
Subject: Wayne, what about passive bi-amping?
Posted by [Bill Epstein](#) on Thu, 03 Jul 2008 01:35:46 GMT
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I ordered the parts for the new crossover 1.6k boards today. The ART was fun and better sounding than I expected but really, not that good. Most of its success I would attribute to the bi-amping. Steve Brown sent me this link and another but formulas give me shingles. I'm anxious to hear the new crossover but even more anxious to have both amplifiers running.

Subject: Re: Wayne, what about passive bi-amping?
Posted by [Wayne Parham](#) on Thu, 03 Jul 2008 18:49:01 GMT
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I think passive filtering and biamping is a great idea. The filters used in the crossover are simple enough to implement easily with a handful of passive components, so it's a perfect application. The splitter filters are simple 3rd order networks, 1.3kHz low-pass for the woofer and 1.6kHz high-pass for the tweeter. The trick is getting the tweeter's response curve right. The proper top-octave compensation is 6dB/octave, but you don't want it to start until above 4kHz and crossover is below 2kHz, so you have over an octave that should be flat before starting the 6dB/octave rising region. The way I do that is to make the load impedance a little bit high on the high-pass filter in the tweeter circuit. That causes it to be slightly underdamped, which causes it to peak around the crossover frequency. Then, when a 6dB/octave top-octave filter is added after that, the first octave becomes flat, followed by the region of rising response. My suggestion for making a passive line-level crossover would be to do the exact same thing, but at high impedance

instead. Here are some circuits that would work: Woofer circuit: o-----150mH-----50mH-----o
|o-----o Tweeter circuit: -----0.0047uF--- |

|o-----o You'll notice the inductance values are very large. Fortunately, they do not need to have much current capacity so they can be made with small gauge wire. Don't look for speaker crossover coils, instead, use small signal chokes. Unfortunately, most of these have cores that aren't that great for fidelity. They won't get anywhere close to saturation, so maybe that's OK, but I'm not sure I'd want a ferrite core coil in the crossover circuit. Maybe you can find better low-hysteresis coils. Another possibility worth looking at is Steve Bench's 6DJ8 Tube Crossover. Circuit boards are available, making assembly easy and keeping it clean. I made a Spice model to help me find components that would provide the proper top-octave compensation, having the initial flat shelf and then 6dB/octave augmentation above 4kHz. Use this circuit with crossover splitter values of 1.3kHz 3rd order low-pass for the woofer and 1.6kHz 3rd order high-pass for the tweeter.

Subject: Re: Wayne, what about passive bi-amping?
Posted by [Bill Epstein](#) on Fri, 04 Jul 2008 17:31:39 GMT
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Thanks, Wayne. The inductor problem may make the solution no better than op-amps? I can't read the teeny writing in the Bench schematic GIF, is it possible to post or e-mail just the schematic to be enlarged? I saved it to My Pictures but my photo editor won't read it. What I can see doesn't look too bad to build, point-to-point. don't know about a power supply, tho'.

Subject: Re: Wayne, what about passive bi-amping?
Posted by [Wayne Parham](#) on Fri, 04 Jul 2008 17:50:17 GMT
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I wonder if MagnaQuest or Heyboer could provide good audio coils in those values. The cores they use in their audio transformers are much better than ferrite. I'll open up the tube crossover schematic in OrCad, size it larger, screen print and E-Mail it to you. You might also want to download the OrCad (PSpice) demo distribution and the 6DJ8 crossover model because those are the source files.

Subject: Re: Wayne, what about passive bi-amping?
Posted by [xcortes](#) on Fri, 04 Jul 2008 23:54:28 GMT
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do you know these?: <http://marchandelec.com/xm46.html> he'll sell the populated boards alone.

Subject: Re: Wayne, what about passive bi-amping?
Posted by [xcortes](#) on Fri, 04 Jul 2008 23:55:53 GMT
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more: <http://marchandelec.com/ftp/xm46man.pdf>

Subject: Re: Ron sent me the schematic
Posted by [Bill Epstein](#) on Sat, 05 Jul 2008 11:21:15 GMT
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Looks pretty simple for point-to-point, have to find a power supply which is completely beyond me.

Subject: Re: Ron sent me the schematic

Posted by [Wayne Parham](#) on Sat, 05 Jul 2008 17:36:36 GMT

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Sorry, Bill, I meant to send it yesterday and got tied up. This weekend is a busy one for me. Glad Ron sent it to you!

Subject: Re: I wonder if the original Foreplay power supply would work?

Posted by [Bill Epstein](#) on Sun, 06 Jul 2008 11:27:31 GMT

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IIRC, the Foreplay B+ is about 170 vdc and just 4 diodes, handful of resistors and 3 caps. Might be just the thing for the Bench, padded down to 150vdc?

Subject: Re: More...

Posted by [Bill Epstein](#) on Sun, 06 Jul 2008 11:46:07 GMT

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I already have one of these and the Foreplay2 schematic. Could the 250volts be padded down to 175 or so to get the 150 volt B+? Bottlehead PT-1 preamplifier power transformer Our search for a cost effective, quiet power transformer for our Seduction phono preamp led us to having our own custom model made. With a large core and both electrostatic and magnetic shielding this transformer radiates less than 2/3 of the electromagnetic field of off the shelf models, making it a great choice where space is limited and the power supply sits close to the amp circuit. It turned out so good that we decided to offer it by itself. Super for line stages, phono preamps, mic preamps, active crossovers, any low level application. Specs are 120V primary 250V CT @ 20mADC secondary 6.3VAC @ 1.2 A rms secondary Made in the USA with channel frame construction, 2-1/2" mounting centers and solder terminals so you can use your favorite wire to hook it up. This transformer now ships with our current Seduction phono preamp kits and is essentially a drop-in replacement for the original Seduction power transformer, requiring only a little additional wire for installation. Intended for mounting on the underside of a chassis. The installation of this trans and the recommended Hammond die cast box over the Seduction preamp circuitry will yield a dead quiet tube phono preamp. This super quiet transformer can be useful in Foreplay mod projects too, by drilling new mounting holes and converting to a full wave rectifier. Price is \$40 plus shipping. PT-1 preamplifier power transformer, plus UPS to US address
