

Which amplifier layout to choose and which output transformer (amongst the listed ones) is the best for the purpose ?
By Ari Polisois.

What I am going to say is subject to discussion and criticism. They are both welcome.

Because I do not think there is a universal and stiff rule that applies to the subject, my views could be true enough.

I believe that the first thought of a diy designer that decides to build an amplifier is: **how much power he needs.**

The valves he possesses influence a lot his decision. Most of diydb (Diy designers & builders) have some stock of valves they bought here and there or from Billington, Chelmer, Tubesandmore etc. at their early stage of activity or later. Buying new ones, if it is not absolutely necessary (this is seldom the case), means risking to add them to a dusty collection.

The following step is to check that the valves they have in mind can do the job.

Here I would suggest that they should refuse to be influenced by what a lot of people say about valves, often so superficially. I noticed many judgments, less in published articles but much more in forums (where anyone is free to say what he believes in, right or wrong), that are in full contradiction with my experience, based on built and tested amps with many different valves (2A3, 300B, EL34, 6080, 6336, 6C33C-B, etc.) and working more than satisfactory in every way. Of course, the same guys are ready to approve enthusiastically the high quality of the 300B, even if they have never built a single unit using this reputed triode, just because the risk of sustaining an opposite opinion, could involve being discredited in the reputation they have so hardly acquired attending the forum correspondence.

I will not say anything against the 300B quality, it is really a superb valve, but I believe that any other valve (except few, that have horrible curves) can deliver a definite excellent sound, if properly used.

By the way, the same applies to circuits.

The next step is to choose these. If you do not have a wide experience, consolidated by success and failure, you tend to rely on what authors say in their articles. Would you expect them to admit they had problems of different kinds, including a questionable sound ?

Then, what can a DIYDB do ? Almost nothing, unfortunately, unless he had a chance to listen repeatedly to an existing amplifier owned by a friend. This would give a good indication.

In this eventuality I would exclude the famous brand's amplifiers, because the possibility of getting the real circuit and layout and duplicate them is remote.

Therefore : this question remains unanswered (but maybe someone has something to add).

Once the circuit has been selected, the most important choice to face thereafter is **the output transformer**. Here, there are two main influences : the manufacturer's reputation and the price. I am not going to express any opinion on this point, for obvious reasons.

Feel free to follow your own conclusions.

Howevr, as regards the transformers listed in the "Products" section of this site, I shall talk about them because I know their characteristics, the way they are built, their qualities and their limits.

None of them is perfect, but, if you are willing to give them a thought, the following statements will help you not to make a wrong selection that is liable to disappoint you.

The OPTs listed belong to two different families of novel transformers (*) basically intended for the single ended layout :-

- The “Self compensated” , that ensure the DC offset of the idle anode current, irrespective of the intensity of same, instantly and automatically, without the need of monitoring nor adjustments.
- The “Split Core – Stereo Common Circuit” (SC-SCC), that works like a push-Pull transformer, but has “both channels on the same magnetic core”.
The above feature allows space, weight and cost savings; all of them of the utmost importance in a valve amplifier.

Some will object that they do not believe in the sound quality with two channels sharing the same iron. I can understand them; as I was also doubtful at the beginning.

When Gianni Mariani (**) and myself started designing and testing a real unit, after a long discussion at his Laboratory in Modena, Italy, we were not surprised to discover that the interference of the left and right channels was extremely low at the high frequencies, and acquired some importance only at frequencies below 100 Hz.

In fact, we had based our expectations on the same principle of the SC-OPT, namely, the effects of a loose coupling factor between two opposed primaries.

Regarding the low frequencies interferences, as you know, they do not really matter in the stereophonic process, but purists will certainly disagree (what else?).

On the other hand, many advantages were confirmed, making this novel transformer worth of being adopted, in consideration to a classis push pull transformer layout, in fact:-

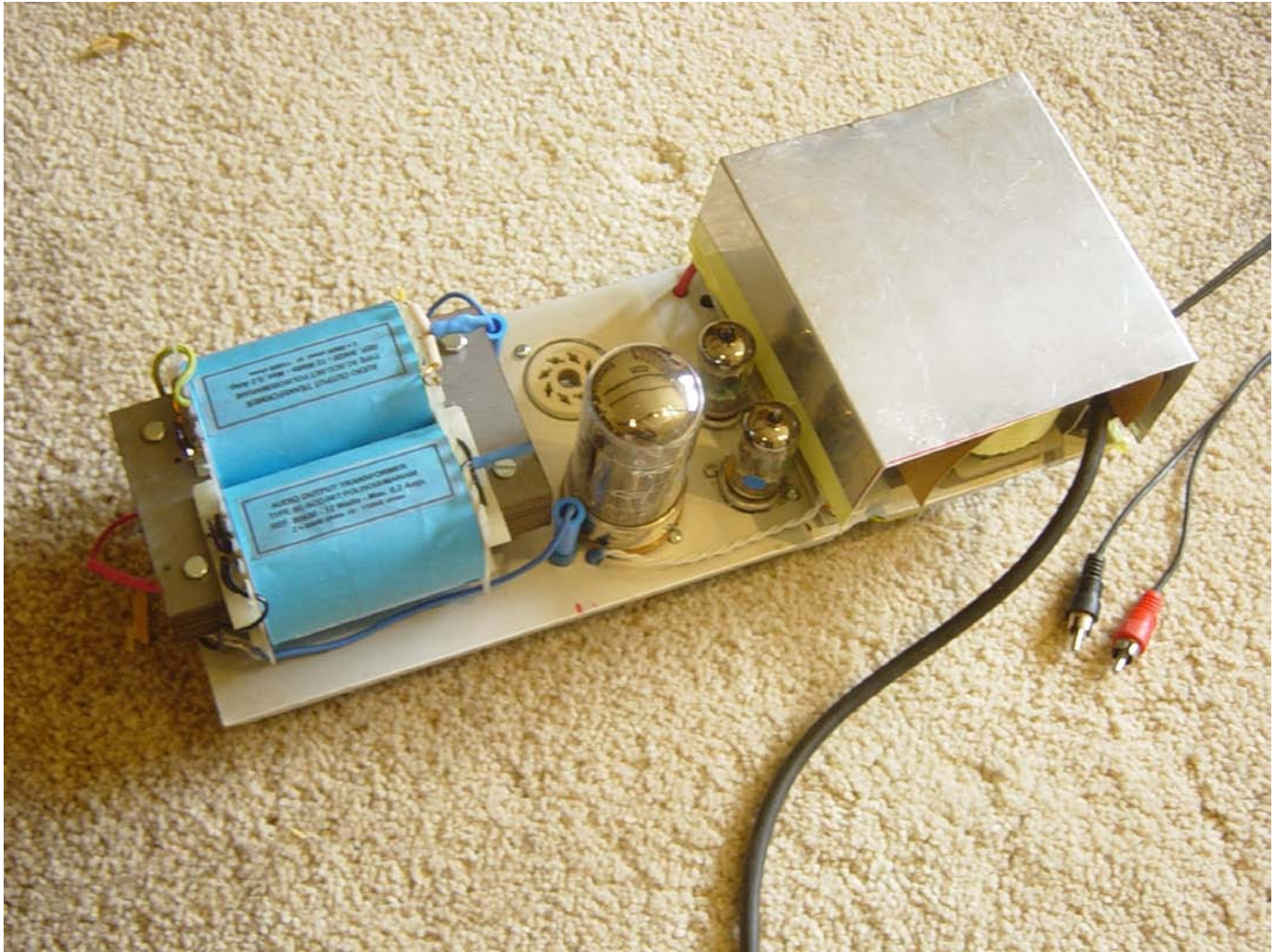
- a) **ONE** SC-SCC **replaces** **TWO** push pull transformers
- b) **You need ONE** driver per channel and **not TWO** (= less valves and components)
- c) **You can use ONE** output valve per channel, **instead of the TWO** (compulsory in the push-pull)..
- d) You can, therefore, make an **amplifier smaller in size, weight and cost**, if necessary (the last one I tested is the Spartan, whose photo is inserted below)
- e) The amplifier with this solution can be defined as a “**Double ended**” , combining the sound qualities of the Single ended, with the above advantages.

The **trade-off** concerns the low frequency end interference, due to the phases turning at a certain point. But, as mentioned, considering their limited effect on the stereophonic perception, I am sure many of you will accept this drawback..

Ari

(*) Please see the lecture held at the 2008 European Triode Festival (from Google, look for ETF 2008, where you can find several lectures and photos – the same will be included shortly in our site).

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(TO BE FOLLOWED)