

amzfx

AMZ GUITAR EFFECTS

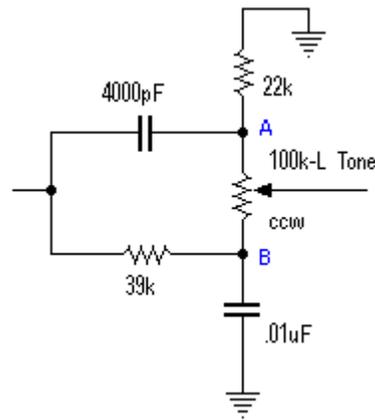
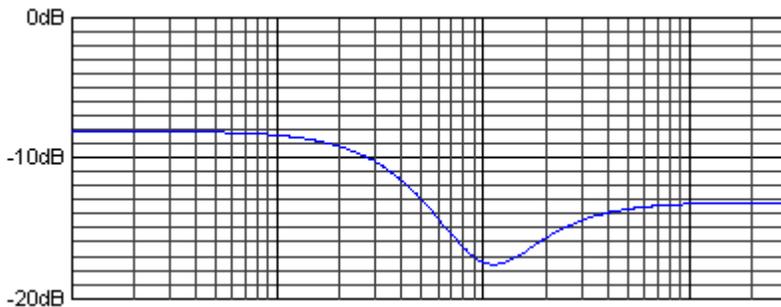
Schematics • Projects

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AMZ Presence Control

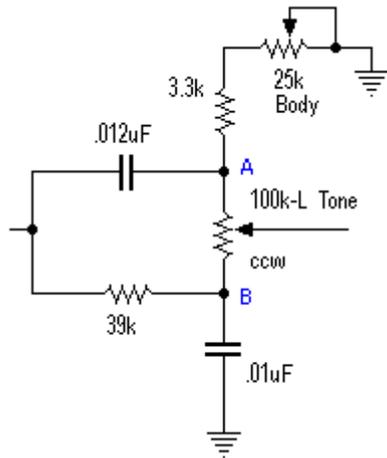
The BMP Tone Control

The basic Big Muff tone control is a valuable building block and has been used by both commercial builders and D-i-Y hobbyists. The original BMP circuit (shown below) does not give an even response to the high and low ends of the frequency spectrum due to the high output impedance of the transistor stage driving it (the response is better when driven by a low impedance source like an opamp). The highs are slightly attenuated and there is also a dip in the mid range response around 1k Hz.

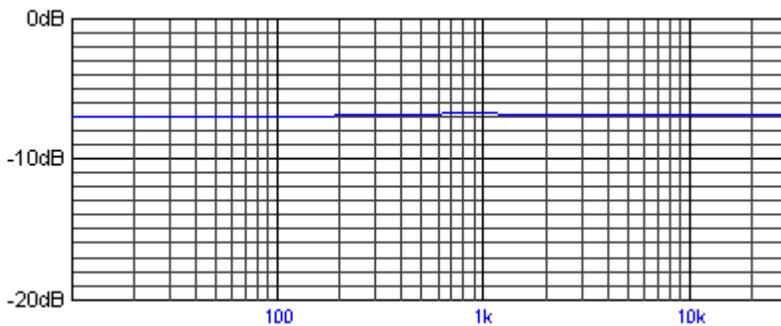


The New AMZ Tone Control

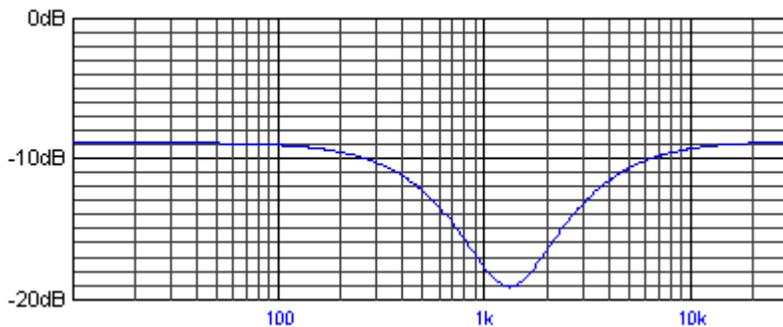
I have previously posted various derivatives of the BMP circuit that gave different responses or tonal characteristics and recently I had the idea of modifying the basic circuit to add an additional control for varying the mid response. Although this did not prove to do exactly what I had intended, the new circuit has some interesting properties when used for controlling the presence or "body" of the signal.



This is the first version of the new control that allows for an additional range of responses to be dialed into the circuit. A 25k pot has been placed in series with the high pass resistor to allow control of the cutoff point of that filter section. Some of the other values have been optimized as well.



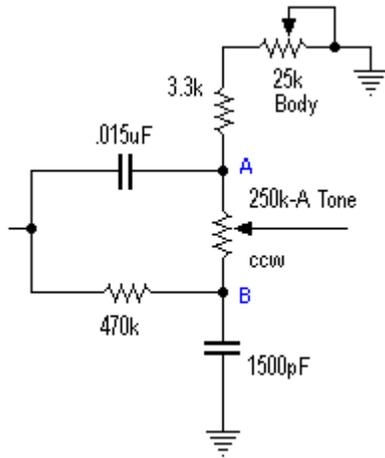
The changes in components have eliminated the mid range cut and make a flat response across the entire frequency band. The graph to the left is with the Body control at maximum resistance; the tone knob is at its mid position.



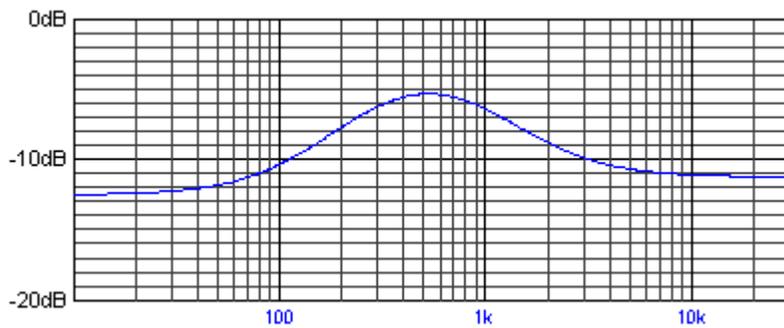
If the Body control is rotated to its minimum resistance, this is the response of the circuit (tone knob still at mid-point). Notice the scooped response! Now we have a single tone control that is capable of both flat and scooped response merely by changing the setting of the Body control.

If the Tone knob is rotated away from its mid-point, the high or lows will be boosted or cut in a similar response to the original. The Body control sets the depth of the mid range notch.

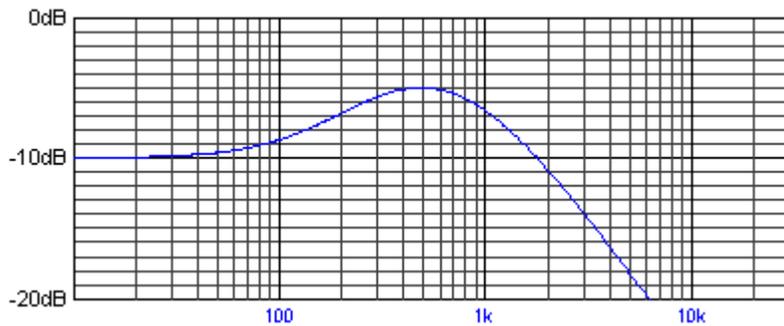
Version 2 of the AMZ Control



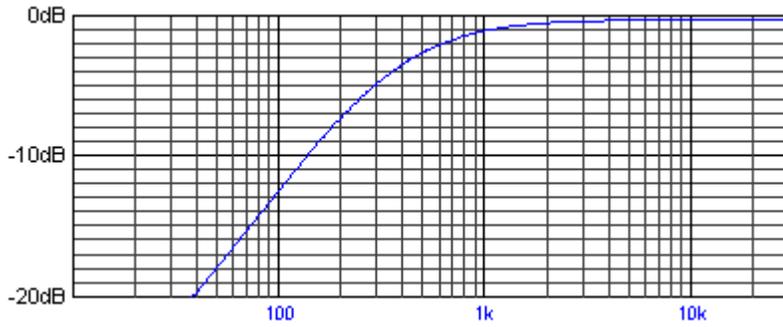
This is another version of the AMZ Presence Control that has a very different response. Notice that the Tone control pot is a higher value and has an audio taper. The other component values are now quite different from the original Big Muff circuit.



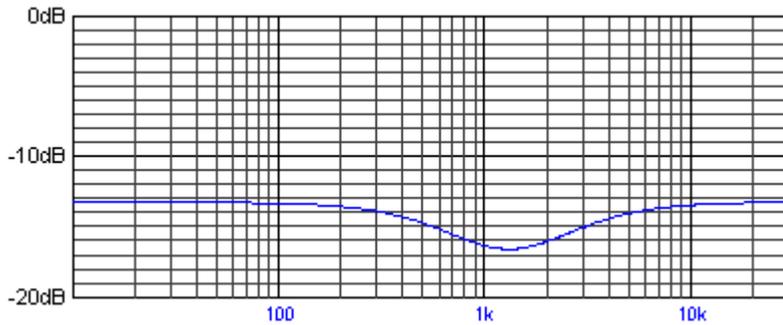
The new component values have made a broad peak in the frequency response much like that from a TS-9. The mids are emphasised but not so much as through a wah pedal. This graph has the Body control at max resistance and the Tone in the middle.



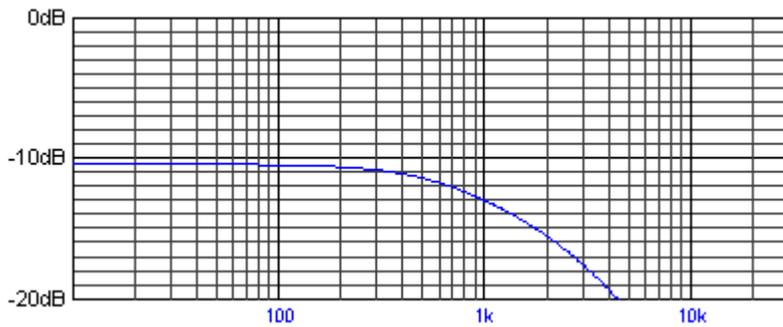
With the Tone control turned to the bass side, the highs are rolled off but there is still the mid peak.



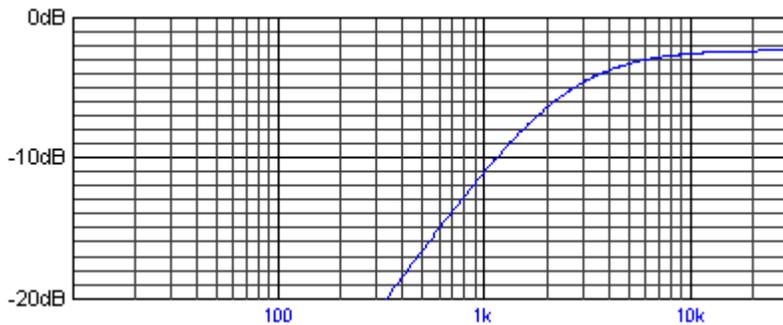
With the Tone control turned to the treble side, not only is the bass attenuated but the treble is boosted and the mid peak is gone.



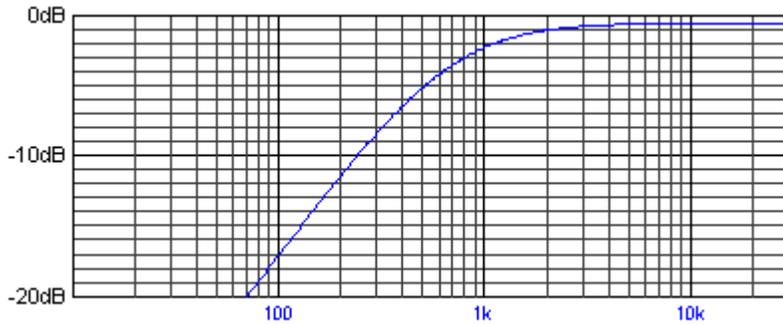
This graph shows the response with the Tone control back to the middle and the Body control set at minimum resistance. The broad peak has been replaced by a flat response with a slight dip in the mid range. Compare this to the graph three examples back where the mids were peaked. Merely changing the Body control has altered the entire character of the Tone control response.



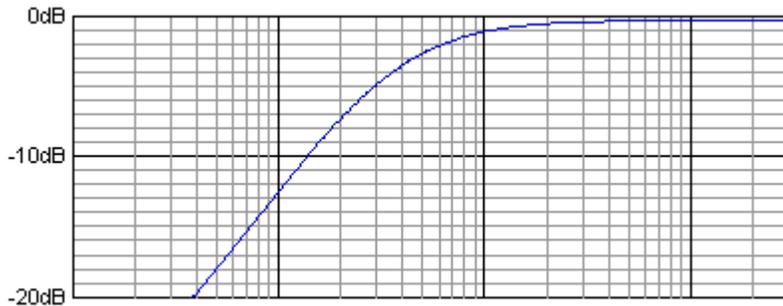
Tone control to bass side with the Body control at minimum.



Tone control to treble side with the Body control still at minimum.



For this graph, the Tone control is still to max treble but the Body control has been rotated to its mid point. Compare to the last graph to see how the change in the Body control has shifted the response lower by a couple of octaves.



This is an example of the full range of response as the Tone control is rotated from max to min and back, while the Body control is held at maximum resistance. The high frequency boost is graphically illustrated. Top Boost anyone?

(animation not visible in the pdf version)

All of the examples above are with the tone control driven by a low impedance source such as an opamp or even a mini-booster. The higher output impedance of a bipolar gain stage as in the Big Muff would not be as suited to these examples and the frequency responses would be much different.

The creation of the Presence or Body control has added a whole new dimension to the basic treble/bass tone network. Either of the previous example circuits could be used with an effect or amp design to add versatility. Other interesting frequency responses are possible by careful selection of all of the component values and a future article will show more examples of this type of tone control.

Use it as you wish but give credit to where you learned about the idea!

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