Subject: HF Horn-Woofer phase at crossover
Posted by AstroSonic on Thu, 01 May 2003 13:07:25 GMT
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Hi,I am building a pair of 2 way speakers with 15 inch woofers in a bass reflex cabinet and a horn/driver with a 2nd order 500 Hz Xover. The horn is located on top of the BR box. I have read threads here and in the High Efficiency forum, that suggest that with the Altec VOTT's it is important to move the horn until it sound /measures flat thru the crossover region, and that not doing this will likely result in a suckout due to phase cancellation. Of course with the VOTT's the cone of the bass driver is located well behind the front of the enclosure. The Altec Valencia used VOTT components in a BR box with the horn flush mounted to the front baffle and an 800 Hz xover. How did they get around the phase problem? Is this an issue with the Pi BR speakers? If I align the voice coils the horn will extend around 10 inches beyond the front baffle. Possible, but the WAF would go right thru the ceiling. Any ideas?TIA,AstroSonic

Subject: Re: HF Horn-Woofer phase at crossover
Posted by Sam P. on Thu, 01 May 2003 15:21:10 GMT
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Can you cross them at 675Hz? Have you read altec AN-9? Sam

Subject: Re: HF Horn-Woofer phase at crossover
Posted by ToFo on Thu, 01 May 2003 15:26:31 GMT
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I think Valencia was a home finished model. I have seen some drawings and if memory serves the woofer was a bit recessed in the box. That might have been about right for 800Hz. It would depend on the slope and other issues in the crossover/wiring scheme, and perhaps they didn't even address it. too many variables to consider on appearance alone. As for the folks who build trolleys to fly the horn out front, this is a good idea to get the phase to gel at the crossover frequency. If you have too much overlap though, you will be adjusting for one range while cancelling another. The crossover document has some nice explanations of phase relationships at crossover, check it out. Also I think Sam P. has his altec horns like this.Thomas

crossover doc

Subject: Re: HF Horn-Woofer phase at crossover
Posted by Wayne Parham on Thu, 01 May 2003 16:32:14 GMT
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In addition to the other good replies you've received, I'd like to encourage you to search this forum for posts concerning "phase" and "baffle spacing." If you enter either of those into the search feature here, the system will show you a list of posts on the subject.In a nutshell, I try to reduce nulls in the crossover region within the desired dispersion angle. The ways to limit the crossover region involve using high slope filters. The ways to limit acoustic interaction between subsystems are to use narrow dispersion, at least in the axis where adjacent subsystems combine. Measurement tools available today are pretty inexpensive and can help in this regard, making your job much easier. As you've said, you will look for response anomalies, with flat response through the crossover region being your goal.Some call this "time alignment" but it is not. It is done to reduce response anomalies in the crossover region at the target listening position. Alignment on-axis at the crossover frequency centers the coverage window so that any anomalous artifacts occur off-axis and away from the crossover frequency, towards the stop-band of one of the two adjacent subsystems. A well-formed system is one that has fairly wide windows of operation where nulls are avoided or suppressed. If dispersion is controlled to limit overlap and the crossover also limits overlap, then the anomalous regions can be minimized.

Subject: Re: Thanks!
Posted by AstroSonic on Thu, 01 May 2003 20:22:43 GMT
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Thanks to all who responded. Plenty of leads to follow. I have a copy of the Crossover doc which I have found to be a great source of ideas. Of course, this is a 'problem' endemic to all multiway speakers, except perhaps the Tannoy type coax's. I understand that there will always be some phase cancellation until the perfect brick wall filter is developed. However, I have heard many multiway speakers with 1st and 2nd order networks that sounded enjoyable and musically involving, so I am confident that this combination of drivers can be made to sing. I have not seen or been able to locate Altec (tech note?) AN-9. I did find a suggestion, in an un-numbered tech booklet on the Lansing Heritage site, to try reversing the leads on the drivers (i.e., wire the tweeters in phase with the woofers). I tried this tonight and knew at once that that was not the solution in my case! Sam emailed a picture of a sliding horn assembly using common drawer slides. This will have to be tried! The sound quality with the horns projecting just off the front edge is really quite good. Just a little thin in the mids and thrown in contrast by the metallic ringing from the 511b horns. I am currently researching solutions to that problem. Good possibilities include destressing by cutting through the fins, surrounding the horns with sand, and damping with adhesive backed damping material like Black Hole 5 or VE-1. Also, the low pass crossover values are those of Hiraga (I am using 515b's) which were developed for the front loaded horn commonly used with these components. I may revert to classic 2nd order values with a Zobel. Any suggestions greatly appreciated. Again, thanks for your help.Regards,AstroSonic

Subject: Re:ringing
Posted by Sam P. on Thu, 01 May 2003 22:00:24 GMT
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Look next door at Hi Eff forum, I just commented about the $50 de-ring tweak. Most older 511's I've seen, even when "mint" could still use a coat of paint to be more presentable. So cutting them to de-stress/de-ring them is what I did. I would like to see what they look like after being "hot tanked" like cleaning up an aluminum intake manifold in chemical stripper, nice shiny (maybe glass beaded) aluminum finish would give a hi performance flair to the horns, huh Wayne! I'll try to find a url for Altec an-9, I think it was on the sound practices web site, but it's been a while. Sama search for "gutting a lexus" will probably turn up the original posting in the archives, written when the banshee scream of the sawsall was still fresh in my mind:) ear plugs AND ear muffs.

Subject: Jet-Hot
Posted by Wayne Parham on Fri, 02 May 2003 01:33:05 GMT
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Regarding metal coating and finishes, try Jet-Hot for a real treat. That's the ticket for headers - I've got it on the Olds. Then again, powdercoat is probably just as good for this application, and definitely a lot cheaper. But when running metals red-hot, this Jet-Hot ceramic coat is the real deal.You won't believe this stuff until you see it with your own eyes. You'll think I'm exaggerating. But the facts are that you can watch your headers glow red-hot and not damage the finish with this treatment. It's a silver finish that looks very much like polished aluminum and feels like plastic or vinyl. It lasts several years and keeps your tube headers from rusting or heat fatigue. Not only that, but 15 minutes after running - and seeing the tubes glowing red-hot - you can touch the headers and not get burned. It directs heat away so well that most heat passes out the pipes rather than being conducted through the metal. That also keeps your starter and other nearby peripheral assemblies cool. The coating is some form of ceramic that can expand and shrink with the change of metal at temperature. You can get it in a variety of finishes, with black and silver being the most popular. Really cool stuff!

Subject: Re:Radical DeStressing 511B's
Posted by AstroSonic on Fri, 02 May 2003 09:27:21 GMT
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Hi Sam,Thanks for the info. I was able to locate Altec AN-9 at the Sound Practices website as you had suggested. The method of achieving acoustic alignment by changing the relative position of the drivers while wired in phase to produce a maximum null at the crossover, then reversing the driver phase (for 2nd order xover) is ingenious.Now about destressing the 511b's... Just how much sawing/weld removal are we talking about? Just the fins, fins and flare, or the entire

horn?Regards,AstroSonic

Subject: Re:go for it!
Posted by Sam P. on Fri, 02 May 2003 10:28:45 GMT
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hope the pictures explained better :) This is easier than doing front baffle cutouts for woofer, ports, and horn flares any day. Sam