

Did you ever eat at a restaurant so upscale that the entrees took several sentences to describe, and contained ingredients so exotic that you wonder if they made them up? When they bring your food to you, it's perfectly centered on a giant plate, and the garnishes take up more space than the actual food. You eat your small dish, pay the exorbitant bill, and in the end you think to yourself, "Maybe I should have just gone out for a burrito?"

The Classix II are the audio equivalent of that burrito. Tasty, spicy, flavorful, filling... probably fattening, too. But so much fun!

This design is an "update" of my original Classix design. With this redesign comes a new tweeter, a slightly adjusted crossover, and a new look for the cabinet. The Classix II can be purchased as a kit from Meniscus audio, or the parts can be purchased individually from a wide variety of stores.

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## Drivers



The Classix II is designed around the Dayton DC160 6.5" woofer. It's pretty easy to tell that I have a penchant for this driver--you may also notice that audiophiles and engineer-types eschew the DC160. I think it's all a matter of looking at the driver objectively vs. subjectively. Objectively, it has a "simple motor design" and its harmonic distortion graphs aren't all that impressive. Subjectively, however, this driver is "euphonic"--meaning that most ears find it very enjoyable and pleasing to listen to, despite poor measurements. I believe that if a driver sounds really good, then it's a good candidate for a speaker design, regardless of how it measures.



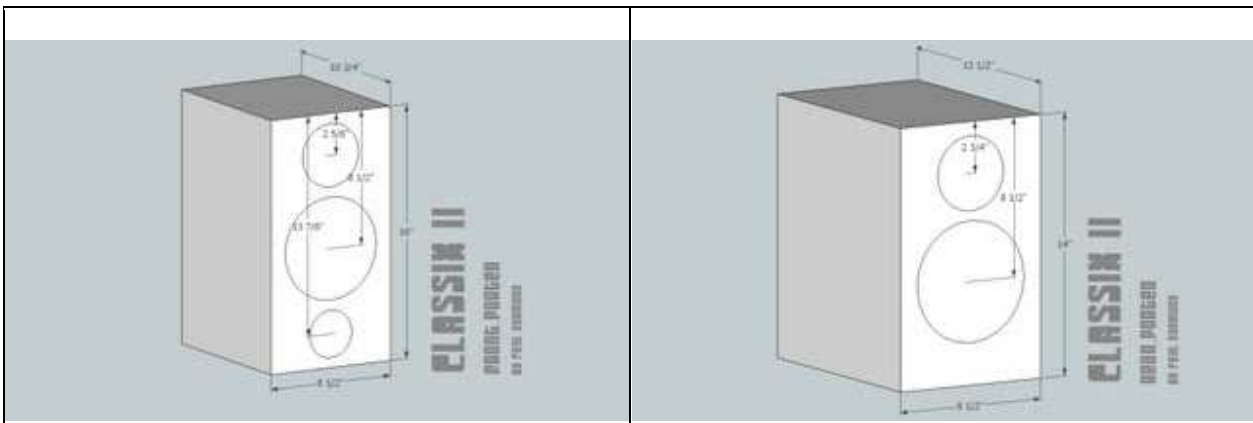
The tweeter for this new version is the Vifa BC25TG15, the new underdog in the DIY (and retail Mid-Fi) speaker world. It's very reasonably priced, and has a pleasant sound that doesn't draw attention to itself, and never gets harsh or fatiguing.

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# Enclosure Design

Much like how cars tend to get cosmetic re-designs every once in a while, the Classix II cabinet is a re-design of the original Classix. I wanted to make the speaker look a bit stouter and meaner this time. As far as overall size goes, it's what I'd consider a "medium-sized" bookshelf speaker, with an internal volume of around 15 Liters. It is tuned to 40 Hz, which means you'll need a 1.5" dia vent, approximately 4" long (I'm partial to [these lately](#)). It reaches an F3 in the mid 30 Hz range with a great sense of ease. As you can see, there is a front-ported version and a rear-ported version. The two cabinets will perform identically; which one to choose is a matter of aesthetic taste.

The cabinet should probably be built with 3/4" MDF or plywood. A single brace ought to suffice to keep the panels of the cabinet from resonating. The internal walls of the cabinet should be lined with "eggcrate" convoluted foam, and one can add a handful or two of polyfil for additional damping, if desired.



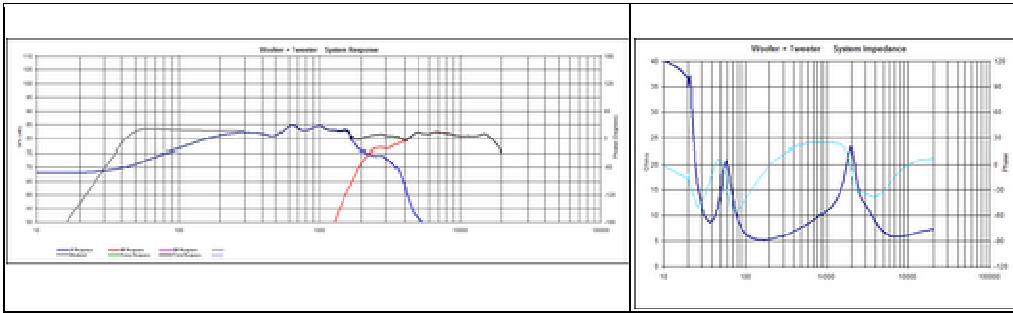
# Crossover Design



The crossover for this speaker is what I'd like to call a "flying squirrel." What I mean is that both drivers just barely reach into one another's frequency spectrum, so the crossover between the two is almost a stunt-like flying leap. With a lot of coaxing on my part, the end result comes across sounding pretty seamless, and very natural, if I may say so.

The woofer uses a 2nd order electrical filter along with an additional "Zobel-looking" filter to shape the response (C4+R3). The tweeter uses a full-blown 4th order filter plus an L-pad. In general, I try to keep crossover filters as simple as possible, however as I said, this one is sort of a "flying squirrel." Both drivers needed extra care at the edges of their ranges to make sure they met up seamlessly. The end result is worth the couple of bucks in extra parts.

# Frequency Response and Impedance Graphs



Although it doesn't quite show up on the Frequency Response graph, the Classix II are voiced with a slightly "relaxed" midrange. The bass response is rock solid down into the mid 30 Hz range. The impedance load presented by the Classix II are an easy load for any amp to drive.

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## Listening Impressions

I know you'll think I'm kidding, but of all the speaker designs I've done, if I could only keep a handful, these would be near the top of my list. Why? Because not everything I listen to is all that well-recorded--and that's where the Classix II really shine. For example: give them a grungy rock album and they will run with it. Hip Hop, R&B, Pop, Metal, Country--all stuff we spent so many hours of our lives listening to, developing emotional ties to--that music usually doesn't stand much of a chance on a true HiFi set of speakers. But as I said, the Classix II have a "euphonic" quality about them. They "gloss over" many of the problematic details of popular music (that an "audiophile" speaker would glare at you with), but at the same time are engineered to be revealing *enough* that most people would be surprised to hear new things in favorite old recordings.

Imaging is pretty solid. No, it's not pinpoint like you might get from a speaker with a Hiquphon OW1 or a Vifa XT25, but the soundstage is surprisingly spacious, with a nice sense of separation. I find it interesting each time I turn on a pop song to realize that there actually *is* a soundstage on the recording, and to hear instruments and voices intentionally placed--not just a mash of sound, like I thought I heard in my car or at the mall.

And of course, the big highlight of the Classix II is the deep bass coming from such an unassuming bookshelf speaker cabinet. Perhaps one reason I'm so attached to this design is that I wish so dearly I had it for the years I was living in apartments. During that time--the time before I knew what DIY was--I had to keep listening volumes pretty soft, and all I had to listen through was a dusty pair of old Cerwin Vegas. Kinda sad, really. I loved listening to music, but a sub was out of the question, and the Cerwin Vegas sort of sucked the life out of the music. If only I'd had something like these. Even now, these have superseded the Overnight Sensations as my "late night" listening speakers because they go so low. Plus, the paper cone woofer with its slightly dipped mids goes a long way to eliminate any possibility of listening fatigue.

In closing, I'd like to write a letter.

Dear Classix II,

Thank you for bringing that music I used to love in high school and college back to life. Thank you also for making modern recordings listenable again. I look forward to many years of head bobbing and toe tapping (and possibly air drumming) together.

Sincerely, Me