



3 Ways to Make RAISED PANELS

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We explore the best ways to raise a panel with a router, handplane or table saw.

Traditional raised panels appear in almost every furniture style since Roman times, though the way to make them varies wildly.

All the methods, however, fall into two different camps: One method is to use a tool that is specially designed to do the job, such as a panel-raising plane or a panel-raising router cutter. The other method is to use a basic woodworking tool (such as a table saw or a rabbet plane) and a little bit of cleverness to do the job.

In our shop at *Popular Woodworking*, we use at least three different methods to create raised panels for doors and drawer bottoms. What follows is a step-by-step tutorial in each.

Raising Panels With a Router Table

I learned to make raised panels in a commercial shop with a big shaper equipped with a power feeder. The results were predictable and consistent, and the process went quickly with only a bit of finish sanding needed after machining. A router table with a good cutter is the next-best thing.

There are two key elements to success: good material preparation and proper machine setup. With those in place, the actual making is the quick and easy part. I'm a fan of quick and easy, and I like being able to make profiles with a curve and to

have a consistent, flat tongue around the perimeter of the panel.

If the panels-to-be aren't dead flat with straight edges, the relationship between wood and cutter will vary as the piece is machined. This results in variations in the completed panel that take a lot of time to work out by hand sanding or scraping.

The setup is equally important; make the tongue too thick and you get to make another pass, make it too small and you either start over or live with an annoying rattle whenever you open or close a door. It takes a while, but

if you get it right the first time the reward is moving on to the next step with a pile of crisp panels.

And of course the cutter can make or break the entire enterprise. Good ones have an extra set of wings for shearing material, and they leave a nearly perfect surface. If you try to save a buck with a cheap cutter you'll spend more time sanding and have more tear-out to deal with.

Below are the methods I use for setting up and making raised panels. —RL



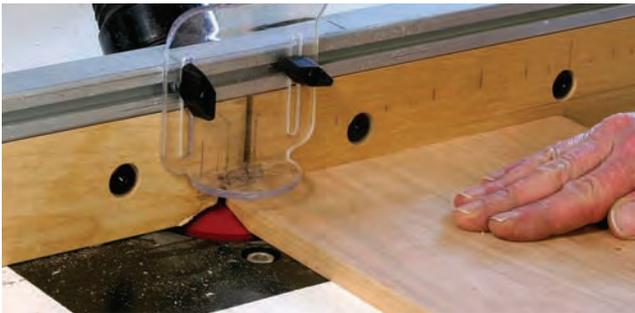
1 Off to a good start. There are two crucial settings to make: the height of the bit and the distance the cutter extends from the fence. I start by setting the height and use an adjustable square on top of a panel blank to leave a 1/4"-thick groove.



2 Get off the fence. For the final cut, the bearing on the cutter is flush with the face of the fence. This is a simple setting to make and return to. Get it close for now so you can make cutouts in the fence to match the cutter profile.



3 Slow down and be careful. Raised panel cutters are big so you want to minimize the amount that is exposed and slow the router down if it has a speed control. I set the router speed to its minimum and ease the sliding fences into the spinning cutter to make a zero-clearance opening. If that makes you nervous, remove the fences and cut the profile of the cutter with a jigsaw or band saw.



4 Steps to a great cut. Set the fence so that only about half the cutter is exposed before making the first cut. I usually make three passes — two that remove about half of the material and a final light pass (about 1/16") to clean up and leave a smooth surface. Place a guard over the cutter and hook up the dust collector.



5 Begin with the end. Cutting across the grain can lead to tear-out as the cutter exits the wood. Make the cross-grain cuts first and the long-grain cuts that follow will clean things up. Keep the panel flat on the table and be aware of where your hands are at all times.

6 Getting close. Move the fence and set it in front of the bearing about 1/8" before making the next pass around the perimeter. For the final cuts, set the bearing flush with the face of the fence. If the corners aren't lining up, either the panel is curved or your hand pressure is inconsistent.



7 Fine finish. The last pass leaves a consistent tongue and a clean surface. A quality cutter is worth the investment unless you like to sand and sand in awkward places.



Raising Panels by Hand

When I was about 12, I raised my first panel, and I did it by hand. Since that time my voice has gotten deeper, I've gotten furrer and my methods have changed a bit. Now when I raise a panel, I'll usually rough out the shape on a table saw (like Senior Editor Glen D. Huey shows in this article), then I'll clean up the nasty saw blade marks

with a skew block plane. I find this method to be fast and produce nice results.

However, raising a panel entirely by hand is actually quite easy to do and doesn't require a lot of tools. All you need are a couple cutting gauges and a rabbet plane. Though I show using both metal and wooden rabbeting planes in this article, I prefer using a

metal rabbeting plane because its fence has a longer reach, so I can make a wider bevel.

The first step is to back off the nicker in your rabbeting plane. Though you have some cross-grain cuts to do, the nicker isn't going to help you. Next, set your cutting gauge and rabbet plane so they are making the same width of cut. —CS

1 Define the field. Use your cutting gauge to define the field all around all four edges of your panel. Begin with light strokes and then increase your downward pressure to make a fairly deep cut. This bevel is $1\frac{1}{8}$ " wide.



2 Define the tongue. Use a second cutting gauge to define the thickness of the finished tongue. Run the fence of the gauge along what will be the backside of the panel. Make this cut on all four edges.



3 First get cross. Now sink a rabbet that is the width of your bevel and about $\frac{1}{8}$ " deep. Work both cross-grain bevells first. Note the block of wood at the end of my stroke that prevents me from spelching the edge.



4 Then with the grain. Then sink the same rabbet on the long-grain sections of the panel. Don't press too hard on the fence. The skewed blade will pull the fence against the panel.



5 Lean into it. Now shift the fence so the tool will take a slightly wider cut—usually $\frac{1}{8}$ " wider will do it. Why? The bevel is longer than the rabbet. Tip the plane and work the rabbet into a bevel. Work down to the line on the edge of the panel.



6 Check your cut. Use a mullet that is the depth and width of your finished groove to check the edge. When the tongue fits and the corners look good, stop planing.



7 Use your eyes. Clean up the cross-grain bevells first. Then the long-grain bevells. With each pass of the plane, you'll see the bevells come into the same plane.



8 Cleaning up. Sometimes I'll use a rabbeting block plane or skew-block plane to dress the surfaces and clean up any wonky areas. A plane with a skewed blade makes cleaner cuts on the cross grain, but that plane is at home today.

Raising Panels on a Table Saw

In the home-building industry, I built stairways, bookcase units and raised-panel fireplace walls for new home construction. At that time it was important to raise panels as fast as I could. My tool of choice was my shaper. I spun a three-wing cutter of various profiles in a 5-horsepower machine to crank out the necessary parts.

When I moved to building furniture, the need for churning out so many parts

all but disappeared, but I did need to raise panels for many of my pieces. My shaper use dwindled to the point that it was a burden to clear junk off the machine's top to put it in use. I needed another method to create raised panels, and I no longer had the need for different profiles.

The main woodworking machine in most shops is a table saw. So that's where I turned. And today my raised-panel-making tool of

choice is still a table saw – with a fence extension for increased accuracy and safety.

A series of specific steps is all it takes to make raised panels at a table saw. Building techniques allow you to set up this process the same way every time you need to create a panel. As an example, most often we fit raised panels into frames that have $\frac{1}{4}$ "-wide grooves that are $\frac{3}{8}$ " deep, and the thickness of your panel can range from $\frac{3}{4}$ " down to $\frac{1}{2}$ " – I prefer $\frac{5}{8}$ " as my panel thickness. If you consistently build to these settings, this setup works every time. If you vary in your groove width or depth, you'll need to fine-tune your setup, but the procedure is the same.

If your table saw is anywhere close to tuned up, the process is simple and repeatable, and uses fundamental skills. It's a matter of adjusting the table saw blade tilt and height, along with accurate fence positioning.

— GH

1 Setup by the numbers. Set the blade tilt to 12° and position your fence so the distance between the fence and a tooth pointing toward the fence is exactly $\frac{3}{16}$ " as the tooth passes below the table saw top. Why this setting? If you cut your panel edge at 12° and have the fence spaced correctly, the post-cut angle on your panel sits tight to the bottom of the frame groove while just touching the arris as it rises out of the groove.



2 Feel the blade height. To set the height of the blade to create a raised panel, hold the panel tight to the fence extension and crank the blade up until the edge of the blade's tooth that's farthest from the fence is flush with the face of your board. That sets a $\frac{1}{8}$ " reveal for the raise portion of the panel. Now you're ready to cut.



3 Accuracy and safety. Here you can see how the fence extension aids in making this cut safe and trouble-free. Remember to cut the end grain first. This reduces the chance of grain blow-out along the long-grain because those edges are formed last. Notice how the blade just barely peeks through the panel freeing the waste material. This is what I look for. Cut all four edges.

4 Measure for fence position. Adjust the blade angle back to 90° and set the height to just less than $\frac{1}{8}$ ". To get the fence properly adjusted for the final step of squaring the reveal, lay your panel face up with one edge tight to your fence, then use a rule to measure the distance from the fence to the edge of your cut.



5 Take a nip to square. Set your fence to the measured distance plus $\frac{1}{16}$ ", then flip the panel face down as you run four passes (one pass on each edge of the panel) over the blade to square the reveal and complete the raised panel. All that's left is sanding. You might be surprised to find out that I use power for this step as well. PW