Illuminate 7 Mk2

Build Guide

www.printyourspeakers.com

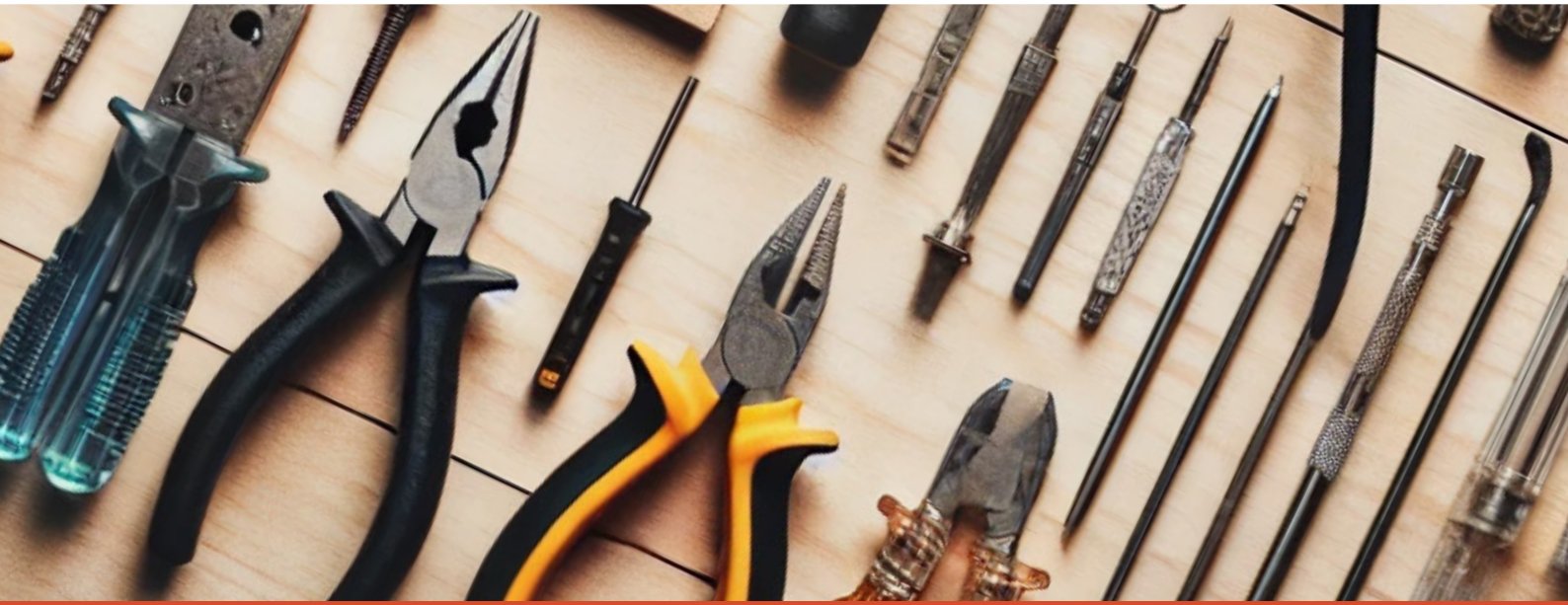
ILLUMINATE 7 MK2 BUILD GUIDE

Introduction:

Thanks for choosing Print Your Speakers! You're about to dive into a hands-on audio adventure like no other. By sourcing your own components and building these speakers, you're not just assembling equipment–you're building speakers that are unapologetically yours. Patience is your ally, so embrace the process and enjoy every moment. Let's transform these parts into something extraordinary!

Toolkit Rundown: Everything You Need to Get Started

- **Reliable FDM 3D Printer:** With at least a H250xD240xW200mm build volume.
- **Soldering Iron:** Your trusty tool for creating strong, conductive connections between electronic components.
- **Soldering Tip for Threaded Inserts (Optional):** A specialized tool that can make installing threaded inserts easier. These tips will allow you to heat and embed your inserts into plastic parts with minimal stress and higher precision. You can find a variety of suitable soldering tips here.
- **Hot Glue Gun:** Use this tool to secure Dacron and lightweight parts in place, preventing movement that could lead to wear, rattles or disconnection.
- **Allen Key:** To drive in your M4 and M5 cap head screws.
- **Pair of Pliers:** Versatile tool for gripping and manipulating small items.
- **Hammer:** Use carefully to help fit parts together or install certain components that require gentle tapping.
- **2+ Woodworking Clamps:** Essential for holding enclosure halves firmly in place during gluing.



3D PRINTING YOUR SPEAKER COMPONENTS

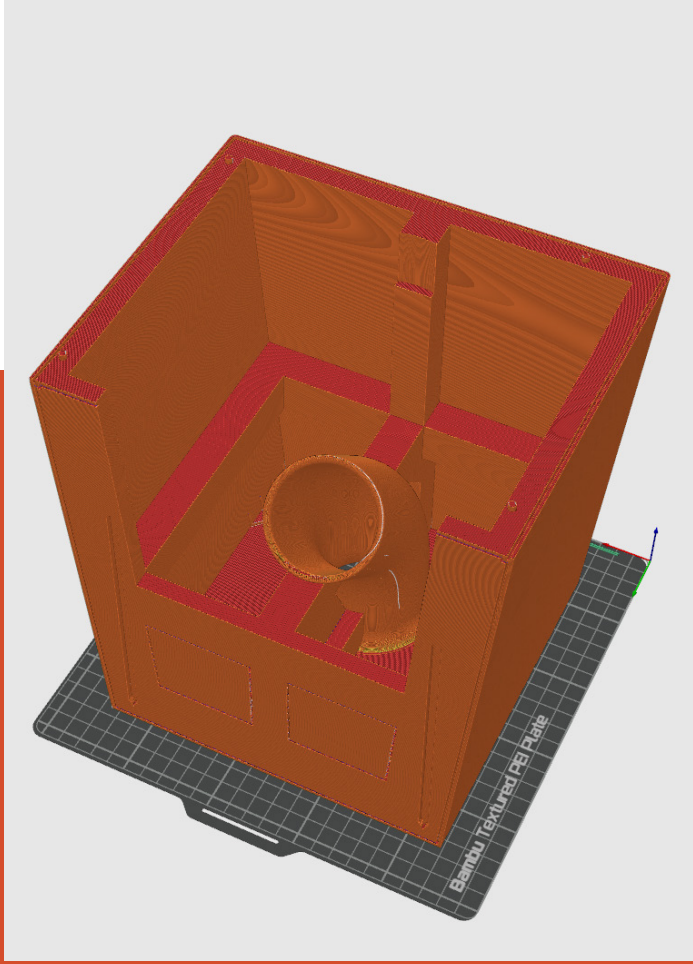
There are lots of different 3D printers and filaments out there, so we're guessing you already know your stuff. But if you're still learning, don't worry–YouTube has heaps of helpful tutorials.

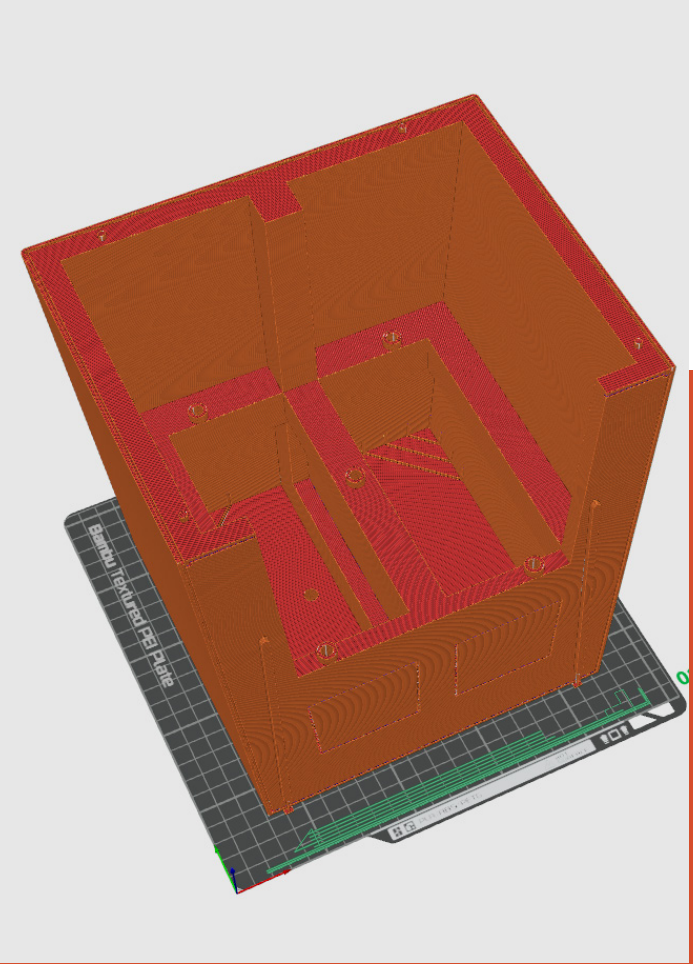
Support: None of the printed parts require slicer generated supports, however, the enclosure has small built-in support panels under the cross braces.

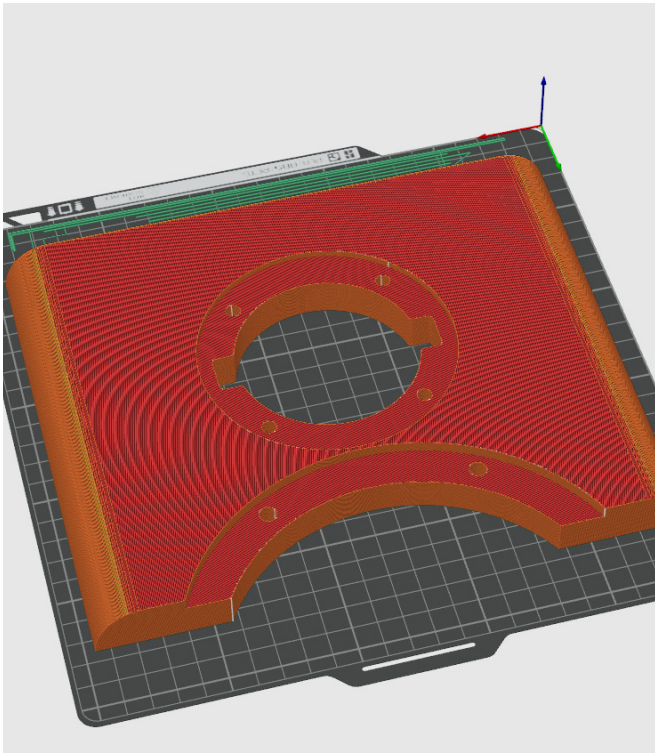
Cooling: For big prints, keep the part-cooling fan low or off–too much airflow cools the plastic quickly and unevenly, which can lead to warping.

Enclosure and Baffle Print Settings: Use 4 wall loops, 5 top and bottom shells, and 30% gyroid infill. Don't use less, or you might get unwanted vibrations in your speaker. If you want extra rigidity, you can increase the loops or infill, but don't go higher than 60%. The infill helps dampen vibrations.

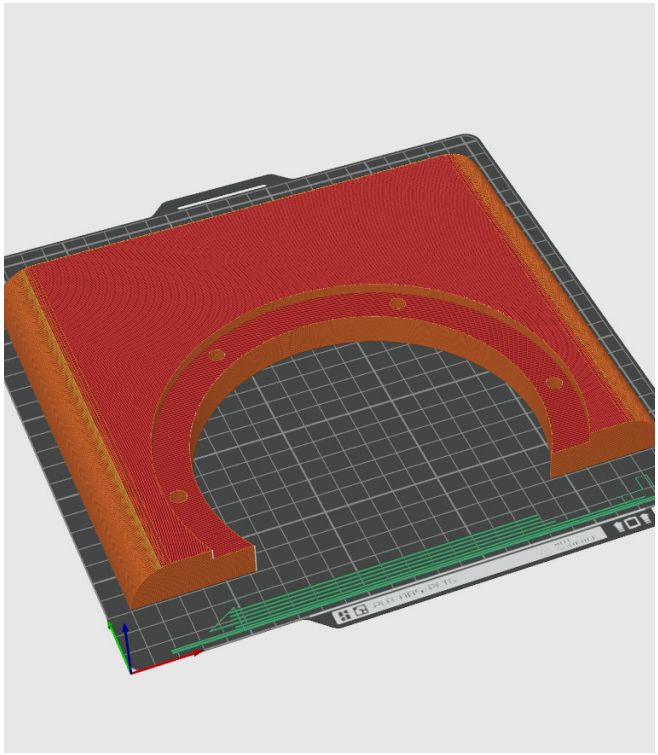
Below is what your enclosure and front baffle should look like in your slicer.



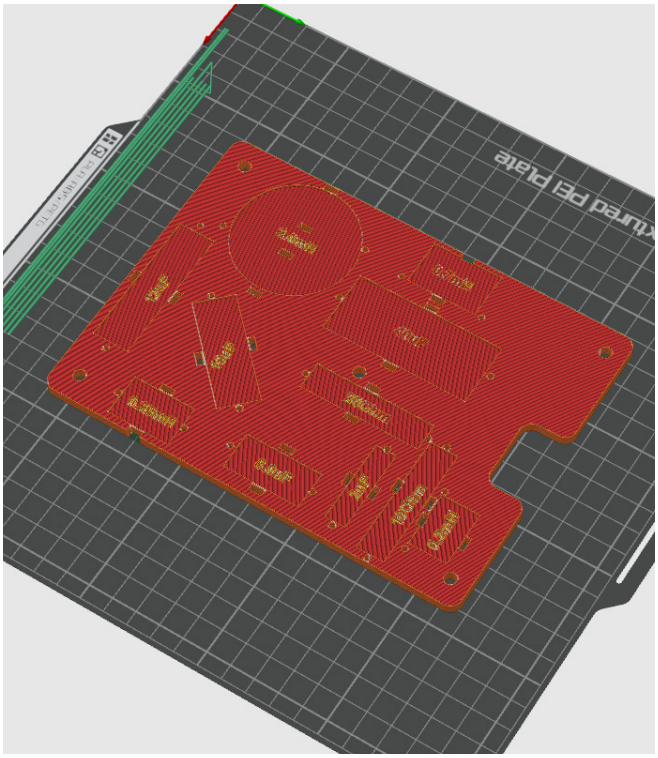


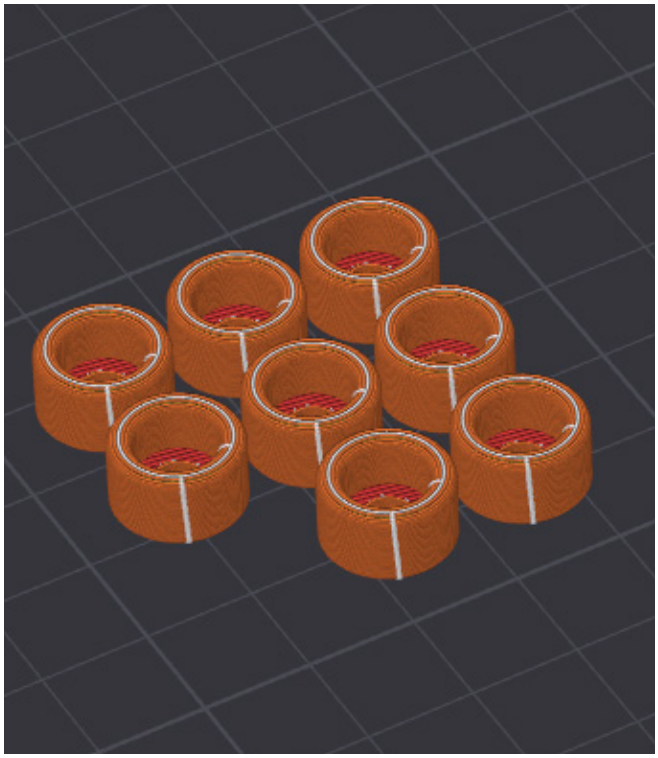


Crossover Board: Go support-free with a solid 100% infill.



Feet: Print support free, two edge loops and 10% infill, don't forget to use a flexible filament like TPU. Alternatively you can purchase rubber feet.



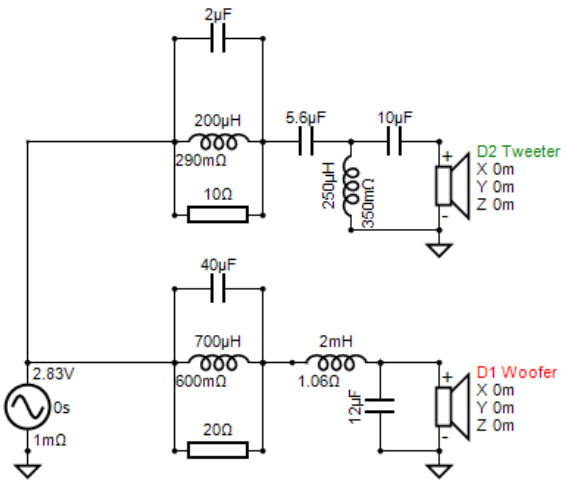


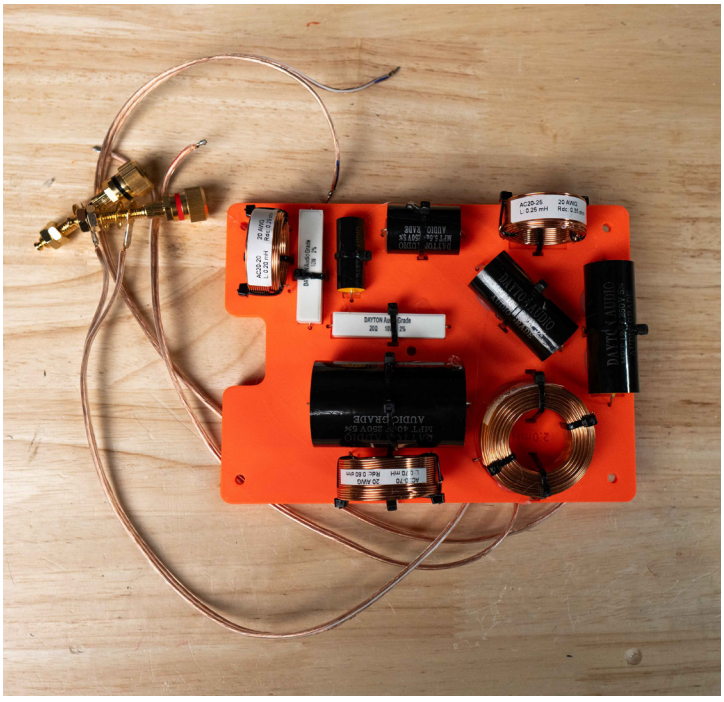
There you have it! With these settings and a bit of patience, you're all set to print parts that look good and sound even better.

ASSEMBLY INSTRUCTIONS

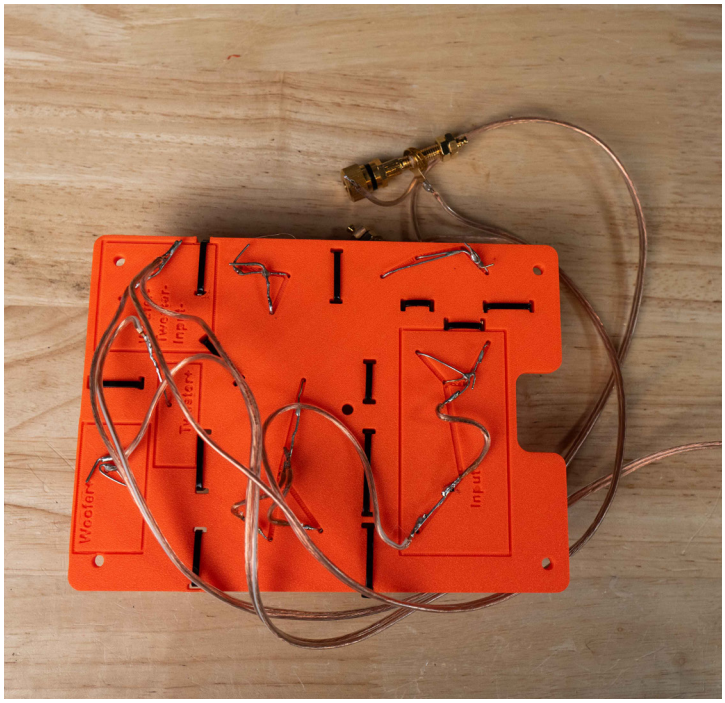
Follow these step-by-step instructions to assemble your speaker:

- **Check Your Components:** Before we begin, make sure you have all the parts listed in the parts and purchase guide. It's a good idea to double-check so nothing is missing.

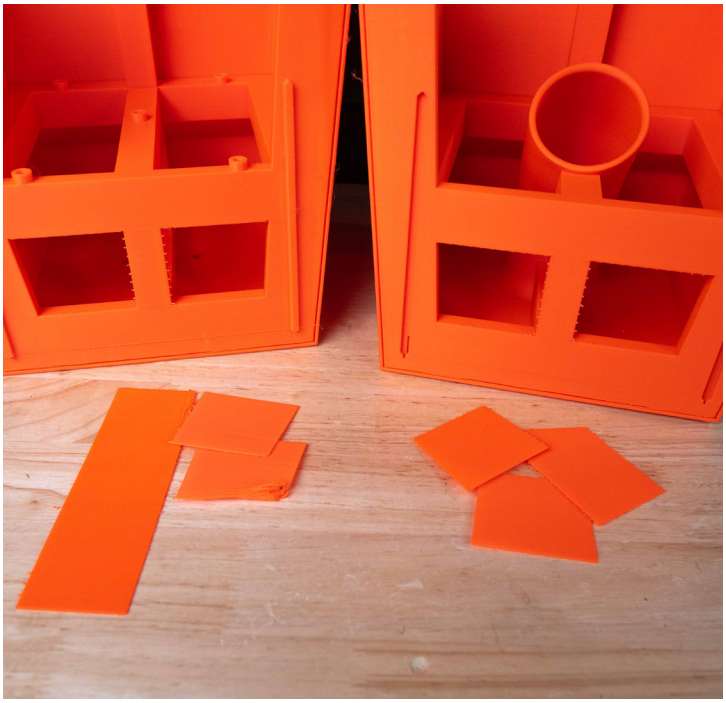




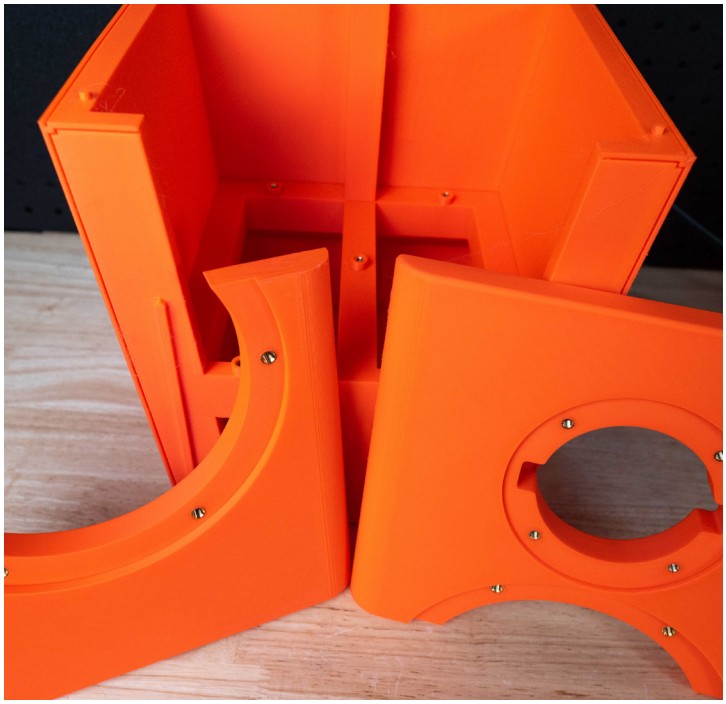
- **Arrange the Components:** Place the components onto the crossover board according to their specified values. Thread the wires through the designated holes and use hot glue and cable ties to secure everything in place. Ensure there is enough space for the cable ties when applying hot glue. This crossover is tightly packed, so a methodical approach is essential for easy assembly. Don't forget to trim the cable ties.



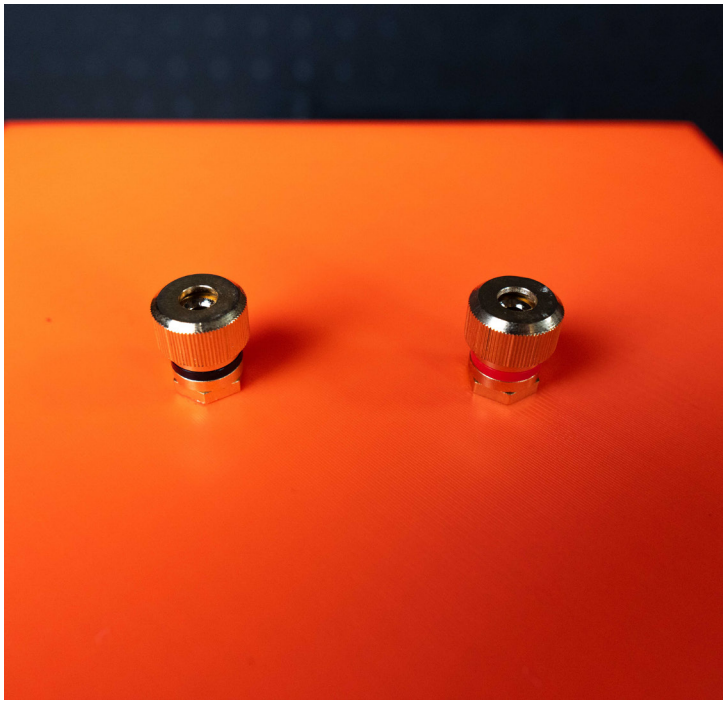
- **Solder Time:** Flip the board over and begin soldering. Follow the paths marked on the board, if any wires don't reach, use extra speaker wire to make the necessary connections. Solder the woofer, tweeter and input wires to their labeled positions on the board. Begin with about 50cm of wire and adjust the length as necessary.



- **Remove Supports:** Snap off the small support panels under the cross braces.



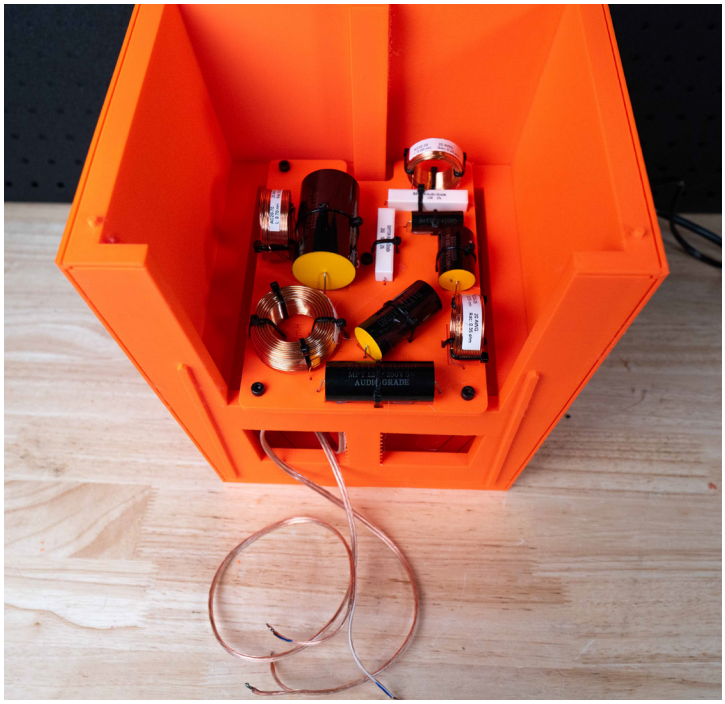
- **Threaded Inserts:** Stick in your threaded inserts using a soldering iron–six M5 for the woofer, four M4 for the tweeter, four M4 for the feet, and five M4 for the crossover board.



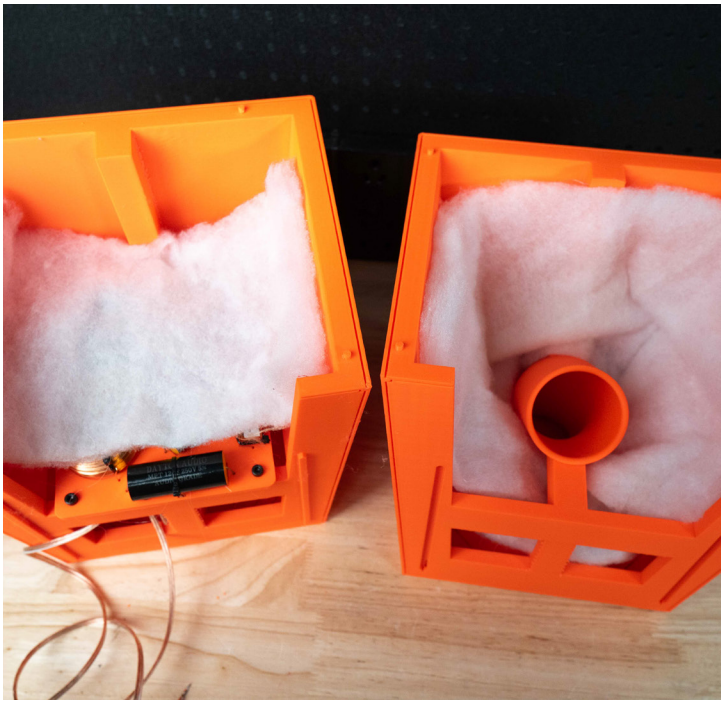
- **Binding Posts Time:** Carefully hammer the binding posts into the back of the cabinet, making sure they're orientated correctly.

- **Seal the Deal:** Apply a small amount of hot glue around the inside of the binding posts to ensure they are airtight.

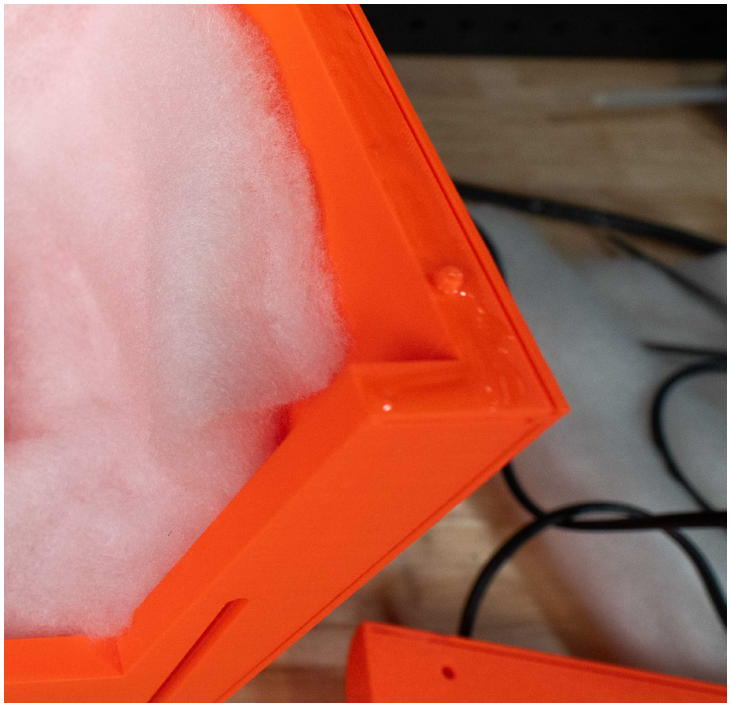
- **Connect the Binding Posts:** Hook up the spade connectors to the binding posts and double-check your wiring to ensure everything is in phase.



- **Tidy Up:** Tuck the wires neatly at the back of the board and screw it down. Pass the tweeter and woofer wires through the bracing as pictued above. Don't forget to label the tweeter and woofer wires!

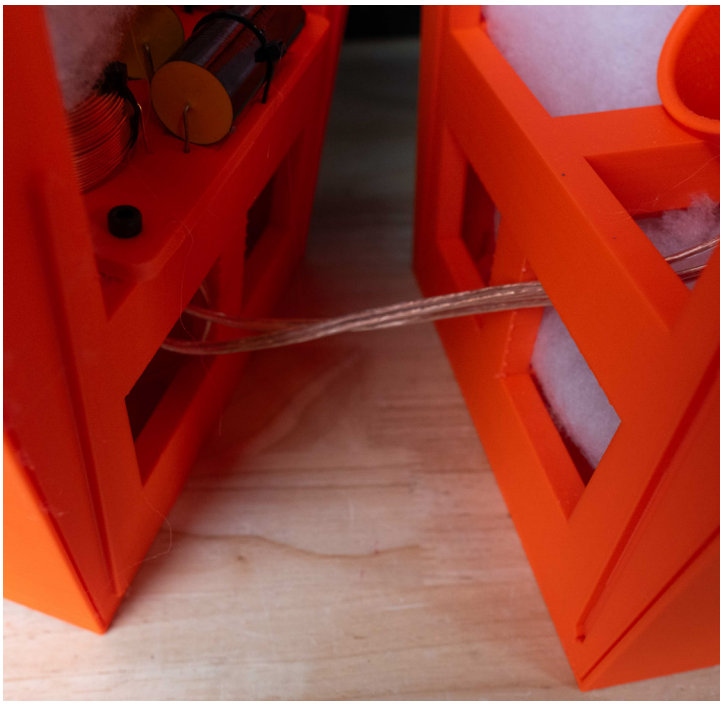


- **Fluff It Up:** Glue a single layer of Dacron to the enclosure around the port tube and over the top of the crossover. Make sure you don't block the back of the woofer or cover the port opening.

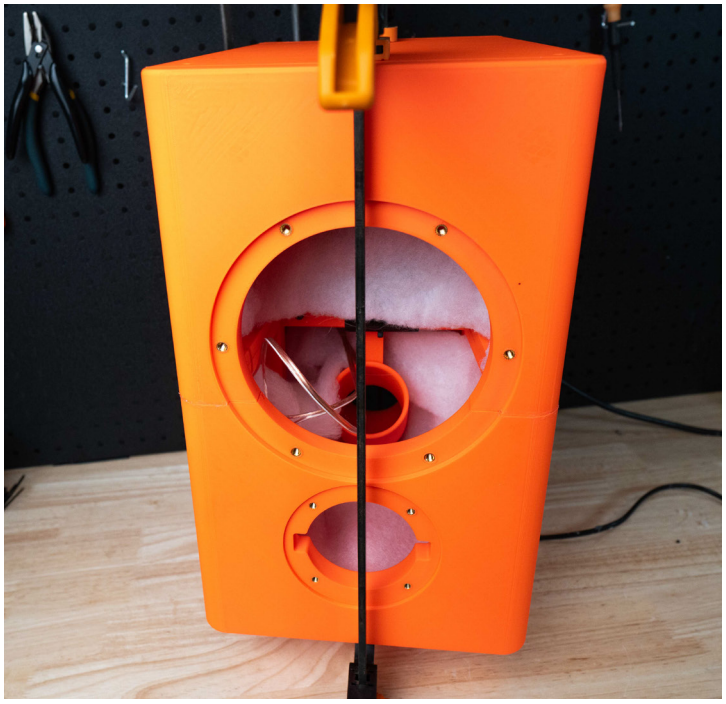


- **Glue it Good:** Mix your epoxy glue, then carefully spread it onto the mating surfaces where the baffles meet the enclosure sections. Don't put glue in the groove–it's designed to catch extra glue and stop it from oozing out.

- **The Clamps:** Clamp the enclosure sections to the baffles and set asside while the glue sets.



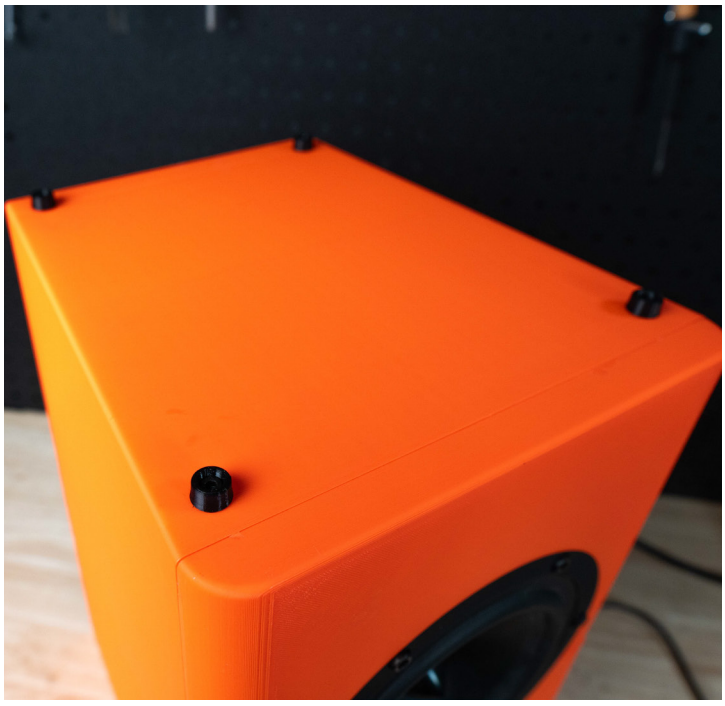
- **Wires This Way:** Pass the tweeter and woofer wires into the second enclosure section as pictured.



- **The Clamps Part 2:** Use epoxy to glue the two enclosure halves together.

- **Make the Connection:** Solder the wires to the contacts on the tweeter and woofer. Pay close attention to polarity.

- **Driver's Seat:** Screw the tweeter and woofer in place, nice and secure. Ensure not to over tighten the screws.



- **Stand on its Own:** Screw those feet on. No wobbles allowed.

- **Final Once-Over:** Take a good look at your master-piece. Everything snug? Brilliant. Now kick back and enjoy the sweet sound of success.

TROUBLESHOOTING COMMON ISSUES

Links to Useful Guides

- **Soldering:** Instructables How-to Solder Guide
- **Threaded Inserts:** CNC Kitchen's Tips & Tricks

Encounter a hiccup? Here's how to solve common issues:

- **Silence from Both Drivers:** Check your connections at the crossover and binding posts.
- **Single Driver Not Working:** Ensure all crossover connections are correct and secure.
- **Crackling Noises:** Tighten all connections and check for any loose solder joints.
- **Amplifier Powering Off:** Inspect for any shorts in the wiring, particularly around the crossover and binding posts.
- **Weak Bass Response:** Verify polarity at all connections, check your wiring against the wiring diagram and ensure the port is unobstructed.

For any persistent issues or if you need more guidance, don't hesitate to get in touch with our support team at help@printyourspeakers.com. We're committed to helping you achieve the best sound experience possible!

Join Our Maker Community!

Got your speakers up and running? We'd love to see them in action! Share your build on Instagram, and don't forget to tag us @Print.Your.Speakers. Join the community and inspire others with your creation!

We Value Your Feedback!

Thanks for building with Print Your Speakers! We're always looking to improve, and your thoughts can help us do just that. If you have a moment, we'd love for you to fill out our quick survey: https://forms.gle/vGdJ8ECs8qqVMPcH6.

Have more to share? Feel free to email us directly at feedback@printyourspeakers.com. Your input is what helps us keep getting better!