

Harvest Table

This Shaker drop-leaf design can be built for two or for 20

BY CHRISTIAN BECKSVOORT



The drop-leaf table is one of the most versatile designs that I build.

I've made small, 30-in. square end tables, 10 footers for major dinner parties, tables with drawers, tables with one leaf, and tables with leaves that hang almost to the floor. The form can be used not just for dining tables but also for side, end, serving and couch tables.

Recently, I was commissioned to design and construct a drop-leaf table and a set of chairs to seat eight. The base should provide diners with adequate chair space, with no one straddling a leg. Figuring 24 in. (or more) per serving area, I came up with a base that's 28½ in. by 79 in.

For the top dimensions, I figured 31 in. wide by 84 in. long. The top extends beyond the base so that the two 9-in. leaves can hang below. When down, the leaves allow for chairs to be slid under them. With the leaves up, the total width of the table-top becomes roughly 48 in. (because of the rule-joint overlap). I made this tabletop 1⅜ in. thick, but ¾ in. is the minimum—less than that and the quirk (or filet) on the leaf rule joint becomes too thin or fragile.

Glue up the top and build the base

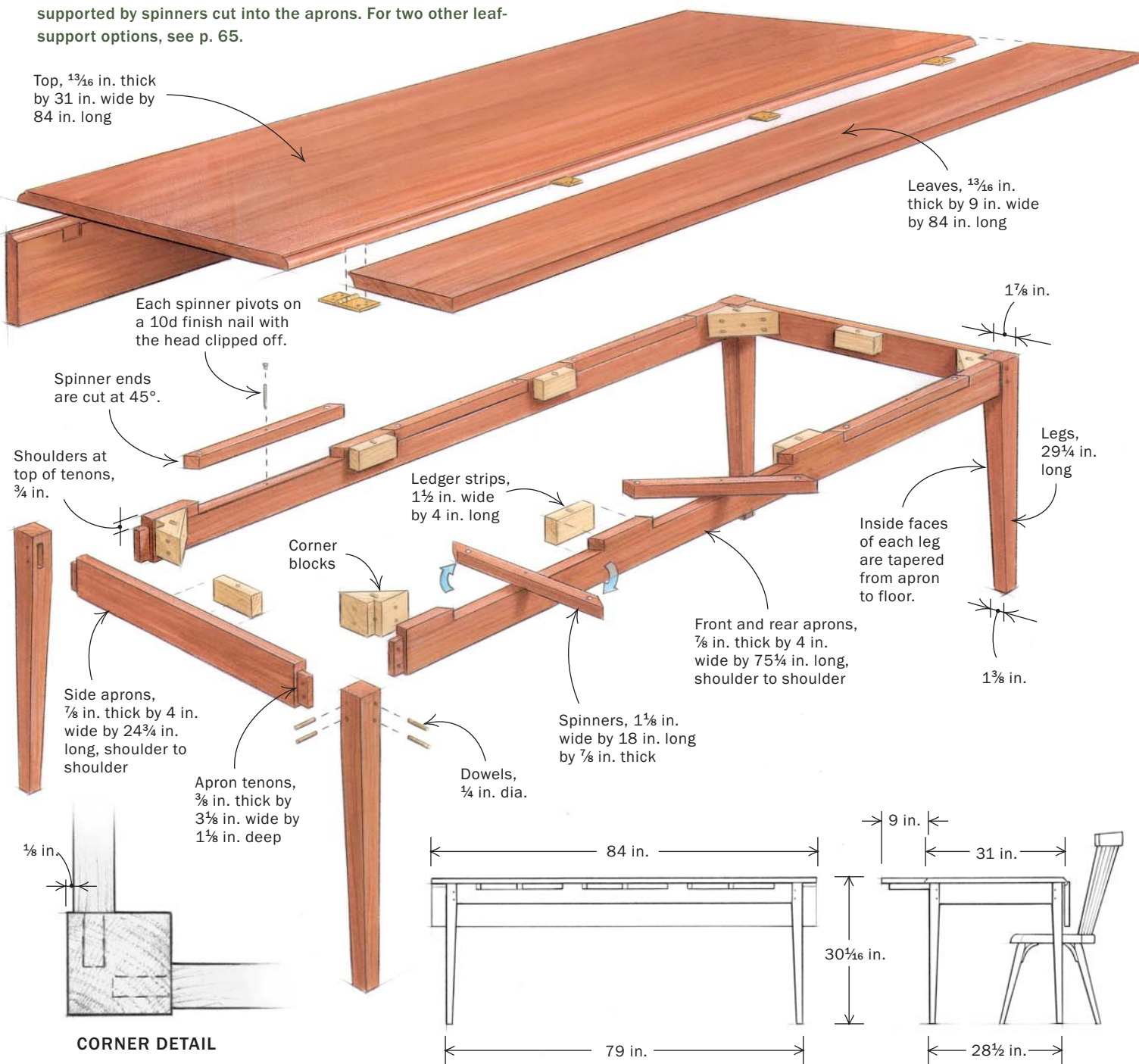
Start by gluing up the top and leaves from ⅞-in.-thick stock. When flattened and sanded, the finished product is 1⅜ in. thick, a smidge more than minimum. Next, cut the legs to 1⅞ in. square by 29¼ in. long. Taper the four legs to 1⅜ in. on the tablesaw using a jig, then clean them up on the jointer.

The mortises in the 4-in.-wide aprons are ⅝ in. thick by 1⅞ in. deep by 3⅞ in. wide (located ¾ in. from the top of the leg and ⅞ in. from the apron bottom). I'm fortunate enough to own a horizontal slot mortiser, but this joint is easily cut by hand, with a drill press and chisels or with a router.

The aprons are milled from ⅞-in.-thick

CHERRY DINING TABLE

This classic Shaker dining table features drop leaves that are supported by spinners cut into the aprons. For two other leaf-support options, see p. 65.



stock: two pieces 4 in. by 28 in. and two pieces $4\frac{1}{4}$ in. by 79 in. (The long side aprons are purposely oversize in both dimensions.) Before you cut and chop up the long aprons to make the leaf supports, or spinners, make a story stick. The stick shows the location of the two legs, the three spinners, the four hinges and the four attachment points where the top will be screwed to the base. With the story stick,

you can then make witness marks in the appropriate locations on the aprons: two short 3-in. ends, three 18-in. spinners and two spacers between the spinners. Then rip $1\frac{1}{4}$ -in.-wide strips the full length of both aprons and joint the pieces. With the witness marks in place, cut the spinners and the spacers to length with the miter gauge set to 45° (for other leaf-support options, see p. 65).

Now it's time to reconstruct. Starting from the center, line up the spinner with its witness marks. On either side, glue and tape the two spacers onto the apron, place the other two spinners and glue the two end spacers. Then remove the spinners and clamp the spacers. Drill $\frac{1}{8}$ -in. holes through the center points of each of the six spinners. Once the glue has dried, attach the spinners using 10d finish nails. Let the

SPINNERS SUPPORT THE DROP LEAVES



Let it spin on a nail. Becksvoort uses nails to act as pivot pins, because they are stronger than brass and can be let into a smaller hole.

heads protrude about $\frac{1}{4}$ in. and nip them off with pliers. Then sand the aprons, cut them to length and cut all of the tenons.

Now glue the long aprons to the legs and pin the joints with $\frac{1}{4}$ -in.-dia. pins. When the two long sides of the table are ready, glue and pin the short aprons between them.

With the base assembled, make corner blocks from $1\frac{3}{4}$ -in. by $3\frac{1}{2}$ -in. stock to strengthen the joint. Screw each block into both the aprons and leg. The aprons are only $\frac{7}{8}$ in. thick, so add $1\frac{1}{2}$ -in.-wide ledger strips to the top inside surfaces between the spinners. These ledgers are drilled out for a $\frac{1}{4}$ -in. by $\frac{3}{8}$ -in. slot to allow for movement of the top. Near each leg, there is also a similar slot in the corner blocks, as well as a 1-in.-dia. access hole on the bottom of the blocks. On the end aprons, add a ledger strip with just a $\frac{1}{4}$ -in.-dia. hole at the center. These two holes anchor the tabletop and ensure even wood movement across the top.

Cut the rule joint

Once you've established the critical dimensions of the rule joint (see the story on p. 66), it's time to set up the router. I have two, so I can have one set up for the roundover cut (table edge) and the other for the cove cut (leaf). That allows me to go

1 CUT THE SPINNERS FROM THE APRON

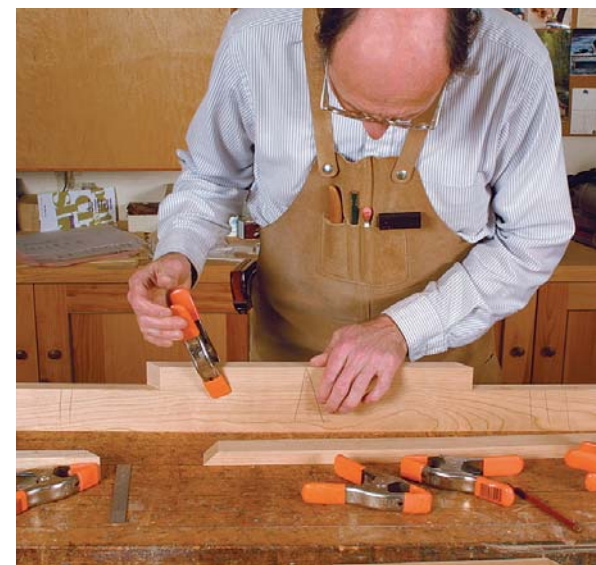


Cut apart the apron. At the tablesaw, rip the spinner stock from the top edge of the apron.



Separate the spinner stock. Becksvoort cuts the spinners using a 45° crosscut sled.

2 REASSEMBLE THE APRON



Position the spinners. Starting at the center of the apron, clamp the first spinner in place.

back and recut either portion of the joint if I'm not happy with the fit.

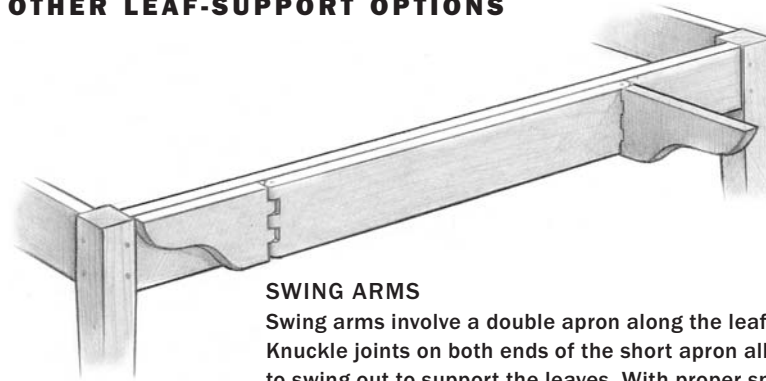
Make the roundover cuts first on the tabletop. Three passes usually get me to the appropriate depth. The router bit's bearing rides on just a sliver of edge on the final pass, so you need to clamp an auxiliary wood fence to the router base for a longer bearing surface.

Next, mount a cove bit in the router and make three passes under each leaf. Now fit each leaf next to the tabletop, and sight down the joint. Differences in height will, for the most part, be pulled together by the four hinges. Differences in width or parallelism will have to be adjusted. First use a block plane to remove tight areas (usually on the leaf, which is more prone to bowing). Once the gap between leaf and table is a constant width, flip over the leaf and rerout the cove. Because the bearing rides on the quirk that you've just planed to fit, that's where all of the routing takes place. Once you're satisfied with the fit of both joints, you can install the hinges.

Attach leaves and fine-tune the fit

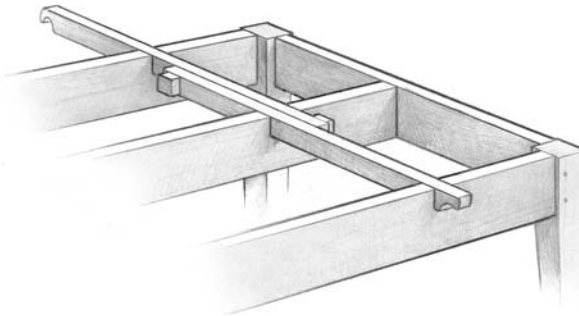
First, locate the hinges using the story stick. Because the hinges are perfectly flush to the underside (if properly installed), the locations can be altered if you have a severe

OTHER LEAF-SUPPORT OPTIONS



SWING ARMS

Swing arms involve a double apron along the leaf sides. Knuckle joints on both ends of the short apron allow the ends to swing out to support the leaves. With proper spacing and planning, one or more swing arms can be used. With well-made knuckle joints, this is arguably the strongest leaf-support system because it does not involve cutting the apron.



SLIDING SUPPORTS

Although a bit more work than making spinners, sliding supports are a neat and clean alternative. They should be no more than a third the height of the aprons. They work best where the leaves are less than half the width of the tabletop. For a complete description, see *FWW* #111, pp. 75-79.

3 ATTACH THE SPINNERS



Rebuild the apron. Reglue the parts of the apron, making sure everything remains in the correct order. Keep things tight, and work from the center toward the ends.



Don't just drive a nail. With the spinner clamped in place, drill a hole in the center to accept a 10d finish nail.



Bumpers allow smooth spinning. Before installing the spinners, Becksvort planes them slightly, then sets nylon bumpers into place.



A SMOOTH-OPERATING RULE JOINT

1 ROUT THE TABLETOP AND LEAVES



Cut half a rule joint. Take several light passes before setting the bit to final depth and cutting the roundover portion of the rule joint (left). Then cut the leaf of the tabletop in several passes with a cove bit.

warp in a leaf, for example. However, if your table is narrow, and you have attachment screws that go through the aprons, the hinges cannot go in the same place as the screws. Bring a line from the quirk on the tabletop to the underside of the table. Set a marking gauge $\frac{1}{4}$ in. closer to the table's edge and mark through all eight hinge locations. Then center the hinge pins over the scribe marks, with the long leaves extending onto the table leaves. With a pencil, mark the locations of the hinge barrels and draw these lines parallel to the scribe marks.

Using a $\frac{1}{4}$ -in. bit, rout out for the hinge barrel. This trough can be a bit deeper and wider than the barrel, but no longer. Clean the ends with a $\frac{1}{4}$ -in. chisel. Clamp both ends of the table and leaves right at the joint. Place the hinge barrel into the trough, keep the pin centered on the scribe line and use a sharp knife to scribe all four sides of the hinge. With the router set to the thickness of the leaves, rout the mortise

and clean the corners with a chisel. The hinge should be snug and flush. Drive in all six screws (at least $\frac{1}{8}$ in. shorter than the top thickness). Repeat for each hinge.

If the table and leaves are straight, fitted and laid out accurately, fine-tuning the joint is a minor chore. I fold down the leaf and take a few passes with a block plane along the bottom edge of the top. A bit of hand-sanding, and that's it. Frequently, it is a bit more involved. When I fold the leaf back up, it invariably rubs and squeaks. Of-

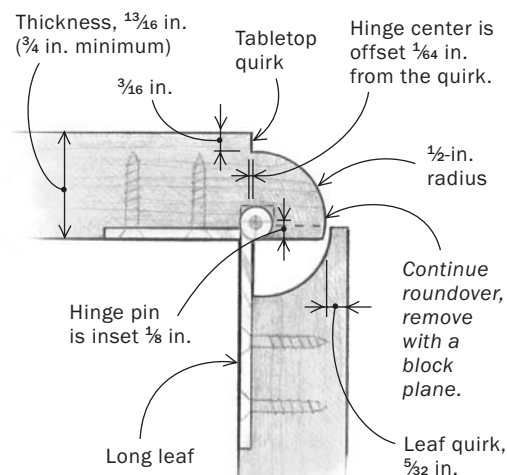
The rule joint: It all hinges on the barrel



Locate the hinge barrel. Square a line up from the quirk.

When hinging a rule joint, convention says to center the hinge under the quirk, but I've found that it's better to offset the center of the hinge $\frac{1}{4}$ in. closer to the edge of the tabletop. The center of the hinge pin is buried $\frac{1}{8}$ in. above the bottom surface, which is the rotating axis of the joint. Consequently, the quirk height is the sum of the depth of the hinge pin ($\frac{1}{8}$ in.) plus the radius of the roundover bit ($\frac{1}{2}$ in.), which totals $\frac{5}{8}$ in., subtracted from the total thickness of the top. To keep the quirks substantial, I made this tabletop $\frac{13}{16}$ in. thick, but $\frac{3}{4}$ in. is minimum. For a $\frac{13}{16}$ -in.-thick top, that leaves a $\frac{3}{16}$ -in. quirk on the tabletop. On the leaf, a $\frac{1}{32}$ -in. clearance is ideal between it and the table, meaning that the leaf quirk is only $\frac{5}{32}$ in.

RULE-JOINT DETAIL



2 ADJUST THE REVEAL AND REROUT THE LEAVES



Mark the contact spots. Set the leaf in place, and mark spots where the joint makes contact.



Trim the leaf, not the tabletop. A few passes with a handplane helps achieve an even reveal. Once the joint closes up, rerout the profile on the leaf and try another test fit.



ten I can visually locate the points of contact and eliminate them with a rabbet plane and sandpaper. More often than not, I get out my supply of ancient carbon paper and slide it between the leaf and table, then fold the leaf up and down a few times to locate the friction points. I do this along the entire length, two or three times, planing and sanding the dark spots each time.

When both leaves fold smoothly, mark equal distances from the end hinges for an 84-in. length, square a line across both ends and cut the assembly to length. I use a circular saw with a fence clamped in place. I belt-sand through to 320 grit, hand-sand using 320 grit and then polish with 0000 steel wool.

Attach the top, open the spinners 90° and mark under the tabletop for stops. A small ½-in. by ½-in. by 1-in. block glued to each of the six marked locations allows the spinners to open perpendicular to the table aprons. If I detect any sag in the leaves, I glue a small wedge-shaped shim in front of the stop blocks to level the leaves.

My finish of choice is Tried & True varnish oil, four or five coats applied over a three-week period. Rub with 0000 steel wool after the first coat, and let subsequent coats build to a satin sheen. □

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3 INSTALL THE HINGES AND CHECK THE FIT



Carbon paper still has a use. Becksvoort holds carbon paper between the joint as he opens and closes the leaf. Black marks are left where the joint is too tight. Those spots are trimmed with sandpaper or a block plane.

