

valves will overheat the unit, as the HT transformer will saturated with DC. The half wave valve load on the HT transformer may explain the need for over voltages so the valve warms up properly!

N.B. Two of the anode voltages come from the heater transformer!

THUMB WHEELS

Care must be taken when selecting the 9 valve pin thumb wheels to correct 10 option valve electrode connection. Plug in S G A electrode wander lead connections available for top cap & side screw types.

This must be done with the POWER OFF as any mistake may destroy the valve or damage the tester!

THUMB WHEEL		SOCKET		VALVE	
0 = Earth		5		5	
1 = Cathode	ALWAYS DOUBLE	6	4	4	6
2 = Heaters -	CHECK ELECTRODE	7	3	3	7
3 = Heaters +	VALVE BASE	8	2	2	8
(G) 4 = Grid (G1)	CONNECTIONS!	9	1	1	9
(S) 5 = Screen (G2)		PIN NUMBERING CONVENTION			
(A) 6 = Anode 1	Normal \	2		2	
7 = Anode 2	A2 Select	4	3	3	4
8 = Diode Anode 1	D1 Anode	5		5	
9 = Diode Anode 2	D2 / Switch				
		1		1	

[Not Side Contacts types!]

Multiple section valves are catered for, with up to 2 Anodes & 2 separate Diode Anodes. Grids are normally paralleled up with over sections, & for Mixer valves you use A2 as G2/G3 etc.

Insert valve in correct socket! Then power up, watching out for unusual signs of over bright heaters, no heaters, glowing anodes or screens. Switch off immediately & check settings & valve type.

CATHODE INSULATION

CINS test uses 3 changeovers to rewire much if the anode meter bridged test circuit to measure the leakage cathode to heater when 80V (105V!) AC is applied though the 50nF cap. (put Screen to 60V) [250kΩ is a GOOD insulation!]

N.B. The test uses Anode to Cathode rectification to drive the meter so the valve must be warmed up, with the Anode circuit connected!

HEATERS

The heater transformer has an internal mains taping adjustment if needed. Valves can be tested after about 1 min warm up for indirectly heated types & a few seconds for directly heated ones. Over doing the heaters e.g. 7.5V on a 6V valve may well quicken the warm up time, but lower initial voltage is best at 1st for heaters. Never over run heaters above the normal cathode temperature (dull red) as this WILL vaporise a cathode coating & stop emission! For dual/tapped heaters types use parallel connection.

As the whole valve warms up there may be differences (improvements) in measurements is the valve is soaked for 30 mins or so.

BATTERY VALVES

On the valve holder panel there is a heater 1/7 transformer to enable small directly heated valves to be lit at 1.4V when it is switched in & heater volts set to 10V, so never through this switch back to normal on 1.4V valves!

DIODE CURRENT TEST

This applies 14V via the 560 Ω & you measure the current on the 10mA scale with mA/V pot at to highest end.

REC CURRENT TEST

This applies 32V via a 91 Ω & you measure the current on the 100mA scale.
e.g. mA/V pot set to 100.

TRIODE/PENTODE GAIN TEST

Select Anode & Screen voltages as needed (from a AVO ref book!). Screen voltage must not be used without anode connected, as a Screen only current can damage some valves.

Valve Gain "gm" is measure by Zeroing the meter with DC offset from the SET ZERO" control, then throwing the "mA/V" key. With the "SET mA/V" set to the "mA/V" the "gm" position, the "gm" can be directly read off the meter scale.

The mA/V test switch applies either 1.2V or 1.1V AC to the G1 & the difference in anode current can be measured, or if the GM value is dialled into the SET mA/V pot, & Anode current bridge balanced SET ZERO, a GOOD/FAIR/BAD gain indication results.

TEST PROBES

The mains neon has 2 switched probe sockets (S), if plugged in these probes allow full mains voltage insulation testing on the leads for testing the unplugged valve. As there are 2 high value Rs on this circuit so it is quite safe really!

SAFETY

As there is no fuse in old appliances like this, I use a 1A mains plug fuse!

See my Tech buls on "Valves (Tubes)" & "Old Valve Radios"

Why don't U send an interesting bul?

73 de John G8MNY @ GB7CIP