Subject: Matched directivity two-way loudspeakers
Posted by Wayne Parham on Tue, 09 Sep 2008 04:01:29 GMT
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Like virtually every other compression driver + CD horn combo, HF rolloff is predictable, since power response falls off at 6dB/octave and horn directivity is constant. The goal of designers using a horn like this is to combine it with other drivers or horns that have matching directivity. You'll want to design the crossover and set baffle spacing for a forward axis normal to the baffle, with null angles preferably just outside the vertical pattern of the HF horn. Crossover frequency should be approximately where the midwoofer's pattern narrows to equal the tweeter's horizontal pattern. Summing should be flat on axis and at all angles within the pattern.Baffle spacing, phase angles and time alignment, revisitedThis describes the basic approach. It isn't terribly difficult, but it isn't trivial either. I put a lot of time in each of my designs to make sure they are optimized. If you don't have measurement equipment, you can calculate phase angles and determine driver spacing to approximate crossover frequency and slope but this is rather tedious. For best results, you'll want to get the design close by calculation and verify with measurements, fine tuning as necessary.