Subject: RIAA preamp?
Posted by Damir on Thu, 03 Feb 2005 17:39:57 GMT
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Hey, just a thought - oversized PS with free 2x300V winding, big chasis - why not put RIAA preamp inside, selectable to the input (100k pot) of the line preamp?I tinkered for a few hours about this idea today - I tried to be as simple as possible ("all in one go" EQ, just one double triode), and without "exotic", hard to find values for the RIAA EQ - R1, R2, C1, C2. The little "trick" is to find the C1 cap with little lower value then standard 10nF, about 9,76 nF (not a big problem actually, most of the standard 10 & 20 % caps I tried are little lower in value). Then, with our RIAA equations: R1C1=2187uS, R1C2=750uS, R2C1=318uS, C1/C2=2,916 we can find:R1=224 kOhms - our Rout from the first stage is about 3k, and we can use standard E96 value, 221k/1% (even E24 value 220k with small selection)R2=32,58 kOhms - little tricky, we can select between some 33k resistors, or use some cobination, or just use E96 value 32,4kC2=3,347 nF - "input" capacitance of the second stage is about 47pF, and just use standard 3,3nF cap of your choice (2,5% tol. if possible)If we want to use this preamp to drive more then few cm of cable, then we can use active DN2540 load for R7=15k, and use low imp. out. Theoretical amplification is about 80 times/1k, more then enough for "normal" MM cartridges + our line stage.Well, this is just some thoughts/computing/simulations (almost perfect, of course:-)). Is not a problem to build it, problem is that I don`t have the quality measuring devices to actually try RIAA accuracy:-(. Maybe...hm...Doug? And, BTW - some other tubes besides E188/7308 can be implemented, probably E180CC, maybe 6N1P or so... Both triodes work with rel. high current, Ia1=10mA, Ia2=9,5mA.Thoughts?

Subject: Re: RIAA preamp?
Posted by Manualblock on Thu, 03 Feb 2005 19:12:37 GMT
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Nice idea; what about shielding?

Subject: Re: RIAA preamp?
Posted by Damir on Thu, 03 Feb 2005 20:46:35 GMT
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Not so sure what you mean, maybe shielded cable? I`d build it close to the input pot, just a few cm of wire. Tube socket can be PTFE material or so + tube shield...I posted this schematic in hope that some discussion can be made... at the end, maybe someone actually build it and try it... I hope that direct coupling between the stages have more advantages then flaws... then cathode decoupling cap C3 (220uF/160V-probably electrolitic) hasn`t large negative impact on sound (can

be avoid with active load and Mu-out), etc.

Subject: Re: RIAA preamp?
Posted by Manualblock on Thu, 03 Feb 2005 21:18:30 GMT
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I would like to combine the two and get rid of one box on the shelf.

Subject: Re: RIAA preamp?
Posted by PakProtector on Fri, 11 Feb 2005 14:05:18 GMT
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Well, it looks good to me. I have a few ideas. First is to use a Guinevere-style plate load on the final stage. It offers the high drive capability and a little more free gain without interfering with the RIAA parameters.Second, I'd suggest the 6BQ7A/6BK7B valve. It is inexpensivew and a little higher gain. Cg-a is comaprable to any of the mentioned alternatives.regards,Douglas

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Subject: Re: RIAA preamp?
Posted by Damir on Fri, 11 Feb 2005 20:24:08 GMT
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Close enough to ECC180 and then close enough to E180CC I suggested?:-)I hope that I`ll find some time to breadbord E188CC version first and see is it good enough. If yes, E180CC (and little correction for ECC180/6BQ7-A if necessary) is in order... I just don`t have the instruments good enough for checking RIAA accuracy, that`s the problem. Any idea? Any desire to breadbord it?

Subject: something like it....
Posted by PakProtector on Fri, 11 Feb 2005 21:27:33 GMT
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I am going to try for a two-stage valve pre for MC. Cascode of the front end stage. Probably a pair of triode strapped, high gm pentodes. Get the first stage gain in neighborhood of 200:1 and feed the RIAA filter and end with a CCS-loaded 6BQ7 perhaps. Getting half or a third of mu-squared from a cascode is not too difficult I think.the troubles I can see from here are mainly the high

output z of the cascode stage and the correspondingly high z RIAA EQ. The Guinevere-style plate load will do a good job of driving cables.I may decide to put in a variable capacitance in the front, as the cascode will be nearly free of Miller effects.Still looking at it.regards,DouglasThat and noise....heh-heh-heh!

Subject: 6EJ7
Posted by PakProtector on Sat, 12 Feb 2005 00:28:55 GMT
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Hey-Hey!!!,Been looking at the sheet to the EF184/6EJ7. Nice, mu ov 60 and gm of 15 mA/V in triode connection. That leaves a plate z of 4k, which is acceptable.Do you know of a sheet with its triode curves? With that I could generate the cascode plate curves and see what gain I could realize. mu-squared is unbelievable (3600). If I could get 10% of that I'd be in business.regards,Douglas

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Subject: Re: 6EJ7/EF184
Posted by Damir on Sat, 12 Feb 2005 12:37:08 GMT
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Hey, of course, here`s the link - www pages by Tom Schlangen (sometimes it is useful to read rec.audio.tubes threads :-)), down there: "Tubes Technical data".Don`t tell anybody, but IMO - EF184 is cheap, linear and plentifull - I have some TFK, Valvo and Siemens.
http://www.tubes.mynetcologne.de/roehren/roehren.html

Subject: Re: 6EJ7 cascode A
Posted by Damir on Sat, 12 Feb 2005 20:27:09 GMT
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You probably know this, but just in case... Amplification of the cascode is A=gm*Ra, just like in pentode, where gm is gm of "compound device, quasy pentode", or A~gm1*Ra , where gm1 is transconductance of the lower triode, IME - always gives a little "optimistic" values. With unbypassed Rk, gm1`~gm/3, and with Ra~8k2 - A~40.Of course, there are "full" formulas for this ("Valve Amplifiers", RDH, "Vacuum tube amplifiers"). For complicated cascode versions there`s always SPICE (hey, I have EF184 pentode 3f4 model - if you feel desire for it...).I also thought about cascode RIAA, but that Rout...

Subject: Re: 6EJ7/EF184
Posted by PakProtector on Mon, 14 Feb 2005 01:33:27 GMT
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I read through M-J's cascode stuff today. gm1*R_load is close enough. If I can realize +10 mA/V, a 30k load resistor will get me a gain of ~250. Now we're talking...output z of 30k leaves a 300k RIAA to play with. that's possible.Look at a E180F with gm of 50 mA/V and we can get output z down by a quarter and still keep stage gain in the mid-200's. If it can be done quiet enough, we're almost in std output moving coil area with a follow-up E180F grounded cathode and CCS plate load.I'll call this the 'hand waving' stage....regards,Douglas