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- g. Reassemble the circuit board in the front half of the case. Connect the battery pack. Leave the rear half of the case off. Fully extend the antenna.
- h. Grasp the unit in one hand as in normal use but do not touch the metal parts with hand.
- i. Tune L8 for a maximum indication on the field strength meter.
- j. Install the rear case half.

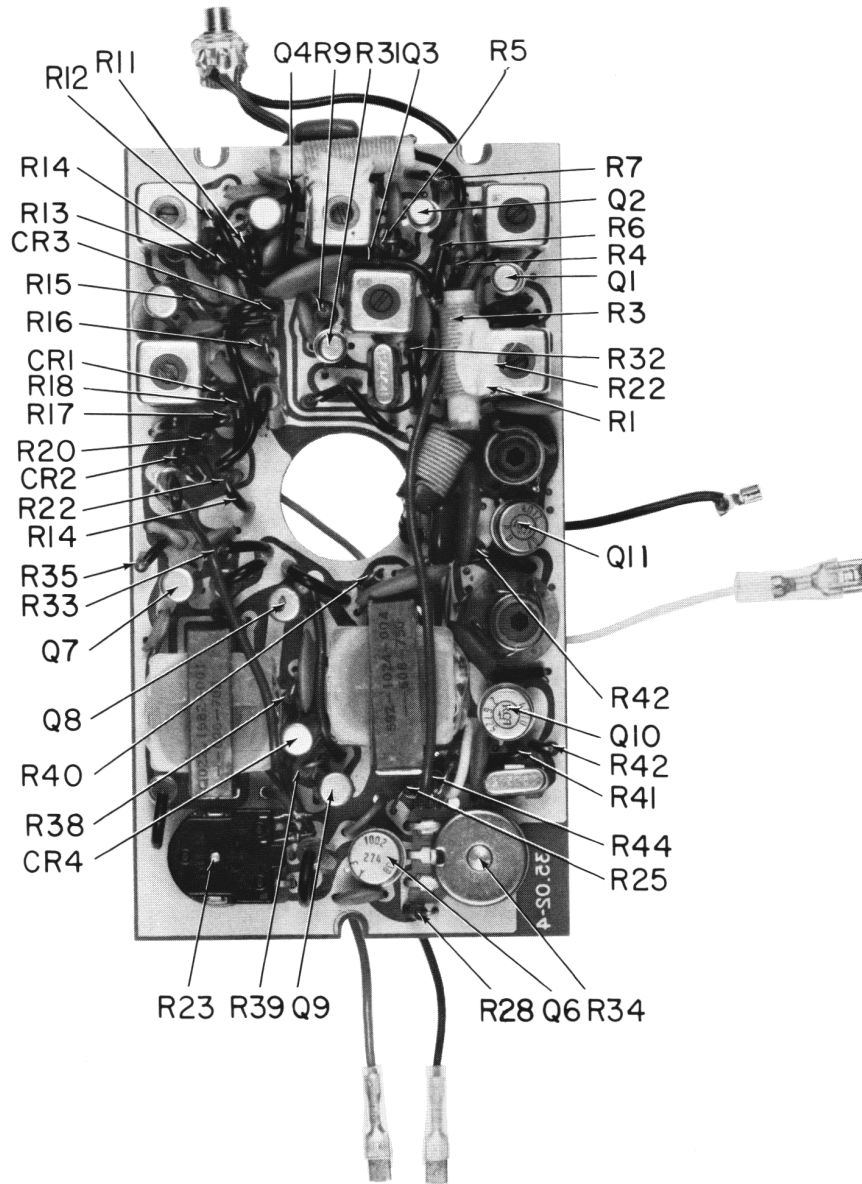
SECTION 5

PARTS LIST

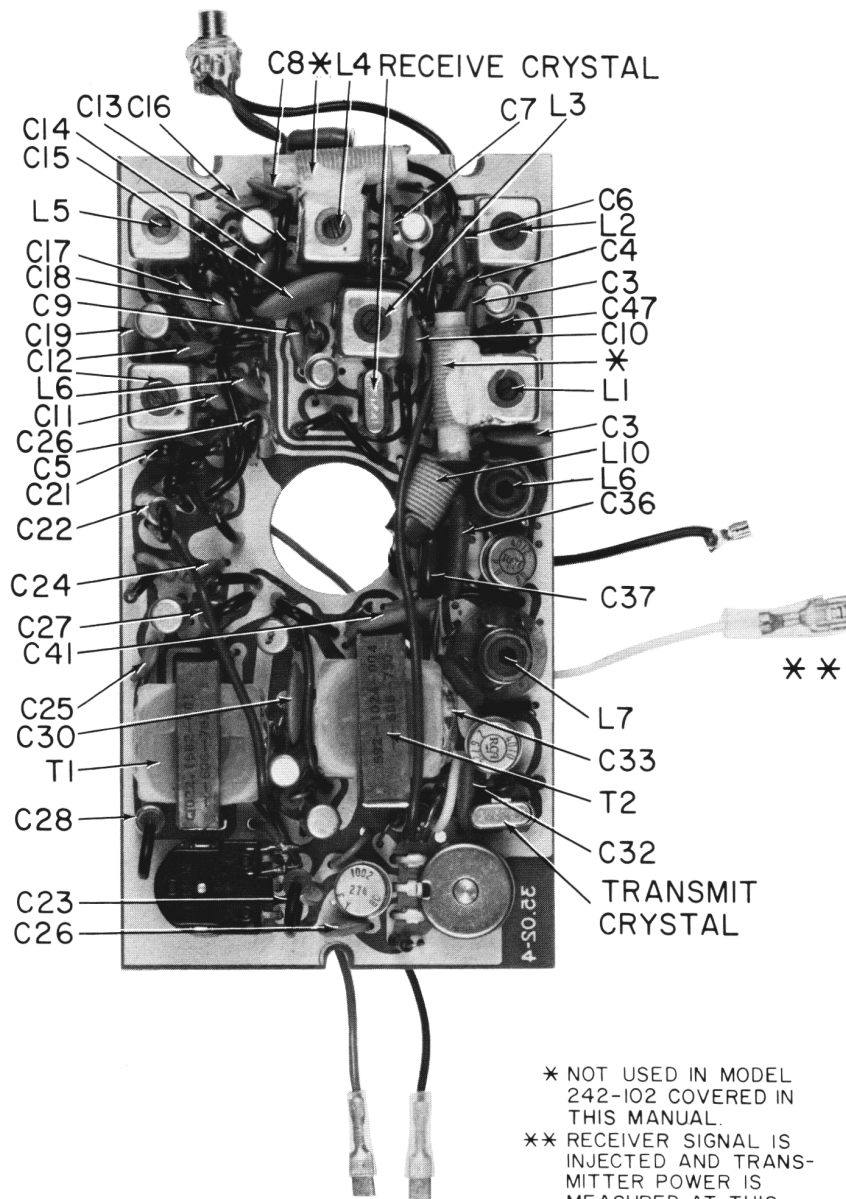
| SYMBOL NO. | DESCRIPTION | PART NO. | SYMBOL NO. | DESCRIPTION | PART NO. |
|-------------------|----------------------------------|--------------|-------------------|---|--|
| ANTENNA | | | CASE PARTS | | |
| ANT | Antenna - collapsible whip | 022-1793-001 | | Case - front half (includes speaker cover and plastic moisture barrier) | 023-1522-001 |
| CAPACITORS | | | | Case - back half | 023-1521-001 |
| C1 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | Switch button | 032-0126-002 |
| C2 | Same as C1 | | | Pen cell battery unit | 023-1528-001 |
| C3 | Same as C1 | | | Strap assembly | 023-1530-001 |
| C4 | Same as C1 | | | Knob | 032-0127-004 |
| C5 | 5.6 μ F 35 V | 510-2005-569 | | Transmitter identification card (attached inside back cover) | 022-1606-002 |
| C6 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | Identification label (attached outside back cover) | 022-1973-001 |
| C7 | Same as C6 | | | Speaker mask | 018-0800-002 |
| C8 | Same as C6 | | | Standoff stud | 013-1013-001 |
| C9 | Same as C6 | | | Spacer | 018-0799-001 |
| C10 | Same as C6 | | | Rubber bumper (cement to speaker) | 018-0798-001 |
| C11 | Same as C6 | | | Knob washer | 029-0423-001 |
| C12 | 150 \pm 10% pF 50 V | 022-1803-001 | | JACK | |
| C13 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | J1 | Phono jack with nut and washer 515-2002-001 |
| C14 | 0.22 +80% -20% μ F 3 V | 510-3009-224 | | COILS & TRANSFORMERS | |
| C15 | 0.1 +80% -20% μ F 25 V | 510-3007-104 | | L1 | Coil, input 592-5017-001 |
| C16 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | L2 | 27 MC - output transformer 592-5017-002 |
| C17 | Same as C16 | | | L3 | 27 MC - oscillator transformer 592-5017-003 |
| C18 | 0.22 +80% -20% μ F 3 V | 510-3009-224 | | L4 | 455 KC - input transformer 592-5017-004 |
| C19 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | L5 | 455 KC - interstage transformer 592-5017-005 |
| C20 | 0.005 \pm 20% μ F 50 V | 510-3047-502 | | L6 | 455 KC - output transformer 592-5017-006 |
| C21 | 1 μ F 35 V | 510-2005-109 | | L7 | Coil, oscillator 592-5018-004 |
| C22 | 5.6 μ F 35 V | 510-2005-569 | | L8 | Coil, output 592-5018-005 |
| C23 | Same as C22 | | | L9 | 20 uhy choke 542-3002-002 |
| C24 | 0.005 \pm 20% μ F 50 V | 510-3047-502 | | L10 | Coil, 2.2 μ H ironcore 022-1944-022 |
| C25 | Same as C24 | | | T1 | Driver transformer 022-1682-001 |
| C26 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | T2 | Output - modulation transformer 592-1024-004 |
| C27 | 22 μ F 15 V | 510-2003-220 | | TRANSISTORS | |
| C28 | 5.6 μ F 35 V | 510-2005-569 | | Q1 | RF amplifier, 3008 576-0003-008 |
| C29 | Dual 40 +100% -10% μ F 15 V | 510-4008-006 | | Q2 | Mixer, 3008 576-0003-008 |
| C30 | 0.02 +80% -20% μ F 50 V | 510-3047-203 | | Q3 | Receiver oscillator, 3009 576-0003-009 |
| C31 | 0.1 \pm 20% μ F 250 V | 510-1004-104 | | Q4 | 455 kHz IF amplifier, 3010 576-0003-010 |
| C32 | 82 pF \pm 5% N750 disc ceramic | 510-3020-820 | | Q5 | Same as Q4 |
| C33 | 27 pF \pm 5% NPO disc ceramic | 510-3013-270 | | Q6 | Quiet (Squelch), 1002 576-0001-002 |
| C36 | 105 pF \pm 5% NPO disc ceramic | 022-1920-001 | | Q7 | Audio driver, 1009 576-0001-009 |
| C37 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | Q8 | Audio output, 2004 576-0002-004 |
| C38 | 470 pF mica | 510-0001-471 | | Q9 | Same as Q8 |
| C39 | 82 \pm 5% pF NPO | 510-3013-820 | | Q10 | Transmitter oscillator, 4010 576-0004-010 |
| C40 | 5 pF \pm 5% N750 disc ceramic | 510-3020-509 | | Q11 | Power amplifier, 4012 576-0004-012 |
| C41 | 0.1 +80% -20% μ F 25 V | 510-3007-104 | | | |
| C42 | 270 \pm 10% pF 500 V mica | 510-0005-271 | | | |
| C43 | 0.01 +80% -20% μ F 50 V | 510-3047-103 | | | |
| C44 | 68 pF \pm 5% N750 ceramic | 510-3164-680 | | | |
| C45 | 100 pF \pm 5% N750 ceramic | 510-3164-101 | | | |
| C46 | 39 pF \pm 5% N750 disc ceramic | 510-3028-390 | | | |
| DIODES | | | | | |
| D1 | 1N295 | 523-1000-295 | | | |
| D2 | 1N881 (noise limiter) | 523-1000-881 | | | |
| D3 | 1N295 | 523-1000-295 | | | |
| D4 | 1N2326 | 523-1002-326 | | | |

PARTS LIST (cont'd)

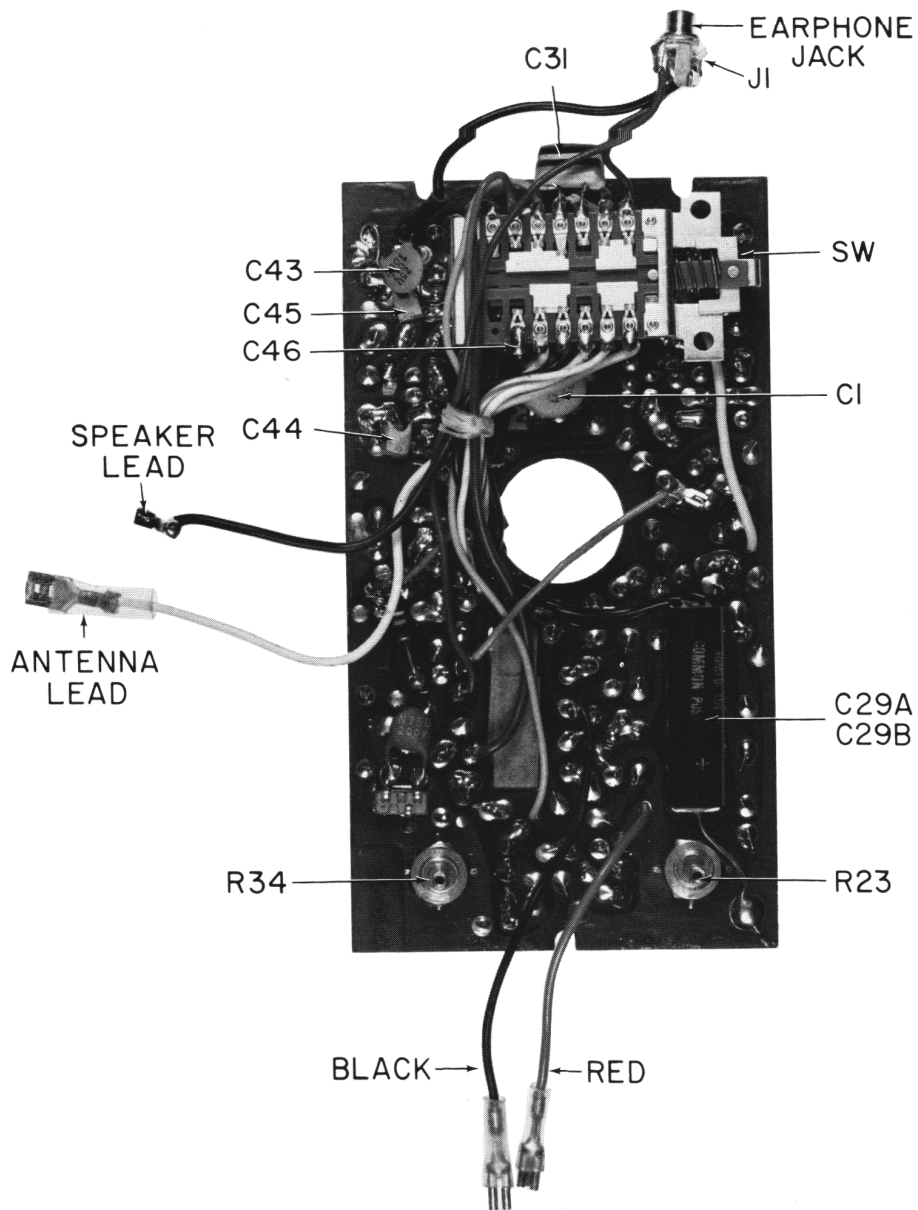
| SYMBOL NO. | DESCRIPTION | PART NO. | SYMBOL NO. | DESCRIPTION | PART NO. |
|---------------------------|---|--------------|----------------------------------|---------------------------------|--------------|
| RESISTORS | | | RECHARGEABLE BATTERY UNIT | | |
| R1 | 8200 ±10% ohms 1/4 W | 569-1002-822 | | Battery Case (Grey) | 032-0125-001 |
| R2 | 47,000 ±10% ohms 1/4 W | 569-1002-473 | | Header Assembly | 023-1523-003 |
| R3 | 1000 ±10% ohms 1/4 W | 569-1002-102 | | Battery Mounting Plate Assembly | 022-1529-002 |
| R4 | 470 ±10% ohms 1/4 W | 569-1002-471 | | Rechargeable Battery (6.24V) | 022-1806-001 |
| R5 | 100 ±10% ohms 1/4 W | 569-1002-101 | | Resistor 1 meg. ohm 1/4 W | 569-1002-105 |
| R6 | 47,000 ±10% ohms 1/4 W | 569-1002-473 | | Resistor, 270 ohm 1/4 W | 569-1002-271 |
| R7 | 4700 ±10% ohms 1/4 W | 569-1002-472 | | Rectifier, 1N881 | 523-1000-881 |
| R8 | 1000 ±10% ohms 1/4 W | 569-1002-102 | | Insulator | 018-0814-001 |
| R9 | Same as R8 | | | Capacitor, 0.47 μF | 022-1982-001 |
| R11 | 1500 ±10% ohms 1/4 W | 569-1002-152 | | Back up plate | 016-1506-001 |
| R12 | 1000 ±10% ohms 1/4 W | 569-1002-102 | | Tie Rod (2 required) | 013-1012-002 |
| R13 | 4700 ±10% ohms 1/4 W | 569-1002-472 | | "E" Ring | 022-1790-001 |
| R14 | 27,000 ±10% ohms 1/4 W | 569-1002-273 | | Tie Rod | 013-1015-001 |
| R15 | 670 ±10% ohms 1/4 W | 569-1002-681 | | | |
| R16 | 5600 ±10% ohms 1/4 W | 569-1002-562 | | | |
| R17 | 33,000 ±10% ohms 1/4 W | 569-1002-333 | | | |
| R18 | 12,000 ±10% ohms 1/4 W | 569-1002-123 | | | |
| R19 | 27,000 ±10% ohms 1/4 W | 569-1002-273 | | | |
| R20 | 39,000 ±10% ohms 1/4 W | 569-1002-393 | | | |
| R22 | 100,000 ±10% ohms 1/4 W | 569-1002-104 | | | |
| R23 | 10,000 ohm potentiometer with SPST switch | 562-0016-001 | | | |
| R25 | 22,000 ±10% ohms 1/4 W | 569-1002-223 | | | |
| R28 | 470 ±10% ohms 1/4 W | 569-1002-471 | | | |
| R29 | 39,000 ±10% ohms 1/4 W | 569-1002-393 | | | |
| R30 | 4700 ±10% ohms 1/4 W | 569-1002-472 | | | |
| R31 | 680 ±10% ohms 1/4 W | 569-1002-681 | | | |
| R32 | 1000 ±10% ohms 1/4 W | 569-1002-102 | | | |
| R33 | 39,000 ±10% ohms 1/4 W | 569-1002-393 | | | |
| R34 | 10,000 ohm potentiometer | 562-0002-005 | | | |
| R35 | 10,000 ±10% ohms 1/4 W | 569-1002-103 | | | |
| R36 | 470 ±10% ohms 1/4 W | 569-1002-471 | | | |
| R37 | 560 ±10% ohms 1/4 W | 569-1002-561 | | | |
| R38 | 10,000 ±10% ohms 1/4 W | 569-1002-103 | | | |
| R39 | 4.7 ±10% ohms 1/2 W | 569-1004-479 | | | |
| R40 | 47 ±10% ohms 1/4 W | 569-1002-470 | | | |
| R41 | 680 ±10% ohms 1/4 W | 569-1002-681 | | | |
| R42 | 3900 ohms ±10% 1/4 W | 569-1002-392 | | | |
| R44 | 39 ohms ±10% 1/4 W | 569-1002-390 | | | |
| R46 | 10 ohms ±10% 1/4 W | 569-1002-100 | | | |
| R48 | 47 ±10% ohms 1/4 W | 569-1002-470 | | | |
| TRANSISTOR SOCKETS | | | | | |
| XY1 | 3 pin | 515-5005-001 | | | |
| XY2 | Same as XY1 | | | | |
| SPEAKER | | | | | |
| LS | 2" Speaker | 022-1764-001 | | | |
| SWITCH | | | | | |
| SW | Slide switch | 022-1792-001 | | | |



LOCATION OF COMPONENTS
 (RESISTORS, DIODES
 AND TRANSISTORS)
 FIGURE 5-1

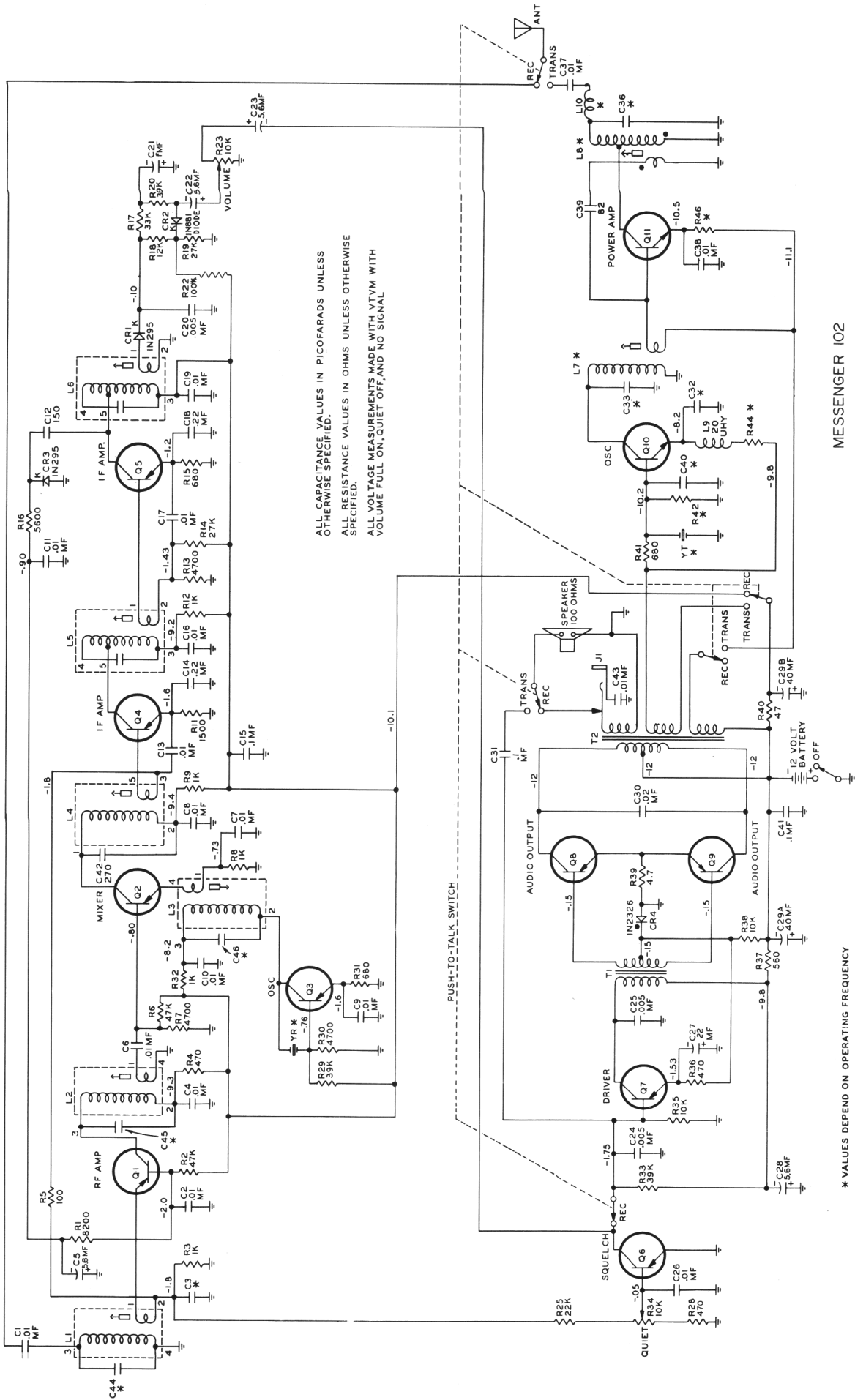


LOCATION OF COMPONENTS
 (CAPACITORS, CRYSTALS AND
 TRANSFORMERS)
 FIGURE 5-2



POWER LEADS

LOCATION OF COMPONENTS
 (REAR VIEW WITH INSULATING
 PAPER REMOVED)
 FIGURE 5-3



MESSENGER 102

QUALITY ELECTRONIC PRODUCTS SINCE 1923



E. F. JOHNSON COMPANY
WASECA, MINNESOTA 56093