

WIN!

AN AXMINSTER CHUCK AND JAWS SET



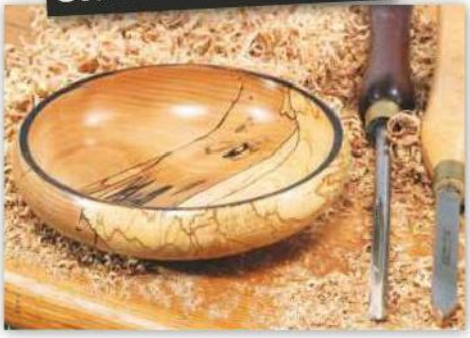
The Woodworker

July 2012

www.getwoodworking.com

& Woodturner

TURNING
CHALLENGE BOWL



PROJECT
TENOR UKULELE 1



WORKSHOP
TAILOR-MADE BENCH



Going *for* growth



Duncan Rose houses an expanding DVD collection

FOR YOU TO MAKE

- Oak blanket chest ■
- Mechanical joints ■
- Turned boxes ■

PLUS: TEMPLATE ROUTING ■ 9 TOOL & MACHINE TESTS



welcome



At the end of last year I promised to revive an old *Woodworker* tradition of featuring the building of musical instruments in the magazine. We haven't included any for a while, but at last I can bring you the beginning of a brand new series that features a tenor ukulele, built by Paul Bodiam. The ukulele is undergoing something of a popular revival at present, so we chose this instrument with that in mind.

Paul studied guitar and lute making in the short course programme at West Dean College and then privately with Zachary Taylor, who edited the magazine for a while back in the 1990s and now spends his time researching, making and playing stringed instruments ancient and modern. Paul tries to balance a career as a freelance IT consultant with being an amateur musician and luthier, and looking at his handiwork I reckon he's already become quite a craftsman. Part 1 of the build is on page 20 of the magazine, and part 2 is in the pipeline. We hope that those of you with a musical bent will have a go at making a ukulele of your own with Paul's help, and that you'll send us some photographs when you've finished it. We could even start our own ukulele orchestra...

Come rain or shine

You may remember Keith Smith writing in his Shop Notes column last autumn that he'd built a little jetty at the edge of the natural pond in his



Shropshire garden. He'd wanted one for years, but it took last year's drought to lower the water level enough for him to be able to build it, as you can see in the photograph on the left. The pond stayed very low all last winter, but the recent deluges have finally filled it to the brim and Keith can now often be found on a summer's evening face down on the deck, happily tickling his newts!

Mike



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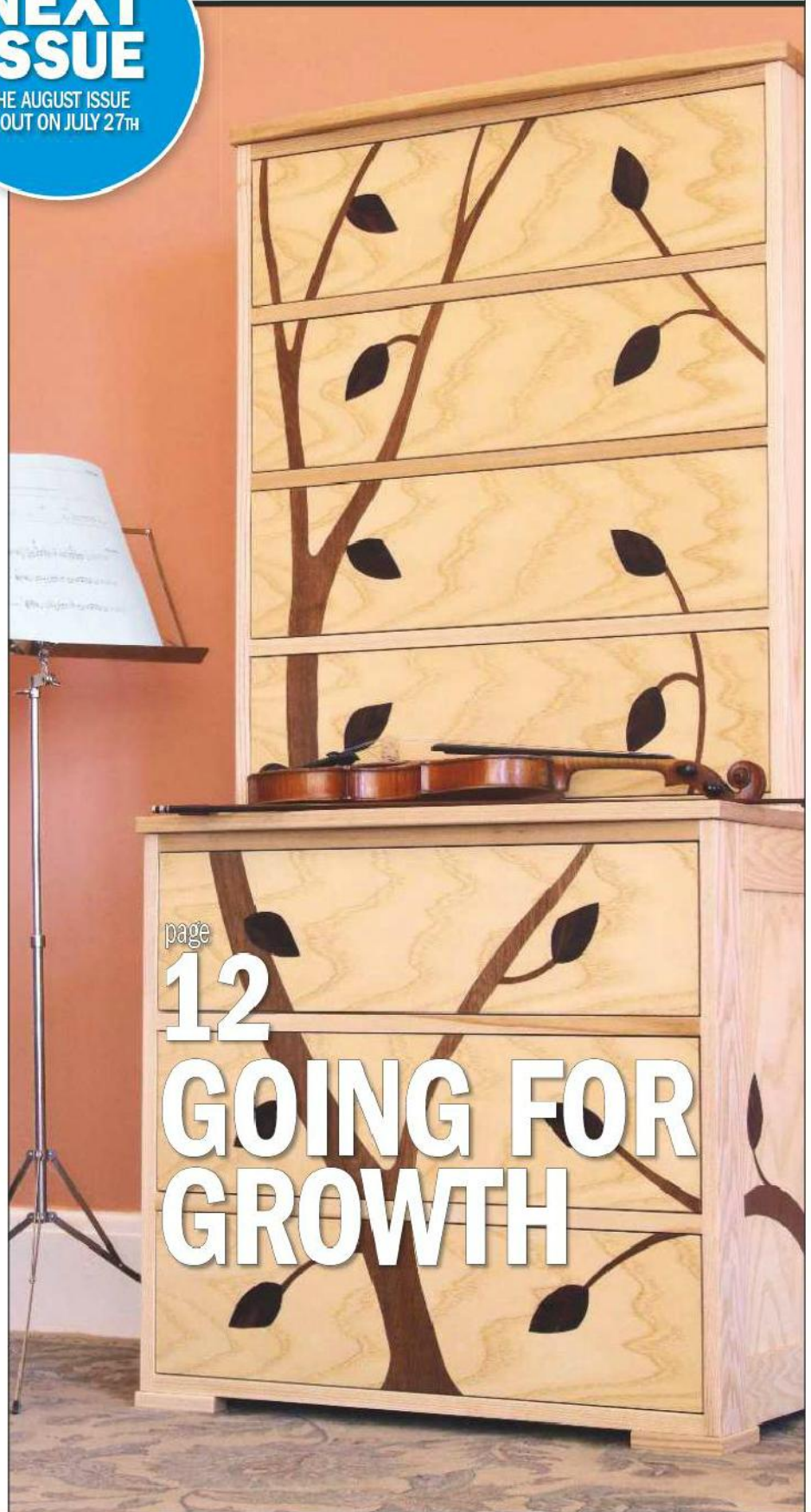
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AN AXMINSTER CHUCK AND JAWS SET
WORTH £125
SEE PAGE 63 FOR DETAILS



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SEE PAGE 56 FOR DETAILS

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The Woodworker

& Woodturner

July 2012

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On the desk...



TRENDY ACCESSORIES

MANUFACTURER: Trend
PRICE: from £13.20

Trend has just launched several new accessory products. The first is a versatile no-volt release switch whose main function is the remote switching of power tools such as routers when mounted in a router table. The plug-in switch can be conveniently



positioned by bolting it to the router table leg. It comes with a 1.7m flex and is priced at £54.

The next product is a heavy-duty double-sided adhesive tape which is ideal for temporary fixing when

making jigs. The 25mm wide cloth-based tape comes in 25m rolls and costs £13.20.

Lastly, Trend have introduced are two new styles of Euro guide bush. The 24mm bush has a 10mm spigot, while the 40mm bush has a 14mm spigot and accepts larger panel cutters up to 32mm in diameter. Both are ideal for use with the Trend Varijig frame system, and are priced at £15.60.

BETTER BIT HOLDERS

SUPPLIER: Irwin Tools
PRICE: from around £5

Irwin Tools has launched a new range of bit holders called Lock-N-Load which feature a quick-release mechanism to ensure the fast and efficient changing of drill bits. The unique jaw design holds bits securely on 6-flat shanks, as well as ball detent bits, while the 1/4in range can also hold insert bits.

The new bit holders are available in 1/4in diameter in 65mm, 150mm and 300mm lengths, while the 3/8in size comes in 80mm, 140mm and 300mm lengths.



Contact details of products and services mentioned in this edition of *ON THE DESK*...

Bosch	01895 838743	www.boschpowertools.co.uk
Irwin Tools	0844 412 1190	www.irwin.co.uk
Robert Sorby	0114 225 0700	www.robert-sorby.co.uk
Trend	01923 249911	www.trend-uk.com

DIARY

JUNE

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Waterperry, Oxford OX33 1JZ
020 7381 3192
www.artinaction.org.uk

Axminster Skill Centre

9 Tools for the furniture maker
19 Spindle moulding
Check website for places available
Unit 10 Weycroft Avenue,
Axminster EX13 5PH
0800 975 1905
www.axminsterskillcentre.co.uk

Intelligent Workshop

21 Summer open day
Lodge Road, Staplehurst, Kent
TN12 0QZ
01580 388131
www.intelligentworkshop.co.uk

John Boddy's Demonstrations

7 Chair caning: Christine Addley
28 Woodturning: Marsden Howitt
01423 322370 ext 257
www.john-boddys-fwts.co.uk

John Lloyd Courses

30-Aug 3 Furniture making 1
01444 480388
www.johnlloydfinefurniture.co.uk

Orchard Woodturners

14 Alan Hazel
Village Hall, Milstead, Kent ME9 0SD

Peter Sefton Furniture School

14 Open day, The Threshing Barn,
Welland Road, Upton upon Severn
WR8 0SN
01684 591014
www.peterseftonfurnitureschool.com

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11 Birstall Woodturners, Mirfield,
West Yorkshire WF14 8NA
21 Cornwall Woodturners, Wheal
Jane, near Truro, Cornwall
0114 225 0700
www.robert-sorby.co.uk

Toolshow 2012

7-8 Amex Express Community
Stadium, Brighton BN1 9BL
01273 774455
www.toolshow2012.co.uk

12-BIT DRIVER

SUPPLIER: Bosch Power Tools
PRICE: £59.99

The Bosch PSR Select is a 3.6V cordless screwdriver fitted with an innovative bit cylinder box that holds 12 standard screwdriving bits so you'll always have the right bit at hand.

The unique rotatable bit box ends the hassle of searching for the correct screwdriving bit. It's easy to see which bit you've selected by using the illuminated window at the top of the tool, and the 12 slots are interchangeable depending on your needs. With its Lithium ion battery the PSR Select is always ready for use, and never suffers any self-discharge or memory effect.

The PSR Select is available in selected DIY stores and from Amazon (www.amazon.co.uk)

TRAD OR TAPERED

SUPPLIER: Robert Sorby
PRICE: from £20.15 (from £84 for a set of 4)

This new Sheaf River range of chisels features finest Sheffield steel blades made from drop-stamped high-carbon blanks and incorporating a specially formulated alloy to ensure a perfect balance of tensile strength and edge retention. The chisels are available as standard bevel-edge or shorter butt versions. They're fitted with American ash handles for strength and resilience, and are offered with a choice of a traditional or tapered bolster and ferrule. They're available singly and in sets of four or five sizes.



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BY DUNCAN ROSE

Going for growth

Some friends asked me to make a decorated storage cabinet to house their ever-growing collection of film DVDs, and gave me a very interesting brief to follow. This month I'll describe the marquetry work and the making of the carcase, and next month I'll make the drawers and complete the cabinet

My friends wanted an innovative design using drawers that open and close with a push-to-release mechanism. As a cabinet without handles can look a little blank, they supplied a sketch showing its front and sides decorated with a stylised tree design, and asked me if I could make it work. It was a challenge I couldn't resist...

The cabinet will sit in a living room, and is designed to store a collection of more than four hundred DVDs. The collection is still growing, so the cabinet is a generous size. The design complements the style of the room, and echoes some curves found in its wooden fireplace surround. The last part of the design specification was a projection halfway up the front on which to rest a cup of tea!



1 Cut tongues on the panel edges so they'll fit into the side frames



2 Glue the mitred ash lipping strips to the seven drawer front panels



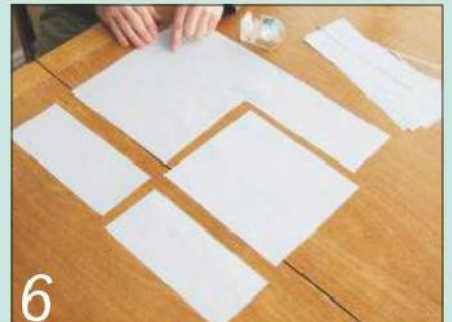
3 Use a sharp plane to trim the lipping strips flush when the glue has dried



4 You need only some basic tools and equipment for cutting the veneers

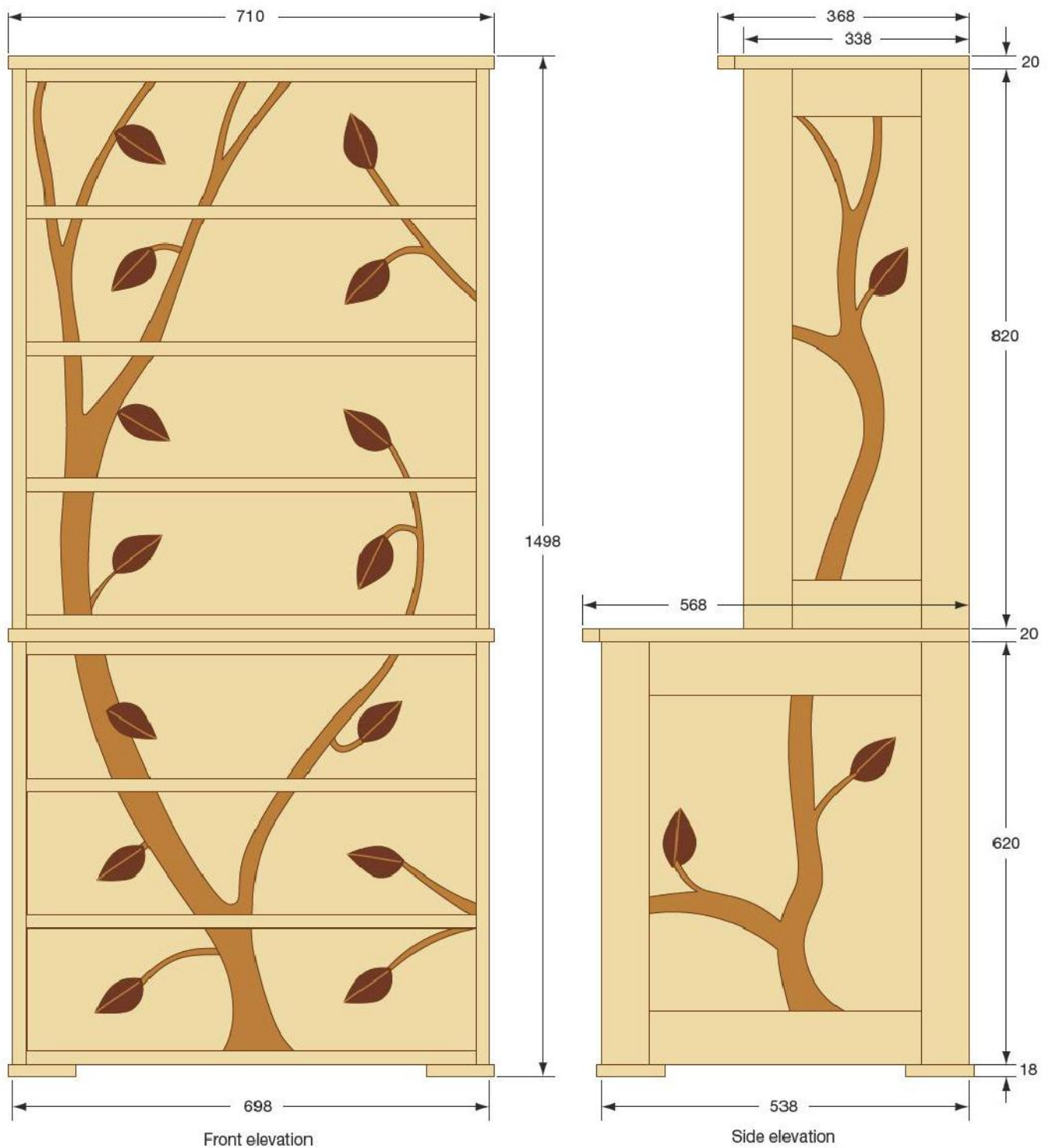


5 You can make a large sheet of veneer by butt-jointing and taping smaller pieces



6 Make a full-size drawing of the individual marquetry design for each panel





All measurements in millimetres

Creating the design

Using the wish list together with the measurements of the planned location, I set about designing the cabinet using CAD software. I started the design from the inside out; I selected a drawer size that will hold three rows of DVDs and allocated space for the drawer runners. Then I designed the carcass with four shallow

drawers at the top and three deeper drawers below. Finally, I drew the tree and leaf design onto the side panels and the lay-on drawer fronts. The CAD software makes it easy to draw the sweeping curves, to modify their size and position, and to try various veneer species until I was happy with the overall appearance. Then I hit the PRINT button...

Seven Into two

The cabinet is made in two parts, and the upper section is shallower to provide the required shelf for teacups. Both sections use the same method of construction. I shaped the front edge of the shelf and top with a gentle curve to echo that of the fireplace surround.

The regularity of the seven drawer fronts is

balanced by the strong marquetry design. Made using ash veneer for the background, brown oak for the branches and Indian rosewood leaves, the branches wrap across the lower and upper sections and also flow horizontally from the side to the front.

Making the side panels

Start by cutting the four plywood side panels to size. These form the groundwork for the marquetry and will be glued into grooves in the carcass side frames. I cut the panels from 12mm thick birch plywood; this provides enough thickness for the screws that will hold the drawer runners in place later.

Next, cut a 6 x 6mm tongue around the edges of the panels. I cut these using a rebate cutter mounted in the router table, **photo 1**. An off-cut of plywood helps to set the cutter height and fence position.

Lipping the drawer fronts

Prepare the drawer fronts at this stage as well, so all the marquetry work can be completed in one stage. I made the fronts from 18mm birch plywood, and lipped them with ash to mask the plywood edges. Dimension the plywood 20mm smaller than the 658 x 180mm drawer aperture. Later the veneered fronts will be trimmed to give an equal clearance gap all round.

Machine the lipping to a cross-section of 18 x 10mm and then cut it to length with mitred ends that will form invisible corner joints on the edges of the drawer fronts. I glued the lipping on and held it in position using low-tack tape, **photo 2**. When the glue is dry, plane the lipping flush to the panel, **photo 3**.

Veneering technique

The marquetry was created using the so-called window method. Here the design is gradually assembled into a single sheet of veneer that shows the required image; this is then glued onto the plywood backing panel. You can achieve impressive results using only a few tools such as a steel ruler, a cutting mat, a sharp knife and low-tack tape, **photo 4**. A rubber roller and electric iron will also be useful.

I cut all the veneer pieces using a scalpel, working from the face side of the veneer. For the curved cuts I made multiple short scoring cuts that ensure good knife control. All the abutting veneer edges are held close together using low-tack tape. Try some practice cuts first to get a feel for the properties of the veneer. When cutting, remember to keep your fingers behind the cutting blade at all times: scalpel blades are surgically sharp!

DVD CABINET 1 CUTTING LIST

All dimensions are in millimetres

Part	Qty	L	W	T
UPPER CARCASE				
Top	1	710	368	20
Back (plywood)	1	796	672	6
Base (plywood)	1	672	288	6
Side panel (plywood)	2	690	208	12
Side stile	4	820	70	20
Side rail	4	198	70	20
Front top rail (dovetailed)	1	688	32	20
Front/back rail	6	658	32	20
LOWER CARCASE				
Top	1	710	568	20
Back (plywood)	1	672	596	6
Base (plywood)	1	672	488	6
Side panel (plywood)	2	490	408	12
Side stile	4	620	70	20
Side rail	4	398	70	20
Front top rail (dovetailed)	1	688	32	20
Front/back rail	5	658	32	20
Back plate (plywood)	2	90	90	6
Foot	8	100	20	18
LAY-ON DRAWER FRONTS				
Front (plywood)	7	638	160	18
Lipping (long edge)	14	658	18	10
Lipping (short edge)	14	180	18	10

You will also need a quantity of veneer for the marquetry panels: I used ash for the panel backgrounds, and brown oak and Indian rosewood for the design



7 Hinge the background veneer to the edge of the panel using tape



8 Make the first cuts in the background veneer by following the drawing



9 Cut the adjoining veneer using the previous cut edge as a guide



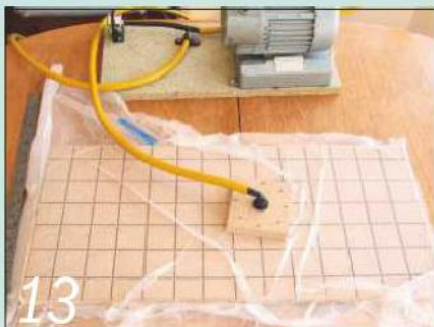
10 Tape the veneer joints together as you make up the panel design



11 Use two pieces of rosewood veneer to simulate veins on the leaves



12 Pour adhesive onto the panel and spread it out using the rubber roller



13 Press the assembly between flat cauls; I'm using my vacuum bag press



14 Release the panel after about an hour and remove all the tape strips



15 Flatten any ridges in the veneer with a medium-hot iron over paper



16 Remove any glue marks or squeezed-out adhesive using a hand scraper



17 Set your orbital sander to a low speed and carefully sand the veneer smooth

Balancers and backgrounds

Start by cutting the pieces of ash veneer that will cover the inner and outer faces of the side panels. The piece on the inside, called the balancer, is fitted to prevent the panel from warping after the veneers are glued to it. The piece on the outside is called the background, and will be the scene for your marquetry picture.

I dimensioned the balancer and background veneers a few millimetres larger than the panel to make alignment at glue-up a little easier. If your veneer sheets aren't wide enough to cover the panels in one piece, you can join two narrower pieces together using straight-edged cuts, **photo 5**.

Printing the design

For the next stage you require a full-size drawing of your marquetry design for each panel. You can either draw these by hand or design them using CAD software before printing them from your computer. As my design was larger than the printer paper, I printed it out across several pages and taped the sheets together, **photo 6**.

Now you can hinge the background veneer and then the drawing to the plywood panel. Use tape along one long edge, **photo 7**, so that both layers can be easily flipped in and out of position as required.

Creating the picture

Now it's time to start building up the marquetry design. Make your first freehand cut in the ash background with the drawing overlaid as a visual guide, **photo 8**.

Next, lift away the drawing out of the way and remove the cut-off side of the ash background. Tuck the adjoining piece of veneer – here it's the brown oak – underneath the cut edge, and tape it to the groundwork.

Make the cut in the oak veneer, **photo 9**, using the previously cut edge of the ash veneer as a guide for the knife. Discard the off-cut of oak that lies beneath the ash background. The resulting edges of the oak and ash veneers should match up perfectly, and you can now tape them together.

Repeat as necessary

Duplicate the above steps for the next veneer joint, first cutting through the drawing and the first veneer, then using the cut edge to guide the following cut in the next piece of veneer in your design. Gradually your marquetry picture will come together, **photo 10**.

Make the leaves and branches using the same method. First cut a window in the background and tape the leaf veneer underneath it. Then cut the leaf veneer

using the window as a guide, and tape the leaf in position, **photo 11**. I made the leaf veneer from two smaller pieces of Indian rosewood veneer with their grain direction matching that of the leaf veins.

Sticky moments

It's now time to glue the balancer and the marquetry sheets to the plywood panels. Hinge the balancer to the panel so it stays aligned when they are glued together.

Spread the adhesive carefully on the plywood, taking care to avoid any excess that could squeeze up through the joints. I used PVA adhesive and spread it evenly using a rubber roller. First I applied the adhesive to the plywood's inner face and folded it over onto the balancer veneer. Then I applied adhesive to the plywood's outer face, **photo 12**, and folded this over onto the marquetry sheet.

A pressing engagement

Now you need to press the work between flat cauls. I like to add sheets of thick paper between the work and cauls to absorb any excess adhesive, making the cauls easy to separate. I used my home-made vacuum bag press, **photo 13**, described in the Winter 2009 issue of *The Woodworker*. Alternatively you could use heavy weights on the cauls, such as books, sheets of wood or a couple of sandbags.

While the iron is hot

Wait an hour; then remove the work from the press and peel away the tape from the picture surface, **photo 14**. Check for any ridges in the veneer. These are swellings caused by the water in the adhesive, and should be removed immediately. Press them with a medium-hot iron for about five seconds to soften the PVA underneath; then press the heated patch flat until it has cooled. Use a piece of paper to prevent the iron from marking the veneer, **photo 15**.

This is also a good time to remove any glue marks with a scraper, **photo 16**.

A perfect picture

Leave the work to dry for 24 hours. Then sand the panels until they're smooth to the touch, **photo 17**. If sanding causes any discolouration in adjoining veneers, stop and apply a coat of sanding sealer. Clean the panel edges and their tongues of any excess adhesive and overlapping veneer.

Needless to say, all you have to do now is prepare the other three cabinet side panels, before moving on to veneering the seven drawer fronts. It won't take nearly as long now you've got the hang of it...



18 Cut all the mortises for the loose tenons in the frame stiles and rails



19 Rout edge grooves in the frame members to receive the panel tongues



20 Cut a socket for the dovetailed top rail in each of the side frame front stiles...



21 ...and check that the joint is a snug fit. Add a screw to hold it securely if necessary



22 Cut the mortises in the frame stiles to accept the front and back rails



23 Glue and cramp up each of the side frame assemblies and leave them to dry



24 Link the side frames with the rails, fit the cramps and remove any excess adhesive



25

Rout 6mm deep rebates in the carcass base and back to take the panels



26

Glue and pin the base and back panels in position in their rebates



27

Finally, screw the eight corner feet pieces to the base of the lower carcass



28

The two carcass sections are now complete except for the top and the shelf

Frames of reference

After all that veneering, it's time to make the carcass side frames. I cut the stiles and rails from 25mm thick sawn planks of ash, and used the planer to flatten, square and then thickness them down to 20mm. This is also a good time to make the front and back carcass rails.

Now mark out the positions of all the stile and rail joints and cut them. To save time I jointed the frame pieces using pairs of floating tenons, with their mortises cut using a proprietary handheld cutter, **photo 18**. You can also use traditional mortise and tenon joints; if you do, remember to make the rails longer than the dimensions given in the cutting list, to allow for cutting the tenons. Allow a lot of extra time too!

Feeling groovy

Next, cut 6mm wide grooves in the frame stiles and rails to hold your marquetry side panels. Position the grooves so the inner face of the side panel and frame are flush with each other. I cut the grooves using a 4mm slot cutter in the table router, **photo 19**, and adjusted the cutter height to get the required groove width. Note that as my frames are jointed using floating tenons, the grooves in the stiles are stopped at each end; these are clearly visible in **photo 22**.

Essential rails

Cut the joints in the panel stiles ready to receive the front and back rails before gluing up the frames. For added strength, I jointed the front top rail in each carcass using a lapped dovetail and held it tight with a screw. I cut the tails and the sockets using my dovetailing jig, **photo 20**, resulting in a well-fitting and strong joint between rail and stile, **photo 21**.

I jointed the remaining front and back rails to the frame stiles using floating tenons, again with matching mortises cut using the handheld cutter, **photo 22**. The rails are positioned to give equally spaced drawer apertures 180mm high.

Coming together

Now it's time to glue up the two carcass assemblies. I did this in two stages. Start by gluing up the side frames around their marquetry panels. Make sure that they're square by checking that the measured diagonals are equal, and clamp until the adhesive is dry, **photo 23**.

Next, glue the front and back rails to the side frame assemblies. Make sure the assembly is resting on a flat surface, clamp the rails tight and check once again that everything is square, **photo 24**.

Panels for a purpose

The carcass base and back panels add strength to the structure. They also prevent the ingress of dust, and air trapped in the sealed cabinet provides a damping effect when the drawers are closed.

I made the panels from 6mm thick plywood and fitted them into 6mm deep rebates, which I cut using my hand-held router fitted with a bearing-guided rebate cutter, **photo 25**. Dimension the panels to fit and fix them into their rebates with glue and pins, **photo 26**. If you use a pin hammer or a nail gun, be sure to insert the pins no more than 3mm from the panel edges.



29

The seven completed drawer fronts reveal how the tree design flows

Two pairs of feet

The final task in part 1 of the build is to make the feet for the lower cabinet. I made each foot from a pair of 100mm long pieces of ash, mitred at the corner. A small round along their edges looks attractive and helps the finished cabinet to slide more easily across the floor when it's moved. Locate the feet so they extend beyond the cabinet by 3mm and secure each section with two countersunk screws, **photo 27**.

Now the carcasses are complete except for their tops, **photo 28**, and the drawer fronts are ready to be fitted to their boxes, **photo 29**. Next month I'll describe making the drawers and fitting the shelf and the top, before finishing and fitting out the cabinet.

FURTHER INFORMATION

Drawer hardware

- Blum UK
- 01908 285700
- www.blum.com



BY PAUL BODIAM

Highly strung!

1: MAKING THE HEAD AND NECK

In recent years there's been a huge renaissance of interest in the ukulele. It's knocking the recorder off top spot in schools, and The Ukulele Orchestra of Great Britain is filling concert halls the world over. So we thought we'd show you how to make one...

To meet the growing demand for cheap ukuleles, mass-produced instruments are widely available via music shops and online in a variety of garish colours for around £15 to £20. However, in my experience these imported instruments rarely play in tune without several hours of fettling, and their tone quality is best described as disappointing.

In this series I'll be building a tenor ukulele, using the same tools and techniques that I employ when building a full-sized classical guitar.

The Ideal voice

The tenor ukulele is slightly bigger than the commonly available soprano version, making it more comfortable for an adult to play, while still being small enough for a child to manage.

The plans for this ukulele came from Zachary Taylor, a former editor of *The Woodworker* who now researches, writes about and makes period and modern stringed instruments. His website www.zacharytaylor.co.uk offers a wide range of plans, plus helpful links to materials suppliers.

Selecting your wood

It's best to source the wood for an instrument project like this from specialist lutherie suppliers. They have the expertise to select, cut and season the wood to get the best properties out of it, both visually and tonally. They're more used to supplying wood for guitars and may not list pieces sized specifically for a ukulele project, but I've found a quick email or phone call is all that's needed to get a wealth of helpful advice and suggestions.

Two suppliers I've used extensively are David Dyke (www.luthierssupplies.co.uk) and a firm called Touchstone Tonewoods (www.touchstonetonewoods.co.uk), both of whom I would recommend highly.

Specification matters

When contacting your supplier, you should specify the maximum width of the instrument, the depth of the body (the rib height – see overleaf), and the scale length (the distance between the nut and the saddle). This will enable them to suggest the most appropriate selections of timber to suit your project.

The soundboard should be quarter-sawn spruce or cedar, with straight and evenly spaced growth rings. It should be free of any splits, shakes or knots. Soundboards are usually supplied as book-matched pairs



1 The package of blanks I ordered included Sitka spruce, mahogany, rosewood, and bone



2 The two smaller pieces cut from the neck blank will be stacked up to make the heel



3 Mark out the cut for the scarf joint that will connect the head to the neck



which you will have to joint along the centre line of the instrument.

The ribs and back can be made of pretty much any close-grained hardwood, again ideally quarter-sawn. Popular wood choices for guitars include sycamore, rosewood, cherry, maple and mahogany. Attractively figured woods can enhance the look of the finished instruments, especially on a book-matched back. However, on a first project I would avoid highly figured rosewood; its wayward grain around knots

can make it very difficult to get an even curvature when bending the ribs.

The neck should be in a straight-grained timber that's easy to carve. Popular choices are cedar, mahogany, maple or sycamore.

The fingerboard and bridge are usually made from rosewood or ebony, although practically any hard-wearing wood will do. I once used a piece of lacewood, split and book-matched lengthwise, to make a very attractive fingerboard on one of my guitars.

The head facing can be made from the

same wood as the back and ribs or, alternatively, in a wood that compliments the fingerboard and bridge.

The nut and saddle are usually made from bone or a hard plastic called Corian, which is also used to make kitchen sinks and worktops amongst other things.

For this project I've chosen Sitka spruce for the soundboard, mahogany for the ribs, back and neck, and rosewood for the head facing, fingerboard and bridge. **Photo 1** shows all the materials as they were delivered.



4 Cramp the scarf joint components on edge to a piece of MDF to keep them aligned

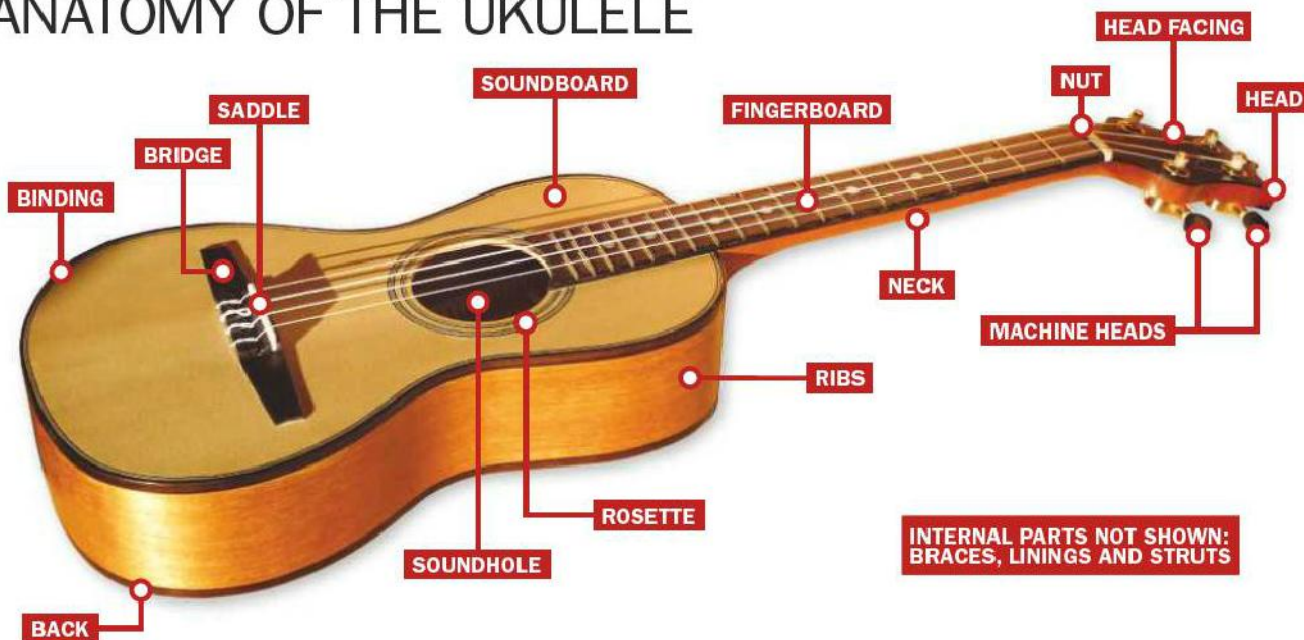


5 Glue and cramp the two pieces that form the heel stack to the opposite end of the neck



6 Draw a centre line and two width lines on the finished neck and head blank

ANATOMY OF THE UKULELE



BACK The rear panel of the instrument's body, as its name suggests. It's usually made of a close-grained hardwood, and reflects sound radiating from the back of the soundboard.

BINDING A thin strip of hardwood set into the joint where the soundboard meets the ribs, and often where the ribs meet the back as well. It protects the soft edges of the soundboard from wear and casual knocks. It's often made into a decorative feature by the addition of other thin inlays in contrasting colours.

BRACES (not shown) Strips of wood glued across the inside of the back to reinforce it.

BRIDGE A raised piece of wood that anchors the ends of the strings on the soundboard. It's usually made of a dense hardwood such as rosewood or ebony, and transmits the vibrations of the strings to the soundboard.

FINGERBOARD A thin layer of decorative hardwood glued to the top surface of the neck, into which the frets are fitted. It often has inlays to indicate the position of certain frets to aid the player.

HEAD The part at the top of the neck where the strings are attached to the machine heads (tuning pegs). It's set back at an angle from the neck to ensure that the strings are pulled down firmly onto the nut (see below).

HEAD FACING A hardwood veneer on the top surface of the head. This is not only decorative; it covers and strengthens the joint between the neck and the head. Some makers include a logo or monogram inlaid into the head facing.

LININGS (not shown) Strips of wood, often spruce or cedar, glued inside the edges of the ribs to increase the gluing area where the top and back are joined to them.

MACHINE HEADS Also known as tuning pegs, these are fitted into the head and are used to keep the strings under the correct tension. Originally they would have been simple taper-fit pegs like violin or lute pegs, but worm-gear tuners are more usual these days.

NECK The part connecting the head of the instrument to its body, with the fingerboard on its upper surface.

NUT A notched support for the strings at the head end of the fingerboard, usually made nowadays of bone or a hard plastic. It keeps the strings a set distance apart and forms one end of their vibrating length. The nut also sets the height of the strings above the first fret.

RIBS The curved sides of the body, usually made of the same hardwood as the back. The complex curved shape of the ribs provides considerable stiffness to the body while keeping the weight down.

**INTERNAL PARTS NOT SHOWN:
BRACES, LININGS AND STRUTS**

ROSETTE A decorative marquetry ring inlaid round the soundhole. In cheap instruments this is often a transfer applied under the varnish, or is omitted altogether.

SADDLE A strip of hard material such as bone set into the bridge to form the other end point of the string's vibrating length. It also sets the height of the strings above the fingerboard, often called the 'action' of the instrument.

SOUNDBOARD Also called the top, this is the front of the body and is usually made of spruce or cedar. This is the surface that resonates with the vibration of the strings.

SOUNDHOLE The round hole cut through the soundboard to let the sound out.

SCALE LENGTH The vibrating length of the strings; in other words, the distance between the nut and the saddle.

STRUTS (not shown) Wood glued to the inside of the soundboard to stiffen it without adding significant mass to it.



Getting started

The best place to start work on your ukulele is with the neck. The mahogany blank shown in **photo 1** is huge, but this is because I deliberately ordered one big enough for a full-sized guitar. This means there will be plenty of wood left over to make the neck block and bottom block (which will be covered in a later article).

Cut the blank down so it's as wide as the widest part of the head design (68mm) and check that it's square on all sides. It must be long enough to form the head (117mm), the neck (231mm) and the heel-stack (42mm for each slice). My blank was 30mm thick, so I needed two pieces to make the heel. Therefore I cut my blank 440mm long.

First cut off the two pieces that will form the heel, **photo 2**. Then cut down the remaining blank to the maximum thickness of the neck (16mm). At the end that will eventually form the head, cut the blank down to a thickness of 13mm over a length of about 125mm.

The right angle

A scarf joint will connect the head to the neck. Measure 120mm from the end of the blank and use a protractor to mark out the angle of the cut (165°), **photo 3**. Extend these lines right around the blank and then cut this joint carefully, taking care to keep the saw cut exactly on the marked lines.

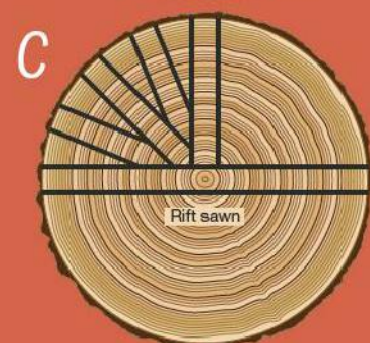
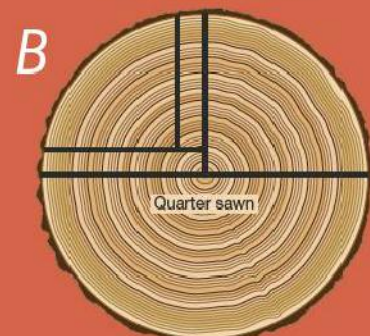
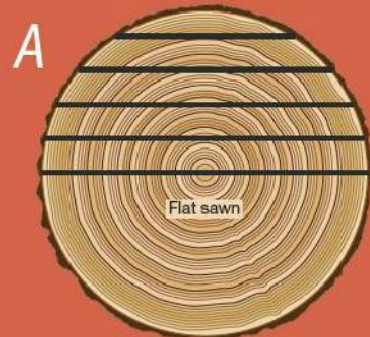
Clean up the cut surfaces with a plane. This piece will be jointed to the underside of the neck to form the angled head.

This is a difficult joint to clamp up, and it's important to keep the parts precisely in line. I like to assemble them as follows. Lay a piece of paper on the bench to stop any glue sticking to it. Then clamp the neck blank firmly down onto the bench on its side. Apply a liberal amount of glue to the jointing faces and offer up the head, also on its side. When the head is in the right position, clamp it to the bench too. Finally, fit as many cramps as you can in the space available to close the joint evenly, and keep it cramped while the glue sets, **photo 4**.

Adding the heel

When the glue has set thoroughly, remove the cramps and clean up any glue that has squeezed out of the joint. Use a plane to make sure that the top face of the head is perfectly flat across the joint so the head facing will fit properly.

Now measure 231mm (the length of the neck plus its dovetail) from the point where the head meets the top of the neck, and cut the neck squarely at this point. Glue on the two heel pieces that you cut off earlier, **photo 5**, being careful to ensure that the grain runs in the same direction on each piece. When the glue has dried and you've cleaned off any squeeze-out, cut the heel



CONVERTING TIMBER

The simplest way to convert a log to boards is to take repeated parallel slices from it (**A**). This is known as flat sawing, and results in boards that tend to have a curved section of growth rings in the board when viewed end-on. As the wood shrinks or expands due to changes in environmental moisture levels, these curved rings will cause the board to cup across its width.

Musical instrument makers strive to use wood that isn't going to change shape once the build has been completed. Therefore they look for wood where the growth rings run perpendicular to the board's plane. In a stack of flat-sawn boards, there will be only one or two suitable boards in the centre of the stack with the right orientation of growth rings.

Quarter sawing

An alternative way of converting a log is first to cut it into quarters lengthwise, and then to take parallel slices from the faces of each quarter of the log (**B**). This yields a higher number of boards with perpendicular growth rings, but is also more wasteful than flat sawing. This technique is known as quarter sawing.

The way to get the most quarter-sawn boards from a log is to use a technique called rift sawing. In a rift-sawn log, every board is cut radially (**C**). This yields the highest possible number of quarter-sawn boards, but is also the most wasteful way of converting a log due to the wedge-shaped waste pieces. Consequently, rift-sawn boards are the most expensive.



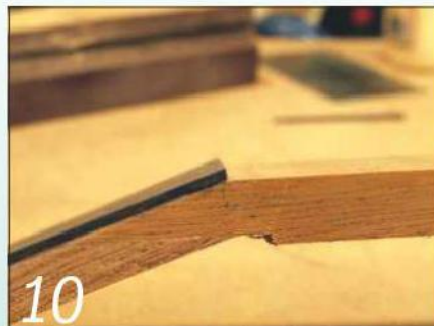
7 Cut the head facing slightly over-size, then glue and clamp it in place on the head



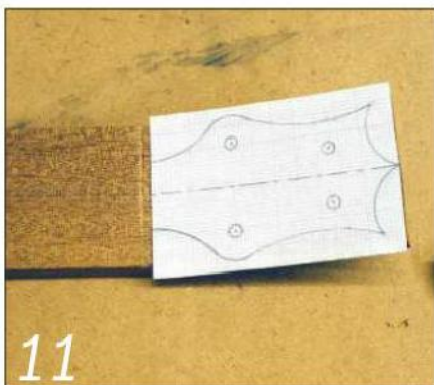
8 Mark the end of the head facing. This will form the back of the channel in which the nut sits



9 Cut the end of the head facing square across the neck and perpendicular to its surface



10 This close-up of the nut end of the head facing shows the angle of the cut



11

Stick a paper template of the head shape to the front and back of the head blank



12

Cut out the head shape on a scrollsaw. If you don't have one, use a coping saw instead



13

The template also shows the positions of the holes for the four tuning pegs



14

Use a small-diameter twist drill to bore pilot holes at the marked positions



15

Then bore the larger holes for the pegs. Work from both sides to avoid tear-out



16

Test-fit the pegs. Adjust the holes if necessary to ensure that they're positioned symmetrically



17

Remove any saw-marks and carry out the final shaping with a 120-grit sanding drum



18

Follow this up with some hand sanding, working down through the grades to 400 grit

block down in size so the total height of the neck and heel is 62mm.

You should now have something that is starting to resemble a guitar neck, **photo 6**. Mark a centre line on the front and back of the neck, head and heel.

Facing the head

The next step is to prepare the head facing. As supplied, mine was around 2.5mm thick. After cleaning up with a cabinet scraper, it was reduced to 2mm thick – exactly as specified in the plans. Incidentally, the easiest way to hold a small piece of wood like this while cleaning it up is to stick it to the bench with double-sided tape.

Cut the head facing to overhang the head by around 2mm all round, and glue it on. I find small spring clamps ideal for this job, **photo 7**. They will return for a starring role in a later article in the series.

Once the glue has dried, trim the head facing flush with the head on the sides and the end. Then draw a line on the head facing where the head meets the neck, **photo 8**. This line must be exactly at right angles to the neck.

Cut on this line to trim the end of the head facing, **photo 9**. This cut surface will eventually form the back of the channel that holds the nut, so it must be perpendicular to the neck, **photo 10**.

Shaping the head

Now you can cut out the shape of the head. Makers often develop their own unique head design, with the only constraints being that it must be aesthetically pleasing and must offer enough space for the player to reach all four tuning pegs comfortably.

For this project I've reproduced the head design exactly as given in the plans. Prepare two paper templates of the head shape and stick them to the front and back of the head, **photo 11**, being careful to align them to the marked centre line. Cut out the head, **photo 12** and **photo 13**. If you don't have access to a scrollsaw, you can use a coping saw to do the job by hand just as well, albeit a little more slowly.

Drilling the head

Start by boring pilot holes for the four tuners, **photo 14**, followed by the correct diameter holes they require, **photo 15**. To avoid any risk of grain tear-out where the drill bit emerges, I always bore these holes to just over half their depth, then finish them off from the other side of the head.

Test-fit the tuners, **photo 16**, to ensure that they fit properly and that they're symmetrically spaced. You can make small

adjustments to the holes now or, if absolutely necessary, correct a mis-positioned hole by plugging and re-drilling.

Finishing the head

Remove the paper templates with a cabinet scraper; then sand the cut edges to remove any saw marks and blend in the curves. For speed, I use a small 150-grit sanding drum in a drill-driver for the initial smoothing and blending, **photo 17**, then finish off working down through the grades down to 400-grit by hand, **photo 18**, until the curves are perfectly smooth, **photo 19**.

The head is now finished and won't be touched again until the final assembly of the instrument, so it's a good idea at this point to wrap it up to protect it from accidental knocks. I used an offcut of quilting material, but an old clean sock will do just as well.

Shaping the heel

Moving to the other end of the neck, it's time to start forming the heel. This is a complex shape with carved surfaces. Whenever you're preparing to create a carved surface, it's important to start by getting the profiles of the curves right when viewed from the end and side. So the first step is to mark out the side profile.

Draw a line 9mm in from the end to show where the shoulders of the dovetail joint will be; then extend this line right round the neck and heel. Create a paper template of the side view of the heel and use this as a guide to cut out its curved profile.

Using the centre line as a datum, mark and cut down the width of the neck so it's 1mm wider than the fingerboard along its entire length. The neck will be trimmed to the exact dimensions of the fingerboard during final assembly of the instrument.

Preparing the dovetail

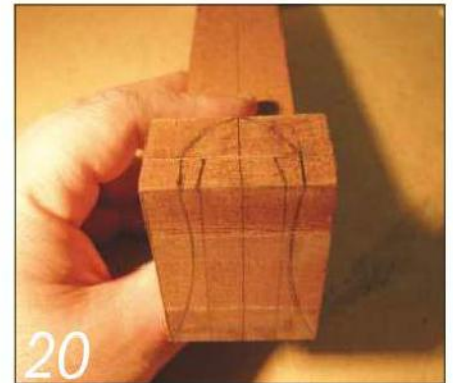
Mark out the dovetail and the heel profile, **photo 20**. Although you won't be cutting the dovetail just yet, it's a good idea to cut the dovetail shoulders now, **photo 21** and **photo 22**, because it will be impossible to make these cuts accurately after the sides of the heel have been shaped.

Now you can create the end-on profile of the heel. Using a coping saw, **photo 23**, cut away as much of the waste as possible; the neck gets in the way eventually. Then use a sharp knife to finish the shaping, **photo 24**, and smooth the curve with fine abrasive paper to create a neat symmetrical heel profile, **photo 25**.

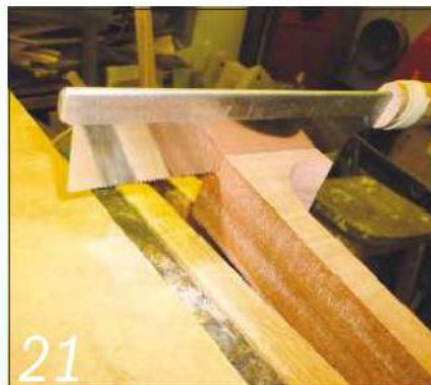
In next month's article I'll be carving the heel, building some jigs and creating the soundboard... Don't go away!



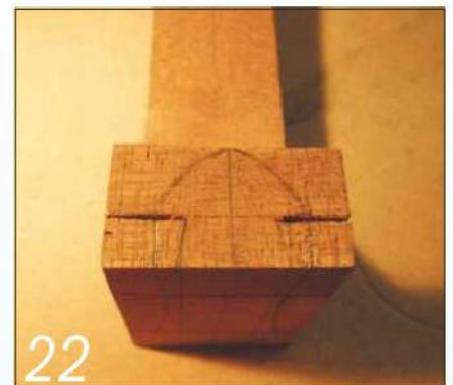
19 The head is now finished, and can be wrapped up to protect it while work continues on the neck



20 Mark out the shape of the heel and the position of the dovetail on the heel stack



21 Cut the dovetail shoulders now before you start to shape the profile of the heel



22 This close-up of the heel stack shows the two dovetail shoulder cuts completed



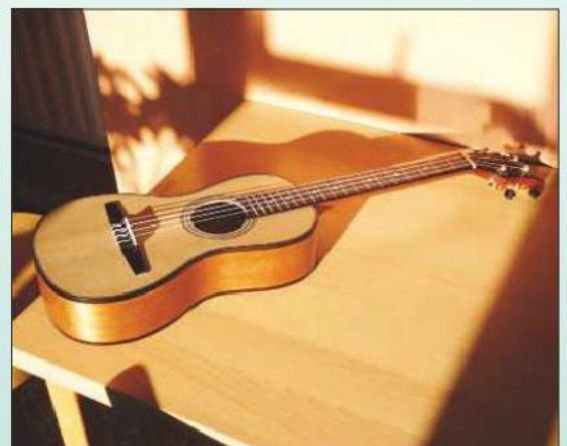
23 Remove as much waste as possible with a coping saw; the neck gets in the way eventually



24 Finish off the shaping with a really sharp knife, before sanding it to a smooth curve



25 The finished profile need not be precisely on the marked lines, but should be smooth and symmetrical



Olive Wood Turning

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Olive wood bowl and turning blank



Olive heart wood

My name is James Newburn. Welcome to Olive Wood Turning.

For many years I have been turning all sorts of bits and pieces on my wood lathe in my workshop. As with most of you, I would guess that's it's always a pleasure to get a new piece of wood onto the lathe and see what's inside. I first tried turning olive wood a couple of years ago, the first thing that hits you when you start turning is the smell, it's just fantastic. I've tried fresh cut, part seasoned and fully seasoned. All these have their good and bad points but I've found that turning part seasoned works for me the best. Whilst not being dripping wet it's still malleable enough to get a good shape out of before sealing and putting it on the shelf for a few months ready to final turn and polish. It's always an absolute joy to final turn and polish olive wood projects, the golden grain sparkles, it's very difficult to find a poor looking piece. It's also possible to turn larger projects, but to find fully seasoned large pieces of olive wood are both rare and usually very expensive. My intention with Olive Wood Turning company is to supply very nice part seasoned wood imported from southern Italy, in useable sizes at reasonable prices for those who want to unlock the delights of olive wood.

At present I have the following five sizes all sizes in mm. ;

155x155x75 180x180x100 300x75x75 250x65x65

And Pen blanks at 18x18x125

In my experience the sales of my Olivewood pieces at craft and trade fairs are always good. Customers cannot resist the smell and feel of the wonderful wood. The sizes on the products page are what I have in stock but I can supply most sizes if you don't see what you need. I turn this wood as well as supplying it. Having been to Italy and Greece to visit wood yards, in my opinion my product is the best on the market (but then it would be) give it a try for yourself I'm sure you'll not be disappointed. If you need a size that you cannot see here, give me a call and we will have a chat and see if we can help! I look forward to hearing from you!

Olive Wood Turning is a subsidiary of Wood and Stuff Ltd, 38 Park View Road, Lytham St Annes, Lancashire, FY8 4JE
Tel: 07714 204060 email: james@olivewoodturning.co.uk

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BY PETER BISHOP

Community chest

For several months (or is it years?) my wife has been asking for a blanket chest in which to store out-of-season bedding. Finding a bit of time on my hands recently, I decided I'd make her a solid oak coffer and do the job properly!

To be honest, there was another bit of an incentive to build this piece. I'd bought an expensive router cutter in readiness for a jointing job that didn't happen, and I wanted to see how it worked. So with that excuse at the ready, I was able to design this project in a slightly different way.

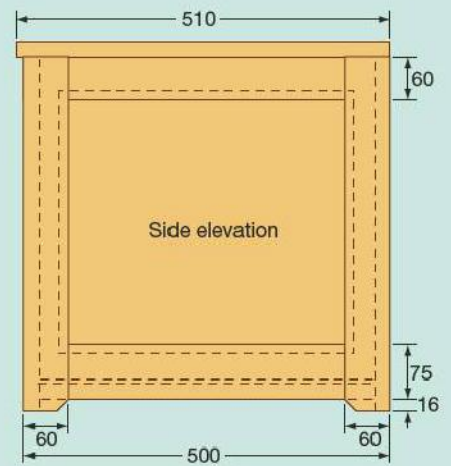
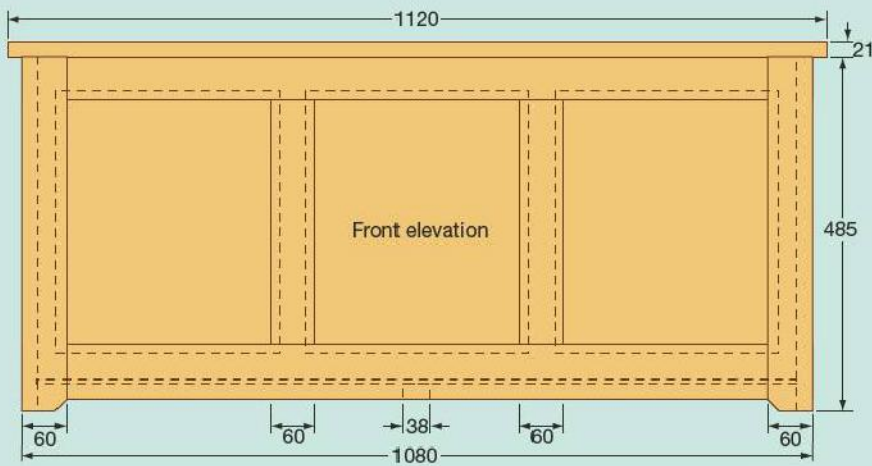
Preparing the parts

With some thick planks of waney-edged kiln-dried English oak in hand, I soon had the components marked out, **photo 1**. I then sawed them to nominal sizes, end-sealed them (**photo 2**) and stored them inside the house for a couple of weeks to acclimatise.

Once all the framing and lid components were ready, they went back into the workshop to be planed to size, **photo 3**, and to have their edges squared, **photo 4**. I took some trouble over this, as I wanted to make the corners of the chest out of two right-angled components rather than the traditional square post. To make the legs appear solid, I planned to use a cunning router cutter called a mitre lock jointer, **photo 5**.

Mitre magic

This forms a tongue and a groove on each mitred edge. You can reassemble these in the flat – at 180° to each other – as a



All measurements in millimetres



When marking out the various components, take care to avoid knots and splits

BLANKET CHEST CUTTING LIST

All dimensions are in millimetres

Part	Qty	L	W	T
Top	to make	1120	510	21
Leg	8	500	60	21
Long upper rail	2	1080	60	21
Short upper rail	2	500	60	21
Long lower rail	2	1080	75	21
Short lower rail	2	500	75	21
Muntin	4	380	60	21
Front/back panel	6	370	300	8
End panel	2	370	400	8
Base panel (mdf)	1	1200	600	6
Bottom brace	1	500	38	21

An allowance has been made on all the lengths for cutting joints.

You will also need some 25mm sq softwood battens to support the base panel, and two brass butt hinges, two screw eyes and a short length of chain to secure the lid.



Prepare the rough-sawn components, then seal all the ends to prevent splitting



Any 'misses' that occur during surfacing can be removed during the thickening stage

variation on a tongued-and-grooved edge joint, although you wouldn't buy this relatively expensive cutter just to do this! The magic appears when you join them at right angles; then the mitred edges interlock to leave an external corner that looks just like solid wood.

To machine the components on the router table, one piece is passed over the cutter flat to the bed, and the other flat to the fence. A little bit of trial and error with some offcuts of the same thickness eventually produced a good joint for me. It was time to machine the eight pieces that would form my four legs.

As long as the joint is strong enough, there are some advantages in creating a right-angled corner rather than using a square post. Firstly you don't use so much wood and, secondly, the rectangular base panel doesn't need to be notched to fit round the corner posts.

Making the corner joints

I assembled the legs by applying PVA glue to the abutting faces and cramping them up. The critical points here are to make sure that all the excess glue is squeezed out of the joint, and that each corner is a perfect right angle on the outside faces once it's cramped up, **photo 6**.

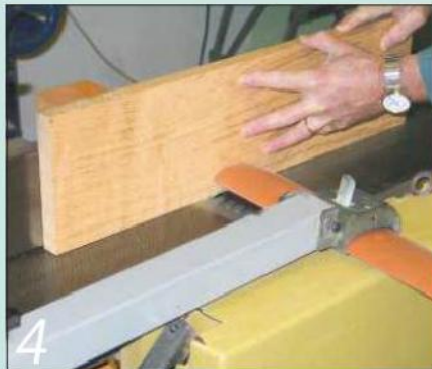
I'd deliberately finished the eight corner components slightly wider and longer than required. Once the glue had gone off I then planed each L-shaped post to its finished width to match the top rails, **photo 7**, and trimmed it to length. Now they were ready to be marked out for their joints, **photo 8**, which I did with the four leg assemblies laid side by side for accuracy.

Cutting the mortises

I set the width of the mortises to match the thickness of the panels. This meant that when the grooves for the panels were cut, the recess for a haunch on the tenons would be formed automatically. Each mortise must be cut parallel to the outside face. So in a mortising machine, the clamping action must force this face against the back fence, **photo 9**. Cut all the mortises and set the legs aside for now.

Panel Imitations

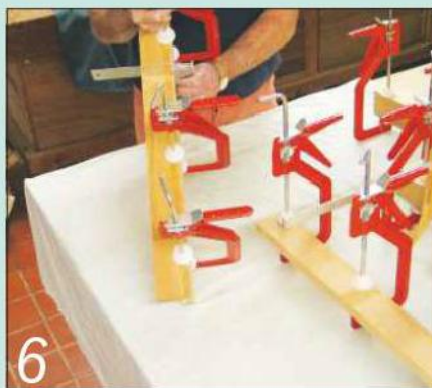
I didn't have enough solid oak for the panels, so I decided to try another cuning technique. I had a quantity of 4mm thick oak-faced mdf offcuts kicking around from another recent job. With oak on one face only, I decided to stick two pieces together to make flat panels 8mm thick. I spread a generous quantity of PVA glue on the face



4 Square the edges carefully in preparation for making the L-shaped legs



5 I planned to use this cuning router cutter, called a mitre lock jointer, to assemble the legs



6 Each two-part leg assembly is glued, cramped up and checked for square



7 Plane the oversize legs to their finished size and then cut them to length



8 Mark out the mortise hole positions on the four legs in one operation



9 Position each leg on the mortiser so that the slots are cut in the same place

of one panel, **photo 10**, and then rubbed the other into it. Each panel was then pressed down with heavy weights, but as their numbers were limited I could tackle only a couple of panels at a time. I needed eight in all...

Before you go any further, now is the time to rout out the 8mm wide grooves on all the components to accept the edges of these laminated panels. Mark all the edges that need a groove clearly so you don't make a mistake, and then cut all the grooves on the router table.

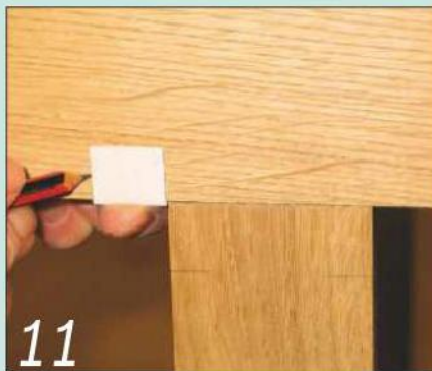
A dry assembly

With the legs already mortised, I formed matching tenons on the ends of the eight top and bottom rails and trimmed them to fit. I could now dry-assemble the frame of the chest and work out the exact positions of the four muntins at the front and rear. I also marked out the position of the bottom brace that would support the centre of the plywood base panel, and determined its length including an allowance for a tenon on each end.

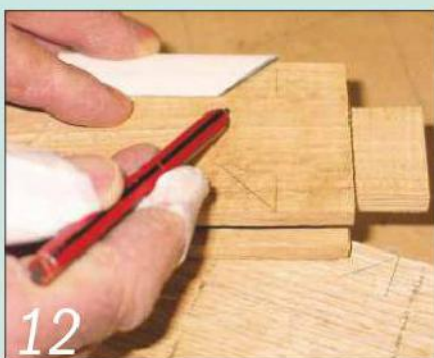
This done, I cut the mortise holes on the long top and bottom rails and tenoned the



10 Prepare the panels by gluing one surface and rubbing the other onto it



11 Dry-assemble the chest and mark the positions of the frame chamfers



12 Use a simple template to mark the 45° ends of the chamfers



13 Cut the panels to size, then assemble the front and back sections



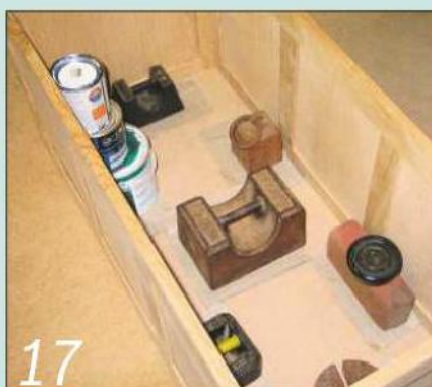
14 Complete the chest carcass by fitting the end rails and panels in place



15 Screw and glue softwood battens to the lower rails to support the base panel



16 Mark the dimensions of the base panel from underneath and cut it to size



17 Spread glue on all the battens, fit the base panel and weight it down

muntins to fit, along with the bottom brace. Another dry assembly, just to check, also gave me the opportunity to measure the size of the side and end panels. These were cut to size, plus an allowance for them to fit into the grooves in the panel frames, and then everything was cleaned up ready for assembly for real.

Optional chamfers

By the way, if you want to chamfer the edges of the panel frames, now's the time to do it. Mark the positions of the chamfer stop ends on each dry-assembled frame with a spacer to get them all the same, **photo 11**. Then use another small plastic template to mark the ends of the chamfers at 45°, **photo 12**. Form the chamfers on the router table and neaten the stop ends with a sharp chisel.

Assembly time

I glued up the front and rear panel assemblies first, **photo 13**. The joints went together sweetly without too much pressure, and I checked that the frame was square overall. The other important thing to check is that the legs haven't gone out of square. Some adjustment to the packing for the sash cramps might be necessary to ensure this doesn't happen.

Later, these two panel assemblies were cleaned up and were then linked by the end rails with the end panels located in their grooves, **photo 14**. Don't forget to put the bottom brace in as you do the assembly; I nearly did! Once the glue was dry, the whole lot was cleaned up ready for finishing.

Adding the base

Pieces of slim softwood batten were then glued and screwed in place around the inside of the bottom rails, **photo 15**, to support the rectangular base panel. You can see clearly here how my L-shaped legs avoid the need to notch the corners of the base. I used a piece of 6mm thick mdf, **photo 16**, marking it out from underneath. After cutting it to size I applied glue along all the battens and on the bottom brace, dropped the panel in place and weighted it down for a few hours to secure it, **photo 17**.

Making up the top

While all this had been going on, I'd made the top out of three pieces of oak. These were planed with square edges, biscuit-jointed (**photo 18**), glued and rubbed together and then cramped up, **photo 19**. Later I cleaned off all the excess glue, applied filler as required and sanded the surface smooth.

With the chest carcass completed I could work out the finished size of the top. I sliced a strip off one long edge and planed that square. Then I marked the width required and made the second long edge cut working freehand on the bench saw, **photo 20**. This edge was again planed square; then I trimmed the top off to the required length.

Finishing time

I decided to use an acrylic non-yellowing satin finish on the chest. This is great stuff to apply, but unfortunately it always raises the grain more than an oil- or polyurethane-based finish. This meant that each coat had to be sanded well back before the next was applied. I applied four coats to the top panel before I was satisfied with its final appearance; just three coats made a good job of the body of the chest.

Selecting the hardware

A trip to B & Q sourced a pack of three decent brass hinges 75mm long, a length of fine brass chain and some strong screw-in eyes. I fitted the three hinges to the top first. Having marked their positions, I set a straight cutter in my router and removed the bulk of the waste to a depth of about 3mm. I cut the rest by hand, then fitted and fixed each hinge.

Next I put the top onto the main body of the chest free, not fixed, and positioned it where I wanted it. I marked the extremities of each hinge on the back rail and removed the top. I then cut the ends of the hinge recesses using a fine saw and a square, **photo 21**, and chopped out the waste with a chisel, **photo 22**. Once the recesses were finished, I placed the top safely on some supports alongside the chest so I could align the hinges with their recesses and drive in the screws. Pilot holes and a little grease on each screw make sure they go in smoothly, **photo 23**.

Adding the safety chain

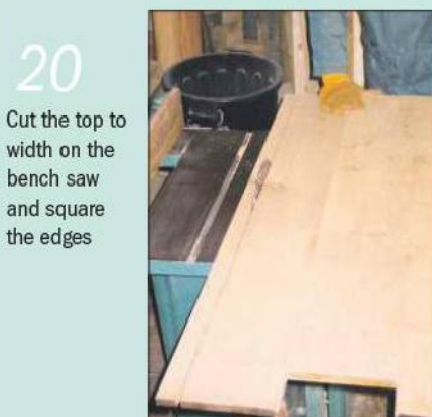
The chain, about 500mm long, and the screw-in eyes are essential to stop the top from going too far over the back of the chest and straining the hinges. I opened up each eye by holding the threaded end in a vice and inserting a flat-tip screwdriver blade into the closed loop. I then fitted one end of the chain into the first eye and squeezed it closed again. This was the eye to go in the top. I worked out its position and screwed it in, making sure that it was clear of the side rail when the lid closed. I then attached the second eye to the side of the chest, hooked the chain on and closed the eye, **photo 24**. Job done, and I was back in my wife's good books!



18
The planked top is jointed up from a number of pieces using biscuits



19
Rub the joints and cramp the top up from both sides to keep it flat



20
Cut the top to width on the bench saw and square the edges



21
Mark the hinge positions and cut the ends of the recesses with a saw



22
Chop out the waste from each hinge recess using a sharp chisel



23
Applying a little grease to each screw thread helps them to drive in easily



24
Fit the eyes and chain to one (or both) sides to stop the top opening too far





BY ANDY KING

Mechanical joints

After guiding you through the maze of picking raw materials, preparing stock, marking and setting out, and preparing your tools, it's time to take a look at the joints you need to put things together. I'm going to deal with so-called mechanical joints first

Joint-making is an essential part of woodworking which can be broken down into two broad sections. There are the traditional self-locking joints such as the mortise and tenon, the housing and the dovetail, and the mechanical joints such as

butts and mitres which rely on adhesives and/or mechanical fasteners such as nails or screws to hold them together and give them strength. Although they're simple enough in their execution, these joints still need accuracy in their making.

THE MITRE JOINT



1 Mitre joints are often used on skirting boards and door architraves



2 You can cut the joints more accurately using a table or mitre saw



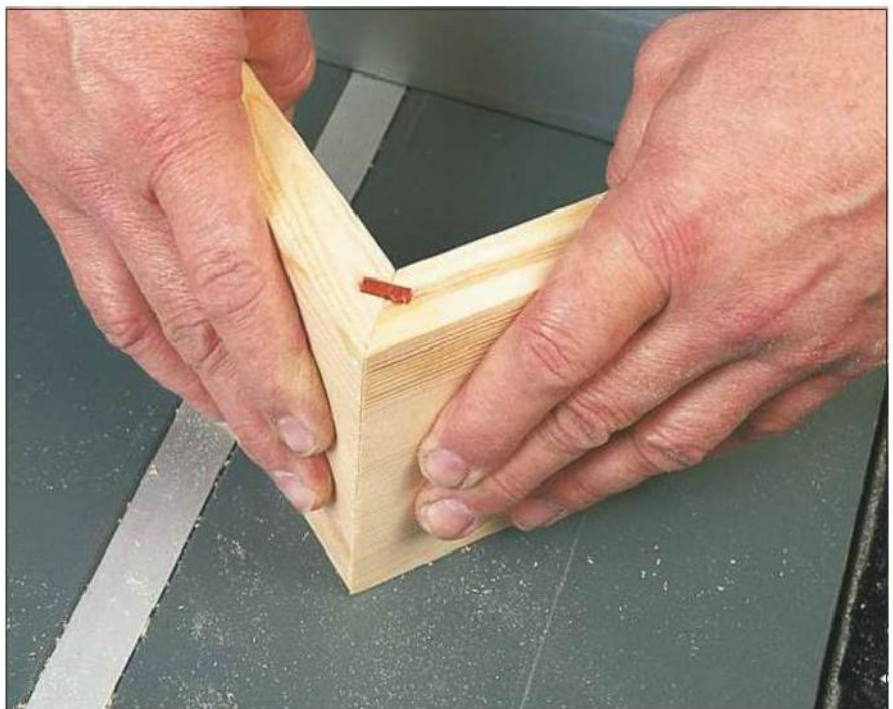
3 Use a sharp plane and a shooting board to trim mitres precisely



4 Dowels are an excellent and invisible way of reinforcing a mitre joint



5 Inserting a hardwood spline in the meeting faces of the joint...



6 ...provides reinforcement that can also add decorative detail

A simple pair of 45° mitres such as a door architrave can be achieved with relative ease once the angles have been marked out. It's when you construct a frame that any error you make will be compounded, as there will always be at least one open joint. It isn't just the accuracy of the joint that matters, but also the need for precise component lengths, as both will cause problems when a frame is assembled.

The cut is enough

For architraves and similar mitre joints, the cut from the saw will usually suffice if it's made with a fine enough saw. For cabinetmaking and picture framing there's often a need for a finer finish on the cut that even the finest saw won't give. You may also need to fine-tune the joint to eliminate the tiny gap that even the best

of mitre cutting can still leave.

Although you can buy dedicated mitre trimmers to shave a joint and give it a crisp clean face, the shooting board can easily earn its keep here, and can be made for pence from offcuts. Used with a really sharp plane, it will give extremely accurate results.

The correct length

In making a mitred frame, getting the length of each component correct is equally important. If you have a frame with four components of equal length, the best method is to cut one 'master' piece and then use it as a pattern for the rest.

Frames with parts of differing dimensions should be cut in the same way, with one master for each dimension. The identical pieces for the opposite sides of the frame can then be marked from them.

Adding strength

As a 'show' joint, a mitre has no integral strength of its own, and as it's technically end-grain on end-grain, adhesives alone aren't always enough to keep it connected. Pins are the old favourite to strengthen a glued mitre; they're driven in from each edge to tighten it and keep it from twisting. Another option is to use dowels, but care needs to be taken to prevent the outer dowel from penetrating the work surface. Alternatively, a tongue can be fitted into a saw cut made into each face of the joint.

Another option is the use of a spline. A simple sawcut is made across each face of the joint and a thin veneer is glued and tapped into the grooves. This adds a surprising amount of strength to the joint and can also be used to decorative effect.

THE HALVING JOINT

Halvings are joints that need accurate cutting while still relying on further fixings to hold them in position. As the name implies, half of each component is cut away to form a simple interlock between the two.

Halving joints are often used as an easier method of jointing to make a framework where you need more structural strength than a butt joint, but without going to the extent of cutting mortises and tenons. It introduces shoulderlines, which have an automatic bracing tendency once the joint is assembled, so any frame construction needing a little more resistance to racking is an area where it works well.

When gluing up a halving joint, you have a long-grain on long-grain connection so any gluing will be at its most effective. However, it's not uncommon to strengthen or secure the joint with a few nails or screws after it has been glued, or simply to rely on the fixings to hold things securely.



1 The basic halving joint involves cutting away half of each component



2 You can use a power saw as a quick and accurate alternative to hand sawing

THE BUTT JOINT



1 A simple butt joint such as this needs screws or nails to strengthen it

Without doubt the most basic of joints any of us will come across is the butt joint. It's a stalwart of first-fix carpentry, from studding to roofing and flooring. As the name implies, it's simply one piece of timber butted up to another.

It's a rough and ready joint that's quick and easy to make, but there's still a need for accuracy. In house carpentry, studs, joists and rafters all have to hit specific centres, either to conform to Building Regulations specifications or to receive sheet material claddings.

The butt joint has no structural strength as such. It's not a joint where adhesive is the normal method of securing. Instead it's wholly reliant on the use of some form of mechanical fastening – predominantly nails in first-fix situations, although screws are often used to assemble a basic framework that will be on show.



2 Pocket-hole screws can be concealed on the inside of the frame

Pocket-hole screws

These can work well as a way of reinforcing butt joints if you can position the screws in a way where they won't be seen. A special jig makes it easy to drill the screw holes accurately. They work well for making up and fitting face frames to carcasses, although you need to clamp the parts firmly as you screw them up to avoid creep in the joint.

Lightweight frames

For lighter frameworks you can use corrugated fasteners. These are simple but effective, and are hammered in across the joint. The corrugations are splayed slightly so that as they are driven in they pull the components inwards and the joint gets tighter. They're often used for simple frames such as rabbit hutches made with light framing battens that won't be subject to too much loading.

THE SCARF JOINT

While mitres and butts are classed as simple construction joints, there is often a need to extend a piece of timber. It's unusual to get anything longer than about 5m in softwood stock, so in situations such as a roof ridge or boatbuilding, a so-called scarf joint is often used to join two lengths of timber together end to end.

In its simplest form it's just a pair of long tapers cut on the ends you want to join. The slope ratio needs to be long – ideally around 1:10. Introducing a return angle cut on the tapers will give the joint a degree of self-locking, which can be useful in initial setting up for further work.

It's also a common joint used in repair work, such as on the bottoms of frames where they have rotted. The taper ratio here tends to be more a common 45° for ease of cutting.

If you have to form a scarf joint as a



An angled return cut on the tapers helps to lock the components of the joint together

repair on an existing frame, aim to cut upwards into it. If you take the easier option and cut downwards, the repair piece will have the leading edge of the scarf facing upwards on the outer face, and this is likely to let water back in, defeating the object of the repair.

THE REBATE JOINT

A halving joint is normally made so that the pieces end up flush with each other, so as long as you remember that what you take off on part of the joint has to be left on the other part you can't really go wrong. But you can also make joints where half of only one component is removed, to form what is known as a rebate joint.

Using a marking gauge is the easiest way of marking the component to be cut. As with all woodworking, mark from a face edge. As long as you remember to cut to the waste side of the line, hatching it in to avoid errors, the resulting joint should come up flush.



1 Set the marking gauge to half the thickness of the part to be cut



2 Use a fine-toothed tenon saw to cut away the waste area

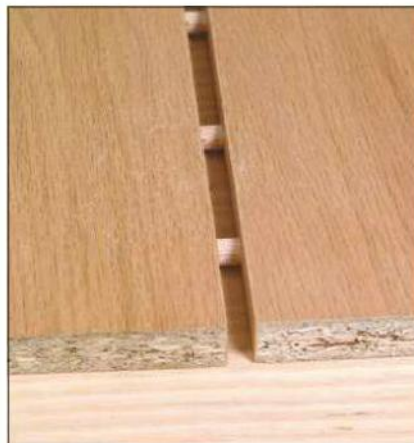


3 Test the fit of the joint, and plane off any excess from the rebated part

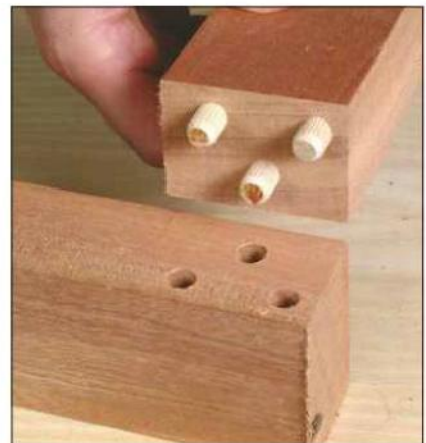
THE DOWEL JOINT



1 A dowel jig is an essential aid, but few models will cope with all possible dowel orientations



2 A jig such as the Joint-Genie will ensure aligned dowels for edge joints...



3 ...and will position as many dowels as you want in furniture joints

Dowels have long been a traditional strengthening and locking device for any butting surfaces. They can be used on a wide variety of joints, not only to secure them but also as a decorative element when a contrasting timber is used.

A dowel has a dual function; it can be a knock-down fitting and also a joint in its own right, but in most instances it's a locator to align a part and then lock it as a joint. The fit on a dowel is such that if you have a few of them, getting the joint apart can prove very difficult.

Jointing Jigs

Getting a run of dowels aligned is not an easy task without a jig. There are loads of jigs available that will make life easier,

but if you like the idea of using dowels for different joint intersections, getting one jig to do the lot is a tricky business.

Some do one or two variations, others do a few more, but only one that I'm aware of, the Joint-Genie, seems to have cracked the problem and will cope with every joint orientation where you would normally use a dowel. Joint-Genius would be a better name, and the jig is also very simple to use.

The bonus with dowels is they immediately bring structural strength to your work, so a mitre or butt joint with a dowel or two within it can be cramped up safe in the knowledge that it can be handled immediately without fear of it falling apart in your hands.

THE BISCUIT JOINT

The biscuit joint consists of a thin oval of wood fitting in a slot in each part being joined. The slots are cut by a power tool called a biscuit joiner. It's been a boon to many a woodworker, and has caused a revolution in the way woodwork is done. Much the same as dowels, biscuits align components and, with the tool's adjustable front shoe and depth fence, the range of joints you can make are well covered. In applications where a fixing is required, such as butt, mitre and edge joints, the biscuit is a fantastic choice for additional strength and perfect alignment.

There's no problem with setting the depth, as it's identical for each component, and there's also some play in the joint position; if the components slip slightly, you can still align the joint correctly.

Staying aligned

The main drawback with biscuits is assembling the work and holding it all together. While you can make some very complex and clever pieces, there's no structural strength or locking during assembly, so getting it all together before the glue starts to grab can be a bit fraught! There are plastic biscuits with a barbed face available that will grab on assembly, so a few of these strategically placed will help if you don't have an extra pair of hands during the assembly and glue-up stages.



1 The biscuit's oval shape makes it perfect for assembling mitre joints

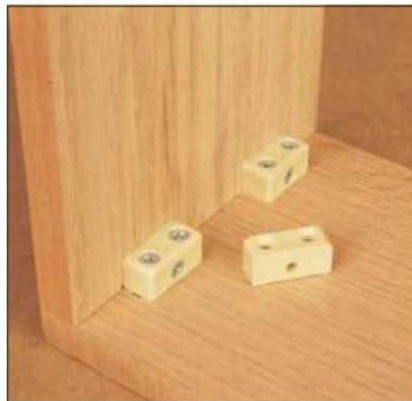


2 The pencil marks on the joint components help the biscuit joiner to align the slots



3 Biscuit joints provide an invisible fixing when assembling corner joints

KNOCK-DOWN FITTINGS



1 This one-piece furniture block is screwed to the inside corner of the joint



2 Two-part blocks are stronger, and are linked with a machine screw



3 Cam-and-dowel fittings are widely used today in flat-pack panel furniture



4 Accurate alignment of the components is essential for a good fit

Screws and nails are an age-old way of strengthening and securing a joint with no locking structure of its own, but some clever inventions over time have certainly made life easier! Knock-down (KD) fittings are a good example. As the name implies, these allow you to assemble a piece of furniture and then to dismantle it (knock it down) for transportation to its final resting place. Their introduction led to the development of the flat-pack furniture industry.

If all you want is the look of a fully jointed piece without taking the time to make it in the traditional way, then KD fittings are certainly more than good enough for most jobs, especially where panel components are concerned.

Building blocks

The simplest KD fittings are one-piece plastic blocks that screw into the inside corners of the joint. They have little real strength when used as a corner joint, and are best used alongside another fixing method, but they can prove their worth as

an intermediate fixing for components such as a fixed shelf.

There are two-part versions of these blocks, with a machine screw that locks the blocks together, but once again the fixings are close to the edge of the work.

Cams, dowels and bolts

The most commonly used fittings in flat-pack furniture are cam-and-dowel fixings. These work well in chipboard carcasses, as the cam is set well back from the edge and locks around the metal dowel in the other component.

There are many other variations on a theme with these fixings, such as the Scan bolt; this is widely used on knock-down frame furniture such as bed frames. It's just a long bolt that connects through a leg frame into a barrel nut that's let into the rail.

KD fittings need precise positioning so that each part mates correctly, and there's also the additional problem of concealment to avoid showing the fixings on face or top surfaces. But they have their uses...

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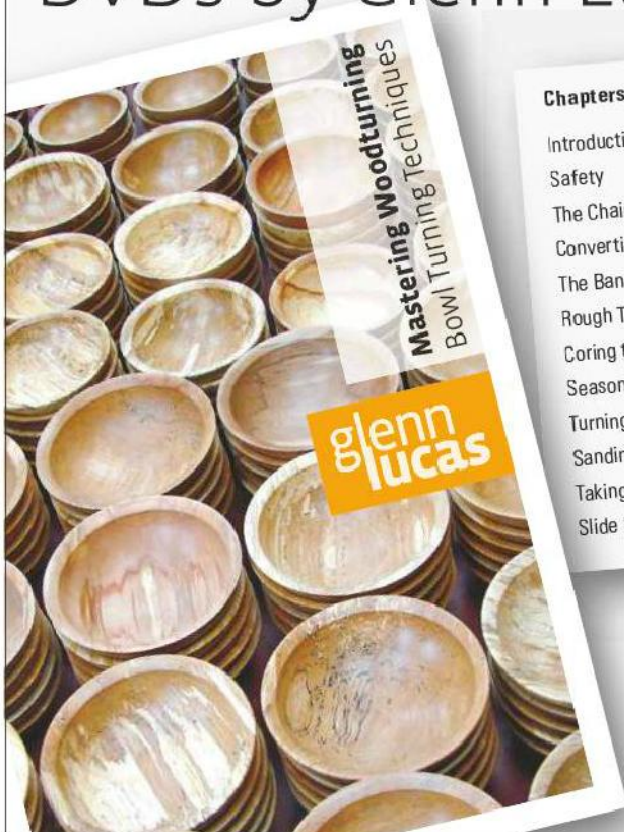
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BY PETER PARFITT



MADE TO MEASURE 2: Building the bench

Last month I described making the bench top and installing the vices. Now it's time to tackle the support framework and to build in the tailor-made tool storage that's the main feature of my design



I used the Festool DF 700 Domino to joint the pedestal frame components. You can use traditional mortises and tenons if you prefer

I rarely use PAR timber, and mostly start with sawn stock that I can finish to the sizes I want. Here I used a combination of 100 x 50mm, 50mm square and 50 x 25mm sizes which I surface-planed square and then thickened to 95 x 45mm, 45mm square and 45 x 22mm respectively.

Two-part construction

Stability is an important feature with any bench, and the supporting legs of mine were designed as two pedestal frame units that would be domino-jointed (photo 1) and then glued together. I wanted to be able to break down the support structure into two pieces in case of a future house move, and had originally planned to link the two pedestals by dry-jointing them with dominos and securing the joints with screws. I chose a different approach after the two pedestals were complete.

The left-hand pedestal (fig 1) consists of a pair of frames with 95 x 45mm legs and

lower rails, 45mm square upper rails, a lower rear rail of 95 x 45mm stock and two front rails of 45 x 22mm stock.

The right-hand pedestal (fig 2) has to take account of the tail vice sub-frame, by being lower on the right and also less deep to allow for whatever might be held in the front part of the vice. Otherwise it's constructed in the same way as the other pedestal.

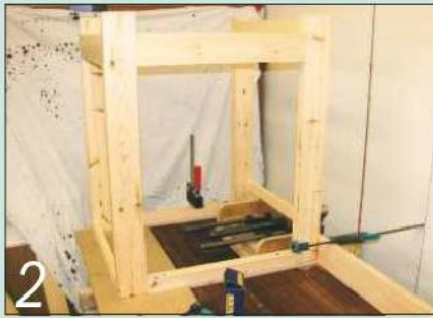
Linking the pedestals

Small fillets of plywood had to be made to fit along the top of the pedestal side rails to match the thickness of the plywood base of the tool well. With these glued on, the two pedestals were positioned upside down on the underside of the bench top and screwed in place, photo 2.

I still needed to fix the two pedestals relative to each other, as the space within them would be occupied by drawers and I didn't want any possibility of movement. I decided to cut 45 x 22mm fillets to match the exact width of the gap between the two pedestals. These were glued and nail-gunned to a length of 45mm square stock that was then screwed to the rear of the front rails on the pedestals, photo 3.

Making the tool rack

I used to fight a constant battle with dust in the workshop despite having an overhead air filter, some quite reasonable chip extractors and a small vacuum extractor. Now that I've mainly converted to Festool machines, everything is much better and



2 Screw the two pedestal bases in place to the underside of the bench top. Note the small plywood fillet to match the thickness of the tool well base



3 The two pedestals are joined by cross members that can be removed should the bench need to be broken down and transported in the future



4 The centre part of the rear tool storage area was made to take a pair of 13-amp socket outlets with a small space below



5 The side tool racks are only screwed in place, and are shown here before the various tool slots and holes have been created



6 I used both 500mm and 550mm heavy-duty runners from Screwfix, and made up an mdf template for drilling the holes for the fixing screws

I'm quite happy to have an open tool rack at the back of the bench.

Again I wanted the tool rack to be removable for possible remodelling, replacement or relocation. I needed to have a pair of power socket outlets in the middle, each connected to a lead with a 13amp plug on the end. I am able to have one plugged into a normal wall socket and the other plugged into my Festool CTL 26 extractor. This allows me to plug tools into the second socket, which then starts and stops the extractor automatically. **Photo 4** shows the central part of the tool rack prior to the fitting of the socket outlets.

The side tool racks are shown in **photo 5** before the slots and holes for the various tools were formed. I used Forstner bits to bore the various holes, and my Domino 500 to cut the slots for chisels and other items. This method of construction ensures that the edges of sharp tools are kept out of harm's way when stored.

Fitting the drawer runners

The various drawers for tool storage are all supported on heavy-duty runners. Having worked out the drawer layout I required and their heights, I was able to set the locations of the runners. I made up an mdf template, **photo 6**, which I used to drill the small holes for the M6 drawer runner screws, just visible in the picture. I had to put in some extra pieces on the leg sections so that the middle part of the runners could be screwed into something solid.

The runners are quite forgiving, but I still prefer to make my drawers to within 1mm of the planned size. I measured the thickness of the runners, doubled it and took this away from the width of the space where the drawer would be fitted. This left me with the finished drawer width. **Photo 7** shows all the runners fitted and waiting to be united with their drawers.

Making the drawer boxes

I wanted a very simple but robust drawer design, so I chose 19mm plywood for the bases and some 20mm thick idigbo for the sides, back and front. All the parts were domino-jointed, with the addition of one or two counterbored screws on each side of the front, **photo 8**. I had decided at an early stage that the drawer fronts of the bottom two layers would be lowered to allow the Festool Systainers (and the label identifying their contents) to be clearly seen.

Once the bench had its vices fitted, they were put to use. Making the drawers was a good test, **photo 9**, but I had to take care not to mark any of the bench or vice surfaces as

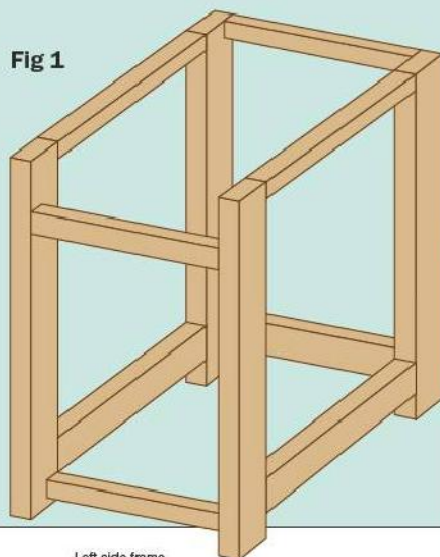


Fig 1

Left side frame

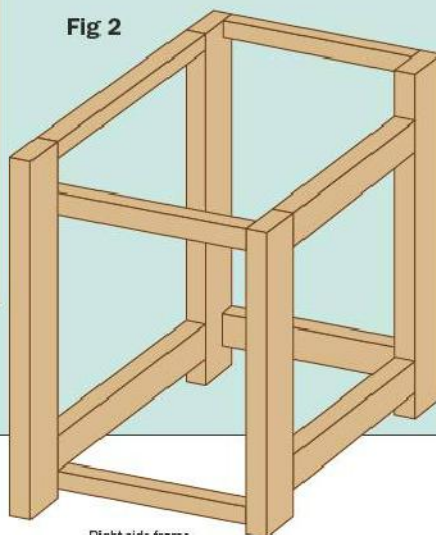


Fig 2

Right side frame

I used them because I had yet to take the photographs of the finished bench.

I concealed the screw counterbores in the drawer fronts with some matching idigbo plugs. My little Japanese pull saw was just the job for cutting off the excess once the glue had dried. By keeping the pressure on the smooth blade with, in this case, my left forefinger I was able to avoid damaging the surface of the drawer front. If you don't have one of these superb saws, you should give one a try. Mine came from Screwfix and cost under £13.

Making the bench dogs

There are plenty of off-the-peg bench dogs on the market, but I wanted to keep to my money-saving approach and decided to produce my own. A lot of the items I make have delicate faces, so I wanted to reduce the compression damage that any dogs might cause.

I decided to base my system on 10mm aluminium rod (available from B&Q) for the pegs, but added flat maple faces to protect my work. Dogs were required for the main vice and both aspects of the tail vice. I made up the dogs first, **photo 10**, using 40mm long aluminium dowels set into 24mm thick maple. Then I used one set of the maple faces (the ones for the main and tail vices) as the pattern for a plywood template, **photo 11**, which I then used as a guide for drilling the holes in the bench.

Using lever cramps

Ratchet lever cramps, **photo 12**, are very quick and easy to operate, and I wanted to make it possible to use several of them to complement the main vice when holding long or awkward pieces of wood. The flat end of the clamp can either fit through a hole or through a slot in the surface against which it is to be used.

For the former method I bored four 20mm holes in the extended front face of the main vice, **photo 13**, and rounded the edges over using the router. Also visible in **photo 13** are the three lengths of finishing trim ready to be fitted to the front face of the three pedestal legs below the vice face. I cut the 45° slots in the rear face of each strip on my mitre saw, **photo 14**, and drilled holes for screws and plugs. Note that the slots in the trim on the left-hand pedestal leg should slope down from right to left when fitted. The trims on the other two legs will have the slots facing the opposite way round.

Two different ways of using the lever cramps can be seen in **photos 15** and **16**. Another method of achieving a similar capability would be to have long, wide slots



7 With the screw holes drilled, it was a simple job to fit the runners in place, ready to receive their tailor-made drawers



8 The drawer sides are domino-jointed to the 19mm plywood base, with counterbored screws added at the front for extra strength



9 I made good (and careful) use of the vices on the unfinished bench during the manufacture of the drawers



10 I made my bench dogs from lengths of aluminium rod. The maple facings will protect delicate workpieces from damage



11 I made up this simple plywood template so I could mark the positions of the dog holes in the bench top, teady for drilling out



12 These Festool ratchet lever cramps are very easy to use, and are perfect for those with arthritic wrists or who use cramps all day



13 The pedestal front trims show the angled recesses that will accept the stems of the lever cramps. The four holes in the front vice face providing alternative locations for the cramps are also visible



14 The angled slots in the three trims for the legs of the cramps were trench-cut at 45° with my Festool mitre saw



15 Here's a lever clamp in use, fitted into one of the four holes in the extended front face of the bench's main vice



16 This large board is supported, in part, by a lever clamp slotted into the trim on the front of one of the pedestal legs



17 I used some maple offcuts to make an end stop. The various components are shown prepared and awaiting fitting to the bench



18 Use an Allen key to screw the threaded screw insert into a pre-drilled hole in the side of the left-hand front leg



19 The threaded knob securing the end stop slide doesn't need to be tightened much, as it comes under no strain during use

behind the maple trim to give more freedom for positioning the cramps. Alternatively, after fixing the trim a series of 20mm angled holes could be drilled from left to right where the trim and leg join.

Making an end stop

I can't survive for long without an end stop to my bench, and once again I set out to make one from odds and ends of maple. I wanted a simple sliding mechanism that would require only a minimal effort to adjust it for height.

I cut a 180 x 90mm piece of 10mm thick maple to form the sliding stop, and formed a 6mm wide slot about 40mm long in the centre, towards one end. I then cut another piece of the same maple 140mm long to form the crosspiece, and two more pieces measuring 90 x 25mm which I glued to the crosspiece to form a channel for the sliding stop, **photo 17**. I sanded the sliding stop and waxed it to allow it to pass freely through the channel.

Fitting the end stop

The next step was to position the sliding stop against the end of the bench and mark the position on the pedestal leg for the screw insert which would be used, with a threaded knob, to secure the slide in position, **photo 18**. My threaded inserts came from Screwfix, but they're widely available from other suppliers.

Once I'd turned the screw insert into its pre-drilled hole with an Allen key, I screwed the slide in place using the threaded knob and a washer. I adjusted the slide for square, cramped the channel piece over it and checked that the slide moved freely through the channel. Finally, I used the four screws to secure the channel piece in place, **photo 19**.

Finishing the bench

I wanted to preserve the contrast between the white of the hard maple and the rich colour of the iroko, oak and mahogany. I therefore waxed the maple with clear Briwax. The iroko top was rubbed with linseed oil which I left to soak in overnight. I brushed French polish onto the mahogany and oak parts, followed by wax applied with a green scourer.

The bench in use

This bench has been a long time in the making. It's as solid as a rock, and is exactly the stable vice and clamping station that I set out to create. There's certainly no bench on the market with exactly the same features. However, I reckon I would need to spend at least £1000 to buy something similar ready-made, and I'd certainly have had to pay extra for the drawer units. So I'm well-satisfied!



BY RON FOX

Routing with templates



1

The Trend kit includes the clear acrylic offset trenching base, the centring cone with its dual-diameter shank and two 6mm fixing screws

This is the first of what will become an occasional series in which I'll take a look at the availability and use of some of the many commercial templates and work aids that help make the router the exceptionally versatile tool it is

Much of the creative work that can be done with the router involves the use of templates and other simple work aids. Many of these can be home-made, but with others the accuracy of the finished job depends on the accuracy of the template, so a commercially produced one can be the better option.

As an introduction to the series I'm going to examine the Trend offset trenching base, which enables grooves and housings to be cut and widened without having to move a straightedge or make an adjustable jig. It's a very clever piece of kit.

Potential problems

Cutting grooves and housings is bread-and-butter work for the router, but there are one or two common problems that can complicate the job.



2 Centre the offset base using the centring cone and tighten the fixing screws



3 Make the first pass by pushing the router using the 100mm base edge



4 Widen the cut by rotating the router through 60° so the 101mm edge is against the straightedge, and pull it in the opposite direction



5 The result of the gradual widening process is a housing that fits the shelf perfectly. I found that the 103mm edge gave the best fit in this case

Firstly, it's often impossible to find a cutter with a diameter that exactly matches the width of the required housing, and in any case your shelf boards may vary slightly in thickness, especially if they're veneered.

Secondly, positioning the cut can be a tedious business; it takes place at a distance from the edge of the router base, and this distance varies with the diameter of the cutter.

A neat solution

The Trend offset trenching base provides a clever way round the problem. It's a piece of 8mm thick clear plastic in the shape of a regular hexagon, **photo 1**, with a central cutter aperture that's 30mm in diameter but slightly offset from the hexagon's true centre. Its shape provides

six straight sides, each of which can be run against a straightedge. The distance from the centre of the cutter aperture to the nearest side is 100mm; subsequent sides are further away in 1mm increments, giving distances of 101, 102, 103, 104 and 105mm.

By running the 100mm side against a straightedge, you will cut a groove or housing with a width equal to the diameter of your cutter. So long as your cutter is not already too big for the shelf thickness, you can then rotate the base through 60° to widen the first cut by 1mm at a time and accommodate the shelf.

Clearly, the accuracy of this operation depends on the accuracy of manufacture of the offset base, and on its exact centring on the router base.

Centring the offset base

The base comes ready-drilled with the two standard De Walt/Elu/Trend fixing holes. This configuration fits a large number of other router makes that have adopted this standard pattern. For non-compatible models, fixing holes can easily be drilled.

The fixing holes are counter-bored to take the two fixing screws, and are drilled slightly oversize to allow accurate centring on the router base. A centring cone with a dual 8mm/¼in shank is part of the kit, and is inserted in the router collet after the base has been attached loosely to the partly-plunged router. The router is then raised on its plunge legs until the base aperture is centred on the cone, and the fixing screws are tightened, **photo 2**.



6 Run the offset base against the straightedge and cut off a strip of hardboard



7 Use the correct spacing strip to position the straightedge for a cut

Making the cuts

With the appropriate cutter installed, the offset base is run against a straightedge to make the first cut, **photo 3**. In the picture I'm using a ½in straight cutter on a piece of black plastic-faced chipboard, of nominal thickness 16mm.

If the 100mm side is used to make the first cut and then the router is rotated clockwise through 60°, the next cut will be made with the 101mm side against the straightedge and the housing will be widened by 1mm to the right. Rotating the router by more than one position enables you to widen the housing by up to 5mm.

With my test cut I widened the cut gradually, 1mm at a time, **photo 4**. With my ½in cutter and my 16mm board, I found that the 103mm side gave the best fit, **photo 5**.

Widening to the right

Note that the straightedge is placed to the left of the router in **photos 3** and **4**, and the housing is widened to the right of the initial cut. The second cut, if made by pushing the router across the board, will actually be made with the rotation of the cutter, so concentrate on keeping the side of the offset base firmly against the straightedge.

Alternatively, you can pull the router towards you to make the cut against the rotation, but you still need to keep the offset base firmly against the straightedge. In practice, 1mm won't be a heavy enough cut to make a difference, but a bigger cut – for example, if you're widening by 4mm in one pass – might be.

Widening to the left

In the example shown, I started the cut using the 100mm side of the offset base and rotated the router clockwise to widen the housing to the right. I could equally have started with, say, the 105mm side against the straightedge and widened the cut to the left by rotating the router anti-clockwise. This method also happens to preserve the correct direction of cut – against the cutter rotation – for both passes.

Positioning the straightedge

Whatever straightedge you use, whether it's a simple length of batten or one of the more sophisticated alloy clamping guides, you have to position it for the initial cut. It has to be offset from the line of cut by the distance from the edge of the cutter to the initial side of the plastic base. Some cumbersome ways of achieving this have been suggested, but for repetitive jobs like housings I use very simple home-made gauges, which I've described before in these pages.



You can use the base as an anti-tilt plate for edge moulding work



Trimming a worktop edge with the offset base also provides anti-tilt protection



The centring pin can also be used to check the concentricity of a guide bush

Making spacing strips

To make one for the 100mm offset base edge and a ½in cutter, install the base and the cutter, clamp your straightedge across your cutting table and butt a piece of hardboard up against it. The edge of the hardboard against the straightedge should itself have a true straight edge. If it doesn't, trim it straight first with your router and straightedge.

Clamp the hardboard tightly against the straightedge (or hold it with double-sided tape). Then take your router and, with the 100mm side of the offset base running against the straightedge, cut off a strip of hardboard, **photo 6**. The width of this strip will be the distance from the edge of your ½in cutter to the 100mm edge of your

straightedge. I call it a spacing strip. Label it clearly so you know what it's for.

Repeat as required

You need to make strips for each diameter cutter you use, but they're so quick and easy to make that this isn't a problem.

You might also like to make strips for one or two of the other offsets, such as the 105mm side. This will allow you to position the straightedge quickly for a cut that will be widened to the left. Some examples of these spacing strips are shown in **photo 6**.

To position your straightedge, mark the position of the housing on the board you're cutting and offset the straightedge by the width of the spacing strip, **photo 7**.

Note that when marking up stopped housings you must be careful to make sure that you widen them on the desired side. This problem doesn't arise with through housings because you can cut from either side of the board.

Some other uses

The offset base increases the area of the router base, so it can serve as an anti-tilt base when you're using cutters less than 30mm in diameter for edge moulding, **photo 8**.

It can also be used when truing the edge of a board or the end of a kitchen worktop, again with anti-tilt provision. With a straight cutter fitted, the line of cut is marked and the straightedge set back from it with the aid of the appropriate spacing strip, **photo 9**.

Finally, the centring cone, which can be bought separately, is an accessory in its own right. It's very useful for checking and adjusting the concentricity of guide bushes in the router, **photo 10**.

Summing up

All in all, the offset trenching base is a useful bit of kit. Considering the need for accuracy in centring it on the router and machining the six sides, it is one of those work aids where it could be worth paying for the manufactured article.

With a few straight cutters in imperial and metric diameters, and the six sides of the offset base, you can exercise very fine control over the width of your housings without having to search for a cutter that exactly matches the board thickness.

FURTHER INFORMATION

Offset trenching base £31.38

Centring cone £5.29

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



BY KEITH SMITH

Shop notes

Last month I promised you a workshop tour, and we've finally got the place sufficiently clear of work for me to take some pictures. So here's the story of how we started out and turned a hobby into a business, developing the workshop as we went along

When I first started woodworking I operated out of our single garage, but when we moved to Shropshire in 1999 we bought a house with a purpose-built stable block in the garden, and I finally got the chance of a decent-sized workshop. The timber building measured 11 x 5.8m overall, and was divided up into two stables, a tack room, a storeroom and a larger central area where a car could be parked. Fig 1 overleaf shows the original layout. It also had stair access to a hayloft, but this didn't have enough headroom to use for anything other than storage.

Entry to the building used to be via a pair of double sliding doors in the middle of the front wall. A year ago we added a small extension over where they used to be, which gives us just enough room inside to keep the disc sander, mitre saw and drum

sander. Next to that we have a passive solar collector and the present entrance door, for which we had to create a new opening. This was fitted with one of the original internal stable doors, but we've modified it to provide extra security and insulation.

Door modifications

The entrance door is 1100mm wide, which gives good access. However, it opens outwards so it's potentially vulnerable because the external hinge pins are easily accessible. After fitting some hinge bolts, we further strengthened it by screwing and gluing a softwood frame to the inside which fixes the two halves of the old stable door permanently together. We filled the space in the frame with foil-backed insulation board, added a vapour barrier and covered it with a sheet of 9mm ply. This extra thickness



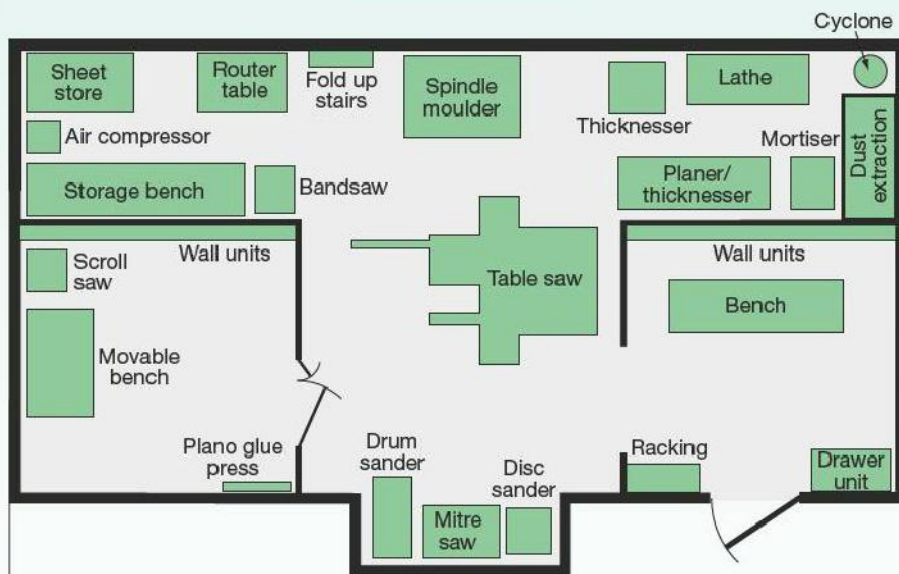
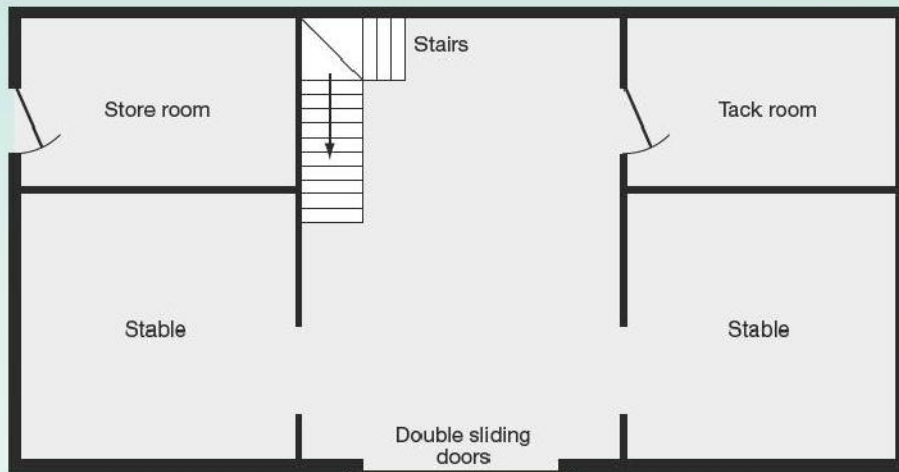
1 The main workbench takes up nearly the full width of the room, but there's just enough space for me to get round each end



2 We fitted an extra shelf in the right-hand rack for storing my collection of hand planes. I do have quite a few drills too; the rest are in the van!

3 This very slim cupboard takes up little space but houses a lot of my most frequently used small tools, and is very handily positioned right by the bench





allowed us to rebate a five-lever mortise lock into the door edge to augment the heavy duty padlock and armoured hasp.

On the bench

This door leads straight into the main work area where I have my bench, **photo 1**; it's a 2.1m long cabinetmaker's bench from Sjöbergs. We also use this bench for assembly work, but it's only 600mm deep including the tool well, so there's not really enough flat area for glue-ups.

To resolve this problem when it arises, I screw a piece of 18mm mdf to the bench top. However, it takes away some of the functionality of the bench, particularly as the mdf sheet covers up the tail vice.

Reorganised storage

We recently did quite a bit of work on this room when we moved the metal storage racking, which now houses my hand planes, drills and some small power tools, to the right of the door. To the left of the door we now have a Tormek and my old Multico mortiser on a drawer unit, **photo 2**, which holds large tools such as handsaws, and this has made the layout much better. **Fig 2** shows the positions of these units.

I also have a very slim vertical cabinet to the left of the bench, **photo 3**. The wall behind the bench has units fitted all the way across (see **photo 1** again), and these contain my boxed screw collection together with various small tools and fittings. The wall at the end of the bench is fitted almost wall to wall with Bessey clamps, **photo 4**.

Simple comforts

Heating in this room is provided by a 2kW wall-mounted ceramic heater, **photo 5**. This heats objects (mainly me) rather than the air and is very efficient, but it doesn't do a lot for any timber I'm trying to warm up on a cold day. For that I often resort to an electric blanket – simple but surprisingly effective!

Dealing with boards

The table saw takes up most of the space in the main working area, **photo 6**, and is probably the machine I use the most. This saw is really a panel saw, but a baby one! Due to the lack of space, I bought the saw with a 2m sliding carriage, which means that I can't cut an 8 x 4ft sheet lengthways.

This is a real disadvantage and wastes a lot of time as we have to clear the Sjöbergs bench, cover it with a foil-backed insulation board, put a sacrificial sheet of polystyrene insulation over that and then use a Festool saw and guide rail each time we need to make a cut along the length of a board.



4 I've spent a lot of money on clamps, but still never seem to have enough. The box above the window is an air cleaner, which collects a lot of fine dust



5 This ceramic heater makes working in the room bearable, even on the coldest morning. The magnetic dry-wipe board helps to keep me organised



6 Pride of place in the central area of the shop goes to my Felder table saw. It's big, even though it's only a baby panel saw model



7 The spindle moulder sits beyond the table saw near the back of the shop. It's fitted with a power feed which makes the machine safer to use

Spindle or router?

Behind the saw sits the spindle moulder, **photo 7**; it was getting this machine that prevented us fitting a 2.4m panel saw in the room, but I would hate to be without it.

Years ago I made a very good router table, and I wondered if as a result I would use the spindle moulder much, expecting to reserve it mainly for the big tasks like rebating door frames. However, it cuts so accurately that I now rarely use the router table any more.

The main downside of a spindle moulder is the cost of its tooling, which can be prohibitively expensive. I've managed to get some when it's been on offer, and have made considerable savings; even so, I've spent nearly £2,000 on tooling for it.

The spindle moulder is fitted with a power feed which makes the machine much safer to use. It also allows it to cut cleanly and far more accurately than if the work were hand-fed; this is because it provides a constant even downwards pressure while driving the timber through at a steady speed. The spindle moulder also has the advantage of a sliding carriage, which makes tenoning easier.

The bay window

The small front extension I mentioned earlier is only 2.4m wide and 740mm deep, but it serves a vital function because it lets us keep three machines out of the way, **photo 8**, while also providing some natural light and better sound and heat insulation.

The disc sander came by way of a very good friend who lives near the Axminster Tool Centre in east Devon. For some reason they were selling two machines off at a massive discount, and he called me to see if I wanted one. I said yes, despite never having thought of getting one. It's become another of those invaluable machines and I wonder how I ever managed without it.

A problem with dust

Next to it is the mitre saw, and this is one tool I've tried to manage without but can't! The main problem is the dust it generates. I try to keep a reasonably clean workshop, but this machine throws out more dust than all my other machines combined. Despite the fact that I have an automatic extractor permanently fitted, the amount of dust collected is minimal and the rest ends up in the air and then on the floor. I've thought of getting a new saw, but most look to have the same feeble extraction; I'm told that the Festool Kapex is better, but at about £1,100 it will have to join the queue!

The third machine in the bay window is the drum sander. This has been a real boon,



8 This is the small extension to the front of the shop. The three machines have to be pulled out when needed, but they're well out of the way when they're not



9 The old storeroom houses the bandsaw, the router table, my air compressor and a storage bench, and is also where I store my sheet material off-cuts



10 I adapted the original staircase that led to the loft. It stands upright when it's not needed (see photo 9) and drops into position when I want to get into the loft storage space



11 The old tack room contains my planer thicknesser, a separate thicknesser, a mortiser, a small lathe and the workshop dust extraction system plus its cyclone



12 The Hammer planer thicknesser tackles wood up to 400mm wide. However, mode conversion takes time, so I use it mainly for planing

and most timber gets put through it at some point. We have to pull it out into the room to use it, but that isn't too much of a problem.

Two back rooms

At the rear of this central area are two smaller rooms. The one to the left (**photo 9**) was the original storeroom. It houses the bandsaw, the router table, my compressor and a storage bench, and is also where I store my sheet material off-cuts.

We had to remove the original staircase that led to the loft, but I adapted it to form a sort of hinged loft ladder. It stands upright against the rear wall of the shop when it's not needed, as you can see in **photo 9**, and drops into position when I need access to the loft storage space, **photo 10**. Cunning!

The room to the right (**photo 11**) now contains my planer thicknesser, a separate thicknesser, a mortiser, a small lathe and the workshop dust extraction system.



13 I leave all the thickening work to my old friend the Jet JPM-13CSX, which stands against the opposite wall of the workshop



14 The Rojek extractor unit provides the suction for the cyclone unit in the corner. I moulded this myself several years ago and it works brilliantly!



15 My home-made router table has added sound insulation and is one of the quietest machines in the workshop. Since I got a spindle moulder, it doesn't get used as often as it did



16 This shallow bench along one wall of the old storeroom is too narrow to work on, and instead provides some useful storage space for my bigger power tools



17 I've converted the other old stable into my workshop, and use it mainly for finishing and spraying work. That's why it's relatively empty



18 My Plano glue press is mounted on the wall by the finishing room door. It comes in handy at times, but I find it frustrating to use

Plane sailing

The planer thicknesser, **photo 12**, is my latest acquisition. I bought it this year to replace a Jet 60A planer, which was a superb machine but had a meagre 200mm planing width. I coped with this for years, using a sled with the thicknesser for wider boards, but after one particularly big job I decided enough was enough and ordered the 400mm wide Hammer machine.

I'm just getting used to it, and when planing wider boards it really saves time and effort. However, converting from planing to thickening takes a while and I knew that it would frustrate me, so I kept my Jet JPM-13CSX thicknesser, **photo 13**, and I rarely use the Hammer for thickening.

I have a small lathe, fig 1, but I don't do a lot of turning and it gets used mostly for making knobs. The mortiser nearby also gets relatively little use, as we're trying to reduce the amount of joinery work we do.

Meet the cyclone

On the end wall of this area we have the dust extraction system. I built my own cyclone from GRP (see *The Woodworker* January to March 2009 for details of the build, which was quite a challenge and a very steep) and it works brilliantly.

The Rojek extractor which provides the suction is housed in a cupboard next to the cyclone, **photo 14**, which is open to the outside so I can empty the sacks easily when they're full. This means that in the winter it pumps warm air to the outside, but it does ensure that the finest dust doesn't get re-circulated through the filter bags. The cyclone is very efficient and collects the vast majority of the dust we generate, including the fine dust from the sander.

The router revisited

As mentioned earlier, my router table lives opposite the bandsaw in the old storeroom,

photo 15. I made this many years ago, and it was a vast improvement over the DeWalt aluminium router table I'd used previously. One of the biggest improvements I made was to add sound insulation and make it one of the quietest machines in the workshop. I also fitted two fences – a home-made long fence and a shorter Inkra LS Positioner. The Inkra is first-rate but I rarely use it. Perhaps that is because I can now machine to very fine tolerances on the spindle moulder...

Essential storage

In the corner of the storeroom I have a rack for storing sheet materials (see **photo 9** again). Like everyone I generate a lot of off-cuts which look too useful to throw away. They therefore get stacked in here so there's little space to store full-size sheets, which was its original purpose.

Next to this is the compressor. This is piped up to provide air for nailguns in the workroom and for spraying jobs in the finishing room. Above it a small rack contains my collection of turning blanks.

The bench on the left-hand side of the room is too shallow to work on, **photo 16**, but it houses some of my bigger tools such as SDS drills and plumbing equipment. Finally in this corner we have the bandsaw, which is the only machine that I've screwed down to the floor. I've thought about fitting it with a mobile base, but bandsaws can be a bit top-heavy.

Acres of space

The final room in the building is the original left-hand stable, **photo 17**, which I have converted to be my workshop. Now we use it to finish and spray work, so the room is relatively empty. There are cupboards to one wall which have doors to protect the contents from paint overspray, and I have a Plano glue press fitted to the other wall, **photo 18**. The Plano is handy at times, but I do find it frustrating to use!

The only machine in this room is the Hegner scrollsaw. This came with a metal stand, but when I get some spare time I plan to make a drawer unit on castors for it so I can move it out of the room more easily when I need it.

Well, that's it! I know I complain a lot about not having enough space, but with the workshop empty of work it probably looks more spacious than it actually is. The shop is a work in progress, and no doubt we'll be modifying it until the day I retire... if that ever happens! Then, in my dreams, we're going to rip everything out and convert it into an indoor swimming pool!



Power Carving has in recent years rocketed in popularity. It is true that in these so-called austere times, a skill and hobby like this is a very cost effective skill or hobby!

More and more manufacturers are seizing this opportunity and are developing a whole range of new tools for the carving enthusiast.

Kaizen Bonsai which as its name suggests is actually a company specialising in Bonsai, but in recent years they have arguably become a market leader with their comprehensive range of carving tools.

Having spent over twenty years using carving tools to create Bonsai, Graham Potter the owner of Kaizen Bonsai then spent two years researching and developing his own tools after experiences with other tools which were just ok, reasonable or even dangerous!

His idea was to make a tool that was versatile for working both large and small projects. The cut rate needed to be exceptional but with a very long cutting tip life and above all the tool needed to be safe.



And so Terrier™ and Little Terrier™ were born!

Their Terrier™ and Little Terrier™ ranges are receiving much acclaim the world over being CNC machined from 3032 high carbon stainless steel from a solid Billet with

tips which are replaceable. They are created from polished Tungsten carbide which allows a much faster cutting rate, a shortened loading time and an enhanced lifetime of the tools themselves (which are not to be confused with cheaper less effective imitations that are made in parts).

Behind the cutting edge of both the Terrier™ and Little Terrier™ is a groove which serves to present it at a positive rake to the project making it a faster and cleaner cut. Conveniently, once the cutting face becomes dull, you simply loosen the retaining screw and rotate the tip to a sharper new section. It is reckoned by the manufacturer that the tip should last for a continuous 20 hour drilling session, so these pieces really are at the cutting edge!

The 27g Terrier™ is the larger of the two Overall with a length of just 65mm and designed with a 1/4" (6.35mm) shaft primarily for the tools safety. This allows use in an array of die grinders and flexible shaft machines. It really does remove wood effortlessly and cleanly and its 25mm head removes wood efficiently at higher speeds. A chip limiter prevents the tool from 'digging in' to the work.



Unlike some larger tools the Terrier™ has a responsive cutting action that is very pressure sensitive. A light action by the user produces a fast delicate cut but with a little more pressure the tool bites harder without fear of it 'grabbing' or kicking back like some other tools.

For more confined areas the 15mm Little Terrier™ which weighs just 23g just seems to get in anywhere with much greater control and is a solid and robust as its brother and delivers an equally clean job. It's not difficult to see why this tenacious, robust piece of kit which works well at both high and low speeds gets its name!

Both cutters work well at most speeds but the manufacturers recommend best results are achieved at between 1500 & 2000 rpm.

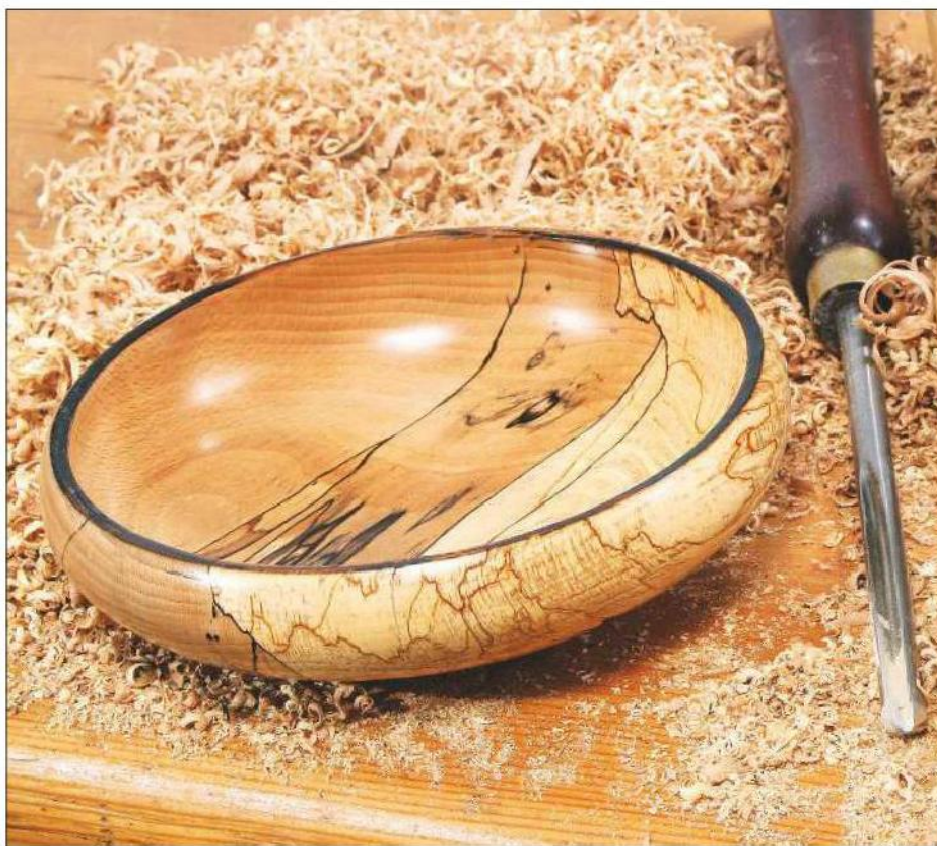
Economically priced at just £44.95 inc VAT and p&p, the Little Terrier™ is a great little investment which should, when used correctly last a good few years and its big brother the Terrier™ at just £54.95 inc VAT and p&p represents equally good value.



Replacement cutting tips and screws are available separately.

All can be purchased from:
www.kaizenbonsai.com
or by telephoning them on:
0800 4580 672





BY ALAN HOLTHAM

Challenge bowl

Last month I took a look at the spalting process and the way it turns ordinary wood into a material with dramatic colour and figuring that turners love. This month I'll show you some of the techniques you need to master in order to work it successfully

The term 'spalted' is used to describe wood in the first stages of rot, a state that causes it to develop a totally fascinating variety of colours and patterns not normally characteristic of that timber. These patterns can be quite magnificent, with zones of different colours separated by fine black lines in a highly ornate pattern. The extent of the patterning varies enormously, depending on the number of different fungal attacks that have infected the wood. One of the best ways to exploit this natural phenomenon is to cut the wood into blanks and then turn it on the lathe. I've chosen a beech blank to illustrate some of the problems of turning spalted timber, **photo 1**.

Potential problems

For a start, it can sometimes be a bit tricky to season spalted wood. If it's evenly infected and discoloured, then all the stresses seem to have been equalised. But if the spalting is more varied, or particularly in definite planes, then splits will often develop along the boundaries, with the stresses obviously now overcoming the weakened timber.

There are no specific techniques involved when working spalted timber, other than keeping your tools sharp and being patient. The continual tearing of soft areas causes frustration, particularly when a fine finishing cut leaves a smooth surface but with a couple of deep tears. Trying to fill these just highlights the problem, so there's often no alternative to lots of sanding. The only snag to this is that the different densities sand out unevenly, the soft areas often getting quite hollow compared to the harder surrounding timber. To even this out I find it's best to use a powered sanding pad, which spreads the wear more evenly.



1
This spalted beech blank had some promising surface figuring



2
Even with the sharpest tools, little patches can be plucked out to quite a depth



3
Problems also occur when a soft area adjoins a sound, harder one



7
You'll get clean cuts on hard patches and jagged tears on softer ones



8
Try turning the gouge upside down to produce a fine shearing cut



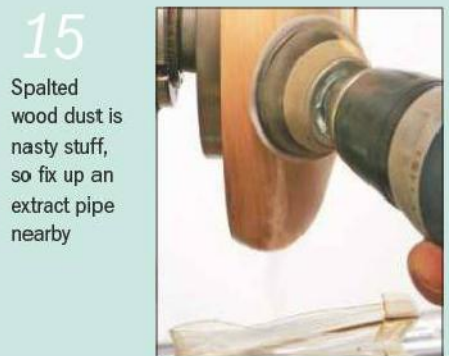
9
Cut the chucking recess to match the diameter of your chuck jaws



13
Aim to end up with a square-edged recess that will maximise the chuck's grip



14
Stabilise cracks and tears by flooding them with very thin superglue



15
Spalted wood dust is nasty stuff, so fix up an extract pipe nearby

Health Issues

The dust from spalted wood is often cited as a particular health hazard. I have seen no scientific evidence that the dust is any more injurious than dust from normal wood. I do know, however, that they are both potentially hazardous, so I always wear some personal protection in the form of an air-fed helmet as well as running my air cleaner when I'm turning spalted wood.

Although it has developed through the initial phases of rotting, spalted wood is quite stable once it has been dried. With no moisture in the wood the rot can't survive, and the timber won't deteriorate any further unless it gets wet again.

Uneven textures

The downside of spalting is that as the wood starts to decay, it becomes softer. Generally speaking the heavier the spalting,

the softer and more difficult the wood is to cut cleanly. The main problem is that little patches are plucked out to quite a depth, **photo 2**, no matter how sharp your tools are. However, there are a few tips that can minimise some of these difficulties.

A more difficult situation occurs where there is a distinctly soft area next to a much sounder section, **photo 3**. Although the effect of this may be visually quite dramatic, it is much more difficult to work as the turning tools tend to bounce when they encounter the different densities of wood as the blank spins, and you end up with a very uneven surface. The problem becomes even more acute when you start sanding.

The chosen one

Nevertheless, I've selected just such a bowl blank to try to illustrate the turning process. Sadly, although it appeared to be well

spalted, closer inspection revealed that the patterning was all on one surface and the underside was relatively plain. I was then faced with the dilemma of which way to mount it. Making the well-marked side the top will result in most of it being turned away. In the end I settled on putting the better spalting to the underside in the hope that I could turn down into it in the base of the finished bowl.

Beginning to turn

The first problem is physically mounting the blank on the lathe, particularly if the wood is very soft. If there's a reasonably sound section you can use a large woodscrew chuck and rely on just the one fixing. If it's softer, use a faceplate with plenty of big screws to get an adequate hold, **photo 4**.

You can then start the turning process.



4 If the blank appears soft, use a faceplate and attach it with plenty of big screws



5 The best tool to use for small bowls is a bowl gouge sharpened to 45°



6 The wood is fragile, so proceed by taking cuts as gently as possible



10 Even a sharp parting tool will leave ragged edges to the recess...



11 ...but you can clean these up with a slicing cut made with a skew



12 Cut away the waste in the recess with a steeply bevelled spindle gouge



16 To minimise black dust stains, rub in some thinned-down sanding sealer



17 Repeat the sanding and sealing process several times to get a clean surface



18 In sanding the bowl, I inadvertently rounded over the chuck recess!

Remember that the internal density can vary tremendously, so keep the lathe speed down to minimize any vibration. I've found that the best tool to use for these small bowls is a 1/4in bowl gouge with the bevel sharpened to about 45°, **photo 5**. Bear in mind the fragile nature of the wood and make the cuts as gentle as possible, **photo 6**. This is the key to working spalted wood. You simply can't lay into it with heavy cuts as you can with sound timber. Slow and easy are the watchwords here. Above all, keep the pressure of the tool down on the toolrest, rather than on the wood, to minimise bouncing.

Mixed results

No matter how sharp your gouge is, the finish will be extremely variable, with clean cuts on the harder patches and jagged tears on the soft ones, **photo 7**. This blank

revealed a couple of quite major splits along the zone boundaries as well. I reduced its diameter to get rid of some of the splits, but left the rest to be dealt with later on.

As you get near to the finished profile, start taking finer and finer cuts to reduce the tearing damage. Re-sharpen the tool regularly as well; it's amazing just how abrasive this very soft timber seems to be, and anything less than a razor-sharp edge will tear rather than cut.

Another old trick that's worth trying is to turn the gouge almost upside down to produce a very fine shearing cut that slices cleanly through all but the softest patches, **photo 8**. However, you have to accept that you're not going to get a perfect surface straight off the gouge with this wood. Just do the best you can with the last few finishing cuts.

Getting a grip

I prefer to use a recess for re-chucking, as I find it more secure than gripping onto a spigot which can be rather unpredictable in density. Use a narrow parting tool to mark out the recess, and try to make the diameter as close as possible to the true diameter of the chuck jaws to maximize the amount of grip, **photo 9**. If the material is well spalted, allow some extra depth to the recess to compensate for the weaker material.

Even a sharp parting tool will rag the edges of the recess, **photo 10**, but you can clean these up with a slicing cut made holding the skew on its back, **photo 11**. The waste within the recess can then be cut away with a steeply bevelled spindle gouge using a pull cut, **photo 12**. Aim to end up with the recess as clean as possible off the tool, and with a sharp corner to maximise the chuck's grip, **photo 13**.



19 After sealing the outside of the bowl, apply wax with a steel wool pad



20 Make sure you reverse the work back onto the chuck dead square



21 Start turning out the inside of the bowl with light, gentle cuts...



22 ...and don't be tempted to cut the walls of the bowl too thin; they may crack



23 I charred the bowl's rim lightly for contrast by holding a block of hardwood against it



24 Wax the interior once more and buff it up to a soft natural sheen with a soft cloth

Glue and sand

Once you've finished shaping the outer profile of your blank, your next job is to check it all over carefully for cracks and severe tears. The best way to stabilise these is to flood them with very thin superglue, **photo 14**, letting it soak well into the defects. This dries hard in a few seconds, hardening up those very soft patches and sealing any cracks.

You can then start to sand the surface carefully, but avoid overdoing it or you'll wear away the softer areas more than the harder ones and the surface will become very irregular. Power sanding is best as it seems to spread the wear more evenly.

Some form of dust extraction as close as possible to the surface you're sanding is essential here, as the spalted dust is particularly offensive. I've found that the best way to get the extraction pipe near to the action is to bolt a large spring clip on the end, which can then be clamped onto the bed bars just where you need it. It's very satisfying to see the dust being sucked straight down into the pipe, **photo 15**.

Keeping it clean

The other problem with sanding spalted wood is that a lot of the black dust from the zone boundaries gets deposited in the torn grain of the soft light-coloured areas, giving it a very dirty appearance. To overcome this, do a little sanding, stop the lathe and rub in

a coat of thinned-down cellulose sanding sealer, **photo 16**. This dries in no time and you can then sand again, but now the black dust is reduced and the grain is filled a bit. Keep repeating this procedure until you get the finish you want. You may have to do it five or six times to get a smooth and clean surface, **photo 17**.

During the power sanding I accidentally rounded over the internal edge of the chucking recess, **photo 18**, which makes a nonsense of what I said earlier about maximising the grip. However, I rather liked the effect it created, so I decided to risk carrying on rather than turning it again. Fingers crossed!

Outside finish

With spalted timber I nearly always finish the surface with pastewax, so after building up a really good basecoat on the outside of the bowl with several coats of sanding sealer I applied the wax with a pad of 0000-grade steel wool, **photo 19**. I find that oil finishes tend to go very patchy on spalted wood, even after so much sealing, and the high gloss finishes tend to look inappropriate anyway with such extreme figuring.

Back to the turning

Take care when you reverse the work back onto the chuck that you get it dead square, **photo 20**, particularly if like me you have reduced the recess depth. Go steady when

turning out the inside of the bowl, **photo 21**, just taking gentle cuts until you get a feel for how even the timber is. Don't be tempted to try for over-thin walls, **photo 22**. Spalted timber has no real strength, so it's better to leave the walls a bit fuller, and to keep stopping the lathe to douse soft patches with superglue as you get near to the final thickness you want.

A minor disappointment

As I'd feared, the finished bowl revealed two coloured areas with a disappointingly small amount of spalting. So, in an effort to try to tie these two contrasting areas together, I charred the rim lightly by holding a piece of hardwood against it as it was spinning, **photo 23**. I'm still not sure if this works or not! Finally, repeat the sanding sealer procedure on the inside; then wax it again, **photo 24**, buffing the wood to a natural sheen with a soft cloth.

After much frustrating, time-consuming and dusty work you should now have a beautifully finished piece of spalted timber. My finished piece was a little disappointing, but every day is a learning day!

The bonus is that you don't need many tools to turn spalted wood, as you can see in the main picture on page 59. I used just a 1/4in bowl gouge for most this project, with a little help from a 1/8in parting tool, a 3/4in skew and a 1/4in spindle gouge. A few simple tools really do go a long way!

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For more technical information on these chucks and accessories, or to view the entire catalogue, visit www.axminster.co.uk. Call 03332 406406 to order a copy.

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T02RL 1 1/2in x 6tpi T23 1 1/4in x 8tpi



BY COLIN SIMPSON

Boxing lessons

Boxes are always a favourite with turners. They can be made in a wide range of shapes and sizes, and make great gifts for friends and family. Here are three techniques you can use to create some little boxes you'll be proud of

FIT FOR PURPOSE

There seems to be a degree of one-upmanship in some turning circles with regard to how tightly a box lid should fit. I've heard a turner talk about his ten-second boxes, meaning that if the box is picked up by the lid it will take ten seconds for the base to drop off.

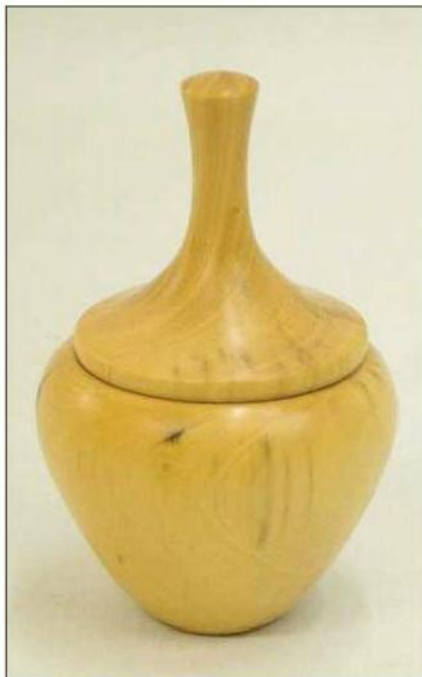
That's clearly a great fit, but is it really necessary to make it so tight? Boxes with such well-fitting lids must be made from extremely stable wood, and need to be kept in a room with a controlled environment to prevent the wood from swelling and contracting with changes in humidity.

How tight should a lid fit anyway? My answer is always that it depends... If the box is to be used for holding pills and will be carried in your pocket, then a tightly-fitting lid is called for. However, if it lives on a mantelpiece and its purpose is to hold trinkets, then a lid you can lift off with one hand without needing to hold the box with the other is preferable. My motto? Simply make your lid 'fit for purpose'!

Making wooden boxes is a good way of testing your turning skills, as they require a fair bit of accuracy to make the lid fit well. However, because they're small they can be turned from off-cuts of wood, so they're very economical even if you're using an exotic and expensive species. Above all, they're great fun to make.

Here I'm going to show you three different ways of making boxes in three different styles. You can, of course mix and match the techniques to suit your own needs. The first is a simple finial box that's turned on one chucking, and I've made it from – you've guessed – boxwood.

THE FINIAL BOX



1 Mount the cylindrical blank in the chuck and shape it with a spindle gouge



2 Remove the tailstock support so you can clean up and sand the finial



3 Cut off the lid using a narrow parting tool to minimise grain mismatch



4 Bore a hole in the centre of the blank to the required cavity depth

Mount the wood between centres, turn it to a cylinder, and cut a chucking spigot on one end. Mount the piece in the chuck and start to shape both the base and lid of the box using a $\frac{3}{8}$ in spindle gouge, **photo 1**. Remove the tailstock support to clean up the top of the finial, **photo 2**. Turn the lid to its final shape at this stage, then sand and polish it before parting the lid from the base. I use a narrow parting tool for this, **photo 3**, to minimise the amount of wood I remove and ensure a good grain match on the finished box.



5 Start hollowing out the internal cavity using a $\frac{3}{8}$ in spindle gouge



6 The profile of this home-ground scraper allows me to undercut the box opening

Hollowing out the base

Create a hole in the centre of the base to the full depth of the box cavity. You can either use a drill in a chuck in the tailstock or bore it out with a $\frac{3}{8}$ in spindle gouge, **photo 4**, and then widen it with the same tool.

Start the cut with the tool in the hole and the flute pointing towards 10 o'clock, and swing the handle away from you as it cuts, **photo 5**. Continue to hollow the box out in this way until you reach the bottom of the drilled hole, and use a scraper to make any final smoothing cuts that are needed. Commercially bought scrapers like the one shown in **photo 6** are available, but I ground this one myself. This shape allows me to undercut the opening of the box without fouling the lip.

Scrapers are used with the handle higher than the cutting edge – the



7 Sand and polish the inside; note how I'm holding the abrasive paper



8 Sand and polish the outside of the base, then part it off as before

opposite to the way we use gouges. Remember that you should get shavings from the tool. If you get only dust, then it needs to be sharpened.

Finishing touches

When you're happy with the internal shape, sand and polish the inside, **photo 7**. When sanding inside small boxes like this it's essential to use only one finger. If you go

in with two there's a risk that your fingers could twist round each other, breaking one or both of them. Don't be tempted to wrap the abrasive around your finger either, in case the rotation snatches at it.

I like to complete the final shaping of the outside with the lid on; it makes it easier to get the proportions right. Sand and polish the outside of the base before parting it off with the narrow parting tool, **photo 8**.

THE PEPPERPOT BOX



The second method of making a box also involves just one chucking spigot, but the base of the box is used as a jam chuck to finish the lid. The grain can't be matched as the lid is turned around, but the box design reduces the visibility of the mismatch.

Forming the lid

Start as usual with the blank held between centres, turn it to a cylinder and cut a spigot on one end to fit your chuck. Mount the workpiece in the chuck and true up the tailstock end. This will become the underside of the lid. Hollow the underside of the lid using the techniques described for the finial box, **photo 1**.

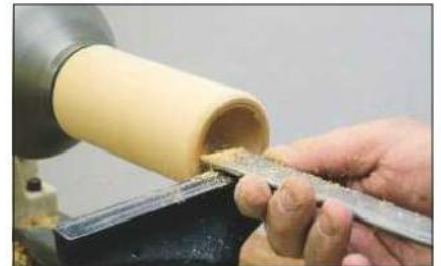
Clean up if necessary with a round-nosed scraper. Then cut a small step in the lid using a parting tool or a skew chisel on its side, **photo 2**. This step must have parallel sides. Sand and polish the inside of the lid. Use vernier callipers to measure the diameter of the step inside the lid. Then do some initial shaping of the outside of the lid, **photo 3**, before parting it off from the base.

Testing the fit

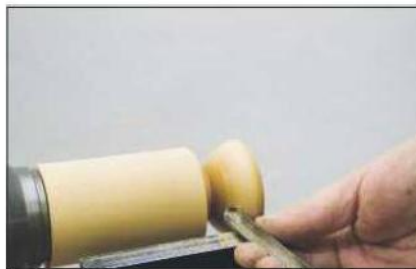
True up the face of the remaining blank and transfer the diameter of the step in the lid to it, **photo 4**. Cut a tenon down to this mark using a skew chisel on its side, **photo 5**, and keep offering up the lid until it fits tightly. This fit must be tight enough



1 Start to hollow out the underside of the lid with a spindle gouge



2 Cut a small step inside the lid using a parting tool or skew chisel



3 Do some initial shaping of the lid to form the pepperpot shape



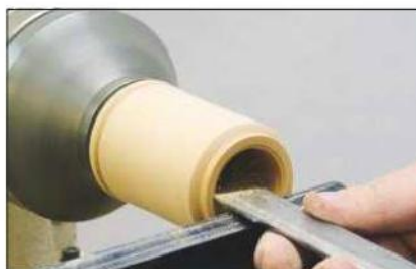
4 Transfer the diameter of the step in the lid to the face of the blank



5 Cut a tenon down to this mark using a skew chisel on its side



6 Use the tenon as a jam chuck so you can finish off shaping the lid



7 Hollow out the base as before and scrape the sides clean with a skew



8 Sand and polish the base, then part it off and assemble your box

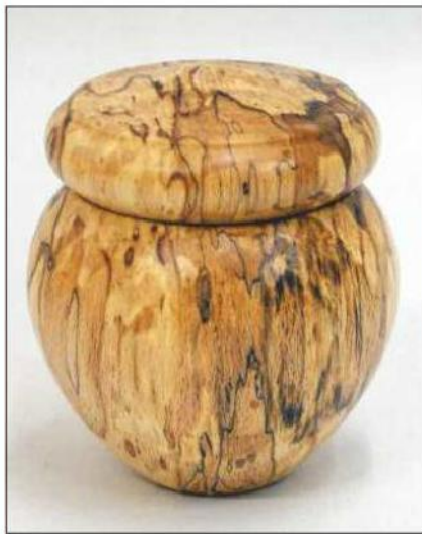
to hold the lid in place while you finish off the top, **photo 6**. When you're happy with the shape of the lid, sand and polish it and then remove it from the base.

Hollowing out the base

The tenon can now be eased slightly by taking a very fine shaving from it, or by giving it a light rub with abrasive paper. Hollow out the base in the same way as

before. The walls can be cleaned up using the point of the skew chisel as a scraper, **photo 7**. When the skew reaches the bottom of the side wall, gently move the tool away from you so the cutting edge scrapes the bottom of the hole. Sand and polish the inside of the box and then clean up the outside. Finally, sand and polish the outside and part off the base with the narrow parting tool, **photo 8**.

THE SPALTED BOX



This third method of box making is similar to the second, but the base and lid are chucked separately and the lid is in the same orientation as the base so the grain can be matched as closely as possible. I've chosen a block of spalted wood for this little box.

Double spigots

Start with the blank mounted between centres as before, rough it down to a cylinder and cut a chucking spigot on both ends. I like working on the lid first, so mount what will become the lid in the chuck and then part this off from the base, **photo 1**. Hollow out the underside of the lid as described for the pepperpot box, and cut a parallel-sided step in the lid as shown in **photo 2** of that picture sequence. Sand and polish the underside of the lid, measure the diameter of the step, then remove the lid from the chuck and put it aside.

Another way

Here's a slightly different technique for fitting the lid to the base. Mount the base in the chuck and cut a slightly larger tenon than necessary for the lid to fit onto. Cut a shallow taper on this tenon and offer up the lid. The lid should fit somewhere on the



1 Mount the lid end in the chuck and part it off from the base section



2 Offer the lid up to the tapered tenon so it forms a light burnish mark



3 Use the base as a jam chuck to finish off the top of the lid



4 Then complete the shaping of the outside of the box base



5 If you wish, add a few decorative beads to the inside of the lid



6 Reverse-chuck the base so you can clean up the bottom neatly

taper and, if the lathe is running as you do this, it should leave a light burnish mark on the taper, **photo 2**. I've deliberately held the lid onto the taper a little longer than necessary in order to highlight the burnish mark for the camera, but you don't need as large a burn as this when you do it.

Fitting the lid

Next, hollow out the base as before, sand it and polish it. Then fit the lid to the base exactly. All you need to do here is to cut the tapered tenon to make it parallel at the point of the burnish mark. Use a parting tool or skew to do this. The burnish mark should just disappear, and then the lid should fit on perfectly.

There's a reason for hollowing the box before fitting the lid precisely to it. If you have a perfect fit of the lid to the base before doing the hollowing, the chances are that it will be less than perfect after

you've finished. This is because the hollowing process removes a lot of wood, and the remaining wood is likely to move a little as the internal stresses are released.

Finishing off

Progress is now exactly the same as for the pepperpot box. Use the base as a jam chuck to finish off the top of the lid, **photo 3**, and then complete the shaping of the outside of the base, **photo 4**.

You may wish to consider adding a few decorative beads to the inside of the lid, **photo 5**, and to reverse-chuck the base so you can clean up the bottom rather than just leave it as a parted-off finish, **photo 6**.

It's worth mentioning that this method of making boxes is the most time consuming of the three because of the number of times the work has to be chucked. If you sell your work, you should therefore charge a little more for them!

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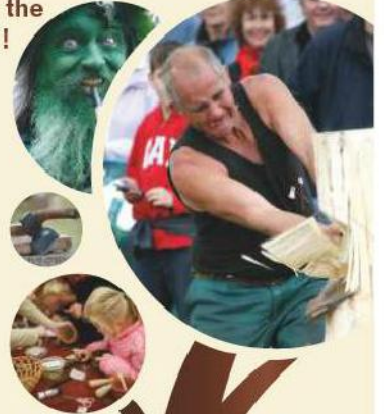
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The Festool TS55R marks a significant step forward in design, and builds on the excellent track record of the TS55 saw. The new model is the same price as its predecessor and with so many new features, scores full marks for value for money

Festool TS55R circular saw

I'm continuing the process of replacing my old, heavy woodworking machines with smaller, lighter and more accurate machines from Festool. I wanted a second circular saw with the aim of setting one up as a bench saw, allowing me to get rid of my dusty Jet machine. My old TS55 is as reliable as ever, and I was tempted to go for its big brother the TS75. However, when I first saw the TS55R at a show I decided that it was the 'must-have' saw for me. I'll soon purchase the Festool CMS unit to create my new table saw.

What you get

I already have several Festool guiderails, so I ordered just the 'barebones' saw which comes in a Systainer case with a splinter guard, a fine-tooth blade, the clear window guard and the blade-change Allen key. For those without rails, the FS Plus version is good value as it includes a 1400mm guiderail for only £48 extra.

Once registered, all Festool tools have an extended guarantee period of three years. Not many people realise that an insurance scheme should your tool be stolen is included in the guarantee. No other company in Europe offers such a comprehensive guarantee.

Extras and consumables

Festool don't bundle the side fence (£38 extra) with the basic saw. However, as the saw is mainly used on the guiderails the side fence is rarely needed; I've only ever used mine once. There are several blades available for cutting wood, ranging in price from £47 to £55, and some specialist blades for aluminium and composite materials priced at £101. The guiderails come in many lengths. The 1400mm (£51) will allow cuts across the width of an 8 x 4ft sheet, and two rails joined together will cover the length.

There are no discounts available on the tools themselves, but most dealers will try and sweeten any deal with a modest discount on the accessories. Festool themselves have frequent bundle deals that are well worth looking out for.

Standard features

The TS55R has a dual depth gauge which provides depth readings both on and off a guide rail. A micro-adjustment knob allows very precise depth settings to be achieved, and is used to calibrate the depth gauges. The new extra-wide riving knife provides great stability during long cuts, and makes the resumption of a cut less likely to be noticeable. The splinter guard can be replaced with a clear

£426



The new depth gauge and micro-adjustment knob make depth-of-cut setting foolproof



The cut angle ranges from -1 to +47°. Pulling the detent knob allows settings outside these limits



The blade change lock is shown engaged (on the handle). The large riving knife can also be seen



The TS55R uses the normal guiderails and is the ideal companion for the MFT3 workbench on which it's resting

TESTED BY PETER PARFITT



plastic window (supplied) which makes it easy to saw forward to a line. The flat blade housing now allows cuts very close to a wall or skirting board.

The angle of cut can be set from -1° up to 47° , with a release knob allowing the saw to go below 0° or above 45° . The dust collection has been improved, and when the saw is connected to my CTL26 extractor, my workshop remains free from dust.

The saw in use

The saw was perfectly set up on arrival, and I did my first test on some temperamental oak-faced mdf which had been cut badly on my old table saw. I cross-cut walnut, ripped down some maple and then tackled a sheet of plywood. Every cut was perfect, and typical of the high standard that I now expect from Festool.

When I saw the TS55R at a show, the demonstrator cut a piece of aluminium with no effort at all. Although I'm unlikely to want to do this, it does illustrate the versatility of this professional saw.

The saw is also very robust. The magnesium alloy base frame shows no sign of damage – not even a scratch – after the saw fell from my bench to the concrete floor as I moved the camera tripod. The saw came off better than I did!

Part of the family

When I reviewed the Festool MFT3 workbench in the April 2012 edition of *The Woodworker* I explained the importance of the circular saw, and then stressed the major role of the CT26 extractor the following month. I see these three tools together as the key starting point for any small workshop or mobile tradesman.

I'm a self-confessed Festool fan, but with limited means one has to be objective and be able to prioritise spending. I believe that the TS55R should be at the top of anyone's shopping list as it is competitively priced, versatile and integrates superbly with other tools from this quality German manufacturer.

SPECIFICATION

MOTOR	1200W	
BLADE DIAMETER	160mm	
NO-LOAD SPEED	2000-5200rpm	
MAX CUTTING CAPACITY	at 90°	55mm
	at 45°	43mm
MAX BEVEL RANGE	-1° to 47°	
WEIGHT	4.5kg	

VERDICT

This is a competitively priced saw with many features that sets a new benchmark for other manufacturers to follow.

- PROS**
- Depth of cut adjustment to 0.1mm
 - Almost dust-free sawing
 - Cuts almost flush to a wall or door
 - Excellent ripping knife

- CONS**
- For a first purchase, the guiderails need to be factored into the cost

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Festool UK
- 01284 760791
- www.festool.co.uk

The saw cuts perfectly, compared with the cut from my old table saw on the edge of the lower board



Lift the Quickfix lock on the handle and use the Allen key to release or secure the blade



The flat blade housing allows cuts to be made very close to an adjacent vertical surface



The resulting cut can be as little as 10mm away from the vertical surface



Bandsaw
£320
 Stand
£50

Bandsaws are popular and versatile tools, especially good at cutting curved components and making joints. They take up little workshop space and are quiet and relatively safe. You don't need a large machine for most jobs, and this model is just right for the home and light trade user

Draper BS315 bandsaw

A good bandsaw is a must for any serious workshop. Though a table saw generally does the lion's share of the dimensioning work, a bandsaw is invaluable for creating curved components, cutting joints, making veneers and cutting circles. With its generous depth of cut, quiet operation and little danger of kickback, the bandsaw is also a pleasant machine to use.

This Draper model is the ideal size for the smaller workshop. With a 305mm throat capacity and 160mm depth of cut, it's large enough to be useful without needing too much floor space.

Standard design

This is a very familiar bandsaw design, and both Metabo and Record produce something comparable. My first bandsaw 20 years ago was an Elektra Beckum BAS315, which was a remarkably similar machine. It just shows that some classic machine designs really do stand the test of time.

This bandsaw has a solid steel casing with separately opening top and bottom doors. The lower wheel is belt-driven and there is a choice of two speeds, though for woodworking only the faster one is ever used. A handwheel is mounted on the side to set the belt tension.

The NVR switch is conveniently positioned on the spine of the saw. For safety it is fitted with a locking cover, and there's a small key that must be inserted to allow it to open. The blade tension adjusting knob is on the top of the saw, and the blade tracking control is on the rear.

Regular features

The table of this bandsaw is a standard solid cast iron design, with a smoothly finished surface and a pair of grooves machined into it for the mitre fence. It's mounted on a substantial bracket and can be tilted to 45°.

Both rip and mitre fences are supplied with the saw. The rip fence runs in an alloy track that's bolted to the front of the table. It's a solid fence with good adjustment knobs to ensure accuracy. The mitre fence is equally robust, and fits snugly in the table grooves without any play.

The saw has a steel casing and separate top and bottom doors



The rip fence runs in a track bolted to the front of the table



The robust mitre fence fits snugly within the table grooves

At the present time, JCB has more than a dozen power tools in its line-up, including various saws, several sanders, numerous drills and a router. These products are made for the company, but to their specifications and standards, and are available exclusively at B&Q

JCB R01500 plunge router

With a motor rated at 1500 watts, this router is in the medium power class, but it's a heavy-duty product in every other sense. The handles are as big as they get for a router and provide a very positive grip, helped by being set at a slight angle. The right-hand one incorporates the on-off switch, which has a lock-on facility.

Standard features

The depth-stop provision is in two parts. Near the right-hand handle there is a simple but common arrangement whereby a

plunger and stepped rotating turret control the depth. On the top left-hand side is a fine adjuster which can be rotated to control the depth to the finest of limits. The plunge lock is conveniently located on the rear of the body.

The underside of the base is covered in non-stick material. The guide bush secures to the centre of the underside; alternative sizes to the one provided are not available. Neither the Trend nor the Axminster universal bases can be fitted directly, but it's possible to add them by drilling through the router base and securing the universal base with small nuts and bolts. The advantage of these false bases is that they allow for a wide range of guide bushes to be brought into use.

Fence matters

The fence can be added to either side of the base, but it doesn't have any micro-adjustment. Because of its design, a second fence can't be added directly to the supporting rods; however, a home-made additional fence is simple to make and easy to fit.

The side fence is also used to hold both the roller guide and the pivoting centre point. Both of these devices are used when curved work is being tackled, and they worked to my satisfaction.

Collets and cutters

The selection of cutters supplied with this router enable a range of basic cuts to be made, and are of very acceptable quality. The smaller collet included allows for cutters with 1/4in shanks to be used. I found changing the cutters to be straightforward; a spanner is included for this, and the router spindle is locked with a simple spring-loaded plunger.

Using the router

One of the main functions of a router is moulding edges, and this is where I started my trials using a roller-guided cutter. I moulded both a straight edge and a curved one; the shaped one was as easy to tackle as the straight one. Next it was on to some grooving; for this the fence was brought into use, and it performed well.

A router is also an effective tool for forming small mortises, but it helps if a second fence is made for it. This fence allows the router to straddle the workpiece and prevents any sideways movement. It is



£71.98



The plunger and rotating turret offer eight separate depth settings



The 30mm guidebush supplied fits in the centre of the router base



It's possible to fit a universal base by drilling the router baseplate



The accessories supplied include six cutters of very acceptable quality



You can use a simple template such as this to form internal cut-outs

also best to use end-cutting cutters, although with care standard ones can be used. The rounded ends of the mortises will then need to be squared off by hand.

Summing up

So how did I score this router? Not surprisingly, it's a robust product – not the most powerful on the market, but adequate for hand-held use. There's plenty of speed choice for all operations, and the depth control is simple but effective. Although only one guide bush is included, the extent of the cut produced with any guide bush can be largely controlled by using bits of different diameters.

What must always be kept in mind with any power tool is the cost versus the use to which it will be put. This is where this router scores heavily. The quality is underlined by the 5-year guarantee, one of the best offered by any manufacturer and suggesting they have total faith in the product. And those six cutters provided with the tool must be worth around £20!



TESTED BY GORDON WARR

SPECIFICATION

MOTOR	1500W
NO-LOAD SPEED	11,500-28,000rpm
COLLETS SUPPLIED	¼in and ½in
PLUNGE DEPTH	0-55mm
MAX FENCE EXTENSION	250mm
WEIGHT	4.3kg
ACCESSORIES	six ½in shank cutters, 30mm guidebush, roller guide, centre pin, spanner, extract adaptor

VERDICT

This is a quality product, and although it has some limitations it offers excellent value for money.

- PROS**
- Good depth-of-cut adjustment
 - Decent quality cutters included
 - 5-year guarantee

- CONS**
- Only one guidebush supplied
 - No fence micro-adjustment
 - Universal bases don't fit directly

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- JCB
- 0845 600 5526
- www.jcbdiy.com
- B&Q
- www.diy.com



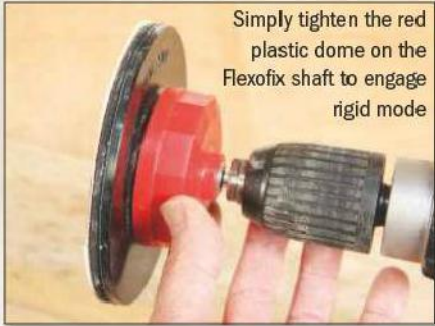
The fence can be fitted to either side of the base for grooving work



The roller guide supplied accurately followed a curved edge



Add a second home-made fence when using the router to cut mortises



Simply tighten the red plastic dome on the Flexofix shaft to engage rigid mode

Flexidisc Flexofix sanding kit

£34.90

TESTED BY ANDY STANDING

A disc sander is not normally the tool chosen to produce a fine finish on timber. It may excel at shaping and removing large amounts of stock, but it's usually too brutal for finishing work. However, the Flexidisc sanding system changes all that

VERDICT

These are remarkably effective sanders that will produce a high-quality finish in no time. They combine the stock removal speed of a normal disc sander with the fine finish of an orbital.

- PROS**
- Keen price
 - Good quality
 - Speed of use

- CONS**
- No dust extraction

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- enquiries@webwisewares.co.uk
- www.webwisewares.co.uk

Hand-held disc sanders have never really been much good at delicate work. The problem is that if you tilt the disc even slightly when sanding a flat surface, you'll leave a depression that can be extremely difficult to remove. The usual hard backing pads and the high rotation speed of the abrasive disc exacerbate the difficulties, and you can end up with a grooved and scratched surface.

The Flexidisc sanding system manages to resolve these difficulties with a rather ingenious flexible shaft that allows the disc to remain flat on the surface even if the power drill is not being held perfectly perpendicular to it. It's available in two versions; the metal Flexoplan which is intended for professional use, and the plastic Flexofix which is more suitable for everyday DIY work.



Insert the flexible shaft in the baseplate and fit the plastic dome over it



Then thread the large locknut onto the shaft and screw it down to secure the dome

The Flexoplan kit consists of two discs, a flexible shaft, a plastic dome and a locknut



£21.90

A cunning design

The Flexoplan has a metal backing plate into which the flexible metal shaft fits. This is held in place with a large plastic dome, and on top of this sits the locknut. The disc can be used in two modes: flexible or rigid. Flexible mode is used for sanding flat surfaces and is engaged by loosening the locknut. The rigid mode is used for shaping work and for sharpening tools and is engaged by tightening the locknut. The abrasive discs are fixed to the backing pad with Velcro touch-and-close fastenings.

The Flexoplan is supplied with a pair of discs – a metal 125mm diameter one and a 115mm diameter plastic one for more intricate work.

The plastic Flexofix disc is less sophisticated and relies for its flexibility on a soft mounting on the rear of the disc. It has a plastic dome that can be tightened to engage the rigid mode.

It's available singly priced at £12.40, or in a comprehensive set (£34.90) containing a complete range of abrasive discs, a polishing mop, a flexible hand sanding pad, a bench clamp, a pair of safety glasses and a cleaning stick.

Using Flexidiscs

The finish produced by these sanders is remarkable. You can prepare a surface ready for polishing in an extremely short time. They are comfortable to use, with none of the catching or kicking associated with standard hand-held disc sanders. The rigid mode is also useful as, combined with the bench mount, it can be used for tool sharpening and static sanding. The only problem is the dust. We are so used to sanders with integrated dust extraction, that it comes as a bit of a shock that the minute you touch these sanders against the workpiece, a cloud of dust is released, covering the workshop. It's best to use them outside!

Summing up

Apart from the dust problem, these are excellent sanders. In my opinion the Flexoplan is the one to choose, as its metal backing plate and additional weight make it spin more smoothly, and it's obviously going to be more durable. With a price tag of just over £20 it's also a bargain.

Having said that, the Flexofix is a versatile package of sanding, grinding and polishing kit, and is also keenly priced for what it offers.



The abrasive discs remove stock at a remarkably fast rate



Release the locknut completely to use the disc in flexible mode



Elmer's glues

TESTED BY RON FOX

Toolstream are now distributing a range of glues and wood fillers from US manufacturer Elmer's Products Inc and have kindly sent me a generous selection for testing.

The glues include standard and waterproof versions of Carpenter's Woodglue, ProBond weatherproof wood glue, and all-purpose Glue-All which claims to bond metal, stone, wood and other materials. All of these are sandable and paintable when dry.

In addition I have four different Crazy Glues, **photo 1**, which are instant glues intended for bonding ceramics, wood,



1 Crazy Glue comes in four different dispensers



2 The wood fillers are available in several shades

plastic rubber, metal and glass. Three of these come in different types of applicator – pen, tube and gel – while the fourth is an advanced super-strength version in a precision-tip dispenser.

The wood fillers, **photo 2**, come in various wood shades and colours, some for interior use only and others for interior or exterior use. Like the wood glues these are sandable and paintable when dry.

Clearly, testing a box of assorted glues and fillers is not an overnight job. I've started using the wood glues and will proceed to the instant glues and fillers next, reporting on them in due course.

FURTHER INFORMATION

- Toolstream
- 01935 382222
- www.toolstream.com

In a small workshop a combination table/mitre saw can be an excellent choice. Combining the accuracy of a compound mitre saw with the modest ripping capacity of a small table saw, these compact machines offer considerable cutting capability in a relatively portable package

Makita LH1200FL combination table/mitre saw



This clever combination saw package is a solid and attractive machine with some innovative features. It's mounted on a fairly standard alloy mitre saw base with a smoothly rotating table complete with side extensions and a workpiece clamp. A substantial rear bracket supports the saw assembly and allows it to be tilted for angled cuts.

The main controls are mounted on a large horizontal handle on the front of the machine. Power is controlled with a standard NVR switch, and below it is mounted a pair of switches. These control the laser and the worklight, which is mounted under the table surface. Behind the handle is the release lever that allows the saw to plunge.

On the top is the saw table, which measures 307 x 465mm. This is a well-finished sturdy alloy design with a clearly marked rip scale and a substantial two-part rip fence.

Changing modes

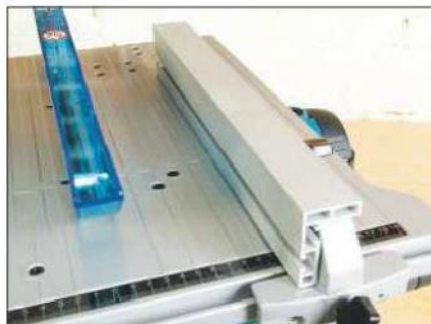
It's important with any power saw that the operator is protected from the blade at all times, so it must be safely guarded. The Makita uses a clever system that ensures you can't change modes before the blade is properly protected. Before you can change from table saw to mitre saw, the table must be released, and it springs upwards so that the top of the blade is completely covered. You can then release the lock allowing the sawhead to pivot. In table saw mode there is also an additional plastic blade guard that surrounds the slot in the mitre saw table and covers the bottom of the blade.

Dust extraction

Efficient dust extraction is always difficult on mitre saws. The Makita is supplied with a dustbag, or it can be connected to a workshop extractor. Unusually there are two dust ports on this machine; one on the rear for use when crosscutting, and one which connects to the underside of the mitre table for use in table saw mode. This proved to be remarkably effective.



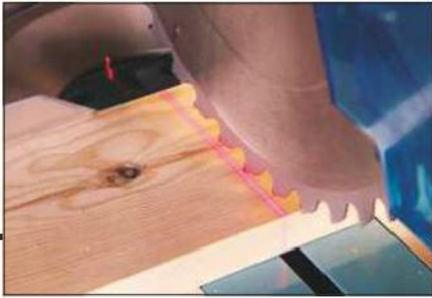
In table saw mode, an extra guard shields the lower part of the blade



The rip fence is a solid two-part construction with a clearly marked rip scale



The maximum ripping width in table saw mode is an impressive 160mm



The laser projects a very bright and well-defined line on the workpiece



TESTED BY ANDY STANDING



Two dust ports are provided, and the dust extraction is very efficient



A solid clamp holds the workpiece securely when cross-cutting



The saw is so well balanced that it can easily be used one-handed

This is a powerful tool and needs to be treated with respect. The large blade slices through the hardest timbers without hesitation, and the plunging action is smooth and easy. The blade is a good compromise and while it produces a high-quality crosscut, it can also rip effectively. The table is solid and the rip fence is secure.

This is certainly an excellent machine, with generous cutting capacities and impressive performance. It is made to Makita's usual high standard, and is more than tough enough to survive heavy site use.

SPECIFICATION

MOTOR	1650watts
BLADE DIAMETER	305mm
NO-LOAD SPEED	4000rpm
TABLE SIZE	307 x 465mm
MAX CUTTING DEPTH (table saw)	52mm
MAX RIPPING WIDTH	160mm
MAX CROSSCUT CAPACITY (mitre saw)	95 x 155mm
MAX MITRE CAPACITY	64 x 155mm
MAX COMPOUND CAPACITY	64 x 65mm
WEIGHT	20.7kgs

VERDICT

This is an impressive professional machine, large enough to be useful yet light enough to carry.

- PROS**
- High build quality
 - Good cutting capacities
 - Efficient dust extraction

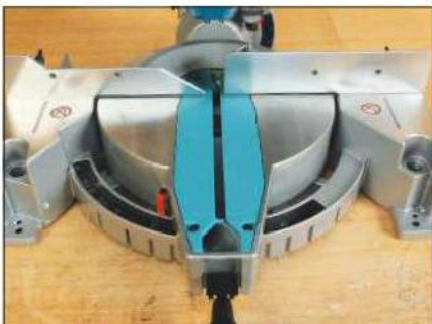
- CONS**
- None

VALUE FOR MONEY 

PERFORMANCE 

FURTHER INFORMATION

- Makita
- 01908 211678
- www.makitauk.com



The saw is mounted on an alloy base with a smoothly rotating table

The lower blade guard is a cleverly-designed extra safety feature



A strong steel spring supports the mitre saw's plunge action

This rather grandly named 'bench-mounted spindle moulder' is really just a big router table with an integrated motor. Supplied with a range of collets and accessories, all you need to provide are the cutters. Aimed squarely at the home user, it provides an economical introduction to table routing

Draper 09536 bench-mounted spindle moulder

A router table greatly increases your router's capabilities and versatility. However, if you only have one router it can be a nuisance to have to keep fitting it into a table and removing it again. Either you can buy a second router and a router table or, perhaps, a router table with an integrated motor. This Draper router table has a powerful 1500W motor and is supplied with collets to fit every size of router cutter.

Standard features

The table stands on a thin metal base cabinet with a removable plastic front panel. An NVR power switch is mounted on the left with a variable speed control above it. On the right-hand side panel is

the winding handle to adjust the height of the spindle within the table. The central part of the table is made from alloy, and a pair of steel side extension tables is supplied. A set of four circular insert plates is included to suit different cutter diameters.

Fences and guides

The main fence is made from a combination of plastic and metal. It fixes securely to the table and is easily adjustable. Both the side pieces are adjustable for width, to suit the router cutter in use, and the out-feed side is also adjustable for depth. A dust extraction port is incorporated, and there is also a removable transparent cutter guard. A groove runs across the table and the extensions, and a small plastic mitre guide is included to fit into this.

Two sprung pressure guides are included to help hold the workpiece against the cutter as it moves past it. One is bolted to a bracket on the front of the table; the second can be fixed vertically above the fence once the transparent guard has been removed.

Setting up the spindle moulder

This is not a difficult machine to set up. To install the cutter, wind the router up to its maximum height and then remove the table inserts.



£170



The motor is securely mounted within the machine's base cabinet



The machine is supplied with five collets and four circular insert plates



The small plastic mitre guide is a rather loose fit in its groove



To fit a cutter, depress the spindle lock with one spanner and tighten the collet nut with the other



TESTED BY ANDY STANDING

Insert the cutter in the collet. There is a spindle lock button, though it is a little difficult to reach with your finger. It is easier to use the end of one of the two supplied spanners to press it in; you can then tighten the collet nut with the other spanner. Set the cutter height, lock the fence in place, check the variable speed setting and you're ready to start work.

Using the machine

Like all routers, this is a noisy machine. I made some initial cuts using a bearing-guided chamfer cutter, and this produced a rather rippled finish. This appeared to be due to a small amount of play occurring in the router mounting that allowed the cutter to move slightly. However, after changing cutters and trying some moulding and a bit of tenoning, it appeared to be producing smooth accurate cuts, and has continued to do so.

Minor grumbles

The transparent cutter guard is a little irritating, and can get in the way during cutter changes. I preferred to use the top hold-down guide. The mitre guide is also a loose fit in its groove, so it must be used with care. The sprung pressure guides are good, however, and the main fence is fine.

The dust extraction got blocked almost immediately. This happens because there are slats across the outlet which stop the chippings getting through, but these could easily be removed.

Having used the table for a while, I was quite impressed with its performance. I found that one of the collets would fit my sanding drum set, and thought it would also work as a drum sander. Unfortunately, even on the slowest speed it spins far too fast, making the drum unusable. It seemed like a good idea at the time...

Summing up

Though this isn't a high-quality machine, it does give you a lot for your money. It's compact enough to fit in a small workshop, and light enough to be easily stored when not in use.

With careful use it will produce surprisingly good results. The motor is perhaps a little underpowered to cope with the largest cutters, but for home use it's perfectly adequate. I imagine it would not be difficult to tighten the motor mountings to reduce the play, and the loose-fitting mitre guide could easily be fixed too.

SPECIFICATION

MOTOR	1500W
TABLE SIZE (with extensions)	1030 x 360mm
SPINDLE SPEED	11,500 to 24,000rpm variable
SPINDLE TRAVEL	0-40mm
COLLETS SUPPLIED	6, 6.35, 8, 12 and 12.7mm
FLEX LENGTH	4m
WEIGHT	30kg
ACCESSORIES	Fence, mitre guide, cutter guard, side and top pressure guides, table insert plates, dust extract adapter

VERDICT

It's not a machine for the perfectionist, but with careful use this glorified router table can produce acceptable results.

PROS

- Low price
- Good range of accessories and collets

CONS

- Loose-fitting mitre guide
- Prone to some inaccuracy
- Noisy in use

VALUE FOR MONEY 

PERFORMANCE 

FURTHER INFORMATION

- Draper
- 02380 494333
- www.draper.co.uk

The two sprung pressure guides make it easy to steer the work safely past the cutter



The transparent cutter guard can get in the way during cutter changes



The cutter height is adjusted from 0 to 40mm using this wheel



A large-diameter dust extraction port is attached to the main fence



TESTED BY RON FOX

Axminster double-bevel marking knife

I recently bought myself a new marking knife. Truth to tell, I had committed the cardinal sin of using my previous one for purposes I won't dwell on, thus spoiling it for its intended use! I won't misuse this one...



£9.80



The flat back ensures a precise cut against the rule



The spear point makes it easy to mark dovetails



The long bevels guarantee ease of resharpening

were novelty items; I assure you these are serious tools! They will be of particular interest to boxmakers, musical instrument makers, antique restorers and modelmakers.

The perfect gift

These planes are not on the essential tool list, but they are beautiful to own and use. As they're relatively expensive I suppose they do come in the luxury category, but just one – so well presented in its gift box – would make a very acceptable gift to a woodworker who appreciates quality. After all, you are likely to buy tools like this only once in a lifetime! I would select the edge plane for my first purchase, followed by the shoulder plane, but your choice will depend on the type of work to be undertaken.



£49.40

Set the depth of cut to match the thickness of the inlay you're fitting

Miniature router plane

This model is designed for fitting small items of hardware, and for fine inlay or intarsia work. Its stainless steel body has a ground and lapped sole that encircles the 3.2mm wide blade for maximum registration to the workpiece. The blade can be clamped in the forward position for general work and in the back position for bullnose work. A fine-screw feed mechanism sets the blade depth, and a knurled clamping knob holds it in place.

Clamp the workpiece securely and plane out the required groove



Like many other apparently simple tools, there's more to a marking knife than first appears. Factors such as the shape, angle and thickness of blade, the flatness of its back, the shape of the handle and whether it's single- or double-edged all affect its ease and efficiency of use.

This Taiwanese-made knife is 170mm long overall. It has a 55° spear-shaped blade of high-speed tool steel 35mm long and 3mm thick, long bevels for ease of resharpening, and a wooden handle with flat sides to stop it rolling off the bench.

Being spear-shaped, it can be used left- or right-handed – a big advantage when marking out dovetails, and an improvement on my previous single-sided blade. The sharp point, long edges and flat back give a precise cut which is more accurate than a pencil line and which forms a clear register for saw or chisel work, resulting in greater accuracy. Cut lines don't smudge as pencil ones do...

VERDICT

This is a well-made knife that's ideal for most woodworking applications.

- PROS**
- Excellent for marking out cutting lines and joints
 - Accurate and reasonably priced

- CONS**
- Blade too thick for marking out the finest dovetails

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Axminster Tool Centre
- 03332 406406
- www.axminster.co.uk

A bigger blast...

As the Swinging Sixties got under way, there was little sign of the mood of those times infecting the pages of *The Woodworker*. The magazine was 60 years old and resolutely middle-aged...

The 24 editorial pages of the July 1962 issue of the magazine contained a veritable treasure trove of woody stuff. The lead feature was a very attractive writing bureau (right), which was designed to eliminate the need for stays to support the bureau flap. It was made in blackbean, a prized cabinetmaking wood in Australia but not at the time widely known in Europe. The flap was veneered in cherry, while sycamore was used to give a pleasing contrast to the interior fittings. It looked to be a fine piece, with its unusual curved laminated stretcher scarf-jointed into the lower side rails.

Several series of articles were ongoing in this issue of the magazine. Readers could catch up on the latest instalments of Wood carving 4: The heraldic lion, Polishing 3: Waxing, Hand and machine tool sharpening 7: French spindle cutters and Marquetry cutting 15: Laying. As a complete contrast there was also an article on the ancient country craft of making besoms – traditional brooms consisting of bundles of birch twigs bound to an ash, larch or willow handle.

The issue included a selection of simpler projects that were clearly intended for weekend woodworkers to tackle, including a camera tripod, a useful dustbin trolley and an unusual jardinière made entirely without joints. The one nod to modernity in the magazine was the second part of a long series on making an electric guitar, which no doubt enabled many youngsters with a woodworker in the family to enjoy being a rock 'n' roll star before The Beatles burst on the scene later that year.

The final project in the magazine was an ambitious plan for a revolving summerhouse (below). This had a pent (sloping) roof and was half-glazed on three sides with an open front. It rotated about a central pivot pin on four wheels 8in in diameter, cunningly mounted at the corners of the floor structure, and was to be erected on a smooth concrete slab so the wheels could rotate freely. It looked very modern and thoroughly useful!

