Subject: Can somebody please tell me if this Tractrix design is correct
Posted by Adrian Mack on Thu, 27 Mar 2003 22:37:51 GMT
View Forum Message <> Reply to Message

Hey everyone. I've decided to use the Eminence Delta 10 for my midrange horns, covering 200Hz-1.6KHz. I have been modelling it in Hornresp, and come up with what I think are some pretty good results. Here is the graph:It stays within +/-2db along the curve to about 200Hz. The horn itself has a cutoff of 164.03Hz, it performs crap at this freq according to the graph, but thats OK, as I only want it from 200Hz to 1.6KHz :) Here are the parameters I entered in the program:As I have never built a horn before, and this is my first time using Hornresp, can anyone please tell me if any of the numbers I have entered are just outragously stupid or impractical :) I have heard that Tractrix horns should not be used to its cutoff frequency... do you think, from the info above, that this one will be fine from 200Hz? What should the acoustical and electrical impedance look like? Here are the ones I have for this design:Can anyone see any problems with these?Ok... providing all the design work is correct, how do I go about building it! EG: Mouth angles, etc. Some links would be nice, or just plain info if you are willing to spend the time telling me :)Here is the schematic plans if it helps any:Thanks for any help !!! I hope the message is not to long or confusing :D Most of it is just pictures anyway!Adrian

Subject: Re: Can somebody please tell me if this Tractrix design is correct
Posted by Adrian Mack on Thu, 27 Mar 2003 22:41:08 GMT
View Forum Message <> Reply to Message

Oh yea... one more thing, on the diaphram displacement graph, it shows real big excursion, but when I sample the freq, it says the result is supposed to be displacement divide by 10. Is this correct? If it is, it should have shown this on the graph anyway instead of only in the samples :PThanks!Adrian

Posted by Wayne Parham on Fri, 28 Mar 2003 05:17:12 GMT
View Forum Message <> Reply to Message

Looks like you've got a great horn there! After a quick look over your screens, I see no glaring

the placement as a cornerhorn, I'd model them in halfspace and expect them to be baffle mounted. Then again, the horn's mouth is two feet in diameter, so baffle mounting may be impractical. You may want to design them with the intent of forcing placement to a corner or against a wall. But do try a model of them in freespace - If they look good in freespace, they'll be fine on a baffle or in a corner.One thing worth mentioning is the very small throat. This makes the

compression ratio quite high and you may find that is a problem. I am concerned that it may stress the cone and cause it to bend, possibly even tear. But maybe it will be just fine if you're planning only low-level output and don't plan to "crank it up." Still, while I can't say for certain, I think I would open it up, even though that makes the horn much bigger.All-in-all, I think you did a great job!!!

Subject: Re: Can somebody please tell me if this Tractrix design is correct
Posted by Walt on Fri, 28 Mar 2003 06:54:51 GMT
View Forum Message <> Reply to Message

As Wayne mentioned the throat in your design is extremely small. I think 100cm2 or more would be more realistic. I think you will see that the upper cuttoff frequency of the horn will be come less. If this is the case don't worry to much. Hornsresp only gives you the SPL produced by the horn. The speaker itself will have its own sound.In practice you will need a volume in front of the speaker to couple the speaker to the horn. For ATC you should enter the cone area and the volume should be at least cone area X maximum excursion, this to prevent the cone from hitting the panel which is in front of it. Try to keep this volume as small as possible because it acts as a low pass filter which attenuates the higher frequencies.Best regards,Walt

---

Posted by Adrian Mack on Fri, 28 Mar 2003 10:13:00 GMT
View Forum Message <> Reply to Message

Hey Wayne and Walt,I tried a larger throat as you've said. Walt reccomended 100cm^2. But anything above 10cm^2 is no longer flat to 1.6KHz! It is more near 1KHz or lower. I plan on running them at high levels, 120db in some cases (like when I'm showing off my system). I also enjoy high levels of output. According to Hornresp I'll need about 60Wrms to do this. Do you think this will present any huffing sound or any other unwanted noises with the very small throat? What freq would you reccomend I crossover at? 250Hz? or is that still too low for this horn?> in practice you will need a volume in front of the speaker to> couple the speaker to the horn. I am not exactly sure what you mean?!> For ATC you should enter the cone area and the volume should be at > least cone area X maximum excursion, this to prevent the cone from > hitting the panel which is in front of it.I've tried using the ATC figure the same as Sd (344.9cm^2). And for throat chamber volume, I used 550cc which is Sd*Xmax (Voice Coil Overhang) Since the program needs it in cc for some reason, does 1000cc equal 1 litre?. However using the two figures above (344.9cm^2 and 550cc) significantly restricts my high frequency response (have also tried a larger mouth). The same also goes for the throat area when I increase it. Can any of you suggest ways around this?Thanks!Adrian

Subject: Re: Can somebody please tell me if this Tractrix design is correct
Posted by Adrian Mack on Fri, 28 Mar 2003 10:14:18 GMT
View Forum Message <> Reply to Message

Thanks for the info! I've ran into a few problems doing this though, can you please read them in the other followup I made?Thanks!

Subject: Re: Can somebody please tell me if this Tractrix design is correct
Posted by Adrian Mack on Fri, 28 Mar 2003 10:18:01 GMT
View Forum Message <> Reply to Message

Hey Wayne,I was also wondering, the program requires a parameter called FR, which is the Rear compression chamber acoustic lining flow resistance, measured in gm/cc/sec. Is this a spec of the damping material used for lining? How will I know what to use here? Thanks!Adrian