December 2023

My journey of building a great pre amp using the #26.

Around 2012 I read a great article in POSITIVE FEEDBACK ONLINE - ISSUE 16, about the use of the #26 tube by Kevin Kennedy. <https://positive-feedback.com/Issue16/kennedy.htm>.

See schematic 1.

I was quite intrigued but had no #26 or #01 tubes at hand.



Schematic 1.

Quite some time later I came across a box full of #26 tubes in a surplus store, some even in their original boxes.

I felt like a kid in a candy store.

And so my journey with the #26 started.

I first started with a simple schematic to see how the #26 tube would sound. See schematic 2.



Schematic 2.

It sounded OK, not great. Like modern indirect heated triodes.

So perhaps the cathode resistor and how I configured it all was perhaps part culprit on that.

So I changed some things and made battery bias. See schematic 3.

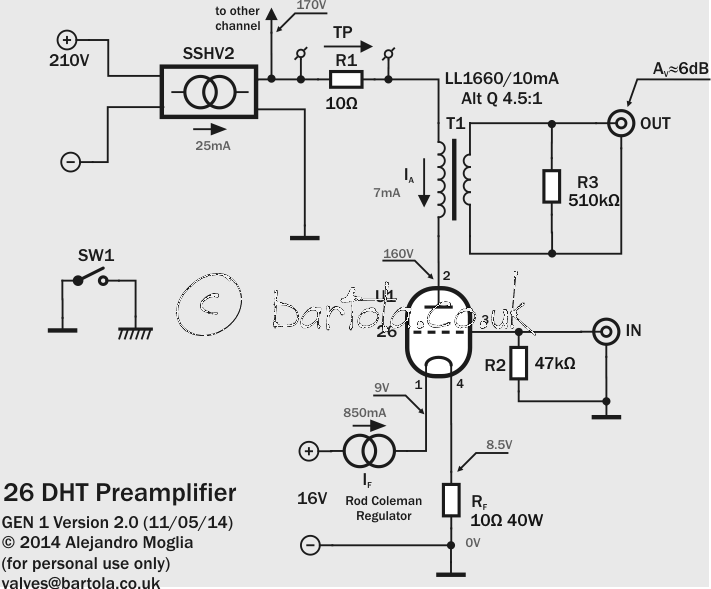


Schematic 3

It sounded better but not impressed my current preamp with a C3m tube sounded just better in all facets.

Then I came across Al Moglia’s excellent web site. <https://www.bartola.co.uk/valves/dht-pre-amplifier/26-dht-pre-amplifier-gen1/>

So I decided to build that one. See schematic 4. I prefer to have no capacitors in the direct signal path so this schematic was more on my preference.



Schematic 4.

I had an LL1660 laying around.

I did not used the Coleman current source but build my own with the LM338.

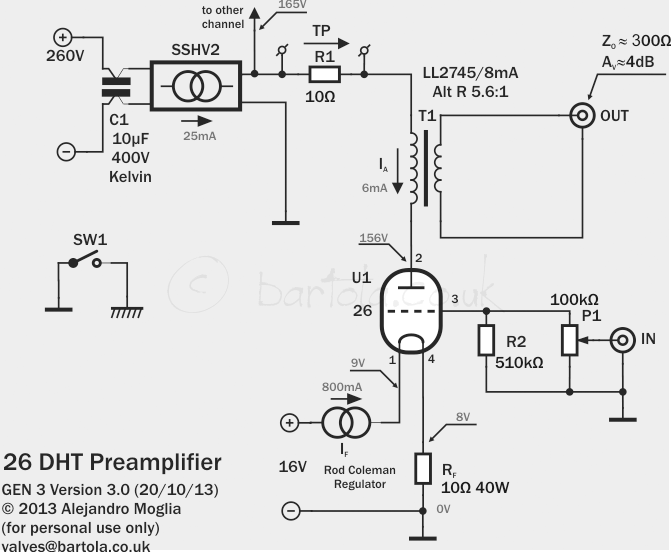
Did not used the Salas SSHV2 regulator either. Just build a stabilized power supply with the OA3 and OD3.

And the input resistor was replaced with an ALPS potentiometer.

This was a big step forward.

I read all about starving the filament and the sound and experimented with that by adjusting the current source. *More in this later*.

Then on Al Moglia’s web site I came across this schematic. See schematic 5.



Schematic 5.

Purchased the LL2745 and build it.

Again used the LM338 as current source.

Note the potentiometer is wrongly drawn in the schematic 5. Taper should go to the grid.

And again did not used the Salas SSHV2 regulator. Used the same power supply I used for schematic 4.

This was a good step up.

Also here playing again with the current through the filament (not knowing that I was killing my tubes, I wondered though why some broke, and thought was age)

Good thing I came across this article about filament voltages on Emission labs website.) <http://www.emissionlabs.com/Articles/TECH-BULLETIN/TB-05-Heater-Voltage/TB-05-Heater-Voltage.html>.

Well as I said I learned the hard way I was killing my tubes and Jac explained carefully why in that article. Good thing I had a box full.

My current starved tubes did not sounded well anymore after a while. Loosing bass and more things.

So with the knowledge of the emission labs website and reading through some other pages as well on the emission labs web site the next design was created. See schematic 6.



Schematic 6.

This was a huge step forward.

This sounded great.

I used also a grid choke here and a switch at the output transformer so I could change the absolute phase.

Then some notes:

No parallel resistor on the grid choke is needed if at the input a potentiometer of 50Kohm or less is installed.

When used as a driver amp consider installing a <47Kohm resistor parallel to the Grid Choke.

Filament voltage should be as close to 1.5 volt on the PINS. Do not starve the filament, this will damage the tube.

Do not ground the output of the LL2745. This will be grounded by the power amp. Not grounding eliminates ground loops.

Or ground the output RCA with the input RCA, and then perhaps do not ground the power amp.

Install the #26 sockets on sound dampeners.

You could also use tube dampener ring(s)

And that little circle below the 120 ohm resistor by the way is a ferrite bead

To make the amp even sounding better I soldered two caps of 4.3uF over the transformer plus voltage connection and cathode, see schematic 7.

This isolate the cathode parts, resistors and caps, out of the sound circuit.



Schematic 7.

Now I really start liking the sound. It outperformed now in musicality my C3m based pre amp.

The only improvement I could think of is using a better quality transformer which became the Nano crystal LL2745NC. See schematic 8.



Schematic 8.

It sounded now perfect to me. Woman’s voices you could pick the notes from the loudspeaker, I hear details never noticed before.

The notes for schematic 6 are also applicable for schematic 8 and 7.

I am going to keep this preamp for a while. It is dead quite.

This amp uses now for more than a year the same tube without degradation of the tube. (Jac was right about the filament voltage, as usual)

You could even make this pre amp even quieter by using a potentiometer at the output (instead of the input) now also reducing any noise generated by the tube anyway. Use only low value potentiometers like 1.5K or so. See principle in sketch 1. If you want to use a phase switch install that before the potentiometer.



Sketch 1

For completeness the current power supply can be found in schematic 9 and is installed in a separate case.



Schematic 9.

The 1.5 volt power supply for the filament I created using the LM338 (sketch 2) again but now as voltage regulator.

Get between 6 and 12Volt DC before the regulator.

The lower the voltage the less hot the regulator becomes.



Sketch 2

I hope my journey makes you look too at some of the earlier tubes made last century but surrounded by modern parts. You will happily surprised.

Robbert ter Haar

PS I am currently experimenting with this. See Schematic 10.

A battery in series with the signal path??

Robbert you said you do not like caps in the signal path and now this?

Well give it a try. It could surprise you.

It is Not my idea I got this idea from another excellent website. <http://www.troelsgravesen.dk/TRAM.htm>

If you want to build Troels WOT pre amp by the way use a Lundahl >15mA transformer.



Schematic 10.