Subject: Re: Horn Loaded woofers
Posted by Wayne Parham on Sat, 17 Oct 2009 19:26:38 GMT
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It depends on what you are trying to do. Traditionally, people wanted stiff drivers with low Q and high Fs. The idea was to "let the horn do the work" and that excursion wasn't required. However, if low bass is the goal, you still need excursion. Sure, horn loading reduces excursion but displacement still rises as frequency goes down. So you shouldn't overlook this when designing a horn.

My suggestion is to model the horn with different drivers and not to get hung up on any particular rules of thumb. You'll definitely see a trend form, and you'll find some merit in the "low Q, high Fs" argument in that it is usually tied to the efficiency/bandwidth ratio. The passband is made wider with such a driver, and for midbass, midrange and certainly higher frequencies, that is generally desirable. But for a hornsub, the opposite is often true. Not only do you not need upper frequency extension, you actually don't want it. So in this case, it's probably best to choose a driver with higher excursion ability, which also tends to usually have a looser suspension, and that means lower Fs. Sure the horn will reduce the resonant frequency, but that's not really all that important. What's important is the efficiency and smoothness of response, and also that you don't reach thermal or mechanical limits prematurely.

subwoofer. It performs very well and I'm very proud of it.