

HOW TO BUILD A
**MAHOGANY
TONEWOOD**
SPEAKER CABINET KIT



 **stewmac**[®]
making guitars better

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Tools and supplies

These are the tools and supplies we recommend for assembling the Stewmac Mahogany Tonewood Cabinet. Stewmac item numbers are included where applicable.

Tools

18" or larger bar clamps (#3714)
Hand drill or drill press
3/16", 5/32", and 7/64" drill bits
3/8" countersink drill bit
7/8" forstner drill bit (#2497) OR 7/8" spade bit
Glue brush (#4167)
Razor knife
Staple gun

Supplies

Titebond glue (#0620)
Sandpaper (#5562)
ColorTone fretboard finishing oil (#3863)
ColorTone black aerosol lacquer (#3885) OR
black fingerboard stain (#4237)

Optional

1/8" roundover router bit (#2475)
Powdered grain filler (#0269-N)
Cabinet scraper
Super 77 spray adhesive (#7048)

A speaker cab is a great first build

Getting started

Welcome to the world of crafting your own sound! A speaker cabinet is a simple project that's great for first-time builders. And when you use beautiful hardwood instead of plywood, the result can be as handsome as your guitar itself.

Starting with a kit of pre-cut parts, you can build your cabinet using few tools and minimal workspace. This book shows you how. The example used here is Stewmac's Mahogany Tonewood Speaker Cabinet Kit. You probably already own most of the tools you'll need to build this high-end cabinet.

Before you start

We strongly recommend you read all of this book before you begin. Understanding the later steps now will be helpful to you as you start to build.

Always use eye protection, and wear gloves when working with glues and chemicals.

Remember, if you have any questions or get stuck on a specific step, contact us! Our world-class customer support team is full of experienced builders and we're always happy to help.

We wish you all the best on your build.

Stewmac kit parts

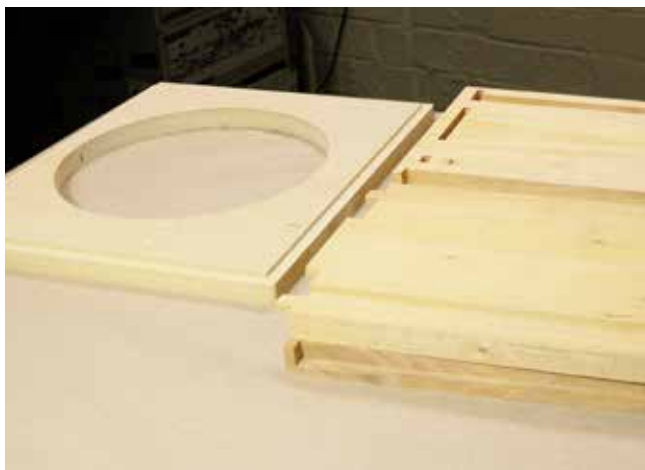


- ① Handle
- ② Chrome handle mount (2)
- ③ Handle mounting screws (4)
- ④ Wiring harness
- ⑤ 2" Velcro scrap
- ⑥ Back panel screws (12)
- ⑦ Grill cloth
- ⑧ Feet with mounting screws (4)
- ⑨ Electrosocket
- ⑩ Speaker mounting bolts with nuts (4)
- ⑪ Top
- ⑫ Side panel (left)
- ⑬ Side panel (right)
- ⑭ Bottom
- ⑮ Speaker baffle
- ⑯ Back panel (top)
- ⑰ Back panel (bottom)
- ⑱ Grill cloth frame

***Exact parts and materials may vary.**

Lay out the parts

Lay the parts on your bench and use the photos on page 4 to identify the top, bottom, sides, baffle, and the two-piece back. The back comes in two pieces to give you the option of open or closed back. Mark with a pencil to keep the pieces straight.



Clean up the edges

Clean up any rough edges. Pay special attention to the mortise and tenon joints to ensure there are no rough edges or debris that may prevent the joints from properly seating. Sandpaper or a cabinet scraper works well for this.



Dry-fit the parts

Assemble the sides, top, and baffle to familiarize yourself with the construction. Start with attaching the sides to the bottom, slide the baffle in, followed by the top.



Mark the baffle

With the cabinet still assembled dry, carefully place it on its back with the baffle facing up.

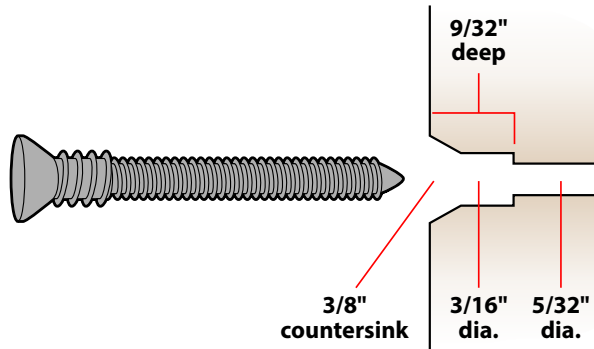
Place the speaker of your choice in the hole. It's important to choose a speaker that matches the impedance and wattage of the amp you'll be using.

The hole is slightly oversized to allow it to fit various speaker brands. Use a ruler to measure from the edge of the speaker to all four sides of the cabinet. Adjust the position of the speaker until it's equally spaced on all four sides. This ensures the speaker is directly in the center of the front panel. Mark the mounting hole positions.



Drill the baffle

Drill the speaker baffle for mounting hardware. The bolts that mount the speaker have a machine-thread portion and a wood-thread portion. Drill through-holes for these bolts using a 5/32" bit (**illustrated**). This is for the machine-thread portion of the bolts. For the wood-thread portion of the bolts, chase the initial holes with a 3/16" bit, going only 9/32" deep. Follow up with a 3/8" countersink bit so the head can sit flush with the face of the baffle. Use a drill press for best results. Test fit the screws, then remove them. We'll install them later on.



Paint the baffle

Typically, grill cloth is loosely woven so sound can flow freely out without changing the tone. For this reason, speaker baffles are painted black to visually disappear behind the cloth.

Mask off the outer lip of the baffle and paint the baffle with spray paint or stain, making sure to get the inside edges of the speaker cutout. Any black paint or stain will work for this step. It's only cosmetic.

Clamp the bottom and sides

Apply glue to the edges of the mortises on the sides. Let the tenons on the bottom push the glue in during installation. Use care not to use too much glue, which would result in excessive squeeze-out to clean up. Spread glue around the flats of joints with a finger or a brush.

Squeeze the sides to the body and clamp lightly. Partially install the baffle about 2/3" of the way down into its slot and clamp using two bar clamps. The partially installed baffle helps keep the sides and bottom square without accidentally gluing it in. Tighten the clamps firmly, but use care not to dent the wood. You can also use pads on the clamp jaws to protect the cabinet's finish. Any dents can be steamed out later if needed.

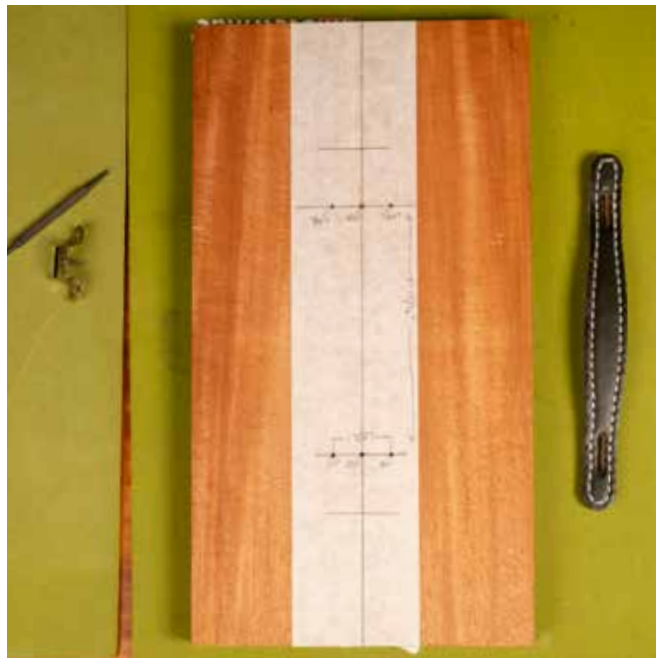
Be diligent in cleaning up any glue squeeze-out, especially in the corners of the baffle channel. Any glue squeeze-out that isn't cleaned from the baffle channel may prevent the baffle from seating properly.

Allow to dry as per the directions of the glue used. We're using Titebond wood glue, which works well for this.



Mark out the handle

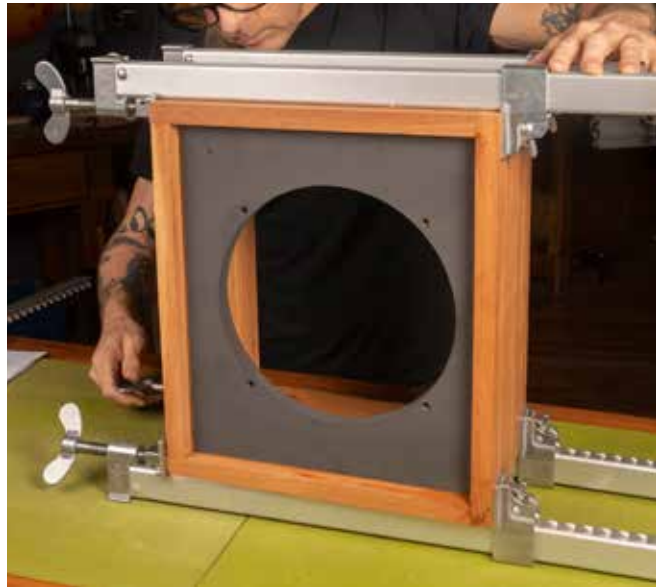
Place strips of masking tape across the top to protect the wood. Center the handle and hardware on the top, mark the screw locations and drill accordingly. When marking the screw locations, don't stretch the handle tight—it needs some slack so that you can get your hand under it after it's installed.



Install the top

Unclamp the cabinet and pull the baffle out halfway. Apply glue to the channels in the sides and bottom of the cabinet and seat the baffle. Apply glue to the top mortises and baffle channel and install. We suggest using four clamps.

Clean up any glue squeeze-out.



Locate and drill the input jack hole

Be sure to consider your speaker choice when choosing the location of the input jack on your cabinet. Test fit the speaker by placing it in the cabinet. Note the locations of the connections, frame, and magnet.

Locate the jack in an area where it won't come in contact with the magnet or frame, and that the wires from the speaker to the jack can be accessed easily.

Locating and drilling your hole to the side of the speaker magnet will ensure there will be no contact between the jack and speaker.

Drill for the input jack on the bottom panel of the back using a 7/8" spade bit or a forstner bit.

Note: The location shown in the photo (at right) will work for many speakers, but not all. We drilled a hole 2-1/2" down from the top edge, in the center of the panel.



Drill the back panel holes

The mounting holes on the back panels are predrilled, which makes it easy to locate the back panel mounting holes in the cabinet.

Place the cabinet face down on your work surface and temporarily install the back panels. Use a scribe or transfer punch to mark out the screw holes using the holes in the back panel for reference.

Once located, remove the back panels and drill the mounting holes in the cabinet using a 7/64" bit. Then countersink the screw holes on the back panels using a 3/8" countersink bit.



Install the speaker mounting bolts

Install the speaker mounting hardware. The speaker mounting stud is a hanger bolt with threads that run two different directions. First, tighten the machine-thread portion of the screw as normal, turning clockwise. When the wood-thread portion of the bolt is reached and it stops threading in, press firmly while turning the screwdriver counter-clockwise until the bolt is tight against the face of the baffle.



Sand the edges

Use a block or orbital sander to sand all the edges flush around the sides and top. Note that the sides sit slightly proud of the bottom of the cabinet, allowing them to act as feet for the cabinet to stand on. You can leave these as-is or sand them flush to the bottom if you decide to add the included rubber feet. The feet offer more protection, but the stand-alone cabinet offers a cleaner look.

Round the edges

Round the top edges of the sides and front of the top, as well as the front of the sides. We used a 1/8" roundover bit. You could also use other tools like a hand plane, woodworking file, or an orbital sander. Sand the entire cabinet to 320 grit.



Apply the finish

Apply the finish of your choice. We used one coat of ColorTone fretboard finishing oil (#3863) for our cabinet, applied with a rag. It's simple and fast. Wipe on, wipe away any excess or runs, and then let dry according to the directions on the finish.

The cabinet on the cover was finished using multiple coats of glossy lacquer, applied using a spray can or gun.

Either type of finish will work, so go with whatever look you prefer. Oil-based finishes offer a warmer, matte appearance and more natural feel. Lacquer gives more of a glossy, factory-finished look and offers more protection.



Install the hardware

If you choose to install feet, drill and install them now. Follow by installing the handle.

Install the jack into the mounting socket and install the socket into the back panel.



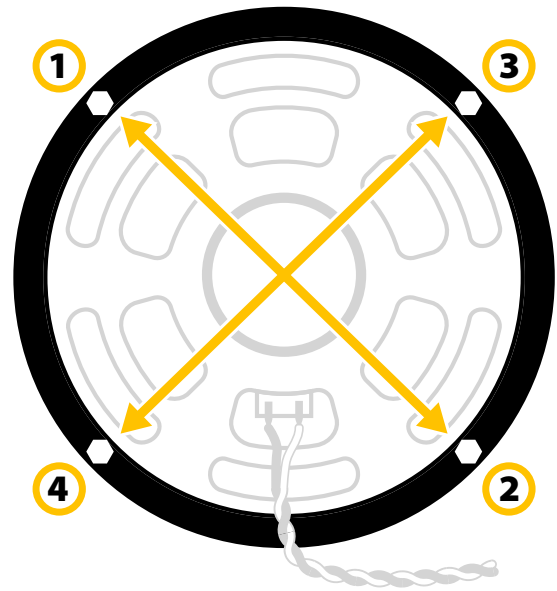
Install the speaker

Install the speaker, with the wire connecting lugs pointing down. Remove the nuts from the four speaker mounting screws. Carefully slide the speaker onto the mounting screws until it's flush with the front panel.

Install the mounting nuts so they lightly touch the speaker frame.

Don't tighten the nuts in a circular pattern around the speaker, this can warp the speaker frame.

Instead, tighten one nut with a quarter turn so it's snug, then do the same to the opposite side. Then snug the third nut and fourth. Repeat this criss-cross pattern of quarter-turns until all four nuts have had one full turn. This will give proper tension to compress the speaker gasket. Overtightening can damage the cone and cause unwanted distortion.



Install the speaker jack

Remove the nut and washer from the jack and thread it tightly into the mounting socket using hand tension.



Connect the wiring

Twist the white/black leads together. Run the white (hot) lead of the harness to the (+) lug on the speaker. The black ground lead runs from the opposite lug. (This ground lug is typically unmarked.)



Assemble the grill cloth frame

Clamp the edges, keeping the frame flat until the glue dries. Use care to remove any excess squeeze-out. You can glue the joints one at a time or all at once (depending on the number of clamps available). Clamp the joints against a flat surface and use wax paper to protect the clamps and the work surface from glue.

Paint the grill cloth side black after the glue has dried.



Lay out the grill cloth

Lay out your grill cloth and frame. Keep the frame square to the lines in the pattern of the cloth so it won't look crooked when the grill frame is installed on the cabinet.

Cut the cloth 1.5" larger than the outside diameter of the frame.



Cut the corners

Using scissors, cut out the corners as shown where the cloth will be folded over. Take your time and be sure all of your cuts make 90° degree corners. The more accurate you are in this step, the cleaner the cloth will look when attached to the frame.



Fold the edges

Clamp a piece of scrap wood approximately 1" x 1/4" wide, to the edge of your work surface. This will help to steady the frame while stapling and keep the cloth tight to the sides.

Starting with one of the wide edges of the frame, line up the grill and pull the cloth and frame up to the piece of trim that is clamped to your bench. Work the material and fold it over the grill frame, keeping it tight to the sides.

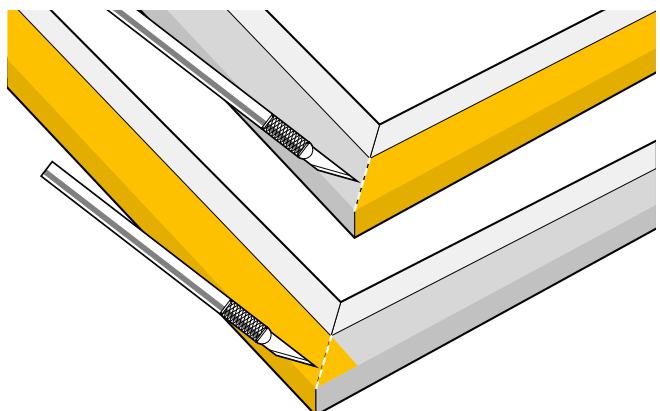


Staple the grill cloth

Clamp the frame tightly to the scrap wood and staple the cloth, leaving 1/4" between each staple. Move the clamps as necessary to get a line of staples all the way across. Place a weight on the opposite edge of the frame to help keep things flat.

Stop shy of the corners, which will be mitered before stapling (**illustration**). After the edges are stapled, use a razor knife to miter the corners where the cloth folds over. Then staple the corners of the grill cloth for a clean, flat look.

Depending on the material of the cloth, heat can be used to make it more flexible and easier to work with. A hairdryer works well for heating without getting too hot. A spray adhesive such as Super 77 can help position the cloth and keep it in place while stapling. Follow the directions on the label for best results.



Install the grill

There are many different ways to attach a speaker grill. The Stewmac mahogany speaker cabinet uses velcro on the frame and cabinet. Screws and finish washers can also be used.

Cut the included 2" strip of velcro into four equal pieces and staple the hook side to the back of the grill cloth in the corners. Staple the loop side onto the baffle and mount the grill.



You're done!

Your cabinet is finished! Grab an amp that matches your speaker and play away!





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