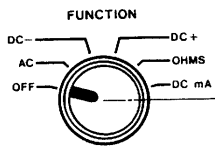


- NOTES:
1. ALL 1% RESISTORS ARE 1/4 WATT UNLESS OTHERWISE NOTED. ALL OTHER RESISTORS (5%) ARE 1/2 WATT UNLESS OTHERWISE NOTED.
 2. RESISTOR VALUES ARE IN OHMS (K=1,000, M=1,000,000).
 3. CAPACITOR VALUES ARE IN μ F.
 4. ∇ DENOTES CIRCUIT GROUND.
 5. \circ DENOTES A DC VOLTAGE MEASURED FROM THE POINT INDICATED TO GROUND WITH THE FOLLOWING CONDITIONS:
 - A. RANGE SWITCH SET TO 1 VOLT.
 - B. FUNCTION SWITCH SET TO +DC.
 - C. INPUT SHORTED.
 - D. MEASUREMENTS MADE WITH A HIGH IMPEDANCE VOLTMETER.
 6. \square DENOTES A CIRCUIT BOARD CONNECTION.
 7. \circ DENOTES OTHER CONNECTIONS.
 8. SWITCHES ARE SHOWN IN CCW POSITION. "D" ON SWITCHES DENOTES DUMMY LUGS USED FOR ELECTRICAL TIE POINT.

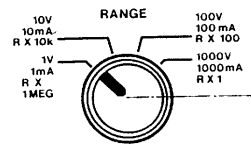
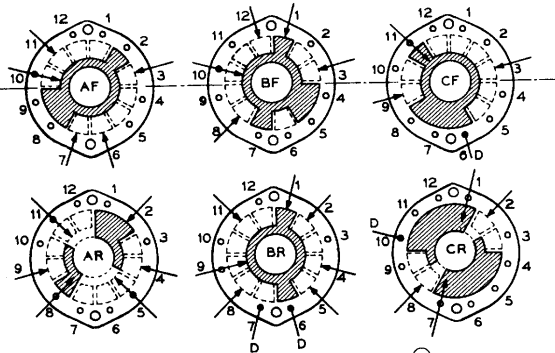
**SCHEMATIC OF THE
HEATHKIT®
MULTIMETER
MODEL IM-5284**

Part of 595-1961-02

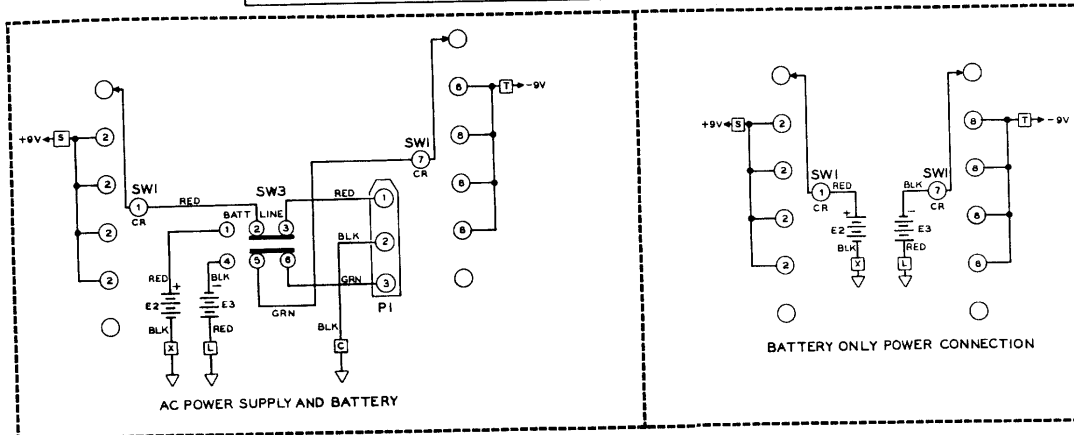
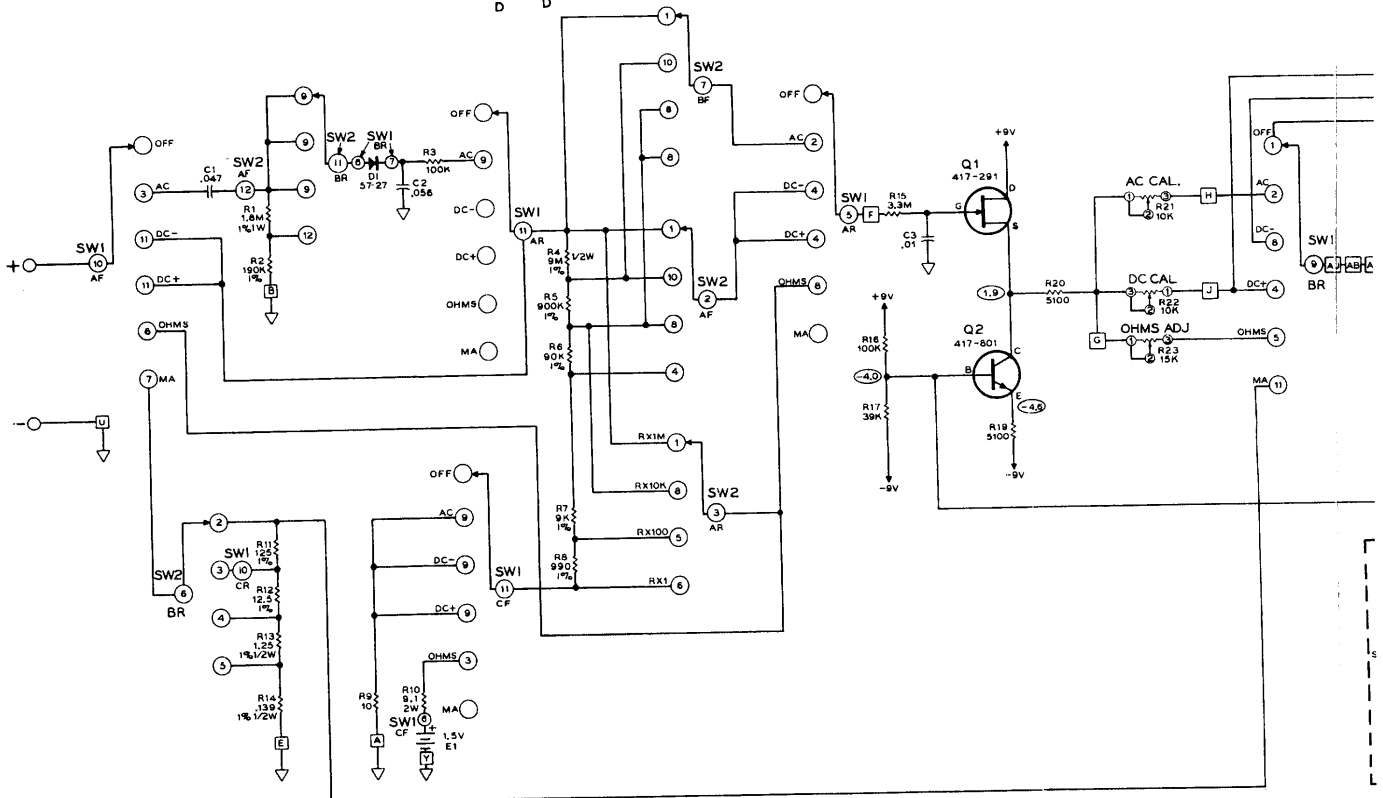
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SW1



SW2



- NOTES:
1. ALL 1% RESISTOR: ALL OTHER RESIS: NOTED.
 2. RESISTOR VALUES
 3. CAPACITOR VALU
 4. ▽ DENOTES CIRC
 5. ○ DENOTES A DC INDICATED TO
 - A. RANGE SWI
 - B. FUNCTION
 - C. INPUT SHO
 - D. MEASUREM VOLTMETER
 6. □ DENOTES A CI
 7. ○ DENOTES OTH
 8. SWITCHES ARE S DENOTES DUMMY

CALIBRATION

NOTE: If the Multimeter does not seem to operate properly during any of the following tests, turn it off immediately and refer to "In Case of Difficulty" (Page 38).

Refer to Pictorial 22 (Illustration Booklet, Page 5) and Pictorial 17, Part A for the location of the front panel controls and switches in the following steps.

(✓) Turn the mechanical zero-adjust screw at the bottom of the meter until the meter pointer is directly over the zero indication on the meter face.

(✓) Set the Multimeter front panel switches and controls as follows:

RANGE SWITCH . 1000 V.
 FUNCTION OFF.
 ZERO ADJUST . . . Center of rotation.
 OHMS ADJUST . . Maximum counterclockwise.

(✓) Set the circuit board controls as follows:

METER ADJ Maximum counterclockwise.
 DC CAL Maximum clockwise.
 AC CAL Maximum counterclockwise.

(✓) Set the LINE — BATT Switch (SW3) to LINE (for Power Supply operation), or BATT (for 9-volt battery operation).

(✓) Prepare the following wires:

1-3/4" red
 1" black
 1" white

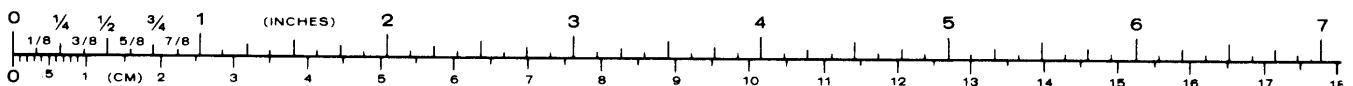
NOTE: When you connect a wire to the foil side of the circuit board as in the next step, position the insulation on the wire up off the foil so the solder can flow in around the bare wire and form a good connection. See the inset drawing. Then cut off the excess lead length from the component side as you connect each wire.

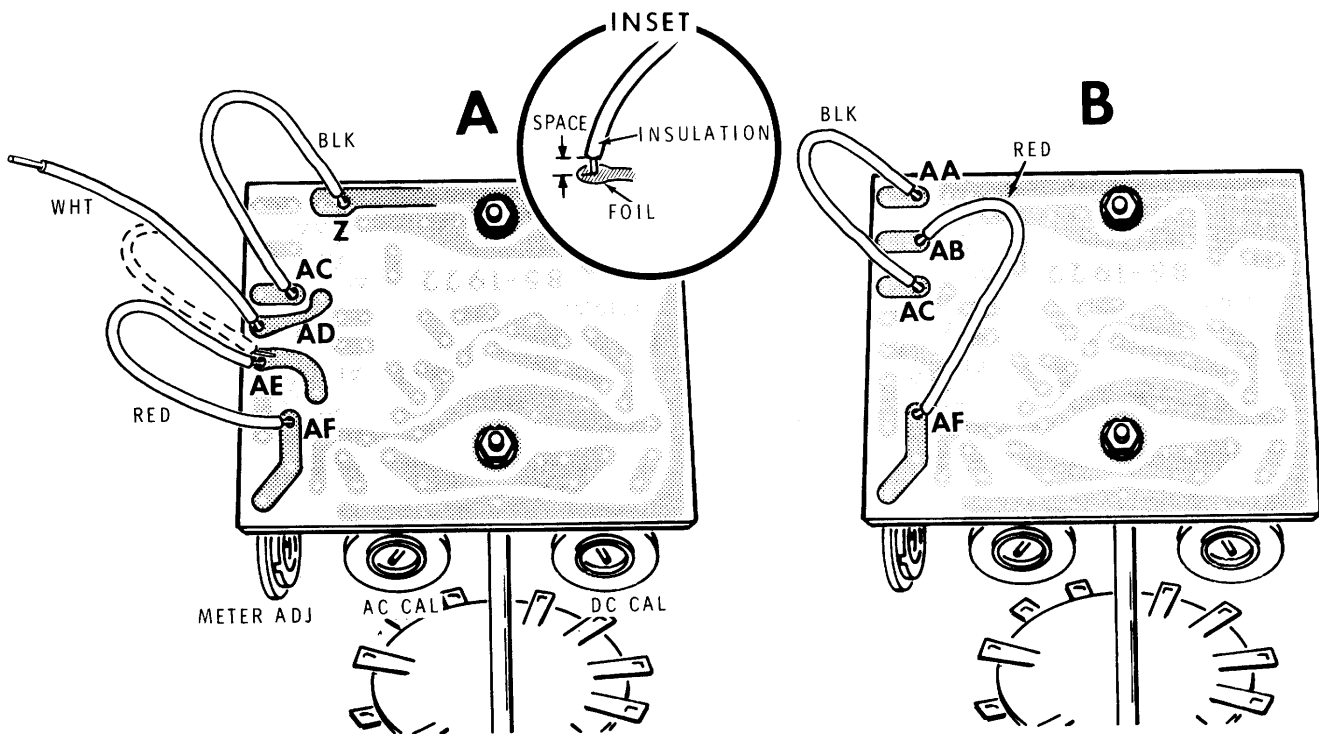
Connect the black and red wires to the foil side of the circuit board as follows:

(✓) Black wire between hole AC (S-1) and hole Z (S-1).

(✓) Red wire between hole AF (S-1) and hole AE (S-1).

(✓) Turn the FUNCTION switch to DC+. The meter should indicate approximately 8 on the black scale.





PICTORIAL 17

8.8
 Note the meter reading on the black scale.

Turn FUNCTION switch to OFF.

Connect the white wire between hole AD (S-1) and to the foil pad at AE (S-2).

Turn the FUNCTION switch to DC+.

Turn the METER ADJ control to the point where the meter indicates one-half the value you noted above, and leave the control at that position.

Turn FUNCTION switch to OFF.

Refer to Pictorial 17 Part B for the following steps.

Remove the end of the black wire from hole Z and connect it to hole AA (S-1).

Disconnect both of the wires at hole AE.

Connect the free end of the red wire to hole AB (S-1).

Remove the white wire; it was only used for calibration.

Turn the FUNCTION switch to DC+.

Turn the ZERO ADJUST control (not the mechanical zero) on the front panel fully clockwise. This should cause an upscale meter reading.

Set the FUNCTION switch to DC- and turn the ZERO ADJUST control fully counterclockwise. This should cause the meter pointer to move upscale.

Readjust the ZERO ADJUST control for a zero indication on the meter.

Alternate the FUNCTION switch between DC- and DC+. If the meter needle was set exactly on zero, it should remain on zero in either switch position. If it does not, repeat the preceding step.

Plug the black test lead into the black (-) jack and the red test lead into the red (+) jack on the front panel.

DC CALIBRATION

- (✓) Set the FUNCTION switch to DC+.
- (✓) Turn the RANGE switch to 10 V.
- (✓) Touch the tip of the DC probe (red test lead) to the positive terminal of the 1.5-volt C-cell battery and adjust the DC CAL control (on circuit board) for a 1.5-volt meter indication on the black scale, as shown in Pictorial 18 (Illustration Booklet, Page 4). (If other DC voltages that are known to be more accurate are available, they may be used for the DC calibration).
- (✓) Remove the probe tip from the battery and readjust the ZERO ADJUST control for a zero indication on the meter. Then repeat these two steps until both adjustments are proper.

AC CALIBRATION

Using the AC Power Supply

CAUTION: Do NOT use the common (negative) lead of the Multimeter when measuring power line voltages. This lead is already connected to the circuit ground and to the power line ground. If the common lead should contact the "hot" side of the power outlet, the power line will be shortcircuited. Connect ONLY the meter probe to the power line.

- (✓) Turn the FUNCTION switch to AC and the RANGE switch to 1000 V.
- (✓) Connect the test probe to the side of the AC line which provides a meter deflection.
- (✓) Adjust the AC CAL control (on the circuit board) for a meter reading of 120 volts on the black scale (this is a reading of 1.2, or one scale division above the numeral 1, as shown in Pictorial 19, Illustration Booklet, Page 4. If the line voltage is known to be other than 120 volts, adjust for this value).
- (✓) Disconnect the test probe from the AC line.

Using Batteries

Refer to Pictorial 19 (Illustration Booklet, Page 4) for the following steps.

- () Set the Range switch to the 10 V range.
- () Set the Function switch to AC.
- () Refer to Detail 19A and connect the black test probe between SW1 C1 and SW2 A12.
- () Adjust the AC CAL control (on the circuit board) for a meter reading of 7.4 on the black scale.
- () Disconnect the test lead.

OHMS ADJUSTMENT

- (✓) Turn the RANGE switch to R×1MEG.
- (✓) Turn the FUNCTION switch to OHMS. The meter should give an up-scale reading.
- (✓) Adjust the OHMS ADJUST control for a fullscale (INF) reading on the green scale.
- (✓) Touch the tips of the test leads (the red probe and the alligator clip) together; this should cause a zero meter reading. If it does not, turn the FUNCTION switch to DC+; then turn the ZERO ADJUST control to zero the meter needle. Repeat the preceding two steps and this step.
- (✓) Turn the RANGE switch to each of the other three resistance ranges. Each range should give a zero indication with the test leads touching each other, and an INF reading with these test leads apart. On the R×1 range, with the leads touching, observe that there will be a fraction of an ohm circuit resistance indicated.
- () Turn the FUNCTION switch OFF.
- () If you are using the AC Power Supply, disconnect it from the Multimeter and remove the plug from the AC outlet.

This completes the "Calibration." Proceed to "Final Assembly."