Subject: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by bmar on Thu, 15 Nov 2001 01:30:11 GMT
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Hi Wayne,Thanks for all you're help. The crossover diagrams you make are easy to follow. Designing the crossover and "really" understanding it, is something I have difficulty with.When you get a free moment (I know your very busy) If you could help me with a crossover, I would greatly appreciate it.Here are the drivers I wish to build into a seven Pi. All specs are from JBL.Low frequency;2226G 4 Ohms sensitivity 89db spl 1/1Mid frequency;M209-8 8 Ohms sensitivity 105db spl 1/1 (with horn)Fs 91hz Re 4.9 Le .265mH Qts 0.385 Qms 2.04 Qes 0.475High frequency;2425HS 8 Ohms sensitivity 111db spl 1/1 (with horn)JBL has recommended in their tuning specs to cross these parts at 420hz, 1.6khzAttenuating with +2db woofer-5db mid-10db TweeterI dont know that this would be the same in a Seven Pi corner horn, but It might be helpful information. I think this will make a great Seven Pi corner horn.Thanks,Bill

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by Wayne Parham on Thu, 15 Nov 2001 07:09:22 GMT
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Nice parts, I think you can make very nice sounding seven Pi speakers with them!Of course, building a crossover isn't entirely trivial, but some generalities are in order. The lower the midrange to woofer crossover point is made, the more distance can be between them without causing summing problems. That makes the lower crossover point somewhat more forgiving than the upper one. I would probably keep the tweeter crossover as it is, but the upper crossover of the midrange needs to be determined. There are several factors that will come into play, the midrange's acoustic rolloff at HF, it's position, it's breakup behavior, etc. These are going to be the things to look at.My gut feeling is to start off with lower crossover between 200Hz and 400Hz and keep upper crossover around 1.6kHz. The lower crossover can allow lots of overlap if the drivers are within 1/4 wavelength, so first-order is fine. For a 16 ohm woofer, that means you'll want a 6-12mH coil in series. The midhorn may work just fine without a high-pass capacitor if you aren't hitting it with a lot of power, otherwise put in a series cap. Obviously, attenuate the tweeter and midhorn to match the bass bin. For the tweeter, that means using the same 1.6kHz circuit as in many of my other designs with R1/R2/C1 padding/EQ. For the midrange, use a standard L-Pad arrangement that attenuates 10-12dB. Try different low-pass crossover slopes on the midrange and see which one integrates best. You may find the midrange horn has the right acoustic rolloff no electrical low-pass filter is necessary. You may only need to add a series coil. Or maybe you'll need a second or third order slope somewhere between 1.2kHz and 1.6kHz to get summing right. It all depends on the characteristics of the midrange horn, it's acoustic rolloff, length, etc.

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by Michaelz on Thu, 15 Nov 2001 10:56:35 GMT
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Hi, Bmar:The published specs indicates that 2226G has a sensitivity of 97db.Hi, Wayne:Thank you for being such a nice host of the forum!Michael

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by bmar on Thu, 15 Nov 2001 15:38:12 GMT
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Thanks Mike,your right. I had fat fingers! 89 would be silly

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by bmar on Thu, 15 Nov 2001 16:09:48 GMT
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Hi Wayne,Thanks for the prompt reply. So, I'm off to Parts Express and in the crossover business.Thanks for all the help. I'm sure first order on the mid will be fine, and as you say, there is always time for a tweak here and there.Bill

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by Wayne Parham on Thu, 15 Nov 2001 23:44:17 GMT
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Sounds great. Once you get it going, we'll do some basic tests to see what needs adjustment here and there. Keep us posted!

Subject: Re: 3 Way Seven Pi crossover, with JBL CS3115 Parts
Posted by bmar on Sat, 17 Nov 2001 01:20:34 GMT
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Thanks Wayne!I'm having a difficult time understanding a lot of the component functions at this point. I'm just begining so I'm going to get the stuff and just build it and see how it sounds. :)thanks,Bill