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Nick Gibbs
Editor

... this month I've been mostly working on a routing jig and teaching my daughter woodwork

Andy King
Technical Editor

... this month I've been mostly watching the footie (again) and practising penalties

Phil Davy
Contributing Editor

... this month I've been rummaging around reclamation yards for doors and wood

Andy Brough
Contributor

... this month I've been finishing of the chair (p22) and working on a kitchen table

Welcome

Steve Maskery's made us a maple chest this issue, using a **clever technique** for easy-fit drawers. His approach is foolproof and quick, and the **drawers glide beautifully.** At least that's what we think, but you might consider it cheating. Do tell us your opinion. Elsewhere, Jeff Gorman looks at chamfering **without splits**, Dave Roberts turns some simple candlesticks and Wade Muggleton makes an attractive stool for use at the bar, table or for milking!

Nick Gibbs

Nick Gibbs, Editor

PS. If you can't always find *Good Woodworking* on the shelves, turn now to p58 to discover a superb opportunity to subscribe and guarantee satisfaction every month. Or just call our hotline: 0870 837 4722.

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Good Woodworking

September 2006

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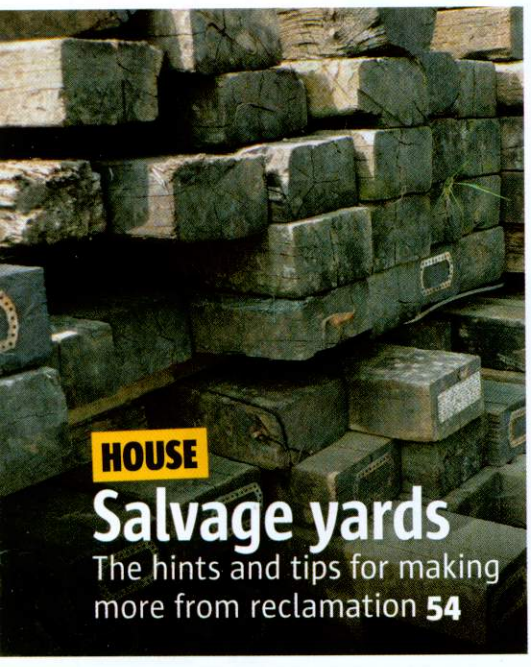

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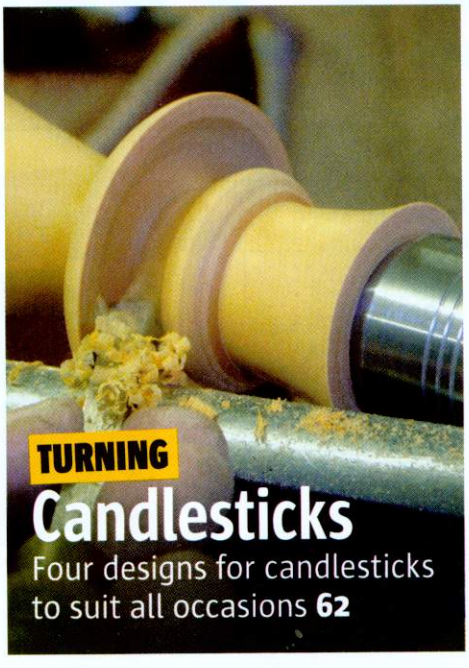

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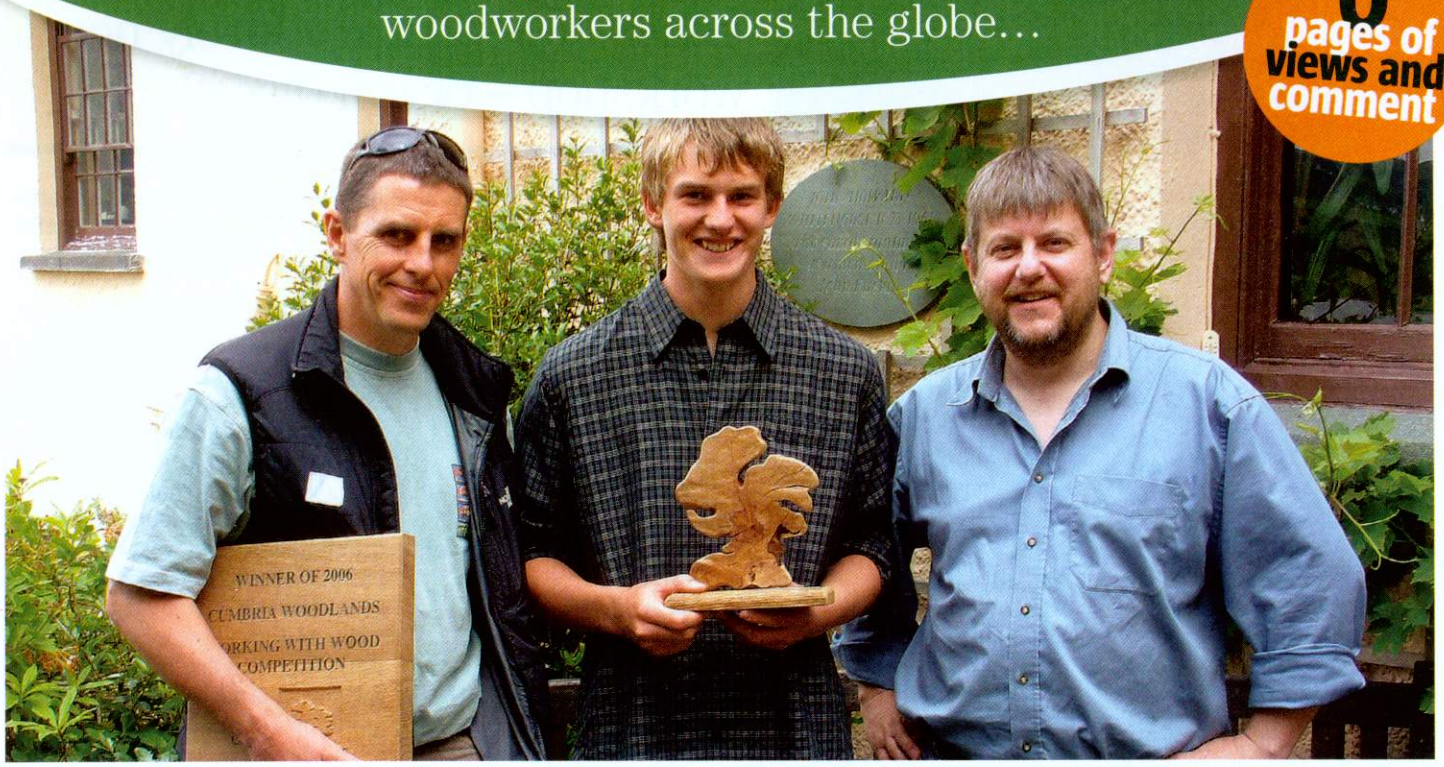

"The cherry was quite hard work, with a lot of sanding and oiling"

How Did I Get Here?

Gavin Tullett

Young prize-winning woodworker

Earlier this year, Cumbria Woodlands, which works to promote the use of local timber, initiated the Working with Wood Prize for pupils in the area. Fifteen GCSE students took part, and Gavin Tullett of Queen Katherine School in Kendal won. When he's not woodworking he enjoys sailing.

How long have you been woodworking?
For about four or five years, since I started at secondary school. It's been my favourite part of technology.

What do you like about it?
It's good to think of things and make them and be please with what you've achieved. My teacher, Mr Howard, has inspired me and taught me what to do.

How did you come to enter Working with Wood ?
Mr Howard told me about the competition. I was something to aim for, to develop the table and make it that much better.

Where did the design of your table come from?
I thought of the design myself. I'd seen a couple of things in catalogues, and changed them and added my own ideas.

What timber did you use?
Cumbria Woodlands supplied us with some cherry and yew from some local woodlands near Keswick. The cherry was quite hard work, with a lot of sanding and oiling to make it look good.

Did you expect to win?
I thought I might do quite well, but was a bit surprised. I won the trophy and an iPod.

Are you going to carry on with woodwork?
Not as a profession, but maybe as a hobby. I've left school now and am going to do a plumbing apprenticeship.

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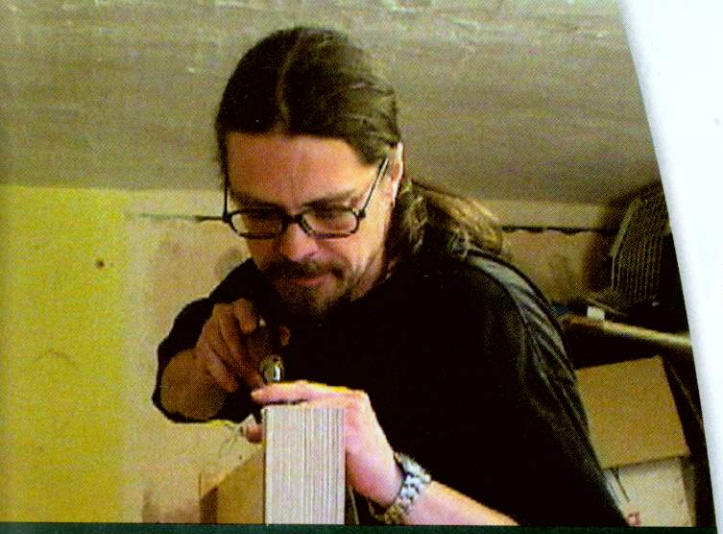


Diary of a Beginner

What happened when Mike Riley *decided his workshop was a load of rubbish…*

The only thing that has come out of my workshop this month is rubbish. Literally. I decided that if it was to be called a workshop it should look like one and this meant getting rid of the tat. My workshop is quite large but there was little floor space due to piles of garden chairs, garden tools and cardboard boxes.

It's a never-ending battle to try and keep it clear, particularly in the summer months when relatives decide the workshop is the best place to leave footballs, barbecue equipment and general assorted debris.

Meanwhile I've been practising preparing and finishing rough stock by hand and I like to think I'm getting quite good at it. I've been starting with a wooden plane with a heavily cambered blade to thickness and then moving on to a Veritas low-angle jack, closing the mouth as I work towards a finish and then finally moving on to card scrapers to clean up any tearout, which I can't seem to avoid completely. A higher angle bevel on the blade would help this, I think.

Card scrapers have to be one of the most dangerous hand tools around. My fingers are covered in little nicks and blisters from the burns. But they're also one of the most satisfying tools to use. There's little to beat watching the surface of the wood start to shine as the shavings curl off.

The downside of all that practice of course is that while my planing has improved vastly almost to the stage where I can forego sanding, I've created three more bin bags of rubbish: shavings this time.

I also decided to excavate some of the rubbish left behind by the previous owners of the house and in one dark corner of the basement I found five old handsaws, among them a Spear & Jackson panel saw and two nice back saws. I've managed to get most of the rust off the Spear & Jackson and now it's time to learn how to sharpen it.

One place where I am going to avoid creating too much rubbish, though is my monster walnut board (GW177:10). It's in the region of 3in thick and rather than wastefully scrub it down to thickness I've decided to resaw it.

I don't have a bandsaw so I've started building a frame saw. I prepared the stretchers and arms and then set out to mortice one to the other. I didn't get very far: I managed to blow out the end of the first mortice with the chisel… so my saw won't be quite as wide as I'd planned. Oops!

Tales of a chairmaker

James Mursell has a lovely new workshop – or is a disco?

Eight months ago I described how my business was in desperate need of larger premises, in order to expand my chairmaking courses (GW170:10). Well, it has finally happened! The builders left a week ago after being here for three months.

At times it seemed as though they'd stay forever, with half-full skips and various vans continually filling my yard.

The work began quickly, as always seems to be the case, with the old roof stripped off in just two and a half hours and the new, insulated, roof put on in just a couple of days.

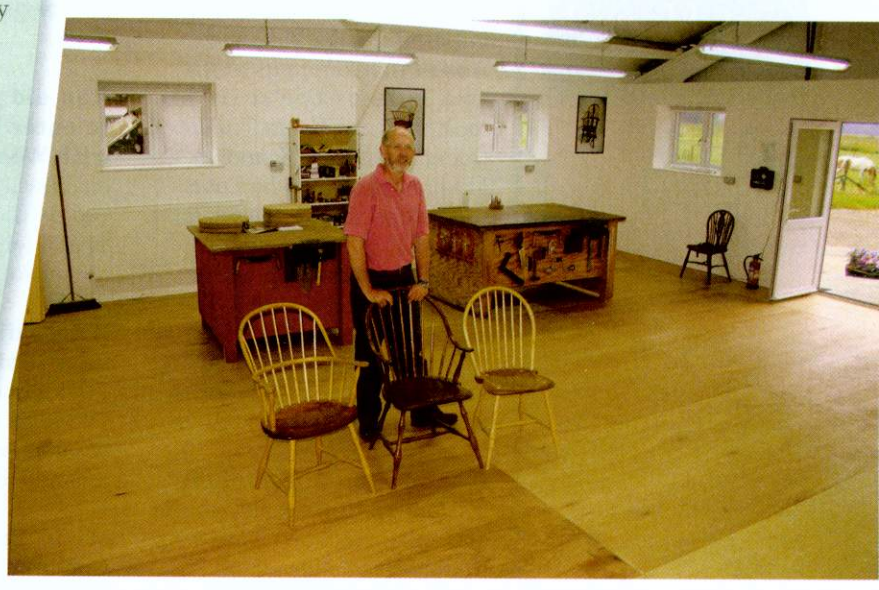
But although in truth the building work went remarkably smoothly, it was not without stress on my part. Throughout the project the size of the building has seemed to fluctuate between expansive and tight, the worst time being when the roof was off.

Although I'd measured the space and made detailed plans, the absence of the roof and the blue sky between the rafters made me seriously question my maths. Of course it was just an optical illusion: there is plenty of space.

And that's not the only dramatic difference. My old workshop had painted rough-stone walls, a concrete floor, wormy beams and a low roof; the new workshop is large, airy and bright. There are windows with a view over fields and hills to the South Downs.

The floor is pale plywood and all other surfaces are painted white. 'Daylight' fluorescent tubes, bought on the advice of one of my students, help reduce the difference between inside and out. They should keep Seasonal Affective Disorder at bay in the winter, too!

The acoustics are also very different. The new workshop



▲ Workshop or nightclub? The Mursell clan can't decide...

echoes, and probably will until it's fitted out with its full complement of benches, lathes and so on. In the meantime, it's great for music.

My daughters' first reaction was to arrange a disco before I cluttered up the 'dance floor' with equipment, but I'm sorry to say that I was too quick for them! In any event my aged personal stereo, playing through a set of old computer speakers, puts out a great sound, enough at least to keep everyone happily working.

I remember one fellow woodworker describing how he had to remove the roof to move his largest machine, because it would in no way pass through the door. I am fortunate not to have too much heavy machinery, so moving my kit wasn't too arduous.

But I couldn't do it on my own and called on my brother Tom, a supremely practical guy. He arrived with various bits of kit, not knowing exactly what he was in for, but in the end we moved almost everything using just his 200kg-capacity sack barrow.

The old Jubilee lathe went first, in two parts, followed by the three-phase Meddings pillar drill and then the small Startrite bandsaw. With these all in their new home only the bench remained to be moved, and it's a substantial item. The bench measures 1200x1900mm and is made largely out of ply. The top is two sheets of 25mm ply, with the upper designed to be sacrificial (although it has nowhere near worn out after 10 years). Two pattern-makers' vices also add considerably to the mass, weighing 24kg each.

Having removed the top sheet of ply, and the vices, we could move the bench by hand, and we soon had it in position. Shortly afterwards, with everything reassembled and wired in, I was almost ready to start work again.

Many of my smaller tools are yet to find a permanent home, as I get used to working in the new space. I don't want to commit myself too soon to fixing things to the walls and disfiguring the pristine white surface, so a 30-year-old Habitat bookcase (well strengthened with ply and screws) has been pressed back into service to provide a temporary resting place for the tools I need most often.

What fun it should be over the next few months getting everything as I want it, buying a new lathe, and building new benches. I can't wait!

◀ 'Daylight' lighting helps give the space a bright and airy feel

James Mursell runs regular chairmaking courses in West Sussex. We can put you in touch by email or post.

The Golden Fraud

Golden Ratio? It's not even silver or bronze, says *Mike Darlow*

Many articles on woodwork promote the Golden Ratio, a geometric ratio that is supposedly particularly pleasing to the eye. But the Golden Ratio does not actually have any special aesthetic properties, and I believe that those who promote its use do so from ignorance.

It was supposedly discovered by the Greek mathematician Euclid in about 300BC. I say 'supposedly' because it doesn't explicitly appear in his multi-volume *Elements*.

Fig.1 shows a Golden Rectangle, AFED. ABCD is the square which fits exactly within half of the circle with its centre at M.

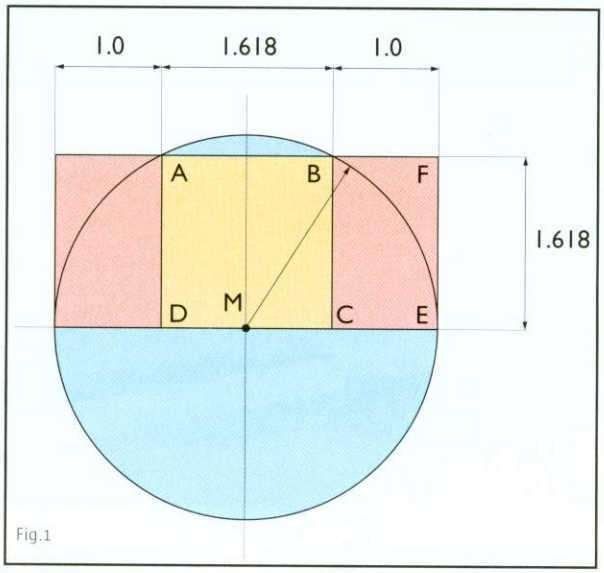


Fig.1

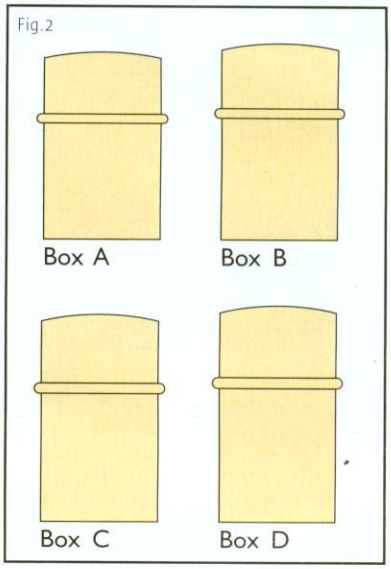


Fig.2

DC:CE = FE:CE = DE:FE = 1.618+:1 = 1:0.618+ = 1: 0.5(1+÷5)

If a Golden Rectangle is divided into a square and a rectangle, that rectangle is also 'golden'. It is an exact, precise ratio which, like pi, has an infinite number of numbers to the right of the decimal point, hence the '+' above. A ratio that is close to, but not identical to, the Golden Ratio is not 'golden'.

However, I am not sure how these undoubted geometric properties morphed into the supposed ability to confer beauty.

The Ancients had widespread beliefs that were popular during the Renaissance. A major source of those beliefs is Marcus Vitruvius Pollio (born c84 BC), who said that beauty was determined by numerical relationships and by the correspondence of those to the proportions of the human body.

This belief was probably based on earlier Greek beliefs associated with Pythagorus, Aristotle and Plato that beauty was determined by mathematical relationships, not in the eye of the beholder, and was an intrinsic property like weight.

Those who hold the related belief in the aesthetic power of the Golden Ratio often point to the fact that it occurs in nature.

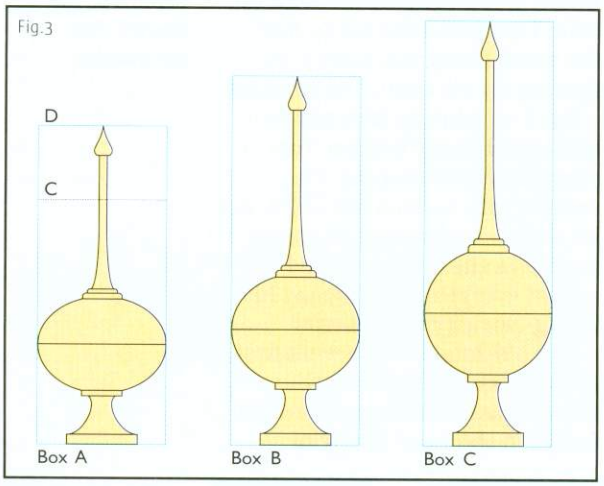


Fig.3

Mike Darlow, a full-time turner since 1979, has published six woodturning books and a DVD. For more information, see www.hinet.net.au/~mdarlow

For example, Gyorgy Doczi, in *The Power of Limits*, shows an opah fish that conforms. Well, I haven't measured many opah fish. But I suspect that, like people, their proportions would vary: there'd be thin ones, fat ones, long ones, short ones. And anyway, the opah specimen shown in the book is no more nor less beautiful than the 14 other fish pictured in it.

Also, the presence of a particular ratio in nature is meaningless; you can find any ratio you specify.

Another supposedly persuasive factor is that many beautiful, man-made, objects conform to the Golden Ratio. Some may conform because they were designed to conform, others may conform because the designer chose that proportion unconsciously.

So, is an object that conforms precisely to the Golden Ratio more beautiful than one that doesn't? Look at the diagram of four boxes (Fig.2). Can you identify which conforms to the Golden Ratio? Is one more beautiful than the other three? Probably, like me, your answer to both questions is 'no' (Box B, by the way, has the Golden Ratio). And if your answers were indeed 'no', this demonstrates that the Golden Ratio has no special aesthetic properties.

Design

So, even though the Golden Ratio is without special aesthetic properties, does it have special value as a design tool? In my view, it doesn't.

When we look at an object we tend to look for conformance to the basic forms: square, circle, triangle, cylinder, sphere or cone. If a form does not quite conform to one of these, we tend to regard it as an imperfect attempt. So a form

should conform exactly, or be so different it won't be thought to be an imperfect example. The Golden Ratio is sufficiently between 1:1 and 2:1 that it will not be mistaken as an imperfect example of either. But so are 3:5 (1.667) and the square root of 3 (1.732), to give just two examples.

Does proportion have much value as an aesthetic concept anyway? If you look at objects around you, objects of the same type have similar proportions. These proportions have usually evolved and become the norm because of considerations of weight, strength, and function.

Thus billiard cues have an approximate proportion of 50:1. Their lengths are governed by the lengths of players' arms; their diameters by the need to withstand the stresses applied to them, the need to have the butt end of grippable diameter and the need to keep the cue at an appropriate weight.

Conventional billiard cues are beautiful, at least to me. But a cue conforming to the Golden Ratio would be absurd. Clearly, departing from the Golden Ratio does not prevent these objects being thought beautiful.

Proponents of proportion are fond of putting rectangular boxes around objects. If the object is rectangular, this has some relevance because it does at least define an obvious geometric property. But the further the object departs from the rectangular, the less relevance such 'rectangulation' has.

Fig.3 shows a drawing of a finial box by Ruth Chipman. Does rectangle C have any more relevance than rectangle D, where a major proportion of the box's height has so little visual mass (but not necessarily visual power)? Stretching the proportion does not make boxes B and C less beautiful, although it may make them less beautiful to you.

Roger Scruton in *The Aesthetics of Architecture* argues that beauty depends on the appropriateness of part to part within a form. That's not as easy or as definite as imposing favoured proportions, but it reflects much more the way we react aesthetically.

Nick Gibbs' Old Cotswold Outhouse

Here we go. I promised mathematics last month, and you don't get more perplexing than guide bush offsets for routing with templates and jigs.

The task is pretty simple. All I need to do is create a U-shaped housing to join the sides and back of a small chest to its bottom and top, but I want a technique that's foolproof because I'm not in the workshop often enough to set up accurately each time.

Andy King says the solution is to make a routing jig for guide bushes. So I take a sample chest bottom and stick it temporarily to a baseboard of 10mm birch ply, a good bit longer and wider than the workpiece. Following Andy's advice I surround the bottom with 2in wide lengths of the same ply, screwed to the baseboard. These will act as guides to hold the workpiece in position, which will be held with a toggle cramp. But they have a further purpose.

You use the battens to guide a router to cut a channel in the baseboard. This channel will ultimately guide the 4mm cutter I want to use to cut the housing in the chest bottom and top. At this stage you need to have a router cutter to match a guide bush exactly. In my case that's a 12mm cutter to cut a 12mm groove for my 12mm guide bush.

The difficult thing is positioning that channel so that the final housing is in exactly the right place.

This is the devil to explain. Doing it is far easier! If I'm using a 16mm guide bush, the centre line of the channel it produces is 8mm from the edge of the battens, and hence also 8mm from the edge of the workpiece. So when I use that channel to rout a housing the centre line will once again be 8mm from the edge of the workpiece.

Because I'm using a 4mm cutter that will leave the housing 6mm from the edge (8mm minus half the diameter of the final cutter).

I did that by trial and error, and would have preferred the housing to be a little further from the edge to accommodate a moulding around the chest bottom. I think I should have used a 20mm guide bush, rather than the 16mm to gain a couple of extra mm.

A further complication is that the housing is stopped at the front. That is very difficult to do accurately, but we received a great tip from Dave Major recently suggesting the use of a screws as a stop for drawers. I've borrowed the tip to make an adjustable stop at the front of the channel. It works a dream. Thanks!

▲ The tricky thing about this process is positioning the channel

Sticky business

Andrew Jeffay asks: what's so great about PVA?

There are so few things in life that provide such absolute satisfaction, do exactly the job you expect them to do and come at such a bargain price, but the £4 a litre you pay for PVA glue can only be described as a steal. PVA glue (Polyvinyl acetate if you want to show off) really works on porous surfaces such as wood. To be honest I have no idea how it works. If you want to find out look it up on www.wikipedia.co.uk, and if you understand the molecular diagram then you are wasting your talents on woodworking.

Science aside, it is great to have a product in the workshop that can be so trusted to do what it promises. As a bored child during the school holidays in my father's workshop, I can remember putting the claim 'stronger than the wood itself' to the test. My carefully planned experiment resulted in me holding the shards of a half lap joint that had shattered at every point excepting the glue joint (and leaving behind a rather dented workbench).

Caring for PVA

As long as you protect it from frost PVA is a loyal servant. It does not have the same odour and fumes as 'contact glues' and doesn't require accurate mixing or heating like some others. The bond it creates is strong but has a degree of flexibility – it's not brittle like some twin pack glues. There are not the off-putting rabbit hairs that you often find in the old fashioned animal glues. Even so, you should always exercise caution and be sure that you follow the instructions.

As it is a water-based product, excess glue can be cleaned up with a damp rag and a chisel preserved specially for the task. Wrapping the chisel in the damp cloth provides an accurate tool fit for the job. Unlike all your other chisels that should be razor sharp, a slightly numb tool does a better job. However hard you try to remove any remnants of glue before it sets, there is always residue. This is best removed with a sharp chisel, used either in a conventional way or held upright in the same way as a scraper.

As there is a long shelf life for the glue, buying a five-litre container is a prudent move. Save a small bottle (either a litre or even a half-litre if you're doing more detailed work) and decant from the large container as needed. When filling from a larger container, squeeze the smaller bottle – this allows you to stop the flow from the big container and not overfill the bottle. Release the smaller bottle just as it appears to be filled and the excess glue will then fill the extra space created. Keep it nearly full otherwise you seem to spend half your life waiting for the glue to emerge from the end of the bottle. In colder weather, when the glue moves more slowly, standing it in warm water can speed it up. I keep the nozzle clear by pushing a nail in to the end of it after each use. As with all glue containers, when replacing the top after refilling it, make sure the thread on both bottle and lid is washed out so they it do not stick together. It is also worth keeping a few spare nozzles from old bottles each cut to create a different sized hole. This allows you to swap them over to cope with more detailed work as needed. Getting an even spread of glue is important and to do this I use brushes, usually bought from the Early Learning Centre shops. Although sold as kids' paint brushes, they are a very cheap way to do the job. They can be washed out easily or, if used regularly, stood in a jar of water.

A good indicator of whether you have used the right amount of glue comes when you clamp the job up. Glue should be visibly forced out all the way round.

Clamping with PVA

The curing time of PVA is probably its main disadvantage, at three hours minimum. It means that jobs using PVA need to be either clamped in position while the glue 'goes off' or secured in some other way. I will often use masking tape to hold lippings in place while the glue sets. If you use a strip of tape every inch or so it's amazing how tightly it can be held. We often use moulding pins to do the same job. Clamps, especially sash clamps, are expensive and however well equipped you are, there never seem to be enough. So I improvise. Heavy weights placed on setting items overnight often do the trick.

PVA is available as 'exterior', 'flooring' and 'quick setting' but they all look and tend to work the same. The only occasional problem I have encountered with some of the unbranded and cheaper glues is the odd lump. White wood glue is cheap, simple and effective and essential in any workshop.

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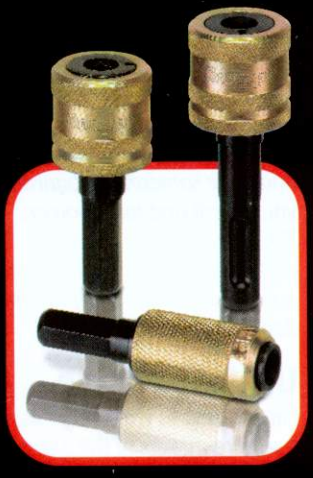

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Good Woodworking Letters

Which projects do you make? Tell us about them

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Help please

I am 17 years old and have spent the past 18 months looking for an apprenticeship with a carpenter/joiner. I spent six months at college, where they said my skills were wasted in carpentry and I should do joinery instead.

I have written 160 letters, 100 emails and made countless phone calls to local carpenters/joiners and have had a couple of trial days, but nothing long term.

Now I want to go down the custom-built furniture route and am having even more trouble, as I'm sure you can imagine.

I have my own small workshop with a few machines, and all the handtools, but I want a job in furniture, not just a hobby.

Do you know anyone who might be able to help?

Neil Bramley, Sussex

We know it's a challenge to get going as a furniture-maker. There's not much we can do, except publish some photos of your work and hope someone recognises your talent and takes you on. Taking a course in furniture-making may help, but even that is no guarantee (see the letter from Ben Norton, below). *Nick*

▼ Help please: Neil Bramley's made loads and now wants a job

Useless degree

I am writing to warn other aspiring furniture-makers of the dangers of completing degree courses in furniture-making. I designed and made a dining chair for my final major project for my degree course (pictured right). I invested in many new tools for my course and thought that I had started on a course where my skills and thoughts would be valued.

I also thought I'd enrolled on a course where the tutors were reasonably knowledgeable about the subject, but instead found myself teaching them how to plane a piece of timber and informing them what a spokeshave was. Made from ash and utile, my chair was created entirely by hand.

When I received my degree mark earlier this week I was sadly not surprised to see that I had been awarded a 2:2. Not a lot to show for a great amount of time and effort. Again, I was sadly not shocked to learn that others had been awarded higher marks for work that had been sent away to be made professionally.

It seems to me that if you are capable of 'thinking' about design, and can 'think' about making something, you are well on your way to a top degree mark.

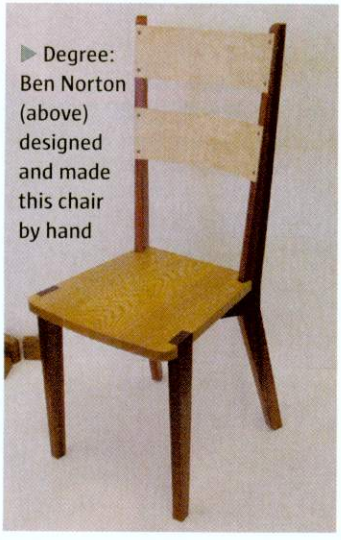
I wish I had taken on board John Brown's observations in March 2001 (GW106:56), when he wrote: "Now everyone is encouraged to apply, and three years later, equipped with a Mickey Mouse degree, take an unskilled job and feel very resentful."

My advice is for aspiring furniture-makers to seek hands-on work experience with other makers or simply get on with it on your own. Please do not pay for a degree certificate that will be burned on the workshop stove.

Ben Norton, Kent

I can sympathise, Ben, although I must say that not all furniture-making and design courses are worthless and we don't know the full details of your experience. Neil Bramley, another young woodworker, has written to us this issue about the difficulties of finding an apprenticeship with a joiner and increasingly employers are demanding higher academic qualifications for even practical jobs. Students are justifiably demanding better standards of their courses. If it's any consolation, I too got a 2:2 in my degree, although in my case it was probably more than I deserved! *Nick*

▶ Degree: Ben Norton (above) designed and made this chair by hand



Shed watch

Phil Davy's amusing article on his attempts to borrow a saw at B&Q (GW177:47) brought to mind a similar incident at my local B&Q Warehouse in Northampton.

I went to buy a quantity of timber for a job entailing PAR of various lengths which I intended to carry back in the boot of my car. I took my pull-cut Shark saw with me and, having purchased several standard lengths of timber, commenced to cut them down.

I loaded the timber into my car but, like a fool, left the saw on the trolley I'd used as a workbench. On turning round to retrieve the saw and trolley I found both had been 'borrowed' from behind my back! By the way, one can still get a fairly reasonable breakfast at a reasonable price from that B&Q.

Mike Fletcher, Northants

Pulley problems

I read in the July issue of a reader having trouble with a planer thicknesser (GW176:82). I have had the same trouble with the belt falling off, although my Elektra Beckum is a little older.

After a few phone calls to Elektra Beckum I was

Letters

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sold a conversion kit because the spindle on which the plastic pulley is fitted was thinner on the old machines than the new ones. The wobble on the pulley wheel throws the belt off.

After fitting the parts the problem was cured for a short while, and then returned, but I think it is the rubber used for the belts being of an inferior quality.

I plan to sandwich fabric between two belts with glue to stop the stretching as it gets hot. I am convinced the problem is now the quality of the belts because the old belt was in use for many years and did sterling work.

Nigel Austen, Kent

We'll pass your comments on to Mark Walker, who wrote to us in the first place. Thanks. Nick

Ruler plea

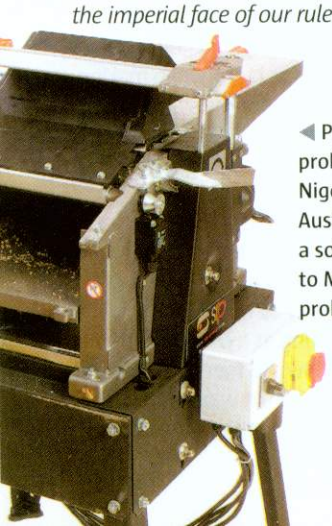
The free rule on issue 176 of *Good Wood* was a great gift: thank you. It seems a good opportunity to make a plea for someone to make a rule genuinely designed for woodworkers, by having exactly the same scale on both edges of one side.

Think how often in woodwork you place one end of the rule on a mark to take a measurement, then rotate the rule to point the other way, only to find you are now looking at a different scale. It happens all the time.

We need a rule with exactly the same scale on both edges, say in 16ths. Perfection would be to have an inch scale on one face and a metric scale on the other. Surely there must be a manufacturer who could make one?

Norman Billingham, Sussex

Good point. As you rightly observe the imperial face of our ruler has 16ths along one edge and 10ths along the other. Perhaps less is more? Would it help to have the graduations running in different directions along the edges? Probably not. Nick



◀ Pulley problems: Nigel Austen has a solution to Mark's problem

Useless ruler

Having bought a copy of *Good Woodworking* magazine I was delighted that it came with a free 12in double-sided steel rule. However on examination I found the ruler would be useless for accurate measurement as the engraved lines start with almost a full 1mm missing from the zero end of the scale. I wonder whether I have just been unlucky with a faulty ruler?

J. Prescott, Cumbria

Mine seems to be fine, so perhaps yours was an isolated case, and we've received loads of support for the ruler. I was always taught never to use the end of a steel rule as a reference point as one cannot guarantee its accuracy. Instead I generally work from the 5cm or 10cm mark. Nick

Kitchen worktops

In issue 177 you had an email from Alan Flockhart regarding the best router to use for kitchen worktops. It just so happens I fitted three kitchen worktops in the shape of a U for a teacher at my school, two weeks ago. I hired a 1/2in router from Plexhill Plant Hire in Palmers Green, North London. He uses Hitachi M12V routers and Makita routers as well. He's been in the business for 35 years and knows the best power tools to buy and hire. He also only hires Unika worktop jigs, although most jigs will do the same job.

To fit kitchen worktops you need a 1/2in router, 1/2x2in TCT cutter or replacable blade cutters (this is what kitchen fitters use, as they are cheaper in the long run), 30mm guide bush, worktop jig, and F clamps with nylon protective pads or G clamps with scrap pieces of hardboard/MDF to prevent marking the worktop.

Measure the width of the old worktop and buy one the same or wider. They don't all come in 600mm widths, but vary considerably. Some people use 'mastic gun' type speed clamps to fix the jig, but these never go really tight and can slip. You also have to remember to turn the worktop upside down on some cuts so you don't chip the plastic laminate. I also like to seal all exposed chipboard edges and under the worktop with two coats of exterior PVA, which is faster drying than exterior. varnish and is waterproof against seepage between the joints.

I squeeze two beads of clear silicone on the sealed chipboard edge (one near the top, one near the bottom) before bolting up. (Unika have their own silicone). If you use three bolts and four biscuits, the tops should be dead level. Most people don't realise that the slot in the jig is 31mm wide and the guide bush is 30mm.

This is so that you can take a roughing cut in 8mm depths (keeping the router to the right of the slot) and a final 1mm finishing cut at full depth, this time keeping the router pushed hard against the left side of the slot.

The job I did came out okay but I couldn't get the surfaces dead level. I used a cheap biscuit cutter that left the biscuits floppy in the slots! I ended up screwing battens underneath the worktops, which brought them to about 0.1mm out of flush. The teacher was okay

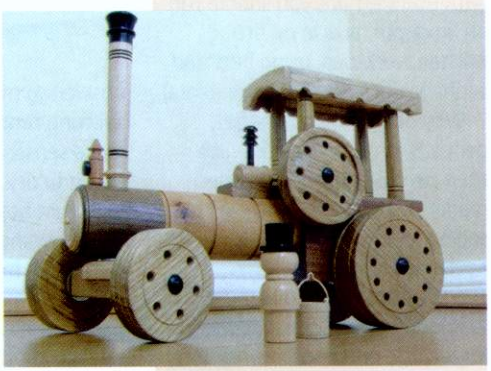
Snippets

A belated thank you for your most recent free gift, the 12in ruler. I have been testing it, which is why I'm slow to say thanks, and I find it works well. It is easy to read and accurate; at least it agrees with my 'master' ruler, to about 0.25mm in 300mm.

Peter Kebbell, Selby

I won the competition in June and the TurboCAD software has arrived. I look forward to getting to grips with it. I hope that my woodworking will benefit from better design and detailing.

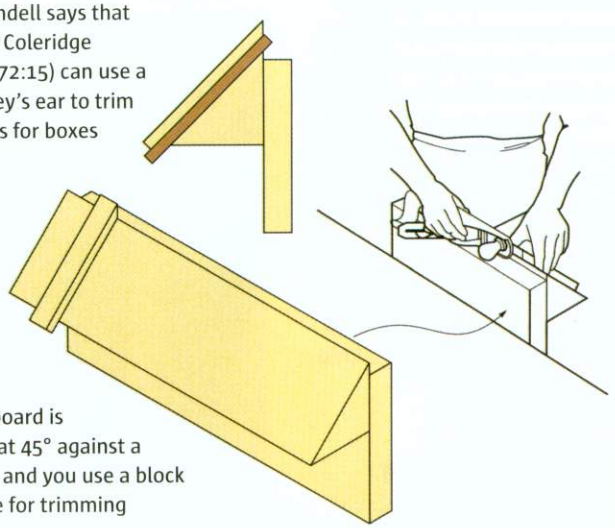
Ivan Dickason, Berks



Thank you for helping me in creating the plans needed for a traction engine. Now I'm after plans for a six-wheeled railway engine. Can anyone help with this?

S. Brown, Northumberland

C Blundell says that Hugh Coleridge (GW172:15) can use a donkey's ear to trim mitres for boxes



The board is held at 45° against a stop, and you use a block plane for trimming

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Winners!

Congratulations to the competition winners from issue 176. **R.W. Stephens of Kidderminster** wins a full set of Ryobi cordless tools and seven other lucky readers win a set of Irwin clamps and saws: **Greg Taylor of Surrey, J. Oakes of Hatfield, David Nobbs of Ipswich, M.H. Lyons of Orpington, Martin Jones of Northampton, Keith Sutton of Guildford and A. Williams of Wisbech.**

◀ Modern braces: Clive Bickley has devised his own method for strengthening gates

with that.Perhaps you should run an 'in depth' article on fitting kitchen worktops, using butt and scribe joints (mason's mitre joints).

Why don't you print in full, people's email addresses (with their permission) so that other readers could send advice to help solve problems.

Kevin Nairn, London

Thanks. Some great tips there. We don't publish email addresses for privacy, and because, selfishly, we like to be part of the writing process! We always forward emails or letters. Nick

Brownie points

Here's how to keep yourself amused, save some money and win some brownie points. It all started when a 60-year-old wardrobe, of solid oak carcase, got removed for modernisation, so through the saw it went to make three clocks, and a jewellery box and then something for the hall.

My wife saw an antique programme on the TV with a wonderful Victorian hall postbox which went to auction and fetched £800. No wonder it was wonderful. So into the workshop I went and made her one. It is surprising what you can achieve with an old wardrobe and a little bit of skill.

J. Taylor, Lincoln

Splitting timber

Thanks for the two-page spread in this month's *Good Wood* answering my question on splitting timber. Reading this does make sense. Is it really worth trying to dry your own timber out? I was just hoping to practise doing some turning on some timber that didn't cost me anything. I have now cut it all down into smaller sizes and leaving it to see if i can salvage anything from it.

I had a light bulb moment reading Dave Roberts' article on his double twist candlestick. I am in the process of finishing off a nest of tables that I started some time ago. I finished the larger table, which turned out well for a first attempt, using old floorboards and reclaimed timber. I had glued the tops up ready, when I thought about doing three different styles of tables in one nest, a mixed nest. The first table has tapered legs, so I've made the middle table with square legs, making them look more chunky, with a stopped chamfer on all four edges, and have made the legs on the smaller table using Dave's method of barley twist, which again for a first attempt I think as turned out well. The only drawback doing the barley twist legs was all the sanding, my fingers are still aching. It must be old age creeping in!

Can you recommend a finish to put on the tables that is going to be hard wearing? I have used varnish on the first table.

Paul Johnston, by email

We'd love to see photos of your nest of tables. Have you tried using a Danish oil? It is hard wearing and easy to apply. Nick

Ledged and braced

I was pleased to read the article in the July issue (GW176:51) in which you give some of the best and proper methods for making a ledged and braced door. Can I add a couple of suggestions in making a well-made door that will last for many years?

Firstly, all edges of the T/G boards and the backs of the ledges and braces should be painted with primer before assembly. The edges of the braces and ledges should be bevelled both for appearance and to throw off rainwater.

Frederick Bate, Portsmouth

▲ Splitting: is there no way to season short lengths of timber?

Modern braces

I have been a subscriber to *Good Woodworking* since January this year and find the content varied and very interesting. I think you get a good balance with articles to suit the less experienced and the professional. I certainly look forward to the next issue dropping through my door.

In July (GW176:51) Phil Davy gave advice on the bracing of doors and I thought that your readers may be interested in a new approach I took when making a pair of gates for the side of my house. The old gates had been there for 25 years with a repair about 10 years ago and now needed replacing completely.

The demise of the old gates had been hastened by the ingress of water, firstly by the diagonal braces acting as a conduit carrying the rain down to meet the stiles and rails where it was trapped and secondly by the through tenons, ▶

Letters

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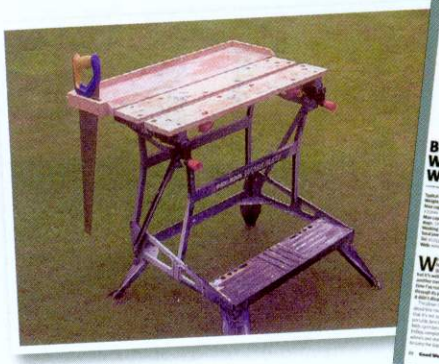

Thanks for a great magazine. I was particularly interested in the test you ran on portable workbenches (GW176:86). I use my B&D626 a lot as most of my work is done on site. However there is very little room to put tools etc while you are working. So I have added a simple tray, which screws to the rear jaw with a couple of battens. It can't take much weight, but is ideal for screws, handtools and even a mug of tea. ***Trevor Charman, Scarborough***

which were wedged in the traditional manner, but moving, with the result that joints everywhere opened and let in the water. I wanted to retain the style of the gates and keep the vertical boards as this gives a tidy face both sides but this was also a problem as the boards were screwed to the rails and again this made a trap for water.

I needed braces as each gate is 1350mm wide and very heavy needing plenty of support. My answer to the problem was to have a steel brace in tension and therefore sloping down from the hinge side at the top to the toe at the bottom. For this I used a 12mm threaded rod (studding) drilled through the stiles and centre rail with a recess in the outside of the stiles to accommodate a large washer and a nut on each end. The beauty of this is that it is adjustable and the gate can be pre-tensioned. Okay so far, but this is not going to look very nice and there could still be a problem with water around the threads as they pass through the timber so I used a length of 15mm copper pipe as a cover and this was glued in place to seal where it entered the wood.

Through tenons have been around for centuries and must be the right way to do the job, but these old craftsmen didn't have the benefit of polyurethane glue as we do, so are they really necessary? I decided that they weren't and used basic mortice and tenon joints, the tenons being about 75mm long, well glued with PU glue. This is not so easy as the glue has a five minute setting time and required me to assemble the frames one side at a time.

For the boards I used the same theory as used on PVCu. windows, if you can't stop the water getting in, make sure it can get out. To do this I cut 8mm pieces of 15mm copper pipe and used them as spacers between the boards and the rails, the screws that hold the boards pass through them and hold every thing in place. This method allows the dreaded rain to pass right through and not lie trapped with subsequent rot happening. All horizontal surfaces were bevelled or curved also to encourage water to run off.

The gates were stained with three coats of Does what it says on the tin, the backs of the boards and the rails being coated before assembly. All this was three years ago, and to this day there has not been the slightest movement in any of the joints and the gates are as watertight now as the day they were hung.

Clive Bickley, Clwyd

TIP

If, like me, you find it increasingly difficult to remember measurements, try this recorder. It consists of a disk of plastic laminate stuck to my tape measure, and a pencil. I can write down measurements and rub them off again when done, and it saves me having to re-measure something I measured just now.

Steve Maskery

More wood

My main criticism of woodworking magazines is that all the periodicals contain the word 'wood' in their titles, but of the 100-odd articles published every year only half a dozen are on the subject. I would like to see more articles on buying timber, and the grading used in timber yards. Perhaps we could have a permanent feature giving average prices of timber taken from a selection of suppliers? Tell us if they have minimum quantities or cash limits and delivery charges. Does any reader have experience of buying timber by mail order?

A.J. Woollett, Staffs

I think it's a very fair point, and we will do our very best to find a solution to your problems. You may notice that this in this issue (on p35) we have a piece about the grading and pricing of oak, and we're planning more in the future. And please, everyone, tell us where you buy your timber from. Thanks. Nick

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Writing chair

Mahogany's not easy to find these days, so instead **Andy Brough** stains up sapele to match his writing desk

Recently I had a commission for a writing desk and chair. I wrote about the desk in GW176:20, and this month I'll look at the construction of the chair. The thing is, before I started this project, I'd never made a chair. I did tell the client this, but he said he had confidence in me so what could I do but say yes?

In the next few days I read all the articles I could find on the subject and ended up even more unsure of myself! But I managed to offer an outline of a chair to complement the table. The client liked it and I won the order.

Now, it's one thing having a drawing but quite another to make the chair; and it's reasonable for a paying customer to expect that chair to be comfortable. So I realised I'd have to make a prototype that he could try out. This prototype would have to be adjustable so we could change the proportions until they were correct. I had no idea how I was going to do this quickly and cheaply.

In the end I made a couple of full-sized templates in 1/8in white-faced hardboard, using the original drawing as a guide. I transferred the outlines to some spare bits of pine. The pine was cut to dead sizes, leaving out the tenons, thinking I would biscuit-joint the prototype. But after experimenting with my pocket-hole jig I realised I could screw the joints together, take them apart, reposition and re-screw (Pic.1).

So it was that within four hours I had made a prototype that you could stand on, let alone sit on, with parts that could all be repositioned in minutes (Pic.2). I took this to the client for a fitting session and indeed we did alter the back shape and position, so it was worth it.

I'd hoped to get away with a straight top with the cushion padding providing the support, but had made an alternative curved piece and of course the client wanted that one. I fitted it with my cordless driver in a few moments.

I left with a three-dimensional design that the client was happy with; now all I had to do was make it in sapele which, as you'll remember from issue 176, was the timber I'd chosen as a substitute for mahogany.

◀ Pic.1 **Pocket holes used in the prototype**

1 Preparation

I started by doing a new drawing, this time using the mock-up as the actual measure, allowing for tenons, and the already-made templates to cut out the parts.

I had machined the sapele to approximate thickness while making the table and had left it in stick since then so it was ready for use.

2 The back legs

I cut out the back legs (B) first, on a bandsaw (I don't have one myself so I borrowed a friend's). It's important here to ensure that both legs have exactly the same angles and that the vertical portion where the mortice goes is truly flat and at right angles to the bottom of the leg.

Saw just outside the line to allow for cleaning up later. You could use the template and a bearing-guided cutter to clean up the legs, or do as I did and use the old-fashioned combination of plane and spokeshave.

It could be argued that the mortices should be cut before the legs are shaped. If you're using a morticer I'd agree, but I used a

▲ Pic.2 **The prototype chair: it looks delicate, but is solid enough to sit or even stand on**

▶ Pic.3 **Andy cut the leg tapers on the tablesaw using a home-made jig**

Skill Build

See GW176:20 for how to make this stylish writing desk

Skill Build

▲ Pic.4 If you're only making one chair cutting the tenons is often as quick by hand

WoodRat, which accommodates most shapes (0845 458 2033, www.woodrat.com). Shaped legs clamped to the mortice rail are no issue.

3 The front legs

Plane the front legs (A) square and cut them to length (leave overlength at this stage). Mark out and cut the mortices. Although I have a morticer I find that for smaller joints the router in the WoodRat is easier and more accurate. Once cut, square the corners if a router is used.

The front legs are the trickiest bits to machine because they are not only tapered but also relieved up to the top where the seat rails fit. The procedure is the same as for the legs of the writing table (see GW176:20 for more details and pictures). Begin by making a jig to cut the tapers on the legs. This is simply a straight piece of hardwood that runs along side the rip fence with a notched block at the front to hold the leg at the correct angle (Pic.3, p22).

The tricky bit is routing the relief (see 'Tip', right) near the top of each front leg (A). Set up a router table with a 1/2in cutter with the fences in planer mode; the outfeed table should be set 1/8in further out than the infeed and the cutter aligned to the former. Set an end stop instead of trying to work to a line, it's safer that way. This cut must be made in one pass at the full 1/8in depth. The joint end must remain on the table, otherwise the taper drops the leg down and the shoulder won't be square. Press down on this end while routing.

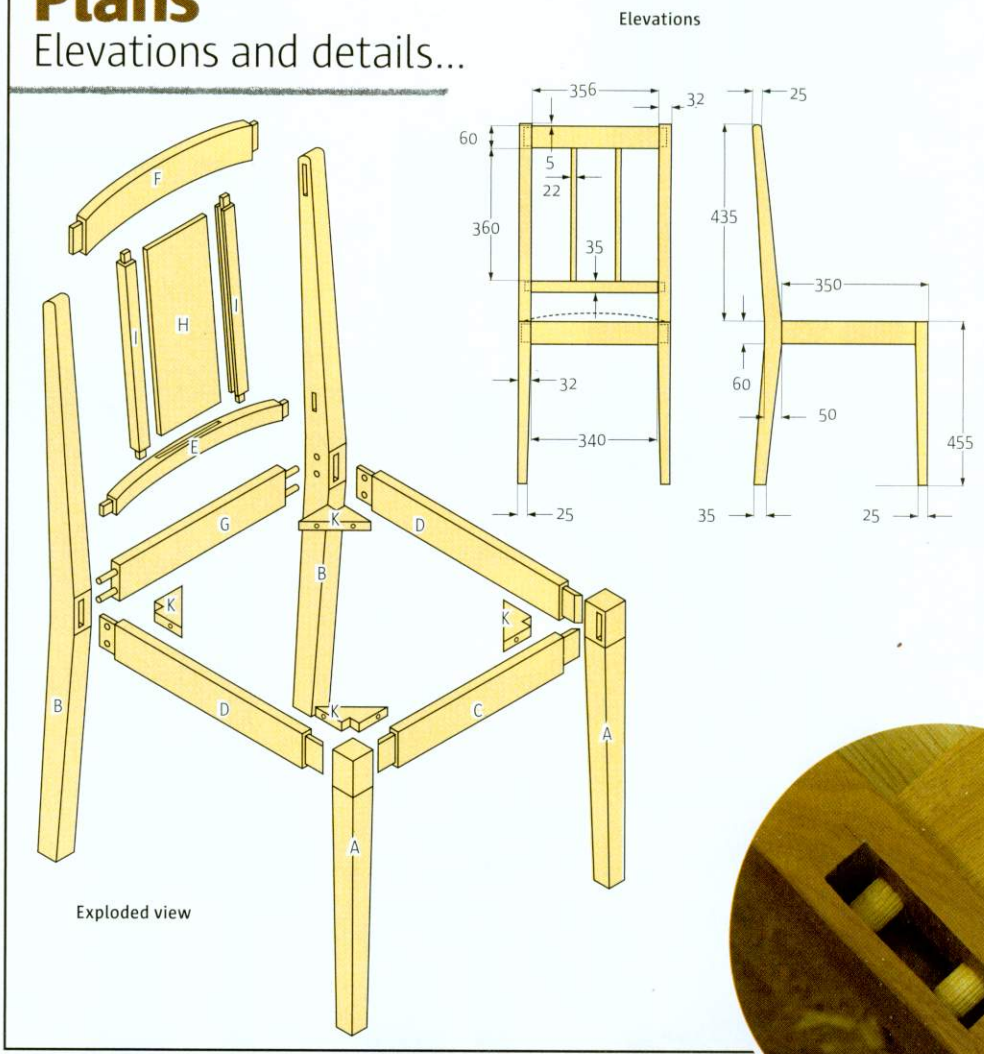
I planed the resulting surfaces and used a Carroll 1/2in drum sander in a pillar drill to clean up. Take care not to produce a scallop, which is easy to do by over-zealous sanding with a drum. I used the complete router fence on the pillar drill to simulate the routing action.

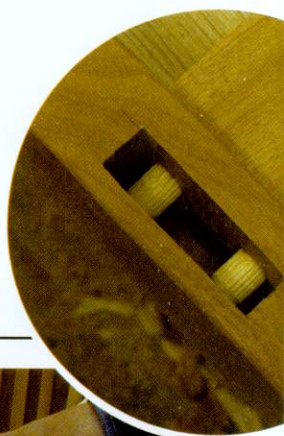
4 Strong joints

The main weakness in most chairs is the back joint, which is under a lot of stress, especially if the chair's occupant leans backwards. This is

Plans

Elevations and details...





The relief on the legs was done using this Triton table

TIP Before you rout the relief on the legs, use a modelling knife to scribe a line all around where the relief starts. That will help to prevent breakout.

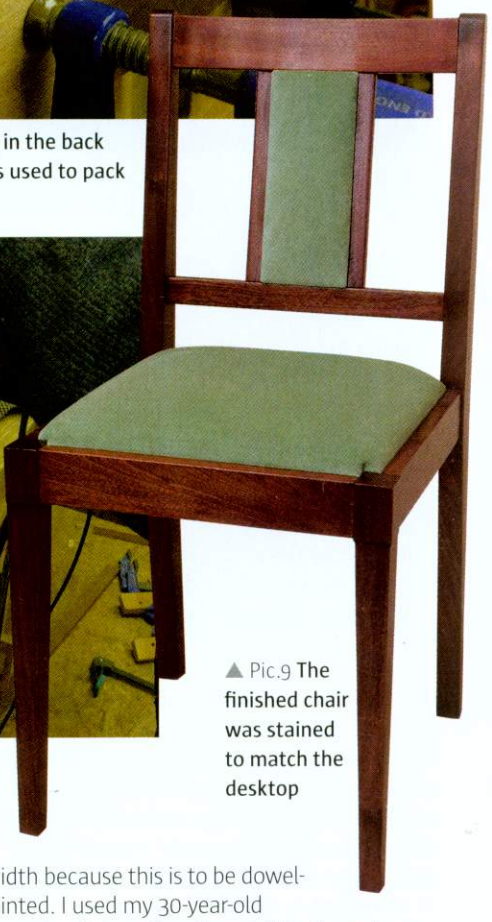
An ideal chance to use your project planner from GW175

▲ Pic.6 It's worth investing in a professional upholstery job

◀ Pic.7 A rear leg joint with the dowels that will go through the tenons

▲ Pic.5 Routing the housing in the back support: notice that waste is used to pack the piece accurately

▲ Pic.8 Cutting the dowel holes through the endgrain



▲ Pic.9 The finished chair was stained to match the desktop

why I decided to make the side rail (D) tenons as deep as possible and to lock the tenon in place with the rear seat rail (G), which is joined with dowels that go through the mortice once it is glued in place (Pic.7). This will alter the usual procedure for gluing up: normally you'd glue the front and back as separate pieces first, but with this method the sides are done first.

The tenons on the front (C) and side rails (D) are cut next. These are mitred at 45° where they meet inside the mortices. Because I don't have a bandsaw, I dragged out my old tenoning jig for use on a circular saw. It's not a very safe way to go about it but I kept my hands behind the jig and well away from danger.

When using this method it pays to cut the shoulders all around the rail with a fine crosscut blade and a sliding carriage. The rip fence is used as the stop because the cut is only partial and nothing will jam. Make this cut fractionally deeper than the exact depth to help cleaning up later: this ensures that the shoulder is exactly the same on each face. Replace the blade with a rip-toothed one to cut the tenon cheeks. The depth will be slightly less than required because the earlier crosscut has defined the tenon length. Of course, each face is cut on the outside to keep the settings the same and the sliver that falls off is on the outside so cannot jam. Don't use this technique unless you are an experienced woodworker, and have the right guarding.

With a micro adjuster on your rip fence and a couple of trial cuts, the tenons can be made very accurately this way, so it may pay to improve the jig and include a bridge to cover the blade and a larger base to run on the fence.

The mitres were cut by hand although the saw could easily be reset to 45°. Test for fit and shave the faces of the tenons with a shoulder plane until they slide easily into the mortice: if you make this joint too tight, it may get starved of glue.

5 The rear rail

The rear seat rail (G) should be cut exactly to width because this is to be dowel-jointed. I used my 30-year-old Record 148 dowelling jig and this allowed me to work fast, with no marking out: the jig is flipped over and, keeping to the reference faces, mirror image holes are cut in both faces and edges (Pic.8). For this joint the edges are not flush, so the holes are drilled further from the edge in the sides of the legs.

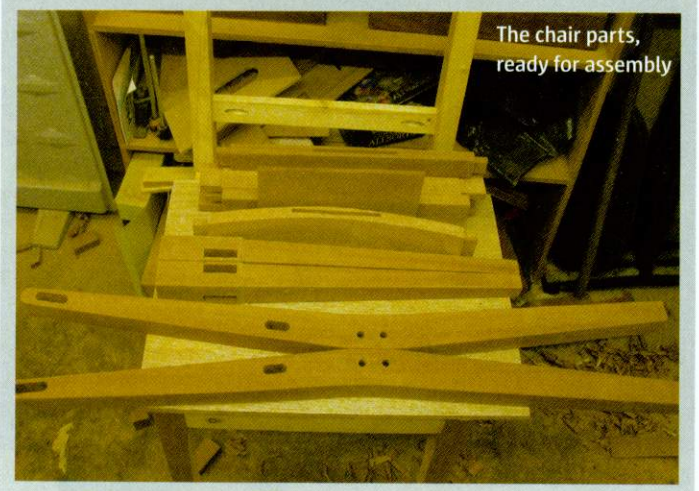
A good way of achieving this is to set the jig for the holes furthest from the edge and use packing for the mating holes, which in this case would be to make the holes central to the end of the back rail. Once the chair sides have been assembled the holes will be re-drilled through the tenons to lock the lot together.

6 Seat supports

The two back rails (E & F) have tenons, which I cut on the circular saw. The mortices in my case were cut with a router in the WoodRat, so they have rounded ends; I rounded the tenons ▶

Skill Build

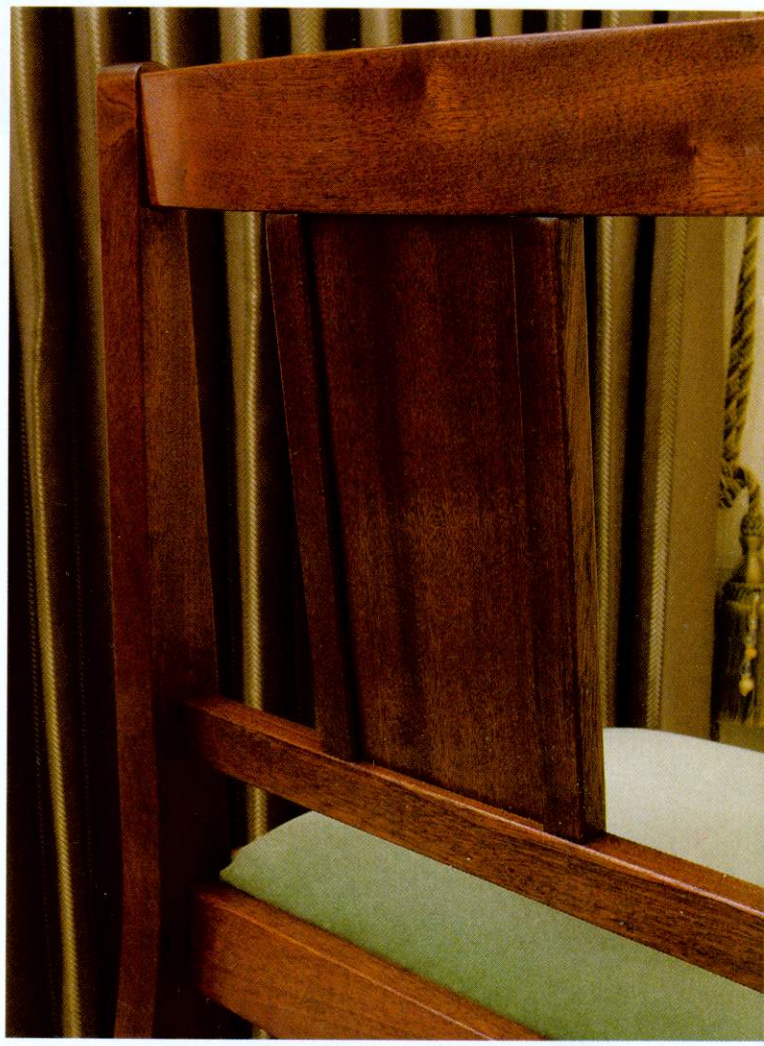
FOR BEGINNERS



The chair parts, ready for assembly

Using adhesive

Before assembly begins, get out all the cramps you're going to use along with packing pieces (offcuts used to spread the clamps' load and thus protect the wood from being marked by their ends). Do a trial assembly, without glue, to ensure that everything fits and is square and use this to preset the clamps. You'll also need cloths and a bowl of water to clean off the excess glue squeezed out of the joints during clamping, unless you are using Andy's chiselling method (see below). With PVA you don't have very long to get everything set up before it starts to dry: usually around 15 minutes. If you want to take your time, use an adhesive with a longer 'open time' such as Extramite.



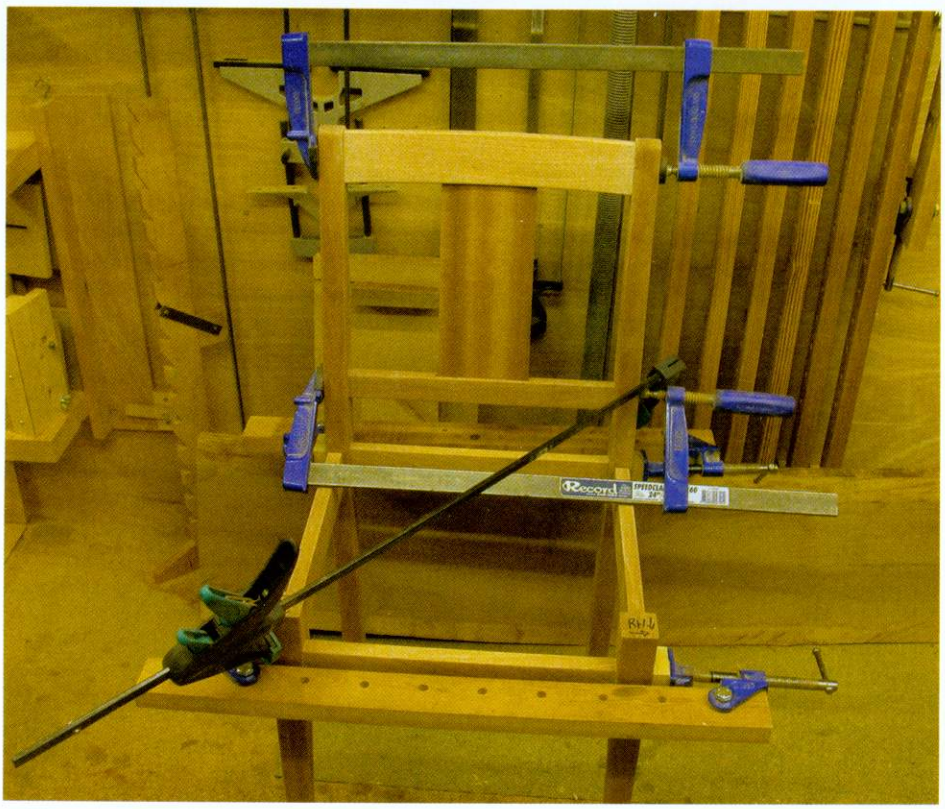
to suit with a combination of chisel and rasp. The upper back rail (F) is curved. I used the mock-up piece to draw the shape onto the edge of the rail. If you haven't made a mock-up use a template. Cut out, being careful not to catch the tenons, and clean up with a plane and a spokeshave. Check all mortices and tenons for fit and adjust as required.

The underneath of the upper back rail (F) and the top of the lower back rail (E) have a housing cut into the edge to take the solid panel (H). This will have edges (I) added after assembly, and will be upholstered on the inside later. The panel is 6mm thick and the housing 1/4in wide, the resulting play allows for the angle that is formed due to the curved top.

Now round over all the outside edges with a 1/8in radius cutter to soften the look and to match the table edges. The ends of the back legs are rounded over by hand or with a disc/belt sander. Sand all surfaces down to 240grit with a palm or small orbital sander. The front legs will project above the side rails; don't cut them to length until after assembly, or the ends may split during assembly.

7 Assembly

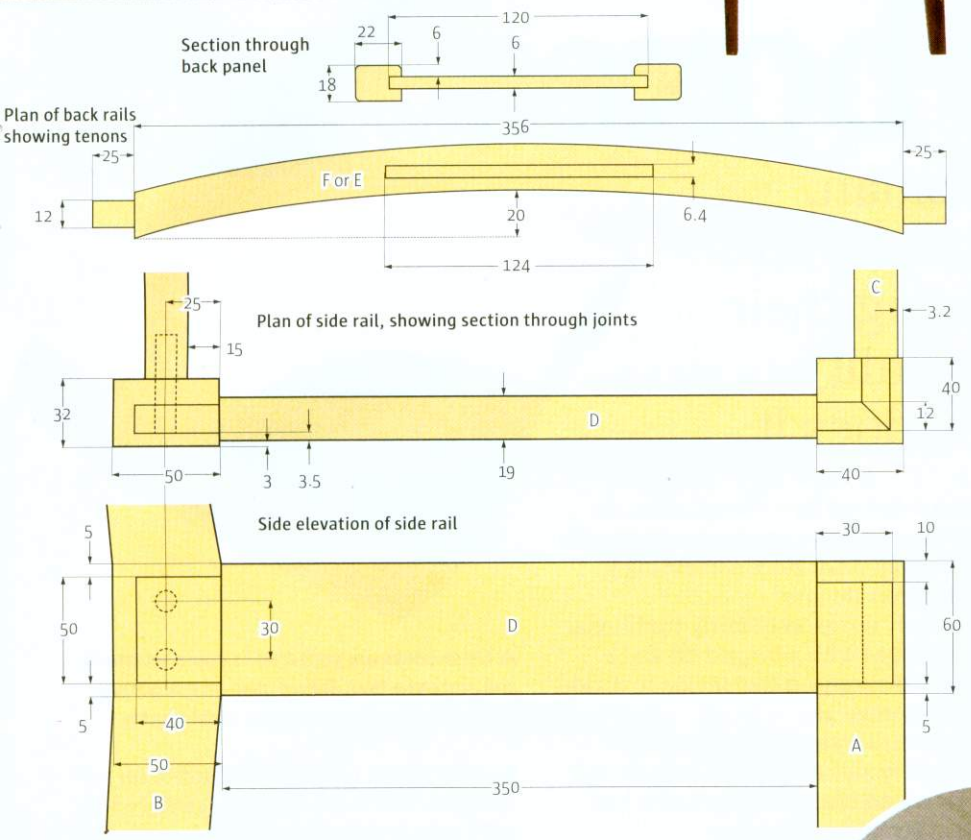
The two sides are assembled first. Lay one over



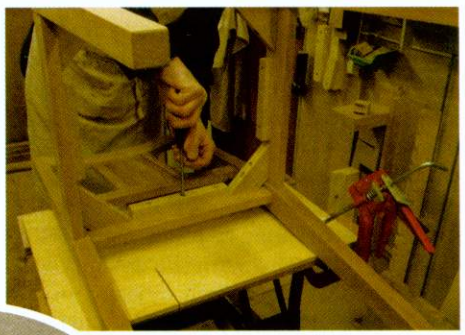
▲ Pic.10 The assembled chair clamped up: the back panel is not glued

Plans

Elevations and details...



▲ Pic.11 **The original chair had a straight back but the client preferred this curved shape**



▲ Pic.13 **Corner blocks fastened in place add strength to the joints**

the top of the other and check the diagonals and adjust if the assembly is not square. At least, both sides must be the same. Once dry, the rear dowel holes need to be re-drilled so the dowels pass through the tenons.

To complete the assembly, lay one side on the floor and add the rails and the back panel. The back panel needs no glue because it is captive in its housing and anyway must be free to move over time.

Add the second side and stand upright. Position the clamps and once more check for square in all directions; adjust with a clamp across the long diagonal (Pic.14). It's best to wait until the glue's rubbery and cut it off with a chisel, rather than wipe it off when wet.

Once dry, the extra length of the legs must be cut off. To do this, I clamped an 18mm plate with a large hole in its centre over the leg end and used a router and guide bush to rout the end off cleanly to the depth of the adjacent rails. If you cut by hand at this stage, a Japanese pullsaw is ideal. Sand the top of the seat flat. Then add the corner blocks (K) for the 9mm ply seat (Pic.13). The ply is cut to fit the shape so it sits flush to the top.

Next, make the sides for the back rest. Cut a 6x6mm housing down a length of sapele, rout all outside edges with the 1/8in cutter and cut to length to fit each side of the panel. Glue them only to the panel so that they will move with it and blend them in with the top support. Hand sand and ensure no traces of glue remain.

▶ Pic.12 **Andy took care to make sure the seat panel would fit perfectly**

Make a 6mm ply panel for the back. Both panels need to be clear all round by a couple of millimetres to allow for the covering.

I work part-time for a soft furnishings interior designer so the covering was organised through her. If you don't know anyone who's handy with upholstery, look in the *Yellow Pages* for a local firm who'll do it for you.

8 Staining

While the upholstering was going on, I stained the chair to match the table using a spirit dye. It was quite tricky to match the desk because its top was different from its substructure: the top is darker with a more prominent grain. The tendency was to compare the tabletop with the chair even though the legs do match, so to build the colour up, I added dye to the varnish and used a dark mahogany wax. This was sealed with two thin coats of a 50/50 polyurethane and white spirit mix but still looked too light. So I stained a varnish mix and added a coat of that, followed by a thick coat of polyurethane. The whole lot was then cut back with a plastic scourer and given a coat of Danish oil to remove all the little scratches left on the varnish. Then I applied a coat of my usual 50/50 polyurethane and Danish oil mix with a scourer, and wiped it with a soft cloth. The final finish was with the mahogany stain.

The seat panels fit beautifully and the chair looks very smart, if I do say so myself!

Any Questions?

If you have questions about this project or want us to send you a cutting list, write to us at 30 Monmouth Street, Bath, BA1 2BW or email goodwood@futurenet.co.uk

Faster boxes

As a professional craftsman, *Trevor J Cottell* must make boxes quickly while maintaining their character and design quality. Here he reveals how he does it

▲ These boxes are veneered in ripple sycamore and amboyna burr. Trevor used an innovative MDF block technique to make them quickly

Decorative boxes have always been rather an indulgence for me. I just love making them. Right at the very beginning of my career, when I was teaching myself woodwork in the garden shed, it was boxes that I made. Since then, I have refined my methods to allow me to be extremely creative with the design but yet make boxes relatively quickly, so that I can sell them at affordable prices.

When I went for my interview at the London College of Furniture back in 1977 it was a decorative box (safely packed in a cardboard carton) that accompanied me.

My interview piece was a very angular mahogany box with a panel on the lid formed from alternating diagonal strips of mahogany and black walnut. Inside, the colour scheme was reversed with the tray being made from black walnut with a central lid again decorated with strips of mahogany and black walnut.

I still have that box and it's not too bad for a beginner, although the timber contrast has, unfortunately, gone. At that time, I always used to make the top and bottom separately, something I would never do now.

My early boxes were fairly traditional casket types with a hinged lid and a compartmentalised tray inside to divide up the storage and to locate the lid when closed. Mostly they were made from salvaged woods such as mahogany, oak or American black walnut, which has been a favourite ever since.

Early designs

They were made before I had any idea of design. I was simply interested in making things and was as yet unaware of the major influence that the realisation of 'design' was going to have on me. I made several more boxes during my time at the college and slowly moved from almost reproductions of old things, or from work inspired by contemporary makers, to having a style of my own.

Much of my work then developed from making drawing studies of plants and flowers which had a big influence on my designs. The small Ivy Box (pictured on p30) was designed during this period for a friend, Rex Heathcote, who is now a furniture-maker in Australia.

Another design from this period was the Primrose Box. Based on the flower of the common primrose, which has five petals, the box was five-sided and the lid was a stylised flower that imitated the way the petals overlap each other. These were made in fine timbers such as pear or sycamore and usually had a 'surprise' rich interior veneered in amboyna.

I had such a box with me one day between leaving college and starting in business. I was in Hampshire and decided to call in at the workshops of Edward Barnsley, the son of Sydney Barnsley of Arts & Crafts Movement fame and a well-known furniture designer and maker in his own right.

He would have preferred it if I'd made an appointment but was nonetheless welcoming and kind; it was certainly an honour and a privilege to meet him.

He took me round the workshops, entertained me with coffee and

◀ Here you can see one of the pins used on this series of boxes to make sure the lid only fits in one position (turn over for more information)

▲ Using the grain vertically, as in this ash burr box, is very speedy but the timber must be very dry to avoid problems with the lid's fit later on

biscuits in his house, and was keen to hear my unpolished opinions on all that he showed me, without a hint of superiority. As I was leaving, with a box of windfall apples as a gift, he asked me whether I had any of my own work with me. I duly produced a Primrose Box and several other pieces of work, which he examined carefully and quietly.

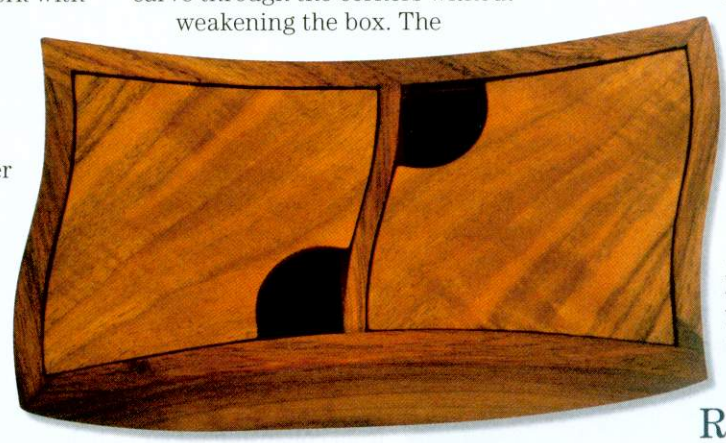
His comment was that "two pieces of wood either fit together or they don't". I have always taken this to mean that the objects were made well enough, but that I needed more experience and refinement as a designer. My Primrose Box's 72° dovetailed corners were clever but did nothing for the look of the box.

Box bodies

When I started my business, it soon became clear that to make boxes commercially, I needed to change my approach. One of my principal aims throughout my career has been to make well-designed, good-quality products that are affordable rather than exclusive. But every time I made a box, even just the little Ivy Box, it took me a whole day, which made the price at which I had to sell the box too expensive.

I had to look at ways of rationalising the process without spoiling the end product. I calculated that I needed to be making a minimum of 10 boxes at one time. To this end, the body of the box needs to be a fairly standard item that can be made quickly, freeing up time to work on the more important aspects of the piece.

The Ivy Box is square, as you can see from its bottom. This is the simplest form possible. It's through-dovetailed together because I need to be able to carve through the corners without weakening the box. The dovetails also need to be good all the way through, because I don't want any gaps to appear while carving. I generally make 10 of these 'box blanks', as I call them, at one time. Later, I split up the batch and do different things with them to give each one an individual character.



▲ Trevor favours finger-holes in his lids rather than handles, and makes them part of the design, as in this oak double box

An even faster method of making box blanks is to use the grain vertically. For this method, the wood must be very dry because later contraction of the timber can cause the lid to be 'snatched' and difficult to remove.

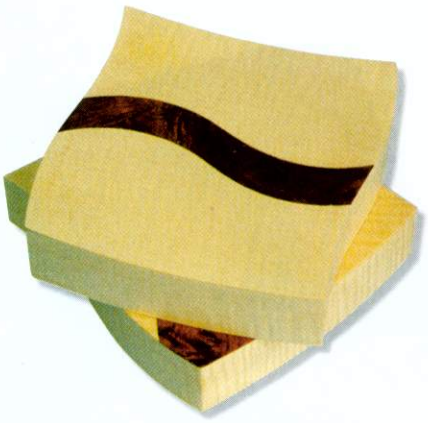
The components of these box blanks can be made very quickly and in long lengths. One component is the long side, for example 150x30mm section with a 4mm groove, 26mm from each edge on one face. The other component, the short side, is 96x30mm in section with a 4x3mm barefaced tongue on each edge.

Simply saw two of each kind at the right height off the strips and rout a groove across each for the bottom. Make a 96mm square bottom to fit in the groove, then glue the whole thing together. It's very quick.

Recessed lids

Mostly I make small boxes, trinkets in themselves really, intended to hold small items of jewellery. I decided a long time ago that I preferred not to use hinges or hinged lids. My lids are usually shaped flat timber and drop into recesses in the top edges of the box. Also, I'm very fond of finger-holes rather than handles.

For a box such as the Primrose Box, which has five sides, I need to ensure that the lid fits perfectly in each of five ▶



▲ Although Trevor uses clever techniques to make boxes like this quickly, he says the design is just as important as the way they're made

◀ The Large Ivy Box, made of American black walnut, incorporates three compartments

▲ The Billowy Box, again made of American black walnut, is inspired by the shape of laundry hanging on a washing line

positions. Alternatively, a lid needs to fit definitely in only one position. This is important to bear in mind.

With my drop-in lids, I experimented first of all with making my own plywood from squares of veneer. Contrary to my expectations, they didn't remain very flat. I had better luck with solid timber and found quartered timber is best because it is more stable.

Also, using 3mm quartered timber as the core and then veneering and counter-veneering each side has proven to be good, especially when I'm using burr veneers.

I use a two-layered router pattern for recessing the lids. The thicker top layer, which is made from 9mm MDF, has a slightly larger lid shape cut out of it. This is for the guide collar of the router to run in. The lower layer (4mm MDF) is then routed through and gives the exact shape of the lid.

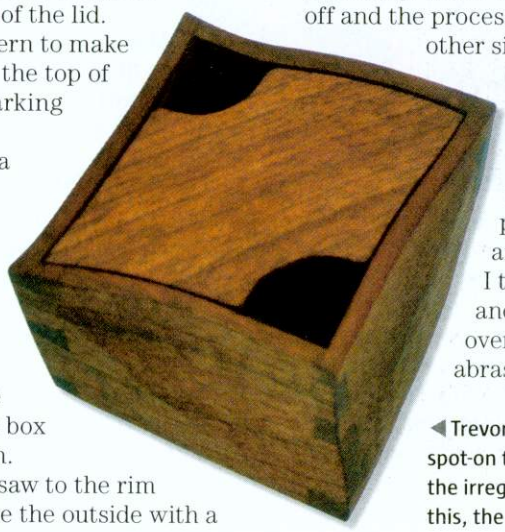
I use this pattern to make the lid recess in the top of a box and for marking the lid shape accurately with a knife. The lid is sawn out and cleaned up to the lines, giving a good, accurate fit. Drawing a line parallel with the lid recess on the box blank gives a rim.

I usually bandsaw to the rim line, then texture the outside with a gouge or clean it up with spokeshaves and abrasive paper.

Veneer

I don't often use veneer (my box lids are one of the few exceptions) but I recently made a series of boxes that are veneered all over in ripple sycamore and amboyna burr (pictured top right). Again, I made box blanks of sapele. I then applied a top and bottom of 4mm sapele-faced MDF, at the same time trapping inside a block of MDF the exact depth of the box.

When the top and bottom were dry I bandsawed out the horizontal slope and cleaned it up on the spindle moulder using a pinned-on template. Then I veneered two opposing sides using curved blocks and cardboard for softening. When dry, these were flushed off and the process repeated for the other sides. A second flushing off and then the top was veneered, the MDF block inside preventing the box from collapsing under pressure. After another drying session I trimmed the top flush and cleaned the box all over using very fine abrasives. I then cut the boxes on the circular saw to form a base and a lid; the block inside was helpful here, too. Finally I removed the inner block, cleaned up the surfaces of the joins and finished the box.



◀ Trevor must make his dovetails spot-on to avoid gaps appearing in the irregular shapes of pieces like this, the Small Ivy Box

Because it is important that the lid only fits in one position, I have three pins in an irregular triangular pattern in the base section, which locate in three holes in the lid.

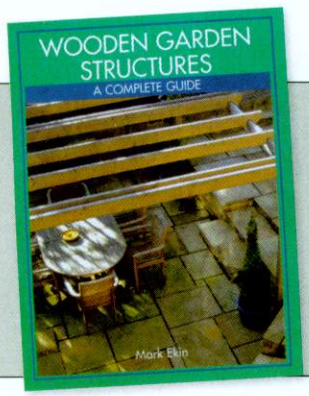
Although my boxmaking has become a small manufacturing operation, I still enjoy designing and making the boxes as well as looking at the finished product. And I believe that I still stay true to my maxim that the design of what you are making is just as important as how you are making it.

Trevor will take us through the design and making of a box in a forthcoming issue: watch out for it.

Good Woodworking

Books

Reviewed by Andy King



Wooden Garden Structures

Mark Ekin
Crowood Press, £16.99
Size: 252x194mm
Pages: 144
ISBN: 1861268378

The full title of this book is *Wooden Garden Structures: A Complete Guide* and it is an outline of how anything outdoor is made, rather than a collection of step-by-step projects.

There are a few projects, including a small shed and a garden obelisk, and these are well-explained with clear diagrams, although they are probably better suited to someone who's not a complete novice.

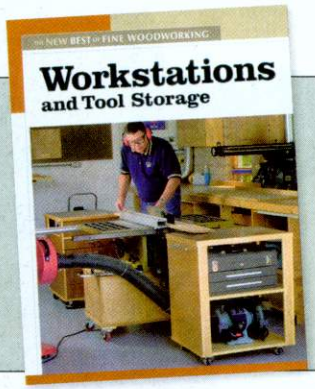
The majority of the book, though, is information on construction techniques for anything outdoorsy, whether a pergola, raised walkway or even outbuildings such as sheds and gazebos. The information is plentiful and good and I like the rustic approach. The author concentrates on traditional countryside techniques and designs so you can give your work individuality and character.

There is some padding: certainly the couple of pictures of a workbench and a battery drill with a caption saying what they are seem to be stating the obvious.

And despite being a decent enough book for garden types, the lack of colour throughout gives it a somewhat drab feel. Overall it seems to lack a 'hook' that would enthral and inspire. **AK**

To buy this book at a 20% discount off the list price (+ p&p) call 01672 520320 and quote 'Good Woodworking'

★★★☆☆



Workstations and Tool Storage

Taunton, £12.95
Size: 275x215mm
Pages: 160
ISBN: 1561587850

Book of the Month September

This book has some superb solutions for making the most of your precious space (although the American workshops shown are bigger than most Brits' homes!). And there's not a speck of MDF or chipboard: it's all veneered or solid timber so each one looks extra special.

The projects include some real crackers. How about using standard waste pipe within a cabinet to store your clamps, interlacing the bars over each other? Or a knock-down clamping frame for glue-ups where the sash clamps interlock at 90° to each other and sit on top of the clamp storage cabinet?

I have to take issue with the 'two cars and a workbench' one, mind you. It shows a line drawing of the said two cars within the workshop, but only a snake would be able to get out of them and I don't know any snakes that can drive.

On the whole, *Workstations and Tool Storage* is packed with enough ideas and information to keep the most avid woodworker enthralled. Workbench construction, tool chests and cabinets all get quality treatment, with great photos and information so you can glean what you need and adapt it to your requirements. **AK**

Good Wood *readers can buy this book at the special price of £9.75 + p&p. To order, call 01273 488005, quoting reference R337*

★★★★½

Building Real Furniture for Everyday Life

Chris Gleason
Popular Woodworking Books, £16.99
Size: 280x215mm
Pages: 128
ISBN: 1558707603

One of the joys of woodworking is its diversity and the 'wow!' factor when you spot some stunning pieces. We get them as projects in *Good Woodworking* and often in the books we review, but when I flicked through this one it gave me the 'eek!' factor: there are some pretty awful looking pieces in it!

It does state there are 14 projects you can make in a day, and I don't doubt it, but some of the designs are so dated, looking like a set from a 1970s sitcom.

Construction methods are quite simplistic, pocket screws, biscuits and standard screws the main options, nothing too taxing on the brain, but the choice of woodworking materials doesn't help sell the book. Plywood gets used extensively, and the birch faced cabinet doesn't look too bad, but the use of what seems to be a Far Eastern type on a couple of others and the decision to leave the edges unlipped looks tacky. Fine for the workshop, but not in the home.

If you like the retro look, then some of the stuff here might grab you, and you could adapt the ideas or even take them a step further and give them maybe an extra day to do them and raise their overall appeal, but that's its downfall in my opinion – the lack of finesse and design just don't appeal to me. **AK**

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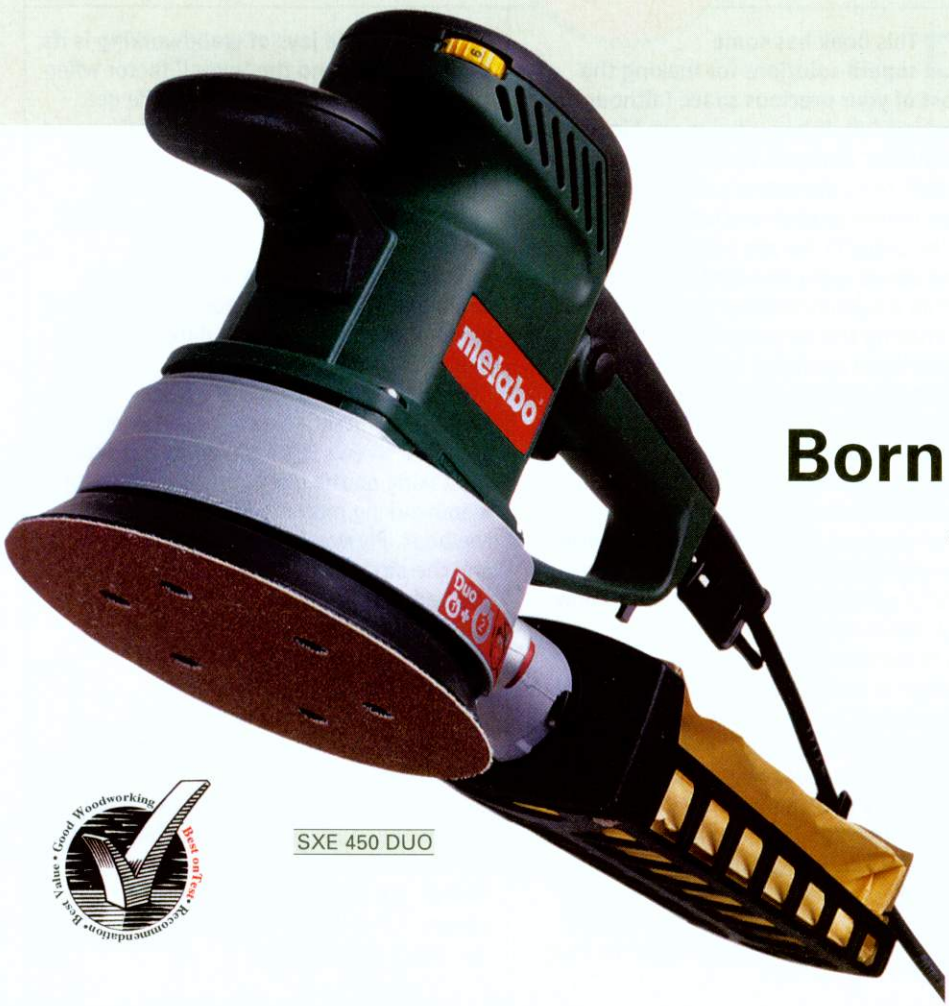

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FOR BEGINNERS

Nick Gibbs BEGINNER'S GUIDE

The *Good Wood* guide for first time woodworkers, those returning after some time away from the workshop, and the rest of us who've forgotten as much as we ever knew!

Shoulder the mitre

The mason's mitre is one of the trickiest joints to cut, but can be conquered by working to order

Bill Newton's article last month on the making of a corner cabinet (GW177:18) incorporated that most challenging of joints, the mason's mitre. Not surprisingly we've received a few questions from readers wanting to know more. Joining two pieces that are rebated or grooved and also moulded raises a number of issues, and this joint proves challenging for most of us, let alone new woodworkers. It combines the mortice and tenon with the mitre, a joint I consider one of the most difficult to complete seamlessly.

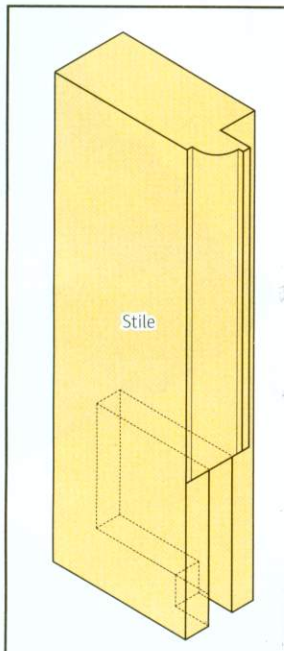
Unlike the dovetail, the business part of a mortice and tenon joint is well hidden from the public gaze. The width of the mortice is usually determined by the width of your chisel or router cutter, and the tenon is cut to match that measurement. Any discrepancy in the cutting of either part can usually be resolved with thin slithers of wood and/or plenty of glue. But gaps on the shoulder lines around the tenon are next to impossible to disguise.

The further you get into woodworking the more you come to realise the significance of shoulders. While a cutting list is important for establishing the overall length of each component, it is the distance between the shoulders that can determine the success or failure of a project.

More often than not the mortice is cut into what is known as the stile, though you'll also find mortices in legs and midway along some rails. Usually you just have to make sure the edge is planed straight and true. Cutting the tenon shoulders on the rail is completely different, and accuracy determined initially by the quality of your marking out. If your pencil marks don't line up around the four sides of the rail the chances are the shoulders won't tighten up. That the marks are out is usually the result of a dodgy square or poor planing. Tenon saws are designed with a solid back to keep the blade straight, so that you can cut the shoulder accurately. Though you'll probably need to clean up the join between the cheek and the shoulder (ideally with a knife or the point of a chisel), invariably any attempt to tidy up a poorly-cut shoulder leads to gaps that show up oh so clearly on the assembled joint.

The critical thing about the mason's mitre is working to order. First you work the moulding and the rebate or groove on the rail and stile stock. If you rebate first there may be less stock to rest on the router table when you come to rout the moulding. For ease the rebate should be the same depth as the moulding, but that's not always possible. If the rebate has to be deeper than the moulding you need a longer shoulder on that side of the tenon.

Now pare back the stile down to the rebate/groove and/or the moulding. Routing a rebate

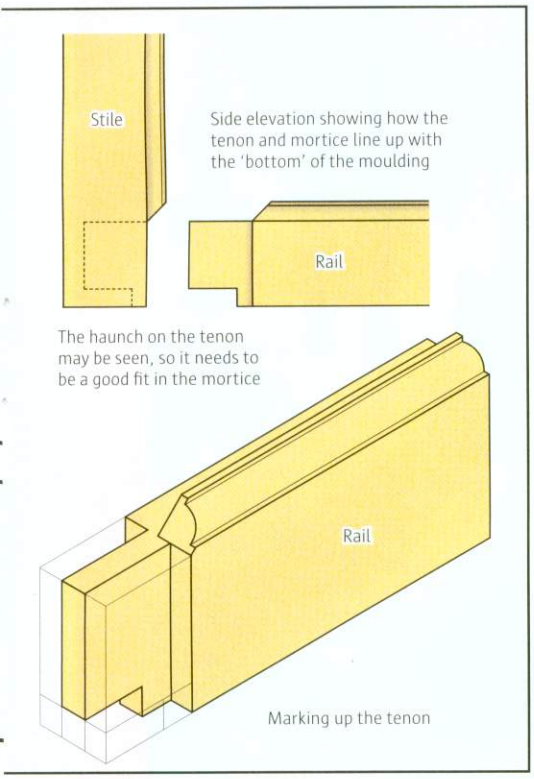


The mason's mitre, with haunched tenon. The haunch extends the tenon without weakening the stile

▲ Bill Newton was cutting the mason's mitre in grooved stock. He used the 45° guide to feather the stock first to make it easier to pare back to the line of the moulding

Not So Clever...

A very common mistake when cutting the mason's mitre is to get the distance between the shoulders on the rail wrong. You tend to forget to add the depth of the moulding to the length of the rail.



▲ You can just notice that Bill Newton's mitre guide for his chisel has only one cheek. This makes holding the piece in the vice slightly easier. The tenon is haunched

flat, square and true is simple, but getting this area level is has to be done carefully by gradually working down to a line with a chisel (paring). The trick is to have a very sharp edge, and well-marked line, and to remove no more material at a go than you can do gently with hand pressure alone. Any discrepancy here will show up along the shoulder line later.

You then cut the tenon, however you like. The two components would come together nicely now, except that the moulding would get in the way. It is this you need to mitre. The best way to do this job is to make yourself a mitre guide to keep the chisel at 45° to the work. You make this from a block the same thickness as the workpiece, and one or two cheeks to hold it in place. The leading edge of the sandwich is cut accurately to 45° to guide the chisel. Slowly work your way back, checking the fit of the joint frequently until all the shoulders and the mitre are tight.

Buying oak is all about wastage rates

Woodworkers are often confused by the grading and pricing of timber. So we asked around to find out how the yards are selling their oak

Buying hardwood often stymies some woodworkers who've been used to picking up ready-planed lengths of softwood from B&Q. Though it may not appear so, dotted around the country are yards selling native and imported hardwoods, often mail order, with carriage charged by weight, or delivered locally for a nominal fee.

Grading of hardwood is complicated. For American hardwoods you probably want to look for what's known as 80/20 FAS (Firsts & Seconds), which means that 80% of one face is knot-free. That's likely to be all you're offered in most good yards. However, just because the grading is clear, there's no reason why a knot won't still appear just where you don't need it (in the middle of a board for instance), and so wreck your wastage rates. To that end it's worth selecting the boards yourself, or build up a good relationship with a supplier.

▲ At Interesting Timbers you can hunt out the boards you want. Don't be intimidated, the best yards will help you find what you need

Waney-edged boards

In the UK it is largely a question of wastage. European oak is likely to be sold with a natural edge (waney-edged), or perhaps one straight edge. That means there's still unusable sapwood to contend with, not to mention any knots and splits (aka shakes). "There tends not to be much lower-grade oak these days," says David Simmons of Interesting Timbers in Somerset (01761 241333), before explaining that you probably have to accept up to 50% wastage on a waney-edged board. This is often referred, confusingly, as 100% wastage because you have to order twice what you need.

Most sawmills will cut and plane boards to your specifications. This is far easier than doing it yourself, but their wastage may be higher (and they charge for what gets wasted) and you'll pay for the labour.

According to Sean Roddy of SL Hardwoods in Croydon (0845 004 8683) all their European oak is prime quality, aimed at joiners and furniture makers. Like Interesting Timbers they provide a mail order service, and charge by weight for postage. Usually the delivery charge has an initial fixed fee, and then rises by the kilo above a particular level. David Simmons says that one cubic foot is likely to weigh about 20-25kg, and cost around £25 to send. Buying boards ready-planed mail order saves on the cost of shipping sawdust!

Hardwoods are priced and sold by the cubic foot. According to the mills we spoke to, plus Lincolnshire Woodcraft Supplies (01780 757825), waney-edged, 1in sawn European oak is fetching between £32 and £34 per cubic foot. Some yards will offer discounts for quantity, and the best will offer friendly advice and will let you root around their yard.

We are creating a database of timber yards. Tell us where you buy your timber by emailing us at goodwood@futurenet.co.uk. Thanks.

Good Woodworking

Solutions

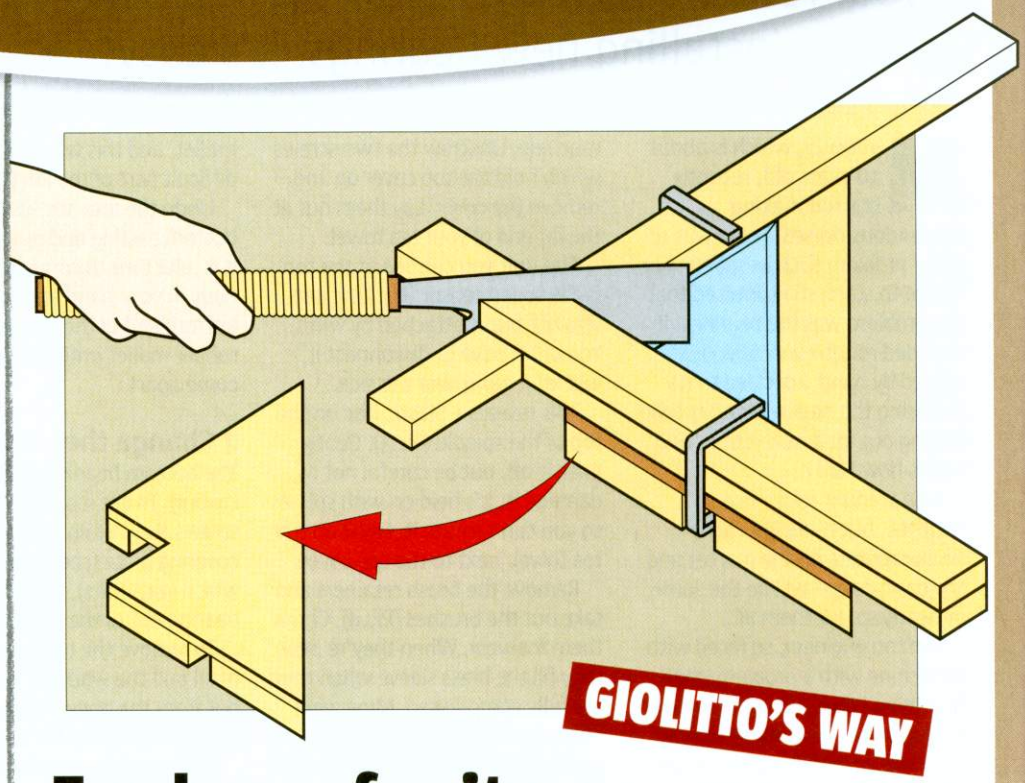
September 2006

9 pages of essential answers

TURNING DESIGN RESTORATION HAND TOOLS JOINERY FINISHING

Welcome to our technical section, where we show how to **replace the bearings on a router** and how to work **chamfers** without splitting the grain. **Stephen Simmons** looks at **replacing broken castors** and **Terry Brown** converts a **small lathe** into one for turning bowls. And, of course, there are your **questions answered**.

Nick Gibbs



GIOLITTO'S WAY

Foolproof mitres

For mitring small, unmoulded material I have devised a simple jig that is quick to use and even allows for a slight inaccuracy in cutting. Effectively you cut the mitres in pairs, with one on top of the other, held in place with small fret clamps and aligned with a plastic set square. A triangular baseboard has a cut-out at the corner so that the saw doesn't foul as it appears through the workpiece. Clamp one piece to the baseboard, with the cramp located between blocks, and then position its twin on top, supported by a spacer. Use the set square to line up the pieces, and mark the mitre line on the top piece. Cut through both sections (I use a Japanese backsaw) and if the saw tilts slightly any inaccuracy will be equalised and a good joint should still result. **Peter Giolitto**

Send us your question

We can answer your technical questions, find you suppliers or help you resolve obstacles in the workshop.

Send a question by email to goodwood@futurenet.co.uk or fill in this coupon and post it to *Good Woodworking* Solutions, Future Publishing, 30 Monmouth Street, Bath, BA1 2BW. Please don't phone us, though: we're a tiny team and rarely have time to answer your questions on spec, much as we'd love to!

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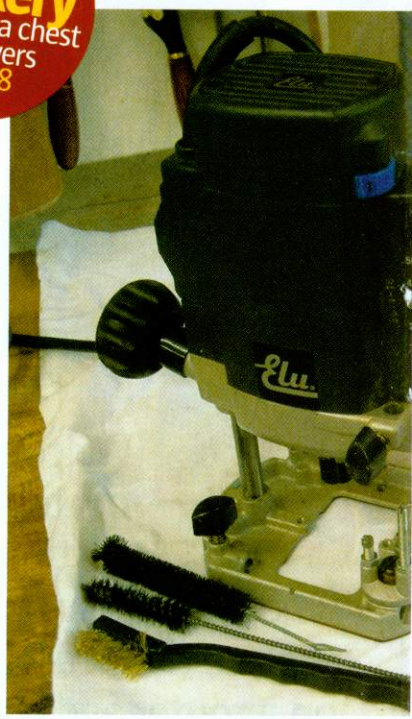
More Maskery
He makes a chest of drawers on p68

Replace your router bearings

If your router's rattling, follow *Steve Maskery's* guide to installing new bearings. It's easy!



My router, which is about 10 years old, recently started making horrendous noises. There was no other problem such as sparking or failure to start, so I surmised that the problem was the bearings. It sounded rough even when just turned by hand. I decided to try replacing the bearings rather than forking out for a new router, and here's how I did it.

This account refers to a MOF96E, but there are many similar routers on the market and the basic design will be the same, or nearly so, for them all.

I am no engineer, so faced with a machine with a problem, the first thing I do is ask someone who knows more about these things than I do. I posted a query on an internet forum and got some valuable help from Alan in Humberside. I don't think I would have tackled it without his guidance, even though, in the event, the process wasn't anywhere near as difficult as I'd imagined.

It took me an afternoon, including going shopping for bearings. I found a local bearing supplier through my *Yellow Pages*, and the top and bottom bearings cost me £3.50 and £5.50 respectively.

1 Take the router apart

In order to get at the bearings, we have to remove both the top and bottom of the machine. First unplug the router, then remove the fence, cutter, collet nut and collet, as well as the fine height adjuster, so that you have a bare machine. Unscrew the two screws which hold the top cover on and remove the cover. Lay them out at the far end of your tea towel.

The unit you can see at the top is the speed sensor (Pic.2). It just lifts off, but is attached by wires. You don't have to disconnect it, just let it hang over the side.

This reveals a plastic disc on the top of the spindle (Pic.3). Gently prise it off, but be careful not to damage it; it's held on with splines so you can't rotate it. Lay it on the tea towel, next to the top cover.

Remove the brush retainers and take out the brushes (Pic.4). Check them for wear. When they're new, they fill the brass sleeve when they are fully compressed. Mine were only about 6mm below the end, and still extend 10mm or so when released, so there's life in them yet.

Next, remove the base. It is retained by a circlip on the top of the post, inside the body of the machine. To see it, remove the switch cover and plunge the router fully (Pic.5).

Carefully remove the circlip so that the base unit, complete with posts, comes away. Give it a good scrub with turps. Be careful when removing it that the main spring does not shoot out.

Remove the spring and the brass sleeve over which it rides. Make sure you know which way this goes back in (the brass sleeve is inserted from above).

The bottom housing now needs to come off. A round nut holds it on. It has two slits in it, like the head of a screw, but they are difficult to locate; I drifted it off with a flat screwdriver and a mallet, and this was the most difficult part of the job (Pic.7).

Undo the four screws in the bottom casting and remove it. If it is reluctant to come, hold the body in your hand and tap the bottom end of the spindle with a rubber mallet until the two halves come apart.

2 Change the bearings

The bottom bearing will be in the casting. To get it out, undo the screws that retain it, remove the covering plate (check you know which way it fits), and tap the bearing out of the casting (Pic.8).

To remove the top bearing, first of all pull the whole of the motor out from the body. Again, a rubber mallet might help if it is stiff.

Using a compressed air supply (or your lungs and a drinking straw), blow out the cavities in the armature. I was amazed at how much stuff came out. The bearing is a push fit onto the top end, so needs to be drifted off. Hold the armature in the vice (using soft jaws, rubber or wooden) and gently drift off the bearing (Pic.10).

You'll need to turn the armature in the vice regularly to exert the tapping in an even manner, but it should come off with little trouble. Try to get a spanner behind it; this will exert a more axial force.

3 Rebuild the router

This is where you'll be glad you were taking photos (see 'Tools You'll Need', right). Put your new bottom bearing into the lower casting. If you have to hit it, hit the outer part of the bearing, where it is in contact with the casting, not the inner part.

Replace the retaining plate and tap the top bearing onto the armature. This time, tap the inner part of the bearing, not the outer. If you tap first one side and then the other, the bearing will likely just rock back and forth without going down, so tap it in three places, going round and round. I used a nailset for this bit (Pic.11).

The bearing goes down as far as a shoulder. Insert the armature back into the body of the router.

Replace the lower casting and that awkward round nut. Spin the motor with your fingers; it should feel nice and smooth.

Grease and replace the main plunge spring, assemble the body and base together and lock the plunge right down.

You should be able to see the top of the post in the switch cavity again. Replace the circlip and test the plunge action is smooth and positive. Replace the switch cover.

Replace the brushes, or fit new ones, and replace the brush covers. Check with your photo that all the wires lie in the same place as they did originally.

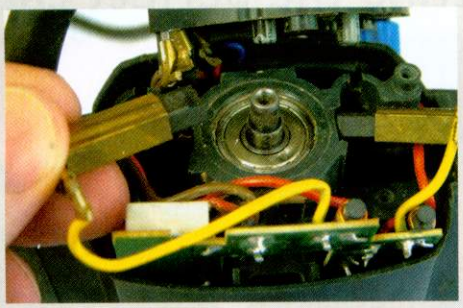
Push the plastic wheel onto the splines, press the speed sensor back in place and screw on the top cover.

Check you have no pieces left over and that everything's tight. Make sure the speed is turned to the lowest value, then turn it on and listen to the purr. I'm delighted with the results, it's like a new router again.

▲ Pic.1 This is a good opportunity to clean the machine: I used WD40 and turps

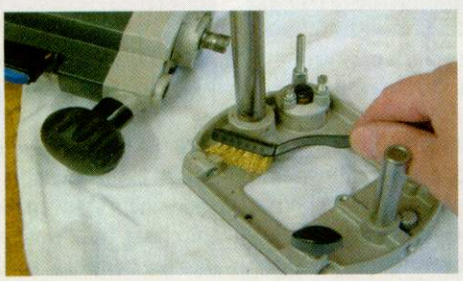
▲ Pic.2 This is the speed sensor mechanism. It does not need to be disconnected

▲ Pic.3 This speed disc is easily damaged, so take care as you prise it off

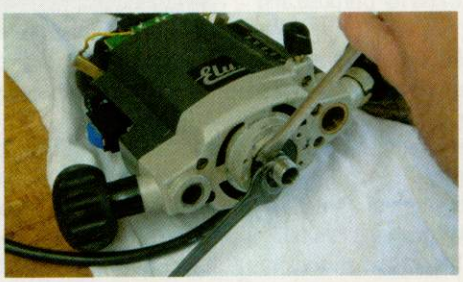


▲ Pic.4 After removing the brushes, check closely for wear

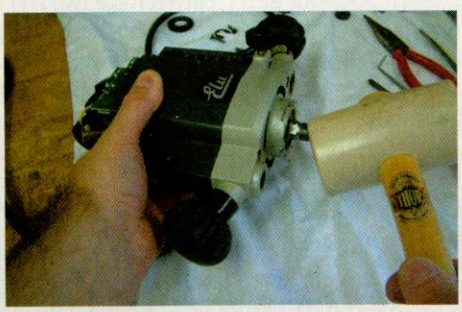
▲ Pic.5 With the plunge locked down, you can get access to this circlip from the switch box



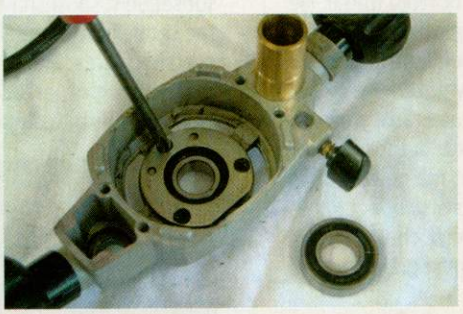
▲ Pic.6 After taking the base off, Steve cleaned it using the brushes given away with GW174



▲ Pic.7 Steve thinks router makers have a special tool to do this stage, but he used a screwdriver



▲ Pic.8 Remove the four screws from the bottom casing to separate the two halves



▲ Pic.9 The bottom bearing can now be removed and replaced easily

▲ Pic.10 The top bearing is a bit tricky to deal with. Be careful not to damage the armature

▲ Pic.11 Happily, replacing the top bearing is a bit easier than taking it out

Tools you'll need

- A bowl 'borrowed' from the kitchen and a bottle of turps
- Small wire brush
- Screwdriver
- Rubber mallet
- Long-nose pliers
- Hammer and drift (I used a nailset, but it is hard: mild steel would be better)
- A clear bench. Lay out a clean tea towel (although it won't be clean by the time you've finished with it) on to which you can place the bits you remove
- You will also need a digital camera. You should take photos of your router at every stage from lots of angles to help you put it back together again. It's easy to miss the fact that something that looks symmetrical, for instance, is, in fact, handed, and it's too late when you've taken it out and can't remember which way it originally went in...

TIP

If you can, find an exploded view diagram of the router. For Elu routers this is available at www.toolshopdirect.co.uk but you can probably find similar drawings for the major brands at other sites if you search

A close-up on chamfering

◀ A small table in oak by Ernest Gimson. *Thanks to Leicestershire Museums and Art Galleries for the photo*

This month Jeff's regular look at using hand tools concentrates on getting the perfect chamfer

AT THE BENCH with Jeff Gorman

Working around the beginning of the last century, Ernest Gimson (1864-1919) was one of the founders of what has become known as the Cotswold School of hand craftsmen. They determined that their work should rigorously show fitness for purpose and involve sound construction.

They eschewed applied decoration and believed that enhancement should respect the fundamental nature of wood. Gimson used stopped chamfers to great effect, sometimes working chamfer on chamfer.

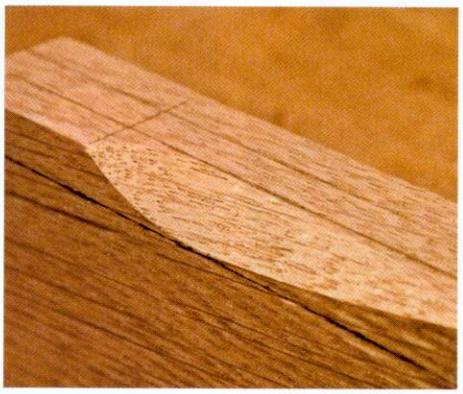
From the original of this photo of a small table in oak (above) I can tell that his craftsman took care to select straight-grained material for its bottom frame. He would know that oblique grain would weaken the rather vulnerable cross-halving joint, but fellow-feeling makes me guess that his choice was also affected by experiences of trying to work chamfers on workpieces with less obliging grain.

Using a 'finger gauge' to mark the chamfer width

No grain without pain?

I'm using the camera to illustrate how to form what I'll call a 'scooped' chamfer terminal on a sample of European oak that, while it would be satisfactory as a panel member, has grain that makes an angle of about 10° with the top edge. Here the grain rises towards its right-hand end, meaning that a tool working the top edge from left to right will go 'with the grain' (Pic.1).

If you care to enjoy an hour or so in replicating this demo, find a suitable sample and try the easier bit first. Using a fairly wide chisel, start near the left-hand end at two or more chamfer widths from the intended end-point. Use the index finger of your supporting hand as a pivot and with the thumb on top of the blade, push with the other hand at the same time as you lower the chisel handle and smoothly follow-through, aiming to create a shape like that in Pic.1.



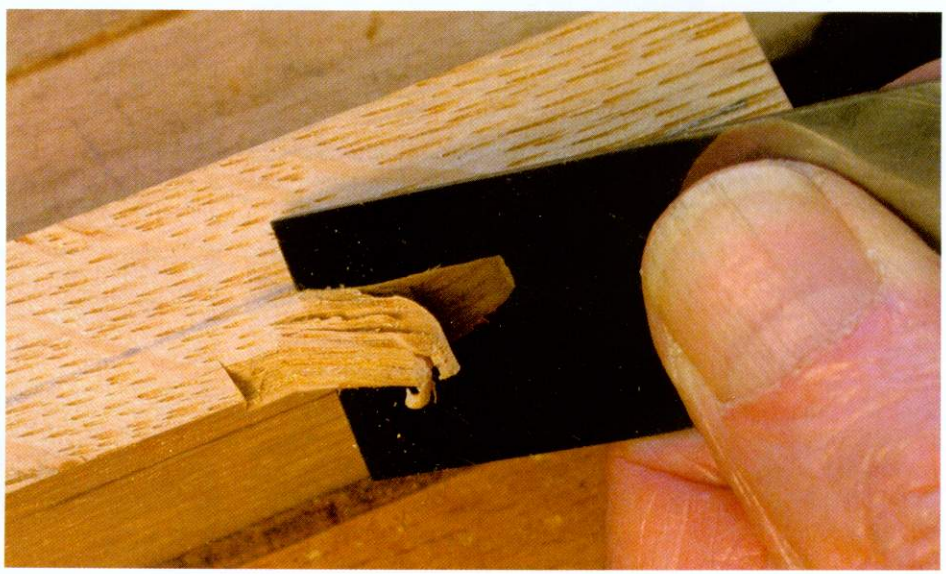
▲ Pic.1 **Scooping with the grain is easy here because the grain slopes up to the right**

▲ Pic.2 **If allowed to go too far, a split will ruin your chance of making a good chamfer**

This will act as a starting-off zone for subsequent spokeshaving. Take a close look at the shape of the vessels (wood cells) on the overshoot area. Their shape and length indicate that this part is parallel to the grain. In fact the wood has harmlessly split upwards.

At the other end you have to work from right to left: in other words, against the grain. Pic.2 shows how the wood will also split ahead of the chisel, but this time it will run downwards into the body of the workpiece.

Weaken the splinter by chiselling a nick (Pic.3) directly across the arris (the edge between the two angled surfaces) and break it off. As you make the second cut you'll reach a place somewhat short of the nick (Pic.3), where because the shaving has thickened, the chisel wants to stop. Move further backwards and



▲ Pic.3 **Working against the grain calls for a different approach, as Jeff explains**

▲ Pic.7 Top to bottom: a drawknife; a simple pencil gauge; a flat-faced wooden spokeshave; a small round-faced spokeshave and, for the old-tool buffs, a Stanley spokeshave with wing-like fences

repeat with shallow cuts until you have created a concave surface that makes a tangent with both pencil lines.

Working on tenterhooks

If you like delicate working with a sharp chisel, this is where the fun starts. Right-handers will move to the left, and working towards the scoop (Pic.4) gradually use the bevel of the chisel to 'plane' long cuts intended to join the ends of each of the previous cuts. Eventually all the shavings should become detached and reveal the curve that you intend.

As you make the final cuts you reach the heart-in-mouth stage where an overshoot would cut into the curved surface. Concentrate on employing a fine cut with a sideways slicing motion that gently feels its way towards the curve. The depth of cut will depend, of course, on the chisel's angle to the wood. Start by rehearsing the cut with the angle so low that the bevel only rubs the surface; then gradually increase the angle until the edge starts to bite.

Any unevenness will show up when the job is polished, so use a fingertip to find what your eye might have missed. A delicate touch with a cabinetmaker's scraper might help. While it is very tempting to scrape with the chisel's edge, this can create a slightly rougher finish.

Having safely joined the curve, check that you have also achieved at least 25mm of plain chamfer that offers a safe 'landing area' for the spokeshave. I've written 'safe' because you don't want to have the fore edge of a metal tool barging into, and denting the curve.

Plane sailing

You could complete the entire chamfer by simply planing with your chisel. Alternatively you could use a bull-nosed rebate plane, but when working as I've suggested, a spokeshave is the most convenient (and fairly inexpensive) tool for generating a nice long and flat surface.

The shiny area on the toe of my metal spokeshave (Pic.5) is because I took the precaution of rounding its fore edge to prevent damage from an accidental overshoot. However this is a limited insurance because an overshoot that goes beyond this point will burnish the apex of the upsweep.

Top six chamfering tips

1 Crispness is vital in chamfered decoration. Avoid using glasspaper because it will dull the arrises.

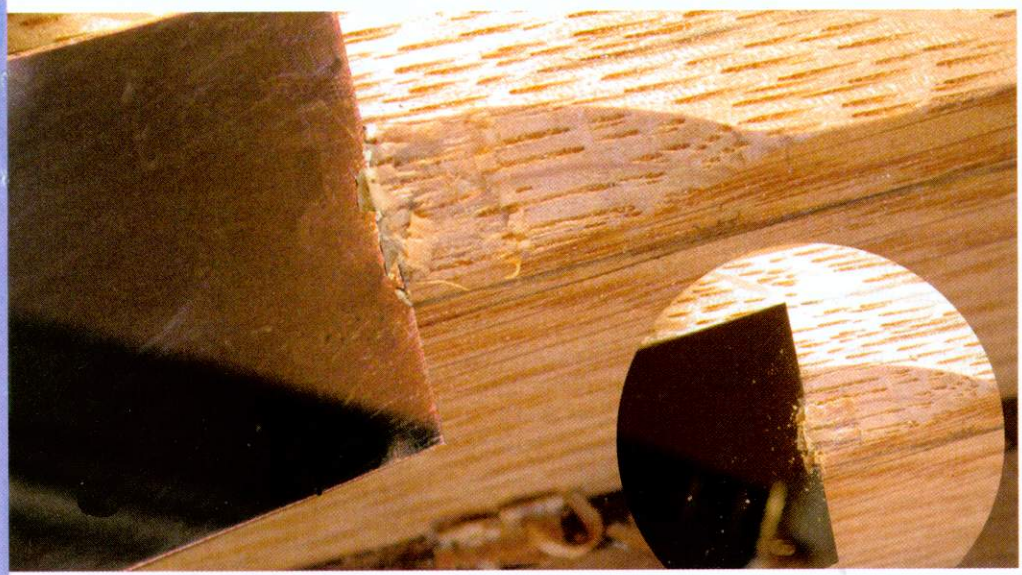
2 Don't mark the chamfers with a common marking gauge. If you want to know why, try it on a piece of scrap! Use your finger as a gauge (Pic.6) or make a wooden one (Pic.7).

3 The size of metal spokeshaves' blades makes them difficult to hold for sharpening. Fit them into a kerf formed in the thickness of a piece of wood about 150x50x12mm. To tighten its grip, you might need to incorporate a countersunk machine screw and wingnut.

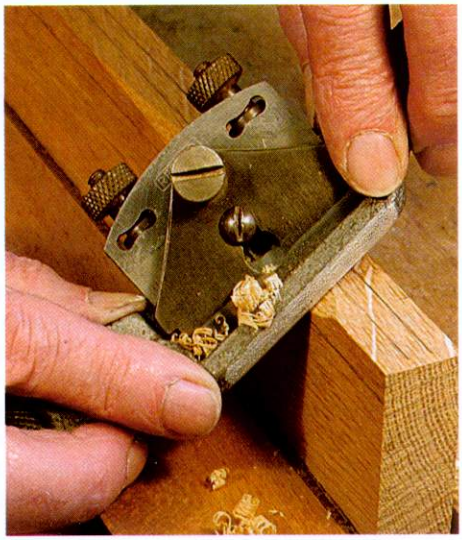
4 If you own a drawknife, you might enjoy trying that instead of a chisel.

5 Although wooden spokeshaves can be difficult to sharpen and set up, their knife-like action makes them satisfying to use. However, you're only likely to be able to get one from an old-tool dealer. Probably you'll need to reface them with an inlaid brass strip and epoxy adhesive

6 A small, round-faced spokeshave will cut stopped chamfers but is more suitable for long and gentle curves. Despite its very fine mouth, it's not guaranteed to cut smoothly against the grain.



▲ Pic.4 The inset shows how delicate the operation can become



▲ Pic.5 If the spokeshave goes further than this, the apex of the curve will be spoilt

Replacing castors

Castors can break easily and replacing them often requires a little detective work. *Stephen Simmons* helps you to get rolling

Castors take a lot of abuse, particularly on chairs, and they can break under the strain. My father-in-law has got through three sets on the rear legs of his favourite late-Victorian armchair in 10 years. Of course, he always blames the castors themselves rather than any mistreatment or the way in which they were fitted.

Yes, the castors themselves are important. There are cheap, flimsy ones and there are expensive, robust ones. But before you buy the inexpensive ones, consider what they must go through.

There are considerable stresses and point-loading involved in a 13-stone human frame slumping heavily into the chair and propelling it backwards over a carpet on its rear castors only. No wonder the central pin bends and eventually sheers: even the best castors won't withstand this level of daily abuse for long.

Castors come in many types but all need the same approach

Three wheels good

Apart from better treatment, there are three important points that will ensure a longer life and more efficient working of replacement castors.

First, they have to be the right sort of fitting, usually plate or cup, and the right size. If you are replacing a clear original there is little problem but if you are dealing with a previous bodge you'll probably have to do some detective work.

Look closely for marks left by the original; compare with others in any set; or go to the furniture history books for similar pieces.

Remember that the original castors were an integral part of the design and therefore the most appropriate for the piece of furniture. The diameter of the bottom of the leg will determine the size of plate as well as the internal measurement of any cup. The wrong size castor will cause a loss of overall proportion of the piece and too large a cup will cause instability and unnecessary strain.

TIP

One of the best sources of good quality castors is Martin & Co, 119 Camden Street, Birmingham B1 3DJ (0121 233 2111). Their catalogue is available on-line at www.martin.co.uk

The second point is to repair damaged wood and make it sound enough to take the castor. Any fitting is only as strong as its host. It may be necessary to drill out and re-dowel the bottom of a leg where the screw thread has enlarged the original hole. Or you may need to plug smaller screw holes from previous plate fittings to secure the replacement.

In extreme cases I have had to splice in fresh timber and even strengthen the joint with hidden screws to make a sufficiently robust starting point.

In the detail

The third point is that although castors may not be as obvious as other cabinet brassware such as handles they demand close attention to detail in the fitting.

Don't be fooled by the idea that just because they are heavy they can be treated any differently. I have known attempts to fit a castor with a threaded pin without sufficient pre-drilling.

This risks two things: splitting the bottom of the leg, and weakening the pin and hence the castor. To avoid strain I usually pre-drill at only fractionally less than the diameter of the thread.

Any pre-drilling and fitting also has to be square to avoid any harmful stresses in use. The forces on a castor are at 90° to the floor: anything fitted at 85° or 95° will not only look foolish but will have an inherent weakness.

Just as with drawer handles, styles and materials vary with castors too, and the wrong style can undermine all your best efforts. I have not yet traced a source for castors with leather wheels but, otherwise, varieties of brass and china ones are readily available. Choose with discretion and fit with care.

If you have any queries about this article, contact the author directly on 00 33 (0)2 33 38 40 48

Next month: A writing slope

Turning P62 With Dave Roberts

Terry at work on his modified lathe

Big enough for bowls

Terry Brown adapted his mini lathe so he could turn bowls without twisting his body uncomfortably. Here's how

My workshop is 8x12ft – far from large – and I have the usual array of machines squeezed into that small space. My router table, planer, thicknesser, bandsaw and pillar drill are all mounted on wheeled bases to allow them to be moved to the centre of the space when the need arises. I have U-shaped benches taking up one end of the workshop floor, too.

Because of these space restrictions, I have an Axminster mini lathe. But I was finding it difficult to twist over the bed of my lathe when faceplate turning or bowl turning because I have mobility problems.

Of course there was no option of buying a bigger model, so I realised I would have to adapt my existing machine for the task.

When I originally bought my mini lathe, I had mounted it on a stout ply base so that it could be pushed to the back of the bench, out of the way, when not in use.

I had also had a bed extension made to allow me to use the lathe for small table legs and the slightly longer items that need making from time to time. But this still did not offer me a comfortable position for faceplate work.

It was out of the question for this little lathe to be altered into one with a swivelling headstock. What I needed was a mini lathe with a short length of bed that I cold mount on a ply base so that I could work end-on, facing the headstock and chuck with the toolrest mounted on the shortened bed, instead of being side-on to the machine and having to twist myself across the bed bars.

Another consideration was the headstock configuration. It has to match the 1in x 8 thread per inch 2MT of my Axminster so that I could use my chucks and drive centres: I didn't want the expense or even the extra clutter of a whole new range of tooling.

▲ The end support brace was cut from 1inch plywood

The choice of lathe

Unfortunately, it would appear that these little machines are much prized and despite scouring the small ads, I failed to find one for sale. So I raided my piggy bank and bought a new Perform mini lathe, the cheaper, hobby version ▶

▲ It took Terry quite a while to hacksaw the lathe bed into two parts

◀ He smoothed the cut ends for safety

of my existing one but with the same size fittings.

Allowing for the chuck and jaws on the headstock plus a generous amount of room for a bowl blank and space for the tool rest banjo, I calculated that I needed to retain 10in of the bed. At about this point, a strut is welded under the bed across the two bars, and I decided to retain this strut to preserve rigidity.

Out came the hacksaw, and some time later the bed was in two parts. I have of course kept the cut-off part of the bed and the redundant tailstock. You never know, they might come in handy some day.

▲ Terry had to support his lathe at the cut part after he'd removed the legs from one end

Support brace

Having removed the legs from one end of the lathe, I needed to restore support to the cut end. So I fashioned a support brace from 1in ply and screwed and glued it to the ply baseboard, a tight hammer fit of the brace between the bed bars ensuring that the cut end of the machine is securely mounted. The cut metal ends were carefully rounded over with an angle grinder to tame their sharp edges.

My next job was to move the switch to the headstock end of the machine and to do this I had to completely dismantle the switch and its wiring, and drill and tap for a new earth connection to the machine frame. This was well within my own experience, but it's not a job for those who aren't proficient at working with electrics: always leave this stuff to an electrician. Oh and of course this modification means there's no chance of making a claim if the thing should pack up!

However I don't expect that it will. Throughout the process I took into account that this machine is made and marketed as a hobby lathe; it is not capable of handling large or heavy stock. The little beast I have created is a dedicated machine for faceplate or bowl turning. But it is more comfortable for me to operate, has added to my turning repertoire and has allowed me to further overcome my disabilities.

Spray booth

Is it a gazebo? Is it a spray booth? No, it's something in between. *Steve Maskery* explains...

The finish is often the first thing that people notice about a project. They touch it and say: "Ooh, that's nice." Maybe later they will appreciate the fine joinery, the well-matched grain, the mathematically sound proportions. But if your finish is patchy or rough or has a run, you can bet they'll see that first.

See GW176:79 for an affordable spray kit, tried and tested

For years I got by with Danish oil, which can give a very beautiful finish, especially on cherry. But it doesn't last. After a couple of years or so, it needs tarting up. To get the sort of finish seen on commercial furniture requires cellulose or acrylic lacquer and that means spraying.

Happily, spray kit is now within the reach of amateurs. We no longer need a compressor: we can get excellent results with a high volume, low pressure (HVLP) set-up, such as those made by Apollo and Fuji, which you can buy from Axminster (0800 371822, www.axminster.co.uk). The biggest problem for the home woodie, nowadays, is finding enough space to spray.

I usually spray outside, because I don't have a dedicated spray shop, but this is bad for the garden and means I rely on having dry, warm weather with no wind.

So I got to thinking about spray booths. I needed something that took up no room when I wasn't using it, allowed me plenty of protected space to work when I was using it, and preferably cost little or nothing to get. This is what I came up with.

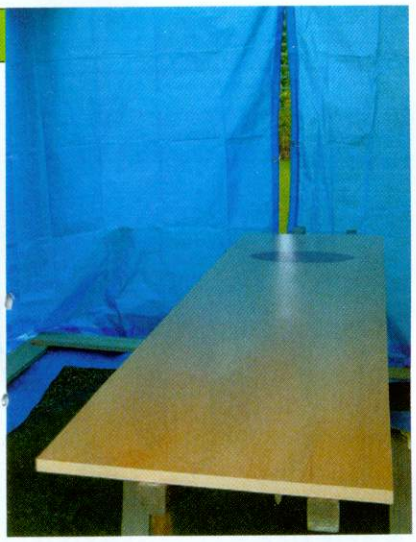
Cheap gazebo

I bought a 4x3m gazebo on the internet for a very cheap £26 including delivery. It went together very easily. The trouble is, it comes apart just as easily.

Have you seen that Laurel and Hardy film about delivering the piano? When they are clearing up and Stan moves the junk from one side to the other while Ollie puts it all back? Well, every time I put a pole in one corner, one popped out somewhere else. After an hour or so it ceased to be funny (to me, anyway: my wife took one look and went back to bed with a cup of tea and the *Times*; if you can hear laughter in the background, that'll be her now).

▲ There is plenty of room to work, and it's sheltered

The problem was that the frame is hardly strong enough to support itself, let alone the weight of the



▲ The tarps hang with shower curtain rings, and boards hold them down. It's cheap and cheerful but quite effective for occasional use

canopy. It's okay once it's actually up, because the canopy holds it all together, but getting there is a nightmare. You need four people. I ended up tying it together across corners with those ratchety strappy thingies.

Next I took a trip to B&Q for some shower curtain rings, which you can just see in the main picture, a couple of tarpaulins and some eyelets. The tarps already had eyelets every metre, but I needed more. I cut the tarps down so that they were the right height plus about 400mm or so, to allow enough to hold down with a board (see picture, left).

Fit for purpose

Is it pretty? No, unless your taste differs markedly from mine. I dread to think what the neighbours think. Is it a classy gazebo suitable for a royal garden party? No. Is it a professional spray booth? Hardly.

But is it a decent DIY spray booth for the likes of us, to be used once in a while and packed away in the garden shed the rest of the time? Yes, I think it is. And I've got change from £50.

It's not going to protect me from the rain, or a Gale Force 10 wind. But as a simple solution to a problem, and with all its limitations, it has certainly made a difference when spraying things such as the wardrobe doors I'm working on in the photo here.

Of course, the irony is that there isn't a breath of wind anyway this morning.

By the way, please don't write in to tell me that my visor is a dust mask that's not suitable for spraying. I know, and a proper one with a charcoal filter is on the top of my shopping list. I promise.

Feedback

If you see any techniques in ***Good Wood*** you'd like to see explained in greater detail, please do contact us. ***Write*** to us at 30 Monmouth Street, Bath BA1 2BW or ***email*** goodwood@future net.co.uk For back issues, call our Hotline on 0870 837 4722.

Q&A Your Question... Our Answer

I'm confused about extraction

I want to install a dust collection system and air cleaner in my workshop but I'm confused by the vast array of units available. There are high flow units with large diameter hoses and dust extractors with smaller diameter hoses... which one would be best for me? I have a 10in tablesaw, a router table with 1/2in router, lathe, small handheld router, jigsaw, biscuit jointer, portable circular saw and various handheld power sanders. All of these have extraction ports of various shapes and sizes.

I also intend to make the air cleaner described in GWW150:30 and would like to know where I can buy the 1.5micron needle felt bags at £12 each. The only ones I can find are in the Axminster catalogue at about £40 each.

Brian Yates, Liverpool

A High-volume, low-pressure extraction systems are best for removing chips from machines that produce a lot of sawdust. Usually they have a 4in/100mm hose, which matches the fittings on planers and tablesaws.

Record (0870 770 1777, www.recordpower.co.uk), Charnwood (01530 516 926, www.charnwood.net) and Rutlands (01629 815518, www.rutlands.co.uk) sell good ranges of HVLP systems.

The better ones have induction motors and metal fans and I would always favour building in a system using blast gates and ducting (see GWW172:34). You can save money by using soil pipe from a builder's merchant, but you need to run a bare copper wire inside non-metallic ducting, earthed at one end, to prevent the build-up of static electricity. Static can cause sparks and maybe a fire.

Handheld tools including routers, jigsaws, biscuit jointers and sanders are better suited to low-voltage, high-pressure (LVHP) systems such as an industrial vacuum cleaner. This type usually has a finer filter, but the higher airflow speed makes them noisy.

Axminster (0800 371822, www.axminster.co.uk) offer a wide range, including several that turn on automatically when you switch on the relevant tool. The smaller hoses are much more manageable on a portable tool, and the higher suction force enables the extractor to work effectively without being strangled by the small hose. You can easily make adaptors of various diameters using ordinary PVC waste pipe that you can buy from your local plumber's merchant.

To make a pipe smaller, saw it along its length with a small tenon saw. Make another cut to reduce it to the size you need, clamp it up with jubilee clips and apply solvent weld along the join.

When dry, remove the clips. To increase the size, do the reverse; slit the pipe and add in a section, then solvent weld it. You can put it on a mandrel turned to the right diameter, wrapped in polythene, while the solvent is setting. Make sure you use the type of pipe designed for solvent welding.

So, you may need two units to cover all your tools, HVLP for the high volume machines and LVHP for the rest – you can use it as a shop cleaner as well.

If you do a lot of sanding and/or work with MDF, you'll get a very fine dust that settles as a fine film. For this you need an air-cleaning system such as the one designed by Ian Dalziel in the article you mention. However, I think you'll find that 1.5micron isn't small enough and that you need to get down to 0.5micron for safety. To stop the fine filter from clogging too quickly, you need one or two sections of coarser pre-filters too.

As to this mysterious £12 filter bag that was used by Ian in his article, he had an old B&Q dust extractor from which he used the bag, but the unit seems to be obsolete now. Try Rutlands' part DKX9 at £14.95.

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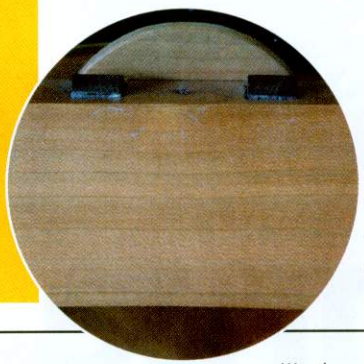
GREAT LITTLE IDEAS

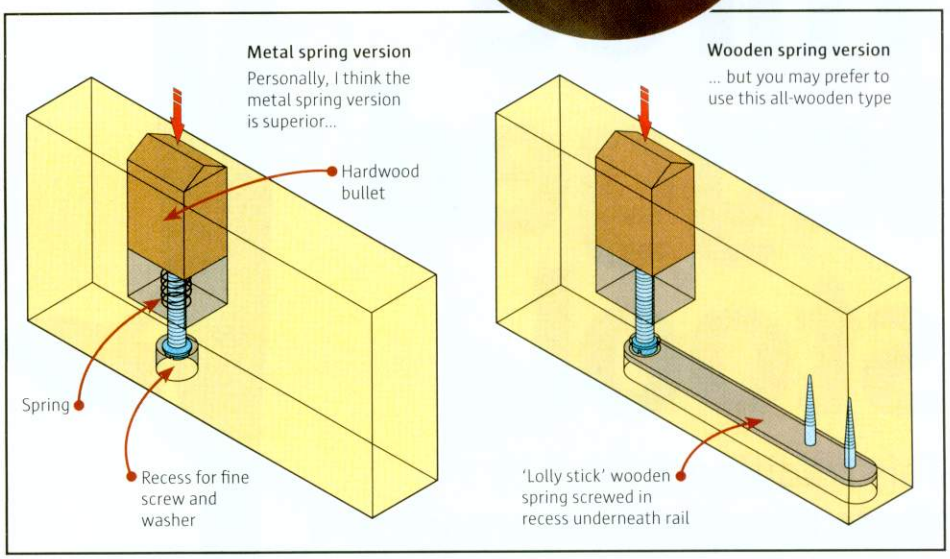
Top projects you can make in a few hours



◀ Pic.1 **Your catches should be organised early on in the construction process**

Bullet catch

Little touches make a big difference, so try **Steve Maskery**'s slick catches on your doors



There is a famous magic trick in which a magician is shot at but he catches the bullet in his teeth. The bullet catch to which I refer here is far less dangerous, however. I'm talking about having a nice 'click' when you open and close a cabinet door, and something smooth and tactile to play with when someone is admiring your handiwork.

These catches are best suited to doors that sit in a face-frame, and the dimensions I give here are suitable for a 40mm face-frame bottom rail, but there's no reason why these can't be adjusted to suit your own needs.

The bullet is a short piece of something hard. On a walnut cabinet you may want to use maple as a contrast, or on a cherry cabinet you might choose ebony. You don't need much material, and a single pen blank, which you can buy from turning suppliers such as Craft Supplies (0800 146417, www.craft-supplies.co.uk), will be sufficient for several.

The spring must be strong enough to hold the catch, but not so tight that the door will be difficult to operate. You can salvage suitable springs from ballpoint pens, toothpaste pumps, soap dispensers (Pic.2) and the trigger-packs that many cleaning products come in.

▶ Pic.2 **Soap dispensers are just one of the household containers that will yield the right kind of spring**

Making

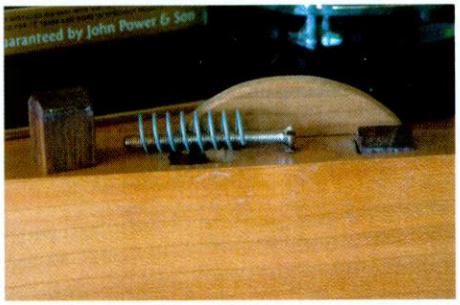
1 Make a suitable hole in the top of your bottom rail before you assemble your face frame because it needs to be dead square to the surface and close to the leading edge of the door (Pic.1). If your blank is 15mm long, I'd suggest a 12mm mortice or hole, 25mm deep. On the underside of the rail, directly in line, you drill a counterbore, say 10mm in diameter and 10mm deep, then right through at 4mm (or to suit your screw).

2 Now make your bullet. It must be an easy sliding fit: not so sloppy that it racks, but not at all tight. If you have a hollow-chisel morticer you may choose to keep your bullets square, as I do. If you have a lathe, you can make them round and drill the rail. The top of a square bullet should have a slight double-bevel to it so that the door slides over it easily. If your bullet is round, make it domed, although the disadvantage of this shape is that the bullet becomes difficult to hold while you adjust the screw.

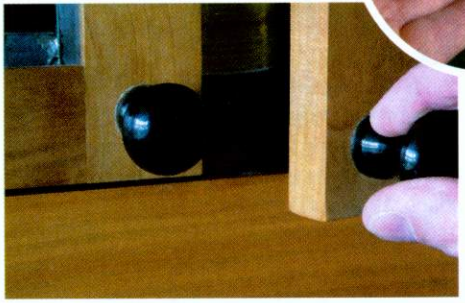
3 Drill a hole in the bottom of the bullet to take the screw. You may find it helpful to tap a thread: if you don't have a proper engineer's tap, grind a flat on the screw itself and let it tap its own thread. I find that electrical switch-plate screws work just dandy. They have a fine thread that doesn't foul the wire of the spring, and they are easy to adjust. They may not have a flat head, though, so you really need a washer underneath to seat properly. If you use a woodscrew, the wire of the spring can get caught in the thread and adversely affect the operation of the catch.

4 Insert the screw underneath the rail, slip the spring over it from above, then add the bullet. It doesn't need to stick up by very much to work properly, and its exact position can be adjusted by turning the screw. This operation is tricky if you're using a domed bullet, because there's nothing to prevent the bullet rotating. You may have to drill a small access hole in the rear of the stile and poke in a bradawl to hold the bullet while you adjust. If you don't want to use a metal spring, you can rout a shallow groove in the underside of the rail and screw in a wooden strip, like a lolly stick. This keeps the bullet up, but is harder to adjust because the stick covers the head of the screw and must be taken off to adjust it.

5 Finally, the underside of the door itself needs a recess to accommodate the bullet. You can mark the required position accurately by putting a piece of carbon paper over the bullet and then opening and closing the door a few times. Then cut the recess by hand with a sharp chisel.



▲ Pic.3 **The catch itself should be hard because it has to withstand wear during use**



▲ Pic.4 **Your lovely catch will be almost unseen, but will still make all the difference**

Three legged stool

This traditional stool by **Wade Muggleton** incorporates a carved seat and steam-bent legs held together by wedged tenons

To make these stools, Wade Muggleton used home-grown, seasoned timber, obtained from the 110-acre Worcester Woods Country Park by one-man chainsaw milling, as we reported a couple of issues ago (GW176:12).

For the seat, any attractive hardwood will do, though of course elm is perhaps the most traditional. Ash is best for the legs because it bends so well, but beech is often used.

The seat is made from one wide board at least 10-12in wide and 2in thick. Of course, if you can't access such a board, you could make it up from narrower boards. Knots can be attractive but it is harder to work the shallow, carved seat depression into such difficult grain. Splits and shakes should be avoided at all costs.

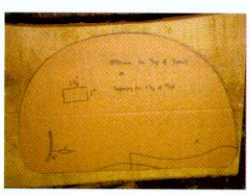
Wade uses a cardboard template (Pic.2) to mark the outline and the position of the leg holes. Add the height of the seat from the floor and a sketch of the seat profile on the template for quick reference.

Making

1 The shape is cut out on a bandsaw (or with a jigsaw) and the 3/4in holes for the legs are drilled straight through, perpendicular to the seat, from above.

2 To hold the seat firmly to the bench, screw a short batten to the underside and clamp it in a vice (Pic.1). Then rough out the seat profile. Wade uses an Arbortech Woodcarver (Pic.6). Leave a rim around the back edge and remove material to a maximum depth of approximately 8-10mm to provide the shape.

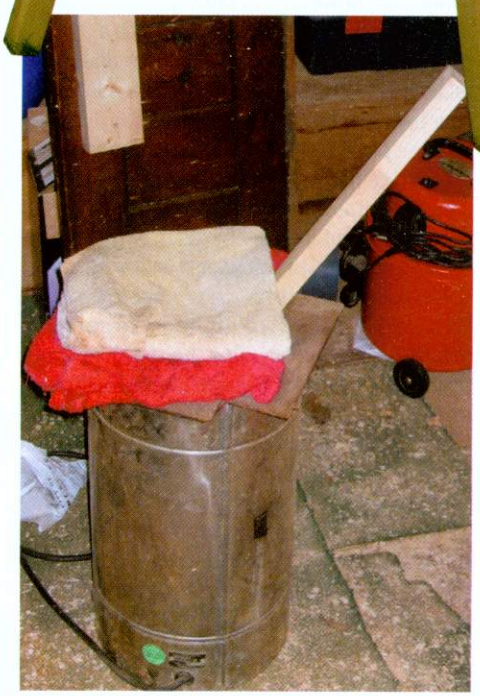
▲ Pic.1 **A hollowing spokeshave is great for the final shaping and for a fine finish**



▲ Pic.2 **Mark the shape of the seat on the template, plus sectional details and other information**

3 To work smoother and finer curves into the seat use a hollowing (or bent) spokeshave (Pic.1), working along the grain. Then sand out any remaining tool marks and sharp edges to get a smooth, organic shape. Apply successively finer paper up to 240grit, with 320grit after the final assembly and between coats of finishing oil.

4 The timber for bending needs to be straight grained as possible and free from knotty defects or it will split or break. Prepare the ash legs to 1x2in, planed and square all round and cut to length. The steamer can be made from any sealed box that you can get the workpiece into and create a steamy atmosphere for a few hours.



▲ Pic.3 **Wade's steamer is a converted tea urn, with only a small part of the leg needing to bend**

Wade uses a converted tea urn (Pic.3). "Only the bottom end is actually to be bent so the rest sticks out," he explains. "I use towels to seal the top."

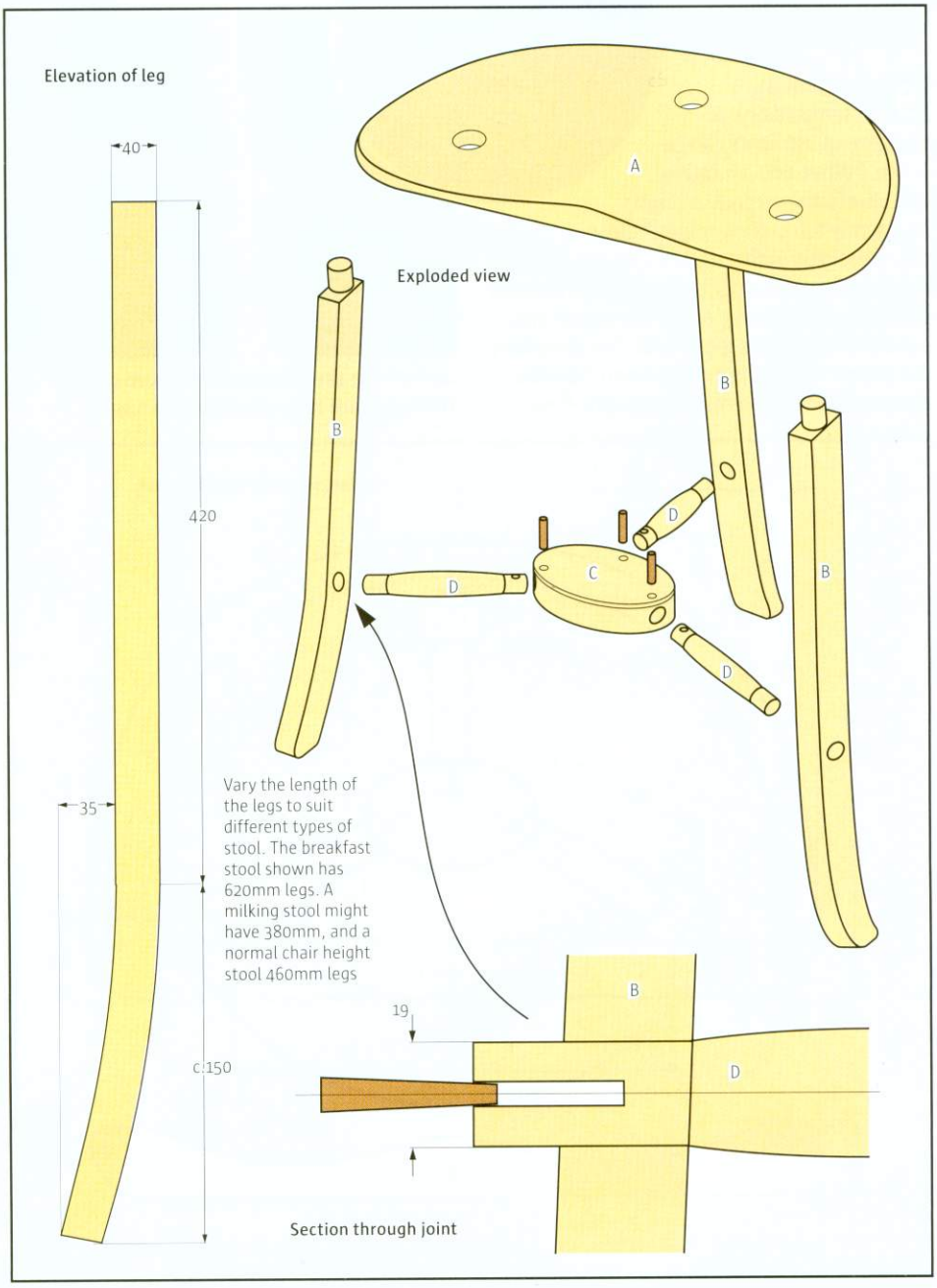
▲ Pic.4 **Left for a night in the former the leg will be bent permanently**

▲ Pic.5 **The former is simply a piece of 4x2in pine with a cleat at the end to hold the part that's to be bent**

▶ Pic.6 **To remove the bulk of the waste use an Arbortech Woodcarver**

5 The former, or bending, jig (Pic.5) is made from a solid piece of 2x4in pine. The angle for the leg-bend is cut on one end and ply-wood cleats hold a top block opposite the bent section, leaving a slot for the steamed leg. "This allows me to clamp the steamed leg into the jig with just one small G-clamp on the straight un-steamed top section," Wade explains. "After a night in the clamp to cool and dry out, each leg is permanently bent to exactly the same degree."

6 Wade uses a rounder to cut a 3/4in diameter, 3in tenon on each leg so that the dowel will be about 1in proud. Don't forget to knife around the shoulder line, beforehand, to prevent the grain tearing. With a handsaw cut down through the dowelled end to about 1in above the shoulder. "The wedges will be driven down this slot after assembly so cut all the slots in the same plane," says Wade.

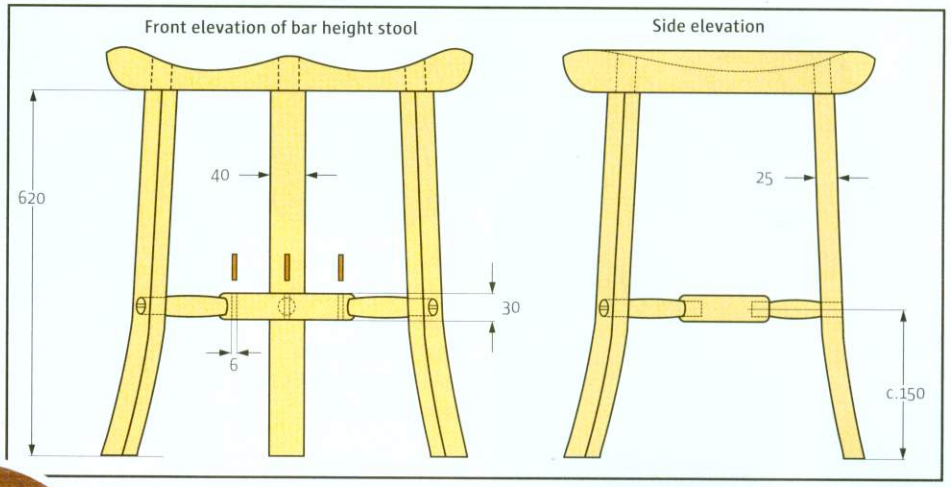


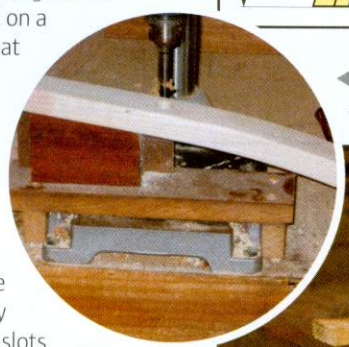
GREAT LITTLE IDEAS

7 Mark centre-points on the legs for the stretcher holes. "The angle at which they are drilled is essential. I have a jig made from offcuts to support each leg in the same place." The jig (Pic.7) only has to be set up correctly once, after that, it will position and hold countless legs for identical drilling. The leg can now be sanded to 240grit, removing the arrises (sharp edges).

8 The central puck (C) is cut out on the bandsaw, and drilled around the rim to take the stretcher ends. Make sure this piece is well clamped or held firm in a jig, before drilling. Then clean it up to 240grit. The stretchers (D) can be turned on a small lathe to taper slightly at each end or made with the rounder plane from square stock. Cut a slot for the wedge in one end.

9 The stool is assembled dry, so that any adjustments can be made. "When you are happy add glue to the wedges and slots and gently tap in the wedges." Clean off excess glue with a damp cloth and when dried, being careful not to damage the finished surfaces while sawing, cut off the waste and sand back flat to the leg or seat. The stretchers are pinned into the puck with 6mm diameter dowels, either home-made or bought.

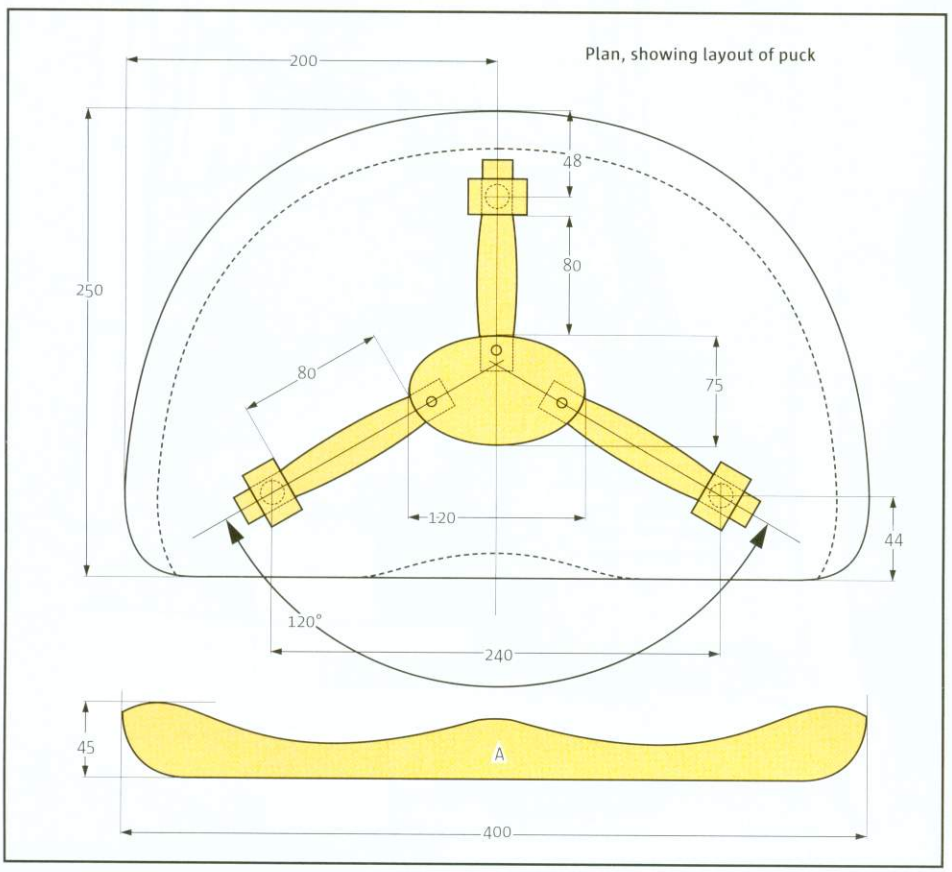




◀ Pic.7 A simple drilling jig sets the angle in the legs for the holes

▲ Pic.8 The 1in excess on the tenons can be trimmed back later once the glue has set

▲ Pic.9 Mark a centre line on the legs to position the holes for the stretchers accurately



▲ Pic.10 Wade finishes his stools with furniture oil, gradually building it up

Instrument hanger

If you've got more guitars than you have space to rock out, keep them out of the way with **Mike Ninham's** nifty hanger

Being a musician as well as a woodworker, my collection of instruments just keeps on expanding and I am gradually running out of floorspace. One day it came to the stage where the only way was up, so I made some wall hangers, all custom-sized to fit the different neck widths of my guitars, banjos, mandolins and violins. The gap between the arms is slightly narrower than the instrument's neck so that it has to be twisted a little to be slotted in or released.

Most kinds of wood would be suitable for this project but nice contrasting hardwoods are my choice. For the one in the photo, I used beech for the body and sycamore for the holder. I made it a basic shape, but you could do a plain bevelled edge, or a moulded edge made with a router: it's up to you.

▲ Pic.1 **Bevel the wallplate with a sharp chisel, or rout a moulding around the edges**

▲ Pic.2 **Adjust the shape of the holder to suit your guitar**

◀ Pic.3 **Use carving chisels and craft knives for shaping**

▼ Pic.4 **Glue the holder into the plate**

Making

1 Begin with an 18mm thick piece of timber, 75mm wide and 120mm long for the wallplate. This fits the dimensions of my guitar – you can always alter these sizes for a particular instrument you wish to hang.

2 Mark and saw off the corners, then cut heavy bevels with a sharp chisel (Pic.1) and finish them off with a block plane (Jeff Gorman has advice on chamfering, p40).

3 Mark out the mortice, drill out the waste and finished it off with a 12mm chisel.

4 For the holder, a 25mm thickness block is needed at 75x110mm. Mark this out and rough-cut it using a bandsaw and coping saw, leaving a generous amount for the tenon.

5 Cut the arms to a concave shape to allow the instrument to sit safely between them. Use a sharp chisel and craft knife (Pic.3) to round over all the edges and shape the arm ends, then smooth everything off with files and sandpaper.

6 Before you start assembly, a brass hanger plate must be let in flush and screwed on the rear of the wallplate.

7 Put a spot of glue on the tenons and assemble; then finish it all with a coat of satin varnish.

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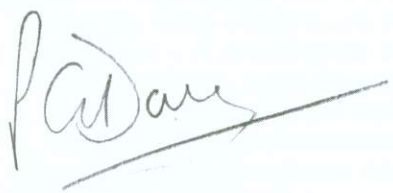
Around the House with Phil Davy

Late Summer
Five pages of stuff to do on the house

As the environment becomes increasingly important to all of us, it's good to know that we woodies can do our bit by **recycling timber**. If you've never considered using reclaimed wood before, give it a try (turn over for my advice on choosing and buying it). Just remember to **check for hidden nails** before you start cutting: a simple metal detector will save **expensive nicks to cutter knives or sawblades**.



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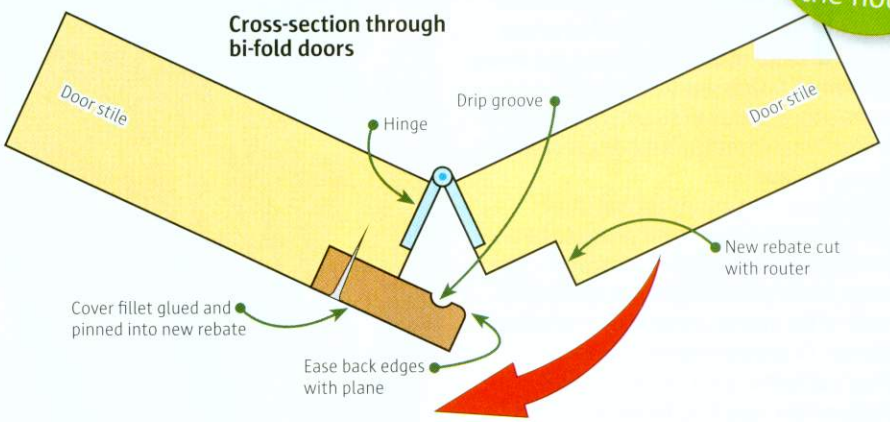


Meeting in the middle

Q&A
Your Question... Our Answer

My wife has asked me to change our patio doors, together with the frame, and fit two pairs of French doors into the opening instead. The idea is that each pair of doors could be made to fold back on themselves, and against the external wall, thus creating a full opening to the garden.

The problem I have is that I can buy standard doors locally, but the opening, less the thickness of the frame, would require the rebates on the meeting stiles to be removed, together with some other adjustments. My concern regards making the modified doors weatherproof. Could you give me some guidance to overcome this and any problems regarding security on this type of installation?

Bob Hughes, email

By hanging them in the way you describe you are creating bi-fold doors, which are normally only used internally because of security issues. It is possible to make them secure, though.

Hinge bolts will prevent the doors being forced off their hinges and can be bought from Screwfix Direct (0500 414141, www.screwfix.com) for about £12 for five pairs. Internally, fit rack bolts between each stile. These are operated with a key and are not visible from outside. Screwfix will provide them at £5.79 per pair, including a key. You could also fit conventional surface-mounted bolts to the head and threshold of the frame.

You can make the doors weatherproof fairly easily with a router. Once you have removed the rebates on the meeting stiles with a circular saw, plane the edges either with a long bench plane or running each door over a surface planer. If the doors are softwood, use 50x25mm PAR batten or smaller to form a new cover fillet. If you have a thicknesser, reduce the batten thickness to about 15mm. If the doors are hardwood, make the fillet any size you like, within reason. Rout a drip groove along the rear edge that will butt against the rebate in the new meeting stile.

Rout a rebate down one stile to half the width and the full depth of the batten. Rout a matching rebate in the adjacent door, so that when closed the batten will fill sit in both rebates. Glue the batten along one edge, using an exterior adhesive such as Extramite or Titebond Polyurethane. Oval nails should also be used, but drill pilot holes to prevent splitting. You will probably need to ease inner edges of the fillets with a plane to get the doors to close properly.

As each pair of doors will be hung from one side only, I'd recommend you fit three hinges rather than two to each jamb. Twin doors mean there will be twice as much weight for the hinges to support.

Reclaiming timber

BUYING ADVICE

New life for old wood

Reclamation yards are timber treasure troves if you know what to look for

Have you ever had to replace an oak beam or pine floorboard, in the sure knowledge that a new piece of timber will stick out like a sore thumb? Distressing new wood to create an aged appearance can sometimes make old and new blend together, but often it can still look out of place.

The answer is to visit an architectural reclamation specialist. There seems to be an increasing number of these yards around the country, some of them no doubt spawned as a result of the variety of home renovation and makeover TV programmes of recent years.

That's all to the good, because these specialists have a lot to offer woodworkers who know how to make the most of them.

If you have a romantic image of sorting through stacks of old oak floorboards in some rural idyll, then you may be disappointed. There's a tendency for them to migrate to the far-flung corners of industrial estates, as far from the centre of town as possible.

However, some yards are pleasant places to be, as I discovered when I stumbled across Gallop & Rivers in Crickhowell, Powys (01873 811084, www.gallopandrivers.co.uk). Surrounded by the delightful Welsh hills, you could easily combine a visit here with a walk in the countryside, or even a short break.

The location aside, Gallop & Rivers is typical of many reclamation companies, offering secondhand roof tiles, chimneys, cast iron radiators, flagstones, stained glass, windows, doors and floorboards, plus new handmade ironmongery to suit period joinery.

When visiting a reclamation yard, if you have a rough idea of what you want, make sure you take a tape measure and notebook. Take along a digital camera if you're after something special, so you can check whether that particular old door or fire surround would really fit your home. And phone first or check the relevant website for opening hours, because many yards close early on a Saturday.

Unlike most timber merchants and sawmills, reclamation yards often let you clamber over stacks of wood and pick up the stuff that's on sale to inspect it. So be careful, and wear a decent pair of boots or sturdy shoes.

Try and avoid visiting a yard on a wet day if you want to check out some of the heavier old timbers. These may well be stacked out in the open, and you'll have a miserable time if water is pouring down your neck or sleeves.

▲ Reclaimed oak and elm (top) and new oak sleepers (above) are among the wood you'll find on sale

Beams and sleepers

Many of the old beams I've found were evidently once components of timber-framed structures, with visible pegged mortice and tenon joints. Some of these timbers are probably several hundred years old.

Watch out for insect attack and rot, which is very easy to spot, but don't worry if a beam that takes your fancy has a few wormholes: it will probably be fine. Make sure you liberally apply a couple of coats of woodworm killer as soon as possible after getting it home, though. Avoid timbers that are riddled with holes.

Old railway sleepers are a favourite for garden landscapers, and these are readily available all over the country. Beechfield Reclamation in Devizes, Wiltshire (01380 730999, www.beechfieldreclamation.co.uk) has a wide selection including some brought over from Germany and new French oak

▲ These oak floorboards are actually new but have been aged to blend with period buildings

▲ Creosote-treated railway sleepers and (inset) old oak beams

sleepers measuring 10x6in and 8ft 6in long. At £25 each this timber seems excellent value, and would be ideal for lintels. You'd need a heavy-duty bandsaw to slice these beams up, but Beechfield have machining facilities and can mill timber to any dimensions you require.

Their website has a useful pricing calculator for green oak beams, enabling you to estimate the exact cost for a given size. They offer sizes up to 12x12in and lengths up to a massive 30ft. Beechfield's reclaimed oak sleepers cost £18 each, though these are coated in creosote, so are only suitable for exterior use. Douglas fir beams are also stocked.

Most yards offer a delivery service, which I'd recommend in the case of heavy timbers or doors. It may be tempting to buy that lovely old piece of oak and elm and load it onto the car. But be cautious, even if you have roof bars, unless you're sure the suspension will cope.

Fantastic flooring

Some yards specialise in supplying reclaimed floorboards. Websites often give up-to-date information of what is in stock. Frequently this timber comes from old factories and warehouses, so if you need to cover a big area it shouldn't be a problem. Oak, elm and pine are most common, with prices typically from £26 per m^3 for pine, up to £77 or so for oak.

Sometimes you may find maple strip flooring, which is traditionally a favourite for gymnasium and dance floors. This is lovely timber for all sorts of projects, but you may need to laminate boards to get a decent thickness. When I visited Beechfield, they had some Canadian maple at around £18 per m^3.

Most yards sell new kiln-dried oak flooring, because old elm and oak boards are becoming scarce. This is brought over from mainland Europe, ready machined, normally tongued and grooved on all four edges. Widths vary, though 7in, 9in and 11in boards are typical. The finished thickness is about 22mm and lengths range from 8ft to 12ft.

If you want to build ledged and braced doors this oak is a good choice. It's supplied already sanded and you can either incorporate the pre-machined edges into your project or rip off the tongues with a circular saw to create square edges. Boards are priced either by the running foot (12in) or by the m^2. Typical price is around £41 per m^3 for new oak. Quite a difference when you compare this with the cost of reclaimed oak.

If you really don't want to use reclaimed oak flooring in your house but want a realistic aged look, it's possible to buy new 'old grey' boards, which actually look amazing. Beechfield Reclamation orders this tongued and grooved timber

▶ A 'burned oak' effect makes new oak flooring look more like walnut

Top 10 tips for salvage success

- Look at the yard's website first to find out what's likely to be in stock. Some yards specialise in pews, others in railway sleepers.
- Take a notebook when you go to jot down measurements or make sketches and notes.
- A tape measure is essential, much better than trying to guess dimensions.
- You'll find a calculator handy if you need to estimate the cubic content of a beam and its approximate cost.
- A digital camera will also be useful. If there's something that takes your eye, a photo will help you decide when you get home again.
- Wear sturdy shoes or boots. Old beams aren't always stacked neatly and you'll certainly know about it if one's dislodged while you're sorting through a pile.
- A pair of gardening gloves will save your hands when lifting old beams that may have rusty nails embedded in them.
- You may save a few quid by loading timber or a door on to your car, but ask about delivery of larger items. Any yard should be able to deliver goods.
- If you have sturdy roof bars for your vehicle, make sure there are adequate tensioning straps or ropes for securing a load – and mind that suspension!
- Old blankets or sheets for the back of the car will prevent the inside getting too messy. Reclaimed timber is usually filthy dirty.

Jobs in Late Summer

Reclaiming timber

BUYING ADVICE

from France, in 6in widths. It's not cheap, though, at about £77 per m³. Another interesting effect is their 'burned oak' flooring, which has been smoked and looks rather like walnut.

If you're nearer to east London than the West Country, you can buy structural timber and floorboards salvaged from establishments such as the Royal Arsenal at Woolwich and GEC Marconi in Essex at Reclaimed Timber Specialists in Leytonstone (020 8558 2811, www.reclaimed.uk.com).

Their prices range from £10 to £35 per m², depending on the timber. Floorboard widths can be as narrow as 3in or as much as 12in, though this size is uncommon, and they've got a massive range of other stuff that's well worth a rummage, too.

New oak skirting and architrave is sold by several suppliers, with torus and ogee patterns the most popular.

Doors and windows

The majority of yards will have a wide selection of old doors stored under cover. Secondhand doors are usually marked with their overall size on one of the stiles, which helps if you need a specific style. Some yards have facilities for making new doors to order, usually from oak. A favourite is the cottage ledged door, with optional braces.

Simple interior versions start at around £150, although framed, ledged and braced external doors are far more pricey: from about £400 upwards. Imported European oak and pine is the favoured material, making use of new flooring already stocked.

Whether you're looking for Victorian, Edwardian, Georgian, gothic, art deco or a more recent style of door, most yards will have a pretty good stock. The great thing is that many of these doors are unique and have much more character than contemporary equivalents. Some specialists will also insert coloured, bevelled or frosted glass of your choice. To get some idea of door patterns available, visit Walcot Reclamation's website (www.walcot.com) or drop in to their premises in Somerset (01225 444404).

Sourcing a specific style of window is rather more difficult than finding a door. Even if you find one suitable, the chances of it being the correct size will be slim. This could provide the impetus to build your own, of course, but making several windows is a major task, unless your workshop is reasonably well equipped with machinery.

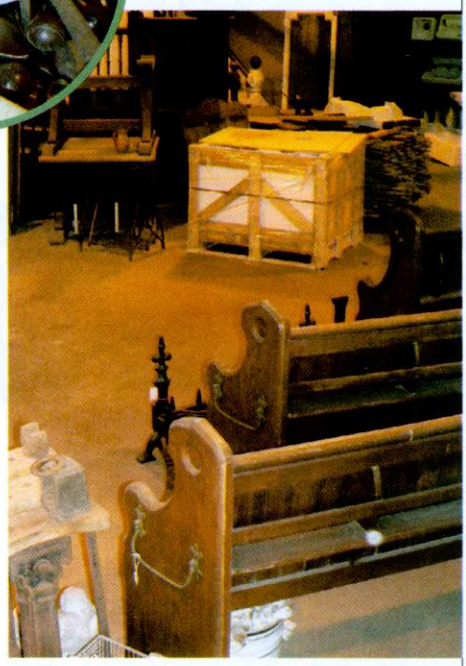
▲ Reclaimed doors and windows of all shapes and sizes are a common sight in reclamation yards

Pews, church furniture and stairs

Fancy a bit of ecclesiastical grandeur in your kitchen or living room? Church and chapel pews often consist of beautiful pieces of pitch pine or oak stretching their full length. There is no shortage out there, some at quite reasonable prices.

I was surprised to hear from Sandra Spearing, director of South West Reclamation (01278 444 141, www.southwest-rec.co.uk)

▲ A full flight of elegant stairs like these can be yours for roughly £1000



▲ Church pews look striking and are a bargain, considering the amount of timber involved

that demand for pews is low at the moment. It's because of fluctuating fashion and, no doubt, those TV makeover shows again, so if you still love them as much as I do, now is the time to buy.

Typically a 7ft oak pew costs around £300, with a 16ft version not a great deal more than £350. When you consider that the seat itself can be 2in thick, that's a serious amount of quality, seasoned hardwood, and probably defect-free, too. Most yards will cut pews to size, though it may be more economical to buy the whole seat and saw it yourself.

To give you some idea of what's available if you really want to splash out, Cox's Architectural Salvage in Gloucestershire (01608 652505, www.coxsarchitectural.co.uk) was recently selling a gorgeous, 6ft-long choristers' pew of oak with hinged seats, priced at just over £900. But if you haven't recently won the lottery, more humble pine pews start at around £150, which is very good value.

There are probably not too many homes that have a spare corner to accommodate a pulpit or altar font, but if you want one, they can be bought fairly easily, too.

You'll find fire surrounds in any yard, and these can be either reclaimed or made to measure from new timber. Most common are pine and oak, although finding a stunning mahogany surround should not be too much of a problem. South West Reclamation had a huge oak fireplace in their warehouse when I visited, as well as a selection of pews, baths, doors and pulpits.

There were a couple of impressive flights of stairs lurking in their warehouse, too. An elegant, straight flight would set you back roughly £1000. And stair spindles can be bought in bundles for next to nothing.

Hunting for hardware

If you're making your own doors or windows in a traditional style, contemporary fittings tend to look out of place. Although more expensive, handmade ironmongery such as hinges, handles or latches will add the finishing touch to that cottage door.

Many reclamation specialists stock secondhand door knobs and handles, or you can buy hand-forged hardware at From the Anvil (www.fromtheanvil.co.uk) or Hand Forged (07891 854820, www.handforged.co.uk). Everything from massive barn door hinges to 1in rosehead nails and coathooks can be bought, either off the shelf or ordered.

So, whatever you're looking for, if you've never been to a reclamation yard before, track one down and either pay a visit or check out a website or two. They can be inspiring places for the woodie; you're bound to find a beautiful old mantelpiece or glazed door that could provide design ideas for your own projects, even if you don't buy timber.

And, of course, the best thing about the whole reclamation process is that it means fewer trees get cut down.

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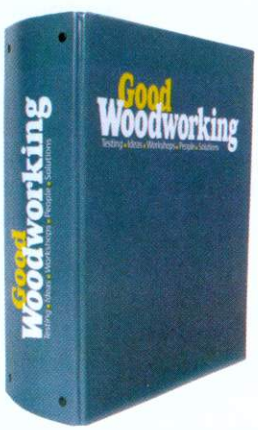

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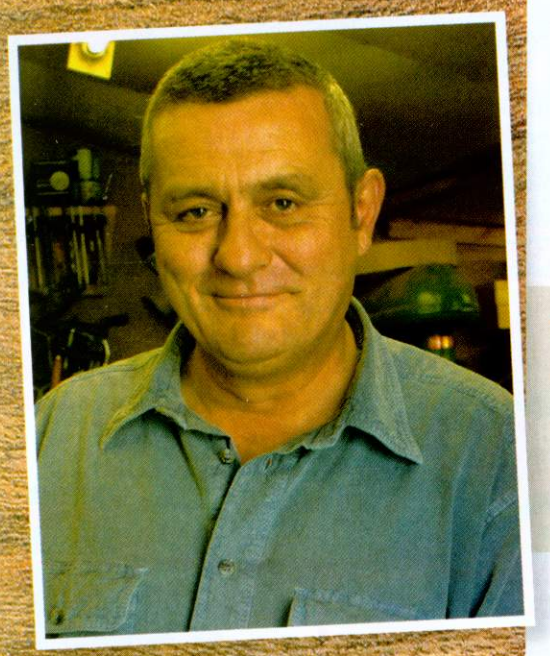


Dave Roberts

THE ENGINEER'S WORKSHOP

Candlesticks can come in all shapes and sizes: here are a few to fire your imagination. Go on, experiment!

This Month...

Inspirational Candlesticks

This month I'm turning four candlesticks, two of them traditional shapes and the other two more unusual. Hopefully they will show that candlesticks don't have to be boring and will inspire you to create your own imaginative designs.

Two of them (the yew one and the oak one) are made in one piece, so they are relatively quick and easy to turn. These can be turned straight from the branch wood and that's what I did with the yew candlestick; but with the oak one, I couldn't find a piece of timber big enough so I stuck two together.

If you do this, the surfaces must be perfectly flat before you glue them together so if you have a planer to plane the surfaces, use it. Put PVA glue on both sides of the timber, then rub the two pieces together, clamp them and leave them to set for 24 hours.

I have stained the oak candlestick a dark brown to give it a bit of a lift. You could stain other plain timbers any colour you fancy.

As for the other two candlesticks, the tallest one is made from three pieces, and the other from two sections. For the three-piece one I used a contrasting combination of pau amarillo for the base and sconce and American walnut for the centre column. For the two-piece design, I made the whole thing in boxwood, which is one of my favourite timbers to turn because it's hard, turns well and takes a good finish.

But there are many other woods you can use: if you like home-grown timber, laburnum is very nice; I'd recommend ash and sycamore, too, because they can be stained to whatever colour you want.

One final note before we start: all these candlesticks have a brass insert, which you can buy from Craft Supplies. Each candlestick must have a hole drilled in it to take the insert, and you do this in the same way for each workpiece. Fix a 25mm Forstner bit into a Jacob's chuck and put it into the tailstock. Put the lathe on a low speed. Wind the tailstock in slowly to the required depth. Stop the lathe and try the brass insert in the hole to check that it fits snugly.

Tools you'll need

13mm, 16mm, 25mm Forstner bits, 9mm detail gouge, roughing down gouge, parting tool, 6mm, 9mm gouges, 6mm scraper, 19mm skew chisel

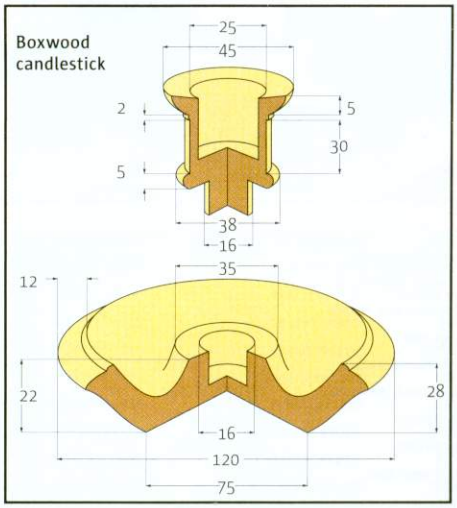
Two-Piece Box Candlestick

This candlestick is in two pieces. The first piece to be turned is the base. Hot glue this to a scrap piece of wood (see p65 for instructions). Use a 9mm gouge to turn the bulk of it. Careful turning will leave the surface with an excellent finish and you could also use a scraper to turn the bottom. A freshly ground scraper will leave a perfect finish on a hard, dense timbers such as the boxwood I used here.

▲ Pic.1 **You need a freshly sharpened scraper for hard timber**

Before you remove it from the lathe, don't forget to drill a 16mm hole for the sconce. Sand it up to at least 600 grit to achieve a mirror-like finish, then seal and polish.

The sconce is held on a screw chuck, turn it to the finished diameter then drill the hole for the brass insert as described on the left. Round the bead over with the detail gouge and turn the fillet with the parting tool. Don't forget to turn the 16mm spigot. When completed, glue the two pieces together, lining up the grain.



One-Piece Design

Select a piece of yew wood that is free from large knots and shakes and mount it between centres.

Turn it to a cylinder with a roughing gouge: I used a 1¼in gouge made by Crown (Pic.3). Craft Supplies sell similar ones starting at £33.95.

Use a parting tool to turn a spigot on one end to fit the jaws of your combination chuck. Put the workpiece into the chuck and bring the tailstock up for support while you turn it. The first job is to get the taper right; you can check this with a steel rule to make sure it's flat. You may have to tweak it a little to get it right.

Drip tray and sconce

Make the hole for the brass insert as before. Because the drip tray and the sconce are all one piece you may find it difficult to use a gouge to turn the drip tray; a 6mm scraper will come in really handy here (Pic.4). Work slowly with the scraper to leave the surface with a good finish.

The amount of sanding you'll need to do depends on how well you have turned! Sharp tools and keeping the bevel rubbing will leave the surface with a good finish. But some timbers turn better than others; with yew it is generally easier to get a good standard, which should mean less work with sandpaper.

A grade of 180grit is coarse enough to begin with, and you should work up to 400 or higher, doing your final sanding with the lathe stopped, moving the paper up and down the grain.

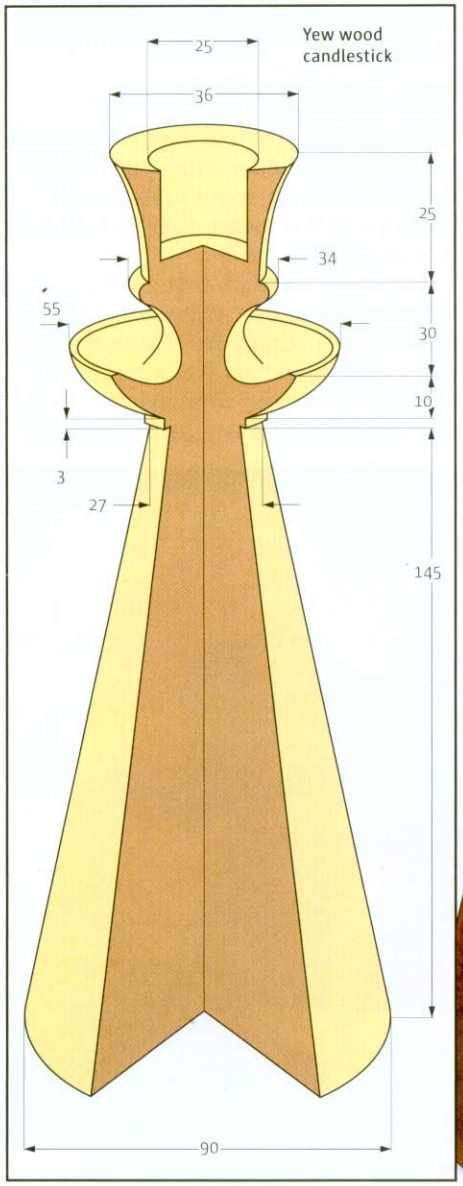
Seal the timber with sanding sealer; when dry, rub it back with 0000 wirewool and then polish it. Use a fine parting tool to part it off, holding the tool in one hand and the candlestick with the other.

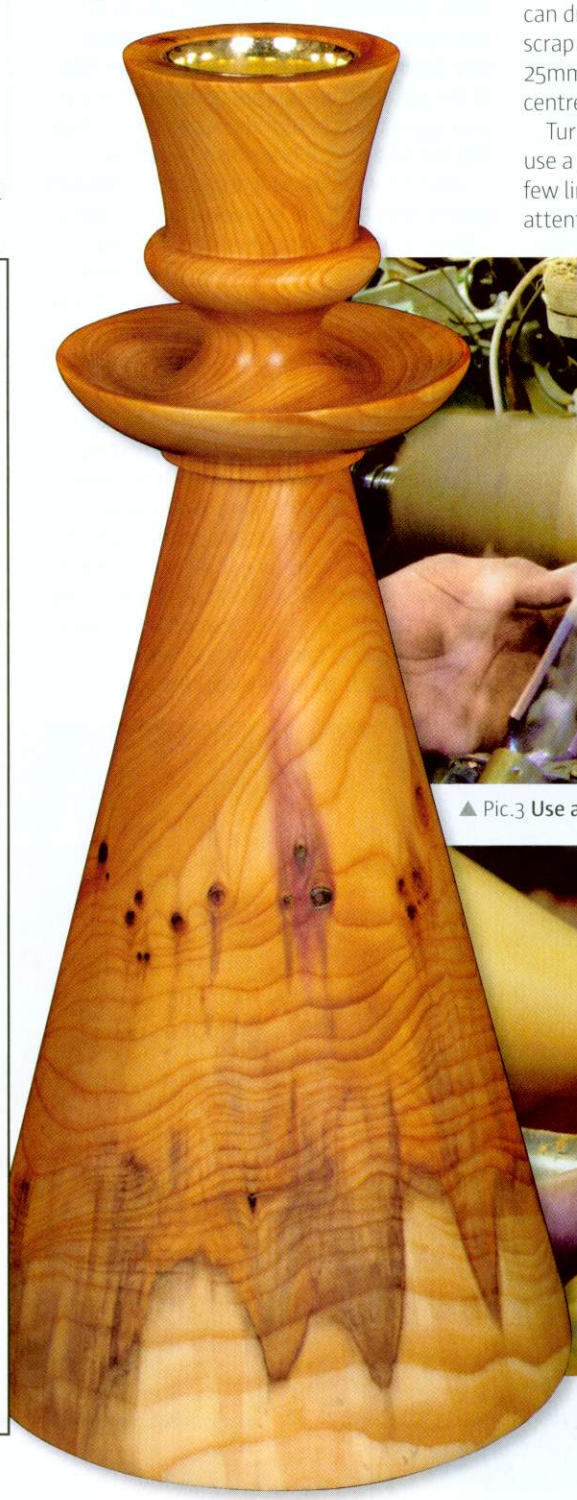
◀ Pic.2 **Use the corner of the parting tool to add a little decoration on the bottom**

The bottom

Turning off the bottom looks much better than leaving it rough. Turn the piece around and put the tailstock in the centre of the bottom. You can drive it two ways: either put a piece of scrap onto a screw chuck and turn it down to 25mm so it fits into the sconce, or use a drive centre, so long as it runs true.

Turn the bottom off with a 6mm gouge and use a parting tool to add decoration (Pic.2). A few lines are good and show you've given some attention to detail. Finally, sand and seal.



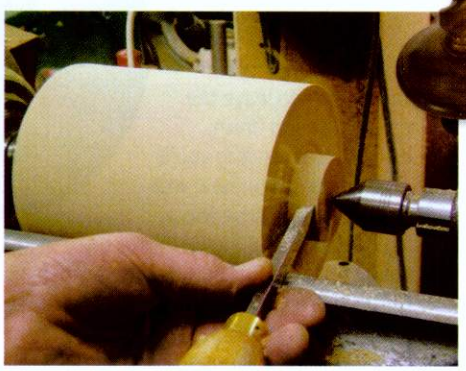


▲ Pic.3 **Use a roughing gouge to turn a cylinder**

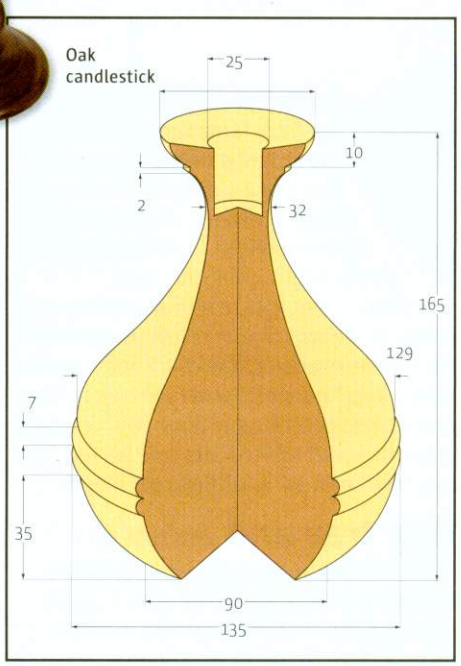
▲ Pic.4 **To remove timber and form the drip tray, you'll need a small scraper** ▶

See GW177:50 for Dave's Twisted Candlestick

▲ Pic.5 Dave glued together two pieces of oak because he couldn't find one lump big enough



▲ Pic.6 Use the parting tool to turn the spigot for your combination chuck



Stained Stick

Start this candlestick by finding the centres of your block, whether it's one piece or two stuck together, as I used. Bang in the drive centre with a wooden mallet and put the timber between centres.

When you've got a lump this size spinning around it will move a lot of air, so any dust you have around the lathe will be kicked up. You may find it's best to drop the speed down until the workpiece is round. With a parting tool, turn a spigot one end to fit your combination chuck (Pic.6) and bring the tailstock up for support.

True up the blank and turn it to the finished diameter, then pencil in the two beads. The best tool for turning the beads is a detail gouge with its wings ground back, which allows you to get into tight places. Use a 6mm parting tool to turn down the sides of the beads and the fillet at the top, then use a 6mm gouge to turn the concave in the top. Turn the speed down, then drill the hole for the brass insert as above.

Sand the vase, working through the different grades, watching the fine detail on the beads.

Once all that is completed and the dust wiped off, you can stain it if you like. I used a spirit stain, but a water-based stain would also do. Craft Supplies have a good selection, but a small project like this is also a good chance to use up those little bits in a can that have been hanging around the workshop for ages.

I find the best way to apply stain is with a brush; using a cloth or paper towel is okay as long as you wear gloves, because otherwise the stain will get on your fingers and it takes a fair bit of scrubbing to get it out (Pic.7). That's why they call it a 'stain'! Put a good coat on and leave it to dry, which will take a while. When it is dry rub it back with 0000 wirewool then seal it with sanding sealer and again rub back with wirewool. When the sealer is dry, put on a coat of polish.

The bottom

To achieve a good finish on the bottom you will have to turn it around and turn it off. Start by turning a 25mm spigot on a scrap piece of wood. A push fit is good enough; if it's too tight it might split the piece.

Push it onto the spigot and bring the tailstock up for support while you turn off the end with a 6mm gouge. Keep the bevel rubbing on the endgrain and you'll get a good finish which means less work with sandpaper. Finally, stain and seal it and assemble the candlestick.

▲ Pic.7 Put paper on the bed of the lathe while you apply the stain

Tall Three-Piecer

This candlestick is made in three parts that push together. The first piece to turn is the base. Select a piece of pau amarillo or whatever timber you choose to use and bandsaw it as round as possible. Drill a hole in the centre and mount it onto your screw chuck. Face up the bottom with a 9mm gouge and place a steel rule across it to check it's flat. Then sand and seal it.

Now turn it around to work on the rest of it. I prefer to hot glue it to a scrap piece of wood so that I'm not left with any horrible chuck marks.

To do so, put the scrap wood onto the screw chuck or faceplate and face it up. Put the hot glue on, push the base onto it and wind the tailstock. Then leave it for a minute or so until the glue sets.

You can leave the tailstock in place while you turn the base to shape. A 9mm gouge will form the gentle curve and leave a good finish provided you keep the bevel rubbing.

Once all the turning is done, drill the 16mm hole for the spigot on the stem. Put a 16mm Forstner bit into a Jacobs chuck and put it into the tailstock. Put the lathe on a low speed and wind the tailstock in slowly, withdrawing it occasionally to clear the debris.

Sand it, seal it and remove it by tapping it with a rubber mallet; it should break away leaving most of the glue on the chuck. If there is any left on the base, it should pick off easily.

The column

The column is straightforward turning, nothing very technical. The first job is to drill a 13mm hole in one end to receive the spigot on the sconce. When that is done, place the revolving centre into the drilled hole while you are turning the column.

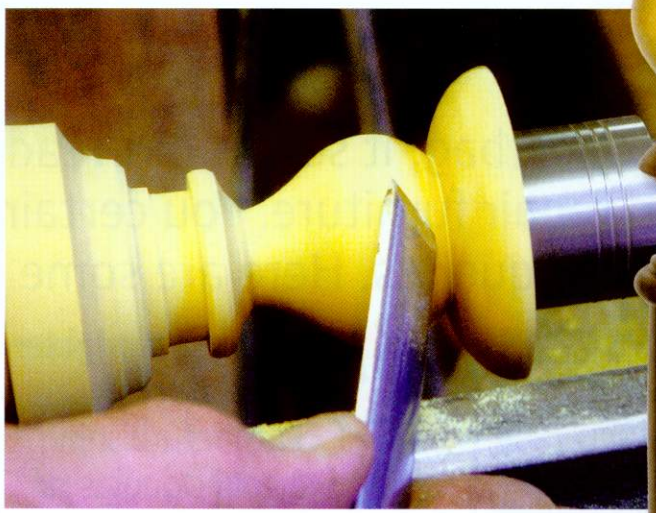
Turn the spigot first and make sure that it is a good fit in the base; there's a bead both ends. I like to use a detail gouge to turn these try to keep them as round as possible (Pic.9).

The main part of the column is straight. Place a straightedge on it to check it's flat. Sand the column with the lathe rotating, then stop the lathe and sand by hand, rubbing up and down the grain to get rid of any sanding marks. Finish by sealing and polishing.

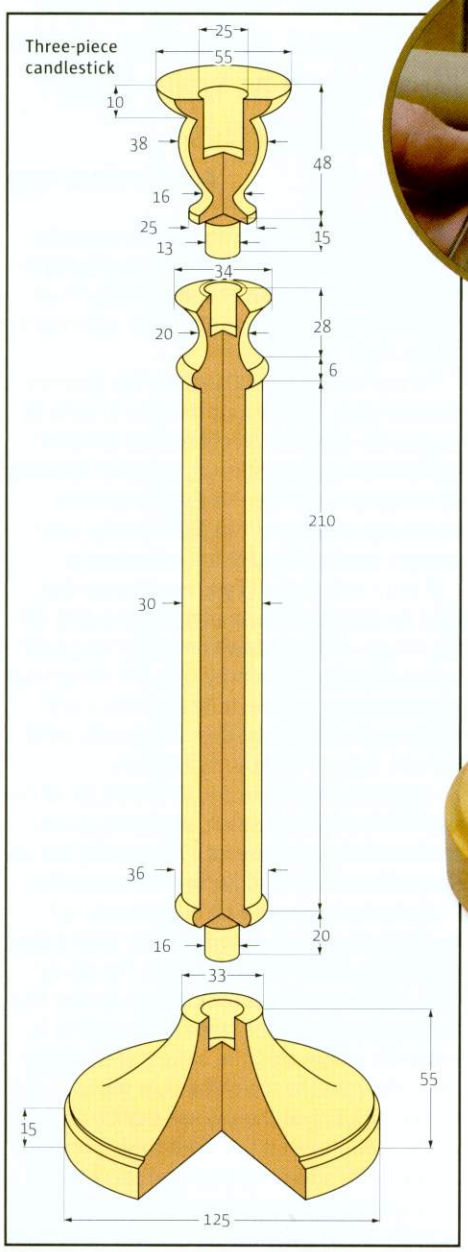
The sconce

Mount the blank onto a screw chuck while you turn it. Drill the hole first for the brass insert as on p62, then bring up the tailstock for extra support. There isn't a great deal of turning on the sconce but you will find a skew chisel very useful: it will leave a good finish and tuck itself into almost any nook and cranny (Pic.8).

After sanding and sealing the sconce, glue the whole lot together by applying a little PVA glue, lining up the grain and then assembling the three parts.



▲ Pic.8 **Using the skew chisel like this will leave the surface with a good finish**



▲ Pic.9 **A sharp detail gouge and a steady hand will form good beads**

Next Month

Dave makes a nest of jewellery boxes: just the thing if you're starting to think about Christmas presents. Meanwhile, if you have any turning queries or suggestions email goodwood@futurenet.co.uk or write to us at the address on p5.

Repairing furniture

Judging by our postbag, it seems our readers love to restore and repair furniture. You certainly have plenty of tips and queries. Here are some of the best

What material do I need for this desk?

I have been asked to repair this roll-top desk because some of the slats have come off. What is the material on the back likely to be (it looks like hessian), what is it likely to be stuck on with and does it need coating with anything?

Neil Donkin, Humberside

A Yes, the material is likely to be hessian, although I have known linen to be used. It will be stuck on with animal glue and it doesn't need coating with anything. Hessian can be bought from upholstery suppliers: Burdett & Rawling in Hull (01482 493246) are probably the nearest source to you.

Try John Boddy in Boroughbridge (01423 322370, www.john-boddy-timber.ltd.uk) for the animal glue. The beauty of animal glue is that new glue will amalgamate with and re-activate old glue, so you don't necessarily have to clean all the old glue off before re-sticking. Similarly, partially loose slats don't have to be removed and re-set. See GWW175:45 for my detailed look at animal glue. *Stephen Simmons*

Help me straighten these doors

I am refurbishing some lovely old Douglas fir doors: four panel doors with the middle rail offset. They all bow out at the top, some by as much as 1/2in. How can I remedy this?

Andrew Harris, Lincs

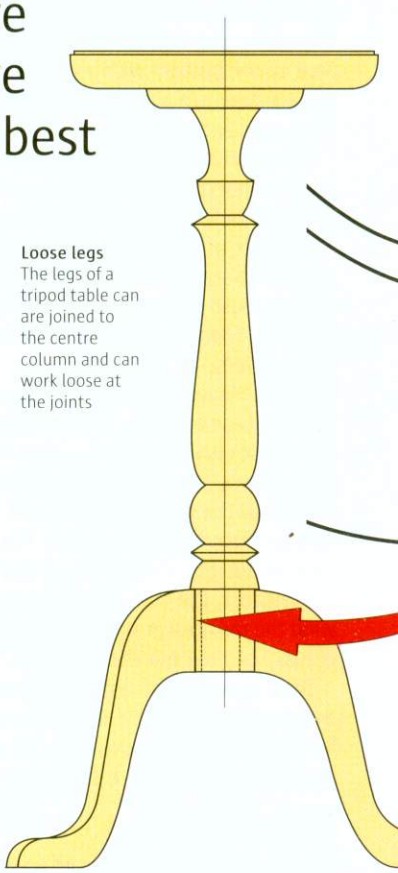
A You must force the door in the opposite direction by twice the amount of twist in the door: in your case, this will be 1in. To do this, leave the door hung and place a 1in block on the floor by the stop.

Force the door closed until the top touches the doorstop. This will put the door in twist by 1/2in in the opposite direction. Hold it in that position for at least 24 hours by either screwing or wedging it. A batten screwed diagonally across the architraves can also be used, with wedges driven behind to force the door in.

If you can't do this (if you need to use the door for access, for example) take the door off the hinges and lie it down on a flat floor; pack up the touching corners by 1/2in, the weight the opposite corners down until they touch the floor, again putting the door in opposite twist by 1/2in. Leave it for at least 24 hours.

Once the door is released, it'll want to settle back in its original position, but having been forced back beyond normal it'll hopefully end up somewhere in the middle, in other words flat.

These methods are a bit hit and miss so I prefer to disguise the twist instead. With a door that twists away from the stop at the top by 1/2in, set the top hinge back by 1/4in and let the bottom one out by the same amount; that is, move the hinges closer to or further from the stop. This puts the top of the door slightly below the lining at the top and slightly proud at the bottom, but it's difficult to spot on the hanging side. Close the door and check the closing stile against the lining to see if it's parallel; adjust the hinges if needed. *Andy King*



Loose legs
The legs of a tripod table can are joined to the centre column and can work loose at the joints

Can I French polish a teak table?

Will teak accept French polish and will a teak table which has been oiled about once per year need any special treatment?

Barry Sisson, Nottingham

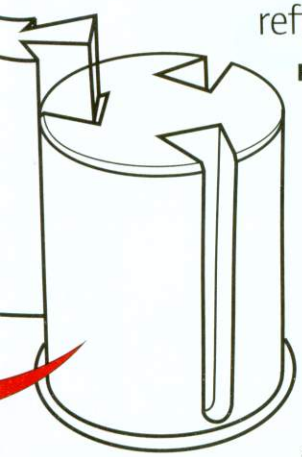
A Teak is a naturally oily wood and as such is not suitable for French polishing. The shellac may take initially, but the oil in the wood will eventually cause it to bubble and flake. A table that has already been oiled regularly once a year stands no chance of being successfully French polished, I'm afraid.

Oil it again and then buff it firmly, regularly and vigorously. It's hard work and you won't get a high gloss, rather an attractive deep sheen and a finish that is far more robust than shellac. *Stephen Simmons*

Q&A My table's sides are splitting

I have been asked to repair an occasional table. The legs have partially come away from the main centre support. What is the best way to melt the glue so that I can pull the legs apart and refit them?

Peter Ridley, Hereford



A From your sketch it looks as though the table is either a Victorian or Edwardian tripod, so animal glue would have been used. The glue can be dissolved by injecting a little warm water into the joint and then gently worrying it apart. I doubt you'll be able to dismantle it in just one go, so repeat the process a few times. But don't use too much water or the joint will swell and jam, defeating the exercise.

Alternatively, to avoid jamming, inject meths instead of water. Alcohol desiccates the glue instead of dissolving it, but the result is the same. You might need to tap the legs down out of their housing; do this gently with a light hammer or mallet and a well-padded endgrain wooden block to avoid bruising.

When reassembling, use animal glue again. You may also need to tighten the joint by inserting a fillet of veneer if it has worn loose over the years.

Stephen Simmons

Stop the wobble

When Mike Ninham's friend asked him to repair a set of six wobbly chairs, he found they had a common problem, probably caused by years of people rocking on the back legs. They had loose joints at the rear, where only the corner blocks were stopping them falling apart. Mike used the same five-step process on each chair:

1 First label each part on masking tape before taking the joints to pieces

2 Take out the dowels, scrape them clean of the old glue and clean out the holes. If there are no grooves to allow surplus glue to exit, cut some as shown using a carver's V chisel

3 Apply hide glue to the dowels, which was the original adhesive, and is therefore 'restorer-friendly'. Assemble on a level surface to avoid adding wobble

4 Cramp lightly to pull up the joints: a band cramp is very useful for these square-off situations. Put in the drop-in seat to check the cramping has not pulled the chair off square

5 After screwing and gluing the corner blocks, with a little candlewax on the threads to help, the chair is finished.

Q&A How can I get rid of this paint?

My wife has a kitchen/dining table and chair set approximately 20 years old and of German origin. The wood looks like solid ash and is painted an off-white colour, but with the grain showing through. We'd like to strip the paint to bade wood and treat it with an oiled/wax finish. Is this possible and if so, what's the best way to do it?

Hamish Baxter, Germany

A You need to sand the surface back. It would be very difficult to extract the paint from the grain with a chemical stripper. Because the table isn't very old you shouldn't need to worry about damaging any built-up finish (known as the 'patina').

Use a belt sander or random orbit sander, starting with coarse abrasive (above 80grit) and working down to something finer once the paint has disappeared (240grit, I'd say) to get rid of any sanding marks the coarse paper leaves behind.

Take great care with the belt sander because it's very easy to remove too much and end up with a ridge and furrow effect; the areas around the edges are at the greatest risk. Some belt sanders have a frame with brushes, a bit like a hovercraft, to stop the sander tipping.

Always wear a dust mask and, ideally, connect any power sander to a vacuum cleaner or at least attach a bag to it.

Nick Gibbs

Combo belt & disc sanders Tested: p86

Skill Build

An ideal chance to use your project planner from GW175

Curvaceous chest of drawers

Simpler than it looks, the success of this piece is all about getting the right proportions. By **Steve Maskery**

This is the latest addition to our bedroom suite, which I started several years ago (see GW113:6, GW130:6 and GW177:37 for the bed, bedside table and wardrobe). It may look like complex curved furniture, but actually the construction is very simple, and the curves don't complicate matters; all the joinery is still rectilinear.

The more I make furniture, the more I get to understand just how much difference the smallest changes in proportion can make to a piece. Get a bottom rail too narrow or a knob in just the wrong place and an otherwise fine piece can be spoiled. What's more, there is usually very little you can do about it by the time you can see your error. Therefore getting the design right beforehand is very important. As I've written before, computer-aided design is a great help here. The legs of this piece, and the drawer spacings, were designed in AutoCAD and then the model developed in SketchUp (see GW173:34).

I based the dimensions of the drawers on the Hambridge Progression, which is a geometric concept based on the relation of the width of a succession of rectangles to their height. I adapted it because the width of the drawers varies throughout the cabinet, and it works very well.

1 The carcase

The carcase consists of veneered MDF sides and a set of 10 rectangular frames housed into it.

▲ Pic.1 A ply template is used to mark out the legs

To get the positions of the housings right, I drew them out full-size on a spare piece of ply, called a rod, and used that instead of trying to measure from a drawing.

You can make the frames however you want; traditionally they would be mortice-and-tenon, but I chose to biscuit them. The short side rails (B) need to be a bit wider for this method, though, because they have to accommodate the biscuits.

I used No.10 biscuits, and offset the slot a bit to minimise the width. The slot pokes out of the edge, but that doesn't matter, because it can be trimmed off and it will be hidden in the housing when assembled.

The frames are made from a load of recycled brown stuff I was given, library shelves made out of some kind of bland mahogany, which saved on the rather more expensive maple. Mahogany is not an ideal material, though; it is a bit soft. I did make the front rail (A) from maple, even though it is rarely seen.

However you make them, take care to make them square, flat and true, because any twist will affect the smooth running of your drawers.

The top frame also has a rebate running around the inside bottom edge, 8mm or so deep. This is important, because it will be used to attach the top (F) with buttons later.

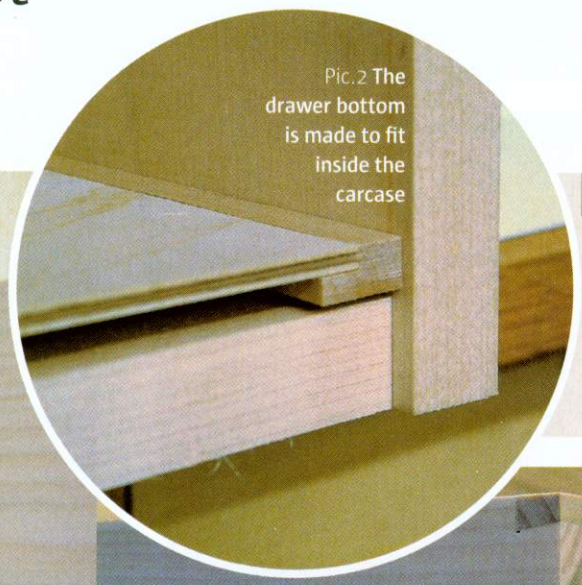
The sides (C) were cut using my Festool circular saw, which gives a good finish, even on cross-cut veneered board, because of the zero-clearance support it provides. I cut them both as one piece, double

FOR BEGINNERS

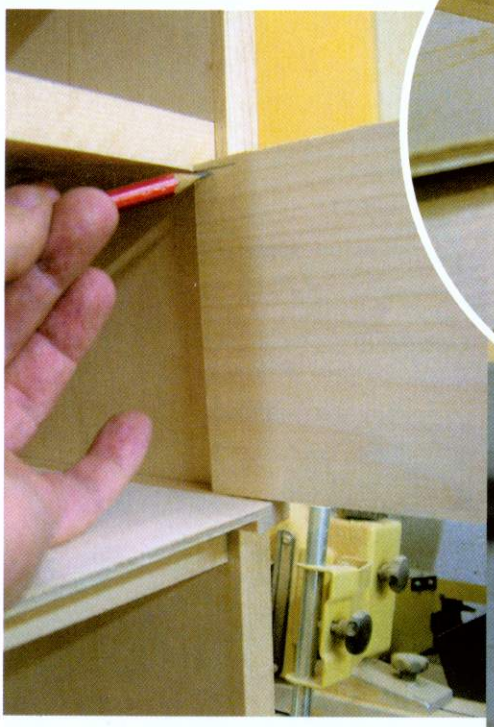
If you prefer to make your legs on the spindle moulder or router table, this is how to do it. The MDF jig should be about 200mm wide, to give some stability, and one edge is the outside curve of the leg and the other edge the inside.

It is important to make the jig over-long. You need to be able to lead in with the cutter before starting to cut, and you need some spare on your blank so you can screw it down in areas near the ends which will be cut off later. So although the legs finish at 1300mm long, cut the blanks to 1400mm and the jig to 1500mm. That gives 100mm run-in and 50mm at each end for screws to hold it down. Along the length, support is offered by back-blocks and hold-down bars, which also act as handles. Screws hold it to the back-blocks, but make sure they're not so long that they damage your cutters.

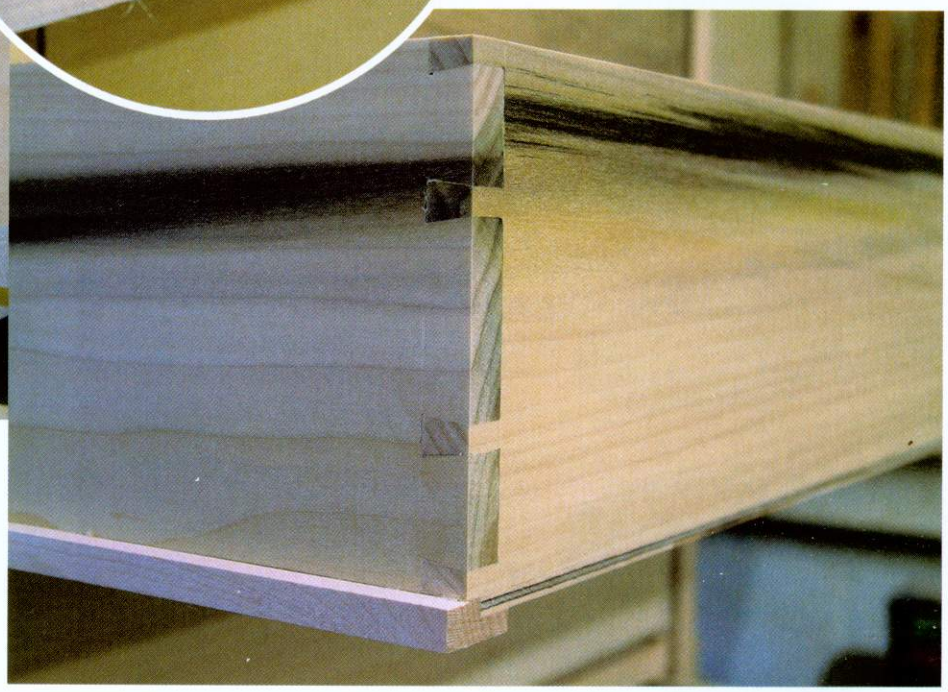
The rod is invaluable in getting the jig accurate. I remove most of the waste first on the bandsaw, then trim with my spindle moulder, using a rebating block and a ring fence or sometimes with a bearing guided straight cutter on my router table, running the fence, or bearing guide along the pattern jig only, while the cutter makes a perfect copy on the clamped workpiece.



Pic.2 **The drawer bottom is made to fit inside the carcase**



▲ Pic.3 **The drawer sides are marked off to height directly from the opening**



▶ Pic.4 **When dovetailed and assembled the drawer is glued to the drawer bottom**

TIP

When cutting the frame, if your biggest cutter is smaller than the housing to be cut, you will have to take two passes, and the safest and most accurate way is to keep the guide fence clamped in place but to slip a spacer between the fence and router.

width, to start with, which has advantages when it comes to cutting the housings (or 'dadoes' as they are increasingly being called, courtesy of our friends in the USA). If you have a router cutter that's exactly the same size as your frame thickness, then your job is made easy. Simply clamp a guide across the board and rout away.

The most important thing, though, is to ensure that the grooves are absolutely parallel. Measure and measure again, or better still use a setting gauge (see my article on board cutting, GW177:62) from one end, and only then commit to the cut. When all are done, rip the board down the middle and put the two inside faces together. All the housings should match both front and back.

I glued thin edging strips to the front and back, about 3mm thick, and iron-on edging to the bottom, just to cover up the raw MDF, then trimmed it all up with a router and flush cutting jig. Then I routed a 4mm rebate for the ply back. If you prefer, you can rout grooves into which the back will slide. In this case you would rout your housings to stop shy of the groove, and finish off with a chisel. If the back is to be seen, you may choose to build a frame-and-panel back, in which case the rebate will, of course, have to be deeper accordingly.

Before you assemble the carcase, the drawer dividing frames, or webs, need to be notched at the front to go round the lipping, unless, like mine, they are not quite deep enough. In that case, just butt them up to the lipping as far forward as they will go.

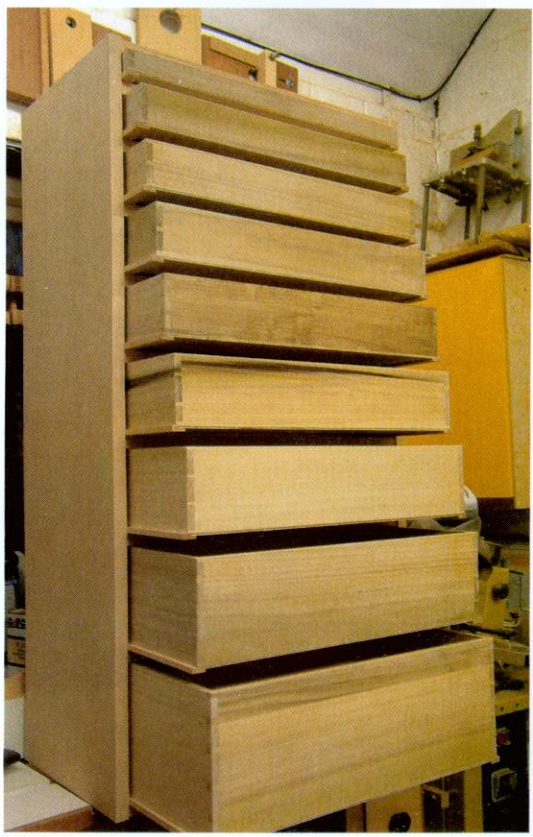
Then the carcase is assembled with PVA glue. That frame we rebated earlier needs to go at the very top, with the rebate down. At all stages, check that everything is square and out of wind. Ensure that any glue squeeze-out is removed cleanly. Do not attach the back (D) at this stage, because it is easier to fit the drawers without it.

Not So Clever...

A word of warning on the legs. It's a good idea to mark the shape of the inside of the foot after offering it up to the actual carcase. It's very easy to shave off to much and that raises the start position, meaning that the inside curve starts to move out above the bottom of the carcase. Carelessness on my part means that this has happened here. Fortunately it is all covered by the drawer fronts (at least on the front) but it would be better to avoid the problem than having to cover it up.

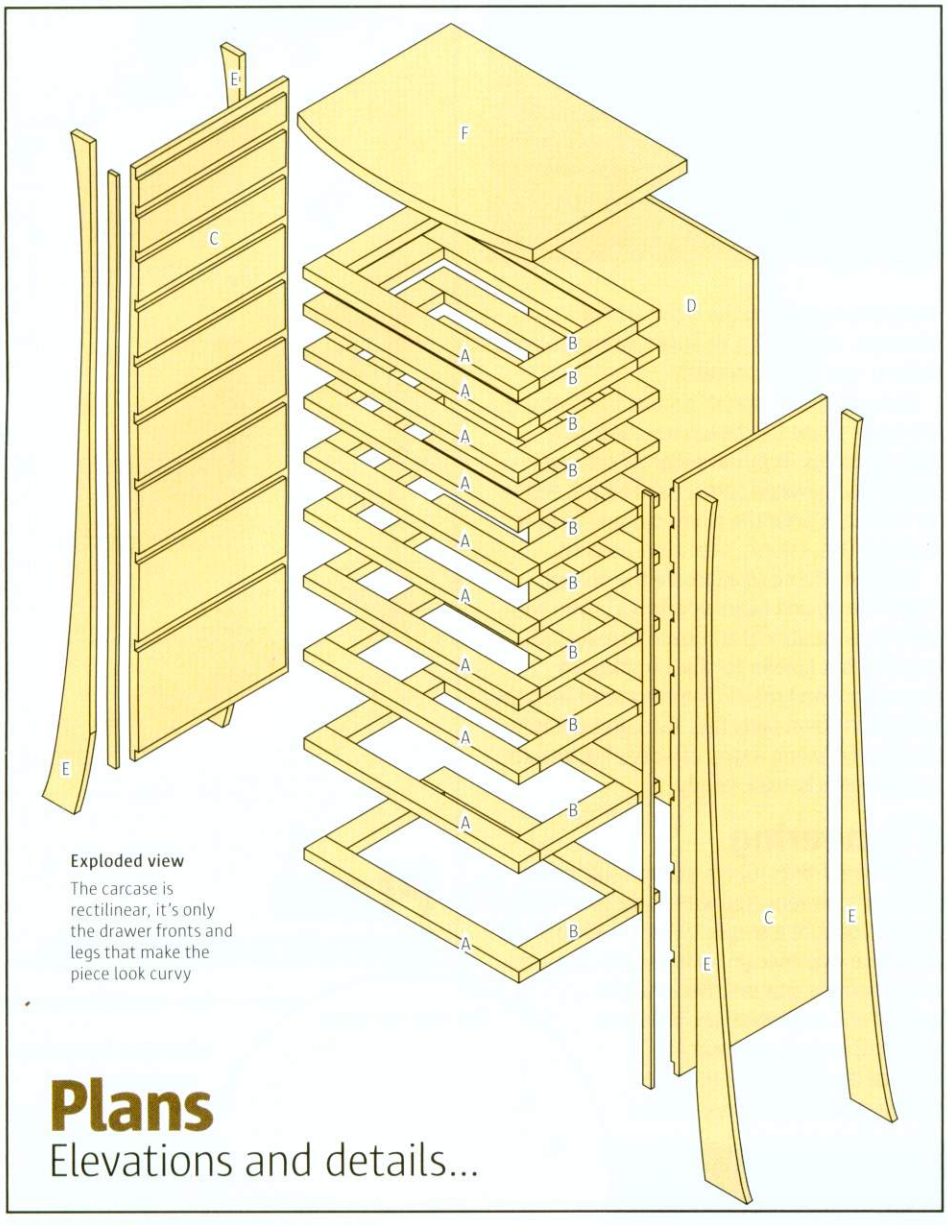
2 The legs

To make the legs (E), I started with a printout of that CAD design, overlaid with a 20mm grid. This is then drawn out full-size on a piece of ply and cut out and shaped to make a template



▲ Pic.5 **The basic carcase is all rectilinear, making construction easier than it looks**

Skill Build



Exploded view
The carcase is rectilinear, it's only the drawer fronts and legs that make the piece look curvy

Plans
Elevations and details...

▲ Pic.6 **The legs are screwed from the inside**

(Pic.1, p68). The curve is not crucial, but it should be smooth and even, and the best way to tell is to look down the length of it with one eye. Any kinks will show up.

I usually shape legs like this by making a jig (see p69). Because I was only cutting four, and one edge was straight for nearly all of its length, I decided to shape them by hand with bandsaw, compass plane and spokeshave.

Whichever method you adopt, once shaped, remove the waste from the ends and round over the edges to 1/4-inch radius. The legs can then be screwed to the carcase from the inside, but make sure that the screws are properly countersunk, so that they do not foul the movement of the drawers.

3 The drawers

The drawers have a false front (G), the ends of which follow the curve of the legs, but this is applied afterwards. The drawer is rectangular. This is a great way of getting interesting shapes to the front of your furniture without making it hideously difficult to make good drawers.

Of course, if you want to make a curved carcase with curved drawers, and some people do, don't let me stop you. But I would rather have simple drawers that work well than fancy drawers that don't, so I opt for the easy life. I have used canary wood, otherwise known as poplar or tulip, for the drawer sides, front and back. It is a hardwood, cheap and easy to work.

I'm a fan of NK (Enco) drawers. With an NK drawer, the drawer bottom frame is the only part to touch the carcase sides, the drawer box itself being 6mm or so narrower. It never comes into contact with the carcase sides, and therefore doesn't bind. From the maker's point of view, NK drawers are more tolerant of errors and much easier to fit. That is not an excuse for sloppy work, of course; I'm just making life more straightforward. Is it cheating?

TIP

The easiest way to prepare stock for the drawers is to start with a wide board and rout a rebate for the ply bottom onto the edge of the board. Then rip off 8mm. This is also safer than trying to rout a rebate in such small stock.

To make an NK drawer we start with the bottom runner (L). This is 20mm or so wide, by 8mm or so thick. We then cut the ply bottom (K) so that the total width of ply plus runners is the internal size of the carcase, preferably a bit full rather than a bit loose.

This drawer bottom (K) is now very carefully fitted so that it runs nicely. Just take a shaving at a time, and take care to remove material only where necessary (Pic.2). You may find that the ply is curved, in which case you will have to repeat this process when the drawer box is ▶

Skill Build

glued on, because as it is pulled flat it will increase slightly in width. But for now at least this will do.

The stock for the drawer sides (J) must be thicknessed to 12mm, either from 1in boards, or, more economically, by re-sawing 1½in boards. Then they are dimensioned to width, which has to be done very accurately because the smooth running of the drawers is at stake (Pic.3, previous page). With the drawer bottom in place, carefully trim the drawer sides so that they slide without play between the drawer bottom and the divider above it.

The drawer box is a simple affair: through dovetails all round. I cut my dovetails on the bandsaw, then mark the pins by hand, then cut the pins on the bandsaw. It's quicker than doing them entirely by hand, but still gives a hand-cut look, rather than a mechanical appearance, see GW 174:47 for the full method and details of the jigs required.

Glue the box up nice and square, clean up the joints and glue the box to the drawer bottom. If you have got your sums right the line where the ply bottom meets the runners is somewhere near the centre of the thickness of the drawer side.

Your drawer should now run nicely, but if it is still tight, it is probably on the width, if that bottom was curved and has been pulled flat. You can see, now, the advantage of leaving off the back – it's easier to see where the drawer is binding if you have an all-round view.

4 The top

The top (F) is made from three boards glued together (Pic.7) then held in place with buttons. For a simple jig for making buttons easily and quickly on the radial arm or mitresaw see GW151. Be sure that the buttons will not foul the top drawer.

Although this is part of a suite, I did not use the same shape for the top as I did for my bedside tables. They have slightly concave edges, and bevelled corners and edges, and to be honest, it's not the nicest design I've ever created. This, I think, is far more elegant.

You can choose to alternate the boards, heart-side up and heart-side down, if you wish, which is a traditional approach to reducing cupping, but I prefer to glue up solely on appearance and rely on the carcase to keep the top pulled down fairly flat. The curve is easily created by flexing a strip of wood, but an extra pair of hands is, well, handy.

5 Veneering

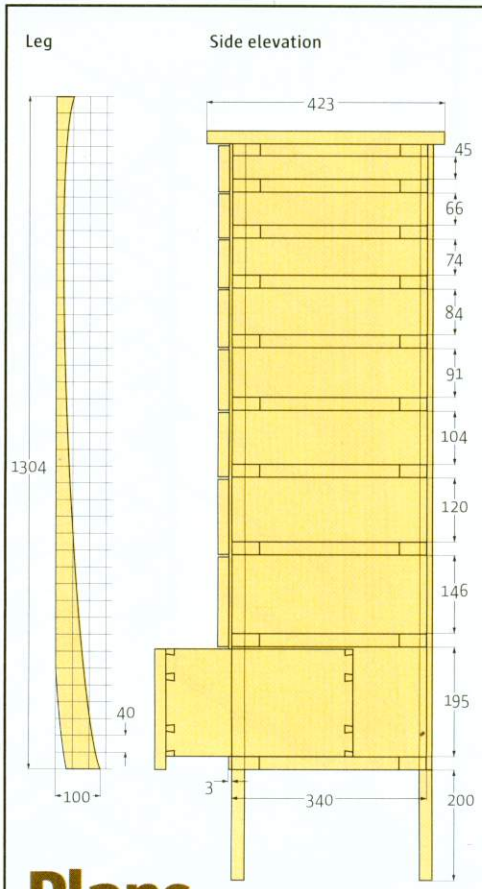
The drawer fronts (G) are 18mm solid maple, which is then veneered with some nice figured maple. I bought a bundle when I made my bed and there was enough to do this piece, as well as my bedside drawers. Because the ground and the veneer are the same material, it is not necessary to balance it on the back. I can hear sharp intakes of breath, even as I write! But I tried this on my bedside drawers and have not had even the merest hint of a problem with it.

I started by preparing the stock. Even though it is going to be veneered, I like to get a good surface. Maple can be a difficult timber, with significant tearout when the grain changes direction. Some pieces can't be put through the thicknesser any way round without getting some tearout, so the only options are either to plane it by hand or to sand it smooth. I have a nice drum sander which is easy and does a good job, even if it isn't quick. For the edges I worked by hand.

When cutting them to height, remember that each one covers the drawer divider underneath it, except for the top one which also covers the drawer divider above it, too. This has important implications for the original layout. It is the drawer fronts that are seen, and which follow the Hambridge Progression, not the drawers themselves. So when you

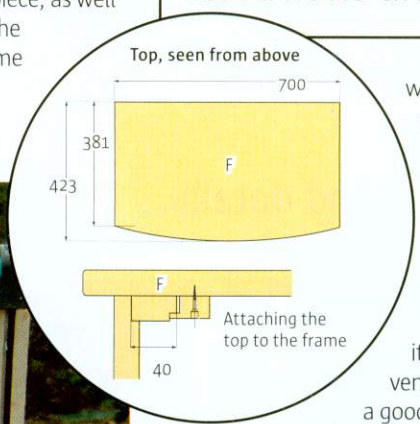
Help...

Am I the only one who has difficulty in reading a maple board? On more than one, I found that I had to plane in what appeared on the face of it (literally) to be against the grain, yet there was no doubt about which gave the better finish. I've noticed this before with maple, can anyone enlighten me?

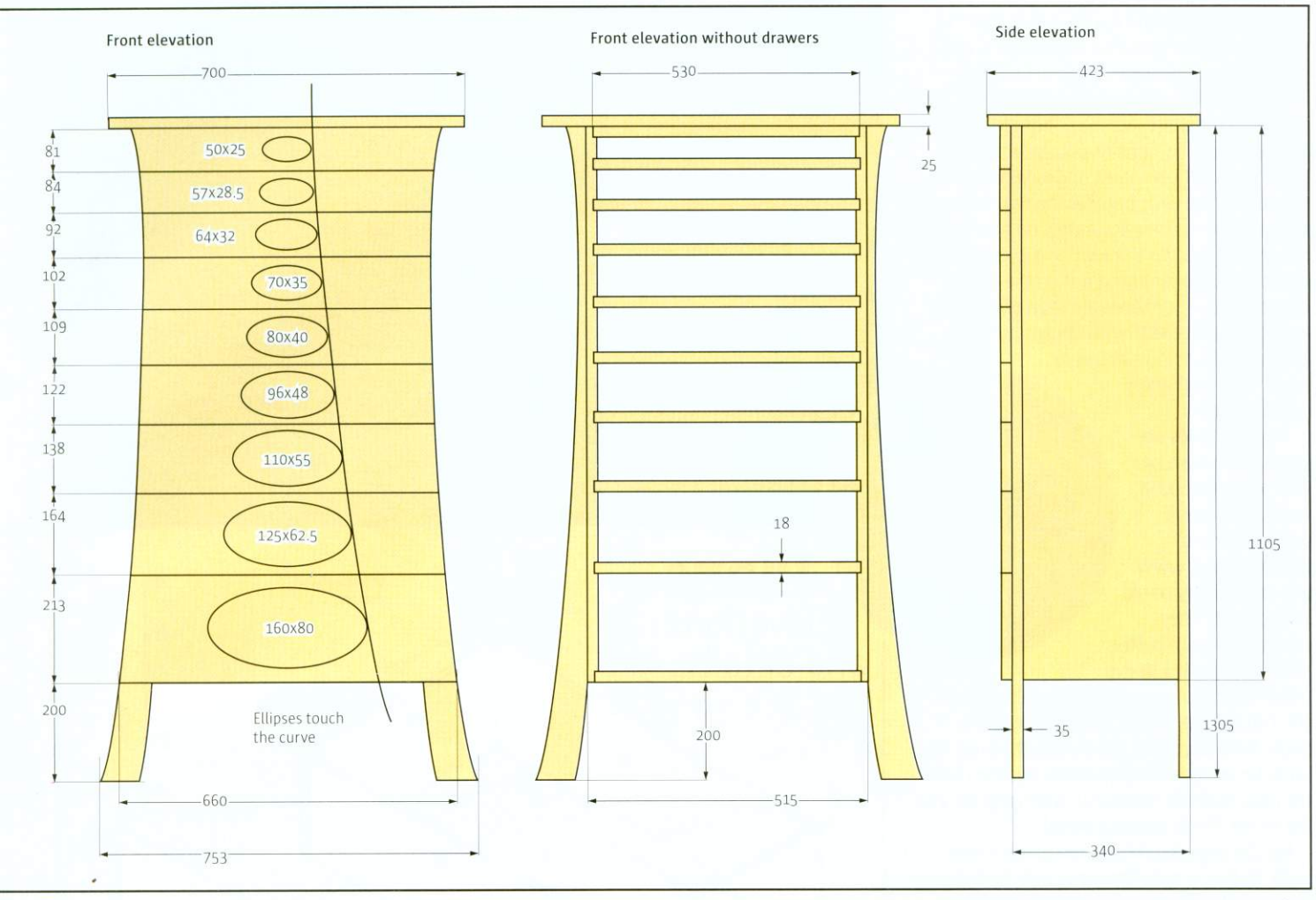


Plans

Elevations and details...



▲ Pic.7 The top is glued up from three boards. The triangle is marked on that so I don't get mixed up



draw them up, remember that the top drawer front covers two dividing webs, and that the drawer itself is shallower as a result.

Once cut to height, each drawer front has its centre lines drawn on the edges. This is so we can find them again once the front is veneered. Each drawer front is kept rectangular during the veneering process and only trimmed to shape later.

The sizes of the various ellipses was determined at the CAD stage. I tried various ways of sizing them. The most obvious one, where they all touch a pair of tapered lines, proved to be less than perfect aesthetically, so instead they all touch a Bezier curve, a function of CAD, which complements the curve of the legs without actually getting wider again at the top. The diagram should make that clear. They all have the same aspect ratio of 2:1.

Each ellipse (H1, H2 and so on) is drawn on the drawer front, and when we apply glue for the figured maple veneer, we only just go inside the ellipse. In that way, once I've whizzed round with the female template,

▲ Pic.8 **The stringing is hammered in, then it can be persuaded in without breaking: it must be heated (inset) so that it can be bent to such tight curves**

Skill Build

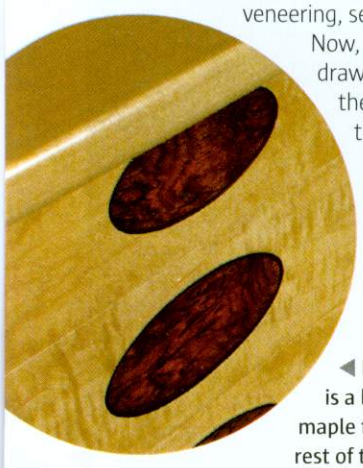
digging out the waste is a lot easier. Don't be so tight with the glue that the veneer is not properly stuck where it should be, though.

There are nine ellipses, and each one requires a template, cut from 9mm MDF. I actually used the same template for all nine, starting with the smallest and increasing the size of the hole each time for the next one up. I drew out the profiles accurately on my PC, and the centre lines were drawn on too, as these will be required for laying out on the actual drawer-front. The shapes are then printed out and stuck to the MDF with Spraymount adhesive which you can buy in any craft or stationery supplies shop.

The templates are used with a bush kit. CMT (0845 604 0064, www.cmtutensili.com) and Trend (0800 487363, www.trendmachinery.co.uk) both do one. They consist of a 3mm cutter, and a bush with a sleeve which alters the radius by 3mm. In this way, you can use the female template with the larger bush to cut out the recess, then use the same template with the smaller bush to make the inlay that will fit exactly, warts and all, into the recess (Pic.8, previous page).

For the stringing, I have had made a third bush, so that it puts the cutter exactly half-way between the other two. I clamp the female template in place, using the centre-lines as alignment, and whizz round again with a one-sixteenth-inch cutter, just the right size for the black stringing. For the tight curves I had to soak it and steam it over a hot pipe before persuading it in with a traditional veneer hammer: tricky work, but very satisfying.

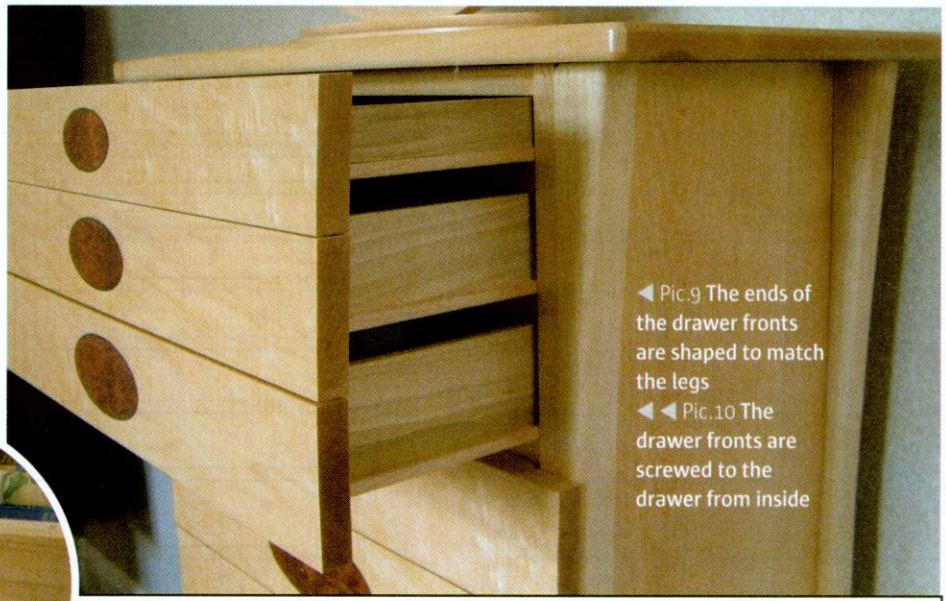
The biggest risk is that the stringing snaps at the tight end of the ellipse, but this risk is reduced if you use a piece of masking tape as a bending strap to support the wood fibres, just as if you were doing 'proper' steam bending. For a detailed account of how I did this veneering, see GW172:48.



◀ Pic.11 **The veneer is a lovely figured maple that matches the rest of the bedroom suite**

Now, with all the drawer-fronts done, they are screwed to the drawers from inside, and the shape of the legs traced. I wanted to cut these veneer side up, so I didn't get breakout, but of course, the legs are on the back. So I used the original leg template on the front, aligned with the legs proper, to mark with a pencil where the curve needs to be cut.

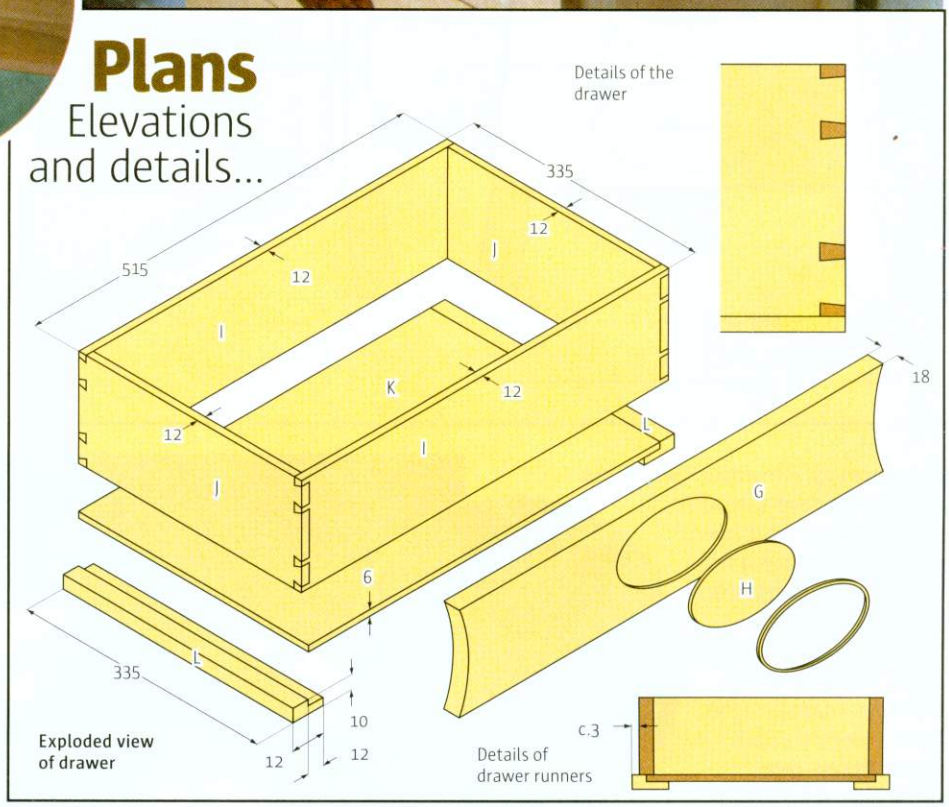
The drawer-fronts are then removed, bandsawn, replaced, then trimmed flush with a router. We have no knobs on our drawers, so I left them off this piece as well. The rounded-over legs are enough to allow fingers in at the sides to pull the drawers open (Pics 9 & 10).



◀ Pic.9 **The ends of the drawer fronts are shaped to match the legs**

◀◀ Pic.10 **The drawer fronts are screwed to the drawer from inside**

Plans
Elevations and details...



6 Finishing

It's easiest to finish this project if it is dismantled first. The legs can come off, as can the top and the drawer-fronts. This makes sanding and spraying much easier. I gave it all one coat of Chestnut Cellulose Sanding Sealer followed by two of their Cellulose Lacquer. I tend to stick with the same manufacturer, so there's more chance of compatibility.

Finally, I gave it all a good waxing with Woodwax 22, again by Chestnut (01473 425878, www.chestnutproducts.co.uk), and nailed on the back.

Any Questions?

If you have questions about this project or want us to send you a cutting list, write to us at 30 Monmouth Street, Bath, BA1 2BW or email goodwood@futurenet.co.uk

Good Woodworking

Competition

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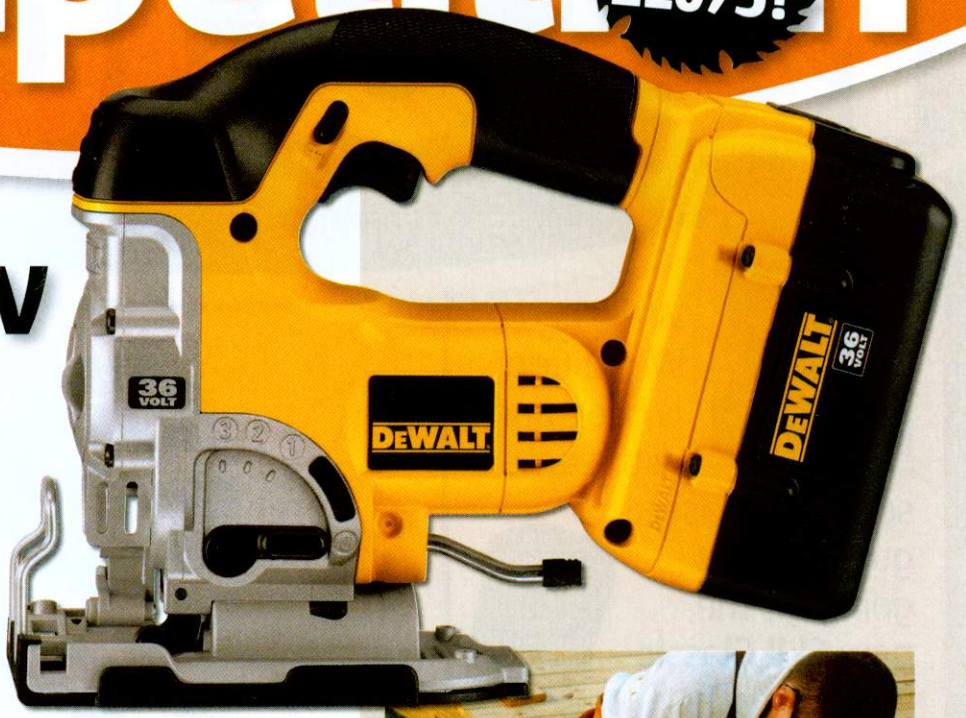
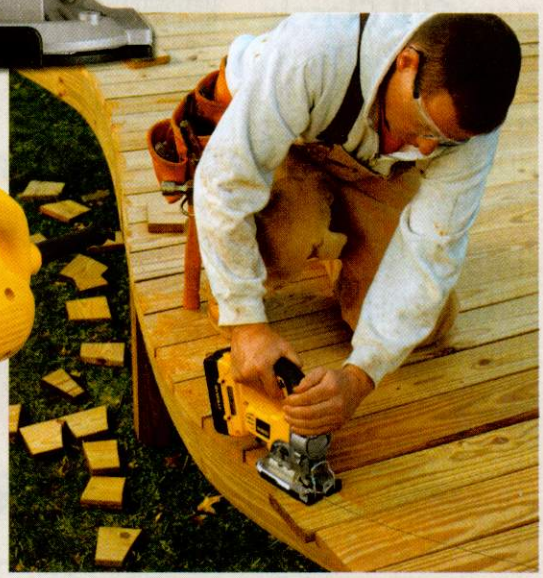
PLUS Four DeWalt Jigsaws for Runners-Up





Summer's the time for jigsaws, for cutting outdoors, and the ideal tool is the DeWalt 36v DC308KL Cordless Jigsaw

The jigsaw is one of the favourite powertools for the woodworker on the move, in the garden, around the house and in the workshop. For the ultimate in portability and power, DeWalt have recently launched a 36v cordless jigsaw, the DC308KL. DeWalt's unique Lithium-Ion, Nano-Phosphate battery technology is capable of an amazing 2000 recharges.

Worth more than £600, the jigsaw comes with two batteries, a one-hour charger and a kitbox. It features a keyless blade clamp, dust blower and four-position orbital action for faster cutting. Nor do you need a key to adjust the base to any of the pre-set angles. There's an electric brake to stop the blade as quickly as possible. In DeWalt's tests the 36v battery cut 18.9m of 25mm laminated particle board, which is twice the battery life of their 18v jigsaw.

DeWalt are also introducing two new mains power jigsaws, responding to a demand for more compact jigsaws that are also lighter in weight. The DW341K (c.£105) has a top handle, while the DW343K (c.£116) is body grip. Both saws feature a square plunger for better cutting accuracy, and crabbing is minimised by a new v-shaped mchanism designed to stop the blade wandering. They have variable speed and tool-free blade changing, plus the dust blower for keeping the line clear.

DeWalt: 0700 433 9258 or visit their website at www.dewalt.co.uk

How to enter

To enter, simply answer the question below. Write your answer (A, B or C) on a postcard with your name, address and daytime phone number and send it to: **DeWalt Competition**, *Good Woodworking*, 30 Monmouth Street, Bath, BA1 2BW to reach us no later than **3rd September 2006**.

QUESTION

Which saw is best for cutting the curved ends of decking out in the garden?

A 36v Cordless Jigsaw
B Cast Iron Tablesaw
C Radial Arm Saw

Rules: Competition open to all UK residents except employees of Future Publishing, DeWalt and associated companies, their families or agencies or anyone connected with the competition. The winner will be announced in *Good Woodworking*. No purchase necessary. If you wish to enter this competition without buying the magazine, send a postcard with your contact details and answer to the question to the address given above. There is no cash alternative to the stated prize. The prize includes delivery anywhere within mainland UK. No multiple entries. Competition closing date is 3rd September 2006. The winner will be the first correct entry opened after this closing date.

If you are NOT happy to receive relevant information about products or services from Future Publishing, DeWalt or any of their respective group companies by post or telephone and/or if you do NOT wish your details to be passed on to carefully selected companies to enable them to contact you about their services by post or telephone, please write '**no marketing**' on your postcard.

Good Woodworking

Kit & Tools

Sept 06

New products, tools and tests

Well the World Cup is over, and with some seemingly laser-guided goals going in, the **new Skil Classic** with its **twin lasers** seems appropriate for a test this issue (**p79**). Of course, with Scotland failing to qualify, I've had no cause to drown my sorrows (honest!) so the **Group Test of Belt and Disc** sanders on **p86** has at least given me a thirst!

Andy King, Technical Editor
goodwood@futurenet.co.uk

Dakota 10" hold down clamp

Working small components at the router table or sawtable can be a dangerous practice, but this jig has been designed to make both jobs safer by clamping the work between fast adjusting nylon blocks with a capacity from zero to 255mm.

On the router table the workpiece is simply clamped in place and rides against the fence to make the cut, and on the sawtable the angled aluminium runner acts as a guide against the fence, so the timber sits towards the blade.

The aluminium runner also swings out to 45° for taper cuts. Two plastic grips keep your hands away from the cutting area, especially on the router, although on the tablesaw you have to pass your hands alongside the blade area, so please ensure the guards stay on!

The brass pin on the centre block lifts for fast adjustment, the aluminium knob tightening the position.

Typical Price: £19.95
Contact: Rutlands 01629 815518
Web: www.rutlands.co.uk

Prices

Our pricing reflects typical prices available as we go to press. We cannot guarantee these prices and so we thoroughly recommend that you shop around.

Our awards

Good Woodworking Best Buy

Awarded to a superb product that offers great value for money.

Good Woodworking Recommends

Awarded to an item that stands out as a top performer in its field.

How we rate...

★	Don't expect this product to perform adequately
★★	Has significant deficiencies, needs improvement
★★★	Performs reasonably, but you will find better
★★★★	A fabulous performer, but just short of perfect
★★★★★	As near perfection as we can hope for now!

New Product

Bowclamp

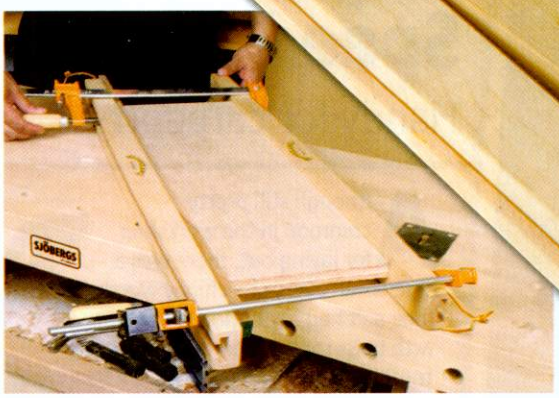
Just two 'F' clamps for lipping use

The old adage 'you can never have enough clamps' doesn't seem to be in the Bowclamp vocabulary as Bowclamps are designed to do away with loads of them when edge lipping, relying on just two 'F' types to apply the pressure.

Anyone who does laminating will know the principle of a caul, applying pressure from the centre out, and it's the same here. The maple Bowclamps have a pronounced curve on their faces, on these 920mm ones it's about 10mm from the centre. The straight backs have a 'T' slot routed through them, designed to take the swivel foot on the clamp so it can slide along the Bowclamp for differing lengths of workpiece. The slot will take any swivel shoe up to 29x7mm.

The idea is you glue your lippings, put the Bowclamps in position and tighten up the clamps until the bow is reversed, flattening against the lipped edge. The pressure is applied from the centre out so you only need two clamps. On single-edged boards, one Bowclamp is all you need. I used a cherry lipping on some 19mm ply, working perfectly.

The video on their website (www.bowclamp.com) states that you can lip edges in pairs or lip up to four sides such as a table top in one go, so I tried to work a lipping on two edges, using a pair of Bowclamps.



▲ Trying to get both Bowclamps to nip up can be tricky

The video doesn't show you the technique, and it wasn't so successful, trying to spring everything as the clamps tightened. I did manage it, but I then spotted that the fixed end of the 'F' clamp had started to crush the T section on the Bowclamp as it had to pull on the thinner routed area on the Bowclamp.

Pressure pads will prevent this, but then you are complicating things. For single lippings the bowclamp is fine, easy to use and adjust, and doing exactly as it claims. I can't say the same for the other claims though.

Its wax coated to prevent glue sticking, and the manufacturer claims its curve is computer generated for optimum performance.

The Woodworking Verdict: Good

+ great for single lippings

– problems on more than one lipping at a time

Rating ★★½☆☆

Typical Price: £23.05 each (36in) or £41.20 a pair
Made in: USA
Tel: 0845 1659244
Web: www.woodworkersworkshop.co.uk

Jasper 400 Perfect Circle Guide

Cut perfect circles using this handy Jasper guide

The Jasper Circle Guides evolved from the company's original business, which was making speaker cabinets, and the need to cut consistent, perfect holes in an array of diameters to mount the speaker cones.

Its worth was obviously picked up for general woodworking applications, and having used it to cut the opening for the router table, and also to relieve the underside of the table to sink the router base in, I have to say, it serves its purpose perfectly.

The clear base fits directly to the base of your router, using the provided centralising disc to ensure it sits perfectly to the spindle. It will fit most major makes, but check the website for full compatibility – www.jasperaudio.com.

The jig has a spider web design with a series of holes radiating from the centre in 1/16 inch increments (it's imperial only).

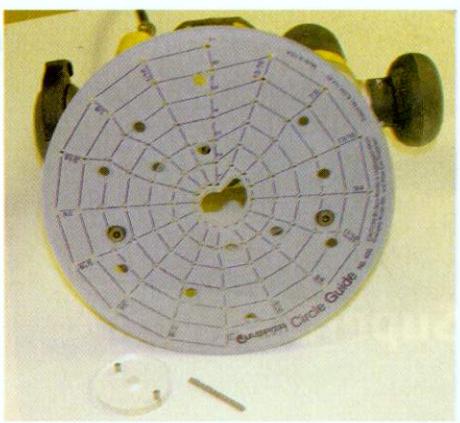
These holes act as the pivot point for the cutter, reading the size of hole you need and pushing the supplied pin into it. You simply drill a locating hole for the pin into the centre of the piece you want to cut and rout away.

The guide is designed for a 1/4in diameter cutter, and cuts perfect sized holes if this bit is used, although you can get in between sizes by using a different diameter, if you are prepared to do a little bit of calculation for yourself.

You can use the guide to cut discs as well as holes, so it's possible to do inlayed inserts, but you do have to make sure the pivot hole is on the underside.

I found that you will need to take a little care when the waste from a hole is just about to be freed from the cut to ensure the router doesn't slip into the edge of the newly formed hole, but if you are careful it shouldn't be a problem.

Cutting circles might not appeal to everyone, but anyone who is wanting fast consistent results won't go far wrong with the Jasper Circle Guide.



The Woodworking Verdict: Good

+ fast and accurate

– care needed at the end of the cut

Rating ★★★★½

Typical Price: £21.95
Made in: USA
Capacity: 1in to 7 1/2in diameters
Tel: 0845 1659244
Web: www.woodworkersworkshop.co.uk

First Impressions

Hangman Mirror and Picture Hanger

Hanging frames on the wall is fine if it's just one, but get a run of them and its tricky getting them all aligned, so this simple solution is great. Working like a French cleat, you have a slide in bubble so you can get the wall cleat level, the other half goes to the frame. Simple!

Typical price from: £1.74
Tel: MTS 01283 210222
www.mts-ltd.com

Superb sawing

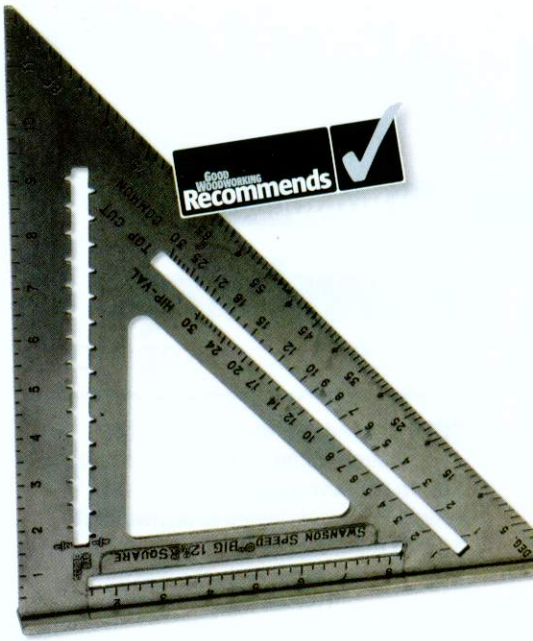
Arbortech, the makers of the Woodcarver powercarving disc, have developed another cunning device. Their Allsaw is really designed for cutting brick, mortar and breeze blocks, but will also see its way through roots and wood, using ingenious reciprocating blades.

Typical price: £750
Tel 01962 827610
www.elliotts4tools.co.uk

New Product

Swanson 'Big12' Speed Square

Handy for carpentry



Although still pretty common in the workshop for laying out, there was a time when every site chippy worth their salt had a roofing square, but with truss roofing commonplace, the traditional two-blade square is a becoming more of a rarity.

The Americans, on the other hand, combine the usefulness of the roofing square with a more compact design that also offers increased usefulness, this model boasting seven different functions.

There are smaller versions available, but this 12inch model has more adaptability, coming complete with a bolt-on fence and a pair of studs for laying out stair strings, as well as the standard cut roof functions.

Roofing is very simple to get to grips with, with scales for either degree increments or common rafter per inch rise (no metric scales). The square works off a single pivot point, swinging it around until the desired increment is aligned with the timber edge and the line is struck. A further scale for hip and valley angles tallies with the 'per inch rise'.

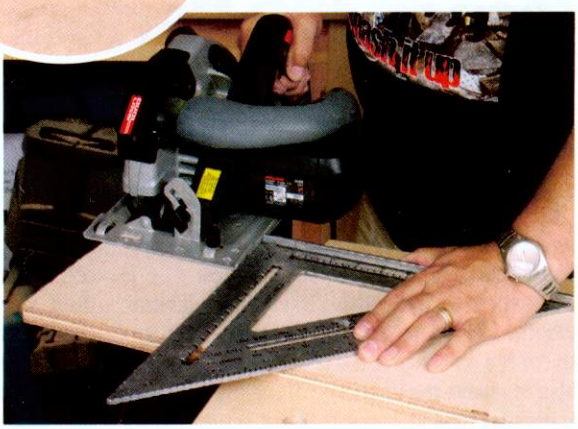
A book of tables is included, giving you all the information needed to increase or decrease the jacks on centres, and also includes stair setting out. You do need a decent understanding of geometry to get the most from the book, and also the square, but that's the same of the standard two blade squares as well.

While you don't get the information on back bevels on hips and the like, the common cuts are all available.

The additional features? Apart from the obvious square checking function, using the stock allows you to strike parallel lines at 1/4inch spacings, using the notches from 1 1/2inch to 9 1/4inch. Up against a board it can be used as a guide to quickly crosscut square with a circular saw, plus you can set out off an edge a 180° fan in 1° spacings.

Whereas a standard roofing square might get a run-out occasionally, the functionality of this one means that it is more likely to stay close to hand, but it does lack the pinpoint markings that you get with the traditional squares, which could prove to be problematic.

◀ Fitted with the adjustable studs you can quickly set out repeats for stair strings



▲ It's pretty adaptable, great for using as a quick saw guide

Good Woodworking Verdict

+ multi function, handy for general carpentry
– lacks precision increments

Rating ★★★★½

Typical Price: £20.57
Made in: USA
Tel: 01707 873434

New Product

Skil Classic Dual Laser Circular Saw

Powerful and robust

Although badged as the 'Classic' this model conforms closely to the Orca replacement that was launched about three years ago, not the original stalwart of the Skil fleet that was the trade standard for years and years.

The Orca was the first in the UK to be sold with no riving knife and this one follows the same mould, so you can make stopped plunge cuts for inset applications such as sink.

With the 190mm blade, it's the most popular size on the market, able to cut just beyond 50mm at 45°. With 50mm the standard stock thickness construction size in the building industry, being able to cut bevels is important if you're involved in first fixing.

If you don't own a tablesaw a circular saw is invaluable, not only for sheet materials, but also for converting boards for planing, and with a 1600 watt motor, the 'Classic' has the power to rip 50mm stock with no problem, but like any ripping job, forcing the saw isn't an option. Drive it steadily and it works well.

The base is powder-coated pressed steel so maybe not ideal for anyone wanting to do higher accuracy cutting, but still good quality and robust. This version of the 'Classic' is still a saw designed for general all-round work.

Adjustments are simple enough; a front knob sets the angle up to 45° against a rudimentary scale with a lever at the rear locking the plunge depth. A single lever on the outside of the lower guard swings it away for plunging work.

The gripping options are faithful to the Orca, having the same hooped front handle for maximum comfort with the base tilted. Both grips are rubberised.

The original Orca came with a small light that illuminated the area in front of the blade and also had a flip-out adjustable cursor to follow layout lines. Both of these have been dispensed with on the new Classic in favour of not one, but two laser beams. These strike either side of the blade.

You still have the traditional notches in the base for 90° and 45° cuts, but the lasers are designed to replace these, and this is where me and lasers don't see eye to eye...

A laser has good purpose for levelling or transferring marks over distance, or for aligning a mark with a blade on a static fixed tool such as a mitresaw, but I can't for the life of me see the purpose on a handtool that relies on the end user to direct it.

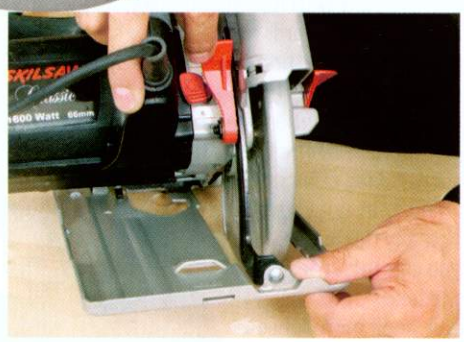
I assume the reasoning is to see if you deviate away from a marked line, but I would have thought the original torch beam would be better for this. The other idea could be that you can simply mark the end of a board and once the laser fires (the beam lights up by pressing in the safety button above the trigger) you simply keep it aligned with the mark, adjusting as you go to keep it on track.

Unfortunately, even in fluorescent light the beam only fires about 450mm in front of the saw before it bleeds and fades.

I would say that it has some use with the blade tilted so you know you are in the right position at the start of a cut, and I suppose the double kerf option ensures you cut to the right side of the line before you start, but I can't see why any saw that is directed through a cut and is constantly being tweaked to track the line needs a straight laser beam or two firing in front that deviates if the saw does.

It would seem that the lasers are so you can look well in front of the cut to keep on track, but I always find that the best place to see a cut is directly at the point the blade makes contact, or with the notches. so to make use in this respect, you have to re-educate your cutting method.

That aside, the Classic is a competent saw, powerful and comfortable to use. It lacks the guide track option of the aluminium based saws from the likes of DeWalt et al, but for workhorse circular saws, Skil have a good reputation, and this one upholds that.



▲ This lever allows the base to raise or lower for plunge cutting

▲ With no riving knife it's simple to drop the saw through the centre of a board

The Woodworking Verdict: Good

+ robust build, good grips

– lasers seem irrelevant to me!

Rating ★★★½☆

Typical Price: £99.99
Assembled: USA
Motor power: 1600watt
Cutting capacities: 66mm @ 90°
52mm@45°
Weight: 5.5 kilos
Tel: 01895 834466
Web: www.skileurope.com

New Product

Makita 2704 Table Saw

Offering the best of both worlds

The Makita 2704, like the Bosch GTS10 and DeWalt DW744XP tested in issue 157 is sort of 'piggy in the middle' machine. It has good build quality and accuracy for the workshop, yet with the brush motor and portable design, is also suitable for out on site, and is aimed towards the end user who needs a good saw for both types of application. It designed to be portable, and has a set of collapsible legs available but these aren't supplied as standard.

From the site point of view, the saw is far better than the standard fabricated steel site saw. It will do all the rough work that the site saw will, but with its flat aluminium tables, it's aimed more towards the shopfitter's realm, trimming and cutting finer work rather than outside in puddles ripping shutter ply.

A major benefit on the table if you want to use specialist mitre fences from manufacturers such as Kreg or Incra, is a standard 3/8in x 3/4in slot in the table. Actually there are two, so you can cut either side of the blade.

A small mitre fence is standard, decent enough for general use, but slightly slack in the slots.

Interestingly, I have been told that legislation is changing so that the standard square-sided slot has to be a 'T' type on new saws to prevent the fence from tipping at the extremes of the table. The Makita has these 'T' slots.

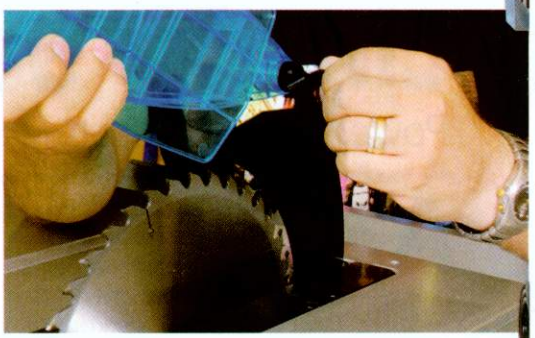
Like the DeWalt and Bosch, the base is an ABS type plastic which keeps the weight down, but it's still pretty heavy at 36kilos. The right-hand side extending side table increases the overall width to 730mm, which puts even more strain on your wingspan as you carry it.

There is a scissor lift workstand available. It's well worth considering if you are likely to move it around from place to place as it has wheels and a gas strut to make it easy to collapse or erect when transporting.

This side extension gives a maximum ripping width of 625mm, while the simple galvanised rear extension protrudes 600mm from the rear of the blade so a full half sheet can be safely ripped without it tipping at the end of the cut.

The fence is aluminium, locking with a sliding lever on the front and back rails. The fence shoe is wide enough to keep the setting rigid and square to the blade, plus it has a

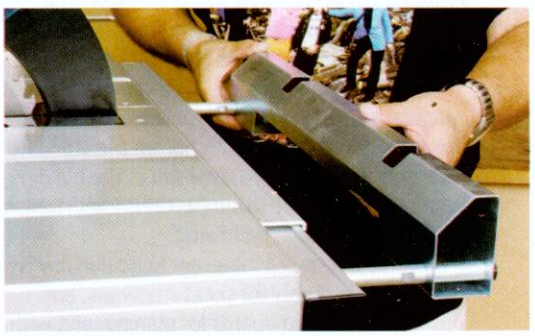
▲ All the blade adjustments are carried out from the front of the saw



▲ A small lever makes it easy to detach the crown guard for maintenance

▲ The fence extends on rails to allow ripping up to 625mm

◀ The fence locks firmly at the front and rear with this cam lever



▲ A pull out pressed steel rear extension helps support the stock as you cut it

sliding facing for ripping timber.

The fence can be locked against the metric scale, but by releasing the two locking levers below the table, the side table can be pulled out, moving the fence with it while still retaining the correct width reading as it moves.

It seems strange that two levers are needed as they operate independently of each other, yet both are required to release the side table and lock it. Closer examination reveals that they lock both the front and rear sliders of the side table so the setting remains parallel. Basic sliding and locking seems to lock the fence parallel, and while it lacks the superb rack and pinion fence of the DeWalt DW744XP, it does give you the chance to slightly flex the front or rear and lock accordingly should it be needed.

Blade adjustments are all front facing, a single crank adjuster setting the rise and fall, with the tilt function set with the outer wheel via a cogged crank. A lever locks the position, read in 1° increments up to 45°. The crown guard is a two-part type, the translucent blue allowing you to see where you are in relation to the cut. It has a pinned fixing so that it sits directly on the table, lifting as the timber is introduced. The side portion of the guard drops down to cover the blade if you tilt the blade.

The guard still fits to the riving knife, but on a quick release cam lever so you can take it off without the need for spanners.

While you have good vision and a guard that sits down tight to the workpiece as you cut it, so you don't have to adjust it, it has no provision for dust extraction, relying on the lower port to pull the waste away. It does mean that it's not as efficient in dealing with dust, and it does tend to cling to the guard, thus removing the benefit of the translucency.

While the efficiency and performance of the saw can't be faulted and the 2.2hp motor seems powerful enough to cope with full 90mm deep cuts with no problem, I always get the impression that the brush motors favoured on this type of saw just don't seem as stable and reassuring as an induction version. This is in no way detrimental to the finish of the cut, nor the accuracy, it's just my own preference for a workshop saw that runs quietly.

That said, based against the Kity/Elektra Beckum (now Metabo) and Scheppach small induction saws that are portable, the Makita has far superior capacities, capable of cutting 65mm stock at 45° and 90mm at 90°, the small induction saws only capable of around 55mm

▲ Compact but powerful and with the capacity to rip sheet materials economically lines
▼ These levers lock the side extension rails independently

at 90° and 40mm at 45°. On the other hand, those smaller saws, designed as cabinet saws for the workshop, have sliding carriages for accurate dimensioning where the Makita relies on the fence alone for accurate conversion.

As a dedicated workshop saw, these designs are fine for general stock conversion. The Makita will cut very accurately, but the limitations become apparent for more refined applications.

As a hybrid capable of site and shop work the saw does offer the best of both worlds, but with a footprint of 720x770mm and a lot heavier than a standard 25kg bag of cement it's only just 'portable'.

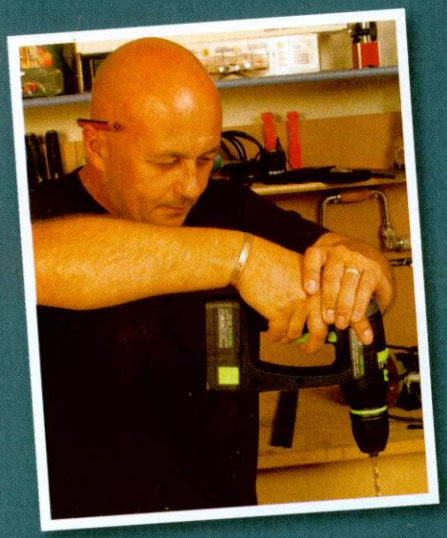
The Good Woodworking Verdict

+ good capacities, accurate
– noisy, needs the legstand for portability

Rating ★★★★☆

Typical price: £500
Made in: USA
Table size: 520x625mm
Weight: 36kilos
Decibels: 97
Tel: 01908 211678
Web: www.makitauk.com

Good Woodworking



Welcome to this month's **Kit & Tools Extra**, our monthly detailed look at buying and maintaining workshop kit. This issue it's a **hand tool** jamboree! We follow last month's look at scrapers with tests of some **burnishing tools**, tell you about some ranges that are **new to the UK** and answer more of your questions.

Remember to send us any questions about kit and workshops. The **best way** to contact us is by email to **goodwood@futurenet.co.uk**.

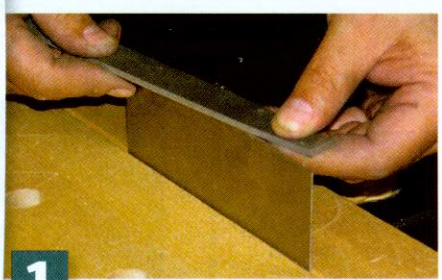
Scraper accessories

Andy King tries out some of the best tools to improve your scraping

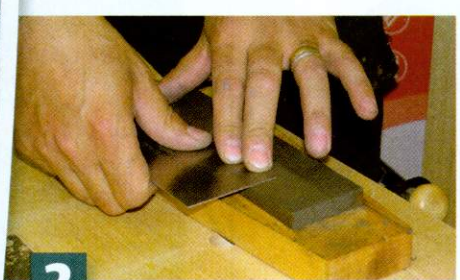
See GW177:86 for Andy King's group test of scrapers

Do you use cabinet or card scrapers? Then you'll know how important it is to have a well-burnished edge. And because they're stamped out of plate metal, burnishing is something you have to do in the workshop after purchase (see below for our three-step guide to preparing your scraper for burnishing).

Some people use a screwdriver shaft, but proper hardened burnishers work better and are well worth the investment. So after last month's test of scrapers (GWW177:86), I've tried out some of the best burnishing tools on the market: here's what I thought of them.



1 The edge of the scraper is dressed at 90° with a bastard-cut flat mill



2 The edge is polished; use the side on a Japanese-type stone to avoid face damage

3 Polish the scraper faces to remove any burrs, repeating the edge stroke if needed

Veritas Variable Burnisher

This gadget is designed to help you get a consistent hook on a card scraper. It allows you to dial a specific hook angle from 0 to 15° in left and right planes to put a hook on both sides of the scraper.

The principle is simple: prep the scraper in the normal manner, filing and polishing first, then set the hook you want and drag or push the burnisher over a couple of times to form the hook.

Being able to keep a consistent hook allows you tune the scraper to be aggressive or to cut more finely and eliminates any inconsistencies in technique. Used with the Veritas Jointer and Edger (see right) you can get a scraper up to speed with perfect results in next to no time.

The Good Woodworking Verdict

Rating ★★★½☆

Typical Price: £20.27
Made in: Canada
Tel: Brimarc 0845 330 9100
Web: www.leevalley.com

Clifton Burnisher and Veritas Tri Burnisher

Here you have the round bar Clifton, and the tri-profile Veritas. The Veritas is designed to cope with all scrapers, both flat and curved. The round bar profile of the Clifton, meanwhile, will still turn a burr on a curve, the tighter inner radii may be inaccessible.

Both are high quality, with polished hardened blades and hardwood handles, the Clifton having a flared brass ferrule acting as a finger guard. It's difficult to distinguish which one is best. The Veritas has more usable options, but if you don't do really tight radius work, then both are excellent.

The Good Woodworking Verdict

Rating ★★★½☆

Clifton: Typical Price: £13.49
Made in: UK
Tel: Axminster 0800 371822
Web: www.axminster.co.uk

Rating ★★★★★

Veritas: Typical Price: £17.25
Made in: Canada
Tel: Brimarc 0845 330 9100
Web: www.leevalley.com

◀ The Clifton (left) and Veritas (right) are traditional burnishers

Veritas Jointer and Edger

This jig is not an essential part of scraping, but it will ensure the edges of your flat scrapers remain at a perfect 90° prior to polishing and burnishing, or at 45° in the case of scraper planes.

You need to fit a suitable file, (it will take standard flat mill files from 6in to 10in) then hold the scraper in the vice. A couple of quick sweeps and the edge is flattened and trued ready for polishing.

▼The Jointer and Edger fits a range of file sizes

The Good Woodworking Verdict

Rating ★★★½☆

Typical Price: £11.47
Made in: Canada
Tel: Brimarc 0845 330 9100
Web: www.leevalley.com

TIP An old-fashioned knife steel, the kind you use on the carving knife at Sunday dinner, makes a great tool for sharpening scrapers. Two or three strokes are usually enough to get a really good edge. Just remember to put it back in the kitchen drawer before your other half notices it's missing!
Len Grottick, *Good Wood* reader

Q&A Your Question... Our Answer

Bandsaw for tight and deep curves

What is the best bandsaw to use a 3mm blade for tight curves in 120mm-deep local hardwoods? The tight curves to which I refer are for cutting drawers from solid wood. 100mm thickness is probably my limit but also I am involved in model making. The scrollsaw I couldn't get on with. To have two bandsaws would eliminate a lot of blade changing. I have a big Mini Max for my heavier work.

David Paton , Ayrshire

A There are some tabletop models that cut 100-125mm, but I would say that you really need to be looking towards a 150mm or more capacity to ensure the saw isn't working flat out all the time. With that in mind, I'd be thinking about something like the Scheppach Basato 3 or the Record BS300, but fitting a 3mm blade to Record might cause problems as the starting width is 6mm, while the Basato can take a 3.5mm.

Both saws have rack-and-pinion table adjustment, so setting angles is a cinch, and the Basato has a continuous variable speed adjustment while the Record has two speeds. The Record scores for quick blade changing, though, because it has a quick tensioning lever, minimising downtimes.

Either of these will be ideal for the stock size you quote, but unless Record have recently changed their specifications, the Basato is the one for you, because it takes the narrowest blade. At time of writing, DB Keighley in Leeds are advertising this machine for £285 plus VAT (0113 257 4736, www.dbkeighley.co.uk), but other dealers ask £350 or more.

Andy King

Q&A
Your Question... Our Answer

Bonzer router!

I'm thinking of buying a new 1/2in router, and I'm impressed by your review of the Trend T11. However, I live in Australia, where the product retails at the equivalent of more than £350, which is beyond my budget. So instead I'm thinking of buying a DeWalt 625, and upgrading with some of the Trend goodies such as the Quick Raiser. Will these fit the very similar DeWalt 625?

Keith McCarthy, Australia

A The Quick Raiser is an integral part of the T11, not a retro-fit for other routers.

Having said that, the DW625 is very similar and with a bit of ingenuity you could probably adapt it; the hard part would be creating the through-hole in the baseplate in order to access the height adjustment when used in a table. On the other hand, a WoodRat Plungebar gives you easy and quick one-handed height adjustment, and there is a model for most well known machines including all DeWalts.

The DW625 has been seen as an industry standard for years, but have you seen the DW626? With a 2300w motor, 70mm plunge and DeWalt quality, it's an excellent choice for professional or heavy user.

My favourite, though, especially as you're in Australia, is the Triton TRA01. It's 2400w, with 68mm plunge and dead easy bit change, with an automatic spindle lock: ideal for use in a table. Best of all, it has a built-in rack and pinion depth adjustment and other table-specific features. It's still good as a handheld though, because of its low centre of gravity. I assume you can buy Triton products easily in Australia because they are based in Cheltenham, Victoria (03 9584 6977, www.triton.com.au).

If you really want to purchase a T11 you could consider importing one yourself. Rutlands (01629 815518, www.rutlands.co.uk) offers export facilities. You don't pay UK VAT, which should offset the shipping costs, and they sell the T11 for only a little more than £200 (excluding VAT/shipping).

Bruce Manning

Bymore benches back in Britain

These benches were the winners of a Best on Test award in *Good Wood* a few years ago, so you can imagine how pleased we are that they're available in the UK again after a few years' absence.

The benches, made by Bymore, were created in Zimbabwe from plantation-grown Rhodesian teak, which looks very similar to bubinga.

But political upheavals in Zimbabwe forced the business to relocate to South Africa and stop supplying the British market... until now.

Classic Hand Tools will be selling the benches and a range of Bymore's chopping boards and knife blocks in the UK as of this summer. You can see them on display at the Festival of the Tree, which is being held at Westonbirt Arboretum from 21st-28th August.

When he tested one of the benches back in 2000 (GW91:44) when they were being sold under the Axminster brand, Phil Davy called it "a superb, heavy bench with plenty of cramping and storage facilities". And they are also great value.

A 1.5m bench with five drawers costs £1372; a 2m version costs £1642. Without drawers, a 1.5m bench costs £980 and a 2m one £1157. All have 30mm-thick tops, a double row of bench dog holes and a working height of 868mm; four dogs are supplied with each bench.

Classic Hand Tools 01473 730739
www.classichandtools.com

Long John timber

If you need particularly long lengths of timber for a project, get in touch with John Brash.

They sell a range of 6/6m and 7.2m timbers, all FSC or PEFC accredited. You can choose from dimensions of 47x150mm, 47x175mm, 47x200mm, 47x225mm, 47x250mm, 47x300mm, 75x150mm, 75x200mm, 75x250mm and 75x300mm

Rough sawn, split packs cost £220 and full packs £195; if you prefer the timber regularised with eased edges you will pay £240 for a split pack and £215 for a full pack.

For an extra £15 you can have a Naturewood finish, or a Protim finish for £20.

John Brash 01427 675555
www.johnbrash.co.uk

If you're worried about elderly or infirm friends and relatives slipping on that fancy decking you've just made in the garden, you can give it a lick of International Anti-Slip

Feature-packed tree festival

Huge sculptures like this are part of the fun at this year's Festival of the Tree, where there are carving and craft activities for grown-ups and children alike. The British Woodcarving Association, the Gloucester Association of Woodturners, the Toymakers Guild, and the Guild of Model Wheelwrights will all be demonstrating. There will also be tools for sale and hand tool demonstrations from Rob Cosman, Konrad Sauer, Chris Pye, Peter Berry and Philippe Borgeat. The festival runs from 21-28 August at Westonbirt Arboretum in Gloucestershire. Call 01666 880220 or see www.forestry.gov.uk/westonbirt.

Demonstrations

John Boddy's continues its popular technique demonstrations during August and September with events focusing on turning, carving, routing and finishing. For more information call 01423 322370 or see www.john-boddys-fwts.co.uk.

Floor Paint. It costs £13.99 for 750ml. Call 01480 484285 or visit www.international-paints.co.uk for more information and details of stockists.

Bigger range at Rutlands

Rutlands' new catalogue includes for the first time the Job Quick range from Dakota and an expanded range of hand tools.

Job Quick is a quick-change drill bit range based around a quick-release chuck that's mounted on a hexagonal shaft designed to fit into all drill chucks. The 1/4in hex shank mounted tools include flat bits, auger bits, Forstner bits, plug cutters and counter sinks, all supplied in sets of several related items.

You can also buy two assorted sets of Job Quick tools, each comprising a range of useful items from screwdriver bits to drills, in a wooden box with a plastic lid so that it's easy to find what you need. A 39-piece box costs £39.95, a 19-piece box is £19.95.

Rutlands have sold Norton waterstones for a while, but now they also stock their diamond stones, lapping compounds and oilstones.

The oilstone range encompasses all types from shaped stones for carving chisels and gouges to bench stones plus a choice of two complete sharpening systems, which each comprise coarse, medium and fine grade oilstones in an oil reservoir. They cost £59.95 for one with 8x2in stones and £169.95 for one with 11x2 1/2in stones

Check out the 196-page catalogue for a complete range of Rutlands' products. **01629 815518, www.rutlands.co.uk**

Q&A Your Question... Our Answer

Computerised cutting list

I'm about to start a project that will involve using rather a lot of MDF. Is there a computer program that will enable you to produce a cutting list to maximise the usage of a typical 8x4ft sheet?

Richard Pringle, via email

The alternative software of the type needed to work out best fit on a sheet tends to be big, complex and expensive.

I've used a really good one which worked out how to fit hundreds of parts on a sheet of steel which was to be cut up with a laser, operating to an accuracy of 0.1mm. But the program cost several thousand pounds and wouldn't run on anything but a really expensive PC anyway.

The pragmatic solution is to do scale drawings of each piece on a sheet on graph paper, cut them out and try to physically fit them on to an 8x4ft sheet drawn to the same scale. It can be fun, actually, until someone opens the door and all the little bits blow away!

You could also use a drawing package such as CorelDraw. Set up a custom page size, say 8x4in. Turn on the grid to show on screen, set it at 12 lines per inch. Using the grid to determine the size of each piece (one grid square represents a 1in square on the final part), draw each piece in your project; if they are rectangular this takes seconds with the Rectangle tool. Use Clone or Duplicate if you have several identical pieces. You can easily flip the pieces by any angle, using the Rotate command.

Move the pieces around on the page (which represents your 8x4ft sheet) until you get a fit you are happy about. If you weren't working in MDF, I would also add a grain direction line to each piece. It probably helps to put a name or part number on each part.

The third option is to go the CAD route. With CAD programs you get automatic dimensioning, but they do tend to be expensive, and are notoriously non-user friendly to learn. TurboCAD is one of the cheapest at £80 for the most basic package, but free and very cheap programs are also available: have a look at www.eland.org.uk for a list of cheap-but-legal CAD or try www.sketchup.com. **Bruce Manning**

Combination sanders

Are there benefits in buying a sander that offers a belt and a disc, or are they as useful as belt and braces? **Andy King** tests six affordable models

Every woodworker probably has a sander of some sort to finish their creations: all types have their uses in making life easier.

The 'entry level' combination machines are a favourite in the home workshop, giving you the benefits of a belt and a disc in one.

Competitively priced, they take up very little room, and they can be a priceless addition, but in some respects, their ability to master a lot of tasks can be let down by the lack of capacity.

A 6in or 150mm diameter disc is the usual standard with a 100mm belt and it's easy to think you have plenty of scope. In reality, however, in the case of the disc, you only have half, as the sander, like a tablesaw blade, needs to address the timber on the down stroke, or from the centre to the periphery as the disc passes below the table.

The rear of the table, where the abrasive comes on the upstroke can be used at a push, but it is always lifting the workpiece away from the table, making any accuracy difficult to achieve or maintain.

This limits you to 75mm maximum width stock, so fine tuning long mitres, where a disc sander excels, is very limited. While on solid timber you may be able to effect enough control on a wider area to clean up a wider piece, a face veneer may start to lift away, tear or feather on the upwards stroke of the disc, ruining previous hard work.

Similar origins

Unpacking the machines, it's easy to see similarities in a lot of areas, implying that they all emanate from similar factories in the Far East, and like most other budget machinery and tooling, there seems to be more emphasis placed upon value for money than high quality.

Like any tool, accuracy is only as good as the quality of the product in front of you, but the tables on these budget sanders follow along the lines of budget tablesaws, each manufacturer/supplier opting for aluminium, whether ribbed or flat, and all coming with a slot for a mitre fence.

Like the budget saws, the supplied mitre fences are no great shakes, each one made from plastic with a 120° range, and perfectly adequate for smaller stuff, but as with all budget slots, some are not the tightest of fits. The best is the Rexon, showing 0.1mm difference between slot and bar, with Draper and Axminster in second with 0.2mm difference. Perform and SIP have 0.3mm of

▲ Rexon and Axminster have a yoke to support both sides of the table. It's fully adjustable to get it parallel to the abrasive

▲ This three-point bracket is used by the other sanders. It's still fully adjustable, but only supports one side of the table

Group Test

difference, while the worst is the Charnwood, with 0.4mm. The decision to use a plastic sliding bar over the steel or aluminium favoured by the others could be the determining factor here.

None of them are standard 3/4x3/8in slots, each in the region of 16x8mm deep, so an after-market type of accessory isn't an option.

Only the Perform has a 'T' slot so you can confidently sand without the fear of the fence tipping or jumping the slot.

Being accurate with even the most slack ones is possible, but you have to keep the fence tight against one side of the slot.

Accuracy for table tipping

How the table fixes to the sander, and the way it adjusts and locks off, plays an important part in overall accuracy, more so when the table is tipped. They all have adjustments to bring the slot parallel with the disc so you can be sure that any fence work can be kept on track, but it's when the table tilts, or when there is any deal of weight on the table, that you could find yourself wanting.

Rexon and Axminster are the best here, opting for identical cast iron pivoting yoke options that support both sides of the table, fitting to the body with a large steel post.

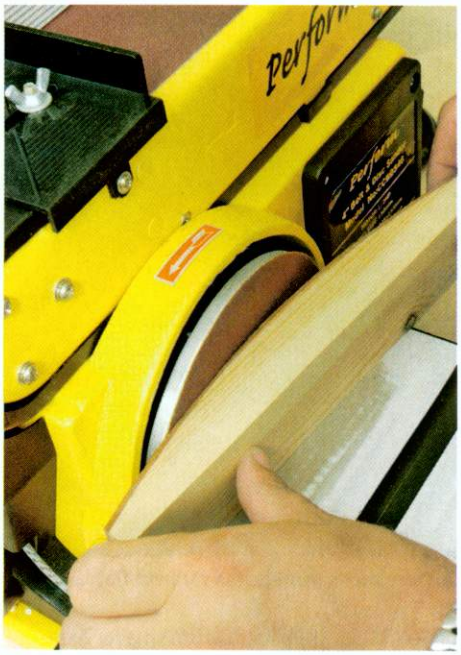
It ensures that the table will stay parallel as it tilts and locks off firmly. The Rexon has a better graduated scale though, done to 1° increments and picked out against a chromed scale, whereas the Axminster has 5° settings etched into a black scale, difficult to pick out.

The remaining machines all use identical table supports, locating on the side of the sander with a pivot pin and locking knob.

Although these all support the table at the critical side where the work addresses the wheel, it does leave the other side unsupported, and prone to twisting if any deal of pressure or weight is applied.

It can also alter the setting of the table when it's tilted, so the slot will go out of parallel, making fine tuning of mitres and compound mitres more difficult, and also alter the normal 90° setting if it twists or flexes.

▼ Clogged abrasives can be rejuvenated with a rubber block such as this one from Axminster, which costs £4.90



▲ Even though it only has 75mm of usable area, a disc sander can cope with large radii, although flat areas are limited

With the Far East now moving up a bracket towards cast iron machinery, I would hope that these sanders are in line for upgrading.

It's often the case that manufacturers and suppliers bring in similar specced machines at the low end of things (and often higher up!) altering a casing or table but keeping identical adjusters, and this is the case here, with only two types of table support used between six machines, but there is scope for improvement, as seen on the Draper and Axminster.

I asked all the suppliers/manufacturers for their entry level combi sanders and was surprised to see these (Draper and Axminster) both have 200mm discs. A big improvement for the end user while still maintaining the same footprint, as the 150mm diameter models.

It's also proof that not every machine has to be a semi-clone of its rival, there is some leeway available at the manufacturing end to chop and change.

Convex shapes

Despite the larger diameter disc, if you tend to use it more for convex shapes the 150mm disc is more than adequate as a curve only addresses a pinpoint of contact. As an example, a disc of 50mm diameter can be cleaned as easily as a 500mm one, although the wider the work, the more difficult it can be to support it on the relatively small tables that are supplied with these entry level models.

Again, these are available to suit the choice of the importer, and with the exception of Charnwood, who opt for an aluminium extrusion; they all go for cast aluminium with a surface ground face. There's no webbing on the ▶

▲ The platens were tested for both flatness and twist, to ensure the accuracy of any work

underside for stability, but the smaller area should mean they stay stable enough.

The Perform one isn't very well finished though, on the outer left face the grinding process hasn't touched it, and so it's low. This means you have to keep an eye on the timber if you slide it over the table to stop it tilting away.

In truth, quality control should have picked this up in the factory, but reality is that budget is budget and these flaws can slip through.

The Draper and Axminster models have ribbed tables. This is a decent feature as any dust that builds up can drop in the grooves so the workpiece remains flat on the table.

With both having 200mm discs, it would be easy to assume a bigger table would be fitted, but only the Draper has a bigger area, 265x160mm. Axminster's table is identical to the smaller disc models, each one being about 225x155mm.

Belt up

Moving up to the belt, you have a flat steel platen and an end stop for flattening or shaping. Depending on the end stop position there are differences in the platen area. Perform, Axminster and Charnwood all have 225mm of flat area, the Rexon, SIP and Draper all have a 290mm working area.

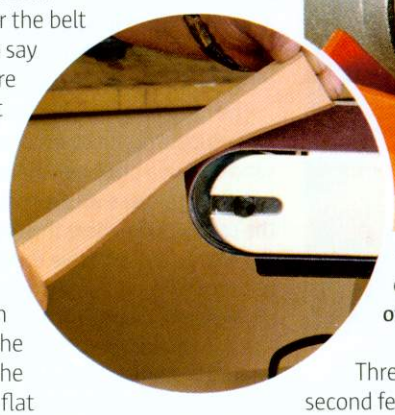
Unlike a portable belt sander where the movement of the tool over the surface flattens it back, anything put onto the platen mimics any discrepancy in the platen itself. With each model having similar pressed and welded steel construction, I checked each one for flat and wind to see if the process had distorted them.

Each one proved flat enough, with the Charnwood and Perform showing very slight (less than 1mm) twist from front to back on the platen, so no great problem with any of them.

Each sander uses identical tensioning lever and tracking devices, no such luxury as a self tracking belt on anything here!

I found all of them easy to track bar one model, the Rexon, which was very difficult to get the belt to pull over and stay on line. It looked like a misalignment on the wheels, so I slackened the screws, retightened and tried again with more success, but it was still not as good as the others. It may be a rogue machine that slipped the net, but I'd much prefer it right out of the box as the manuals on some of the machines are quite basic, and definitely not written by Wordsworth!

The end stops for the belt are rudimentary to say the least; little more than a simple twist of pressed steel and held in position with a single bolt. Even so, their main function is to stop the workpiece from being grabbed by the belt and flung off the end when sanding flat stock, so it doesn't have to be anything more.



Concave curves are worked on the end of the belt, so you have a multi-function tool for sanding flats and both internal and external curves, but where the external curve is, in theory, limitless in the diameter you can work, the diameter of the sanding belt wheel limits you to anything equal to, or bigger than the wheel itself. If you work with the machine on a bench, unless you mount it in such a way in that the end of the belt extends over an edge, then the distance from the belt to the benchtop will limit the amount of curve you can successfully work; something to consider when siting the tool. A better option would be maybe to mount it on a sub-base that can then be clamped to the bench in the best position to suit the job in hand.

◀ The wheel of the belt is perfect for concaved curves up to the diameter of the wheel itself

Three of these machines come with a second fence for the belt, acting in the same way as a planer fence so you can work accurate edge and face angles by combining the end stop and fence. The SIP and Perform both have identical fences using a trunnion type adjuster similar to a bandsaw table, sliding in and out across the belt on a pair of rods. These both work pretty well, keeping the table parallel as it adjusts for bevels, and there are positive stop positions to return it back to 90°.

The other model with an upper fence is the Draper. With its 200mm disc, this was on target for the Best on Test accolade, until I fitted this pretty awful fence. In its own right it's okay, but it's poorly made, the angles set on a single crescent arm and this is where the problems arise. While you can set it at 90° to the table with a square, because of its poor construction, it sits across the belt at an angle. This means

▲ There is a simple metal end stop that prevents any workpiece being dragged off the end of the belt

that any bevels set become an increasing compound angle, and so are more difficult to set accurately.

Great versatility

I mentioned earlier that the disc is limited in the working area available, so to increase the adaptability, and also give a more capacity for mitre work, each sander has the option of flipping the belt up to a vertical position.

The table from the disc sander will relocate onto the belt casing, with the same functions of the disc, so you can bevel as well as work at 90°, and you have the mitre fence for a greater degree of control.

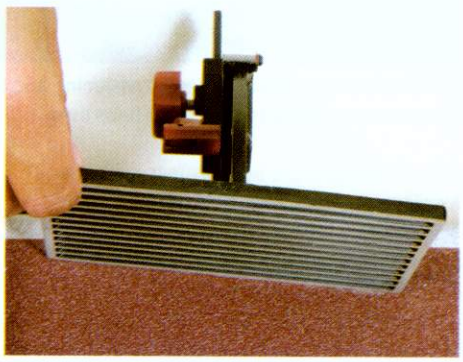
On longer mitres, you can work to a pencil line, but if it is wider than the belt, you can easily run a ridge into the joint, so unless you are very careful, you are best sticking within the 100mm belt width.

Again, the Draper and Axminster fare well with the yoke type support for the table.

There are two more factors to consider. One of these is easily rectified, the other is something you either live with, or have to modify yourself. The first is the abrasives supplied. Coming from the Far East, the supplied abrasive is, like the blade on a bandsaw, not something that would sell the machine if it was a case of 'try before you buy'.

The discs, to be fair, are fine as they simply stick to the aluminium platens so they remain flat. It's the belts where the problems arise. Look at a decent belt like a Hermes, and the join area is feathered at the seam so that the jointing tape stays flush.

The belts supplied here tend to have a ridge where the tape is simply stuck over the backing cloth, which then drums and lifts the work as it passes underneath it, making it difficult to achieve a flat surface. It may cost a few quid for some decent belts, but is money well spent!



▲ The Draper top fence is crude and doesn't sit squarely to the belt, which means it makes angle setting difficult

The second – and more important – factor is dust control. These machines generate an immense amount of dust in a short space of time, so adequate extraction is a must.

Each sander has at least one dust port, with the Rexon the only model with separate ports for both the belt and disc.

The extraction on the discs is pretty good on all models as the dust tends to get dragged under the table because of the way it works. But the belt extraction is a different story.

Again, there are identical components used on the extraction ports; the Draper, Charnwood, Perform and SIP all have 60mm ports, the Rexon and Axminster opt for 35mm. Hooking them all up to a small DeWalt portable extractor with fine filtration, there's little to choose in actual performance in getting the dust away, although in theory the wider port should be better for a proper extraction system.

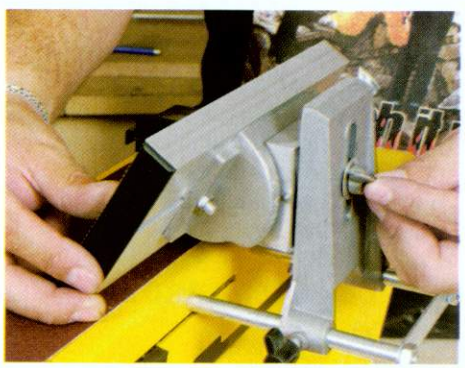
The method in getting the dust away is identical, the small guard on the end of the drive wheel acts as a type of funnel to pull the dust down.

The speed the belt runs means the dust can overshoot the end, releasing it into the air, and on all models except for the Draper, this was the case.

Draper's inclusion of a small plastic upstand pays dividends as it deflects the dust down into the opening for more efficiency, making it the best model for dust control.

The final part of any machine that has the option to swap and change for different work is how easy it is to achieve it.

All models use sticky-backed discs, and each requires the removal of the table to make the change. The Axminster and Rexon need a spanner, which is supplied and has a clip on the body for storage, but I'd be inclined to swap this for a Bristol lever or similar. The rest have a knob, so are easy to do.



▲ This double post and trunnion found on the Perform and SIP models is far better, staying parallel as it alters

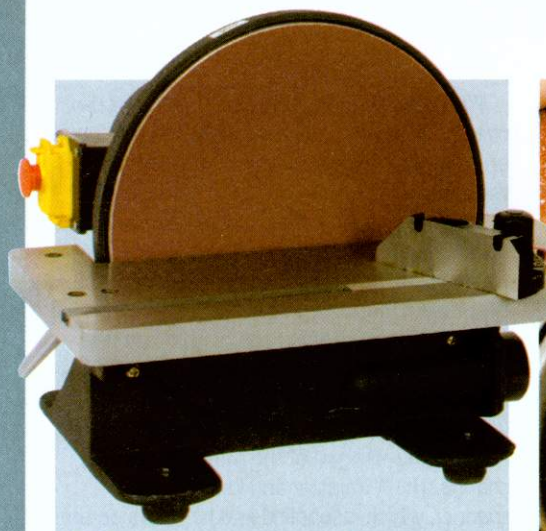
The belts, however, tell a different tale. Perfom's has a plastic guarding on the underside, while the Rexon needs the dust hood removed, which makes life a pain if you swap constantly. The remainder all have a simple slacken and swap method identical to a standard belt sander.

Positive factors

Like most group tests, there are factors on some that would be fabulous if they all came together on one model.

The 200mm diameter discs on the Draper and Axminster make them more adaptable for accurate mitres and the like, but the top fence on the Draper is one I'd leave off. If dust control is paramount, it's the best one here, though.

Of the smaller models, the Rexon has some nice touches, again the good table enhances it, but the initial tracking problems I had were disappointing. Perform, SIP and Charnwood are almost singing from the same hymn sheet for lookalike machines, although the Charnwood's plastic mitre fence and plastic table support bracket are not the most endearing features! The Perform and SIP's fences are good and work pretty well, so a worthy addition, but the SIP has the edge on all the 150mm disc models, build quality is good, and its easy to adjust and ▶



To buy, or buy something else

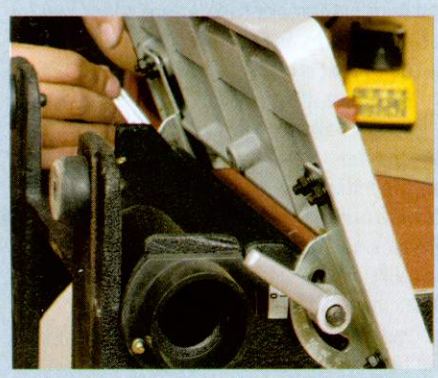
A small belt and disc is a good starting point in the workshop, but does a bigger diameter standalone disc offer the same versatility, or even more over them? The construction quality and stability is far better, but is that enough reason to ditch the belt option?

SIP 12" Disc sander

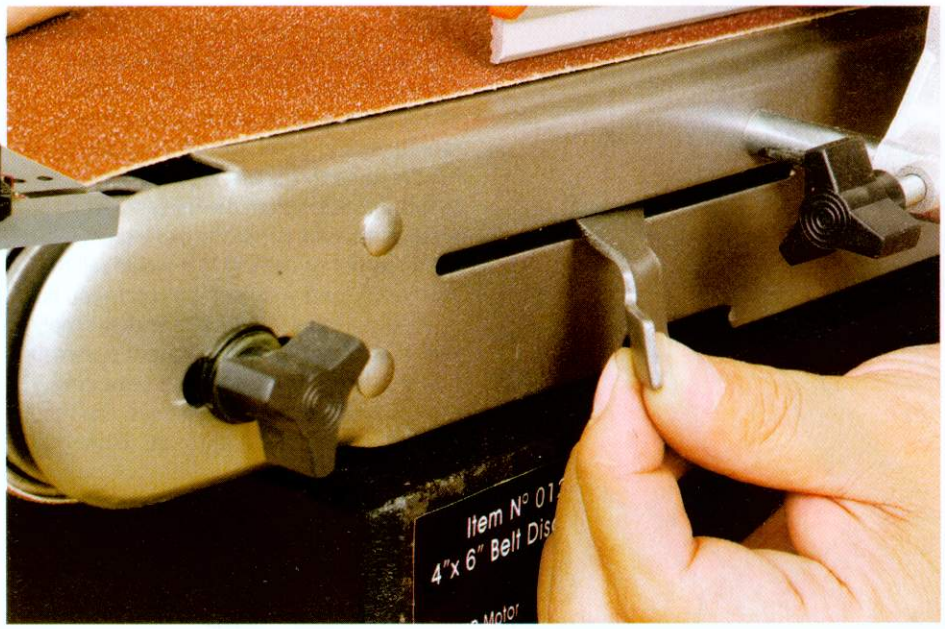
Typical price: £109

Rating ★★★★★

▲ The bigger the disc, the wider the work. The SIP 12in disc is very stable and quiet



▲ The SIP 12in disc also has a double locking cast iron fence so its rigid along its entirety



▲ All the belts use a similar lever tensioning and tracking knob method, but some models need components removed to swap the belts over

swap belts, so is the Best on Test, with the Axminster coming in as a recommended buy.

But do the limitations of the disc size combination model mean that a standalone disc may serve a better purpose?

Certainly the SIP model here has a 12in diameter disc so you have far more scope when dealing with mitres and the like, plus it has a great cast iron table that pivots and locks on both sides of the disc with Bristol levers for solid stable performance whether at 90° or on a bevel. Where it loses out is the concave option the belt offers. If curves make up a lot of you work, then a single disc may not pull all the strings, but the next step up from the small entry level belt and disc to a wider disc and also belt is a big leap in both size and cash.

This puts us in a bit of a Catch 22 situation regarding the decision. I have a small belt and disc at home, and I tend to use the disc more often, whether it's for general fine tuning of work or sanding ends square for pen turning. A bigger disc, with its better construction and stability make it more desirable as the accuracy and capacities give you more scope and control, but if you have to fine tune a long taper, then a belt is the easier option.

In an ideal world a standalone big diameter disc and a bobbin sander would be my preference, and is the choice for commercial operations, but reality results in lack of space, not only within the workshop to locate them, but also to be able to use them.

This means that the easily stored combination sander will always gain the upper hand for the small workshop and hobbyist, but I wish someone would go the Far East and spend an extra few pounds to specify a better model with solid locking cast iron table and a decent mitre fence!

Be safe, not sorry

Finally, I'd like to add a few notes on safety. It's easy to believe that a disc sander is pretty safe, but there are inherent dangers, as there are with any woodworking tool. The obvious factors are that you should not have loose clothing that can get dragged in, but most importantly, with these sanders is to ensure that there is minimal space between the abrasive and the fence or the top steel end stop to prevent your fingers from getting dragged in. A piece of abrasive will make short work of any flesh that it pulls in!

Of the six models here, only three – Axminster, Perform and Rexon – have opted for a rear guard over the belt around the dust chute to prevent anything getting pulled down into the rear of the belt. The best of them is the all-metal construction used on the Axminster.

The SIP and Charnwood, while having an open end, have small ribs to close the area down so you can't get fingers pulled in. The Draper, however, has quite an open space between the back dust chute and the belt, certainly big enough to pull fingers in. It can't cost much more to put the same dust chute design on this, especially as they all come from the Far East.

The similarities between all the sanders become even more apparent when comparing component to component. Only Axminster and Rexon show their country of origin (Taiwan), and the identical fences indicate a similar factory may have been used for some parts.

The same goes for the other sanders too, although none indicate their country of origin, my guess is China. Although each one shows similar build components on the fences and dust chutes, they are different to the Axminster and Rexon.

The Good Woodworking Verdict

Best On Test

Rexon BD-46A

Typical price: £100
Weight: 25kg
Disc speed: 2875RPM
Belt speed: 448 metres per minute
Belt/disc size: 100x915 (belt) 152mm (disc)
Made in: Taiwan
Number of dust ports: 2
Dust port diameter: 35mm
Dust efficiency: 3/5
Decibels: 89
Fences: single fence
Ease of belt swap: dust kit needs to come off
Flatness/twist of belt platen: good

Rating ★★★½☆

Sip 01362

Typical price: £95
Weight: 17kg
Disc speed: 2850RPM
Belt speed: 490 metres per minute
Belt/disc size: 100x915 (belt) 152mm (disc)
Made in: not given
Number of dust ports: 1
Dust port diameter: 60mm
Dust efficiency: 3/5
Decibels: 83
Fences: extra top fence
Ease of belt swap: simple
Flatness/twist of belt platen: good

Rating ★★★★½

Draper BDS368

Typical price: £110
Weight: 20kg
Disc speed: 2850RPM
Belt speed: 490 metres per minute
Belt/disc size: 100x915 (belt) 200mm (disc)
Made in: not given
Number of dust ports: 1
Dust port diameter: 60mm
Dust efficiency: 4/5
Decibels: 86
Fences: extra top fence
Ease of belt swap: simple
Flatness/twist of belt platen: good

Rating ★★★½☆

Recommended

Axminster AS408

Typical price: £109.18
Weight: 18kg
Disc speed: 1850RPM
Belt speed: n dot given
Belt/disc size: 100x915 (belt) 200mm (disc)
Made in: Taiwan
Number of dust ports: 1
Dust port diameter: 35mm
Dust efficiency: 3/5
Decibels: 83
Fences: single fence
Ease of belt swap: simple
Flatness/twist of belt platen: good

Rating ★★★★☆

Perform CCBDS46

Typical price: £59.98
Weight: 20kg
Disc speed: 2850RPM
Belt speed: 490 metres per minute
Belt/disc size: 100x915 (belt) 152mm (disc)
Made in: not given
Number of dust ports: 1
Dust port diameter: 60mm
Dust efficiency: 3/5
Decibels: 87
Fences: extra top fence
Ease of belt swap: guarding needs to be removed
Flatness/twist of belt platen: very slight twist

Rating ★★★½☆

Charnwood W407

Typical price: £84.99
Weight: 17kg
Disc speed: 2850RPM
Belt speed: not given
Belt/disc size: 100x915 (belt) 152mm (disc)
Made in: not given
Number of dust ports: 1
Dust port diameter: 60mm
Dust efficiency: 3/5
Decibels: 89
Fences: single
Ease of belt swap: simple
Flatness/twist of belt platen: very slight twist

Rating ★★★½☆

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PRODUCT KEY CODE

H – HANDTOOLS; P – POWER TOOLS; W – WOODWORKING MACHINERY + TOOLING; CS – CUTTING OR SHARPENING SERVICES; BS – BOOKS/CATALOGUES;MF – MATERIAL FINISHES; A – ATTACHMENTS; D – DEMONSTRATION AVAILABLE ON SELECTED MACHINES; T – TIMBER; MO – MAIL ORDER

Good Woodworking

Free Reader Ads

Selling your old router or want to buy a bargain biscuit jointer? Then look no further...

Hand tools

Two new hand mortice chisels, 1/4in and 1/2in. £8 each or £15 for both.
Derek Bright, W Sussex
✆ 01403 263564

Makita 9401 belt sander, 11v, £75. **Axminster guillotine**, £55. **18mm Japanese paring chisel**, £10. **6mm Japanese framing chisel**, £10. **Wooden jack plane**, £5. **Japanese marking gauge**, cost £45, will sell for £10. **110v-240v step-up transformer**, cost £150, will sell for £45. **Lie-Nielsen dovetail marker**, £10. **Lie-Nielsen dovetail saw**, used once, £55. **Lie-Nielsen bronze edge planer**, £50. **Lie-Nielsen No.85 scraper plane**, never used, £100. **Record Multiplane**, boxed, £45. **Axminster honing leather and soap**, £5. **Mitutoyo digital callipers** (metric only), cost £120, little use, will sell for £60. **Japanese waterstones**, 800grit and 4000grit, £5. **Ceramic sharpening stones**, medium £10, extra fine £20.
A Honisett, E Sussex
✆ 01323 461432

Machinery

Elektra Beckum tablesaw with extension table, never used, £280. **Trend Craftsman CDJ600** dovetail jig, £80.
DP Head, Durham
✆ 0191 384 1656

Triton Workcentre 2000 saw table, comes with Power Pro 10in laser saw, dust collectionbucket and hoses, videos, bevel guide. Less than two years old. Also **Tomesani planer thicknesser** on wheels. £550 ono for the lot.
Bob Davies, Coventry
✆ 024 7627 1087

Legacy 1200 mill, complete with circle-cutting centre pin, linear table, five pilister dogs, design kit, two 'how to' DVDs and three videos. As new £1000, big saving. **LittleRat**, £200. **Triton router tabletop** (no legs), £50. **Triton biscuiter attachment**, £50. **Freud FT1000E router**, £30. **Freud FT2000VCEV2 router**, £50 (no soft start).
David, Northants
✆ 01933 386969

Elektra Beckum site saw, one phase 315mm dia blade and two spares, £300. **Metabo over and under planer**, one phase, 10x6in, £450. Can see working.
S Thorp, Essex
✆ 01787 220235

Kity BestCombi, five operations: circular saw, planer, thicknesser, spindle moulder and slot morticer. Complete with accessories, £375. **APTC CM1903 morticer**, as new including 5/8in, 1/2in, 3/8in and 1/4in chisels. Cost £194, will accept £75. **Delta 40-560 two-speed 16in scrollsaw**, as new. Cost £200, will accept £75. **Elu MOF96 plunging router** plus mounting table, £45. **Charnwood 895** Woodworker dust collector, £30.
Howard Neath, Lancs
✆ 01257 265781

Axminster BM78 morticer complete with floor stand, set of 8in, 10in, 12in and 1/2in chisel and bits. Good condition, moderate use. £350. **Record 12in cabinet saw**. Sliding table, extension table. All tables aluminium. Induction motor (Lutz Jumbo product). £300. **Metalcraft Master Workshop** consisting of 2x scroll formers, industrial stripworker, master twisting tool. Instruction/pattern books. Cost around £1000, yours for £550. Selling sadly due to downgrading of workshop size. Buyers collects all.
Tony Francis, Grimsby
✆ 01472 598064/07702 989431

Workshop sale. Items include 52in Bieseymeyer fence system, Makita LS1020 10in mitresaw, DeWalt 16 gauge air nailer, Bostich 15 gauge angled air nailer, Bosch blue five-piece cordless set, Jessem Rout-R-Lift, Leigh dovetail jig, Tormek Supergrind. Phone for details.
Steve Barber, Poole
✆ 01202 768213/07727 124033

Scheppach overhand thicknesser, 10in, 240v, very good condition. Genuine reason for sale. £350 ovno.
John Hall, S Lincs
✆ 07957 492221

Rousseau benchtop folding router table, used twice only, £70. Trend CDJ300 dovetail jig, £40. 1/4in router with table, £30.
Kaspar Mcfarlane, W Yorks
✆ 01924 274515

Triton MK3 Workcentre fitted with Elu saw, router table and extra large side extension, 940x860mm. £275.
AJ Woollett, Staffs
✆ 01889 583441

New morticing attachment and three new chisels, 1/4in, 3/8in and 1/2in, £25. Meddings 1/2in bench pillar drill on portable stand, £90. Help with delivery possible. Set of blades for Axminster CT150B jointer planer, new, £15.
Derek Bright, W Sussex
✆ 01403 263564

Kity 613 bandsaw, stand and mitre guide, instruction book. As new condition. Hobby use only. £250 ono.
D Parsons, Hampshire
✆ 01425 612586

Mafell DD40 dowel system jointer, cased, as new £375 ono. **SIP bench surface planer**, 6in. Unused, £110 ono. **Various TCT sawblades**, top quality, unused. 300x30x96. £45. Freud and others.
JWJ Ovel, Ipswich
✆ 01473 785351

SIP 10in bandsaw and stand, £70. Dremel hobby fretsaw, £40.
R Clement, W Yorks
✆ 07768 317571

Mafell AD160 planer thicknesser with tilting fence. One year old, little use. £285.
A Honisett, E Sussex
✆ 01323 461432

Turning

Union Graduate lathe, variable speed with reverse. 30in between centres, £900.
DP Head, Durham
✆ 0191 384 1656

Coronet No.3 lathe, twin bed, 42in centres, large bowl attachment. Assorted chucks, tools etc. Head mask, toolmac wet/dry grinder. Mounted on very sturdy bench. Has only had light domestic use. £499.
R Binns, Cheshire
✆ 01565 633946

Timber

Hardwood pieces for sale, suitable for cabinetmaking and woodturning. Oak, American black walnut, beech, ash, cherry etc.
K Mason, Lancs
✆ 0161 339 5161

Miscellaneous

American Drill Doctor drill bit sharpener complete with two chucks, spare diamond wheel and video. 115v. £120. **Transformer** 3.3kva, 115v, double outlet. £50.
Ken Chappell, W Yorks
✆ 01274 598616

Wanted

Leigh dovetail jig and accessories, also **Leigh or Trend mortice and tenon jig**, **WoodRat** and accessories.
R Clement, W Yorks
✆ 07768 317571

Motor for 10in bench circular saw 240v, 1500w, Performance Tools Ltd, from B&Q store.
J Marsh, Hants
✆ 01256 881652

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- Alternatively, if your advertisement is for goods worth less than £500, you can email the details to **goodwood@futurenet.co.uk**

Never enough cramps

Don't miss the next issue of Good Wood as you'll find a free spring clamp on the cover, ideal for setting up jigs and holding stops on fences and for small cramping jobs

GROUP TEST: We all know you can never have enough hands in the workshop, and next month Andy King will be testing those quick-fit, one-handed cramps you use for setting up machines and jigs. Andy finds out which is best, and lists the many ways you can use your free spring clamp.

Projects to Make: *Curved table laminated using a vacuum press* ● *Steve Maskery's hall cupboard with bell* ● *Sash cramp holder for the workshop* ● *Turned jewellery boxes*

Techniques for better woodwork: *How to restore a writing slope*
Sawtables: *set the height right* ● ***Jeff Gorman*** *on handtool techniques*

NEXT MONTH IN GOOD WOOD
ON SALE 1st SEPTEMBER

EXCLUSIVE TEST!
The unique Holtey No98
Does perfection have a price?

Bonus Tip!

Stronger nailing
You can strengthen a nail joint if, instead of driving the nails straight in, you hammer them in alternately at slight opposing angles. This gives a dovetail effect, and has a greater resistance to the pieces of wood pulling apart.

Good Woodworking

Reader Tips

The solutions and nifty ideas that woodworkers love

Write to *GW*, 30 Monmouth Street, Bath, BA1 2BW
Email goodwood@futurenet.co.uk

The prizes

Each month we search for a Tip of the Month. The winner will receive one of the innovative planes from the Veritas plane range and the plane on offer will change each month. Runners-up receive a £25 voucher to spend on any Veritas products.

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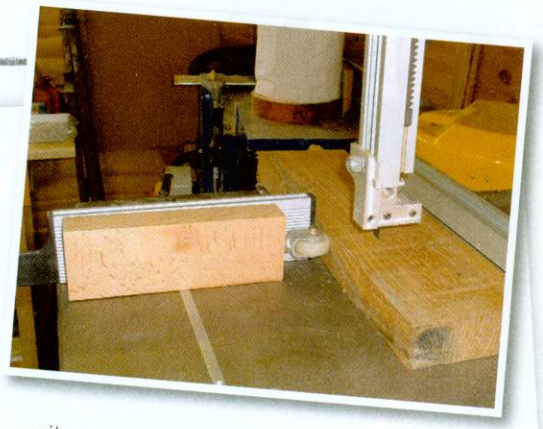
Wheel boards



I do not use featherboards because I have made a replacement I prefer. It comprises a fixed wheel castor mounted in wooden stock. This is clamped to my fence or to my mitre guide. The wheel is in contact with the stock and keeps it in place and allows the stock to move freely.

Roger Thomas, by email

This is an interesting idea. Surely, though, the wheel doesn't stop the work from kicking back (which is one purpose of featherboards)? There also appears to be no 'give' to adjust for inconsistent width of the workpiece? Nick

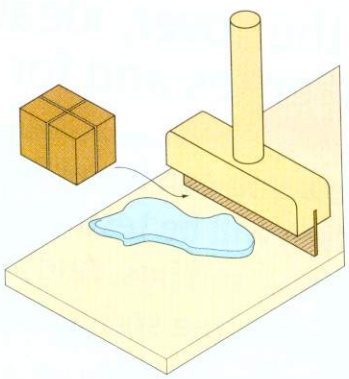
Drawer screws

For ages I've had an idea in the back of my mind, but have never tried it. I have some drawers with the usual glue blocks to set their position when closed. Inevitably, over time, there is shrinkage or wear and the drawer no longer closes 'just so'.

My idea is to glue stop blocks to the runners or dustboard, leaving about 1/4in between the front of the block and the back of the drawer. Insert screws into the back of the drawer, in line with the blocks, so about 1/4in protrudes. Test the position of the drawer, and adjust by moving the screw in or out.

Dave Major, by email

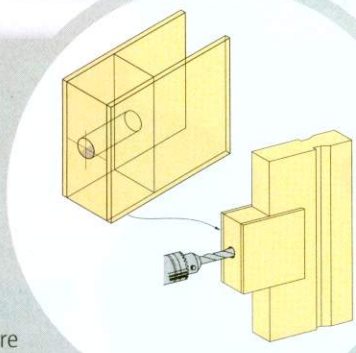
This is a great idea, Dave. I've used it this month in the making of a routing jig (p13). Please contact us if you try it and it works as well as we'd expect.



Glue spreaders

You can make extremely effective glue spreaders out of the strips of polypropylene banding that are used to bind up parcels. Cut into 2 1/2in lengths, they can be used to get PVA into small cracks, or they can be fitted into a home-made spreader for larger areas. You'll find long lengths at any builders' merchant. The criss-cross pattern means that the strip acts as a fine-tuned spreader.

Dennis Massey, Somerset



Drilling jig

I have made a jig for drilling internal, tubular door locks. You need a central block the same thickness as the door, and a pair of cheeks that act as guides. Bore the hole in the central block on a pillar drill to ensure it is accurate and centred. You can hold of cramp it in position.

A Reader

For some reason we have no details for the reader who submitted this tip, only a surname. Please contact us if it is yours. Nick

Keep the wheel

Tip of the Month

Now you've got an electric or cordless drill-driver, don't throw away that redundant wheel-brace. Keep your countersink bit in it permanently, ready for instant use. No more interminable swapping from drill bit to countersink and back again. Better still, if you also have a Yankee driver with its original countersink you can have a choice between different types of countersink in both the Yankee and the wheel-brace.

Tilgear, who were recently selling off Yankees at half price, tell me that unfortunately Yankee countersinks are no longer available, but that Snappy make a quick-chuck with a 5/16in shank to fit Yankees. I haven't checked that, though.

John Marlow, Herts

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Table size	300mm x 270mm
Motor	300Watts
Takes blades	¼" and ⅜"

Supplied with rip fence, sliding crosscut mitre fence, ¼" Blade, NVR switch.

Optional items:

W340F2 Cabinet floorstand	£62.99
BB01 6.35mm x 1400mm x 6tpi blade	£4.99
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W715

Our medium sized bandsaw, ideal for small workshops and where the size of timber and boards is not too large.

Max cutting depth	100mm
Throat depth	250mm
Table size	340mm x 335mm
Motor	375 watts
Takes blades	¼", ⅜", ½"

Supplied with rip fence, sliding crosscut mitre fence, ⅜" Blade, NVR switch, 60mm extraction outlet.

Optional items:

W715F floorstand	£14.99
W340F2 Cabinet floorstand	£62.99
BB20 1712mm x 6tpi blade	£6.99
BB21 1712mm x 6tpi blade	£6.99
BB22 1712mm x 6tpi blade	£6.99
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W720

Our largest Bandsaw. Tough enough for any workshop duties.

The W720, with its two cutting speeds will cut soft and hard timber, boards, metals and plastics.

Max. cutting depth	150mm
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Table size	480mm x 400mm
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W720 Stand included as standard

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Specification	
Power	2.2kW
Blade Tilt	0-47°
Blade Diameter/Bore	315mm/30mm
Max Depth of Cut @ 45°	60mm
Max Depth of Cut @ 90°	90mm
Max Width of Cut with Fence	310mm
Max Rip Capacity with Extension	860mm
Table Size	550 x 800mm
Overall L x W x H	900 x 820 x 1030mm
Weight	50kg

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