
Subject: Pictures of the "corner horn"

Posted by [Michaelz](#) on Thu, 12 Dec 2002 15:38:40 GMT

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Hi, Wayne and everyone: Here are some pictures I took of the "corner horn". Sorry about the poor quality, but I hope they will give you an idea as to how big they are.

Subject: Wow! Very interesting!

Posted by [Wayne Parham](#) on Thu, 12 Dec 2002 16:12:40 GMT

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That is an interesting arrangement. It's a very attractive box too! Do you normally leave the cabinets sitting that close to the corner, or do you move them out from the wall a little?

Subject: Re: Wow! Very interesting!

Posted by [Michaelz](#) on Thu, 12 Dec 2002 18:29:48 GMT

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Hi, Wayne: Thanks for the compliment! I heard of using Tung oil on your forum. Actually I heard of Tung oil ever since I was a child when I was in China, and I did not relate Tung oil to "tong you" (which is how it sounds in Chinese) before this project. >Do you normally leave the cabinets sitting that close to the corner, or do you move them out from the wall a little? Yes, this is the way I leave them to the corners. I ran the numbers in my Marshal Leach Util. I am trying to use the space between the three sides of the box and the two walls and the floor in such a way that the space would approximate the horn throat size recommended by the utility. The front chamber also needs to be reduced by sand bag to match the size by the utility. But I have not gotten to it yet.

Subject: That is cool!

Posted by [LuxmanLover](#) on Thu, 12 Dec 2002 19:49:42 GMT

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I bet this would work really well in a good room.....neat idea and design...Kelly

Subject: Re: Wow! Very interesting!
Posted by [Wayne Parham](#) on Thu, 12 Dec 2002 20:56:51 GMT
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Sounds like an excellent idea. You can even mount a board on the front face of your woofer with a round or rectangular hole to set your compression ratio, if you wish. Just make a front plate that's the same diameter as your woofer, and cut a hole in it and viola! - compression greater than 1:1.

Subject: Ummmm.....Unhh.....HmMMM.....Aaaaaah.....
Posted by [BillEpstein](#) on Thu, 12 Dec 2002 21:17:35 GMT
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I gotta be the one to ask, Michaelz: how is the gorgeous tetrahedron with the stick on the front of it related to the cube in the corner? What am I missing here? And why does it lead Wayne to wonder about nailing a board across the front of it?

Subject: Re: Wow! Very interesting!
Posted by [Michaelz](#) on Thu, 12 Dec 2002 21:34:10 GMT
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Hi, Wayne: That's a good idea! In fact the front chamber according to the ML Util is quite small, so your idea may be the only way to implement it.

Subject: Re: That is cool!
Posted by [Michaelz](#) on Thu, 12 Dec 2002 21:43:21 GMT
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Hi, Luxmanlover: Even though the room is not made of concrete, the rough measurements

Subject: Re: Ummmm.....Unhh.....HmMMM.....Aaaaaah.....
Posted by [Michaelz](#) on Thu, 12 Dec 2002 22:05:15 GMT
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Hi, Till:tetrahedron, I did not know that this is the name for the shape!! gotta be the one to ask, Michaelz: how is the gorgeous tetrahedron with the stick on the front of it related to the cube in the corner?It's the same cabinet or the back chamber of the "horn". From out side as in the first picture it looks like a cube, but it's hiding the tetrahedron against the corner of the room. The stick is used as support when the box is placed in the corner, so that the box will not lean against the walls. The upper side of the box in the second and third pictures is the down side in the first picture.And why does it lead Wayne to wonder about nailing a board across the front of it? Wayne's idea will make the space between the inner side of this board and the cone of the driver the front chamber of the "horn". The whole idea of "corner horn" is from Wayne's thought that below 40HZ in a average room, the bass is produced by the room corner unless the horn size is no problem. I just liked to make the coupling to the corner tighter and to reduce the size of the box itself. I would think that any 12" or 15" drivers suitable for horn loading would work this way. Just run the specs through the ML Util and simulate the horn in HornResp. I even have a small VB program to calculate the "room corner" conical horn size for use in HornResp.

Subject: Re: That is cool!

Posted by [Wayne Parham](#) on Thu, 12 Dec 2002 22:11:42 GMT

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No kidding - The nails that hold drywall to the studs in my home backed out, so I know what you mean!

Subject: Re: That is cool!

Posted by [LuxmanLover](#) on Thu, 12 Dec 2002 23:04:27 GMT

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Actually I was more concerned about room dimensions than construction. I can't use a corner horn in my place 'cause of the stupid layout of my room (even the 4Pi's don't like that much) so it wouldn't be workable for a lot of us unfortunately! Kelly

Subject: Re: Pictures of the "corner horn"

Posted by [bmar](#) on Thu, 12 Dec 2002 23:18:09 GMT

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Cool, I like it. Don't you have a leave a space between the cube and the wall so the sound can

come out of the corner?Bill

Subject: Re: Pictures of the "corner horn"
Posted by [Michaelz](#) on Thu, 12 Dec 2002 23:35:30 GMT
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Hi, Bill:Yes, there is about 1/2 inch space between the cube and the walls and the floor.Michael

Subject: Re: Pictures of the "corner horn"
Posted by [bmar](#) on Fri, 13 Dec 2002 01:57:19 GMT
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Hi Michaelinteresting. and that's enough space huh. most things ive seen using a corner as part of the horn are around 8"-10" space. This is a really interesting box you have going here. Bill

Subject: Re: Pictures of the "corner horn"
Posted by [Michaelz](#) on Fri, 13 Dec 2002 10:10:36 GMT
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>and that's enough space huhThis is probably a bit more than the horn throat size by ML Util.

Subject: very cool!
Posted by [replay](#) on Sat, 14 Dec 2002 03:33:30 GMT
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i'd love to hear them. you should bring them to lima.cheers,george

Subject: Re: very cool!
Posted by [Michaelz](#) on Sat, 14 Dec 2002 13:05:50 GMT
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I wish I could. Helas, I am down here in Georgia.

Subject: Re: Wow! Very interesting!
Posted by [Walt](#) on Mon, 16 Dec 2002 14:07:45 GMT
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The volume of the rear chamber should change if another compression ratio is used. In fact this volume varies linear with this ratio. For some horns it really makes a difference if the volume is chosen wrong. Might cause 5-6dB bumps! Use McBean to model a rearloaded hyperbolic horn with: $l=2.8\text{m}$, $a=75\text{cm}$, $b=850\text{cm}$. In this case the volume should be kept as small as possible! Best regards, Walt

Subject: Re: Wow! Very interesting!
Posted by [Michaelz](#) on Mon, 16 Dec 2002 18:25:39 GMT
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Hi, Walt: Thanks for the input! $l=2.8\text{m}$, $a=75\text{cm}$, $b=850\text{cm}$. Could you please tell what a_h and a_m (mouth area?) mean? I used HornResp to model a conical horn for the "corner horn". Actually, I calculated the v_b (back chamber) and v_f (front chamber volumes) and used the numbers in HornResp. I just do not use the calculated front chamber volume yet. So if I need to conform to the numbers I would use Wayne's idea. See how small the throat area and the v_a are: $\text{Input } f_l = 15\text{Hz}$, $f_h = 150\text{Hz}$, $Q = 20$, $q_{es} = .21$, $q_{ms} = 2.2$, $v_a = .82\text{QMC}$, 6.816 (qmc is from calculation). $\text{Output } v_b = 0.177\text{ m}^3 = 6.25\text{ feet}^3$, $v_a = 0.0073\text{ m}^3 = 0.2578\text{ feet}^3$, $st = 0.064\text{ m}^2 = 0.687\text{ feet}^2$, $n = 36.39\%$. The v_a becomes bigger if f_h is lower. I use these boxes as subhorns so I will not reduce the v_b (which will raise the f_h and lower the n (efficiency)). Another reason for choosing this v_b volume is that I can get a volume around 6 feet^3 in a box shaped this way by using 4X8 board without much waste (a lot of 2X2 pieces are needed). The way the "corner horns" are placed now gives a st of $0.85344\text{ m}^2 = 1.399308\text{ feet}^2$ and probably a v_a of 2 feet^3 . So I think I would use Wayne's idea to conform to the calculated st and v_a . Maybe due to the lossy nature of the walls and the floors, all these numbers do not really apply. What really counts for me is the sound it makes. I got the room modes, but what other horn that goes this low would not in the same room? Thanks! Michael

Subject: Re: Wow! Very interesting!

Posted by [Walt](#) on Tue, 17 Dec 2002 07:45:27 GMT

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Ah = cross sectional area at the beginning of the horn
Am = cross sectional area at the end of the horn
l = horn length
The numbers I gave correspond to a hyperbolic horn as it was described in a previous edition of the german magazine "Hobbyhifi" as you will model this horn you will see that in this case a too large volume will result in a non flat frequency response. In this case the volume should be kept as small as possible:
http://www.hobbyhifi.de/Archiv/02/04_02/04_02.html
Best regards, Walt
