Woodsmith PLANS

CURVED-FRONT HALL TABLE

TOTAL SUCCESS
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HEIRLOOM PROJECT

CURVED-FRONT TABLE

A curved apron and tapered legs with inlays are two of the challenges in building this classic table. Actually, instead of creating traditional inlays, you'll use a simple technique that achieves the same look.

There's something about this curved-front table that brings out the curiosity in any craftsman. How are the curved aprons made? Is a thick piece used and then cut into a curved shape? Or is it bent somehow? And how about the legs? I'm sure some kind of fancy jig was used to get the inlays so tight.

Not at all. In fact, both of these seemingly complex woodworking tasks have simple solutions.

CURVED APRONS. The curved aprons of the table are made from plywood and have a series of saw kerfs cut in the back to allow the wood to bend.

TAPERED LEGS. The "inlaid" legs are another example of a simple solution to a difficult task — how do you inlay tapered strips on all four faces of each leg?

In what could almost be called a reverse inlay technique, I removed wood from the leg to leave the "inlay." Then, I glued thin strips of contrasting wood where the wood had been removed. It's that simple.

WOOD. I used solid cherry for the legs and cherry plywood for the aprons and tabletop. The contrasting wood trim is walnut. I also used some ½"-thick plywood to build the inner case that the aprons are bent around.

OPTIONS. Although I really like the look of the inlaid legs and the inlay on top of this table, it can be built without these details and still look quite elegant.

FINISH. To finish the table, I wiped on one coat of *General Finishes' Sealacell* and two coats of their *Satin Royal Finish* top coat.

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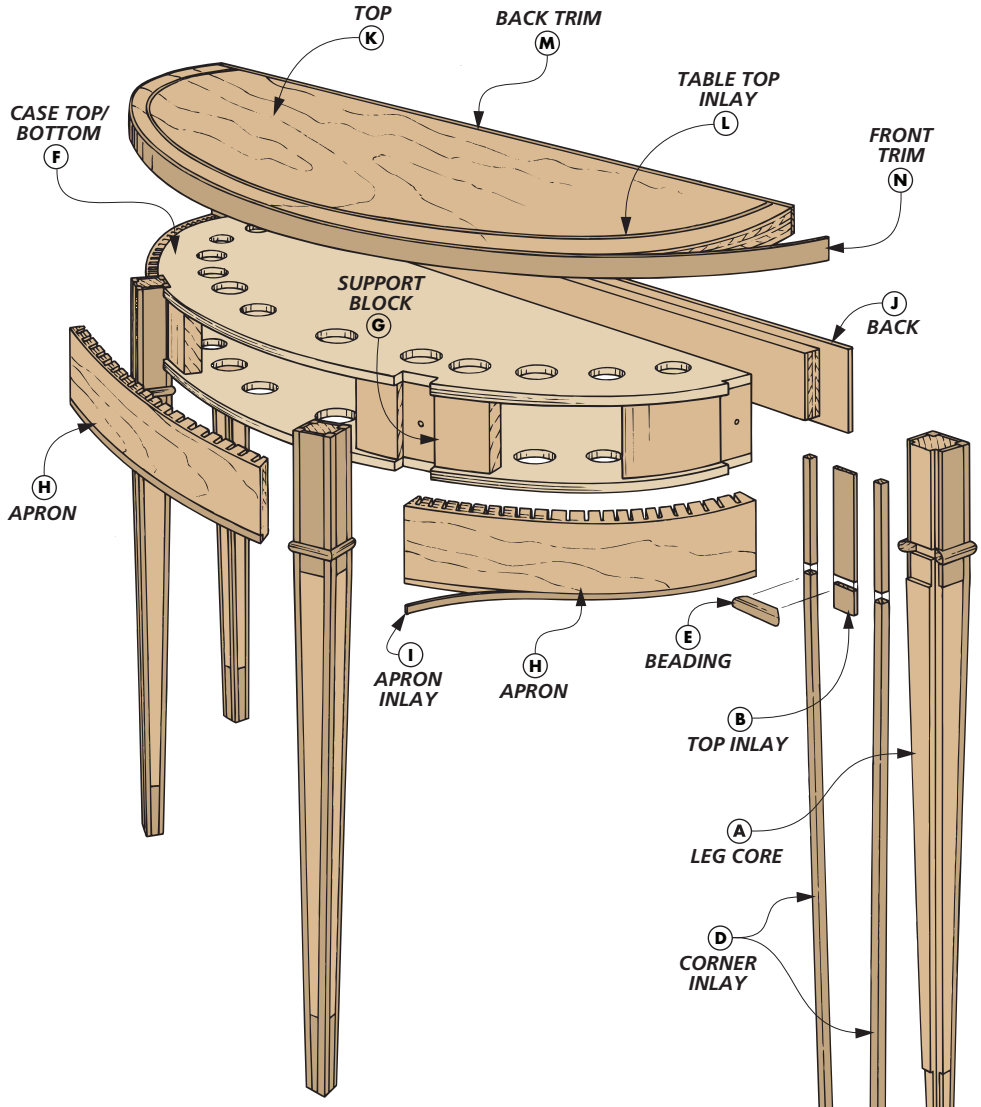
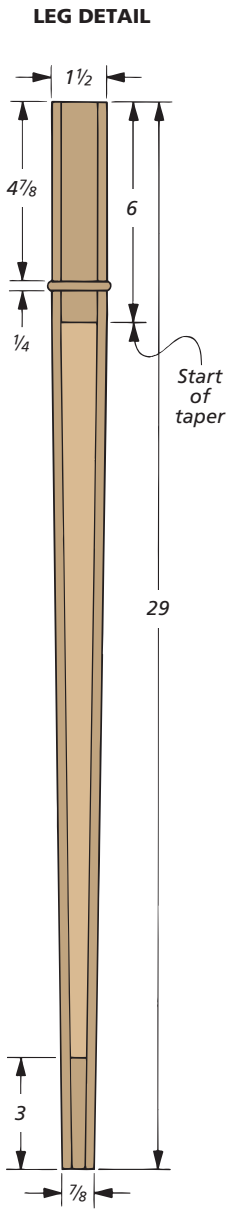




Construction Details

Overall Dimensions: 36¼" x 14⅛" x 29¾"

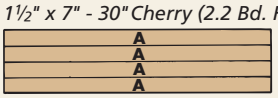
MATERIALS & HARDWARE

A	Leg Core (4)	1½ x 1½ - 29
B	Leg Top Inlay (16)	⅛ x 1¼ - 6
C	Leg Btm. Inlay (16)	⅛ x ⅞ - 3
D	Leg Corner Inlay (16)	¼ x ¼ - 30 rgh.
E	Leg Beading (1)	¼ x ¼ - 30 rgh.
F	Case Top/Btm. (2)	½ ply. - 12⅜ x 33
G	Support Blocks (4)	1½ x 3 - 6
H	Apron (1)	¾ ply. - 4 x 48
I	Apron Inlay	1/16 x ¼ - 48 rgh.
J	Back (1)	¾ ply. - 4 x 32¼
K	Top (1)	¾ ply. - 13⅞ x 36
L	Table Top Inlay	⅛ x ¼ - 54 rgh.
M	Back Trim (1)	⅛ x ¾ - 36
N	Front Trim (1)	⅛ x ¾ - 54 rgh.

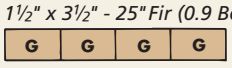
General Finishes' Sealacell Sealer
General Finishes' Royal Finish (Satin)

CUTTING DIAGRAM

1½" x 7" - 30" Cherry (2.2 Bd. Ft.)



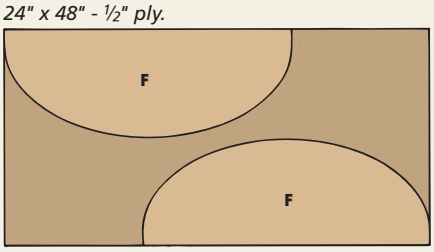
1½" x 3½" - 25" Fir (0.9 Bd. Ft.)



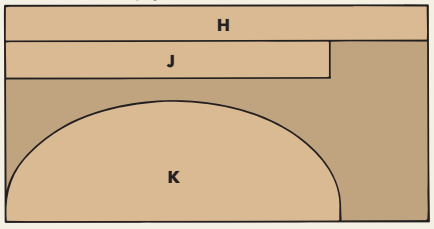
¾" x 7" - 60" Walnut (2.9 Bd. Ft.)

***NOTE:** A 24" x 48" sheet of ¼" hardboard is also required for the template*

24" x 48" - ½" ply.



24" x 48" - ¾" ply.



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Tapered Legs

Before starting on this table, you have to decide if you want to add inlays and decorative beading to the legs or not.

If you don't want to add them, you can start on the legs by cutting four leg cores, 1½" square and 29" long. (I used cherry for the legs.) Then skip to the "Taper Leg Cores" section below, and continue with building the case on page 5.

INLAYS. If you want the inlaid look for the legs, go ahead and cut the leg cores. Although the inlaid legs (which you can see in the photo on page 1) appear to be made from walnut with cherry inlays, I think it's easier to start with cherry cores and inlay walnut into the corners, top, and bottom of the legs.

TOP RABBET. After cutting the cores, cut a wide, shallow rabbet around the top of each leg for the leg top inlays, as shown in Figure 1. Position the table saw rip fence so it's 6" away from the outside edge of a dado blade (Figure 1a). Then adjust the blade to cut to a depth of ⅛".

Now cut a shoulder on each face of the leg — using the rip fence as a stop and the miter gauge to keep the workpiece square. When the shoulders are cut, go ahead and waste away the remaining stock to the end of the leg.

TAPER LEG CORES. After the top rabbets are cut on all four legs, the next step is to taper the legs, refer to the Leg Detail on page 2. I did this on the table saw using a taper jig set to begin the taper at the shoulder of the rabbet, as in Figure 2.

BOTTOM RABBET. Once a taper is cut on the legs, the rabbet can be cut for the bottom inlay. To do this, first position the rip fence so it's 3" from the outside edge of your dado blade, as shown in Figure 3.

There's a potential problem here. Since the leg is now tapered, if you cut the bottom rabbet with the miter gauge set at 90°, it won't be parallel with the bottom of the leg. So, you need to tilt the miter gauge so the bottom end of the leg is flat against the side of the rip fence. Then, cut the rabbets as you did for the leg top inlay.

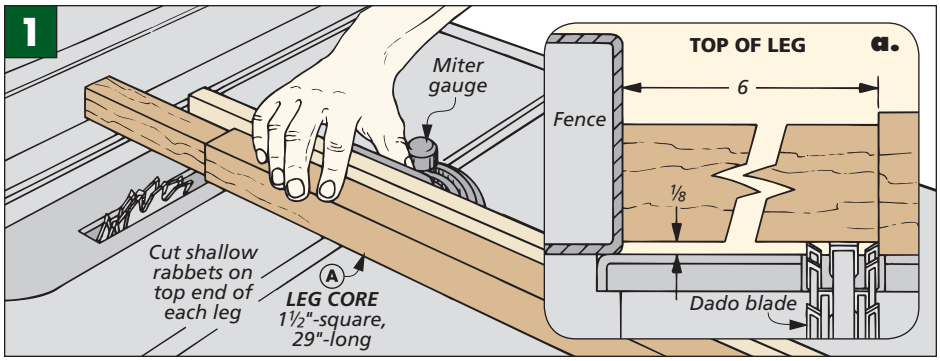
TOP & BOTTOM INLAY. With the legs rabbeted, walnut inlay pieces can be cut to fit the rabbets. Start by cutting through stock for sixteen pieces of leg top inlay and sixteen pieces of leg bottom inlay.

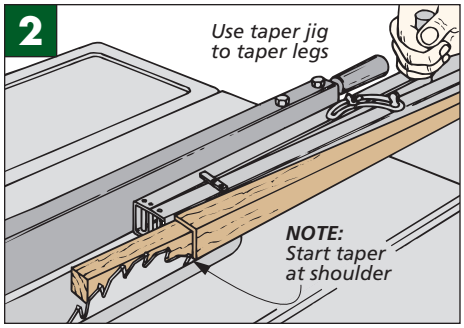
To do this, resaw the stock so it's as thick as the rabbets are deep (⅛"). Then cut the pieces to fit the rabbeted areas and glue them in place, as illustrated in Figure 4.

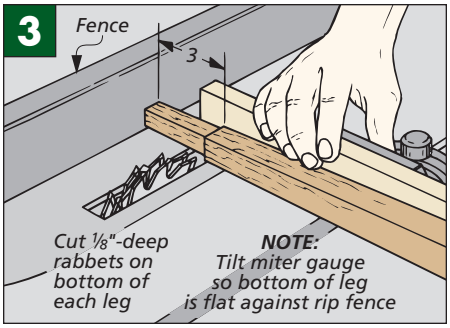
Note: Since you'll be cutting away the corners of each leg, this inlay doesn't have to extend all the way to the corners — just to the shoulders of the rabbet. Take a look at Figure 5a.

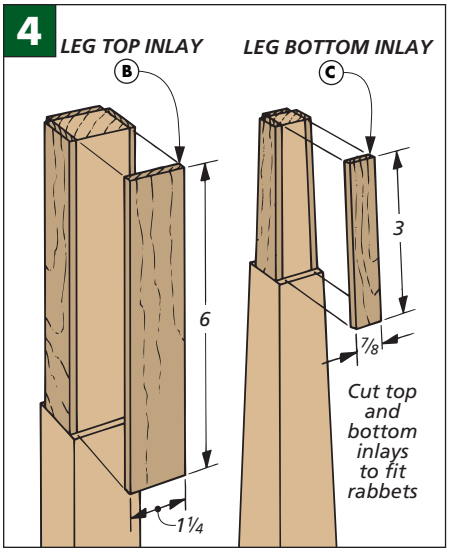
CORNER INLAY. The next step is to rout a ¼" x ¼" rabbet the length of each leg for the leg corner inlay (Figure 5a). I did this by making two passes on the router table, as in Figure 5. (For more information on this, refer to Shop Notes on page 9.)

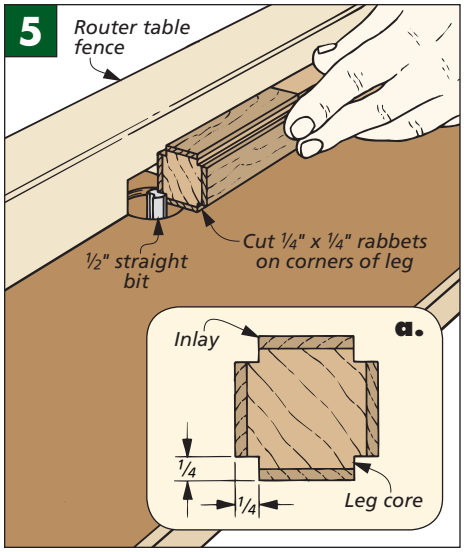
Now cut sixteen leg corner inlays to fit the rabbets, as illustrated in Figures 6 and 6a. Then, glue the strips to the legs and sand them flush.

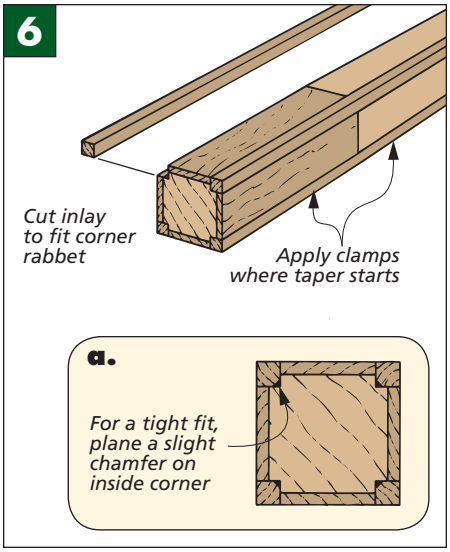












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Beading

There's one more set of trim to add to the table legs — the decorative beading that softens the transition between the flat section at the top of the legs and the tapered lower section.

ROUT DADOES. The beading fits in shallow dadoes cut near the top of each leg, as in Figure 11. I routed these dadoes on the router table, as in Figure 7. You could use a table saw, but the chance of chipout is reduced if you use a router (and you'll get a cleaner cut.)

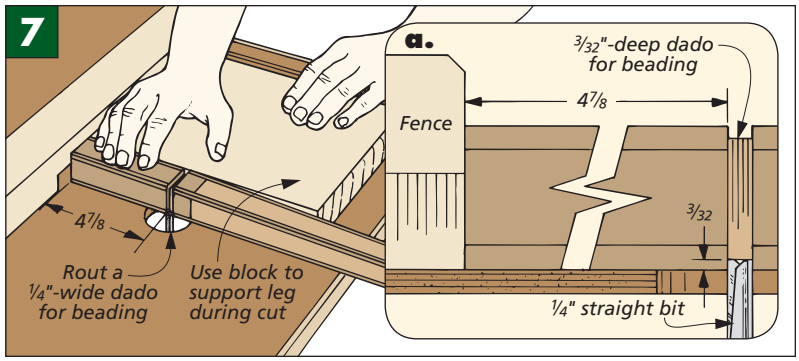
To locate the dadoes, start by positioning the fence on your router table 4⅞" from the inside edge of a ¼" straight bit (Figure 7a). Then use a board to back up the leg, and rout the dadoes on each leg (Figure 7).

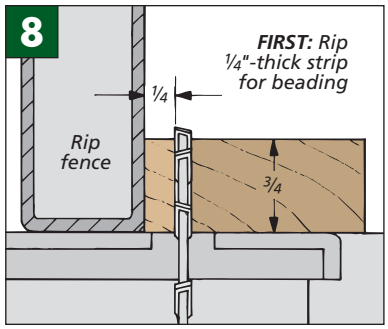
CUT BEADING. Once the dadoes are cut, the next step is to make the beading. Since the beading is small (¼" x ¼"), it's safest to start with a wide piece and then cut the beading off the edge of the strip.

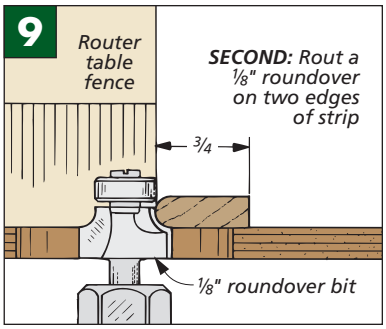
First rip a strip ¼" thick (Figure 8), and then use a ⅛" roundover bit on the router table to round over both edges, as shown in Figure 9. (This produces a ¼" bead.) Now, the beading can be safely cut off the edge of the strip, as in Figure 10. Position the fence to cut a ¼"-wide bead on the waste side of the blade.

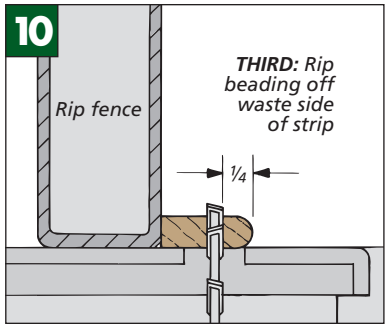
MITER BEADING TO LENGTH. After the strips for the beading are cut, the final step is to miter sixteen short pieces to fit in the dadoes on the legs (Figure 11). I cut these pieces on a shop-built miter box, as shown below.

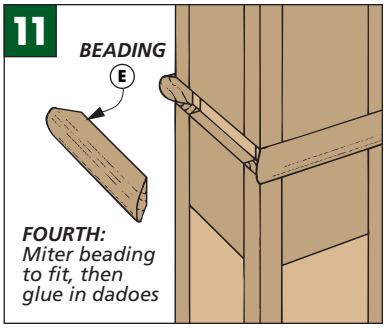
I cut the pieces one at a time and glued them in place. This way I could work on one leg as the beading on another leg was drying. (Note: The beading should fit tight without clamps, but if they're loose, tape them in place until the glue dries.)









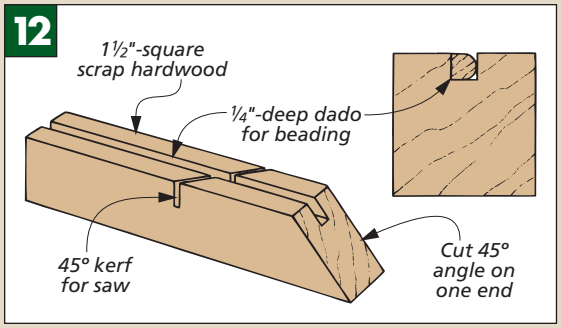


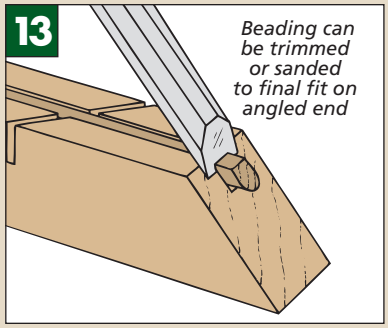
MITERING SMALL PIECES

How do you accurately miter and trim short pieces such as the beading for the legs for the curved-front table? The method I use is to make a miniature miter box with a 45° kerf to guide a hand saw.

MAKE BOX. To make the miter box, start with a scrap of 1½"-thick hardwood (Figure 12). Then, cut a centered groove the length of the scrap to hold your workpiece. Next, lay out and cut the 45° kerf with a hand saw.

CUT 45° ON END. You can also trim miters with this miter box. To do this, cut a 45° angle on one end, as shown in Figure 13. Then position the workpiece so it extends out the angled end and chisel, file, or sand the piece for a perfect fit.





▲ *The workpiece is held by pressing it into a groove cut in the top of the miniature miter box. The end of the miter box is cut at an angle so it can be used for final trimming.*

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Curved Front Case

The tapered legs are mounted to a carved case that also acts as a base unit for the aprons. The case consists of two pieces of plywood held together with curved support blocks (photo on page 6).

The support blocks are notched to accept the legs, and a series of holes are drilled in the case to aid in clamping on the aprons later (Exploded View, page 2).

TEMPLATE. I started work on the case by making a template to cut the case top and bottom. There are two reasons for this template. First, you only have to lay out one ellipse — even though there are three pieces with this shape on the table (the two case pieces and the finished top).

Second, you can also use the template (along with a flush-trim or pattern bit) to cut identical forms for the case and to cut the top and add an inlay strip (page 8).

To make the template, start by laying out the ellipse dimensions on a piece of ¼"-thick hardboard (Figure 14). To allow for the back legs and inset back piece, lay out the centerline of the ellipse 1⅜" from the back edge of the hardboard. Now draw the ellipse. (For a description of how to do this, refer to page 9.) Finally, cut the template out and sand the edges smooth.

CASE TOP & BOTTOM. After making the template, the next step is to cut and trim the case top and bottom from ½"-thick fir plywood (Figure 14). To do this, trace the outline of the template onto the plywood. Then, rough cut the top and bottom to within ⅛" of the pencil line, as shown in Figure 14a.

Now use the template and a flush-trim bit to trim the plywood to match the template. To do this, tape the template to the blank with double-sided tape. Then, adjust the bit so the bearing rides against the template, and trim the blank to shape (Figure 15).

LAY OUT NOTCHES. Once the case top and bottom are trimmed, the next step is to lay out four ⅜"-deep notches along the edges to accept the legs. To save time, lay out the notches on the top only. Then tape the top and bottom together with double-sided tape to cut the notches in both pieces together.

To locate the two center notches, make marks on the back edge of the case top, 7" in from each end, as in Figure 16. Then transfer the positions up to the front edge.

Now, hold a leg on the mark and draw the thickness of the leg toward the inside of the top, as illustrated in Figure 16.

The notches for the back legs are a little different. They're narrower than the leg so the legs stick out beyond the back of the case pieces. (This allows for the case back that's added later.) So cut these notches ⅛" narrower than the legs (Figure 16).

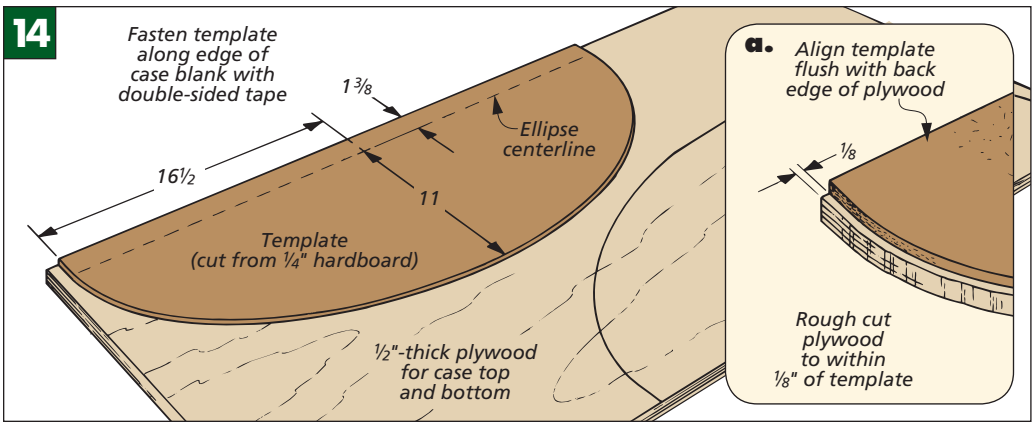
CLAMP HOLES. Since the case top and bottom are used to support the curved aprons, I drilled a series of holes in both pieces to be able to clamp the aprons in place. To do this, lay out and drill twelve holes, as shown in Figure 16. (I used a 1½"-dia. bit, but this can vary depending on the size of clamps you use.)

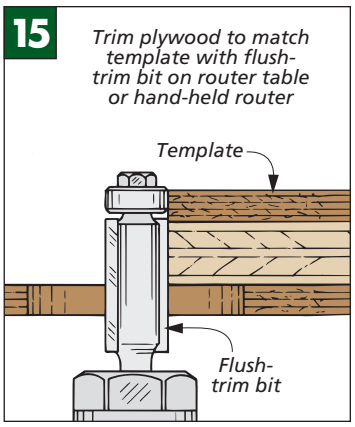
SUPPORT BLOCKS. Once the clamp holes are drilled, work can begin on the support blocks. These blocks act as spacers between the case top and bottom and also as screw blocks for the legs, refer to Figures 19 and 20 on the following page.

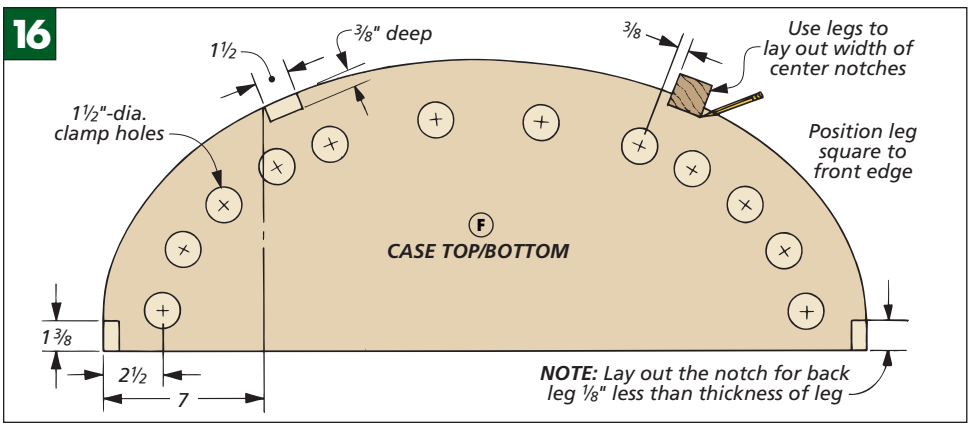
Make the support blocks by ripping a piece of standard 2x4 to 3" wide. Then cut off four 6"-long blocks.

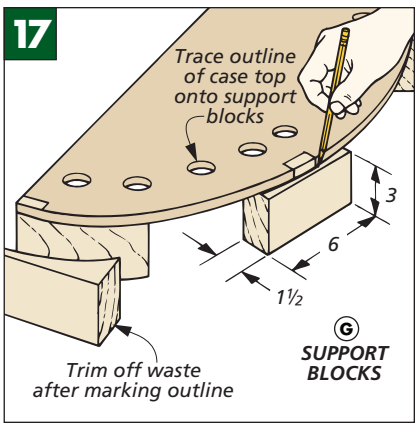
Next, center two blocks under each of the middle leg notches that are laid out on the case. The other two blocks are positioned flush with the back edge for the rear leg notches, as shown in Figure 17.

Now, trace the outline of the plywood case onto the blanks and cut out the support blocks along this line.









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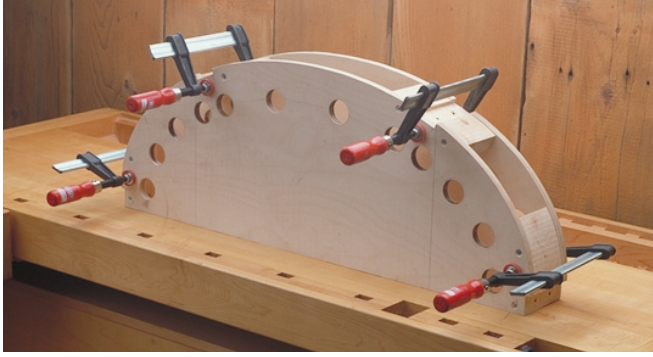
Case (continued)



After the support blocks have been cut to match the curve of the case top and bottom, they can be screwed in place.

Since the apron (that's added later) is glued only to the plywood top and bottom, I set the support blocks back ⅛" from the front edge. This won't affect the support the blocks provide to the legs, though — they will be notched along with the plywood top and bottom to accept the legs.

ASSEMBLE CASE. Assembly of the case begins by screwing the support blocks one at a time to the bottom of the case.

To do this, center a support block on a notch and set it back ⅛" (Figure 18). Now clamp the block in place and screw it to the plywood. Note: I used two flathead screws for each support block and countersunk them into the plywood so the table top (added later) will sit flat on the case top.

After all four blocks are screwed to the bottom, the top of the case can be attached. Screwing it to the blocks is easy — but getting the top and bottom aligned with each other is not so easy. If the case top and bottom aren't square and aligned to each other, the aprons won't be square to the table top when they're glued on later.

To attach the top of the case, place the assembly on edge with the back edge resting on a flat surface, as in Figure 19. Then, use a try square to align one end of the case. Once the top and bottom are aligned, clamp them together. Then, slide the square slowly up the curved case, checking to make sure the two pieces are square with each other.

If they're not square at each support block, you can shift the top or bottom of the case to bring them into square. When they're clamped square, screw the top of the case to the support blocks.

CUT NOTCHES. After the case is screwed together, the notches can be cut to fit the legs, as illustrated in Figures 20 and 21.

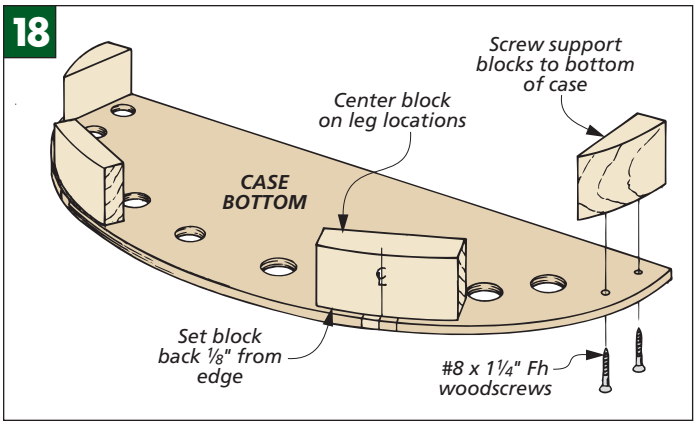
I cut these notches on the band saw by cutting the sides of the notch first and then removing the waste with a series of cuts. You could also use a hand saw to cut the sides and a chisel to remove the waste.

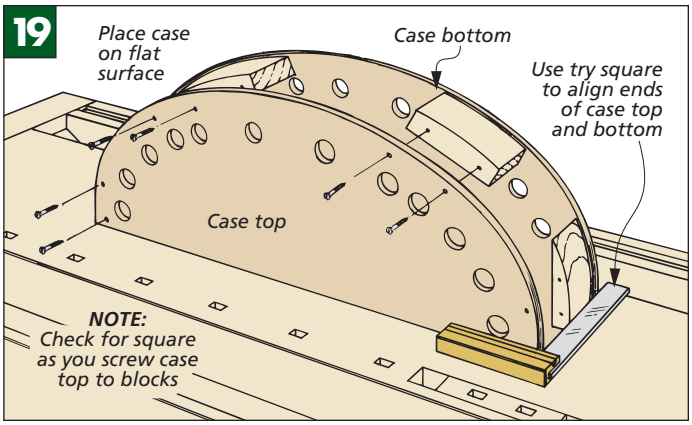
Whichever method you use, it's important that the back of each notch be parallel to the front edge of the case. If it's not, the leg won't be perpendicular to the top of the table. This can cause two problems: First, the legs can twist so they aren't parallel. Second, the aprons (added later) won't butt up against the legs squarely.

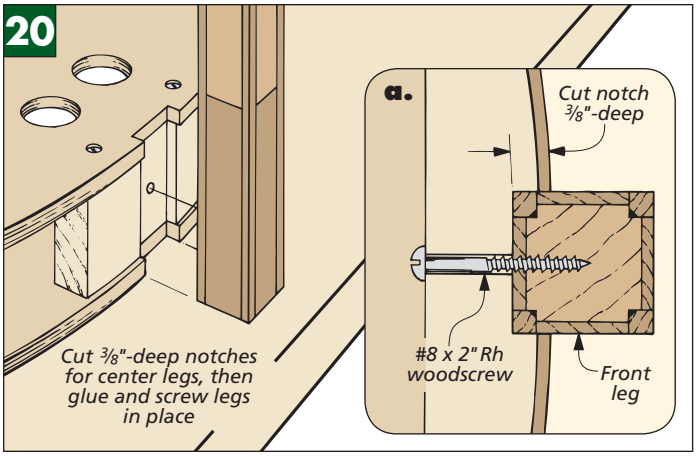
ATTACH LEGS. Once the notches are cut, the next step is to screw the legs to the case. To do this, start by drilling a shank hole centered through the front of each support block, as shown in Figures 20 and 21.

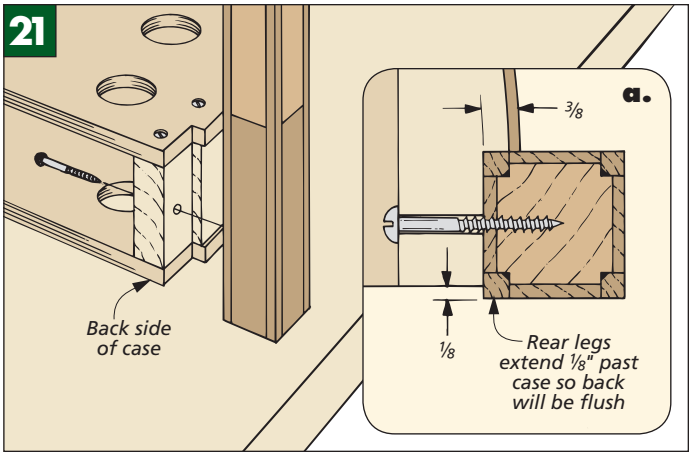
The next step is to locate a pilot hole in each leg. To make it easier to do this, turn the case upside down and place it on a flat surface. Then insert a leg in a notch and hold it in place. Next, reach through the back of the case and push an awl or brad-point bit through the shank hole so it leaves a mark on the leg.

After making each leg, drill a pilot hole in the back of each leg. Finally, spread glue in the notches and on the back of the legs, and screw the legs to the case, making sure they're perpendicular to the case.









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Aprons & Back

At this point, the legs are screwed to the case. Next, you'll add the apron to the curved front. The apron is made from a strip of ¾"-thick cherry plywood that's cut into three sections to fit between the legs.

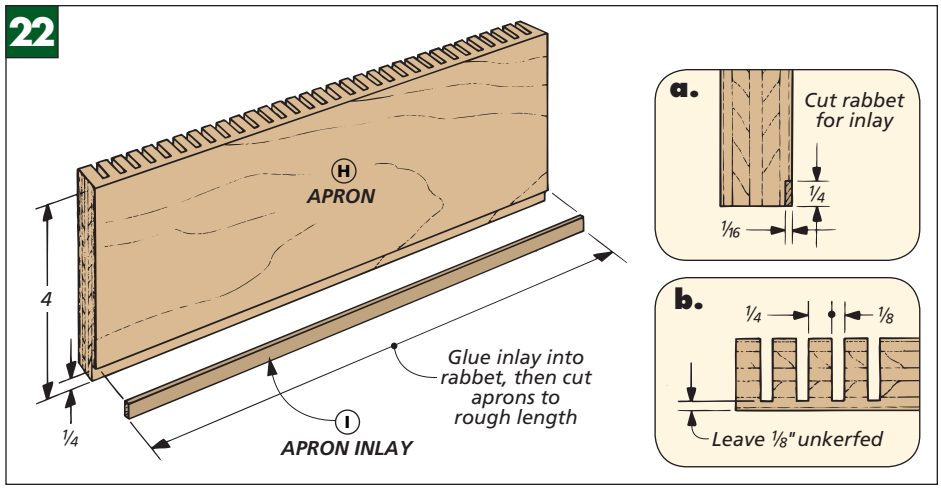
APRON. Begin work on the apron by cutting a 4"-wide, 48"-long strip of cherry plywood. (Note: The face grain of the plywood should run the length of the strip.)

Before cutting the apron into sections, I added an apron inlay strip for appearance. To do this, rout a ¼"-wide rabbet along the bottom edge, as illustrated in Figure 22. Then cut the inlay strip to fit the rabbet. After it's glued in place, sand the inlay flush with the apron.

CUT SECTIONS. Now the apron can be cut into three sections. To determine the rough length of each section, run a tape measure between the legs along the curved case. Then, to allow for the thickness of the plywood and for trimming later, add 1½" to each measurement.

Now cut the strip into three sections. (I cut the two end sections 14" long and the middle section 18" long.)

KERF & FIT APRON. The next step is to kerf and fit the apron sections. I started by cutting kerfs in each section, spacing them every ¼", as shown in Figure 22b.



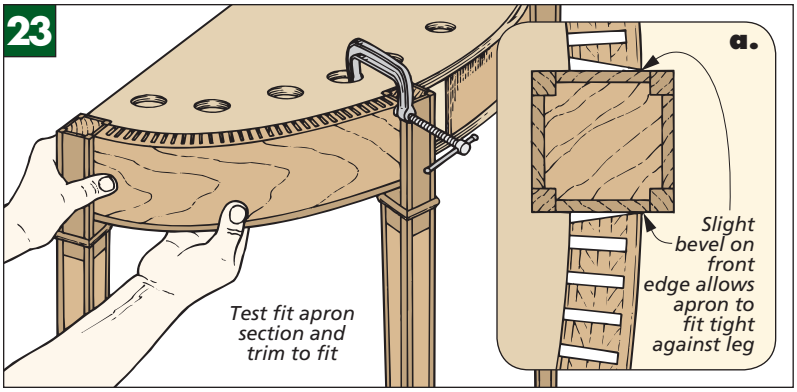
To make it easier to fit the aprons between the legs, I cut a 10° bevel on one end of each apron, as shown in Figure 23a. Then to get an idea of the final length, curl the apron around the edge of the case and make a mark where the unbeveled end meets the leg, as you see in Figure 23. Now cut this end at 10° at the mark. Sneak up on the final length by taking very light cuts until the apron just fits between the legs.

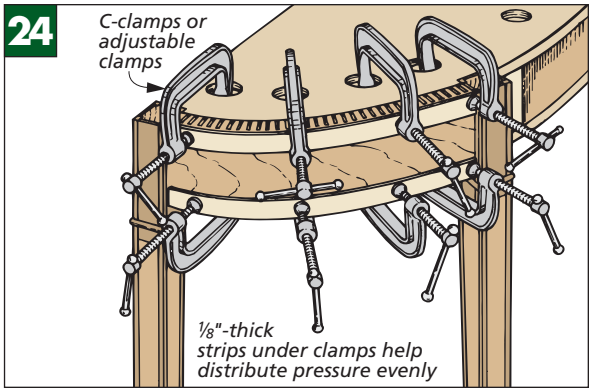
After fitting all three apron sections between the legs, they can be glued and clamped to the case (Figure 24). I added clamping strips to protect the apron and distribute the pressure evenly along the edge.

BACK. The next step is to add the back. To determine the length of the back, measure the inside distance between the rear legs (Figure 25). Measure the height (thickness) of the case to determine the width of the back, and finally cut the back to size.

RABBET EDGES. Since the legs protrude ⅛" from the back of the case, you need to cut a rabbet that leaves a ⅛"-thick tongue on the edges of the back. Cut the rabbets on the ends to match the width of the rear support blocks, as in Figure 25a.

After cutting ½" rabbets along the top and bottom edges of the back, you can finally glue the back to the case.





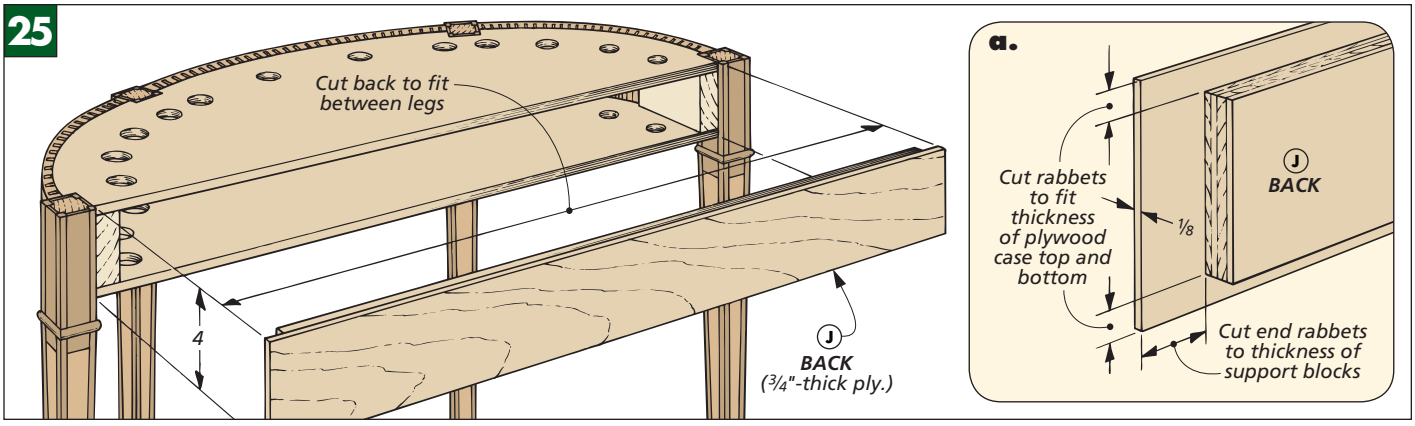


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Table Top

The last step is to add the table top. I made the top out of cherry plywood and covered the plywood edges with strips of walnut. For an accent, I also added an inlay strip of walnut along the perimeter of the top.

TOP BLANK. Start work on the top by cutting a blank of ¾"-thick plywood (Figure 26). This blank is cut into a half-oval shape so it will overhang the case by 1½".

To do this, you could make a new template that's 1½" larger than the one used for making the case. But there's an easier way — just enlarge the size of the original template onto the plywood blank by using a compass (Figure 26). Now rough cut the top ⅛" outside of the pencil line.

That's great for getting the top to rough shape. But how do you use a router to trim the top to final shape without a new template? Simple. Use a pilot strip to position the bit the correct distance from the template (Figure 26a and tip on page 10.)

CUT GROOVE FOR INLAY. Once you've trimmed the top, the next step is to cut a groove for a top inlay strip (Figure 27). To do this, I clamped the template to the top again. But this time, mount a ⅝" guide bushing and a ⅛" straight bit in the router to rout a groove in the top, as shown in Figure 27a.

INLAY. After routing the groove, cut an inlay strip of walnut to fit. At the same time, cut the strips for the back trim and front trim since they're all the same thickness (⅛").

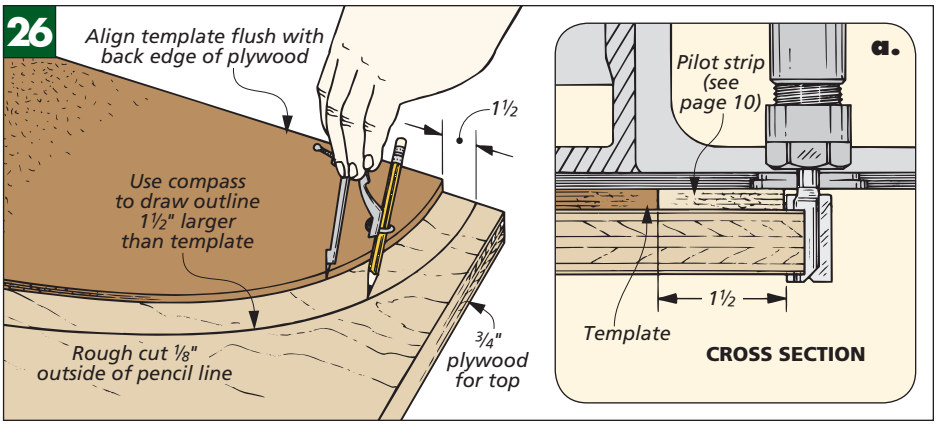
Rip the top inlay to ¼"-wide and glue it into the groove, as in Step 1 in Figure 28. (Note: To make it easier to glue the inlay in place, you may want to plane a slight bevel on each face of the inlay.) When the glue dries, trim the inlay flush with the top, as shown in the lower right box.

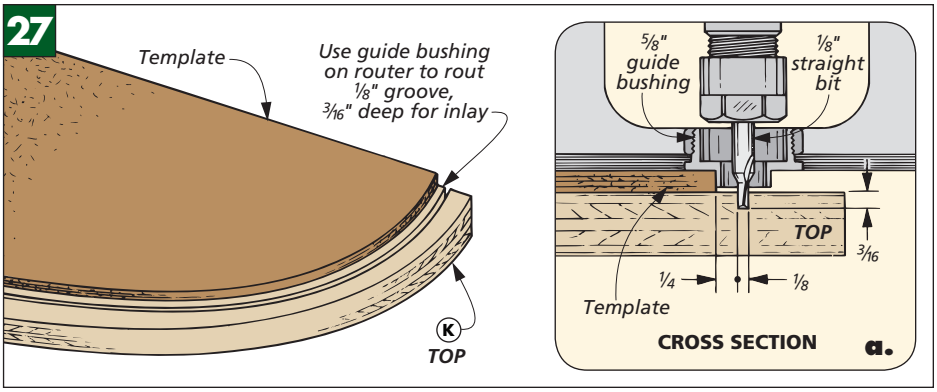
TRIM. The next step is to glue on the back trim, as in Step 2 in Figure 28. (I used tape to hold the strip in place.) When the glue is dry, cut the trim flush with the ends of the top. Then, glue on the front trim.

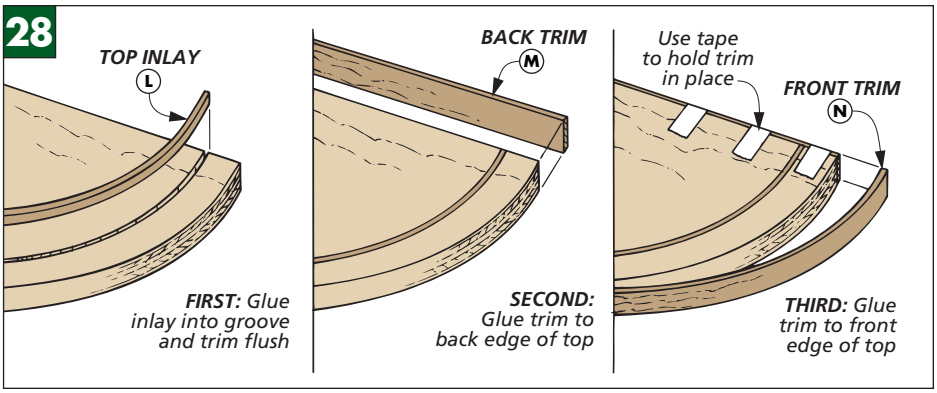
ATTACH TOP. Now the top can be attached to the case. Since both the top and the case are made from plywood (which won't expand or contract with changes in humidity), I simply glued the top to the case.

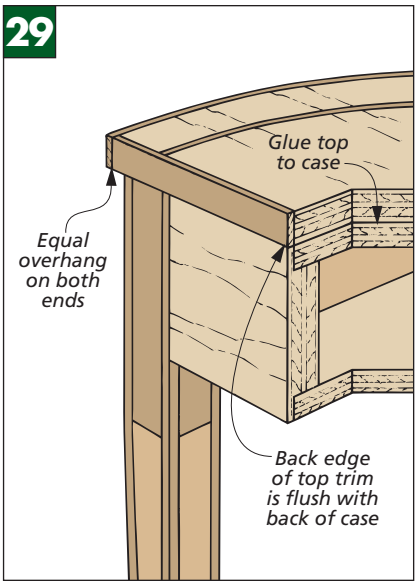
To do this, position the top flush with the back and so it overhangs an equal amount on both ends, as illustrated in Figure 29.

FINISH. After attaching the top, I sanded the entire table and then wiped on one coat of *General Finishes' Sealacell* and two coats of their satin *Royal Finish* top coat.

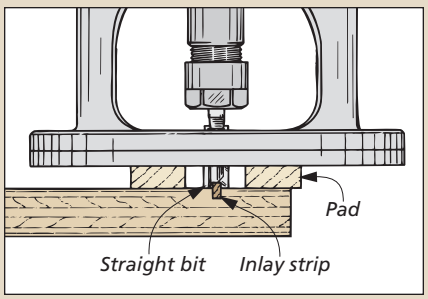








TRIMMING INLAY



To trim inlay without chipout, tape a pair of pads onto the router base with some double-sided tape. Then adjust a straight bit so it's flush with the surface, and rout the inlay flush.

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SHOP NOTES

Rabbeting without Chipout

When routing a rabbet along the corner of a piece of wood, there's always a chance of chipout along the outside face of the workpiece, as you can see in Figure 1. (There shouldn't be any chipout along the inside of the rabbet since the wood fibers behind those being cut support them).

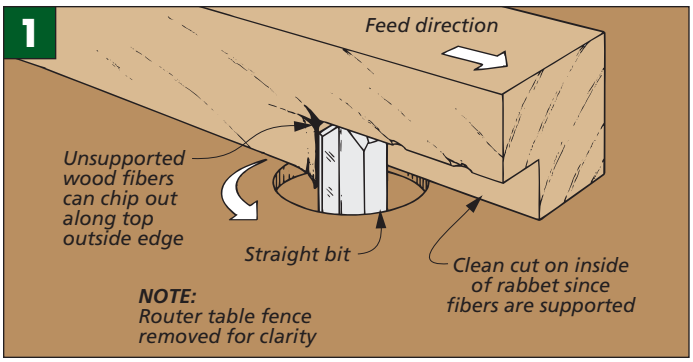
Along the outside face, the fibers aren't supported. If the grain direction of the workpiece runs at an angle, there's likely to be chipout along the top outside edge of the rabbet, as shown in Figure 1.

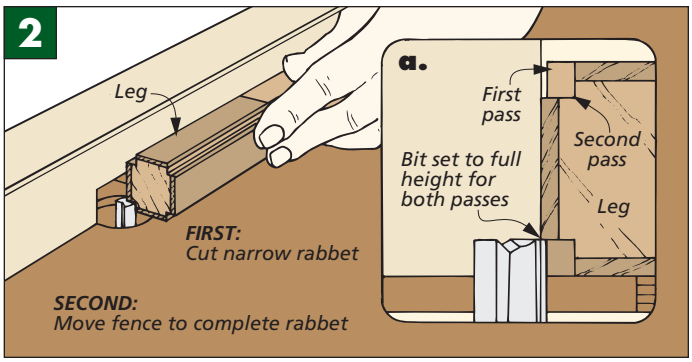
CLEAN EDGED RABBET. Since all faces of the table legs are exposed, rabbets with two clean edges must be cut for the corner inlays. (Normally, this isn't a problem since chipout on the outside face is often hidden by a piece of wood fitted in the rabbet).

Typically, a ¼" x ¼" rabbet might be cut in a single pass with a straight bit on the router table. Or it could be cut in two passes, raising the bit between passes.

TWO-PASS METHOD. For this project, I used a two-pass method. But instead of raising the bit between passes, I cut the first pass with a straight bit set at full height. The difference is that I set the router table fence so only 1/16" of the bit was exposed, as you can see in Figure 2. This first pass lightly skims the face and greatly reduces the chance of any chipout along the top outside edge of the rabbet.

Then, to complete the rabbet, reposition the fence to expose ¼" of the bit and make a clean full-depth cut along each corner of the leg, as illustrated in Figure 2.





Drawing a Partial Ellipse

To make the semi-elliptical table top, you need to draw a partial ellipse. All it takes is a pencil, a piece of wire, and a few nails.

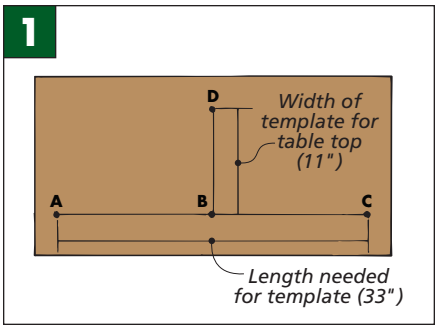
LAY OUT. Start by drawing a straight line as long as the template for the table top (33"), as in Figure 1. Mark one end of the line A, and the other end C. Find the centerpoint and mark it B. Next, draw a perpendicular line from the centerpoint, B. Make it the same length as the width of the table top (11"). Mark the top end of this line D.

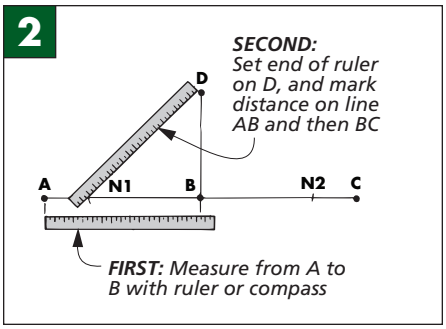
The next step is to locate two nail points. To do this, use a ruler or compass to find the distance from A to B (or B to C, it should be the same). Then measure this distance from point D to line AB and also to line BC (Figure 2). These are your nail points, mark them N1 and N2.

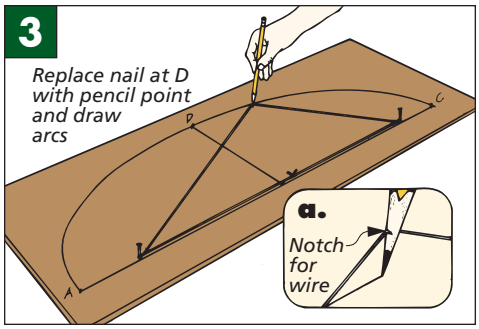
NAILS & WIRE. The next step is to drive a nail or brad into N1, N2, and D. Then loop a piece of thin wire (I used 32 gauge) tightly around all three nails and twist the ends together. Note: Don't use string because it stretches too much.

DRAWING AN ELLIPSE. Finally, remove the nail at D and replace it with a pen or pencil point. Keeping the wire taut, draw an arc from D to A and from D to C (Figure 3).

Note: If you're using a pencil, cut a notch for the wire to ride in about ½" from the pencil tip, as shown in Figure 3a. This will keep the wire from sliding and make it easier to draw an accurate ellipse.







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Pilot Strip for Router

When it came time to make the top for the curved-front table, there was a problem. I wanted the top to have the exact same elliptical shape as the case — only larger.

The best solution was to use the same template that I made for the case parts.

PILOT STRIP. The technique I came up with that allowed me to do this involves taping a strip of wood to the base of the router (Figure 1). This pilot strip keeps the router bit a uniform distance from the edge of the template. And that makes the top larger.

To make the pilot strip, cut a small scrap of stock 1½" wide and 5" long. The strip should be the same thickness as the template (¼" in my case).

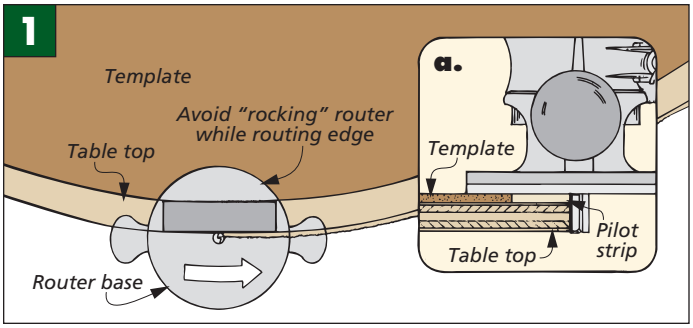
Then tape the pilot strip to the router base using double-sided tape. Position the edge of the strip so it just touches the edge of the straight bit you use for trimming, as illustrated in Figure 1.

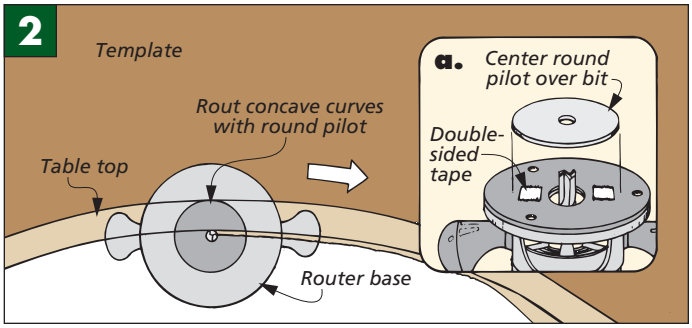
USING A PILOT STRIP. Now, to use the pilot strip, start by taping the template to the workpiece and cutting the workpiece slightly oversized (refer to Figure 26 on page 8). Then set the router on the template so the edge of the pilot strip rides against the edge of the template, as in Figure 1a. Try not to "rock" the router along the edge of the template as you rout the workpiece. Rocking will increase the distance between the template and the bit.

INSIDE CURVES. This works well for routing straight stock and outside (convex) curves, such as the curved-front table. But a straight pilot strip won't allow the bit to go into an inside (concave) curve. In this case, I use a round pilot, as in Figure 2.

To make a round pilot, draw a circle on the pilot stock with your compass set to the distance you want to increase the template plus half the diameter of the bit. Then you can go ahead and cut out the circle.

Once that's done, drill a hole in the center of the pilot that's slightly larger than the bit. And finally, attach the pilot to the router base making sure it's exactly centered over the bit.





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