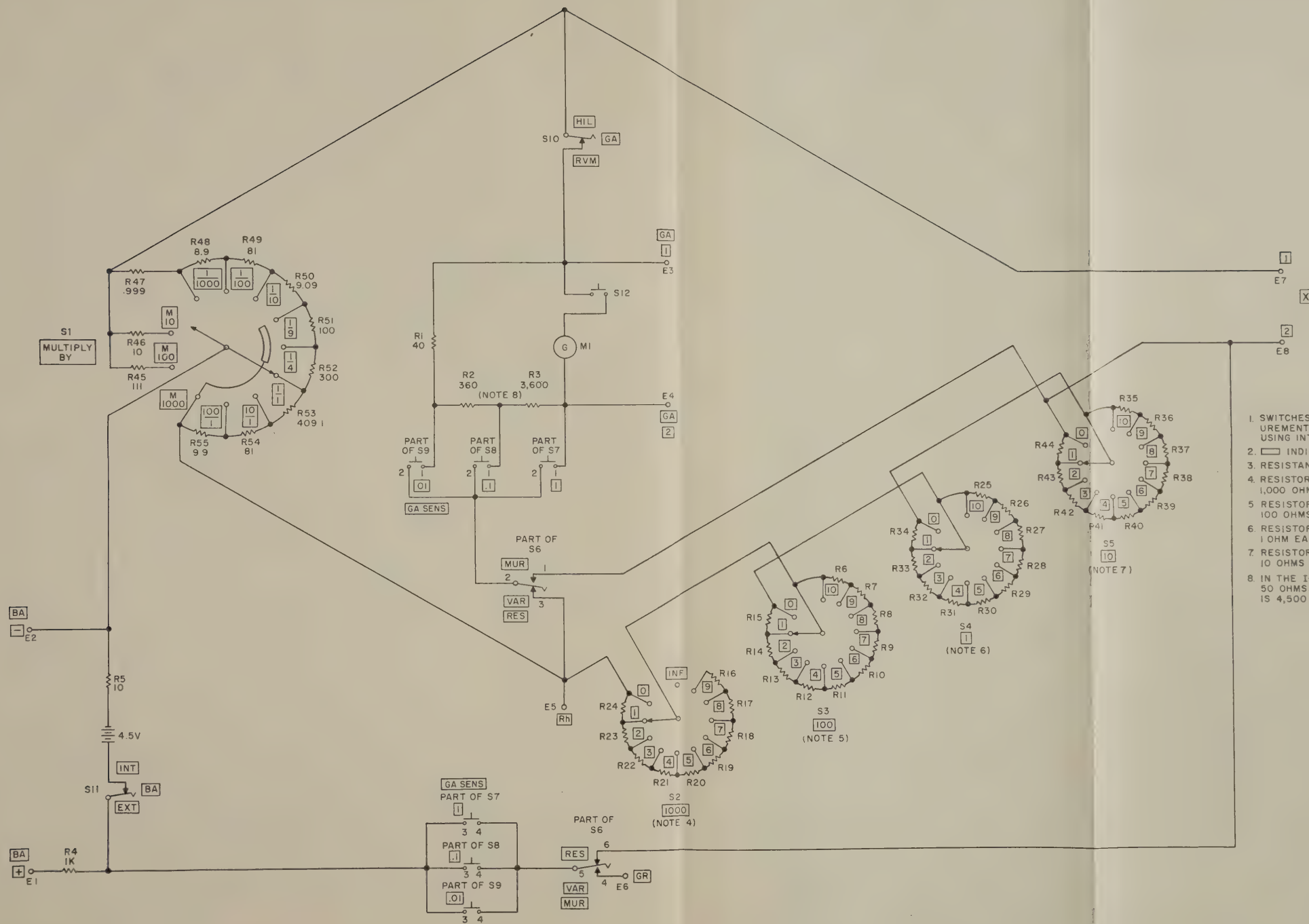
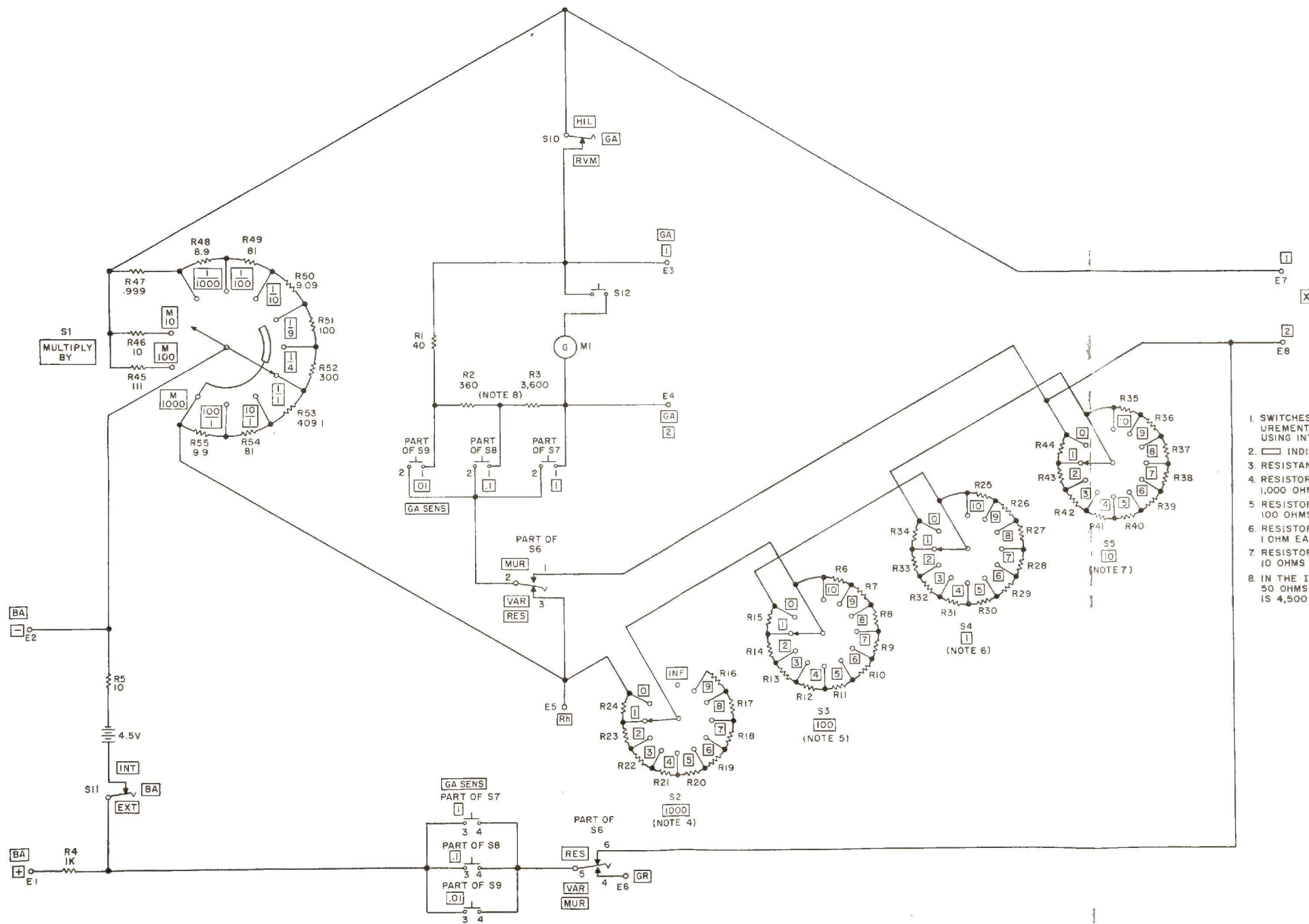




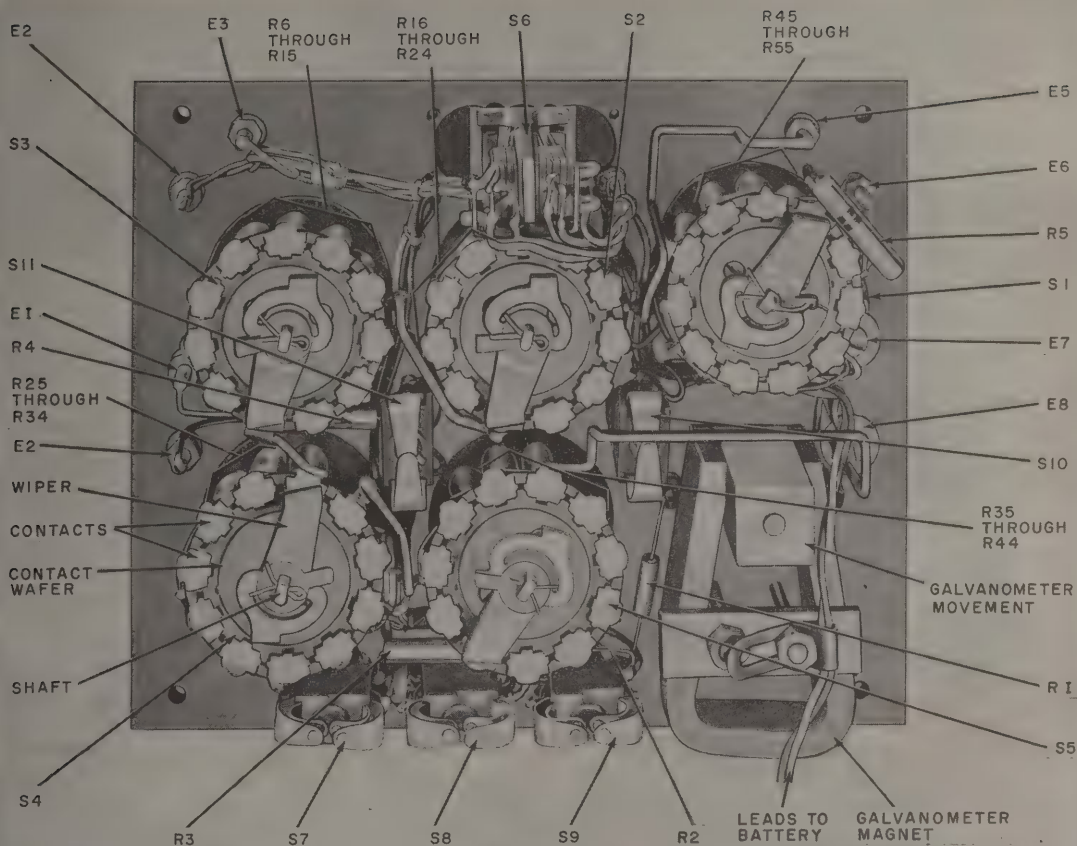
- NOTES:
1. SWITCHES S1 THRU S11 SET FOR MEASUREMENT OF UNKNOWN RESISTANCE USING INTERNAL BATTERY.
 2. INDICATES EQUIPMENT MARKING
 3. RESISTANCES ARE IN OHMS
 4. RESISTORS R16 THRU R24 ARE 1,000 OHMS EACH
 5. RESISTORS R6 THRU R15 ARE 100 OHMS EACH
 6. RESISTORS R25 THRU R34 ARE 1 OHM EACH
 7. RESISTORS R35 THRU R44 ARE 10 OHMS EACH
 8. IN THE I-49-B AND ZM-4A/U, R1 IS 50 OHMS, R2 IS 450 OHMS AND R3 IS 4,500 OHMS

Figure 21. Test set schematic diagram.



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1. SWITCHES S1 THRU S11 SET FOR MEASUREMENT OF UNKNOWN RESISTANCE USING INTERNAL BATTERY.
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Figure 21. Test set schematic diagram.



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Figure 22. Resistance Bridge ZM-4A/U, bottom view.

b. Galvanometer (All Models).

- (1) Remove the galvanometer screw and the slotted screw from the left side of the galvanometer (fig. 3).
- (2) Lift the galvanometer straight up from the test set panel. No leads are attached to the galvanometer and it can be lifted free.
- (3) Install the new galvanometer by reversing the removal procedure. No leads need be attached to the galvanometer as the two screws ((1) above) are used to connect the galvanometer coil to the circuitry of the test set.

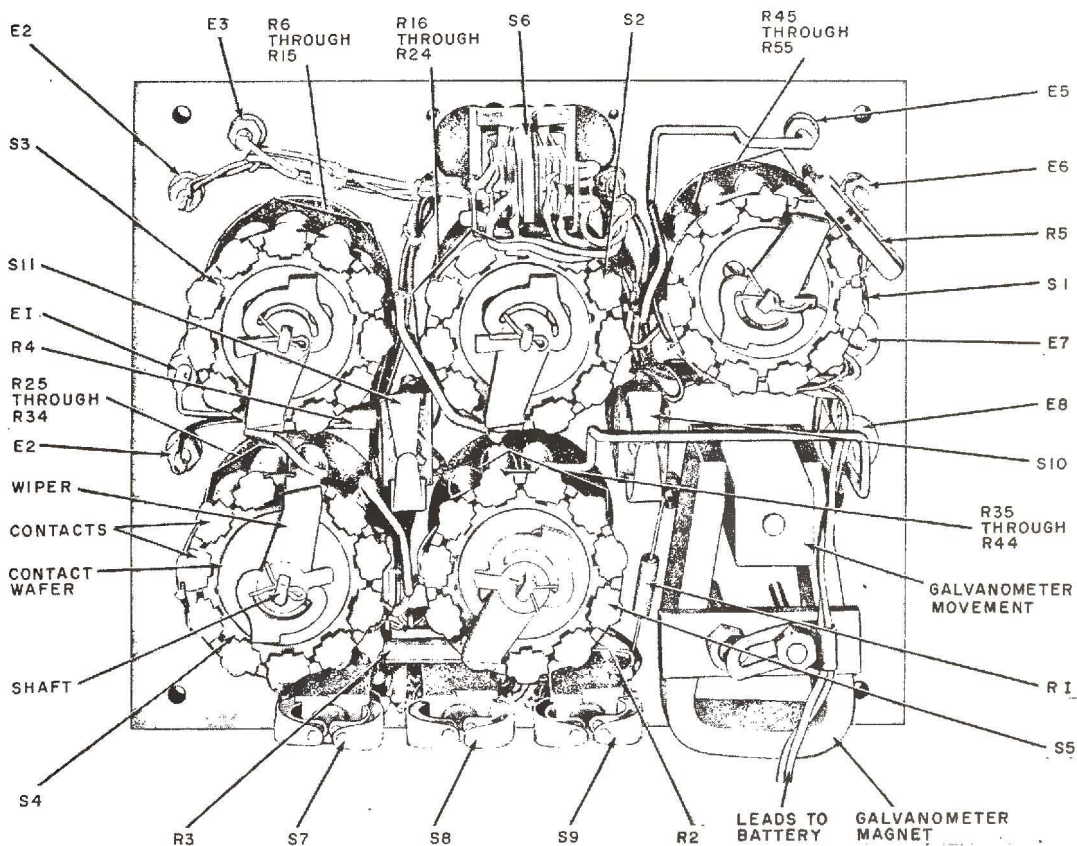
50. Switch Adjustments

The spring switches in the test set must

meet the requirements specified below. Use appropriate spring bending tools to bend the springs to meet the requirements.

a. *GA SENS Switches.* The switches used for GA SENS switches S7, S8, and S9 (figs. 22 and 23) vary from model to model, but all are the plunger type with spring contacts. The contacts of all must be open when the plunger is fully released. As the plunger is depressed slowly, the pair of contacts in the battery circuit must close first. Continued downward movement of the plunger must then close the pair of contacts in the galvanometer circuit. After the second pair of contacts is closed, spring follow must be perceptible as the plunger is moved to the fully depressed position.

b. *BA and GA Switches.* The type of switch



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Figure 22. Resistance Bridge ZM-4A/U, bottom view.

b. Galvanometer (All Models).

- (1) Remove the galvanometer screw and the slotted screw from the left side of the galvanometer (fig. 3).
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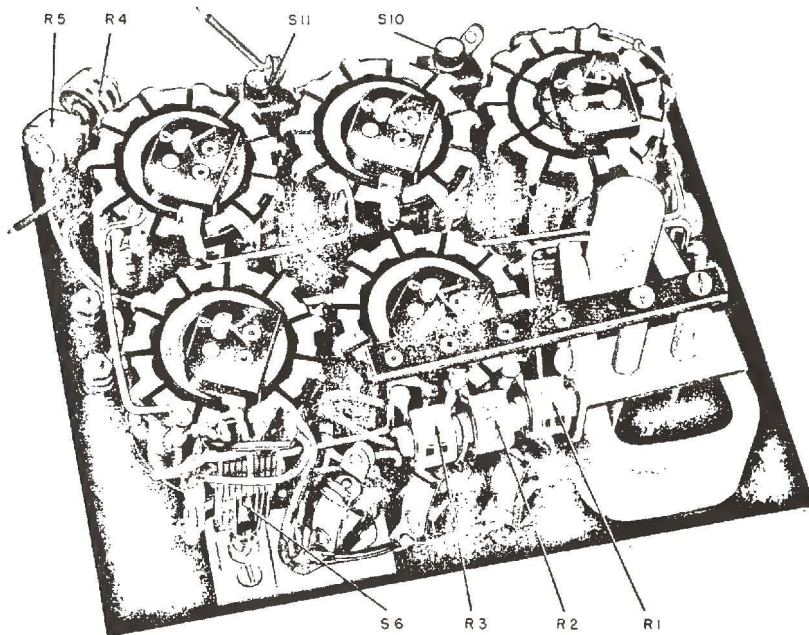
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The spring switches in the test set must

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b. *BA and GA Switches.* The type of switch



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Figure 23. Resistance Bridge ZM-4B/U, bottom view.

used for BA switch S11 and GA switch S10 (figs. 22 and 23) varies from model to model but all are two-position rotary plunger type with spring contacts. As the plunger is rotated clockwise, a camming surface moves the plunger downward until it is held latched in the fully downward position. The contacts must be open when the GA switch is in the HIL position (released) and the BA switch is in the EXT position. As the GA switch is moved toward the RVM position and the BA

switch is moved toward the INT position, the contacts must close with perceptible spring follow until the switches are latched in the fully clockwise position.

c. *Wipers of Rotary Switches.* As the switch dial is rotated slowly, each of the wiper springs must come in firm contact with each contact surface on the switch. Remove the wiper from the shaft and bend the wiper springs to meet the requirements.

Section III. FINAL TESTING

51. Purpose of Final Testing

The repaired test set must be tested thoroughly to insure that it meets the performance standards required of new equipment. Use the tests described in this section to measure the performance of a repaired test set. The test data is applicable at 68° F.

52. Galvanometer Test

Test the galvanometer as follows:

a. Set the RES-VAR-MUR switch to MUR

and the GA switch to RVM.

b. Connect a source of $4\frac{1}{2}$ volts dc in series with the 1-megohm resistor and connect both across line binding posts X1 and X2.

c. Depress the GA SENS 1 switch. The galvanometer must deflect at least three divisions of the scale (3 millimeters).

53. Test of Decades and Multiplier Resistors

Test the operation of the test set at each

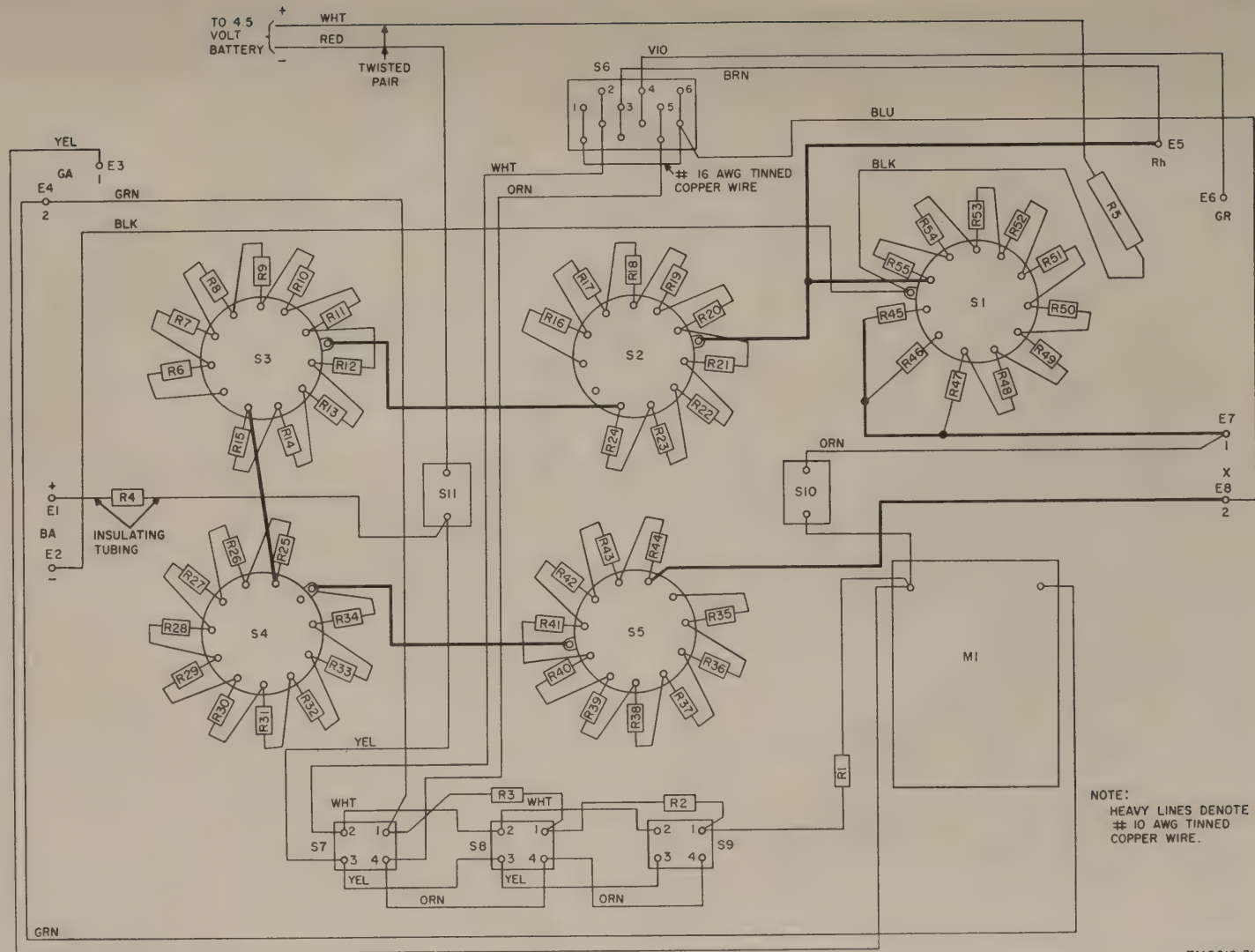
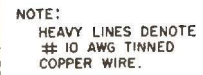


Figure 24. ZM-4A/U, I-49, and I-49B, wiring diagram.

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