3TD-X Tower Assembly Instructions

What You'll Need

At a minimum:

1. Screw Driver
2. Soldering Iron
3. Wire Cutters/Strippers
4. Wood Glue

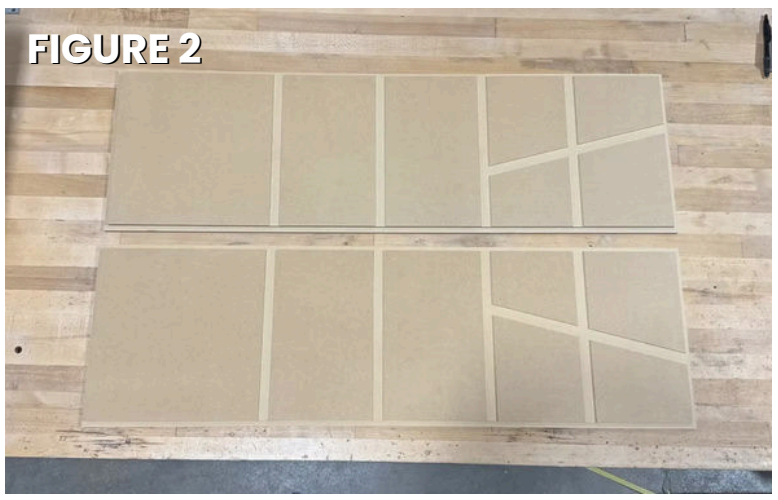
You might also find it beneficial:

1. Clamps
2. Electric Drill

Flat Pack Enclosure Assembly

1. Verify all cabinet parts were received. (*figures 1 & 2*)

2. Clear dust from the corners of all panels. Any debris in the joints will prevent a tight, flush surface when gluing up the cabinet. (*figure 3*)

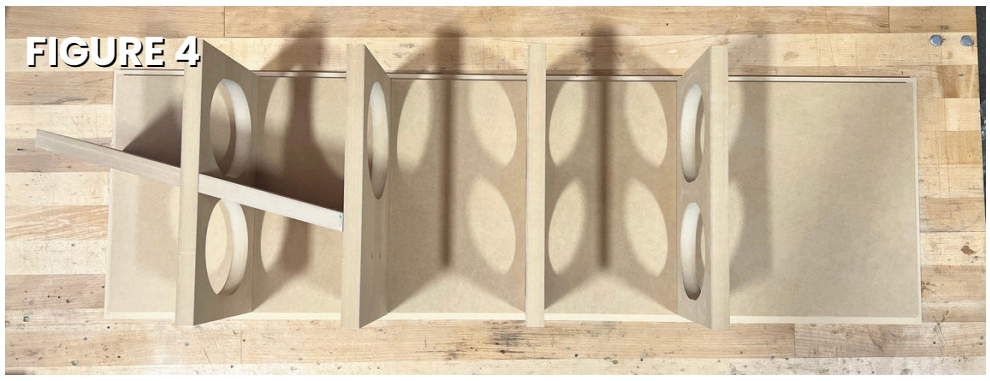


3. Assemble the cabinet **WITHOUT** glue to ensure all panels fit together.

Now is the best time to install magnets into the baffle if using the grill kit. This YouTube video can be used as a guide: https://youtu.be/QD4HvV4hPFM

We recommend placing the larger side panel on the work surface first, followed by the center brace, front and rear panels, top and bottom panels, and finally the opposing side panel (*figures 4 & 5*). No large gaps should be visible, and joints should be square.

NOTE: Due to regional and seasonal humidity differences, some sanding may be required to insert braces into the appropriate slots. This is more common in Baltic birch cabinets because plywood has slightly less dimensional stability than MDF. The front and rear panels are intentionally oversized by 1 mm to allow for easier flush sanding after assembly.

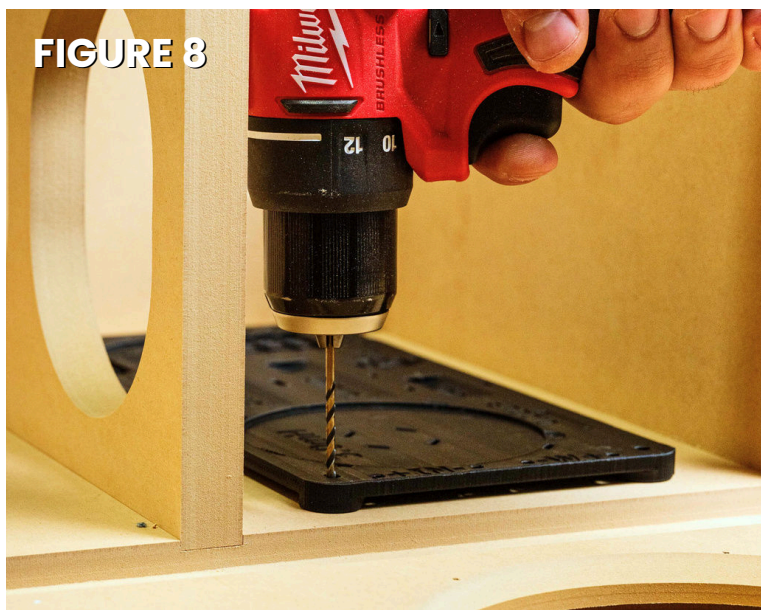


4. Disassemble the cabinets and place panels on a clean surface arranged for easy assembly. Use the assembly images to confirm proper panel orientation. The angled brace sections should face toward the rear of the cabinet. In the reference figure 4, the front of the cabinet is shown at the bottom of the image. (*figures 4 - 6*).

Make sure the front baffle is positioned so the tweeter flange recess faces outward and the midrange chamber faces the tweeter and midrange openings. The side with the brace cutout should face the cabinet's rear. (*figure 6*)

5. (OPTIONAL) Before assembly, you may drill pilot holes for mounting the crossover board using the board as a template. (*figure 8*)

Use caution to avoid drilling through the panel. The TM Circuit Board should be mounted on the side panel of the woofer enclosure, below the midrange sub-enclosure, just behind the top woofer. The Woofer Circuit Board should be placed on the side panel behind the second-to-top woofer (*figure 7*). This step is optional, but it will make installing the board easier once your cabinet is fully assembled. Screws can be pressed into the MDF cabinets without drilling if desired.



6. Apply wood glue to the dados and rabbets on one side panel first. Install the braces and midrange chamber panels. Next, install the top and bottom panels, applying glue to the rabbets for the front and rear panels. Finally, apply glue to the remaining side panel and install (*figure 9*).

FIGURE 9

NOTE: We recommend using Titebond III wood glue due to its longer working time, which can make assembly easier. Titebond I or II may also be used if preferred, especially when working quickly or with additional assistance.

After the cabinet is fully assembled and the glue has cured, sand the cabinet flat. Fill any larger gaps with wood filler or Bondo and sand all surfaces smooth. (*figure 10*)

FIGURE 10

7. Finish as desired using veneer, vinyl, paint, etc. (see CSS blog post for ideas).

Crossover Assembly

1. Verify all crossover parts were received. (*figure 11*)

Woofer:

- 1Ω Resistor (*x2*)
- 125µF Capacitor (*x2*)
- 3mH Inductor (*x2*)

Tweeter/Mid:

- 0.4mH Inductor (*x2*)
- 0.75mH Inductor (*x2*)
- 3mH Inductor (*x2*)
- 5.6µF Capacitor (*x2*)
- 10µF Capacitor (*x2*)
- 75µF Capacitor (*x2*)
- 0.47µF Capacitor (*x2*)
- 20Ω Resistor (*x2*)
- 3Ω Resistor (*x2*)
- 2Ω Resistor (*x2*)
- 1.5Ω Resistor (*x2*)
- 1Ω Resistor (*x2*)

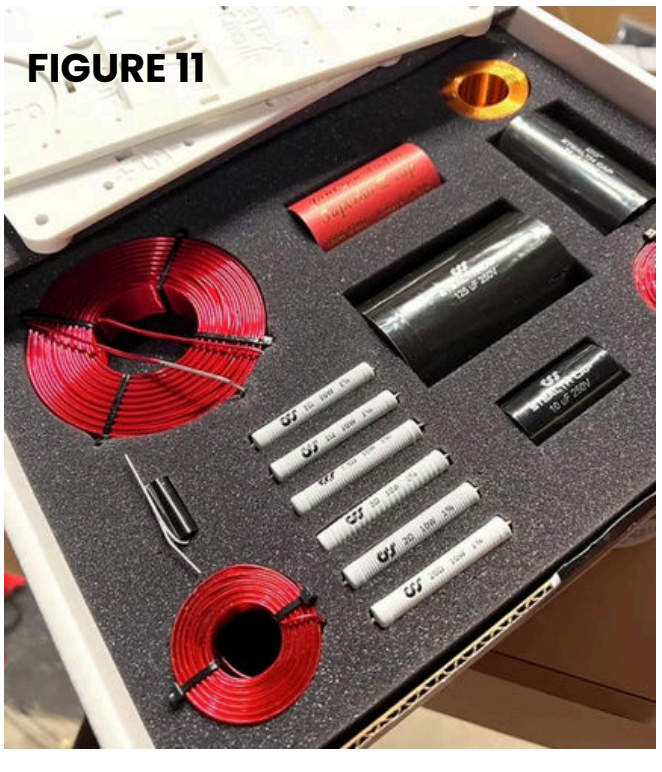


FIGURE 11

2. Place each component in its labeled location on the SmartNode board by putting the lead wires through the holes for the associated board location. (*figure 12*)

Orientation does not matter as long as leads can reach the through-holes.

NOTE: Pull the inductor wires up through its center hole and back down, if needed, to prevent the leads from being crushed against the inductor body. This will prevent a potential short when cinching the zip ties.

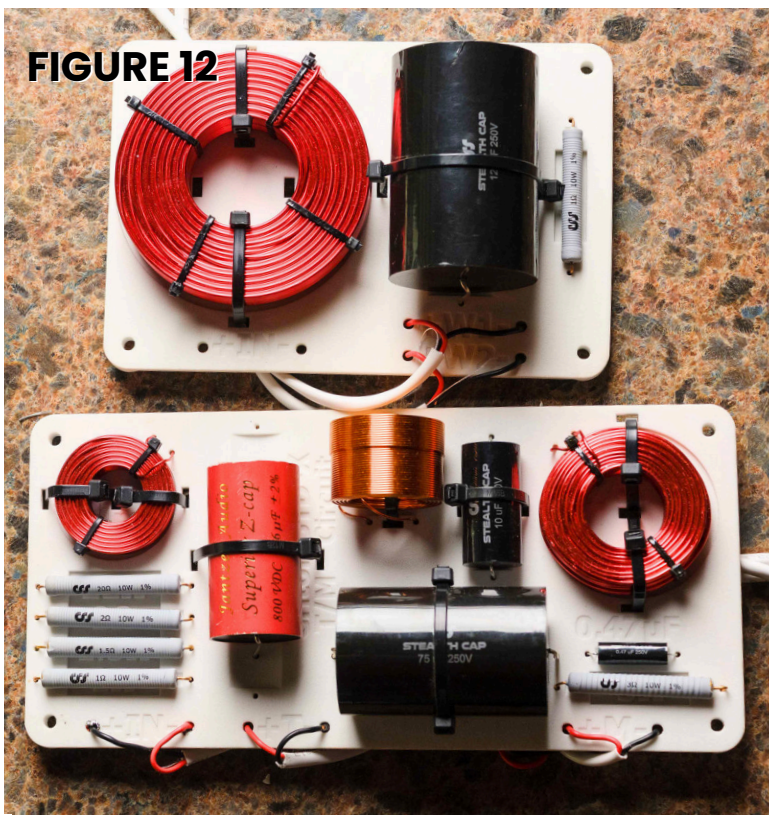


FIGURE 12

3. Secure the components to the board with the supplied zip ties (*figure 12*).

4. On the back side of the board, twist the leads together that share common letters (e.g., A to A, or B to B to B), using the supplied hookup wire where necessary to jumper between nodes. Ensure that no bare wires are touching unintentionally.

FIGURE 13

NOTE: Crossing bare wires from non-matching letters can degrade sound quality and damage the drivers or amplifier. To make a connection across another wire and prevent issues, ensure you use the red insulated hookup wire supplied in your kit.

NOTE: Inductors have an insulating coating. You cannot solder directly to the red or orange colored portions of the inductor wire, or you will cause an open circuit. Solder to the pre-tinned leads (silver portion) to ensure proper connection.

5. Cut wire lengths for the pair of speakers as follows:

- Qty. 4 — 18" lengths from woofers to Woofer Circuit Board (+W–)
- Qty. 2 — 24" lengths from binding posts to Woofer Circuit Board (+IN–)
- Qty. 2 — 24" lengths from tweeter to TM Circuit Board
- Qty. 2 — 24" lengths from midrange to TM Circuit Board
- Qty. 2 — 36" lengths from binding posts to TM Circuit Board (+IN–)

6. Strip approximately 3" of outer white insulation from each wire pair and ¼" of insulation from each red and black wire end. (*figure 13*)

It may be beneficial to strip slightly more insulation on the ends connecting to the SmartNode boards.

7. Insert the appropriate wire lengths through the designated holes on the SmartNode boards, using a red wire for positive and a black wire for negative. Follow the labeled + / – terminal markings on the top side of the board, regardless of the lettered node connections on the underside. (*figures 14 & 15*)

8. Connect the inserted wire ends to the appropriate lettered nodes using the supplied jumper wire, as needed.

9. Solder all twisted connections.

(*figures 16: tweeter/mid & 17: woofer*)

FIGURE 14

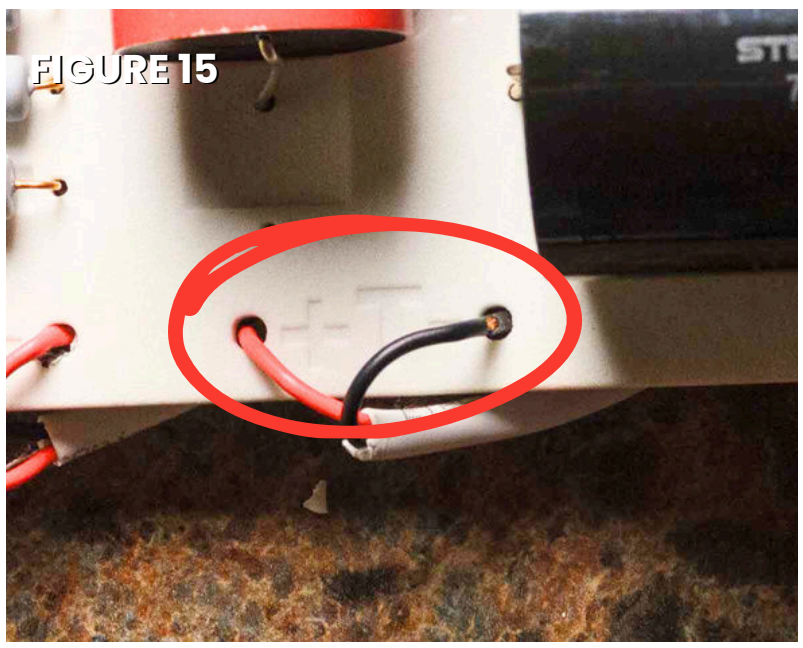


FIGURE 15

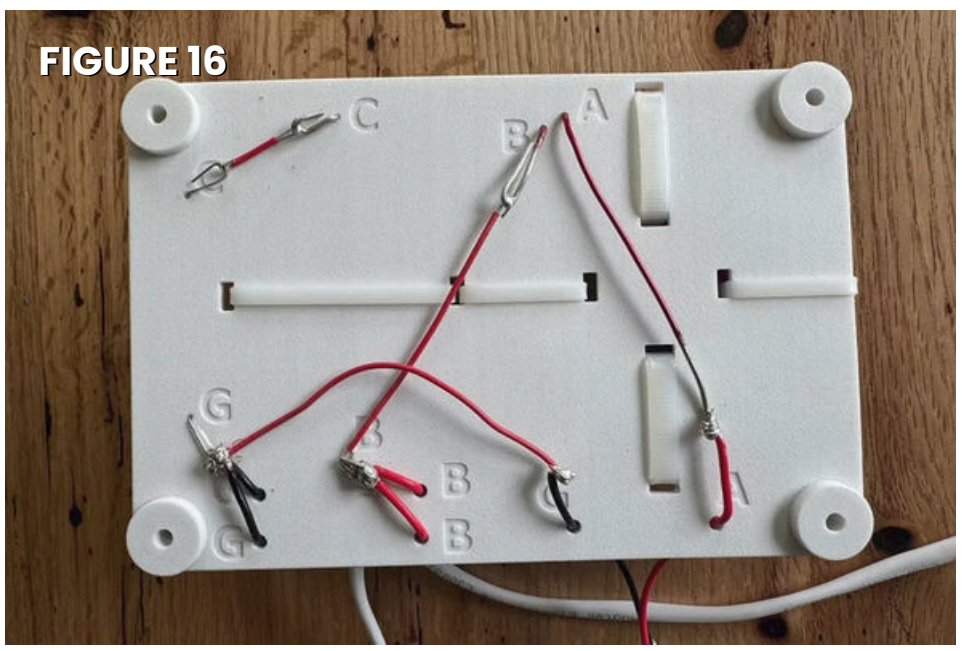


FIGURE 16

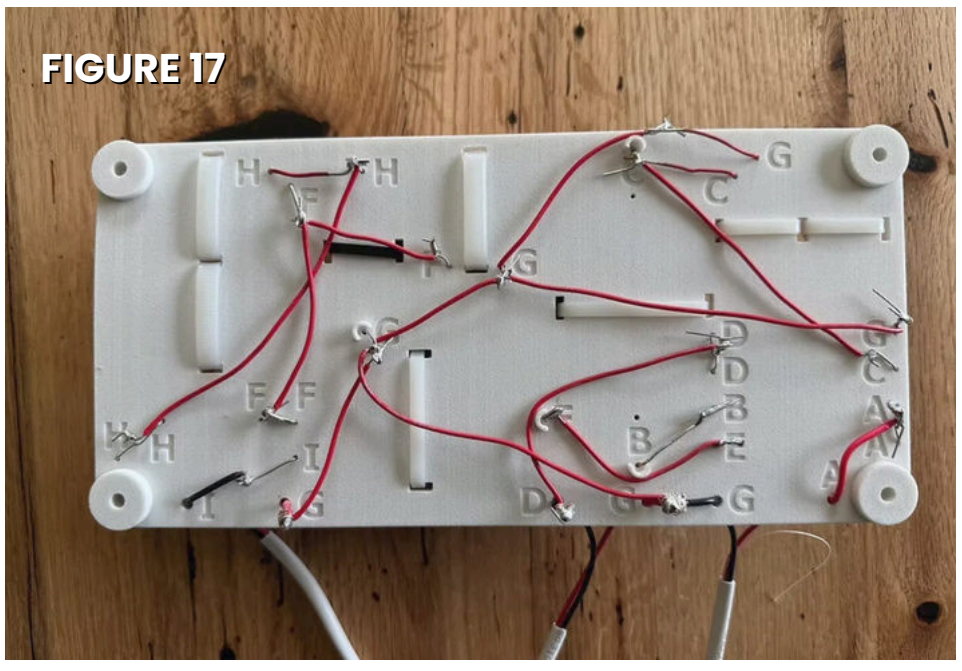
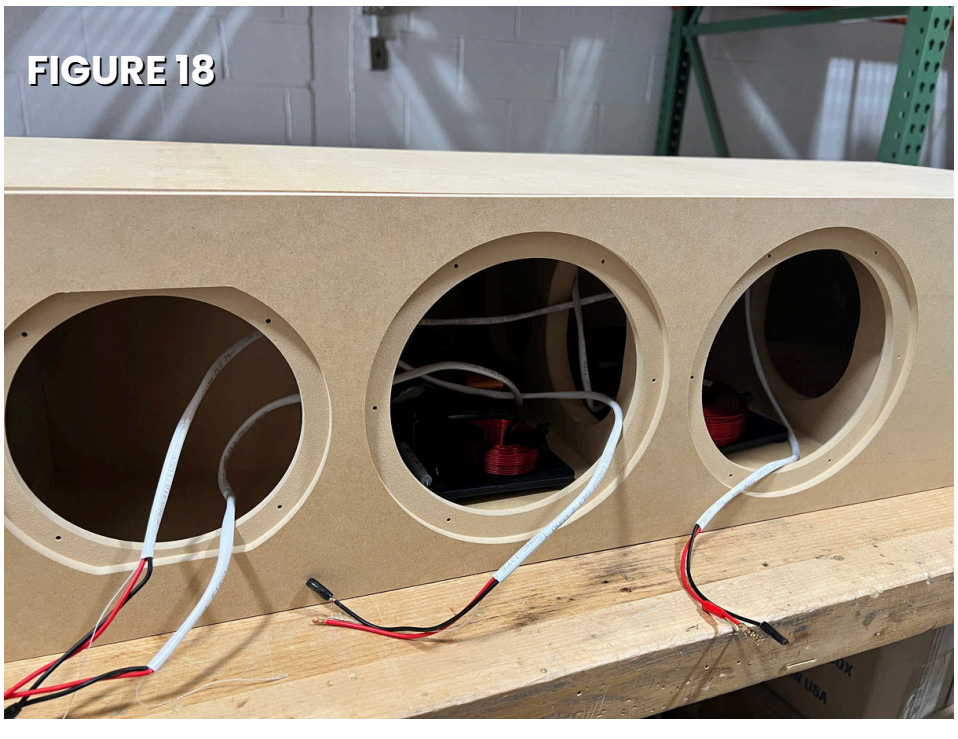


FIGURE 17

Final Assembly

CAUTION: It is recommended to test your speaker after final assembly by starting at a very low volume and listening closely to each driver. You should hear highs from the tweeter and lows from the woofer, with no crackling or static, before increasing the volume.

1. Mount the TM SmartNode board below the midrange chamber behind the top woofer and mount the Woofer SmartNode board behind the second woofer from the top (*figure 18*).



2. Route the wire pair from the +M– terminals through one of the holes in the bottom of the midrange enclosure and mark the hole “M” for future reference. (*figure 19*).

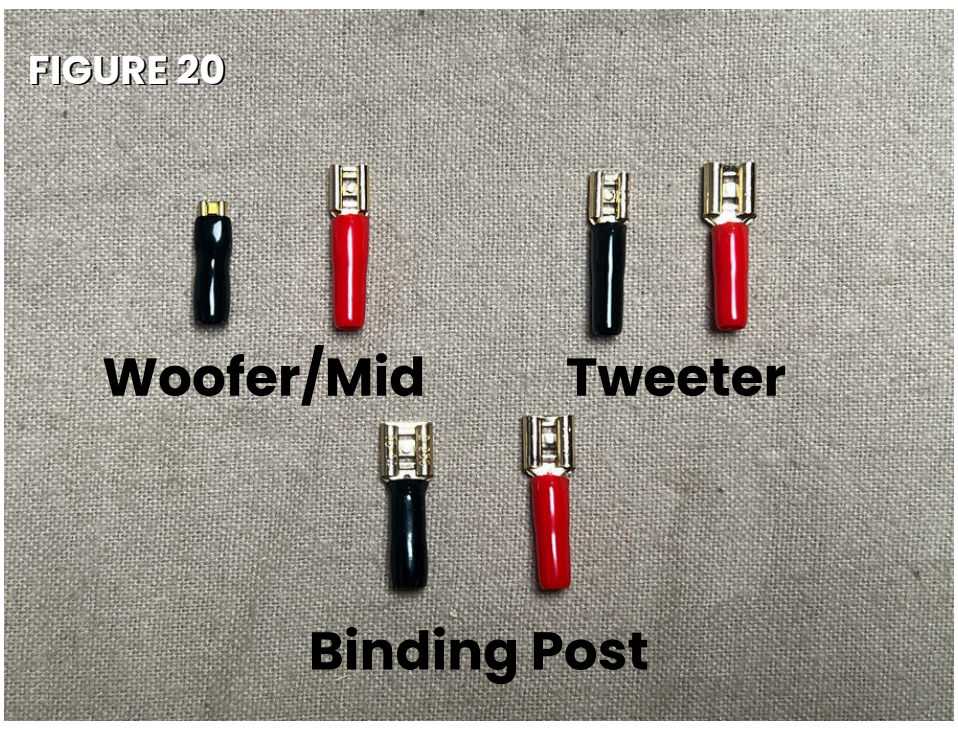
3. Route the wire pair from the +T– terminals through the remaining hole in the bottom of the midrange enclosure and mark the hole “T” for future reference. (*figure 19*)

   Allow slight slack near the crossover boards while keeping most of the wire inside the midrange enclosure.

4. Crimp quick-connect terminals to the driver-end wires from the SmartNode boards.

   There are two sizes of red terminals and three sizes of black terminals. The black connections are for the negative terminals, and the red connections are for the positive terminals. Verify proper fit on the drivers before crimping. (*figure 20*)

   - Woofers and mids use one smaller red and one smallest black terminal
   - Tweeter uses one large red and one medium black terminal
   - Binding posts use one large red and one large black terminal



5. The wire pairs coming from the +IN- holes on each SmartNode board should be sent down the back of the cabinet and out the terminal plate hole on the rear of the speaker. Here, the 2 red wires should be twisted together, and a large quick-connect crimped to the joined red wires. Likewise, the 2 black wires should be twisted together, and another large quick-connect crimped to the joined black wires. (*figure 21*)

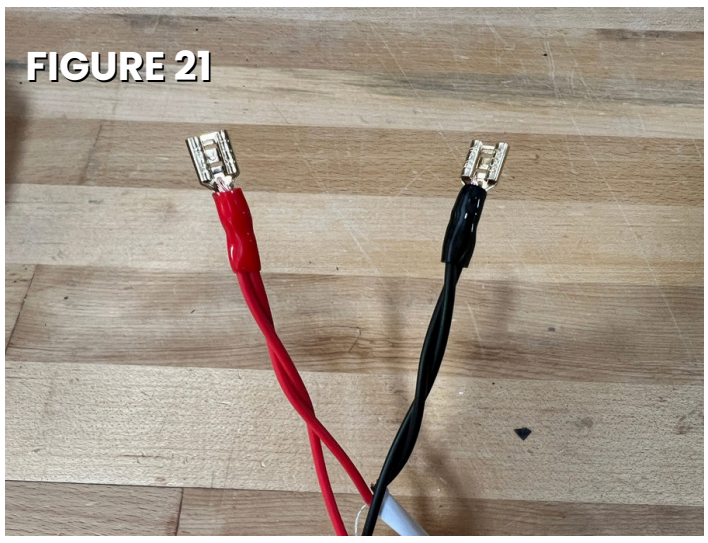


FIGURE 21

6. Connect the binding post to the input wires. Keep in mind that the quick connects may need to be compressed a little for a tight slide-on fit with a pair of pliers (*figure 22*). Insert the binding post plate into the opening and screw it in place using the supplied #6 x 1″ screws (*figure 23*).

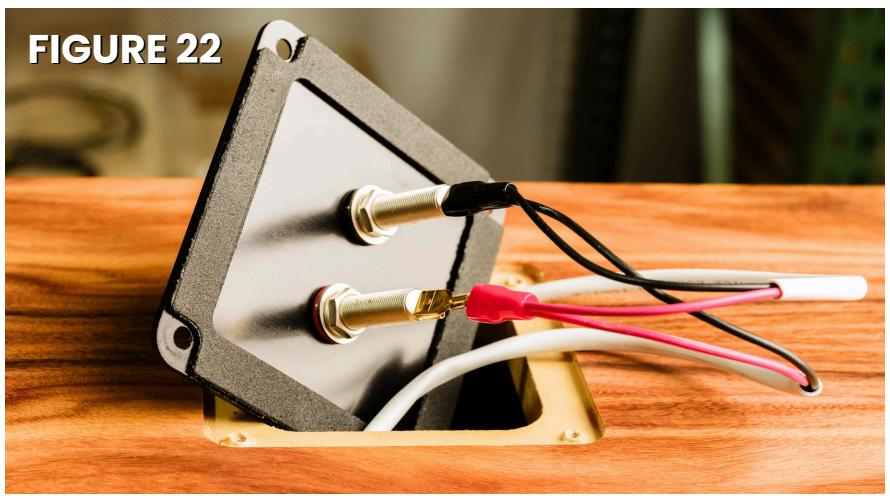


FIGURE 22

7. Insert 2 pieces of the 7″ x 6″ x 3.5″ thick recycled denim into each midrange enclosure, one piece above the brace and one piece below behind the tweeter and the mid (*figure 24*).

FIGURE 23

8. Cut the 10.5" × 24" eggcrate foam into the following sections for the pair of speakers: (*figures 25 & 26*)

- Qty. 2 – 7" × 7" (rear panels)
- Qty. 4 – 10.5" × 7" (long side panels)
- Qty. 4 – 10.5" × 4" (top/bottom panels)

Install the foam with the eggcrate surface facing inward. Position the foam on the cabinet walls surrounding the woofers and above the port (*figure 27*). Ensure the foam does not obstruct the port opening or interfere with wiring.

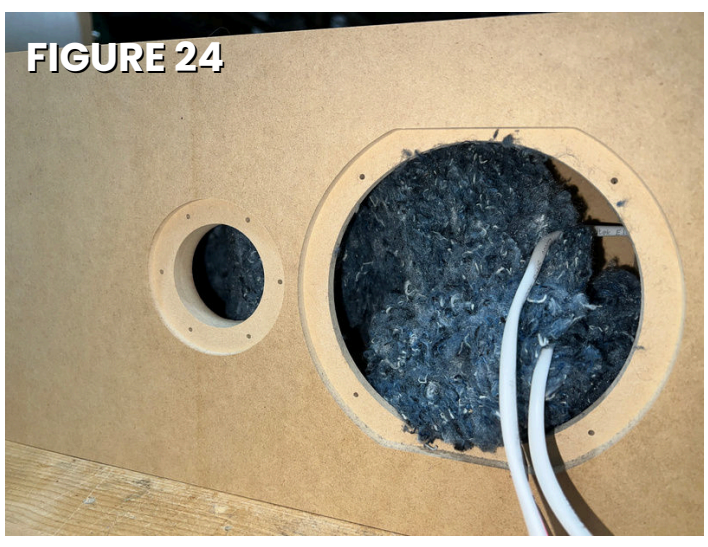


FIGURE 24

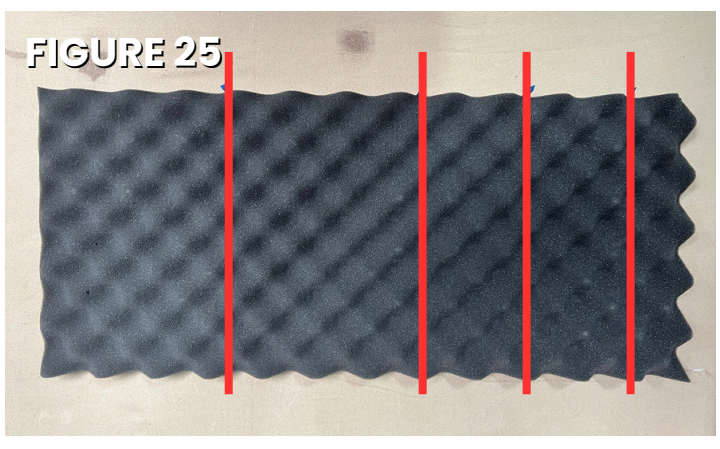


FIGURE 25

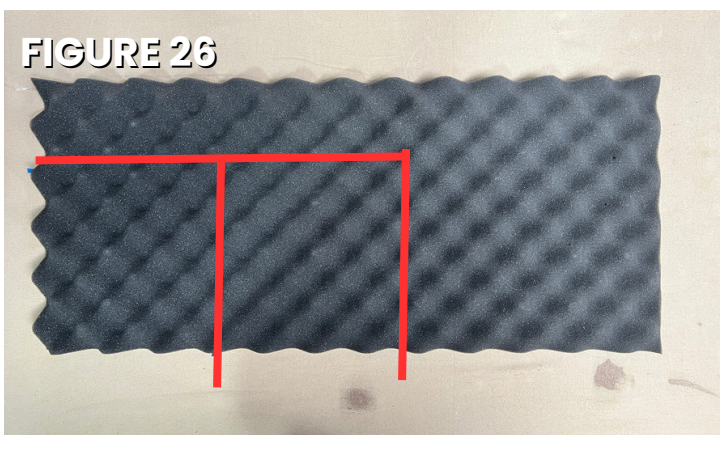
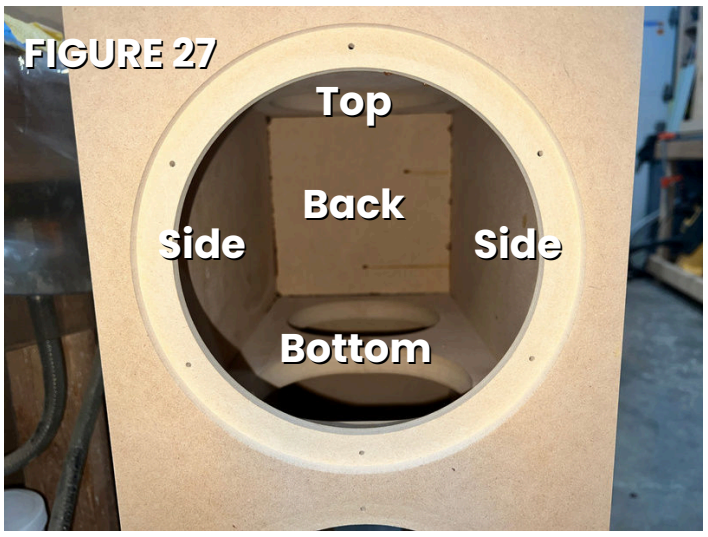
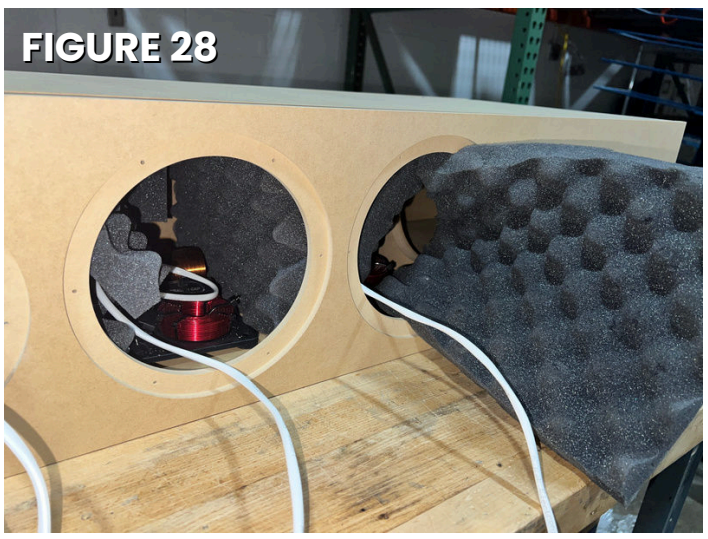


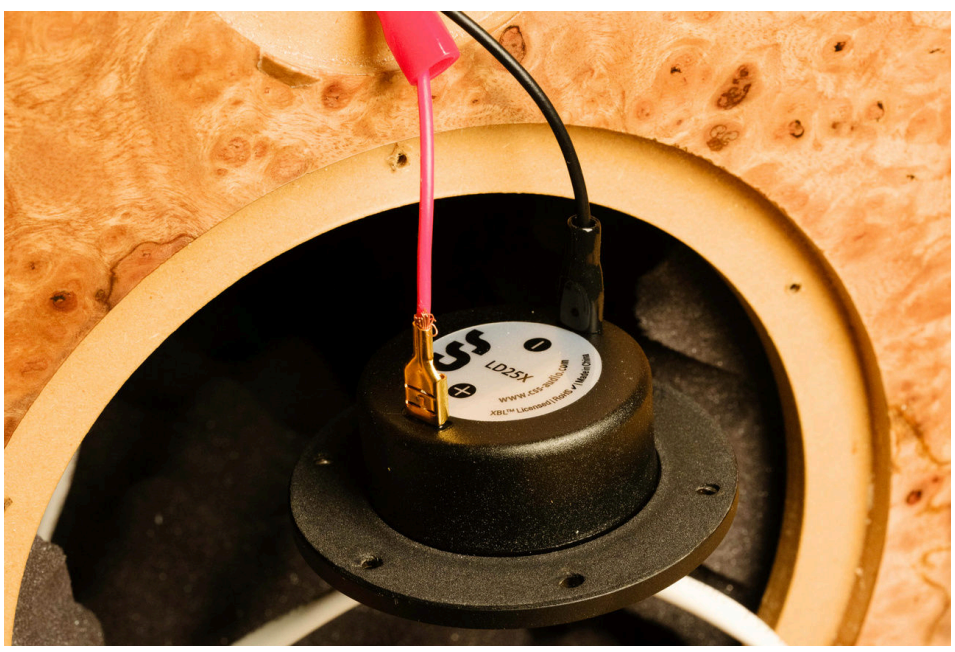
FIGURE 26

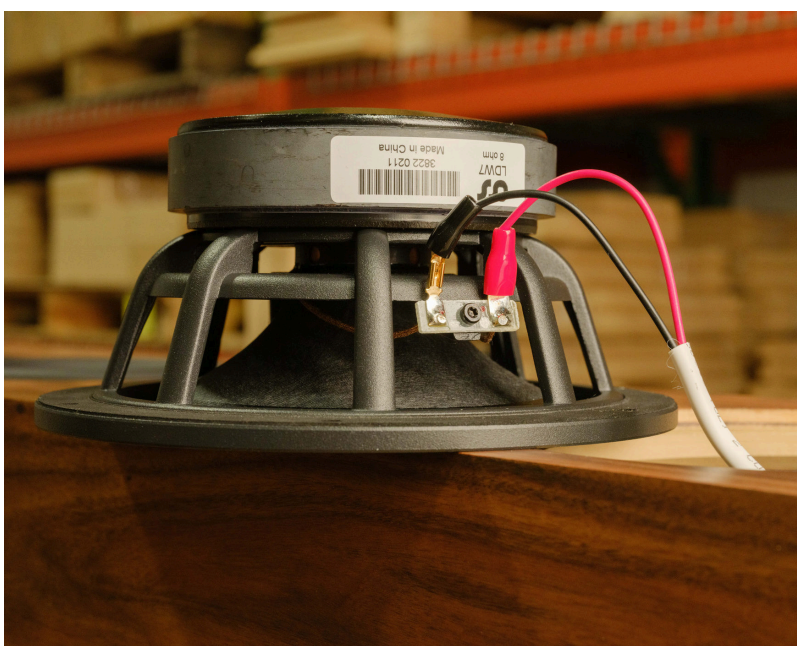
9. Pull the tweeter wire (marked “T” in step 3) through the tweeter hole and slide the quick connects onto the tweeter terminals – large to large and small to small. Give the wires a light tug to check the grip. If they slide off easily, close the opening a little on the quick connects with a pair of pliers and repeat until a snug fit is achieved. Then install the tweeter in the proper place using the included screws.





10. Repeat step 9 for the midrange and woofer drivers.





Troubleshooting

1. **No Sound From the Whole Speaker** - No sound from one or both speakers typically means you have a problem on the amp input side of the crossover. Check that your input wires are properly connected to the crossover (including the ground wires returning to the negative connection) and to the binding post side. Ensure the input wires and binding posts are not shorted by stray wires or other metal, which could create a conductive path between the negative and positive.

2. **No Sound From One Driver** - No sound from a single driver most typically results from a bad connection in the crossover. Review all connections to make sure only similar letters are on the same connection points. Ensure inductors are properly connected to tinned/bare wire, not over the insulation. Ensure there are no loose connections anywhere.

3. **Crackling Sound** – Crackling sounds are usually the result of a loose connection. Check to make sure you have secure connections on all driver and binding post wiring. Ensure crossover wiring has a solid connection, and solder welds are tight. You should see no movement in the joint itself. Check crossover wiring for any bare wires that are inadvertently touching where they shouldn't. If the source cannot be identified, contact us.

4. **Amp Shuts Down** – An amp shutting down is likely caused by a straight short to ground, meaning your amp is seeing minimal or no resistive load. The most likely cause is wiring touching where it shouldn't be. Check crossover wiring for any bare wires that are inadvertently touching where they shouldn't. Ensure binding post terminals are not inadvertently touching. An amp shutting down is likely a straight short to ground, meaning it's seeing no resistive load. If the source cannot be identified, contact us.

5. **Lack of Bass** – There are a few things that can cause a lack of bass. Check to make sure all your connections have the same polarity on both the inside and the outside of the binding post. Inverting the polarity of one speaker will cause bass cancellation. Ensure there is free airflow around the port openings and that they are not blocked by stuffing material. Ensure the woofer is connected to the woofer W +/- section of the SmartNode board and not the tweeter T +/- section. Ensure the port is adjusted to the correct length. If the source cannot be identified, contact us.