Subject: The Yokes on me
Posted by Manualblock on Sat, 11 Feb 2006 01:04:12 GMT
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I got the DIY TUBE driver board for my ST 70 so I think; let me replace a few parts and see if I can hear the change. Looking on Angelas site I see nice oil caps fopr 7$ each. On the resistor page I am scrolling down and I see these Tantalum resistors so I say what the heck and I order 8 of them for different values.They came in the mail and for a bill I see 56$ for resistors and about 60$ for caps. I can't figure the bill because I am seeing 7$ for each part and so I call to tell them they made a mistake on the resistors. Nope; I looked again and those sumbitches are 7$ a piece. Am I crazy? 56$ for 8 resistors. There must be old guys with picks and shovels up in Alaska mining these resistors.Oh well; so much for that nice valentines day necklace for my sweety; flowers are nice; right?

Subject: Re: The Yokes on me
Posted by Damir on Sat, 11 Feb 2006 05:51:29 GMT
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Hey, this stuff has its price... I must admit that I recently bought 8 tantalum resistors, too. About $4 per piece, 0,5W - I need them for grid stop/grid leak positions (luckily, 1W=$8 and 2W=$13, locally).And hey, you can always give a resistor or two with the flowers...
http://www.youtube.com/?v=LT8QXypewb4

Subject: Re: The Yokes on me
Posted by Manualblock on Sat, 11 Feb 2006 15:10:29 GMT
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I almost had a heart attack. That'll teach me to read carelessly. So why use them on the grid leak/grid stop side? Is there some sonic benefit to that? I need to find a use for these; they were so expensive I could not bring myself to solder them in.So; you think they would make nice earring's?

Subject: Re: The Yokes on me
Posted by Damir on Sat, 11 Feb 2006 16:15:07 GMT
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I hope there`s a sonical benefit, I didn`t try them so far - but my experiments with SE amp

components convinced me that almost everything is audible I just tried the grid chokes - there`s a nuance or two difference then 220k grid leak resistor. Little more that "3-D feeling", clarity and warmth. And yes, it`s better for output tube and for the driver, larger AC load. Amplification of the cascode goes "up" about 10%, and sound has more "finesse" :-). I can`t hear any loss of HF (Cw of the grid choke and rel. high Rout of the driver "filter"), but sound is maybe a little too "warm/soft" for my liking - more experiments are in order .Not a "night and day" difference, I said just a nuances...is this worth that money? In my view, absolutely...
http://www.stewartdollhousecreations.com/jeare02.html

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Subject: Re: The Yokes on me
Posted by Manualblock on Sat, 11 Feb 2006 18:08:57 GMT
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Well Damir; leave it to you to get to the essence of the issue. Nuance is all we got; without that then we should all just go on E-Bay and buy old Sansui Recievers from the 70's. They get the job done with "Vanishingly Low Distortion", numbers. If the low distortion of .00001 is the indicator of good sound then my old Technics Reciever is the best sound money can buy. Very "Accurate". Thats the whole business of Audio in a nutshell; "Perfect Sound Forever."Lets just toss all those old crappy tube amps from Harmon and Fisher and Marantz out the trash bin; they have at least 1% distortion; must sound like crap!

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Subject: Re: The Yokes on me
Posted by Damir on Sat, 11 Feb 2006 18:57:36 GMT
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Hey, then what`s a few bucks in comparison with Absoluteness? You earned and bought those resistors, for something you love.It`s an interesting hobby - from engineering/math part to the building and listening, collecting parts... E182CC has more amplification and more "bright" sound then 5687 (warmer) in this cascode driver. Stay tuned...
Buzzcocks - "Ever fallen in love" (video)

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Subject: Re: The Yokes on me
Posted by Manualblock on Sun, 12 Feb 2006 12:47:05 GMT
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Say Damir; you never said what you use for a pre-amp?

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Subject: Re: The Yokes on me
Posted by Damir on Sun, 12 Feb 2006 16:32:39 GMT
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"Say Damir; you never said what you use for a pre-amp?"Nothing. Straight from CD player in the power amp, CD player has 2Vrms (0-VU) max. output, and I used volume function in it, adjustable in 2dB steps - in experiments phase.Although CD through preamp/buffer can sound stronger, sharper, even cleaner and more detailed - IME, it`s a "sound effect", like additional EQ, or so. Nothing really wrong with preamps, but I don`t need them.

Subject: What size is the coupling cap?
Posted by Old Brown Eyes on Mon, 13 Feb 2006 19:13:26 GMT
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I too have been playing with grid chokes.  How many henry are your grid chokes and what size is the coupling cap?  Due to the rising impedance of the grid choke I'd expect a gain rather than a loss of HF.I have not tried nor confirmed but I have been told that the grid choke would not work well with a CCS or choke loaded driver.  If one looks at "historical" amps you always see a "R" in there someplace...like LCR or RCL.  My grid chokes will also be replacing 220K grid leak resistors.  I am going to use RCL coupling and will try 0.47uF cap first...if I have a bass boost I might go up to a 1uF cap or perhaps play with a resistor in series with the grid choke (I'd like to avoid a resistor across the grid choke).  I am now obsessing about where to place them (four of them) in my chassis as I hear they are prone to picking up noise.Russ

Subject: Coupling cap/grid choke, etc.
Posted by Damir on Tue, 14 Feb 2006 12:51:22 GMT
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My grid chokes are 1700H/8k amorphous "C"-core devices. The "Q" of the RCL circuit (choke model - inductor in series with resistor, and paralelled by winding capacitance) is Q=[(L/C)^0,5]/Rw. If we (simplified) observe L as a constant, and Rw=8k constant, too, then we can lower the Q (and avoid subsonic resonance) by enlarging the coupling cap, or by adding external resistance. Series external resistance Rout of the driver "dampens" the Q, and parallel R can also help a bit.I simply used 4,7µF Mundorf Supreme coupling cap, "good compromise" between the cost/dimensions and value.In the next couple of days I`ll post about this experiments on "Group Build" forum, but in short:-E182CC cascode with ~20mA and Ra=15k has output impedance Rout=Ra`=Rin//Ra ~14kOhms. Amplification is A=gm*Ra`, and with gm~4ma/V and very large (infinity) loading impedance (grid choke, Zgch=2Pi*f*L) our amplification is A=4*14=56 times. We can say that we aproach this on high frequencies, say 10kHz, where Zgch=106,8MOhms theoretically and simplified. On larger frequencies, say 20kHz and up, Cw

"comes into play" and with Rout of the driver forms low-pass filter. On the lowest frequency of interest, say 20Hz, our Zgch is "just" 213,6kOhms. In parallel with Ra`=14k, we have Ra``=14//213,6 = 13,139kOhms, and amplification is "only" 52,55 times. But, when we express this in dB, it`s a difference of only 0,55dB.Is this negligible? In my listening tests these days I found that  high Rout cascode in combination with grid choke isn`t really the best solution. Sound was bright, and bass was "anemic".When I used the CCS parallel with Ra, and used Mu-out, then I got the "right" sound, from "bottom to top". Unfortunatelly, I don`t have measuring devices for objective evaluation of the circuit, just the subjective sound" results :-).I didn`t notice bass boost / subsonic resonances, although Mu-out has low Rout (no ext. damping). As I said, good sound, bass "punch" returnes, and amplification is ~55.
http://audioroundtable.com/GroupBuild/messages/1489.html

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Subject: Cool, I'll let you know how mine turns out
Posted by Old Brown Eyes on Tue, 14 Feb 2006 13:56:07 GMT
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My setup is simpler.  A 6sn7 split load inverter (direct coupled to 6sn7 voltage amp) with 22K load(s).  Grid is around 100vdc with 300vdc B+ and 0.47uF coupling caps.  I don't need to swing much for triode strapped 6V6 tubes.  My chokes are 1,000 henry, M6, with a DCR just under 4K.  I used them on the grid of the voltage first but have decided the 6V6's are the correct place to use them (but I liked the sound enough to buy another pair and thought I had some bass boost:).  I am waiting on the other pair to arrive.Did you measure the "Cw" or was it provided to you?Russ

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Subject: Re: Cool, I'll let you know how mine turns out
Posted by Damir on Tue, 14 Feb 2006 18:08:43 GMT
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Cw - well, no - unfortunately, for now I don`t have almost anything of measuring equipments. Without scope you are blind :-).I mean, ears are not enough - in the last few days I changed so many things and went through many cascode versions...everything is so similar sounding and interactive... And clever ideas on paper mostly aren`t "good enough" in practice.6SN7 concertina - I tried it with 27+27k, first stage 56k/620 Ohms. 5687/E182CC concertina - 10+10k, first stage 27k/330 Ohms. I have a plan to change this 27k to CCS in my DIY monoblocs...5687 is a good sounding in many circuits, but I`m little dissapointed with it in the  cascode driver...50Vrms out isn`t a joke, though. If you have a scope and sig. generator - look for the sharp peak around 10Hz - enlarging of coupling caps would probably result in little lower peak, in magnitude and frequency. Keep us posted.Did you see this - seems interesting PC measurements system?!
http://audioroundtable.com/Measurement/messages/89.html

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Subject: Cascode....hmmmm...have you considered/tried
Posted by Old Brown Eyes on Wed, 15 Feb 2006 14:28:57 GMT
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6H30 (or 6N6)? Might mate well with the slightly romantic sound of a 300B. Something like 12-13ma, bias the lower tube around 4 volts, shoot for low 200's on the top tube's plate...I forget your B+ but maybe around 14K-12K load resistor? Also consider ditching the resistor between the two tubes and biasing the top tube's grid from a voltage divider (Allen always hated me showing self biased cascodes). Don't forget grid stoppers and do float the upper tubes heater with B+ voltage divider:) Might be better as a direct coupled cascade with a 1:1.25 IT to the 300B but now we have a different amp (and no place for your grid chokes).Totally agree that ears alone are not enough and also think in this day and age a computer based testing system makes sense. But you still need a rather good sound card and I'd say at least 16 bit resolution (on the PC scope part)....so it still isn't cheap by any means. Besides we would drive ourselves crazy with FFT plots and THD values...LOL!Russ
6H30 datasheet in Russian

Subject: Re: Cascode....hmmmm...have you considered/tried
Posted by Damir on Wed, 15 Feb 2006 20:27:53 GMT
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Unfortunately, I don`t have any 6H30Pi, ECC99 and similar "candidates".I tried BP Raytheon 5687WA and E182CC (Philips and Amperex) I have.Just looking in a few sheets of papers, full of measured numbers. I tried three cascode variations, with many little tweaks. Full "report" soon."Slightly romantic" SE 300B sound can be ("wickedly") described also as warm/distorted, limited on both frequencies extremes, slow, soft, compressed... Every change is "interactive", and IME - it isn`t easy to find the "right" sounding driver circuit.And without FFT/THD and frequency plots I can only suspect that "strident" E182CC sound have something to do with odd upper harmonics, or "warm", "dark" and "mushy" 5687 sound with some other (lower) harmonics/IMD... And yes, good soundcard is expensive. Expecting some NOS sockets, and more E182CC, 5687 and 6C45Pi tubes these days.And yes, CCS can sound a little "dry"... this afternoon I tried CCS loaded 6J5GT driver, sound not bad, but (of course), A only 21.P.S. I used AZ50 rectifier tube, my choice between all 5R4GYB, 5V4G/GZ32 and GZ34 tubes I tried... "Besides, we WOULD drive ourselves crazy with FFT plots and THD values...LOL!"Don`t tell anybody, but I don`t need that papers with numbers...nor I used schematics...it`s everything in my head...and not much of anything else...
http://www.youtube.com/watch?v=h1HGPpZ8-8Q

Subject: 0,47µ/4µ7
Posted by Damir on Thu, 16 Feb 2006 12:43:02 GMT
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Today I tried A/B test with 4,7µ Mundorf Supreme coupling cap and 0,47µ Auricap "in front of" the grid choke. Larger cap (Mundorf) has "silky" highs, and somewhat "soft" sound, but detailed. 0,47µ Auricap has more "punch" and "harder", more "dominating", but little "rougher" sound.With little help of test CD I measured bass response of both combinations (anode out of CCS-ed 6J5GT), and 0,47µ / grid choke combination has little bass boost on 20Hz, about 0,84 dB. This resonance started at about 160Hz, and has it`s peak probably somewhere around 4-5Hz, but I don`t have

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Subject: Re: 0,47µ/4µ7
Posted by Manualblock on Thu, 16 Feb 2006 15:00:53 GMT
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Shannon on DIYTUBES is coming out with a CD of test tones for measuring purposes. Would that help at all?

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Subject: Re: 0,47µ/4µ7
Posted by Damir on Thu, 16 Feb 2006 18:16:17 GMT
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I have a "Behringer" test CD, it has test frequencies from 20Hz-20kHz in standard 1/3 octave steps. It helps if you have true RMS multimeter with 20kHz bandwith, also...

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Subject: Re: 0,47µ/4µ7
Posted by Manualblock on Thu, 16 Feb 2006 20:35:46 GMT
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I have to get one of those. My Radio Shack still displays in crayon.

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