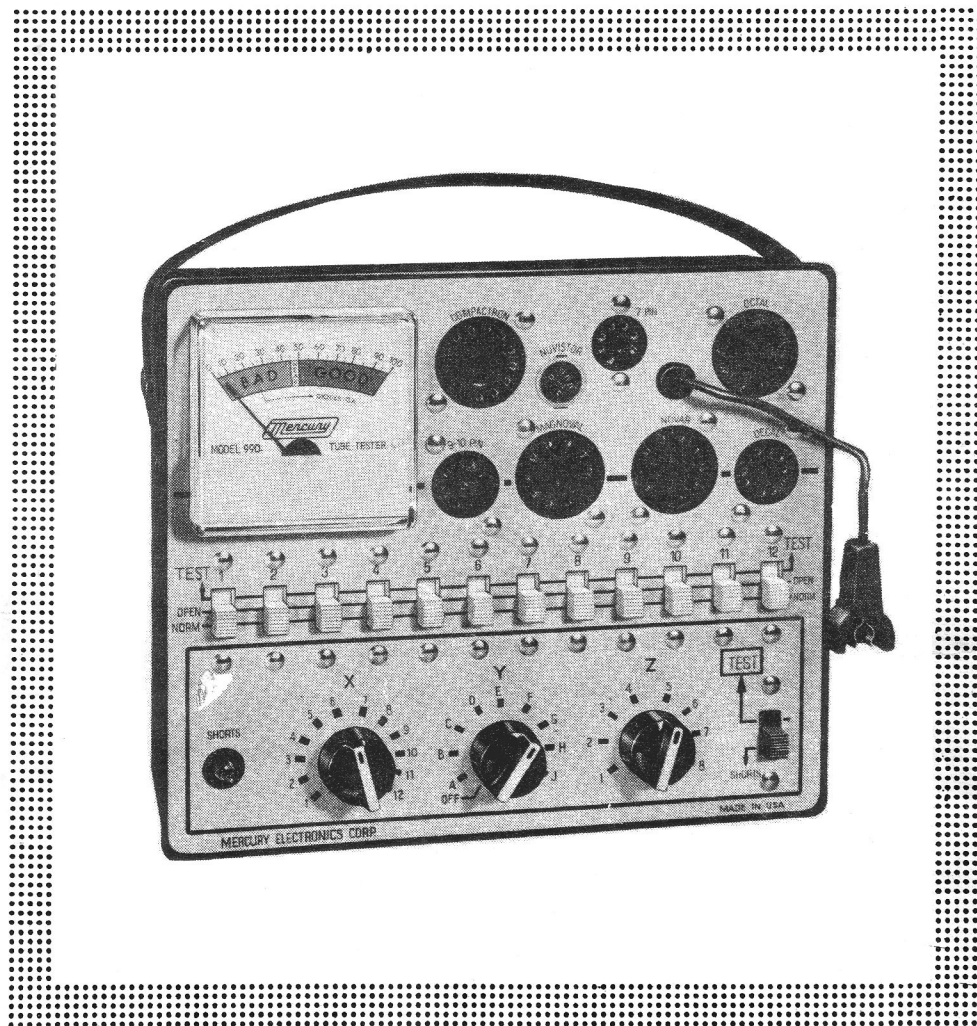


# Model 990 TUBE TESTER



## TEST PROCEDURE

**Mercury** ELECTRONICS CORPORATION

manufacturers of quality electronic products

Mineola, New York 11501

## TEST PROCEDURE

**CAUTION:** Dangerous voltages may be present at the tube sockets and/or at the grid clip during operation. Do not touch the metallic portion of these parts while the TESTER is connected to the power line. Always disconnect the power cord before taking the wired panel out of the case.

CHECK	STEP
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## I. INITIAL SET UP

- ( ) 1. Set slide switches number 1 through 12 at NORM.
- ( ) 2. Set knobs: X at no. 1 position.  
Y at PWR OFF position.  
Z at No. 1 position
- ( ) 3. Plug line cord into a 110–120 volt, 50–60 Hz power supply.

## II. SHORTS TEST

- ( ) 1. Turn knob Y to position A. SHORTS/LEAKAGE neon should not light. Refer to TROUBLE SHOOTING GUIDE in case of difficulty in obtaining the correct results.
- ( ) 2. Set slide switches numbers 1 through 12, one at a time, from NORM to TEST then back to NORM. The neon indicator should not light in each instance.
- ( ) 3. Insulate the 15K ohms 1W 10% test resistor (brown-green- orange-silver) by bending one lead in the opposite direction and inserting the resistor into the large plastic sleeving as shown in Fig. 2. Cut the resistor leads evenly approximately 1/4" from the sleeve. Manipulate the test resistor by holding the insulated portion. Do not touch the exposed leads while applying the test resistor to the panel.
- ( ) 4. Check for the correct SHORTS/LEAKAGE indication with each of the following test set-ups. (Set switch Y at A, switch Z at 1 during this test).

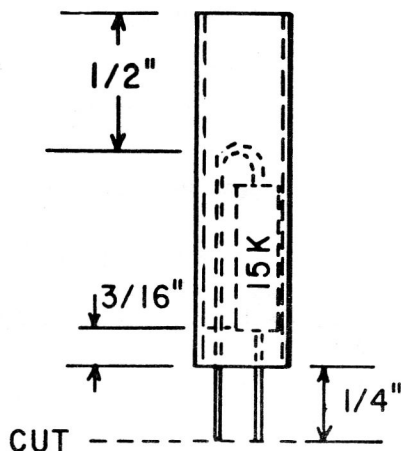


FIGURE NO.2

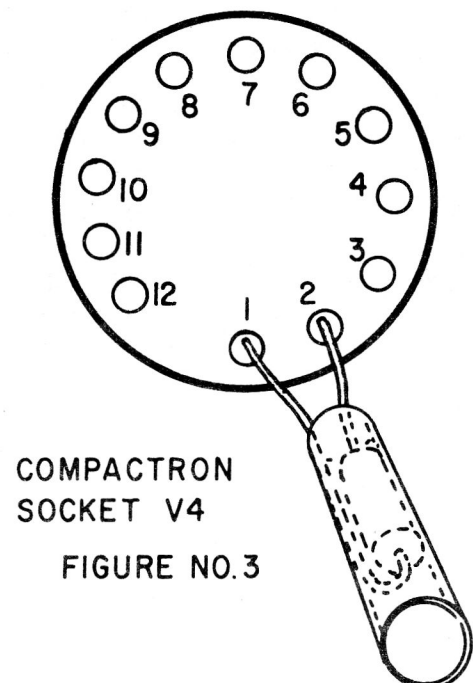


FIGURE NO.3

CHECK	STEP	TEST SET-UP			
		INSERT TEST RESISTOR INTO COMPACTRON PIN NUMBERS	SWITCH X SETTING	SET SWITCH TO TEST POS. (ALL OTHERS AT NORM)	SHORTS/LEAKAGE INDICATOR
( )	a.	1-2 (Fig. 3)	1	1	ON
( )	b.	1-2	1	1,2	OFF
( )	c.	1-2	2	2	ON
( )	d.	3-4	3	3	ON
( )	e.	3-4	3	3,4	OFF
( )	f.	3-4	4	4	ON
( )	g.	5-6	5	5	ON
( )	h.	5-6	5	5,6	OFF
( )	i.	5-6	6	6	ON
( )	j.	7-8	7	7	ON
( )	k.	7-8	7	7,8	OFF
( )	l.	7-8	8	8	ON
( )	m.	9-10	9	9	ON
( )	n.	9-10	9	9,10	OFF
( )	o.	9-10	10	10	ON
( )	p.	11-12	11	11	ON
( )	q.	11-12	11	11,12	OFF
( )	r.	11-12	12	12	ON

### III LOAD VOLTAGE TEST

(Switches nos. 1 through 11 at NORM, switch no. 12 at TEST, X at 12, Y at A, Z at 1, test resistor in 11-12; all of these settings carried from the previous test).

Hold main TEST/SHORTS switch (S13) to TEST position and check for the correct meter indication on the 0-100 scale for each of the following X, Y, and Z combinations.

		<u>X</u>	<u>Y</u>	<u>Z</u>	APPROXIMATE * METER READING
( )	1.	12	A	1	5
( )	2.	12	A	2	13
( )	3.	12	A	3	24
( )	4.	12	A	4	77
( )	5.	12	A	5	27
( )	6.	12	A	6	66
( )	7.	11	H	7	58
( )	8.	11	J	7	0

\*Readings may vary  $\pm 20\%$  from those shown. However, they should progressively increase from Steps 1 thru 4, and from Steps 5 to 6.

CHECK    STEP

TEST SET-UP

**IV FILAMENT VOLTAGE TEST**

(Switches 1 through 11 at NORM, switch 12 at TEST, X at 11, Y at J, Z at 7, test resistor in 11-12; all of these settings carried from the previous test).

Hold main TEST/SHORTS switch (S13) to TEST position and check for the correct meter indication on the 0-100 scale for each of the following X, Y, and Z combinations:

		X	Y	Z	APPROXIMATE * METER READING
( )	1	11	J	7	0
( )	2	11	H	7	57
( )	3	11	G	7	85
( )	4	11	F	7	100
( )	5	11	F	4	35
( )	6	11	E	4	55
( )	7	11	D	4	60
( )	8	11	C	4	65
( )	9	11	B	4	70
( )	10	11	A	4	0

\* Readings may vary  $\pm 25\%$  from those shown. However, they should progressively increase from Steps 1 thru 4, and from Steps 5 thru 9.

Release main TEST switch (S13), remove test resistor, reset switch #12 to NORM, X to 1, Y to PWR OFF, and Z to 1.

**V DYNAMIC TEST**

Test a few tubes of known quality by following the test procedure as outlined in the INSTRUCTION MANUAL. Try to select a variety of tubes which will test out each of the tube sockets, and, the grid clip connector. Tubes that are known to be defective should test BAD and good tubes should test GOOD.

**CABINET ASSEMBLY**

Disconnect the TESTER from the power line and fasten the panel into the case by mounting the three #6-32 x 1/4" screws previously removed in Step 2 of the UNPACKING INSTRUCTIONS.

## TROUBLESHOOTING GUIDE

<u>STEP</u>	<u>SYMPTOM</u>	<u>CHECK</u>
II - 1	SHORTS/LEAKAGE INDICATOR LIT METER GOES OFF SCALE	Switch S1-16, neon NE2, resistor R1, capacitor C1. All point-to-point wiring
II - 2	SHORTS/LEAKAGE INDICATOR LIT WITH ANY SWITCH IN THE TEST POSITION SWITCH DOES NOT MOVE FROM NORM TO TEST	Short between the respective socket pin and adjacent pins(all sockets) respective switch. Clearance of wires under switch button
II-4a,b,c	WRONG INDICATION	Socket V4 pins 1 and 2, switches S1-2-13-16, neon NE2, resistor R1, capacitor C1.
II-4d,e,f	WRONG INDICATION	Socket V4 pins 3 and 4, switches S3-4-13-16.
II-4g,h,i	WRONG INDICATION	Socket V4 pins 5 and 6, switches S5-6-13-16.
II-4j,k,l	WRONG INDICATION	Socket V4 pins 7 and 8, switches S7-8-13-16.
II-4m,n,o	WRONG INDICATION	Socket V4 pins 9 and 10, switches S9-10-13-16.
II-4p,q,r	WRONG INDICATION	Socket V4 pins 11 and 12, switches S11-12-13-16.
III - 1	NO INDICATION ON METER	Meter M1, switches S13-14, resistors R3-4-8-9, diodes D1-2, trans T1.
III - 2	INCORRECT METER READING	Resistor R5, switch S14.
III - 3	INCORRECT METER READING	Resistor R6, switch S14.
III - 4	INCORRECT METER READING	Resistor R7, switches S14.
III - 5	INCORRECT METER READING	Resistor R2, switch S14, trans T1.
III - 6	INCORRECT METER READING	Switch S14.
III - 7	INCORRECT METER READING	Switch S14-15.
IV-1 thru 10	INCORRECT METER READING	Switch S14-15, trans T1. If an AC voltmeter is available, check the filament voltages across the test resistor for each switch <u>Y</u> position. They should be the values indicated on the schematic diagram $\pm 10\%$
V	INCORRECT RESULTS FROM ANY SOCKET	Wiring of respective socket