

Compact wooden enclosure

P02-01 · V5 CANDIDATE 01 · ILLUSTRATED 01 · PUBLISHED CONSTRUCTION PLAN

24 × 18 × 18 inches

610 × 457 × 457 mm · bare outside case, width × depth × height



Optional exterior maple veneer shown; removable glazing and screened roof

Build a cleated plywood case with a lift-off door and hand-operated swivel hasp. Optional face-only maple veneer is shown as a conditional configuration.

Before construction: receiving hardware trials, veneer balance/bond approval, prototype construction, physical testing and qualified review remain open. No animal-use approval is established by publication.

Before you start

Read through the complete sequence, buy and measure the specified hardware, and complete offcut trials before irreversible cuts. This guide describes a generic indoor shell; deeper substrate, immersion, different hardware or edge-wrapped veneer require a revised design.

What the measurement describes	Reference
Bare outside case	24 × 18 × 18 in (609.6 × 457.2 × 457.2 mm)
Clear box before fittings	22.594 × 16.594 × 16.594 in (573.89 × 421.49 × 421.49 mm); cleats, stops and equipment intrude
Front opening	≈19 19/32 in; 19.594 in exact (497.69 mm) × ≈13 19/32 in; 13.594 in exact (345.29 mm)
Door ring	≈19 15/32 in; 19.469 in exact (494.51 mm) × ≈13 15/32 in; 13.469 in exact (342.11 mm)
Service reserve	21 in (533.4 mm) in front; 1 3/4 in (44.45 mm) lift above the open door
Optional maximum body envelope	24.092 × 18.092 × 18 in (611.94 × 459.54 × 457.2 mm), before minor edge finish and projecting hardware

Measurements: inches are first; mm means millimetres. Approximate fractions are labeled “≈”; use the accompanying exact decimal or physical scribe for nonfractional mating cuts. Coordinates use LEFT, FRONT and outside FLOOR BOTTOM unless a step explicitly names a panel edge.

Stop and resolve: measure actual plywood, mesh crossing, screw roots, hinge axis/release stroke and latch seating. The optional veneer requires supplier guidance and a full-size door trial. Blank receiving fields are intentional.

Tools and safe setup

Use a flat fully supporting bench, clamps, square, straightedge, tape, caliper, scrap measuring strip, guided circular/table saw, jigsaw, drill/driver, stopped pilot bits, 11/64-inch (4.37 mm) wood clearance bit, countersink, 17/64-inch (6.75 mm) metal bit, snips, hacksaw, files, chisel and sanding block. Metal bits must suit the steel; clamp work before drilling.

For thin strips use a guarded jig with push blocks or have a competent woodworking supplier cut them. Use an acrylic-rated blade and full support for the pane. Add a veneer scraper, sharp utility knife and cutting straightedge only for the veneer option.

Use eye/hearing protection, appropriate wood-dust control and ventilation. Gloves help handle cut mesh and loose metal; keep hands and loose clothing away from rotating tools. Secure waste so it cannot tear the part or fall against the blade.

Key terms: cleat = solid screw-receiving strip; receiver = the wood into which screw threads enter; scribe = transfer actual mating edges; story stick = shared marked measuring strip; kerf = blade-width waste; pilot = thread guide hole; clearance = hole through the first part; countersink = shallow cone for a flat screw head; datum = named measuring edge.

Build sequence

1. OP01 · Choose the finish and record the received stock
2. OP02 · Test the actual lift-off hinge first
3. OP03 · Test the swivel latch on offcuts
4. OP04 · Lay out and label the plywood blanks
5. OP05 · Use one measuring strip for the case height
6. OP06 · Cut both low side inlets
7. OP07 · Prepare the stopped drill setup
8. OP08 · Fit the solid side supports
9. OP09 · Dry-fit the back and floor supports
10. OP10 · Cut the screen retainers and door stops
11. OP11 · Fit the two side screens
12. OP12 · Cut the roof opening and mesh
13. OP13 · Make the steel support seats
14. OP14 · Drill and fasten the detached roof
15. OP15 · Scribe and cut the continuous surround
16. OP16 · Fit the separate plywood door ring
17. OP17 · Drill the front connections while accessible
18. OP18 · Fit the continuous closure stops
19. OP19 · Fit the glazing pocket and pane
20. OP20 · Drill the removable glazing retainers
21. OP21 · Transfer both hinges to the supported door
22. OP22 · Transfer the latch in both working positions
23. OP23 · Complete the veneer trial before production
24. OP24 · Preseal the five outward veneer faces
25. OP25 · Apply and trim the optional face veneer
26. OP26 · Glue the bare case joints and keep it square
27. OP27 · Prepare every exposed wood face for finishing
28. OP28 · Apply the specified one-coat finish
29. OP29 · Wait for full cure before refitting
30. OP30 · Refit screens, stops and the floating pane
31. OP31 · Refit and cycle the finished door
32. OP32 · Test door removal and safe refitting
33. OP33 · Attach and test the removable roof
34. OP34 · Commission and maintain the empty shell

Materials and hardware

Buy quantities are purchase packages, not mesh counts. These direct links are bound to this revision's BOM. No affiliate collection has been verified for this revision; none is presented as a complete cart.

Product / link	Exact model and purchase	Current check · 9 Oct 2026
L01 · Birch sanded plywood, nominal 3/4 in, listed actual 0.703 in, 4 x 8 ft Direct product listing	712849 Buy 1 package(s) × 1 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Out of stock in displayed storefront.
L02 · Pine board, actual 3/4 x 1-1/2 x 96 inches Direct product listing	L51244218 Buy 2 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L12 · Pine square board, actual 1-1/2 x 1-1/2 x 96 inches Direct product listing	2X2 8 RPC Buy 2 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L04 · Acorn galvanized hardware cloth Direct product listing	HC4245 Buy 1 package(s) × 2 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Out of stock in displayed storefront.
L06 · SPAX zinc flat-head Unidrive wood screws, #8 × 1 1/4 inches Direct product listing	4101010400322 Buy 4 package(s) × 30 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Out of stock in displayed storefront.

Materials and hardware · continued

Buy quantities are purchase packages, not mesh counts. These direct links are bound to this revision's BOM. No affiliate collection has been verified for this revision; none is presented as a complete cart.

Product / link	Exact model and purchase	Current check · 9 Oct 2026
L08 · Titebond III Ultimate wood glue, 16 fluid ounces Direct product listing	1414 Buy 1 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L14 · Varathane Triple Thick water-based polyurethane clear satin Direct product listing	284473-7482 Buy 1 package(s) × 2 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation. One package contains two quart cans.
L03 · OPTIX clear acrylic sheet Direct product listing	1AG2123A Buy 1 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L13 · RELIABILT S4S poplar glazing-cap stock Direct product listing	L5201424 Buy 3 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
H01 · Sugatsune lift-off hinge, RIGHT hand Direct product listing	NH-40R/SS Buy 2 package(s) × 1 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. In Stock, Ships Next Business Day displayed; not reserved.

Materials and hardware · continued

Buy quantities are purchase packages, not mesh counts. These direct links are bound to this revision's BOM. No affiliate collection has been verified for this revision; none is presented as a complete cart.

Product / link	Exact model and purchase	Current check · 9 Oct 2026
H02 · Quickscrews #5 x 5/8-inch flat Phillips hardware screws Direct product listing	11325 Buy 1 package(s) × 100 each	Exact model identity retrieved; local fulfillment/variant confirmation remains required
H03 · SPAX #8 x 1-inch PAN screws Direct product listing	4111010400252 Buy 1 package(s) × 30 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Out of stock in displayed storefront.
H04 · National Hardware black swivel-staple safety hasp, 3-1/4 inch Direct product listing	N305-979 Buy 1 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L15 · Hillman solid hot-rolled steel flat, 1 x 1/8 in x 36 in, model 11653 Direct product listing	11653 Buy 1 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
L16 · Everbilt 1/4-20 × 2-inch zinc-plated round-head machine screws Direct product listing	831561 Buy 2 package(s) × 3 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Pickup and delivery offered in displayed storefront; not reserved.

Materials and hardware · continued

Buy quantities are purchase packages, not mesh counts. These direct links are bound to this revision's BOM. No affiliate collection has been verified for this revision; none is presented as a complete cart.

Product / link	Exact model and purchase	Current check · 9 Oct 2026
L17 · Hillman 1/4-inch zinc-plated flat washers, 3/4-inch OD × 1/16 inch thick Direct product listing	270055 Buy 8 package(s) × 1 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation. Listing identifies 1/4-inch hole and one washer per package; outer diameter/thickness must be measured for the bolt stack.
L18 · Hillman 1/4-20 zinc-plated Keps nuts Direct product listing	880483 Buy 2 package(s) × 2 each	Exact product identity and listed dimensions/package checked on 2026-10-09; local fulfillment requires confirmation.
E01 · Fluker Mini Sun Dome — optional screen-top fixture Direct product listing	27004 Buy 1 package(s) × 1 each	Exact model identity retrieved; local fulfillment/variant confirmation remains required
H05 · Everbilt #10 × 5/8-inch zinc-plated Phillips flat-head wood screws, 12-pack Direct product listing	825391 Buy 1 package(s) × 12 each	Exact listing/selection checked in rendered supplier page on 2026-10-09. Selected #10 / 5/8 inch / 12-pack, pickup and delivery offered; not reserved.
V01 · Optional flat-cut maple, standard quality, 48 x 96 in, factory 3M PSA Direct product listing	MapleFC4x8PSA-I Buy 1 package(s) × 1 each	Exact MapleFC4x8PSA-I variant observed; special order / non-returnable. Application trial remains required.

Cut list

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
P01 · Floor	24 1/8 in (612.77 mm) × 18 1/8 in (460.38 mm)	24 in (609.60 mm) × 18 in (457.20 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
P02 · Roof	24 1/8 in (612.77 mm) × 18 1/8 in (460.38 mm)	24 in (609.60 mm) × 18 in (457.20 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
P03 · Left side	18 1/8 in (460.38 mm) × 16 3/4 in (425.45 mm)	18 in (457.20 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
P04 · Right side	18 1/8 in (460.38 mm) × 16 3/4 in (425.45 mm)	18 in (457.20 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
P05 · Back	22 3/4 in (577.85 mm) × 16 3/4 in (425.45 mm)	≈22 19/32 in; 22.594 in exact (573.89 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
C1 · Solid cleat C1	16 in (406.40 mm) × 1 1/2 in (38.10 mm)	≈15 51/64 in; 15.797 in exact (401.24 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
C2 · Solid cleat C2	16 in (406.40 mm) × 1 1/2 in (38.10 mm)	≈15 51/64 in; 15.797 in exact (401.24 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
C5 · Solid cleat C5	19 3/4 in (501.65 mm) × 1 1/2 in (38.10 mm)	≈19 19/32 in; 19.594 in exact (497.69 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
C6 · Solid cleat C6	19 3/4 in (501.65 mm) × 1 1/2 in (38.10 mm)	≈19 19/32 in; 19.594 in exact (497.69 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
C7 · Solid cleat C7	15 1/4 in (387.35 mm) × 1 1/2 in (38.10 mm)	≈15 3/32 in; 15.094 in exact (383.39 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)

Cut list • continued

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
C8 · Solid cleat C8	15 1/4 in (387.35 mm) × 1 1/2 in (38.10 mm)	≈15 3/32 in; 15.094 in exact (383.39 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
MSL · L side vent mesh	7 1/2 in (190.50 mm) × 3 in (76.20 mm)	7 1/2 in (190.50 mm) × 3 in (76.20 mm) × 1/16 in (1.59 mm)
VLB · L vent retaining batten B	8 1/8 in (206.38 mm) × 1 in (25.40 mm)	8 in (203.20 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
VLT · L vent retaining batten T	8 1/8 in (206.38 mm) × 1 in (25.40 mm)	8 in (203.20 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
VLF · L vent retaining batten F	1 5/8 in (41.27 mm) × 1 in (25.40 mm)	1 1/2 in (38.10 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
VLR · L vent retaining batten R	1 5/8 in (41.27 mm) × 1 in (25.40 mm)	1 1/2 in (38.10 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
MSR · R side vent mesh	7 1/2 in (190.50 mm) × 3 in (76.20 mm)	7 1/2 in (190.50 mm) × 3 in (76.20 mm) × 1/16 in (1.59 mm)
VRB · R vent retaining batten B	8 1/8 in (206.38 mm) × 1 in (25.40 mm)	8 in (203.20 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
VRT · R vent retaining batten T	8 1/8 in (206.38 mm) × 1 in (25.40 mm)	8 in (203.20 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
VRF · R vent retaining batten F	1 5/8 in (41.27 mm) × 1 in (25.40 mm)	1 1/2 in (38.10 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)

Cut list • continued

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
VRR · R vent retaining batten R	1 5/8 in (41.27 mm) × 1 in (25.40 mm)	1 1/2 in (38.10 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
MR · Roof mesh	21 1/2 in (546.10 mm) × 11 1/2 in (292.10 mm)	21 1/2 in (546.10 mm) × 11 1/2 in (292.10 mm) × 1/16 in (1.59 mm)
RB1 · Roof retaining batten	22 1/8 in (561.98 mm) × 1 in (25.40 mm)	22 in (558.80 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
RB2 · Roof retaining batten	22 1/8 in (561.98 mm) × 1 in (25.40 mm)	22 in (558.80 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
RB3 · Roof retaining batten	10 1/8 in (257.18 mm) × 1 in (25.40 mm)	10 in (254.00 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
RB4 · Roof retaining batten	10 1/8 in (257.18 mm) × 1 in (25.40 mm)	10 in (254.00 mm) × 1 in (25.40 mm) × 3/4 in (19.05 mm)
F01 · Continuous plywood front surround	22 3/4 in (577.85 mm) × 16 3/4 in (425.45 mm)	≈22 19/32 in; 22.594 in exact (573.89 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
FCB · Front lower receiver	19 3/4 in (501.65 mm) × 1 1/2 in (38.10 mm)	≈19 19/32 in; 19.594 in exact (497.69 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
FCT · Front roof receiver	19 3/4 in (501.65 mm) × 1 1/2 in (38.10 mm)	≈19 19/32 in; 19.594 in exact (497.69 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
FCL · Front left receiver	13 3/4 in (349.25 mm) × 1 1/2 in (38.10 mm)	≈13 19/32 in; 13.594 in exact (345.29 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)

Cut list · continued

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
FCR · Continuous right receiver	13 3/4 in (349.25 mm) × 1 1/2 in (38.10 mm)	≈13 19/32 in; 13.594 in exact (345.29 mm) × 1 1/2 in (38.10 mm) × 1 1/2 in (38.10 mm)
D01 · Continuous plywood door ring	19 5/8 in (498.47 mm) × 13 5/8 in (346.07 mm)	≈19 15/32 in; 19.469 in exact (494.51 mm) × ≈13 15/32 in; 13.469 in exact (342.11 mm) × ≈45/64 in; 0.703 in exact (17.86 mm)
G01 · Floating undrilled acrylic pane	16 1/2 in (419.10 mm) × ≈11 15/32 in; 11.469 in exact (291.31 mm)	≈16 15/32 in; 16.469 in exact (418.31 mm) × ≈11 15/32 in; 11.469 in exact (291.31 mm) × ≈7/32 in; 0.22 in exact (5.59 mm)
GSB · Glazing spacer B	17 5/8 in (447.67 mm) × 7/16 in (11.11 mm)	≈17 15/32 in; 17.469 in exact (443.71 mm) × 7/16 in (11.11 mm) × 1/4 in (6.35 mm)
GST · Glazing spacer T	17 5/8 in (447.67 mm) × 7/16 in (11.11 mm)	≈17 15/32 in; 17.469 in exact (443.71 mm) × 7/16 in (11.11 mm) × 1/4 in (6.35 mm)
GSL · Glazing spacer L	11 3/4 in (298.45 mm) × 7/16 in (11.11 mm)	≈11 19/32 in; 11.594 in exact (294.49 mm) × 7/16 in (11.11 mm) × 1/4 in (6.35 mm)
GSR · Glazing spacer R	11 3/4 in (298.45 mm) × 7/16 in (11.11 mm)	≈11 19/32 in; 11.594 in exact (294.49 mm) × 7/16 in (11.11 mm) × 1/4 in (6.35 mm)
GCB · Glazing cap B	17 5/8 in (447.67 mm) × 1 in (25.40 mm)	≈17 15/32 in; 17.469 in exact (443.71 mm) × 1 in (25.40 mm) × 1/4 in (6.35 mm)
GCT · Glazing cap T	17 5/8 in (447.67 mm) × 1 in (25.40 mm)	≈17 15/32 in; 17.469 in exact (443.71 mm) × 1 in (25.40 mm) × 1/4 in (6.35 mm)
GCL · Glazing cap L	10 5/8 in (269.88 mm) × 1 in (25.40 mm)	≈10 15/32 in; 10.469 in exact (265.91 mm) × 1 in (25.40 mm) × 1/4 in (6.35 mm)

Cut list · continued

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
GCR · Glazing cap R	10 5/8 in (269.88 mm) × 1 in (25.40 mm)	≈10 15/32 in; 10.469 in exact (265.91 mm) × 1 in (25.40 mm) × 1/4 in (6.35 mm)
DSL · Door stop DSL	13 3/4 in (349.25 mm) × 1/2 in (12.70 mm)	≈13 19/32 in; 13.594 in exact (345.29 mm) × 1/2 in (12.70 mm) × 3/4 in (19.05 mm)
DSR · Continuous right door stop	13 3/4 in (349.25 mm) × 1/2 in (12.70 mm)	≈13 19/32 in; 13.594 in exact (345.29 mm) × 1/2 in (12.70 mm) × 3/4 in (19.05 mm)
DSB · Door stop DSB	18 3/4 in (476.25 mm) × 1/2 in (12.70 mm)	≈18 19/32 in; 18.594 in exact (472.29 mm) × 1/2 in (12.70 mm) × 3/4 in (19.05 mm)
DST · Door stop DST	18 3/4 in (476.25 mm) × 1/2 in (12.70 mm)	≈18 19/32 in; 18.594 in exact (472.29 mm) × 1/2 in (12.70 mm) × 3/4 in (19.05 mm)
LB1 · Steel support under lamp area	12 in (304.80 mm) × 1 in (25.40 mm)	12 in (304.80 mm) × 1 in (25.40 mm) × 1/8 in (3.17 mm)
LB2 · Steel support under lamp area	12 in (304.80 mm) × 1 in (25.40 mm)	12 in (304.80 mm) × 1 in (25.40 mm) × 1/8 in (3.17 mm)
V-P03 · Optional maple face on P03	18 1/4 in (463.55 mm) × 16 7/8 in (428.62 mm)	18 in (457.20 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈1/32 in; 0.0305 in exact (0.77 mm)
V-P04 · Optional maple face on P04	18 1/4 in (463.55 mm) × 16 7/8 in (428.62 mm)	18 in (457.20 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈1/32 in; 0.0305 in exact (0.77 mm)
V-P05 · Optional maple face on P05	22 7/8 in (581.02 mm) × 16 7/8 in (428.62 mm)	≈22 19/32 in; 22.594 in exact (573.89 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈1/32 in; 0.0305 in exact (0.77 mm)

Cut list · continued

One of each ID. Rough wood lengths include trimming; fit mating pieces to actual stock. Fixed floor/roof are trimmed to 24 × 18 inches. Veneer rectangles trim flush; field-fit pane from the finished pocket. Dimensions below are length × width × thickness, not machine-stop prescriptions for received stock.

Part	Rough blank	Finished reference
V-F01 · Optional maple face on F01	22 7/8 in (581.02 mm) × 16 7/8 in (428.62 mm)	≈22 19/32 in; 22.594 in exact (573.89 mm) × ≈16 19/32 in; 16.594 in exact (421.49 mm) × ≈1/32 in; 0.0305 in exact (0.77 mm)
V-D01 · Optional maple face on D01	19 3/4 in (501.65 mm) × 13 3/4 in (349.25 mm)	≈19 15/32 in; 19.469 in exact (494.51 mm) × ≈13 15/32 in; 13.469 in exact (342.11 mm) × ≈1/32 in; 0.0305 in exact (0.77 mm)

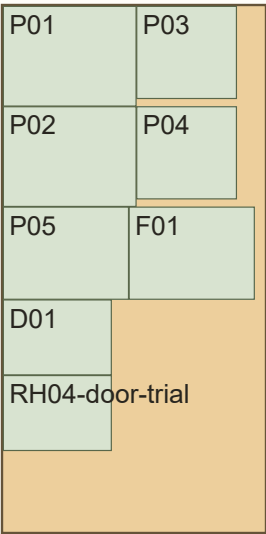
V-part thickness is the complete modeled face stack: 0.0245-inch (0.622 mm) reference veneer/PSA plus two 0.003-inch (0.076 mm) coating films. It is not the purchased veneer thickness. Measure delivered stock; the maximum checked face stack is 0.046 inch (1.17 mm).

Sheet and veneer allocation

Cutting allocation · L01-plywood

Reference geometry · inches first · never scale this drawing

48 in (1219.20 mm)
× 96 in (2438.40 mm)
Trim 1/4 in (6.35 mm)
Kerf 1/8 in (3.18 mm)
↓ SHEET GRAIN



Rectangles are rough blanks. Final cuts and field fitting follow the cut reference.

Plywood: seven production panels plus a full-size trial-door blank

Use the optional veneer layout in OP25. One 24 × 60-inch (610 × 1524 mm) mesh roll covers MR and both side screens; the purchased two-roll pack leaves a spare. One 18 × 24-inch (457 × 610 mm) acrylic sheet covers the pane.

Solid-stock allocation

Board	Separate oversize lengths; allow kerf between
L12-board-1	C5 19 3/4 in (501.65 mm); C6 19 3/4 in (501.65 mm); FCB 19 3/4 in (501.65 mm); FCT 19 3/4 in (501.65 mm); C1 16 in (406.40 mm)
L12-board-2	C2 16 in (406.40 mm); C7 15 1/4 in (387.35 mm); C8 15 1/4 in (387.35 mm); FCL 13 3/4 in (349.25 mm); FCR 13 3/4 in (349.25 mm)
L02-board-1	RB1 22 1/8 in (561.98 mm); RB2 22 1/8 in (561.98 mm); DSB 18 3/4 in (476.25 mm); DST 18 3/4 in (476.25 mm); RB3 10 1/8 in (257.18 mm); VLF 1 5/8 in (41.27 mm)
L02-board-2	DSL 13 3/4 in (349.25 mm); DSR 13 3/4 in (349.25 mm); RB4 10 1/8 in (257.18 mm); VLB 8 1/8 in (206.38 mm); VLT 8 1/8 in (206.38 mm); VRB 8 1/8 in (206.38 mm); VRT 8 1/8 in (206.38 mm); VLR 1 5/8 in (41.27 mm); VRF 1 5/8 in (41.27 mm); VRR 1 5/8 in (41.27 mm)
L13-board-1	GSB 17 5/8 in (447.67 mm); GST 17 5/8 in (447.67 mm); GSL 11 3/4 in (298.45 mm)
L13-board-2	GCB 17 5/8 in (447.67 mm); GCT 17 5/8 in (447.67 mm); GSR 11 3/4 in (298.45 mm)
L13-board-3	GCL 10 5/8 in (269.88 mm); GCR 10 5/8 in (269.88 mm)
L15-board-1	LB1 12 in (304.80 mm); LB2 12 in (304.80 mm)

Each stock length starts after 1/4-inch (6.35 mm) end trim, with 1/8-inch (3.18 mm) kerf after each blank. Rip each allocated blank to its listed finished width using the protected setup. Reject defects that consume the reserved length; purchase replacement stock rather than shortening parts.

OP01 · Choose the finish and record the received stock

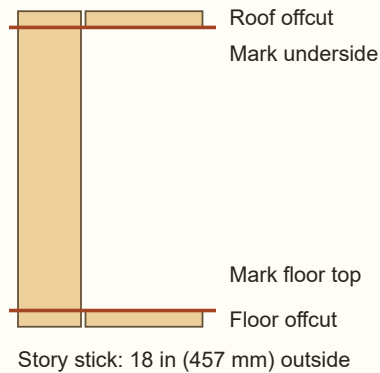
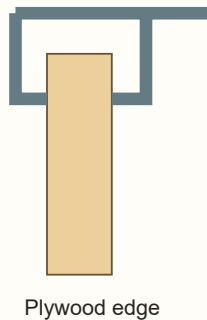
Parts: P01–P05 · F01 · D01

Before you begin: Do not begin the optional veneer work until its bond, finish, dwell and panel-balance questions have been resolved.

Measure stock, then mark both inside faces

Method diagram · plywood thickness and offcuts exaggerated for clarity

Caliper jaws touch both faces



Transfer the two inside marks to BOTH side panels. Measure stock; do not assume .703 in.

Choose the finish and record the received stock

1. This is an indoor, moderately humid enclosure shell. It has no immersion, outdoor, species, strength or escape approval. Set it on a flat support under the entire 24 × 18-inch (610 × 457 mm) floor. Do not support only its corners.
2. Choose plain finished plywood or the conditional face-veneer option before drilling. Record actual sheet thickness, square-stock dimensions and mesh crossing thickness. The drawings use 0.703-inch (17.86 mm) plywood; 3/4 inch is its shop label, not a measured thickness.
3. Reject warped, split, delaminated or short stock. For thickness changes, use the fitting method below and revise the model record before claiming an as-built match.

Check before continuing: Receiving fields stay blank until measured. Complete RH01–RH04 before their irreversible operations.

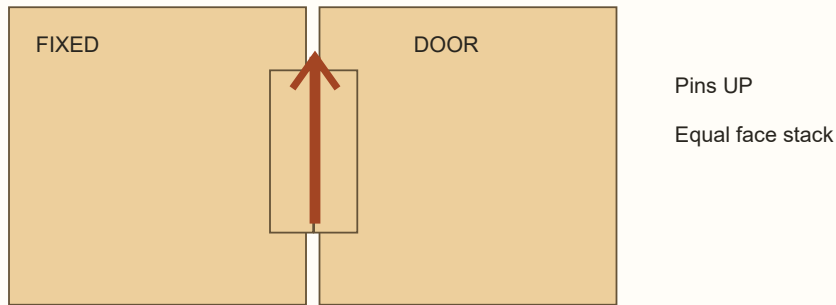
OP02 · Test the actual lift-off hinge first

Parts: H01 · H02 · matching plywood offcuts

Before you begin: Stop if the exact hinge/screw combination fails. No bending leaves or enlarging metal holes.

Hinge trial: pin leaf fixed left; socket on right door

Orientation schematic · test on matching offcuts before front cuts



Bare joint 1/16 in (1.59 mm). Transfer actual holes; this is not a template.

Test the actual lift-off hinge first

1. Use two identical right-hand Sugatsune NH-40R/SS hinges, bought individually. Use eight Quickscrews 11325 #5 × 5/8-inch (15.9 mm) flat-head screws. The separated-leaf supplier picture is not an installed template.
2. Clamp two offcuts with a 1/16-inch (1.59 mm) bare joint. Seat both leaves on the same front plane, barrel outward: lower pin leaf on the fixed LEFT piece; upper socket leaf on the RIGHT door piece. Pins point up. If veneered, trial the same cured face stack on both pieces.
3. Transfer the received holes; measure the screw root and test a stopped pilot. Hand-seat heads without enlarging the hinge holes. Swing from flat through 90 degrees, lift off and refit. Measure pin offset and release stroke.

Check before continuing: Heads seat, tips stay buried, leaves do not distort and the joint clears. Actual lift stroke must fit the reserved 1 3/4 inches (44.5 mm).

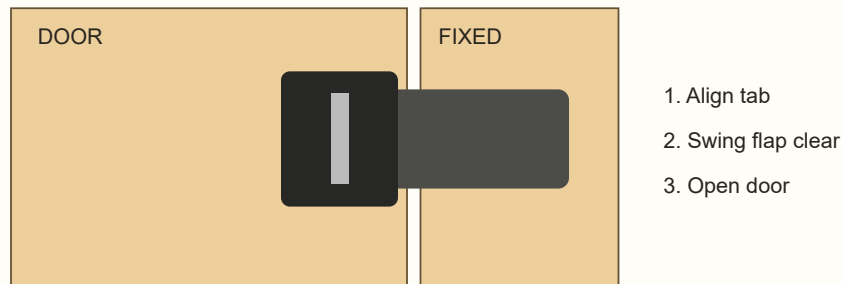
OP03 · Test the swivel latch on offcuts

Parts: H04 · H05 · matching plywood offcuts

Before you begin: Do not use the longer supplied screws. The utility latch has no claimed security or animal-containment rating.

Surface latch: door left, fixed surround right

Operation schematic · utility latch, no security/escape rating



Center 9 in (228.6 mm) above outside floor bottom; actual hole transfer governs.

Test the swivel latch on offcuts

1. Trial National Hardware N305-979 across the same joint and face stack. Hasp mounting leaf belongs on the fixed RIGHT side; the square swivel plate belongs on the door, to its left.
2. Hold both entire bases over solid wood. Align the tab with the slot, close the flap, then turn the tab across the slot. Open the flap fully clear before moving the door.
3. Test the seven Everbilt H05 #10 × 5/8-inch (15.9 mm) flat-head screws: three in the hasp, four in the swivel plate. Transfer holes from the hardware and use the successful root-size pilot/depth-stop trial.

Check before continuing: Seated tips leave at least 1/16 inch (1.59 mm) of wood at the rear. Both latch positions work freely.

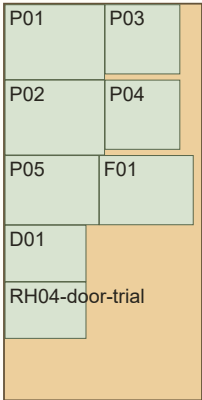
OP04 · Lay out and label the plywood blanks

Parts: P01–P05 · F01 · D01

Cutting allocation · L01-plywood

Reference geometry · inches first · never scale this drawing

48 in (1219.20 mm)
× 96 in (2438.40 mm)
Trim 1/4 in (6.35 mm)
Kerf 1/8 in (3.18 mm)
↓ SHEET GRAIN



Rectangles are rough blanks. Final cuts and field fitting follow the cut reference.

Lay out and label the plywood blanks

1. Label every panel ID, FRONT, TOP and inside face before separating it from the sheet. Use the illustrated 48 × 96-inch (1219 × 2438 mm) allocation: 1/4-inch (6.4 mm) edge trim and 1/8-inch (3.2 mm) saw kerf. Kerf means the strip lost to the blade.
2. Cut the rough blanks listed in the cut reference; keep the marked grain direction. Trim floor P01 and roof P02 to 24 × 18 inches (610 × 457 mm). Leave other mating dimensions oversize until scribed.
3. Support both the saved part and waste. Use a guided saw, square and eye/hearing/dust protection. Save the full-size door-trial blank and smaller offcuts. Ease splinters; keep mating edges flat.

Check before continuing: Count seven production panels and one optional trial-door blank. No part relies on the fragile window waste.

OP05 · Use one measuring strip for the case height

Parts: P01 · P02 · P03 · P04 · P05

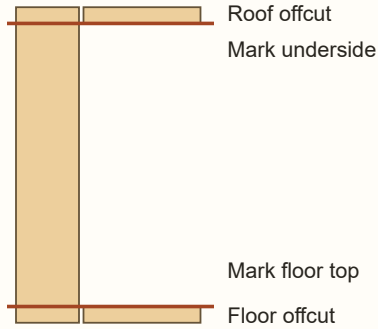
Measure stock, then mark both inside faces

Method diagram · plywood thickness and offcuts exaggerated for clarity

Caliper jaws touch both faces



Plywood edge



Story stick: 18 in (457 mm) outside

Transfer the two inside marks to BOTH side panels. Measure stock; do not assume .703 in.

Use one measuring strip for the case height

1. A story stick is a scrap strip carrying physical marks instead of separately rounded measurements. Mark the 18-inch (457 mm) outside height. Lay actual floor and roof offcuts against it; mark the space between their inside faces.
2. Transfer that shared height to both side panels. Their finished depth is 18 inches (457 mm). Keep them mirrored: the FRONT labels must meet the same front plane.
3. Stand both sides on the floor with outer faces flush to the floor edges. Scribe the back between their actual inside faces. Scribing means transferring the mating edges directly to the oversize blank. Trim gradually; the back rear face finishes flush with the floor rear edge.

Check before continuing: The dry case sits flat, faces meet without force and both diagonal measurements match. Do not correct a short part by bending the case.

OP06 · Cut both low side inlets

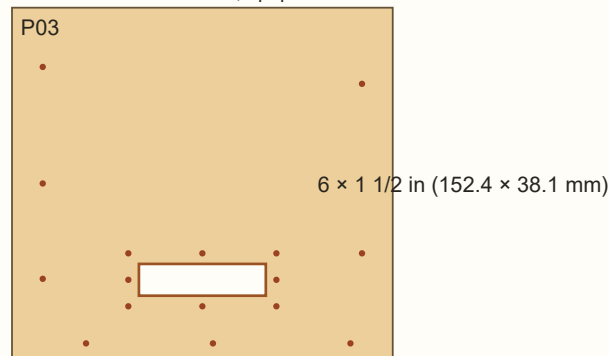
Parts: P03 · P04

Before you begin: Deeper substrate needs a revised inlet and front arrangement. A 1/4-inch (6.35 mm) mesh opening is unsuitable for some animals and feeders.

Left side · P03

Orthographic datum projection · screw dots are references; use the station schedule

Across: FRONT → BACK; up: panel bottom → TOP



18 in (457.20 mm)

Height / depth: $\approx 16 \frac{19}{32}$ in; 16.594 in exact (421.49 mm)

Thickness: $\approx 45/64$ in; 0.703 in exact (17.86 mm)

Cut both low side inlets

1. On each side, mark the inlet 6 inches (152 mm) behind FRONT and 3 inches (76 mm) above the panel bottom, which sits on the inside floor. Mark a 6 × 1 1/2-inch (152 × 38 mm) opening.
2. Drill a jigsaw entry hole wholly within the waste. Support the panel and waste, cut to the marks and smooth all four edges. Keep the surrounding screen-retaining land intact.

Check before continuing: Both panels are mirrored correctly. A proposed 1-inch (25 mm) shallow fill leaves 2 inches (51 mm) below these openings.

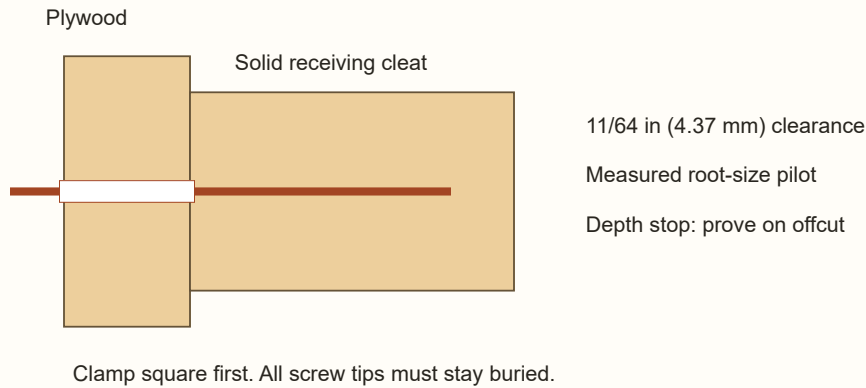
OP07 · Prepare the stopped drill setup

Parts: L06 · plywood and solid-stock offcuts

Before you begin: Never extend the full clearance diameter into the receiver or use screws to pull misaligned panels into position.

Clearance through the first part; pilot only the receiver

Section schematic · bore and driver axis shown · widths not to scale



Prepare the stopped drill setup

1. A clearance hole lets the first part slide along the screw; a pilot hole guides the threads in the receiving wood. For L06 #8 × 1 1/4-inch (31.8 mm) screws, drill 11/64-inch (4.37 mm) clearance through the first plywood only.
2. Clamp the parts aligned before marking the receiver. Pilot to the received screw root diameter and a depth proven on matching offcuts. The product does not publish that root diameter; reference bores in the model are not drilling prescriptions.
3. Countersink only enough for the selected flat head to sit flush. Keep drill and driver square. A countersink is a shallow cone for the screw head. Use a physical depth stop and inspect the trial tip.

Check before continuing: The first board pulls tight, the receiver does not split and the screw tip remains inside the wood.

OP08 · Fit the solid side supports

Parts: C1/C2 · C7/C8 · P03/P04



Fit the solid side supports

1. Cleats are solid wood strips that receive face-driven screws. Use the purchased 1 1/2-inch (38 mm) square stock. C1/C2 sit on the floor top, against their sides, starting 1 1/2 inches (38 mm) behind FRONT; trim their rear ends to the fitted back inside face.
2. C7/C8 sit on those lower cleats, in the rear corners. Their backs meet the back panel inside face; their tops finish flush with the side tops beneath the roof.
3. Lay each side flat for drilling. Lower-cleat screws are 3 1/2, 9 1/2 and 16 inches (89, 241, 406 mm) from FRONT, 3/4 inch (19 mm) above panel bottom. Upright screws are 5 and 13 inches (127 and 330 mm) above panel bottom, on its transferred centerline. Use 10 L06 screws total.

Check before continuing: Transfer the upright centerline to the outside face using the top/bottom edge marks. All tips stay buried; inlets remain clear.

OP09 · Dry-fit the back and floor supports

Parts: P01 · P03/P04 · P05 · C5/C6



Dry-fit the back and floor supports

1. Keep the open front clamped and supported on a flat bench. Place C5 across the rear on the floor, between the lower side cleats. Place C6 between the rear uprights with its top flush beneath the roof. Scribe both to their actual span.
2. Through the back, screw into C5 and C6 at the panel centerline and 7 inches (178 mm) either side. Their rows are 3/4 inch (19 mm) from the respective bottom/top edge. Back-to-upright screws are 3/4 inch (19 mm) from each side edge, 3 and 11 inches (76 and 279 mm) above the back bottom.
3. For the floor: transfer actual cleat centerlines onto the underside before turning. Two screws per side are 5 and 14 inches (127 and 356 mm) from FRONT; three into C5 are centered and 7 inches (178 mm) either side. Use 17 L06 screws total.

Check before continuing: Brace before turning; retain FRONT and LEFT labels. Match diagonals without forcing. This is still an incomplete supported shell.

OP10 · Cut the screen retainers and door stops

Parts: L02 pine · L13 poplar

Before you begin: Use a guarded thin-rip jig and push blocks, or have a competent supplier cut narrow strips. Never hand-hold them beside a blade.

Separate stock lengths before ripping narrow strips

Stock method schematic · lengths and widths in the generated cut list

L02: 1 in screen battens — keep separate from 1/2 in stops

L13: 1 in caps — separate 7/16 in spacer blanks

Allow 1/8 in kerf (3.18 mm); use a guarded jig and push blocks

Exact board-by-board allocation is in the workshop reference.

Cut the screen retainers and door stops

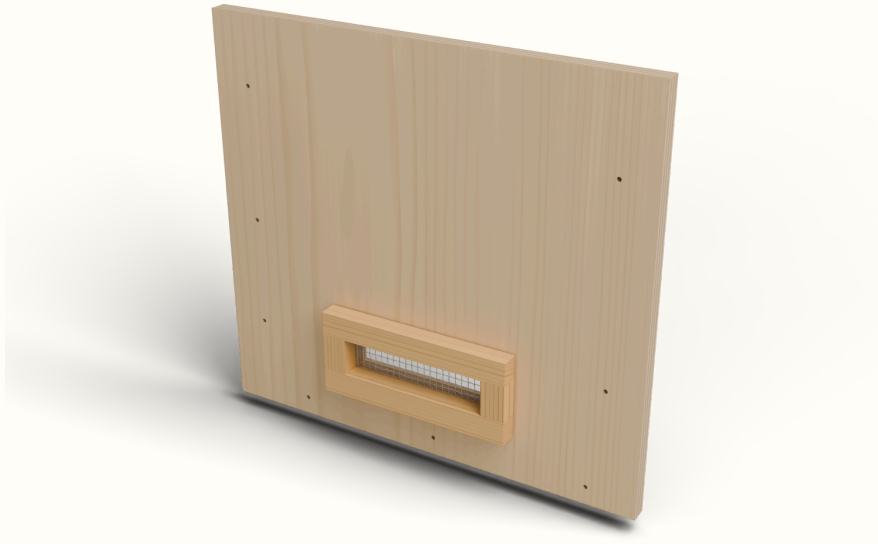
1. Use the stock-board layouts and cut list. Rip 1-inch (25.4 mm) wide, 3/4-inch (19 mm) thick pine screen battens. Side battens are four × 8 inches and four × 1 1/2 inches (203 and 38 mm). Roof battens are two × 22 inches and two × 10 inches (559 and 254 mm).
2. Rip the separate stops to 1/2-inch (12.7 mm) width × 3/4-inch (19 mm) depth. Left and RIGHT stops are both continuous; fit the top/bottom stops between them. Do not leave a right-hand bay.
3. For glazing, rip separate quarter-inch (6.35 mm) poplar blanks into 1-inch (25.4 mm) caps and 7/16-inch (11.11 mm) spacers. Their final lengths follow the door window.

Check before continuing: Use the separate board allocations: a 1-inch strip and 1/2-inch strip plus saw kerf cannot both come from one 1 1/2-inch width.

OP11 · Fit the two side screens

Parts: MSL/MSR · eight side battens

Before you begin: If a wire blocks a marked bore, snip only that wire inside the covered overlap, flatten its ends and remove fragments. Never drive against a wire or shift the wood hole.



Fit the two side screens

1. Cut two 7 1/2 × 3-inch (191 × 76 mm) screens. Center each inside its inlet for 3/4-inch (19 mm) overlap all around. Wear gloves and eye protection; collect every wire fragment.
2. Long battens span 5–13 inches (127–330 mm) behind FRONT, at 2–3 and 4 1/2–5 1/2 inches (51–76 and 114–140 mm) above panel bottom. End battens fill the gaps at 5–6 and 12–13 inches (127–152 and 305–330 mm) from FRONT.
3. Use 16 L06 screws outside-to-inside: long rows at 5 1/2, 9, 12 1/2 inches (140, 229, 318 mm) from FRONT and 2 1/2 or 5 inches (64 or 127 mm) above bottom. End screws are at 5 1/2 and 12 1/2 inches (140 and 318 mm), height 3 3/4 inches (95 mm).

Check before continuing: Every cut edge is under a batten. A wire crossing must measure at most 1/16 inch (1.59 mm); seat battens directly on mesh, without spacers.

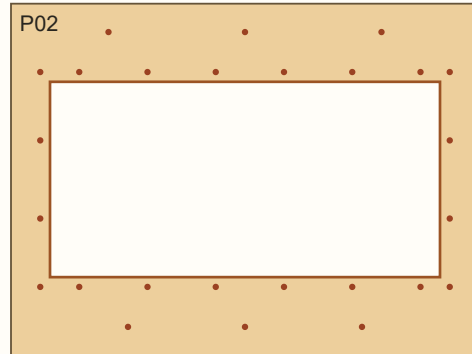
OP12 · Cut the roof opening and mesh

Parts: P02 · MR · RB1–RB4

Roof · P02

Orthographic datum projection · screw dots are references; use the station schedule

Across: LEFT → RIGHT; up: FRONT → BACK



24 in (609.60 mm)

Height / depth: 18 in (457.20 mm)

Thickness: $\approx 45/64$ in; 0.703 in exact (17.86 mm)

Cut the roof opening and mesh

1. Mark a 20 × 10-inch (508 × 254 mm) opening, starting 2 inches (51 mm) from LEFT and 4 inches (102 mm) from FRONT. Cut with the same backed entry-hole and supported-waste method.
2. Cut roof mesh MR to 21 1/2 × 11 1/2 inches (546 × 292 mm), giving 3/4-inch (19 mm) overlap. Position RB1/RB2 from 1–23 inches (25–584 mm) across the roof, at 3–4 and 14–15 inches (76–102 and 356–381 mm) from FRONT.
3. RB3/RB4 fit between them at 1–2 and 22–23 inches (25–51 and 559–584 mm) from LEFT. Work with the detached roof underside facing you; preserve its datum labels.

Check before continuing: All four mesh edges will be captured. Do not install the roof on the case yet.

OP13 · Make the steel support seats

Parts: LB1/LB2 · RB1/RB2

Before you begin: These strips define a lamp-support arrangement, not a proven roof load or heat rating.



Make the steel support seats

1. Cut two $12 \times 1 \times 1/8$ -inch ($305 \times 25.4 \times 3.18$ mm) steel flats. Clamp securely for metal cutting/drilling; deburr every edge and hole, remove oil and wipe dry.
2. Their centerlines are $4 \frac{3}{4}$ and $9 \frac{1}{4}$ inches (121 and 235 mm) from LEFT, spanning 3–15 inches (76–381 mm) behind FRONT. Transfer their ends to the roof-facing sides of RB1/RB2.
3. Make four 1-inch-wide (25.4 mm) seats, nominally $1/8$ inch (3.18 mm) deep. Use repeated saw kerfs and a sharp chisel on clamped battens; approach final depth gradually. Fit the actual steel thickness so its top is flush beneath the mesh.

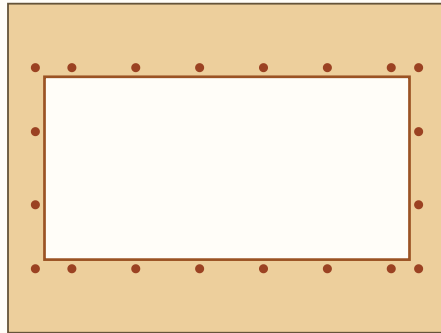
Check before continuing: Both steel strips bear on full seats without rocking. The opposite roof area stays open for shade/ventilation.

OP14 · Drill and fasten the detached roof

Parts: P02 · MR · RB1–RB4 · four bolts

Roof retaining screws: LEFT / FRONT datums

Twenty red RM stations; four through-bolt stations are separately defined in OP14



Long x: 1 1/2, 3 1/2, 7, 10 1/2 in
and 14, 17 1/2, 21, 22 1/2 in
x (mm): 38, 89, 178, 267,
356, 445, 533, 572
Long y: 3 1/2 / 14 1/2 in (89 / 368 mm)
End x: 1 1/2 / 22 1/2 in (38 / 572 mm)
End y: 7 / 11 in (178 / 279 mm)

Width: 24 in (609.60 mm)

Depth: 18 in (457.20 mm)

LEFT → x. FRONT → y on roof; FLOOR BOTTOM → z on front/door.

Drill and fasten the detached roof

1. Clamp the roof stack and drill four aligned 17/64-inch (6.75 mm) holes at x = 4 3/4 or 9 1/4 inches (121 or 235 mm), y = 3 1/2 or 14 1/2 inches (89 or 368 mm). Clear obstructing wire only under covered overlap.
2. Each bolt stack downward is: 1/4-20 × 2-inch (50.8 mm) machine screw head, flat washer, roof, mesh, flush-seated steel, batten, flat washer, Keps nut. Its captive toothed washer bears on the lower flat washer. Tighten by hand without crushing wood.
3. Use twenty L06 retaining screws at the diagram stations: eight in each long batten, two in each end batten. Keep the four bolts distinct from these screws and the six later roof-to-case screws.

Check before continuing: All edges are covered, steel is flush and at least two full threads show beyond every seated nut. Verify actual stack before machining all parts.

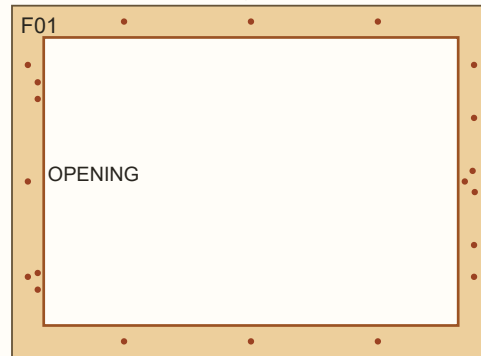
OP15 · Scribe and cut the continuous surround

Parts: F01

Continuous plywood front surround · F01

Orthographic datum projection · screw dots are references; use the station schedule

Across: LEFT → RIGHT; up: BOTTOM → TOP



≈22 19/32 in; 22.594 in exact (573.89 mm)

Height / depth: ≈16 19/32 in; 16.594 in exact (421.49 mm)

Thickness: ≈45/64 in; 0.703 in exact (17.86 mm)

Scribe and cut the continuous surround

1. After successful hardware trials, scribe the oversize F01 blank between the actual floor, side and roof faces. Keep the outside front face flush with the case front.
2. Mark a continuous 1 1/2-inch (38.1 mm) border on all four sides. Drill the entry hole in waste, back the work and cut its opening. Keep every border intact; no half-laps or routed rebate are required.
3. Fit four square-stock receivers behind it: FCB and FCT across bottom/top, FCL and continuous FCR at left/right. Fit each against the actual mating parts. Receivers must stay clear of inlets and roof opening.

Check before continuing: The ring lies flat and both diagonals match. Never force it square with screws.

OP16 · Fit the separate plywood door ring

Parts: D01

Continuous plywood door ring · D01

Orthographic datum projection · screw dots are references; use the station schedule

Across: LEFT → RIGHT; up: BOTTOM → TOP



≈19 15/32 in; 19.469 in exact (494.51 mm)

Height / depth: ≈13 15/32 in; 13.469 in exact (342.11 mm)

Thickness: ≈45/64 in; 0.703 in exact (17.86 mm)

Fit the separate plywood door ring

1. Trim the separate oversize door blank to the actual surround opening using equal 1/16-inch (1.59 mm) bare shims on all four edges. Do not use the surround waste as the door.
2. Mark its window: 1 1/2-inch (38.1 mm) borders at LEFT, TOP and BOTTOM; 2 1/2 inches (63.5 mm) at the RIGHT latch border. Cut and smooth the window with the same supported method.
3. Keep the opening and door edges free of veneer and edge banding. Sand splinters without rounding the fitting faces. The front veneer, if selected, ends flush at those edges.

Check before continuing: The door fits flat without force. Bare perimeter gap is 1/16 inch (1.59 mm), later accepted at 1/32–1/16 inch (0.79–1.59 mm) after cure.

OP17 · Drill the front connections while accessible

Parts: F01 · FCB/FCT/FCL/FCR



Drill the front connections while accessible

1. Clamp the dry surround to its four receivers. Use the stopped L06 setup; the 11/64-inch (4.37 mm) bore passes through the first plywood only. All heights here are above the outside FLOOR BOTTOM.
2. Left front-to-receiver and left side-to-receiver: three each at 4 1/2, 9, 14 1/2 inches (114, 229, 368 mm). Right: four each at 4 1/2, 6, 12, 14 1/2 inches (114, 152, 305, 368 mm). Use each receiver centerline; side bores are 3/4 inch (19 mm) behind the surround rear face.
3. Top/bottom front rows, floor-to-front and roof-to-front each have three at x = 6, 12, 18 inches (152, 305, 457 mm). Front rows are centered in receiver height; floor/roof rows are 3/4 inch (19 mm) behind the surround rear face.

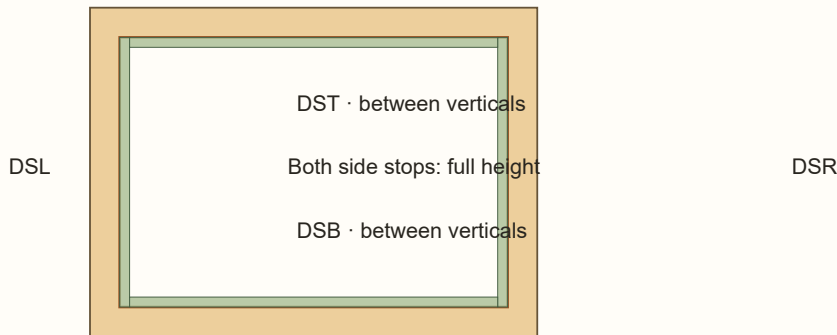
Check before continuing: Count 26 front/case stations including three front roof screws. Leave the roof removable. The separate rear roof row has three more screws.

OP18 · Fit the continuous closure stops

Parts: DSL/DSR · DSB/DST

Front datum view: stops behind the surround

Green = actual stop footprint; drive through stop width into receiver



Width: $\approx 22 \frac{19}{32}$ in; 22.594 in exact (573.89 mm)

Height: $\approx 16 \frac{19}{32}$ in; 16.594 in exact (421.49 mm)

LEFT → x. FRONT → y on roof; FLOOR BOTTOM → z on front/door.

Fit the continuous closure stops

1. Fit both vertical stops the full opening height; fit horizontal stops between them. Overlap the door edges with their 1/2-inch (12.7 mm) width. Set bare front faces 1/32 inch (0.79 mm) behind the bare door rear face.
2. Use fourteen L06 screws through the stop WIDTH into the receiver. Left stations: heights 4, 8, 12, 14 inches (102, 203, 305, 356 mm). Right: 4, 5 1/2, 12 1/2, 14 inches (102, 140, 318, 356 mm). Top/bottom: x = 5, 11, 17 inches (127, 279, 432 mm). Center in the 3/4-inch (19 mm) stop depth.
3. Clearance-drill only the stop. Top screws point up, bottom down, left left and right right. Work through the open front or open roof before glazing.

Check before continuing: The offset stations avoid other screws. Finished stops must not preload the door; set them back if the actual cured coating requires it.

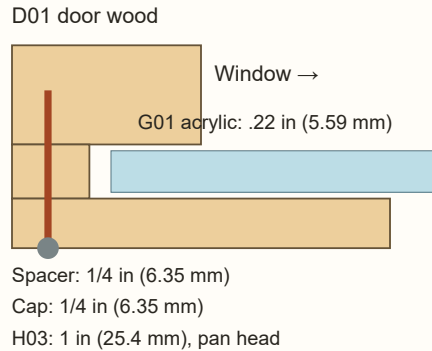
OP19 · Fit the glazing pocket and pane

Parts: D01 · G01 · GS/GC strips

Before you begin: Use an acrylic-rated blade and full support; keep protective film for cutting, deburr and remove fragments. This clearance is not a certified thermal range.

Removable glazing: assembled rear view and edge section

Right: section schematic, not to scale · pane is undrilled, unglued and free to move



Keep 1/16 in (1.59 mm) free at each pane edge; 1/64 in (0.40 mm) through thickness.

Spacer holds cap away from pane. Screw stays OUTSIDE pane and ends INSIDE door wood.

Fit the glazing pocket and pane

1. The cap outside rectangle extends 1 inch (25.4 mm) beyond each window edge. Top/bottom caps run full length; sides fit between. Spacers share that outside rectangle; their full-length top/bottom strips are 7/16 inch (11.11 mm) wide.
2. Start the acrylic at window width plus 1 inch and window height plus 1 inch (25.4 mm added each way). Fit to the FINISHED pocket, leaving at least 1/16 inch (1.59 mm) on every edge and 1/64 inch (0.40 mm) through its thickness.
3. Nominal 0.22-inch (5.59 mm) acrylic inside 1/4-inch (6.35 mm) spacers leaves 0.030 inch (0.76 mm) before finish. Measure actual stack; if spacers need more thickness, recheck cap screws and stop clearance.

Check before continuing: The pane has 1/2-inch (12.7 mm) nominal window overlap. It stays undrilled, unglued and free to move.

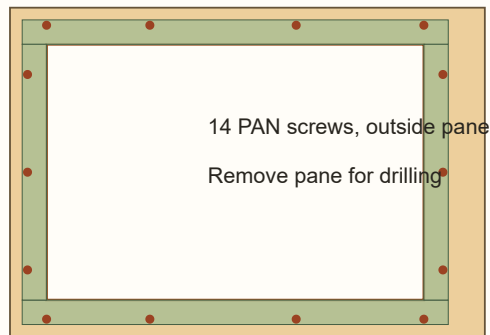
OP20 · Drill the removable glazing retainers

Parts: GCB/GCT/GCL/GCR · GS strips · H03

Before you begin: Never substitute the longer 1 1/4-inch shell screws: they can pierce the door.

Front datum view: rear caps shown through door

Green = caps; red = fourteen H03 stations; transfer shell datums as instructed



Width: $\approx 19 \frac{15}{32}$ in; 19.469 in exact (494.51 mm)

Height: $\approx 13 \frac{15}{32}$ in; 13.469 in exact (342.11 mm)

LEFT → x. FRONT → y on roof; FLOOR BOTTOM → z on front/door.

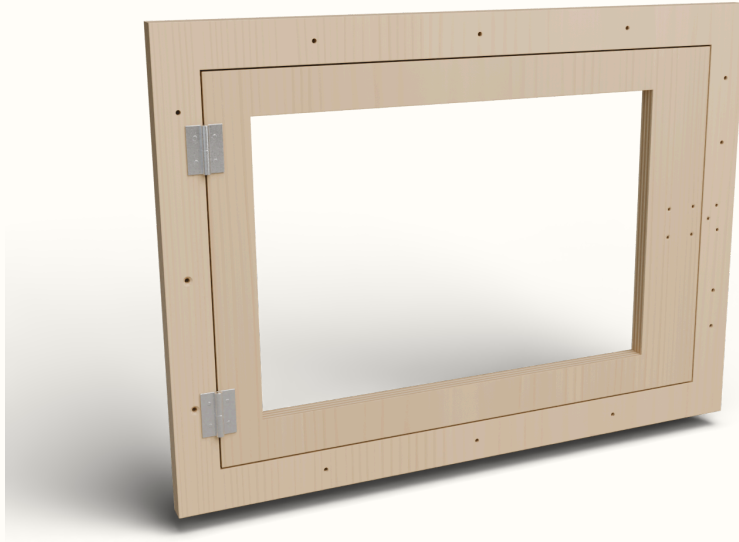
Drill the removable glazing retainers

1. Keep the cap outside edges 1/2 inch (12.7 mm) from LEFT/TOP/BOTTOM door edges and 1 1/2 inches (38.1 mm) from the RIGHT edge. Center the screw line on the spacer width, outside the pane perimeter.
2. Four screws per top/bottom cap: 1 inch (25.4 mm) from each cap end plus $x = 8$ and 14 inches (203 and 356 mm) from the shut-door shell LEFT datum. Three per side: heights 5, 9 and 13 inches (127, 229, 330 mm) from outside FLOOR BOTTOM. Transfer datums to the removed door.
3. Remove the pane. Drill 11/64-inch (4.37 mm) clearance through cap and spacer only; depth-stop pilot D01. Use fourteen H03 #8 × 1-inch (25.4 mm) PAN screws; no countersink.

Check before continuing: The nominal 1/2-inch (12.7 mm) stack leaves 1/2-inch engagement and 0.203-inch (5.16 mm) rear cover. Verify on actual offcuts.

OP21 · Transfer both hinges to the supported door

Parts: H01 · H02 · F01 · D01



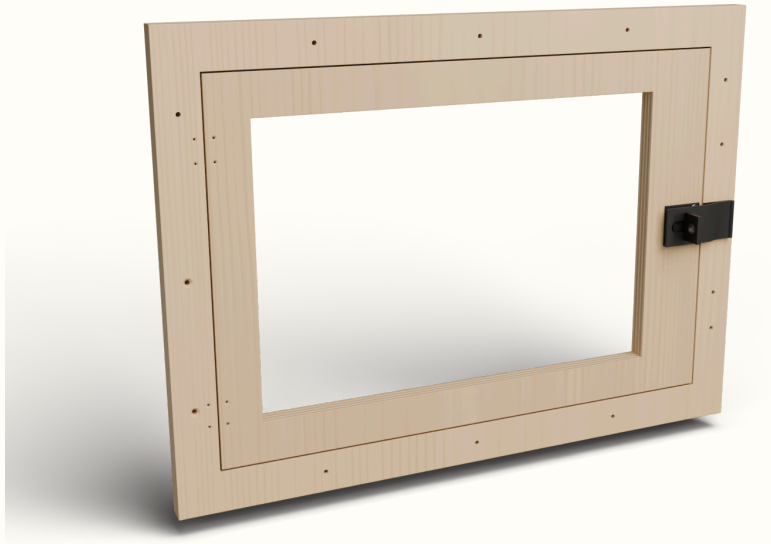
Transfer both hinges to the supported door

1. Support D01 in its bare shims. Put assembled hinge bottoms 3 1/2 and 12 1/2 inches (89 and 318 mm) above outside FLOOR BOTTOM. Align both pin centerlines over the left joint with a straightedge.
2. Seat both received hinges flat, fixed pins on the left surround and sockets on the door. Transfer the four holes from each; use the tested face pilots and eight H02 screws. Hand-tighten without twisting leaves.
3. For veneer, perform final hole transfer only after the equal face stack is applied to BOTH seating faces. The nominal 0.0305-inch (0.775 mm) added stack moves the hardware outward; its 0.046-inch (1.17 mm) design maximum reduces hinge screw engagement to about 0.520 inch (13.2 mm).

Check before continuing: Cycle to 90 degrees and support/lift/refit before glazing. Actual hardware fit remains the governing checkpoint, including pin offset.

OP22 · Transfer the latch in both working positions

Parts: H04 · H05 · F01 · D01



Transfer the latch in both working positions

1. Nominal latch center is 9 inches (229 mm) above outside FLOOR BOTTOM, about 20 13/16 inches (529 mm) from LEFT. This is a placement reference; the actual received hole pattern controls.
2. Support the shut door in its gaps. Keep the hasp base fully on fixed RIGHT surround and square swivel base fully on the wide door border. Trial open and secured states before marking seven holes.
3. Use the offcut-tested stopped pilots and H05 screws, three plus four. Keep front pilots clear of rear glazing screws. At the maximum veneer face stack, nominal latch engagement is 0.509 inch (12.9 mm); verify actual seated tips and heads.

Check before continuing: Flap clears the aligned tab, then stays captured after a quarter turn. At least 1/16 inch (1.59 mm) rear wood cover remains.

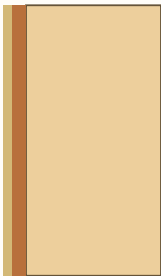
OP23 · Complete the veneer trial before production

Parts: V01 · full-size trial D01

Before you begin: Do not substitute a guessed 24-hour bond wait or rely on a small coupon to prove panel balance. If this fails, keep the plain-plywood configuration.

Face-only veneer stack · keep every edge and joint clear

Exaggerated section · optional system remains conditional on full-size balance/bond trial



Plywood substrate
Cured preseal: nominal .003 in (0.076 mm)
Factory PSA + backer + maple: measure total
Maximum veneer system: .040 in (1.02 mm)
Final topcoat: nominal .003 in (0.076 mm)

Apply equal stacks to both hinge/latch seating faces; reopen accessible screw holes.

Complete the veneer trial before production

1. Optional: Oakwood flat-cut maple, standard quality, 48 × 96-inch (1219 × 2438 mm), factory 3M pressure-sensitive adhesive (PSA), SKU MapleFC4x8PSA-I. It is special order and non-returnable: resolve application questions before buying. Supplier total thickness is about 0.023–0.026 inch (0.58–0.66 mm); measure the delivered veneer/backer/adhesive together.
2. Get supplier guidance for this one-sided plywood panel, Varathane-presealed bond face, topcoat and expected heat/humidity. Confirm the required bond dwell before topcoating. Apply the full sequence to the full-size spare door ring and smaller hardware coupons.
3. Check flatness against a straightedge and the actual opening before and after finishing/cure, then repeat hinge, latch and clearance checks. Record actual conditions and time.

Check before continuing: Proceed only if the full-size door stays flat and preserves all gaps; veneer/backer/adhesive must be at most 0.040 inch (1.02 mm).

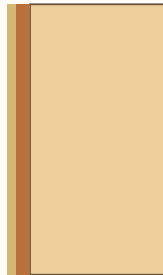
OP24 · Preseal the five outward veneer faces

Parts: P03/P04/P05 · F01 · D01

Before you begin: Do not apply veneer to uncured finish. Do not hide service screw heads.

Face-only veneer stack · keep every edge and joint clear

Exaggerated section · optional system remains conditional on full-size balance/bond trial



Plywood substrate

Cured preseal: nominal .003 in (0.076 mm)

Factory PSA + backer + maple: measure total

Maximum veneer system: .040 in (1.02 mm)

Final topcoat: nominal .003 in (0.076 mm)

Apply equal stacks to both hinge/latch seating faces; reopen accessible screw holes.

Preseal the five outward veneer faces

1. Optional, after the trial succeeds: dismantle the dry-fitted parts and label every position. Mask all future bare-wood glue contacts on inside faces. Veneer only outside side/back faces and matching front surround/door faces; leave roof, floor underside, interior, edges and stops unveneered.
2. Prepare and preseal only the intended veneer bond faces with the trial-approved Varathane system. Keep glue contacts bare. Follow the same one-coat, preparation and temperature rules in the finishing steps.
3. After full cure, scuff the sealed bond faces with 120-grit as directed by the PSA guide, remove dust and use the trial-approved cleaning method. The surface must be sound, smooth and dry.

Check before continuing: No cured finish, adhesive or veneer crosses a required bare glue contact or removable joint.

Required wait: Varathane preseal: full 7-day cure at 70°F / 50% RH (21°C); adverse conditions require longer. Supplier veneer dwell remains a separate requirement.

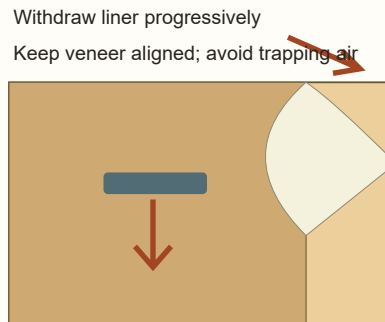
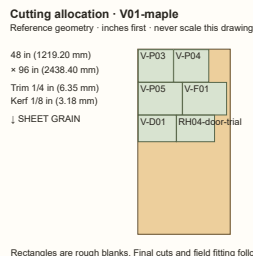
OP25 · Apply and trim the optional face veneer

Parts: V-P03/V-P04/V-P05/V-F01/V-D01

Before you begin: Do not add veneer to the roof or around the lamp area. No heat/moisture exposure rating has been established.

Allocate the sheet; peel, scrape and trim each separate face

Application schematic · use stiff veneer scraper; knife and straightedge for supported trimming



Scrape from center outward, with grain
Trim flush around edges and openings

Do not wrap edges or bridge panel joints. Reopen screw holes; honor the confirmed bond dwell.

Apply and trim the optional face veneer

1. Acclimate the veneer with the wood under the supplier's installation conditions; Oakwood advises 48–72 hours. Cut oversize pieces from the layout, preserving vertical show-face grain. Peel back a small portion of release liner, align the face, then withdraw the liner progressively.
2. Press with a stiff-bladed veneer scraper, working firmly from center outward along the grain over the entire face. Use the supplier method and successful trial; do not substitute an unverified roller or contact cement.
3. Support the panel for trimming. Use a sharp knife, several light cross-grain scores and a straightedge; keep hands clear. Trim flush around outer edges, window/inlets and each separate panel. Lightly ease veneer edges. Reopen all existing clearance holes and countersinks while accessible.

Check before continuing: No edge wrap, bridged joint, bubble, loose edge or buried screw head. Equal door/surround seating stacks and original 1/16-inch bare gaps remain.

Required wait: Honor supplier-confirmed bond dwell before topcoat; record it.

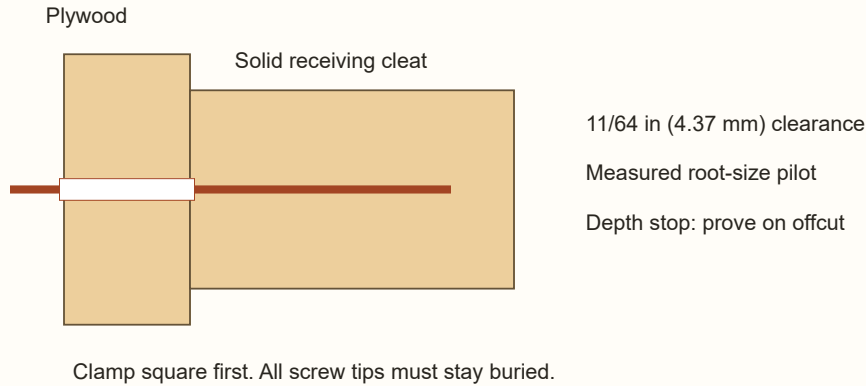
OP26 · Glue the bare case joints and keep it square

Parts: Shell panels · solid cleats · front receivers

Before you begin: Titebond III is not for continuous submersion or certified load-bearing use. Follow the received label for temperature, clamp and drying time.

Clearance through the first part; pilot only the receiver

Section schematic · bore and driver axis shown · widths not to scale



Glue the bare case joints and keep it square

1. Complete the last dry-fit first. Remove dust and masking from bare wood-to-wood contacts. Use Titebond III on the case/cleat/surround joints according to its current label; retain every specified mechanical fastener.
2. At 70°F (21°C), 50% RH, Titebond III lists 8–10 minutes open time and 20–25 minutes total assembly time. Keep glue, air and wood above the received label minimum (published 45°F / 7°C). Work in manageable subassemblies: side cleats, back/floor shell, then front surround/receivers. Recheck diagonals while clamped.
3. Keep the removable roof, screen battens, stops and glazing retainers unglued. Clean squeeze-out before it cures, without disturbing the fit. Do not use glue as a structural capacity claim.

Check before continuing: The case stays square and joint faces meet fully. Retain bench support until the glue has dried sufficiently.

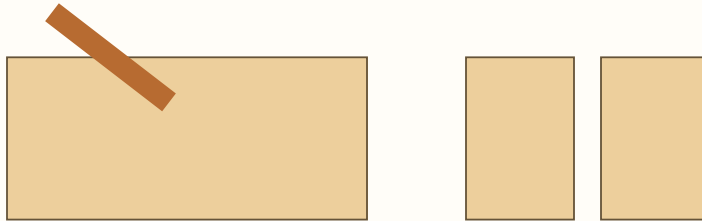
Required wait: Manufacturer guidance: clamp unstressed joints 30–60 minutes; stressed joints 24 hours; do not stress joints for at least 24 hours. Longer if conditions require.

OP27 · Prepare every exposed wood face for finishing

Parts: Case · roof · door · loose retainers/stops

Coat the loose parts and accessible case after glue drying

Process schematic · do not bridge removable joints with finish



Remove hardware, pane and mesh first

Coat all batten faces

120 → 220 grit · clean and dry · stir, do not shake

One uniform coat · synthetic brush · 60–90°F (16–32°C); RH below 85%

Prepare every exposed wood face for finishing

1. After glue drying, remove dry-fit screens, battens, stops, acrylic, hinges and latch. Label their locations. Keep metal, mesh and glazing clean. Leave permanently buried glue contacts bare.
2. Sand clean, dry wood from 120 through 220 grit. Vacuum and wipe with a clean lint-free cloth. Include opening edges, holes, loose batten faces, spacers, caps and stops. For the optional veneer, use the successful trial preparation without sanding through its thin face.
3. Coat accessible shell faces, edges and all loose wooden pieces. Keep remove/refit joints separate; finish must not glue parts together. Repair sharp fibres or damaged veneer before coating.

Check before continuing: All wood that can see the enclosure environment is accessible and prepared. No acrylic or hardware remains in the finish area.

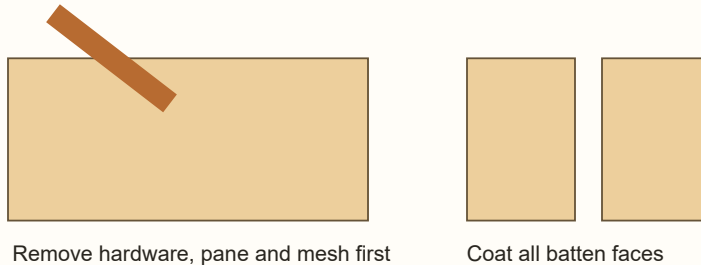
OP28 · Apply the specified one-coat finish

Parts: L14 Varathane Triple Thick 284473

Before you begin: Do not apply a generic three- or four-coat schedule to this one-coat formula. Manufacturer excludes exterior surfaces/floors; no animal-safety certification is claimed.

Coat the loose parts and accessible case after glue drying

Process schematic · do not bridge removable joints with finish



120 → 220 grit · clean and dry · stir, do not shake

One uniform coat · synthetic brush · 60–90°F (16–32°C); RH below 85%

Apply the specified one-coat finish

1. Use one uniform coat of the selected clear satin formula. Stir; do not shake. Brush with the grain using a quality synthetic-bristle brush in adequate ventilation.
2. Apply at 60–90°F (16–32°C) and below 85% relative humidity (RH: moisture in the air compared with saturation). Clean tools with soap and water. Record application date, temperature and RH.
3. A nominal coat is 0.003 inch (0.076 mm) dry per face. Opposing coats reduce a gap by about 0.006 inch (0.152 mm); actual film varies. The budget includes one final coat and optional outward-face precoat within the two-quart pack. Additional coats need another coverage calculation.

Check before continuing: No runs obstruct fits, pools fill seats or bare exposed wood remains.

OP29 · Wait for full cure before refitting

Parts: All coated pieces

Record the clock from the LAST coat or repair

Process schematic · cure and physical testing are separate statuses



7 DAYS — full cure

70°F (21°C) · 50% RH · ventilation

2 h recoat ≠ full cure

48 h light use ≠ full cure

Cooler or adverse conditions need longer. Repair restarts the clock.

Wait for full cure before refitting

1. Keep parts ventilated and protected while curing. Start the clock from the LAST applied or repaired coat. Full cure is 7 days at 70°F (21°C), 50% RH and adequate ventilation; cooler or adverse conditions require longer under manufacturer guidance.
2. Two hours to recoat and 48 hours to light use are not full cure. Touch-dry feel and absence of odor do not prove readiness.
3. If an extra coat is needed, sand with 220 grit first, add its area to the finish calculation and restart cure. Keep a dated record for the optional precoat, final coat and any repair separately.

Check before continuing: The full cure requirement has elapsed under recorded conditions. Receiving and physical-test records are still distinct.

Required wait: Wait at least the specified 7-day full cure; no assembly shortcut through this checkpoint.

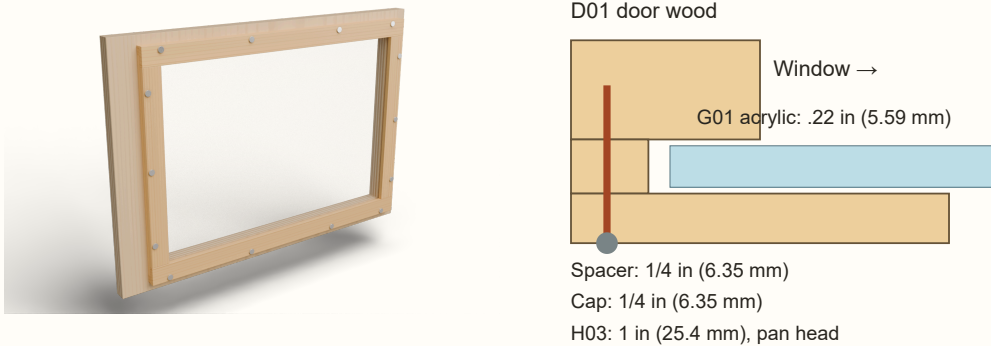
OP30 · Refit screens, stops and the floating pane

Parts: MSL/MSR/MR · retainers · G01 · H03

Before you begin: If fitting damages a coating, repair it and repeat the full cure before use.

Removable glazing: assembled rear view and edge section

Right: section schematic, not to scale · pane is undrilled, unglued and free to move



Keep 1/16 in (1.59 mm) free at each pane edge; 1/64 in (0.40 mm) through thickness.

Spacer holds cap away from pane. Screw stays OUTSIDE pane and ends INSIDE door wood.

Refit screens, stops and the floating pane

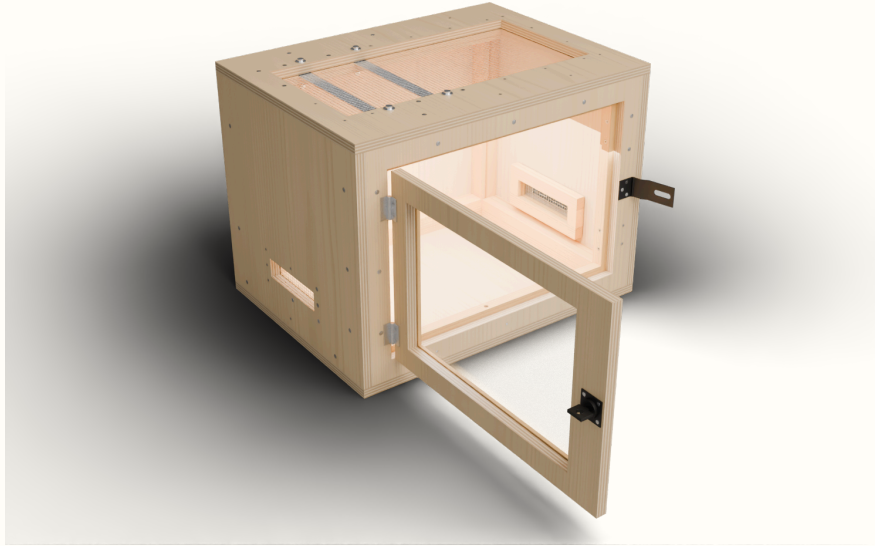
1. Refit labeled screens and screen battens after full cure. Recheck every wire edge and the four roof bolt stacks. Refit stops without pressing on the door; cured pieces must seat without force.
2. Seat the glazing spacers and pane on the rear of D01; fit caps using the fourteen short PAN screws. Snug evenly by hand without bowing caps or pinching acrylic.
3. Measure at least 1/16 inch (1.59 mm) at each pane edge and 1/64 inch (0.40 mm) thickness freedom. Keep positive window overlap. The pane must be retained without being rigidly clamped or able to rattle out.

Check before continuing: Every tip remains buried; the pane is undrilled and caps remain removable.

OP31 · Refit and cycle the finished door

Parts: Door · hinges · swivel hasp

Before you begin: If the received hinge cannot clear within the stated gap, stop for a revised detail. Do not bend leaves or enlarge holes.



Refit and cycle the finished door

1. Refit the hinges and latch with their original short screws. Measure the entire finished door perimeter: acceptable running gaps are 1/32–1/16 inch (0.79–1.59 mm). Check the middle of each edge as well as corners.
2. Turn the swivel tab into line, swing the flap clear, then open the supported door to 90 degrees. Close it, lower the flap and turn the tab across the slot. An optional padlock may use the eye; no key is required for normal operation.
3. Check for rubbing at small opening angles, cap/stop contact, hardware distortion and accidental tab rotation. Remove only minor high spots; repair and fully cure disturbed finish. Do not enlarge gaps to conceal veneer warping.

Check before continuing: Flap stays captured when secured; shut door cannot lift off. No contact with glazing screws or exposed tips.

OP32 · Test door removal and safe refitting

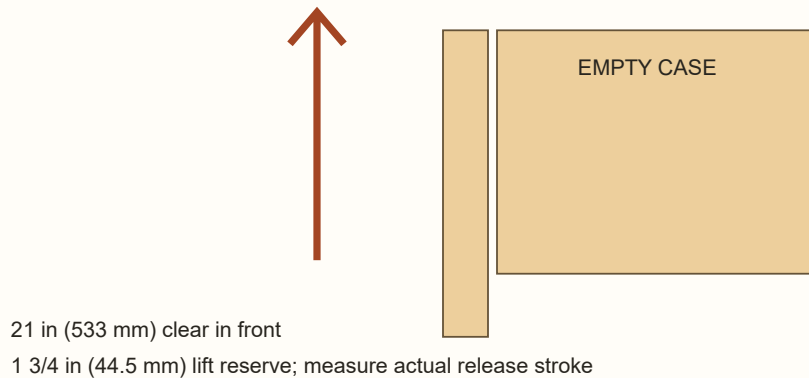
Parts: Lift-off door assembly

Before you begin: No removal with animals inside. Never move the enclosure by its door, roof or mesh; support beneath its floor.

Open 90 degrees; then lift both sockets together

Service-route schematic · remove the lamp before roof work

Support with BOTH hands



Test door removal and safe refitting

1. With the enclosure EMPTY, release the latch and swing its flap clear. Support the door with both hands and open to 90 degrees.
2. Reserve 21 inches (533 mm) clear in front and 1 3/4 inches (44.5 mm) upward. Lift both sockets together until they clear their pins; confirm actual release stroke within that reserved space before adding glazing or relying on the route.
3. Set the door on a padded bench. For refitting, lower both sockets onto their pins together; confirm full seating before releasing its weight. At 90 degrees the lifted door is in front of the roof. The small closed top gap must prevent lift-off when shut.

Check before continuing: Removal/refit causes no collision, finish damage, tipping or dropped-door risk. Record the measured release stroke.

OP33 · Attach and test the removable roof

Parts: P02 · six case-attachment screws

Before you begin: Repeated wood-screw service can wear pilots. If threads loosen, stop for an assessed repair; do not substitute longer screws.



Attach and test the removable roof

1. After the case joints are cured, lower the completed roof onto intact side/back/front bearing faces. Use three front L06 screws at x = 6, 12, 18 inches (152, 305, 457 mm), on the front receiver centerline.
2. Use three rear L06 screws at x = 5, 12, 19 inches (127, 305, 483 mm), transferring the actual C6 centerline from BACK. Keep these six distinct from the twenty retaining screws and four bolts.
3. Remove and restore the roof once to prove access. No lamp or loose equipment may remain on it during service. Do not glue this joint.

Check before continuing: Roof seats flat without force, screws stay buried and all six can be reached and removed.

OP34 · Commission and maintain the empty shell

Parts: Complete shell · selected equipment

Before you begin: Keep bedding and furnishings below openings. Do not infer animal suitability from dimensions or the model.



Commission and maintain the empty shell

1. Check seated steel, captured wire, tight bolts and two full threads beyond each nut. Trial the COLD fixture centered 7 inches from LEFT and 9 inches from FRONT (178 and 229 mm). Proposed envelope: at most 6-inch overall diameter, 5 1/2–6-inch flat rim (140–152 mm), at most 2 lb (0.91 kg) including bulb; rim bears over both strips. This is not a tested load rating.
2. Choose equipment for the intended animal separately. Mini Sun Dome 27004 has a 100 W electrical maximum, not a recommended bulb for this shell. Follow fixture clearances, keep heat and cords away from wood, retain shade at the right, use suitable thermostatic control and measure the complete environment. Physical strength, stability, thermal, moisture, ventilation and escape tests remain unperformed.
3. During maintenance, remove the lamp before roof work; inspect for loosening, sagging, corrosion, veneer lifting, coating damage and heat damage. Correct faults before reuse. Remove the door for bench glazing service rather than reaching around sharp wire or an unsupported panel.

Check before continuing: Qualified review and the intended environment's measured commissioning checks are recorded separately from digital drawings.

Workshop dimensions and machining

The downloadable specification records every part's lower corner, size, opening and screw path in inches. The machining CSV contains all 135 station IDs, start coordinates, direction, length, through-parts and receiver. The pictured steps give local working datums; do not guess coordinates from a rendered view.

Group	Installed / purchase
L06 #8 × 1 1/4 in flat	106 / four packs of 30 = 120
H03 #8 × 1 in pan	14 / one pack of 30
H02 #5 × 5/8 in flat	8 / one pack of 100
H05 #10 × 5/8 in flat	7 / one pack of 12
Roof through-bolts	4 / two packs of 3
Washers / Keps nuts	8 / 4; verify package counts

[Versioned specification](#) · [Cut list CSV](#) · [Exact station schedule](#) · [Current BOM](#) · [Drawings/model/reference ZIP](#)

Model pilots are reference envelopes only. Determine pilot size and depth from the received screw and successful same-stock offcut trial. Clearance bores stop at the receiving member.

Receiving and acceptance record

Leave each field blank until someone measures or performs it. Digital checks are not physical tests.

Checkpoint	Measured result / date / reviewer
RH01 · Wood and mesh Measure actual plywood and square stock. Use floor/roof offcuts as story stick; scribe back and surround between actual sides. Mesh crossing at most 1/16 in (1.59 mm). Regenerate geometry for measured stock before calling the model an as-built record.	
RH02 · Hinge and screws Offcut trial of received NH-40R/SS and 11325. Measure actual pin offset and release stroke; test two collinear pins, 90-degree sweep, buried tips and seated heads. Nominal display pin is not verified hardware CAD.	
RH03 · Swivel hasp Transfer all seven holes from actual N305-979 at nominal center. Trial #10 x 5/8 screws; minimum 1/16 in rear wood cover. Verify slot clearance and retention after finish.	
RH04 · Veneer system Confirm 48 x 96 in standard maple / factory 3M PSA variant with supplier; ask about one-sided plywood balance, Varathane-presealed substrate, topcoat, and proposed heat/humidity. Full-size door trial must remain flat and preserve gaps. Measure veneer/backer/adhesive <=0.040 in (1.02 mm); no edge wrapping.	
RH05 · Fixture and completed environment Qualified review and physical load/stability, heat, ventilation, moisture and containment testing remain unperformed. No species or roof load rating follows from this model.	

Coat date/time: _____ Temperature/RH: _____ Full cure due: _____ Repairs and restart:

Product evidence and limits

Manufacturer references support product dimensions and application instructions. They do not certify the whole enclosure or resolve the stated receiving trials.

- Sugatsune NH-40 dimensions
- National N305-979 nominal drawing
- Oakwood maple / PSA options and thickness matrix
- Oakwood PSA preparation/application
- Titebond III product/assembly limits
- Titebond clamp guidance
- Varathane Triple Thick full cure

Validation levels: researched product information and digital dimensional checks are recorded separately from prototype construction, physical testing, qualified review and publication. Prototype construction, physical testing and qualified review remain unperformed. The owner authorized publication on 9 October 2026. Publication does not close the receiving and physical-test holds.

One-coat rectangular wood-area upper bound is 49.51 ft² (4.60 m²); optional preseal adds up to 11.18 ft² (1.04 m²). Including an additional 15% contingency: 69.79 ft² (6.48 m²), within the 100 ft² (9.29 m²) nominal two-quart coverage. Openings/joint exclusions make this conservative; extra coats require recalculation.