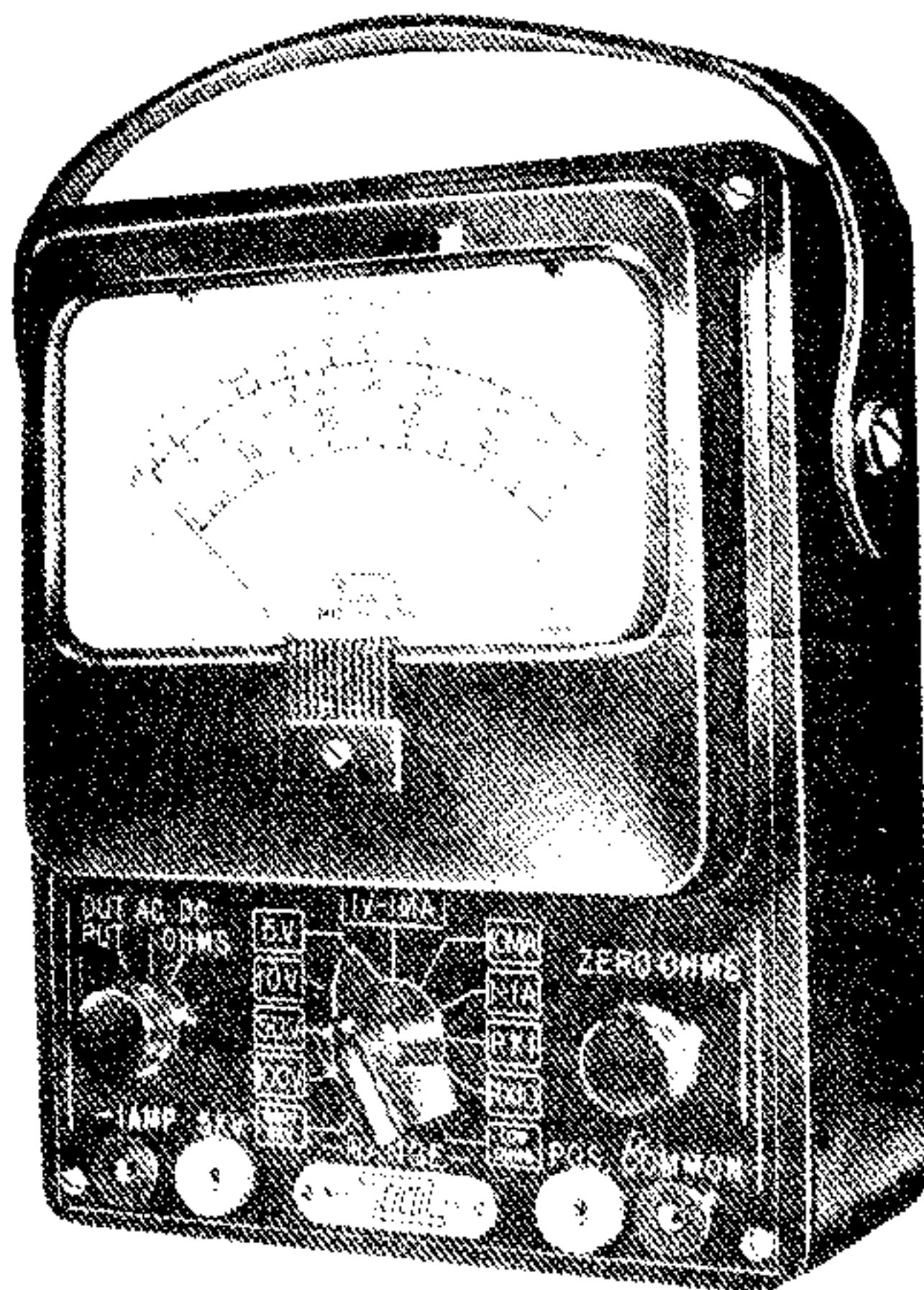


MODELS 566-556
MULTIMETERS
Construction Book



283 Malta Street, Brooklyn, N. Y. 11207

General Instructions

- 1) The Models 566-556* Multimeters are easily constructed with the aid of the point-to-point wiring instructions and the accompanying pictorial diagrams. Before beginning the actual construction, it is advisable to study the schematic and pictorial diagrams until all the steps are seen clearly.
- 2) USE A GOOD GRADE OF ROSIN CORE SOLDER ONLY. UNDER NO CIRCUMSTANCES USE ACID CORE SOLDER OR ACID FLUX as the acid flux can cause serious corrosion.
- 3) Carefully unwrap all the parts and check them off in the space provided on the parts list.

*Note: 1% multiplier resistors are used in Model 556.

Construction Procedure

- 1) Refer to Assembly Print No. 1. Mount the designated components to the panel and wire as instructed and shown in the figure.
- 2) Refer to Assembly Print No. 2. Prewire the range switch S1 as instructed and shown in Fig. 1. Mount the prewired range switch as instructed and complete the final wiring as instructed and shown in Fig. 2.
- 3) Refer to Final Steps.

Stock #	Sym	Description	Amt.	Stock#	Sym	Description	Amt.	
56001	B1	1.5 volt battery	1	58300	H27	spaghetti	length	
20006	C1	.1 MFD condenser	1	58501	H28	bare wire	length	
96001	D1	rectifier	1	50005	J2,3	red jacks	2	
88005	H1	cabinet	1	50006	J1,4	black jacks	2	
80015	H2	panel	1	43000	L1	#6 solder lug	1	
41006	H3	10-24 handle screws	2	72002	M1	meter movement	1	
40005	H4	10-24 hex nuts	2	16008	P1	600 ohm pot	1	
45000	H5	#10 brass eyelets	2	(11900*)	11950	*R1	4.5M ohm res	1
42011	H6	#10 flat washers	2	(11029*)	11529	*R2	400K ohm res	1
42004	H7	#10 lock washers	2	(11022*)	11522	*R3	50K ohm res	1
87003	H8	handle	1	(11020*)	11520	*R4	40K ohm res	1
56501	H9	battery bracket	1	(11016*)	11516	*R5	5K ohm res	1
41016	H10	4-40 x 1/4 screw	1	(11014*)	11514	*R6	4K ohm res	1
40007	H11	4-40 hex nut	1	(11007*)	11507	*R7	111.1ohm res	1
43003	H12	meter lugs	2	(13003*)	13503	*R8	9.09 ohm res	1
42016	H13	meter washers	2	(13001*)	13501	*R9	1.01 ohm res	1
40014	H14	meter nuts	2	(11009*)	11509	*R10	940 ohm res	1
40000	H15	meter mounting nuts	4		11005	R11	100 ohm res	1
40001	H17	3/8 hex nuts	3	(11041*)	11533	*R12	1200 ohm res	1
42001	H18	3/8 flat washers	3		60010	S1	Range switch	1
41017	H19	#4 panel screws	4		60000	S2	function switch	1
40015	H20	hex nuts for jacks	4		81901		bracket	1
42002	H22	#6 lock washer	1	with {	19006		1K pot	1
53000	H23	bar knob	1		43000		#6 gnd. lug	1
53002	H24	small pointer knob	1				instruction book	1
53001	H25	small round knob	1				construction book	1
58000	H26	hook-up wire	length					

*1% in Model 556

NOTE: When ordering replacement parts, please include all of the following information: 1) stock number and description given in parts list; 2) quantity; 3) model number of instrument; 4) serial number of instrument (on panel). This information will expedite the processing of your order and insure your receiving the correct replacement parts.

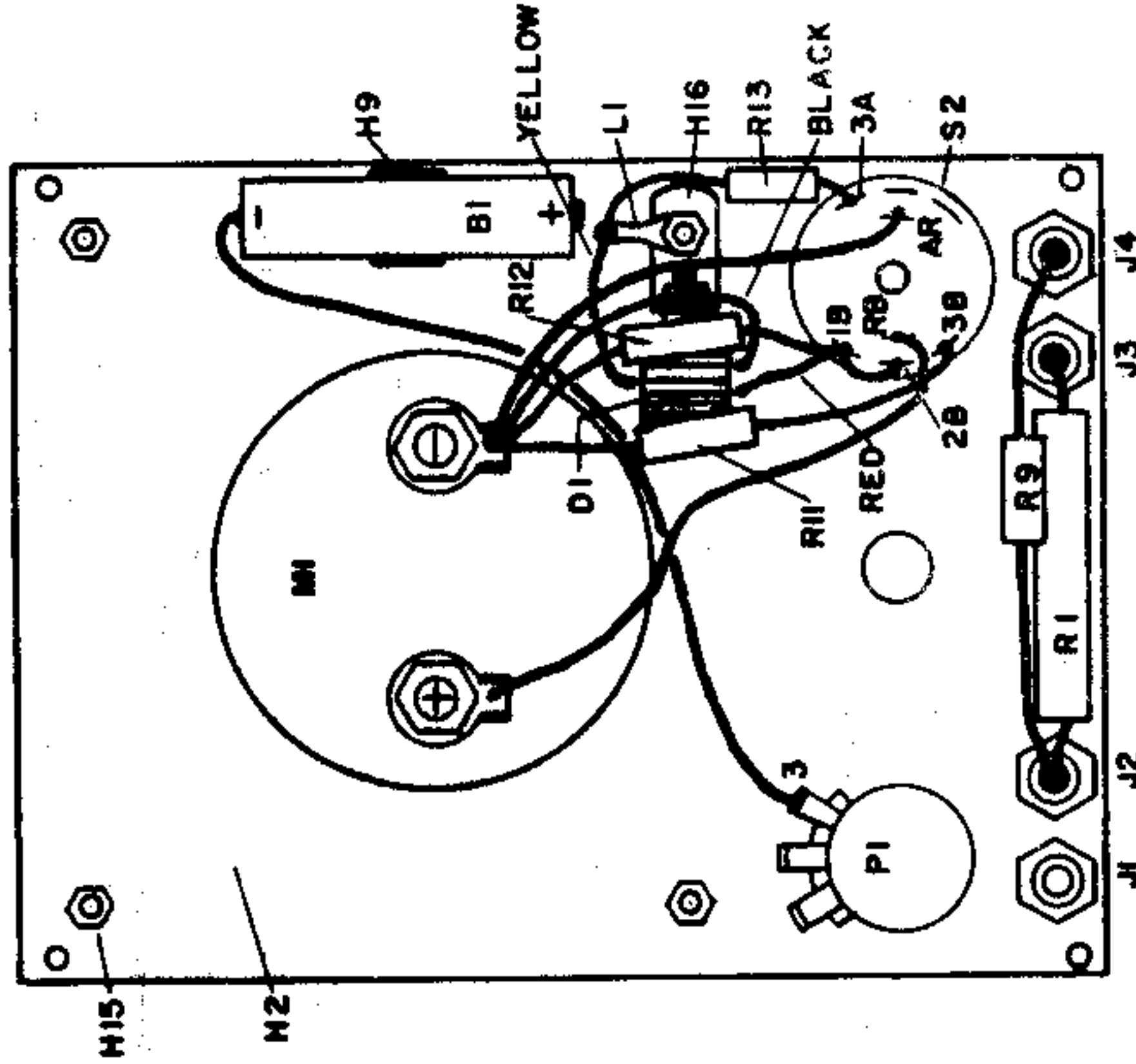
MOUNTING ON TO PANEL H2

✓	Step #	Sym.	Description	Mounted With	Remarks
	1-1	H9	Battery Bracket	1/H10, 1/H11, 1/H22	
	1-2	P1	600 Ohm Pot.	1/H17, 1/H18	
	1-3	S2	Function Switch	1/H17, 1/H18	
	1-4	M1	Meter Movement	1/H15, 1/H16, 1/L1	See Diagram
	1-5	J1	Black Jack	1/H20	
	1-6	J2	Red Jack	1/H20	
	1-7	J3	Red Jack	1/H20	
	1-8	J4	Black Jack	1/H20	On H16
	1-9	D1	Rectifier	1/H21, 1/H22	

Mount lugs to meter terminals with associated hardware.

In the wiring instructions (C) means "Connect" and (S) means "Solder". As an example, consider the second line of the following instructions. The red wire of the rectifier D1 is "connected" to pin #1 of switch S2B. Another example would be the fourth line. The 672 ohm resistor, R13, is soldered to the ground lug L1; the other side is connected to pin #1 of switch S2A.

<u>WIRING</u>						
✓	Step #	Sym.	Description	From	To	Remarks
	1-10	D1	Yellow Wire	D1	L1(C)	
	1-11	D1	Red Wire	D1	S2B#1(C)	
	1-12	D1	Black Wire	D1	M1(-)(C)	
	1-13	R13	672 Ohm Res.	L1(S)	S2A#3(C)	
	1-14	H26	Wire	M1(-)(C)	S2A#R(S)	
	1-15	R12	2400 Ohm Res.	M1(-)(C)	S2B#1(C)	
	1-16	R11	100 Ohm Res.	M1(-)(S)	S2B#3(C)	
	1-17	H28	Bare Wire	S2B#1(S)	S2B#2(S)	Spaghetti
	1-18	H26	Wire	M1(+)(S)	S2B#R(S)	Spaghetti
	1-19	H26	Wire	PL#3(S)	B1(-)(S)	
	1-20	R1	4.5M Ohm Res.	J3(S)	J2(C)	
	1-21	R9	1.01 Ohm Res.	J2(C)	J4(C)	Spaghetti



MODELS 566-556

ASSEMBLY PRINT NO. 1

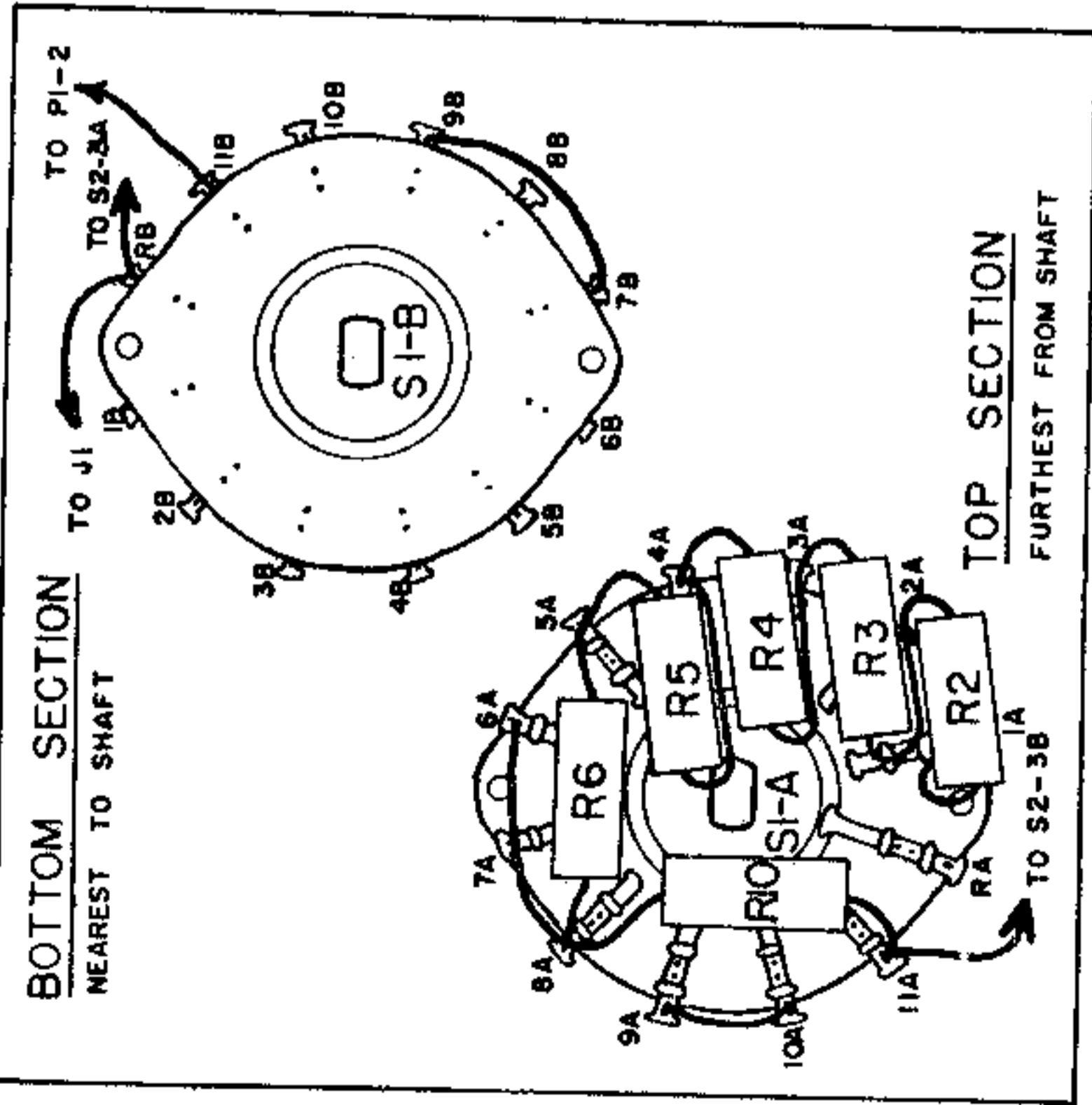


FIGURE 1

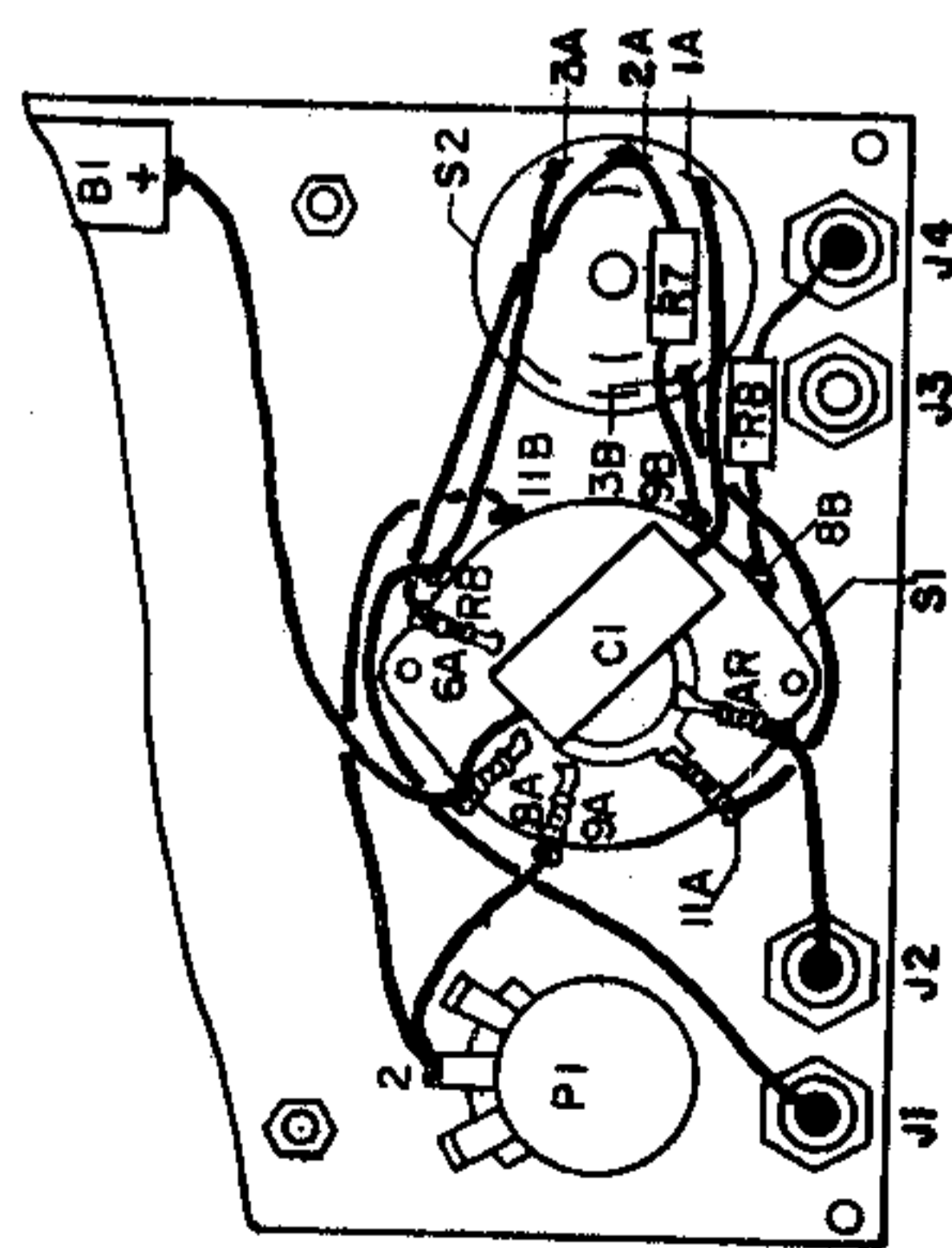


FIGURE 2

To position switch S1 to correspond to the view shown of it in the rewiring diagram, Fig. 1, and Fig. 2: turn the whole switch in your hand, keeping the shaft pointed away from you, until the long (rotor) contact, RA, of switch S1-A is at your lower left, and the long (rotor) contact, RB, of switch S1-B is at your upper right. Note: Switch S1-A is formed of the contact members and rotor fastened to the top of the wafer (nearest you), and switch S1-B is formed of the contact members and rotor fastened to the underside of the wafer (furthest from you).

PREWIRING OF SWITCH S1

Step #	Sym.	Description	From	To	Remarks
2-1	H26	Wire	S1-B#R(C)	S1-B#9(C)	4" to J1
2-2	H26	Wire	S1-B#R(S)	S1-A#9(C)	3" to S2-A#3
2-3	H26	Wire	S1-B#11(S)	S1-A#7(C)	3 1/2" to P1-2
2-4	H26	Wire	S1-B#7(S)	S1-A#6(C)	Spaghetti
2-5	H28	Bare Wire	S1-A#10(S)	S1-A#2(C)	Spaghetti
2-6	H28	Bare Wire	S1-A#8(C)	S1-A#3(C)	Spaghetti
2-7	H28	Bare Wire	S1-A#7(S)	S1-A#4(C)	
2-8	R2	400K Ohm Res.	S1-A#1(S)	S1-A#5(C)	
2-9	R3	50K Ohm Res.	S1-A#2(S)	S1-A#8(C)	
2-10	R4	40K Ohm Res.	S1-A#3(S)	S1-A#11(C)	
2-11	R5	5K Ohm Res.	S1-A#4(S)		
2-12	R6	4K Ohm Res.	S1-A#5(S)		
2-13	R10	940 Ohm Res.	S1-A#8(C)		
2-14	H26	Wire	S1-A#11(S)		4" to S2-B#3

Mount the prewired switch S1 to the panel with 1#H17 and 1#H18.

PINAL WIRING

Step #	Sym.	Description	From	To	Remarks
2-15	H26	Wire	S1-A#11	S2#3B(S)	Prewired on S1
2-16	H26	Wire	S1-B#R	J1(S)	Prewired on S1
2-17	H26	Wire	S1-B#11	P1-2(C)	Prewired on S1
2-18	H26	Wire	S1-B#R	S2-A#3(S)	Prewired on S1
2-19	H26	Wire	S1-A#8(C)	B1(+) (S)	
2-20	C1	.1 MFD Cond.	S1-A#8(S)	S2-A#1(S)	
2-21	H26	Wire	S1-A#9(S)	P1-2(S)	
2-22	H26	Wire	S1-A#R(S)	J2(S)	
2-23	H26	Wire	S1-A#6(S)	S2-A#2(C)	
2-24	R7	111.1 Ohm Res.	S2-A#2(S)	S1-B#9(S)	Spaghetti
2-25	R8	9.09 Ohm Res.	S1-B#8(S)	J4(S)	Spaghetti

MODELS 566-556



ASSEMBLY PRINT NO. 2

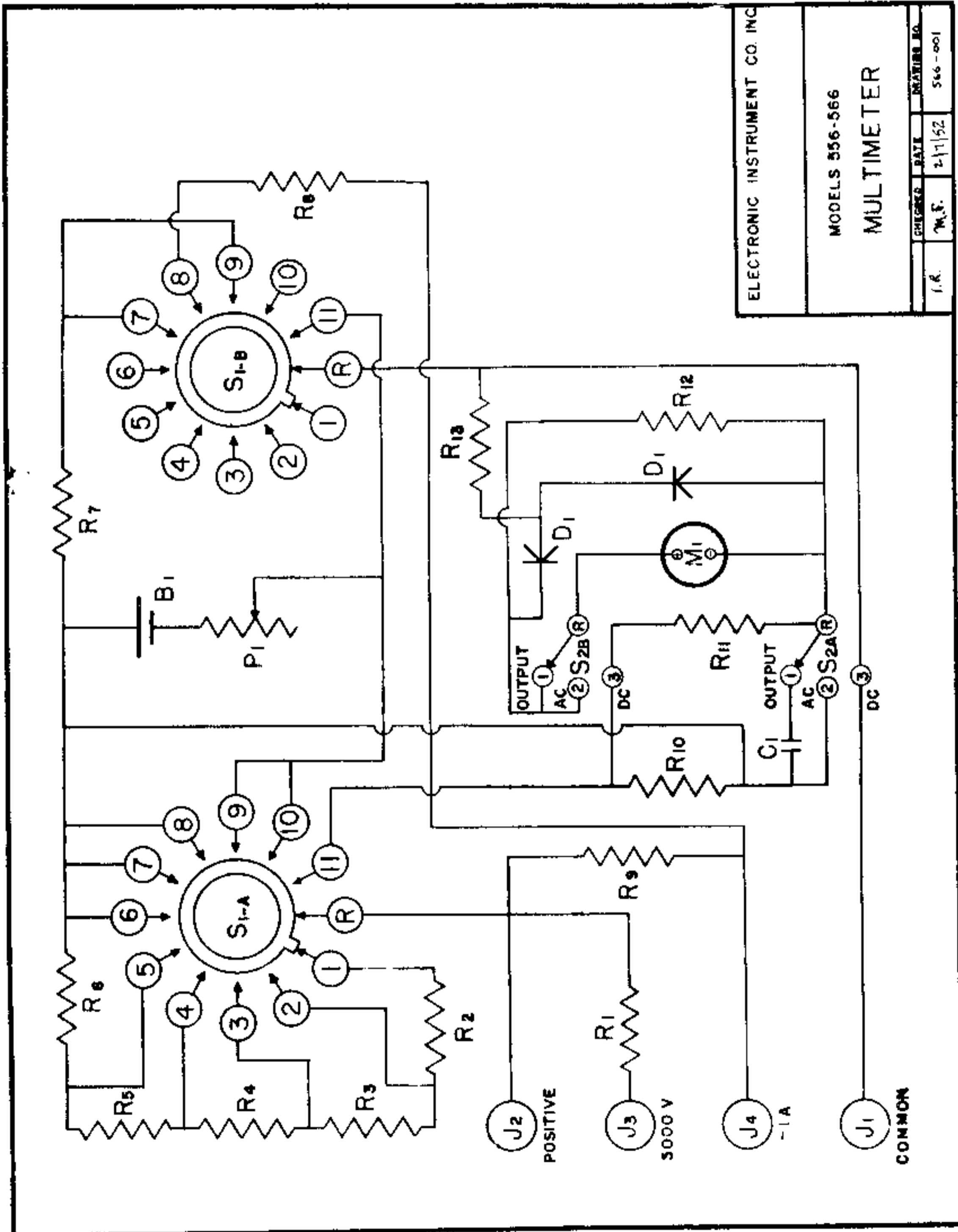
Final Steps

On completing the mechanical assembly and wiring of the instrument, follow the procedure outlined below.

- 1) Assemble the handle and the case in the following manner. Insert the #10 brass eyelet in the hole at the end of the handle. Pass the 10-24 screw through the eyelet, the #10 flat washer, and the hole provided in the case. Secure the screw with the hex nut and lockwasher provided.
- 2) Insert the completed unit in the case, and secure it with the four #4 panel screws.
- 3) Place the small round knob over the shaft of the ZERO OHMS potentiometer, and tighten the set screw.
- 4) Place the small pointer knob over the shaft of the OUTPUT-AC-DC switch, and tighten the set screw. Turn the switch clockwise as far as it will go. Loosen the set screw, and line up the knob with the marker for the DC position. Tighten the set screw. The knob now indicates properly.
- 5) Place the bar knob over the shaft of the RANGE switch S1, and tighten the set screw. Rotate the switch counter-clockwise as far as it will go. Then rotate the switch clockwise three stops. Loosen the set screw, and line up the knob with the marker for the 10V position. Tighten the set screw. The knob now indicates properly.
- 6) As a check of the knob settings, set the OUTPUT-AC-DC switch at the DC position, and the RANGE switch at the LOW OHMS position. The meter pointer should swing to the right.

Notes

- 1) The Models 566 and 556 do not require calibration. The shunt and series resistances to compensate for the rectifier characteristics have been predetermined.
- 2) Should the meter indicate improperly, use the schematic diagram to trace the circuit for the range in error. Make certain that the wiring and the components in the circuit are correct. Almost all troubles reported to us in the past have had improper wiring as their cause. If the wiring is correct, test for continuity and check individual components for breakdown.
- 3) If you are still having difficulty, write to our engineering department (Dept. MV, Electronic Instrument Co., Inc. 283 Malta Street, Brooklyn, N. Y. 11207) listing all indications that you have which might be of help.
- 4) If desired, you may return the instrument to the factory, where it will be repaired and placed in operating condition for \$3.00 plus the cost of parts replaced due to their being damaged in the construction of the instrument. Pack the unit very carefully; in the original shipping carton, if possible. Send it to the above address, prepaid Railway Express. The instrument will be returned as soon as possible, express collect.



SYMBOL	DESCRIPTION
B1	1.5 VOLT BATTERY
C1	0.1 MFD CONDENSER
D1	RECTIFIER
M1	METER MOVEMENT
P1	600 OHM POT.
R1	4.5 MEG OHM RES. 2W
R2	400K OHM RES. 1/4W
R3	50K OHM RES. 1/4W
R4	40K OHM RES. 1/4W
R5	5K OHM RES. 1/4W
R6	4K OHM RES. 1/4W
R7	111.1 OHM RES. 1/4W
R8	9.09 OHM RES. 1/4W
R9	1.01 OHM RES. 1/4W
R10	940 OHM RES. 1/4W
R11	100 OHM RES. 1/4W
R12	2400 OHM RES. 1/4W
R13	672 OHM RES. 1/4W
S1	RANGE SWITCH
S2	2 P. - 11 POS. FUNCTION SWITCH



ELECTRONIC INSTRUMENT CO. INC.

MODELS 556-566

MULTIMETER

I.R.	W.R.	DATE	DRAWING NO.
		2-17-52	566-001

MODELS 566-556 ADDENDA SHEET

To improve the operation of the unit, we are incorporating a new high quality instrument rectifier in place of the rectifier shown in the Construction Book. This makes it necessary to use a different value shunt compensation resistor (R12) and a different value series compensation resistor (R13) than given in the Construction Book. The new value of R12 is 1200 ohms and the new value of R13 is a 1000 ohm rheostat*. You will find these parts in your kit. In addition, the new rectifier is not mounted on a bracket as the old one was. This eliminates the rectifier bracket, H16, 1-H21 (#6 hex nut), and 1-H22 (#6 lock washer). Also, solder lug L1 will be found pre-assembled to R13.

In connection with these changes, make the following changes in the Construction Book before proceeding. Furthermore, always refer to the new Assembly Print 1 drawing provided on this addenda and ignore the old Assembly Print 1 drawing in your Construction Book.

Parts List: Cross off H16, H21, and change the amount of H22 from 2 to 1; note that L1 is now part of R13. Change the value of R12 to 1200 and the value of R13 to 1000 ohm rheostat.

(Ass'y Print 1) Mounting on to Panel H2: In step #1-4, cross off 1#H16 and 1#L1 in the "Mounted With" column and in its place substitute the R13 rheostat and bracket assembly (includes L1). Also cross out step #1-9.

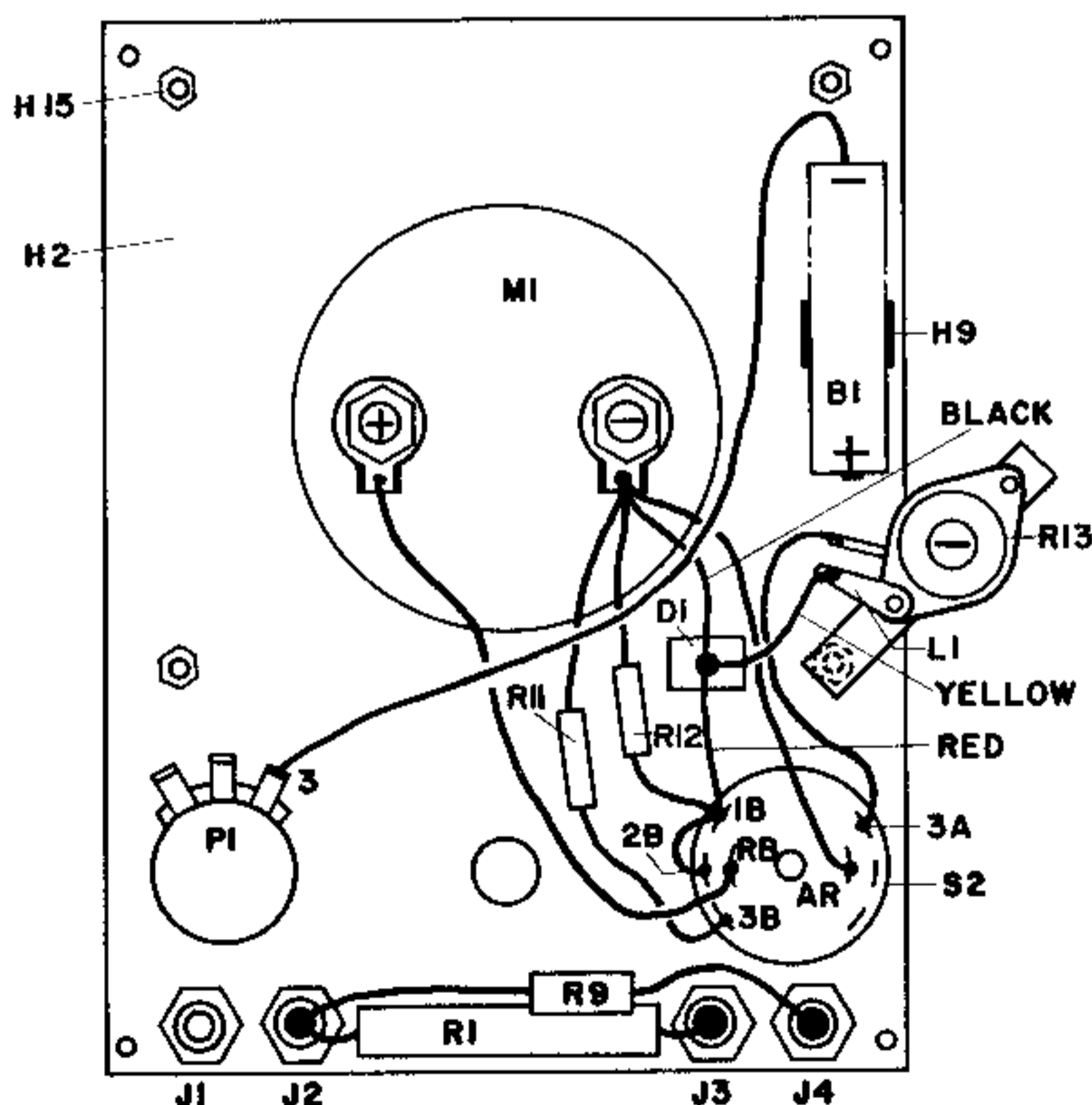
(Ass'y Print 1) Wiring: In step #1-10, change L1 (C) in the "To" column to L1 (S). Cross out step #1-13 and replace with the following: Connect a length of wire from S2A #3 (C) to the rotor lug of rheostat R13 (S). In step #1-15, change the value of R12 to 1200 ohms.

Table on Schematic Diagram: Change value of R12 to 1200 ohms and the value of R13 to 1000 ohms rheostat*.

With the above changes made, proceed with the mounting but ignore step #1-9, the rectifier mounting, which is crossed off. Please note that the R13 assembly is mounted in step #1-4. Then complete the first three steps of the wiring, step #1-10, 1-11, and 1-12, in which all the rectifier leads are connected, noting that in step #1-10, the yellow lead of D1 is soldered to L1. (There is no change in the color coding of the rectifier leads.) Then simply place a drop of ordinary household cement (Duco or similar) on the back of the bakelite panel where the new rectifier (D1) is shown to be on the new drawing of Assembly Print 1. Press the bottom of the rectifier into the drop of cement and hold it against the panel until the cement is set. Since the rectifier is a delicate component, do not squeeze it or pull on the leads.

If you wish, you may proceed with the remainder of the wiring immediately, but be careful not to disturb the rectifier before the cement has dried. While cementing the rectifier to the panel is preferable, it may be left hanging freely from its leads since it is extremely light and compact.

* Preset at factory to 540 ohms for proper calibration on ac voltage ranges.



Addendum Models 555/555 556/566

The case supplied with your unit might have # 6-32 threaded inserts instead of the #4-40 specified in the manual. We have added (4) # 6-32 X 1/4" binding head screws to be used to mount the front panel to the case if this diameter screw is required.

For models 555/555, the assembly step which would be affected is # 3 in the Final Steps. Change "Four # 4 panel screws" to "Four # 6 panel screws".

For models 556/566 the assembly step affected is # 2 in the final steps. Change four # 4 panel screws" to "Four # 6 panel screws".

IE 1327

EXCO ELECTRONIC INSTRUMENT CO., INC
288 MALTA STREET BROOKLYN, N. Y. 11209

MODELS 556-566 (KIT OR WIRED) ADDENDA

The value of the OHMS ADJUST pot., R14, has been changed from 600 ohms to 1000 ohms. The stock number of the 1000Ω pot. is 16001. Please enter this change on the Replacement Parts List and the symbol identification list under the schematic diagram.

I.E. 1327 Electronic Instrument Co., Inc.,

10/27/60

MODELS 556, 566 (KIT ONLY) ADDENDA

Replace 4 each 4-36 screw Part #41017 with 4-40 screw Part #41016.

I. E. 1257 Electronic Instrument Co., Inc.,

3/25/59

K4XL's **BAMA**

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