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Subject: 7Pi driver complement, woofer question  
Posted by [Duke](#) on Sat, 29 Jan 2005 15:24:48 GMT  
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Hello Wayne, Has my feeble memory finally failed me, I vaguely recall a 7Pi-18, but may well be mistaken. I was recently looking into the "how high up can you use an eighteen" question. I like the idea of the increased directivity of an 18 over a 15, but have never played with an 18. The JBL 2241 certainly looks smooth enough on paper to try fairly high up - what are your thoughts on that? Do you have suggestions for an 18 that would sound good crossed over high enough (ballpark 800 Hz) to be used in a two-way? Thank you! Duke

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Subject: DI Matching and Cornerhorns  
Posted by [Wayne Parham](#) on Sun, 30 Jan 2005 04:50:29 GMT  
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The larger the radiator, the lower it starts to narrow its pattern and you can use this property to match directivity with a horn. I've always liked that approach. Of course, as you've mentioned, it requires that your midwoofer have good response up high and that cone flex is well damped. Breakup modes sometime add nasty peaks and, obviously, you don't want that. So,

cornerhorn concept does not use collapsing DI to match directivity. Instead, it uses the confines of the room's wall angle to limit LF to 90°, and then matches with HF horns that also employ a 90° pattern. It was initially conceived as a three-way design, with the woofer crossed over to a midrange horn at a fairly low frequency. The idea was to crossover at or below the frequency where the distance to the apex was 1/4 wavelength. There is fairly wide overlap between midrange and woofer in the current model, to smooth floor bounce notch and higher room

an acoustic filter that tended to equalize the rising response of a driver used in them. This is partly due to the confined directionality of the room's apex and the transition from launch boundary to reflector. This tends to boost lower frequencies more than higher frequencies. And it is partially due to standing waves that form at higher frequencies too. But the net result was that the cabinet acoustically equalized the driver used in it at relatively high frequencies. So I ran them

intended to be a no-compromise solution, truly a statement product. So I decided to go back to the original design concept, and to improve upon it. The earlier three-way cornerhorn models all used midranges that were physically small, typically 5" units, and the midrange now used is a larger 10" unit. This allows wide overlap between woofer and midrange to ensure smooth response and provide rich full vocals and midrange. I think it's a great approach, and the current model really sounds nice.

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Subject: Cornerhorn question

Posted by [rnhood](#) on Sun, 30 Jan 2005 19:40:30 GMT

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When one is seated at approx. 9' to the speaker plane and, in an equalateral triagle will the 7-Pi corner horns throw a fairly well defined, wide and deep soundstage? I am trying to get a picture or sketch of their soundscape attributes. Also, if the room has mucho cubic footage (lots up high and behind the listening position) will the listening position see 40Hz within 3db or, is the 40 Hz lower response figure for the 7-Pi sort of an "ideal case" figure? With every speaker that I have owned over the past few years the low frequencies start to shelve down around 80 Hz or so. I just don't ever seem to be able to realize the specified response.

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Subject: Cornerhorn answer

Posted by [Wayne Parham](#) on Mon, 31 Jan 2005 05:01:28 GMT

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What you're describing is actually the ideal situation for cornerhorns. If the room is large enough, the fundamental room modes are shifted down below the audible range. And the best listening area is within 30° from both speakers. You don't have to be right on axis, but it's best if you're at nearly the same angle to both speakers. One thing to look at is the distance between speakers and the distance to walls. Consider that there will be cancellation at the frequency where the distance between woofers is 1/2 wave. There will also be self-cancellation at the frequency where the distance between the woofer and a wall is 1/4 wave. So this gives a range of distances to avoid, and if you're in this range of distances, then different placements might be chosen instead. The idea is to place your speakers strategically so that nulls don't form in your target listening area. In some cases, you may want to stagger them so nulls that form as a result of a single woofer are filled by another woofer. For more information about room layout, I might suggest these papers: Sound System Design Reference Manual, George Augspurger Loudspeakers and Rooms for Multichannel Audio Reproduction, Part 1, Floyd Toole Loudspeakers and Rooms for Multichannel Audio Reproduction, Part 2, Floyd Toole Loudspeakers and Rooms for Multichannel Audio Reproduction, Part 3, Floyd Toole

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