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welcome

What a great time of year this is! The summer is still fairly fresh in the memory, but there's that autumnal scent in the air, and the feeling among nature's creatures is that some worthy work is required to prepare for winter. This latter instinct translates itself to us woodworkers as a powerful urge to get into the shed or workshop and start making the next Great Thing on our ever expanding list of necessary and desirable items – if we've got the time, that is…

Short time

I'm not sure why time has become an even more precious commodity than before, but, as long as it appears to be in short supply, we must do all we can to use it wisely. If, for some reason, you can't access the workshop at the moment, then don't just sit there watching the leaves fall from the trees (although I have to agree it's a very enjoyable thing to do), but use this time to plan your next woodworking task. The designing and drawing is always a favourite part of any project, so, if you can afford it, why not use that spare time to make a really top class job of it?

Handy help

Very few professionals I know use anything other than some kind of CAD (Computer Aided Design) program, but there is one architectural designer friend of mine who still bashes his jobs out by hand onto paper. As well as being customer-ready, there's a certain old-school charm in the pencil drawing, but make sure you fix it (to avoid smudges) or ink it in to improve clarity. As a keen student of art and design, I'm always on the lookout for good examples, especially if they're of items of particular interest to me. I'm sure most of us know someone who has a framed technical or constructional drawing on the wall.

Your shout

I'm very pleased with the last couple of issues of the magazine. They seem to contain a good variety of material, with practical advice aplenty and even a bit of entertainment thrown in! It's my intention to keep things moving along in this direction, but if there's any subject you, the reader, think has been neglected for too long, just get in touch and we'll see what can be done. Don't forget that this mag belongs to all of us, so be part of the woodworking community and join in!

mark

PS

Here at *The Woodworker* we're always on the lookout for fresh talent, whether it be in drawing, making or writing. So, if you excel at any of these – particularly the writing part – why not try your hand at becoming a contributor to the magazine? Speaking from experience, I can personally vouch that it is more than achievable, and the pleasure to be derived is considerable. If any reader fancies it, just drop me a line at the usual address and we'll take it from there!

You can contact Mark on mark.cass@mytimemedia.com

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REGULARS

WOODWORK

TURNING

ON TEST

The Woodworker & Woodturner

October 2014

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TRADE & DIY WELCOME

You're invited to join D&M Tools at **'THE' TOOL SHOW '14** at the prestigious Kempton Park Racecourse in Sunbury-on-Thames between Friday 10th to Sunday 12th October 2014. This year's show will continue to build on its success as the largest display of branded tools at a UK exhibition.

BIG BRANDS, BIG STANDS, LATEST PRODUCTS

All the leading brands are represented, many with huge stands displaying the widest range of products, making this the premier showcase for power tools, hand tools, woodworking machinery, accessories and workwear. Several brands including Festool, Makita and Metabo will be using this opportunity to debute new products from their Autumn 2014 range for the first time at a UK exhibition.

LIVE DEMONSTRATIONS & FREE MASTERCLASSES

Plenty of live demonstrations and masterclasses each day of the show make this a unique opportunity to see the products in action before you buy. Talk direct to the manufacturers and compare makes and models under one roof.

EXCLUSIVE SHOW SAVINGS

You can also expect great savings across the show, including our exclusive **TOP 30 'DOWN & DIRTY' DEALS** only available to show visitors, PLUS enter our popular **FREE PRIZE DRAW with prizes worth £2500.**

RELAX & MAKE A DAY OF IT

Visitors to the show have access to the spectacular Panoramic Restaurant & Bar where you can relax and enjoy an excellent value hot meal whilst admiring spectacular views across the racecourse. Alternately grab a quick snack or drink from the catering vans outside or the Costa Coffee bar on the ground floor.

For latest details visit our dedicated show website:

WWW.THETOOLSHOW.COM

or call D&M Tools on 020 8892 3813

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In brief...

Making it
Registrations are now open for the 2014/15 MakeIT! programme. This is an industry-wide educational initiative, run by Proskills UK Group and supported by the wood and furniture industries, which aims to encourage young people to consider a career in furniture or wood. The competition is aimed at Years 9-12.

About the programme
MakeIT! Furniture & Wood, mapped to the national curriculum, familiarises students with how furniture is designed and manufactured. It also shows how wood and timber is grown, crafted and used in a whole range of domestic and industrial uses.

Students are asked to create either a piece of furniture or a wood-based product. Teachers are supplied with a detailed guidebook and support package that includes a series of prepared lesson plans, downloadable interactive multi-media resources and interactive presentations.

Many schools are unaware of the wide range of opportunities within furniture and wood industries, so MakeIT! provides students with the rare opportunity to see and experience first-hand the different careers available.

Don't take our word for it!
Chris Hyde, Head of Learning at the Rycotewood Furniture Centre, said: "*This is a brilliant event. The MakeIT! competition helps students to connect with their imagination and creativity. It's very encouraging to see how the schools value learning by design and making.*"

Mr O'Callaghan, the 2012-2013 winner of the Best Teacher Award, added: "*This competition has generated a lot of excitement and interest around the design and technology department (both kids and staff), and has been a brilliant incentive for our students to want to succeed. It has opened their eyes to the fact that there are colleges such as Rycotewood that specialise in woodwork and furniture design.*"

Get on board
Don't miss out on this opportunity to showcase to your students the different skills and career opportunities available in these growing industries. To register for the programme please visit the website: **www.proskills-academy.co.uk/makeit** or get in touch to find out more by calling **01235 432080** or emailing **slk@proskills.co.uk**

Irons in the fire
There's a great opportunity to see ace turner Phil Irons demonstrating Woodcut Tools at all the Axminster Tool Centre stores across the UK during October and November. Phil, who turned professional in 1994, admits to having done his fair share of production turning, but now supplies galleries, has his own online business, enjoys teaching and offers courses at his workshop in Welford-on-Avon. For more information visit www.philironswoodturning.co.uk

A turn down under
New Zealand company Woodcut Tools has a long association with Phil spanning over 25 years. Woodcut manufactures a unique range of woodturning products, and is best known for its lathe-mounted Bowlsaver bowl coring system, Tru-Grind sharpening jigs and Pro-Forme hollowing tools. New tools from Woodcut include the Tru-Grind CBN grinding wheels and replaceable-tip bowl gouges.

You can see Phil in action this autumn at the following Axminster Tool Centres:

- Basingstoke (Oct 18th)
- Nuneaton (Nov 1st)
- Warrington (Nov 8th)
- Axminster (Nov 15th)
- Sittingbourne (Nov 22nd)
- High Wycombe (Nov 29th)

Entry is free at all the venues. For addresses and more detailed information, visit www.axminster.co.uk/stores

Pocket rocket

Dremel's new Micro is its most compact cordless lithium-ion multitool ever. Perfect for cleaning, cutting, grinding, polishing, sanding, sharpening, carving and engraving, and weighing a mere 250 grams, the Dremel Micro has a sleek rocket-shaped design and excels at extremely detailed work and operating in confined spaces.

The Micro has a highly efficient DC motor, lighter-than-usual 7.2V lithium ion battery, an LED worklight, an LED to indicate the operating speed (5,000 to 25,000rpm) and a battery level gauge. It comes complete with 35 Dremel accessories including EZ SpeedClic, packed into a smart black nylon-covered case. It's priced at £110.

Dremel is supporting its Micro launch with a *Win a Trip into Space* promotion, offering one lucky winner the opportunity to fly in a Lynx Mark II, one of only two spaceships currently allowing consumer space flights, to a height of over 100km above the Earth!

www.dremel.co.uk and www.dremelmicro.com

Supersonic Jet

The new Jet JML-1015VS lathe would be a perfect choice for the novice woodturner, or for the advanced enthusiast or professional looking for a small, fully featured machine for the workshop. A 375W variable-speed DC motor drives a strong spindle through three belt pulley ratios, giving a good range of speeds for any project. The electronic variable speed control system has sensitive feedback which controls the torque applied to the spindle, keeping it running at the speed set even when a heavy load is applied to it. The speed within each ratio is varied by a control knob on the right-hand side of the bed. Speed ratio changing is easy, with convenient doors giving full access to the belt and pulleys.

The bed is precision-ground to allow smooth sliding of the tailstock and tool rest. A cam lock mechanism allows tool-free adjustments of the tailstock and tool rest base. The headstock has 24 integrated indexing positions, making it easy to cut evenly spaced features for fluting and veining. It's supplied with an 80mm faceplate, a 2MT drive and tailstock centres and a knock-out bar. It's priced at £539.95.

www.brimarc.com

Better than ever

The Tormek T-4 second-generation compact sharpening machine takes precision and stability to a whole new level. Vital functions like the motor and the main shaft are mounted in the new cast zinc top, which also includes the integrated sleeves for the Universal Support. The result is a rigid machine with a significantly improved level of precision for the Universal Support, which is the base from which the Tormek jigs operate.

The top section also has an integrated handle, which makes the machine easy to move and place when necessary. Another new detail is the metal machine plate; this can be a convenient place to store the Tormek AngleMaster, which has magnetic feet).

The T-4 comes with all the necessary start-up accessories, including the SP-650Stone Grader, the AngleMaster, a handbook, a DVD and some honing compound.

www.brimarc.com/tormek

Staying sharp

The new Trend Complete Sharpening Kit comes with a double-sided stone the size of a credit card, a 3in taper file, 100ml of lapping fluid, a cleaning block, a non-slip mat, an instructional DVD and the 'Sharpening Made Easy' booklet. It's ideal for

shapening router and Forstner bits, gouges, chisels and carbide inserts, and comes with a five-year guarantee.

The sharpening stone uses a highly complex manufacturing procedure where electroplated nickel locks the diamonds to the surface. This product will for last for years if used with the lapping fluid, which prevents clogging and subsequent lifting of the embedded diamond particles.

The kit costs £59.99 and is available through local Trend Routing Centres and stockists.

www.trend-uk.com

In brief...

Lamello takeover

Axminster Tools & Machinery has just completed a deal which will give the company exclusive rights to sell Lamello products throughout the UK. This new arrangement will come into effect from 1st October 2014 when the Axminster Business Services Team takes over all Lamello-related matters. All field sales members of the team have undergone training at Lamello's

factory in Bubendorf as well as hands-on training within the UK.

AT&M's sales director Alan Styles said: "*We are delighted that our new Axminster Business Services Team will be able to work with one of the industry's best known and most innovative names, that of Lamello.*" Both companies will be exhibiting at W14 Working with Wood exhibition at the NEC in Birmingham from 5-8 October, on stand number 8G720.

www.axminster.co.uk

Bentley Woodfair 2014

This year sees the 19th annual Bentley Woodfair, with over 150 demonstrators and exhibitors. There will be a packed programme of have-a-go activities, live demonstrations of woodworking skills, craft displays, children's activities and chainsaw sculpting, as well as a wide range of trade stalls selling everything from tools and equipment to bespoke furniture. The fair takes place on

September 26th-28th in the beautiful Bentley estate at Halland in East Sussex, BN8 5AF.

www.bentley.org.uk

Romanian crafts

From beaded bird motifs, colourful cross-stitch and sequins to intricately carved wooden cups and patterned powder-horns, an array of artistry and craft takes centre stage at the Horniman Museum and Gardens' new exhibition in Forest Hill, South London.

Revisiting Romania: Dress and Identity explores how Romanian folk art has been used to express social and political ideas within the village and on the national and international stage. The exhibition highlights the elaborately decorated textiles, costumes and artefacts used in Romanian peasant homes in the late 19th and early 20th century.

While textiles were traditionally the woman's domain, men carved wooden distaffs for winding wool for spinning, as well as creating other wooden items such as the ornate maple wood cask pictured, and worked also with leather, metal and horn.

The exhibition opens on October 4th, and entry is free.

www.horniman.ac.uk

Triton Day

Yandles is holding an open day in Martock, Somerset TA12 6JU on Saturday 18th October to celebrate the opening of the new Triton Academy and showroom display. The day starts at 10am, with demonstrations on the full range of Triton power tools and machinery. Visitors will also be able to try out the products for themselves.

In the afternoon, customers will be able to get specific advice on Triton products, and there will be a trip around the sawmill with a general talk about timber. This talk has limited places, and those wishing to attend should book in advance through the office by phoning 01935 822207 or e-mailing jane@yandles.co.uk.

Throughout the day there will be special offers available on all Triton products, and also discounts on timber. There's a café and plenty of free parking.

www.yandles.co.uk

DIARY

OCTOBER

Axminster Skill Centre courses
6 Sharpening tools
6-7 Beginners woodturning
7 Fine-tuning hand planes
8-9 Beginners routing *
11 Penmaking
13-14 Beginners woodturning
14 Spindle moulding *
15 Taster session
* Course held in Sittingbourne, Kent
Unit 10 Weycroft Avenue, Axminster EX13 5PH
0800 975 1905
www.axminsterskillcentre.co.uk

John Boddy's courses
2-3 French polishing: Ted Vickerman
16-17 Woodturning: Andy Rounthwaite
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www.john-boddys-fwts.co.uk

John Boddy's demonstrations
18 Woodturning: Andy Rounthwaite
Details as above

D&M Tool Show 2014
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020 8892 3813
www.thetoolshow.com

Record Power Road Show
10-12 D&M Tool Show 2014 (see above)
17-18 Scottish Woodworking Show (see below)
www.recordpower.co.uk

Robert Sorby demonstrations
17-18 Scottish Woodworking Show (see below)
www.robert-sorby.co.uk

Scottish Woodworking Show 2014
17-18 Brodies Timber, Dunkeld, Perthshire PH8 0JR
01350 727723
www.brodiestimber.co.uk

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What's new from D&M TOOLS

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2 X 18V BATTERY LXT 190MM CIRCULAR SAW

MANUFACTURER: Makita
D&M GUIDE PRICE: DHS710ZJ £229 95
(body only: no batteries or charger supplied)

The new DHS710 190mm circular saw from Makita has a 36V motor which is powered by two 18V 3.0Ah or 4.0Ah Li-ion batteries, delivering more power and run time without leaving the 18V lithium-ion platform. It features a compact and lightweight design, with a 66mm depth of cut and a no-load speed of 4,600rpm, and is supplied in a MAKPAC connector case.

5-PIECE BRUSHLESS KIT + CHOICE OF BATTERIES

MANUFACTURER: Makita
D&M GUIDE PRICE: MAK DLX5KITBB4 (4.0Ah) £799
MAK DLX5KITBB5 (5.0Ah) £824.95

These new five-piece brushless kits from Makita feature a choice of three 4.0Ah or 5.0Ah batteries and either a body-grip or D-handle jigsaws. All tools in the kit have the new brushless BL motors. The kit contains

- DHP480 combi hammer drill
- DTD129 impact driver
- DHR242 SDS hammer drill,
- BJV181 body-grip jigsaw or BJV182 D-handle jigsaw
- BML801 LED torch, plus a charger and aa large holdall.

See our website for latest prices and more information.

MAINS/CORDLESS WET & DRY VACUUM

MANUFACTURER: DeWalt
D&M GUIDE PRICE: £154.95

This new compact DCV582 wet-and-dry vacuum from DeWalt operates on 14.4V and 18V DeWalt XR battery packs (not supplied) as well as from the mains. The high-efficiency washable HEPA filter traps 99.97 per cent of dust as fine as 0.3 microns. The on-board hose, cord and accessory storage makes for convenient transport. You can vacuum both wet and dry materials without needing to change the filter. It comes supplied with a 2m hose, crevice tool and wide nozzle.

PLEASE CHECK OUR WEBSITE WWW.DM-TOOLS.CO.UK FOR THE LATEST PRICES AND DEALS

BY MARK CASS

Show-off shelving

I'm sure I'm not the only woodworker to have been asked to make a copy of an existing or treasured item, or to replace one that has been lost or destroyed. These simple bookshelf units are a perfect example of the past revisited

I was commissioned recently to construct a pair of bookshelf units designed by Gerald Summers for Makers of Simple Furniture in the early 1930s. Extremely versatile thanks to their size and shape, these shelves are in my opinion a bit of an underrated classic.

The original ones, like this new pair, were made of a top-quality ¾in plywood (the closest equivalent is 18mm today), and were edge-veneered on both sides. It's very possible that there may have been some solid hardwood versions made as well.

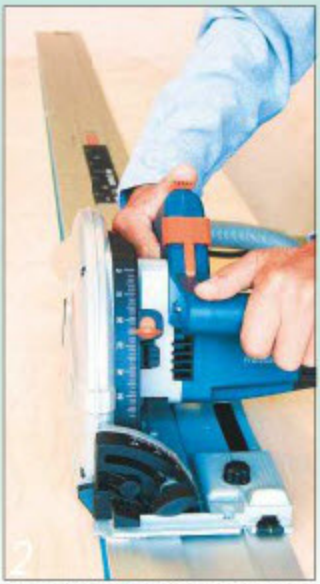
They were joined with lapped dovetails and stub tenons. I've gone for the modern method of biscuit jointing, but I've mitred the corners for a contemporary reinterpretation. To be fair, there's a lot to be said for the dovetails as a decorative detail, but these days it's as much about economics as anything else, and few of my customers are Premiership footballers or full-bonus bankers.

Spare the rod

With little actual information to go on, apart from two or three photos and the basic dimensions – 40 x 20 x 9in – it was down to me to make the replica shelves resemble the originals as closely as possible. While one can always pencil or PC a scale drawing, I find that the really best way is to make a full scale rod.

I chose to construct an outline unit with some scraps of 20 x 20mm softwood I had

It's always a good idea to make a full-sized rod to better gauge the proportions

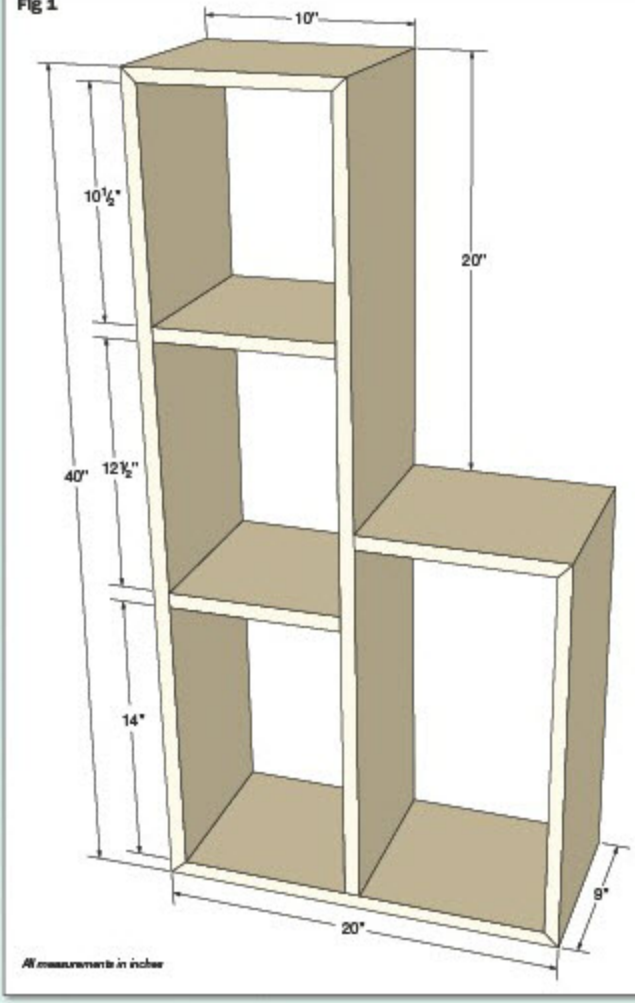


Plunge saw + track = easy work + top results = one very happy chippy!

Setting up for square cuts with the angle guide

The plunge saw is tilted to 45° for cutting the board-end mitres

Fig 1



BOOKSHELF UNIT CUTTING LIST

All dimensions are in millimetres

Part	Qty	L	W	Notes
Long side	1	1016	229	mitre both ends
Centre upright	1	998	229	mitre one end
Short side	1	508	229	mitre both ends
Top	1	254	229	mitre both ends
Half-top	1	254	229	mitre one end
Shelf	2	218	229	square ends
Base	1	508	229	mitre both ends

All the components are cut from 18mm thick plywood

lying around, photo 1. It took a couple of attempts, but I'm sure the spacings between the shelves themselves are pretty near bang on. Obviously it would be great to refer to one of the sets from the 1930s, but I've yet to have the chance.

Staying on track

Following my recent acquisition of a plunge saw and track system, I've been looking for opportunities to use it wherever possible in preference to struggling single-handedly to manoeuvre full-size sheets of ply over my table saw. It's not only easier – I just have to lift the sheet once and clunk it on to some trestles – but I suspect it's more accurate too. Certainly the cuts I've been achieving have been as clean as a whistle to date.

After connecting the two parts of the track together, it's straightforward enough to mark the face of the board to the desired width, lay the track on the work and stroll the plunge saw along the cut, photo 2. The rubber edge of the track ensures no breakout and possibly the cleanest cut you'll see outside of a pro furniture factory. Repeat a couple of times and you've got three or four lengths at the precise widths you want, ready for conversion into all the shelf components.

Lengthy options

It's a degree or so easier to cut the pieces to length on a sliding table saw. However, unless you have a pre-cut scribing blade, the track saw will make a better job of it when it comes to avoiding breakout. Of course, if you're not in any particular hurry, a panel saw and a spot of shooting with your jack plane will do the job just as well. It's easy to forget that most work of this sort was done entirely by hand until fairly recently...

It always pays to cut out slightly more material than you need, and I was glad I had the fourth length of ply as it enabled me to be a bit more choosy about the

grain. I've seen these shelves painted, and have to say that they look so much better in a natural timber finish; it's definitely worth taking the time to select the best bits if you can.

5
The eight components are soon cut to size and mitred as required

The right angle

As these shelf units can be fitted together in a variety of different configurations, as shown here and in the panel on page 18, it's essential that they're accurately made. So long as you check that all your cuts are perfectly square and right on your line marks, you should be fine.

I was helped in this stead by an optional angle guide, photo 3. This is a short length of track which can be set and locked to any degree required, hooked over a board's edge and joined up to another piece of track if a longer cut is required. It's well made and can be relied upon to retain its set throughout the sawing operation.

It was with a degree of satisfaction that I discovered my track saw had no difficulties in achieving the level of accuracy I wanted, even on the mitre cuts, photo 4 – a notorious area for pitfalls and problems generally. I now had eight panels cut to size, mitred as required and ready to put together, photo 5.

Own-brand biscuits

Okay, it's time for some biscuits, and my latest cheapskate confession. We all know there are times when you have to make do with what's available, and the first time I bought cheapo biscuits at Toolstation, I was slightly disappointed to see that they were stamped out of ply and not the usual solid beech of the branded varieties.

Obviously I used them regardless, and soon came to appreciate the stable nature of the ply biscuits – especially in winter when my workshop gets a bit damp in the corners and things like biscuits have a tendency to swell up unwanted. The only downside I've noticed is that the thickness can be a bit more variable from the packet, and if they're too tight it can make for an even more stressful glue-up.

Standard pattern

Standardization can help make every batch production task easier, safer and less prone to error, and on a job like this it makes perfect sense to set all the biscuits in an easily repeatable pattern. I started by making a biscuit stick (a mini marking rod, really) with which to mark all the pieces to be joined, photo 6. It definitely pays to keep everything symmetrical so that there's no danger of getting your marks mixed up and your slots misaligned.

6
A plywood offcut makes a mini rod for marking the biscuit positions

7
I applied Mark's Rule of Jeopardy when biscuiting in mitre mode

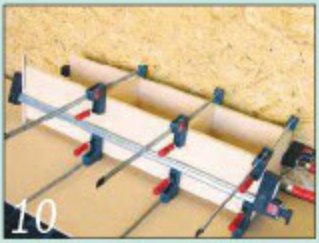
8
A steady hand and a non-slip biscuiter face produce accurate slots

9
Varnish the inside faces before gluing up. Note the masking tape over the biscuit slots

Once everything is marked – and it's very sensible to clearly identify each component and its orientation – it's time to get the biscuiter out. Regardless of your biscuiting equipment, you'll be needing to change a setting or two for the three different operations used here. As long as everything is clearly marked and sorted into a machining order, you should be fine. So, which ones first? I generally work to Mark's Rule of Jeopardy, which is to get the trickiest stuff (or the bits with the highest risk of failure) out of the way first. So I set my biscuiter to mitre mode, made a test cutting in a piece of scrap, and boldly went to work, photo 7. As for the other slots, a steady hand and a non-slip biscuiter face produced accurate slots all round, photo 8.

Ready for action

Although on the face of it these shelves are fairly straightforward, it's essential to put them together in a dry assembly. As well as checking that all your biscuiting is correct, a dry assembly will give you a chance to assess the viability of every joint and provide an

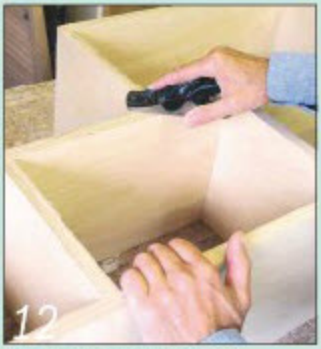


Assembling the unit in two separate stages makes for simplicity...

...and helps to ensure that all the components come together perfectly square

ANYTHING IS POSSIBLE

Here and on pages 16-17 are just a few of the orientations you can achieve with a pair of these shelf units. Clearly some arrangements will be more stable than others...



A clean-up of the edges with a sharp bench plane completes the job

opportunity for any adjustments if necessary. It also makes you think about cramping and the order in which it should all proceed.

Steady as she goes

So, are we ready to go? No, not quite yet. Anyone who has tried to paint a set of cubbyholes or small shelves will know that it's a very tricky job indeed, and also nigh on impossible to get a top-class result. The only solution here is to apply your finish before you glue it all up. This is a straightforward enough job in this instance, and you only need to do the inside faces so it shouldn't take too long either, especially with the quick-drying acrylic varnish many of us favour these days for interior woodwork. You can further enhance the job by masking the biscuit slots, photo 9, and thus ensure maximum adhesion between component edges.

Spring into action

Ever the optimist, I set about gluing up the first unit in one go – a decision I came to regret fairly soon afterwards. Once you're committed it can be very tricky to change direction, so all I could do was grit my teeth and just think of the benefit the lessons learned from such a strategical error would afford the good readers of this magazine.

The next day I employed a bit more sense, and as a result shelf unit No 2 was a much simpler affair. By gluing and cramping it up in the stages shown in photos 10 and 11, all manner of anxieties were thereby avoided and the normal pleasant calm of the Neon Saw workshops remained peacefully undisturbed.

Splint finish

All that remained now was to clean up the edges with a sharp plane, photo 12, and to sand all the faces and edges down to at least 180 grit or more. As much as I'm a big fan of birch ply, it does have a drawback or two, and one of the most irritating is a tendency to splinter easily along the cut edges. With care (and a bit of judicious glue and masking tape repair) it's possible to keep most of the edges neat and square – something I think is important for a professional looking result.

The last stage is the application of a pleasing finish – some kind of polish or varnish of your choice. It's worth making a sample or two early on in the proceedings, especially if there are other interested parties involved. I personally like the clear acrylic varnish; it adds barely any colour to the job and allows the timber to darken naturally as time goes by.

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BY DUNCAN ROSE

Sitting comfortably

Here's a classic garden bench made with Edwardian-style cast iron ends and oak slats. It's a straightforward project that will reward you with hours of outdoor comfort. It looks pretty stylish too...

I studied cabinetmaking at college, and made friends with many people on the course. Sadly, fate takes a hand as time goes by, and I was recently asked to make a memorial bench for one of these fellow woodworkers using the last four oak boards from his workshop stock.

To keep the bench special, I was keen to use only the boards provided. Looking at

Stick Post-It notes on the ends to mock up the slat positions and decide on the slat width

Remove the old bolts using bolt cutters, then wire-brush the castings to remove loose debris

Use a small brush to apply two generous coats of special paint for outdoor metalwork

Cut your boards to match the slat length and rip them down to their finished width

Use the thicknesser to finish all the sawn slats to their final width of 40mm

Soften all the slat edges using a roundover cutter in the router table

Hold each slat in place against the bench end and mark the position of its fixing bolt

You may need to sand the corners of the two outer slats to fit within the bench ends

various designs, I realised that making an all-wood bench would be difficult to achieve. Fortunately the oak boards were large enough to convert easily into slats, so my plan was to make an Edwardian-style cast iron and oak bench.

Sourcing the ends

Recycled cast iron bench ends are readily available on the internet from both private sources and salvage outlets at a reasonable cost. The bench supports I bought have stylised naturalistic decoration, and will be connected by slats arranged in a flowing curved profile that is both attractive and very comfortable.

The cast iron and oak are happily complementary, as both are robust and attractive materials that are weather-resistant and give excellent longevity. To enhance their durability, I planned to use stainless steel fixings that won't weather or react with the oak. The slats will be finished with boiled linseed oil that shows the beautiful wood at its best and is easy to maintain with future wipe-on coats.

Setting out

The castings have a continuous curved flange along their inside faces that is used to support and attach the seat slats. These include holes for attaching twelve slats using bolts. I placed Post-It notes in the slat positions to mock up the appearance, and selected a slat width of 40mm, photo 1. The boards I'd been given would comfortably convert into the required twelve slats.

As traditionally provided for strength, each bench end also included a small hole for attaching a diagonal steel brace between the castings and the seat centre. At the seat centre there is usually a steel spreader that is shaped and fixed to each slat. Together, these make the seat very sturdy.

A paint job

My bench ends were in fair condition, with just a few minor rust and paint blemishes. Even their green colour was close to that which had been requested! However, I decided to spruce them up with some fresh paint.

Start by removing any remaining old slat timber, fixings and braces that are still attached to the bench ends. My ends still had their corroded fixing bolts in each hole, even though the original slats were long gone. The easiest way to remove the bolts is with a pair of large bolt cutters.

Next, clean up the bench ends with a wire

brush to remove any loose debris, surface rust and flaking paint, photo 2. The brushing also scratches the existing paint to key the surface for the new paint. I used a wire rotary wire brush fitted in a power drill.

Now you can paint the ends with your chosen colour. I used a brush to apply two coats of pale green paint designed for use on outdoor metalwork, photo 3. These dried quickly overnight.

Preparing the slats

Begin by cross-cutting your full-width boards to the final slat length – in my case, 1060mm. Then flatten them, square an edge and finish the boards to their final thickness of 20mm. Next, rip along the board lengths on the bandsaw to create each of the slats, photo 4. Finally use the thicknesser again to finish all the slats to their final width of 40mm, photo 5.

It's a good idea to round over the slat edges to make sitting more comfortable and to soften the bench's appearance. I used a 9.5mm bearing-guided roundover cutter fitted in my table router, photo 6.

Fixing holes

Now drill the holes in the slats so they can be attached to the bench ends. I selected M8 bolts as these were a good fit in the existing flange holes. Start by marking the hole positions on the slats. I found that the positions of the flange holes were a little irregular, so I offered up each slat in turn and marked it in position, photo 7. Then drill the holes a little over-size to ease assembly later.

I found that I needed to cut a small chamfer along the underside of each slat to clear a cast web along the inner edge of the flange. You may also need to sand the outside corners of the two outer slats so they fit within the casting, photos 8 and 9. Mark the end of each slat with a lightly pencilled number representing its position in the slat assembly.

Next, drill the holes in the slats for attaching the centre spreader. I placed the slats on the workbench and marked the hole positions before drilling the holes, again making them slightly oversized, photo 10.

Now it's time to apply your choice of finish to the slats. Start by removing any pencil marks and give the slats a light sanding. I used a foam brush to apply several liberal coats of boiled linseed oil, photo 11. I thinned the first coat with white spirit to help it penetrate the wood.

Check their fit, and make any further slight adjustments as necessary. Then label the slat

Mark the centre line of the slats and drill all the fixing holes slightly over-size

I used a foam brush to apply several liberal coats of boiled linseed oil to the slats

I chose M8 x 40mm stainless steel flange-head bolts with Nyloc nuts and washers as the fixings

The bolts are very easy to tighten using a hex bit fitted in a power drill/driver

Shape the centre spreader in stages by hand while holding it in a bench vice

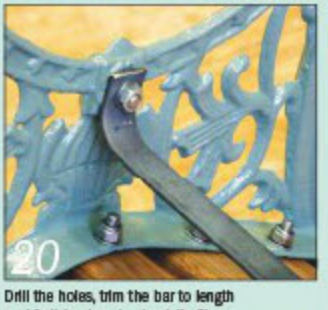
Test the spreader's fit, then mark the positions of the two outer fixing bolts on bits of masking tape

Drill the two holes and temporarily fit the spreader in place to the outer slats

Mark the remaining hole positions on the spreader, and also where to trim the ends

Bend the diagonal brace to shape and mark the position of its centre fixing

Mark the positions of the brace's fixing bolts, and also the finished length



Drill the holes, trim the bar to length and fix it in place to check its fit

21

Refit the painted spreader and brace in place and give all the nuts a final tighten

Attaching the slats

You can now fit the slats to the bench ends. I used M8 x 40mm stainless steel flange-head bolts with Nyloc nuts and washers, photo 12. These bolts have a generous contact area with the wooden slats, and a relatively low and smooth profile. They're very easy to tighten using a hex bit fitted in a power drill/driver, photo 13. Check that the slats and castings are square before tightening the Nyloc nuts enough to hold them in position.

Adding the entre spreader

Now it's time to make the centre spreader from a length of flat mild steel bar. This interconnects all the slats, distributing the seated load, and makes the seat very much stiffer.

Start by shaping the bar to match the profile of the fitted slats. I used a piece of bar 25mm wide and 3mm thick, bending it in stages by hand while holding it in my bench vice, photo 14. Test its fit as you work and make any necessary adjustments.

The next job is to drill fixing holes so you can attach the spreader to the slats. Begin by holding the spreader in position so you can mark the positions of the holes for the two outer slats, photo 15. Then drill these two holes and temporarily fit the spreader in place, photo 16. I stuck masking tape on the bar first to make the marks easier to see. Now mark the remaining ten hole positions on the spreader, and also where to trim the bar to length, photo 17. Remove the spreader and drill the remaining holes in the bar. Then trim the bar to length using a hacksaw and temporarily refit it to the seat.

Extra bracing

Now make the diagonal brace using another length of the same mild steel bar. The brace adds strength by diagonally interconnecting each of the castings to the central spreader. Begin by carefully bending the bar to an angle at its centre; then bend each of its ends to fit flush against the castings. Mark the brace with the position of its centre fixing, photo 18, drill the hole and fit it in place using the spreader bolt.

Next, mark each end of the brace bar with the positions of the fixing bolts, photo 19, and also mark the finished length. Then drill the holes, trim the bar to length and fix it in place to check its fit, photo 20.

You can now remove the spreader and brace from the bench and give them a couple of coats of the metal paint. When the paint is dry, fit the spreader and brace back in place and give all the nuts a final tighten, photo 21.

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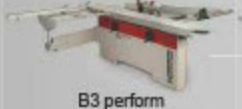

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BY ANDY STANDING

A stylish cover-up

Unless you can afford fancy designer radiators, you probably wish you could hide your ugly panel versions. However, it's a simple job to make a radiator cabinet that looks good and also lets the heat out

Medium-density fibreboard (mdf) is the ideal material for making radiator cabinets as it's completely stable, won't be affected by the heat and can be painted to match your existing decor. It is possible to make cabinets using solid wood, but great care must be taken to season and acclimatise the timber properly, and the construction must be carefully planned to accommodate the inevitable wood movement. The grille on the front of the cabinet is a major decorative element, and there are many designs available, from posh perforated metal panels to rather cheaper mdf versions.

Measuring up

As every radiator installation is different, you must measure up carefully before beginning construction. As a basic rule, the inside of the cabinet should be at least 25mm away from the face of the radiator, the sides should have a similar clearance, taking into account the valves, and the top should be around 70mm above the top of the radiator. If you have thermostatic valves, they must be on the outside of the cabinet, otherwise they won't measure the room temperature accurately. Also take into account the positions of any nearby electrical sockets.

If ever an ugly panel radiator was in need of a cover-up, this is it!

Use a jigsaw and a guide rail or batten to make the cut-out in the front panel

A small drum sander is ideal for cleaning up any curves in the design

Fit stop blocks when cutting stopped chamfers. Support the router base on an mdf offcut

The finished cut cheers up an otherwise plain edge. Repeat on the other three edges

I decided to try copying the unusual architrave moulding on the nearby door frames

I chose to use a sliding mitre saw combined with a simple angled jig

The first step was to mark out the workpiece into equal sections...

A simple design

The design shown here can easily be modified to suit any size of radiator. The casing is made from 18mm thick mdf and the top is 25mm thick. To make your cover blend into the room, it's worth using skirting board on the base to match your existing boards if at all possible. Sometimes, if the skirting is very high, this can look clumsy and will reduce the size of the grille, so in this case a lower skirting would be preferable. Also, if there are particular mouldings in the room, these could also be copied. In this example the mouldings around the doors were unusual, photo 1, so I decided to replicate them on the sides of this cabinet.

Start at the front

Once you've marked out the various panels, make the initial cuts on a full sheet of mdf with a trimsaw. Then mark out the cut-out on the front panel, and use a jigsaw and a guide rail or batten to make the cuts, photo 2. A small drum sander is ideal for cleaning up any curves on your design, photo 3.

Once the opening for the front panel has been cut to accept your choice of grille, use a router to cut a stopped chamfer all round rather than leaving the inside edges of the opening square. This is easily done by pinning stop blocks inside each corner and running the router up to them. Use a bearing-guided chamfer cutter and support the router base with an mdf offcut to prevent it from tipping, photo 4. Then reposition the stop blocks and repeat the process to chamfer the other three sides of the opening, photo 5.

Making mouldings

Most mouldings can be fairly easily copied using either a router table or a spindle moulder. Even fairly complex patterns can be built up in stages and then assembled. However, the unusual door moulding I wanted to copy didn't really lend itself to either method, photo 6, so I had to come up with an alternative technique.

I chose to use a sliding mitre saw combined with a simple angled jig, photo 7. As with all these sorts of jobs, a fair amount of trial and error is involved to achieve the correct angle and depth of cut. It was then simply a matter of marking out the

workpiece, photo 8, cutting away the waste on each alternate section with a series of overlapping cuts, photo 9, and then turning over the piece and repeating the process on the other side, photo 10. The end result was a surprisingly good match to the original, photo 11.

To do this sort of cutting you need a very accurate sliding mitre saw. The DeWalt model used here is perfect for the job, and also benefits from the XPS illumination system which makes it easy to line up the cuts. The main problem, however, is the dust. Using this method to make mouldings from mdf creates a lot of dust, and even when the saw is connected to my extraction system, a lot still escaped. So you do need to wear a dust mask while doing this.

Alternative mouldings

A detail which looks good on almost any radiator cabinet is to cut a series of parallel flutes on the side columns. This is fairly easy to do using a router fitted with a cove cutter and a side fence. Begin by working out the spacing on an offcut of the side piece. Next, cramp your workpiece on the benchtop, slightly overhanging the front edge, and fix a pair of stop blocks at either end to limit the router travel and ensure that the ends of the flutes are in line. Then rout out the flutes one by one, photo 12. You can see the finished columns in photo 13.

Preparing the top

The top is made using 25mm thick mdf. The extra thickness gives the cabinet a more balanced and solid appearance. The front and side edges are moulded with a bearing-guided roundover cutter, and it overlaps the cabinet by 30mm at the front and sides.

Assembling the cabinet

The front columns and the sides are biscuit-jointed together, photo 13, and cramped up tightly while the glue sets, photo 14. These two components are then joined together with a rail at the top rear, which is used to support the top and also to fix the cabinet to the wall. The rail can be fixed to both the sides and the top using pocket screws, and the Trend jig was used here to drill the screw holes, photo 15. The end result was a neat assembly with no

...and to cut away the waste on alternate sections with a series of overlapping cuts

Turn the workpiece over and repeat the process on the other side

The finished moulding was an excellent copy of the original version

Use an offcut to work out the spacing for the flutes and cut them one by one

Cut slots for biscuits in the edges of the side panels and the backs of the columns

Assemble the pairs of components and cramp them securely while the glue sets

I used Trend's handy pocket-hole screw jig to drill all the fixing holes...

...and attached the side panels and the rear rail to the top panel

I cut a small chamfer on the skirting boards using my router table

The three skirting board sections were mitred and biscuit-jointed

Pin small plywood offcuts to the batten behind the skirting board to support the front panel

The front panel is held in place using a pair of roller catches fixed to the underside of the top

visible fixings, photo 16.

The skirting board runs around the base and features a simple chamfer along its top edge, formed on the router table, photo 17. It's then mitre-jointed and strengthened with biscuits, photo 18. It's attached to the cabinet by means of screws driven through the sides and front. A batten runs along the back of the skirting, on which the front panel sits. Pin a couple of small plywood offcuts to back of this batten to stop the panel from slipping off, photo 19. This panel is held in place using a pair of roller catches fixed to the underside of the top, photo 20.

Fitting the grille

The decorative grille is fixed to the rear of the opening in the front panel. If it's mdf it can be simply glued and pinned in position, photo 21. If it is a metal grille, you'll need to use wooden battens and screws to secure it. Make sure that the grille is centrally positioned and accurately lined up with the edges of the opening.

Installing the cabinet

Once it's been painted, the finished cabinet is fixed to the wall with screws driven through the rail across the top. If necessary the sides can also be anchored to the wall lower down using metal angle brackets. Scribe the back end of the plinth to fit over the existing skirting board and you're done.

The final stage before fitting the cabinet is to add the decorative grille

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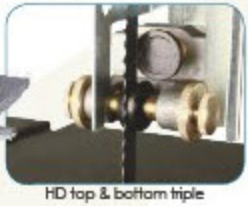

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This stunning hall table shows just what can be achieved with veneering

Veneering 2: adhesives

Veneering is a perfect way to exploit the natural variety of wood. Here's the second of two articles that will help you to explore the subject

Using other glues

If you're using glues with longer setting times than pearl glue – PVA, for example – you'll need to keep the veneer pressed into place while the adhesive cures. Before the advent of the vacuum press, weight spreading boards or 'cauls' were clamped in place from the centre of the board outwards so that any excess glue is forced out to the edges of the veneer.

Your cauls should overlap the groundwork by at least 12mm all round. With large workpieces, you can ensure an even pressure by using battens that run across the cauls at intervals of no more than 100mm. If you make the underside of these battens slightly convex, the pressure they exert on the work will be applied to the centre first, and then work outwards, helping to ease any excess glue out from the underneath the veneer.

To keep veneer pressed while an adhesive is curing, use boards or cauls together with lots of cramps

GLUES FOR VENEERING

Not all glues are suitable for veneering, but these four all have particular strengths that lend themselves to the process.

PEARL GLUE

Pearl glue, hide glue, Scotch glue. Call it what you like, it's a gelatine glue made from rendered animals, and makes for a very strong adhesive that's been used since the Pharaohs were lads.

PVA (white glue)

PVA has the advantage of being easy to use, and offers satisfactory results. However, it's not altogether ideal for veneering because it never fully hardens. This not only means that any glue that exudes from the glue line is very difficult to sand off, but also that veneers can move or creep if the piece is subject to changes in humidity. PVA can also bleed through and discolour the veneer.

ALIPHATIC RESIN GLUE (yellow glue)

This is essentially an up-market PVA. Not only is it stronger, creep-free and sandable; it won't bleed through the veneer either. Compared to a urea formaldehyde glue, it has a shorter open time and a longer curing time, but is arguably easier to use than two-part glues of that type.

UREA FORMALDEHYDE GLUES (powdered resin)

Primarily Cascamite (formerly known as Extramite, Polymite or ResinMite) – these are two-part adhesives. The easier-to-handle versions come in powdered resin form, and are activated by mixing with water. Two-part urea formaldehyde glues involve a catalyst which acts as a hardener for the powder and water solution.

For edge strips, apply PVA or yellow glue to the back of the strips...

...and iron the veneer in place, ensuring the edges are well and truly attached

Use a wallpaper stripper and a piece of pipe to steam the ebony veneer lines, before gluing them into position

The gorgeous tapie-top was made by shooting and taping together a series of separate leaves, as shown

When veneering curved surfaces, you used to use hot sandbags as flexible cauls. The bag takes on the shape of the form being veneered and the hot sand speeds the curing of the glue. Thank goodness for the vacuum press! When you evacuate the air from inside the bag – which otherwise balances the air pressure on the outside – the atmosphere over our heads, which is several miles deep, presses down on the work with a pressure of 1700lbs per sq ft, which is ideal for ensuring a good bond.

Resisting pull

This is probably a good time to mention that water-based adhesives all contract when they dry, leading to pull, which is strong enough to distort even quite substantial groundwork.

There are a number of ways to offset pull. The first is by applying a balancing veneer to the back of the groundwork which will counteract the pull of the face veneer. In the interests of cost, the balancing veneer is usually of inferior quality to the face veneer, though of the same thickness.

Alternative methods

Another more involved method is to pre-cup the workpiece by wetting the side to which veneer is to be applied, and allowing it to expand – movement that will be revealed by cupping, of course. The veneer is then applied, and as the veneer and ground dry they'll shrink and straighten. Once they become straight, they can be cramped while they finish drying. As you can imagine, it's a technique that will be different for every veneer/groundwork combination, and for different thicknesses of groundwork.

Thinking laterally, you can reduce the problem of pull by reducing the amount of water involved in the gluing process – exactly the approach employed with the technique of dry-glue bonding, which uses white or yellow PVA.

The method involves spreading two coats of thinned glue onto both the veneer and groundwork and allowing them dry. Then you place the veneer on the ground and use an iron to reactivate the glue and to press the veneer into place. This takes quite a lot of heat, though; about 80°C for white glue and 120°C for yellow glue.

CHOOSE YOUR SUBSTRATE

It's said that almost anything you can make can be 'painted' with a layer of veneer. That's probably true, but just like painting preparation is everything. Your groundwork must be clean, free of dust, and above all it must be smooth. Any faults or unevenness will telegraph themselves through the thin layer of veneer and spoil the finish – unless a telegraphed texture is what you're aiming for, of course.

MDF

Flat, stable and smooth. What wouldn't Chippendale have given for medium-density fibreboard?

BALTIC BIRCH

Ask an expert about this stuff and he'll probably tell you it's the vicar's knickers: another substrate that's smooth, stable and mostly resistant to pull, though admittedly not as flat as mdf.

SUPERPLY

This isn't a proprietary product; you make it yourself by laminating together three sheets of 1.5mm birch ply using a PVA solution (10 per cent water). Cramp them while they dry and the result is a smooth, stable ground.

HARDWOOD-FACED PLY

This is not only less expensive than Baltic birch; thanks to its softwood core it's less resistant to pull, too. Some telegraphing may occur despite the hardwood facing.

SOLID TIMBER

The thing to watch for here is the action of the usual suspect: movement. Small knots should be cut out and the holes filled with plugs which are then planed flush. See opposite *Tips: Filling & patching veneer.*

Whatever material you're using for a ground, you can improve the bond with the veneer in two simple ways.

Firstly, put a key on the groundwork using either a toothing plane, or by scraping it with the blade of a tenon saw or even an old hacksaw blade.

Secondly, size it with a either a 10:1 water/pearl glue solution or a 50:50 solution of PVA and it leave to dry for 24 hours before starting your veneering. This will reduce moisture absorption during the veneering process, resulting in a slower-setting and a stronger bond. Make your size from pearl glue and paint it onto the groundwork. Remove any nibs once it's dry.

Be sure to store veneers flat prior to use

Store veneers in the order they come off the bundle so consecutive layers will match

VENEERING: DO, DON'T, AND MAYBE

Do Store veneers in the sequence they came off the bundle, and keep them flat, free from dust, and in the dark to prevent fading.

Use veneer tape to protect the edges of veneers in storage.

If you've flattened a veneer, be doubly sure to store it flat prior to use. Burrs are particularly troublesome, and will return to a state of corrugation if not kept pressed.

Plan for wastage and make sure that you buy enough veneer for your project at the outset, ensuring that it all comes from the same bundle, and that it all matches.

Don't use contact adhesive! Apart from its unforgivingly grabby nature, which doesn't give you the chance to reposition a veneer, it's susceptible to both heat and the solvents used in finishes such as lacquer. It also deteriorates over time and gives a thick glue line. You're probably getting the idea now. Don't use contact adhesive.

Don't apply pressure to masking tape if you use it to hold leaves while you tape them into place . It'll weld itself to the veneer and be impossible to remove without causing damage

Maybe Try using glue film, which is placed between the veneer and the groundwork, and activated with an iron. It's quick and easy to use, but has less hold than, say, a gelatine-based adhesive.

VENEERING TIPS

SNEAK PREVIEW

You can reveal the finished colour of a veneer by wiping it with isopropyl alcohol (IPA), which is available from chemists. Unlike water, this won't raise the grain, and dries very quickly.

SILVER HIGHLIGHTS

If it's a pale, aged look you're after, try harewood, which is sycamore that has been treated with ferrous-sulphate solution that turns it to shades of grey.

FLATTENING BUBBLES

Bubbles, formed where the veneer isn't glued to the ground, can be repaired in several ways.

If you've used pearl glue, it may be enough to revitalise the glue by heating up a block of mdf on an iron and cramping it onto the raised area. This will soften the glue, allowing it to key to the veneer.

Alternatively, slit the veneer along the line of the grain so that you can work a small quantity of fresh glue underneath. To help get PVA under a veneer, spread water on the top so that capillary action draws it through the cut you've made; the water will in turn help draw the PVA after it. You can then either cramp the repair, or speed the repair by rubbing the area with a hot iron.

FILLING & PATCHING VENEER

Burr and butt veneers tend to be brittle, and you need to be prepared to repair areas where defects – bark inclusions or knots, for example – have shrunk and fallen out.

You can anticipate the need to fill pinholes by colouring your glue to match the veneer so that any pin holes or flaws are partly disguised. After the event, however, you can fill them by scraping an off-cut until you've got enough dust to mix with glue and fill the holes. Spirit-based stains in powdered resin glue work (but test first to ensure that the setting of the glue isn't affected) and food dyes work in PVA.

To repair holes, start by cutting a patch from a piece of left-over veneer; the best shape for these patches is an ellipse with pointed ends. This avoids, as far as possible, cuts across the grain. Place the patch over the area to be repaired and draw around it. The most accurate way to now cut to the line is to use a router with a very fine cutter – about 1.5mm – and the depth gauge carefully set to the thickness of the veneer. If you're using a urea formaldehyde glue, make sure you use a TCT cutter; powdered resin glues will blunt HSS cutters very quickly.

Burr veneers are brittle and may need repairing

GELATINE CLEAN

After using pearl glue, use a warm wet cloth to clean tools and surfaces; dry cloths and cold wet cloths just won't shift it.

CONTACTS

- **Capital Crispin Veneer**
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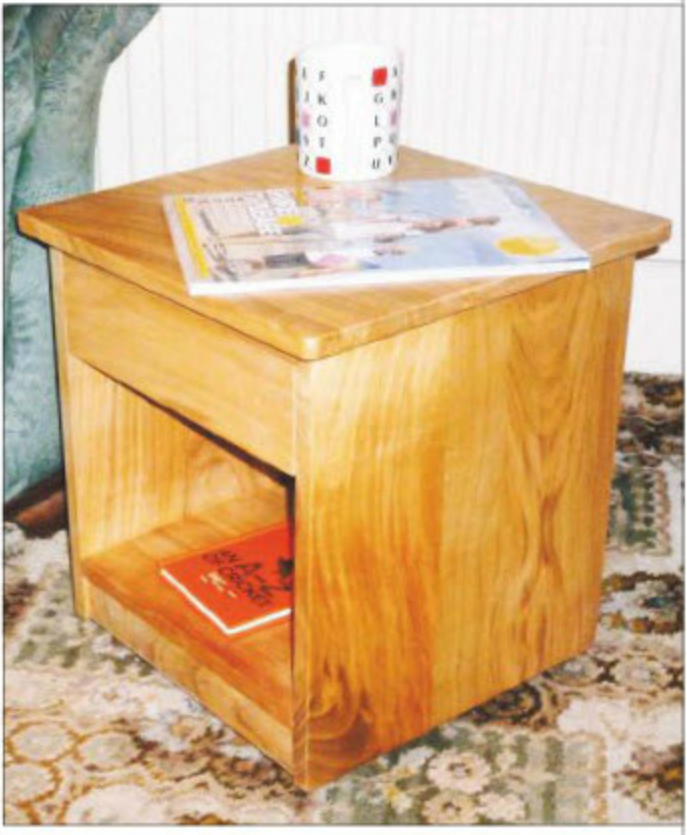


BY GORDON WARR

Right-hand man

This little table is mounted on castors so it can be drawn up close to an armchair. The drawer will house a few items such as a couple of books and a pair of spectacles, while the shelf will hold magazines and the morning paper

I've made a number of these tables at the request of various family members, and reports back indicate that they have always been popular. They're even more useful if made as a matching pair, in 'his and hers' versions.

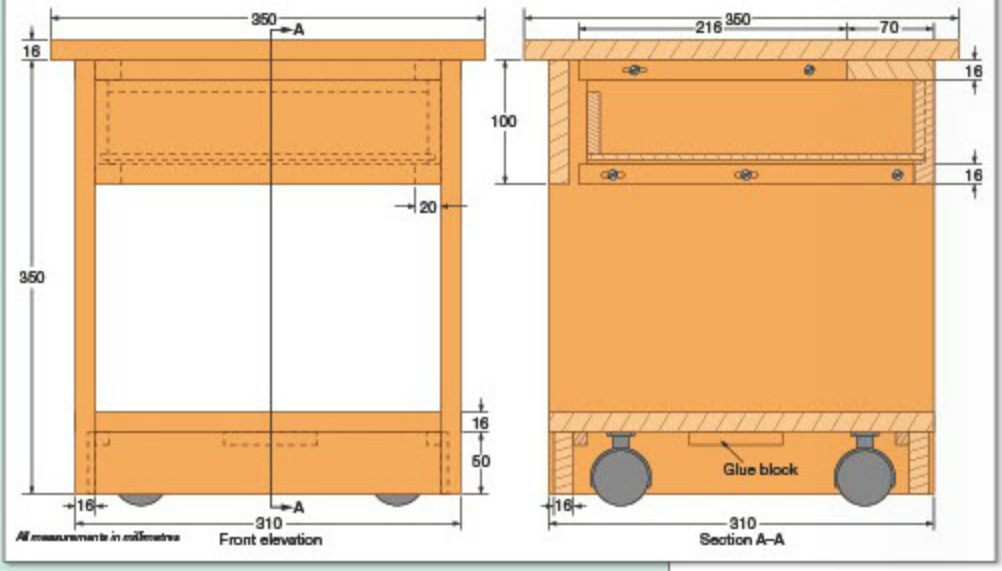
Making a start

Any of the furniture hardwoods is suitable for this project (I used cherry), and the construction for the main assembly is by biscuit jointing. I started by thicknessing my stock, **photo 1**. I used biscuits to strengthen the edge joints needed for the sides, top, and shelf; material of sufficient width is unlikely to be available, whatever wood is used. One of the advantages of using biscuits when edge joining is that they also help to ensure that surfaces adjacent to the joint remain flush. I cut all the biscuit slots, **photo 2**, glued and assembled the four panels and cramped them up.

Preparing components

Once out of the cramps, these four main components were trimmed to both width and length – an easy job with a saw bench available, although a fine-toothed blade is really essential when cross-cutting. The front and back rails were also cut to size at this stage.

Fig 1



SOLO TABLE CUTTING LIST

All dimensions are in millimetres

Part	Qty	L	W	T
Top	1	350	350	16
Side	2	350	310	16
Shelf	1	290	310	16
Front rail	1	290	70	16
Back rail	1	290	100	16
Plinth	2	300	50	16
Drawer front	1	290	84	16
Drawer back	1	290	50	10
Drawer side	2	240	70	10
Drawer base (ply)	1	280	250	4
Drawer runner	2	280	20	16
Drawer kickers	2	230	20	16

Widths and thicknesses are net. An allowance has been added to the lengths.

You will also need a set of four castors with 40mm diameter wheels, two metal expansion brackets and some offcuts for mounting pads and glue blocks.

1

Start by planing your chosen stock to the required thickness

The two pieces which form the plinths at the front and back are held at their ends in 6mm deep grooves cut in the sides of the carcass. This is a simple job for the router; the rounded ends of the grooves will be hidden later by the lower shelf.

Initial assembly

I had quickly reached the stage when some cleaning up was required prior to gluing up. The sides were sanded both on their inner and outer surfaces, but the shelf was sanded only on its upper surface. This sanding was carried out using a belt sander, completing this stage with some hand sanding.

Assembly at this stage was confined to the ends, the shelf and the two upper rails, photo 3. Like all assemblies, it was checked for being square, and the surplus adhesive removed while still wet.

Now the plinths could be trimmed to length so as to just fit in the shallow grooves prepared for them in the side panels. They were then sanded on their front faces and glued in position, photo 4. A couple of cramps on each ensured that their top edges were tight to the underside of the shelf.

Adding the wheels

Although my previous tables made to this design have all been fitted with 40mm diameter plate castors, I used some with twin wheels and a bolt fixing which I had salvaged from an old commercially-made

TV stand, and adapted their fixing to the underside of this table to suit. Once they were in place, I added glue blocks all around the underside, photo 5.

Some sanding was still required to the edges of the assembly to ensure they were all flush, and at this point in progress all the exposed arrises were gently rounded over.

Drawer components

Next, I prepared the pieces which would form the drawer runners and the kickers, along with the four main parts for the drawer.

Because the runners and kickers are fixed across the grain of the side panels, the holes for their fixing screws are formed as slots, apart from the ones at the front. Any subsequent movement of the pieces to which they are secured is then away from the front edge. This means that the maximum strength is where it is most wanted, at the front. Similar holes were prepared in the kickers for securing the top panel, but this was not added at this stage as its absence would make fitting the drawer a little simpler.

Each kicker is simply screwed in place with its upper surface level with the top edge of the carcass. I used one of the drawer sides to give me the position for each of the runners, photo 6, by holding it against the kicker.

Drawer joints

The drawer front, sides and back were sawn to length, then laid out flat so the meeting corners could be marked to identify them for assembly later.

The construction of the drawer follows standard practice, with lap dovetails at the front and through dovetails at the rear. The drawer front is sized so as to project below the bottom edges of the sides. This conceals the ends of the runners, and also provides a finger grip for opening the drawer.

Cutting dovetail pins

The first stage in marking out the dovetails is to gauge the extent of the pins and the sockets. A cutting gauge must be used for this, photo 7; an ordinary marking gauge used across the grain just scratches the fibres rather then cutting them.

My usual practice is to use a slope of 1:7 for all dovetails, marked using a home-made gauge, photo 8. I prefer to cut the pins first, although I'm aware that some woodworkers start by forming the sockets.

After preparing the panel parts, cut all the slots for the biscuits

Assemble the sides, the shelf and the rails to form the carcass

The two plinths are glued into shallow grooves routed in the side panels

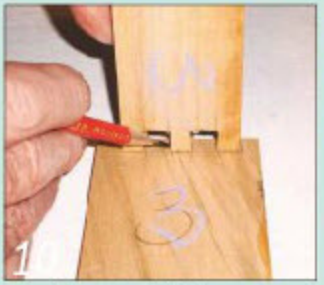
My recycled castors were fitted to the base using glued mounting blocks

Use one of the drawer sides to locate the two drawer runners on the side panels

Use a sharp cutting gauge to mark the extent of lapped dovetails

I then used my home-made dovetail gauge to mark the slope of the pins

Bore out the bulk of the waste and r emove the rest by chiselling



Mark out the sockets directly from the pins with a hard pencil

Test the fit of the dovetails, and ease any that appear to be tight

Form grooves for the plywood drawer base on the router table

Glue up and assemble the four drawer components, and check for squareness

Slide the plywood base panel into place, and glue and pin its rear edge

Screw on the top panel. Note the expansion brackets attaching the top at the back

If a bench drill is available, along with a selection of Forstner or saw-tooth bits, then boring out the bulk of the waste in this way is an excellent method for tackling the lap dovetails, photo 9. The depth of the holes bored can be adjusted so as to be exactly down to the gauge line.

Removing the remaining waste from between the pins is a matter of careful chiselling, making sure that all cuts are square or vertical. I have a pair of 6mm wide bevel-edge chisels with the cutting edges ground to a slope to match that of the pins. One is sharpened to the right, and one to the left. These help very considerably when cutting into the acute-angled inner corners of the pins.

Tackling the sockets

I use a hard-grade pencil, sharpened to a fine point, to mark around the pins to show the extent of the sockets, photo 10. These are first cut down the grain with a dovetail saw, sawing close to the pencil line but just, and only just, leaving the line visible. The edge sockets are also cut off with this saw. The centre socket is removed using a coping saw, cutting a little away from the line and completing this stage with a chisel. Now is the time to test the fit of the joints, photo 11, and to ease any that are over-tight.

Making up the drawer

I always make the back of drawer a little narrower than the sides, allowing around 6mm at the top, and let the lower edge align with the upper surface of the drawer base. This means that the drawer's initial assembly is confined to the sides, front and back, with the bottom being added as a second stage.

With the dovetails cut and fitted, a 4mm wide groove to take the base is required in the drawer front and sides – a simple job for the router, photo 12. After some cleaning up on the inner surfaces, these four pieces can then be glued and assembled. Check that they're square, photo 13, and remove excess glue from the inner surfaces.

Once the glue is dry, the plywood base panel can be trimmed so as to slide in place, photo 14. I add adhesive to the groove along the front, and once slid into place I then gently apply pressure to the base to spring it a little clear of the lower edge of the back. This allows me to introduce some adhesive to give the base a secure fixing, along with a few small pins.

Fitting the drawer into the carcass is the next step. If all has gone well, this should involve little more than levelling off the dovetails on the sides, and possibly a shaving or two off the top edges of the sides and front. This is where the absence of the top helps, as better visual checking of the fit is therefore possible

Adding the top

Now I could turn my attention back to the top. The four corners were gently rounded, then all surfaces were smoothed, but it was not screwed in place at this stage. Its absence would allow the sides to be better accessed for finishing.

With a final sanding completed, the project was ready for me to apply my favourite finish for small projects – pre-catalysed lacquer. I applied three coats all over, with an extra couple to the top. I flat down between coats, and abrade the final coat very lightly with 0000-grade steel wool dipped in a soft wax polish. Finally I burnish the surface with a soft cloth.

All that remained was to attach the top, with screws driven up through the front rail, photo 15, and also through the slots in the drawer kickers. Two metal expansion plates fix the top to the back rail to complete the assembly of the unit.

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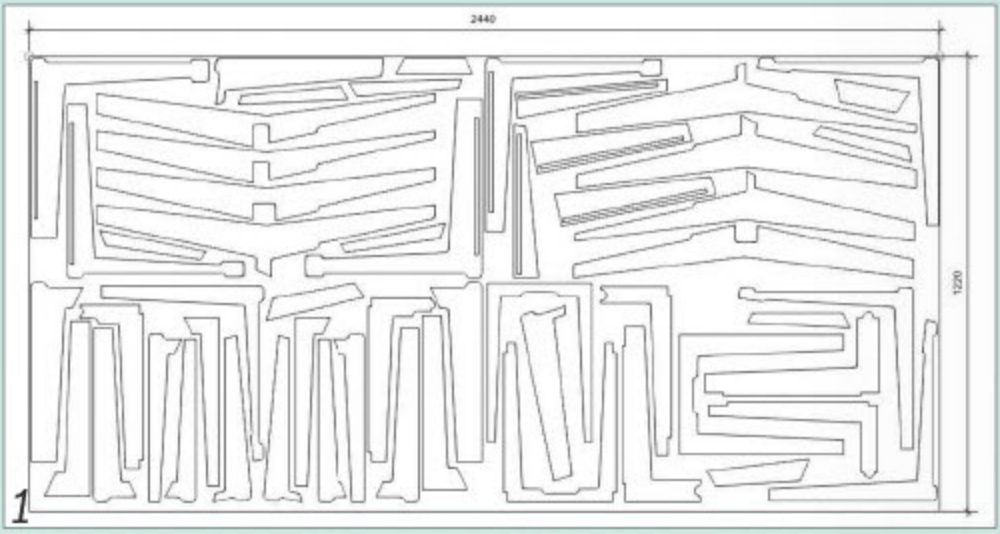
BY MARK HAMPSON

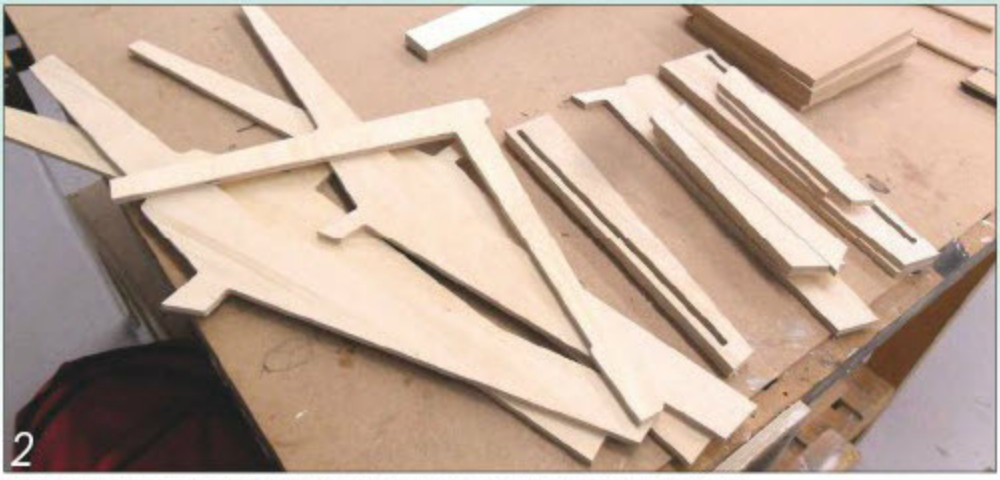
The Convene concept

In today's space-starved homes, every piece of furniture has to earn its keep. This set of two chairs and two side tables nests into one compact unit when it's not in use, and looks stylish in both guises

You may or may not know, but British people are finding themselves living in smaller and smaller environments. The British Isles currently have the lowest new-build home size in Europe at only 76 sq m, which is 15 per cent smaller than our Irish cousins and 60 per cent smaller than the Danish. Because of this shrinkage, the concept of this space-saving project came to the fore, and from the work that ensued, the *Convene* concept was born.



The Vectorwork drawing shows each piece nested onto a single sheet of 9mm plywood. Unfortunately, due to shortage of space in the university workshop the sheet had to be divided into four quarters, but every piece could still be fitted on



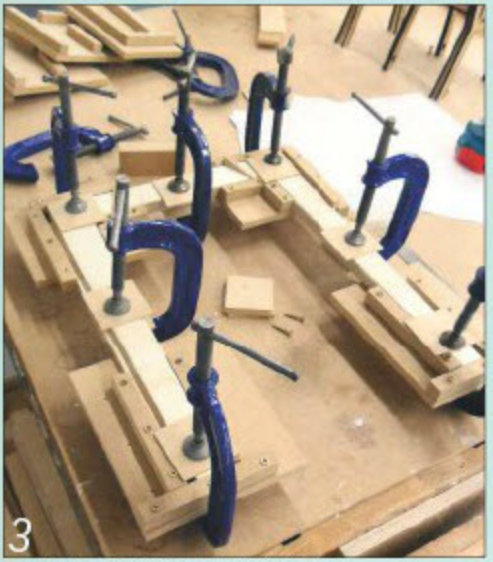
After cutting on the CNC machine, the components simply needed cleaning up and sanding in preparation for gluing

Four into one

Convene is a collection of two chairs and two stools-cum-side tables which fit within the footprint of a single chair, allowing users to pull out an additional chair or stool when required. Most people who live in restricted spaces may have enough room for one or two chairs, and *Convene* allows them to have hidden additional seating without taking up their limited storage space.

Computer control

Making *Convene* was a meticulous and rewarding experience. From the start it was decided that birch plywood should be the primary material, and the design needed to be simple to produce on my college's CNC router (the initials stand for computer numerical control, by the way). This resulted in a design using 9mm plywood in a simplistic panel format which would allow the CNC machine to rout the shape of each piece to the exact dimensions. This was critical, as each chair had a 2mm tolerance to ensure that the other pieces could slide in effortlessly. Using 9mm plywood allowed for an interlocking design, and when the two 9mm sections were glued together it resulted in a strong structure that saved a lot of material in the process.



I created this makeshift jig for gluing the front panels of the larger chair together

The first dry fit showed that every piece fitted together perfectly, much to my relief

Fixing the seat back and base to the plywood frame was achieved by gluing in walnut dowels at specific locations

The sprayed finish created a pleasing contrast next to the smooth birch and the walnut dowels

Maximum efficiency

Cost was additionally an issue, and it was essential to ensure that every single piece of the puzzle could be cut out of one 8 x 4ft sheet of plywood so there was as little wastage as possible. It became apparent early on in the production of the prototype that the plywood edge would become a feature, so I added a slight 3mm chamfer to the outside edges, simply to give the eyes an invitation to peer round and notice that famous plywood texture.

Fixing the seat back and base to the plywood frame was achieved by gluing pieces of walnut dowel at specific locations and then sanding it back to create a flush seamless blend of dark and light wood.

Plastic alternative

Due to its prototype nature, the backs and tops of the 'Gen.1' version had been sprayed purple using a matt car spray paint. However, in hindsight and with further development, these parts of the chair could have been made in sheet acrylic plastic, bringing an interesting contrast between the pale birch and a solid synthetic colour.

Convene has now progressed. After exhibiting it at the New Designers show in London earlier this year, there were a few elements that needed to change, although plywood would stay as its main feature.

Generically I felt that the chair needed to have a bit of a re-style. This resulted in a lot of the harsh angles being rethought, as well as finding a better way to remove the sliding mechanic. Overall the new design is comparatively more elegant and seamless compared to its slightly clunky older version, and importantly the plywood will be the headline act as it was always intended to be.

One unit of *Convene* is complete, and proves the soundness of the original space-saving concept

Photo courtesy of Yandles

BY PAUL GREER

Job centre

If you're practical and like the idea of physical work, it's well worth researching the range of jobs available in the construction sector. You may be surprised at how many there are, and how each one has features likely to add to or reduce its appeal

Job opportunities can be explored effectively (and fairly easily) by consulting a good general careers website, or one for the industry such as www.ciob.org.uk. As well as the jobs that come quickly to mind, such as bricklayer or joiner, look too at the less obvious ones, such as tiler or scaffolder.

Who do you think you are?

Take your time with this, as it's important not to rush. You need to take into account what you discover about each job, and relate this to the kind of person you think you are. This means knowing your likes and dislikes, and ensuring that any preferred job has many positive features and few (if any) negative ones. This process should leave you with no more than three or four possible jobs to investigate more closely.

Competitions can provide a real chance to excel. Chris Lake is seen here at World Skills 2014

Construction needs materials, and there are many opportunities for work in the supply chain

Time to talk

Next, speak with people who do these jobs. An obvious contact would be a builder, a decorator or a plumber who's already visited your home. Failing that, you could ask a relative or neighbour involved in such work, or look in a local directory such as *Yellow Pages* for the names of local tradespeople who may be willing to give you information or advice over the phone.

Distinctions between jobs are important to recognise, particularly when there's little obvious difference in their titles, or they employ similar equipment. A joiner, for instance, may be deployed in fabricating doors and window frames, or in making furniture. Rough or fine plastering are similarly distinctive. In each case, the chance to utilise craft skills may differ quite markedly.

Working conditions

Construction environments differ widely, and likely levels of noise and temperature may influence your choice, as may whether you'd be working with others or alone. Certain kinds of work can depend on the weather, and some jobs such as bricklaying are more affected by this than others.

Fit for purpose

Many young people especially find the transition from education into work or training a big jump. The longer day counts for much, and this is often felt most in physical jobs, which may entail standing for long periods, carrying heavy objects or operating in less-than-comfortable positions. So you need to have a reasonable level of general fitness.

For some jobs in construction, it's important that you have good colour vision, and aren't allergic to any of the materials or substances you'll be using.

A toe in the water

Try hard to arrange work 'tasting' or on-the-job experience. The first might be a stay of only a few hours, probably in a mainly observational role. The second could be a week's stretch (or the equivalent, spread out), and include tasks making a small but real contribution.

Even if you don't get a positive initial response, stick at it. Firms that want to help may hesitate, but a good first impression may dispose one to assist you more than it might have. Say clearly what you want from a visit, and rehearse this, or have a few

It's a diverse industry; with such a variety of work there will be something for everybody

notes to hand when you ring up (preferably having first taken the time to consult the organisation's website).

Route planning

Become familiar with the main training routes – an apprenticeship, or a full-time college course. Apprenticeships are usually available only through named training providers, usually (though not necessarily) construction firms, and more often middle-to-large ones rather than one-man bands. Information on these is available through local 'Connexions' services (or their equivalent), and on the national website – www.apprenticeships.org.

Many colleges offer courses in skills such as bricklaying, joinery, plumbing and electrical work, with subjects such as painting and decorating, plastering and others available at the larger or specialist ones. It's worth remembering that many colleges offer full apprenticeships as well as courses, or are the venue for the one day each week most apprentices spend away from their workplace.

Making contact

Most colleges and training providers run Open Days or attend general careers conventions. Most such events take place between September and Easter, showing what's available and how to apply. Even more valuable, however, is the chance they offer to speak with representatives, and to ask anything important to you. Details of the training programme, and the typical numbers of applicants per place, are always worth knowing.

Find out whether you'll need particular GCSE subjects or minimum grades. English and maths are frequently specified, and sometimes additional subjects, while places on the more popular apprenticeships can require C grades in several subjects. However, selectors tend to be more interested in an applicant's job knowledge and level of commitment, and D (or even E) grades can still get you onto the first rung of the ladder.

Getting organised

To make your applications manageable and to meet deadlines, set a schedule. Your order of approach needn't reflect your order of preference. For instance, an apprenticeship may be your first choice and college your second, but it may be better to approach colleges first. All applications should be made at least six months before the intended start date. As you may have to submit a CV, complete one (with an accompanying letter) in advance of your initial enquiries. Take your time composing it; you want it to do you justice.

Getting involved in a college research project will always pay dividends

In today's more egalitarian society there are plenty of chances for girls as well as boys

Tests and interviews

The selection process may well include a test. This is likely to be pencil-and-paper or touchscreen, and far shorter than an academic exam. However, you'll still need to concentrate, and to work quickly and carefully. Sample tests may be available online, and feedback on former tests may be available from the local colleges or training organisations which set them.

An interview is normally the last stage of selection but is often considered the most important, and even good candidates sometimes fall down here through nervousness or lack of preparation. However, if you speak fairly easily to new people, and firmly believe you've found the right career, what you say will probably go down well.

Even those ill at ease can still score points by anticipating questions and having a few well-rehearsed answers. Two or three of these can turn something daunting into a satisfactory (or even enjoyable) experience. Don't forget it's a two-way process. Posing a couple of good questions to the interviewer(s) will show that you're really thinking about the process.

The road ahead

Look ahead to where initial training and some experience might take you. This is partly to address any interview questions along these lines, but also to see how you might develop your career. Make sure you're aware of any academic qualifications you might need in the long-term. As an apprentice, for instance, you might progress onto a degree course such as in building surveying, but only if the university is confident you can cope with its academic content. This is a reminder of how much construction can offer as a career, and it's one which certainly merits exploration.

BY JONATHAN SALISBURY

Plane improvements

You get what you pay for when buying tools, but it's possible to break this rule even if you are a serious woodworker. The work I've been doing on budget planes proves my point...

There are three main aspects to consider when deciding on value for money: the qualities of design, materials and manufacture. Naturally the design has to be right; otherwise function will be impaired. Better quality materials are more stable, hold their edge longer and do not deteriorate so quickly. However, the most significant compromises in the quality of low-cost tools are those that occur during manufacture. Tolerances are fairly low so parts do not always fit with each other, and less time is spent on finishing them. Lastly, little testing is carried out to ensure they're ready for use (or even fit for purpose). This is work that must be undertaken by the owner rather than by workers in the factory.

A change of plan

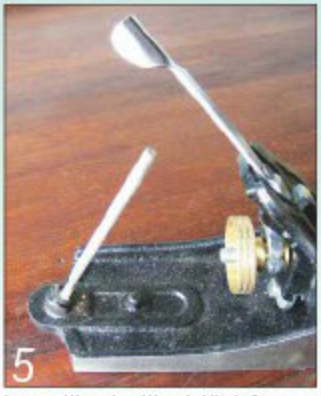
In my previous article (in the July 2014 issue, where I compared a trio of budget planes), I said that I intended to further refine the Axminster winner so it would provide more consistent results. While I still intend to do this, I've been very happy with its performance so far – it has only required the occasional hone – so for the moment I'm leaving well alone!

The Faithfull and Draper planes are born of the same mould: all parts are identical and interchangeable

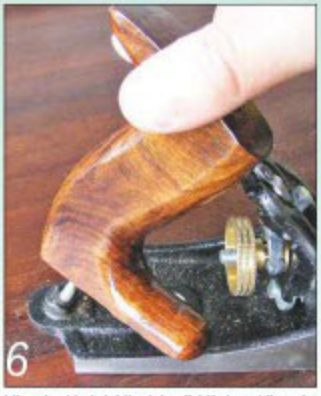
Rough edges around the outside of the casting must be removed to prevent damage to work surfaces...

...but a little work with a fine file is all you need to smooth the soft iron

As I loosened the cap nut to remove the tote, the entire retaining bolt came free



I removed the nut and threaded the bolt carefully back into the body



I then had to twist the tote slightly to get it past the frog assembly before replacing the nut

However, the other two planes have been sitting idle on a shelf. There's no such thing as an unusable bargain and so, having previously succeeded in getting away with the minimum amount of work, I embarked on a quest to spend some time optimising the performance of the planes supplied by Draper and Faithfull. These are more or less identical, photo 1, apart from the different names cast onto them.

A learning curve

I'm using my budget planes as a learning tool, which will hopefully lead to a better understanding of how they function, how to recognise when maintenance is required and how to carry it out without risking a lot of money (or distress) if things go wrong. Getting performance from budget planes that's out of proportion to their initial cost is my aim. It also makes sense to have one or two planes available for preparation work before using a top-quality plane to finish off the job, as opposed to continually adjusting and tuning the one tool.

Making a start

My first task was to remove the sharp edges left after the casting process, photo 2. Caused by poor finishing, they catch on fingers and can spoil the surface of the wood you are carefully smoothing. With the plane body held in the bench vice, a few simple passes of the file was enough to remedy this, photo 3.

Fixing the tote

Although there's no need to completely disassemble a plane in good condition, especially if it's new, there was one thing that I wanted to tackle on the Faithfull. The tote was not sitting centrally. As I undid the nut that holds the tote in place, the lower end came loose, not the top, leaving me with a long bolt in my hand, photo 4. When I fed this back through the hole in the tote it didn't align with the thread on the plane body, which made it impossible to secure it.

Having removed the nut (the bolt had to be held in a vice), I screwed it back into the plane body, photo 5. I then slid the tote over the rod, turning it slightly to get it past the adjustment lever and wheel on the frog, photo 6. It was then simply a case of replacing the nut – without forgetting the washer!

Tackling the bodywork

Concentrating now on one plane at a time, I started to work on the Draper to get it smoothing like never before. The body was neatly painted, but this included the throat. Anything that increases friction as the shaving passes up past the iron has to go.

With the iron and frog removed, the flat side of a half-round file was thin enough to get into this area without removing metal elsewhere, photo 7. Keeping it perpendicular to the sole, I carefully filed away the paint to leave a smooth surface without removing any metal.

The finish of the mouth was a little uneven too, with neither end being entirely square. This could be easily neatened up if required, but, since the iron goes nowhere near these points on my plane, it wasn't a problem.

Flattening the frog

I next tackled the front face of the frog. This needs to be flat so the iron is well supported, to prevent chatter. To test flatness you can use special layout and identification fluid or, if you don't have this, a permanent felt-tipped pen will do.

Once I'd inked it all over, photo 8, I rubbed the face of the frog below the depth adjustment lever on a piece of wet-and-dry paper stuck to a flat surface (float glass is ideal). Once the surface is clean it's flat: an even pattern of fine scratches is also a good sign, photo 9.

I use 600 or 1200 grit to test for flatness, and a coarser grade when it needs to be flattened. Wetting the back of the sheet holds it in place on the glass; there's no need to use any glue.

Fitting the frog

When the frog is installed it needs to sit firmly on four points on the plane's body. If it doesn't, the iron can twist, vibrate or even come loose, with a resulting loss of quality in the cut.

Checking this is easy. Remove the iron, loosen the screws and see if it rocks across corners. If it does, remove the adjustment screw and smear a little valve grinding paste (which you can buy from motor factors or online) on the surfaces. Move the frog backwards and forwards – the direction it moves when being adjusted – while applying downwards pressure until an even seating has been achieved, photo 10. Clean the valve grinding paste carefully off all the surfaces before replacing the frog.

Fixing the cap iron

Next, I reground the cap iron to improve its contact with the iron, ensuring there was no gap. I also polished the top surface with fine steel wool to further encourage good shaving flow.

The bevel of the iron got another hone, first on the 1200 and then on the 6000 grit waterstones. I used a Veritas honing guide with a cambered roller, photo 11, which allowed me to control the tilt on the edge of the iron over to relieve the corners.

I've used several guides over the years, and prefer the Veritas system for all but the narrower chisels. By the way, I thoroughly recommend Michael Forster's excellent articles on sharpening in the September and October 2013 issues of the magazine for a variation on this method.

Finally, I refitted the cap iron so an even gap – about 1mm wide – was visible along the edge of the iron. After reassembling the plane and applying a little wax on the sole to ensure it glided smoothly, I adjusted the frog to close the gap between the cutting edge and the throat and started cutting transparent, full-width shavings. Success!

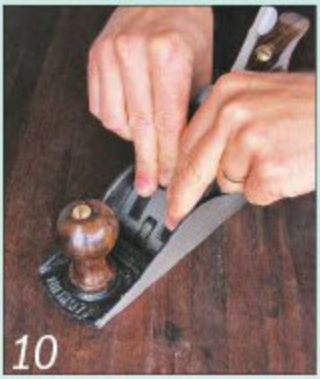
And now for plan B...

I had completely different plans for the Faithfull plane. It was a little coarser in finish than the Draper and the frog was chipped –

Keep the file perpendicular to the sole when removing excess paint from the throat

Ink the frog using a permanent felt-tipped pen so you can test it for flatness

Rub the surface of the frog below the adjustment lever on wet and dry paper until the colour has gone



Test the frog to see if it rocks across the four corners: mine didn't

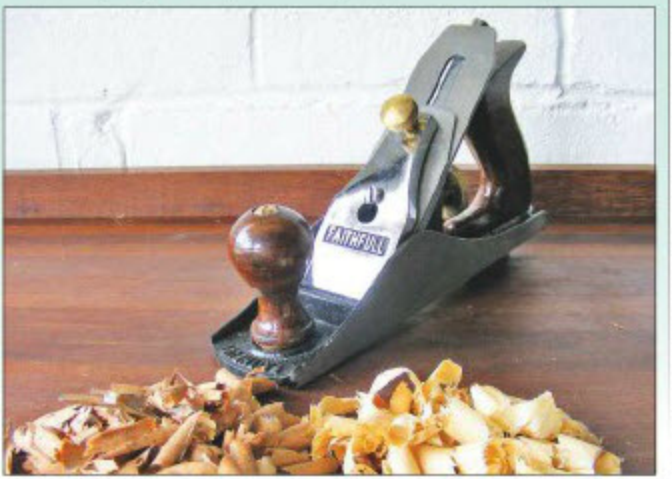
The cambered roller on the Veritas honing guide allows the edges to be feathered back to prevent dig-in

A grinding wheel helps to speed up forming the cambered edge on the cutting iron during my scrub plane conversion

Sharpen from right to left with the trailing edge up to prevent dig-in

Fit the cap iron further back from the blade edge to allow a clear passage for shavings

A wide throat allows large shavings to be cut: you can file this even wider if required



another symptom of cost-cutting, no doubt. This would have meant even more work to sort it out if it were to become a smoothing plane. But what if that wasn't its destiny?

This began to be decided after a fellow wood enthusiast showed me a scrub plane. I'd read about them in Garret Hack's *The Handplane Book*, but seeing one for real was the encouragement I needed to have a go, not least because I didn't think I'd really need four smoothing planes!

Freshly scrubbed

Scrub planes must survive the forces applied to them and be kept sharp, but otherwise they need little preparation and setting up. They are used to gouge large quantities of wood from uneven surfaces quickly, and the rough surface they leave behind subsequently undergoes significant truing and smoothing.

The Draper plane also came with a spare iron to play with…

Scrub planes can still be bought: Lie-Nielsen make one, but they are otherwise a bit of a rarity as they were never made in huge quantities like standard bench planes. Varying in size depending on manufacturer, they are generally about the same length as a No 4 but with a narrower iron – 1½in is common. The main features are a distinct curve in the cutting end of the iron, and a much wider mouth to allow large shavings to pass unhindered.

Simple changes

Setting up the Faithfull plane for scrub duties was a straightforward job. After going through the basic checks and adjustments, what took longer than expected was grinding the curve in the iron. The edges were 1.5mm lower than the centre to provide a 1.5mm deep gouge when the whole iron is cutting, and most of the curve was ground on the water stone, photo 12.

The back on this iron hadn't been flattened. I used my lapping plate for this; then the edge needed to be sharpened and polished. Honing guides are less useful here, so I did the job by eye, photo 13. I found that by working sideways I could achieve a constant bevel, which I couldn't with the usual method. Since I was using waterstones, I took my time and avoided pressing too hard as I didn't want to spend a lot of time flattening them again. The cap iron was left straight, and is secured further from the sharp edge than on a smoothing plane, photo 14.

A test drive

Testing the plane was great fun! Breakout is an inevitable consequence of the deep cut and wide mouth, but this is a compromise that has to be made when so much wood is being removed in one go. The shavings didn't jam, but it would have been a straightforward job to widen the mouth if they had, photo 15. A word or warning, however: there's no going back once you start filing away to creating a scrub plane from a smoothing plane body!

Summing up

This has been another enjoyable and successful journey. My tool kit has been expanded considerably and, more importantly, I have a much deeper appreciation of (and respect for) this family of tools. The only thing I now have left to do, apart from keeping them in working order, is to enjoy using them. I can't wait!

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BY COLIN SIMPSON

Well rounded

A perfect wooden sphere is incredibly tactile: I guarantee you'll want to hold and caress it. You might fancy starting a collection of spheres made from different woods. You can use them for games such as skittles too

You can buy a number of different jigs for making spheres, but I think these are expensive and difficult to justify if you're making just a few. My method of turning spheres (and I'm not the first person to do it this way) doesn't use any jigs or templates, but you will need to make a pair of cup chucks (see below).

Making a start

Select a piece of wood – I'm using olive ash – about 30mm longer than it's wide, and turn it to a cylinder, **photo 1**. Use outside callipers to measure the diameter of the cylinder and transfer this measurement to the body of the cylinder, **photo 2**. Don't adjust these callipers, as you'll need to use them frequently.

Next, use a peeling cut with a skew chisel to remove the waste at each side of these marks, **photo 3**. Measure the length of your cylinder – it should be exactly the same as the diameter – and mark the mid-point, **photo 4**. Start the lathe and continue this mark all the way round the circumference of the cylinder. This line should remain in place all the time you're cutting the sphere.

Rough your stock down to a cylinder using a spindle roughing gouge

Measure the cylinder's diameter and transfer this to the side wall

Turn away the waste wood at each side of the marks with a peeling cut

Measure the length of the cylinder and mark a line at its mid-point

Start the shaping by cutting chamfers on both sides of the centre line

Check the size frequently using callipers still set to the cylinder's diameter

Use a spindle gouge to start rounding over the chamfer at each side

The pencil lines indicate that that part of the sphere is close to its final size

Take light cuts and keep checking your progress with the callipers

Refine the shape using a scraping action with a sharp skew chisel

Hollow out the end of the headstock cup chuck with a spindle gouge

Use callipers to measure the diameter of your revolving centre

Getting round

Use a spindle gouge to start removing the wood from each side of the centre line. I like to work both sides alternately and to cut a chamfer first, photo 5. With the callipers still set to the diameter of the piece, keep checking the size of the chamfer, photo 6.

When it's nearly the correct size, start rounding off the chamfer to make the sphere, photo 7. Take light cuts and keep checking your progress frequently with the callipers. Remember that you can always take more wood off, but it's very difficult to put it back on!

The second half

Photo 8 shows me cutting the other half of the sphere. It also shows the addition of two more pencil marks. These lines indicate that that part of the sphere is very close to the final size, photo 9, so I want to feather the cut out towards these marks.

You can continue to take fine cuts with the spindle gouge to true up the sphere or, if you prefer, you can scrape the piece to finalise the shape using a sharp skew chisel held in its side, photo 10. Bring the piece as close to a sphere as you can, checking all the time with the callipers. However, it doesn't have to be completely perfect at this stage. Now for the final stage: holding the sphere without its supporting tenons, using a couple of simple cup chucks.

Making the cup chucks

To make these you'll need two pieces of close-grained hardwood about 40mm and 60mm long. The diameter depends on the size of your sphere. My sphere was 85mm in diameter, and my cup chucks measure 30mm. I find this size works well for spheres up to about 120mm in diameter; bigger spheres than this will of course need larger cup chucks.

Mount the smaller length of hardwood – I used beech – between centres and turn it to a cylinder. True up the end and cut a spigot to fit your scroll chuck. This will become the cup chuck for the headstock end and will fit into your scroll chuck. Mount the piece in your scroll chuck, true up the free end and cut a hollow in the end using a spindle gouge, photo 11.

Drill out the end of the other cup chuck to fit over the revolving centre

You now have a pair of cup chucks tailor-made to fit your lathe

Mount the two chucks, rotate the sphere through 90° and secure it between them

Cut off the two tenons with a fine-toothed saw and start the lathe

Remove any visible ghosting with light cuts using the spindle gouge

Mark another centre line and then rotate the sphere through 90° again

Sand the sphere, starting with 180 grit and finishing at 400 grit

Finally apply a wax-over-oil finish and the sphere is completed

MAKING A BACK MASSAGER

Practise your technique by turning two more identical spheres, this time about 55mm in diameter. You will also need a piece of wood about 280mm long and 25mm square to make the handle. Mount this between centres and turn it to a cylinder using a spindle roughing gouge. Refine the shape and add a few decorative details using the spindle gouge, **photo A**. Round off both ends and sand and polish it before parting off using the skew chisel, **photo B**.

Forming a shaft

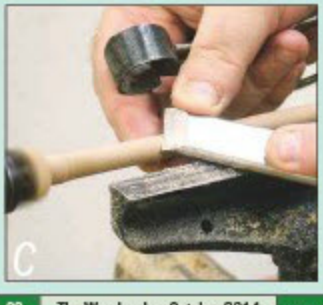
I also turned an 8mm diameter dowel about 80mm in length, but if you prefer you can buy commercially made dowel. At this small size the wood starts to flex away from the tool as you cut it. To prevent this from happening, support the wood with your fingers as shown in **photo C**. Don't rub hard, and if you smell burning, let go! I also have the callipers to hand, set at 8mm so I can continually check the size.

Assembling the massager

Drill an 8mm diameter hole 35mm deep in each of your spheres. The massager looks better if the grain on both spheres is aligned. I used the plastic lid of an aerosol can to support the sphere while I drilled the holes using my pillar drill, **photo D**.

Next, drill an 8.5mm diameter hole in the handle 20mm from the end. Glue one end of the dowel into one of the spheres, slide on the handle and glue on the second sphere. Take care not to allow any excess glue to get near the handle. The dowel must be able to rotate freely in the hole.

So now you have a useful back massager that will earn you loads of Brownie Points with your other half. You might even be asked to stay out longer in the workshop and make more of them!



Mount the longer piece between centres, turn it to a cylinder and cut a spigot on both ends. This cup chuck will fit over your revolving centre in the tailstock.

Use callipers to measure the diameter of your revolving centre, **photo 12**. In my case this was 32mm. Mount the tailstock cup chuck in your scroll chuck using one of the spigots you've just cut. Replace the revolving centre with a Jacobs chuck fitted with a 32mm spade bit, and drill a hole in the end of the cup centre, **photo 13**. Turn the piece round, mount it using the second spigot and turn a hollow in the end as before. You now have a pair of cup chucks tailor-made to fit your lathe, **photo 14**.

Using the cup chucks

Remove the sphere from the lathe and mount the two cup chucks. Rotate the sphere through 90° and hold the piece between the chucks, **photo 15**. Tighten the chucks just enough to hold the piece firmly, but not tightly. Cut off the two tenons, **photo 16**, and then start the lathe.

You will notice a little bit of ghosting, showing you that the piece is not truly round. Remove the ghosting by taking light cuts with a spindle gouge, **photo 17**. As the piece becomes more true it's difficult to see the ghosting, but you should be able to feel where it's still not quite the right shape by the clicking you will hear as the high points come round and hit the bevel.

Once the sphere is true in this orientation, mark a centre line again, **photo 18**, and rotate the sphere through 90° in the cup chucks. Once again remove any ghosting that's visible, either with a scraping action with the skew or with the spindle gouge. If necessary, rotate the piece again by any number of degrees and again remove any further ghosting.

Next sand the piece, **photo 19**, starting with 180 grit and finishing at 400 grit. Keep rotating the piece in the chucks to allow you to sand the whole sphere. To finish the piece, I applied a wax-over-oil finish with the work off the lathe. Eureka! Your first perfect sphere, **photo 20**.

BY CHRIS CHILD

Bowl turning

TURNING BASICS 3

Turning a bowl is one of the best ways to learn the basic principles of gouge control. This isn't an especially difficult skill to acquire, but it is one that needs understanding if you're to get the best results from your wood turning. It will also help you to become more adept with the other turning tools

Bowls are still a favourite turning project, and as they aren't normally copied, you're free to form whatever shape you want to and enjoy improvising with the design as you go.

A suitable wood

All fruit woods, especially English cherry, are excellent for bowl turning, although apple and pear wood must be very dry if they are not to warp out of shape afterwards. Other suitable native hardwoods are sycamore, English maple and ash, which all turn cleanly and are not as abrasive on the tools as some other timbers.

The example shown here is in English elm. This is usually a fairly coarse-grained wood, but the texture and colour can vary considerably.

Fixing the blank

To find the centre of the bowl blank, I've made a simple centre-finding device out of a sheet of Perspex. To use the device, place it onto the blank and position it so one of the marked circles lines up with the blank's perimeter. Then mark the blank with a pencil through the centre hole, photo 1.

I use this home-made Perspex centre finder to mark the blank's centre

Screw the faceplate to the blank with four No 8 Spax or similar screws

If you don't have a bowl-turning attachment, work at the end of the lathe

Create the outer shape of your bowl by first forming a simple chamfer

Maintain this depth of cut until the gouge has completed its pass

Use an open-handed grip so that the tool slides through your fingers

Flatten off the base of the bowl using a scraper supported by the tool rest

Cut the recess for the chuck with the ¾in beading and parting tool

Create the dovetail in the corner of the recess with an angled scraper

Test that the chuck fits in the recess properly by hand-tightening it

Start hollowing out the bowl with a freshly sharpened bowl gouge

Hold the tool down on the tool rest to stop the cut spiralling out of control

Secure the faceplate to the blank with at least four screws, photo 2; they need to penetrate about 15mm into the surface of the wood. The screws I use are No 8 or 10 precision-machined Spax screws. They're made from hardened steel and have serrated threads that cut straight into most woods without the need for pilot holes.

All-round working

If your lathe has a swivelling headstock and bowl-turning attachment, lock the headstock at 90° to the lathe bed. In this orientation you can work all round the bowl, without having to stretch over the bed bars. If your lathe isn't equipped with a bowl turning facility, you can do just as well by sliding the headstock to the end of the bed bars and working at the end of the lathe, as you can see in photo 3.

Standing square

With the bowl blank securely fitted onto your lathe, select a suitably slow speed of around 500rpm. Set the tool rest to about 20mm below centre height, and before switching on the lathe, check that the blank can rotate clear of any obstructions.

Put on your face shield at this stage. This is especially important when you're working on wide-diameter blanks.

Face the work with your feet to each side. Avoid the traditional boxer's stance with one foot in front of the other, which severely restricts sideways body movement. Hold the bowl gouge firmly against the tool rest with the handle hugged into your lower body. The ½in Henry Taylor Super Flute bowl gouge is the ideal turning tool for this type of project.

Starting to turn

To turn the outside of the bowl, I deliberately hold the shaft of the gouge in my right hand and the handle in my left, which, unless you are naturally left-handed or ambidextrous, will feel very uncomfortable to begin with. However, persevere with this position because a left-hand mode of holding the gouge enables you to see the edge and bevel of the tool and its angle of approach to the work surface more clearly. Also, and more importantly, it prevents you from exerting too much pressure on the end of the tool, causing the bevel to ride in and out of the uneven work surface. This leads to uneven cutting which, if unchecked, causes a spiral wave to form on the surface.

Shaping the sides

Create the outer shape of your bowl by first forming a simple chamfer, photo 4. Notice how sweetly the gouge cuts when it's working away from the centre of the bowl and with the direction of the grain. The gouge is slightly on its side, with the bevel gently floating on the freshly-cut surface. There is a clearly visible step cut into the side of the work, photo 5, and this depth of cut is maintained until the gouge has completed its pass.

When it comes to forming a curve on the side of the bowl, you use exactly the same cutting technique, only this time you need to bring the handle of the tool slowly round in an arc so that the bevel of the gouge always remains in line with the work surface. Photo 6 shows a fine finishing cut being made to the outside of the bowl. Use the open-handed grip so that the tool slides smoothly through your fingers.

Keep it sharp

A freshly sharpened gouge is essential for obtaining a clean finish, so don't be tempted to continue your cut when the tool edge becomes dull. Twist the gouge round and present different parts of the blade, so you use up all the cutting edge before re-sharpening it. Remember to keep the bevel flat against the work surface when you return to a fresh cut.

Fitting the chuck

Flatten off the base of the bowl using a scraper, photo 7. Then form a dovetailed

recess so the bowl can be fitted onto a chuck. Start cutting the recess with the ¾in beading and parting tool, photo 8. Place the tool at a cutting angle of 45° to the work surface and hold it firmly down on the tool rest so it's rigid when performing its cut.

Next, create the dovetail with a specially shaped scraper which forms the same profile as the chuck jaws, photo 9. It is very important that it, too, is held absolutely rigid while it cuts, as any irregular movement will effect the centring of the bowl.

Test that the chuck fits in the recess properly by hand-tightening it, and rotate the lathe to make sure that it is centred correctly, photo 10. I leave the faceplate in situ until I'm sure that the bowl is seating correctly in the chuck.

Forming the hollow

Start hollowing out the bowl in the middle of the disc with a freshly sharpened bowl gouge, photo 11. When you start the entry cut, there is nothing to prevent the gouge from digging in and spiralling out of control across the face of the work, photo 12, apart from the pressure that you exert to hold the tool down on the tool rest.

When you get closer to the desired wall thickness of your bowl, you may like to use a vertical tool post to support the back of the gouge and prevent it slipping and spoiling the crispness of the bowl's edge. Photo 13 shows a masonry nail fixed into a hole in the tool rest performing this function. The gouge is starting the cut slightly on its side, with the bevel in line with the direction of cut and the lower right-hand side of the flute generating the shaving.

Digging deeper

Photo 14 shows the cut a little further on. The step or depth of cut has been well established, and the tool's bevel can now lie against the supporting surface of the bowl's wall. All that is required is a little pressure to propel the cut forward; a sharp tool should meet little resistance and draw the shaft steadily through the fingers of your hand. You can take quite a thick shaving at this stage, but as you work further round the inside curve of the bowl, arcing the tool in a lateral plane as you go, you will need to decrease the depth of cut.

The perfect base

It is possible to form the entire cavity of the bowl using only gouges. Some turners, including me, prefer to use a specially ground obtuse 60° bevelled angled gouge. This slides across the floor of the bowl, removing the unevenness caused by the standard bowl gouge, photo 15. This takes a lot of practice, however, and forming the floor surface of the bowl is much easier with a large round-nosed scraper.

This 1½in scraper has a 60° bevel which is ground and then honed on an oilstone. By holding this tool horizontally and flat on the tool rest, and using only part of its cutting edge at any time, you can scrape the floor area perfectly smooth, photo 16.

All that remains is to trim the top edge of the bowl smooth, which you can do by drawing the bowl gouge lightly across until the surface is concentric, photo 17.

The finishing touch

It's now time to give your bowl its final sanding. An effective dust mask is an essential health precaution at this stage.

Always keep your fingers in line with the rotation of the work, photo 18. I use J-flex aluminium oxide cloth abrasive because it's long-lasting and flexible.

Start off with 80 grit and then work your way through to 240 grit, finishing off with 400 grit. Use each successive grade to remove the scratch marks of the previous one. Watch the stream of dust which should accompany your sanding; as soon as it disappears, change to a fresh piece of abrasive. Don't be tempted to continue using blunt abrasive, as this can cause fine end-grain cracking. This particular bowl was given the simplest of finishes. A generous application of quick-drying wax was rubbed on all over with the lathe stationary, and then the dry wax was burnished to a bright sheen with a soft cotton cloth.

Start the cut with the tool post supporting the back of the gouge

All that is required is a little pressure to propel the cut forward

It is possible to form the entire cavity of the bowl using only gouges

Use a scraper to flatten off the bottom of the inside of the bowl

All that remains is to trim the top edge smooth using the bowl gouge

Always keep your hands in line with the rotation of the work when sanding

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Kaizen Bonsai

The cutting edge of UK Bonsai

Right at the cutting edge

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 it name suggest 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™ where 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. 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 effieciently 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!

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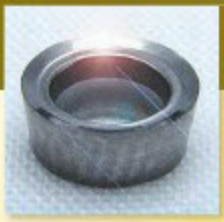

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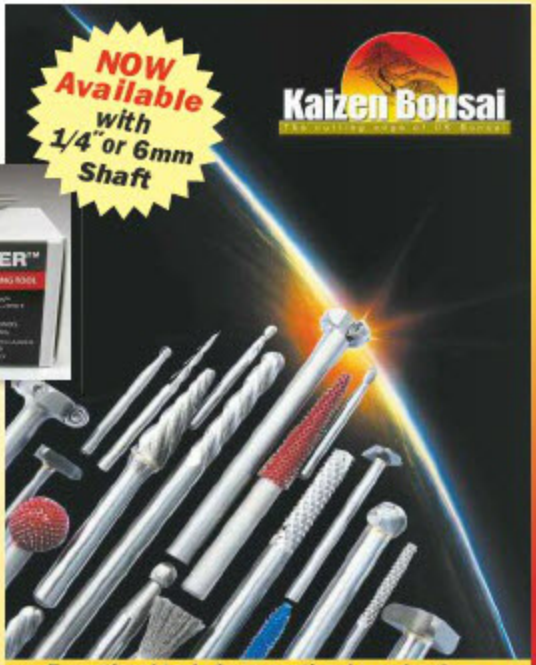

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Another expansion of the Bosch 10.8V battery platform heralds the release of this dinky but fully featured jigsaw. Does it perform as well as it looks?

Bosch GST 10.8V-Li jigsaw

£200
(£130 body only)

This compact little jigsaw has a bodygrip design, and therefore has a slider power switch rather than a variable speed trigger. The speed is controlled by the dial at the rear of the saw. The switch is on the left of the saw body, so is more suited to the right-handed user.

This slider type power switch makes it a little more difficult to control a cut. Trigger control allows you to alter the speed as you progress with lots of control, and more intricate work especially so, but you can adjust the speed as you work if necessary.

It does have good manoeuvrability though. The 230mm overall length allows the saw to swing tightly if needed, and although the body of the saw doesn't allow an all-round grip unless you a big hand, it follows the same contour as the battery pack so it's still very comfortable to hold.

Standard features

The full-sized baseplate is identical to others in the Bosch Professional range. It's an aluminium casting with a steel insert for durability and strength and comes with a clip-on plastic scratch plate. The tilting base requires a hex wrench for adjustment, with the wrench conveniently storing on the base.

Lighting-up time

Just behind the switch is a bank of LEDs that illuminate for a few seconds to show the battery status once the power is engaged, along with a small button that toggles the worklight LED on or off. The latter function would be far more useful if you could toggle it without applying the trigger, but it seems you have to switch it on once the saw is running. It does give good illumination to the work area, however.

With the three-stage pendulum action, the sawing capabilities are very good, but it won't break records for battery longevity. When pushing hard on a few thicker pieces after making some cuts in sheet material, it soon began to run out of steam. It does have good power, though; you aren't left feeling the saw is struggling in normal loading situations.

Safety cut-outs

It's useful to note that when you do push the saw too hard, or you turn a corner too tightly and put the machine under excessive strain, it has a built in safety cut-out so both the battery and motor are protected – a feature also found on the other Bosch 10.8V machines in the range.

The slider is position more favourably for a right-handed operator

A bright, switchable LED worklight is built into the saw body

There's a hex key adjustment for tilting the base by up to 45°

There's no dust blower, so dust builds up quickly around the cutting line

Coping with dust

This saw lacks the dust blower found on full-sized saws, so dust build-up around the blade is a problem. This means you either have to constantly puff away to clear it, or rely on the dust adaptor and a workshop extractor.

It does work well once an extractor is fitted, but the saw's manoeuvrability suffers once you have a large hose to contend with – much the same as most jigsaws in that respect.

Changing blades

Blade swaps are very easy. They're tool-free, as you would expect from the inventors of the fast-change SDS system, and the blade is held very securely. Apply a slight touch on the red lever and the blade slips in. The lever then slides further around the blade to lock it in securely; this is particularly effective, and you can see if it is securely fastened prior to starting any work.

A quick push on the lever ejects the blade without you having to touch it – a very handy feature if you've ever had to swap a hot blade that no longer cuts so well.

Using the saw

Although the saw has a 70mm depth of cut, it's prudent to see it more as a saw for thinner work, and it compliments the Bosch 10.8V circular saw perfectly for such work as fitting laminate or solid floors, or the trimming and fitting of decor panels and plinths in furniture and kitchen applications.

These latest saws now give the end user smaller controllable options for work that would normally demand heavier kit, and it will certainly find its niche in these areas. ***AK***

SPECIFICATION

BATTERY TYPE		2.0Ah 10.8V Li-Ion
NO-LOAD SPEED		1500-2800/min
MAX DEPTH OF CUT	wood	70mm
	steel	3mm
STROKE		18mm
PENDULUM ACTION		3-stage
WEIGHT		1.5kg

ACCESSORIES two batteries, charger, two blades, dust extraction kit, anti-splinter guard, glide shoe, L-BOXX

VERDICT

This saw is ideally suited for thinner stock and has good manoeuvrability for finer work.

PROS
- SDS quick blade change
- LED worklight
- Safety overload circuitry

CONS
- No dust blower
- Base needs hex key to tilt
- Switch better suited to right-hand use

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Bosch
- 01895 838743
- www.boschpowertools.co.uk

The saw is very easy to manoeuvre, especially when you're working in confined spaces

An clear plastic anti-splinter shoe is supplied for finer cutting

Pulling this lever allows the blade to be slipped in or ejected

When correctly fitted, the collar wraps around the blade shank

Turning tools come in all shapes and sizes, and new versions of old favourites keep appearing on the market. These two models from Henry Taylor Tools offer turners some interesting options

Little Sister mini hollowing tool

The Little Sister is the smallest version of Hamlet's Brother series of large hollowing tools, and is particularly suited to work undertaken on smaller lathes. It's made in imperial sizes. The tool has a shank 9in long and ½in in diameter, with a ⅜in cutter at the end. The shank is slightly tapered towards the cutting edge to ensure maximum rigidity. The tool can be purchased unhandled for £43, with a 10in stained beech handle for £48 or with a 12in Hamlet Multi-handle for £73. The tool we tested came with the Multi-handle.

from £43
(see text)

The tool's cutting head is well made and very easy to adjust

Avoiding dig-ins

These tools are designed for hollowing out vases and bowls (not to be confused with hollow forms), and work particularly well on wet wood. Ring tools have been around for a number of years, but they're quite difficult to use because of possible dig-ins. This tool has an adjustable cap which controls the amount of cutting edge presented to the wood, which virtually eliminates this hazard.

The cutting head is well made and easy to adjust. The DVD supplied with the tool describes clearly how to set the cutter and how to present it to the wood. It also explains how to sharpen the cutting ring to ensure an efficient cutting edge.

Handy handles

The Multi-handle design was developed for the Brother tool, but it can be used with other suitable blades from the Hamlet range. The parallel steel handle tested had a relatively soft rubber grip and was comfortable to hold. Because of its weight it was easy to control the cutting action without any vibration, and the ability to adjust the length of blade exposed is an advantage.

There are four different lengths of handle and three different bore sizes in the range, so you need to be sure to match the tool's shank to the handle. The photo shows a 9in and a 12in handle, but only the 12in one is suitable for the Little Sister blade. Having a Multi-handle and separate blades does take up less room when it comes to storage, however.

A small grumble

The blade is secured by means of two cup-point grub screws, and I was disappointed to find that these left a permanent circular deformation on the shank. This may be considered trivial, but it's annoying. The problem could be overcome by using a grub screw with a soft point tip in nylon or copper, and this wouldn't add greatly to the cost.

Using the tool

This tool works well and is up to the standard expected from the Hamlet brand (part of Henry Taylor Tools Ltd). It's quite expensive, but if you regularly turn small vases, goblets and bowls you would probably consider it a good investment. Which sort of handle you choose will be a personal choice, but if you have other Hamlet blades you would probably be interested in the Multi-handle. *IW*

The Multi-handle comes in four lengths and three bore sizes

The blade is secured by two grub screws, which marked its shank

£43.96

Elf decorating & texturing tool

The Decorating Elf was designed in the USA by William Hudson (apparently known by his friends as the Turning Elf). It has a well-shaped and finished standard beech handle with a long brass ferrule. A ball cutter, a hog bristle brush and an instructional DVD come with the tool.

The cutter has a 3mm diameter shank which slips into the ferrule and rotates freely. There is a collar 5mm long and 4mm in diameter to stop the cutter going too far into the holder. For this reason, take note that other makes of cutter won't fit!

Optional extras

In the DVD a negative-rake cove tool and a long point-tool with three facets are shown in use. These can be purchased separately unhandled and cost £15 each; they will fit into the smallest 9in Hamlet Multi-handle described in the Little Sister test opposite. However, most turners will probably already have suitable tools to carry out the procedure shown.

Time to experiment

The Decorating Elf can be used to cut patterns in end grain or on the side in fine-grain hardwoods, acrylics, bone and so on. It's an advantage to have a variable-speed lathe so different frequencies of patterns can be produced. This is a fun tool, and with perseverance and experimentation some interesting results can be achieved. You can also add a cylinder cutter and a bud cutter, each costing £7, which will produce different patterns.

Using the tool

After watching the DVD we tried out the tool on blanks of fault-free sycamore, and later experimented with English boxwood. The latter proved too hard, but the tool worked reasonably well on artificial ivory. We turned the coves first with the negative-rake coving tool, and de-burred any whiskers with the hog bristle brush. We then used the ball cutter provided to form some patterns. The decoration produced is small and delicate, almost like embossing.

You need a steady hand to push the tool into the wood; you don't move it across the surface. It's harder to use than a chatertool. We then tidied up the edges between the patterns with the point tool. Don't use abrasive on the workpiece, as it will remove the fine detail. The abrasive particles left in the wood will also blunt the cutter.

Lastly, a word of warning! This tool is ground to a very sharp point, and needs to be handled carefully or it will draw blood! *IW*

A negative-rake cove tool and a long point-tool can be bought separately

You push the tool into the wood to form the texture rather than moving it across the surface

The decoration produced by the tool is small and delicate, almost like embossing

You can also buy a cylinder cutter and a bud cutter to produce a range of different patterns

VERDICT

Both these tools are well designed and made, and are easy to use after a bit of practice.

VALUE FOR MONEY ■■■■■□

PERFORMANCE ■■■■■□

FURTHER INFORMATION

- Henry Taylor Tools
- 0114 232 1338
- www.hamletcrafttools.co.uk

A bench-mounted disc sander is a very useful piece of equipment to have in any workshop. It will finish work accurately to length and produce neat mitres, convex curves and compound angles

Axminster AWDS12H disc sander

£179.94

This Axminster sander is heavily built, mostly of iron castings. There are four adjustable feet in the base, along with holes for bolting down purposes. The motor provides adequate power, with the switch for this being located on the front of the motor housing. The disc mounts directly on the motor spindle.

Table and guarding

The table is designed so that it cannot be positioned too close to the disc; built-in stops prevent this. Generously-sized locking levers hold the table horizontally, or at any desired angle. As the table is tilted, its inner edge moves a little distance away from the disc, but there is provision for the table to be moved slightly when tilted so as to be closer to the abrasive if desired.

The rear half of the disc is guarded, so only the front part can be used. There is a lock for the disc located at the top of the machine; this is spring-loaded so that it cannot be left operative. The lower half of the disc, below the table, is also guarded with a plastic cover which serves to control the dust and incorporates an outlet at the rear.

A length of flexible hose around 450mm long is provided with the machine and allows for ready connection to the machine and a vacuum dust collector. Dust control is very important with a sander of this type, as a lot of fine dust can be generated in a short time.

Perfect for mitres

The table is slotted to carry the mitre fence. The double face of this has the faces machined to exactly 90°, and can be adjusted up to 45° left and right. The particular advantage of the double faces is when trimming mitres. Even if the faces are set not quite exactly to 45° and one face is used to trim the end part of the mitre, and the

The table tilts up to 45° and is secured with a couple of locking levers

The hose supplied connects to the dust outlet at the rear of the machine

The fence is set at 90° for basic trimming of end grain

You can easily smooth a convex outline after bandsawing it roughly to shape

other face for the second part of the mitre, then the combined angle of the two components will always be an exact right angle. This is because if one part of the joint is trimmed to marginally less than 45°, then the other part will be trimmed by exactly the same amount more than 45°.

Using the sander

What must be realised with a disc sander is that it is suitable only for trimming purposes, rather than smoothing. As well as preparing mitre joints as described above, it will trim the ends of material to any angle after having been sawn close to the line giving the length wanted. With the table tilted, and the mitre fence also adjusted, then compound angles can be readily prepared, and these of course can be accurately repeated.

One particular use of a disc sander is in trimming convex edges after they have been sawn approximately to shape on the bandsaw. The curve required must be clearly marked; then the wood is moved gently over the abrasive and kept moving slowly. This technique is quickly learnt, with only a little subsequent hand sanding needed to give excellent results.

Summing up

This disc sander from Axminster is as good as they come. Although classed by Axminster under their Hobby rating, this machine will satisfy not just the home woodworker, but most small professional shops as well who are only going to use it for a few hours a week. The double-faced fence is superb to use, making trimming mitres almost impossible to get wrong. **GW**

SPECIFICATION

MOTOR	750W
DISC DIAMETER	300mm
NO-LOAD SPEED	1420rpm
TABLE SIZE	445 x 155mm
TABLE TILT	45°
DUST EXTRACT OUTLET	63mm dia
WEIGHT	30kg

ACCESSORIES 450mm extract hose

VERDICT

This sander is very solidly built and has plenty of sanding power.

PROS
- Excellent fence
- Good table locking levers
- Self-adhesive sanding discs

CONS
- None

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

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

By tilting the table you can also tackle a curved surface which is bevelled

Use one face of the mitre fence to trim one component of a mitre joint...

...and the other face to trim the second component of the joint

The result is a perfect right-angled corner joint every time

This saw is an uprated version of the best-selling Charnwood W650 10in saw, with a more powerful motor and the addition of a sliding beam with a 1220mm length of cut, making it ideal for handling 8 x 4ft sheets

Charnwood W660 table saw

If you're on the hunt for a saw that doesn't dominate your workspace too much, the W660 will impress. It can crosscut widths up to 1225mm, so will convert a full sheet of ply across its width, but it only takes up 1460mm across its tables without accounting for the actual crosscut fence for the carriage. You can also rip up to 610mm wide with the rip fence set to the right of the blade, so it's a saw that will convert sheet stock economically no matter what the cut.

Tables and carriage

The support offered by the tables on the saw is good, and behind the blade the generous take-off table is particularly useful in offering support at the end of the cut.

The crosscut carriage sits on top of the saw, tight alongside the blade, and this is usually seen as the most accurate type of construction as it doesn't drift like an offboard carriage can.

There are jacking adjusters to get the travel exact as well, allowing the saw to be used as a precision fitting and dimensioning tool as well as a workhorse stock converter.

Cutting clear

Stock conversion as a general rip saw is powerful enough, with oak and sapele test stock dealt with at a decent rate without the saw labouring, even on a 70mm ripping cut in oak.

It's good to see Charnwood quoting maximum cutting depths rather than maximum blade projection. The crown guard sits lower than the top of the blade and the quoted maxima take this into account this, as well as allowing for tooth gullet clearance.

Blade adjustments are made with two hand wheels, and both run very smoothly, allowing easy setting of heights and bevels, complimenting the sweet running fence and carriage.

Fence performance

Many woodworkers now look for a finer and more accurate cut directly from the blade, and the saw fence is a solid affair that allows this. The aluminium fence extrusion is fitted to a solid cast iron shoe. When combined with the smooth running motor, this ensures that a fine accurate cut can be made.

£1199

There's also a fine adjuster on the fence to shave a cut by a fraction, allowing work to be fitted straight from the saw if needed. That said, it would be worth upgrading the supplied blade if you are aiming more in this direction, as this is a general-purpose one.

Even so, a few compound mitre cuts on the oak gave very decent results. The intersection between the cuts was crisp for a tight joint, but with some breakout on the exit side of the cut.

The carriage slides away to give good access for changing the blade

There's a micro adjuster on the fence to allow you to fine-tune the cut

Blade adjustments are easily made thanks to smooth-running wheels

You can adjust the outrigger to level up the squaring table

A range of cuts

Any such compound work or subsequent repeat work is where the crosscut carriage comes into its own, and with the pair of crosscut fences supplied you can work short or long stock accordingly.

Both fences can be set for angled cuts, and both have flip stops for repeat work. On the shorter fence you can make repeat cuts up to 560mm long, while the longer fence has a capacity of 1020mm using the stop. The shorter fence locks into the T-slot on the aluminium carriage and has a hold-down post to secure the work.

The longer fence fits to the 600 x 460mm steel outrigger frame, and is secured with a Bristol lever from the underside. There are also offset cam studs to set the fence position accurately at 90°.

A minor grumble

The model tested had no scales on the outrigger to indicate angles, nor were there any tape scales on the mitre fences, although there is a facility on the longer fence for a tape to be located. It was a new 'demo' machine, however, so this is likely to be included as part of the package as the rip fence arm has a similar extrusion with the scale fitted.

Summing up

All this makes the Charnwood a very decent saw for the price. While there are a couple of budget-based adjustment knobs as per usual on machines coming in at the lower end of the spectrum, these are still better than many I've seen. Overall, this saw is definitely worth looking at if it's within your price band. ***AK***

SPECIFICATION

MOTOR		2200W
BLADE DIAMETER		254mm
NO-LOAD SPEED		4000rpm
TABLE SIZE		650 x 620mm
SUPPORT TABLE SIZE		450 x 350mm
MAX RIPPING WIDTH		610mm with fence
MAX CROSSCUTTING WIDTH		1225mm
MAX DEPTH OF CUT	at 90°	75mm
	at 45°	45mm
WEIGHT		170kg

VERDICT

This is a solidly built saw with easy adjustments, and is relatively compact for its capacities.

PROS
- Good cutting capacities
- Accurate carriage
- Micro-adjustable fence

CONS
- No scale on carriage fence
- Carriage fence adjustment can be sticky

VALUE FOR MONEY

PERFORMANCE

FURTHER INFORMATION

- Charnwood
- 01530 516926
- www.charnwood.net

There's a useful workpiece clamping shoe fitted to the smaller mitre fence

The squaring frame can be repositioned on the carriage to suit the cut being made

You can get the carriage accurately aligned with these jacking bolts

The carriage runs very smoothly on bearings in a sturdy support bed

£484.94

At first glance this looks like a basic hand-fed benchtop mortiser. However, although it's quite expensive it's very well constructed and has some unique features

Jet 701 benchtop mortiser

Hand-fed mortisers don't have front cramps, so you normally have to use a lot of thumb pressure to hold the work against the back fence. To counteract this the Jet has a couple of wheels on the table that you butt up to the work to allow you to slide it through easily without having to grip the work to the fence.

It would be beneficial to dress the fence and table with a paste wax to keep things moving freely. Although there was a little resistance if the wheels were pushed in too tightly, once the sweet spot was found the resulting action past the chisel is excellent.

The wheels are rubber-tyred, so you can apply light enough pressure to keep the work snug while still allowing free movement, and with a locking knob on each wheel, it's a tool-free set-up.

Holding the work

The two-prong hold-down fork sits over a threaded post, but it's a slip fit so it moves freely up and down on it without engaging the threads and is secured over the work with a side knob.

The threading on the post is simply to allow the winder knob to sit tightly to the top of the fork to retain the setting, allowing the work to lift as you extract the chisel and, on a smooth post, begin to lift the fork with it. With the rollers nipping the work to the back fence, this combination keeps the work aligned accurately.

A couple of cam levers hold the back fence setting within the T-slot slides. It's adjusted with a rack-and-pinion action using the large hand knobs, or by simply pushing or pulling it to the rough setting and fine-tuning the position with the knobs.

Extra features

A couple of built-in setting shims position the chisel correctly. Each is a couple of millimetres thick, allowing you to set additional clearance on the chisel if the timber is resinous or makes bigger chips that could clog the chisel.

For left-handers, it takes just seconds to switch the handle to the other side. Once in place, the retaining knob compresses a spring below it and this also allows the handle to be pulled away from the spline and rotated to alter the position to suit the operator or to set the position to suit different timber thicknesses.

These rollers are pushed against the work to hold it securely to the fence

The heavy-duty hold-down fork is secured in place with a locking knob

A rack-and-pinion knob sets the back fence position. Once set, it's held with twin cam levers

The mortiser comes with additional collars for common-sized chisels

Using the machine

The capacity is limited to working stock 110mm deep – not the biggest, but more than adequate for general joinery applications such as door stiles.

The head travel is a combination of a heavy-duty rack-and-pinion rise-and-fall mechanism and a gas strut to counteract the weight. It works well.

Below the mortise head is a full-width stop that can be used to restrict the travel and set the depth of the mortise for blind or haunch work. Again, this works very well and you can use packers or shims to set a specific depth, but it doesn't have the dexterity of a swing-out flip stop and has to be backed off or set each time you need a different setting.

Summing up

Like any cutting machine, there's a need to fit a decent cutting tool to get the best from it. Doing this certainly complimented the overall quality of this mortiser perfectly, knocking out hardwood and softwood through-mortises without any strain on the machine.

The final touch is novel. A diamond-coated cone sits at the back of the column, and can be used to quickly ream the inside of the chisels prior to going to work.

These features certainly lift this basic mortiser above the rest. Your choice rests on whether you can live with a hand-fed, very solid and well-constructed machine that would work in a trade environment over a budget model with rack-and-pinion lateral table movement that cuts a few corners to hit a similar price band. ***AK***

SPECIFICATION

MOTOR	550W
MAX CHISEL CAPACITY	19mm
CHISEL COLLARS SUPPLIED	¼, ⅜ & ²¹⁄₃₂in
CHISEL STROKE	140mm
MAX WORKPIECE HEIGHT	110mm
MAX DISTANCE CHISEL TO FENCE	110mm
WEIGHT	42kg

ACCESSORIES 13mm drill chuck, long chuck key, tool tray and sharpening cone

VERDICT

This hand-fed benchtop mortiser is very solid and well constructed, with some useful features.

PROS
- Clever table rollers and hold-down
- Bit sharpener
- Left- or right-hand handle

CONS
- Limited to 110mm-deep stock
- Rather basic for the price

VALUE FOR MONEY ■■■■■□

PERFORMANCE ■■■■■□

FURTHER INFORMATION

- Brimarc
- 03332 406967
- www.brimarc.com

The guide rollers help to produce clean, square and parallel-sided mortises

These built-in spacers slide under the collar to set the chisel correctly

The auger is retained in the usual way, held in a three-jaw chuck

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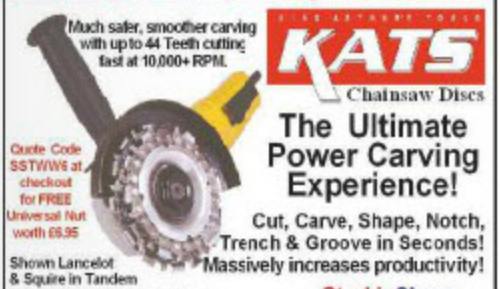

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In your own write...

Here are just a few of the latest letters we've received since the last issue. Drop us a line on paper or via screen and keyboard to add your voice to the woodworking crowd; you might be one of the lucky few who will manage to get their hands on a coveted Woodworker badge!

SNAIL MAIL OR EMAIL?

You can write to us at, The Woodworker, MyTime Media Ltd, Enterprise House, Enterprise Way, Edenbridge, Kent, TN8 6HF or send an email to mark.cass@mytimemedia.com

PLANS IN THE PIPELINE

Dear Mark
I read with great interest the two articles in the August and September issues of *The Woodworker* by Paul Batho about building a wooden clock. It's the first time I've purchased the magazine, although I love to dabble with wood and frequently lock myself in my shed to make a fresh load of rocking-horse manure. I was, however, a bit disappointed that no information was given as to how Paul obtained the plans to build it, or if he would sell full-size clock gear plans to anyone who'd like to have a go. I hope that you'll be able to talk him into giving details of the plans. Many thanks for your time.
Mark Feltham-Rickard

This is one of those increasingly common instances where I've been forgetful and confused. In a strange twist of coincidence, two articles on making cog-driven timepieces recently appeared in my inbox, both of them from Germany. It was clear that there was plenty of scope for a mix-up between them, and that's exactly what happened.

Both projects were worthy of publication, but what gives the second of them the edge are the plans and construction details attached. So the bottom line is that the next instalment of wooden clock-making will shortly appear in The Woodworker, *but this time with some actual constructional data to assist any reader in having a go themselves. My apologies!*

FINDING GOOD WOOD

Hi Mark,
I'm not the lucky winner of a super workbench, despite entering all the competitions in *The Woodworker* to date, but I won't give up and will keep on plugging away! That's not why I've written, though. When your talented woodworkers send in their pictures, could you please ask them to reveal where they get their beautiful straight-grained knot-free timber… and possibly the price they paid too?

I read our magazine avidly these days since recovering from a stroke. I'm glad to say I can still manage a bit of fretwork and hope to do more. Keep up the good work.
Ken Hyde, Hereford

Thanks for your comments, Ken. Most of the letters we get from prizewinners start in the same way as yours: 'I've never won anything before…' so keep on sending in those entries! One day…

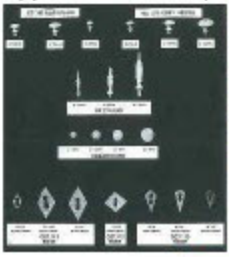
Purchasing timber has something of the luck about it. You need to be at the right yard at the right time, and have the patience to wait for the good stuff if it isn't there on the day. I've often had to return home empty-handed after searching in vain for some specific boards I needed.

If you have a good relationship with your local supplier, they may alert you to times when they have some new stock in, but mostly you just need to be a frequent visitor and to buy the good stuff when you see it. Remember that you don't need to buy a huge amount of spare stuff; the areas of 'show wood' on any workpiece are often quite small, and it's easier than you think to get a good result with a bit of judicious placement.

A MYSTERY PARCEL

I've recently received this selection of photos from a reader, along with a dimensioned drawing of a mid-18th century oak chest signed 'Cym'. Also present in my mystery parcel was this copy of a 1969 catalogue page showing cabinet fittings in real ivory and bone, plus an interesting article on early Victorian turned boxes and containers for string. If anyone can shed any light on these items, I'll happily follow them up for the enlightenment of all our readers.

Please keep those letters and emails coming in. I particularly enjoy the tales of work in the past.



Mitres and their making

The mitre is a cruelly misunderstood joint, frequently abused and more often than not ineffectually executed. But it needn't be like that...

On the face of it, the joint seems so easy (or at least straightforward) to make, but theory is one thing and practice another. And not only does it have to be cut correctly, but somehow it needs to stay that way – not always easy when dealing with softwoods and central heating...

In the old days

This page, taken from *The Woodworker* of September 1934, shows some shop-made aids and jigs which generations of joiners have employed over the years. It's very likely that one or more of these would have been pressed into service during the construction of every one of those elaborate and decorative interiors that still grace a good number of UK chemists and dispensary shops. Nearly always in mahogany, the standard of work – and the obvious time that went into producing it – is a clear indication of the worth of such a retail service to a town, and their longevity is a surprising bonus for all aficionados of fine shop fitting.

A tight mitre joint is a very pleasing thing to pull off – a job made hugely easier these days by accurate machines and power tools. It's easy to forget just how much skill and effort was involved back in the days when everything had to be done by hand.

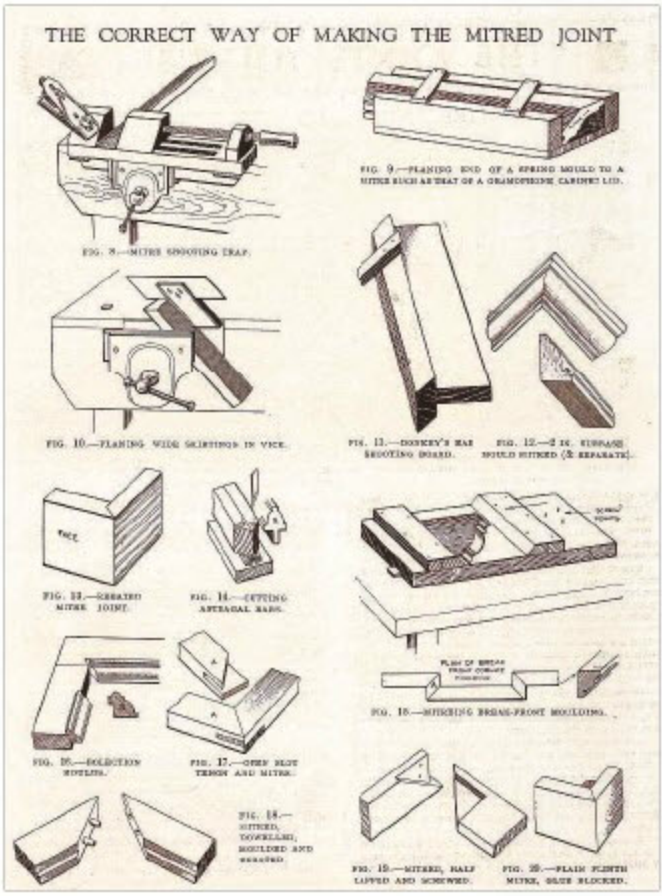
Learning curve

My own experience of shooting boards is disappointingly small. Having started in the construction business in the early 1960s, I went straight into a workshop with a pull-out mitre saw, and so had nothing to do with (nor in fact any knowledge of) shooting boards, traps or donkey's ears.

Soon afterwards I went in with my pal Paulo, who was skilled enough to cut and plane a tidy mitre by hand, and after that came the ever dependable chop saw (it really pays to make sure that the blade is sharp). It's only been in the last ten years or so that I've really started to achieve constantly respectable hand-cut mitres in any situation. About time really...

Lost and found

There are some great examples of mitres and aids illustrated here. I'm particularly impressed with the break-front cornice board as those short inner lengths can be very troublesome, even more so if it's a crown moulding (or 'spring' in 1934 parlance). I've found the open-slot tenon and mitre to be a good one for combatting shrinkage and opening problems, but have yet to find a good reason to employ the rebated mitre joint.



If anyone regularly uses any of these mitre aids I'd love to hear what they've got to say about them, so get in touch and we 'mitres' well make a joint venture out of it!

Mark

More from The Woodworker archive next month...

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