Subject: PP 2A3 intro
Posted by PakProtector on Wed, 11 Jan 2006 15:40:19 GMT
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hey-Hey!!!,The schematic for the PP 2A3 amp is done. Galahad is its name. It employs a Schmitt inverter front end pair of 12BY7 pentodes with neutralizing caps for the 2A3 finals. The 10k load gives a -3dB point of ~23 kHz w/o neutralization. With the caps in place to eliminate the effects of Miller on the grid-anode capacitance, it should run to the limits of the output Iron.To ensure Class A operation, I suggest the uprated 2A3's from Russia. They will also make a little bit more power. This amp ought to do 7W quite well.cheers,Douglas
http://www.audioroundtable.com/GroupBuild/Projects/Galahad_Schematic.pdf

Subject: Re: PP 2A3 intro
Posted by Wayne Parham on Wed, 11 Jan 2006 16:55:17 GMT
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What transformer and grid choke does it use?

Subject: Re: PP 2A3 intro
Posted by Manualblock on Wed, 11 Jan 2006 19:40:38 GMT
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Also I don't see the CCS?

Subject: More
Posted by PakProtector on Wed, 11 Jan 2006 20:49:39 GMT
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Hey-Hey!!!,To the CCS, there are several levels, from the simplest current regulator diodes, to the depletion-mode MOSFET cascode circuit detailed in the original Merlin. I left out the PS as well as the bias supply, so there should be a few additions in the follow-up schematic. I suggest the Merlin MOSFET cascode. It is simple and easy to implement and with -20V. Unfortunately the 2A3 will need ~75 volts negative...I am not sure what to do about that. Perhaps a doubler, and take the CCS to the first half.On the OPTx, I have several to work through. I would hazzard a guess that the Peerless S-230-Q is going to win the tasting. The 2A3's will run this circuit to less than 10W, so it is not too critical about what OPTx, as long as it is able to deal with the 60-70mA of idle per leg.On the grid choke, the HTS-7547 should do quite well. Call for no spacer and minimum-gap

butt stacking to present the pentodes with minimum load.cheers,Douglas

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Subject: Re: More
Posted by Damir on Thu, 12 Jan 2006 15:26:43 GMT
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A few more details, please - what`s the Ia and Ig2 per 12BY7, (and CCS current - the sum of this, x 2 tubes). Then, Rg2 value, Rg2=((B+)-90)/Ig2.Did you "breadbord" it and your comments about sound (possible comparisons with "Merlin"?). I noticed that you didn`t use "stoppers" on g2 and 2A3 input - not necessary?For HV 15pF cap - maybe three 47pF in series (standard value)?And 23kHz (w/o 15pF caps) means "lot" of Cw (with Zout~10k of the driver)?

Subject: Re: More
Posted by PakProtector on Thu, 12 Jan 2006 16:13:28 GMT
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I have not breadboarded it. The g2 dropping R will get set 'in-circuit'. 150R CC resistors for g2 stopers would probably be a good idea.On idle current, plan on putting the plate V about half way between B+ and g2(maybe a bit closer to g2). I'd use an adjustable R-set for the cathode CCS, it makes covering for other parameter drifts and variations easier.I have some coax that makes nice capacitors in the few pF range. TFE insulation andeverything. Probably going to take 12 cm of it. I also neglected Cw of the choke, and may have droped a zero in the calculation.cheers,Douglas

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Subject: Looks Great !
Posted by MRCLASSICMAN on Thu, 12 Jan 2006 16:15:58 GMT
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Looks Sweet ! Keep us posted on the developements , like the grid choke and the -75 volt supply. I have a -200 using Hammonds and two 100 volt zeniers for its -200 volt supply. Few mod's we could get 75 volts no problem. Terry

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Subject: Re: More
Posted by Damir on Fri, 13 Jan 2006 17:17:52 GMT
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Forgot to ask about sensitivity/amplification of the driver stage.With "polished" details - good project!

Subject: front end gain
Posted by PakProtector on Fri, 13 Jan 2006 21:30:42 GMT
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Hey-Hey!!!,Using the traditional gm*R_load and then divide by two and we'll arrive at an answer.gm is going to be ~10 mA/V; R_load is 10k or gain of 100. Divide by two for the differential circuit, and we get V/V of 50 per phase. Looks like a little more than a volt to deliver the 60V or so to the 2A3 grid. We could try a lower load and take a bit away, but remember to raise the g2 the correct amount to keep a nice clean area to work the load through. The 12BY7 is a nice tube, and the required data to make these g2 voltage determinations is available. I am tempted to try its DH cousin...:)cheers,Douglasremember also that the grid choke is going to offer an eliptical load at the LF extreme. Lowering the load (to lower numeric) would alleviate that sort of behaviour a bit.

Subject: More front end tubes
Posted by PakProtector on Sat, 14 Jan 2006 00:40:33 GMT
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Hey-hey!!!,There are other inexpensive front end pentodes to use. 6AQ5 is one suspect. Put g2 at 100V for a 10k load and 300V B+. 6CL6 would want a little bit less(if the curves are to be trusted), say ~80V.THe 6AQ5 would cut gain by half due to lower gm, and 6CL6 by maybe a fifth. EF184 data I have found does not show anode current at g1=0 and varying g2, but it would offer slightly higher gain than the 12BY7. Guidelines only, play and see how they sound.cheers,Douglas

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Subject: and further fun...
Posted by PakProtector on Mon, 16 Jan 2006 16:00:18 GMT
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examine some of the other small power tubes. 6W6 and 6EZ5 or 7355 do quite well with 6-8k loads. Adust with g2 voltage, and that 2A3 grid doesn't stand a chance of misbehaving.6W6 is waaaaayyyyyy cheap too, and it looks nice with a g2 of ~60V or so. That one is on the list for sure!cheers,Douglas

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