Dovetails by Bandsaw and Router

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Half-Blind

Half-blind dovetail joints (Figure 1) are commonly used to attach a drawer front to the drawer sides. They are often cut by hand or with a specialized dovetail router jig. It's also possible to cut them using a table mounted router and a band saw.

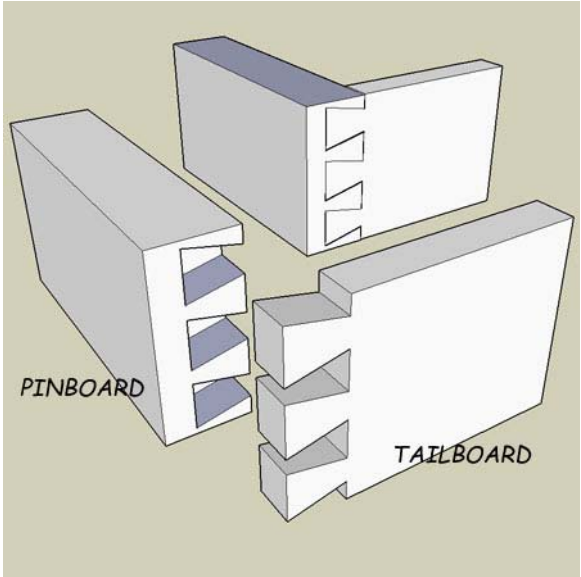

Figure 1. Half-Blind Dovetail Joint (from Wikipedia)

Preliminaries

The drawer front will be the pinboard, to take advantage of the mechanical properties of the joint. Before you start, the drawer front should have been trimmed to fit the opening. It must fit easily into the opening but can be 1/32" or so larger than the final size. Mark the front and top corner so that you cut the pins in the correct direction. Unless the opening is perfectly rectangular, a well-fitted drawer front will only fit one way.

Cut the grooves for the box bottom in the sides, front and back. (For example, for a drawer, ¼" x ¼" groove spaced ¼" up from the bottom edge.) This should be done to mark the bottom inside edge of each piece and to simplify aligning the pieces while marking out the joints.

Cut the Tailboard

Although opinions differ, I usually prefer to cut the tails first, because I believe that it is more accurate to mark the pins from the tails rather than the other way around. In this case, if you will cut the pinboard using spacers (see below) it might be easier to cut the pinboard first.

As explained below, when you cut the pinboard on the router table you will have to rotate the work end for end, in order to feed each end of the board from the right. That means that both long edges of the drawer front (pinboard) will serve as the reference against the router fence. It will be convenient to design the tails to be equidistant from each edge. i.e., symmetrical around the center of the tailboard.

Mark the tails and continue the layout lines to both sides of the tailboard. Of course, you can cut the tails by hand. This Note is about cutting the tails with a bandsaw. A bandsaw with a taper jig against the fence can be much quicker and more accurate than hand cutting.

Make a taper jig that will run along the bandsaw fence. This jig is simply a triangular piece of wood, about half as long as the tailboard, with the same taper, e.g., 14°, as the DT bit. It is helpful to put coarse sandpaper along the hypotenuse to keep the workpiece and taper jig sliding together.

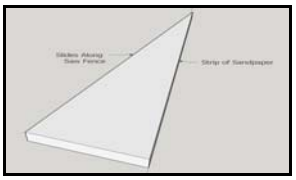

Figure 2. Bandsaw Taper Jig (It's just a 14° right triangle)

Cut to the outside of the layout lines. (It is too easy to cut the tails a bit too small.) Cut away the waste between the tails with a coping saw and chisel. To avoid tearing out wood, It is important to score both sides of the tailboard before chopping out the waste, especially if the tailboard is plywood.

Cut The Pinboard

Mark the layout for the pins from the tailboard and continue the layout lines to both sides of the tailboard. You will get a more accurate layout if you clamp the tailboard (drawer side) in place against the pinboard (front) before you mark position for the tails.

Cut the pinboard (mortises) with a ½" 14° dovetail router bit on the router table. To cut correctly on a router table, the work piece for the pinboard must be fed from the right side. Otherwise, the rotation of the cutter will tend to push the workpiece away from the fence, which is unsafe for the operator and likely to result in a sloppy cut.

Therefore, you have to rotate the work end for end to cut both ends. That means that both long edges will serve as the reference against the fence. It will be convenient to design the pins to be symmetrical around the center of the pinboard. On the other hand, unequally spaced tails will look more interesting and hand made.

The mortises need to be at least as wide as the diameter of the DT bit, but they can be wider.

1. Set a stop block so that the DT bit will cut the mortise to a depth equal to the thickness of the tailboard, e.g., ½" deep, plus a 1/32" inset in case you need to trim the box.
2. Set the height of the DT bit to the layout line, e.g. ¾ of the thickness of the pinboard.
3. Now, to position the pinboard horizontally, you can simply adjust the router fence until the DT bit lines up with the layout lines.

   An alternative takes more preparation but will yield more precise results if you have many to cut. Make spacers that will line up the the DT bit with the layout lines for each mortise. Assuming that you have three mortices to cut, set the fence for the "outside" mortise with both spacers and cut the mortise. Remove one spacer, cut the middle mortise, remove the second spacer and cut the "first" mortise. You can use the tails to measure the distances.
4. Finish the mortises with a chisel. In effect, the DT cutter serves the role of a dovetail saw. You still have to chisel away some of the mortise walls until the sides are square. Remove the remaining wood (if any) left by the neck of the DT cutter. Then, from the side, chisel the mortises until the sides are square. Be careful. You may split the drawer front if you strike the chisel too forcefully. Just tap the chisel with the mallet until you get the feel of the chisel cutting and then meeting more resistance at the bottom of the mortise.

Through Dovetails on a Bandsaw

Through dovetails (Figure 3) are usually cut by hand or with a specialized router jig. They can be cut on a bandsaw.

The tailboard is cut as described above. The pinboard is cut by means of a "ramp" that tilts the workpiece. In the example we have been using, the ramp would tilt the workpiece by 14°. (Figure 4)

A ramp is needed because most bandsaw tables do not tilt in both directions. Even if yours will tilt in both directions, the ramp will ensure that the angles are equal on both sides of the pins.

You cut half of the pin cuts and then rotate the ramp, so that the workpiece is tilted 14° in the opposite direction, and cut the second half. Then remove the waste with a chisel.

Reference

The method of cutting pins using a ramp on the bandsaw is from a note entitled "Bandsaw Dovetail Fixture" by Bruce Petersen that appeared in *Fine Woodworking Magazine*, April 2000 No. 141. Figure 4 is modified from the figure that appears in that note.

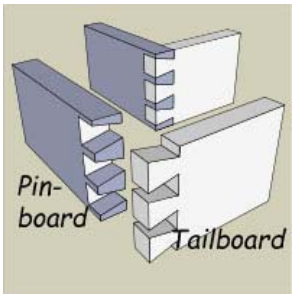

Figure 3. Through Dovetail Joint

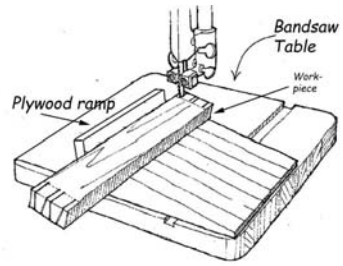

Figure 4. Bandsaw Ramp and Guide