Subject: Pi Studio One Tower
Posted by FredT on Tue, 09 Jan 2007 22:40:37 GMT
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Some time ago I decided to experiment with the Studio One Pi kit in different volume floorstander enclosures, and since then I get the occasional email inquiry about the details of the enclosures. I never did any drawings, but I've posted a picture, and that picture along with this description should be adequate for anybody to build a pair of their own.But first I want to explain why I built a tower version of the Studio One Pi. The One Pi looks puny compared to all the other Pi kits, especially the three and larger models, but it's not a small speaker by contemporary standards. The 8" Eminenec Alpha 8 woofer is larger and capable of moving more air than most mainstream speakers in the $1.5K and under range with their typical low efficiency 6.5" or smaller woofers. When you consider its high sensitivity along with its bass and dynamic capability, it's a great speaker for most small tube amps and also for all mass market receivers, which may have high power ratings but not much drive current capability. The Sherwood two channel receiver I bought on sale for $80 at Circuit City will drive the one pi to very high levels. Add to this it's incredibly low price ($150/pr), and it's a logical speaker choice for any budget system.Ditto for the Two Pi tower, but its much larger enclosure might not fit too well into a small room, especially if there's a wife involved in the decision:) So, I thought, why not build a smaller footprint and not quite so tall tower whose volume will take advantage of all the bass capability of the Alpha 8, and the One Pi tower concept was born.I've built a few variations on the Pi One towers for friends and have finally decided which version offers the best sound. Interior volumes have varied from about 1.2 c ft to 2 cu ft, and I have finally decided a 2 cu ft tuned to about 50hz sounds best to me.I make mine 38" high, which places the tweeter about ear level. To achieve this volume I make the front and back panels 10" wide and the side panels 11-3/4" wide. I like the look of a narrow baffle, and the 10" dimension is about the least you want with an 8+ inch driver. The external dimensions are 10"W, 13-1/4"D, 48"H. I use three brace inside. The top one abuts the front panel between the woofer and tweeter, and is 8.5"W by about 4" deep. The middle brace, placed a couple of inches below the woofer, is an 8-1/2W X 11-3/4"D window frame brace. The lowest brace, also a window frame, is placed halfway between the middle brace and the bottom of the enclosure. The port is mounted halfway between these braces, and the speaker terminals are placed between the bottom brace and the bottom of the enclosure. The best tuning is about 49 to 50hz. In a 2 cu ft enclosure this requires a 3" port cut to 1.5" length or a 4" port cut to 4" length. The Parts Express #260-411 4" port is a good choice. It's marked in half inch increments and you can cut it with a hacksaw. The port can be placed on the front or the back of the enclosure. I usually place mine on the front only because many of my friends listen to low power SET amps in small rooms with the speaker close to the back wall. I prefer back placement if I know the speaker's back will be at least one foot from the back wall - the lowest bass will be augmented a bit more with this placement.It's a good idea to have some kind of base for the speaker. You can make one out of a sheet of mdf that's two inches wider and two inches deeper than the enclosure. I prefer the easy way - I use four Parts Express #260-770 rubber feet. Also, since you're already ordering the ports and rubber feet you might as well order a #081-435 bag of black #6 driver mounting screws. These will work on the woofers, tweeters, speaker terminals, and the feet. For the enclosure material you can use mdf or plywood. Have the store cut a 4X8 sheet to two 4X4 for handling ease. When you get it home, cut each to 38X48. Then cut each to yield two 10X38 boards and two 11.75X38 boards. The remaining material can be used to make the 8.5X11.75 tops and bottoms. You will need some additonal material to make the braces. I usually have enough scraps on hand, but if you don't you

can use a 4X4 piece of 1/2" plywood.I use R-13 fiberglass home insulation for the interior damping material. It's about 4" thick, which is too thick for this application, so I "peel" each piece into two identical 2" thick pieces. I line the back and one side of the interior with one sheet between each of the braces and the top and bottom, and I also place a full thickness piece at the bottom.
Studio One Pi Tower