Tenon Shootout

Tablesawn or hand-cut? Two experts go *mano-a-mano* to champion their favorite techniques

Associate Editor Matt Kenney livened up one of our staff meetings not too long ago when he mentioned that he likes to cut tenons by hand. A passionate and experienced woodworker, Kenney tends toward hand-tool techniques.

But he really ignited the conversation when he went a step further and said the work can be done faster by hand than by machine. Art Director Mike Pekovich, with more than 70 pieces of furniture under his belt, disagreed. Pretty soon we had a contest brewing.

To settle the argument, Matt and Mike each cut the tenons for a pair of cherry door frames—eight haunched tenons in all. We milled all the stock and cut the mortises in advance, centered on the stock.

Associate Editor Steve Scott acted as timekeeper. Matt finished his frames in 129 minutes; Mike was done in 35. Still, once the dust settled, we all agreed that the stopwatch didn't tell the entire story; the real lessons were in the tips and techniques that we'd witnessed.

Online Extra

Tune in to **FineWoodworking.com** at 1:30 p.m. EST Thursday, Jan. 21, to watch Matt and Mike in a live rematch.

Photos, this page: Michael Pekovich

‘Cutting tenons by hand is quicker than you think’

BY MATT KENNEY

I’ve been cutting joinery with hand tools since I began making furniture, when I didn’t have the money or the space for big woodworking machines. Nowadays, I still prefer hand tools—especially for joinery. Machines are fast, but I’ve found that I don’t gain much in time or enjoyment by using them.

Cutting the tenons for this pair of doors, for instance, shouldn’t take too much longer by hand than it does with a stack dado cutter at the tablesaw. You can make the process efficient with a few tricks for cutting crisp, clean tenon shoulders and cheeks that need only minimal trimming for a good fit.

And the additional time it does require is time well spent. After all, it’s time spent woodworking.

The competitors started with enough milled stock for two frames, with mortises already cut. Then we started the clock.

‘Tenons in no time with a tablesaw and dado set’

BY MICHAEL PEKOVICH

I’ve tried various methods of cutting tenons. I’ve cut them by hand, on the bandsaw and the tablesaw, and even routed them. Each method has advantages, but I’ve found the quickest and most accurate is using a dado blade on the tablesaw. It takes a few minutes to get set up, a process that requires a handful of scrap pieces milled to the exact thickness and width as the frame parts. But once the setup is done, the dado blade not only removes stock quickly, it cuts the cheek and shoulder in one pass. And because the stock lies flat on the saw table, the tenon is guaranteed to be parallel to the workpiece and consistent in thickness. Plus, all the tenons end up exactly the same size. Speed, accuracy, and repeatability: three good reasons to use the tablesaw and a dado blade to cut tenons.

BY HAND: CAREFUL LAYOUT IS KEY

Begin by marking the tenon shoulders. *Use a cutting gauge for clean, deep lines. Wheel or pin gauges don't cut as crisply. Set the gauge to the depth of the mortise and make three or four passes, cutting a little deeper each time.*

Pick up the mortise width. *With the fence against the front face of the stile, set a mortising gauge to the width of the panel groove, which is the same as the mortise width.*

Mark the tenon thickness. *Again, keep the fence on the front face. Scribe the end grain and the edges down to the shoulder line.*

WITH POWER: NO LAYOUT, JUST TEST CUTS

Install the dado blade. *Pekovich uses a sharp, high-quality dado set to make tenons, forming the shoulders and the cheeks in just a few quick passes.*

Prepare the miter gauge. *A good dado blade should leave a chip-free shoulder, but a backing fence on the miter gauge is needed to prevent any chipout on the back end.*

Set the blade height. *Place a mortised frame part next to the blade and raise the blade until it's just below the mortise. This should yield a tenon that's too thick—a good starting point for a series of test cuts in scrap.*

Photos, except where noted: Steve Scott

Mark the haunch. *First, set the cutting gauge to match the distance from the edge of the stile to the mortise. Then use this setting as shown to mark the end grain on the tenon.*

Secret to a clean shoulder. *Using a chisel, make a series of shallow passes to cut a groove about 1/16 in. deep on the waste side of the scribe lines. This reveals more of your deep scribe lines and helps establish the top of the shoulder.*

Cut the shoulders using a backsaw with crosscut teeth. *The chiseled groove provides a square reference surface to guide the saw. It also seats the saw below the surface of the workpiece to prevent marring. Stop cutting when you reach the panel groove.*

Sneak up on a snug fit. *Raise the blade in small steps and remove stock from both faces of your test piece. Stop when you can just get a corner of the tenon into the mortise. Don't leave the tenon too thick. This only creates more fine-tuning—and more chances for error—later.*

The fence controls the tenon's length. *Use a combination square to set the fence position.*

It's time to cut tenons. *To avoid chipout at the end of the tenon, start at the end and work toward the shoulder. Maintain downward pressure on the stock to keep it flat on the tablesaw top. After you've cut the entire face, check for an even cut and take a second pass if necessary.*

BY HAND: SAW THE TENONS AND TRIM THEM TO FIT

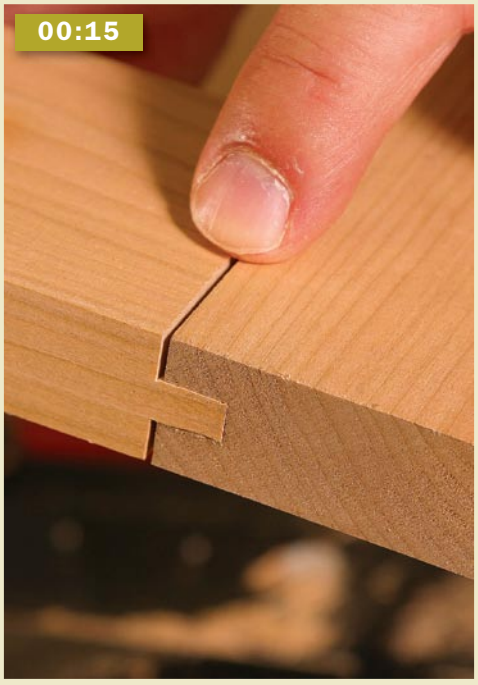
Cut the cheeks with a ripsaw. *Clamping the rail at an angle lets you sight along two layout lines (end grain and near edge) for greater accuracy. Cut just proud of the lines, and adjust the rail to vertical as soon as the saw reaches the far corner. Then finish the cut.*

The haunch comes last. *Start the cut at your layout line on the end grain, and saw down to the shoulder cut that matches the depth of the panel groove.*

Trim the cheeks. *Test-fit each tenon and remove excess thickness with a rabbet block plane or shoulder plane until you get a friction fit. If the tenon is too wide, pare the edge with a chisel.*

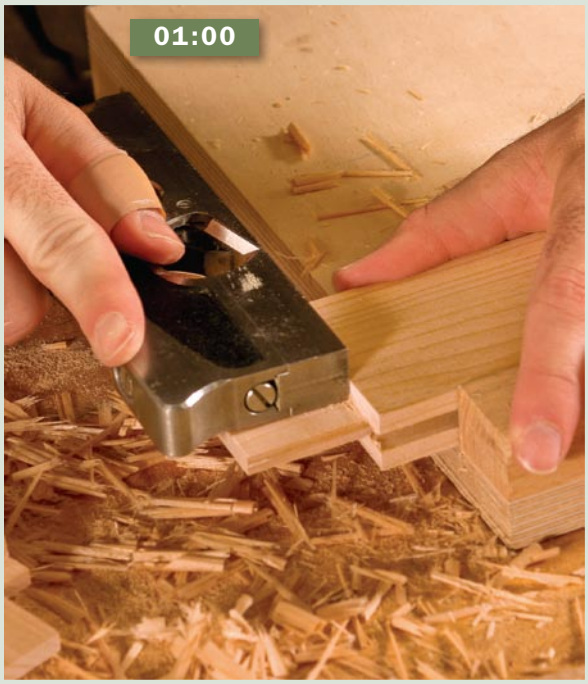
WITH POWER: CUT THE HAUNCHES AND FINE-TUNE THE FIT

OK, a tiny bit of layout. *This frame joint requires a haunched tenon, one with an extra bump to fill in the panel groove on the end of the stile. Mark a tenon with the depth of the panel groove. Use this mark to reset the tablesaw fence before cutting the outside shoulder.*



Test fit. *This haunch has bottomed out before the joint is fully seated, leaving a gap. Adjust the fence for a slightly wider cut.*

Ganging up on the saw. *Once the setup is dialed in, the workpieces can be run over the dado set as a group to cut all of the haunches at once.*



Check the shoulders. *If necessary, trim the shoulders square and flush to the line left by the cutting gauge. This should take just a few passes with a shoulder plane.*

01:27 FIRST FRAME,
02:09 FOR BOTH FRAMES

What they learned

MATT: MY FAITH IS UNDIMMED

I expected Mike to cut great joints, and he did. But I didn't expect him to do it in 35 minutes. That's impressive.

Still, even though I'm the one who started this whole debate, the results only reinforce my feeling that the time involved isn't that important to me. In fact, if I were making another pair of doors today, I'd probably take a little more time in laying out and sawing the joinery.

As impressive as Mike's results were, they're not enough to make me give up what I love most about woodworking. I enjoy working with hand tools to relax and test my skill, and I like the look and feel of truly handmade furniture. I appreciate the process as much as the product. With hand tools, the process requires more skill and practice but it's also much quieter and more satisfying. And I never had to worry about losing a finger to the voracious teeth of a tablesaw blade.

Trim to fit using a chisel or a shoulder plane. *Before trimming the whole tenon, be sure there isn't a thick portion just at the tenon end. Trimming from the tenon's rear face keeps the front face of the workpiece aligned with the rest of the frame.*

00:25 FIRST FRAME,
00:35 FOR BOTH FRAMES

MIKE: TABLESAW'S SPEED GETS ME QUICKLY BACK TO THE BENCH

I was impressed at how fast Matt was able to hand-cut tenons. I figured it would take him half a day to get through them. An hour a door is not bad and certainly a more enjoyable experience than making sawdust at the tablesaw.

I guessed the task would take me only about 15 minutes. And that's about how much time I spent at the tablesaw. What surprised me was that I spent as much time fine-tuning the joints at the bench as I did cutting them. Even with power tools doing most of the work, it still took some hand work to get to the finish line.

I envied Matt's quiet time at the bench, but I think I'll stick to the tablesaw for tenons. As much as I like hand tools, I don't see a benefit in using them for this task. The tablesaw's speed and accuracy means I'll get to pick up my dovetail saw and handplanes that much sooner. And the handcrafted results from these tools will really enhance the finished piece.