Subject: Re: mid horn
Posted by Adrian Mack on Mon, 20 Sep 2004 12:00:44 GMT
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What would be the purpose of a 12-sided horn? It's extra work and effort which wont give you any actual gains over a round or rectangular horn. How low you go depends on what your goals are. Size also comes as a factor. Don't forget, for a horn to work as an actual horn it must be at least 1/4wavelength in length of the lowest frequency you want horn loaded. 1/4wavelength of 100Hz is 33.84", so the horn must be at least this distance in length for real 100Hz loading. Required mouth size also increases at the same time the lower you get. From memory the Pi Midhorn is 1/4wl of 300Hz in length and below that frequency works as a direct radiator. Corner loading it results in a low-end usable response to below 300Hz (I forget the actual low end limit, but I think it was around 150Hz-200Hz). The Pi 8 Corner horn has the rear chamber vented to 35Hz however, which is what brings the lower F3 right down to approximately 40Hz. "do you think I can try cutting off at 100"Not an issue with the Pi8 corner horn - there's no highpass filter at the horn cutoff because it uses a vented rear chamber to extend bass response to around 40Hz. As before, the transition between the midrange horn loading and direct radiator is at 300Hz. The vented rear chamber (5ft^3 tuned to 35Hz) is what brings response down to ~40Hz at the F3, without this very large vented rear chamber, the F3 is much higher. It sounds like you're talking about the horn without the rear chamber, but it wasn't clear from your question, so I just wanted to make you're aware of how it actually works. So - the idea is, if you're just building the midrange horn by itself and not the Pi8 addition (essentially the 5ft^3, 35Hz tuned rear chamber), then the issue of the lower horn cutoff is there. But in the Pi8, it doesnt really matter. You could make the horn length longer to support a lower Fc (also requiring a larger mouth size to support the cutoff - everything gets bigger as you get lower in frequency), but the idea of the Pi8 is performance in a reasonably small package. As you may or may not know, the sensitivity above 300Hz where there is horn-loading is much higher than below 300Hz, where output is direct radiator. To counter this, Wayne has a filter in the crossover to attenuate sensitivities above 300Hz to match it with the direct radiator output so response is flat from the vented rear chamber's ~40Hz F3 right up to the midrange horn's upper cutoff at ~2.5Khz or so (although the Pi8 plans call for a 1.6Khz crossover, but I mention it anyway).