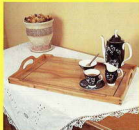


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October/November 2003

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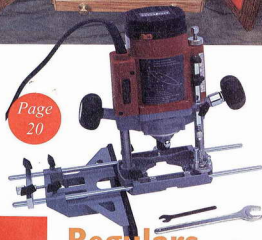
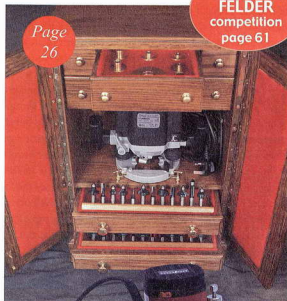
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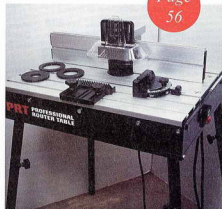
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Sharp tips

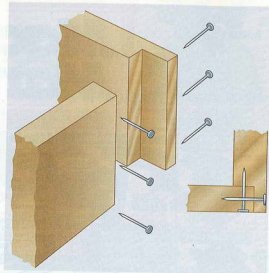
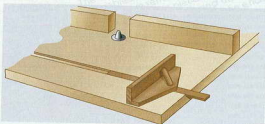
Hone alone**TOP TIP**

I bought a DMT Diafold whetstone a few years ago to hone router cutters and saw blades. It's great for saw blades, but I find accuracy difficult with a router cutter in one hand and the whetstone in the other. The large sized bench stone is expensive, so I use my glue gun to attach a small off-cut to the back of the Diafold and hold it in the vice (see photo). Both hands can then be used to control the cutter with vastly improved results. The off-cut is easily removed when finished.

James Brolly, Powys

Pushing on

The mitre guide provided with some router tables, may be satisfactory for pushing small and light work, but if you want to push a large or bulky piece squarely over the cutter without risk of wobbling, a more substantial pushing device is helpful. The pusher shown could be made of wood about 15mm thick, attached to a strip of metal to slide in the guide slot. If you are not expecting frequent use, you could make the strip of close-grained hardwood.

Walter Frankton, Mersyside

Stonger nailing

I wanted to make boxes for use in the garden, but felt that simple nailed corners would not stand up to the hard rough work I intended for the boxes. The job did not justify dovetails or other elaborate joints. I used my router to rebate the ends of the pieces forming one part of a joint, the thicker piece, if there was a difference (as shown). Nails could be driven both ways, so there was no fear of a corner pulling apart.

Walter Winterton, Wiltshire

Win a Bosch power tool!

Each issue, we've teamed up with **Bosch** to give you the chance of winning some great new power tools. Simply send in your top routing tip and the sender of the most useful, inventive or entertaining tip we publish will win a Bosch power tool of their choice to the value of £120 inc. VAT. The Bosch DIY range includes well designed quality power tools you can trust such as mains drills, cordless drills, jigsaws, sanders, planers and routers.

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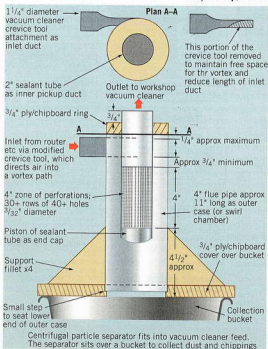
Vortex vacuum

I am a lecturer in aerodynamics and aircraft design, and concluded that it couldn't be too difficult to build a centrifugal particle separator, rather than splash out on a second vacuum cleaner. There are a variety of designs of domestic vacuum cleaners with centrifugal separators. After some thought about the requirements of the airflow path, and a look at some of the designs in use, I came to the following conclusions: The air must enter a vortex or swirl chamber at a high tangential speed at the periphery of the chamber. The air must then be drawn out of the chamber at the centre, preferably via a sharp change in direction.

These conditions lead to the layout of the separator. As the air moves towards the central outlet in the swirl chamber and its radius reduces, its rotational velocity will increase due to the conservation of its angular momentum. The very high centrifugal forces thus generated throw the dust etc to the outer edge of the swirl chamber where it slowly falls under gravity into the bucket at the bottom of the chamber. To help the air to 'let go' of the dust, the air should enter the outlet with a very low radial velocity, which is achieved by having a very large outlet area compared to the inlet. This is the purpose of the perforated zone on the central inner pickup duct which with so many small holes (at least 1200), has an airflow area at least four times that of the inlet. The small holes also act a crude filter. Finally, the presence of a solid core of 'dead' air where dust might collect is also eliminated by the use of the inner pickup duct. The separator which I have constructed was built, following these thoughts, from items of scrap which I had lying about in the workshop.

I have found that the separator works excellently, and only the very finest dust particles escape a home in the collecting bucket. However, these are then filtered out of the air by the vacuum bag and filters. The overwhelming bulk of the chippings and dust are separated out and hence do not fill up the vacuum bag.

Toy Bishop, Hants



Trend Q & A

trend
routing technology

Got a routing problem? Need some technical advice? Here's your chance to ask the Trend technical experts. Compiled by Phil Gardner



My company manufactures polythene linings for horse's swimming pools, yes an odd one I agree, but the pools are used in stud farms as an aid to artificial insemination, the lining is in place to stop the animals injuring themselves.

We need to cut 8mm slots in 20mm thick material but are having some difficulty with this, mainly jagged edges to the cut and the material melting and sticking to the cutter. If I send a sample, could you possibly undertake some tests as to what might be the most suitable cutter?

Mr A Dover, Sheffield

Trend's technical department tested the sample as soon as it was received - told me the results which they also sent directly to Mr Dover (Photo 1). For general readership, suffice to say that the cutters best suited to this particular process

(Photo 2) happen to be the S55/06 enabling a full 8mm width slot in one pass with no weld back owing to the grinding characteristics, or, the S60/05 - again a solid carbide tool with an upset helical grind - but giving a super fine finish, alas only on one side so a 5mm diameter cutter was recommended requiring two passes to achieve the required 8mm. One pass left to right, the other right to left, cutting each slot in a clockwise direction.

Another test request was for carbon fibre matting (Photo3), in this case used as protection on the instrument housings of racing motorbikes. The recommended cutters are a 3/20 (Photo 4) which gives excellent results for both plunge and slot cutting with the possibility of the S49/10 for template work.

The upshot of this and indeed the numerous similar enquires received by the technical department is that router cutters can be used not just for timber but a wide range of materials.



Can Trend help?

Trend Experts, Routing, Berwick House, 8-10 Knoll Rise, Orpington, Kent BR6 0EL or phone 01923 224681

Tea for two



A large, light-weight tray is an invaluable item for today's lifestyle. Whether for breakfast in bed or having dinner in front of the TV, this attractive example is just the job. By **Peter Dunsmore**



Skill level: 

I don't know whether it is just me, but the tea trays I see in shops these days are not only too small to fit anything more than a couple of cups and saucers on but they are also disproportionately heavy. It was only after I made this tray that I appreciated how much easier it is to use a light weight tray with a much larger surface area.

Simple job

Although I have given this project a skill level rating of three, there really is

nothing difficult in the actual construction of the tray itself. In fact, once the templates are made and the jig constructed it is a simple job to make more trays and they would make ideal presents. The slight complication is in the use of a specially constructed jig to fit the sliding dovetail keys to strengthen the corners (full instructions to make this jig appear elsewhere in this issue).

An alternative method to reinforce the corners would be to add a couple of pins and not to rely on the glue alone to hold the corners together, but the visual impact of a contrasting timber for the dovetail key makes the construction of this jig worthwhile. The jig is not made only for this tray but can be used for

many more projects in the future where mitred corners could be either decorated or strengthened.

Cardboard template

Very little timber is required to make this tray and consequently it is worthwhile buying an attractively grained wood. I used a length of Yew timber (although by definition a softwood it is in fact a very hard and attractive timber) planed to 8mm thickness with a matching piece of Yew veneer for the surface. Other suitable timbers would be pine, cherry, walnut or even one of the native fruitwoods.

Following the drawing make a cardboard template for one half of the

“Once the templates are made and the jig constructed it is a simple job to make more trays and they would make ideal presents”



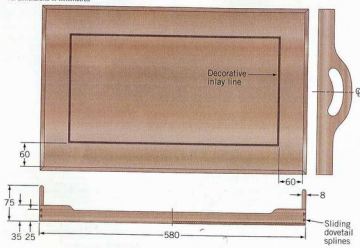
I experimented so the grip on the tray was comfortable to hold



Cut just outside the pencil lines with a fret saw to produce the basic end piece

Fig 1

All dimensions in millimetres



tray end and trace around this onto a thin piece of timber or MDF and cut to shape. Mark clearly the vertical centre line on this template and take a further piece of MDF a little larger than tray end and again mark on this the vertical

centre line. Draw the outline, one half at a time, onto the MDF and then use a fretsaw to cut out the template cutting just outside the pencil lines. Use double-sided tape to hold the accurately cut half template in place after carefully lining

TIP: CUTTING MITRES

A little trick I find useful when gluing mitres such as this together goes as follows:

1. Put some adhesive on the two surfaces to be glued together and place these pieces with the bevels face down.
2. The straight lower edges are butted up against a straight edge and the two bevels pushed together.
3. A piece of masking tape is stuck firmly across the joint of the two pieces of timber. The two pieces are carefully turned over and the joint closed up.
4. In this way the masking tape is pulled tightly over the joint making for a neat and tight join.
5. This process is repeated on all four sides so that the assembly goes together accurately and square.

up the centre lines, and working on one half of the template at a time, use a trimmer to produce one full-size smoothly finished end template. This process is repeated in a similar fashion to produce an MDF template for the tray sides. It should be noted that the small decorative curves on the tray sides are shallow enough for the bearing on the trimmer to follow without the need for any further finishing.

Cutting the mitres

Instead of cutting the mitres with a saw, a very simple jig is made to be used in conjunction with a bearing guided 45° bevel cutter. An off-cut about 300mm long of either the same timber used for the tray sides or another piece planed to the same thickness is planed straight along one side. Two pieces of 9mm MDF approximately 120 x 50mm are pinned and glued at right-angles at either end and put aside to dry.

The timber for the tray sides and ends are cut to exact length and the upper edge shaped with a fretsaw slightly oversize. The bottom edge should be cut straight and square. The timber is now held in place on the jig with double-sided tape. The lower edge should be butted tightly up against the long straight edge of the jig and one end should be level with the end of the MDF. With the bevel cutter fitted in the table mounted router, the depth of cut is set so the cutter cuts a neat bevel when the jig is passed over the tabletop. Increase the depth of cut a little at a time until the bevel just touches the MDF. Remove the wood from the jig and form the bevel on the other end by repositioning the timber on the jig and repeating the above process.

Using this method will produce accurate mitres and matching lengths for the tray sides. Cut all the mitres before removing the cutter from the router to avoid resetting the depth of cut again. Leaving the top edge of the sides cut slightly oversize allows a little waste should there be any breakout when the mitres are cut with the jig. This will be removed at the next stage when the top is rounded over.

Rounding over the tops

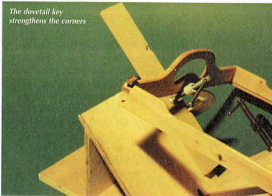
Use double-sided tape and fit the template accurately in place over the timber ensuring the lower edges are level. A bearing guided bead cutter is used in the router table to round over the top edges in addition to the inside of the hand grip. Accurate setting of the depth of cut is essential and it is worth testing this on a scrap piece of timber of the same thickness taped onto a piece of MDF. With the depth of cut set all the rounding over should be carried out at this stage.

A straight cutter is used in conjunction with the table fence guide to produce the rebate along the inside lower edge, the depth of which should be adjusted to suit the 6mm plywood and the thickness of the veneer used to decorate it.

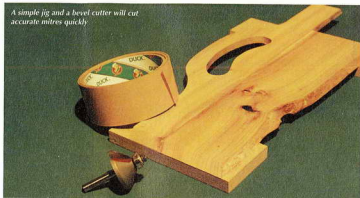
Making the tray base

The base of the tray is cut from 6mm plywood and the measurements are taken from the inside length of the rebate. Glue the four sides together holding the corners together tightly with masking tape. To keep the sides square temporarily put the base in place while the adhesive sets. Wipe any excess glue away with a damp cloth whilst it is still wet.

The dowetail key strengthens the corners



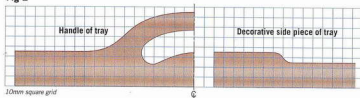
A simple jig and a bevel cutter will cut accurate mitres quickly



The corners ready for gluing together



Fig 2



When this has dried the plywood is lifted out and veneered to suit the tray sides. Gluefilm is used as it is quick, and with a little practice, easy to use.

Various means can be used to add a little decoration to the base such as the insertion of a centre inlay motif or some black stringing in a geometric design. I



Be careful when cutting the trench for the handing not to overshoot



Close-up showing the spine dovetail joint detail



The inlaid banding adds a nice detailing touch to the tray



The finished tray

USEFUL CONTACTS

The Art Veneer Company
Tel: 01638 712550

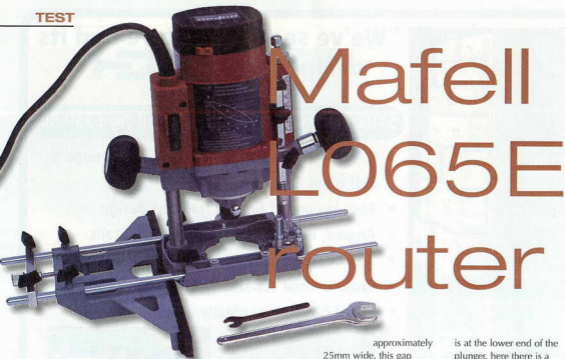
opted for a simple walnut banding set into the veneered top. This is easily achieved using a straight cutter the same width as the banding. In this case a 6mm straight cutter was used as the banding is 6mm wide. With the cutter fitted securely place the router on the tray top and plunge the router down (with the machine switched off) so that the cutter just touches the veneer. Set the depth stop so the thickness of the banding is a tight fit between the turret stop and the depth stop rod. With the router fitted with a fence guide cut the trench for the banding to fit into.

Remember to stop the trench before reaching the end of the tray and this position can be easily marked by turning the router to the next side of the tray and using a sharp pencil mark where the cutter sits. The external corners should be squared with a chisel and the banding glued in place with a little PVA.



FINISHING

Use the jig to cut slots for the dovetail keys. The tray can be firmly held in place against a straight edge clamped in place on the jig and the jig pushed against a straight edge on the router table. The keys are cut on the edge of a long piece of timber about 6mm wide and adjusted on the router table until the strip is a sliding fit in the slot. When satisfied with the fit the keys are cut slightly oversize and glued in place. The protruding bits are later trimmed with a trimmer fitted in the router table (see 'Great jigs' article in this issue). All parts are rubbed smooth and before the tray base is finally glued and pinned in place the tray is protected with three coats of satin varnish rubbed down between coats with abrasive paper.



Mafell LO65E router

Gordon Warr takes a closer look at the recently upgraded large Mafell router which incorporates some interesting features



Mafell is a German company that has been manufacturing woodworking machines and power tools for over 70 years. Its engineers work in close collaboration with trade users, and it regularly introduces technical innovations as a result. All Mafell products are of professional quality, aimed primarily at the trade user, but with a reliability and performance which have a strong appeal to the discerning home woodworker. Amongst its line of power tools are a couple of routers, and it is the larger of the two which has recently had an upgrade,

including a power boost, which has been the centre of my attention.

Mighty powerful

The LO65E is now a mighty powerful tool, driven by a 2200 watt motor, this equals 3hp, which is enough for any application. Even the output power is a massive 2hp. The speed is variable, from 8,000 to 20,000rpm. This is controlled by a rotating button near the top of the body, an unusual feature of this is the way in which it is graduated, it is marked from 8 to 20 to give an exact indication of the speed. The maximum plunge is 65mm, one of the handles is twisted to lock the plunge extent as required.

Router base

The base of the router has parallel sides and curved ends. The radius of the latter is approximately 170mm, while the parallel sides are 125mm apart. The underside of the base is covered in a Tufnol type facing, but there is a gap in the centre of this

approximately 25mm wide, this gap extending into the casting of the base to a depth of approximately 6mm. Unusually, although the base, the lower part of the body and the side fence are aluminium alloy, they have been given a grey painted finish although clearly this is not of any significance.

The base carries the rods on which the side fence is mounted. The fence is around 300mm in length, the two-part plastic facing to this is adjustable so as to create a gap in the centre according to the size of the cutter and the nature of the cut being made. The fence has a micro adjustment facility, while the supporting rods allow for the fence to be set up to 330mm from the centre of the arbor. This is far greater than most routers owing to the generous length of the rods.

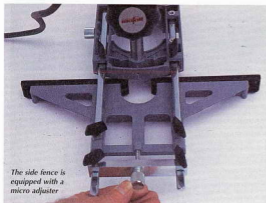
The base also carries the now typical revolving three-step turret depth stop, the plunger on the upper part of the body has ready depth adjustment and a graduated scale as a guide to setting this. A welcome refinement

is at the lower end of the plunger, here there is a rotating tip which allows for the micro adjustment of the depth setting. A fine height adjuster is built into the body, this controls the position of the body on the supporting columns.

Collet and extraction

The arbor is supplied with a 1/8in collet, with other sizes being available as extras. However, an adapter is included which replaces the collet, this has a threaded end and is intended for the mounting of cutters with a corresponding internal thread, although such cutters are really confined to the shop floor of industry. The arbor can be easily locked by depressing the built-in plunger, thus allowing for the spanner provided to slacken and tighten the lock nut to the collet.

Routers can generate an enormous amount of debris in a very short time, to allow for a vacuum hose to be linked to the tool a dust collecting hood is included. This fits readily in place and is secured with the small knurled nut already in place



The side fence is equipped with a micro-adjuster

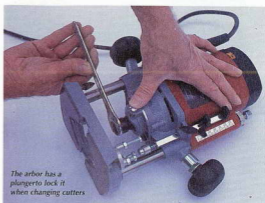
on one side of the base. This hood has an outlet of 35mm diameter. Also included is a guide bush, this has a diameter of 30mm with other sizes being available. The base will accept the Trend 'Unibase', allowing a very wide range of other guide bushes to be fitted, but the base is not drilled and tapped for EDT standard fitting.

Tried and tested

I now have a loose pattern of particular uses of a router when I'm trying out a new one for the first time, and always start with some edge moulding. Edge moulding was a use of the router which was consistently being promoted as a favourite operation in the early days of routing, and when the range of cutters and accessories were far less than is the case now. While at one time moulding cutters were of the plain type, most present day cutters for moulding purposes invariably are the bearing guided pattern. What this means is that a side

fence is not required with the latter type, unless the cut is to be made less than the maximum possible. There is sometimes a slight difficulty with a bearing guided cutter in starting the cut at the extreme left of the wood, what I invariably do is to commence the cut 20 or 30mm from the end, then move the router slightly backwards before moving it along the edge of the wood. While this is technically moving the router the 'wrong' way, the amount of waste being removed is very slight and I have never experienced any difficulty with this little dodge.

Next I was onto some rebating, using a straight cutter for this which allows both the depth and width of the cut to be fully controlled. Here the side fence is essential, and even with heavy cuts in hardwood I found there was plenty of power. With the same cutter in the collet and the side fence still in place, I moved on to forming some



The arbor has a plunger lock it when changing cutters

grooves. Cutting was sweet and smooth, although with most machines and power tools the quality of the tooling fitted plays a significant part in the performance and efficiency.

From grooving I moved on to trenching, and while these are similar cuts, they are actually quite different. Whereas a groove is made along the grain, a trench is formed across the grain. First I formed some trenches at right-angles to the edge, using my home-made jig. It will cope with material up to 300mm in width, and is also adjustable so that it can be used with different routers (see *Routing* issue 51). From square trenches I moved on to angled trenches, here I used a commercial jig, and although this can be adjusted to suit various angles, it controls the router on only one edge of the base, and although this Screwfix jig works perfectly well, extra care has to be taken to ensure the router follows the intended path.

Template work

The router lends itself admirably to template work, and there is a choice of tackling this. Either a guide bush can be used, or a flush trimming bearing cutter. The real difference is in the preparation of the template. When a flush trimming cutter is being employed, the template is prepared to exactly the same size and shape as the intended workpiece. However, with a guide bush and plain cutter, the template must be prepared smaller than the final component, the difference depending on the relative diameters of cutter and guide bush. The guide bush provided has a greater projection than usual from the base of the router, this means that the template has to be rather thicker than the usual 6mm. The router offers the choice with framed constructions such as doors of either forming any rebates and moulding which might be needed as the joints are being prepared, or after

The supplied 30mm guide bush fitted to the base



The Trend Unibase can be fitted to the base to use more guide bushes



The dust extraction nozzle is quickly and easily secured



All the depth controls are grouped on one side of the body





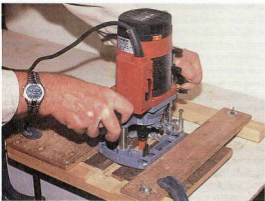
Moulding a straight edge



Moulding the edge of a circular workpiece



The side fence is essential when grooving



Trenching using a home-made jig

VERDICT

So what were my conclusions with this German made router, did it live up to its promise? **It is certainly very robust with adequate power for the largest of cutters**, with the speed readily set by means of the better-than-average graduations of the control dial. **Depth control facilities are also excellent**. I liked the long supporting rods for the side fence and also the quick and simple way of adding the debris spout when this is required. **The router can be inverted and stood on its top surface, this helps when cutters are being changed**. A little on the down side, though, is the absence of EDT (Elu/DeWalt/Trend) standard threaded holes in the base enabling it to be mounted in many tables.

assembly has taken place. This means that the jointing is usually simplified, but bearing guided cutters are essential for cuts made on the inner surfaces. It also means that while the depth of any rebates can be readily controlled, by the adjustments on the router, the width of the rebate is dictated by the cutter, but by fitting bearings of different diameters, the width too can be varied. Again, the LO65E made these cuts with ease and power to spare.

MORE INFORMATION

List price:
£499 plus VAT
Contact:
NMA (Agencies) Ltd
Tel: 01484 400488
www.nmauk.com

Cutting mortises

My final trials with the Mafell router was to form some mortises, the router being well suited to forming mortises of various types. However, end cutting cutters are needed, and the extent of the mortise must be marked in pencil on the wood. Where the mortise is the stopped variety, or when a haunch is involved, then the depth control features of the router promote both ease of use and consistency of results when multiple joints are being made.

I did find with this Mafell router that when forming these cuts on the edge of wood less than around 25mm in thickness then extra care is needed because of the recess in the centre of the base of the router.



Template work using the guide bush provided



Forming a typical small mortise with the help of a second fence

Finishing

4: Crossbanding made easy

Peter Dunsmore continues his series on finishing techniques with instructions for easy crossbanding

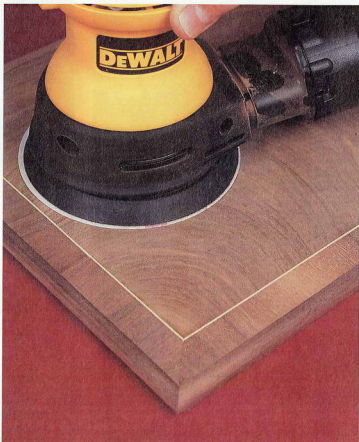


Crossbanding around the perimeter of an attractively figured piece of veneer not only visually enhances it by forming a frame around it, but also serves to protect the fragile edges. If this can also be combined with the forming of an attractive edge moulding then the end result can be an attractive feature on a piece of furniture.

Uses and techniques

In the case of a piece such as a tabletop the expense involved in using solid timber for the top is not only prohibitive but it does not seem to make sense if the timber is going to be covered with a veneer anyway. In such cases it makes not only financial sense to use a quality grade of plywood or blockboard, but this method of construction also has the benefit of not moving with any variation in humidity as would a solid timber base.

A careful look at many examples of old furniture will show splits in the veneer where the timber base has shrunk or cracks where two different timbers meet and have moved at different rates. A way of overcoming any potential problem where the solid timber joins the stable plywood is to make the join lie directly underneath the join between the crossbanding and the decorative veneer. Should any slight movement or shrinkage occur over a period of time then any crack will be camouflaged by the wood stringing separating the crossbanding and the main veneer.

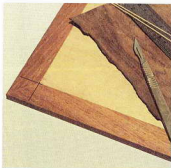


Veneer preparation

To make the moulding around the edge of the plywood it is first necessary to make a lipping of solid timber of the required species. The thickness is obviously going to be the same thickness as the plywood base, however, before this is cut to width and glued in place a little thought should be given as to the width of the lipping.

A small drawing on a piece of paper showing the size of the cutter needed for the mould and the width of the crossband veneer required will quickly

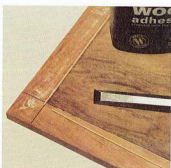
dictate the width of the timber lipping. This should be carefully cut so the corners have neat and accurately cut mitres and the timber glued in place using masking tape to hold the join together until the adhesive has set. In the case of a thicker top such as a large tabletop it is worth considering reinforcing the join with a plywood tongue or some biscuits. Even though this at first appears to be quite complicated to make there really is nothing difficult involved if the following steps are followed.



1. The solid timber lipping is cut to width and glued in place. For the end result to be successful the corners should be cut neatly and tightly closed. Masking tape is ideal to hold the timber in place as there is no excess force applied to the join as with clamps which may bow the top. Use a pen to mark where the joins are as this makes the trimming at the next stage a lot easier.



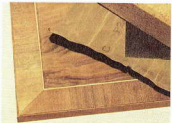
2. The veneer for the top is glued in place. This is cut oversize to begin with as it is far easier to trim later and the excess removed. As in previous projects I find the use of Gluefilm both easy and quick to use. With the veneer laid, a steel straight edge and a sharp knife are used to trim the veneer over the joint between the hardwood and plywood.



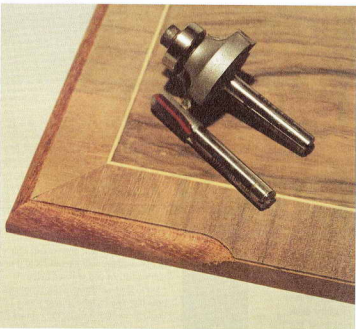
3. With the edge of the veneer neatly trimmed some boxwood or sycamore stringing is glued in place using some quick setting PVA adhesive. This should be butted up against the main veneer and left to dry. For something this size it is not necessary to cut neat mitres at the ends but simple butt joints are sufficient.



4. Veneer of either the same timber as the main piece or a veneer of a contrasting colour is cut into strips a little under the width of the lipping and glued in place. Gluefilm can again be used or some PVA if the crossbanding can be held in place while the adhesive sets. A sharp chisel is used to cut a neat joint at the corners.



5. When all the crossbanding has been fitted the surface can be smoothed level with abrasive papers. I usually start with 180 grit emery paper wrapped around a cork block rubbing with the grain and work my way through the grades down to about 400 grit.



6. Fit a bearing guided rounding over bit in the router and form the moulding on the edge of the top. This can be achieved using one of two methods. Either fit the router in the router table and adjust the fence (or move the position of the router) so that the edge of the bearing is level with the face of the fence and holding the wood upside-down cut the moulding. Alternatively use the router freehand over the top after clamping the timber in place. In each case take two or three shallow passes and make sure the cutter is both sharp and free from any build-up of resin. Check also that the router base or router table is free from any grit or sharp edges that may damage the veneers. If the veneer for the crossbanding is brittle and you find that the edge is tearing then this can be overcome by sticking some masking tape in place where the moulding will be formed.



Posh protection

Patrick Stoolé describes how and why he made this quality oak cabinet for his router.



Photography by Ian Hoe

I have a Freud FT 2000E and a lot of different accessories which I like to keep all together. I decided to make a cabinet to keep them all in and after several weeks of drawing sketches this is the idea I finally arrived at. The cabinet featured here is obviously designed around my Freud router, so if

you have a different one you may have to make some small alterations to the cutting list. As you will see below, I tried to keep construction as simple as possible. The material I used was English oak which made the cabinet nice and strong and gave it a quality look and feel.

Outer case

1. The outer case of the box is dovetail jointed in much the same way you would make a drawer.
2. Before assembly rebate out for the router shelf and backboard and then assemble the outer case and fit the backboard and router shelf.

Drawers

3. Next, make the top drawer supports and drawers. This is best described using the drawing. Before making this assembly make sure you have enough space in front of the drawer fronts for the handles. The simple way of making this assembly is make a drawer, as you only need two corners cut off excess, look at the drawing and you will see it is a three part assembly. Make the right and fit, then make the left and fit, then slide centre drawer support in and glue.
4. Draw boxes and fronts. Make to the size of the apertures, because the drawer boxes are so small only rebate for bottom of drawer, and drawer edges

TOOLS USED

Router
Dovetail jig
Spindle moulder
Sander
Dowel finders
Chop saw
Thicknesser
Disc sander
Cordless drill
Planer

are glued and pinned. For the fronts of the drawer boxes you need the grain running from top to bottom. This is made easy by covering all five drawers, marking out and cutting with a fine saw blade. After this put a small mould on the drawer fronts, drill hole for handle through drawer box, glue and assemble.

5. Bottom drawer assembly. The bottom two drawers are dovetailed, use the cutting list for this or make to apertures. When drawers are made you need to rebate the sides to take wooden runners, size and fit drawers. Now make two drawer fronts and mould front edges as top drawers, for reference see the photos of my box. Drill for handles, glue and assemble, see photos and cutting list for router bits.

Top and bottom

6. As the top and bottom of the box are the same size, I made these together



Inside cabinet showing storage area for guide bushes in top drawer



The cabinet has drawers at the bottom for cutter storage



Cabinet with doors closed looks like a nice piece of furniture



Rear detail of the router cabinet showing back panel pinned in to rebate

very simply. Cut to size (see cutting list) and mould three edges, i.e. sides and front, but not back for moulding. On the bottom of the router box I fitted four feet, again see photos for design. Making eight of these, mitre in centre

and glue two of them to make one foot. Then glue and screw a block to the underside of the bottom and glue the feet to this (see photos) do not fit top or bottom at this stage.

CUTTING LIST

All dimensions in millimetres

Details	Qty	Height	Width	Depth	Material	Notes
Router cabinet	1	665	425	250	Oak	
Top & base	2	425	250	21	Oak	Ogee mould on front and sides
Main carcass	1	558	400	212	Oak	
Top & bottom	2	400	212	14	Oak	
Sides	2	552	212	14	Oak	Dovetail construction using dovetail jig
Back panel	1	550	392	6	Oak MDF	Pinned in to rebate
Mid-shelf	1	386	180	14	Oak	Housed in stopped groove
Router clamp block	1	90	32	20	Oak	Rebated to leave 7 x 5mm retaining lip

This is the cutting list for the main carcass of the cabinet. If you would like a full cutting list that includes details of the drawers and the internal sections, please send an SAE to the following address: Routing cabinet cutting list, Highbury Nexus Special Interests, Berwick House, 8-10 Knoll Rise, Orpington, Kent BR6 0EL.



Side profile showing dovetails and brass furniture

Doors

7. The doors are made on a spindle moulder using the Freud Cutting System, or these could be made using raised cutting system for a router in a table, again see photos. Rebate door edge to receive piano hinge, rebate box edge

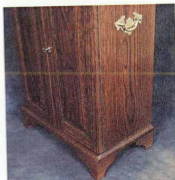


The edges of the cabinet top feature an attractive ogee moulding

both 1mm deep and fit. When the doors are sized and fitted you can now fit the top and bottom to the router box. Screw the bottom and dowel the top.

Finishing

8. Spraying and tinting. Remove all drawers, seven in total. Remove all drawer handles, sand and fill. The box is now ready for spraying. Blow any dust and use a tack rag to prepare the surface. First step is to tint, I used stripped pine, three coats in total. Allow to dry between



The cabinet feet are made in two parts and then mitted together

coats then apply three coats of two-pack base coat. Allow to dry for one day. Nib down with 320 fine paper and wax using Beeswax and very fine wire wool, refit drawers and fit handles back on.

9. Felt in doors and drawers. First step is to felt the doors. This is quite simple, cut thick cardboard to size of door then get some thin foam, stick foam to cardboard and cover with felt. I found contact adhesive best for this job. For the drawers, cut thick cardboard to fit sides of drawers, I found this easier doing one side of a drawer at a time covering with felt and no foam used for sides just the bottom. In the top centre drawer I made a home for all of my guides, again very simple, use correct hole cutter and cover with felt.

10. The cabinet is now almost finished all that is required are handles for the side of the box and to fit brass door lock and brass latches to top and bottom of door.

11. To finish this project the only job left is to find a way to retain the router in the box. The back of the router is held in place using rebated timber, the router then is just pushed to the back and the front of the router is held in place with two thumb locks.

Fig 1 Router storage cabinet

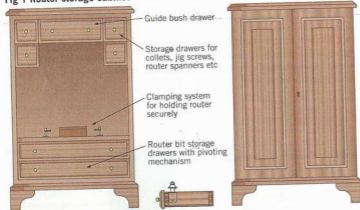
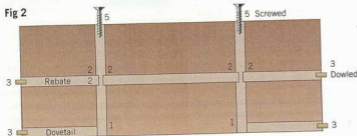


Fig 2



FINALLY

The project is now finished, and I do hope you have as much pleasure making the router box as I did. May I take this opportunity to thank Routing magazine for inspiring me to make projects such as this.

The Accurate Guide



Ron Fox puts the new Accurate Guide housing jig from The Wood Workers Workshop through its paces



It is most unlikely that you will have cutters that exactly match the thickness of your shelf boards.

New device

Jigs of varying degrees of complexity have been devised to overcome this problem. They all involve the slight movement of the router after the initial cut to widen the trench. Now, a new device from the USA, the 'Accurate Guide', sets out to provide a means of cutting very accurate housings of widths from $\frac{1}{8}$ in to $1\frac{1}{2}$ in using only two cutters: a $\frac{1}{8}$ in and a $\frac{1}{2}$ in straight.

The Accurate Guide consists of two anodised metal cheeks mounted on two short rods. One of the cheeks is fixed; the other is

free to move on the rods and is held in place with two locking knobs. The cheeks are mounted on a pair of longer rods, which match the diameter, and spacing of your router fence rods. The make and model router is specified when ordering. My review set was made to fit the CMT 1E, DeWalt 625 and models with similar fence rods. I tested it with the CMT 1E.

Test housing

I made my test housing in a piece of 16mm Contiboard. The appropriate diameter cutter ($\frac{1}{8}$ in) was installed, the bars of the Accurate Guide closed up tight together and locked, the straight edge positioned and the initial cut made across the board, giving a $\frac{1}{8}$ in housing.

With the first cut completed, two small pieces of the shelf board were inserted between the outer cheeks of the Accurate Guide and a second cut made. This widened the housing to the width of the shelf board. If the fit is too tight, the pieces of shelf board are shimmed with paper to open the cut a tiny bit more. **Photo 2** shows the initial cut, made with the Accurate Guide in the closed position, and **photo 3** the second cut with the shelf pieces inserted and the rails opened.

If the shelf board thickness is $\frac{1}{8}$ in to $\frac{1}{2}$ in a $\frac{1}{8}$ in cutter is used and the shelf pieces are inserted in the inner (shallow) pockets of the Accurate Guide, if the shelf board is between $\frac{1}{2}$ in and $1\frac{1}{2}$ in thickness, a $\frac{1}{2}$ in

Cutting housings for shelves and carcass components is a basic routing operation which appears perfectly straightforward. You install a straight cutter of the required diameter, position your straight edge, and run your router against it to make the trench across the board.

However, it is not quite as straightforward as it seems. The principal problem is that

The first cut across a piece of Contiboard with the Accurate Guide fitted to the CMT 1E router



The housing is widened by inserting two pieces of the shelf board in the pockets of the Accurate Guide



A home-made work aid is used for quick positioning of the initial cut



The second cut made against the home-made work aid



cutter is used and the shelf pieces inserted in the outer (deep) pockets.

The system is very accurate for cutting housings (through or stopped) of exactly the required width but makes little or no mention of two other aspects of the job: positioning the initial cut and avoiding running away from the straight edge.

With regard to the first of these, the instructions simply say 'measure for the location of your slot'. This can be

tedious, to say the least, and we wanted something more reliable. Our solution was to make two very simple work-aids, one for each size of cutter. These consist of a piece of MDF with a length of batten glued to it at right-angles. The work-aid is initialised by making a cut across it to notch the batten. This provides an automatic indexing point for the cut. You simply mark the line of the housing and line up the edge of the notch with it. To ensure accuracy, the Accurate Guide

VERDICT

This is an ingenious way to achieve perfectly fitting shelves etc, with materials such as veneered boards, which vary from their nominal thickness, using only two straight cutters. It becomes more convenient if you devise a quick way to position the jig but, as seen above, this is not a difficult task. **Anyone who has the need to make a lot of housings should consider the Accurate Guide as a useful investment.**

is installed in the router with its short black rods pushed tight against the router base.

Photo 4 shows the home-made jig lined up ready for the initial cut. **Photo 5** shows the second cut made, with the shelf pieces in the rails.

The work-aid shown is in fact identical to my everyday housing jig. It is all I use for housings. With regard to deviation from the cut, the length of the Accurate Guide gives a reasonable surface to bear against your straight edge, but many home-made housing jigs use adjustable cheeks or guide bushes to overcome the problem. With

the Accurate Guide the trick is to cut in the direction that pushes the router against the straight edge and consciously apply a little pressure to help hold it in.

Sliding dovetails

These can be made in the same way as ordinary housings. The dovetailed shelf ends have to be made first and the housings made with the same dovetail cutter at the same depth. The dovetailed housing is opened up by inserting two off-cuts of the dovetailed shelf end in the pockets of the Accurate Guide.

MORE INFORMATION

Cost: Around £40

Contact: Wood Workers Workshop

Tel: 0800 970 0140

www.woodworkersworkshop.co.uk

www accuratewoodtools.com

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Great jigs

**Peter
Dunsmore**
shows how to
make a sliding
dovetail spline jig



This jig is designed to cut the slots for dovetail shaped keys to fit into the corners of mitre joints. In addition to strengthening the corners the keys also visually enhance the piece, particularly if the keys are made from a contrasting coloured wood. An example of the effect can be seen on the tea tray featured on page 15 of this issue.

Making the jig

Start with a board of 12mm MDF 1200mm long by 180mm wide. These measurements are not critical as it all depends on the size of box the jig is to be used with, but it does make assembly a lot easier if you start off with a board of uniform width. A jig made to these dimensions will easily cater for a box up to 250mm wide, however, should it be a particularly long structure the support pieces may need to be lengthened.

1. Cut the base of the jig to the dimensions shown in the plan and use the router fitted with a fence guide to cut the three slots shown using a 12mm straight fluted cutter. Draw a centre line

at right-angles to the side of the base clearly using a sharp pencil.

2. Using either a simple jig or a batten clamped in place as a guide, cut the

two grooves 12mm wide either side of the centre line to a depth of 4mm. It is important that these two grooves are of equal distance to either side of the centre line.

The different components to make this jig



The angle must be 135° and square to the side of the base

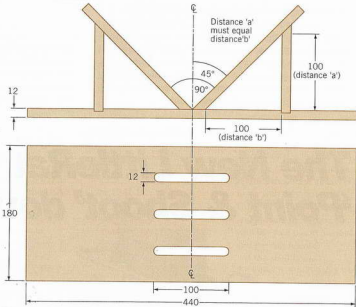


When fitting the second half the angle must be 90°



Fig 1 Sliding dovetail spline jig

All dimensions in millimetres



THE SPLINES



Note the support brackets clamped in place to help hold the workpiece in place

3. Cut the two vertical support pieces as shown with a 45° bevel at one end but at this stage leave them slightly over length. It will now be apparent why the parts for this jig are cut from one board as the support pieces will fit neatly in the grooves without any overhang.

4. From the remaining timber cut a further 45° bevel at either end and cut this board in half. This provides the two shelves upon which rests the box. There are two ways to achieve the correct fitting at this stage. Either the mathematical method or the slightly more hit or miss method. Both work so I will explain both ways.

5a. The boxes to be used in this jig will have corners at 90° so the jig must correspond accordingly so that it provides the box with sufficient support. For the dovetail splines to be visually balanced on the corners of the box the support shelves must be at 45° to the base of the jig. To achieve this the distance from the rear edge of the bevel resting in place at the centre-line on the base to the rear edge of the groove must be the same as the distance from the lower edge of the

bevel of the vertical support plus the depth of cut used to support this part. The vertical support pieces can then be cut to length.

5b. The easier and far less complicated way of doing this is to set a sliding bevel to 135° or use a multi-angle square. Fit the vertical support piece in the groove and place the support shelf in place accurately on the centre line of the base. Check that the angle between the base and the shelf is 135° and adjust the length of the vertical support by trimming a little of its length at a time till it is correct. Glue these two parts together onto the base, check again the angle of the shelf is as it should be and also that the lower edge of the shelf is perpendicular to the side of the base. Put this aside to dry.

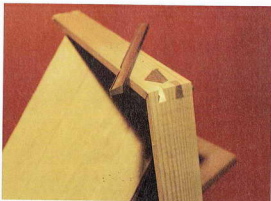
6. When the adhesive has set repeat the process for the other side but adjust the positioning of the shelf and the length of the vertical support piece so the angle between the two shelves are at 90°. Glue in place and put aside to dry.

7. As can be seen from the photograph of the jig in use I have made a couple

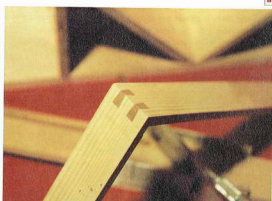
of support pieces from off-cuts that can be clamped in place so the box can be firmly held in place. These are simply glued together and can be positioned where required on the jig depending where the dovetail spline is to be positioned.

Using the jig

This jig is simplicity itself to use. For the first cut fit a dovetail cutter in the router and set the height of the cutter so the narrowest part of the cutter is level with the top surface of the base of the jig. Place the jig on the table with the cutter through one of the slots. Either position the fence against the jig or clamp a straight edge batten in place. Switch the router on and slide the jig so the cutter passes through the MDF and makes a slot through the jig. I used one of the other slots for a larger dovetail cutter. Position the box to be cut on the jig and hold firmly against the support brackets or alternatively clamp in place and slide the jig forward. Reposition the box for further cuts. Keeping the cutter lined up with the slot in this way provides support to the workpiece and will help prevent any breakout damage to the article.



The slot and dovetail key can be clearly seen



The end result after trimming - neat and effective

Weather watch

This banjo style barometer features figured walnut curl flame veneer with unusual crossbanding around the face. By **Peter Dunsmore**



Skill level: 

At first glance this banjo style wheel barometer, so called because it is not dissimilar in appearance to a banjo, would appear to be very straightforward and easy to make. It appears very similar to the barometers found in shops whose profile is simply machined from one piece of timber and the barometer screwed in place.

However, a closer look at this design will show that the wheel part not only has a stringing around its perimeter, but the corners between the circle and the vertical post are clean cut and not blended into one. The wheel has walnut crossbanding around its face radiating from the mechanism, designed to look like rays from the sun, and the post has a beautifully figured walnut curl flame veneer starting at the base below the wheel and continuing up to the top of the barometer. To achieve this effect it is necessary to make the wheel and inset this into the vertical post as a separate operation and this requires some very accurate cutting with the router and a couple of templates.

Making a start

To begin with an MDF template is made of the vertical section of the barometer following the drawings as a guide. In order to make each side identical I find

it easier to make just one half accurately and then, using some double-sided tape and a trimmer, to turn the half template over on the centre line and repeat the process on the other half.

The full-size template is pinned onto a solid piece of walnut and the majority of the waste timber cut away with a fretsaw. Bearing guided trimmers are then used to profile the edges neatly. A better finish is achieved when cutting downhill with the grain and not cutting against the fibres of the wood. It will be noticed that the cutters are not long enough to trim to the full depth of the walnut and this is overcome by alternating the cutters for either the top bearing or lower bearing guided cutters and using the trimmed walnut as a guide.

Cutting the circular rebate

As previously mentioned two accurately cut templates are required to make this project. Use the router fitted with a trammel bar to cut a disc the diameter of the wheel section of the barometer and put aside. Now reset the trammel bar in the router and cut a circle in a piece of MDF so that the disc will be an exact fit into this hole. To allow for any slight adjustment cut a shallow trench first and lift the router out

of the way. Place the disc over the trench and see if any slight adjustment is required.

When the disc is fitted into the hole draw a clear line across both templates with the line passing through the indentation made by the point on the trammel bar. This line will be used later to align the template centrally over the barometer post.

Draw a centre line down the length of the walnut post. Put the disc somewhere safe where the edges will not be inadvertently dented and pin the other template in place on the post with the previously marked centre lines coinciding with the centre line drawn on the barometer.

Now fit a guide bush to the base of the router with as wide a cutter as possible and running the guide bush



against the template, plunge the router down in gradual steps to remove the waste to half the depth of the post. With some kind of ski system fitted to the router, remove the remainder of the walnut so that you are halfway to a half-lapped joint. This stage can be easily seen in the photograph and saves a lot of explaining. To trim accurately to the template the cutter in the router is now exchanged for a top bearing guided trimmer and the small ridge left, as a result of using the guide bush, is carefully removed. Be aware of any potential breakout as the cutter breaks free from the walnut and avoid this by cutting very slowly and just nibbling at the end.

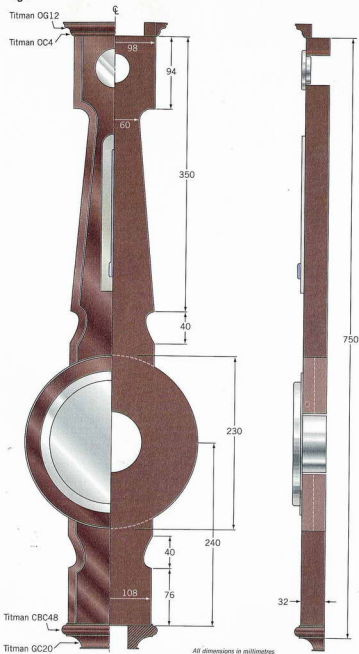
Veneering the post

As seen in the photograph of the finished barometer a curl walnut veneer is used to decorate the front although many other veneers would be just as attractive. Curl veneers are very fragile and tricky to lay partly because they dry buckled. They can be flattened by spraying both sides with a light spray of water from an old kitchen cleaner type spray bottle and slowly clamping between two pieces of chipboard. The moisture softens the veneer making it more pliable and the chipboard draws the moisture out of the wood. After 24 hours the veneer will be found to be perfectly flat and much easier to work with although it will quickly start to buckle again. An even layer of PVA over the walnut and the veneer clamped down should do the trick. The veneer can be cut oversize as it will be trimmed at the next stage.

The perimeter of the veneer, both above and below the wheel section is crossbanded with some walnut veneer. Before this part can be carried out it is necessary to cut the curl veneer back an even distance from the edges. To achieve this I use a rebate cutter with a suitable sized bearing and run this around the barometer post. Set the depth of cut accurately so that only the excess veneer is removed and a nice flat surface remains for the crossbanding to adhere to.

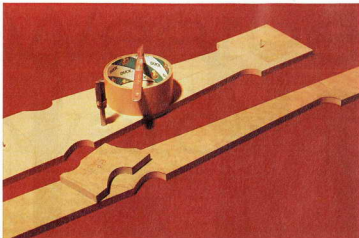
Some sycamore stringing is fitted around the curl and this is easily glued in place with a little PVA. To bend round the corners the stringing is first steamed in the spout of a boiling kettle

Fig 1

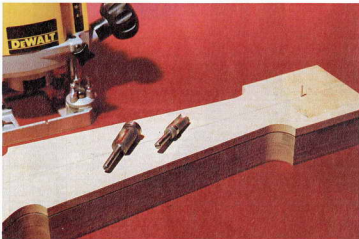


for a few minutes and the wood wrapped round a small jar and taped there until the it has dried out. The crossbands are lengths of veneer cut across the grain and glued in place. For the small tight curves it is necessary to cut little wedges to fit.

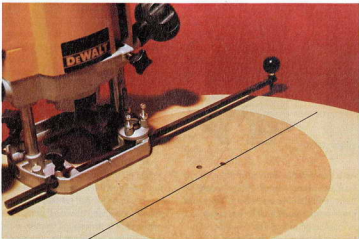
When all the crossbanding is completed and the adhesive has set the veneers can be sanded smooth and level. The overhang of veneer where the wheel will fit is trimmed accurately using a bottom bearing guided trimmer (see 'Finishing' article in this issue).



Make one half of the template accurately and then use this half to produce a full size template



Use the template to profile the edges of the walnut. Note the two types of trimmer used



The MDF disc is a good fit into the hole

USEFUL CONTACTS

Craft Supplies

Barometer Part No. BA164

Tel: 0800 146417

The Art Veneer Company

Suppliers of veneers

Tel: 01638 712550

Making the wheel

This should be quite straightforward, but unfortunately I was running out of walnut timber and consequently I had to join two pieces of walnut to some spare timber to make up the width. Cut the circle slightly oversize on a bandsaw and pin the disc MDF template in place and using the trimmers cut the circle to size. Cut downhill wherever possible and use a guide pin on the router table to prevent the cutter snatching the wood and damaging it.

If all has gone to plan the wheel should be a snug fit into the recess in the barometer post. With the wheel in place run a marking knife along the back of the wheel against the post to know where the timber must be removed. Again the router makes light work of this and the depth of cut should be set so the wheel, when veneered on the front face, sits level with the post.

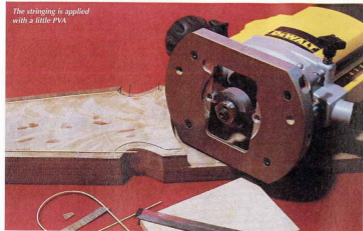
Wedges of walnut radiating from the centre of the wheel are fitted around the perimeter and the overhang trimmed later with a bearing guided trimmer. Sand the surface smooth and exchange the bearing on the trimmer to one of a slightly smaller diameter. Now set the depth of cut so the rebate formed will fit a piece of sycamore stringing. Experiment on a piece of scrap timber before cutting the rebate around the wheel. With the stringing glued in place the rebate at the back can cut away using the router until the wheel sits flush in the post.



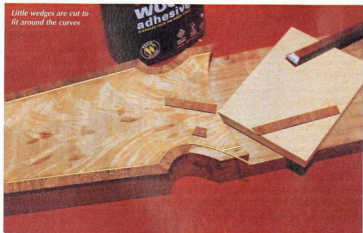
Position the template so the central lines on the template line up with the centre line on the post

FINISHING

The stringing is applied with a little PVA



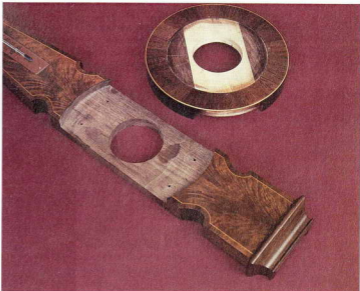
Little wedges are cut to fit around the curves



Upon completion the veneers are sanded down to a smooth finish



Any overhang of veneer is trimmed with a bearing-guided trimmer



The two parts of the barometer ready to be assembled

A hole needs to be cut in the wheel to suit the barometer mechanism and is easily cut with a fretsaw and a further hole needs to be drilled at the top of the post to suit the hygrometer although this is best left till after the barometer has been polished. The mouldings around the top and base of the barometer are shaped on solid walnut using various cutters and should not present any problems. The mouldings are cut to length using a saw in a small mitre box and glued together. These parts are best polished separately, as is the barometer, and glued together on completion of the polishing.

To bring out the figuring on veneers such as this it is probably best to apply a full bodied French polish. Curl veneer is very open grained and it does take a little while to body up but the end result is worthwhile. When this stage has dried the finish is rubbed with 0000 grade wire wool dipped in a quality wax polish and then buffed to a soft sheen. All that remains is to screw in place the mechanism and to fit the hygrometer and thermometer in place.

Trend Pocket Hole Jig

Ron Fox tries out the latest in fast and accurate jointing systems from Trend



to make carcasses, frames and panels.

Quick and accurate

The jig provides a quick and accurate way of making screwed joints. It involves clamping one of the pieces to be joined in the jig and drilling one or more angled holes in it with the stepped drill included in the kit. The drilled piece is then joined to its mating piece with special self-tapping screws. For additional strength glue can be applied to the mating surfaces with the screws holding the joint together while the glue dries

In the last year or so Trend have introduced a great many new products. Most of these have been router related, as would be expected, but there have also been one or two 'non-router' items. The latest of these is the Pocket Hole Jig for joining timber and plywood

without the need for clamps.

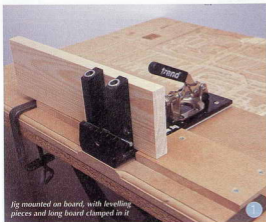
The jig can be used on materials from 16mm to 38mm thick but the optimum thickness is 19mm. With this thickness, the screws exit in the centre of the drilled board.

The instruction manual recommends that the jig be screwed to the bench top, although it can also be used portably. We chose to make a mounting board for it with a strip of MDF on either side of the jig to provide a level surface for longer boards on edge. **Photo 1** shows the jig mounted on our board, clamped with two fret



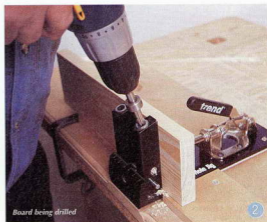
COST

The list price of the jig is £58.89 including VAT, but you will find it offered in the pages of this magazine for the pre-VAT price of £49. Additional screws are available in packs of 500 for £8.17 including VAT.



Jig mounted on board, with levelling pieces and long board clamped in it

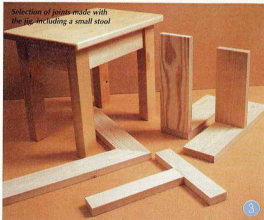
1



Board being drilled

2

Selection of joints made with the jig, including a small stool



cramps, and with levelling pieces on either side of the jig.

Special drill

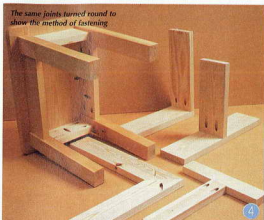
Hardened steel bushes in the columns of the jig guide the special drill. The tip of the drill should stop short of the jig base by 3mm and is controlled by the depth collar screwed to the shank (the instruction manual helpfully points out that a £1 coin is the right thickness for setting the collar). **Photo 2** shows the board being drilled.

Only one component of the joint needs to be drilled. To assemble the joint the two pieces are brought together and the special square-drive screws driven with a torque-control driver. The self-tapping screws are sufficiently fierce, however, to be easily driven by hand with the appropriate driver. For flat edge-to-edge joints, a face clamp is included in the kit to hold the two components flush while the screws are driven. For those who use the 'Snappy' system a drill bit with quick-

change fitting is available as an accessory.

Photo 3 shows a selection of joints, including a little stool we made as a test piece. The joints shown do not exhaust the possibilities of the jig. **Photo 4** shows the same joints turned round to show the method of assembly.

The same joints turned round to show the method of fastening



VERDICT

This is an extremely useful jig for making a variety of joints quickly and accurately. You will not use it for fine cabinet work but it will be invaluable for framing and basic carcass work. It can also be useful in jig making and, being screw based, it is ideal for temporary assemblies that will be dismantled later. It comes with a clear instruction Manual, which gives guidance on a wide range of joints. **Recommended.**

RYOBI CBD-1202/U DRILL/DRIVER

For the Pocket Hole Jig tests we had the use of the Ryobi CBD-1202/U 12v cordless drill, kindly supplied by Ryobi. This is a well-balanced two-speed model with more than adequate power for the pocket hole screws and light enough for my aged slightly arthritic hands to cope with.

Attractively presented in a moulded plastic carrying case, the drill comes with two 1400mAh batteries and a one-hour multi-volt charger that can handle all the models in the range from 9.6V to 18V. An additional touch, new to me, is the wrist strap to guard against dropping when working on scaffolding etc. The chuck capacity is 10mm and there are 23 torque settings for use in screwdriver mode.

The speeds are set with a gear selector in a slider switch on top of the drill and within each speed range, 'HI' or 'LO', the switch delivers higher speed and torque with increased trigger pressure.

Direction of rotation is reversible, controlled by a forward/reverse selector located above the trigger switch. In the centre position the switch is locked.

List price is £109 plus VAT, but you should find it on special promotion throughout the summer at a substantially lower price.

I got on very well with this little cordless. Its size and weight suited my hands nicely. The body is slightly shorter than similar models from other manufacturers, which helps to get in the tight corners you will encounter assembling items like the little stool above. **If you are looking for a good general-purpose cordless drill/driver you could do a lot worse than look for this one at a promotion price.**



MORE INFORMATION

Contact: Trend
Tel: 0800 487363
www.trendmachinery.co.uk

MORE INFORMATION

Contact: Ryobi
Tel: 01491 848700

Garage workstation

Short of routing space in the garage or workshop? Then why not have a go at making **Kevin Smith's** folding router table and accessory store



Skill level:

This project is my solution for a problem that many of us have had at some stage, a lack of space. This project, though called a 'garage workstation', can also be applied to a small area of a workshop or shed.

Quick and easy

Following one of my routing courses a student asked if I could choose the best routers for his needs and help solve the problem of space as he only had the use of a garage and that had to be shared with the car.

We decided on two routers in the end. The DeWalt DW625E for the ½in router that would be almost permanently fixed into the table, and the Milwaukee OFSE 1000 for freehand

work. He was keen to get set up as soon as possible, so he needed a quick and easy solution to his limited space problems. The garage workstation idea was born.

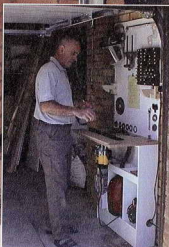
I decided that the carcass was to be quick and easy to assemble. This would mean no great effort being spent on joints and as little outlay on materials as possible as he would be paying out for two routers and associated equipment as it was. It was to be more functional than appealing in appearance.

The very basis of the project would be to make a workstation that would take up as little space as possible to allow for the parking of the car, yet be assembled for use quickly. It also had to house all of the equipment he had, and

would accumulate over time. Another point to bear in mind was light. Good visibility is important when routing so a light was incorporated over the work area and the unit was painted with white gloss, which offers a light background and reflects a little more light. It also protects the MDF carcass from damp.

Shelving unit

The bottom section is an open front shelving unit with butt joints being glued and screwed. The reason for this is that if you need something from the shelf in a hurry and the car is in the way you won't be able to open any doors. This section is made from 18mm MDF. The sides extend into the garage by

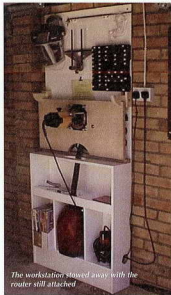




The bare carcass in position. Note it is set more towards the centre to allow for longer lengths of timber



The workstation fully set up, notice the sockets set at a comfortable height



The workstation stowed away with the router still attached

180mm only and stand 940mm high. Height is always a factor to take into account when making a project like this so I have incorporated a large plinth at the bottom to allow the reader to make adjustments to suit their needs. The table should be at a height that is comfortable for you.

The top shelf of this unit is set 610mm from the floor. This is determined to allow plenty of headroom when removing or replacing the second router that is not to be fixed all the time.

A hole is made in the middle of this and the upper shelf to allow the hose of a vacuum cleaner to pass through to the table. For the extraction system I used an old Sanyo 1200W vacuum cleaner that I had bought some time ago as this laid quite flat in this position. The vacuum cleaner is to sit in the space immediately below the centre and it was necessary, but easy, to shorten the hose before it will fit neatly into position. I also put some 50 x 25mm

around the hole to stop any bits from falling through from the shelf. The two spaces either side of the vacuum are for books, magazines and files. You may wish to put different size shelves in to suit. You will see from **Fig 1** the construction of the shelving unit. The most important part of this is the 50 x 25mm baton across the back. This serves two functions. Firstly it gives rigidity to the top, and secondly it gives a solid fixing for the table section and also to the wall.

Table section

The table section is the one part that requires time and accuracy. For this piece I decided to use some 25mm ply instead of MDF as this would give good fixing qualities. The design is very basic, yet effective. The table is 865mm wide and 445mm deep.

A strip 50mm wide is cut along the back and is then hinged back on with four hinges as shown. Leave a gap the

thickness of a 50p coin between them to stop binding and the possibility of clogging up with dust and debris. The front section of this piece has two holes cut in it; one for the vacuum hose and one for the table insert. When making projects like this there are always areas where you can save money, but when it comes to the tables themselves it is best to buy the best you can afford straightaway.

I fitted a Trend insert plate in this case for two reasons. Firstly I had used this kind before and I knew it would do the job. And secondly I knew it was compatible with the router to be used, a DeWalt 625E. Another bonus with this plate is that you can buy a levelling kit so if it is your first attempt you can still be accurate in setting up.

Other accessories

The fence used is the adjustable back fence from Trend. Once this is fitted there should be adequate clearance between the dust cowl of the fence and the back board, but if you have a tight fit then simply unscrew the table section from the bottom and move it forward slightly.

I gave this top section a coat of varnish to seal the wood and to protect it from grubby marks. I then used 5 x 50mm screws and 5 x 36mm screws through the back to join it to the shelving section. This is where the all important 50 x 25mm baton comes into its own.

IMPORTANT ISSUES

The lighting should be well placed over the table. The correct placing of the two switched sockets that allow the router and the dust extraction to be turned on and off simultaneously and the stowing away of excess cables are also important issues to consider. You could cut a hole through the bottom shelf into the void of the plinth to tuck any excess away.

This then is the basics of the garage workstation. I hope this will give a solution for anyone wishing to set up in a limited space whether it be a shed or garage.

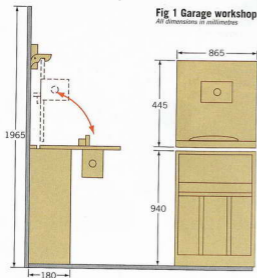


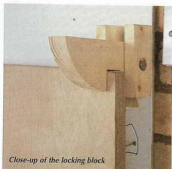
Fig 1 Garage workshop
All dimensions in millimetres

The top section is actually a continuation of the 9mm MDF backing. This piece measures 1965 x 865mm. This allows the back to stand up 1m above the table. How you arrange your tools will inevitably be governed by what equipment you have. With that in mind this the layout shown is just to show the things we wanted close to hand.

The two brackets for holding the table in the stowed position are really the only pieces that must be in the right place. Other than that you can only fix fairly flat things below them as anything bulky would obstruct the table or fence when stowing. Therefore the insert rings are graded, spanners, guide bushes and a Unibase. These have been hooked onto pop rivets that have simply been pushed into holes drilled into the MDF.

Retaining brackets

The two retaining brackets are a fairly simple but effective design. They consist



Close-up of the locking block

of a piece of timber 155 x 70 x 35mm that has a notch to take the table when lifted. In front of this there is a curvature that will allow the table to lift the bracket when it comes into contact with it. The back of the bracket has a round cut off to allow it to swivel upwards and this rounded piece is glued to the underside to give a flatter surface to the swivelling piece so it will not swivel downwards, this is clearer in the photos. It is possible to stow the table upright with the router still attached, but this does put a strain on the table fixings so they should be checked regularly to make sure they do not come loose. Alternatively you can remove the router each time as this would lessen the chance of catching the router as you move past it.

The swivelling part is simply captured by two pieces of 50 x 25mm that have been bolted together using nuts with nylon washers so that they cannot come undone. The two brackets are then fixed with screws from the back of the 9mm backing and into the two 50 x 25mm sides. I found it necessary to put washers between the swivelling part and the two pieces of 50 x 25mm.

Equipment organiser

Above this we decided to fix a cutter organiser that can be stored upright. This allows clear visibility and access to the

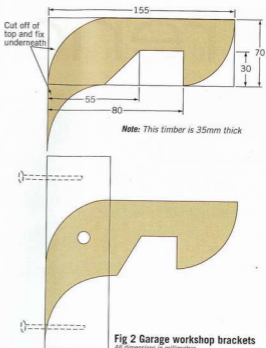


Fig 2 Garage workshop brackets
All dimensions in millimetres

cutters. We felt it was important to have a clip in the middle to hold instructions or drawings that you may need to work from. The all important Airshield was a must so this took pride of place and the rest of the space was given over to a fence, dust cowl, and trammel pin and bar, all of which were hung on rivets again except for the trammel which was held on magnetic catches.



The clearance as seen from outside

Trend PRT

We take a quick first glance at Trend's new router table aimed at professional users

The latest Trend product, the Professional Router Table, is now with us. The PRT is an all-metal table with an alloy top mounted on a pressed steel under-frame. This assembly is mounted on four fixed short legs for bench top use, but also comes with four longer legs to make it floor standing at a height of 830mm.

The top measures 650 x 550mm and consists of three alloy extrusions. The two outer ones are fixed, but the middle section is removable, held in place by four cam screws. It is lifted out to mount the router and then dropped back in again and the cams tightened. The alloy is drilled with the three standard EDT countersunk holes to take the Trend T5 and T9 routers plus the numerous other models that have the same fixing points. With non-EDT routers you have to drill the appropriate holes. The removable section makes inserting and removing the router very easy and the alloy plate, at only 8mm thick, minimises the loss of depth of cut. Photo below shows the



upturned centre section with the T5 router fitted, complete with PlungeBar. The T9 is also shown.

Fully specified

The table comes fully specified with a fence with adjustable cheeks, vertical

and horizontal pressure guards and a mitre fence fitted with adjustable stops for rapid setting to 90° and 45° left or right. The cutter aperture is 90mm in diameter with reducing rings to bring it down to 68mm, 54mm, 35mm and 20mm.

An NVR switch is ready fitted and the package is completed by a lead-in pin for pattern routing, and a push stick.

Very little assembly is necessary. The table on its short legs is simply lifted out of the carton, the floor standing legs fitted if required, and the fence and guards installed.

Fully tested

The whole thing is well presented and looks very smart, but handsome is as handsome does and Ron Fox will be putting the table through its paces and reporting fully in the next issue. R

The upturned centre section with the Trend T5 router fitted, complete with PlungeBar. The T9 is also shown



MORE INFORMATION

Contact: Trend
Tel: 0800 487363
www.trendmachinery.co.uk

Music store



This simple cassette box is the ideal place for the young music lover to keep their valuable audio tapes. By **David Lucas**



Skill level: 4

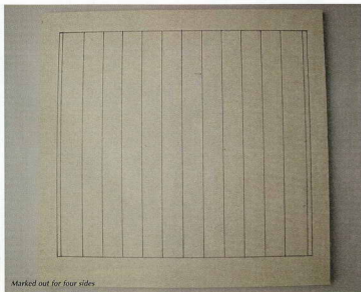
rectangular partitions and a rectangular base, all being cut from MDF.

Design and dimensions

The partitions and base are 3.5mm thick and I decided to rout grooves of width 4mm mainly because I already had a straight cutter of this diameter. I suppose that ideally I should have used a 3.5mm diameter cutter. Carefully measure the size of the largest cassette

box that you can find and add a millimetre in length and width. The lengths of the sides are then calculated as $12 \times (\text{cassette box width} + 1) + 11 \times (\text{groove width}) + 2 \times (\text{thickness of the end of the box})$. Now cut these out and groove each one, it is much easier to do four at once. So cut a piece of 10mm thick MDF a little over the calculated length by four times the side height plus an allowance for the saw kerfs as it is cut into four. This is very carefully marked out with lines 23mm apart (the cassette box width + 1 plus groove width) except at either end where the spacing is 26mm to allow for the extra width of the grooves for

This project began when I was asked to make a box for my grandson, Richard, to keep his audio cassette tapes in. A simple project it seemed, yet even so it gave scope for a couple of developments which may be of interest. As can be seen from the photos the sides of the box are grooved to accept



Marked out for four sides



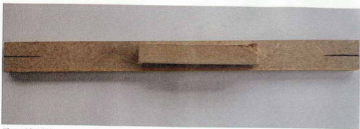
The first stages of machining

CUTTING LIST

All cut from MDF.
All measurements in millimetres for one box.

2 Sides	292 x 60 x 10*
2 Ends	116 x 60 x 10
11 Partitions	116 x 50 x 3.5
1 Base	272 x 116 x 3.5

* See text as four were made together



The guide piece

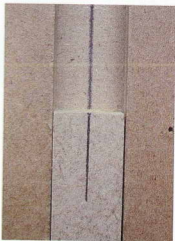
the box ends. The lines seen in the photo were thickened so that they would show up, finer lines would have given greater precision.

Simple slot jig

Only one jig is needed, the one I use more than any other, just a simple slot jig. This is a long 17mm slot cut in a wide piece of MDF, so as to suit the guide bush I normally use. It could be cut with a 17mm diameter straight cutter or with a smaller one in several stages. The piece of MDF must be fairly wide or it cannot be clamped to the piece being machined without the clamp getting in the way of the router.

Now the problem arose of positioning this jig over the lines drawn on the side

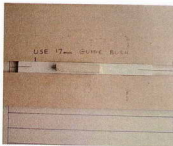
pieces so that the lines were in the middle of the 17mm groove. Usually I have done this by eye, but with so many grooves and with little margin for error I decided that something better was needed. Therefore I cut a piece of MDF 17mm wide so that it fitted snugly into the groove, stuck a simple handle (just a



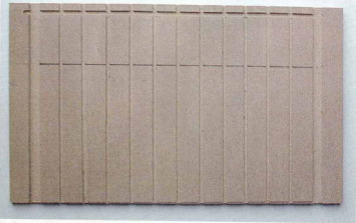
Close up of guide piece in use



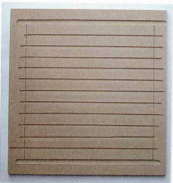
Machining the grooves



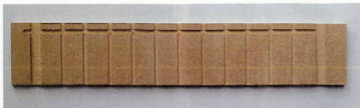
The guide piece in use



Ready to cut off the second side



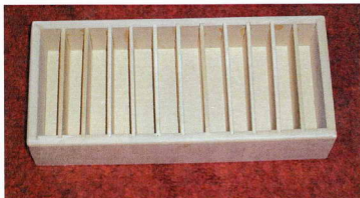
The machined sides



The single side



The side trimmed to length



The finished box



The boxes painted and in use

scrap piece of MDF) on it, and marked each end centrally as carefully as I could. Then with this in the groove and with my eye directly above I set the mark on the guide piece exactly over the ruled line, clamped the jig, checked that nothing had moved and prepared to rout. Obviously it is essential to keep one's eye exactly over the guide piece and I suppose that a further improvement would be to cut the ends of the guide in a chisel shape so that the mark on the guide would actually touch the ruled line. However, I found that the simple version worked very well.

In the groove

Then all that is necessary is to machine 10mm wide grooves at each end and 4mm wide grooves in-between, all to a depth of 3mm.

The next step is to rout another 4mm wide and 3mm deep groove at right-angles to the previous ones with its centre 8mm up from what will become the bottom of the side. The side is then sawn off from the composite piece, another cross groove routed and so on until four separate sides have been made. The ends of the sides are trimmed to the outer edge of the 10mm grooves.

The other pieces are sawn to size and the two boxes are then glued together. When the glue is dry all the exposed edges are rounded over using a suitable cutter and with the router in a table. The boxes are then finished as preferred. This same principle could be used for other cassettes, CDs or DVDs by changing sizes to suit.



Richard choosing his tape

Triton upgrades

Continuing its policy of product development, Triton has introduced some upgrade parts for the RTA300 Router Table.

Ron Fox tries them out



When the Triton RTA300 Router Table was first released it was already near the top of the design class, but it just had a couple of minor shortcomings. As part of its product development policy, Triton has now introduced a couple of very reasonably priced upgrades to address them.

RTA 425 fence upgrade kit

Reviewers of the Triton router table have mentioned one of its very few shortcomings as the need to use a screwdriver to adjust the MDF fence cheeks. With four screws in each cheek this made rather hard work of a usually simple job. Triton has responded to this criticism by revising the

method of securing the fence cheeks. All new tables have fences with the cheeks fastened with spring-tensioned screws. The cheeks themselves are unchanged and the spring-loaded system is available as an upgrade kit for tables manufactured before mid-2002.

Fitting the upgrade is a quick and easy process. The original screws are removed and four M4 x 45mm screws are put in their place. These screws are threaded through the slots in the metal part of the fence and for each pair of screws, inner and an outer plastic spring bases, separated by springs, are installed, followed by an M4 Nyloc nut on each

screw. The process is repeated for the other fence cheek and the screws tightened with a screwdriver until the tension on the springs holds the fence cheek in place while allowing it to be slid sideways to open or close the cutter aperture.

The screws are fine-tuned until the cheeks can be moved with firm pressure, but remain in place for most routing operations. For very heavy or difficult cuts you are recommended to lock the cheeks in place by fully tightening the screws.

Photo 1 shows a rear view of the fence with two of the spring-tensioned fastenings clearly visible.

The system works very well and we have not yet come across an application where it was necessary to fully tighten the screws.

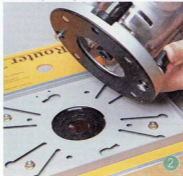
In order to fit the new fastenings it is necessary to remove the plastic planing shims from their parking slots in the metal fence. The instructions advise you to make new parking places by cutting a suitable trench down the back of each MDF cheek. Given that you are likely to have a box or drawer containing your Triton odds and ends you might decide, as we did, that it is not necessary to cut into the MDF cheeks.

The fence upgrade kit costs £4.34 inc. VAT.

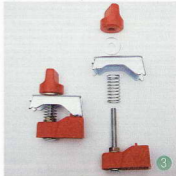
Rear view of table fence showing spring-tensioned fastenings



The new plate with the Triton router held with the fence bolts protruding, ready to drop into the holes



Two of the new clamps: one assembled and one in 'exploded' form showing the assembly order



Freud/Draper
2000 installed in
the new plate



RTA 423 Router plate kit

Along with the fence upgrade, Triton has introduced an improved router plate kit. This provides a quick-release system for the Triton router and a more secure set of clamps for other models.

The basis of the system is an inner plate which screws under the existing insert plate after removing the original clamping system. The additional plate is separated from the upper plate by means of four plastic spacers and is fitted with the flange downwards. The new plate has two slotted holes for the Triton router and eight further slots for attaching four separate clamps for other routers. The additional plate increases the effective thickness of the table insert by a few millimetres, but it still compares favourably with the thickness of most orthodox insert plates.

Our review kit came with no fitting instructions, and we spent a happy few

MORE INFORMATION

Contact: Triton
Workshop Systems
Tel: 0800 856 7600
www.triton.net.au

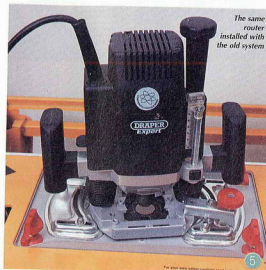
minutes puzzling out which bit went where. This shortcoming has now been remedied and the kit comes with full instructions.

Triton router

The Triton router is fitted very quickly by loosening the side-fence mounting knobs, pushing down on the knobs until the bolt heads go through the holes in the plate and rotating the router anti-clockwise until the squared tops of the shanks engage in the slots. The knobs are then tightened. The system provides positive location and very quick installation and removal, with the router base held at two opposite points on its circumference. Although some depth of plunge is lost the collet still plunges far enough through the table top to install and remove cutters from above.

Other routers

Non-Triton routers are fitted by means of four clamps which can be positioned independently using the slots that radiate from the centre of the plate. The heads of the four clamp bolts are inserted through the semi-circles at the ends of the appropriate



The same
router
installed with
the old system

slots, the base blocks dropped over them and slid up against the router base. The base blocks are then locked in place by tightening the nuts, after which the springs, clamps, washers and fixing knobs are assembled on each bolt, **Photo 3**.

The new system is a vast improvement on the old, especially for non-Triton routers. There are now four substantial clamps which can be individually positioned, compared with the two rather spindly fastenings with limited scope found in the previous system. We tried a number of routers, mostly $\frac{1}{2}$ in models, and they all fitted easily and solidly and we felt more confident in the holding power of the new system compared with the old, especially for the heaviest models.

As an illustration of the improvement brought about by the new system, **Photo 4** shows the Freud/Draper 2000 installed in the new plate and **Photo 5** the same router installed with the old system. The doubling of the number of clamps and their flexible positioning make for a much stronger installation.

We were sufficiently impressed by this to try the Triton router with the clamps. By removing the depth-setting turret we were able to position all four clamps, but the router felt quite solid enough using three of them. Unless I needed to insert and remove the router frequently I would probably forego the quickness of the Triton fixing holes and use the clamps.

The upgrade kit costs £8.38 inc. VAT.

VERDICT

These latest upgrades improve the efficiency and ease of use of the Triton table. I particularly recommend the insert plate kit, especially for those who use the table with a heavy non-Triton router. The fence upgrade is possibly less vital but it is nice to be able to open and close the cutter aperture without fiddling with eight screws. **Both upgrades are very reasonably priced and are heartily recommended.**

Small holdings

A traditional small cupboard makes a useful addition to any home and this design by **Percy Blandford** will fit in anywhere



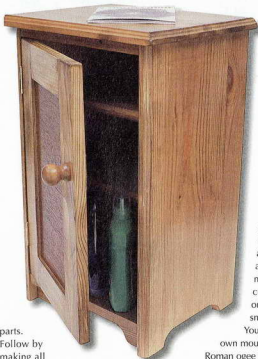
Skill level: 

This cupboard is of traditionally sound construction, but your router can be used at nearly every stage. The method of construction could be used for cupboards of widely-different sizes. As described (Fig 1), the cupboard matches the pair of bedside cabinets featured in a previous issue (Routing 55) and could be used with them in a suite of furniture. The cupboard illustrated was made for use with some other furniture, which has been finished a light brown colour.

Design and materials

The cupboard would look good in almost any wood, but this example is made of building-quality softwood (pine). The maximum width of this usually available is sold as 9 x 1in nominal, meaning this is the section before planing, and means that when you buy it planed, it is about 220 x 19mm. The cupboard sizes suggested allow for economical use of this section. The wide parts are made from a full-width piece joined to a half-width piece.

You will have to join pieces for many parts, so your available cramps may control your programme. If you join pieces to form the sides first, you can start making them while waiting for glue to set on wood for the other



parts. Follow by making all crosswise parts and assemble them to the sides to make the carcase. Add the top and back, then make and fit the door.

Router work

You can do all of the router work with a $\frac{1}{8}$ in router and a few basic cutters. The router can be hand-held for everything, although you could do rebating and moulding on a router table. You will need a straight $\frac{1}{8}$ in or 6mm cutter to suit the plywood thickness to cut grooves for the door panels. The grooves across the sides will be about $\frac{1}{8}$ in (19mm) and might be made with a cutter of that diameter or with two passes of a smaller one.

You might choose your own moulding pattern, but a Roman ogee is shown. Shelf edges are rounded over, although you may prefer to chamfer them. You can use a rebate cutter to fit the back, or the rebate can be cut with a straight cutter guided by the fence.



Shelf cramped

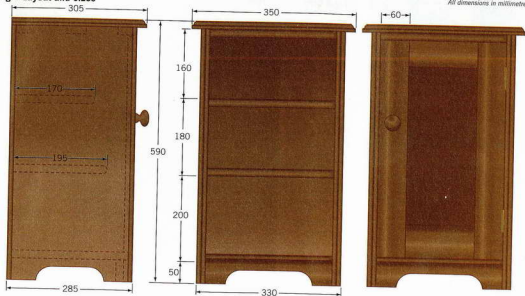


Cutting groove in side

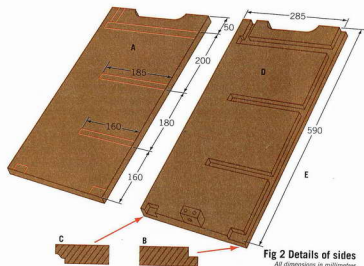


Cutting moulding on table

Fig 1 Layout and sizes



All dimensions in millimetres

Fig 2 Details of sides
All dimensions in millimetres**Construction**

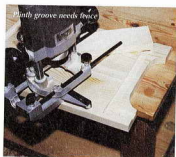
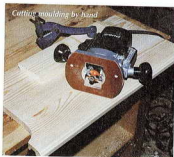
1. Prepare enough material for all parts, gluing pieces to make up widths. At this stage allow a little extra length on each part. Pick the better surfaces for tops and sides. Large knots will not matter on inside parts. Use face marks for front and outer surfaces. Pair side and door parts.

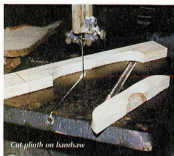
2. Mark out the pair of sides (Fig 2A). Leave some waste at the ends until after router work has been done. Use the shelf wood as a guide to groove widths. Cut rebates full-length on the inner surfaces of the rear edges, so the plywood back will fit slightly below the surface (Fig 2B).

3. Cut mouldings full-length on the outer surfaces of the front edges of the sides (Fig 2C). Cut the grooves for shelves and bottom (Fig 2D). Use a guide strip clamped on for the router base to slide against. Make the depth of cut half the thickness of the wood.

4. Trim the forward ends of the grooves to shape with a chisel. Each groove should finish 12mm back from the front edge of its fitted crosspiece. Cut the plinth grooves with the same cutter and depth setting. Guide it with the router fence against the edge.

5. Trim the sides to length and shape





Cut plinth on handsaw



Fitting plinth

(Fig 2E), but leave cutting recesses for the top crosspieces until later, when they can be checked together.

Crosswise parts

6. It is important that all crosswise parts (Fig 3) are the same length, so mark them at the same time or check them against each other. Finish the bottom (Fig 3A) to the same width as the sides, less the rebate.



Mould top by hand



Chiselling door frame tenons

Fig 3 Crosswise pieces

All dimensions in millimetres

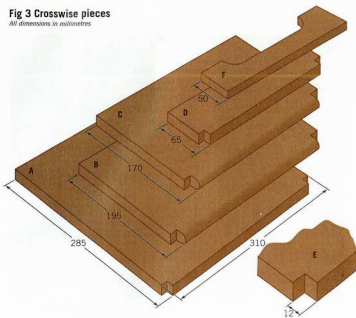
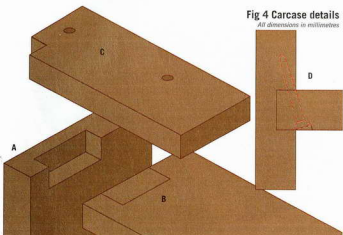


Fig 4 Carcase details

All dimensions in millimetres



7. Cut the shelves (Fig 3B and C) to the widths shown. Round over or chamfer their front edges. Mark the top crosspieces to length (Fig 3D). Cut to length all the parts and notch the front

corners (Fig 3E). The depth of each notch should match the groove depth.

8. Make the plinth (Fig 3F) without end notches. Cut it away to match the cut-



Door assembled



Back ready for fitting

CUTTING LIST

All dimensions in millimetres

Part	No.	L	W	T
Sides	2	590	205	19
Top	1	350	305	19
Bottom	1	310	285	19
Shelf	1	310	195	19
Shelf	1	310	170	19
Rails	2	310	65	19
Plinth	1	310	50	19
Knob	1	70	35	35
Door sides	2	500	60	19
Door rails	2	250	60	10
Door panel	1	400	200	6 ply
Back	1	550	310	6 ply

outs on the sides. Use the top crosspieces as guides to the sizes of recesses to take them in the sides (Fig 4A).

9. Some of the waste in the recesses can be removed with a large diameter straight router cutter (Fig 4B) guided by the fence, then the recesses finished to size with a chisel.

10. Drill the crosspieces for screws upwards into the top (Fig 4C). Drill their ends for screws downwards into the sides. Try the fit of the crosswise parts into the sides. If necessary, ends of shelves and bottom can be eased by planing underneath. See that the top pieces will finish level with the ends of the sides.

Carcase and top

11. Sand all parts. Glue all joints. You can provide extra strength in the bottom joints by screwing diagonally upwards (Fig 4D), with two widely spaced in each joint. You could do the same at shelf joints if necessary.

12. Pull joints tight with cramps. Glue and clamp the plinth to the bottom. Check squareness by comparing diagonal measurements. Check the assembly is not twisted. Leave standing level on a flat surface for the glue to set.

13. Cut the top to size so it will fit level at the back and overhang the same amount at front and sides. Mould the top edges of the extending parts. Sand the upper surface of the top.

Assembly

14. Do any necessary levelling of edges of the carcase and check that top surfaces are level. Fit a central screw block inside the top of each side. Do not put a strip right across, as this would restrict the slight expansion and contraction in the width of the wide parts and might cause cracking. Drill the holes in the blocks for screws into the top at a slight angle, so a screwdriver will clear the edge of the shelf.

15. Invert the carcase on the underside of the top, where it should fit closely. Glue and screw the top into place. Fit the plywood back with glue and panel pins. It can stop about 25mm from the floor. Check the assembly stands level. If not, plane feet until it will stand without rocking.

Door

16. The door is framed with a plywood panel. This small door will be strong enough without deep mortise and tenon joints. It will be satisfactory to let the tenons into the same 12mm deep grooves as the plywood panel. Cut grooves to suit the plywood 12mm deep centrally in the four frame parts. To give the router base a steady support, put a strip of straight scrap wood alongside as you cut a groove.

17. Mark the door sides to length allowing for a little clearance in the carcase opening. Do not cut yet, but

leave some waste at the ends. Mark the door rails. Cut to length at the ends of the tenons.

18. You can cut the tenons with the router and a large diameter straight cutter. Cramp the two door rails together and make the cut in a similar way to cutting the grooves, with the router base guided by a strip.

19. Cut the plywood panel and make a dry trial assembly. Glue and cramp the door, checking squareness while the rails are level with the marks on the aides. When the glue has set cut off the projections. Fit the door to the opening, by planing edges where necessary.

20. Decide which way you want the door to open. Hinging could be by letting in two small butt hinges, but for this small door it is satisfactory and simpler to use the special thin flush hinges, originally intended for chipboard construction, which do not have to be let in.

21. You could fit a metal or plastic handle or make a turned knob that will match the cupboard style. Locate it above halfway. You could secure the door with any type of catch, but a magnetic one is suitable and acts as a door stop. With some catches you will have to add a wood block door stop.

22. Remove rough and sharp edges and corners, as well as any excess glue. Sand surfaces where necessary. Apply your chosen finish. Whatever the outside finish, a light colour paint inside improves visibility. The cupboard illustrated has light brown stain and two coats of semi-matt varnish.



The finished cupboard complete with antique pine finish