🔨 Home Speaker Build — Cut & Assembly Guide

Everything measured, nothing guessed. Two 2-way ported bookshelf speakers, ¾" MDF, external **11.5"H × 9.5"W × 12"D**, tuned ~45 Hz. Total parts:

One sheet of 4×8 ft ¾" MDF cuts both cabinets (incl. bracing) with generous scrap. Port length was recalculated and the box deepened so the 2" port genuinely fits — the first draft had a port that was longer than the box was deep.

1 · Panel cut list — one cabinet (make TWO of each)

Piece	Size (¾" MDF)	Qty	Notes
Front baffle	9.5 × 11.5	2	2 driver cutouts + flush recess
Back panel	9.5 × 11.5	2	+ 2" port hole, + terminal hole
Sides	10.5 × 10	4	internal depth × internal height
Top / Bottom	8 × 10.5	4	internal width × internal depth
Brace (optional)	~8 × 3	2	1 horizontal strut per cabinet

*All sizes in inches. Butt construction: sides & top/bottom sit **between** the front and back faces.*

2 · Sheet layout — how to cut the 4×8 sheet

48" wide × 96" long — ¾" MDF (one sheet, both cabinets)



Cut the four 9.5×11.5 faces first, then the 8 sides (10.5×10) and 4 top/bottoms (8×10.5) from the rest — everything fits with scrap left over.

3 · Front baffle layout (each baffle)

Woofer centered ~4.75" from the sides, its center ~5" down (top edge of the box). Tweeter directly above, tweeter center ~4.75" in and ~1" from the top. Driver **cutout diameters:** use the flange/template that ships with each driver; recess the baffle a router-depth (~½–¾ the flange) so flanges sit flush. Keep woofer/tweeter center-to-center ≈ 5.5".

4 · Assembly — step by step

1. **Mark & cut all panels** per the cut list. Rip one cabinet's worth at a time so identical pairs stay matched.
2. **Rout driver recesses** on the two front baffles and drill the port (2") and terminal (for binding posts) holes on the two backs.
3. **Dry-fit** one box with clamps — check all 6 panels seat flush (sides & top/bottom inside the front/back faces).
4. **Glue & screw** the box: run a bead of wood glue on every butt edge, clamp, and add a few screws per joint. Glue **all** edges — no gaps.
5. **Install the brace** across the internal width (half-box height) and clamp until dry. Also seal every interior seam with extra glue.
6. **Assemble the crossover** on a small board (inductor + caps + resistor per channel) and solder the wiring: amp terminals → crossover → drivers. Keep the iron-core-free inductor clear of the woofer magnet.
7. **Mount the port** (2" × ~8", rear) and fit the binding post terminal. Run speaker wire inside, then **screw the drivers** into the recessed baffle flanges.
8. **Add damping** — loosely fill the interior with polyester fiber (no packing; the port must stay clear). **Finish:** seal seams and paint/vinyl, add rubber feet.
9. **Wire up & test** — match +/− on every driver. Play a slow sweep; double-check no buzz or port chuff at normal volume.

5 · Parts quick-reference

Part	Model / #	Qty
Woofer · Dayton Web	DC160-8 (295-305)	2
Tweeter · Dayton DC28F-8	275-070	2
Inductor 0.60 mH air-core	257-818	2

Cap 10 µF	027-428	2
Cap 3.3 µF	027-420	2
Resistor 8 Ω 10 W	006-2	2
Port kit 2" flared	268-348	2
Binding post pair	091-340	2
MDF 3/4" 4×8	Home Depot	1

Shortcut: if you'd rather not solder the discrete components, a prebuilt **Dayton XO2W-2.5K** (260-142, $31.69 ea) replaces inductor+2 caps+resistor per speaker — just wire amp→XO2W→drivers. Slightly dearer but foolproof.