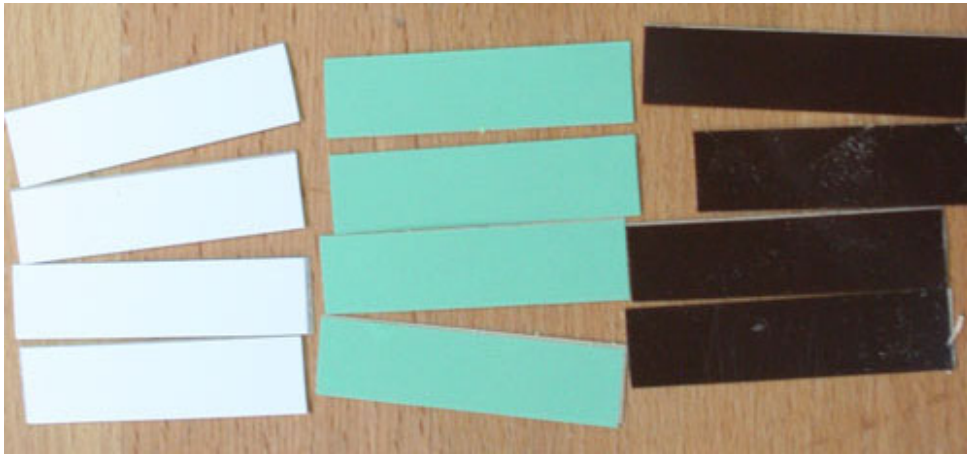


Tapered Sliding Dovetail – Using Variable Angle Guides and Shims

(note: our standard sliding dovetail in user manual is not tapered and is less complex)

The tapered sliding dovetail is one of the most difficult joints in woodworking. It is often used to attach shelves to the sides of a bookcase. There are very few jigs that can cut this joint, but with our angle guides and shims, Router Boss can easily cut tapered sliding dovetails. This joint will not pull apart and, to allow for wood expansion, can be assembled without glue or only the end of the taper glued.

1. You'll need a set of shims. You can use thin veneer edge-banding or purchase adhesive backed plastic ½" wide shims from Craftsman Gallery. White ~ 1/32nd, Black ~ 1/64" and Green ~ 1/128". Combine them for any thickness.



- 2.
3. We'll clamp the board to be used for the sliding dovetail socket onto the mortise table next to the wide cutout. As an alternative you can use our brush feather board to support the board under Router Boss's base plate. For long boards with multiple socket cuts, such as in the sides of bookcases, it is best to use the brush with roller supports.



- 4.

5. We'll make a stopped sliding dovetail like those most often used in the sides of bookcases. Mark a line on the board where the dovetail socket (slot) will stop. Mark a corresponding line on both sides of the Router Boss base plate. We'll use this line to position the angle guides.

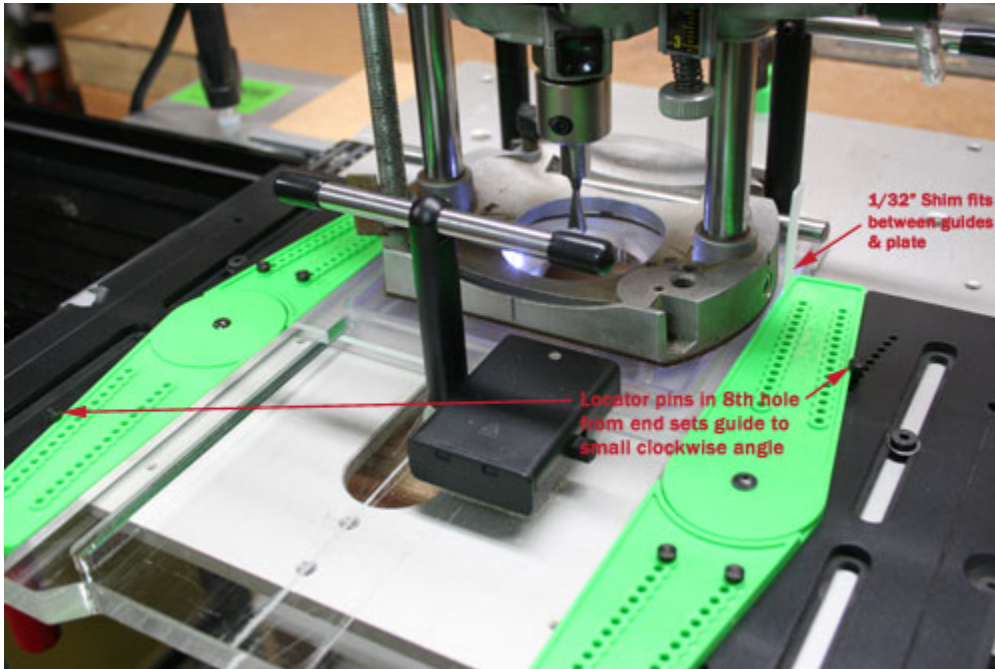


- 6.
7. Next mount the variable angle guides. With binding bolts loose, insert locator pins to set all of the green wings to 0 degrees (straight cut). Align the black guide rail bases with edge of Router Boss's base plate centered on the mark made on each side of base plate. For wide boards you may need to add an additional tap to secure the black base to the base plate or use a clamp (see below) instead of a screw. The green wings should be tight against Router Boss's router plate. Be sure to tighten the binding bolts.

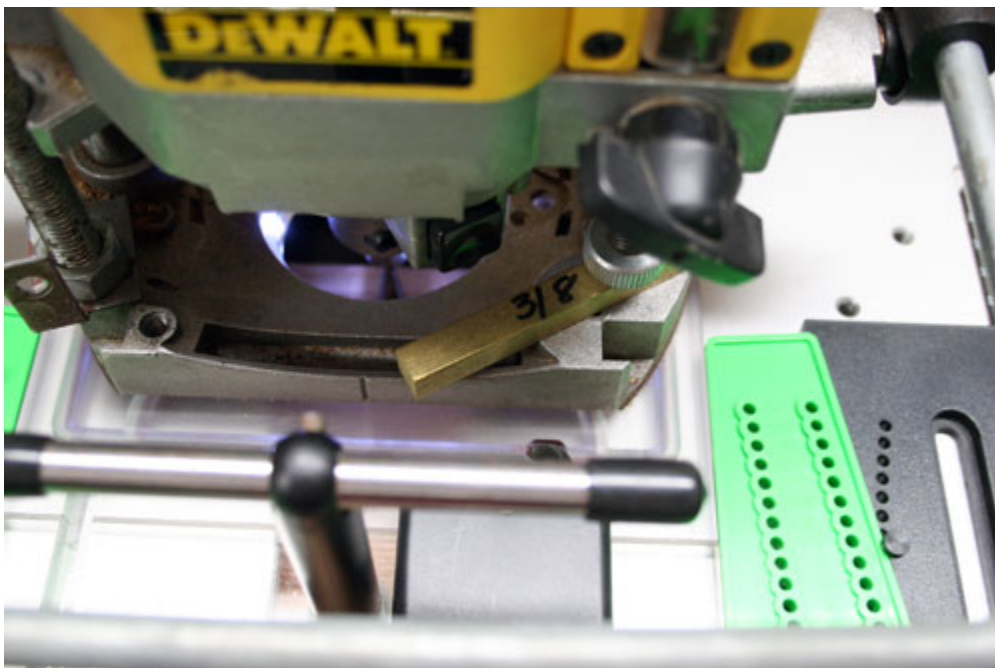


- 8.

9. Remove the locator pins from the right rear green wing and left front green wing. On the side of each of these green wings insert a locator pin in the 8th hole from end of the black base. This will establish a small clockwise angle that will be used in cutting the taper for the dovetail slot. Check the angle by inserting a 1/32nd shim between the green wing and router plate. We are going to cut the dovetail slot (socket) with a taper on one side only.



10.
11. Plunge router and dovetail bit to zero the bit on top of the socket board. Set router depth stop using a gauge bar. We'll use the same gauge bar to set the plunge depth for both the socket and mating tenon cuts then use the router's adjustment screw to decrease the depth very slightly for the tenon cuts.

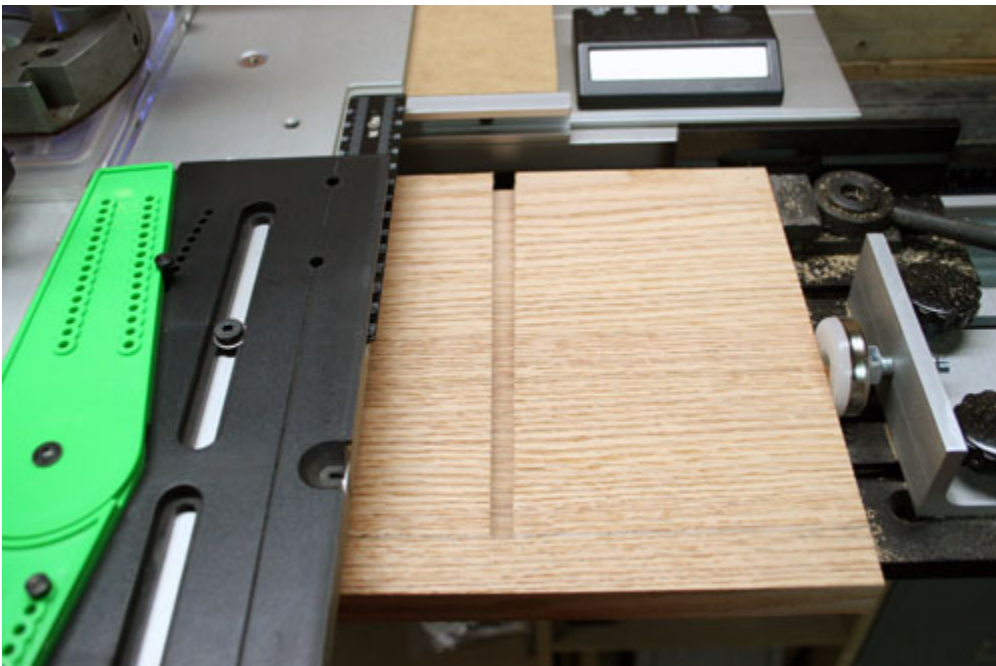


- 12.

13. OK, time to cut the dovetail socket. We'll turn on and plunge the router then make 2 round trip cuts. For each cut we move the router and cutter from in back of the board to the line on the board then return the router and cutter to behind the board. For the first cut we twist the router counter-clockwise to make a straight cut against the wings set to 0 degrees. For the second cut we twist the router clockwise and make a taper cut against the slightly angled wings. For better control we are not performing a climb-cut for the taper.



- 14.
15. We have now completed the dovetail slot for the tapered sliding dovetail. This is actually the easier part and can be repeated if you have other slots to cut. Next we'll measure the taper and setup for the tenon cut.



- 16.

17. We'll use a Craftsman Gallery digital caliper to measure the amount of taper in the completed dovetail slot. First we measure the narrow part of the slot near the stopped end of the slot. In our case we measured the narrow part as .281".



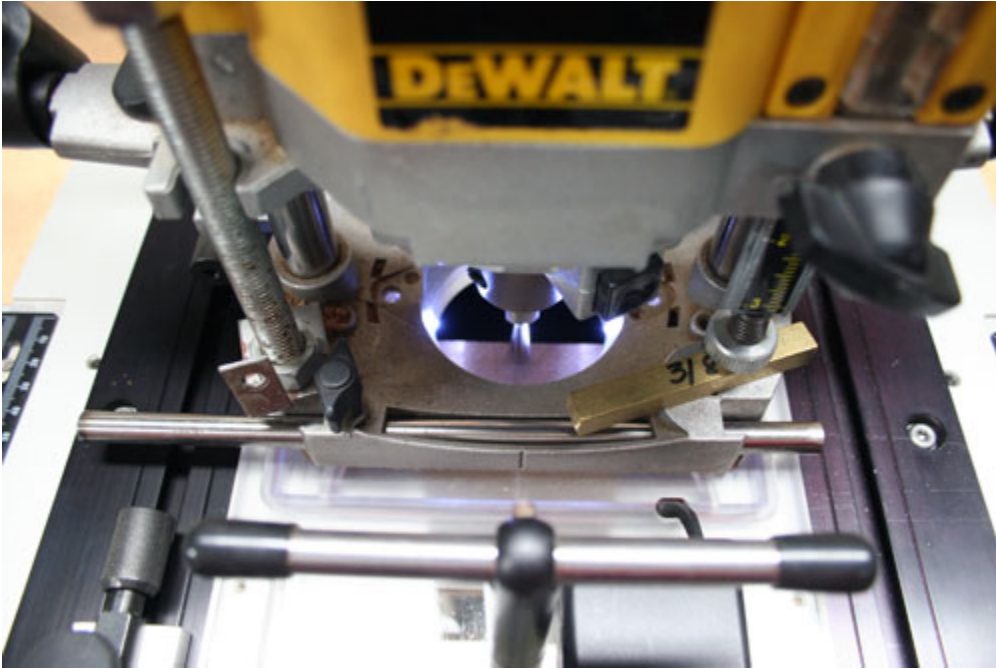
18.

19. Next we measure the wide part of the dovetail socket near the entry point. In our case we measured .384". The difference between the narrow and wide parts of the dovetail slot is .103" or about 1/10". This represents approximately how much we'll need to shim the tenon board to achieve the correct taper. With a couple of test cuts we found that a stack of 3 each 1/32nd shims and 1 each 1/64th shim (.109" total) provided the correct amount of taper.

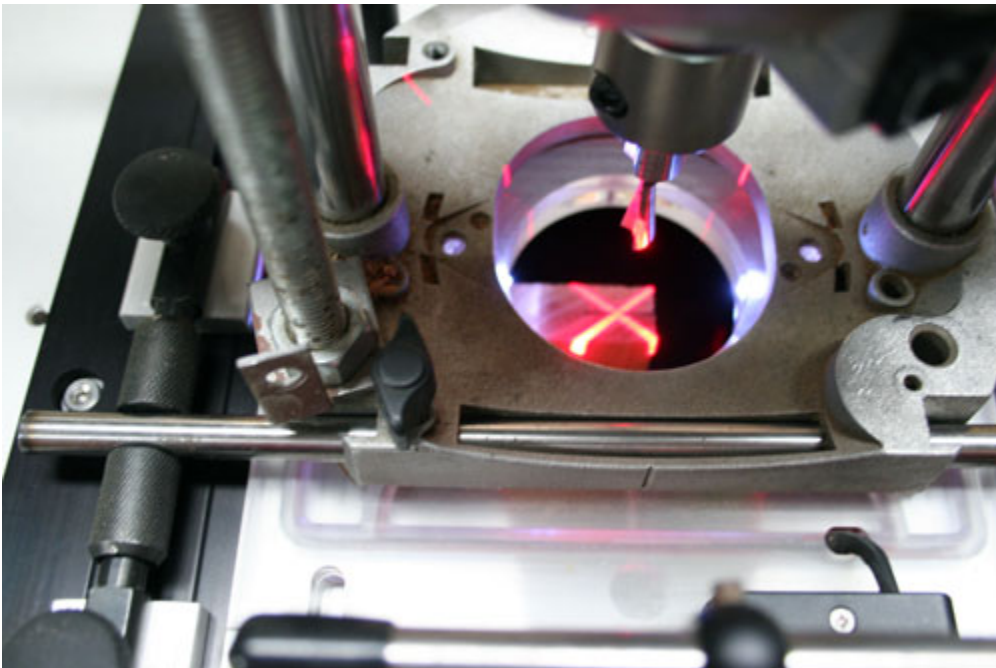


20.

21. Remove the variable angle guide rails and mount the aluminum guide rails with t-slots. We attached 2 precision stops to the left side guide rail t-slot. Alternatively you could use 1 precision stop and 1 of the green stops included with the machine. The precision stop will allow us to fine tune the tenon dovetail cuts. Cam the tenon board, zero the dovetail bit on top of the board and set plunge depth using the same gauge bar as used for the dovetail slot.

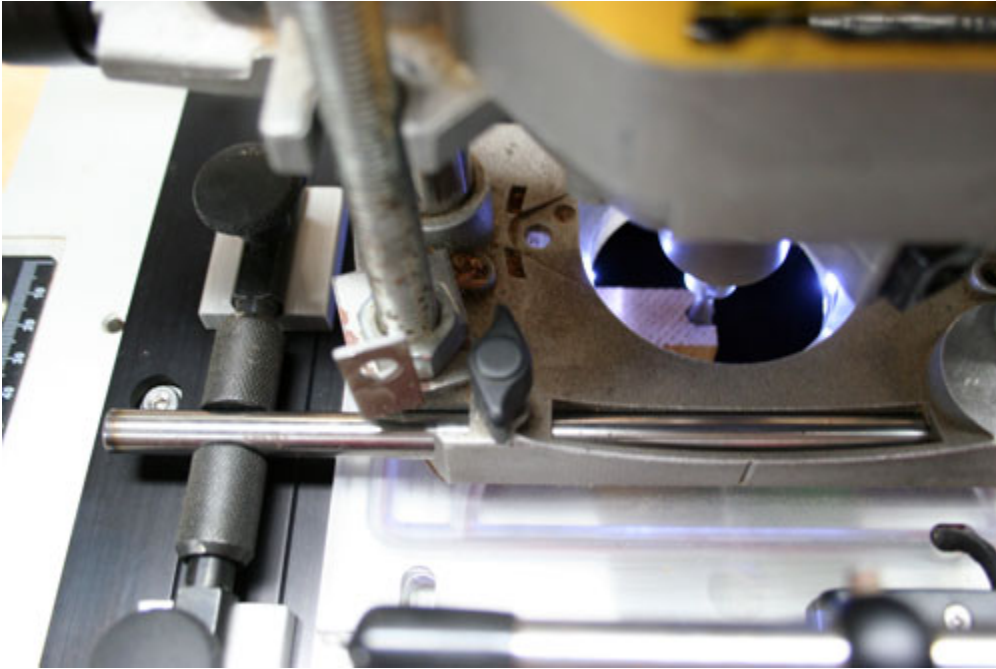


22.
23. Use the built-in laser cross-hair to position bit at approximately the center of the tenon board. Slide the 2 precision stops against the router stop bar and lock both in place. Also lock Router Boss's router plate with the star knob.

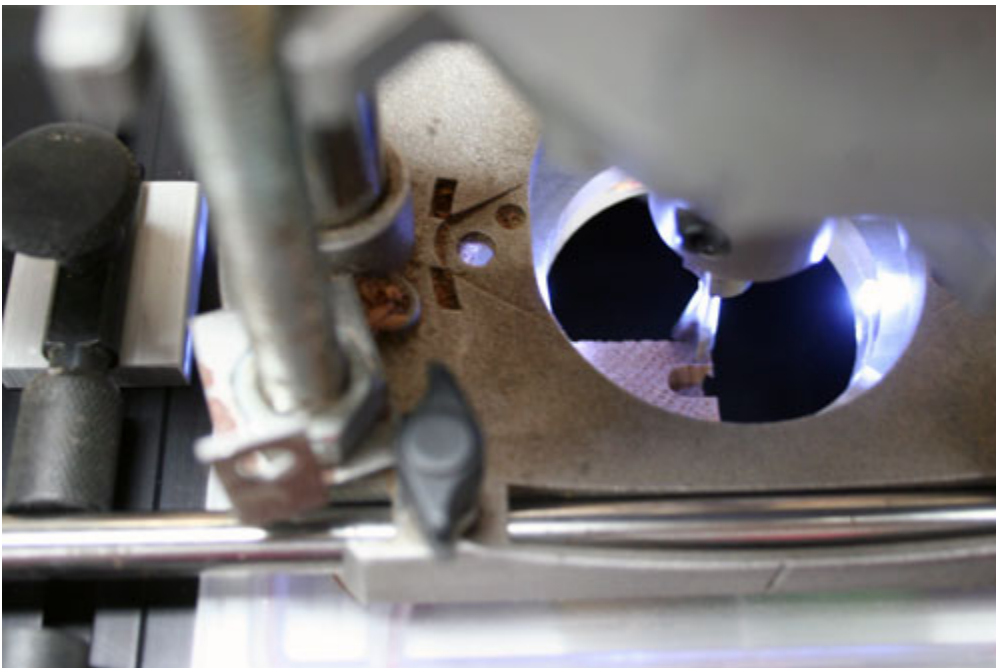


- 24.

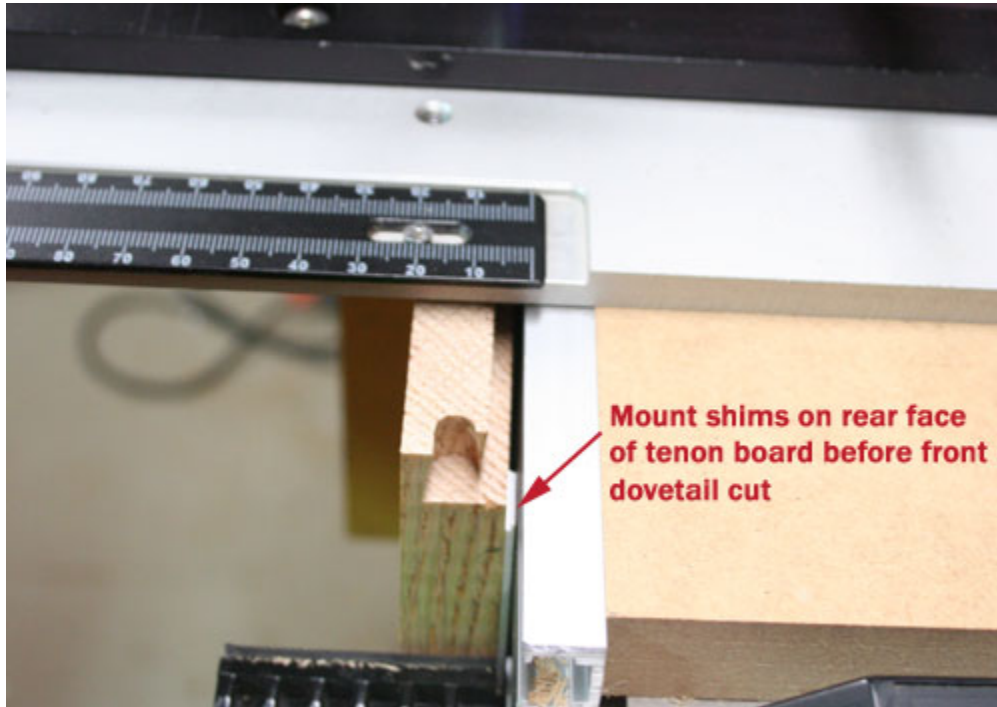
25. We are going to use the method shown on bottom of page 61 of RB user manual to locate the rear/front dovetail cuts on the tenon board. You should make the cuts first on a test board. This method will get us close to a perfect fit then we can fine tune with the precision stops for the final fit. To taper the dovetail key we will place shims on back side of the board before making the front dovetail cut. We start by depthing the router bit and cutting a short groove.



- 26.
27. With the short groove cut we unlock the router plate and rear precision stop, raise the bit and align the tip of the bit's cutting edge with back edge of the groove cut. Slide the rear stop against the router stop bar and again lock the stop and router plate. Crank the bit to left side of the board, plunge the bit to router depth stop then make the rear dovetail cut as a climb-cut.



28. After the rear dovetail cut, attach the determined thickness of shims to right rear side of tenon board then re-cam the board tight against the machine face. Note the board is now clamped at a slight angle. Align cutting edge of dovetail bit against front edge of the short groove (as previously done for rear cut), set front stop, lock the stop and router plate, plunge the bit and make the tapered front dovetail cut as a climb-cut by cutting from right to left side of the board.



- 29.
30. As a final step, cut away the right end of the completed dovetail key (including what remains of the short groove) in a series of rear to front cuts. The resulting width of the dovetail key should be slightly less than the dovetail slot in the socket board.



- 31.

32. Assemble the tapered sliding dovetail by sliding the dovetail key that was cut in the tenon board into the dovetail slot of the socket board. It should be a loose fit until the final inch or so then the tenon board can be hammered home. If too tight or too loose then fine tune the fit by adjusting one or both precision stops or the router plunge depth. When a precise fit is achieved, you can repeat the same cuts over and over again. For example, multiple shelves in a bookcase.



- 33.
34. **TIPS:** We found that double sided carpet tape was best for attaching the stack of shims to the tenon board. Carpet tape allows us to reattach the same stack of shims repeatedly reusing the same adhesive. As always, boards should be machined flat and square before cutting joinery. When you cut a dovetail key on the other end of a shelf or other side of a bookcase, keep taper angles running in the same direction. Typical large bookshelves are 10" to 11" deep, but with a stopped slot the 10" crosscut capacity of Router Boss should be sufficient for all. Unlike on a router table, with Router Boss you can safely cut break-out free dovetail keys even in veneer plywood shelves by using a climb-cut. Cut left to right on back side of the board and right to left on front side. Hide the ply in veneer shelves with solid wood banding on the shelf front.