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# The Woodworker & Woodturner

May 2013

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## Dressing companion



Roger Berwick marries a cupboard to a chest of drawers

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# welcome


PROJECT Oak embroidery box

A stitch in time

This cabinet began life as an idea for a storage unit for a cross-stitcher or needleworker, and was designed in the same rustic style as the slate-topped table featured in the December 2013 issue of The Woodworker


WORKSHOP Shop notes

Shop notes

Our forests are under increasing threat from disease and insect attack. A new tiller fungus may mean that our native ash trees will start to die in the same way that Dutch elm disease killed most of our elms 40 years ago


ON TEST Corded cordless kit

Einhell BT-TK 10.8Li cordless kit

£60

Triton TSP S450 oscillating spindle sander

£120.96

It's been a couple of issues now, but slowly a picture is emerging. As I'm sure all readers will know, it takes a while to familiarise oneself with any new situation in life, magazine editing included. You'll be pleased to hear that I'm gradually getting to grips with the size, scope and substance of The Woodworker, both as an actual magazine as well as a less tangible concept or entity. Judging from reader response – and I'd like to thank everyone who's taken the time to get in touch – The Woodworker occupies a tidy place in the consciousness of the nation; one which is not only steeped in tradition, but is optimistic and forward-thinking as well.

As we – The Woodworker team, now bolstered by new web editor Steven Winter on getwoodworking.com – slowly develop the title, there's still plenty of scope and opportunity to get involved. Never forget that it's your magazine as well as ours; we're all just part of the wider woodworking community. We have equal shares and a common interest in developing our skills to the benefit of everyone. Let me know what you think; I'm keen to find out and I'll definitely respond!

Thanks again to those who've sent in photos of recent projects. I always enjoy seeing other people's work, even when it's better than mine! I'm planning on running a page of readers' projects before long (it's one of the many entries on my ever-lengthening 'to do' list), so if you fancy breathing the heady oxygen of publicity, don't hesitate to boost me over a digital image of something you've recently made. . Please email them to mark.cass@mytimemedia.com

I don't know about you, but I'm always interested in anything new, especially if it's in the broad field of the construction industry. Mind you, I'm pretty keen on manufacturing too… oh, and research and development as well! Let's face it: it's great to learn about new stuff, especially if it's something we can personally use or benefit from. And I'm not just talking about machines, tools and technology, but information and knowledge too, all of which can be found in this sparkling latest issue of our magazine.

As the future unwinds, I plan to bring you loads of informative articles on as many disparate – but woodwork-related – topics as possible. Factor in further opportunities for learning and entertainment and we'll be close to presenting the true Woodworker values, both on printed page and screen. Watch this space.

*mark*


If you can't always find a copy of the magazine, help is at hand! Complete this form and hand it in at your local store, and they'll ensure that a copy of each issue is reserved for you. Some stores may even be able to arrange for it to be delivered to your home. Just ask!

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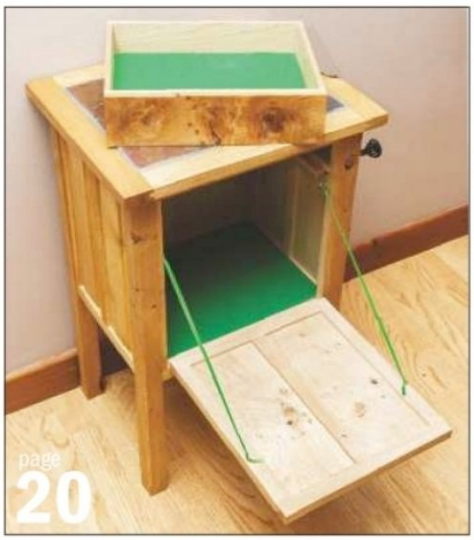

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The Woodworker & Woodturner

**May 2013**

Published by **MyTime Media Ltd**
Hadlow House, 9 High Street,
Green Street Green, Orpington, Kent BR6 6BG

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The Woodworker & Woodturner, ISSN 1752-3524, is published 13 times per year by MyTime Media Ltd. c/o USACAN Media Dist. Srv. Corp. at 26 Power Dam Way Suite S1-S3, Plattsburgh, NY 12901. Periodicals postage paid at Plattsburgh, NY. POSTMASTER: Send address changes to The Woodworker & Woodturner c/o Express Mag, P.O. Box 2769, Plattsburgh, NY 12901-0239.

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# On the desk

## SHARPER FASTER

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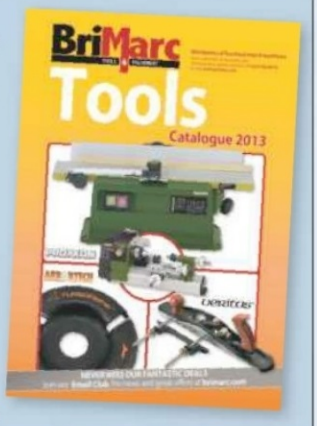
The Fasttrack comes complete with two grades of diamond whetstone, a cleaning block and a bench fixing facility, and costs £83.57. It's available from Trend Routing Centres and stockists.

The new 2013 Trend catalogue has also just been published. To request a free copy or to find details of your nearest Trend Routing Centre, call 01923 249911 or visit the website at www.trend-uk.com

## BRIMARC CATALOGUE

BriMarc Tools & Machinery has just launched its new 2013 Tools catalogue. This 116-page issue is packed with some exciting new brands, including UJK Technology which offers a range of routing and pocket-hole tools and accessories designed by woodworking experts for the hobby and professional craftsman. Also new to the catalogue is Shesto, suppliers of polishing kits and lights for all crafts. Lastly, new offerings from Proxxon include the AH 80 surface planer and the FD 150/E metalworking lathe.

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## FINER MULTI-TOOLS

Fein is releasing four new MultiMaster sets that will replace their existing line of oscillating power tools. The newly configured 2013 sets contain freshly developed accessories which give better work progress, longer accessory life and better value. The sets – Start, Quick Start, Top and AFMM 14 – range from an entry-level kit for a large number of renovation tasks to a comprehensive, cost-effective kit for carrying out many different applications. Here's what you get in each kit.

- Start: an FMM 250 machine, Allen key-based accessory changes, 24 accessories.
- Quick Start: an FMM 250Q machine, QuickIN tool changes, 24 accessories.
- Top: an FMM 250Q machine, QuickIN tool changes, 59 accessories.
- AFMM: a 14.4 V 3Ah Li-ion cordless machine, QuickIN tool changes, large range of accessories.

The Fein MultiMaster sets are available from specialist dealers. To find your nearest one, go to http://www.fein.de/en_uk/dealer-search/

## ODDS AND ENDS

- Stanley Tools has added a new folding Jabsaw to its FatMax range. It can cut on the pull or push stroke and features three optional blade angles.
- Hilti has launched the GX 90-WF, its first gas-actuated framing nailer with a unique safety sleeve on the tool nose specially developed to minimise accidental firing. It comes with two rechargeable 7.2v Li-ion batteries for reliable cordless operation.
- Irwin Tools is running a Buy-one-claim-one-free offer across its entire Vise-Grip plier product portfolio. To claim a free tool, simply buy any pliers from a participating stockist, complete a claim form and send it in to Irwin.
- Warwick Laser Systems has developed a new wood product called E-MDF. It's created using new laser processing technology which allows a scanned image of any wood grain to be permanently etched onto the surface of the board, giving it the look and feel of real timber.

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# What's new from

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## TS254 PORTABLE TABLE SAW

**MANUFACTURER:** Metabo
**D&M PRICE:** £575

The new Metabo TS254 makes it even easier for you as a professional to have a table saw on site. Its stand is completely integrated into the saw housing, and can be extended and stowed away in a matter of seconds. This not only makes it uniquely compact; it is also by far the lightest table saw of its kind at only 33.4kg. Furthermore, all attachments can be stored safely in a compartment on the casing. Thanks to its hard rubber tyres, the TS254 can be pulled along easily, thus setting a new benchmark for mobility in compact table saws.


## DUAL-VOLTAGE 4.2AH Li-ION CORDLESS TOOLS

**MANUFACTURER:** Panasonic
**D&M PRICES:** See website for details

Li-ion S 4.2Ah

With the new Panasonic range of cordless tools, the future fits the past, meaning that you can use any of your existing Li-ion 14.4V and 18V batteries in these five new power tools with dual-voltage interface. Specialist circuits in the tools detect the voltage when the battery pack is inserted. They then apply controls to allow current and voltage flow to the tool for best performance. For the highest power, the new 4.2Ah S-type battery range will provide unrivalled capacity and endurance whilst working.


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ideas for life

## NEW MACHINERY & WORKWEAR SHOWROOMS

Last year saw us embark on an extensive redevelopment of our warehouse and office facilities at our **Twickenham Superstore**, during which we had to re-deploy various areas in our shops to use as temporary storage and goods in/out areas. The new building work was completed at the end of 2012. We've now had the opportunity to refurbish extensive areas of our showroom, including investing in new ceilings and LED lighting throughout the store, to improve our customers' experience. We have a completely new woodworking machinery department where visitors can view a large range of bandsaws, pillar drills, lathes and table saws together with all the accessories they will need. We have also dedicated a large area to an extensive range of workwear, clothing and protective footwear from top brands including Snickers, Dickies and Jobman. Why not pay us a visit if you are in the Twickenham area (TW1 4AW)? Visit www.dm-tools.co.uk or phone 020 8892 3813 for details.


BY ROGER BERWICK

# All dressed up

**This dresser is the last of a suite of bedroom furniture pieces I was commissioned to make recently. It complements two wardrobes, a dressing table, some bedside cabinets and a cheval mirror, all designed and made in the same contemporary style**

This commission came from a couple who were completing a large self-build house and had decided that they wanted to furnish it in a specific style. However, no one supplier could offer all the pieces with the look they wanted.

The brief I received was for a bedroom suite in a clean contemporary style, made from a light-coloured timber such as maple or beech. The set included this dresser, comprising a cupboard at one end and ample drawer storage.

My customers were naturally looking for a competitive price, so I recommended adopting more commercial methods for the construction – mainly biscuit rather than hand jointing – to maintain overall quality but to help reduce costs. This article concentrates on the construction of the dresser, but the method of construction was essentially the same across the suite of pieces.

## Assessing the detail

The dresser was to stand 950mm high to sit just under a wall thermostat. At 1540mm wide there was plenty of room for a storage cupboard on the right-hand side of a set of seven drawers. **Fig 1** on page 14 gives all the relevant dimensions. The cupboard features adjustable shelving mounted on shelf support pegs rather than bookcase strip to keep the price down.

However, the clients were very specific regarding the fitting of high-quality metal drawer runners, as they wanted the silky smooth opening and closing action that commercial runners offer. After looking at several samples, we settled for some Hafele full-extension ball-race runners which I duly ordered.

## Preparing the stock

I started the job by thicknessing all the 25mm square-edge sawn boards I'd bought down to a finished thickness of 20mm. This seemed a chore at the time, but it saved me from having to thickness batches of timber as I went along. I could just take the boards as required and cut them down to the relevant component sizes as I proceeded, making them more manageable on the bench, **photo 1**.

My next task was to joint up boards for the top, the two sides and the divider between the drawers and the cupboard. After ripping them to the correct width, I edged them on the surfacer before cutting the slots for size 20 biscuits, **photo 2**, and glued them up.

I normally use a panel sander to finish composite boards but, never having had great results with beech using this machine, I created a flush finish on the joints with a random orbit sander connected to my workshop extractor to keep the airborne dust to a minimum.

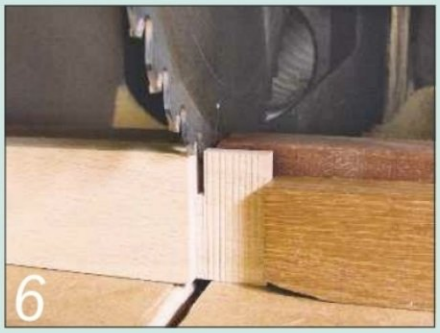
I started the job by cutting the carcass components from thicknessed stock

The boards for the top, sides and divider were all assembled with biscuit joints

All the mortises in the long frame rails were cut using a hollow chisel mortiser

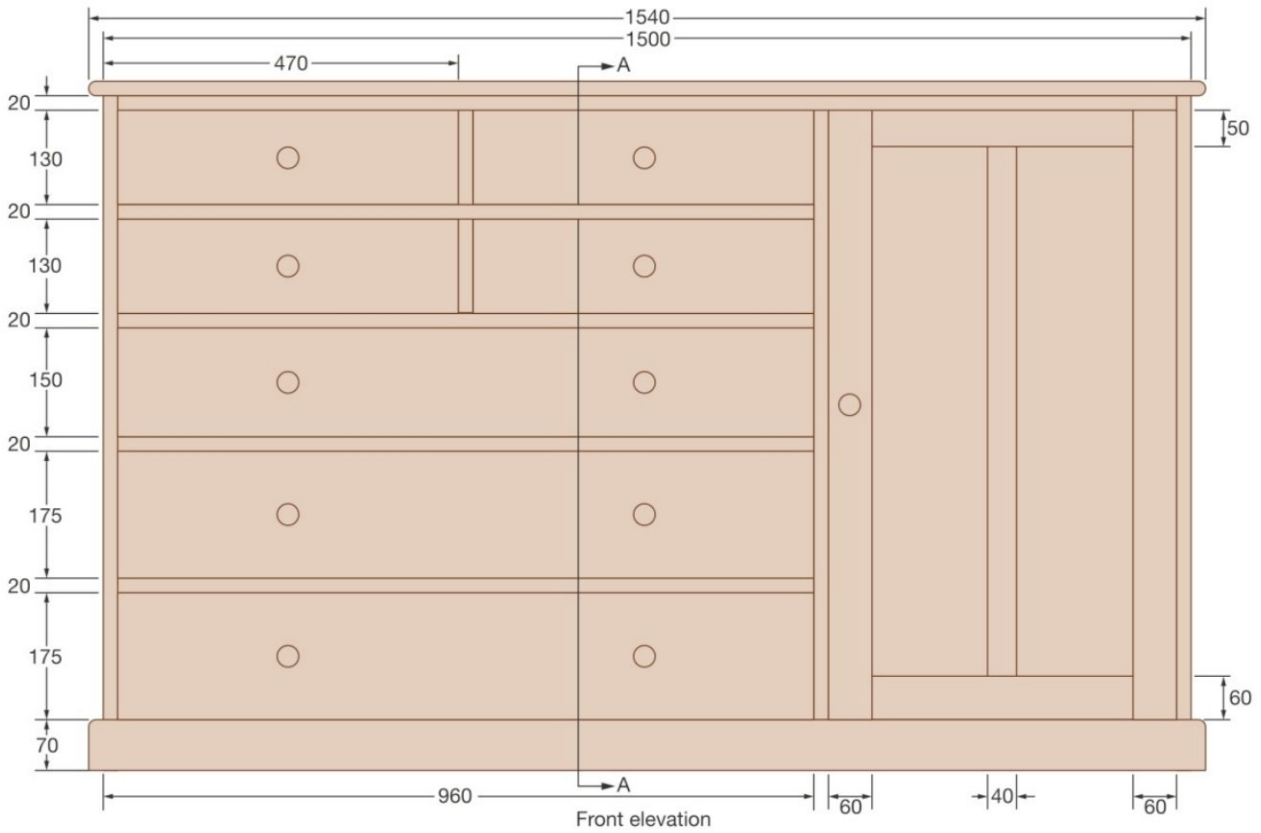
I used a gun connected to my air line to clear all the debris from the mortise holes

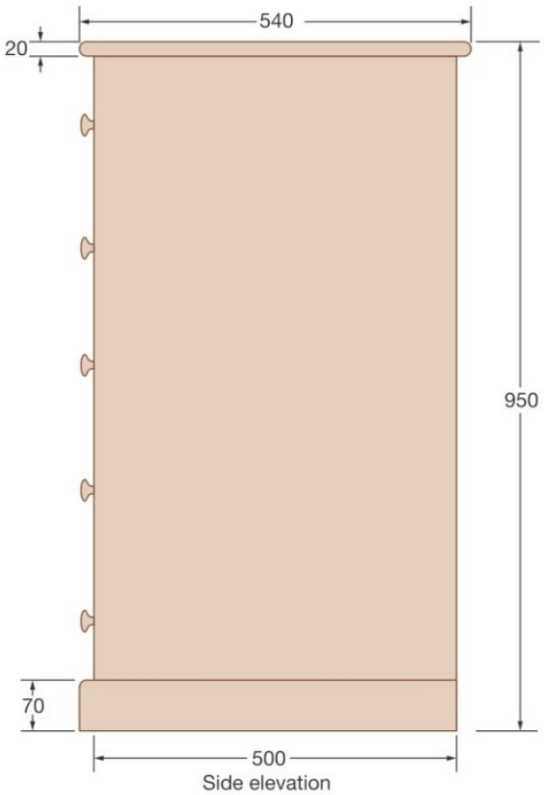
The tenons were all cut using a repetitive stop set up on the radial arm saw

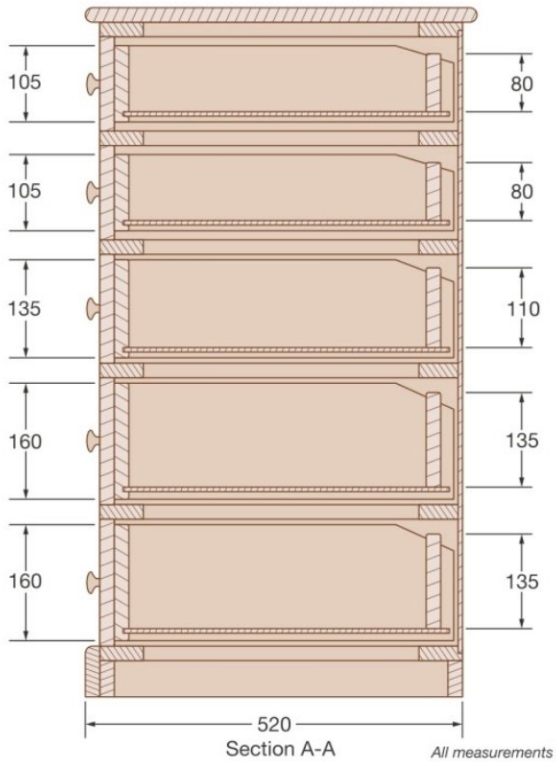


I created a haunch on each tenon by cutting down one third of the tenon width

**Fig 1**




*All measurements in millimetres*

### Assembling the main frames

My design called for a top and bottom frame linking the outer sides, with the divider being let into shallow housings in the cross braces – see **fig 2**. This divided up the carcass into two spaces, one 480mm wide for the cupboard and the other 960mm wide for the drawers. Four shorter frames span from the left-hand side panel to the divider and create spaces for the drawers.

Having cut and dimensioned the stock for the six frames, I prepared the mortises on the long rails on my hollow chisel mortise, **photo 3**. The chippings seemed to fill the holes, but a good blast of air from a fine-nozzled gun connected to my air line soon had them clear, **photo 4**.

I cut the corresponding tenons on the ends and braces with a repetitive stop set up on the radial arm saw, **photo 5**, as they were all the same size. With the waste removed from the cheeks, I created a haunch on each tenon by lifting the blade and cutting down a third of the tenon width, **photo 6**, before removing the final waste with a second cut on the bandsaw, **photo 7**.

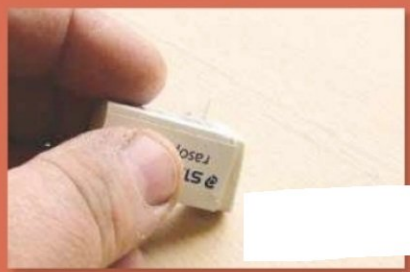
Each frame was then glued and cramped up, **photo 8**. I pinned all the joints using a headless pinner, **photo 9**, so I could immediately remove the cramps and carry on with the construction process.

### A base for the cupboard

The six frames would be left open as the top one would be covered by the dresser's top surface and the others would be concealed by the drawers. The only position in a frame that would need filling was the section of the bottom frame forming the base of the cupboard. I rebated this section of the frame from the underside so I could insert an mdf base panel from underneath once the carcass had been glued up.

## ERASING MARKS

I always use a white rubber to remove pencil marks from wood before I sand it. The reasoning behind this is that the graphite is lifted off the surface by the rubber even where it has got into the pores of the wood. Just sanding often leaves very faint traces of pencil lead which become evident again once the polish finish is applied. *Staedtler* rubbers seem to be the best make to use for this, and they last for ages!



**BEECH DRESSER CUTTING LIST**

All dimensions are in millimetres

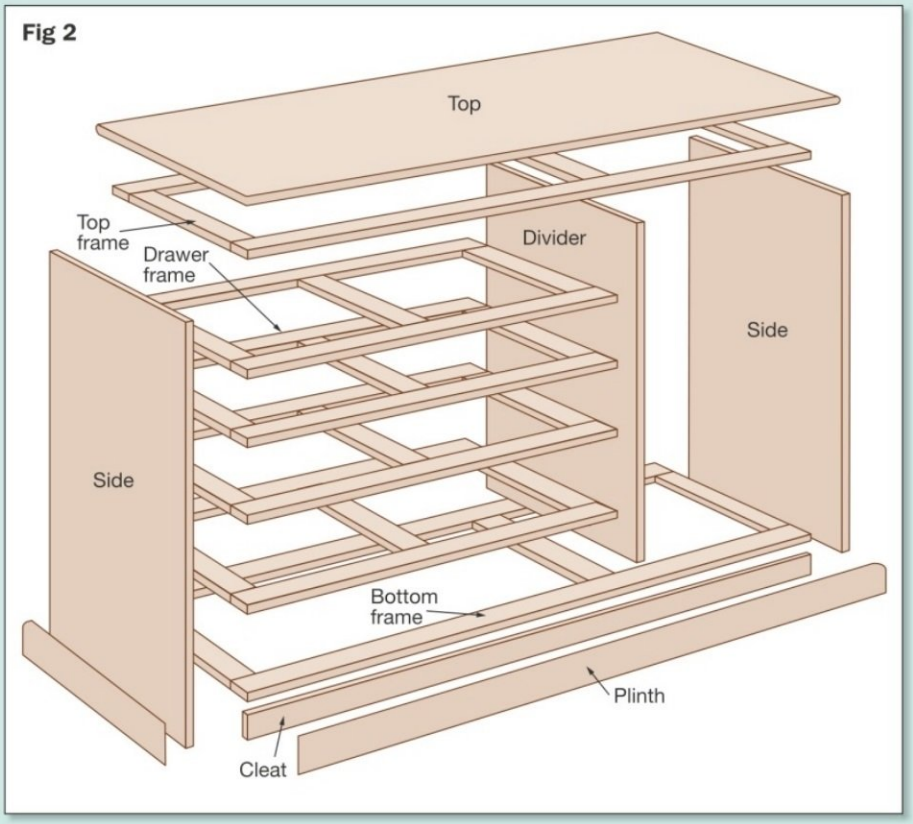
| Part | Qty | L | W | T |
|---|---|---|---|---|
| CARCASS | | | | |
| **Top** | 1 | 1540 | 540 | 20 |
| **Side** | 2 | 930 | 500 | 20 |
| **Divider** | 1 | 840 | 500 | 20 |
| **Top/bottom frame rail** | 4 | 1460 | 60 | 20 |
| **Top/bottom frame end** | 4 | 500 | 60 | 20 |
| **Top/bottom frame brace** | 4 | 500 | 60 | 20 |
| **Drawer frame rail** | 8 | 960 | 60 | 20 |
| **Drawer frame end** | 8 | 500 | 60 | 20 |
| **Drawer frame brace** | 4 | 500 | 60 | 20 |
| **Drawer frame divider** | 4 | 150 | 60 | 20 |
| **Front/rear base cleat** | 2 | 1460 | 50 | 20 |
| **Front plinth** | 1 | 1540 | 70 | 20 |
| **Side plinth** | 2 | 540 | 70 | 20 |
| **Cupboard back** (ply) | 1 | 860 | 500 | 6 |
| **Cupboard base** | 1 | 480 | 480 | 20 |
| **Cupboard shelves** | 3 | 478 | 475 | 20 |
| DOOR | | | | |
| **Door stile** | 2 | 840 | 60 | 20 |
| **Door top rail** | 1 | 440 | 50 | 20 |
| **Door bottom rail** | 1 | 440 | 60 | 20 |
| **Door muntin** | 1 | 790 | 40 | 20 |
| **Door panel** | 2 | 750 | 190 | 12 |
| DRAWERS | | | | |
| **Top drawer false front** | 4 | 470 | 130 | 20 |
| **Top drawer front** | 4 | 460 | 105 | 20 |
| **Top drawer side** | 8 | 468 | 105 | 20 |
| **Top drawer back** | 4 | 460 | 80 | 20 |
| **Top drawer base** (ply) | 4 | 460 | 475 | 6 |
| **Centre drawer false front** | 1 | 960 | 150 | 20 |
| **Centre drawer front** | 1 | 950 | 135 | 20 |
| **Centre drawer side** | 2 | 468 | 135 | 20 |
| **Centre drawer back** | 1 | 950 | 110 | 20 |
| **Centre drawer base** (ply) | 1 | 950 | 475 | 6 |
| **Bottom drawer false front** | 2 | 960 | 175 | 20 |
| **Bottom drawer front** | 2 | 950 | 160 | 20 |
| **Bottom drawer side** | 4 | 468 | 160 | 20 |
| **Bottom drawer back** | 2 | 950 | 135 | 20 |
| **Bottom drawer base** (ply) | 2 | 950 | 475 | 6 |

All dimensions include an allowance for jointing where relevant.


I removed the waste from the haunched tenons with a single bandsaw cut


Each of the six frames was then glued, assembled and cramped up square

**Fig 2**




I secured all the glued mortise-and-tenon joints using a headless pinner

To finish the frames, I ran a small chamfer all round their inside edges with my router

It was time to assemble and cramp up the frames and vertical panels

## Assembling the carcass

To finish the frames I fitted a bearing-guided chamfer cutter into my router and ran a chamfer cut round their inside edges, **photo 10**. I know these edges won't be seen once the carcass is finished and the drawers and door are in place, but I just didn't like the idea of leaving them square.

Lastly, I cut the housings in the top and bottom frame cross braces to accept the divider, and prepared all the biscuit slots to enable the frames to be jointed to the ends and the divider. The carcass was then glued and cramped up, **photo 11**, while the glue cured and the biscuits swelled.

## Making the door

With the carcass almost complete it was time to make the door. The stiles were mortised and the rails and muntins tenoned. I then grooved all the frame components on the router table, **photo 12**, so that the two floating panels could be fitted. I reduced the panel thickness down to 12mm before machining a rebate round its rear face, forming a tongue that would fit into the grooves I'd cut previously in the frame components. The panels were to remain flat, giving the clean contemporary appearance requested, but I rebated only one face so that if there was any future shrinkage in the beech panels an unsightly gap wouldn't appear on the door front.

Before gluing up the door assembly, I dry-assembled it without the panels, **photo 13**, as I wanted to round over the inner edges of the frame members where they met the panels. As I had already grooved the frame, I realised that the bearing on my roundover and ovolo cutters would drop into the groove, so I opted to use the rounding section of a traditional ogee cutter instead, **photo 14**; this did the job a treat.

I then glued up the door, removed the excess wood from the ends of the stiles and trimmed the door to fit its aperture in the carcass, **photo 15**.

## Adding the plinth

To complete the carcass I turned my attention to the plinth, which again was cut from the pre-thicknessed 20mm boards. Three 70mm wide pieces were cut, one for the front and two for the sides. These had a simple roundover cut applied to their upper edges on the router table, **photo 16**, before the corners were mitred.

To support the plinth – and to stiffen the bottom frame – I screwed a pair of 50mm wide cleats to the underside of the frame, flush to the front and back of the carcass.

The front section of the plinth was then

glued and screwed to the front cleat from behind, while the side sections were fixed to the bottoms of the carcass sides in the same way. The screw holes in the side panels were elongated slightly to allow for any subsequent movement of the plinth, with a small amount of glue applied to the mitres to prevent them from opening up.

### Finishing the carcass

All that was left to complete the carcass was fitting the two small vertical drawer frame dividers between the upper frames to create the openings for the four top drawers. These were simply screwed into place along with a couple of triangular reinforcing blocks to stop them from twisting, **photo 17**.

Lastly I routed a rebate round the back of the cupboard section of the carcass and cut the oak-faced plywood back panel to size. It would be screwed into place later once the carcass had been polished.

### Drawer details

With the carcass now complete, it was time to turn my attention to the seeven drawers. I prepared a pile of components, **photo 18**, ready for jointing to form the drawer boxes.

As previously mentioned, the drawers were to run on full-extension ball-race runners, and these required a clearance gap of 12.5mm between each drawer side and the carcass. Therefore each drawer box had to be 25mm narrower than the aperture into which it was to fit. To conceal the gaps, false drawer fronts would therefore be needed. The cutting list and **fig 1** gives the sizes of all the drawer components, and **fig 3** shows the drawer construction in plan and elevation.

I prepared no fewer than 35 separate drawer components ready for jointing

### Cutting the drawer joints

When I'm not hand-cutting dovetails I normally use my Woodrat, as I don't like the uniform spacing provided by standard dovetail jigs. However, as I was fitting commercial runners my clients were happy with the machine-cut appearance. I therefore opted to use my Bosch dovetail

I cut a groove on the inside edge of all the door frame members on the router table

...round over the inner edges of the panel openings using the rounding section of an ogee cutter

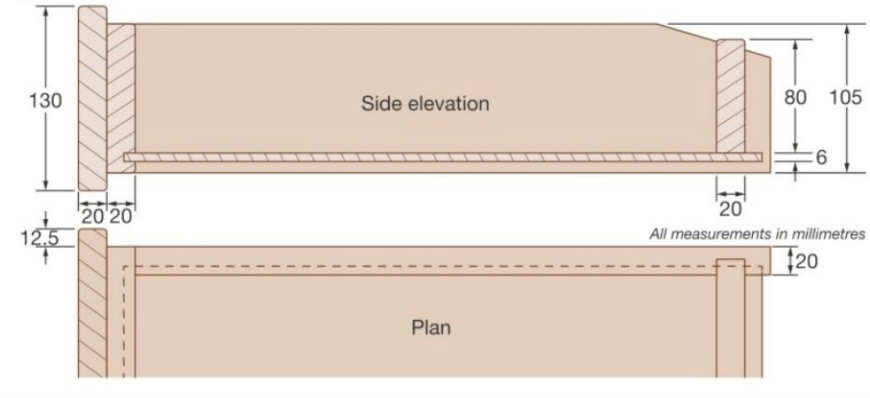
I rounded over the top edges of the timber for the front and side plinths on the router table

I dry-assembled the door frame without the panels because I wanted to...

After assembling the door I trimmed the stiles to length and cut the door to fit its opening

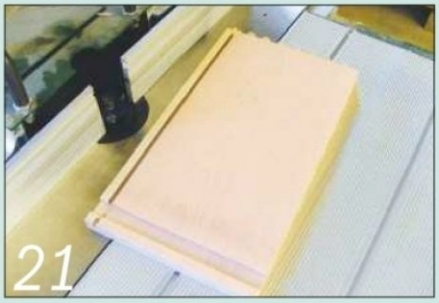
The last components to be fitted to the carcass were the two vertical drawer frame dividers

**Fig 3**



My Bosch dovetail jig made light work of cutting dovetails in the drawer sides

I used my radial arm saw to cut housings in the drawer sides for the backs...



...and a slotting cutter in my router table to make the grooves for the bases

With all the drawer components jointed, I rounded over the tops of the backs...

23

...before assembling the drawer boxes and sliding in their plywood bases

I softened all the square drawer edges with a roundover cutter in my laminate trimmer

The false fronts concealing the drawer runners were screwed on from inside the boxes

26 The runner mechanisms were attached to the drawer and carcase sides to finish the job

Finally, three shelves were fitted in the cupboard on shelf support pegs

jig, **photo 19**, which was far quicker to use as all the components were of the same 20mm thickness. I soon had all the dovetail joints cut.

To keep things simple I decided to cut a housing at the back of each drawer side into which the drawer back could be glued. As all the drawer sides were the same length, I was able to set up a pair of repetitive stops on the radial arm saw. As a result all the housings were quickly cut without the need to mark up each one separately, **photo 20**. Then the drawer sides and fronts were grooved on the router table, **photo 21**, ready to accept their plywood bottoms when the drawers were glued up.

### Assembling the drawers

With all the drawer components now completed, **photo 22**, I rounded over the tops of the drawer backs and sanded all the inner surfaces with the random orbit sander. Then the drawer boxes were glued up and their plywood bases fitted, **photo 23**. Once the glue was dry I sanded all the outside faces, and opted to soften all the sharp square edges with a small roundover cutter fitted in my laminate trimmer, **photo 24**.

To finish off this stage of the job, I made the false drawer fronts to fit the drawer openings and screwed them to the drawer fronts from the inside, **photo 25**, after rounding over their edges.

All that remained was to fit the drawer runners, **photo 26**, hang the door and add the shelves to the cupboard on adjustable shelf pegs, leaving the dresser complete and ready for polishing.

The whole suite of furniture, including the dresser, was finished with a few coats of Danish oil before a final waxing to give a natural sheen. It was time to get the delivery van out…

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BY PETER DUNSMORE

# A stitch in time

**This cabinet began life as an idea for a storage unit for a cross-stitcher or needleworker, and was designed in the same rustic style as the slate-topped table featured in the December 2011 issue of *The Woodworker***

The cabinet door pulls down and provides a suitable surface on which to place bits and pieces during use. The drawer provides ample space to house various threads and tools, and pulls out of the cabinet so it can be placed beside the user if needed. Below the drawer is an opening large enough to hold material and hoops of various sizes. The top has some slate let into the frame so drinks can be placed on it without fear of causing any damage to a wooden surface.

I used English oak as the timber for this project, although other timbers would be just as suitable.

## Making a start

The basic construction consists of two framed side panels, each of which houses two fielded panels divided by a central muntin. The rear panel is made in the same way as it is likely to be seen if the cabinet is located in the room rather than butted up against a wall. The drop-down door is hinged within an outer frame. The panels are secured to the four legs using a combination of mortise-and-tenon and rebate joints.

Begin by cutting the four legs to length. As can be seen in **photo 1**, I laminated two pieces together to make up the thickness required. When the adhesive has dried, plane these pieces square, cut them to length and put them aside.

## Machining the mortises

Begin by cutting the upper and lower rails for each side panel and cramp them together. Use a square to mark out the locations of the two end mortises and the centre mortise for the muntin, **photo 2**. Repeat this process for the rails on the other side panel and the rear panel. Mark the mortise a little shorter than the 25mm width of the timbers to allow for the shoulders to be cut on the tenons.

A mortising machine set up with a 20mm depth of cut makes light work of producing the many mortises required, **photo 3**. To ensure that each mortise is central, I usually set the chisel slightly off-centre to begin with and then turn the timber round and repeat the process.

## Rebating the tenons

The next job is to cut the tenons on the ends of the various timbers. A quick and accurate way of doing this is to use a large bearing-guided rebate cutter such as the Trend 46/390 x ½in. This particular cutter forms a 19mm rebate (hence the 20mm mortise depth), and should be used in a router table fitted with a sliding fence, **photo 4**. A piece of scrap wood fitted to the fence will prevent any breakout from the timbers.

By carefully adjusting the depth of cut, a good sliding fit into the mortises is easily achieved, and by turning the stiles on their edges the shoulders can be cut during the same operation. The result is an accurately made joint, **photo 5**.

## Cutting grooves

Now assemble the side and rear panels without adhesive to check the fit, and make any adjustments required. Mark the face side of each piece lightly with a soft pencil, **photo 6**. The fielded panels are let into grooves cut into the various frame components. To avoid confusion, run a

Laminate narrow boards if required to make up the width of the legs

Use a square to mark out the locations of all the mortises on the legs

A mortising machine makes light work of the many joints to be cut


pencil line along each face that needs to be cut while the assembly is still fitted together.

Take one of the components and align the tenon accurately with a bearing-guided slotter to make a groove 6mm wide, **photo 7**. Set the fence on the router table in line with the bearing and cut all the grooves. Remember that each component should be face up when cut so each groove will line up accurately, **photo 8**.

## Preparing the panels

The panels are made from oak planed to 12mm thickness. Try to use a board wide enough to be cut in two lengthways, allowing the grain to flow through the central muntin to good effect. The board with the most attractive figuring is best kept for the front doors where they will be seen; plainer timbers can be used for the rear panels.

A simple bearing-guided raised panel cutter such as the Trend 18/80x ½in is more aesthetically pleasing than a fussy cutter for this type of unit. Whatever cutter you use, remember to select a slow speed on the router. The peripheral speed of the cutter is much faster on a large-diameter version, and this quickly scorches the wood unless the router speed is reduced. Taking two or three passes will also produce a much cleaner finish to the bevel than one deep cut, **photo 9**.

When cutting the panels to size, remember to allow an extra 10mm in both length and width over the panel openings. This allows 5mm to fit into the grooves all round, plus a little space for the timber to expand if it decides to do so in the future. Keep checking and adjusting the depth of cut on the panel until a sliding fit into the groove is obtained.

## Adding decoration

Each rail has a stopped chamfer along its length to add a little detail to the cabinet. Assemble the frame face down and make a mark 25mm away from the stiles and muntins on the inside face. As the timbers are 25mm in width, use an offcut as a gauge, **photo 10**.

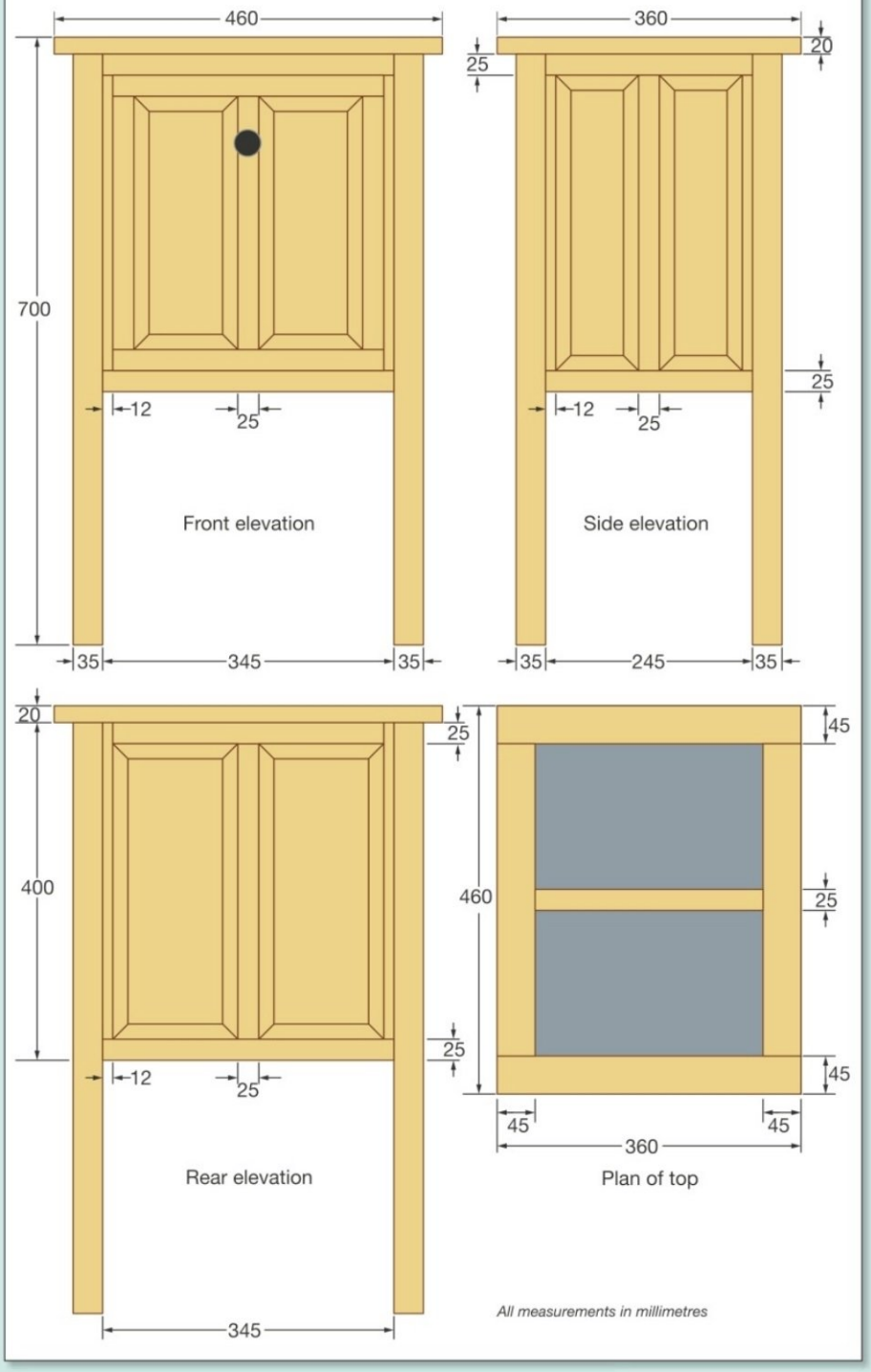
Use a bearing-guided chamfer cutter such

Use the sliding mitre fence on the router table to cut all the tenons

Precision cutting should result in a well-fitting mortise and tenon

Make a trial assembly of the panel frames and mark each face side

Fig 1




Align the cutter with the tenon and machine the 6mm wide grooves

Make sure you cut the grooves on the correct face of each component

Remember to reduce the speed of the router for a cutter of this diameter

10

Use a 25mm wide offcut to mark the positions of the stopped chamfers

as the Trend 46/37 in a router table to cut the chamfers. Position the timber across the cutter and stop it when the centre of the cutter lines up with the pencil mark. Depending on the router table used, it's useful to make a small pencil mark on the back of the fence as a guide as to where to stop the timber, **photo 11**.

## Intermediate finish

When all the chamfers have been cut, remove any pencil marks and sand the timber to a smooth finish. It's difficult to apply a finish to a cabinet like this after construction because of the many crevices and corners; it's easier to do the job while there is easier access.

On English oak it's hard to beat a finish of two coats of Danish oil, brushed on and allowed to soak in for a few minutes before the excess is wiped off. It brings out the grain and leaves a waterproof matt finish which can be waxed to a shine if desired. Take care to avoid getting any finish onto the tenons or in the mortises, **photo 12**.

## Assembling the panels

All the components can now be glued together to make the side panels, the rear panel, the front door and the four pieces that make up the outer door frame. Apply adhesive to the various joints, use cramps to pull the frames together and set them aside to dry, **photo 13**.

Use the same slotter as for the raised panels to cut a groove on the inside faces of the four legs to match the length of the four panels. Then cut a mortise in the

groove to a depth of 20mm, **photo 14**, to accept the top and bottom rails on the side and rear panels. Cut grooves on the inside faces only for the door frame.

Use the same bearing-guided cutter that formed the tenons to cut a rebate and form a tongue along the sides of the side and rear panels, **photo 15**. Adjust the depth of cut until a sliding fit into the groove is obtained. Obviously the 20mm tongue won't fit into the 6mm groove, so the excess must be removed using a bandsaw, **photo 16**.

The front door frame is made in a similar way, but there are no tenons at the top and bottom. Instead just saw away excess timber to leave a 6mm tongue along the length of the frame to fit into the grooves in the legs. Check that everything goes together satisfactorily; then glue the sides to their respective legs. Next, glue the sides to the front and rear pieces and allow them to dry.

The cabinet base is a piece of 9mm mdf, cut square and notched in the corners to fit round the internal faces of the legs. It rests on 10mm square offcut strips, glued to the inside faces of the lower rails.

## Making the top

The top is joined together using mortise and tenon joints cut in the same way as for the side panels, **photo 17**. A piece of 9mm mdf is let into a rebate cut on the lower inside edge of the top frame. This rebate is easily cut with a bearing-guided rebate cutter, with the router used freehand and the frame cramped to the workbench. To prevent the router tipping off-balance as it cuts round the frame, place a 20mm thick offcut inside the frame, **photo 18**. Glue the mdf in place, then stick the central divider in position on it. When this has dried, apply a couple of coats of Danish oil to the oak.

## Making the drawer

The drawer features through dovetails at both the front and back of the box, made using a dovetail jig, **photo 19**. Cut a slot along the inside edges of each side to accept the 6mm mdf drawer base. Then assemble the drawer box and line the base with felt.

The false front of the drawer is a piece of figured oak cut to the overall width of the drawer front and glued and clamped in place, **photo 20**. Note that the drawer front is 15mm taller than the drawer box to act as a drawer stop and to provide a finger hold so you can pull the drawer out.

## Fitting the drawer

The drawer sits on runners that are glued onto strips pinned to the inside faces of the legs, **photo 21**. Note that each runner is set

### EMBROIDERY BOX CUTTING LIST

All dimensions are in millimetres

| Part | Qty | L | W | T |
|---|---|---|---|---|
| **Leg** | 4 | 700 | 35 | 35 |
| **Front/rear rail** | 4 | 383 | 25 | 20 |
| **Side rail** | 4 | 283 | 25 | 20 |
| **Panel stile** | 8 | 388 | 25 | 20 |
| **Panel muntin** | 3 | 388 | 25 | 20 |
| **Side panel** | 4 | 370 | 110 | 12 |
| **Rear panel** | 2 | 370 | 160 | 12 |
| **Door rail** | 2 | 320 | 25 | 20 |
| **Door stile/muntin** | 3 | 340 | 25 | 20 |
| **Door panel** | 2 | 345 | 135 | 12 |
| **Top frame side** | 2 | 410 | 45 | 20 |
| **Top frame end** | 2 | 360 | 45 | 20 |
| **Top frame divider** | 1 | 370 | 25 | 11 |
| **Base/top** (mdf) | 2 | 400 | 300 | 9 |
| **Drawer front/back** | 2 | 320 | 70 | 9 |
| **Drawer side** | 2 | 250 | 70 | 9 |
| **Drawer base** (mdf) | 1 | 310 | 240 | 6 |
| **Drawer false front** | 1 | 320 | 85 | 9 |
| **Drawer runner** | 4 | 270 | 40 | 10 |
| **Drawer guide** | 2 | 270 | 15 | 10 |
| **Drawer kicker** | 1 | 270 | 25 | 20 |

Take care when cutting the chamfers to stop them at the pencil marks

Apply a finish to all the components before gluing the parts together

Assemble and cramp up each panel, and check that it's square

Cut 20mm deep mortises and grooves on the inside faces of the legs

Cut a rebate to form a tongue along the edge of the side and rear panels

Saw away the excess between the tenons to leave a 6mm tongue


Haunched mortises and tenons make strong joints on the top frame


Use scrap wood to support the router as you cut the rebates in the frame


A dovetail jig makes quick work of jointing the four drawer sides


The oversize false drawer front is glued and clamped to the drawer box


The drawer runner is clamped to support strips that are simply pinned in place


The drawer guides are slim strips glued to the tops of the drawer runners


Attach the top with screws driven up at an angle through the side rails


Hang the door in its frame with a pair of suitable surface-mounted hinges


Use quick-setting adhesive to fix the two slate panels to the mdf base board


Fill the narrow gaps between the slate and the frame with flexible grey grout

back from the front of the strip by the thickness of the drawer front. This provides the drawer stop. When this has dried, slide the drawer in place and use a sharp pencil to mark the location of the drawer guides on the runners. These guides are then glued in place, **photo 22**. To prevent the drawer from tipping down as it is pulled out, glue a kicker to the cabinet so it's secured in place over one of the drawer sides.

### Finishing touches

The floor of the cabinet is covered in a piece of felt to match that on the inside of the drawer. The top is fixed in place by screwing up at an angle through the top rails and into the underside of the top itself, **photo 23**.

Hang the door with suitable hinges along the lower edge, **photo 24**, attach a matching knob and fit some brass eyes and ribbon so the door sits open in the horizontal position.


The brass locking pin slides in or out to lock or release the door

The last assembly job is to glue the slate in place. A small water-cooled tile cutter makes light work of cutting the pieces to size. Cut each one about 10mm shorter overall in length and width and use a suitable adhesive such as No More Nails or silicone mastic to secure the slate in place, **photo 25**. Then fill the surrounding gap with flexible grey grout, **photo 26**.

A lock isn't practical for this piece, and ball catches seem a bit tacky. The solution I came up with was a locking pin – a length of 4mm brass rod (available from good model shops) glued into the end of a knob matching the door knob. A suitable hole for the pin is then drilled through the cabinet leg and into the side of the door, and the pin is pushed in to hold the door closed, **photo 27**.

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CCS-2

| MODEL | MOTOR | MAX CUT 90°/45° | BLADE BORE DIA. | EX VAT | INC VAT |
|---|---|---|---|---|---|
| FURY | 1200w | 54/35mm | 185/20 | £54.99 | £65.99 |
| Clarke CCS-2 | 1300w | 60/45mm | 185/20 | £64.99 | £77.99 |
| Makita 5704RK | 1200w | 66/46mm | 190/30 | £99.98 | £119.98 |
| Rage | 1050w | 54/35mm | 185/20 | £89.98 | £107.98 |

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| MODEL | SHEET SIZE | MOTOR | EX VAT | INC VAT |
|---|---|---|---|---|
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|---|---|---|---|---|
| Clarke CEP1 | 650w | 2mm | £24.99 | £29.99 |
| Clarke CON1020 | 1020w | 3mm | £36.99 | £44.39 |
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* DIY # PRO

| MODEL | MOTOR (W) | PLUNGE (mm) | EX VAT | INC VAT |
|---|---|---|---|---|
| CR1C* | 1200 | 0-50 | £39.98 | £47.98 |
| Ryobi ERT1400RV# | 1400 | 0-55 | £87.99 | £105.59 |
| Trend T5# ‡ | 1000 | 0-50 | £159.98 | £191.98 |
| DeWalt DW622K-GB# † | 1400 | 0-55 | £219.98 | £263.98 |

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PRICE CUTS! * was £299.98 inc.VAT # was £514.80 inc.VAT SAVE £72!

| MODEL | MOTOR (HP) | NO. TURNING SPEEDS | CAP OVER BED /OUTBOUND | EX VAT | INC VAT |
|---|---|---|---|---|---|
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| Clarke CON750# | 750w | 80/10mm | £29.98 | £35.98 |
| B & D KS600* | 450w | 60/5mm | £33.99 | £40.79 |
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|---|---|---|---|---|
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CWL1000

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| CWL1000 | 1016 | 350mm | 4 | £106.99 | £128.39 |
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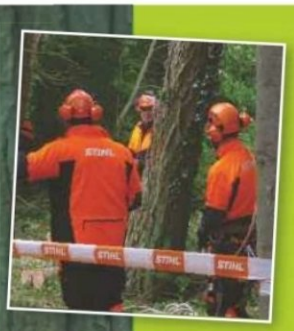

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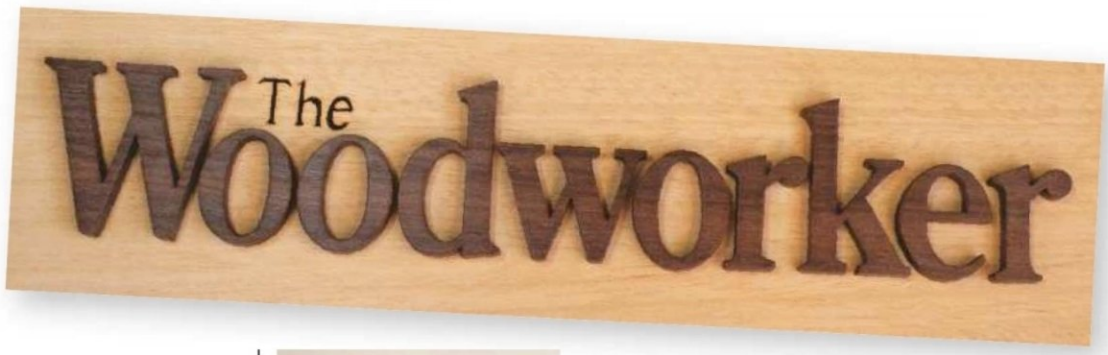



BY JULIE & FRED BYRNE

# Sign of the times


1

Cut your wood of choice to size and then prepare two copies of the patterns

## TOOLS & MATERIALS

- Scrollsaw with No 2 and No 5 blades
- Pillar drill with 1.5 and 3mm twist drill bits
- Two copies of the paper pattern
- Wood of your choice (see text)
- Fine (180 or 240 grit) abrasive paper
- Extra-wide masking tape
- Glue stick or aerosol adhesive
- Pencil, ruler
- Dark brown felt-tip pen
- Wood glue
- Cramps or weights
- Old artist's paint brush
- Wood finish of your choice

**Carving lettering by hand is hard – and skilled – work. But arm yourself with a scrollsaw and a computer, and you can quickly create professional-quality lettering with just a little practice**

Everywhere you look there are signs. Some feature big chunky wooden letters that can be freestanding, while others have more ornate characters that are better suited to being hung or framed. In the old days they'd have been cut by hand, but nowadays they've probably had some machine help.

The scrollsaw is one of the most versatile tools in the workshop, and is perfect for cutting out most styles of lettering. If you own a computer, you have access to a huge range of typefaces and the ability to choose the size you want, and if you wish to make something bigger than your specimen there are programs such as Rapid Resizer (see the panel on page 31) available on the internet that make it easy to do your own enlargements.

### Carve our name with pride

The *Woodworker* sign featured here gives you a little introduction into how easy it is to cut out letters, whether they're freestanding or attached to a backing.

The main concerns when cutting out letters are getting the spacing even throughout, and making sure that the straight lines are actually straight. You can get away with a curve that isn't quite right, but wavy lines will stick out like a sore thumb. Letting the blade do the work is the key to cutting good-looking letters

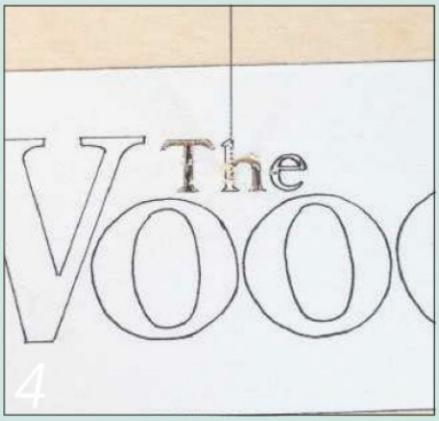
### Triple decker

The *Woodworker* sign consists of three layers, each measuring about 280 x 75mm. The backing used here is a light-coloured wood 6mm thick. The middle (where the letters for the word 'The' are cut out) is also light-coloured, but is just 2mm thick. The dark-coloured top layer forming the larger letters is 6mm thick.

Unless you have the means to thickness wood to these dimensions, it's best to buy prepared stock from hobby and craft

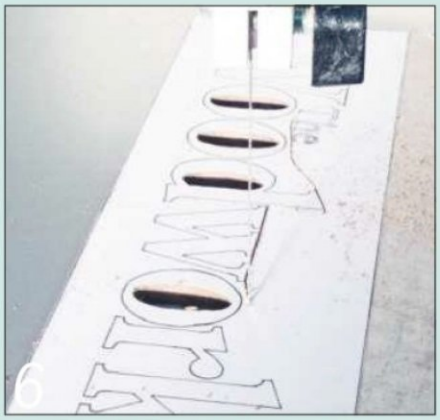

Stick strips of extra-wide masking tape onto the wood surfaces so you can attach the patterns

Use a 1.5mm drill bit to drill the blade entry holes in the middle layer first



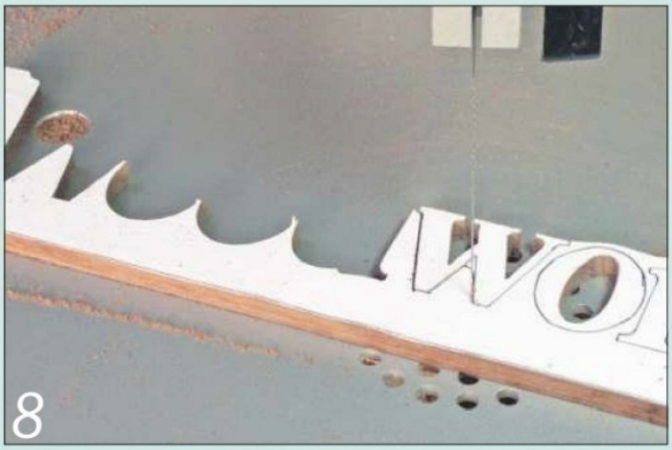

Thread the No 2 blade through the entry hole and cut out the three small letters


Drill a 3mm hole in the top layer, change to a No 5 blade and begin cutting out the large letters



Cut close to the top of the lettering first to remove most of the waste material

Then remove the waste within each letter before cutting round the outside



Keep the bottom waste section intact for use as a spacing template later


Remove the pattern remains and sand off any burr from the underside

suppliers. For example, Hobby's sell imperial-sized 18 x 3in (457 x 76mm) sheets of light-coloured spruce and darker mahogany, providing just enough wood to make two signs. Spruce sheets 2.4 and 6.3mm thick are priced at £1.35 and £2.36 respectively, while a sheet of 6.3mm thick mahogany costs £2.82. See the panel on page 31 for contact details.

## Getting started

First make two paper copies of the pattern. Remember that you can use a photocopier to enlarge or reduce your chosen subject, which in the case of the *Woodworker* sign is on the front cover of the magazine!

Cut your wood panels to size and prepare their surfaces by sanding them with 180 to 240 grit abrasive paper, **photo 1**.

Place strips of extra-wide masking tape onto the wood surfaces, **photo 2**, and attach the patterns to the tape with paper or aerosol adhesive. Peeling masking tape off the wood when you've finished the cutting is a lot easier than removing a paper pattern that's been glued directly to the wood.

## Preparing to saw

Use a tiny 1.5mm drill bit, **photo 3**, to drill the pilot (blade entry) holes within the outline of each of the small letters forming the word 'The' on the middle layer of wood. These enable you to thread the blade through the workpiece before attaching it to the blade holders and making the cut-out. Change to a 3mm bit to drill the pilot holes within the larger letters on the top layer.

Set up the scrollsaw with a small No 2 blade to begin with. Thread the blade through a pilot hole in the middle layer and then carefully cut out and remove the small letters, **photo 4**. You may wish to disregard the centre of the letter e. Alternatively, do as we have and retain it, so it can be glued in position at the end of the job.

### Cutting the larger letters

Change to the slightly larger No 5 blade to cut out the larger letters. Begin by cutting out the sections contained within the letters first, **photo 5**. Then cut along – or close to – the top of the lettering to remove most of the waste material there, **photo 6**.

Cut out and remove the waste within the letter W, **photo 7**, before cutting around the whole letter. As you remove each letter, **photo 8**, try to keep the whole of the bottom section intact as much as possible. This can then be used as the perfect template when it comes to gluing the letters in position later, as it guarantees that they'll all have the correct spacing.

### Cleaning up the letters

Once all the letters have been cut out, peel off the masking tape carrying the remains of the paper patterns, **photo 9**. Then use very fine 320-grit abrasive paper to remove any burr from the underside of each letter, and lightly round over their edges to give them a more finished look.

Place the middle section over the base layer and use a sharp pencil to mark the position of the word 'The' section onto it, **photo 10**. Then use either a dark brown felt-tip pen, **photo 11**, or acrylic paint to colour in your pencil markings. This will make the word stand out more when the sign is assembled.

### Assembling the layers

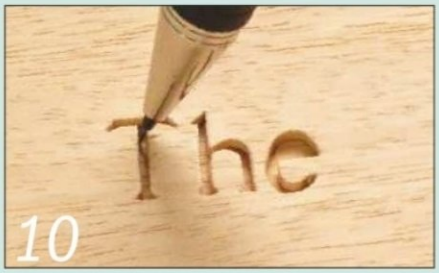
Next, apply an even coat of glue to the underside of the middle section, **photo 12**, align it on top of the base layer and secure it with clamps – or use weights, **photo 13**. Then leave the assembly to dry. If you've used wood that is slightly larger than you need, mark it out so you can trim off the top to the required size, **photo 14**.

Now place the waste template you saved earlier onto the middle layer and secure it in position with masking tape, **photo 15**. Apply glue sparingly to the underside of each letter in turn, **photo 16**, and then position it correctly on the template. When all the letters are in place, **photo 17**, set it aside to dry.

Finally, apply a finish of your choice, **photo 18**. Two coats of a clear liquid polish, buffed between coats, will give the sign a pleasing sheen. Attach a hanging ring or picture wire if the sign is to hang on the wall.

**FURTHER INFORMATION**

- Hobby's
- 020 8761 4244
- www.hobby.uk.com
- Rapid Resizer
- http:online.rapidresizer.com




10 Use a pencil to mark the outline of the word 'The' onto the backing layer


11 Use a dark brown felt-tip pen or acrylic paint to colour in the letter


Apply an even coat of PVA glue to the underside of the middle section


Align it on top of the base layer and secure it with clamps or weights


14

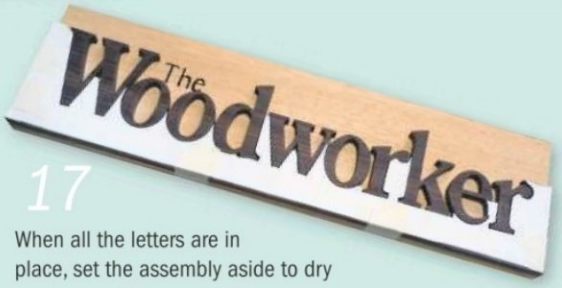
When the glue is dry, mark and trim off the top to the required height

15

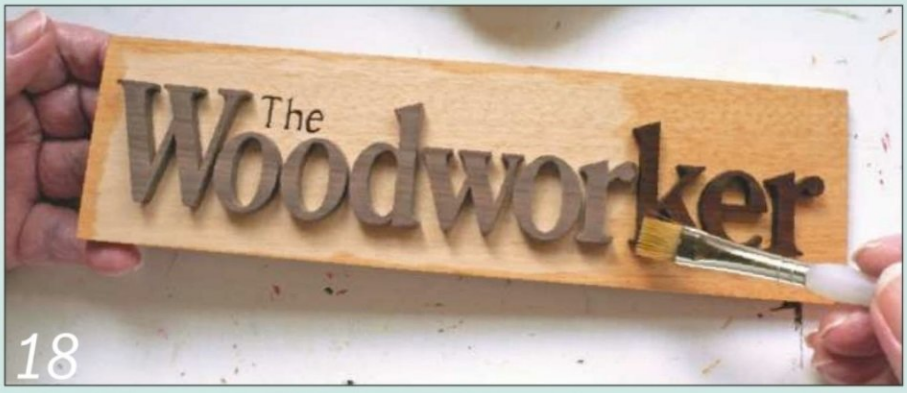
Position the waste template on the middle layer and stick it in place with masking tape



Brush glue onto each letter in turn and place it on the template




When all the letters are in place, set the assembly aside to dry




Apply two coats of a clear liquid polish, buffing it up between coats

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BY ANDY STANDING

# F is for...

**The aim of this series is to provide you with snippets of interesting and, I hope, useful information concerning all aspects of woodworking. It will explain some of the mysteries for those new to the craft, and will I hope inspire and entertain everyone else**

The idea of pottering through the alphabet and looking at woodworking topics that begin with each letter in turn generates some unusual entries. But it's an interesting exercise in lateral thinking, because in a curious way one topic seems to lead on to another, even if there's no obvious link between them as you first consider them. Here's my latest batch; please read on, and see what useful nuggets you can pick up from my trawl through subjects beginning with the letter F.

## FRENCH POLISH

This is the classic wood finish for the highest quality furniture, musical instruments and objets d'art. It's made by dissolving shellac, the resinous secretion of the lac insect, in alcohol. It's applied to the surface being polished using a rubber – a small cloth pad containing a piece of wadding soaked in the polish.

It takes time and a considerable amount of skill to master the polishing technique, but the results can be spectacular, producing a flawless finish that can't really be matched by any other method. It's only really suitable for decorative items, as it's easily damaged by heat, moisture and alcohol, and is also easily scratched.

## FINGER JOINT

The finger joint or comb joint is a simple mechanical joint often used on box corners, or to join two pieces of timber end-to-end where a simple butt joint wouldn't be strong enough. The joint can be cut using a router (with the aid of a guide jig), with a bandsaw and chisel, or by hand. Specialist stacked cutters are available for use on spindle moulders and router tables to cut the joints in one pass of the workpiece.

## FIELDING

No, we're not talking cricket here! A fielded panel is a panel with a central square or rectangular flat area that is surrounded by a moulding. The moulding is often bevelled so that the panel will more easily fit into a groove cut into the surrounding frame. On a raised and fielded panel the central area is raised up so it's flush with the surrounding frame. There are many designs of moulding that can be used, and these used to be cut laboriously using hand moulding planes, though today spindle moulders or routers are used instead for speed and accuracy.

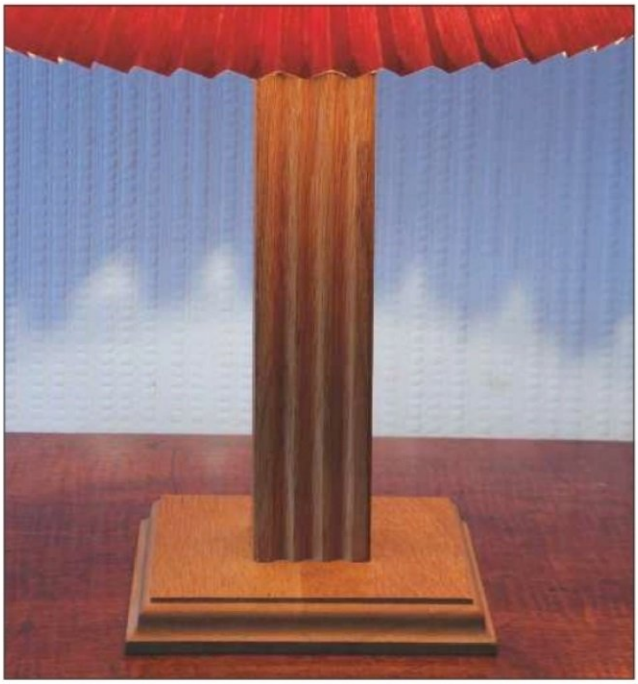
## FENCE

A fence can be several things – the barrier surrounding your property, the dodgy bloke you buy things from in the pub, or the safety guide fitted to your woodworking machinery. Some kind of fence is fitted to all cutting machines, both to protect the operator and to guide the workpiece past the blade or cutter at the correct angle.

A table saw and a bandsaw will both have two fences – one for ripping and the other for crosscutting. A planer has one fence to support the workpiece as it runs over the cutterblock. A router table or spindle moulder will usually have a two-piece fence which acts both as a guard around the cutter and a guide to steer the workpiece past it. The fence can often be tilted to form angled (bevelled) cuts.

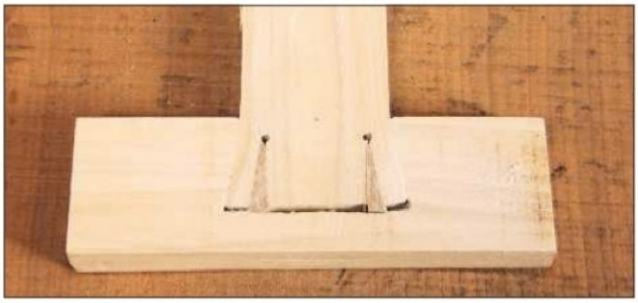
## FLUTE

Mention the word flute, and most people think of a musical instrument of the woodwind family. However, it's also a longitudinal round-bottomed groove used as a type of decoration since classical times on architectural stone columns and, much later, on furniture. Fluting, as it is also called, is often found on chair or table legs, on lamp or coat stands and also on fitted furniture, especially bookcases and cabinets, where it forms features such as fluted pilasters.



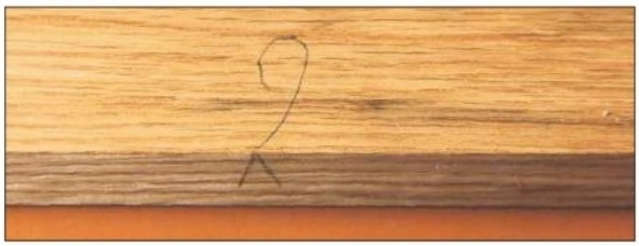
## FOX WEDGING

This is not some clever trick used by the hunting fraternity to secure their prey. It is actually a rather ingenious method of fixing a tenon permanently in its mortise. This technique is used only on stub tenons. The joint is cut normally and then the sides of the mortise are flared out at the base. A pair of slots is cut into the end of the tenon and small wedges are inserted into the slots. As the tenon is pushed into the mortise, the wedges force their way into the slots and splay the sides of the tenon out into the flared mortise, so locking it in place. The wedges are of course invisible once the joint is assembled.



## FIGURE

Figure refers to the appearance of timber. It is affected by the way the timber is cut and, of course, by the species. Certain timbers are highly figured and much prized for their decorative qualities, such as some mahoganies, walnut and rosewood. Highly figured timbers are often used in veneer form for two reasons. Firstly, this uses far less timber, so is more economical and sustainable. Secondly, veneering allows the maker to exploit the natural figure of the wood with designs and patterns that would not be possible to create with solid timber.



## FACE SIDE AND EDGE

When preparing components from sawn boards, after cross-cutting and ripping the timber to size, the wood must be planed to smooth and true up the surface. You start by choosing the better wide surface of the workpiece, and once this has been trued it becomes the face side and should be marked as such. The next job is to prepare the better narrow edge. This is planed to be at a perfect right angle to the face side, and is again marked for identification. This then becomes the reference edge of the timber, from which all future measurements are taken.

## FUMING

Fuming is a method of darkening timber by exposing it to ammonia vapour. It is primarily used on oak, which has the high tannin content necessary to make the process work. It's an extremely easy process requiring little specialist equipment. All you need to do is put your timber in a box, or in a tent made out of polythene sheeting, and place a small bowl of liquid ammonia in it. Depending on the strength of the ammonia and the degree of darkening that you're aiming for, the process can take anything between a couple of hours or a whole day. The process actually penetrates the timber and changes the chemistry of its pigments rather than just coating it, so any type of finish can be applied over it.

Take care when handling liquid ammonia not to splash it onto your skin or into your eyes. Dispose if it afterwards by diluting it with lots of water and pouring it onto the garden; it's an excellent fertiliser.

## FOLDING WORKBENCH

Ron Hickman may not be a very familiar name to you, but you will certainly know his invention. The Lotus car designer invented the Workmate folding bench which Black & Decker started producing back in 1973. This revolutionised the DIY and woodworking world. Suddenly you were now able to have a substantial and robust portable bench that could be set up anywhere in moments.

With its integrated vice jaws and bench dogs it was enormously versatile, and its dual-level height adjustment, which was introduced later, further added to its uses. Of course it's still in production today, and although other manufacturers produce their own designs, the Workmate itself still reigns supreme.

## FORSTNER BIT

When boring holes in timber, you have various choices of bit. The most common choice is the twist drill, with its spiral groove to remove the waste. For larger holes you could use a flat (spade) bit or an auger bit, but for a perfect finish and a flat-bottomed hole the only choice is the Forstner bit.

This is more of a cylindrical cutter than a drill bit. It has a pair of cutting edges around the circumference and another pair of cutters across the base.

The advantage of Forstner bits is that they produce very precise, high-quality holes. They can also bore at any angle and are not pushed off-line by knots or other defects. They can even bore a series of overlapping holes.

By the way, the bit was invented by an American gunsmith called Benjamin Forstner, and was patented in 1874. It made him a very rich man!

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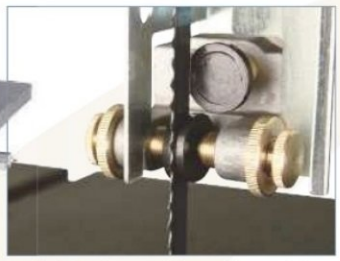

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BY ANDY KING

# Universal machines

**Many woodworkers consider universal machines – also known as combination machines or combis – to be the solution to a lot of problems. They cost less than a shop full of separates and take up less space. So are they the ideal choice?**

Let's start with the space issue. A combination machine will need good working space all around it, so it may not be ideal in a long narrow workshop as some of them can be real monsters. Some separates such as planers can often be pushed back to a wall or sited in areas to allow good movement around the workshop. By contrast, a universal machine tends to be quite square in its profile. You not only need access to all four sides; you also have to remember that what goes in must come out, so cutting and machining, whether of sheet stock or natural timber, needs equal infeed and outfeed space.

That means you need an area pretty central to your workspace, even though the main working direction is in one plane. In other words, while you'll need to stand in various positions to feed and work the various stages, you generally need to work in a 'North/South' style operation.


Space issues may have you moving the machine for the best position in the shop

## Access and weight

You may need to consider the access to the workshop as well. It's no good buying a huge machine that will do everything you want but which won't go through the door!

Luckily many machines are designed to split into smaller components for transport, but it's certainly worth checking prior to purchase if you have only a single door access… or even limited access to a workshop that has double doors.

Don't forget to consider the weight issue as well. A set of independent machines spaced around a shop may load well enough on some suspended floors, but the dead weight of a combination machine positioned centrally may well be too much for it. Of course, concrete floors eliminate this problem.

Another consideration is mobility. You may need a wheel kit if your space is on the tight side. Some machines have a jockey wheel built in, **photo 1**, to allow you to spin it into the best orientation.

## All or nothing

If you've your mind made up that a combination will fit the bill, don't forget that


Budget machines have quirky adjustments such as a lift-up saw blade

You may have to lift the whole saw-head assembly to make bevel cuts

Having to bolt on brackets for fences can be a nuisance when re-setting

buying individual or separate machines leaves you in full control of what you purchase. So if you want a higher spec table saw, or a planer that is capable of a certain capacity, you can buy accordingly.

On a combination machine you may find that while one criterion may be met within your budget, another one may be lacking. Moving up the scale to a better specified machine to gain that missing parameter can take the costs beyond your limits, so you may have to compromise if you have a set budget.

## Starting point

There are machines for different budgets as well as capacities. Build quality will vary, as will user-friendliness. The first machine I looked at was the Maxi26, and it was pretty rudimentary in that respect.

The capacity spec was good, but the tables were pressed steel and, with a single motor, you had to get inside the machine and swap the belt every time you wanted to change from one function to another. It also had a quirky blade adjustment for the saw which required a lever to alter the height. This was very fast for basic adjustment, **photo 2**, but a finer setting was a difficult thing to achieve.

## Buying second-hand

If the second-hand market is where your budget takes you (and with brand new machines even at the low end starting in the thousands, it could well be your only viable option), be prepared for some anomalies if you come across the original version of this machine.

Quirkiness is often a feature on some of the lower-end models. The CEMA model of a few years back, sold by Charnwood as the M316, was a goiod example. It had extruded aluminium tables throughout, and a very odd tilt for the blade which meant you had to lift the whole saw head assembly to make any bevel cuts. It was heavy, and needed two hands to lift and lock it, **photo 3**, but it was a machine with good capacity. Just be aware of its quirks, should you see one second-hand and be tempted.

## Changing modes

Even the machines with three or more motors that allow you to go from mode to mode without swaps still need a good planning regime, as you need to remove or place things on the top of the table to do specific tasks, and they will interfere with the other modes should you need to go back to them for whatever reason.

Some models allow a reasonably quick setup to remove fences and hoods, but others may well need brackets bolted in place for specific fences to be fitted, **photo 4**.

Most models usually have one main panel for altering modes, **photo 5**, but better ones should also have at least an NVR switch to cut the power when working from the opposite side of the main controls, and preferably a start button as well.

## Shared components

Budget models often share common components, so for example you'll often find the saw fence can double up as the planer fence. So if you find you've forgotten to saw a particular component from your cutting list, or subsequent planing exposes a flaw that renders the piece unusable, you have to go back to square one and strip the planer down to re-saw that rogue piece.

## Machining options

Combination machines are usually promoted as having five or six functions. These are based around just three core machines in the workshop, the table saw (**photo 6**), the planer thicknesser (**photo 7**) and the spindle moulder (**photo 8**).

Central switching is usually standard for isolating each motor function

Taking the planer thicknesser as providing two of those functions, that leaves the spindle moulder as the third and the table saw the fourth. The ripping function of the saw is backed up with a crosscut carriage, giving the fifth function.

It's that crosscut function that will increase the required working area dramatically on some models, as you can go from a simple on-board carriage with limited capacities, **photo 9**, to a full-on outrigger to convert full-sized sheet stock, **photo 10**.

### The sixth function

The mortising function is one that's rarely promoted in the UK, although it's favoured in Europe. It utilises a tapped hole in the planer block to take a chuck for spiral cutters which, when coupled with the appropriate adjustable table, gives a horizontal mortiser, **photo 11**.

This is actually very adaptable in what it can do, especially for furniture work where shaped components are a commonplace requirement. However, it's not only for mortising. With a range of stops built into the carriage, dowelling work and specialist fittings such as 'Soss' style hinges can be drilled out.

I've used them a couple of times, and for lightweight stuff they do well, but cutting narrow, deep mortises was a little daunting as the bit did seem to whip and chatter. A lighter touch taking smaller bites is certainly the order of the day, especially with the narrow cutters, **photo 12**.

### Standard configuration

The layout of combination machines usually follows a familiar format, with the table saw located at the front left of the machine and the spindle moulder sitting directly behind it. Both machines are operated from this front left position.

This can be favourable on some models if there's a big enough area to allow the saw fence and planer fence to stay onboard for general ripping and face and edge work without any alterations.

However, use the spindle moulder and you'll normally need to remove the saw fence, and for ring-fence work, any other obstructions on the top to allow the work to move around unobstructed.

The Hammer brand had a neat touch, **photo 13**, where you could flip the reducer rings on the spindle to give a raised lip to run a template round for ring-fence type moulding work.

This spindle-behind-saw configuration works well, as the spindle moulder can also have a sliding carriage, allowing cross-grain


You should still be able to convert most stock economically on a combi

7 A solid fence (right) is a must for squaring up your stock accurately


The spindle function allows you to enhance your working practices

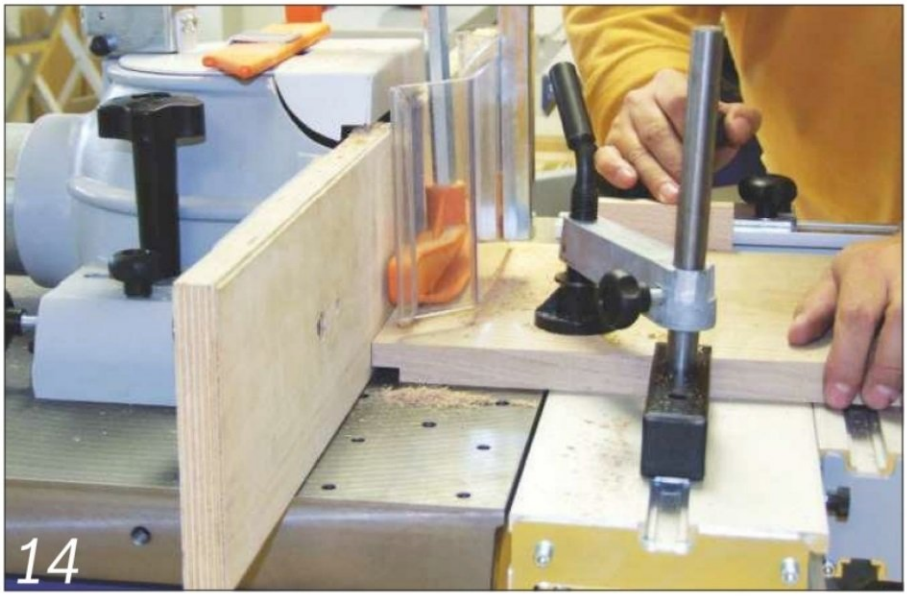

The sliding carriage on the table saw can be a small on-board type...


...or a bigger outrigger, ideal for sheet conversion as well as trimming


A horizontal mortising table is normally an optional accessory on a combi...

...and can be a pretty useful and adaptable feature, especially on furniture work

The spindle well on this model has clever reversible rings for curved work



The sliding carriage is used on the spindle moulder as well as the saw

The thickness function can be a fixed-bed option, as on this machine...

moulding, scribing and tenoning work to be done for extra diversity, **photo 14**.

## Plane and thickness

Move to the right of the machine and you'll find the planer thicknesser. This has the tables positioned for a right-handed user's benefit, so for surfacing work you stand facing the opposite direction to the feed direction of the saw. Thicknessing is done in the reverse direction.

As with stand-alone machines, the table variations dictate the working area when it comes to using the thicknesser. There are over/under styles where the tables remain in position, **photo 15**, and others with lift-up tables and that can be inboard, **photo 16**, or outboard, **photo 17**.

The outboard type can prove frustrating as, unlike a stand-alone machine, you can't walk round to the opposite side to gain easier access, and if it's a gull-wing type there's more space needed to account for that as well.

## Variations on a theme

Spindle moulders and saws follow a pretty similar theme, no matter what budget you have, although capacities will vary. On the saw the depth of cut is an obvious area where changes are expected, but the inclusion of a scoring blade is a worthwhile consideration if you need to work sheet stock more than natural timber, **photo 18**. Remember that opting for a saw with a scoring facility may also affect the sliding carriage. As the scoring function is associated with bigger outrigger saws designed for panel work, the overall size increases accordingly.

The spindle moulder picks up on the sliding carriage as an enhancement, but the only difference across the price bands tends to revolve around the diameter of block that can be used, how much travel on the spindle is available and how the speeds for the spindle are changed.

It's normally the case that at lower end of the market you have to get inside the machine and alter the belt manually, **photo 19**, while the higher-end machines will have an auto-change system. That function certainly speeds up productivity if you work regularly with lots of different diameter blocks.

The deeper the well on a spindle moulder, the more travel there is available, which in turn allows for deeper stock to be moulded. It also allows stacked blocks to do more complex moulds in one hit, rather than constant block swaps and adjustments. This may involve using two spanners, a

spanner and wrench, or a spindle lock with a single spanner or wrench combination, **photo 20**.

### Plane and simple

It's the planer functions where the options vary the most. Apart from the way the surface beds alter to gain access to the thicknesser, there are variations in the way the bed adjusts and in the cutterblock itself.

Starting with the block you will find simple two-knife versions as commonplace, but three- and four-knife models are also out there. As with stand-alones, the cuts per millimetre are roughly the same no matter how many knives you have, but the feed speed increases so productivity is enhanced. However, the more knives you have the longer it takes to set them up when the time comes, **photo 21**.

A further productivity lift is available on some machines by specifying a Tersa block. Some have this fitted as standard; on others it's an option. This block speeds up cutter swaps dramatically, as no tooling is needed to remove them, and there's no setting up to align them with the beds either. But they use disposable knives, so you have to weigh up ease of use over costs.

The surface beds, as noted earlier, can have differing lift options or none at all. A lift-up bed system does make it easier for routine maintenance of the block and rollers, so it's horses for courses.

Thicknesser tables are adjusted via a central ram or a threaded post, with the former seen as the higher-end preference, **photo 22**. This is worth noting if you are on the hunt for a better planer over the rest of the combi functions.

### Summing up

While there are undoubtedly compromises to consider with a combination machine, you get the benefit of good capacities, normally at a cost saving if you went for separate machines of similar spec. And it's always a bonus to gain extra working area in any workshop – it may be worth considering a combi for that alone!

They don't work so well in narrower situations, but if you have a squarer workshop for all-round access they're definitely a good option. If you can find a safe haven for the fences, guards and spindle hood, with the saw blade retracted and the spindle dropped into the well, you can whack a bit of ply or mdf on top of the tables to protect them and create an excellent large surface for assembly after you've done all your preparation work on the machine itself.


...or it may use a lift-up bed system. This model operates inboard

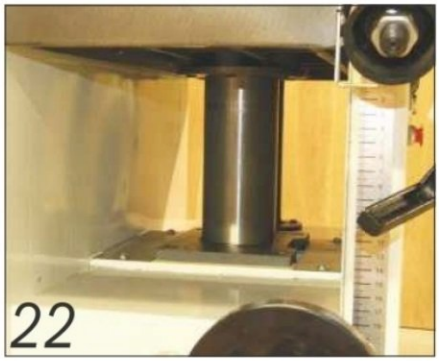

This gullwing model needs more working room and also limits access


A scoring function is handy on machines with big outrigger tables


The spindle motor may need a manual belt swap for speed changes; all have replaceable cutters


Spindle swaps vary, but a two tool set-up as shown here is commonplace


Many planer blocks have multiple knives that need traditional set up methods




A central ram to set the thicknessing dimension is normally seen as the better option

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BY MICHAEL FORSTER

# Box of tricks

**Welcome to the wonderful world of box-making – a great way of enjoying woodworking because it can be scaled in every way to suit your own resources and preferences. This, the first of three articles, will give you a taste of what's possible**

Easily manoeuvrable in a confined space, boxes can be made from virtually any timber you have lying around. They can be as simple as your own skills and kit dictate, or as complex as your imagination and ambitions suggest. For example, the simple box shown in **photo 1** requires few tools and very basic skills, while the rotating octagonal jewellery box in **photo 2** – designed to solve a problem with my wife's tangled necklaces – presented a variety of challenges in both its design and construction, and gave me a number of opportunities to learn from my mistakes!

This month I'll try to give an overview of the subject and some of the choices and decisions it presents. Of course, I'll miss out far more than I include, as is inevitable with this sort of scope. Then over the next couple of months I'll make a basic box – a good basis for development, as it's capable of almost endless variation – and play around with a few alternative lid and interior treatments.

## Style and substance

There's a fable about a donkey that starved to death between a bucket of oats and a pile of hay because it couldn't make up its mind where to start! It's the same with box-making. Unless you have a particular purpose in mind for a box – which can definitely help narrow things down – the hardest part might actually be making a decision! For example…

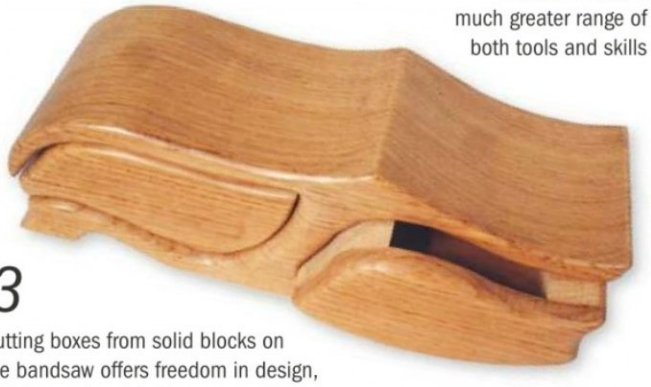
■ What shape will the box be? Squares and rectangles have the attraction of being straightforward to make, but there's no reason why boxes can't be polygonal, or have curved lids or sloping sides… and owning a reasonable bandsaw opens up

1

Capable of countless variations, this mitred box with its lift-off slab lid is remarkably simple to design and make

2

By way of contrast, the complexity of this octagonal jewellery box demanded a much greater range of both tools and skills

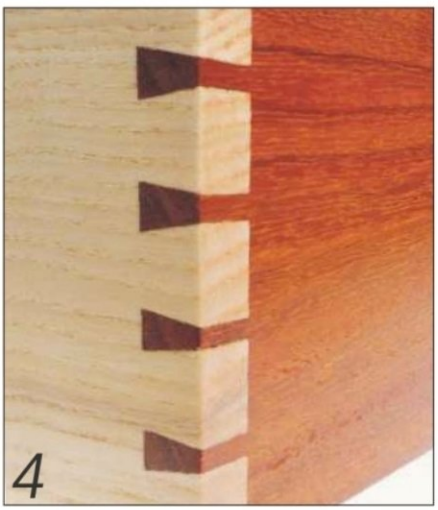


3

Cutting boxes from solid blocks on the bandsaw offers freedom in design, but demands a lot of power sanding

limitless scope for cutting free-form boxes from the solid, **photo 3**.

■ What about the corner joints? These can be a feature in themselves. A simple butt joint can be simultaneously reinforced and decorated using contrasting dowels, but my preference is usually for dovetails, **photo 4**, or mitres, **photo 5**.



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Dovetails – especially in contrasting timbers – combine functionality with aesthetic appeal

■ Will the box be solid or veneered? Solid work is less complicated and can be planed and sanded without anxiety – and on this scale even expensive and exotic timbers become affordable, **photo 6**. Veneers, on the other hand, allow a different range of decorative effects that would at the very least be tricky to achieve in solid material, **photo 7**.

■ What kind of lid will the box have? The simplest is a plain slab of wood located by a rebate, but an integral lid, made as part of the box and separated from it later, looks really classy.

Small boxes can have simple lift-off lids, **photo 8**, but as size increases those can be inconvenient as you have to find somewhere to put the lid down, making hinged lids preferable. Hinges can take many forms, ranging from simple pivots to elaborate stay hinges that are tricky to fit. The most useful are those that hold the box lid open at a convenient angle, such as the SmartHinge shown in **photo 9**. However, sometimes you need nothing more complicated than couple of a captive brass rods, **photo 10**. Remember too that box lids can open in unexpected ways, **photo 11**.

## Internal affairs

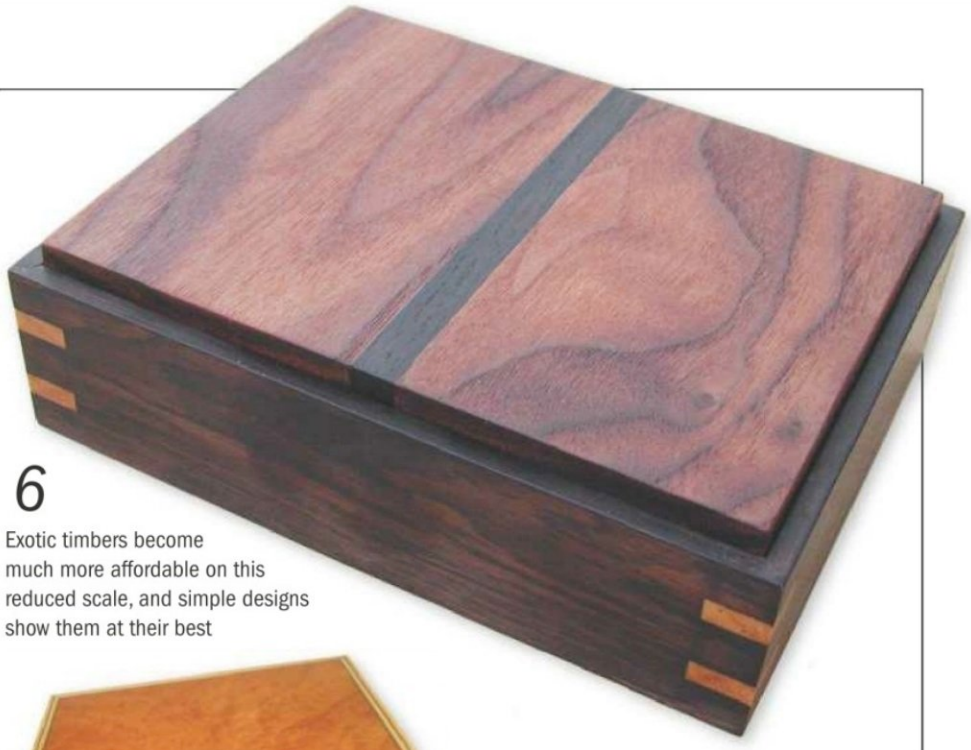
Exploring the interior is part of the enjoyment of a beautiful box, as the main picture on page 47 shows to great effect, so it's worth taking some trouble here. Again, the contents will sometimes limit your options or suggest possibilities – either of which is helpful. At other times you may have a lot of decisions to make. Should it be left plain (but finished nicely) or lined, and if so with what? Contrasting wooden linings – especially if they match the box bottom – are very effective. Fabrics such as velvet, felt or leather can also be used. Dividers and shallow lift-out trays can be simultaneously aesthetically pleasing and useful – and drawers can be a very attractive feature for makers with the confidence to tackle them.

## The question of finishes

The best way to finish a box is one of those subjects on which, whenever there are four woodworkers present, there are five opinions! Daunting though choosing the right finish can be, it's worth some thought and care… if only to ensure that all your painstaking cabinetry gets shown off to best effect.

5

Corner mitres are easier to master, and have the benefit of allowing continuous grain to flow round the corners



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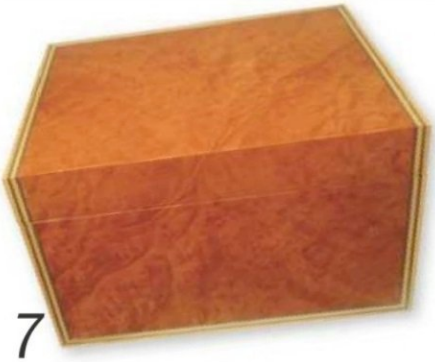
Exotic timbers become much more affordable on this reduced scale, and simple designs show them at their best



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Veneers open up a whole universe of designpossibilities, such as the four-way bookmatch featured on this keepsake box

Since a box is inevitably going to get handled a great deal, it makes sense to use a finish that can take that and be easily dusted clean when necessary. I also prefer to leave the wood looking and feeling as natural as possible; wood is a tactile material, and I believe it shouldn't feel indistinguishable from glass or plastic!

### What not to use

Those are all the reasons why I don't use oil, which yellows pale timbers, or wax that marks easily and also fills the grain so you lose its texture. You'll also have guessed by now that I don't use French polish, but there are circumstances when that is really the only viable approach. Burr veneers don't respond well to varnish or oil – believe me, I've tried – but really show at their best under a good French polish. If you're planning on using a lot of burr veneers, then I'd say bite the bullet and learn that skill – but for solid wood boxes I think the simpler approaches can also be the best.

8

This lift-off lid was made as part of the box and separated later. I'll show you more about this in part 3

### The varnish compromise

I've recently been using acrylic varnish almost exclusively. It's easy to apply, provides a finish that stands up to reasonable handling, only minimally impairs the timber's natural colour, and still leaves the texture clearly discernible. So for me it ticks all the boxes… most of the time. There's just one timber I've used that I found was better left without any finish at all, and that's African blackwood. The natural oils in the wood give it a lovely patina, and once I'd got my planes set up to overcome the horrific tear-out the surface came up silky smooth.

### What kit do I need?

A lot of the books I've read are very machine-oriented, which is fine if you've got the cash, the space and the inclination to go down that route. Generally speaking, I enjoy the process of hand work – apart from the satisfaction of using the skills, it makes for a much more pleasant working environment – but power tools and machines have their place, too. However, box-making allows us to start small, with a few relatively simple tools, and to add to the kit as necessary.

Let's begin by tooling up for the simple rectangular box with keyed mitred corners and a solid lift-off lid that I'll make next month. The basic essentials of a rule and a try square really go without saying. If you're faced with buying these, I'd go for a steel rule graduated in millimetres and a steel engineer's square.

### Preparing the wood

Timber preparation can be done easily by hand, and I'm assuming you've got at least a saw or two in the kit already. Even if they're pretty basic they'll probably serve well enough for this purpose. Planes, though, are another matter, and it's worth making this a priority item in the budget. A poor plane will set you up for frustration and a guarantee that you'll end up buying twice. So unless I had the skills and knowledge to fettle one up myself, I'd go for a mid-range plane, definitely not a 'value' one.

My bevel-up jack plane is certainly the most-used tool in the shop, and must have

9

The SmartHinge, available from Andrew Crawford (see the panel on Surfing the web on page 50) will hold a box lid open at a convenient angle

10

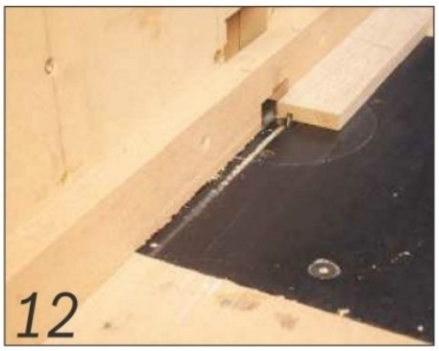
A cheaper alternative is a couple of captive brass rods used as pivots. However, mitred corners don't lend themselves to this

11

The opening of this two-part pivoting lid can be finely adjusted, making it a perfect pomander

13

Apart from the router table, a few simple and mostly inexpensive tools will get the ball rolling



12

A basic router table will be invaluable for cutting grooves and slots

justified its cost many times over by now. The bevel-up configuration means I can set up the honing angle for difficult timbers, and even though I have a cabinet full of specialized planes, this one is where my hand naturally tends to reach.

The jack plane will do most of the work in making next month's basic box, from initial preparation of the timber and shooting the mitres precisely to the angle required, to cleaning up the assembled box to a fine finish.

### The essential router table

This is one power tool I wouldn't be without. The electric router has to be the most versatile power tool ever invented, and in terms of what it will do for the money you pay it's a no-brainer. Just about the only thing you can't do with it is sand, and I'd almost be prepared to bet that someone's working on that!

The box I plan for next month needs a groove for the bottom and slots for the mitre keys, **photo 12**, all of which will be simplicity itself with a basic router table.

### Gripping stuff

When it comes to assembly, they say you can never have too many cramps, but a box-maker can begin with the absolute minimum. For me, years ago, that meant a bit of string and a screwdriver as a tommy-bar to form a tourniquet. I've now progressed towards the dizzy heights of technology, using the cheap and simple band cramp shown along with the other basic tools in **photo 13**. That's enough for the mitred boxes; dovetails don't need cramps at all, so just that one provision covers a multitude of sins.

Assembly apart, a third hand is often useful in woodworking, and for that you really can't beat the one-handed quick-action cramps now widely available.

That about covers it, apart from a few workshop jigs that can probably be made from scraps you have lying around, and I'll say more about those next month.

Meanwhile, I hope I've whetted your appetite for this craft. Next month I'll be using the basic kit to make something simple but very acceptable, and then it's onwards and upwards as we build on the basic skills.

## A WORD ABOUT PLANES

Whole books have been written about hand planes and how to choose and use them. Here's the essential basic information for a beginner in this craft.

The jack plane is the workhorse of woodworking, and will do a lot more than is generally realized. A bevel-up (sometimes called low-angle) configuration will give you much more control over its cutting characteristics, and should also include an easily-adjustable mouth. The best of these planes are made by top-end manufacturers such as Lie-Nielsen and Veritas, but there are also some cheaper clones on the market from Qangsheng. I haven't used one, but they've been well reviewed and are stocked by discerning woodworker Matthew Platt's 'Workshop Heaven' outfit.

If funds permit, you might want to complement the jack with a low-angle block plane, but it's not strictly necessary. Once you get the hang of using the jack, it's amazing what small work it can handle.

## SURFING THE WEB

Here are a few websites to get you started. I especially recommend the first two. When you've explored their sites, go to their links pages and start surfing: you'll find some amazing stuff. I've also included a few kit suppliers which will be useful if you decide to explore and develop the craft of box-making further.

■ **www.fine-boxes.com**
Andrew Crawford's site will introduce you to the world of fine decorative boxes using veneers and inlays. If you're drawn to this aspect of box-making, then Andrew offers excellent tuition as I know from experience.

■ **www.finehardwoodboxes.co.uk**
Peter Lloyd is to solid hardwoods what Andrew is to veneers: his site is well worth a good poke around.

■ **www.handcraftedboxes.co.uk**
This is my own site, and again you'll find the Links page helpful in pointing you to other makers' sites to get a flavour of the range of possibilities that the craft may open up.

■ **www.workshopheaven.com**
■ **www.classichandtools.com**
These sites represent a couple of specialist suppliers, and are run by experts who are also enthusiasts. They're the places to go for the more specialized kit.

■ **www.axminster.co.uk**
Here you'll find a massive range of stuff with great customer service and a sympathetic returns policy (not that you're that likely to need it).

■ **www.turners-retreat.co.uk**
This is an excellent source not just for turners. You'll find hand tools, veneers and much more here.

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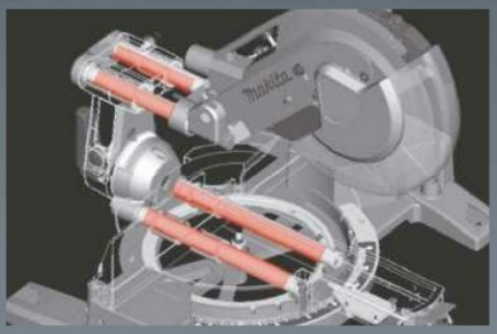

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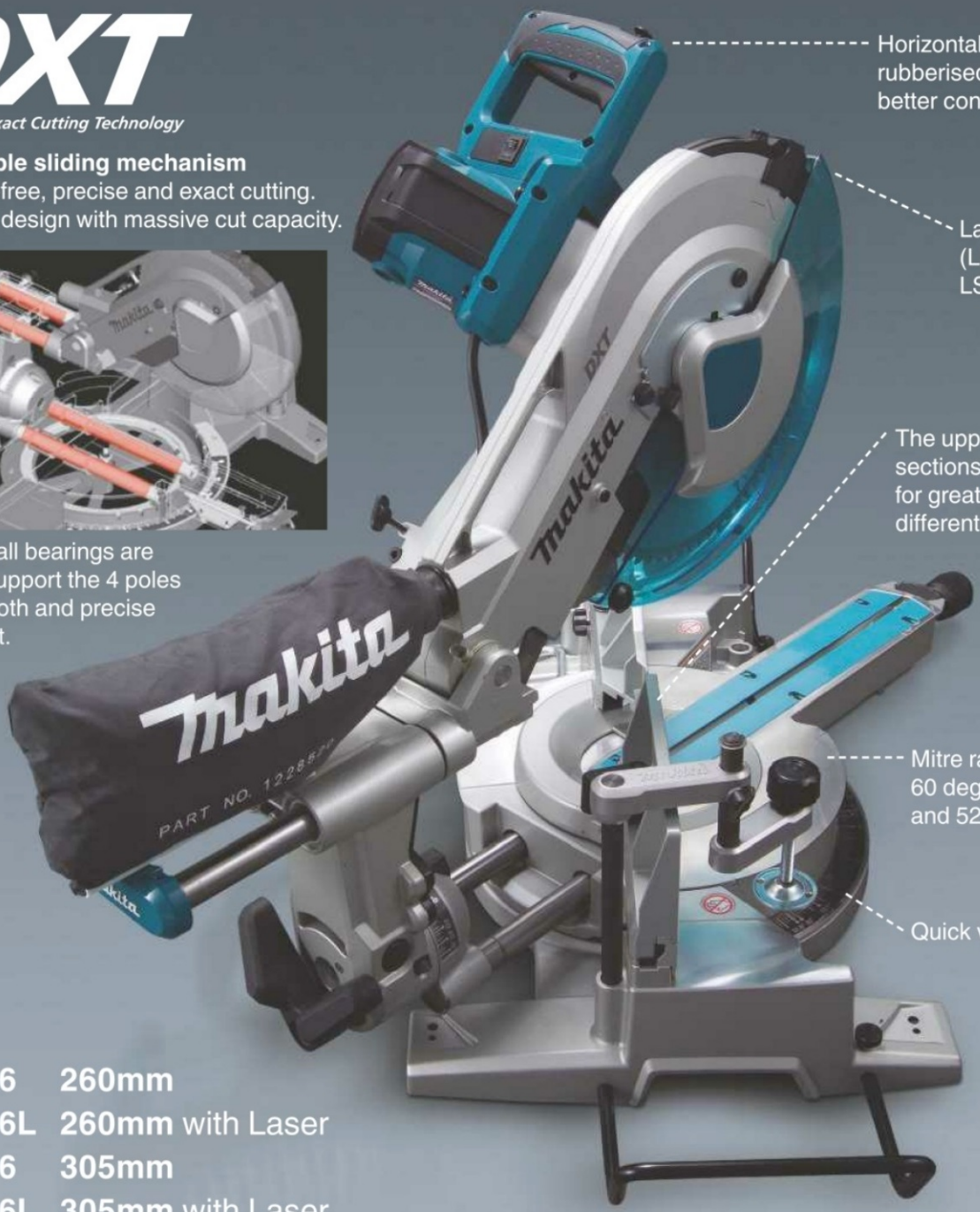


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BY KEITH SMITH

# Shop notes

**Our forests are under increasing threat from disease and insect attack. A new killer fungus may mean that our native ash trees will start to die in the same way that Dutch elm disease killed most of our elms 40 years ago**

Ash dieback is caused by a fungus, *Chalara fraxinea*, and was first discovered in Poland back in 1992 when large numbers of ash trees became infected. The disease seems to have been brought into this country relatively recently by saplings imported from Dutch nurseries. These were distributed all across the UK, and now the disease can be found from Buckle in the north of Scotland to Redruth in Cornwall. According to the Forestry Commission there are currently over 200 sites where the disease has been found in newly planted trees.

However, the really bad news is that the disease has now spread into established woodland, with over 170 sites identified with the disease. Many of these are in East Anglia and Kent, suggesting that the disease is also spreading into the UK from Europe by natural means. Unfortunately this disease doesn't even herald a glut of cheap ash for woodworkers, because infected trees can't be moved when they are felled.

### Reporting infection

If you think you have an ash tree with this infection (the symptoms are leaf loss and crown die-back), you should inform the Forestry Commission via their website www.forestry.gov.uk/chalara. However, current recommendations are to leave the tree if it hasn't died, as some trees are likely to have a genetic resistance and may survive.

There are currently over a dozen other serious pests and diseases threatening our trees, with acute oak decline being the most widely reported, but a fungus-like organism *Phytophthora ramorum* is infecting larch (which is an economically important species in the UK) and this has already resulted in large numbers of trees being felled.

### Personal loss

In our own garden in 2006 we lost our horse chestnut to bleeding canker; this prompted us to plant a small mixed copse of seventy trees in the spring of 2007. These have grown really well, but we've recently lost all our alders, possibly through *Phytophthora alni* which can look like a fungus but is actually a chromalveolata – a recently discovered organism halfway between plant and fungus. It appears that global warming may well be implicated in the spread of many of these diseases, and controlling their spread is going to be very difficult in the long term.

### Chestnut memorial

My neighbour has now lost his horse chestnut to the same bleeding canker, but instead of turning it into firewood he has employed a tree surgeon, Joffrey Watson, to create a work of art from the dead trunk. This was only possible for two reasons; bleeding canker is not a notifiable disease, and horse chestnut is a relatively soft wood which makes it suitable for carving with a chainsaw.

I was lucky enough to be able to watch him work, which is on a completely different scale to what I'm used to. Rather than use pens to mark the design out, he set up his scaffolding (**photo 1**) and scribed it out in his head by invisibly marking out the design on the bark with his finger. I imagine he uses the patterns in the bark as a mental datum from which to work. Then he started cutting, **photo 2**.

### All in a day's work

Joffrey spent the whole day working on the tree, **photos 3** to **5**, and this was certainly a testament to his fitness as well as his skill; when I've used a chainsaw I've found it extremely tiring, even for short periods.

The other thing I noticed was that he had a special chainsaw with which he did the carving. It has a blade which tapers down to a much smaller diameter end than that of a standard chainsaw. This makes it much less likely to kick back, especially when cutting with the end of the saw.

Once he was happy with the sculpture, he cut a section of the bark away just above ground level. This is called ring barking and it prevents sap from rising; this will stop the tree from producing shoots should it not be completely dead. If you want to see more of Joffrey's work, you can visit his website at www.thechainsawbloke.co.uk

### A different scale

As a complete contrast to watching Joffrey carve wood with a chainsaw, I've just undertaken one of the smallest jobs we've ever been given. We've been renovating a house nearby, and have refitted many of the existing doors after new flooring had been laid. Unfortunately the ceramic backing

plate from one door handle had gone missing, and we were asked if we could replicate it in wood.

I started off by mounting a piece of beech onto a small block of mdf, **photo 6**. Once I'd turned it to size I drilled the mounting holes and a larger hole for the spindle before turning the detail on the front. The next step was to use a parting tool to cut the disc to the required thickness, **photo 7**. I then gave it a coat of primer, **photo 8**, before painting it to match the handle, and this is where things got tricky.

### An unusual finish

I decided to use artist's acrylic paints as they're easily mixed and dry very quickly. The trouble was that the surface looked very dull, so I had the bright idea of applying a thin coat of epoxy resin. However, the problem with using epoxy finishes is that they generate bubbles which get trapped in the finish and look terrible.

Some time ago I'd seen a video on the internet where a blowlamp was very quickly played over the surface of the wet epoxy and all the bubbles disappeared. You have to take a lot of what you see on the internet with a pinch of salt, so I tried it first with a scrap of mdf. I gave it a good coating of epoxy, left it for five minutes and sure enough the epoxy was full of bubbles, so I got my blowlamp out and wafted the flame over the surface. As if by magic all the bubbles disappeared, and once the epoxy had cured it left a smooth glass-like finish. What a result!

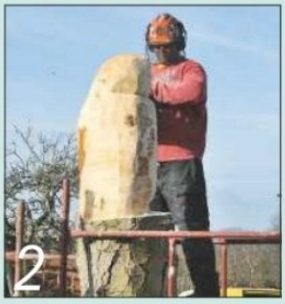
### Another plan

I mixed up some more epoxy resin, brushed it onto the turned disc, left it for a few minutes for the bubbles to form and then wafted the blowlamp over the surface. This was a disaster: it caught fire! I'm not sure why; perhaps it was the raised part of the detail that left the epoxy coating very thin and liable to ignite, but the disc was ruined and there was nothing for it but to turn another one.

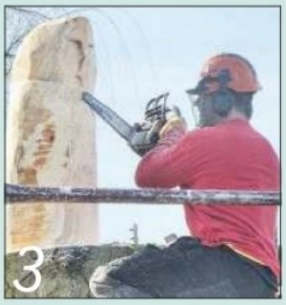
For my next attempt I used artist's oil colours, which gave a much more vibrant colour match. The only problem was that it took nearly a week to dry. This time I didn't risk coating it with epoxy, but gave it two coats of gloss varnish instead. It looked quite good when it had dried, and once fitted on the door you'd hardly notice it wasn't ceramic, **photo 9**.

Still, this has been a lesson. I spent the best part of a day making this little bauble, and I did it for free as I'd told the client it would only take me a few minutes to make!

Carving with a chainsaw is potentially extremely hazardous; a firm working platform is a must



You have to be extremely fit to do this job; a chainsaw is really tiring to use for any period of time



A carver's chainsaw is different to a standard chainsaw; the blade tapers down to a much smaller tip

The finished 'Owl House' has decorative stonework and an arched door

The body of the owl has beautifully detailed feathers, all done with the saw tip

I turned the beech blank to size and added the front detail before drilling the mounting holes

After finishing turning the detail, I sanded it to a fine finish before parting it to thickness

Getting this far was the easy bit; the ceramic backplate, which I had to match for colour, is on the right

The finished backplate is reunited with its original handle, and looks every inch the part

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**Another customer said that using a Woodstation halved his logging time compared to using a Fergie logging bench.**

### *Versatile:*

The Buckingham Woodstation allows you to cut stakes and fence posts with the use of a simple attachment that turns the Woodstation into a 'horse' holding the log at the perfect height for splitting and sharpening.

***You can also cut smaller diameter wood easily and effectively, which is especially useful for charcoal burning. Even cutting slabwood becomes a pleasure.***

### *Time-saving:*

As well as the convenience, the speed will surprise you. One customer told us he easily cuts 150 logs in five minutes using the smallest Garden Model.

### *Model sizes & options:*

Whether logging is your business, or you cut logs for an open fire or wood stove, the Buckingham Woodstation will make cutting firewood faster and easier than before, and there are a range of model sizes to suit your particular need.

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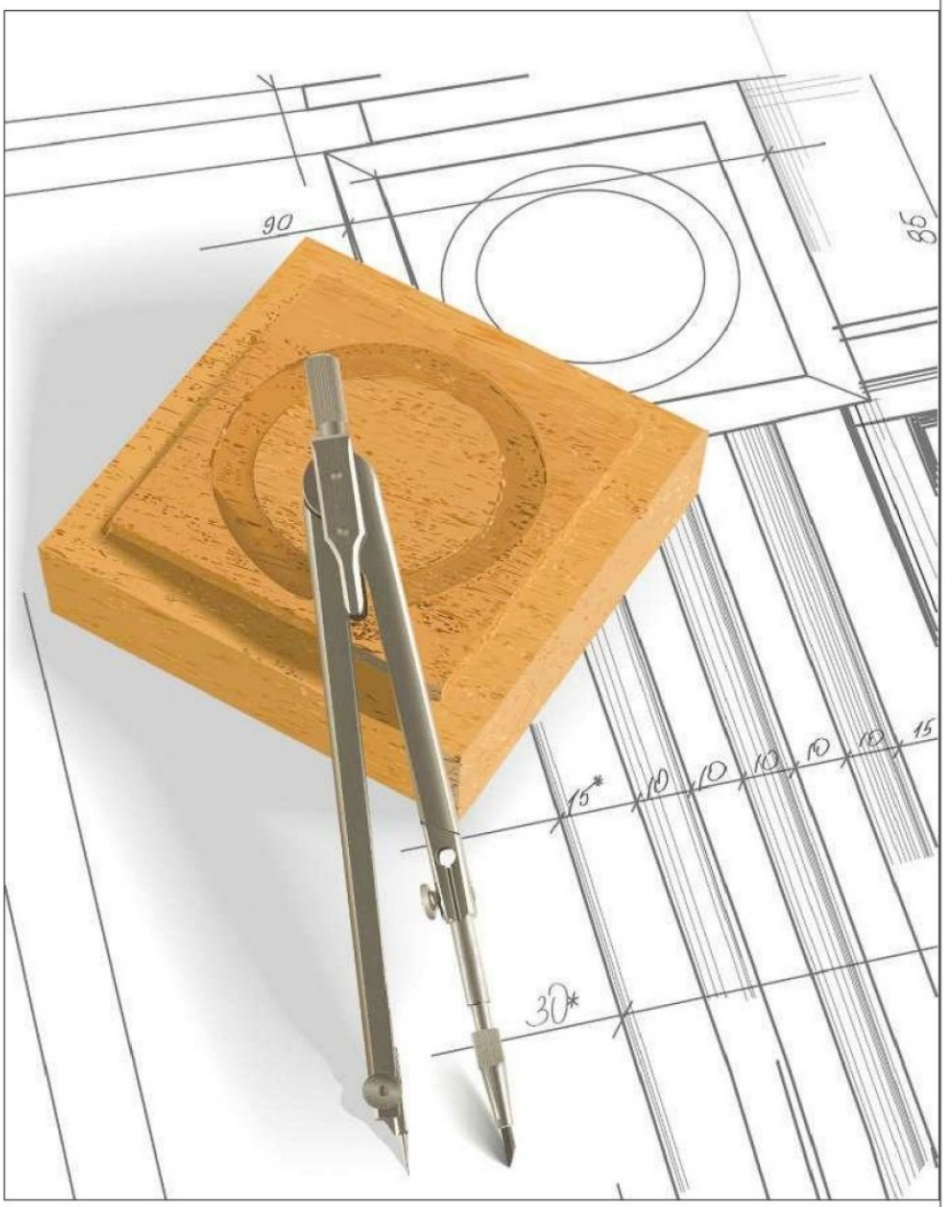
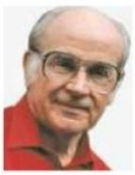


BY GORDON WARR

# Geometry lesson

**Remember geometry at school? It wasn't as difficult as algebra, so long as you could handle a ruler, a protractor and a pair of compasses, but you probably thought you'd never use it in later life. How wrong you were...**

Geometry frequently plays a part in workshop activities, though perhaps not as much as it did in the past when glazing bars to display cabinets were often of an elaborate design, and when joiners had to be very accurate in tackling what is referred to as 'circle on circle' work where projects were curved in both elevation and plan. So let's take a look at some basic geometrical constructions you might find useful in your work, and for which a decent pair of compasses will nearly always be required. But first you need to know what's what.

## 1: THE PARTS OF A CIRCLE

What is a circle? It's a continuous line drawn at a fixed distance from a centre point. The various parts of a circle are shown in **fig 1**.

- The circumference A is the perimeter of the circle.
- The diameter B is any straight line which crosses the circle and passes through its centre.
- The radius C is a line drawn from the centre to any point on the circumference. It is half as long as the diameter.
- A chord D is a straight line which passes from one point on the circumference to another, but doesn't pass through the centre.
- An arc E is the section of the circle's circumference between the ends of a chord.
- A segment F is the area of the circle enclosed by a chord and an arc. The term segmental is often used to describe arches in the shape of an arc.
- A quadrant G is a quarter of the circle enclosed by two radii drawn at 90° to each other and the arc between their outer ends. The term gives its name to mouldings and glazing beads with this cross-section.
- A tangent H is a line drawn to touch the circumference at any point, which is known as the point of contact J. A line drawn from the point of contact to the centre of the circle is always at right angles to the tangent.

Right: that's enough definitions. Now let's do some geometry…

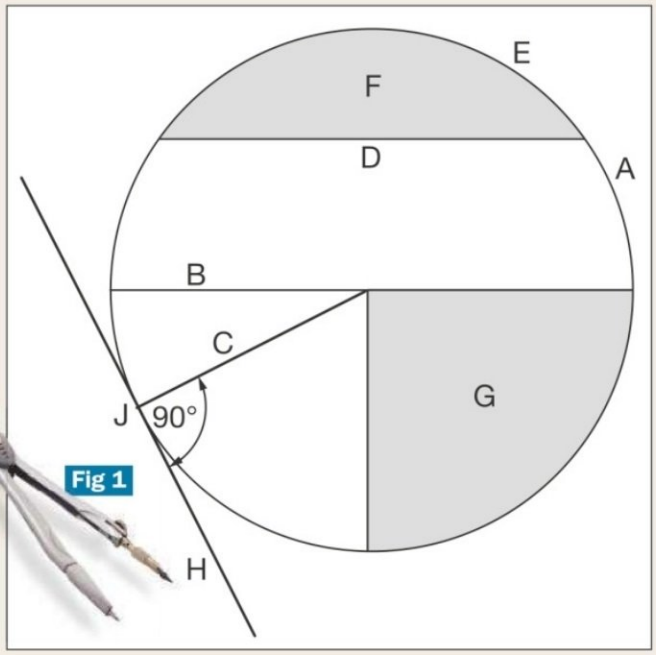



Fig 1

## 2: BISECTING A LINE

To bisect a line AB, **fig 2**, first set the compass arms so their tips are about two thirds of its length apart. With the compass point on A, let the pencil tip draw a short arc above and below the line. Then, with the same setting of the compasses and with the compass point on B, draw two more arcs to intersect the first two. Join up the points of intersection; this line will bisect the original line AB at C.

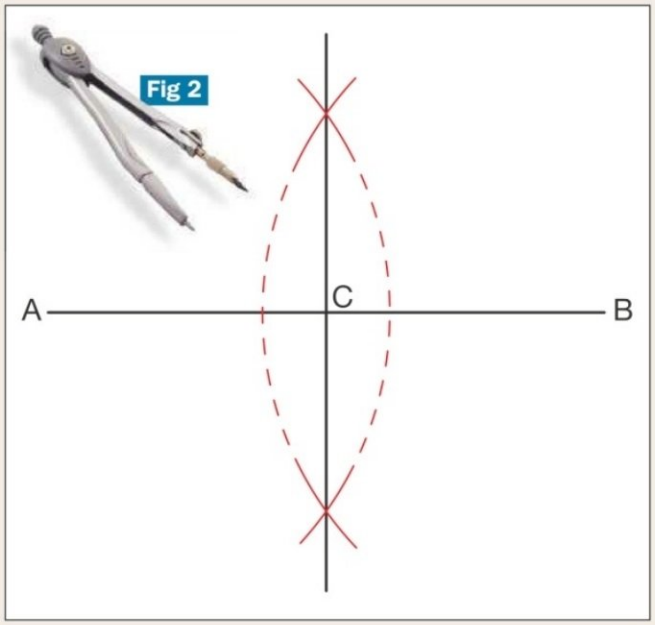



Fig 2

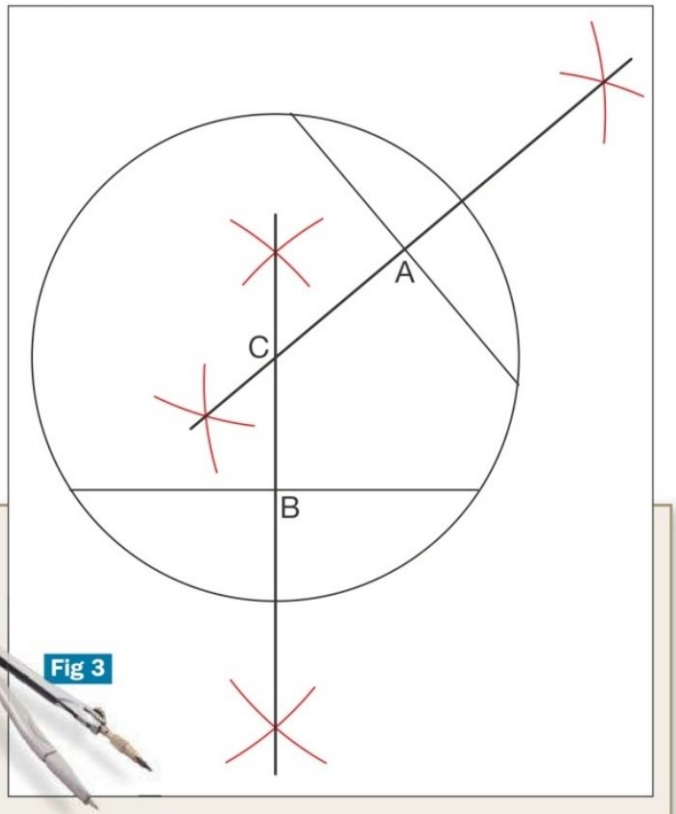
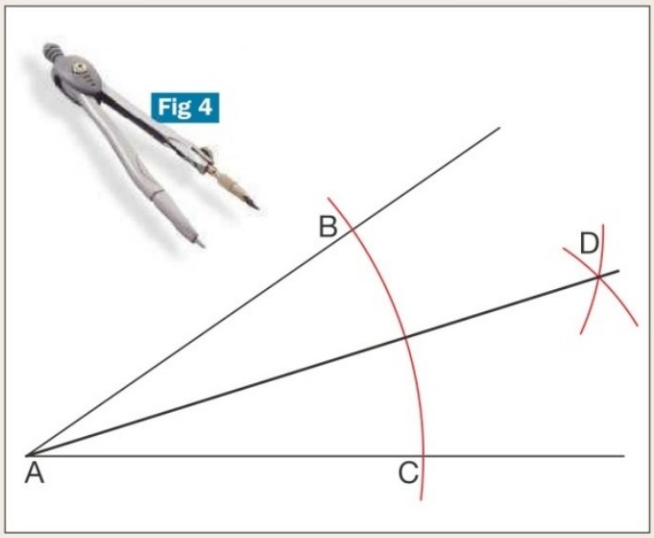



Fig 3

## 3: FINDING THE CENTRE OF A CIRCLE

First, draw two chords at any position within the circle, at an angle to each other as shown in **fig 3**. Bisect each chord at A and B (see **2** above). The bisecting lines will intersect at C, the centre of the circle.

Marking tools called centre finders work on this principle, but these are usually small and are therefore only suitable for small-scale work. This geometric method works on round table tops and the like.



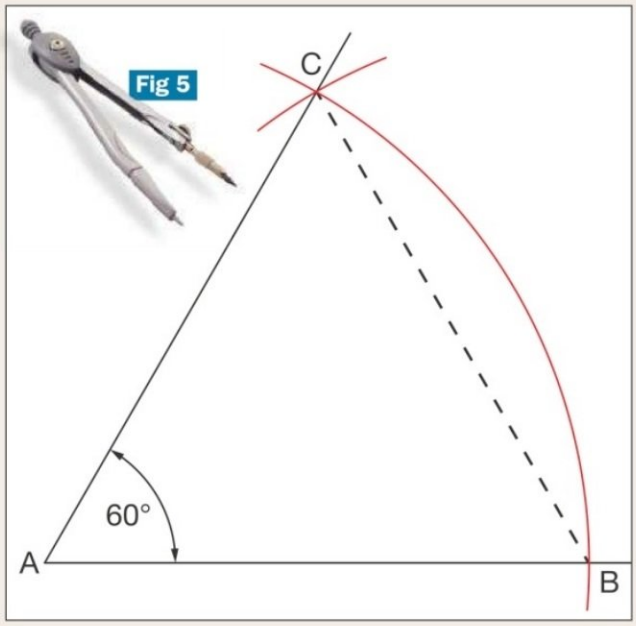

## 4: BISECTING AN ANGLE

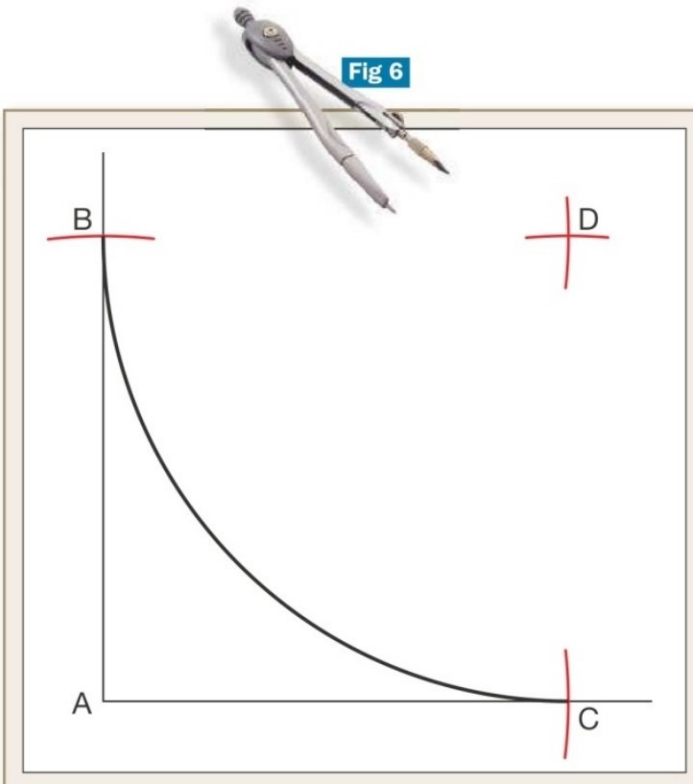
With the compass point positioned where the two lines meet at A, **fig 4**, draw an arc to intersect both lines at B and C respectively. Now with the compass point placed first at B and then at C, draw two further arcs so that they intersect at D. The line joining point D to point A bisects the angle. Note: The second setting of the compasses doesn't have to be the same as the first.

## 5: DRAWING AN ANGLE OF 60°

From the base line, draw a long arc centred at A to intersect the line at B, **fig 5**. With the same setting of the compasses, and with the compass point set on B, draw a second arc to intersect the first at C. By joining up point C with point A, an angle of 60° is formed.

By joining up all the points of intersection, an equilateral triangle ABC is formed. This is a triangle where the three sides are equal in length, and the angles are also all equal at 60°. In any triangle, the sum of the three internal angles is always 180°. The construction of an angle of 60° is the basis for marking out regular hexagons.




## 6: DRAWING AN ARC IN A CORNER

Draw two intersecting lines at 90° to each other, **fig 6**. Set the compasses to the size of arc required, and from the point where the two lines meet at A, draw an arc to intersect the lines at B and C. From these two points of intersection, and with the same setting of the compasses, draw two more arcs to intersect each other at D. Finally, with the compass point on D, draw the arc – the solid black line – within the right-angled corner.

This construction is used where, for example, the corners of a table top need to be rounded (radiused). In practice, because it's virtually impossible to place the point of a pair of compasses on the edge of a piece of wood, scrap wood can be temporarily held against the workpiece. Alternatively the method of construction shown can be used to mark out a template in plywood. This is cut and trimmed to shape, then used to mark out the corners.

***Don't miss part two of Workshop Geometry next month!***

BY BOB CHAPMAN

# 10 steps to better bowls

**Most turners make bowls, but they don't all make them equally well. I often see bowls which could have been improved with a little more thought, so I've drawn up ten simple steps to help you get better results. Here are the final five...**

## 6 CUT IN THE RIGHT DIRECTION

In general you'll get a smoother surface on the underside of the bowl if you begin the cut near the centre and finish it near the rim. Cutting in this direction is the equivalent of cutting 'with the grain' when using a hand plane on a flat piece of wood. You can cut in the opposite direction, but the surface will be rougher and prone to tearing out.

Keep your gouge sharp and make sure the bevel is in contact with the surface. The flute should be pointing to about 10 o'clock relative to the toolrest as you pull the tool towards you, **photo 1**. Aim for a smooth curve from the edge of the foot to the rim, and remember that practice makes perfect. As your tool skills improve, so will your shapes. I usually sand and polish the underside before turning the bowl round to tackle the inside.


Shape the underside first, cutting outwards from the centre towards the rim

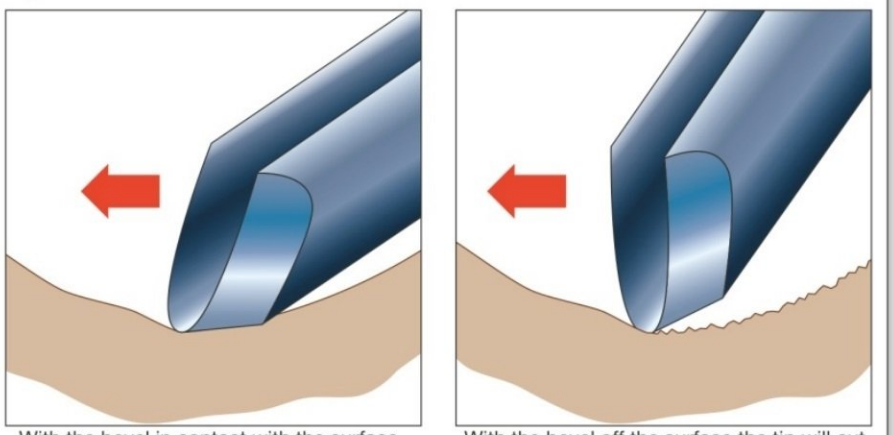
## 7 SAND THE SURFACE

Depending on your skill with the gouge, the finished surface may have some small ridges or other imperfections that need sanding away. Start with the coarsest paper you think you need. Don't be reluctant to use 60 or 80-grit paper. Whatever grit you start with, this paper must do all the work of removing the blemishes. If you don't remove them with the first grit, you're unlikely to remove them with a finer grade. Only move to the next grit when you're certain you're doing no more good with the first one.

I usually start with 120-grit paper (or 80 if needed) and then work down through 180, 240 and 400 grit. The purpose of each paper is to remove the scratches left by the previous paper until finally they're too small to be seen at all. I usually stop at 400 grit.

Don't skimp the time you spend on sanding – there's more skill to it than you might think – and always take adequate

Fig 1



With the bevel in contact with the surface the tip cannot go deeper. The surface will be smooth

With the bevel off the surface the tip will cut deeper and the surface will have ridges

Apply firm pressure to the abrasive to make it cut, and keep it moving

Power sanding is quick and efficient, but creates a lot more dust

Use the point of a skew to form a starting groove that will locate the gouge

Start the cut with the gouge blade almost parallel to the bed of the lathe

precautions against dust. Then apply the sealer and finish of your choice; remember that two thin coats are almost always better than one thick one.

### Hand sanding

Make sure you have your fingers behind the part of the paper in contact with the wood, and apply a reasonable pressure to make the paper cut, **photo 2**. If it starts to feel hot, ease off. If it's too hot for you to hold, it's far too hot for the wood. Renew the paper as often as necessary. Using worn-out paper is a waste of effort.

### Power sanding

Alternatively the abrasive may be fastened, usually with a hook-and-loop system, to a rubber-backed disc held in an electric drill, **photo 3**. With the lathe running and the drill on, sanding is very quick – but not so quick that you need fear doing it. It works very well, but you need to take care not to remove corners and other fine detail. Work down through the grits as with hand sanding. Dust is produced in much greater quantities by power sanding, and you must take adequate precautions to collect it and to avoid inhaling it.

## 8 HOLLOW THE INSIDE

Remove the bowl from the screw, turn it round and tighten the jaws onto the dovetail spigot. Don't over-tighten the jaws or you risk breaking the fibres in the spigot away from the body of the work. The underside of the bowl should turn true, without wobbling, when you turn the lathe on.

True up the upper surface with a bowl gouge and mark out the width of the rim and any other features you want to include in the design.

On the inside of a bowl the cut should be made from the edge towards the centre. Use a pointed scraper or the long point of a skew chisel to form a groove where you want to begin hollowing, **photo 4**. This is used to locate the tip of the gouge and prevent it from skidding sideways and damaging the rim.

### Starting the cut

Hold the gouge almost at right angles to the face with the open flute at about two o'clock, **photo 5**. Push the tip firmly into the wood and simultaneously swing the handle back towards you, letting the tool slide forwards between your fingers. While the tip progresses by perhaps 20mm or so, the handle will swing through almost 45°, **photo 6**.

Beginners can never quite appreciate the extent of this movement, but it's essential to keep the bevel of the gouge in contact (as shown in **fig 1**, above left) to ensure a smooth cut surface. If the handle isn't brought back far enough the bevel will be off the work, allowing the tip to cut in with no restraint to prevent it going deeper and deeper. Attempting to prevent this with brute strength leads to a surface that is at best full of ridges and, at worst, deeply grooved as the tip repeatedly penetrates and has to be pulled back. Practise, practise, practise. In the early days, you'll get ridges. Remove them with gentle cuts using a large scraper, **photo 7**, and sand the surface as before.

Swing the handle of the tool back towards you through an angle of about 45°

## 9 CHOOSE A FINISH

There are numerous finishes available for finishing turned work, and the best advice I can give you is to experiment with them.

### Sanding sealer

Not really intended as the final finish, sanding sealer is used to seal the grain prior to applying some other finish. If your chosen finish has to penetrate the wood, it's best not to use a sealer.

There are several different sealers available – spirit-based, cellulose-based, acrylic, melamine and so on. I use cellulose sealer and dilute it 50:50 with thinners… against the manufacturer's advice! Apply it as quickly as possible and wipe off the excess immediately. Its big advantage is that it dries almost immediately. Its big disadvantage is that it dries almost immediately. You've got to work fast.

### Food-safe finishes

These products are mostly based on mineral oil or liquid paraffin, which can be bought quite cheaply at pharmacies, although nowadays they don't all stock it. After sanding the surface, apply a generous coating with a brush or cloth and leave it to soak in for an hour or so, **photo 8**. Wipe off any excess with a clean cloth and leave it to dry. It may take a few days to dry properly to a dull finish. The finished bowl will stand up to wiping with a damp cloth, but will eventually need recoating.

### Oil finishes

Oils stand up to water better than wax finishes, and there are several to choose from. Lemon oil is applied to bare wood and dries to a matt finish, **photo 9**, giving off a lovely lemony smell. Danish oil is a mixture of oils which can be applied to bare wood or over a sealer, and four or five successive coats can be used to build up a gloss finish which will withstand getting wet. A 50:50 mixture of Danish oil and clear polyurethane varnish also makes a good waterproof finish. Use either gloss or matt polyurethane and apply the mixture to the surface with a cloth.

### Wax finishes

Unless there is a reason not to, all my bowls get a wax finish, applied while the bowl is on the lathe. After sealing and with the lathe on, run a stick of solid beeswax across the surface from the centre out. Do this at a brisk rate and only do it once. Applying too much wax is the single most common fault with wax polishing. Repeat the process with a stick of carnauba wax.

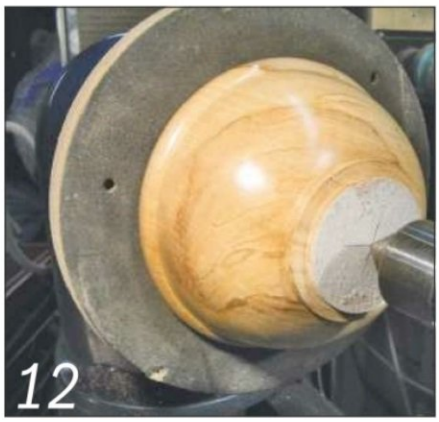

A large scraper will remove any surface ridges and bumps left behind by the gouge


Leave a generous coat of finishing oil to soak in before removing the excess with a dry cloth


A matt oil finish can look very classy if it's used on the right piece


Wax will polish to a beautiful soft sheen, and any damage is easily repaired


Keep sharp fingernails well away from polished surfaces as you work




Friction between the bowl and the mat is enough to drive the bowl round

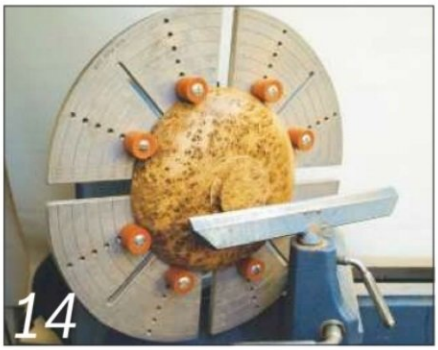
Now use a small pad of cloth to work the waxes into the wood. Start in the centre and apply enough pressure to the pad for the friction to melt the waxes, blending them together and spreading them thinly on the surface. Move the pad slowly across towards the outside edge; you may be able to see the molten edge of wax as you push it across. Then use a fresh part of the pad to buff the surface gently to a soft sheen, **photo 10**.

The advantages of wax are that it's an instant finish; you don't have to wait for it to dry or come back tomorrow to apply a second coat. It's also easily repaired when necessary using ordinary wax furniture polish. The disadvantages? It scratches easily and will mark quickly if it gets wet.

### Mind your nails!

Your fingernails are harder than a polished surface. I've lost count of how many times I've seen people spoil an otherwise excellent finish by carelessly scratching it with their fingernails. Take care when you're wielding polishing cloths that only the pads of your fingers make contact with the surface, **photo 11**.

Leave a small central portion in place so you can maintain the tailstock pressure



Button jaws leave the foot area of the bowl completely exposed for shaping

Make sure the bowl is held securely by wrapping rubber bands round it

A vacuum chuck allows the tailstock to be removed once the work has been centred

Even large and irregular pieces can be held securely on a vacuum chuck

Of course, a foot isn't compulsory! It would certainly spoil the look here...

## 10 FINISH THE BOTTOM

It's nowhere near as difficult as most inexperienced turners think to turn a finished bowl round so you can work on the foot. It's the assumed difficulty of the operation which prevents many turners from finishing the underside of their bowls properly.

### Using a friction pad

A friction pad is a wood (or plywood or mdf) disc, with a sheet of foam rubber glued on the front. Made from offcuts of this and that, they are very inexpensive. I've cut pieces from an old rubber floor mat, and I've also used an old mouse mat for the purpose – whatever bit of softish rubber you can find.

The friction pad could be mounted on a faceplate, or it could have a recess or a spigot for holding in a chuck. The rim of the bowl is then placed on the rubber surface and the tailstock centre is brought up to apply gentle pressure, **photo 12**. It helps in centring the bowl if you have previously marked its centre on the spigot. Friction between the rim and the rubber is enough to drive the bowl round without damage to the rim.

With the tailstock in place, remove the spigot with gentle cuts, leaving enough in the centre to maintain tailstock pressure, **photo 13**. Sand and finish the underside of the foot as far as you can; then remove the bowl from the lathe and cut away the central remains. Finish the sanding and polishing with the work off the lathe.

### Using button jaws

These are also called Cole jaws. A photograph of them in action is self-explanatory, **photo 14**. The buttons are adjusted to the closest fit and the jaws are moved in or out for the final grip. Button jaws can also be used to hold square bowls, **photo 15**. If you're in any doubt about security, use tape or rubber bands around the work and the jaws to make everything more secure. You can also bring up the tailstock for extra support, removing it only for the last few gentle cuts. Remember, though, that these jaws were never designed to hold heavy workpieces or to be used at high speed.

### Using a jam chuck

With a piece of scrap wood mounted on a faceplate or in the chuck, a recess is cut to exactly the right size to fit the rim of the bowl. This centres the bowl and, if the fit is tight enough, the foot can be worked on without tailstock support. If necessary, use tape or rubber bands to hold the work more securely. Again the tailstock can be used to give additional security until the final cuts.

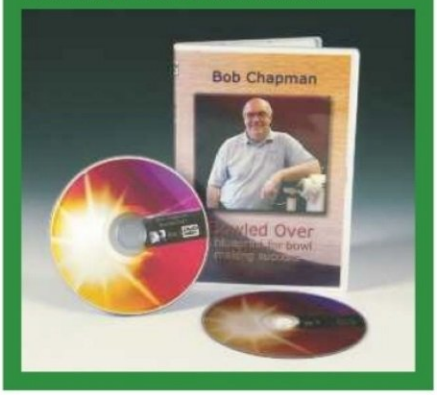
### Using a vacuum chuck

Vacuum chucking is becoming increasingly popular, and there are many turners (me included) who have constructed their own vacuum system. The tailstock is needed to centre the workpiece but can then be removed, **photo 16**. Space prevents a full description here of how the system works, but suffice it to say that when gripped by vacuum the bowl is very securely held and the bottom can be worked on unhindered by the tailstock, **photo 17**.

Of course, after all this you may decide you don't want a foot at all, **photo 18**. That's your prerogative…

## GETTING MORE HELP

Bob's double DVD entitled 'Bowled Over' expands and illustrates many of the techniques explained here. It runs for 2 hours 40 minutes, and is available direct from Bob at £19.99 plus £1.84 p&p. Visit www.bobchapman.co.uk for more information and contact details.



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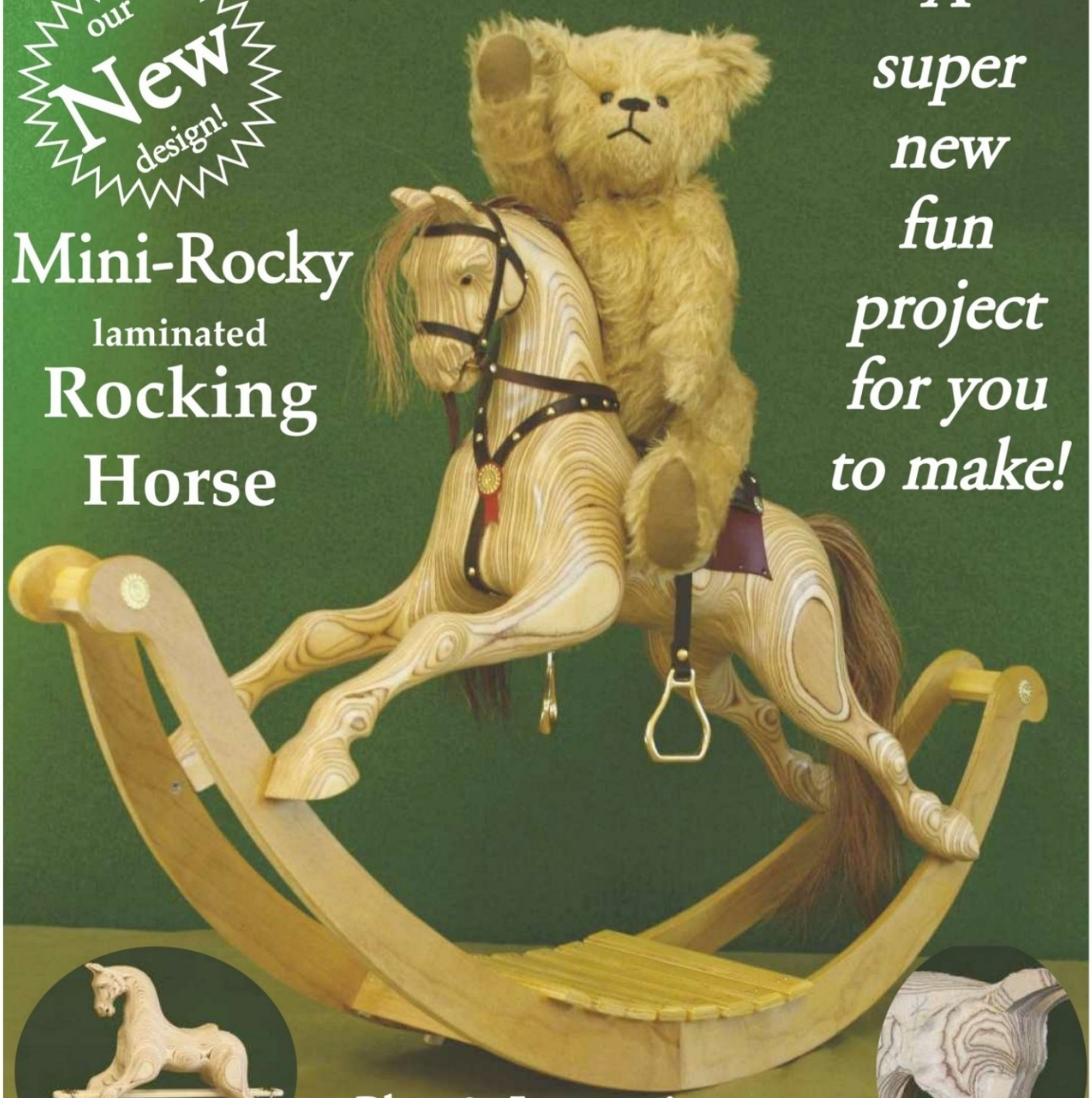

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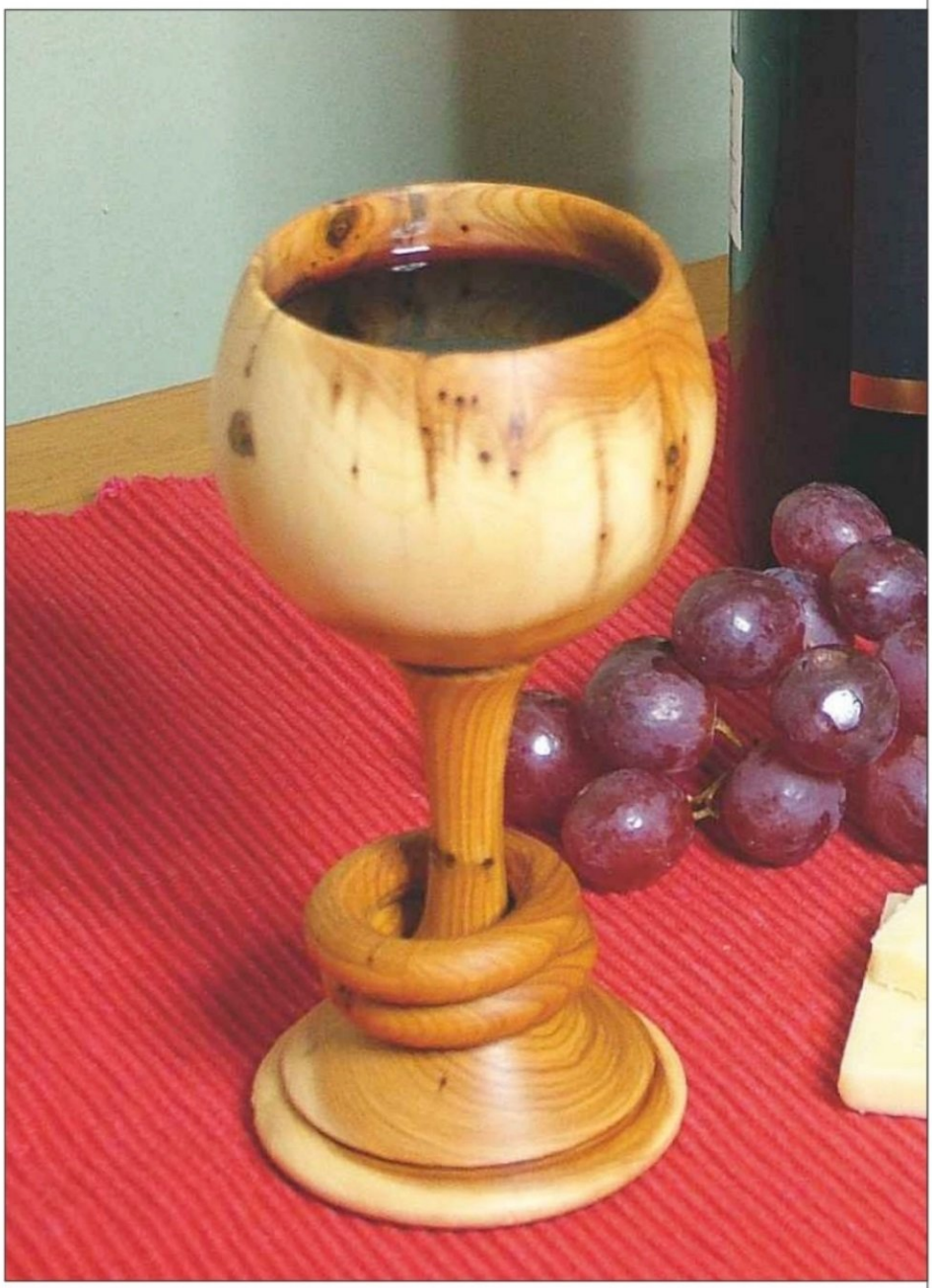


BY COLIN SIMPSON

# Give us a ring

**This is a fun and easy project to make and will puzzle those not in the know, wondering how it's done. The fact is that the captive rings are very simple to create and can look very effective. Here's how...**

On each ring there will be some short grain, making it a little fragile, so it's best to use a close-grained timber for this project. Any of the fruit woods are good, as is laburnum, maple, beech or sycamore, but I'm using a small branch of yew. If you intend to drink from the goblet, then use a food-safe finish, as made by Chestnut Products amongst others. If the goblet is for decoration only, then a sanding sealer and wax finish will be fine.

### Turning a spigot

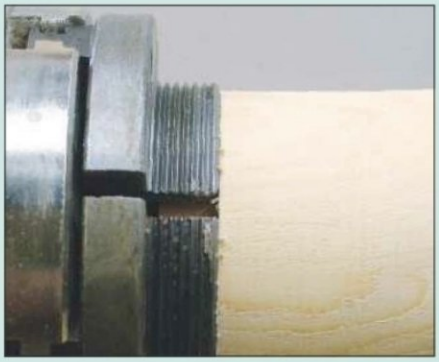
Start by mounting your chosen blank between centres and turn it to a cylinder, **photo 1**. Then cut a chucking spigot on the end that will become the base of the goblet, **photo 2**. I prefer to use my gripper jaws when I'm making these, as they allow me to cut a more substantial spigot. This is useful when working a long way from the chuck, as when hollowing out the cup of the goblet. It's important that the shoulder of the spigot sits closely against the outer edge of the jaws, **photo 3**, and that the spigot itself doesn't sit on the bottom inside the jaws.

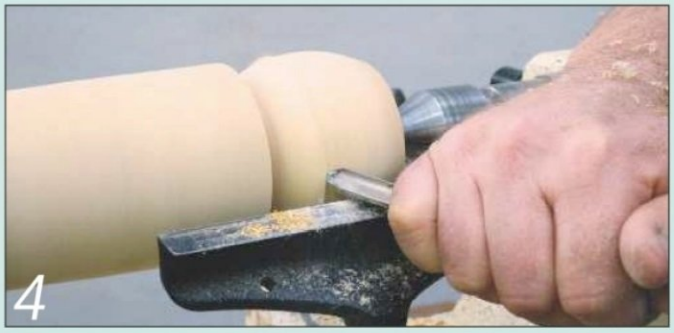

Mount the blank between centres and rough it down to a cylinder


Cut a chucking spigot on the end that will become the goblet base

3

The spigot shoulder should sit flush with the top edge of the jaws for a good grip






Start shaping the bowl part of the goblet with a small spindle gouge

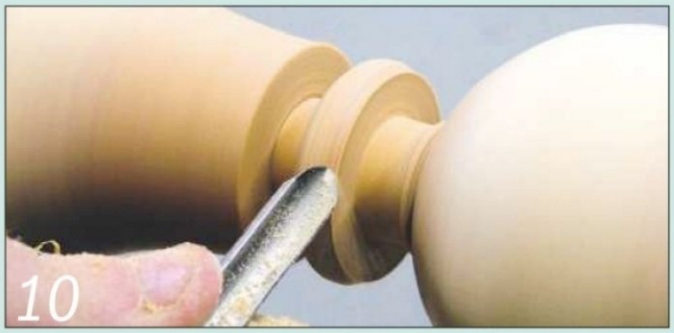

Use the same gouge held horizontally to start drilling the hole...


...and then start the hollowing out, pivoting the tool on the toolrest


Use a round-nosed scraper to clean up the inside surface of the bowl


Now refine the bowl and the top of the stem with the spindle gouge


Use a parting tool to make clearance cuts at each side of the first ring




Switch to the spindle gouge and use it to roll a bead on the ring

### First shaping

With the piece now held in the chuck jaws, bring the tailstock up to provide additional support and start to shape the cup of the goblet using a ⅜in spindle gouge, **photo 4**. Don't make the bottom of the cup too small at this stage; you'll need some strength here in order to hollow the piece out without vibration being generated.

Next, remove the tailstock support and square off the top of the goblet. Position the spindle gouge on the toolrest with the flute facing up and the handle low. Gently raise the handle until the tip of the cutting edge touches the very centre of the work. Bring the handle to the horizontal and push the tool towards the headstock. It should start to cut the hole, **photo 5**.

If you prefer, you can always drill the hole using a twist drill bit in a Jacobs chuck held in the tailstock. Whichever method you use, drill the hole to the depth of the cup.

### Hollowing the inside

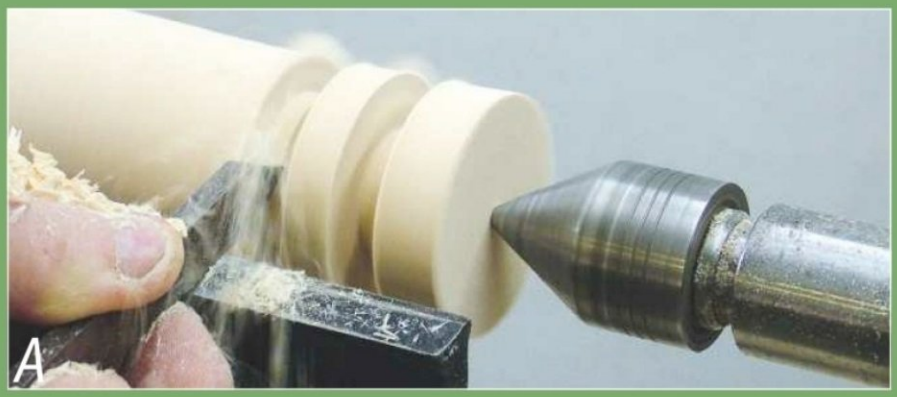
The same spindle gouge is also used for hollowing. Start with the gouge about 2mm inside the hole with the flute pointing towards 10 o'clock. Swing the handle away from you in an arc, pivoting the tool on the toolrest, **photo 6**. Continue this cut, using the bottom wing of the gouge, until the goblet is hollowed out.

In **photo 7** I'm using a round-nosed scraper to clean up any imperfections left by the spindle gouge. Note that the scraper is used with the handle higher than the cutting edge. I'm still cutting on centre, and it's necessary to raise the toolrest slightly to achieve this.

When you're happy with the finish, sand the inside of the goblet at this stage. This is particularly important if you're making the stem very thin.

### Introducing the ring tool

Now refine the outside shape of the goblet with the ⅜in spindle gouge, **photo 8**. I reduced the diameter of the stem a little before using a parting tool to make a couple of clearance cuts either side of what will become my first captive ring, **photo 9**.







## RINGS WITHOUT THE TOOL

Still want to make captive rings, but don't want to buy a ring tool? There is another way. I've seen some turners use a small skew chisel, but I prefer to use a miniature parting tool.

The preparation is the same. Make a couple of clearance cuts first on each side of the ring, **photo A**. Cut a bead with a spindle gouge, **photo B**, and then use the miniature parting tool to undercut the ring, **photo C**. Work from both sides alternately and remember to sand the outside of the ring before separating it.

It's a little harder to achieve a smooth, rounded undercut using this method, so a little more sanding of the inside of the ring may be necessary, **photo D**. The big advantage of this method is that you can cut any size ring you want… within reason!


This is the business end of the Hamlet captive-ring tool


Swing the handle to the right to cut the right-hand side of the ring


Then turn the tool over and swing it to the left to cut the other side


Sand as much of the ring as you can before separating it from the stem


Attach some abrasive to the stem to sand the inside of the ring


Support the stem with the fingers of one hand while shaping it


Hold the rings out of the way while you finish sanding the stem


Part off the goblet with a parting tool, undercutting the base slightly


Apply a food-safe finish if you're going to drink from the goblet

Turn a bead on the outside of this ring with a spindle gouge, **photo 10**.

**Photo 11** shows a close up of the business end of a captive-ring tool. This one is made by Hamlet, and is reversible so you can cut both the left and right-hand sides of the ring with the one tool. It's very simple to use, and you can form rings of the same size and shape every time. They come in different sizes to make different size rings, so the bad news is that quite a large investment will be necessary if you want to use this method. However, the good news is that you can still make captive rings without a ring tool: see page 67 for details.

### Forming the rings

With the tool on the toolrest, use the hook part of the tool to start undercutting the ring by swinging the handle to the side, **photo 12**. Work from both sides of the ring alternately, **photo 13**. Then repeat steps 9 and 10 to form the second ring further down the stem.

Before separating the two rings completely you need to sand them, **photo 14**. By folding the abrasive into a triangle, you should be able to get into the undercut. Now use the ring tool to separate the two rings completely. To sand the inside of the rings, I glue a strip of abrasive to the stem of the goblet and then hold each ring over this as the lathe turns, **photo 15**.

### Finishing the stem

After sanding the rings, the stem of the goblet needs to be finished. You could tape the rings at one end of the stem, but I find the technique shown in **photo 16** useful. Here I have gently looped my fingers over the back of the stem to support it and dampen down any vibrations that are introduced as the stem gets thinner. My fingers are also keeping the rings out of the way of the cutting edge.

Sand the stem, **photo 17**, and then part off the goblet with a parting tool, **photo 18**, slightly undercutting the base. **Photo 19** shows the finished piece with one coat of food-safe oil applied. Having completed your first goblet, I think a celebratory drink is in order. Cheers!

***Workshop sanders are odd beasts.*** *If you've never had one, you're unlikely to miss it, but once you have one, you'll wonder how you ever managed without it. Whether disc-and-belt or disc only, they're useful machines to have in any workshop*

# **Charnwood** W413 12in disc sander


**£199**

Budget belt and disc models often have a poor-quality table with flimsy angle setting clamps. but the table on this standalone 305mm(12in) disc model is held very firmly thanks to the twin Bristol locking levers. The crescents that lock the settings are simple enough (just pressed steel) but they hold securely once they're nipped up.

Any angle from 0 to 45° in an obtuse setting can be made, as well as an acute 10° tilt read against a basic etched scale on one crescent, but all angles need to be checked with an appropriate bevel or square as there are no positive stops. It would be better to have one stop for the 90° setting at least, as it's the common position for most work, or maybe a rack-and-pinion style adjustment to make final positioning that bit easier when setting any angle.

Velcro-backed abrasives discs cost more than adhesive ones but can be swapped in seconds

A Bristol lever at each side locks the tilting table firmly in position...

...allowing the table to tilt downwards to a maximum angle of 45°

You need to hold the mitre fence tight against the edge of the slot in the table to keep it accurate

### A poor mitre fence

Although rated for light trade use, this sander is still built to a budget, and this is evident in the quality and fit of the supplied mitre fence to its corresponding T-slot in the aluminium table. It's an all-plastic construction and there's a lot of slop in the fit, so you have to keep it pushed to one side of the slot to retain any accuracy, especially on a compound operation. Furthermore, the 16 x 6mm slot is a non-standard size for any after-market upgrades you may be considering.

### An excellent disc

While the plastic mitre fence leaves a lot to be desired, the disc is a much better component. The usual sticky-back abrasive disc retention has been discarded in favour of a Velcro system, so there's none of the usual residue or bits of old abrasive to remove from the disc between swaps.

This not only makes it fast to change abrasives, but also very economical. Discs can be swapped and re-used until they no longer cut, which you can't do with the sticky-backed type. These have to be discarded if you need to change to a different grit.

However, there is very slight 'give' in the fit between the abrasive and the disc because of the Velcro backing, especially at the outer edge, so excess pressure can round over the edge of the work slightly. However, there should be little need to lean on it to make it cut properly; letting it cut at its own pace gave perfect results.

### Good extraction

Keeping on top of dust is important, and the 63mm dust port coped well, removing waste efficiently when it was hooked up to a suitable extraction point. For anyone with a smaller bore plumbed-in extraction system, the 63mm bore is compatible without the need for additional adaptors.

### Summing up

This Charnwood sander runs very smoothly and quietly, and with its fast and economical abrasive changeover it should appeal to many. However, a few improvements on the table, especially the mitre fence, would work well in its favour. AK

## SPECIFICATION

| | |
|---|---|
| **MOTOR** | 750W |
| **DISC DIAMETER** | 305mm |
| **NO-LOAD SPEED** | 1450rpm |
| **TABLE SIZE** | 395 X 295mm |
| **TABLE TILT** | -10° to 45° |
| **WEIGHT** | 30kg |

## VERDICT

This is a decent workshop sander if your budget is tight. The easy disc changeover makes up for the poor mitre fence.

***PROS***
- Smooth, quiet operation
- Positive table locking
- Velcro disc abrasives

***CONS***
- Poor mitre fence
- No positional stops for table angle

***VALUE FOR MONEY***

***PERFORMANCE***

## FURTHER INFORMATION

- Charnwood
- 01530 516926
- www.charnwood.net

Freehand shaping is very easy to do, and cuts are smooth and consistent

It can also be tilted upwards to an acute angle setting of 10°

With no positive 90° stop, you have to use a square for total accuracy

The mitre fence is very basic and is a sloppy fit in the table's T-slot

***The Trend Airshield Pro respirator is the frequent choice of many small workshop and hobby users,*** *but is it as good as the advertising suggests? We've put it to the test and found that it does its job very well*

# **Trend** Airshield Pro respirator


**£238**

Dust in the workshop is the biggest long-term hazard faced by most amateur and professional woodworkers. The resins used to bind mdf and other man-made boards are particularly bad, but so too is the dust from many of the common species of timber. The really harmful particles are invisible to the naked eye, and so in every workshop there must be a strategy in place to combat this dangerous foe. If, after a normal day's work, there's a visible layer of dust on exposed surfaces in your workshop, particularly on the tops of stationary tools, then it's likely that you need respiratory protection.

## The design concept

The Airstream Pro is a self-contained respirator that fits over the head and provides filtered air to the user. It is sealed against the neck and face with an elasticated fabric cuff, can be worn for long periods without discomfort and is even suitable for users who wear spectacles. The headband can be easily adjusted, and holds the respirator firmly but comfortably in place.

Air is drawn into the helmet assembly through a pair of filters by a battery-powered motor, and is delivered to the user in a constant

You need to press the two grey tabs to release the lid of the respirator

The battery slides into its compartment at the back of the unit


The twin air filters are simply pushed into place in their holders

The visor also provides protection against sparks when sharpening tools

stream. The air enters from above the forehead and passes down in front of the face, keeping the visor free from mist. The over-pressure created by the motor more than overcomes any leakage that might occur from the elasticated seal.

### Preparing for use

Before first use the battery is installed and given an initial charge over 24 hours. Subsequent charges take 14 hours, and each charge provides a full eight hours of use.

The respirator is supplied with a pair of filters that fit firmly in place on either side of the battery compartment. You also get a flow-rate tester that should be used from time to time to check that the filters aren't clogged. Filters will last from two weeks to three months, depending on usage, and cost about £26 a pair.

There is a crown strap that may need a one-time adjustment to suit the user's head. At the back there is a headband tensioner which is used each time the respirator is worn. It twists to tighten or loosen and can be pushed inwards to lock it in place. It's best to start the motor just before putting the respirator on. A buzzer will sound if the battery level is low.

### A breath of fresh air

If you try out the Airshield Pro in a shop, take the time to get it fitting correctly as this makes a huge difference to the whole experience. Care needs to be taken if you wear spectacles, but once the flip-up visor is mastered, adjusting them is easy. During our testing the respirator was worn for several long stints, and at no stage did it feel unbalanced or awkward.

The motor is quiet, delivers a steady supply of filtered air and, with the face visor, makes woodworking safer and more enjoyable. It also makes sweeping up the workshop a less unpleasant chore at the end of the day.

It's a pity that a second battery and a charging cradle aren't included in the package, but these optional extras would add another £70-80 to the basic price. PP

### SPECIFICATION

| | |
|---|---|
| **AIR FLOW** | 160-200 litres/min |
| **BATTERY** | 3.6V NiMh |
| **RUN TIME** | 8 hrs |
| **CHARGE TIME** | 14 hrs |
| **WEIGHT** | 995g |

### VERDICT

The Airshield Pro is a quality product at a competitive price that deserves to retain its lead in the sub-£300 powered respirator market.

***PROS***
- Comfortable, even when worn all day
- Simple to set up and maintain
- Appropriate safety ratings
- Professional but affordable

***CONS***
- Only one battery and no charging cradle

***VALUE FOR MONEY*** ■■■■■□

***PERFORMANCE*** ■■■■■□

### FURTHER INFORMATION

- Trend UK
- 01923 249911
- www.trend-uk.com

It's best to keep the respirator on when you're cleaning up the workshop

Use the flow tester occasionally to check that the filters are clear

The visor is designed to accommodate users who wear spectacles

The elasticated cuff fits snugly round the neck and under the chin

***Lightweight cordless tools can be just as good as their heavyweight cousins for smaller jobs, and also more convenient to use.*** *This versatile kit contains a drill/driver and a multi-tool, sharing the same batteries, and can cope with a wide range of tasks*

# Einhell BT-TK 10.8Li cordless kit

**£65**

## SPECIFICATION

| | |
|---|---|
| DRILL/DRIVER | |
| **NO-LOAD SPEED** | 0-550rpm variable |
| **CHUCK CAPACITY** | 10mm |
| **TORQUE SETTINGS** | 11+ (drilling) |
| **WEIGHT** | 850g |
| MULTI-TOOL | |
| **OSCILLATION RATE** | 20,000/min |
| **WEIGHT** | 650g |
| **ACCESSORIES** | saw blade, scraper, delta sanding plate, two abrasive sheets, Allen key |
| BATTERIES | |
| **POWER** | 10.8v Li-ion |
| **CHARGE TIME** | 3.5hrs |
| **ACCESSORIES** | charger, storage case |

## VERDICT

This is a useful pair of lightweight tools, ideal for the less demanding jobs.

***PROS***
- Small and light
- Reasonable performance

***CONS***
- Slow charging rate
- Single-speed gearbox (drill/driver)!

***VALUE FOR MONEY*** ■■■■■□

***PERFORMANCE*** ■■■■□□

## FURTHER INFORMATION

- Einhell
- 0151 6491500
- www.einhell-uk.co.uk

It's always handy to have some lightweight cordless tools in the workshop to take care of all those fiddly little jobs such as fitting cabinet hinges, sanding or assembling components or detail sanding. This twin pack provides a useful pair of tools at an extremely attractive price.

### The drill/driver

The drill/driver is a solid little tool with a softgrip-covered body and a bright LED worklight. It has a useful spirit level inset into the top to help you drill accurately, and features a twelve-position torque ring. It has a variable speed trigger, but unfortunately only a single-speed gearbox. Above the trigger is a rather stiff sliding switch that controls the direction of rotation. A keyless chuck is fitted with a maximum capacity of 10mm.

### The multi-tool

This is a simple multi-tool with few frills. Again, it has a comfortable softgrip-covered body and the battery plugs neatly into the rear. There is a large power switch on the top, but no variable speed. It's supplied with a saw blade, a scraper blade, a delta sanding head and two abrasive sheets. These are easy to change using the Allen key supplied. The accessories are compatible with the new Oscillating Interface System (OIS), now adopted by many manufacturers, so any make of blade or cutter can be used.

### Using the tools

These tools are ideal for occasional use. They're not intended for carrying out heavy-duty professional work, but are quick and convenient to use for smaller jobs. The drill rather suffers from having only a single-speed gearbox, which compromises both its screwdriving and drilling abilities. However it performs perfectly adequately as long as it's not overstretched. The multi-tool is an eager performer with a vibration-free motor and a comfortable grip.

This is a useful kit to add to your toolkit. Although the two tools can't compete with more powerful tools, they're light, convenient and easy to handle – ideal for a bit of DIY or light maintenance work. AS

The interchangeable batteries are a simple push fit in the handles

The drill/driver features a 10mm chuck and a 12-position torque ring

The multi-tool accessories supplied are compatible with the OIS fitting system

The drill/driver has a bright trigger-activated LED work light above the trigger

***A disc sander is perfect for smoothing external curves, and a spindle sander is the ideal companion for internal ones.***
*This Triton oscillating sander is supplied with a full range of sleeves and accessories, and produces excellent results*

# **Triton** TSP S450 oscillating spindle sander

Making any kind of curved component can be a challenge, and will generally involve a lot of manual work using spokeshaves and shaped sanding blocks. If you want some mechanical help, a spindle or bobbin sander is the tool to use when sanding internal curves. The sanding drums are supplied in a variety of different diameters to suit the particular curve, and the sanding sleeves are available in a range of grits to suit your desired finish. The oscillating mechanism causes the spindle to rise and fall as it rotates, so using more of the abrasive and reducing the chance of burning the workpiece.

## Standard features

The Triton stands on a bright orange base with a cast iron work table. On the front is a standard NVR power switch. Around the base of the machine are slots and posts on which to store the rubber sanding drums, their sleeves and the matching table inserts. There's a dust extraction port at the rear of the table for connection to a workshop vacuum.

## Using the sander

The Triton is a simple machine to set up. Choose the correct sanding drum and slide it onto the spindle with its sleeve in place, then fit the top washer and tighten the nut on top of the spindle with the spanner supplied. This puts pressure on the rubber drum, causing it to expand and grip the inside of the sanding sleeve, holding it tightly. Now simply fit the corresponding table insert and you're ready to start.

The machine runs quietly and smoothly, with the spindle rising and falling as it spins. The cast table is solid and supportive and the machine feels stable. Initially I found that the sanding sleeve tended to rise up on the drum, but this was entirely due to the fact that I hadn't tightened the top bolt enough to grip it properly. It does need to be fairly tight, particularly on the larger sizes. The smallest sleeve doesn't have a rubber drum and fits directly onto the spindle. To make full use of the abrasive on the sleeves, you can invert them on the spindle.

## Summing up

Overall this is a useful and well-designed machine. It produces a good finish, and the dust extraction is very effective. Perhaps the only feature it lacks is a tilting table, though, for the majority of users, that's likely to be rarely used. Its performance is good, and it's very easy to set up and use with its convenient on-board storage. I can really find little to criticise, and at this price it's a bargain. AS


**£120.96**

## SPECIFICATION

| | |
|---|---|
| **MOTOR** | 450W |
| **NO-LOAD SPEED** | 2000rpm |
| **STROKE LENGTH** | 15mm |
| **SLEEVE SIZES** | 13, 19, 26, 38, 51, 76mm |
| **TABLE SIZE** | 370 x 295mm |
| **WEIGHT** | 14.6kgs |

## VERDICT

This is a convenient and efficient machine, supplied with all the abrasive accessories you're likely to need at a very attractive price.

***PROS***
- Well designed
- Good performance
- Wide range of sleeve sizes

***CONS***
- No tilting table

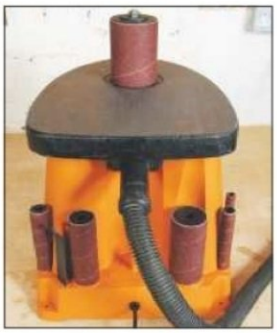
***VALUE FOR MONEY*** ■■■■■□
***PERFORMANCE*** ■■■■■□

## FURTHER INFORMATION

- Triton Tools
- 0844 5760266
- www.tritontools.com

The sander comes with a range of drums, sleeves and table inserts

The dust port is at the rear of the machine; extraction is very efficient



Tightening the nut on the spindle expands the drum and grips the sleeve

The smallest spindle sanding sleeve is ideal for sanding tight curves

***The Leigh R9 Plus joinery system uses a precision CNC-machined template and new template positioning technology*** *to enable fast and accurate routing of through dovetails and finger joints on boards of any width and up to 21mm thick*

# **Leigh** R9 Plus joinery system


**£139.95**

This style of jig is certainly not new, but it's one of the easiest to get to grips with and, best of all, everything you need is in the box… with the exception of a router, of course. However, the guide bush is a North American design so you may need to buy a compatible base or an adaptor base to suit.

You could use a suitable bush if you have one for your own router, but the one supplied has a clever slightly elliptical profile for ultra-fine tuning of the fit if required.

### Beam and backing board

Before you commit to cutting any joint, you have to make a suitable beam and backing board to which the jig is fixed and against which the stock is cramped while the joint is cut. The board design is explained in the instruction manual, and features sacrificial mdf backing strips which are replaced as and when necessary.

### Clever innovations

The box contains all you need, including the cutters to make a set of through dovetails with a ½in pin profile on stock up to 30in wide. If you need to joint timber beyond this generous width you'll need extra index pins; these are available together with five different dovetail sizes and three sizes of finger joints as part of an upgrade kit.

The R9's indexing feature will prove its worth if you need to tackle really wide runs of dovetails. With this system there's no width limit; you can dovetail full sheets of plywood if you want to!

### Two ways of working

You also have the choice of clamping the stock to the backing board and routing hand-held at the bench, or of inverting the jig and using it on a router table.

With the hand-held option it's difficult to see what you're doing because the base obscures the jig plate. As you have to rout every other pin when making the tail cuts, you need to be sure you're in the right spot before you make the cut.

### Using the side stop

To make any joint, the stock has to address the side stop as a positive location each time. This has an offset to allow it to nudge


You may need a sub-base to accept the elliptical guide bush

The jig is made up of a timber beam with a sacrificial mdf facing


The right-hand cramp is moved along to suit the width of the workpiece

The cut is made in a single pass. Make sure the guide bush addresses the comb fully

the stock across by a few millimetres as it's rotated. This offset is also used to centralise the stock so you aren't left with a joint that gives a thin pin.

However, the jig will also cut finger joints, so this stop also has the double function of stepping the work across by the correct amount to ensure a correct fit.

### Using the jig

The first cuts are made with the stock clamped in position and tight to the underside of the jig. It doesn't matter if these are pin or tail cuts as you have to do the same process for each part. However, it makes sense to make all the tail or pin cuts in one hit before swapping over cutters and flipping the jig.

As with other through dovetail jigs of this type, you need to make the pin cuts with a straight cutter on the flared or tail part of the jig, and the tail cuts using a dovetail bit on the finger side of the jig.

The jig plate is very simple to set whatever the joint being cut, and is positioned on the locating pins and held with rotating knobs. The locating pins allow the jig to be easily positioned to suit different cutter sizes. The longest part of cutting the joint was the initial setup of the backing board, but once that was set, the test cut was simple.

### The first cut

You need a ½in router as the cutters supplied have shanks ½in and 8mm in diameter, but there's an 8mm reducing sleeve included so you don't even need an additional collet.

The initial cut can be a little tight or slack, but the clever elliptical guide bush allows very fine adjustment to snug the cut to a perfect fit. Once the fit is achieved, the jig is set and will cut identical perfectly fitting joints no matter what the thickness of the stock.

The simplicity of the jig makes it well worth considering if you want to make through dovetails or finger joints quickly and without any fuss. The downside is the need to purchase a sub-base if you don't have a router that will take the adjustable guide bush. AK

## THE SYSTEM

| | |
|---|---|
| **R9 template** | |
| **Three pin plates** | |
| **Two F-style cramps** | |
| **Adjustable side stop** | |
| **Hardware for beam assembly** | |
| **80-8 dovetail cutter** | (½in x 8°) |
| **160mm straight cutter** | (½in x 1¼in) |
| **Collet adaptor** | (½in to 8mm) |
| **e10 elliptical guide bush** | |

**An accessory kit costing £83.50 is also available – see text**

## VERDICT

This jig is well worth considering if you regularly cut a lot of dovetail and finger joints.

***PROS***
- Easy to use once set up
- Indexing feature for wide runs
- Clever offset guide bush for fine tuning

***CONS***
- Sub-base may be needed for the guide bush
- Needs shop-made beam and backing board

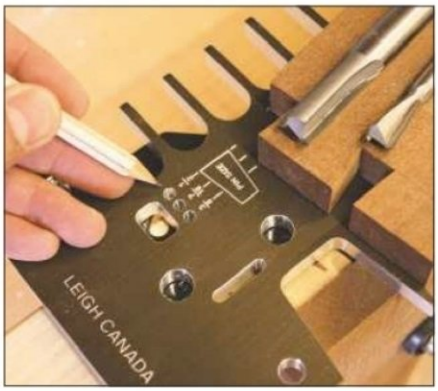
***VALUE FOR MONEY***

***PERFORMANCE***

## FURTHER INFORMATION

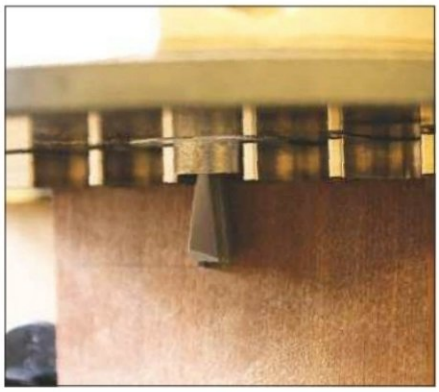
- BriMarc 03332 406967
- www.brimarc.com
- www.leighjigs.com

The jig is moved to the opposite side and the cutter changed to make the mating cut




The comb jig locates on the pin plate through the hole that corresponds to the cutter diameter


The piece to be cut is clamped under the comb jig and the corresponding part is marked



This mark sets the depth of cut for the router cutter

***Once upon a time, planer thicknessers aimed at the smaller workshop had a surfacing width of as narrow as 115mm.*** *Now there's a wide choice of machines such as this model with planing widths of around 250mm*

# **Scheppach** HMS 1070 planer thicknesser


This Scheppach machine is specifically aimed at the amateur workshop. The body is pressed steel, with a rubber foot at each corner. The motor is tucked away at the base of the machines, and is linked by chain to the four corner pillars that control the thicknessing table.

## Standard features

The rear surfacing table is fixed. The infeed table is adjusted by a knob at the front, giving a maximum depth of cut of 3mm. The fence is a generous size and is easily tilted, with a stop for returning it to 90°. However, it cannot be adjusted laterally across the table.

The cutterblock holds two blades, and unusually, each is held in place with seven retaining screws. To help with the setting of the blades, a simple setting jig is included along with a selection of Allen keys.

The thicknessing table is quite small and is fabricated from steel, stiffened on the underside. It is provided with a fixed extension on the exit end, in the form of a bent steel bar. The table is raised and lowered by means of a loose handle inserted into the top end of one of the table supporting spindles, with a scale alongside the thicknessing aperture to indicate the setting required. Both the infeed and outfeed rollers are rubber-covered, and there anti-kickback fingers on the infeed end.

## Safety first

A lot of emphasis is placed on machine safety these days. The main features include the covering of rotating parts and electrical safety. On this Scheppach machine, the cutterblock cover is secured to the thicknessing table when surfacing is taking place, and the table must be raised so that a microswitch becomes activated; otherwise the machine cannot be started. When surfacing, the cover is secured to the top of the outfeed table and again it has to be correctly positioned for the same microswitch to become operative.

The universal motor is tucked away neatly within the base of the machine

The debris outlet is positioned below the table when surface planing

The sturdy fence support allows it to tilt to a maximum of 45°

Maintain downward pressure on the outfeed table when surfacing

This cover also acts as a chippings collector, and is provided with a dual diameter outlet for connecting to the vacuum debris collector.

### Standard operations

There are four basic operations which can be carried out on a planer thicknesser: surfacing, edging, thicknessing to width and thickness, and bevel edging. Additional operations require the use of a jig. The stages of preparing wood to the required cross-sectional sizes normally follow the same stages adopted when planing wood by hand – face side, face edge, plane to width, then plane to thickness.

### Planing and edging

When planing the wide surface of a workpiece, it is never wise to take heavy cuts; it's far better to take two or more lighter ones. This applies particularly when the wood is very wide and hard; heavier cuts are best suited to narrow edges.

The surfaces produced on this machine were very smooth and virtually free of ripples, usually caused by a combination of slow cutter block speed and high feed rate. The Scheppach's cutterblock speed is rather higher than is typical, and the adoption of a universal motor means the noise level is a little on the high side.

Bevel edging was also tackled. This is little different from square edging, although extra care is needed to keep the wood tight to the fence.

### Thicknessing time

After changing over the position of the cutter guard, several pieces were passed through the thicknessing facility of the machine. There is no clutch when this aspect of preparing wood is tackled, and there is only one feed speed. These make negligible difference to the performance of a planer thicknesser. However, the machine is at its best when thicknessing wood of moderate cross-section; it's not designed for tackling material the size of railway sleepers.

### Summing up

With any machine, its performance has to be balanced with its cost. This is essentially a budget machine but is nevertheless perfectly capable of preparing wood of moderate cross-section to the sizes required, with four flat surfaces and 90° corners. With its attractive cost in mind, we give the HMS 1070 the thumbs-up. GW

## SPECIFICATION

| | | |
|---|---|---|
| **MOTOR** | | 1500W |
| **CUTTERBLOCK SPEED** | | 9000rpm |
| **PLANER TABLE** | | 1105mm |
| **PLANER FENCE** | | 635 x 125mm |
| **PLANER FENCE TILT** | | 90° to 45° |
| **MAX PLANING WIDTH** | | 254mm |
| **MAX PLANING CUT** | | 3mm |
| **THICKNESSER TABLE** | | 270mm |
| | with extension | 440mm |
| **MAX THICKNESSING WIDTH** | | 252mm |
| **MAX THICKNESSING HEIGHT** | | 120mm |
| **WEIGHT** | | 34.5kg |

## VERDICT

This is essentially a budget machine, but is nevertheless capable of preparing wood perfectly satisfactorily to the cross-sectional sizes required.

***PROS***
- Excellent guarding
- Safety microswitches
- Blade setting jig

***CONS***
- Only one feed speed
- Rather noisy in use

***VALUE FOR MONEY*** ■■■■■
***PERFORMANCE*** ■■■■□

## FURTHER INFORMATION

- NMA Agencies
- 01484 400488
- www.nmatools.co.uk

Keep the work pressed tight against the fence when bevel edging

The thicknessing table has a steel rod extension on the outfeed end

The table is moved by rotating a handle on the top of the machine

The debris outlet offers a choice of diameters to suit your system

***This new Carvex PS 420 jigsaw from Festool retains the distinctive features of the existing model,*** *but this new machine pushes the boundaries even further in every application for which it's used*

# **Festool** Carvex PS 420 EBQ-Plus jigsaw


**£320***
*see panel

Festool's latest mains jigsaw has some clever new touches to put it above the normal jigsawing applications, with square cutting around tight curves one of the big selling points.

Like the previous incarnation of this saw, there's a set of pinch guides below the roller guide that you need to snug up to the blade with the supplied hex wrench to ensure maximum blade support. It's simple and quick to do this, but if you swap between blades of different thicknesses often, it could well prove a little frustrating.

## Blade selection

The saw certainly does achieve a square cut on tight curves, but to get the best from it you need a thicker blade to cope with the deflection on a thicker board, and also a wide set and large tooth profile to give it fast clearance. This will give rise to a coarser finish on the cut, but that can be dealt with by fitting the zero clearance insert.

## Bevel cuts

Instead of the traditional tilt function, whether held with a hex screw or a fast-release lever, the Festool saw opts instead for interchangeable shoes. The basic shoe supplied is 90°-only option with no tilt facility. It locates on a very solid cast alloy connector with dovetailed meeting points, so it locks solidly and perfectly square every time.

If you want to do bevel work you have to shell out for an accessory shoe. It's a neat concept, with a hinged rack-and-pinion adjuster that alters both sides of the shoe so you have an identical tilt in one hit. There are no adjustments to make for a left or right bevel cut, and it's very easy to set to a specific angle.

## The other adaptor shoe

This one allows you to use the jigsaw on the Festool guide rail system. A plunge saw will make a much cleaner and faster cut than a jigsaw will, but there is a far more useful addition that clips to this shoe: the circle cutting guide. This has a roll-up steel radius setter that looks like a tape measure. It allows circles of diameters from 120mm to 3m to be cut accurately without any setting out.

## Body styles

The saw comes in in two body styles, a D handle and bodygrip version. Power on the bodygrip test model is controlled by a slider switch, and the switch is replicated on both sides of the tool to cater for left-handed users. However, its position is a little too far forwards,

The plug-in flex fits into a pivoting socket to keep the saw free of restrictions

The variable speed dial has an auto setting that adjusts speed under load

Slide this lever and the base easily disengages to allow other bases to be fitted

Working with the strobe light setting makes it very easy to see the line

and even though it's picked out in green, there's a tendency to try switching the saw off by pushing the adjacent blade eject slider.

### Clever lighting

The power sliders play a secondary role, with the LED cluster around the pendulum cycling through a sequence of functions by sliding both switches at the same time until a beep is heard. This allows the lights to illuminate constantly, to strobe so the blade appears stationary, or to be switched off. The strobe feature is useful when making finer cuts, as you can see exactly where the tooth line is.

### Blade retention

The blade is held securely using a sleeve that wraps the bayonet to hold it firmly. It self-ejects when you slide the lever so you don't burn your fingers on a hot blade. However, the long plastic finger that operates the blade clamp seems a weak point. On a tool of this quality a more robust alloy finger would be better.

### Speed control

The variable speed dial is stepless and works flawlessly. However, the downside on the body-grip model is that the speed is set automatically. A clever feature here is the auto setting. Putting the dial to this position and switching on has the saw running at idling speed so you can align and position it accurately. Only when the pressure is applied for cutting does the saw pick up speed.

A variable-speed trigger on the D-grip model's handle offers more control on intricate work, so you have to make your choice of body style with that in mind.

### Summing up

Festool continue to innovate with their products, but the basic tilt function is a standard feature on most jigsaws, so having to pay extra for this may put people off buying what is a very accurate saw that performs extremely well. AK

## SPECIFICATION

| | | |
|---|---|---|
| **MOTOR** | | 550W |
| **STROKE RATE** | | 1500-3800spm |
| **MAX CUTTING DEPTH** | wood | 120mm |
| | non-ferrous metal | 20mm |
| | steel | 10mm |
| **WEIGHT** | | 1.9kg |

**ACCESSORIES** Systainer case
* angled shoe £99.72
* circle jig £41.52
* guide rail adaptor £12.36

## VERDICT

Festool have certainly done their homework on the Carvex and it offers several innovations, although these come at a cost.

***PROS***
- Great cutting performance
- Clever features
- Choice of body styles

***CONS***
- Blade clamp durability
- Additional accessories are expensive

***VALUE FOR MONEY***

***PERFORMANCE***

## FURTHER INFORMATION

- Festool UK
- TTS Tooltechnic Systems
- 01284 760791
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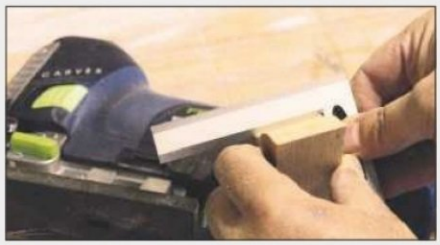

Cutting deeper stock in hardwood leaves perfectly clean and square edges

The plastic blade eject lever lets the side down compared to the rest of the saw

Cutting a few tight curves on melamine chipboard left a decent finish...

...even with a coarse wide-set blade fitted. The splinter guard works wonders!

***The Turnmaster is a scraping and shear-cutting tool.*** *The example tested is handled, and came with three tungsten carbide cutters and the necessary keys and spanners, plus a pack of HSS cutters*

# **Robert Sorby** Turnmaster


from **£75**

Robert Sorby's Turnmaster is the first tool to combine three cutting-edge technologies in one tool. Cutters are available in various profiles in tungsten carbide, high-speed steel (HSS) and TiN (titanium nitride) coated HSS, and all fit into the Turnmaster cutter head. Prices start at around £75 for the handle, shank and head plus one tungsten carbide cutter. Individual cutters cost from £8.70.

## Standard features

The steel shaft has a flat ground on the underside for stability, and a hole drilled for a tommy bar that holds the shaft while the cutter head is fitted. The tang is 55mm long and 13mm in diameter, and can be fitted into your own turned handle if you prefer. The shaft has a head at the end which can be adjusted to allow three positions: scraping, shear cutting to the right and shear cutting to the left.

The indexable head slides onto the end of the shaft and locates in one of three notches. The nose nut screw passes over the end of the head and screws onto the shank to hold the head securely. A shaped spanner is used to lock the head while the tommy bar stops the shaft from rotating. The cutters are then secured to the end of the tool with a high-tension steel T20 Torx screw; a key is provided.



## Cutter shapes

There are only three shapes in tungsten carbide (round, diamond and square), but these will cope with most turning jobs. The two HSS ranges include additional specialist shapes for box cutting, undercutting and so on. The cutters are all quite small; for example the round cutter is 4mm thick and just 9mm in diameter. Best keep them somewhere safe…

The shaft has a flat ground on the underside, and a hole for a tommy bar

The head slides onto the end of the shaft and is retained by the nose screw

The head can be rotated in the shaft to offer one of three cutting positions

Tungsten carbide cutters come in just three shapes; others are available in HSS only

The cutters with tungsten carbide tips are designed to keep their edge for a long time and then to be replaced when they no longer cut efficiently. However, they can be freshened up for a while with diamond abrasive. The steel cutters can all be re-sharpened – for example, on the Robert Sorby ProEdge system – and a special tool holder is available to facilitate this.

## Using the tool

Its overall weight feels right. The indexable head provides a firm vibration-free holder for the cutter. The machined flat on the underside of the shank makes it easy to control the tool, which lies flat on the toolrest. The distance between the edge of the cutter and the toolrest is in the region of 70mm; this takes a bit of getting used to, especially for spindle work.

The ash handle is strong, well finished, with a good shape, and can be tucked under the armpit for greater control. The cutters are well made and ready to use. The tungsten carbide types should give long life, while the TiN-coated tips should last longer between sharpening sessions than the plain HSS cutters.

## Summing up

The Turnmaster system will suit many turners who want one tool system to do everything, and the three basic cutters will be sufficient; additional cutters can be added when required. The tool is easily stored, but care is needed to ensure that the cutters aren't dropped into the shavings and lost!

The system doesn't replace conventional turning tools, which are designed to cut rather than scrape the wood. However, many newcomers and occasional turners find it difficult to master these tools and to remember the techniques required. Therefore there's definitely a place for this new system. The tool and cutters are well priced when compared with a set of conventional turning tools. All the components can be purchased separately, but if you buy the handled example tested with three carbide cutters you can be up and turning straight away. You also won't need to buy a grinder and jigs; this helps to keep the overall cost down for the new turner. IW

## THE CUTTER RANGE

| | |
|---|---|
| **Tungsten carbide** | square, round, detail point |
| **High-speed steel** (HSS) | as above plus box, French curve, mushroom and teardrop cutters |
| **Excelsior** (TiN-coated HSS) | as above |

## VERDICT

The Turnmaster is a well-thought-out tool that's manufactured to a high standard and does its job well.

***PROS***
- Simple one-tool system
- Well designed and made
- Ideal for occasional turners

***CONS***
- Finished work requires more sanding
- Tiny cutters can easily get lost

***VALUE FOR MONEY*** ■■■■■
***PERFORMANCE*** ■■■■■

## FURTHER INFORMATION

- Robert Sorby
- 0114 225 0700
- www.robert-sorby.co.uk

The long ash handle can be tucked under the armpit for greater control

A special spanner locks the nose nut. The tommy bar stops the shaft from rotating

The cutter is attached securely to the head with a T20 Torx screw

The HSS cutters can be sharpened; a special jig is available to hold the cutter securely

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Every month we aim to bring you the best projects, the widest range of tests and the most useful techniques, building up into a complete library of essential woodworking knowledge. If you've missed an issue, here's your chance to find that vital tool test or project. If an issue is sold out, we can send you a photocopy of any feature at a discount price.


### JUNE 2012

PROJECTS: Cherry dresser 1, Jewellery chest, Pedestal side tables, Guestroom towel rail
FEATURES: Marking and setting out, Portable power tools 7 – routers & router tables, Using a vertical panel saw, Shop notes
TURNING: Banksia nut projects, Metalworking tools for turners, Two-tier tripod spice rack
ON TEST: Trend combination router base, Famag Forstner bits, Dremel compact saw, Makita cordless circular saw, Trend goggles, Axminster table saw, Einhell multi-tools, Trend hex key set, Mafell circular saw with guide rail


### SUMMER 2012

PROJECTS: Cherry dresser 2, Outdoor dining table, Glass-topped lounge table, Patio side table
FEATURES: Preparing tools, Tailor-made bench 1, Choosing machinery, Shop notes
TURNING: Hollow cedar gourd, Silvered candlesticks, How spalted wood occurs
ON TEST: Makita router/trimmer, Axminster pillar drill table, DeWalt laser, Trend depth gauge, Veritas palm plane, Trend sharpening stones, Axminster drum sander kit, DeWalt camera, Robert Sorby Micro modular tool system, Axminster compressor


### JULY 2012

PROJECTS: Veneered DVD cabinet 1, Tenor ukulele 1, Oak blanket chest
FEATURES: Making mechanical joints, Building a tailor-made bench 2, Routing with templates, Shop notes
TURNING: Techniques for turning spalted wood, Three ways to shape small boxes
ON TEST: Festool circular saw, Draper bandsaw, JCB plunge router, Flexidisc sanding system, Elmer's glues, Makita combination table/mitre saw, Draper bench-top spindle moulder, Veritas miniature planes, Axminster double bevel marking knife


### AUGUST 2012

PROJECTS: Children's outdoor climbing frame, Tenor ukulele 2, Open cherry bookcase, DVD cabinet drawers
FEATURES: Making interlocking joints, Using profile-scribing and panel-moulding cutters, Shop notes
TURNING: Desktop companion, Cutting screw threads, Dowsing pendulum
ON TEST: Axminster Stayput worklight, Mafell cross-cutting system, Axcaliber mitre trimmer, Festool Surfix oil finish system, Makita cordless biscuit jointer, Proxxon bench drill, Axminster squirrel-tail palm plane


### SEPTEMBER 2012

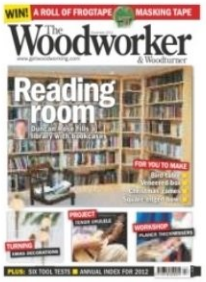
PROJECTS: Curvy ash reclining chair, Interwoven room screen, Tenor ukulele 3, Glass-topped map table
FEATURES: Shaping your work, Getting components to fit together well, Making a ledged-and-braced door, Shop notes
TURNING: Writers' Circle trophy, Multi-centred wall plaque, Green bowl in applewood
ON TEST: Makita cordless jigsaw, Intelligent Workshop and Qwas bench dogs, Osmo oil finishes, Hammer planer thicknesser, Numatic workshop vacuum cleaner


### OCTOBER 2012

PROJECTS: Oak front door, Child's tricycle, Tenor ukulele 4, Curved mantelshelf
FEATURES: Letter and numeral templates, Cleaning up your work, Making a bench hook and shooting board, Shop notes
TURNING: Three easy-make pincushions, Involuted turning
ON TEST: Lie-Nielsen shooting board plane, Veritas chisels, Hitachi cordless combo kit, Radian router cutters, Axminster flexible drive unit handpieces, Liogier rasps and rifflers, Makita workshop/site radio, Wera screwdriver and bit sets, Dremel cordless drill/grinder, Lie-Nielsen tenon saw


### NOVEMBER 2012

PROJECTS: Curved-top bookcases, Bentwood ash footstool, Tenor ukulele 5, Oak futon base, Adjustable-height workbench
FEATURES: Shop machines 1: The table saw, Restoring a bench plane, Shop notes
TURNING: Cedar wood moth-proofing medallions, Long-hole boring: making a base for a table lamp
ON TEST: Veritas optical centre punch, Bosch GSS orbital sanders, Parkside vacuum cleaner, Dremel 3000 multi-tool, Veritas sliding square, Woodster Divar saw system, Jet mini lathe




### DECEMBER 2012

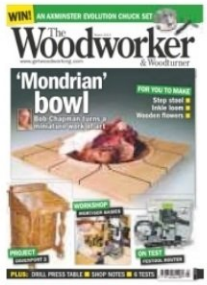
PROJECTS: Library bookcases, Veneered hardwood box, Tenor ukulele 6, Bird table, Traditional table games
FEATURES: Workshop machines 2: The planer thicknesser, Shop notes
TURNING: Christmas tree decorations, Square-edged yew bowl
ON TEST: Einhell circular saw, Japanese adjustable boring bits, Makita cordless random orbit sander, Axminster lathe, GemRed digital callipers, Gedore Magic shear cutting set
INDEX: Full contents listing for the January to December 2012 issues


### JANUARY 2013

PROJECTS: Five-bar pedestrian gate, Small workbench, Tambour-fronted chest of drawers
FEATURES: A woodworker's ABC 1: the letter A, Shop notes, Workshop machines 3: Singles or twins?
TURNING: A selection of bowls, Combined clock and table lamp, Hourglasses
ON TEST: Axminster Evolution chuck, Einhell jigsaw, Osmo wood fillers, Mafell circular saw, Dremel Moto-Saw, Osmo PolyX-Oil wood finish, Hitachi cordless combi drill, Veritas marking gauge, Einhell workshop vacuum cleaner


### FEBRUARY 2013

PROJECTS: Burr oak Davenport 1, Kitchen shelving units, Gadget carry case
FEATURES: A woodworker's ABC 2: the letter B, Shop notes, Workshop machines 4: The bandsaw
TURNING: Two-stage tall vase, Toy cakes and tarts, Spinning wheel bobbins
ON TEST: Einhell circular saw, Axminster reversible air drill, Tuff Saws Vari-tooth bandsaw blades, Bosch site radio, Hitachi bench planer, Metabo TurboTec orbital sander, Makita circular saw, Festool cordless jigsaw, Jet workshop extractor




### MARCH 2013

PROJECTS: Burr oak Davenport 2: fitting out and finishing, Simple step stool, Inkle loom
FEATURES: A woodworker's ABC 3: the letter C, Workshop machines 5: The bench mortiser, Adapting a drill press table, Shop notes
TURNING: 16-part segmented bowl, Sanding and finishing work on the lathe, Wooden flowers
ON TEST: Trend router table insert, Festool router, Makita biscuit jointer, Bosch table saw, Metabo cordless sabre saw, Marples marking tool set, Pax tenon saw


### APRIL 2013

PROJECTS: Room screen, Oak side tables, Computer desk
FEATURES: A woodworker's ABC 4: the letter D, Workshop machines 6: The spindle moulder, Adjustable-height workbench, Shop notes
TURNING: Ten steps to better bowls: part 1, Adding pewter embellishments to turned work, Two candlesticks
ON TEST: Charnwood bandsaw, Hitachi cordless vacuum cleaner, Bosch combi drill driver, Triton wetstone grinder, Senco nailer kit, Metabo cordless jigsaw, Veritas miniature block plane, Worx impact driver, Veritas planing stop

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# On the edge

**Your tireless editor visits the archives once more in search of forgotten treasures, and finds that there's plenty of new stuff to be found in an old place...**

As well as providing us with a quality page of retro entertainment, every back issue of *The Woodworker* contains an informative gem or two. A case in point can be found in an article on hardboarding a floor published in February 1965. Anyone who has ever laid a floor or two – and, like me, has the dodgy knees to show for it – will no doubt have encountered a variety of awkward corners, tricky protrusions, and all sorts of challenging edges.

Despite employing a variety of scribing methods, careful measurement and the occasional educated guess, I don't think I've used this particular method of transferring a shape from reality to a future fit. Known as spiling, it involves a rough template of paper or card, a rigid marking piece or set square, and the gradual build up of the tricky profile in question (A). With the finished template transposed to the relevant edge of the floorcovering, the marking piece is placed in its successive positions, and the profile reproduced with pencil dots on the tip (B). It's simple yet effective.

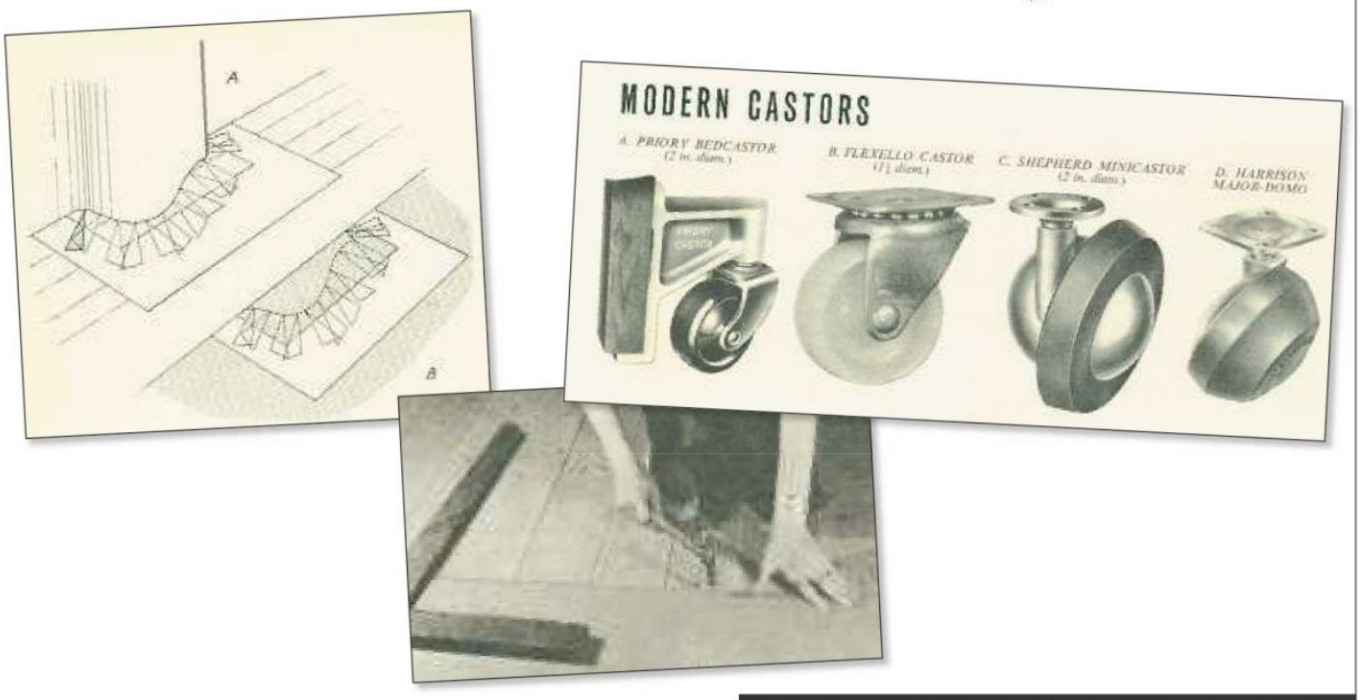
Also mentioned in this excellent flooring article is a specialised hardboard or fibreboard plane to both cut and chamfer an edge. It's the Record No 730 plane, and I have to confess to never having seen - or heard of - one of these at all. Does any reader own one? Maybe you've used one? If so, I'd love to hear about it or see a photo.

## Cast adrift

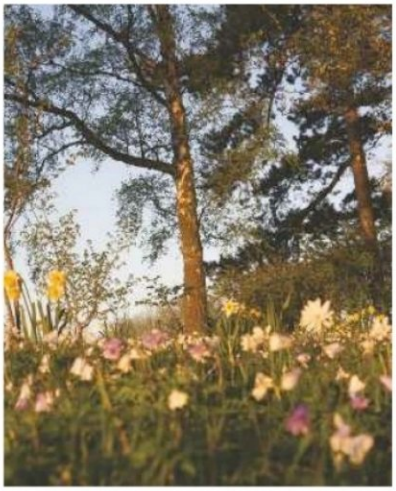
While I'm at it, I have another request here (don't worry, there will be more) for all our sleuth-like readers. This one concerns the scan of the Modern Castors from a two-part article on the same subject in *The Woodworker* March 1965 issue. Over the years I've noticed that much in the way of mid twentieth century technical illustration used to employ a technique that took a photo (black and white usually) and touched it up somehow to produce a smooth, clean and slightly stylised end product. I've seen it in car handbooks and manuals of the period, also advertising and similar, and I'm pretty sure its use was fairly widespread. If anyone can tell me anything at all about this process I would be extremely grateful.

Speaking of castors, it's nice to see that some of these are still available – notably the Shepherd type – but a bit sad that others, like the Priory Bedcastor, are no longer available. I'd quite like to use these ones for other applications as they look highly useful, not to mention decorative. Part of me is also quite keen to put the spiling technique into practice, but the other part – mainly my knees – is screaming NO!

Mark




*More from The Woodworker archive next month...*



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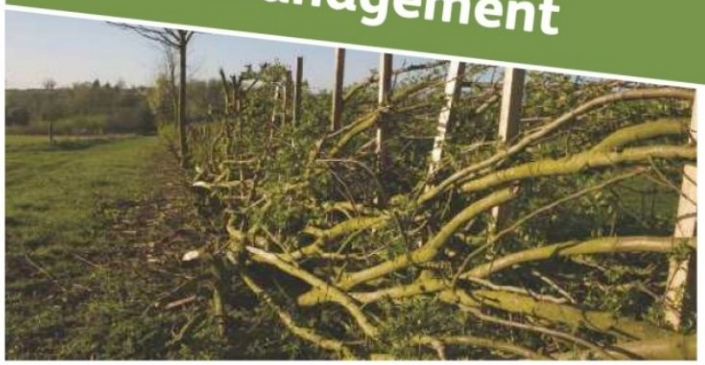

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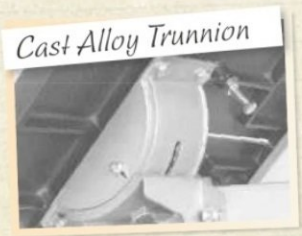
|  |  |
| The doors can be opened easily without the need for tools. | A far less convenient solution. |
| **Easy-Adjust Guides** | **Standard Guides** |
|  |  |
| A superior design, similar to our premium bandsaw range. | Provide less support and require tools to adjust. |
| **Jmproved Access** | **Limited Access** |
|  |  |
| The large table insert makes access and adjustment very easy. | Most bandsaws feature smaller table inserts, restricting access. |
| **Steel Rack & Pinion Trunnion** | **Cast Alloy Trunnion** |
|  |  |
| This type of trunnion allows one-handed operation, giving excellent support and accuracy. | More difficult to adjust accurately, requiring two-handed operation. |

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ESTABLISHED 1909®

Over 100 years
Experience • Knowledge
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