

WHAT WILL MY VT1000 TEST?

The Orange VT1000 valve tester performs a series of tests based on typical valve failure modes.

Testing sequences include:

- Heater filament test: Short circuit
- Heater filament test: Open circuit
- Heater filament test: Tolerance check
- Heater cathode insulation: Short Circuit
- Tests for heater current abnormalities
- Screen grid test
- Dual test for double triodes
- Emission
- Inter electrode leakage
- Inter electrode short circuit
- Flash-over (arc detection, high voltage breakdown)
- Gas ionisation test

In addition to the tests listed above, the VT1000 performs a series of unique tests which are designed to filter out bad valves and to assess if the valve is good, or needs to be replaced.

“WHAT WILL MY VT1000 TEST?”

“The Orange VT1000 valve tester performs a series of comprehensive tests based on manufacturers design specifications and typical valve failure modes.”

| Parameter | VT1000 | Manufacturer Specification (Typically +/- 20%) |
|-----------------------------|---|---|
| Heater Voltage (All Types) | < 2 VRMS | 6.3 VRMS |
| EL34 Heater Resistance | 1 – 30 Ω | 4.2 Ω |
| EL34 Heater-Cathode Leakage | k Ω leakages improve ratings | > 100 M Ω |
| EL34 Plate-Cathode Leakage | >23 k Ω | > 100 M Ω |
| EL34 Screen-Cathode Leakage | >51 k Ω | > 100 M Ω |
| EL34 Grid – Cathode Leakage | 100 Ω Changes rating from 10 - 8 | > 100 M Ω |

In addition to the preliminary leakage (at 365 VDC for Power and 290 VDC for PreAmp) and heater tests outlined in the above table, testing consists of the following:

Power Tubes: With 250 VDC (295 VDC for KT88 and 6550) thru 6.8 k Ω applied to the plate (~ as well as the screen), it “Fails” or “Passes” and rates the tube based on the grid-cathode voltage required to establish and maintain ~ 19 mADC cathode current in conjunction with some unknown criteria established for the tube type.

PreAmp Tubes (12AX7s tested): 290 VDC thru 6.8 k Ω is applied to both plates thru separate 2.2 k Ω resistors. -0.9 VDC is applied between both grids and the cathodes of separate semiconductor diodes which have their anodes attached to each tube’s cathode (causing ~ -1.5VDC grid to cathode voltages). The resultant plate current flows, in conjunction with some unknown criteria established for the tube type, causes “Fail” or “Pass” and section ratings to be assigned.

Note that since all testing is conducted at only 10% $(2/6.3)^2$ of the manufacturers specified heater power, it would seem difficult to apply any of their other tube manufacturer design specifications. But, a 5751 passes the 12AX7 test (with “13” @3.3 mA and “15” @4.1 mA ratings). Normally (with 6.3 V heaters) that would be as much twice the current of a typical 12AX7 at -1.5V gate – cathode.

The VT1000 does nothing to vary the plate current flow or voltage after tube warm-up stabilization, so there are no **“Amplification factor”**, **“Voltage gain”**, **“Power gain”**, or **“Mutual conductance”** tests conducted. Nor are there any **“unique tests under varying load conditions”**.