Subject: Amp Kits
Posted by Manualblock on Sun, 23 Jan 2005 14:41:33 GMT
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The difficulty with providing kits for electronics lies in the choices the manufacturer needs to make in order to provide for some measure of profitability. In a tube amp kit; the most expensive aspect of sales is not the parts but the need to provide for aftermarket customer support, which is particularly involved in the case of kits. The parts of a tube amp; other than the transformers and chassis are not pricey and therefor have a limited profit possibility. At the 5-600$ point there is very little room for maximising profit potential; in fact the only flexible option is parts and the only parts that offer a serious cushion whithin which to float is the transformers. How much can you save on a capacitor or resistor. So therefor the manufacturer must by definition cut costs on the iron; which is the most important part of a tube amp. Case in point; Bottlehead started as a group of guys selling kits in order to fund their own purchases. It helped that one of their members was a transformer winder. They did not need to make a big margin to survive. So they could sell cheap with decent iron. Once a kit is built with marginal transformers, no amount of tweaking will ever get the amp to the next level. That is the drawback to all tube amp kits as I see it. Even with economies of scale they still cannot sell enough to enable a serious transformer set to be feasible. So you are doomed before you start to mediocre performance.There are rumours; unsubstatiated but from a good source that Magnequest wishes to leave the DIY community entirely due to low profit and high maintainence. I think we will see more of that as the year progresses.

Subject: Re: Amp Kits
Posted by Wayne Parham on Sun, 23 Jan 2005 20:32:42 GMT
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You really should check out that Stoetkit, if you haven't already. Heart makes their own transformers and chassis, and I understand they make them as an OEM for a lot of other manufacturer's too. So that lets them bring a top-notch product to the market at an entry-level price.Also, Douglas (Tnuctipun), here and over in the Group Build forum, has contacts with another transformer winder. I don't know much about the details, but I understand that the quality is very good.

Subject: Re: Amp Kits
Posted by Manualblock on Sun, 23 Jan 2005 21:38:18 GMT
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I reviewed the Stoetkit from FSA audio and was impressed what one could hear for the price; which was very affordable at about 700$ for a tube integrated amplifier kit that looks beautiful.However; the issue of transformer quality boils down to one of simple economics. They

are labor intensive to build; they require large amounts of material and extensive attention to quality control. Not to mention they are heavy and expensive to ship. They are design dependant; ie. they are usually specific to each design so as a result they are small batch items. They have an inordinate effect on the sound of tube circuits, poorly regulated and constructed examples result in poor sound period. Well constructed units are expensive. Quality units are big and heavy and rely on the quality of the raw materials used to construct them for their sound. There are no exceptions to this rule. With transformers; Quality=money. And you can't design around poor transformers. Cheap trans are not good; good trans are not cheap.My point was the cost of good iron prohibits designers from making money on inexpensive amp kits. So by definition they must compromise on the transformers and no amount of tweaking passive parts can overcome that limitation.

Subject: Re: Amp Kits
Posted by PakProtector on Sun, 23 Jan 2005 23:31:03 GMT
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Hey Hey!!!,While not exactly exceptions, there are wys around expensive TX's. The manufacturing costs are a major factor in stuff like vlave output transformers. For power Iron, it is a fine line between spending more money researching how cheap you can go v. getting something a bit on the big side for a bit more money.For example NC winders v. 'by hand'. let alone the antics of what must be built like an electronic card shuffler to stack the lams v. 'by hand'. THe NC machine can be told how to handle TFE wrapping, or what ever the wire gage is, and it will do it quite well. Contrast this with soe knuckle-head who has either run out of pot the day before or has been indulging in the weed whilst winding your TX. I think I'll stick with the NC machine. Just need to tell it how to interleave, so get a good model and take it apart if you're in a big hurry. The R&D which would have to get spent on a new design makes things more expensive again.Anybody have a Harman Kardon Citation II with a toasty opt? Think Homer SImpson's cloning hammock, put the bad one in(along with some money for the winder) and out pop two new copies. Or one of the properly useful UTC Linear Standard series....name your fav, it can be copied and modified for new circuits. Put the tap for U-L just where you need it for what ever vlave you decide to use...regards,Douglas

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Subject: Re: Amp Kits
Posted by Manualblock on Mon, 24 Jan 2005 00:30:37 GMT
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What about Acrosound Iron. There seems to be quite complete directions from the original winders on the net. Any thoughts. BTW The Citation II;I was never a big fan. On a personal level I thought the V sounded better. Don't think they used the same Iron. Then again lot of people like the II better so who know's? I like the big trannies on the old Eico 20's.

Subject: Re: Amp Kits
Posted by Wayne Parham on Mon, 24 Jan 2005 00:34:44 GMT
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Hi Douglas,Did you happen to see that Stoetkit John and I were talking about? It's a UL P-P amp that develops 9 watts. The transformers are nice and they come with attractive metal covers, mounted on the chassis. This little amp looks great and sounds great too. As entry level tube amp kits go, it's definitely one of my favorites.Wayne

Subject: Re: Amp Kits
Posted by PakProtector on Mon, 24 Jan 2005 01:13:06 GMT
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hey 'block,can you direct me to this mass of information on the Acro OPT's? I have a TO330 and 300 waiting for an appropriate project(and their sacrifice to the cloning process at Heyboer). I have my suspicions about the 300, the 330 seems to be a bit more complex...regards,Douglas

Subject: Re: Amp Kits
Posted by Manualblock on Mon, 24 Jan 2005 12:52:59 GMT
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It is probably the same sites you have already accesed. I would ask have you tried a patent search? I believe it is still free from the patent office but you do need the original patent no. Sowter makes a copy; you probably know all this so excuse me if I am redundant. There was a article in Sound Practices that told of winding your own and I believe they used an Acro. I'll check unless you already have. Sorry could not be more help. J.R.

Subject: transformers
Posted by akhilesh on Tue, 25 Jan 2005 15:47:08 GMT
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Based on my limited knowledge, output trannies are very important in the standard direct coupled SET mode. Output trannies for parallel feed amps (like doc bottlehead's) are much less important. Output trannies for PP are also less important, though for UL they may make soem difference. POwer trannies i think make much less difference, assuming they are a hammond or above.Bottom line, i think output trannies matter only in the direct coupled mode SET config...the good ones sell for about $600 a pair!Even the James trannies in my custom SET 45 sell for about

$200-$250 a pair. The output trannies in a parafeed config like the bottleheads would sell for much less (they are much less critical and their mfg requirements are much less)..my guess would be $20-$50 a pair. thanxakhilesh

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Subject: Re: transformers
Posted by Manualblock on Wed, 26 Jan 2005 01:14:46 GMT
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Sorry to disagree but power trannies require very good regulation and high permeability and low internal resistance in order that they are able to provide adequate current when needed and that they do not roll off the frequency extremes. There are no tube functions where a transformer is not very important, not even Parrallel circuits.

Subject: Re: transformers
Posted by Wayne Parham on Wed, 26 Jan 2005 03:24:55 GMT
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Hey Akhilesh,You oughta get into the Guinevere project on the Group Build forum. I think you'd really enjoy it. Interested?And by the way, Bill Wassilak announced he's having the next GPAC meeting at his house on the 5th. See you there?Wayne

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Subject: transformers
Posted by akhilesh on Wed, 26 Jan 2005 08:18:24 GMT
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I agree John! trannies are important in all aspects of the tube circuit. I guess my point was (and of course its just my opinion) that the engineering demands on the output trannies of a directly coupled SET are much greater than, say, for the power tranny. This does not mean that a bad power tranny will do. -akhilesh

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Subject: transformers
Posted by akhilesh on Wed, 26 Jan 2005 08:22:22 GMT
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HI Wayne, will check it out. Feb 5...i think we have some thing to go to between 3 & 5 pm, which I will try to get out of, since I really want to attend the GPAC meet. -akhilesh

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Subject: OPT Iron
Posted by PakProtector on Wed, 26 Jan 2005 10:49:03 GMT
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Hey-Hey!!!,Sorry, I must disagree with the idea that a good OPT is only going to really benefit a DC SE amp. Not my experirience. I have found that PP requires the same sort of consideration. Even for measured paramenters like leakage L and capacitance. It is not just OPT's, other signal Iron is also very dependant on its construction details for excellent sound. Good sound is easy. Four triodes, two or them low mu power valves like 2A3, a good OPT. With some careful design, and implementation, we can make the leap to excellent. We could just as easily start with EL34, 1619, 807 or 13E1... regards,Douglas

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Subject: Re: OPT Iron
Posted by akhilesh on Wed, 26 Jan 2005 11:56:05 GMT
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HI Doug,I agree with you. I don't think anyone said that ONLY a DC SET will benefit from good iron....far from it. However, the engineering requirements for the output tranny of a dc SET are significantly more demanding than for a parafeed SET, or a PP. Hence, the variation in quality is much more, and they also tend to be very costly. what do you think?-akhilesh

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Subject: Why?
Posted by PakProtector on Wed, 26 Jan 2005 12:07:36 GMT
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what is it about a DC SET that is so much more demanding of the OPT compared to a PP amp?regards,Douglas

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Subject: Re: Why?
Posted by akhilesh on Wed, 26 Jan 2005 14:20:59 GMT
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HI Douglas,IN the standard transformer coupling, single ended situation, the major disadvantage of the method is the average DC current that flows in the circuit must be supported by the transformer, making the transformer relatively large so that it does not saturate due to the DC only. This is probably the most common output coupling method, as it is relatively simple. At quiescent conditions, the power supply voltage appears on the plate (minus a little loss due to the IR loss in the transformer. During signal conditions, the output swings above and below the supply voltage. akhilesh
http://members.aol.com/sbench/outstru.html

Subject: Re: Why?
Posted by Manualblock on Wed, 26 Jan 2005 14:48:05 GMT
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Thanks for the Link AK; So in the parafeed you need to replace an expensive transformer with an expensive large choke; and in PP the mis-match unbalanced DC causes frequency imbalance; requireing much higher HT and therefor larger transformer.. Is that correct?Thanks J.R.

Subject: Re: Why?
Posted by TubeCraft on Wed, 26 Jan 2005 15:28:29 GMT
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"So in the parafeed you need to replace an expensive transformer with an expensive large choke.."Don't forget it could be a simple resistor, or an itty-bitty CCS... (I like the sound of the resistor-loaded version best. Yeah, they'll both need more HT.)TC

Subject: Re: Why?
Posted by Manualblock on Wed, 26 Jan 2005 16:30:19 GMT
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Tube-craft; thanks for the reply. Let me ask; you really like the sound of the resistor loaded version better? I don't have the experience to be able to judge so I am relying on your reply. So; what does it do better?I have heard the Bottlehead Paramours and think they sound pretty good except one thing I have always noticed listening to them with the Foreplay and Seduction ; and that is a certain grainy harsh sound on the mids that becomes more apparent on certain recordings. And a kind of brittle mettalic sound on certain instruments ie. cymbals and stringed instruments like violins. Since they are choke loaded para-feed I wondered what your experience is. I've always ascribed the sound to their use of SS rectifiers; so maybe thats wrong.Thanks J.R.

Subject: Re: Why?
Posted by TubeCraft on Wed, 26 Jan 2005 17:56:03 GMT
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Well, in theory, the resistor should load the tube more evenly across a wider frequecy range than a choke. And, there seems to me to be a lot of wierd interaction between a choke load and the coupling transformer, (and the all-important parafeed cap) - wierd in that it is very difficult to predict how it will sound - it can sound great. And, of course, the resistor is smaller and cheaper - but it needs more HT to deliver the same swing as a choke loaded circuit.If you need the voltage - use a choke, but I think a resistor gives a smoother, more coherent response (in some set-ups). Or I may just be lazy.Both my amps, SE and PP, are transformer driven in a parafeed connection with a resistor load instead of a choke. My preamp is resistance loaded parafeed.All this being said - my parafeed SE amp is choke loaded on the output. I'm too lazy to build that big of an HT supply!Let me say this, too. I'm not nearly smart enough to have figured out any this stuff on my own. Read Steve Bench's article on parafeed - he's someone who really knows his stuff.TC

Subject: Re: Why?
Posted by TubeCraft on Wed, 26 Jan 2005 17:58:05 GMT
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Well, in theory, the resistor should load the tube more evenly across a wider frequecy range than a choke. And, there seems to me to be a lot of wierd interaction between a choke load and the coupling transformer, (and the all-important parafeed cap) - wierd in that it is very difficult to predict how it will sound - it can sound great. And, of course, the resistor is smaller and cheaper - but it needs more HT to deliver the same swing as a choke loaded circuit.If you need the voltage - use a choke, but I think a resistor gives a smoother, more coherent response (in some set-ups). Or I may just be lazy.Both my amps, SE and PP, are transformer driven in a parafeed connection with a resistor load instead of a choke. My preamp is resistance loaded parafeed.All this being said - my parafeed SE amp is choke loaded on the output. I'm too lazy to build that big of an HT supply!Let me say this, too. I'm not nearly smart enough to have figured out any this stuff on my own. Read Steve Bench's article on parafeed - he's someone who really knows his stuff.TC

Subject: Re: Why?
Posted by Manualblock on Wed, 26 Jan 2005 17:59:50 GMT
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Thanks; Will do. He is the real deal.

Subject: Re: Why?
Posted by akhilesh on Wed, 26 Jan 2005 21:19:51 GMT
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"So in the parafeed you need to replace an expensive transformer with an expensive large choke"Not quite. a transformer wwit ha small gap is MUCH harder to make than a large choke. -akhilesh

Subject: Re: transformers
Posted by Wayne Parham on Fri, 28 Jan 2005 04:13:29 GMT
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I think output and interstage transformers have more requirements than power transformers.Power transformers need to be efficient at line frequency, and they need to be able to pass current without fatigue. It's nice if they are physically robust too, with sturdy construction and wiring and with laminations that don't vibrate and buzz. But basically, they work at a single frequency and they aren't required to do much but transform line voltage to the levels required.Output and interstage transformers are required to pass a wide frequency range and may be in the presence of reactive components. They are asked to pass a bandwith of three decades and to be flat even if other reactive values in the circuit change. So in my way of thinking, these are really pretty critical components.Just my 2¢

Subject: Re: transformers
Posted by akhilesh on Fri, 28 Jan 2005 13:23:40 GMT
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I agree totally, Wayne. ANd this is reflected in the prices, too!-akhilesh