

WOOD

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Pro Tips for Better Built-In Cabinets

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Super-Simple

Workbench with Wall Storage

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October 2013

Issue 221

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The WOOD® magazine difference:
We build every project, verify every fact, and test every reviewed tool in our workshop to guarantee your success and complete satisfaction.

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BASIC-BUILT

GREAT PROJECTS MADE SIMPLE.

Pocket-hole Pointers

Develop Your Shop Skills

Whether you own a pocket-hole jig or are considering buying one based on our review on page 45, these shop-won insights will help you get more from your jig.

Prepping the stock

► **Make precise, square cuts.** When making projects with right angles, such as cabinets or face frames, square cuts ensure square assemblies. Set your table saw's blade precisely 90° to the tabletop before cutting parts to size, and make sure your miter gauge is exactly 90° to the blade. Anything less will result in gaps or unsquare joints. If you cut stock on a miter saw, tune it up as well.

► **Plan your work, work your plan.** After cutting but before drilling, lay out project parts in the orientation you



want, and then mark the *back* faces, as shown *below left*. Be sure to also draw other layout marks, such as where a middle rail lines up with the stiles. Then drill pocket holes into the marked faces to prevent accidentally drilling into the best face.

► **Grab the best grain.** Drill pocket holes so screws thread into edge or face grain

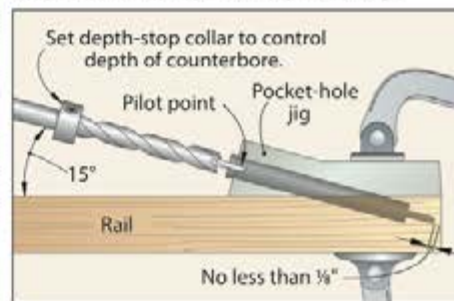


These screws won't hold as well threaded into end grain. Instead, drill the pockets on the rail and drive screws into edge grain of the stile (*top photo*).

for maximum purchase; avoid screwing into end grain, as shown *below center*.

Drilling the holes

► **Set the correct pocket depth.** For strongest joints, set the stop collar according to your jig's instructions. The pilot point should stop 1/8" from the workpiece's end or edge, as shown *below*. Check this each time you use the jig to avoid accidentally drilling too deep.



► **High speed = cleaner holes.** A corded drill bores a cleaner hole than a cordless one because of its faster bit speed.

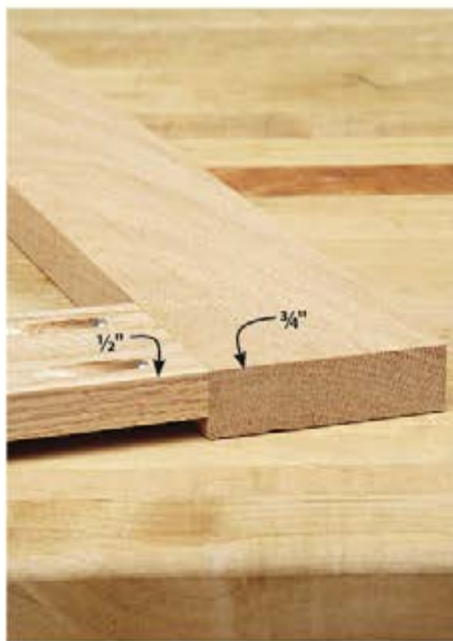
continued on page 16

Excessive tear-out around the pocket could indicate a dull bit. Keep a second bit on hand so you can switch to it when the first begins to dull.

► **Smooth the way.** Before drilling, spray the bit with a dry lubricant, such as Bostik DriCote, to reduce drilling friction and prolong sharpness. Repeat after every 20 or so holes.

► **Clear chips frequently.** Pull the bit out when you've reached about half depth to clear the chips; then finish drilling. This reduces friction and bit dulling.

► **Match up different thicknesses.** When joining boards of two different thicknesses edge-to-edge or end-to-edge, as shown *below*, set the pocket-hole depth for the thinner board. If joining boards end-to-face or edge-to-face, such as the table apron to the top, shown *far right*, set the depth for the thickness of the board with the pockets, regardless of which is thinner, and then use a shorter screw if necessary.



Assembling the joints

► **Choose the right screws.** Coarse-thread pocket screws hold best in softer woods, such as pine, cedar, and poplar, as well as plywood; use fine-thread screws for hardwoods. Choose the length based on the workpiece thickness, as shown in the chart *above right*.

Most pocket-hole screws come with an oversized washer head for increased contact with the pocket shoulder, but you can also get screws with a smaller pan head for use with shallow pockets where a washer head would protrude

Pocket-Hole Screw Guide	
Material Thickness	Screw Length
1/2"	1"
5/8"	1"
3/4"	1 1/4"
7/8"	1 1/2"
1"	1 1/2"
1 1/8"	1 1/2"
1 1/4"	2"
1 3/8"	2"
1 1/2"	2 1/2"

Fine thread with pan head



Fine thread with washer head



Coarse thread with washer head



Use fine-thread screws for hardwoods. Use coarse-thread screws for softwoods, MDF, particleboard, and plywood.

above the workpiece surface. For outdoor applications, choose stainless steel or coated screws. Never use drywall screws—they break easily while driving, and their tapered ("bugle") heads can split the bottoms of the pocket shoulders.

► **Don't forget the glue.** Screws alone make a plenty-strong pocket-hole joint, but adding glue helps prevent a joint from opening up due to seasonal shrinking and swelling.

► **Clamp before screwing.** Clamp across a joint whenever possible [**opening photo**], to avoid the parts creeping out of alignment as you snug up the screws. Clamp parts to a perfectly flat surface so the front faces align. (If one of the parts is offset, shim below it, if needed.) When screwing an edge to a face, such as the table shown at *right*, always clamp the assembly securely before driving screws.



When attaching table aprons to a top, allow room for the screws to move in their pilot holes as the top expands and shrinks with humidity changes. To do this, drill the pocket as normal; then drive a screw through as shown (*top*). Remove the screw and drill out the pilot hole about 1/8" larger in diameter. Finally, mount the apron-and-leg assembly to the top.

► **Learn to drive a clutch.** Although handy for driving fasteners, avoid using an impact driver for driving pocket screws. Because you can't see the screw snug up against the pocket's shoulder, the tool's high torque can easily strip out the screw hole. Instead, use a drill or cordless screwdriver with an adjustable clutch, set to pull together joints without stripping out the holes. 🌱



Bedroom set finale

Blanket chest

A family heirloom for decades to come

Approximate materials cost: \$125
Dimensions: 25½"H × 46½"W × 25½"D

This cinch-to-build, budget-friendly project completes the bedroom set shown *top right* that includes a bed in issue 218 (May 2013), nightstand and dresser (issue 219, July 2013), and lingerie chest (issue 220, September 2013). (If you don't have those issues, see **More Resources** on *page 40* to obtain plans.) All the pieces share similar construction methods to simplify building two or more of them.

First, make the legs, rails, and stiles

1 Laminate blanks for four legs (A) slightly wider and longer than the finished sizes shown in the **Materials List**, *page 40*. Trim them to size, select the best faces to face out, and mark the tops of the legs to show their orientation in the project. Bandsaw the tapers [**Drawing 1**] and sand them flat.

2 From ¾" stock, cut to size the stiles (B), side top rails (C), side bottom

rails (D), front/back top rails (E), front/back bottom rails (F), and front/back center stiles (G) [**Materials List**].

Quick Tip! Plane a 12"-long piece to the same thickness as these parts to use later when setting up to cut tenons.

In one edge of each piece, mill a centered groove to fit the ¼" plywood panels [**Photo A, Drawing 1**]. The center

stiles require grooves in both edges [**Drawing 2**].

Quick Tip! Use a featherboard to ensure clean and consistent-width grooves. Buy a commercially made one or make your own as shown at woodmagazine.com/featherboard.

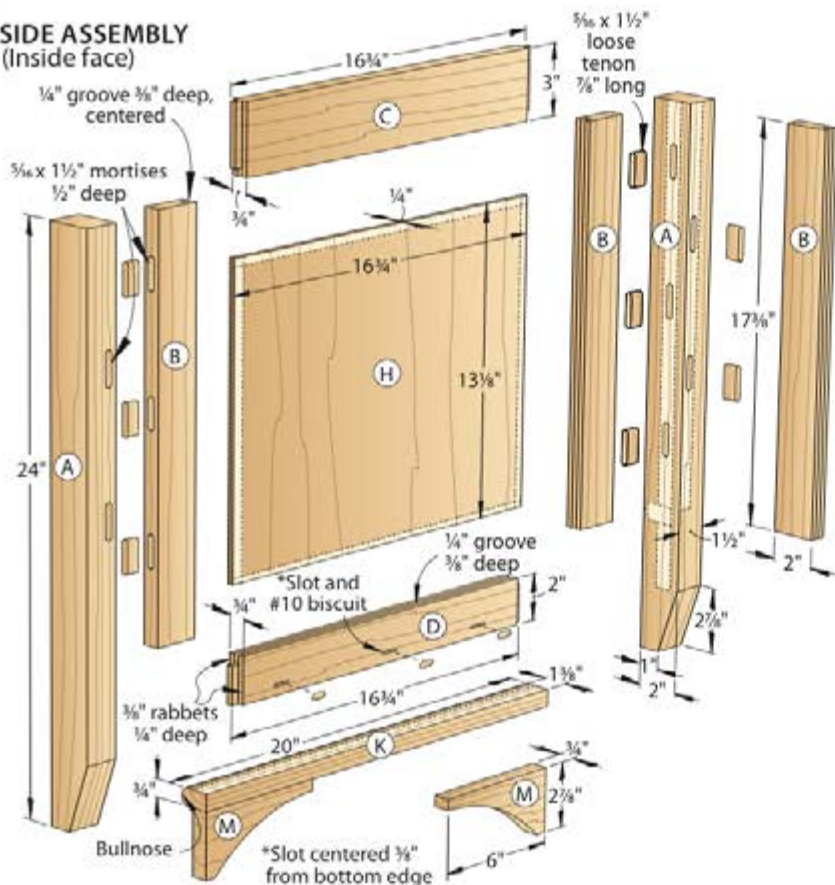
3 In your tablesaw, set up a ⅜" dado blade ¼" above the saw table, and attach an auxiliary face to the rip fence.

Go green when choosing poplar

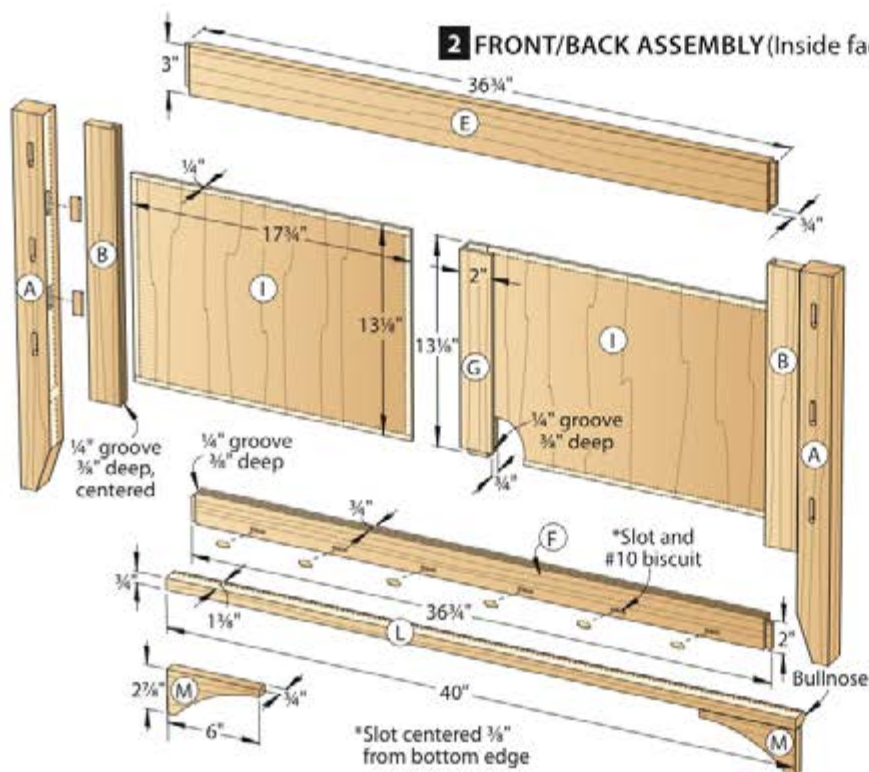
Poplar boards vary greatly in the amount of green-tinted heartwood and white-tinted sapwood they contain. For stained projects, such as this blanket chest, choose heartwood boards. In our shop trials—see the results at *right*—we found that green boards stained more evenly with less blotching than the white ones, making it easier to match the color of the green boards to the maple-plywood panels.



1 SIDE ASSEMBLY (Inside face)



2 FRONT/BACK ASSEMBLY (Inside face)



FLIP FOR CENTERED GROOVES

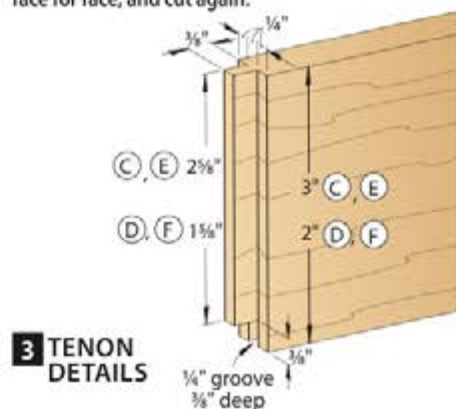


Cut grooves in the rails and stiles by making a $\frac{1}{4}$ "-deep ripcut to either side of center. Flip the piece end for end and make a second rip.

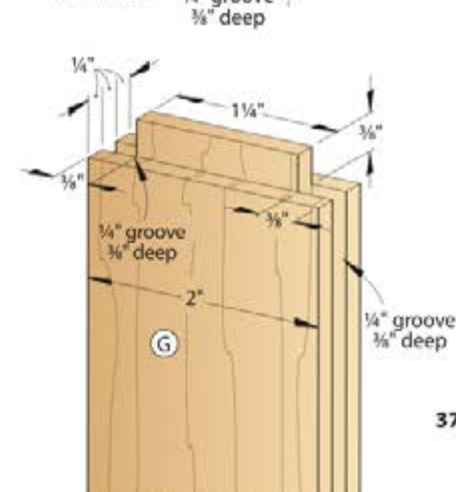
DO THE TENON TWO-STEP



Adjust an auxiliary wood rip fence to just touch the dado set. Cut one side of the tenon, flip the piece face for face, and cut again.



3 TENON DETAILS



Retrieve the scrap you planed earlier with the rails and stiles, and cut a $\frac{3}{8}$ "-long tenon on one end and test the fit in a stile. Make any needed adjustments;

then cut tenons on the ends of the rails (C, A, E, F) and front/back center stiles (G) to fit the grooves you previously cut [Photo B, Drawing 3].

MARK PAIRS FOR PRECISION



C Clamp together adjacent legs and stiles with their tops flush; then, use a square to mark the centerlines of mating mortises.

SPACERS HELP ROUT OFF-CENTER MORTISES



D To offset from center the mortises on the three-mortise face of each leg, position a $\frac{1}{4}$ " spacer against the tapered face of the leg.



E For the mortises in the adjacent faces, secure the jig to the leg with a $\frac{3}{4}$ "-thick spacer against the three-mortise face.

4 Position on your bench the legs (A) and stiles (B) in their ultimate orientation. Mark mortise locations on these pieces [Drawing 4].

Quick Tip! To ensure that the mortises in the legs and stiles line up precisely, mark mating pieces at the same time [Photo C].

5 Build the self-centering loose-tenon-joinery jig described on page 52 in WOOD® issue 218 (May 2013) (download the free article at woodmagazine.com/218loosetenon). Cut a $\frac{3}{4} \times 1\frac{1}{2} \times \frac{1}{16}$ " opening in its top. Outfit your plunge router with a $\frac{5}{16}$ " upcut spiral bit and $\frac{3}{4}$ " guide bushing. Modify the jig with a $\frac{1}{4}$ " spacer as shown in Photo D, and cut the three mortises in the face of the legs (A) that will face the side assemblies. Then, swap in a $\frac{3}{4}$ " spacer and rout the two mortises in the faces of the legs (A) that face the front/back assemblies [Photo E].

6 Cut the mortises in the stiles (B)—no spacers required; the jig automatically centers the mortises.

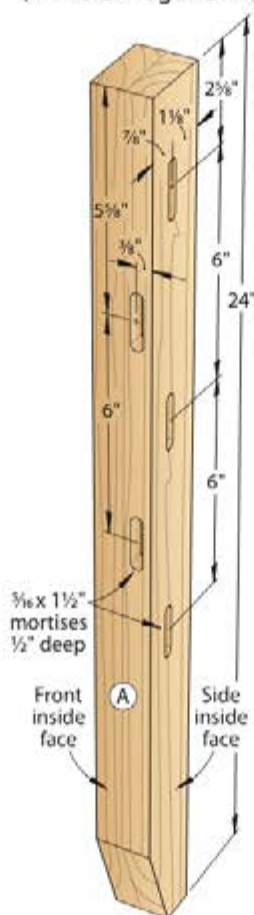
Now assemble the carcass

1 From poplar cutoffs, make twenty $\frac{5}{16} \times 1\frac{1}{2} \times \frac{7}{8}$ " loose tenons using the methods described in the jig article mentioned in Step 5 above. Make the tenons a hair thick and sand them for a snug fit.

2 After dry-assembling to check the fit, glue loose tenons into the mortises in each stile (B), then glue two stiles to each leg (A) [Drawing 1].

3 Cut to size the side panels (H) and front/back panels (I) [Materials List]. Glue together each side panel with its rails (C, D) [Drawing 1]. Glue each front/back panel to its adjoining rails (E, F) and center stile (G) [Drawing 2].

4 LEG MORTISE LOCATIONS (Front left leg shown)



4 Dry-fit the leg/stile assemblies (A/B) to the front/back assemblies (E/F/G/I) [Photo F]. Tie the front/back assemblies together with the side assemblies (C/D/H), clamp the fit-up, and check it for square. Then, measure the opening for an exact fit of the bottom (J).

5 Cut the bottom (J) to size. Set it in place, using spacers to support it

DRY-ASSEMBLE THE CARCASS



F Working with the parts upside down keeps the top ends of the legs (A) and the edge of the top rail (E) flush during assembly.

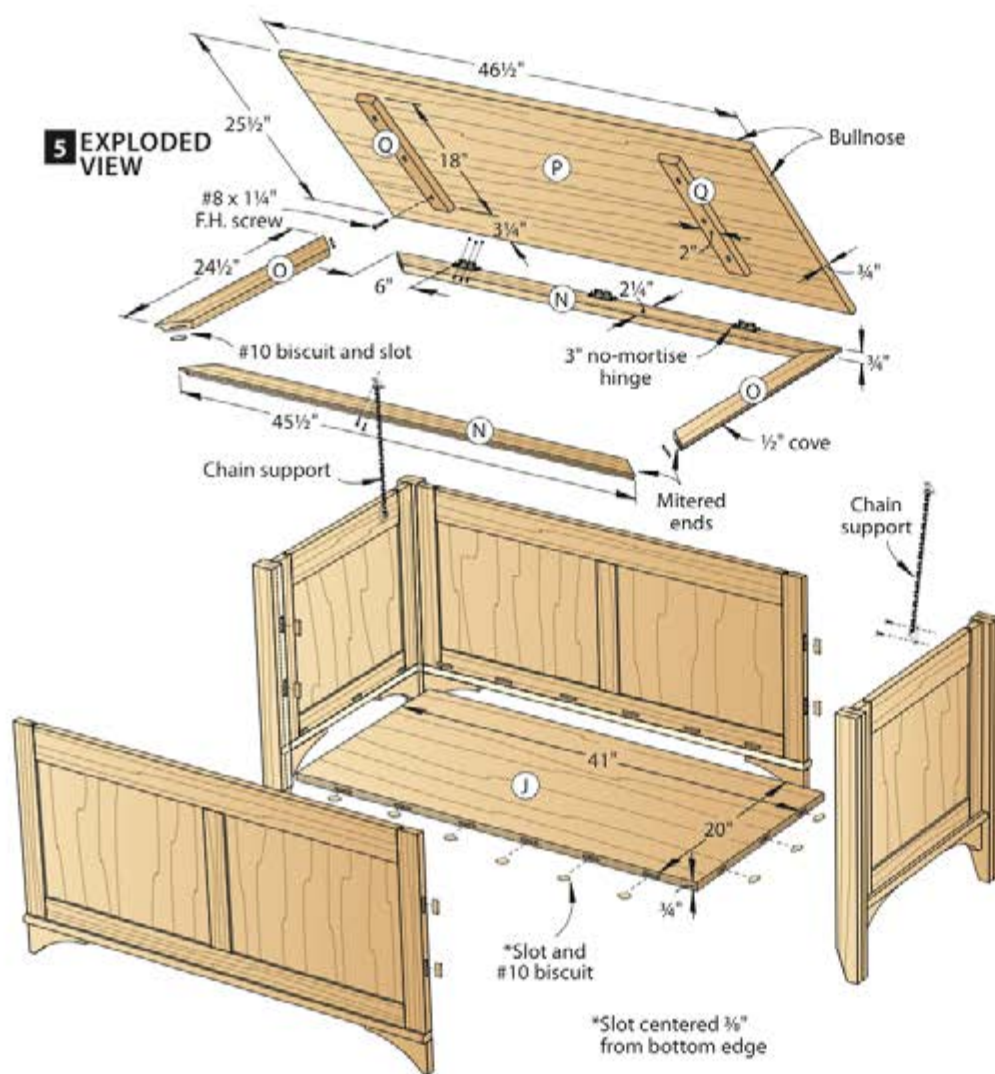
MARK BOTTOMS-UP BISCUIT SPOTS



G With a square and pencil, mark across the bottom (J) and adjoining rails about every 6" to locate biscuit cuts.

flush with the bottom rails (D, F). Then mark the bottom and bottom rails for biscuit locations [Photo G, Drawing 5].

6 Disassemble the chest and cut slots in the bottom and rails for #10



COVE-CUT THE LID TRIM



H Using pushblocks for safety, cut the cove to within $\frac{3}{16}$ " of full depth. You'll clean up the remaining material after gluing up the trim assembly.

MITER THE LID TRIM



I To ensure opposing lid trim pieces are the same length, for the second cut use a stopblock clamped to a miter-gauge extension.

biscuits. **Note:** If you've not already sanded the panels to 220 grit (it's always a good idea to finish-sand parts as you make them), now's the time to tackle that task.

Quick Tip! Practice a dry-fit with biscuits in the slots before assembling the chest with glue. This helps you figure out how many clamps you'll need in what lengths, and how to work most efficiently.

After your practice run, reassemble the carcass with glue and biscuits.

7 To make the side bottom trim (K) and front/back bottom trim (L), start with a $\frac{3}{4} \times 4\frac{3}{8} \times 41$ " poplar blank. With a $\frac{1}{2}$ " round-over bit extended $\frac{5}{16}$ " above your router-table top, rout a bullnose profile on both edges. Rip a $1\frac{3}{8}$ "-wide strip off one edge and crosscut that piece to make two side bottom trim (K) pieces. Rout a bullnose profile on the just-sawn edge of the blank, then rip the blank to produce two front/back bottom trim (L) pieces. Glue these pieces to the bottom rails (D, F), trimming them for exact fit [Drawings 1, 2].

8 Make copies of the **Bracket Pattern**, page 41, and use them in cutting eight brackets (M) to shape. Remove the patterns, finish-sand the brackets, and glue them to the bottom trim (K, L) [Drawings 1 and 2].

Time to top it off

1 Cut the lid front/back trim (N) and lid side trim (O) 2" longer than listed [Materials List, Drawing 5]. Rout a partial

$\frac{1}{2}$ " cove profile along one edge of each trim piece [Photo H].

2 Cut miters on the ends of the lid trim pieces (N, O) [Photo I]. Then, cut #10 biscuit slots in the miters and glue together the lid trim assembly [Drawing 5]. Complete the assembly as described in the **Shop Tip**, below.

3 Glue the lid trim assembly (N/O) to the carcass, being careful to align it evenly on all sides.

SHOP TIP

For the lid trim pieces (N, O) rout the cove profile to slightly less than full depth when you make the pieces. Then, after you assemble the trim, complete the cove to full depth with a handheld router, as shown at right. That will cut away any mismatch where the profile meets at mitered corners.



4 From at least four boards, edge-glue the lid (P) about 1" wider and longer than specified in the **Materials List**. Cut the lid to size and rout a bullnose profile along its edges as done earlier on the bottom trim (K, L).

HOW TO MATCH OUR COLOR

SHERWIN-WILLIAMS
Sher-Color (ta)

INTERIOR
SHER-WOOD BAC WIPING STN
PENETRATING

PROFESSIONAL
ALKYD
STANDALONE

WOOD MAGAZINE
CUSTOM MANUAL MATCH

BAC COLORANT	OZ	32	64	128
R2-Maroon	2	36	-	-
B1-Black	-	52	-	-

ONE GALLON
S64N00051

CHESTNUT
501246219

J Here's the pigment mix for the custom stain color based on a sample we created.

Materials List

Part		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	legs	1½"	2"	24"	LP	4
B	stiles	¾"	2"	17¾"	P	8
C	side top rails	¾"	3"	16¾"	P	2
D	side bottom rails	¾"	2"	16¾"	P	2
E	front/back top rails	¾"	3"	36¾"	P	2
F	front/back bottom rails	¾"	2"	36¾"	P	2
G	front/back center stiles	¾"	2"	13¾"	P	2
H	side panels	¾"	16¾"	13¾"	PL	2
I	front/back panels	¾"	17¾"	13¾"	PL	4
J	bottom	¾"	20"	41"	PL	1
K*	side bottom trim	¾"	1¾"	20"	P	2
L*	front/back bottom trim	¾"	1¾"	40"	P	2
M	brackets	¾"	2¾"	6"	P	8
N*	lid front/back trim	¾"	2¼"	45½"	P	2
O*	lid side trim	¾"	2¼"	24½"	P	2
P*	lid	¾"	25½"	46½"	EP	1
Q	lid cleats	¾"	2"	18"	P	2

*Parts initially cut oversize. See the instructions.

Materials key: LP—laminated poplar, P—poplar, PL—maple plywood, EP—edge-joined poplar.

Supplies: #10 biscuits (22), #8 × 1¼" flathead screws (6).
Blade and bits: Dado set, ⅜" upcut spiral, ½" cove, and ½" round-over router bits.

Source

3" non-mortise hinges (3), no. 28704, \$4.59/pair; Chain (2), no. 30663, \$15.39, Rockler, 800-279-4441, rockler.com.

5 Cut the lid cleats (Q) to size. Drill the holes and slots where shown, and screw the cleats to the bottom face of the lid.

Finish up

1 Sand any areas that need it to 220 grit. Remove dust and apply a stain. We used Sherwin-Williams custom-tinted Chestnut BAC Wiping Stain and top-coated with satin-finish lacquer [Photo J].

2 Install the hinges on the lid. Have a helper hold the lid in position while you screw the hinges to the lid trim (N). Install the lid chain [Source] to prevent the lid from falling backward [Drawing 5]. Now, gather your blankets and tuck them into their new home. 🌲

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Project design: **Kevin Boyle**

Illustrations: **Lorna Johnson**

Cutting Diagram



¾ x 7¼ x 96" Poplar (5.3 bd. ft.)



¾ x 7¼ x 96" Poplar (5.3 bd. ft.)



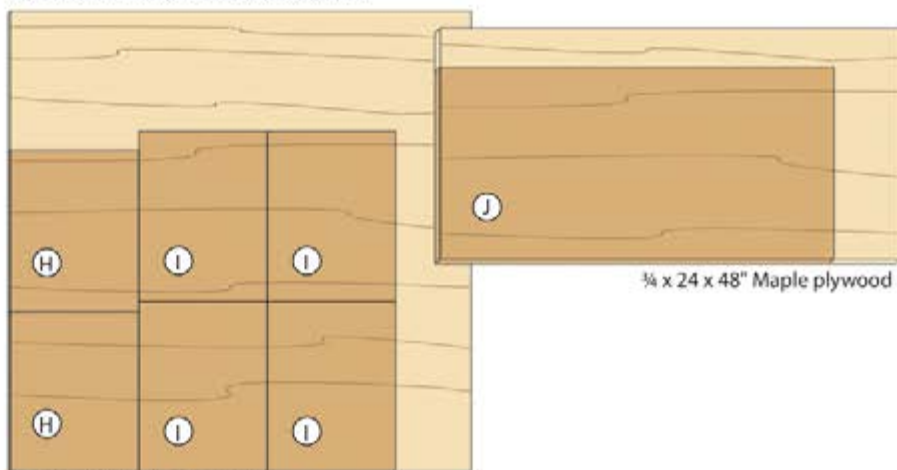
¾ x 7¼ x 96" Poplar (5.3 bd. ft.)



¾ x 7¼ x 96" Poplar (5.3 bd. ft.) (2 needed)



¾ x 5½ x 48" Poplar (2 bd. ft.) (2 needed)



¾ x 48 x 48" Maple plywood

¾ x 24 x 48" Maple plywood

More Resources

► To purchase issues 218 (May 2013), 219 (July 2013), or 220 (September 2013) of *WOOD* containing the articles on building the bed, dresser, nightstand, and lingerie chest that match this blanket chest, go to woodmagazine.com/2013issues.

► To purchase a download of just the bed, dresser/nightstand, or lingerie chest articles, go to woodmagazine.com/traditionalbedroom.

► Thinking about lining your chest with cedar? Read this first: woodmagazine.com/aromatic.

► For more bedroom furniture inspiration, visit our reader's gallery at woodmagazine.com/bedrooms.

