Subject: pi seven top horns?
Posted by artsybrute on Mon, 03 Jan 2011 17:53:27 GMT
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Hi Wayne and all,

I've been away from the forums for about a decade or so. I built the Pi Seven cornerhorns way back and love them. But back then I built the bass boxes and have been using lowther PM6A's in 36 inch front horns for the rest.

At this point where I want to take the lowther setups out of the equation and finish the sevens. (Yeah I know: I move really fast.)

But when I went to the product site, I saw the sevens seem to no longer have the mid and HF drivers dropped into the doghouse, but directionally adjustable in little horns on top. That looks really nice.

Could you please point me to a place that explains this development?

Also, could you please send me plans for the top horns?

Thanks.

Subject: Re: pi seven top horns?
Posted by Wayne Parham on Mon, 03 Jan 2011 19:54:46 GMT
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the midrange and tweeter have changed over the years. I've used direct radiating mids and horn-loaded mids, and for a few years even experimented with making the system as a two-way speaker.

The midrange is different than lower and higher frequencies because of acoustic scale. At low frequencies, the woofer is close enough to the walls that the room's corner acts like a large waveguide, at least down to the Schroeder frequency where room modes set the pattern. At high frequencies, the tweeter horn sets the pattern. But the midrange frequencies are sort of in a transition region in terms of acoustic scale. The midrange driver isn't usually close enough to be

self-interference issues.

In 2003, I designed a midrange horn specifically to address this situation. I wanted it to do a couple things, first, to provide constant directivity in the same pattern as the woofer and tweeter and second, to be able to be run low enough to blend with the woofer to smooth floor bounce, much like vertical arrays do. Of course, these requirements make a physically large horn, even when designed for 1/8th space loading (at least at the bottom end where it needs it). So instead of putting the midrange driver in the bass bin, I moved it on top and cradled the tweeter on top of

that. Works out great with respect to height too, putting the midhorn and tweeter roughly at ear level.

Subject: Re: pi seven top horns?
Posted by artsybrute on Mon, 03 Jan 2011 20:14:50 GMT
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Thanks!

It may be large, but not larger than my sevens plus 36 inch front horns in front of them!

I see you mentioned Martinelli tweeter horns. Does this mean that the plans only include the mid horns but do not include the tweeter horns?

Thanks again.

Subject: Re: pi seven top horns?
Posted by Wayne Parham on Mon, 03 Jan 2011 20:31:20 GMT
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That's right. In fact, the tweeter horn in the photo above is one of mine, not a Martinelli horn. Mine are made on a CNC machine and are what are called waveguides these days. You can also use an H290 horn, which is what's in the stock kit.

Subject: Re: pi seven top horns?
Posted by artsybrute on Mon, 03 Jan 2011 23:18:18 GMT
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Thanks again Wayne.

Darn, leave civilization for a few years and they change the language again...

Subject: Re: pi seven top horns?
Posted by artsybrute on Tue, 04 Jan 2011 17:32:59 GMT
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Hey Wayne,

When you send the plans, could you also send pricing on the drivers, waveguides, and kits for this application. I already have the old seven cornerhorns built, so I don't need the doghouse plans or bass drivers.

Also, if you release plans or solid model for the tweeter waveguides, I would appreciate those too. I understand if they are proprietary or otherwise unreleasable.

I have CNC here but it is for metalworking. I only use it on wood for the higher cost items since machining wood rusts metalworking machinery. It gets tiring holding a shopvac to the cutter with one hand while using compressed air to cool the tool with the other. But for the waveguides it could be worth it, depending on wood costs.

Oh: I'm assuming that lowthers are inappropriate for the mids. Is that correct?

Thanks again.

Subject: Re: pi seven top horns?
Posted by Wayne Parham on Tue, 04 Jan 2011 18:51:44 GMT
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I sent plans yesterday to your hotmail address. Did you not receive them?

Kits are available here:

Midhorn flat pack kit
Wood tweeter horn/waveguide

Subject: Re: pi seven top horns?
Posted by artsybrute on Tue, 04 Jan 2011 19:12:54 GMT
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Sorry, no I did not receive them. I checked my junk mail folder as well.

I do get mail from webmaster of the forum when I changed my password. But I noticed that I'm having problems navigating your website today.

I sent you an email from another address to the email address you used years back. Please send the plans there. Thanks.

Subject: Re: pi seven top horns?

Posted by Wayne Parham on Tue, 04 Jan 2011 19:39:30 GMT
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Will do.

Subject: Re: pi seven top horns?
Posted by artsybrute on Wed, 05 Jan 2011 02:53:16 GMT
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Thanks for the info.

In the info, you mention that the tweeter horn is just cosmetic. Yet you offer an off the shelf horn and a CNC machined horn for the tweeter.

Did you later find that the tweeter horn does indeed make a difference?

Subject: Re: pi seven top horns?
Posted by Wayne Parham on Wed, 05 Jan 2011 15:41:07 GMT
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Maybe you misunderstood. What I have said is that wood is aesthetically pleasant, but that I do not think the wood is necessarily better for acoustics, just better looking.

Wood can be machined, so the CNC/wood approach is perfectly suitable for small quantities. You probably wouldn't make a mold for a few dozen horns.

Essentially, as long as the material is non-resonant, I'm not real concerned with it as far as acoustics are concerned.

But the horn profile has a LOT to do with sound quality. The shape of my wood tweeter horn/waveguide is exactly what I want from a horn. It provides constant directivity and doesn't have any internal sharp edges that would cause discontinuity.

In the following document, there's a little more information about what makes a good horn shape for constant-directivity when sound quality is as important as coverage:
High-Fidelity Uniform-Directivity Loudspeakers

Subject: Re: pi seven top horns?
Posted by artsybrute on Wed, 05 Jan 2011 17:07:34 GMT
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Okay I'm a little slow but I got it. When you say "Tweeter cabinet is purely decorative, and may be omitted" you mean the cabinet only, not the horn, which is indeed what you said and not what I read.

Thanks again.

Subject: Re: pi seven top horns?
Posted by Wayne Parham on Wed, 05 Jan 2011 19:08:07 GMT
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Oh, I see what you mean now. If you want, you can put the H290 in a cabinet instead of cradling

optional. The important thing is the mouths of the tweeter and midhorn must be flush to make path lengths right for phasing/summing issues.
