

About This File

WoodRat corner is an ongoing feature in the UK-based Routing Magazine. The idea is to keep WoodRat users up to date with new ideas and techniques.

WoodRat Corner

Making tenons with the new Alu GuideRails

We are frequently asked for stops for the router to stop against to make tenons, so in this first WoodRat Corner we would like to tell you something of our new, sleekly anodised Alu GuideRails.

To begin with we assumed that they'd need two stops, to make the back and front cuts of the tenon, but in the development process there came that "Oh, why didn't I think of that before?" kind of idea: one stop, plus a small block of wood, and with it you can knock out laps and tongues for housings and tongue and groove joints, and tenons proper of all kinds, haunched, single or double, through and stub and, almost as simple – perfect sliding dovetails.

Here's how it works: You need some kind of abutment on your router to hit against the Stop. Contrive something to stick out sideways from your router: we show a short rod fixed in the router's guide-rail hole.

Fix the Stop into the groove on the rail at any point along it, with its nut and M4 screw. Then as the router slides forward the Rod hits the Stop to position the cut wherever you want it.

Now the Block:

Make it the size of the bit you're using for the **tenon** plus the bit you will later cut the **mortise** with. You can cut this from a stick of hardwood scrap, using your straight bit. Cut the stick top with a shallow groove to find out the width of the cutter you're using. This is also a good time to change the bit and make a test mortise.

Mark up the rail in the usual way with the front and back line of the tenon. Zero the cutter onto the top of the rail and set the depth of plunge. Place a blade (the blades turned North/South) against the back line. Then place the Block between the Stop and the Rod, sliding the Stop up against the two. Tighten the M4 screw. Track the work out of the way so you can drop the cutter, and power the work, going left, into the cutter (clockwise as usual, to give a clean shoulder to the cut). That's the back of the tenon. Pull the router onto the Block as you go.

Take out the block, and pull the router forward to the Stop. Track the workpiece right, to cut the front cut. The resulting tenon should be the exact size of the mortise. If it's too tight you must sand off a little to thin it, and if too loose, pack it out with a paper shim.

With a little headscratching

you'll quickly work out how to make double tenons and even triple tenons. The Block will work for the double mortises as well as the tenons. **By using** a similar Block, you'll also be able to make finger joints, but that will have to wait for another WoodRat corner.

Happy 'Ratting....

Martin Godfrey

WoodRat Corner 2

Making Finger Joints

In the previous WoodRat Corner we outlined the way you can use a simple wooden block, placed against the Stop fixed on the GuideRail, to make tenons. We hinted that it can also make finger joints, so let's take a look now.

Finger Joints are a machine alternative to dovetails. They give a large joint area, so with good glues they're extremely strong, but their real beauty is that they can be batch cut on a table saw or router table – ideal for making instrument cases and storage boxes. With the 'Rat, the usual advantages apply; batch cutting, easy set-up and the use of a wide range of bit sizes.



The work is cammed onto the sliding bar, and run through the cutter as a single stack. The router is brought forwards by two cutter widths each time, fixed down, and the work run through again. There are several ways to hold the work: taped or clamped up and cammed into the CamLock.

I have never seen a finger joint that didn't have the socket and pin the same size. It occurred to me that if you used one big diameter cutter for sides A, and a slim cutter for sides B you would get a nice variant with unequal spacings. The Block is made to the size of the two diameters, and it's used for both A's and B's. I used a Half Inch with a Quarter inch bit.

Take a stick about an inch square. Cut a shallow groove in the top of it with the 1/4" bit. Next, place the 1/2" bit and cut another shallow groove exactly next to the 1/4" groove. Do this very carefully. Now depth the cutter further, and cut the top of the stick to the exact width of the two grooves. Take a final very fine cut (about the thickness of a piece of paper) to form the glue line, otherwise you'll be having to hit the pieces together with a hammer. Saw off the end of the stick, and that's the Block.

You'll need to devise some kind of projection from the router to hit the Block. Place the cutter placed against the back of the stack of workpieces. Bring the Block against the projection, and take the Stop up to the Block and fix it. Take out the Block, bring the router forwards to the Stop. Fix the router. The cutter has inchwormed its way forward by the two cutter-widths. Switch on and track the first cut.



That done, unfix the Stop and bring it forward, repeating the 'inchworm progress' described above. Make the next tracking cut, and repeat across the top of the stack A. Cartwheel the block and cut the other end. Before taking out the stack A, find the position of the first socket cut in B from the first pin in A.

Make the cuts in stack B, working across the stack in the same way, using the same Block. Any two pieces from stack A should form a perfectly fitting box with two pieces from stack B.

Happy 'Ratting

Martin Godfrey



WoodRat Corner 3

Knuckle Joints for a Pembroke Table

It's a favourite test piece for woodworking schools – a challenge to get right by hand, but it takes a bit of thought by WoodRat too. There are two versions; a through and a lapped type, which I prefer, and show here. In effect it's a lapped, half-blind finger joint, but with rounded ends.

Prepare the stock from a length of 90 x 35mm approx. The actual lengths will depend on the project, but here we're just considering the joint.

Cut the first round: Lock the stock against the machine face. Zero the round-over cutter against the back edge of the work, then depth the cutter to (a little more than) the radius of the cove. Cut the first cut in two passes – clockwise as usual to avoid breakout. Go steadily, so the cutter doesn't burn the wood. The bit should just cut the back face of the work and be just below the top.



cut: Bring the cutter forward to make the front cut. Position the final cut so that you lose the little ridge and make a perfect half circle.

Change the bit to a 1/2" bit. Cut a socket in scrap hardwood. Measure the inside of the socket with a pair of good dividers. Prick out a line of pin points on the face of a stick. A perspex cursor with a scratched line, cammed into marker



position will run across the face of the stick and pick up every other pin-point. These give the socket positions.

Depth the cutter to the full depth of the joint and set the depth stop. Then lower the stop on the router's height limiter to stop the upward travel of the router bit just above the rebate.

Piece A: Position the cutter at the first socket position

a little in from the edge. At this position, fix the marker stick to the channel top (double-sided tape) so the right-hand point lies behind the scratch line on the perspex cursor.

Cut the first cut as a straight-through cut with the cutter 'up' limited by the height stop. Then plunge the cutter fully, and cut along the same line, but as it's an end cut, cut only half-way, leaving a large lap. Repeat for the next cut (two pin-points along) first cutting straight through with the cutter 'up', but on the second cut (with the cutter 'down') cut forward without cutting into the lap. Repeat this for all the inside cuts, but if the last cut is an outside cut bring the bit only half-way forward as the first cut.



Cut piece B in the same way. Using the points between the points that you used for piece A.



The outside sockets can be radiused with a chisel. Better, cam the piece in horizontal and drop a 30mm straight bit down to cut the radius. Not having a 30mm, I used a 28mm dovetail bit which doesn't look too bad. Check the depth first, set it, and drop the cutter to depth.

Chisel out the rounded corners of the sockets. Any amount that you cut into the lap will show and look nasty, so be careful. This done, the two rebates should go together cleanly and the joint should bend like a new knee.

Mark out the circle for the hole on the line of the rebate, exactly 15mm from the internal angle. Do this from both edges of the joint.

Cam the two together, firmly, horizontal under the plate and drop the bit through the circle. Go gently (a PlungeBar is a great help for this) so that the bit isn't stressed at any time. Cut from one side and then the other, so the holes meet. Making an 8mm pin will have to wait for another WoodRat Corner.

Happy 'Ratting,
Martin Godfrey

