Router Know-how

Frame and panel cutters

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Framed at last! We've finally got the better of him as we remind our **Editor** of what it was really like when he made doors and panels for a living. Now he is going to give us the lowdown on the cutters that are almost exclusively the province of the large ½in router – frame and panel sets

1 I ran a cabinetmaking business for some years and a lot of the work was just that, cabinets in one form or another. Everything that needed to be framed and panelled, from carcass sides to doors, required suitable cutters to do the job and not being in possession of a spindle moulder, the router table was the logical answer. By acquiring several different frame and panel cutters I could cater for most requirements and produce decent quality frames and panels quickly and easily.

Profile and scribe cutters

2 A panel isn't complete without a frame to it so that is where we start. There are several different cutter types as well as styles. The one I used to favour many years ago was the reversible type where you machine the scribing cuts first, then swap cutter components and do the profile cuts second.

3 Since then it has been possible to buy one-piece cutters which are a bit taller and are simply wound up or down in the router table to select either the scribing or profiling section of the cutter.

1

A typical frame and a matching panel for quick and easy construction

2

This cutter has to be reassembled when changing from profile to scribe

3

These cutters are moved up and down to change cuts

4 There are also separate scribing and profiling cutters; you just swap one for the other, or if you have the luxury of two router tables, both could be set up for repeat runs without changing cutters or settings.

5 Style-wise you can choose between a plain bevel, ogee – shallow reverse curve – Roman ogee – a steeper reverse curve – and classical – two opposing curves broken in the middle with a narrow quirk or step. Which one you choose is dictated by the situation the frame will be used in and how many sets you feel like investing in.

Frame cutters

6 The plain, square frame router cutter is actually very versatile both for hidden panel, e.g. back or side panels, but will look good if you want either modern, clean-lined doors, painted to suit an earlier farmhouse or Shaker style.

7 It can be used with flat or raised centre panels as can the profile and scribe sets.

Panel raisers

8 Since all the frame producing cutters usually have a 6mm panel slot you can use a flat ply or MDF panel which can save cutter cost and look good. However, if you want traditional raised solid wood panels then you need to acquire at least one panel raising cutter.

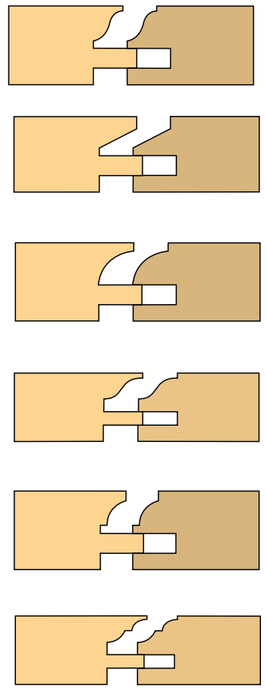
With two separate cutters it helps to have two routers

9 These are large diameter cutters and in some cutters fairly massive. It must be noted that these cutters must be used in a router table and all frame cutters should be used similarly, even if there appears to be no manufacturer's restriction on freehand use.

Horizontal type

10 These big cutters come in a variety of styles which are intended to complement the frame styles. So you can choose from Roman ogee, bevel, bevel with a swept edge, classical and dished profiles. They may also be available in different sizes with the smaller ones suitable for drawer fronts, if used with care in setting out the sizes.

Whereas frame cutters always come with bearings, not all panel raisers do, but you need a decent fence to run against in any case, unless you are making arch top doors in which case a bearing is vital.



5 Examples of various different moulding styles

Plain frame cutters create a simple style

Flat panels can look good in the right situation

An arch top door can be used to suggest a specific 'look'

This panel raiser just fits in the table opening

There are panel raisers to match all frame sets

11 Some cutters can accept a back cutter which creates an even tongue so you know the panel must fit the frame slot without any adjustment. It gives a slight sweep on the panel rear face which looks deliberate and adds to the appearance of the door panel.

Vertical type

12 These cutters lend a couple of distinct advantages to panel raising operations. Firstly, they aren't as scary to use because they are much smaller in diameter. Secondly, they can be used with a small router, as long as it will take an 8mm collet and has sufficient motor power to run it.

13 The downside is that you cannot do arch top panels, only square ones, and the scribing cuts will tear grain out so you need to take steps to prevent this.

Right: The small back cutter creates a perfect tongue

Vertical panel raisers are available in all shank sizes

Tearout can result with the vertical type of cutter

TOP TIPS

The through-fence on the router will prevent breakout

The *WPP* router table that I made works really well

Precise measurements are essential when using a router

It is advisable to always start with a proper cutting list

A stack of raw components, ready to machine

1 A larger router table with a high through-fence fitted is essential as is a fine height adjuster.

2 Apart from vertical panel raisers all cutters will need a ½in router preferably with at least an 1,800W motor input. Check all cutters will fit through the opening in the table.

3 Always make the frames first as these define the actual size of the door or cabinet panel you are creating. Measure the openings for each one so they will be a correct fit and aim for a common size even if slight trimming is needed after assembly. Inset doors and drawers should have no more than a 2mm gap on all edges when fitted.

4 Do a carefully calculated cutting list expressing the sizes of stiles – vertical components – rails – horizontal components – and muntins – vertical intersecting components. The stiles should be left over-length and 'horns' cut off later.

5 All other components must be exact length and take into account the width of the stiles – or rails in the case of muntins – plus an amount that the scribing joints plug into the other components – usually 2 x 9.5mm = 19mm with most sets.

A test piece for panel raising

The crosses denote the face to be machined and on which edge

6 Prepare all stock plus some spare sections for test cuts as accurately as possible. A planer/thicknesser will help assure this, but if you don't have that facility pick carefully through prepared stock at your timber yard. In particular all frame components must be the same thickness, since the process of scribing and profile cutting involves turning everything over for the second operation.

7 Work methodically by stacking components like with like. Mark which component is which, e.g. stile, rail or muntin. In addition, mark the opposite face which will be face down when machining, for example if component ends are being scribed mark the component's 'seen' face. When scribing is finished they will be turned over and all components can then be profiled.

8 Test cuts are essential before you start; get the scribe cut right, machine all those then do a test cut before profiling.

9 Panels, if they are made from solid timber, need to be flat and true on the edges where they are joined in the middle. If you use biscuits to add edge strength you risk them showing at the ends when the panel raising takes place. It is better to make a good butt joint and avoid the biscuits 'grinning' through.

Scribing cuts need a through-fence for good support

Oh dear! A biscuit showing at the panel end – not good!

10 The panel sizes are best checked against the dry-assembled frames. Measure for panel size by working from the flat frame section excluding the moulding as this is the same depth as the groove underneath it. Now subtract no more than 2mm in length and width to obtain panel size.

You should always check panel fit before assembly

11 Machine the panel raise in more than one pass to depth; don't be too ambitious as it means removing more wood than is safe. If you have a back cutter fitted, do the multiple passes by moving the fence back until you reach the correct cut width.

12 Start with the scribing cuts so any tendency to tearout is removed when you do the lengthwise profile cuts. Use even, downward pressure so the cuts are consistent and the mitres meet at the panel corners. A light final pass will help when making cut alignment correct. ■

Even downward pressure is needed for consistent results

It is important that the mitres meet at the corners

Manufacturers & suppliers

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Trend www.trend-uk.com
CMT www.cmttools.co.uk
Titman www.titman.co.uk
Makita www.makitauk.com
Axcaliber www.axminster.co.uk
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