HSSP Audio: Enclosure Design Tutorial   April 21, 2007

Your goal is to figure out exactly which pieces of wood you'll need to assemble a speaker enclosure. Start with the desired enclosure volume in liters and your mental image of what you want the speaker to look like. You'll end up with dimensions in inches for top/bottom, side, front/back and maybe bracing pieces of MDF. I'll go by your calculations when cutting the pieces at the Hobby Shop. This really is step by step!

1.   Size of enclosure from T/S simulation: _____ liters

2.   Size of woofer: _____ inches

3.   Reasonable or cool-looking width of enclosure to accommodate woofer:

      (If you have no clue, try 2-3 inches above woofer size)   _____ inches

4.   Reasonable or cool-looking height of enclosure: _____ inches

Now you've got a little bit of math to do, to establish the right depth of the enclosure. The volume you found is the internal volume or airspace inside, so you'll need to subtract out the thickness of the wood. Typically we use ¾" thick MDF with ¼" deep grooves cut into it, so the edges are ½" thick and the inside dimensions are 1" smaller than outside. You'll have to rethink this if you are not using grooves, or you're using different material (such as a thicker front baffle).

5.   Convert the enclosure size to cubic inches.

      (1 liter is 1 cubic centimeter; 2.54 cm per inch)   _____ in^3

6.   **Internal** width and height: _____ x _____ in

7.   Internal depth needed: _____ in

8.   External dimensions again:

      _____ (w) x _____ (h) x _____ (d) inches

Okay, this is now looking more like a box. The trick now is to figure out how you want the pieces to overlap: if you're building a 12" cube, the pieces can't all be 12 inches square! Remember your edge thickness and come up with the basic dimensions. (I usually build speakers with the edges showing all around the side panels and along the front and back edges of the top and bottom.)

9.   Top/bottom piece dimensions: _____ x _____ in

10.   Side panel dimensions: _____ x _____ in

11.   Front/back panel dimensions: _____ x _____ in

Do you want to use bracing? If so, the braces are (usually) completely internal to the box. Figure out an orientation and size.

12.   Brace quantity: _____; Dimensions: _____ x _____ in

Almost there! On the back of this page, draw dimensioned diagrams of all the pieces I will need to cut.   Try to remember drivers, binding posts, and porting. Braces should have holes in them for air to flow! If you're feeling adventurous, mark out where the grooves will go. Or, draw a diagram of a 4x8' piece of MDF showing how I can easily cut all of the pieces out.

This continues on the back!

CAD type diagrams: See if you can completely describe each piece with your dimensions in an understandable way. That includes position and diameter of any holes, width and depth of grooves, etc. Look at a computer CAD drawing to get the idea.

Front	Back
Side	**Top/Bottom**
Brace	**How it all fits together!**

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