Subject: Back to the Horn
Posted by GarMan on Tue, 19 Sep 2006 16:01:42 GMT
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Being the selfish bastard that I am, I want to redirect the conversation back to horn building. All the dimensions you need to build it is in the link below.Here's my take laying out the plan. All dimensions are in cm. Divide by 2.54 for inches:- Establish a center-point (CP) and trace an arc with radius 27.5cm for the top and bottom plates- The arc should span 130 degrees (x: +/- 24.92, y: 11.62 from CP)- Draw an arc of 3.9cm from CP. This is where the inner tip of the vanes will sit- From centre to edge, the vanes are located 22 degrees, 22 degrees, and 21 degrees from each other. Don't ask me why the last one is 21 and not 22.- Don't use degrees in your layout. It's more accurate to translate to X/Y coordinates. Mark these coordinate in relation to the CP and connect them to the CP to give center lines for vanes:(0, 27.5)(+/- 10.3, 25.5)(+/- 19.1, 19.78)(+/- 24.92, 11.62)- Clip the apex of your fan by 0.61cm to give mouth opening of 2.6cm, OR keep trimming the apex back until you get the 2.6cm openingThe best way to ensure you get 4 identical plates is to cut a hardboard template with the above dimensions. Roughcut the actual material a little oversize and use the template and laminate bit on a router to trim.Making the 25 degree cut on the side pieces will be tricky. I made a jig for my chop-saw and even then, it took 8 cuts to get 4 good ones. Best bet is to rough cut to 1/16" oversize and level with 80 grit on a sander.Looking forward to hearing other suggestions on building techniques.Gar.
audioheritage smith horn link

Subject: Why 120?
Posted by colinhester on Tue, 19 Sep 2006 19:02:53 GMT
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It might be an intersting experiment to make differnt horn Smith horn geometries. 90 or 60 seem to be popular. Yeah I know, the damn things ain't built yet and I'm already asking what-if questions.....C

Subject: Re: Why 120?
Posted by GarMan on Tue, 19 Sep 2006 20:21:50 GMT
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I think the original intent of the Smith horn is to provide a wide and diffused HF dispersion for use in a mono-single speaker setup. In modern multi-speaker systems, there's less of a need for such wide dispersion, so 90 or 60 degrees can make sense. Sensitivity may also increase.I did noticed that when I switched from my 2380A horns (90x40) to the smiths, I loss a few dBs in sensitivity and had to adjust the L-pad. No big deal as most compression drivers have over 10dB advantage over the woofer, so there's lots of room to play with in the L-pad.

Subject: Re: Why 120?
Posted by SteveBrown on Wed, 20 Sep 2006 10:01:22 GMT
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I wonder if it could be built to 120 degrees and the experiment with smaller arc by putting rolled up towle or similar stuffing along the inside edges? Or would that just dampen the sound.

Subject: Re: Back to the Horn
Posted by Manualblock on Thu, 21 Sep 2006 18:09:53 GMT
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Garman; this is from the 27.5" x 49.9" 3/4" plywood sheet noted on the Audioheritage site? Their dimensions look to be in inches. Do I have that wrong? Thanks Much.Your instructions above; they follow that cut plan or is there any changes you made?

Subject: Re: Back to the Horn
Posted by GarMan on Thu, 21 Sep 2006 23:18:02 GMT
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MB, I ain't not horn designer. Just following the plans from audioheritage. My post above was how I would take the dimensions from that plan and lay it out on the board. Not everybody has a CNC machine, so some of us have to do things the old fashion way, with trammels (compasses) and rulers.In my experience, I've found it difficult to accurately apply angles on a board. Much more accurate to use a bit of tri and layout with x/y coordinates. I just translated the dimensions from the plan to the x/y coordinates.gar.

Subject: Re: Back to the Horn
Posted by Manualblock on Fri, 22 Sep 2006 01:29:38 GMT
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Excellent. I wasn't sure if you were exact in following that model; but after checking and converting to inches from your dimensions I see you are using that template. Thanks. I saw talk regarding different dimensions on the general forum.Have you started building yet?