Subject: Push-Pull horns
Posted by martin seddon on Fri, 27 Aug 2004 12:30:37 GMT
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Hi,I recently built what I call a push-pull horn and would like to chip in with my own experiences. It started out with a large fibre glass 160Hz front horn for a Lowther PM2a. Then I made an L shaped 2.2m 7000cm2 f/glass and ply horn for bass using a CA25FEY. I had cross over difficulties I didnt know how to solve and eventually adapted the horn to back load the Lowther. This was done by breaking the top round fibreglass section over to mate with the mounting plate on the fronthorn. So there are only 2 x 90 degree bends (using reflector plates. The driver sits in the throat of the backhorn - with no throat chamber.HornResponse predicted it would work down to 50Hz at c. 102 dB - and I think it may actually be true in practice - tho I havnt measured. It works much better than I expected - great bass integration. A

Subject: Re: Push-Pull horns
Posted by GM on Fri, 27 Aug 2004 15:42:28 GMT
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>Extended HF down the back horn is OK.====If the 'XO' point is kept low enough, I agree, but I've experimented enough with BLs that above ~250Hz (some say as low as 100Hz) I find the comb filtering unacceptable, so as always YMMV.==== >The back horn throat chamber (LP acoustic filter)is best eliminated - this removes the nasty looking peaks (phase inversions?) shown by HornResponse - which even if well down, must surely be heard full level from the front.====Hmm, if you design the horn properly, the filter doesn't cause this due to the first section of the horn damping it. I assume that either by design/experimentation/blind luck yours works due to having the ~correct first section that is in effect the LP filter.GM

Subject: Re: Push-Pull horns
Posted by martin seddon on Sat, 28 Aug 2004 12:11:31 GMT
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Well with my old cloth ears and lack of measuring skills I won't make any rash claims. I build the contraptions as an experiment not expecting that much out of it - and was pleasantly surprised. I think possibly back horns get a bad name (and I've heard a few) because they are not even close to a proper expansion. Once one builds something like the real 50Hz thing (never minding the power to weight ratio, waf etc)one discovers what these drivers can do in the bass end. amazed just how enjoyable and free a single triode / horn can be.best rgds, martin s

Subject: Re: Push-Pull horns
Posted by GM on Sat, 28 Aug 2004 21:55:40 GMT
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Agreed, I've yet to hear a 'fullrange' single driver backhorn that has the proper loading for the app other than my few 'proof of concept' designs.GM

Subject: Re: Push-Pull horns
Posted by JeffM on Sat, 28 Aug 2004 22:12:59 GMT
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I agree. A backhorn is so narrow it must be more like a TL or TQWP than a horn. Not that that's bad at all, but I think it is true.

Subject: Re: Push-Pull horns
Posted by roncla on Sun, 29 Aug 2004 00:32:22 GMT
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Well i spent around 6 months developing a horn for the 206e and its based on a very low M factor hyperbolic/exponential flare. It performs as designed and i believe i have the proper loading.Any BLH is going to have some TL action.ron

Subject: Re: Push-Pull horns
Posted by GM on Sun, 29 Aug 2004 02:19:12 GMT
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Yeah, when I add enough series R to get the mass corner down to ~250Hz, I calc the flare = ~6Hz, M = 0.509, so for all intent it's a very narrow angle conical horn.GM

Subject: Re: Push-Pull horns
Posted by roncla on Sun, 29 Aug 2004 03:32:48 GMT
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so for all intent it's a very narrow angle conical horn.If real estate is location, location, location then horns are size,size,size.ron

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Subject: Re: Push-Pull horns
Posted by GM on Sun, 29 Aug 2004 04:10:44 GMT
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Yep, which sets the gain.GM

Subject: Re: Push-Pull horns
Posted by roncla on Sun, 29 Aug 2004 14:44:46 GMT
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GM,I posted the flare in the FR Tech forum gallery, it really dosent appear to be a conical flare.And i find that no series resistance to be the best sound (in this case)ron

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Subject: Re: Push-Pull horns
Posted by GM on Sun, 29 Aug 2004 20:47:37 GMT
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With an uncorrected mass corner around 433Hz, this is way too high for me, so I guess it's a 'different strokes for different folks' situation.FR tech forum gallery? Anyway, if you plot out what I posted you'll see that until you get near the mouth of the full size horn, which you wouldn't since the cutoff would be at a much higher frequency, the expansion is conical enough that I'd bet dollars to donuts you couldn't hear the difference outdoors, much less in a typical room.GM

Subject: Re: Push-Pull horns
Posted by roncla on Mon, 30 Aug 2004 01:42:50 GMT
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FR tech forum gallery? Yea James has installed a section in the image galleries for tech pics and such.I'd bet dollars to donuts Cant take that bet GM, the Doc has put me on a restricted diet, seems like my fats are too high.ron

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Subject: Re: Push-Pull horns
Posted by GM on Mon, 30 Aug 2004 03:16:59 GMT
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Hmm, I saw your horn dwgs, but didn't see any specs for them. Understand the problem well, I've lost 30 lbs since I saw the Atla DIY2003 Meet pics. Still got another 25 to go though, ugh! Oh well, I enjoyed getting them, but as usual, payback is a !@#$%^.GM

Subject: Re: Push-Pull horns
Posted by roncla on Mon, 30 Aug 2004 21:57:27 GMT
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GM, go to the image gallery page there will be FR drivers ,diy ,horns and such. At the bottom of the page theres a section that says Technical, i believe i have the only image in there at present.ron(those rice cakes can be made eatable,just goop on lots of cream cheese and grape jelly)

Subject: Re: Push-Pull horns
Posted by GM on Wed, 01 Sep 2004 01:31:16 GMT
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Arg! Didn't scroll down far enough. I have the fonts set so large I have to scroll pretty far just to get to the bottom of the horns section. Anyway, the point I was trying to make is that if you draw a line between the throat and at the 42.8" point and built it that way, you would be hard pressed to hear the difference. Now if a slower flare rate is used such that this slow expansion went all the way out to 1/4WL before a rapid flare to the mouth, it will work just fine if it's a straight line, i.e. conical out to this point.GMPS - I prefer cinnamon and sugar syrup on my rice cakes. ;^)