Subject: Re: The Bumma (tentative title)
Posted by Wayne Parham on Thu, 17 Jun 2010 23:18:15 GMT
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That's a beautiful horn!

I have found that first-order crossovers don't work well with compression drivers. They allow too much excursion below the passband, where the horn unloads. But since the horn is longer than the direct radiating midwoofer, you can take advantage of higher orders. You don't really want to align voice coils vertically anyway, because that would put the mouth of the horn awkwardly out in front. Besides, all the mechanical and acoustic slopes add in there and modify the overall transfer function anyway.

It's a juggling act of competing priorities. You can make crossovers that give the right transfer functions and phase to get the forward lobe right and provide EQ for mass-rolloff with first-order, second-order, third-order or even higher filters. About ten years ago, I even went to the trouble of modeling first-order, second-order and third-order crossovers in Spice, writing up a document showing the schematic and transfer functions of each. Notch filters, Zobels and other filter types (as well as the R/R/C network for mass-rolloff) are all examined as well. It's sort of a study / illustration / demonstration document specifically written for people building crossovers for matched-directivity two-way loudspeakers:
Speaker Crossover Document
Crossover Electronics 101 Handout (from the Crossover Electronics 101 seminar I do at trade shows)I think you've been all through that stuff before too. You may have seen these documents, in fact, now that I think about it, probably so. But I guess it can't hurt to link them in this thread for other readers that might not have.