1x15" Bass Guitar Cabinet Build Instructions

These instructions demonstrate a simple method for building your own high-quality bass guitar cabinet. With some basic woodworking tools and a little time, you can build your own bass guitar cabinet in just a few days.
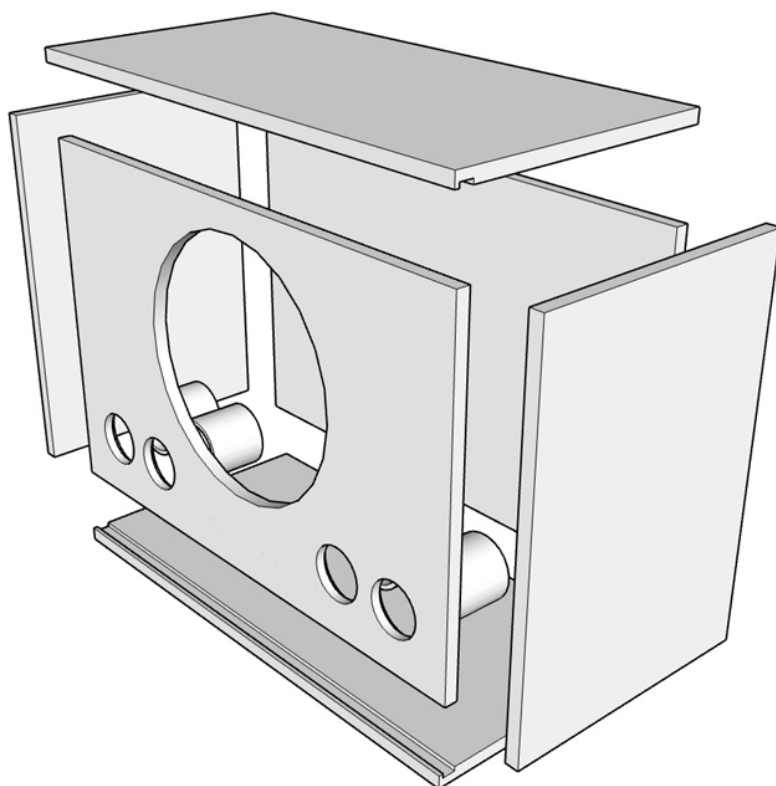
The dimensions and port lengths shown will provide a single 15" bass guitar cabinet with a gross internal volume of 4.23 cubic feet (119.8 liters) and a port tuning frequency of 49.9 Hz.

Build Materials:

- One 48" x 96" (4' x 8') sheet of 3/4" (19mm) birch plywood

Plus one of these two options:

- 3" ID Schedule 40 PVC pipe (you will need four 2-7/8" long pieces)
- Four press-fit 3" ID port tubes cut to 3-3/8" length

Suggested Tools and Consumables:

- Table saw, track saw or circular saw
- Drill
- Assorted twist drill bits
- Router
- Circle jig for router
- ¼" diameter plunge-cut router bit
- Wood clamps
- Sanding block and/or electric finishing sander
- Wood glue
- Polyurethane glue (Gorilla Glue)
- Wood/void filler (Bondo or spackle)
- Dado stack (if using a table saw)
- Flush-trim router bit

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Cut Sheet:

Stock sheet	96x48
Used area	2689.5 58%
Wasted area	1918.5 42%
Cuts	8
Cut length	288
Panels	6
Wasted panels	3
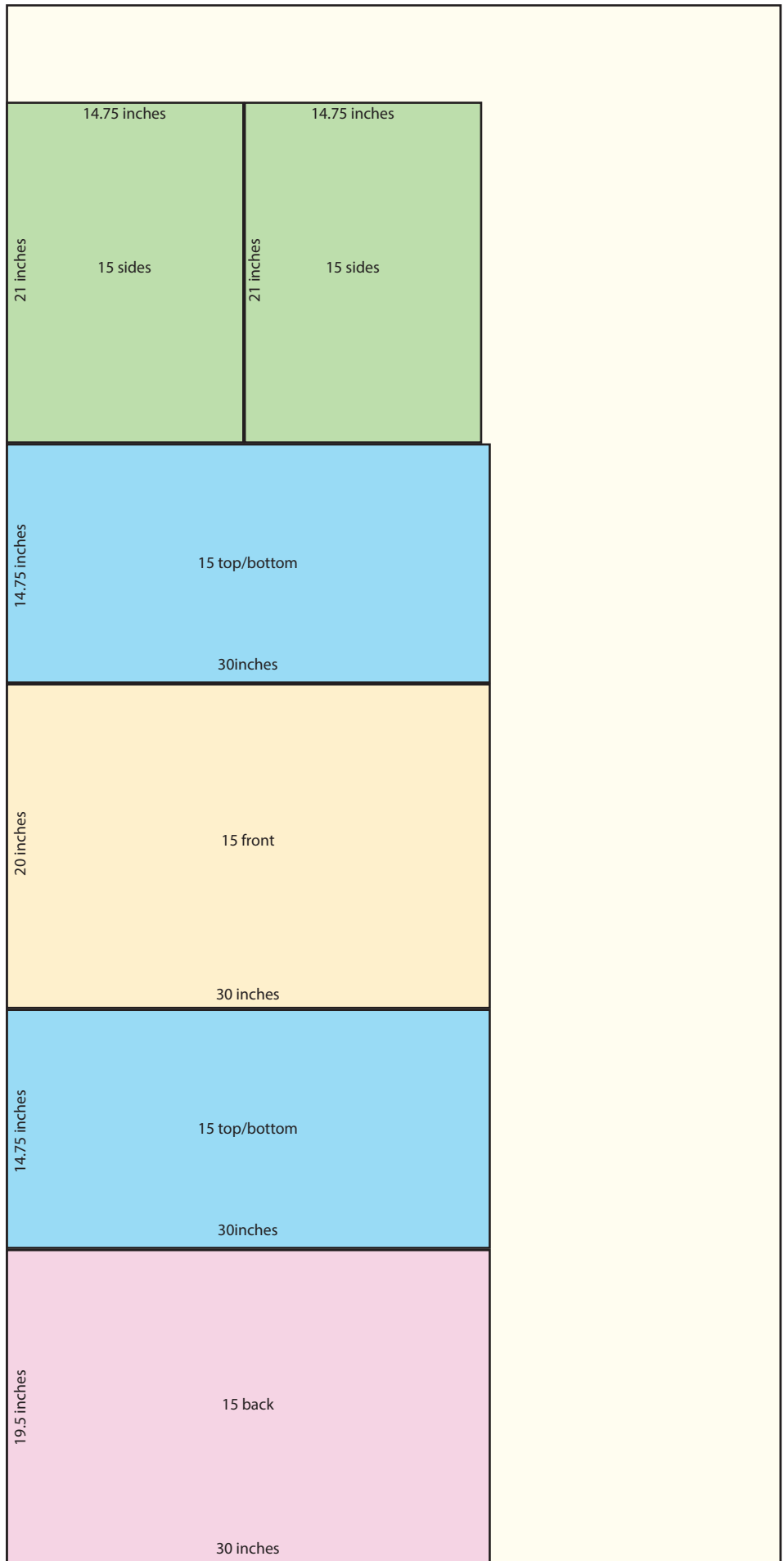
Stock sheet	Lablel	Qty
14.75 x 30	15 top/bottom	2
21 x 14.75	15 sides	2
19.5 x 30	15 back	1
20 x 30	15 front	1

15 sides — 14.75 inches × 21 inches
15 sides — 14.75 inches × 21 inches
15 top/bottom — 14.75 inches × 30 inches
15 front — 20 inches × 30 inches
15 top/bottom — 14.75 inches × 30 inches
15 back — 19.5 inches × 30 inches

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Enclosed Pre-Assembly:

Cut all panels out according to the cut sheet using your preferred cutting methods and tools.
Once you have all panels cut out you should have the following:

- Two side panels measuring 21" x 14-3/4"
- Two top and bottom panels measuring 30" x 14-3/4"
- One front baffle measuring 30" x 20"*
- One rear panel measuring 30" x 19.5"

*If you do not have a table saw or dado blade, the front and back panels will both need to be 30" x 19.5".

Once you have all panels cut to the appropriate sizes, take the front baffle and mark hole centers for the woofer and four ports using the following dimensions:
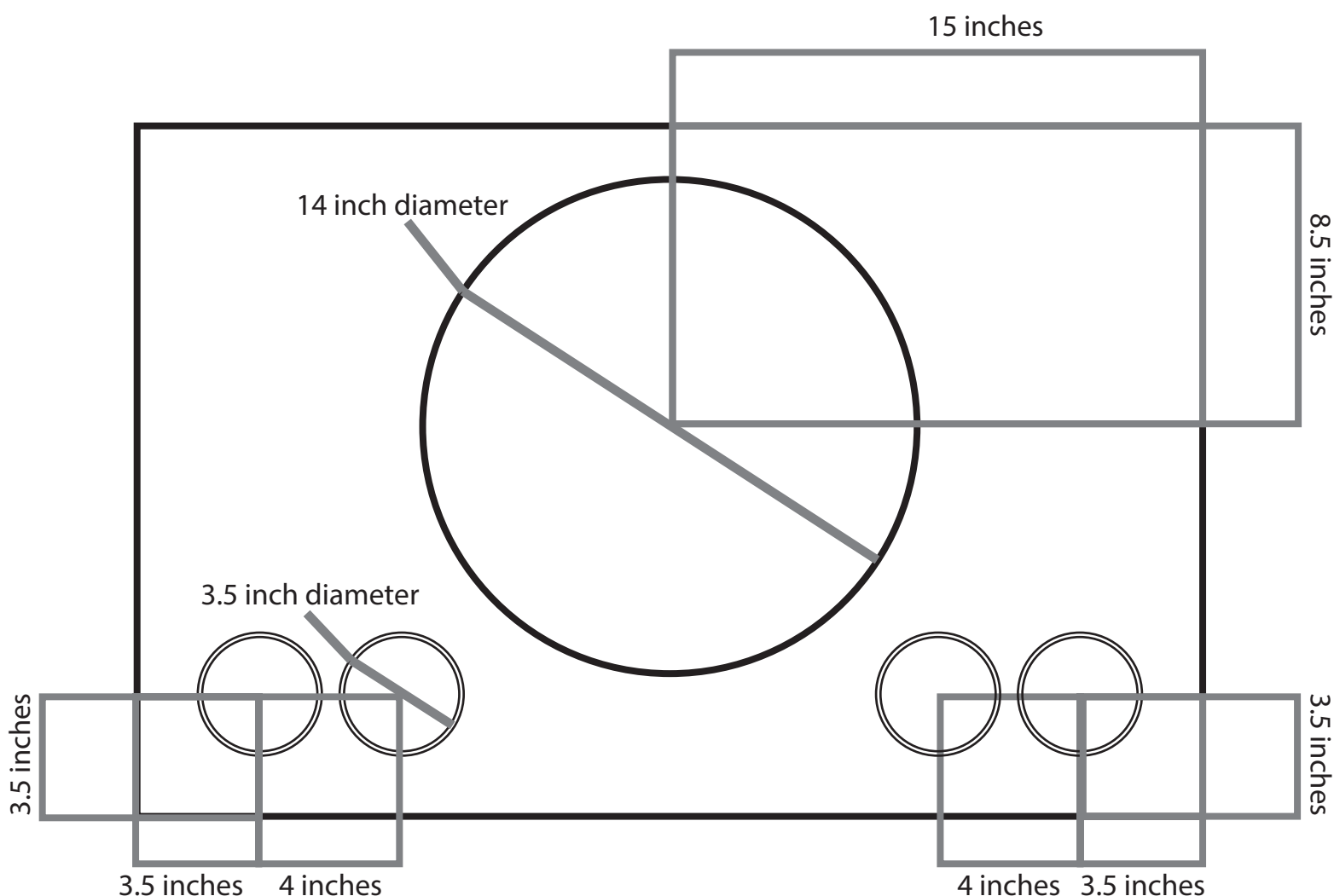
Next, using your router and preferred circle jig, cut a 14" diameter hole for the woofer. This is a through-hole, all the way through the baffle.

Once the woofer cutout is finished, if using the PVC pipe port method, set router plunge depth stop to 1/4" and cut four recesses for the ports at 3.5" outside diameter and 1/4" deep.
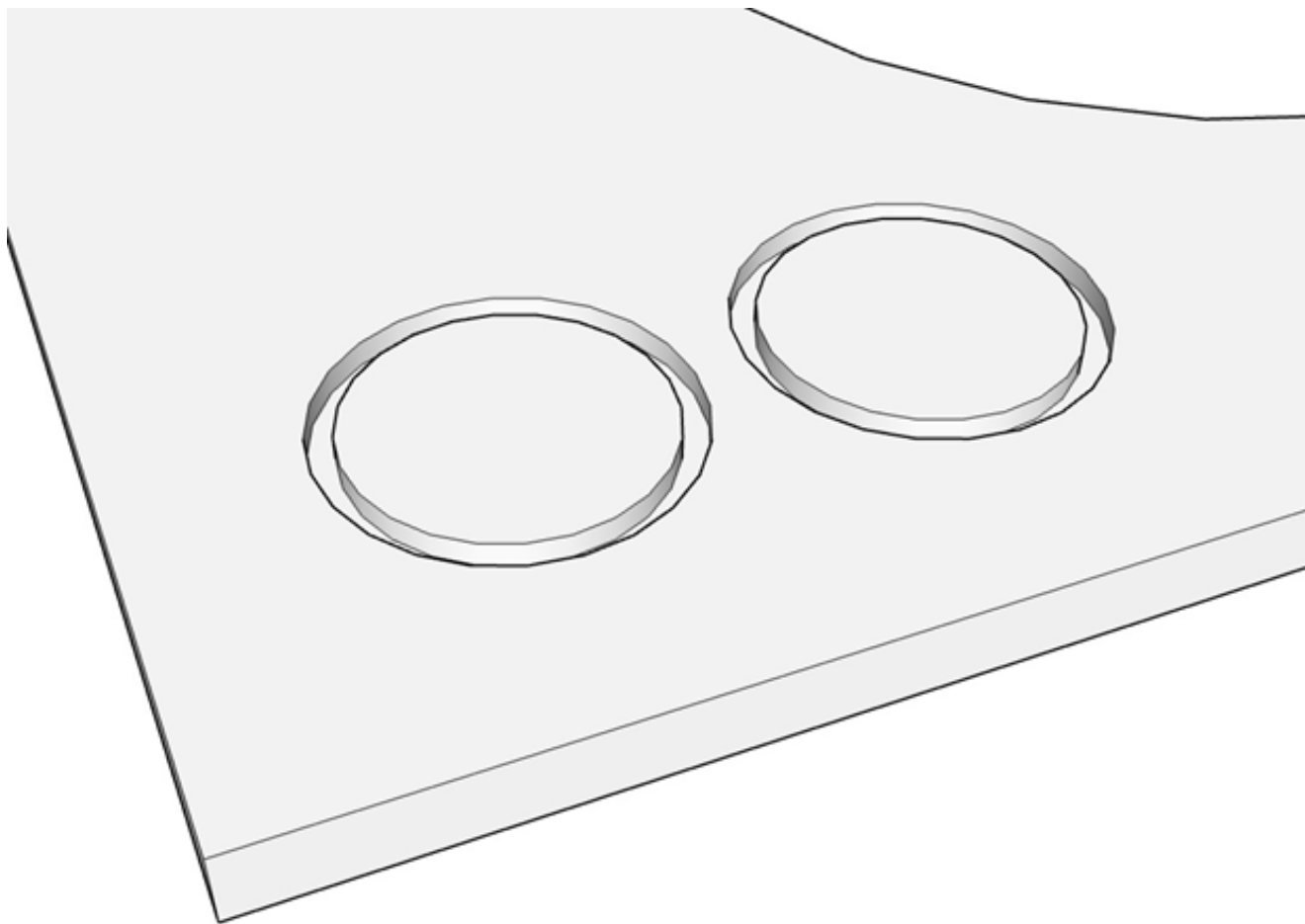

Cut four 3" ID PVC tubes to 2-7/8" length.

Test fit the PVC tubes into the recesses to ensure fitment. You may need to make one more slightly smaller or larger pass in order for the tubes to fit, but never more than +/- 1/16" the original diameter.

Once PVC tubes fit flush into the recesses, spread a bead of polyurethane glue inside the recess and insert the port tubes. Turn the tubes back and forth to ensure sufficient glue contact. Add clamping pressure to each port and set front baffle aside while the glue dries, according to the glue manufacturers recommendations.

If using pre-made press-fit port tubes, cut them to 3-3/8" length and cut openings to the manufacturers recommended diameter.
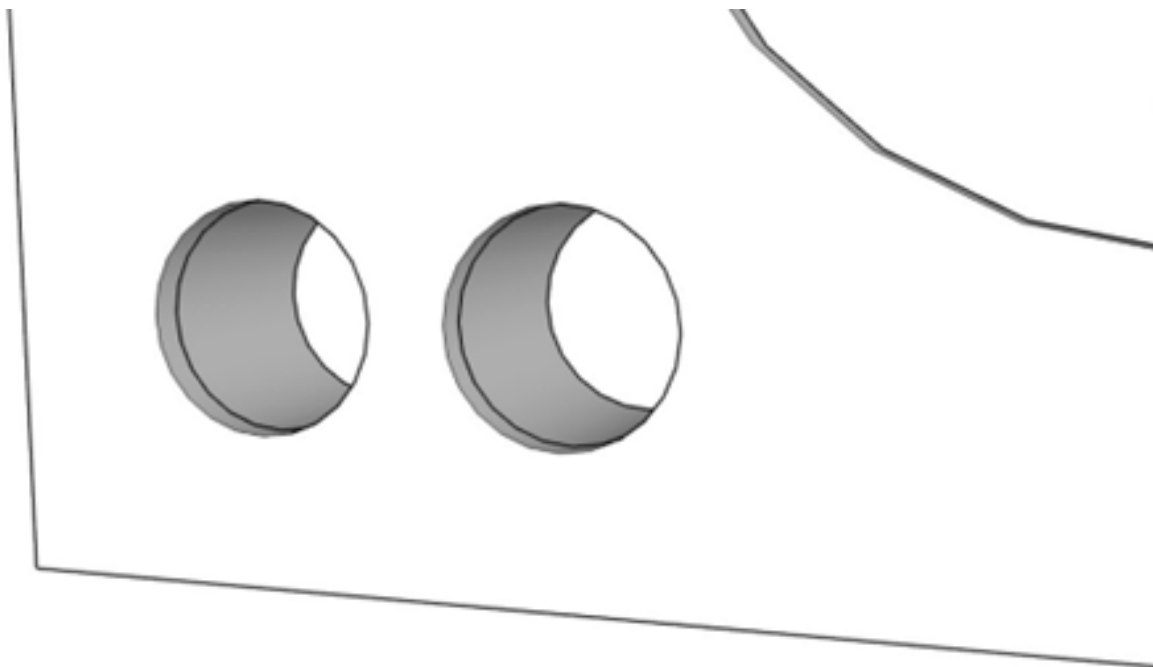
If using a table saw, install the dado blade so it matches the thickness of the material you are using. Test cuts with scrap pieces are recommended for getting the best fitment. Once the dado stack is to the correct kerf thickness, set your table saw fence to 3/8" to the inside edge of the dado blade. Set blade cut depth to 1/4". Cut 1/4" deep dados into the top and bottom panels along one edge.
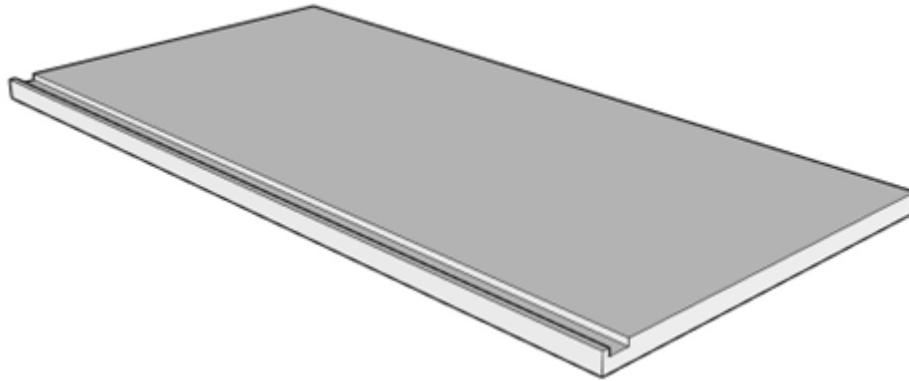
Once the ports have dried according to the glue manufacturers recommendations, install your flush trim router bit into your router. Flip the baffle over so the PVC tubes are on the back/bottom side. Drill a pilot hole through the baffle inside each of the four PVC tubes large enough for the flush trim router bit to fit inside it.

Secure the baffle to a table or work bench and flush trim the centers out of the port openings, using the PVC as the bit bearing guide.
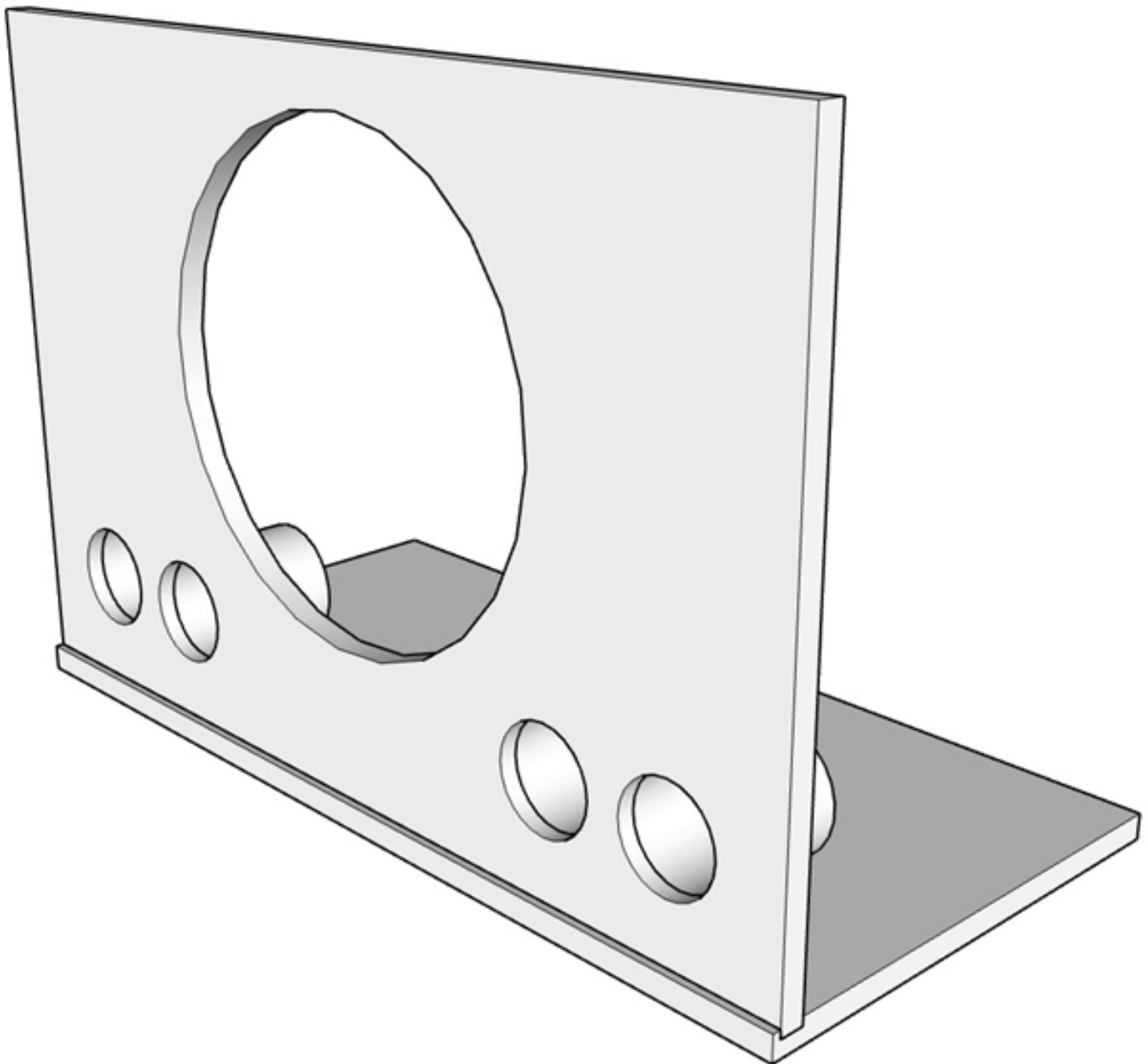
Once these are cut, you will have four perfectly flush port tubes that are 3-3/4" long. You can add a round over to flare them, or leave them as-is.

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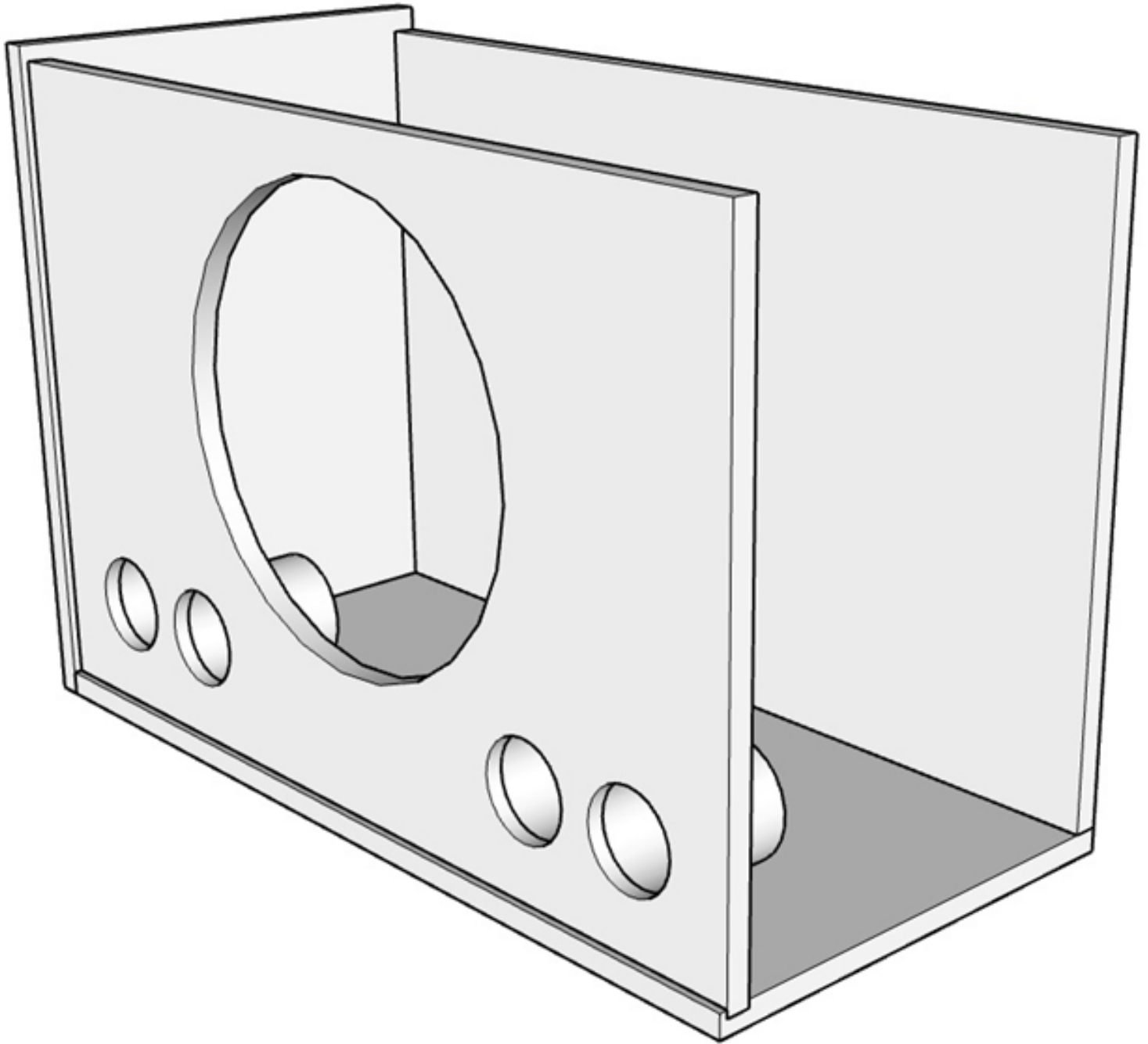
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Enclosure Final Assembly

Lay the bottom panel flat on your work bench and add a bead of glue inside the dado. Insert the front baffle into the dado and clamp in place, allowing the glue to dry to the manufacturer's recommendations. Ensure the baffle stays perfectly square to the bottom panel at 90 degrees.
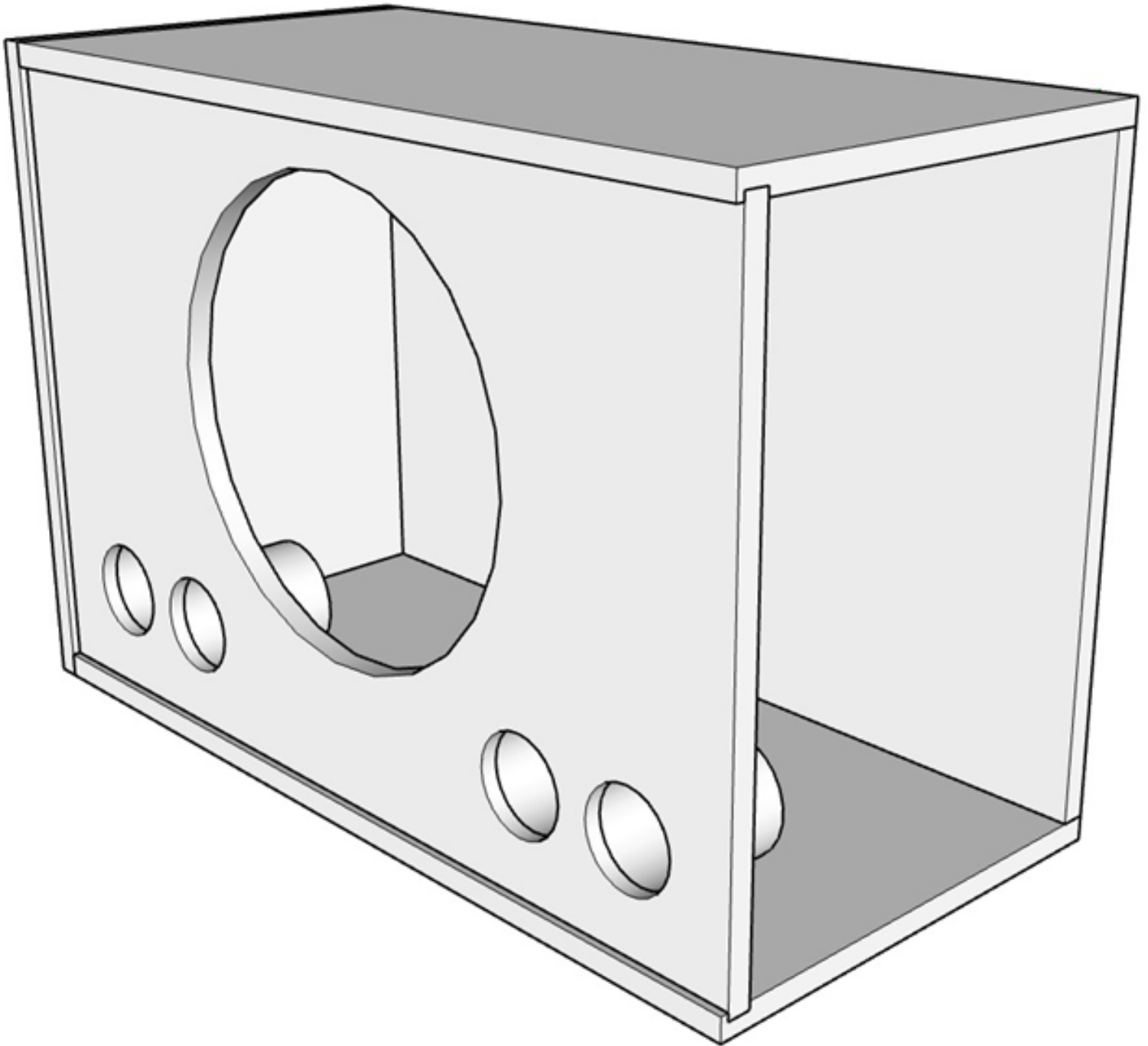
If you do not have a dado, glue the baffle to the bottom panel maintaining a 3/8" space to the front of the bottom panel.

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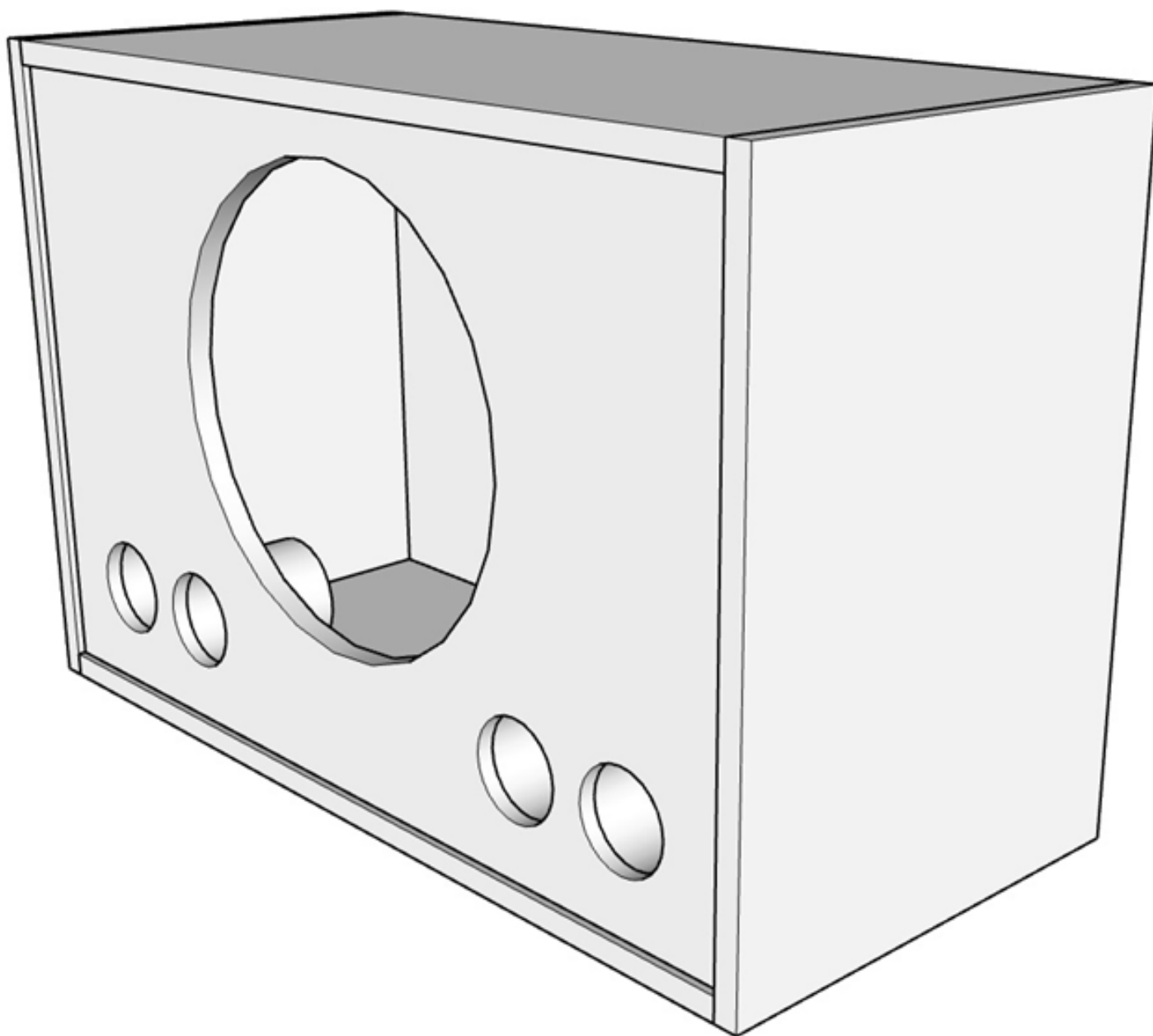
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Once the glue has dried, glue one side panel and the rear panel on at the same time, adding clamps as necessary and allow them to dry. Maintain 3/8" spacing along the front side, while gluing the rear panel flush.

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Once those panels are dry, glue the top panel on, adding glue to all necessary surfaces and edges. Clamp and let dry.

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Finally, add the second and final side panel as shown, glue and clamp and allow to dry.

Once the final panel is dried, remove clamps and fill any voids or obvious blemishes with your choice of wood filler, if necessary. Sand all edges and filler smooth using 100 and 220 grit sand paper. Cut or drill required openings in the back panel for your choice of wire connections. Finish cabinet to your liking. Internal damping material is recommended, covering at least 3 of the 5 interior sides. A minimum of back, one side and either top or bottom coverage is recommended, using your choice of damping material or ~2" thick fiberglass. Add press-fit port tubes (if applicable), rubber feet, handles, cabinet corners or any other hardware of your choice.

Finally – enjoy your finished custom DIY bass cabinet!