

Choosing and using dado planes

BY BOB ROZAIESKI



There are numerous ways to cut a dado by hand. You can saw the walls and then clean out the waste with a chisel and router plane. You can even make the joint with nothing but a sharp chisel. These methods, however, are relatively slow. While speed may be a minor concern when you need to make only a single joint, when a piece requires a dado, there tend to be several. In these situations, the most efficient method is a sharp, tuned dado plane. There's more to learn than with some other joinery planes, but a dado plane deserves a spot in your tool kit. Be forewarned, though; it's hard to stop at just one.

History, from wood to metal

The wooden-bodied dado plane has been around since the 18th century; however, the wooden form we know today wasn't common until the early 19th. They were made in various sizes, typically ranging from $\frac{1}{4}$ in. to 1 in. wide, in $\frac{1}{8}$ -in. increments,

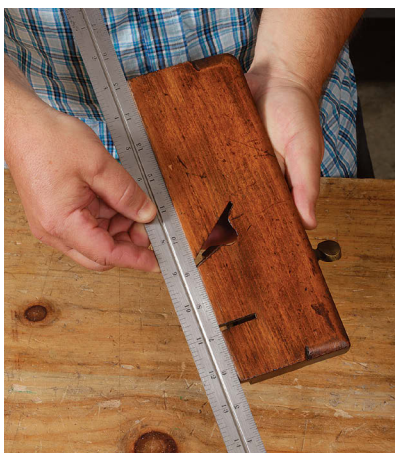
with many manufacturers also making a $\frac{13}{16}$ -in. size to match a common stock thickness. Compared to most other wooden-bodied planes of the time, which were rather simple tools, dado planes were quite complex, making them up to two times more expensive than the simpler wooden planes. Because of the cost, it was unlikely that most joiners and cabinetmakers of the time would have owned an entire set of dado planes. Instead, they may have made do with two or three.

By the 20th century, iron-bodied dado planes were being manufactured. They came in various widths similar to wooden versions but were significantly less expensive. Iron dado planes were manufactured by Stanley into the 1950s. As a result, these tools are still very common in good, usable condition.

All things being equal, I prefer wooden planes because they're more ergonomic. This isn't a big deal when working softer woods like walnut and mahogany, but can be quite the literal pain with really dense woods, like white oak. But,

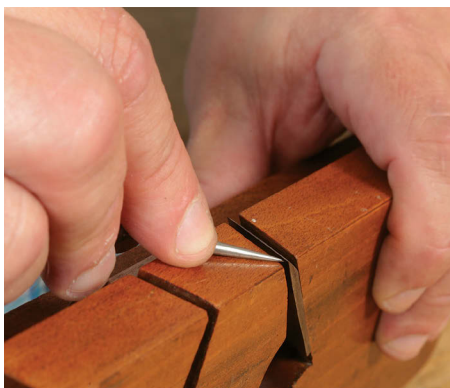
Tuning a wooden-body plane

CHECK THE BODY



To work properly, the sides of a plane's body must be straight. If they're out more than 1mm, pass on the plane and keep looking. Anything more, and fixing the bow will negatively affect the tool. The sole should be straight and square, too. Use a very finely set bench plane to make adjustments. If the body is slightly bowed, straighten its right side for accurate reference on the batten when using the plane. Then joint the sole.

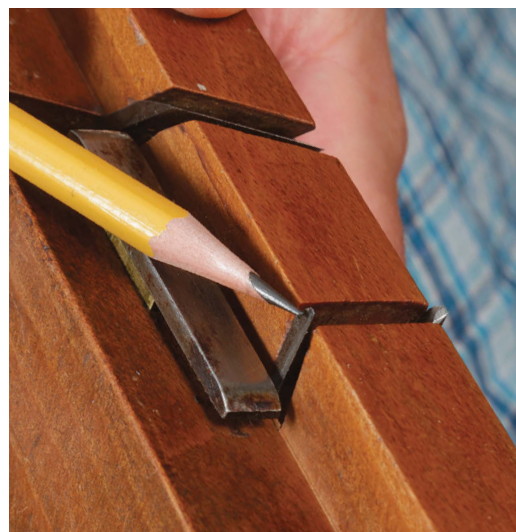
SQUARE THE BLADE



The skewed main blade should project evenly from the mouth. To verify this, color the back of the iron and place it in the plane. Scribe the iron following the sole of the plane. The scribe line will show clearly against the marker. Grind a new bevel at the proper skew angle if necessary. Begin with the blade horizontal, grinding the tip until you reach your scribe line. Then tilt the blade up to form the bevel.

DRESS THE SCORING BLADE

The scoring blade, which is not skewed, should be slightly wider than the body. If the blade is narrower than the body, the plane may bind in the cut. For this reason, don't remove material from the outside edges when dressing it. The soft steel is easily worked with a file. These blades don't need to be razor sharp, so touching up the blade with a file works well enough. Rozaieski also likes to form a rounded, thumbnail profile at the cutting edge.



Tuning a metal plane

CHECK THE BODY

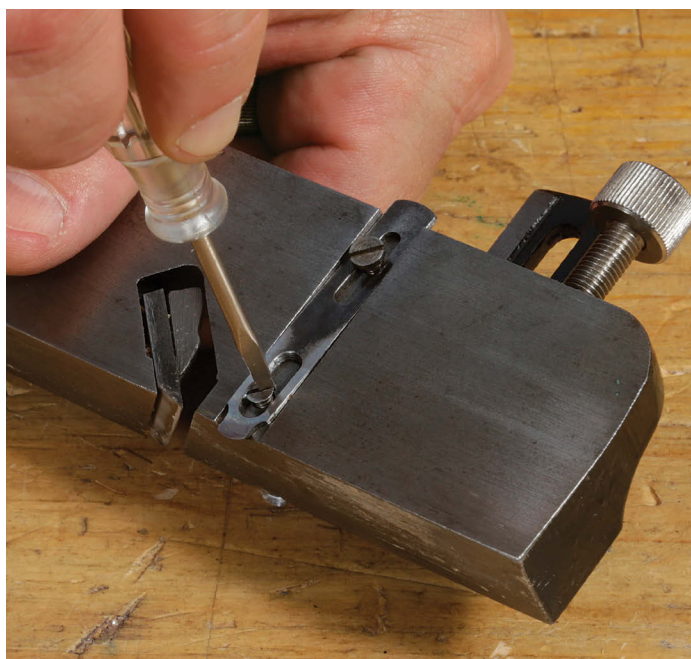
Metal bodies shouldn't need much work, but it's still worthwhile to make sure the body and sole are straight and square. Lap on sandpaper if necessary. Rozaieski does the majority of the work on the sole, because removing too much material from the right side of the plane can affect where the scoring blade attaches. Clamping a square reference fence to the lapping substrate helps keep the sole square.



HONE THE SCORING BLADE



Use bench stones to sharpen the backs and bevels of these thumb-shaped irons. Like the wooden plane's scoring blade, these do not need to be razor sharp. To keep the left-side scoring blade just proud of the body, metal planes house them in a ramped slot. As long as you don't remove a significant amount of metal from the cutter during sharpening, the ramp will position it correctly. The right-side scoring blade sits flush; this keeps it clear of the batten when the plane is in use.



unfortunately, used wooden planes are much harder to find. It's a good thing the metal ones function just as well.

Buying and tuning a vintage plane

As mentioned, dado planes are quite complex compared with bench and even some joinery planes. They have either two or three blades, the main blade is skewed, and there's a depth stop. For a dado plane to work properly, all of these parts must work together.

When shopping for a wooden dado plane, first make sure the side of the plane's body is straight. If it's bowed, the tool will bind in the cut and will not make a satisfactory joint. One millimeter or less can be planed out, but more is unacceptable. The sole can be jointed straight and square too if it isn't already.

It's uncommon for the body of a metal plane to be bowed,

but it's still worth checking. If it is, there's no easy fix. A more common problem is that the sole may be out of square. You can fix this with careful lapping, but if it's severe, pass on the plane. They're too common to bother with major defects.

Check the blades next. A wooden plane should have two, a two-pronged scoring blade in front and the main skewed cutting blade behind. Both should be a hair wider than the body. Otherwise, they won't work. They should be secured by wedges. If a blade or wedge is missing, the plane is useless.

Most metal planes should have three separate blades: two scoring blades, one for each side; and a skewed cutting blade. Make sure that the scoring blades fit properly. The scoring blade for the left side will have varying degrees of a Z shape depending on the size of dado the plane will cut. The scoring blade on the right will be flat. The left blades are therefore

Setting up a cut

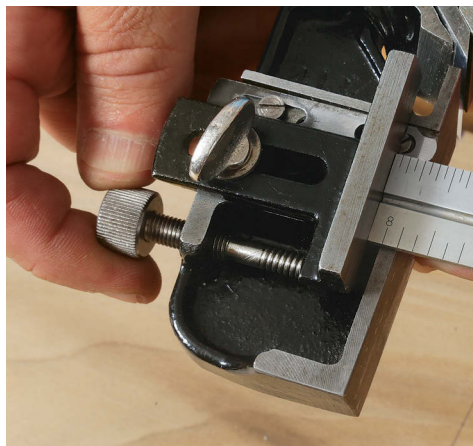
ADJUST THE BLADE

On metal-body planes the iron locks in with a thumbscrew and blade clamp; on wooden ones with a wedge. The skewed cutting iron excels at planing across the grain as cleanly as possible, but in setting the blade the user must still take into account wood hardness, grain behavior, and any knots.

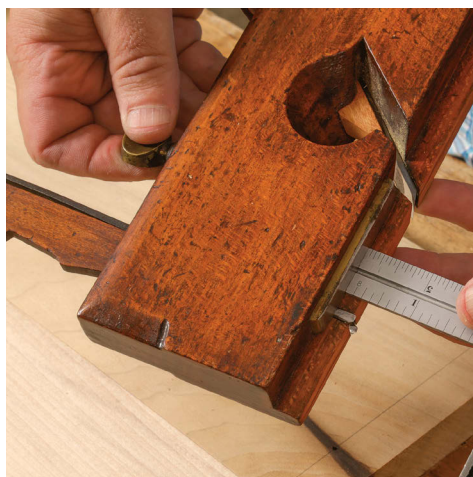


SET THE DEPTH STOP

Use a ruler to adjust the depth stop. After adjusting the screw stop to your desired dimension, lock the depth stop in place with the thumb screw.



While wooden planes can employ two other styles of depth stop, Rozaieski prefers the screw stop. Typically made of brass, it's mortised into the plane body and adjusted with a thumbscrew located on top of the plane body.



not interchangeable between planes of different widths. Each scoring blade attaches to the plane with two small machine screws that easily go missing, so check for all four.

The main blade of an iron-bodied dado plane is also specific to the size of the plane. Replacements are difficult to find. The blade is secured with a blade clamp that is attached to the body of the plane with a screw. Again, these clamps are specific to the size of the plane. The size in eighths of an inch is typically cast into the bottom face of the clamp. Check the blades for pitting as well.

Lastly, verify the depth stop is present and functions properly. While the plane can be used without one, it's less efficient.

On wooden-bodied planes, there are three different styles of depth stop. The least common is a wooden block that is mortised into the plane and secured by friction or a wooden thumbscrew. The second style, commonly called a side stop, is typically made of brass or steel and secured to the outside of the plane body by a steel wood screw. The most common and most reliable is a brass screw stop, which is pictured at left.

All the iron-bodied dado planes that I'm aware of use a version of the screw stop. Replacement stops can be difficult to locate, so I pass on any that doesn't come with all the parts.

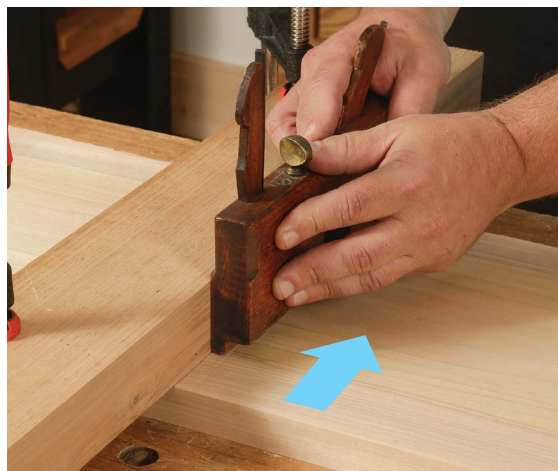
When I get a new old plane, I first disassemble, clean, and derust it. From there, I true the body if necessary. Next, I turn my attention to the scoring blades. On a metal plane, all you need to do is hone these. For a wooden plane, I lightly file the insides of the two nickers to sharpen them. I also round each nicker's cutting edge so it cuts on both pull and push strokes.

With the nickers addressed, verify that the main blade's skew angle is such that the blade projects evenly from the mouth of the plane. Having a skewed blade helps the plane cut cleanly

Planing a dado

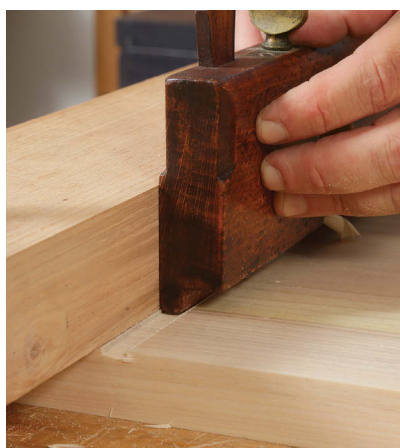
SCORE FOR A CLEAN CUT

Draw the plane backward while holding it tight to the fence. Pulling the plane toward you lets the scoring iron knife the dado's walls, limiting tearout. Because dado planes don't have an integral fence, a batten clamped to your layout line keeps the plane on track.



START AT THE FAR EDGE

Form the dado in successively longer strokes until you're planing the width of the board. Start with a short pass at the far edge, then move the starting point toward you with each pass until you're planing the board's full width. This enables you to keep the plane vertical and tight to the batten, leading to a square joint.



across the fibers, so you want the geometry to be right. If it isn't, grind a new bevel at the proper angle. Then, hone the edge. I find this easiest to do freehand.

Now set the blades into the plane. The nickers should project just a hair more than the main iron, which itself should project evenly across the mouth of the plane and not past the edges of the nickers. The main blade should line up between the nickers, so it cuts evenly between the scored lines.

Batten keeps things in line

Unlike some other joinery planes, dado planes do not have an integral fence; most dados are too far from the ends of a board for one to be useful. So to guide the plane, we attach a batten to the workpiece. The batten is simply a stick of wood with a jointed edge and face. It can be clamped to the workpiece, or, more traditionally, affixed with a couple of finish nails.

With the batten attached, start the dado by drawing the plane backward while holding it tightly to the fence. Do this two or three times to score the sides of the dado. Then, starting about 6 in. from the far end, make a forward pass with the plane. Back up 6 in. more and again plane to the far edge. Back up again and make a third pass. Do this until you are planing the full width of the board. Plane until you reach your depth stop.

Troubleshooting

When you are using a dado plane, there are three common maladies you might run into. Luckily, most involve simple fixes.

The first is that the sides of the dado aren't vertical. This comes from tipping the plane. To fix this, slow down and focus on keeping the plane tight to the batten, and thereby vertical. A thicker batten can be helpful; double-check that it's square.

Another problem is the plane binding in the cut. Several things can cause this. First, a scoring iron may not be proud





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Dado planing tips

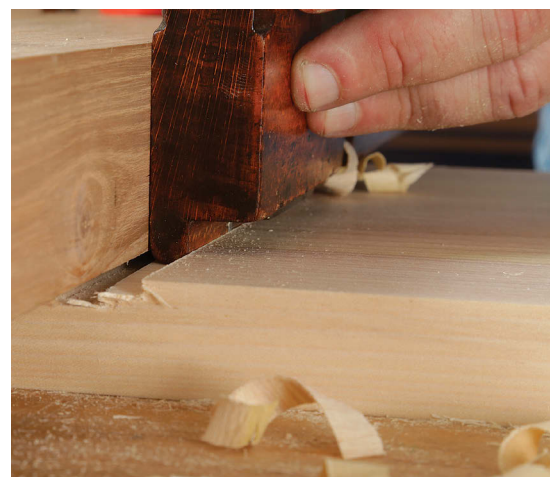
PAIR UP CASE SIDES

Two pieces receiving dados can be clamped together and planed at the same time, ensuring the joint in the two panels will line up perfectly come assembly. By putting the two front edges to the inside, this method also limits blowout.



CUT WIDE DADOES IN TWO PASSES

Tap the batten over after the first dado to widen the joint. To create a dado wider than your dado plane, first plane a normal dado. Then move the batten over the distance you want to widen the joint before planing again.



of the plane body. Another possibility is that you are tipping the plane. If you start nice and vertical but then tip the plane as your dado progresses, the front corner of the plane will rub on the wall of the dado, causing the plane to bind. Again, slow down and focus on holding the plane plumb.

The third common issue is the dado's walls chipping and tearing out. Use this checklist to figure out the cause. First, the nickers should be sharp. Next, they need to be aligned with the main blade, so see that the main blade doesn't protrude beyond the nicker on one side. If they are aligned, make sure the iron isn't too wide. This is extremely rare but can happen. If it does, lightly grind the sides of the iron to narrow it. Finally, be sure you're not tipping the plane, causing the side of the cutting iron to rub the corner of a dado wall, leading to tearout. □

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RABBET A SHELF TO FIT A DADO



If you don't want to widen the dado or thin the shelf to fit, you can rabbet the shelf. An argument can be made that the rabbet's shoulder strengthens the joint.