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ISSUE. 169
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Tall clock p42

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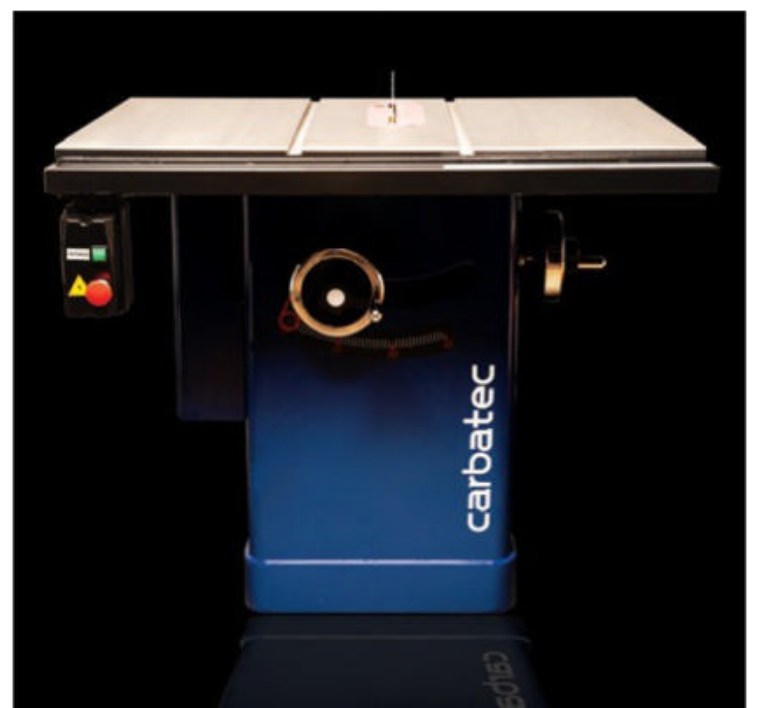
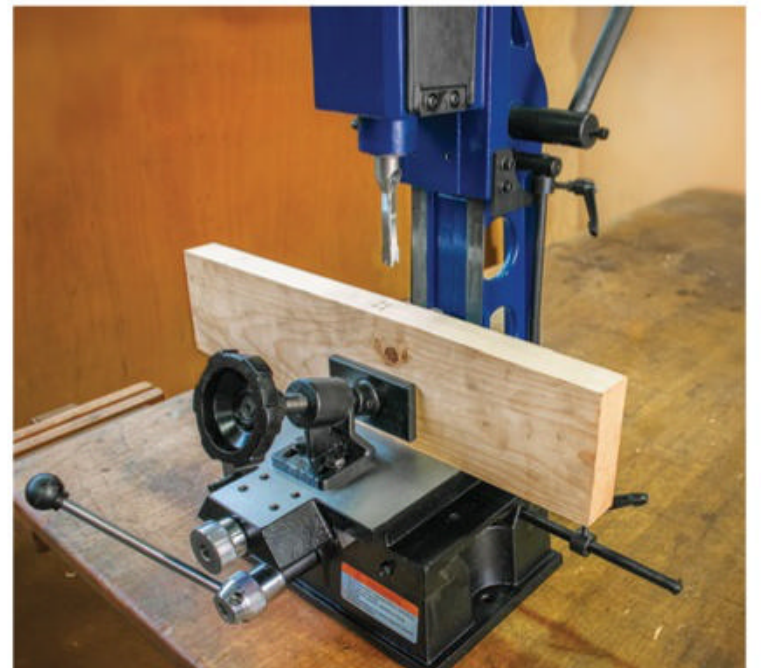
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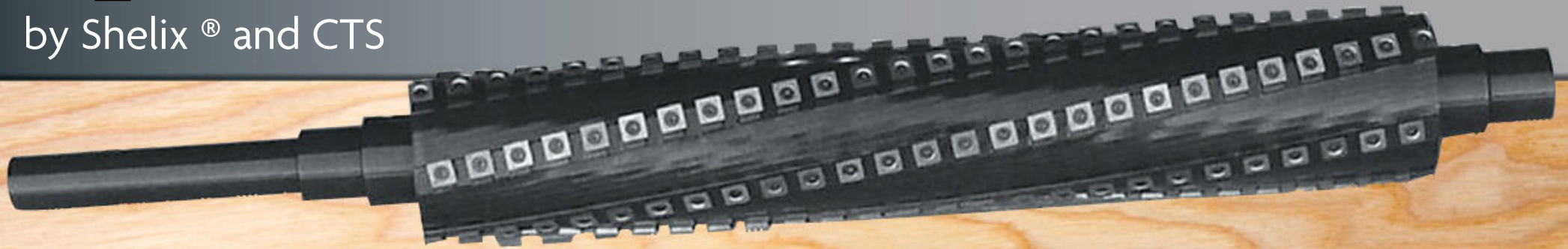
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**WOOD
CRAFT
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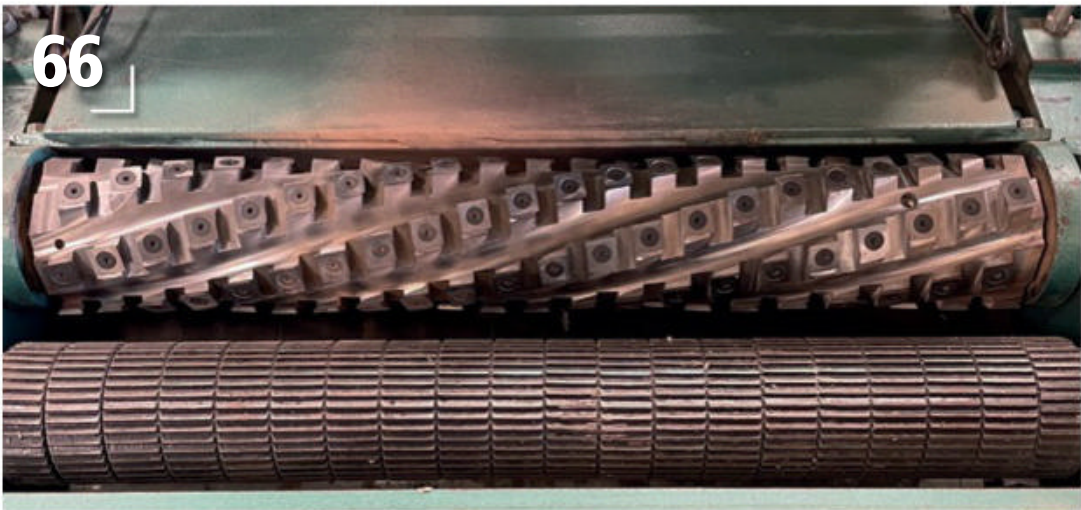
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The Art Deco lines are just stunning!



Go to www.australianwoodsmith.com.au and follow the prompts to register. Each week you'll receive a new e-tip directly to your inbox. It's free, but don't worry, we won't bombard you with advertising or pass your details on to anyone else. We just hope you'll tell your friends about *Australian Woodsmith*.



from the editor Sawdust

It was a delight to be invited to the opening of "Beyond Ordinary" at the Sturt Gallery in Mittagong and to hear the introductions delivered by the Head of Sturt, Kristie Phelan and Lucy Turnbull AO. Both spoke eloquently about elevating the profile of women makers in wood and the non-linear paths that we follow these days. Most of the makers whose work was on exhibition had morphed themselves from one profession to another. Looking back, I can count on one hand the makers I know who had direct paths to becoming professional woodworkers and toolmakers. Most of us make a living and dive into woodwork as a release for our creative drives. Evan Dunstone was a pilot before he put his flying gloves in the drawer and took up woodwork, Terry Gordon was a navigator in the RAAF and took an early retirement to follow his dream to become a toolmaker. Most of us get the woodworking bug and slowly replace the furniture in our homes with stuff we have made with our own hands. Very few end up being able to make a living building bespoke furniture.

In this issue I got to profile my friend and neighbour, Stu Dennis, spending time with him on his balcony and watching him transform a billet of high carbon steel into a knife was a delight. Making things with your own hands, transforming materials into useful and beautiful objects is a meditative experience. Just you, your tools and the project at hand. All the worries of the world melt away and you are in your own creative zone.

Happy woodworking!

Chris

Chris Clark, Editor

Australian Woodsmith acknowledges the Cammeraygal people, Traditional Custodians of the land on which this publication is produced, and pay our respects to their Elders past and present. We extend that respect to all Aboriginal and Torres Strait Islander peoples today.



This symbol lets you know there's information online at: www.australianwoodsmith.com.au. There you'll see bonus cutting diagrams, articles on techniques, jigs and a lot more. If you don't have access to the internet, contact us on (02) 9439 1955.

Tips & Techniques

Australian Woodsmith.

No. 169

May/June 2022

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EDITOR Chris Clark

TECHNICAL EDITOR Mark Jones

DESIGNER Julitta Overdijk

SUBSCRIPTION MANAGER Julie Hughes

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ABN 49 097 087 860

Suite 14, Level 2/174 Willoughby Road, Crows Nest
NSW 2065

PO Box 81, St Leonards, NSW 1590

tel. 02 9439 1955

EDITORIAL ENQUIRIES

editor@paragonmedia.com.au

ADVERTISING ENQUIRIES

sales@paragonmedia.com.au

tel. 02 9439 1955

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www.australianwoodsmith.com.au

subs@paragonmedia.com.au

tel. 02 9439 1955

INTERNATIONAL EDITOR Bryan Nelson

EDITORIAL STAFF Vincent Ancona, Robert Kemp,
Phil Huber, Wyatt Meyers,

EXECUTIVE ART DIRECTOR Todd Lambirth

ARTISTIC STAFF Harlan V. Clark, Dirk Ver Steeg,
Peter J. Larson, Bob Zimmerman, Becky Kralicek

FOUNDING PUBLISHER Donald Peschke

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SAFETY IN THE WORKSHOP

Safety devices, such as riving knives, guards on table saws and guards over router bits have been deliberately left out of the line drawings in *Australian Woodsmith* projects in order to make them easier to follow. It goes without saying that where safety devices have been supplied by the manufacturers you should use them. We encourage the use of push sticks as good work practice.

Exercise vigilance and the greatest of care when using power tools, whether stationary or portable. Keep all your tools sharp and well maintained. Wear protective eyewear, a dust mask and a hearing protector when appropriate. By limiting distractions and developing safe work practices you will go a long way to avoiding workshop accidents. So, work safe fellow woodworkers. -Editor

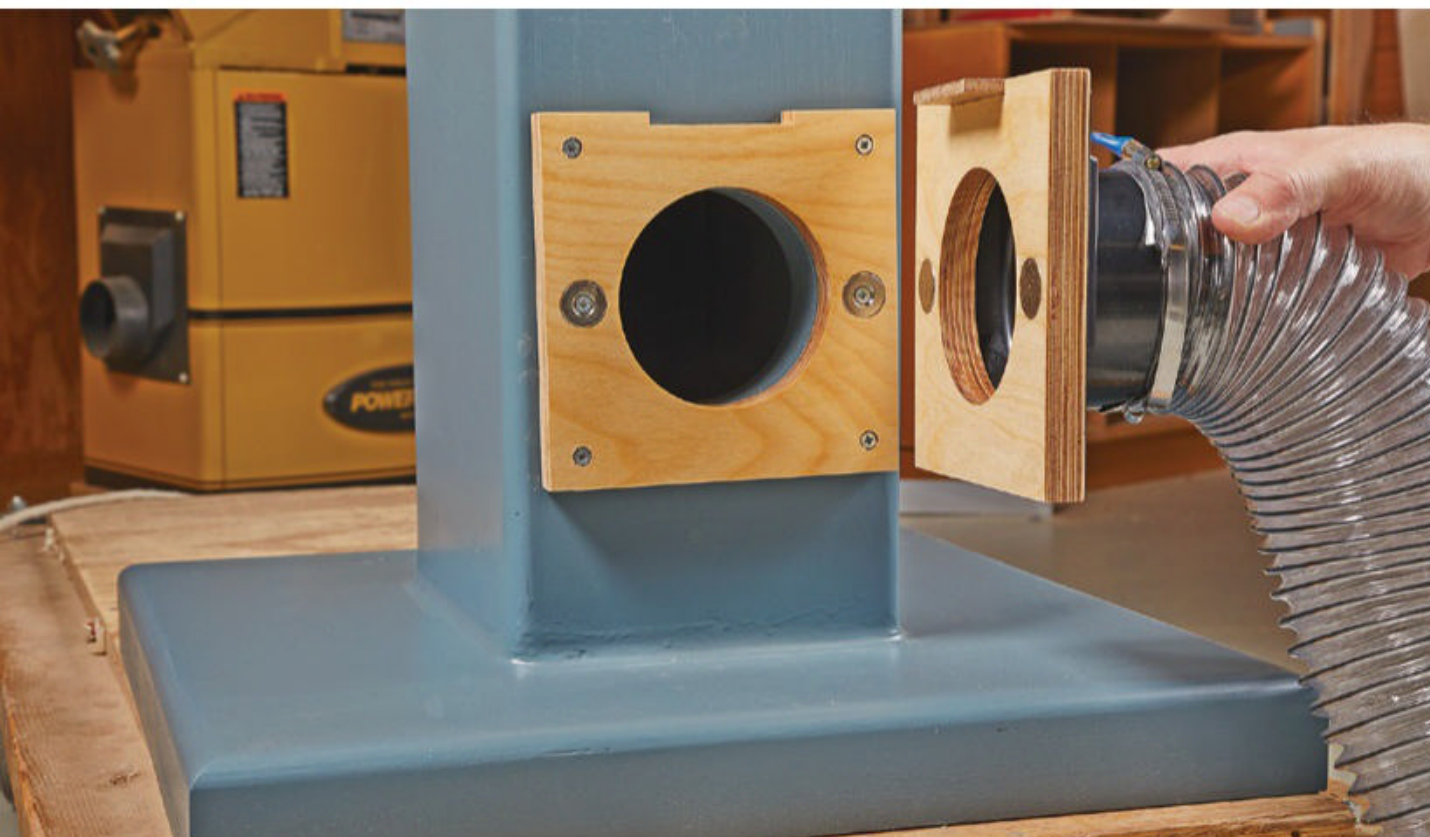
1

2

SQUEEZEOUT-FREE GLUING

I've always struggled with cleaning up the squeezeout from gluing mitre joints. When I was working on a mitred box recently though, I was struck with an idea. Once I was ready to make the mitre cuts, I took some painters tape and laid it on the edges of my workpieces, overhanging where I was going to make the cut. After making the mitres on the table saw, I had a perfect "zero-clearance" tape right up to the edge of that board. To keep the squeezeout off all of your pieces, make sure you do this for all edges that are going to be glued. I did the glue-up as normal and clamped everything in place. I came back once the glue had dried and peeled the tape off to find a flawless, glue-free surface left behind.

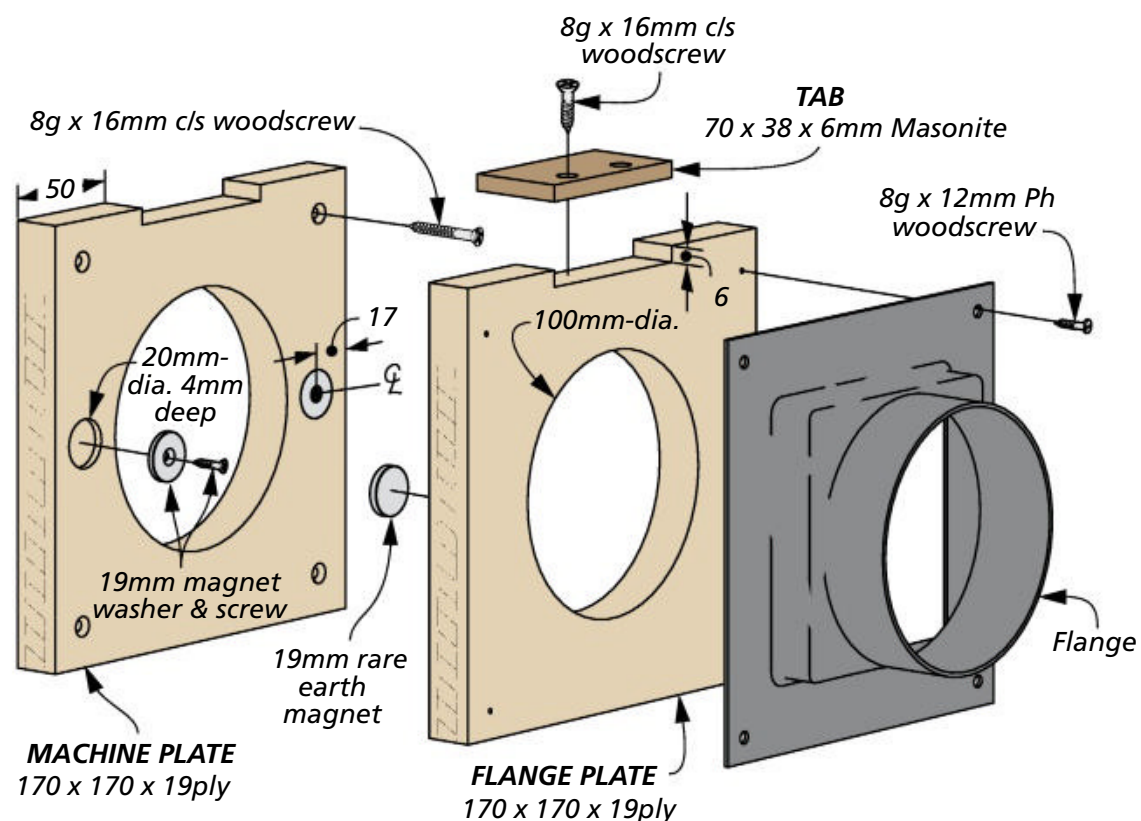
Nathan Terepocki



MAGNETIC DUST COLLECTION

In my workshop, I found swapping dust-collection hoses from machine-to-machine to be a pain — until I simplified the procedure. This is done with plywood connector plates held in place by rare-earth magnets recessed into each side. I found that if I put magnets on both of the connectors, it was a bit much. Instead, I used the magnets on the flange side and magnet washers on the machine side. The magnets held the plates together well, but they didn't have good shear strength, and I often found them sliding down. To prevent this, I cut trenches in the top of each plate and screwed a small Masonite tab to the top of the flange side to hold the plates at the same level.

Dan Mays





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IMPROVED GRIP

I have always got great use out of wood-handled F-clamps, but I found it became harder to get a good grip on them as the years went by. By adding bicycle handle bar grips to my clamps, I now have a stronger, more comfortable grip.

John Finger



EASY PATTERN REMOVAL

When I was putting patterns on workpieces, I wanted an easy way to get the leftovers off once the job was done. I masked the surface with painters tape first, then used spray adhesive to attach the pattern, making for an easy removal.

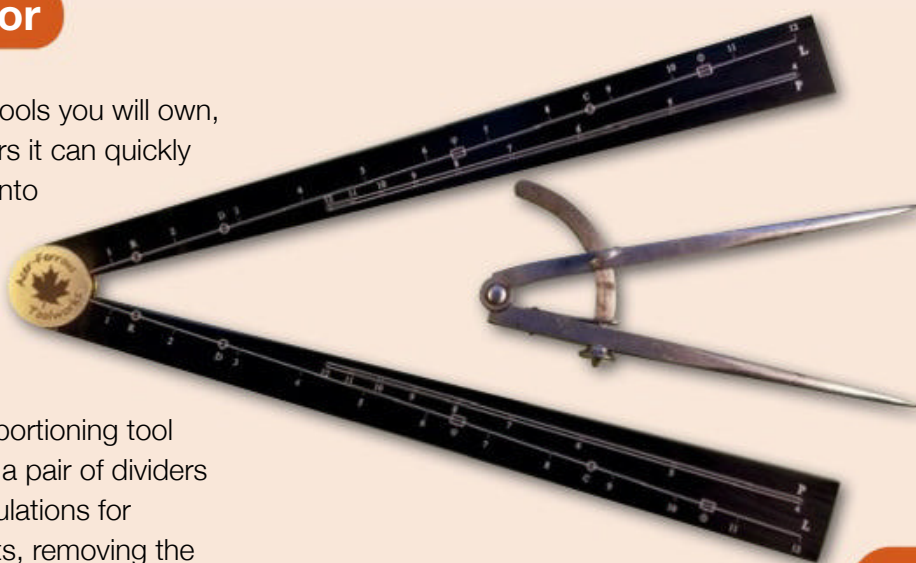
Dan Martin

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LATHE DRUM SANDER

In a workshop with limited space, having one tool perform multiple functions is invaluable. Instead of investing money and workshop space in a drum sander, I glued stud stock together and turned them down to make a 75mm-dia. dowel. I then wrapped adhesive-backed sandpaper

around the dowel (photo at right). Remember which direction your lathe will be spinning when you attach the sandpaper so it doesn't peel itself off while you're sanding. Once the lathe is turned on, you've got a drum sander.

Steven Bunker



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BANDSAW TENSIONER

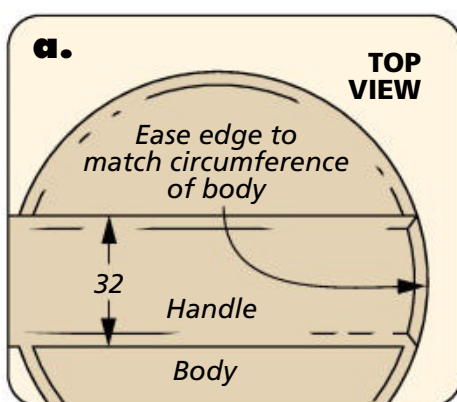
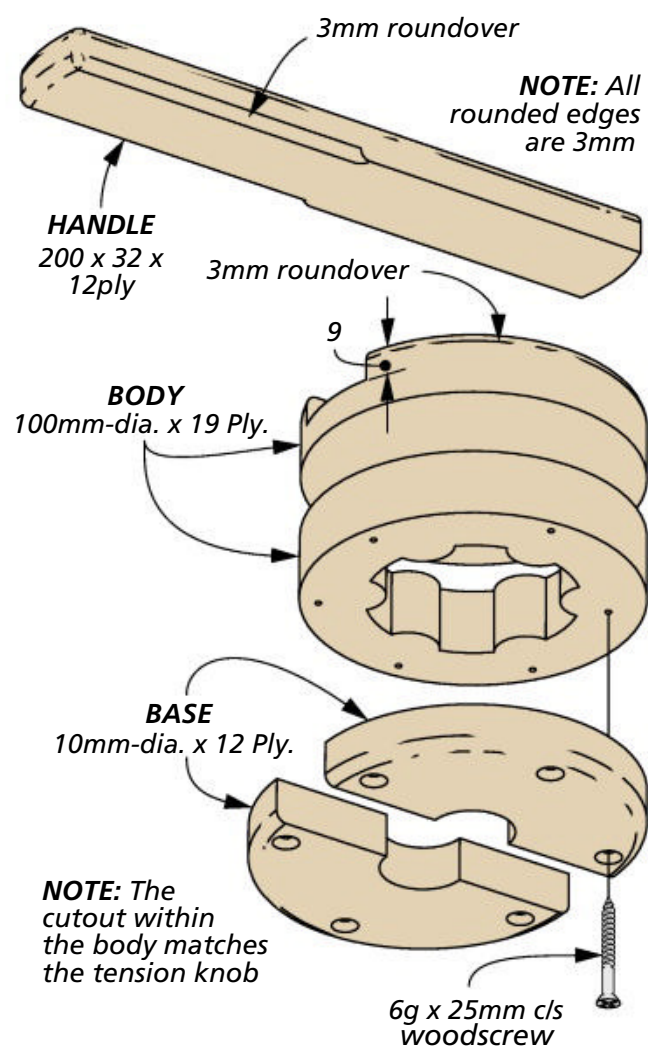
I've been using a 14" (355mm) Powermatic bandsaw for years, but the older I get the more difficult I find the small tensioning knob. After looking at the cost of aftermarket options, I decided to make my own using leftover plywood.

I started off with a few pieces of 12 and 19mm stock, then created a template of the original tensioner knob. Using the template and a pattern bit in my router, I cut out a space for the original knob in one layer of the body. On the top layer I cut a trench to fit the handle at the table saw. Over at the bandsaw I cut out the hole in the base for the tensioning shaft. Next I made the handle and rounded off the edges. The cutouts allowed me to screw together the new tensioner right over the original knob.

Jim Fox



For full-sized patterns of the tensioner parts for this saw, visit our website at australianwoodsmith.com.au



Next issue of *Australian Woodsmith* on sale 9th June 2022 - Issue 170

In our next issue we make pesto with Bunya pine nuts and find out why this ancient tree is so special for Aboriginal people. We take a look at washi and rice glue, wood insert joinery and tenoning with a router. We show you how to build a staircase so you can ponder building your own. Our designer project is a Kumiko lamp shade made from recycled hardwood and lined with washi mulberry paper. The weekend project is a utilitarian workbench built from construction grade stock, while our heirloom project is a small chest of drawers perfect for your watch collection or as an elegant jewellery case. The turning challenge is an iconic Singapore ball. As usual we feature clever tips and techniques from our generous readers.

PLUS! COMPLETE INDEX

An index of projects and general information, such as articles on timber, tools, techniques and jigs, that have appeared in Issues 1 - 170 of *Australian Woodsmith*.



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COUNTRY WOODCRAFT: THEN AND NOW

The “Then” in the title of this encyclopaedic tome on green woodworking refers to 1977 when Drew Langsner authored the original *Country Woodcraft*. Drew spent a summer in 1972 studying Swiss cooperage un-

der the masterful eye of Ruedi Kohler. When Drew returned to the US, he and his wife Louise settled into an old farmhouse in North Carolina and started sharing their insights into traditional woodworking by running classes out of their old farmhouse.

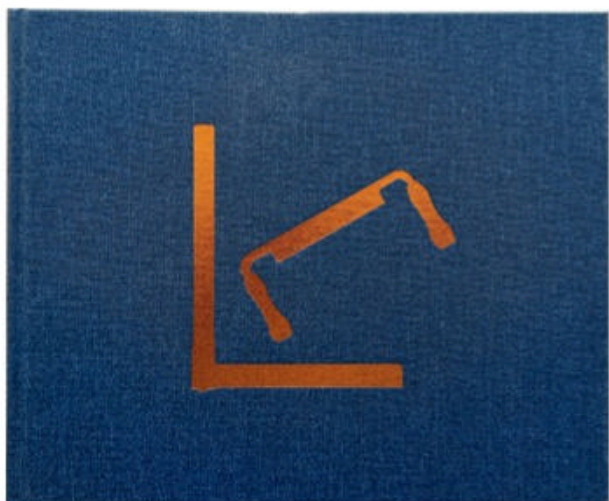
These classes introduced spoon carving and other European traditions to a whole new audience. Drew and Louise ran these “Country Workshops” for 40 years until 2017.

The “Now” in the title is the distillation of 40 years of experience and continued insights on behalf of Drew and Louise. The old black and white photos from the original take you back to the fashions and hairstyles of the 1970s, while the colour photos and

different typeface bring you up to date.

The 400-page book is divided into four parts. Part 1 is the foundations of country woodcraft and introduces basic tools, felling techniques and seasoning. Part 2 is about the workshop and introduces the shavehorse, clubs and mauls as well as workbenches and pole lathes. Part 3 is all about agricultural implements and how they were (and are) designed and made. Part 4 is focused on household crafts and furnishings. Every area of green timber woodworking is covered in depth through the lens of a lifetime of endeavour.

This really is a gem of a book from Lost Art Press. Available from Lie Nielsen Toolworks Australia (lie-nielsen.com.au).



Boys' Toys, Books & Gear

BOSCH PLL 1P LASER LEVEL

This clever little pocket-sized level does all you would expect a level to do. However it also has a laser function that can produce a line on one end or a point on the other.

The laser line projects up to 5m and is perfect for setting a datum for hanging pictures, installing shelves or marking out centres for stair spindles. The level has a simple slide switch in the centre

that turns the laser from a line to a point (and also off). The pointer function projects up to 20m and is perfect for transferring heights from one wall to another.

As you can see the laser level also comes with a cradle that can be mounted on a tripod or pinned to a wall. The cradle can be tilted in line with a staircase so that pictures can be hung in perfect harmony or the hedge trimmed accurately. This is a perfect companion to the Bosch PLR laser distance measuring tool. Lasers used to be only found in comic books: they have become an indispensable tool for lots of trades. Available at Bunnings.



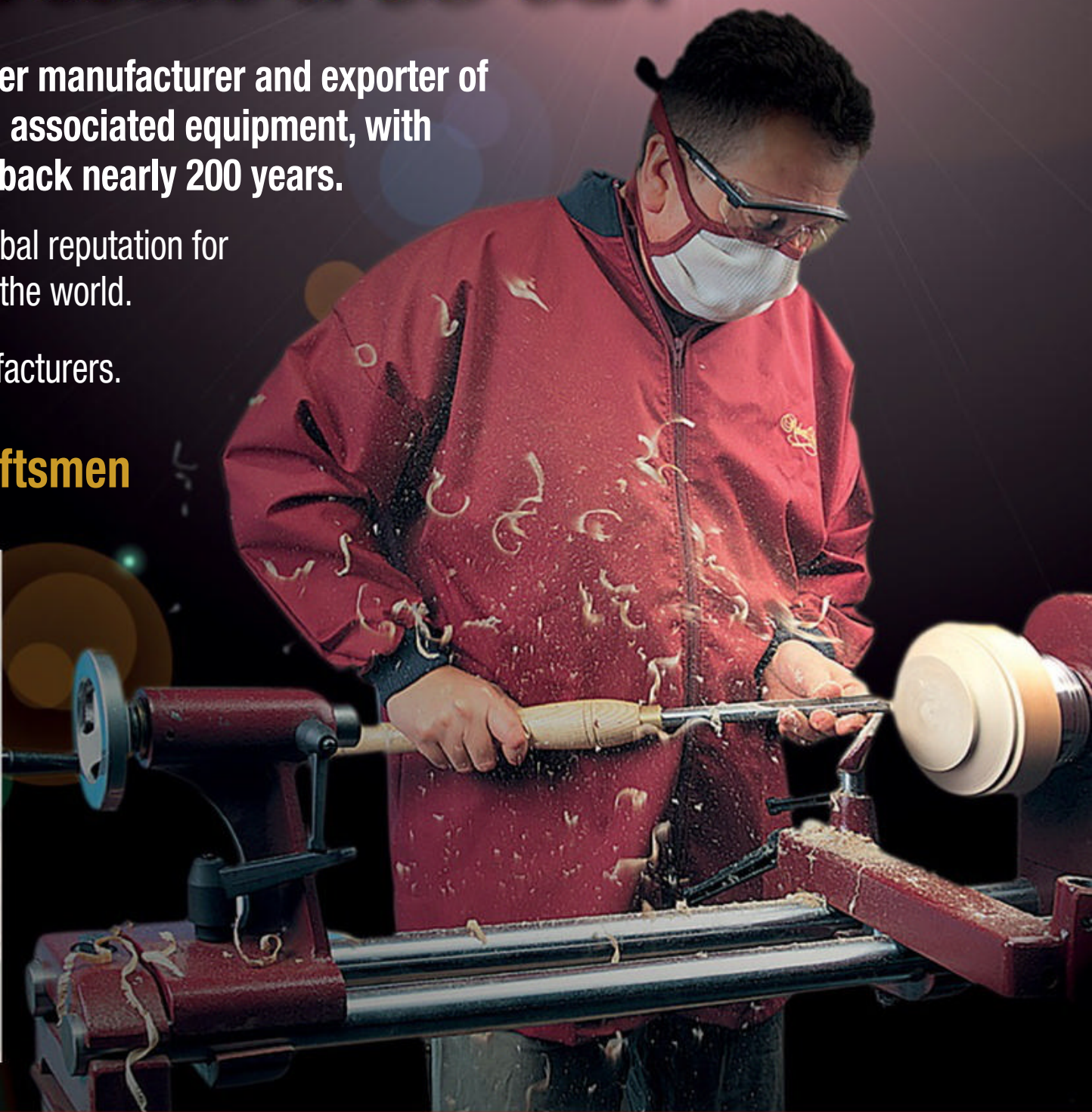
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you are perched on a ladder and measuring frames. The lanyard is designed to slip into a housing that clips onto your belt. Its purpose is to give you peace of mind when measuring from a height.

One thing that puzzled me for a moment was the discrete red triangles that you see 455mm apart on the blade. Mitch explained that it is the traditional distance from centre to centre between posts in typical Japanese house construction.

SHINWA TAPE MEASURES

Japanese Tools Australia stocks a wide range of Japanese-made Shinwa rules and measuring tools. On my last visit to the recently renovated workshop and showroom I was pleased to see that JTA now stocks Shinwa tape measures.

As you can see the bold black and red

markings are easy to read. What you can't see is that the same markings are repeated on the reverse side of the tape. This makes them even more versatile.

The larger of the two tape measures has a blade width of 25mm that can "reach" 2.2m before the blade extension is defeated by gravity. This makes the tape perfect for carpentry, especially if

The manufacturing standard of these tapes is exceptional. The nylon-coated blades conform JIS Accuracy Class 1. Shinwa can be translated as "trust and harmony". Not a bad name for a company that makes some of the world's best measuring tools.

Available from Japanese Tools Australia (japanesetools.com.au).

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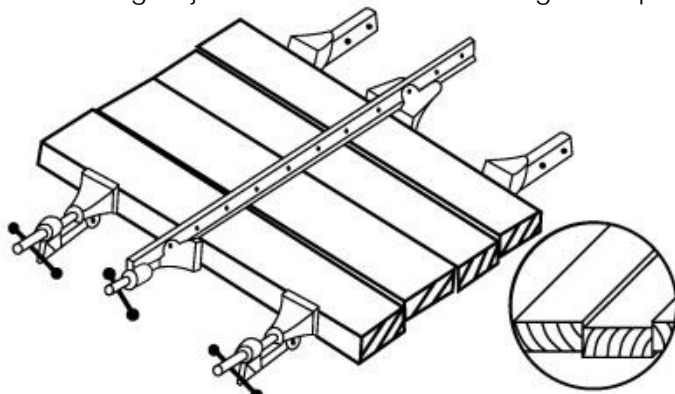
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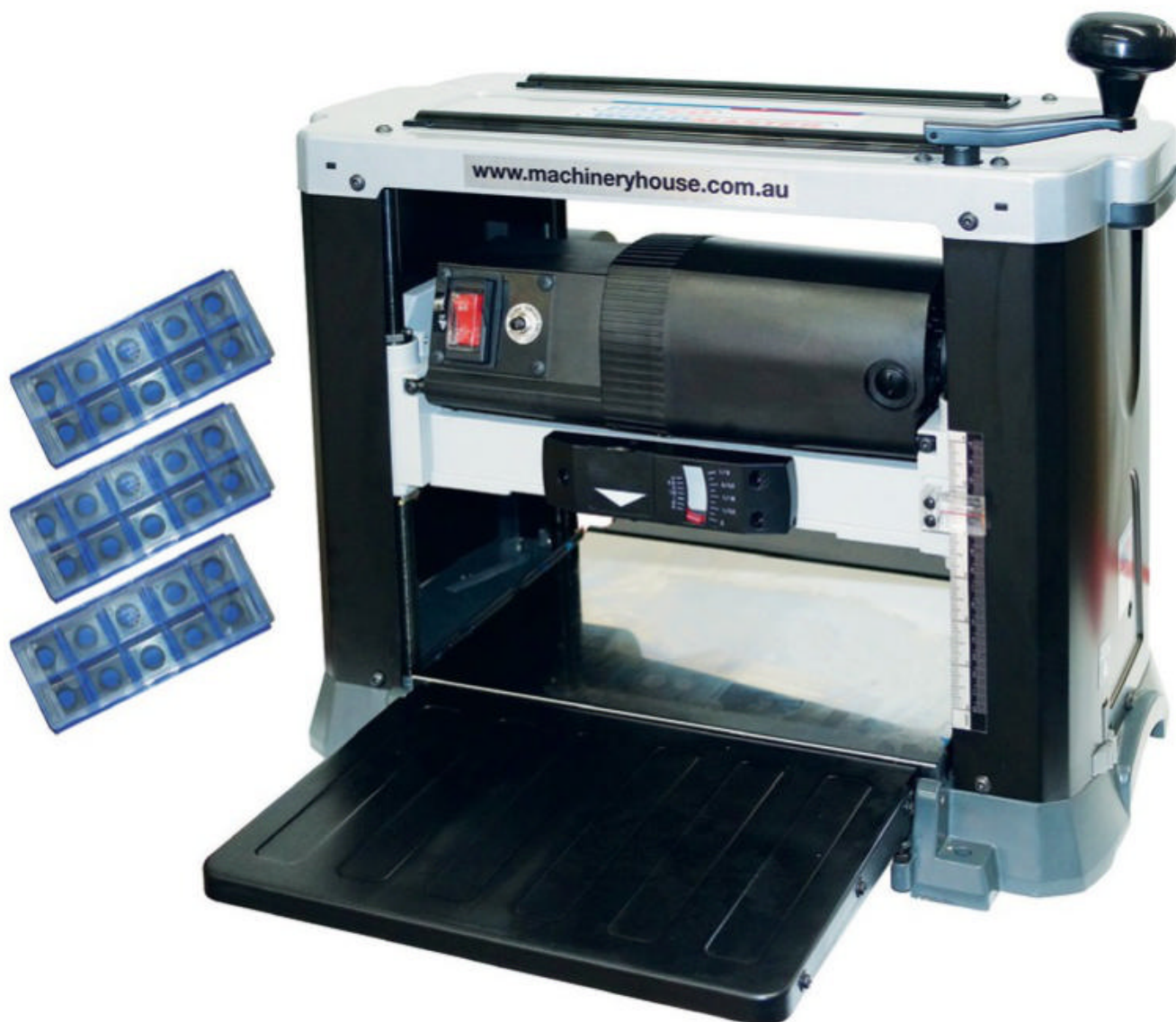
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HAFCO T-13S HELICAL HEAD BENCH MOUNT THICKNESSER

The Hafco helical head bench mount thicknesser is an affordable machine for the small workshop. The machine features six rows of staggered cutters positioned so that they overlap as they slice through the stock. This staggered arrangement means that each cutter scallops out a 15mm-wide shaving that is then whisked away by the workshop vacuum.

Traditional machines with long blades that create long shavings that clog dust extraction ports are famously noisy as they hammer away at the stock. The T-13S comes standard with 26 High Speed Steel (HSS) inserts that will eat pine and similar softwoods for breakfast. Each of these HSS cutters has two cutting edges and can be rotated when an edge becomes dull or is chipped.

Australia is home to some of the hardest timbers on the planet; that is why Hare & Forbes Machinery House is offering the machine with three packs of 10 tungsten carbide cutters. These cutters have cutting edges on all four sides and really do make a difference when it comes to planing recycled hardwoods. This excellent value for money machine is designed to sit on a bench and can be easily stored away when not in use.



The helical configuration of the cutters puts less load on the motor (compared to traditional straight blade cutters) and creates a smoother surface on the planed timber. A simple gauge on the front of the machine indicates how much material you are removing.

Small machines like this one should only ever remove 1mm of stock at a time.

If you are machining 300mm-wide hardwood boards then I would knock this down to 0.5mm per cut (the machine will cut up to 3mm per pass). The problem with planing a lot of stock away in one pass is that you will overload the drive train and risk stripping a gear.

Available from Hare & Forbes Machinery House.

CWS

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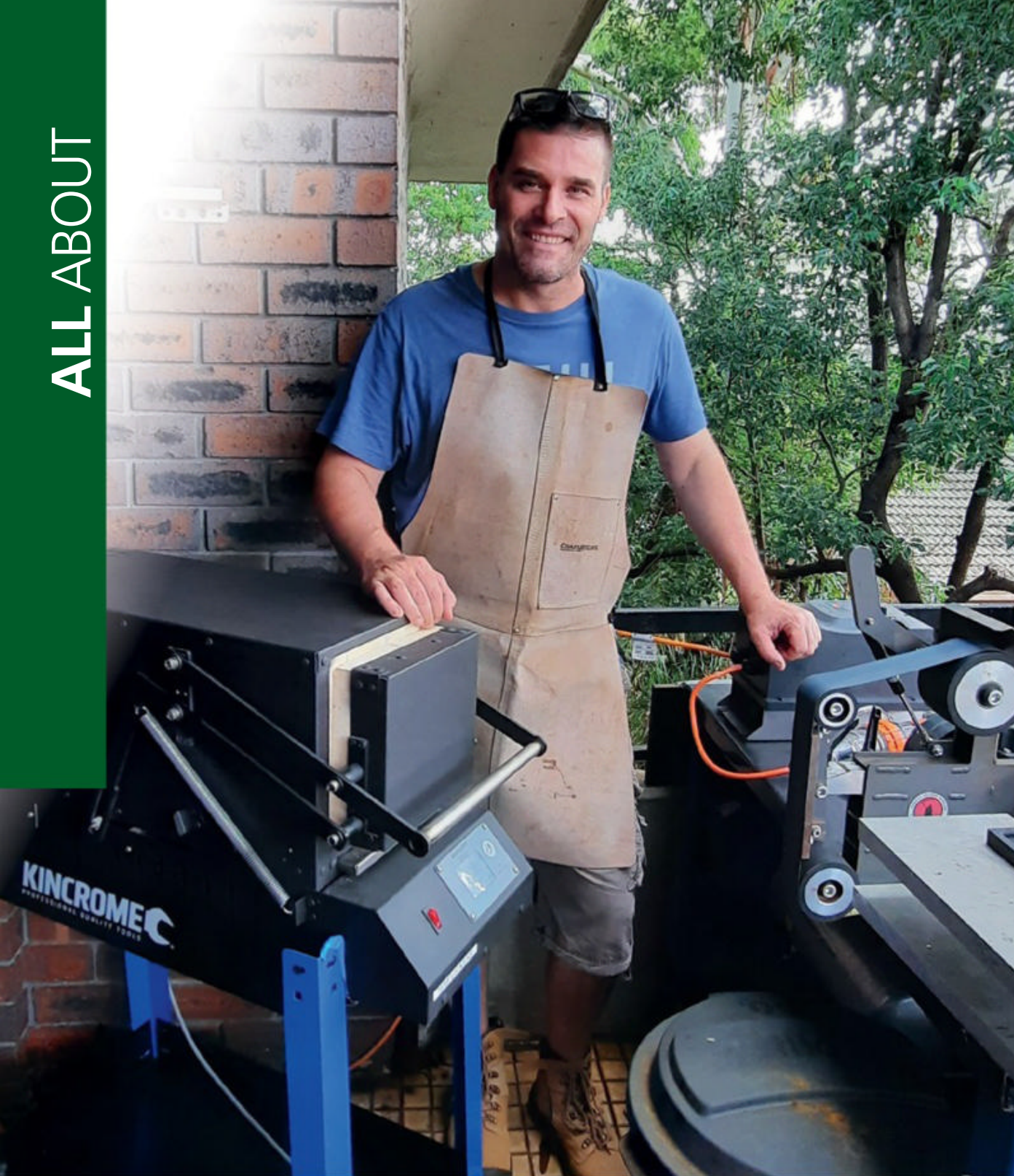
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Stu Dennis: Knifemaker

Stu has turned his inner city balcony into a workshop. Creative souls will always find a way.

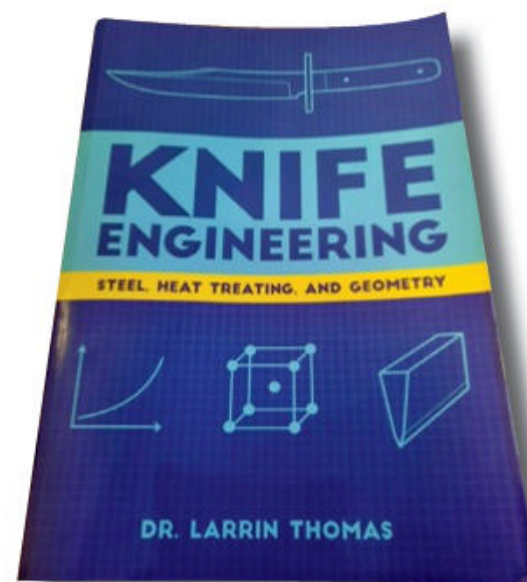
You don't need an anvil and forge to make bespoke knives. Stu Dennis is a self-taught knifemaker (lots of YouTube watching) who has been building knives on his balcony for years. As you can see, instead of a BBQ and a couple of chairs, Stu has a bench equipped with a couple of vices, an 84 Engineering belt sander and an extensive tool trolley (hidden

from view). The Australian-made Tempus oven is stored in the laundry most of the time and gets rolled out when it is needed to heat treat blade stock.

When it comes to the materials needed to make knives, companies like Nordic Edge and Gameco supply knife steel in billets cut to convenient length, that can be ground to shape with simple tools.



▲ 84 Engineering is an Australian company that specialises in the design and manufacture of knife grinding machines.



▲ *Knife Engineering* has become the bible for knifemakers. Dr Thomas even has a YouTube channel called "Knife Steel Nerds".

The most important machine on the balcony is the small 84 Engineering Shop Mate 48 that runs 48" x 2" abrasive belts. The second most important item on the balcony is the bin half full of water that sits under the working area of the sander. This is the "mank tank" that both captures the sparks and grounds produced when grinding and is also used to cool the blade and keep it tempered.

There is also a DeWalt portable band-saw fixed to a bench and a clever aluminium-faced horizontal vice that is used to quench stainless steel. The most important part of the process is a very patient Stu Dennis just chilling out!

Stu is an affable fellow keen to share his knowledge with fellow knifemakers. You can follow him on Instagram by searching "balconyblades".

1 Stu hunts down knife designs on Pinterest and other online sites and then tweaks them to suit. Once a profile has been sketched it is traced onto (in this case) a 63 x 2.6mm billet of 52100 high carbon steel with an indelible felt pen. An 18tpi blade is then popped into the DeWalt portable bandsaw and the 15-minute or so process of cutting out the profile begins.

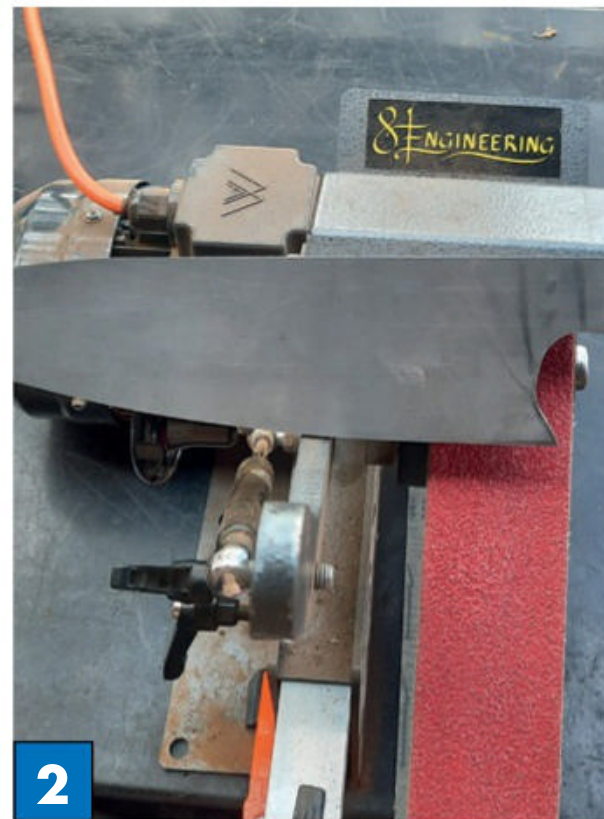
2 The indelible pen creates a 2mm-wide mark on the billet. The bandsaw is used to cut to the outside of the mark and then the Shop Mate 48 is used to sand down to the inner edge of the line. Half round files and elbow grease finesse the curves.

3 The $\frac{3}{16}$ " rivet holes for the bolster and 8mm pin holes for the handle are then centre punched before being drilled out. WD40, machine oil or Treflex can be used as a cutting compound to lubricate the drill.

4 Now is the time to drill and file a decorative pattern into the back of the handle. After it is heat treated the stock will be too hard to drill.

5 Hardening the blade is a delicate process. The rolled and annealed steel has a variety of elongated grain structures that need to be aligned. This is done by setting the Tempus oven to 920°C, soaking the blade for 20 minutes, removing it and letting it cool for an hour. To make sure all the grains in the billet are normalised this process is repeated three times. The oven is then heated to 830°C and the billet soaked at this temperature for another 20 minutes. The quenching oil is then heated to 60°C and the knife plunged in to lock in the austenitic structure of the steel. The hardened steel then needs to be tempered at 200°C for an hour (two cycles).

6 The centre of the blade is marked with a caliper (blue indelible pen makes this mark more obvious) before the carbide file guides are locked in place. The blade is then handheld and introduced to the 2"-wide belt on the Shop Mate 48. The 36 grit abrasive belt forms the basic profile that is then finessed with 120 and then 240 grade belts. The "mank tank" collects the sparks and is used to cool the blade every second cut.





7 Knifemaking is a form of Zen meditation. Sanding out the grind marks takes hours. The blade is locked down on a rigid block before being sanded down with 400, 600 and then 800 grit wet and dry papers. If a mirror finish is required the blade needs to be sanded through grit sizes all the way to a minimum 1600 grit.

8 With the faces sanded it is time to protect the surface from scratching and focus on the bolster. The brass for the bolster and the rivets is heated until it is red hot and then quenched in water. This softens the brass and makes it easier to work with. The bolster stock is then cut to size and the faces sanded and polished. One bolster is popped into position so the holes can be centre punched. A $\frac{3}{16}$ " drill is then used to drill one hole. The rivet stock is inserted and then the second hole is drilled. The process is reversed to align the holes and then the rivets are inserted (with aid of Locktite) and peened.

9 West System epoxy resin is a boat-grade adhesive that is both flexible and waterproof. Adding candle black to the resin allows the overflow to penetrate the decorative filemarks on the back of the handle. One scale is glued in place and clamped for 24 hours. An 8mm drill is then used to drill the pin holes before the matching scale is glued to the reverse side.

10 With the handles glued in place it is time to drill the remaining 8mm-dia holes and insert the pins. Decorative pins can be bought from Nordic Edge or made using 8mm-dia brass tube. (Stu makes his own.) These pins are then glued in place and left for 12 hours. The excess handle stock is then cut away.

11 A new 120 grit belt is popped onto the Work Mate 48 and used to sand the pins flush and to blend the bolster with the handle (the problem you have with a belt that has been used on steel is that it will burn the wood on the handle). The profile is further refined with a 240-grit belt before the hand sanding process starts at 400 grit and finished at 1500.

12 Gidgee is one of the hardest woods on the planet. As part of its growing cycle it absorbs silica from the soil and deposits it in its cells. (In many ways it is a living petrified wood!) The hardness of the wood allows it to take a deep shine. Gun Stock Tru-Oil is a wipe-on-wipe-off finish that is best left for an hour between coats (eight coats for this handle). As you can see the filed pattern on the back of the blade handle has been filled with overflowing West System black epoxy. The black resin adds a detail to the knife that lifts it to another level.



12

13 Sharpening and honing is done with a Ruixin Pro sharpening system. For a chef's knife the jig is set at 17°, while for a hunting knife the set would be 20°. A 120-grit stone is used to create the secondary bevel on the blade. The blade is flipped and the opposing edge is also ground to 17°. This process is repeated through grit sizes 320, 600, 800, 1200 and 1500 before the edge is stropped on leather that has been dosed with fine rouge.



13

14 The micropores in high carbon steel need to be filled with a food-grade wax to protect it from rusting. High carbon steel can be fashioned into amazingly sharp knives, however in this modern world of stainless steel we have lost the habit of oiling steel blades. A professional chef will oil each blade at the end of the day to keep rust at bay.

15 With the knife complete the story could end here, however a sheath will protect the edge and make the knife safer to handle. As you can see the sheath is made from Kydex thermoplastic that is softened in an oven, folded like a taco and pressed between two foam pads with the knife sandwiched between. To add a bit of tolerance to the sheath, painter's tape is carefully applied to the blade so that the sheath is just a fraction larger than the blade itself. The sheath is then riveted together, trimmed and polished. For more information turn to Sources on page 73. [W](#)



14

15

TTTG Annual Tool Sale

The Traditional Tools Group annual tool sale is the largest in Australia.

After two years of lockdowns and cancellations TTTG managed to run a very successful tool sale at the Brickpit Stadium in Thornleigh during February.

I arrived half an hour before the doors opened so I could take photos of the tools on offer. It was a delight to see familiar faces for the first time in years and to hear about family and friends.



▲ The evolution of the modern plane was on view. Some woodworkers prefer the geometry of older planes to their modern cousins.

Four rectangular islands of tables were set up on the basketball court in such a way that the vendors were inside each island, making space for buyers to wander around without crowding.

IVORY SECTOR RULE

I noticed that Fred Murrel was not at his table and suspected he was making the most of the moments before opening time to look for treasures himself. After the doors opened and the first wave of collectors passed through I caught up with Fred and asked him what he had bought himself.

He reached under the table and pulled out an ivory sector rule. On close inspection the etched numbers, lines and fine brass pins revealed themselves to be the work of a very fine toolmaker. Fred paid \$30 for the rule. He will clean it with just a cloth and water and then probably keep it himself (they can occasionally be purchased online for \$400!).

MADE IN AUSTRALIA

Fred is a retired accountant who has developed a passion for tool collecting and has an encyclopaedic knowledge of tool-makers' marks, dates of manufacture and current value. In pre-pandemic times he would spend his weekends visiting garage sales and markets on the hunt for tools and treasures.

One interesting item he had on his table was a Bakelite shell with a cord running through it. Fred handed it to me to puzzle over. The name "CAPSTAN QUIKSTROP" on the shell gave the game away. It was a razor blade strop used to hone the edge of old-fashioned steel blades. When I opened the box the mechanism became obvious. A used blade would be popped onto the two lugs, the case closed and the cord pulled. The blade would move across four sets of abrasive teeth and be honed ready for use again. The most interesting mark on the case was "Made in Aust".



▲ Fred's ivory sector rule was a bargain that will yield a premium on the online market.



▲ It is not only woodworking tools that are on offer, rabbit traps remind us of our past.



▲ The original multi-tool. This modern sculptural object is a 1940s International Harvester "solve all" wrench.

PAD SAWS & TURNPINS

Another tool collector (Keith, a retired CSIRO scientist) had emailed before the event to say that, after two years of being a bubble hermit, he was excited to be able to get out and sell some of his pad saws. I ended up purchasing two pad saws, one with an ebony handle and the other in beech. Both made around 1870 in England.

From another table I was pleased to find two lignum vitae turnpins to add to my collection.



▲ This Bakelite case was designed and built in Australia to perform a daily function.

A SUCCESSFUL DAY OUT

The Traditional Tools Group needs to be congratulated for putting together a great tool sale. If you have tools you want to move on, all you need to do is contact TTTG online, join the club and hire a table. Each year is different due to the fact that collectors of all types turn up with goods to sell. This year one of the most interesting tables was peppered with wrenches designed to tweak and maintain International Tractors and similar farm equipment.

For more information go to tttg.org.au. See you next year. 



▲ A razor blade was positioned on the lugs, case closed, strings pulled, edges honed.



▲ When a plumber worked with lead pipes (plumbum) they used turnpins to create flange joints. Turnpins are fortuitously beautiful objects that have become collectable items in their own right.



▲ Premium chisels at bargain prices are a reason why so many collectors and makers attend the TTTG tool sale.

BEYOND ORDINARY

CONTEMPORARY WOMEN MAKERS

Sturt Gallery Beyond Ordinary



▲ **Onslow Drinks Cabinet.** Silver beech, rock maple, walnut, white ash, brass. Sensuous curves that are breathtaking from all angles. As a maker, Cat's advice is "Pursue what gives your heart joy".
Cat Cook.

An Exhibition of Contemporary Women Makers.

Dale Dryden and Ruth Thompson deserve high praise for the fabulous exhibition they curated at Sturt Gallery in Mittagong this year. Dale and Ruth are aware that female makers are underrepresented in gallery exhibitions, hence an all-female tour de force of creativity and cooperation, inspiring younger women to break free of gender stereotypes and follow their own creative star.

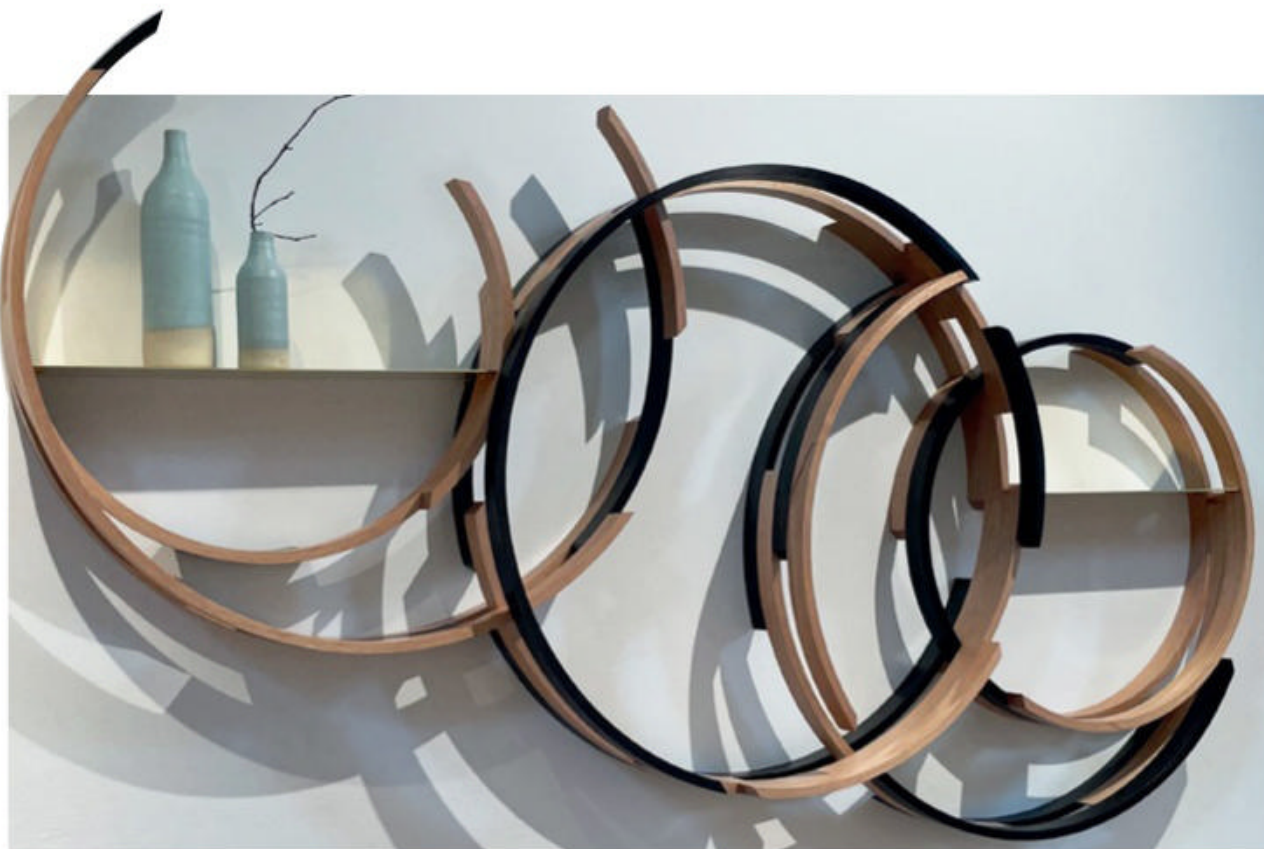
It is appropriate that Sturt Gallery hosted the exhibition. In the opening address Head of Sturt Kristie Phelan praised the vision of the founder of Sturt in 1941, Winifred West, and went on to detail how the school has evolved over time to become a place of excellence in design and the art of making.

Lucy Turnbull AO was then introduced and spoke about how we live in non-linear times and how we need

to be open to learning new ways of thinking and being. Lucy went on to acknowledge several of the makers on show and detailed their various backgrounds (from ballet to engineering) and the circuitous paths that have led them to crafting in wood and mosaics. Two memorable quotes from Lucy were "Women hold up half the sky" and "Love what you do and do what you love".

After the official opening in the courtyard outside the gallery the makers present were congratulated and praised by family and friends.

As you can see on these pages the exhibition spanned pieces that could fit in the palm of your hand all the way to Ruth Thompson's awesome chair. The light in the gallery always casts fabulous shadows, adding depth and movement to the works on exhibition.



- ▲ **Sculptural Wall Shelf No 2.** Southern mountain ash, brass. The joinery is practically perfect in this eye-catching and playful piece. The shadows cast on the wall add movement and dynamism to the shelf. *Eliza Maunsell.*



- ▶ **Objects Of Comfort.** Huon pine, blackwood, silky oak, tiger myrtle, King Billy pine, White beech. Netsuke-inspired pieces that demand to be fondled and admired. Yakisugi (charring) exposes the grain and adds texture. *Carol Russell.*

- ▶ **Casting Off Mosaic.** Hand-cut marble, smalti, knitting needles, cord. No wonder Marian has gained international renown for her creative interpretation of mosaic craft. *Marian Shapiro.*



- ▲ **Kurver 1 & 2.** Laminated myrtle and eucalypt veneer. A modern play on campaign furniture and our need to store stuff. *Linda Fredheim.*



- ▲ **I Know What We Did Last Summer.** Salvaged hardwood, stainless steel rod, bailing wire. *Kim Johnston.*
Cupric Room Divider. Painted European beech, torched copper mesh. *Lana Kagan.*



▲ **Kaleidoscopes.** Salvaged piano components upcycled into a traditional toy. *Birgit Jordon.*

Twenty-eight makers had their works on display at the exhibition. Some makers were well known while others are at the cusp of what promises to be a stellar career.

Cat Cook's Onslow Drinks Cabinet is an exceptional piece of furniture. The curves and contrasting timbers make it a delight to the eye. Cat very cleverly hung the doors in what looked like an impossible problem.

The Water Stories table above right was a collaboration piece choreographed by Vivienne Wong. Both Ella Havelka and Lorraine Tye are Wiradjuri women who wove the lomandra grass that lifts this seat to a higher plain. The detail under the seat and in the joinery is second to none.

Phoebe Everill's The Reindeer was appropriately centre stage. The rare raindrop birdseye blackwood could be ap-



▲ **Galing Gilang/ /Water Stories.** Blackwood, woven lomandra grass. Exquisite basketry, refined joinery and a practically perfect finish showcase the skills of a team. *Vivienne Wong, Ella Havelka, Lorraine Tye & Linda Elliot.*

preciated from all angles. Phoebe even incorporated a secret compartment in the desk to acknowledge the source of the amazing timber.

Upcycling salvaged timber allows the maker to breathe new life into a discarded object. The playful kaleidoscopes above left are made from a salvaged piano named "Berlin".



Sara Smith captured the essence of Art Deco with her ray patterned tambour doors. The brass handles continue the theme, making this piece a delight to the eye.

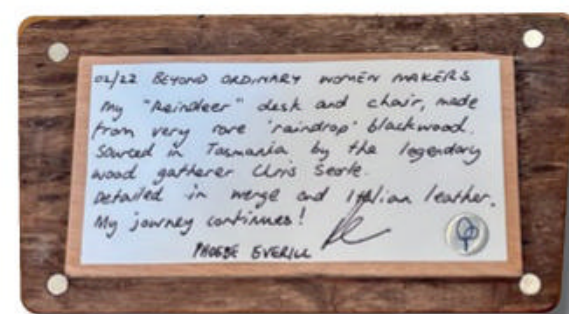
Dale Dryden's shelf in macrocarpa is so striking I think the lines would be spoilt if you put anything on them! It is a truly magnificent pared down piece, very powerful and commanding.

The antithesis to the sharp lines of the shelf is Ruth Thompson's amazing upholstered chair. From all angles this chair is a gem. On close inspection I could not work out how Ruth was able to flex the panelling that locked into the arm frame.

After returning to the exhibition two weeks after the official opening I was drawn to my favourite piece, Bec Evans' Wall Cabinet. Krenov is an inspiration to lots of woodworkers. The hand-cut dovetails and acute angles make this piece very special. **W**



▲ **The Reindeer.** A woman's writing desk and chair. Tasmanian raindrop birdseye blackwood, coachwood, Italian leather. A sensuous celebration of grain. *Phoebe Everill.*





▲ **Way Off Broadway.** Macrocarpa, MDF, Brass, Mirror. Clean lines, primary colours and an inspired design combine to create a bold and impressive shelf. *Dale Dryden.*



▲ **Wall Cabinet.** White cedar, Californian walnut, shellac and oil finish. An awe inspiring nod to James Krenov and thinking outside the box. *Bec Evans.*

▶ **Rea's Cabinet.** Walnut & Brass. Art Deco influences shine through this finely crafted clever cabinet. *Sara Smith.*



▲ **Out of the Blue.** Silky oak, Huon pine, Venetian glass, gold. A striking blend of mosaics and premium timbers. *Catherine Capan.*



▲ **Leaf Platter 1 & 2.** Maple silkwood, Wau beech, shellac, wax. Organic forms highlighting the grain of the timber. *Linda Nathan.*



▲ **Chair for Quiet Contemplation.** Tasmanian myrtle, hand-embroidered Suzani upholstery. *Ruth Thompson.*
Barcode Screen. Tasmanian Oak, stainless steel and rubber. *Laura McCusker.*

Flattening Large Surfaces



While I always look forward to the completion of a project, there are certain milestones along the way that can bring almost as much satisfaction. One of those is creating a smooth, flat solid-wood panel. Whether it's a tabletop or case piece, the top often becomes a focal point. So you want it to look its best.

From a woodworking point of view, the attention often seems to centre around sanding and finishing. The reality is that to end up with a flat, smooth panel, the process begins way before that step.

I've found it helpful to divide the process into three stages: preparing, flattening and smoothing. For each stage, there are a range of tools to consider that will help achieve the goals you're after. So on the next few pages, I'll take a tour through the workshop to help you select the best tool for each step of the journey.

PREPARING THE PANEL

The starting point of a flat panel is at the timber yard and requires few tools beyond your eyes. Of course, the boards should look good to you, but you need to look at their condition.

Sight down the face and edge of each board looking for cupping, bowing or twist. These can play havoc with your ability to create a flat panel. Being a natural product, finding perfectly flat and straight material isn't always possible. So try to find the boards with the fewest defects but still suit your needs.

STRAIGHT, FLAT & SQUARE. Back in your workshop, it's time to talk tools. For the individual boards to become a single panel, the faces need to be flattened and the edges need to be square.

How you go about this depends on the tools you have and the amount of physical effort you want to devote. The standard approach in the era of power tools is to use a jointer to flatten one face and straighten one edge. A thickness planer brings boards to a consistent thickness with parallel faces. Finally, the table saw



▲ Good stock preparation allows you to get tight and level joints once you start applying glue and clamps.

steps in to rip the board to width and parallel to the jointed edge.

FACES. The lower left photo shows flattening the face of a board with a jointer. The key is having a jointer that's wide enough to match the boards you get. However, wide jointers are pricey and take up more space than smaller models.

Another route to take is to use a thickness planer for flattening. You can see this in the lower right photo. The workpiece rides on a sled. Shims provide support for gaps caused by twist.

This is the approach I take in my home workshop. I don't have room for a jointer. So, I try to get as much as I can from other tools.

EDGES. When it comes to edges, the

jointer is (once again) the place to start. And for sheer efficiency, it's tough to beat. Running a workpiece with the flat face against the fence while moving it across the cutterhead, you can quickly create a straight, square edge. Before power jointers, woodworkers used hand planes to do the same task.

THICKNESS. While hand planes can be used to bring boards to final thickness, it's physically demanding work. That's just one reason I consider a thickness planer an essential tool for furniture making.

GLUE-UP. No matter which tools you use, straight edges and flat consistent boards simplify the gluing process. As we'll see, this investment saves a lot of time and effort down the road.



▲ A jointer can flatten the face of a board that's as wide as the cutterhead or narrower. Use even pressure with push pads to remove cupping and twist.



▲ You can flatten one face of a board using a thickness planer by supporting it on a sled. Thin wedges or shims keep the workpiece from rocking during the process.



- ▲ A hand plane working straight across or at an angle to the grain quickly levels the high spots in a panel while minimising the risk of tearout.



- ▲ Looking across the tops of a pair of winding sticks helps you see any twist in the panel. To make any discrepancies more apparent, the upper edge of one of the winding sticks is often lighter in colour than the other.

FLATTENING

Once the glue is dry and the clamps come off, the goal line seems much closer. But rushing here can ironically lead to slower progress and frustration.



It's at this point you need to clearly differentiate the flattening stage from the smoothing stage. Then choose the correct tools to meet the need.

The first thing to do is evaluate the panel from a big picture perspective. This will check for overall flatness. Before going any further though, grab a scraper and remove any excess glue, which can interfere with your observations.

VISUAL AIDS. I like to use a straightedge to determine if a panel is flat across its width and length. Gaps between the straightedge and panel reveal cup (width) and bow (length). You can see this in the lower

right photo. Mark low spots with pencil scribbles.

There's one other test to perform — check for twist. For this, you use a pair of straightedges called winding sticks. One stick goes on each end of the panel, as shown in the upper right photo. Sight across the tops of the sticks. Ideally, they will be parallel. Any tapering shows that the panel is twisted. This combined diagnosis helps determine the next course of action.

COARSE CORRECTION. Your task is to bring the high spots of the panel down to the level of the lower spots. This can involve removing a surprising amount of wood. So the tools you select should be capable of making quick, coarse cuts.

The three tools on this page are all good options for this work. I have an affinity for



- ▲ A power planer (top photo) or a belt sander (lower photo) can make quick work of flattening a panel, but go lightly and check your progress often.



- ▲ A straightedge comes in handy for quickly revealing high and low spots. A meter aluminium rule is a good choice. Make scribbles with a pencil wherever you see light from under the straightedge.

hand tools, so I often use a hand plane. If you work across the grain or at an angle, you can take relatively heavy cuts.

In the power tool category, a belt sander or power planer are solid options. The key with these two tools is to keep them moving. Lingering in one area can create dips (and more work). I find it easiest to work with the cupped face up. Shim the edges, if necessary, to prevent rocking.

The pencil lines you made earlier serve as a gauge to guide your work. Once the lines are gone, grab the straightedge and winding sticks to see if any further flattening is necessary. When you're satisfied, flip the panel over and repeat the steps on the opposite face.

SMOOTHING

Tools that remove wood quickly often leave rough surfaces. So once a panel is flat, you can concentrate your efforts on one last remaining stage — smoothing.

Here your gaze zooms in to the smaller imperfections of the surface. Your eyes and your fingers are the best tools for evaluation.

HAND PLANE. The classic picture of wood-working usually conjures the image of a sharp plane creating gossamer shavings and a glass-like surface, as shown in the upper right photo. However, as you move from board to board in a wide panel, the



▲ A sharp, finely set hand plane works remarkably fast and produces an unbeatable surface. Just watch out for grain changes along the boards and as you move from one board to the next in the panel.

grain direction can change dramatically. The ugly tearout that results brings your enjoyment to a screeching halt.

CABINET SCRAPER. If you want to stick with hand tools, a cabinet scraper also produces shavings. It works with a high cutting angle that prevents tearout. Although the surface is rougher than what you get with a plane.

SANDING. A third option to consider is a 125mm random-orbit sander. What's important here is choosing the right grit of disc. Starting with 80- or 100-grit quickly removes the marks left by the flattening

step. From there, you can quickly work through the grits. I usually stop at 180- or 220-grit.

Finally, no matter what tool I've used to this point, I hand sand with a sanding block wrapped with 220-grit paper to even out the look of the surface and soften the edges. Then it's ready for finish.

Taking a large solid-wood panel from glue-up to final smooth finish is a challenge. But knowing and understanding the options also provides the freedom to find a path that works right for your project and satisfaction in the time you spend in your workshop. **W**



▲ The metal body of a cabinet scraper is more comfortable to use than a card scraper. The sole helps you keep the surface flat and avoid creating noticeable divots in the workpiece.



▲ When using a random-orbit sander, start with a grit that removes surface flaws the quickest. Then step up through the grits in order. Finish with hand sanding using the last grit.



- ▲ Making the thin metal blade of the dough knife throws a little metalworking into the mix. Thankfully, you likely have all the tools and skills to get the job done.





Kitchen Tools

This quartet of small projects is sure to please the cook in your life. You can make one or all four in a weekend.

Making my own woodworking tools offers a new level of enjoyment of practising this craft. I also love to cook. So why not bring those two concepts together by making some kitchen tools? Here are four options that would make an ideal set or to mix and match.

Cutting boards use up scrap pieces most of us have squirrelled away. A small one like this serves as an ideal extra prep surface in the kitchen or on display as a serving board for cheese, charcuterie or fruit and vegies.

A scraper comes in handy for scooping chopped food into a larger bowl or cooking pot. Sometimes called a dough knife, it also divides dough cleanly.

Speaking of dough, a rolling pin can be simple or complex. Our version is inspired by a vintage French-style pin. It's a fun and fast turning project.

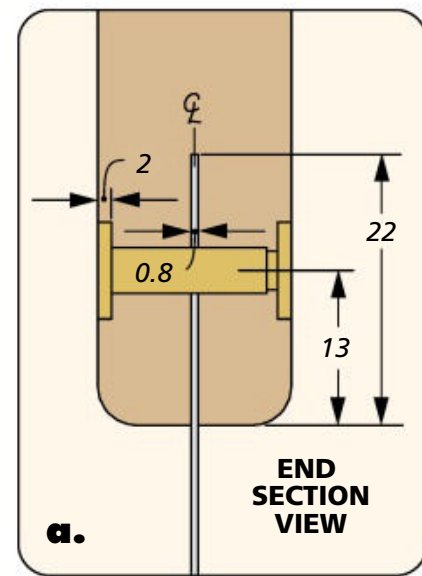
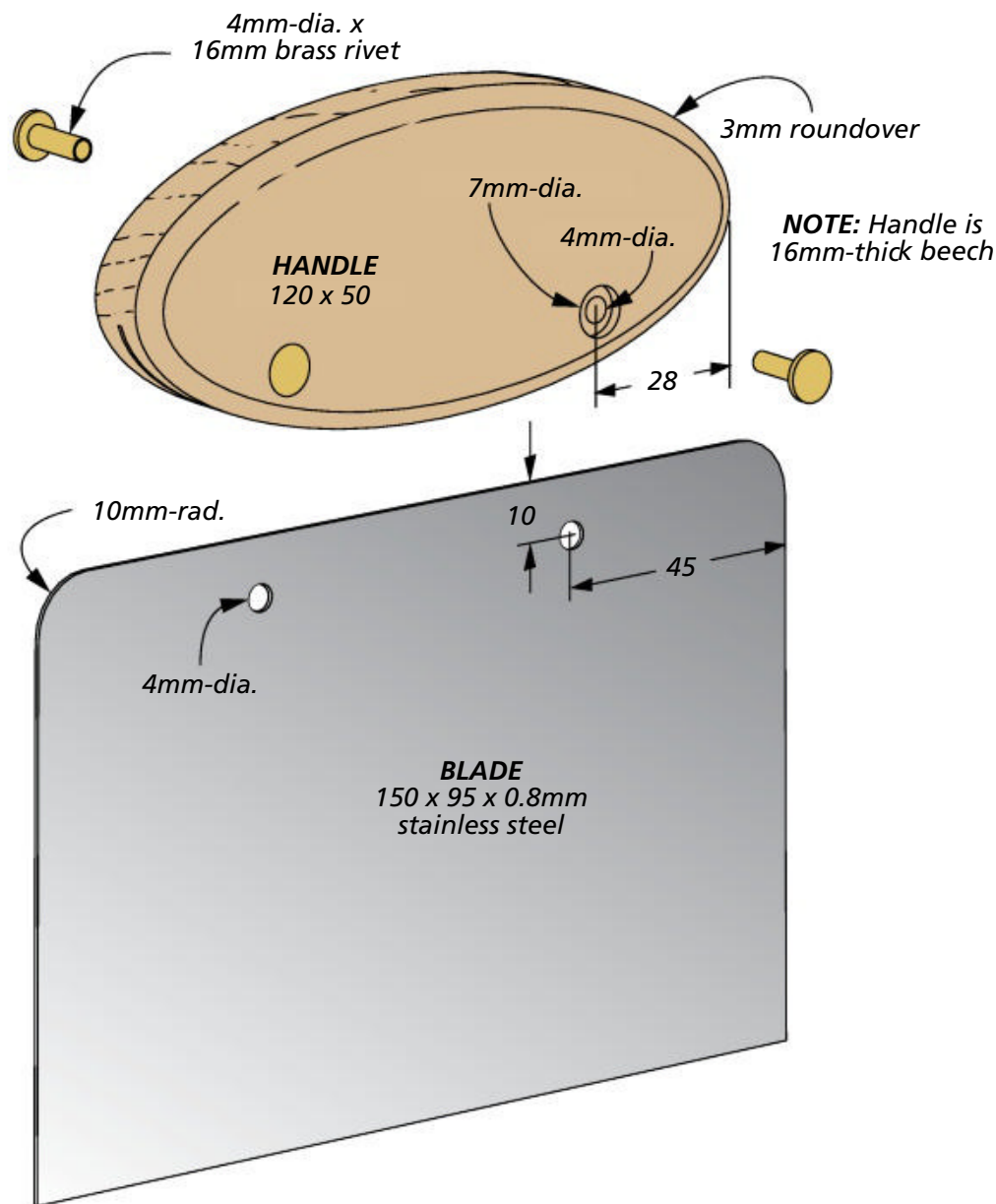
The final tool adds safety to getting items in and out of a hot oven. The push/pull tool keeps your hands away from hot racks.

These tools offer a couple of other benefits. They're a great introduction to woodworking for kids or anyone else new to the craft.

Finally, these simple projects offer plenty of opportunities for customising. You can easily change up some of the design details or materials and end up with personalised items.



▲ It's best to avoid reaching inside a hot oven. This tool includes a hook along the bottom for getting a solid grip on an oven rack to pull it out. And a notch on the end makes it easy to safely push it back in.



the pattern online at australianwoodsmith.com.au or you can draw an oval freehand — or create your own design.

At the router table, ease the edges of the handle with a roundover bit. I applied a few coats of finish to the handle before adding the blade.

THE BLADE. The metal blade is formed from a blank of stainless steel. A fine-tipped permanent marker makes a distinct line on the blank. Cutting the metal with a hack saw is a little tougher than mild steel. You could also use an angle grinder with a cut off wheel.

Round the upper corners with a file, as shown in Figure 1. Then with a file and sanding block ease the edges of the blade to prevent accidental cuts. The holes in the handle serve as a guide to mark the holes in the blade. Clamp the blade to the table of the drill press to prevent it from climbing the bit.

Sand the blade up to 400-grit with silicon-carbide paper before securing it with the rivets.

Dough **KNIFE**

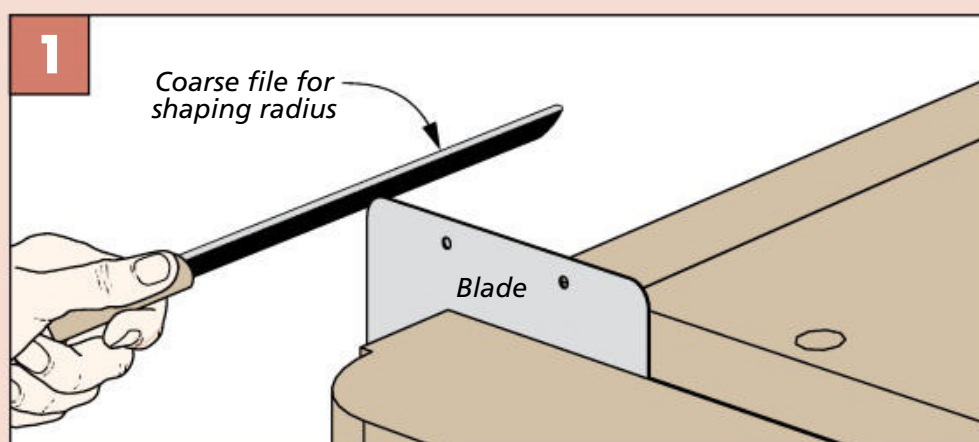
There are only two parts on the dough knife: the handle and the blade. The starting point is making the handle. While it ends up as an easy-to-grip oval, you need to do a couple of steps while it's a rectangular blank. First, drill the counter-bored holes for the rivets that secure the blade. Stop blocks on the drill press fence

allow you to locate the counterbores on each face, as in detail 'a.' Drill these with a Forstner bit. Then drill the through hole.

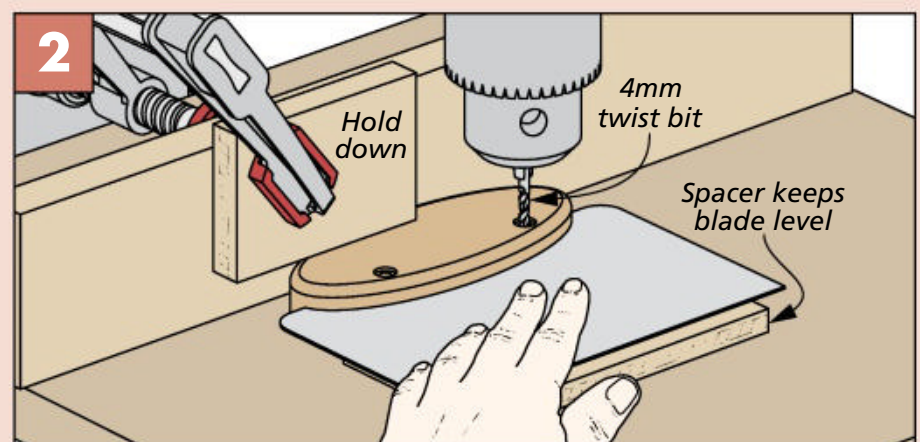
The other step to take is to cut the kerf for the blade (detail 'a' again). A bandsaw works well for this, though a hand saw will give you a better fit.

The handle can now be cut to shape. Use

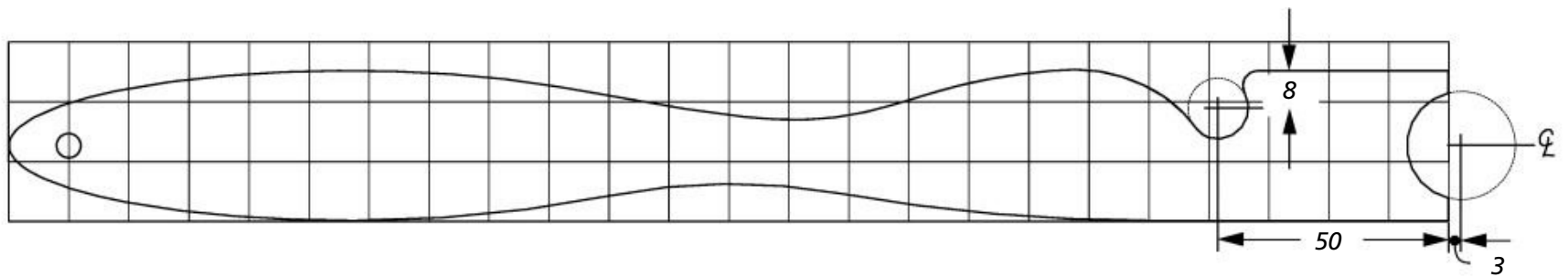
SHAPE & SECURE THE BLADE



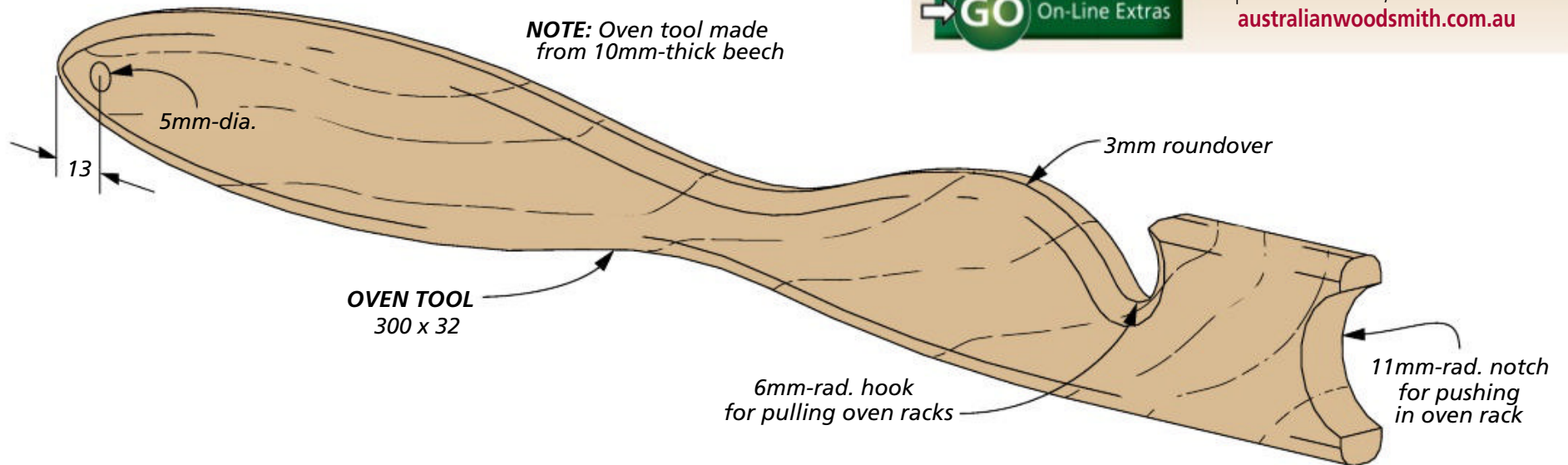
Round Over Blade. A coarse metal file shapes the radius on the corner of the blade. Then smooth out the file marks with sandpaper.



Drill Holes. The holes in the handle serve as a guide for locating the corresponding holes in the knife blade that accept the rivets.



To find plans for kitchen utensil dough scraper and oven tool, visit our website at australianwoodsmith.com.au



Push Me **PULL YOU**

One of my first steps into woodworking came in an industrial arts class in year 7. The instructor, Mr. Will, was a stickler for detailed, full-size drawings and wearing safety glasses even when we weren't using the power tools. One of our first projects was making a coaster using pine plywood and plastic laminate — it sits on my office desk to this day.

One of the other early projects was an oven tool. A hook on the end allows

you to pull a rack out without getting burned. The end had a notch to push the rack back into the oven. Not sure where that one ended up. Maybe my mum still has it.

On the surface, it's a simple affair you could make in an hour or so. But there are some design details that are often overlooked.

HOOK & NOTCH. Let's start with the hook and notch. The hook to pull out the rack needs to be larger than the rack bar so

it doesn't lock in place. The hook is set back from the end for strength. Otherwise, the grain could snap as you pull out a laden rack.

The notch up front likewise is a larger opening to easily catch on the rack without requiring a sharpshooter's aim. The curved profile prevents the tool from slipping off in use.

For both of these details, I prefer to shape them with a drill bit. It results in a clean, smooth shape that only requires a little finish sanding. The drawing above shows how to drill the notch on an extra-long blank.

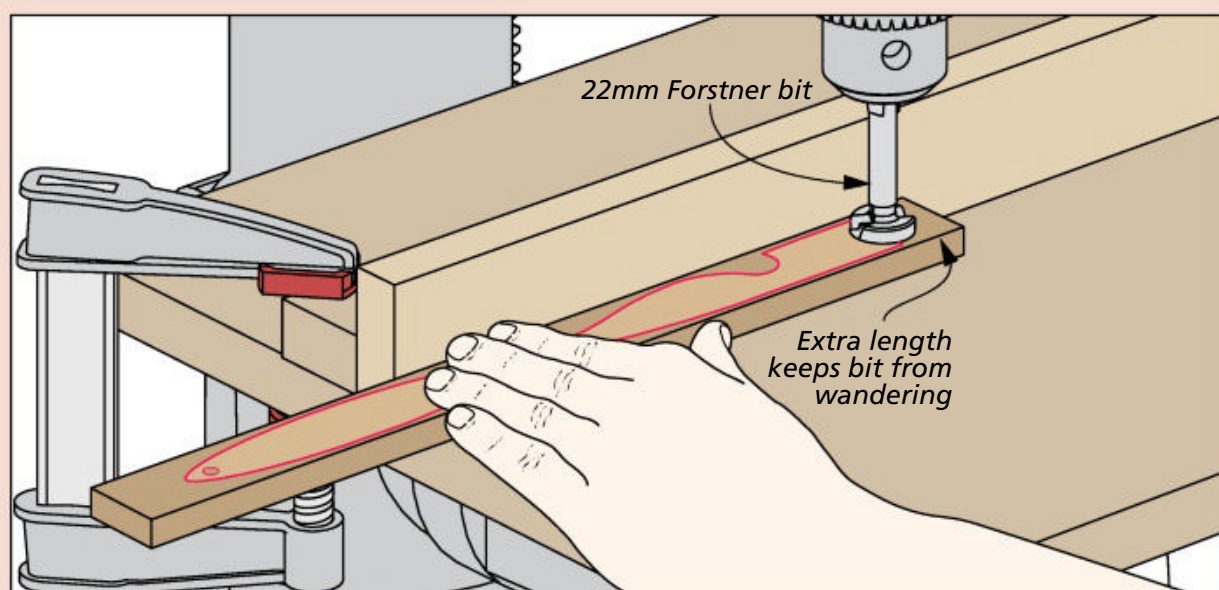
HANDLE DESIGN. Creating the handle puts the focus on comfort and utility. Clearly, the handle should rest well in your hand. But it should also reinforce the two roles the tool plays: pushing and pulling oven racks.

You can see in the drawing above how the handle has an oval shape. When you're pushing on the tool, the swelling prevents the handle from slipping through your grasp.

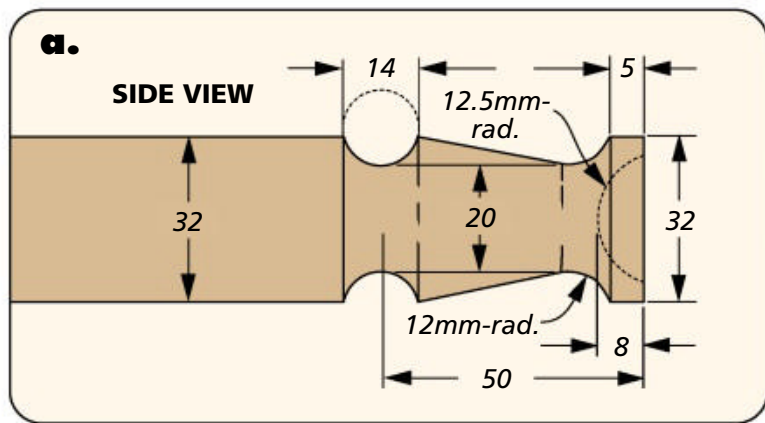
The same concept applies when you need to remove a rack. The narrow waist provides a smaller grip to resist slipping in that direction.

The final profile allows for customisation. For a pattern go to australianwoodsmith.com.au and click on "Extras".

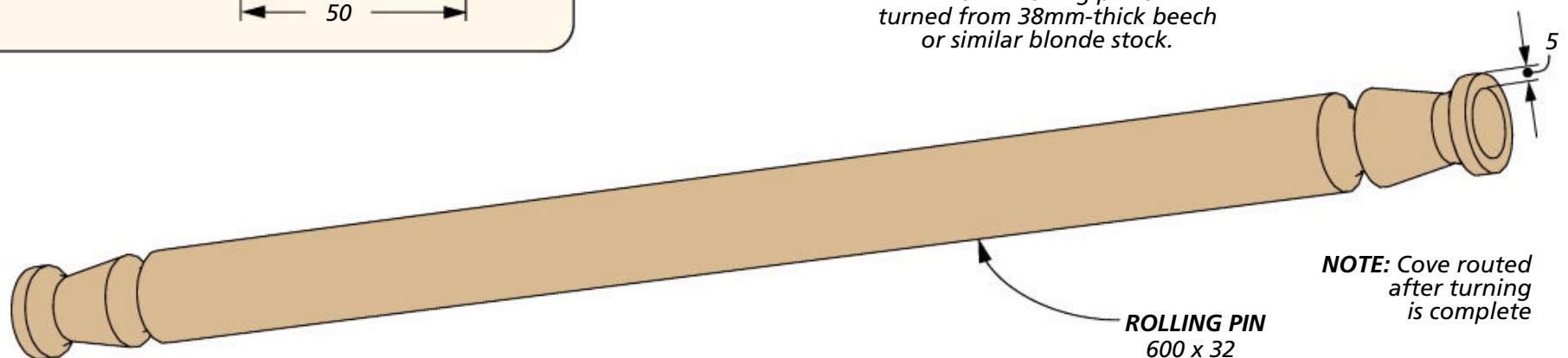
FORM THE NOTCH



Drill the Notch. An extra-long blank gives a Forstner bit additional support for drilling out the notch on the end of the oven tool. Do the same for the hook section.



NOTE: Rolling pin is turned from 38mm-thick beech or similar blonde stock.



Rolling PIN

There are two primary styles of rolling pin: one where the roller spins on an axle attached to a pair of fixed handles. The other is a single-piece turning. The latter is the style of the rolling pin for this set of tools.

A project like this offers a solid double benefit. The obvious is that you end up with a practical item. The process of making teaches you focused techniques you can apply in other projects.

DESIGN AS GUIDELINE. Most of the work on this project takes place on the lathe. And whenever you start turning something, fixed dimensions and numbers become less demanding and more advisory.

For example, the major diameter of the rolling pin is 32mm, as shown in the drawing above. If yours ends up a bit larger or smaller, don't worry. The same goes for the profile details on the handles. Though I will say that aiming for the numbers makes good practice for learning careful work habits at the lathe.

A TURNING LESSON. The first step is to take a square blank and turn it into a smooth, consistent cylinder with a turning gouge.

My approach is to make a series of evenly-spaced grooves along the blank that match the final diameter. I used a parting tool for the cuts. A caliper set to the final diameter serves as a guide. This allows you to turn the now smaller areas between the grooves, first with a gouge and then with a skew chisel.

THE HANDLES. While the pin is turning, use a pencil and the dimensions in detail 'a' to mark the locations of the handle profiles. For these flowing shapes, I switched to a fine gouge, beginning with the cove.

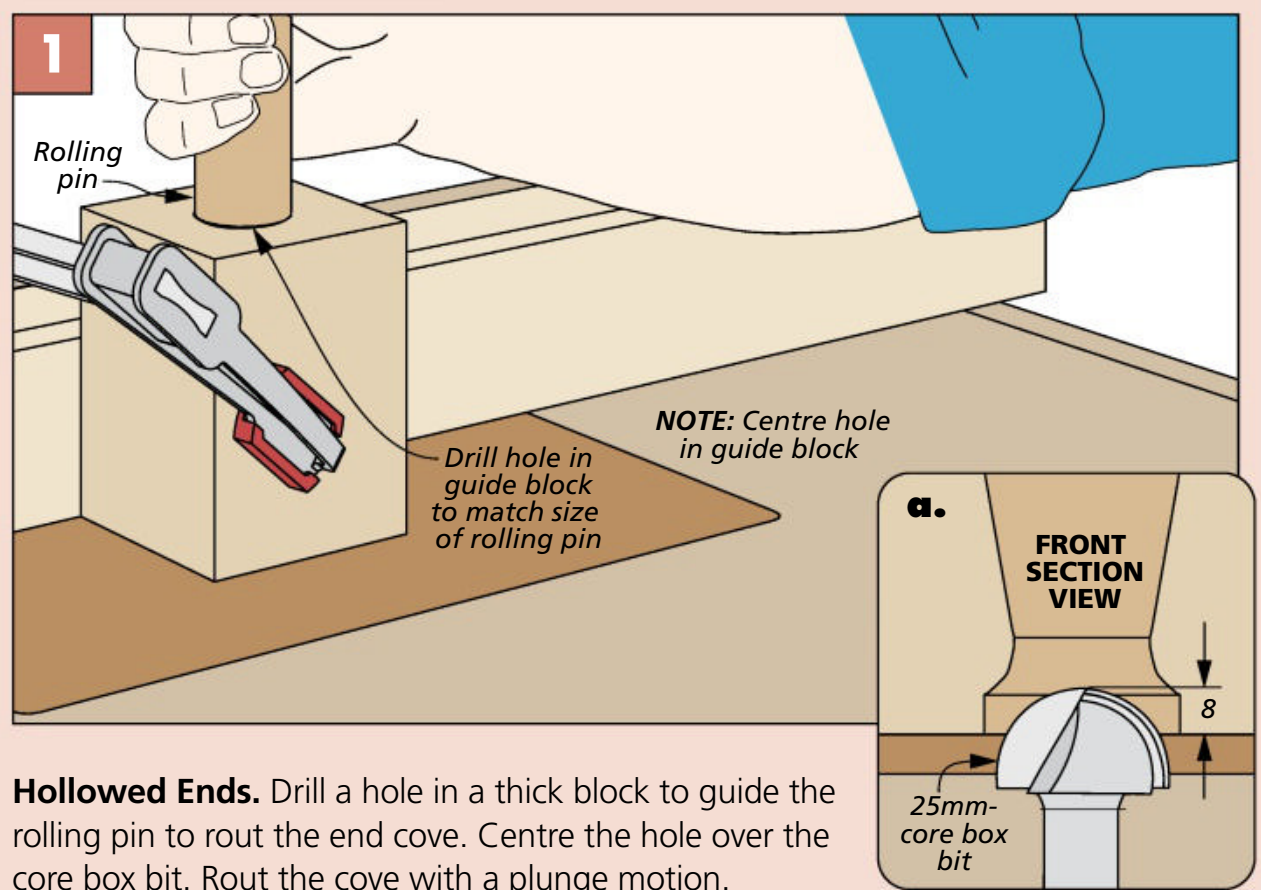
Establishing the cove defines one end of the handle taper. Make sweeping passes working your way down to the end of each handle.

When you're satisfied with the turning,

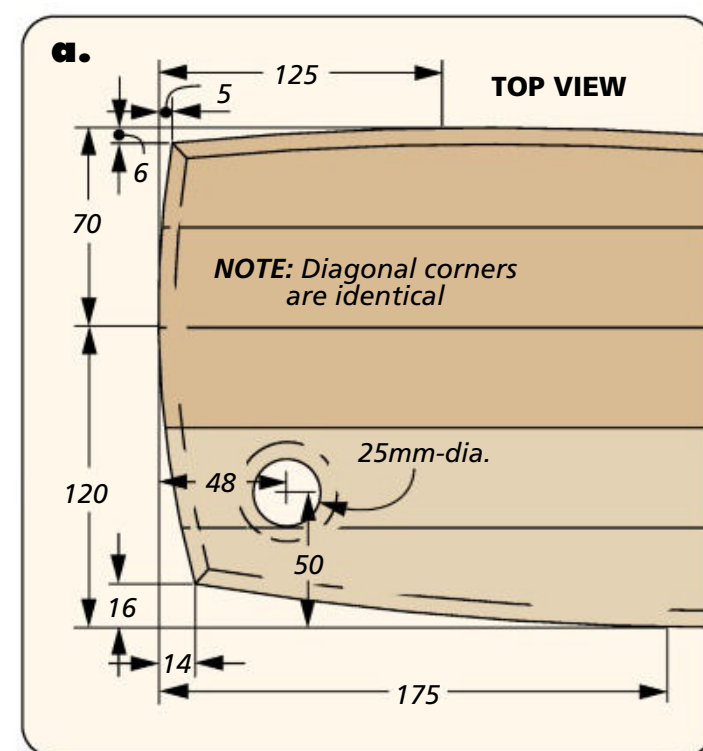
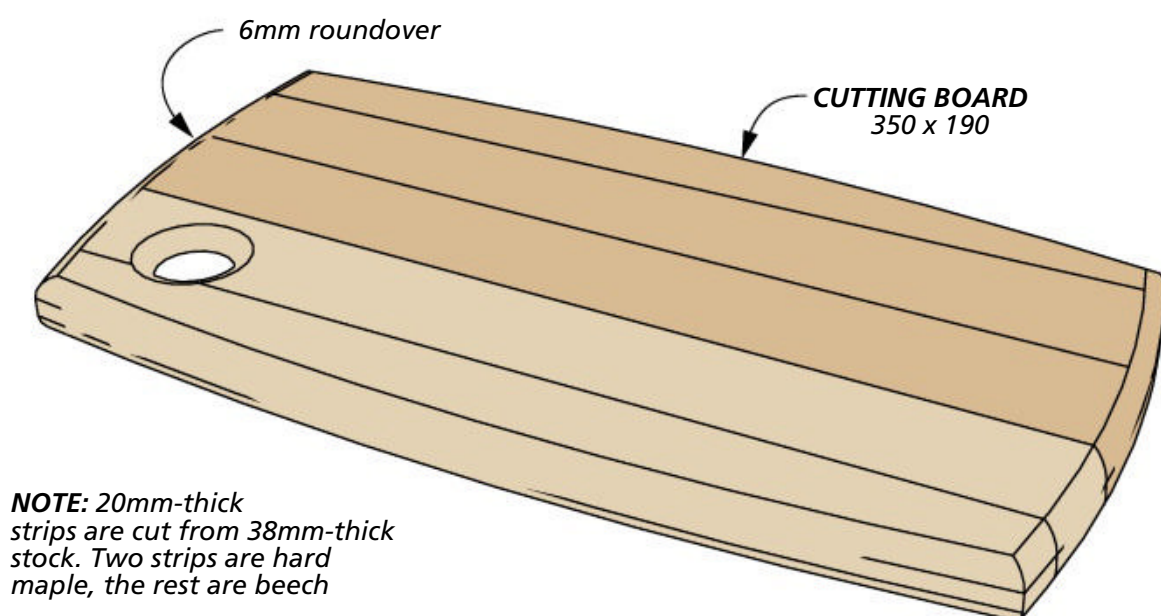
sand away the tool marks working up to 220-grit.

ROUT THE ENDS. The final detail is to rout a cove in each end of the rolling pin. I did this at the router table, as shown in Figure 1 below. As you can see, I drilled a hole to match the diameter of the pin and centred it over the cutter. For a splash of colour, I painted the coves. The rest gets a couple of coats of oil and wax.

COVE THE ENDS



Hollowed Ends. Drill a hole in a thick block to guide the rolling pin to rout the end cove. Centre the hole over the core box bit. Rout the cove with a plunge motion.



Cutting BOARD

Large cutting boards tempt woodworkers with an impressive work area and “Wow!” factor. However, smaller cutting boards like this one may be even more valuable.

Most folks have one primary prep area — thus they only need one large cutting board. However, for big meals or holiday gatherings, pulling out a spare cutting board or two can save the day. In

addition, these smaller boards can double as on-table prep and serving pieces.

ALL IN THE DETAILS. While you could use a single board to make this size, there’s plenty of room to add some flair. For starters, this one is made from maple and beech. The colours and grain textures go well together.

Even on a small scale, the usual best practices apply. Edge grain is more

durable (and cleaner looking) than the plain sawn face grain. If you can find a wide board that will give you that much straight grain, go for it. Most of the time, I end up gluing up the two different sections of the cutting board.

RIP & FLIP. Figure 1 below shows my approach. Working with thick stock, rip narrow strips from each edge. The width of the strips should be slightly more than the desired thickness of the board. Flip the strips on their sides to reveal straight-lined edge grain.

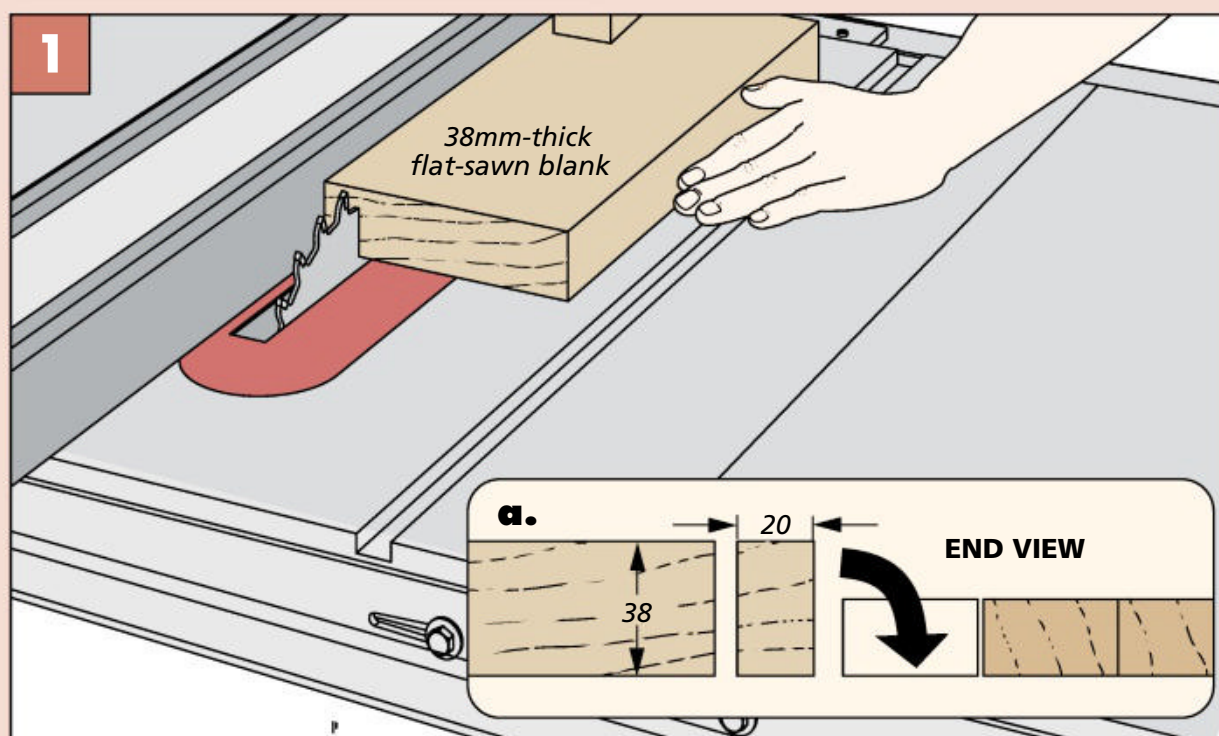
I glued each section of the cutting board together separately. I find this allows me to focus on keeping just one or two glue lines flush at a time. By the time you glue the two “halves” together, you shouldn’t have much flattening to do.

DRILL & SHAPE. Lay out and drill the hole while the board is still a rectangle. From here, you can draw in the finished shape. Pro Tip: if you plan on making several of these (they make great gifts!), make a template from Masonite or plywood.

Cut the shape at the bandsaw and then use a spokeshave or an edge sander to smooth the ends and edges. At the router table, round over all the edges, including the hole.

After a final sanding, the board is ready for your choice of food-safe finish. I used a mineral oil-beeswax blend. Then it’s time to head back to the kitchen. **W**

GET THE RIGHT GRAIN



Create Edge Grain Strips. The sides of thick, flat sawn boards reveal straight edge grain. Rip narrow strips from the blank and flip them over to create durable faces for the cutting board.

Curved Dovetail Box

David Barron makes a lined box with curved ends.

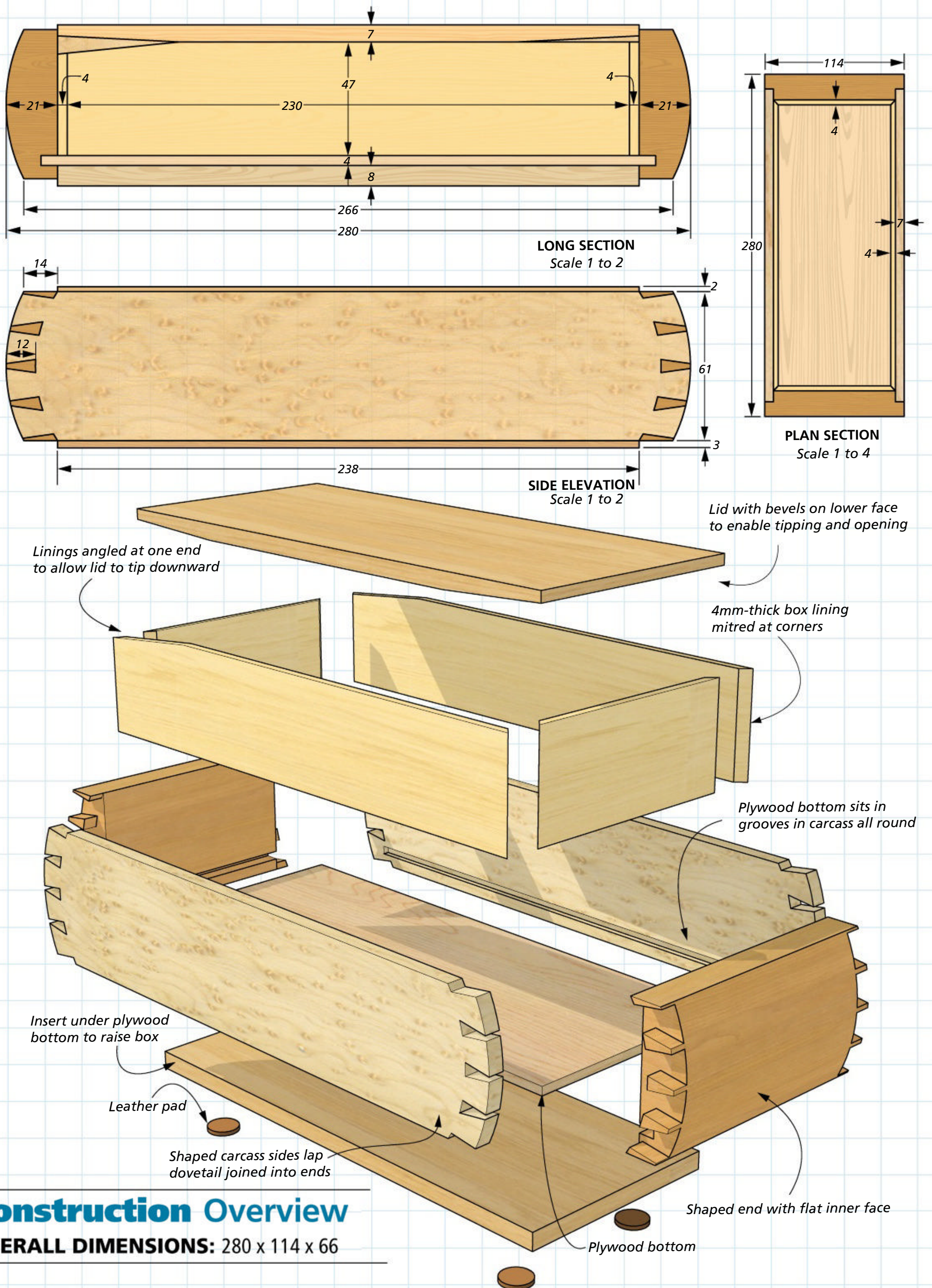


Having made a box with angled dovetails, I decided to have a go at making one with curved dovetails. I've seen lots of boxes where the dovetails have been cut square and then the sides rounded; although this is a simple method it leaves the dovetails much thicker at the middle as the baseline does not follow the curve of the sides. It does, however, give you square sides to the inside of the box, which is desirable for lining. So I decided to go for evenly curved dovetails while retaining square sides on the inside of the box.



PHOTO: GMC PUBLICATIONS/DEREK JONES

PHOTOS: DAVID BARRON, UNLESS OTHERWISE STATED

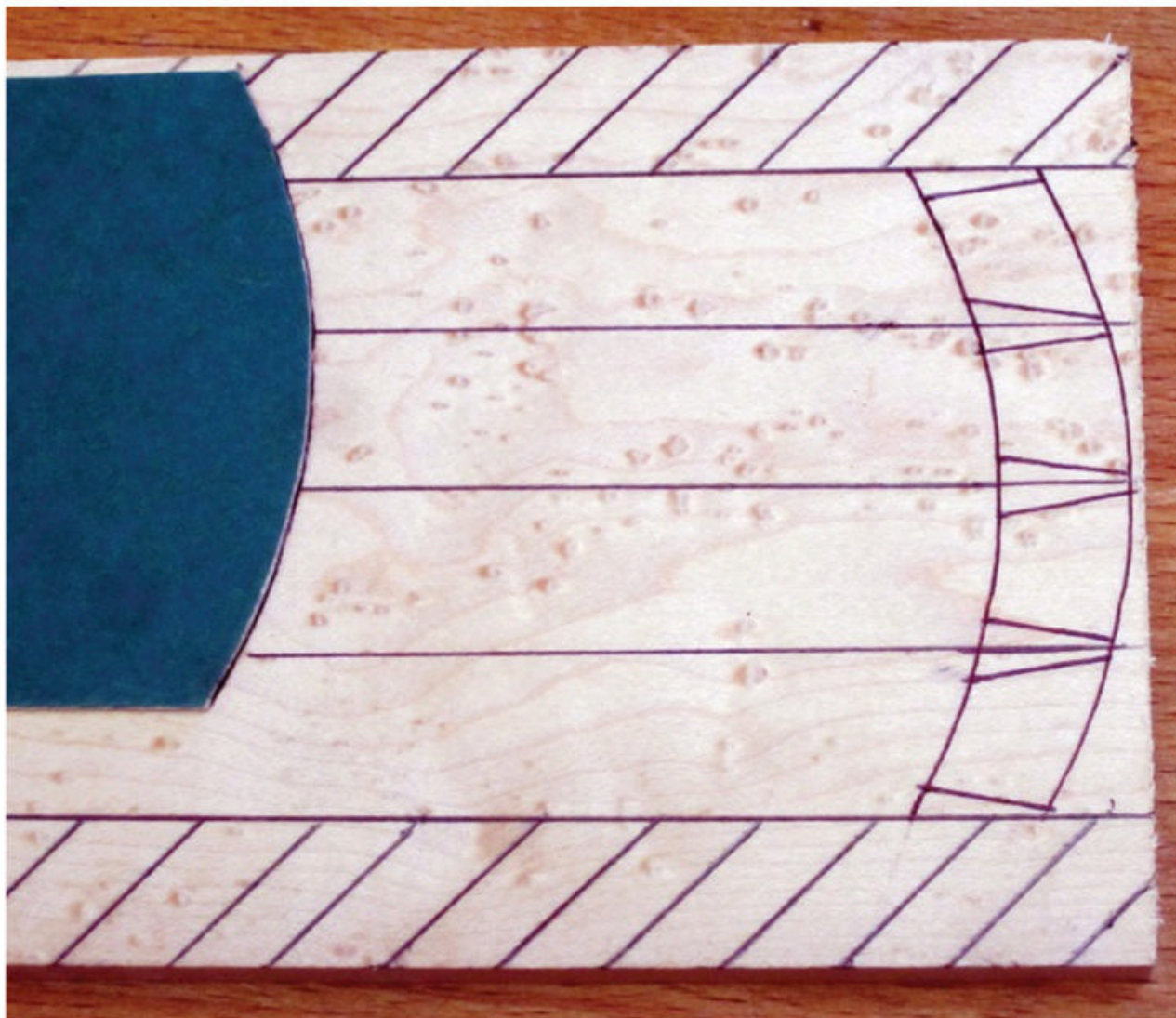


Construction Overview

OVERALL DIMENSIONS: 280 x 114 x 66

Marking the **TAIL BOARDS**

At this stage it's best to mark everything clearly out on both ends of each tail board. I used one edge to run parallel lines to mark out the centre points of the tails as well as the waste areas on the top and bottom, indicated by the diagonal lines. A cardboard template was used to mark the curves, making sure that each of the pieces was marked the same distance in from the ends, ensuring square corners in the finished box. The dovetail spacing needs to be even to look good and this was easily achieved by making sure the parallel lines were evenly spaced. Having a pin in the middle of a set of dovetails is always my favoured option and this is even more visually important when used on a curve. While the board end is still square, a normal dovetail template can be used to mark out the tails in the space between the two curved lines.



▲ The tail board marked up showing the waste areas.

Adapting the **CUTTING GAUGE**

The first thing I needed to do was adapt my cutting gauge to cope with marking along a curved edge. This was done by reversing the head and filing a curve to the face that is greater than the curve I intended to use. This meant that there would be two points in contact with the curve as the marking was done. I have kept the gap between these two deliberately small (13mm) to keep material waste to a minimum (this will be explained later). Wheel marking gauges are not suitable for adapting and the best blade is one

which comes to a point rather than the thumbnail profile of the gauge I used.

When using the adapted gauge it loses contact with one of the two points before reaching the edge of the board. So for this box with a finished height of 62mm, I cut all sides to 92mm to provide support for the gauge. The wider the gap between the two points on your gauge the more material you will need to add to your finished height. Although a little wasteful, this was the best of the various options I came up with.



▲ My adapted cutting gauge filed to handle marking out the curves.

DOVETAIL ALIGNMENT BOARD

A dovetail alignment board is a must have bench accessory that keeps your sides aligned and true while you mark your tails and pins. If you take a close look at the top image on page 40 you will see how I rest the side of the pieces I am working on against wings that are mitred

and screwed to the board itself. The alignment board is 250mm long and 150mm wide. I start with a 500 x 150 x 19mm board, plane it so it is perfectly square and then dock it in half. Next step is to mark out and cut seven pins and then trace them to cut six tails. Once the joint is

assembled I sand and lacquer all faces so that the jig remains stable in all weathers. Then I attach the mitred 23 x 8mm wings to the face edge. It is these wings that act as the datum for the pieces to register against. (YouTube: www.youtube.com/user/DavidBarronFurniture)

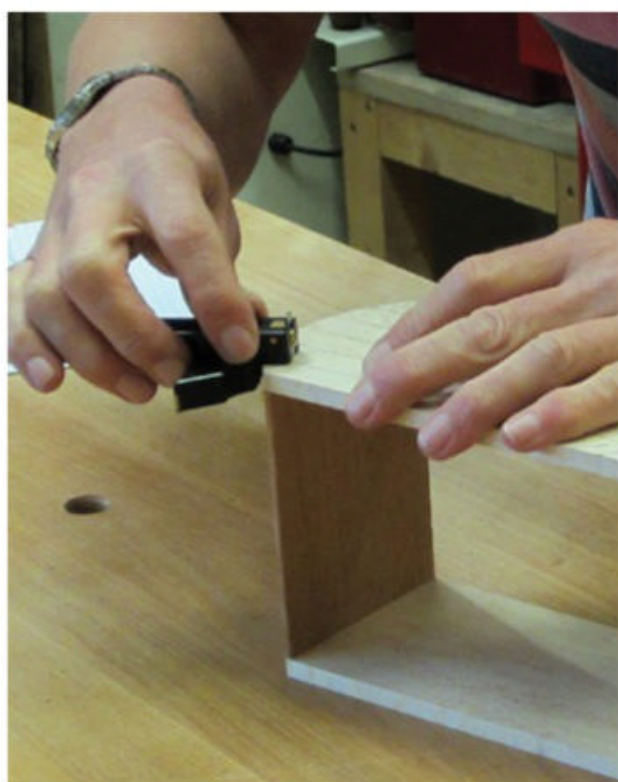
Shaping the **CURVE**

Shaping the curve is easily done on a disc sander but I wanted to make sure that the corners to be joined were a perfect match for each other. So I assembled the box with double-sided tape using an accurately cut spacer block to make sure it was perfectly square. In this assembled state the curve can be cut on the bandsaw and refined on the disc sander, but you must make sure the table is perfectly square to the disc. Convex curves are easy to get smooth on a disc sander, especially if you use a finer abrasive. I

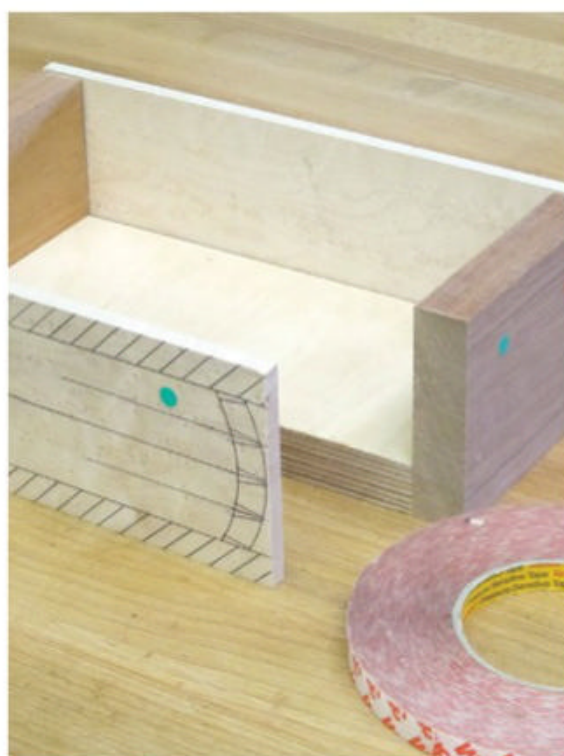
used a 240 grit, which, although slower, was a lot more controllable and left a fine finish. The curved baselines can now be carefully marked on the tail board before disassembling the parts with a tail vice or spreader clamps. Please remember to mark all the parts before taking apart or this will result in lots of head scratching afterwards – trust me, I know! I applied my coloured dots at the beginning but had forgotten that they would be removed from the pin board as the curves were cut.



▲ Sanding the convex curves on a disc sander.



▲ Marking out the baseline on the tail board.

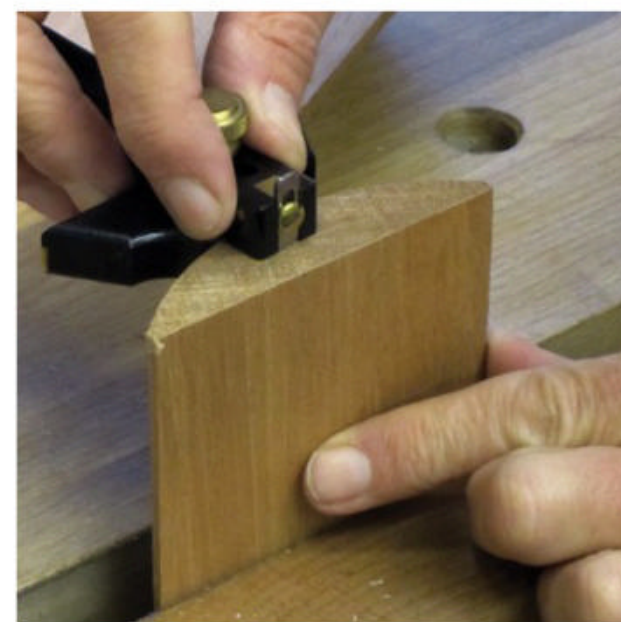


▲ Assembling the box using double-sided tape and an accurate spacer block.

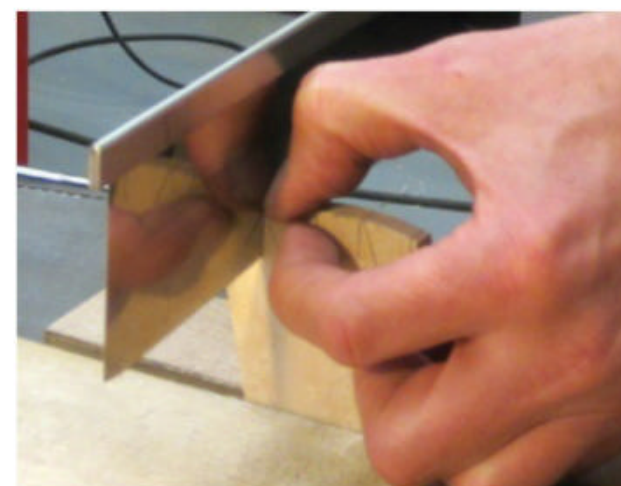
Marking and cutting **THE DOVETAILS**

With the gauge on the same setting, the depth of the dovetail can also be marked on the end grain of the pin boards. I realised that the pin on the gauge had the bevel facing the wrong way for this cut but changing it around would have lost the setting, so I just made a lighter cut, knowing this would be planed out later anyway. It's always a good idea to retain the setting on the gauge until the end of the job, so I used another gauge, set to the thickness of the tail board, for the final marks across the face grain of the curve.

Now it was time to cut the tails. I angled the boards to 1:6 so that the cuts on each side of the dovetails were made vertically, which I find helps with accuracy. The waste was removed with a fretsaw and then chiselled down to the base line. Although this line is curved, it is only 6mm wide so I just used a straight chisel to make the final cut. I removed the waste on the bandsaw from both the tail and pin boards and planed them smooth on the shooting board.



▲ Marking out the end grain of the pins.



▲ Cutting the tails.



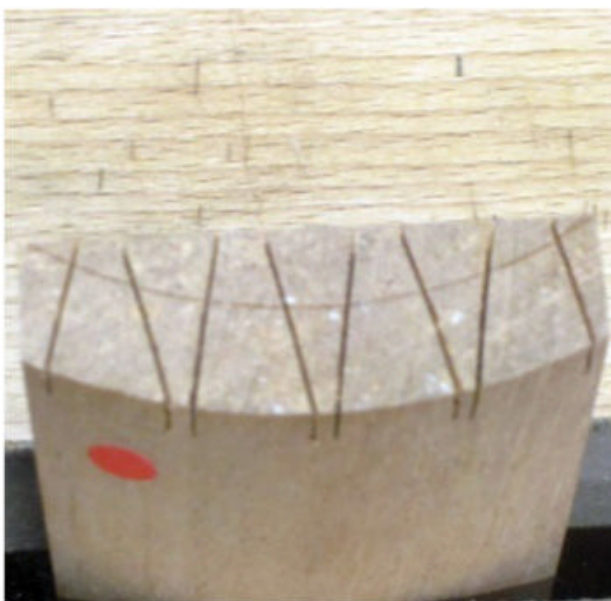
▲ Marking the pins using my alignment board.

Marking and cutting THE PINS

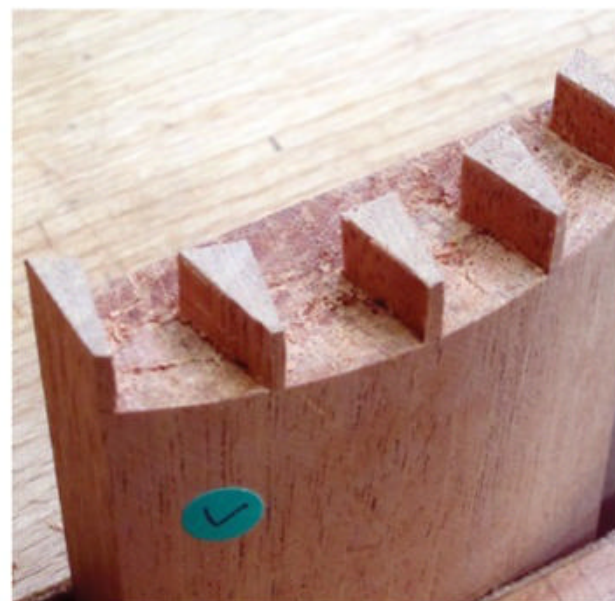
With the tails finished, the pins could be marked. The flat inside surface meant I could use my alignment board which kept things square and matched up the bottom edges of both boards. Once the pins were marked, they were cut all the way across and down to the gauge line. The fretsaw was used to remove the majority of the waste and I made sure I cut well into the back of the pin (which is in the waste) making removal back to the gauge line easier and less likely to split. This is very similar to removing the waste from the smaller pins of houndstooth dovetails (see 'Houndstooth Dovetails' video on YouTube: www.youtube.com/user/DavidBarronFurniture).



▲ The finished tail boards.



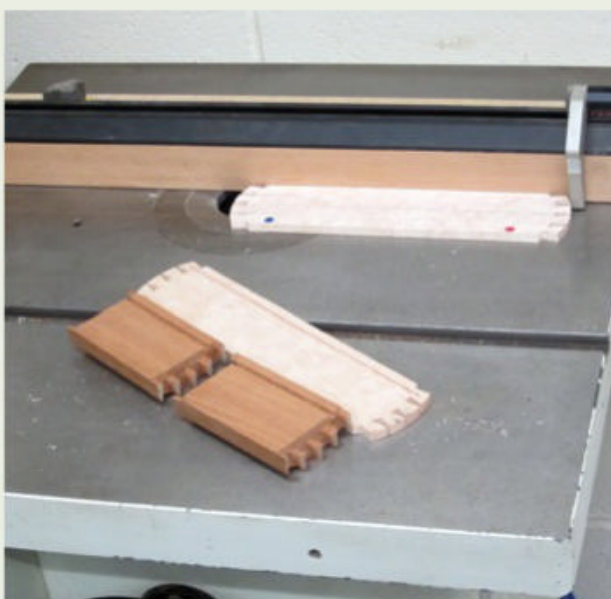
▲ Saw cuts made on the pin board.



▲ The finished pin board.

ROUTING THE GROOVES

The groove for the 4mm ply base was then cut on the router table using the same bottom edge as on the alignment board, against the fence to ensure the grooves lined up perfectly. The top of the inside surfaces were smoothed and finished and the box was glued up, making sure all was square. The ends were rounded smooth on the disc sander with 240 grit and the sides were cleaned up with a sharp plane and sanded to a fine finish. The second base was stuck to the plywood one, adding weight as well as giving a lift to the box. Homemade leather bumpers were also added.



▲ Cutting the grooves on the router table.

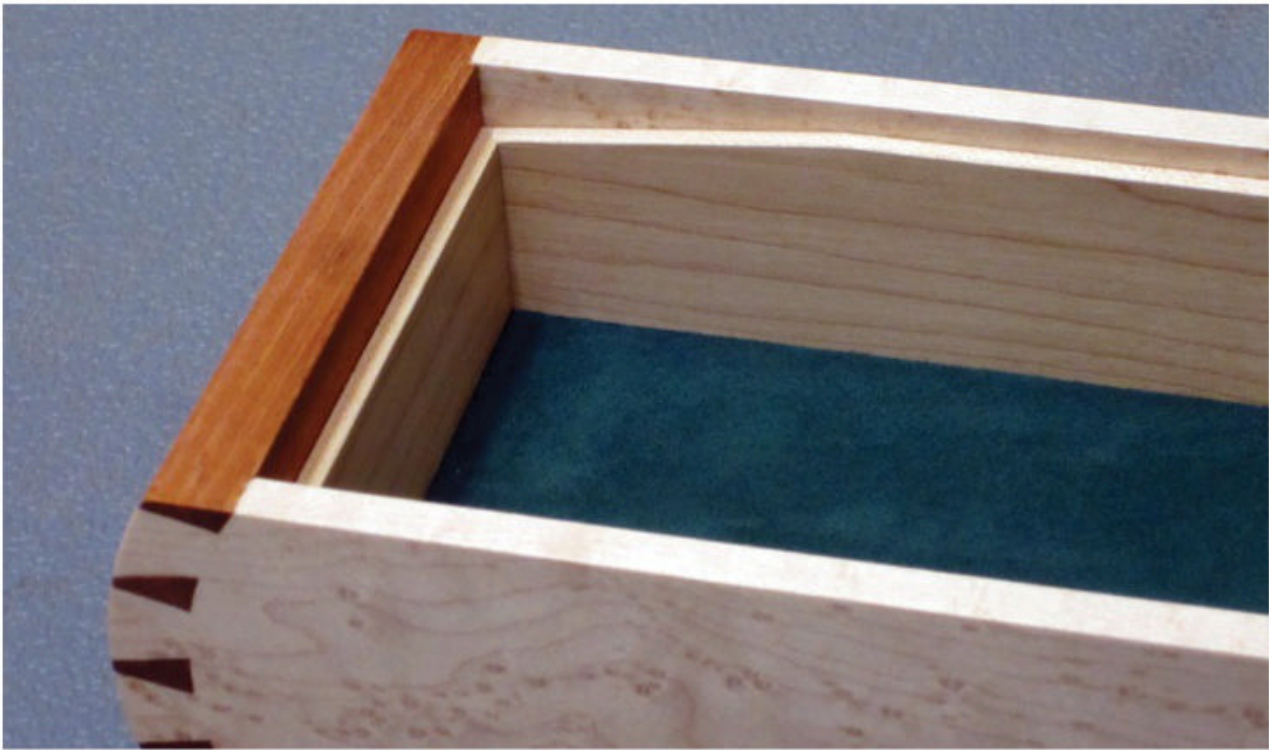


▲ Cleaning up the sides including removing all trace of the base lines.

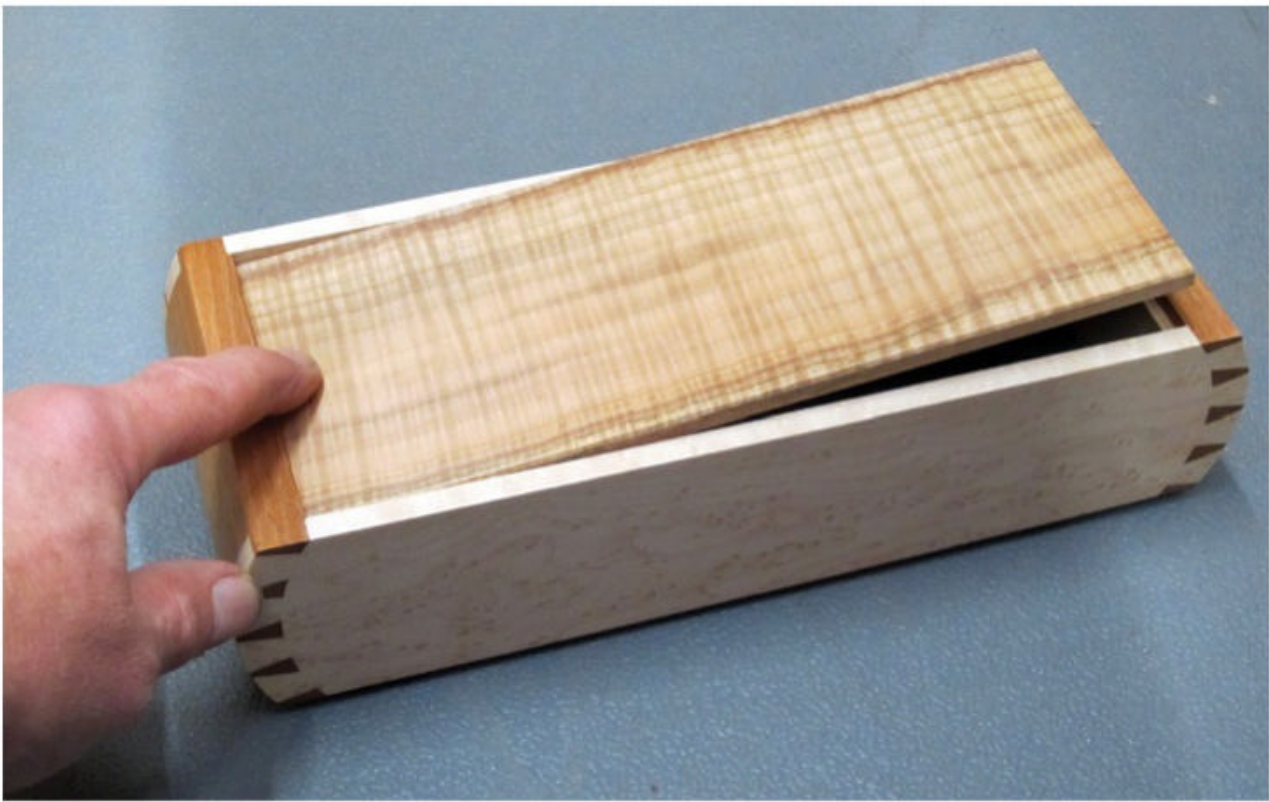
FINISHING touches

The base inside was lined with padded pig suede and the mitred linings were planed on the shooting board to a tight fit. As I had chosen a highly figured piece of amboyna (Pterocarpus spp.) for the lid I decided to make it a tilt top rather than add a handle. This was simply achieved by lowering one end of the lining and angling the two sides to match. The lid can be tilted down with a finger and removed with the same hand.

The whole box was sanded carefully down to 320 grit followed by four coats of cellulose lacquer. After allowing an hour to harden this was cut back with 400 grit Abranet followed by 600, 1000 and 2000 grit Abralon pads to leave a silky matt sheen. **W**



▲ The angled lining in place.



▲ The action of the tilt top lid.



▲ The lining being shot on a mitre shooting board.



▲ Additional base stuck in place.



▲ Leather bumpers being struck.

Tall Clock



▲ Making the face of the clock means that it can be as simple or complex as you want. Here, we've made an aluminium and brass face that blends well with the Prairie style of the clock.



▲ The optional gridwork door further adds to the Prairie style. It takes a little time to make, but the payoff is well worth it.

This grandfather clock takes design cues from the Prairie style of architecture. Its timeless look means it will fit into nearly every décor and is a piece of furniture that can't be ignored.

I love making clocks. Not sure I know why that is but I think it has to do with shiny brass mechanisms and the clever movement of precision gears measuring out time.

In the realm of clocks, a grandfather clock has always been a “bucket list” project of mine. Unfortunately, the traditional, often “over the top” style of a grandfather clock doesn't fit into our modern home décor. But, when I saw the design that Chris Fitch came up with for this clock, it might just work its way into my house.

FRANK LLOYD WRIGHT CUES. As you can see from the main photo, this isn't your typical grandfather clock. With its clean lines and modern design, this clock takes many of its design cues from architect Frank Lloyd Wright. Many refer to this look as the “Prairie style.” Not only has this style been popular in architecture, but in furniture design as well.

SOLID CONSTRUCTION. In true traditional joinery fashion, the designer of this clock, Chris Fitch, chose to use solid wood for the majority of the case

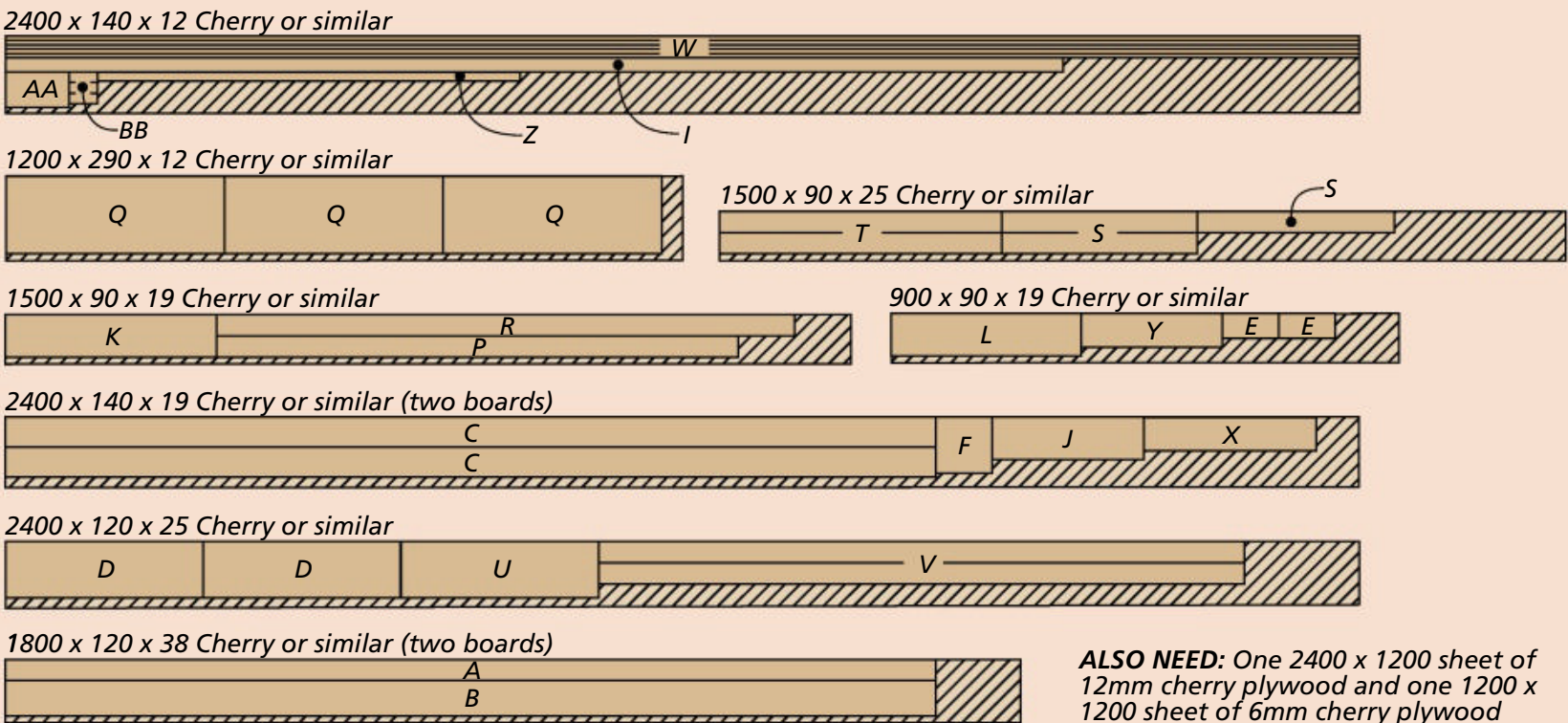
work, but mixed in some plywood where it makes sense. This means that the construction (which is stub tenon and groove) is going to last, but is also straightforward to make.

Of course, you wouldn't want to build a clock such as this and skimp on the movement or the face. So, we've selected a quality mechanical movement, along with a homemade pendulum arm and bob. And while you're making the arm, you might as well make the face also. Overall, it's a project that I'm excited to build.

Materials, Supplies & Cutting Diagram

A Front Posts (2)	1675 x 38 x 38	L Riser Back (1)	342 x 63 x 19	W Glass Stop (1)	11.5m x 8 x 8rgh
B Back Posts (2)	1675 x 64 x 38	M Base (1)	354 x 260 x 12ply	X Supports (2)	310 x 60 x 19
C Stiles (4)	1675 x 54 x 19	N Face (1)	510 x 317 x 6ply	Y Shelf (1)	255 x 60 x 19
D Back Rails (2)	355 x 100 x 25	O Top Plate (1)	354 x 260 x 12ply	Z Arm (1)	762 x 19 x 7
E Top Rails (2)	100 x 45 x 19	P Plate Trim (1)	1m x 38 x 19rgh	AA Bob (1)	118 x 63 x 6
F Bottom Rails (2)	100 x 100 x 19	Q Top Fillers (3)	394 x 280 x 12ply	BB Bob Brackets (3)	50 x 19 x 10
G Back (1)	1512 x 343 x 12ply	R Top Trim (1)	1050 x 38 x 19rgh		
H Caps (2)	354 x 260 x 12ply	S Door Rails (3)	355 x 38 x 25		
I Trim (1)	2m x 25 x 12rgh	T Top Door Stiles (2)	510 x 38 x 25		
J Riser Sides (2)	273 x 75 x 19	U Door Bottom Rail (1)	355 x 100 x 25		
K Riser Front (1)	380 x 75 x 19	V Bottom Door Stiles (2)	1162 x 38 x 25		

- (16) 8g x 45mm c/s Woodscrews
- (1) 300 x 300 x 3mm Brass stock



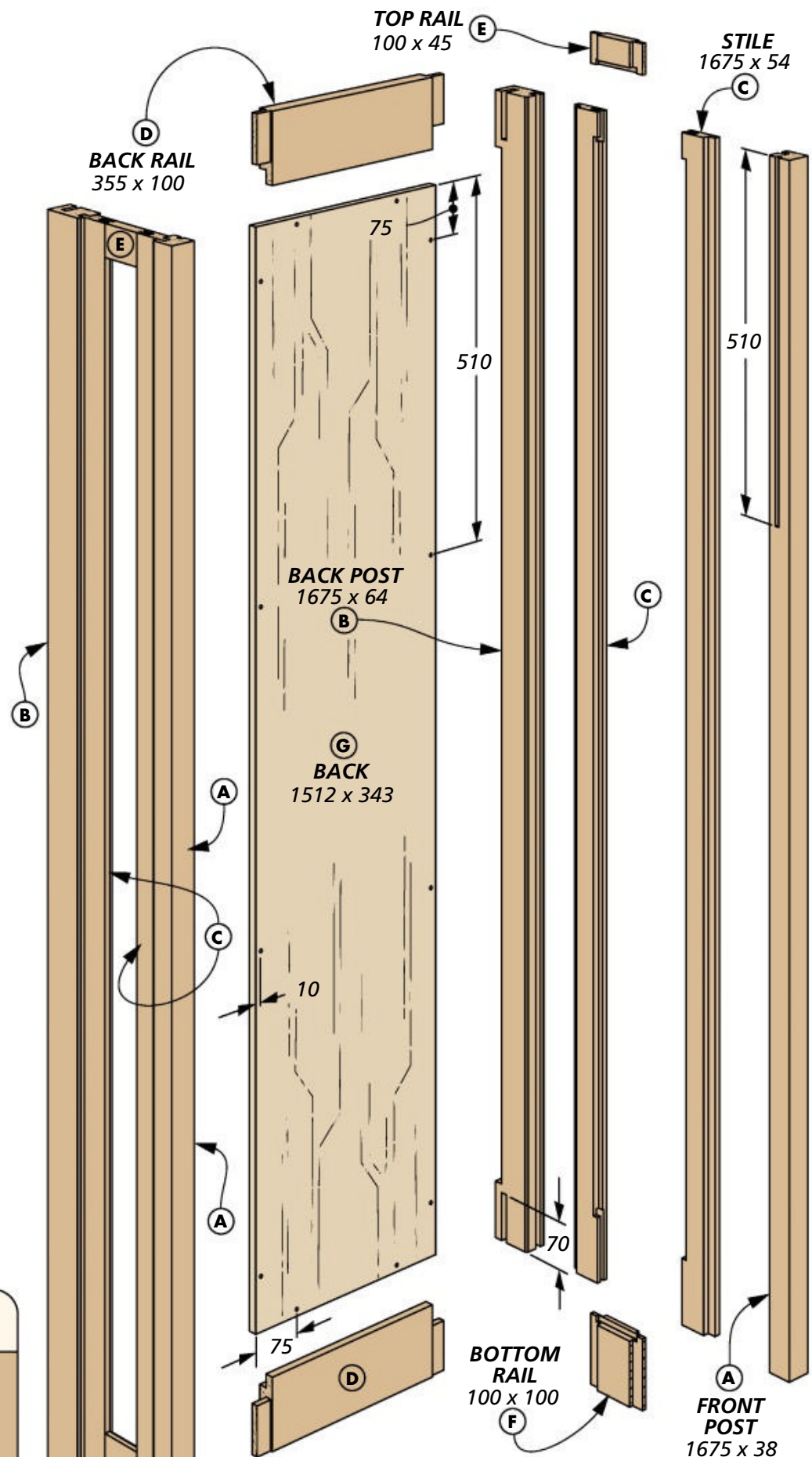
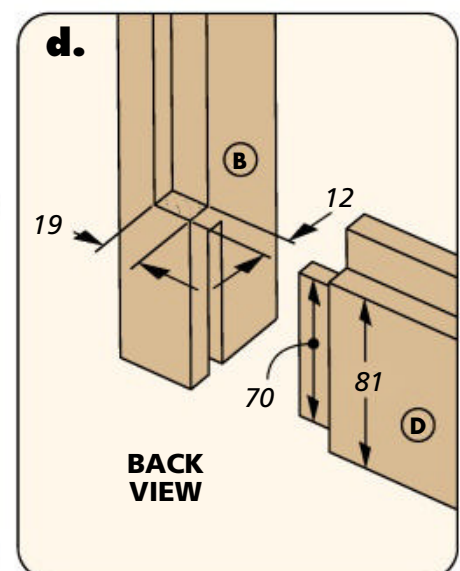
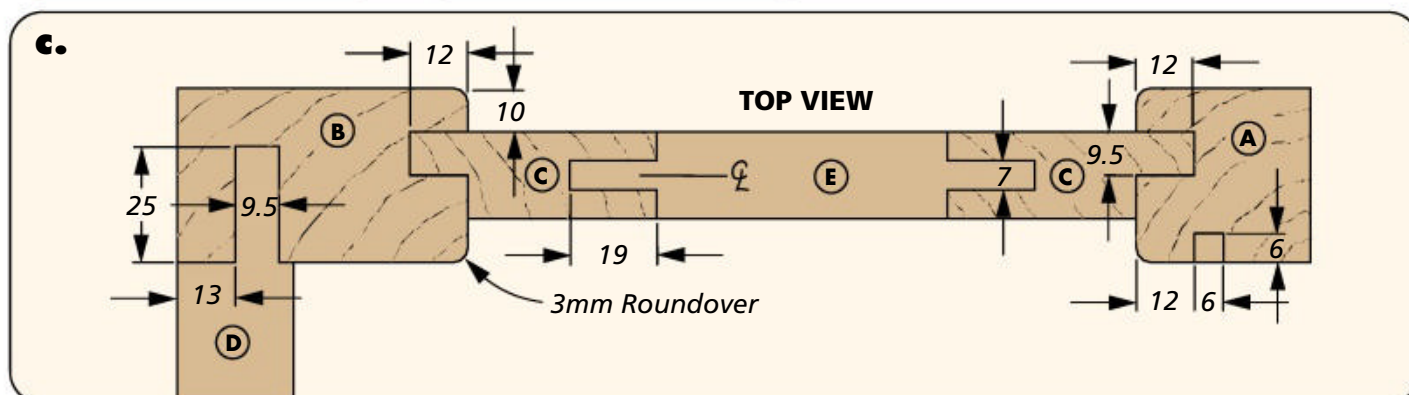
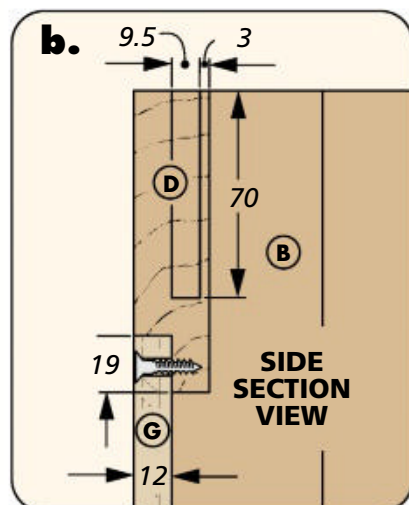
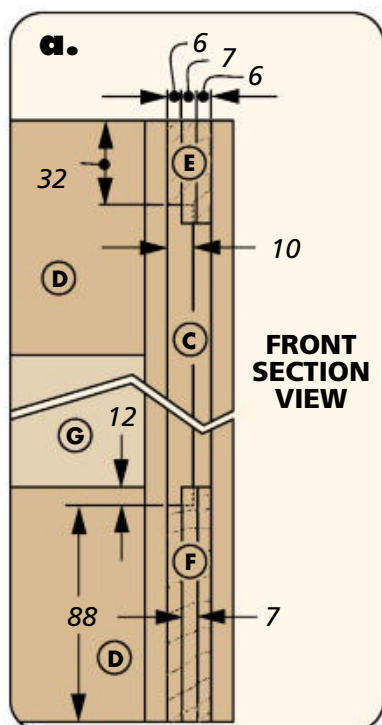
Build a tall CASE

Building this clock starts by creating the case. This consists of a pair of side assemblies tied together with a plywood back. You can see this form in the main drawing to the right.

LONG CORNER POSTS. The side assemblies consist of a pair of posts that capture a frame. The posts are the place to start. Each side will have a front and a back post that are mirror images, so label them to keep them straight.

After planing stock to thickness, rip the posts to width. Take a look at the main drawing and detail 'c' below and note that the front and back posts are different widths. At the router table, rout a groove down the length of the inside face of all four posts. These will hold a tongue on the frame pieces in a little bit.

STOP THE GROOVES. At this point, you can rout some stopped grooves in each post.



CREATING THE CASE JOINERY

The back posts each get a pair of short stopped grooves that are routed towards the top and bottom for the back rails.

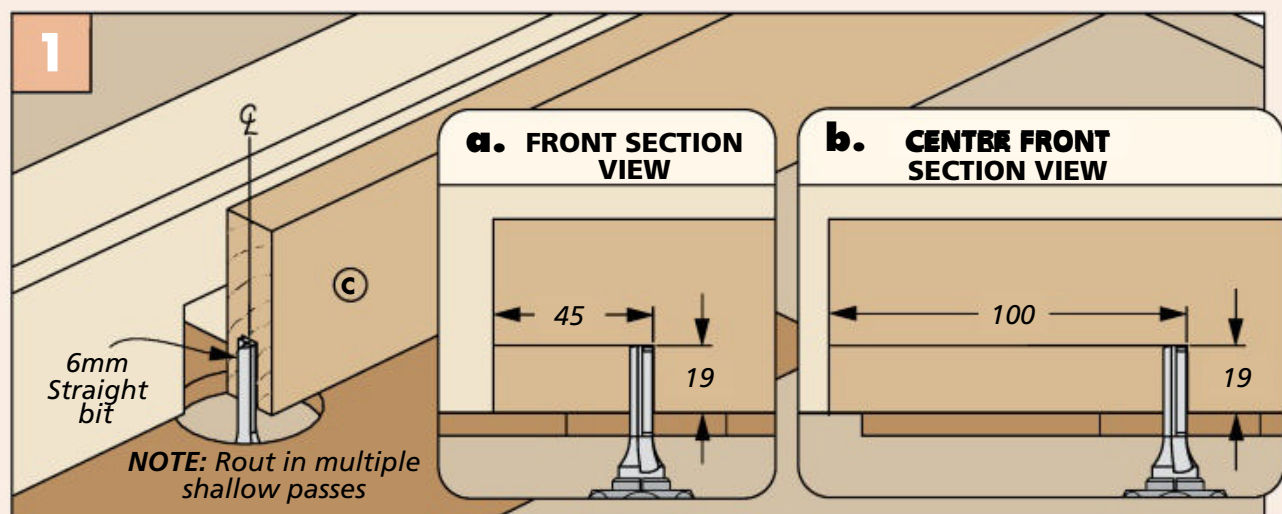
The front posts get a stopped groove that's longer — they're for the clock face. Mark the front and rear edge of the router bit on your fence as a guide. Square up the ends of all of the grooves with a chisel before setting the posts aside.

FRAMES. Now it's time to cut the frame parts. There are stiles, top and bottom rails, and back rails. The stiles are the same length as the post and attach to the posts with a tongue that will be cut after assembly. After cutting them to length, rout a stopped groove on the inside face, along the top and the bottom (Figure 1). Set the stiles aside while you cut the back, top and bottom rails. Then, cut a tenon on each end, as seen in Figure 2.

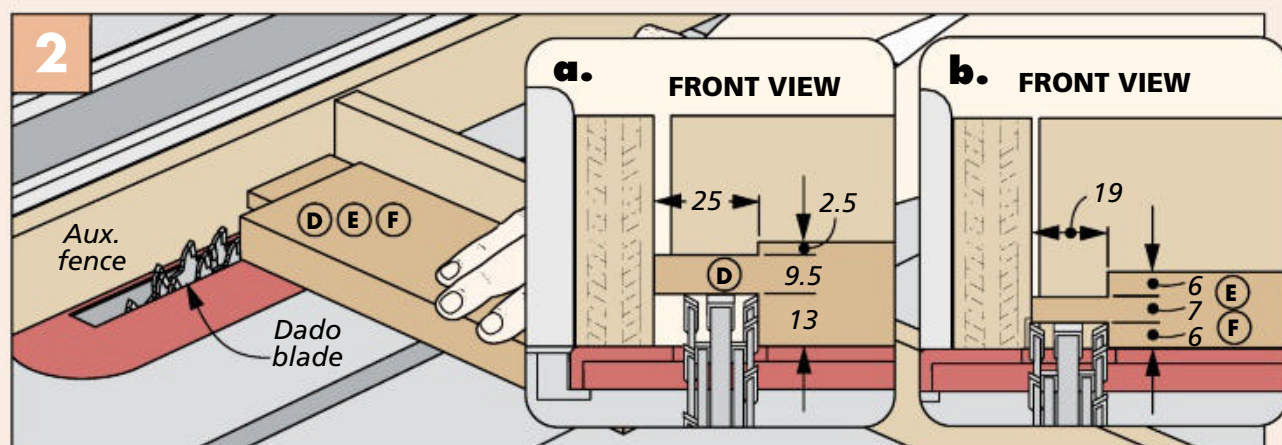
ASSEMBLY. At this point, you can do a little assembly. First glue the rails to the stiles. After assembling the side frames, use a dado blade to cut a tongue on the stiles (Figure 3). Finally, use a rebating bit at the router table to rout a rebate along the inside of each frame and square up the corners with a chisel. With the rebate cut, you can glue the frames to the front and back posts.

Next, you'll want to join the two side assemblies with the top and bottom back rails by gluing them in place. You'll probably find it helpful to add a front spacer to keep the assembly strong before adding the top and bottom. You can cut a plywood spacer and add it in the top groove on the front posts.

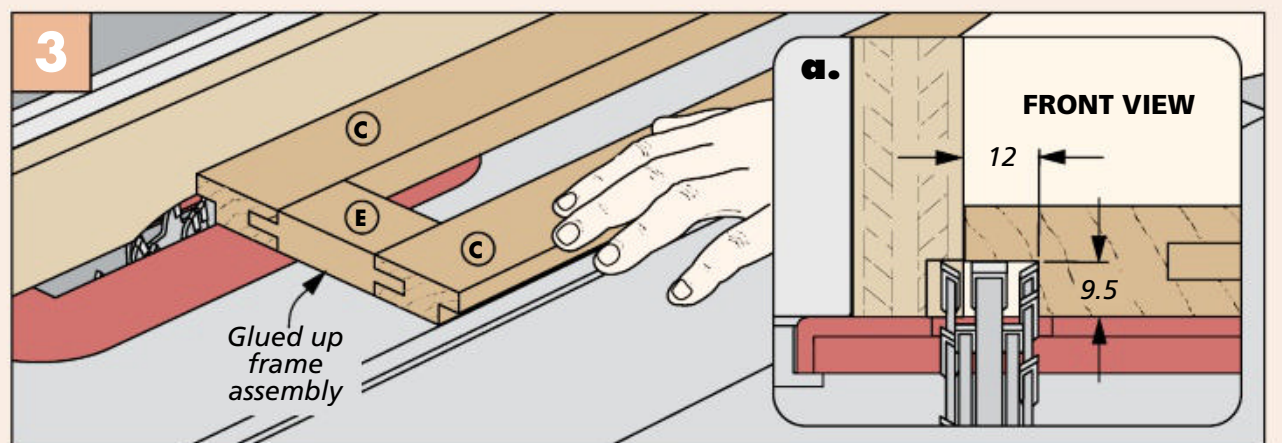
Now, flip the assembly face down and use the rebating bit in a hand-held router to cut a rebate along the outside face of the back (again, square it up with a chisel). Finally, you can take a measurement and cut a plywood back panel to fit in the rebated opening. The panel is screwed in place.



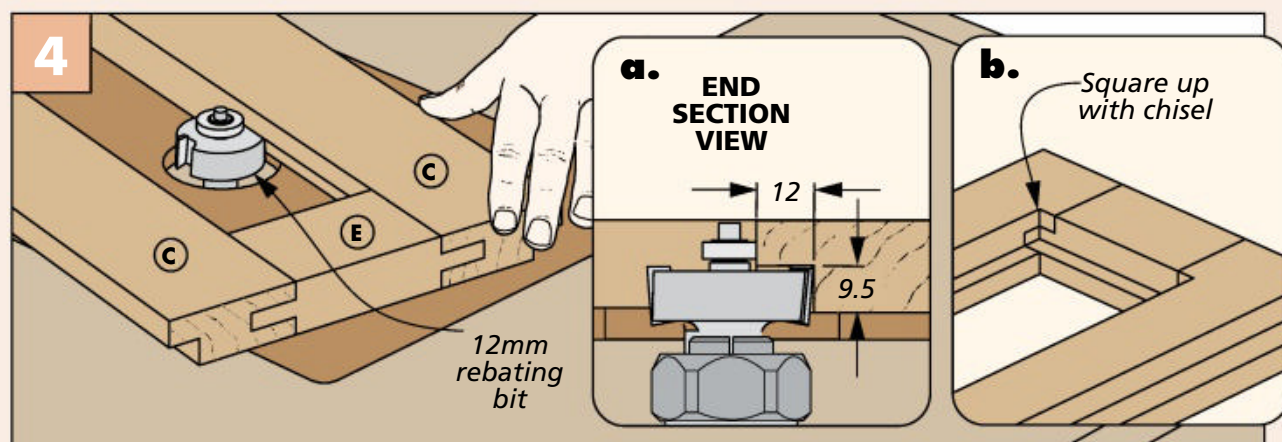
Stopped Grooves. Load a straight bit in the router table. Mark the front edge of the bit as a reference before routing the stopped grooves in the front and back posts.



Tenons. Bury a dado blade in an auxiliary fence. Cut the offset tenon on the back rails before adjusting the blade height to cut the tenons on the top and bottom rail.



Frame Tongues. After gluing up the frame, cut a rebate on both outside stiles. These rebates form a tongue that fits into the grooves in the front and back posts.



Rebate the Inside. At the router table, use a rebating bit to cut a rebate on the inside of each side frame. Use a chisel to square up the inside corners.

BASE, TOP & FACE

With the casework done, it's time to add a few other elements to the clock. The first is the base, followed by the face and the top.

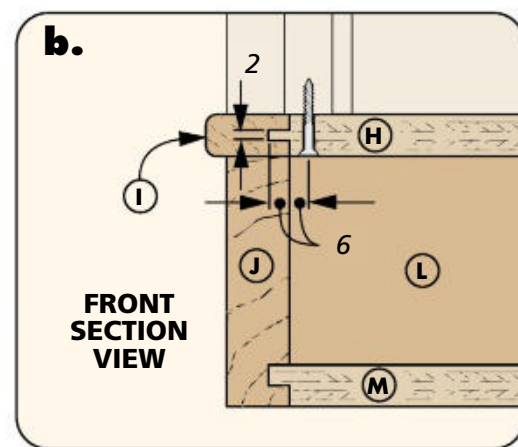
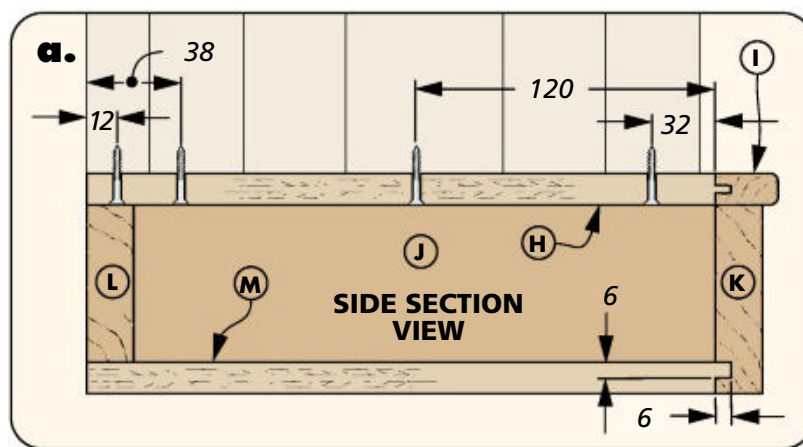
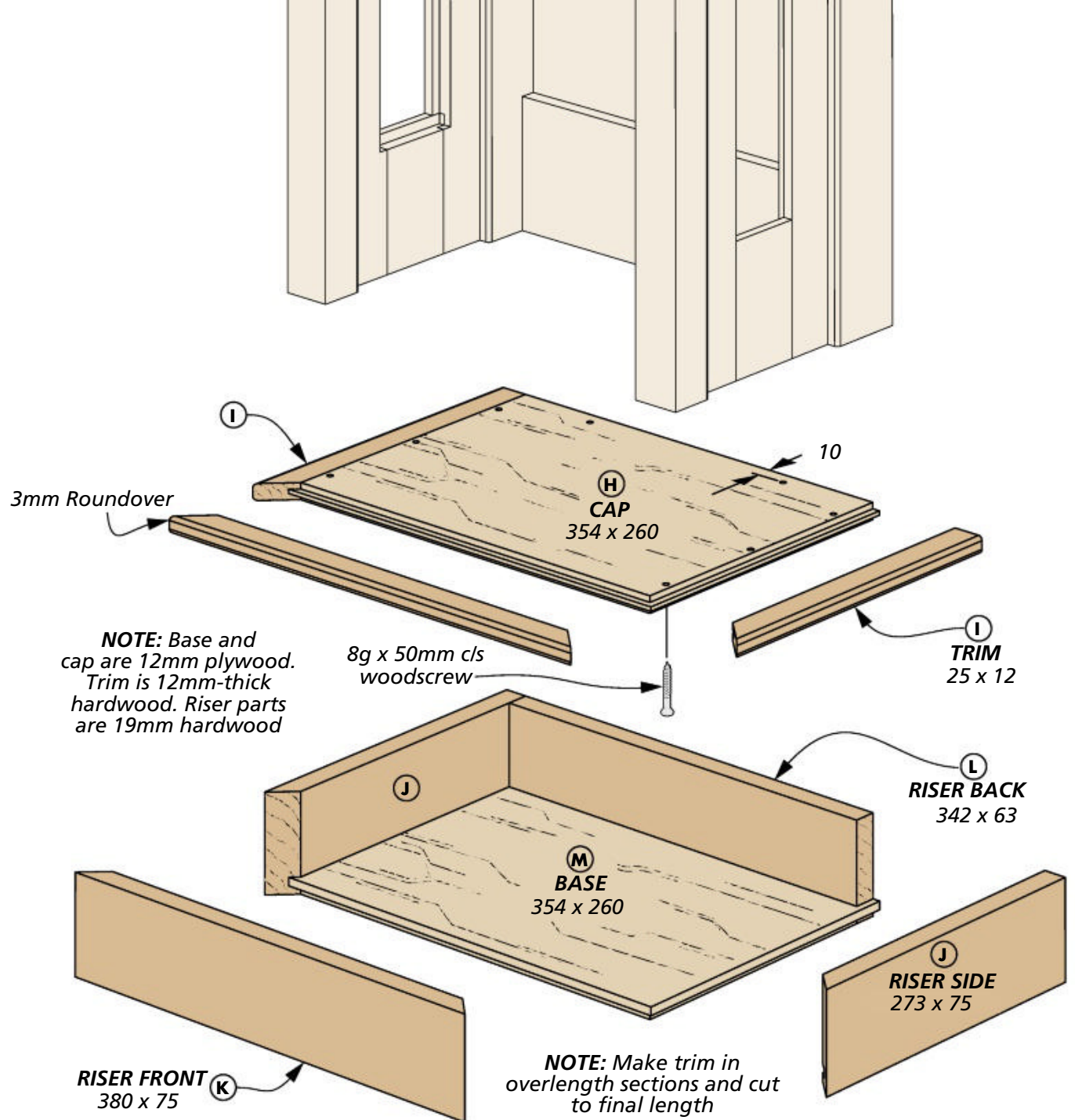
HOLLOW PLATFORM. As you look at the drawing to the right, you'll notice that the base is a hollow platform. A plywood cap is edged with trim and then screwed to the case. Below it, a four-sided box with a bottom is glued in place.

Making the plywood cap with edging is up first. Just a note here: the bottom and the top cap (added later) are identical, so make two. Cut the plywood panel to size at the table saw. Then, bury a dado blade in an auxiliary fence and cut the tongue on three sides of the panel.

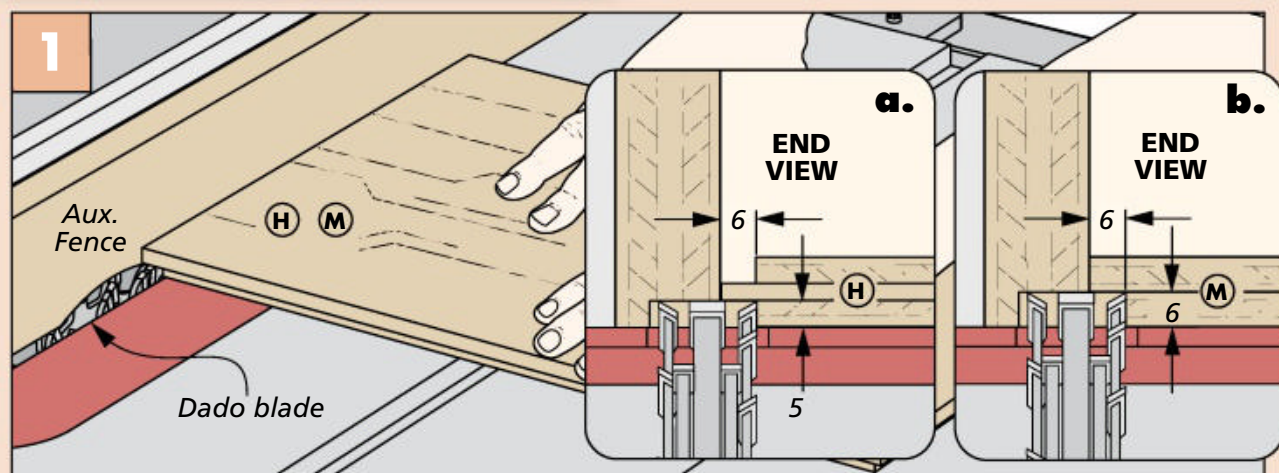
EDGING. Create the hardwood edging by cutting a groove in the edge of some hardwood stock. At the router table, add a small roundover to the top and bottom edge. Now, cut the edging to length. I start by cutting the mitres first and leaving the side pieces long. After all the edging is fit, you can mark the final length of the side trim and cut it. Attach it to the plywood panel with glue.

Once the glue is dry, you can attach the cap onto the bottom of the clock case. Do this with glue and screws. Double check that the case stays square as you're attaching it. Don't attach the top cap just yet. You'll do that in a little bit.

BOTTOM RISER. Now you can create the bottom riser. This is a four-sided box that's mitred up front and has a butt joint at the back. You can see the details in the drawings above. Glue the mitres together and slide the plywood bottom into the groove. Then, glue the back in place before gluing the box onto the bottom cap.



BUILDING A PLATFORM



Rebate Base. Bury a dado blade in an auxiliary fence and use it to cut the tongue on the cap panels and the tongue on the base panel.

FACE & TOP

Adding the face panel and top really start to bring this clock together. The top is made from three distinct layers that are all edged in trim.

FACE FIRST. Before tackling any parts of the top, you have to get the face panel installed. This is simply a piece of plywood that's cut to size. Drill a centred hole for the movement stem and cut out an opening for the bell. Slide it into the grooves in the front posts.

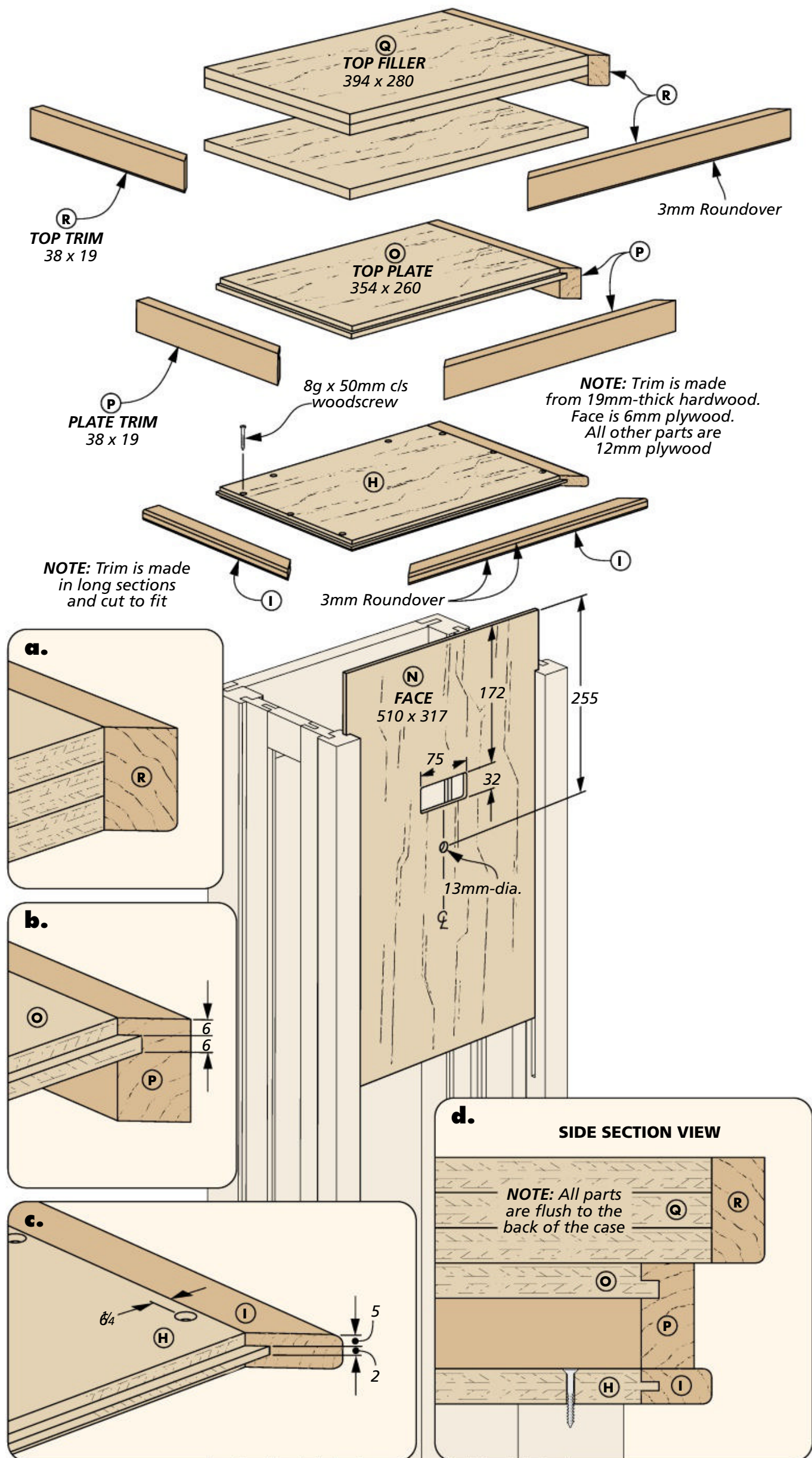
CAP IT OFF. Now is the time to attach the second cap you made, this time on top of the clock. Again, attach it with screws into the posts and frames.

The next few layers of plywood and edging are to create a cap (like the capital on a column). The first layer above the cap is a piece of plywood that has some wider edging. The plywood panel has a rebate cut around three edges to create a tongue. Then, the edging gets grooved to fit over the tongue. Again, the front edges are mitred for a seamless fit. Glue the edging on and glue it to the cap.

ANOTHER LAYER. Now that you've added two layers onto the top of the clock, what's another layer? To make this final layer beefier however, I glued up three layers of plywood.

To simplify the glue up, start by cutting a piece of plywood to size. Then, glue a slightly oversize second layer on. Here, you can speed things up a little bit by relying on some pin nails to hold the parts together while you continue to work. Use a flush-trim bit in the router table to trim it to size. Repeat this step for the final layer.

With the three layers glued up, you can trim it out with hardwood edging. Finally, complete the assembly by gluing it to the top.



The DOORS & CORE

The home stretch of this clock build is, in my opinion, the most fun. The final things to add are the two doors (one for the face and one for the pendulum) and to create the face. I started with the doors.

DOOR FRAMES. Creating the door frames is a great exercise in mortise and tenon joinery. You can cut them how you'd like, but my go-to is always the same. Which is to use a mortising machine to make the mortises and a table saw to cut the tenons. If you don't have a mortising machine, a drill press and chisel will work as well, it will just take a little more time.

Cutting the tenons at the table saw can easily be done with a dado blade buried in an auxiliary fence. Make sure to make a couple of test cuts first to dial in the fit of the tenon in the mortise. After everything's fitting, glue together the top and bottom door.

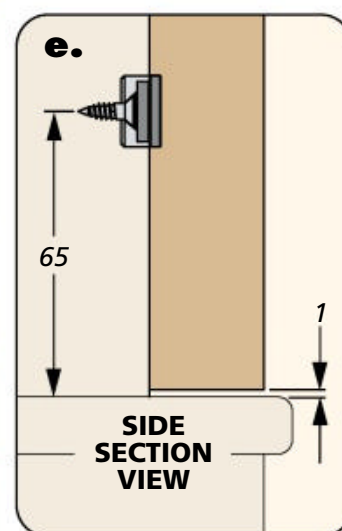
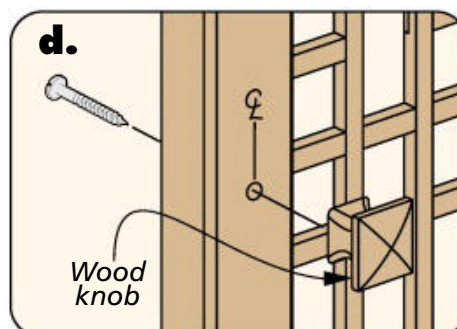
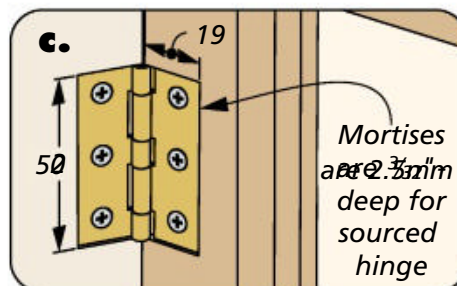
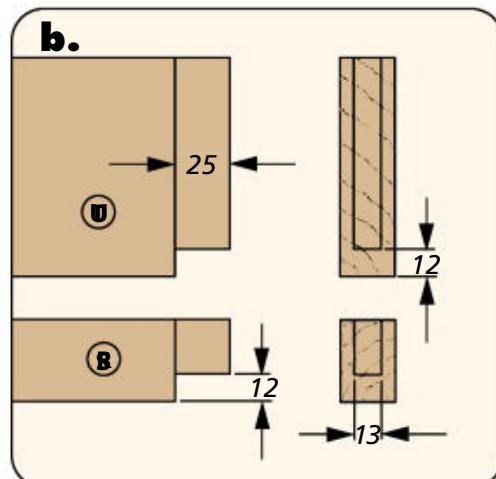
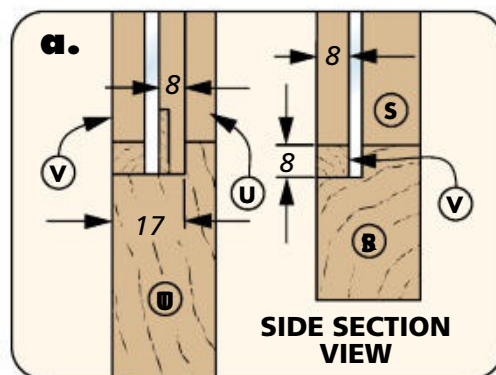
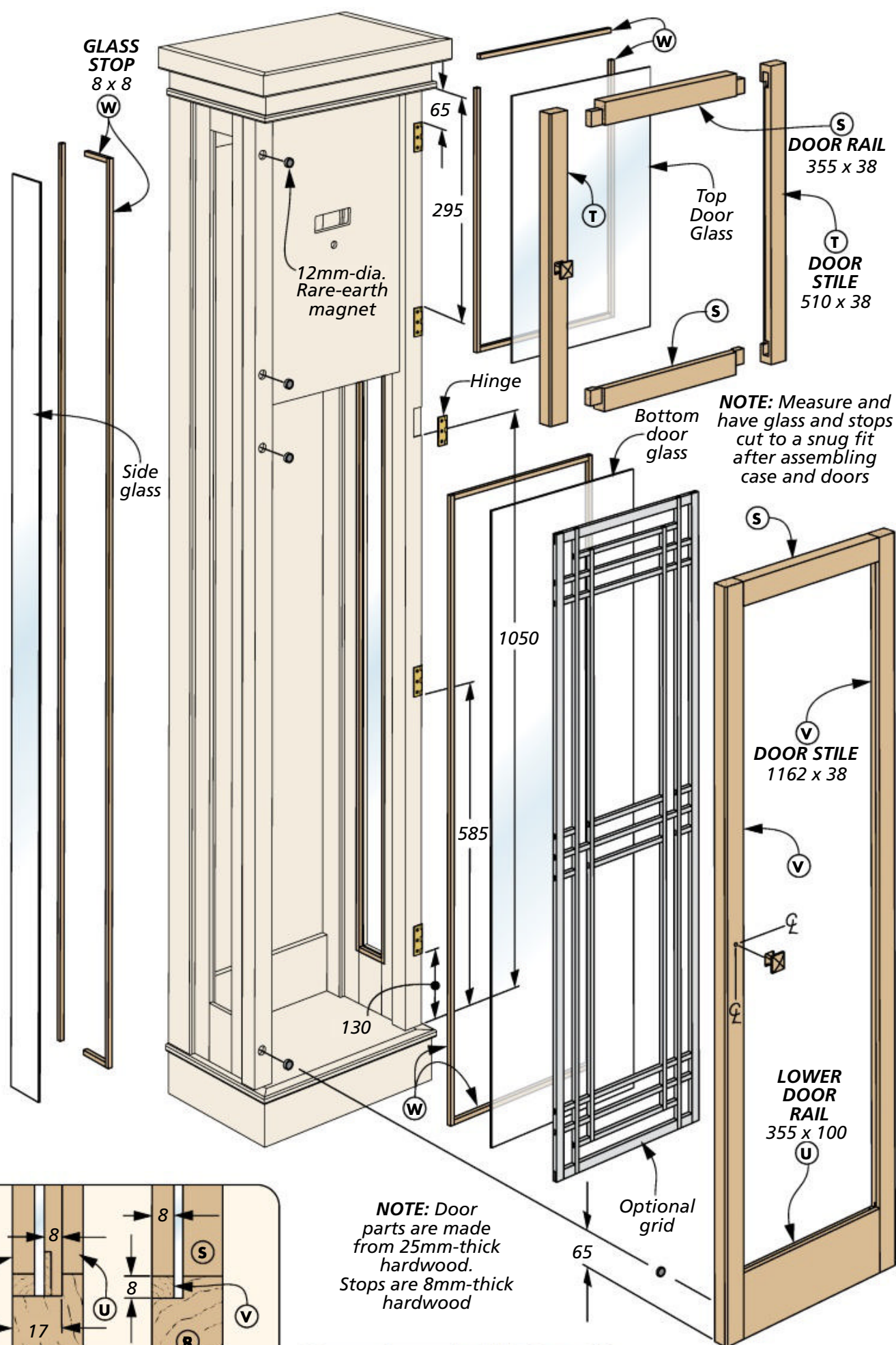
FRAMEWORK & DOORS. To tie in with the Prairie style, I chose to make a framework to go in front of the glass (see pages 50-51). For now, use a router and rebating bit to create a rebate on the back of the doors for the glass and square up the corners with a chisel.

At this point, you can mount the doors. If your hinges require a mortise like mine do, create a small template out of Masonite and use a trench clean-out bit in a palm router to cut it. Then as the final step, you can install the glass in the entire clock. All of the glass is held in with retainer strips that are nailed in place.

NOTE: Turn to page 50 to see plans for building the door framework



Plans for the clockface are at:
australianwoodsmith.com.au



CLOCK PARTS

The final details to put together are the clock parts. These are the movement, support shelf, clock face and pendulum shaft. You can start with the shelf.

MOVEMENT. The movement sits on a support shelf. It's just a couple of vertical support brackets cut to shape at the bandsaw (detail 'a'). They have a trench in them to hold a shelf. The shelf has an opening for the pendulum that is cut by drilling the ends and then cutting out the waste. The shelf is screwed to the face panel (see detail 'c').

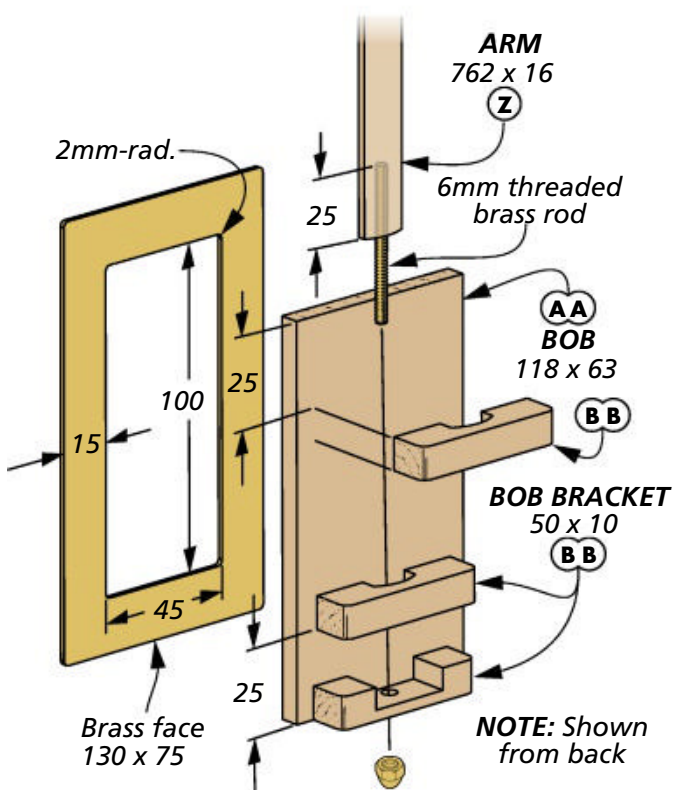
After placing the clock face (details for making it are at australianwoodsmith.com.au), you can install the movement. Wrap it up with a couple of hands and attach the weights.

PENDULUM ARM. The final detail to take care of is the pendulum arm. The arm is a piece of cherry that's routed into a "football" profile (Figure 1 below). Once that's done, epoxy a threaded rod in a hole on the bottom of the arm (drawing below).

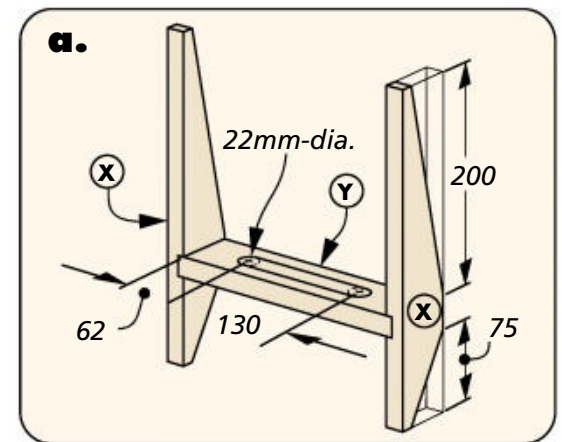
The brackets for the pendulum bob are cut to size and glued on a cherry bob with a brass face (details below). The bob needs to end up weighing 115 grams so the period of the swing will be one second.

Once the pendulum is hung on the holder, you can apply a few winds to the movement. Once it's swinging, the clock is ready to find its way into your home. And I

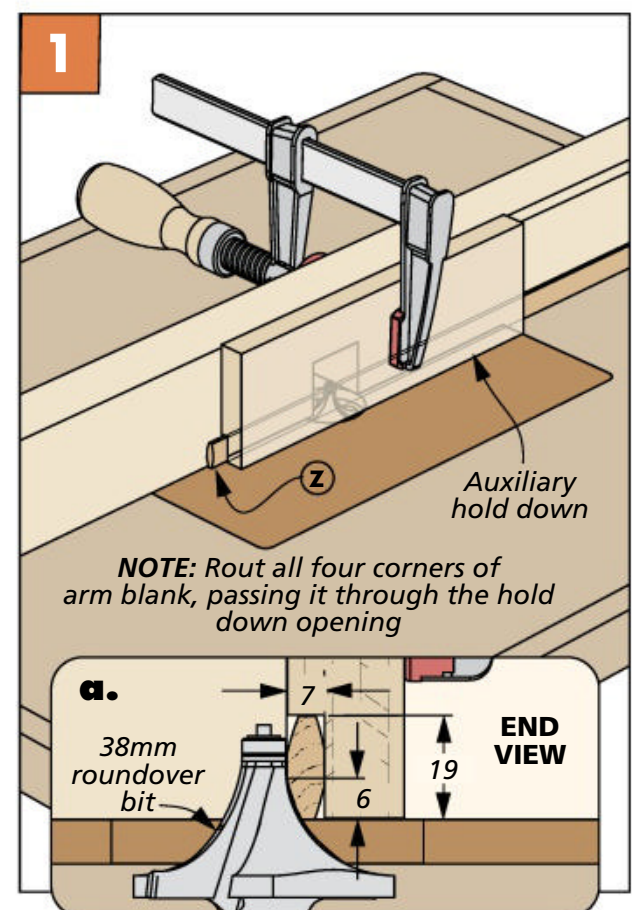
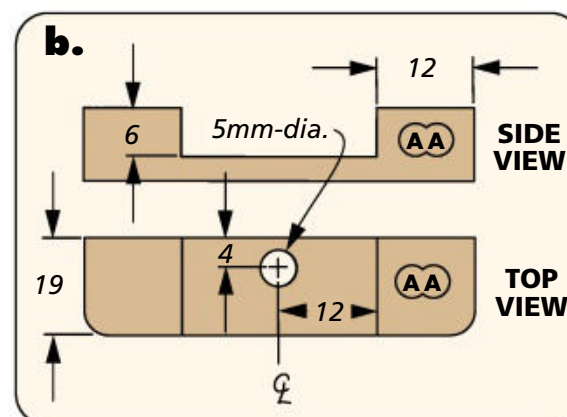
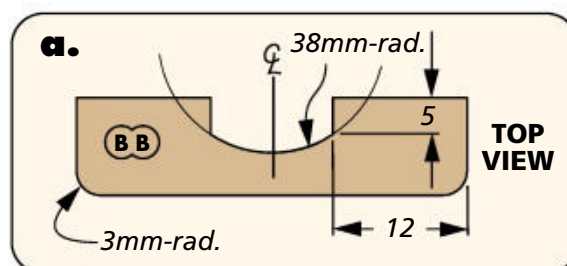
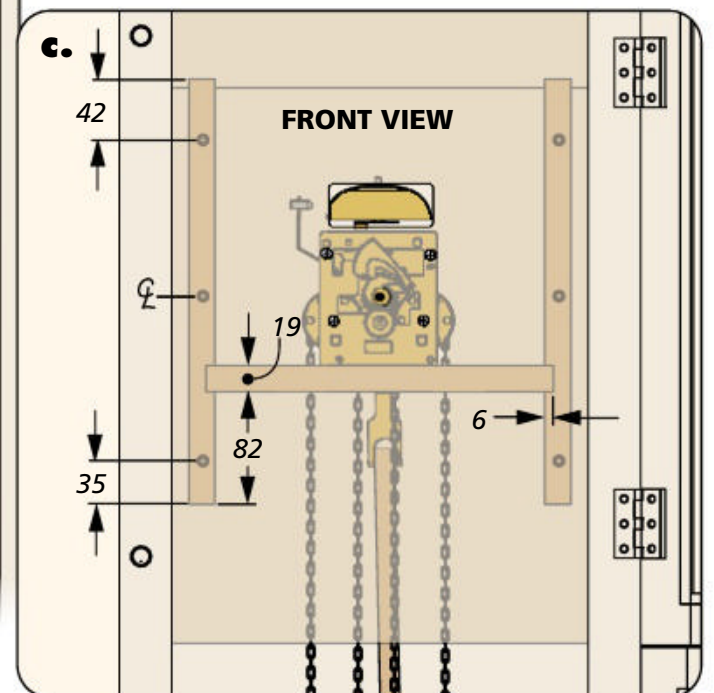
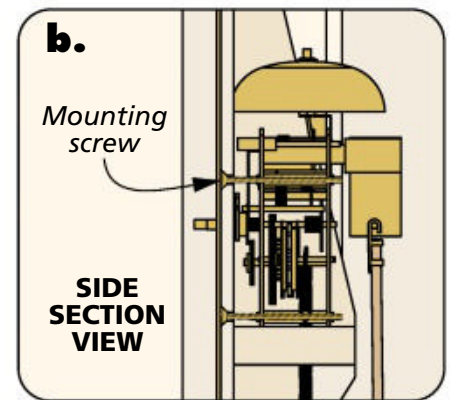
must say (and I'm hoping my wife agrees), that it's a great-looking modern clock that's a departure from traditional grandfather clock styles.



NOTE: All parts are made from 19mm-thick hardwood



NOTE: Movement is mounted with M3 standoffs and M4 countersunk screws





Tall Clock **DOOR** **GRIDWORK**

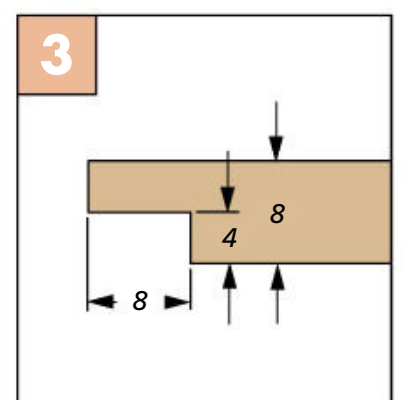
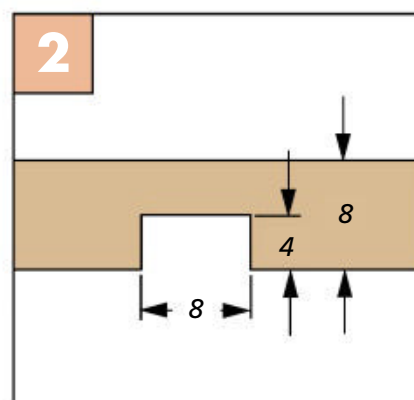
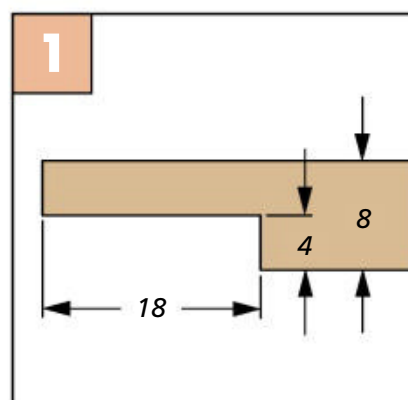
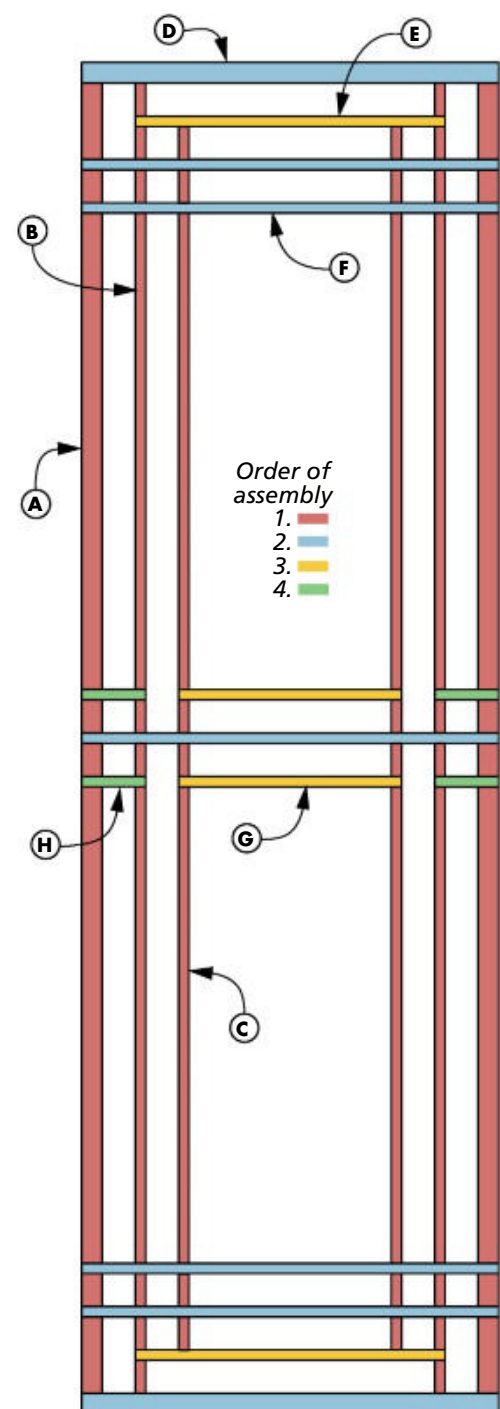
The grid work on the front of the tall clock is iconic for the Prairie style. It's a series of thin, narrow strips that are assembled with half laps and rebates forming a grid.

STOCK PREP. Start the grid work by planing all of the stock to thickness. Then, you can rip strips to the widths shown on the next page. Note that the 16mm rim pieces are wider than the inside 8mm framework. You can get a total count of the number of parts needed by looking at the drawing to the right. The final assembly nests inside the door frame, reducing the exposure of the outer frame to 8mm (matching the inner frame section).

NOTCHES FIRST. The first thing you'll need to do is notch the end of the pieces to create half laps. You can see these in Figures 1 and 2 below. Create these notches at the table saw with a dado blade buried in an auxiliary fence. Next, you can switch the dado blade set-up over to make the notches on the interior of all of the parts. Dial in the width carefully — you'll want a tight half lap joint without any slop.

Once you're happy with how the half lap fits, you can cut the notches in all of the parts. Do this with an auxiliary fence attached to the mitre gauge and a 25mm-wide spacer to help keep the grid sections 25mm apart.

ORDERED ASSEMBLY. With the parts cut, you can assemble the grid work. Here, you'll want to be careful to assemble the pieces in the order shown at right. Start by laying out the vertical pieces first. Then, glue on the horizontal rim pieces (part 'D') and horizontal bar (F). Next, you can attach the short (E) and centre bars (G). Wrap up the grid work by gluing on the outside bars (H). **W**





Mitre Saw Station

This no-nonsense workstation offers all the needed features in a compact, mobile design.

Over the years, we've featured a number of different mitre saw stations, some of them taking up an entire wall. The one shown here hits what I consider a sweet spot in terms of size and features. The drop-down wings on either side of the cabinet open out to provide over 2.4m of workpiece support. Below the saw is a compartment for a dedicated workshop vacuum. And the whole thing is mounted on castors, so it can easily be tucked away when not in use.

START WITH THE CASE. With the exception of a couple of parts, this mitre saw station is built entirely out of 19mm plywood. The case is an open, plywood box. To build it, I started by cutting the panels for the sides, back and bottom to size, according to the dimensions shown in the main drawing on the next page.

The case panels are joined using tongue and groove construction. I cut all these joints at the table saw, but you could use a router if you prefer.



▲ With the wings folded down, the mitre saw station can easily be rolled across the workshop and stored out of the way, until it's needed again.

I started by cutting 6mm-wide trenches near the bottom edge of the side and back panels, as shown in detail 'a.'

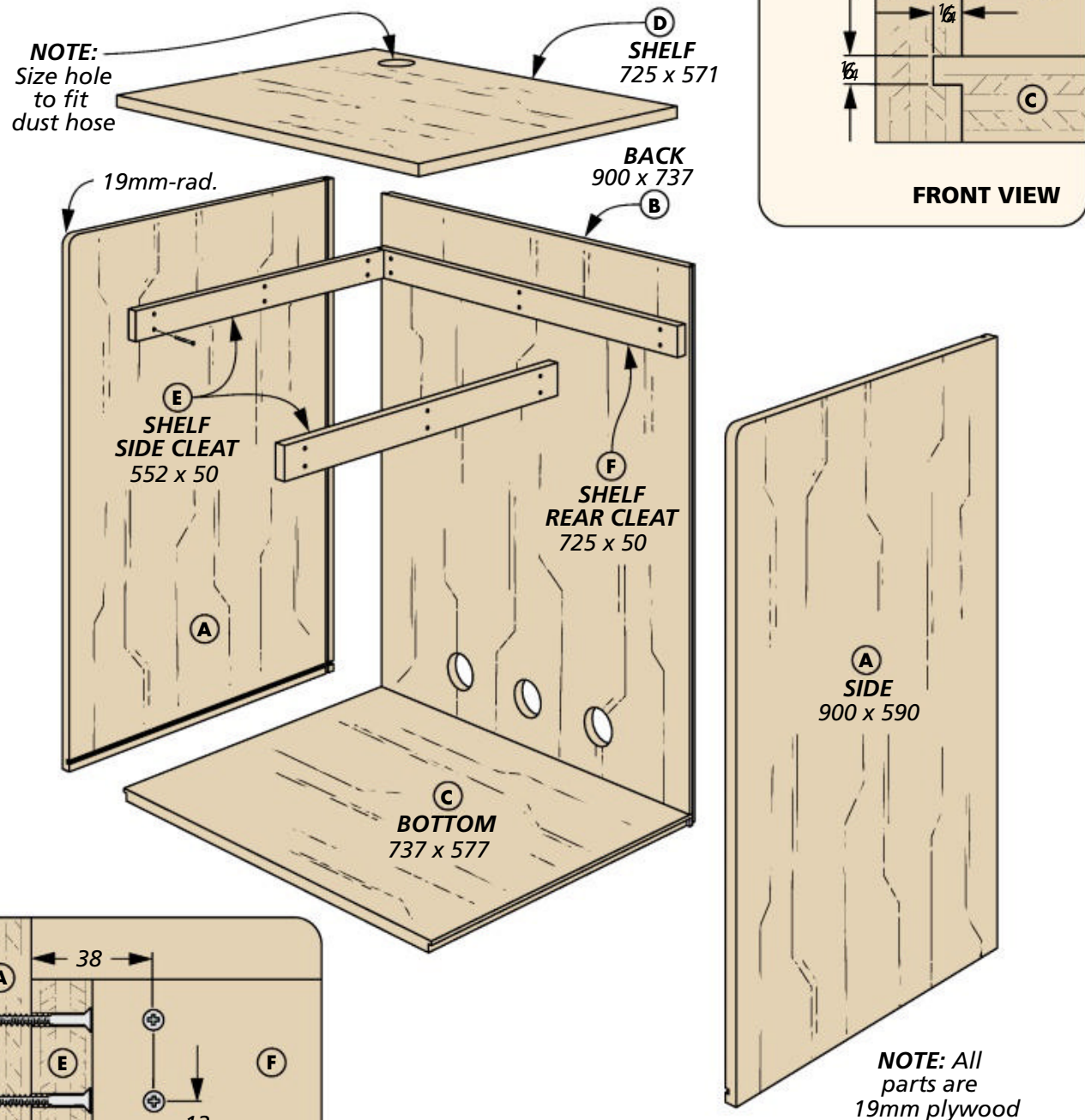
Using the same set-up, cut a groove along the inside back edge of the two side panels. With that done, you can turn your attention to making the matching tongues on the bottom and back panels.

Burying a dado blade in an auxiliary rip fence allows you to dial in a precise length for the tongues. The tongue thickness is controlled by raising or lowering the blade.

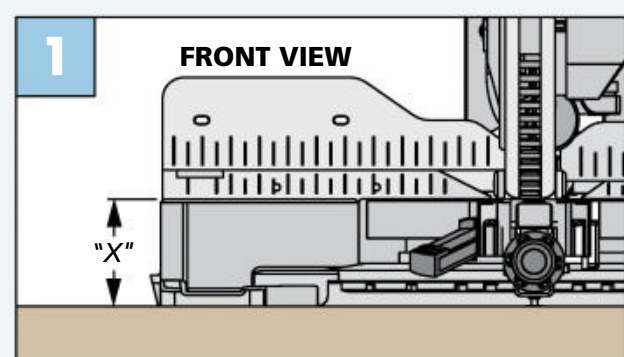
Before gluing up the case, there are a couple of details to take care of. First, I radiused the upper front corners of the side panels. Then I drilled a series of holes in the back panel, as shown in detail 'c.' These holes allow for airflow when using a workshop vacuum for dust collection.

ADD A SHELF. Once the case is glued up, you can add a shelf. The shelf is nothing more than a piece of plywood sized to fit in the case. It's supported by three cleats that are screwed to the sides and back of the case.

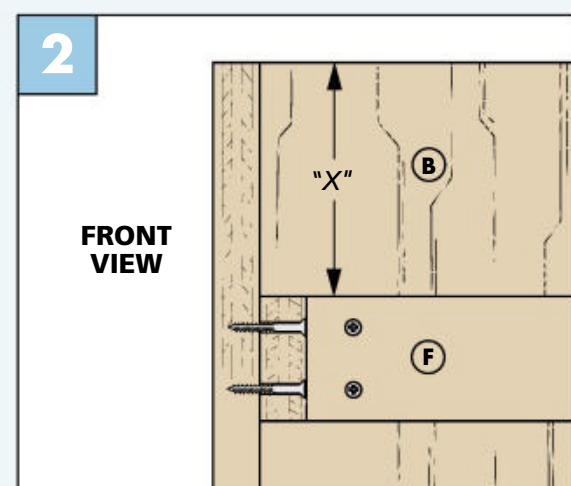
The location of the shelf within the case will depend on the height of the table of your mitre saw. The box below will help you determine where to position the cleats and shelf so that your mitre saw ends up at the same height as the extension wings that you'll be adding next.

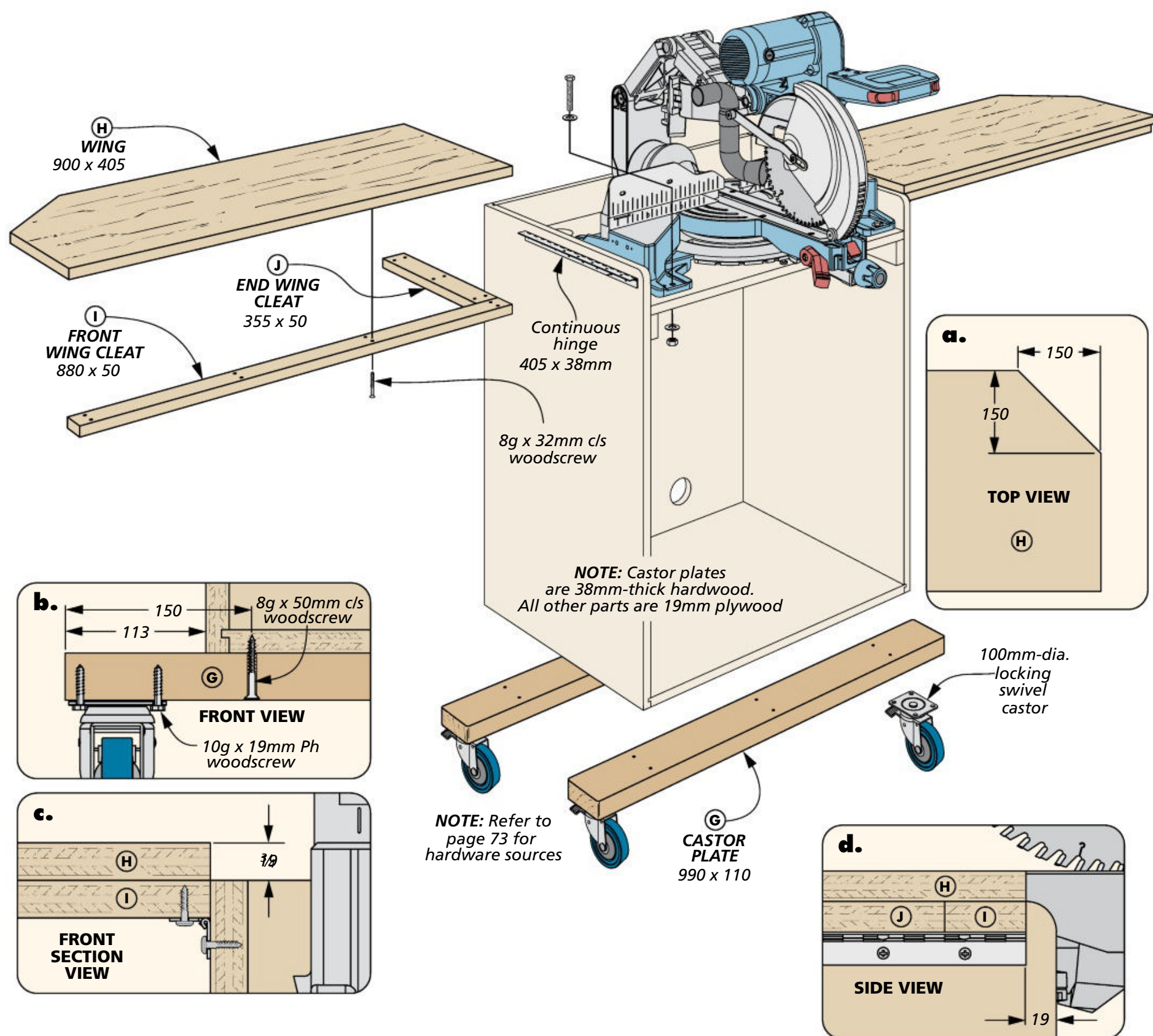


CLEAT POSITION



Mounting Your Mitre Saw. In order to position the cleats for the shelf, start by placing your mitre saw on a flat surface and measure the distance to the working surface of the saw, as shown in Figure 1. Then, use this measurement (plus the 19mm thickness of the shelf) to position the cleats on the case (Figure 2).





Adding the WINGS

With the basic case complete, the next step is to add the drop-down wings. Before getting started on those, however, I decided to add some castors to the case. This makes it a little easier to move the station around as you're adding the wings.

As you can see in the drawing above, the locking swivel castors are mounted to a pair of castor plates. These are simply a couple of pieces of 38mm-thick hardwood. (Or you could make them out of two layers of plywood).

After the castors are mounted, the plates are screwed directly to the bottom of the case (detail 'b'). They're flush at the front and back, and centred from side to side.

WINGS. The drop-down wings are made up of a single layer of plywood with a couple of cleats mounted to the under-

side to add some stiffness. As you can see in detail 'a' above, the outer back corner of each wing is mitred to relieve the sharp corner. Then the cleats are screwed to the bottom of the wing, flush with the end and front edge.

MOUNTING THE WINGS. The wings are attached to the sides of the case with continuous hinges. I found it easiest to mount the hinges to the wings first and then to the case. As you can see in details 'c' and 'd,' the goal here is to position the wings so they are flush with the table of the mitre saw and set back 19mm from the front edge of the case.

Attaching the wings to the case is probably the trickiest part of this project. The task is much easier if you have a helper to hold each wing as you drive the screws

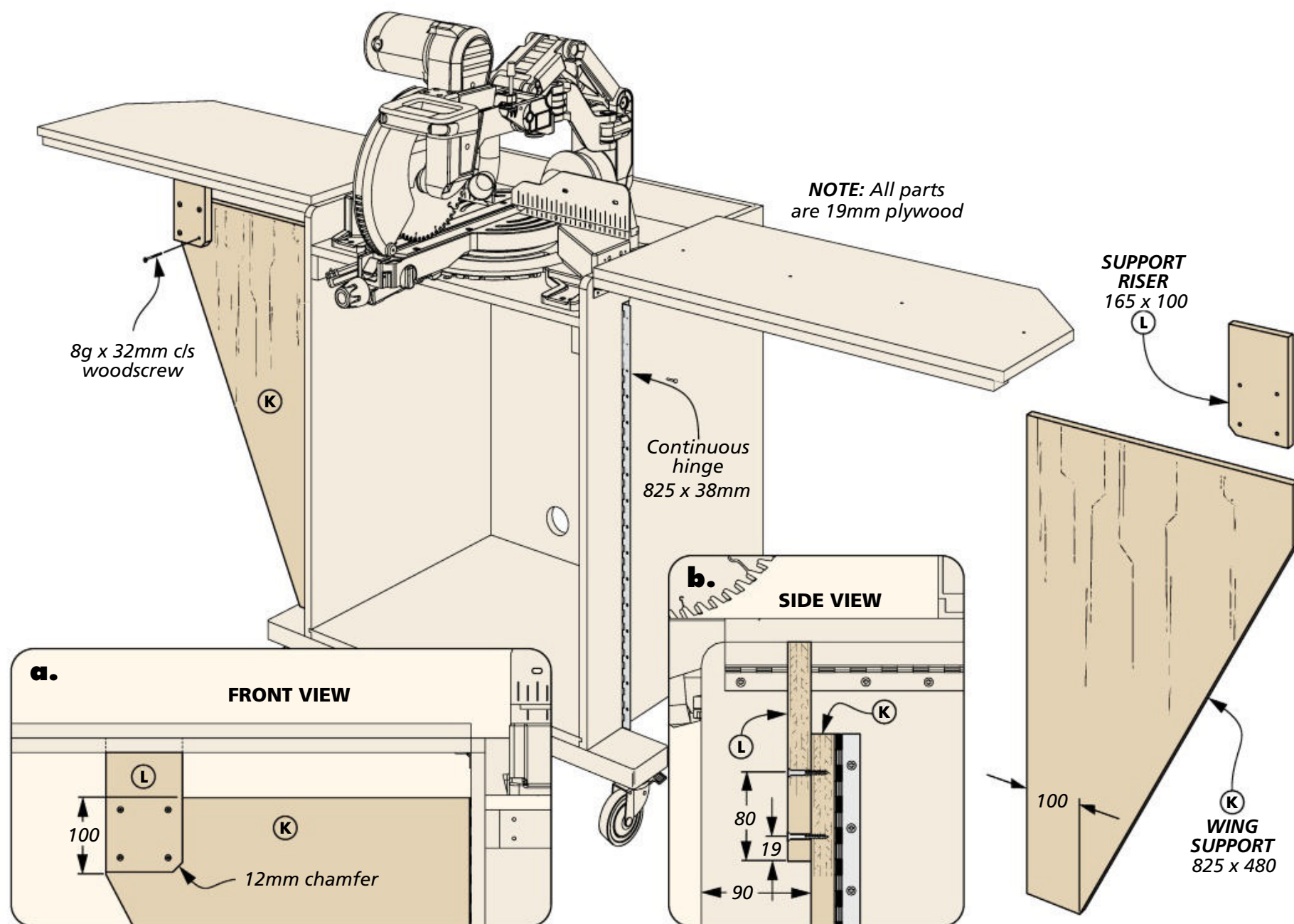
that attach the hinges.

If you're flying solo, you can clamp a long, straight 150 x 50mm board to your mitre saw so that it overhangs each side, as shown in Figure 1 in the box on the next page. Then clamp the wing to the board to hold it in position while you screw the hinge to the side of the case.

HINGED WING SUPPORTS

In order to hold the wings up, I added a couple of wing supports, as shown in the main drawing on the next page. These work similar to the supports on a drop-leaf table. You simply lift up the wing and then swing the support out to prop up the wing.

The supports are made up of two pieces — a support panel and a small riser. The



support panels are cut to overall size first. Then to keep the weight down, I cut a large taper on one edge at the bandsaw.

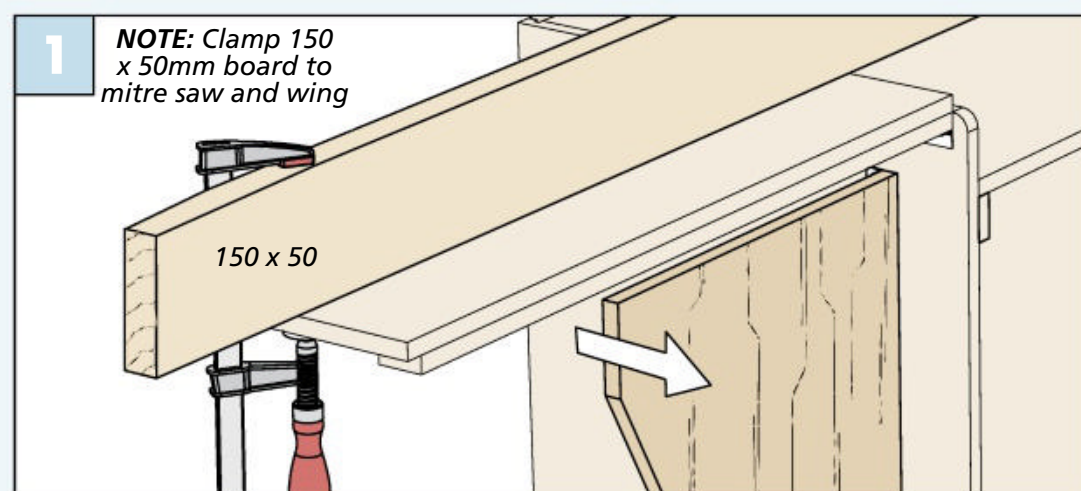
The risers are cut to size next and drilled for mounting screws. Note the chamfer on the lower inside corner (detail 'a').

ATTACHING THE SUPPORTS. Like the wings, the supports are attached with continuous hinges. The goal here is to position the supports so that when they are swung open 90°, the riser will hit the back edge of the cleat on the wing, as shown in detail

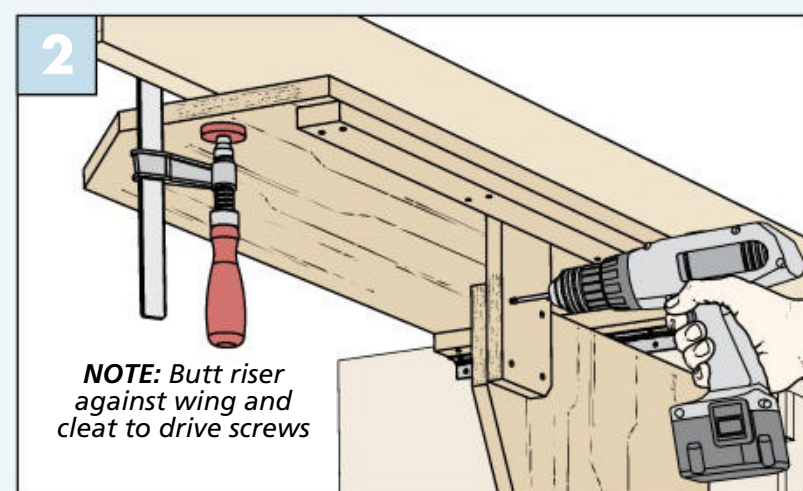
'b' above. (The risers are not attached at this point.) The end of the support should be flush with the lower edge of the case.

Once the supports are hinged to the case, you can screw the risers in place. Figure 2 in the box below shows this being done.

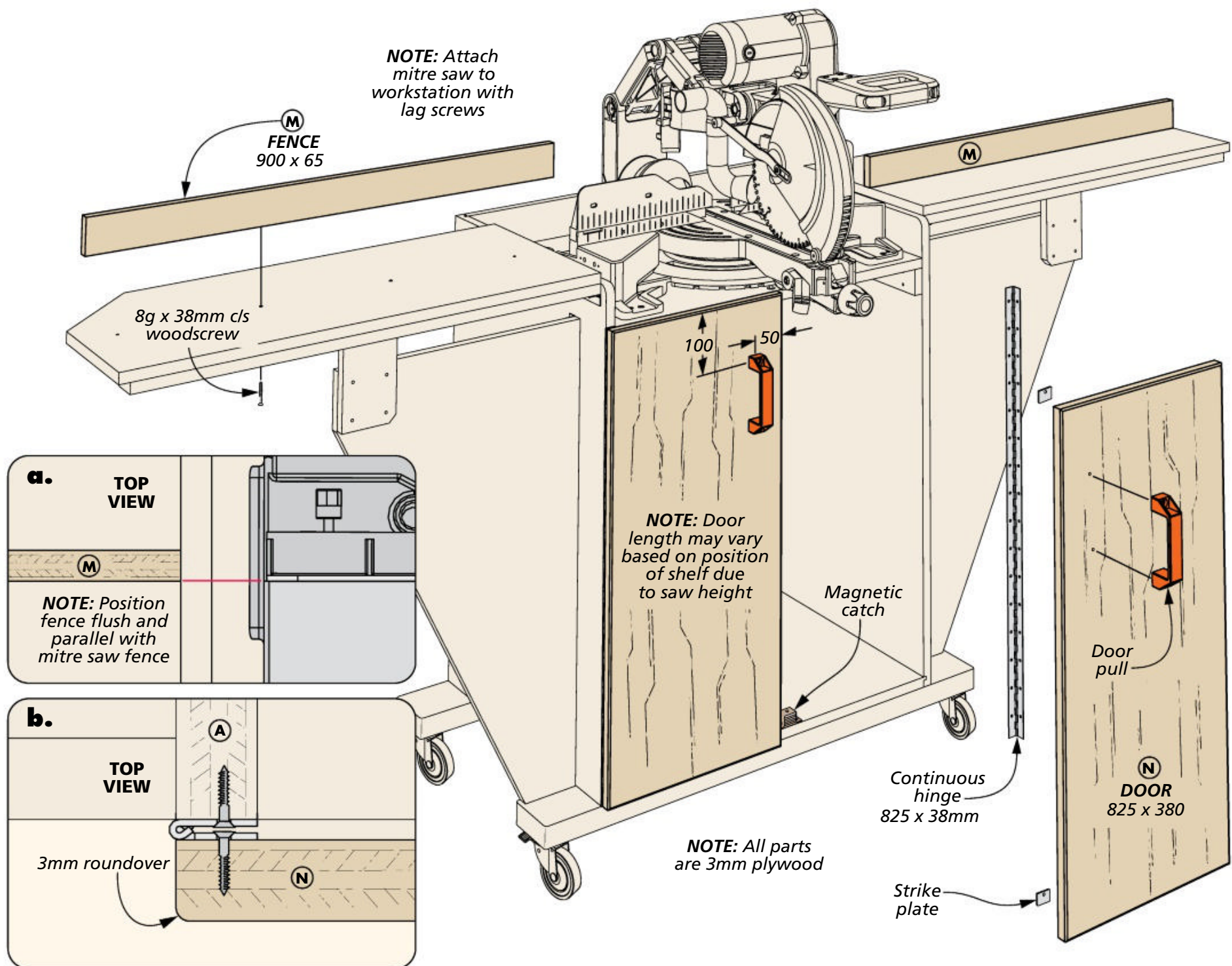
ATTACHING THE SUPPORTS



Mounting the Supports. To hold the wings up while mounting the supports, clamp a long, straight 150 x 50mm board across the mitre saw. Then clamp the wings to the board and screw the support hinges to the case.

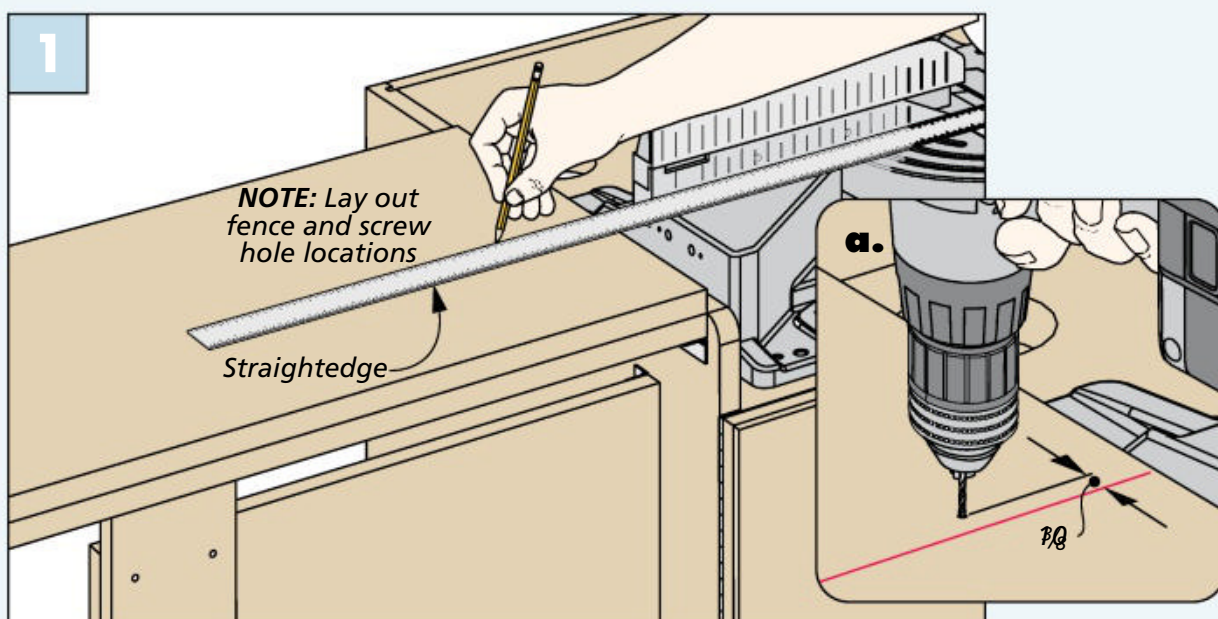


Risers. Position the riser so it contacts the bottom of the wing and butts up against the back edge of the cleat. Then screw it in place to the support.



Completing the STATION

FENCE ALIGNMENT



Aligning the Fences. Place a straightedge against the fence of your mitre saw to lay out the locations of the fences and the screw holes.

At this point, there are only a couple of finishing touches left to complete the mitre saw station — a pair of fences for the wings and a pair of doors for the case. I started with the fences.

As you can see in the drawing above, the fences really couldn't be any simpler. Each one is just a strip of plywood that is screwed directly to the wing.

With the fences cut to size, the next step is to lay out the mounting holes on the wings. Start by attaching your mitre saw securely to the cabinet with lag screws. Next, use a straightedge and rule to mark out the locations for the fences and corresponding screw holes, just as you see in the box at left.

After drilling and countersinking the screw holes, the fences can be clamped to the wings and then screwed in place. Again, you'll want to use a straightedge



- ▲ The compartment below the saw is large enough to house a workshop vacuum. The hose for the vacuum passes through the hole in the shelf to connect to the saw.



- ▲ With the wings folded down, the swivel castors allow you to easily manoeuvre the mitre saw station into a corner of your workshop, until the next time you need it.

as you're positioning the fences to make sure that they're perfectly aligned with your saw.

ADDING THE DOORS. Not wanting to break with tradition, the doors for the mitre saw station are also just two simple plywood panels. But I need to mention something about their length. The doors are sized so that they end up flush with the top of the shelf and the bottom of the case. Depending on where you located the shelf for your particular mitre saw, you may have to make the doors slightly shorter or longer than the dimensions given in the main drawing.

Once you've determined the length for your doors and cut them to size, you can rout a roundover on the front edges. Then mount the doors to the front of the case with continuous hinges, (detail 'b' on previous page).

DOOR HARDWARE. The final steps to complete the doors are to add a pair of pulls and a set of magnetic catches at the top and bottom of each door. These will prevent the doors from swinging open as you roll the station around your workshop.

FINISH. I finished the project with two coats of spray lacquer. You'll have to remove the mitre saw in order to apply

the finish, so just make sure to align the saw with the fences when you bolt it back down.

The last step, should you choose to do so, is to mount a workshop vacuum inside the cabinet. The cabinet enclosure helps to keep the noise from the workshop vacuum down. (But unfortunately, it doesn't do anything for the noise from the saw itself.)

I really like the simple functionality of this mitre saw station. While it may not have a ton of bells and whistles, I think you'll find that it's a practical addition to any workshop. **W**

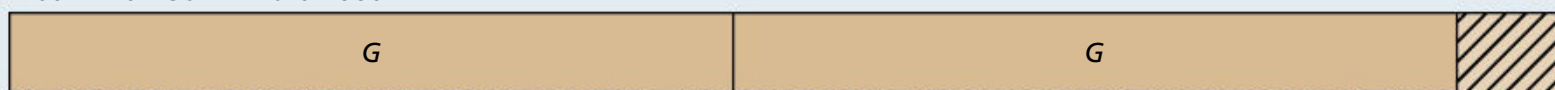
Materials, Supplies & Cutting Diagram

A Sides (2)	900 x 590 x 19ply
B Back (1)	900 x 737 x 19ply
C Bottom (1)	737 x 577 x 19ply
D Shelf (1)	725 x 571 x 19ply
E Side Shelf Cleats (2)	552 x 50 x 19ply
F Rear Shelf Cleat (1)	725 x 50 x 19ply
G Castor Plates (2)	990 x 110 x 38
H Wings (2)	900 x 405 x 19ply

I Front Wing Cleats (2)	880 x 50 x 19ply
J End Wing Cleats (2)	355 x 50 x 19ply
K Wing Supports (2)	825 x 480 x 19ply
L Support Risers (2)	165 x 100 x 19ply
M Fences (2)	900 x 65 x 19ply
N Doors (2)	825 x 380 x 19ply

- (54) 8g x 32mm c/s Woodscrews
- (12) 8g x 38mm c/s Woodscrews
- (12) 8g x 50mm c/s Woodscrews
- (16) 10g x 19mm Ph woodscrews
- (4) 100mm-dia. Locking Swivel Castors
- (5) 900 x 38mm Continuous Hinges
- (2) Pull Handles w/Screws
- (4) Magnetic Latches w/Screws

2100 x 110 x 38mm Hardwood



ALSO NEEDED: Three 2400 x 1200 sheets of 19mm plywood

Asymmetric Lidded Vase

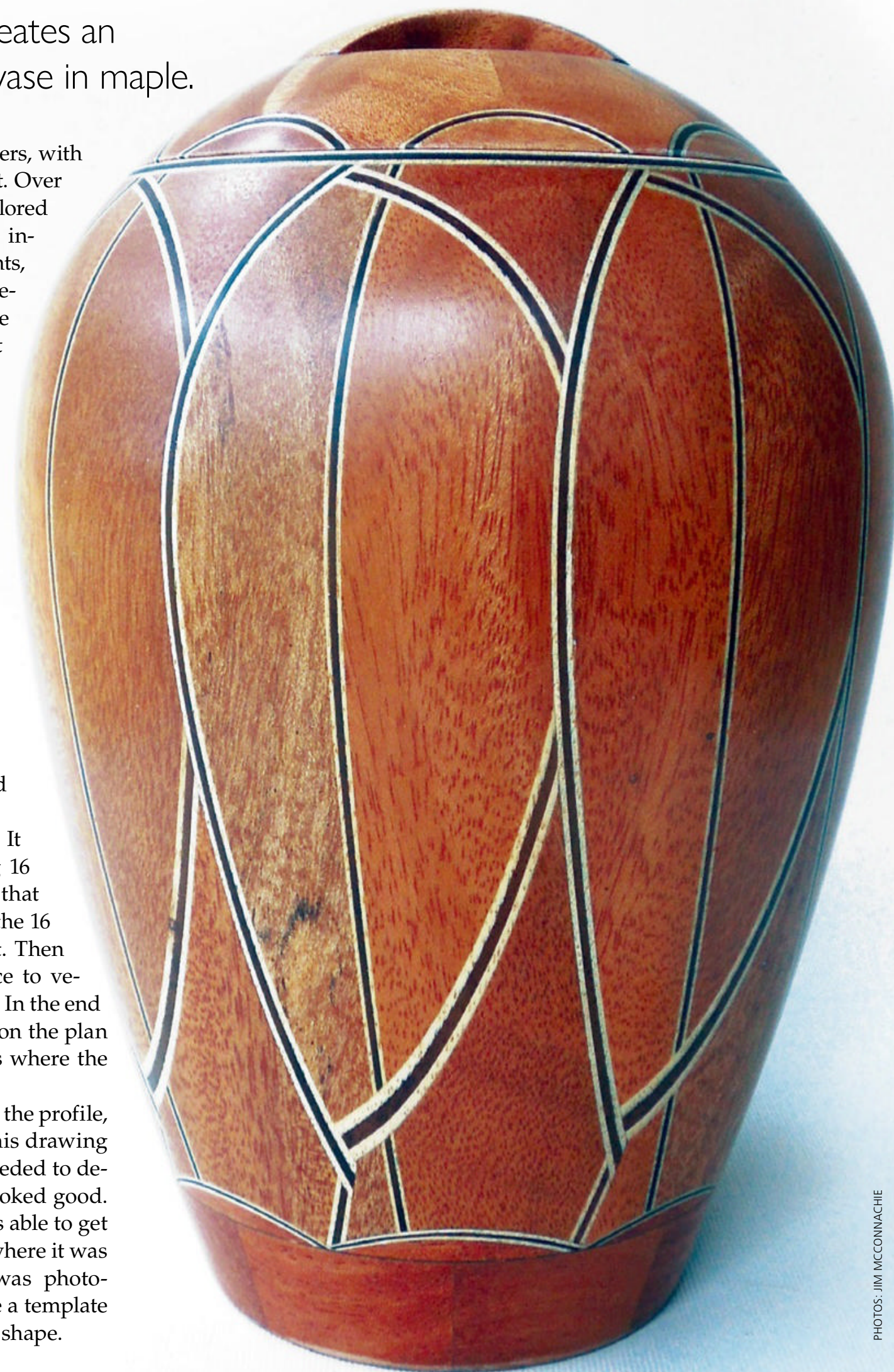
Jim McConnachie creates an unusual segmented vase in maple.

I started out like most segmenters, with the accepted 'brick wall' format. Over the past few years I have explored various forms of segmenting, including the use of curved joints, and have played with using veneer in the joints to highlight the various timbers. The current system moves away from cutting the usual wedge-shaped segments and fitting them together. I still have a few ideas about where to take the method – time will tell.

I started the project by determining how big it was to be – even the development of the size and shape for the finished article was a conundrum. I tried six sections first, but the cutting of the shape of the pieces seemed too complex. With eight sections a common angle of 45° seemed much easier to handle.

Then the planning started. It appeared obvious that cutting 16 pieces was the way to go, but that involved wasting a portion of the 16 pieces when the bevel was cut. Then came the problem of what face to veneer to get the effect I was after. In the end I cut some scrap to the shapes on the plan and quickly it became obvious where the veneer should go.

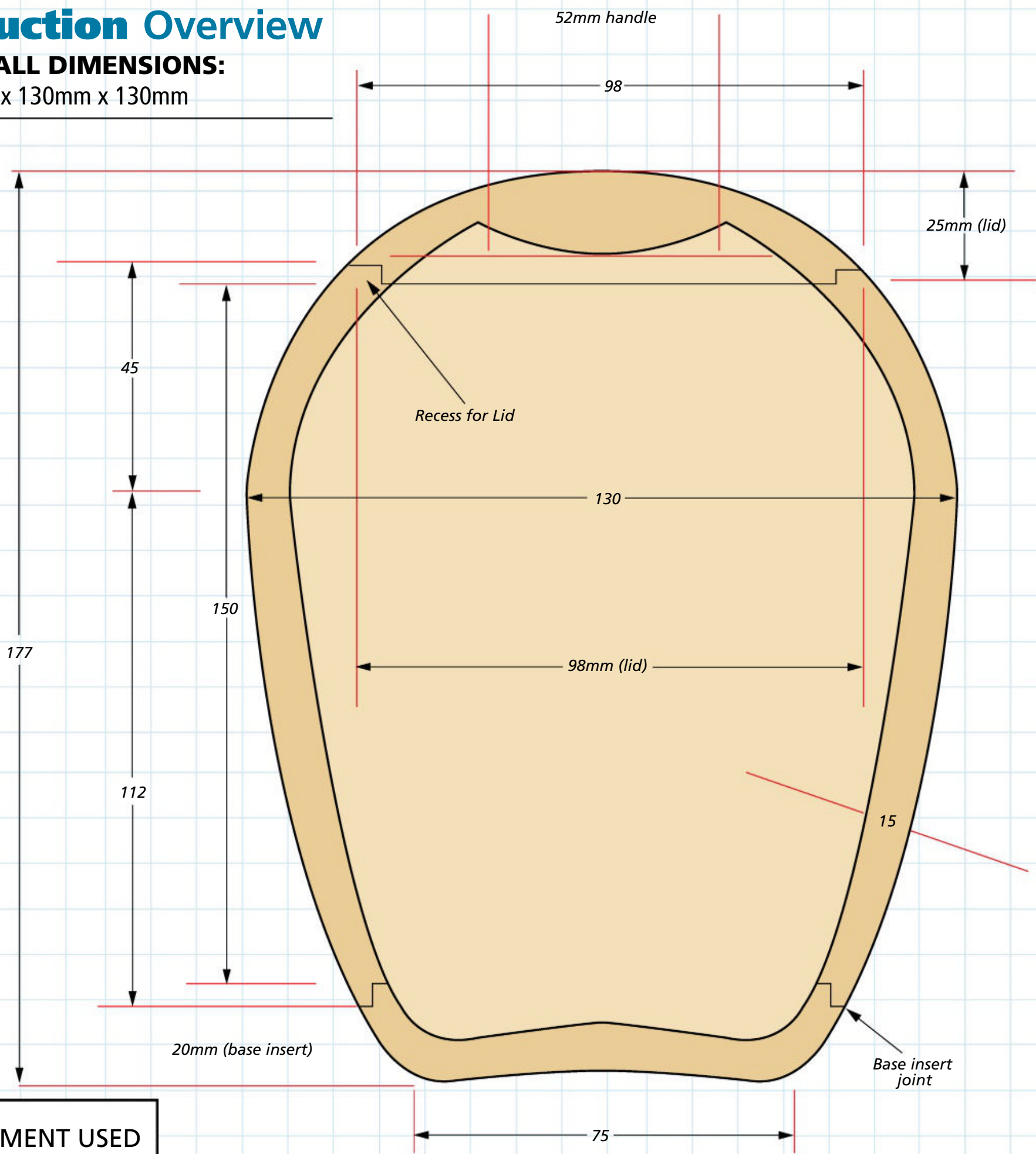
I made a full-size drawing of the profile, showing the wall thickness. This drawing will show the size of timber needed to develop a shape that I thought looked good. From these two drawings I was able to get a timber list and a better idea where it was going. The profile drawing was photocopied onto cardboard to make a template for both the outside and inside shape.



PHOTOS: JIM MCCONNACHIE

Construction Overview

OVERALL DIMENSIONS:
177mm x 130mm x 130mm



EQUIPMENT USED

MATERIALS

- 8 x 25 x 25 x 320mm maple for main form
- Enough veneers in silver ash and walnut to make enough 3-ply to make 32 laminations (main form only). Veneers for secondary laminations to bottom of form. And enough veneer to make a 3-ply sheet 150mm by 150mm
- Some scraps of maple to make inserts 25mm-thick and

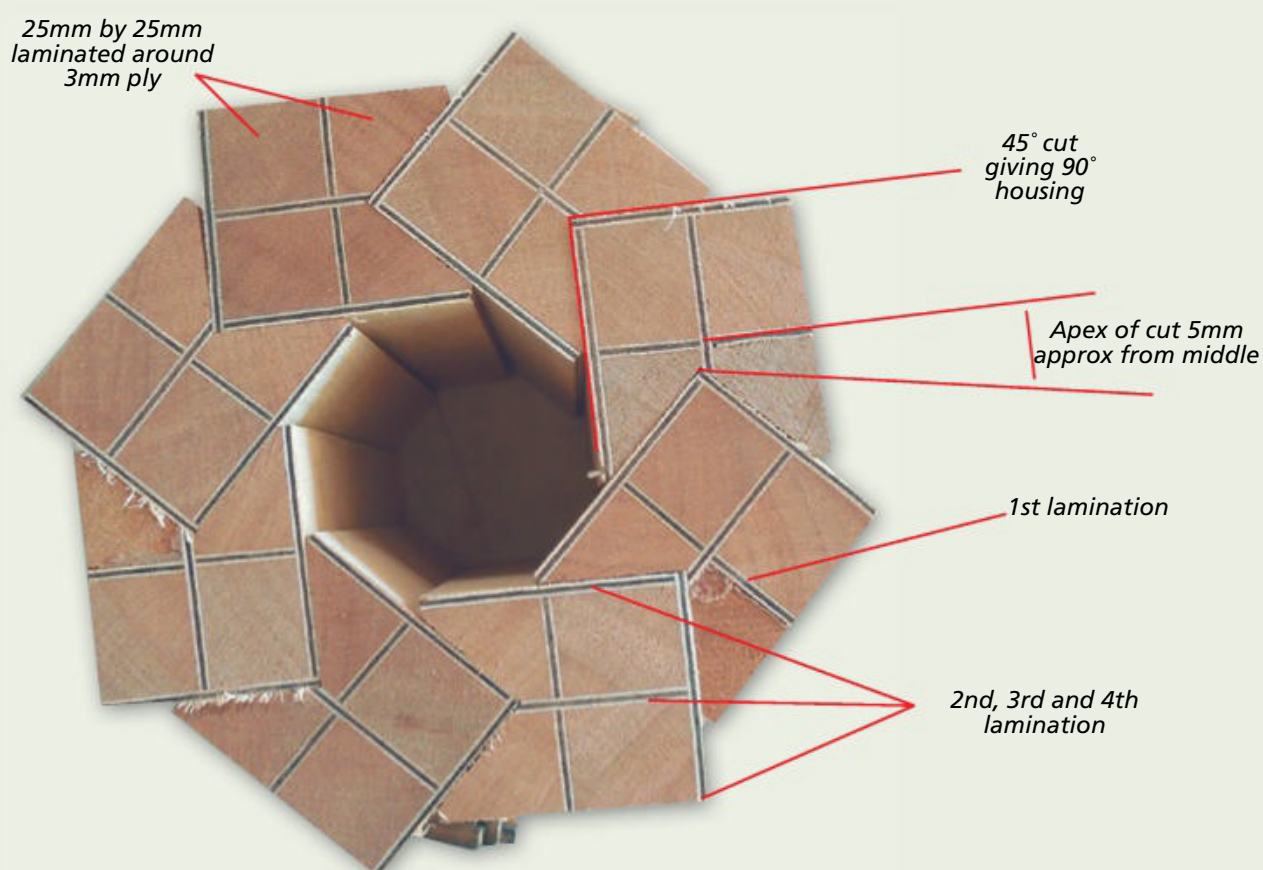
- approximately 75 by 40mm.
- 8 x 150 x 80 x 60mm maple for wedges to make the lid
- 25 x 100 x 100mm maple to make the base
- 25 x 60 x 60mm maple (or contrasting wood) to make the handle
- Scrap wood for tailstock cone and glue chucks

TOOLS

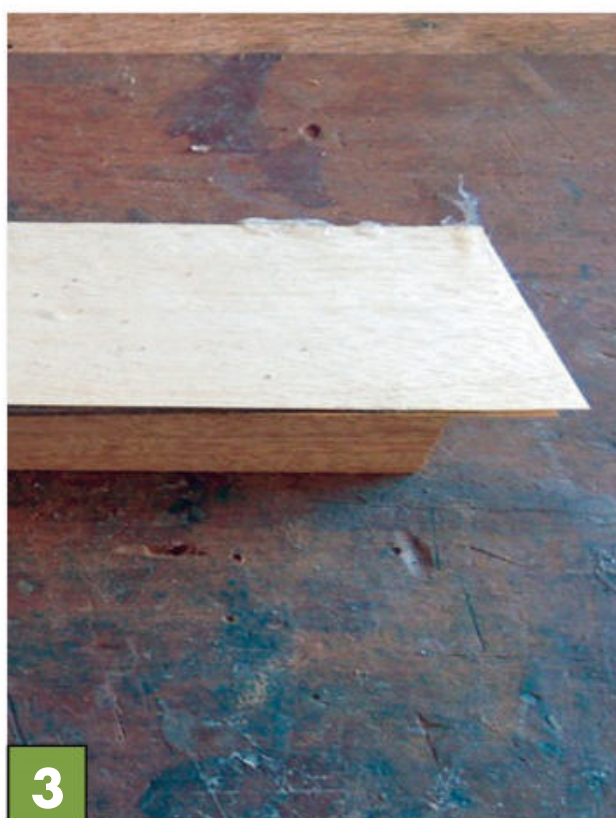
- Clamps
- Hose band clamps
- Wood glue
- Veneer saw
- Spindle roughing gouge
- 19mm bowl gouge
- 10mm spindle gouge
- Parting tool
- Hollowing tool
- Scraper

AN OCTAGON

The eureka moment came after several attempts at crafting a hexagonal barrel shape. Cutting 45° mitres on a table saw is a much easier challenge. As you can see the mitred housings act as keys and lock the whole barrel shape together. The added surface area created by the mitred grooves gives the Tite-Bond glue more fibres to penetrate and lock together. This design evolved before my eyes as I turned it to shape. The scalloped sections added to the bottom and the top give the vase an Art Deco vibe. Challenging to create but worth the effort!



1 I started with eight pieces of 25 x 25mm maple stock 320mm long. A laminate of three pieces of 1mm veneer, two light coloured and one dark between them, was glued between two pieces of maple and clamped to cure. This was done four times. The 3-ply was trimmed once dry. NB: the extra lamination in the photograph is for the base insert to be made later.



2 Next, a layer of the 3-ply is glued to one of the 53mm faces. As you can see I processed two 53mm-wide faces at a time by creating a sandwich of veneers between the two sections (taking care not to have any glue migrate between the outer faces of the veneer).

3 Once the lamination is cured the ply is trimmed flush with the block. A veneer saw is the best tool for this.

4 The blocks are now ready to be cut on the table saw. I swept the table down to remove any dust and then used a drafting square to set the saw blade at precisely 45°. The cut is made from about 5mm in from the corner of the block. Note that I have lowered the saw blade below the table and moved the fence to the right. I have removed the guard here for the photograph. These blocks were then cut to half length, giving me eight pieces.

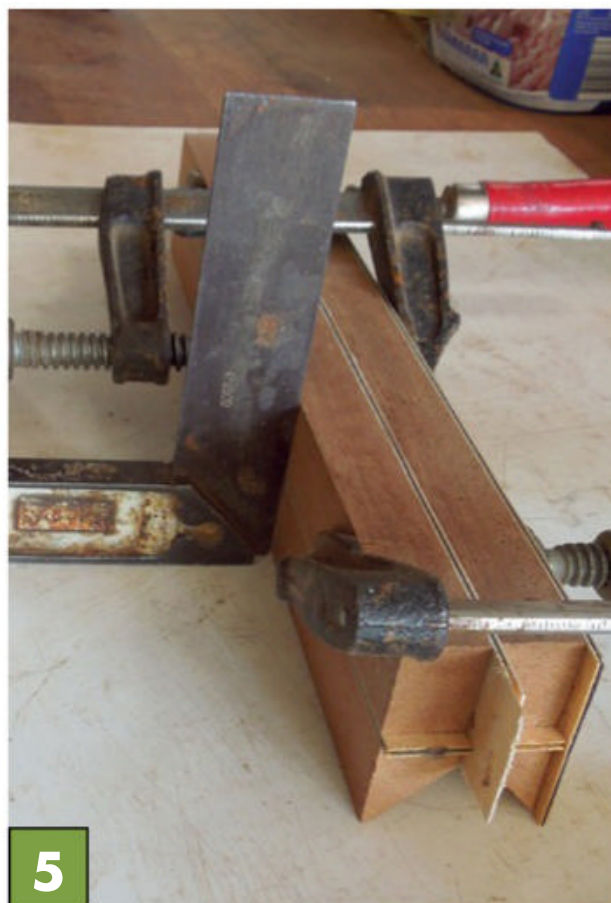
5 Two pieces are joined at the short face, another lamination is added between the cut pieces and a further piece to one of the side faces. It is critical that the two 'sharp' edges are at exactly 90° to the face.

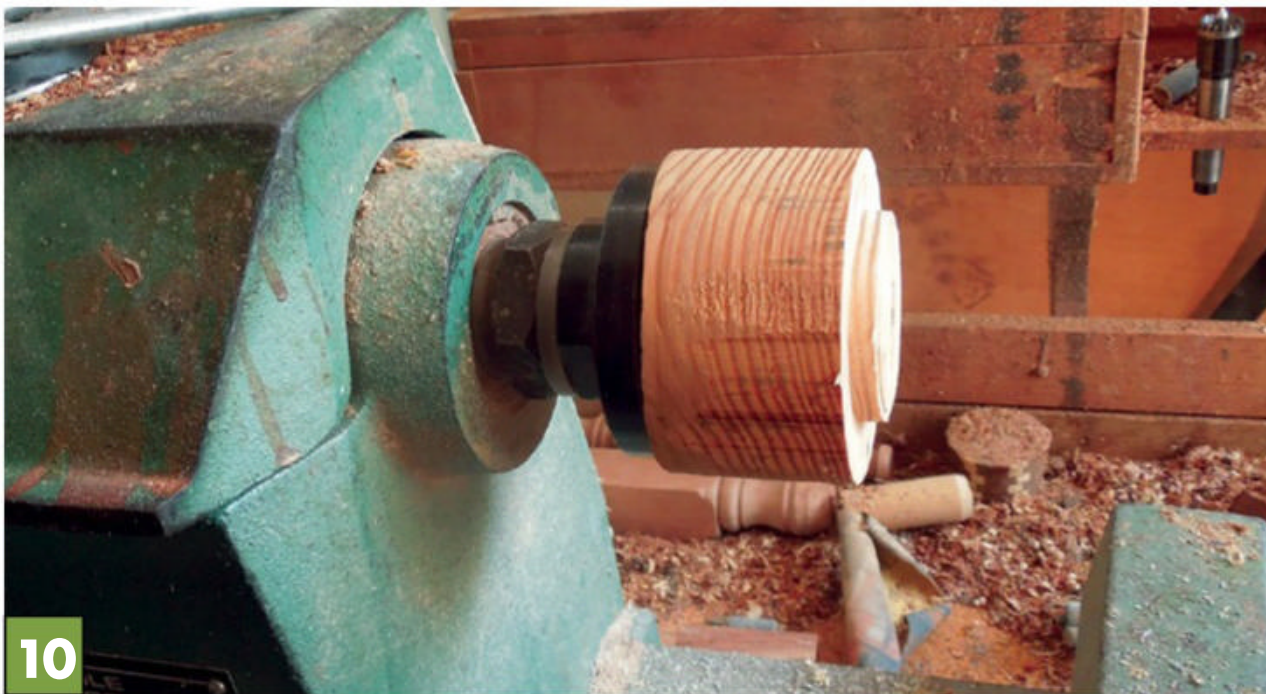
6 After a few attempts without glue, I worked out that, with the two 'sharp' edges down on the bench, a small try square made sure that the pieces would be correctly glued together. Once cured another lamination is added to the face opposite the V.

7 The blocks were then cut to half length, giving me eight pieces 158mm long. Now that the glue has dried thoroughly and the bottom of the V was perfectly clean, it was time to try a dry fit of the whole assembly and check for gaps.

8 The dry fit looked good and didn't need any tweaking. It can be seen here which sides of the pieces were veneered.

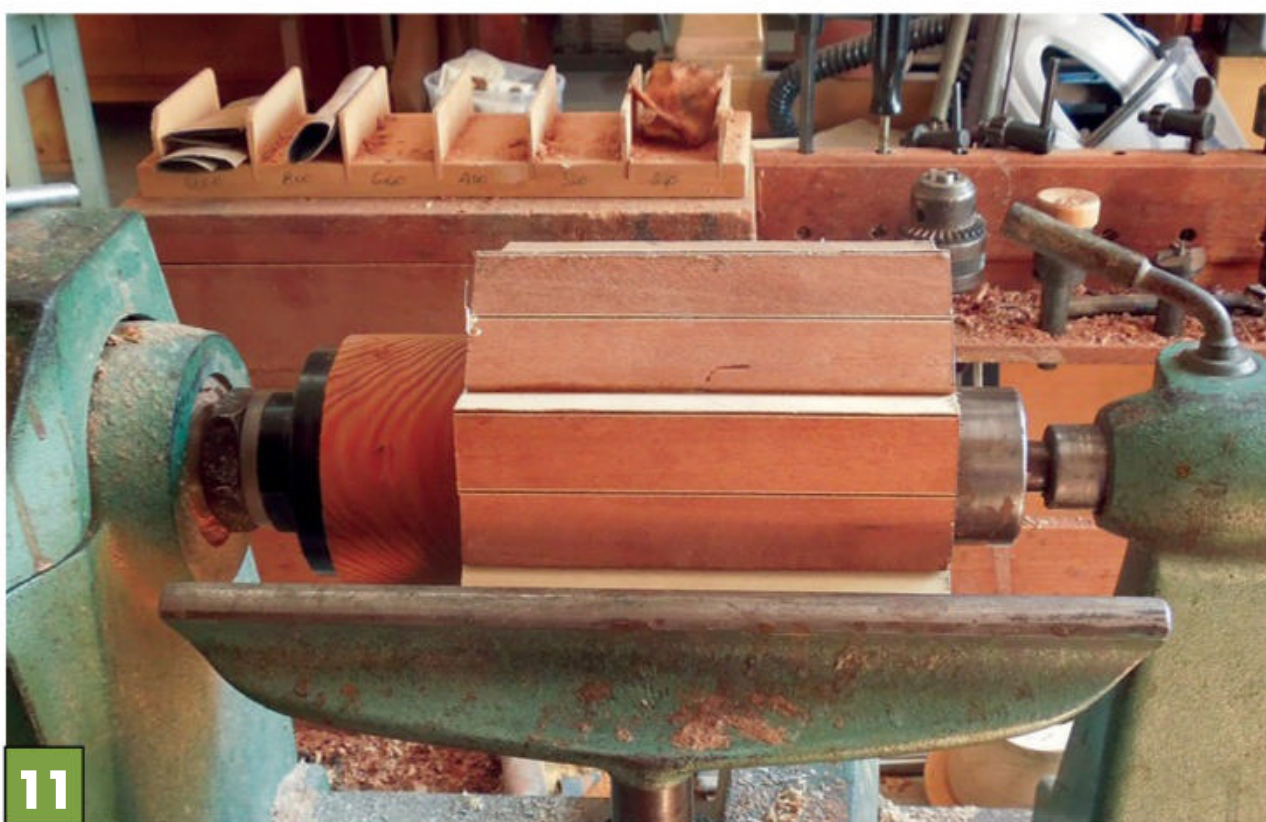
9 I applied glue to the V of two sections and inserted the square back of one into the V of the first piece. Glue was applied to the V of a third piece, and the square back inserted into number two and so on until the assembly was completed. I used two worm drive hose band clamps to hold the job while the glue set.





10

10 Now the fun begins. I fitted a waste block to the small face plate and turned it round. Then I turned a small spigot to neatly fit into the roughly octagonal hole running through the form. This is only a friction fit to allow the barrel of the form to be roughly turned to a simple cylinder. The tailstock end is supported by a large revolving cone centre. The mitred nature of the barrel sections locks the shape together, stopping it from "bursting" as the tailstock is driven home.



11

11 The barrel supported at both ends between the wooden chuck and a wood cone at the tailstock end of the blank. The tool rest is set 2mm clear of the barrel. Woodfast tool rests are one of the best in the business, the cove cast on the face of the rest allows your forefinger to slide along with ease, giving you comfortable control of a gouge or chisel as you slice away at the stock.



12

12 The blank can now be turned to a cylinder using a 25mm spindle roughing gouge. Take light cuts to avoid chipping out the straight edges. I like to run the lathe at its second slowest speed when roughing down a section this diameter. When the gap between the stock and the rest is more than 10mm, I stop the lathe and adjust the rest so that the gap returns to 2mm. The tailstock end is carefully trued up square with a 6mm parting tool, in preparation for gluing to a faceplate.

13 Here I have used a faceplate made from wood. A threaded hole allows it to fit straight onto the headstock. There is a spigot turned on the face of it, not visible in this photograph. The spigot fits neatly into the octagonal centre of the barrel. The barrel is fitted with the prepared squared end face onto the wooden faceplate on the lathe, with the large cone revolving centre supporting the other end. I used good-quality hot-melt glue to fix the barrel to the wooden faceplate. Apply plenty of hot glue (in globs so that its latent heat keeps it liquid) and make sure it has fully cooled before removing the tailstock. This will become the top end of the barrel. Use the lathe as a press by bringing the tailstock to support a large cone in the centre hole.

14 While the hot glue is setting, I made a segmented disc that will become the bottom part of the barrel. When it came to writing up this article I realised that there was not space within the pages to detail this process satisfactorily, so decided to write it up as if the base was from solid wood. If you are an experienced segmenter you will no doubt be able to design a segmented base should you so desire.

15 The barrel is now turned to shape using the base, equator and top edge dimensions from the diagram as a guide.

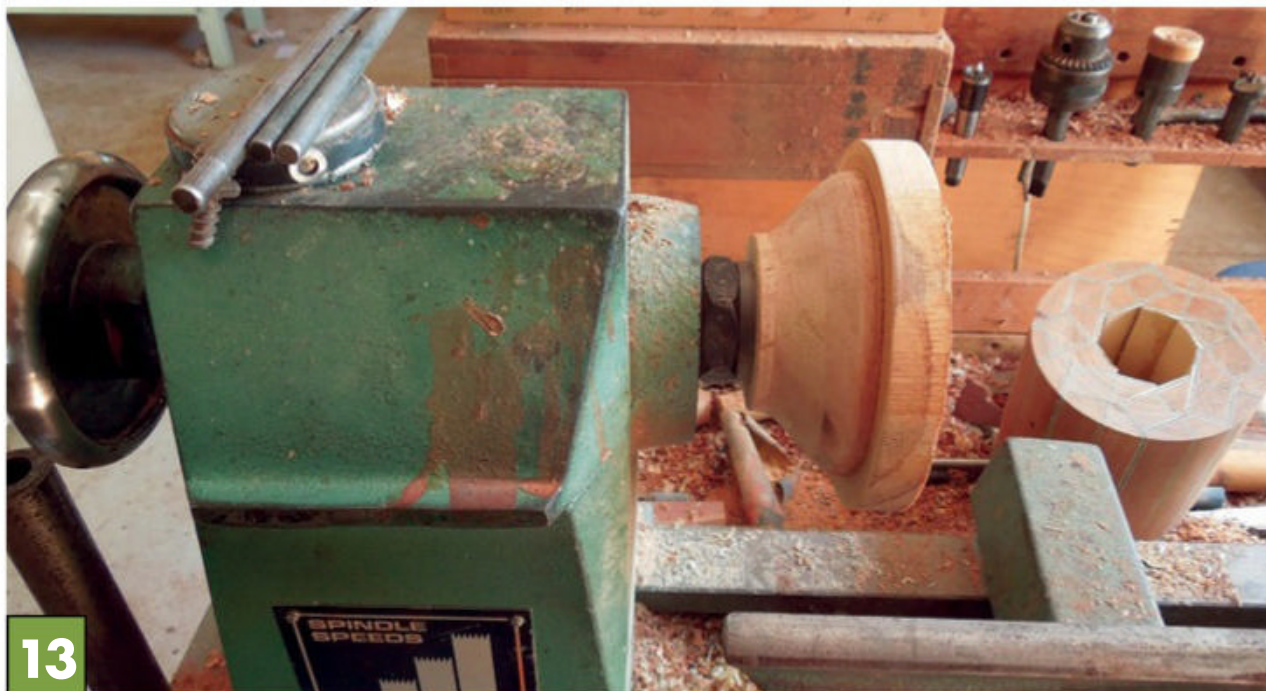
Using the eight straight edges on the inside edge of the base as a guide, eight scallops are carved on the bottom of the barrel with a workshop-made drum sander. To make the drum sander, I turned a cylinder to 150mm diameter and glued 80 grit sandpaper to it. The cylinder was fitted to the drill press with the barrel supported horizontally using a dividing head. The barrel was slowly introduced to the spinning sanding drum. Sand two opposing sides only at this stage.

Matching inserts were made using a jig on a disc sander. To do this, make a cardboard pattern to fit the shape left by the sanding drum, and cut eight pieces from some 25mm-thick timber with one face laminated with the 3-ply. These pieces can now be accurately shaped using a sanding disc. Check that it fits accurately. Some tweaking may be necessary with some hand sanding.

I have used my workshop-made press to glue these two segments onto the bottom of the barrel. As an alternative, cut a disc of plywood or particle board to cover the two inserts and bring up the tailstock to apply some pressure.

CREEP

Not all PVA glues are created equal. Cheaper poly vinyl acetate glues "creep" over time as the timbers expand and contract due to humidity. You notice this when you wipe your hand over a joint that is a year old and feel that there is a slight ridge of glue evident. Titebond and other premium PVA glues do a great job bonding long fibres together, they penetrate deep into the fibres, cross bond and lock the joint together, no creep, just a solid seamless joint.





16 Replace the barrel on the lathe and carefully turn the projecting segments to just proud of the bottom edge. Here I use a 12mm spindle gouge. This procedure of sanding the recesses and sanding the inserts to shape is followed four times to complete the feature at the bottom of the barrel.



17 The feature on the bottom edge of the barrel is now complete. A 5 x 5mm rebate is now cut into the bottom of the barrel. Next, a block of matching wood 25mm-thick is glued to a scrap chuck and turned to a disc the approximate diameter of the base of the barrel, and a 5mm tenon turned to fit the recess in the barrel. The whole thing is glued with wood glue into the barrel and left to fully cure.



18 Once cured the barrel assembly can be replaced on the lathe so you can refine the curve over the joint between the added base and the body of the form and sand the barrel to your finish.

19 Hollow out the interior using the hollowing tool of your choice and leaving a 15mm wall thickness. Use callipers to gauge the thickness of the wall. Sand the inside smooth.

20 I had previously prepared another sheet of 3-ply. I cut a 100mm disc from this sheet and glued it to the top to conceal the end grain. Again, I used the lathe as a press, with a disc of wood supported by the tailstock. When it was dry I trimmed it to the shape of the barrel and cut the middle out using a thin parting tool. Cut a parallel edge for the lid to register in later.

ART DECO

One of the delights of woodturning is showcasing the grain in the timber being turned. The contrasting veneer inlays in this segmented vase create both straight and curved lines when turned. The scalloped sections added to the top and the bottom complement these lines and add interest to the final shape.

21 The lid was made from eight pie-shaped wedges cut from some 60mm stock to a point, using a mitre gauge set at 22.5°. It was clamped using a band clamp. The lid was turned to size and then scalloped using the drum sander once again. Curved infill pieces were made and 3-ply laminated to one face. These were glued in place and the whole thing turned to close shape and size. A hole was bored in the centre and the disc fitted to a screw chuck. A 5mm-deep rebate was cut on the back edge of the disc to a diameter to firmly fit the top of the barrel. This is important as the barrel will be used as a friction chuck.

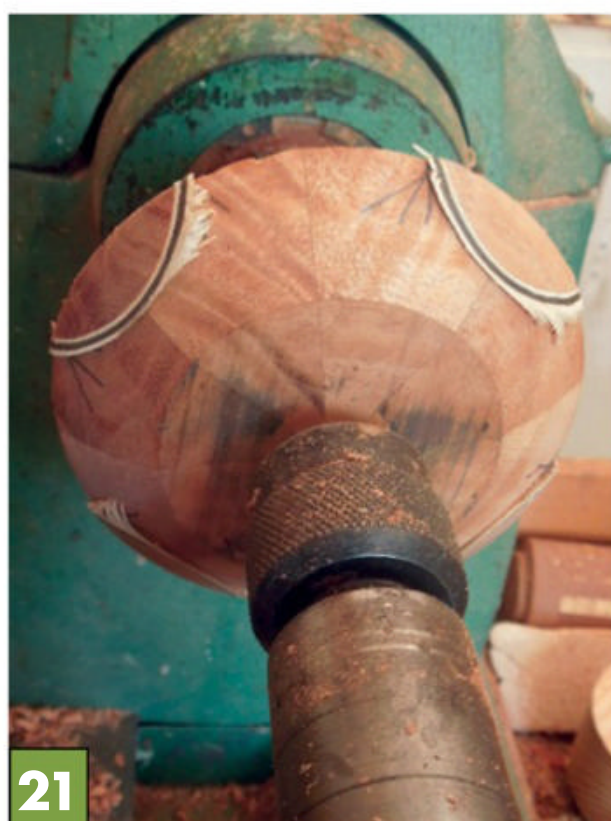
22 Remove the disc, remount the barrel and fit the lid. Use some tissue paper to adjust the fit if necessary. It needs to be tight. Bring the tailstock up for support and shape the top to match the profile of the barrel. Check the shape with the patterns. A shallow dish, 52mm in diameter, is turned into the lid. Sufficient depth is required to provide finger room once the handle is fitted.

The tailstock has been removed here to show the lid. I am not a fan of knobs and finials, so how to take the lid off and on was a problem. It was then that I noticed the drawer handles on the filing cabinet, and there was the solution to the problem.

23 Here we see what will be the handle. A disc was cut on the bandsaw and fitted to a screw chuck. The disc was turned to 52mm diameter and the scalloped sides drawn on then cut on the bandsaw and hand sanded to a finish. The handle can be glued into the lid and, once cured, it can be carefully turned to match the lid. A dowel was turned with a dome-shape end and used to fix the handle to the lid.

24 Now all that remains is to give the whole job a final sand with fine sandpaper, apply finish and carefully part the barrel from the waste block. I parted part-way down and completed with a saw. Reverse turn the barrel on a jam chuck to complete the base.

I chose to reapply a coat of sanding sealer and fine sand again. Then I applied two thin coats of sprayed lacquer and buffed to a soft glow. **W**



Spiral Cutting Heads

Spiral cutting heads for thicknessers and jointers are becoming standard in new machines. Retrofitting a spiral head into an old workhorse is a great idea.

Two years ago I apprenticed myself to Mitch Ainsley for a day and helped him upgrade the Davden 20" thicknesser above and bring it into the 21st century (see Issue 159). It took a day to replace the old three-bladed cutting head and install a six-spiralled CTS cutter head with 126 tungsten inserts.

Last month I dropped into Mosman High School to catch up with Mark Jones (our Technical Editor) and get an update on how the machine was going.

I was amazed that only one insert was



▲ After two years of use (and abuse) the cutting head has just one chipped insert (notice the witness mark bottom left).

chipped and that the rest felt sharp and were still producing an excellent surface finish (the chipped insert left no evidence on the boards and was only noticed when we inspected the cutting head).

As you can see bottom left, each insert has a witness mark on the bottom left corner, indicating the original position the insert was seated on the day of manufacture. Mark had yet to rotate any of the inserts.

The verdict after two years was that it was money well spent and that the system should have been upgraded ten years earlier!

Mark explained that not only was the machine much quieter, it also produced a superior finish with no tearout, less snipe and no scalloping. The clean finish produced by the shearing action of the cutters meant that less time was spent by students sanding boards smooth after they had been "planed" compared to the old parallel bladed cutting head. This reduction in dust in the workshop was a welcome side benefit of the quieter and more efficient helical cutting head.

The other advantage was that the dust extraction system no longer got clogged

with long shavings from the thicknesser, the shearing action of the 126 teeth produced small and easily cleared shavings.

BYRD SHELIX

My first introduction to a Byrd Shelix helical cutter was 20 years ago when I was teaching woodwork in a newly renovated Canadian high school workshop. The Byrd Tool Company in the US developed the SHEar-heLIX system in the 1990s and is now so busy building cutting heads that they have waiting lists!

Robert Gregory (Wood Craft Supplies) was so impressed with the system when he first saw (and heard) it in action he went out on a limb and imported the cutting heads into Australia. For the last 16 years Robert has been sharing the good news about helical cutting heads around the country. The cost of changeover has had some people think twice about the move forward. Robert linked up with CTS (Cater Tools Supply in Qingdao, China) and added even more helical cutting heads to his inventory.

These days most new machines come with helical cutting heads, however not all helical heads are the same.

- This Sedgwick spiral cutting head has 6 rows of 18 inserts, creating a cutting head with a total of 108 blades (acting in shear).



- ▲ A heavy-duty cutting head for a Powermatic thickness planer, this head has 4 rows of 13 cutters that cut on a shear action.



CTS

Robert Gregory introduced me to Mike from Cater Tools Supply via email so I could ask him what is the most efficient configuration and number of inserts you need to make a cutting head work best?

I asked this question because there are some machines on the market that appear to skimp when it comes to inserts. This is his response:

"The number one advantage is that the spiral cutterhead shears in a staggered way. Instead of removing the whole length as the long straight blade does, each 15mm-long angled insert on a CTS cutterhead shears away 12mm of stock at a time. Most of the European cutterheads have straight edge inserts which cut the whole length of the inserts, e.g, 14mm or 15mm and do not cut in a shearing action.

"Below is some simple maths about the number of carbide inserts you need to produce an efficient cutterhead.

"Take a spiral cutterhead for a 630mm planer as an example, our CTS standard configuration is 162 carbide inserts. So, the total cutting length is about $162 \times 12 = 1944\text{mm}$. $1944 / 630 = 3.08$. This means that 162 carbide inserts take up $4/3$ of the workload. If we make it 4 spirals, 5 spirals at the same pattern, the effective cutting blades will be $4/6 \times 3 = 2$, $5/6 \times 3 = 2.5$. So, these inserts will take $4/2$ or $4/2.5$ of the workload. The fewer-insert design will make more noise and produce a less smooth surface finish. For 120mm cutterheads, we make 8 spirals, 9 spirals, 10 spirals and even 12 spirals. Their effective cutting equals to $3/6 \times 8 = 4$ blades, $3/6 \times 9 = 4.5$ blades, $3/6 \times 10 = 5$ blades, $3/6 \times 12 = 6$ blades. It's easy to understand why more spirals with more carbide inserts are better.

- ▲ This helical head is designed for European machines. Notice that the blades are set square and do not cut in a shearing action.

"But how many inserts are good? It totally depends how often customers operate their machines. For industrial use and heavy cutting, more spirals are recommended. If it's just for hobby, four spirals are okay.

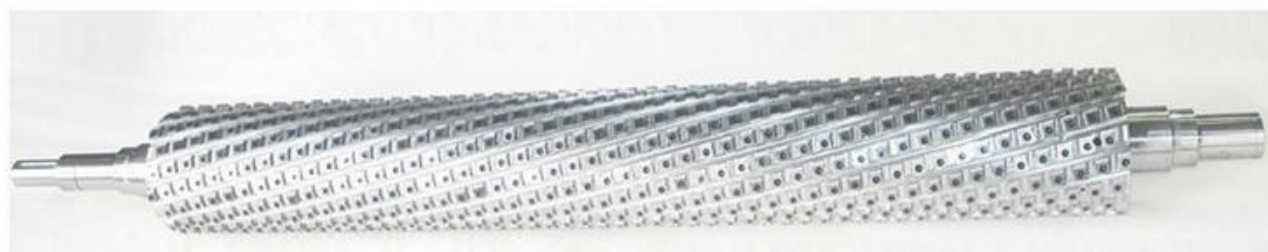
"DW735 is our best seller, the cutting diameter is around 50mm. We install 40 carbide inserts on four spirals. We can make it 26 carbide inserts. Will this work? The answer is yes. Can this 26-insert version be the same as the 40 carbide inserts? Never.

"We have been manufacturing spiral cutterheads for over 14 years and we

have had a lot of experience for different applications. Below is the spiral cutterhead we just made. Across its 1260mm cutting length we installed 900 carbide inserts on a single cutterhead. It's for surfacing XPS/EPS board.

"Our experience tells us that most of the customers are willing to pay a fair price for good quality tools. Woodworkers are hardworking people. We share their concerns and have been trying our best to provide tools that are worthy of every cent they invest."

See page 73 for sources. **W**



- ▲ This enormous Sheartak spiral cutting head is 1260mm long and 180mm in diameter. It has 18 spirals, each with 50 tungsten carbide inserts set in shear. The total number of inserts is 900! This industrial head is designed to perfectly machine wide boards.



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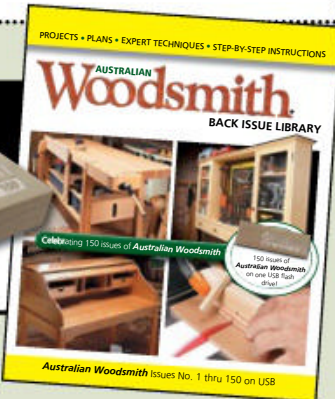
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Philip Greenwood shares a few handy tips for getting the most out of your lengths of timber.

More Bowl Blanks From A Length Of Timber

Are you able to stretch your timber to make it go further? The answer is no, well not at the moment, anyway. It's all down to how you cut the length up. It's not magic. If you like more straight-sided bowls this will not work for you, but it will work for bowls that have more sloping sides.

If you cut bowls at 150mm square out of a piece of timber

608mm long – with a 8mm cut allowance – you can only manage four bowls from this length, but cutting every other bowl upside down with a 75mm base allows you to cut five from the same length of timber. This means you now get five bowls instead of four. How many extra you will get using this method depends on the outside shape and bases of the bowls.



1

1. MAKING THE TEMPLATE

Here you can see I have made a template to the shape of the bowls I will turn; this is just thin cardboard and is easy to make. It was first cut to the depth of the plank, then to the correct length for the design of the bowl. You can always fold the cardboard in half lengthways then draw just half a bowl, cut this to the profile and when you unfold it you will have a full bowl profile. Next, stick this to a piece of cardboard and this time bandsaw at an angle which will help with the cutting step.



2

2. CUTTING THE BOWL BLANKS

The first cut will be at the end of the plank to remove the waste wedge shape. Line up the top corner of the plank with the bandsaw blade and cut the waste corner off. Now turn the plank over and you are ready to take the second cut, but remember that when you are cutting on a bandsaw with the table at an angle, you need to push the timber towards the face to stop it sliding down the table to maintain the correct length. You will now have your first bowl blank. Now continue to cut the second bowl blank remembering each time to turn the plank over. You will need

to cut the end of the last blank as with the first.

3. SETTING THE BANDSAW TABLE

We can use the bandsaw table set to the same angle as the template side, which is determined by holding the template to the bandsaw blade, and then set the table fence to the length so you don't need to measure each bowl blank. When making any adjustments to a saw, make sure it is disconnected from the power supply; this way this step can also be completed with a tablesaw or radial arm saw giving you more support and a better finish.

4. THE PREPARED BLANKS ARE NOW READY FOR TURNING

Now you have the bowl blanks cut and you're ready to mark the centres. Yes, you have sides on the blanks and these can be cut off before you turn them with the bandsaw, or just turn the corners off when turning – the choice is yours. As you can see, five into four will go. **W**



3



4

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KNIFE MAKING

Nordic Edge and Gameco Artisan Supplies can supply all you need to build knives on your balcony. If you have a shed they can supply forges, anvils and every other blacksmithing item you need. Knife making as a hobby started for me when I spent a Saturday with the guys at Nordic Edge. *Knife Engineering* by Dr Larrin Thomas is available on Amazon.

TTTG

The Traditional Tools Group website has a trove of information about old tools and techniques that will keep you entertained for at least a month (click on the resources menu tab). If you want to become a member, check online and come to a meeting.

KITCHEN TOOLS

The 304 Grade stainless steel and the 3.8 x 16mm brass rivets used in the dough knife are available on eBay.

TALL CLOCK

The Hermle mechanism, weights, shells and clips are available from Clock Movement Importers (CMI) in Brisbane. Jeff from CMI made an important point when he saw the project that the bob needed to weigh 115 grams in order for the arm length and bob weight to drive the Hermle mechanism. He suggested a more cautious approach would be

to purchase a matched pendulum (the approximate cost of the clock components is \$900 in total).

- W.00241.080094- ½Hr Strike -Chain Movement -94cm Pendulum series x 1
- 328 -Weight Shell 40 x 264mm Polished x 2
- 315 Weight 2.00KG 36x265mm Steel x 2
- E007.03160 Weight Shell HOOK Hermle (Each) x 2
- E007.03170 Weight Shell NUT Hermle (Each) x 2
- HM.14054 Mech Hand 110/60mm - Tapered Point x 1
- E002.02830 Hanging Clip suits 19mm Wood Pendulum

The square knob (01X4004) is available from Lee Valley.

MITRE SAW

The continuous hinge and castors needed to build this mobile saw station can be found at Bunnings.

HELICAL CUTTERS

Robert Gregory (Wood Craft Supplies) is the person to speak to if you want to upgrade your old thicknesser and save your hearing. Robert is a font of knowledge when it comes to helical cutters and will be able to give you a quote on upgrade costs. Give him a call.



4Pce Woodturning System
 with Carbide Insert Cutters
 WFT70-800 #8001790



Midi Wood Lathe
 320mm x 510mm Heavy Duty
 1HP 240V Variable Speed Lathe
 WL1220A #8001555



5Pce Woodturning System
 with Carbide Insert Cutters
 WFT0011 #8001297



Woodturning Tool Roll Holder
 19 Tool Pockets / Holders
 Water Repellent Heavy Duty Nylon Fabric
 WF19001 #8001061

WOODFAST
 woodfastmachinery.com.au

Pricing correct at time of printing, however subject to confirmation.



▲ *Curved Dovetail Box.* David Barron makes a lined box with curved ends. He'll take you through the steps starting on page 36.

Final details



▲ *Mitre Saw Station.* This no-nonsense workstation offers all the needed features in a compact, mobile design. All the instructions you need start on page 52.



▶ *Asymmetrical Vase.* Jim McConnachie creates an unusual segmented vase in maple. Step-by-step instructions begin on page 58.



▲ *Tall Clock.* This grandfather clock takes design cues from the Prairie style of architecture. Its timeless look will fit into nearly every décor. Detailed instructions start on page 42.



▲ *Kitchen Tools.* This quartet of small projects is sure to please the cook in your life. You can make one or all four in a weekend. Turn to page 30 to get started.



WL520A Classic Wood Lathe
510mm x 910mm Heavy Duty
2HP 240V Variable Speed Lathe



WL3040A Professional Wood Lathe
762mm x 1016mm Heavy Duty
3HP 240V Variable Speed Lathe



WL1220A Midi Wood Lathe
320mm x 510mm Heavy Duty
1HP 240V Variable Speed Lathe

Woodturning Tools + Machinery



4Pce Woodturning System
with Carbide Insert Cutters

WFT70-800



5Pce Woodturning System
with Carbide Insert Cutters

WFT0011



Woodturning Tool Roll Holder
19 Tool Pockets / Holders
Water Repellent Heavy Duty Nylon Fabric
WF19001

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CTG254 Contour Gauge

- 254mm length
- 45mm depth
- Magnetic side
- Impact resistant plastic



TM TOOLMASTER

Order Code: M967

\$38.50

PSK5 - Safety Push Blocks & Stick Set

- 5 piece set
- 2 x 150mm push block with foam base
- 405mm long push block with foam base
- 19mm wide V-notch push stick
- 215mm saw guide



Order Code: W309

\$29.70

SAFELY GUIDE YOUR TIMBER

WT-8 - HSS Wood Turning Tools

- High speed steel
- 15mm & 26mm skewers
- 7mm & 14mm spindle gouges
- 14mm & 16mm parting & beading
- 24mm roughing gouge
- 15mm domed scraper



Order Code: W301

\$132

CHS4S HSS Wood Turning Tools

- 4 Piece set
- Includes 3/4" roughing gouge, 3/8" spindle gouge, 1/4" deep bowl gouge, 1/8" one-handed parting



Order Code: W3034

\$154

MM-50 - Digital Moisture Meter

- Measures moisture in timber & building materials
- Wood: 5-50%
- Building Materials: 1.5-33%
- Measuring accuracy: $\pm 2\%$
- Lid cover used for calibration
- Large LCD display
- Includes 9V battery



Order Code: W6455

\$49.50

WHG-3U - Mini Digital Height Gauge Wood Working

- Ideal for saw blades & routers
- Metric, inches and fractions
- 0 ~ 80mm measuring range
- Auto shut-off - 3 minutes



Order Code: W644

\$33

WL-14V - Mini Wood Lathe

- Ø356 x 470mm turning capacity
- Electronic variable speed
- Digital readout speed display
- 12 position spindle indexing
- 0.75hp, 240V motor



Order Code: W385

\$693

WL-20 - Swivel Head Wood Lathe

- Ø370 x 1100mm turning cap.
- Swivelling headstock
- Variable speed 500-2000rpm
- 1hp, 240V motor
- Includes bowl turning attachment faceplate, drive & live centres toolrest & stand



Order Code: W384

\$869

T-13B Bench Mount Thicknesser

- 330 x 152mm capacity
- 2 x HSS blades
- Anti-kick back fingers
- 2hp, 240V motor



Order Code: W812

\$594

PJ-6B - Bench Planer Jointer

- 153mm capacity
- Built-in dust fan with collection bag
- 10000rpm blade speed
- Cast iron table & fence
- 1.1kW / 1.5hp 240V motor



Order Code: W618

\$572

DCK-2 - Wood Dust Accessory Kit

- 2 x (3m x Ø100mm hose)
- 10 x hose clamps
- 2 x shut-off valves
- 1 x 558mm wide floor sweeper, table saw hood, universal dust hood, 150mm dust hood & "Y" connector



Order Code: W344

\$176

FC-10 Filter Cartridge

- 1 micron filtration
- Increases filtering area by 700%
- Rotary hand-wheel for manual cleaning the filter
- Ø500 x 600mm high



Order Code: W328

\$330

schepach

OS-58 - Vertical Oscillating Bench Bobbin Sander

- 1/2", 3/4", 1", 1-1/2", 2" & 3"
- 370 x 290mm cast iron table
- Rotating & oscillating
- 450W / 240V motor



Order Code: W843

\$319

Slik 7.0b - Oscillating Belt Sander

- German design & technology
- 850 x 300mm cast iron table
- Tilting sanding belt 90-180°
- 2515mm x 150mm belt size
- 3hp 240V motor
- Includes storage cabinet stand



Order Code: L903

\$1,815

L-69A - Belt & Disc Linisher Sander

- 150 x 1220mm sanding belt
- 230mm disc with guarding
- Tilting table and mitre guide
- 1hp 240V motor



Order Code: L107

\$572

DC-7 - Dust Collector

- 2300 cfm - LPHV system
- 5 Micron fine filter bag
- Portable on wheels
- 2.25kW/3hp, 240V motor



Order Code: W329

\$792

CDS-2/3 - Cyclone Dust Separator

- Separates dust up to 99%
- 110 litre steel drum
- 2 x Ø100mm inlets
- Ø152-25mm outlet
- Suits dust collectors up to 3hp



Order Code: W316

\$495

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STEVE
Staff Member

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