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**From:** Steve A. ([steve\\_ahola@yahoo.com](mailto:steve_ahola@yahoo.com))  
**Date:** 1/17/2001 10:44 AM  
**Subject:** Here's an idea for Randall and R.G. re: variable B+

I've been using 10v/5W zener diodes in the ground circuit from the FWB on my Blues Express amp and have wired up switches to ground out different zeners in the string to produce a choice of B+ voltages in this amp. FWIW this switching has been dead quiet to my ears; the mechanical sound of the switch itself is all that I hear.

I was just thinking that if a "variable zener" was created using solid state circuitry, by inserting that circuit into the ground path of a FWB rectifier you could dial in your choice of B+ voltages without having to use long strings of these 10V zeners and clunky switches.

Increasing the B+ would also increase the total power available for the amp; decreasing the B+ would allow for a "brown" distortion while reducing the overall power level.

It seems to me that such a control would be a big improvement over the Mesa Boogie "tweed power" switch, which allows you to choose between only two B+ voltages.

A second mission, should you choose to accept it, would be a way to keep the voltage to the preamp tubes relatively constant as the voltage to the output tubes and possibly PI would go up or down. Can you connect two different FWB's to the same two HiVAC leads from a PT? It would require a second set of power supply caps and resistors but that way you could vary the B+ to the power tubes without an equivalent variation in the B+ to the preamp tubes (I bet that there would be SOME interaction).

BTW a variable power supply like that might be very handy in prototyping to determine the "sweet spot" for a particular circuit.

--Thanks!

Steve Ahola

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**From:** BrianH ([brianmelisa@earthlink.net](mailto:brianmelisa@earthlink.net))  
**Date:** 1/17/2001 2:37 PM  
**Subject:** Re: Here's an idea for Randall and R.G. re: variable B+

*Can you connect two different FWB's to the same two HiVAC leads from a PT?*

I've been wanting to build a "stereo side" for a rackmount mono amp that I built. Is it better to have a separate PT for each side or can they both share the same PT, if it is beefy enough? The Marshall stereo amps that I've seen have two PT's but I think the Mesa stereo beasts share the PT.

Also, doesn't TUT2 cover a method of variable B+ of power reduction like what you have described? I'm wondering though, if several switches would be all anyone would need, i.e. one switch for normal operation, a second for half power, all the way down to playing at 3 AM in the morning levels.. Maybe a rotary switch!

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**From:** Bruce ([MissionAmp@aol.com](mailto:MissionAmp@aol.com))  
**Date:** 1/17/2001 4:44 PM  
**Subject:** Re: Here's an idea for Randall and R.G. re: variable B+

I guess someone was holding you behind the door again when we were discussing this Steve!

<http://www.aikenamps.com/Zener2.PDF>

Bruce

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**From:** Gary J ([gary\\_justus@excite.com](mailto:gary_justus@excite.com))  
**Date:** 1/18/2001 1:27 AM  
**Subject:** Re: Here's an idea for Randall and R.G. re: variable B+

Just curious... Looking at the one using the 2N3055, could you put a trim pot between the Zener and ground to vary the voltage rather than select different zeners for different fixed voltages? Cool circuit!

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**From:** Steve A. ([steve\\_ahola@yahoo.com](mailto:steve_ahola@yahoo.com))  
**Date:** 1/18/2001 4:46 AM  
**Subject:** Re: Here's an idea for Randall and R.G. re: variable B+

Bruce:

So is there any way to add a pot to those circuits to make them continuously variable within a specific range? Maybe I'm missing something but I don't see a big advantage for using those

transistorized circuits instead of a string of the 10V/5W zeners that you had told us about last century. Unless you could wire in a pot to make it continuously adjustable. (Well, the transistor circuits might look a little bit more elegant... those zeners sort of look like a hack but they work like a charm!)

*I guess someone was holding you behind the door again when we were discussing this Steve!*

You know that I always ignore you guys when you start writing out equations and talking shop... unless of course I can see how it might apply to one of my projects and then I get somebody to translate it into plain English for me. 😊

--Thanks!

Steve Ahola

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<b>From:</b> Don Symes ( <a href="mailto:cdsymes@pacbell.net">cdsymes@pacbell.net</a> )			
<b>Date:</b> 1/17/2001 5:04 PM			
<b>Subject:</b> Re: Here's an idea for Randall and R.G. re: variable B+			

*Can you connect two different FWB's to the same two HiVAC leads from a PT?*

Wouldn't fiddling with the CT affect all possible outputs from that secondary? I could see at FWR (usual CT-ref'd HT) to the poweramp/PI and a bridge (full HT) to power the preamp, but how to reference the bridge to ground I don't see.

As to the Zener circuit ... using the Zener amplifier controlled by a variable regulator instead of an actual Zener seems like a way to go.

Hmmm...

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<b>From:</b> Steve A. ( <a href="mailto:steve_ahola@yahoo.com">steve_ahola@yahoo.com</a> )			
<b>Date:</b> 1/18/2001 4:30 AM			
<b>Subject:</b> Re: Here's an idea for Randall and R.G. re: variable B+			

Don:

*Wouldn't fiddling with the CT affect all possible outputs from that secondary?*

What I had in mind specifically was a pair of FWB's connected to a two lead secondary

without a CT. The negative terminal of each FWB could be connected to either ground or a variable "Zenre" circuit (I need to copyright the name!)

So whaddaya think... would it work?

Steve Ahola

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