NEW SERIES



## BAILEY'S ROUTER CLASS

# Three legged stool

**Anthony Bailey**'s second article in his routing series makes a lovely little stool

The router is still the most versatile power tool there is. Along with a vast range of cutters, jigs and gadgets – many of which you can also make for yourself – it can help produce high quality woodwork. This series is intended to show you what the router can do, while assuming the reader has a general level of woodworking knowledge. We hope to show you the aspects of each project that specifically involve the router and how this great bit of kit can expand your woodworking skills.

Each month, we will highlight the jigs, cutters and gadgets you will need to help you get more from this incredible machine. Feel free to send us pictures of your routing endeavours, or post them on the WPP forum at: **www.woodworkersinstitute.com**

## THE PROJECT

Here's a small, but perfectly formed, project to test your routing skills. This stool is functional, kids will love sitting on it, and it involves some interesting techniques to achieve a good result. A nice present for someone perhaps, or, an attractive object in your living room, this design is a modern interpretation of the classic three-legged stool, which manages to avoid any woodturning, while still looking aesthetically pleasing. Because strength is an issue, using hardwood is a must – it also makes for a cleaner finish and neater joints.

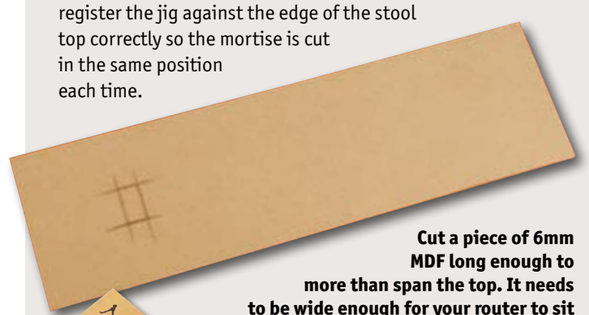






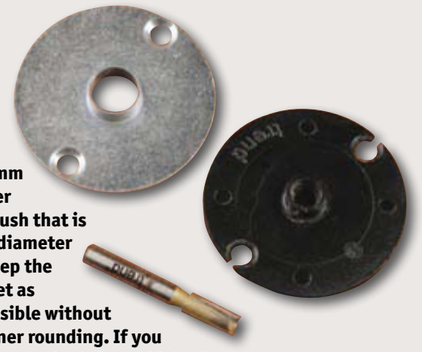
## THE JIG

The plain circular board for the stool top requires three mortises in the underside to accept the tenoned legs. The idea, as with most jigs, is quite simple in principle. In this case, register the jig against the edge of the stool top correctly so the mortise is cut in the same position each time.



1

**Cut a piece of 6mm MDF long enough to more than span the top. It needs to be wide enough for your router to sit comfortably without tipping at all. Towards one end draw the desired mortise size on the MDF, carefully centred and square**



2

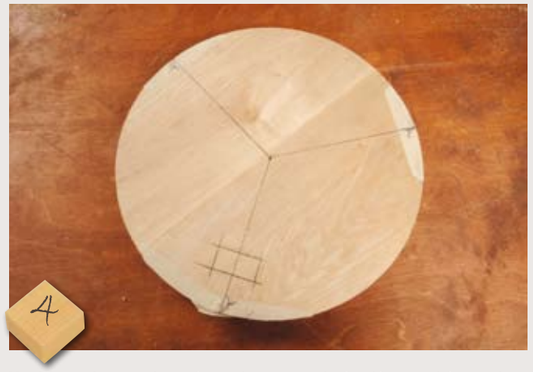
**Choose a 6.4mm straight cutter and a guide bush that is close to that diameter in order to keep the mortise socket as square as possible without too much corner rounding. If you only possess a standard size guidebush it is well worth investing in a set of plastic guide bushes from Trend. These are relatively cheap but give you a lot of choices**

## TRAMMEL

Even the cheapest of routers usually comes with a trammel point and possibly a dedicated bar as well. In order to produce a circular top for the stool, we need to use a trammel like you would a compass but with a straight cutter to machine a perfect circle from a timber blank.

3

**As with all guidebush work, subtract the cutter diameter from the guide bush diameter and divide the difference. This amount should be drawn around the mortise shape on the MDF and machined out to this new line very carefully with the router, a 6.4mm straight cutter and straight fence**



4

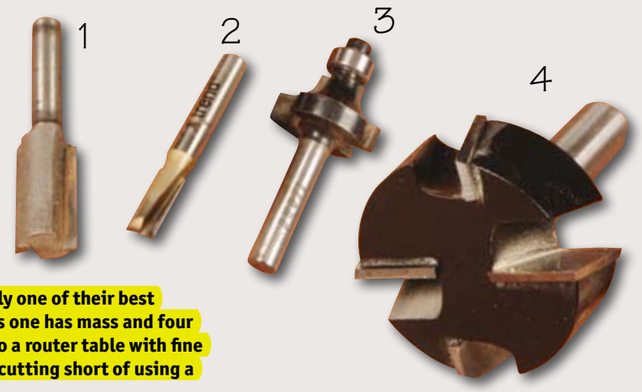
**Mark out the stool top into three equal pie slices – this can be done by stepping with dividers or a pencil trammel until they are equally spaced, or by using a protractor and with lines 120° apart. Next, mark one mortise position in the centre of the line. Note the use of masking tape when using dividers or a trammel, so your marking does not affect the timber**

5

**Now cut a very shallow obtuse 'V' angle in a piece of 75 x 50mm PAR softwood. Lay the MDF strip along one line with the guidebush opening over the mortise and gently press the 'V' piece up underneath until it touches the stool rim, and screw through the MDF into it to fix it. The jig is now ready for use. Here it is shown upside down to explain the shape properly**

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

## THE CUTTERS




**This job needs just four cutters: a 9.5mm straight cutter, which needs to be as long as the seat is thick for the circle blank cutting work; a 6.4mm straight cutter which is used for making the mortise jig opening and doing the actual mortising (1-2); a 9.5mm roundover for shaping both the stool top and the legs (3); and the most interesting cutter – the big tenoning cutter from Wealden (4),which is probably one of their best kept secrets. It comes in a smaller size as well, but this one has mass and four cutting edges for smooth clean tenon cutting. Allied to a router table with fine adjuster, it is the fastest and cleanest means of tenon cutting short of using a spindle moulder**

## MAKING IT...

**Glue up a pre-planed blank for the stool top ready for machining into a circle. Fix the point to the bar and install a standard 6.4mm straight cutter in the router, then set the radius measuring from the point to the edge of the cutter and tighten up the rod. Make sure the trammel point is pushed firmly into the centre of the blank. Now, machine in complete circles, unplunging and drawing the router backwards before the next cut. Make sure each pass is no deeper than 2-3mm to avoid straining the cutter. Continue this procedure until you have reached full depth and the top separates from the blank**

*TOP TIP — If the edge of the blank has score marks from the repeated passes, undo the bar and tap it in slightly, then do a full depth plunge and trim the edge all round.*

**Clamp the jig on the underneath face of the stool top, making sure it is aligned correctly and the 'V' cut-out is pressed against it. The clamp will be at the far side away from the router, so it does not interfere with the router base**

**Sit the router on the jig with the guide bush and cutter in place. Plunge the cutter with the motor off so it sits on the stool top, then adjust the depth rod to set your depth of cut – about two thirds the thickness of the seat. Now repeatedly machine going deeper with each pass – it is important the depth rod can't slip or you may penetrate through the seat. Clear the chippings after each passing using a vacuum or the corners will pack and the guide bush wont go right into them**





## Bailey's Router Class

**Roundover all the edges of the stool top and legs on the router table including the bottom ends. Take care not to let the cutter sink in on the top surfaces leaving a step that would be hard to remove. Sand all surfaces and blend the roundover edges in. Note the use of a lead-in pin for safety**

**The tenoning cutter is used with a through fence to machine all the tenon faces. Each component needs to be supported behind with a pushblock**

**Trim off the tenon corners with a fine saw and chisel, then check the fit in the mortises. Glue and tap the legs in place – these should go in without needing clamping but stand it on a flat surface and check the square is level**

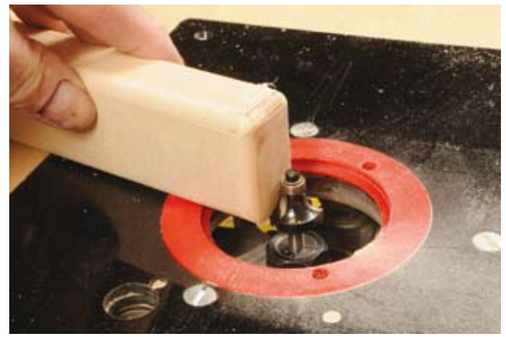
## Router torque

Email your router questions to: anthonyb@thegmcgroup.com

**Q** Can I do most routing operations freehand, as it seems easier, or should I invest in a router table?

**A** The key to accurate, repeatable and safe routing operations is control. Freehand working is alright if you have good control, but working on small items such as the legs on our stool is very difficult and liable to go wrong. The same operation in a table gives you a good view and you aren't balancing a big machine precariously as you would freehand. So be aware of your own skill level and in general, work freehand when working on decent size components with some form of control, whether a straight fence, guide bush and template, or a special jig. If you use very big or specialised cutters for making up door frames, for example, you have no choice but to do it on the table as the cutter size generates a lot of kinetic energy, making the router very difficult to control. The simple answer if you are serious about routing is that you need both options.

**Using a small straight cutter is easy freehand with a guide bush fitted**



**When machining small work pieces it is essential to use a router table to have the necessary control**

We get most of our router cutters from these two British companies:
**Trend. www.trend-uk.com**
**Wealden Tool Company. www.wealdentool.com**
They both have comprehensive websites and catalogues with all their respective ranges.

Always buy good quality tooling for safety and satisfaction! ■