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Subject: initial exponential horn design

Posted by [Adam](#) on Tue, 23 Apr 2002 21:08:03 GMT

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I drew up a sketch of my 40 Hz exponential horns and I decided to post it to see what everyone thinks. It's actually even bigger than I originally posted. The design I was looking at was for a 1/4 space horn and this is going to be an all-out 1/2 space design. The mouth area is 4,550 sq inches, dimensions on the mouth are six feet wide and six feet tall. In this picture, the horn is 72" tall and 58" deep. Also, the entire thing would be 72" wide as well. The first expansion is a horizontal one, coming from the throat down to the first fold. It expands from a 49 sq inch throat (14"x3") to the widest it can get which is 72". So at the 1000 sq inch mark, the horn folds, and then the expansion continues vertically to the mouth of the horn. This is a rough drawing, but the estimated horn length is 11.5 feet, -3db points at 39 Hz and 285 Hz. So, any comments? I know bracing is going to be rough, I'm just hoping that having the two lengths sharing one wall will help cancel out vibrations. I'll use cross bracing inside the horn to bind opposing walls together, add stiffening ribs every ten inches or so and use expanding foam in the cracks. I think it's a pretty good design, except that when I build it I'll probably not have the first expansion follow the wall of the second expansion so closely, so it isn't bent like that. That should simplify things. P.S. the entire volume of the horn (externally) is about 117 cubic feet! Adam