Subject: Midhorn implementation
Posted by jlharden on Mon, 03 Jan 2005 22:00:35 GMT
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Hi Wayne, Hope you had a great holiday! I have a couple of questions. I'm interested in using the midhorns with JBL 2012 drivers. I'd like to try to bring the midhorn low enough to match a pair of 2226 woofers per side. The woofers are being run with a subwoofer plate amp which utilizes a 12 db/octave lowpass variable from 40-160 hz. Can the midhorn be scaled slightly larger to lower the useable cutoff? I'll be using a 2426/2370 horn above and would be interested in the crossover schematic between the midhorn and hf horn. My 2426 is a 16 ohm part, so I'll have to pad the mid an extra 3 db or so(will be used along the wall and not corner loaded, doesn't have to match woofer system though). Thanks for any help you can provide. P.S. After dragging out the 4648 enclosures and loading them with the 2226J woofers, the wife thought they were pretty cool! I'm looking to configure similarly to audiophile Pi type setup using a seperate amp on the woofer section and passive network between horns. The 2226 cabinets presently sound great reinforcing the "little" 2 pi towers! Take care!  Jerrod

Subject: Re: Midhorn implementation
Posted by Wayne Parham on Mon, 03 Jan 2005 22:18:38 GMT
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You can make the horn larger for lower cutoff, something like this "80Hz horn."  You can probably use something a little smaller, maybe just a couple of feet long.  Midhorns like this can get pretty large.

Subject: Re: Midhorn implementation
Posted by jlharden on Tue, 04 Jan 2005 22:18:09 GMT
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Thanks Wayne, Increasing the mouth size to 14" x 28" yields 392 square inches, very close to the proposed horn you mentioned. 5.5" x 5.5" inch throat is very close to the proposed 30". Am I correct that the radiation angle expanding to the desired mouth size will dictate the horn length? By length, are you refering to the axial length from throat to mouth? Sorry, a little hand holding required. Would the 2012 perform well with this lower cutoff frequency or would the 2206 be better suited. There is a large difference in efficiency between the two units. Thanks, Jerrod

Subject: Re: Midhorn implementation
Posted by Wayne Parham on Tue, 04 Jan 2005 22:28:19 GMT

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Those are good dimensions;  Probably worth giving it a try.You're right that flare angle sets length if throat and mouth area are held constant.  What it's going to do is to give you a truncated horn.  You'll probably find that it will work well in corners, but the low end response will sag when pulled away from the corner.  The corner actually becomes the horn for the bottom octave because the flare alone is too small to support the lowest frequencies.  So if you pull the horn out further than about a foot away from the corners, you lose all the bottom end.You may also have some issues with your upper crossover point, and might have to shift it down just a smidge, both because of midhorn rolloff and because of summing.  That's where your real work will begin.  I'm hoping if you don't modify the horn too much from what I already have that the crossover will work well as it is, or with only a slight shift.  I'm very proud with how seamless the integration is.

Subject: Re: Midhorn implementation
Posted by Bill Wassilak on Wed, 05 Jan 2005 21:03:01 GMT
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Hi Wayne,To add to what your saying a conical flare also rolls off on the low end at about 20% higher in freq. than what the actual flare rate calculates out to be without corner loading. For example you could have a conical horn with a 100Hz flare rate but it may be only usable to about 120Hz or so without any sort of extra loading.Bill W.

Subject: Re: Midhorn implementation
Posted by Wayne Parham on Wed, 05 Jan 2005 23:59:24 GMT
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You're right, conical horns rolloff on the bottom end higher than exponential and hyperbolic of the same size.  Tractrix horns rolloff on the bottom too.  But like you said, corner loading can really boost the bottom end.  It not only confines the radiating pattern but also makes the horn act as if it were larger, extending the flare in both area and length.

Have you ever tried Hornresp?  It does a very good job of calculating response, and I like to use it to do "what if" analysis before building a horn prototype.  It can't model vented rear chambers or other acoustic devices like that, but they can be modeled separately.  And it cannot model a phase plug or deal with non-pistonic diaphragm motion, so frequency response up past cone breakup is usually higher than predicted.  But I think Hornresp does a great job of predicting response from lower cutoff up to the end of the diaphragm's pistonic range for traditional horn shapes.