

MODEL 211 KIT INSTRUCTIONS

Read Method of Assembly 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.

Since this instrument is very compact, it is very important that the soldering be very neat. Otherwise loose bits of wire or solder may cause shorts and inoperation or damage to the instrument. Check very carefully for this.

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 ASSEMBLY

Refer to Drawing #1

1. ✓ Mount the octal and loctal sockets by pushing the sockets through the front of the panel and pressing the mounting rings over the rear of the socket and into the mounting grooves of the sockets. Use a screw driver for this operation. Make sure the socket keyways are in the position as shown on Drawing #1.
2. ✓ Mount the 7 and 9 prong sockets as shown using 2-4/40 screws and nuts for each socket. Make sure the socket pins are in the position
- 2a. ✓ Mount the Nuvistor Socket as shown using 2-4/40 screws and nuts. Make sure the socket pins are in the position as shown on Drawing #1. as shown on Drawing #1.
3. ✓ Mount the 2- double pole double throw slide switches S10 and S11 using 2-4/40 screws.
4. ✓ Mount the 10- single pole double throw slide switches S1, S2, S3, S4, S5, S6, S7, S8, S9, and S12 using 2-4/40 screws.
5. ✓ Mount the control to the panel in the position shown on Drawing #1
6. ✓ Mount selector switches A and B to panel using a 3/8" lock washer under the panel and a 3/8" locknut over the panel to fasten switches to the panel. Make sure the long clips on each switch are in the positions shown on Drawing #1.
7. ✓ Mount the meter to the panel using a U clamp as shown. Fasten the 3 terminal mounting strip under the lower mounting nut in the position shown on Drawing #1. Mount the 5 lug terminal mounting strip under the upper mounting nut in the position shown. Use 2-6/32 nuts to fasten clamp to meter.

8. ✓ Mount the transformer using 2/6/32 x 5/8" long screws and 3/8" long spacers to lift transformer from the back of the panel. Keep the side of the transformer with the 2 black wires facing toward the meter and away from the edge of the panel. Use 2-6/32 nuts to tighten the transformer to the spacers.
9. ✓ Insert the 2 rubber grommets into the panel holes provided for them (See Drawing #1).
10. ✓ Solder the variable resistor VR1 between the meter lug and the indicated lug of the 5 lug terminal strip as shown on Drawing #1.
- 10a. ✓ Connect the Nuvistor Socket to the Octal Socket as indicated below. Solder all connections to the Nuvistor Socket but leave the connections to the Octal Socket unsoldered until all other connections to the Octal Socket have been made.
- Connect No. 1 on Nuvistor Socket to No. 2 on Octal Socket.
 Connect No. 2 on Nuvistor Socket to No. 1 on Octal Socket.
 Connect No. 3 on Nuvistor Socket to No. 4 on Octal Socket.
 Connect No. 4 on Nuvistor Socket to No. 8 on Octal Socket.
 Connect No. 5 on Nuvistor Socket to No. 5 on Octal Socket.
- Refer to Drawing #2 and make the following soldered connections:
11. ✓ Connect a wire from the indicated lug of 5 lug terminal strip to the indicated lug "2" on control.
12. ✓ Connect a wire from the indicated lug on slide switch S11 to the indicated lug on 5 lug terminal strip.
13. ✓ Interconnect the 2 lugs on slide switch S11 as shown.
14. ✓ Connect a wire from the indicated lug on slide switch S11 to the indicated lug on slide switch S12.
15. ✓ Connect a wire from lug 1 of control to the indicated meter lug.
16. ✓ Connect a wire from lug 1 of control to the indicated lug on slide switch S10.
17. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S10.
18. ✓ Connect a wire from pin 8 of loctal socket to pin 8 of octal socket.
19. ✓ Connect a wire from pin 1 of loctal socket to pin 1 of octal socket.
20. ✓ Connect a wire from pin 1 of octal socket to pin 1 of 9 prong socket.
21. ✓ Connect a wire from pin 8 of octal socket to pin 8 of 9 prong socket.
22. ✓ Connect a wire from pin 1 of 9 prong socket to pin 1 of 7 prong socket.
23. ✓ Connect a wire from pin 1 of 7 prong socket to the indicated lug on slide switch S1.
24. ✓ Dress the connections already made and remove any excess solder or loose bits of wire.
25. ✓ Connect a wire from pin 8 of 9 prong socket to the indicated lug on slide switch S8.
26. ✓ Connect a wire from pin 9 of 9 prong socket to the indicated lug on slide switch S9.
- Refer to Drawing #3 and make the following soldered connections:-
27. ✓ Connect the 2 black wires from the transformer to the indicated lugs on 5 lug terminal strip.
28. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S7.
29. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S8.
30. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S9.
31. ✓ Connect a wire from the indicated lug on slide switch S7 to pin 7 of 9 prong socket.
32. ✓ Connect a wire from pin 7 of 9 prong socket to pin 7 of octal socket.
33. ✓ Connect a wire from pin 7 of 7 prong socket to pin 7 of octal socket.
34. ✓ Connect a wire from pin 7 of octal socket to pin 7 of loctal socket.
- 34a. ✓ Connect grey wire from transformer to indicated lug on selector switch A.
- 34b. ✓ Connect 1.5 ohm across the indicated lugs on selector switch B.

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35. ✓ Connect a wire from pin 2 of loctal socket to pin 2 of octal socket.
36. ✓ Connect a wire from pin 2 of octal socket to pin 2 of 7 prong socket.
37. ✓ Connect a wire from pin 2 of 7 prong socket to pin 2 of 9 prong socket.
38. ✓ Connect a wire from pin 2 of 7 prong socket to the indicated lug on slide switch S2.
39. ✓ Interconnect the 2 indicated lugs on slide switch S11 as shown.
40. ✓ Refer to Drawing #4 and make the following soldered connections:
Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S4.
41. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S5.
42. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S6.
43. ✓ Connect the green wire from transformer to indicated lug on selector switch B.
44. ✓ Connect the yellow wire from the transformer to indicated lug on selector switch B.
45. ✓ Connect the green and white tracer wire from transformer to the indicated lug on selector switch B.
46. ✓ Connect the 50 mfd condenser across the meter. Be sure to observe proper polarity.
47. ✓ Connect the .02 MFD condenser from indicated lug on 3 lug terminal strip to indicated lug on selector switch B.
48. ✓ Connect a wire from pin 6 of 9 prong socket to the indicated lug on slide switch S6.
49. ✓ Connect a wire from pin 6 of 9 prong socket to pin 6 of 7 prong socket.
50. ✓ Connect a wire from pin 6 of 7 prong socket to pin 6 of octal socket.
51. ✓ Connect a wire from pin 6 of octal socket to pin 6 of loctal socket.
52. ✓ Connect a wire from pin 3 of loctal socket to pin 3 of octal socket.
53. ✓ Connect a wire from pin 3 of octal socket to pin 3 of 7 prong socket.
54. ✓ Connect a wire from pin 3 of 7 prong socket to pin 3 of 9 prong socket.
55. ✓ Connect a wire from pin 3 of 9 prong socket of the indicated lug on slide switch S3.
56. ✓ Refer to Drawing #5 and make the following soldered connections:
Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S1.
57. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S2.
58. ✓ Connect a wire from the indicated lug on selector switch A to the indicated lug on slide switch S3.
59. ✓ Connect the red with yellow tracer wire from transformer to the indicated lug on selector switch B.
60. ✓ Connect the blue wire from transformer to the indicated lug on selector switch B.
61. ✓ Connect the red wire from transformer to the indicated lug on selector switch B.
62. ✓ Connect a wire from the indicated lug on slide switch S5 to pin 5 of 9 prong socket.
63. ✓ Connect a wire from pin 5 of 9 prong socket to pin 5 of 7 prong socket.
64. ✓ Connect a wire from pin 5 of 7 prong socket to pin 5 of octal socket.

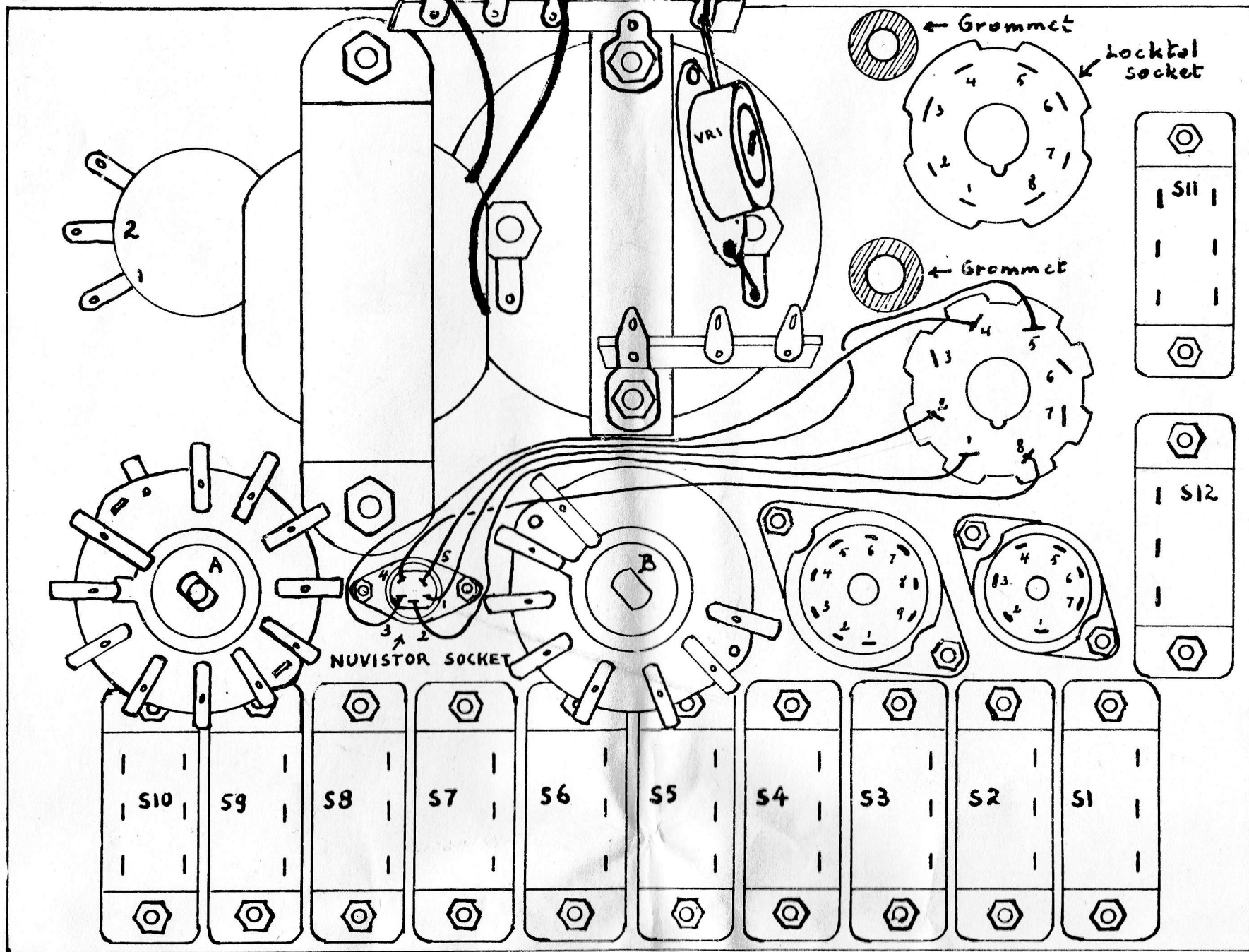
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65. ✓ Connect a wire from pin 5 of octal socket to pin 5 of loctal socket.
66. ✓ Connect a wire from pin 4 of loctal socket to pin 4 of octal socket.
67. ✓ Connect a wire from pin 4 of octal socket to pin 4 of 7 prong socket.
68. ✓ Connect a wire from pin 4 of 7 prong socket to pin 4 of 9 prong socket.
69. ✓ Connect a wire from pin 4 of 9 prong socket to the indicated lug on slide switch S4.
Refer to Drawing #6 and make the following soldered connections:-
70. ✓ Insert the grid cap connector to the indicated grommet and solder the free end to the indicated lug on slide switch S10.
71. ✓ Interconnect the indicated lugs on slide switch S1, S2, S3, S4, S5, S6, S7, S8, S9 and S10.
72. ✓ Connect a wire from the indicated lug on slide switch S12 to the indicated lug on slide switch S1.
73. ✓ Connect a wire from the long clip on selector switch A to the indicated lug on slide switch S11.
74. ✓ Connect a wire from the long clip on selector switch B to the indicated lug on slide switch S11.
Refer to Drawing #7 and make the following soldered connections:-
75. ✓ Push neon bulb partially through the indicated rubber grommet from the rear of the instrument. It will be held in place by the rubber grommet.
76. ✓ Connect one wire from neon bulb to the indicated lug on 3 lug terminal strip.
77. ✓ Connect a 1 meg resistor across the neon bulb as shown.
78. ✓ Connect a wire from the interconnection of the 1 meg resistor and neon bulb to the indicated lug on slide switch S12.
79. ✓ Place spaghetti over the pigtailed of the 1200 ohm resistor and connect it from the indicated lug on slide switch S10 to the indicated lug on selector switch B.
80. ✓ Place spaghetti over the pigtailed of the 270 ohm resistor and connect it from the indicated lug on slide switch S10 to the indicated lug on selector switch B.
81. ✓ Insert line cord through opening in case. Knot it to prevent it from pulling back and connect the line cord to the indicated lug on 5 lug terminal strip. This completes the wiring.
82. ✓ Turn the 2 selector switches to the extreme counter clockwise position and amount the 2 round knobs with pointers so that the pointers face toward "A" and "1" positions on the selector switches.
83. ✓ Turn the control to extreme counter clockwise position and mount the bar knob so that it points toward "0".

CHECKING AND ADJUSTMENT

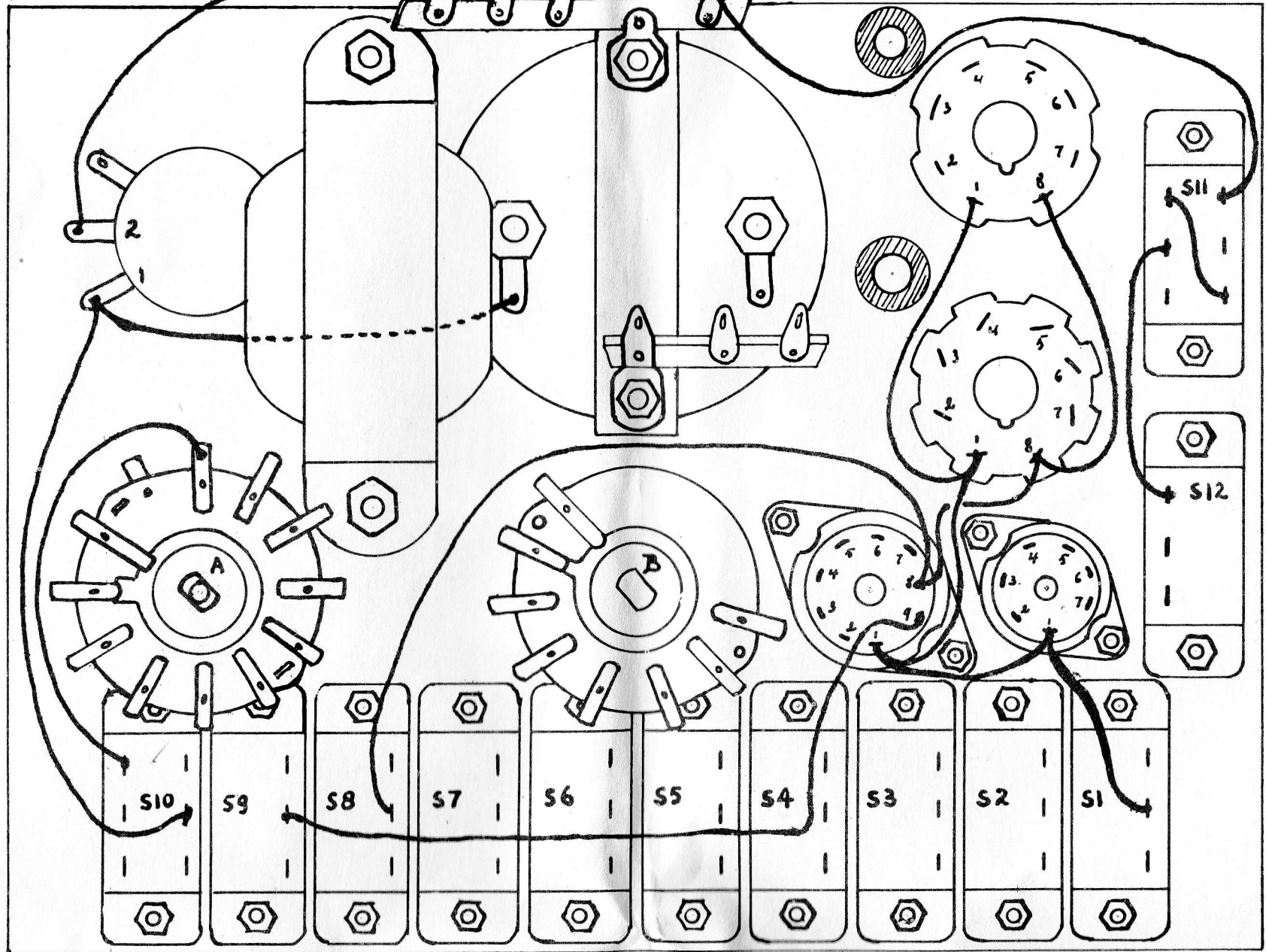
1. Double check all your wiring and connections to make sure they are right and that there are no unsoldered or poorly soldered joints. Remove any excess solder or loose bits of wire or solder.
2. Plug line cord into 105-130 volt 60 cycle AC outlet.
3. Set the QUALITY-SHORT slide switch to "SHORT" position. Take a piece of wire or test lead and connect it temporarily across pins 1 and 3 of the octal socket. Press #1 or #3 slide switch to "P" position. The neon bulb should glow. If it does not, recheck wiring for "SHORT" position with wiring diagram. If no error is found try replacing the NE2 neon bulb.
4. Set the QUALITY-SHORT slide switch to "QUALITY" position. Take a tube that you are certain is a good tube. Set the switches for the quality check of the tube as per operating instructions. Adjust the meter reading to 36 on the 0-50 scale by inserting a screw driver into the variable reasistor and adjusting it until the meter reads 36. This completes the adjustment.

Black wires from Transf.
Rear View of Panel



DRAWING No. 1

Rear View of Panel Model 211

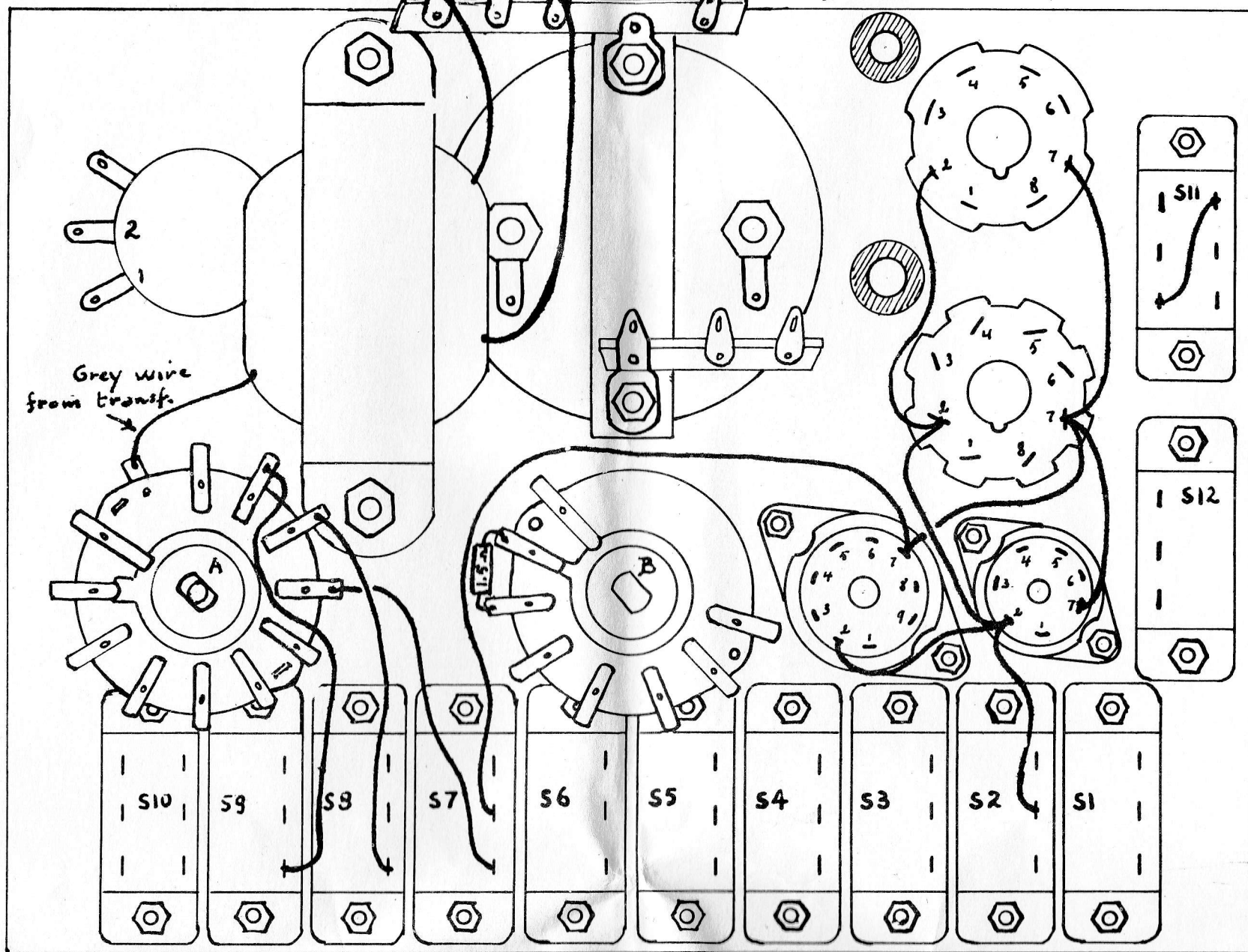


DRAWING No 2

Black wires from Transf.

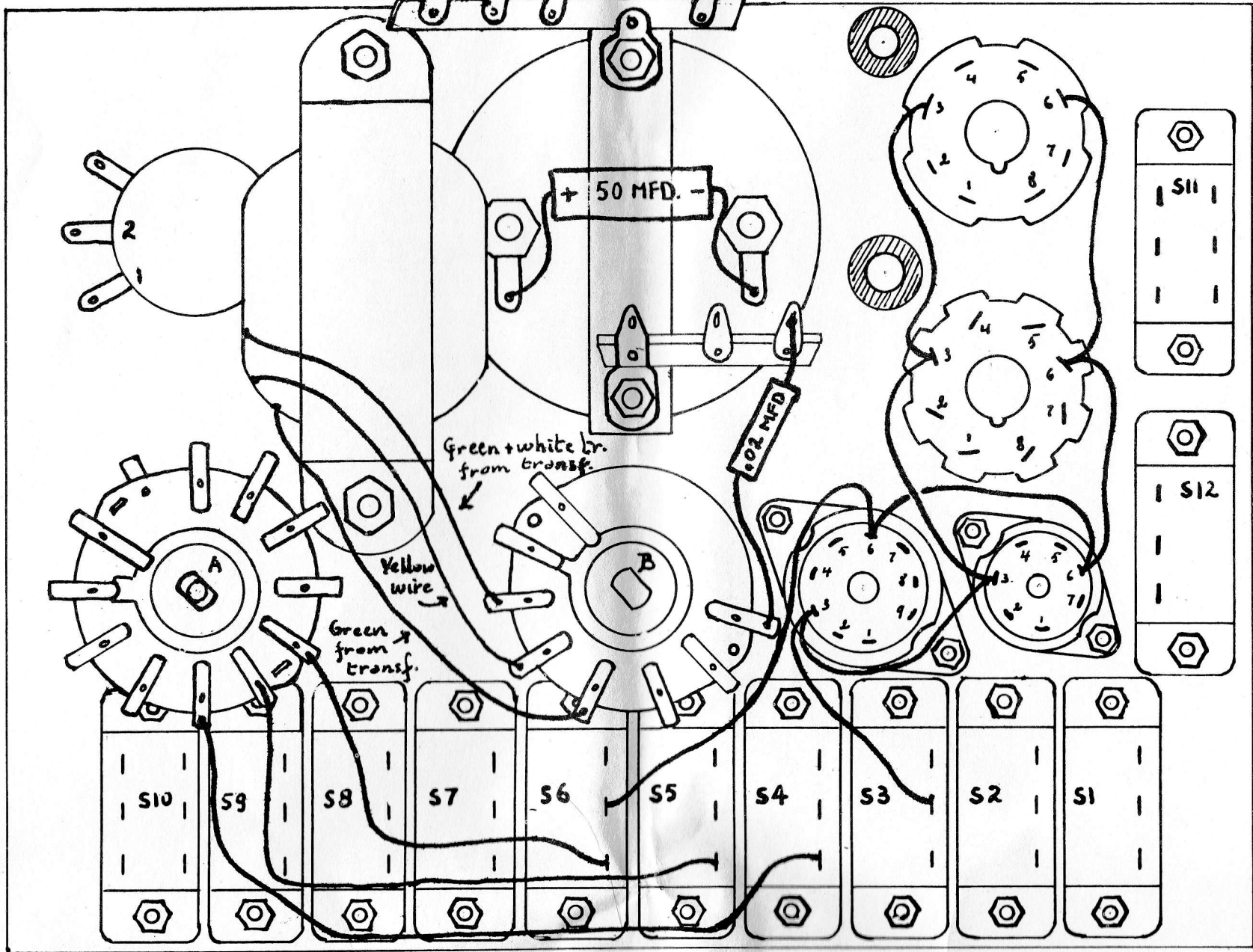
Rear View of Panel

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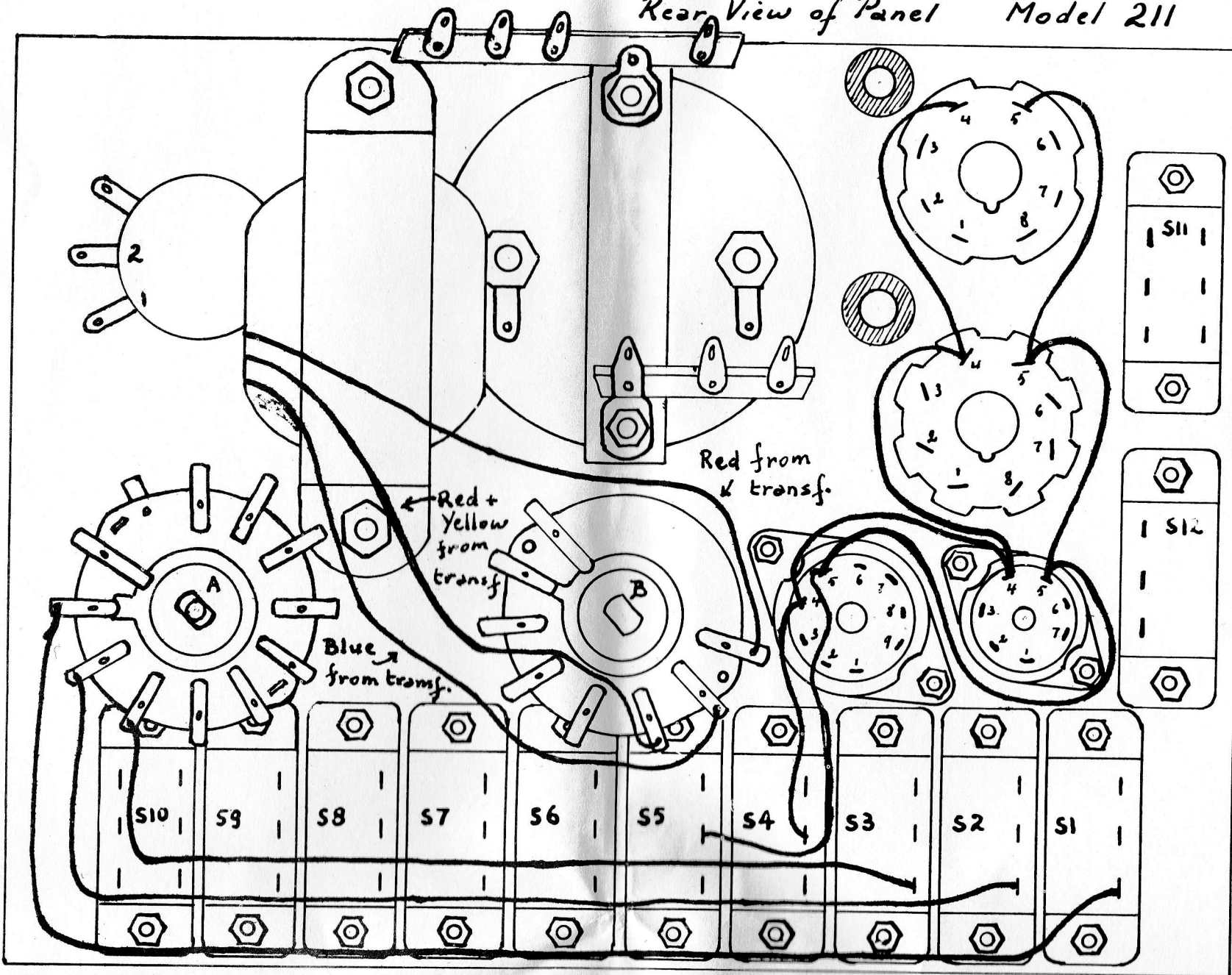
DRAWING No 3

Rear View of Panel Model 211

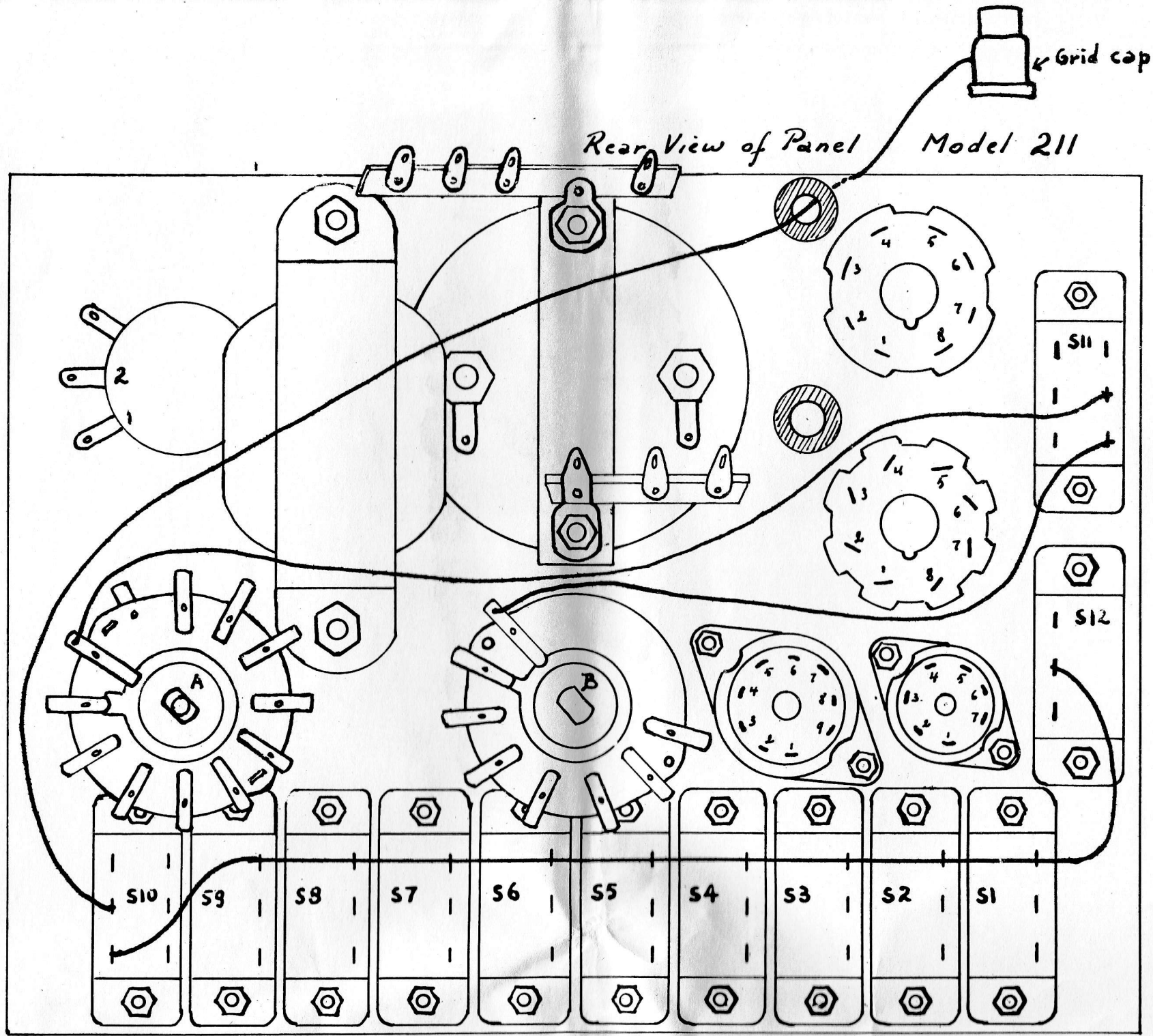


DRAWING No 4

Rear View of Panel Model 211



DRAWING No 5

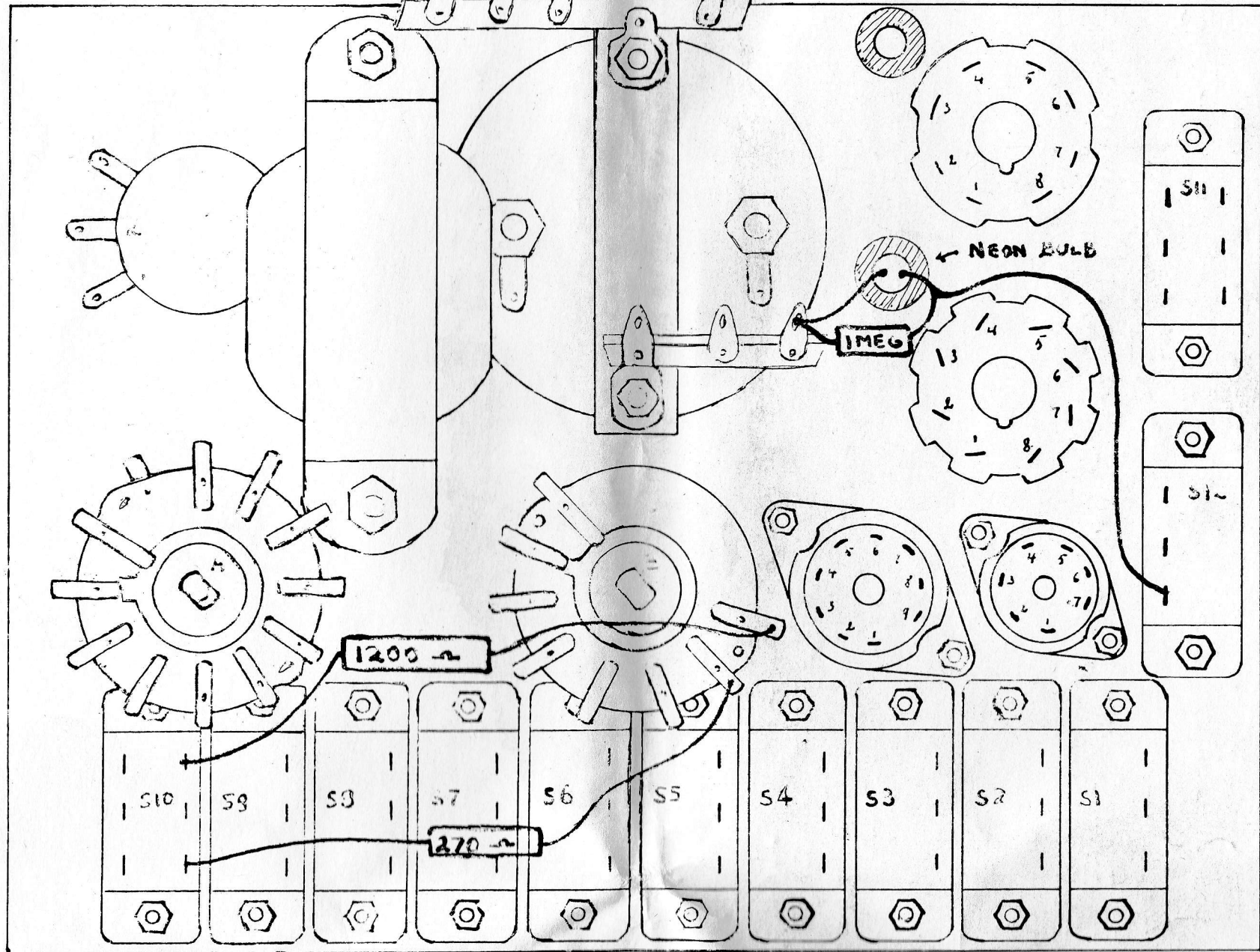


DRAWING No 6

Line Cord

Rear View of Panel

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DRAWING No 7

PARTS LIST FOR MODEL 211 KIT

<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1. ✓	Meter	1	23. ✓	.02 Mfd Condenser	1
2. ✓	Panel	1	24. ✓	50 Mfd Electrolytic Condenser	1
3. ✓	Case	1	25. ✓	1 Megohm (brown-black-green) resistor	1
4. ✓	Transformer	1	26. ✓	U Mounting Bracket for Meter	1
5. ✓	Fil. Volts Switch	1	27. ✓	5 Terminal Strip	1
6. ✓	Fil. Selector Switch	1	28. ✓	3 Terminal Strip	1
7. ✓	2000 ohms Shunt Control	1	29. ✓	6/32 Nuts	4
8. ✓	Loctal Socket with Ring	1	30. ✓	4/40 Nuts	6
9. ✓	Octal Socket with Ring	1	31. ✓	4/40 Screws	34 35
10. ✓	9 pin socket	1	32. ✓	6/32 Screws, 58 Long	2
11. ✓	7 pin socket	1	33. ✓	3/8 Nuts	3
12. ✓	DPDT Slide Switch	2	34. ✓	3/8 Lock Washers	2-3
13. ✓	SPDT Slide Switch	10	35. ✓	3/8 Spacers	2
14. ✓	Line Cord	1	36. ✓	Wire	15 ft.
15. ✓	Large Pointer Knob	1	37. ✓	Operating Manual	1
16. ✓	Small Pointer Knob	2	38. ✓	Kit Instructions	1
17. ✓	Rubber Grommet (small)	2	39. ✓	Bare Wire	8 in.
18. ✓	Neon Bulb, NE2	1	40. ✓	Nuvisitor Socket	1
19. ✓	Grid Cap Connector	1			
20. ✓	600 ohm Variable Resistor	1			
20a. ✓	1.5 ohm resistor (brown-green-gold)	1			
21. ✓	270 ohm, 1W (red-purple-brown) resistor.	1			
22. ✓	1200 ohm 2W (brown-red-red) resistor	1			

GUARANTEE

IMPORTANT - READ CAREFULLY

Electronic Measurements Corporation will replace any defective part or part 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 \$3.50 minimum labor charge plus the cost of any parts or extra labor required because of damage or excessive errors in wiring.