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Subject: Re: PP 845 (little theoretycal ramblings:-))  
Posted by [Damir](#) on Wed, 20 Apr 2005 21:05:32 GMT  
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With OP 800V/-120V,  $I_a=60\text{mA}$  ( $60\text{mA}_p$  or  $42,4\text{mA}_{rms}$  max. AC current "swing") and that limits PP A-class to about  $P_{aa} = I_a^2 \cdot R_{aa} = 0,04242^2 \cdot 10000 = 18\text{W}$ . And yes, we must "limit" our "input swing" to less than 80Vp per output tube if we want to stay in A-class, let's say  $54\text{V}_{rms}$  per tube, then every tube "produce" AC anode voltage:  $U_a = \mu \cdot U_{gk} / (1 + r_p / R_a) = 5,3 \cdot 54 / (1 + 1700 / 5000) = 213,5\text{V}_{rms}$ . And we have  $2 \cdot 213,5 = 427\text{V}_{rms}$  across primary, and  $P_{aa} = U_{aa}^2 / R_{aa} = 18,2\text{W}$ . Actually, my little formula gives  $R_a = U_{gk} \cdot \mu / I_a - r_p = 120 \cdot 5,3 / 0,06 - 1700 = 8,9\text{k}\Omega$  in SE, or  $R_{aa} = 2 \cdot R_a = 17,8\text{k}\Omega$ . Quick graphical load-line analysis gives about  $9,3\text{k}\Omega$  per tube in SE, or about  $R_{aa} = 2 \cdot R_a = 18,6\text{k}\Omega$  in PP A class. Then, with  $R_{aa} = 18\text{k}\Omega$  we have about  $P_{aa} = 32\text{W}$  in "pure" A-class. Of course,  $R_{aa} = 18\text{k}\Omega$  OPT is somewhat "impractical", haha... ("Lundahl" model LL1688 has  $R_{aa} = 20,5\text{k}\Omega$ ). IMO -it's hard to get more than 18-20W in A-class with 10k a-a OPT...but class AB1 on peaks are not a great sin I suppose?

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