

# 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 77-830

## MANUFACTURER'S SPECIFICATIONS

|                         |                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------|
| Circuitry:              | 4 ICs, 16 Transistors, 14 Diodes, 2 Zenor-diodes, 1 Vari-cap.                                              |
| Frequency Control:      | PLL (Phase Lock Loop) Synthesizing System                                                                  |
| Channels:               | 40 channels all installed                                                                                  |
| Mode of Operation:      | AM                                                                                                         |
| Receiver System:        | Dual Conversion Superheterodyne                                                                            |
| Sensitivity:            | Nominal 0.7 $\mu$ V (S/N 10 dB)                                                                            |
| Selectivity:            | More than 45 dB down at $\pm 10$ kHz                                                                       |
| Intermediate Frequency: | 1st: 10.695 MHz<br>2nd: 455 kHz                                                                            |
| Frequency Tolerance:    | $\pm 0.005\%$                                                                                              |
| Spurious Rejection:     | More than 60 dB                                                                                            |
| RF Output Power:        | Maximum 4.0 W (F.C.C. Maximum)                                                                             |
| Squelch Range:          | 0.5 $\mu$ V — 500 $\mu$ V                                                                                  |
| Audio Output Power:     | More than 3W (EXT. SP at 8 ohms)                                                                           |
| Controls:               | VOLUME CONTROL/POWER SWITCH, PA/SQUELCH CONTROL, CHANNEL SELECTOR, EXT. CB/OFF SWITCH, AUDIO FILTER SWITCH |
| Jacks and Connectors:   | MIC, EXT. SP, ANT, EXT. CB/PA SP, DC POWER                                                                 |
| Speaker:                | 3 $\frac{1}{2}$ " dynamic, 8 ohms                                                                          |
| Microphone:             | Dynamic CB mike                                                                                            |
| Power Source:           | DC 13.8 V                                                                                                  |

Courtesy of the Manufacturer

MIDLAND MODEL 77-830

**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:

L14, T7 thru T10 ..... 5009  
L7, L11, L12 ..... 9304  
L1, L2, L5, T1 thru T6 ..... 9440  
CT1 ..... 5000

## SYNTHESIZER ALIGNMENT

| TEST EQUIPMENT                     | TRANSCEIVER  | ADJUST | REMARKS                                                                                            |
|------------------------------------|--------------|--------|----------------------------------------------------------------------------------------------------|
| Input of frequency counter to TP1. | Ch. 19       | CT1    | Adjust for 10.240MHz $\pm$ 50Hz.                                                                   |
| Input of RF VTVM to TP2.           | Ch. 19       | T1     | Adjust for maximum.                                                                                |
| Input of DC meter to TP8.          | Ch. 19       | L1     | Adjust for 3.6 volts $\pm$ .1 volt.                                                                |
| Input of frequency counter to TP3. | Ch. 19, Xmit |        | Check for 10.695MHz.                                                                               |
| Input of RF VTVM to TP4.           | Ch. 19       | L2, T2 | Adjust for maximum.                                                                                |
| Input of frequency counter to TP4. | Ch. 1        |        | Check for 37.660MHz.<br>Check all channels (channel frequency + 10.695MHz = frequency on counter). |

## 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                                                                                | TRANSCEIVER                             | ADJUST          | REMARKS                                                               |
|-----------------------------------------------------------------------------------------------|-----------------------------------------|-----------------|-----------------------------------------------------------------------|
| Output of signal generator thru .01uF to TP10.<br>455kHz, 1000Hz @ 30% modulation.            | Ch. 19<br>Squelch MINIMUM<br>Filter OFF | T10, T9, T8     | Adjust for maximum output.                                            |
| Output of signal generator thru .01uF to antenna jack.<br>27.185MHz, 1000Hz @ 30% modulation. | Ch. 19<br>Squelch MINIMUM<br>Filter OFF | T7, L14, T6, T5 | Adjust for maximum output.<br>If necessary, readjust T8, T9, and T10. |

## 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 1000uV. | Ch. 19<br>Filter OFF | RV1    | SQUELCH RANGE<br>Set squelch control VR2 fully clockwise.<br>Adjust RV1 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<br>Filter OFF | RV3    | S METER<br>Adjust RV3 for 9 on S scale of meter.                                                     |

## TRANSMITTER ALIGNMENT

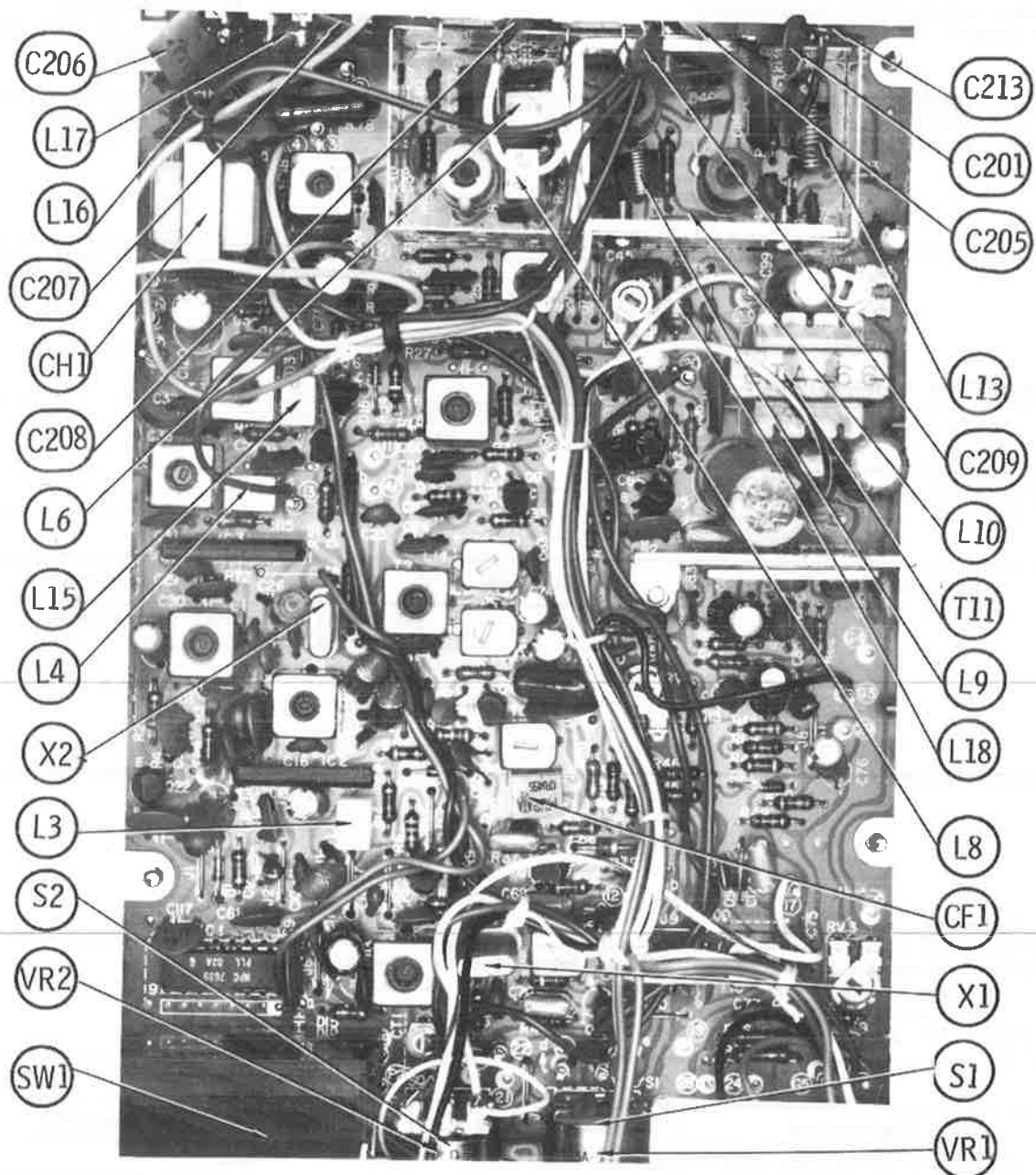
Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.  
NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.  
See page 4 for channel frequencies.

| TEST EQUIPMENT | TRANSCIVER | ADJUST                  | REMARKS               |
|----------------|------------|-------------------------|-----------------------|
|                | Ch. 19     | L5,T3,T4,<br>L7,L11,L12 | Adjust for maximum.   |
|                | Ch. 19     | L12                     | Adjust for 3.8 watts. |

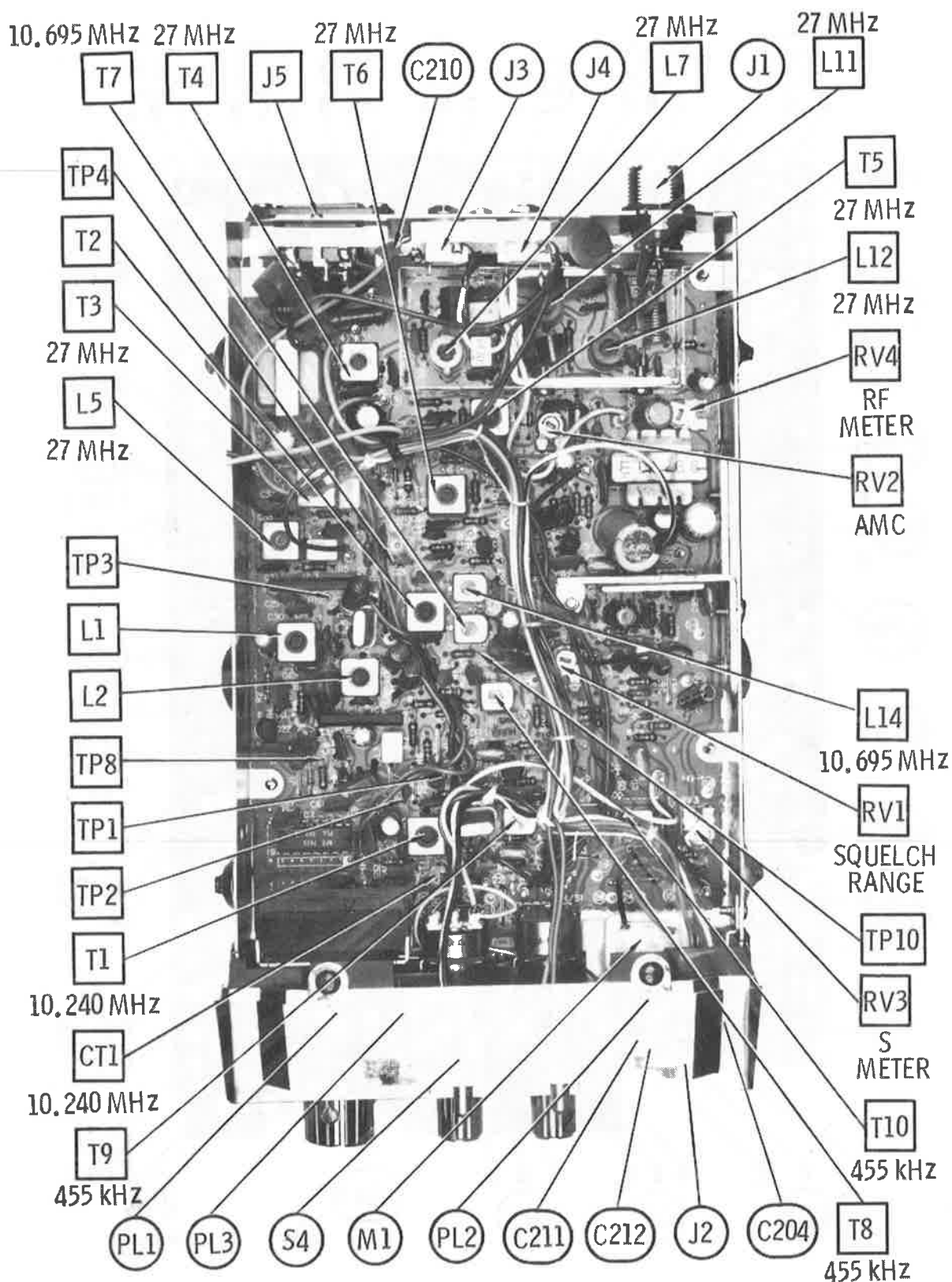
## TRANSMITTER ADJUSTMENTS

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

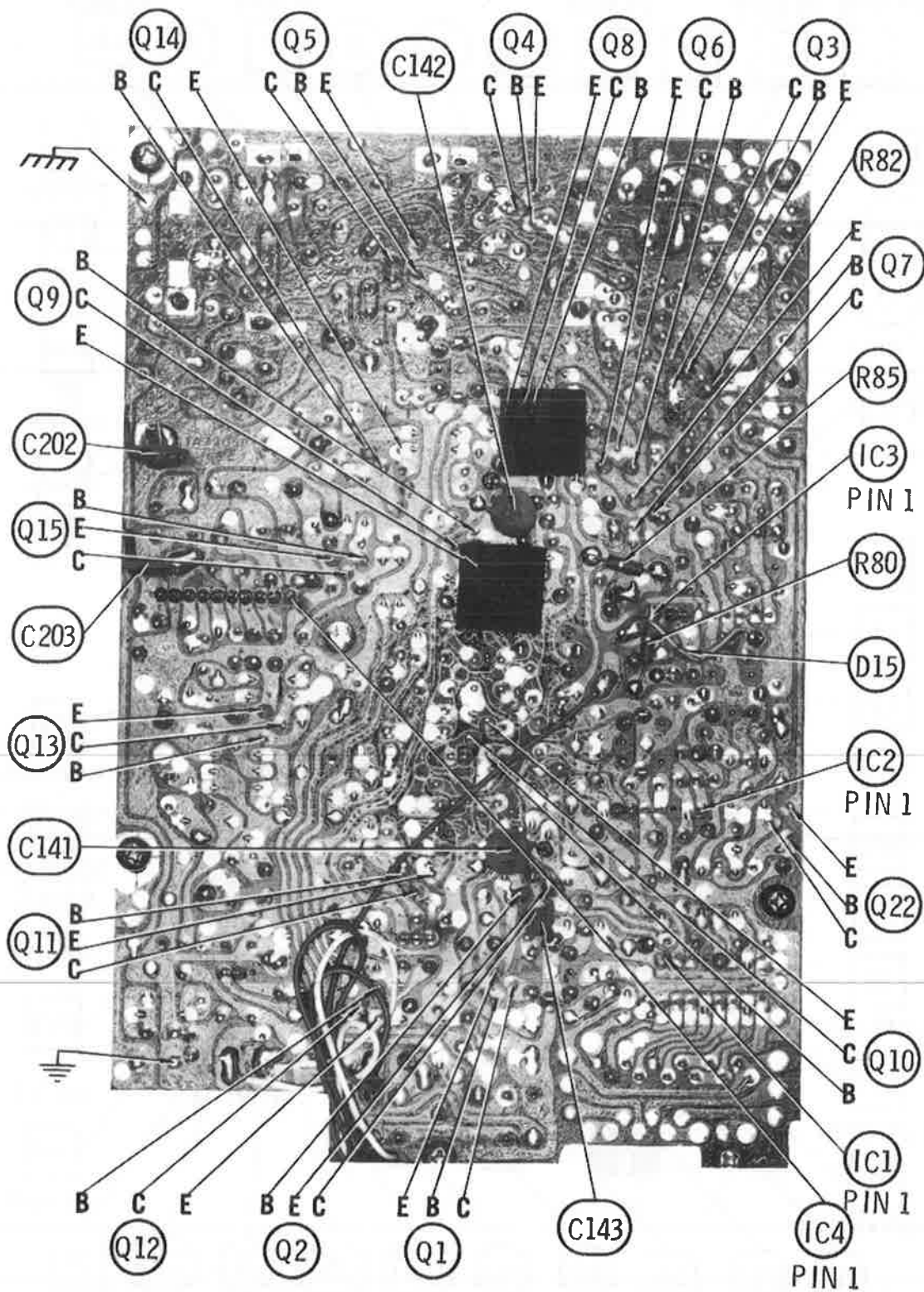
| TEST EQUIPMENT                                                                  | TRANSCIVER | ADJUST | REMARKS                                                                       |
|---------------------------------------------------------------------------------|------------|--------|-------------------------------------------------------------------------------|
| Modulation meter to antenna jack.<br>Inject a 20mV, 1000Hz signal at mic input. | Ch. 19     | RV2    | AMC<br>Adjust for 85% modulation.                                             |
| Connect an RF wattmeter and 50-ohm, 25-watt dummy lead to antenna connector.    | Ch. 19     | RV4    | RF PANEL METER<br>Adjust RV4 so that RF panel meter agrees with RF wattmeter. |



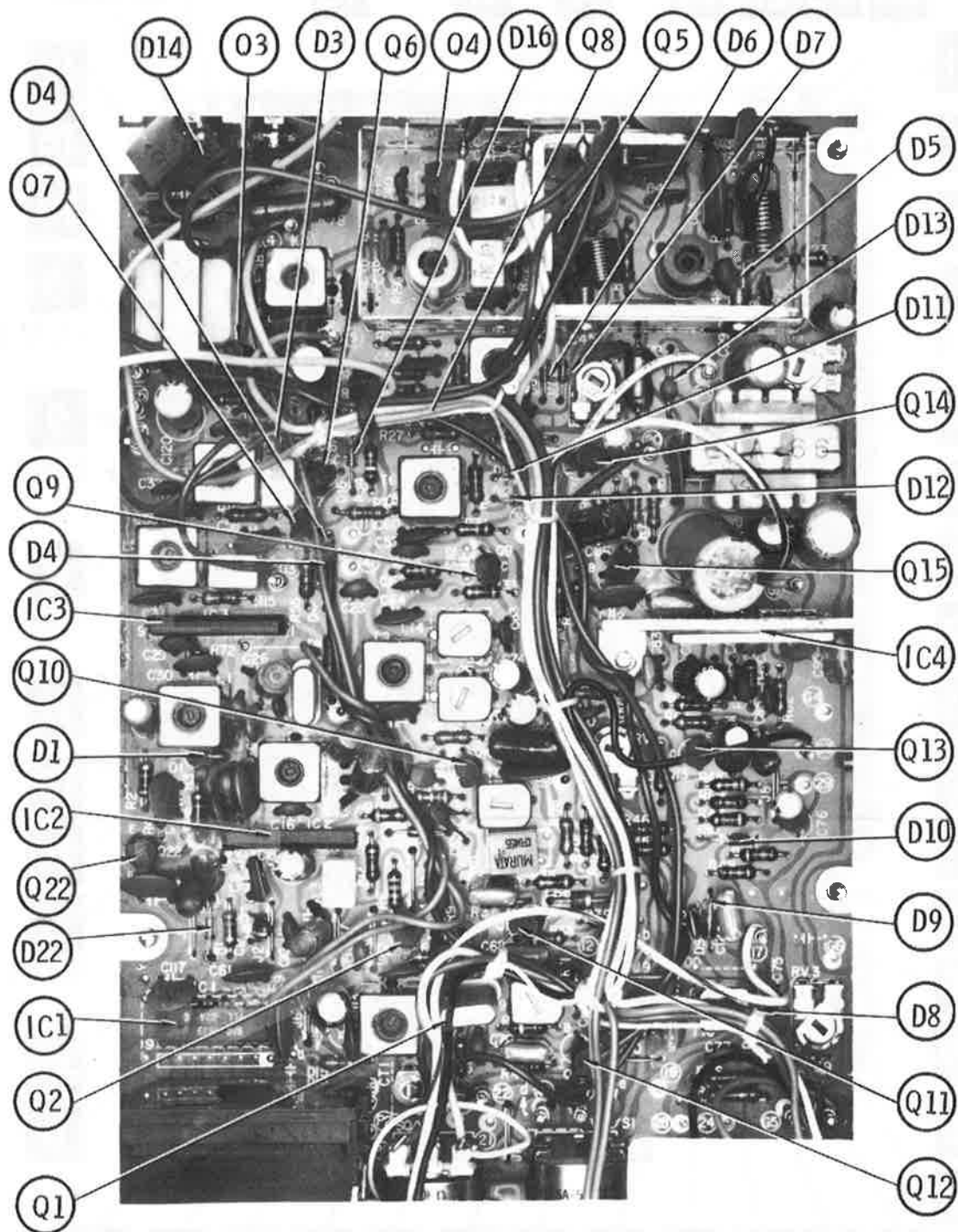
MAIN BOARD



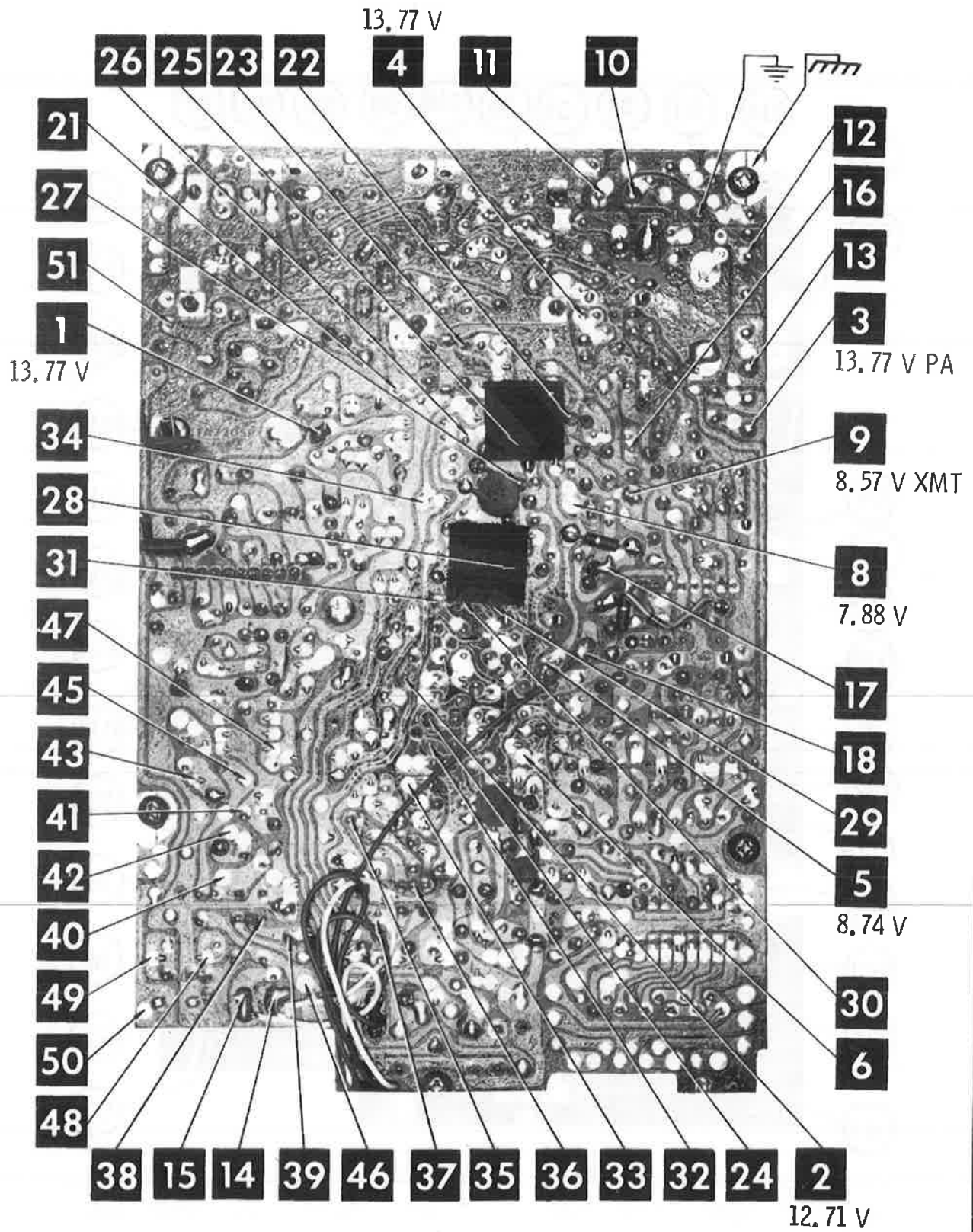
CHASSIS - BOTTOM



MAIN BOARD

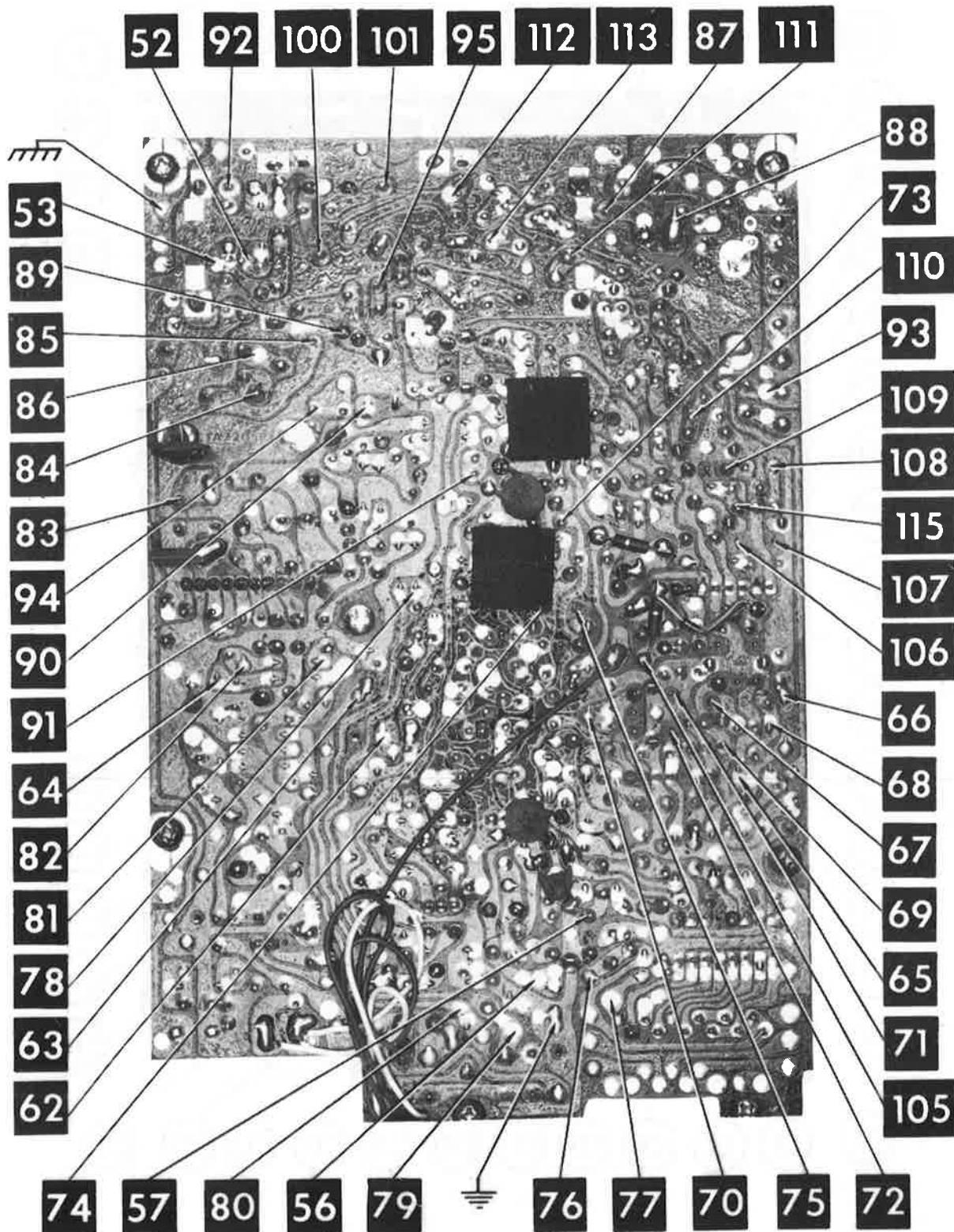


MAIN BOARD

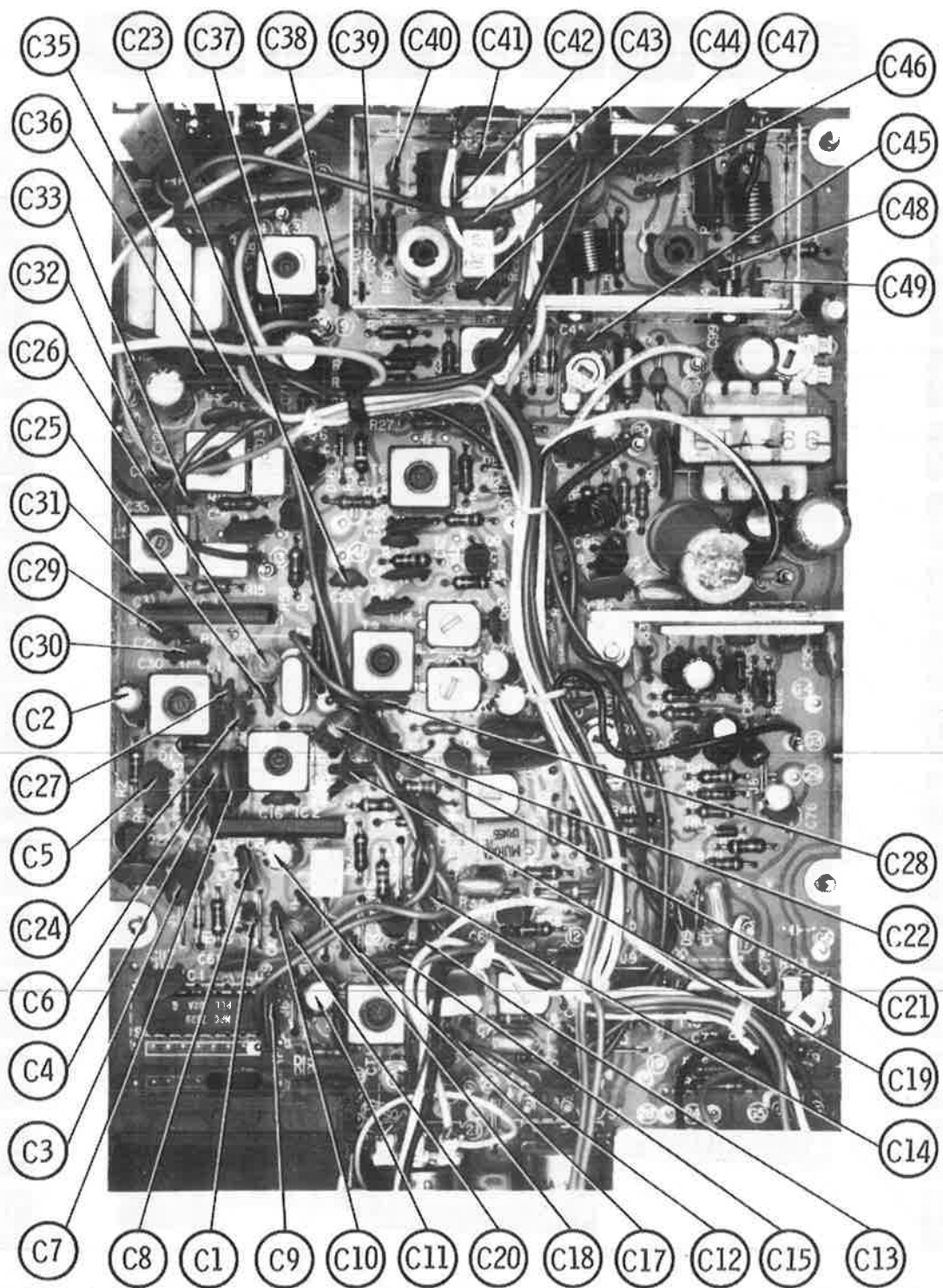


MAIN BOARD

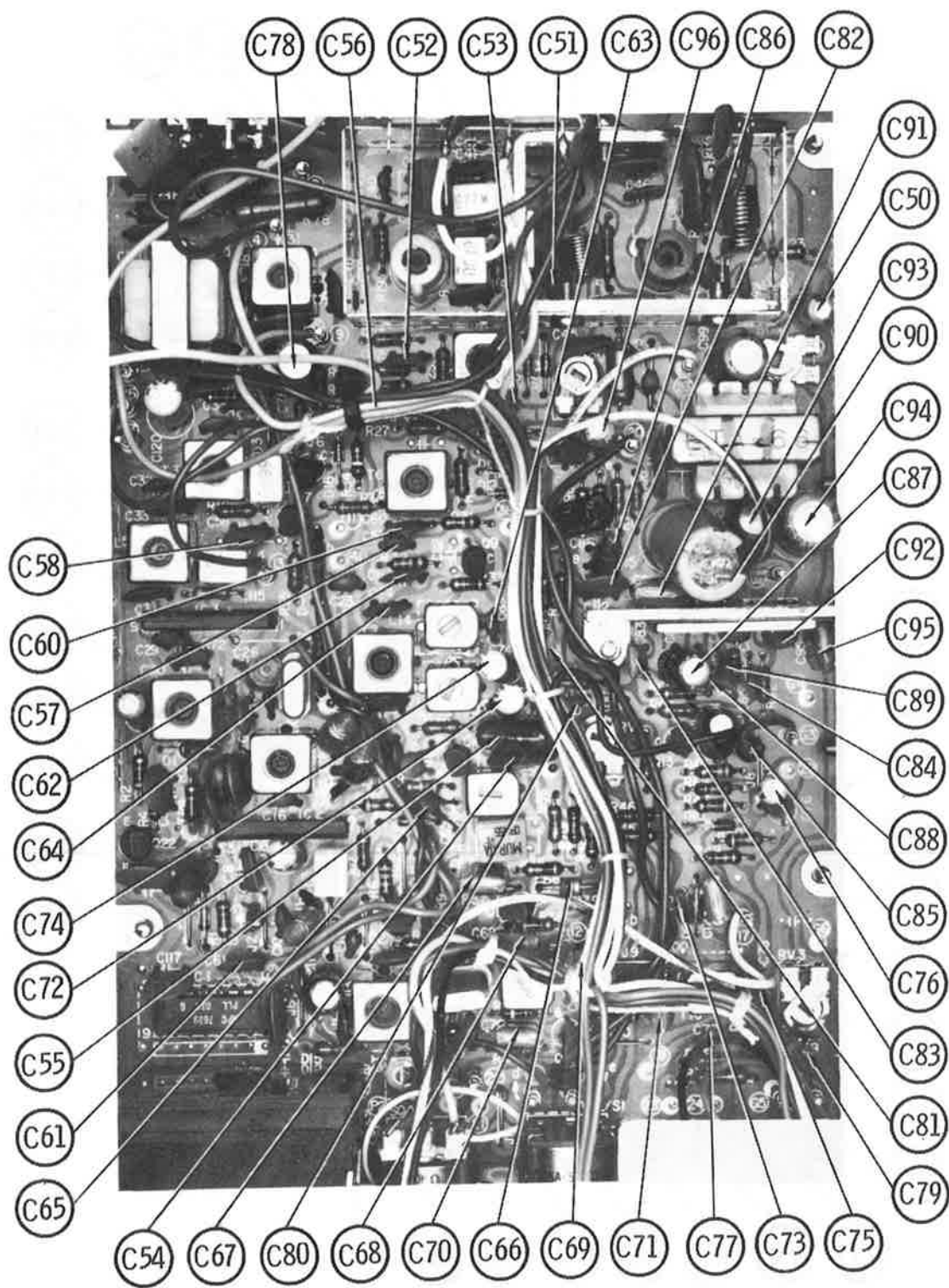
MIDLAND MODEL 77-830



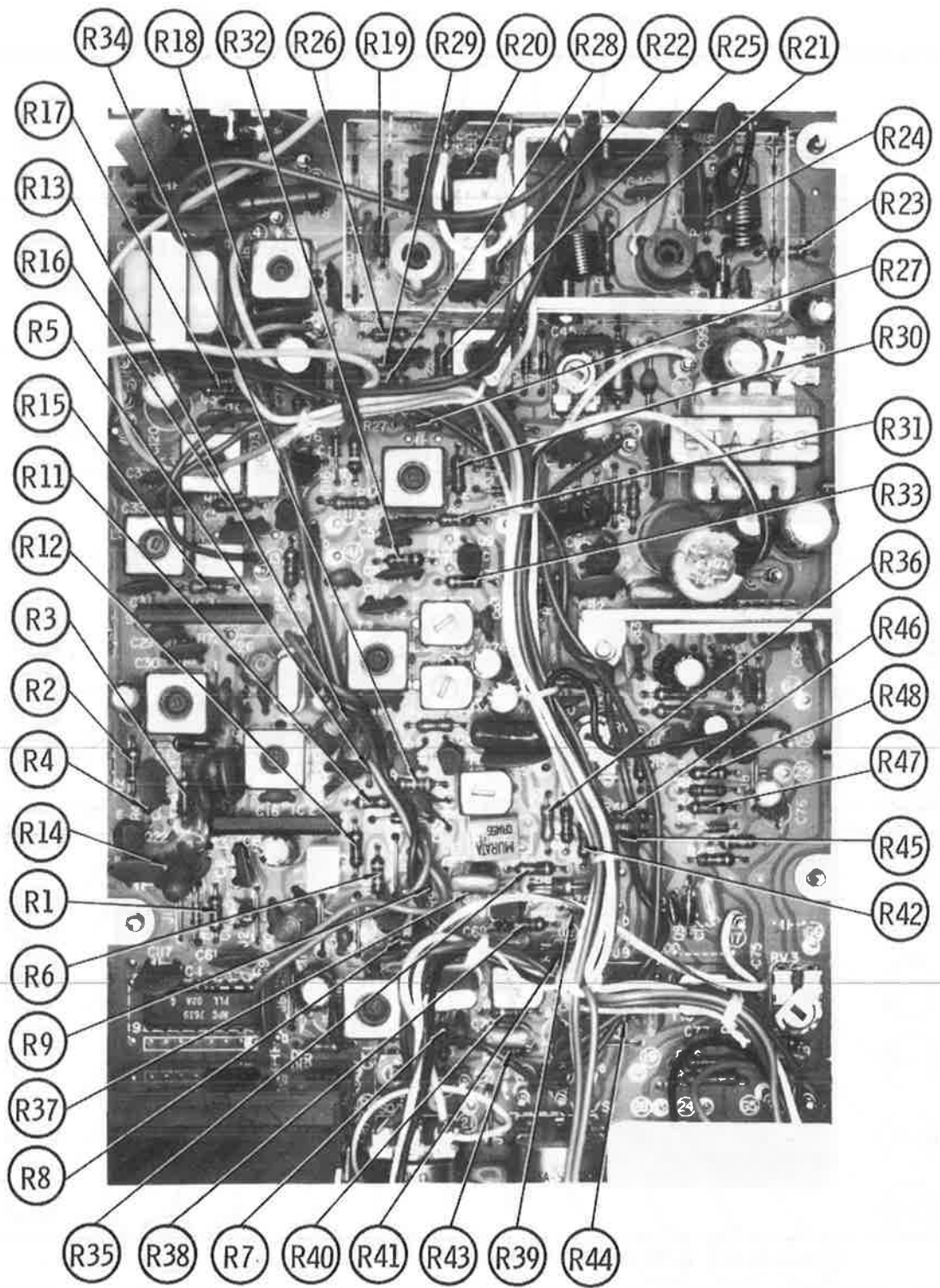
MAIN BOARD



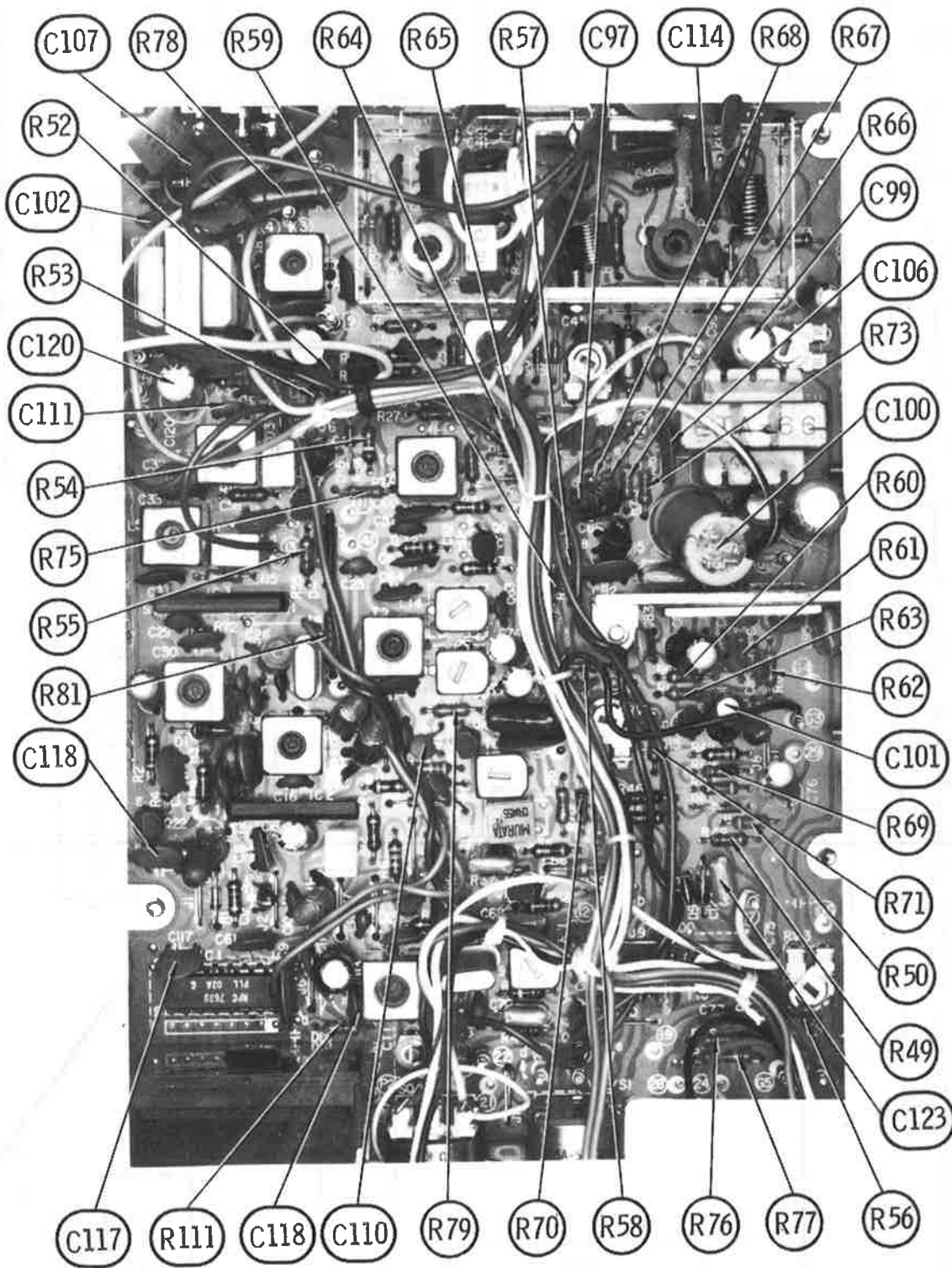
MAIN BOARD



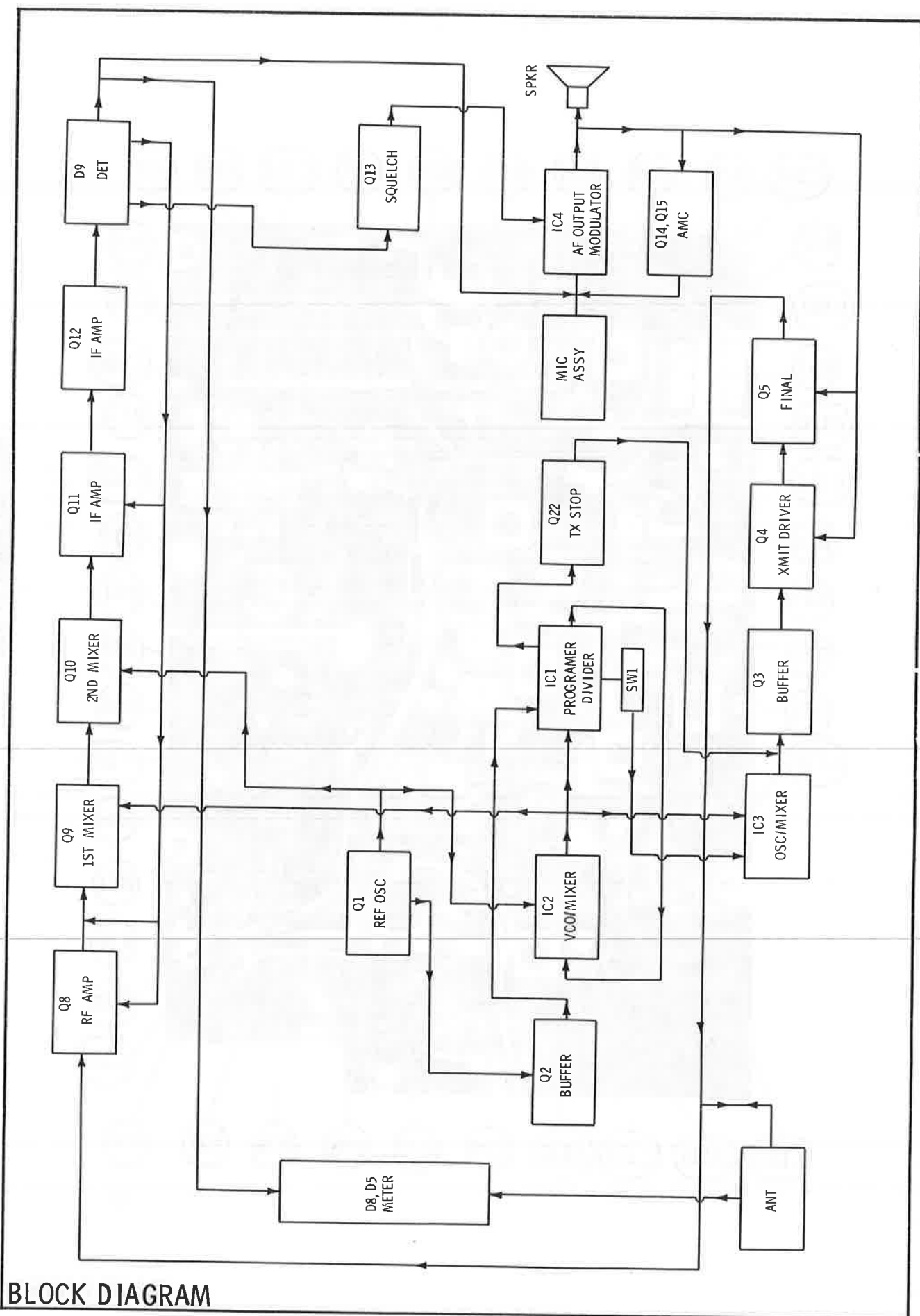
MAIN BOARD



MAIN BOARD



MAIN BOARD

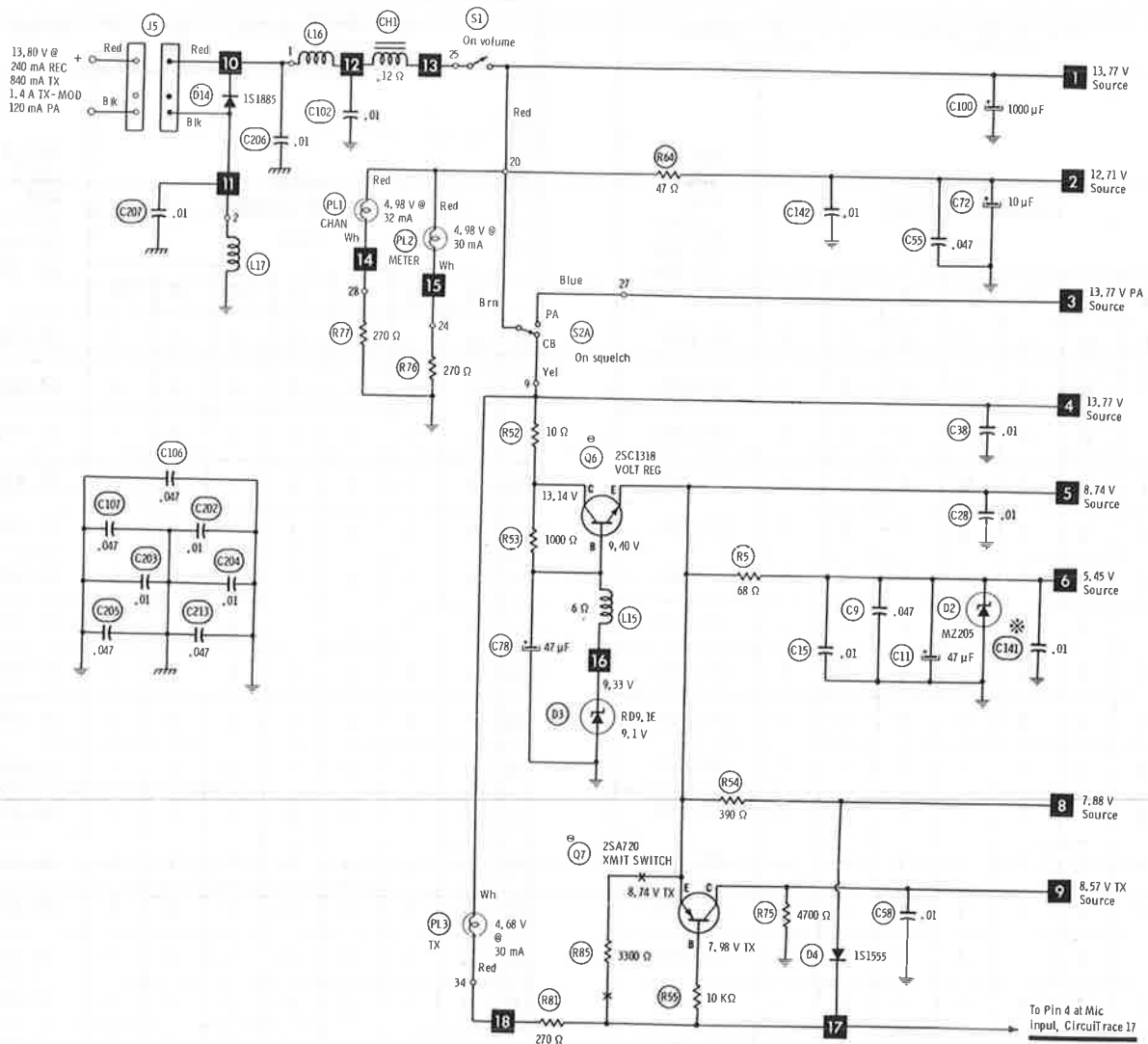


# TRUTH CHART

| 1 = <u>5.33</u> Volts      0 = <u>0</u> Volts |                          |    |    |    |    |    |    |                                                    |
|-----------------------------------------------|--------------------------|----|----|----|----|----|----|----------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC101<br>PROGRAM DIVIDER |    |    |    |    |    |    | REC &<br>XMIT<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP4 |
|                                               | PINS                     |    |    |    |    |    |    |                                                    |
|                                               | 9                        | 10 | 11 | 12 | 13 | 14 | 15 |                                                    |
| 1                                             | 1                        | 0  | 0  | 1  | 0  | 1  | 0  | 37.660                                             |
| 2                                             | 1                        | 0  | 0  | 1  | 0  | 0  | 1  | 37.670                                             |
| 3                                             | 1                        | 0  | 0  | 1  | 0  | 0  | 0  | 37.680                                             |
| 4                                             | 1                        | 0  | 0  | 0  | 1  | 1  | 0  | 37.700                                             |
| 5                                             | 1                        | 0  | 0  | 0  | 1  | 0  | 1  | 37.710                                             |
| 6                                             | 1                        | 0  | 0  | 0  | 1  | 0  | 0  | 37.720                                             |
| 7                                             | 1                        | 0  | 0  | 0  | 0  | 1  | 1  | 37.730                                             |
| 8                                             | 1                        | 0  | 0  | 0  | 0  | 0  | 1  | 37.750                                             |
| 9                                             | 1                        | 0  | 0  | 0  | 0  | 0  | 0  | 37.760                                             |
| 10                                            | 0                        | 1  | 1  | 1  | 1  | 1  | 1  | 37.770                                             |
| 11                                            | 0                        | 1  | 1  | 1  | 1  | 1  | 0  | 37.780                                             |
| 12                                            | 0                        | 1  | 1  | 1  | 1  | 0  | 0  | 37.800                                             |
| 13                                            | 0                        | 1  | 1  | 1  | 0  | 1  | 1  | 37.810                                             |
| 14                                            | 0                        | 1  | 1  | 1  | 0  | 1  | 0  | 37.820                                             |
| 15                                            | 0                        | 1  | 1  | 1  | 0  | 0  | 1  | 37.830                                             |
| 16                                            | 0                        | 1  | 1  | 0  | 1  | 1  | 1  | 37.850                                             |
| 17                                            | 0                        | 1  | 1  | 0  | 1  | 1  | 0  | 37.860                                             |
| 18                                            | 0                        | 1  | 1  | 0  | 1  | 0  | 1  | 37.870                                             |
| 19                                            | 0                        | 1  | 1  | 0  | 1  | 0  | 0  | 37.880                                             |
| 20                                            | 0                        | 1  | 1  | 0  | 0  | 1  | 0  | 37.900                                             |

| 1 = <u>5.33</u> Volts      0 = <u>0</u> Volts |                          |    |    |    |    |    |    |                                                    |
|-----------------------------------------------|--------------------------|----|----|----|----|----|----|----------------------------------------------------|
| C<br>H<br>A<br>N<br>N<br>E<br>L               | IC101<br>PROGRAM DIVIDER |    |    |    |    |    |    | REC &<br>XMIT<br>VCO<br>OUTPUT<br>IN MHz<br>AT TP4 |
|                                               | PINS                     |    |    |    |    |    |    |                                                    |
|                                               | 9                        | 10 | 11 | 12 | 13 | 14 | 15 |                                                    |
| 21                                            | 0                        | 1  | 1  | 0  | 0  | 0  | 1  | 37.910                                             |
| 22                                            | 0                        | 1  | 1  | 0  | 0  | 0  | 0  | 37.920                                             |
| 23                                            | 0                        | 1  | 0  | 1  | 1  | 0  | 1  | 37.950                                             |
| 24                                            | 0                        | 1  | 0  | 1  | 1  | 1  | 1  | 37.930                                             |
| 25                                            | 0                        | 1  | 0  | 1  | 1  | 1  | 0  | 37.940                                             |
| 26                                            | 0                        | 1  | 0  | 1  | 1  | 0  | 0  | 37.960                                             |
| 27                                            | 0                        | 1  | 0  | 1  | 0  | 1  | 1  | 37.970                                             |
| 28                                            | 0                        | 1  | 0  | 1  | 0  | 1  | 0  | 37.980                                             |
| 29                                            | 0                        | 1  | 0  | 1  | 0  | 0  | 1  | 37.990                                             |
| 30                                            | 0                        | 1  | 0  | 1  | 0  | 0  | 0  | 38.000                                             |
| 31                                            | 0                        | 1  | 0  | 0  | 1  | 1  | 1  | 38.010                                             |
| 32                                            | 0                        | 1  | 0  | 0  | 1  | 1  | 0  | 38.020                                             |
| 33                                            | 0                        | 1  | 0  | 0  | 1  | 0  | 1  | 38.030                                             |
| 34                                            | 0                        | 1  | 0  | 0  | 1  | 0  | 0  | 38.040                                             |
| 35                                            | 0                        | 1  | 0  | 0  | 0  | 1  | 1  | 38.050                                             |
| 36                                            | 0                        | 1  | 0  | 0  | 0  | 1  | 0  | 38.060                                             |
| 37                                            | 0                        | 1  | 0  | 0  | 0  | 0  | 1  | 38.070                                             |
| 38                                            | 0                        | 1  | 0  | 0  | 0  | 0  | 0  | 38.080                                             |
| 39                                            | 0                        | 0  | 1  | 1  | 1  | 1  | 1  | 38.090                                             |
| 40                                            | 0                        | 0  | 1  | 1  | 1  | 1  | 0  | 38.100                                             |

MIDLAND MODEL 77-830



—X— 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 PHOTOFAC STANDARD NOTATION SCHEMATIC

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Transistor Terminal Guide



Q6, Q7  
Bottom view

# PARTS LIST AND DESCRIPTION

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

## SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No.   | MFR. PART No. | REPLACEMENT DATA          |                     |                  |                   |                   |              |                  |                   |
|----------|------------|---------------|---------------------------|---------------------|------------------|-------------------|-------------------|--------------|------------------|-------------------|
|          |            |               | GENERAL ELECTRIC PART No. | IR WORKMAN PART No. | MALLORY PART No. | MOTOROLA PART No. | RAYTHEON PART No. | RCA PART No. | SPRAGUE PART No. | SYLVANIA PART No. |
| D1       | ITT410     |               |                           | WEP602              |                  | HEPR2502          |                   |              |                  | ECG612            |
| D2       | MZ205      |               |                           |                     |                  |                   | RE 105            |              |                  | ECG135            |
| D3       | RD9.1E     |               | GEZD-9.1                  |                     | ZB9.1B           |                   | RE 114            |              | RT-240           | ECG139A           |
| D4       | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D5       | 1N60       |               | 1N60                      | 1N60                | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            |
| D6       | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D7       | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D8       | 1N60       |               | 1N60                      | 1N60                | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            |
| D9       | 1N60       |               | 1N60                      | 1N60                | PTC206           | HEPR9135          | RE 47             | SK3088       | RT-263           | ECG109            |
| D10      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D11      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D12      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D13      | V06C       |               | GE-504A                   | 5A4D                | PTC201           | HEPR0052          | RE 49             | SK3030       | RT-213           | ECG116            |
| D14      | 1S1885     |               | GE-504A                   | 5A4D                | PTC201           | HEPR0052          | RE 49             | SK3030       | RT-213           | ECG116            |
| D15      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D16      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| D22      | 1S1555     |               | GE-300                    | D200                | PTC214           | HEPR0602          | RE 52             | SK3100       | RT-218           | ECG177            |
| IC1      | PLLO2A     |               |                           |                     |                  |                   | RE 306-IC         |              |                  | ECG1167           |
| IC2      | C3001A     |               |                           |                     |                  |                   |                   |              |                  | ECG1192           |
|          | TA7310P(1) |               |                           |                     |                  |                   |                   |              |                  | ECG1192           |
| IC3      | C3001A     |               |                           |                     |                  |                   |                   |              |                  | ECG1192           |
|          | TA7310P(1) |               |                           |                     |                  |                   |                   |              |                  | ECG1192           |
| IC4      | TA7205P    |               | GEIC-179                  | WEP949              | PTC780           |                   | RE 357-IC         | SK3231       | TVMC-81          | ECG1155           |
| Q1       | 2SC710E    |               | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710F(1) |               | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710DE   | 01-030710(1)  | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
| Q2       | 2SC710     |               | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710E(1) |               | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710DE   | 01-030710(1)  | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
| Q3       | 2SC1687    | 01-031687     | GE-20 *                   | TR-24 *             | PTC121 *         | HEPS0015 *        | RE 13 *           | SK3018 *     | RT-107A *        | ECG123A *         |
|          | 2SC1687Q   | (1)           | GE-20 *                   | TR-24 *             | PTC121 *         | HEPS0015 *        | RE 13 *           | SK3018 *     | RT-107A *        | ECG123A *         |
| Q4       | 2SC1760    | (11)          | GE-276                    | WEP1014             |                  |                   | RE 224            |              | RT-310           | ECG306            |
|          | 2SC2036    | (1)           | GE-336                    |                     |                  |                   | RE 209            |              |                  | ECG306            |
|          | 2SC1846    | (1)           | GE-336                    |                     |                  |                   | RE 209            |              |                  | ECG295            |
|          | 2SC1846Q   | 01-031846(1)  | GE-336                    |                     |                  |                   | RE 209            |              |                  | ECG295            |
| Q5       | 2SC1678    | (12)          | GE-322                    | WEP1678             | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            |
|          | 2SC2076    | (1)           | GE-215                    | WEP1306             | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            |
|          | 2SC1974    | (1)           | GE-337                    | WEP1306             | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            |
|          | 2SC1306    | 01-031306(1)  | GE-215                    | WEP1306             | PTC186           |                   | RE 203            | SK3197       | RT-146           | ECG235            |
| Q6       | 2SC1318    |               | GE-210 *                  | TR-21 *             | PTC178           | HEPS0015 *        | RE 17 *           | SK3122       | RT-302           | ECG128 *          |
|          | 2SC1318Q   | (1)           | GE-210 *                  | TR-21 *             | PTC178           | HEPS0015 *        | RE 17 *           | SK3122       | RT-302           | ECG128 *          |
|          | 2SC1318Q,R | 01-031318(1)  | GE-210 *                  | TR-21 *             | PTC178           | HEPS0015 *        | RE 17 *           | SK3122       | RT-302           | ECG128 *          |
| Q7       | 2SA720     |               | GE-82 *                   | TR-19               | PTC127 *         | HEPS0026          | RE 211            | SK3114       | RT-126A *        | ECG298            |
|          | 2SA719     | (1)           | GE-269                    | TR-28 *             | PTC103 *         | HEPS0019 *        | RE 26 *           | SK3114       | RT-305           | ECG290            |
|          | 2SA719P    | (1)           | GE-269                    | TR-28 *             | PTC103 *         | HEPS0019 *        | RE 26 *           | SK3114       | RT-305           | ECG290            |
|          | 2SA719Q,R  | 01-010719(1)  | GE-269                    | TR-28 *             | PTC103 *         | HEPS0019 *        | RE 26 *           | SK3114       | RT-305           | ECG290            |
| Q8       | 2SC460     |               | GE-61 *                   | (IR)2SC460B         | PTC136 *         | HEPS0014 *        | RE 9              | SK3018 *     | RT-134           | ECG107            |
|          | 2SC710     | (1)           | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC1047    | (1)           | GE-60 *                   | (IR)2SC829B         | PTC132 *         | HEPS0016 *        | RE 28 *           | SK3018 *     | RT-107           | ECG161 *          |
|          | 2SC460B    | (1)           | GE-61 *                   | (IR)2SC460B         | PTC136 *         | HEPS0014 *        | RE 9              | SK3018 *     | RT-134           | ECG107            |
|          | 2SC1047B,C | 01-031047(1)  | GE-60 *                   | (IR)2SC829B         | PTC132 *         | HEPS0016 *        | RE 28 *           | SK3018 *     | RT-107           | ECG161 *          |
| Q9       | 2SC1359    |               | GE-212                    | (IR)2SC380A0        | PTC121 *         | HEPS0014 *        | RE 192            | SK3038 *     | RT-308           | ECG199            |
|          | 2SC710     | (1)           | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC1359B   | (1)           | GE-212                    | (IR)2SC380A0        | PTC121 *         | HEPS0014 *        | RE 192            | SK3038 *     | RT-308           | ECG199            |
|          | 2SC1359B,C | 01-031359(1)  | GE-212                    | (IR)2SC380A0        | PTC121 *         | HEPS0014 *        | RE 192            | SK3038 *     | RT-308           | ECG199            |
| Q10      | 2SC829     |               | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
|          | 2SC710     | (1)           | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710D    | 01-030710(1)  | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
| Q11      | 2SC829     |               | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
|          | 2SC710     | (1)           | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC710D    | 01-030710(1)  | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
| Q12      | 2SC829     |               | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
|          | 2SC710     | (1)           | GE-211 *                  | (IR)2SC710          | PTC115           | HEPS0016 *        | RE 13 *           | SK3018 *     | RT-308 *         | ECG123A *         |
|          | 2SC829C    | (1)           | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
|          | 2SC829B,C  | 01-030829(1)  | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
| Q13      | 2SC828     |               | GE-61 *                   | (IR)2SC828A         | PTC121 *         | HEPS0015 *        | RE 192            | SK3122       | RT-302           | ECG199            |
|          | 2SC945     | (1)           | GE-212                    | (IR)2SC945          | PTC121 *         | HEPS0015 *        | RE 192            | SK3124       | RT-107A          | ECG199            |
|          | 2SC372     |               | GE-61 *                   | (IR)2SC372          | PTC121 *         | HEPS0015 *        | RE 13 *           | SK3122       | RT-308           | ECG123A *         |
|          | 2SC828P    | 01-030828(1)  | GE-20 *                   | (IR)2SC829B         | PTC121 *         | HEPS0015 *        | RE 9 *            | SK3122       | RT-308           | ECG229 *          |
| Q14      | 2SA720     |               | GE-82 *                   | TR-19               | PTC127 *         | HEPS0026          | RE 211            | SK3114       | RT-126A *        | ECG298            |
|          | 2SA719     | (1)           | GE-269                    | TR-28 *             | PTC103 *         | HEPS0019 *        | RE 26 *           | SK3114       | RT-305           | ECG290            |
|          | 2SA564     | (1)           | GE-65                     | (IR)2SA564A         | PTC103 *         | HEPS0019 *        | RE 193            | SK3114       | RT-303           | ECG234            |
|          | 2SA719Q    | 01-010719(1)  | GE-269                    | TR-28 *             | PTC103 *         | HEPS0019 *        | RE 26 *           | SK3114       | RT-305           | ECG290            |
| Q15      | 2SC945L    | 01-030945     | GE-212                    | (IR)2SC945          | PTC121 *         | HEPS0015 *        | RE 192            | SK3124       | RT-107A          | ECG199            |
|          | 2SC945P,Q  | 01-030945(1)  | GE-212                    | (IR)2SC945          | PTC121 *         | HEPS0015 *        | RE 192            | SK3124       | RT-107A          | ECG199            |
|          | 2SC945     | (1)           | GE-212                    | (IR)2SC945          | PTC121 *         | HEPS0015 *        | RE 192            | SK3124       | RT-107A          | ECG199            |
|          | 2SC900     | (1)           | GE-62                     | (IR)2SC644          | PTC139 *         | HEPS0015 *        | RE 192            | SK3124       | RT-302           | ECG199            |
|          | 2SC900E    | (1)           | GE-62                     | (IR)2SC644          | PTC139 *         | HEPS0015 *        | RE 192            | SK3124       | RT-302           | ECG199            |
| Q22      | 2SC900     | (1)           | GE-62                     | (IR)2SC644          | PTC139 *         | HEPS0015 *        | RE 192            | SK3124       | RT-302           | ECG199            |
|          | 2SC900V,F  | 01-030900(1)  | GE-62                     | (IR)2SC644          | PTC139 *         | HEPS0015 *        | RE 192            | SK3124       | RT-302           | ECG199            |

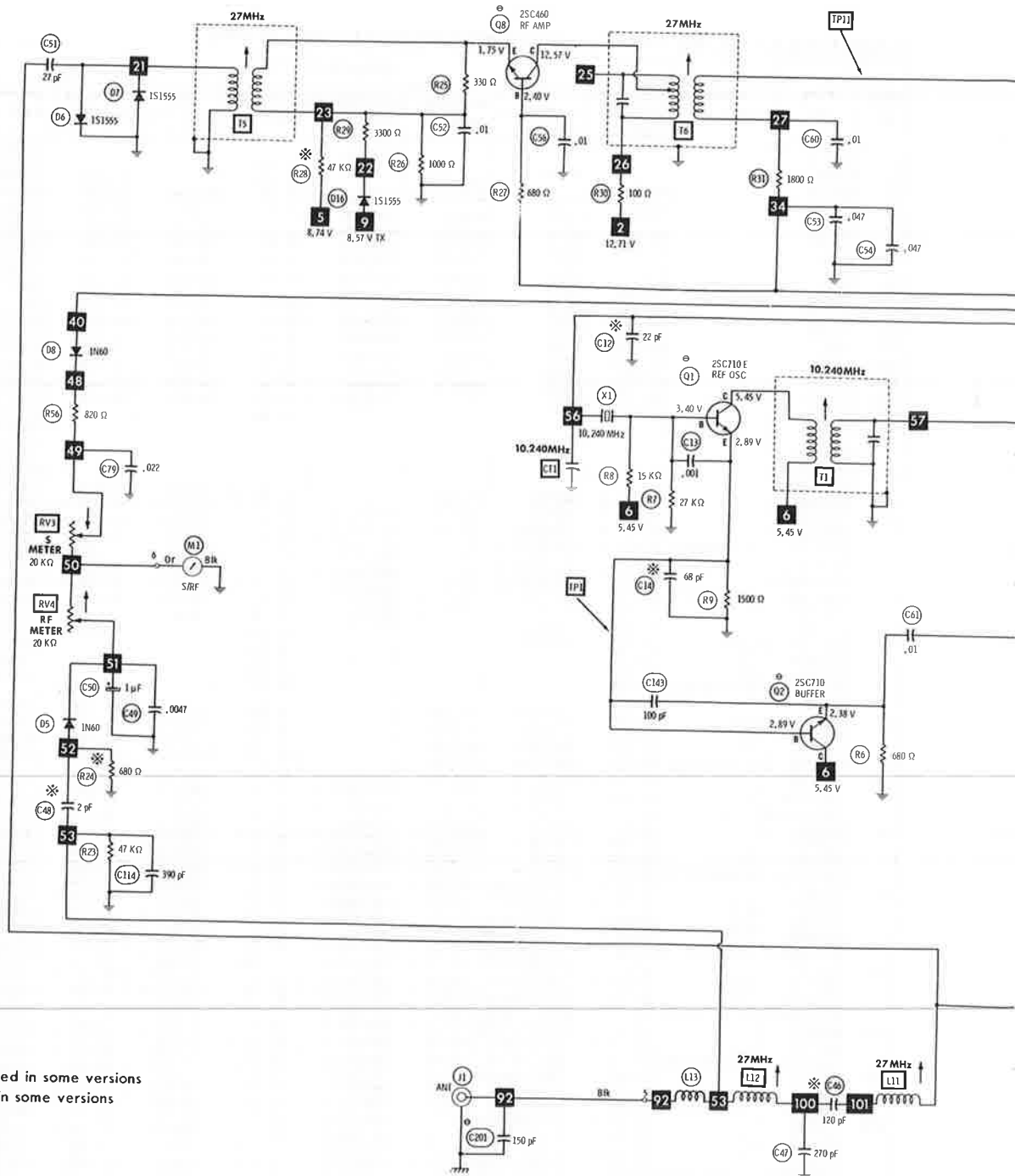
MIDLAND MODEL 77-830

\* Lead configuration may vary from original.

(1) Used in some versions.

(11)Q4 950 MW @ 500 mA

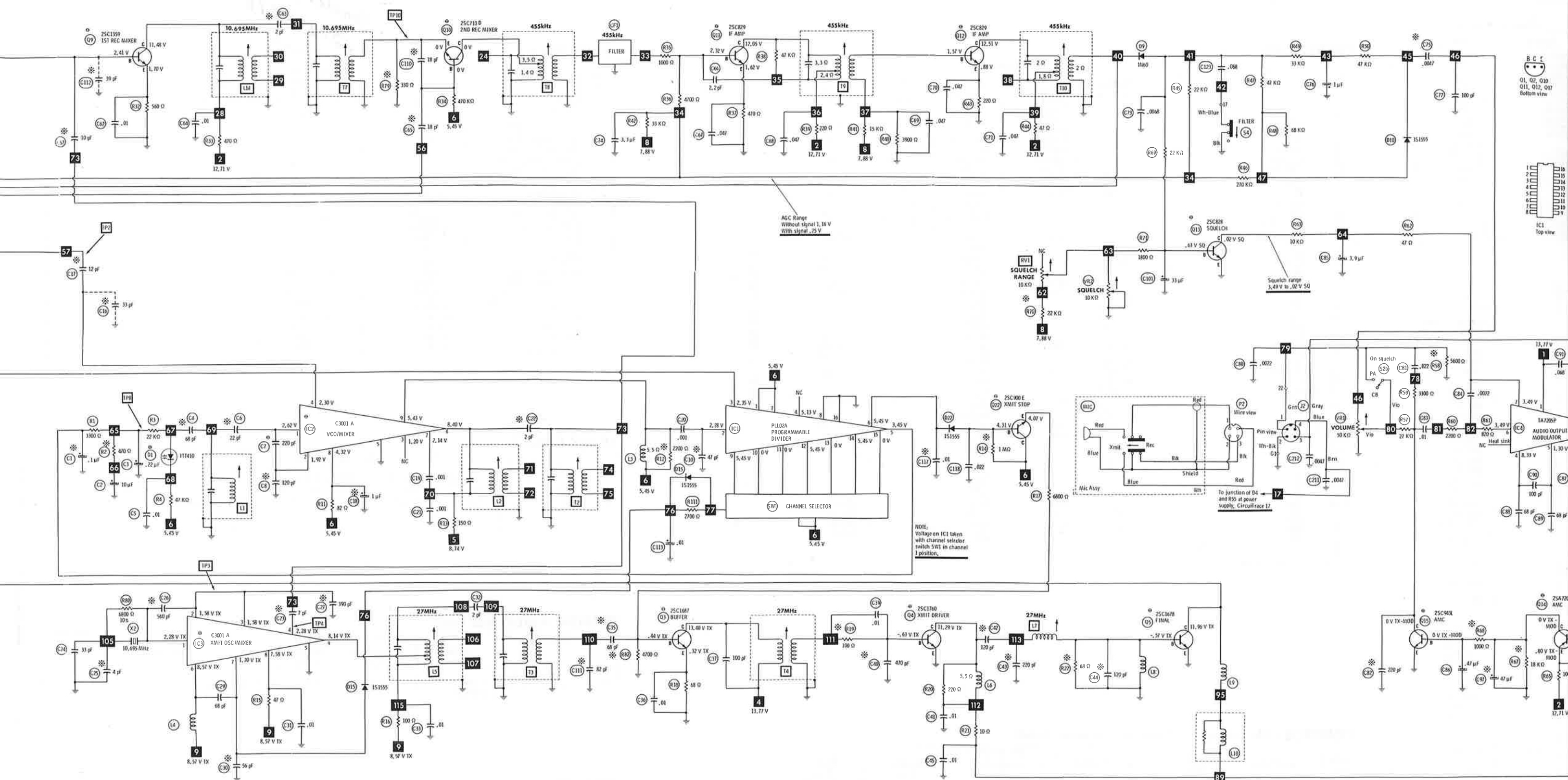
(12)Q5 10W @ 400 mA



A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE

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

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING   | REPLACEMENT DATA |                           |                  |                  |              |
|----------|----------|------------------|---------------------------|------------------|------------------|--------------|
|          |          | MFRG. PART No.   | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |          |                  |                           |                  | Q-LINE           | GENERAL LINE |
| C1       | .1 10V   |                  |                           | TDC104M050EL     | QDT1-2           | SD50-R109    |
| C2       | 10 16V   |                  |                           | VTT10B25         | QV1-41           | EV-1222      |
| C3       | .22 10V  |                  |                           | TDC224M050EL     | QDT1-10          | SD50-R229    |
| C11      | 47 10V   |                  |                           | VTT47D16         | QV1-73           | EV-1226      |
| C18      | 1 50V    |                  |                           | VTT1A50          | QV1-11           | EV-1615      |
| C50      | 1 50V    |                  |                           | VTT1A50          | QV1-11           | EV-1615      |
| C72      | 10 16V   |                  |                           | VTT10B25         | QV1-41           | EV-1222      |
| C74      | 3.3 25V  |                  |                           | VTT3R3A50        | QV1-23           | EV-1318      |
| C76      | 1 50V    |                  |                           | VTT1A50          | QV1-11           | EV-1615      |
| C78      | 47 16V   |                  |                           | VTT47D16         | QV1-73           | EV-1226      |
| C85      | 3.9 25V  |                  |                           | TAC395K025P04    | QV1-23           | SD35-3R99    |
| C86      | .47 10V  |                  |                           | TDC474M050EL     | QDT1-19          | SD50-R479    |
| C87      | 33 6.3V  |                  |                           | VTT33B10         | QV1-61           | EV-1125      |
| C93      | 47 16V   |                  |                           | VTT47D16         | QV1-73           | EV-1226      |
| C94      | 220 16V  |                  |                           | VTT220H16        | QV1-117          | EV-1240      |
| C96      | 3.3 25V  |                  |                           | VTT3R3A50        | QV1-23           | EV-1318      |
| C97      | 47 10V   |                  |                           | VTT47D16         | QV1-73           | EV-1226      |
| C99      | 47 25V   |                  |                           | VTT47E25         | QV1-75           | EV-1326      |
| C100     | 1000 16V |                  |                           | VTT1000L16       | QV1-183          | EV-1260      |
| C101     | 33 6.3V  |                  |                           | VTT33B10         | QV1-61           | EV-1125      |
| C120     | 33 16V   |                  |                           | VTT33D25         | QV1-63           | EV-1325      |

CAPACITORS

| ITEM No. | RATING        | MFRG. PART No. | REPLACEMENT DATA   |                           |                  |                  |              |
|----------|---------------|----------------|--------------------|---------------------------|------------------|------------------|--------------|
|          |               |                | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |               |                |                    |                           |                  | Q-LINE           | GENERAL LINE |
| C4       | 68 N150 10%   |                |                    |                           | *                |                  | 10TCP-Q68    |
| C5       | .01           |                |                    |                           | MAG5011          |                  |              |
| C6       | 22 N150       |                |                    |                           | *                |                  | 10TCP-Q22    |
| C7       | 220 10%       |                |                    |                           | CN0312           |                  | 10TCC-T22    |
| C8       | 120 10%       |                |                    |                           | MAG5015          |                  | 10TCC-T12    |
| C9       | .047          |                |                    |                           | CN0447           |                  |              |
| C10      | 47            |                |                    |                           | *                |                  | 10TCC-Q47    |
| C12      | 22 N150       |                |                    |                           | *                |                  | 10TCP-Q22    |
| C13      | .001 10%      |                |                    |                           | MWC-102          |                  | MWC-102      |
| C14      | 68 N150 10%   |                |                    |                           | *                |                  | 10TCP-Q68    |
| C15      | .01           |                |                    |                           | MAG5011          |                  |              |
| C16      | 33            |                |                    |                           | *                |                  |              |
| C17      | 12 N150       |                |                    |                           | *                |                  | 10TCP-Q12    |
| C19      | .001 10%      |                |                    |                           | CD19FD102J03     |                  | MWC-102      |
| C20      | .001 10%      |                |                    |                           | CD19FD102J03     |                  | MWC-102      |
| C21      | .001 125V 10% |                |                    |                           | CD19FD102J03     |                  | MWC-102      |
| C22      | 2             |                |                    |                           | NP02P2           |                  | 10TCC-V22    |
| C23      | 7             |                |                    |                           | NP06PB           |                  | 10TCC-V68    |
| C24      | 33 N150 10%   |                |                    |                           | *                |                  | 10TCP-Q33    |
| C25      | 4 N150        |                |                    |                           | *                |                  | 10TCP-V39    |
| C26      | 560 125V 10%  |                |                    |                           | CD19FD561J03     |                  | MWC-561      |
| C27      | 390 10%       |                |                    |                           | GP390            |                  | 10TS-T39     |
| C28      | .01           |                |                    |                           | UK50-103         |                  |              |
| C29      | 68 10%        |                |                    |                           | DTZ-68           |                  | 10TCC-Q68    |
| C30      | 56 10%        |                |                    |                           | NP068            |                  | 10TCC-Q56    |
| C31      | .01           |                |                    |                           |                  |                  |              |
| C32      | 2             |                |                    |                           | UK50-103         |                  | 10TCC-V22    |
| C33      | .01           |                |                    |                           | DTZ-2R2          |                  |              |
| C35      | 68 10%        |                |                    |                           | UK50-103         |                  | 10TCC-Q68    |
| C36      | .01           |                |                    |                           | DTZ-68           |                  |              |
| C37      | 100 N150 10%  |                |                    |                           | UK50-103         |                  | 10TCP-T10    |
| C38      | .01           |                |                    |                           |                  |                  |              |
| C39      | .01 10%       |                |                    |                           | WMF1S1           |                  | 1FT-S10      |
| C40      | 470 10%       |                |                    |                           | GP470            |                  | 10TS-T47     |
| C41      | .01           |                |                    |                           | UK50-103         |                  |              |
| C42      | 120 10%       |                |                    |                           | DTZ-120          |                  | 10TCC-T12    |
| C43      | 220 10%       |                |                    |                           | DTZ-220          |                  | 10TCC-T22    |
| C44      | 120 10%       |                |                    |                           | DTZ-120          |                  | 10TCC-T12    |
| C45      | .01           |                |                    |                           | UK50-103         |                  |              |
| C46      | 120 10%       |                |                    |                           | DTZ-120          |                  | 10TCC-T12    |
| C47      | 270 500V 10%  |                |                    |                           | DTZ-270          |                  | 10TCC-T27    |
| C48      | 2 500V        |                |                    |                           | DTZ-2R2          |                  | 10TCC-V22    |
| C49      | .0047         |                |                    |                           | DD-472           |                  | 56A-D47      |
| C51      | 27            |                |                    |                           |                  |                  | 10TCC-Q27    |
| C52      | .01           |                |                    |                           | UK50-103         |                  |              |
| C53      | .047          |                |                    |                           | UK50-503         |                  |              |
| C54      | .047          |                |                    |                           | UK50-503         |                  |              |
| C55      | .047 10%      |                |                    |                           | DPMS2S47         |                  | 1FT-S47      |
| C56      | .01           |                |                    |                           | UK50-103         |                  |              |
| C57      | 10            |                |                    |                           | DTZ-10           |                  | 10TCC-Q10    |
| C58      | .01           |                |                    |                           | UK50-103         |                  |              |
| C60      | .01           |                |                    |                           | UK50-103         |                  |              |
| C61      | .01           |                |                    |                           | UK50-103         |                  |              |
| C62      | .01           |                |                    |                           | UK50-103         |                  |              |
| C63      | 2             |                |                    |                           | DTZ-2R2          |                  |              |
| C64      | .01           |                |                    |                           | UK50-103         |                  |              |
| C65      | 18 N150       |                |                    |                           |                  |                  | 10TCP-Q18    |

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

CAPACITORS (cont)

| ITEM No. | RATING        | MFRG. PART No. | REPLACEMENT DATA   |                           |                  |                  |              |
|----------|---------------|----------------|--------------------|---------------------------|------------------|------------------|--------------|
|          |               |                | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |              |
|          |               |                |                    |                           |                  | Q-LINE           | GENERAL LINE |
| C66      | 2.2           |                |                    |                           | CN0522           |                  | 10TCC-V22    |
| C67      | .047 50V 10%  |                |                    |                           | EWFA1A17         |                  | 1FT-S47      |
| C68      | .047 50V 10%  |                |                    |                           | EWFA1A17         |                  | 1FT-S47      |
| C69      | .047 50V 10%  |                |                    |                           | EWFA1A17         |                  | 1FT-S47      |
| C70      | .047 50V 10%  |                |                    |                           | EWFA1A17         |                  | 1FT-S47      |
| C71      | .047 50V 10%  |                |                    |                           | EWFA1A17         |                  | 1FT-S47      |
| C73      | .0068 50V 10% |                |                    |                           | WMF1D68          |                  | 1FT-D68      |
| C74      | 3.3           |                |                    |                           | NP03P3           |                  | 10TCC-V33    |
| C75      | .0047         |                |                    |                           | CN0533           |                  | 1FT-D47      |
| C77      | 100 10%       |                |                    |                           | M192P4729R8      |                  | 10TCC-T10    |
| C79      | .022 50V 10%  |                |                    |                           | CN0310           |                  | 1FT-S22      |
| C80      | .0022         |                |                    |                           | M192P23R8        |                  | 10TS-D22     |
| C81      | .022 50V 10%  |                |                    |                           | GP222            |                  | 1FT-S22      |
| C82      | 220 10%       |                |                    |                           | M192P239R8       |                  | 10TCC-T22    |
| C83      | .01 50V 10%   |                |                    |                           |                  |                  | 1FT-S10      |
| C84      | .0022         |                |                    |                           | WMF1S1           |                  | 10TS-D22     |
| C88      | 68 10%        |                |                    |                           | NP068            |                  | 10TCC-Q68    |
| C89      | 68 10%        |                |                    |                           | NP068            |                  | 10TCC-Q68    |
| C90      | 100 10%       |                |                    |                           | NP0100           |                  | 10TCC-T10    |
| C91      | .068 50V 10%  |                |                    |                           | WMF1S68          |                  | 1PB-S68      |
| C92      | 100 10%       |                |                    |                           | NP0100           |                  | 10TCC-T10    |
| C95      | .068          |                |                    |                           |                  |                  |              |
| C102     | .01           |                |                    |                           | MAG50168         |                  |              |
| C106     | .047          |                |                    |                           | MAG5011          |                  |              |
| C107     | .047          |                |                    |                           | MAG5015          |                  |              |
| C110     | 18            |                |                    |                           | MAG5015          |                  |              |
| C111     | 82 10%        |                |                    |                           | CN0418           |                  | 10TCC-Q18    |
| C112     | 39            |                |                    |                           | CN0482           |                  | 10TCC-Q82    |
| C113     | .01           |                |                    |                           | CN0439           |                  | 10TCC-Q39    |
| C114     | 390 500V 10%  |                |                    |                           | MAG5011          |                  |              |
| C117     | .01           |                |                    |                           | GP339            |                  | 10TS-T39     |
| C118     | .02           |                |                    |                           | MAG5011          |                  |              |
| C123     | .068 50V 10%  |                |                    |                           | MAG5012          |                  |              |
| C141     | .01           |                |                    |                           | EWFA1A168        |                  | 1PB-S68      |
| C142     | .01           |                |                    |                           | MAG5011          |                  |              |
| C143     | 100           |                |                    |                           | MAG5011          |                  |              |
| C201     | 150 500V 10%  |                |                    |                           | CN0310           |                  | 10TCC-T10    |
| C202     | .01           |                |                    |                           | GP350            |                  | 10TS-T50     |
| C203     | .01           |                |                    |                           | MAG5011          |                  |              |
| C204     | .01           |                |                    |                           | MAG5011          |                  |              |
| C205     | .045          |                |                    |                           | MAG5015          |                  |              |
| C206     | .01           |                |                    |                           | MAG5011          |                  |              |
| C207     | .01           |                |                    |                           | MAG5011          |                  |              |
| C208     | .0047         |                |                    |                           | GP4700           |                  | 56A-D47      |
| C209     | .0047         |                |                    |                           | GP4700           |                  | 56A-D47      |
| C210     | .0047         |                |                    |                           | GP4700           |                  | 56A-D47      |
| C211     | .0047         |                |                    |                           | GP4700           |                  | 56A-D47      |
| C212     | .0047         |                |                    |                           | GP4700           |                  | 56A-D47      |
| C213     | .047          |                |                    |                           | GP4700           |                  | 56A-D47      |
| CT1      | 20            |                |                    |                           | UK50-503         |                  |              |

(1) Used in some versions.

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

| ITEM No. | FUNCTION            | RESIST-ANCE | REPLACEMENT DATA |                    |                    |                  |              |
|----------|---------------------|-------------|------------------|--------------------|--------------------|------------------|--------------|
|          |                     |             | MFRG. PART No.   | CENTRALAB PART No. | CLAROSTAT PART No. | MALLORY PART No. | TRW PART No. |
| RV1      | Squelch Range       | 10K         | 13-164132        |                    |                    |                  |              |
| RV2      | AMC                 | 5000        | 13-164146        |                    |                    |                  |              |
| RV3      | S Meter             | 20K         | 13-164134        |                    |                    |                  |              |
| RV4      | RF Meter            | 20K         | 13-164134        |                    |                    |                  |              |
| VR1      | Volume/Power Switch | 50K         | 13-160140        |                    |                    |                  |              |
| VR2      | Squelch/PA Switch   | 10K         | 13-166079        |                    |                    |                  |              |

PARTS LIST AND  
(When ordering parts, state A

COILS (RF-IF)

| ITEM No. | FUNCTION            |
|----------|---------------------|
| L1       | VCO (18MHz)         |
| L2       | VCO Mixer (37MHz)   |
| L3       | RF Choke (68mH)     |
| L4       | RF Choke (1mH)      |
| L5       | Xmit Mixer (27MHz)  |
| L6       | RF Choke (2.2mH)    |
| L7       | Xmit Driver (27MHz) |
| L8       | RF Choke (68mH)     |
| L9       | RF Choke (.55mH)    |
| L10      | RF Choke (1mH)      |
| L11      | Final Amp (27MHz)   |
| L12      | Antenna Match (27M  |
| L13      | RF Choke (.40mH)    |
| L14      | Rec Mixer (10.7MHz) |
| L15      | RF Choke (68mH)     |
| L16      | Pi Filter (.75mH)   |
| L17      | RF Choke (.75mH)    |
| L18      | RF Choke            |
| T1       | Ref Oscillator      |
| T2       | VCO Mixer (38MHz)   |
| T3       | Xmit Mixer (27MHz)  |
| T4       | Xmit Buffer (27MHz) |
| T5       | Rec Antenna (25.2M  |
| T6       | Rec RF (27MHz)      |
| T7       | Rec Mixer (10.7MHz) |
| T8       | IF (455kHz)         |
| T9       | IF (455kHz)         |
| T10      | IF (455kHz)         |

MIDLAND MODEL 77-830

FILTER CHOKE

| ITEM No. | RATINGS            |         |
|----------|--------------------|---------|
|          | CURRENT (Measured) | DC RES. |
| CH1      | 1.4A               | .116    |

TRANSFORMER (

| ITEM No. | IMPEDANCE |           |
|----------|-----------|-----------|
|          | PRI.      | SEC.      |
| T11      | 2.88      | 1 2 13.52 |

SPEAKER

| ITEM No. | TYPE              |
|----------|-------------------|
| SP       | 3 1/2" PM, 8 Ohms |

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

| SPRAGUE PART No. |              |
|------------------|--------------|
| Q-LINE           | GENERAL LINE |
| QDT1-2           | SD50-R109    |
| QV1-41           | EV-1222      |
| QDT1-10          | SD50-R229    |
| QV1-73           | EV-1226      |
| QV1-11           | EV-1615      |
| QV1-11           | EV-1615      |
| QV1-41           | EV-1222      |
| QV1-23           | EV-1318      |
| QV1-11           | EV-1615      |
| QV1-73           | EV-1226      |
| QV1-73           | SD35-3R99    |
| QDT1-19          | SD50-R479    |
| QV1-61           | EV-1125      |
| QV1-73           | EV-1226      |
| QV1-117          | EV-1240      |
| QV1-23           | EV-1318      |
| QV1-73           | EV-1226      |
| QV1-75           | EV-1326      |
| QV1-183          | EV-1260      |
| QV1-61           | EV-1125      |
| QV1-63           | EV-1325      |

| SPRAGUE PART No. |              |
|------------------|--------------|
| Q-LINE           | GENERAL LINE |
|                  | 10TCP-Q68    |
|                  | 10TCP-Q22    |
|                  | 10TCC-T22    |
|                  | 10TCC-T12    |
|                  | 10TCC-Q47    |
|                  | 10TCP-Q22    |
|                  | MWC-102      |
|                  | 10TCP-Q68    |
|                  | 10TCP-Q12    |
|                  | MWC-102      |
|                  | MWC-102      |
|                  | MWC-102      |
|                  | 10TCC-V22    |
|                  | 10TCC-V68    |
|                  | 10TCP-Q33    |
|                  | 10TCP-V39    |
|                  | MWC-561      |
|                  | 10TS-T39     |
|                  | 10TCC-Q68    |
|                  | 10TCC-Q56    |
|                  | 10TCC-V22    |
|                  | 10TCC-Q68    |
|                  | 10TCP-T10    |
| QFT2-91          | 1FT-S10      |
|                  | 10TS-T47     |
|                  | 10TCC-T12    |
|                  | 10TCC-T22    |
|                  | 10TCC-T12    |
|                  | 10TCC-T12    |
|                  | 10TCC-T27    |
|                  | 10TCC-V22    |
|                  | 5GA-D47      |
|                  | 10TCC-Q27    |
| QFT2-171         | 1FT-S47      |
|                  | 10TCC-Q10    |
|                  | 10TCC-V22    |
|                  | 10TCP-Q18    |

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 |
| C66      | 2.2           |               | DTZ-2R2            | NP02P2                    | CN0522           |                  | 10TCC-V22    |
| C67      | .047 50V 10%  |               |                    | DPMS2S47                  | EWFI1A147        | QFT2-171         | 1FT-S47      |
| C68      | .047 50V 10%  |               |                    | DPMS2S47                  | EWFI1A147        | QFT2-171         | 1FT-S47      |
| C69      | .047 50V 10%  |               |                    | DPMS2S47                  | EWFI1A147        | QFT2-171         | 1FT-S47      |
| C70      | .047 50V 10%  |               |                    | DPMS2S47                  | EWFI1A147        | QFT2-171         | 1FT-S47      |
| C71      | .047 50V 10%  |               |                    | DPMS2S47                  | EWFI1A147        | QFT2-171         | 1FT-S47      |
| C73      | .0068 50V 10% |               |                    | WMF1D68                   | EWFI1A268        | QFT2-73          | 1FT-D68      |
| C74      | 3.3           |               | DTZ-3R3            | NP03P3                    | CN0533           |                  | 10TCC-V33    |
| C75      | .0047         |               |                    |                           | M192P4729R8      | QFT2-63          | 1FT-D47      |
| C77      | 100 10%       |               | DTZ-100            | NP0100                    | CN0310           |                  | 10TCC-T10    |
| C79      | .022 50V 10%  |               |                    |                           | M192P223R8       | QFT2-127         | 1FT-S22      |
| C80      | .0022         |               |                    |                           | GP222            |                  | 10TS-D22     |
| C81      | .022 50V 10%  |               |                    |                           | M192P2239R8      | QFT2-127         | 1FT-S22      |
| C82      | 220 10%       |               | DTZ-220            |                           |                  |                  | 10TCC-T22    |
| C83      | .01 50V 10%   |               |                    | WMF1S1                    | EWFI1A110        | QFT2-91          | 1FT-S10      |
| C84      | .0022         |               |                    |                           | GP222            |                  | 10TS-D22     |
| C88      | 68 10%        |               | DTZ-68             | NP068                     | CN0468           |                  | 10TCC-Q68    |
| C89      | 68 10%        |               | DTZ-68             | NP068                     | CN0468           |                  | 10TCC-Q68    |
| C90      | 100 10%       |               | DTZ-100            | NP0100                    | CN0310           |                  | 10TCC-T10    |
| C91      | .068 50V 10%  |               |                    | WMF1S68                   | EWFI1A168        | QF1-195          | 1PB-S68      |
| C92      | 100 10%       |               |                    | NP0100                    | CN0310           |                  | 10TCC-T10    |
| C95      | .068          |               | DTZ-100            |                           | MAG50168         |                  |              |
| C102     | .01           |               | UK50-683           |                           | MAG5011          |                  |              |
| C106     | .047          |               | UK50-103           |                           | MAG5015          |                  |              |
| C107     | .047          |               | UK50-503           |                           | MAG5015          |                  |              |
| C110     | 18            |               | UK50-503           |                           | CN0418           |                  | 10TCC-Q18    |
| C111     | 82 10%        |               | DTZ-82             | NP082                     | CN0482           |                  | 10TCC-Q82    |
| C112     | 39            |               |                    |                           | CN0439           |                  | 10TCC-Q39    |
| C113     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C114     | 390 500V 10%  |               | DD-391             | GP390                     | GP339            |                  | 10TS-T39     |
| C117     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C118     | .02           |               | UK50-223           |                           | MAG5012          |                  |              |
| C123     | .068 50V 10%  |               |                    | WMF1S68                   | EWFI1A168        | QF1-195          | 1PB-S68      |
| C141     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C142     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C143     | 100           |               | DTZ-100            |                           | CN0310           |                  | 10TCC-T10    |
| C201     | 150 500V 10%  |               | DD-501             | GP500                     | GP350            |                  | 10TS-T50     |
| C202     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C203     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C204     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C205     | .045          |               | UK50-503           |                           | MAG5015          |                  |              |
| C206     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C207     | .01           |               | UK50-103           |                           | MAG5011          |                  |              |
| C208     | .0047         |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C209     | .0047         |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C210     | .0047         |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C211     | .0047         |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C212     | .0047         |               | DD-472             | GP4700                    | GP247            |                  | 5GA-D47      |
| C213     | .047          |               | DD-472             |                           | MAG5015          |                  |              |
| CT1      | 20            | 13-123069     | UK50-503           |                           |                  |                  |              |

(1) Used in some versions.

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

| ITEM No. | FUNCTION            | RESIST-ANCE | REPLACEMENT DATA |                    |                    |                  |              |
|----------|---------------------|-------------|------------------|--------------------|--------------------|------------------|--------------|
|          |                     |             | MFR. PART No.    | CENTRALAB PART No. | CLAROSTAT PART No. | MALLORY PART No. | TRW PART No. |
| RV1      | Squelch Range       | 10K         | 13-164132        |                    |                    |                  |              |
| RV2      | AMC                 | 5000        | 13-164146        |                    |                    |                  |              |
| RV3      | S Meter             | 20K         | 13-164134        |                    |                    |                  |              |
| RV4      | RF Meter            | 20K         | 13-164134        |                    |                    |                  |              |
| VR1      | Volume/Power Switch | 50K         | 13-160140        |                    |                    |                  |              |
| VR2      | Squelch/PA Switch   | 10K         | 13-166079        |                    |                    |                  |              |

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

CORRECT PT No 2  
13-178210

COILS (RF-IF)

| ITEM No. | FUNCTION              | REPLACEMENT DATA |                      |                 | REMARKS |
|----------|-----------------------|------------------|----------------------|-----------------|---------|
|          |                       | PART No.         | OTHER IDENTIFICATION | MILLER PART No. |         |
| L1       | VCO (18MHz)           | 77-176001        | 10DD003S7118         |                 |         |
| L2       | VCO Mixer (37MHz)     | 13-090405        | 10MB003T6724         |                 |         |
| L3       | RF Choke (68mH)       | 13-171210        |                      |                 |         |
| L4       | RF Choke (1mH)        | 77-176002        | 10CB002MXT           |                 |         |
| L5       | Xmit Mixer (27MHz)    | 77-176003        |                      |                 |         |
| L6       | RF Choke (2.2mH)      | 13-176564        |                      |                 |         |
| L7       | Xmit Driver (27MHz)   | 13-176508        |                      |                 |         |
| L8       | RF Choke (68mH)       | 13-178210        |                      |                 |         |
| L9       | RF Choke (.55mH)      | 13-176567        |                      |                 |         |
| L10      | RF Choke (1mH)        | 13-176565        |                      |                 |         |
| L11      | Final Amp (27MHz)     | 13-176509        |                      |                 |         |
| L12      | Antenna Match (27MHz) | 13-176510        |                      |                 |         |
| L13      | RF Choke (.40mH)      | 77-176004        | 07MB008M68L3         |                 |         |
| L14      | Rec Mixer (10.7MHz)   | 77-090007        |                      |                 |         |
| L15      | RF Choke (68mH)       | 13-178210        |                      |                 |         |
| L16      | Pi Filter (.75mH)     | 77-178003        |                      |                 |         |
| L17      | RF Choke (.75mH)      | 77-178003        |                      |                 |         |
| L18      | RF Choke              |                  |                      |                 |         |
| T1       | Ref Oscillator        | 77-094001        | 10DB002S60E3         |                 |         |
| T2       | VCO Mixer (38MHz)     | 77-094002        | 10MB005S60HV         |                 |         |
| T3       | Xmit Mixer (27MHz)    | 13-176580        | 10CB001SW2           |                 |         |
| T4       | Xmit Buffer (27MHz)   | 13-176581        | 10CP00526834         |                 |         |
| T5       | Rec Antenna (25.2MHz) | 13-176511        | ETK3336634           |                 |         |
| T6       | Rec RF (27MHz)        | 77-094003        | ETK033460C3          |                 |         |
| T7       | Rec Mixer (10.7MHz)   | 77-090007        | 07MB008M68L3         |                 |         |
| T8       | IF (455kHz)           | 13-090371        | ET1012267BT          |                 |         |
| T9       | IF (455kHz)           | 13-090375        | ET1012368BT          |                 |         |
| T10      | IF (455kHz)           | 13-090372        | ET1012968BT          |                 |         |

MIDLAND MODEL 77-830

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. |                     |
| CH1      | 1.4A               | .116    | .48mH                        | 13-178208 ELA-16(1) | TR523               |                | (1) Number on unit. |

TRANSFORMER (Audio Output)

| ITEM No. | IMPEDANCE |             | REPLACEMENT DATA   |                     |                | NOTES               |
|----------|-----------|-------------|--------------------|---------------------|----------------|---------------------|
|          | PRI.      | SEC.        | MFR. PART No.      | THORDARSON PART No. | TRIAD PART No. |                     |
| T11      | 2.88      | 1 8 2 13.52 | 13-096200 ETA66(1) | TR723               | MCB-16         | (1) Number on unit. |

SPEAKER

| ITEM No. | TYPE              | REPLACEMENT DATA |               | NOTES |
|----------|-------------------|------------------|---------------|-------|
|          |                   | MFR. PART No.    | QUAM PART No. |       |
| SP       | 3 1/2" PM, 8 Ohms | 77-060001        | 3A0528        |       |

## PARTS LIST AND DESCRIPTION (CONTINUED)

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

### FUSE DEVICES

| ITEM No. | DESCRIPTION     | REPLACEMENT DATA |        |               |        |                     |        |                  |
|----------|-----------------|------------------|--------|---------------|--------|---------------------|--------|------------------|
|          |                 | PART No.         |        | BUSS PART No. |        | LITTELFUSE PART No. |        | WORKMAN PART No. |
|          |                 | DEVICE           | HOLDER | DEVICE        | HOLDER | DEVICE              | HOLDER | DEVICE           |
| F1       | 2A Quick Acting |                  |        | AGC2          | HDJ    | 312002              | 150145 | F62-2            |

### MICROPHONE

| ITEM No. | REPLACEMENT DATA |             |                 |          | CONNECTION DATA |        |           |           |         |          |          |
|----------|------------------|-------------|-----------------|----------|-----------------|--------|-----------|-----------|---------|----------|----------|
|          | MFGR. PART No.   | GC PART No. | GC NOISE CANCEL | GC POWER | GC CONNECTOR    | GC Red | GC Shield | GC Yellow | GC Blue | GC White | GC Black |
| MIC      | 13-038075        | 18-032      | 18-034          | 18-010   | 18-092          | 1      | 2         | 4         | 3       | NC       | 2        |

### MISCELLANEOUS

| ITEM No. | PART NAME  | PART No.  | NOTES                             |
|----------|------------|-----------|-----------------------------------|
| CF1      | Filter     | 13-179059 | 455kHz                            |
| J1       | Jack       | 13-159220 | Antenna                           |
| J2       | Jack       | 13-159234 | Microphone                        |
| J3       | Jack       | 13-153168 | PA-External CB                    |
| J4       | Jack       | 13-153168 | External Speaker                  |
| J5       | Jack       | 13-159235 | DC Power                          |
| M1       | Meter      | 13-200079 | S/RF Power                        |
| PL1      | Lamp       | 13-201080 | Channel (4.98V @ 32mA)            |
| PL2      | Lamp       | 13-201081 | Meter (4.98V @ 30mA)              |
| PL3      | Lamp       | 13-201076 | TX (4.68V @ 30mA)                 |
| S1       | Switch     |           | Power (Part of Volume Control)    |
| S2       | Switch     |           | PA (Part of Squelch Control)      |
| S3       | Switch     | 13-183236 | External CB                       |
| S4       | Switch     | 13-183236 | Filter                            |
| SW1      | Switch     | 77-180003 | Channel                           |
| X1       | Crystal    | 13-128384 | 10.2400MHz (Reference Oscillator) |
| X2       | Crystal    | 13-128383 | 10.6950MHz (Xmit Oscillator)      |
|          | Power Cord | 13-034097 | DC                                |

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

| ITEM         | PART No.  | ITEM                 | PART No.  |
|--------------|-----------|----------------------|-----------|
| Escutcheon   | 77-011005 | Knob, Channel        | 13-115048 |
| Case, Top    | 13-010320 | Knob, Volume/Squelch | 13-110205 |
| Case, Bottom | 13-013145 | Microphone Holder    | 13-158509 |

### 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')    |