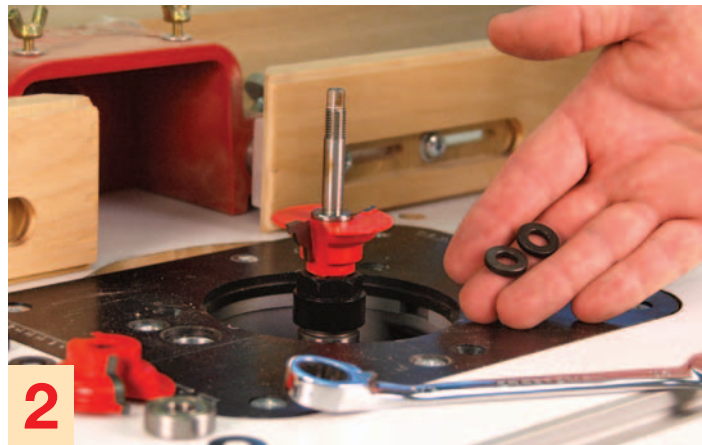




BUILDING INTERIOR DOORS



1 Each of the Freud bit sets can create either exterior or interior doors. The set arrives ready to create exterior doors. To change it over to interior door thickness, mount the bit in your router table, but remember to unplug the router first!



2 Using a standard 1/2" wrench, remove the nut from the top of the bit. Then carefully remove the upper cutter, shims and bearing, setting them aside in the order they were removed (this makes reassembly much easier). Remove the two 1/8" spacers and reassemble the set, inserting the two spacers below the top nut, as shown in photo 3.



3 Next replace the bearing, shims and upper cutter, tighten the nut in place and you're done. The rail or 'cope' bit is used to run the stub tenon profile on the ends of the rails and any intermediary stiles. To avoid mistakes, mark the ends to cope.

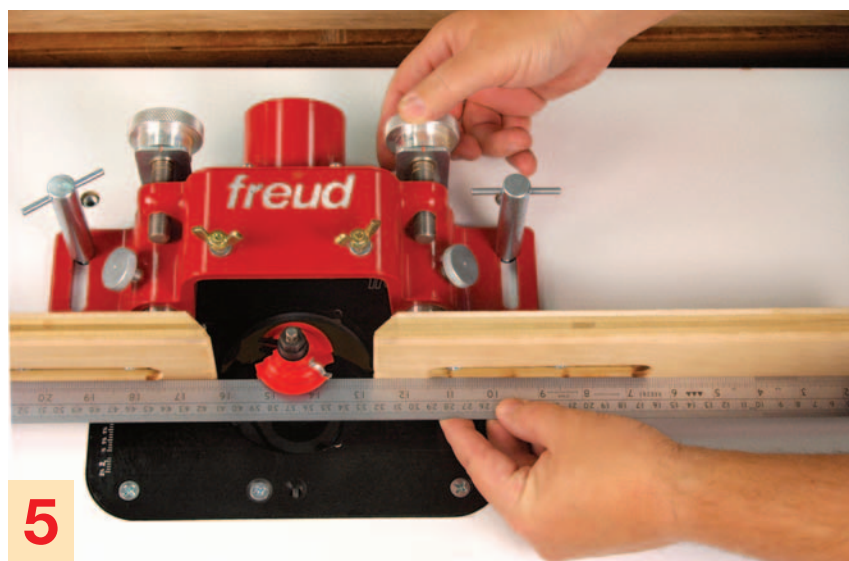


4 Adjust the height of the cutter to the exact center of your stub tenon pieces, using a sample piece to start. This will make the pieces fit together more easily and reduce sanding. With a router that can be adjusted for height from above the table (such as the Freud FT3000 shown here) it's easy to fine-tune the bit height.

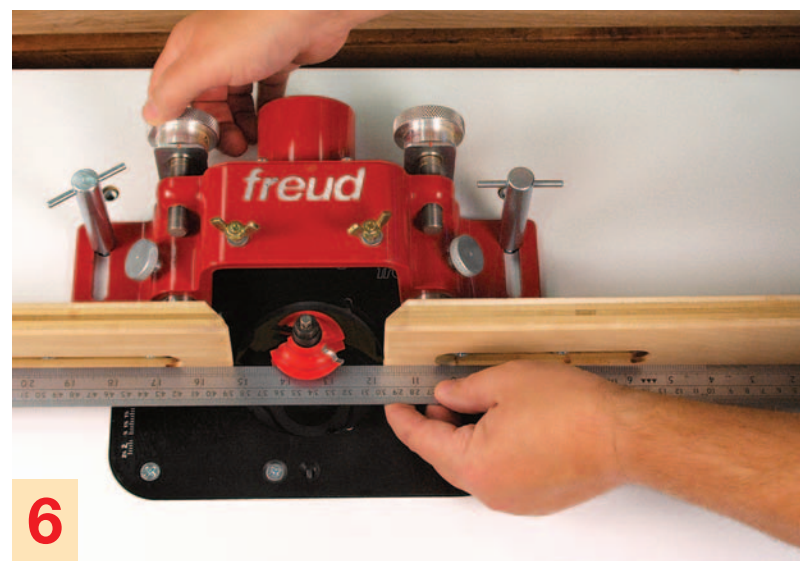
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5 With the bit height set you need to adjust the fences. Both the infeed and outfeed tables need to be perfectly aligned with the bearing at the center of the bit. Use a straightedge to first align the infeed (right) fence with the bit. The fence system shown allows for very fine adjustments with each of the fences individually. This makes a perfect setup simple.



6 Next, bring the outfeed fence into alignment with the bearing and infeed fence. It's important that the outfeed fence be perfectly aligned, or just a hair back from the bearing and infeed fence. Otherwise the fence can deflect the rail after it passes the bearing making the profile on the pieces too shallow. This will cause an improper fit.



7 Use a miter gauge to run the coped ends. Mount a scrap fence to the miter gauge to reduce tear-out on the back of your pieces. The coping cut should be made in at least two passes (more with denser material), increasing the cut to full depth on the last pass.



8 To cut the long tenons on the rails, unplug the router and engage the shaft lock. Then use the wrench to remove the upper section without changing the height. Then thread the flathead screw into the lower half of the cutter as shown.



9 To create a door that is square, it's important that the shoulders on the rails be the same length whether they have long or short tenons. The longer tenons need to be created by using multiple passes, so you need to sneak up on the exact size. To make this easier, strike a centerline on a stub tenon rail and your long tenon rails, then align the centers and mark the shoulder location on the longer pieces.



10 Adjust the fences and make the cuts to extend the tenons to their finished length. Again, you should use multiple passes, and with harder wood species take smaller cuts. Make cuts from both sides of the pieces. Now you see why centering the cutter was important.



11 You're finished with the coping bit, so unplug the router and replace the upper portion, then insert the stile or 'stick' bit in the router. Use the same procedures as used with the cope bit to adjust the stick bit for a 1 3/8" interior door. Then center the bit on your material, using one of your completed stub tenon pieces to find the exact center.



12 While it was important to run the cope/tenon ends of the rails in multiple passes, it's even more important with the stick profiles. These are long edges that will require infeed and outfeed support beyond the router table. In addition, reversing grain direction can cause more tear-out. Go slow and make the cut in multiple passes.



13 As you make your last pass on the stick profile, you'll leave a fairly thin lip at the very edge of the profile. This is the edge that will fit against the door panels and will be a very visible part of the door. It's important that the piece doesn't lift from the surface of the router table during the cut or this profile will get distorted. Use roller stands (which is what I prefer), outfeed tables or featherboards to support this last pass.



14 To make the door sturdy there are long tenons (2") at each of the corners. The bottom rail of the door is fairly wide and a single tenon can weaken the joint and can cause wood movement issues. I divided the tenon into two smaller tenons and then cut my mortises to match, allowing 1/8" of extra length in the mortises to allow for wood movement. Check your fit, then fine-tune the width of your tenons as necessary for a snug fit.



15 Raising your panels to fit into your door is one of the last steps. As with the edge profiles for the rails and stiles, there are many different panel raising profiles from which to choose. I wanted a slightly different look on the interior of my door and chose to raise only one side of the panel, leaving the other side flat. As with all large-bit procedures, use multiple passes and take it slow. Check your panel fit in your door grooves on your final pass.



16 Another door option (as shown on the gallery of doors on the opening pages) is adding glass rather than wood panels. After the door is assembled, you can use a flush-cutting router bit to remove the back edge of the groove in the glass sections, creating a rabbet for the glass. By using the upper portion of the stick bit you can make glass retainer strips. Make the profile cuts on wider pieces then rip them to final size. It's safer and easier.