
Subject: Re: Really Front-Loaded

Posted by [GM](#) on Tue, 19 Sep 2006 04:18:23 GMT

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Greetings! Right, the throat transition insert is to minimize reflections/standing waves at the throat that will make hash out of the driver's beaming BW, so is essential for wide BW apps. Hmm, 'baffle mounted' = throat mounted maybe? Dunno, 'baffle mounted' works for me. The >the throat area, the lower the horn's/WG's HF cutoff, but it has nothing to do with the driver's beaming BW, which will set its power response HF corner. Ditto for wall angle. Consider a straight pipe, driver VC, whatever: its HF BW is governed by its perimeter WL equivalent, so a 4" diameter pipe's HF3 will be $\sim 13560/\pi/4 = \sim 1079$ Hz with a fundamental based on its 1/4 WL for a closed pipe and 1/2 WL for an open one. IOW a fundamental plus harmonics BW with its gain curve governed by its cross sectional area (CSA), so it will roll off below ~ 1079 Hz unless its length is proportional. Expanding one end of the pipe to a 4 ft diameter, it now has a ~ 1079 Hz HF3 - 89.92 Hz LF3 passband with its gain curve a function of its length and expansion profile. So a typical horn is only going to work over a relatively narrow 1/2 WL passband and as a rolled off 1/4 WL resonator on the low end, morphing into either a sealed or vented alignment and a rising on axis WG on the high end if not corrected somehow. Driver mutual coupling is a bit different in a horn since the baffle is folded up into a projector with some directivity control, though obviously at some point the drivers are beaming so much that the walls 'disappear' and the throat represents an acoustically large flat baffle with two or more discrete sources. GM
