Issue 313

Good woodworking

www.getwoodworking.com

The No.1 magazine for aspiring designer makers

WIN! MAKE A PIECE OF FURNITURE & BE IN WITH THE CHANCE OF WINNING 1 OF 3 FANTASTIC PRIZES

WITH 60 YEARS FELDER

PIPE MASTER

THE GENIUS THAT IS TOM ELTANG

SUSTAINABLE CHRISTMAS TREE

CELEBRATE NATURALLY & RESPONSIBLY WITH AN ECO-FRIENDLY 'HABITREE'

WIN! A BOSCH PROFESSIONAL SANDING BUNDLE WORTH OVER £325

PLUS...

- Make your own Generation Weil Chair
- Les Thorne reports from Wizardry in Wood 2016
- We go inside Oliver Renison's 'Shed of Dreams'

mytimegroup WOODWORKING GROUP
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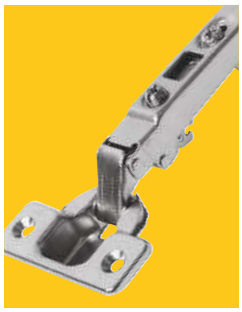

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FOLLOW US ON

*'Happy Christmas from **Good Woodworking** magazine!'*

Welcome

It's December and, much to my disbelief and I'm sure many of yours, Christmas will soon be upon us. I know quite a few of you will be making presents with your own fair hands, which I think is incredibly admirable. I've loved seeing the photos you've sent in of what you'll be making for friends and family and I think this is such a brilliant idea – after all, who wouldn't want to receive a hand-made gift? It's so easy to do your Christmas shopping online these days and not really put a great deal of thought into what you're buying for your loved ones, but a personalised and unique offering really does make the recipient feel very special indeed, not to mention making a welcome change from the usual pair of festive socks!

Sustainable trees

Still on the Christmas theme, I have to say that I'm a massive fan of the Habitree, which is this month's Centrefold (see **pages 46-47**). I hate to think of how many Christmas trees are thrown away in January after they've lost all their needles and are no longer of any use to anyone, and are either dumped outside people's houses or added to the never-ending pile of discarded trees destined for local recycling centres. A reusable and sustainable alternative is a great idea, and this one is especially suited to the eco-conscious woodworker, as well as anyone who is a fan of Scandinavian design. They look great and the fact you're helping to do your bit for the environment is an even better reason to consider an alternative. It's not too late to order yours in time for the festive season – see **www.habitree.dk.** There's even three different designs to choose from in two wood varieties – happy holidays indeed!

Series ideas

*GW*312 saw the last of Michael Huntley's 'Musings' but I'm glad to say that he's back this month with a look through his extensive woodworking archives until we can find a suitable replacement. If any of you fancy taking over this mantle and have any ideas for a new series for 2017 or something you'd particularly like to share, then I'd love to hear from you. I'm open to suggestions as always, so please email me here: **tegan.foley@mytimemedia.com** if you would like to be our new back page author.

Could you be a finalist?

The closing date for our Felder competition is looming, so if you haven't already, then please do start sending in photos and a description of how your chosen piece of furniture was made to ensure you're in with a chance of winning one of the three fantastic prizes on offer. The closing date is 17 February 2017, so if you're in the middle of a build or are nearing the final stages, then please do make sure that it will be completed and submitted to me with ample time. The judging ceremony will take place on 17 March and five lucky entrants will be chosen to attend. Out of the five finalists, three will be awarded either first, second or third place, with the prizes on offer being worth a combined total of over £4,000. It's not too late to get making, so see **page 54** for more details. Good luck and happy Christmas to all of our readers!

Tegan

Email tegan.foley@mytimemedia.com

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Consultant Editor

We endeavour to ensure all techniques shown in Good Woodworking are safe, but take no responsibility for readers' actions. Take care when woodworking and always use guards, goggles, masks, hold-down devices and ear protection, and above all, plenty of common sense. Do remember to enjoy yourself, though

80

Art, beauty, skill & mystery

Taking a break from his usual turning projects, Les Thorne reports from the much anticipated Wizardry in Wood 2016 exhibition, and shares his experiences of the many wonderful things he saw

WIN!

A **BOSCH PROFESSIONAL SANDING BUNDLE** WORTH OVER **£325**

One lucky reader could be in with the chance of winning a **Bosch GEX 125-150 AVE Professional random orbit sander** & **M480 abrasives selection pack** – see **page 30** to find out more

60 YEARS FELDER

To celebrate their 60th anniversary, Felder are running a fantastic competition in conjunction with *Good Woodworking* and *The Woodworker* magazines to find three of the best furniture makers across the UK – there's also some fantastic prizes up for grabs. See **page 54** for further details

Good woodworking
December 313
• TOOLS • PROJECTS • TECHNIQUES • ADVICE

PROJECTS

TECHNICAL

PEOPLE & PLACES

TESTS

YOUR FAVOURITES

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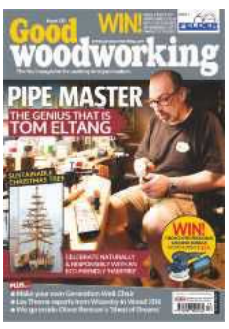

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CTS10D	1500W	254mm	£169.98	£203.98

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CBS1-5

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CDE7B	750W	850 M3/h	114Ltrs	£149.98	£179.98

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BOSCH Power Tools

Clarke CONTRACTOR

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PSR18

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Bosch PSR18	18V	1	£54.99	£65.99
CON18Ni	18V	2 x Ni-Cd	£69.98	£83.98
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7/250	2 HP	7	24ltr	£94.99	£113.99
11/250	2.5HP	9.5	24ltr	£109.98	£131.98
8/510	2HP	7.5	50ltr	£119.98	£143.98
11/510	2.5HP	9.5	50ltr	£139.98	£167.98
16/510*	3 HP	14.5	50ltr	£209.00	£250.80
16/1010*	3 HP	14.5	100ltr	£259.98	£311.98

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CS4-8

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CEP1

BLACK & DECKER

- 82mm cutting width

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was £69.59 inc.VAT

MODEL	MOTOR	DEPTH OF CUT	EXC.VAT	INC.VAT
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Einhell TE-PL850	850W	3mm	£49.98	£59.98
B&D KW750K - GB	750W#	2mm	£54.99	£65.99

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CVAC20SS*	1400W	16/12ltr	£59.98	£71.98
CVAC20PR2	1400W	16/12ltr	£62.99	£75.59
CVAC25SS*	1400W	19/17ltr	£67.99	£81.59
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CCT48	Cordless 4.8V Ni-MH	22/18	£28.99	£34.79
CESNG2	Electric	18/18	£39.98	£47.98
CONSN18LiB	Cordless 18v Lithium-Ion	18/18	£114.99	£137.99
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MODEL	SHEET SIZE	MOTOR	EXC.VAT	INC.VAT
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CON300	230X115mm	330W	£34.99	£41.99

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- Powerful, bench mounted disc sander • 900W
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CDS300B

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CON185*	1600W	60/40	£59.98	£71.98
CCS2	1300W	60/45	£59.98	£71.98

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CPT250

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CONVERT 230V 1PH TO 400V 3PH

MODEL	MAX. MOTOR HP	FUSE	EXC.VAT	INC.VAT
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PC40	3.5HP	20Amps	£269.00	£322.80
PC60	5.5HP	32Amps	£319.00	£382.80

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Clarke • Ideal for surface removal, sanding and finishing

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MODEL	MOTOR	M/MIN	EXC.VAT	INC.VAT
Clarke BS1	900W	380	£34.99	£41.99
Clarke CBS2	1200W	480	£76.99	£92.39
Makita 9911*	650W	75-270	£89.98	£107.98

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- 450W motor • 2000rpm spindle speed
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- Inc. sleeves, drum and belt

NEW

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COEBS1

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Evolution Fury 3-B	210/25.4	50/120mm	£57.99	£69.59
Einhell TC-SM2131#	210/30	62/310mm	£119.98	£143.98
Einhell SM2534‡	250/30	75/340mm	£159.98	£191.98

Laser Guide ‡ Sliding Compound

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DEVIL 7003

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DEVIL 7003	230V	3	£59.98	£71.98
DEVIL 6005	400V	2.5-5	£74.99	£89.99
DEVIL 7005	400V	5	£84.99	£101.99
DEVIL 6009	400V	4.5-9	£119.00	£142.80
DEVIL 7009	400V	9	£139.98	£167.98
DEVIL 6015	400V	5-10-15	£179.00	£214.80
DEVIL 7015	400V	15	£199.98	£239.98
DEVIL 6025	400V	22	£289.00	£346.80
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Devil 2100 NEW	49.8	£259.00	£310.80

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CBS350	340mm/14"	225mm	160mm	£479.00	£574.80

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CDP102B	350 / 5	£79.98	£95.98
CDP152B	450 / 12	£134.99	£161.99
CDP202B	450 / 16	£179.98	£215.98
CDP10B	370 / 12	£194.99	£233.99
CDP352F	550 / 16	£219.00	£262.80
CDP502F1100 / 12		£499.00	£598.80

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BELT SIZE	MOTOR	(mm)	EXC.VAT	INC.VAT
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*DIY #Professional

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Clarke CON750#	750W	80/10mm	£27.99	£33.59
Bosch PST700E*	500W	70/4mm	£44.99	£53.99

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CR1C

*DIY

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Bosch POF1400ACE	1400	0-55	£79.98	£95.98
CR2	2100	0-60	£119.98	£143.98

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CBG6RSC	HD	150mm	£54.99	£65.99
CBG6SB#	PRO	150mm	£54.99	£65.99
CBG6RWC	HD	150mm	£59.98	£71.98
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MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
CSS400B	85W	1450	£79.98	£95.98
CSS16VB	90W	550-1600	£89.98	£107.98
CSS400C	90W	550-1600	£109.98	£131.98

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Get starry DIY'd with Dremel this Christmas

Whether it's for yourself, or as a gift for the craft, DIY or hobby enthusiast in your life, Dremel's new Christmas kits are the perfect way to create a sparkle in any tool fanatic's eye this festive season.

New for this year, the 3000 Multi-Tool itself features an innovative EZ Twist Nose Cap, making it the most user-friendly option yet. With a simple twist action, the functionality of the tool can be changed within seconds, without the need for a wrench. This versatility makes the tool perfect for a variety of detailed tasks, projects and applications.

Each kit includes a different selection of add-ons, offering users a bundle for every level of expertise. What's more, every package comes with a unique EZ wrap storage solution, allowing users to quickly and safely tidy away their tools and accessories.

3 Star Multi-Tool Christmas kit

Perfect for those looking for an introductory bundle, the 3 Star package features a unique, EZ Wrap Tool Holder, allowing the user to wrap the tool cord for easy storage. The kit includes a mandrel screw, 13mm sanding band & mandrel, 9.5mm aluminium oxide grinding stone and 32mm cut-off drills, making it a great starter package. **Priced from £39.99**.

4 Star Multi-Tool Christmas kit

For the intermediate enthusiast, the 4 Star package offers increased versatility with three Dremel attachments. The line and circle cutter allows users to create perfect holes and easily perform straight cuts, while the multi-purpose cutting kit is suitable for providing controlled cutting in a variety of different materials. Users can also perform precise, detailed work in hard-to-reach areas with the flexible shaft attachment. Offering further versatility, the kit includes a range of 55 high quality accessories, including EZ SpeedClic, which allows the user to tackle a wide range of applications quickly and effectively. **Priced from £79.99**.

5 Star Multi-Tool Christmas kit

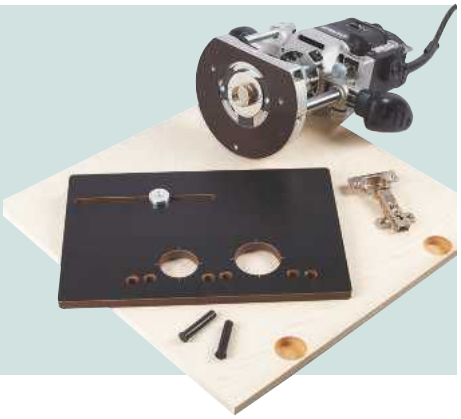
The 5 Star bundle is perfect for even the most experienced DIY, hobby and craft fanatic. Five versatile attachments are included alongside the Dremel 3000, enabling the user to tackle any challenge. As well as a line and circle cutter, multi-purpose cutting kit and flexible shaft attachment, the expansive kit also includes a detailer's grip to offer increased control, as well as a shaping platform, which enables users to sand and grind at both 45 and 90° angles. On top of this, 75 high quality accessories accompany the Multi-Tool, increasing versatility and enabling the user to complete a multitude of tasks. Presented in a robust aluminium tool box and **priced from £99.99**.

Share your work

Aimed at showcasing users' skills, each kit also includes a chessboard and pieces, enabling enthusiasts to use their Dremel Multi-Tool to create a customised set. Once complete, users can share their unique creations online for a chance to win exclusive Dremel prizes. For further information on the kits, where to buy, videos on how to use the tools and ideas and project inspiration, visit **www.dremel.co.uk**.

Trend Cabinet Door Hinge routing template

Trend is excited to introduce a new Cabinet Door Hinge routing template. The template allows a plunge router to create a 26mm or 35mm diameter blind hole recess, for a circular cabinet door hinge. The hard-wearing 12mm-thick high-pressure laminate template has an adjustable alloy edge guide for adjustment of recess position from top or bottom of the door, which can be removed for a middle hinge recess. Pin guides allow for 3mm and 5mm location holes to accurately position the recesses relative to the edge of the door, and are reversible for left- and right-hand doors and engraved centre sight lines allow for ease of positioning. The Cabinet Door Hinge Template is priced at £71.93 and is available from all Trend Routing Centres; see **www.trend-uk.com** for more info.



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New Axminster Trade Series extractor

For either mobile or static use, the CT-90HCK Trade Series extractor from Axminster Tools & Machinery is a thoroughly modern design of dust extractor. The excellent performance comes from careful matching of the motor, impeller and housing, resulting in a quietly efficient machine able to extract chips and medium-sized dust from all machinery found in a typical large trade workshop.

This extractor is suitable for connection to a 200mm ducting system; alternatively, the twin 150mm connections can be used for direct fitting onto a machine. An alloy impeller is fitted to reduce the risk of sparks and the extra large cartridge filters have a rating of 1 micron at 100% capture rate. Large capacity plastic waste sacks and quick-release straps are included and a comfortable tubular handle, steel rear wheels and two pairs of castor wheels are provided for easy mobility.

The cartridge filters increase the potential use of this machine to include sanders as well as the normal range of saws, planers, and so on. With the top-mounted crank handles, the filters are easy to keep clean; the extra large filter surface area means that the general airflow is not reduced. Overall, this is a fine, modern extractor suitable for any trade workshop. Hose not supplied and a 16A supply will be required; currently priced at £899.96, see **www.axminster.co.uk** for more info.

IBC/Andy King Striking Knives

Jointly developed by IBC and our very own Andy King, the regular striking knife is ideally suited to general layout work and the marking of shoulder lines, while the precision striking knife is ideally suited to the marking of dovetail joints. Once struck, the marked line is used as a register for the chisel or saw to ensure the cutting of accurate joints.

Both knives feature a finely machined arrow head blade made from IBC's unique high vanadium AISI A2 tool steel. A single sided dual 25° bevel angled at 55° makes them ideal for left- or right-handed use. The blades are hardened to 58-60 HRC with a double temper and cryogenically treated to ensure the ultimate in edge retention.

The handles are turned to an ergonomic profile from selected American black walnut that offers the user excellent control and comfort, then fitted with a stainless steel ferrule to bolster the connection between the blade and socket.

All in all, one of the finest striking knives currently available with the quality of an heirloom tool but without the price tag. Priced at £22.99, see **www.classichandtools.com** to order yours now.

Johnson Tools introduce Rotarex professional woodworking discs

Johnson Tools have recently been announced sole distributor of the fantastic range of Rotarex professional woodworking angle grinder discs. There are currently four discs available in the range that cover a whole spectrum of applications, such as cutting, carving, shaping, planing and milling in a host of materials. Every Rotarex disc is precision manufactured in Europe from high carbon steel, vacuum tempered for strength and then surface treated with the Rotarex Black Mamba coating for added durability, cooler running and corrosion protection. Each disc is designed to work safely with any 115mm angle grinder and each is fully CE certified.

Rotarex RC 115mm Pro-Carving Disc

This disc allows any 115mm angle grinder to be utilised as an effective carving machine. It features six alternating teeth, each followed by a limiter that regulates the cut and virtually eliminates the threat of kickback. Precision manufactured from stainless steel and hand sharpened to a razor edge.

Rotarex R2 115mm Shaping Disc

The R2 Shaping disc features hundreds of easy-cut teeth that remove material in a quick and controllable manner. Ideal for many a shaping task and built to last.

Rotarex R4 115mm Universal Disc

The R4 Universal disc allows you to cut and shape, all with one disc.

Rotarex RX 90mm Shaping Disc

The RX Shaping disc is ideal for renovators, timber framers and general shaping.

The complete range of Rotarex professional discs are priced at £29.99, but Johnson Tools are running a nationwide promotion through participating retailers this autumn and winter with the discs on sale for just £19.99. For more information and to locate your nearest stockist, see **www.johnsontools.co.uk**.

Makita launches DTD170 impact driver

Makita has introduced a new operating mode with the launch of the latest 18V Brushless motor impact driver. The new Makita DTD170 impact driver is technically a six-function impact driver, with four speeds and matched impact power. T-Mode is used for tightening self-drilling Tek screws and the new A-Mode (Assist mode) which, when selected, starts the rotation slowly allowing maximum control of the screw as it starts to bite into the material. Once the impact driver detects the screw tightening it switches to full speed and full impact power to complete the tightening sequence. The A-Mode is designed to eliminate 'screw cam-out' and 'cross threading' caused by high speed rotation before the screw bites in the material.

The new Makita DTD170 generates a massive 175Nm maximum tightening torque with four impact speeds and power stages ranging from soft setting of 1,100rpm and 1,100ipm, through medium and hard setting levels up to a maximum of 3,600rpm and 3,800ipm. This impact driver also handles high strength bolts up to M14 and 22 × 125mm coarse thread screws.

In line with all new Makita tools the performance increases while the overall size of the machines decreases. The new top-of-the-range Makita DTD170 impact driver has a compact overall body length of just 117mm and weighs only 1.5kg.

Two further replacement models are introduced to Makita's impact driver range: the DTD153 single-speed driver produces 170Nm of torque, 3,600ipm and runs up to 3,400rpm while the DTD154 three-speed model also has the T-mode for self-drilling screws. All three machines have Brushless motors; ¼in hex; one-touch bit chuck; an electric brake; variable-speed control trigger; LED job light with pre-glow and after-glow, and ergonomically designed soft grip handle. To find out more, see **www.makitauk.com**.

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December
1* & **13** Pen making
4–5 Bowls & platters
4–5 Introduction to milling
5 Pyrography – Ben Beddows
6–7 Introduction to the small lathe*
7–8 Beginners' woodturning (2 days)
8 & **15*** Scrollsaw course
8–9 Christmas decorations & gifts (2 days)
9* Sharpening with Tormek Woodturning
14 Taster session

* Course held in Sittingbourne, Kent
Axminster Tools & Machinery
Unit 10 Weycroft Avenue
Axminster, Devon EX13 5PH
Tel: 08009 751 905
Web: www.axminster.co.uk

2–5 Make simple furniture
2–5 Woodcarving – a creative exploration
6 Greenwood spoon carving – a taster day
8 & **9** Woodturning – make a small bowl

West Dean College
West Dean, near Chichester
West Sussex PO18 0QZ
Tel: 01243 811 301
Web: www.westdean.org.uk

5–9 Router skills
28 Half-day marquetry taster
29 Half-day woodwork taster

Chris Tribe, The Cornmill, Railway Road
Ilkley, West Yorkshire LS29 8HT
Tel: 01943 602 836
Web: www.christribefurniturecourses.com

3–4 Antique furniture care & repairs
12–16 Skills week – sharpening & essential cabinetmaking hand skills

John Lloyd Fine Furniture
Bankside Farm, Ditchling Common
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Tel: 01444 480 388
Web: www.johnlloydfinefurniture.co.uk

3 Willow wreath for Christmas

Weald & Downland Open Air Museum
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Web: www.wealddown.co.uk

11 Introduction to woodcarving

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Pro comfort Screwdrivers

This new range of Pro Comfort Screwdrivers from IRWIN Tools features a unique distinctive handle designed especially for an enhanced ergonomic grip, giving added comfort, performance and efficiency. They are available in a core range, covering the most popular tip types and sizes, including Phillips, Slotted, Pozidriv, Torx and Parallel heads.

Available to purchase individually or as part of 10-, nine- and six-piece sets, each screwdriver features a dual material (polypropylene and rubber) covered trilobular handle for an ergonomic grip; Chrome-Vanadium (Cr-V) steel shaft with corrosion protection; a black phosphate finished magnetic tip for improved alignment, easy driving and extended life; a Hex bolster, which allows for increased torque when using with a wrench, and there is also a Magnetiser/demagnetiser accessory available.

This new range of Pro Comfort Screwdrivers and VDE Insulated Screwdrivers, for electrical work up to 1,000V AC, are available at leading tool stockists. Prices start from £2.82 per screwdriver; see **www.irwin.co.uk** to find out more.

Keep your workshop warm with a Dimplex

Dimplex has just launched the DXTT3 Pro Series Twin Turbo Ceramic Workshop Fan Heater with a unique design that frees up workspace while delivering safe, comfortable heat for chilly workshops and garages.

With its eye-catching twin fan design and robust steel case, the DXTT3 Twin Turbo is a compact, portable electric fan heater that can be used freestanding or wall-mounted to save floor space in a packed workshop. The heater provides a powerful 3kW of heat, which can be directed where you want it most with an adjustable 30° 'tilt' mechanism. The built-in room thermostat ensures the heater is energy efficient, providing a cost-effective and comfortable working temperature.

Operating in workshop environments is no problem as the DXTT3 comes with a built-in filter combined with dual Positive Temperature Coefficient (PTC) elements. This enables heat output to automatically reduce if the filter becomes blocked – reducing overheating and high-temperature cut-out, ensuring hot or cold air remains running even in a dusty workshop. The integral tip switch ensures further safety, cutting power should the heater be accidentally knocked over.

Compact and lightweight, the DXTT3 measures 470 × 290 × 280mm and is priced at £105 RRP; see **www.dimplex.co.uk** to find out more.

Hitachi launches super fast UC18YSL3 18V battery charger

Hitachi Power Tools has launched its super fast UC18YSL3 18V battery charger, which can fully charge a powerful 6.0Ah Lithium-ion battery in just 38 minutes. One of the fastest battery chargers available for power tools to date in the UK, the launch of the UC18YSL3 means that by taking two 6.0Ah batteries on site, one for use on an 18V power tool and one being charged by the UC18YSL3 on rotation, you will never be without cordless battery power.

The UC18YSL3 charger is compatible with all Hitachi slide Li-ion batteries, including 1.5Ah (15 minutes), 2.0Ah (20 minutes), 3.0Ah (20 minutes), 4.0Ah (26 minutes), 5.0Ah (32 minutes) and 6.0Ah (38 minutes). To add even more convenience and value to the UC18YSL3, Hitachi has also included a USB port so that the all-important mobile phone can be charged at the same time. The UC18YSL3 is also compatible with engine generators, can charge at low temperatures from -10°C and features a high visibility charge indicator. For more details, see **www.hitachi-powertools.co.uk**.

OFFCUTS

Trend Machinery and Cutting Tools Ltd are pleased to announce the launch of their official Instagram page. Head of Marketing, Luke Hulley, comments: "We have seen our Facebook page rise significantly over the last 18 months and we are always looking at other ways to engage with our customers. Trend's new Instagram page will share photos and videos and we look forward to using this platform to communicate with our valued customers." BBC Young Carpenter of the year, Tibby Singh, will also be sharing tips via the new page. He adds: "I'm delighted to support Trend's Instagram page; I look forward to sharing my work and any handy tips I can come up with to help fellow woodworkers." To follow the page, visit **www.instagram.com** and search for **@trendrouting**

Taking place from 10–11 December, Wonderworks brings together craftspeople of distinction under one roof at Chagford's Jubilee Hall in Devon to showcase their beautiful hand-made creations. 27 craftspeople will be exhibiting a range of crafts at the show, and you can also try your hand at craft making. Make your own Christmas decoration to take home, with a donation from each creation going to the Exeter-based Juvenile Diabetes Research Foundation (JDRF). To find out more, visit **www.wonderworkscraft.com**

Toolite will be holding their in-store show from 2–3 December, so do pop along and check out some exclusive show deals from the likes of Charnwood Machinery plus a number of other leading woodworking brands. Expect to see an extensive range of power and hand tools, all under one roof, and the event also benefits from free entry and parking. See **www.toolite.org.uk** for more info

TrigJig: coving made easy

As any professional plasterer, joiner or keen DIY-er knows, installing coving or skirting board in old, irregular houses is an awkward job, especially if you're out to get a precise, high-quality finish. Or at least it was an awkward job before TrigJig, a British-designed tool that makes the perfect finish quick and easy – and it fits in the palm of your hand.

With a TrigJig and just a hand saw, any tradesman can be sure to get a perfect fit for coving and skirting boards every time. It's a simple solution to a complex, age-old problem.

The TrigJig is robust, finished in stainless steel and comes with a three-year guarantee. It's simple, convenient, durable and dependable – it really is built to last. To find out more, see **www.trigjig.com**.

ForgeFast screws

ForgeFix is setting a new standard in fastening performance and has just launched its new range of ForgeFast screws. In independent tests, the new screws outperformed most other premium screws on the market in areas such as drive-speed, cam-out reduction, corrosion resistance, shear prevention and even environmental protection.

The new ForgeFast screws feature reinforced countersunk necks, angled or inset lobes, double cutting or sharp points, and anti-friction or self-drilling threads. They are also coated with ForgeFix's proprietary Elementech 400 coating, which has been salt spray tested to 400 hours to give these screws exceptional weather resistance, which lasts up to six times longer than more commonplace zinc coatings. Both Pozi and Torx head screws are available under the ForgeFast brand and in sizes ranging from 3.0 × 12 to 6.0 × 240. To find out more, see **www.forgefix.co.uk**.

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MACHINERY & MISCELLANEOUS

Sedgewick chisel mortiser – model 571; single-phase; extra chisels; 160kg weight; instruction manual supplied; very little use; delivery possible; £495
01754 890 282 (lincs)

Trend T20K biscuit jointer, very good condition; £65. Mortise & tenon jig, brand-new in box with new straight cutters; £150 ONO
01273 611 839 (East Sussex)

Jig plus router for turning (e.g. barley sugar twists). Proton DB250 lathe, fuse saw, MP300 moulder, Leigh dovetail jig, 36in lathe and 9in angle grinder. Call to make offers
01568 770 404 (Herts)

DeWalt DWS520 plunge saw plus tracks, clamps and T-square attachment – little used; £185
01322 526 897 (Kent)

Roy mortiser with six Japanese pattern bits; £400. MK1 Woodcut; £180. Mateo 317 bandsaw and blades; £120. Many more tools for sale – call for details
01206 826 615 (Essex)

KITY 535 planer/thicknesser – in good order. Photo available. Buyer collects; £75 ONO
01497 831 759 Herefordshire

Record Power DX4000 high filtration dust extractor. In mint condition, complete with 100mm hose and instruction manual. Email photo available. A bargain at £175
01202 698 725 (Bournemouth)

Vicmarc VL100 EVS electronic variable-speed lathe. The Rolls-Royce of mini lathes. Complete with tools and user guide. Email picture available. In excellent condition and selling at a bargain price of £495
01202 698 725 (Bournemouth)

Proxxon DH40 thicknesser – brand-new. 40 × 80mm capacity; £350 ONO
01482 893 149 (East Yorkshire)

Felder combination machine – 1.3m sliding table spindle moulder with router attachments; F34 power feeder and AF12 dust extractor; £1,500
01435 872 222 (Heathfield)

Coronet Major Universal Woodworker – complete unit with planer, saw, belt sander and lathe with cabinet and tools, etc. Buyer collects; offers over £400
01623 411 407 (Mansfield)

Professional woodwork and engineer's vices – 9in quick-release jaws on woodwork vices; 4in hardened steel jaws on engineer's vices; £40 each
07951 130 694 (North London)

Fein Dustex – 25l, 240V wet & dry dust extractor with tools. Latest model, little used; £95
01322 526 897 (Kent)

Let's get burning!

If you have an artistic bent and fancy trying out your drawing skills on wood, then this signature pyrography machine from Peter Child could prove to be just the ticket

Well, in for a penny, in for a pound! Pyrography is another area where I don't have masses of experience, but this is one of those crafts where it's more about your artistic abilities as opposed to woodworking skills. I've been to plenty of shows where the demoing pyrographers let the kids present have a go at it, so I guess if they're able to do it, then surely I can? It'll be interesting to see how good my drawing skills are but not before having a look at the unit in general.

A need for dexterity

First off, pyrography, like other art-based work where brush, pen or pencil is involved, requires a degree of dexterity, so any restrictions in this area will hinder free flowing movement.

Therefore the lightweight pen that holds the burning tips, along with a flexible cable to provide power to the tip in order to get it hot enough to do the burning, is certainly welcome; I found it as easy to hold and control as my favourite handwriting pen.

Machine setup

The setup is very unobtrusive, comprising of a small transformer and the pen along with a few spare burning nibs and a coil of wire to make your own designs, which is ideal for creating repeat patterns. The transformer has a carry handle with a small spring clamp alongside to store the pen when it's not in use, which is also handy for allowing it to cool down safely. The heat is controlled via a dial on the transformer with a maximum temperature of 1,100°C, so it will certainly do some serious burning if needed.

There's no indication of minimum operating temperature, nor any indicators on the transformer to show the actual temperature it is running at, but it's a 'suck it and see' type experience where you need to experiment with the dial to find the best position for what you are trying to achieve – defining lines, shading and so forth.

I also discovered that the heat required is also dependent on the timber you are working: light coloured, close-grain hardwoods are best such as maple, or a light coloured veneered ply is also a good choice and will allow you to get the best contrast from the burning work.

Pen tips

The supplied pen tips are a wishbone pattern, held with simple slotted screw clamps, although there's no screwdriver supplied – but let's be honest, there can't be many woodworkers out there who don't own a basic slotted driver, so I don't see this omission posing a problem.

The style of tip and thickness of wire used for the tip also affects the amount of burn at a set temperature, so a lower heat setting with a fine tip may burn too deeply, whereas a thicker gauge tip that doesn't heat so readily will offer more control, as will a flatter spoon-shaped bit for shading work. You can even make these yourself using a pair of needle-nose pliers and a small hammer to shape and flatten the tip.

In use

Having a dabble at freehand sketching first, once I got the temperature where I wanted it, the pen was easy to control and I didn't notice a 'hot' feeling in my hand while holding it, which was reassuring.

The tip can pick up the occasional spot of burnt debris and resin if the timber is of that type, and as pointed out in the supplied information brochure, I found that pine is one to avoid for fine tip work as the grain structure burns unevenly; although a wide or flatter tip can be used to good effect.

Conclusion

Having never really had much of a chance to try my hand at pyrography, I did find it to be a very relaxing and easy activity, and if you have an artistic flair or are skilled at copying from existing pictures, then this little unit will prove very rewarding either from a relaxation point of view or as a little cottage industry side line for craft fairs. If I eventually get to retire, alongside my attempts at woodturning, I may have found a new hobby to while away my days! **GW**

Specification:

- **Maximum temperature:** 1,100°C
- **Output voltage:** 12V
- **Suitable wire gauges:** 22-26

- **Typical price:** £109.75
- **Web:** www.craft-supplies.co.uk

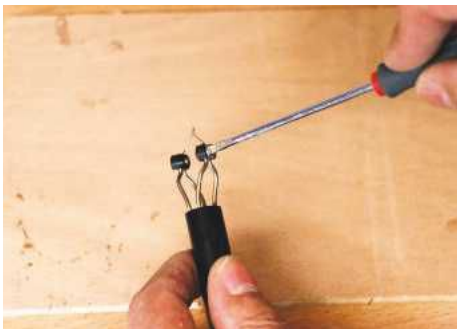
THE GW VERDICT

- **PROS:**
  Very easy to use; flexible and free movement; variable heat is very controllable
- **CONS:**
  No temperature indicator
- **RATING:** 4.5 **out of 5**

Varying the tips, speed at which you work and the heat output allows shading and fine line work to be achieved

The heat output is controlled via this dial – note the separate on/off switch

A clip on the top of the machine holds the pen securely for storage or while cooling down

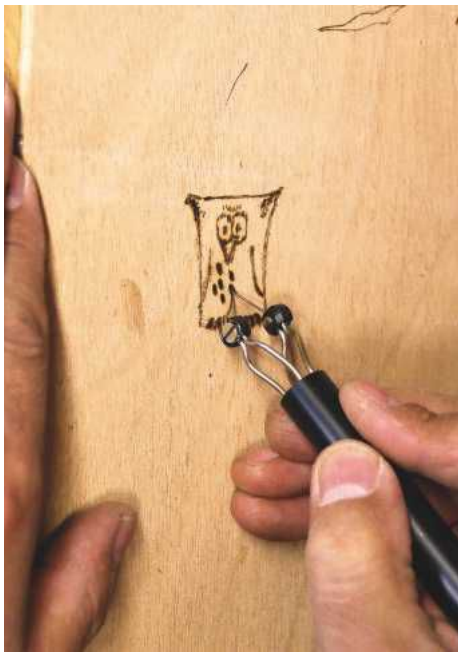


Burning tips are secured in simple screw clamps

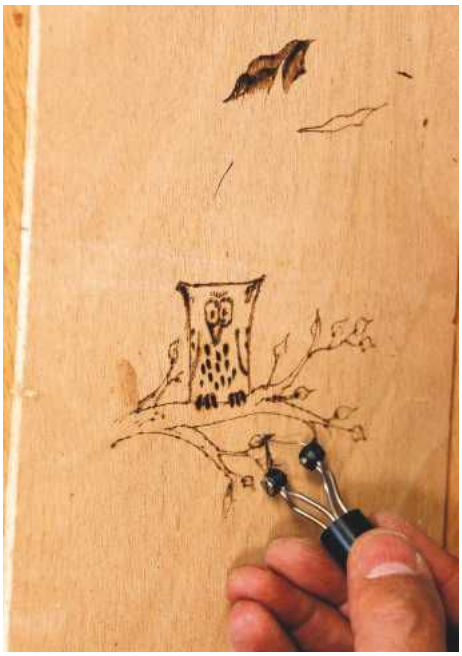
The kit is supplied with a few tips and a coil of wire so you can have a go at making your own

As a fully paid up member of the *Dennis the Menace* fan club, I guess I'd best pay homage...

... swiftly followed by a quick interpretation of his dog Gnasher



I had a go at drawing an owl on a branch but he looks like he's got a broken beak...



... but I don't think he's worried; in fact he couldn't give a hoot! (I'll get my coat...)

Fast & consistent nailing made easy

This new 18-gauge nail gun offering from Milwaukee is robustly made, features a handy bump mode and will prove an affordable and desirable addition to the kit of many a tradesman

Milwaukee continue to move at a pace in all areas of construction with the 18V battery platform favoured by the trades for power and performance and therefore these are the areas in which the major advances tend to be made. This time around the battery tool using carpenters have been given a treat with new nail guns for the second-fix market, so with this in mind, I decided to have a look at this 18-gauge CN18GS straight nailer to find out what makes it tick.

Robust design

Construction quality and attention to detail are synonymous with Milwaukee products and no different here: a robust ABS casing with rubber over-moulded grip makes up the main body with an all-metal nose construction.

As part of the 'Fuel' range the gun has Milwaukee's 'POWERSTATE' brushless motor to alleviate maintenance issues, increase performance as well as keeping things as compact as possible, and this is certainly a very compact machine compared to rival brands on the market, especially around the motor and main body area – there's obviously some interesting technology going on under the hood! Brushless motor technology also helps to reduce weight but if you are a gas nail gun user, then you should be prepared for an increase of around 1kg over a similar capacity gas-operated gun.

Fixings drop easily into the magazine – the total capacity is 110 nails

With a 4 or 5Ah battery fitted the Milwaukee nailer tips the scales at 3.4kg but when you consider the very impressive figures that this gun can fire – up to 1,200 fixings with a 2.0Ah battery – if weight is an issue then the smaller capacity batteries it is supplied with will see you through a day's work with ease and reduce the weight along the way.

The gun also incorporates 'REDLINK PLUS' technology, which enables constant communication between the tool and the battery for both increased performance as well as maximum protection against overload or similar issues.

Good balance

Despite the weight of this machine, the square boxy design gives it decent balance in different applications whether vertical or horizontal and at only 300mm from the nose tip to the back of the tool, it will get into tight spots with ease, which is useful when dealing with more intricate and elaborate work whether on furniture or in alcoves, recesses and the like. With nail lengths ranging from 16mm through to 54mm and in the thinner 18-gauge, the gun sits in the finish moulding area: beads, architraves, etc. are all areas where this piece of kit will find its niche.

Loading the magazine is simple: a rear clip releases the spring-loaded slide to access the track and apertures in the track give a swift visual reference of the nails remaining, or it can be easily read against the bold numeric indicators.

Adjustment & maintenance parameters

As with nail guns in general the Milwaukee M18 CN18GS follows similar adjustment and maintenance parameters. For example, there's a quick-release front to gain access to the firing pin area, which allows you to deal with any jams and releases and re-engages very easily. Alongside the nose, complete with its rubber anti-mar cover, is the depth of drive adjustment with a spare tip storing on board.

Although there's no indicator on the gun to show in which direction you move the setting to allow for deeper or shallower drive, in terms of finding the correct position it's normally a trial and error situation when working with most materials, so it's a matter of winding in and out and test firing until you hit the sweet spot you desire.

Sequential & 'bump' modes

While the finer gauge guns are designed for more precise setting of fixings, this gun benefits from both sequential and 'bump' modes. The first allows the gun to be placed onto the work area in a precise manner and then fired, with each fixing requiring this sequential movement. In bump setting the gun can simply be pressed to the work with the trigger engaged and a fixing is fired every time the gun makes contact with the work once enough pressure is applied. This allows the gun to be 'bumped' along the work for very quick setting if precision isn't paramount.

A set of green lights at the back of the gun indicate the status of the machine: a long press of the central button brings the gun to life, and by pressing this button again, the gun can be toggled through both sequential and bump modes, with the light either a steady green or flashing to indicate the mode for quick reference.

In use

Loading the gun with brads of its maximum length capacity and selecting a piece of sapele as a test medium I tried the gun in both modes, firstly setting fixings in a precise fashion as well as testing the depth of drive function. It didn't fail in the tests; adjusting the gun accordingly it was easy to set flush, below or above the surface, with each fixing consistent for each setting.

Switching to bump mode gave me a chance to see how fast the gun would operate, and if it could repeat the consistency. Bumping along the sapele at around three or four shots per second the gun continued hitting the mark each and every time.

I had a few bits of architrave and skirting that needed re-fixing after removing them to sort out an underlying problem. Once I'd carried out the sapele test I wasn't expecting any failure in this area, but this task offered me a great opportunity to check the balance in a vertical plane. Even with the bigger 5Ah battery I had fitted the gun felt easy to control and set, allowing me to quickly refit the bits accurately.

In use there's a bit of recoil involved and a quite loud, almost rattly sound as the gun ramps up and fires, but the performance of the M18 CN18GS more than makes up for any noise issues and it certainly isn't as loud as a gas equivalent.

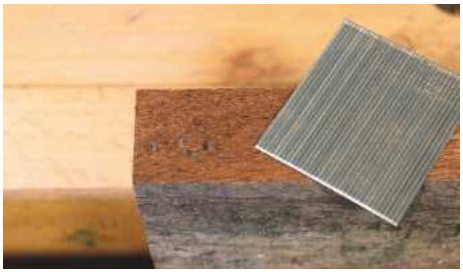
Conclusion

Alongside this the cold weather and other issues associated with gas guns are eliminated here, including the additional costs of buying gas as well as fixings, which more than makes up for any issues of weight or indeed the purchase price compared to that of a comparable gas version. Factor performance, maintenance-free performance and reduced running costs into the equation and the Milwaukee becomes an affordable and desirable addition to any kit. If you already own Milwaukee battery tools, then it's worth noting that the M18 CN18GS is available as a 'body only' option as well. **GW**

Jammed fixings are easily sorted thanks to this robust toggle clamp nose

Viewing apertures show how many fixings are left. There's a safety cut off to prevent empty firing

A toggle switch and a set of lights show the status of the gun, which also powers it on or off



The fixings were set consistently at every actuation

Second-fix work such as this architrave is where the Milwaukee gun will especially find its niche

A simple dial adjuster sets the depth of drive for the fixings

Firing 54mm brads into sapele posed no problem for the gun in either mode

You can adjust the drive to suit the timber. In hardwood it needs a higher setting to drive fully

Specification:

- **Nail capacity:** 110 nails
- **Nail gauge:** 18g
- **Nail lengths:** 16-54mm
- **Fixings per hour:** 900

- **Typical price:** £499.99 with 2 × 2.0Ah batteries
- **Web:** www.uk.milwaukeetool.eu

THE GW VERDICT

- **PROS:** Fast, consistent nailing; bump mode for extra speed; compact
- **CONS:** Sounds a little rattly in use; some recoil; a little heavy after extended use
- **RATING:** 4 **out of 5**

A hot idea for hand-sanding

This simple hand-sanding device not only represents great value for money but it will take standard size belts and is ideal for a multitude of household tasks as well as the usual woodworking applications

Simple things can often be the most effective and that's undoubtedly the case here with the Sand Devil 3.0 (I assume there must have been versions 1 and 2 prior to this one!)

Making good use of a standard 75mm-wide sanding belt, the Sand Devil 3.0 is pretty much a hand-driven belt sander and indeed it has the same style of tensioning lever to retain the belt around its periphery.

Elbow grease is required

The belt doesn't rotate in this instance; as with any hand-sanding it's all about elbow grease and with the wide, flat area it offers, it's ideal for larger areas especially.

You can slacken the belt to rotate it as needed once it loses its bite to get full use from the abrasive before changing it, and with good quality abrasives that shouldn't be too often.

If there's a negative in this it could be the durability of the lever; it feels a little flimsy for something that will be operated regularly, but it does what it's designed to do and as long as it isn't operated with force it should stand up to the task, although a metal or alloy lever would be better suited and ultimately more durable.

Design

The design of the tool incorporates a couple of curves and a wedge profile so it will work these as well as getting tight into corners; I found it worked really well against a vertical surface as the grit of the abrasive against my palm was sufficient to hold it firmly while I sanded, and I found I could sand right up to an edge, which was a definite bonus.

It comes supplied with a relatively coarse belt, which is fine for general work, such as keying a surface or cutting back an old finish, but the option is there to fit a finer grit belt for more delicate sanding if you should need it. I found it felt a little on the large side when I first started using it but this does work in its favour in general as you can get good purchase on it if you need to work it hard and place two hands on the surface to allow for extra pressure or control.

Useful applications

Although woodworking is an area where it will undoubtedly find a place, I also found it brilliant for blitzing back some Polyfilla from a door lining I had fitted, cutting the filler back flush in seconds and leaving it ready to paint. Any drylining-type work where filler needs flattening back is another application where the large surface area is a definite winner.

Conclusion

As with many Milescraft products, this one won't break the bank – it retails for around £14 including a good quality belt. **GW**

THE GW VERDICT

- **PROS:** Takes standard belts; multiple profile areas; large sanding area
- **CONS:** Tension lever looks a bit fragile
- **RATING:** 4.5 **out of 5**

Specification:

- **Belt size:** 533 × 75mm
- **Belt supplied:** 80 grit
- **Typical price:** £14.10
- **Web:** www.toolovation.co.uk

Belts are swapped using this tension lever, although it doesn't look to be overly durable

The Sand Devil 3.0 takes standard off-the-shelf 533 × 75mm belts

Cutting back filler was very quick and you can sand right up to an edge

The all-round abrasive aids gripping when sanding

Each part of the Sand Devil 3.0...

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... which are ideal for intricate areas...

... such as mouldings

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Scribing problems solved

This innovative tool from Trend will allow you to solve all manner of scribing problems quickly and accurately– it really is the perfect tool for many a household DIY task

You can spile by opening up the EasyScribe and marking around a template board

Cut the template board to the marks, leaving the line in place

Scribing is an important part of woodworking and I think many of us will have got by with blocks of wood as spacers or used an old school compass with your pencil to make the required mark.

The Trend EasyScribe takes the place of both spacers and compass, and having a flat back allows it to be held in a more stable and therefore parallel fashion to the area to be scribed, which allows for increased accuracy.

Extending plate

A slide out flat plate with a slightly tapered front edge allows the EasyScribe to get into tight gaps if needed, and with the maximum extension of up to 50mm it can also be used to scribe over stepped areas if required. In this type of application it can also be used as a spiling tool to mark up a template and then transfer the setting to the workpiece; I produced a small alcove cill using this method and it worked really well.

Other areas where the extending plate comes in handy is for swapping hinges where a thicker leaf is used than the existing, meaning the plate slides over the hinge rebate on both the frame and the door to allow an accurate depth to be set in which to chisel to.

EasyScribe uses

Of course, standard scribing work for any general applications such as a skirting to an undulating floor, architraves into corners, worktops to un-flat walls and so forth, are all within the remit of the EasyScribe and with the brass adjustment wheel it's easy to alter the setting to the desired amount to cover the scribe needed.

I had initial doubts about the flat leads required to fit the EasyScribe but they are of good quality and seem durable enough even though they are quite thin, although they are readily available from Trend stockists if you do need to source replacements.

Conclusion

I guess there will be people who see the EasyScribe as an unnecessary gadget when a pencil/compass/packer does the job, but this tool allows you to do the job quickly and easily and offers more diverse options than a standard scribe method, which makes it worth a punt especially if you do a lot of fitting work involving scribes, etc. **GW**

Specification:

- **Opening range:** 1-40mm
- **Scribe plate extension:** up to 50mm
- **Lead supplied:** 3off

- **Typical price:** £25
- **Web:** www.trend-uk.com

THE GW VERDICT

- **PROS:**
  Easy adjustment; sliding plate spans over hinge recesses, etc. if needed
- **CONS:**
  Requires special leads
- **RATING:** 4 **out of 5**

Keeping the same setting on the EasyScribe, transfer to the cill board and cut to the marks

The resulting fit will be tight and clean on all edges

A thicker hinge can be marked up for leaf thickness using the EasyScribe

It will transfer the line if the lining has stops fitted – an area where a gauge may struggle

Opened up to the widest point a worktop is quick to mark up

Planed to the line, the fit is perfect

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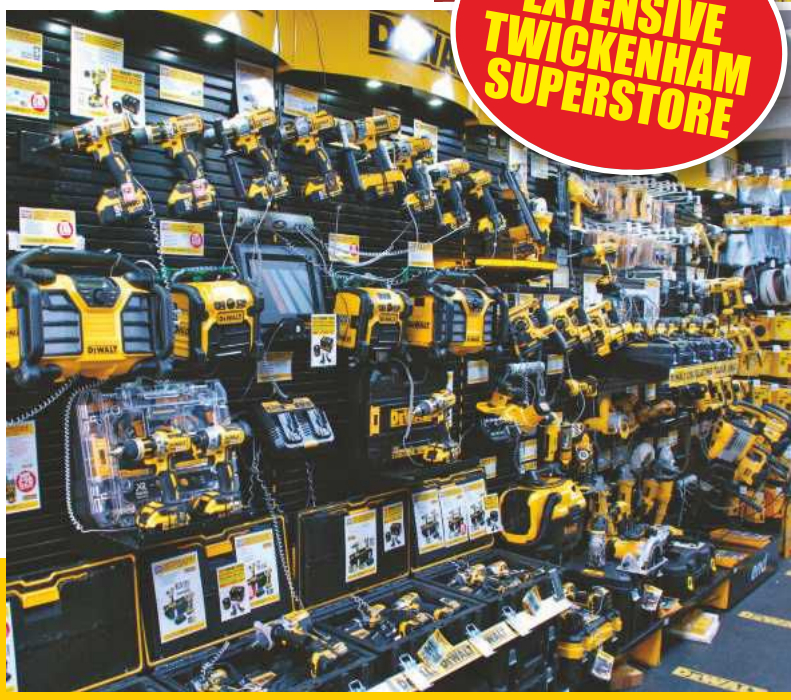

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A contemporary touch

Inspired by a French woodworker, **Michael McCrory** sets about making a similar set of contemporary kitchen stools, which will prove an ideal addition to any home

I made these stools using black walnut (for the seat) and cherry (for the legs). I got the inspiration from a video that I saw from a French woodworker named Boris Beaulant. His stools were a little smaller, but I adapted his design to make them taller and suitable to sit at a kitchen worktop. I also adapted the methodology so that I could make them with my tools. His tools are pretty slick (and expensive), so I've adapted the process so that the project can be made with tools that are more typical of a workshop in America (and the UK). You can watch his video by visiting this link: **www.youtube.com/watch?v=EUligNhBoa8**.

Please note that although many of the photos here show machines unguarded for clarity, you should ALWAYS ensure that when operating equipment the appropriate guards are in place.

Rough cutting the boards

For the seats, I rough cut the walnut to be 1,650mm long (**Pic.1**). I was using a piece that was about 200mm wide so that I'd be left with eight 200mm squares. After milling, I ended up with a piece that was 197mm wide, so a 1,650mm length was all I needed to make eight seat pieces. You can adjust the size of the seat pieces to suit your desired stool size; anything from 180mm to 203mm wide should be suitable.

For the legs, I made the stool to be 635mm high, so you can rough-cut the length to 660mm or 675mm to give you enough length to square up each end and put a 5° bevel on one end later on. Remember, they'll be angled by 5°, so you'll need pieces longer than 635mm to get a 635mm height. But it's not too critical; a 610mm height would be fine, too.

You'll need enough cherry to cut eight legs that are 75mm wide and 152mm long. The cherry that I had was about 203mm wide, so I cut three lengths to be 660mm. That gave me enough material to cut nine legs, which left me with one extra in case I made an irrecoverable error, but I was lucky and didn't have to use it.

Joint the edge of the cherry

I jointed one edge of the cherry to make sure that it was straight prior to cutting the legs on the table saw (**Pic.2**). If you do not have

STEP 1. The first step is to cut the walnut to be 1,650mm long

STEP 2. Jointing one edge of the cherry to make sure that it is straight prior to cutting the legs on the table saw

STEP 3. Cutting the legs to be 75mm wide using the table saw

STEP 4. Plane the thickness of the legs and the walnut seat

STEP 5. Plane the exact width of the legs

STEP 6. Jointing the walnut seat board

a jointer, then there are other ways to do this. For example, you could clamp the board to a jig on your table saw to cut a straight edge, or you could use a hand plane.

With one edge of the cherry jointed straight and flat, set your table saw fence to be 75mm wide and cut each of the legs (**Pic.3**).

Planing the seat timber

Use a planer to thickness the pieces so they end up being exactly 25mm (**Pic.4**). I used callipers to ensure mine were the exact thickness that I wanted.

Knowing that my dado set can cut a maximum of 24mm, I wanted the leg to be exactly 72mm, so I set the planer so that the legs would be exactly 24mm. I planed just a little bit at a time, and adjusted the height of the planer blades each time until I got 24mm (**Pic.5**). I used my calliper to test the width of the leg after each cut.

I jointed the walnut to have a straight edge prior to cutting the width on the table saw (**Pic.6**). The board that I started with was about 216mm at one end, and a little less than 203mm at the other. My goal was to end up with a piece that was 197mm wide after cutting it on the table saw.

Filling the voids

There were some voids in the cherry that I wanted to fill with epoxy. I used a clear variety for some of the voids (**Pic.7**), and for others, I mixed in some brown dye so that they would be more noticeable. This gives some character to the wood, but it's really up to you if you want to fill the voids and, if you decide to, whether or not to use a colour.

There was a bit of grain separation that occurred after planing the walnut, so I decided to fix this using dark brown epoxy (**Pic.8**). I filled this area with the epoxy, then added wax paper and clamped it with a board so that the wood would be joined together. I let this sit overnight so that the epoxy would be fully cured before sanding. After curing overnight, I sanded away the excess epoxy (**Pic.9**), after which the board was nice and flat and the voids were almost imperceptible.

Planning the cuts for the seat

The seat pieces will just be squares in the end, so why cut all these angles, make it harder and use more wood? You'll basically cut 140mm squares out of 197mm squares, so it's not the most economical use of the wood. There are two primary reasons for this: all of the seat components will have the grain running in the same direction, which gives it a nice look. I had end-grain on all the joints, which make for a strong joint and it looks nice, but it does use a lot more material and does make it more difficult to cut all those angles, so which method you use is up to you (**Pic.10**).

STEP 7. Filling the voids with clear epoxy helps to give the wood character, although this is optional

STEP 8. To fix the grain separation, I decided to use dark brown epoxy, added wax paper, then clamped it with a board to join the wood together

STEP 9. Sanding away the excess epoxy to make the surface nice and flat

Cut the seats into squares

Now it's time to cut the walnut into 203mm squares (actually about 197mm but the important thing is that they're square). I did this by putting a stop block on the fence of the table saw (**Pic.11**). This is important to prevent kickback so that the piece you're cutting does not bind against the fence. You could also do this in a safe and repeatable fashion using a sliding compound mitre saw.

With the stop block still in place, it's a good idea to make a couple of test pieces with extra material (**Pic.12**). In this case, I'm using some leftover MDF. These pieces will be very important for setting up the joints that you'll cut into the walnut seat pieces. It's very important to get these cuts set up perfectly so that you don't make any errors.

Using a jig on the table saw

It's vital to make accurate and repeatable joints. I decided to make a jig that fits over my table saw fence so that I could make cuts with my dado set (**Pic.13**). I could have used a router instead, but I would have had to purchase a new bit and I'm not sure it would have been any better. I think I made the right choice given my tools.

I made the jig out of MDF. The jig runs along my table saw fence and has two sides: one was used to make two cuts into each seat piece; and the other was used to make a single cut into each of the legs.

Since I made two cuts into the seat pieces, I wanted to set up the jig so that I could make the first cut, then flip the piece over to make the second cut to ensure they were symmetrical. This is where the test pieces come into play – it took multiple test cuts to make the final cuts the same.

For the cuts into the leg pieces, I did not need additional test pieces because I had cut the legs to be extra long. I was able to carefully make short test cuts into the end of each leg. I made multiple test cuts and tried the fit into the leg each time before finally arriving at a fit. After setup was completed, I made the cuts into the other end of the legs; the ends with the test cuts would be removed when cutting the legs to the actual length.

Cut the slots in the seat pieces

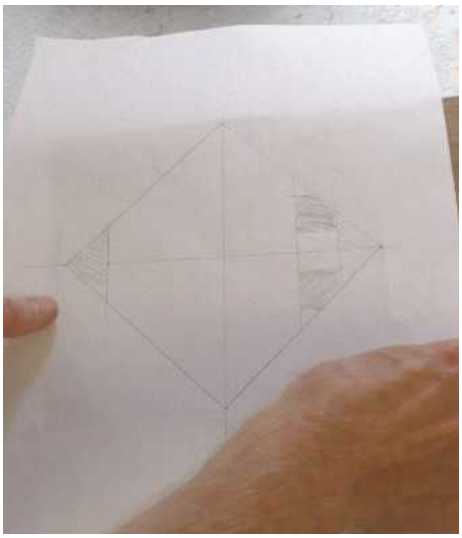
Rather than making the full cut of 25mm high × 24mm wide in a single pass, I made the cut in two passes (**Pic.14**). I made each cut (16 in total; two cuts in each seat piece) only about 12mm high on the first pass. I made the first cut, then flipped the board around to make the second symmetrical cut, then I set the blade to be slightly higher than 25mm for the final pass and repeated the process.

Cut a slot in the legs

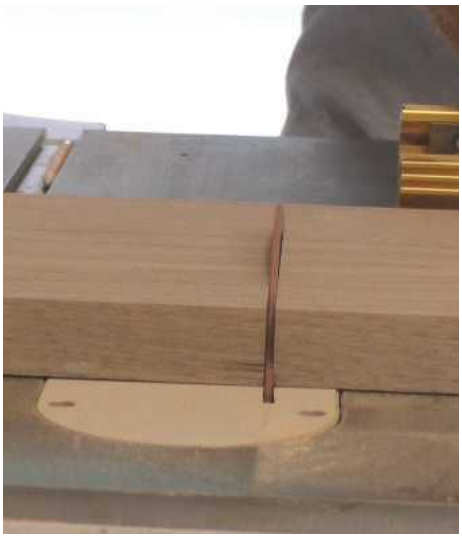
Next, I flipped the jig around so that it could be used for the legs (**Pic.15**). I used the extra length on the end of the leg to test the cut to ensure that it was dead centre, then tested the fit with the seat. After the test cuts were perfectly aligned, I made the 25mm cut into each leg.

Cutting the seat pieces

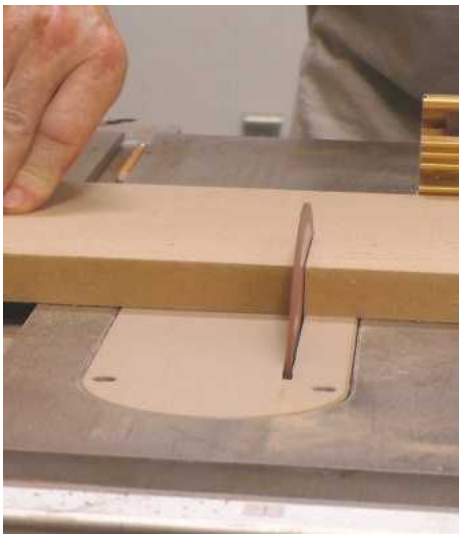
I used a table saw sled and a 45° mitre jig to cut



STEP 10. Diagram showing the cuts and angles to be made for the seat

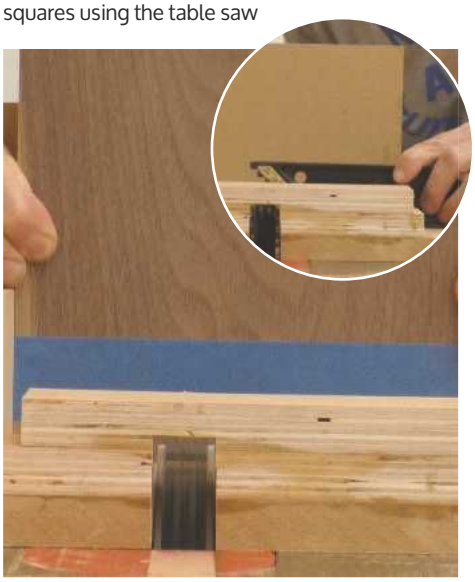


STEP 11. Cutting the walnut for the seat into squares using the table saw



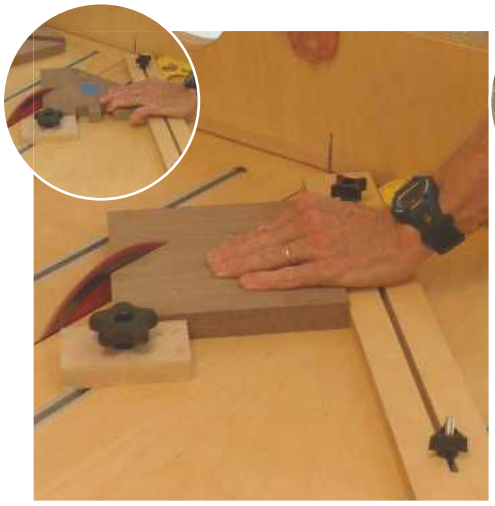
STEP 12. Making a couple of test pieces using some leftover MDF

STEP 13. I decided to make a jig that fits over my table saw fence so that I could make cuts with my dado set

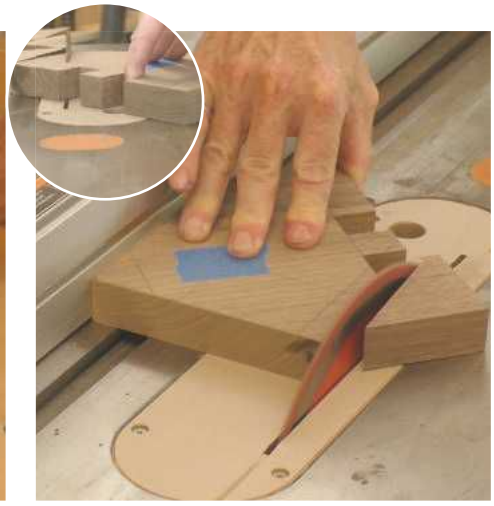


STEP 14. Rather than making the full cut of 25mm high × 24mm wide in a single pass, I made the cut in two passes

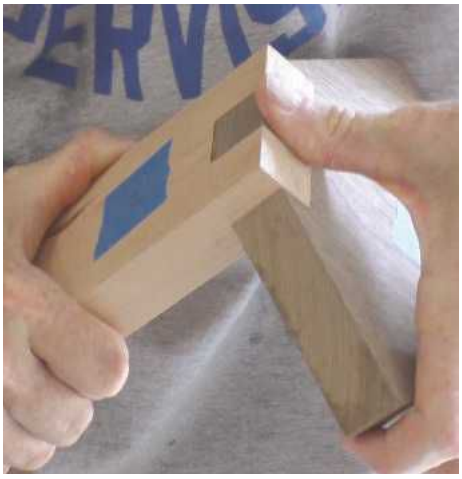
STEP 15. I flipped the jig around so that it could be used for the legs and then tested the fit with the seat



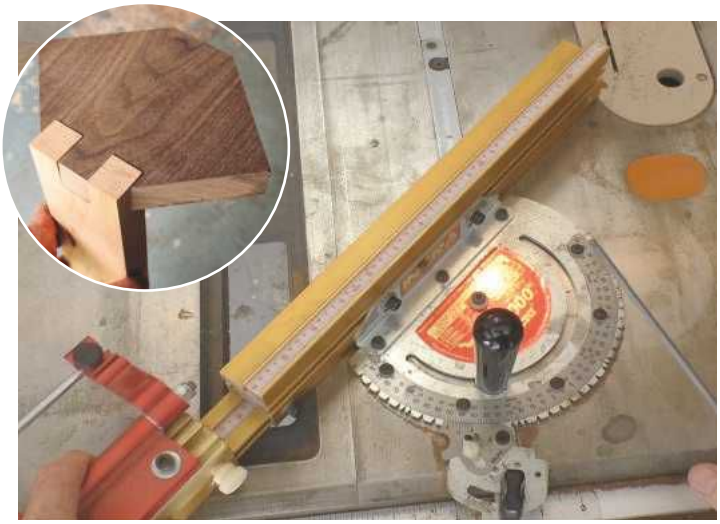
STEP 16. I used a table saw sled and a 45° mitre jig to cut the first angles on the seat pieces



STEP 17. Set the table saw fence to cut the remaining angles; this will cut the corner off and make it parallel to the 45° angle just cut



STEP 18. You can then do another test fit to make sure everything fits as it should



STEP 19. The final cut of the seat piece ensures that the interior corners will form a square at the centre of the stool when assembled

STEP 20. The angles are going to be set at a 5° angle (i.e. 85° to the floor)

the first angles on the seat pieces (**Pic.16**). I also used a stop block to set the position. This made it quite easy to cut the first set of 45° angles since everything was symmetrical. It was just a case of cutting the first angle, then flipping the piece over to cut the second.

After cutting the first two angles, now set the table saw fence to cut the remaining angles (**Pic.17**); this will cut the corner off and make it parallel to the 45° one just cut. Again, it's a matter of making the cut and then flipping the board over to make the next. It's a lot simpler to execute these cuts than you might think; it's then time to do a test fit (**Pic.18**). Everything should be looking pretty good!

Now it's time for the final cut of the seat piece, to cut the interior corners so they will form a square at the centre of the stool when assembled (**Pic.19**).

The angles are going to be set at a 5° angle (i.e. 85° to the floor). You need to put corresponding 5° mortises into the seat pieces to join them together with floating tenons (**Pic.20**).

Drill mortises into the seat pieces

I used a mortising attachment with a 10mm bit on my drill press (**Pic.21**). I felt this was the best option to create the mortises because I didn't have a dedicated mortiser. It worked quite well for me. Another option would have been to use a router with a 10mm bit and a mortising jig, but it would have been more complicated to set up the 5° angle.

It is **VERY IMPORTANT** to mark the top side of each seat piece prior to drilling the mortises. If you accidentally drill any of the mortises with the wrong side against the fence, then the angles will be wrong and the assembly will be impossible. I put a piece of blue tape on the top side of each piece to make sure I didn't make a mistake.

I drilled the mortises to be 20mm deep, 10mm wide, and 32mm long. I used the stop mechanism on my drill press to ensure they were all drilled to the same depth and stop blocks mounted to the drill press fence to ensure they were all the same length. This was a tedious process, but it worked well in the end. It's important to be patient and let the bit do the work. I had to drill 32 mortises in total, and that probably took about two hours of work. After drilling the mortises, I cleaned them up with a chisel.

The tenons

I used my callipers to measure the length of the mortise and then cut a strip of walnut to the same width (**Pic.22**). The next step was to do a test run to make sure I had a very tight fit. I used a stop block and set the cut to be 48mm for the tenon; that would allow 32mm for the tenon to sink into the mortise (20mm on each piece) and then leave approximately 10mm exposed between the seat pieces.

Glue & clamp the seat to the leg

I applied a liberal amount of glue (Titebond III) to all surfaces of the joint and then clamped it in place. It is very important to ensure that the seat is 90° to the leg so that everything will fit together in the end. It's worth checking more than once, especially after the clamps are tightened (**Pic.24**). After the glue sets, the joints need to be sanded smooth (**Pic.25**).

Set the table saw blade to have a 5° bevel and then trim the legs to length (**Pic.26**). It's important to use a stop block on your mitre gauge to ensure that all legs will be the same length.

Assembly & finishing steps

Now to assemble the stools. This part is a

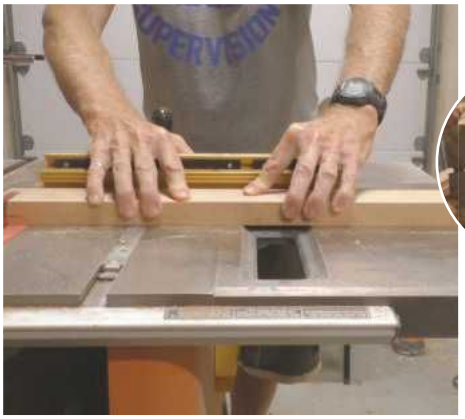
STEP 21. For drilling the mortises into the seat pieces, I used a mortising attachment with a 10mm bit on my drill press

STEP 22. I used my callipers to measure the length of the mortise and then cut a strip of walnut to the same width

STEP 23. Cutting the tenons to length using a stop block

STEP 24. Before gluing and clamping, ensure that the seat is 90° to the leg so that everything will fit together in the end

STEP 25. After the glue sets, the joints need to be sanded smooth



STEP 26. Set the table saw blade to have a 5° bevel and then trim the legs to length

STEP 27. Assembling the stools is a little tricky due to the tight tolerances between the tenons and the mortises

STEP 28. Once together, you need to let the glue cure overnight before finishing it

STEP 29. Sanding the stool using a variety of abrasives

STEP 30. For the cork pads that will be used for the feet, I bought some cork tiles and cut pieces to fit onto the ends of the legs

STEP 31. To finish, I applied a tung oil followed by paraffin oil mixed with some medium coarse pumice stone after the final coat had dried

little tricky because of the tight tolerances between the tenons and the mortises (**Pic.27**). It's helpful to trim off the corners of the tenons, which will make them easier to insert. You can do this using a chisel or a sharp knife. Once the stool is constructed, you need to let the glue cure overnight before moving on to the finishing steps (**Pic.28**).

To sand the stools, I started with a random orbit sander using a 120 grit abrasive pad and then moved on to 220 grit. After that, I had to do plenty of hand sanding (**Pic.29**). All of the seat edges were pretty sharp, so I rounded over all the edges and corners with the 220 grit abrasive.

The next step was to apply cork pads to the feet (**Pic.30**). I bought some cork tiles and cut pieces to fit on the ends of the legs (these measured about 75 × 25mm). I applied a liberal amount of glue to both the cork and the feet and then turned the stools right side up to let the glue harden overnight. I then trimmed off the excess cork using a sharp knife and lightly sanded the edges, again with the 220 grit abrasive.

To finish, I used tung oil, which I wiped on. This really accentuated the contrast between the walnut and the cherry. I applied five coats of finish with a light sanding between each coat (**Pic.31**).

After the final coat had dried, I rubbed the stools with paraffin oil mixed with a bit of medium coarse pumice stone; this creates a really smooth finish and ends up not being too glossy. As a final step, I applied paste wax to smooth and protect the surface (**Pic.32**); the stools are then complete and ready to be placed in your kitchen (**Pic.33**). GW

STEP 32. As a final step, I applied paste wax to smooth and protect the surface

STEP 33. Here are the finished stools. They also stack nicely if you want to put them out of the way

FURTHER INFORMATION

You can find out more about Mike McCrory and some of his other work by visiting his website: **www.woodumakeit.com**

Mike's stool is adapted from one of Boris Beaulant 's original designs. Find out more about Boris here: **www.borisbeaulant.com**

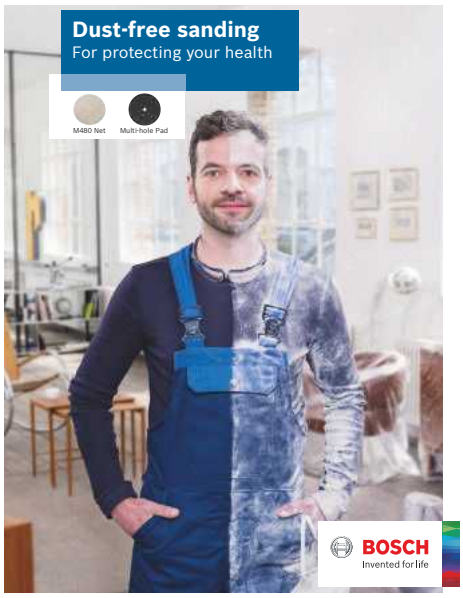
Win a Professional random orbit sander & M480 abrasives bundle

WIN! Bosch PRIZE BUNDLE WORTH OVER £325

One lucky reader could be in with the chance of winning this excellent random orbit sander & abrasives bundle from Bosch, worth over £325

While not all woodworkers enjoy sanding, when you have a powerful motor behind you, as well as a machine with excellent dust extraction capabilities, this often laborious task can become a breeze.

To mark the recent launch of their M480 Net abrasives (reviewed in *GW*311), Bosch are giving away one of their popular GEX 125-150 AVE Professional random orbit sanders as well as four packs of the M480 Net abrasives in various different grit sizes, each of which contains five individual pads. Let's look at the bundle in more detail:



GEX 125-150 AVE Professional random orbit sander

Boasting one of the lowest vibration settings on the market, which means no more tingling in your hand as well as easier handling, this model is equipped with a powerful 400W motor and is designed to take a choice of either 125 or 150mm pad, depending on the job you're working on. This versatile and ergonomically designed sander features variable-speed with constant electronics even under load as well as fast waste removal with a 4mm orbit. Effective for both sanding and polishing, the GEX 125-150 AVE is fitted with a Bosch micro-filter dust box, which ensures this sander is not only effective but clean.

Bosch M480 Net abrasives

This clever new abrasive pad is designed to facilitate virtually dust-free sanding to allow for a clean work environment. Minimal clogging avoids the spreading of dust; the open net structure allows a full surface extraction of the sanding dust; and the high dust extraction allows for the reduction of cleaning time. Available in discs, rolls, sheets for delta sanders and orbital sanders, with a grit size ranging from 80-400.

HOW TO ENTER

To be in with a chance of winning this Bosch sanding bundle, just visit **www.getwoodworking.com/competitions** and answer this simple question:

Question: In which issue were the M480 Net abrasives reviewed?

The winner will be randomly drawn from all correct entries. The closing date is 6 January 2017

Only one entry per person; multiple entries will be discarded. Employees of MyTimeMedia Ltd and Bosch are not eligible to enter this competition

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Exploring sanding & finshing

Moving on to looking at the plethora of power sanding options available to the woodworker, **Peter Bishop** talks us through the wide range on the market, offers tips for getting the most from them, and also covers the broad topic of abrasives

There's a wide range of different powered sanders on the market today, so let's start by looking at a couple of the traditional methods and some of the simple systems. Most of us will have completed the sanding process by using a bit of abrasive paper wrapped around a wooden block. There's nothing wrong with this, in fact, it can be one of the most efficient ways of finishing, especially in tight corners. It also affords you the fine control needed for intricate work. A step forward might be taken by making or buying a felt-backed block for comfort and longer paper life. The give in the felt allows the paper to move slightly, thus avoiding excessive wear. Foam-filled flat and shaped abrasive blocks are also available, and these can be used and then disposed of when fully clogged up or worn out.

Before the advent of the dedicated sanding tool, electric drills formed the basis of a formidable sanding system. Orbital sanding attachments can probably still be found to fit some makes and models; these simply clip over the business end of the drill and are used just like the purpose-made tool. Slightly more sophisticated disc sander pads can be fitted directly into a drill chuck or an angle grinder. There are also some very useful 'flap' sanders that can be chuck mounted, which are ideal for getting into awkward or restricted places. Care needs to be taken in use with this type of sanding system as they tend to erode the original profile. If the budget will allow, I'd recommend going for the individual sanding tools every time: you'll save time messing around fitting attachments to your drill etc., etc.

TIPS FOR HAND & POWER SANDING

When hand or power sanding, always wear a mask or respirator. The fine dust generated can harm your health so it's much better to take precautions sooner rather than later

Drum sanding

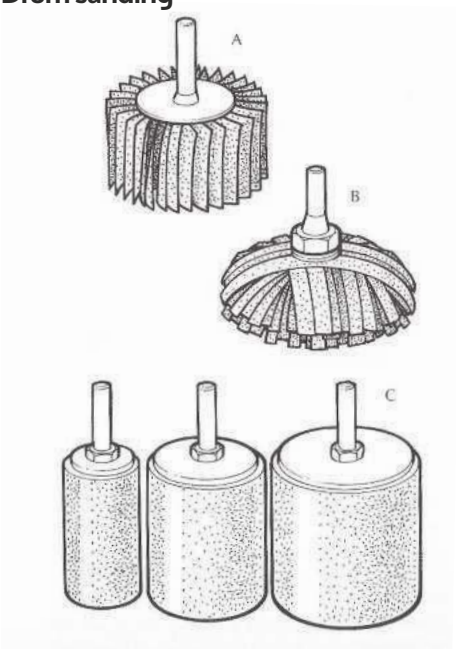


FIG 1. These sanders can be fitted into drills: a) straight flap; b) random flap; c) drum

There is also a range of successful drum sanding kits on the market. These are usually manufactured with a solid or air inflated drum around which is fitted an abrasive sleeve. These systems are ideal for maintaining, as close as possible, a truly concave shape. They are also great for finishing off curves that have been cut on a bandsaw, easily removing all the little discrepancies. I think these drill-mounted drum sanding systems are one of the most useful of their kind if you don't require a purpose-made machine.

Hand-held power sanders

Today we have more than the simple powered sanding systems, namely the orbital, belt and disc. This has changed and a range and variety of dedicated tools are now competitively priced and available off the shelf. Along with this, improvements have also been made to the original trio. The heavy-duty sanding tools are belt-driven so we'll start with them.

Various examples of belt sanders

TIPS FOR USING BELT SANDERS

- Let the belt sander run up to full operating speed before engaging your workpiece. If you start the sander while it's sat on the object piece it can have a life of its own and may dig in or charge off, thus damaging the surface. Also make sure the workpiece is secure before you begin
- Unless the surface finish is not important, always run your belt sander 'with the grain'. This is especially important if you are working the surface down to follow on with another finishing sander
- Don't discard your old or torn fabric belts unless they are totally worn out. Recycle them in smaller pieces to sand those curved faces or for use on the lathe

Belt sanders

I've had a belt sander in my tool box for some time. I find it one of the most useful tools and it's very versatile. With a coarse grade grit belt it will rapidly remove many layers of paint and other grunge. With care I can nearly finish a surface. By using the nose of the machine you can also clean up concave shapes. The design of a belt sander is universal, fairly simple and straightforward: an abrasive fabric belt runs around two rollers; one is directly driven from the motor. The direction of rotation is clockwise so therefore the sander will tend to pull away from you. The free wheeling roller is adjustable so that the belt can be centred, which is important if you don't want it to come off or damage the body of the sander. It is also likely to be on a spring-release mechanism, which enables the belt to be loaded.

Heavy-duty industrial belt sanders will have motors of 1,000W or more and are likely to be quite weighty. For general purpose using anything from 500-750W will probably be adequate. Belt widths will vary; the two most common sizes are 75mm and 100mm. I would suggest that it is better to have a wider width if at all possible, as you can do more with it.

Each machine will have a fixed width and length of belt. Obviously you'll need to know this when ordering spares. I tend to keep a stock in hand and reorder when down to my

Various examples of industrial belt sanders >

Various sanding belts

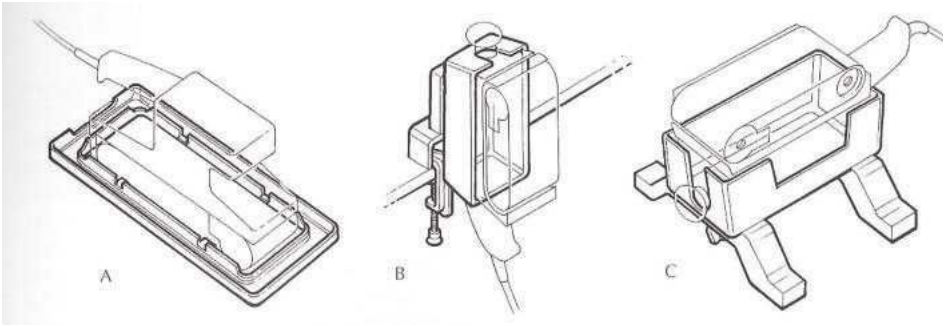


FIG 2. Attachments for sanders: a) sanding frame for a belt sander; b) clamps to fix belt sander in a vertical position; c) horizontally

last one or two. I use 40 grit for quick, rough removal right down to 120 grit for a finer finish. (See the relevance of these grit grades later).

Naturally you will have to buy the machine you can afford, but do look at the cost of replacement belts before you buy. Some belt sanders have accessories that will make them more versatile. One of these is a frame that enables the sander to float across the surface and not dip or dig in – ideal if you don't feel too confident in holding the sander level while in use. These frames can be adjusted to ensure no excessive amounts of waste are taken off during the sanding process. Other accessories will allow you to fit the sander in a vertical position on the side of a bench or invert horizontally. These can be very useful if space or budget are limited. You'll need to check that your intended purchase can fit these options before you buy if you require them.

A belt sander in the workshop is a useful, but not essential, addition to the rest of your kit. If you need to remove waste quickly and efficiently, then go for one. Just be aware that the surface quality can be pretty rough if not used with care.

Mini belt sanders

Some manufacturers call these 'powerfiles' and they are usually fitted with narrow belts of around 6mm or 13mm. Others are available with a variety of belt widths up to 50mm. The powerfile is not an essential item, or for rough use. If you have an application then these small sanders can be used for a variety of jobs – not all with wood.

Disc sanders

Dedicated disc sanders that simply rotate are not particularly useful in a woodworker's workshop. They are too much like the disc attachments for your drill: difficult to control and difficult to achieve a satisfactory finish, that is unless you are using one all the time. In my hands they seem to always leave semi-circular marks all over the surface. So unless you'll be working on car bodies as well, I'd not go out of my way to buy one of these.

Random orbit disc sanders

These are impressive tools that come in a variety of sizes. They look like a disc sander but have some significant operating differences. They run an elliptical but random pattern and are sometimes called 'eccentric' sanders. Coupled with this is the circular rotation of the sanding disc. This random arrangement is really effective in balling off the waste without marking the surface. In circumstances where it is inappropriate to use a belt sander, but a fair amount of work has to be done, these are the boys! Mine is a mid-sized model with a 300W motor and a 125mm disc size. Lighter and heavier weight models are also available.

Most random orbit sanders will have an integrated dust removal system; punched holes in the paper allow the dust to be sucked through the base pad and into a bag. It's important that the paper is positioned correctly to avoid blocking these exit holes. Next time I'm looking for a finishing sander, I will be tempted to buy one of the smaller, palm versions available. The only slight caveat is the cost of the discs. Because they are round, the manufacturers use a system that is self-fixing. Comparing the cost between these discs and a roll of abrasive is not difficult and needs to be taken into account when buying.

Various examples of random orbit disc sanders

Various examples of 'powerfiles'

Examples of replacement discs for various random orbit sanders

Various examples of orbital sanders

Orbital sanders

Often called a 'finishing sander' these have a square or rectangular-shaped baseplate with parallel sides. The base is driven in tight elliptical patterns and usually includes forward and sideways movement. Some machines do have a tendency to leave small swirling, circular marks on the finished surface. To avoid this, try to choose one with a small 'orbit'. This means the smaller the movement, the less noticeable any residual marking may be. This type of orbital sander is fitted with standard width and length pieces of abrasive paper, which can be bought in packs ready cut to size. I'd recommend buying rolls of, say, three grit sizes and cutting your own. This should save you quite a lot of money. If you have two similar sanders, then try and arrange things so that they both take the same paper width, which will save you both time and money. How the paper is retained is another important factor. I have come across some really awkward and weak systems in the past, so this is definitely worth checking out.

Choosing an orbital sander will depend upon what you want to do with it. If you are only going to have one sander in the workshop, then you might consider a mid to large range model. Anything with a motor over 200W probably drops into this range; the serious tools go up to 500W or more! This latter type of machine will be a two-hander, so check out the vibration levels – you don't want to end up with tennis elbow or something similar. Palm sanders are smaller and, usually, under the 200W motor size and are ideal for finishing.

Buying rolls of abrasives is a lot more cost effective

Like the random orbit sanders, some of the orbital sanders will have an integrated dust extraction system with punched hole abrasives. I would avoid any that don't have a bag or an exhaust port for extraction. Without this option most of the dust will exit onto the workpiece and all around you in the workshop. You can, of course, use plain paper without any holes but the effect will be to create no extraction at all. In an ideal world, you will use punched paper and hook up to an extraction unit. If not, wear a mask! There are rolls of multi-hole papers available which should, by definition, match some of the sanders. Try some of these if you don't want to buy the dedicated stuff or can't be bothered to punch the holes.

Hook-and-loop-backed sanding pads are the ideal choice

TIPS FOR USING ORBITAL SANDERS

If you have a choice, then consider self-adhesion fixing systems for your paper, such as hook-and-loop. It's easier just to line up and fit the sanding sheet or disc rather than having to fiddle with clips

Detail sanders

Detail or delta? Different manufacturers call them by alternate names. These are usually based on the orbital sander system. The difference is that the baseplate has a shaped, protruding nose that allows you to get into those awkward, normally inaccessible, corners. Most are light to medium weight with fairly small motors; they are not designed for constant, heavy use; however, they are excellent for fine corner work. They don't appear to leave too much residual surface marking, which is a good point. Larger versions may have the ability to change the shape of the sanding head to suit other applications. When considering purchase, think through the amount of work the sander is likely to undertake. If you are convinced there is a need, then buy the appropriate machine to match the workload.

Sanders are an essential part of any workshop. If your budget will stretch to it, then you might like to buy two or three of the different types of individual machines that are available. If not, be selective and buy one that will meet most of your needs. There are some systems out there with interchangeable heads; this is another option if space or cost is the key factor. For occasional use, light weight models will be fine but in a commercial environment, aim for the heavy-duty ones that should last a lot longer.

Various examples of detail, or delta, sanders


Hook-and-loop-backed pads to fit various detail sanders

Heavy-duty sanding machines

Stepping up a scale or two we have the dedicated bench or freestanding sanding machines. These bits of kit will be more expensive, more desirable in a commercial environment, and, possibly, more flexible when it comes to the shapes and sizes of material you can abrade. >

Disc sanders

For outside curves and straight work, where cleaning up or shaping is important, a disc sander is a great asset in the workshop. They come in a variety of shapes and sizes: some will be disc sanding only, whereas others will have a combination belt sander as well. Mine is bench-mounted with a 300mm disc and I find it invaluable when I need it. A light weight, alloy disc forms the basis of the machine. Onto this you stick your abrasive – I buy a variety of grit sizes. The abrasive discs are usually self-adhesive. You need to clean the old stuff off first before the fresh disc goes on; if not, they have a tendency to lift off around the edges. Most machines will have a supporting bed that fits right up to but not touching the sanding disc. It should be set at right angles for most work but, if adjustable, this can be changed to produce bevels, etc. With a bit of practice you'll soon get the hang of how to use one. Too much pressure from the workpiece onto the disc will lead to burning followed by clogging and once that happens, it's time to change and put a new one on.

Various examples of disc sanders

Bobbin sanders

An oscillating bobbin sander is also handy but will probably only have limited use. Into my bench-mounted one I can fit bobbins that are, at a minimum, 12mm in diameter right up to 75mm. These sorts of dimensions cover most of the jobs I do. The bobbin shaft is driven round and also rises and falls the oscillation at the same time. This double action improves the finish and helps to avoid the dreaded burn out. In the centre of the bed there are some interchangeable plates; these lift out and you then put the best matching one in compared to the bobbin diameter; this then helps to support the work. A great bit of kit but not essential.

Various examples of bobbin sanders

Horizontal belt sanders

For the smaller workshop, vertical belt sanders can be found in useful sizes. Sometimes, as mentioned, they come as part of a combination machine. However, if you can afford it and, of course, have a use for it, then buy a dedicated bench or standalone model. Most of these will be similar to a larger version of the hand-held belt sanders. A fabric-backed abrasive belt is driven round two rollers. One of these is live and the other adjustable to take up the slack. The belt is slipped onto the rollers from one side and then tightened up to the optimum running tension. There will be a centring mechanism to ensure the belts run true. Various grit grade belts will be available and a side table will be fitted to take the workpiece.

A variation upon this is a panel finishing belt sander. A much bigger machine, maybe 2m long or thereabouts, the belts run horizontally. Your workpiece, say a door, is placed below the sanding belt. The belt

FORMAT 4's wide belt sander – an example of an industrial finishing/thicknessing sander

is then lowered and a pad used to bring the two into contact. There's some skill required in their use to make sure the quality of finish is up to standard.

Yet another type is a finishing/thicknessing sander. These have two or three rollers with, usually, a vertical type arrangement. They are generally much wider that the bench machines and a serious bit of kit in their own right. A bit like a thicknessing plane, the workpiece passes underneath the sanding surface to finish them off. The amount removed can be adjusted but should not be more than 1mm or so. Used where there is a high level of production required, they aren't cheap! However, scaled down models are available and could be considered cost effective in a low production setting.

Floor sanders

The last group of sanding machines is one that can be used to finish or clean up wooden flooring. These beasts are often based on a belt sander type of configuration and are self-propelled. You can also find disc and pad oscillating floor sanders as well. Having used a drum version a couple of times, they can do a great job. You do need to control them or you'll end up with grooves all over the floor. The other issue is that they often don't get right up to the skirting/edge, so this has to be finished with a smaller machine. But, hey, rather than spending a few hours on your knees, these are the boys for the job.

Abrasives

Abrasives abrade (wear away) the surfaces they are applied to and the colloquialism 'sandpaper' is often used when talking about

Various examples of horizontal belt sanders

Examples of floor sanders

them. The rate of cut will be determined by the type and size of abrasive grain, the substance it's stuck to, the spacing between the grain distribution and the condition or ability of the grain itself to cut. Exerting extra pressure should have little effect at all. Constant, even pressure is the best way to make your abrasive work for you. Cheap abrasives will be made from soft grain materials, have been set into a poor bonding material, and clog easily.

Abrasive papers were first manufactured with sharp sand or glass stuck to them, hence sandpaper and glasspaper. The latter is now found as a fine finishing paper, grade 00, flour paper, and the former is not often sand! There are three main grains used for sandpaper today: garnet is crushed stone, with better wearing qualities than glass, and used for hand finishing; aluminium oxide is tough, hard and retains its shape under duress and is therefore ideal for power tools; and silicon carbide is very hard. On our power sanding tools we will tend to use the aluminium oxide papers and, perhaps, the silicon carbide or a mix of the both. The abrading process should be progressive, starting with a coarse grain and working down to a fine. A final finishing paper of 240-320 grit will cover most of our needs.

Uses for paper- and textile-backed sandpaper

Weight	Material	Use
A	Paper	Light and flexible Handsanding
B	Paper	Slightly stiffer Hand and block
C	Paper	Medium stiffness Blocksanding
D	Paper	Medium weight Disc and orbital
E	Paper	Rigid Machine sanding
X	Textile	Medium Belt sanding
J	Textile	Light and flexible Ideal for lathwork

FIG 4. Uses for paper and textile-backed abrasives

Abrasives are used for a wide range of applications. Woodworkers will come across two main backing materials: paper and textile. Both come in a variety of grades. Paper-backed, for hand sanding applications, will be what is called 'A' weight, for use with a block 'B'-'D' weight and with power sanders etc., 'D'-'E' weight. Sanding belts are made from textile to provide greater strength and flexibility. In most cases this will be an 'X' weight textile. A very flexible textile back is 'J' weight, which is often used in woodturning applications. In addition to the backing material there are, generally, two types of bonding adhesives to stick on the grain: animal glues and/or resins. The animal, or hide glues, will soften in use and are not really suitable for power tools. The speed of revolution, or oscillation, generates too much heat. Resin, on the other hand, has greater adhesion under stress and is ideal for power tools. Animal glues, used in conjunction with a lightweight paper, will give a softer cut as the grain flexes. This is desirable when hand finishing small profiles. Resin glue is hard; we have all tried to fold this paper cleanly with little success! However, the hardness holds the grain firm and makes it ideal for power tool use.

There are a number of other abrasive mediums that can be used with a variety of success. For cutting back sealed surfaces, steel wool can produce a really fine finish. I often use a coarse wool, say, grade 2, after the first sealing coat to cut back to the wood. Then, depending upon the subsequent number of coats, work down to an ultra fine wool of grade '0000'. After cutting back lightly with the last one, wax can be directly applied to give a beautiful, lustrous finish. There are also some composite abrasive sheets, made from Nylon, available. These appear to be an open mesh material, probably 12mm more or less thick, which have the abrasive fixed to the threads. You should be able to sand different profiles with no clogging, the waste dropping away between the mesh gaps. I have seen the same type of material set on a shaft. These balls of abrasive material can be used to clean up or finish inside cavities.

Sandpaper grit grades/sizes

	Silicon Carbide, Aliminium Oxide	Garnet	Glass
Very Fine	600		
Very Fine	500		
Very Fine	400	400 (10/0)	
Very Fine	360		
Very Fine	362	320 (9/0)	
Very Fine	280	280 (8/0)	
Very Fine	240	240 (7/0)	00 flour
Very Fine	220	220 (6/0)	0
Fine	180	180 (5/0)	
Fine	150	150 (4/0)	1
Fine	120	120 (3/0)	2
Medium	100	100 (2/0)	F2
Medium	80	80 (0)	
Medium	60	60 (½)	
Coarse	50	50 (1)	
Coarse	40	40 (1½)	
Very Coarse	36	36 (2)	
Very Coarse	30	30 (2½)	
Very Coarse	24	24 (3)	
Very Coarse	20	20 (3½)	
Very Coarse	16	6 (4)	

FIG 3. Abrasive grit grades for woodworking

The usual message applies to both machine and abrasive: buy the best you can afford and make sure it will do the job you want it to do well. **GW**

Various examples of abrasives for woodworking

TIPS FOR USING ABRASIVES

- Always aim to buy a quality abrasive. Most of the cheaper ones available will clog up, tear or lose their abrasion too quickly, thus wasting time and money
- Sheet papers come cut to size and punched ready to use. Consider buying your abrasive paper in a roll and punching your own holes. This is much cheaper and you'll have the advantage of always having a stock
- Damping the surface, once you think it's as smooth as you can get it, will raise the grain slightly so that you can get an even better surface finish

Split ends

Edward Hopkins designs on the hoof – and comes up with a donkey bracket

Lust won. I kept thinking about the wide white boards of ash I'd seen at Winter Garlands (*GW*311) and I couldn't resist; I didn't want to resist. That's the whole point about temptation: you see no reason to resist. So back I went and this time it was a trailer load. The boards were enormous. They sat on trestles, blocking up my workshop; making it impossible for me to move. I had to cross-cut them to get them upstairs into dry storage but because I had no particular plans, I had no cutting list.

I judged the boards on their merits. Six of them were consecutive from one tree. Three more were from another, wider and cleaner still, yielding two, almost perfect sheets 18in wide and 6ft long, and the third the same, but not so good. Beyond, a couple of large knots promised nothing but trouble so, while preserving adjacent timber as long, but thinner planks, I cut through the knots with impunity. I stacked the timber in stick next to the oak that entrapped me originally. I'm pretty sure there's a dining table in there, and maybe chairs too, and a whole lot more, but for now it can sit quietly and get used to its new surroundings.

A few pieces still loitered by the bench: plank ends 600mm long, widening as the tree connected with its roots, but fractured by many shakes; not worthy of storage, too good to discard. I thought then that I would make something – anything – just to honour the timber. I would let the wood dictate a design. Inevitably I'd colour that design with needs and wants

PIC 1. The ends, seen bottom left, had no worthwhile timber in them and will, sadly, end up on the fire. Top left is a better piece whose main fault is in being short – but, critically, not too short to go through the thicknesser. I had already sawn down existing shakes. There are more cuts to make. With each necessary cut, the amount of usable timber dwindles

of my own, but that would only add zest. I had the perfect excuse to do exactly what I wanted but I didn't have a clue what that was.

The joy of not knowing

I specialise in not knowing what I'm doing. I used to think it was a weakness, an inadequacy, but now I prefer to see it as an asset. I once built a balcony on my house. John asked if his teenage son Alex might 'help' me. Alex would look at the construction so far and he'd query 'what will happen there?' and 'what are you going to do next?' I'd say 'I don't know' so many times that he must have thought I was being deliberately obtuse. I wasn't. I really didn't know. I didn't need to know. What I was doing was sufficient and necessary up to that point. It's an organic way of working where each stage is complete in itself.

You do of course need an overall direction and drift but you don't have to have every step of the journey plotted in advance. If you do – and there are many professional situations where this is inevitable – then you're likely to climb only that particular staircase. If instead you start with a vague notion, an old compass and a blunt machete, you could end up anywhere. It could be a place of waste and disappointment. It could be a place more beautiful than you had imagined. It's a risk, and risk is exciting.

I cut the wood down further. It appeared to offer several lengths with straight and even grain, 50mm wide. The grain reminded me of laminating. I've done a bit of laminating and it is interesting. It can also be troublesome with laminations bent beyond their limits. Good moulds are essential, and an infinite number of cramps. Another trouble is 'squidge'. As laminates are cramped together, the glue can act as lubricant: the more you squeeze them face to face, the more they slip sideways.

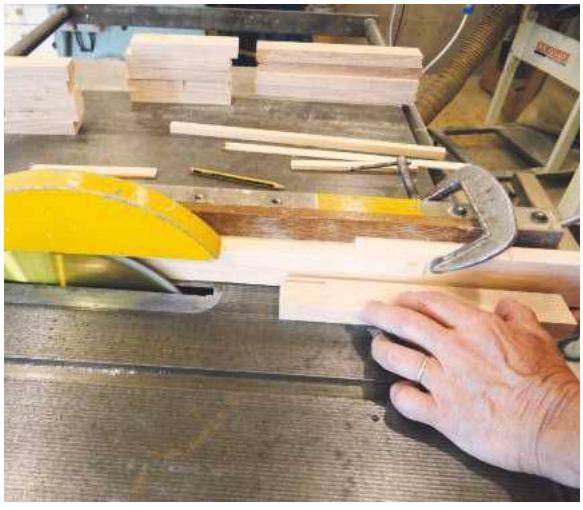
Half this squidge, I thought with impeccable logic, would be eradicated if one end of the piece of wood were solid. The other end I'd cut into a comb joint. If the comb's teeth were long enough, they might happily bend in a mould. There would be gaps at either end of the joint where the teeth curved away. Would this be a problem? I didn't see why. If you can't avoid it, then make a virtue of it. I mocked one up. It didn't bend well. Not well at all (**Pic.2**). A bit of sideways thinking was needed (**Pic.3**).

The comb joint has to be just right: too loose and I'd be relying on glue; too tight and I won't get the parts together before the glue goes off. I cannot cut a comb by pencilled lines – as my first attempts showed – so I needed some sort of jig, some method of moving the fence exactly the right distance for another gap between identical teeth (**Pics.4-7**). >

PIC 2. Inauspicious beginnings. What was I thinking of? If these rough-hewn combs were five times as long, they might invite a satisfactory curve with a radius of, say, 400mm. To laminate on that scale makes my modification (to have one end remaining in the solid) of little consequence/a bit of a nuisance

PIC 3. But if the components were rotated by 90°, they'd clasp each other, fingers interlocked with no stress or strain. This, I thought, was better. But then it disturbed me that I had not arrived at this obvious and profound conclusion by myself. Must I go round the houses in order to arrive? On the other hand, I quickly retorted; isn't it good to be working in a system that automatically corrects for human error?

PIC 4. A second fence is cramped on to the existing one. The thin, shaped strip, which is glued to it, allows the component to be stopped precisely. The strip is thinner than the first tooth of the comb so that the first gap can be cut



PIC 5. Cutting the first gap, using a fine-toothed blade

What then to make? What do I want: what do I need? Well, I want to make wild extravagant gestures with unmissable dramatic effect. No really, I do. But in the meanwhile I have a hazy list of domestic requirements, near the top of which is a clothes hanging rack, a sort of temporary wardrobe because although our guest suite is well appointed, there is no wall space for a proper wardrobe. I'm not unhappy about this for a wardrobe is usually a big ugly box. Besides, our friends don't generally stay that long. Instead, I envisaged an aerial structure light and delicate, dedicated to a few clothes hangers and probably as unlike a box as possible.

The comb joint allows an easy dynamic structure. I had seen the joint as a neat and strong construction. I would cut the protruding combs back flush with the next component making, in effect, a giant walking stick handle. But something troubled me. The user wouldn't see the construction: all the combs were on top. The rack wouldn't look particularly interesting despite the innovative work that had gone into it. A causal passer-by might not even notice it. This was not good, not good at all.

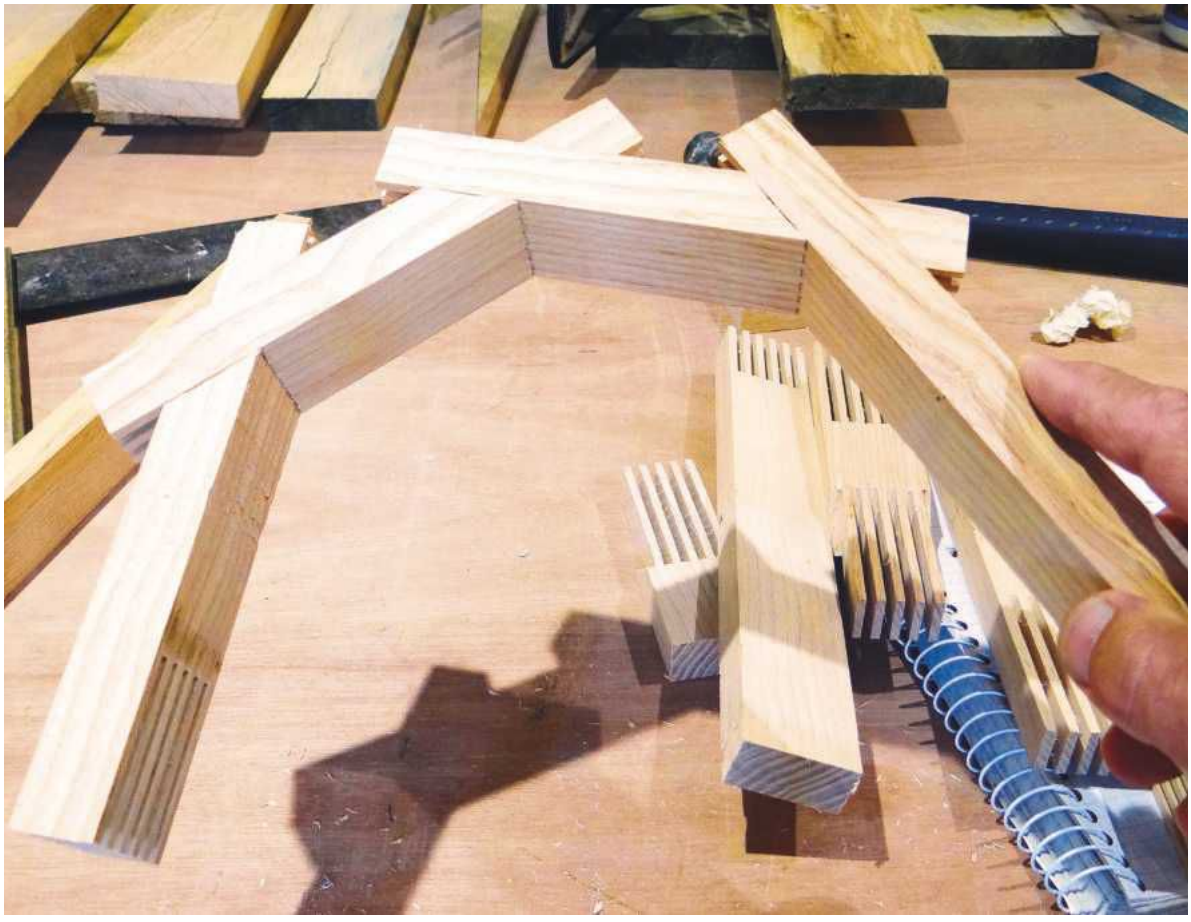
Donkey brackets

The new improved Mk II clothes rack would extend the combs so that in two places they'd link fingers, triangulate a corner and make it extra strong. The visible combs would add a technical feel to the shelf somewhere between suspension bridge and nodding donkey.

The components would need to be longer but, ahem, I've just cut all my ash down to length and I don't have enough. This is a different sort of ignorance. I've rushed ahead of myself. I've blundered. Now I have a heap of components with no purpose in life. (I can't allow it to be so, so at some point I'll see what I can do with them, but for now it seems like

PIC 6. Holding the component firmly to the table; releasing the fence and winding it out, then back in with a spacer in place; locking the fence; removing the spacer and repositioning the component for the second gap. This spacer is a vital part of the procedure and determines the tightness of the joint by affecting the thickness of the comb's teeth

PIC 7. Cutting the second gap. A push-stick is necessary though largely as a pull stick. When the component is stopped by the fence, it has to be drawn back. The stick makes this safe and controllable



PIC 8. I made three of these before I realised I didn't want any of them because once trimmed, they would look too plain. Perhaps they have another life to come. I hope so. The oblique lines on the side of the joint are slightly curved from the table saw. This has not to matter. This example is not glued. Presumably glue would diminish the shadow line. Best not to worry

a bit of a shame, and a waste of time.)

I went upstairs to my new-found timber store hoping to find an obliging length of ash. It was indecently soon to start using it, but my shelf, I countered, had no shrinkage issues. If the ash wasn't bone dry, it could safely become so later. There were, however, no odd lonely pieces of ash offering themselves up, so I turned to the neighbouring oak. On top of that stack, weighed down by some battens and a block were two short pieces of oak that would be just right. >

PIC 9. Donkey brackets. A day later and it was done. Now I had to know how to join the brackets together so that a hanging rail could stretch between them. Four rails seemed sensible: one at the donkey's nose from which to hang clothes; one on the top of his head, one under his throat and another down between his knees or across his chest (depending on the size of donkey). I shouldn't get too attached to the idea of the bracket being a donkey: I'm planning to cut its ears off

Only when I'd made the brackets did I see that the back rail had the capacity to hold some pegs. I thought of five equally spaced pegs for bathrobes and thin things, but that looked cluttered. Four was an idea – two for each guest – but I wondered whether three would give a centrality and focus to the bracket. Maybe the middle one could be longer? But no, it would be too pointed and visually competitive. I had just enough timber to cut four equal length pegs – three and a spare.

I cut one notch on the wrong side so that was the spare gone. The radial arm saw took a chomp too deep, and another one went. At this point I realised that two pegs were much better than five – more in scale with the function of the piece, which is only to house the clothing of a couple of day's stay. This is called making a virtue out of a necessity.

Standing back

The finished rack doesn't look anything like a donkey. Or a bridge. I'm alright with that. It is what it is, for better or worse. I don't have any reservation about the triangulated comb joints: they're smart, clever and honest. I did the only thing I could do with the rails and they're OK. The only ifs or buts are with the pegs. When I'd made them (which took a considerable time) and dry fitted them, I didn't know if I liked them. Overnight I convinced myself that they had to go. But, ignorant as ever, I didn't know with what to replace them.

The next morning I tried to see the rack with fresh eyes. The pegs did exactly what pegs don't do: they didn't stand out. Actually, they looked quite good. This was a pleasant surprise and a relief. Now all I have to do (apart from cleaning it up, gluing it together and cleaning it up again, before waxing and hanging) is to forget all about it. I've been too close to it for three days to see it with really clear eyes. And, of course, I've never seen it fixed to the bedroom wall with bathrobes and wooden coat hangers adorning it. And because this is how it will be, I've never seen it (or anything like it) ever before at all. **GW**

PIC 10. Don't be fooled by this photograph: the lines above the middle horizontal mortise are only shadow lines. The middle structure should acknowledge the sides: it shouldn't be dull – as here, in dry-fit assembly, it is. But I don't like constructing decoration for the sake of it. The rails are off in another direction; on another axis, and have license to add another theme. Having said that, they don't have a lot of room for movement. I played with grooves along their leading edges, but that didn't seem to work, so I went for chamfers

PIC 11. The completed clothes rack

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Forsa 9.0 — 1300mm — 107 mm — **3200 mm Cutting Stroke**

Forsa 4.0 & 4.1
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Forsa 8.0 & 9.0
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Letters & Makers

Letter of the month

Christmas gifts for loved ones

Roger's beautiful shape-sorter features his granddaughter's name on the front...

... and numbers 1-10 on the reverse

Hi Tegan,
I'm new to woodworking and grandfatherhood – I think the two could go well together! At least it keeps me off the email and in my workshop.

I have made this small shape-sorter for my granddaughter for Christmas, when she will be 18 months old. I used some leftover 9 × 70mm beech, which I had a local wood shop make up years ago for kitchen drawer dividers, as well as some scrap 18mm maple from my daughter's old bedroom work desk from her school days. The shapes were cut out of one piece of 9mm beech with a scrollsaw and then laminated to a solid piece of beech to allow the shapes to fit. I hand-cut mortises in the maple supports to take the beech. The idea is to help Clementine work out which shapes go where (and only in one place). On the reverse the shapes are numbered 1-10 so she can learn to count as well. It was lucky there are 10 letters to her name! I made sure all the pieces were compliant with the small parts cylinder standard in EN71-1:2014, and the paint and varnish is toy-safe Polyvine acrylic.

I had hoped to develop my pyrography or carving skills for the letters and numbers, but in the end I had to go for marker pen and 20mm plastic stencils. You can see my first attempt at carving on the scrap wood! So, a very simple project, but as we know, young children are not offended by simplicity as we often are! Hopefully it will help her develop her dexterity skills and learn at the same time.
Best wishes, **Roger Wotton**

Hi Roger, thank you so much for getting in touch and for sharing your project – it's wonderful! What a lucky granddaughter you have! I'm sure this will be treasured for generations to come and she'll be a champion shape and number sorter before you know it! What a great way of using up offcuts and also recycling old bits of wood, especially those that belonged to your daughter, which helps to make this present even more special. Thank you again for sharing! **Tegan**

Router cutter shanks

Just a small selection of the extensive range of router cutters sold by Trend

Dear Tegan,
I enjoyed reading the latest issue of *Good Woodworking* (*GW*312). I probably won't be the only reader to point out that Peter Bishop's article on learning about routers (pages 24-29) is misleading in terms of the information given regarding router collet sizes, where it says that these usually come in 6mm, 8mm, or 12mm versions. Common collet sizes in the UK are 6.35mm and 12.7mm (1/4 and 1/2in); 8mm and 3/8in sizes are rather less common. I'm not sure 6mm and 12mm cutter shanks are available from any supplier, but if they are they certainly wouldn't fit the commonly available collets.
Ben Elford

Hello Ben,
Thank you for pointing out this oversight – unfortunately it seems that we missed the relevant conversions out of the paragraph on collets. This is how the paragraph on collets and locking mechanisms should have read:

The collet is directly related to the shaft size of the cutter: usually 6mm or 1/4in, 8mm or 3/8in and 12mm or 1/2in. Most will have a self-locking mechanism that works as you tighten the collet nut on the cutter shaft. The majority of cutters have 6mm or 1/4in shafts but specialist and larger ones will be manufactured with 8mm or 3/8in and 12mm or 1/2in. All are readily available but it is important that you fit the right collet for your cutter shaft size. If you wish to obtain total flexibility, then a router that will accept a range of collets is a must. The advantage of the big collet is its ability to take a more robust cutter. The larger the shaft size, the better grip the collet can make on it. Small shafts can flex and distort occasionally. Whichever size of cutter fitted, the shaft should always be inserted at least three-quarters of its length before the collet is tightened. Always check that the cutter is not grounded – i.e. touching any part of the body.

Peter tells me that he did contact some major router cutter suppliers, many of which indicated that these shaft sizes are readily available in the UK. The key point to remember here is that the cutter should fit the collet and if not, don't use it. There is also a wide range of collet adaptor sleeves available; for example, Trend list more than 16, so this will hopefully be useful for other readers to know.

Once again, thank you for getting in touch and for pointing out our errors; we hope we've cleared up the problem and will endeavour to do better next time!
Best wishes, **Tegan**

FORUM THREAD TURNED CHRISTMAS PRESENTS

I thought I would start making my Christmas presents early as there always seems to be more to make each year! I have two more lazy Susans, which are easy until you have to put the final four screws in – a magnified screwdriver is definitely a must. The wood is a job lot I bought on eBay – an incredible bargain at only £24 for the lot. The two main burrs are massive and, as I have not attempted to turn any as big as this before, I am going to seek some advice from forum members and my club. **Robby**

I love the clock, Robby, and you certainly got a great deal on all that wood. I think the burrs are something that need to be seen in person before making any suggestions, but from the photo they look like they will produce something special when you get around to turning items from them.
Derek

Thanks, Derek. I was delighted with the wood, which I had to pick up from a country village about an hour's drive away. We had a great day out and a bargain to boot with hopefully more to come. I am toying with the idea of using the club's bowl saver on the large round burr – I've not used one, have you?

I'm going to turn the one shaped like Great Britain into a table top or cut it up to give me four or five bowl blanks.
Robby

Robby has already turned a pedestal clock and two lazy Susans for Christmas presents

One to watch: Richard Marvin

While feeling disillusioned with his degree course at university and procrastinating online, Richard stumbled upon a video about the Offerman Woodshop based in Los Angeles. "I was slightly taken aback by the passionate and sincere way these woodworkers spoke about the material they use and the objects they create," he says, "and what really struck a cord with me was the sense that using your hands to craft something tangible and beautiful could lead to an intrinsic feeling of satisfaction; a feeling which was devoid in my previous creative disputes."

Richard has now been studying woodwork at the Building Crafts College in London for just over a year. He began with a bench joinery qualification and is currently studying for a Fine Woodworking Diploma. "I've learnt so much; improving my hand skills on the Japanese side table in ash designed by Rod Wales, and using machines and making jigs while building the Hexagonal side table, designed by Andy Mayes," he comments.

His two-person dining table has a Jesmonite resin table top – a composite material which 'goes off' much like plaster. Richard poured the liquid resin into a plywood mould, lined with baking parchment, much like baking a cake, and left it to set. This top sits on three turned sections below.

Richard takes great pleasure in practising a craft which is both practically and creatively satisfying. "Woodwork requires a level of confidence, driven by competence and an aspiration for quality, which I wouldn't find doing anything else," he finishes. To find about more about Richard and his work, see **www.richardmarvin.wordpress.com**.

Hexagonal side table – 450mm high × 400mm across the top

Japanese side table – 350mm high with a 400mm square top

Jesmonite dining table, which sits on three turned sections

WRITE & WIN!

We always love hearing about your projects, ideas, hints and tips, and/or like to receive feedback about *GW*'s features, so do drop us a line – you never know, you might win our great 'Letter of the Month' prize, currently a Trend Easyscribe scribing tool. Simply email **tegan.foley@mytimemedia.com** for a chance to enhance your marking capability with this versatile workshop aid

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David Moody

An avid reader from Thailand, David recently had the opportunity to build a projector stand for use in the classroom of the school where he teaches. He designed it himself, which wasn't easy considering the fact he couldn't find much inspiration online. The first attempt was a success, and he's currently waiting to find out if the school wants more.

David recently made a projector stand for the school where he teaches

Mike Jordan

According to Mike, this build was made up as he went along, although you certainly wouldn't know it! "It started out as a promise to make a waterwheel and gathered a few embellishments along the way," he says. The project features a small solar panel on the back left corner, which lights up the inside after dark. "It's given everybody a few laughs and does work surprisingly well. The axle of the wheel extends right through the building and a plastic cam works the figures. It still lacks a few finishing touches but I will sort it during the winter when I take it in out of the weather," he finishes.

Mike's fantastic waterwheel, complete with moving figures

Mailee

Mailee's latest build is this stunning oak desk, which was made for one of his customers who had seen something similar. This desk includes more space for files in the two bottom drawers and also needed to be transportable, so the top and upper drawers are separate from the pedestals. It's made in American white oak and drawer runners are all soft close.

Mailee's beautiful desk is made using American white oak

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"Kebony is the perfect material for the Habitree – it is long lasting, beautiful, and it comes with all necessary certifications and eco-labels, in order to truly celebrate responsibly"

– Jan Strandkvist, co-founder of Habitree

KEBONY *Christmas tree*

Habitree launches the Kebony Christmas tree for sustainable holidays

This autumn, Habitree is launching a stylish and eco-friendly Christmas tree made from sustainable Kebony wood. Danish designer, Jonas Støvring, first developed the idea while working for the Randers microbrewery in Denmark, which used Kebony timber to build premium boxes for packaging their beer bottles. The process of manufacturing these boxes left the distillery with excess offcuts of wood, with which Jonas created a small tree as a way of upcycling the spare materials; the resulting design was so clean and striking that the designer teamed up with entrepreneurs Søren Bach and Jan Strandkvist and decided to establish Habitree as an individual start-up company.

Unique & beautifully crafted

Comprised of overlapping stacks of Kebony wood, these unique and beautifully crafted Christmas trees provide the ultimate alternative to the typical Christmas fir, although the Habitree's aesthetic simplicity makes this an eye-catching sculpture that is not just for Christmas. The bespoke trees are a minimalist, stylish and sustainable addition to any household or workplace. Available online now, the Habitree can be individually shaped by the designer and decorated with candles or more traditional decorations during the festive season.

Sustainable credentials

Kebony, the sustainable alternative to tropical hardwood, was selected by Habitree both for its aesthetically clean finish and sustainable credentials. Developed in Norway, the patented Kebony technology is an environmentally friendly process, which modifies sustainably sourced softwoods by heating the wood with furfuryl alcohol – an agricultural by-product. By polymerising the wood's cell wall, the softwoods permanently take on the attributes of tropical hardwood including high durability and dimensional stability, without the need for tropical deforestation or environmentally damaging treatment. The Habitree is produced from FSC-certified Kebony wood types, and all Kebony woods carry the Nordic Ecolabel 'Swan'.

Three different designs

This unique indoor tree is created for those who enjoy Scandinavian design and want to celebrate sustainably. The Habitree can be used all year-round, ultimately reducing the number of trees that are cut down each year during the Christmas period, ensuring that the Habitree works successfully as both a design feature and an environmentally responsible product. The product range includes three different sizes – 950mm, 1,250mm and 1,800mm – and two different wood types. Kebony Clear is dark brown, with a smooth knot-free surface, while Kebony Character is more rustic, and has the traditional Nordic style. All products are ideal for both home or office.

Jan Strandkvist, Co-founder of Habitree, comments: "Kebony is the perfect material for the Habitree – it is long lasting, beautiful, and it comes with all necessary certifications and eco-labels, in order to truly celebrate responsibly." **GW**

Habitree – celebrate naturally and responsibly

Habitree is a new kind of holiday tree for a new kind of home or office. It was created not just for any space, but for genuine habitats, where values such as sustainability are as important as the joy we take in decorating for the holidays. Made from premium, sustainably farmed wood and reusable year after year, Habitree can be shaped and decorated any way you like. It warms any environment with its natural beauty and the positive spirit in which it was created just for you. To order your Habitree, visit **www.habitree.dk**

CNC routed table

In the third part of his new series, **Dennis Keeling** sets about making a table using the CNC router, and while he encountered a few problems with the proportion of the table to the legs, the end result is very striking

I wanted to make a coffee table that would be an interesting design, which would have been difficult to make using traditional tools. Squares and circles are easy for the furniture maker but curves are a problem. CAD allows us to use splines, which enable shaping of the most interesting curves. You are only limited by your own imagination here.

I hate having to apply paint to finish projects. At college I used melamine-faced plywood for my adjustable chair project, which was great to work with. Melamine-coated birch ply comes in 12, 15 and 18mm 1.2 × 2.4m sheets, so I purchased a sheet 18mm-thick – I didn't want the table to look like a cheap IKEA flat-pack. The melamine coating is very hard and can chip easily, but it is durable and easily wiped (for those inevitable coffee spills).

The CAD design

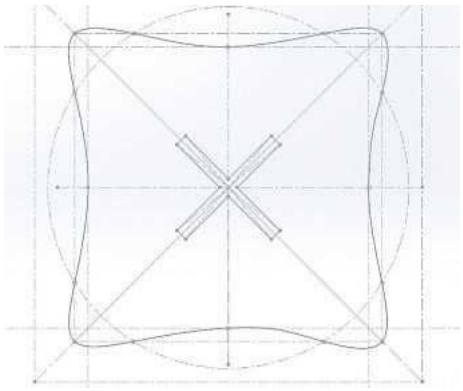
The maximum cutting size of my CNC router is 600 × 600mm, so I started with a design of the top that could be cut from a 600mm square sheet. Getting symmetry of spline curves can be very difficult, so I constructed a framework of construction lines to give me symmetrical points for the splines. I could have created a quarter segment and mirrored it both ways but I wanted to play around with the shape (**Pic.1**).

When I was happy with the top, I then constructed the matching interlocking legs. While I had bought 18mm ply, the actual thickness with the melamine facings was 18.3mm, so I designed the slots to be an exact fit – I could make an allowance for tolerance with the CAM system. I set the height of the table to be 450mm and the legs 580mm wide. I wanted a Queen Anne look to the shape. I did use the mirror feature around the centre vertical construction line to ensure the sides were symmetrical (**Pic.2**).

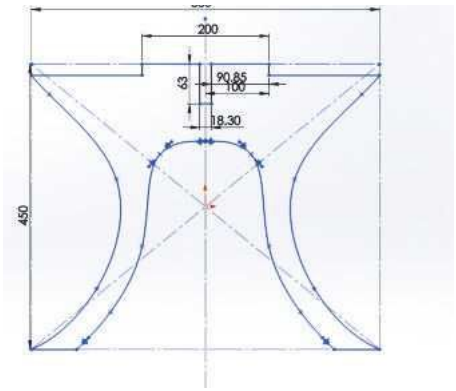
When both sides and the top had been drawn in CAD, I created an assembly to ensure they all fitted together. I decided to use 90° corners in the design rather than the tangent radius technique that I have used before on previous projects. I wanted to finish the corners off by hand and make the design a desirable piece of furniture (**Pic.3**).

The CAM configuration

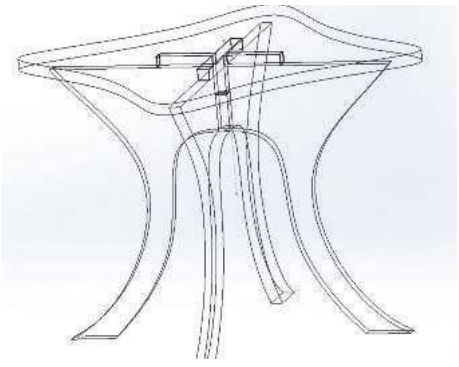
I wanted the edges to be a clean cut on the top of the Melamine. Plywood is always notoriously difficult to machine cleanly and the melamine can chip, so I



PIC 1. CAD design of the table top



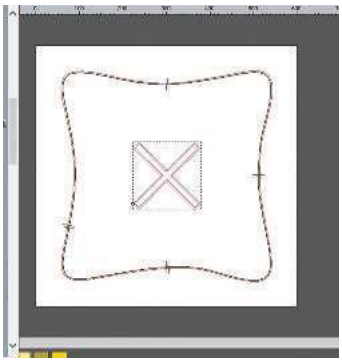
PIC 2. CAD design of the side

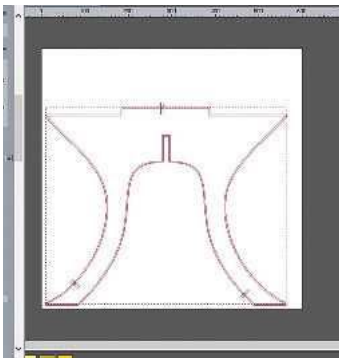


PIC 3. CAD table assembly

PIC 4. The downward spiral router cutter

PIC 5. The test slot made using the cutter





PICS 6 & 7. CAM configurations

decided to invest in a 6mm twin downward spiral carbide cutter with a 20mm cutting depth. The downward spiral pushes the top of the laminate down (rather than lift it with the conventional upward spiral) (**Pic.4**). To test out the effectiveness of this router cutter and to check the tolerance of the cutting of the slots in the plywood, I created a slot 18.3mm wide in the corner of the melamine ply. My CNC is very accurate and I thought that I may have to make a 0.1mm over allowance, but when I tested the slot, the melamine-faced ply just fit – no allowance needed (**Pic.5**).

The CAM configuration was quite straightforward – it was cut to the exact dimensions with the following settings (**Pics.6** & **7**):

- Tool – 6mm downward spiral end mill
- Stepdown – 2.5mm
- Feed rate – 800mm/min (slot) & 1,000mm/min (outer)
- Plunge rate – 600mm/min
- Spindle speed – 15,000rpm
- Machining time – 1.28 hours for the top and 1.28 hours per side

  I was happy with the 1,000mm/min feed rate, but some CNC routers could possibly machine faster. I didn't use bridges for the table top but I used them for the sides.

Machining the table

A piece of 12mm MDF measuring 600 × 600mm was placed on the vacuum table and the 600 × 600mm melamine panel placed on top. There was no need to hot-melt glue the sides as with such a large surface the vacuum table would be more than adequate to stop any movement. The router bit was positioned on the top surface of the bottom left-hand corner, with the vacuum turned on. The vacuum makes 5mm difference in the 'Z' height on my CNC (**Pic.8**).

The router head needs the dust extractor hood fitted as there is a large amount of dust generated. The inner slot of the table top is cut first (**Pic.9**). The outer shape of the table top is then machined (**Pic.10**).

The table top is then removed from the CNC, the MDF bed cleaned up and a new piece of melamine-faced ply is fitted for machining the two sides; this takes about the same time to machine (**Pic.11**).

Cleaning up & assembly

The internal corners have to be cleaned up and the bridges removed from the sides. I used files to undertake this job – care must be taken to not lift the melamine surface when filing (**Pic.12**).

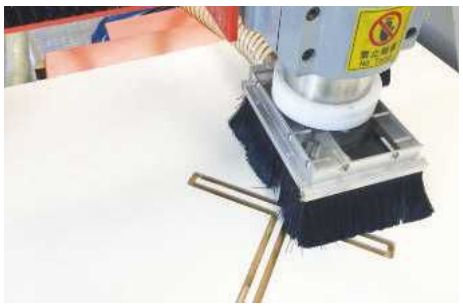
The outer plywood edge will be seen on the finished table, so the simplest way to seal the plywood for finishing is to coat it with cyanoacrylate (CA) adhesive. I tried the thin and the thick versions: the thin really soaks in well but it runs everywhere and I had to then clean it off the melamine faces, which was not easy; the thick spreads very well although doesn't penetrate as well. It was easy to apply without having to clean up the melamine afterwards. Be careful of getting CA adhesive on your hands – I put my hands in polythene bags as it doesn't stick to this material. Also, beware of the choking fumes when the CA glue attacks the plywood and ensure to ventilate the workshop well (**Pic.13**).

When the CA glue has cured, which will take at least a couple of hours, the edges can be cleaned up. Rather than using abrasives, I prefer to use a small hardened steel scraper made from an old Stanley blade. The blade is run at right angles through a grindstone and a fine burr is developed on the bottom edge. It's great for cleaning up the edges (**Pic.14**). I was so pleased with the end result that I did not have to apply any other finish to the edges. The result was a smooth, satin finish.

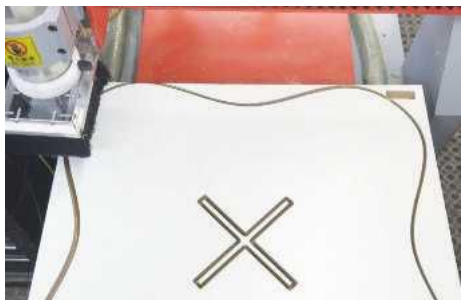
Assembling the finished table

The two sides are dry mounted together to ensure the overlap centre slot has enough clearance for them to sit evenly (**Pic.15**). The top is then positioned over the legs. Don't force the top, otherwise the melamine edge will get caught and lift. You may have to relieve the internal corners and the ends to enable them to fit snugly. A dry-fit should be all that's needed – no need for glue or nails (**Pic.16**). The table is then complete and ready for use (**Pic.17**). **GW**

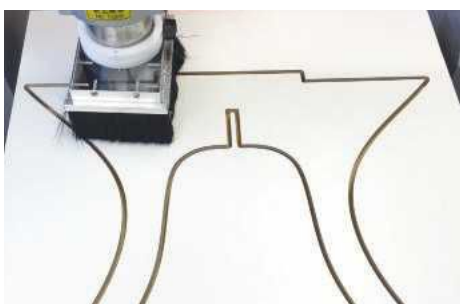
PIC 8. Setting the zero



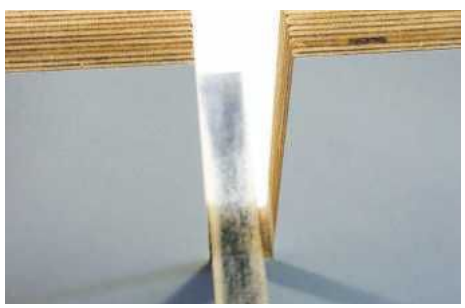
PIC 9. Cutting the slot



PIC 10. Machining the table edge



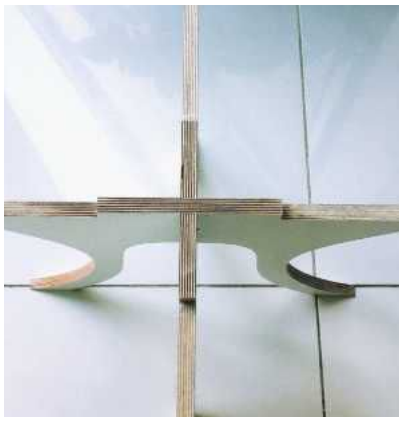
PIC 11. Machining the sides



PIC 12. Filing the internal corners

PIC 13. Applying CA glue to the edges

PIC 14. Cleaning up the edges with a small scraper



PIC 15. Assembling the side panels

PIC 16. Fitting the legs to the top

PIC 17. The completed table

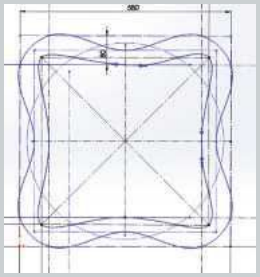
How to recover from a mistake

PIC 18. The first attempt: the top was out of proportion to its legs

The first attempt at the table produced a top that was out of proportion to its legs (**Pic.18**). My wife, a sculptor, said the legs were the wrong shape for the top! Nothing much I could do about the legs other than go back, redesign them and cut fresh melamine, which is a lengthy and costly process, so I decided to reduce the size and modify the shape of the top, which would enable me to use the existing top by re-machining it smaller.

I went back to the CAD drawing and played around with a smaller and sharper version. This time I drew a construction circle to show where the existing legs would stretch to (**Pic.19**).

By carefully positioning the existing top over the MDF base of my CNC, I was able to line it up with its original 'X-Y' position. Keeping the original CAM co-ordinates, I could machine it again. I did a dry run with the 'Z' axis set very high to check the alignment. Satisfied that it was 'near-enough' (a CNC technical term) I reset the 'Z' height and started to re-machine it (**Pic.20**). I was delighted with the result – even my wife admitted it was an improvement! (**Pic.21**)



PIC 19. The revised top design

PIC 20. Re-machining the top

PIC 21. The completed re-worked top

ABOUT THE AUTHOR

Dennis Keeling progressed from segmented turning to CNC routing after completing a course at Bucks new University in Furniture Design. He has self-published his CNC projects and a copy of this design in .dxf format is available on his website: **www.denniskeeling.com/downloads**

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Learning wood machining skills

In the next part of his new series, **Peter Sefton** and his Long Course students mix up the use of machines and hand tools to make a small rack

Mixing up the use of machines and hand tools has always been a crucial part of my students' time with us at the School. This small rack was their first project to start learning wood machining skills; preparing timber for their individual projects.

General design brief

The students were given a general design brief for a rack incorporating hand-cut through and lapped dovetails, wedged mortise & tenons and dovetail housings – all good joints in themselves, but all reliant on accurate timber preparation and choice.

Waney-edge English ash boards were taken from the timber store where they have been settling since I bought them four years ago; I sourced the boards from a local farmer after he had planked and air-dried them. The boards were full of character – in other words, knots, splits, sap and a few worm holes for good measure!

Waney-edge boards

Finding the components for a given project from waney-edge boards can be quite tricky – knowing what is going to be stunning and what is kindle is a key skill when evaluating timber. I feel that having this skill is one of the defining factors between being a good woodworker and a great furniture maker.

The students referenced their drawings and cutting lists and needed to select all the timber from a single board to keep colour and grain consistency. Choosing the timber at this early stage can make or break a project – we were looking to match the grain left and right, choose timber that the joints would work within plus find some interesting grain to lift the project.

Interlocked grain

We found some fantastic swirling crotch grain that we knew would look great within the rack. This interlocked grain can be challenging to use without breaking up when being machined – we knew we were in with a good chance of it not breaking up as we had just changed over the planer's cutters, so we were quite prepared to take it slowly through the machine and if this didn't work, we would revert to our dual drum sander. The timber was carefully machined and left to relax for a week before being re-machined prior to the hand joints being formed.

The racks are now complete and the grain's natural beauty has been highlighted within the back rails and detailing within the project; it's great to see those rough-sawn boards come to life. **GW**

Great use of the grain in Ian's chilli spice rack

Students reading the grain and marking out boards

Boards after ripping marked up with student's initials on the ends

Ian ripping boards to width on the table saw

Deeping is often safer on the bandsaw, using a gripper to hold timber against the fence

A pair of through dovetails with the cathedral grain rising from the joint

A pair of left- and right-hand rack sides with dovetail housings and matched grain

Simon's finished rack with the grain on the sides following the curved front edge

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Expert judges

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Important information

- Due to email server size limitations, please ensure to send low resolution photos. For ease of judging, attach all photos and text to one email rather than sending multiple emails, which could potentially get lost
- Please outline your name, address, age and the piece of furniture you've entered at the start of the email (preferably in the subject heading)
- Please note that finalists must cover the costs of transport to the judging ceremony as well as any costs involved in transporting their piece of furniture
- Entry is open to UK residents with a permanent UK address
- The closing date for entries is 17 February 2017. Pieces will be judged on Friday 17 March 2017, so please ensure you are free on that date in case your entry is chosen as one of the final five
- All entries should be emailed to **tegan.foley@mytimemedia.com** and should be sent no later than 17 February 2017 – postal entries will not be accepted
- Only one entry per person; multiple entries will be discarded. Employees of MyTimeMedia Ltd and Felder Group UK are not eligible to enter this competition
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Building

Winner of the 'Cabin & Summerhouse' category in the 2016 Shed of the Year competition, **Oliver Renison, Aka Black Tea One Sugar**, shares the secrets behind the making of his amazing shed

I don't know anything about growing vegetables; it's never been something I've particularly aspired to, but when the chance to take on an allotment plot came up close to where I live, I had a dream: a dream of a beautiful shed I could design and build myself, a shed where I could spend my time relaxing and getting away from work day stresses. The tasty vegetables would just be a bonus!

'Perfect storm' situation

I took on the allotment just before Easter 2015, sharing the plot with a few friends and family. In that time we were able to plan what we'd grow and give the plot some much needed TLC after being vacant for some time. We needed a shed, though – somewhere to store our hand tools and get shelter from the weather, and we needed it quick.

It so happened that Easter break was coming up at Warwickshire College where I'm a technician/instructor on a furniture making course. I had some holiday booked and a window where the workshop would be empty, giving me a chance to build something with all the conveniences of a well-equipped workshop to hand. I had about five days in total to do it.

I also happened to have access to quite a lot of materials that contractors working on site had just left behind outside in the elements, and so I had a sort of 'perfect storm' situation to get something built.

The green light

I'd been poring over interesting building techniques and all manner of shelters for inspiration when I came across a construction technique on YouTube that I warmed to immediately. An American bloke was making boat-building shelters with a very simple and lightweight technique of bending two members around a curved former and then locking the bend in place by screwing blocks between them, essentially a zero glue version of

the dream

laminating, which I've done lots before in my time making furniture, but a technique I'd yet to use for big structures.

The basic Gothic arch shape is formed and unified with a ridgebeam and floor rails and the whole structure stiffened by passing ties diagonally through the curved members, screwing them in place and thereby creating a very strong and stiff triangulated structure, which would then be 'skinned' with plastic greenhouse wrap. It occurred to me that this technique would lend itself well to a shed, but skinning the structure with sheet materials rather than poly-wrap.

I began to plan my idea with rough sketches, working out sizes and eventually, drawing something up in Google SketchUp. Because I was on an allotment, I had to adhere to strict guidelines about the building of sheds: they must be no more than 2.4 × 3m and must first be approved by the committee. Attaching the image of my plans I'd created in SketchUp, I sent the email with slight trepidation, but luckily the committee really liked the idea and so I was given the green light.

Setting about the build

With the start of half term upon me, I set about my build. I had no actual working drawings as such, only the finished 'footprint'.

With some treated 50 × 100mm timber, I started building my base. I planned to build it in two sections, as I knew that the whole thing had to be transported to site on top of my car. The base would be 2.4 × 3.6m, which rather handily is three full sheets of 1,220 × 2,440mm, of which I had plenty at my disposal. The shed would lose a foot of floor space at each end to comply with regulations, but I planned that the roof would overhang, giving me back that foot once on. With some hefty screws and a good dose of joist hangers, the base framework came together.

Next it was on to building the curved ribs. For this I had some 100 × 15mm larch, which was used for external cladding before it found me. I marked out a half-width view of the front elevation of the shed onto some MDF on the floor and played around with the curve of the wall/roof. I actually laid down on the floor and tried to imagine the headroom I wanted, then I was able to spring a curve onto the floor and draw it in, using a pencil. I then screwed blocks to this curve intermediately.

The first larch member was then placed onto the former, bent around it and clamped in place at the top. Next, I used sections of 50mm timber and placed them around the curved rib before adding the second rib on top, clamping it in place and screwing the whole thing together through the spacer blocks. This locked everything together. I had a couple of failures due to knots but ended up with the eight sections I needed. With all ribs complete, I cut the top ends down on the cross-cut saw where they'd meet the ridgebeam – now for assembly.

Each rib assembly screwed into the floor framework, spaced apart so that the panel joints would fall centrally. Then I would lift the ridgebeam into place and screw it into position (not easy by yourself!) I then added temporary diagonal bracing in an X-shape on each side to help keep things in place.

Next were the end panels. With the ridge beam sitting plumb, I propped up a 1,220 × 2,440mm sheet each side of centre and scribed a pencil line around the shape, which >

PIC 1. Sinking the log foundation posts

PIC 2. Each rib was curved along a former

PIC 3. The skeleton inside the workshop

PIC 4. The frame erected on the plot

PIC 5. Roof skinned and waterproofed

PIC 6. The lengthy task of fitting the individual hardwood shingles

I could then cut to. At one end I made an opening for a door, which I'd rescued from a skip, but the other end, the focal point, had to be special.

I love using things that I find for a task that's perhaps out of context, and so I had the idea of using a washing machine door as a window, as I knew I could get these free and easily at the local tip, plus they'd add a lovely touch of quirk. I fitted the first one above the entrance to the door and then at the other end. I really went for it creating a Gothic 'trefoil' as can be seen in church windows – Pugin meets Zanussi!

Skinning the structure

With the end panels complete I could skin the structure. For this I used 9mm moisture-resistant MDF – again, sourced for nothing and it was a case of positioning and screwing the sheets onto the ribs. I had to lengthen each panel to get the length up to the ridge and the end panels gained a nice gentle flowing curve to give me some roof overhang. This was all of the workshop stage done; I'd run out of half term and needed to get it to site. I took it there in several trips on top of my long-suffering Berlingo where I had prepared the ground.

The base would sit on top of six large logs that I had sunk into the ground as deep as my arms would reach and shored up with some postcrete. The shed went up very quickly now that I had it all ready and took shape in a day, between rain showers and frantic arranging of tarpaulins. Once together and skinned, I felted the roof and fitted the door to make it secure; I could then do all the detailing at my leisure.

Cladding

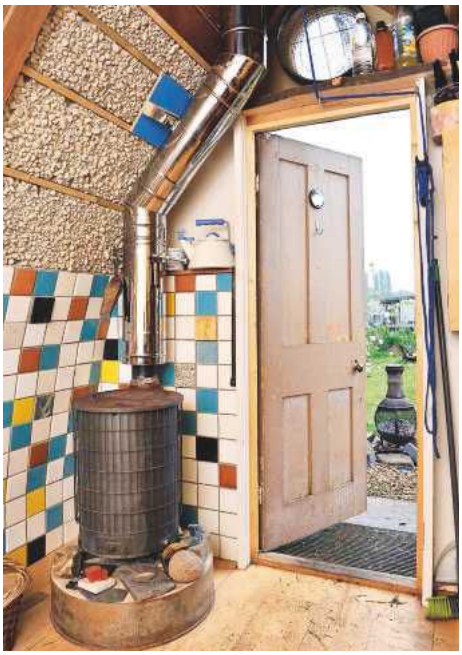
Each end is clad in hardwood shingles, which I made small so that I could get them from offcuts as and when I could. This took ages as each shingle is taper-cut on the bandsaw and then nailed to the shed over a layer of DPM. The finished effect is lovely, with ash, oak, sapele, London plane, elm and walnut all mixed randomly together.

Finishing touches

I knew I had to have a stove in there and managed to find a secondhand one on eBay. I fitted it using brand-new double-walled flue, as I wanted it to be as safe as possible. It was a little tricky routing it through the roof as it meets it at a steep angle but a bit of messing about with a heat-proof silicone sheath got me there. A carbon monoxide detector was fitted for peace of mind.

All in I'd say the materials cost me under £500, the bulk of which was spent on treated timber for the floor, and much of the rest was scavenged or found. I'm pretty pleased with it as my first attempt at an actual structure that you can get inside of but there are always things you'd add or do differently.

The Shed of Dreams, as I dubbed it, (think Kevin Costner films) has really become an amazing place to work and relax and share with friends and family. We often hold birthday parties there and definitely find it a relaxing place to spend time in after testing days at work. Being awarded winner of the 'Cabin & Summerhouse' category in the 2016 Shed of the Year competition was an added bonus; after all, everyone needs a shed and it's great when all your hard work is recognised. **GW**



PIC 7. The stove was fitted using brand-new double-walled flue, to make it as safe as possible

PIC 8. Washing machine doors were repurposed as windows

PIC 9. Inside, the shed is spacious and the curved ribs are really visible

PIC 10. Both ends of the shed are clad in hardwood shingles, each of which was taper-cut on the bandsaw

PIC 11. Shed of Dreams certainly blends into its natural habitat

PIC 12. The deserving winner with his rosette

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It's good to be a pipe maker

Believe it or not, pipe smoking is experiencing a golden age right now. At least according to Tom Eltang, the Danish pipe maker widely regarded as one of the very best. **Arko Højholt** reports

ABOVE: A selection of Tom Eltang's handmade pipes

It's 9am when I discover the yellow house balancing nicely on the edge of Øresund, the strait separating Denmark from the southern tip of Sweden. I'm on the Danish side, in the tiny village of Tårbæk just north of Copenhagen, and I'm about to meet a real superstar. I knock on the door, it's ajar and from somewhere inside I hear a rusty voice: "Come in, come in!" I pass through a kitchen, enter a living room, and there he is, the man that is known as the master, the living legend, one of the very best in the game. The kind of guy people will travel around the globe just to spend a few minutes with – Tom Eltang in the flesh. And in his underpants.

More hobby than habit

Tom Eltang was only six-years-old when he saw a magazine featuring pipes in a shop window, but right there and then he knew what he wanted to do with his life: make beautiful pipes. And he went ahead and did just that. After an apprenticeship with Anne Julie, the grand old lady of Danish pipe making, and a stint as a pipe repairer with some of the established pipe factories, he finally established himself as an individual pipe maker

in 1980. And then came the hard years. Hard decades. Pipe smoking, while still relatively popular in Denmark compared to other countries, was slowly becoming unfashionable, and Tom had to do various other jobs on the side to provide for his family. But in the late '90s something began to happen.

"Back in the day, everybody smoked a pipe," Tom remembers as we, a cup of coffee and a pair of shorts later, zip through Tårbæk on two bikes. "Pipes were almost as common as iPhones are today. Almost. But then came the whole anti-smoking movement, anti-everything, really, but around 2000 a new generation suddenly discovered the fine aspects of pipe smoking. Of course, you didn't suddenly see a lot of young pipe smokers on the street. No, society had changed, and so had pipe smoking. It became more of a hobby than a habit, so to speak. The pipes were still smoked but they had also become more like collectors' items; something that was on display, something that had a sculptural, artistic value."

This development only grew stronger with the birth of online communication. The pipe clubs of yesteryear made a move from physical to digital locations, and today one can find huge pipe communities on places like YouTube, where pipesters from all over the world 'meet' and discuss pipes and tobacco. "And they're extremely dedicated," Tom says with a big smile, "in many ways the culture of pipe smoking has never been in a better condition!"

No music, no joy

About 20 minutes of idyllic scenery later we arrive at his workshop in Charlottenlund. The door is open and music is pouring out. We park the bikes and enter, Tom yelling: "Johannes! Coffee!" A young blonde guy comes out from the depths of delicate machinery with a great smile on his face. He is Tom's apprentice – and he is the grandson of Anne Julie, Tom's own teacher. "He's extremely gifted," Tom whispers as the kid disappears into the kitchen. "And one hell of a worker!"

Despite Tom's praise of the current state of pipe smoking, I can't help wondering if schooling a young kid in pipe making isn't basically like steering him down a dead end. Will there be enough to do in his future? "I don't know," replies Tom, "I think there will be enough pipe smokers in my own time, I just hope the >

ABOVE: The briar blocks used for making the pipes

ABOVE: Pipe templates

best for a guy like Johannes. In any case, there won't be any pipe smokers if there aren't any pipe makers, right?"

"And without music, there's no joy!" he adds while flicking through playlists on a computer. He puts on Bob Marley and turns up the volume. A lot. And to the voice of Bob singing about positive vibrations, I'm given a grand tour of the workshop. Lathes, belt sanders, drills, files, every kind of tool I can and can't imagine seems to occupy every nook of the place. The same goes for the huge baskets filled to the brim with *Erica arborea*, commonly known as briar wood, in blocks of various sizes. This heat-resistant and extremely hard sort of wood is the typical material used for smoking pipes, and while some pipe makers often experiment with other types, and Tom himself has made a couple of pipes from bog oak, nothing beats good old briar. As Tom puts it: "It's suitable and beautiful."

The danger is real

Briar is indeed beautiful with it's clear and dense grain, and that is something that matters to the pipe fans. There are many factors that determine the value of a pipe and one of them is the quality and look of the briar. A certain harmony between the grain of the wood and the shape of the pipe can up the price of a pipe significantly. The most valued is what is called 'straight grain', where the grain of the briar sits in perfectly straight lines from the heel of the pipe to the rim, leaving what is known as bird's eyes: the end of the grain, on the bottom and on the rim. If the grain 'shivers' a bit, it's called a 'flame grain', and if the grain runs horizontally across the bowl of the pipe leaving bird's eyes on each side of the bowl, then it's called 'cross-grain'. All key terms for the serious pipe buyer who can be seen spending hours picking the right one.

"Luck is a part of the game if you're buying a factory made pipe," Tom explains, as Johannes places a steaming mug of coffee in front of him. "You can find a good looking pipe from a mass producer, sure, but it's not something they aim for in their production. They're cutting shapes, lots and lots of identical pipes, not works of art, so to speak. Good grain is up to us individual pipe makers. For me it's basically the wood that determines the pipe. I work with the wood, with the grain, not against it, and it's always so cool to find out what pipe is naturally hidden in the block."

Works of art. That's interesting. A pipe, no matter how much of a collectors' item it is, is basically an object made for use, but looking at some of the pipes that are made today, I can't help but think that some of them seem more like sculptures, like something that wouldn't

BELOW: The pipe maker's tools

BOTTOM: Lathe with template

LEFT: Planning the airways

BELOW: The beloved Schaublin lathe

FAR LEFT: Naked pipes ready for staining

LEFT: Tom Eltang's workshop in Charlottenlund, Denmark

FAR LEFT: A Bulldog shape in the making

LEFT: Johannes, Tom's apprentice

Step 1: sketching the airways

Step 2: digging in

Step 3: drilling the tobacco chamber

be very comfortable clenched between your teeth. Are the new kind of pipe smokers, the art collectors, actually ruining the functionality of the pipes?

"The danger is real, I guess," says Tom, "I experienced it myself at one point. I came to the conclusion that my pipes were becoming too artistic, too crazy, and I just couldn't accept that. A pipe is meant to be smoked, not sit on the shelf as a dusty sculpture. A pipe must be simple and elegant and have the right weight distribution – and it can't be too big. Sure, it must look good and all, but in the end a pipe is just a piece of wood with holes in it that are meant to do one thing, and therefore it must be done right. The basics must be in order." >

LEFT: Step 4: opening up the shank

Handshake from China

Bob Marley is still booming from the loudspeakers, making ubiquitous briar dust dance on every surface. Tom is dancing as well. Just a few twists and turns to celebrate the ongoing birth of what looks to be a very well proportioned pipe. "You think this could be an M?" he asks Johannes, referring to the grade M in his own system, which is only given to a few pipes every year. Outstandingly beautiful ones, that is. Johannes inspects the raw and naked shape from every angle, then nods. "Could be, boss, could very well be." "Yes, man! Here we go!" Tom shouts as he turns to the sander and shaves off another microscopic layer of wood. "It's in there, I can feel it!"

After about 10,000 pipes he is still childishly enthusiastic. It's fantastic. The current pipe culture couldn't have found a more likeable superstar. And he's a superstar alright. Mention the name Tom Eltang to any serious pipe smoker in the world and you'd see them nod and smile, and you'd most likely hear them talk dreamily about odd things like Bamboo Pokers, Golden Contrast Stain, and Snail Marked Billards. Those who can afford it will happily crown their personal collection with an Eltang pipe, and those who can't will dream respectfully, because even though Tom's work is out of range for many a pipe smoker, he's still accepted as one of the very best living pipe makers. He's so popular that he once in a while receives unannounced visits from fans as far away as China, fans that bought the ticket just to be able to shake Tom's hand. "Oh, it's always very humbling, and it's very humbling that people like my pipes and are willing to pay for them. But it's not something I spend a lot of time thinking about, to be honest. I concentrate on doing the best I can every day; concentrate on doing my job, which is the best job in the world. It's good to be a pipe maker," he says, before taking two little dance steps towards a new block of briar and whatever pipe it's about to show him. **GW**

ABOVE: Stained Pokers waiting for a layer of Carnauba wax

ABOVE: ... says Tom again and again!

ABOVE: Refining the shape

RIGHT: Almost ready to be loved by someone

FURTHER INFO

To find out more about Tom Eltang and his fantastic pipes, see: **www.eltang.mono.net** and **www.danishpipeshop.com**

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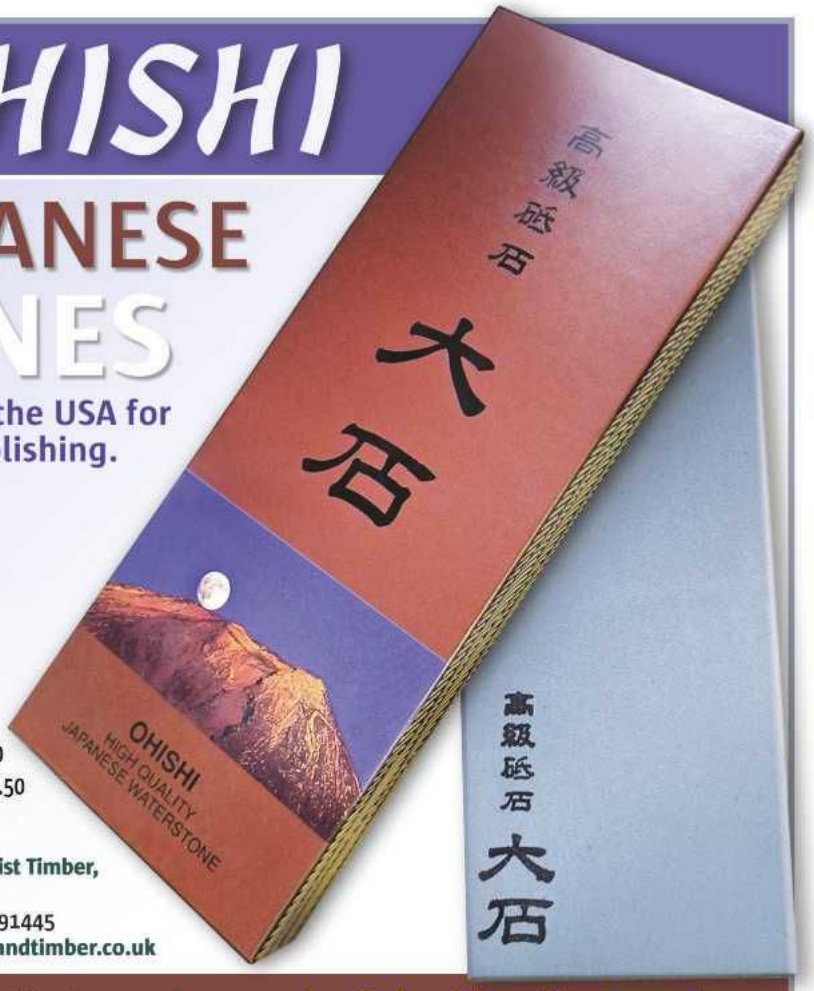

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The Generation Weil chair

Made in Weil am Rhein, Germany by **Van Bo Le-Menzel**, we look at how a reproduction Generation Weil Chair can be simply made using a few clamps, glue and a selection of Dremel multi-tools

Is it really possible to recreate a designer chair that is on show at the Vitra Design Museum in Weil am Rhein, Germany? Can seats that are otherwise bent into shape industrially at great effort and expense be brought to the correct shape using just clamps and glue? In this DIY project the designers show you how to make the Generation Weil Chair yourself inexpensively in 10 steps using a selection of Dremel multi-tools. Put your DIY skills to good use and enjoy making this wonderful project. **GW**

TOOLS & MATERIALS REQUIRED

TOOLS

Jigsaw
Cordless screwdriver
Forstner bit
Serrated spatula
Several clamps
Metal ruler & pencil
Compasses or cups
Plates
Paint pots
Oval paint bucket lid
Dremel 8200 and set of wood drill bits (636)
Dremel DSM20
Dremel Workstation (220)

MATERIALS

2 × glued and laminated pine boards (18 × 600 × 1,200mm)
3 × birch plywood sheets for the seat (450 × 800mm)
3 × birch plywood sheets for the backrest (500 × 600mm)
2 × formwork boards
1 × stable batten (40 × 60mm)
2 × wood battens (60mm high)
1 × machine screw (12 × 120mm)
4 × screws (4 × 70mm)
2 × screws (4 × 60mm)
8 × screws (4 × 40mm)
Wood glue

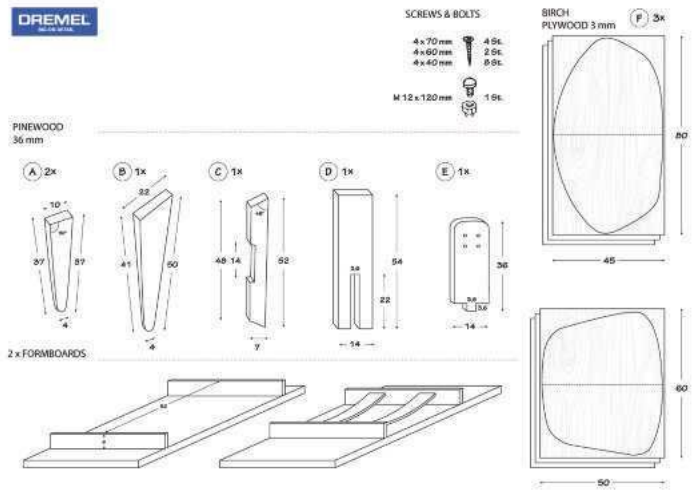

FIG 1.

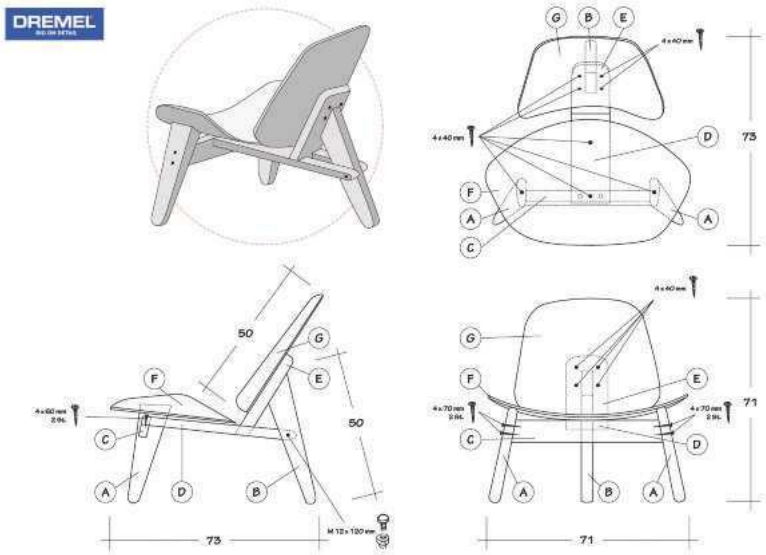

FIG 2.

STEP 1. For the substructure you need to glue together two planed and laminated pine boards. Apply the wood glue to the entire surface of one board using a serrated spatula and lay the other board flush on top of the first. Clamp the two boards firmly together and leave overnight to harden

STEP 2. Next, draw the individual parts for the substructure, saw them out and sand the edges. Make sure that when you have finished adjusting the seat and backrest you screw and glue the substructure into place

TIPS

1. Make sure that all parts have the grain running in the same direction, which will make bending easier. Draw the outlines of each on a separate sheet of plywood and mark the centreline (see **Figs.1** & **2**)

2. The dimensions of the drawing should be slightly less than those of the sheet because bending naturally affects the flushness (inner and outer radius)

STEP 3. If you don't have a pair of compasses to hand you can use cups, plates and even paint pots to draw the rounded edges you require. We shaped our seat and backrest with the aid of a large oval paint bucket lid, for example

STEP 4. Finished substructure parts are best pre-drilled using the Dremel 8200. That is especially advisable for parts for which you need to screw into the end-grain of the wood. As we glued two pieces of board together, we pre-drilled a little from the middle, as it were, before they were glued

STEP 5. Cut the 3mm birch plywood for the seat and backrest to shape using the Dremel DSM20 compact saw

STEP 6. Using a serrated spatula, start by applying wood glue generously to one sheet (the seat, for example), spreading it over the entire surface. Then lay the second sheet flush on top of the first, apply glue to it and finally add the sheet with the centreline marking. Make sure the sheets are flush

TIPS

3. The more pressure points there are, the more firmly the sheets will be glued. Beware of clamp 'footprints' – use pads to avoid this. To shape the backrest, simply saw off the backrest of an old chair and screw it to a board

4. Pay attention to the direction of the grain and the centreline of the backrest. Use the same gluing and clamping procedure as for the seat and leave the wood glue to harden overnight

STEP 7. For the seat platform, screw two wooden battens (60mm high) onto a stable formwork board 520mm apart (the length of Part C). Also mark the middle between the two wooden battens. Lay the newly glued birch sheets onto the battens and align the two centrelines to each other. Take, for example, a stable 40 × 60mm batten and lay it upended exactly on the centreline. This batten is then clamped to the formwork board. The birch sheets should now sit firmly in the centre of the formwork board, then clamp the remaining sheets together as quickly as possible (smaller clamps will suffice)

STEP 8. Carefully saw the shape of the surfaces and then sand the edges. Round off the edges by sanding them manually

STEP 9. Mark the borehole position for the assembly of the seat and backrest by laying them on or holding them against the substructure and making a mark where they lie flat against the substructure, then screw the seat and backrest firmly into place

STEP 10. Screw the back chair leg into place with a large machine screw (M12 × 120mm), countersinking it with a Forstner drill in order to recess the screw. You can also use a longer screw, of course

The completed Weil Chair shown from the front...

... back...

... and side

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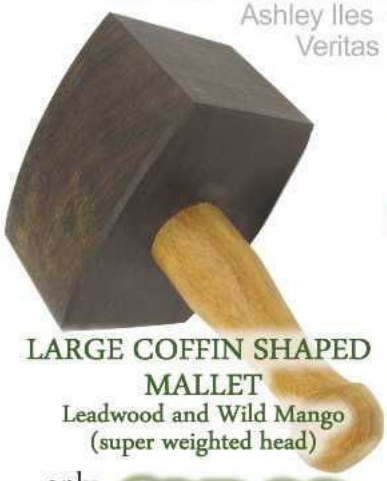

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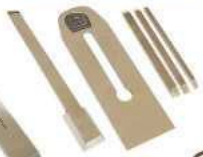

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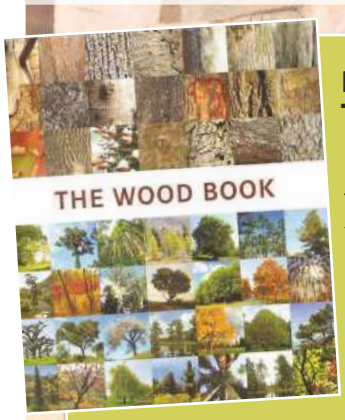
AROUND THE HOUSE with Phil Davy

How do you store all those offcuts, I wonder? Perhaps by length, width or thickness, or even by softwood and hardwood. Or maybe by individual species, or native and imported timbers. We've probably each got a system that works for us. Faced with having to tidy an already cramped workshop a few weeks back, I was surprised at just how much timber had accumulated over several decades. Some smaller pieces were left from the time I worked on a timber guide with Nick Gibbs, years ago. One shelf is now stacked tidily with maple, another full of European oak, while others are piled with instrument offcuts. Of course, no woodworker likes to get rid of decent timber, especially when it's valuable. Happily, very little ended up in the woodburner...



BOOK REVIEW: The Wood Book

There have been plenty of timber identification books published in recent years, but it's hard to know exactly who this new volume is aimed at. It's partly based on the collaboration of Spanish wood collector Manuel Soler, who apparently has a collection of some 4,000 timber samples. It must have been tricky narrowing the field down to the approximately 115 species included here. With examples from around the world, there's an emphasis on the Americas, Asia and Africa, with few European species featured.

Woods are listed by their botanical names (though not in alphabetical order), which is fine if you're a botanist or arborist and conversant with Latin. But with no index of common names anywhere, it's tricky to find your way around. These and family names are included in small type, but would benefit from being much more obvious. Species are classified from softness to hardness, though the actual measurement is not stated in every case. The front section of the book (almost 50 woods) appears to concentrate on softwoods, but there's no clear distinction and it's not obvious where the hardwood section actually begins.

Considering the title, I'd have expected definitions of softwood and hardwood and perhaps a closer look at their differences, desirable with any timber guide. And a brief explanation of sustainability, FSC certification and so on would have been welcome. Grain, colour and figure are important characteristics of many timbers and a few extra photos would not have gone amiss here.

Lesser-known woods

There are some pretty obscure timbers featured, such as cuipo, jujube, gumbo-limbo and portia. No problem with that, but at the expense of omitting any of the common oaks (present on most continents), ash, walnut (apart from Brazilian) and several others this does seem puzzling. Australian southern silky oak is the only one to get a mention, though it's not a member of the *Quercus* family. None of the rosewoods, ebony, padauk or other exotic tropical hardwoods are included either, though that may be intentional.

Each wood has two pages devoted to it, with photos of the tree itself, the bark, plus finished surface. A world map highlights where individual species originate, besides their Threatened Species status. Machinability of each timber is shown by a coloured bar chart, with a dozen or so criteria that include boring, planing and steam-bending where appropriate. Physical properties are crucial for some timber applications, and again, there's plenty of relevant information here regarding density, weight and various strengths.

Although this book is quite a lavish hardback, there are some shortcomings. To describe yew (*Taxus baccata*) as 'the hardest of all hardwoods' is a major blunder. Surely everyone knows this is a temperate softwood?

Photography is excellent, with occasional double-page spreads of trees in all their glory, though captions would have been a bonus. Alongside the English text there's oddly a similar amount in German, which presumably means the book is also destined for other markets.

THE GW VERDICT

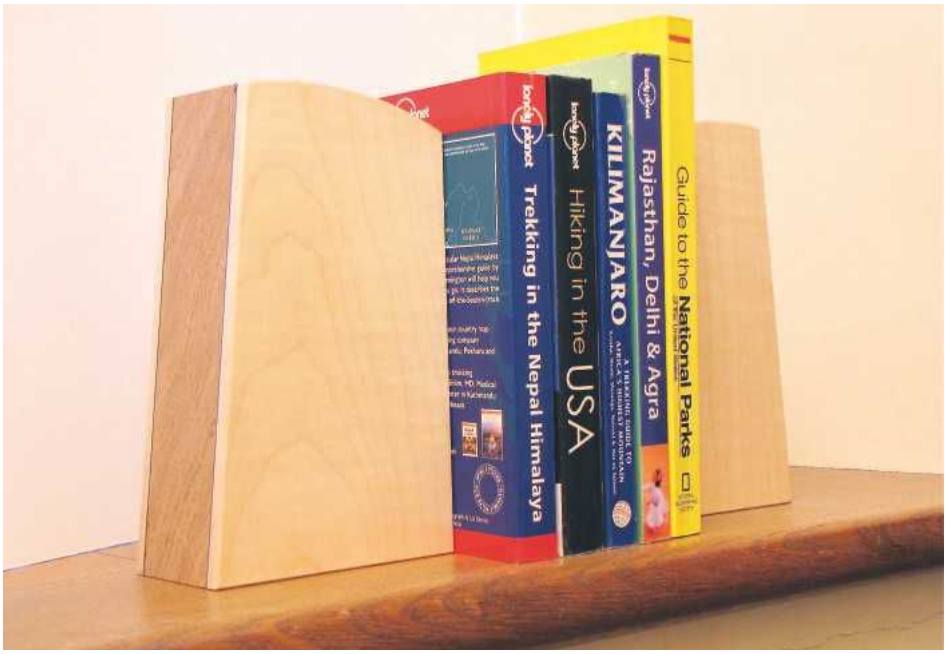
- **RATING:** 3 out of 5
- Francesc Zamora, published by **Loft Publications**
- **PRICE:** £29.99
- **WEB:** www.loftpublications.com

WINTER PROJECT – DECORATIVE BOOKENDS

TAKES: One day

Guggenheim souvenir

A visit to the Guggenheim Museum in Bilbao resulted in **Phil Davy**'s ultra-modern bookends



When a friend asked me to make her a pair of bookends for a glass shelf I wondered how I could create something distinctive. My visit to Bilbao's Guggenheim Museum a few months ago provided plenty of ideas. This extraordinary building is teeming with geometric complexities and must be a constant source of inspiration to architects around the world. This resulted in a bookend design that's very simple but fun. Maybe covering the timber in silver foil would have hinted at the titanium cladding the actual building is finished in.

You can make the bookends from virtually any material, though I chose oak for the core, with sycamore facings. To add contrast I placed coloured veneer between the layers. This is the sort of job that suits a disc sander, providing a fast way of squaring up and shaping end-grain on chunky hardwoods. It would be easy enough to laminate a few pieces of MDF or plywood, then conceal them with an exotic veneer. I'd be less inclined to use softwood as this would be too lightweight.

Lead shot weighting

To increase weight and stop them sliding on the shelving I glued a quantity of lead shot into the base of each bookend. This is quite expensive at around £19 for a 2kg bag (via Amazon), but this amount should be just enough for four bookends. An alternative would be ball-bearings, though I'm not sure these would be as heavy as lead. Whatever you use, the filling should be glued into the core pieces. The easiest method is to use epoxy, though you'll struggle with standard tubes from DIY stores as packs are small.

Once you've drilled the holes in each core section, fill them with lead to check how much is needed before mixing with epoxy. Through trial and error I found that by drilling 38mm-diameter holes in 43mm-thick oak I needed just over 1kg of lead to fill four holes (i.e. enough for one pair of bookends). Incidentally, I weighed the oak before and after filling with lead and each core piece increased by about 0.6kg, doubling its initial weight. Overall height of each bookend is 180mm, while base width is 110mm. The outer edge slopes at 84°.

Don't be tempted to use an oil finish on pale timber such as sycamore as this tends to give a blotchy appearance. I applied two coats of acrylic satin varnish. If necessary you could stick felt pads on the base of each bookend to provide a bit more friction after finishing.

WEST SYSTEM EPOXY

Used in the boatbuilding industry for decades, West System epoxy is utilised by many furniture makers for gluing a variety of materials. You can add various fillers, some of which can be stained before mixing. Mixing is five parts resin to one part hardener, either by weight or volume. It can be mixed in any suitable plastic tub, although the West System mixing pot is marked in 100ml increments to make life easy. Once the glue has cured you can simply peel it away from the plastic to re-use a container. To really simplify mixing it's worth using specific Mini Pumps, which dispense hardener and resin in the correct proportions.

I used 206 Slow Hardener, which gives a pot life of about 25 minutes before it starts to gel, depending on air temperature. The epoxy cures in around 9-12 hours, or 5-7 hours if you use 205 Fast Hardener.

My adhesive was supplied by Axminster, which sells various West System packages (**www.axminster.co.uk**). Starter kits include application tools and plungers. West System products are not cheap, but that's to be expected with any industrial-strength epoxy glue. To fill the four holes on the two bookends I mixed about 100ml of glue. By comparison, small tubes of Araldite or similar when mixed will give 30ml of epoxy, so you'd need several packs.

It's worth buying a copy of the West System CD (about £2) if you want to discover more about this versatile bonding system

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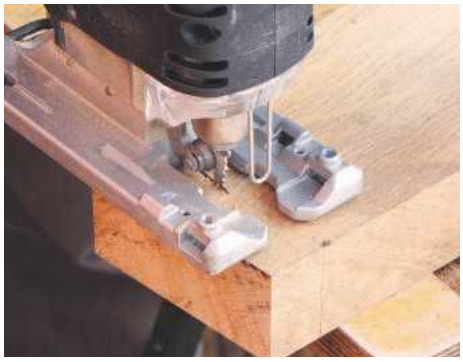
STEP 1. Plane faces of the inner core and make sure one long edge is square. The opposite one will taper

STEP 2. The outer facings can be of any thickness. Here sycamore is being reduced to a thickness of 6mm

STEP 3. Trim one end of the core timber square with a finely-set block plane or on a disc sander

STEP 4. Although not essential, an MDF template is useful. Draw around a suitable object for the upper curve

STEP 5. Cut out the template and clean up edges. Align the 90° corner on the core timber and draw the outline



STEP 6. Carefully cut out the core timber with a jigsaw, ensuring to keep just on the waste side of the pencil lines

STEP 7. Plane tapered edges to the line, then shape upper curves with a sanding drum. Check against the template

STEP 8. Mark hole centres at the bottom of the core timber. Drill a pair of 38mm holes with a flatbit mounted in a drillstand

STEP 9. Cover the holes on one side with several layers of masking or gaffer tape, pressing this down firmly

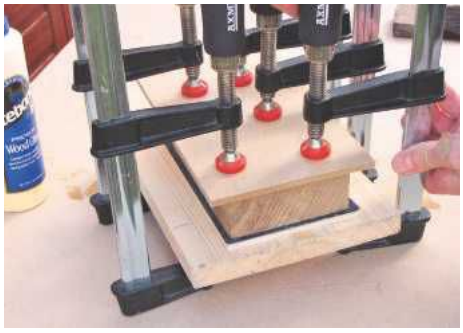
STEP 10. Mix the epoxy adhesive thoroughly and add enough lead shot for filling both holes in one core piece

STEP 11. When fully mixed, spoon the lead carefully into each hole. Allow this to settle, but don't overfill

STEP 12. Leave to cure overnight, then clean off excess glue with a cabinet scraper or using a sanding block

WINTER PROJECT – DECORATIVE BOOKENDS (continued)

STEP 13. Cut veneer and outer facings to size. These should be at least 3mm larger all round than the core



STEP 14. Brush PVA glue on to surfaces and stack up layers. Cramp together with cauls to spread the pressure

STEP 15. When the glue has dried, use a bearing-guided straight router bit to trim facings flush with the core

STEP 16. Using a finely-set bench plane, carefully clean up facings and edges, checking the grain direction

STEP 17. Finish edges with a light chamfer or rounding-over bit. Alternatively, use a block plane

STEP 18. Fine-sand surfaces and brush on a couple of coats of satin varnish, denibbing between coats

STEP 19. My bookends were inspired by the Guggenheim Museum

At first glance, cordless sanders may seem more DIY tools than kit for serious woodworking. After all, what use is a sanding tool when the battery runs flat halfway through finishing a project? In a workshop with a power supply a 240V sander probably makes more sense (together with a vacuum extractor), though it's hard to ignore the convenience of a battery equivalent. Mains tools tend to be cheaper than cordless, however. Many manufacturers now offer both 240V and cordless sanders, with Ryobi adding two new 18V models to their impressive One Plus range. Rated as mid-range power tools, either is likely to make

The sander is fairly tall to accommodate the vertically-mounted battery

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RYOBI R18ROS-0 18V random orbit sander

sanding a somewhat less tedious task. Their compact size makes them handy for outdoor work around the house, especially when working off a ladder or away from a mains supply.

Into orbit

The R18ROS-0 random orbit tool is the pricier of the pair and equipped with a standard 125mm diameter pad. With plenty of textured, soft-grip rubber the sander is held from above and weighs 1.6kg with a 1.5Ah battery fitted. Although it has a reasonably small footprint, the sander is fairly tall to accommodate the vertically-mounted battery.

A standard push-through power button activates the tool and is accessed from either side. There is an orbit rate of 20,000opm and an orbit diameter of 2.5mm, which is enough for fairly aggressive paint removal as well as finer finishing. With eight holes to aid dust removal, the backing pad is hook-and-loop-backed and three abrasive discs are included (240, 120 and 80 grit).

Supplied with a rigid dust container, this simply slides over the tool's outlet and actually stays put when sanding. It's an effective system and easier to empty than some budget sanders out there. Fitted with a fully-charged 1.5Ah battery, I got about 10 minutes use, which may not sound a lot, but it's surprising just how much timber you can cover in a few minutes. Obviously a bigger battery will give increased run time.

THE GW VERDICT

- **RATING:** 4 **out of 5**
- **PRICE: £69.99** (bare)
- **WEB: www.ryobitools.eu**

The backing pad is hook-and-loop-backed and three abrasive discs are included

A standard push-through power button activates the tool and is accessed from either side

The rigid dust container simply slides over the tool's outlet and actually stays put when sanding

USEFUL KIT/PRODUCT

Ryobi R18PS-0 18V palm sander

For more detailed sanding the R18PS palm sander is a cheaper alternative. Again, the battery is mounted vertically and you hold the tool at the top. Textured, soft-grip rubber makes this comfortable to use, particularly sanding vertical surfaces or overhead. Lighter and more compact than it's random-orbit brother, this sander weighs 1.05kg with a 1.5Ah battery on board.

The tool comes with six triangular abrasive sheets, punched to match the extraction holes in the hook-and-loop-backed pad. There's no dust collection box, but you can still hook it up to an external vacuum extractor. A rubber flap at the lower edge of the tool is flipped open and a plastic adaptor inserted in the slot, although the flap does seems a bit flimsy...

Power on/off is via the push-through button, reached from either side of the nose. No-load speed on this sander is 11,000rpm, giving an orbit rate of 22,000opm. Orbit motion is 1.8mm, so you can expect a slightly finer finish than with the random orbit machine. Fitted with the same 1.5Ah battery (fully recharged), this time I managed to complete an impressive 30 minutes of sanding.

Conclusion

Faced with plenty of shiplap cladding on a shed to sand before applying a finish for winter, this was the perfect opportunity to take both these tools for a spin. The fact that both are cordless makes life easier outdoors, but you do have to factor in the cost of a Ryobi battery unless you've already bought into their One Plus system. A 1.5Ah lithium battery and one hour charger will set you back around £70, with larger batteries costing a fair bit more.

For indoor use the palm sander ideally needs to be used with an extractor, though for small jobs you can get away without one. The more expensive random orbit tool is perhaps better for sanding larger areas and has an efficient dust collection system. The run time is far less, so you'd really need a couple of batteries, but either makes a great sander for outdoor use. **GW**

THE GW VERDICT

- **RATING:** 4 **out of 5**
- **PRICE: £39.99** (bare)
- **WEB: www.ryobitools.eu**

This sander weighs 1.05kg with a 1.5Ah battery on board

The tool comes with six triangular abrasive sheets, punched to match the extraction holes in the hook-and-loop-backed pad

A rubber flap at the lower edge of the tool is flipped open...

... and a plastic adaptor inserted in the slot

Power on/off is via the push-through button, reached from either side of the nose

The triangular pad design allows for sanding up to the edge in tight corners

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Art, beauty, skill & mystery

Taking a break from his usual turning projects, **Les Thorne** reports from the much anticipated Wizardry in Wood 2016 exhibition, and shares his experiences of the many wonderful things he saw

Display by the AWGB

Les' exhibition area, including the display stand made last month

Winner of the AWGB's Junior Plain Turning Competition was Macaulay Watkins' lidded goblet

During my years as a woodturner, I've been lucky enough to have been invited to some fantastic events as a demonstrator, teacher and even to promote the artistic side of turning. I was over the moon to be given the opportunity to display my work at the 2016 Wizardry in Wood exhibition – an event hosted by the Worshipful Company of Turners – which takes place every four years.

Guest exhibitions & demonstrations

The first exhibition was held in 2004 at the prestigious Pewterers' Hall. Owing to the success of that first year, and with thanks to the Worshipful Company of Carpenters, the event moved to the larger Carpenters' Hall in Throgmorton Street in the city of London, where it has been held since 2008.

This year, the Company were able to showcase two special guest exhibitions that are seldom seen by the general public. The first was a selection of over 100 fascinating wooden objects and rare samples of world timbers from the Economic Botany Collection at the Royal Botanic Gardens, Kew, curated by Dr Mark Nesbitt. The second was a magnificent selection of 48 turned works from the world famous Daniel Collection, curated by Shirley Sinclair and Jonathon Cuff.

The exhibition saw over 25 specialist turners displaying their skill and mastery of the craft of woodturning, and all items were for sale, from the simple bowl to fine turned works of art. There were also representatives from the various Associations and Societies involved in the woodturning world, including the Association of Woodturners of Great Britain

(AWGB), the Register of Professional Turners (RPT), the Association of Pole-Lathe Turners as well as the Society of Ornamental Turners. There were even some demonstrations given by young turners, which were arranged by the AWGB to promote their Youth Training Scheme and to encourage other young people to take up the craft.

One of the many highlights of the event were the competitions, which included many categories such as plain, ornamental and youth sections, but the most interesting for me was the competition that commemorated the 350th Anniversary of the Great Fire of London in 1666, and to quote the master of the Turners Company, Nicholas Somers: "I hope that everyone who visits Wizardry in Wood leaves with a greater appreciation of turned wood and timbers." So, given that this exhibition is

An ornamental turning demonstration

The Association of Pole-Lathe Turners' stand

Antique maritime timber from Kew

a special one, I thought I'd take this opportunity to showcase a few of the many turners present and the various collections that caught my eye.

The Collection at Kew

Kew is one of the world's great botanical institutes. It is famous for its gardens, featuring no fewer than 14,000 trees on 300 acres of west London, and for its world-class science. 250 scientists carry out research into understanding and conserving plants and fungi worldwide and this essential work is based on collections including 7,000,000 pressed plants and 300,000 books and art works. Wizardry in Wood was a rare opportunity for a wider public to see wooden treasures from Kew's Economic Botany Collection. Its 100,000 specimens show the uses of plants, ranging from timbers to textiles, medicines and food. Until the 1980s, many of these were on show at Kew's Wood Museum, but now they are in temperature-controlled storage where they are used for research and temporary exhibitions. Kew informed me that it wasn't easy choosing from the 35,000 timber specimens, and 5,000 or so wooden objects in the collection. Those on display have fascinating stories to tell about Britain's past, as well as its place in the world. The exhibition also highlighted the continuing role of Kew scientists in enabling the conservation and sustainable use of wood – still one of the world's most used materials.

Kew's wood collection dates back to the founding of the Museum of Economic Botany by William Hooker in 1847. The Museum acted as an information point for manufacturers in Britain's thriving industries, and for producers overseas. Kew exchanged specimens and knowledge with other museums all over the world, and encouraged travellers to collect on its behalf. The original museum, opened in a converted fruit store, was soon full, and by 1910 there were four buildings, containing about 75,000 raw plant materials, and objects made from plants. Everything was on display, and the combination of plants and the flavour of the 'exotic' overseas was immensely appealing to the public. At first, wood specimens were simply for display, but at the beginning of the 20th century, Kew established its first plant anatomy laboratory. Research into wood anatomy became a firmly established part of Kew's work, and an area in which it is still a world leader. Many pieces of wood are missing a portion, removed to be cut up for microscope slides.

The Victorians used the 'illustrative series' to show how things were made, in the era before this could be conveyed by moving images. These charted the progress from raw material – such as a piece of raw timber – to finished product. The Kew collection includes a cricket bat, violin, spoon, brush and Tunbridge Ware, all showing this. The scope of the collection is truly global. Former colonies are well represented, particularly India, as Kew inherited many objects from the East India Company's museum. However, British traders, officials and travellers were everywhere, and Kew also received generous gifts from overseas admirers. One of the distinctive features of the Kew collection is that it is of practical, useful plants. Unlike other museums, it has not sought out objects on purely artistic grounds. Daily life – whether cooking, clothing or pastimes, for example – is the focus. Many of the simple, even disposable, objects in the collection have great charm, and even great beauty. The special role of the Economic Botany Collection can also be seen in its emphasis on botanical identity: almost every wood specimen and object is named to species. Indeed the collection is organised by plant name, so unnamed material is difficult to place. The botanical name – for example, *Quercus robur* for English oak – is so important for two reasons. Firstly, it tells us how a plant sits in the evolutionary tree and thus what properties it will have, and secondly, it acts as a

From willow to cricket bat

Part of Kew's collection

A view of the extensive archives at Kew

passport to data about that species in any language, as botanical names (Latin names) are used worldwide.

The Economic Botany Collection continues to grow. Many wood specimens have come from research collaborations in South America, Africa and elsewhere. Today's scientists are interested in all woody plants, not just sources of timber, so wood specimens are much more variable in shape and size than in the past. Wooden objects continue to be added, sometimes collected by staff on field trips, given by the maker, or occasionally a gift from a member of the public, but in the 170 years since Kew started collecting woods, the purpose of the collection has changed. Originally focused on trade and industry, in the 1930s the emphasis shifted to looking at the anatomical characters of woods. Today work at Kew emphasises conservation and use of woods for the benefit of local populations – for example, in work on sustainable fuel-woods in Brazil, or forest conservation in Bolivia and the Caribbean. At the same time, historians and designers are finding new uses for Kew's wood collections, such as in tracking down the use of different woods in furniture, or investigating archaeological artefacts. As this exhibition shows, with close examination every object tells a story.

The orangery at Kew, where the original collection was housed

INSPIRATIONAL TURNERS

I thought it'd also be a good idea to showcase some turners who have had an influence on my turning life. It's a really great idea to look to other sources and areas when searching for inspiration, but please always give credit to the maker if you are thinking of replicating someone else's work.

Stuart King

Stuart King's stand

One of Stuart's historical turned figures

Regarded by many as the turning historian, I have known Stuart for many years and he's certainly a little different from your usual maker/demonstrator. He is internationally known as a lecturer, researcher as well as a demonstrator and is the authority on the history of turning, especially in the Chilterns – the home of the Windsor chair. I like his sense of fun, which is shown in much of his work. His figures are so cleverly made and titled and probably bear some similarities to toy figures that used to be so popular in the toy making areas of central Europe.

Stuart Mortimer

Stuart is one of the most talented and generous turners around. He once broke the world record for the largest bowl ever made from a single piece of wood, which measured over 7ft in diameter! He is now best known for his twisted work and after having written the definitive work on the subject, he has now taken twisting to a new level with exquisite finials and vessels incorporating this theme. Stuart is pretty local to me and I owe a lot of my development as a turner to him, and he carries this on by championing the teenage turning events that he holds at his workshop. His work is often finished with a high gloss, which gives the effect of the object shining and glimmering like glass or porcelain.

Stuart Mortimer's stand

A piece from Stuart's 'Pink Ivory Shell' series

Louise Hibbert

I hadn't really spoken to Louise before the event but I have admired her work for years and my own funky pepper mills business was inspired by her decorated mills. There are a lot of turning decorators out there but not many are as talented as Louise; her application of carving, texturing, airbrushing, resins and metals take her work to the next level. Louise's award-winning salt and pepper mills entered into the 'Fire of London' category were just amazing and probably my favourite pieces on display.

Louise Hibbert's winning entry

Louise's 'Polyphylla 1'

Gary Rance

Gary is one of the few surviving apprenticed trained turners and specialises in production work, both architectural and giftware. He manages to get a great shape on his turned apples and pears and the twig in the top adds to the effect. Gary is my production turning guru and we spend our tea breaks together on the phone, so don't try and phone me at 10am as I will be on a call to Gary talking about what we're currently up to! Just looking at his display area demonstrated the quality of his work – definitely craft fair with attitude.

Gary Rance's stand

Hard work & commitment

A whole magazine's worth of space could be dedicated to the event and I'd need that many pages to do the exhibition justice. It's worth remembering that these events only happen due to the hard work of volunteers, so I would like to thank everyone involved in the running of Wizardry in Wood and for the help of those who assisted me in compiling this article. **GW**

FURTHER INFORMATION

To find out more about Wizardry in Wood and the Worshipful Company of Turners, see **www.wizardryinwood.com** and **www.turnersco.com**

Most of the turners mentioned here have their own websites, so do take a look online

The father of UK turning Ray Key BEM's display

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Secret drawers

Delving into his woodworking image archives, **Michael Huntley** shares photos showing the secret drawers of a lovely late 17th-century walnut marquetry cabinet

Over the years I have amassed a huge collection of woodworking photos, so the Editor has asked me to dig out a few and share them with you on this page. It is worth noting that as some of them are old, quality may not be as high as we have become used to in this digital age.

Late 17th-century cabinet

This collection of images shows the secret drawers of a walnut marquetry cabinet from the late 17th century. In **Pic.1** the central cupboard looks quite normal; however, in **Pic.2** you can see that the rear wall has been folded down, to reveal a compartment and some drawers. This is shown more clearly in **Pic.3** with the drawers open. The item is displayed in Fairfax House in York. This is an 18th-century house with a lot of very nice furniture in it, and the house is open to the public. If you are lucky, the stewards will show you the secret drawers. **GW**

PIC 1 (ABOVE). Here, the central cupboard looks quite normal

PIC 2 (LEFT). The rear wall has been folded down, to reveal a compartment and some drawers

PIC 3 (LEFT). Cabinet showing the drawers open

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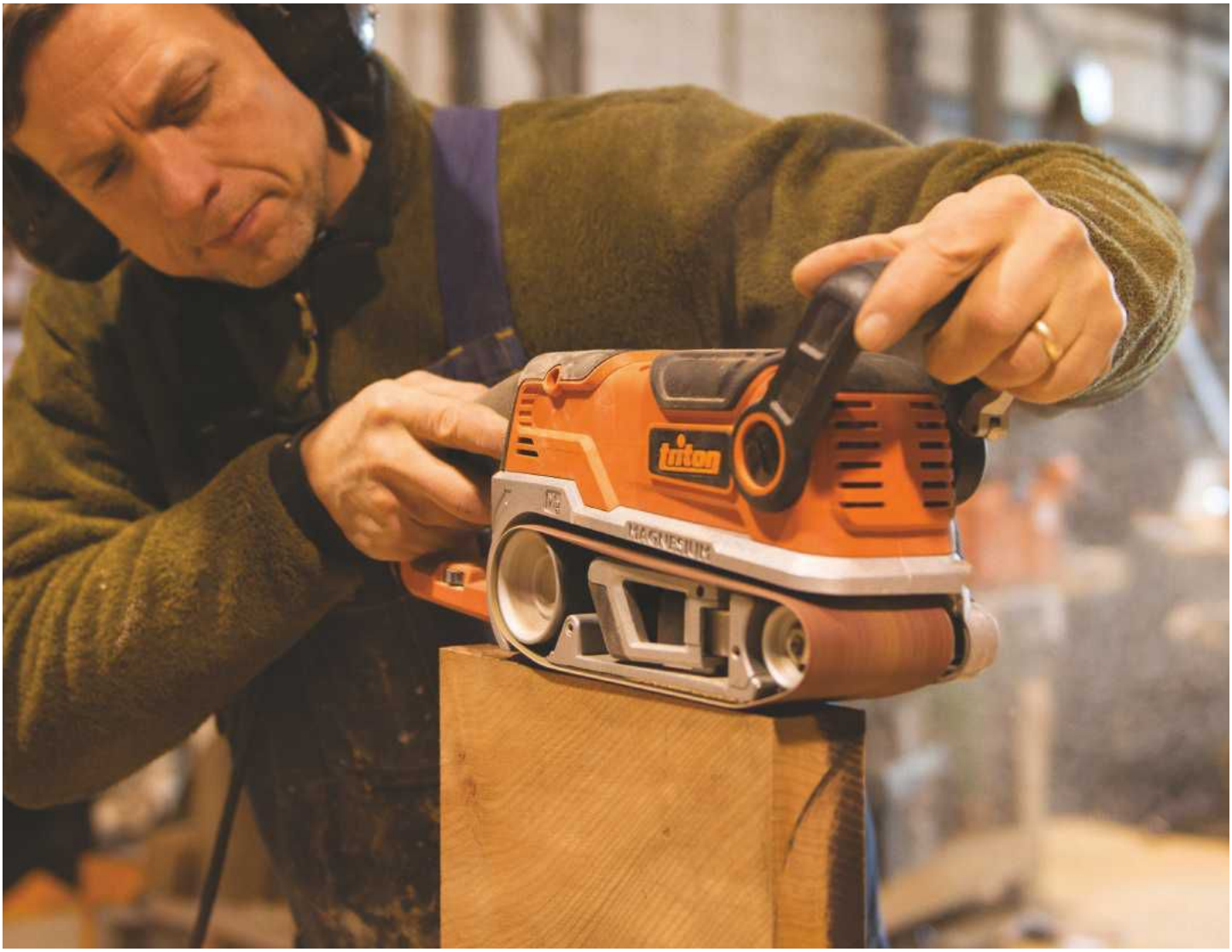

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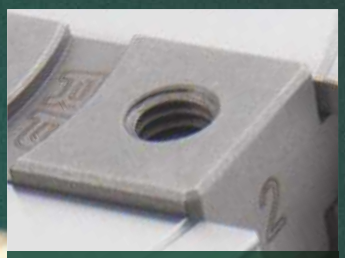

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