



StewMac®

HOW TO BUILD AN EXTENSION CAB FOR YOUR TWEED AMP

BY DANIEL PETRZELKA



Having an extra extension cab, or two, around the studio or in the van, opens up incredible tonal possibilities. Speaker swaps are so much easier—a sweet alnico can be loaded in the main cab, and then a high-power ceramic loaded in the extension, if you want to get rowdy. If you want an even bigger sound from your Tweed Deluxe combo, its external speaker jack allows you to make a mini tweed stack for 2x12" of tone. Not to mention how killer a 5-watt mini-tweed Champ can sound through a 12" speaker—the low end really comes to life. An external cab allows you to scale your rig up or down, and test-drive different speakers with different amps by simply plugging in a cable. For the home studio, or gigging musician an extension cab provides great flexibility.

Even if you've only assembled basic birdhouses or very simple furniture, you can still build a cab just like Leo did in the '50s. There are a minimal number of cuts to make, the pine is readily available, and the joinery is flexible enough for beginners to make successfully. With a modestly outfitted workshop, a few key woodworking tools, a clear set of plans, this speaker cab is a great DIY project that almost anyone can complete.

PREPARATION

Tools List

- Table saw or track saw
- Sliding miter saw (or track saw) with 12" cross-cut capability
- Dado blade, box joint blade, or Kreg jig
- Drill + assorted drill bits (Fisch brad point drill bits [#0097](#), Depth-stop bits [#1717](#)), large Forstner bit/small hole saw
- Tape measure
- Carpenter's or framing square ([#4903](#) or [#4950](#) are really nice)
- Assorted clamps, 4 with at least 20" capacity, and 4 with at least 16" capacity [#3714](#)
- Titebond Original Wood Glue [#0622](#)
- Mallet/hammer + scrap wood block for tapping finger joints together
- Abrasives 60-220 and sanding block, a random orbital sander is even better (3M Fre-Cut 150-grit [#5096](#), 220-grit [#5097](#))
- EcoWeld adhesive [#7045](#)
- Brushes for adhesive application [#4167](#)
- Straightedge, razor blade, rotary cutter/scissors for cutting tweed
- Rubber roller/brayer to ease smoothing of tweed on the cabinet
- Brad nailer (optional) + several lengths of brads
- Spindle sander
- Grain filler [#5577](#)
- Matte black paint
- Soldering iron [#0502](#)
- Solder [#0505](#)
- Parafin or beeswax (optional)
- Staple gun
- Router with 3/8" radius rounding-over bit
- Low-tack tape [#1682](#)
- Heavy Sewing Needle

Hardware List

- Handle and mounting screws (2x #50790, 1x #50792, 4 wood screws)
- (4) Baffle mounting screws + nuts (traditional Fender-style copper mounting screws, or stainless truss-head #6-32 x 1.5" with #6-32 hex washered "k-lock" locking nuts)
- (4) Speaker mounting screws with nuts, Fender-style with reverse thread preferred
- (8) #6 x 1.25" oval head screws for mounting back panels
- (4) Fender-style Sphinx amp glides (amp feet)
- 1/4" Switchcraft output jack (mono) #4652
- 12"-18" wire to connect speaker to jack (18 AWG ideal)
- Round jack mounting plate and mounting screws
- Speaker (more info on [page 17](#))

Cut List

3/4" pine - 1" x 12" x 8' is how it is labeled at the hardware store. (1" nominal is actually 3/4" thick)

- (2) 9-1/2" x 20" (top and bottom) pieces **A** and **B**
- (2) 9-1/2" x 16" (sides) pieces **C** and **D**
- (2) 1" x 14-1/2" (cleats) pieces **E** and **F**

3/8" pine - or plywood if you prefer.

- (2) 1-3/4" x 20" (fascia) pieces **G** and **H**

1/4" plywood

- 7" x 18-1/4" upper back panel piece **I**
- 4" x 18-1/4" lower back panel piece **J**
- (2) 1" x 16-3/8" baffle filler strip pieces **K** and **L**

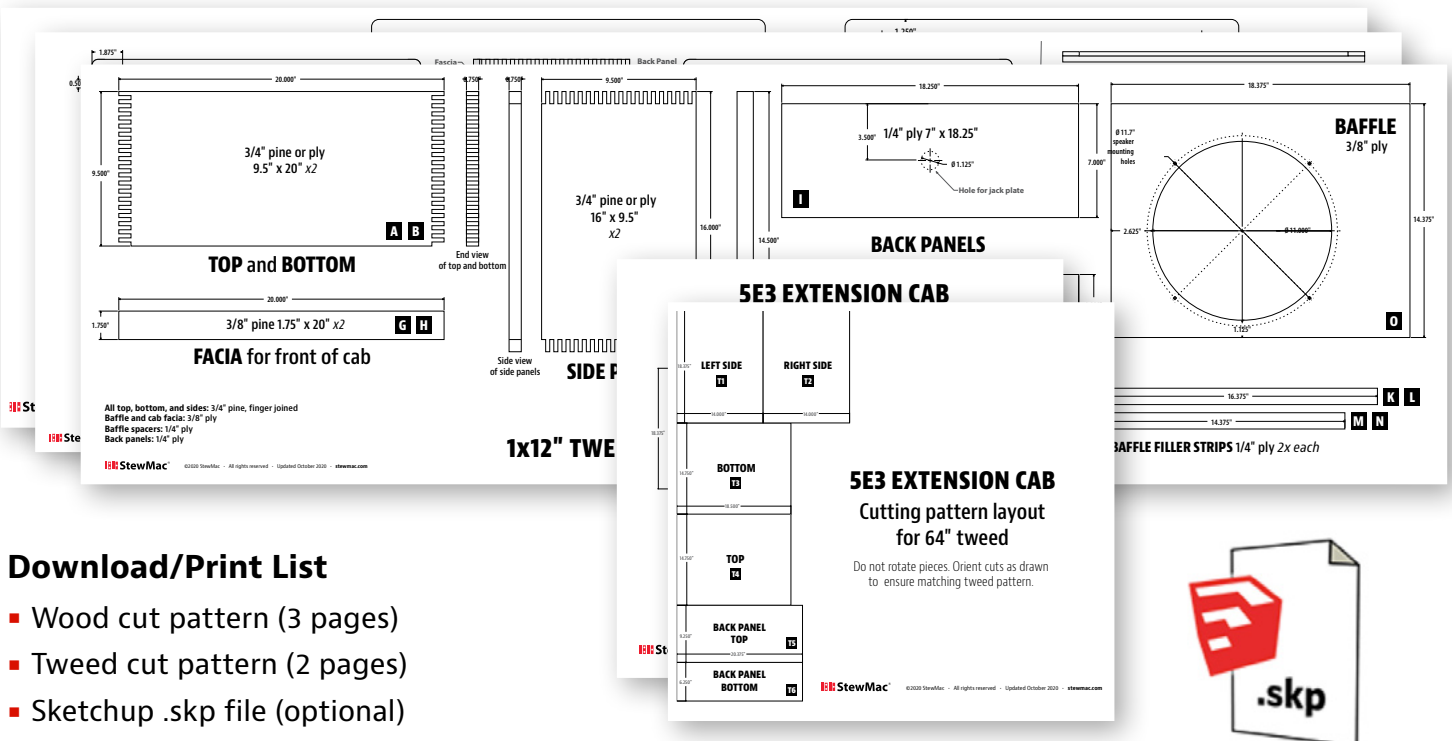
3/8" plywood - fine birch ply is ideal.

- 14-3/8" x 18-3/8" (speaker baffle-cut after cab assembly to fine-tune fit) piece **O**

Tweed - one yard of 64" material, whether you're using tweed fabric or Tolex patterned tweed the application is the same.

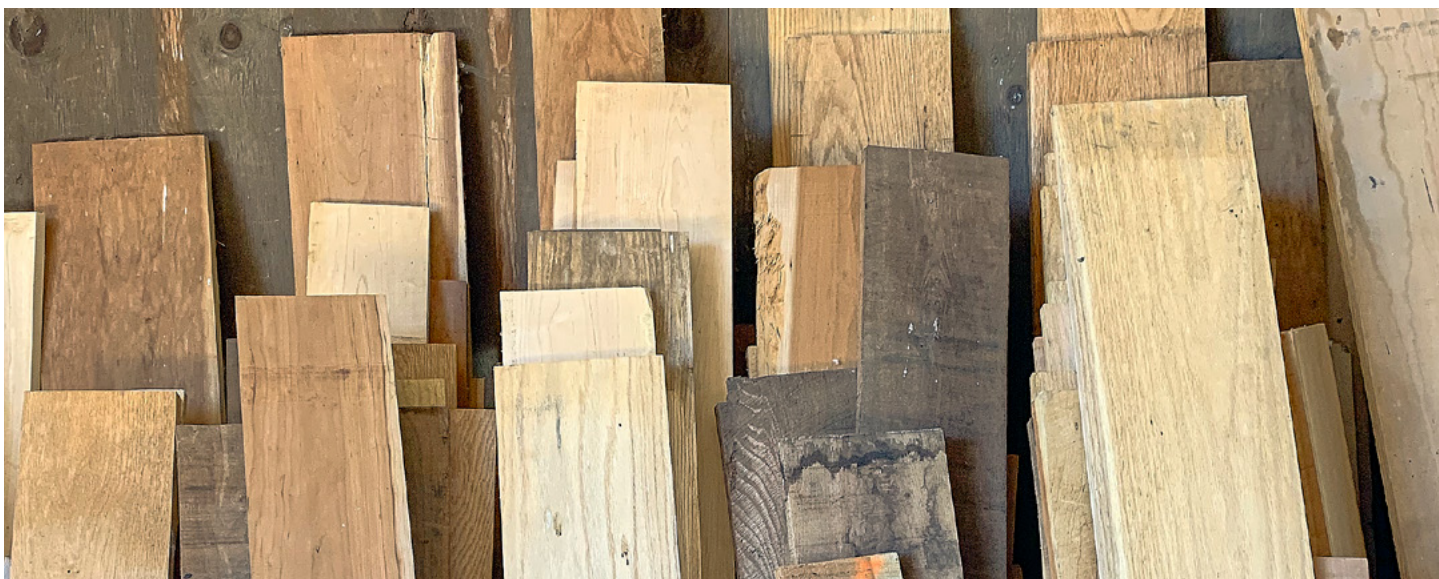
- (2) 18-3/8" x 14" sides, pieces **T1** and **T2**
- (2) 14-3/4" x 18-1/2" top and bottom, pieces **T3** and **T4**
- 9-1/4" x 20-3/8" back panel top, piece **T5**
- 6-1/4" x 20-3/8" back panel bottom, piece **T6**

Oxblood grill cloth - 59" wide #50756



Download/Print List

- Wood cut pattern (3 pages)
- Tweed cut pattern (2 pages)
- Sketchup .skp file (optional)



A FEW THOUGHTS ON WOOD SELECTION

Pine: The Classic Cab

All classic Fender cabs from the '50s Tweeds to the '60s Black Panel amps are made from solid pine—it's affordable, light, and has just the right resonance to get the cab singing along with the speaker when you really crank it up. For this size cab a 1" x 12" x 8' board is perfect—the actual dimensions are 3/4" x 11-1/4". The grain runs the length of the board and an 8' piece leaves you a little scrap for testing your finger joints. A few knots won't matter, but look for a board that's nice and straight, without split ends or any noticeable cupping.

Audio guys may say this is the wrong material for a speaker box (for hi-fi, it may be true) but we're building like Leo Fender did—he broke all the right rules when it came to amp design. He ran power tubes hot and made the cabs just big enough to hold what they needed. This is the recipe for the tone most of us know and love, but feel free to experiment too!

Baltic Birch: A More Modern Cab

Birch plywood is a great choice as well, it's also really easy to work with and is super dimensionally stable. It will have a more neutral sound than a traditional pine cabinet and little less resonance. Sheets of this plywood are usually in metric dimensions, 18mm thick, rather than 3/4". This isn't a problem; your cut lengths for the top, bottom, and sides stay the same—you just end up with slightly larger interior volume. The speaker baffle, cleats, and back panel dimensions will need to be slightly larger as they all fit inside the finished cab.

Skip the MDF

Medium-density fiberboard can help reduce cabinet resonance even further, if that is what you are after. I've always found MDF to be lifeless, and it never holds up as well in the long run. Finger-joining doesn't work well with composites either; they're heavy and screw holes can strip much more easily. I strongly recommend avoiding it.

Final Thoughts

So, unless you've got a really specific vision in mind for another material, I advise sticking with the proven classic: pine. You'll have no problem finding it; I've even had luck using the "white wood" or shelf-grade pine from the big-box hardware stores. It's also not a bad idea to keep an eye out for opportunities to snag old, clear-grain pine shelving and stash it away for cab projects; it's the "good stuff."

Ideally, your speaker baffle will be built from a nice 3/8" hardwood ply. Birch ply is the preferred choice. It's what the high-end cabinet shops use, but it's not likely you'll find any at your local hardware store, unless you have a Rockler, Woodcraft, or a fine woodworking store nearby. Otherwise, anything from 3/8" fir A/C ply to 1/2" particleboard will work well in this project too. Each will have a bit of a different sound, but they all will hold the speaker nicely. The traditional 5E3 cabs have a floating baffle, it's only fastened on the four corners, with no support along its height. This allows the baffle to move and vibrate—all part of the resonance and sonic character of Fender-style cabs.

LET'S GET STARTED!

ASSEMBLY ORDER OVERVIEW

This project, as with most, has a proven order of operations to follow. We recommend reading through all of the steps first and familiarizing yourself with the project as a whole before starting.

- Cut the main cabinet pieces (**A, B, C, D**) **6**
- Cut finger joints, drill screw holes..... **6**
- Assemble the main cabinet body **7**
- Install fascia boards (**G** and **H**)..... **8**
- Rout the radiused edges..... **10**
- Install the cleats (**E** and **F**) **10**
- Cover the cab with tweed..... **12**
- Cut and test-fit the baffle (piece **O**)..... **16**
- Cut and install spacers on baffle board
(pieces **K, L, M, N**) **17**
- Cut and test-fit the back panels (**I** and **J**)..... **17**
- Install speaker mounting screws **17**
- Apply the grill cloth **18**
- Mount the hardware..... **19**
- Install jack mounting plate **21**
- Wire-up and install the speaker..... **21**

STEP 1: CUT THE MAIN CABINET PIECES

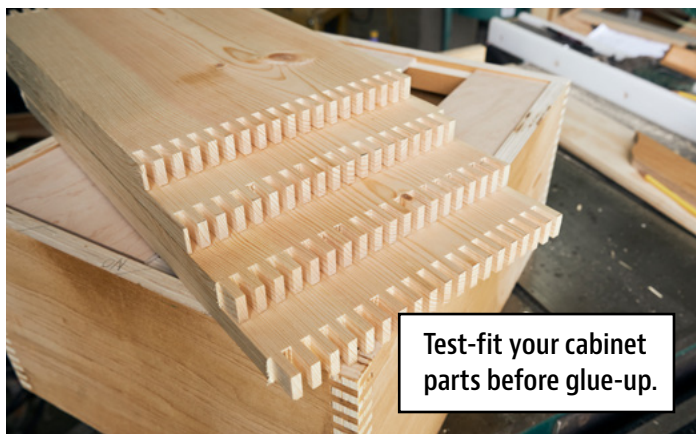
Cut the 3/4" pine pieces **A**, **B**, **C**, and **D** in order to assemble your main box first. As with most woodworking projects, you can end up with a little variation in your final dimensions, and that's fine, you'll just want to adjust the cuts for the baffle and cleats to be sure they fit.

Starting with the cross-cuts, use a sliding miter saw, track saw, or radial arm (if you're still brave enough to keep one of those in your shop) to break down the 8' pine board. Then rip **A**, **B**, **C**, and **D** to

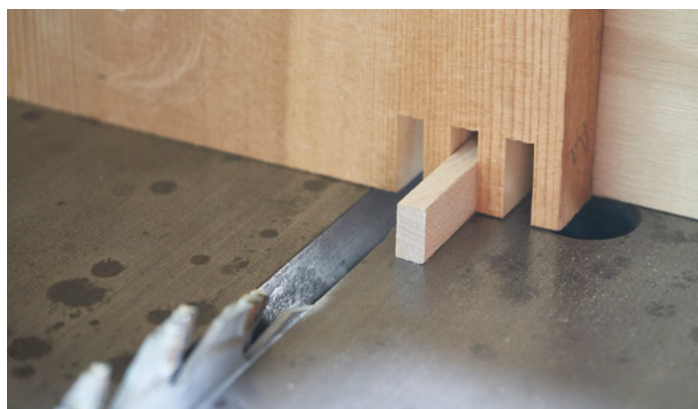


the 9-1/2" width on your table saw (save the offcuts to make the cleats **G** and **H**). If you're using birch plywood for your amp, a table saw or track saw will work great to break the sheet down into the main pieces.

Pro tip! The main trick here is to save the baffle and back panels for last, ideally after you've covered the cab, so you can test fit it and make any subtle adjustments to your dimensions. It's great to trim a little off of your speaker baffle, if necessary, before you staple on the grill cloth.



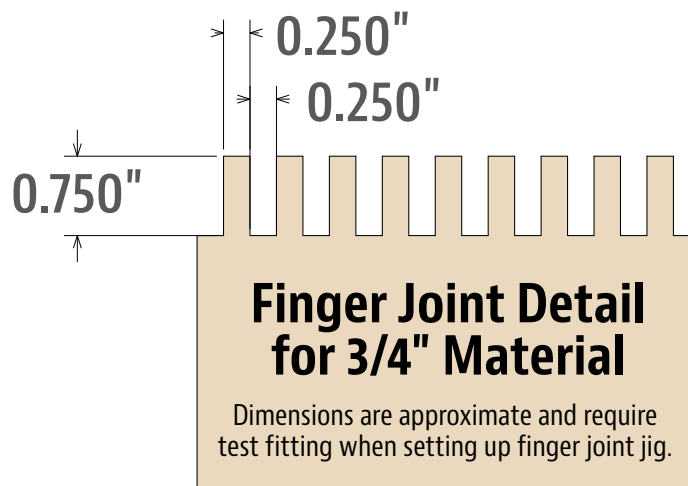
STEP 2: CUT FINGER JOINTS, DRILL SCREW HOLES



Create Joints for the Main Cabinet Pieces

For our build, a 1/4" table saw dado blade stack will work great. Most dado blade sets will cut fingers from 1/4" to 13/16" wide by using spacers to adjust the width. The nice thing about using a narrow 1/4" width dado blade rather than a big 1/2" stack is that it's easier on smaller table saws with smaller motors. There are really deluxe finger joint jigs available (In-cra I-Box Jig), and if you already have one of those, great. But for a project like this, a simple homemade jig built around your miter gauge can work well. It's as simple as using two pieces of scrap plywood and a kerf-sized wood spacer and you'll be set to cut really well-fitted finger joints.

There are countless videos online that show you how to make and properly use a finger joint jig—just [search YouTube for "simple finger joint jig"](#), watch a few, and you'll get the idea for setting the finger width and the correct cutting sequence.





Pocket Holes with the Kreg Jig

Another alternative is to use a pocket-hole method with a jig from Kreg. It will not be quite as robust as one built with finger joints, but it goes together quickly, and should hold up for years. This method makes for less setup on the table saw and requires only one change in dimensions on the cut list. Sides **C** and **D** need to be 1-1/2" shorter in length, as they will sit inside the top and bottom. Sides **C** and **D** should be cut at 14-1/2" x 9-1/2" when doing pocket-hole joinery. You'll want to use 1-1/4" long screws for the 3/4" thick cabinet material. Since pine is on the soft side, get the coarse thread screws for the best grip. One thing to keep in mind with pocket-hole joinery for this cab: the screws go into the face grain of the board from the outside. This means the screw holes will be on the outside of the cab; the screws will point away from your radiused corners, and the inside will look nice and clean. Keep the outermost pocket hole screws at least 5/8" back from the edge of the cab to reduce the risk of interference between the screws and the 3/8" deep rabbet that will need to be cut for the fascia board later in the build—your table saw blade will thank you for planning ahead.

You can buy nice pre-cut plugs to fill the pocket holes after installing the screws to be sure the holes won't show through the tweed covering. From the inside of the cab, the box will look as clean (or cleaner) than one that was finger-joined.



STEP 3: ASSEMBLE THE MAIN CABINET BODY

Glue-Up

The old adage is true: you can never have too many clamps! Get out your favorite bar, pipe, and (if you have them) corner clamps. Another secret weapon I like to use for a project such as this is my pneumatic brad nailer. If you have an 18-gauge brad nailer, set the depth-stop to leave the brad sitting an 1/8" to 1/4" proud of the surface—this works great both for pinning the main box corners to be sure nothing slips in glue-up, and the brads also work well for holding the 1/4" spacers to the baffle during glue-up. I leave the brads sitting proud so that they can be pried out with a large pair of diagonal wire cutters. It takes practice and patience to pull them out—but works well when you're short on clamps.



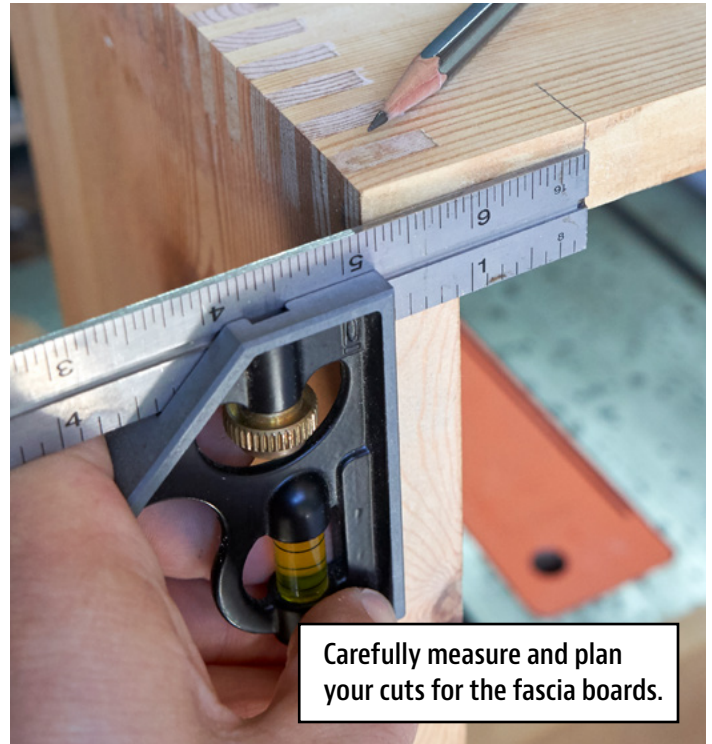
Don't cut the brad nails! Gently pry them out with large diagonal cutters to protect your router bit.

STEP 4: INSTALL FASCIA BOARDS

Leveling, Routing, and Filling

After the glue has had plenty of time to cure (overnight is usually good) and the wood has had time to dry completely as well (all of the glue area can put a lot of moisture into the finger joints on the box) take time to level and sand any fingers that stick proud of the box. A sharp hand plane can knock down proud fingers, or coarse 60-grit paper on a random orbital sander can make quick work of it. The covering will lay flatter, which is nice, but doing so also ensures you have a smooth, square edge for your router bit to follow.

With the main box cleaned up, the next step is to add the fascia boards, pieces **G** and **H**. In the photos of bare '50s cabs I've seen, the fascia boards appear to run the width of the face of the cab and are a full 1-3/4" high, as shown in the plans. In building a square extension cab (rather than a tapered amp cab) the table saw makes quick work of cutting the rabbet (rectangular recess) for the fascia. Clearly mark the 3/8" x 1-3/4" rabbet on both the top and bottom of the front, and use the dado blade still in your table saw to remove the unnecessary wood. The fascia boards can be glued in with Titebond and tacked into place with brad nails or clamped with a pipe or bar clamp until dry.



Carefully measure and plan your cuts for the fascia boards.



A long bar or pipe clamp works well to gently squeeze opposite corners when squaring up the cab.

For finger-jointed cabinets, always test fit the joints before gluing. If the fit is snug, use a rubber or wooden mallet and a scrap wooden block to gently tap the cabinet together, making sure everything fits. If the dry fit looks good, you're ready to glue it up. Take the time to brush the Titebond glue in between each finger—it doesn't take a lot, a light coat on all of the contact points will do. Tap snug joints together again with your mallet, and then clamp it up and check for square. A carpenter's square can be used on the outside of each corner to confirm they are at 90 degrees, but if you don't have one, there is a tape measure trick that is accurate enough for an extension cab build.

With your tape measure, compare the distance between two pair of diagonal corners—I usually measure outside to outside corner of one diagonal set, and then compare to the other two. If the measurements are the same (+/- 1/16") it's close enough for rock and roll. If it's off by an 1/8" or more, you'll need to push the longer diagonal sides in toward each other (a pipe clamp works well to gently squeeze the opposite corners in a little) and compare the measurements again. When the two diagonal measurements match, your box is square.



STEP 5: ROUT THE RADIUSSED EDGES



A 3/8" radius round-over bit is the best for all of the outer edges of the main cab. If you've used any brad nails to tack together glue joints, be sure to pull them, or use a punch to drive them well below the path of the radius router bit. 18-gauge brad nail holes are small enough they won't affect routing or show through the tweed. Follow the usual guidelines for safe routing: ear and eye protection, clamp your workpiece or use a grip mat, and use a conventional cut to help maintain control of the router. With this shallow of radius on pine, the cuts will be easy with a sharp bit; chipping or splintering is a rare problem. Knock down any fuzzy edges with some 100-grit or 220-grit abrasive.

This is a great time to fill any voids you see. You don't want to discover those after your tweed is on. Sometimes there will be a little chip-out along one of the fingers, or maybe a dent in the wood from heavy clamping. A water-based grain filler can work wonders on creating a smooth, flat outer surface on the cab. If there is a big chip-out to fill, some KwikWood epoxy wood filler is a good option. You won't see any of the filler once the tweed is on, but imperfections can show through if you're not careful. The preparation will be well worth it.



Fill any voids before gluing on the tweed.

STEP 6: INSTALL THE CLEATS

The cleats (pieces **E** and **F**) for mounting the back panels are inset from the back of the cab a little over 1/4". They are glued inside the left and right sides, with the goal being to have the back panels sit flush or just inside the back of the cab once they are wrapped in tweed and screwed in place. These can be glued and clamped, but glue and brad nails again make it very easy and ensure that the cleats don't slip during clamp-up. I set the brads proud and pull them after everything has dried, but they could easily be driven home, and left in place if you prefer.



Glue and brad nails will make sure nothing slips while clamping.

This final stage of raw wood cabinet prep is a good time to drill the baffle mounting holes in the fascia. Take careful measurements, and if you have a large enough drill press use it. Use a fence, securely clamped to the drill press table, to help keep the holes square and well aligned. It may seem trivial, but the placement of the baffle mounting screws, if off even a little, can really show in the finished cab. After you've covered the cab with tweed, a small sharp nail or heavy sewing needle can help you find the predrilled hole. Use a drill bit to clean out the tweed and dried glue after wrapping the cab with tweed.



For a better-looking cab, carefully measure and trace the radii you will cut.



The back panels (pieces I and J) are 1/4" plywood and straight-forward to cut with the table saw. The radius of the lower back panels can be finished on a bandsaw and smoothed with a spindle sander or coarse abrasive wrapped around an appropriately-sized tube. Take your time and make the radius and its transition to the flat across the back baffle nice and smooth—it's one of the areas on the cab that can catch your eye when the lines are off.

Drill or cut a 1-1/8" mounting hole for the input jack plate before covering the upper back panel with tweed. A large Forstner bit or small hole saw will make a clean, symmetrical hole with minimal (if any) tear out.



Use a spindle sander to smooth the bandsaw cuts.





Before starting the next section, it's a good time to take a break—you'll want fresh eyes, full attention, and a good dose of patience.

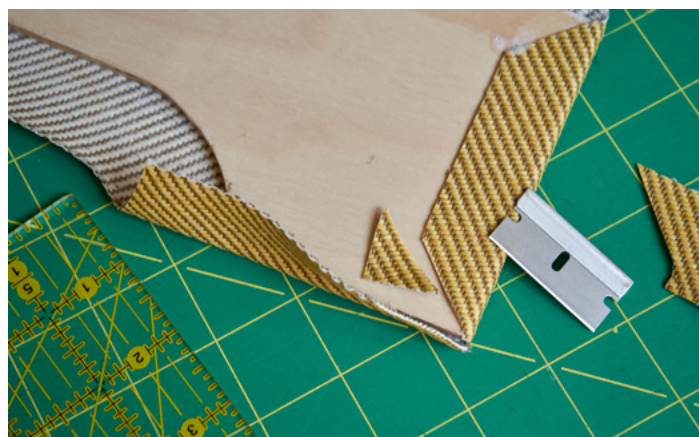
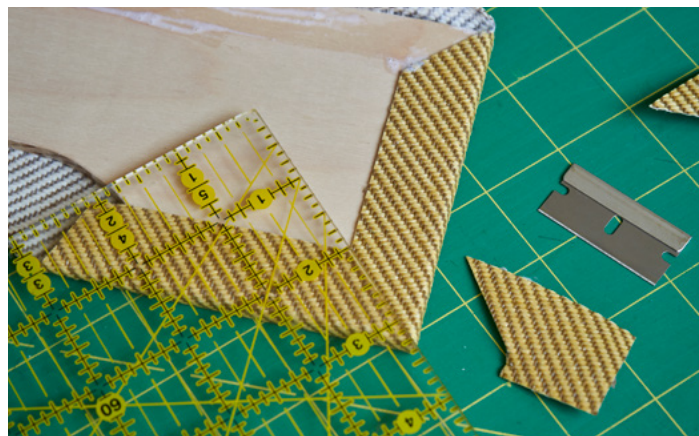
STEP 7: COVER THE CAB WITH TWEED

Planning Cuts

When working with tweed, it's worth taking the time to ensure the cuts are square and the pattern of the twill points the same direction across the amp. Vintage Fenders almost always have the dark lines in the tweed running diagonally up toward the left. Fortunately, it's pretty easy to map out the cuts, and the full set of tweed can be aligned across the standard 64"-wide tweed yardage.

The included **tweed cut pattern** shows an efficient layout. All of the cut lines can be drawn in pencil on the back side of the yardage. Make your cuts with a straightedge and rotary cutter. If you have a precise hand, you can get away with using sharp scissors because most of the edges won't be visible. The important cuts to get really nice and clean are the long edges of the two side panels (the 18-3/8" edges of **T1** and **T2**)—these are exposed edges along the top and bottom of the finished cab.





Gluing/smoothing

Applying tweed and Tolex is another step that is a lot easier than it seems, and is best understood by watching it done once or twice. [YouTuber Uncle Doug has a wonderful video](#) showing the application of Tolex to a Black Panel-style pine cab. The front cleats are a little different than the fascia of the tweed-style cab, but it's a great primer for the nuances of working with contact adhesive and making the precise cuts in your tweed with a single-edge razor blade. As he mentions, start with the bottom corner of the side piece to get your technique down—and when you get to the miter cuts, start on the back bottom corners too.

EcoWeld, a water-based contact adhesive, is really nice to work with. It has extremely low odor, cleans up with water before it dries, and is pretty forgiving to work with. It can be applied with a chip brush or foam brush applicator, and even after setting up tacky allows for some repositioning and finessing of the tweed. With contact adhesives a solid coat, or two, needs to be applied to both the wood cabinet and the back of the tweed fabric. Be sure to protect the EcoWeld from freezing in the jar before use—as with most quality adhesives, store in a cool, dark place.

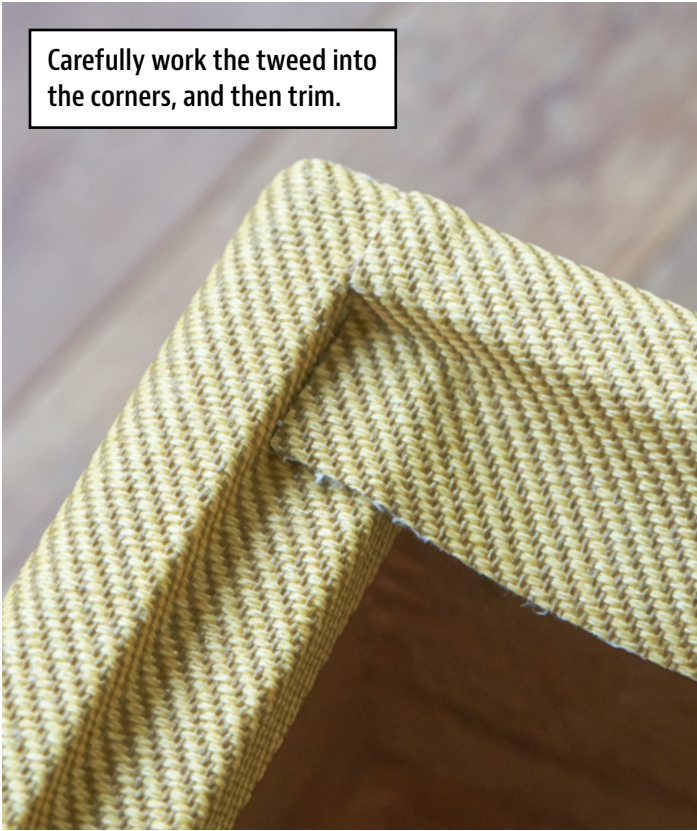




The tweed covering is applied in a specific order to have the proper finished effect. First the left and right side pieces are applied, corners trimmed and mitered. The top and bottom pieces are then applied, overlapping where they meet the sides. Take time to let the contact adhesive dry to a tacky touch, if left too wet the tweed won't stick well and is more likely to develop bubbles or shift.



Let the adhesive get tacky before applying the tweed.

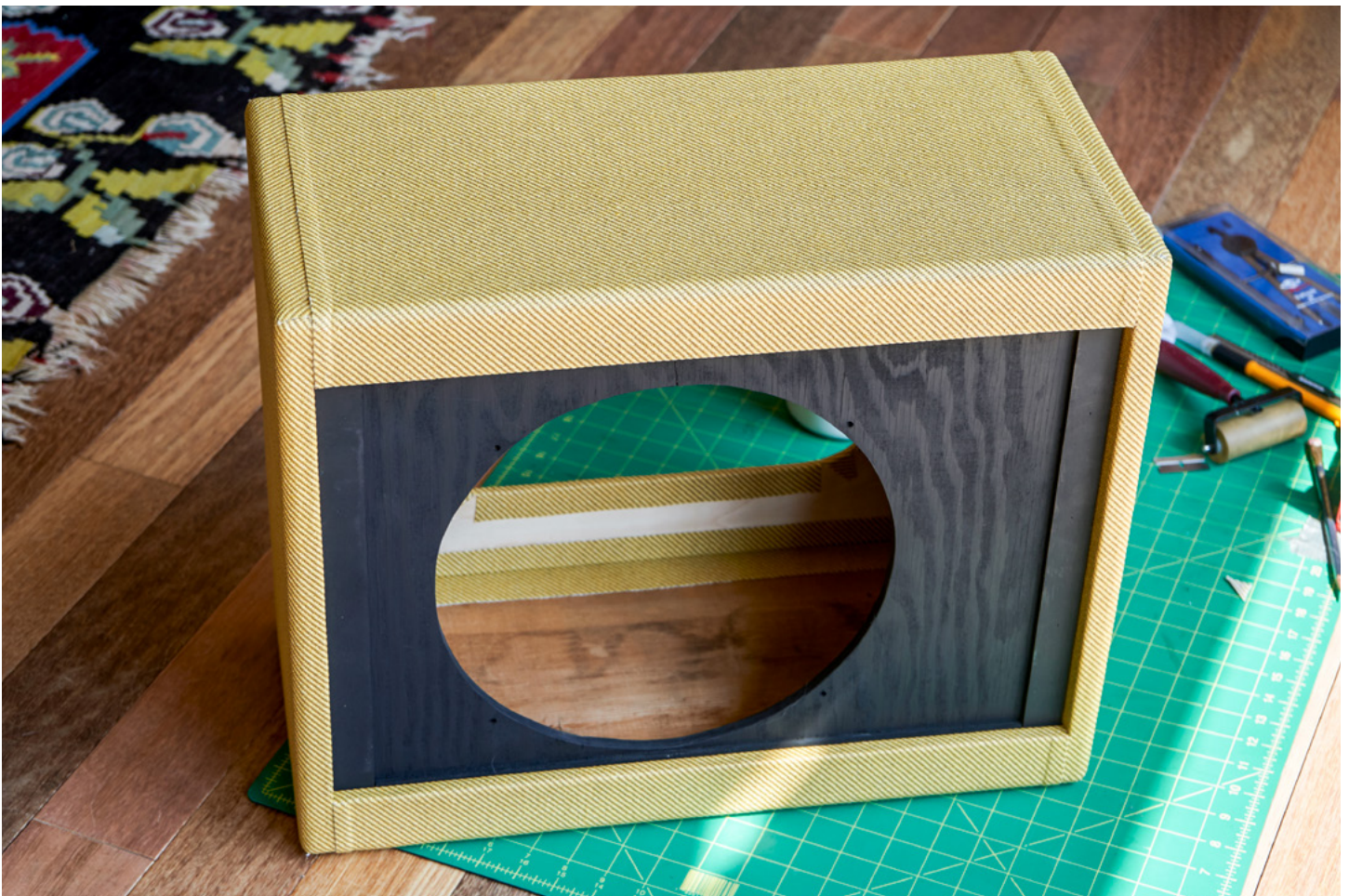


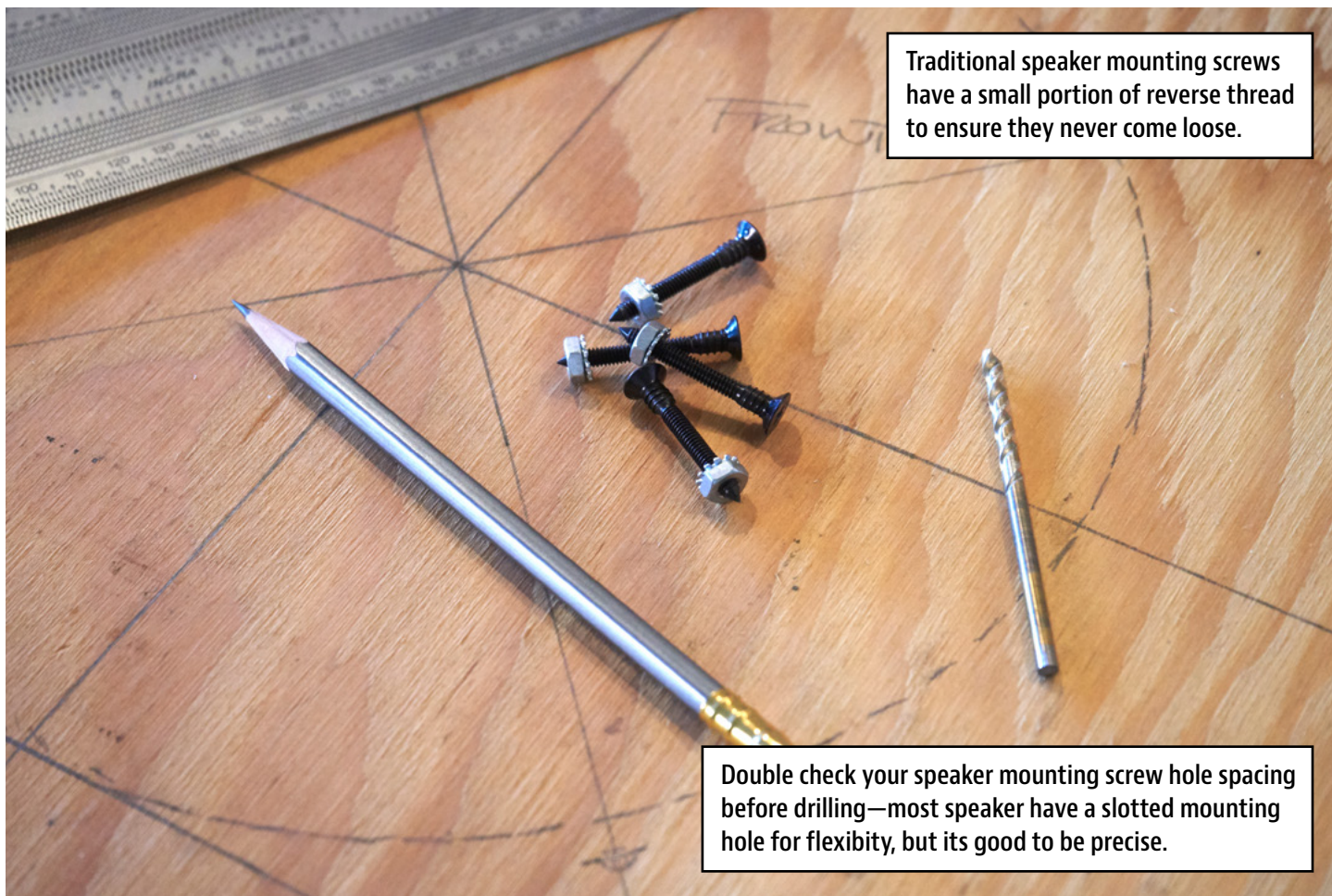
Carefully work the tweed into the corners, and then trim.



A fresh single-edged razor blade works well for trimming tweed.

Make sure you work out any bubbles or inconsistencies early on—they get really tough to remove after a day of drying time. You can work bubbles from under the tweed by rubbing them toward an open seam with your fingers or palm. Poking a small hole in the covering with a heavy sewing needle can also help release trapped air. Over the next day, the adhesive and fabric will dry further. As the bond strength increases, the tweed will tighten up.

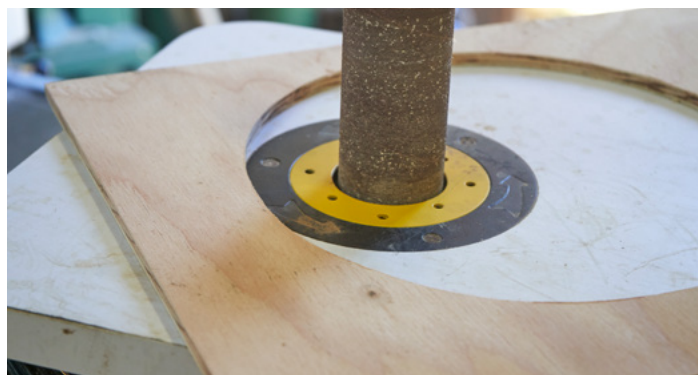
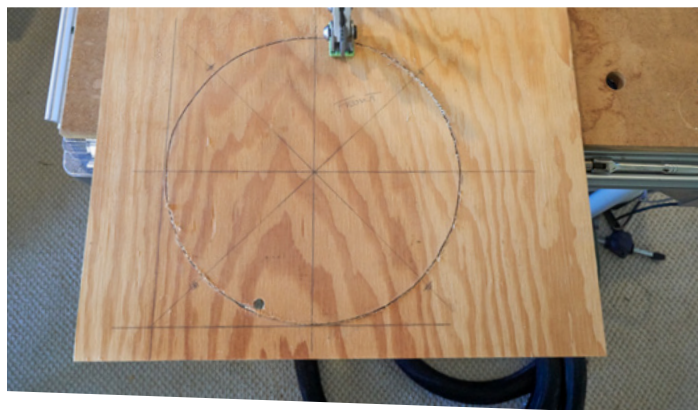




STEP 8: CUT AND TEST-FIT THE BAFFLE

Save the baffle assembly until after you've covered the cab. This gives you the chance to make any adjustments to height and width of the baffle to be sure it fits just right. An 18-3/8" x 14-3/8" baffle board should give enough clearance with the tweed covering and final grill cloth, but it's worth checking against your covered cab before stapling on the grill cloth. If things look a little snug, a quick pass through the table saw to remove another 1/32" or 1/16" is an easy fix.

It's easiest to cut the speaker hole and drill the mounting holes after the 3/8" ply baffle is trimmed to size, but before the 1/4" spacers are glued on. Speakers are most often placed off-center in combo amps to help the magnet clear the power transformer—it's a very practical move. In hi-fi circles, there are a number of calculations that come into play for speaker placement. The included plans have the speaker placed as it would be in a 5E3 combo—you can center it if you like.



The key measurements to get correct with the speaker mounting are the holes for the mounting bolts. Most speakers, American, British, and Italian, have oblong mounting holes that will accommodate a little variation in mounting screw/bolt placement. Some common mounting hole diameters are:

BRAND	STEWMAC PART #	DIA.
Amperian VSOP	#50586	11.75"
Celestion Alnico	#50553, #50551, #50550	11.7"
Warehouse 12"	#50576, #50575, #50582	11.7"
Jensen C12N	#50596, P12Q #50606	11.56"

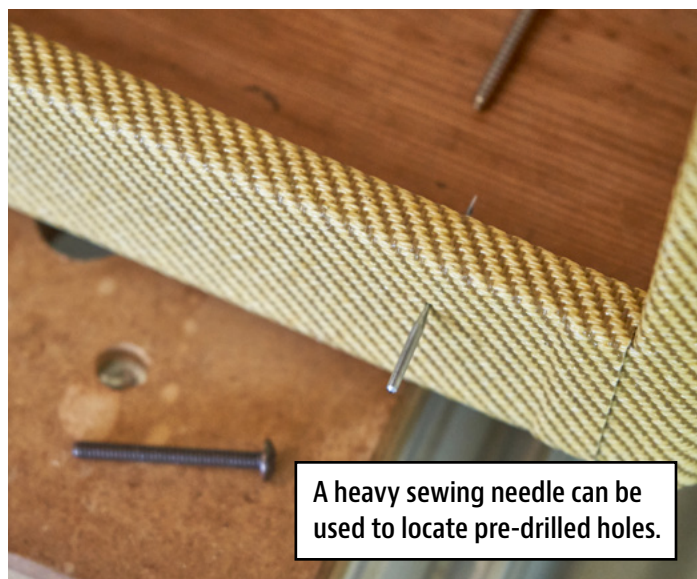
Take time to drill those four holes square to the face of the baffle—if the screws are tilting in, or out, it can be tough to install the speaker.

Glue on the 1/4" baffle spacers, pieces **K**, **L**, **M**, and **N**, tacking them in place with brad nails if you have them, or carefully clamping them so that they align along the perimeter of the baffle board.

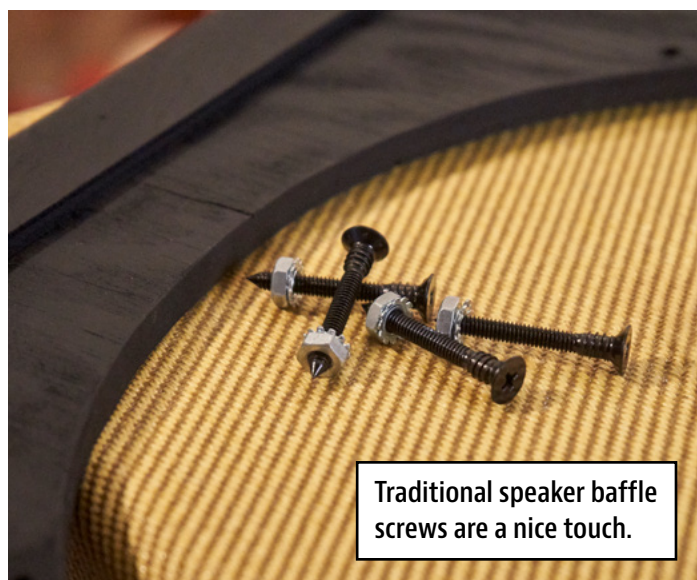


This is a good time to drill the baffle mounting screw holes in the baffle itself. The baffle can be placed in the cab, gently clamped in place behind the fascia boards, and a bit run through the fascia boards, drilling perfectly aligned holes through the baffle. This process is common in one-off woodworking, it allows for some minor variation in cuts and fitting—well-aligned screw holes are a lot nicer in the end.

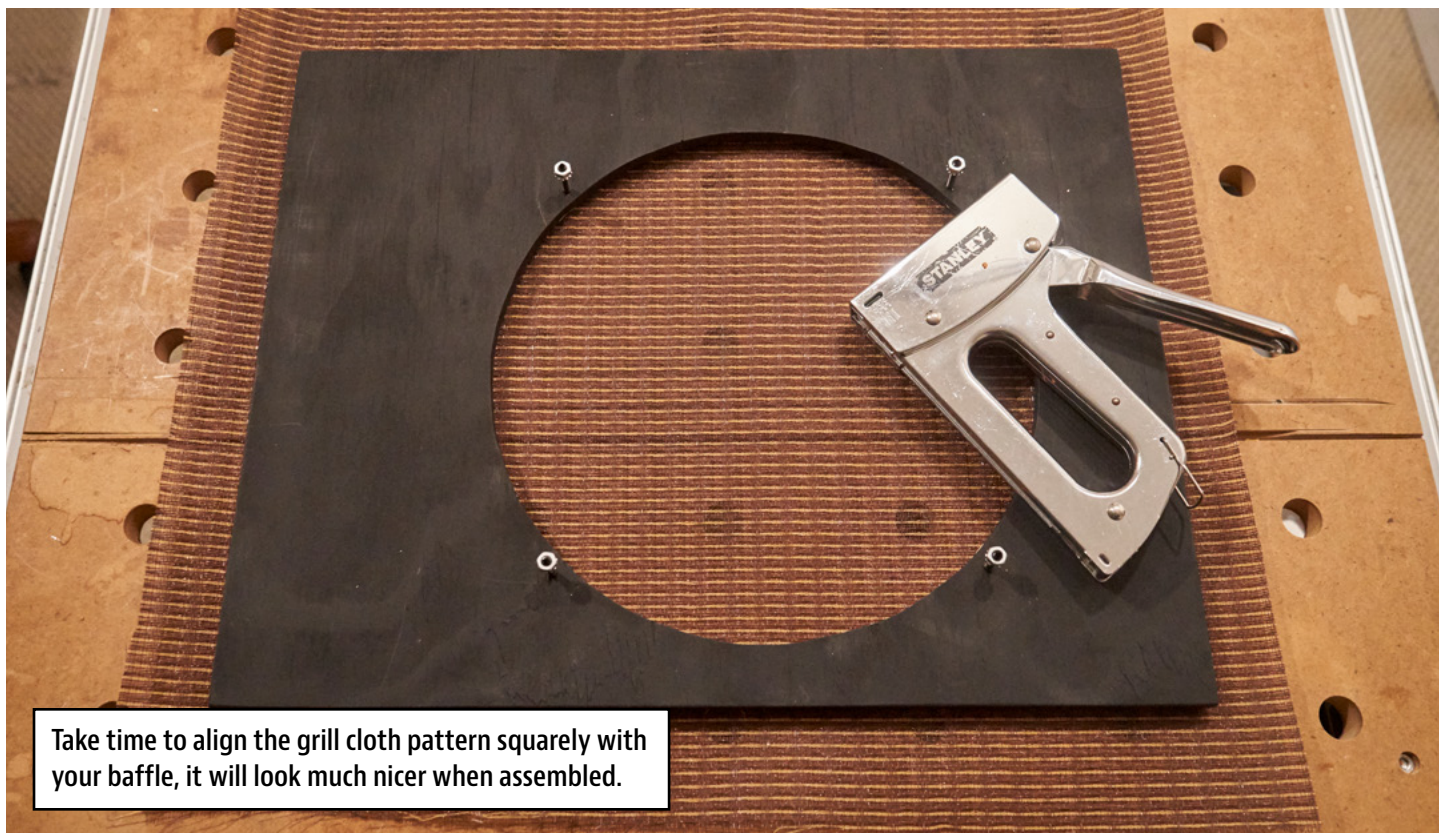
Install your speaker mounting screws/bolts before you staple on the grill cloth. Not that any of us have done that before, but take my word for it. Drive them in from the front of the baffle, ensuring they go in squarely. Finally, paint the baffle matte black.



A heavy sewing needle can be used to locate pre-drilled holes.



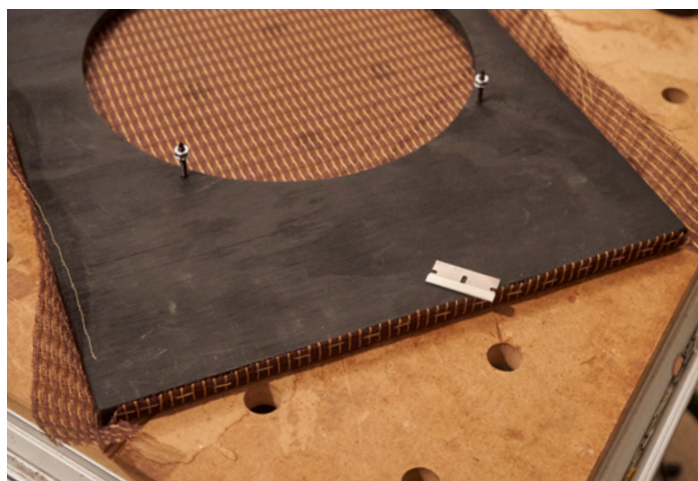
Traditional speaker baffle screws are a nice touch.



Apply the Grill Cloth

For a classic tweed-style cab, oxblood grill cloth is the natural choice, and it's an easy grill cloth to learn to install. The yellow stripes generally go horizontally across the front of the baffle, and provide a nice visual alignment cue to follow as you staple. Cut the yard down to a piece 18" x 21", with the yellow accents running lengthwise. A hand-held Stanley-style stapler with 3/8"-1/2" staples is all that is needed to apply the grill cloth.

Start with the baffle face down on top of the grill cloth—double check the yellow accents are running lengthwise and facing out—and square the baffle up to one set of horizontal lines. It works well to staple along the top and bottom of the baffle, starting first at the center, and working your way out to the left and right. Keep a close eye on the alignment of the grill cloth—the yellow accent strips will give a good visual cue, watch for waves developing from pulling the cloth too hard one direction or the other. If anything gets off track, staples can be removed and adjustments made. Stop about an inch short of the corners, and begin working on the sides, again starting with a staple in the center and working out. To finish off the corners, miter with a single-edge razor blade and staple the last inch of grill cloth along each corner.





STEP 9: MOUNT THE HARDWARE

You're in the homestretch—it's time to mount the hardware! Placing low-tack tape on the tweed makes it easy to measure and mark the drill points easily, without risk of leaving pencil marks behind. Mark the drill points, and use appropriately sized depth-stop bits to avoid drilling through the cab. Wax all of the screws with paraffin or beeswax, as you'd do when installing guitar hardware, to make driving them in just a little easier.

Page three of the **wood cut pattern** shows you where to place your hardware. Don't rush this part,



A drill press fence helps ensure that the back panel mounting screw holes are precisely aligned for a cleaner look when assembled.



Waxing screw threads with beeswax or paraffin ensures easier assembly.

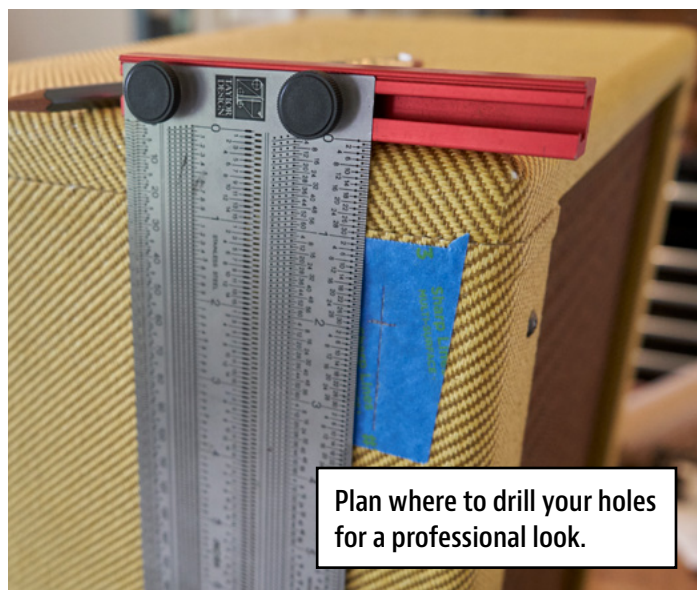
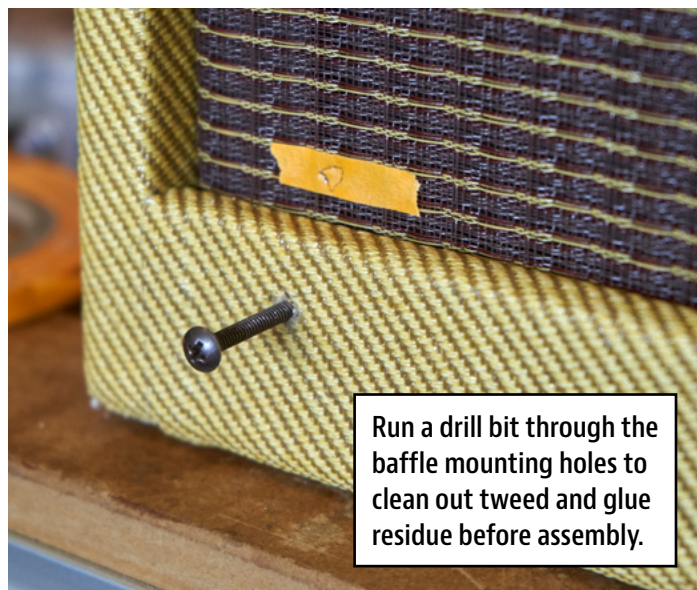
ill-aligned screws will show, and an off-center handle will feel funny every time you pick up the cab. I always drill the baffle mounting screw holes in the fascia boards before the cab is wrapped, but the rest of the holes (back panel mounting holes, handle and feet/glides) get drilled after the EcoWeld has cured.

Handle: Mount the handle centered front to back and side to side so that the cab will balance well when carrying it. The tradition Fender-style leather handle requires the handle mounts (#50790) to be placed 6" apart (center-to-center). Mark the placement using a hammer to tap the handle mount into place (it has a nail-point in the middle), and then pre-drill the four mounting screw holes with a No. 50 (.070") depth-stop bit. Set the depth-stop so you do not drill through the top of the cabinet.

Glides/Feet: The feet are best placed 1-1/4" in from the front and back, and 1-7/8" in from the left and right sides. Predrill the feet screw holes with a No. 50 (.070") depth-stop drill bit, making sure not to drill through the base of the cab. Like all of the wood screws in this project, don't over-tighten, just snug them up. The rubber base behind each metal foot allows for some variation in height of the foot—slight adjustments can be made while tightening to help the cab sit flat on hard surfaces.

Speaker Baffle Mounting Hardware: We pre-drilled these holes before wrapping the cab. Using a heavy sewing needle you can probe the front of the cab to find the holes, and then chase the hole with an 1/8" drill bit—this cleans out any glue or tweed to make it easier to insert the screw. With the back panels removed, the speaker baffle is inserted through the back of the cab. If you have the nut with integrated lock washers, tightening them is done by turning the baffle screws at the front of the cab (no need to hold a socket or wrench on the nuts inside the cab). These need to be snug, to keep the baffle from rattling, but not excessively tight.

Back Panel Mounting Screws: Two sets of holes need to be drilled: through holes in the back panels, and pilot holes in the cleats at the back of the cab. If possible, use a drill press to drill the mounting screw holes through the back panels. These holes should be approximately 1/8" to 5/32" diameter, so that the panel screw can slide through. With the cabinet lying on its face, lay the back panels in place mark the pilot hole locations by poking a pencil through each hole in the panels, and then drill No. 50 (.070") pilot holes into the cleats with a depth-stop bit and cordless drill.



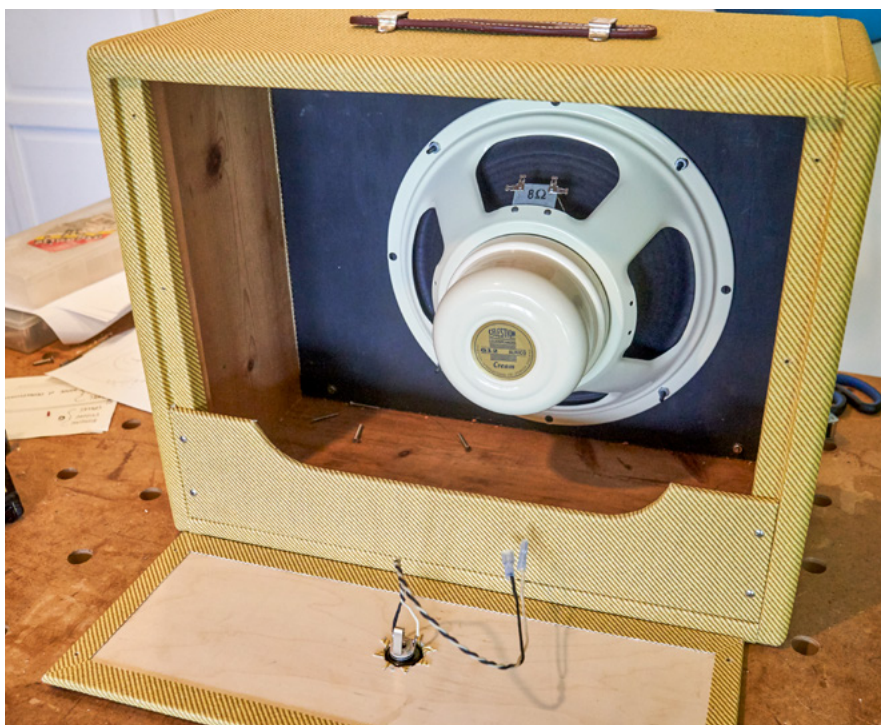
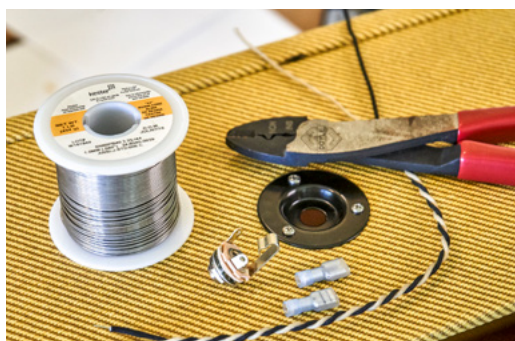
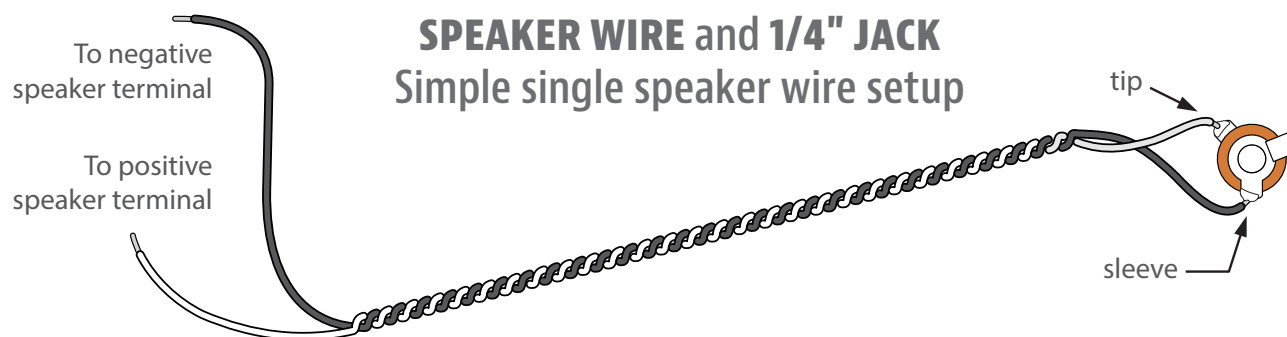
STEP 10: WIRE UP AND INSTALL THE SPEAKER

To wire up the output jack, twist together a pair of 18 gauge wires—generally black and white or black and red, approximately 12"-18" long. One end of these wires will be soldered to the 1/4" input jack, and the other to the speaker terminals after installing the speaker in the cab. The black wire is commonly "negative" or "-" and soldered to the "sleeve" lug on the jack. The white or red wire will be the "positive" or "+" and is soldered to the "tip" lug on the jack. If you are running multiple speakers it's important to have these polarities set correctly so that the speakers are "in phase" and not cancel-

ling out any frequencies. If you're only running one speaker, the polarity of the speaker wires is less critical, but it's still worth taking time to do it right.

The jack mounting plate is screwed to the outside of the back panel, centered over the hole you drilled earlier, with three #6-1/4" screws. For screws this small, 1/16" pilot holes work well. The 1/4" Switchcraft mono jack can then be mounted on the plate as you would on a standard guitar jack plate—the jack inside, washer and nut on the outside.

Pro Tip! To make speaker changes easy, you can fit the speaker wires with female quick connect tips. This allows you to plug the wires onto the speaker terminals, rather than soldering/desoldering the





speakers wires for each change. You'll need two female quick connectors, in the 18-14 gauge range and a crimping tool if they are full insulated connectors. If you use bare connectors, just solder the speaker wires into the quick connect sleeves. Always check that your quick connects have a good fit and grip on the speaker terminals when making speaker changes. On rare occasions they can be a little loose, and a gentle squeeze with pliers will tighten-up the connection.

Before installing a speaker it's best to stand the cab up, in the playing position. This helps reduce the risk of dropping the speaker onto the mounting bolts and damaging the cone or surround (the soft foam ring around the speaker cone). There are four mounting bolts, but you only need to see that two are properly aligned as the speaker is slid into place.

Slide the speaker onto the mounting bolts, and then gently thread on the four nuts with integrated lock washers. Tightening should be done in a "star pattern," just like lug nuts on a car—snug up nuts slowly, skipping to opposite sides of the speaker. This approach reduces the risk of over-torquing a nut, or tweaking the speaker frame by tightening one side significantly more than another. Once the nuts are snug, slide on the speaker wire quick connects or solder on the speaker wires (red or white to positive and black to negative terminal) Double check that the excess speaker wire is not resting against the back of the speaker cone, as this can lead to both weird sounds and excessive speaker wear.

Reinstall the back panels and that's it. Time to connect your amp and crank it up! Congrats on a job well done!



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