
Subject: Parafeed vs transformer coupled
Posted by [Gilipsie](#) on Mon, 12 Nov 2007 15:02:42 GMT
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Can anyone explain the technical reasons for going parafeed as opposed to transformer coupled? I see there is a cap connected but they look nearly the same except that. What does the capacitor give you?

Subject: Re: Parafeed vs transformer coupled
Posted by [RC Daniel](#) on Sat, 17 Nov 2007 09:49:27 GMT
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Howdy,Below, I have included quotes frfm others far more knowledgeable than I. As for differences between the two topologies, when looking at circuit diagrams, you should notice a few things. In a parafeed diagram, the power supply (B+) should connect to the output tube's plate via a plate choke (or CCS etc.); in a series-feed diagram, the B+ should connect to the output tube's plate via the transformer (which is gapped to carry the necessary DC current). The parafeed circuit has the capacitor you noted to block any DC current that might want to make its way to the transformer. There are lots of theoretical advantages to the parafeed output, however, to realise these, the core of the output should be permalloy, cobalt etc. rather than plain old iron. That's fine, as parafeed is 'easier' to make with these cores than series-feed. Also, despite parafeed's theoretical benefits, some people believe gapping a transformer linearises its core and provides some sonic benefits and others claim they can hear the parafeed cap in the signal path. Anyhow, read the comments from the pro-parafeed camp below – they provide some detail as to the benefits. Also, you could read this (you can ignore the PP stuff): <http://homepage.mac.com/tlinespeakers/vaughn/downloads/SE-v-PP-Part2.pdf> Voltsecond (2002):I don't fully understand yet why a Parafeed works as good as it does but I am still attacking the problem. A Parafeed will have much more power supply rejection than a SET. With a 10H choke in B+ it could be 50 dB more. The choke in the B+ both stores energy for the output and blocks power supply ripple voltage from getting on the output. The Parafeed naturally removes sub-harmonics from the output transformer making the output transformer's job easier. At low frequencies with the right coupling capacitor, the AC voltage on the plate is reduced without reducing the amount of voltage supplied to the speaker. This reduces the amount of AC current change in the plate choke which allows it to work to a lower frequency before it runs dry (stored current drops to zero.) If you want to design a little bass boost into a Parafeed, you can. But don't think this is why the Parafeed has good bass. With lossy parafeed I am trying to remove as much of the bass boost as possible. Doc Bottlehead (2002):An air gapped transformer will generally have much lower inductance than a interleaved transformer built for parafeed use. This is important because the inductance of the OT works in parallel with the inductance of the plate loading choke. A parafeed trans will tend to have very high inductance, maybe 200H, so it's influence on the overall inductance is relatively minor when paired with say a 30H plate choke. mqracing – of Magnequest (2006)awe... probably 99.9 percent of all series fed tranneys have the signal going to ground through the power supply (which is as the name suggests in series with the audio signal). And what is the first thing the signal sees in the series feed circuit after the

trans? The last capacitor in the power supply filter circuit. Usually a 10, 20, 40 or more mfd capacitor. Right smack dab in the signal path. But... if you hide the cap... then a lot of folks will "see" a contrast... even in the case where the parafeed blocking cap is in the same exact position schematically as the series fed power supply cap. But, yet, many folks will not see this series capacitor in the signal path... just as they don't ever see all the tiny little capacitors (many, many of them) in any audio transformer... and in some cases (like a 1:1 bifilar wound critter) the capacitance can be rather large... and responsible for most of the effective coupling above a certain frequency. Anyhow, that lot can be a little confusing... perhaps best to read the article linked above for a bit of context etc. Cheers Raymond

Subject: Re: Parafeed vs transformer coupled
Posted by [Bill Epstein](#) on Sun, 18 Nov 2007 20:01:43 GMT
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Reserching my article on the Simple 45 amp I Googled an article by Steve Bench and included this: The "parafeed" (parallel feed) uses a large choke to provide the DC voltage to the anode (of the power tube, bold characters are mine). This choke must be large in value, and provides a relatively high impedance (a good thing) at audio frequencies. The output transformer is capacitively coupled to the anode (of the power tube)... The advantage of this kind of mechanism is the choke and the transformer can be individually optimized: the choke for saturation capability, and capacitance; whereas there is no DC in the transformer, so it can be made relatively smaller, providing both lower capacitance and leakage inductance with respect to its primary inductance. This is a long-winded way of saying that it is possible to achieve wider frequency response (especially in the bass which is why the Robin Hoods work so well). There are four other advantages to this circuit. First, the capacitor inserted allows a low frequency "extension" ... The second is that additional low frequency poles can be more easily controlled... The third is reduced "hum". ..The fourth advantage of this circuit is since the transformer has no high voltage DC on it, the transformer can be replaced with an "autoformer" (a single tapped winding) allowing the output autoformer to be further optimized. "In regard to the possible disadvantage of a large capacitor in the parafeed output, Mike Lefevre has this to say, 'the power supply is also in series with the output and it has of necessity very large capacitors. An additional one that has the merit of reducing hum and blocking DC really isn't all that bad a thing' The full article is on the net somewhere.

Subject: Re: Parafeed vs transformer coupled
Posted by [Gilipsie](#) on Sat, 01 Dec 2007 21:09:12 GMT
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Sounds like there is no advantage to pure transformer coupled outputs then. Is that the general consensus? Parafeed is always better?

Subject: Re: Parafeed vs transformer coupled
Posted by [SteveBrown](#) on Sun, 16 Dec 2007 13:26:28 GMT
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I'm not sure I'd say that. Look at Lynn Olsen's work on amps like the Karna. Or look at Gary Pimm's work on his PP 47 amp. Now, I'll note that these are both PP designs, where things are much more balanced. A great alternative in SE to the parafeed choke is to put a constant current source (CCS) in the anode of the output tube, and then cap couple to a non-airgapped transformer. This replaces the need for that expensive and bulky choke. But it comes at a price - the B+ will need to be about 2x what you need otherwise. Performance is much better with the CCS up there, however, since it offers a much higher anode load and does so much more linearly across the audio band (e.g. no inductive reactance to worry about).
