Subject: Folded horns with curves, about 60 – 500 Hz
Posted by Richard on Sun, 20 Nov 2005 09:23:18 GMT
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Hil'm going to build my first horn system, about 60 – at least 6000 Hz. (Under that sealed active subs, above that maybe Aurum Cantus ribbons).Most desired qualities: transient response, dynamics & detail. Budget: lowish with good quality. Plan A is look for a horn to put my 12" JBL 2202H's in, covering 60 - 400 Hz. A bit more would be better, as my mids would be happier from 500 Hz up. A straight hypex 68" (172 cm) should give close to 60 Hz, but is a tad long. When I saw 15" JBLs in a U horn the other day http://hem.passagen.se/sajberrapid/50hz.html, I thought the smaller size and ability to stick them where the back wall meets the side-walls should make integration easier. I tried to contact Mattias for design info, without success so far. Option B is just run the JBLs up to about 150-250 Hz, then use some 10" PHL 3451s that I have, up to about 800 Hz, then a 1.5-2" driver in a horn all the way to 20 kHz. If I go Plan A, it'd be more flexible with either a U horn (how to design it?) or a folded horn. To get extension to 500 Hz, I'd need one with either very well deigned reflectors, or curves. Bill Fitzmaurice's DR horns have curved bends, eg www.billfitzmaurice.com/plans/product_info.php/products_id/3 but are a double curve, and intended to hold arrays as well, so degree of difficulty to build is more than I need. Is there a single curve folded design around? Any comments are welcome. Thanks!

Subject: Re: Folded horns with curves, about 60 – 500 Hz
Posted by Wayne Parham on Mon, 21 Nov 2005 15:38:36 GMT
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I've built horns that do this, and I can tell you that there are several suitable designs. A straight horn will do it, and so will a folded horn if the bends are arranged so the higher frequencies propogate out. The thing is that there's a bit of a balancing act, in fact, several. The most obvious is wavelength related. The horn must be large enough that the diaphragm is loaded at low frequencies, but that means the dimensions will be several wavelengths at higher frequencies. So not only do you have issues of wavefront propogation and reflections but also standing wave modes and propogation time.Folding, bends, reflectors, etc.Simulation

Subject: Re: Folded horns with curves, about 60 – 500 Hz
Posted by rick57 on Mon, 21 Nov 2005 21:15:31 GMT
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Hi Wayne> I can tell you that there are several suitable designs.Great! Could you name some for which DIY plans are available (and any comments on tuning them).(and maybe the odd one up to say 400 Hz)?Thanks

Subject: Folded horns 70 – 500 Hz
Posted by rick57 on Tue, 22 Nov 2005 09:28:35 GMT
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Hi Wayne To add to that, I've read Bill Fitzmaurice saying:"The DRs are the only folded horns that I'm aware of that can go as high as a straighthorn but still deliver down to as low as 80 Hz in a relatively compact package."The DRs are more complicated than I need, so do you have a simpler plan for a DIYer?Thanks

Subject: Re: Folded horns 70 – 500 Hz
Posted by Wayne Parham on Tue, 22 Nov 2005 13:21:11 GMT
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Yes, I can send you some plans. But beyond that, it's probably better to take this discussion to

is a simple conical horn. The bandwidth you require is mostly midrange, so you might consider a higher crossover point which allows a smaller horn. Naturally, deeper extension will require a larger horn. If you plan to use subs underneath, you could raise your midrange horn crossover point an octave or so, which would make its size requirements much smaller. Then you could go with a straight horn, which is about as simple and pure as it gets.

Subject: Horns 70 – 500 Hz
Posted by rick57 on Wed, 23 Nov 2005 01:54:59 GMT
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WayneThanks, before you send any plans . .I didn't mention it, but I have a pair of JBL 2202s, that are Fs 50 Hz, Qes 0.17 & Fhm 588 Hz. To get value from them I wanted to cross to a mid horn at 500 Hz. If I cross at only 200 Hz I'm throwing away a lot of their potential. (I'll use a sub under about 70 Hz).I could sell them, but they're very good.Yes a simple conical horn could be perfect above that, and have a driver in mind that's good over 500 – 6000 Hz.Do any of the plans, by virtue of smoothness one octave into the lower mids, fit this need?Thanks

Subject: Re: Horns 70 500 Hz
Posted by Wayne Parham on Wed, 23 Nov 2005 15:40:41 GMT
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When considering any driver/horn combination, I would suggest modeling first with Hornresp.

Once you have confirmed that it looks good on paper, give it a try and see how it sounds, measuring if possible. That's how I would approach this.

Subject: Re: Folded horns with curves, about 60 – 500 Hz
Posted by DorinD on Fri, 25 Nov 2005 07:33:34 GMT
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Nobody mention yet the Show Horn of Bruce Edgar?Get plans from www.volvotreter.de ->downloads. If you have a 10' driver with 2Fs/Qe of about 600Hz you could try to resize the plan (1:1.4) and have a 70-580Hz horn but only with with a proper phaseplug installed.
