

FUNCTIONAL CHECK OF COMPLETED TESTER

1. Mechanically zero meter. (Power off)

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
6.3	50	2	1	12345-6789X	

2. Using an ohmmeter on the X100K range check for possible shorts between meter movement and meter lamp terminals.
3. Check the mechanical action of all switches and in particular the G_m switch.
4. Connect tester to A.C. Wattmeter (Triplett 861). Chart lights should be connected. Wattage should be approximately 24 watts with LINE TEST switch depressed.

Note reading on 3444A meter. It should not be over 2 divisions on the 75 division (C-15) scale, with Value 1 Switch depressed. (This indicates condition of plate supply filtering).

5. Depress VALUE 1 and G_m Adjust and check range of G_m Adjust. (Range should be approx. 400 to over 1000 on the 1000 G_m scale)

Age tester 2 hrs. with the VALUE 1 switch depressed.
(This forms condensers and stabilizes components in tester).

A.C. VOLTAGE CHECK and LINE CALIBRATION

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
6.3	0	2	1	12345-6789X	

1. LINE VOLTAGE CONTROL CHECK

Connect 6.3 Standard to 1 and 2 of any socket. Vary line voltage from 105 to 120. LINE ADJUST should have range to hold standard at 6.3 volts.

2. LINE VOLTAGE CALIBRATION (Connect Plate & Screen Std.)

- (a) Connect 6.3 standard to 1 and 2 of any socket.
- (b) Connect Plate & Screen Std. Scroll chart should be connected.
- (c) Connect Decade box in place of R-4. (From Red wire 588K Resis. or Pwr. Supply board.)
- (d) Adjust LINE VOLTAGE CONTROL to give exactly 6.3V A.C. on Std. (LINE TEST switch depressed)
- (e) Adjust decade so the 3444A meter reads on LINE TEST MARK.
- (f) Install R-4 and recheck with Std. (Inspection tolerance $\frac{1}{2}$ div. 75 div. scale)

3. REGULATION CHECK

Release the LINE TEST switch. The 6.3V. A.C. Std. reading Should not increase over .1 Volts. 1 Div. on A.C. volts filament Meter.

4. FILAMENT VOLTAGE CHECK (Disconnect Plate & Screen Std.)

- (a) Connect H.P. 400D between pins 1 and 2 of any socket. (Range setting appropriate to voltage being checked)
- (b) Adjust LINE TEST to ON.
- (c) Holding LINE TEST depressed rotate FILAMENT switch through all ranges and note readings.

Range	.63	1.25	1.4	2.0	2.35	2.8	3.15	4.2	4.7	5.0
Voltage	.61	1.20	1.5	2.1	2.41	2.71	3.00	3.9	4.5	5.1
Range	6.3	7.5	8.4	9.5	10.5	12.6	16.8	19.9	26.0	
Voltage	6.3	7.22	8.3	9.5	10.4	12.5	16.5	19.4	26.3	
Range	30	50	70	117						
Voltage	34.3	51.0	70	115						

Tot. $\pm 5\%$

A.C. PLATE VOLTAGE CHECK (Disconnect Plate & Screen Std.)

Switch Settings

A	B	C	D	Element Switches	Short-Leakage
6.3	0	1	B	12345-6789X	Value

- (a) Connect H.P. 400D (300V range) between ground and Sect. D of VALUE 1 switch. (Orange wire connection) (Test point shown in following diagram)



PUSHBUTTON
CIRCUIT BD.

TEST POINT

- (b) Depress LINE TEST and adjust line voltage on. H.P. 40CD should read 195V. A.C. $\pm 2\%$
- (c) Turn "D" switch to 9, H.P. should read the same.
- (d) Check all ranges of "C" Plate Voltage for proper voltages.

1-4 5-8 9-10 11 Vol. $\pm 2\%$
195V 83V 29V 19.5V

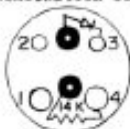
- (e) Short the TEST POINT to ground on position 11. Overload light should glow.
- (f) Disconnect H.P.

RECTIFIER TEST (Disconnect Plate & Screen Std.)

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
6.3	0	1	9	12345-4789X	

1. Insert dummy rectifier load with 5 M.A. current meter in combination socket. (630 M.A.)



The dummy rectifier load is assembled in a 4 prong plug. Two jacks on top are used to connect a 5 M.A. meter such as a 630 M.A.

2. Depress VALUE 1 switch and adjust LINE VOLTAGE control for 5 M.A. on the current meter. The 3444A meter should read (14.4-14.9) on the O-15 scale.
3. Turn D switch on 3444A to position 8, meter on 3444A should read 2.5-2.75 divisions on O-15 scale. The 5 M.A. reading on current std. should not have changed.
4. Remove Dummy Rect.

TUBE SOCKET WIRING CHECK (Disconnect Plate & Screen Std.)

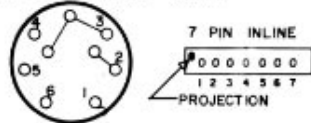
Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
6.3	0	1	1	12000-00000	

1. Connect a 12 V. A.C. meter (630 M.A.) between pin No. 1 of the 7 pin miniature socket and pin No. 2 of all other sockets, except the compatron of which both 12 and 3 are tested. (630 M.A. should read 6.3 V.)
2. Return element switch No. 2 to 0 position then set element switch No. 3 to the No. 2 position. Repeat the voltage check for check for all sockets using pin No 3 (Pin 4 on compatron socket.) Repeat this test for all pins.
3. With filament voltage still on 6.3v. place a No. 44 lamp in the large 7 pin lamp testing socket. (Lamp should light)
4. Short the lamp testing socket momentarily. Overload lamp should light.

WIRING of SPECIAL SOCKETS (Top view)

4-5-6 COMBINATION SOCKET



LIGHTHOUSE



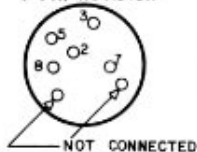
7 PIN SEPTAR



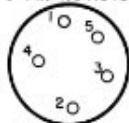
ACORN



7 PIN NUVISTOR



5 PIN NUVISTOR



BIAS VOLTAGE CALIBRATION (Disconnect Plate & Screen Std.)

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
0	0	2	1	12345-6789X	

1. Rotate "B" bias to zero and remove knob.
2. Connect D.C. V.T.V.M. between grid and cathode jacks.-
(Voltmeter on a low range)
3. Depress line test & hold during calib. check.
4. Slowly rotate "B" bias shaft till Voltmeter starts to read. Replace knob, positioning pointer at zero.
5. Rotate "B" bias to 50. (Std. should be on 50 V. range)
6. Adjust R-27 till Std. read 50 V.
7. Check points on bias scale.

10	20	30	40	50	
10.2	20.4	30.6	40.8	51	± 2% of 50
9.7	19.6	29.4	39.2	49	

8. Rotate "C" plate voltage switch to position No. 1. Connect a resistor decade box as a substitute for R-31. Set bias dial to 50. Adjust R-31 till Std. (10V Range) reads 5 Volts. (line Test Depressed)
9. Install R-31 and check.
10. Check points on bias scale.

10	20	30	40	50	
1	2	3	4	5	Volts ± 2% of 5
1.02	2.04	3.06	4.08	5.1	
.97	1.96	2.94	3.92	4.9	

LEAKAGE CALIBRATION (Disconnect Plate & Screen Std.)

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
0	0	2	1	13000-00000	

1. Connect decade box as a substitute for R-30. Place a short between pins No. 1 and No. 2 of any socket.
2. Adjust line test on, then turns shorts-leakage switch to H-K position. Adjust value of R-30 for full scale reading on 3444A.

3. Install R-30 and recheck. Tot. $\pm 2\%$ ($1\frac{1}{2}\%$ div. on 7b div. scale)

D.C. PLATE VOLTAGE CHECK

Switch settings.

A	B	C	D	Element Switches	Short-Leakage Value
6.3	40	2	1	1R34B-6769X	

1. Plug standard into 9 pin socket and grid cap.
2. Adjust line test on. Deptree value switch and rotate D switch through positions 1-2-3-4-5-6-7. All indicated voltages should remain the same. Release value switch and rotate D switch through positions 8-7-6-5-4-3-2-1. No reading should appear on plate and screen volt meters. Bias meter voltage should remain same.
3. Turn D switch to position No. 1. Recheck line test. Hold line test switch depressed and rotate C. Plate voltage switch and check voltages per following chart.

Tot. $\pm 3\%$ on all plate and screen voltages except position No. 11 which is $\pm 1\frac{1}{2}\%$. Bias voltages are approximate.

C Switch Position	Meter Range	Plate Voltage	Screen Voltage	Bias Voltage
1	300	263	263	1.5
2	300	263	263	35
3	300	263	130	35
4	300	263	130	1.5
5	150	113	113	1.5
6	150	113	113	35
7	150	113	57	35
8	150	113	57	1.5
9	100	40	40	1.5
10	100	40	20	1.5
11	30	23	23	1.5

4. Reset switches same as start of DC plate voltage check.
5. Connect 1500 Ω load between plate and cathode jacks. Adjust line test on plate voltage should not be less than 225 volts.
6. Remove D.C. Std.

V.T.U.A. Calibration

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value
0	0	2	4	15000-00000	

1. Connect H.P. 400D (Range .1 V). Place negative lead in Pin No. 1 of octal socket and positive lead in Pin No. 2.

- Adjust line test. Depress value switch and adjust R-17 (G_m check) for .0333 volt on the R.P. Then adjust R-50 for full scale reading on 3444A Vol. ± 1%.
- Turn bias dial to 50 R.P. reading should not increase more than .11V. Return bias dial to zero.
- Check all signal voltages ranges per following chart.

D Switch	HP Reading	
1	1 VAC	1.0% tol.
2	.333 VAC	
3	.1 VAC	1% tol.
4	.0333 VAC	
5	.0107VAC	

- Check half cal. on 1 volt range (Adj. osc output to give range)

SHORT-LEAKAGE SWITCH TEST

H-K Position

Switch settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	13000-00000	H-K

(Short between pin 1 & 2)

- Rotate element switch No. 2
Positions 3-4-5-6-7 Show short
Position Y shows 1 Meg.
- Depress Value (3)
Positions 3-6-7-8-9-x Show short

G1 Position

Switch settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	51000-00000	G1

(Short between 1 & 2)

- Rotate element No. 2
Positions 1-2-3-4-5-7 Show short
Position Y Shows 1 Meg.

Switch settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	11000-00000	G1

(Short between 1 & 2)

- Depress Value switch 3
- Rotate element switch No. 2

P POSITION

Switch settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	41000-00000	P

(Short between 1 and 2)

1. Rotate element switch No. 2.
Positions 1-2-3-6-6-7 Show short.

Switch settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	91000-00000	P

(Short between 1 and 2)

1. Depress VALUE 3
2. Rotate element switch No. 2
Positions 1-2-3-6-7-8-Y Show short

G2 POSITION

Switch Settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	61000-00000	G2

(Short between 1 & 2)

1. Rotate element switch No. 2
Positions 1-2-3-4-5-7 Show short
Position Y Shows 1 Mag.
2. Depress VALUE Switch 3
Position 1-2-3-7-8-9-X Show short

G3 POSITION

Switch Settings

A	B	C	D	Element Switches	Short-Leakage
0	0	2	1	71000-00000	G3

(Short between 1 and 2)

1. Rotate element switch No. 2
Positions 1-2-3-4-5-6 Show short
Position Y shows 1 Mag.
2. Depress Value 3 switch
Positions 1-2-3-6-8-9-X Show short.

33.3 OHM PLATE RESISTOR CHECK

Switch settings

A	B	C	D	Element Switches	Short-Leakage Value	Notes
0	0	2	1	15000-00000		(11)
(1)	Apply 5K Hz signal across 33.3 plate load resistor using appropriate isolation capacitors in signal generator leads.					
(2)	Connect VVM Std. (H.P. 400D) across 33.3 ohm resistor.					
(3)	Depress Value Switch No. 1.					
(4)	Adjust signal generator to give full scale on 3444A.					
(5)	Read H.P. 400D. (Should read 1 volt \pm 2%)					
(6)	If off, check 33.3 resistor and C2.					
(7)	Rotate plate switch 1 through 11. (Adjust signal generator if necessary to 3444A meter ON and read tolerance on H.P. 400D.) Tol. \pm 2%					

73-1140
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