Subject: Re: Other Drivers and stuff
Posted by Tom Danley on Sun, 11 Apr 2004 17:45:58 GMT
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Hi WayneThe standard Lab 12, the version we use and the shorted turn samples your talking about that Eminance has built are all the same driver with the exception if the dimensions of the center pole and in one case the addition of a shorted turn and in the other a different VC.You could say they were different drivers but unless you took them apart down to the core and measured, you couldn't tell the difference as all the radiator, suspension , frame, physical construction and magnetic parts are all the same. Part of the design (what makes it a LAB 12 and different) here was to make a very ridged cone, one that acts like piston in operation in a horn as well, not just the driver parameters I had specified.My thought in not calling it by an unrelated name (like mag 12 etc) is that one does not see this generally when one say offers some other minor change, say a dual coil version of a woofer with a proven track record like the LAB 12 has. Also since the LAB sub project drove the need and then the design / spec's I gave Eminance for the LAB-12, it is perhaps also a part of the objection that one would simply be taking a unique, successful, proven design, make a small change (that was on the wish list but couldn't have been implemented at its conception) and try to infer it as a fundamentally different driver.Since "MAG 12" is not a new driver design and is identical in every way to the LAB 12 (except for adding the ST), why not just call it the LAB12 ST?This is perhaps just my view, for example, our version of it has our logo and decals and a somewhat stronger motor and different VC, but I still refer to it as our version of the LAB 12 and not something new..So far as co-operating, understand any help I have given (doing the LAB sub project etc) or other things is aimed at the DIY'rs and not part of "my job". It is a somewhat sensitive area too as it is frequently pointed out that my designing things for DIY'rs (like the LAB sub) that may compete with our products at work in not a "good idea". This stuff is my personal interest though and fortunately I am not constrained by the all rules which usually prevent others in my position from participating, now it is only a lack of time that is the problem.I see your forum as a good thing for the DIY community so from that standpoint I am trying to help (like commenting on and refering to your forum on LAB etc) and on this I think we do certainly have common ground.While the Pro-sound guys are happy with the LAB sub and our version of the LAB 12 has worked well in the Bdeap's, I agree too that the driver has other "non-horn" uses, one of the first things I posted about on LAB was that I used the drivers in a vented box for my bass and then in 2002 we came out with the td-1 sub which is a vented box using it which has been well received. There are a few threads on the LAB from folks who did this too.I am Working on a hybrid horn system now using it again, it is a great driver and few have failed in the years it has been in use and it is nice the big E can add a shorted turn now. I am curious to see how much difference it makes on this driver.I wouldn't expect sales to the Pro-sound market to be very large though, the Lab horn "as is" is the lowest distortion (at a given level) of any of the Pro-sound subs tested, including the other low distortion horn system. "Driven to non-linearity"In practice one finds a loudspeaker has measurable distortion at any level one could drive it at, it then becomes a question of how much is too much or can you hear the difference with and without.Woofers specifically, all produce audible distortion at any level you can hear them at. Dolby Labs found in testing commercial subwoofers some years ago that there were none available to the home market which could even produce an audible 20 Hz at 1 meter and not also have plainly audible distortion components (when taken away).On the other hand, one can measure levels of 10 % or much more on many speakers at low frequencies at modest listing levels (why distortion is often specified only at 1 Watt or other "low" power).The idea in the

Lab sub was to make it have as high an acoustic power as possible, to run out of excursion and thermal at about the same time.In the home, this makes for a horn which is literally loafing in the extreme.For example, in my corner I have two Bdeaps, at the listening position, I have a measured sensitivity of 97.5 dB avg for 1 Watt input. The system can handle two or three times the 2000 Watt amplifier I have driving it If you are using something at -30 or -33 or even -40 dB of full power, driver linearity is going to be very good and be low in distortion at any level your concerned with.The math, 2 boxes (2 of the 12's in each box) can handle 3200 Watts RMS in band, and the peaks in that rating are +6 dB greater still (requiring 12.8 KW peak). 1 Watt equals 97.5 dB at the couch with a safe +42 dB of peak head roomNow, want to extend the bottom end a little?Add say +20 dB of EQ which since your dealing with an acoustically small room (at this freq) it is also minimum phase which corrects the response and phase.Now you may have extended the low cutoff an octave or two at the expense of cutting your peak headroom down to "only" +22 dB left (over 97.5 dB).Here is a fellow who has gone perhaps off the deep end in his home theater, look at the measured responses.http://www.avsforum.com/avs-vb/showthread.php?s=4c6ec5466a3c7c6d0bf0174910298bf9&postid=3473618&highlight=bdeap#post3473618Remember the plots for the single LAB sub in half space (which goes down a tad lower than the Bdeap) are nothing like what one see's in a room, these are not like the "bass horns" most are familiar with and neither is the driver or horn alignment.As a direct radiator however, the distortion would (for a given SPL) be much greater both from the added excursion (the Lab horn raises the output about 20 dB vs a direct radiator) and from the fact that a proper horn has an acoustic roll off above its operating band (attenuating harmonics).A horn like the LAB sub or our Bdeap does not just "go away" below cutoff, at an ocatve down from the corner, these horns are still adding about 3 dB over the same excursion as a direct radiator and its low pass acoustic filter (of the horn) also lowers the distortion vs a direct radiator.Got to run now,Tom Danley

EQ'd horns