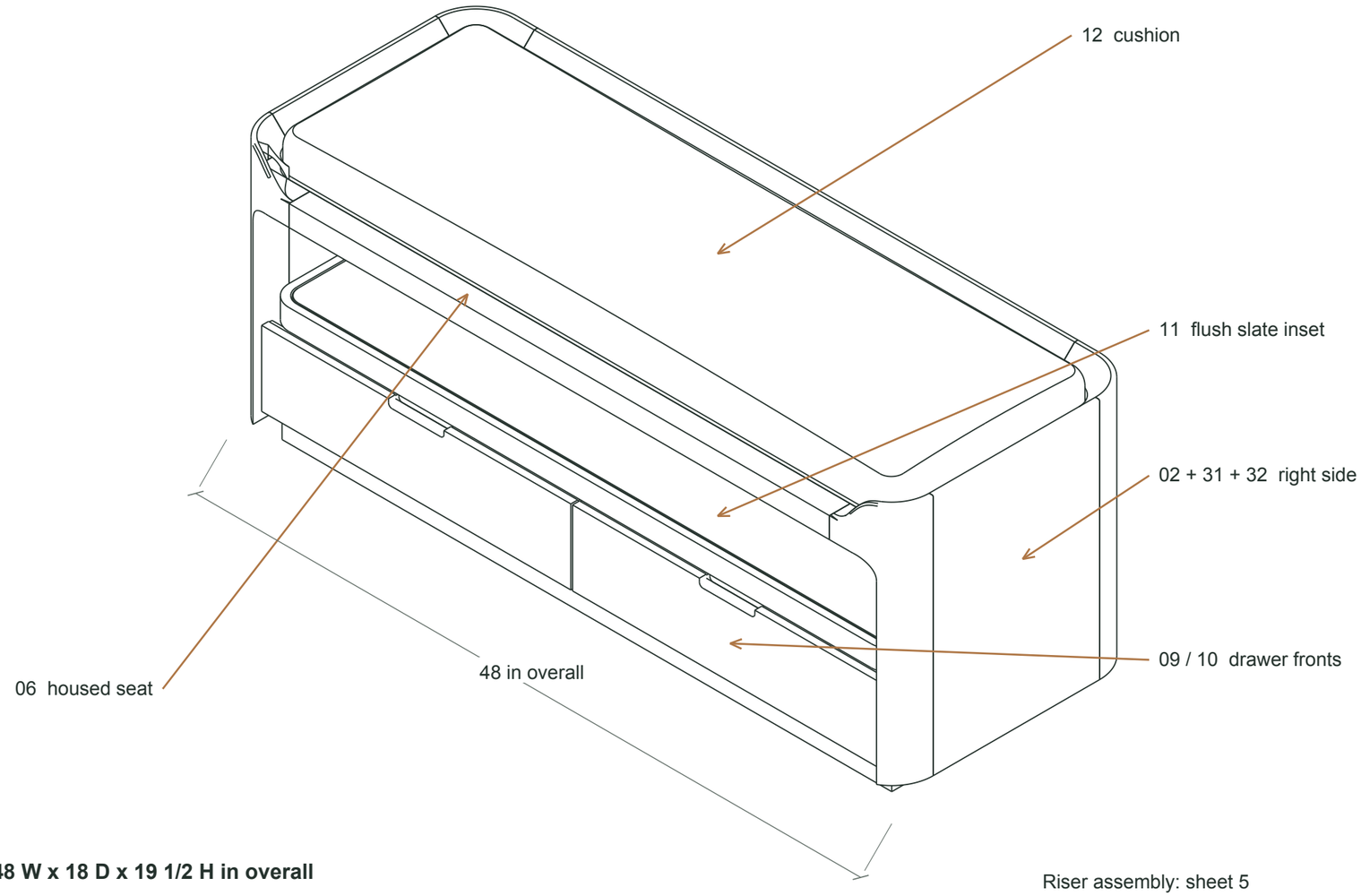
Build the bench, one real part at a time.

A compact shop guide: cut stock, machine the receiving parts, dry-fit, then assemble.



48 W x 18 D x 19 1/2 H in overall

Riser assembly: sheet 5

What changed in this revision

Matched dowel bores and front screw holes are now in the wood CAD. The slate is a true flush inset with a wood rim and 2 mm liner. Slide pilot holes belong to the side panels, divider and drawer sides.

Build status

First-article design. Geometry is checked; seating strength and loaded drawer performance still need physical validation. No seating load rating is assigned. Cushion CAD remains a finished envelope for the upholsterer.

1 Cut and label the stock

Use the shared cut list. All sizes are finished sizes; build laminations before the final cut.

2 Make the subassemblies

Machine the three pieces of each side, the five-piece riser and the two matching drawer boxes.

3 Close the case

Dry-assemble all dowels first. Fit the seat and drawer-bay panels between the sides; keep every bearing face square.

4 Fit the slate and slides

Route the carrier pocket, dry-seat the liner and slate, then install slides and align the fronts.

5 Check the first build

Check squareness, smooth drawer travel and support under load before repeating the build.

01 / Cut the stock.

BENCH- is omitted in the tables for space. Each number matches the named STEP part.

PART	PIECE	QTY	FINISHED SIZE (in unless mm)	STARTING MATERIAL	SHEET
01 / 02	Flat side panels	2	17 1/2 x 12 x 1 1/2	Oak-faced laminate	3
29 / 30 / 31 / 32	Separate corners	4	17 1/2 high; 4 1/2 x 3 envelope	Laminated shaped blanks	3
03	Front seat rail	1	39 x 1 1/2 x 1 1/2	Oak-faced laminate	4
04	Upper rear rail	1	39 x 3 1/2 x 1 1/2	Oak-faced laminate	4
05	Lower rear rail	1	39 x 6 1/2 x 1 1/2	Oak-faced laminate	4
06	Seat	1	46 x 15 x 1 1/2	Structural birch laminate	4
07	Inset carrier	1	45 x 14 3/4 x 1 1/2	Structural birch laminate	6
08	Case bottom	1	45 x 14 3/4 x 3/4	Birch plywood	4
13	Divider	1	14 3/4 x 4 3/4 x 3/4	Birch plywood	4, 8
09 / 10	Finished drawer fronts	2	22 5/16 x 5 3/8 x 3/4	Oak-faced plywood	7
14 / 15 / 19 / 20	Drawer sides	4	14 x 4 x 1/2	Birch plywood	7, 8
16 / 17 / 21 / 22	Drawer box ends	4	20 3/32 x 4 x 1/2	Birch plywood	7
18 / 23	Drawer bottoms	2	522.7 x 342.5 x 6.35 mm	Birch plywood; fit trim	7
24 / 33	Riser long rails	2	44 x 2 x 1 1/2	Straight solid wood	5
34 / 35 / 36	Riser ends / center	3	11 x 2 x 1 1/2	Straight solid wood	5
11	Slate	1	1113.6 x 345.25 x 20 mm	Calibrated slate	6
28	Slate support liner	1	1113.6 x 345.25 x 2 mm	Solid HDPE sheet	6
12	Cushion, finished envelope	1	44 3/4 x 14 3/4 x 2 1/2	Upholstery; template to fit	1

Stock preparation

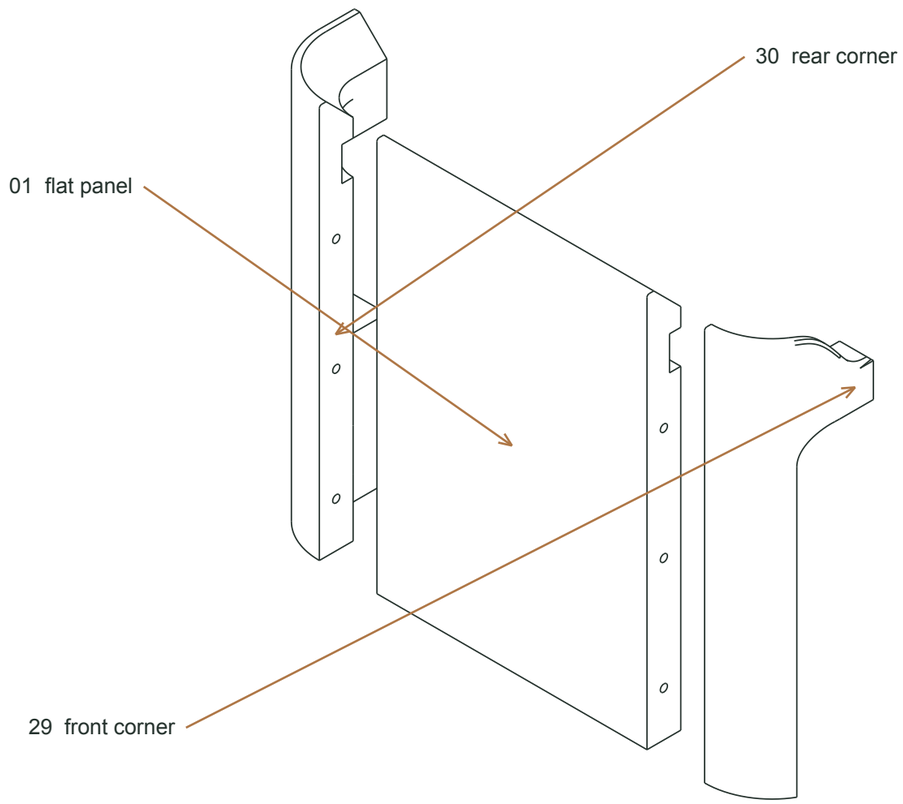
Allow trimming and cleanup on rough blanks. Measure actual plywood and facing. Laminate the 1 1/2 in parts to 38.1 mm FINISHED, including oak facing; nominal sheet labels are not finished thickness. Use continuous structural birch cores, full-spread adhesive and flat cauls. Keep joint faces bare.

Hardware for one bench

38 x 8 x 40 mm dowels; 42 x 8 x 30 mm dowels; 16 x 6 x 25 mm dowels. Two pairs Accuride C3832-E14 slides. 24 slide screws (4 x 10 mm, low head); four 4 x 25 mm front screws. Titebond III adhesive. Slide screw head: max 1.6 mm high, 8 mm diameter.

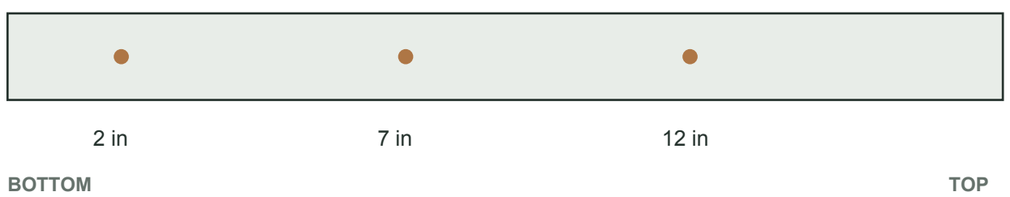
02 / Make two sides: a flat panel and two corners each.

01 + 29 + 30 = left side. 02 + 31 + 32 = right side. Keep the handed corner profiles.



Panel / corner joint face

8 mm bore / 20.5 mm deep / centered across 1 1/2 in edge



1 Prepare the separate blanks

Flat panel: 12 deep x 17 1/2 high x 1 1/2 thick. Glue up corner blanks oversize. Shape to the supplied STEP profile: R3 in outside, R1 1/2 in inside return. Match facing after shaping.

2 Cut the seat housing and rim

Inside face: housing 1/2 in deep x 1 1/2 in high, lower shoulder 14 in above the part bottom. Through the flat panel; continue 1 1/2 in into each corner from its panel joint. Square the stops. Keep the source 1.20 in x 45-degree inner top bevel and R0.10 in eased rim.

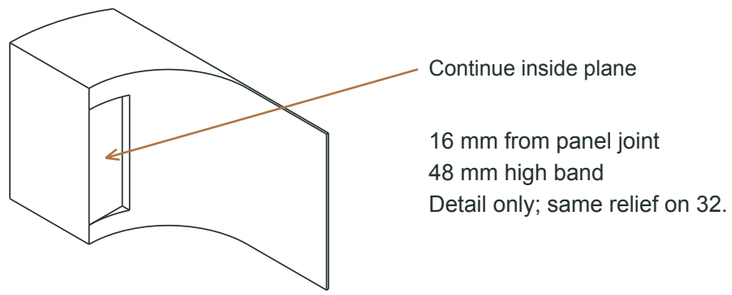
3 Drill the panel-to-corner joints

At each square joint: three 8 mm bores, 20.5 mm deep in BOTH parts. Hole centers 2, 7 and 12 in above the bottom, on the 3/4 in thickness centerline. Use three 8 x 40 mm dowels per joint; transfer with one matching jig.

4 Drill the receiving faces before glue-up

Rear corners 30 / 32: relieve the inside return for the slide. From the FRONT panel joint, continue the flat panel inside plane 16 mm into the corner, over a 48 mm high band centered 3 1/2 in above the part bottom. Square the stop. Rail and panel mates: sheet 4; slide pilots: sheet 8. Dry-fit, then glue the side joints with housing shoulders flush.

Rear-corner slide clearance / 30 and 32

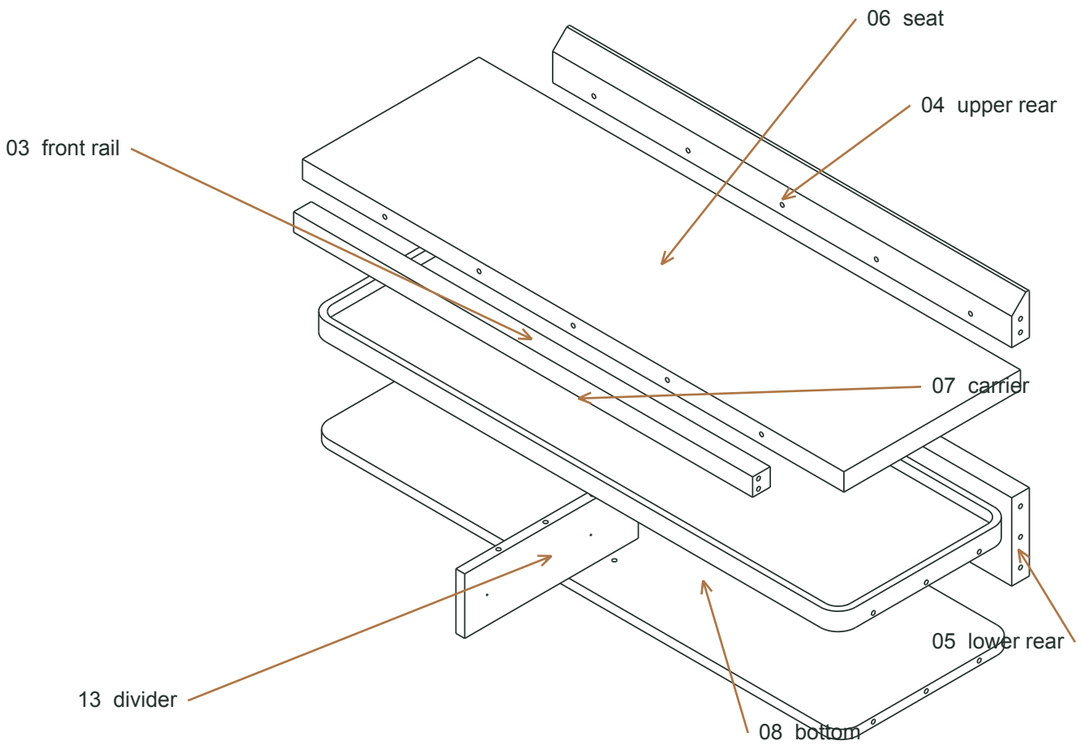


After assembly

One side measures 18 in front-to-back: 3 + 12 + 3. Use the bottom and inside face as references for all mating work. Preserve glue faces when finishing.

03 / Drill the case joints, then bring the sides together.

Use a stop-collared dowel jig. All depths are from the mating face, not from the outside of the part.



Rail ends -> corner returns / 03, 04, 05 + 29-32

8 mm bores x 20.5 mm deep on each mate; 8 x 40 dowels. Front rail: centers 3/8 and 1 1/8 in above its bottom, 1/2 in behind FRONT face. Upper rear: 3/4 and 1 3/4 in above its bottom, centered in thickness. Lower rear: 1, 3 1/4 and 5 1/2 in above its bottom, centered in thickness. Mark the matching corner from the fitted rail.

Bottom / carrier edges -> flat side / 08, 07 + 01, 02

8 mm bores x 15.5 mm deep both mates; 8 x 30 dowels. On each panel end: 3 holes at 3, 7 1/2, 12 in from CARRIER front; on BOTTOM use 2 3/4, 7 1/4, 11 3/4 in from its front. Bottom holes centered through thickness; carrier holes 8 mm above underside. On flat sides: 1 1/2, 6, 10 1/2 in behind front joint. Bottom line 7/8 in above side bottom; carrier line 160.4 mm above side bottom.

Divider ends -> panel faces / 13 + 08, 07

8 x 30 dowels, 3 at top and 3 at bottom. Center across divider thickness; 3 1/4, 7 1/4, 11 1/4 in behind divider front. Drill 18.5 mm into divider ends and 12.5 mm into panel faces. Panel holes on width centerline; use the same setbacks on bottom, add 1/4 in on carrier.

Seat edges -> front / rear rails / 06 + 03, 04

8 mm bores x 15.5 mm deep each mate; 8 x 30 dowels. Center through seat thickness. Five holes from seat LEFT end: 7, 15, 23, 31, 39 in. Mating rails: 3 1/2, 11 1/2, 19 1/2, 27 1/2, 35 1/2 in from left end; 3/4 in above rail bottom.

Retained shaping

08 bottom: R1 1/2 in plan corners. 04 upper rail: inner 1.20 in x 45-degree bevel; starts 2.30 in above rail bottom, meets top 1.20 in back. Preserve the source R0.10 in eased rim and match it into the side corners.

Assembly order matters

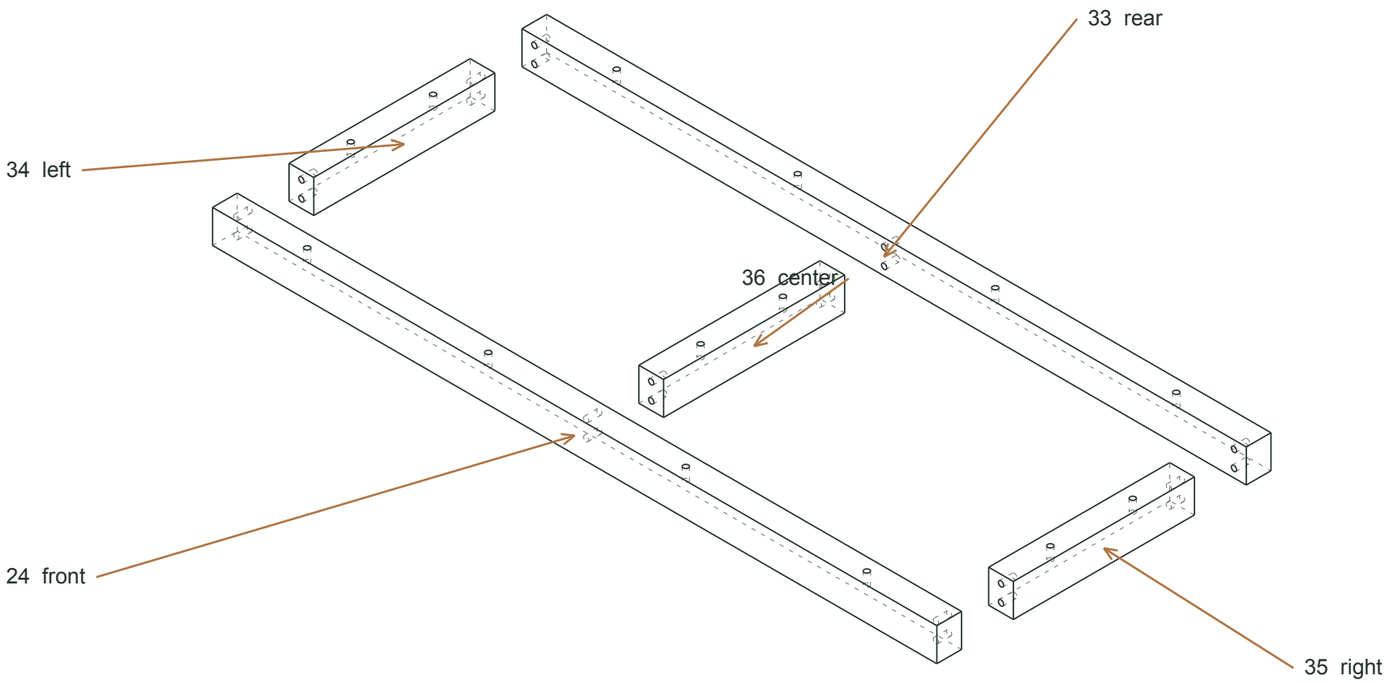
Make the seat + front/rear rail subassembly first. Join divider between bottom and carrier. Dry-fit these assemblies and lower rear rail into one complete side, then bring the other side straight onto the dowels and seat housing. Rehearse before glue; use cauls and clamps, never force the fit.

Dry-fit checkpoints

Seat enters each housing 1/2 in. Divider is centered: each drawer bay 22 1/8 in wide. Compare case diagonals and check the carrier level. Glue bare bearing faces and dowels; cure per adhesive label before loading.

04 / Build the five-piece riser.

24 front + 33 rear + 34 left + 35 right + 36 center. Finished frame: 44 x 14 x 2 in.



Long-rail top holes / 24, 33

Centered across the 1 1/2 in width. Four holes at 5, 16, 28, 39 in from LEFT end. Keep front/rear rails parallel.

Short-member top holes / 34-36

Centered across width. Two holes at 3 and 8 in behind the front end. Use one jig for all three members.

Matching holes in 08 underside

Reference the bottom panel LEFT and FRONT edges. Front rail: 1 in behind front; rear rail: 13 1/2 in behind front. Hole setbacks from left: 5 1/2, 16 1/2, 28 1/2, 39 1/2 in. Short rails: 1 1/4, 22 1/2, 43 3/4 in from left; holes 4 3/4 and 9 3/4 in behind front.

1 Mill the five members

Plane straight stock to 1 1/2 x 2 in section. Cut two at 44 in and three at 11 in. The short members fit between the two long rails.

2 Drill each butt joint

Two 8 mm bores, 20.5 mm deep in both mates; 8 x 40 dowels. Centers 1/2 and 1 1/2 in above bottom. Short-member ends: centered in thickness. Long-rail inside faces: 3/4, 22, 43 1/4 in from LEFT end.

3 Dry-clamp, then glue

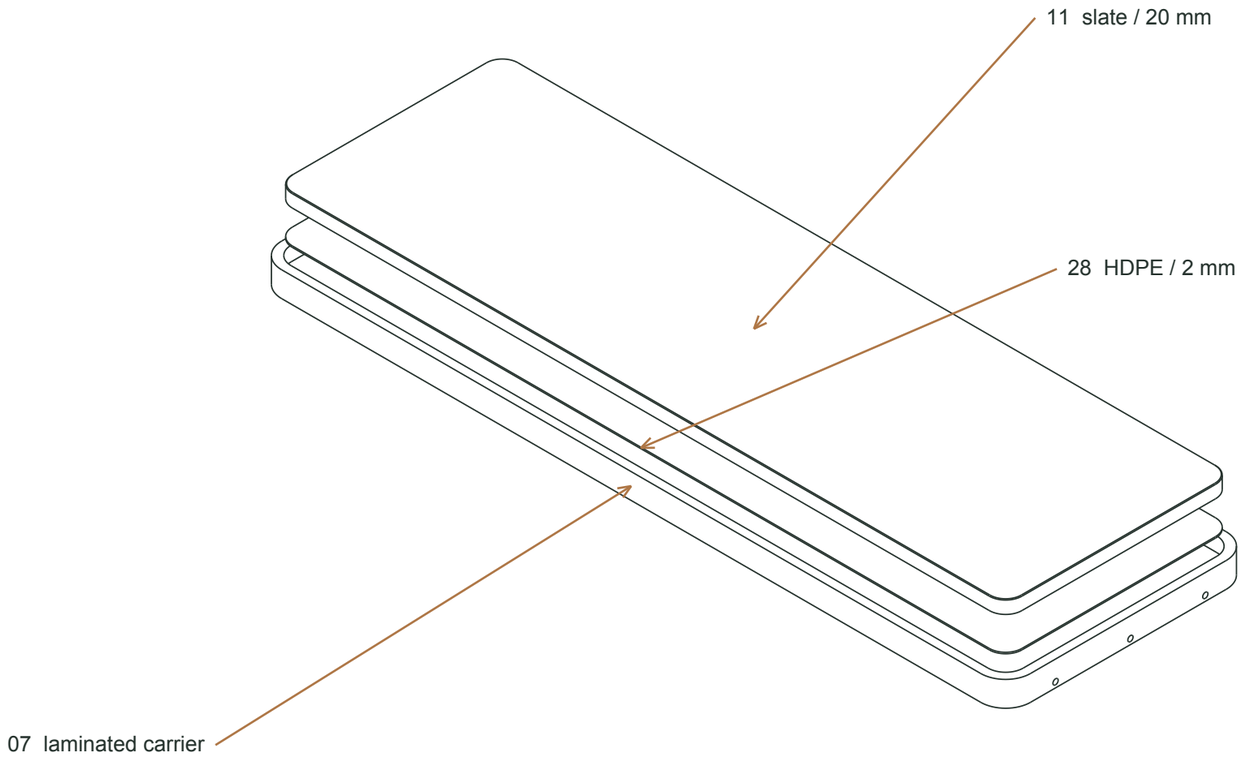
Match diagonals. Center bearer leaves 19 3/4 in clear on either side. Glue and clamp square; check a flat bearing plane on top.

4 Attach to the bottom

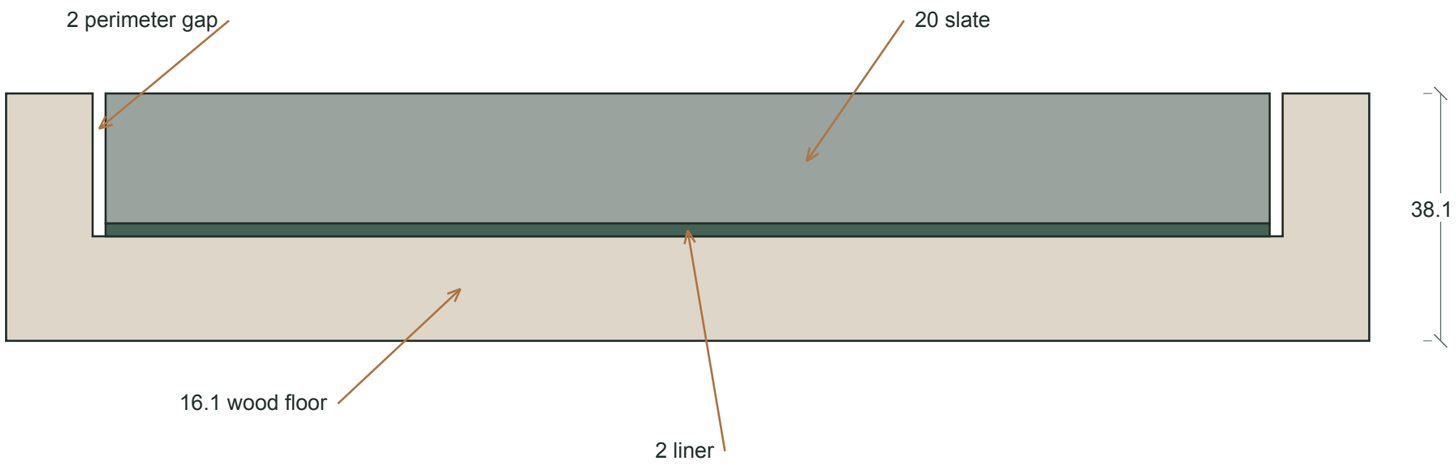
Fit with the case upside down. Transfer the pattern below, then glue 8 x 30 dowels. Drill 18.5 mm into riser tops and 12.5 mm into case underside.

05 / Make a flush, removable slate inset.

07 carrier receives the pocket. 11 is the stone slab. 28 is a cut sheet liner, not a modeled void.



Section through the inset / mm



Width compressed to show the edge stack; use full plan dimensions above.

1 Laminate and trim the carrier

Two nominal 3/4 in birch layers; measure and finish the laminate to 38.1 mm. Trim to 1143 x 374.65 mm. Outside plan corners R38.1 mm. Keep the underside flat.

2 Route the inset into 07

Pocket 1117.6 x 349.25 mm, R27 mm, 22 mm deep from TOP. Center it: 12.7 mm straight rim on all four sides. Rough in passes, finish with a template. Remaining wood floor: 16.1 mm.

3 Cut the stone and liner

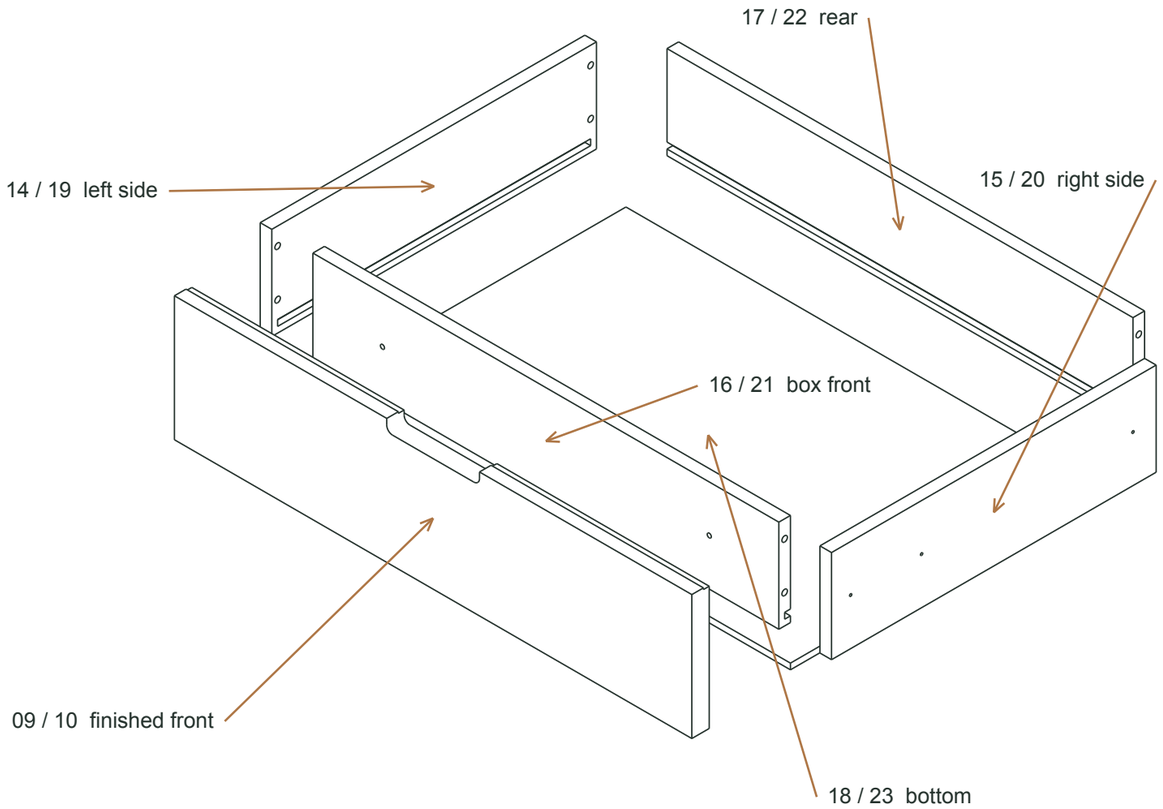
Slate: 1113.6 x 345.25 x 20 mm; R25 corners; upper edge chamfer 1 mm x 45 degrees. HDPE liner: same plan, 2 mm thick. Keep its supporting face smooth and flat.

4 Dry-seat and check flush

Place liner, then slate. Nominal gap: 2 mm on each side. No adhesive. Confirm actual slab thickness before setting pocket depth. Remove using stone suction lifters.

06 / Make two identical drawer boxes, then fit the fronts.

Left: 14-18 + 09. Right: 19-23 + 10. Keep the bottom grooves on the inside faces.



Groove the four walls

6.55 mm wide x 6.35 mm deep; lower shoulder 1/4 in above wall bottom. Side grooves stop 1/4 in from both ends (13 1/2 in long); square the stopped ends with a chisel. End-piece grooves run through. Test with a bottom offcut; the CAD allows 0.2 mm thickness clearance.

Dowel the drawer corners

6 x 25 mm dowels, two per corner. Centers 1 1/4 and 3 1/4 in above wall bottom. End pieces: centered in their 1/2 in thickness, 17.5 mm deep into each end. Sides: matching centers 1/4 in from front/rear end, 8.5 mm deep from INSIDE face. Stop the drill; these are blind holes.

Fit the bottom, then glue the box

Bottom blank: 20 19/32 x 13 1/2 in x 1/4 in; trim 0.2 mm from each plan edge to the cut-list size. Slip-fit into grooves. Glue dowel joints, capture the bottom and clamp square. Box outside: 21 3/32 wide x 14 deep x 4 high.

Machine the two finished fronts

Centered pull: 4 in wide x 1/2 in down, R1/4 lower corners; 9 5/32 in at either end. Rear top relief: 1/4 in into thickness x 1/16 in down, full width. Keep the front face intact.

Drill the front attachment

16 / 21: two 4.5 mm THROUGH holes, 3 in from either end, 2 in above bottom. 09 / 10: matching 2.5 mm pilots, 14 mm deep from BACK; 2 7/8 in above bottom. On 09, holes are 3 57/64 in from LEFT and 4 21/64 in from RIGHT; reverse these on 10. Fasten from inside with two 4 x 25 mm pan-head wood screws per drawer.

Front alignment

Clamp the box directly against the back of the finished front. Box top sits 1/2 in below front top; bottom sits 7/8 in above front bottom. Use 1/8 in spacers at the case sides and center gap. Fit and adjust slides before final tightening.

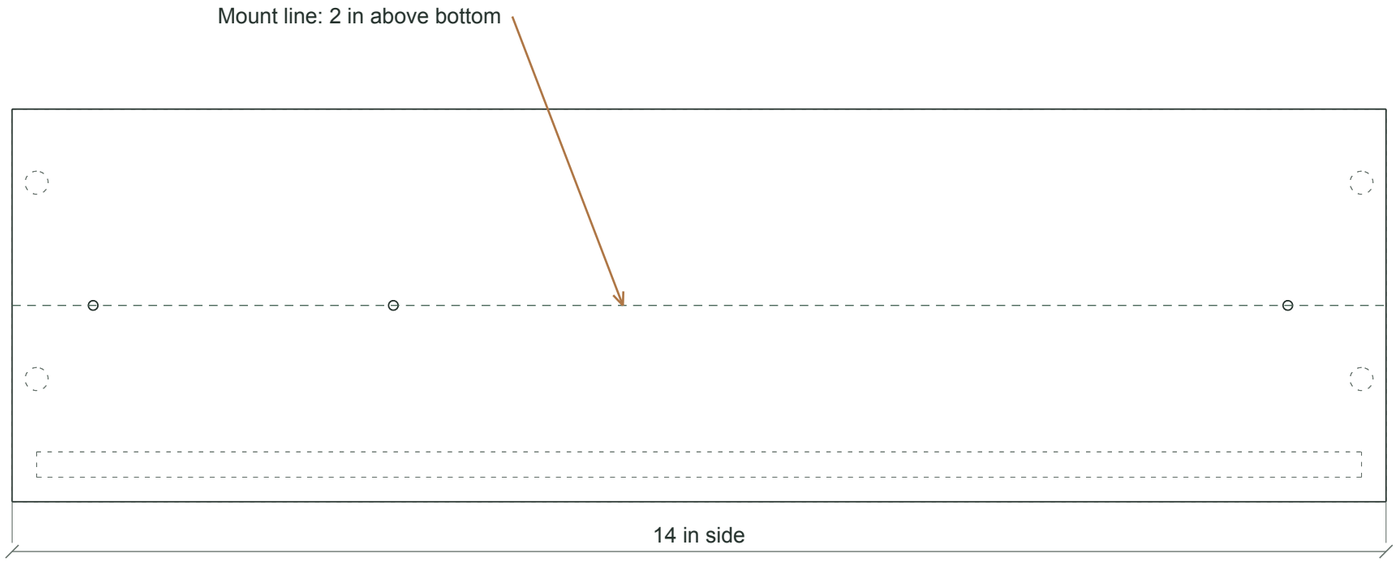
Fit before finishing

The finished front has 1/16 in clearance below the carrier at its relieved back edge. Keep glue out of the bottom groove, check equal diagonals and verify the box moves freely before applying finish.

07 / Mount the slides and prove the fit.

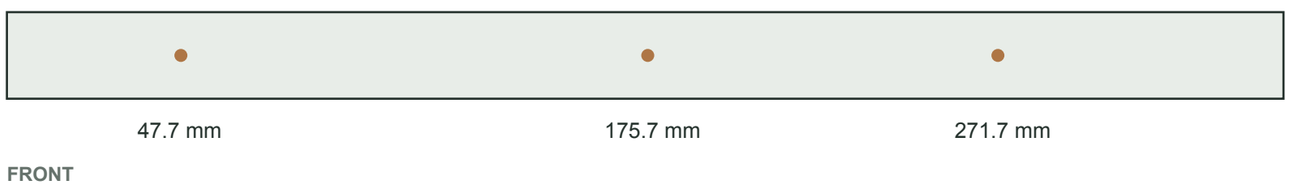
Selected hardware: Accuride C3832-E14, two pairs. 350 mm body; 356 mm nominal travel. Side mount only.

Outside of 15 / 20. Front at left.



Mounting stations from the FRONT of each metal member (mm).

CABINET member / front and rear locks, middle slot



DRAWER member / neutral cam position



Hardware source: Accuride 3832E technical / installation sheet (linked).

Cabinet pilots / 01, 02 and both faces of 13

Mount line 2 1/4 in above the case-bottom TOP. Metal member front: 7/8 in behind finished drawer-front FACE. On the flat panels, pilot centers are 16.6, 144.6, 240.6 mm behind the FRONT joint. On the divider: 48.3, 176.3, 272.3 mm behind its FRONT edge. All pilots 2.5 mm x 9 mm deep.

Drawer pilots / outside of 14, 15, 19, 20

Mount line 2 in above wall BOTTOM. Metal member front nominally 1/8 in behind box FRONT edge. Pilot centers: 21.0, 98.7, 330.2 mm behind that edge. All pilots 2.5 mm x 9 mm deep. Start with the neutral cam and rear screw; add the round-hole locking screw after alignment.

Fasten and adjust

Use 4 x 10 mm low-head wood screws (24 total), head <= 1.6 mm high and <= 8 mm diameter. Check the actual slide over the modeled pilots before drilling a batch. Set both members parallel. Set setback with the middle cabinet slot, then secure its front/rear round holes. Set drawer height with the cam and rear slot, then secure its round-hole lock.

First-build checks

Side space: 33/64 in (13.097 mm) each. Box bottom: 1/4 in above case bottom. Front gaps: 1/8 in each side and center. Cycle both drawers through full travel, check rear clearance, screw heads and loaded sag. Confirm all glue joints have cured before seat/load trials.

For a larger run, use this first build to check the stock, joints and hardware fit; refine the design before committing the batch.