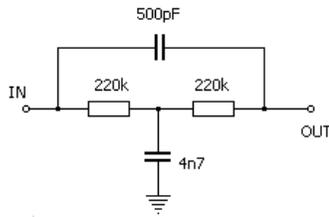




# Notch Tone Control

A Bridged-Tee Tone Control for Effects Pedals

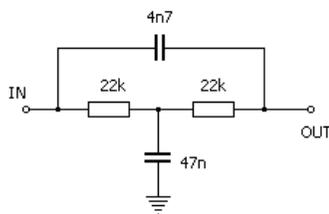


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The bridged-T notch filter has been used in music and audio designs. This circuit to the left was featured in several Gibson amps of years past and produces a notch or band-reject in the frequency spectrum (around 450Hz).

By rejecting certain frequencies in the audio band, muddiness can be reduced that would otherwise interfere with the clarity of the sound. It is a common practice in mixing sessions to cut the mid-range of guitar sounds to make them fit better into the mix, and the same technique could be applied to the live sound of a band.

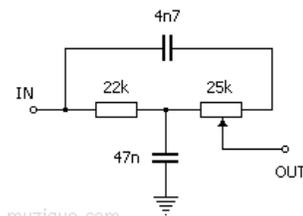
This filter is from the Gibson Hawk Reverb-12 though similar filters were used on numerous Gibson tube amps, such as the GA-17RVT and the Skylark Tremolo amps among others.



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We can scale the component values to get a notch filter that has the same response but with lower resistor values.

This filter and the one above will sound practically identical.

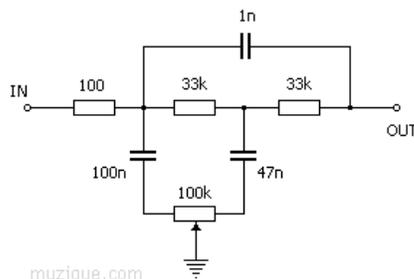


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Since I was looking for a way to make a novel tone control, a few minutes reflection on the circuit yielded a bridged-T notch that also served as a low pass filter with a potentiometer to pan between the two responses.

When the wiper is all the way to the right, you get the classic notch response. With the wiper all the way to the left, the audio is low passed and much of the high frequencies are attenuated. In between, some of the highs are dialed back in.

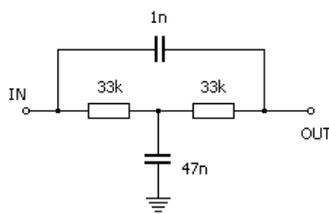
This schematic is a practical version of the tone control and could be used in a pedal.



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The Marshall Shredmaster had a variable notch/low pass filter that produces a similar effect but is more complicated than the design I have shown above.

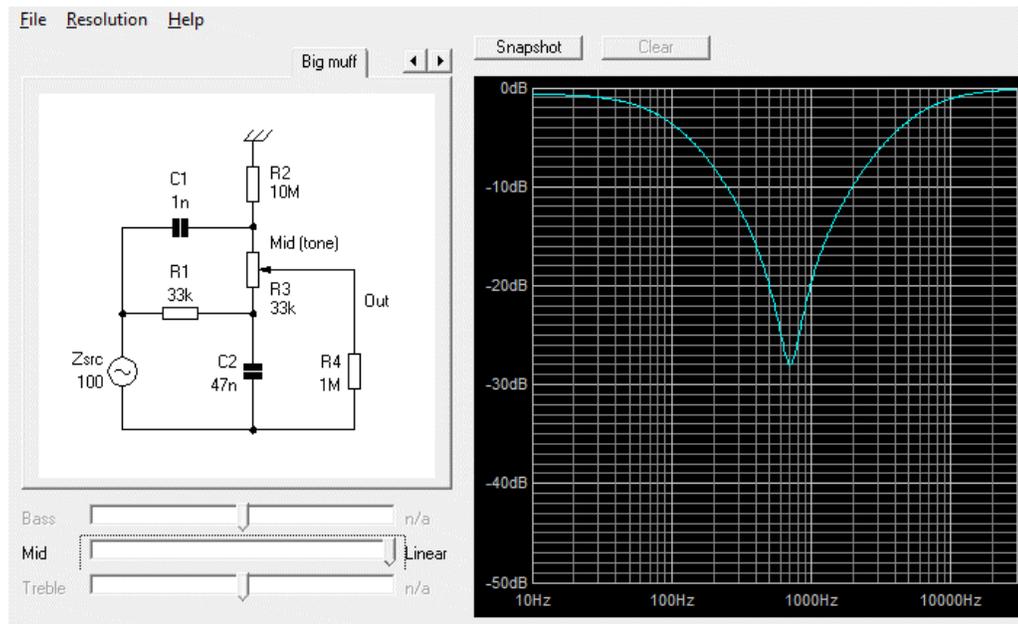
In this case, the wiper of the pot is grounded and will isolate or connect the appropriate capacitor to ground depending on its setting.



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Here is another version of the bridged-T notch filter that has a good response for pedals. In this version, the notch is centered at about 700Hz.

While working on this circuit modification, it occurred to me that this filter is a variation of the [Big Muff style tone control](#). Imagine that the resistor to ground on the high pass side of the BMP control is infinitely large, and you have the bridged-T filter. In fact, you can use the [Duncan Tone Stack Calculator](#) to test the circuit. Simply increase the value of R2 to 10M ohms or more and it will have little impact on the response.



In the circuit in the calculator image above, imagine that R2 is deleted. C1 will be bridging the two 33k resistors and C2 is the 47n capacitor to ground, just as in the previous notch filter.

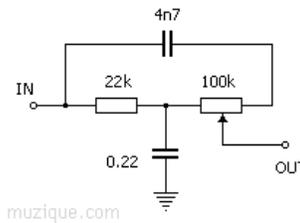
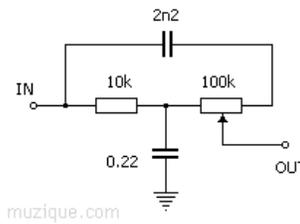
With the Mid control all the way to the right, you are getting the notch response, and the highs begin to roll off as the R3 Mid control is brought to the left.

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Enjoy this tone control variation and let me know if you find any good combinations of component values!

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Update: Here are a couple more notch tone controls. These have a lower center frequency for the notch than those shown above. The second one is the lower of the two. Enter the values in the Tone Stack Calculator to get a view of the response.




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