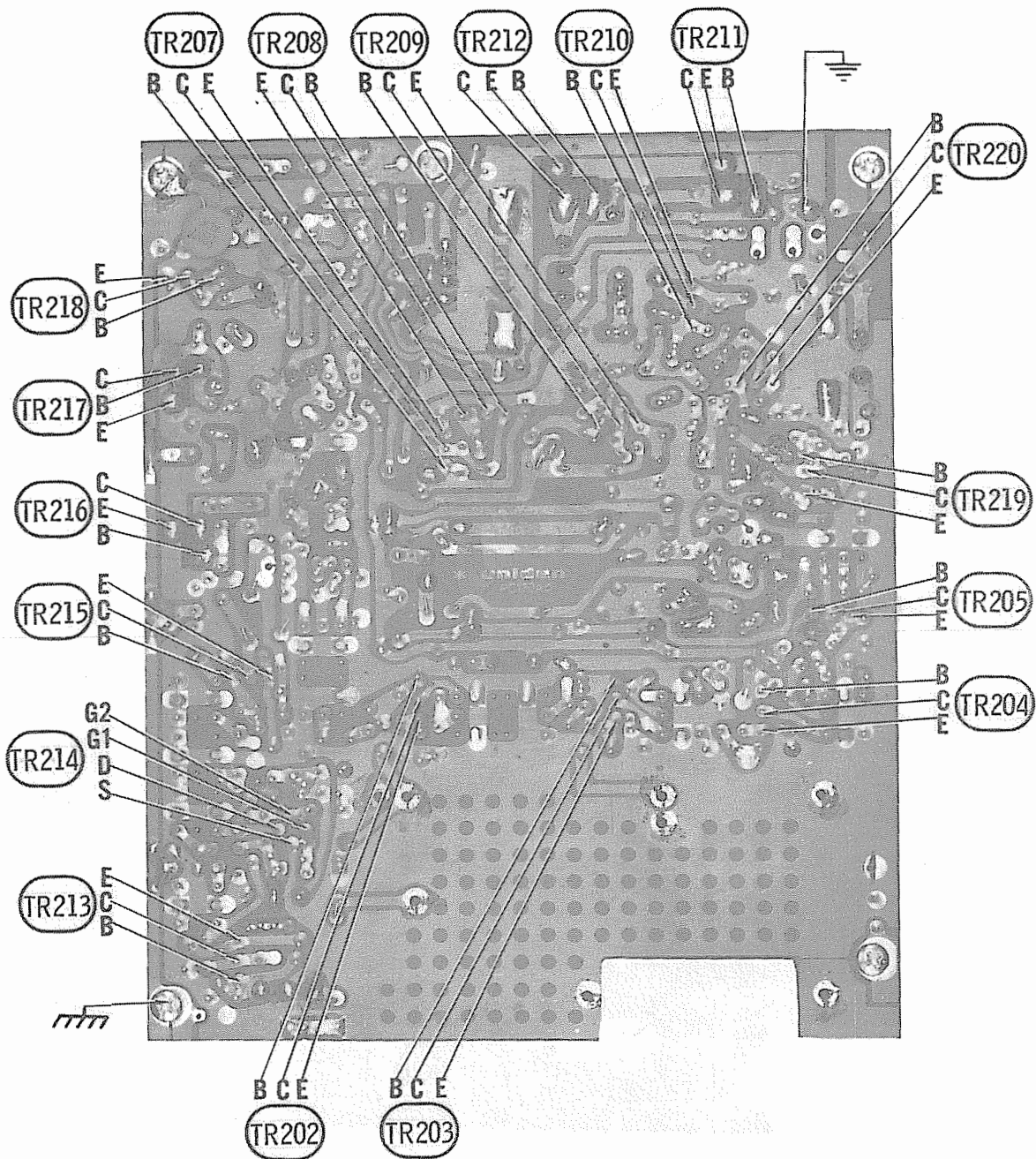
SYNTHESIZER BOARD



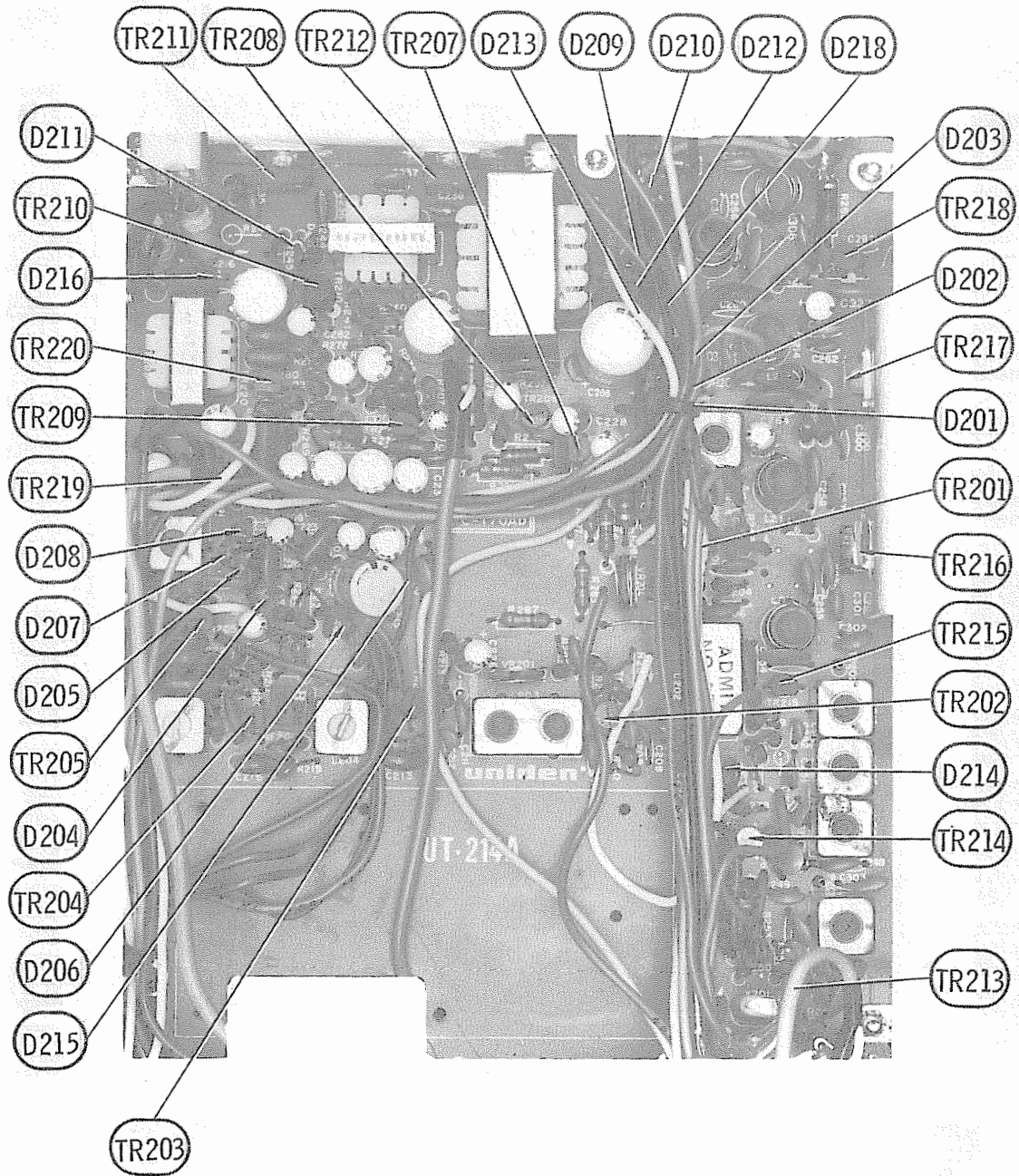
SYNTHESIZER BOARD



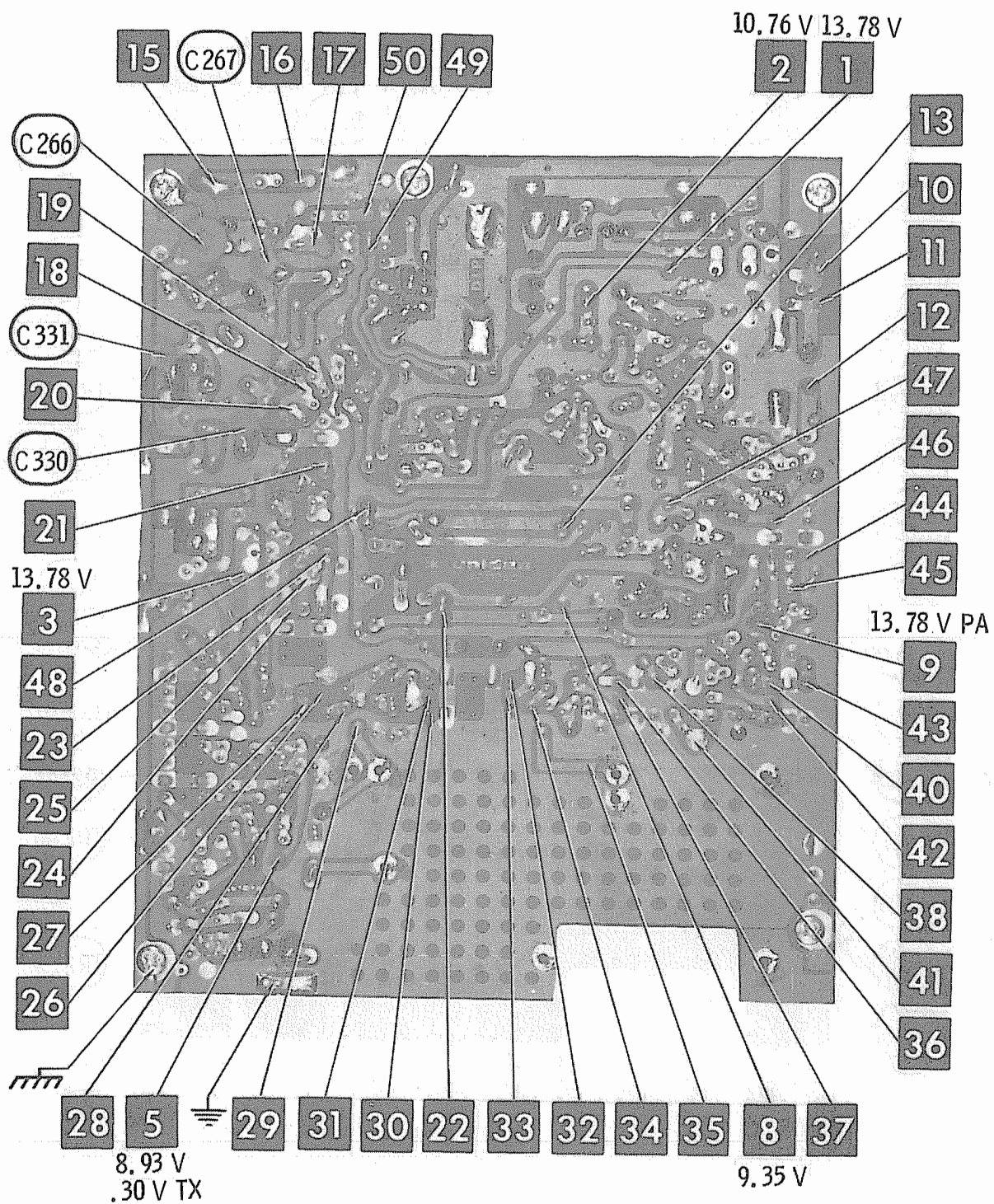
SYNTHESIZER BOARD



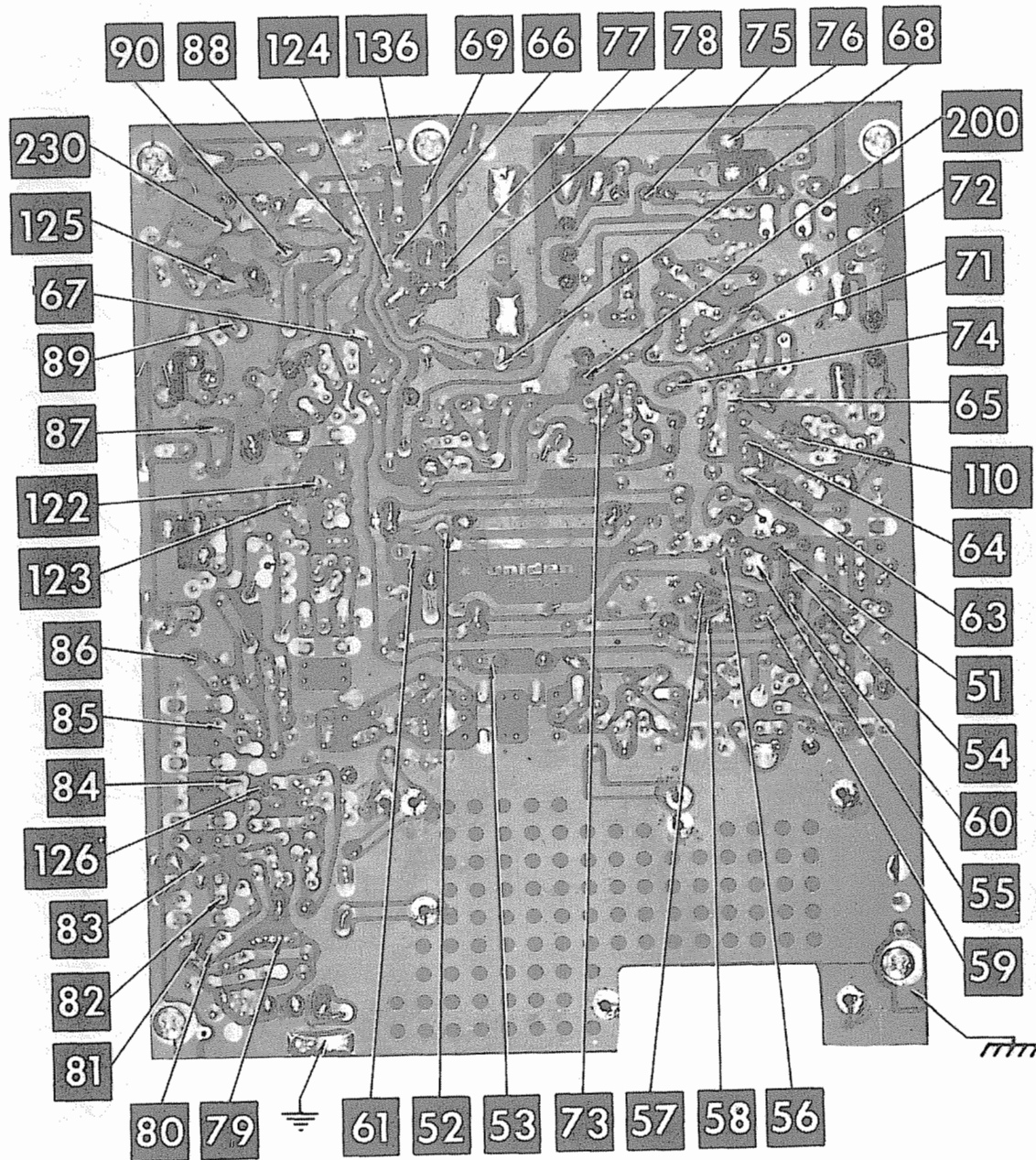
MAIN BOARD



MAIN BOARD

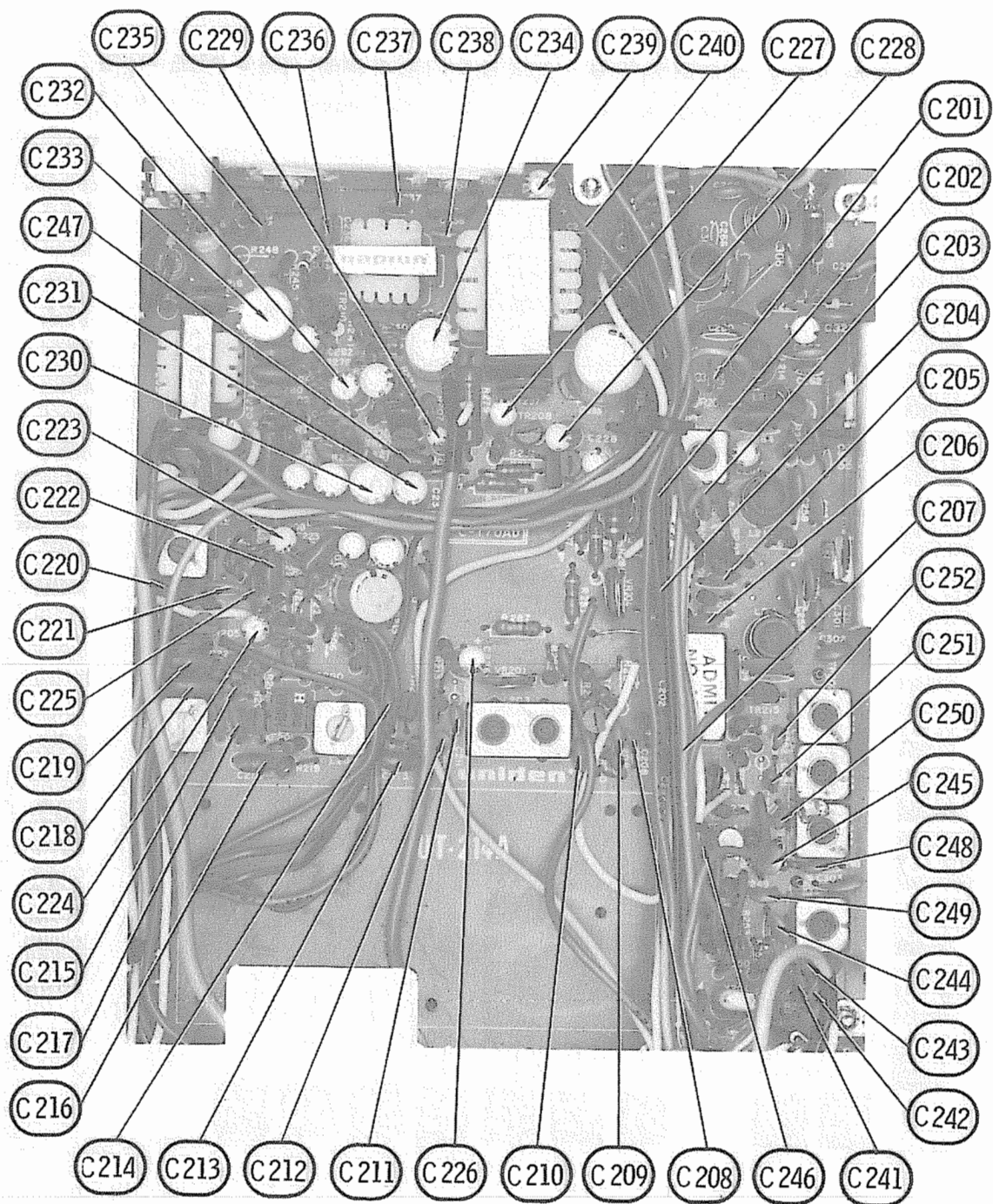


MAIN BOARD

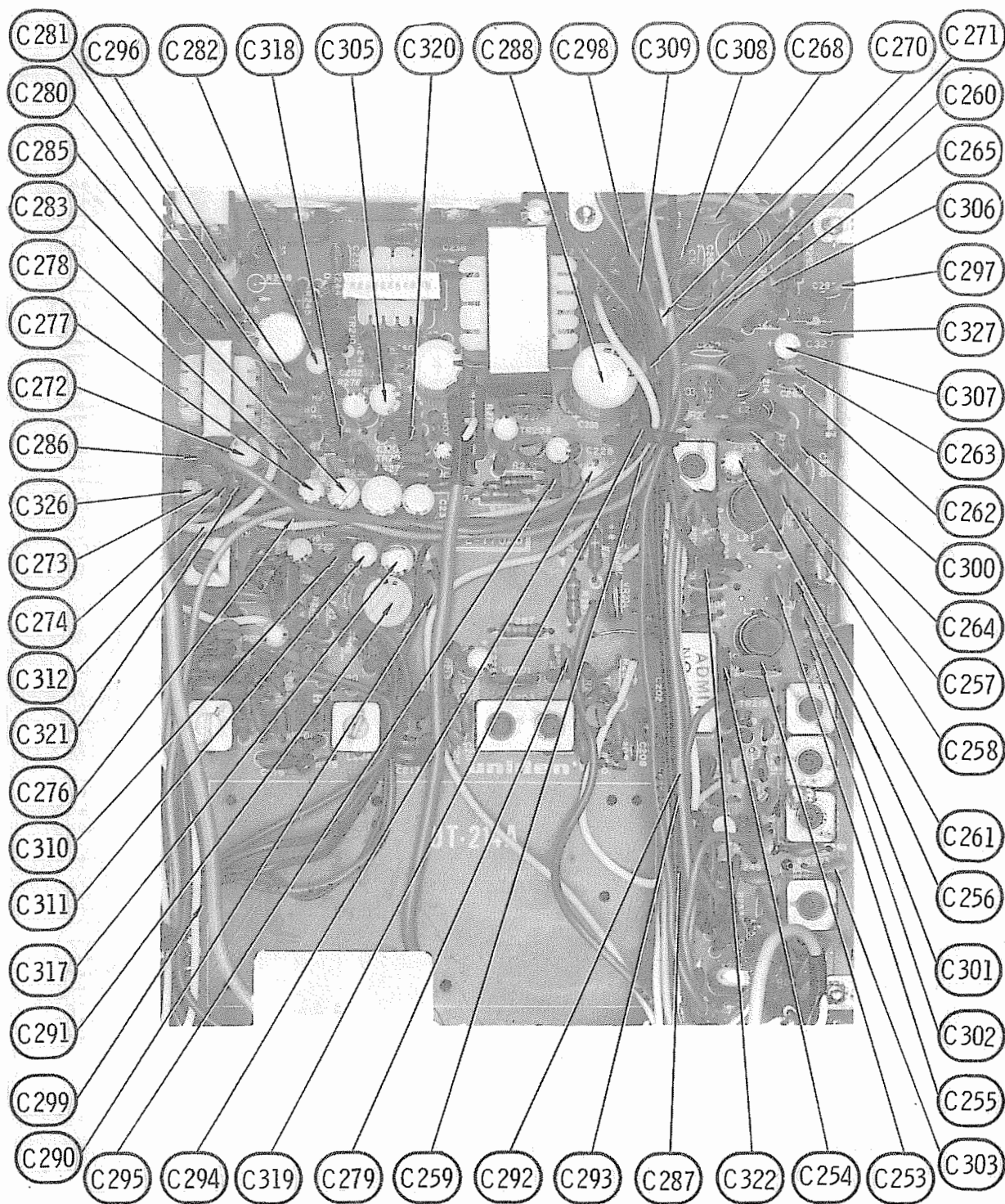


REALISTIC MODEL TRC-452

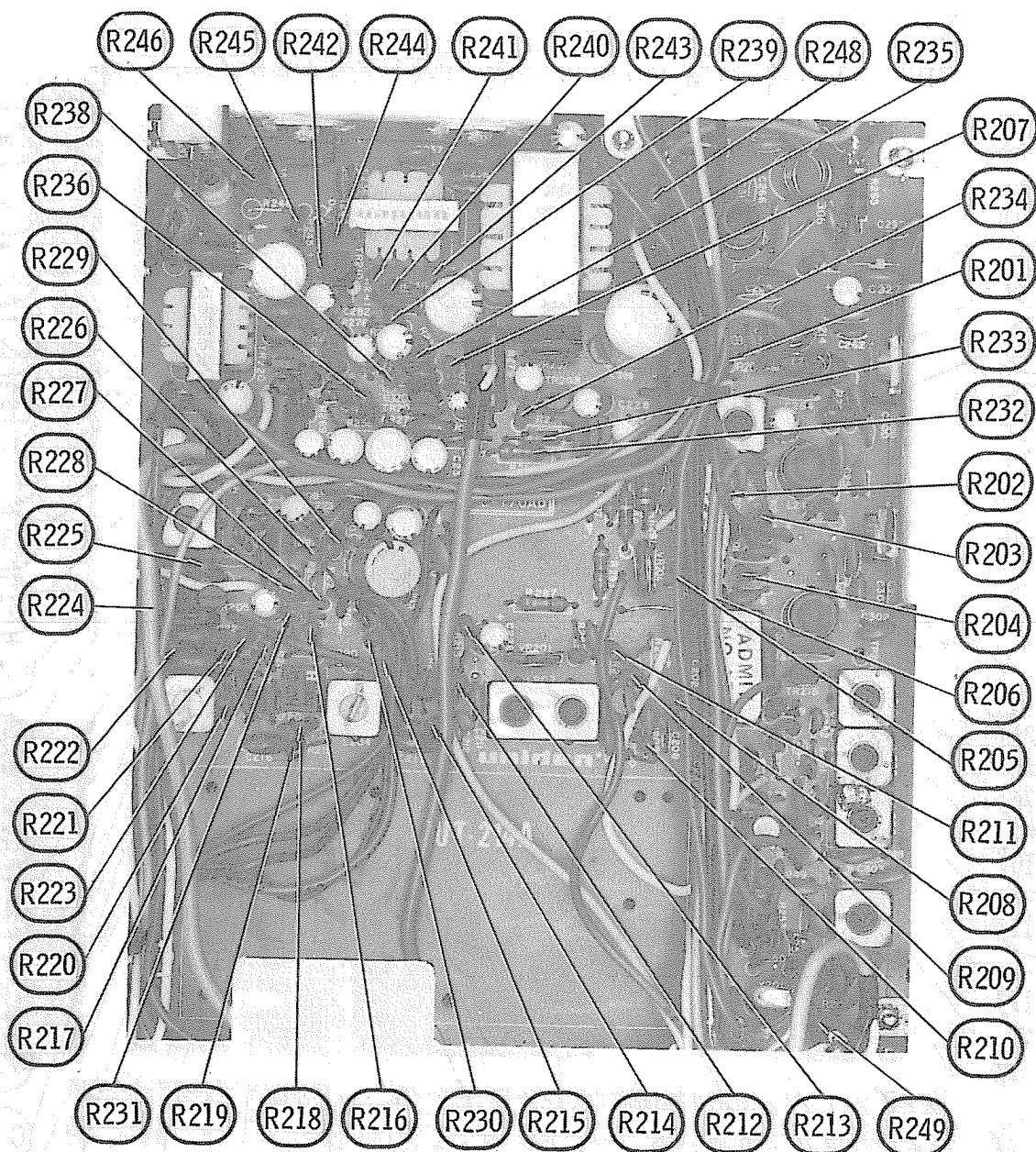
MAIN BOARD



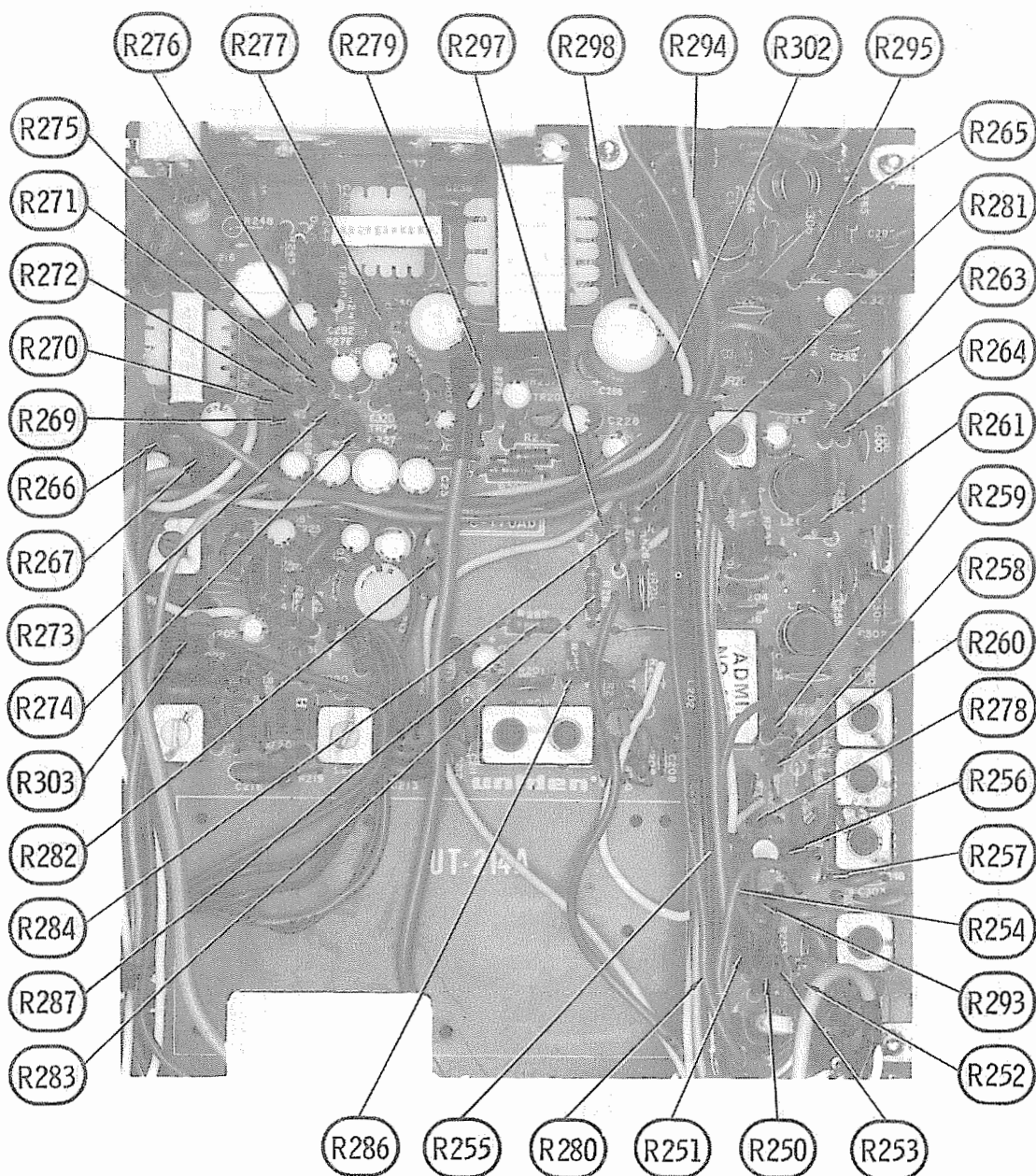
MAIN BOARD



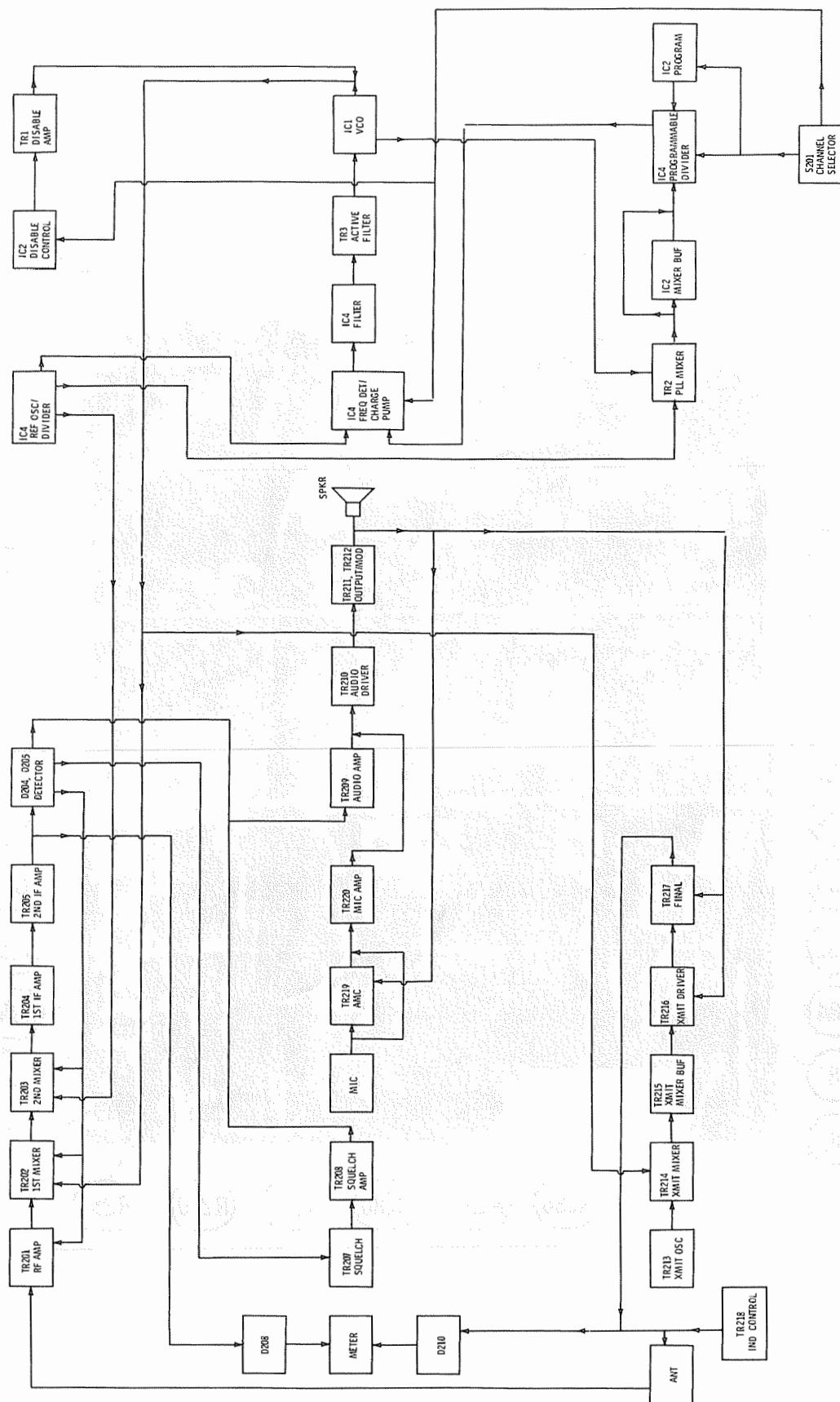
MAIN BOARD



MAIN BOARD



MAIN BOARD



**BLOCK DIAGRAM**

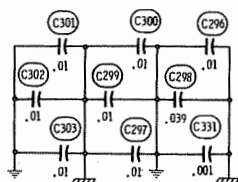
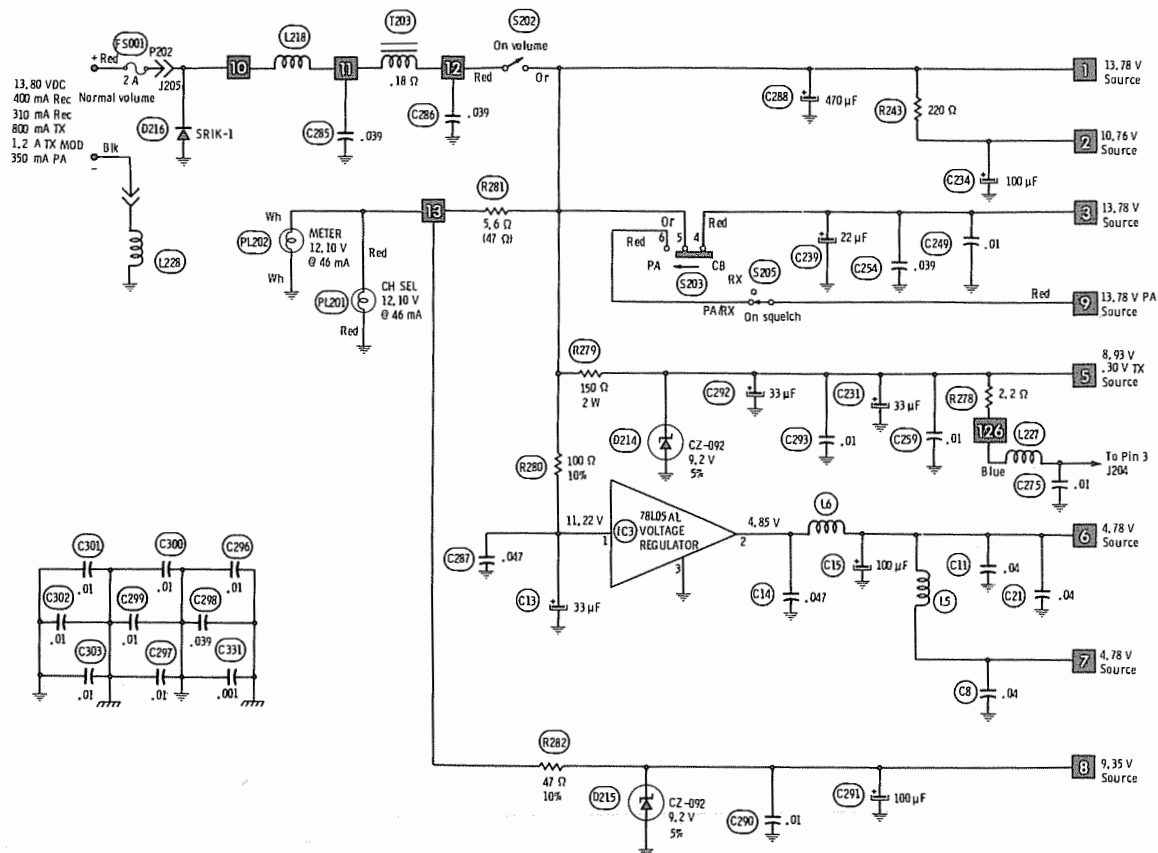
# PARTS LIST AND DESCRIPTION

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

## SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No.    | MFR. PART No. | REPLACEMENT DATA          |                  |                   |                   |              |                  |                   |                     |                  |                 |
|----------|-------------|---------------|---------------------------|------------------|-------------------|-------------------|--------------|------------------|-------------------|---------------------|------------------|-----------------|
|          |             |               | 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. |
| D2       | 1S2473      | DDAY048001    | GE-300                    | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |                     | WEP1062          |                 |
| D3       | 1S2473      | DDAY048001    | GE-300                    | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |                     | WEP1062          |                 |
| D201     | 1S2473      | DDAY048001    | GE-300                    | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |                     | WEP1062          |                 |
| D202     | 1S2473      | DDAY048001    | GE-300                    | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |                     | WEP1062          |                 |
| D203     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D204     | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D205     | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D206     | 1S2473K     | DDAY048007    | GE-300                    | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            | 1N60                | WEP1062          |                 |
| D207     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D208     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| O209     | SR1K-1      | DDAY002001    | GE-504A                   | PTC201           | HEPR0052          | RE 49             | SK3030       | RT-213           | ECG116            | 1N4004              | WEP156           | 212-61          |
| O210     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D211     | WV-1        | DDAY007001    |                           | PTC301           |                   | RE 250            |              |                  | ECG601            |                     |                  |                 |
| D212     | WZ162       | DDAY008021    | GEZD-16                   | ZM168            |                   | RE 122            | SK3142       | RT-246           | ECG5025           | 1N4745A             | WEP1427          |                 |
| D213     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| D214     | CZ092       | DDAY010002    | GEZD-9.1                  | ZM9.18           |                   | RE 114            | SK3060       | RT-240           | ECG5018           | 1N4739A             | WEP1419          | 103-279-18      |
| D215     | CZ092       | DDAY010002    | GEZD-9.1                  | ZM9.18           |                   | RE 114            | SK3060       | RT-240           | ECG5018           | 1N4739A             | WEP1419          | 103-279-18      |
| D216     | SR1K-1      | DDAY002001    | GE-504A                   | PTC201           | HEPR0052          | RE 49             | SK3030       | RT-213           | ECG116            | 1N4004              | WEP156           | 212-61          |
| D218     | 1N60        |               | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
|          | 1N60AM      | DDAY001001    | 1N60                      | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            | 1N60                | WEP134           | ZEN-430         |
| IC1      | UHTC-003    | DDAY007601    |                           |                  |                   |                   |              |                  | ECG1202           |                     |                  |                 |
| IC2      | MB84011     |               |                           |                  |                   |                   |              |                  | ECG4011           |                     |                  |                 |
|          | MB84011M    | DDAY008001    |                           |                  |                   |                   |              |                  | ECG977            |                     |                  |                 |
| IC3      | 78L05AV     | DDAY008001    |                           |                  |                   |                   |              |                  | ECG977            |                     |                  |                 |
|          | NJM78L05A   | DDAY008001    |                           |                  |                   |                   |              |                  | ECG1198           |                     |                  |                 |
| IC4      | UPD858C     | DDAY005001    |                           |                  |                   |                   |              |                  | ECG199            |                     |                  |                 |
| TR1      | 25C945      | DDBY224003(1) | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C945AQ    |               | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C372      |               | GE-61*                    | PTC121*          | 25C372            | RE 13*            | SK3122       | RT-308           | ECG123A*          | 25C372              | WEP372           | ZEN-114         |
|          | 25C458      |               | GE-210*                   | PTC121*          | 25C458            | RE 13*            | SK3124       | RT-187           | ECG123A*          | 25C458              | WEP458           | ZEN-114         |
|          | 25C5360     |               | GE-212                    | PTC121*          | 25C536            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP536           | ZEN-119         |
|          | 25C828      |               | GE-61*                    | PTC121*          | 25C828            | RE 192            | SK3122       | RT-302           | ECG199            | 25C828              | WEP828           | ZEN-119         |
|          | 35K458      | DDCY104003(1) | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                     | WEP905           | 121-826         |
|          | 35K458-09   |               | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                     | WEP905           | 121-826         |
|          | 35K41       |               | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                     | WEP905           | 121-826         |
|          | 35K45       |               | GE-210*                   | PTC121*          | 25C458            | RE 13*            | SK3124       | RT-187           | ECG123A*          | 25C458              | WEP458           | ZEN-114         |
| TR3      | 25C458C     | DDBY273001(1) | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C945      |               | GE-61*                    | PTC121*          | 25C372            | RE 13*            | SK3122       | RT-308           | ECG123A*          | 25C372              | WEP372           | ZEN-114         |
|          | 25C372      |               | GE-61*                    | PTC121*          | 25C828            | RE 192            | SK3122       | RT-302           | ECG199            | 25C828              | WEP828           | ZEN-119         |
|          | 25C828      |               | GE-60*                    | PTC132*          | 25C930            | RE 9              | SK3039*      | RT-308           | ECG229*           | 25C930              | WEP956*          | ZEN-127         |
| TR201    | 25C930      | DDBY261002(1) | GE-60*                    | PTC132*          | 25C930            | RE 9              | SK3039*      | RT-308           | ECG229*           | 25C930              | WEP956*          | ZEN-127         |
|          | 25C1359     |               | GE-212                    | PTC121*          | HEPS0014*         | RE 192            | SK3038*      | RT-308           | ECG199            | 25C710              | WEP66            | 121-29000       |
|          | 25C394      |               | GE-61*                    | PTC121*          | 25C394            | RE 9              | SK3018*      | RT-309           | ECG229*           | 25C394              | WEP394           | ZEN-114         |
| TR202    | 25C930      | DDBY261002(1) | GE-60*                    | PTC132*          | 25C930            | RE 9              | SK3039*      | RT-308           | ECG229*           | 25C930              | WEP956*          | ZEN-127         |
|          | 25C930D     |               | GE-60*                    | PTC132*          | 25C930            | RE 9              | SK3039*      | RT-308           | ECG229*           | 25C930              | WEP956*          | ZEN-127         |
|          | 25C1359     |               | GE-212                    | PTC121*          | HEPS0014*         | RE 192            | SK3038*      | RT-308           | ECG199            | 25C710              | WEP66            | 121-29000       |
|          | 25C394      |               | GE-61*                    | PTC121*          | 25C394            | RE 9              | SK3018*      | RT-309           | ECG229*           | 25C394              | WEP394           | ZEN-114         |
| TR203    | 25C1675     | DDBY259001(1) | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C1675L    |               | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C372      |               | GE-61*                    | PTC121*          | 25C372            | RE 13*            | SK3122       | RT-308           | ECG123A*          | 25C372              | WEP372           | ZEN-114         |
|          | 25C829      |               | GE-20*                    | PTC121*          | 25C829            | RE 9*             | SK3122       | RT-308           | ECG229*           | 25C829              | WEP829           | ZEN-127         |
| TR204    | 25C1675     | DDBY259001(1) | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C1675L    |               | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C372      |               | GE-61*                    | PTC121*          | 25C372            | RE 13*            | SK3122       | RT-308           | ECG123A*          | 25C372              | WEP372           | ZEN-114         |
|          | 25C829      |               | GE-20*                    | PTC121*          | 25C829            | RE 9*             | SK3122       | RT-308           | ECG229*           | 25C829              | WEP829           | ZEN-127         |
| TR205    | 25C1675     | DDBY259001(1) | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C1675L    |               | GE-213                    | PTC139*          | 25C1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                     | WEP956*          | ZEN-127         |
|          | 25C372      |               | GE-61*                    | PTC121*          | 25C372            | RE 13*            | SK3122       | RT-308           | ECG123A*          | 25C372              | WEP372           | ZEN-114         |
|          | 25C829      |               | GE-20*                    | PTC121*          | 25C829            | RE 9*             | SK3122       | RT-308           | ECG229*           | 25C829              | WEP829           | ZEN-127         |
| TR207    | 25C945AQ    | DDBY224003(1) | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C945      |               | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C458      |               | GE-210*                   | PTC121*          | 25C458            | RE 13*            | SK3124       | RT-187           | ECG123A*          | 25C458              | WEP458           | ZEN-114         |
|          | 25C828      |               | GE-61*                    | PTC121*          | 25C828            | RE 192            | SK3122       | RT-302           | ECG199            | 25C828              | WEP828           | ZEN-119         |
| TR208    | 25A733      | DDBY003002(1) | GE-221*                   | PTC103*          | 25A495            | RE 26*            | SK3114       | RT-303           | ECG159*           | 25A495              | WEP495           | ZEN-106         |
|          | 25A733Q     |               | GE-48                     | PTC103*          | 25A733            | RE 219            | SK3138       | RT-303           | ECG294            | 25A733              | WEP916           |                 |
|          | 25A495      |               | GE-48                     | PTC103*          | 25A733            | RE 219            | SK3138       | RT-303           | ECG294            | 25A733              | WEP916           |                 |
|          | 25A564      |               | GE-65                     | PTC103*          | 25A564            | RE 193            | SK3114       | RT-303           | ECG234            | 25A564              | WEP564           | 121-879         |
| TR209    | 25A945AQ    | DDBY224003(1) | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25A945      |               | GE-212                    | PTC121*          | 25C945            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP1945          | 121-29000       |
|          | 25C458      |               | GE-210*                   | PTC121*          | 25C458            | RE 13*            | SK3124       | RT-187           | ECG123A*          | 25C458              | WEP458           | ZEN-114         |
|          | 25C545      |               | GE-212                    | PTC121*          | 25C536            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP536           | ZEN-119         |
|          | 25C828      |               | GE-61*                    | PTC121*          | 25C828            | RE 192            | SK3122       | RT-302           | ECG199            | 25C828              | WEP828           | ZEN-119         |
|          | 25C536      |               | GE-212                    | PTC121*          | 25C536            | RE 192            | SK3124       | RT-107A          | ECG199            | 25C945              | WEP536           | ZEN-119         |
| TR210    | 25C1364     | DDBY233001(1) | GE-210*                   | PTC121*          | 25C1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          | 25C1364             | WEP364           | 121-29000       |
|          | 25C1364-6   |               | GE-210*                   | PTC121*          | 25C1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          | 25C1364             | WEP364           | 121-29000       |
|          | 25C733      |               | GE-62                     | PTC139*          | 25C733            | RE 192            | SK3122       | RT-302           | ECG199            | 25C733              | WEP66            | ZEN-114         |
|          | 25C1684     |               | GE-62*                    | PTC139*          | HEPS0024*         | RE 192*           | SK3122*      | RT-108A*         | ECG199*           | 25C735              | WEP66*           | ZEN-128         |
| TR211    | 25C1096     | DDBY227004(1) | GE-28                     | PTC110           | 25C1096           | RE 42             | SK3197       | RT-166           | ECG186A           | 25C1096             | WEP1096          |                 |
|          | 25C1096-42L |               | GE-28                     | PTC110           | 25C1096           | RE 42             | SK3197       | RT-166           | ECG186A           | 25C1096             | WEP1096          |                 |
|          | 25C1419     |               | GE-66                     | PTC167           | HEPS5027          | RE 21             | SK3054       | RT-197           | ECG152            |                     | WEP745           |                 |
| TR212    | 25C1096     | DDBY227004(1) | GE-28                     | PTC110           | 25C1096           | RE 42             | SK3197       | RT-166           | ECG186A           | 25C1096             | WEP1096          |                 |
|          | 25C1096-42L |               | GE-28                     | PTC110           | 25C1096           | RE 42             | SK3197       | RT-166           | ECG186A           | 25C1096             | WEP1096          |                 |
|          | 25C1419     |               | GE-66                     | PTC167           | HEPS5027          | RE 21             | SK3054       | RT-197           | ECG152            |                     | WEP745           |                 |
|          | 25C1226A    |               | GE-215                    | PTC186           | 25C1226           | RE 203            | SK3197       | RT-166           | ECG186A           | 25C1226             | WEP900           |                 |
|          | 25D325      |               | GE-28                     | PTC110           | 25D325            | RE 42             | SK3197       | RT-197           | ECG186            | 25D325              | WEP751           |                 |

REALISTIC MODEL TRC-452



# Terminal Guide



IC3  
Bottom view



TR201 thru TR205,  
TR207, TR213, TR215  
Bottom view



TR208, TR210  
Bottom view



S203  
Wiring view



B, C, E  
FRONT VIEW



TR214  
Bottom view



E, C, B  
FRONT VIEW



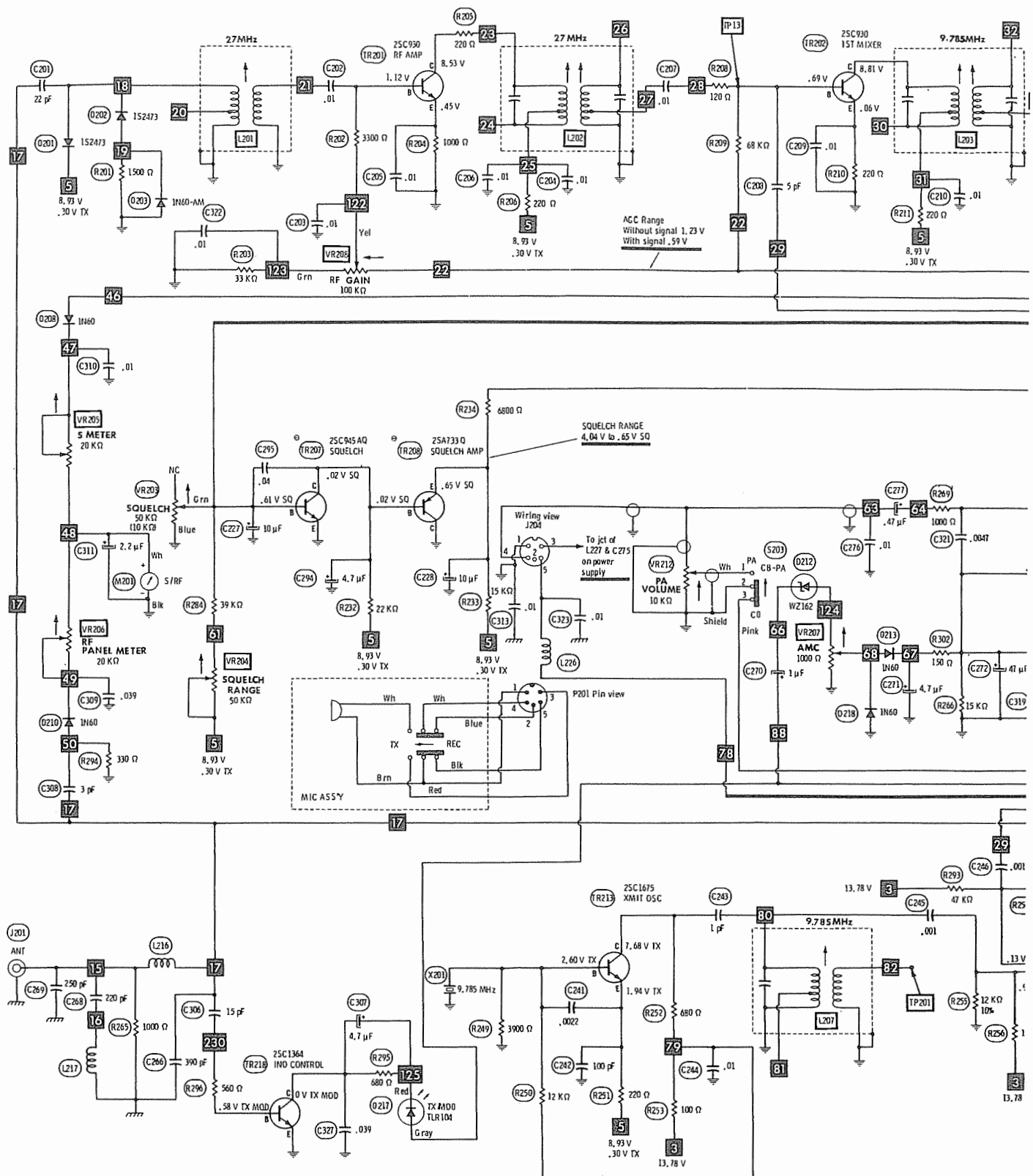
TR217  
FRONT VIEW

- \* Circuitry not used in some versions
  - Circuitry used in some versions
  - ⊕ See ports 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.

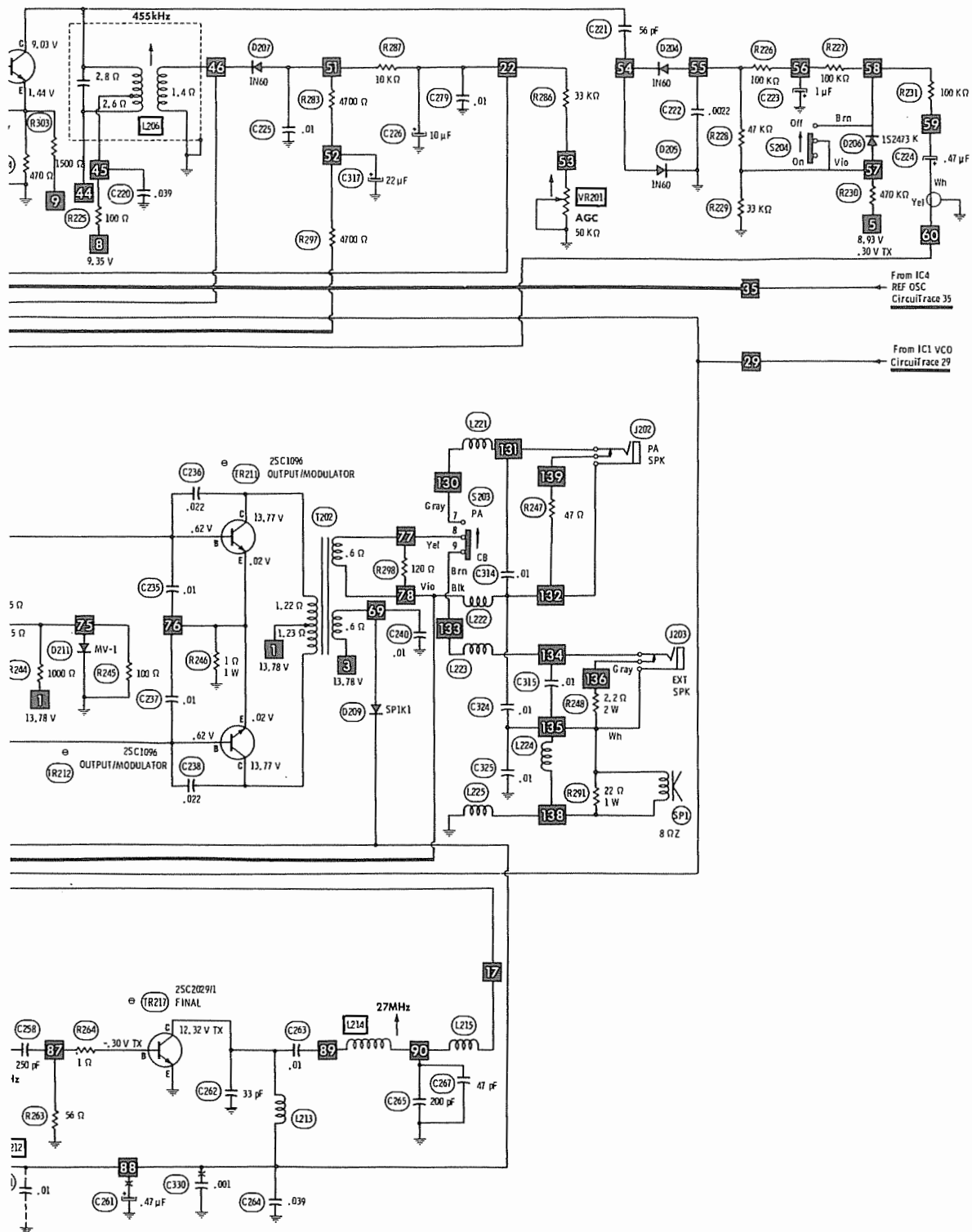
A PHOTOFACT STANDARD NOTATION SCHEMATIC

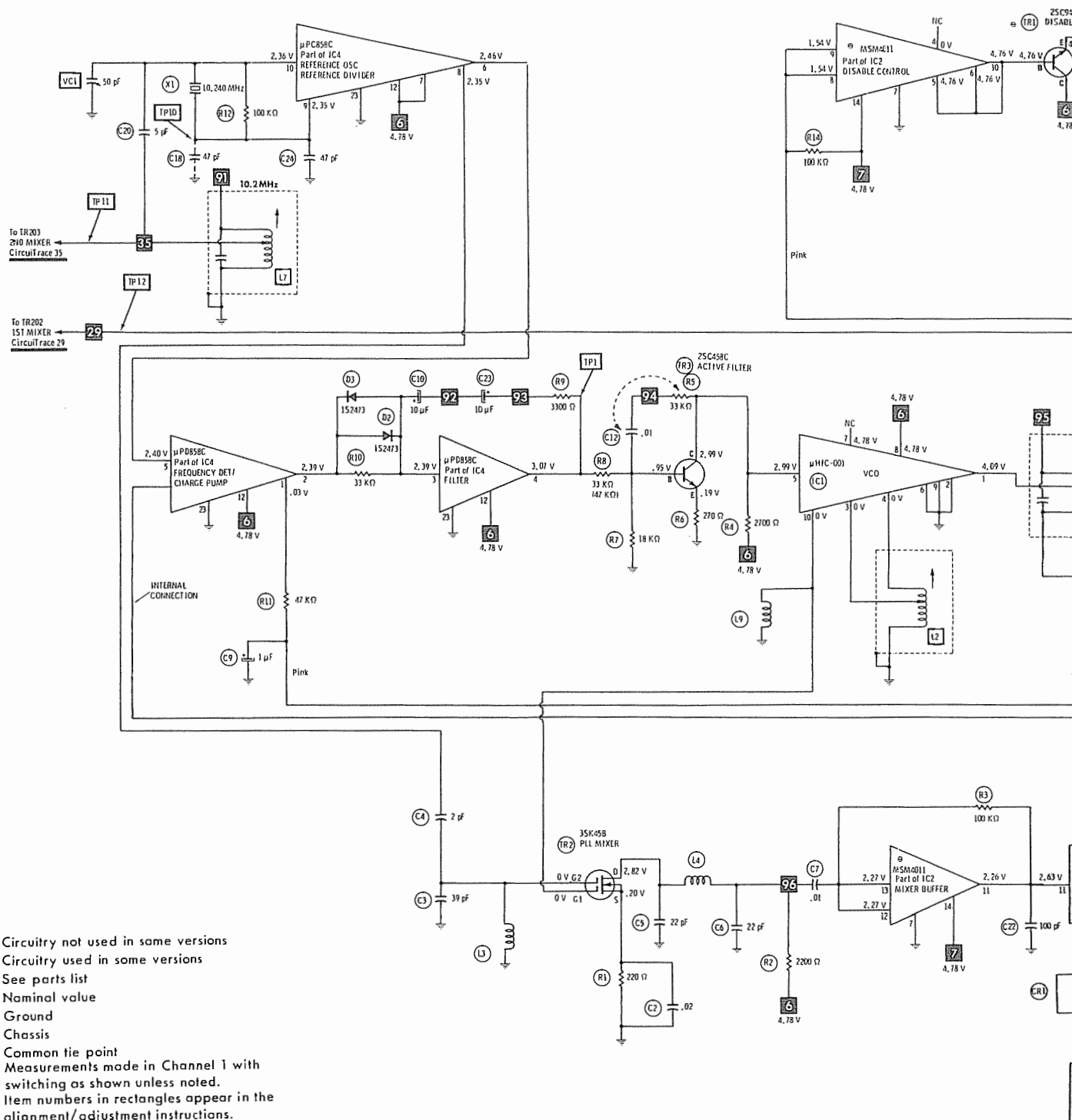
WITH **CIRCUITRACE**

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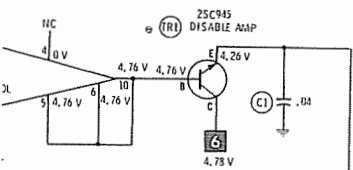




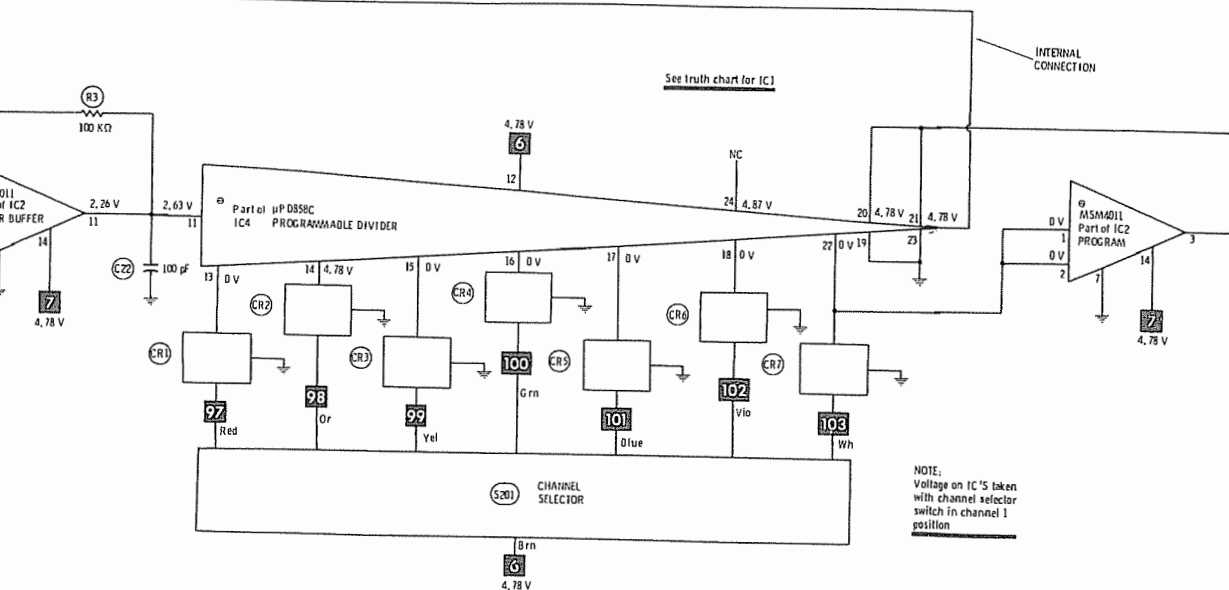
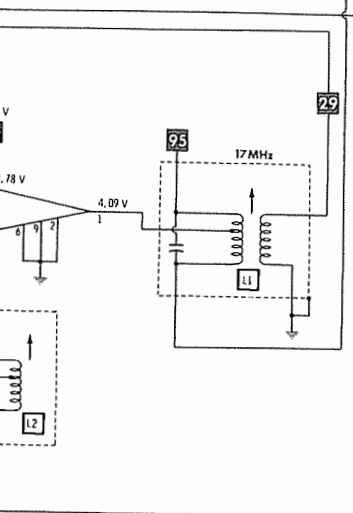
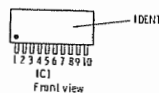
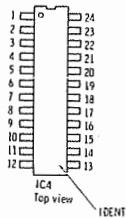
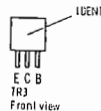
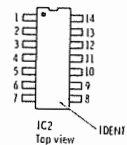




✖ Circuitry not used in some versions  
 --- Circuitry used in some versions  
 ⊕ See parts list  
 \* Nominal value  
 ⏏ Ground  
 ~ Chassis  
 ▽ Common tie point  
 Measurements made in Channel 1 with switching as shown unless noted.  
 Item numbers in rectangles appear in the alignment/adjustment 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 PHOTOFACIT STANDARD NOTATION SCHEMATIC



Terminal Guides



## 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. |
| TR213    | 2SC1675        | DDBY259001(1) | GE-213                    | PTC139*          | 2SC1675           | RE 13*            | SK3124       | RT-308           | ECG229*           | 2SC829<br>2SC372              | WEP956*          | ZEN-127         |
|          | 2SC1675L       |               | GE-213                    | PTC139*          | 2SC1675           | RE 13*            | SK3124       | RT-308           | ECG229*           |                               | WEP956*          | ZEN-127         |
|          | 2SC829         |               | GE-20*                    | PTC121*          | 2SC829            | RE 9*             | SK3122       | RT-308           | ECG229*           |                               | WEP829           | ZEN-127         |
|          | 2SC372         |               | GE-61*                    | PTC121*          | 2SC372            | RE 13*            | SK3122       | RT-308           | ECG123A*          |                               | WEP372           | ZEN-114         |
| TR214    | 3SK45          | DDCY104001(1) | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                               | WEP905           | 121-826         |
|          | 3SK45B         |               | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                               | WEP905           | 121-826         |
|          | 3SK41          |               | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                               | WEP905           | 121-826         |
|          | 3SK49          |               | GE-FET-4                  | PTC182           | HEPF2004          | RE 199            | SK3050       | RT-181           | ECG222            |                               | WEP905           | 121-826         |
| TR215    | 2SK2076C       | DDBY270001(1) | GE-210*                   | PTC121*          | HEPS0015*         | RE 13*            | SK3122       | RT-308           | ECG123A           | 2SC1364<br>2SC735             | WEP736           | 121-722         |
|          | 2SC2076CB      |               | GE-210*                   | PTC121*          | HEPS0015*         | RE 13*            | SK3122       | RT-308           | ECG123A           |                               | WEP736           | 121-722         |
|          | 2SC2076        |               | GE-210*                   | PTC121*          | 2SC1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          |                               | WEP736*          | 121-29000       |
|          | 2SC1364        |               | GE-210*                   | PTC123*          | 2SC735            | RE 13*            | SK3122       | RT-308*          | ECG289            |                               | WEP735A          | ZEN-127         |
| TR216    | 2SC735         | DDBY256002(1) | GE-270                    | PTC180           | HEPS3044          | RE 209            |              |                  | ECG295            | 2SC496                        | WEP913           |                 |
|          | 2SC2028/2      |               | GE-270                    | PTC180           | HEPS3044          | RE 209            |              |                  | ECG295            |                               | WEP913           |                 |
|          | (12)           |               | GE-270                    | PTC180           | HEPS3044          | RE 209            |              |                  | ECG295            |                               | WEP913           |                 |
|          | 2SC2028-B/8/20 |               | GE-336                    | PTC180           |                   | RE 224            |              | RT-310           | ECG306            |                               | WEP771           |                 |
| TR217    | 2SC1846        | DDBY257001(1) | GE-276                    | PTC180           |                   | RE 203            | SK3197       | RT-146           | ECG235            |                               | WEP785           |                 |
|          | 2SC1760        |               | GE-333                    | PTC186           |                   |                   |              |                  |                   |                               |                  |                 |
|          | 2SC2029        |               |                           |                  |                   |                   |              |                  |                   |                               |                  |                 |
|          | (13)           |               |                           |                  |                   |                   |              |                  |                   |                               |                  |                 |
| TR218    | 2SC2029B/8/10  | DDBY233001(1) | GE-333                    | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            | 2SC1306<br>2SC1364<br>2SC1364 | WEP785           | 121-29000       |
|          | 2SC1816        |               | GE-216                    | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            |                               | WEP785           | 121-29000       |
|          | 2SC1678        |               | GE-322                    | PTC186           |                   | RE 13*            | SK3124       | RT-308           | ECG123A*          |                               | WEP736*          | ZEN-120         |
|          | 2SC1364-6      |               | GE-210*                   | PTC121*          | 2SC1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          |                               | WEP736*          | ZEN-127         |
| TR219    | 2SC1317        | DDBY224003(1) | GE-210*                   | PTC178           | HEPS0015*         | RE 196            | SK3024*      | RT-107A          | ECG289            | 2SC735<br>2SC945              | WEP910           | 121-29000       |
|          | 2SC735         |               | GE-210*                   | PTC123*          | 2SC735            | RE 13*            | SK3122       | RT-308*          | ECG289            |                               | WEP735A          | 121-29000       |
|          | 2SC945AQ       |               | GE-212                    | PTC121*          | 2SC945            | RE 192            | SK3124       | RT-107A          | ECG199            |                               | WEP1945          | 121-29000       |
|          | 2SC945         |               | GE-212                    | PTC121*          | 2SC945            | RE 192            | SK3124       | RT-107A          | ECG199            |                               | WEP1945          | 121-29000       |
| TR220    | 2SC458         | DDBY224006(1) | GE-210*                   | PTC121*          | 2SC458            | RE 13*            | SK3124       | RT-187           | ECG123A*          | 2SC458<br>2SC828<br>2SC1364   | WEP458           | ZEN-114         |
|          | 2SC828         |               | GE-61*                    | PTC121*          | 2SC828            | RE 192            | SK3122       | RT-302           | ECG199            |                               | WEP828           | ZEN-119         |
|          | 2SC1364        |               | GE-210*                   | PTC121*          | 2SC1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          |                               | WEP736*          | 121-29000       |
|          | 2SC945AQ       |               | GE-212                    | PTC121*          | 2SC945            | RE 192            | SK3124       | RT-107A          | ECG199            |                               | WEP1945          | 121-29000       |
| TR220    | 2SC945         | DDBY224006(1) | GE-210*                   | PTC121*          | 2SC945            | RE 192            | SK3124       | RT-107A          | ECG199            | 2SC458<br>2SC828<br>2SC1364   | WEP1945          | 121-29000       |
|          | 2SC458         |               | GE-210*                   | PTC121*          | 2SC458            | RE 13*            | SK3124       | RT-187           | ECG123A*          |                               | WEP458           | ZEN-114         |
|          | 2SC828         |               | GE-61*                    | PTC121*          | 2SC828            | RE 192            | SK3122       | RT-302           | ECG199            |                               | WEP828           | ZEN-119         |
|          | 2SC1364        |               | GE-210*                   | PTC121*          | 2SC1364           | RE 13*            | SK3124       | RT-308           | ECG123A*          |                               | WEP736*          | 121-29000       |

- \* Lead configuration may vary from original.  
 (1) When ordering transistors by manufacturer part number any transistor in the group may be received.  
 (12) Rating 5 Watts @ 1.5 Amps.  
 (13) Rating 10 Watts @ 2 Amps.

### ELECTROLYTIC CAPACITORS

| ITEM<br>No. | RATING   | REPLACEMENT DATA  |                                  |                     |                  |              |
|-------------|----------|-------------------|----------------------------------|---------------------|------------------|--------------|
|             |          | MFRG.<br>PART No. | CORNELL-<br>DUBILIER<br>PART No. | MALLORY<br>PART No. | SPRAGUE PART No. |              |
|             |          |                   |                                  |                     | Q-LINE           | GENERAL LINE |
| C9          | 1 50V    | CEL2811090        | PC1-50                           | VTT1A50             | QV1-11           | EV-1615      |
| C10         | 10 10V   | CSE2111006        |                                  | TOC106M025FL        | QDT1-64          | S025-109     |
| C13         | 33 16V   | CEL2313300        | PC30-25                          | VTT33025            | QV1-63           | EV-1325      |
| C15         | 100 10V  | CEL2111010        | PC100-10                         | VTT100E10           | QV1-93           | EV-1130      |
| C23         | 10 10V   | CSE2111006        |                                  | TOC106M025FL        | QDT1-64          | S025-109     |
| C223        | 1 50V    | CEL2811090        | PC1-50                           | VTT1A50             | QV1-11           | EV-1615      |
| C224        | .47 50V  | CEL2814780        | PC1-50                           | VTR47A63            | QV1-3            | EV-1610      |
| C226        | 10 16V   | CEL2311000        | PC10-25                          | VTT10B25            | QV1-41           | EV-1222      |
| C227        | 10 16V   | CEL2311000        | PC10-25                          | VTT10B25            | QV1-41           | EV-1222      |
| C228        | 10 16V   | CEL2311000        | PC10-25                          | VTT10B25            | QV1-41           | EV-1222      |
| C229        | .1 16V   | CAA2311086        |                                  | TOC104M050EL        | QDT1-2           | S050-R109    |
| C230        | 100 10V  | CEL2901010        | PC100-10                         | VTT100E10           | QV1-93           | EV-1130      |
| C231        | 33 16V   | CEL2313300        | PC30-25                          | VTT33025            | QV1-63           | EV-1325      |
| C232        | 1 50V    | CEL2811090        | PC1-50                           | VTT1A50             | QV1-11           | EV-1615      |
| C233        | 220 6.3V | CEL2902210        | PC250-10                         | VTT220F10           | QV1-115          | EV-1140      |
| C234        | 100 16V  | CEL2311010        | PC100-16                         | VTT100F16           | QV1-95           | EV-1230      |
| C239        | 22 16V   | CEL2312200        | PC25-25                          | VTT22B16            | QV1-55           | EV-1224      |
| C261        | .47 50V  | CEL2814780        | PC1-50                           | VTR47A63            | QV1-3            | EV-1610      |
| C270        | .47 50V  | CEL2814780        | PC1-50                           | VTR47A63            | QV1-3            | EV-1610      |
| C271        | 4.7 25V  | CEL2514790        | PC5-50                           | VTT47R7B50          | QV1-27           | EV-1319      |
| C272        | 47 10V   | CEL2114700        | PC50-16                          | VTT47D16            | QV1-73           | EV-1226      |
| C277        | .47 50V  | CEL2814780        | PC1-50                           | VTR47A63            | QV1-3            | EV-1610      |
| C282        | 1 50V    | CEL2811090        | PC1-50                           | VTT1A50             | QV1-11           | EV-1615      |
| C283        | 47 10V   | CEL2114700        | PC50-16                          | VTT47D16            | QV1-73           | EV-1226      |
| C288        | 470 16V  | CEL2314710        | PC500-16                         | VTT470K16           | QV1-151          | EV-1250      |
| C291        | 100 16V  | CEL2311010        | PC100-16                         | VTT100F16           | QV1-95           | EV-1230      |
| C292        | 33 16V   | CEL2313300        | PC30-25                          | VTT33025            | QV1-63           | EV-1325      |
| C294        | 4.7 25V  | CEL2514790        | PC5-50                           | VTT47R7B50          | QV1-27           | EV-1319      |
| C305        | 22 16V   | CEL2312200        | PC25-25                          | VTT22B16            | QV1-55           | EV-1224      |
| C307        | 4.7 25V  | CEL2514790        | PC5-50                           | VTT47R7B50          | QV1-27           | EV-1319      |
| C311        | 2.2 50V  | CEL2812290        | PC2-100                          | VTT2R2A50           | QV1-19           | EV-1517      |
| C317        | 22 16V   | CEL2312200        | PC25-25                          | VTT22B16            | QV1-55           | EV-1224      |
| C326        | 4.7 25V  | CEL2514790        | PC5-50                           | VTT47R7B50          | QV1-27           | EV-1319      |

# PARTS LIST AND DESCRIPTION (CONTINUED)

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

## 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       | .04     | (1)           | OC-203             | NGP02                     | GP140            | QC2-157           | 5GA-S40      |
| C2       | .02     |               |                    |                           | TA120            |                   | TG-S20       |
| C3       | 39 NPO  |               |                    |                           | CN0439           |                   | 10TCC-Q39    |
| C4       | 2 NPO   |               |                    |                           | CN0522           |                   | 10TCC-V22    |
| C5       | 22 NPO  |               |                    |                           | CN0422           |                   | 10TCC-Q22    |
| C6       | 22 NPO  |               |                    |                           | CN0422           |                   | 10TCC-Q22    |
| C7       | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C8       | .04     |               |                    |                           | GP140            |                   | 5GA-S40      |
| C11      | .04     |               |                    |                           | GP140            |                   | 5GA-S40      |
| C12      | .01     |               |                    |                           | EWFA1110         |                   | 1PB-S10      |
| C14      | .047    |               |                    |                           | EWFA1147         | QF1-91<br>QF1-171 | 1PB-S47      |
| C18      | 47      |               | OTZ-47<br>OTZ-4R7  | NP047<br>NP04P7           | CN0447           |                   | 10TCC-Q47    |
| C20      | 5 NPO   |               |                    |                           | CN0547           |                   | 10TCC-V47    |
| C21      | .04     |               |                    |                           | GP140            |                   | 5GA-S40      |
| C22      | 100     |               |                    |                           | GP310            |                   | 10TS-T10     |
| C24      | 47 NPO  |               |                    |                           | CN0447           |                   | 10TCC-Q47    |
| C201     | 22      |               |                    |                           | CN0422           |                   | 10TCC-Q22    |
| C202     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C203     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C204     | .01     |               |                    |                           | EWFA1110         |                   | 1PB-S10      |
| C205     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C206     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C207     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C208     | 5       |               |                    |                           | CN0547           | QC2-141           | 10TCC-V47    |
| C209     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C210     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C211     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C212     | 15      |               |                    |                           | CN0415           |                   | 10TCC-Q15    |
| C213     | .047    |               |                    |                           | EWFA1147         | QF1-171           | 1PB-S47      |
| C214     | .01     |               | DC-103             | DPMS2S47<br>MGPO1         | TA110            |                   | TG-S10       |
| C215     | 1 NPO   |               |                    |                           | CN0510           |                   | 10TCC-V10    |
| C216     | .047    |               |                    |                           | EWFA1147         | QF1-171           | 1PB-S47      |
| C217     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C218     | .01     |               |                    |                           | EWFA1110         |                   | 1PB-S10      |
| C219     | .047    |               |                    |                           | EWFA1147         | QF1-171           | 1PB-S47      |
| C220     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C221     | 56 NPO  |               |                    |                           | CN0456           |                   | 10TCC-Q56    |
| C222     | .0022   |               |                    |                           | GP222            | QC2-97            | 5GA-D22      |
| C225     | .01     |               |                    |                           | EWFA1110         |                   | 1PB-S10      |
| C235     | .01     |               | DC-103             | MGPO1                     | TA110            |                   | TG-S10       |
| C236     | .022    |               |                    |                           | EWFA1122         |                   | 1PB-S22      |
| C237     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C238     | .022    |               |                    |                           | EWFA1122         |                   | 1PB-S22      |
| C240     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C241     | .001    |               |                    |                           | GP210            |                   | 5GA-D10      |
| C242     | 100 NPO |               |                    |                           | CN0310           |                   | 10TCC-T10    |
| C243     | 1 NPO   |               |                    |                           | CN0510           |                   | 10TCC-V10    |
| C244     | .01     |               |                    |                           | MGPO1            | QC2-141           | TG-S10       |
| C245     | .001    |               |                    |                           | GP1000           |                   | 5GA-D10      |
| C246     | .001    |               |                    |                           | GP1000           |                   | 5GA-D10      |
| C247     | .001    |               |                    |                           | DPMS601          |                   | 1PB-D10      |
| C248     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C249     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C250     | 2 NPO   |               |                    |                           | CN0522           |                   | 10TCC-V22    |
| C251     | 2 NPO   |               |                    |                           | CN0522           |                   | 10TCC-V22    |
| C252     | 33      |               |                    |                           | CN0433           | QC2-107           | 10TCC-Q33    |
| C253     | .0033   |               |                    |                           | GP233            |                   | 5GA-D33      |
| C254     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C255     | 180     |               |                    |                           | GP318            |                   | 10TS-T18     |
| C256     | 180     |               |                    |                           | GP318            |                   | 10TS-T18     |
| C257     | 68      |               |                    | NP068                     | CN0468           |                   | 10TCC-Q68    |
| C258     | 250     |               |                    |                           | GP322            |                   | 10TS-T22     |
| C259     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C260     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C261     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C262     | 33      |               |                    |                           | CN0433           | QC2-141           | 10TCC-Q33    |
| C263     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C264     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C265     | 200     |               |                    |                           | GP320            |                   | 10TS-T20     |
| C266     | 390     |               |                    |                           | GP339            | QC2-141           | 10TS-T39     |
| C267     | 39      |               |                    |                           | CN0439           |                   | 10TCC-Q39    |
| C268     | 220     |               |                    |                           | GP322            |                   | 10TS-T22     |
| C269     | 250     |               |                    |                           | GP322            |                   | 10TS-T22     |
| C273     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C274     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C275     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C276     | .01     |               |                    |                           | EWFA1110         | QF1-91<br>QF1-215 | 1PB-S10      |
| C278     | 1       |               |                    |                           | EWFA1010         |                   | 1PB-P10      |
| C279     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C280     | .01     |               |                    |                           | EWFA1110         |                   | 1PB-S10      |
| C281     | .01     |               |                    |                           | EWFA1110         | QF1-91            | 1PB-S10      |
| C285     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C286     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C287     | .047    |               |                    |                           | EWFA1147         | QF1-171           | 1PB-S47      |
| C290     | .01     |               | OC-103             | MGPO1                     | TA110            |                   | TG-S10       |
| C293     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C295     | .04     |               |                    |                           | GP140            | QC2-141           | 5GA-S40      |
| C296     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C297     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C298     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |
| C299     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C300     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C301     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C302     | .01     |               |                    |                           | TA110            |                   | TG-S10       |
| C303     | .01     |               |                    |                           | TA110            | QC2-141           | TG-S10       |
| C306     | 15      |               |                    |                           | CN0415           |                   | 10TCC-Q15    |
| C308     | 3       |               |                    |                           | CN0533           |                   | 10TCC-V33    |
| C309     | .039    |               |                    |                           | GP140            |                   | 5GA-S40      |

REALISTIC MODEL TRC-452

## 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 |
| C310     | .01    | (1)           | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C312     | .01    |               |                    | WMF1S1                    | EWFA1A110        | QF1-91           | 1PB-S10      |
| C313     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C314     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C315     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C316     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C318     | .001   |               | DD-102G            | GP1000                    | GP210            | QC2-81           | 5GA-010      |
| C319     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C320     | .01    |               |                    | WMF1S1                    | EWFA1A110        | QF1-91           | 1PB-S10      |
| C321     | .0047  |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C322     | .01    | (1)           | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C323     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C324     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C325     | .01    |               | DC-103             | MGP01                     | TA110            | QC2-141          | TG-S10       |
| C327     | .039   |               |                    |                           | GP140            |                  | 5GA-S40      |
| C330     | .001   |               | DD-102G            | GP1000                    | GP210            | QC2-81           | 5GA-010      |
| C331     | .001   |               | DD-102G            | GP1000                    | GP210            | QC2-81           | 5GA-010      |
| VC1      | 50     |               |                    |                           |                  |                  |              |
|          |        | CCVY024006    |                    |                           |                  |                  |              |

(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. |
| VR201    | AGC                  | 50K        | RRVY103010 (18)  |                    |                    |                  | X260R503B(2) |
| VR202    | Volume               | 10K        | RRVY117001       |                    |                    |                  |              |
| VR212    | PA Volume            | 10K        |                  |                    |                    |                  |              |
| VR202    | Power Switch         | 50K        | RRVY238001       |                    |                    |                  |              |
| VR204    | Squelch/RX/PA Switch | 50K        | RRVY103010       |                    |                    |                  | X260R503B(2) |
| VR205    | Squelch Range        | 50K        | RRVY103010       |                    |                    |                  | X260R253B(2) |
| VR206    | Meter                | 20K        | RRVY103008       |                    |                    |                  | X260R253B(2) |
| VR206    | RF Panel Meter       | 20K        | RRVY103009       |                    |                    |                  | X201R102B    |
| VR207    | AMC                  | 100K       | RRVY102004       | T-1000             | C102               | MTC13L1          |              |
| VR208    | RF Gain              | 100K       | RRVY048001       |                    |                    |                  |              |

(2) Cut off one of the end terminals and bend to fit PC Board

(18) Includes VR202, VR212, Switch.

### COILS (RF-IF)

| ITEM No. | FUNCTION           | REPLACEMENT DATA |                      |                 | REMARKS |
|----------|--------------------|------------------|----------------------|-----------------|---------|
|          |                    | PART No.         | OTHER IDENTIFICATION | MILLER PART No. |         |
| L1       | VCO(17MHz)         | CA-3627          | LA-166               |                 |         |
| L2       | VCO                |                  | LA-167               |                 |         |
| L3       | RF Choke(2.2uH)    | C-0697           |                      |                 |         |
| L4       | RF Choke(100uH)    | C-0698           |                      |                 |         |
| L5       | RF Choke(100uH)    | C-0698           |                      |                 |         |
| L6       | RF Choke(390uH)    | C-0699           |                      |                 |         |
| L7       | Ref Osc(10.2MHz)   | CA 3629          | LA-168               |                 |         |
| L9       | RF Choke(5.6uH)    | C-0700           |                      |                 |         |
| L201     | Rec Antenna(27MHz) | CA 3630          | LA029                | CBS740-T        |         |
| L202     | Rec RF(27MHz)      | CA 3631          | LA154                |                 |         |
| L203     | IF(9.785MHz)       | CA 3632          | LA153                |                 |         |
| L204     | IF(455kHz)         | CA 3633          | LA163                |                 |         |
| L205     | IF(455kHz)         | CA 3634          | LA164                |                 |         |
| L206     | IF(455kHz)         | CA 3635          | LA107                | 8517            |         |
| L207     | Xmit Osc(9.785MHz) | CA 3636          | LA159                |                 |         |
| L208     | Xmit Mixer(27MHz)  | CA 3637          | LA148                |                 |         |
| L209     | Xmit Mixer(27MHz)  | CA 3637          | LA148                |                 |         |
| L210     | Xmit Mixer(27MHz)  | CA 3638          | LA146                |                 |         |
| L211     | Xmit Buffer(27MHz) | CA 3639          | LC019                | CB305           |         |
| L212     | Xmit Driver(27MHz) | CA 3640          | LC017                | CB303           |         |
| L213     | RF Choke           | CA 3641          | LD012                | 4588            |         |
| L214     | Final(27MHz)       | CA 3639          | LC019                | CB305           |         |
| L215     | RF Choke           | LLCY119001       | LC119                |                 |         |
| L216     | RF Choke           | LLEY064001       | LE064                |                 |         |
| L217     | RF Choke           | CA 3644          | LD066                |                 |         |
| L218     | RF Choke           | CA 3645          | LD027                |                 |         |
| L221     | RF Choke(2.2uH)    | LLZY002005       |                      |                 |         |
| L222     | RF Choke(2.2uH)    | LLZY002005       |                      |                 |         |
| L223     | RF Choke(2.2uH)    | LLZY002005       |                      |                 |         |
| L224     | RF Choke(2.2uH)    | LLZY002005       |                      |                 |         |
| L225     | RF Choke(3.3uH)    | LLZY002010       |                      |                 |         |
| L226     | RF Choke(3.3uH)    | LLZY002010       |                      |                 |         |
| L227     | RF Choke(3.3uH)    | LLZY002010       |                      |                 |         |
| L228     | RF Choke           | LLDY027001       |                      |                 |         |

### FILTER CHOKE

| ITEM No. | RATINGS            |         |                              | REPLACEMENT DATA  |                     |                | NOTES               |
|----------|--------------------|---------|------------------------------|-------------------|---------------------|----------------|---------------------|
|          | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000~) | MFR. PART No.     | THORDARSON PART No. | TRIAD PART No. |                     |
| T203     | 1.2A               | .18     | .86mH                        | DB-2293 TF-083(1) | TR516               |                | (1) Number on unit. |

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### TRANSFORMER (Driver)

| ITEM No. | TURNS RATIO |        |        | REPLACEMENT DATA     |                     |                | NOTES               |
|----------|-------------|--------|--------|----------------------|---------------------|----------------|---------------------|
|          | PRI.        | SEC. 1 | SEC. 2 | MFGR. PART No.       | THORDARSON PART No. | TRIAD PART No. |                     |
| T201     | 1           | 1      |        | TN-0105<br>TF-069(1) | TR635               |                | (1) Number on unit. |

### TRANSFORMER (Audio Output)

| ITEM No. | IMPEDANCE |      |    | REPLACEMENT DATA     |                     |                | NOTES               |
|----------|-----------|------|----|----------------------|---------------------|----------------|---------------------|
|          | PRI.      | SEC. |    | MFGR. PART No.       | THORDARSON PART No. | TRIAD PART No. |                     |
| T202     | 32        | 8    | 20 | TD-0144<br>TF-068(1) | TR709               | MCB-9          | (1) Number on unit. |

### SPEAKER

| ITEM No. | TYPE          | REPLACEMENT DATA |               | NOTES |
|----------|---------------|------------------|---------------|-------|
|          |               | MFGR. PART No.   | QUAM PART No. |       |
| SP       | 4" PM, 8 Ohms | S-4605           | 4C25Z8        |       |

### FUSE DEVICES

| ITEM No. | DESCRIPTION | REPLACEMENT DATA |        |               |        |                     |        |
|----------|-------------|------------------|--------|---------------|--------|---------------------|--------|
|          |             | PART No.         |        | BUSS PART No. |        | LITTELFUSE PART No. |        |
|          |             | DEVICE           | HOLDER | DEVICE        | HOLDER | DEVICE              | HOLDER |
| FS001    | 2 Amp       | HF-111B          |        | AGC2          | HDJ    | 312002              | 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      | M-225B           | 18-032      | 18-034          | 18-010   | 18-105          | 4      | 1         | 3         | 5       | NC       | 1        |  |

### MISCELLANEOUS

| ITEM No. | PART NAME             | PART No.       | NOTES                             |
|----------|-----------------------|----------------|-----------------------------------|
| CR       | Component Combination | C-0701         | CR004                             |
| CR2      | Component Combination | C-0701         | CR004                             |
| CR3      | Component Combination | C-0701         | CR004                             |
| CR4      | Component Combination | C-0701         | CR004                             |
| CR5      | Component Combination | C-0701         | CR004                             |
| CR6      | Component Combination | C-0701         | CR004                             |
| CR7      | Component Combination | C-0701         | CR004                             |
| D217     | Led                   | DDAY007001     | MOD Indicator (5.5mA @ 3.60V)     |
| J201     | Jack                  | J-6421         | Antenna                           |
| J202     | Jack                  | J-0724         | PA                                |
| J203     | Jack                  | J-0724         | EXT SP                            |
| J204     | Jack                  | J-0723         | Microphone                        |
| J205     | Jack                  | JJKY052001     | Power                             |
| M201     | Meter                 | M-0311         | S/Rf                              |
| PL201    | Lamp                  | L-0713         | Meter (46mA @ 12.10v)             |
| PL202    | Lamp                  | L0-712         | Channel Indicator (46mA @ 12.10v) |
| S201     | Switch                | SSRY154001     | Channel Selector                  |
| S202     | Switch                |                | Power (Part of Volume Control)    |
| S203     | Switch                | S2334          | CB/PA                             |
| S204     | Switch                | S2335          | ANL                               |
| S205     | Switch                |                | RX/PA (Part of Squelch Control)   |
| X1       | Crystal               | QQXY074001     | 10.240MHz                         |
| X201     | Crystal               | QQXY070001     | 9.785MHz                          |
| XF201    | Crystal Filter        | C-0672 (FL019) | 455kHz                            |

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

| ITEM              | PART No.   | ITEM                    | PART No. |
|-------------------|------------|-------------------------|----------|
| Case, Top         | MTBP203642 | Knob, Channel           | K2142    |
| Case, Bottom      | MTBP203643 | Knob, Control           | K2283    |
| Bracket, Mounting | MB0153     | Knob, Channel Indicator | K2284    |
| Escutcheon        | Z2896      |                         |          |

### 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. 9466 (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')    |

REALISTIC MODEL TRC-452