Subject: Hmmmm
Posted by Adrian Mack on Wed, 10 Dec 2003 09:50:33 GMT
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Re-measured my conical horn today with speakerworkshop.... and guess what, it now reckons response only goes to 1.1/1.2KHz or so :@ It did say 1.6KHz just yesterday. I dont know whats happening there but I tried a million times and it just doesn't wanna do 1.6KHz any more. Perhaps it was a resonance or noise or some other sort of crap that isn't coming up anymore, although I did smooth and filter out quite a lot of that junk... so I still am not sure whats happening there.Perhaps its time to try a new driver. Just analyising the Alpha 6 I was using again, its Fs is 120Hz, BL is 8Tm and Qts is 0.54. I think that the Qts is rather high for use in a horn.... perhaps this is limiting its HF response. Using driver mass rolloff equation =2*Fs/Qes gives a mass rolloff on the Alpha 6 of 393Hz. After searching around a lot, I saw an offering by Eighteen Sound which looks like a good candidate for my horn, model 6ND410. Its a 6" driver with a BL of 11.6Tm, and low Qts of just 0.24, and Fs is 120Hz. Driver mass rolloff equation gives mass rolloff of 888Hz! Very high compared to all other drivers I have looked at such as P.Audio ones and a couple of JBLs. Hornresp predicts that the Alpha 6 and the 6ND410 both have about the same HF response in my horn. But the Alpha 6 in reality doesn't.... perhaps, the higher BL and lower Qts of the 6ND410 will make it better for the HF response that I (apparantly, grrrr at SW!) am missing with the Alpha? Below is the spec sheet for the 6ND410. Of course JBL LE5 would be nice... but very rare.Anyhow if anyone has comments on the 6ND410 etc, I would appreciate it. I would like to know weather or not its worth buying and testing out in my horn or not. I know 18-Sound does not make cheap quality stuff, however I want comments on the suitability of this driver in a horn etc, weather or not I would see an advantage over the Alpha 6... Thanks for any advice guys!Adrian

Subject: Re: Hmmmm
Posted by Adrian Mack on Wed, 10 Dec 2003 09:57:45 GMT
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Somebody on the high efficiency forum suggested my throat is too SMALL... do you think increasing the throat size a bit will help improve the top end? Its pretty weird the Alpha isn't going higher..., but I always thought a smaller throat is what brings up the top end. I would still appreciate comments on the 6ND410, that driver is really on my mind at the moment... although I really wanna make sure that I've made best use of the Alpha 6 before spending more on another driver.

Subject: JBL 2105
Posted by Wayne Parham on Wed, 10 Dec 2003 11:33:39 GMT

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Here's another one just to throw one out there - The JBL 2105 was a real sweet 5" midrange driver that is in the same general size you're looking for. Like the Alpha 6, Q is a bit high but the smaller diaphragm resonates higher, so 2Fs/Qes = 615Hz. You can run them way up high; The only problem now is finding a pair - Maybe you can find them pre-owned somewhere. They're excellent, so it would sure be worth looking.

Subject: Re: JBL 2105
Posted by Adrian Mack on Wed, 10 Dec 2003 12:31:30 GMT
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Oh man.... and there was a pair of JBL 2105s in good condition on eBay AUSTRALIA, my own country about a month or two ago. I was sitting here at the computer wondering to myself, should I buy it or not. They wern't even going for that much. They looked pretty nice so I was going to buy them, but I was thinking, "Whats the point if I have no use for them except to stare at them". WHY DIDN'T I BUY IT? !! I wish I had now. Got some ideas off high eff forum about using a phase plug and a little larger throat, a round throat too to reduce more phase cancellations above 1KHz, perhaps I can get more response doing this. I am going to kick myself for not buying those 2105's. I can only hope that they would not have worked good for me, I'll never know now.

Subject: Re: JBL 2105
Posted by Wayne Parham on Wed, 10 Dec 2003 13:02:36 GMT
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Keep looking. Those 2105's are sweet.About phase plugs and throat shape - My design approach has been to keep the midrange horn simple and crossover where required without a difficult flare transition and phase plug in the midrange subsystem. The idea is that the added complexity isn't required considering you plan to crossover at some point to a tweeter.Phase plugs certainly help reduce path length related cancellations at higher frequencies. That's what they're used for. But I'm not sure you'll need one in a midrange horn like this. You definitely could design around one and make an excellent horn. But fabrication might be more difficult, and the extension you'll gain might have been easier to accomplish by different means.Modern midrange horns designed for use above 100Hz or 200Hz are generally expected to cover the vocal range, and run out of steam in the overtone region, between 1kHz and 2kHz. Many of them use flares very similar to yours, some with phase plugs and some without. So I think you're on the right track here, and you just have to decide what compromises and optimizations are in order for your particular goals.

Subject: Re: JBL 2105
Posted by djstan on Wed, 10 Dec 2003 20:29:32 GMT
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I've been looking at some pro sites that use conical horns and found the Yorkville tx8's use a conical 8 inch midrange and most, if not all the mid driver can be seen in the throat area. The Electrovoice Variplex II pretty much the same. They use 8 inch mids however, the Yorkville using Audax mids which interests me because I have 4 Audax 8inch mids (HT210T0 almost ruler flat from 200 to 6khz) and want to put them on a conical horn. Maybe this is the route to go?Also from the Electrovoice picture it looks like it has a one to 3 inch straight throat before it enters the concial horn. What effect would this have? Increase high frequency extension?

Subject: Re: JBL 2105
Posted by Wayne Parham on Wed, 10 Dec 2003 20:59:48 GMT
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Many JBL's use horns like that with 8", 10" and 12" cone drivers. Examples include the Venue Series 2110, 3115, etc. My midhorn uses a 10" driver, which seems to work best for covering the entire vocal range.

Subject: Re: JBL 2105
Posted by Adrian Mack on Wed, 10 Dec 2003 22:38:34 GMT
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> Also from the Electrovoice picture it looks like it has a one to 3 > inch straight throat before it enters the concial horn. What > effect would this have? Increase high frequency extension?See this post http://www.AudioRoundTable.com/PiSpeakers/messages/1623.html and then scroll down to "Hybrid Flare". I think this is what your after.

Subject: Good outcome with phasing plugs
Posted by Adrian Mack on Thu, 11 Dec 2003 07:17:05 GMT
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Messed around today with a couple of different phasing plugs, triple checked speakerworkshop etc to make sure its going right. I did see an improved top end when using a phase plug. My

phase plugs were basically discs, of a few different diameters and thicknesses. I am going to muck around more with phase plugs, perhaps try different shapes and see what happens then. It definitly did improve the top end though!I think last time why SW gave me a differnet result in the end (when I stated response to 1.6KHz on the conical, then I came back and said it was no longer happening) was because my filler block was kinda pressed against the cone. I knew this was happening because it was a bit oversized and I couldn't be bothered changing it to a more appropiate shape (used two smaller blocks that I had already made and put them togethor to form one big one), so what happened was at the beginning it limited cone movement and HF response increased, but after continuous use, a few hours etc, the cone no longer completed stayed limited. The cone sort of started 'bending', the filler block only limited it near the edge of the cone (towards the surround), so the part of the cone near the middle (towards the dustcap) started bending/bulding, however you want to put it. Kinda like cone flex, it only became apparant after continuous testing/strain on that day. Anyway, thats what happened... I have since removed that oversized filler block as it could also damage the drivers (no damage has been done though). I started today building yet another conical horn... this time with a 110mm diameter throat. I will use changable sizing rings this time so I can try differnt throat sizes on the horn. Perhaps a little larger throat so that phase cancelations above 1KHz are reduced and also a phase plug too will get me my wanted HF extension, I'm pretty hopeful after my results with phase plugs today. I might post graphs here later of different phase plugs and their results etc, perhaps not for a few days though until I get everything done. Will post back.....