Subject: Horn Designs for brand X drivers
Posted by Bass Trouble on Sun, 30 Mar 2003 10:59:15 GMT
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I am extremely interested in building some kind of front loaded horn boxes (3 of them) to increase the effieciency of my home subwoofer settup. I use 3 18" dual voice coil car subs driven with a 1400 watt amp. My spl levels are in the 120 range room loaded at 25 to 30 hz, and was told a flh would increase those numbers significantly. Specs on the drivers are as follows. spl 1w/1m-89.1, displacement-6513.3 cc's(397.4 cubic inches), mounting depth 8 1/4", revc-7.32, vc inductance,mh- 7.499, sd,sqM- .1159, bl-26.83, vas-423.17 liters (or 14.94 cubic feet), Mms,gms-372.63, fs-17.5, qms-11.942, qes-.417, qts-.403, Pmax-1000, and Xmax-14 mm. I have tried to download some horn modeling programs, and do not know what im doing, so can some one please help me design some horns that would give response down to around 20 hz with these drivers? Size is not a problem, nor is the construction of the enclosures. I have asked everyone it seems for help on designing my own "earthquake" style sub enclosures, and no one has helped anywhere else, just told me to do worksheets on different programs. I can't seem to understand all that stuff when I do get a download properly, so please help me. Thanks a lot for any and all help provided.

Subject: 20Hz basshorns
Posted by Wayne Parham on Sun, 30 Mar 2003 20:06:10 GMT
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Size actually is the problem when you're talking about 20Hz operation. The wavelength of 20Hz is 55 feet so a horn for this frequency must be very large. At any rate, I suggest using the Hornresp program to design your horns.

Subject: Couple of questions
Posted by Bass Trouble on Mon, 31 Mar 2003 01:21:42 GMT
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Okay, my computer downloaded the program succesfully (I think, it said 4 files or items unzipped, so I hope there is only 4), but I need to know for a front loaded horn, with a sealed chamber for the sub, what am I looking for? Finite or infinite horn, single tractrix, exponential flare segments, or hyperbolic-exponential, conical or tractrix, ummm lets see, for the horn flare parameters there are catenoidal,cosh,exponential, sinh, and conical. Couple other things I can't quite remember off the top of my head that I have never heard of in my life until now. I will use this program as suggested to me, but for a sub only horn settup, what is a preffered design (with a sealed enclosure for the back of the woofer) as far as all that stuff I mentioned goes? I can build

any sealed, ported, or bandpass box you want, but this is more complicated than I ever imagined. I thought transmission line stuff was sophisticated!! Size is not of a concern as long as the overall height is no higher than 8 feet and no more than 44 inches wide. These will be built where they will stay in the room. I am aiming for the most spl down to at least 25 hz response at the highest spl levels possible, preffering flat or boosted response at the 25 to 30 hz frequency area. I have much to learn now, just tell me what flare style and which design I want, and maybe some tips to help me understand all this. In the mean while I will be looking up all this new lingo. I've heard the CV Earthquakes before, what design are they? Thanks again

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Subject: Couple of answers
Posted by Wayne Parham on Mon, 31 Mar 2003 02:53:55 GMT
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An infinite horn is just that - infinite. So you can't build it. Modeling it will show you what a finite horn of given shape and characteristics might approach if mouth size is sufficiently large, or if several are used in a group. Besides this, there are spatial constraints that you can model with

any boundaries. Half-space is a common configuration as it is what a single horn standing on the

"ANG" field and it is the condition a horn will be in if it is against two boundaries, like on the

and it is what the horn will act like when placed in a corner.As for a 20Hz horn, you have a problem if you want to truly horn-load the bottom octave. It has to be huge. So before you even worry about flare shape, you might want to set some design goals. If your goal is 20Hz f3, you're stuck with only options that are very large. One of my favorite solutions is to use room corners because they form the largest horn one can possibly fit in a room. Hyperbolic or exponential expansion loads the diaphragm lower than a linear expansion for a given length, but again, the room's corner is the biggest horn you can possibly fit into a room. So it makes a lot of sense to take advantage of it.

Subject: Re: Couple of answers
Posted by Bass Trouble on Tue, 01 Apr 2003 23:58:38 GMT
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Thanks for the guidelines, does a corner horn have to be a bass reflex design, or can it be sealed? The ebp for my subs prefers a sealed, though plenty of people build vented boxes for these. I've been reading through lots of the old post, and seems you've had to explain many(!!!) times the size of a theoretical horn for 20 hz performance. I could live with 30 hz for an acceptable frequency limit. I will post more questions as I learn more and model different designs. One quick question, are there any 10pi designs you or others have designed less than the size of a house with 18" drivers that have output to 30 or below hz with high spl levels at those lower frequencies? I am strongly considering some JBL 2241H (I think thats the number) or Eminence Kilomax subs

instead of using these car audio subs.Thanks again, randy.

Subject: Re: Couple of answers
Posted by Wayne Parham on Wed, 02 Apr 2003 02:03:51 GMT
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The main thing is that the alignment be overdamped to conjugate the bass lift from corner

"seven Pi-18 cabinet dimensions" for specific dimensons for making the bass bin for the JBL 2241.

Subject: Re: Couple of answers
Posted by Bass Trouble on Wed, 02 Apr 2003 23:28:18 GMT
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Do you have designs for the very large 30 hz 10 pi's? If so please e-mail them to hot455ho_79@hotmail.com. If not please elaborate on drivers and spl performance at low frequency. One more quick question, how does a corner horn use the ceiling as a part of the horn design? Seems like they would only get benefit from the walls and some from the floor. Thanks again! You must be one busy dude, I see all the replys all over this forum and a couple of others!

Subject: You've got mail!
Posted by Wayne Parham on Thu, 03 Apr 2003 00:09:34 GMT
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