Secret to a Sheraton Leg? Divide and Conquer

BY MARIO RODRIGUEZ

I'm always on the lookout for small but challenging projects, so this Sheraton table caught my eye. It's a stylish piece, compact and delicate. But it was the turned legs that really grabbed me. The top portion is turned to a tight stack of perfectly formed rings. Below the rings are 12 carved, tapered reeds that end neatly in a small ring and reel at ankle height. Under the ring and reel, the leg swells to a smooth bulb, and finally ends in a narrow tip.

All that turning made me hesitate. I've never considered myself a turner, more like a furniture maker who turns a little. So how did I create the four ornate legs you see in the photo? I did it by dividing each one into three separate sections—upper rings, center reeds, and foot—connected by simple mortise-and-tenon joinery. Doing so let me make multiple copies of each section, discarding any single part that wasn't up to snuff without losing the rest of my work.

This safety net also makes the project a great opportunity to grow as a turner. The work can be done on a small lathe, and each section features different details and treatments, requiring a range of skills and techniques.

The TOP section is turned with two sets of rings, grouped to match the width of the drawer faces.

The CENTER section is tenoned on both ends. The upper portion begins with a ring that aligns with the bottom of the case. A series of turned shapes gives way to a long, straight taper into which the reeds are cut.

The reeds in the center section die beautifully into the BOTTOM section. Another series of traditional details leads to the elongated taper at the foot.

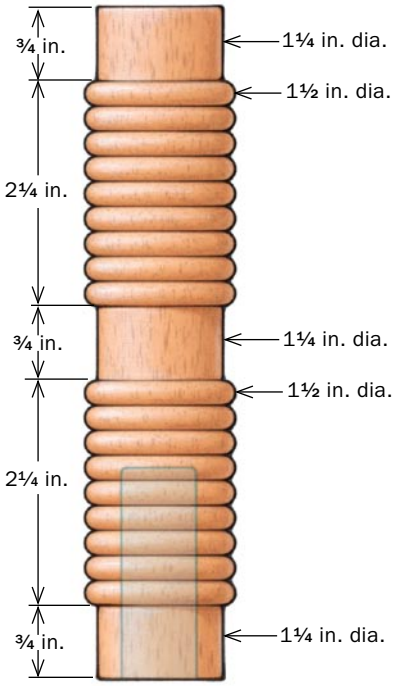
Straight joints make a straight leg

For this approach to succeed, all the parts must line up correctly: Any misalignment will draw attention to the joints. This means the mortises and tenons must be drilled and turned so they are perfectly straight and concentric with the turned profiles.

For the top and foot, I drill the mortise first and then use it to mount the workpiece on the lathe. In this way, the workpiece rotates around the center of the mortise as the piece is turned. On

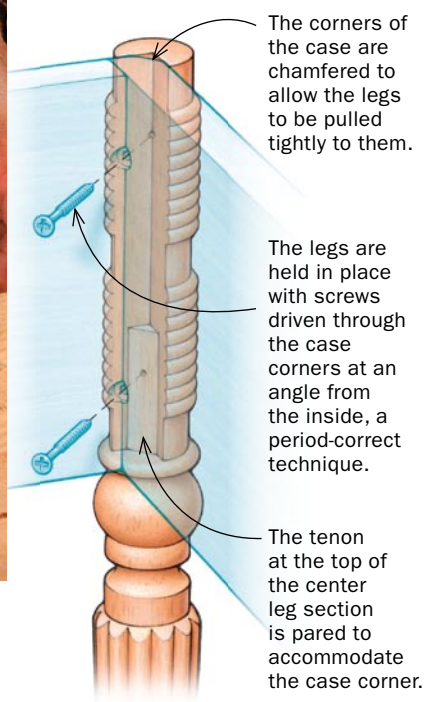
The top section is notched to join the case

TOP SECTION



Notch the blank. *Cut away one quarter of the leg. Then, to make the blank whole for turning, glue in a piece of scrap. A layer of kraft paper makes the scrap block easy to remove later.*

ATTACHING THE LEGS TO THE CASE



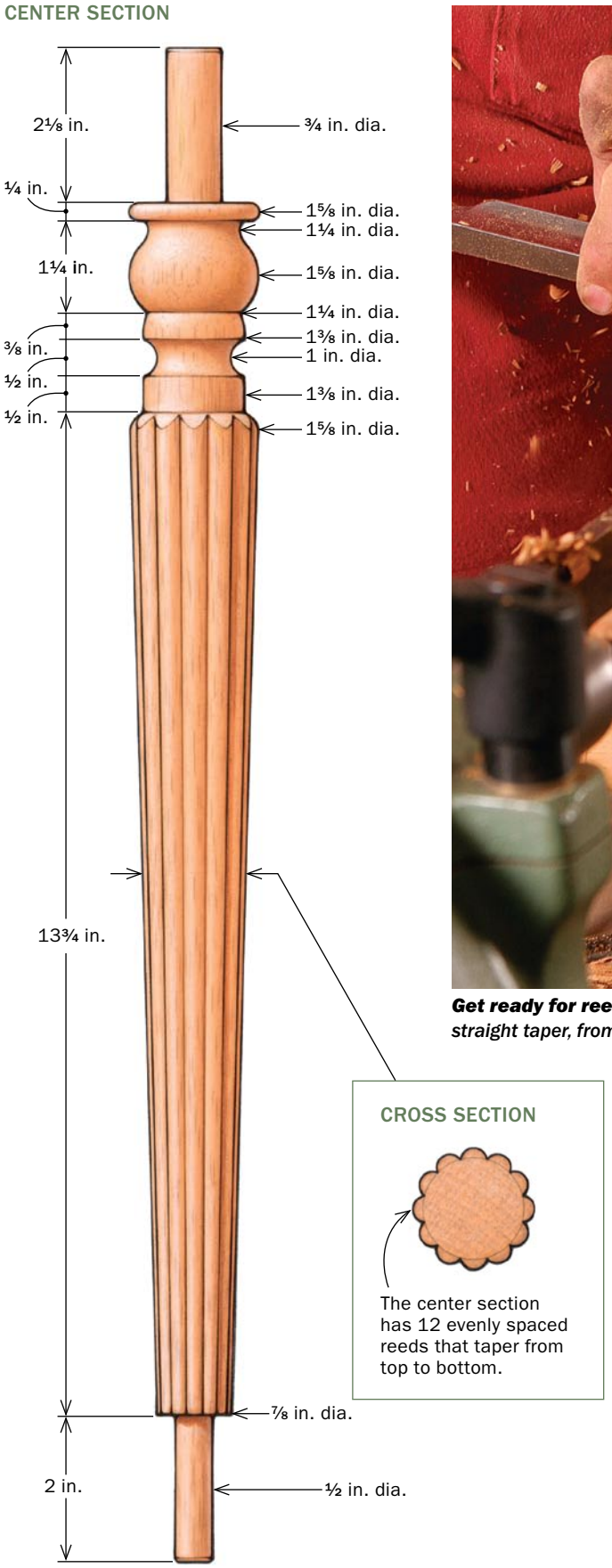
Drill a round mortise. *Clamp a right-angle jig to the drill-press table. This helps ensure that the mortise runs straight.*

A shopmade fixture holds the work. *The workpiece mounts on a mandrel turned to fit snugly in the mortise. The mandrel is held in a chuck. The opposite end of the workpiece is held with a live center in the tail stock.*

Turn the rings with a bead-cutting tool. *Use the tool to score the outline for all of the rings as a reference before forming them. Afterward, use a sharp chisel to pry away the glued-in filler block.*

Photos, except where noted: Steve Scott; drawings: Christopher Mills

The center section is tapered and reeded



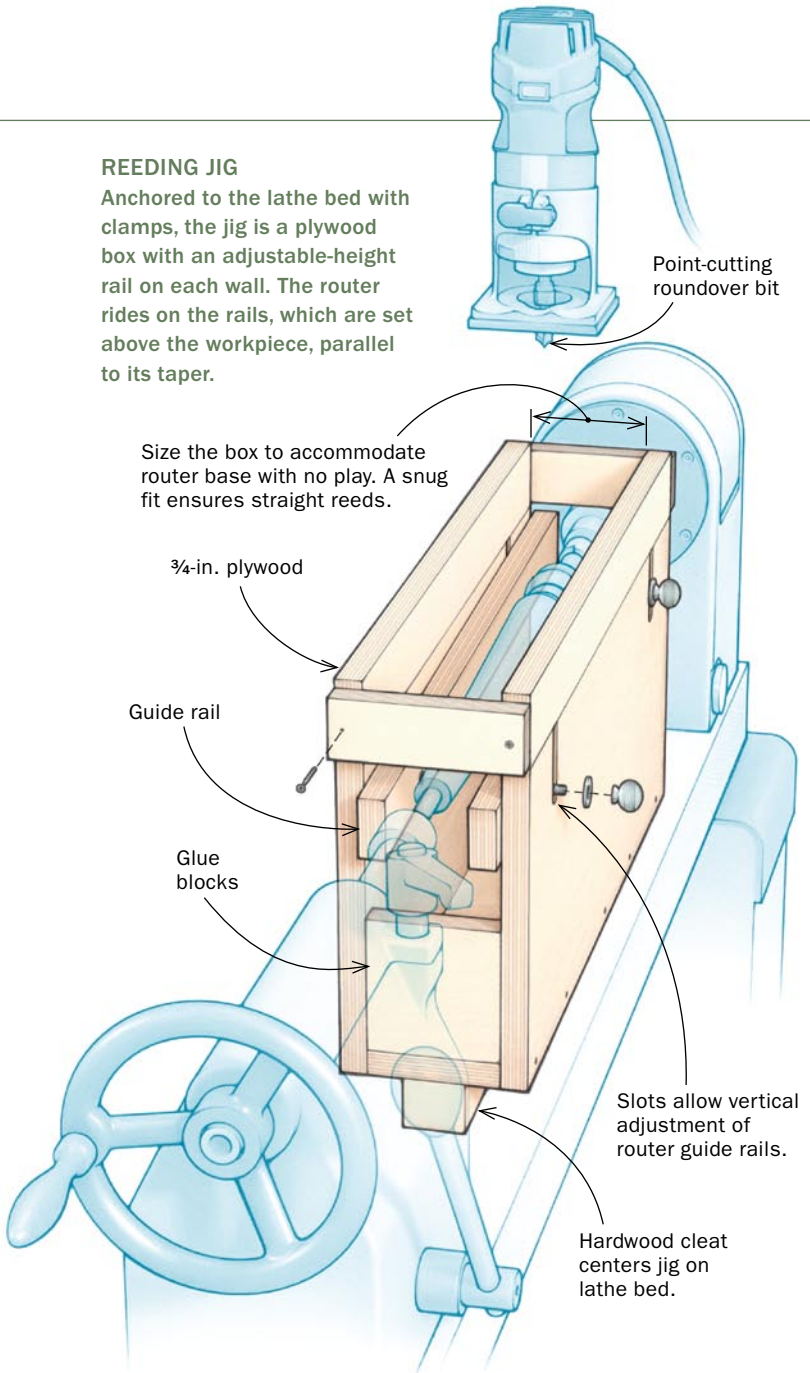
Get ready for reeding. *Turn the details at the top of this post. Then use a spindle gouge to cut a straight taper, from 1⅝ in. dia. to ⅞ in.*

the middle portion, the tenons are turned with the rest of the workpiece and so share the same centerpoint.

Mortise the top and foot before turning—I begin with the blank for the top portion. I cut away one long corner of the blank, measuring ¾ in. by ¾ in. When the table is assembled, this recess fits around the corner of the case. For now, I fill in the missing section with a piece of scrap and glue it in with thick paper placed between the scrap and the workpiece. This allows me to easily remove the fill-in piece after drilling my mortise and turning the rings, without damaging the top section.

I use a mortiser or a drill press with a right-angle guide and a sharp Forstner bit to drill the mortises. After drilling the mortises, I mount the blank on the lathe by fitting the mortise onto a shop-made mandrel chucked into the lathe's jaws. I secure the other end with the live tail stock.

After turning the blank round, I use a sharp ¼-in. beading tool to mark out and cut clean, exact rings. Afterward, I lightly sand



the rings with P220-grit paper and use a handful of shavings to burnish them to a smooth finish.

Although the patterns and dimensions are different, the foot is mortised and turned in essentially the same way.

Two jigs take the risk out of reeding

After roughing the entire center-section blank to a cylinder, mark out and use a parting tool to turn the tenons. To ensure precise diameters and a snug fit, I use open-end wrenches to gauge the tenon thicknesses as I work. This is crucial, as any play in the joinery would definitely affect the appearance and registration of the parts and might cause the joints to fail.

Afterward, turn the pattern of coves and beads at the top, then use a spindle gouge to turn the rest of the piece to a taper measuring 1⅝ in. dia. at the top and ⅞ in. at the foot end.

Rout the reeds on the lathe—To cut the reeds, I made a simple jig that supports and guides a router as it travels along the length

Photo, this page (bottom): Mario Rodriguez

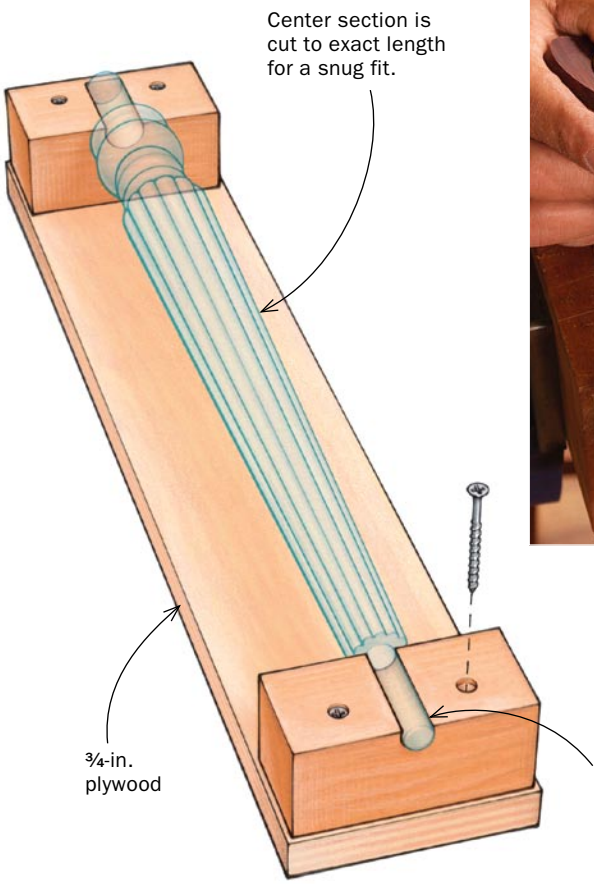
A box for reeding. *Before mounting the workpiece between the lathe centers, Rodriguez clamps the reeding jig to the lathe bed.*

Rout the reeds. *Start with a light cut and be sure the jig's rails are aligned properly. Use the lathe's indexing head (above) to lock the workpiece in position at 30° intervals. The bit leaves flat-topped reeds (below) that must be rounded (see next page) to create the finished appearance.*

Refine the reeds by hand

BENCH JIG

To hold the workpiece while refining and smoothing the reeds, Rodriguez created this simple jig by mounting a pair of drilled blocks on a piece of flat stock.



Shaping the reeds. *Rodriguez mounts the workpiece in a shopmade jig, then uses a variety of tools to round the tops of the reeds and sharpen the grooves.*

Create a flat on the tenon. *The tenon will be exposed by the cut-away portion of the leg. The flat surface lets the legs marry to the beveled corners of the case.*

of the leg. The jig surrounds the workpiece, which remains secured between centers on the lathe. But because the leg tapers, this jig has adjustable tilting guide rails.

With a ¾-in. straight router bit loaded into a trim router, adjust the rails so the router bit just touches the leg at both ends. With both the router and the lathe running, pass the router up and down the length of the leg. This removes any rough spots on the surface and produces a perfectly concentric taper. Now you're ready to reed the leg.

First, plot a cross-section of the leg on a scrap piece of plywood. In this case, 12 reeds fit around the leg. The 12 reeds will be situated with an indexing head built into the lathe headstock. Because the reeds taper, it's impossible to cut full and complete reeds with the router. The best you can hope for is straight partial reeds that you can finish with rasps and files.

Use a point-cutting roundover bit and set it for a light cut. Remember, the smaller diameter at the foot end still has 12 reeds, but they are cut to a slightly shallower depth. Lock the leg into position with the indexing head and cut a single reed, then

Finish with the foot

rotate the leg until all 12 reeds are cut.

Refine the shapes at the bench—To finish shaping the reeds, I made a benchtop jig to hold the work and provide easy access to the full length of each reed. This is another great advantage of building the leg in three parts: I can shape and sand the reeds straight through without interference on either end. This produces clean, perfect, and smooth results along their entire length.

I use a shoulder plane and detail files to remove the sharp edges of each reed, carefully rounding the tops. Then I use a knife-edge file between the reeds to sharpen and deepen their profile.

For a smooth finish, I use a set of small rubber sanding shapes, changing them frequently to match the taper of the reeds toward the small end.

A graceful foot. *Use the shopmade mandrel again to mount the foot blank on the lathe, using the tailstock and a live center again to stabilize the piece. The foot is shaped using a parting tool and a variety of spindle gouges.*

Mix and match parts before glue-up

After preparing all the leg sections, test the fit of the different parts. Each section should slip in snugly, without any play or pressure at the joint. Sight down the length of each leg; it should be straight and appear as if turned as a single piece. You may find that the mortise in the top section wasn't perfectly drilled, causing the leg to cant in or out of alignment. If so, the cutout corner can be fine-tuned for a straight and square fit.

Another advantage to this method is that it lets you select the best-looking parts for the front legs and put the lesser parts on the back legs. You also can rotate each section for the best appearance, color, and grain orientation.

When you're satisfied, mark the alignments with a pencil tick on a strip of masking tape. Next, take everything apart and carefully cut a shallow notch along each tenon to let excess glue escape instead of pooling in the mortise and preventing the joint from going together. Apply glue to the sides of the mortise and gently slide the sections together. Just before the joint closes, rotate the pieces and align the pencil ticks. If you've done careful work, you won't even need to clamp the leg assembly. □

Mario Rodriguez is a longtime contributor who teaches at the Philadelphia Furniture Workshop (philadelphiafurnitureworkshop.com).

FOOT