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Economy Dovetail Jig

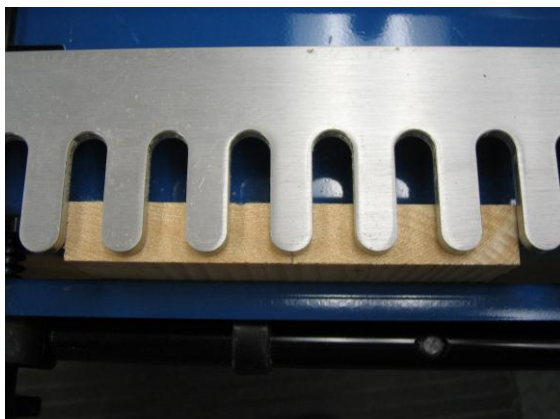
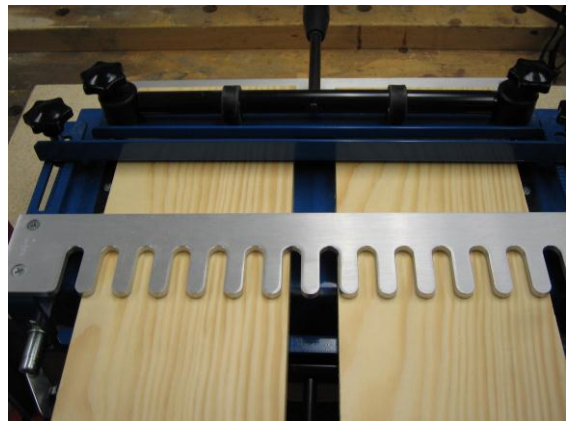
IMPORTANT:

Before using your dovetail jig, it should be securely fastened to a workbench. For a temporary setup, attach the jig to a piece of $\frac{3}{4}$ " thick plywood or MDF long and wide enough that it can be clamped to a work surface.

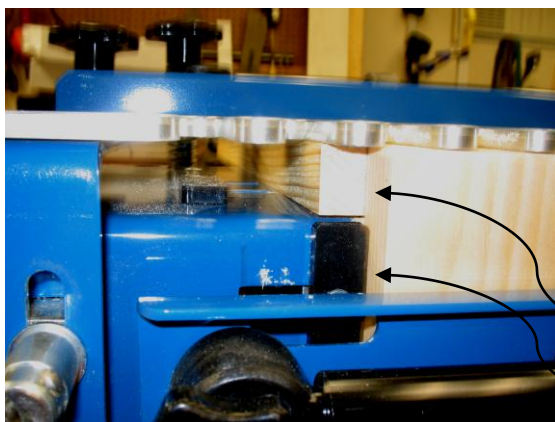
Half-Blind Dovetails:

Half-blind dovetails are most often used in drawers to conceal the joint when the drawer is closed. This places the pins on the front and back and the tails on the sides, an arrangement that allows the taper of the tails to counteract the force applied when opening the drawer. Machining this joint requires the straight $\frac{1}{2}$ " template, the $\frac{1}{2}$ " x 14-deg. router bit, and the $\frac{7}{16}$ " O.D. guide bushing. This cutter gives an overlay of $\frac{7}{16}$ ", making it suitable for drawer fronts greater than $\frac{5}{8}$ " thick. With this joint, the pins and tails are cut at the same time; the board with the tails is held vertically, that with the pins is clamped horizontally and acts as a backer to help minimize tearout.

1. When preparing stock, it is wise to produce additional material with the same width and thickness as that in your project. This wood serves as test pieces so that you can verify the accuracy of the router and jig setup.
2. Set the height of the finger template by using two pieces of wood the same thickness as the drawer front as spacers, one on each side of the jig. This ensures that the template is parallel to the jig surface. Lock the template in place at this height and remove the spacers.



3. Clamp a test piece that corresponds to the drawer side vertically on the left hand side of the jig so that it is centered on the template fingers. To insure it is clamped squarely, its end must be fully registered on the template. Loosen the screws securing the vertical stop and adjust the stop to touch the edge of the workpiece.

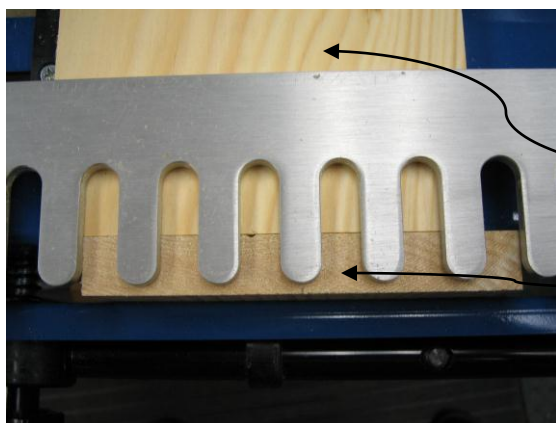


4. The drawer front must be offset $\frac{1}{2}$ " to the left of the side. On a test piece that represents the drawer front, mark a line on its end $\frac{1}{2}$ " in from the edge. Fasten this piece horizontally in the jig, insuring its end is registered against the face of the drawer side, and the $\frac{1}{2}$ " offset mark corresponds to the side's edge. Set the horizontal stop against the edge of the drawer front.

$\frac{1}{2}$ " offset

Side stop

5. Repeat steps 3 & 4 on the right side of the jig. In this position, the two parts are offset to the right.
6. Clamp test pieces against the stops on the left side of the jig.

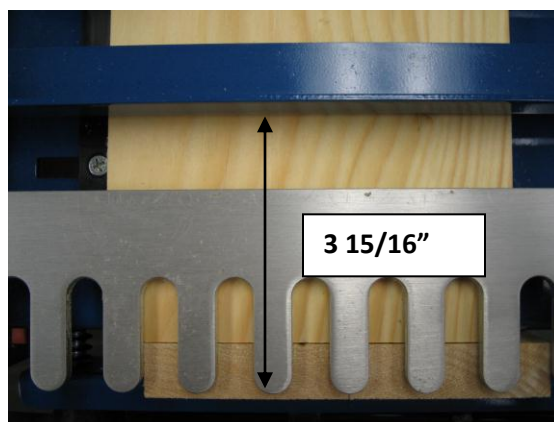


7. Adjust the template so that the ends of the fingers are about $\frac{1}{8}$ " back from the front face of the drawer side.

Drawer front/ back

Drawer side

8. Install the $\frac{1}{2}$ " 14-deg bit and $\frac{7}{16}$ " guide bushing in your router. Set the bit so that it projects about $\frac{11}{16}$ " below the router baseplate.
9. The fence limits the travel of the router by providing a positive stop for its base, and thus defines the length of the grooves cut between the template fingers. For a $5 \frac{3}{4}$ " diameter router base with a $\frac{1}{2}$ " diameter bit in $\frac{3}{4}$ " lumber, set the fence $3 \frac{15}{16}$ " from the tips of the template fingers. Be certain the fence is parallel to the template. For other router base sizes, use this formula:



$$A \times 2 + 1/32" + B = C$$

A= Amount the template overlaps the vertical board

B= Distance from the edge of the bushing to the edge of the router base

C= Distance from fence to front of template

10. Place the router on the template and make a cut from right to left, just touching the tip of each finger. This scoring cut helps prevent tearout. Without lifting the router, cut a test joint by traversing the template from left to right.
11. Turn off the router and wait for the bit to stop rotating before lifting the router from the jig. If the router is removed while still running, the bit will damage the template.
12. Remove both pieces from the fixture and test the joint for fit. If the joint is too loose, increase the depth of cut; if too tight, raise the bit. If the tails protrude from the sockets, adjust the fence towards the rear of the jig slightly; if the tails are recessed, move the fence toward the front.
13. Continue milling test pieces until you are satisfied, and then make a test joint to verify the setup on the right side of the fixture. Once all is adjusted, proceed to cutting the joints for your drawer.
14. Dovetails for the left front corner and right rear corner of a drawer are cut on the left side of the jig; joints for the right front corner and left rear corner are machined using the stops on the right. It is a good idea to keep track of the parts by numbering the joints and labeling each component.

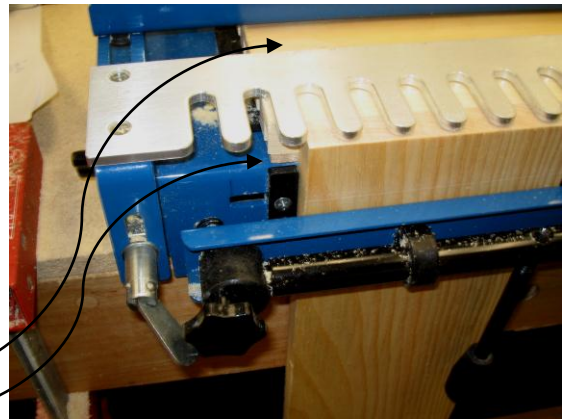
Through Dovetails:

So-named because the joint is visible on both parts, the through dovetail also has a decorative aspect provided by the contrast between end- and face grain. The joint derives some of its strength from the mechanical lock provided by the taper, and it is well to bear this in mind when orienting the components in the finished piece. If making a cabinet or drawer, place the tails on the side pieces for maximum strength. To produce this joint, the tails are cut first using the straight template and a $\frac{1}{2}$ " 8-deg router bit and $\frac{7}{16}$ " O.D. guide bushing. The pins are machined second, as it is this step that determines the fit of the joint. The 8-deg pin template is installed in the jig and a $\frac{5}{16}$ " straight cutter in the router. Both the pins and tails are machined with the work held vertically on the left side of the fixture.

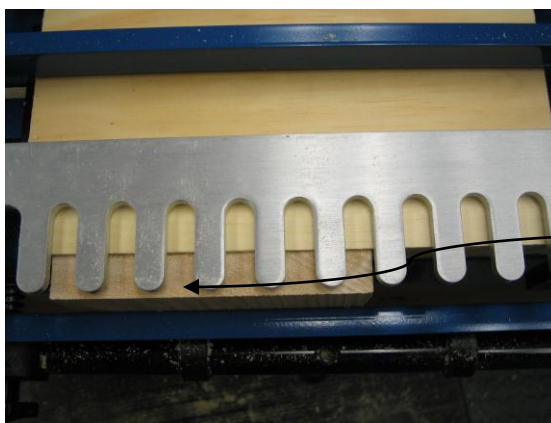
1. Layout the parts and label the front and back (or top and bottom in the case of a cabinet), along with the two sides. Determine which will have the pins or tails, and mark a "t" or a "p" on the inside faces. Number the joint at each corner.

2. A spacer is required to set the finger template to the correct height and parallel to the jig surface. Use a piece of wood the same thickness as your dovetail stock about 11" wide and 7" deep, along with a thin ($\frac{1}{4}$ ") shim made of hardboard or plywood. Secure these pieces with their edges aligned with the front face of the jig. As you will be making cuts slightly deeper than the thickness of the stock, the shim is needed to prevent the router bit from running into the jig. The spacer helps prevent tearout by acting as a backer.

Spacer
 $\frac{1}{4}$ " Shim



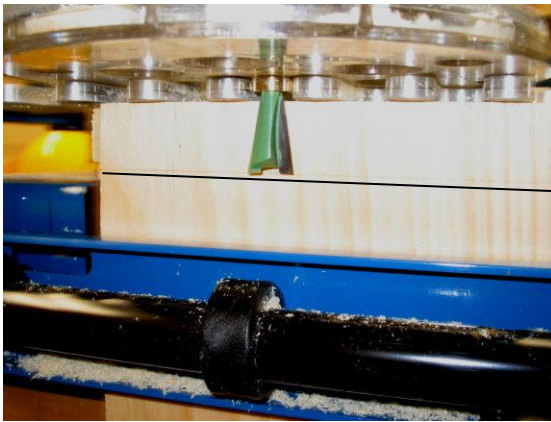
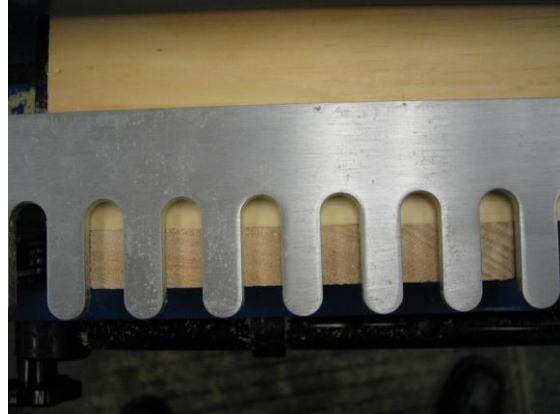
3. Prepare a test piece the same width and thickness as the dovetail stock. Use a marking gauge set to the stock thickness plus about $\frac{1}{32}$ " to scribe a line across the ends.



4. Secure this piece vertically on the left side of the jig so that it is centered on the template fingers. Ensure that its end is fully registered against the template. Set the left side stop against the edge of the test piece.

Workpiece
centered on
fingers

5. Check the position of the template to verify that the point where the straight sides of the fingers meet their round ends lies just beyond the face of the stock.

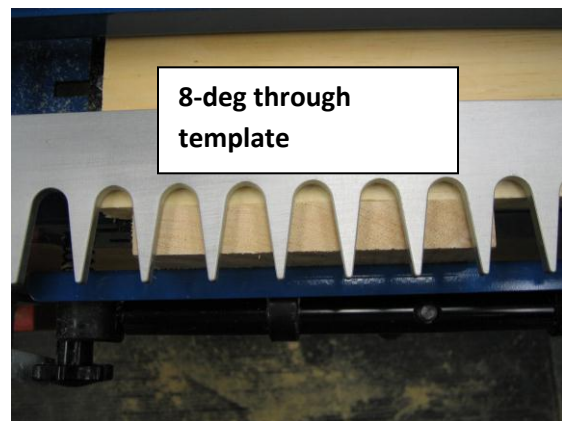
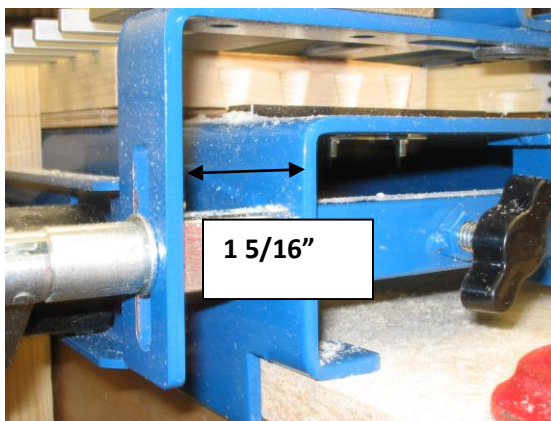


6. Install the $\frac{1}{2}$ " 8-deg cutter in the router, place the router on the finger template, and use the line made by the marking gauge to set the depth of cut.

7. Place the router on the template, ensuring the cutter is not in contact with the stock. Turn on the router and machine the tails, beginning from the left side of the workpiece. Follow the notch between each finger in a clockwise rotation, keeping the bushing registered against the finger edge.

8. If you're satisfied with the setup, cut the tails for your project. Clamp the first piece in the jig with its inside surface facing out. Turn it end for end to mill the tails on the other end. Repeat for the second piece.

9. The setup for the pins determines the fit of the joint. Replace the dovetail bit with the $\frac{5}{16}$ " straight cutter and install the 8-deg through dovetail finger template. Set the position of the template so that the inside face of the vertical support and jig body is about $1 \frac{5}{16}$ ". This setting is suitable for different material thicknesses.



10. Prepare a test piece for the pins. Use the marking gauge to scribe a line across the ends. Position the test piece in the jig against the left side stop and secure the clamp. Set the depth of the router bit as in step 6.
11. Begin with the first recess on the left side of the stock. Make a series of sideways cuts and finish by following the angled sides of the fingers. Repeat for each recess.
12. Test the fit of the joint. If tight, move the template away from you slightly; if loose, shift the template towards you. Follow this process until a good fit is achieved.
13. Cut the pins for your project. The inside surface of the stock must always face towards the jig.