Construction

Lampemètre FC 2010

Test your valves TSF, TV & hi-fi

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Part 1

This tube tester allows to measure the characteristics of the vacuum tubes as in operating conditions. No need of special transformers to build this project it uses standard Métrix U61 tube testers tables whose user manual Is available on the net.

You may also use the excellent Comte program (free) which is available at the following address: http://pagesperso-orange.fr/convoi/radlotsf/combix.htm

Figure 1. — The FC2010 valve tester finished in its case.

Why did I design and build this valve tester? Quite simply because by browsing through numerous magazines, including Radiofil magazine, I have not found a device that meets my objectives which are as follows:
- I do not have a coil winder, therefore, the valve tester should only use standard transformers, so easy to supply;
- be transportable using an aluminum case of 455 x 330 x 150 mm;
- use a matrix instead of numerous and bulky switches;
- read the measurements on LCD indicators (economic model at less than € 5) to avoid numerous scale switches, in the case of galvanometers.
The description is split into two parts. The second part which will be published in the next issue will describe the practical realization of this device. The wiring plan, the printed circuits and the practical realization of the matrix will be detailed there.
For all practical purposes, we recall in the diagram in FIG. 2, the principle of measuring the characteristics of a triode. On the block diagram in Figure 3, we find all the elements to perform this measurement:
- a low voltage PCB printed circuit supplies the filament of the tube to be tested.
- a high-voltage PCB printed circuit provides variable power to the plate.
- the negative polarization voltage is switchable in three ranges (5, 25 and 50 volts).

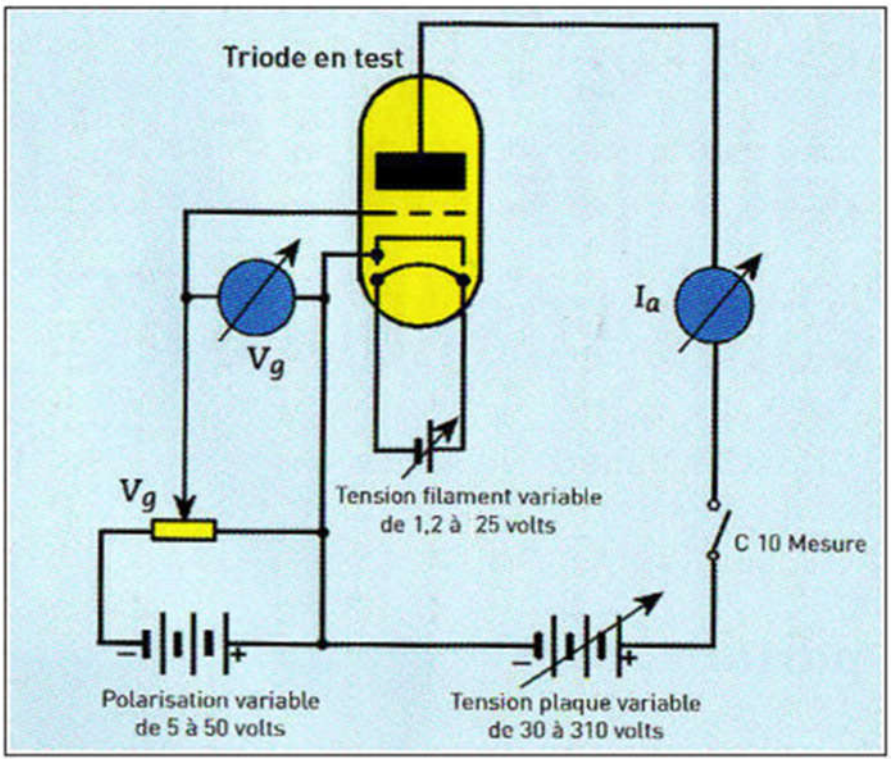

Figure 2. Principle of measuring the characteristics of a triode

1 – Overall description

See the diagram in Figure 3.

Low tension power supply

This supplies the filament of the tube to be tested. This can be supplied with voltage (V) or current (I). The available voltages are as follows: 1.2; 1.4; 2; 2.5; 4; 5; 6.3; 7.5; 9; 12.6; 20; 25 volts.

In constant current mode, three values are possible: 100,150 and 300 mA

High Tension power supply

— This provides three stabilized and adjustable voltages:
- a variable anode voltage from 30 to 165 volts for the 150 volt range and from 60 to 310 volts for the 300 volt range, with an available current of 160 mA maximum; screen voltage adjustable from 60 to 310 volts for the 300 volt range and from 30 to 165 volts for the 150 volt range.

Negative bias power supply

Selection by C9 makes it possible to use three different values:
- range 1: 5 volts adjustable from 0 to 5 volts;
- range 2: 25 volts adjustable from 0 to 28 volts;
- range 3: 50 volts adjustable from 0 to 52 volts.
The adjustment is ensured by a multi-turn potentiometer which offers greater precision.

The two power supplies for LCD displays

They provide four 9 volt 100 mA outputs.
The four LCD displays allow the following reading points:
- Anode voltage or Anode current by switching V/1