Subject: Two-way and three-way loudspeaker systems
Posted by Wayne Parham on Mon, 19 May 2003 20:05:38 GMT
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Until about 1990, almost every speaker I built that had a woofer bigger than 10" was a three-way

started experimenting with two-way designs and I found that a compression horn run from about 1kHz up and a large-format midwoofer with good, clean midrange performance made an excellent sounding two-way speaker. The idea is to match the collapsing directivity of a direct radiating midwoofer with the horizontal directivity of a CD horn. The vertical pattern is a little more narrow, matched by the vertical nulls.

corner it's set in tends to direct HF content towards the listener. So I tried an experiment, running the system as a two-way. The sense of envelopment and spaciousness is very pleasant in this configuration, given the right midwoofer. And frankly, most of the woofers used in the DI-matched two-ways work well for this, having extended upper midrange response.

When a direct radiating midwoofer is matched to a tweeter horn, crossed over where their directivities match, then the woofer directivity below that point gradually widens. When put in the cornerhorn configuration, this is no longer the case. The walls contstrain the radiating angle, limiting it to 90°. In this case, directivity is the same at LF and at HF, with the only exception being the modal region, where room modes set the position of energy pockets. If the room is large or well damped, the cornerhorn becomes truly constant directivity across the entire audio bandwidth.