

You can put this speaker to work in a variety of situations.

A black, rectangular, heavy-duty metal safe with its door open. The interior shows a smaller locked compartment with a mesh screen and a handle. The safe has a textured surface and is mounted on small feet.

PHOTO 1: The Jack 10.

You'll probably use at least twice as much adhesive as you need on your first few joints until you figure out how little is required. Do not use traditional woodworking glue, because any air leaks in the joints will severely compromise

performance, while expanding urethane adhesive works so well filling gaps up to 1/8" wide that you don't need absolute accuracy in your parts cutting. The design is very forgiving of errors, so if things are a bit "off," don't be overly concerned. The only rule that can't be violated is that every joint must be absolutely airtight.

BUILDING THE BOX

The first construction step is to cut out the cabinet top and bottom (**Fig. 1**). Draw the joints on them with the other parts as shown. The lines indicate where the front edges of the baffle and horn panels join the top and bottom. After drawing these lines, place a scrap piece of plywood against each line and trace the outline of the full joint. Using a small drill bit—1/16" or so—drill pilot holes through where the joints with the horn plates and baffle will be. Don't

come closer than an inch from where the end of the jointed part will go. Space the holes 5 to 6" apart for assembly with screws, 3 to 4" with nails, closer as required with smaller parts.

Cut the baffle (**Fig. 2**). The driver hole is centered. First draw a $2\frac{1}{2} \times 8\frac{3}{8}$ " box, then at both ends use a driver frame to trace a curved section extending another $3/16$ " or so. To cut the straight edges clamp or screw a guideboard or saw sled

to the baffle at the correct distance from the cut line. Raise the saw out of the shoe, place the shoe tight against the guide, start the saw, and make a plunge cut. Practice this technique on some scrap wood before trying it for real. Cut each line not quite to the end, finishing the cuts with a jigsaw. Support the baffle on boards, so that you don't saw into the bench top.

One grille option is expanded metal,

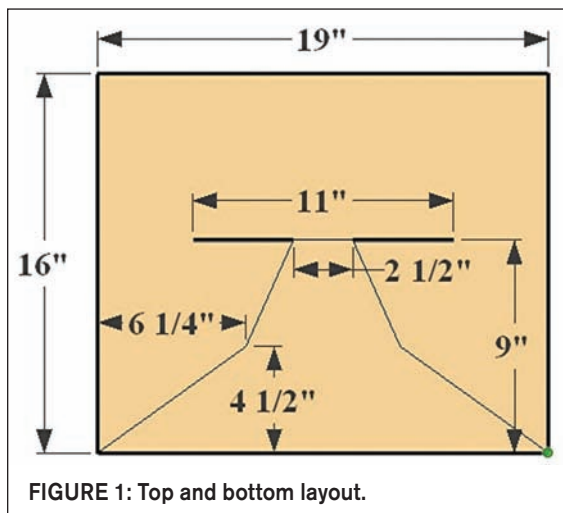


FIGURE 1: Top and bottom layout.

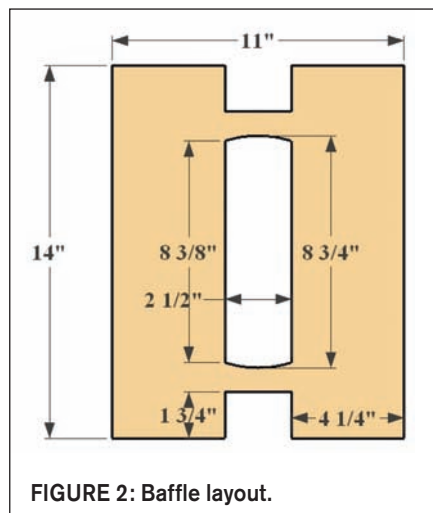


FIGURE 2: Baffle layout.

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The diagram shows a rectangular throat panel with a total width of 14 inches and a height of 5 inches. The panel is divided into three vertical sections by two vertical lines, each 1/2 inch thick. The distance from the left edge to the first vertical line is 1 3/4 inches, and the distance from the second vertical line to the right edge is also 1 3/4 inches. The central section is labeled with a 15-degree angle at the top and a 24-degree angle at the bottom. The two side sections are labeled with a 1/2-inch thickness.



FIGURE 5: Attaching vent duct to throat panel.

FIGURE 6: Throat assembly.

The diagram shows a side brace with the following dimensions and labels:

- Top horizontal dimension: $7 \frac{3}{4}"$
- Left vertical dimension: $4 \frac{3}{16}"$
- Right vertical dimension: $6"$
- Bottom horizontal dimension (from the vertical line to the right edge): $5 \frac{7}{8}"$
- Bottom horizontal dimension (from the slanted edge to the right edge): $3 \frac{3}{8}"$
- Label "Baffle" with an arrow pointing to the top horizontal edge.
- Label "Outside edge" with an arrow pointing to the right vertical edge.

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A 3D perspective diagram of a wooden frame assembly. It shows a base plate with several vertical supports. A mesh screen is attached to one of the vertical supports. A horizontal brace is being attached to the side of the frame, supported by a small wooden block. The diagram illustrates the step of attaching side braces to the structure.

A diagram of a rectangular plate with a height of 14" and a width of 8". A 15-degree angle is indicated at the top right corner of the plate.

A 3D perspective drawing of a cardboard box. The box is light brown with darker brown outlines. The top flaps are open, showing the internal structure where the flaps meet in the center. The box is shown from a slightly elevated angle, highlighting its three-dimensional form.

A diagram of a circular manhole. The outer diameter is labeled as 10 1/2" and the inner diameter is labeled as 11". The manhole is shown as a thick yellow ring.

A rectangle with a width of 16 inches and a height of 15 inches. The width is indicated by a horizontal double-headed arrow at the top, and the height is indicated by a vertical double-headed arrow on the left side.

A diagram of the back of the unit, which is a light orange rectangle with a black border. The width is indicated by a horizontal double-headed arrow at the top, labeled $18 \frac{3}{4}"$. The height is indicated by a vertical double-headed arrow on the left, labeled $13 \frac{3}{4}"$. In the lower right area, there are two circular mounting holes, each with a black outer ring and a grey center.

A throat chamber filler improves midrange response. It's made from 1" thick urethane building insulation foam. Start with a 7½" diameter disc. Draw a 4" diameter circle, centered onto one face. Using a sander, taper the edge, producing a "discus" shape. Draw parallel lines 2½" apart, 1¼" to either side of center, on the non-sanded face. Remove that section with a saw, either power or hand-held, leaving two half-moon-shaped pieces.

Sand the smaller face, giving a finished thickness of $\frac{3}{4}$ ". Trial-fit the fillers and driver. Be sure there's at least $\frac{3}{8}$ " clearance between the filler and the cone with the driver screwed down tight. Install the throat fillers on the baffle to either side of the throat (**Fig. 19**). Use adhesive and a few screws with large washers, so they won't just go through the foam. Remove the screws when the adhesive has cured.

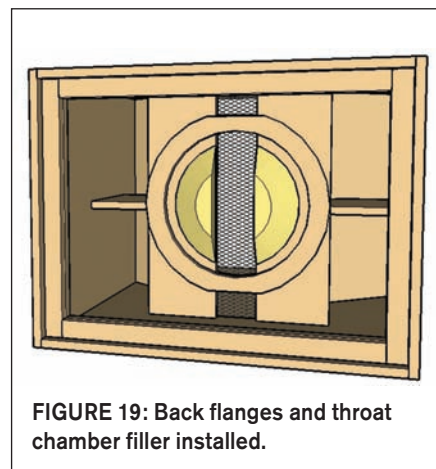
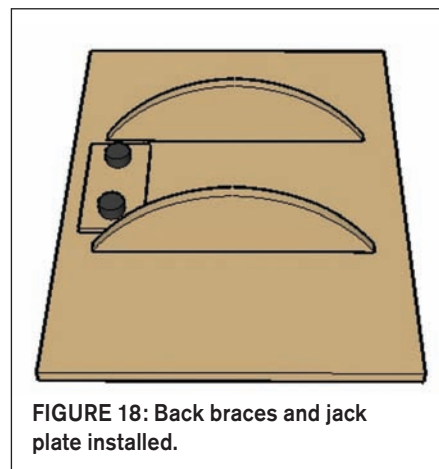
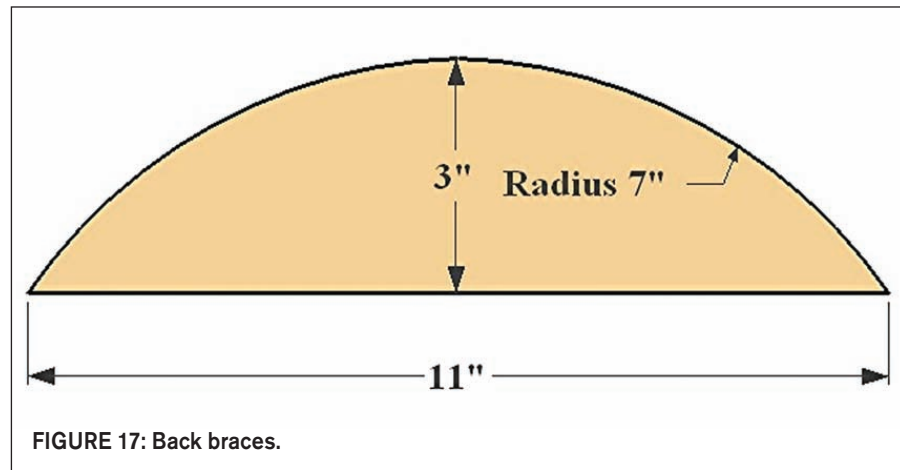
Put the back in place and drill pilot holes for the attachment screws, spaced 4 to 6" apart. Drill holes in the jack plate for your jacks. Depending on your amp, for instrument use you'll probably need to use phone jacks, while PA may require Speakon jacks. Use both, wired parallel, and you can hook up to any source.

You may use side- or top-mounted handles, flush or surface mount. The center of gravity is approximately on the same plane as the baffle. Cut holes for flush-mount handles, avoiding braces. Drill pilot holes for attachment bolts. The cab is light enough to use a strap handle on the top, screwed in place with 1½" screws driven through the top into the baffle.

Fill all the screw heads, holes, saw cuts, joint gaps, and defects in the plywood. I prefer polyester auto-body filler for this job, because it sets fast, holds tight, and doesn't shrink. After the filler has set true, round off all the cabinet edges with a router and quarter-round bit if you have one, a sander if you don't. Then sand the entire exterior with 40 or 60 grit sanding discs.

Apply your finish. For best results use Dura-Tex, the same stuff the pros use (available from www.speakerhardware.com). This water-base urethane acrylic goes on with a standard paint roller, drying quickly with a lightly textured finish that's very durable and easily re-coated if you ding it. It costs not much more than paint, coverage is quite good, and you can finish a cabinet of this size in about 15 minutes exclusive of drying time. Use a small trim roller to reach tight spots.

The cabinet interior must be insu-



Many bass players prefer the sound of a woofer only; **Fig. 20** shows the Jack 10 SPL response when loaded with the Deltalite II 2510, and that of

the same driver in a vented box of the same dimensions. The difference in the lower midrange, the “punch” bandwidth, is considerable. The trade-off (there’s always a trade-off) comes in the upper mids from 1kHz to 2kHz, but because power demand is halved when you go up one octave it’s a very worthwhile trade. For those using the cab for PA or full-range bass or keyboards, I’ll be back in Part II with the high-frequency horn part of the project.

These are the nominal sizes of the major parts. If pre-cutting makes them a bit oversized, trim them to final size when installed.

Top, bottom..... 16" x 19"
Baffle 11" x 14"
Throat panels 5" x 14"
Mouth panels 8" x 14"
Sides 15" x 16"
Back..... 13¾" x 18¾"

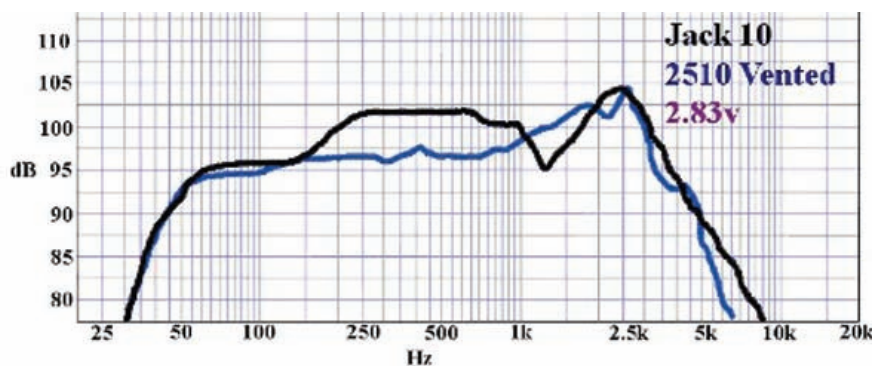


FIGURE 20: SPL Jack 10 versus vented box.

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