Subject: Acoustic reflection from the edge of the horn-mouth
Posted by spears_tears on Tue, 21 Jan 2003 09:02:57 GMT
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Hello, im new to speaker and horn design, found this interesting, i quote from the soul of sound libary;'Acoustic reflection from the edge of the horn-mouth. When a sound wave moves across a sharp boundary, it diffracts and re-radiates in all directions, like a separate driver located at the point of the reflection. The reflected wave from the horn-mouth then bounces back into the throat, which typically has a hard phase plug or a driver with a stiff cone. After it strikes that, it reflects right back outward again ... this succession of reflections is called a series reflection, and it is far more audible than the small ripples in the frequency response might indicate.The best solution is to eliminate the mouth reflection entirely. This has already been done with the Tractrix horn profile, invented by P.G.A.H. Voight in the late Twenties! The Tractrix still has a sharp edge at the horn mouth, but the horn wall has already curved through 90 degrees before the sound hits the boundary. The reflected sound then has the difficult task of curving back through that 90 degree curve before it can strike the phase plug. Therefore ... no standing wave, only one modest reflection, and very little of the "horn sound" if the compression driver is correctly designed.'This next passage in particular.....'(Note: there are rectangular horns on the market that are Tractrix-profile in only one dimension; since the reflection is still an unresolved problem on two of the mouth edges, most of the benefit of the Tractrix profile is lost.)'Humm im looking at Theatre series 4 Pis, they are a rectangular design, only 2 sides have the tractix horn profile. Naturally reading this uneased me. Any help on this subject espically on the design of the actual horn for the compression drivers would be much apreciated.Thank you, Spears.

Subject: All horns have a discontinuity at their mouth edge
Posted by Wayne Parham on Tue, 21 Jan 2003 16:25:47 GMT
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Any time there is a large discontinutity, there is a reflection. So the edge of a tractrix forms its end - a discontinuity - just like any other shape. The flare does curve so that it is flush with the baffle if, in fact, the horn is baffle mounted. That is good. But the horn is finite, so there is still reflection back to the throat from the terminal discontinuity at the mouth.Honestly, this is academic. There are great horns of many shapes. I prefer rectangular horns, as the dispersion pattern is more in line with what I want for the listening room.

Subject: Re: All horns have a discontinuity at their mouth edge
Posted by spears_tears on Tue, 21 Jan 2003 18:28:45 GMT
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Thank you very much for your answer. As i said im new to all speaker design and philosophy and no physicist. The internet is an amazing sourse for information researching audio, but over the years there have obviously been many schools of thought, and everyone has different opinions. Making it difficult to interpret much information. So your help is reasuring, espically as all i really want to do is listen to my music ;?DRegards, Spears.