

More Than One Way to Cut a Dovetail

Learn a variety of approaches for every situation

BY BOB VAN DYKE

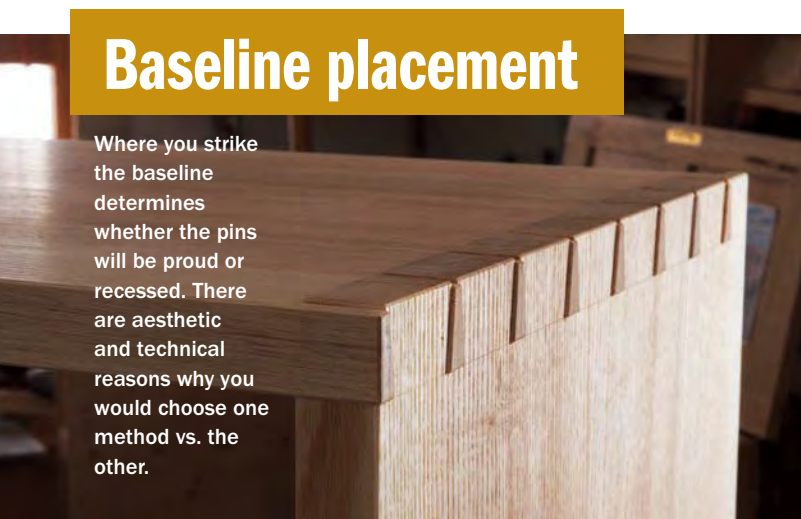
Flexibility in furniture-making techniques is not a common trait among most woodworkers. We tend to find a way that works and stick with it. That makes sense; habits are comfortable and the more you repeat something the more proficient you become. However, the best woodworkers are comfortable with multiple techniques for each task because they accept that situations vary. Recognizing that, here are the reasons why I would choose one technique over another for a given dovetail situation.

Tails first or pins first?

It really depends. The deciding factor for me comes down to which will make for an easier transfer of the first half of the joint to the second half.

Tails first—One advantage to cutting tails first is the ability to gang tail boards together and cut two or four sets of tails at once.

Pins first—On a normal-size project where the transfer is simple, the question of



Baseline placement

Where you strike the baseline determines whether the pins will be proud or recessed. There are aesthetic and technical reasons why you would choose one method vs. the other.

Proud pins. Dovetails are traditionally planed flush after assembly, but leaving them intentionally proud is an aesthetic choice that showcases the joinery, rather than downplaying it as was done in 18th-century furniture. To do this, set the cutting gauge $\frac{1}{32}$ in. to $\frac{1}{16}$ in. thicker than the tail board. Slightly chamfer the protruding corners before assembling.



Shy pins. To make traditional dovetailed drawers, first fit the drawer front to the opening. Then set the cutting gauge just shy of the tail board's thickness, which will result in the surface of the tail board being slightly proud of the pins. After assembly, plane the surface of the tail board flush with the pins.

The big debate

It doesn't have to be always one or the other. Both have upsides.



or tails first?



Pins first for easier transfer. When you're dealing with larger workpieces, it's much easier to transfer the pins to the tails than the other way around. After you cut the pins, make a quick grooved clamping block, lay the tail board on your bench, and put the block over the pins you're not transferring. Use a hand-screw clamp to stabilize the pin board and a bar clamp to hold it to the tail board. With the bar clamp lightly tightened, tap the pins in place, then tighten the clamp.

Complete the transfer. With the boards clamped, use a mechanical pencil or a sharp pencil with a flat on one side to trace the pins onto the tail board.



Tails first for multiples. If you're cutting tails first, you can tape the parts together, mark them all out at the same time, and make your sawcuts to the whole batch at once. When cutting tails by hand, taping two tail boards together makes it easier to cut the tails square to the face.

pins first vs. tails first is personal preference. In a large case project, however, scribing tails to pins with the tail board held horizontally atop a long pin board can be very awkward and unwieldy. Instead, cut the pins first and then hold the pin board vertically on top of the horizontal tail board.

While I work with hand tools all the time, I am also a great believer in machine-assisted techniques when it is to my advantage. If I am cutting the tails first, I usually use the table saw because it excels at cutting straight and square, the basic

Cutting tails

By hand...

Whether you are cutting dovetails by hand, by machine, or a combination of the two, apply the technique that is best in any given situation. Your approach to dovetailing a drawer could be completely different from your approach to dovetailing a carcass.

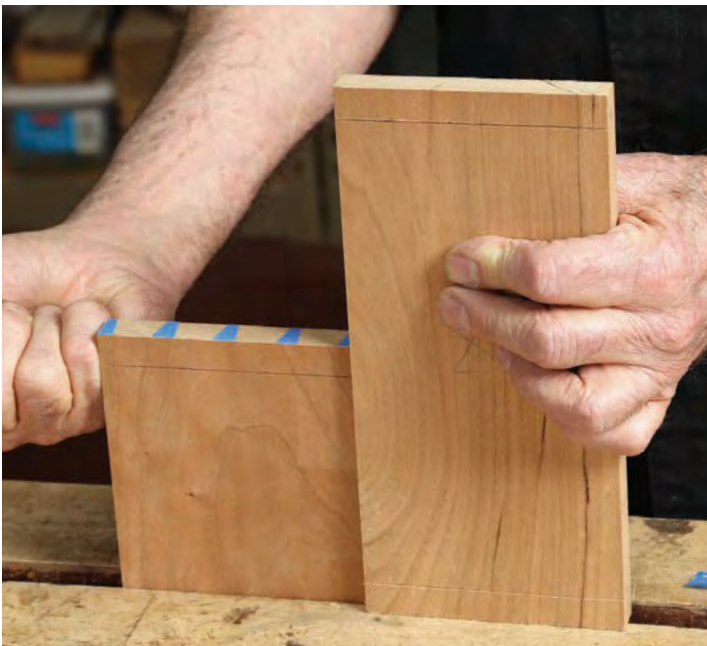


Laying out. Layout lines on the first half of the joint can almost be thought of as “suggestions,” even freehanded in. Precise spacing or angles are not important as long as the pins are perfectly vertical and the tails are perfectly square to the face.



Angled board, straight cut. Accurate vertical cuts are easier to make than accurate angled ones. To avoid angled cutting, shift the tail board in the vise until the layout lines are vertical, not the wood. A squared scrap helps get the tail lines vertical.

THROUGH-DOVETAILS

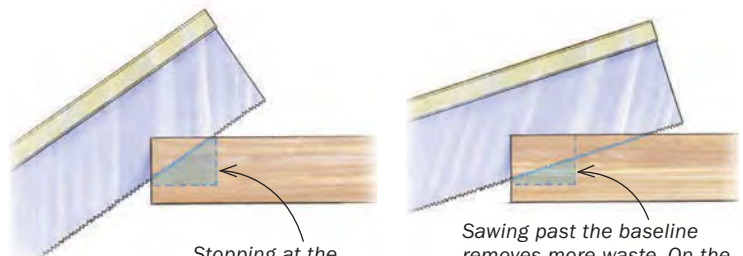


Pins for through-dovetails. Pins must be perfectly vertical, so before cutting, use a squared scrap to align the pin board vertically in the vise. This makes it easier to cut the pins accurately.

HALF-BLIND DOVETAILS



Half-blind pins. Position the board flat on the bench, with the end of the pin board even with and square to the front edge of the bench. Make the vertical cut on the end grain, just leaving your layout line, before transitioning the saw to finish the horizontal overcut.



Stopping at the baseline leaves a large triangle of waste.

Sawing past the baseline removes more waste. On the inside of a drawer front, the overcut is never seen.

or by machine



TABLESAW

Table-saw technique. Van Dyke tilts the sawblade 10° , the same angle the top of the blade was ground to. That keeps the top of the blade parallel to the table surface. Then he cuts the tails using a simple sled that supports the board on end.

requirement for successful tails. Once you are set up with the correct blade and sled, it takes less than 5 minutes to set up the cut. You can buy blades pre-ground to an angle, but it is much cheaper to send an extra sawblade out to be ground to the angle you want. I use 10° .

Pencil or knife

Whether you cut pins or tails first, precision is essential when transferring the first half of the joint to the second half. Many people use a knife to scribe, but just as many use a sharp pencil. The knife line is crisp, but shows in the finished surface. If you pare all the way up to the knife line to remove it, the joint can end up loose; conversely, if you leave the knife line, the bevel of the knife will have created a small gap. A pencil line—even from a sharp, hard lead—may not be as crisp but it is easily removed when cleaning up the joint.

A rabbet can make scribing easier

I usually cut a shallow rabbet on the inside face of the tails before the transfer. I cut this rabbet exactly on the gauge line, a technique I learned from Steve Latta. The small shoulder this creates makes it easy to position the tails and hold them securely against the pin board during the transfer.

Alternatively, a piece of $\frac{1}{4}$ -in. MDF can be clamped exactly on the tail board baseline to serve as a temporary rabbet.



BANDSAW

Wedge and cut. A wedge, cut to the angle of your dovetails, guides the workpiece. With the wedge against the fence, cut to the baseline, and then back out of the cut. Flip the board to cut the other side of the tails.



Accurate transfer

Creating a shoulder on the tail board allows you to securely hold it against the pin board when making the transfer. You can cut a rabbet directly into the stock or make a temporary rabbet by applying a piece of MDF.



Integral rabbet

Easy-peasy rabbet. A quick skim cut on the table saw gives you a solid registration point to transfer tails to the pin board.



A new baseline. After cutting the rabbet, the cutting gauge must be reset to the new tail thickness, otherwise the pins will protrude much more than you intended.

TIP

SIDE-TO-SIDE ALIGNMENT



While a rabbet helps with the front-to-back alignment, a simple, flat scrap of wood ensures the side-to-side alignment of the tail and pin boards.



Temporary rabbet



Add a rabbet. To simulate what an integral rabbet does to locate the parts, simply clamp on a straightedge with a lip. It registers off the edge of the board and creates a shoulder across the face of the tail board. The edge guide on the jig protrudes beyond the baseline, which also provides side-to-side registration.

Many ways to remove the waste

After the joint has been cut, the waste must be removed right up to the baseline. You can chop it out with a chisel and mallet, saw it out with a coping saw, or use a scrollsaw or trim router.

The traditional method is to chop out the waste with chisel and mallet. Done well, no further paring should be required. Coping saws or scrollsaws are also good methods of removing the waste, but the little bit of wood left behind still needs to be pared up to the baseline.

When it comes to the waste between pins, a trim router removes it quickly and accurately. Roughly saw away the waste with a coping saw, scrollsaw, or bandsaw, taking care not to cut into the pins. Don't bother cutting all the way to the baseline; the trim router will do that. Hold the workpiece vertically in a simple jig that allows the trim router to reference off the end of the workpiece. Set the depth to cut right up to the baseline. Holding the router on the jig, cut away the waste between pins. A bearing-guided pattern bit is best because the bearing registers off the top face of the pins and prevents you from cutting into them. The same method can be used for half-blind pins but these require a straight bit, greatly increasing the risk of cutting into a pin and ruining it, so be careful.

Establish the baseline

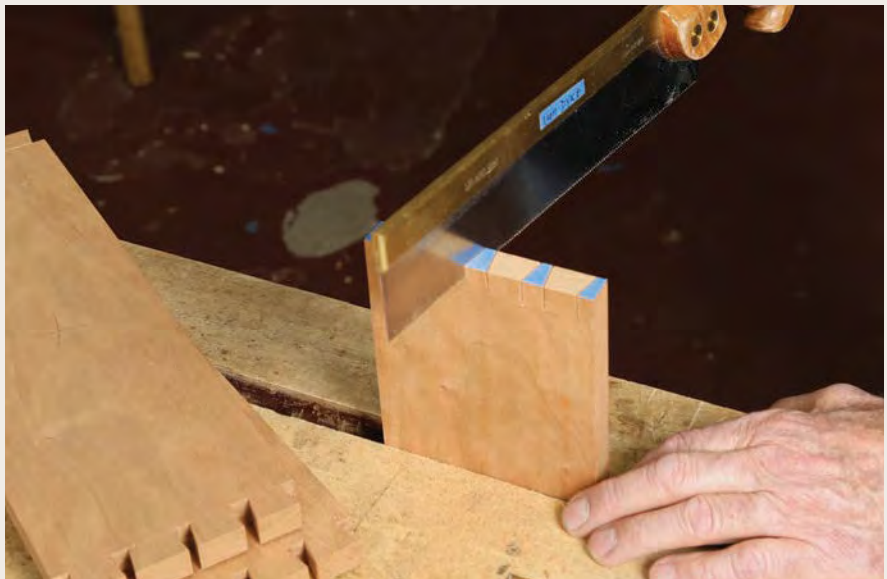
There are choices to be made about how to set the cutting gauge for the baseline. The most common practice is to set the

TIP

BLUE TAPE AND A KNIFE MAKE A CRISP LAYOUT LINE

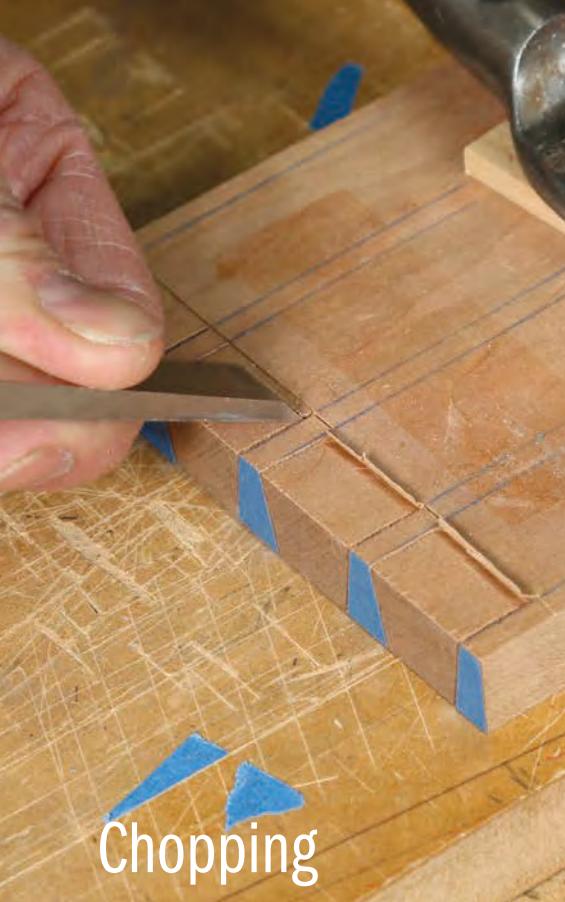


A great technique made popular by Mike Pekovich is to use blue tape on the end grain of the pin board. Scribe along the tails with a knife, cutting only deep enough to cut the tape. Remove the tape from the waste sections. Your layout line is now crisp and distinct. When you cut the pins you can feel the saw riding against the edge of the tape.



Removing waste

There are multiple ways to remove the waste— from a chisel and mallet to coping saw, bandsaw, scrollsaw, trim router or a combination of all of them!



Chopping

Incremental steps. Chopping out the waste is fast and direct. No fussy paring should be necessary. After marking a deep baseline, make a chip cut, which creates a wall for the chisel to register against when chopping. Two to three chip cuts should get you more than halfway through the stock.



gauge to just a hair more than the thickness of the stock. This will result in slightly protruding pins and tails that can be planed flush. Setting it less than the thickness will mean the ends won't quite reach through the stock, a common technique in drawer making.

Sawing pins for half-blind dovetails

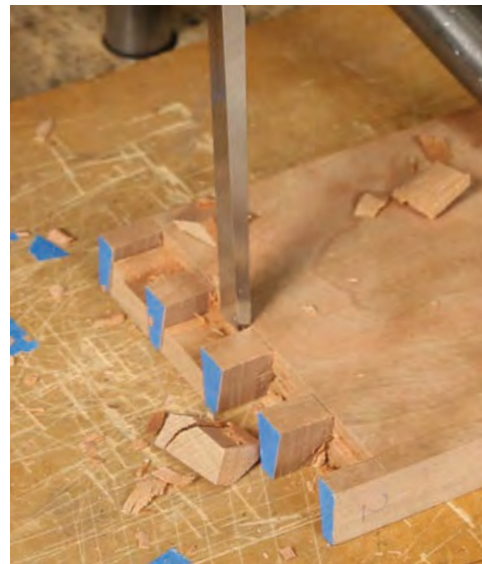
Most contemporary woodworkers find sawing half-blind pins a little irritating because the saw must stop between the baseline and the lap line, leaving a large triangle of wood to be pared away.

However, almost all drawers in period furniture have overcuts. 18th-century cabinetmakers, recognizing that stopping the saw at the baseline caused extra paring, typically extended the sawcut a full 1 in. to 2 in. past the baseline, thus leaving a very small triangle of wood in the pin socket to be removed with the chisel. Because the overcuts are on the inside face of the drawer front, no one ever sees them.

Holding the work horizontally—The usual practice among contemporary cabinetmakers is to hold the pin board vertically in a vise with the end of the board high enough that the vise doesn't get in the way of the sawcut. This is an uncomfortable height at which to saw. And when cutting a long pin board—say for the side of a tall chest of drawers—the surface to



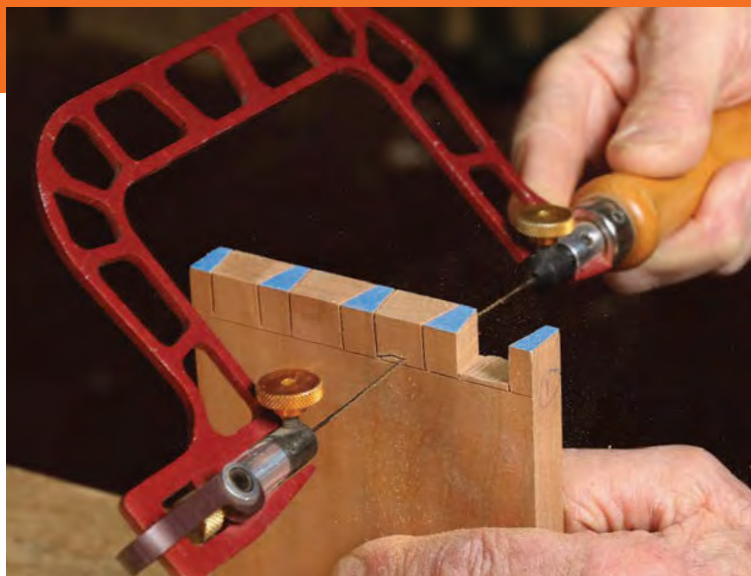
Flip and repeat. When you're about halfway through, flip the board and repeat the process. Use vertical and horizontal chops to clear the waste.



The flat supports the waste.

be cut is now significantly higher than the vise and is not supported solidly. I firmly believe that most period cabinet makers cut the pins with the pin board clamped horizontally on the bench. Not only is the length of the pin board not a consideration, but the cut is also supported right up to the edge of the bench. It felt odd when I first tried it, but now I always cut half-blind dovetails in this manner. □

Contributing editor Bob Van Dyke runs the Connecticut Valley School of Woodworking.

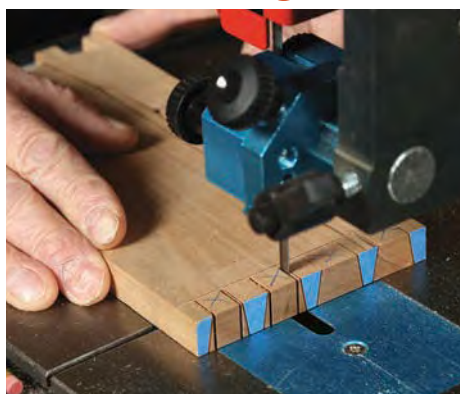


Coping with waste. After sawing the pins or tails, many woodworkers use a coping saw to remove the waste. Saw close to your baseline and then use a chisel to pare to the baseline.



Leave the triangles. The majority of waste can also be quickly removed with a scrollsaw or bandsaw. Make sure the inside face of the pin board is up or you will cut into your pins!

Scrollsawing and bandsawing



Clean up the triangles. A coping saw or chisel makes quick work of the little triangle of wood left by the scrollsaw or bandsaw.

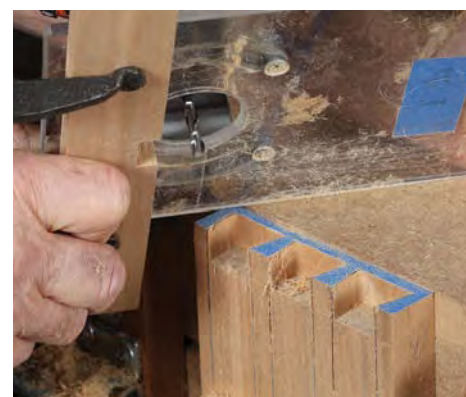


Rout to the baseline. Holding the work in a shopmade jig and routing to the baseline after most of the waste has been removed is the fastest, most accurate path to perfect baselines. It works for through-dovetails and half-blinds, though the bits and techniques differ slightly.

Routing



Through-dovetails. Once you've cleared out most of the waste, use a trim router with a bearing-guided bit to cut to the baseline. The bearing rides on the upper half of the pins without letting the bit cut into the pins.



Half-blind dovetails. A bearing-guided bit won't work with half-blinds. Use a spiral upcut bit or a straight bit. Clamp your pin board to the router box and rout by eye to your saw lines, clearing all the sockets to the same depth and leaving little to clean out by hand.