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Subject: tube rectifiers

Posted by [rohit](#) on Wed, 07 Jul 2004 22:31:09 GMT

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Greetings all,I am building a tube amp and considering rectification. I can use tube diodes, standard silicon diodes or FR diodes. I would like some input on this subject.Rohit

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Subject: Re: tube rectifiers

Posted by [metasonix](#) on Thu, 08 Jul 2004 04:17:10 GMT

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A tube rectifier has a major advantage, built-in slow warmup. But it has a lot of disadvantages--wasting power, needing a separate filament winding, causing massive destruction if it develops gas, etc.Cheap diodes have slew-rate problems which can increase the noise floor in the amp. I'd use FREDs, and a time delay switch or standby switch. And recommend you precede each diode with a 100-ohm 5w resistor to reduce the turn-on surge. That simple trick can increase reliability of the power supply considerably.

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Subject: Re: tube rectifiers

Posted by [Manualblock](#) on Thu, 08 Jul 2004 11:41:41 GMT

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Mr M; Do you mean that the tube rectifier wastes amplifier power or electricity? Can you wire the standby switch to become completely removed from the circuit after warm-up? Thanks Again,J.R.

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Subject: Re: tube rectifiers

Posted by [rohit](#) on Thu, 08 Jul 2004 21:59:34 GMT

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Thanks for your reply,I think I prefer FREDs, but I do not understand why one would not want the DC level to raise to full value right away. If there were a surge as like happens from low resistance filaments in circuit, I could understand. There is not. Why is having full rail voltage on output tube plate during warmup of its filament a problem?Rohit

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Subject: Re: tube rectifiers

Posted by [metasonix](#) on Fri, 09 Jul 2004 03:43:09 GMT

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>Why is having full rail voltage on output tube plate during warmup of its filament a problem?It can cause damage to the tube's cathode coating. It is called cathode stripping. A problem mostly to power tubes running from plate supplies of 400v or greater. IMO, new current production power tubes are more prone to this than NOS.>Do you mean that the tube rectifier wastes amplifier power or electricity?It wastes electricity, adds heat to the system (never a good thing), and represents an additional stress on a power transformer.>Can you wire the standby switch to become completely removed from the circuit after warm-up?No. Why would you want that?

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Subject: Re: tube rectifiers

Posted by [rohit](#) on Fri, 09 Jul 2004 22:34:34 GMT

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Thanks for your advices,I think there is no harm adding a delay relay for B+. Please tell me more about "cathode stripping" and what exactly is causing it. What is exactly happening?Rohit

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Subject: Re: tube rectifiers

Posted by [Manualblock](#) on Sat, 10 Jul 2004 01:44:58 GMT

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Cathode stripping, how would you know it's happening? Then only if the B+ is high, say if you are using 211 triodes or somesuch why is it an issue? Also the power trans. needs to be a little beefier with tube rec. that shouldn't be too difficult. I'm just playing devils advocate here but in the case of the surge circuit wouldn't you want all switches and/or relays out of the circuit if at all possible? Thanks again, J.R.( The KT88 amp looks nice but too powerful, whatever happened to that nice PP 2a3 amp J. Eckland built? When are we going to hear from Natalie Stone again, does she know she has a fan club? Motorcycles and Altec 287 amps; There \_is\_ a God!)

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Subject: Re: tube rectifiers

Posted by [metasonix](#) on Sat, 10 Jul 2004 07:44:24 GMT

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>Cathode stripping, how would you know it's happening? You wouldn't---it damages the coating and shortens the tube's life.It leaves no other traces.>Then only if the B+ is high, say if you are

using 211 triodes or somesuch why is it an issue?Only applies to oxide cathodes or oxide-coated filaments. Power tubes with thoriated filaments (like most 211s) are not harmed by it.>the case of the surge circuit wouldn't you want all switches and/or relays out of the circuitI don't agree in the case of COMMERCIAL amps. They have to be reliable and usable. You can wire your own amp however you wish. And accept any reliability issues that result.>whatever happened to that nice PP 2a3 amp J. Eckland built?He's still got the thing and it does sounds great--but not as good as the KT88 amp!>When are we going to hear from Natalie StoneBeats me--ask the publisher.

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Subject: Re: tube rectifiers  
Posted by [Manualblock](#) on Sat, 10 Jul 2004 17:39:23 GMT  
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Hope you know I appreciate your input. The KT 88 looks good; what makes it better than the 2a3? You have access to many different combinations that we don't so we must rely on your opinion here. The other thing is can you tell us what speakers you are using? Thanks again Mr. Metasonix.

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Subject: Re: tube rectifiers  
Posted by [metasonix](#) on Sun, 18 Jul 2004 02:59:44 GMT  
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it is a problem for power tubes. If you apply plate voltage when the cathode is still cold, it can damage the cathode coating. It becomes a problem only above 400v plate voltage. Some of my references claim it's a phantom, because (supposedly) modern tubes have good cathode coatings. But current production tubes aren't as well made as 20-30 years ago, so it's better to be conservative in this area.

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