



Throughout the years, Goldwood Sound has been supplying the audio enthusiast with quality products at great prices. With the 20% off promotion in this flyer, what better time to feature a customer-submitted speaker project that incorporates Goldwood drivers.

1 Design Goals

My main goal of building new speakers was to replace my old Pioneer set that I bought in high school with something that looked a whole lot better. My old ones were pushing 15 years and really weren't anything special to begin with. Once I decided to build my own set, my first thought was to just buy the drivers, build a box, and wire everything together (who needs a crossover anyway...right?). Then I realized that if I was going to put any money at all into this project, it needed to be at least sound decent. When I told my wife about the speakers she asked me what they were going to look like, and she "politely" informed me they needed to be visually pleasing if they were going to sit prominently in our living room. I thought about an all-oak look, but that has already been done countless times, not to mention that it would have been more expensive. I really cannot pinpoint when the alternating wood pattern emerged...it just came to me one day at work and I ran with it. I am a competent woodworker, so I knew I would be up to the task.

Since I was a complete novice to speaker building, I spent about two solid months of my spare time researching how to put a set together that sounds at least pretty good. I had never even heard of Parts Express until I was searching for drivers on the Internet and the name came up in a Google search. What a great website; they had almost everything I needed, but where is the wood section? Aisle 15 at Lowes, that's where! I ordered and got most of my information from "Designing, Building, and Testing Your Own Speaker System" by David B. Weems (#500-021).

A secondary goal for the project was to spend as little on the electronic parts as possible. After the dust settled (and there was plenty of it), I had a set of speakers that looked good, sounded good, and was relatively inexpensive at a grand total of about \$300.00.

2 Driver Selection

I decided to go with all 8 ohm drivers since I would be pushing them directly from my Onkyo receiver. I wanted to use a large 10" woofer just because I grew up with the attitude of bigger is better, but I also felt the system needed to provide ample bass. These criteria led me to the Goldwood GW-10PC-40-8 (#290-324). The driver's frequency response was listed as 36 to 5,000Hz which I felt was low enough for most of my applications. I also chose this driver for its synthetic cone because it is just a personal preference of mine to go with synthetic over paper for the woofer. The midrange and tweeter were then selected in the same brand, which narrowed the field. I selected the Goldwood GM-85/8 5" (#280-115) for the midrange and the Goldwood Mylar GT-302/s 2-3/8" (#270-175) for the tweeter. Like I said previously, I wanted to spend as little as possible and this combination put my total driver cost at about \$100.00, which is right about where I wanted it to be.

THE WOODIES



3 Enclosure Design

The appearance of the enclosure was the most important element of the project, so this is what I put the most thought into...more on that in the assembly. I chose 3/4" MDF for the structure and a combination of 1/4" and 1/2" red oak, and white poplar 2" and 3" wide boards for the "skin". I used the Parts Express woofer selection guide to determine that the volume for the Goldwood needed to be 0.8 cu. ft. for a sealed box. The width of each cabinet was governed by both the width of the woofer and the board placement. I wanted the oak to stand out a little more on the face, so I used the 3" wide oak boards which worked out perfectly with the width of the woofer. The depth was established by the width of the boards for the sides as well as the mounting depth of the woofer. Finally, the height was determined by merely wanting a decent spacing between the drivers for the wood to stand out. The inside volume ultimately ended up being a little larger than recommended for the woofer at about 1.3 cu. ft., but I felt the overall appearance was more important.

4 Enclosure Assembly

This was the fun part. I knew that since I was going to have two different thicknesses of boards on the front of each speaker, I needed to cut the holes using my newly ordered Jasper circle jig (#365-250) prior to the overall box construction. I spent about 4 hours taking measurements, drawing sketches, and taking re-measurements to make sure I got the fronts right the first time. I first routed all the wood board edges with a 1/8" roundover bit and then I glued the alternating

Look for These Products

Tweeter – #270-175



Midrange – #280-115



Woofer – #290-324



*Turn to page 18 for more information on items featured in this article.

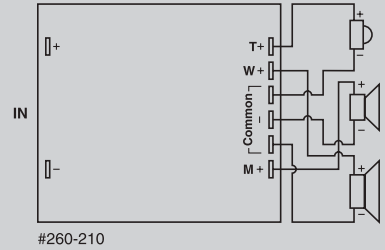
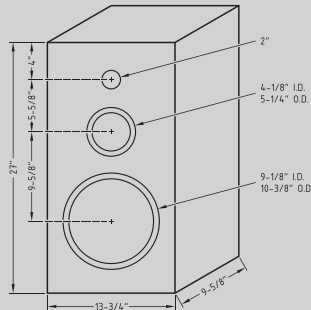
THE WOODIES

Parts List

Dimensions

Crossover

Part #	Description	Qty.
270-175	Goldwood GT-302/S 1/2" Mylar Dome Shielded Tweeter	2
280-115	Goldwood GM-85/8 5" Sealed Back Midrange	2
290-324	Goldwood GW-10PC-40-8 10" Woofer	2
260-210	Crossover 3-Way 8 Ohm 800/5,000 Hz 100W	2
260-297	Square Speaker Terminal	2
260-426	10" 2-Piece Steel Mesh Speaker Grill Black	2
081-420	#8 x 1/2" Deep Thread Pan Head Screws Black 100 Pcs.	1
260-540	Speaker Gasketing Tape 1/8" x 3/8" x 50 ft. Roll	2
260-771	Rubber Cabinet Foot 1-1/2" Dia. x 5/8" H	8



Listeners' Comments

Karl: At first listen I found the system lacked bass and had harsh highs. With some simple adjustments of the tone control (bass, treble), it sounded pretty good considering the total cost of the project.

Brian: Excellent cabinetry, and (with a little equalizing) it sounded pretty good. Although, I feel the system would benefit greatly with the addition of a subwoofer.

Mike V: I wish I could build speakers that look this nice! For a first try, these really aren't all that bad. Baffle gain attenuation would go a long way to making these better. Building DIY speakers is a learning process, and you have to start somewhere. The next step would be an optimized crossover.



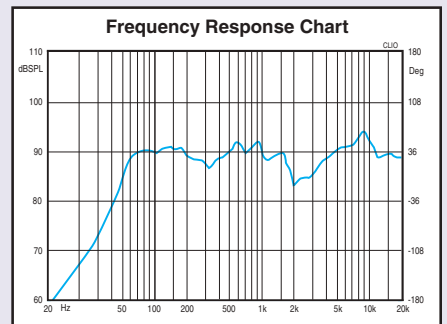
wood pattern on the front piece of MDF. I made sure to cover the entire back of the wood boards to eliminate any vibrations (I used a total of 5 full tubes of liquid nails throughout the project). After the glue dried, I routed the recess depths for the drivers to be housed and then the actual holes. I cut the holes for the tweeters with a hole saw. After this step, I was able to assemble the actual box and continue gluing the alternating board pattern. The boards around the edges are 1/2" thick instead of the 1/4" boards that were used on the face, sides, and top. This allowed me to route a 45° bevel and provide a little depth that gives it an almost picture frame appearance. Then I continued gluing the boards to the sides and top. I sealed all the inside joints with caulk and placed bits of cut foam in it for dampening. The only thing left was to apply 5 coats of polyurethane, screw on the rubber feet, and install the crossover and drivers. To add a finishing touch, I used the ring portion of the steel mesh grill to cover the 10" woofer gasket.

5 Crossover Design

Since this was my first set of speakers, I found a pre-assembled 3-way crossover (#260-210) that fit the budget and had crossover points of 800 Hz and 5,000 Hz. This component also factored into my driver selection, because it helped in choosing my driver and verifying it would work with the crossover. Since I have finished this project, I have researched crossover design and construction and I plan to attempt my own on future projects.

6 Conclusion

The main goal for this project was to develop a pair of speakers that looked good. I think I nailed that part of it. They are always a topic of conversation for visitors, and the most common words used to describe them are either "unique" or "cool". They are not flawless by any means as I had a couple of "where is the undo button" moments, but for the most part these blemishes are unnoticeable. The speakers sound pretty good to me—I was actually impressed the first time I hooked them up. I am currently using them as the front speakers for my 5.1 surround, but I can also set my receiver to pure L-R stereo for music and they seem to deliver. I have heard speakers that sound better and I don't think mine are going to win any



awards, but they serve the purpose for which they were created...and that is good enough for me.

As stated before, I am a complete novice when it comes to speaker building. This project was the first time I had more involvement with audio output than just simply running a wire from the receiver to the store-bought speaker. I took a total of one Electrical Theory class in college and just skated by since it was an in-major elective. As you can see, you don't have to be an expert to create something special. I invested a lot of time and a little bit of money and now I have a one-of-a-kind original set of stereo speakers that I know how they work and I know what it took to build them. I feel that makes them that much more distinctive. I guess what it all came down to was that I wanted to prove to myself that I could complete this project. No kits, no directions, no experience. What I think I have shown is all you need is a little research, a little persistence, and...oh yeah...a whole lot of glue!

About the Designer



Brad Taylor is a civil engineer who resides in Charleston, South Carolina with his wife and two sons. A graduate from Virginia Tech, Brad is a Hokies football fan and loves watching their games in HD with the surround system blasting away. Although he has no formal or informal electronics training, Brad is now in the beginning stages of planning and designing a dedicated home theater room. The system will include a custom center channel speaker built using Goldwood drivers similar to those selected for The Woodies.