BY RON FOX

Beyond the basics 6: Panelling cutters

In previous articles in this series I've looked at the use of slotters for edge-jointing boards, and at specific jointing cutters for edge and corner joints. Now I'm turning to an even more specific type of cutter, used for making framed panels and panelled doors

This type of construction is widely used in kitchen cabinet doors, but is also found in panelled chests, garden planters, wall panelling and numerous other applications. **Photo 1** shows a dry-assembled frame/panel door with the set of panelling cutters that produced it. A fourth cutter – a 4mm slotter, not shown – was used to cut slots toww biscuit-joint the two boards that made up the panel.

The three cutters shown in the picture are by Freud, and come as a boxed set consisting of two cutters for the frame and one for raising the panel. One of the frame cutters is for scribing the rails, the other for cutting the grooves and profiling the internal edges of the frame. The panel raiser is a bearing-guided horizontal cutter with a diameter of 89mm. It's definitely a table routing cutter, requiring a powerful ½in router with variable speed. Its large diameter raises a problem with most router tables, which I'll consider later in the article.

1 A typical frame/panel door with the set of cutters that produced it

Alternative approaches

This set of three cutters represent one way of making panelled doors, but it's not the only one. Here we have two separate frame cutters – one for scribing, the other for profiling – but there are at least two other methods. The two separate cutters can be combined with cutter blocks and be bearing-mounted on an arbor. The components are mounted in the order appropriate to the cut you are making – scribe or profile, as shown in **photos 2**, **3** and **4**.

More recently, a third type of frame cutting set has appeared, with the profile and scribe parts stacked one above the other, **photo 5**.

Some of these cutters require a large aperture in both tabletop and router, plus a good plunge range to allow for raising and lowering the cutter for each type of cut.

Speed is critical

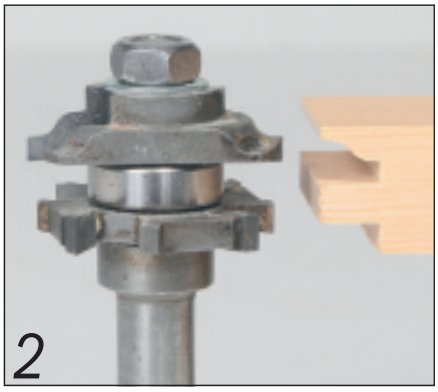
The Freud panel raiser is an example of a bearing-guided cutter that cuts horizontally. It is essential that the router should be run at the correct speed for the cutter, which in this case is 16,000 rpm maximum. With cutters such as these, the maximum permitted speed is usually marked on the shank. This makes it unsuitable – and downright dangerous – for use in a single-speed model.

To overcome this drawback, cutter manufacturers also supply panel raisers in a vertical form. These are of much smaller diameter and can be safely run with less power and at higher speeds than the horizontal types. The panel is taken vertically past the cutter, pressed firmly against the table fence, **photo 6**.

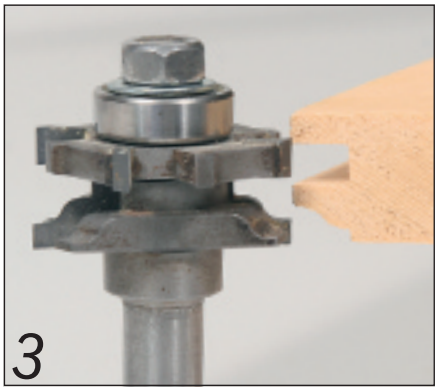
Shape limitations

Vertical panel raisers are inherently safer because of their smaller diameter, but they can only cut rectangular panels. Nothing is impossible, but it would be a challenge to make a jig to hold an arched panel for a vertical cutter.

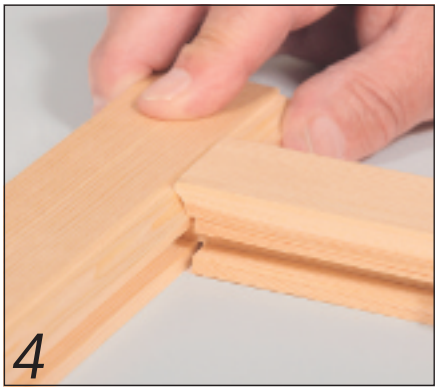
Horizontal bearing-guided cutters can be used with panels of any shape – rectangular, arched, cathedral arched and so on – since the edge of the panel is run against the



A Titman combination cutter shown configured for scribing the rails



The same cutter configured for profiling rails and stiles



The two matching frame components fit together perfectly

bearing to make the cut, **photo 7**.

Note, however, that some horizontal panel raisers don't have a bearing. They're usually used on rectangular panels, with the table fence defining the cut as in **photo 13** below.

They can be made to work with curved panels if you have some form of pin routing or overhead bearing system, but it's much easier to buy a bearing-guided version if you want it for arched panels.

Compatibility counts

Frame/panel cutter sets come in several different patterns. The most common, and probably the most popular, is the ogee. This gives the familiar smooth ogee curve to the edge of the panel and the inner edges of the frame. Other patterns create a simple bevel or a classic beaded edge to the frame and panel.

If you buy your door-making cutters as a boxed set, there should be no problem of compatibility, but the cutter suppliers also offer them separately. If you buy them separately, check that you are buying matching frame and panel-raising cutters.

Shank diameter

Most of the frame/panel-raising cutters in the catalogues are on ½in shanks because the size of the finished product is usually quite large – a kitchen cabinet door, for example. There are a few on ¼in or 8mm shanks, although you're strongly advised to use them only in a medium or heavy-duty router. They tend, not surprisingly, to be smaller than the more common sizes, **photo 8**.

There are also one or two smaller cutter sets made specifically for making small panels. An example is the CMT Sommerfield Junior Raised Panel set, which can be used to make panels down to about 125mm (5in) square and 11mm (just under ½in) thick, **photo 9**.

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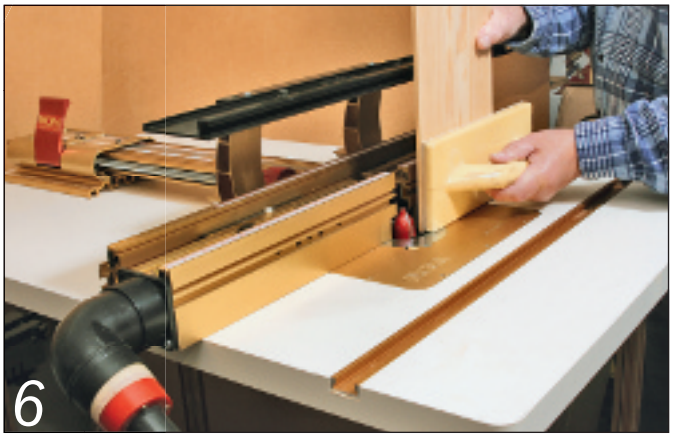
'Stacked' profile and scribe sets from CMT (left) and Trend



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A panel being raised with a vertical cutter on an Incra table. Note the high 'wing' to keep the panel vertical

9

This CMT set can be used to make panels down to about 125mm (5in) square

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Lining up the table fence with the front of the cutter bearing

Material thickness

Panel door cutters are made to cover a particular range of material thicknesses. A common range is 18 to 22mm (¾ to ⅞in), but other ranges can be found. You need to know what thickness of timber you're going to be using for your work before you buy the cutters.

Using your cutters

This is not an article on making panelled doors, but we can step briefly through the sequence of operations.

Begin by assembling the material and sort it into panel and frame components, matching the figure where possible to give the most pleasing appearance. Mark the components so you know which bit goes where and which way up you have to machine it.

Join boards to make the panel. I nearly always use biscuits, but you might choose one of the specialised edge-jointing cutters. Leave the glue to dry and turn your attention to the frame.

13

Raising the panel. Note the use of a non-bearing horizontal cutter

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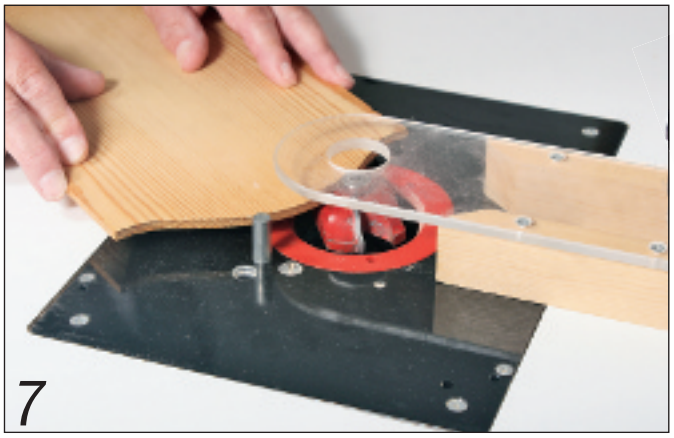
Panel being raised with large-diameter Freud horizontal panel raiser. Note the auxiliary tabletop and fence to accommodate the cutter



An arched panel being raised with a Titman horizontal panel raiser

Trend and Wealden cutters on 8mm shanks are smaller than average

Scribing the end of a rail with the aid of a home-made scribing sled

Profiling a stile; the vertical guard has been raised for clarity

Cut the rails and stiles to length. It is traditional with commercial doors to cut the stiles over-length so that the door can stand on the projecting bits – the 'horns' – to avoid bruising the frame. You don't have to do this with your panels.

Scribe the ends of the rails. Set the scribing cutter (or the frame cutter in scribing mode) in the table and line up the front of the cutter bearing with the table fence, **photo 10**.

A little guidance

You need some kind of guide to take the rails past the cutter at an exact right angle. I don't trust a mitre fence, so I make a simple scribing sled to carry the rail. These can now be bought from suppliers such as Trend and Axminster, but they get cut about in use so I prefer to make my own.

Set the depth of cut against a setting piece, which is just a successful test cut which you have kept and labelled for exactly this purpose. Remember to put your rail on the sled when you set depth of cut. Scribe both ends of each rail, **photo 11**.

Next, install the profiling cutter (change it, re-configure it or re-set its height), set the depth of cut against the setting piece and profile the inner edges of the rails and stiles, **photo 12**.

Trim the panel to its exact size and raise it with a series of light passes. Check the thickness of the edge, offering it to the groove in one of the stiles. Stop when the panel edge slips comfortably into the slot, **photo 13**.

Extra-large panel raisers

I mentioned above that extra-large horizontal panel raisers such as the Freud present a particular problem. With its 89mm diameter, it is too big to lower through the cutter apertures in my big table and De Walt 625 router. This means that it would have to be set too high for the initial cut. The solution to the problem is to lay an auxiliary table of 9mm MDF on top of the router table for the initial one or two passes. In other words, if you can't lower the cutter, raise the table top. A semi-circle is cut in the MDF to let the cutter through.

This panel raiser was also too big for the maximum cutter aperture in my table fence, so I made an auxiliary fence, which I attached to the table fence with double-sided tape. I cut an aperture to give bare clearance for the cutter, which also improved the smooth passage of the panel past the cutter.

This is all a lot of trouble to go to, but it's necessary with most router tables if you use these very large panel raisers. Note also the homemade guard to shield the operator's hands, **photo 14**.

FURTHER INFORMATION

- Freud
- 0870 770 4275
- www.freudtooling.co.uk
- Titman
- 01255 220123
- www.titman.co.uk
- Trend
- 0800 487363
- www.trend-uk.com
- Wealden
- 0800 328 4183
- www.wealdentool.com