



## PRODUCING LINEN FOLD PANELS WITH THE ROUTER

### APPLICATION DETAILS

Linen fold panels are produced in two main stages. Firstly, the strips of timber are machined and, secondly, the strips are cut to length and profiled. In addition, it is necessary to manufacture a jig for the second operation. When making the jig it is helpful if a finished moulded length of the strip is available, therefore we will consider this operation first. Time spent carefully setting up the required jigs etc. will ensure that the finished item is quick and easy to produce.

### Timber Preparation & Moulding

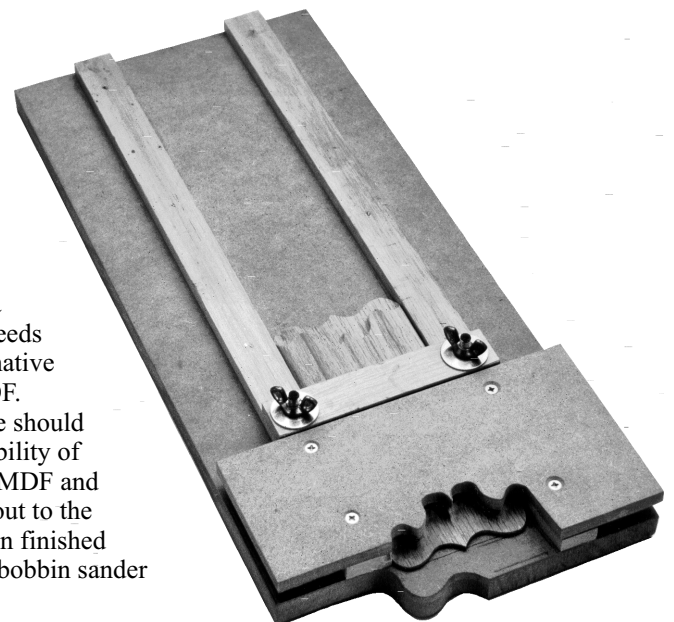
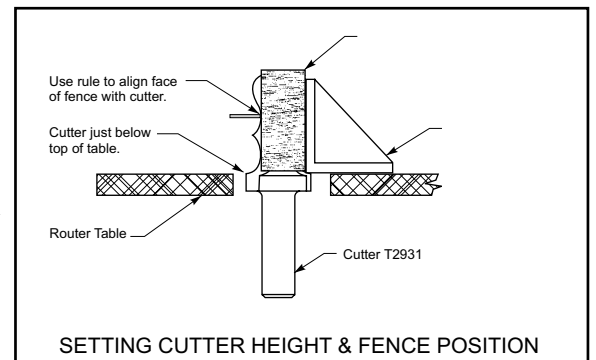
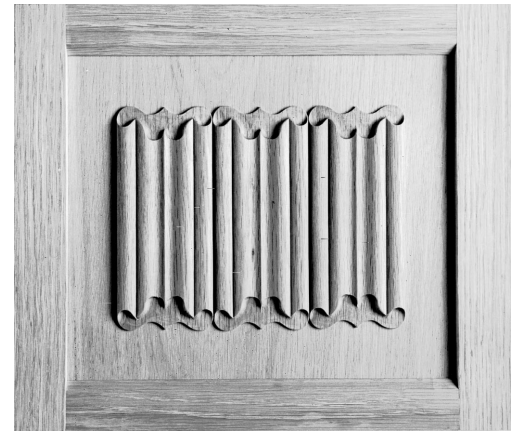
The linen fold panel effect is achieved by glueing two or more moulded and profiled strips (which we will call plaques) to a base panel. Therefore the wood for the plaques and the panel need to be the same, although the panel does not need to be solid timber and can be veneered plywood or MDF. The Linen Profile cutter T2931 is designed for a strip width of 76mm (3") with a nominal thickness of 10mm. The timber should be prepared to the above dimensions and preferably in lengths of about 1 metre, as longer lengths can be difficult to machine successfully. It is important that the width of 76mm is accurate and consistent, although a good finish on the edges is not important. If the timber is prepared to thickness, then cut to width on a circular saw, the strips should prove satisfactory. The profile cutter should be fitted in a router mounted in a table which is fitted with a long fence. The aperture for the cutter in the fence should be as small as possible and a fence height of about 75mm will be best. Spring loaded hold-downs for the timber will ensure safety and enable a more consistent feed rate, which is essential for a good surface finish. The fence should be aligned carefully with the smallest diameter of the cutter: use a rule or straight edge for this. Set the height of the cutter so that return radius at the bottom of the cutter is just below the surface of the table. Two initial cuts should be made, turning the timber end on end between them, and this will result in a moulded section as shown in fig 1. A second pass of the timber past the cutter will allow a better feed rate and therefore better finish, and should result in the finished section having a maximum thickness of about 9mm. If circular saws and thicknessers are not available, the timber could be prepared with the router using a thicknessing table then a straight-edge and flush-trimmer to bring it exactly to width.

**IMPORTANT - if using an 8mm shank cutter see notes on page 2.**

NB It would be wise to practise moulding some scrap timber to gain experience before moving on to expensive hardwoods etc.

### Jig Manufacture

Once some moulded strip has been produced, the jig needs to be manufactured. The final result will depend on the care taken in producing the template profiles, so time spent on this stage will be well invested. The jig baseboard is a piece of 18mm MDF 200mm x 450mm. This needs to be marked out with the trimming profile and position of battens, lines etc. The baseboard template supplied with the cutters has the details for this. You will find two copies of the template supplied. One is marked "Standard" and the other "Reversed". The lines and profile need to be transferred to the MDF and this can be achieved from the "standard" template either with carbon paper, pricking through, or by sticking it to the board with a spraymount adhesive. These adhesives are rubber based and the MDF needs a light sanding afterwards to remove the slight stickiness. Another alternative is to use the reversed template and place it printed side down on the MDF. Then using a very hot iron and pressing down hard for a while the image should transfer to the MDF. However this is not always successful, as the reliability of the image transfer seems to depend on the surface characteristics of the MDF and the iron used. Once the image is transferred, the profile needs to be cut out to the line. This can be done with a coping saw, jig saw, scroll saw etc. and then finished with a rasp (the carbide faced files are very effective on MDF) or small bobbin sander etc. The profile should be cut back until the line just disappears.





## LINEN FOLD PANEL APPLICATION DETAILS - continued

Select two battens about 25mm wide and 10–11mm thick (just thicker than the strip), pin and glue the first to the baseboard with the end flush with the shaped profile and the edge in line with the line “C”. Place a piece of the moulded strip on the board and fit the second batten so that the strip will slide readily between them, but without any side to side movement. The end of this batten will need to be tapered about 4mm x 30mm as shown, to line up with the top template.

The top template should now be made from 10mm thick MDF. As the template has a very thin centre guide it may be necessary to use a tougher material such as Tufnol® if the jig is to produce large quantities of plaques. The profile can be cut and finished in a similar manner to the baseboard and, having achieved the correct profile, it may be wise to keep this as a pattern and make a copy using a small bearing guided trimming cutter on the router table. Fix the top template to the baseboard with four countersunk screws through the battens, ensuring that it is aligned with the front of the baseboard and that the curved part of the template is lined up at each side with the battens. All that now remains is to arrange a clamping method for the strip. A piece of timber mounted immediately to the rear of the top template guide is quite satisfactory. Drill two 6mm holes through the clamping piece and right through the guide battens and base. Insert two 50mm long x 6mm roofing bolts or similar from the underside and enlarge the holes on the clamping piece so that it will fit easily over the bolts. Rebate the ends of the clamping block slightly to enable it to clamp down between the location battens. Two washers and wing nuts complete the clamp. If a more rapid system is required, a horizontal toggle clamp may be fitted in place of the clamping bar.

### Producing the Plaques

The first operation is to decide the length required. Note that the jig as designed will enable a minimum length of plaque of 140mm; shorter lengths can not be clamped.

If two routers are available, one should be fitted with a bearing guided trimmer and the other with the Linen Profile cutter.

If working with two routers, the procedure is as follows:

- (i) Place the cut length moulded face down, aligned with line A on the baseboard. Clamp the workpiece, then shape one side of the workpiece using the flush-trimmer and cutting from the edge of the jig towards the centre.
- (ii) Turn the workpiece over, align with line A and shape this side of the workpiece.
- (iii) Position the front of the shaped end of the board against the line B drawn across the jig and clamp the workpiece. Take the second router fitted with the Linen Radius cutter T2932 and make the “rebate” cut across the width of the workpiece, clearing the front edge first, then finally running across with the bearing following the template. Set the depth of cut to leave approximately 3mm thickness after machining and run the cut in one pass.
- (iv) Repeat steps (i) to (iii) for the other end of the workpiece.

Using one router, steps (i) and (ii) above would be completed for both ends of each cut length and the cutter changed to perform step (iii) for each end of the plaque.

### NOTES:

**8mm shank cutters.** When using the 8mm shank version of the Linen Profile cutter T2931, it is very important that several light cuts are taken to reduce the load on the cutter shank and on the routing machine.

With practice it will be possible to achieve a good surface finish on the strips, which will ensure that no further finishing will be required. Cutting the profile on the end of the plaques can be achieved in one pass. Try to achieve a constant feed rate, start at the outside of the plaque and cut towards the centre. If burning is a problem on difficult materials (oak etc.) reduce the router speed about 70% of full speed.

The rebate cut with the Linen Radius cutter will also need running at reduced speed, as it is easy to burn the workpiece in the small radius cuts at each end. The router can be slowed down to about 50% of full speed if required. It is also necessary to be careful machining around the thin central finger of the template.

If the jig has been constructed to the sizes shown, it will be possible to clamp the jig to a workbench and this should be done so that the front of the jig overhangs the bench. As an alternative a block of wood could be fitted to the underside of the jig so that it may be held in a vice.

### USING THE PLAQUES

When using the plaques to form panels, ensure that the edges are straight, enabling them to be fitted together without any gaps. Glue the plaques to the panel and try to use an odd number of plaques as this tends to improve the appearance and enhance the effect. Avoid applying too much glue as it is very difficult to remove any excess that squeezes out between the plaques.

For a more “distressed” look to the panel, use abrasive paper to remove the sharp machined edges of the cuts made by the Linen Radius cutter, and radius the end of the plaques slightly as shown.

