Subject: You could try this design
Posted by Adrian Mack on Sun, 07 Dec 2003 07:09:16 GMT
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I was a little cautious at first about how this driver would perform in a horn because of its lower mass corner. Its got an Fs of 31Hz so its tuned like a "mini-subwoofer" and not for a midrange horn. Anyhow, the tractrix horn isn't going to give you wideband performance that is flat. I couldn't come up with anything that I would be willing to use myself. Using a conical horn will loose you some sensitivity, but you can get it much flatter over a wider range. After some mucking around I got a nice flat response from 200Hz to 1.6KHz (-3db @ 1.6KHz) in a conical horn within your size limits. Graph is below.It assumes the air in front of the cone is 108cm^2. If I recall correctly, my Alpha 6" Eminence driver had ~118cm^2 of air in front of the cone. Your seas driver is a 6.5" woofer so I'll assume it could be ~128cm^2 or so or air in front of the cone (the air in front of the cone is a permanent front chamber). So you will need to make a filler block, carefully made so that it takes up about ~16cm^2 or so, it serves to lower the volume of the front chamber which increases your usable HF response. Take out your ruler and do some careful measurements of the complete gemetry of the cone and dustcap, and then use a CAD program or paper to design the filler block. If you don't do this, it won't matter too much, the response wouldn't change much as you can see below:Its actually not too bad at all. Since you have SoundEasy (and suitable microphone I assume) then you can take a few measurements before and after the filler block (looks like a disc with hole in it for throat entry) is in place.I used 28cm^2 throat, 3250cm^2 mouth, 43cm axial length, no back chamber, and front chamber options are as said before. Sd to throat area ratio is less than 5:1 so distortion from the mouth geometry is low and horn length is 1/4wl of 200Hz (43cm/16.94"). The horn is only about ~95db 1w/1m sensitivity which is rather low compared to other horns. Its mostly because of the way the drivers tuned, very low, free air sensitivity is just 88db 1w/1m. Its intended use is not a horn. However it looks good in that horn, so I think you should give it a shot. Let me know what you decide to do. Adrian