Subject: Re: Front horns
Posted by GM on Mon, 23 Aug 2004 04:35:48 GMT
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To extend a horn's HF BW requires higher compression (smaller throat), but FR drivers diaphragms aren't designed to handle the load, so will distort at very low power. Also, a phase plug is required to keep cancellations from occurring due to different pathlengths from the larger diaphragm to the much smaller exit.It stops working if you design it to do so, though it's true that the lower you extend a compression loaded Fc, the lower its max Hf cutoff will be and vice versa. Since there's no compression loading of either a FR driver BH or FR (excluding the dual horn), the throat size/filter chamber sets the BH's Hf corner since it's applying pressure to the rear of the diaphragm, while it's the FH's throat size/wall angle since it has no filter chamber of note.You only load the rising response portion of a FR driver's LF/midbass BW, whether front or back loaded. Done right, there's just enough gain to make it ~flat on axis, i.e. no baffle step. In a BH, more extreme flare rates can/should be used to lower Fc and limit gain so it doesn't overpower the mids/HF output. In a FH, the gain must be very low to keep throat pressure low so that it doesn't roll off the driver's HF response as well as not overpower the mids/HF, ergo the horn must be much larger for a given LF/midbass BW, plus you can't fold it up like a BH without rolling off the HF somewhat.Then there's the dual horn where you load the rear more, then mildly front load the mids to tonally balance it out. With these, you either need a rising HF response such as the Fostex FE206E has, or add a horn loaded tweeter. Either way, a fairly narrow 'sweet spot'.With no size constraints a FR driver can be front loaded all the way to Fs without losing any HF BW. Two 40Hz ones would ~fill my room though, and all things considered not worth the effort from a SQ POV unless used either in a aircraft hanger sized room or outdoors, though not where really high SPL is required due to their limited eff./power handling. GM