Subject: Distortion
Posted by Sloan on Tue, 18 Nov 2008 21:37:20 GMT
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I have been thinking about distortion in tubes verses transistors. I thought transistors distorted less than tubes but what was there was higher orders. This would be OK in most cases but when it gets high enough to hear it is really bad because high orders are so much more objectionable than low orders. Even though tubes have higher distortion it is lower orders so it isn't so bad.Then a friend told me something that floored me and I am looking for more information regarding this. I was told that transistors often distort more than tubes and it isn't the part but the feedback that makes the difference. What I mean is the reason transistor amps distort less isn't the transistors at all but instead its the fact that so much negative feedback is used. This cancels the distortion at least in theory. The problem is it can't work in all situations like when the amplifier nears clipping. The feedback loops can no longer work because there is no gain left. This can happen under other situations too like a fluxuating load.If that's true it brings everything into a new light. If you take a 3 watt SET amplifier and compare it with a 3 watt bipolar transistor amplifier both running class A but one triode and the other solid state, will the tube amplifier distort less? Of course the tube and transistor have to be suitably rated for this power level, one can't be driven too hard and the other not for a fair comparison. What do you think? Is my friend right?

Subject: Re: Distortion
Posted by Bob Brines on Wed, 19 Nov 2008 16:08:15 GMT
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This can be a very interesting discussion if we can keep religion out.I don't know the answer to the question posted. I suspect that differential distortion between tubes and transistors is in itself irrelevant and everything depends on the implementation. I do know this: You can drive a SE tube amp into clipping and still be able to listen to it. The soft clipping and euphonic harmonic structure is obvious, but not necessarily unlistenable. Driving a SS amp that does not soft clip (another issue entirely) into clipping is instantly obvious and totally unlistenable. Whether this is an issue or not depends on how you use your amps. Most SS amps are much more powerful than most tube amps. If you need 1 watt and you have 100 watts, you have sufficient headroom that you will never clip. if you need 1 watt and you have 3 watts, you will be clipping all of the time.BTW, if some one can actually address the original question of inherent distortion of tubes and SS, could you also add in class D amps.Bob

Subject: Re: Distortion
Posted by Sloan on Thu, 20 Nov 2008 17:11:14 GMT
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That's the usual pro tube technical argument I hear. If a tube lover gives a reason that's usually it. What surprised me was the statement that a triode actually distorts less than a transistor if feedback isn't used.