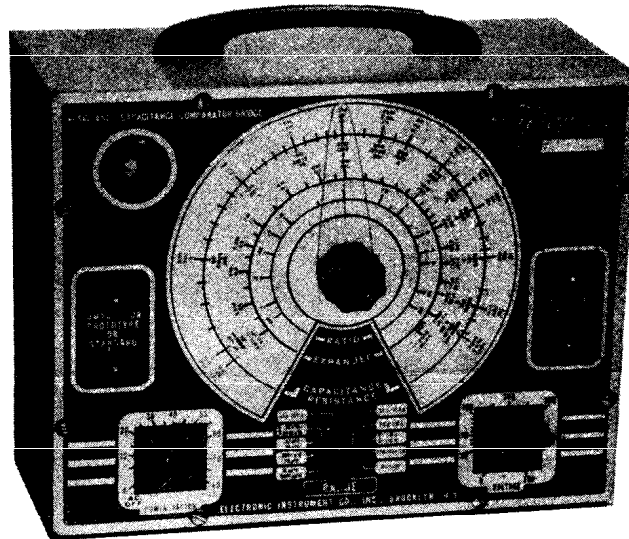


MODEL 950
Resistance-Capacitance
and
Comparator Bridge
Construction Book



ELECTRONIC INSTRUMENT CO., Inc.

276 NEWPORT STREET
BROOKLYN 12, N. Y.

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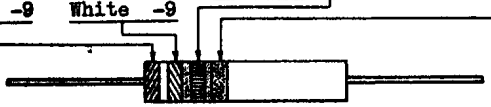
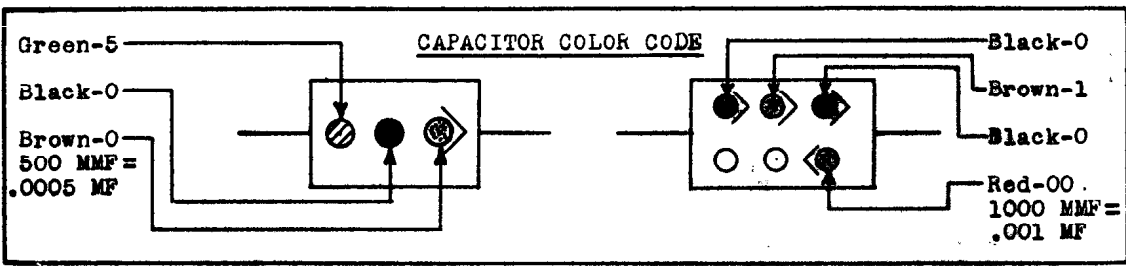
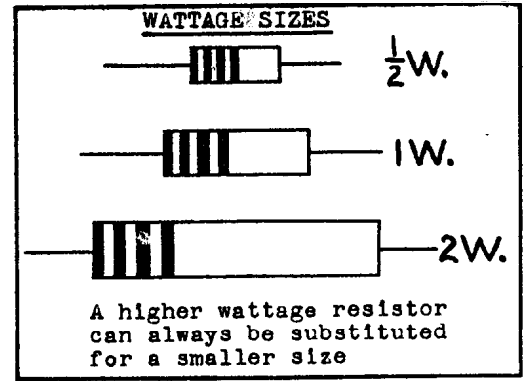


HOT SALE!

RMA COLOR CODES

R.M.A. RESISTOR COLOR CODE

Black -0	Black -0	Black -	TOLERANCE
Brown -1	Brown -1	Brown -0	Gold =± 5%
Red -2	Red -2	Red -00	Silver =±10%
Orange -3	Orange -3	Orange -000	No band =±20%
Yellow -4	Yellow -4	Yellow -0000	
Green -5	Green -5	Green -00000	
Blue -6	Blue -6	Blue -000000	
Violet -7	Violet -7	Gold -Multiply by .1	
Gray -8	Gray -8	Silver -Multiply by .01	
White -9	White -9		

SOME COMMONLY USED RESISTORS

Value	First band	Second Band	Third Band
47	Yellow	Violet	Black
270	Red	Violet	Brown
33K	Orange	Orange	Orange
270K	Red	Violet	Orange
1 Meg	Brown	Black	Green

CAPACITOR COLOR CODE

Capacitors use the same color code as resistors except that they are read in micro-microfarads. Two codes are commonly used: those with three dots and those with two rows of three dots. In the three dot code, reading along the arrow, the first two dots are significant figures and the last dot is the decimal multiplier. For example; brown,black,orange is 10,000 Mmfd. or .01 Mfd.

In the six dot code, the upper row represents the first three significant figures and the lower right hand dot represents the multiplier. If the upper left dot is black, then the other two dots represent the first two significant figures and the lower right dot is the multiplier.


SOME COMMONLY USED CAPACITORS

Mmfd.	Mfd.	First Dot	Second Dot	Third Dot
10	.00001	Brown	Black	Black
20	.00002	Red	Black	Black
50	.00005	Green	Black	Black
100	.0001	Brown	Black	Brown
500	.0005	Green	Black	Brown
1000	.001	Brown	Black	Red
10000	.01	Brown	Black	Orange

CERAMICON CAPACITOR COLOR CODE

Black -0	Black -0	Black -1	
Brown -1	Brown -1	Brown -10	
Red -2	Red -2	Red -100	
Orange -3	Orange -3	Orange -1000	
Yellow -4	Yellow -4		
Green -5	Green -5		
Blue -6	Blue -6		
Violet -7	Violet -7		
Gray -8	Gray -8	Gray -.01	TOLERANCE
White -9	White -9	White -.1	

TEMP. COEF. TOLERANCE



CERAMICON CAPACITORS

These capacitors appear similar to resistors and can be distinguished from resistors in that they have five bands. The first band is extra wide and represents temperature coefficient. The next two bands represent the first two significant figures. The fourth is the multiplier while the fifth and last band is the tolerance of the capacitor.

PARTS LIST - MODEL 950

CHK.	PART NO.	SYMBOL	DESCRIPTION	AMOUNT
	1	C1	8 MFD Filter Condenser	1
	2	C2	200 MMFD Precision Condenser ...	1
	3	C3	.02 MFD Precision Condenser	1
	4	C4	2 MFD Precision Condenser	1
	5	C5,6,7	.01 MFD TUBULAR	3
	6	C8	.25 MFD TUBULAR	1
	7	H1	Panel	1
	8	H2	Chassis	1
	9	H3	Line Cord	1
	10	H4	3/8 Lock Washers	4
	11	H5	3/8 Panel Washers	4
	12	H6	3/8 Hex Nuts	4
	13	H7	#6 Machine Screws	6
	14	H8	#6 Hex Nuts	10
	15	H9	#6 Lock Washers	4
	16	H10	#6 Grounding Lug	7
	17	H11	3/8 Grommet	2
	18	H12	1/4 Grommet	1
	19	H13	Octal Socket, Wafer	1
	20	H14	Octal Socket, molded	1
	21	H15	Bar Knobs	3
	22	H16	#6 Flat Fibre Washers	4
	23	H17	#6 Shoulder Washers	4
	24	H18	Pointer and Knob	1
	25	H19	#6 Self Tapping Screws	9
	26	H20	Magic Eye Bracket	1
	27	H21	Hook Up Wire, 8'	1
	28	H22	Bare Wire - 2 1/2'	1
	29	H23	Spaghetti - 2 1/2'	1
	30	H24	Cabinet	1
	31	H25	Handle	1
	32	H26	#10 Handle Screws	2
	33	J1-4	Binding Posts	4
	34	P1	10K Bridge Potentiometer	1
	35	P2	1K Pot	1
	36	P3	1 Meg, - Voltage Control	1
	37	PT1	Power Transformer	1
	38	R1	500 Ohms 5W Resistor	1
	39	R2	250K 1%, 1/2 W Resistor	1
	40	R3	1 Meg 1/2 W Resistor	1
	41	R4	20 ohms 1%, 1/2 W Resistor	1
	42	R5	2K ohms 1%, 1 W Resistor	1
	43	R6	200K ohms 1%, 1/2 W Resistor	1
	44	R7	30K 1 W Resistor	1
	45	R8	100K 1/2 W Resistor	1
	46	R9	270K 1/2 W Resistor	1
	47	R10	10 Meg 1/2 W Resistor	1
	48	S1	Range Switch	1
	49	S2	SPST Switch, on P2	1
	50	V1	6X5 Rectifier Tube	1
	51	V2	1629 Electron Ray Tube.....	1

EICO MODEL 950K RESISTANCE-CAPACITANCE-COMPARATOR-BRIDGE

The assembly of the Model 950K RC Comparator Bridge is not difficult; on the contrary, it is a simple and straight-forward series of steps. Each of these steps is geared to aid you in the rapid and intelligent completion of your instrument. Before starting the actual construction, study the schematic and pictorial wiring thoroughly getting all of the steps clear in your mind. Do not rush the assembly. Care will pay dividends. It is suggested, because of stray pickup and increased capacity by leads improperly run, etc. that you place your wiring exactly as shown on diagrams.

Note: Use a Good grade on rosin core Solder, UNDER NO CIRCUMSTANCES USE ACID CORE SOLDER OR ACID FLUX inasmuch as this can cause serious corrosion. Before soldering, make certain there is a good mechanical connection. The solder must flow before you remove the soldering iron. This will prevent rosin joints which are poor electrical conductors. If you are soldering close to a part, hold the ends of a pair of longnose pliers between the part and the solder joint. The pliers will conduct the heat away and prevent the component from being unduly overheated.

COMPONENTS

Carefully unwrap all the parts and check them in the space provided on the parts list. Note:- In order to insure the supply of kits and prompt delivery, we are forced to order from several sources; standard manufacturers' parts are interchangeable. You may also find that a value will vary within the permissible circuit tolerance, e.g., a resistance of 470,000 ohms may be substituted for, or may measure 510,000 ohms, etc. All parts supplied will work just as well as the part for which it was substituted. Most parts have a tolerance rating of 20% and the circuit is designed to take this variation into account. No substitutions will be made on precision components unless they are within permissible tolerance.

GENERAL INSTRUCTIONS

CONSTRUCTION TEST AND CALIBRATION: - The construction of your instrument consists of the following steps:

- (1) MOUNTING: The chassis and panel components, per ASSEMBLY PRINT #1, are mounted.
- (2) SWITCH AND MAGIC EYE SOCKET PREWIRING:- The RANGE switch is prewired per ASSEMBLY PRINT #2, FIGURE 1. The MAGIC EYE SOCKET is prewired according to ASSEMBLY PRINT #2, FIGURE 2.
- (3) FINAL ASSEMBLY AND WIRING:-The prewired switch and the magic eye socket are mounted and wired onto the panel and chassis. The final wiring is completed and the instrument made ready for final test per ASSEMBLY PRINTS #3 AND #4
- (4) FINAL STEPS:- The tubes and knobs are inserted and tests made to ascertain proper wiring. The instrument is turned on and if operating properly, it is inserted into the cabinet.

WIRING DIAGRAM OF SWITCH S₁

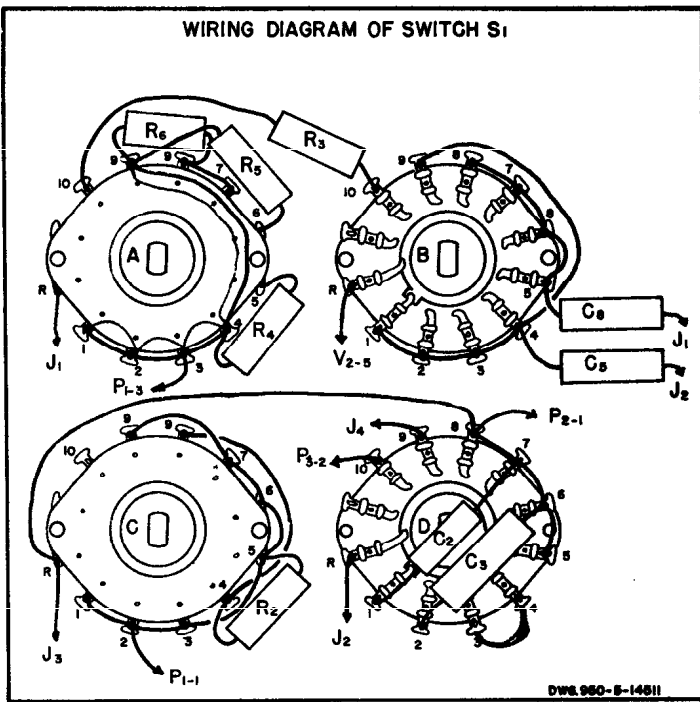
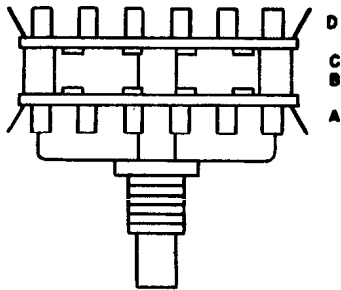


FIGURE 1

SECTIONS



RANGE SWITCH-S1

RANGE SWITCH WIRING - S1

CHK.	SYMBOL	DESCRIPTION	FROM	TO	REMARKS
	H22	Bare wire	(S)A#1	(C)A#2	Spaghetti
		"	(S)A#2	(C)A#3	
		"	(C)A#3	(C)A#4	
		"	(C)A#4	(C)A#7	
		"	(S)A#7	(C)A#8	Spaghetti
		"	(S)B#1	(C)B#2	
		"	(S)B#2	(C)B#3	
		"	(S)B#3	(C)B#4	
		"	(C)B#4	(S)B#9	Spaghetti
		"	(C)B#5	(C)B#6	
		"	(S)B#6	(C)B#7	
		"	(S)B#7	(S)B#8	
		"	(S)C#1	(C)C#2	Spaghetti
		"	(C)C#2	(C)C#3	
		"	(S)C#3	(C)C#5	
		"	(C)C#5	(C)C#6	
		"	(S)C#6	(C)C#7	Spaghetti
		"	(S)C#7	(S)C#9	
		"	(C)C#4	(S)C#8	
		"	(C)D#3	(S)D#4	
		"	(S)D#5	(C)D#6	Spaghetti
		"	(C)D#6	(C)D#7	
		"	(C)D#7	(C)D#8	
		"	(C)D#8	(C)C#8	
	R6	200K ohm 1%	(S)A#8	(C)A#9	Spaghetti
	R5	2K ohm 1%	(S)A#6	(S)A#7	
	R4	20 ohm 1%	(S)A#4	(S)A#5	
	R3	1 meg	(S)A#10	(C)B#10	
	R2	250K ohm 1%	(S)C#5	(S)C#4	Spaghetti
	C2	200mmf Prec.	(S)D#1	(S)D#7	
	C3	.02 mf Prec.	(S)D#2	(C)D#6	
	H23	Hook up wire	(S)A#R	(S)D#8	
		"	(S)D#R	(S)D#8	6" length
		"	(S)A#3	(S)C#2	6 1/2" length
		"	(S)C#2	(S)B#R	2.5" "
		"	(S)B#R	(S)C#R	8" "
		"	(S)C#R	(S)D#9	5" "
		"	(S)D#9	(S)D#10	5" "
		"	(S)D#8	(S)B#5	4 1/2" "
	C6	.01 mf cond.	(S)B#5	(S)B#4	
	C5	.01 mf cond.	(S)B#4		

Pass wire through terminals indicated, (S) means solder, (C) means connect, Use spaghetti where suggested.

MODEL 950

ASSEMBLY PRINT NO. 2

PREWIRING OF 1629 TUBE SOCKET

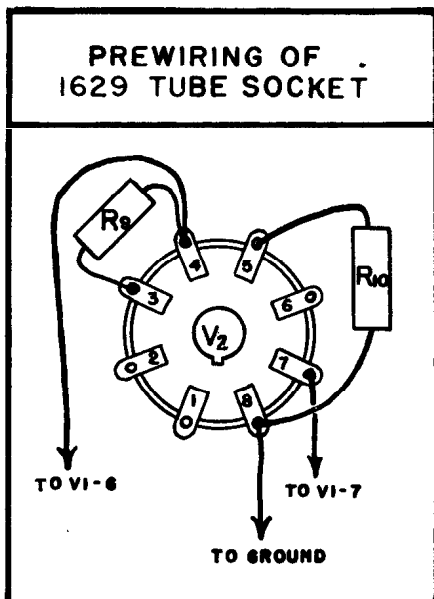
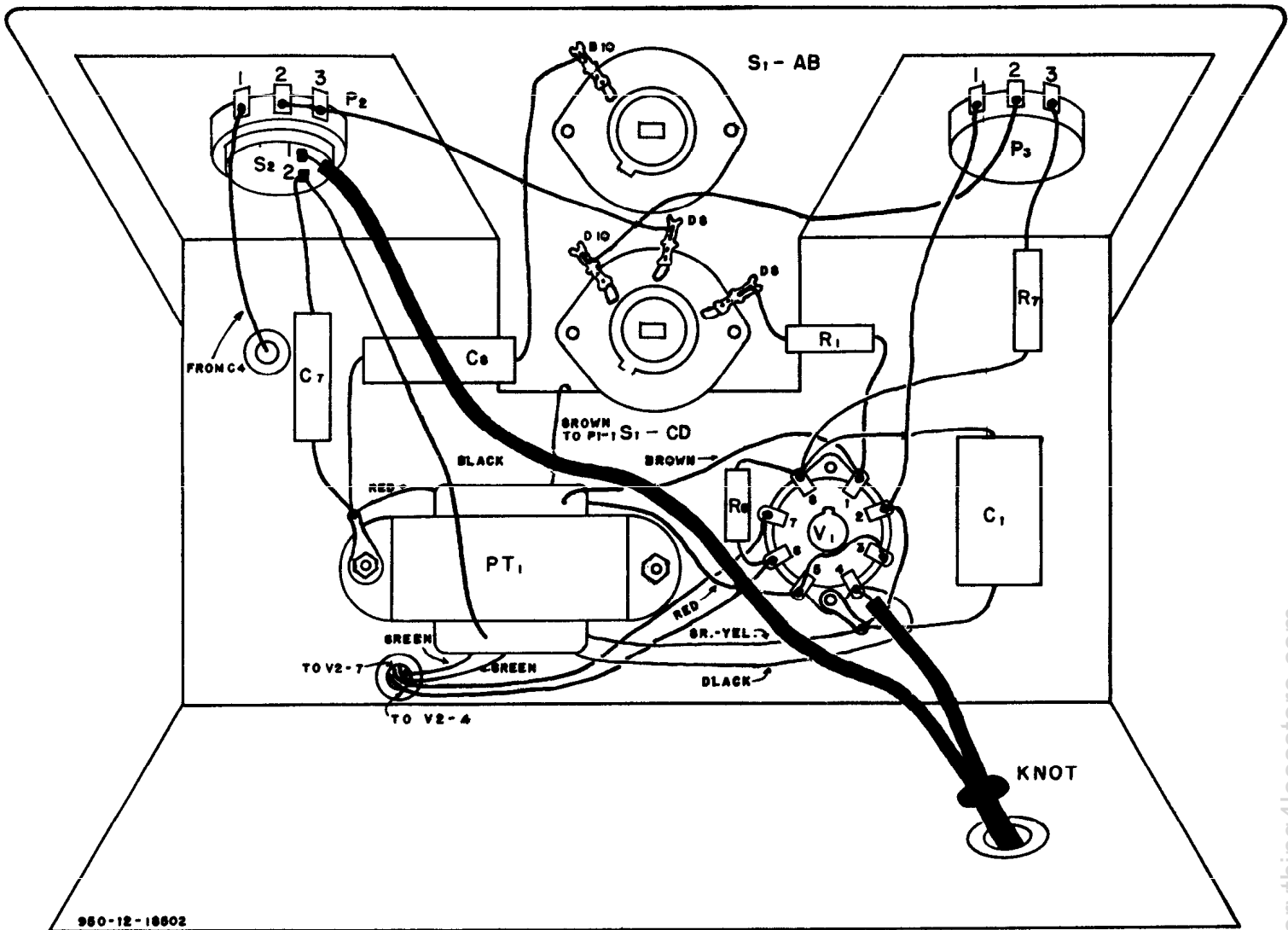


FIGURE 2

1629 TUBE SOCKET WIRING

CHK.	SYMBOL	DESCRIPTION	FROM	TO	REMARKS
	R9	270K 1/2W res.	(S)V2#3	(C)V2#4	11"
		Wire	(S)V2#4	(C)V2#5	
	R10	10M 1/2W res.	(C)V2#5	(C)V2#8	7"
		Wire	(S)V2#8	(C)V2#7	





950-12-18802

MODEL 950

MOUNTING SWITCH

Mount prewired Range Switch S1 using one H1, one H5 and one H6. Position switch as shown in Assembly Print #3.

ASSEMBLY

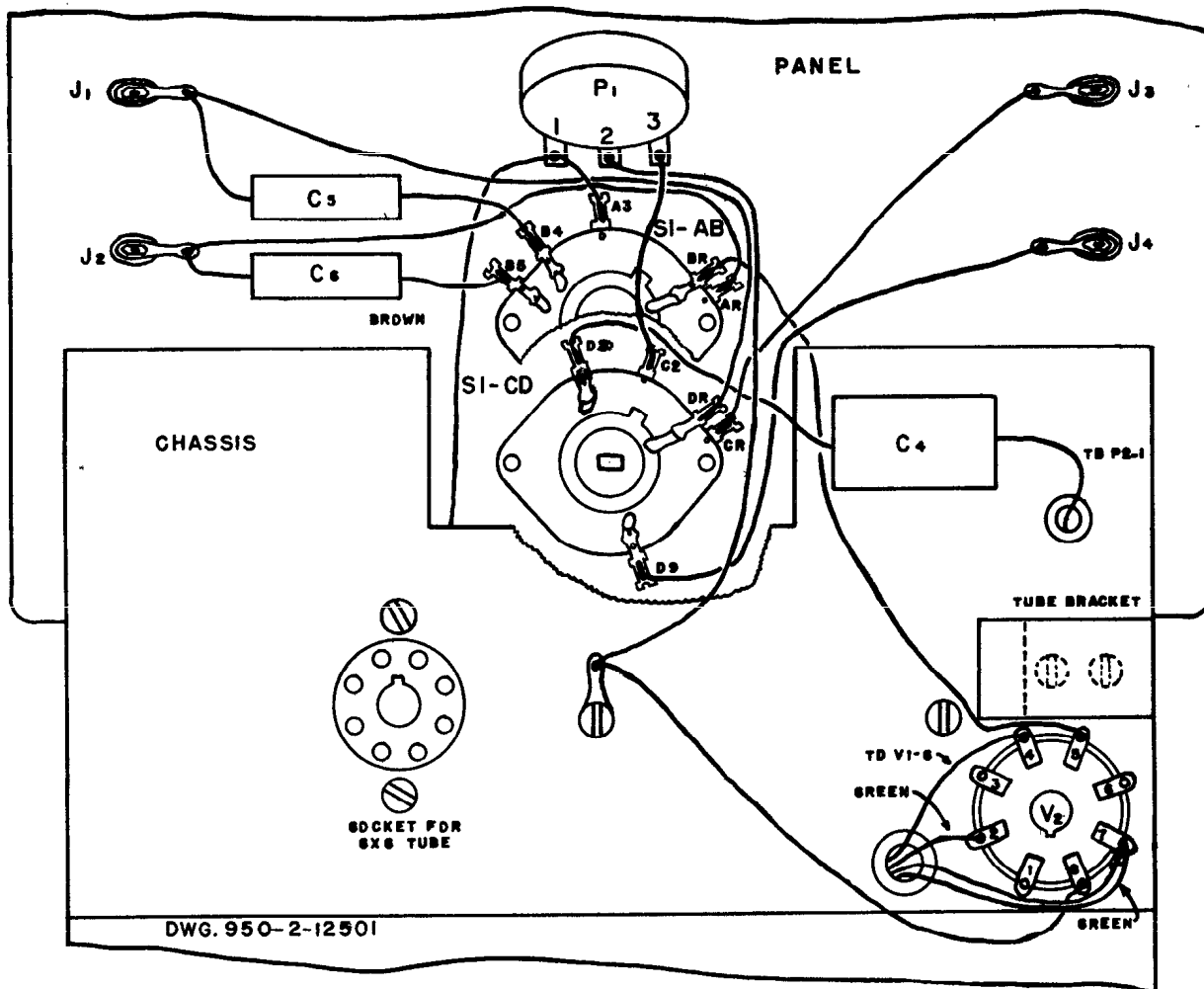
PRINT

NO. 3



WIRING INSTRUCTIONS

CHK.	SYM.	DESCRIPTION	FROM	TO	REMARKS
	PT1	Power trans.	Red wire	V1#5(C)	
		Bare Wire	(S)V1#5	V1#3(S)	Spaghetti
	PT1	Power trans.	Red Wire	Lug (C)	On PT1
		Wire	(S)P3#1	V1#2(C)	
		Bare Wire	(S)V1#2	Lug (C)	On V1
	R7	30K 1 W res	(S)P3#3	V1#8(C)	Spaghetti
	C1	8 MFD filter cond.	(C)V1#8	Lug (C)	On V1 Spaghetti
	R8	100K 1/2 W res	(S)V1#8	V1#6(C)	
	PT1	Power trans.	Green-yellow	Lug (S)	On V1
	C8	.25 MFD cond.	(S)S1#B10	Lug (C)	On PT1 Spaghetti
	C7	.01 MFD cond.	(S) lug	S2#2(C)	
	PT1	Power trans.	Black	S2#2(S)	
		Wire-already attached to S1#D8		P2#2(S)	Thru P2#3(S)
	PT1	Power trans.	Brown	V1#1(C)	
	R1	500 ohms 5W res.	(S)V1#1	31#D6(S)	
	H3	Line cord		S2#1(S)	Knot
	H3	Line cord		V1#1(C)	
	PT1	Power trans.	Black	V1#1(S)	
		Wire-already attached to S1#D10		P3#2(S)	



MODEL 950

ASSEMBLY

PRINT

NO. 4



WIRING INSTRUCTIONS CONTINUED

CHK.	SYMBOL	DESCRIPTION	FROM	TO	REMARKS
	PT1	Power transformer	Green	V2#2(S)	Thru hole *
	PT1	Power transformer	Green	V2#7(S)	Thru hole
		Wire-already att. to V2#7		V1#7(S)-	Thru hole
		Wire-already att. to V2#4		V1#6(S)	Thru hole
	C6	.01MFD condenser already att. to S1#B5		J2 (C)	
	C5	.01MFD condenser already att. to S1#B4		J2 (S)	Spaghetti
		Wire-already att. to S1#A3		J1 (C)	Spaghetti
	PT1	Power transformer	Brown	P1#1(C)	
		Wire-already att. to S1#C2		P1#1(S)	
		Wire-already att. to S1#DR		P1#3(S)	
		Wire-already att. to S1#CR		J1 (S)	
		Wire-already att. to S1#D9		J3 (S)	
		Wire	(S)P1#2	J4 (S)	
				Lug (C)	On the chassis
		Wire-already att. to S1#BR		V2#5(S)	
		Wire-already att. to V2#8		Lug (S)	On the chassis
	C4	2 MFD condenser	(S)S1#D3	P2#1(S)	Thru grommet spaghetti

* Mount 1629 tube in bracket and orient so that key is down. Insert tube in socket before wiring.

FINAL STEPS

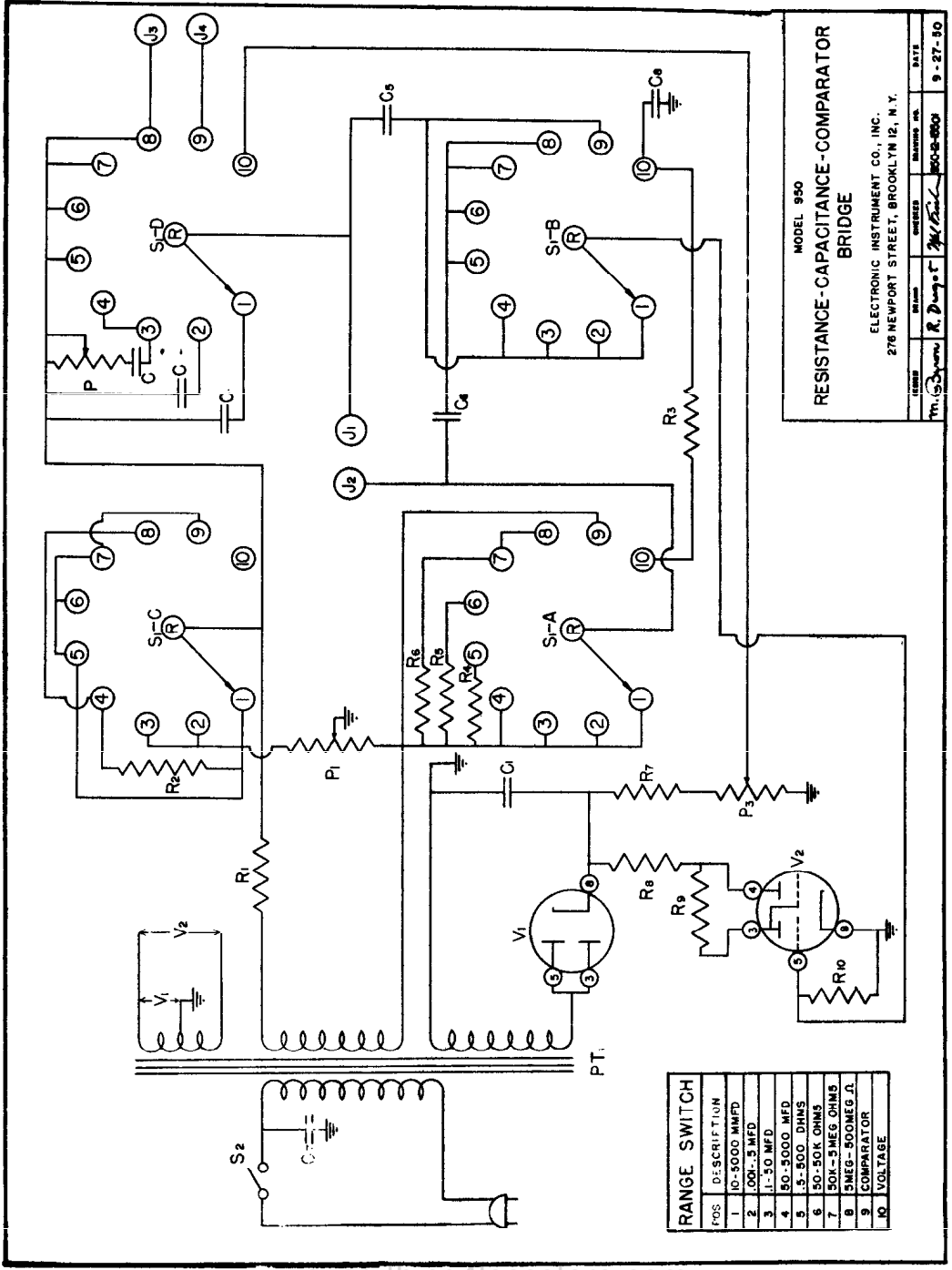
You have now completed the mechanical assembly of your instrument. A few more steps and simple precautions at this point and the instrument may be turned on.

- 1) Insert tubes in sockets; see Assembly Print #4 for tube locations. Rotate all potentiometers and switches to their maximum counter-clockwise positions. Place knobs on as follows:
 - (a) POWER FACTOR knob should line up with the "AC OFF" position. (Make certain the switch is in the OFF position when aligning knob)
 - (b) RANGE selector knob should line up with the "10mmfd-5000mmfd" Position (When switch is rotated to its maximum counter clockwise position).
 - (c) MAIN DIAL knob should line up with the blue radial line starting the dial.
- 2) Measure the resistance from B+(Pin #8 of 6X5 to ground). This should be over 300,000 ohms. With the ohmmeter still connected, rotate the RANGE selector switch. There should be no change of resistance. If it is lower than 300,000 ohms, or changes as the switch is rotated, recheck B circuit before continuing, but under no circumstances apply power until the error has been located.
- 3) Insert line cord and turn set on by rotating POWER FACTOR SWITCH. The filaments should light immediately. If not turn set off and check the filament circuit. Do not leave power on as this could damage the power transformer. The magic eye tube should show a green hue within 30 seconds. If not, recheck B+circuit.
- 4) CABINET: Secure handle to cabinet by using the two handle screws. Slip line cord thru the elliptical hole in the cabinet and secure panel to cabinet with 8 self tapping screws. Bolt the cabinet to the chassis in back with one self tapping screw.

IN THE EVENT OF TROUBLE:

- 1) Check all voltages.
- 2) Check individual components for improper wiring or breakdown.
- 3) Recheck the wiring procedure. Nearly all of our cases of trouble in the past have improper wiring as their cause.
- 4) If you are still having difficulty, write to our engineering department (Dept. CB, Electronic Instrument Co. Inc. 276 Newport Street, Brooklyn, 12, N. Y.) listing all voltages and whatever other indications you have which might be of help.
- 5) If desired, you may return the instrument to the factory where it will be repaired and placed in operating condition for a charge of \$3.50 plus any part or alterations required due to damage in construction. Ship with tubes packed separately in the original shipping carton if possible. Pack unit very carefully and send prepaid Railroad Express. The instrument will be returned as soon as possible Express Collect.

SYMBOL	DESCRIPTION
C1	8 MFD FILTER CONDENSER
C2	200 MFD PREC. CONDENSER
C3	.02 MFD PREC. CONDENSER
C4	2 MFD PREC. CONDENSER
C5, 6, 7	.01 MFD TUBULAR
C8	.25 MFD TUBULAR
P1	10K POTENTIOMETER
P2	1K POTENTIOMETER
P3	1 MEG POTENTIOMETER
PT1	POWER TRANSFORMER
R1	500 OHMS 5 WATT RESISTOR
R2	250K 1% RESISTOR
R3	1 MEG 1/2 WATT RESISTOR
R4	20 OHMS 1% RESISTOR
R5	2K 1% RESISTOR
R6	200K 1% RESISTOR
R7	30K 1 WATT RESISTOR
R8	100K 1/2 WATT RESISTOR
R9	270K 1/2 WATT RESISTOR
R10	10 MEG 1/2 WATT RESISTOR
S1	RANGE SWITCH
S2	ON-OFF SWITCH
V1	6X5 RECTIFIER TUBE
V2	1629 INDICATOR TUBE



MODEL 950
RESISTANCE-CAPACITANCE-COMPARATOR BRIDGE
 ELECTRONIC INSTRUMENT CO., INC.
 278 NEWPORT STREET, BROOKLYN 12, N. Y.

DESIGNER	MANUFACTURER	DATE
Wm. S. ...	TEICO	9-27-50

POS.	DESCRIPTION
1	10-5000 MMFD
2	1000-5 MFD
3	1-50 MFD
4	50-5000 MFD
5	5-500 OHMS
6	50-50K OHMS
7	500-5MEG OHMS
8	5MEG-500MEG Ω
9	COMPARATOR
10	NO VOLTAGE

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