Subject: Horn Basics
Posted by Wayne Parham on Mon, 12 Apr 2004 06:01:43 GMT
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It's been a long time coming, but now I've got a pretty good design nailed down. It is inexpensive and extremely simple to build. And we will be offering them complete or in flat-pack kit form which makes them even easier to build.

Horn Basics

The horn covers the 200Hz to 2kHz band and has 105dB/W/M sensitivity. Maximum power is 300 WRMS, so maximum SPL is over 125dB. Actual response depends on placement, but it is

corner placement is normal. In this application, the horn is smooth down to below 200Hz, almost to 150Hz.

Response is good to 2kHz, and then drops about 5dB and remains at this reduced shelf for almost an octave, to 3.5kHz. This is due largely to breakup modes in the driver. Both the Eminence Delta 10 and the JBL 2012 have rising response that peaks in the region above 2kHz. What occurs here is that the cone begins to flex making ripples in the surface of the cone. These cone surface movements are decoupled from the heavier moving assemblies so it's like having another much lighter cone driving the horn. This makes a second area of response that increases output from the horn above 1kHz.

In some applications, this output can be used making the horn capable of output to 3500Hz. Other applications will want to rolloff the region above 2kHz, and I've found that this can be done with a simple 1mH series coil. This is the same "Pseudo Butterworth" arrangement I've used in the past, and the addition of a 1mH coil does very little to affect horn response below 2kHz. It just shaves the peak between 2kHz and 4kHz, attenuating that region and preventing it from increasing horn output in this range.

Here are the plans: