Subject: Pi Alignments compared with B4, C4 and QB3 Posted by Wayne_Parham on Mon, 18 Jun 2001 05:02:36 GMT View Forum Message <> Reply to Message

I've been asked several times what Pi alignment is and how it differs from other alignments. It's essentially a simplified Thiele / Small method, setting cabinet volume directly proportional to Vas and Qts rather than being proportional to Vas and Qts2. Box tuning is by Helmholtz resonance and is proportional to 3Fts and inversely proportional to 8Qts. At the time I wrote the alignments, I calculated using a figure I called "Qd", which is the reciprocal of Qts.

Pi alignment for drivers with Qts under 0.35 tends to be slightly overdamped with response like large sealed cabinets. For drivers with Qts between 0.35 and 0.4, it's pretty much the same as a B4 alignment. Drivers with Qts above 0.4 are like C4 or QB3. In practice, the high efficiency woofers I favor in my designs have Qts in the 0.3 range. This tends to make a system that is slightly overdamped, which has smooth gradual rolloff. It is fairly insensitive to electro-mechanical parameter shifts from thermal compression or environmental conditions.