

TOP 10 TIPS FOR DRILLING TURNED WORK

Woodturning

THE WORLD'S LEADING MAGAZINE FOR WOODTURNERS

Projects this month

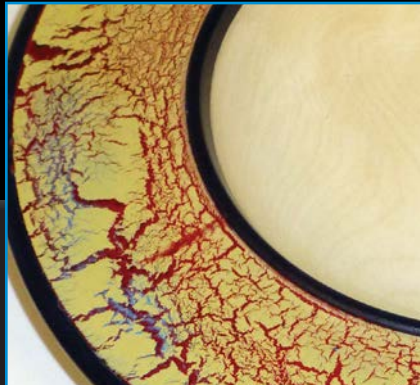
**Moonlight bowl • Stylised cup & cover
Contemporary wall clock**



**How to change, tension and tune your
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**How to use inlaying
work with pewter**



**Create visual impact
with crackle glaze**



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Motor: 3/4 hp
Thread: M33
Taper: 2 Morse taper
Weight: 86 kg
Size: L1210 x D435 x H386 mm



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Happy New Year!



Let me start by wishing you all a Happy New Year. The new year is always seen as a time for new beginnings, change and opportunity. People like to make New Years' resolutions

to do or change something, and I am no different. In 2016 I resolved to spend more time with the family... that hasn't worked and I seem to have spent more time away than ever. Yes, I have got in trouble about that, but I do have a very forgiving wife.

There were two big changes for me in 2016: one was that I turned 50. Everyone told me it was a big thing, but nothing changed apart from me having less hair and feeling more aches and pains. Also, my eldest has moved out, bought her own place, and also a puppy. A cockerpoo – cross between a cocker spaniel and a poodle – named Noah. It is a maniac bundle of fur (unless groomed) that looks like a small toy bear with floppy ears. He is only

15 weeks old at the time of writing this and is chewing everything. Noah is learning the hard way that he cannot fly when he jumps off things, with ears fluttering as he inevitably crash-lands or nosedives onto the floor yelping and looking surprised. I wonder if this is the precursor to what it will be like with grandchildren. I have come to the conclusion that clearing up after a puppy is not dissimilar to babies and young kids. That said, dogs cannot backchat when they get older. Noah has already left me 'messages' in the workshop, chewed the handle on the hammer, removed timber pieces, but he has learned not to step on screws. I found out, to my cost, he loves the shavings pile and rolls about in it. I turned around to a moving pile of shavings and only a wagging shaving-covered tail, before he went around the house, sending the shavings flying. OK, I laughed at that as I thought of it being the abominable shavings dog!

So, this year – as with all of us – changes occur and new things happen. Some good

things, some neutral and others we will wish hadn't happened, but we will learn to adapt and work with or around them.

My workshop reorganisation is coming along, but more needs to be done. Trying to fit everything I want in a small space is not easy. A two week holiday for my wife and I has been scheduled this year – more time than last year. Other than that, I want to do more turning and carving. I know that is my perennial cry, but sadly it has yet to come to fruition. One day it will happen but one thing is for sure, there will always be pressure on my time and that will involve the ever-increasing amounts of juggling that needs to be done. I sincerely wish you all the best for 2017 and as always, let me know what you have been making.

markb@thegmcgroup.com



Woodworkers Institute website (www.woodworkersinstitute.com) is thriving. It would be great if you took a look and participated in the various discussions and competitions in our community, or see us on Facebook & Twitter.

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January 2017

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of Colwin Way
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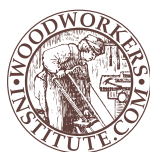
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can all be found on www.woodworkersinstitute.com. These all appear on the magazine homepage and you can see a bigger selection by scrolling down the page and clicking on the individual stories. We also have an extensive online archive for you to browse

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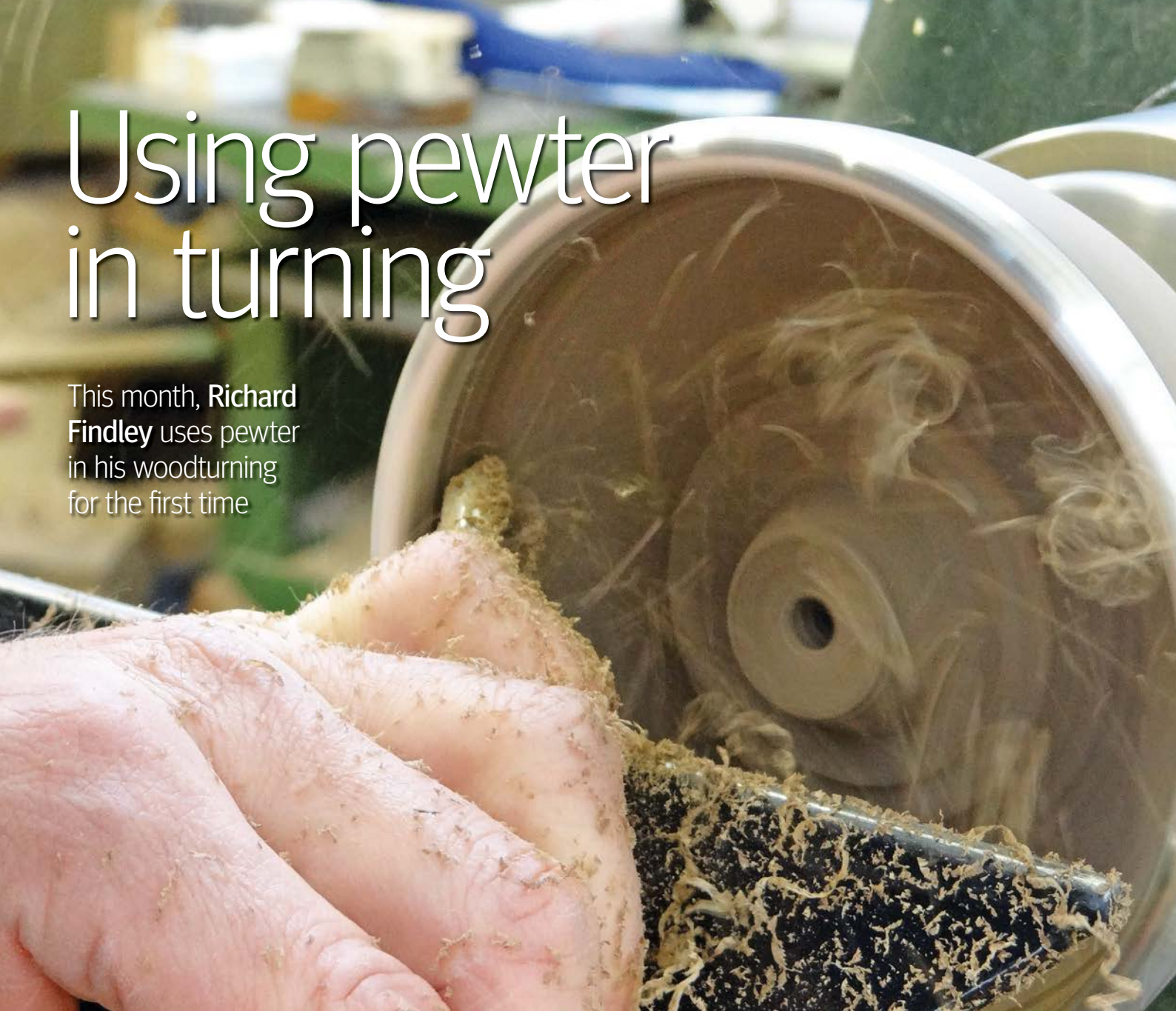


HEALTH AND SAFETY

Woodturning is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines. All readers should observe current safety legislation.

Using pewter in turning

This month, **Richard Findley** uses pewter in his woodturning for the first time



I have been aware of the use of pewter in turning for a number of years. The first time I saw it was on a quach, made by well known pole-lathe turner Robin Wood in his book, *The Wooden Bowl*. I have since seen pewter used by well known turners such as Simon Hope and Stuart Mortimer. For some time I have fancied giving it a try and this series is a perfect opportunity for me to do so.

Pewter is a soft metal which lends itself to use by turners as it has a relatively low melting point of between 170–230° depending on the exact mix of component metals (according to the internet), which means it is easily melted over a domestic stove without the need for industrial equipment. Being quite soft it will turn with standard HSS turning tools, making it ideal to add to turned work as a feature.

The plan

Taking my inspiration from Robin Wood's turned quach, I plan to turn a small bowl with a decorative pewter rim. A quach is

a traditional Scottish drinking bowl with carved handles, often associated with whiskey. As a nod to these early drinking bowls I intend to make a palm-sized, round bottomed bowl, but for purely decorative purposes and without the carved handles.

The theory

My experience of working pewter is entirely based on what I've seen in a number of demos over the years and having read a few articles in magazines and on the internet. It seems quite straightforward as pewter will melt in a pan over a stove and can be cast into a simple wooden former or mould. If this goes to plan I will fix the cast pewter ring to the rim of a bowl and turn it all together into a finished decorative bowl. It should be reasonably simple, although I expect a few challenges along the way, but we shall see!

Timber selection

Pewter, once polished, will have a shiny silver appearance, so I think a darker timber

would suit this job best. To me, the addition of a polished pewter rim suggests a luxury, high end product, so my choice of timber is a pretty easy one. Walnut (*Juglans* spp.) is one of the most expensive commercial hardwoods, not considered exotic. It's a deep chocolate brown colour that will work well with the polished metal and the two materials will contrast, but should work beautifully together. The plan is for a palm-sized bowl, so roughly 135mm in diameter seems about right. I have some 75mm thick American black walnut in stock, which fits the bill perfectly.

Preparation and planning

I always make some sort of plan, sometimes I write it down or do a sketch and sometimes it stays in my head. In this case I sketched out my idea with a few notes to make sure what is rattling around my head is actually going to work. I need a good way of attaching the pewter to the bowl, so by forming a kind of tongue and groove joint between the two,

Step one

I'm sure this could be done in a number of ways and the various steps could be done in a different order, but to me at least, the order I decide to work in seems logical. My first step is to turn the outside shape of the bowl. With this turned I know exactly what I'm going to be working with, which hopefully eliminates some guess work.

The outside shape is a simple curve, I just need to leave enough additional timber on the base to be able to achieve a continuation of this curve at the end, while leaving myself a good holding spigot to grip the bowl. Happy with the curve I sand the outer surface, for no other reason than it seems like a good idea.

Next is to prepare the rim to accept the pewter casting. My intention is to cut a groove in the rim of the bowl with my thin 2mm parting tool and to cast the pewter with a corresponding tongue, which should give me a good strong join. I turn the rim of the bowl around 8mm wide, double checking it

is dead flat with a steel ruler then cut a 2mm wide groove in the centre, approximately 4mm deep. I also make a couple of cuts into the bowl just to distinguish the rim, but leaving the bulk in the centre of the bowl, hoping this will keep the bowl stable while I sort out the pewter.



The bowl is turned and the next stage is casting the pewter

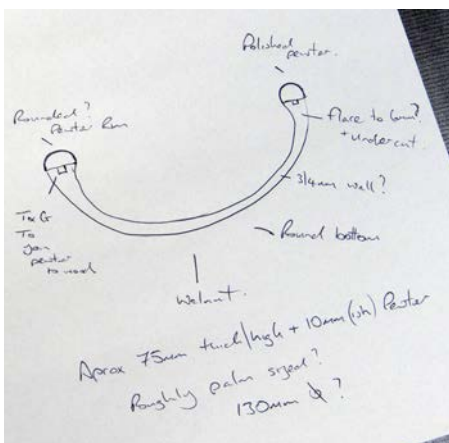
The mould

There isn't much more I can do to the bowl itself until I have the pewter ring cast, so my next job is to make a mould or former in which to pour the molten pewter. There are a number of choices available to me here: I could use an offcut of timber but from internet research it seems that the moisture that is ever present in wood can cause some trouble. Solid wood is prone to movement, which I don't really want here. There can also be reactions with molten metal, in the worst cases – as I read online – causing it to spit back as it's poured. I've seen MDF used in demos, this has the advantage of being stable, unlike solid timber. As I expect the boiling pewter to burn the former somewhat, I don't really want MDF smoke to deal with as well as everything else that is likely to be happening during the pour. I settled on using good quality birch (*Betula* spp.) ply as this seems to be the best of both worlds having great stability, but being less

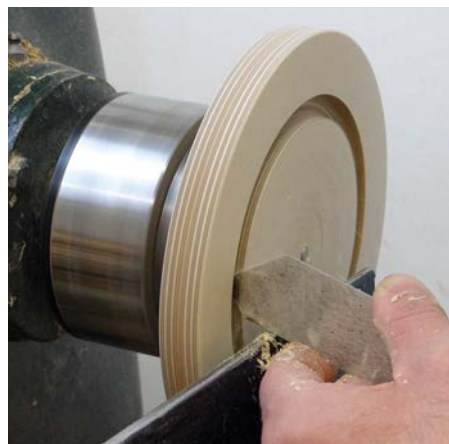
noxious than MDF. I also had several suitable offcuts in the workshop which are crying out to be used.

I carefully measure the rim of the walnut bowl and transfer the dimensions to the ply, which I cut into a disc and mount on a screw chuck on the lathe. Erring on the safe side, I cut the groove in my former around 10mm wide with a 6mm beading and parting tool used as a scraper, giving me 1mm extra of pewter each side of the rim. I expect a little shrinkage in the pewter as it cools so I guess this should be fine. With the groove for the pewter cut around 8mm deep I then cut a narrow groove with my 2mm parting tool, which will form the tongue in the pewter. Again, in case of any shrinkage, I cut this groove around 3mm wide, which should also allow a little for fitting it into the groove in the bowl. Sitting the bowl upside down on the former, it all seems to fit together well so I am encouraged by everything so far.

I think I should have a good surface area to allow epoxy resin to bond them together. I ordered some pewter online, in 1oz ingot form, which I'm sure is not the most economical way to buy it but due to me not planning quite far enough ahead, I needed it quickly and this seemed like a good option.



My initial roughly sketched plan



Forming the groove for the tongue and groove joint in the mould



The rim of the bowl and the mould ready for the next stage

◀ Pewter

A few days before I had ordered some pewter from eBay. I found some 1oz ingots of Sheffield lead free pewter, which seemed to fit the bill. Not knowing how much I'd need or how much pewter is in an ounce, I ordered 10 and crossed my fingers!

Having cut the channel in my plywood mould, I lay my 10 ingots in the groove to see if there would be enough. Not being terribly mathematically minded, but having a reasonably good eye for quantities, I estimate that, as my channel isn't as wide or deep as the ingots, the fact that there is only enough ingots to go three quarters of the way round the former shouldn't be an issue and that I probably had just about enough. I'm sure it would be possible to work out things like the volume of the ingots and that of the channel but to be honest, I just wanted to get to the melting part so that's what I did.

Having bought a small gas camping stove and a pan from local shops, I set the stove and pan up on the loading bay outside of my workshop. While this is essentially going to be like cooking soup or perhaps gravy over my hob at home, I am really not comfortable doing that in a workshop filled with wood, sawdust, wood shavings and flammable finishes. While it would certainly be possible to give the workshop a thorough deep clean and tidy an area to work, I don't have the several weeks to do this just now, not to mention that Mr Wallace, my insurance man would most likely not be at all happy with me burning an open gas flame in the workshop. All in all, outside on the loading bay seems like the most sensible option.

I set up a plywood screen to shelter my working area from a side wind that blows up just as I start setting up and lay out



The mould with the pewter ingots

everything I should need, close to hand. The loading bay is a useful working height and I often use it for glue ups and other jobs that require more space than is available inside the workshop.

I wear my long sleeved turning smock, a full face shield and some protective gloves, just in case. While this does seem to be a simple case of boiling a pan over a stove, I don't feel like splashes of hot pewter would wipe away as easily as hot soup, so I proceed cautiously.

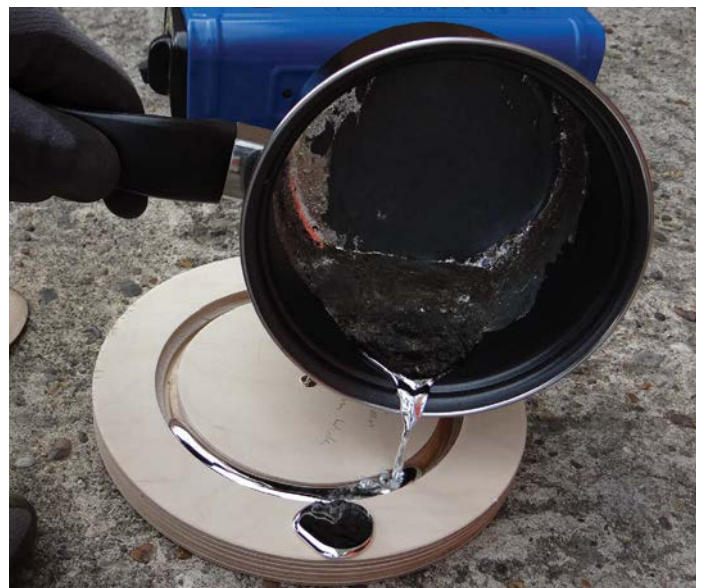
SOURCES FOR PEWTER

I bought my pewter from an eBay seller, which was easy to find and organise, but not the most economical way to buy it. I have since found it at a much better prices elsewhere online. There is also the option of re-purposing old pewter from things like beer tankards, which are often available in charity shops. The only issue with recycling old pewter is that it is very difficult to know if it contains lead, which is of course hazardous to health. If you choose this route extra care and personal protection needs to be taken, in particular the use of breathing protection during the melting process.

The casting



The pewter ingots are melting well



Pouring the pewter



The cooled and cast pewter stands well proud of the mould



It looks like the cooled pewter has shrunk slightly in the mould

With everything set out on the loading bay I am ready to make a start. I'm not entirely sure what I'm expecting to happen, but I turn on the gas with the pewter ingots in the pan and it takes what seems an age before anything happens. I give them an occasional stir, more for something to do with my hands than for any real reason, I think. Gradually the ingots begin to melt. As the metal becomes soft, the amount of liquid increases and the ingots become like melting ice cubes in a pool of quicksilver, until the pan just has liquid pewter swilling around inside.

Once I'm sure all of the metal has melted I am ready to pour into the mould. I had

looked for a pan with a spout – I think they are known as milk pans – but could only find a standard pan, but I'm sure it will be fine. Straight away I miss the groove and end up with a puddle of pewter on the rim of the mould, but quickly get my aim and I'm able to run it round the channel. I am surprised how quickly it hardens off and how high it sits above the ply of the mould. There is nothing else I can do now the mould is full. I had assumed I would need to leave it overnight to cool and fully harden, but it quickly becomes apparent that as soon as everything has cooled to a normal temperature I am going to be ready to remove the casting from the mould.

HEALTH AND SAFETY

As ever, health and safety is largely common sense. Melting the pewter should be done away from anything combustible, so ideally outside in a sheltered area – it is highly unlikely your insurance would cover you should anything go wrong in the workshop.

Personal protective equipment should be worn throughout including gloves, long sleeves and a face shield as a minimum. Breathing protection is certainly advised if there is any possibility of lead being present in the pewter.

Removing from the mould

I had assumed that as the pewter cooled it would shrink a little in the mould, making it easy to separate the two. I was wrong! Despite it looking like it had shrunk slightly, it certainly does not release itself from the mould, if anything it welds itself to it. Initially, I tried prying and levering with screw drivers, knocking and banging it on the concrete floor and even cutting away excess plywood on the

bandsaw, all to no avail. The only option left is far from ideal and certainly not recommended – I remount the plywood former on my screw chuck the opposite way to how I did originally, and gradually turn away the ply former. My biggest fear is the pewter ring will suddenly come away and become an airborne hazard but this doesn't happen, in fact it clings to the mould even after there appears to be no

contact between the two materials.

Throughout, I regularly stop the lathe to check the contact between the two and eventually I manage to prise them apart. This is far more difficult than I had expected, perhaps ply isn't the best material or perhaps I should have better prepared the mould. This is an area I will need to experiment with to find the best solution.



Turning the pewter from the ply mould



Finally free of the mould

Working the pewter

The pewter, now free of the mould, is reassuringly solid and weighty, but with a very rough and uneven surface. I will need to clean it up to fit it to the bowl, so I fit my wooden plate jaws to my chuck and turn a shape, which will hold the pewter ring in expansion mode. The tongue on the pewter is rough and oversized, as planned, so my next job is to trim it down and fit it to the bowl. I take careful measurements from the groove in the bowl and use my negative rake scraper, which is a re-purposed round skew, ground straight across to gently reshape the tongue. I am pleasantly surprised as to how easily the pewter works. With the scraper I largely get dust rather than long shavings, but the surface revealed by the tool is clean and shiny. After several passes and trial fits I am satisfied with how the two parts fit together and am ready to join them.

I have always found epoxy resin to be an excellent way of fixing wood to metal, so don't hesitate to use it here. I mix the two parts of the resin and spread it around the rim of the bowl and into the groove, fitting them together and leaving them to one side to cure overnight under some heavy

weights. Despite my care in applying the epoxy, I still manage to dribble some down the side of the walnut bowl. Hopefully the

fact that I fine sanded the outside of the bowl will minimise any marking or staining that may occur from this.



Holding the pewter ring with my wooden plate jaws in expansion mode



Beginning to shape the tongue on the pewter



Test fitting the bowl to the pewter rim



Carefully spreading the epoxy around the rim of the bowl



The following morning the epoxy is dry including the dribble down the edge of the bowl

Turning the bowl



Tidying the rim with my scraper



Cleaning the bowl and blending with the rim with my bowl gouge in shear cutting mode



Shaping the pewter with my scraper – notice the metallic dust from the tool



The rim, straight from the tool



Turning the inside of the bowl



Burnishing the pewter – very carefully – to a high shine



Adding the tiny V cut between the walnut and pewter



The finished walnut bowl with pewter rim

Strictly speaking the epoxy only takes 30 minutes to dry so having left it overnight, I am comfortable to get straight on with the turning the next morning. I once again use my scraper to tidy the pewter and bring it level with the walnut, before switching to my bowl gouge and making a shearing cut over the wood and the pewter to ensure a flowing curve. Interestingly, the gouge does produce some longer shavings from the pewter. Happy with the outside I round over the top of the pewter rim with my scraper. You can see from the picture how the dust comes away from the rim, which quickly goes from square to round. Once happy with the rim, I can continue to hollow out the rest of the bowl. This is just standard bowl turning, but with the added advantage of having the pewter rim to rest the bevel of my bowl gouge on as it enters the bowl, completely removing the chance of a catch on the rim of the bowl.

I am looking for a reasonably thin bowl so I regularly check the wall thickness with my callipers. Once I am happy with the turning I can sand, initially under power and then by hand. My biggest concern with sanding is that pewter dust may contaminate and discolour the timber. To minimise the chance of this I try to sand from the wood outwards toward the rim, sanding the pewter last at each grit and carefully check the line between the two regularly. I take the whole thing to 600 grit and the pewter rim onward to 1200 grit finishing it very carefully with burnishing cream, which leaves it beautifully smooth and shiny.

I decide to place a very fine 'V' cut between the wood and pewter with my point tool, which succeeds in making the joint as tidy as possible while hopefully helping to disguise any subsequent movement in the wood. Finally, I reverse the bowl in my usual way,

between a disc of MDF fixed to a faceplate and the live tail centre and remove the holding spigot and round off the bottom of the bowl, finishing the tiny pip that remains with a sharp carving gouge, power sander and finally with hand sanding.

Conclusion

I have thoroughly enjoyed making this bowl and feel that out of all of the projects from this series, this one has probably turned out best of all. I'm happy with the shape of the bowl, which sits in the hand well and nicely on a surface while rocking pleasingly when nudged. The pewter contrasts well and sets off the beautiful colour of the walnut. If I were to do this again, which I probably will, I need to research the moulds more carefully so it is easier to release the pewter rather than having to wrestle the two apart. ●

Community news

We bring you the latest news from the world of woodturning and important dates for your diary

We try to give accurate details on forthcoming events. Please check with organisers for up-to-date information if you are planning to attend any of the events mentioned.

AAW EXPLORE!

The American Association of Woodturners (AAW), a nonprofit organisation dedicated to education and advancing the art and craft of woodturning worldwide, has just made exploring the most extensive online woodturning library in the world quick and easy. Whether it's to solve a problem, research a new technique or start a new woodturning project, AAW members are only seconds away from getting precisely the information they desire using EXPLORE!

Nearly everything members want to know about woodturning is now at their fingertips, including all 30 years of the *American Woodturner*, award-winning journal of the AAW, and AAW's cumulative collection of complementary publications.

Phil McDonald, executive director for AAW, explains: "EXPLORE! is part of our VISION 2020 strategy to continue being the go-to source for all things woodturning. This innovative member benefit offers easy access to woodturning information in a user-customisable way, and creates a platform for other, upcoming VISION 2020 initiatives." He says "EXPLORE! is a useful resource for turners of all skill levels, and helps support and accelerate the learning process. It also complements AAW VideoSource (tiny.cc/AAWVideoSource), an online tool introduced in June 2016 that offers open access to useful woodturning videos pre-screened by the AAW for quality and safety," McDonald notes.

EXPLORE! is easy to use. AAW members can access it, after logging into the AAW website at woodturner.org, under the 'Publications' tab (or at tiny.cc/AAWExplore). This innovative resource enables members to locate articles and other media on a specific topic with as few as three mouse clicks – one to select a category, a second to refine the category by keyword, and a third to click the 'search' button and produce a list of article hyperlinks that meet their search criteria.

The Quick Search may be used to search by any word included in the author's name, article title, or publication section, and sort results by title, author, publication date or type of media. Additionally, an option to find only articles suitable for beginners may be selected.

EXPLORE! was designed by woodturners for woodturners, and it would not have been developed so soon without the

AAW EXPLORE!



GRAPHICS COURTESY OF AAW

dedication, generosity and expertise of AAW members Dave Mueller and John Kelsey. Dave's software development skills, combined with John's ability to deconstruct and tag 30 years of member publications, have made EXPLORE! an exciting reality.

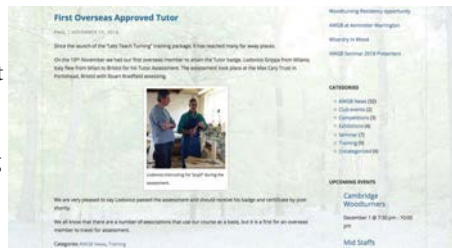
Contact: American Association of Woodturners
Web: www.woodturner.org

First overseas tutor approved

The AWGB are pleased to announce the first overseas tutor to attain the Tutor badge, from the Let's Teach Turning package since its launch. The badge has gone to Italian turner Lodovico Grippa from Milan. Lodovico flew from Milan to Bristol for his tutor assessment, with Stuart Bradfield assessing.

The Let's Teach Turning course was designed to give tuition to those turners who are already tutoring, to give some assistance in teaching the basics of woodturning at training workshops, club events such as hands on evenings or the scout jamborees. To find out more or if you would like to take the course, visit The Association of Woodturners of Great Britain website.

Contact: The Association of Woodturners of Great Britain
Web: www.awgb.co.uk/instructor-training



Woodturning Cruise 2018

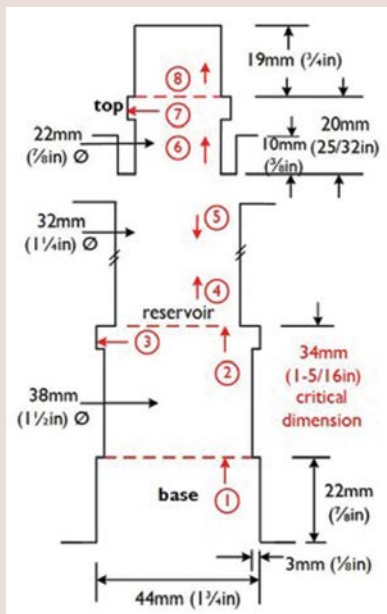
WW Verktøy AS are happy to announce a new woodturning cruise in 2018! The cruise will sail from Stavanger, a picturesque, seaside city on the west coast of Norway and visit 11 cities along the spectacular western and northern coast. The turning point will be the North Cape's closest city Honningsvåg. An excursion to the North Cape is absolutely recommended!

This trip is a once in a lifetime voyage where you will not only see the beautiful country of Norway but you will meet many woodturners, learn a lot of turning techniques from skilled turners, and even do some woodturning yourself on the high seas!

Email: post@woodturningcruise.com
When: 20 August–1 September, 2017
Web: www.woodturningcruise.com

Erratum

We would like to apologise for an error printed in Chris West's Crush Grind article in issue 299 of *Woodturning*, regarding a measurement in the drawing on page 90. Here is the correct illustration.



WOODWORKING SHOWS 2017

Olbernhau

This is the 7th meeting of the members of the German Woodturners forum – www.drechsler-forum.de. These meetings take place every two years and are organised by a different local chapter each meeting. In 2017 it is to be organised by Drechsselfreunde Erzgebirge and organisers are expecting around 2000–3000 visitors. There will be demonstrations on each supplier stand, further demonstrations organised by members and the main demonstration will be at the main stage.

When: 6–7 May, 2017

Where: Olbernhau, Germany

Web: www.dft-2017.de



Woodworks @ Daventry 2017

When: 12–13 May, 2017

Where: Daventry Leisure Centre, Lodge Road, Daventry NN11 4FP

Web: www.charnwood.net

The ToolPost Open days

The ToolPost will be holding their Open House 3–4 June, 2017 with key demonstrators Jan Hovens and Ronald Kanne. Peter Hemsley predicts they will show an interesting contrast in styles, with Jan renowned for his delicate miniature threaded forms and Ronald for his big 'muscular' bowls, turned for wet timber using the Oneway Easy-Core system.

When: 3–4 June, 2017

Where: Unit 7 Hawksworth, Southmead Industrial Park, Didcot OX11 7HR

Web: www.toolpost.co.uk

Wood Show

The Weald & Downland Open Air Museum is home to over 50 buildings – many of which are timber-framed – so wood is central to the Museum's conservation work and this show celebrates the importance of timber.

Visitors to the Wood Show will enjoy a range of wood craft demonstrations, a working wood yard, teams of heavy horses carrying out forestry tasks, exhibitors and displays. From viewing the Museum's own timber-framed buildings to crafted bowls, furniture, tools, toys and other wood products – there will be plenty to see, do and buy.

When: 17–18 June, 2017

Where: Weald & Downland Open Air Museum, Singleton, Chichester, West Sussex, PO18 0EU

Web: www.wealddown.co.uk

Bentley Woodfair

When: 15–17 September, 2017

Where: Harveys Lane, Nr Halland, East Sussex, BN8 5AF

Web: www.bentley.org.uk

The Woodworking and Power Tool Show 2017

Returning for its second year and building on its success in 2016, there will be more stands, more features, more things to do and more demonstrators to see at the 2017 Woodworking and Power Tool Show.

When: 28–29 October, 2017

Where: Westpoint Centre, Exeter

Web: www.wptwest.co.uk



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Moonlight bowl

Colwin Way makes an out of this world moonlight bowl

So we are in the darker months of winter when Christmas seems a distant memory and, if you were good, you may have had the fat fella visit you with a gift or two.

This month I want to try and give you a couple of ideas that may spark your creative thoughts and use some of those gifts you may of been lucky enough to receive.

Our project will be a fairly simple one, a classic ogee-shaped bowl which I intend to decorate. I know decorating turned projects isn't always to everyone's taste so I've tried to give you some different options in the main picture, but I'm focusing on one of my

favourite decorative techniques, airbrushing.

We can look at the basics of bowl turning for those of you just starting out on your turning journey, and then onto some very simple airbrush techniques to inspire you further into embellishment. I'm going to make a trio of bowls: one airbrushed, one will be with a turned line design and one decorated with pyrography.

You could try the same thing on any project. With different techniques and with your own designs, there really is no limit to what can be done; it's almost like creating your own swatch book of ideas. Even though the backs of our bowls have nicely flowing

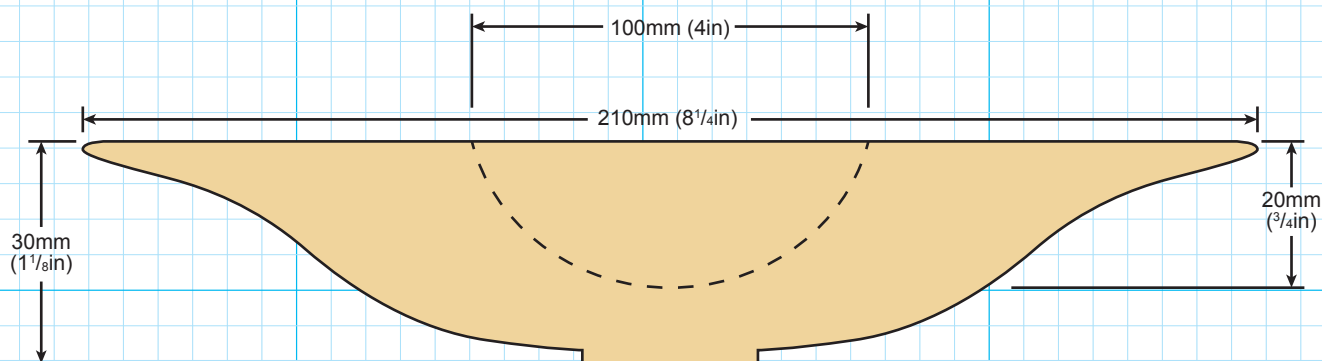
ogees, I've given the front face a large rim to give us a nice blank canvas to decorate.

EQUIPMENT AND MATERIALS

Tools

- Airbrush and dyes
- Pyrography machine
- 10mm bowl gouge
- 6mm bowl gouge
- Skew chisel
- Scrap paper
- Rotary sander
- Abrasive
- Screw chuck
- Dividers

PLANS AND EQUIPMENT





1 I used the whitest sycamore (*Acer* spp.) I could find, which won't discolour the paint. We will turn the back first. Hold the blank in a screw chuck, which will give you a centre hole to take out, allowing you to keep the bowl small. True the front face of the bowl, drawing the bowl gouge from the centre of the bowl towards the outside edge, facing the flute to 10 o'clock. Work from left to right, with the handle low and the flute facing 2 o'clock, draw the chisel across the outer edge using the bevel to rub the timber surface.

2 Now trued up, start laying out the basic shape. Measure the chuck jaws when they're at the optimum size, in this case it is 60mm. The optimum size means when the chuck jaw is at a perfect circle. This will give you maximum surface contact (important if you're only using a small foot to grip with). Use dividers to mark the foot size of 60mm, keeping them in contact with the toolrest and flat to stop them catching.

3 Now rough the shape of the bowl out. Start with the foot and cut a recess with a parting tool to a depth of 3mm. Use a 10mm deep fluted bowl gouge and a pull cut with the bowl gouge from the foot to the outer edge of the bowl. Don't be too concerned about tooling lines or tares at this point, you are only roughing the shape out.

4 Now make your finishing cuts, which means changing from pull to push cuts. When using pull cuts remember that flute direction is crucial. Point the flute towards 10 o'clock; for a push cut it's vital to have bevel rubbing throughout, starting with the bevel flat on the surface while moving the handle of the gouge to create the shape you want. Pressing too hard will give a frustrating 'bevel bounce'. When happy with the shape, clean up the foot with a skew laid flat.

5 Now to sanding, which is important for this project, as airbrushing will show up any flaw. Alternate between hand and rotary sanding: 100 grit hand, 150 grit hand, 240 rotary, 320 hand, 400 hand, 400 rotary, ending with 600 hand.

6 Now to the top face of the bowl. To decorate the face begin with a push cut or a sheer cut. To achieve this, drop the handle of the gouge and turn the flute into the bowl facing 9 o'clock.

7 Don't worry if you have a few turning lines after this process, they will be so small they will come out quickly when sanding.

8 When hollowing it's best to not take too much out as the focus is the rim, so you need it to be as big as possible, but you do want the inside curve to be pleasing. Face the flute to 2 o'clock with the handle over the other side of the lathe bed to start the cut. Draw towards and over the lathe bed as you come around the bottom of the inner curve and finish with a very small finishing cut. Because this curve is very tight, you may want to move to a 6mm bowl gouge instead.





9



10

9 There we are, the three bowls all finished and ready for their various decorations.

10 This is the point where you stop turning, move to the decorating and focus on the airbrushed bowl. I used five airbrushes all loaded with a different colour in each: white, black, blue, red and yellow. The airbrushes all have quick release fittings making the swapping of airbrush very easy. The airbrushes I use are known as dual action, meaning you press down for air supply and pull back for the colour to be delivered. I find these controllable and easy for beginners to use.



11



12

11 Here, I'm running the airbrush through an airbrush regulator, which I've set to 30psi, but anything between 25 and 40psi to start with is fine for normal inks. For most of the colours, use standard spirit wood dyes, which have a good consistency for the brushes and are easily cleaned with methylated spirits. However, for the white, use acrylic paint, which is much thicker than the dye so it will be really bold.

12 Start by laying down the base colour; this is really important and you want this to be really black for the white to stand out later. With the lathe turning at approximately 500rpm, and with an even movement, draw the airbrushes across the face of the bowl about 150mm away from the surface. The colour should be hitting the surface of the timber almost dry, but if you see the paint is staying wet then stop and allow time to dry. For extra guidance, you should be able to stop the lathe and touch the surface immediately without getting colour on your hands.



13



14

13 Once you have a good base of black you can start adding detail. Aiming for a moonlight scene, you'll need to start with the furthest objects in it – the stars! This is one of my favourite bits and takes me right back to primary school. Using a toothbrush, drop a small amount of white acrylic paint on to the bristles and flick some splatters to the surface of the bowl.

14 Now, let's make some of our stars sparkle! Start by cutting a thin slit into a piece of scrap paper, which will be your template. Hold the slit over one of the brightest stars and, using the white paint, spray in the opposing direction of the slit with the star at the centre. Remove the paper, turn it 180° and repeat the process.



15



16

15 Do this to as many stars as you want and try varying the size of them.

16 Now, let's move on to the moon, or moons. I used my only pre-made template, which has several sizes of circle in negative and positive images. As you can see, the edges are all close together so you will need to mask off the areas that you don't want the colours to hit.

◀ Airbrushing

17 Use the same scrap of paper from step 13 and cut a small hole into it to reveal the template, but make sure it covers the rest of the bowl to avoid overspray. If your light source is the centre of the bowl, like mine was, you'll need to have the heaviest colour facing this direction. Hold the paper down tightly with your fingers and spray the edge of the template at 90° to the surface to stop the colour creeping under.

18 I've put two moons of different sizes on my bowl to create some perspective and distance. Now it's time for the clouds. Still stick with the white, tear some tissue as ragged as you'd like to avoid straight edges. Try to move the paper around so you don't create the same pattern every time. Hold the tissue down and using the air supply from the airbrush, flatten it down while spraying the edges. Again, this is a really effective touch with the simplest of kits.

19 All the detail is now done meaning we can start adding colour. I used three colours to enhance the white detail, and the really cool thing with these primary colours is they're transparent, meaning you can spray over the black without them showing, yet when they hit white the colour becomes visible. It might be an idea to give the clouds some night-time colour like I did. Pick out detail with the red, keeping away from the moons and sparkling stars.

20 Now you have finished the colour, you will need to make the centre of the bowl shine. Let the brightness of the sycamore come through by taking a finishing cut to the bowl, creating a lovely crisp edge and making the bowl 'pop'.

21 The bowl is now ready for sanding, but a word of warning: take your time. One slip with your abrasive and it's back to the drawing board. Start with a 150 grit and work through to 600 grit, using the corner of the abrasive on your finger to give you control while sanding up to the edge of the bowl.

22 To finish off, take the foot off by reversing it on to a set of button jaws. Protect the painted surface with some tissue, and with a 6mm bowl gouge gently remove or re-shape the foot to suit your design.

Conclusion

Here we are, the trio of bowls all finished. I hope this has given you some ideas and inspiration to have a go yourself. No special equipment is required to make the effect apart from an old toothbrush and some tissue paper – if you call those special! The pygraphy bowl has a Viking design around the rim and the lined bowl was done using the tip of my skew, purposely easy decoration for everyone's capabilities no matter how new you are to this wonderful hobby. ●





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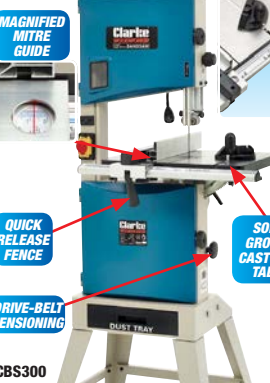
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Bosch	1400	0-55	£79.98	£95.98
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John's display at the University of Alaska Fairbanks Museum of the North gift shop

Building your brand and marketing yourself

John Unruh shows us how to market yourself, and your work, effectively

Every day we take a rough, or ugly, piece of wood that others may toss in their wood stove and turn it into something we hope someone else will appreciate. If it looks good enough to give to our spouse, donate to a charity auction, display it in a gallery or online, then we say 'great', but what if we want to sell it?

Selling our work involves several factors, which start with a review of the four 'P's of marketing: price, product, place and promotion. As all marketing textbooks will tell you, determining which is the most important is the greatest challenge to anyone selling their work, but in my 40 years of working with several hundred businesses and teaching marketing



David and Victoria Marks in their workshop



and entrepreneurship at undergraduate and graduate level, I can easily say they all work together to market and sell a product.

To start thinking about your brand and how to market it, you may ask yourself a few questions like: why I am making this? Do I have friends who want a salad bowl? Do I have a gallery that wants me to supply them with my live edge bowls? What are the most appealing aspects of my work? Is it the finish, the design or the materials I use? As you consider these points, you will develop a concept in marketing known as your SCA: sustainable competitive advantage. In other words, what makes your work different?

Michael Porter, a Harvard University professor developed the concept of competitive advantage in 1985 by identifying three competitive strategies: cost leadership implies that you can make your product for less than someone else. Can you make your production more efficient? Secondly, differentiation

considers the difference between what you and others make. How is your work different? Finally, a focus strategy allows you to target a specific market. Do you turn toys for a children's market or do you make salad bowls to sell on your website? Do you make higher priced items for the art market?

While it is great to say 'I want to sell to anyone', such an approach is more like throwing darts at a board blindfolded and hoping that you hit the bull's-eye.

The magazine you are reading practices a focus strategy by including articles and instructional guides to all aspects of woodturning (and does it very well). Even the adverts are targeted to the woodturner. Even though the magazine sells for around £4 at newsstands in the UK, I pay \$9.50USD at our local bookstore in Fairbanks, Alaska. But each issue has significant benefits to building my understanding and learning of woodturning so I gladly pay the price.

This is the magazine's sustainable competitive advantage. The four 'P's of marketing, as outlined in all marketing textbooks and each product, incorporates these attributes and determine how you price your product, where and how you promote it. They all contribute to building your brand.

Marketing any product and building your brand as a quality wood artist includes promoting your work at a gallery opening, or discussing your work at an exhibition, or simply helping a young turner build their skills. It also includes advertising your work in selected on-ground or online outlets.

For this article, I asked three turners and their wives to share their experiences and offer insight on how they market their businesses. Pat and Peggy Bookey, Ken and Mary Whitten, and David and Victoria Marks all incorporate marketing concepts slightly differently to build their name awareness and competitive advantage.

Product

Pat Bookey advises to "set the quality of your work" and don't deviate. If a piece isn't working, don't spend any more time on it. "Toss it in the wood stove and move on," he states without hesitation.

All products have features and benefits. A feature of a bowl is that it holds water, a salad or potato crisps. A benefit may be it is so beautiful that its function as a bowl is secondary. David Marks spends countless hours on one piece and has buyers throughout the world. His work also sells for significant sums. The more artistic an item the greater emotional bond the buyer will have with it, so it will deserve a higher price. Consider where your work falls on the function versus art scale.



Some of Pat Bookey's pieces on display at the University of Alaska Fairbanks Museum of the North gift shop

Price

One of our first challenges is what to charge for your work. The price you set for your piece is determined by your target market, the features and benefits of your product and the cost of producing it. Do you sell your work too cheap because it didn't take that much time to make? How many years have you spent learning your craft? When starting to sell your work, pricing it is often trial and error. Ken Whitten says: "I price it for what I think the market will bear, but my advice is to not get discouraged if pieces don't immediately sell. Sometimes a piece will take several months to sell, but it's better if there are more of them in our display as people like to have a choice." Ken's local farmer's market has a few dozen vendors of farm produce as well as craft items and is held every Wednesday and Saturday. This is a key location for he and his wife Mary. They chat with locals and tourists from around



Ken Whitten talks with a customer at Farmer's Market



One of the products developed by David Marks

the world. Prices of their items are the same at the market, at holiday marketplaces and galleries where they sell their work.

Ken and Mary price their work at a basic rate and then determine the selling price by considering estimated fixed and variable costs. He readily admits this formula doesn't cover all costs of production like the eight hours spent twice a week selling at the

market out of their display, but it is the most effective. Ken and Mary usually have a few dozen pieces on display with a range of prices. This gives the buyer enough choices that they can select from a higher priced item to something less. The general rule is that manufactured items should retail for five times the cost of their production, but this varies widely and becomes a minor point

when pricing art whether it is a salad bowl, a vase that you have spent hours developing or a top that only takes an hour to make. The price you set is also affected by the competition, though the stronger your brand the more your work is recognised as unique so your work can command a higher price. As we shall see, sales are affected by where you sell your work.

Place

Where do you want to sell your work? Your target markets include distribution points, or the place of sale. That may be at a craft fair, farmer's market, gallery or your website.



John's display of Birch Aspen bowls

Tourist market

Many areas of the world including the US state of Alaska, our home, have large numbers of tourists who stay only a short time, typically less than a week. They have limited time to see your work and limited space in their luggage so use product hang tags, business cards and always sign your work. An excellent study offers substantial details on selling and marketing to tourists: "Selling to Tourist Markets: Marketing Crafts and Tourist Products" University of California Small Farm Program, tinyurl.com/gswwxfw. Key conclusions of this study are: localise products by incorporating a design motif, provide written information on care, safety and use, offer value-added services like shipping, monogramming, gift wrap and accept credit cards and continue to create original designs. Ken and Mary Whitten started marketing and selling Ken's turnings in 2004 by sharing a table at one of the area's most popular holiday

marketplaces. The couple say: "personal sales have the best success. We have a nice display at a farmer's market so we can interact with customers." They also sell at a local gallery.

People buy from people they know and trust, so Ken candidly admits that he might be too honest with customers. "If someone admires a beautiful choke cherry (*Prunus serotina*) bowl, but wants something from Alaska, I have to be honest to let them know that choke cherry is not native to Alaska so if they want Alaskan woods. We show them our spruce (*Picea* spp.), birch (*Betula pendular*) or aspen (*Populus tremula*) items."

Pat Bookey's sales strategy focuses on key distribution points, but he readily admits "if something isn't selling at one place, don't reduce your price, but move it to a place where it does sell." As we have seen, this requires knowing the demographics of your market.

When Pat started his professional career

in woodturning, he presented his work to one gallery who wasn't interested in his pieces, so he literally went down the street and found a gallery that wanted all he could produce. He maintains his prices to target the clientele of the gallery.

David Marks and his wife Victoria build their brand through personal contacts and their website. "Developing relationships are very important," David notes, "we follow a slow growth business model." In addition to having a comprehensive website, he has an ongoing class schedule and has developed several instructional DVDs. The value of his brand has increased significantly over the years. David has developed a unique finish and style for his pieces, which has led to a reputation for high quality art. The quality of his work, dedication to students, instructional DVDs and exhibitions has strengthened their brand.

◀ Promotion

Traditional elements of any business's promotional campaign are: advertising, personal selling, public relations and publicity, direct marketing and sales promotion.

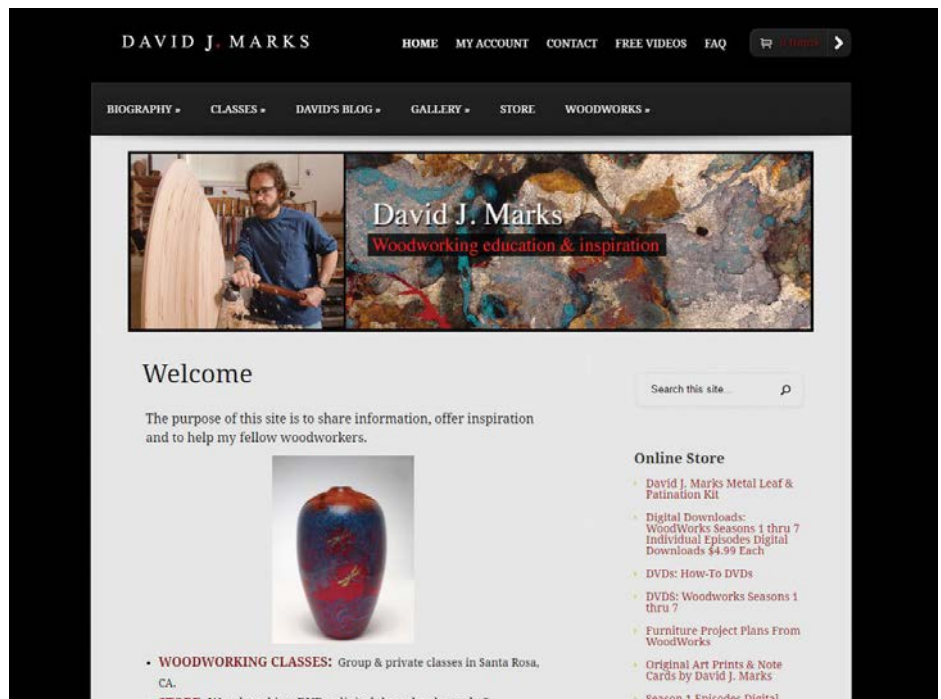


David Marks promotes his work through demonstrating

Websites and social media

It's often assumed that putting one's work on social media or a website is an automatic guarantee of sales. While someone may eventually buy whatever is on a site, it's more effective to target the website to the clientele you want.

The website of David and Victoria Marks includes their products and services, which range from classes, workshops, DVDs and exhibitions past and present. It is clearly a promotional vehicle to build the strength of their brand. "Before we had the website, we had to take pictures (we now use a professional photographer) of each piece, enlarge them, put them into a portfolio and make slides so we could show our work to potential customers," says David, "it was very time consuming." Victoria takes care of the website and states: "that with today's technology, anyone can do it."



David Marks' website. A quick and easy way to market your work

Online presence

YouTube

There is a wide range of videos on YouTube. Some are professional, but clearly it is a place for anyone to do or say anything. It can certainly be said, however, that having good quality content, although it costs time and money to do so, can help raise one's profile and presence.

Facebook

It is important to know that having a presence on Facebook is not a guarantee of success. The important issue of Facebook, or any social media is that anyone can say anything about a product without being accountable. In fact, some companies have been cited for posting misleading comments about their competitors or

false statements about their own.

Facebook is, however, an excellent forum to interact with friends and build name awareness and is good in helping keep people up-to-date with what you are doing and making. One study by Maurer and Wiegmann indicates that adverts are less important to Facebook users – but it does help to have them.

Pinterest

This is the 'third most popular social networks site in the world' according to a study from Shopify: www.shopify.com/blog/6058268-how-pinterest-drives-ecommerce-sales. According to Pinterest, the average order value of sales coming from Pinterest is \$50USD. Take note, these statistics are from Pinterest.

Etsy

There is an abundance of articles online which illustrate ways to generate sales on Etsy and some, unsurprisingly, are written by Etsy or by those who want to promote Etsy. Is putting your products on a social media site an effective way to immediately increase sales? The short answer is 'probably not', but the long answer could be 'yes, but it can only help as part of a combined strategy'. Preparing a marketing campaign should include a social media site, but know your customers.

Blogs

Blogs can take time away from turning, but there's a reason social media is 'social'. "You want to express your artistic voice," as David Marks notes, "to your readers." It's not for everyone and is not intended to replace face-to-face contact with your market, but it's one more option for raising your name awareness. Victoria Marks spends time on the blogs and the couple's newsletter, but readily admits: "it is a time-consuming process, but it keeps us in touch with our customers."

Special events

Galleries often promote their work through special events, so if you are a member or a consignee of a gallery use every opportunity to promote your work.

One example is promoting the first Friday of the month. Galleries offer complimentary hors d'oeuvres and a glass of wine in the evening hours to entice the public into viewing the artists' work. It's a great way to interact with gallery patrons.



John's display at the Karibu Gift Shop, Denali Park, Alaska

Markets and craft fairs

The importance of meeting your potential customers face to face cannot be overstated.

- Is your display organised by product category? Are the strongest features of your work displayed? Is the lighting adequate?
- What is the focal point, i.e., 'the stop sign' of your display? Step back from your display to see what customers see. What attracts them to your display over the other exhibitors? It's important to have adequate lighting to accentuate the finish and colours of the products. Remember that colour 'pulls' the eye of a viewer much more than monotone.
- Does your display have a few pictures of you developing your work? If not, can you 'paint' a picture of your work to a customer? Do you have a variety of pieces to display with enough inventory to back up your display? Replenish your display as you sell during the day.

At a holiday gift bazaar (with nearly 100 other craftspeople vendors) we wanted to add a distinctive touch to our table, so we added two or three pieces of small chocolate to some of the bowls. The purple colours of the chocolatey wrapper contrasted nicely with the natural wood finish.

Remember, your display and work is likely being seen for the first time by a large group of potential customers, so avoid sitting down and interact with them. They want to know you as they are really buying a piece of 'you'.

Print and radio media – local newspapers and tourist guides

Don't discount the effectiveness of your local newspaper and tourist guides to build your community awareness. Newspaper readers typically have a better income and are higher educated. Making your community aware of your wood turning art can result in increased sales. Most newspapers have graphics departments and will work with you to produce an affordable advert, but customers need reminding so if you develop a small and affordable ad campaign, be consistent. Small print ads that run consistently have far more reader recall than one large ad run once every six months. Tourists often rely on local visitors bureau for the best attractions. Build your local clientele to support your reputation with the tourism market.

Donating to a charity

A very effective way to promote your work is to donate a piece for a charity auction. Even if you turn pieces for gifts, donating an item shows others that you are producing quality items and are part of the community so price your work as though you were selling it in a gallery. All three turners donate pieces to fundraisers. There is an enormous amount of information on the effectiveness of using one marketing practice over another, but it all comes down to what you do and how you want to share your passion with your market.

IF YOU WISH TO LEARN MORE

If you wish to understand how marketing can further expand your business, you might wish to review the following topics. Any library has this information or you may use the online links below:

• Brand equity

'Brand: 5 main elements of brand equity explained' – tinyurl.com/z4u6hgw

• Competitive advantage

"Strategic moves to build a competitive advantage" – tinyurl.com/zrq9mps

• Segmentation strategy

"Customer Segmentation Strategies" – tinyurl.com/n9nnzw9

Online opportunities:

• Maurer, C., Wiegmann, R., 2011

"Effectiveness of advertising on social network sites" – tinyurl.com/zsthws3

• Richter, F, 2014

"How Marketers Use Social Media" – tinyurl.com/gth6wl2

• Peterkin-Grant, C, 2014

"Selling art online and reaching new markets: 5 tips for artists" – tinyurl.com/l9svdlf

• Reinecke, P, 2015

"65% of internet users in the EU shopped online in 2015" – tinyurl.com/z7v6d6a

• Abundant Artist

"Tips on how to use Pinterest to get your art viewed by potential buyers" – tinyurl.com/zbftuua

• Light Space and Time online art gallery

"Top 10 reasons why artists fail with social media" – tinyurl.com/z5be3sc

• Delzio, Suzanne, 2015

"12 Social media marketing trends for small business" – tinyurl.com/ou4wn3a

Target markets:

• Leboff, Grant

"Six steps to defining your target market" – tinyurl.com/4mp9ymy

Tourism marketing:

• University of California Small Farm Program, 1993

"Selling to tourist markets: Marketing Crafts and Tourist Products" – tinyurl.com/gswwxwfw

• Value Chain analysis

"Porter's Value Chain" – tinyurl.com/ju7nzfb ●

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Cup and cover

Andy Coates' contemporary take on a cup and cover – making a usable drinking vessel with a twist



A recent article reminded me of an object that was common many years ago – the cup and cover. A cup and cover is exactly what it sounds like – a drinking cup with a lid. A nice simple object that can be as plain, decorative or intricate as you wish providing it satisfies its primary purpose, which is to hold liquid to drink.

Such vessels served at least two purposes, other than to drink from; the cover protected

the drink from becoming contaminated with dust, etc. and it could also serve to insulate a warm beverage. Both perfectly sound functions, even if the former is less of an issue in the 21st century than it might have been when ceilings were not quite as refined as they are today. A cup and cover would, however, be an ideal project if you spend any amount of time outdoors, camping, hiking or attending open-air

events where a picnic is the order of the day. You might want to choose a slightly less decorative approach than I do here, but the process is otherwise the same.

One thing to keep in mind is that the cover should not fit like a box lid. It ought to be a very slack fit to enable easy and unhindered removal. This is not a travel cup where the lid seals the vessel to prevent spillage; this is a drinking vessel with a loose cover.

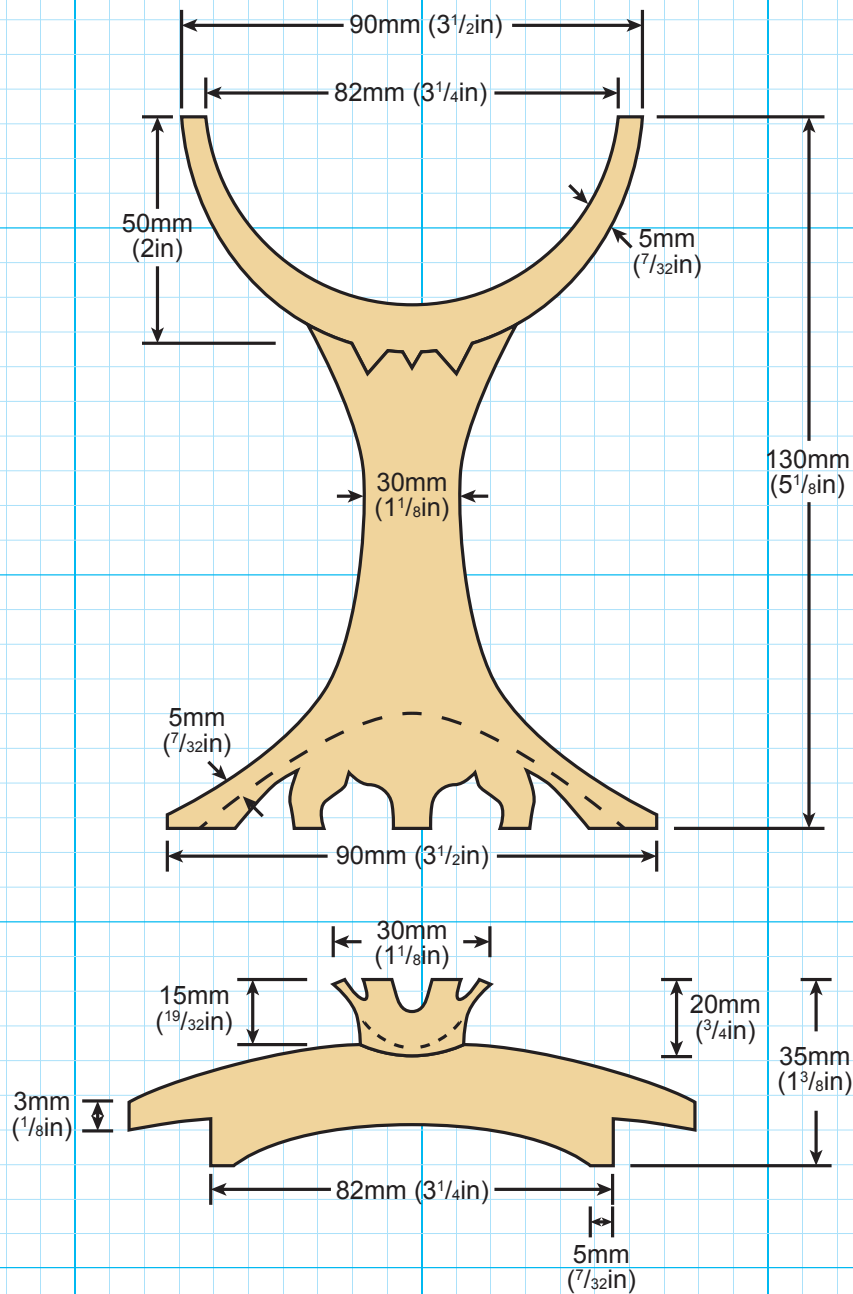
PLANS AND EQUIPMENT

Tools

- 10mm long-ground bowl gouge
- 10mm spindle gouge
- 10mm parting and beading tool
- 2mm parting tool
- Multi-head half-round bar scraper

Materials

- Sycamore (*Acer pseudoplatanus*) block – 100 x 100 x 200mm
- Abrasives 180–600 grits
- Cellulose sealer
- Melamine lacquer
- Acrylic paints
- PPE: facemask, gloves, dust mask/respirator





1 Mount the block between centres and rough down to a cylinder using a long ground bowl gouge or a spindle roughing gouge. Clean up the end of the blank using a 10mm parting and beading tool in preparation for turning a mounting tenon.



2 Prior to initial mounting, the blank was assessed to decide which end would be the base. This end is always put at the tailstock to make turning the tenon easier. However, after initial roughing down some nice figure was revealed, which would look better in the cup of the vessel.



3 Rather than reverse the blank, turn the tenon at the headstock end. Providing care is taken this need not be a problem. While it does result in a larger than usual stub at the centre, this is easily taken up inside the four jaw chuck. Turn the tenon to suit your chuck.



4 Mount the blank in the scroll chuck. True up the blank again if required. Mark the blank with a pencil at 50mm and 130mm down the blank. Using the long ground bowl gouge, begin to shape the cup section, working down approximately two thirds of the depth of the cup.

“... work down to 600 grit to provide a silky finish to the interior surface.”



5 Now set the toolrest to the end face of the blank, and use the bowl gouge to begin to hollow the cup. Aim for a 5mm wall thickness at the rim and work down to form a hemispherical interior. Aim for a final depth of 50mm.



6 The interior needs to have a fine finish, so take a round-nosed scraper and refine the surface taking light cuts with a freshly honed scraper. A half-round bar-type scraper can be easier to manipulate and control than a flat bar scraper. Work until the surface is flat and tear free.



7 Before moving on, abrade the interior of the cup. A rotary arbor can help to achieve an even, unscratched finish. Work from an abrasive grade appropriate for your tooling technique and work down to 600 grit to provide a silky finish to the interior surface.



8 The cup needs to be waterproof, so use a melmine lacquer to finish. Cellulose sealer can be used prior to applying the melamine, or you can just use melamine lacquer. If you do, use just melamine, then two or three coats as the first will serve as a sealer and the subsequent coats will provide the waterproofing. Full curing takes approximately seven days.

9 Re-site the toolrest to the side of the blank and continue shaping the exterior of the cup section. Remove the waste to the left of the bowl to provide the space required to work the finished surface, without fouling the tool. Remember to follow the interior shape and wall thickness.

10 When the outer wall of the cup gets to a depth of 50mm leave a step. Start to roughly shape the stem of the vessel working from the 130mm mark towards the base of the cup. Abrade the outer wall of the cup to a 600 grit finish and apply a melamine finish as for the inside surface.

11 Complete turning the stem of the vessel. The technique here is the same as for a cove in spindle turning. Work from each outer edge towards the smallest diameter and blend the two sides together at the bottom of the cut. Abrade to a 240 grit finish.

12 Using a 10mm parting tool, cut a flat face on the edge of the foot making sure there is a 6mm width. Make the diameter of the foot the same as the diameter of the rim of the cup, approximately 90mm. Abrade the edge face to 240 grit. Using a 2mm parting tool make an initial parting cut to a depth of approximately 5mm. This cut should be flat, at 90° to the bed of the lathe. Widen the cut to the left to provide room for the next step.

13 Now, return to the initial parting cut. Begin the cut with the parting tool at approximately 45° to the lathe bed and work slowly in. You may need to increase the width of the cut to the left to allow the tool to work unhindered. This cut is more difficult than a conventional straight in parting cut, so take care and go slowly.

14 Work as far down as you feel comfortable doing so. Cut off the stub with a fine saw if you prefer. Once the vessel is parted from the waste block, true up the surface of the waste block using the bowl gouge.

15 Measure the diameter of the outer rim of the cup and transfer this dimension to the face of the waste block. Using a 10mm parting tool, cut a recess 8mm deep. Make the cut slightly dovetailed with the lesser diameter at the base, this will allow adjustment if required.

16 Test fit the cup into the recess. It should be a tight fit. If adjustments are required then take very light cuts and re-try the fit after each adjustment. When these are complete, the rim of the cup should sit on the base of the recess to ensure the vessel in true. A light tap with a soft mallet may help, but take care.





17



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17 Secure the vessel to the waste block with masking tape, ensuring the vessel is solidly held. Now re-site the toolrest to the end of the vessel and taking very light cuts with a 10mm spindle gouge turn a cone 20mm deep on the interior of the base. Make the wall thickness about 5–6mm. Clean up the surface of the waste block (now the cover) until it is flat. Measure the interior diameter of the cup and transfer this dimension to the waste block. Using the 10mm parting tool cut a tapered tenon 6mm deep to this mark, testing the cup for fit frequently as you work. Aim for a loose fit.



19



20

18 Once the tenon is completed turn a slight concave on the face, leaving a 5–6mm flat area around the edge. Soften the outer edge to prevent damaging the interior of the cup in use. Use a scraper to ensure a fine finished surface.

19 Abrade the tenon and concave face to a 600 grit finish and apply a melamine finish as for the cup of the vessel.

20 Mount scrap wood in the scroll chuck and clean the face and edges. Measure the tenon on the cover and transfer this dimension to the waste block. Using the 10mm parting tool, cut a recess to take the cover tenon. The fit should be tight, but should not damage the tenon.



21



22

21 Shape the top of the cover using a 10mm spindle gouge, taking light cuts. Leave a 28–30mm stub in the centre and create a rising cove to it from the surface of the cover. Slightly hollow the central stub to a depth of about 10mm. Abrade to 600 grit and apply melamine.

22 Draw some roots at the base of the stem, making sure they end before the top of the inner cone. Using a dremel-type tool, with a burr or rotary cutter, cut the waste away. Do the same for the central stem on the top of the cover. You are aiming for a stylised tree form overall. At the underside of the cup, where the step was left, mark and cut away some small sections to represent boughs and branches.



23



24

23 Use a file or abrasive to blend over the edges of all the cut sections, paying particular attention to the areas under the cup where the 'branches' meet the cup. Take your time to ensure the finish will be as good as the remainder of the cup.

24 Using a high power pyrography machine burn lines to represent bark over the whole stem area and the central section on the top of the cover. Simple strokes are all that is needed, with some deeper lines to give the look of fissures and bark features. Burn quite deeply to provide texture. Finish by painting with an appropriate acrylic colour. The painted area can be sealed or oiled once dry. ●

Workshop rethink

Could your workshop use a bit of a tidy up? Well, the Editor talks us through small, but effective changes to maximise efficiency and safety



No doubt this is a wonderfully productive workshop, but if your workshop and workshop practices resemble this, then maybe a bit of a rethink is necessary



Workshops are personal to us all. They are our space that reflects our needs, likes and what we want to do in them. It is, however, a truism that no matter how big the workshop we have, we will always find things to fill it and thereby need an even bigger workshop. We can dream of bigger workshops, but the reality is, we must all look at utilising space well. But it isn't just space in a workshop that affects how we work, there are other things we need to consider that directly affect how well we can work and also, how safely.

I know it might seem like an old hat and my telling people to suck eggs, but I was taught in my apprenticeship that over familiarity breeds contempt, and complacency results in accidents. So, based on that, here is a reminder of things to consider:

1 Whether you are building a new workshop or remodelling one, always consider and fit appropriate insulation in the roof space and walls. You can never have enough thermal insulation; it helps cut down on some of the heating bills and if you live in hot climates, it keeps things cool. A freezing cold workshop is not only unpleasant to work in, it can affect the drying of finishes and if we are cold it can also affect how we work.

2 Work out what type of heating you can viably use. You might not need any, but if you do check on your insurance as to what you can and cannot use. You may find that some forms of heating are not suitable for your workshop and what you intend to do there.

3 Whether your workshop is a fresh build or a modification, you can never have enough electric plug sockets. Fit as many as you can – I wish I had double the number I have and I doubled my original amount asked for. It is also advisable to have a fuse box with integral RCD breakers as well as having a cut off/isolator switch, so everything is shut down fully when they're not in use. All of the electrics in my workshop can be isolated off when I am not in there, so even if someone goes in I know that no machinery or tools plugged into the sockets will work unless the isolator switch is switched on.

4 Build with the ability to shift equipment and workbenches around. No matter how much you plan, things need to be moved, or altered, over time. I am in the process of reorganising my workshop, mainly due to wanting more from it than I currently get. But, I also admit that it had gradually come to look more like an untidy and well-used storage unit. I am exploring making better use of wall space to maximise storage areas and not having items on the floor, other than benches and storage units.

PHOTOGRAPH BY PAOLO BONA/SHUTTERSTOCK

5 Make sure your work area is clean, tidy and free from trip hazards. I know space is at a premium, but tripping over things or slipping on debris is easily prevented, although it's a common thing to happen. Clean up after yourself each time you work, tidy things away off the floor and out of the way. That may sound obvious, but does everyone do so every time? I know some people's workshops are like surgical theatres – most of us will not have workshops like that, but they do need to be as safe and tidy as you can make them.



My workshop before the start of a tidy up and revamp

6 Make sure you have good lighting. Usually you will need lighting for the whole room and some form of directional lighting to ensure you can see clearly in specific areas. Like space, we can never have enough good lighting. I personally need to fit much more in my workshop.

7 Don't skimp on safety measures and knowing your equipment. Always familiarise yourself properly with the machinery you have and use. Do read the instruction manuals and work within the recommended parameters in a safe and appropriate manner to minimise the risk of injury. Own up... how many of us always read the manuals and instructions? I shall say nothing more on the subject other than I know a lot of people who don't and some who have had nasty surprises by not doing so.

8 When cutting items with power saws and bandsaws use clamps, jigs and other devices as appropriate to hold things securely and help you work safely.

9 Don't ever operate machinery and equipment when you are tired or taking medication that might make you drowsy. It sounds pretty obvious, but like tools and manuals, do you honestly know what side effects there are with each type of medicine you are taking?

10 Personal protective equipment (PPE), as well as good working practices, is vital to minimise the risk of injury should something unplanned happen. Safety glasses, faceshields, facemask and powered respirators as well as a good source of dust extraction to ensure you remove as much debris and dust as close to the source as possible are essential. If money allows, have an ambient air filter in the workshop too. The other thing is to ensure you use them, even for the small jobs that only take a few minutes. The dust stays airborne for a while and you may not realise how much you are breathing in, and the accumulative damage that is being done with repeated exposure.

Usually dust extraction creates various degrees of noise – like some machinery and tools we use, some of it very noisy. Work out what you can use to get the job done well and minimise your own and your neighbour's exposure to the noise. Maybe ear defenders are necessary too.

11 We all know turning creates large volumes of shavings and these are easily removed with a shovel and bin, but sweeping up workshops are not recommended due to the fine dust particles becoming airborne. If you do shovel the big stuff up, please use a vacuum unit to deal with the smaller stuff. All dust is recognised as harmful to health so do all in your power to minimise exposure to it. Irrespective of how you clear up, always wear PPE when doing so.

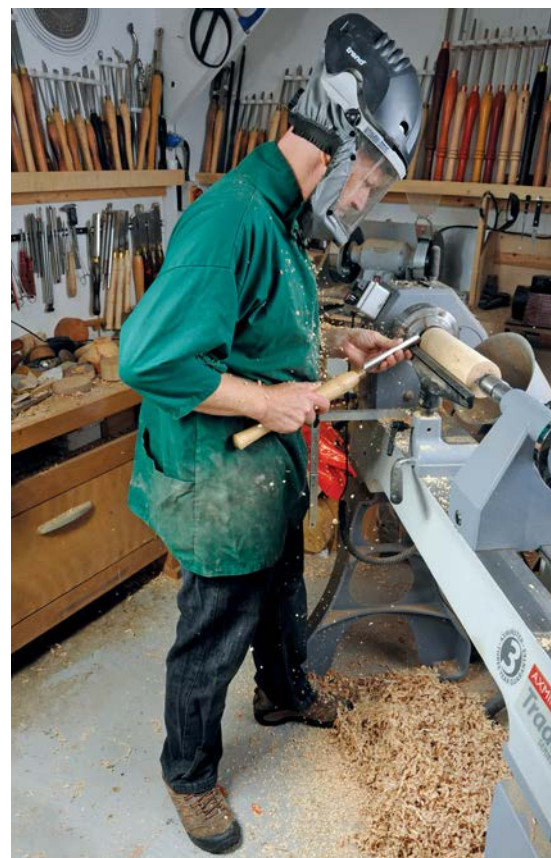
12 When using finishes, minimise your exposure to the product by using the product in accordance with the recommended usage procedures. This includes wearing appropriate PPE, disposing of old finishes, clearing up any spillage and disposing of rags, cloths and cleaning up brushes and anything else properly. It is also advisable to secure flammable finishes in a metal cabinet that is clearly marked.

13 We all try to maximise our use of space, but do try to keep everything within easy reach. Using step-ladders or hop-ups, and others, in the workshop builds another element of risk into our working practices. If you do have to have things at a height greater than you can easily reach

by standing on the floor, make sure they are small items so when you're on a step ladder the weight being lifted and moved is not too heavy to cause problems. One thing to remember is to never over reach when working on step-ladders and hop-ups.

14 You have spent a lot of money creating your workshop, so look after it by fitting in the correct security measures to minimise the risk of break-ins and fire. Consider fitting good quality lock hardware and if possible CCTV, but also an appropriate fire extinguisher or two depending on what you do in the workshop too. A first aid kit is always worthwhile having in a workshop. Hopefully you will never need them, but it is better to be safe than sorry.

15 Lastly, check you are properly insured. This includes making sure you comply with all the relevant insurance requirements for the workshop, but also in regards to content value. Most people underestimate how much it would cost to replace the items they have obtained over the years, working out what you want to do in your workshop and building up all the kit and accessories. If in doubt about anything on your insurance, ask for things in writing and write down your queries to them to make sure your insurance company fully understand everything you are asking and talking about. ●



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A cracking finish

Adrian Jacobs shows how to use crackle glaze to maximise the visual impact of bowls

I have written in *Woodturning* before about the use of crackle glaze and how, when used sensitively, it can really enhance an otherwise unexciting bit of wood. Over the past few years I have been experimenting with the finish and this article sets out some of the tips and techniques you can use to 'jazz up' your turning. Recently, I was given a board of softwood, a kind of pine (*Pinus* spp.), that turns and finishes really well but it had lots of faults and shakes in the wood. I planned to make some large bowls out of it, but in the end I had to settle for five blanks of about 280mm diameter. At the same time, I was about to dispose of three very tatty rubberwood picnic tables that had supported plants in my conservatory. They were stained beyond redemption and had been condemned by the domestic chief executive. I never throw wood away unless I am absolutely convinced

that I can't make use of it and, after a bit of thought, I decided to use these with the pine blanks to make a large bowl and the rubberwood rim that could be covered up by crackle glaze.

This article shows you the tips and techniques you can use to make a similarly large bowl, and what you need to know about using crackle glaze.

What is crackle glaze?

There are a number of crackle glaze products on the market, but the one product I have had most success with is the Plasti-kote range. The products work by spraying on a base coat of an enamel-based paint, followed by a top coat of 'crackle glaze' that splits and cracks as it dries, revealing a network of cracks that exposes the underlying base coat. The base

coat and top coat are chemically incompatible and that encourages the cracking that can be used to give quite dramatic effects. The Plasti-kote range is quite limited in colour combinations and, although it used to be widely available in stores such as B&Q, I have found more recently it is less easy to get hold of and I have had to top up my supplies through internet purchases.

Plasti-kote now supply top coats in black, heritage gold and cream, and base coats in gold and brown, but I have discovered you can use almost any enamel-based spray paint as a base coat. This gives you access to a much wider range of crackle effects. Plasti-kote also do a wide range of enamel spray paints and these work very well, as do enamel-based car spray paints from Halfords.

HEALTH AND SAFETY

- MDF has a reputation for being particularly unsafe in dust form, but a search of the internet suggests that it is no more unsafe than any other wood dust. As always you should take precautions to protect yourself from dust using masks and extraction systems.
- The use of solvent-based lacquers poses two risks: they are very flammable so do not use near any naked flames; the fumes can be toxic so make sure the workshop is well ventilated.



The Plasti-kote range



Just some of the other products I have used successfully as a base coat



The finished rubberwood and elm (*Ulmus procera*) bowl I mentioned in the opening paragraph was made using a base coat combination of red and blue enamel, and a heritage gold top coat. The rims of this bowl are a simple gold spray paint.

For the more adventurous among you,

it is possible to use acrylic-based paints as the base coat, as long as you cover these with a couple of coats of clear enamel before spraying with the top crackle glaze. The clear enamel spray is available from most DIY, craft and car repair outlets.



Figure 1. The finished rubber wood and elm bowl

Bowl design

Bowl design is fairly straightforward and if you follow the 'golden ratio' of decoration to plain wood (roughly 1:1.6) you will probably not go wrong. Despite this, do not be afraid to experiment, as the late great Douglas Bader said, 'rules are for the guidance of wise men and the obedience of fools'. The most important thing is that there should

be sufficient width – typically a rim section on platters, but it can be the outside of bowls, hollow forms and such like – to allow crackle-glazed section to have visual impact.

The bowl with the red and blue base coat and a Heritage gold top coat (Fig.1) has an overall diameter of 325mm crackle pattern width of 70mm.

TIPS AND TRICKS

- Before you trim the masking tape, run your fingernail around the point where you are going to trim to ensure that the masking tape is firmly adhered. Do this again after you have trimmed the tape to ensure the paint cannot creep underneath.
- If, after removing the masking tape, you find there is overspill onto the masked area, then you can touch this up with a fine paint brush using spray paint that has been sprayed into a small container.
- If you have accidentally applied too much spray and there is a danger of runs, use your variable speed (if you have it) to run the lathe at a very low speed while the paint dries. This prevents gravity from dragging the paint at a single point.
- If the masking tape leaves any residue, use white spirit as a solvent to remove it. Cellulose thinners will damage the finish.

The larger of the two black and gold bowls (Fig.2) has an overall diameter of 360mm and a crackle width of 65mm and the smallest (Fig.3) has an overall diameter of 270mm and a crackle width of 45mm. I think that they all work although may not quite follow the golden ratio.

You do not need to confine yourself to using crackle glaze on wide rimmed bowls. It also works well as a side band on a simple bowl. Here (Fig.4) you can see the small bowl that has a crackle band on the inside and the outside; I did this to cover a nasty knot in an otherwise nice piece of cherry (*Prunus* spp.) that was destined for the firewood pile. Here (Fig.5) shows a small bowl made out of the same cherry tree with a simple external crackle band.



Figure 2. Wide crackle glazed rims...



Figure 3. ... made from MDF



Figure 4. Crackle glaze on the internal and external sides of a bowl



Figure 5. Crackle glaze on external side of bowl only

Bowl shape

When creating a wide-rimmed bowl, you can either have a supported rim (Fig.6) or a 'floating rim' (Fig.7). The supported rim will be much heavier and requires a large blank because it all needs to be made from one blank. The 'floating' rim will be much lighter in weight and you can combine all sorts of wood and man-made materials to create it.

Creating floating rim bowls on small blanks is fun, gives you the opportunity to experiment and can achieve dramatic results from small wooden blanks. I have done this in three ways using; a disk of wood reclaimed from an old table; a disk of wood cut from a piece of 11mm thick MDF; and a segmented ring. Whichever way you do it, I recommend following more or less the same process.



Figure 6. A supported rim bowl

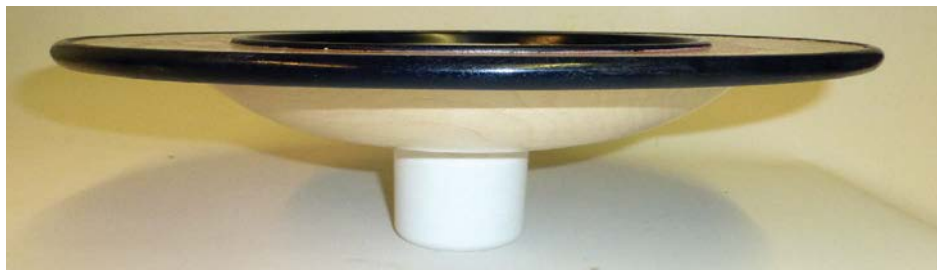


Figure 7. A floating rim bowl

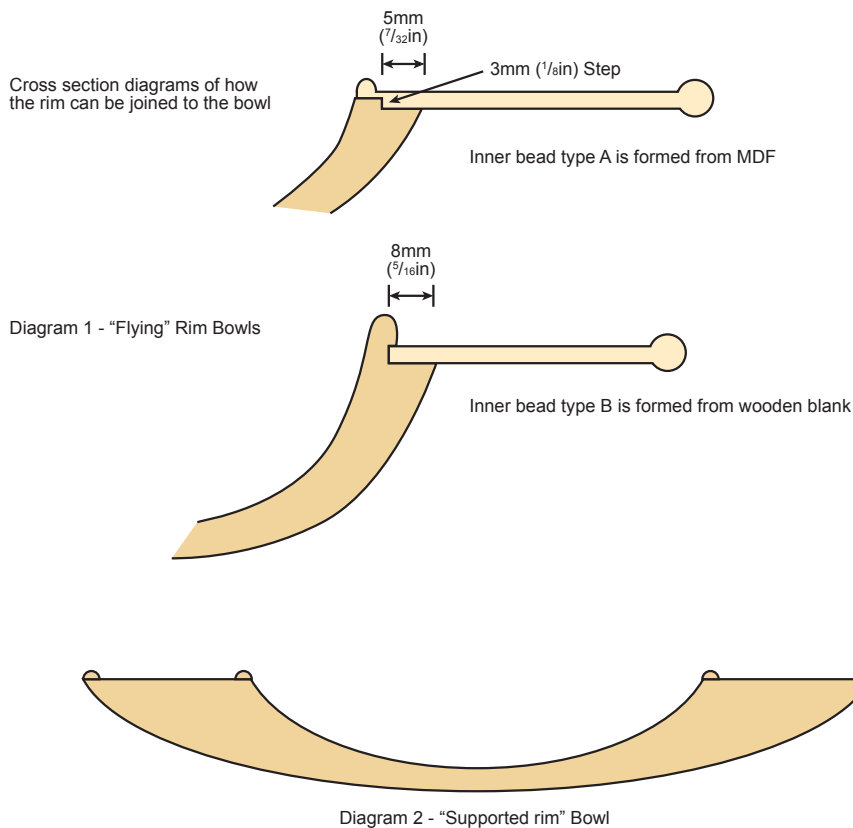


Diagram 1.

Turning your wide-rimmed bowl

Rough turn a bowl to more or less the dimensions that you want the finished bowl, but leave it 2–3mm thicker than you would normally do. Make sure the rim is dead flat (Fig.8) to ensure that there is no gap between the rim and the bowl when you glue up. Then, cut a step about 5mm wide and 3mm deep (Fig.9) in from the outer rim (Dia.1). This step will form the basis of the joint with the rim.

DOS AND DON'TS

Do

- Keep the workshop as dust free as you can before using the paint sprays. It pays to vacuum the work shop and use a dust extractor, then leave the shop to settle for as long as you can. I try to leave it at least an hour before I spray.
- Try to use the most stable timber that you can find, well seasoned quarter sawn blanks are ideal but even they can move after turning. I find that I get the best results by rough turning blanks and leaving them aside for a few months to let them move. When they are finally returned they are almost totally stable and if you are fixing artificial rims to them there is almost no risk of unwanted gaps appearing after a few months.
- Use a wide enough band of crackle glaze to give it some impact, small bands simply do not look good.
- Let the base primer coats dry well between coats to avoid runs, and keep the temperature as high as you can in the workshop - it will speed drying/curing times.
- Allow the base coat crackle glaze to dry so that it is touch dry (usually about 10-15 minutes) before applying the top coat. Don't let the base coat dry out too much so get the top coat on within about an hour.
- When spraying the final coat of clear lacquer, follow the instructions on the can as far as timing between coats goes. Different products vary, I avoid water based products because of the longer drying time and they tend to run more easily!
- After the final coat of lacquer, leave the bowl to harden for a couple of days if you can. This will help to avoid damage when you reverse it to clean up the base; soft lacquer damages easily.
- Be prepared to experiment with colour combinations and thickness of the top coat.
- Keep the piece on the lathe as long as you can. If you don't like the finish it is easy to scrape it off with a bedan and start again.

Don't

- Overwhelm a beautifully figured wood with complex finish, the final product will be confusing to the eye. The more the figure in the wood, the simpler any enhancements should be.
- Rush your paint spraying and drying times. Patience will reward you with a better finish.

RIGHT: Figure 8.
Checking the rim
for flatness

BELOW: Figure 9.
Checking the depth
of the step prior to
fitting the rim



Joining the rim and body blank

Mount the rim blank on the lathe. Any type of mount is fine but I use a screw chuck because it is quick and easy to use. Turn the rim flat and mark out a circle of the exact diameter as the stepped part of the bowl. If you are using a segmented ring, glue this to a piece of ply or MDF (Fig.10) and mount the MDF on the lathe. After truing up the disk, turn away about 2mm of the surface leaving an outer ridge that you will use to form a bead on the rim of the bowl, then create a dead flat surface around the glue joint. I use a

bedan to do this and I get a very good finish if I take very light cuts. Here (Fig.11) you can see an MDF blank with the outer ridge and a second inner ridge which is where the bowl will finally sit. Turn away the centre of the blank to the exact diameter of the step on the bowl blank. A tight fit is important so creep up the final diameter until you have a push fit that is almost as good as if you were using a jam chuck. Glue the bowl to the rim and bring up the tail stock to hold everything in place while the glue dries.



Figure 10. A wide rim made of segmented mahogany mounted on MDF prior to turning



Figure 11. MDF finish straight from the tool

Refining the outside of the bowl or platter

Finish the outer surface of the bowl to its final dimensions. I like to leave a small bead around the glue joint and Fig.12 shows an MDF/elm combination with just such a bead. Don't forget to leave a spigot to fit your chuck jaws for turning the inside of the bowl.

Sand the bowl through the grits to get the best possible finish and give everything a coat of full strength cellulose sanding sealer. Wipe off the excess and buff with '0000' wire wool and then with a soft cloth. If you are using MDF for the rim it sometimes helps to give it two coats of sanding sealer because it is very absorbent. You are now ready to mask the underside of the bowl.

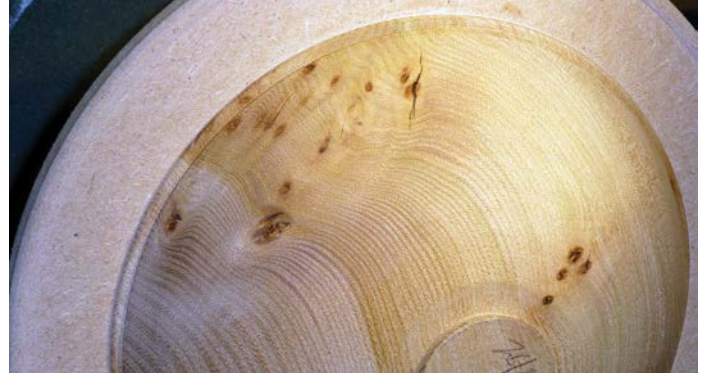


Figure 12. A small bead between bowl and rim

Preparing and spraying

Cover the lathe to protect it from over spray and mask up the underside of the bowl so that you can spray the underside of the rim with the finish that you will use for the bead on the rim. Here (Fig.13) is the tape in place. Use your fingernail to make sure the tape is firmly adhered to the surface before you trim the tape. Set the lathe speed to low and use the point of a skew chisel to cut the masking tape where you want the delineation of the finish. Peel away the excess tape (Fig.14) and you will be ready to spray. Apply the spray in several thin coats. In Fig.15 I have used gold spray and I am buffing with '0000' wire wool between coats in order to get a good finish. When you are happy with the quality of the finish, peel away the masking tape and you are ready to re-chuck and turn the inside of the bowl (Fig.16).

Re-chuck the bowl and turn to its finished dimensions and leave a bead on the inner and outer side of the rim. Finish with sanding sealer and buff with wire wool. In Fig.17 and Fig.18, they show the glue joint between the rim and the bowl. You are now ready for two-stage masking procedure.

Mask up the inside of the bowl so that you can spray the inner and outer rim. Cut the masking tape with the tip of your skew chisel exactly on the glue joint (Fig.19). Remove the tape and spray with your chosen rim colour. This photograph (Fig.20) shows the finish being sprayed on. On this occasion, I am planning to use a gold base coat and so I have sprayed the whole rim. Leave the paint to dry and you can start the next stage of masking.

Mask up the beads and cut the masking tape with your skew on the outer edged of the

inner bead and the inner edge of the outer bead, strip away the masking tape on the flat surface of the rim leaving it clear for the base coat of paint.

Spray on your base coat in layers. If you are using Plasti-kote crackle glaze base coat or any other enamel-based paint, then I recommend that you use three light coats. If you are using a non-enamel based paint, then I suggest two coats followed by two coats of clear enamel.

After the paint is thoroughly dry, apply your preferred polish to the natural wooden surface of the bowl, re-chuck and turn away the tenon on the base and apply a final coat of polish to the outside of the bowl. I use a vacuum chuck to do this but if you are using a large face plate or friction drive, take care not to damage the crackle glaze.



Figure 13. Bedding the masking tape with my finger



Figure 14. Masking tape after trimming with a skew chisel



Figure 15. Buffing the gold lacquer with '0000' wire wool



Figure 16. Finished underside of bowl with tape removed



Figure 17. Buffing the inside of the bowl with '0000' wire wool



Figure 18. Join between wood and MDF rim with no gap



Figure 19. Rimming the masking tape with point of skew chisel



Figure 20. Gold base coat being applied

Filling imperfections

Sometimes you will need to fill imperfections in either the bowl or the rim. I have used all sorts of concoctions to do this, most of which are based on an old French polisher's trick of mixing Danish oil and poster paint to use as a grain filler. I am not keen on using Danish oil under enamel-based paint and find that cellulose sanding sealer is a good alternative and dries much more quickly. Other combinations that work are: acrylic paints and powder paint; polyester resin and powder paint (although this does set very hard); Melted bee's wax and powder paint.

There are very many commercial products that you can use but I find that

Ronseal multipurpose wood filler works very well, dries quickly, is available in dark, medium and light colours and a range of sizes from small tubes to big tubs.

Conclusions

I hope that this article has stimulated your interest in experimenting both with the technique of creating wide rim bowls from leftover wood and the use of crackle glaze. There are many factors that you can alter to create impact to your work. These include:

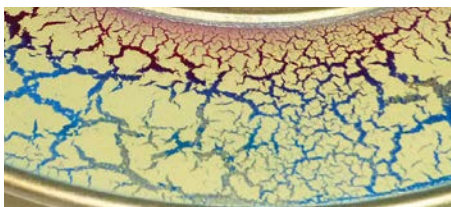
- Bowl shape with or without undercut rims for the inner bowl.
- Rim width and bead design.
- Colours and types of base coats.

I particularly like the effect that you

can get from metallic base coats made by Valspar. They do need the addition of a 'sandwich' coat of clear enamel between them and the crackle glaze but I think they work really well and will be using more of them in a wider range of colours. I also now have a smaller fire wood pile because many of the offcuts that used to throw away will now be pressed into service to make segmented rings for the rims of these bowls.

So go ahead and try it out; as ever the only limit is the rather small range of Plasti-kote crackle top coats and your imagination. If anyone out there knows how to create their own crackle top coat please get in touch, I am dying to know how to do it. ●

Alternative bowl designs



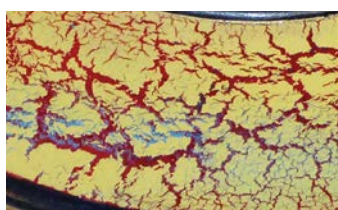
Antique gold on red and blue enamel



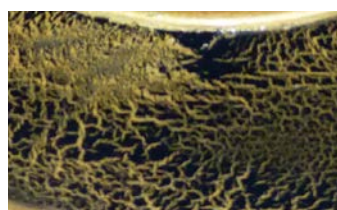
Black on a gold base coat



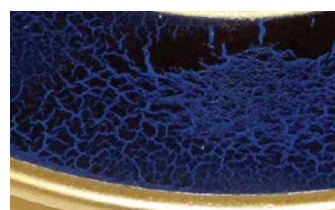
Black on blue metallic paint with clear enamel



Antique gold on blue and red enamel



Black on a gold base coat



Black on blue metallic with clear enamel



Black on blue enamel

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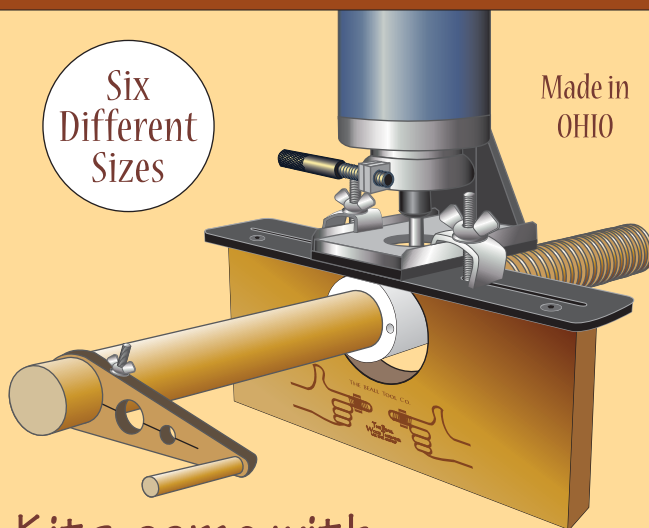
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10 tips for drilling better holes

Kurt Hertzog gives his best advice on drilling better holes

As woodturners we are often cutting holes, but there are many occasions where drilling holes is the method needed. Whether it's a pass through for fasteners, locations for assembly dowels

or one of the many other purposes, the ability to drill a proper hole is a skill. It might seem as mindless as chucking up the drill bit and having a go at it, but here are 10 tips to creating better quality drilled holes:

1 Sharpness is paramount

Like your turning tools that will cut well and cleanly when they are sharp and properly presented, it's the same with your drill bit. In this day of throwaway, few people outside of the trade have ever learned to sharpen a drill bit freehand. It's that sad fact that ensures the drill bit that's purchased in the bubble pack at the home centre will get dull quickly and continue to be used regardless of the quality of the hole it cuts. It will continue to be used until it becomes so woefully inadequate, but the turner rarely goes to purchase a new one to replace it. You will need a sharp drill bit to cut wood, plastic, metal or other materials whether they're new from the package or

just re-sharpened. The calibre of the drill bits available, other than the industrial trades, are so poor that two things typically happen: firstly, they don't sharpen extremely well and even once it's done to their best, they don't hold a usable edge for long. In spite of that, don't be afraid to learn to sharpen or, as I did, buy an inexpensive drill sharpening machine.

The home hobbyist versions are very modestly priced and it won't take long before it has paid for itself. Now, a sharp drill is only a minute away. Like your tools, keeping an edge sharp is easier than sharpening so don't be afraid to touch up a drill after some use. It'll be fresh and keen for your next needs.



My drill sharpener accurately positions and presents the bit to the diamond wheel when it is running. Safety cover removed for visibility



Covering a wide range in drill sizes, orienting and sharpening the drill only takes moments

2 Give your drill a good start

It may seem unnecessary, but I can't recommend this more highly, create a starting location for your drilling. Are there times you might do okay without it? Sure, but like any process if you make it rote and do it as a matter of course, you'll find the seconds it takes is shorter than thinking whether it is necessary or not. I give every hole I drill a starting location by using either a centre drill, spring loaded centre punch, prick punch, hammer or even a nail and rock.



Whether a punch, centre drill or any implement to create a starting 'hole', give yourself the advantage of a starting location

That impression in the surface allows the nose of the drill to seat a bit below the surface of the wood and begin drilling without wandering or skating. Regardless of whether you use a pistol drill, a drillpress, your lathe or other mechanics to execute your drilling, precisely locating your centre point and giving your drill the opportunity to get a good start will give you a better quality drilling.



For speed and convenience, I keep a machinist's centre drill chucked up in an inexpensive chuck with its own taper



The advantage of a starting location can't be stressed enough. No wander, no drift, easy starting with a place to begin

3 Select the correct drill type

To say 'drill bit' really doesn't narrow it down very much. There are more types of drill bits than most of us are aware of. Like most of the tools, there is a reason for any particular style and type. Their design, size, shape, material, sharpening characteristics, length and more are all for a purpose. Most of us will be using the standard jobber length-type twist drill in either 118° or 135° nose angle. These in either angle will work quite nicely for our typical needs. For most holes of a quality nature, you'll need to use a twist drill or Forstner bit. Spade bits are inexpensive in the larger sizes, but they cut a brutal hole. More information on these types, uses and sharpening is in *Woodturning* 278. Carbide tipped drills aren't needed for wood and will not take as keen an edge. Besides, sharpening carbides requires a special wheel. Titanium Nitriding (TiN) is a wear resistant coating applied to cutters in industrial applications to extend life between changes, which is a 'not needed' capability in our type of applications unless it comes for free. Bradpoint bits are nice for cutting into face grain, but have little benefit in drilling the end grain. Most bradpoints I've seen are so poorly ground that the centre point isn't even equidistant between the wing cutters. Not a good recipe for straight tracking of the drill. If you buy and use bradpoint drills, be certain the centre spike is truly dead centre and accept the fact that you probably won't be able to sharpen the drill. None of the drill sharpening units I'm aware of will deal with them. Getting good quality, high-speed steel twist drills will serve you well unless you have very specialised needs.



While bradpoint bits can offer some advantage in face grain cuts, I find most are too poorly made to be of good advantage



Buy the cheap letter, fraction number set and one good set if you can afford it. Keeping them sharp is critical

4 Use appropriate speeds and feeds

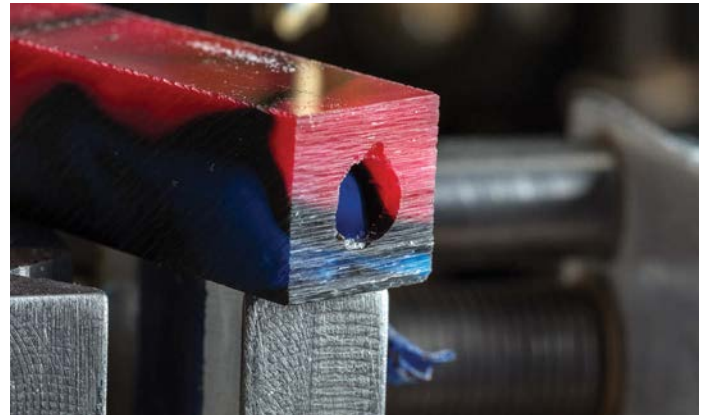
You've certainly heard the term 'speeds and feeds' from me before. It is the catch-all term that says, how fast are you turning? And how hard are you pushing? It applies to nearly any kind of cutting, and drilling is a perfect place to use it. The rpm you select to drill is based on two key items: what is the material being drilled? And what size is the hole being drilled? Obviously, popular drills are much differently than blackwood requiring the use of a different drill rpm. Denser woods require a slower speed and less dense woods can be drilled at a higher rpm. The size hole also has a huge impact on

your rpm choice. A 3mm hole can be drilled at a fast speed, while a 25mm hole needs to be slowed down. It is simply surface feet per minute at the outer edge of the drill bit. The SFPM of the 25mm drill is far higher than that of the 3mm drill running at the same rpm. Good technique for drilling involves getting the hole centre established using a start point advancing the drill to just touch that location and get properly located. Apply some drilling force, drilling slowly enough to avoid chatter and breaking the chip. Breaking the chip involves relaxing the drill forward force a bit

to let the chip break and exhaust out of the flutes. This process is repeated until near the breakthrough point. At that point, relaxing the forward force will provide a better quality hole at breakout. If the exit hole size, shape and quality are key, they provide a sacrificial backing material to support the material being drilled as you break through, even with your relaxed pressure. Some other helpful ideas for minimising destruction of the entry or exit surfaces are using packing or painters tape over the wood. These can help minimise damage when combined with a backing material.



Proper speeds and feeds will drill efficiently, without overheating, and will eject debris effectively



Plastics are especially susceptible to blowout. A sacrificial backer and/or relaxing the force as you approach breakthrough helps

5 Eject the chips

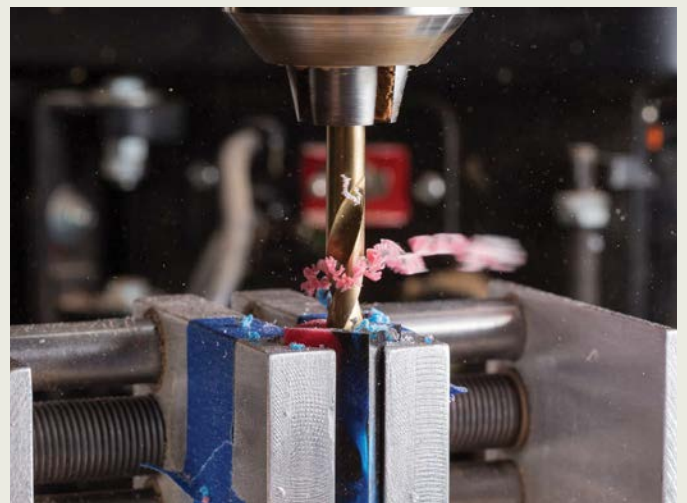
The only spot that really does any cutting work is the two edges at the nose of the drill. All else involved is solely as a support mechanism. Those sharp cut edges that twist up alongside the flutes aren't there except as part of the process of making the drill flutes. The flutes, their design and their functionality are exclusively known for getting the already cut debris clear of the cutting edges so they can continue

to cut. Depending on the species, drill size and technique, you may have a nice, continuous exhaust of cut material from the flutes. This is especially true with proper breaking of the chip. If you don't have debris being thrown from the drill flutes as you drill, retract the drill, turn it off and clean the flutes. Many times, the flutes will become clogged with material and not continue to self feed upwards

and out. If you continue to drill with the flutes plugged, you'll negatively impact the quality of the drilling. Not only will things overheat and probably smoke, but you will have debris preventing the cutting edges from working correctly. It only takes a moment to stop and clear the chips. There are some species where it needs to be done repeatedly. Take the time to do it to drill the best holes possible.



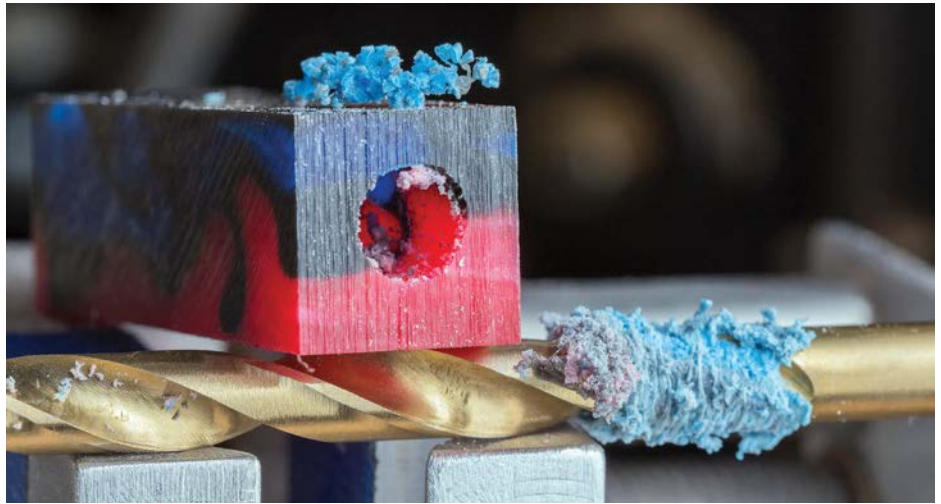
The already cut debris exiting quickly and continuously lets the cutters have a clean area to work



Breaking the chip, easier in a drill press, is good practice to keep the chip strings short and safe

6 Keep things cool

Smoke is never a good thing when drilling wood. You can drill quickly and efficiently without creating a lot of smoke. On occasion, you may get some, particularly from those species that like to burn such as cherry (*Prunus* spp.) but it should be rarely and only a little bit. If you've got smoke erupting from your drilling, regardless of your drilling method you've got other problems. Chances are it is one or more of these: when a drill is dull, rather than sharpen it we often just push harder and speed up the rpm. Smoke can often be caused by far too aggressive speeds and feeds. Slow things down and let the tool do the work. Plugged flutes will also impact the drilling location and just continue to pack things in with no relief for heat or debris. Smoke is a good indicator that shows it is time to check the flutes. Lastly, even without smoke, many turners overheat their drilling. This is often true with plastics, they wonder why the holes aren't round and can have recast plastic on the inner diameter. The short answer is speeds and feeds are too high.



No smoke, but things did get too hot. The hole is egg shaped, there is recast in the hole and the melt is fused to the shank

The longer answer involves the thermal conductivity of plastics and how being a thermal insulator traps the heat inside rather than shedding it. For plastics, it is all about being slow and easy. Once you've

screwed it up it really is scrap at that point. Besides, removing a too hot to hold drill bit from the drill chuck is no joy. When things get hot, stop and take a rest. Let things cool and then continue.

7 Step up sizes

Even in a machine tool shop with specialty equipment of massive sizes they rarely go from zero to big in one step. If you have a larger sized hole to drill, begin with a pilot hole. You'll drill that pilot hole using your starter location and all of the good practices for drilling. Once that has been accomplished, step up to a somewhat larger size and drill another hole using the smaller hole as the guide. Once that has been accomplished, do it again. Depending on the material being used, the drilling equipment and the final size needed, you might need to only drill a pilot hole and then the final size. You might need several intermediate drillings. Don't believe that if you go slow enough and think things are rigid enough that you can put a quality 25mm drilled hole with a twist drill into a turning on one go. It is possible with



Start small and work your way up to the final size. The quality of the final hole will benefit from the process

a Forstner bit, but not with a twist drill in my experience. By stepping up through intermediate sizes, you'll be able to let things

centre on the previously drilled hole and work far less since the current drilling is opening the hole.

8 Check your sizes

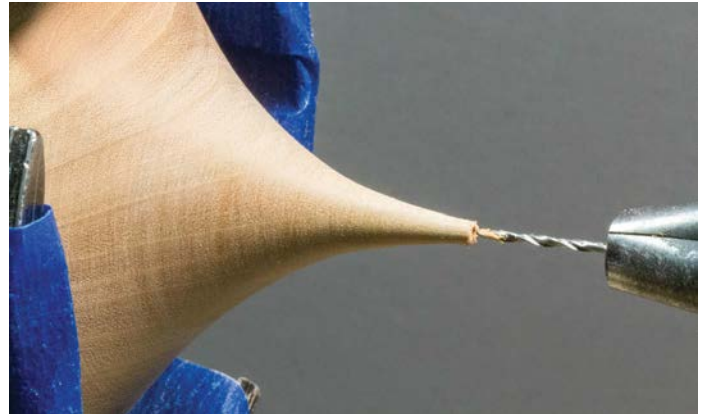
If you need a specific hole size, you need to do a couple of things to ensure that you get it. First, you need to check the actual twist drill you intend to use. Whatever the manufacturer marked is usually close, but on smaller drills you can't even read it. Obviously, the slop in sizes in the index stand is no guarantee of the correct size. When you measure the drill you're going to use, measure it across the flutes, that is where the work occurs. Even when you have that across the flutes measurement, you still don't know what your final hole size will be. For the most part, we aren't working in thousandths of an inch, but sometimes we are. When I drill my custom nibs for the in-fill, my minor diameter is selected to be 1.98mm. Because my in-fill dimension is 1.90mm, I really can't live with a no clearance fit at 1.90mm or a sloppy fit at 2.08mm. You may not care a hoot about the real dimension, but only if a mating part fits properly. Again, too small and you get press fits with no glue gap. Too big and the precision is gone, and the adhesive needs to fill the slot.



If size is important, measure! You measure a drill diameter across the edges that do the cutting



Machinists starter drills come in all sizes from very big to very little as do chucks and drills



Do you think there would have been any way to start a No.62 drill in the point of this cherry roof without a start hole?

9 Different materials yield different size holes

If you drilled the same hole in a variety of species of woods and in different grain orientations, I think you'd be surprised and the variation in hole sizes that resulted by doing this. The end grain will drill differently than the face grain in the same species with slightly different results. Now throw in the various species and any cross grain drillings you might be doing. Plastics and metals are obviously going to have a different response. Though not often that critical, when I need a special size or a special fit, I will test drill my hole(s). I will use the drill I intend to use and a scrap of the exact same piece of wood in the intended orientation. It lets me work out any special workholding if needed and zero in the best speeds and feeds. Once I've completed the practice hole(s), I can measure or test fit things to be certain they meet my needs. If there is a problem, I can easily regroup and change drill sizes, parameters or anything else that might impact my results.



Every species and every orientation is liable to give you a slightly different final result. If needed, drill a test piece to find out

Upon successful completion, all is well and I can proceed with confidence. How long does

this take? Usually a minute or two at most. Is it worth it? For me it is when the size is key.

10 Practice

I'm certain none of us looks forward to telling our turning mates you can't go off with them since you are going to the 'shop to practise drilling holes. I don't treasure it either. Like any skill, reading about drilling doesn't perfect it. Understanding it doesn't perfect it. Only doing it repeatedly and learning from the mistakes will you build the skills to make drilling holes a rote skill. Of course, you can continue on as you were if you are content with your current results. I would liken this to any of the skills you have or will get in the woodshop. You didn't master the skew

chisel by reading about it or understanding it. You mastered it, if you have, by spending sessions at the lathe practicing each of the cuts until you got comfortable with them. Gradually, your quality of cuts improved and the frequency of catches decreased and one day you were comfortable reaching for the tool. Don't worry about setting aside specific times to practice drilling holes. When you need to drill, spend a few minutes ahead of time practising. Make that your mode of operations and soon you'll see the improvement. The great news is that



Don't be afraid to practise. Take scraps and drill holes. Try long lengths with thin walls and then check for uniformity

mastering drilling will take a small fraction of the effort that mastering the skew did.

Conclusions

I view everything in this series and the predecessors as building blocks. Individually, they might seem inconsequential. Collectively, you'll be surprised if you look back to see how far you might have come. Just knowing the 'shop equipment, workholding,

processes, tools, sharpeners, techniques, good and bad practices, shortcuts and the other items should be helpful. I try to share things that will improve your skills and make your shop time more productive. Is drilling a hole that big of a deal? You'll need to be the judge next one you do poorly. ●



The Millers in profile

Catherine Kielthy and Briony Darnley catch up with woodworking couple Pat and Karen Miller, to find out how they work as a team

Meet Pat and Karen Miller who, as they admit themselves, share a bit of a twist on how they see things, for as long as they've been together. "We seem to feed off each other's perspectives in a way where one and one adds up to more than two," they explain. So, we're very keen to find out more about their working relationship and how they came to work together on their beautiful woodturning projects.

How it all started

Karen was born in 1950, in a three-college town in southeast Washington. She grew up surrounded by three brothers and thousands of acres of wheat, and (as was expected of girls of her time) learned to sew and cook, but she recalls that she always wanted more. Her father was a woodworking hobbyist, so Karen was no stranger to the craft, and her mother a painter. Upon leaving school, Karen

studied fine arts, sculpture and jewellery at college, before working in the computer industry. It was after eight years in this job she decided to return to school to become a nurse, the career from which she retired in 2008.

Pat grew up on the southern coast of Oregon State, born 'smack in the middle' of the 20th century. "My earliest recollections as a kid were of taking something apart, trying to figure out what was inside or how it worked," Pat tells us. Having called three men 'Dad' over the years, they were all builders, makers and tool users so Pat was used to construction as he grew up. He recalls: "being a clumsy and overweight kid with no penchant for sports, I seemed to have an intuition for making things." As such, Pat had tools in his hands since before he started school, could weld long before he could drive and his favourite class at his High School was Industrial Arts – referred to as 'Shop'. This was where Pat was first

introduced to the wood lathe.

Pat turned his first bowl in 1996, but due to not knowing what he wanted to do in life, he spent four years in college, studying Geology, having always been fascinated by landforms. Pat goes on to explain: "seeming to be lacking the instruction sheet for this thing called 'life', I scuffed along rather aimlessly until the mid '80s when I decided to clean up my act. I found a decent sales job and met Karen, the love of my life." Karen, as Pat tells us: "brought an arts degree and a nursing career to the table. Together we proceeded to raise her son, remodel the house, rebuild a VW Beetle, take pictures, go for a run, ride our bicycles and hunt for pretty rocks. And it was then when the couple's woodworking relationship began.

Starting turning

In 2010, circumstance put a Shopsmith in Pat

and Karen's single car garage and Pat started again tinkering with the lathe. He tells us how he was quite fascinated with the speed at which a piece could be shaped, but really struggled with turning at the beginning. "I kept at it with encouragement from Karen, eventually finding a mentor in local turning artist John Barany and a chapter of the American Association of Woodturners."

It was from Pat's foray into woodturning, which also brought a wood burning tool into the workshop, that Karen became interested in the craft. Karen tells us that she found herself "scrounging through the bin (he made lots of scraps early on) for pieces on which to ply some rudimentary pyrography." Karen found that she really liked how the deftly scorched wood could mimic the shadow and the detail associated with delicate pen and pencil work. "I also tried my hand at turning," she continues, "but found that it was easier to give Pat a design and have him turn it, and spend my time designing and decorating the piece."

What is the best thing about turning?

"Actually, it's all good. We continue to get closer and have found a host of new friends around the world. We have enjoyed travel and opportunities that we'd have missed without the community of turners, artists and patrons who have embraced us and we have embraced. It's not the friends we keep, it's the friends who keep us." – Pat

Working together

Neither Pat or Karen have been "saddled with the need to feed ourselves via woodturning", so they feel they have been gifted with a lot of freedom to experiment. The couple tell us that the development of a signature style has never been a priority for them as woodworkers but they admit they have gone through phases of turning when they may produce a number of pieces that are similar, but then they soon move on to something new and different. A priority for the pair is a challenge and to have fun, although Karen tends to keep Pat on tack and in motion as she keeps an eye out on deadlines for shows, gallery submissions and other upcoming commitments. Pat admits that he tends to procrastinate at times, but stays on top of the website and their social media aspects.

Karen and Pat have been working together, although on different aspects of their work, from early 2010. "It was inevitable I suppose that we would find a common interest around turning and art," Pat explains. Although they do occasionally have moments of what they describe as "creative tension", for the most part they thoroughly enjoy working as a team. The "creative tension" will often stem



Karen's pyrography on a jewellery box



Swamp Kauri hollowform carved, burned and coloured

from times when their common goal "gets blurred by our own ideas or egos", but they always return to the team with a smile and chuckle. Karen often suggests they set the piece in question aside until the differences in opinion abate and let their creativity merge. "Karen sees things that I do not," Pat tells us, "and vice versa." Most of their pieces start as one or the other's idea or suggestion and that ownership does get a final nod through the working process. Ongoing suggestions help develop the pieces and the couple have learned to trust each other's intuition, even if it can't be seen at that moment. It's only rarely this doesn't work. We ask about the highs and lows of the couple's joint venture so far and Pat tells us: "the occasional argument is not fun. We both tend to be solitary workers who have learned to work together in the studio and have been able to take this team thing into the rest of our lives. It has helped

us get closer to and more tolerant of the world around us."

When asked if their work style has changed since they first started working together, Pat tells us: "art evolves, especially if we don't get in the way and I believe that matters not if it's an individual or team effort. Our style has most definitely changed and improved as a result of our daily collaborations, but it would be impossible to qualify in what way. There are pieces where Karen will ask me for a specific shape of turning because she has an idea and I'll turn accordingly. My hand may not touch that piece again but my influence still occurs because we bring ideas to each other during the course. The same thing applies where I may 'make' a piece from initial turning to final finish that Karen's hand never touches, but her spirit and heart are still there. We affect each other because choose to."

How long does it take to complete a piece?

"We have completed pieces in a day and have taken six months to complete another. As a rule the work that Karen does takes much longer to complete than the turning so I may produce several complete pieces, again with her suggestions and influence, in the time it takes her to complete the pyrography and color details on a single piece." – Pat

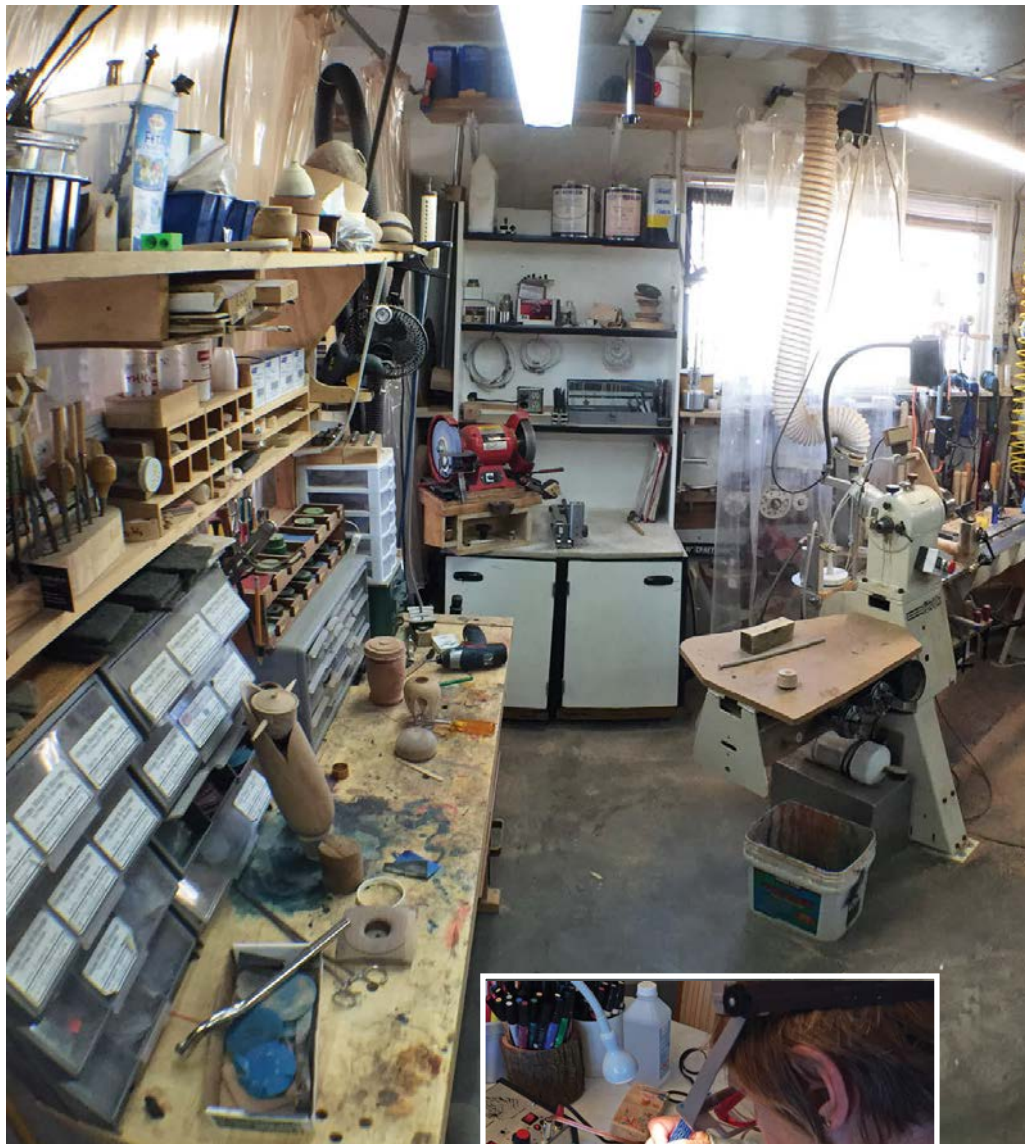
A most challenging piece

A significant piece for the Millers' was a remains urn they were commissioned to make for a family who lost their son to addiction. "They had some very specific requests regarding the wood, shape and finish," Pat recalls. "Their grief was still very recent and apparent." It was hard due to the fact all communication over the piece was via email and telephone due to the family living a fair distance away. The Millers finished the piece and kindly offered to deliver the urn as they had a trip passing near the family's home. "Along with the urn at the agreed price, I made a smaller replica of the urn that could be placed on a desk or counter as a gift. We knocked on the door, introduced ourselves and presented the work. The mom immediately began to cry – good tears in a tragic situation – we all were in tears," Pat tells us. The couple left the family, feeling that not only had they done good work, but that they had helped them through a most trying time.

Inspiration

When looking to their inspirations, Pat tells us that he "tends to be more mechanical and inorganic" in the ideas that buzz around his head, seeing more shapes and patterns in landforms and rocks, whereas Karen is rather the opposite. It is flowers, clouds, cell structures, other organic and nebulous inspirations that catch her eye. "Together we have morphed them into some rather fun if not bizarre interpretations or overlaps if you will," Pat says. "We are both pretty reachable and teachable so we tend to be influenced by anything or anyone we find appealing. We keep the doors open and try not discard ideas regardless. From Hubble space photos to the graffiti on the side of a building, everything can be a source of amazement if allowed," he continues.

If Pat had to pick a person, or persons, who has offered him the greatest influence, it would be Karen and his turning mentor John Barany. Both have taught him to see beyond the visible and to shed preconceptions. Due to Karen's degree in fine art, and her benefit of studying the works and history of masters in many fields, this adds a dimension to her, and by association, Pat's work.



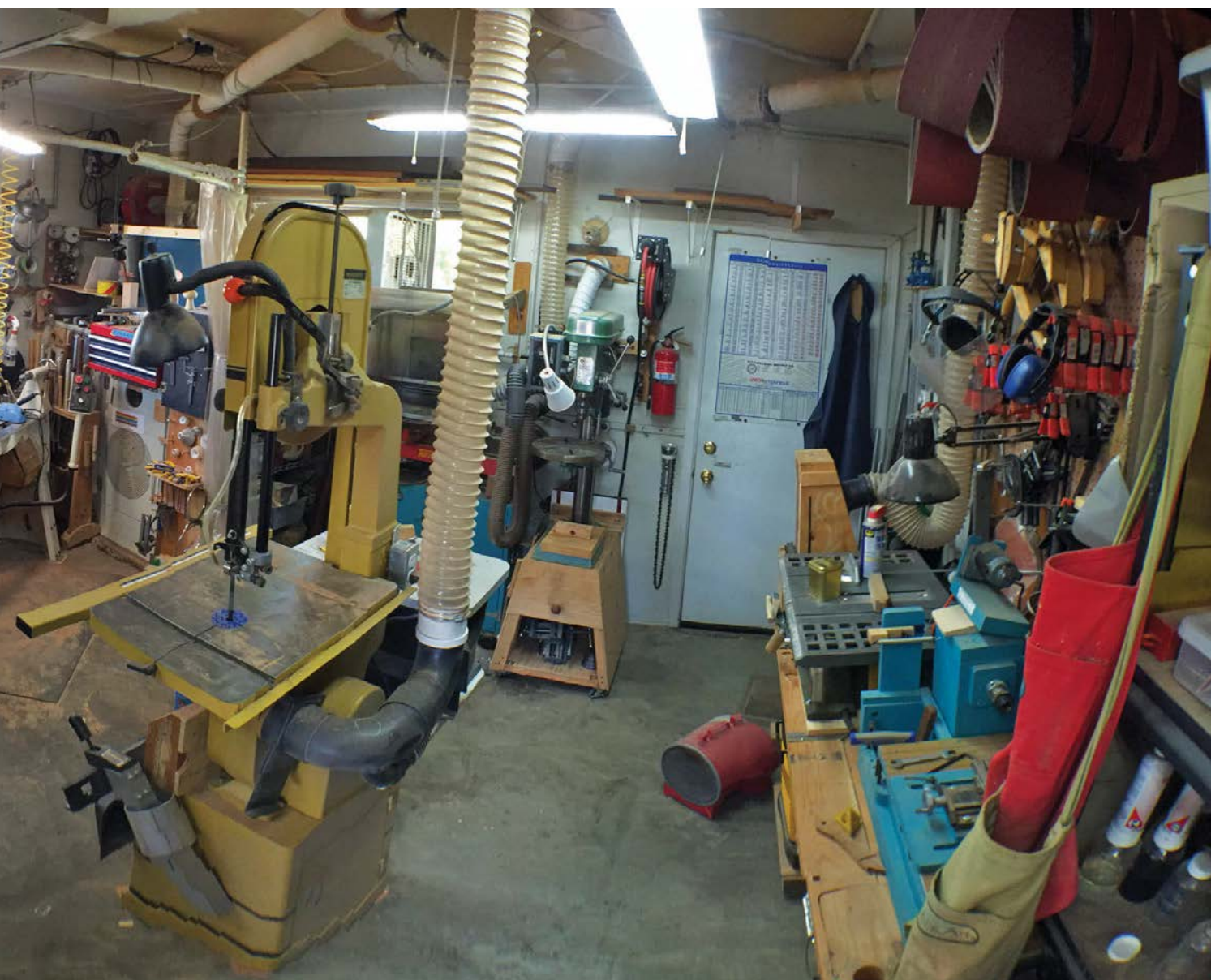
Ornament with a tropical leaf pattern



Karen doing detail work



Pat at the lathe



Workshop

The Millers' main workshop, "where dust and chips are made" is a 4.6 x 5.5m space at one end of their garage. Within the space is a Oneway 1640 lathe, a Powermatic bandsaw, two belt sanders, a thickness planer, scrollsaw, tablesaw drill press, oscillating spindle sander, tool grinder, rose engine, carving and airbrush station and a suspended finishing booth. A small alcove at the opposite end holds a second travel lathe and small bandsaw. Needless to say this needs to be a very efficient space. As it is for the most part quite delicate, Karen does most of her pyrography and colouring on the dining room table. "We do, however, often work together in the 'shop space with our coffee, rock 'n roll and Sophie the cat."

Work promotion

The couple's work is in several galleries, they have a website and enter as many shows as they practically can to promote their work – this certainly must be where Karen's keeping

an eye out for deadlines comes in handy! They can be found on social media, in the form of Facebook and Instagram, which Pat finds very effective in this digital world. The couple also make sure to be actively involved in their local AAW chapter, Pat being the current president of the Mid-Columbia Woodturners, and they attend as many symposiums and events as the calendar and bank account will allow.

Inspiring others

Looking to the future of their woodworking career, the Millers' hope to continue doing more of the same. They have often found themselves invited to demonstrate and while they both love to share what they do "with anyone interested", there is also a stress associated with the preparation and travel, so how much demonstrating they intend to continue to do is currently under review.

While for the most part, at least in the 'States, turning is still a hobby pursuit, there are a few full-time turners who make their

living at the lathe, but for each one of them, Pat would bet there are a hundred like them – retired, active, some free time and a bit of money. "It's not much different from other aspects of the world. We are ambassadors. Our enthusiasm and passion will attract some folks. We need to be inclusive and welcoming in our clubs, shows, symposium and ideas so that everyone with the spark gets the chance. Building bridges instead of fences may be cliché, but it's the truth," Pat says. "When I took over as president of our chapter I made a decision that the very first order of business at each meeting would be to recognize and welcome any new folks, to get contact information and to let them know that they should come to a few meetings to see if it's for them before investing in a membership. Our numbers and participation levels have increased."

Finally, we ask Pat and Karen what advice they would give to fellow turners... "Three words for newbies," they said, "Get. A. Mentor."



KAREN

Likes

- Shared enjoyment
- The treasure hunt for turning wood
- The smell of old growth cherry wood
- The creamy white of holly
- Contorted filbert branches

Dislikes

- Black walnut dust
- (Karen and Pat) cracks!
- Undervaluing art

PAT

Likes

- The sound of a chainsaw
- Building a tool
- A wood score on eBay
- A cheque from a gallery
- Sharing a coffee in the studio with Karen

Dislikes

- Dull drill bits

TOP TECHNIQUES

- **Karen** – stipple pattern pyrography and wood bleach as a colorant
- **Pat** – turning metal on a wood lathe. Using a router or rotary carver in a jig to decorate pieces on the lathe

HANDY HINTS

- **Pat** – I have a small flat block of hardwood (75 x 75mm) with a piece of 2mm diameter rod that is exactly the centre height of my head stock. Setting on the ways it allows me to set jigs and tools to the exact centre of a piece
- **Karen** – Get yourself a kneaded eraser from an art store for easily removing pencil marks from wood without causing smudging or damage ●

Piercing the Moho. Birch vessel textured and colored in a walnut framework



Birth of the Blue Spy – acacia footed vase



A magnet holds the egg and hatchling in the vessel



A maple footed vessel with floral pattern pyrography

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Our contributors



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Andy is a professional woodturner and has a workshop and gallery in Suffolk. He mostly makes one-off pieces, but is just as likely to be found doing small batch runs, antique restorations or any number of strange commissions. He also demonstrates and teaches turning.

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Adrian was a GP for 20 years before becoming a Medical Director in the NHS. He learned to turn egg cups on his grandfather's treadle lathe at the age of 7 but did not really do anything else until his wife bought him a lathe for his 50th birthday. Since then he has been active amateur and is known locally for working with pewter and wood.

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Colwin started turning aged 13 and has since gone on to teach the craft and wishes to continue to give people confidence to try the wonderful hobby for themselves.

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IAN WOODFORD

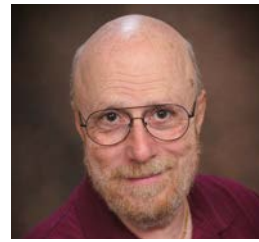
Ian has been turning for many years and since taking early retirement, has developed his skills and enthusiasm. He supplies various craft shops, exhibits at craft shows and has sold at the prestigious London Pen Show, although he now only makes on a commission basis. Ian belongs to two turning clubs in Hampshire and has demonstrated to members on a number of occasions.

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JOHN UNRUH

After a decades-long business career in management, marketing, advertising and sales, John turned his life-long passion for woodturning into a business in 2015. He is a member of the Alaska Woodturners Association and AAW. John lives in Two Rivers, about 40km east of Fairbanks, Alaska with his wife, Alica, a partner in the business and son Michael.



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Kurt is a professional woodturner, demonstrator and teacher and writes for various woodturning and woodworking publications in the United States. He is on the Pen Makers' Guild Council and is past president of the American Association of Woodturners.

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Metals for turning tools

Ernie Conover gives his – sometimes controversial – insight on steels used for turning tools

A factoid is an untruth, or a darn right lie, that has become a generally held truth by the man on the street. There are a good number of turning factoids; we have already covered the ad-man's pitch that a four-jaw metal chuck will solve all your holding problems. I believe that a second factoid is that powdered metal makes a superior turning tool. One of turning's small, but potentially fatal weaknesses is that toolmakers seem to think that what's good for the engineering world will be extraordinary in the turning world. My experience is HSS wins hands down over powdered metal any day. It can be brought to a longer bevel (finer, more acute angle) and honed to a perfect, burr free, polished edge more readily. Powdered metal is gummy and not generally of as high hardness Rockwell C Scale (HRC), making it difficult to bring to as long a bevel and obtain a burr free, polished edge.

Quenching

All that is needed to make tool steel is iron and .6% to 1.5% carbon. To make an edged

tool you need between .8% and 1.5% carbon to get the hardness necessary. Tools have been made for hundreds of years from simple 'high carbon steel.' There are two drawbacks to high carbon steel. The first is that its temper can be drawn by overheating during use (as in cutting metal) or during grinding. The second has to do with the hardening process itself. To harden the high carbon steel it is heated to about 1600° F then plunged into water or brine. The rapid chilling causes the metal to harden, but can also cause warping or even breakage of the tool.

Hardening brings the metal to full hardness, RHC 64–68. The metal is now tempered by heating to a lower temperature in the hardening process. Tempering draws the hardness back to what the toolmaker has decided will give the best balance between hardness and toughness. Metallurgists have known for a long time that vanadium will increase the ability to hold an edge. Other useful properties are the ability to use less severe quenching mediums such as oil or even air, which minimises warpage and breakage during hardening. For the steel

structure to change from soft to hard the rate of cooling during quench is critical. Every alloy of steel has a critical rate of cooling. Unless cooled faster than the critical rate partial hardening, or even annealing, occurs. Plain high carbon steels need the severity of a water or brine, which is more severe quenching. Metallurgists devised oil and air quenching steels to avoid warpage and breaking problems during quenching. By alloying manganese into the steel, the critical rate of cooling is slowed and oil, rather than water, quenching can be used. The 'O' in O1 steel stands for oil quenching. O1 can be readily purchased in a variety of rectangular and round sections, and is perfect for home or small 'shop tool making.

In 1868 Englishman, Robert Mushet, developed a steel with 7% tungsten content that is considered the forerunner of modern high speed steel. It was the first air hardening steel. All high-speed steels are air hardening in that they are quenched in air. This is a good reason not to water quench high-speed steels during grinding because severe cooling can put microscopic cracks in the edge. At the very

end of the 19th century Frederick Taylor and Maunsel White headed a team at Bethlehem Steel in Bethlehem, PA, USA., that worked out modern high-speed steel. The processes they developed had as much to do with heat-treatment as with alloy, but suffice to say that by alloying tungsten and heat-treating at higher temperatures, steel that could withstand high working and grinding temperatures was created. Later, it was found that molybdenum could be substituted for the very costly tungsten.

Powdered metal steel

In the last two decades metallurgists have developed powdered metal steel. While vanadium greatly increases the working life of an edge, it cannot be alloyed in a molten mixture greater than about 2% or it will cause strings of vanadium carbide to form in the ingot. When a manufacturer tries to machine this metal, a stringer will ruin his cutting tools. Powdered technology overcomes this problem by mechanically mixing the metals in powdered form to create the alloy. Once thoroughly mixed they are sprayed into a furnace that makes them plastic, but not molten. The resulting blob of metal is then cold worked into bars. It is possible to alloy up to 15% vanadium by this process.

For cutting metal, powdered alloys make a tremendous difference but for wood, not so much. Additionally, powdered metal tools are only hardened to about HRC 58 while high-speed tools are about HRC 62 – about meaning plus or minus two points Rockwell C.

High-speed steel

High-speed steel is plenty tough and wear resistant; it holds an edge for a good long time. Most high-speed tools are HRC 62–63 and take less time to bring to a keen, burr free edge with a long bevel. What's more, they are generally cheaper.

I find the difference between high-speed and PM steels to be pronounced for all of the spindle tools where a razor sharp edge is mandatory. Bowl gouges generally have shorter bevels and most turners do not remove the burr. I even suspect it may be the burr that does the cutting and why bowl gouges need sharpening so frequently. This is to say that there may be some value in PM bowl gouges.

Carbon steel

A further caveat on steel is that carbon steel is the best material for scrapers. Traditionally carbon steel scrapers were drawn to about HRC 55. This allowed a burr to be raised with a hand burnish – a very nice burr, I might add. High-speed or PM steels are too hard to readily hand burnish and a special fixture with a tungsten-carbide burnishing cone is necessary to roll the burr. Additionally, some high-speed steels (M48, for example, has 3.1%



Grinding causes a burr to form through plastic deformation on the top and bottom about equally.

vanadium and hardens as high as 69 HRC) are made by the powdered process. However, these materials also bring an extraordinary price to a tool. Their utility over M2 in cutting wood is to me questionable.

For those grinding the burr all steels undergo plastic deformation on the top and bottom about equally. Grinding is a better way to sharpen small or odd shaped form scrapers. Such tools are seldom used for prolonged periods; they are the port in a storm where a precise shape or perfect concentricity is necessary. For big bowl scrapers with gentle curves at the edge I feel burnishing is far superior. All this is to say that PM is okay for bowl gouges and carbon steel at HRC 55, if you can find it is better for bowl scrapers. If you spring for the tungsten-carbide burnish high-speed is fine for scraper. For everything else give me good old high-speed steel – M2, M4. ●



A burr can be burnished on HSS with a Veritas fixture that has a tungsten carbide cone to raise the burr.



HSS can be ground with impunity because the temper created is not high enough to draw the temper.

Jennie Starbuck



Tony Wilson



Mick Hanbury



Wayne Mack



Michael Painter



Peter Sefton



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When Walter Hall tested these tools, he admitted

'... when these new Compac tools arrived for testing, I was not expecting to be impressed. I was wrong.'

He continued:

'These are not the usual miniature tools but seriously reduced length versions of full-size tools. They are specifically designed to make turning easier on smaller lathes where the reduced swing and length between centres can make access with long-handled tools difficult. They allow the turner to more easily attain the correct positioning of the cutting edge and handle movement when working within the constraints of a small machine, thus making it easier to exercise good practice and better tool control.'

And concluded:

'These are well-designed and robust tools made from excellent quality materials. They will make an excellent partnership with any of the smaller lathes and fill an important niche gap in the market.'

In fact, all of these things were said by Walter Hall when he reviewed the Compactool set for 'Woodturning' in Issue 276 (Feb. 2015).

We find ourselves agreeing wholeheartedly with Walter, but then we did design these tools and they are unique to The ToolPost. So, naturally, we're proud of them - and of the great success they have been, helping many turners become better turners. But it's certainly nice to have truly independent corroboration of our views from such a well-respected,

experienced and knowledgeable turner as Walter Hall. We take our hats off to this very insightful gentleman.

A typical small lathe has just 6 inches of space between spindle axis and bed. A typical bowl gouge is 23 inches long. You can't fit that into a six-inch space and present it to the workpiece correctly. The new CompacTool bowl gouge measures just 10½ inches overall so it isn't hard to understand why that fits so much better into the available space is it?



Between headstock and tailstock you've maybe got 20 inches at most - and 4 inches less when your workpiece is mounted in a chuck. A standard bowl scraper is 17 inches long. The new CompacTool bowl finishing scraper has the same cross-section as a standard heavy scraper but is only 10 inches long. That fits. Comfortably.



So you see, now at last someone is thinking about your needs when you work on your mini lathe. That's why the new CompacTool set is unique to The ToolPost: we're the folk who think about your needs first. CompacTool: designed for you. By us. Manufactured exclusively for The ToolPost by Hamlet Craft Tools in Sheffield, UK.

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Community letters

Here are just a few letters the Editor has received from you, the readers

Chair inspiration

Hi Mark,

I was inspired to make this chair after the article in the April edition of *Woodturning* magazine, by Colwin Way. I had never made a chair before, so relished a new challenge. As you can see I have chosen a number of different wood species. The legs are made of yew (*Taxus baccata*), ash (*Fraxinus excelsior*) for the seat and arms and ash, apple (*Malus sylvestris*) and plum (*Prunus domestica*) for the finials.

I did have problems with the arms and how to place them, but after contacting Colwin he helped me with this and I am really pleased with the end result. Looking forward to the next inspirational article!

Peter Jones

We are a friendly bunch

Mark,

Once again you have written an excellent editorial. I have always found woodturners to be very generous people, whether it is in sharing their knowledge and ideas, in introducing people to the craft or teaching, as well as donating items to charitable course. A fairly recent Facebook group that I have joined is 'Pen for Heroes', where Pen makers donate pens for the benefit of military veterans, either as individual gifts or quantities for the charities to sell to raise funds for their ongoing work. Also, I know that over the years the Hampshire Woodturning Association and Test Valley Turners have supported a number of causes in our area.

Ron Caddy

Turned Christmas trees

On 2-4 December, the Dumfries & District Flower Club are holding a Christmas Tree Festival in aid of the Aberlour Childcare Trust at St John's Church in Dumfries.

We thought you might be interested in the woodturning element of this event. The husband of the organiser – Tom Florey and myself (brother-in-law) – are busy making trees. They are selling like hot cakes before the event and we are spending every waking hour trying to keep up with the demand! All good fun for a very well worth cause.

Rodney Barnett



PHOTOGRAPH BY PETER JONES

Peter made this chair after reading Colwin's recent article



PHOTOGRAPH BY RODNEY BARNETT

Rodney has been busy turning these fun Christmas trees

FROM THE FORUM

Here we share with you the pieces that readers have posted on our *Woodturning* forum. If you are interested in the possibility of your piece appearing here, or would simply like feedback and advice on your work, visit www.woodworkersinstitute.com and click on the forum button



'Whatsit 1 & 2' by georg

Forum member georg posted these two wonderful pieces of turned work to our *Woodturning* forum. The pieces are made from 1625 x 406 x 25mm elm board, which georg has had for around 10 years! Georg said of the piece: "it was meant to be made into a storage box... it's now a 'Whatsit' that stands on the floor or hangs on the wall depending on the mood or which side one would like to view. They are a mixture of techniques and texturing we have used and experimented with in the past."

Dalboy commented: "there is just enough colour it does not distract from the beauty of the wood." Edbanger also commented on the work, saying: "Stunning. Stunning. Stunning and I'll add a 'WOW' for good measure."



'A Celtic Miscellany' by Les Symonds

Les Symonds posted a platter that was commissioned over the summer, which reflected his customers' Celtic roots.

The size of the platter is 405mm using beech (*Fagus sylvatica*) wood. He says: "the design is based on the ancient Celtic symbols of two Welsh creatures, 'Milgi' the greyhound, and 'Draig' the dragon. The stone in the middle of the piece is a Cornish serpentine. He continues: "this piece is 650mm diameter and is set into a cushion mount, which has been cut into the centre of the platter."

User georg said: "all elements of this piece stand out Les, the pyro work is very clean. Well done."



'Respect' by edbanger

A particularly poignant piece, edbanger posted this beautiful textured vase to the forum, which recieved plenty of comments. These included: "Another nice one ED, and this time I can see the poppy. I like the texturing," from Ian Thorne; "Another great piece Ed for remembrance day, well done," from Robin Laycock; Forum user Kiwi said: "Fabulous commemoration piece Ed, lovely follow-on work"; and georg commented: "A great theme Ed. Very poignant. Lest We Forget".

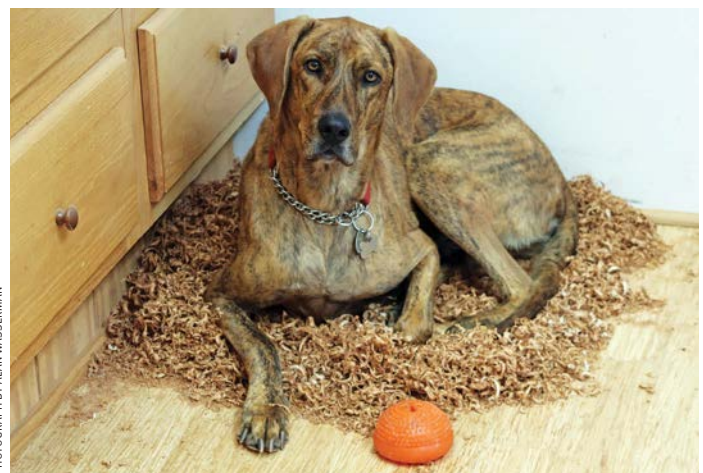
Workshop visitors

It's not only the Editor who has been visited in the workshop by a furry friend recently. Take a look at these two!



PHOTOGRAPH BY DAVE ATKINSON

Dave Atkinson must surely get distracted with this one about!



PHOTOGRAPH BY ALAN WASSERMAN

Alan Wasserman's dog certainly knows how to make himself at home

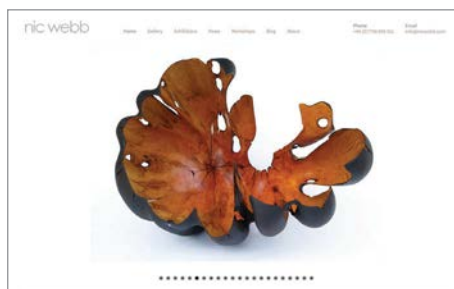
WHAT'S ON THE WEB?

We have searched the internet for the best, most interesting and fun websites, blogs, pins and pictures, so you don't have to

Websites of the month

Nic Webb

www.nicwebb.com



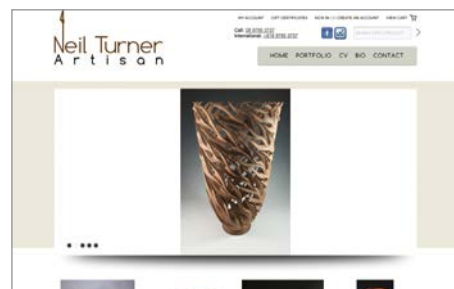
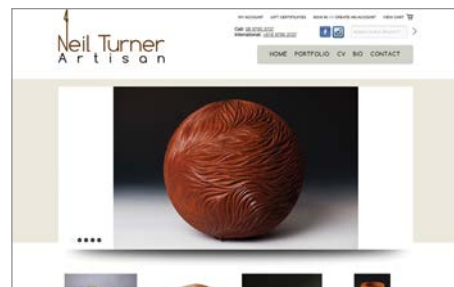
Ernst Gamperl

www.ernst-gamperl.de



Neil Turner

www.neilturnerartisan.com.au



Clips of the month

Allan Batty showing how to chase threads
www.youtube.com/watch?v=-0iEd0kD0S4

Richard Raffan understanding wood catches
www.youtube.com/watch?v=jOvF5f1phhY

Mike Mahoney on sharpening turning tools
www.youtube.com/watch?v=4m8-8MNhpvY

Sam Angelo on selecting chucks
www.youtube.com/watch?v=-YXfu50ggg

Cindy Drozda on sharpening gouges
www.youtube.com/watch?v=4_KDSIDAtGc
WARNING: The grinder has metal safety shields and spark shields removed on the top of the grinder. Best practice is to keep them in place.

Pins of the month

uk.pinterest.com/pin/533746993317160401

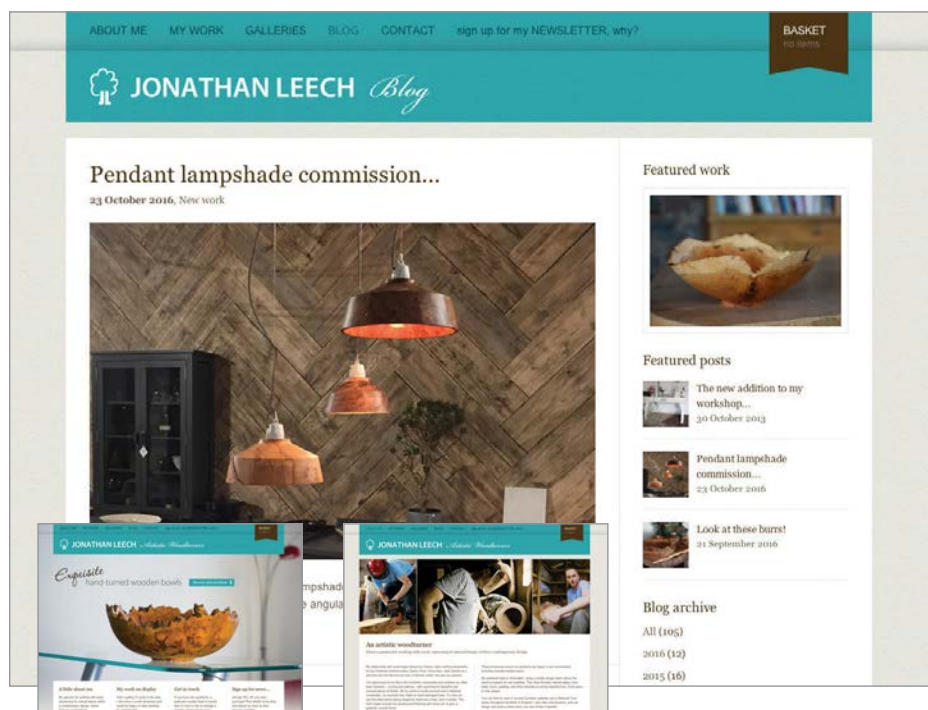
uk.pinterest.com/pin/111604896988075160

uk.pinterest.com/pin/301670875014008155

Blog of the month

Jonathan Leech

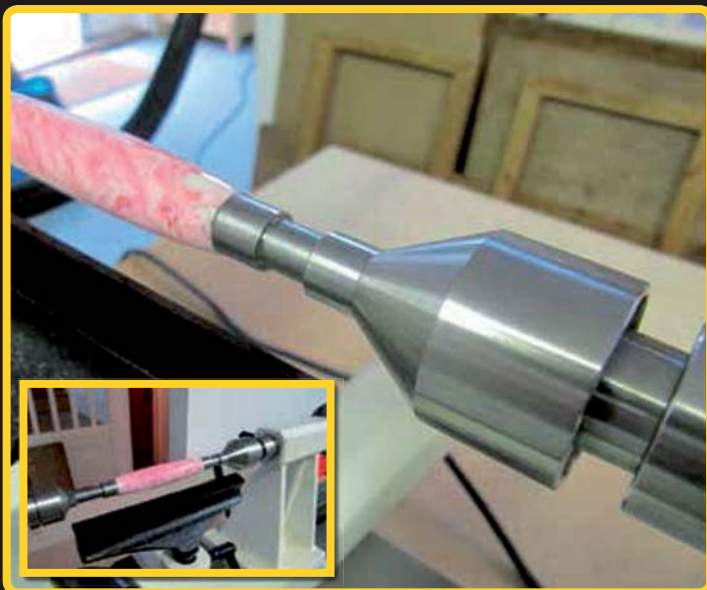
www.jonathanleech.co.uk



Video clips listed have been selected for their interest to other turners. We do not endorse any of the videos or websites selected. We take no responsibility for any information contained or acted upon in any sites listed. You need to be aware of your own skills and your own responsibility as far as wearing appropriate protective equipment and turning as safely as practicable.

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Janice Levi shows how to turn a barrel purse



Richard Findley explores turning natural edge work for the first time

Andy Coates shows how to create a deconstructed platter

Ernie Conover ponders the subject of sharpening tools

Basic tips and tricks for your workshop by **Kurt Hertzog**

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Changing blades

In an abridged extract taken from *Complete Illustrated Guide To Bandsaws*, **Roland Johnson** looks at changing blades on his bandsaw

The ability to change blades quickly and efficiently is one of the most valuable skills you can have at the bandsaw. Although it might seem complicated at first, once you have changed blades a half-dozen times, it will get to be second nature. With practice and a good working knowledge of your bandsaw, you should be able to change blades, adjust the guides, and make a test cut or two in less than 10 minutes. Practice changing blades until the routine becomes familiar. It's time well spent.

In a nutshell, the sequence involves releasing the tension on the blade, removing it, mounting the replacement blade, re-tensioning and tracking it, and then aligning the blade guides. You may want to copy the checklist at left and tape it to your bandsaw until you become familiar with the process.

BLADE CHANGE CHECKLIST

- Disconnect power
- Move all blade guides away from blade
- Release blade tension and remove blade
- Clean tires and guides if necessary
- Mount the new blade
- Track and tension blade simultaneously
- Move upper guide assembly to desired height
- Set the thrust guides, then the side guides
- Test cut
- Recheck guides

Use a spring clamp to secure the blade to the upper wheel while slipping the opposite end of the loop onto the lower wheel



❏ Removing the old blade

To remove the old blade, first disconnect the power, and then move the upper and lower side guides and thrust bearing far enough away from the blade to prevent interference during blade change and tracking. Also remove the table alignment pin from the end of the table slot.

Next, release the blade tension using the tension adjustment knob, wheel, or lever.



Before removing the old blade, retract the side guides and thrust bearing so they won't interfere when tracking the new blade

Then slip the blade off of the tires and thread it through the table slot to remove it from the saw.

Clean and lubricate the thrust roller bearing guides. Although these are often sealed bearings, they can still lose their ability to move freely, so I frequently apply router bearing oil to them. European-style thrust and side bearings are not sealed



To release the old blade, first back off the tension adjustment knob, wheel, or lever

and can wear quickly because they consist simply of a shaft running in a bushing. Therefore, I lubricate them frequently.

Also clean any accumulated sawdust off the tires with a stiff nylon- or brass-bristle brush. Take care to not damage the tires with overenthusiastic cleaning. While you're at it, get in the habit of quickly checking for cracks or grooves in the tires.



Clean debris from tires using a stiff nylon – or brass-bristle brush



Simultaneously tension blade while rotating the upper wheel by hand

Mounting a new blade

Install the blade on the upper wheel first, making sure that the teeth point downward toward the saw table. (If they point in the opposite direction, simply grasp the blade and turn it inside out.) Use a spring clamp to secure the blade to the upper wheel while slipping it over the lower wheel.

Apply enough tension to take the slack out of the blade, and then slowly turn the upper wheel by hand while alternately tracking and tensioning the blade. Do not fully tension the blade until it is tracking exactly in the center of the tire, as you can't properly tension a roving blade.

Bump the on/off switch briefly and check the tracking as the motor coasts down. Adjust it if necessary, turning the wheel by hand. After the blade is tracking correctly, lock the tracking knob, close the wheel house doors, start the saw, and let it run at full speed for a few seconds. Then bring the blade up to final tension (according to the tension gauge) and run the saw again for a few seconds to make sure the tracking stays true.

The tension gauges on most bandsaws are accurate enough for this initial tension setting. However, it's wise to double-check the tension using a different approach, since a number of things can compromise the gauge's accuracy, including a heavy-duty replacement spring. Fully raise the guidepost, and then push against the side of the blade using moderate pressure. (If your saw is equipped with a tension release lever, make sure it is engaged in the full tension position.) Fine-tune the blade's tension so that it deflects about $\frac{1}{4}$ in.

Follow up by making a few cuts in scrap that is the same thickness and density as your intended workpiece. If necessary, the blade's performance can often be improved by increasing or decreasing the tension.

WARNING

Warning: Never tension the blade with the saw running.



A properly tensioned blade should deflect about $\frac{1}{4}$ in. under moderate finger pressure

BLADE TENSIONING SPRING

A bandsaw tension spring can fail without showing any breakage. If the spring has been stressed past its rating, the intergranular structure of its steel can disintegrate, causing the spring to lose its ability to hold tension. Also, a compression spring should never be squeezed beyond approximately 85% of its stroke – the stroke representing the difference between the length of the spring at rest and its length when completely compressed. Compressing the spring completely can result in premature spring failure, regardless of any outward physical sign



Completely compressing a tension spring as shown here can result in premature spring failure

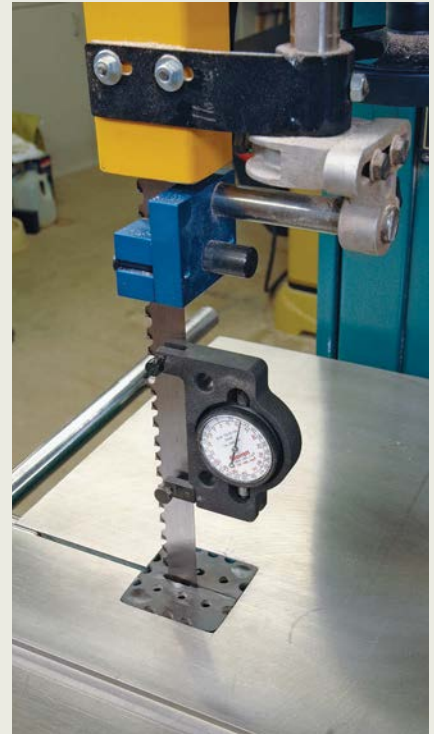
TENSION GAUGES

Proper blade tension is crucial to accurate sawing. Insufficient tension can cause blade wander, but unnecessarily high tension is hard on tires and can cause blade breakage and catastrophic failure of bandsaw parts. However, don't trust your bandsaw's tension gauge to provide the exact tension your blade requires.

Use it instead to get you in the neighborhood. Too many variables can compromise an accurate reading, including the blade's thickness, hardness, pitch, and manufacturing process. The 'correct' tension is simply that which causes the blade to perform at its best.

Some blade manufacturers recommend very specific tension ratings, which vary from brand to brand and blade to blade. Commercial tension gauges are available that will provide readings in pounds per square inch, but they're very pricey, and I consider them overkill for wood-cutting bandsaws smaller than 24in.

So what's my approach? I simply gauge the amount of sideways deflection of a fully exposed blade and then assess the cutting action using scrap.



High-quality precision tension gauges are accurate but very expensive

Setting the blade guides

The first item to address when setting the guides is whether the guide holder is square to the blade. If the bearing surfaces of the side guides – whether rollers or blocks – aren't parallel to the blade, it will be inadequately supported, possibly inducing an erratic cut.

To check your saw, first install a blade that is wider than the guide surface and locate the guides close to the blade. Check for a consistent gap between the blade and each guide. (It's a good idea to square the faces of block guides before checking this.) If the faces of block guides or the edges of roller guides aren't parallel to the blade, you can try rotating the guide assembly on the post to correct the problem. Loosen the guide holder just enough to allow movement, pinch the blade between the side guides, lock them in place, and then tighten the guide holder. This should square everything up.

If a poorly machined guide holder won't allow setting for parallelism, you may have to perform some corrective machining on your saw. Alternatively, if you're using block guides, their faces can be surfaced at a slight angle to parallel the blade.

Set the guidepost to accommodate the height of the workpiece, and then position the upper and lower side guide assemblies to set the guides slightly behind the back edge of the blade gullets. Now you're ready to adjust the thrust bearings and side guides to support the blade.

Set the thrust guides first. Ceramic guides and roller bearing guides can be positioned to lightly touch the blade. However, it's also fine to set them a few thousandths of an inch away, as long as the space is equal on both guides. A dollar bill or a piece of a brown grocery bag is the age-old standard for spacing the guides. Wrap the paper around the blade and carefully set the guides snug to the paper without moving the blade as the guides are tightened. Setting the upper and lower thrust guides precisely equidistant from the back edge of the blade is critical to preventing blade twist, especially when resawing and cutting other thick stock.

Next, adjust the side guides. Ceramic, phenolic, and perimeter-contact roller bearing guides can be set to lightly touch the blade. Wood, metal, and face-contact roller bearing guides should be spaced a dollar bill's thickness away from the blade. In the case of very narrow blades, it's best to trap them within wood or phenolic side guides or to use a specialty guide that provides thrust and side control for narrow blades.

TIP

If a faulty guidepost won't adjust parallel to the blade, reset your guides whenever you change the guidepost height to accommodate a different stock thickness.



This misaligned guide assembly causes the side guides to be out of parallel to the blade. In the photo at far right, the guide assembly has been rotated on the guidepost to bring the guides into parallel with the blade



After installing a new blade, make several straight and curved test cuts to ensure that the blade tracks and cuts accurately

Testing the tune-up

When installing a blade, new or used, it's wise to make a couple of curved and straight test cuts to see how well the machine cuts before committing to your project wood. If the cut wanders, recheck the guides. If the blade vibrates or bows, its tension is probably insufficient. If the guides are set correctly and the tension is adequate but the cut still wanders, a worn blade is most likely the culprit. In that case, it's best to switch over to a new blade.

TIP

A sharp blade that is appropriate for the sawing task at hand is essential for maintaining a bandsaw's performance.

Troubleshooting

Working with a bandsaw that's cutting incorrectly can be frustrating, but a bit of detective work can usually solve the problem. The most common issues involve vibration, bowed cuts, blowout, blade wander, and binding or burning. Not to worry, though. Each of these problems has a cure.

Blade tracking

A blade that wanders off track or that won't stay centered on the upper wheel can cause serious cutting problems and may even result in the blade coming off the tires. Causes may include insufficient blade tension, inaccurate tire crowns, non-coplanar wheels, or a combination of the three.

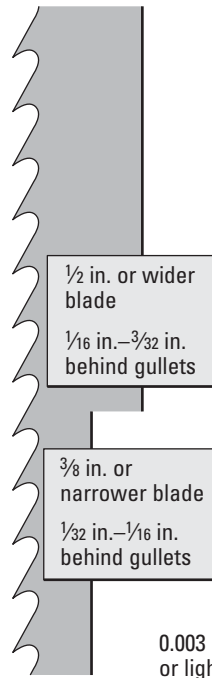
To solve the problem, begin with the easiest approaches and work backward. First check the blade tension (after retracting the thrust bearings so they don't interfere). If necessary, readjust it while tracking the blade until sufficient tension is achieved with the blade tracking in the center of the tire. Be careful not to over-tension the blade. If that doesn't correct the tracking, inspect your tire crowns. If they are very worn, recrown them or replace the tires. If the blade still won't track properly, make sure your wheels are coplanar and correct the alignment if necessary.

Vibration or rippled cut

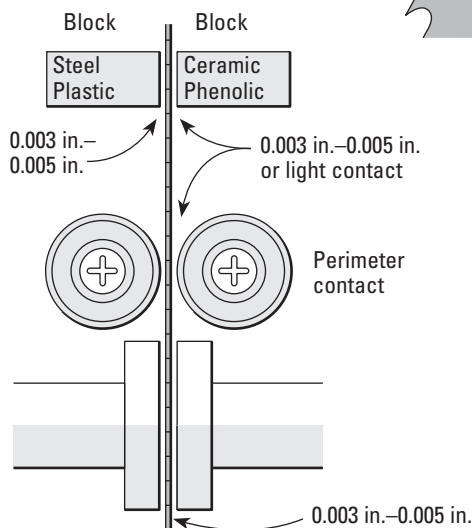
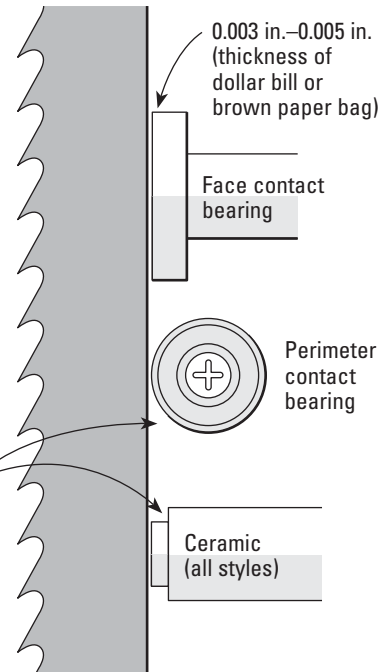
Sometimes a particular chance combination of blade tension and feed rate can cause harmonic blade vibration that creates a rippled cut. Changing the tension or feed rate somewhat will usually eliminate the problem. Switching to a variable-pitch blade (designed to help eliminate vibration) can also help eliminate the problem.

Setting blade guides

Side guides



Thrust guides



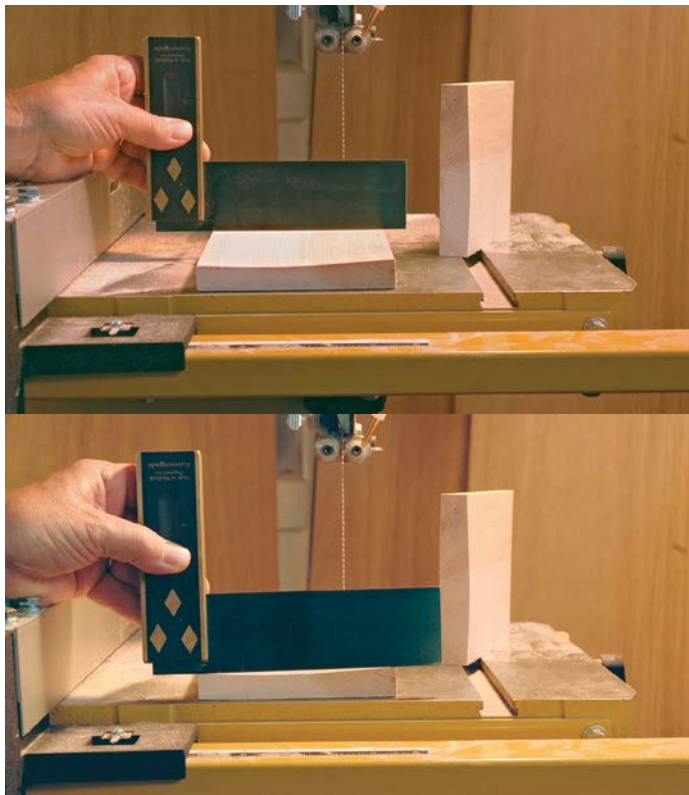
An unlucky combination of blade tension and feed rate can cause a rippled cut like this one

Bowed or bellied cut

Inadequate blade tension can cause a bowed or bellied cut in thick stock. Blades with too fine a pitch (too many teeth) for the material thickness can also cause bowing, especially if the feed rate is too quick. Dull blades can really cause problems due to the extreme feed pressure needed to make the cut. The bowing usually becomes more severe as the cut progresses, resulting in binding, high blade temperatures, and the possibility of blade breakage.

When experiencing bowing, first ensure that you have an appropriate blade installed and that it is reasonably sharp. Next, try increasing the blade tension or slowing the feed rate, or both. (But don't overdo the tension, which could damage the blade or the saw.)

TIP: To back a blade out of a bowed cut, wedge the leading edge open enough to extricate the blade.



An insufficiently tensioned blade caused this bowed cut, which starts straight and square (left) but then bellies out after only 5in. (right)



Non-coplaner thrust guides caused by poor adjustment or guidepost flex can cause blowout at the bottom of a cut

Blowout

Blowout occurs during resawing, when a blade breaks through the side of the workpiece. The problem is a result of the upper and lower thrust bearings not being coplanar to each other. As the blade is pressed against one bearing initially, and then the other, it's forced to twist in response. And once the errant cut is started, the blade tends toward that direction, whether toward the fence or away from it. The blowout often occurs near the bottom of the cut, particularly on saws whose lower guides are some distance from the table.

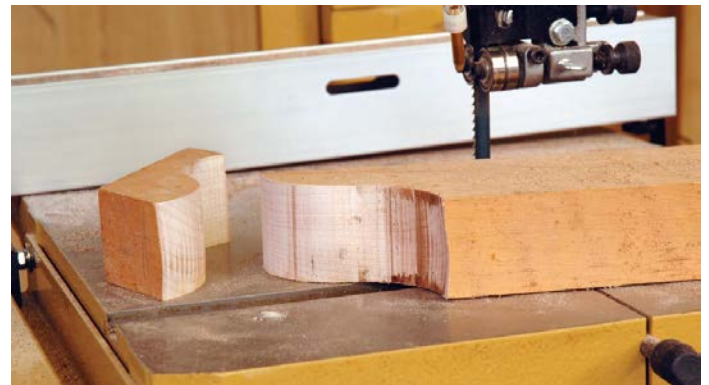
To prevent blowout, make sure your upper and lower thrust bearings are coplanar. Also, use as wide a blade as possible. This problem is less common on saws with stronger frames, which help prevent guidepost movement. If you find that your guidepost is flexing, slow your feed rate to minimize the pressure against the blade.

Wandering

The tendency of a blade to wander from the cut line is often caused by side guides set too far away from the blade. A dull blade can also cause wandering due to the increased feed force needed to push the wood against the blade. Excessive feed pressure can force the blade to twist slightly, resulting in a cut that wanders side to side. To minimize or prevent the problem, adjust wood, ceramic, roller bearing, or phenolic guides very close to the blade – even lightly touching it. And again, make sure your blade is sharp and appropriate for the task.

Burning or binding

Burning or binding in a curved cut is usually the result of using too wide a blade for the cut radius. Switching to a narrower blade should correct the problem. It also helps to round the back edge of a new blade, as shown in 'Stoning a Blade' on the facing page. Sometimes, poorly seasoned lumber or internally stressed 'reaction wood' can pinch the blade during cutting. No problem – just push a small wooden wedge into the cut to relieve the squeeze.



The burned wood and bowed cut here are caused by using too wide a blade for the radius being sawn



Blade binding in a cut can be eliminated by inserting a wedge into the cut

General maintenance

As with any machine, a bandsaw requires occasional cleaning and lubrication to operate well. The tires should be kept free of built-up

sawdust, the bearings need lubrication, the table should be kept clean and corrosion-free, and certain types of guides need occasional truing.

Cleaning

Bandsaw tires must be kept relatively clean to ensure proper tracking and traction. Built-up sawdust can effectively change the crown of the tire, causing erratic blade tracking. It can also cause vibration by creating a 'rough road' for the blade to travel on. Furthermore, excessive debris can impede the traction necessary to power the blade through its cut.

Some bandsaws come equipped with a stiff brush that's mounted in the lower wheel house. It continually rides against the tire to clean off sawdust. The upper wheel stays relatively clean because most of the sawdust falls into the lower wheelhouse. To clean tires, I use a household brush with stiff nylon bristles. A brass-bristle brush works well, too, but avoid steel-bristle brushes, which can damage the tires. To remove heavily encrusted crud, I use a sanding block, wielding it with a light enough touch to clear away only the debris.

Dirty or rusty saw tables can impede stock feeding and cause inaccurate cuts, especially when sawing curves freehand. I use a good spray solvent to clean away the coating of



A stiff-bristle brush mounted in the lower wheel house helps clear sawdust off the tire.

old metal protectant as well as any pitch or gummy detritus. I follow up by scrubbing off any remaining rust or crud using steel wool, a Scotch-Brite™ pad, or 600-grit sandpaper.

After one final quick cleaning with the solvent, I apply a couple of light coats of tabletop protectant, wiping off the excess after each coat.

Truing guide blocks

Guide blocks are subjected to nearly constant contact with the blade. This friction will often produce uneven wear and a notched or angled face on the block. An easy fix is to

sand the face flat, which restores its ability to offer full blade support. (Ceramic guides can be trued on a diamond sharpening stone.) Note that some guide block holders

are not cast or machined true and that the face of the guide may have to be shaped to a slight bevel to create parallelism with the blade.

STONING A BLADE

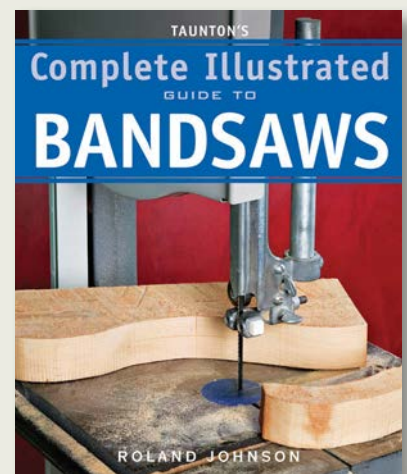
When cutting curves, the sharp corners on the rear of the blade can scrape against the side of the kerf, contributing to balky feeding. The sharp edges can also bite into thrust bearings, inviting grooving. Because of this, it's a good idea to ease the back edges of a new blade with a honing stone to make it glide more smoothly through curves and protect against bearing wear. Stoning a blade also removes any rough areas or misalignment near the blade weld.

You can buy special stones for the purpose at

many woodworking supply stores, or you can simply use a regular sharpening stone. With the saw running, rest the stone on the table and press it against the rear of the blade while rotating the stone around the rear edge. This will ease the corners into a more rounded shape. Don't apply so much pressure that you push the blade off the tires. Be patient. The process will take about five minutes. The stoning will create sparks, so be sure to first remove any sawdust accumulation inside the saw. ●



Completely compressing a tension spring as shown here can result in premature spring failure

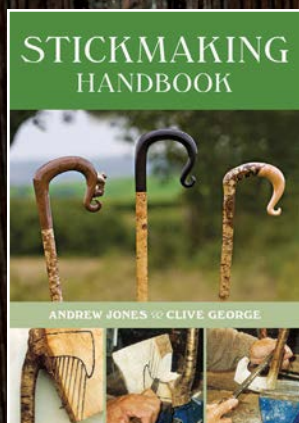


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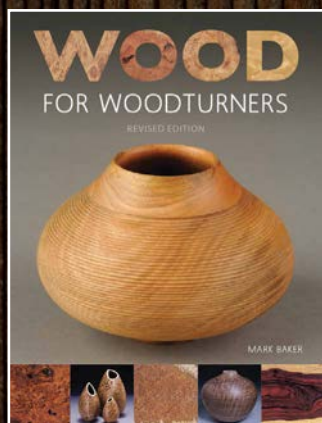
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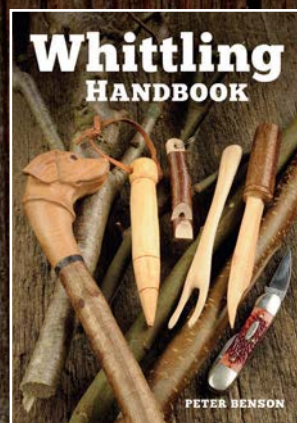
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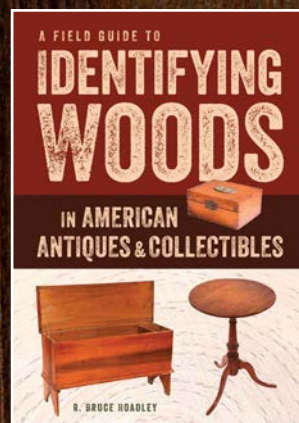
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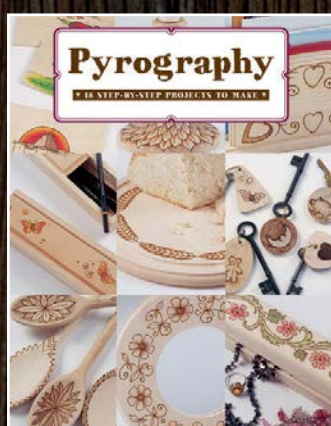
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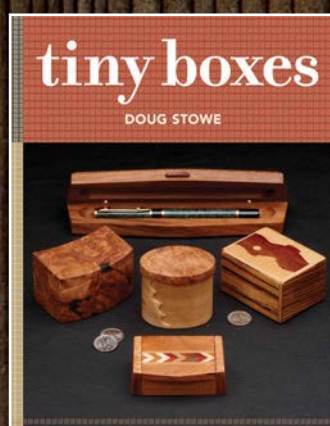
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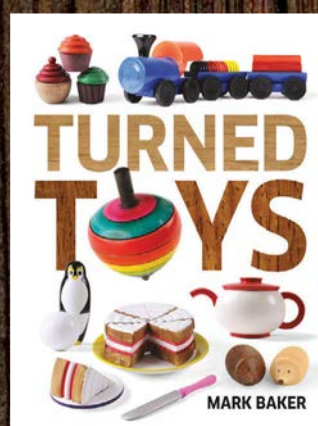
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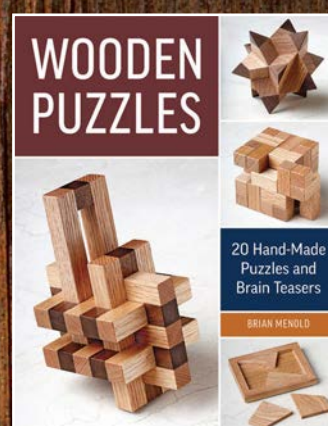
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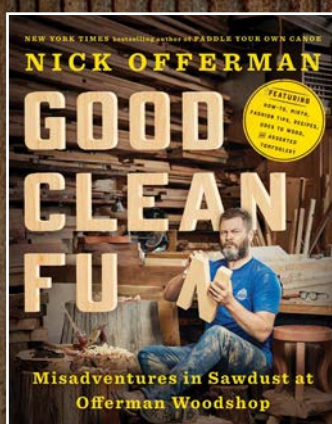


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Cutting the inner ring on the lid multi patterned lid of a finial box

PHOTOGRAPHS BY CHRIS HART

Ornamental turning made easy – part 3

This month, **Chris Hart** focuses on setting up the system and prepares a couple of box lids prior to decoration

The turning required for this month's project is pretty straightforward. However, the decoration of the box lids will require a little thought and concentration. Throughout this article I hope to provide 1% of the inspiration, therefore making it the readers role to supply 99% of perspiration in the form of concentration – more on this later – highlighting the results when concentration lapses.

Preparing the work

The first project is a box lid in curupay (*Anadenthera culbrina*), having finished the base and inside the lid, reverse the lid into a jam chuck. The shape of the lid in this case is a sloping hut roof style, it is, at this point, that care must be taken. The objective is to achieve a slope, which is flat without hills or valleys, neither convex or concave. Cut this with a spindle gouge ensuring the top is perfectly

flat with a straight edge or ruler. A sheet of white paper underneath will help determine this.

If you are unable to achieve the flatness or finish required, try by sheer cutting using a gouge or scraper, alternately scraping with a negative rake scraper is also a good option.

Sanding is best achieved with the abrasive wrapped around a cork block, which will preserve the integrity of the flatness. After sanding, apply a coat of sanding sealer or preferred finish. The need for absolute flatness is because, provided the work is presented to the cutter at right angles, a cut of equal thickness and depth will be achieved.

This simple style of box lends itself to decoration and there are many patterns which can be applied to this shape of lid. When it is finished the lid must remain on the chuck, however, the chuck may be removed from the lathe.



Lid reversed into a jam chuck



Cutting the lid with a spindle gouge



Checking the lid for flatness

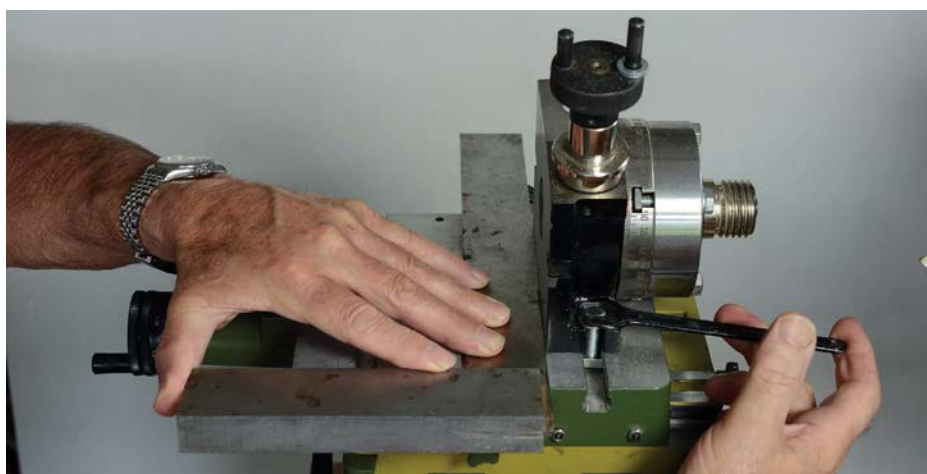


Sanding the lid with a block

Setting up the system

Having finished the preparation of the lid, the tailstock and banjo are removed replacing them with the baseboard complete with the compound table. Securing onto the bed bars of the lathe, mount the rotary table ensuring it sits square on the compound table by using an engineer's set square. The rotation is activated by the handle on the top with a locking screw, two scales are provided, one on the circumference graduated in 1° increments, the other on the handle, which is a Vernier scale in tenths. It is this scale that is used to make final adjustments. The fore and aft (X and Y) movement of the compound table is controlled by two handles, one full turn is 2mm, the graduations, which are 0.05mm. Locking screws for the slides are also provided.

At this stage the chuck needs to be mounted on to the rotary table with the lid still attached. The Barleycorn pattern, which is to be applied, requires a flat surface because the cut is a full circle without interruption, so therefore the surface needs to be aligned at 90° to the cutter. This is achieved by slacking



Setting the rotary table

the bolt on the mounting board and swinging the whole unit. To make sure I get perfect alignment I use a straight edge mounted on to a chuck to align the work, while a sheet of white paper underneath helps.

I have found this method to be the most accurate and versatile. While a long straight

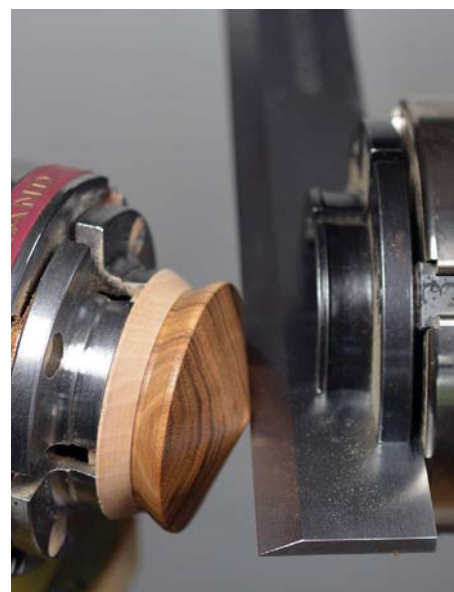
edge can be a little ungainly for small items requiring the spindle lock or indexing system to balance and lock in place, it comes into its own when aligning a large bowl or platter. Alternate methods are to use the surface of a faceplate or fix a wooden straight edge to the faceplate.



Vernier scale on rotary table



X and Y feed, and adjusting knobs



Setting the presentation angle

Setting up the boring head

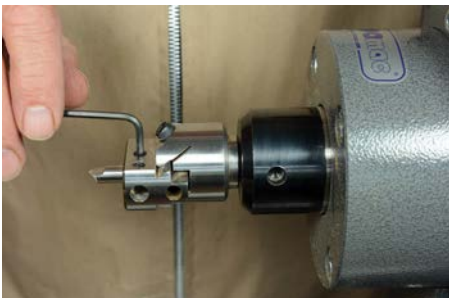
Setting up the boring head is the next task. Start by inserting the boring head via the Morse taper into the spindle and secure with the drawbar. Insert the cutter into the middle slot on the head and secure with the retaining screw. The cutting edge must point upwards if the

direction of travel is anticlockwise, the normal lathe direction. If the direction is reversed, turn the tool bit 180°.

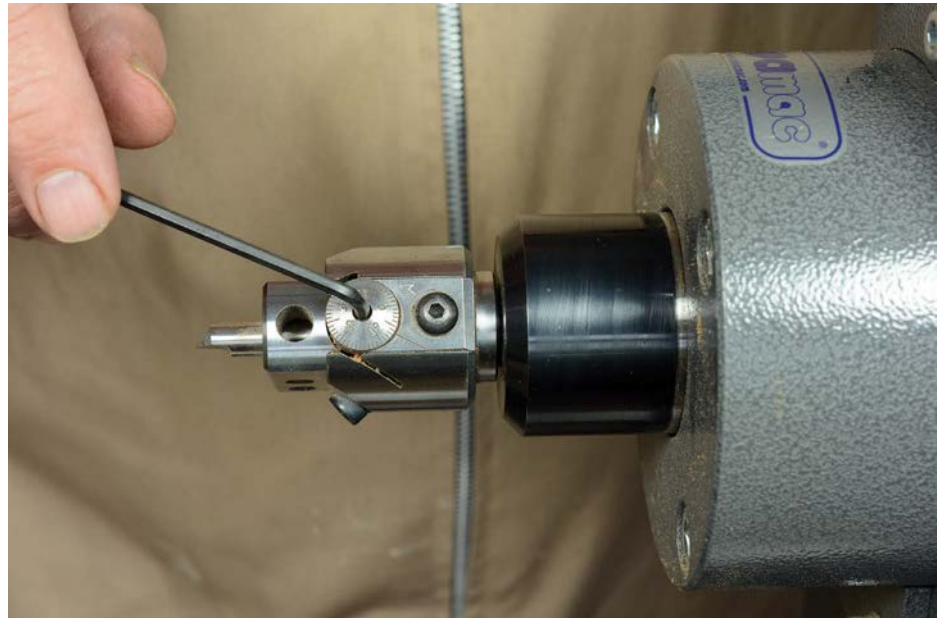
The swing of the head is adjusted by an Allen key inserted into the Vernier scale on the head and locking off with the screw on top.



Inserting and securing the boring head



Securing the cutter



Swing adjusting screw

Determining and cutting the pattern

With the workpiece in the chuck and correctly aligned, together with the boring bar securely installed, complete with cutter. Determining the size of the decoration together with the pattern is the next step.

The pattern is Barleycorn, although you will have seen various examples in previous parts. I make no apology for this, Barleycorn is the basis of most other patterns, depending on the size and spacing of the cuts. It takes on various guises which, when it is placed side-by-side, can look similar, but unrelated.

It is important that this pattern is mastered before moving on to others. Most skills and experience are built up by repetition and so it is with ornamental turning. By varying the increments, depth of cut and shape of work

through experimenting, not only will you be surprised by the patterns produced, it will all add to a skill set and build confidence and experience, including a better understanding of how all the elements combine to make pleasing results, together with ideas about what works and what does not.

First, start by sliding and securing the compound unit to the cutter, making the fine adjustments with the X or Y knobs to advance the lid to almost, but not quite touching the cutter. We now need to determine the diameter of the cut together with the position of the circle. The diameter is achieved by adjusting the dovetail slide with the adjusting screw located in the Vernier scale. The diameter must be considered in relation to the position it occupies, achieving a pleasing balance. In this case I have positioned the cut (20mm diameter) just short of midway between the bottom edge and the top, leaving, about 5mm at the bottom edge and about 7.5mm per side at the top, which will make a nice crown 15mm overall. The overall diameter is 60mm, because of the angle, each side measures 35mm. The measurements are only to give the reader some idea of scale. There is absolutely no need to measure this, it is, in my opinion, best achieved by eye, rotating the cutter observing the positions on the lid.

Having decided the pattern, size and position, all that remains is to select the number of circles. The more circles the

finer the pattern, however, some detail will be lost because of overlapping cuts. Less circles equals a coarse pattern which can look unbalanced on a small box lid. On this occasion I have chosen 18, because when a full 360° circle is divided by 18 it equates to a spacing of 20°. This will give a nicely balanced pattern with lots of fine detail in the extremities.



Setting the swing diameter outside



Setting the swing diameter inside

SAFETY CHECK

- Boring bar is secured with drawbar.
- Tool and sliding dovetail screws are secure.
- Lathe spindle revolves freely without fouling.
- The unit is secured to bed bars.
- Workpiece is secure in chuck.
- Rotary table is secured to compound table.
- Cutter guard is in place.
- Lathe set to lowest speed.
- Rotary table locking screw is secure.
- Dust extraction is in place.



We are now ready to begin cutting however, in the interests of your health and safety, please carry out the safety checks prior to starting the lathe.

Once the safety checks are completed, check that the rotary table is in the zero position both on the main and Vernier scales, secure the locking screw. The compound table lateral or Y adjustment is not needed

on this occasion so lock off with retaining screw, however, it is prudent to mark its position (in case it is accidentally moved), the scale on the knob is spring loaded. Push the scale in and turn until zero is aligned with the mark.

Advance the cutter towards the workpiece, commencing cutting until the required depth of cut is reached. Setting the X scale back to

zero when completed. Reverse the cut until well clear of the workpiece, advancing the rotary table by 20° via the handle on top. Using the Vernier scale as reference, (the most accurate), ensure the locking screw is tightened after each advance. Recommence cutting until the zero mark is reached, repeating the whole process until complete. More 99% perspiration!



Making the first cut



Progressing the cut



The finished box

Decorating a finial box

The second project is a trinket box lid inspired by my favourite and constant inspiration woodturning book *Turned Boxes 50 Designs* by Chris Stott. The woods used are beech (*Fagus sylvatica*) for the base, for the lid, West African pao rosa (*Swartzia fistoloides*) topped with an ebony (*Dispyrus crassiflora*) finial.

I turned, sanded and finished the lid exactly the same as the first project, plus drilling a 12mm hole to house the finial, which also doubles as a 'jam chuck' enabling the underside to be completed.

The pattern is two rows of crescent shaped semi-circles with a dot

detail at the point of each intersection. The bottom row is 20° spacing making 18 cuts, the upper row is half that amount with 40° intervals totalling nine. The dot detail is the same spacing as the main cuts, however, to centre the dots in the middle of the intersection the first cut starts at 10° instead of zero, therefore the scale marking starts at 10° continuing 30°, 50° and so on. The 20° spacing is maintained only the start point had changed. The dots are cut with a single flute router bit with 8mm shaft to fit the tool holder.



Aligning the first cut top



Aligning the first cut bottom



First outside cuts



Cutting the outside dots



Cutting the inner ring of dots

Setting up for this pattern varies from the Barleycorn, because only part circles are to be cut. While absolute flatness of the workpiece is still required, it is not necessary to present the cutter at 90° to the work, indeed an amount of offset is required to enable the part circle to be cut requiring part of the cut to be into fresh air, therefore rotating the compound table in a clockwise direction will provide this relief.

There now follows an amount of adjustment to set up the outer rim cuts, which involves rotating the compound table clockwise to obtain a suitable amount of offset, setting the cutter in relation to the edge together with the length of the crescent. Be aware that all these adjustments are interrelated, therefore one change will affect all other elements.

After turning the unit clockwise, rotate the cutter so the point of the cutter is facing the edge of the lid winding the Y axis until



Mistake on the first attempt

TOP TIP CRIB SHEETS

The very essence of the process (once the setup is complete) is repetition. Human nature being what it is allows concentration to wonder, this happened to me while I was demonstrating the process at my club. I completely 'lost the plot' half way through and I found this most embarrassing. While making the lid for this article, with two cuts left on the outer circle, thinking of something else I failed to rotate the table to the correct mark (the result can be seen in the photograph above). I was then faced with the decision to change the pattern or start again, fortunately the piece was thick enough to skim. The moral here is that, although I had recognised the issue early on during the development, I devised simple sheets with the sequenced increments crossing off each division as they were completed, together with a spreadsheet detailing all the information needed to plan a sequence, I had failed to use them.

LATHE SPEED

As a general rule the faster the speed of the cutter the better the cut, however, the vast majority of the cuts will be with the sliding dovetail extended, which will induce vibration. The best way to reach optimum speed is to start at the slowest speed, increasing until vibration is reached. Do not stop here, but continue, the chances are this will be eliminated as speed increases. The best place to feel vibration is on top of the rotary table, not the bed bars. While some vibration may be tolerated it can cause tool chatter. Router cutters are designed to run at high speed and should only be run true in the centre without offset, therefore can be run at top speed.

the correct distance from the edge is achieved. Now swing the cutter in an arc to determine the length of the cut, adjustment is made on the sliding dovetail. The photographs show the top and bottom of the cut. Put a pencil mark at the top of the arc, now rotate the table with the cutter at the bottom of the arc until it reaches the pencil mark. This is the length of the crescent, also giving the increment to repeat the sequence in degrees. To make the process a little easier I like to use the increments in multiples of 10. Continue to make adjustments until you are happy with the proposed cut, secure all the components and make adjustments. Carry out the safety checks then make the first light cut, which will give you an indication of the shape and position making it possible to make fine adjustments, a full cut will then cover the initial one. Now continue completing the cut.

Once the outer crescents are completed, it's time to cut the dots and wind the work away from the cutter. Remove the cutter and replace with a straight fluted router cutter and secure, then centralise the dovetail slide using the zero on the Vernier scale for fine adjustment. The cutter should now run true. To align the cutter, turn the rotary table to 10°, then adjust the compound table placing the tip of the cutter where the crescents intersect. Making a very light cut will indicate the accuracy of the position allowing final adjustment prior to cutting.

To complete the inner crescents, including dots, repeat the process making allowances for a smaller diameter and shorter crescents.

To finish the lid, reverse the finial recess into a jam chuck enabling the chuck spigot to be removed, then completing the inside of the lid and finally gluing the finial in place. ●



Finished box

Next month

In the final part of this series Chris will look at wood, finishes, more applications and patterns.

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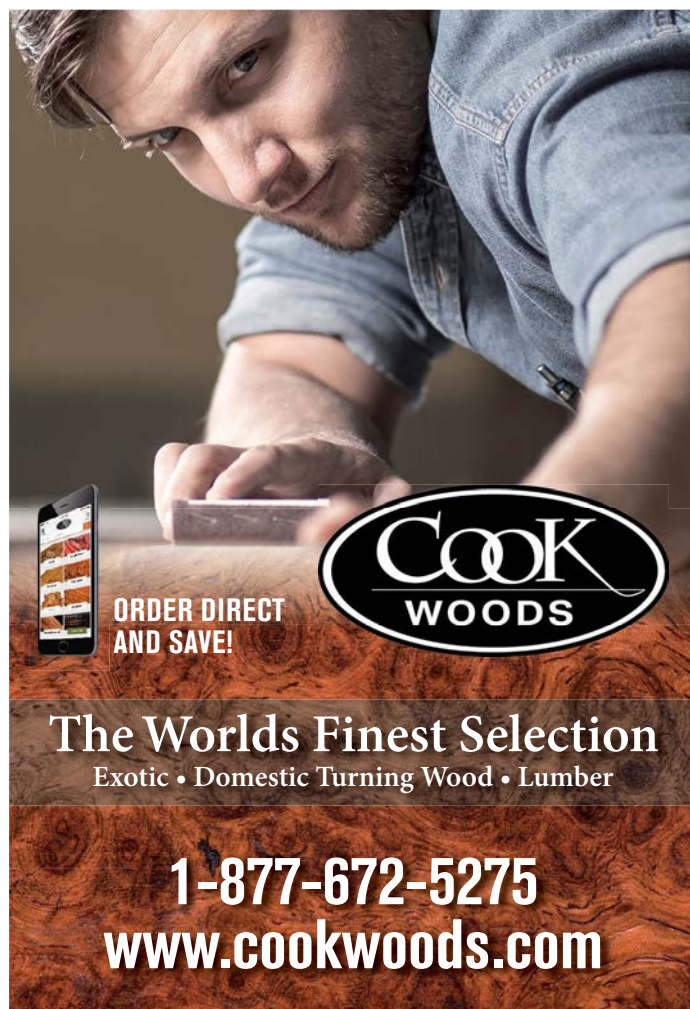
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Censored

Whilst sticks and stones *might* break my bones the dust will *surely* kill me - and you too

Some readers may be scandalized by this image, construing it to be exploitative, sexist etc. They are not correct, but if it made you stop long enough to read this, it has achieved its intention. And reading this may save your life.

Woodworkers in all disciplines are becoming increasingly aware of the risks implicit in breathing dust-laden air. Modern woodturning methods - especially using power tools - create far more dust, of a smaller particle size, than the techniques used by previous generations. Turning dry timber and any lathe sanding does the same. Wood dust is known to be a cause of respiratory disease and cancers.

There can be no more important message for woodworkers today - and perhaps woodturners

in particular - than the need to be protected against the ravages of dust by using appropriate and effective respiratory protection equipment. Turners are being irrevocably harmed, and even killed, by ignoring the protection that a relatively low cost respiratory device can offer.

'Low cost'? That's a description which is easy to explain and to evaluate: my life is worth one heck of a lot more than the price of one of these devices. You may value your own mortality differently, but of mine I have no doubt.

One of the very best of the solutions available to combat the significant dust hazards posed by woodturning is a personal dust mask or, preferably, a powered respirator. Having used such devices for many years, we have selected proven and effective products from major manufacturers which are designed to protect your health and reduce the chance of harm from respiratory illness. Foremost among these is the JSP PowerCap IP offering 8 hour operation on a single charge, full impact protection and costing just £195.00*



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Contemporary clock

Ian Woodford takes on his woodturning club's challenge and creates something with a hole in it...



My local woodturning club issued a challenge to make something with a hole in it. Apart from the obvious, many thoughts went through my mind but this idea came to me while enjoying a glass of wine – I must drink more often!

Each numeral on the clock face was to be a hole, but increase in size from one through to 12 o'clock. I also wanted a contrasting backing to the holes to make them stand out. I experimented with different colours and also tried various wood veneer backings, but the final choice can be your own preference.

The turning is not difficult and can be achieved with basic tools, however it does require a set of Forstner drill bits.

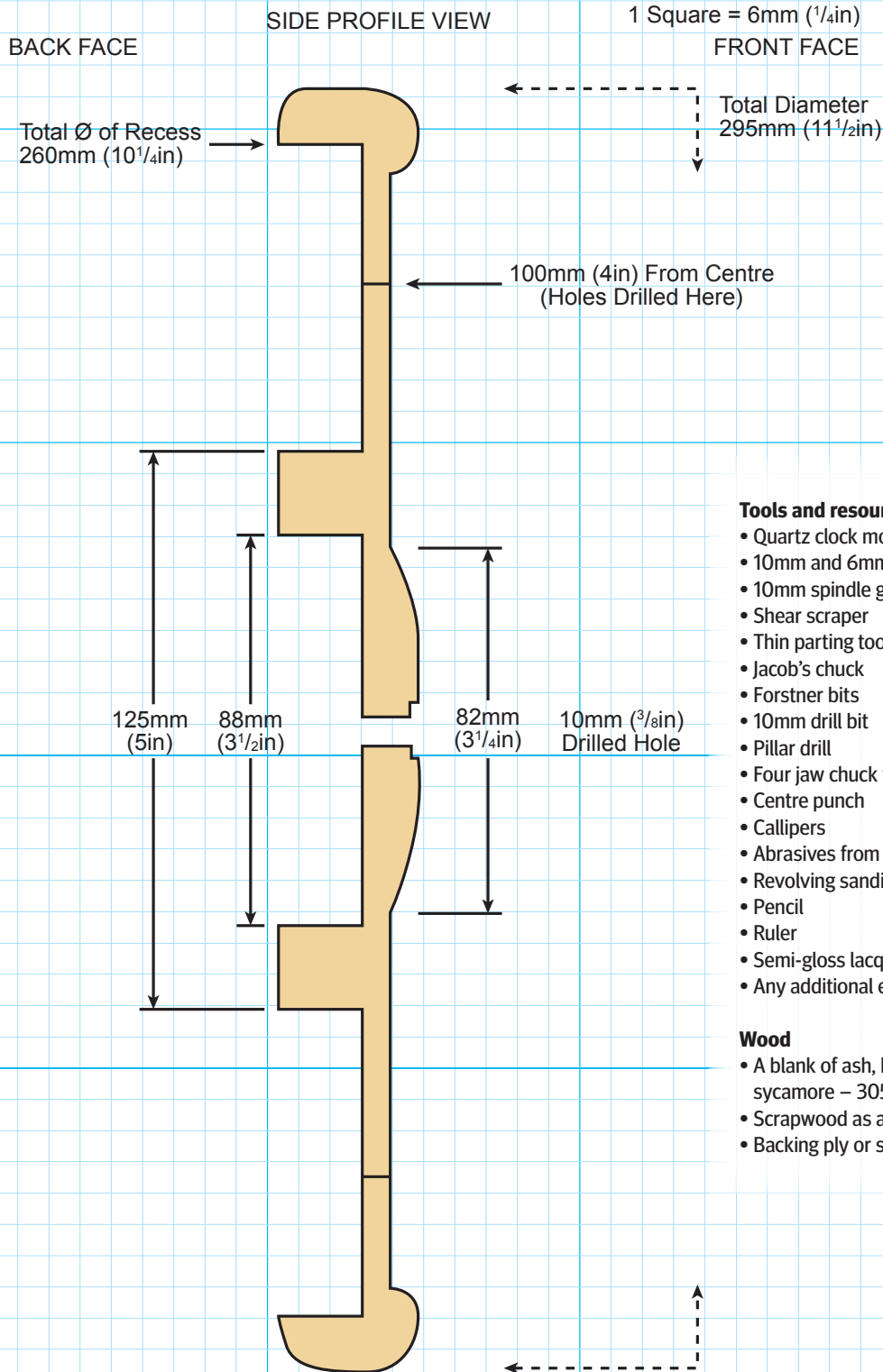
I leave the choice of wood entirely up to you but my preference was to use a light coloured wood which would then enable the backing to the hour holes to stand out well. I chose a piece of ash (*Fraxinus excelsior*), 305 x 38mm, which had a nice grain pattern but sycamore (*Platanus occidentalis*) or maple (*Acer* spp.) would have been equally suitable.

So, let's get into the workshop and get all the necessary tools chosen and sharpened.

Follow the diagrams and every stage is quite straightforward. The clock movement and hands are freely available from many websites and all my measurements were based around the length of the minute hand, which is 100mm long.

Sanding was taken from 120 grit through the various grades and finished at 400 grit. I prefer not to have a bright glossy finish on this type of project, so for the final finish I used a semi-gloss spray lacquer and applied at least four coats to the front, while the back had only two applications.

INFORMATION AND PLANS



Tools and resources

- Quartz clock movement and 100mm hands
- 10mm and 6mm bowl gouges
- 10mm spindle gouge (fingernail grind)
- Shear scraper
- Thin parting tool
- Jacob's chuck
- Forstner bits
- 10mm drill bit
- Pillar drill
- Four jaw chuck with appropriate sized jaws
- Centre punch
- Callipers
- Abrasives from 120–400 grit
- Revolving sanding pad and abrasives to fit
- Pencil
- Ruler
- Semi-gloss lacquer
- Any additional equipment like wood or colour stains

Wood

- A blank of ash, beech (*Fagus sylvatica*), maple or sycamore – 305 x 38mm
- Scrapwood as a glue chuck and jam chuck
- Backing ply or stiff board



1 Mount the clock blank to a waste block with hot melt glue. For the initial turning of the outer edge use the safety of tailstock support.



2 Using a 10mm bowl gouge, turn the blank to slightly more than the clock's final diameter and then roughly true up the face. This side will be the back of the clock.



3 Draw pencil lines to outline the area that will house the clock movement this does not have to be precisely measured, but must be large enough to allow the clock movement to sit comfortably inside, but at the same time not encroach on the area where the holes will be drilled. Use a thin parting tool to define this area where the wood is to be removed.



4 Remove the centre and then the rest of the inside to 25mm of the outer diameter. It is also important not to go to the final depth as this can be done after all the hour holes have been drilled. The drilling, from the front face, can cause some breakout and this can be rectified when the final depth is turned. You can see a slight recess in the face of the movement housing area; this enables the blank to be reversed onto the chuck to turn the front face. A jam chuck into the total depth of the movement housing would also work well.



5 Now reverse the blank and remove the glue chuck. True the surface and using a 10mm drill bit, in a tailstock mounted Jacobs chuck, drill a hole all the way through the centre. This is for the clock movement shaft to pass through.



6 Partially recess the clock face leaving a centre area as a spigot so the blank can be remounted to finish the back after drilling is completed. This spigot will also be shaped in the final turning of the clock face. Mark a circle with a radius of 100mm from the centre and mark the hour positions for drilling. Before marking the hour positions, determine the grain orientation you desire when hung. I used the headstock locking mechanism to mark the hour positions.



7 Now with the positions marked and centre punched, drill the hour positions with Forstner drill bits using your drill press. For the smallest hole, in the one hour position, use a 6mm bit and progress up to 40mm, representing the 12 o'clock position. Don't drill at a fast pace as this could burn the wood.

HANDY HINTS

- When sanding areas with an uneven or interrupted surface like holes, it is always best to have a supportive pad between the abrasive and your fingers. A foam pad is ideal for this.
- If you can speed up the lathe a little when turning areas with holes or natural edges, this will give you a more controlled and even cut.

8 Return the blank to the lathe and re-chuck to finish the back. Follow the diagram and finish the recessed area to the final depth with a shear scraper. This process will clean up any breakout from drilling. Make sure this area is flat as the coloured card will have to sit snugly. Sand the sections that will remain visible and then spray with a couple of coats of semi-gloss lacquer. The back is now finished.

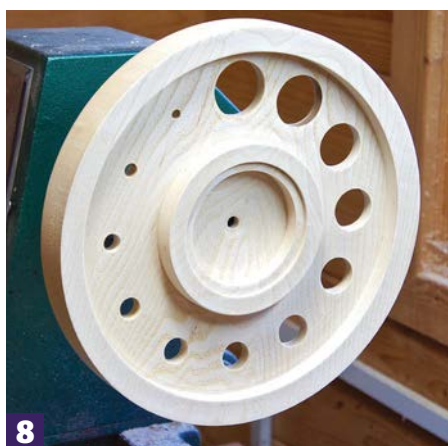
9 Reverse chuck the blank so the clock face can be finalised. Use your 10mm bowl gouge to turn the rim to its final shape. Now reduce the face to its final depth, use a 6mm bowl gouge for most of this and a 10mm spindle gouge to get a clean and tight finish into the corners of the rim and centre spigot. Since you will be cutting through a lot of 'fresh air', speed up the lathe a bit and take very gentle cuts. Make sure this area is flat, which can be achieved by finishing with a shear scraper. Leave the thickness of the face at 6mm, which is easily seen and measured at the holes.

“You now need to decide about the backing colour...”

10 Sanding this area can be very tricky and it's far easier to use a revolving sanding pad as this will result in a much better finish and be safer for your fingers. Sand down to 400 grit.

11 Turn the centre spigot to a gentle dome and turn a small recess in the centre hole to take the brass fitting which screws into the clock movement. It may be necessary to keep trial fitting the movement to make sure enough of the clock shaft projects through to fix the hands. When this is achieved, sand the dome to its final finish. When you are satisfied with the finish, spray with at least four coats of semi-gloss lacquer. The finished face should look something like this.

12 You now need to decide about the backing colour, if there is any. You have three choices: firstly, no backing at all so you can see the wall colour behind. Secondly, cut a piece of contrasting wood veneer as a backing or finally, cut a stiff piece of board and colour it. I cut a piece of ply and fixed stiff card to it, then I used an airbrush to colour it. Make it a firm fit so the backing stays in place without glue. The advantage of this method is you can remove the backing whenever you please and change the colour. Here you can see the backing ply in place. Now all you have to do is attach the hands, insert a battery and the project is complete. ●



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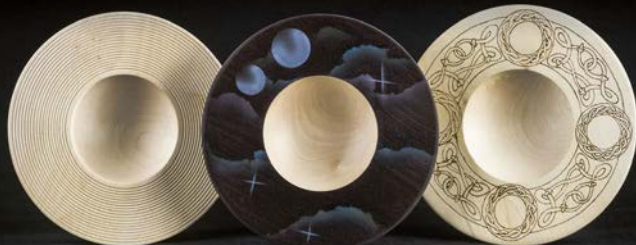
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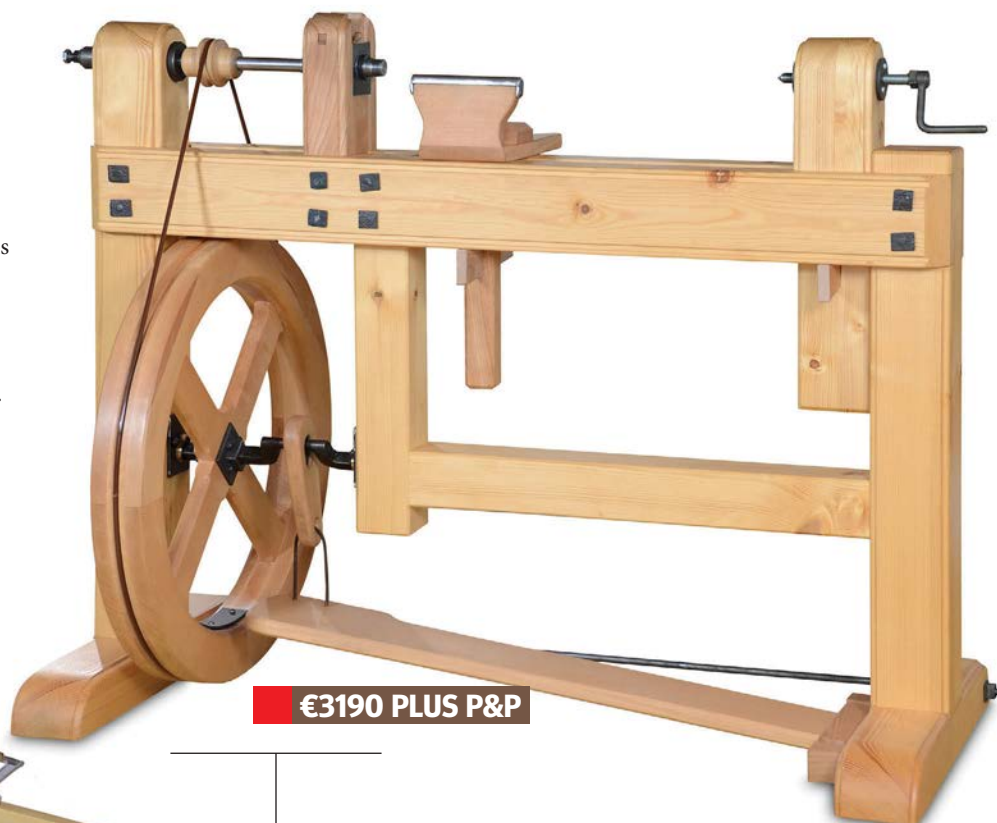
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10mm (3/8in)
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13mm (11/16in)
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15mm (15/16in)
16mm (1in)
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Paul Johnston – ‘Winged Bowl’

Paul Johnston was heavily inspired after seeing a fellow turner’s work



Paul’s ‘Winged Bowl’ was inspired by the work of Terry Scott

I don’t see myself as an ‘artistic’ turner, but I do admire those turners who use that media in their work. However, if I see something that takes my interest and I feel I can make what I see, I do like to attempt or, at least, have a go at it and also try to put my own twist on it, such as in this winged bowl.

The inspiration to make this winged bowl came from seeing the great work of New Zealand woodturner, Terry Scott, in particular his Manta Ray series. This series was created some time before he published his ‘How to...’ in this magazine a while ago.

I had always wondered how he got those flowing wings the way he did, usually one up

and three down. So, as soon as I knew, I just had to have a go at doing this style of bowl myself.

The tricky part for me in Terry’s process would be using the skew to cut the wing’s curves. The skew is one tool I don’t get on with so I had to do it with tools I felt comfortable with and used a 6mm and a 10mm bowl gouge with swept back wings, hence limiting a catch on the side walls as I got deeper in with the cut for the wings.

I cut in as far as I felt safe doing the wings using the two bowl gouges then knew I would have more carving to do by hand, which I didn’t mind so long as I got the winged

shapes and the desired effect. I tried to do my winged bowls slightly differently to Terry’s and, after emailing him, he agreed that I had achieved just that.

I thought my first winged bowl came out well, which is similar to this featured one, but had small pierced holes through on thinly turned wings. Terry made that first winged bowl and this featured one the front page on the American World of Woodturning forum, which pleased me knowing I must have done a decent job doing them.

Contact: Paul Johnston
Web: www.pjwoodcraft.wordpress.com



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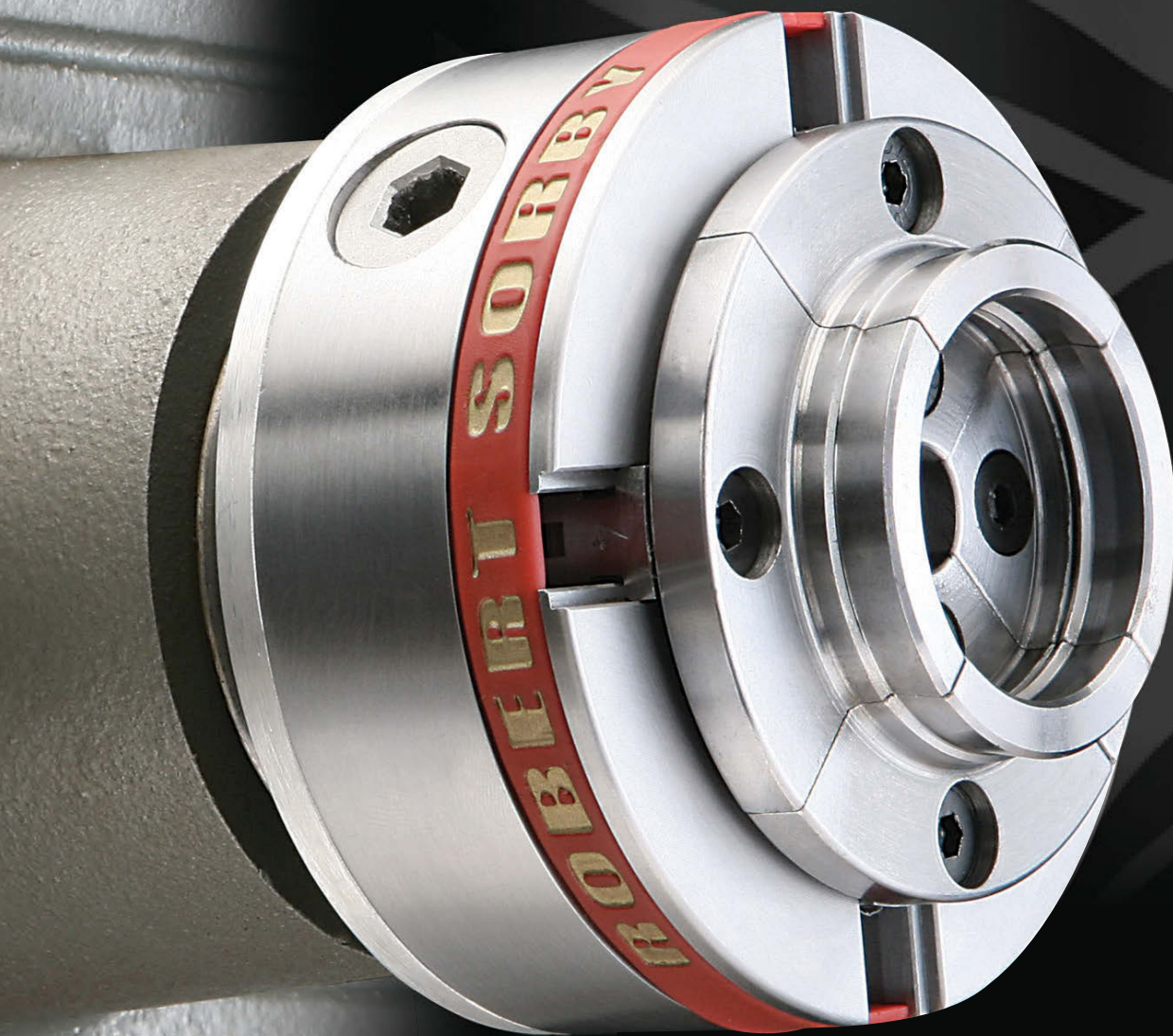
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