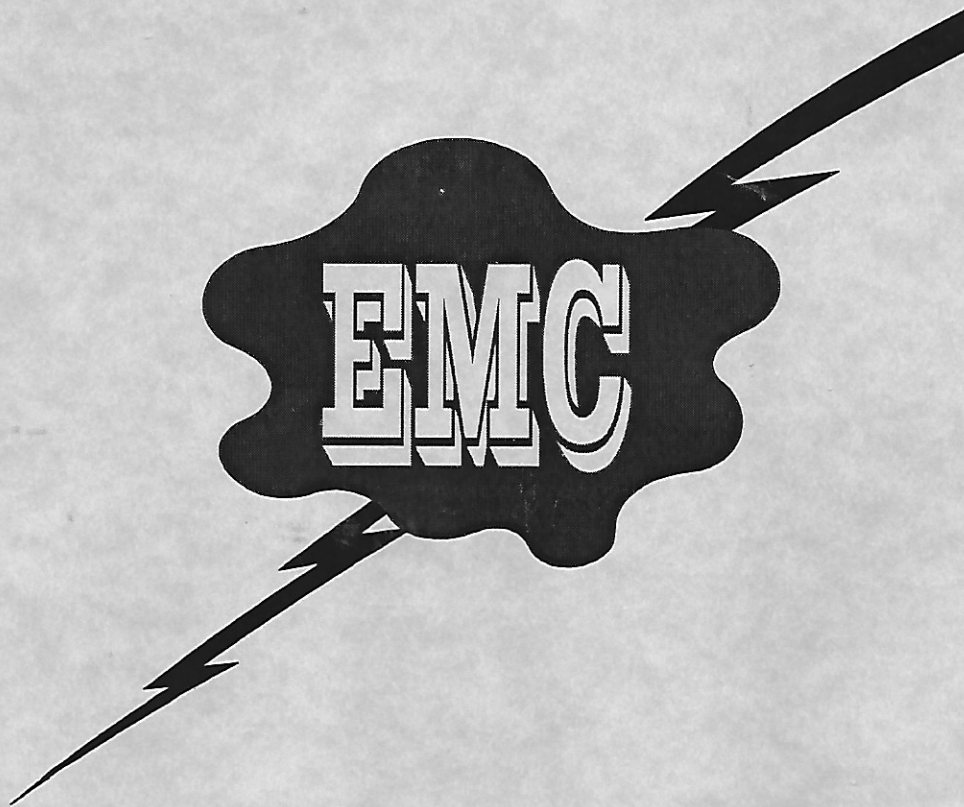


**OPERATING & ASSEMBLY
MANUAL**

E M C Model 801



**ELECTRONIC MEASUREMENTS
CORPORATION
625 Broadway, New York, N. Y.**

MODEL 801 RESISTANCE CAPACITANCE BRIDGE AND IN CIRCUIT CAPACITANCE CHECKER

GENERAL

Model 801 is a comprehensive condenser checker in that it measures capacity in 4 ranges from 10 mmfd. to 5000 mfd. It measures leakage at any rated voltage up to 500 Volt DC and measures power factor up to 60%. In addition it checks condensers for opens and shorts while still in the circuit without the necessity of having to remove them from the circuit.

It also measures resistance in 4 ranges from .5 ohm to 500 megohms.

For all its functions, Model 801 uses a "Magic Eye" tube as an indicator.

The leakage test has a dual sensitivity, a low sensitivity for checking electrolytic condensers and a high sensitivity for checking paper, mica and ceramic condensers.

Model 801 may also be used to compare resistors, condensers, chokes, or transformers against standards that are connected across the "standard" binding posts. The ratio of the unknown to the standard can be determined from the "Ratio" scale.

Because of the wide range of measurements provided, Model 801 is of great value in servicing TV, Radio, Amplifiers and other electronic devices.

SPECIFICATIONS

Open test on condensers:-----50 mmfd to infinity
shunted by more than
2 K ohms at 50 mmfd
400 ohms at 100 mmfd
30 ohms at 350 mmfd

Short test on condensers:-----up to 20 mfd shunted by at least
100 ohms. Electrolytic condensers are
not checked for shorts.

Test Frequencies:-----60 cycle for short test
20 megacycles for open test

Resistance: 4 ranges-----0.5 ohm to 500 ohms
50 ohms to 50,000 ohms
5000 ohms to 5 megohms
5 megohms to 500 megohms

Capacitance: 4 ranges-----.00001 mfd to .005 mfd
.001 mfd to 0.5 mfd
0.1 mfd to 50 mfd
50 mfd to 5000 mfd

DC voltage for leakage test:-----0-500 volts continuously variable

Power Factor:-----0-60%

Ratio Measurements:-----.05 to 20 or 400 to 1

Tubes Complement:-----1-EZ81, 1-1629

Power Requirements:-----105-130 volts 50-60 cycles

Cabinet Size:-----7" high x 10" wide x 4 $\frac{1}{4}$ " deep.

CIRCUIT DESCRIPTION

The "In Circuit" capacity checker checks for both opens, intermittents and shorted condensers.

For the SHORT test an AC bias voltage is connected to the grid of the magic eye tube through a current limiting resistor. The tube acts as its own half wave rectifier and conducts only during the half cycle that the plate of the magic eye tube is positive. The test leads are connected between grid and ground. A shorted condenser shorts out the bias voltage causing the eye to open. If it is not shorted, it will not have this effect and the eye will close completely or partially. The impedance of the condenser and the resistor if any which is connected across it, must be at least 10 ohms. Electrolytic condensers are therefore not checked for shorts only for opens.

For the OPEN test the triode section of the magic eye tube is used as a Hartley Oscillator. A secondary coil is coupled to the oscillator coil and is coupled tight enough to cause the oscillator to quit oscillations. Therefore with no condenser or an open condenser connected across the jacks, no bias is developed across the grid leak and the magic eye is open to its widest angle. When a good or a shorted condenser is connected across the secondary, the circuit is detuned sufficiently to permit oscillations to resume. This develops a bias on the grid of the magic eye and causes the eye to close completely or partially. The oscillating frequency is about 20 megacycles.

Resistance and capacity are measured on an AC operated bridge with the magic eye tube as a null indicator. The rheostat that is used to determine the bridge balance, (It has the pointer on it) varies two of the arms of the bridge.

OPERATION

A. IN CIRCUIT CAPACITY CHECKER

1. Set switch to "IN CIRCUIT TESTER" position.
2. Connect test leads to binding posts marked "RES- CAP. TEST."
3. Turn Selector Switch to either "CHECK" position and allow about a minute for the magic eye to warm up.
4. Clip test leads across the capacitor to be checked.
5. Turn switch to "TEST" position. If the eye is open in this position, replace the condenser as it is either open or shorted depending upon which test you are doing first.
6. If the eye is closed, turn to the remaining TEST position. If the eye closes, the condenser may be considered good as it is neither "open" nor "shorted".
7. If the eye opens in either TEST position, the condenser should be replaced.
8. If the eye flutters in either TEST position when the capacitor is tapped, it is intermittent and should be replaced.
9. Condensers under 100 mmfd should be disconnected from the circuit before testing. Condensers shunted by less than 30 ohms should also be disconnected from the circuit before testing.
10. If the eye has any tendency at all to close as it is turned to the TEST position as compared to its maximum eye opening, the condenser is not shorted or open.

11. Electrolytic condensers should be checked only for OPENS and not for SHORTS.
12. Condensers which are shunted by inductances having impedances of 30 ohms or less at 60 cycles, should be disconnected from the inductance before measuring for SHORTS and if the inductive impedance is less than 30 ohms at 20 megacycles, it should be disconnected from the condenser before the condenser is measured for OPENS.

B. CONDENSER LEAKAGE TEST

1. Set Switch to "CHECK" position for either "OPEN" or "SHORT" test.
2. Set Switch to "CAP-RES BRIDGE" position.
3. Set Range Switch to "PAPER-MICA TEST" or "ELECTROLYTIC TEST" depending on the type of condenser being checked.
4. Set the "VOLTAGE" control to 0.
5. Connect condenser across "RES-CAP TEST" binding posts. Polarity must be observed when checking electrolytic condensers. The positive side of the electrolytic condenser is connected to the binding post marked " + " and the negative side to the binding post marked " - ". For paper, mica or ceramic condensers polarity need not be observed. Failure to observe polarity when checking electrolytics may result in damage to the condenser under test.
6. The magic eye tube should have maximum eye opening with the "VOLTAGE" control at "0". This is the normal indication when the condenser has no leakage.
7. Rotate "VOLTAGE" control to the working voltage of the condenser. If the working voltage is above 500V DC turn control to 500V DC.
8. If the condenser is good the eye opening should contract for a moment and then slowly expand again.
9. If the condenser is excessively leaky, the eye opening will disappear completely and it will stay closed. Please note that the eye does not have to expand back to its original maximum opening in order for the condenser to be considered good. Because of the sensitivity of the leakage test, even a very small eye opening particularly in condensers above .1 mfd, indicates a good condenser. Only if the eye stays completely closed can the condenser be considered bad.
10. Electrolytic condensers should remain under test for at least 5 minutes plus 1 minute for each month of shelf storage. This is to allow time for the leakage current to reach its normal value.
11. CAUTION:- Turn the "VOLTAGE" CONTROL back to "0" before disconnecting the condenser from the instrument.

C. CAPACITY TEST AND POWER FACTOR

1. Set Switch to "CHECK" position for either "OPEN" or "SHORT" test.
2. Set Switch to "CAP-RES BRIDGE" position.
3. Set Range Switch to the range desired.
4. Connect condenser across "RES-CAP TEST" binding posts.
5. Rotate the pointer knob until the eye has maximum eye opening. This is the balance position. Move the tuning control knob back and forth slowly until you are sure the eye opening is at its maximum opening. On either side of the balance point, the eye opening will narrow. If the value of the condenser to be measured is unknown and you can't get a satisfactory balance point on one range, rotate the Range Switch through its other positions. Everytime the RANGE switch is changed start with the counter clockwise position and rotate the control knob slowly to its extreme clockwise position until the best balance setting is obtained. The value of the capacitor is read directly on the proper capacity scale.

6. On the .1 mfd to 50 mfd and on the 50 mfd to 5000 mfd ranges, the power factor control is switched into the bridge circuit to allow for balancing the internal resistance present in Electrolytic Condensers. The setting of the POWER FACTOR control therefore affects the eye opening of the bridge. When using these 2 capacity ranges first set the "POWER FACTOR" control to "0" in order to obtain a capacitative balance. If the internal series resistance of the condenser being measured is high, the angle obtained at the capacitative balance position will be less than the normal maximum eye opening. Rotate POWER FACTOR control until the normal maximum eye opening is obtained.
7. Read the % Power Factor of condenser under test. The power factor is a measure of the power loss in a condenser due to its internal resistance. The lower the power factor the better the condenser. As an approximate rule a reading of less than 15 indicates one that is good for any application, a reading of between 15 and 30 indicates a condenser which is suitable for filter applications but not for by passing. A reading of higher than 30 indicates a poor condenser.
8. When measuring very small condensers the value of the distributed wiring capacity of the instrument itself should be subtracted from the reading obtained. To measure this distributed capacity, use the 10 mmfd- 5000 mmfd range and obtain a balance with nothing connected to the instrument terminals. If this value falls below the 10 mmfd marking it can be ignored. Otherwise subtract it from the value obtained with the condenser connected.

D. RESISTANCE MEASUREMENTS

1. Set Switch to "CHECK" position for either "OPEN" or "SHORT " test.
2. Set Switch to "CAP-RES BRIDGE" position.
3. Set RANGE Switch to the range desired.
4. Connect resistor across "RES-CAP TEST" binding posts.
5. Rotate the pointer knob until the eye has maximum eye opening. This is the balance position. Move the tuning control knob back and forth slowly until you are sure the eye opening is at its maximum opening. On either side of the balance point, the eye opening will narrow. If the value of the resistor to be measured is unknown and you can't get a satisfactory balance point on one range, rotate the RANGE switch through its other positions. Everytime the RANGE switch is changed, start with the counter clockwise position and rotate the control knob slowly to its extreme clockwise position until the best balance setting is obtained. The value of the resistor is read directly on the proper resistance scale.

E. RATIO MEASUREMENTS

1. Set Switch to "CHECK" position for either "OPEN" or "SHORT" test.
2. Set Switch to "CAP-RES BRIDGE" position.
3. Connect the standard resistor, choke, coil, transformer, speaker, or condenser to the "STANDARD" binding posts. Resistors and Condensers whose range falls within the scope of the instrument need not be compared in this way, since they can be measured directly.
4. Connect the unknown resistor, choke, coil, transformer, speaker or condenser to the "RES-CAP TEST" binding posts.
5. Adjust the bridge for balance or maximum eye opening.
6. Read the ratio on the RATIO scale.
7. For all resistor, chokes, coils, transformers, or speakers divide the known value of the standard by the reading on the RATIO scale to obtain the value of the unknown.

8. For all condensers, multiply the known value of the standard condenser by the reading on the RATIO Scale to obtain the value of the unknown condenser.

GUARANTEE

This instrument is guaranteed for 90 days from date of purchase to be free from any defect in workmanship or material. ELECTRONIC MEASUREMENTS CORPORATION will replace any defective part or parts within this period without charge, if tests at our factory show that the defect was not caused by abuse or tampering.

ELECTRONIC MEASUREMENTS CORPORATION reserves the right to make changes in design or add improvements to equipment manufactured by them without incurring any obligation to incorporate such changes or improvements in equipment previously sold by them.

CONSTRUCTION MANUAL FOR MODEL 801 KITGENERAL

Read Kit instructions completely before starting on kit to become familiar with the general procedure. Then when actually starting the construction, check off each operation as it is performed to make sure nothing was omitted.

Unpack the kit and check each item against the parts list to familiarize yourself with the parts.

Make sure that you are using solder that is plainly marked "Rosin Core".

Any other type of solder, paste flux, or acid will cause corrosion and short circuits. The use of any such solder, paste flux or acid will void all guarantees for this kit.

Resistors and controls usually have a 20% tolerance and condensers have an even greater tolerance.

The Model 801 Kit is designed to accommodate such variations, therefore if the kit calls for a 47 ohm resistor and you get a 56 ohm, or if a resistor calls for 8200 ohms and you get a 10,000 ohm in place of it, rest assured that the substituted resistors, controls or condensers will work just as well as the part for which they have been substituted.

Because of the compactness of the Model 801, it is very important that the soldering be very neat. Otherwise loose bits of wire or solder will short cut adjacent switch contacts and cause inoperation or damage to the instrument. Check very carefully for this.

In the wiring instructions, connections followed by the letter (S) are to be soldered. Connections followed by the letters (NS) are not to be soldered as yet as there are more wires to be connected to the same point.

TOOLS REQUIRED

- 1 - pair of wire cutters
- 1 - pair of long nose pliers
- 1 - screw driver
- 1 - soldering iron

In order to assemble this kit in the most efficient manner, we suggest that you follow the instructions given below and check off each operation as it is performed to make sure nothing was omitted.

METHOD OF ASSEMBLYRefer to Drawing #1

1. Disassemble the binding posts by removing the nuts and washers. Remove the insulating sleeves and mount the binding posts to the panel with the insulating sleeves at rear of panel to insulate the posts from panel.
2. Mount lugs under the J3 and J4 binding posts as shown. The J1 binding post ("+" on panel) is red. The other 3 are black.
3. Mount the IOK control in position shown on Drawing #1.
4. Mount the single deck switch in position shown on Drawing #1. Use a locknut to fasten to panel.
5. Fasten the magic eye tube clamp to the bracket provided using a 6/32

screw and nut and then fasten the bracket to the panel using 2-6/32 screws and nuts.

Refer to Drawing #2 and make the following connections:

6. Connect 3.3K resistor across switch points No. 8(NS) and No. 10(NS).
7. Connect 470 mfd condenser across switch points No. 10(S) and No. 11(NS).
8. Connect 200 mfd condenser across switch points No. 1(S) and No. 2(NS).
9. Connect .02 mfd-400V condenser from switch point No. 6(NS) to ground lug of 5 lug terminal strip (NS).

Refer to Drawing #3 and mount the following:-

10. Mount transformer to chassis keeping the red wires of transformer in position shown. Use 2-6/32 screws and nuts to fasten transformer to chassis.
11. Mount 9 prong socket to chassis using 2-4/40 screws and nuts. Mount a solder lug under one of the mounting nuts as indicated on Drawing #4. Mount a 3 lug terminal strip under the other mounting nut as indicated on Drawing #4.
12. Mount the 5 lug terminal strip using a 4/40 screw and nut as shown on Drawing No. 3.
13. Mount the 3 rubber grommets in positions shown on Drawing #3.

Refer to Drawing No. 4 and mount the following:-

14. 5 lug terminal strip in position shown using 4/40 screw and nut.
15. 3- 2 lug terminal strips in positions shown on Drawing #4.
16. Fasten the chassis to the panel with the 70K control and the 1K control (small size). Keep controls in the positions indicated on Drawing #4 and use locknuts to fasten controls to the panel.
17. Mount 2 solder lugs on the binding posts as shown and hold the lugs down with the 6/32 nuts provided.
18. Mount the 2 deck switch loosely through the chassis and panel. Do not fasten securely at this time as it will have to be rotated in order to solder to some of the switch lugs later on.

Refer to Drawing No. 5 and make the following connections:-

19. Connect short green wire from transformer to indicated ground lug of 2 lug terminal strip (NS).
20. The outside red wire from transformer to pin #1 on 9 prong socket (NS).
21. Green with yellow tracer wire from transformer to pin #4 on 9 prong socket (S).
22. Interconnect pins #1(NS) and #7 on 9 prong socket (S).
23. Connect wire from pin #1 on 9 prong socket (S) to switch lug No. 8 on the switch deck nearest to the panel (S).
24. Connect switch lug No. 7 on bottom deck (S) to switch lug No. 7 on top deck of 2 deck switch (NS).
25. Connect a wire from switch lug No. 3(S) to indicated binding post (S).
26. Connect a wire from switch lug No. 6(S) to indicated binding post (S).
27. Interconnect 2 lugs on 1K control as shown (center lug (S) end lug (NS)).
28. Connect a 68K resistor and 4 mfd condenser in parallel across the terminal lugs indicated (NS). Observe polarity of 4 mfd condenser.
29. Connect a 4.7K resistor and .02 mfd condenser in parallel across the indicated lugs on 5 lug terminal strip (NS).
30. Connect .22 mfd condenser between center lug of 70K control (NS) and ground lug as shown (NS).
31. Connect a short wire from ground lug (NS) to pin No. 5 of 9 prong socket (S).
32. Connect a wire from indicated lug of 70K control (S) to ground lug (S).

Refer to Drawing No. 6 of Range Selector Switch and make the following connections:-

1. The "A" deck is the one nearest the panel.
2. Connect a .01 mfd condenser between switch lug #7 of "A" deck (S) and switch to lug No. 9 of "B" deck (NS).
35. Interconnect switch lug No. 2 on "A" deck (S) and switch lug No. 9 on "B" deck (NS).
36. Interconnect switch lug No. 3 on "A" deck (NS) and switch lug No. 6 on "B" deck (NS).
37. Interconnect switch lug No. 6 on "A" deck (NS) and switch lug No. 8 on "C" deck (S).
38. Interconnect switch lugs no. 4(S) and No. 5 on "A" deck (NS).
39. Interconnect switch lugs No. 4(NS) and No. 5 on "C" deck (S).
40. Interconnect switch lugs No. 6(NS) No. 9 (S) and No. 10(S) on "C" deck.
41. Connect 20 ohm resistor across switch lugs No. 3 (S) and No. 11 (NS) on "C" deck.
42. Connect 2K resistor across switch lugs No. 7(S) and No. 11(NS) on "C" deck.
43. Connect 200K resistor across switch lugs No. 4(S) and No. 11(NS) on "C" deck.
44. Connect 470K resistor across switch lugs No. 2(S) and No. 12(NS) on "C" deck.
45. Connect 2.2K resistor across switch lugs No. 1(S) and No. 12(S) on "C" deck.
Note that switch lug No.12 on "C" deck is a grounding lug.
46. Connect 250K resistor across switch lugs No. 3(S) and No. 8(NS) on "B" deck.
47. Connect 270K resistor across switch lugs No. 4(NS) and No. 5(S) on "B" deck.
48. Connect .01 mfd condenser between switch lug No. 6(S) on "C" deck and switch lug No. 5(S) on "A" deck.
49. Connect .02 mfd-100V condenser between switch lug No. 1(S) on "B" deck and switch lug No. 3 (NS) on "A" deck.
50. Connect 200 mmfd condenser between switch lug No. 2(S) on "B" deck and switch lug No. 3(NS) on "A" deck.
51. Cut and strip both ends of the following wires for about 1/2" length:-
 - A. 4 1/2" of purple
 - B. 4" of grey
 - C. 2 1/2" of white
 - D. 7" of black
 - E. 3 1/2" of blue
 - F. 3 1/2" of red
 - G. 3" of green
 - H. 3" of yellow
 - I. 5" of blue
52. Connect one end of white wire to switch lug No. 11 on "C" deck (S).
53. Connect one end of purple wire to switch lug No. 9 on "B" deck (S).
54. Connect one end of grey wire to switch lug No. 8 on "B" deck (S).
55. Connect one end of black wire to switch lug No. 7 on "B" deck (S).
56. Connect one end of blue wire (3 1/2" length) to switch lug No. 6 on "B" deck (S).
57. Connect one end of red wire to switch lug No. 4 on "B" deck (S).
58. Connect one end of green wire to switch lug No. 6 on "A" deck (S).
59. Connect one end of yellow wire to switch lug No. 1 on "A" deck (S).
60. Connect one end of blue wire (5" length) to switch lug No. 3 on "A" deck (S).

61. Push the black, grey, and blue wire (5" length) through hole marked "A" of chassis (See Drawing No. 4) and then mount Range Selector switch to panel in position indicated on Drawing No. 8. Note position of ground lug on "C" deck. Use lock nut to fasten switch to panel. Use an ohm meter and make sure that lug No. 11 on "C" deck is not shorted to lug No. 12 on "C" deck.

Refer to Drawing No. 7 and make the following connections:-

62. Connect wire from lug #1 of 10K control (refer to Drawing #2) to indicated lug of 3 lug terminal strip (NS).
63. Connect 450 ohm - 10W resistor across indicated lugs of 3 lug terminal strip (NS).
64. Connect red wire from "Range" switch to center lug of 70K control (S).
65. Connect white wire from "Range" switch to indicated lug on 3 lug terminal strip (S).
66. Connect blue wire (3½" length) to indicated lug of 1K control (NS).
67. Connect wire from indicated lug of 1K control (S) to indicated lug of 5 lug terminal strip (NS).
68. Connect 2 mfd condenser from indicated lugs of 5 lug terminal strip (S) to indicated lug of 2 lug terminal strip (NS).
69. Connect yellow wire from "Range" Switch to indicated lug of 2 lug terminal strip (S).
70. Connect a wire from indicated lug on 5 lug terminal strip (NS) through the indicated hole in chassis to switch lug #3 of single deck switch (S). (Refer back to Drawing No. 2).
71. Connect a wire from switch lug No. 5 (S) of the switch deck nearest to the panel of the 2 deck switch through the indicated hole in chassis to switch lug No.9 of single deck switch (S) (Refer back to Drawing No. 2).
72. Connect a wire from switch lug No. 9 of one deck of 2 deck switch to switch lug No. 9 of the other deck of same switch. (Solder lug nearest panel only).
73. Connect a wire from switch lug No. 2 of deck nearest to panel (S) to switch lug No. 3 on deck furthest from panel (NS). Refer to Drawing No. 9 for location of switch lug No. 3.
74. Connect 2.2K resistor across the indicated lugs of 5 lug terminal strip. (Solder both ends)

Refer to Drawing No.8 and make the following connections:-

75. Connect 8 mfd. condenser from indicated lug of 5 lug terminal strip (NS) to indicated lug of 2 lug terminal strip (NS). Be sure to observe proper polarity.
76. Connect green wire from "Range" switch to switch lug No. 10 of switch deck nearest to the panel (S).
77. Connect purple wire from "Range" switch to switch lug No. 1 of switch deck nearest to the panel (S).
78. Connect a wire from switch lug No. 4 of switch deck nearest to the panel (S) to switch lug No. 10 on deck "C" of "Range" switch (S). Refer back to Drawing No. 6 for location of switch lug No. 10.
79. Connect a wire from switch lug No. 11 of switch deck nearest to the panel (S) to switch lug No. 4 of single deck switch (S). Refer back to Drawing No. 2 for location of switch lug No. 4.

Refer to Drawing No. 9 and make the following connections:-

80. Inter connect switch lugs No. 3 (S) and No. 12 (NS) on the switch deck furthest from panel.

81. Connect a wire from switch lug No. 12 of deck furthest from panel (S) to indicated ground lug of 2 lug terminal strip (S).
82. Connect a wire from switch lug No. 11 of deck furthest from panel (S) to indicated lug of 5 lug terminal strip (NS).
83. Connect a wire from switch lug No. 10 of deck furthest from panel (S) to indicated lug of 2 lug terminal strip (S).
84. Connect a wire to switch lug No. 1 of deck furthest from panel (S); run in through chassis hole as indicated and connect other end to lug No. 2 on 10K control (S). Refer back to Drawing No.2 for location of lug No. 2.
85. Connect a wire from switch lug No. 2 of deck furthest from panel (NS) to the indicated lug of 1K control (S).
86. Connect red wire from transformer to indicated lug of 5 lug terminal strip (NS).
87. Connect a 3.3K resistor between the indicated lug of 70K control (S) and the indicated lug of 5 lug terminal strip (S). Use a wire to attach to one end of resistor.
88. Connect blue wire from transformer to switch lug No. 2 of switch deck furthest from panel (S).
89. Connect blue with white tracer wire from transformer to switch lug No. 6 of switch deck furthest from panel (S).

Refer to Drawing No. 10 and make the following connections:-

90. Connect a wire from switch lug No. 4 of deck furthest from panel (S) to indicated lug of 3 lug terminal strip (S).
91. Connect a wire from switch lug No. 5 of deck furthest from panel (S) to indicated lug of 5 lug terminal strip (S).
92. Connect a wire from switch lug No. 7 of deck furthest from panel (S) to indicated lug of 2 lug terminal strip (S).
93. Connect a wire to switch lug No. 8 of deck furthest from panel (S); run in through the indicated hole in chassis and connect it to the indicated lug of terminal strip on top of chassis (NS). Refer to Drawing No. 11 for location of this lug.
94. Connect a wire from switch lug No. 9 of deck furthest from panel (NS) to pin No. 3 of 9 prong socket (S).

Refer to Drawing No.11 and make the following connections:-

95. Black wire from transformer to indicated lug of 5 lug terminal strip (NS).
96. Other black wire from transformer to lug No. 6 on single deck switch (S). Refer back to Drawing No. 2 for location of lug No. 6.
97. Connect a .1 mfd condenser and 2.2 meg resistor in parallel with it across the indicated lugs of 5 lug terminal strip. (NS for end lug S for other lug)
98. Connect wire from lug No. 8 of single deck switch (NS). (Refer back to Drawing No. 2 for location) to indicated ground lug of 5 lug terminal strip (NS).
99. Connect black wire from "Range" switch to indicated binding post (S).
100. Connect the blue wire (5 inch length) from "Range" switch to indicated binding post (S).
101. Connect grey wire from "Range" switch to lug No. 3 of 10K control (S).

Refer to Drawing No. 12 and make the following connections:-

102. Connect long green wire from transformer to lug No. 2 of octal socket (S).
103. Connect wire from lug No. 3 of octal socket (NS) to indicated lug of 5 lug terminal strip (S).
104. Connect 2.2 meg resistor between lug No. 3 (NS) and lug No.4 of octal socket (NS).

105. Connect wire to lug No. 5 of octal socket (NS). Run the wire through the hole indicated in chassis and connect the other end to lug No. 12 on deck nearest to panel of 2 deck switch (S). Refer back to Drawing No. 8 for location of lug No.12. Keep the wire as short as possible.
106. Connect 10 meg resistor between lugs 5 (S) and lug 7 of octal socket (NS).
107. Connect wire from lug No. 7 of octal socket (NS) to center or ground lug of 5 lug terminal strip (S).
108. Connect wire from lug No. 8 of octal socket (S) to lug No. 5 of single deck switch (S). Refer back to Drawing No. 2 for location of lug No. 5.
109. Connect .01 mfd condenser between lug No. 3 (S) and lug No. 7 of octal socket (S).
110. Connect wire to lug No. 4 of octal socket (S). Run wire through the indicated hole in chassis and connect the other end to lug No. 9 on deck furthest from panel of 2 deck switch (S). Refer back to Drawing No. 10 for location of switch lug No. 9.
111. Connect wire from indicated lug on 5 lug terminal strip (NS) to lug No. 7 on single deck switch (S). Refer back to Drawing No. 2 for location of lug No. 7.
112. Insert line cord through grommet. Make a knot in the line cord to prevent it from pulling through and connect the line cord to the indicated lugs of 5 lug terminal strip (S).
113. Refer to Drawing #2 and solder coil to the switch in position shown with condenser on top. Solder coil lugs directly to the lugs on switch without any additional wires.

CHECKING AND ADJUSTMENT

1. Double check all your wiring and connections to make sure they are right and that there are no accidental shorts on the switches or tube sockets. Remove all loose pieces of solder.
2. Any excess rosin should be removed by cleaning with carbon tetrachloride
3. Insert E281 and 1629 tubes into their sockets.
4. Mount the 2 bar knobs on the "Range" and "AC OFF" switches making sure that they turn through all the positions indicated on the panel.
5. Mount the 3 small knobs with pointer on the "VOLTAGE" control, "POWER FACTOR" control and "CAP. RES. BRIDGE - IN CIRCUIT TESTER" switch. The knobs should turn through the markings indicated on panel.
6. Mount the knob with the celluloid pointer on the calibration control. In the extreme counter clockwise position it should line up with "50 mfd- 5M" marking. The final setting and adjustment of this knob will be made later.
7. Use an ohmmeter and measure resistance to ground from both B+ and B-. It should be at least 50,000 ohms after it has reached its final value. If it is lower recheck the wiring until the trouble has been located.
8. Set switch to either "CHECK" position and plug instrument into a 105-130 volt 60 cycle line and allow about a minute for it to heat up. The magic eye should glow green within this time.
9. Set switch to "CAP-RES. BRIDGE" position and Range to "50 ohm - 50K ohm" position. Connect the 2,000 ohm calibration resistor across the "+" and "-" binding posts. Rotate the knob with the celluloid pointer until the eye shows maximum opening. Loosen the set screw and reset the knob if necessary until the maximum eye opening occurs when the pointer is exactly at the 2K marking. Remove the 2000 ohm resistor from the binding posts and save it as a standard for future checking or comparison.

10. If the instrument works properly, push the line cord through the opening in the rear of the cabinet and insert the instrument into the cabinet. Align the hole in the rear of the chassis with the one in the rear of the cabinet and tighten with a #6 x 1/2" self tapping screw. Fasten the panel to the case use 8- #8 self tapping screws.

GUARANTEE

IMPORTANT - READ CAREFULLY

Electronic Measurements Corporation will replace any defective part or parts within a period of 90 days from the date of purchase if in the judgment of Electronic Measurements Corporation any such defect was not caused by tampering, electrical overload, or damage due to excessive mechanical shock.

The guarantee does not include any labor. All defective part or parts must be removed from the instrument by the consumer and sent Post Paid to us for inspection and replacement.

If, for any reason, the kit in a completely wired or partially wired form is sent back to us, there will be a \$4.50 minimum labor charge plus the cost of any parts or extra labor required because of damage or excessive errors in wiring.

PARTS LIST

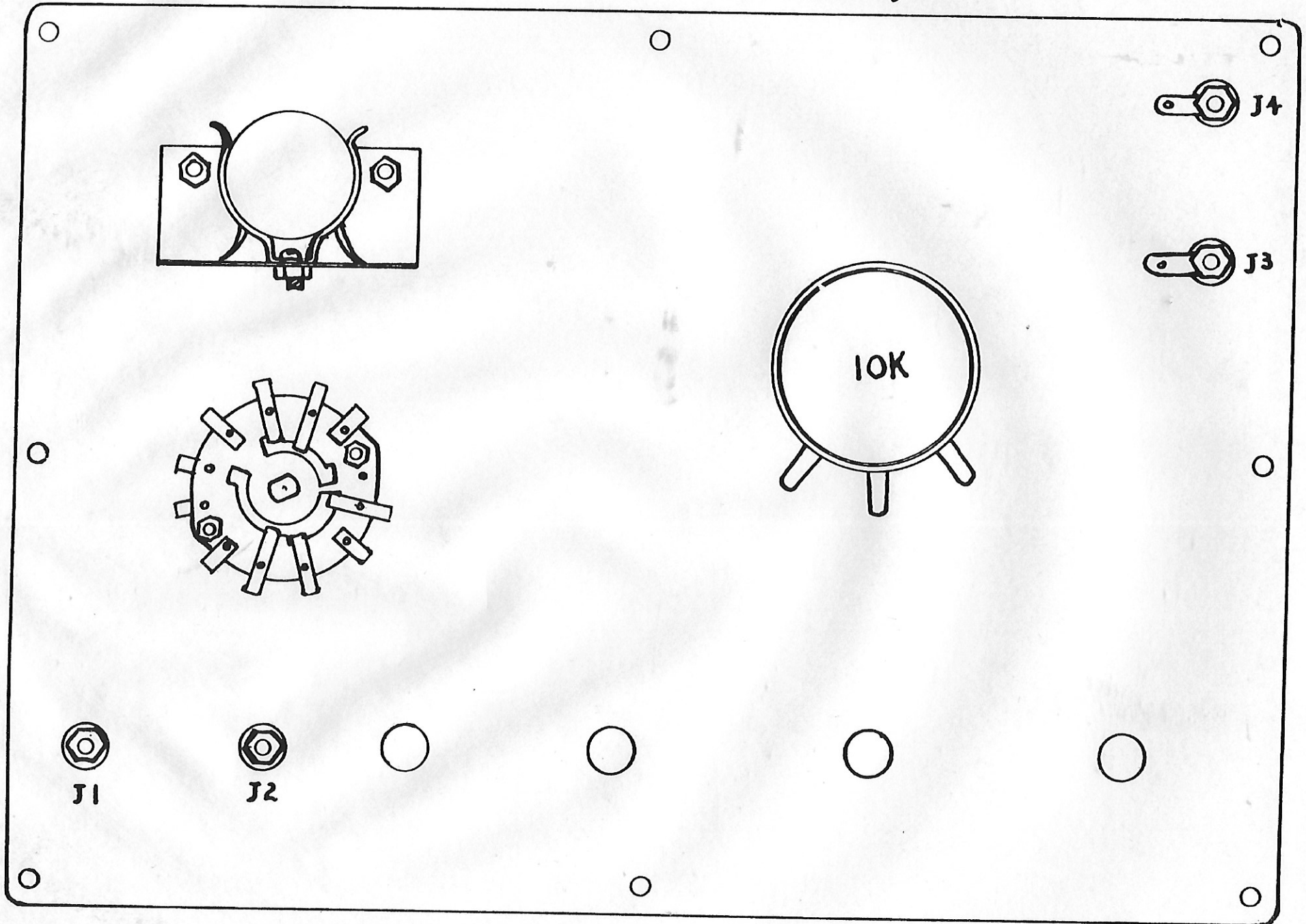
801 Kit

<u>PART NO.</u>	<u>ITEM</u>	<u>QUANTITY</u>	<u>PART NO.</u>	<u>ITEM</u>	<u>QUANTITY</u>
1	Chassis	1	33.	.1 mfd cond.-400V	1
2.	Panel	1	34.	450 ohm-10W resistor	1
3.	Case	1	35.	200K - 1% resistor	1
4.	Transformer	1	36.	250K - 1% resistor	1
5.	Magic Eye Tube	1	37.	2K - 1% resistor	2
	Bracket		38.	20 ohm - 1% resistor	1
6.	Magic Eye Clamp	1	39.	3300 ohm resistor	2
7.	Range Switch	1	40.	470K resistor	1
8.	AC OFF Switch	1	41.	270K resistor	1
9.	In Circuit- Cap.Res.	1	42.	2.2K resistor	2
	Switch		43.	68K resistor	1
10.	1K control	1	44.	2.2 meg resistor	2
11.	10K control	1	45.	10 meg resistor	1
12.	70K control	1	46.	4.7K resistor	1
13.	9 pin socket	1	47.	2 lug terminal strip	3
14.	8 pin socket	1	48.	3 lug terminal strip	1
15.	Black Binding Posts	3	49.	5 lug terminal strip	2
16.	Red Binding Post	1	50.	Grommets	3
17.	Bar Knobs	2	51.	Solder Lugs	5
18.	Small Knobs with	3	52.	Test Leads	1 pair
	Pointer		53.	#8 self tapping screws	8
19.	Knob with Celluloid	1	54.	#6 x 1/2" tapping	1
	Indicator			screws	
20.	EZ81 Tube	1	55.	6/32 screws	5
21.	1629 Tube	1	56.	6/32 nuts	5
22.	Coil	1	57.	4/40 screws	5
23.	8 mfd-525V condenser	1	58.	4/40 nuts	5
24.	4 mfd-250V	1	59.	Line cord	1
25.	2 mfd cond. $\pm 10\%$	1	60.	2 ft. of each of	
26.	.02 mfd cond.- 100V	1		following 8 colors:	
	$\pm 10\%$			purple, grey, black, blue,	
27.	200 mmfd cond. $\pm 10\%$	2	61.	red, yellow, green, and white	
28.	.22 mfd-600V cond.	1		Lock nuts for switches	
29.	.02 mfd-400V cond.	2		and controls	6
30.	.01 mfd-400V cond.	3	62.	Instruction Manual	
31.	470 mmfd cond.	1		and kit sheets	1
32.	20 mmfd cond.	1			

(Premounted on Coil)

Model 801

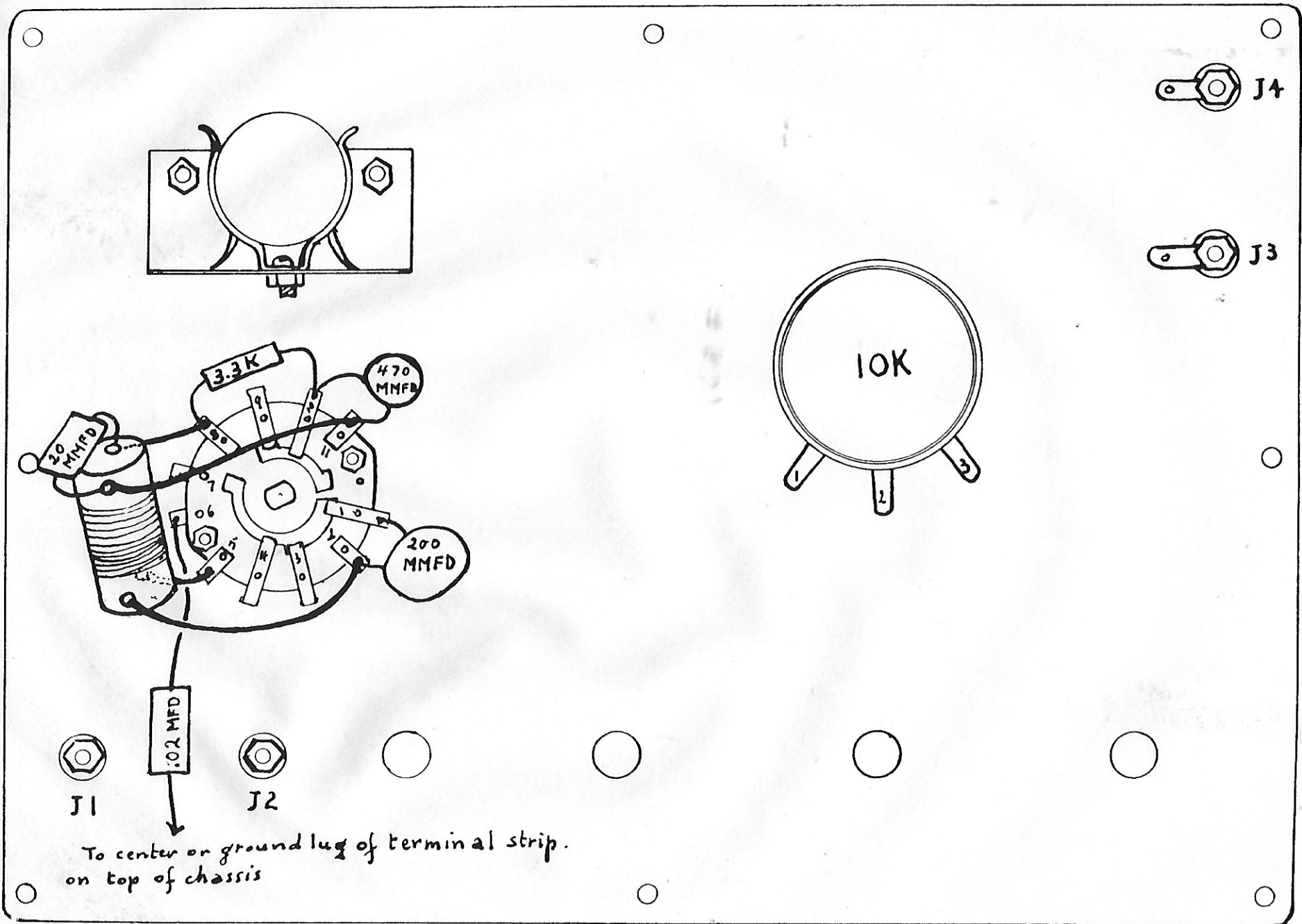
Rear view of Panel



Drawing N° 1

Model 801

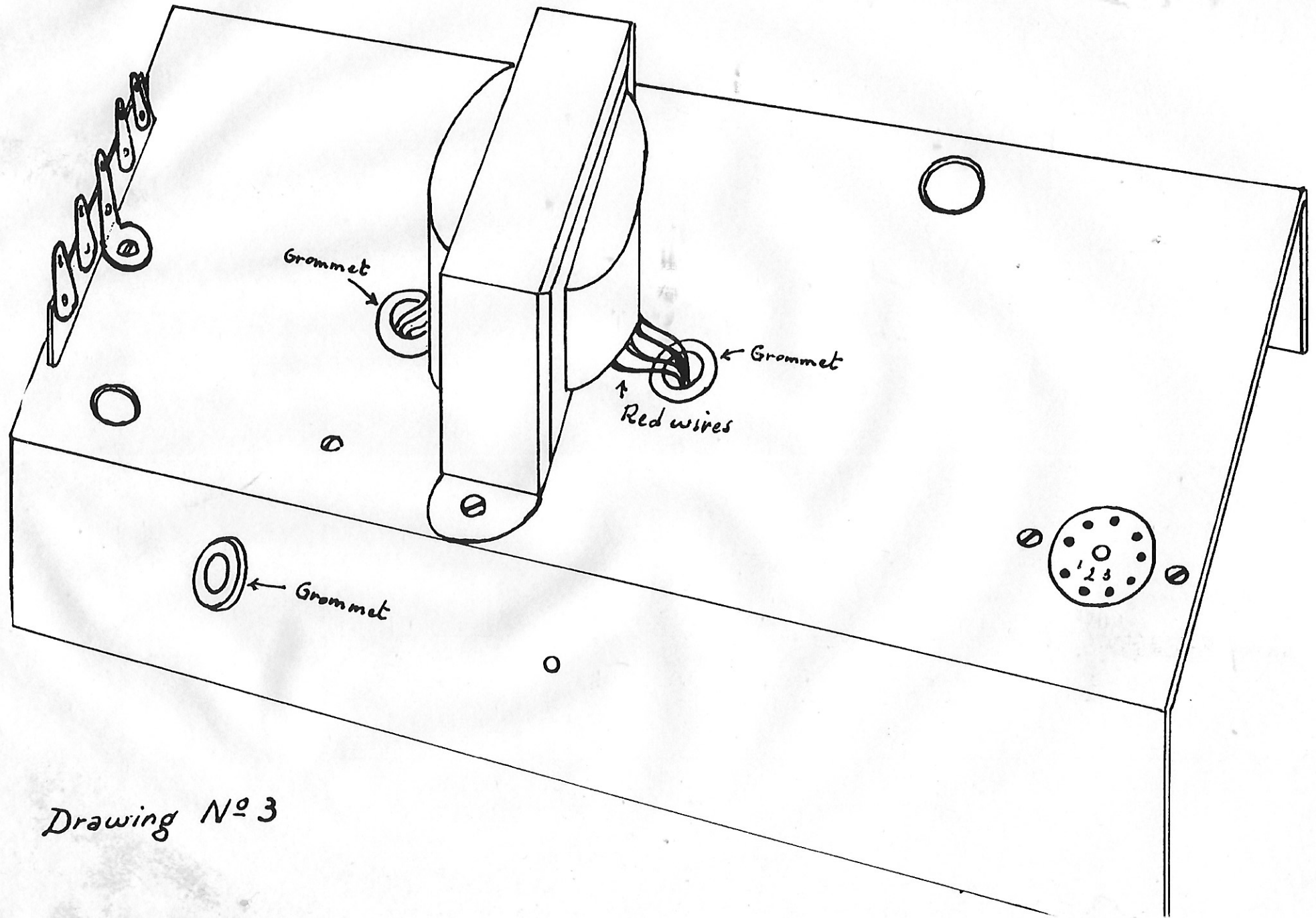
Rear view of Panel



Drawing N° 2

Model 801

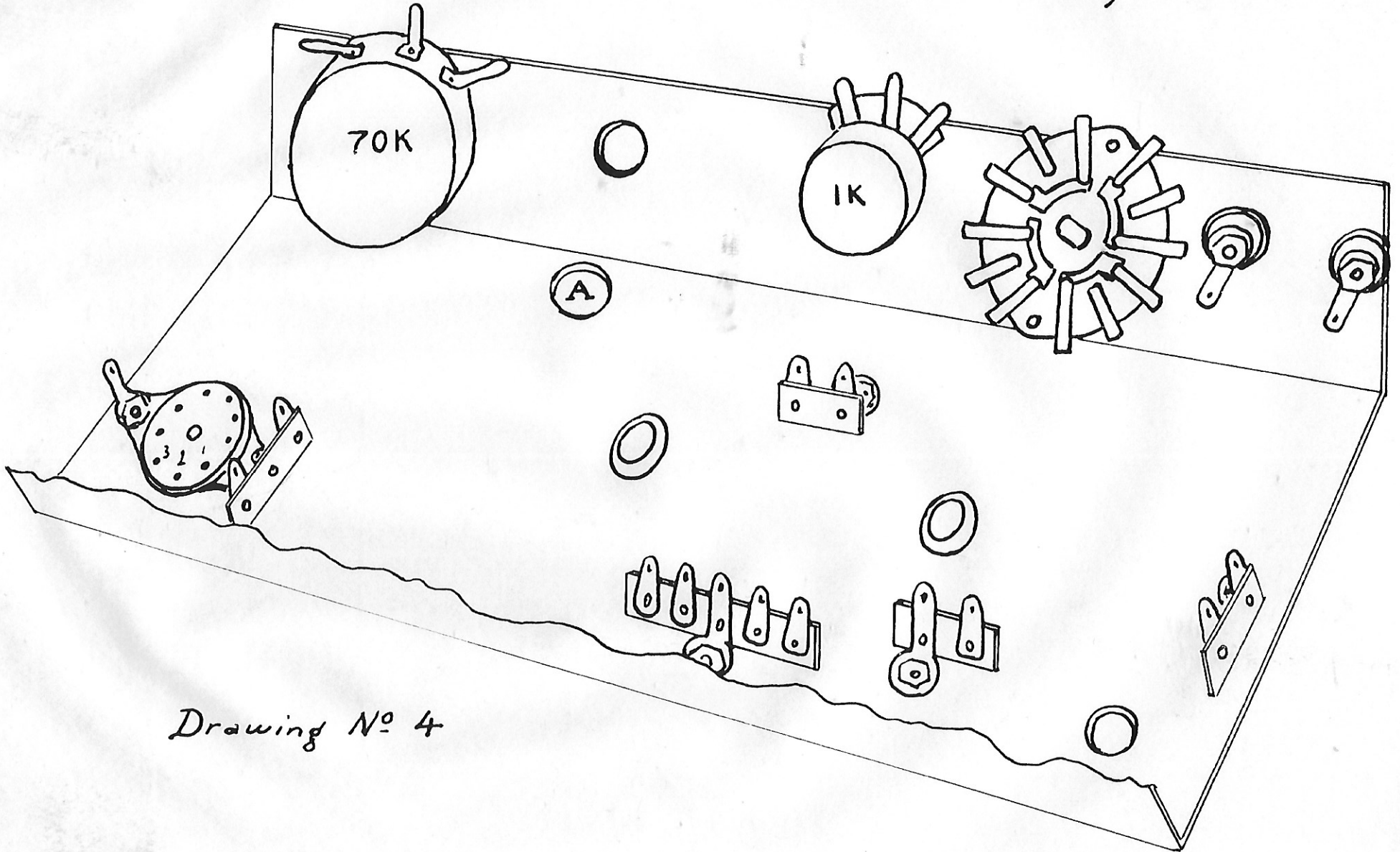
Top view of chassis



Drawing N° 3

Model 801

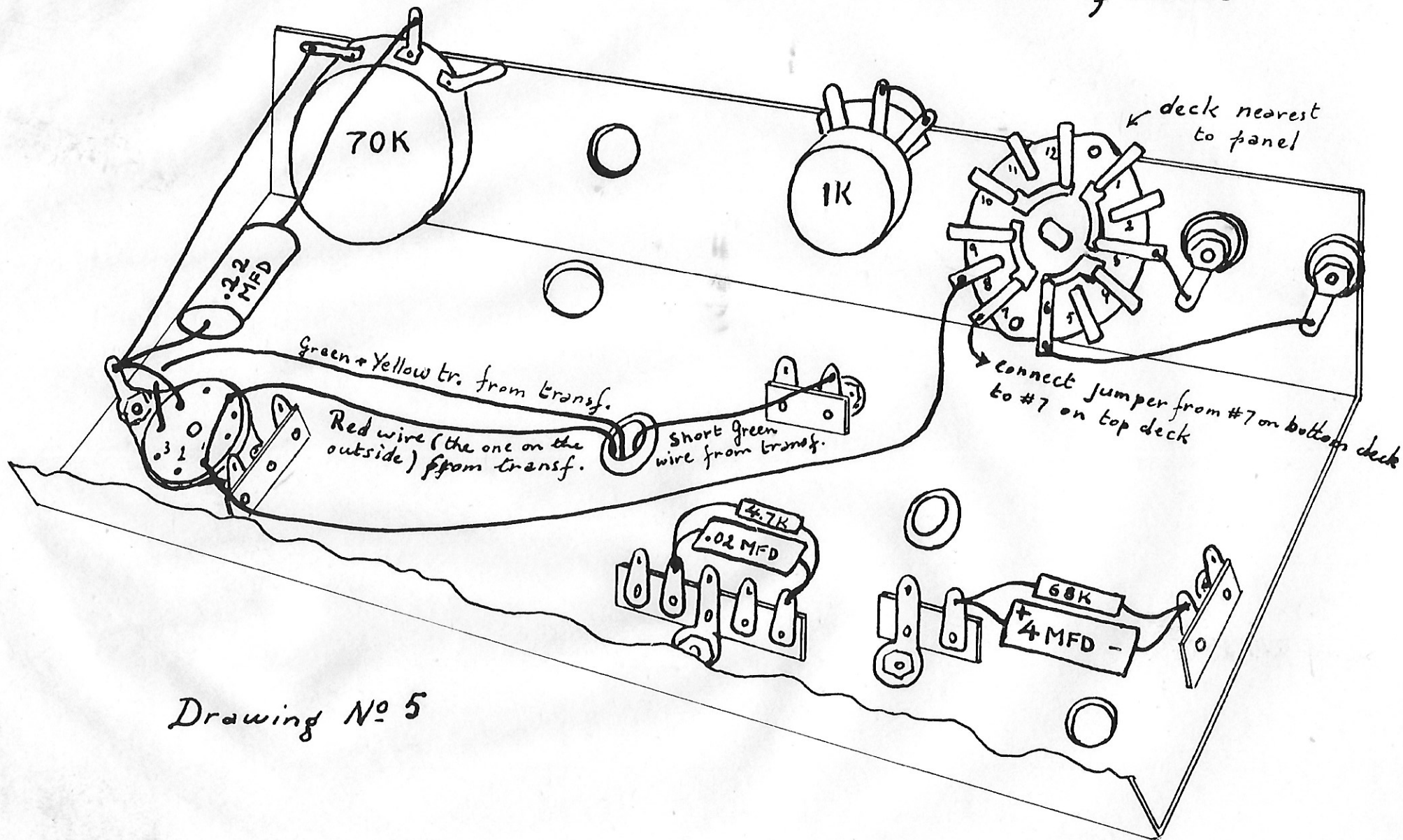
Bottom view of chassis



Drawing N° 4

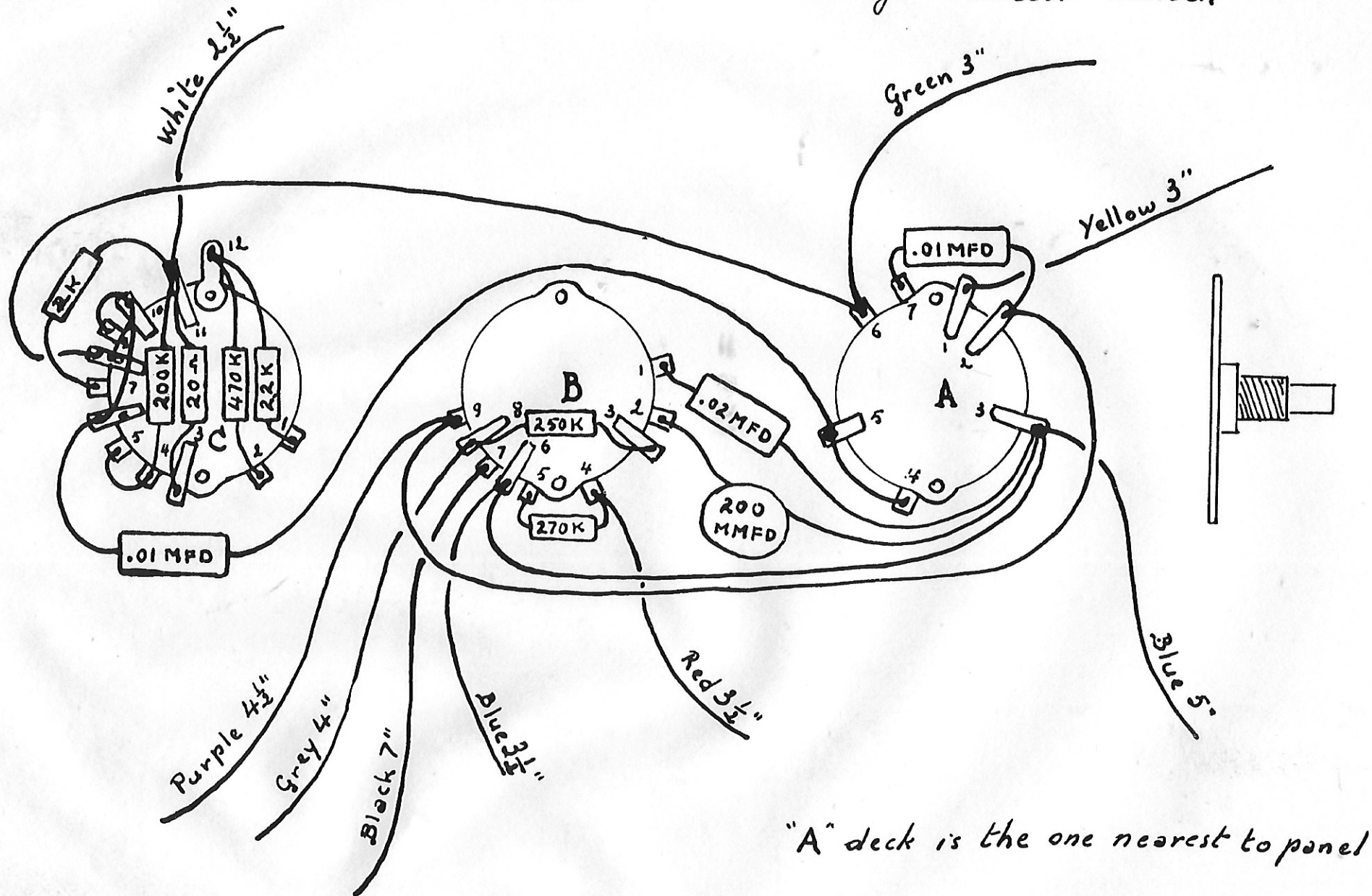
Model 801

Bottom view of chassis



Drawing No 5

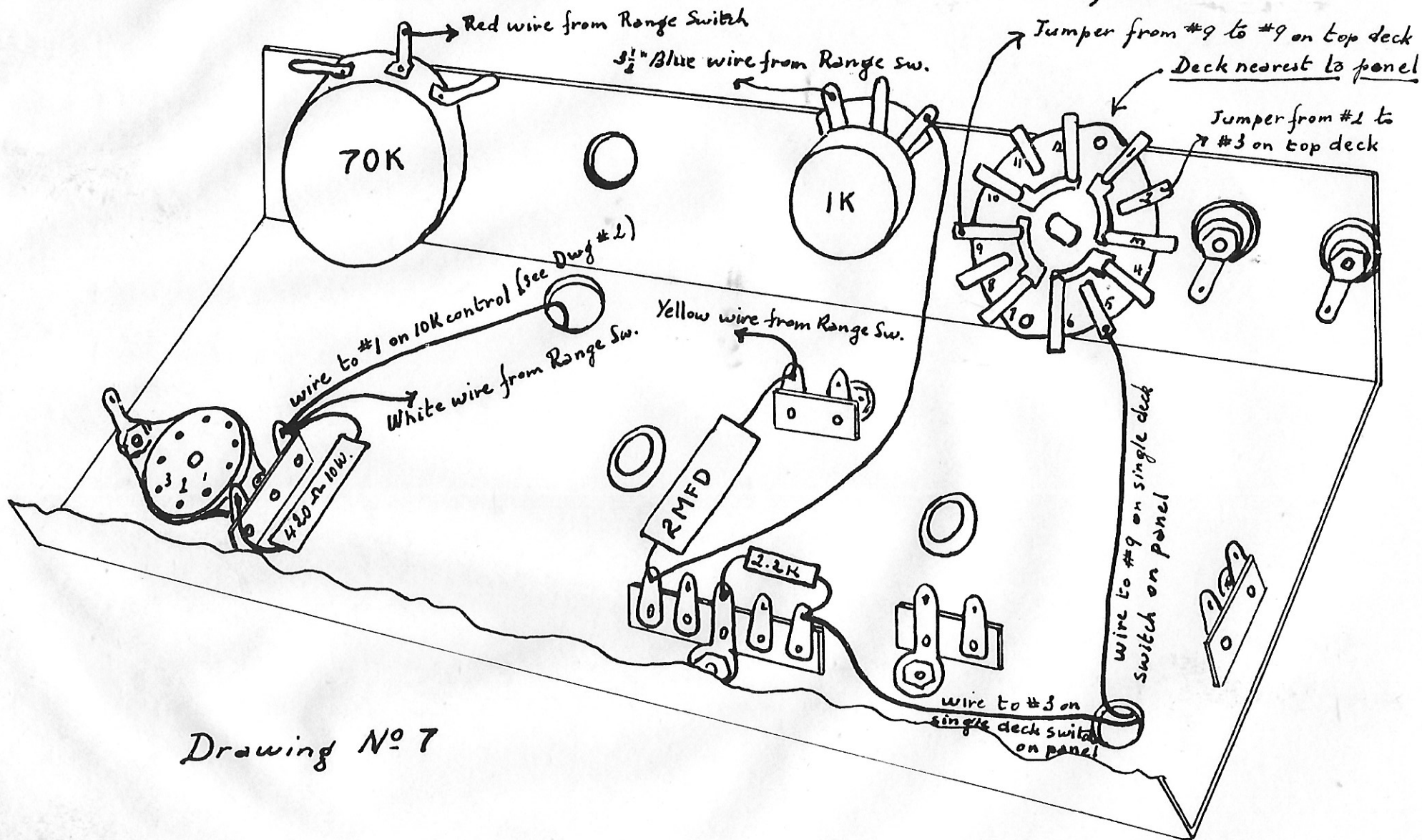
Model 801 - Range Selector Switch



Drawing No 6

Model 801

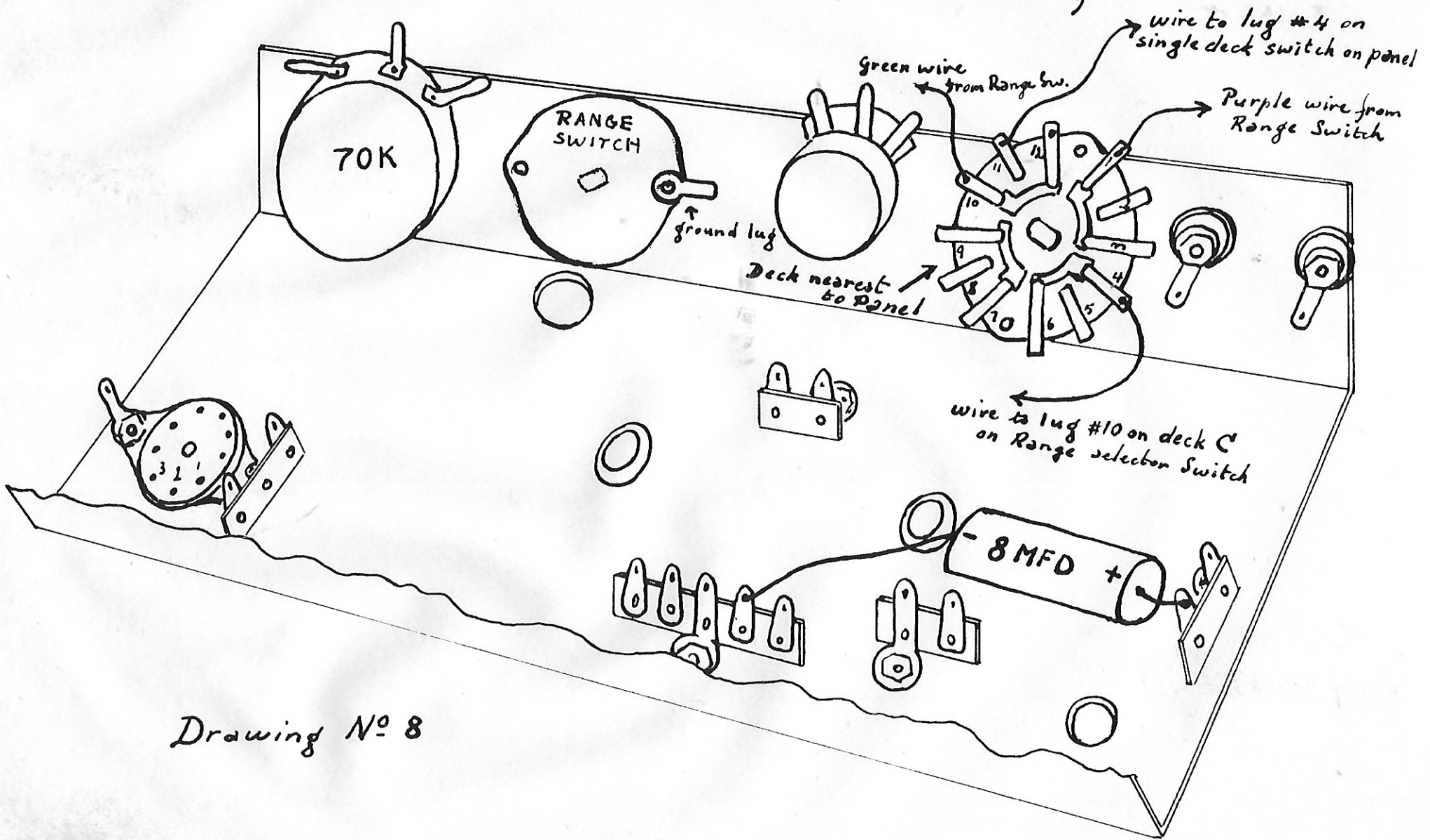
Bottom view of chassis



Drawing No 7

Model 801

Bottom view of chassis



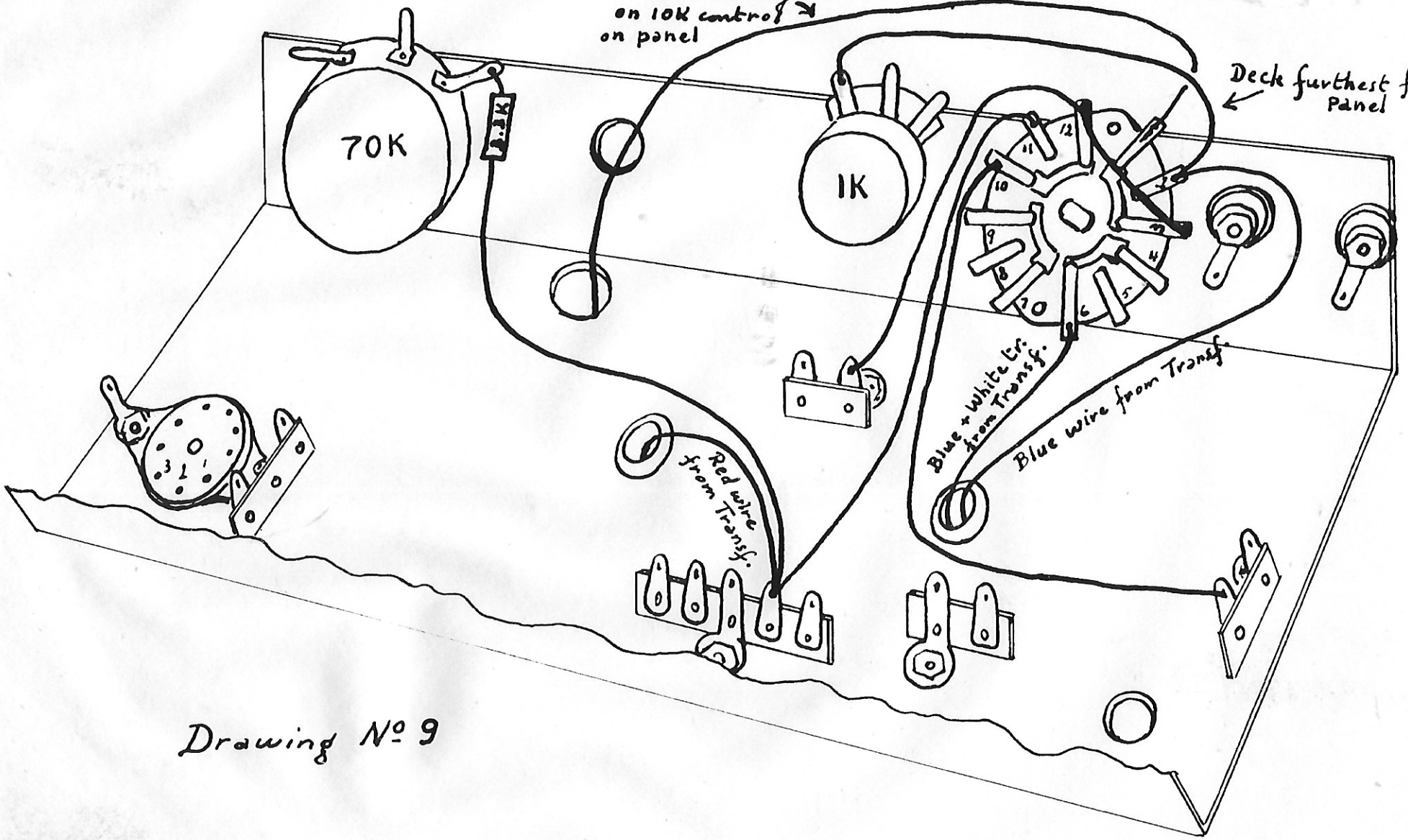
Drawing No 8

Model 801

Bottom view of chassis

Wire to lug #2
on 10K control
on panel

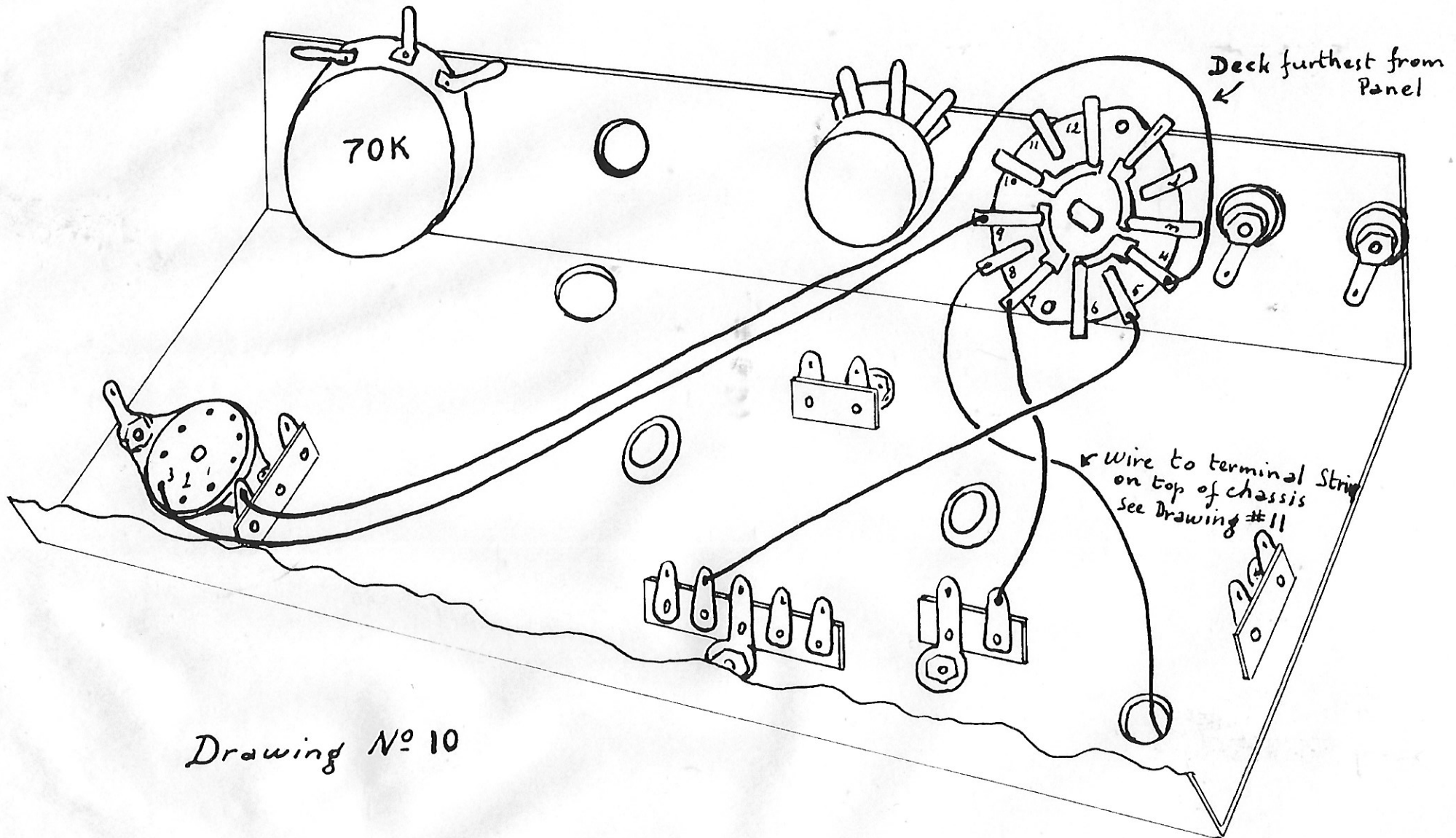
Deck furthest from
panel



Drawing No 9

Model 801

Bottom view of chassis

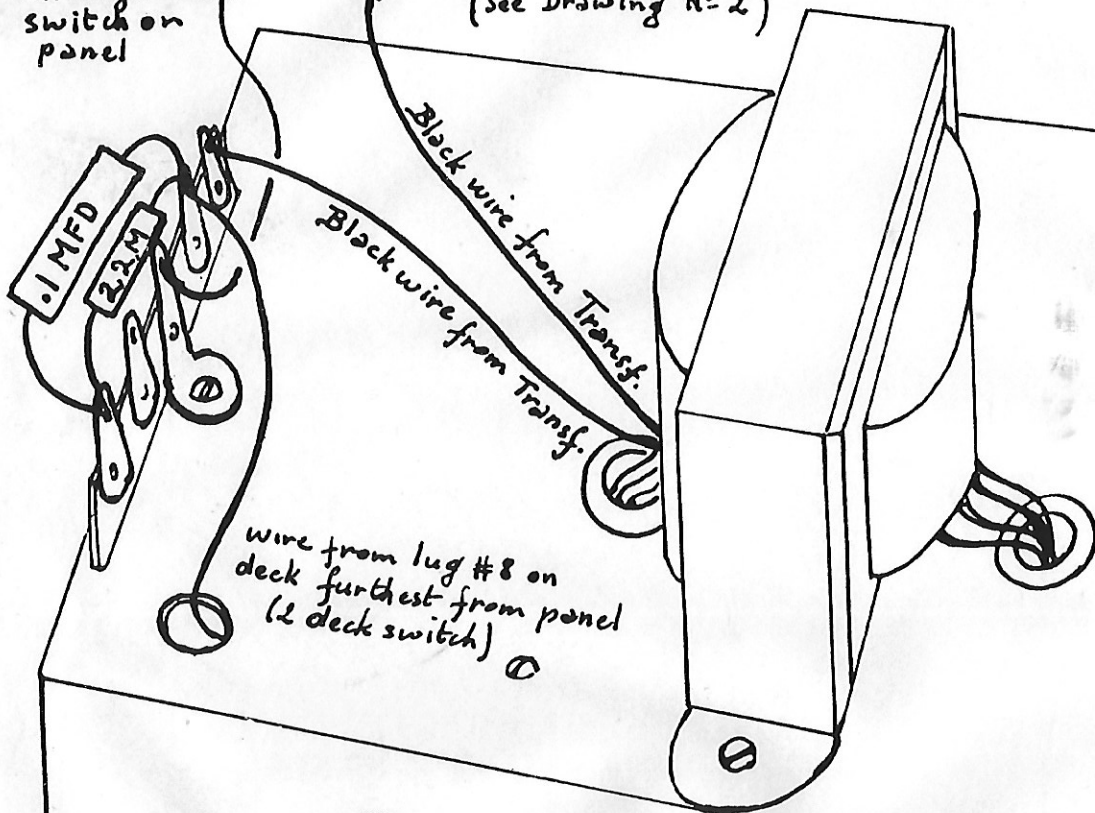


Drawing N^o 10

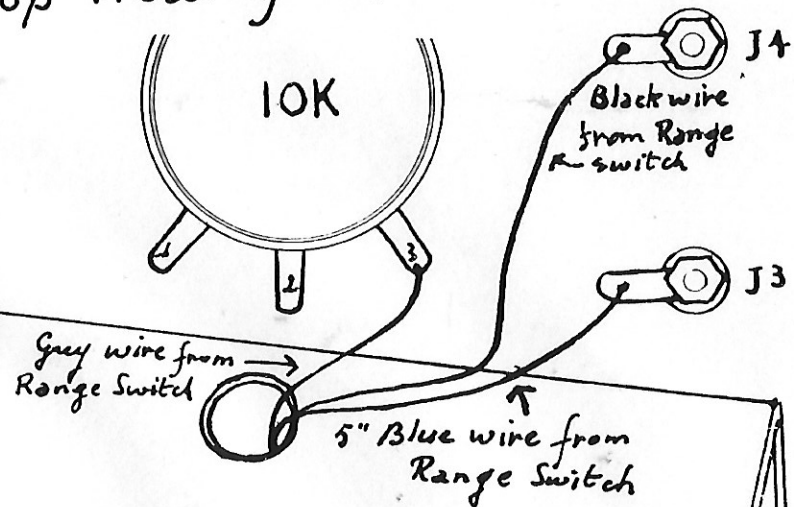
Model 801

wire to lug #8
on single deck
switch on
panel

To lug #6 on single deck switch on panel
(see Drawing No 2)



Top view of chassis



Drawing No 11

Model 801

Top view of chassis

wire to lug #7
on single deck switch
on Panel

.01 MFD → To pin 3 of same socket
→ To lug #5 on single deck switch on panel

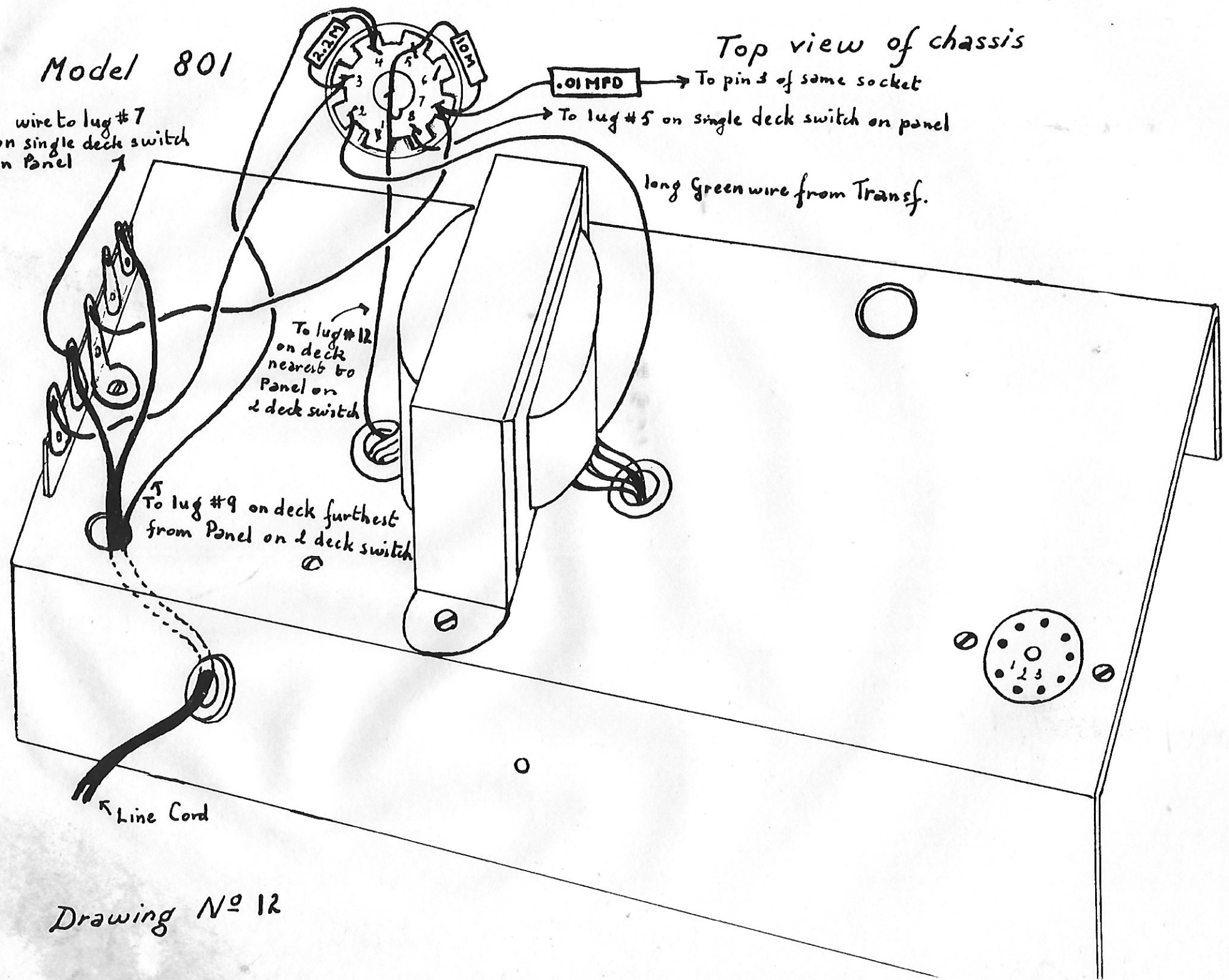
long Green wire from Transf.

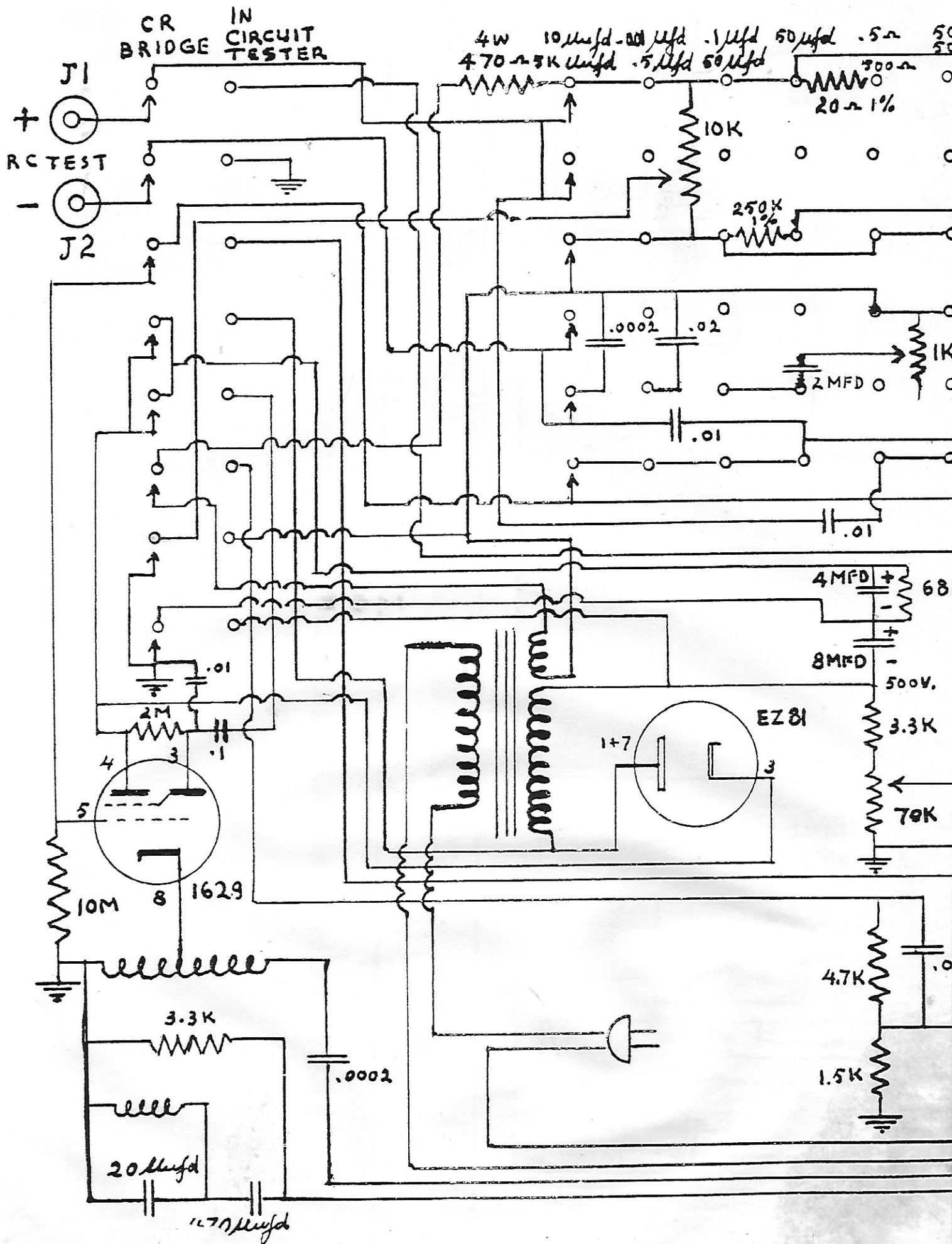
To lug #12
on deck
nearest to
Panel on
2 deck switch

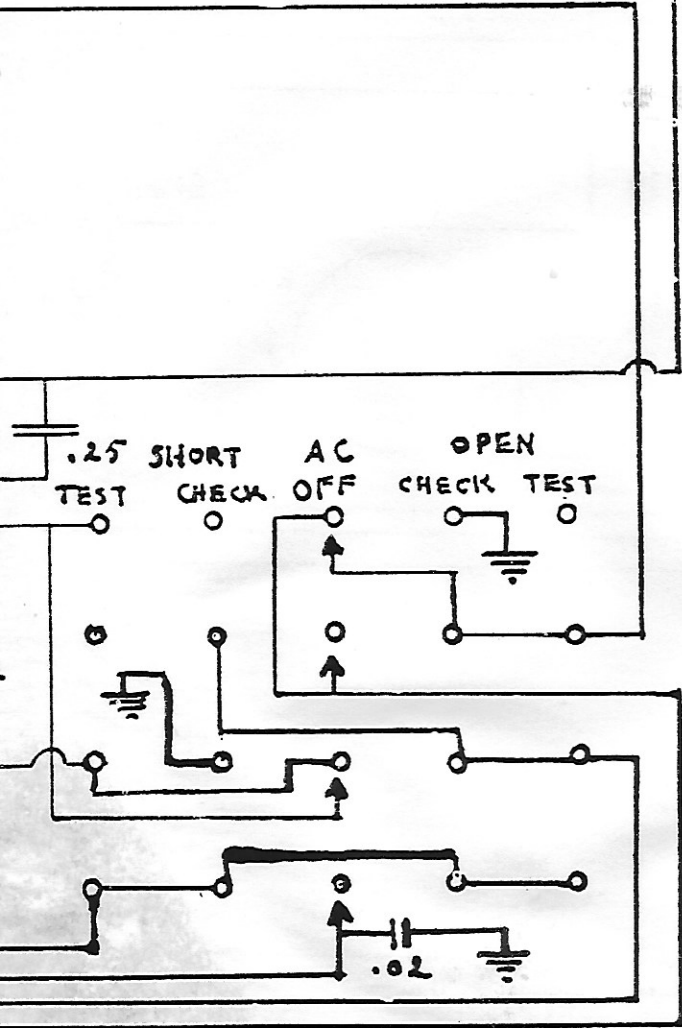
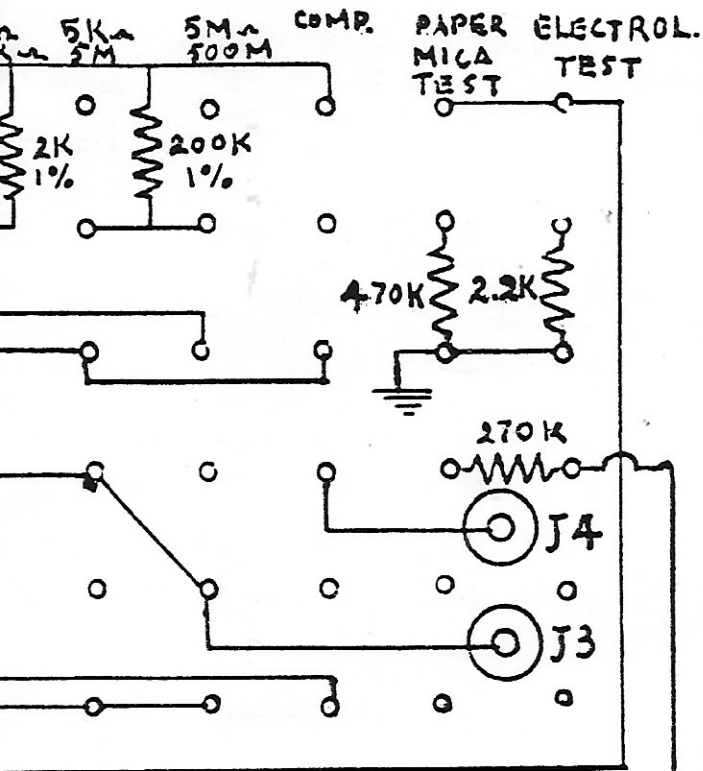
To lug #9 on deck furthest
from Panel on 2 deck switch

Line Cord

Drawing No 12







DATE *8/20/51*

DRAWN BY *R.C. Brigg*

CHECKED BY

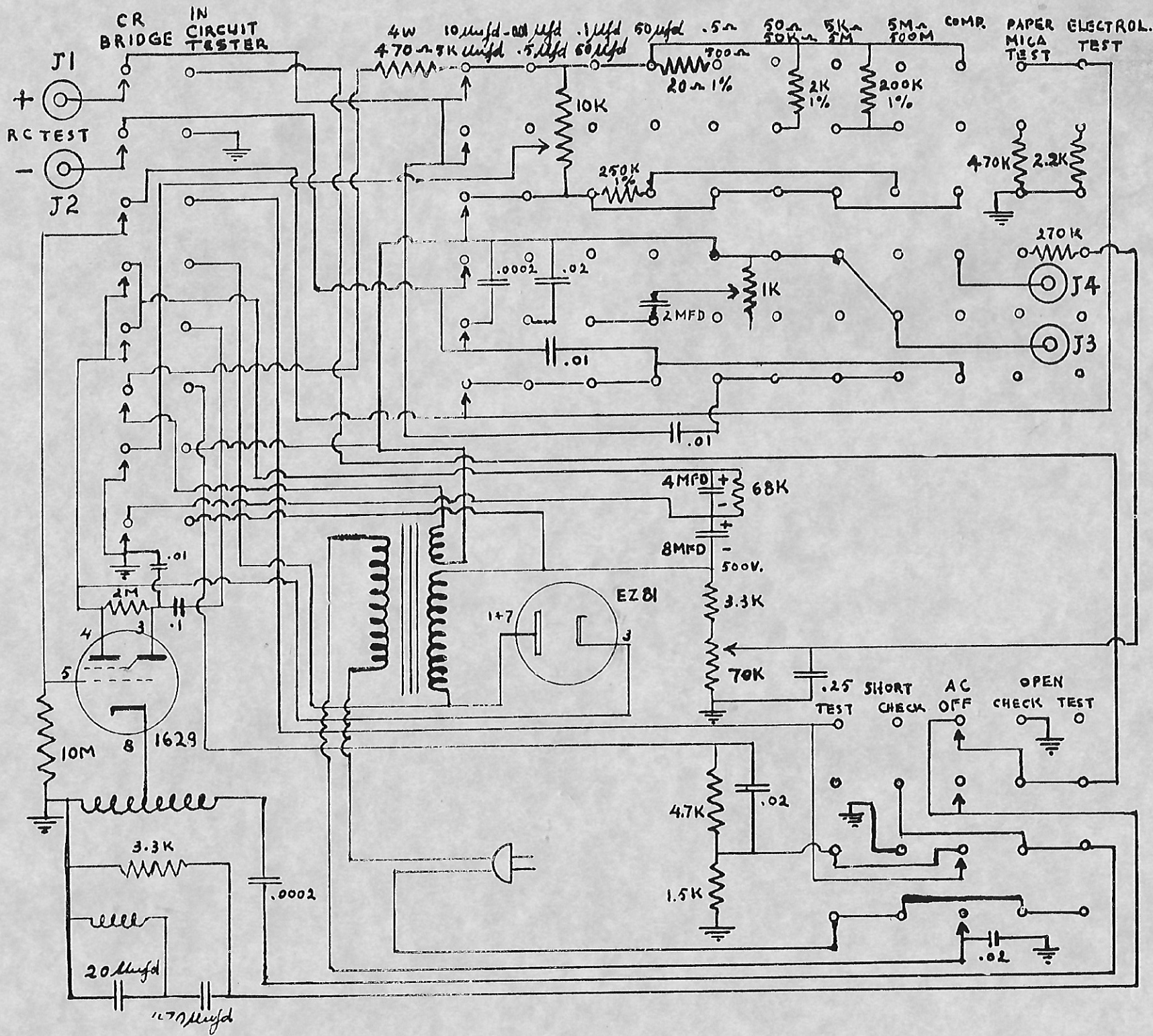
TITLE *Model 801 R.C. Bridge and In-Circuit Tester*

COMPANY

ELECTRONIC MEASUREMENTS CORPORATION

Manufacturers of ELECTRICAL TESTING EQUIPMENT





DATE 8/20/50

DRAWN BY R.C. Bridge
 CHECKED BY

TITLE
 Model 801 In-Circuit Tester

COMPANY

ELECTRONIC MEASUREMENTS CORPORATION

Manufacturers of ELECTRICAL TESTING EQUIPMENT

"EMC GIVES MORE MEASUREMENT VALUE PER DOLLAR"



**ELECTRONIC MEASUREMENTS
CORPORATION**

625 Broadway, New York, N. Y. 10012

MANUALMAN

P. A. Markavage Phone 732.238.8964
27 Walling St., Sayreville, NJ 08872-1818
Web <http://www.manualman.com>
e-mail manualman@juno.com

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