Subject: Push-Pull 300B
Posted by Russellc on Mon, 16 May 2005 22:07:32 GMT
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Any interest out there in a push-pull 300b amp? For years I have thought about one of these, they are supposed to sound unreally cool. I first got this itch from an issue of Sound Practices. They were featuring a fellow who had built them for years from a giant stash of transformers he ownes. Interestingly, he built his amps on metal cake pans, the ones from the 60s with the slide of metal tops. Apparently he had a giant stash of these also. He just turned them upside down and built the amp! He wasn't interested in single ended, all he built were push-pull 300b amps. Anyone heard such a beast?Regards, Russellc

Subject: Re: Push-Pull 300B
Posted by colinhester on Mon, 16 May 2005 23:50:26 GMT
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Google under "push pull" and 300B. Look under "images" for several schematics. If you need a big metal pan to build these on, I've got a stack of 3 x 4' metal pans sitting in the garage I'd LOVE to get rid of....Colin

Subject: Re: Push-Pull 300B
Posted by Manualblock on Tue, 17 May 2005 00:32:34 GMT
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That was AL. He also used 6sn7's as driver tubes and 6sl7's as phase splitters. What a guy. Joe Roberts really liked those amps.Colin; lets talk about possible trade for cake pans.Lot of people drive 300b's with 300b's in PP.

Subject: Re: Push-Pull 300B
Posted by paba on Tue, 17 May 2005 17:42:50 GMT
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Oh and while you are at it, you can add to your amp a 300b for power regulation... there is an article on tubecad journal with circuits.300b driver300b output (PP so atleast 2 300b) 300b regulatorshould be a pretty expensive amp.

Subject: Re: Push-Pull 300B
Posted by Russellc on Wed, 18 May 2005 19:49:22 GMT
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Yes, Al was it? I still have my copies of sound practices mags around somewhere or the other. They had selected him as recipient of a pair of single ended transformers but he turned them down stating he much prefered his 300bs P-P to single ended and suggested they give them to some young diyer. They had his schematic on their web site of the day, but I never downloaded it. Don't have the schematic do you? Anybody?Russellc

Subject: one is on my list...
Posted by PakProtector on Fri, 20 May 2005 10:44:59 GMT
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Hey-Hey!!!,One such beast is on my list of amps to build. It is a bit far down the list for a few reasons, the main one being I find dealing with Pentodes a bit more fun(and some Tantalum anode DH pentodes are in my sights.An 8k a-a with 20W of core rating would be my choice. 10k a-a is twice the SE load of 5k and cuts maximum power just a bit more than 8k a-a. E-Linear taps at ~10% and B+ ~370. Higher load would allow a higher B+ w/o leaving class A and leave more volts for the front end. Keep it absolutely Class A bias, perhaps even to the point of limiting power a bit. 12 or 14 Watts is hard to tell from 17...For the front end, a differential pair of 6C45's look quite good. Hard to get a matched pair I am told, but I have heard them built in PP DHT amps to good effect.Lots of options for sure, and with good OPTx design, it will be hard to make it sound bad...regards,Douglas

Subject: 6S45Pi
Posted by Damir on Fri, 20 May 2005 12:13:05 GMT
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I have two pairs, bought as "matched", but for the differential "work" they probably need some "trimming" (high gm = small change in Ugk=large change in Ia). Fantastic tube, high µ and gm, 1mm thick Ti-anode, Pt- grid wire, very linear, but needs some attention to avoid "transistor sound" (k5) - better run on lower current (by Pete Millett measurements). Then oscillations are higly possible, maybe best to use "stoppers" on both grid connections, and all four cathode connections.It`s high on my list too (300B driver), but too many other options to try, and I`m too lazy...Another not so good feature is that it needs bias in the -2...2,5V area, broadly speaking, and cannot "accept" full 2Vrms signal from CD source... And we need about 2*55Vrms input (min.) in 300B pair...not so easy even for 6S45Pi in diff. driver. But, one stage driver sounds good:-).At least, if nothing concretly, I posted the picture:-)

Subject: 6S45Pi diff pair input signal headroom
Posted by PakProtector on Fri, 20 May 2005 12:55:29 GMT
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Hey-Hey!!!,If you arrange a common cathode differential pair for phase splitting, one grid will be grounded, and signal will be applied to the other.With the -2V of cathode-grid bias on them, the input headroom will be twice that assuming a few idealizations(like perfectly linear valves). apply a 1V signal (say a DC voltage) and the cathode voltage will increase by 0.5V There will be a +/- mu/2 plate voltage change on the anodes(the input section will go - and the grounded section will go +). The anode-anode voltage change will be mu*input voltage. Accounting for nonlinearities, most of which cause 2nd order distortion, the actual headroom will be slightly different.regards,Douglas

Subject: Re: 6S45Pi diff pair input signal headroom
Posted by Damir on Fri, 20 May 2005 19:05:07 GMT
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Yes, I described my experience with SE driver, and forgot that diff. driver is totally different beast. About half of the input voltage we`ll "see" at the cathodes, you are right. (The last time I tinkering with "long-tail" circuit it was on the guitar amp about 5 years ago:-)).I forgot one other thing - diff. pair cancels even and sums odd harmonics, probably not a good thing with already "difficult" 6S45Pi?Well, YOU must try it in the real world, and see/hear I used rel. low values of grid-leak resistor, too.But, with 2Vrms input on the grid of V1 we can expect about 40Vrms per anode out, too low for 300B.

Subject: but, but, but...
Posted by PakProtector on Sat, 21 May 2005 23:10:03 GMT
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with a 2.24v grid bias you can feed them almost 4.5 volts before you get grid current on the input valve. Perhaps 4.3 volts peak, or +/- 4.3 v would give a better idea of maximum output at the anodes. High gm valves probably get a bit of early grid current. Certainly the lower gm 6H30 gets grid current before its cousin the 6H6....regards,Douglas

Subject: Re: but, but, but...
Posted by Damir on Sun, 22 May 2005 07:00:29 GMT
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Yes, we need 3Vrms at the input for full output (about 2*60Vrms), but I mentioned 2Vrms like "desirable" input sensitivity (max. CD output).We`ll definitely need a preamp... something like "Guinevere"? P.S. how you guys solved input switching, (cheap) volume pot problems, etc.? I looked at the some commercial stepped attenuators and input switches, but the price...

Subject: so then....
Posted by PakProtector on Sun, 22 May 2005 12:27:12 GMT
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With an 8k a-a, B+ can be 360 V, plus 75-80V of cathode bias, and B+:ground can be 450. No problem getting a 200v p-p swing(per plate) out of a supply like that. Go to 10k a-a and we can be absolutely sure of Class A operation if bias is in the 80-90 mA area.Use a CCS instead of a resistor, or perhaps an unbypassed R for the cathodes. I suspect the R will give better overload performance than the CCS.I'd rather build a low gain pre like Guinevere with 12B4's and roll a bit of gain into the adjustable volume control/buffer stage. Or take 12B4's and keep the 5687 gain of Guinevere. there is something to be said of two stage amps and linestages with gain. Work together on system requirements instead of building the whole thing to a specific standard of sensitivity(which will set limits on tube choice somewhere in the chain...).regards,DogulasPraise the Lord, and pass the 813's!

Subject: Re: so then....
Posted by Manualblock on Mon, 23 May 2005 23:01:52 GMT
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O'Kay; so whats next? Doug; when will you be settling on an amp to exhibit these thought experiments.

Subject: Re: so then....
Posted by PakProtector on Tue, 24 May 2005 00:08:29 GMT
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Hey-Hey!!!,I am building a pair of monoblocks with 4E27 finals. It is a valve somewhere between a HY69 and an 813 in ratings and dissipation limits. L-C power supply of between 600 and 700 volts. Current delivery of ~300 mA. Ultra-Linear rigging of the finals and E-Linear front end. Cascode differential amp like Merlin. I am not exactly sure how the finals like their U-L connection, so I will be fairly sure of getting where I want to be with those options.I need to get paid a few times before I order the Iron, but I don't think anything will change very much. I have been fairly

sure of this design for a bit now. It's just a matter of scale, those OPTx's would be just as happy with a pair of EL84's as 845's.Still need to decide upon the specifics of the cascode front end, there are quite a few options. I will be posting notice before ordering the OPTx's so as many folks as possible can throw in their money and net us a good price on a bigger run of them.regards,Douglas

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Subject: Re: so then....
Posted by Manualblock on Tue, 24 May 2005 10:37:01 GMT
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O'Kay then; well just wait here.

Subject: Ha!
Posted by PakProtector on Sun, 29 May 2005 11:40:43 GMT
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I like this Al guy already. I must find a way to make his acquaintance.regards,Douglas

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