The Time-Tested Bridle Joint

By Andy Rae

Strong and showy, the bridle joint offers woodworkers a simpler alternative to its relative, the mortise-and-tenon joint. In this case, both the mortise and tenon are exposed, offering a unique look on frame corners. Because the mortise and tenon extend to the edges, you can shape the joint after assembly without sacrificing strength, such as profiling the outer edges. The bridle joint makes for a good choice when constructing narrow frames (see “Stacking Barrister’s Bookcases,” page 24) providing eye appeal and extreme durability.

Better still, the bridle joint may be one of the easiest joints to cut. With no closed mortise to make, the joint doesn’t require fancy mortising machines, just a table saw or bandsaw. Let’s take a look at these two approaches to see which best suits your style. (See the Convenience-Plus Buying Guide on page 17 for the products mentioned in this story.)

It’s common to divide the stock into thirds when sizing the width of the mortise and the thickness of the tenon. Thicker stock allows you to vary this rule.
Cutting on the Table Saw

Cutting a bridle joint on the table saw involves standing the stock vertically while it moves past the blade. To hold the workpiece safely, you’ll need either a commercial tenoning jig or one you devise in the shop. This jig (Figure 2) takes a few hours to put together, features a toggle clamp for safe and repeatable cuts, and can produce a batch of bridle joints in short order.

I use a thin-kerf combination blade to cut the stock, which has several advantages. It requires less cutting effort than a standard-thickness blade, it cuts a smooth surface on the cheeks, and it leaves square shoulders.

Typically, you divide the stock into thirds to determine the width of the mortise and the thickness of the tenon. Thicker stock (over 3/4” thick) allows you to vary this rule.

It’s best to cut the slot mortise first, and then size the tenon to fit the mortise. Set the blade height to the desired depth of the mortise, which is typically the width of the stock. Using a scrap piece clamped in the jig, set the saw fence to rip one side of the mortise. Once you’re satisfied with the setup, clamp the workpiece in the jig and push the assembly through the blade in an even, continuous motion. Then, without changing the fence setting, flip the workpiece over and rip the opposite side of the mortise. Cut both sides for all your mortises, then reset the fence and remove the waste from the middle (Photo A).

With the mortises complete, reset the fence to cut the tenon cheeks. Use one of the mortised pieces to help align the jig and the fence, and again use a scrap piece to test the cut. Remove the waste on the test piece with a handsaw or on the bandsaw, and test the fit of the joint. At this point, too tight is better than too loose. You can always trim a too-fat tenon later. (See “Fitting a Bridle Joint,” page 12.) Similar to cutting the mortise, rip one side of the tenon cheek, then flip the stock over and cut the opposite cheek (Photo B).

**Fig. 2**

**TENONING JIG**

Notch side for tote.

Fence (1/4x2'/x10”)

Top (3/4x5'/x16”)

Side (3/4x5'/x16”)

Blocking (3/4 x width of fence x16”)

Box-style rip fence

90°

3/8”

Replaceable insert (3/4x2'/x4”)

Toggle clamp

Make this jig with 3/4” MDF. Dry-assemble, then check that the side is square to the saw’s top and that the jig rides smoothly on the fence before reassembling with glue.

**STEP 1: SLOT THE STILES.** Use a tenoning jig to rip one side of the slot mortise then flip the stock and saw the second side.

**STEP 2: RIP RAIL TENONS.** Rip the tenon cheeks like the slot mortise, but on the other side of your layout lines. You’ll remove the waste when you saw the shoulders.
To remove the tenon waste, lay the stock flat on the saw and use the miter gauge to guide the work. First, set the blade height to the depth of the tenon’s shoulder. Next, clamp a block to the rip fence, well in front of the blade. Then set the fence so the blade cuts to the shoulder line when the stock is registered against the block.

To make the cut, push the stock against the block, then hold it firmly as you pass it over the blade. The scrap piece should fall harmlessly to one side. Flip the stock over and repeat the sequence to remove the waste on the opposite cheek, as shown in Photo C. Save the offcuts from the cheeks; you’ll use them later.

**STEP 3: SAW THE SHOULDERS.** To ensure that the cutoff doesn’t get trapped between the blade and fence, and come shooting back at you, butt the end of the stock against a stopblock clamped to the fence, then push it past the blade to remove the waste.

**Sawing on the Bandsaw**

Cutting the joint on the bandsaw is done with the stock on edge on the saw table, guided by a fence. One advantage of using the bandsaw is that the cutting force is aimed downward, which means there’s no chance for kickback. This makes it a good choice for beginners. You can use the stock fence that came with your saw, but I like to mill the fence from a piece of hardwood so it’s slightly higher than the width of my stock to give my hands better control. Begin by clamping a fence to the table, adjusting it to the required mortise cheek width (Photo D). Once the fence is set, make sure it’s square to the table by checking it with a square. Next, clamp a stopblock to the far end of the fence, equal to the desired depth of the mortise. As before, use a scrap piece to test your setups.

Cut one side of the mortise by holding the stock firmly against the fence and pushing it into the blade until it reaches the block. Then flip the stock over and repeat to cut the opposite side, as shown in Photo E. Once all the mortise walls are sawn, reset the fence to remove the waste from the middle.

Cutting the tenon is done in similar fashion to cutting the mortise. Use the sawn mortise to help with setting the fence, and again use the stopblock to limit the cut. Cut one cheek, then flip the stock over to saw the opposite cheek.

To remove the waste from the tenon, you can use the table saw technique as described above, or you can reset the bandsaw fence and use a miter gauge to push the work into the blade, stopping when the offcut falls away.

Use a small rule to set the distance from the blade to the fence for the mortise cut. Once you’ve clamped the fence in place, check it for square to the table before making a cut.

Use even feed pressure to cut the mortise walls, stopping when the stock reaches the stopblock.
Fitting a Bridle Joint

In a perfect world, all our joinery would come together right off our machines with flawless fit and precision. Unfortunately, that’s not a typical scenario. When fitting a bridle joint, I aim for a slightly oversized tenon from my machines, so I can fit it to perfection later back at the bench. My weapon of choice is a shoulder plane (See Shop-Made Shoulder Plane on page 10), which takes a very light shaving, allowing me to sneak up on the fit of the joint (Photo F). Plane evenly across each cheek, and stop frequently to check the fit. When the joint slides together with hand pressure alone, you’re done.

Gluing Up a Bridle Joint

A bridle joint requires a bit more finesse when gluing it together. It’s unwise to place clamps directly over the ends of the joint, since the tenon sometimes protrudes from the surface, depending on your machine setup, and the clamps can prevent the shoulders from drawing up tight. Instead, position the clamps as close to the tenon as you can, but not on it. Use moderate pressure; too much clamping force is likely to twist the assembly.

Once you’ve assembled the joint and checked the frame for square, you’ll need to clamp the cheeks. To spread clamp pressure evenly, use the tenon offcuts you saved earlier, placing one above and one below the joint and then clamping over the joint with a small clamp (Photo G).

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