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Woodturning

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classic
box with
Richard
Raffan

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turning made
easy

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personalised croxetti
pasta stamps



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Taper: 2 Morse taper
Weight: 86 kg
Size: L1210 x D435 x H386 mm



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Finishing off a vase

Support and giving



Christmas is soon upon us and we no doubt need to work out what needs to be made, for whom and by when. There is always a rush of activity at this time of year and it is always fun to see and hear about what people are making or plan to make. The charity events – shows, open days and sales of goods – are in full swing, trying to raise money for good causes. It does seem that this time of year becomes a major focus for many such events. I know many turners create lots of goodies and donate to such ventures. I know a lot of clubs make this a club enterprise, but I also know a lot

of individuals who quietly create things and support charities with their giving.

The spirit of giving is very much evident at this time of year, but such charitable giving and participation in helping at such events shouldn't just be for Christmas. Supporting charities, organisations and other worthy ventures is something that everyone can get involved in. I am mindful that there was much support of time – all generously given – to me by numerous people and organisations when I started turning. I wonder how many people have been helped at clubs and events over the years? I know many turners give back in numerous ways and let's face it, support comes in various guises and such generosity is the bedrock of encouragement

and growth. A caring community of people benefits everyone and the beauty is that the help and support given invariably gets passed on in some way to help others.

I have made items this year and given them to charitable concerns and will certainly do more, but I always think could I still do more? Let me know the ways you have found to help others.

Have fun,
Mark

markb@thegmcgroup.com



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

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December 2016

COVER IMAGE courtesy
of Colwin Way
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HEALTH AND SAFETY

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

Christmas decorations for every home

Colwin Way continues to show us how to make things a little more festive

COLWIN WAY

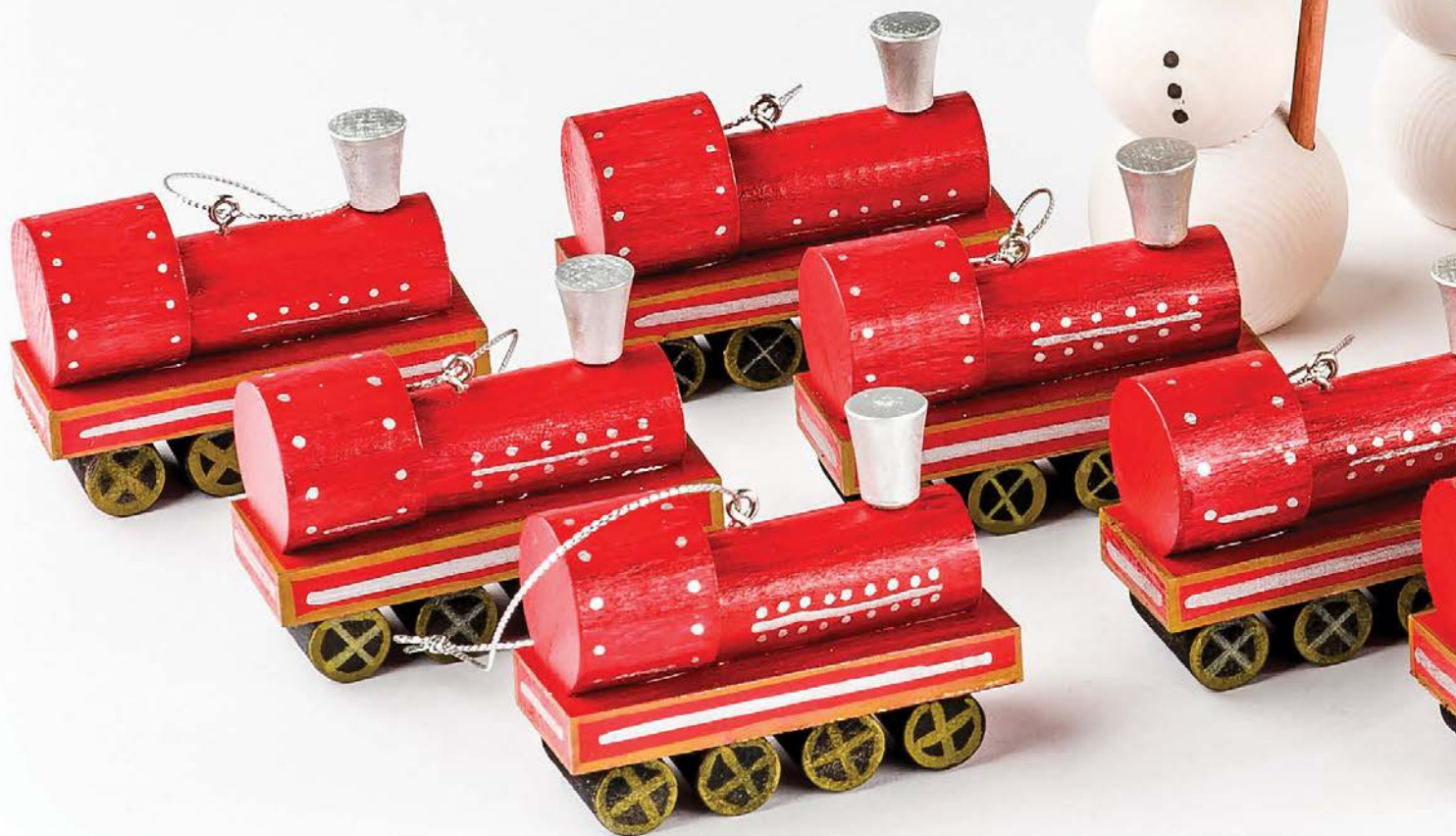


Colwin started turning aged 13 and has since gone on to teach the craft and wishes to continue to give people confidence to try the wonderful hobby for themselves.

colwinway@btinternet.com
www.axminsterskillcentre.co.uk

EQUIPMENT AND MATERIALS USED

- 4mm drill bit
- 5mm drill bit
- Hand vice for drilling
- 25mm skew
- 10mm spindle gouge
- 3mm parting tool
- Paints, pens and decorating materials
- Small pull saw
- Disc sander
- Epoxy resin glue
- 5mm beech dowel (snowman's broom)



As I mentioned in the last issue, Christmas is just my favourite time! It's a running joke in our house that Christmas starts in September for me and lasts until March. Both my youngest son and I have a count down to Christmas on our mobile phones that starts in January. We usually start planning how we're going

to decorate the tree a couple of months before and, of course, in the most colourful over-the-top-way possible avoiding my wife's annual comment of: please can we keep it tasteful this year and maybe just white lights?

My woodturning courses change slightly as well taking a festive spin instead of turning practice pieces in the shape of toadstools

or seashells we can look to do Christmas trees and snowmen. However this month instead of the norm and making these plainer decorations, which are fairly common now in our craft shows and club evenings, I thought I'd share with you a couple of different ideas for you to practise and sell at your Christmas craft shows or simply give as gifts to friends and family. No matter how enthusiastic you are or not about Christmas, there's no doubting that it's a colourful time of the year and gives us a good excuse to go bright with our decoration.

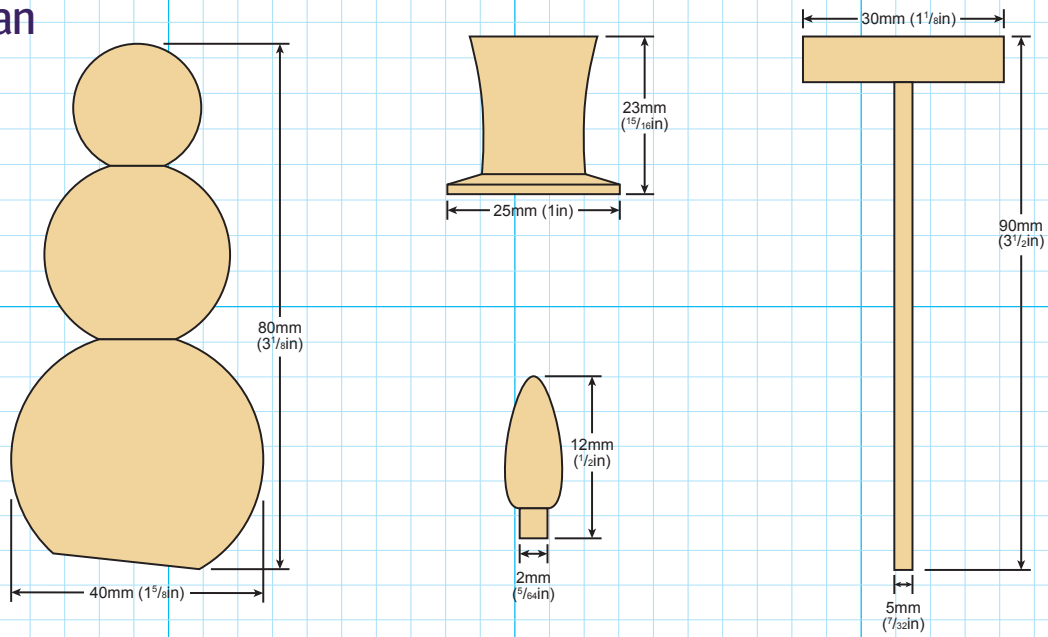
I've decided to do three different items for you each with different types of painting and colouring techniques. Please use my ideas as inspiration to create your own decorations and don't forget to have fun along the way even getting the family involved with the decorating.



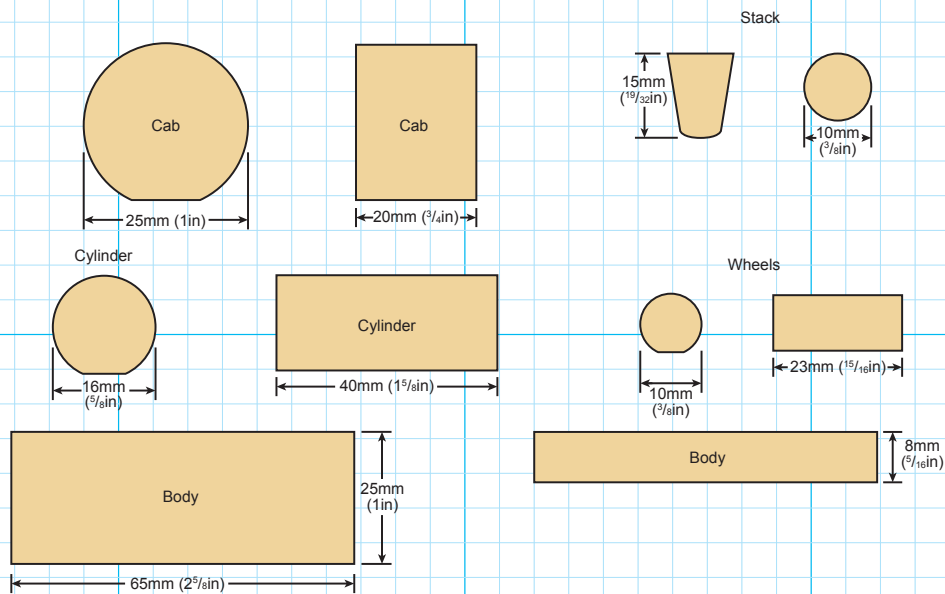


PLANS AND EQUIPMENT

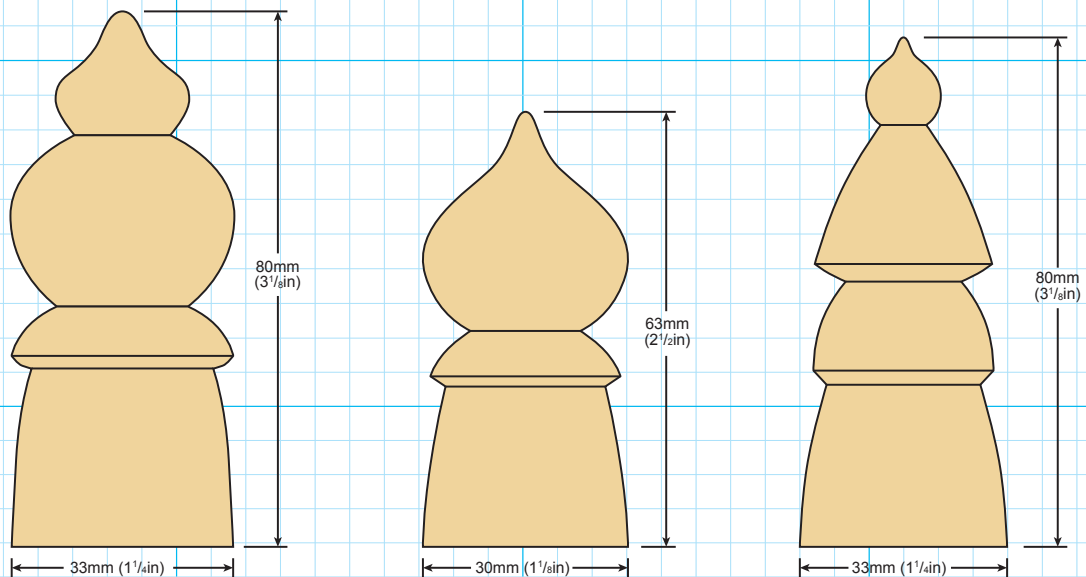
Snowman



Train



Houses





1



2



3



4



5



6



7



8

Christmas houses

I've seen these types of decorations in all shapes, sizes and colours. Mine are fairly small and have a mixture of paint, pen and glitter effects. I've suggested a few different types in the line drawings.



1 All of the decorations I'm doing are in batches, so start off by roughly cutting a handful of Western red cedar (*Thuja plicata*) blocks and the same number of painting sticks. Cedar is so light in weight, but also a really nice timber to turn. Before turning centre the blanks and drill a hole in one end, to match the painting sticks, in this case 5mm. I use a pillar drill, but a cordless drill would be equally as good

2 Mount the blank between centres with the drilled hole towards the headstock. Use a light pull-style friction drive inserted into the hole, to drive the piece and a single pointed live centre in the tailstock. Rough down to a cylinder then clean the surface with a skew cut and start to shape. Use the skew for most of the shaping but a spindle gouge will also come in handy to turn the smaller portions near the finial top. Leave a small piece of waste wood near the top to clean off later, taking away the hole made by the tailstock centre

3 When you have the shape you want, sand and seal the bare timber with sanding sealer to give a good canvas for the paints

4 A selection of the shapes. One is held in the chuck with its painting stick, giving good visibility for painting

5 The paints I'm using are all water-based and a mixture of milk paint and a brand of toy safe paint. We also want one that has a matte finish so we can decorate with pens and glitter

6 Turn on the lathe at a low speed (around 300rpm) to get the block colour

7 Moving quickly before the base coat has the chance to dry, start at one end and add white. Without reloading the brush, keep it in contact and slowly move up the piece. When the brush starts to fade to your liking stop, clean and dry the brush before starting on the next section with the same technique. This gives a snowy look

8 These are by no means finished as they need details. Use a paintbrush, gold and silver pens and glitter for the finishing touches

❏ Snowman place settings

Let's move onto dinner table place settings; these are a little bit of fun and can add a nice talking point while pulling the crackers.



1 Start by choosing your timber. It is important that the timber's pale in colour to help with paint coverage. Here I'm using a piece of joinery grade redwood (*Sequoia sempervirens*). Start by roughing down to a cylinder before using a skew to clean. The snowman needs to be divided into three decreasing balls, so start with a 'V'-cut in preparation for the first bead

2 Once divided up and the 'V'-cuts are in place it's time to roll the beads. I am using the skew, but if you're more comfortable with a beading and parting tool or spindle gouge then both work as well. Avoid scraping as the finish will need more sanding leading to misshaping

3 Here is the finished shape ready for sanding

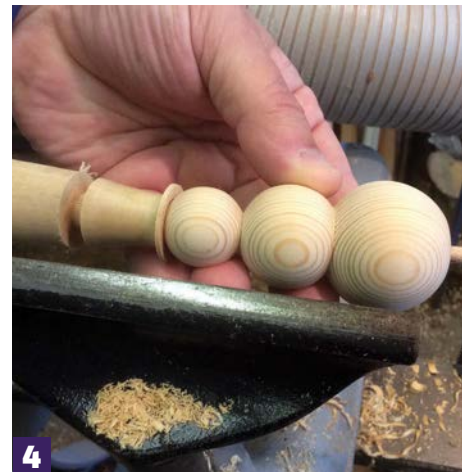
4 Next is to turn the top hat. Here I am testing the fit. Cut the blank slightly oversize to 25mm and hold the blank in some internal step jaws in a chuck. When you're happy with the shape, part off. Don't worry about the parted off end of your top hat; you can clean this off later

5 Now move onto the broom, which is made up of two pieces. The handle is made from 5mm beech dowel and scrap redwood is used for the broom head. To make the head, cut a slot in one side as the picture shows using a pull saw then sanding the opposite side to a slight radius

6 Once you have all the pieces of your snowmen we can think about cleaning up prior to painting. Using a sanding disc held in the lathe, sand the top parted surface of the top hat and the bottom of the body so it sits neatly on the table and any waste material you don't need

7 Set the pieces up for painting on painting sticks mounted into some waste wood blocks, which makes it so much easier to paint

8 I decided to airbrush the snowmen to avoid brush marks. I've also opted for acrylics over spirit stain through the airbrush as I find white stain takes a lot of time to create solid colour whereas acrylic takes just a few seconds of spraying. Here you can see the hats being given the first touches of black paint





1



2



3



4



5



6



7



8

Train decoration

Moving to another tree decoration, a multi-piece steam train. This project comprises of several straightforward turnings. You could use dowel if you have some spare and just cut to length.



1 Start with the main body. Use a pale colour timber for painting, so mainly redwood for me. The body is the only piece of square timber in this project. Sand all faces clean and square

2 Now we move onto the turnings. First turn the main cylinder, and when these are done turn the wheels and the cab (see diagram)

3 The stack is the next thing to turn and to ensure you can glue the stack, include a small tenon of 4mm. Drill the equivalent size hole in the cylinder later

4 Now all the pieces are turned and sanded, we now have to think about how we're going to glue these together

5 To attach all the pieces together we need a good gluing surface, easily done with a disc sander. Note how much of a flat is required. This needs to be done on the wheels, cab and cylinder, as well as any untidy areas

6 Now to the painting table, here's the details to consider; house – windows and doors. On the houses try and mix up your decorating techniques, for instance I've switched between paint with brush, silver and gold pens with fine and thick nibs and glitter pens; snowmen – buttons, eyes, mouth and nose, name tags. I use a fine black marker to paint in the coal features and coloured card for the name tags; and on the Christmas train, details on the wheels, cylinder and cab.

7 Glue together and add the hardware next. Use a hand vice with a small 1mm drill bit to drill a small hole, ready to screw in the screw eyes. This also needs to be done to the train between the cab and the stack. Take time with cotton and blue tack to find the right pivot point before placing the screw eyes. Now to glue everything together. Use an epoxy resin with a cure time of 30 minutes, which works really well on painted surfaces

8 A great idea for Christmas presents or for selling your decorations. Here I've picked out groups of three and bunched them up giving a really presentable gift. ●

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- 370W, 230V motor

CS4-6D

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Clarke **6" BELT/9" DISC SANDER**

- Includes stand
- 1 HP/ 230V/ 1ph motor

CS6-9C

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Clarke **1" BELT/5" DISC SANDER**

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- Quality induction 300W motor

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- Powerful, bench mounted disc sander
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- Ergonomic design for optimum comfort

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- Max thickness cap. 125mm and 250mm wide
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- 450W motor
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- 1750rpm belt speed
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- Inc. sleeves, drum and belt

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only Bobbin Sander

MODEL	MOTOR	RPM	EXC. VAT	INC. VAT
COBS1*	450W	2000rpm	£134.99	£161.99

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10" (254MM) SLIDING COMPOUND MITRE SAW

For fast, accurate cross, bevel & mitre cutting in most hard & soft woods

- 1800W motor
- Laser guide
- 78mm max. depth of cut

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CMS10S2

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• Quality Range of Mitre saws and blades in stock

MODEL	BLADE DIA/ BORE (mm)	MAX CUT DEPTH/CROSS	EXC. VAT	INC. VAT
Einhell TC-MS 2112	210/30	55/120mm	£56.99	£68.39
Einhell Fury 3-B	210/25.4	50/120mm	£57.99	£69.99
Einhell TC-SM2131	210/30	62/310mm	£119.98	£143.98
Einhell SM2534	250/30	75/340mm	£159.98	£191.98

Laser Guide ± Sliding Compound

Clarke

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• Accurately creates deep square recesses

- Table size 150 x 340mm • Max. chisel stroke 76mm
- Robust cast iron base & column ensures stability & accuracy
- 95mm depth of cut

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• Last and accurate with a good solid feel... Excellent value for money. See www.machinemart.co.uk

Clarke

BENCH BANDSAWS

TC-SB200

FROM ONLY **£99.98** (EXC.VAT)
£119 (INC.VAT)

• Produce fast, precise mitre & longitudinal cuts

- Cuts in wood, plastic, etc.

MODEL	MOTOR	SIZE	EXC. VAT	INC. VAT
TC-SB200	180W	8"	£99.98	£119.98
CBS190	350W	7.5"	£124.99	£149.99

Clarke

PROFESSIONAL BANDSAWS

Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

- Table tilts 45° • Adjustable blade guide
- Supplied with stand, 4TPI wood cutting blade, rip fence, mitre guide, mitre gauge and push stick • Induction motors
- Includes stand

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Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

- Table tilts 45° • Adjustable blade guide
- Supplied with stand, 4TPI wood cutting blade, rip fence, mitre guide, mitre gauge and push stick • Induction motors
- Includes stand

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ELECTRIC HEATERS

DEVIL 6003

FROM ONLY **£49.98** (EXC.VAT)
£59.98 (INC.VAT)

• Perfect for smooth and fine finishing along with hard to reach areas or curved surfaces

MODEL	VOLTAGE	HEAT OUTPUT KW	EXC. VAT	INC. VAT
DEVIL 6003	230V	1.5-3	£49.98	£59.98
DEVIL 7003	230V	3	£59.98	£71.98
DEVIL 6005	400V	2.5-5	£74.99	£89.99
DEVIL 7005	400V	5	£84.99	£101.99
DEVIL 6009	400V	4.5-9	£119.99	£142.80
DEVIL 7009	400V	9	£139.98	£167.98
DEVIL 6015	400V	5-10-15	£179.99	£214.80
DEVIL 7015	400V	15	£199.98	£239.98
DEVIL 6025	400V	22	£289.99	£346.80
DEVIL 7025	400V	22	£319.99	£382.80
DEVIL 7030	400V	30	£359.99	£430.80

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MITRESAW STAND

CFMSS1

• Suitable for most sizes/makes of saw

- Inc. outriggers & rollers

£66.99 (EXC.VAT)
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FOLDING MITRE SAW STAND IN STOCK - COMMY ONLY £131.98 INC VAT

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CONTRACTOR

JIGSAWS

CON750

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• DIY #Professional

MODEL	POWER (W)	DEPTH OF CUT (WOOD/STEEL)	EXC. VAT	INC. VAT
Clarke CJS380*	420W	55/6mm	£14.99	£17.99
Clarke CON750#	750W	80/10mm	£27.99	£33.99
Bosch PST700C*	500W	70/4mm	£44.99	£53.99

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CRT-1

Router not included

• Converts your router into a stationary router table

- Suitable for most routers (up to 155mm dia. Base plate)

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£83.98 (INC.VAT)

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CPF13

• Variable belt speed

- Tilting head
- *Black & Decker

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£53.98 (INC.VAT)

was £71.98 INC VAT

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DETAIL SANDERS

CDS-1V

FROM ONLY **£19.98** (EXC.VAT)
£23.98 (INC.VAT)

• Perfect for smooth and fine finishing along with hard to reach areas or curved surfaces

MODEL	WATTS	EXC. VAT	INC. VAT
PS105	105W	£19.98	£23.98
RT-0513	130W	£22.99	£27.99
CDS-1V	280W	£28.99	£34.79

Clarke

13" MINI WOOD LATHE

CWL325V

FROM ONLY **£149.98** (EXC.VAT)
£179.98 (INC.VAT)

• Ideal for enthusiasts/hobbyists with small workshops

- 325mm distance between centres • 200mm max. turning capacity (dia) • 0.2HP motor

Clarke

DRILL PRESSES

CDP152B

FROM ONLY **£66.99** (EXC.VAT)
£80.39 (INC.VAT)

• Range of precision bench & floor presses for enthusiast, engineering & industrial applications

B = Bench mounted F = Floor standing

MODEL	MOTOR (W)	SPEEDS	EXC. VAT	INC. VAT
CDP5EB	350 / 5	5	£66.99	£80.39
CDP102B	350 / 5	5	£79.98	£95.98
CDP152B	450 / 12	12	£134.99	£161.99
CDP202B	450 / 16	16	£179.98	£215.98
CDP10B	370 / 12	12	£194.99	£233.99
CDP352F	550 / 16	16	£219.00	£262.80
CDP502F1100	12	12	£499.00	£598.80

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ROUTERS

CR2

• Powerful heavy duty machines ideal for trade and DIY use

CR2 INCLUDES 15 PIECE KIT WORTH OVER £20

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GRINDERS & STANDS

• Stands come complete with bolt mountings and feet anchor holes

6" & 8" AVAILABLE WITH LIGHT

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STANDS FROM ONLY £47.98 INC. VAT

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BISCUIT JOINTER

DL-BJ900

• 11000rpm Operating Speed

- 860W Motor • 14mm Cutting Depth • Inc. dust bag and storage case

£49.98 (EXC.VAT)
£59.98 (INC.VAT)

Clarke

SCROLL SAWS

CSS16VB

FROM ONLY **£79.98** (EXC.VAT)
£95.98 (INC.VAT)

• 50mm max cut thickness

- Air-blower removes dust from cutting area
- Table tilts 0-45°

MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
CSS400B	85W	1450	£79.98	£95.98
CSS16VB	90W	550-1600	£89.98	£107.98
CSS400C	90W	550-1600	£109.98	£131.98

Clarke

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• Simple, easy to set up & use for producing a variety of joints

- Cuts work pieces with a thickness of 8-32mm • Includes a 1/2" comb template guide & holes for bench mounting

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ROUTERS

CR1C

• Powerful heavy duty machines ideal for trade and DIY use

CR1C INCLUDES 15 PIECE KIT WORTH OVER £20

FROM ONLY **£44.99** (EXC.VAT)
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Clarke

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• Stands come complete with bolt mountings and feet anchor holes

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Community news

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

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

AWGB: Youth Training Day



Hard at work



The Master of the Worshipful Company of Turners looks on

On Saturday 27 August, 2016 the AWGB, in concert with the Worshipful Company of Turners, organised and ran a successful training day for six young turners. Charles Taylor, Ronan Douse, Joseph Buck, Andrew Bell, Joe Creed-Kaile and Amy Hill crafted pens with tutor Ron Caddy, boxes with tutor Graham Barnard and bowls with tutor John Boyne-Aitken. The senior organiser for the day was Stuart Mortimer who oversaw the progress of all those taking part.

The Master of the Worshipful Company of Turners, Nicholas Somers, and Past Master Peter Gibson were also present showing a keen interest in all the work.

At the end of the day parents returned to collect the young turners who had been taking part along with other members of the Worshipful Company. The work carried out during the day was on display for all to see. The Master then presented certificates to all students followed by a short speech by Sam Webber, Vice Chairman of the AWGB, of appreciation to both Stuart and Linda Mortimer for all the organisation and effort they put in to these events.

All present then enjoyed tea and cakes before returning home to various parts of the country.

This was just one of a number of Youth Training Days organised by the AWGB, with

the support of the Worshipful Company of Turners. In addition to formal training events for all its members the AWGB supports woodturning initiatives with a number of bodies including the Scout Association, and many of these events are organised to introduce woodturning to the younger generation. With the great majority of schools no longer teaching woodturning, carpentry or metalwork, introducing woodturning to a wider audience, both young and not so young, is a fundamental aspect of the work of the AWGB. Membership of the AWGB is open to all and membership for young people aged 21 and under at the start of the membership year (1 January) is free.



Students and tutors



John Boyne-Aitken shows how it's done

AXA asks: "Are Brits 'old-fashioned' when it comes to hobbies?"

Research by AXA shows traditional hobbies are firm favourites among the UK population. In relation to their Live Boldly campaign, AXA Insurance have undertaken research into the nation's favourite hobbies, and the results are somewhat surprising. AXA Insurance reveals that the UK's most popular hobby is reading with 52% of people stating that this is their main pastime. Furthermore, hobbies that are traditionally thought of as 'old-fashioned' are still extremely popular here in the UK with 27% of the nation claiming that board games and puzzles are their favourite hobby.

When we look to the insurance statistics in woodwork, welding and carpentry as hobbies, AXA Insurance found that:

- The average person spends £73.50 per month, while 18% spend between £101–150 per month
- 40% of people who practise woodwork/welding/carpentry spend 7–10 hours a week on their hobby
- 53% said they spend more time on woodwork/welding/carpentry than

watching TV

- 30% of people said they practise woodwork/welding/carpentry with their son/daughter and 33% with friends
- 25% said that social media was their main inspiration for taking up woodwork/welding/carpentry
- The average person practises woodwork/welding/carpentry for 16 years, with 26% dedicating between 21–50 years on their hobby

As most people are encouraged to take up hobbies from a young age, it's not surprising to see that, as a nation, it's common for us to practise our hobbies for a number of years.

With many people taking up modern pastimes such as gaming, visual arts and fashion, this research by AXA Insurance shows that, despite popular belief, most Brits prefer more 'old-fashioned' hobbies including reading and board games. AXA's Live Boldly campaign encourages the nation to embrace both new and old hobbies whether it's reading, board games, woodwork or dress making.



Woodturning 292 giveaway prizes

In issue 292, we featured a Carter and Son Toolworks spindle gouge giveaway.

We are pleased to announce that the winners of the 12 spindle gouges are:

- | | |
|---------------------|---------------------|
| • Ian Goose | • Eddie Allison |
| • Michael Heseltine | • Arthur Anderson |
| • John Yeoman | • Mrs. Rachel Nicol |
| • Philip Hamilton | • Robert Weaver |
| • Allen Bumstead | • Kerry Clifton |
| • Richard Kitchen | • Roy Alvarez |

Charnwood Road Show at Yandles

At the Charnwood Road Show receive exclusive Show deals, online and in store, get free expert advice on all Charnwood machines, and save 15% off all self-select timber. There will also be free bandsaw and planer demonstration classes and woodturning demonstrations ongoing throughout the day.

When: 5 November, 2016

Where: Yandles & Son Ltd, Hurst Works, Martock, Somerset, TA12 6JU

Web: www.yandles.co.uk

Woodturning demonstrations by Richard Findley

Richard Findley will be demonstrating at the Ise & Nene Valley Woodturners, 17 November, 2016. The demonstration will take place between 7–10pm, with an admission cost of £7. For more information, contact Pete Bond: peterjbond@btinternet.com.



Richard Findley demonstrating

When: 17 November, 2016

Where: Counties Community Centre, Hertford Rd, Kettering, NN15 6LG

Web: www.awgb.co.uk/event

North of England Woodworking Show

The North of England Woodworking & Power Tool Show is the largest and longest established retail woodworking and power tool show in the country. There is more than ever to enjoy at this year's show, more than 30 top demonstrators, four 'mini' theatres, a 'woodworking clinic' sponsored by Classic Hand Tools and over 70 of the leading companies exhibiting.

When: 18–19 November, 2016

Where: Hall 1, Great Yorkshire Showground, Harrogate, HG2 8NZ

Web: www.skpromotions.co.uk

Northumbrian Woodturners Association Annual Auction

Northumbrian Woodturners Association will be holding its Annual Auction of Tools and General Workshop Equipment. The sale starts at 7.30pm with viewing from 6.30, there is no buyers commission and free parking. Catalogue available from 1 November, 2016 – contact stan.oakey@icloud.com for more information. £3 admission charge to non-club members.

When: 9 December, 2016

Where: Clubhouse-Briardale Community Centre, Briardale Road Blyth, NE245AN

Web: www.northumbrianwoodturners.com



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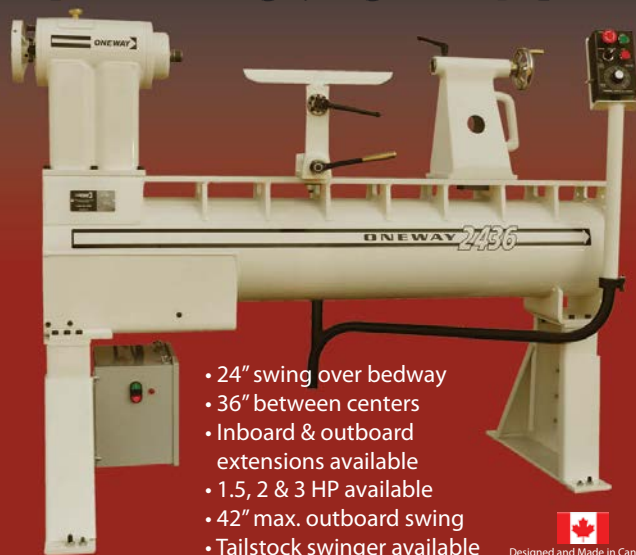
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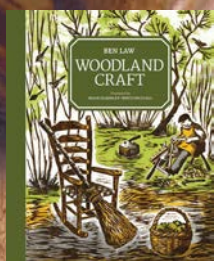
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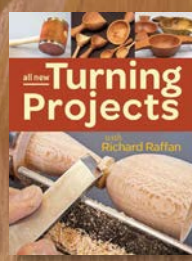
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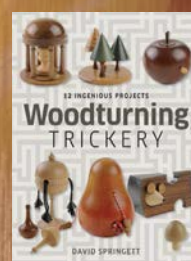
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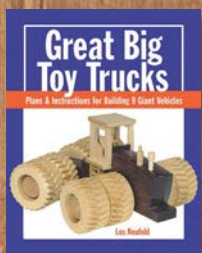
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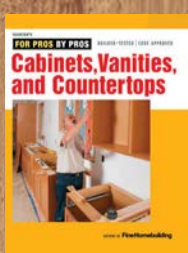
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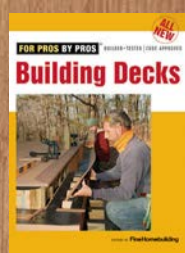
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- Quality materials, solid cast iron throughout, heavy duty triple bearings
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Galaxi DVR 1624-44 Lathe with Stand

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The NOVA Galaxi DVR will make your turning experience more efficient, safer and more fun. It is highly versatile and the perfect lathe for turning small pens and large bowls. It brings together the most useful features of larger lathes with the most advanced, award winning DVR technology, delivering an incredible turning experience.

- 8 preset speeds for fast setup and speed knob with super clear display
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- Delivers high torque from its start speed, suiting low speed turning
- Direct drive with powerful motor, when idle turns off after 10 minutes
- Electronic auto braking feature
- Spindle closely controlled by computer and direct DVR drive motor
- Firmware upgradable so future-proof
- Optional wireless remote (from January 2017)

Power	1,500W(2.0hp)
Speed	100 - 5,000rpm
Spindle Taper	2MT
Spindle Thread	M33 x 3.5
Taper Tailstock	2MT
Distance Between Centres	1,115mm(44")
Max Diameter over Bed	405mm(16")
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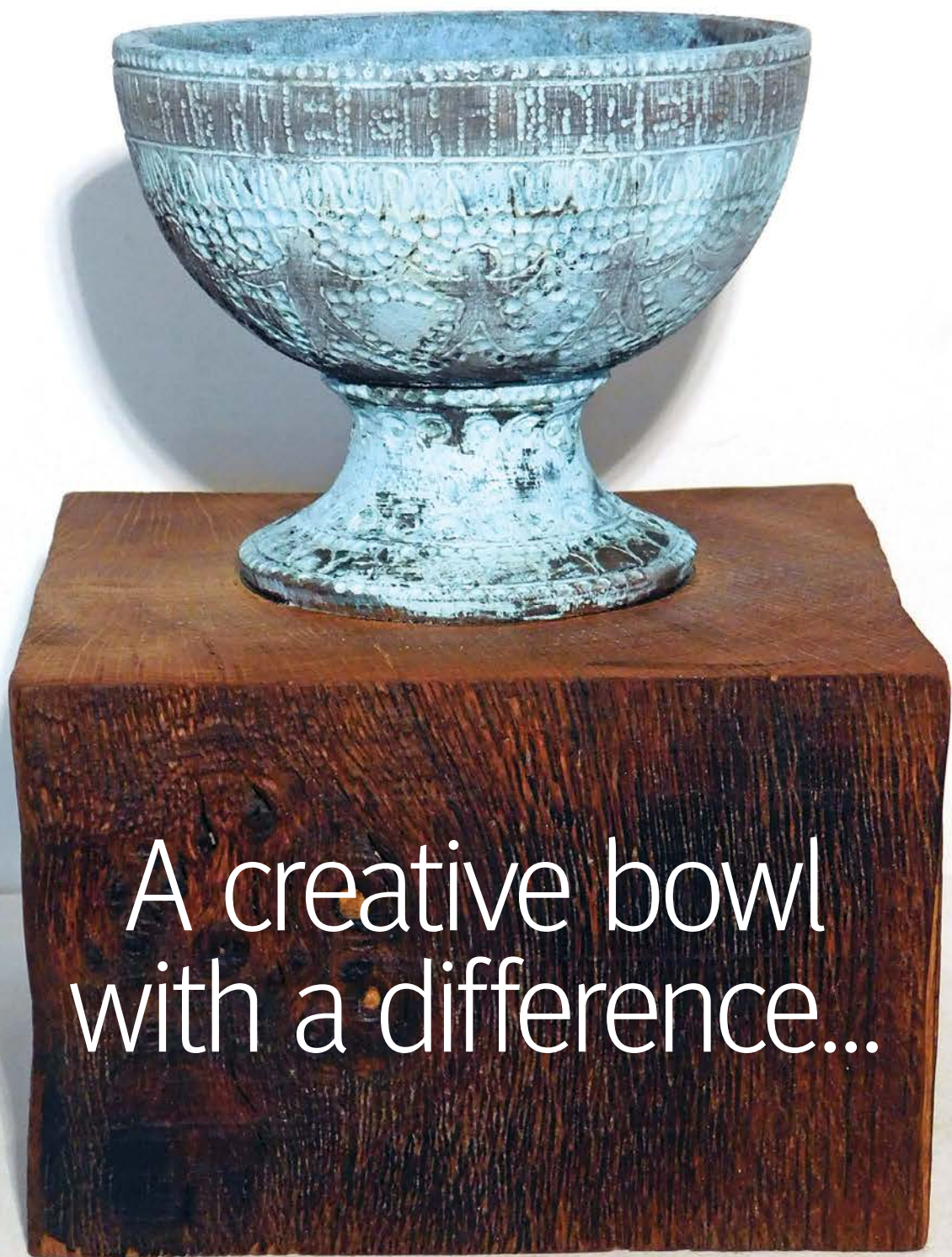


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A creative bowl with a difference...

ANDY COATES



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

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Andy Coates creates a decorative bowl, which remains attached to its base

About 10 years ago I turned a bowl on the end of a 1000 x 200 x 200mm block of oak (*Quercus robur*). Surprisingly it sold as a 'floor bowl' and I've always meant to make another. Recently, I found a large block of very old oak in the wood store and decided to make another, but this time I would pyrograph and colour the bowl. I like the 'over-sized' nature of the object and this allows for the inevitable occurrence of somebody trying to lift the bowl off the block and the

incredulous look that passes over their face as they realise it is all one single piece.

I tend to use material that is not ideal for more refined projects or jobs; old posts are ideal but any large block will do. If your stock is a little rough, all the better as this provides a contrast between the turned bowl and its base. I will create further contrast by pyrographing and patinating the bowl. The intention is for an object that looks as if the block has revealed the hidden bowl, like an artefact recovered from a marine concretion.



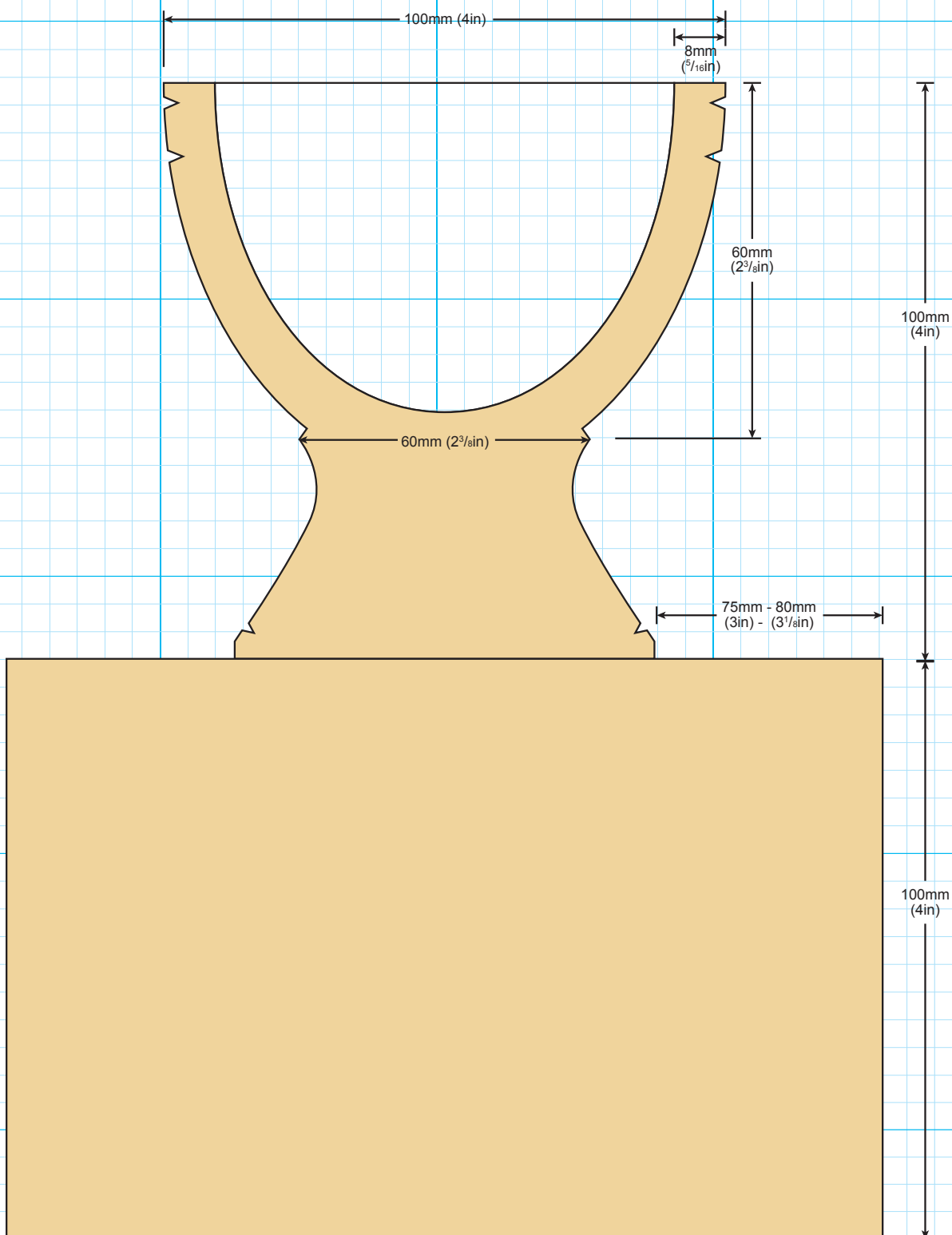
PLANS AND EQUIPMENT

Tools

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

Materials

- Old oak post section: 150 x 150 x 200mm
- Strip of Formica
- Abrasives 180–400 grits
- Cellulose sealer
- Patinating paint
- PPE: facemask, gloves, dust mask/respirator



1



2



1 Before you begin work examine your chosen block for any features you might wish to retain, and more importantly, any faults which may cause problems later on. Old wood can be wonderful to turn, but can also hold surprises. I decided that if possible, I would like to retain the burr section in the base

2 There were some cracks on one end face so I chose this as the end to turn the tenon on. The shape was irregular, so the centres were set by scribing the largest possible circle on each end and using the compass marks as the centre

3



4



3 First clean up the base at the tailstock end. A long ground bowl gouge was used here to ensure a clean surface cut. With an irregular blank lathe the speed was set at 900rpm for safety

4 With a square base it is vital that the surface is completely flat along the edges. If not, there will be a gap when the piece is placed on a flat surface and it may rock on the base. Use a steel edge to check and work until flat

5 As you work to create the flat area on the outside of the pencilled line you can cut the tenon at the same time. Due to the weight of the blank, mount in large gripper jaws on a 90mm tenon, remount on the tenon with tailstock support when finished

5



6



6 The next step is to create a cylindrical 'blank' for the bowl section. Make the cylinder as large as possible and depending on your block size, make the cylinder a third to one half of the length. Use a long-ground bowl gouge and be aware of the corners spinning by your left hand

“With a square base it is vital that the surface is completely flat along the edges”

7



8



7 Once the cylinder is roughed out, true up the face using the bowl gouge, ensuring the first 20mm is of finished standard, then move on to clean up the side face. Do not worry about the top of the base section as we will come back to that later

8 Begin shaping the bowl section using the long-ground bowl gouge. Set the initial curve at the lip and continue to work down to the same curve, but do not begin each cut at the lip or you will lose overall diameter

9 As you form the exterior of the bowl keep in mind that the foot/bowl ratio is around 40/60%. Allowance for this is your shaping. Turn the exterior bowl until it is approximately 2/3 completed and leave the remainder as support for the hollowing

10 Still using the long-ground gouge, begin hollowing the bowl. Working in steps from the centre and aim for fluid, continuous cuts from the front face to the centre of the base of the bowl. This will help to develop your bowl technique and result in better flowing curves

11 Continue hollowing the bowl with the gouge. The bevel should be rubbing to support the cutting edge and the flute direction should be at the two o'clock position. As the cut runs deeper and the curve begins to return towards the centre, be careful not to rotate the tool inwards or you risk a catch on the left wing

12 As your cuts approach the rim of the bowl decide on the finished wall thickness. If your block is reclaimed, or has faults, a thicker wall is wise to avoid turning stresses breaking the bowl and potentially posing a danger; 8–10mm is fine

13 Once you have completed the interior bowl you may need to use a scraper to refine the surface. Remember that this is not a shaping process, but a refining process. With the scraper at about 45° run the edge over any high spots beginning at the base and working outwards to the rim until the surface is uniform

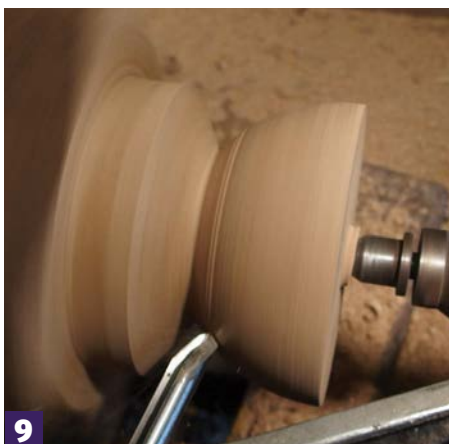
14 Next return to the front of the workpiece. Begin to reduce the foot area using the bowl gouge and remember those spinning corners! Reduce the diameter of the base of the foot as you go and keep the top surface of the base section flat

15 Begin to form a clean sweeping cove between the lip of the foot and the base of the bowl. Aesthetically a step between foot and bowl works well. At the lip of the bottom of the foot form a narrow (5–7mm) edge

16 Using a large skew chisel on its side, use the long point to define and clean the edge at the base of the foot, and at the step between the foot and the bowl. Take care making these cuts; the restricted space and spinning corners make it a tricky job

PAINTING

Paint finishes are available in a range of colours, textures and effects. While not all are labelled as suitable for wood, many are. Experiment with a sample. Patinating finishes offer an exciting range of design opportunities





17



18

17 Make a series of decorative 'V'-cuts on the foot and top of the bowl, but use the corner of a 10mm parting and beading tool if you prefer. These lines can be scorched in using the sharp edge of a piece of Formica. Press in firmly until the black line appears. Return to the upper surface of the base. Use a straight edge to check if the surface is flat. Do not be tempted to use a scraper as a catch on the corners is likely

18 Using the bowl gouge, cut the surface flat right up to the lip of the foot. With the flute of the gouge pointed towards the rear of the lathe, use the bevel to direct the cut along the flat plane. Slow down as you approach the foot and be careful not to catch the edge



19



20

19 The bowl can be abraded. The top base surface is best done by hand or power arbor with the lathe switched off. Remount the piece between jam plate and tailstock and at low speed carefully turn the tenon away

20 The circled pencilled on the surface will help ensure you do not create a hollow on the straight edge. Anything inside the circle can be concave as it will not alter the edge. Work down to a stub 15–20mm diameter and cut the remainder with a pull saw and the lathe switched off. Clean up with abrasive



21



22

21 Give the base section a thorough coat of Danish oil, allowing it to penetrate before wiping excess away. Several coats would be an advantage. Avoid getting oil on the bowl as this will present problems for the colour treatment

22 The next stage is to pyrograph. You want a deep burn to create texture. When pyrographing for any prolonged period ensure that the wood smoke is vented/filtered away. Work in shorts blocks of no more than 15 minutes and take rest breaks

23 Once the pyrography is complete, take a piece of nylon pad or a bronze brush and lightly brush the loose carbon away. Ensure the surface is dust free before colouring

24 How you colour the piece, and with what can be quite personal. Here I have used a proprietary brand of verdigris finish. A similar look could be achieved using a jade acrylic and a green patinating wax. Whichever you use, be careful not to get any on the base section, although the oil will help repel splashes ●



23



24

PYROGRAPHY

A smoke extractor is essential if doing a lot of pyrography. Place a small fan behind your work area to help drive the smoke towards the extractor. If you feel any heat through the pyrography tool stop work immediately and allow the handset to cool.

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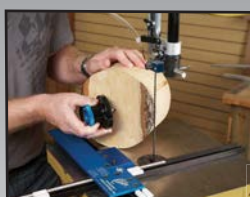
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Croxetti stamp

Andrea Zanini turns an ancient Italian pasta stamp

ANDREA ZANINI

PHOTOGRAPHS BY ANDREA ZANINI



Andrea Zanini is a professional woodworker who learned the trade from his grandfather. Parallel to his furniture-making business he turns all kind of objects, pens, bowls and sculptures.

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Italy and food are two words that often go together. Our culture is indeed full of high quality products such as fine wines, delicious cheese and a huge variety of pasta. But how can woodturning be related to culinary tradition? The first answer you get is, of course, rolling pins. And yes, there's also fun projects such as lemon juicers or honey dippers, but I was looking for something deeply connected to culture and tradition. Then I remembered the story of croxetti pasta stamps.

During the Middle Ages, Italy was divided into several small counties and within each county noble families shared their influence. Liguria, the region where croxetti were invented, was particularly important because of its position on the Mediterranean Sea.

It was imperative for the nobility to state clearly which portion of land they ruled over. The quickest and best way to show that was through food, which is why croxetti were invented: they cut round disks of pasta to print the insignia of the local noble family on one side and a cross on the other (that's where the name, cross-crox-croxetti, comes from).

Initially served at balls to underline the importance of the local noble family, they were later introduced among the population and they worked improving cohesion and the sense of community. They are usually served with a nut or basil pesto and even though they're now stripped of their social and political meaning they are still a delicious dish that belongs to our culinary culture.

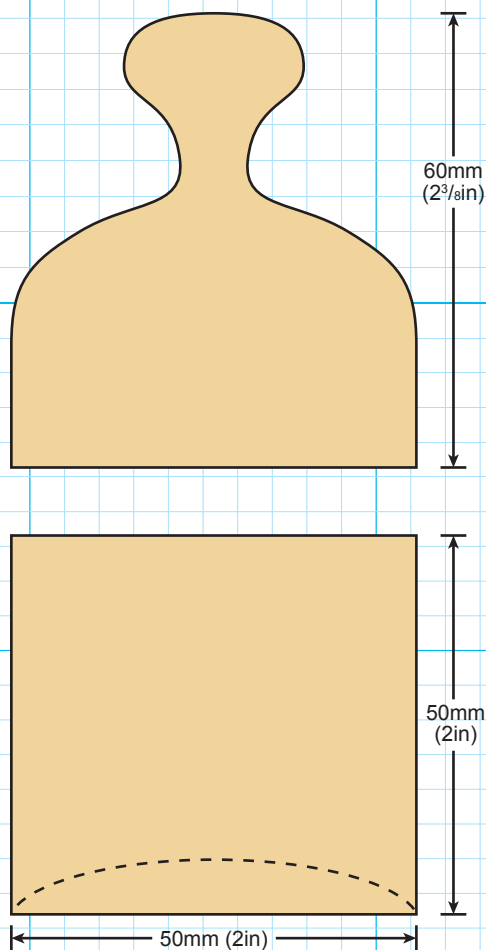
PLANS AND EQUIPMENT

EQUIPMENT AND MATERIALS USED

- 10mm bowl gouge
- Parting tool
- Roughing gouge
- Skew chisel
- 10mm spindle gouge
- Spring caliper
- 15mm wide leather strip
- Dremel carving tool
- 1mm ball head burr

Materials

- Abrasives from 150–240 grit
- Reclaimed beech



1 First of all, you need to choose the right piece of wood. Since this is a small project so you can use reclaimed wood or a piece from your scrap pile. Though there are no precise measurements, it should be big enough to obtain a round blank of 50mm in diameter. Traditionally croxetti were made out of apple (*Malus* spp.) or pear (*Pyrus communis*) wood, but beech (*Fagus sylvatica*) will be just as good. Cut the blank to length using a bandsaw. You can use a manual saw if you prefer or you can cut it directly on the lathe. To obtain a two part stamp you should cut it at 120mm

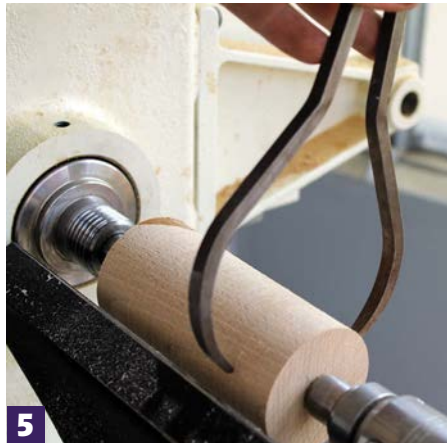
2 To avoid any wood waste, be precise in finding the centre. A centre finding jig is very handy, but if you don't have one, just use a calliper

3 Put the blank between centres and round it using a roughing gouge. Be careful not to remove too much material. Later you'll have the option to carve your family insignia on the stamp, so you're going to need some space for that





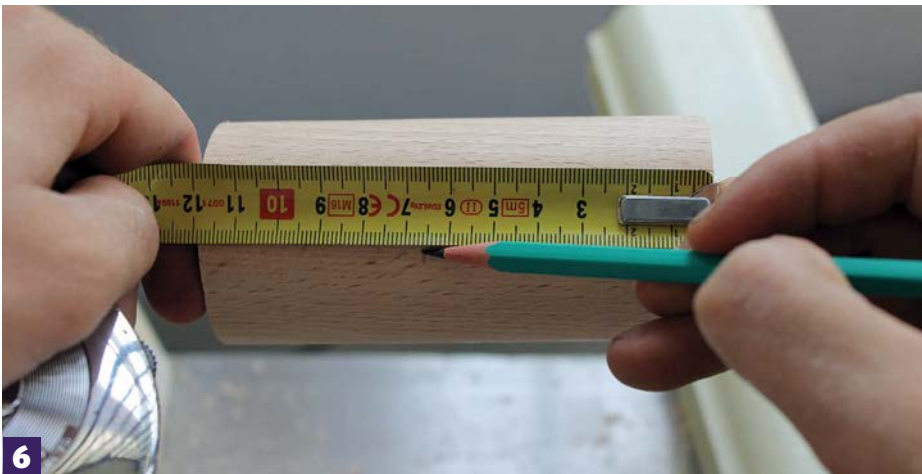
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4 When the blank has been rounded smooth it down using a skew chisel. The finish on the blank will be great and it is a very good way to practise your smoothing skills

5 Be sure that the blank is cylindrical by measuring it with a spring calliper. This is a very important step because the two parts of the stamp must fit as best they possibly can to one another. This is the perfect moment for the final sanding of the stamp surface. If you used the skew chisel a touch of 240 grit abrasive will be enough, otherwise you can start from 150 grit to sand. Remember that this project will be a kitchen tool, so the final piece won't have to be super smooth and shiny



6

“To square it you can use a sharpened parting tool or, if you want a better finish, a spindle gouge”

6 Now, take your time to figure out the measurements of the two halves of the stamp. The half with the handle should be approximately 2/3 of the blank but, again, there are no strict rules and you can improvise

7 Use a parting tool to separate the two halves of the stamp, but don't go all the way through the blank. Leave a little bit of wood that will be removed manually with a small saw; it's a much safer way to part two pieces from one blank



7



8

8 Cut a strip of leather from, for example, an old belt and wrap it on the side of the stamp that will be put in the chuck. The strip must not overlap at either end as it would create an off-centre effect on the stamp. If the strip is a little short round the stamp then that is also fine

9 Place the piece of wood with the leather strip as shown in the figure (see opposite). The leather will avoid any jaw marks on the smooth surface of the stamp and will assure a strong grip on the piece. It's a neat little trick that can be used on a number of different occasions



9



10

10 An important thing to remember is to square both ends of the two halves of the stamp. On the short piece the carved sign will be present, the other piece will have a flat surface that will host another, simpler, drawing – like your initials. To square it you can use a sharpened parting tool or, if you want a better finish, a spindle gouge

11 On the short part, opposite to the flat side, you have to make a shallow depression. Start turning from the edge and keep the border sharp. This part will cut the pasta in small disks, actually making the croxetti. Use a small (10mm in this case) sharp bowl gouge to obtain a very smooth finish

12 It's now time to turn the handle that will be placed on the bigger of the two blanks, the one without the concave shape on one of the two sides. Mark the measurements on the blank and start removing material which corresponds to the narrow part using a parting tool

13 Now, using the spindle gouge, shape the rest of the handle. Take it slowly and stop from time-to-time trying the grip until you feel it comfortable in your hand. When the shape is right, just a touch of sandpaper will make it smoother

14 It's time to stop the lathe and start carving. On one of the two flat sides draw the more complicated design. I like to carve the complex one on the half without the handle so I can hold it firmly in my hand, but you can, of course, use a vice. Carefully draw your design with a soft pencil. The better the drawing, the better the result

15 The ball point burr is the best choice to carve curved designs. The carving doesn't have to be deep and even a small burr will do the job in a reasonable amount of time. This being said, nothing stops you from using different types of burr and experiment with them. This is the final result. A shallow carving is enough to leave a neat and clean mark on the pasta. The design I chose is just a random one, but you can decorate however you want

16 Now that you've turned a croxetti stamp, you'll need pasta to go with it. To make some delicious pasta, you will need 300g of flour, two egg yolks, and a 100ml of water. Sieve the flour first then mix all the ingredients and knead until you get a pliable, smooth dough. Form a ball with the dough and let it rest, covered in cling film for at least 30 minutes at room temperature. Roll out the dough until it's approximately 3mm thick then use the sharp end of the croxetti stamp to cut out even discs

17 Place the disk between the two halves of the stamp and apply a firm pressure. Be sure not to shift the two halves to obtain a clear and neat design on the pasta

18 The result of a perfect croxetti. Cook the croxetti in salted water until they come up on the surface, and let them boil for no more than four/five minutes. Serve with some basil pesto for a tasty dinner! ●



11



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Finishing for turnings

This month, **Kurt Hertzog** talks about epoxy and the correct way to use as a finish for your turning projects

KURT HERTZOG



Kurt is a professional woodturner, demonstrator and teacher and writes for various woodturning and woodworking publications in the United States as well as contributing to *Woodturning* magazine. He is on the Pen Makers' Guild Council and is past president of the American Association of Woodturners (AAW).

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When you think about finishes for turnings a couple of things immediately come to mind. How good does that particular finish look? Is it durable enough for the application? If so, is the piece worth the effort to put that finish on? If the turning is going for sale at the craft fair never to be seen again then perhaps the rub and buff finish is your choice. A turning that may stay in the family or go to a special customer or friend might deserve more attention. Nearly all finishes look good if it's properly applied after having done the necessary preparations. Every finish from beeswax and turpentine through catalysed lacquers will add value to the final piece.

When you think about durability, you can often run into several issues. Is it durable enough to stay looking good for a lifetime of use? Is that lifetime the next few years or handed down to the next generation? Who will be using it, how often, and how 'gently' can also enter the picture. For example, will your bowl sit on the dining room table holding fruit for the rest of its life? Will it be used by kids and their friends for snacks and popcorn at sleepovers? Of course, reparability certainly enters the picture. Should the finish take a beating and be in need of repairs or 'refreshing'? Does the finish you've chosen lend itself to repairs or refreshing? For the most part,

DOS AND DON'TS

- Don't skimp on surface prep as surface flaws will not be hidden, only highlighted
- Get everything ready prior; all supplies, PPE and cleanup materials
- Have a clean, dust-free work area whether a fixture, table or lathe
- Always mix the epoxy components thoroughly. They need it to work correctly
- Work in a room temperature environment until you're more experienced
- Practice and master the process on unimportant practice pieces
- Use a standard, readily available brand. Settle on one and master it
- When you begin to get to the gel point, quit! Don't make a mess trying to fight it
- Do not try to alter the cure times by varying the ratios of hardener to resin
- Never play chemist by adding to the formula. Mix and use as only as directed
- Do not sand too early and wait until the epoxy has cured to solid

Safety

Epoxy adhesives don't require extensive considerations to use but adequate ventilation, eye and face protection, breathing protection when sanding, and using hand protection when needed are wise to have. Never be afraid to read and heed the manufacturer's instructions. The label of every consumer package will have the recommended safe usage includes any PPE that's been suggested to use. Avoiding direct skin contact by using nitrile gloves or equivalent can help prevent or delay you from being sensitised to the active ingredients. Also be aware that other people may be sensitised to the chemical constituents of epoxy. While you may not be affected, there may be others nearby or in the same space that can experience some issues. It is wise to check on this prior to

opening, mixing or using any chemicals. You may hear or read about altering epoxies' open time with the use of acetone or other chemicals. Blend and use epoxies as the manufacturer recommends and do not begin playing chemist. The manufacturer will offer varying cure time products or altered hardeners if appropriate. If they offer it and it fits your needs then use it. Do not try to concoct your own. Likewise, you'll see those trying to heat the epoxy to change the viscosity or alter the cure time. Please be cautious and do this safely. A heat gun set to warm will give you the desired benefit. When I see the online materials with people using a match or torch to heat an epoxy coated turning, I shudder! An open flame of any kind has no place among the dust and debris in my woodshop.

ease of application depends on your skills and familiarity with that finish. Obviously, equipment and frequency of use plays a part. Few of us have dedicated spray booths, specialised filtering hoods, breathing apparatus and the ecologically correct disposal of chemicals that are part of the professional level finishes. Sticking with the more common finishes available to most of us and one that's not used as much as it probably should is epoxy. While I personally am a fan of CA or lacquer as a finish for nearly all of my turnings, epoxy does play a part in my finishing repertoire. This month, we'll look at things you need to know about using epoxy as a finish.



A heat gun set to warm kept well away from the turning can lower the viscosity for penetration as well as accelerate the curing

Advantages

Epoxy is one of the more friendly chemicals used in the 'shop. It isn't as noxious as some of the adhesives and finishes we often use. As a two-part product, it stores well without the issues of oxidation and hardening in the container. The vendors of the product have made metering and mixing easy. While an advantage and potentially a disadvantage, epoxy has gap filling characteristics. When using as an adhesive, a 'plug' or flaw filling agent, gap filling is a great advantage. When using as a finish, care must be taken to avoid filling of crisp details in the work. Depending on the vendor, you can control the mixed product characteristics by using different hardeners and retarding agents. You can find out more about epoxies in 'What you need to know about using adhesives' published in



TransTint is just one of your choices for colouring your wood before finishing or tinting the epoxy then finishing

WT 269, August 2014. An epoxy finish has many advantages. The most obvious is its toughness and durability. Once cured, epoxy is very resilient to the dings and dents of everyday life and epoxy tends not to get brittle with age. It isn't bullet proof, but certainly protects the wood especially when it is been built up with multiple coats. It is modestly priced and readily available and you can colour epoxy from a very light tinting to a solid colour if you wish. The solid colour technique isn't used often for a complete surface finish, but is great for gap filling or special accents. Tinting is easily done by mixing your dyes with the epoxy when mixing the two epoxy components. Be aware that you may have a problem matching tints or colours if you need to mix multiple batches.



The colour palette is quite extensive especially considering you can mix any of the colours together



I've used the five minute structural epoxies for finishing but they are more suited to small items because of their viscous nature



The two laminating epoxies I've used work well on any size turning having a reduced viscosity and controllable open times

Selection

There are many products offered in the marketplace for finishing ranging from wipe on to bar top coatings. The available epoxies range from the five minute bubble package products at the home repair centre to professional grade products with assorted hardeners and retarders. Nearly any of these can be made to work although some are far easier to use. You'll need to consider the open time, gel time and cure time of the product you select. Be certain you've selected a product that will let you apply and work the epoxy as needed before it begins to gel in the curing process. The size of your turning will be a factor. Mixing and applying epoxy to a small, lidded box will be far quicker than working with a large platter. There are a variety of methods to apply epoxy as a finish.

While I have experimented with the various brands from the major manufacturers, I learned epoxy as a finish from Giles Gilson using West System's epoxy. Having been successful with it, I have made it my standard when using epoxy as a filling agent or finishing material. There are other choices for you in the market. The two that I can highly recommend from experience are the West Systems Epoxy and the System 3 Clear Coat. Both fall into the more professional levels than the bubble pack materials in the home centre. They are not necessarily much more expensive per unit volume when you buy in quantity. They both offer optional chemicals for altering open and cure time. However, they are not sold in the small quantity packaging as are the home centre epoxies.

Knowing what happens

Understanding a bit of what happens will help you with your selection and use of epoxy. Two-part epoxy contains a resin and hardener. Most consumer bubble package epoxies are designed to be an equal 1:1 mix of resin and hardener. Others specifically a finish or professional market may differ and will specify in their mixing ratio requirements. At room temperature, mixing the dispensed parts of the two constituents well will begin the curing process. Once mixed well, the resulting liquid can be easily applied or spread. This liquid use time is usually called 'open time' and can also be noted as working time or wet lay up time. Temperature dependent, the manufacturer usually specifies this time at a room temperature of 21°C. Get everything done you need to during this time and apply it where needed, fasten and clamp things, or get your coating spread. The liquid or open

time passes into the gel time. In the gel phase, epoxy tacks up and becomes unworkable from a practical standpoint. It isn't fully cured, but it is part way there. If additional epoxy is added to this gel stage epoxy, there can be a chemical bond between the original and added layer. It is the transition between the liquid and the final cure solid. If not called out on the spec sheets, you can assume the gel time to be the difference between the open time and the cured time. While in the gel state, especially early on, a thumbnail can create a dent in the epoxy. Spec sheets will quote the cure time. At the solid or cure state time, the epoxy has reached about 90% of the strength it will ever obtain. A thumbnail won't make a mark and the epoxy can be sanded and shaped as needed. Any added epoxy at this point will be a purely a mechanical bond. To achieve good adhesion between added layers, the cured surface needs



A couple of work area saviours are a high temp silicone baking mat or parchment paper. Both are chemical and heat resistant

to be abraded to provide tooth for the next layer of epoxy. Be aware that it takes many days beyond the specified cure time to get to the final cure properties. That 90% to 100% completion really isn't of any consequence to us, but know that it does occur and slowly.

Epoxy and temperature

Epoxy and the chemical process of curing is temperature dependent. Once the two parts are mixed, the epoxy begins the process of cross-linking. It exotherms, meaning it gives off heat. This heat generation helps cure the product since the higher temperature helps speed things up. The contrary is true; if you work in a cooler environment the curing process will be slowed. The limit is given on the labels and varies by brand, but the recommended usage temperature range for most epoxy brands, is in the range of mid 30s down to below 5°C. Elevated temperature speeds things and reducing temperatures slows things down. If you stay within reason, you can use this to your advantage from a time standpoint. In a hurry? Warmer temperatures will shorten the needed time. Need more

open time? Cooler temperatures can help. The increased open time based on temperature does come with some downsides. At cooler temperatures, epoxy is more difficult to mix and mix well.

Also, when using it as a coating such as our application as a finish, it doesn't flow out as well being colder. These tradeoffs may not work to your advantage so I recommend you stay in the room temperature range until you get beyond the basics. We'll take advantage of the flow improvements by warming with a heat gun before the epoxy coating has gelled. Warming applied epoxy carries the risk of lowering the viscosity too much and causing sags. We'll still need to be cautious to keep the temperature of mixed epoxy below the recommended maximum of 49°C.

Proper preparation of the surfaces

There is no clear finish that I'm aware of when it's applied that will cover up poor preparation for finish. You certainly will want the shapes and features of your work defined and sanded, but what about the areas that were easier to cut? Depending on the location and finish applied, wide open areas or difficult to examine areas will have scratches that will show up after finishing. Like all finishes, scratches underneath can't be fixed

without removing the finish and fixing the underlying problem. Careful examination of the prepared surface is a very wise investment in time. Sanding, whether power or hand, needs to be done with the care using good technique, cleaning between grits, and working through the grits. It is important to use the intermediate grits when needed. What grit should you work to? That depends on the species and the design. Sand until you

get to the point where you are happy with the appearance of the surface finish. If you can see scratches, the final user can see them right through your epoxy finish too. One caution about sanding to too fine of a grit. Epoxy requires a bit of tooth to bond well to the surface. Though not required, I do a thorough cleaning of the surface with a paper towel soaked with denatured alcohol, which removes any of the dust and debris left from sanding.



Epoxy will fill gaps and voids, but never cover a poor job of surface preparation



Whether high priced or bargain basement, flexible high intensity LED lights are handy accessories for checking surface flaws



The flexible snout lets you lay flat on surfaces, bottoms of bowls, or difficult to reach areas



This image, taken in daylight, but set to show the effects of the light illustrates how you'll see things you'd otherwise miss

Applying epoxy

The method I learned from the late Giles Gilson was as follows: you apply the epoxy in a wipe on and then wipe off technique. You can work anywhere you are comfortable and have the needed ventilation and PPE. I tend to work right at the lathe using the lathe itself as a work holding device. I mix my epoxy as per the instructions with at least enough for the intended coating having all else in ready. My application tool is a folded paper towel. Wearing nitrile gloves prevents bare skin contact with the epoxy. Load up a folded paper towel and using it to rub the epoxy on to the turning while rotating the lathe by hand is the way to do a complete coverage. Once the turning has complete coverage including all of the nooks and crannies, I use a clean paper towel to wipe it off. Change towels as often as necessary to get the turning free of excess epoxy. If you want to be certain to flow into any tight spaces, use a heat gun on low heat to blow warm air over the epoxy. You'll see the viscosity change in



The layup epoxies, West Systems, System 3, or equivalents can be brushed on, applied with rollers, or by hand with a towel

any areas where there is a fillet or residue that couldn't be reached during the wipe off. The epoxy is then allowed to cure. If you need the lathe, take the chuck, faceplate, or other mounting apparatus off and place the turning in a dust-free environment to cure. After 24 hours, if you want another coat of build, remount, abrade the surface to provide some tooth, clean it, and repeat. Like CA, it is a



Sanding between coats with 330 to provide tooth for the next coat. If you don't get white dust, you haven't let it cure enough

progressive build process until you get to the thickness or look that you want. That can be one coat or 15. Your choice. Applied sparingly and wiped off properly, you will not have to do any levelling of the coats. If for whatever reason you wind up with unevenness, you'll have to sand as needed to level the surface. Most of the time, a couple of coats are more than sufficient.

Final finish

With sufficient build to your satisfaction, all that is left is the 'rub out'. This is nothing more than the final light sanding with fine grit abrasive to smooth the finish to a mirror feel and look. I usually use Micromesh, starting half way through the stack, somewhere around 3200 and work to the finest grit on the scale. You can bring the epoxy finish to the same sheen as a lacquer if you wish. Also, '0000' steel wool will matte back the finish for that rustic look. If you have the need, you can always put a bit of wax over the top in either case. I like the Renaissance Wax as an aid to keep fingerprints down. You can use your favourite wax or just leave as is.



Once at the final coat, 1 or a number of them, a final sanding though the Micromesh will smooth and shine to a gloss if desired

A finish or substrate?

You've heard that you can't seal wood to prevent moisture absorption. Epoxy has been used for many years to build and seal boats. Does it do it perfectly? Is an epoxy finish waterproof? I don't know, but it is as close as we'll probably come. Giles Gilson spent enormous time creating his airbrushed masterpieces on turned vessels. His epoxy finishes were applied and perfected to provide a stable substrate for his paintings. From inches to many feet in size, his works of candy coloured lacquer airbrush scenes have existed for nearly 50 years without flexing enough to cause damage.



As a substrate for painting, the epoxy surface finish must be flawless and as inert as possible. A Giles Gilson turned and airbrushed piece



A candy color lacquer over epoxy by Giles Gilson



Movement of any kind would destroy the candy coloured lacquer airbrushing on this piece. A Giles Gilson turned and airbrushed piece



An early Gilson piece with the super high gloss lacquer painted surface



Giles Gilson's holographic appearing painted teapot. Over two feet tall

Conclusion

While epoxy certainly doesn't sound as exciting or high tech as catalysed lacquer, it is far more likely that the home shop user can get, apply, and be successful with it. You can apply the tough, smooth finish to protect your turning or to create a virtually inert substrate over the top of your turning for subsequent decoration. Either way, epoxy can fill the bill. Like all of my columns, this isn't the end point, but rather the starting point. You won't master epoxy finishes just by reading this column. You have sufficient accurate and helpful information to begin your journey using epoxy as a finish for your work. You'll certainly need to experiment and practise developing your own techniques with whichever brand of epoxy you use. Don't try to use them all. Experiment as needed and then pick one that best suits you and master it. It may or may not be the same brand you use as a fastening adhesive. Using epoxy as a finish when appropriate will serve you well and you don't need many to choose from, but I suggest that epoxy be a tool you add to your repertoire. ●



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Hollow forms — part two

Following on from last month **Richard Findley** turns a second, more challenging hollow form

RICHARD FINDLEY



Richard is a registered UK professional woodturner living and working in Leicestershire. He discovered woodturning while working for his father as a joiner. He makes all kinds of work to commission, from replacement

antique components, walking canes and stair spindles, to decorative bowls. It is the variety of work that he loves. He also offers demonstrations and a range of woodturning supplies.

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Usually I photograph and write each article to meet the monthly deadline set by the 'powers that be' at the magazine. Because this article is slightly different, as it follows directly on from the last and the timber I plan to use is stored in black bin bags and poised to start cracking, I decide to turn my second hollow form the day after my first, which has the added advantage of

keeping the tool techniques completely fresh in my mind.

I feel pretty happy with my first attempt at a hollow form. It certainly isn't perfect; there are a few tool marks on the inside which I feel I can avoid on this second one, but the outside is a shape I think works, although I am living with it before I completely make up my mind.

The plan

Keeping in mind the areas I need to improve, the plan for this second hollow form is to turn a more enclosed shape, one that will require a tool with a crank in the shaft to reach into the inside shoulder. I now know the limits of the tools I am using much better due to unwittingly making my first form bigger than I perhaps should. I have also identified a couple of the tools that work well with my style of turning and I have become reasonably familiar with them since turning the first form.

I decide there is little point making a form with a tiny hole as this is very challenging, especially for only my second attempt. Photographing such a form for the article

would be quite uninformative as you really can't see anything on the inside. It is possible to turn a form with a hole on the side to show what goes on inside during the turning, but I feel this will add considerably to the level of difficulty so I decided against this approach. I also found during the turning of the first form that I'm still at a stage where being able to see what I'm doing is helpful to me. So I'm going to play it by ear a little and see how small I can comfortably make the hole while still being able to see inside and with it still working with my planned design, which ultimately is the most important factor. It needs to work as a finished hollow form.

The theory

Having made one, the theory and the practice have become closer together for me. This one should be easier, although I'm offsetting my new found experience by making a more difficult design. I think the biggest challenge will be using tools with a crank in them to reach into the corner, but otherwise this should be reasonably straightforward, but we shall see!

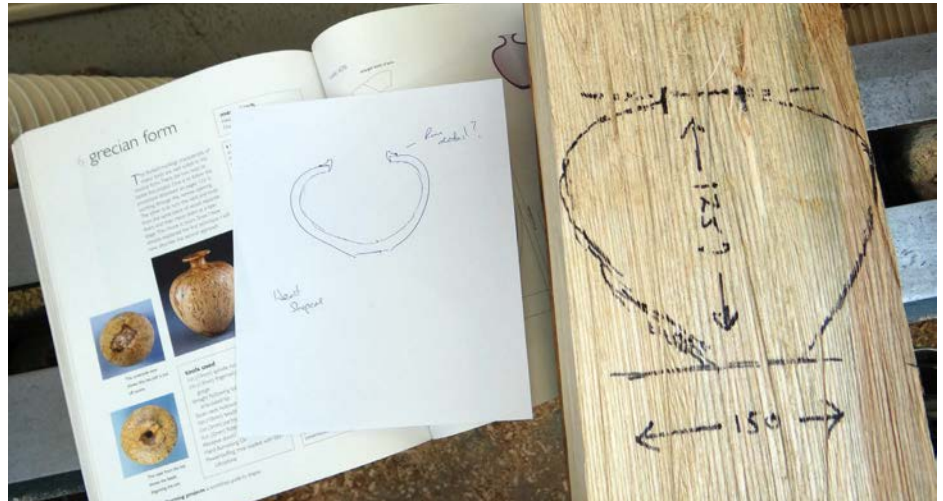
Design

Now I know the limits of the tools, I know this form will not be as tall as the first. I also know I want a more enclosed form so probably a slightly heart-shaped piece would work best. As before, I make a couple of sketches and check my books for design inspiration. Once again, Mark Baker's *Woodturning Projects: A Workshop Guide to Shapes* shows a few examples and the curve of one catches my eye. I'm not keen on the neck, but the body shape works well for what I have in mind. My sketch feels like it's missing something around the hole though, so you'll notice I have marked a rim detail with a question mark. I'll see what works as I turn. This freedom is not something I'm used to with my production work and it feels a little strange, but I'm rolling with it.

Wood and tools

I am using more of the ash (*Fraxinus excelsior*) wood I got from my friend George Watkins. He assured me that ash is a good timber to get into hollow form turning as it is quite user friendly and reasonably stable. I'm interested to see how much, if any, movement these hollow forms will produce.

The two tools I got on best with the first form were the carbide tipped tool and the shielded ring cutter. It seems that a straight cutter can reach a surprisingly good way into the curved shoulder of a hollow form, but I will certainly need some degree of crank or swan neck to reach into the more difficult areas. The one piece of theory that I know about these cranked hollowing tools is that to ensure they work safely, the cutting tip should not protrude much past the straight shaft of the tool otherwise the twisting force produced can be potentially dramatic and uncontrollable. It will be interesting to see how this goes.



My sketch and inspiration for this hollow form



A collection of cranked and swan neck hollowing tools

Making a start

As before, I mount the ash log section between my four prong drive and live ring centre and rough it down starting with my large bowl gouge and finishing with my big spindle roughing gouge. With the ends trued up I mount it onto my faceplate. I did consider using the alternative of holding the timber in my chuck, but as the faceplate method worked so well last time I see little point in changing my method here. Once secured to the faceplate, I once again mark out the blank with the area where the screws sit, a section for waste, the form itself and the final piece of waste, which is next to be turned away. I gradually develop the outer shape of the hollow form with my 12mm spindle gouge. This is just spindle turning so my main focus is on producing a pleasing curve to the profile. Although the final form



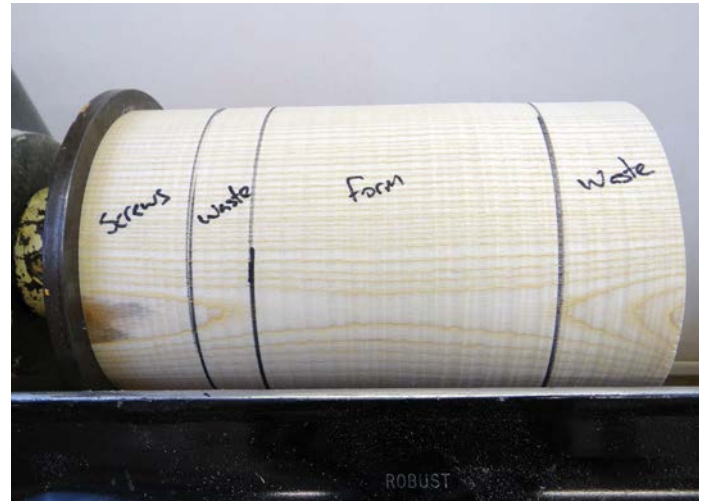
Initial roughing with my big bowl gouge

will have a relatively small base, I leave the lower portion quite chunky for now so it can withstand the forces of hollowing. This does

make it more challenging to visualise the final shape, but I will develop both the inside and outside further as I proceed.



Smoothing with my roughing gouge



The blank marked up with positions of screws, waste and the form



Removing the waste at the end makes some long streamers



Forming the outer shape with my spindle gouge

The inside



Drilling the initial hole

The first step to hollow any form is to drill a central hole as most cutters perform best cutting on the side rather than on the end. I use the same 21mm drill I used last time mounted in my Jacobs chuck in the tailstock. As always when drilling on the lathe I go steady at a relatively low speed and clear the flutes of the drill regularly.

With the hole drilled I pick the first tool. I like how slender the carbide tipped tool is at the business end, which allows the toolrest to be close to the work. Clearly this isn't essential, but it feels more natural to me. I have marked with

a pencil the size of opening I feel works best with the design. In the end it isn't that much smaller than the first hollow form I made, but it is smaller and I have the challenging curved shoulder I originally planned for.



Beginning with the slender carbide tipped tool



The straight tool can manage a surprising amount of hollowing before the crank is required

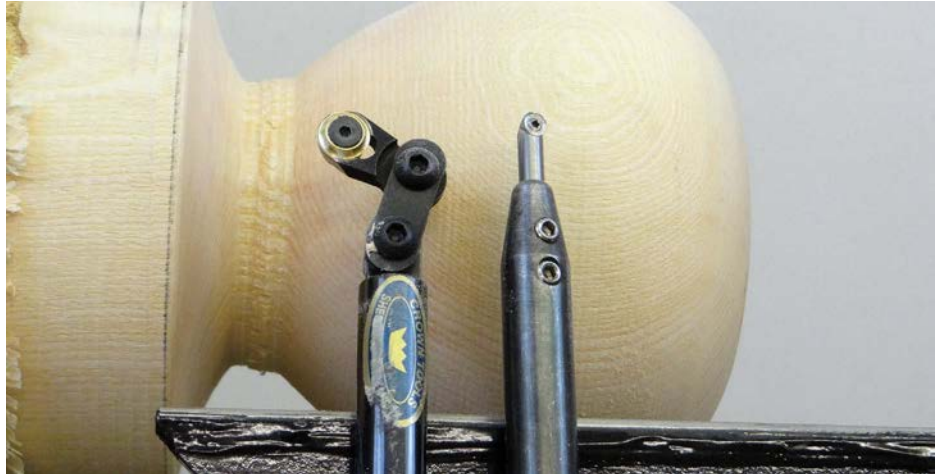


I decide to see just how much I can do with the straight tool and it is surprising how far round I can reach. I will definitely need some degree of crank to finish it off, but nowhere near as much as many tools offer. Having had success with the shielded cutter on the last hollow form, I reacquaint myself with it before adjusting the head to produce the required crank.

I try a few adjustments of the links on the tool until I find just the right balance between being able to reach where I want to get to and being controllable. Oddly the cutter is a good way beyond the line of the shaft and so theoretically should be quite unstable, but I find this works perfectly for me. I suspect, as I found when I first used this tool set up to someone else's liking, this setting won't suit everyone.

Oops!

I gradually develop the inside of the shoulder regularly checking the thickness with my callipers, but I am so focused on cutting it perfectly and achieving an even thickness that I forget my earlier idea of leaving some thickness around the opening for a rim detail. It's too late now though so I'll have to just carry on and come up with something else to finish off the rim. I can't shake the feeling that it's going to need something.



The shielded cutter with the amount of crank that worked for me, with the straight tipped tool I used



Beginning to work on the shoulder with the tool

Continuing to hollow

The lower quarter seems to take forever to get right. I am determined to get the flow of the shapes right while keeping the inside as free from tool marks as possible. I feel like I am removing a lot of wood and the evidence seems to back that up, by the shavings I regularly blow out of the form, but my callipers tell me there is still plenty of wood left. Eventually, with some work on the outside

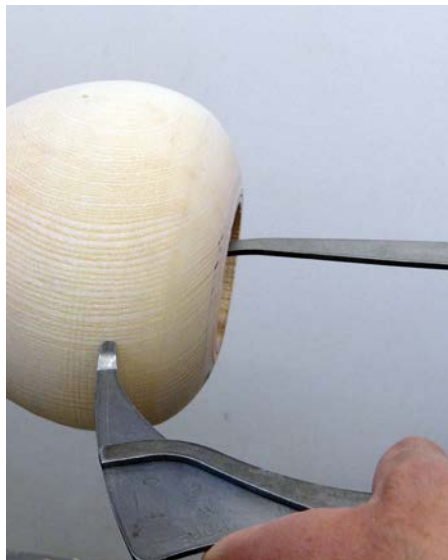
of this area as well, I am happy with all of the elements: the curves, the level of finish, the balance of the shape and the wall thickness. To check this I unscrew the faceplate and hold it up the right way. It's amazing the difference seeing something the right way up or from a different angle can make. Fortunately, I am happy with my work so far and decide it is now almost time to sand.



The airline easily clears the shavings from inside the form



The magnetic LED light is a great help to me



Regular checks with my callipers are essential



I also use rulers to check the depth



Refining the lower portion of the form



Checking the form the right way up is a great help



Using my point tool to cut a 'v'-groove near the rim

Rim detail

Throughout the turning process I am thinking about the rim detail, or lack thereof. There isn't enough wood to turn anything particularly decorative so I tidy the edge of the hole with the wing of my spindle gouge. It looks improved immediately, but still needs something. It occurs to me that perhaps just a simple cut line might be enough to give a little interest to what is currently quite a plain top surface. I draw a pencil line to see and this confirms that it should do the trick so I sharpen up my point tool and cut a small 'v'-shaped groove, which I think works well. Simple, but effective and I like that.

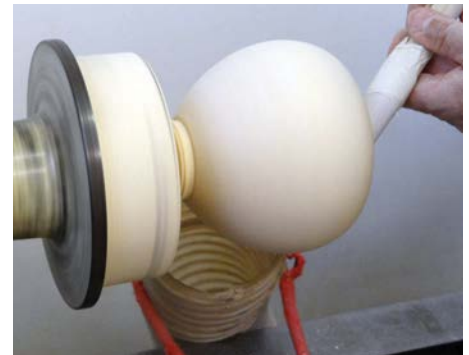
Sanding



Sanding the outside of the form



Sanding as far as I safely can inside by hand



Using a sanding stick to sand the rest of the inside

Sanding the outside is straightforward and I take it from 120–400 grit without a problem. I realise that one of the problems with my first hollow form were the few tool marks that remained on the inside. Usually tool marks like this can be sanded out with some coarse abrasive if you struggle to perfect it with the tool, but because access is restricted on the inside of a form it's impossible to apply enough pressure to the wood with the abrasive to completely get rid of the marks. With the knowledge learned from my first attempt I made sure the tooling is much better this time so the sanding of the inside is easier and generally much more successful. As before, I sand as far into the form as I safely can with my fingers before switching to a sanding stick, which has Velcro attached and allows sanding in tricky places like this. Again I sand from 120–400 grit on the inside.



Turning the base as small as possible

Happy with my sanding, I remove more timber from the base leaving just a small spigot attached to the waste on the faceplate and blend the sanding as much as possible before sawing the form from the waste and finishing the base by hand. I apply a coat of lemon oil to protect it while it settles and store it in my office along with the first form.



Parting off the form with a saw



The parted form

Four weeks later...

After leaving the forms on a shelf in my office to settle and fully season I take them down to the workshop to have a closer look. I am pleased to see they haven't cracked, but they have moved as wood tends to do. They have gone from being round to slightly oval in shape when viewed from the top. They are also a little heavier than I expected them to be. This is an odd thing to say as wood loses weight as it dries so the forms will be lighter now than they were four weeks ago and I don't remember thinking that when I

turned them. They seemed quite flexible and almost fragile when they were fresh from the lathe, but as the moisture has left them they will have stiffened and they actually seem a little thick now. One lesson I immediately take from this is that you can go thinner than you think with green hollow forms. This doesn't particularly take anything away from them, but it is something to bear in mind next time... if there is a next time!

I apply four coats of satin hard wax oil and they are finished.



Hollow form one from the top



Hollow form two from the top



The finished hollow forms

OVAL VS ROUND

The technique I used here was largely based on my discussions with George Watkins, as this is the way he does his hollow forms – turned thin in one hit and allowing them to move.

I am aware that an oval form may not be to everyone's taste so the way to avoid this would be to turn the forms a little thicker and let them settle and fully dry out. Then remount on the lathe, preferably on a chuck, which avoids large chunks of timber, which are likely to crack during seasoning, and finish turn. This would ensure a perfectly spherical form when viewed from the top. I spoke to another friend of mine who does this and he explains that whole books could be (and probably have been) written on this subject, but when I push him, he recommends a wall thickness of 15–20mm if you want to re-turn them, although there are a lot of variables including species of wood, size and shape of the log it comes from and where on the tree it's cut. This would be something to experiment with in the future, but for the purpose of these articles, this technique of turning in one hit has been ideal as deadlines are always looming.

Conclusion

Despite my earlier complaints about turning green wood, I have enjoyed making these hollow forms. There is clearly a steep learning curve with the many techniques involved, but I was able to draw on my past experience to see me through to a relatively successful outcome. I am always my own harshest critic so all I can see with them is the many flaws, but on the whole I am pleased with the way they have turned out. Next time I would definitely make them thinner, perhaps 4mm or even less, and I might be interested to experiment with the techniques involved in turning them twice to achieve a more circular form.

My advice to anyone wishing to have a go at turning hollow forms would be to speak to someone with experience who can let you try out a couple of different tools before committing to spending a lot of money on what could be the wrong tool for you. I would also recommend sourcing good quality timber as this could well be the key to success with this and with most types of turning. ●

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What really counts when buying a lathe

A fixation on features and a ruling out of great machines, **Ernie Conover** talks us through what really counts when buying a lathe

ERNIE CONOVER



Ernie Conover is best known for teaching and writing about woodturning, as well as designing and marketing the Conover lathe.

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Folks buying a lathe often ask my opinion on a particular model. This starts a back and forth discussion regarding the type of turning they plan to do. I break turning into the following categories: pens, where there is a fair number of turners who only turn pens. Mini lathe or practically any other lathe will work fine; traditional spindle turning, which is making parts for furniture, toys such as tops and useful household items, often called green; hollow form spindle turning where the making of spindle turned vessels usually of an amphora shape, or lidded boxes with a press fit or

screw threaded cap; faceplate turning, which is making bowls and vessels and architectural spindle turning (making indoor and outdoor spindles up to 2400mm and longer).

A huge number of aspiring turners aim to turn bowls and 90% of the lectures at many symposiums address this crowd. Manufacturers have jumped on this bandwagon; some have built heavy machines sporting large spindles with lots of swing, while others have merely raised their centre height gaining capacity. Common dinner conversation at a national symposium revolves around whether you can chuck a smart car in your lathe or not.

Aspiring bowl turners hold their arms in a circle and say: "I would like to make really big bowls." Before you buy a huge lathe consider these truths; a bowl larger than about 355mm is not particularly useful. It will take up far too much space for display in the average home. Furthermore, bowls in the 150–300mm sizings are very useful. They hold a correct portion of food and display well in the average interior decorating

situation. The difficulty, and dangers, of turning larger bowls increases exponentially with the diameter. A bowl is essentially a half sphere. Doubling the diameter of a sphere increases the volume eightfold. The average bowl's volume does not increase fourfold, but there is a lot more weight and material to remove with each doubling of size. Also the diameter of the rim doubles as well. Going from 150–300mm takes the outside rim diameter from 480–960mm. This is to say that each increase in diameter requires more turning proficiency, more frequent tool sharpening and much slower speeds.

The average turner will never need more than 200mm height and would find few limitations with a 150mm height. Once you can control the bowl gouge and turn well at very low speeds buy a bigger lathe if big bowls is your quest. However, I bet your spouse will say: "not another wood bowl! Why don't you try spinning pewter rather than buying a bigger lathe?" Also remember that moving the banjo/toolrest on a smaller lathe is much easier.



Speaking of banjos they are not created equally, a factor few buyers consider, but should! A perfect banjo has a low height, becomes one with the bed when locked but unlocks and moves with ease. Every millimetre of height on a banjo robs from swing, because in all between centre and most faceplate situations it has to be under the work. I feel manufacturers should list swing as two times the centre height over the banjo and not the bed. Of course, the marketing department prefers the higher figure.

Never underestimate the value of a good tailstock; like the banjo it should lock solid to the bed with minimal effort on the locking lever. It should have good ram travel with at least a 25mm quill (also called a spindle or ram). The amount of travel depends on the size of the lathe. The hand wheel that extends the quill should be of good diameter, run smoothly and exert proper force. Many, dare I say 'most', tailstocks tend to slide a bit when the ram is extended against the work. This can be because the cam that does the locking exerts insufficient force or the block under the ways that transfers the force cams backwards. Most lathes require too much force on the locking lever, even requiring a mallet to lock really solid.

Indexing

Indexing and outboard turning I think of as evil twins. Most new buyers require both with nothing but intuition as the basis of the perceived need.

As stated above very few folks will ever turn anything over 400mm. They will probably never turn anything outboard – once at the most. Forget outboard exists. If the need arises us a friend's lathe or if



I bought this Oneway banjo/toolrest for my Powermatic because it is so much superior. It locks to the bed like the door of a Chubb safe and grips the toolrest relentlessly. Light pressure on the levers is all that is necessary to lock everything solid

you are turning pilgrimage become gargantuan bowls, buy a lathe big enough to do the job inboard. The outboard arrangements for many lathes is an afterthought; oh, we designed a great lathe here but the marketing department says we have to have outboard, any ideas?

Indexing is the biggest siren luring new buyers onto the rocks. Although turning club wisdom says it is very important, this is a factoid and is actually absolute balderdash in my opinion. Again, most turners will never use this feature and when the need does arise there are so many workarounds that are better. Most notable is a good set of dividers with nice sharp points.

Method

Multiply the diameter you are dividing and divide this product by the number of divisions desired. Set your dividers to this figure and make a trial run around the circle touching the points down very lightly. Open or close the dividers a bit depending on whether you are short or long when you reach the first division; keep adjusting until you end up bang on the starting point. Now push each leg in a bit as you go around the last time and centre punch each of these marks.

Headstock indexing is typically 60, 48, 24 or 12 positions. The last three work well for engineering and come from metalworking.



Using dividers to layout 10 holes: I recently made this hub for a reproduction of an antique spinning wheel called a great wheel. The wheel was 1200mm in diameter and there was 10 spokes. I had 48 position indexing in my Oneway but that was of no use whatsoever. I either had to use eight or 12 spokes or get out the trusty dividers, which is what I did



The finished wheel

60 works the best for artistic endeavours.

A good many buyers are looking to augment their furniture making. For this crowd it is not so much a matter of swing as between centre distance. A 150mm centre height is more than adequate and 915mm between centres is fine for almost all furniture. Again, manufacturers generally list the between the noses of the headstock and tailstock spindles sans centres. The real distance is with these accoutrements installed. Few table legs are longer than 760mm. If you want to make chairs, the back posts can be as long as 1300mm. The good thing about midi lathes is that they all come with modular beds that can be extended to these lengths nicely. This lathe will handle hollow formwork very well as well.

Turning of architectural parts is a commercial undertaking. It requires lathes with swing and between centre distances. There can be a modest living in performing this type of work but you need a big solid lathe. Used may be the best source.

I would like to close with speed control. I think variable speed is a human right and not a luxury. I think it far more important that outboard capacity or indexing. It can be achieved mechanically with a set of variable width sheaves called a Reeves Drive. Adjusting a lever changes the width of the sheaves, which changes the speed. They wear belts a bit but work just fine if maintained.

D.C. speed control is all but gone. You can



Turning architectural parts takes a heavy lathe with lots of between centre distance

find used machines that sport a D.C. drive but none are being manufactured any longer. Frequency drives that deliver three-phase power at any frequency rate have claimed the field. They are reasonably priced, have a robust service life if not struck by lightning, and deliver smooth power. Three-phase motors are also more reliable than their single-phase cousins. In the U.S. we call them freq drives. They are also easy to add to an existing lathe that only has sheaves when you are sick of changing belts. ●



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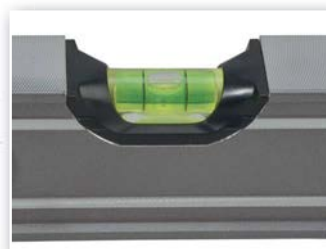


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Hugh Buttrum in profile

The California-based turner is in perfect shape as he talks style, substance and sanding with **Catherine Kielthy**

“**W**hen I was young, they ran a lot of sheep in the hills,” recalls Hugh Buttrum of the landscape near his home in Sonoma County, California, “now it’s in grapes mostly”. Whether the move from livestock to vineyards is progress might be considered a matter of taste, but what isn’t in doubt is the natural beauty of the scene, “emerald green with lots of live oak trees”, that remains so attractive to farmers, winemakers and woodturners alike. A rural idyll on the outskirts of the urban, vibrant, cosmopolitan city of San Francisco. What’s not to like? And what’s not to like about Hugh’s work with its graceful curves, delicate lines and compelling colours? Yet this talented turner, who completed a four-year tour of Southeast Asia with the US Navy after receiving a degree in Forestry, is remarkably modest about his work.

“My woodturning is all over the place,” he

claims, “salad bowls, hollow vessels, textured and carved bowls/vessels, spoons, duck calls, rolling pins and lidded boxes. I don’t seem to stay on one type of item. But then, I am not a great marketer either, so I make what I want to. If it sells, fine. If it doesn’t, I still enjoyed making it, whatever it is.” It’s an attitude that’s hard to resist and one can’t help falling for this laidback Californian charm (and his workshop co-sharer Noodles, of whom, more later). His interest in turning was evident in high school, although his output at the time was, well, minimal to say the least. Two items, one of which was a set of black walnut flour and sugar canisters for his mother, which he still has at home.

It wasn’t until 1990 that he purchased his first lathe, an old, small cast-iron number that was powered by a washing machine motor hanging off the back side. At the time, however, Hugh was working

as a game warden in the Wildlife Law Enforcement Division for the State of California, a career he pursued after leaving the Navy and completing a five-year BA in Biological Science (not sure why yet, but for an inordinate number of woodturners one degree just doesn’t seem to suffice). This naturally restricted the hours he could dedicate to his woodturning hobby, but using Richard Raffan’s books as his teacher – “I still love his books and demos” – Hugh began practising the craft in earnest.

“My workspace was half of a two-car garage with no heating or cooling and my wife put down a strip of masking tape on the floor so I would stay on ‘my’ side,” he recalls fondly. “We lived in an area in California where walnut trees are grown and I turned a lot of black walnut that I scrounged from burn piles.” In 1995, he attended his first American Association of Woodturners

Symposium in Davis, California and discovered a whole new world. “What an eye opener! There was too much to take in and too many directions to go. I found other people who liked to turn wood. But off I went with a whole new insight as to what woodturning was.” Two years later he joined his local woodturning club and he later became a member of the Baulines Craft Guild where he is recognised as a Master Craftsman.

Shape shifting

Another pivotal moment came when he turned 50 and his wife presented him with a gift of two weeks at Arrowmont School of Arts and Crafts in Gatlinburg, Tennessee. John Jordan and Gail Montgomery were the instructors and Mark Gardner was the shop assistant. “Talk about a great combination of talent,” recalls Hugh, “and we had fresh-cut sugar maple to turn. The two weeks were a real highlight of my woodturning. I learned to be a better woodturner using a bowl gouge; I got better at hollowing vessels; and most of all I learned about shapes – good shapes and pleasing-to-look-at shapes. What fun. Thank you, John, Gail and Mark.” These days, Hugh is assisting at Arrowmont. He was preparing to head off to the school to be Mark Gardner’s shop assistant while we were putting together the images for his profile.

Other people who have influenced Hugh over the years since have included David Ellsworth, Christian Burchard and Mike Lee, with whom he also took classes at Arrowmont. And to this list he adds the myriad demonstrators at AAW Symposiums and the many craftspeople “who seem to share freely what they know about woodturning. Sometimes one just needs to be a sponge and absorb.”

He has also incorporated into his designs the shapes, forms and textures found in nature. “Just look around when you go for a walk in the woods,” he urges. “There are many textures and shapes in Mother Nature that work well in woodturning.” Not that he neglects man-made articles, drawing on old and new ceramics and woodturnings in his work. He rejects the notion that he has a ‘style’, however, stating simply that he “strives to make items that are pleasing to the eye.” Over the years, these have included many different things. “When I first started, I was making basic bowls and boxes and simple things like that, not always the greatest shapes. They took a long time to complete, too, as I was a self-taught woodturner at this point with only a minor amount of outside input. Later on, as I was exposed to good shapes and better turning methods, tools, work habits and finishing techniques, my turnings got better, looked better and were more finished.”

Yet he says that sometimes the actual



The wood storage rack in the 'shop with about 250 roughed-out bowls and wood and some tools



Stack of bowls. Mostly Claro walnut, except the porringer, which is made of acacia. Largest is 15in diameter with a burned band texture. The orange coloured porringer with green milk paint is about 10in diameter and the two light-coloured bowls are black oak with milk paint. All finished with Deft oil



Three functional duck calls. Turned sound boards made of Osage orange wood. Left and centre duck call are made of black oak crotch. Right duck call is made from Ironbark eucalyptus. All soaked in linseed oil and rubbed out as it dried



The award-winning urn, 11in high x 10in diameter with 210 cubic inch capacity. Madrone (*Arbutus menziesii*) burl wood, carved Ginkgo leaf pattern. Finished with linseed oil.

woodturning is often the least time-consuming part of the process. Take his example of a salad bowl. There's the time taken to find the wood, get the wood, process the wood, rough out the bowl, and then maybe a year to dry it before it gets finished. "All told, it's maybe only a few hours of work in there, but it may take a year to get the piece done. Add texture to a simple bowl, it's more time. If you carve a turned piece it can take a month or more." And let's not forget the learning process in the preceding years. "What about all the time it took me to learn how to do all these things? What took me a day to make when I was starting out may take only a short time now."

Working in style

Whether it's hours, days, months or years, it's all executed amid the beautifully handcrafted cabinetry in his 24 x 40ft workshop (yes, he escaped the half of a two-car garage – wonder if the delineating masking tape is still on the floor...). "My cat [co-worker Noodles is a moggie] shares the 'shop with me. I have a number of hobbies, but the 'shop is primarily a woodturning 'shop. There is space to do stained-glass work and another space for tying flies for fishing. I have a habit of collecting 'free' wood as there is a lot of it out there. But my 'shop was becoming cluttered with too much timber. A woodturner and cabinet-maker friend fixed up my 'shop last summer. All the wood, roughed-out bowls, etc that were taking up floor space now have cabinets, drawers and shelves. The cabinets all have hard maple counter tops and the drawers all have full extension drawers (33 new ones). So, I am trying to keep my 'shop much neater than I use to. There are a lot of shelves for drying roughed-out bowls and wood chunks. There are even glass-fronted wall cabinets for showing off finished work. He did a fabulous job and had a lot of great ideas to make the space much more efficient. A lot of storage space, lots of countertops. To clean up, I open the garage door and start the leaf blower at the other end and blow it all outside. I still have too much wood around, but I am working on that and the woodturning club members are getting more raffle wood."

Hugh doesn't appear overly sentimental about tools. He has a bandsaw he likes, "but could do without"; a chainsaw for acquiring and cutting wood; a Oneway 2436 lathe which is a "nice machine, my last upgrade"; a good bowl gouge (16mm Thompson) with which he does about 90% of his turning and various homemade hollowing tools. For carving, he likes his Foredom micromotor.

Room for improvement

Reading between the lines, it seems that while turning can be a solitary affair (moggies notwithstanding), outside the

workshop Hugh is a social whirl. He's already mentioned the fun he had during his first two-week spell at Arrowmont, but he's even more enthusiastic when recalling subsequent trips to the school. "A few years ago John Jordan asked me to assist in some of his week-long classes. I was 'shop assistant for him and Mark Gardner. What a week that was. Fresh-cut cherry for the students to turn and John and Mark for instructors. We had a ball."

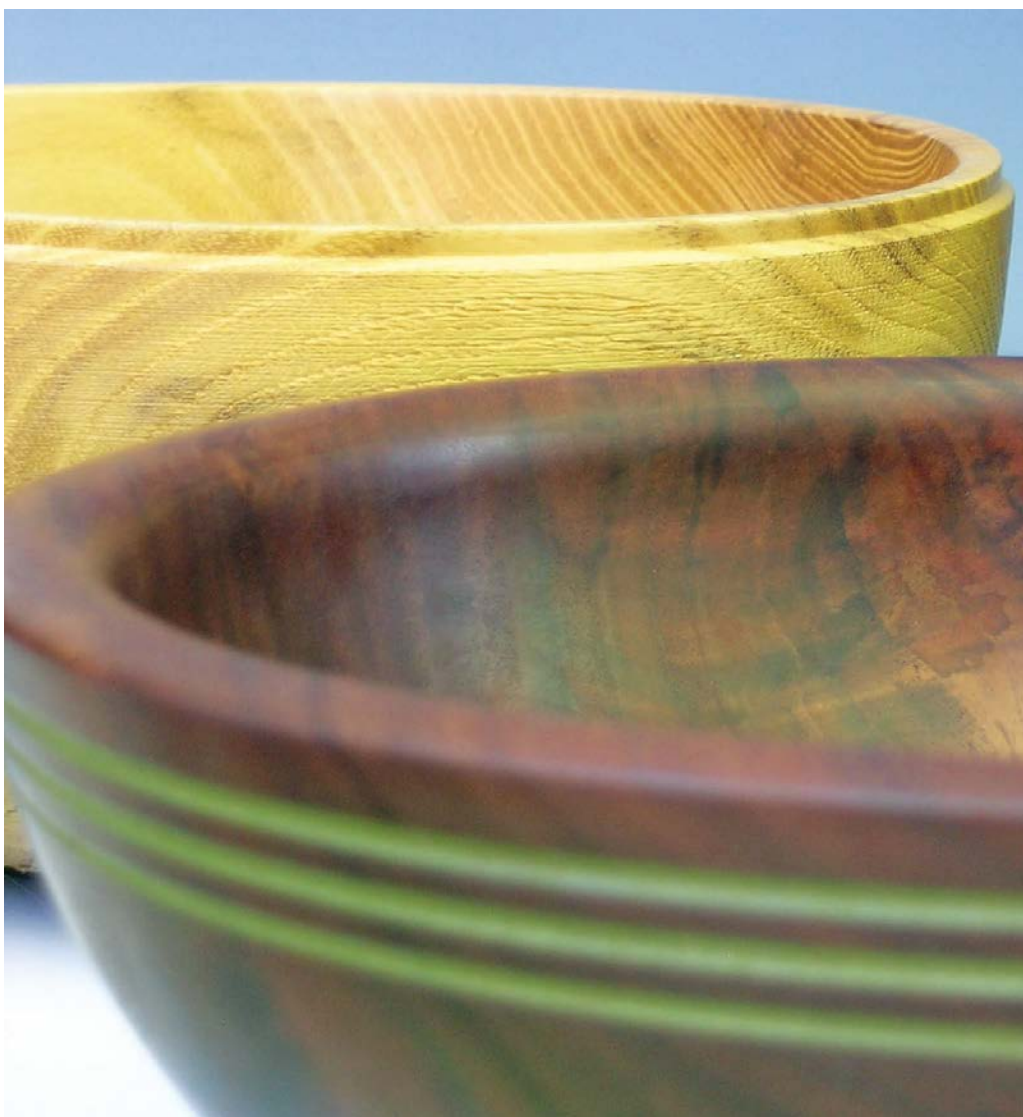
He also loves the AAW symposiums where he gets to talk to "a lot of nice people" who are equally as passionate about turning; enjoys having fellow turners come to visit; and looks forward to meeting all the fun people who practise the craft. "I have met and know a lot of nice people due to my woodturning hobby."

Acknowledging that he has never had to rely upon woodturning to pay the bills, he says "that most of it has been a good experience. Call it all good, but some better! If one is not having fun at it, quit, and move on to something that is fun." For Hugh, it's all about getting lost in the woodturning process – though he admits that some of his best days are spent in the woods getting timber for turning – making something nice, and having other people enjoy what you make. This, perhaps, goes some way to explaining his low-key approach to promoting his work. "I don't even have a website," he says. "The one big event that I do every year is a two-weekend 'open studio' in Sonoma County. On occasion, I'm invited to a winery event and exhibit some of my items and I've also displayed some items at AAW symposiums and other wood shows."

Nonetheless, he insists that, for him, turning is a hobby that pays for itself and he plans on keeping it that way. "I have many things that I want to make in woodturning. Too many to do really. I still wake up in the middle of the night and think of things to make on the lathe and how to make them. I have a bunch of unfinished items that have been started and I've put down. They're still waiting for me to get back to them. I want to get better at woodturning, to keep trying new stuff, new techniques and to keep learning. This he does as part of his daily routine, which also involves an early-morning walk and a 10am start at the 'shop, where he "picks up some of the clutter that was produced the day before." Experimentation, turning, carving and texturing follow (breaks are normally dictated by the arrival of Noodles demanding to be scratched) before, at 4pm or so, Hugh "usually quits turning." Except he doesn't really. Not in his mind anyway. Because, a bit like his much-loved moggie, Hugh has an 'itch' that will always need scratching – it's just he calls it turning and finds it a lot of fun...



Madrone wood vessel with a burned texture. About 5in high and 5in diameter. Finished with Deft oil.



Stack of bowls. Front: Claro walnut, 13in diameter with milk paint grooves; back left is in Black Locust, 12in diameter with wire brush texture; back right is in Claro walnut, 14in diameter with coves and wire brush texture. All are finished with Deft oil.



Madrone wood vessel with silver leaf and patina. Lacquer finish rubbed out.



WHAT MAKES HUGH'S DAY...

1. Sharp tools. They're always safer to work with and to make your woodturning much more fun. Learn to sharpen your tools properly
2. Sharp chainsaws
3. Fresh wood. It always seems to inspire me to make something. I love the smell in the 'shop when turning fresh wood
4. Really nice chunks of wood to turn
5. Good, pleasant-to-look-at shapes
6. Pride in workmanship
7. Woodturning friends. I really enjoy all the friends I have made through the craft. There are some very talented people and woodturners seem to be nice people on the whole (the editor wholeheartedly agrees with this, but then he would...)

... AND WHAT GETS HIS GOAT

1. Really dislike dull chainsaws
– too frustrating
2. Same goes for dull tools
3. I dislike the whole like/dislike concept. Enjoy life. Work around the problem areas and the rest is just fun!

... & WHO'S STOLEN HIS HEART!



Hugh's purr-fect co-worker Noodles

TOP TIPS...

1. Learn to spend the extra 10 minutes to finish your woodturning. I mean really finish it
2. Good sanding (no sanding marks). I have looked at some 'top' turners' work and if you look closely some are not great sanders (others are)
3. Go for good shapes that are always pleasant to look at even if the wood is not the greatest

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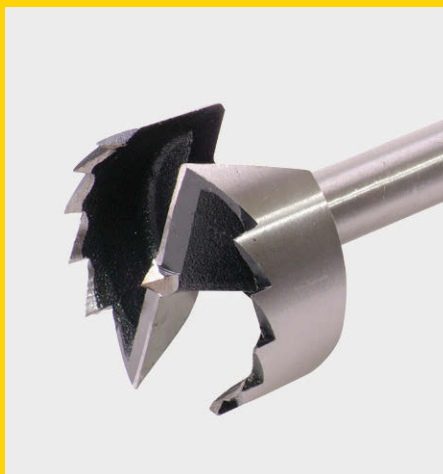
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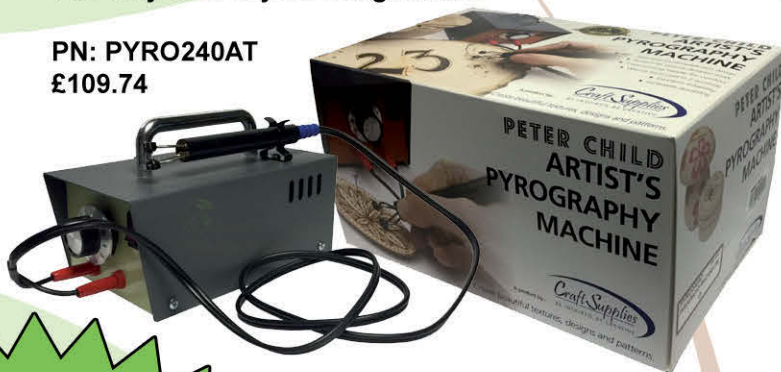
3/4" (19mm) roughing gouge, 3/8" (10mm) spindle gouge,
3/8" (10mm) bowl gouge, 3/4" (19mm) skew chisel,
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Ornamental turning made easy

Chris Hart explores the world of ornamental turning and shows how to decorate turned items in a unique way

PHOTOGRAPHS BY CHRIS HART

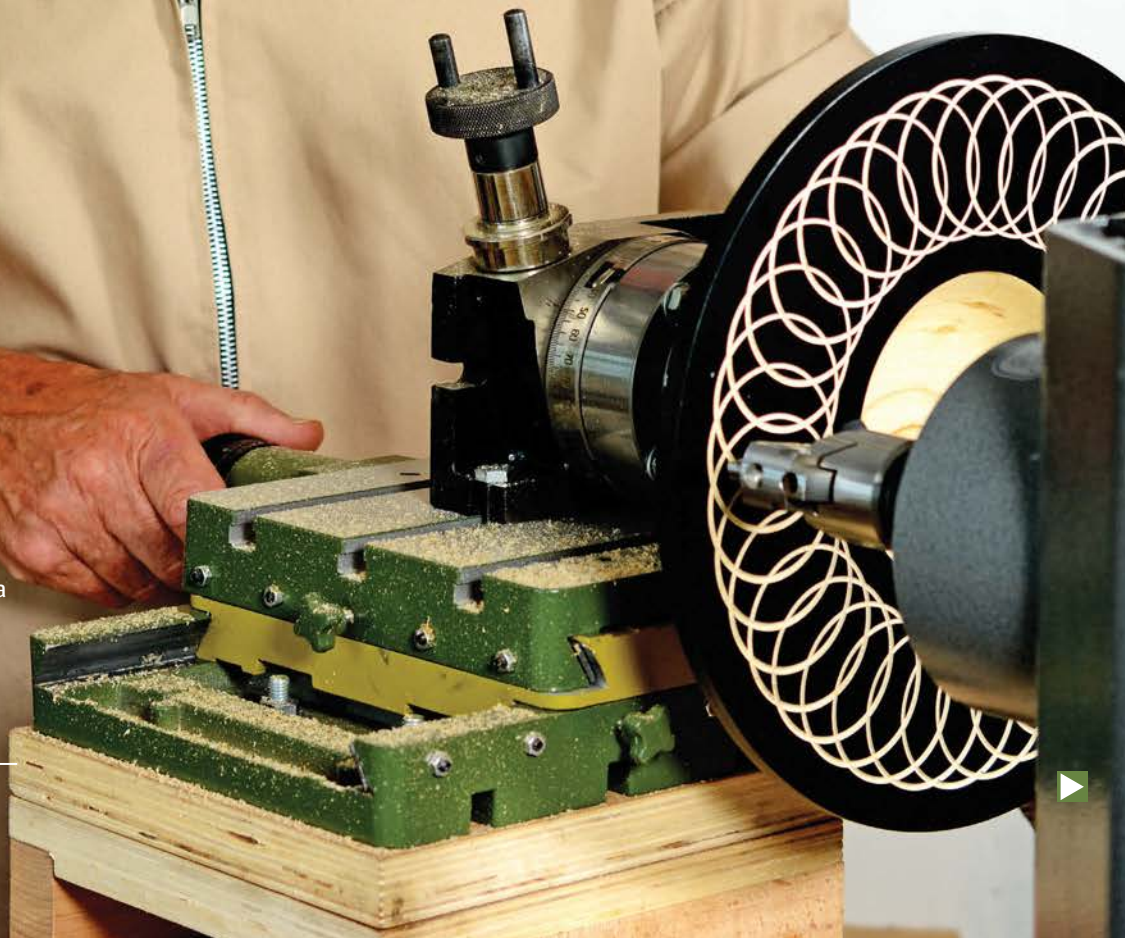
CHRIS HART



Chris Hart is a retired Sales and Marketing executive now living in the beautiful North Wales countryside on the edge of Snowdonia National Park, where

he is currently developing ornamental turning techniques and is an active member of Shropshire and Mid Wales Woodturning clubs

christiehart@btinternet.com



As woodturning has gathered momentum year on year since the 1980s, a plethora of equipment has hit the market. Although some purely for commercial reasons, in the main, the drive has been by innovative turners pushing the boundaries with a desire to try something different and make their work stand out from the crowd. This, in turn, led to an explosion of methods of decorating work picked up by professional demonstrators with a desire to lead the field, and at the other end of the scale, newcomers to woodturning quickly obtain the skills to move through the various disciplines, which creates a push/pull effect. This seems

to have taken a life all of its own and almost become fashion obsessed. A skim through back issues of *Woodturning* will highlight these fashions or trends and that's probably how I arrived at ornamental turning.

Most of my turning is now devoted to making boxes and I began to explore the possibilities of decoration, being somewhat of a purest, loving the tactile nature and beauty of natural wood. However, I had come across ornamental turning in magazine articles, books, the internet and a demonstration of Rose Engine turning at one of my clubs, and so began pondering the possibility of adding this to my repertoire.

Will ornamental turning become the latest fashion, fad or trend in woodturning? It certainly has a lot going for it, being very different from anything that's currently available, it's relatively inexpensive to get started, making some of the kit adds interest, very quick to mount onto your lathe and no more effort than taking the tailstock on and off. The results are stunning, the possibilities endless and only limited by your imagination.

I must point out at this stage; I am not an authority or consider myself an expert on the subject, merely an enthusiast who in the best tradition of woodturners worldwide wishes to share my experience.



A threaded lid box in Quebracho (*Schinopsis*) with decorated cylinder. 12 divisions of 30°, the first row is cut and the work advanced forward then moved around by 15° to give the offset, this is then alternated until the pattern is complete. The cutter was a straightforward point



An olive ash (*Fraxinus excelsior*) platter with barleycorn pattern, 36 divisions of 10° finished with linseed oil



Sycamore (*Acer pseudoplatanus*), yew (*Taxus baccata*) and ebony with a variation of the barleycorn pattern



Hornbeam (*Carpinus betulus*) and ebony box (*Diospyros crassiflora*), crescent decoration, outer and rings 12 half circles, 30° divisions

due to the writings of John Jacob Holtzapffel.

Prior to the formation of the Society of Ornamental Turners in 1948, post second World War, the art or craft was also referred to as complex or sometimes eccentric turning. Indeed either of these terms do describe the processes very well when looking at the complex nature of the work involved, among them are genuine works of art, some of the very best are on display at the Victoria and Albert museum in London.

All of which is beyond the scope of this article and its author, one very good reason for this is that ornamental turning lathes made in the 1800s change hands for many thousands of pounds.

As far the article is concerned ornamental turning made easy is about decorating turned items beyond the normal beads coves, etc. all will be within the skill set of most turners for a modest outlay. Therefore the objectives are to introduce the reader to simple, easy and economical ways to master the art which will certainly add a new dimension to ones work.

I am grateful to the Society of Ornamental Turners together with Richard Broughton and John Edwards for their help researching the history of ornamental turning, items from their website, and John for supplying the photographs of the lathe and blackwood (*Dalbergia melanoxylon*) box.

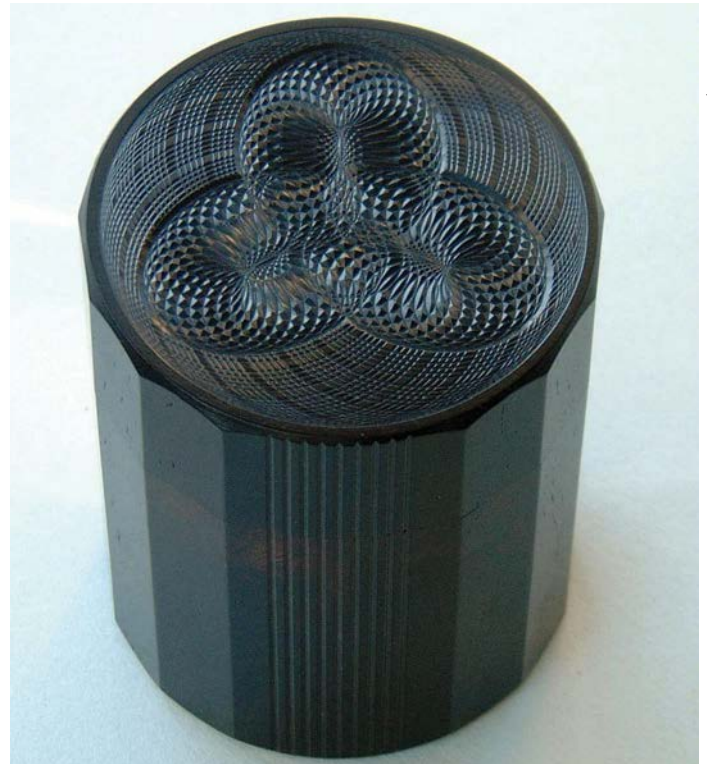
Ornamental turning – a brief history

In its purest form ornamental turning is not a recent innovation, being developed as early as the 15th century in Europe, where it continued for the next 300 years under the patronage of royalty and nobility who employed or commissioned engineers to build complex machines. Together with craftspeople, they would produce artefacts from the finest wood or ivory. Following the French revolution the art form spread to England where the proliferation was largely



PHOTOGRAPH BY JOHN EDWARDS

Holtzapffel No.2517 (dated 1913) which has a division plate for positioning the work and a slide-rest with two lead-screws to position the cutter



PHOTOGRAPH BY JOHN EDWARDS

This is a screw-top box John made from African blackwood the patterns cut into the lid being an interrupted pattern and a 'three-looped double-counted' pattern. Cut with a 120° point cutter

FURTHER READING ON ORNAMENTAL TURNING

- *Ornamental Turning* by TD Walshaw
Reprint 1994
ISBN: 9781854861085
A good place to start, lots of useful information.
- *Turning and Mechanical Manipulation* by Charles and John Jacob Holtzapffel
Volume 5, entitled 'The Principles and Practice of Ornamental or Complex Turning' Reprint
ISBN: 9780486265674
Considered to be the 'bible' of ornamental turning.
- The Society of Ornamental Turning, A friendly and very knowable bunch, their pages are packed full of useful information including a video introduction, this is the go-to site for everything OT: www.the-sot.com
- Ornamental Turning UK. This site is a real mine of information including a register of Holtzapffel and other ancient lathes: www.ornamentalturning.co.uk

What is ornamental turning on a woodturning lathe?

Looking at the patterns you will see what appear to be complex and intricate designs. However, they are in fact made up of a series of interlocked or overlapped concentric circles or part circles, arranged eccentrically around the perimeters of the work. If you are

of a certain age you may well recall your kids having a toy called Spirograph which drew patterns by interlocking circles this works on a similar principle.

Ornamental turning on a woodturning lathe is by definition somewhat limited and is unable to produce the very complex patterns produced by machines from Holtzapffel, Fenn or Evans or indeed adapted Myford metal lathes. The main difference is, working on a woodturning lathe is restricted to surface decoration, whereas ornamental turning on a purpose built or modified metalworking lathe are able to produce very complex shapes, fine examples of this can be found in issue 293 of *Woodturning* which illustrates the work of Jean-Claude Charpignon and depicts the type of machinery required. Circle or part circle based patterns are the mainstay of the type of decoration in this series.

One of the best and probably one of the most attractive examples of interlocking circles is what is referred to as the barleycorn pattern; I think, it is so called because the centre of the decoration resembles the shape of a corn of barley. The photographs show how this pattern is built up, starting with nine, just touching circles, followed by nine more cuts between the first set, two further sets are then cut in the same sequence. This produces 36 circles in total which, in effect provides 10° spacings. Circle-based patterns are applied to the wood presented to the cutter anywhere between approximately 45 and 90° to the lathes axis, so is mainly used to decorate the lids of boxes or perimeter of platters or bowls.

The other application is along a cylinder on the same axis as the lathe, i.e. the body of a box or vessel, vase, etc. The pattern of cylinder decoration is determined by the size and shape of the cutter, depth of cut and the spacing around the circumference and between rows. In the pencil box, spacing is the same width as the cut and alternate rows are aligned offset by half the length of the cut.



The first cut on a barleycorn pattern



Second cut on a barleycorn pattern



Third cut on a barleycorn pattern



Final cut on a barleycorn pattern



Field maple (*Acer campestre*) pencil pot with cylinder decoration 12 divisions of 30° each. Point cutter

The basic set up

A woodturning lathe and a four jaw scroll are a prerequisite. To pursue the setup I am suggesting, the lathe must have a swing of at least 300mm. The reason for this is the lathe bed holds the base plate to, which is added a compound table and a rotary table allowing approximately a minimum 25mm for the base, 75mm for the compound table and half of the height of a rotary table at 50mm this amounts to 135mm, which is half of the swing (270mm). The thickness of the base plate is the adjustment to bring the set up to centre height, which will enable the cutter to cut on centre.

Ideally the lathe will have a two Morse taper in the headstock to accommodate a boring head (more robust than a one Morse taper).

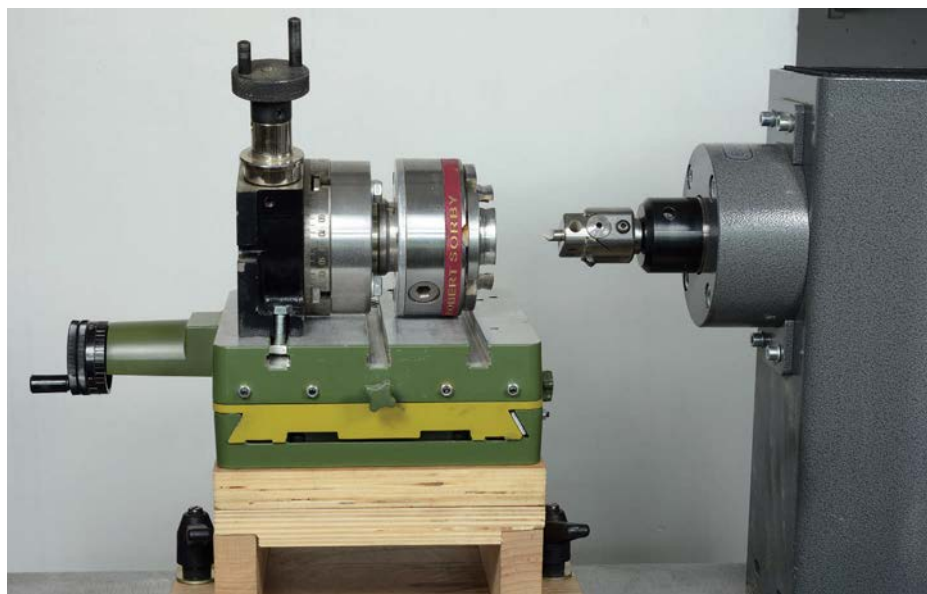
Most lathes these days have variable speed which is critical in finding the optimum speed for the cutter; because the cutter is offset and extends beyond centreline it will introduce a certain amount of vibration, which can often be eliminated by increasing the speed.

A four jaw scroll chuck completes the set up. Ideally, it will be small (100mm or less), lightweight, which is preferable to heavy duty, as will become apparent.

How it works

A woodturning lathe is unique among woodworking machines because the work spins and the tool is applied to the work, whereas with saws, planners, etc., the work is fed into the spinning cutters. The set up to produce decorations is therefore somewhat of a role reversal for the lathe, in that the work remains static and the tools revolve at high speed and the work is fed into the cutter. Subsequent cuts are made by rotating the work and presenting the next area to be cut.

The basis of the set up is a machine boring bar with a cutter in the headstock via a Morse taper secured by threaded bar, which prevents the boring bar working loose. The cutter can be offset from the lathe axis, thereby cutting concentric circles or part circles offset from this axis. The work holding chuck is mounted on a vertical rotary table providing a method of revolving the work in 1° increments,



The basic set up. The baseboard dictates the height, compound table with the rotary table and chuck mount together with lightweight chuck



The boring bar is 2 MT and fits in the headstock, photograph shows Vernier scale for adjusting offset and a point tool in the front slot



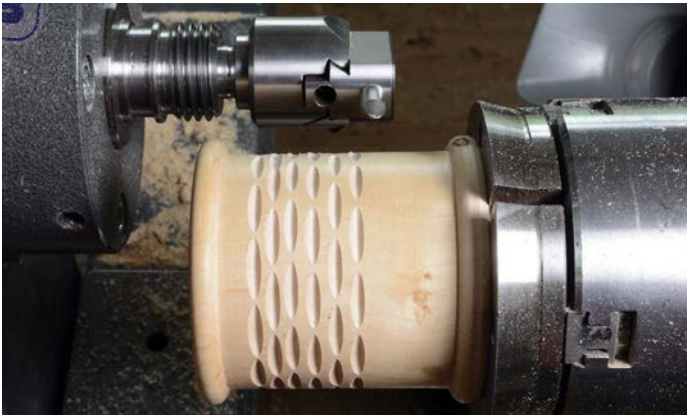
The key to the whole operation, can be likened to an indexing plate with infinite graduations

the compound slide on which the rotary table sits, feeds or positions the work in .05mm increments in both fore, aft and lateral directions commonly called the X and Y axis enabling the work to be fed into the cutter.

Here is a brief description of how it works; the workpiece to be decorated is turned and sanded as normal. At this stage a coat of sanding sealer can be applied, which will help keep the work clean when handling it. This is particularly important with light-coloured wood such as sycamore.

The chuck, with the work in situ is then

mounted on the rotary table; this preserves the concentricity when applying the decoration. Having selected a pattern the cutter is adjusted to suit. The example in Fig. 1 (page 63) is a planned 36 interlaced circles (a full circle is 360°, therefore when divided by 36 gives increments of 10°), the work is then presented and fed into the cutter until the correct depth is achieved. '0' is marked on the scale and the cutter reversed until clear of the work and the table rotated 10°, the process is repeated in 10° increments until the process is completed.



Cutting the cylinder of a pencil pot, the cylinder is parallel to the lathe bed and cutter



Fig. 1 – Cutting an olive ash (*Fraxinus excelsior*) platter is at right angle (90°) to the lathe bed/axis



Workpiece at 90° to the lathe axis, cutting part circle or crescent finished piece



Cutting crescents on an ebonised platter, because I wanted to cut less than a full circle the work had to be rotated to present the less than half the face to the cutter

Applications

Almost all turned work is decorated in one form or another, beads, coves, etc., and can all be considered decoration, which is often referred to as plain turning by ornamental turners. However, simple or easy ornamental turning is the application of surface decoration during the turning process. Although the majority is carried out at or near to the end of the process and may be applied to almost any turned object, the most common use is the decoration of box lids, platters or bowls and it may also be applied to the cylindrical

part of boxes, vase, vessel or goblets. The nut cracker bowl, the mechanism was a gift from a friend and the locally grown beech (*Fagus sylvatica*), the end of a board, the patterns are Barleycorn. This is not something I would normally make, however it lifts an otherwise plain piece of wood and perfectly illustrates an application.

I was invited to demonstrate the ornamental turning techniques at my local woodturning club. Concerned the fine detail of a small box lid would not show up on the cameras and

provide the impact required, I ebonised a piece, sycamore (*Acer pseudoplatanus*), and applied the barleycorn pattern. The black and white contrast is quite stunning and had the desired effect, but again not something I would normally make. The yew (*Taxus baccata*) goblet illustrates simple rim or cylinder decoration. Holly (*Ilex aquifolium*) is a great wood for boxes and holds fine detail well. The pattern is cut in two stages, first the crescents are cut, the dots are then cut with router bits either 45° 'V' groove or a small two-flute radius.



A beech nutcracker bowl isn't something I'd normally use, however it lifts an otherwise plain piece of wood



I ebonised a piece sycamore and applied the Barleycorn pattern. The black and white contrast is quite stunning and had the desired effect. Again, it is not something I would normally make



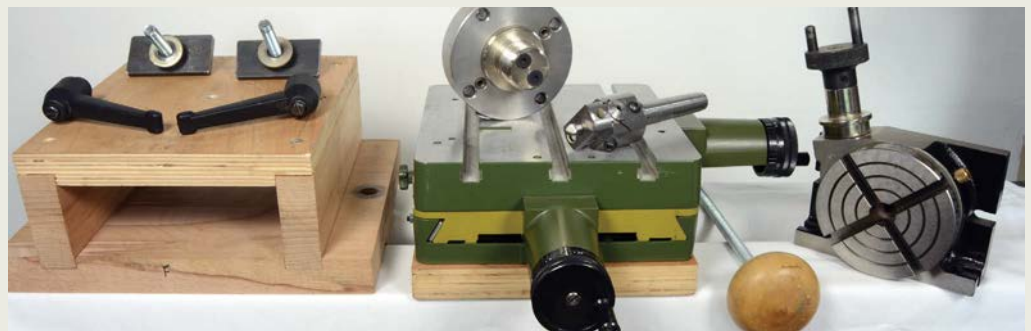
The yew goblet illustrates simple rim or cylinder decoration



A holly box crown pattern

HERE'S WHAT YOU WILL NEED:

- Cutting tools
- Boring head
- Rotary table
- Compound table
- Four jaw scroll chuck
- Shop made jigs
- Turntable base
- Drawbar
- Alignment jig
- Chuck mount



Main components left to right, baseboard with securing Bristol levers, sitting on the compound table is boring bar, chuck mount. Draw bar and rotary table

What is required

The objective of these articles is to simplify and present an easy approach to ornamental turning, therefore all components are readily available, the skills required are basic woodworking, woodturning to a reasonable standard and no special skills are required to apply the decorations. No special knowledge of geometry is required as patterns are determined by eye and experimentation and in some cases by trial and error, so I think that the processes are well within the capabilities of most readers of this magazine.

The components required are listed together with a list of bespoke items you will need to make, all of the components are readily available from engineering suppliers, most of which can be bought online and they are also available from online auction sites such as eBay.

The shop made elements require basic woodworking skills and the chances are you will have sufficient timber in the scrap bin or the 'I will save that just in case' pile. My setup cost just less than £300.

Health and safety

Now seems an ideal time to mention Health and Safety. As I am sure we are all aware woodturning is an inherently dangerous pursuit, ornamental turning is no more or less dangerous than any other turning

operation. However, please be aware that the cutter is revolving at high speed and should be shielded and also the cutting action produces fine dust and not shavings, therefore dust extraction at source is a must, together with personal protection in the form of a mask and, of course, air filtration systems are a real boon. The other consideration is the direction of travel of the cutter which

should always be the same direction as the chuck screws onto the mount so that cuts will tighten the chuck there is a remote possibility that the chuck may unscrew if the cutter revolves in the opposite direction. If for any reason a change in direction is required, then a chuck with grub screw in the collar to lock onto the spindle will prevent the chuck unscrewing. ●

HERE ARE THE COMPONENTS REQUIRED:

- 100mm Soba rotary table
- 40mm Soba boring head
- 8mm HSS toolsteel

All are obtainable from Chronos Engineering Supplies

Website: www.chronos.ltd.uk **Telephone:** 01582 471900

- Proxxon 20150 KT 150 Compound table

The Compound Table was sourced from eBay and came from Germany, prices on this item vary wildly the difference being in excess £100 between the highest and lowest price, so market research is essential.

- Axminster Chuck Hub

As far as I am aware Axminster are the only source for this product, part numbers vary according to spindle size the four most popular sizes are available.

Website: www.axminster.co.uk **Telephone:** 0800 371822

All of the materials for shop made parts are standard items obtainable from wood suppliers and hardware shops.

Next Month

In the next article we will be looking at making the components and setting up the system.

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With the release of the new R-series CBN wheels from The ToolPost, sharpening for woodturners enters a new phase. Produced to the same high standards as our renowned series of face and rim-coated CBN grinding wheels, the R-series brings the brilliance of CBN sharpening within the reach of most turners. By eliminating the CBN coating on the little-used face of the wheel we have been able to substantially reduce the price. Of course, we still keep face and rim-coated wheels for those who prefer this format of wheel, but now we offer a choice. Not just a choice of wheel styles, but a choice of wheel diameters, sizes. All of which seemed to warrant a new name: CuboroN, superior CBN wheels from The ToolPost.



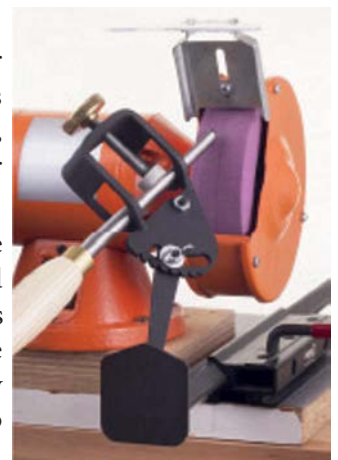
Perfect Partners

If you're going to take full benefit from having the best CBN wheels available, then it makes perfect sense to pair them up with the best sharpening jig too. For very good reason, many folk get more than a little anxious when it comes to sharpening their turning tools. They have seen experts and heard them extolling their own ability to sharpen "freehand" and are frequently left with the impression that this is the 'proper' way to sharpen. Nonsense! The 'correct' way to sharpen is the one that enables you to get the best edge, quickly, accurately and repeatably.

The way, there's nothing to fear

and nothing to discourage you from sharpening as often as necessary to keep your tools turning-sharp - and that can mean as frequently as every few minutes. Without sharp tools, you can never be a sharp turner, so it is important to get this particular little trick under your belt as soon as possible.

So make it easy: always sharpen using a jig - and use the best jig available for bench grinders: the Oneway Wolverine. This is a jig developed by turners for the benefit of turners and produced by one of the most respected engineering companies in the business. The basic system satisfies all standard turning sharpening needs but accessories are also available to complement the system and to meet virtually any turning tool sharpening requirement - including really precise wheel dressing. Standard system with long arm and platform (above), including setup and operation DVD: £85.67. Varigrind jig accessory for Celtic profiles (right): £51.18.



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Community letters

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

A mysterious parcel



Sarah won a Robust Live Centre and Cone Set in our Anniversary Giveaway

Hi Mark,
I was delighted to pick up a mysterious parcel from the sorting office today. I could not think what it could be and it was quite heavy. "It's from the USA," said the man at the counter. In my car I hastily opened it, tearing at the brown parcel tape with my car keys. I was still puzzled because I hadn't ordered anything recently and I could see through the packaging that it was something for my lathe. Then I opened the letter from Robust Tools and discovered I was a winner of the Robust Live Centre and Cone Set. Wow, I was chuffed to bits and really grateful.

I only got into turning this year and absolutely love the challenges, the different woods, all the handsome tools and the fact that I can make something out of wood without having to use a saw and nails! I wanted to learn as much as possible so I subscribed to *Woodturning* and soon discovered that 'the sky is the limit' with this amazing hobby.

I joined Staffordshire and South Cheshire Woodturners Association and that also gave me membership of the AWGB. I am proud to be a member of both. The members at the club are really helpful and encouraging and

we have super demonstrators each month too.

I love reading all of the articles in the magazine, but as a novice there are many articles I will probably return to when I am more experienced and can understand the techniques better.

I would like to thank you again for setting up the Anniversary Giveaway and I shall send in a photo of something I have made when I have become more proficient! Meanwhile, I shall look forward to my monthly copy of *Woodturning* and continue to be inspired by the wonderful articles and woodturners featured.

Kind regards, Sarah Barwick

Spiders in the 'shop

We live out in the country on two acres of land with many trees. When we bought the place, there were spiders everywhere in the 'shop. Ever since I had a run-in with a common garden spider in a cornfield when looking for arrowheads as a child, I have had a fear of spiders. So having more spiders than wood was a bit problematic. I finally called an exterminator and he had the perfect solution. He sprayed inside the 'shop along the walls both at the floor level and ceiling level and sprayed around the outside of the 'shop, too. He did the same for

our house and in a very short time, all I saw was spider carcasses. I verbally warned them he was coming and those who failed to heed my warning paid the price. But now I rarely see a spider either in the house or 'shop and it works great. We do have poisonous spiders here, including the worst Brown Recluse spider, but we also have an occasional Black Widow. We do need to be careful pawing through our wood stacks.

Tom Boley

At auction

Dear Mark,

I was recently asked by a friend if I could donate something to a charity auction she was organising. I offered her two pieces; a 30cm shallow – I think it was – iroko (*Milicia excelsa*) bowl with a wide rim, inlaid with mother of pearl, and an 18cm natural-edged holly (*Ilex* spp.) bowl. I attended the auction, and when the items came up it was suggested that I should conduct the bidding myself. I described the pieces, emphasising their unique nature, which were also handed round. The bidding was brisk and competitive, with a number of different participants. The larger bowl eventually sold at £200 and the smaller for £60. Almost for the first time I felt adequately rewarded for the amount of skill and time I had expended, and I went home very satisfied that my work was appreciated – even though I did not receive anything for it! I highly recommend this course of action to fellow woodturners who might feel their work is undervalued.

Geoff Gymer



An inlaid bowl turned by Geoff

FROM THE FORUM

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



Dalboy has recently posted a fun, inlaid bowl. The piece is made from elm (*Ulmus procera*) wood and measures 180 x 70mm. The decorated band around the bowl has two burnt lines with wide of the decoration, and use Jo-Sonja paint.



'Quartet in Laburnam' by Nick Simpson

Forum member Nick Simpson posted these four beautiful boxes/pots to our *Woodturning* gallery, receiving the comment from Dalboy: "Some great little pots, laburnum is just right for these." Nick made these pieces with Christmas fairs in mind (at which they would be perfect for gifts!) Finished with spray lacquer, the boxes are lined with suede-tex flocking.



'Granadillio Dish' by guido512

By guido512, this granadillio (*Dalbergia retusa*) dish stands at 255mm diameter. Fellow forum users were quick to comment: Stiggy said: "Beautiful grain and great finish – I love the simplicity of the shape!" Dalboy then commented: "Very nice indeed, certainly has a very interesting wood grain, well turned and finished." And gregmcateer said: "Lovely wood – I've never heard of it."

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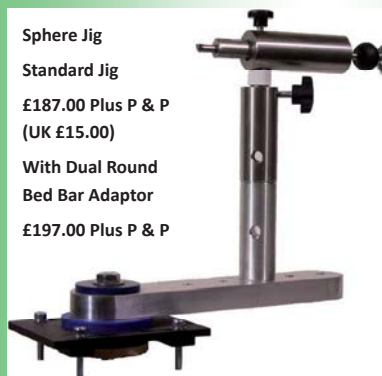
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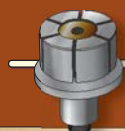
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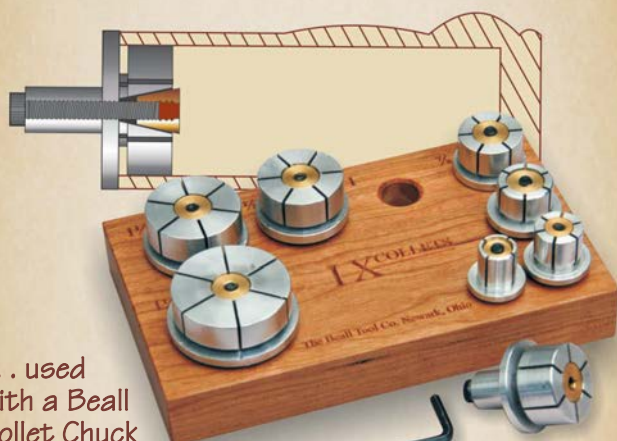


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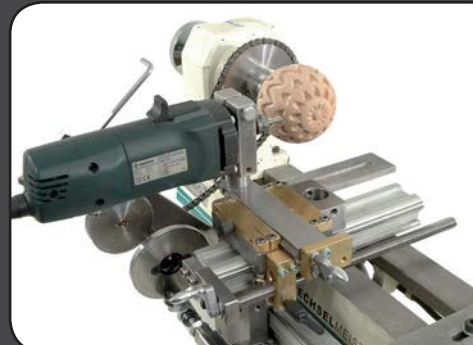
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AAW: Richard Raffan — traditional innovator

The AAW take a look at the work of Richard Raffan



Pistachio Trio by Richard Raffan

Richard Raffan occupies a rare position among contemporary woodturners. While many turners have deviated from customary turning practices in search of creative fulfillment, Richard has determinedly preserved the values of turning as a trade through production of superior functional work. Singlehandedly, he has probably attracted more individuals to woodturning than anyone else in the world.

A self-employed woodturner since 1970, Richard honed his skills during the years of supplying large quantities of domestic wares to a market hungry for traditionally turner products. He trained in his home country of England with an old-school production turner, who believed that turning is at its best when you have a long run of work to complete.¹

Even today, when Richard references production work, it's easy to see the lasting influence of his early teacher. "He was never happier than when he had a run of work," Richard explains. "For one run of 100 salad bowls he said, 'something you can get your teeth into lad! Don't have to think too much!'"²

Development

If Richard had been satisfied to remain in his workshop routinely producing his trademark bowls, scoops and boxes, most of us would probably never have heard of him. However, because he came from a creative social background and family, he always tended to think deeply about his craft. His father was a painter, his older sister was a potter, and they lived in Devon, a part of England where such

crafts were highly regarded. From early on, Richard was influenced by the Arts and Crafts movement, so in addition to spending a lot of time mastering the techniques of turning, he also felt the need to develop a philosophical rationale for his work. This meant that he was well suited to develop a parallel career as a teacher, writer, demonstrator and commentator. As a natural high achiever, Richard did all of these extremely well and in the process infected countless thousands

with the turning bug. With his distinctive face gracing publications sold all over the world he became one of the most recognised turners.¹

When he reflects upon his turning career, Richard underscores his production work, believing the respect he earned as a production turner in some way outweighs his reputation as an artist, teacher and author. Despite his respect for traditional values, Richard has always seen himself as an innovator, albeit at a more incremental



Spillikins, 1978, Maple, laburnum – 203 x 64mm. "One of about 200 sets," Richard explains. "I made the first in 1978 in response to a commission from John Makepeace when I was a visiting tutor at his Parnham Wood School. The brief was something 'to wow them technically.'" – Richard Raffan



Red Verdigris Quintet, 2012, in Manchurian pear, verdigris and acrylic, measuring 90 x 85mm (tallest)



Scoops, 1970–1974, in teak, yew, imbuia. The largest scoop measures 76mm diameter

rate than is common these days: “I’ve always experimented with colour and texture, but few of those experimental pieces left the workshop until the Citadel Series of boxes and the groups of coloured bowls, pots, and tubes. That was after I retired from production work. I am mainly interested in simple forms and refining those remains the challenge for me. I never did like shiny surfaces, and they aren’t really suited to utilitarian bowls. I want pieces to be used and if they’re too glossy, people are afraid they’ll spoil the finish and won’t use them.”²

Perhaps unlike many traditional turners, Richard has always felt he is a technical innovator. “I certainly promote the ways I work at the lathe as they’ve worked so well for me, but if I see a better technique or way of doing things, I use it. When I revised my book *Turning Wood*, my approach had altered so

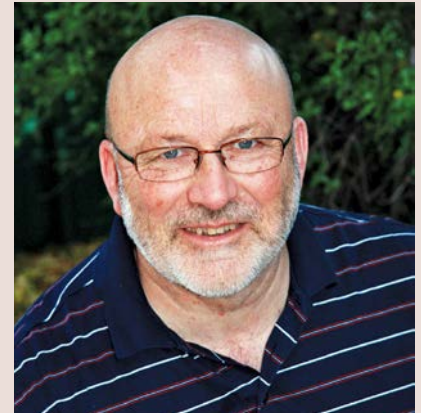
much over 15 years that I needed new photos for almost every technique. I still get major insights watching people like Mike Mahoney, Dave Schweitzer, or Les Thorn.”²

Leaving a legacy

Richard has always had a strong sense of the legacy he will leave, as he explains, “I’m interested in making stuff that will survive generations. I have tools with tradesmen’s names stamped on them that I bought at auctions and junk shops. I’ve no idea who these people were, only that they used these tools of trade, and now I am using them.

I hope someone will continue to use them after me, because keeping traditions going does appeal. I also like the idea of someone decades from now knowing that an individual made the bowl they enjoy using.”²

RICHARD RAFFAN: A LIFE OF TURNING AND TEACHING



The American Association of Woodturners (AAW) 31st Annual International Symposium will be held in Kansas City, Missouri, 22–25 June, 2017. In conjunction with the event, Richard Raffan will present a special lecture open to registered AAW symposium attendees on Thursday, 22 June, entitled, ‘A Life of Turning and Teaching’, during which he will reflect on his path in life, in turning, and his influences.

The Symposium agenda continues Friday–Sunday, 23–25 June, with a super selection of demonstrations and panel discussions that will appeal to wide variety of skill levels – bowls, boxes, vessels, hollow forms, spheres, spindle turning, multi-axis turning, segmented turning, natural edge turning, ornament, jewellery, finishing techniques, surface design, texture and embellishment and more. Demonstrators include Dixie Biggs, Trent Bosch, Jimmy Clewes, Kurt Hertzog, Michael Hosaluk, Rudolph Lopez, Glenn Lucas, Andrew Potocnik, Tania Radda, Richard Raffan, Mark Sanger, Merryll Saylan, Betty Scarpino, Al Stirt, Derek Weidman, and John Wessels. Additional demonstrators to be announced.

The AAW symposium offers something for woodturners of all skill levels. Attendees may select from a broad range of demonstrations and panel discussions to focus on sessions that will enhance their woodturning experience the most. To learn more about the AAW’s 31st Annual International Symposium, visit tiny.cc/AAW2017KC.

AAW 31st Annual International Symposium

When: 22 June, 2017

Where: Kansas City Convention Center, 301 W 13th St, Kansas City, Missouri 64105

Web: www.woodturner.org

Footnotes

1. Martin, Terry. “Richard Raffan.” Professional Outreach Program 2012 Merit Award Recipient brochure, June 2012.

2. Martin, Terry. “Richard Raffan.” American Woodturner, June 2012, volume 27, issue 3: p. 55–61.

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Behind the scenes — with Ron Thomas

This Kentucky woodturner's work is challenging, creative and colourful. But then he doesn't believe in rules and he rarely looks back, as **Catherine Kielthy** discovers

“After you, I'll have breakfast and get back to bed,” quips Ron Thomas when he takes our call at 9am Kentucky time. We're a bit worried to hear that speaking to *Woodturning* might prove so soporific, but he quickly explains that he was in the studio until the early hours and was up at 8am to do the yard. In fact, this contemporary turner, whose background in photography, stained glass and watercolour have provided him with an eye for detail and assured application of colour (not something of which all turners approve, of course, but this doesn't worry him unduly), regularly gets by on a few hours' sleep. It turns out he's fairly nocturnal and the Kentucky humidity means it's easier to work at night.

Not that the 71-year-old, who has degrees in fine and graphic arts and co-founded the

Louisville Area Woodturners Club, is new to the climate. He was born and raised in a town called Central City Kentucky (he now lives in Louisville, Kentucky) and, yes, has a Southern charm (save for when he asks my age and mocks me for having “the most non-informative Facebook page ever”. Admittedly, he softens the blow later on with a sincere invitation to drop by if I'm ever in town). His non-turning life has seen him head up the chemistry unit at a photo finishing lab, design CD and video sleeves for an international publisher and live the wild life on the road with a rock 'n' roll band. But we'll let him explain that – and a lot more besides...

How did you get into woodturning?

Well, I did watercolours, stained glass, arts and crafts and many of my pieces needed

framework, so I was paying people to do this. At first it was okay, but it became costly with long wait times. Then I thought, “It's four pieces of wood, how hard can this be?” So I bought a Shopsmith mark 5. It was in the late 1980s/early 1990s. At about the same time, I read an article in *Fine Woodworking* with Rude Osolnik, who lived in nearby Berea, and thought I'd go see him. I was naïve. I didn't realise he had work in museums and galleries. By the time I'd seen the pieces in his gallery I was intimidated. But from the moment he shook my hand I felt at home there. I didn't start turning to make money; I started it as a hobby.

Who are the greatest influences in your work...

Rudi, who was in his 70s when I met him,

was my first teacher and took me under his wing. He was so attuned to things and would cut to the chase. If he didn't like something, he told you straight on. He never coloured it to make you feel better or bad. He used to ride me hard, I guess. But I was learning. Through him I also met Nick Cook, Ray Keys and David Ellsworth. Darrel Nish and his crew at Craft Supplies have been a great help over the years and Mike Mahoney and Stuart Batty have been a big influence as to how I turn and what I do. They've given me the courage to go for what I want. They'll likely say, "The rules? What rules? There are no rules." Nick Agar has also helped me and there's Jimmy Clewes. We're a soap opera. We can be apart for five or six years, but as soon as we meet up we pick right back up where we left off in the conversation.

... and in your life?

My mother raised me after my dad passed away at an early age. She supported me and gave me strength. When I started doing the craft circuit, she was with me, but then she found out she could trade my work for jewellery or other pieces she wanted. I had to deal with that... Also, when I got the offer to go on the road with the rock 'n' roll band Gary Edwards & Sage, she said, "If you want to do it, go for it." I kinda left school, went on the road and lived out of a suitcase from 1973 to 1976. We hit all the low spots and a few of the high ones. I'm still in touch with the guys.

If you were to offer one piece of advice to fellow turners what would it be?

Life is a roller coaster. So strap in and hang on tight.

And is there any piece of advice you wish you'd taken?

No, you can second-guess everything, but that leads to 'What if...?'. I wouldn't trade the bad moments because even they made something good happen.

Do you find time to listen to music or read books?

I listen to music constantly – classical, hard rock, show tunes, Barbra Streisand, Frank Sinatra, Metallica. I just read an article about the Rolling Stones. You know, Keith Richards just keeps on defying expectations. You keep thinking this guy has gotta be dead. In the article, he kinda said, "We're tough old b*****s," and that's pretty much the way I feel about myself.

What is your silliest mistake?

Too many to mention. Rudi used to say, "You can't do it that way," before adding, "but you're young enough and dumb enough. Go ahead and do it." Everyone has one horror story. I've had accidents, it happens. You're around things that twirl and they're

sharp and they spin. It takes a split second and you've gone from success to disaster. The trick is to learn from it and move on.

Do you have a favourite type of turning?

Whatever I'm working on right now. Rudi told me never to get attached to my work. If you're in the selling business, you have to let it go. Woodturning pieces are like my children, so be kind to my children.

Name one thing on your turning 'to do' list...

I have a notebook full of ideas that I go back through periodically. I did this recently and found a sketch – that's what I was working on last night. I also have all the working pieces to build an ornamental lathe. I've had them quite some time. Jon McGill, out in Washington, built a kit years ago and I bought all the stuff. It's tucked away in the studio in a box. I saw Jon recently in Atlanta and he asked me how it was going and challenged me to build the lathe, so maybe that's the next thing.

Tell us about the piece you're currently working on...

There are lots of them. I rough turn things and then might not come back to them for two or three years. Sometimes halfway through a design process I might think something isn't working, so I'll change it. Turning and stone carving are the only two subtractive arts I can think of where by taking away you're creating whereas with adding you're building. With my colour work, that's non-descript wood. I'm not going to sacrifice colour for what nature did that I can't. A lot of turners

WHAT MAKES RON'S DAY...

- Being able to create things that I love
- Glassware
- Architect Frank Lloyd Wright – I'm a big fan. There's a house of his here in Kentucky and I worked on the windows
- The woodturning community and my friends. At conferences, it's like the world's biggest family reunion. And everybody shares. If you ask somebody how they made an item, they'll tell you. Now, jewellery-making people... they guard their craft like it's a world secret

... AND WHAT GETS HIS GOAT

- Sharpening
- Sanding
- Things that don't work
- The 'norm'

don't like adding colour, but I do whatever I want to do and turn what I want to turn. If people like it, they like it; if they don't, they don't. I had fun making it.

What's the one piece of equipment or tool you would never want to be without?

My Woodfast lathe. No question about it. It came from Rudi. He had it early on and when he was cleaning out his studio at one point asked if I'd like it. I've had it since. Its variable speed control finally let go earlier this year and the company that made it no longer exists. Craft Supplies retro-fitted me with a new variable speed drive with which I'm in love. I have three lathes – the Woodfast short bed that I work on 90% of the time; a Record Bow lathe; and a Rikon mini-lathe.



Four hollow forms: the darker colour is done from the inside of the form, the lighter is done from the outside. Ron tries to use only straight-grain woods for colour forms and has found maple works well

What has been your greatest challenge?

Getting through cancer four years ago was hard. In my work, turning hollow forms, which I still do, has been a big challenge. Most of my forms are small – the hole I’m turning through is probably a ¾in – and some say the only reason people do this is to impress other turners. I’ve never thought of it that way. I do it mainly to impress me and it’s a challenge. Early on, I used to lose a lot, say a ratio of 70/30 losses. Now it’s closer to 95/5. Like any craft, you get better or you quit.

Given the opportunity, is there one thing you’d like to change?

I don’t think so. If you did that, something else would change and if that changed... the yin and yang of life. I’ve had success selling my work and I have a ton of ‘best of show’ ribbons. The likes of Nick Agar and

Benoît Averly have selected my work to critique – Benoît liked the piece so much he took it home to France – and you wonder how much further it goes. But then you meet someone, say your editor Mark Baker, and you feel like you’re starting again [don’t tell him that, Ron, we’ll never hear the last of it!]. This article is a whole new world.

If you had one wish, what would it be?

[He laughs a lot here, readers!] You always wish for more money than you could spend. Then there’s the traditional beauty pageant queen who can’t figure out how to spell MGM backwards and always says ‘world peace’. All those things are important to me. I don’t want to get on a soap box here. My wish is, I’m really at a lost for words – and that doesn’t happen often. I had a dream to be a woodturner all those years ago and when

TOP TIP

Figure out the tools and equipment you want and buy the best you can. If you can’t afford the best, wait until you can. If you buy cheap tools once you adapt to them, you then end up buying the better tool and the inexpensive one is no longer of use. Pick your tools wisely, research, take them for a test drive, go to a craft show or wood store – the AAW trade show is excellent for researching and trying tools.

I went to Rudi to teach me woodturning he said, “alright, but if you are going to be a woodturner, be the best damn woodturner you can be and the rest will follow.” So, at the end of the day I am just a guy, a guy with a dream and a lathe ●



Very much influenced by Japanese culture and art in creating his forms, this series in masur birch is an example. The tall piece is a vase while the small one is a hollow form



The Woodfast short-bed lathe given to Ron by his mentor and close friend, the late Rude Osolnik



A lot of different dyes, lacquer and paint are evident in Ron’s work – here, we see ChromaCraft and Transtint, some of those he uses most often

Facebook: Ron Thomas Designs

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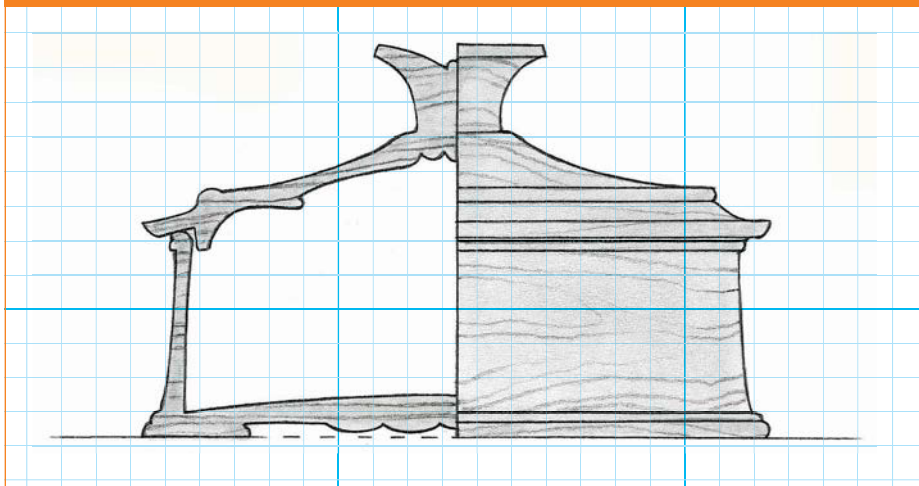
Lidded box

In an extract taken from *Turning Wood with Richard Raffan*, **Richard Raffan** designs and turns a lidded box

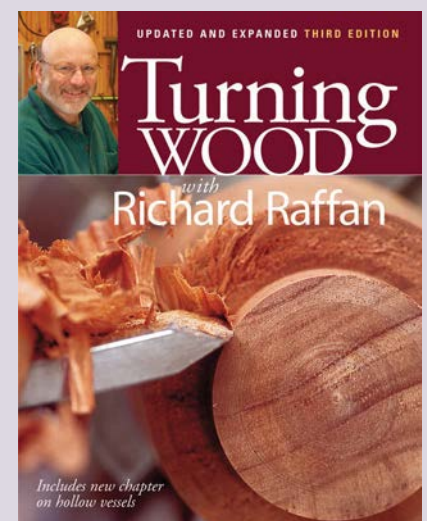
This project not only shows you how useful chucks can be but also provides good scraping practice. The base, a sort of squarish bowl, is made first, then the lid is made to fit the base. The amount of rechucking and the attention to detail make this

an interesting project with a useful end product. You can play around with the basic process and come up with your own variations. When making the lid, you can take the lid in and out of the chuck as many times as you like to see how it fits and looks on the base.

PLAN



BOOK DETAILS



Turning Wood with Richard Raffan
ISBN: 9781561589562
Price: £14.99
Web: www.thegmcgroup.com

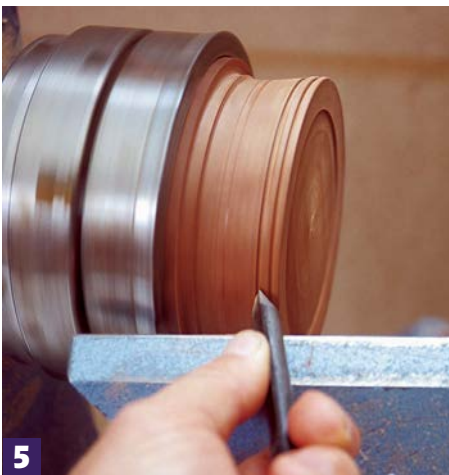


1 Cut the base and lid from the same block. (Shown here is bone-dry sally wattle.)

2 Grip the base section by what will be the top and screw chuck is also fine. Mark out the diameter of the base, which will be gripped by the chuck. If you have only small chuck jaws, use them to expand into a shallow rebate within the base as on the bowl.

3 Rough-out the base profile, ensuring that there are no flat sections left from the band saw. I use a 1/2-in. (13mm) shallow gouge.

4 Turn the bottom and decorate as desired. Here I ease the left corner of a shear scraper to create a recessed dome for the bottom.



5 Use a 3/8in. spindle gouge to turn a bead on the rim of the base, which will disguise any possible chuck marks. At this stage, the lower part of the base is sanded, waxed, and polished, then remounted for hollowing.

6 Use a cloth to protect the finished surface from the chuck jaws as you true the rim of the base section in preparation for the completion of the profile and hollowing.

7 Complete the profile, leaving a bead at the rim. This can be removed later if it doesn't seem appropriate.

8 (LEFT) True the face, (BELOW) then drill a depth hole in the base.



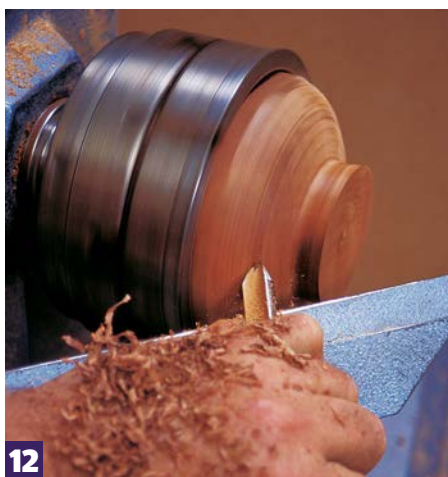
9 Begin hollowing with a 3/8-in. (9mm) deep-fluted gouge.

10 Complete the hollowing with a 3/4-in. (20mm) square-edge scraper.

11 Sand and finish the base. If you follow exactly the same procedure, you should have no problem blending in the portion completed in step 5.

12 Grip the lid by the base and rough-out a knob that fits 2-in. (50mm) jaws.

13 Remount the lid into smaller-diameter jaws gripping the roughed knob so the inside can be completed. True the rim.



14 (RIGHT) Mark the internal diameter of the base, and (FAR RIGHT) turn a short tenon on that diameter to fit the base. Use a 3/8-in. (9mm) shallow gouge.

15 Test-fit the base to the lid.

16 (RIGHT) Turn the inside of the lid. Having removed the bulk with a small bowl gouge, I refine the surface with a 13/8-in. (35mm) scraper. (FAR RIGHT) Then I use a skew chisel on its side to make a small dovetail for the chuck to expand into.





17



17 Cut small beads to decorate the inside.

18 Shear-scrape the flange, undercutting it slightly so it'll sit well on the base rim. The less you sand here, the better the fit. Sand and finish the inside of the lid.

19 Assess how the lid looks on the base. At this stage, it is physically and visually far too heavy.

“The convex edge allows me to turn a slightly concave stem to the knob”



18



19

20 Remount the lid over the expanding jaws. Rough-out the form using a ½-in. (13mm) shallow gouge. From this stage on, you can pop the lid in and out of the chuck as often as you like to see how it looks on the base and to check its thickness.

21 Refine and detail the top of the lid using scrapers. Here I use a shear scraper flat and ease the left corner into the blank near the rim to create a small bead.



20



21

22 Shear-scrape the cove on the rim with a 1-in. (25mm) round-nose scraper tilted on its side.

23 Finally, shear scrape the curved underside of the knob with a 3/8-in. (9mm) shallow gouge. The convex edge allows me to turn a slightly concave stem to the knob.

24 The finished box. If I don't like the lid, I can pop it back on the chuck and refine it further. ●



22



23



24

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Turning a CrushGrind wood mechanism mill

Chris West explores making a mill using a CrushGrind wood mechanism

CHRIS WEST

PHOTOGRAPHS BY CHRIS WEST



During the last dozen or so years, Chris has spent a good deal of his time designing, turning and writing on the subject of salt and pepper mills. His book, *Turning Salt and Pepper Shakers and Mills* was published in 2012 by Taunton Press in North America and GMC Publications in the UK.

chris@westwoodturnery.co.uk
www.westwoodturnery.co.uk

The CrushGrind salt and pepper mill mechanism has a ceramic grinder, which was developed as a multi-purpose grinder suitable for not only salt and pepper, but also for spices and herbs. It could be argued that the CrushGrind mechanisms have become world-beaters.

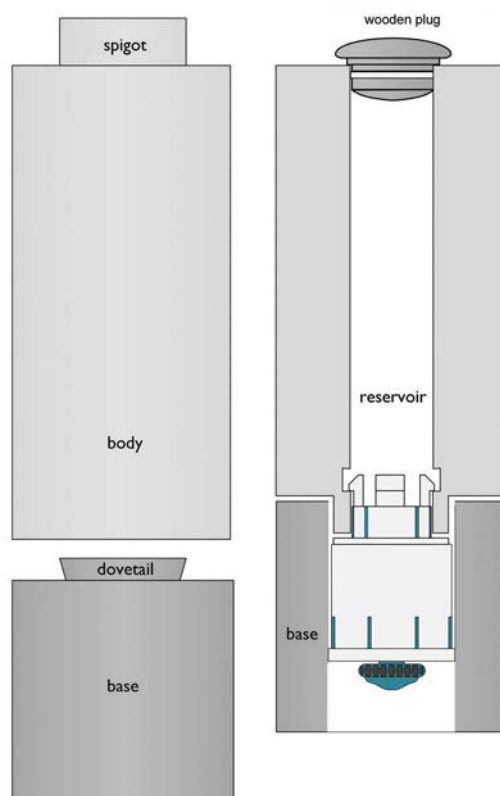
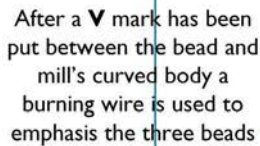


Figure 1. The anatomy of a CrushGrind wood mill. A recess tool, first shown in issue 293, is required to form a recess in the base's three lugs which hold the mechanism in situ





HANDY HINT

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Preparing and drilling the body

Multi-purpose jig

Figure 4.

Dimensions for the Spigot to fit your chuck jaws:

- Total length: $2\frac{1}{2}$ in (63mm)
- Min 1 - $1\frac{1}{16}$ in (43mm) or a diameter to fit your chuck jaws
- Hole length: $1\frac{1}{4}$ in (32mm)
- Top section: $1\frac{3}{4}$ in (44mm)
- Bottom section: $\frac{5}{16}$ in (13mm)
- Bottom right section: $1\frac{1}{4}$ in (30mm)
- Spigot to fit your chuck jaws
- Bottom right section: $1\frac{1}{4}$ in (41mm)

Figure 4.

Shaping the body



Figure 5. Support the body between the multi-purpose jig and a live centre. Start the turning with the two 10mm wide beads. Measure the position of the waistline, mark and using a spindle gouge begin the shaping to give a nice curve



Figure 6. The waistline shaped and ready for finishing as described earlier. The three burn lines can be seen

Preparing, drilling and turning the base blank

The mill's base uses a blank of walnut: 75 x 75 x 97mm. Turn the blank as shown in Fig.2. Hold the base's dovetail in compression jaws and face of the bottom. Refer to Fig.3 to drill steps 1 and 2.

Use a recess tool for step 3. Then step 4 for a distance of 75mm. Measure and mark the length 73mm. Reverse the blank, holding the bottom of the base in expansion jaws. When running true and with a live tailstock in place and face off at the marked line and remove the dovetail. The base is now ready to be shaped.

Shaping the base

Hold the multi-purpose jig in chuck jaws as shown in Fig.7. Position the bottom of the base over it and support the top with a turned support and a turned drive plug as shown. The base's bead can now be shaped using a skew or a gouge before the rest of the body is shaped. Don't forget to 'burn' the line next to the bead. Sand, seal and finish as described earlier.

"The base's bead can now be shaped..."

Fitting the grinding mechanism into the base.

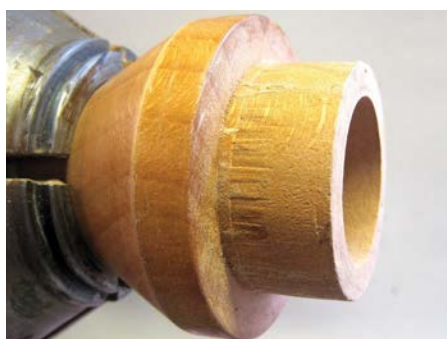


Figure 8. Position so everything is square

Fit the jig into chuck jaws to accept the CrushGrind mechanism. Place the mechanism into the base of the mill and position the body of the mill and mechanism into the jig so everything is square (Fig.8). Bring up the tailstock and lock with a piece of wood central over the tailstock barrel. A 13mm hole in the centre of the plywood is required to allow the CrushGrind shaft to be pressed through, into the hollow barrel of the tailstock. When everything is parallel and the tailstock locked, wind in the barrel to force the mechanism into the mill's base. The lugs need to have clicked into the recess (Fig.9).



Figure 7. Multi-purpose jig fixed in the chuck jaws



Figure 9. Make sure the lugs have clicked into the recess

Turning the retaining plug

Turn the retaining plug as shown in Fig.10, using the same wood as the base. This will be an indicator of the contents of the mill. Try and turn the 23mm diameter as accurate as possible. Fit the sealing ring, Fig.11 over the plug and keep testing its fit in the top of the body until you have a good fit. Be sure to test the mill and adjust the grind using the grey knob at the base of the mill. ●

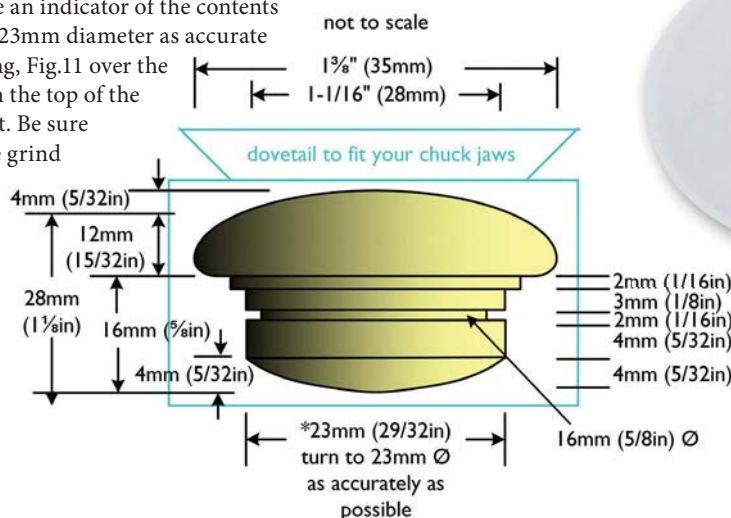


Figure 10. Retaining plug



Figure 11. Sealing ring



It was a beautiful day in Wisconsin so we took our new SCOUT lathe outside for a few photos.

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A mixture of press releases and tests, showing the latest tools and products on the market for great gift ideas

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16MM BOWL GOUGE

A superior gouge produced from M42 high speed steel, heat treated to 68HRC and ground to a razor-sharp edge which lasts and lasts. The optional turned aircraft grade aluminium handle is beautifully crafted too.

Price: From £97.73

Contact: Carter and Son Toolworks
www.carterandson-toolworks.com

For UK: www.thetoolpost.co.uk



PLUGFONES

Plugfones are designed to function as traditional safety earplugs, allowing you to enjoy music at a safe volume. Features include an embedded driver for quality audio sound, reduces noise by 25db, fits a standard 3.5mm headphone jack and includes one set of silicone and one set of expanding foam earplugs.



Price: \$25 (plus tax and p&p)

Contact: Craft supplies USA

Web: www.woodturnerscatalog.com



CROWN MIDI HOLLOWING TOOL

The Midi Revolution hollowing tool is the perfect tool for those who wish to turn hollow forms and semi-enclosed vessels. The Midi Revolution comes with a super ring cutter designed for end grain turning and a bullet-shaped scraper for both end and cross grain turning. Its unique micro-adjustable shield enables the user to make controlled large bulk removal cuts as well as small refining cuts. The scraper cutter is a great finishing tool.

PRICE: £67

Contact: Crown Hand Tools

Web: www.crownhandtools.ltd.uk



KUTZALL SHAPING DISCS/DISHES

The Kutzall shaping discs/dishes are perfect for effortless contour sculpting and adding extra levels of dimension into your creations. The rugged tungsten-carbide coating on all dishes and discs allows you to cut faster, longer and with minimal clogging or time spent cleaning.

Price: \$60–65 (plus tax and p&p)

Contact: Kutzall Tools **Web:** www.kutzall.com



AT2030VS LATHE

This is the largest of the Trade Series woodturning lathes. It is made almost entirely in cast iron, with the bed being particularly wide and well braced. The toolrest holder has a wide base with an offset stem socket for increased rigidity. Twotool rests are provided, 150 and 300mm.

PRICE: £2,955.98

Contact: Axminster Tools & Machinery

Web: www.axminster.co.uk



PAUL HOWARD SPHERE CUTTING JIG

Features of the sphere cutting jig includes turn spheres from small to 300mm diameter, carbide cutter for consistent results, fits flatbed lathes from 120–250mm spindle height and riser blocks included.

Price: £187

Contact: Paul Howard **Web:** www.paulhowardwoodturner.co.uk



PLANET PLUS PEN KIT

The all-in-one pen turners kit includes the deluxe coletted mandrel kit PM1KC/PM2KC but also includes five hardwood blanks and one acrylic, pen trimming tool kit 25mm and 16mm trimmer along with shafts for 7, 8.5, 9.5 and 10mm pen tubes and 7 and 10mm bushings.

Price: £81.84

Contact: Planet Plus **Web:** www.planetplusltd.com

ROBERT SORBY 67HS SET

This set of six of the Robert Sorby core range tools set the standard. Comprising 20mm spindle roughing gouge, 10mm spindle gouge, 10mm bowl gouge, 20mm skew chisel, 3mm parting tool and a 13mm round nose scraper.

PRICE: £181

Contact: Robert Sorby **Web:** www.robert-sorby.co.uk

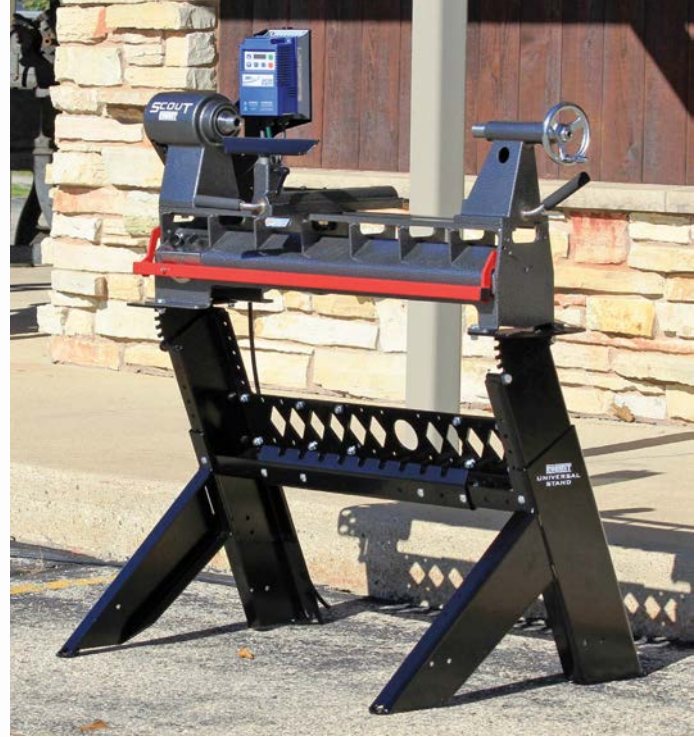


SCOUT 'BIG-LITTLE' LATHE

SCOUT is Robust's 'big-little' lathe – shown with optional stand. Featuring a 14in swing and 26in between centre capacity, it nicely bridges the gap between under powered mini-lathes and full size offerings. Among other features it is fully variable speed with a 1HP motor, 24 position indexing and has a seven year 'head to tail' warranty including everything – even the spindle bearings.

PRICE: From \$150 (plus tax and p&p)

Contact: Robust Tools **Web:** www.turnrobust.com



ROLLY MUNRO WUNDERCUT HOLLOWING TOOL

The 10mm dia. cutter is tungsten carbide (TCT). The complete tool, including 5/8in diameter shaft is stainless steel. An important improvement is the simple method for setting the cutting depth/clearance.

PRICE: From £181.13

Contact: Rolly Munro – www.rollymunro.co.nz

For UK: www.thetoolpost.co.uk



VICMARC VM120

VM120 with standard jaws and insert to fit specific thread size at £223.13; VM120 direct thread M33 standard jaws at £223.13; VM120 can also be supplied without jaws at a cost of £211.41. This price includes the cost of the insert.

Inserts; there are 39 different imperial thread types available and 15 metric. Right hand thread inserts are £32 when bought separately from the chuck and special threads – left hand and left/right are £36 when bought separately from the chuck.

PRICE: From £211.41

Contact: Marco – www.vicmarc.com

For UK: www.blackislewoodturning.com



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This high power unit is suitable for fine artistic work as well as heavier branding and texturing. Features include engineered for good tip heat recovery, smooth variable temperature control from low level through to high power and sufficient reserve power for elaborate custom shape tips.

PRICE: £175

Contact: Woodart Products **Web:** www.woodart-products.co.uk

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PRICE: From £2.68

Contact: Johnson tools

Web: www.johnsonstools.co.uk



WOODTURNINGZ PEN KITS

WoodTurningz is proud to introduce five exclusive new pen kits. The Calypso and Super Stylus combine both pen and stylus and the King Click pen kit offers a stylus tip option. It turns easily and is similar to an acrylic material.

Price: From \$7.50 (plus tax and p&p)

Contact: Woodturningz **Web:** www.woodturningz.com



RECORD POWER CL4 LATHE

The new updated CL4 builds on all the great design features that have made the previous machine so popular, with a number of improvements and to give even greater performance and value for money. It now features a heavy-duty M33 thread spindle and 2 Morse taper. The bed bars have been increased in size to offer more rigidity and the headstock now features easy maintenance sealed-for-life bearings.

The CL4 features the famous VSLK variable speed unit, offering incredible versatility with its responsive variable speed change and is available with a host of optional accessories, including the legstand as shown.

PRICE: £899.99 **Contact:** Record Power **Web:** www.recordpower.co.uk





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Designed by woodturner's for woodturners this robust garment is packed full of unique features. From its real leather elbow patches to its double-ended nylon zipper this is the thinking turners workwear!

PRICE: £36

Contact: The Toolpost

Web: www.thetoolpost.co.uk

HENRY TAYLOR LITTLE SISTER

Little Sister is a mini hollowing tool based upon the highly successful Brother System 2 range. Big on performance, the Little Sister was designed with the small lathe turner in mind, there's a compact fixing screw, hollows through 13mm openings with ease and has a tapered stem for maximum rigidity. There are three configurations available, and a free DVD is included.

Price: From £51.88

Contact: Henry Taylor Tools

Web: www.henrytaylortools.co.uk

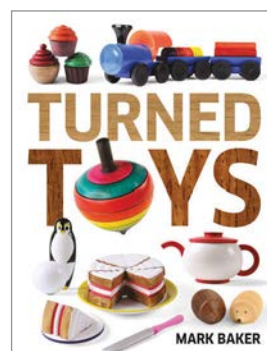


Books

TURNED TOYS

by Mark Baker, published by GMC Publication (£16.99, available from www.thegmcgroup.com)

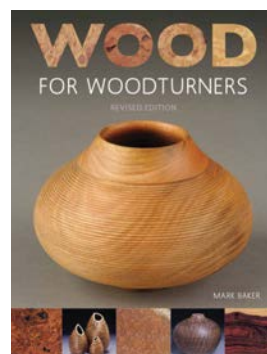
These beautiful hand-crafted toys are as enjoyable to make as they are to play with. Clear step-by-step instructions, detailed photographs and easy-to-follow diagrams start with simple toys and increase in complexity. Projects include simple turned animals, spinning top, tea party items, skittles, stacking blocks, pull-along train and indoor quoits.



WOOD FOR WOODTURNERS (REVISED EDITION)

by Mark Baker, published by GMC (£16.99, available from www.thegmcgroup.com)

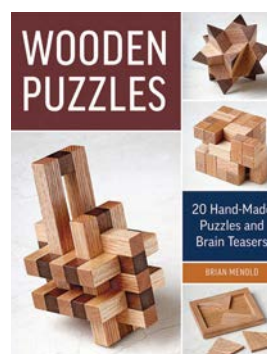
This is the updated edition of the highly successful book by Mark Baker catering specifically for the turner. The book describes 42 of the world's most important woods for turning and goes into great detail with regard to physical characteristics, working qualities and availability.



WOODEN PUZZLES

by Brian Menold, published by Taunton (£17.99, available from www.thegmcgroup.com)

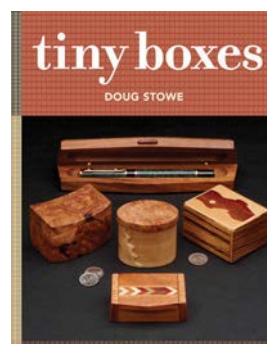
These puzzles can be built from wood scraps with simple tools that any hobbyist woodworker will have in their shop, and make enjoyable projects and great gifts!



TINY BOXES

by Doug Stowe, published by Taunton (£17.99, available from www.thegmcgroup.com)

Boxes are relatively quick to build, require only a small amount of material and can be made in the smallest of woodshops. And, of course, they make wonderful gifts!



COMPLETE IPA

by Joshua M. Bernstein, published by Sterling (£20)

A tangy tour of the world's finest IPAs, from easy-drinking session ales to bitter brews gone wild. This book showcases the best choices in each category, profiles the brewers who helped innovate the sub-categories and highlights emerging IPA styles and the most exceptional breweries making them right now.



Look out for next months Kit & Tools for even more great gift ideas

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 DML320 Cast Midi Lathe 3/4HP £499
 CL3 Lathe M33 2MT £499
 CL4 Lathe M33 2MT £899
 Maxi 1 Lathe £1999
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Alan Wasserman – ‘Ambrosia Maple Burr Nested Bowls’

Alan Wasserman talks to us about his set of nested bowls



Ambrosia Maple Burr Nested Bowls by Alan Wasserman

I am a wood addict, I must admit. I have mastered how to feed this addiction by promising all in my community (and anyone I meet) that if they find a downed (or soon to be downed) tree that I chose to turn, they will have a free bowl. Of course, they have to be the ‘first person to call me’. This has become humorous in practice as there are times I have gotten more than five calls, first thing in the morning, from neighbours that ‘spotted a tree down in the neighbourhood’ and asking if they are the first to call. Just yesterday, after playing a horrible round of golf, I was interrupted while trying to add such a high amount of my strokes when a fellow golfer reminded me that his home being built will require a few

maple (*Acer saccharum*) trees to be cut and wondered when I might come over to ‘select what you want as I need a finished piece for my entrance way’. Yes, I feel like a doctor on call, but it works and it is fun.

This maple ambrosia burl was the subject of one of those early morning calls. Maple, ambrosia and burl are three magical and mystical words, whose reality, once put together, describes a piece of wood that a woodturner may dream about, but rarely obtain. The bowls were cored with the One-Way system, which is simple and allows you to create a nest of bowls if everything works out OK. Once cored, turned and sanded, I applied my sanding sealer mixture to the entire piece. I allowed the pieces to dry for one hour and

then inspected them with a magnifying glass for any sanding or cutting imperfections. I corrected these and then applied Natural Velvit Oil with a brush. After multiple passes with the oil over the course of 30 minutes, I rubbed the oil in with 1000g soft sanding pads, wiped off the excess and allowed the piece to dry for one or two days. I repeated this process two additional times. After curing, I then applied one coat of Velvit Lemon Oil, but rubbed it with a 2000g soft sanding pad. After a two-week cure period I then applied the Beal Buffer system and presto, the finished piece.

Email: alanwassermannnc@gmail.com
Web: www.wassermanstudio.com

Take your turning to the next level with Axminster Evolution



Clubman SK100 Chuck Starter Kit

£169.96 Inc.vat

T38 M33 x 3.5mm **101965**

T04M 1" x 8tpi **101966**

T01 3/4" x 16tpi **101967**

T23 1.1/4" x 8tpi **101968**

Clubman SK80 Chuck Starter Kit

£149.96 Inc.vat

T04M 1" x 8tpi **101969**

T01 3/4" x 16tpi **101970**

Packed into a strong plastic storage box, these starter kits include a set of dovetail jaws (size C), a matching faceplate ring and a screw chuck. This gives you plenty of scope from mounting blanks for initial turning to final completion of another well executed project. All you need to do is choose the chuck thread to suit your lathe.

British manufacturing at its best!

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Clubman SK100 Chuck

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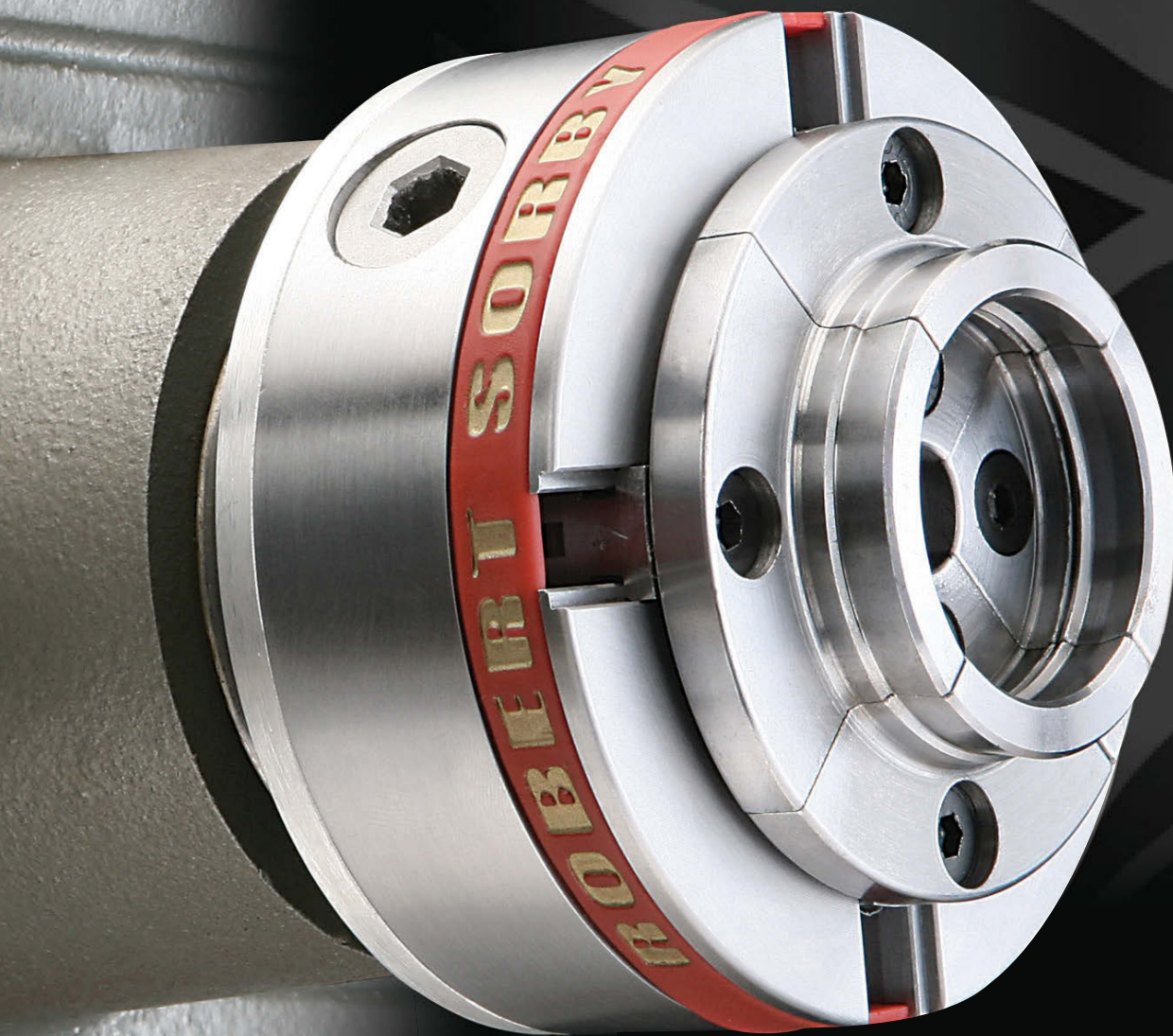
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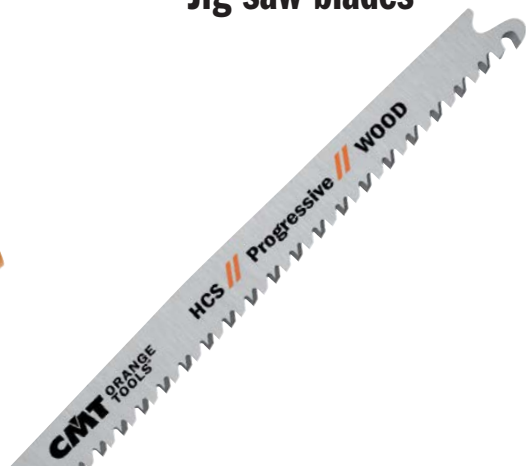
Saw blades



Hole saws



Jig saw blades



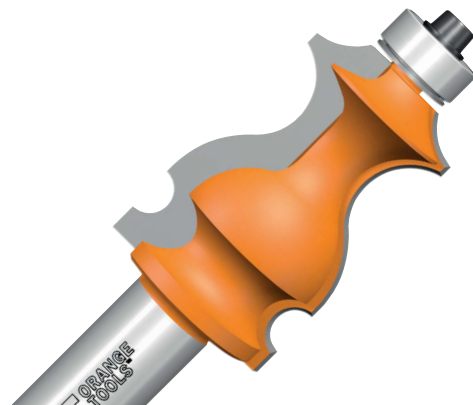
Sabre saw blades



Tools with bore & knives



Router bits & sets



Catalogue

2016/2017

**THE WIDEST
TOOLING RANGE**



Abbreviations

A	= Cutting angle
α	= Hook angle
ATB	= Alternate top bevel grind
B	= Bore diameter
β	= Type of grind
C	= Bearing diameter
COMBI3	= Pin-Hole 2/7/42 + 2/9/46,4 + 2/10/60
D	= Diameter
D₂	= Overall diameter
D₃	= For shank diameter
Ø	= Diameter
d	= Small cutting diameter
FFT	= Flat flat trapezoidal
FTG	= Flat top grind
H	= Cutting depth
I	= Cutting length
I₁	= Cutting length
Inches	= Inches
K	= Kerf thickness
L	= Overall length
mm	= Millimeters
P	= Plate thickness
PTFE	= Non-stick industrial coating, black and orange
R	= Radius
R₁	= Radius
RH	= Right-hand rotation
RPM	= Round per minute
S	= Shank diameter
T₁	= Thickness / Maximum joint thickness
TCG	= Triple chip grind (trapezoidal)
TPI	= teeth per inch
TS	= Tooth spacing
V	= Spurs
Z	= Number of teeth
☐	= On request
●	= Solid tungsten carbide

SINCE 1962 - MADE IN ITALY THEN, STILL MADE IN ITALY TODAY

By now, the story has been told. After over 50 years of success and quality in manufacturing woodworking tools - orange woodworking tools, to be precise - word just sort of gets around. We have grown and we have changed, but one thing still remains the same: our commitment to making only the highest quality woodworking tools.



Pesaro, Italy



Loading the automated multi-axis CNC sharpening machines.



Fully automated assembly and marking.

OUR TOOLS So, what does it take to make a CMT tool? Like all things of quality, it's not only what you do but how you do it. And anyone who works wood knows that you get out of a piece only what you put into it, and it is no different when manufacturing a tool. You choose your designs and materials carefully and you work using all of your skill and know-how. You'll be happy to know that's what we do at CMT too.

DESIGN - Everything starts with a clear idea and having the potential to express it. We have both. At CMT, our technical department uses the best of both worlds - computer technology and hands-on experience - to engineer and design each tool so that it performs flawlessly each time you use it, and to guarantee that you'll be using it for a long, long time.

MATERIALS - Turning a design into a finished product means finding the right material that will do the job and that live up to the specifications set out in the design - quality performance from the final product depends on it. When it comes to selecting raw materials, we don't cut corners.

At CMT, we know that high quality tools come only from high quality raw materials, so we use only solid bar stock steel and specially formulated micrograin carbide to manufacture our bits and blades.

MANUFACTURING - Like we said, it's not just what you do but how you do it. Over the years we have continuously invested in the latest technology in CNC machining equipment and innovative software to manufacture our tools. The result is that now our entire manufacturing process, from turning and milling the steel shanks to brazing and sharpening the carbide cutting tips, is completely automated. And since a machine is only as intelligent as the person using it, everything is operated by specifically trained operators.

THE FINAL TOUCH - A tool simply wouldn't be a CMT tool if it didn't have the trademark orange color non-stick PTFE coating on it. This unique industrial-strength surface coating is designed to withstand the physical stresses the tool undergoes during use while protecting it from residue build-up and burning. And we really like the orange color too.

TOMACO - (TOOL MARKETING COMPANY LTD) - We are very proud to have been appointed the UK distributor for CMT tools. Our company and team have many years experience in the supply of quality products and we are very pleased to be working with such a well known and quality brand such as CMT.

This catalogue, consists of a carefully selected range, which is stocked here in the UK. If you can't see what you are looking for in this catalogue, there are many more products to choose, which you can view at cmttools.co.uk. Any items not stocked here in the UK can be with you within a 5-7 day delivery time. If you would like more information or need to find your nearest CMT stockist, please visit our website www.cmttools.co.uk. For any further assistance, please contact our customer service by phone on 0333 344 5574 or email us at info@tomaco.co.uk

► High-grade tungsten carbide

If steel is what gives our tools strength, carbide is what gives them intelligence. The capacity of the carbide tip to cut precisely and to last a long time is critical for the performance of any tool, so at CMT we use only premium micrograin carbide from Luxembourg to make the tips for our router bits.

MANUFACTURING

► **Turning, Milling and Cutting** Our biggest investment in recent years has been in upgrading production. Today, all machinery at CMT is fully automated. CNC machines run by specially trained operators make sure that the shanks and bodies of our router bits and boring bits are accurate and perfectly balanced.



► **Heat forged steel bodies for large diameter bits** No router bits are exactly the same, sometimes not even in the way they are made. Certain bits require a few more steps than others, like heat forging the steel of larger diameter bits before turning it down into precise bit bodies. This extra step produces a radial grain orientation which gives large diameter bits extra strength and durability.

► **Brazing** We have pioneered the art of brazing. Not only does our unique custom-designed computerized brazing equipment help eliminate the inconsistencies found in old fashioned hand brazing, but our silver-copper-silver brazing 'sandwich' provides a tight bond between the steel and the carbide, with a shock absorbing effect to protect the carbide tips when cutting harder woods.

► **Specially formulated carbide for specific applications** You have to cut every kind material, so we make sure that our carbide tips can handle each individual job. This means specially formulating the carbide of each tool so that the compositions vary from being super hard (for tough cutting jobs like laminates) to being less hard (to absorb the impact when cutting large profiles) and everything in between.

► **Grinding and Sharpening** The final step in the production process is no different from the rest: sharpening and grinding are done to extreme precision on multi-axis CNC machines. Each bevel and angle is ground or sharpened to the micron, to produce a cutting edge that is both razor sharp yet extremely durable.



680°C in seconds - and the brazing is complete.

QUALITY CONTROL - In even the most carefully done task, there's always room for error. However at CMT, we take measures to prevent even this. Just like we have always done, we manually check the quality of our tools at each step of the manufacturing process, and we still make test cuts with rail & stile bits to make sure the cut fits. However, now we also use a fully automatic measuring process that measures every dimension of the tool without actually coming into contact with it, to make sure that the tool measurements are accurate and that the profiles conform precisely to technical specifications. We also use this system to gauge the wear and tear on the CNC machines.



CMT's fully automatic measuring system.

HOW WE PRODUCE OUR HIGH QUALITY BLADES

CMT stands for quality, which means we put quality into everything we do. It only makes sense. At CMT we figure that if our router bits are going to be top quality, high-performance and orange, then our saw blades should be too. And to do that, we simply follow the same guidelines for our blades that we do for our bits: start with a solid design, use only the best materials and manufacture with skill and care. And of course, make sure they are trademark orange.



DESIGN - The simplicity of a circular saw blade design is in reality a complexity of technical considerations. Each blade has to make a certain type of cut, and this requires careful analysis of hook and grind angles, gullet designs, to location of sound dampening slots and the thickness of the blade - just to name a few.

So in order for us to get the best design for our blades - and for you to get the best performance from them - we use the same method that we use to engineer our router bits: we combine the knowledgeable minds and experience of our technical department and the latest computer technology.

The result is a superior blade that has some rather special "standard" features:

Anti-vibration design - The anti-vibration cuts in the blade do exactly what their name implies: they are the anti in anti-vibration. This translates into less chattering during cutting and consequently it lengthens the life of the blade. Anti-vibration also means a flawless cut, so stabilizers and scoring blades are no longer necessary.

Expansion slots - These little hook-shaped cuts in the blade help to reduce noise while regulating the expansion and contraction of the blade as it generates heat during cutting operations.



MATERIALS - When it comes down to it, saw blades are much like router bits - it's just two components: steel and carbide. So in selecting the raw materials, we are every bit as picky with our saw blades as we are with our router bits. Besides, why mess with a winning formula like superior steel and tungsten carbide?

► **Steel** - It's the heart of the blade, so CMT uses only the finest steel available: super 42-44 Rockwell hardness steel.

► **Carbide** - The cutting tips of every CMT blade are made from the best grades of micrograin carbide.



Laser cutting the steel plates.

MANUFACTURING - CMT saw blades are machined on automated CNC machines, from start to finish. The advanced technology and precision of these machines ensures uniform quality on every blade while giving us the possibility to carry out more efficient quality controls.

► **Laser cutting** - The steel plate of the blade is laser cut, NEVER die cut, from superior strength steel. This way of cutting steel is not only extremely precise but it makes it possible to cut harder strengths of steel and does not stress the plate while cutting, so the resulting blade is flat and true and more resistant to warping.

► **Grinding and tensioning** - After it has been cut, the blade is polished and tensioned, the evidence of which can be seen in the superior finish and a tension ring that are visible on the blade. Then the central bore is ground to a smooth finish so that the blade will fit precisely on the saw arbor and will have perfect concentricity during rotation. The seats for the carbide teeth are also ground, making sure that the carbide tips fit perfectly, providing the right conditions for making a secure braze.

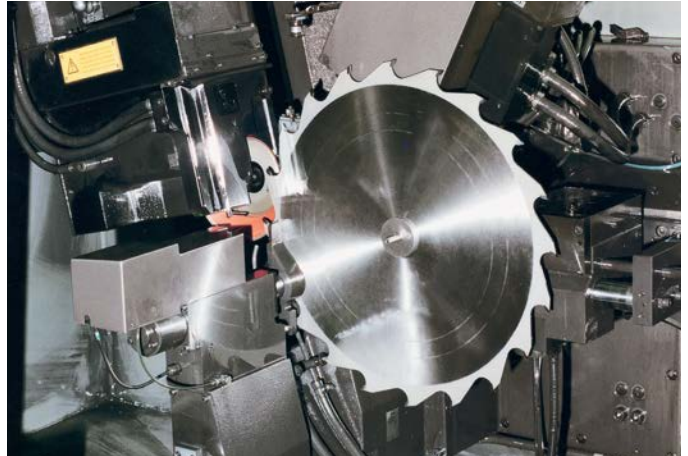


Grinding and tensioning the blades.

► **Silver-copper-silver sandwich brazing** - Once again, experience has been a good teacher. Automated brazing with a special silver-copper-silver “sandwich” brazing compound yields excellent results and reduces the chances of failed welds. In addition, this combination of metals is critical during brazing because as the steel body and the carbide tipped teeth are heated and cooled, they expand and contract at different rates. The copper layer acts as a buffer and keeps the carbide from cracking during cool down shrinkage. When woodworking, the copper provides flexibility and resistance to impact which in turn protects the carbide tips and steel shoulders when cutting through harder substances or knots in the wood.

► **Specially formulated carbide tips** - What is true for router bit carbide tips is also true for the carbide tips on saw blades: what’s good for one type of blade may not be good for another. At CMT, we have studied carbide formulas and their impact on blade performance and have developed specially formulated carbide tips to match each blade’s application. Larger blades require an extra-fine harder carbide that holds its edge and resharpenes easily, while smaller blades need a special carbide that can withstand the occasional nail or imperfections that often occur in construction work. For each blade and each use, there is carbide made especially for it.

► **Sharpening and laser marking** - The final step is sharpening the micrograin carbide teeth. During the sharpening phase, each angle is ground to razor-sharp precision - down to the Milacron - on multi-axis CNC machines. We also laser mark our blades so you have all the details about the blade type and its uses, right there on the blade.



Sharpening the carbide tips.

► **Packaging and instructions** - CMT blades are packed and protected for shipping, display and storage in either a sturdy cardboard box or in a patented heavy duty HDPE plastic case that’s as durable as our tools. Illustrated instructions for resharpening are included with your CMT blade so that you have all the details you need to keep the blade sharp, which will also help you extend the life of the blade.



CMT ORANGE TOOLS. Manufacturers of high quality woodworking tools since 1962, we are still proud to put “Made in Italy” on all our orange tools.

Saw blades for building contractors

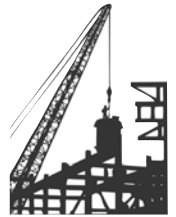


286

APPLICATION: for rip and crosscuts especially designed for building contractors.

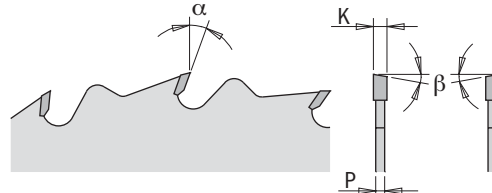
MACHINES: table saws and portable machines.

MATERIAL: soft and hardwood and panels with nails, metal clips and pieces of concrete.



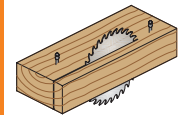
TECHNICAL DETAILS OF CARBIDE TEETH:

- Teeth height mm: 6~10
- Grade ISO: K20
- Hardness (HV10): 1.550
- Transverse rupture strength (N/mm²): 2.600



EXCELLENT

Soft wood with nails, screw, concrete, etc.



D mm	B mm	Pin Hole 	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	16	2,8	1,8	15°	5° ATB	286.016.10M	£28.40	£34.08
300	30	COMBI3	20	2,8	1,8	15°	5° ATB	286.020.12M	£35.95	£43.14
315	30	COMBI3	24	3,2	2,2	15°	5° ATB	286.024.13M	£35.95	£43.14
350	30	COMBI3	24	3,2	2,2	15°	5° ATB	286.024.14M	£41.15	£49.38

Shop tips:

Use our reduction ring from 30 to 25mm order n. 299.225.00 (for rip saw blades Ø250-300-315)

Use our reduction ring from 30 to 25mm order n. 299.228.00 (for rip saw blades Ø350 and larger)

Rip saw blades *industrial line*

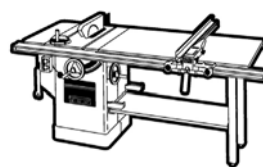


290-293

APPLICATION: for rip and glue line rip cuts.

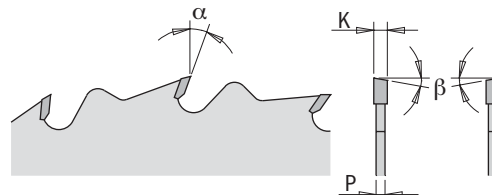
MACHINES: table and special saws, portable and ripping machines for automatic or manual feeding.

MATERIAL: soft and hardwood.



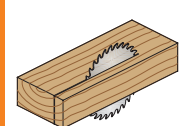
TECHNICAL DETAILS OF CARBIDE TEETH:

- Teeth height mm: 8~10
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150



EXCELLENT

Rip wood



D mm	B mm	Pin Hole 	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	24	2,8	1,8	20°	10° ATB	290.250.24M	£31.70	£38.04
300	30	COMBI3	24	3,2	2,2	20°	10° ATB	293.024.12M	£46.55	£55.86
305	30	2/10/60	28	2,8	1,8	20°	10° ATB	293.028.22M	£46.55	£55.86
315	30	COMBI3	28	3,2	2,2	20°	10° ATB	293.028.12M	£49.20	£59.04
350	30	COMBI3	28	3,5	2,5	20°	10° ATB	293.028.14M	£54.75	£65.70



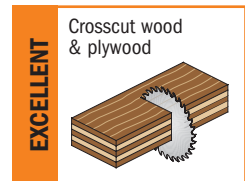
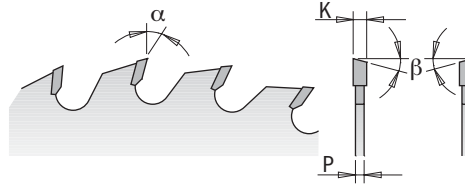
285-294

APPLICATION: for optimal quality rip and crosscuts.
MACHINES: table and special saws, portable machines.
MATERIAL: soft and hardwood, wood-based panels.



TECHNICAL DETAILS OF CARBIDE TEETH:

- Teeth height mm: 8~10
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150



D mm	B mm	Pin Hole	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	40	3,2	2,2	15°	10° ATB	285.040.10M	£43.70	£52.44
250	30	COMBI3	60	3,2	2,2	10°	15° ATB	285.060.10M	£53.00	£63.60
300	30	COMBI3	48	3,2	2,2	15°	10° ATB	285.048.12M	£59.20	£71.04
305*	30	2/10/60 + 2/7/42	54	2,8	1,8	-5° Neg.	15° ATB	294.054.22M	£60.90	£73.08
315*	30	COMBI3	54	3,2	2,2	15°	10° ATB	294.054.12M	£63.10	£75.72
350	30	COMBI3	54	3,5	2,5	15°	10° ATB	285.054.14M	£70.40	£84.48

* Non-low noise

Finishing saw blades *industrial line*

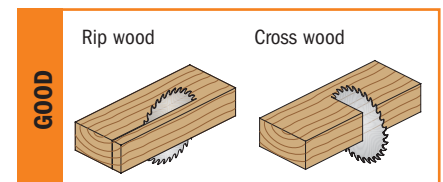
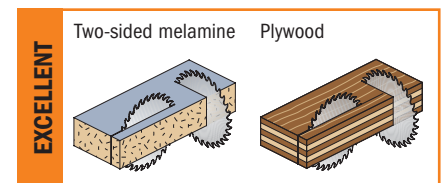
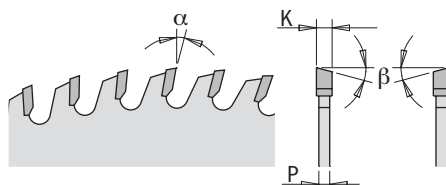


285

APPLICATION: for optimal quality crosscuts.
MACHINES: table and sizing saws, portable machines.
MATERIAL: soft, hard and exotic wood, wood-based panels.

TECHNICAL DETAILS OF CARBIDE TEETH:

- Teeth height mm: 8
- **CHROMIUM** Grade ISO: KCR06
- Hardness (HV10): 1.950
- Transverse rupture strength (N/mm²): 2.300



D mm	B mm	Pin Hole	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	80	3,2	2,2	5°	15° ATB	285.080.10M	£69.55	£83.46
300	30	COMBI3	72	3,2	2,2	10°	15° ATB	285.072.12M	£67.90	£81.48
300	30	COMBI3	96	3,2	2,2	5°	15° ATB	285.096.12M	£81.45	£97.74
305	30	COMBI3	72	3,2	2,2	10°	15° ATB	285.072.22M	£77.90	£93.48
350	30	COMBI3	84	3,5	2,5	10°	15° ATB	285.084.14M	£86.15	£103.38

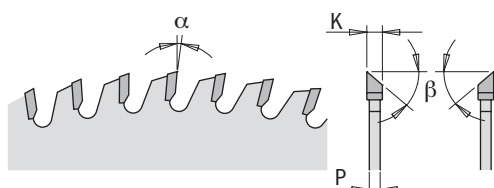
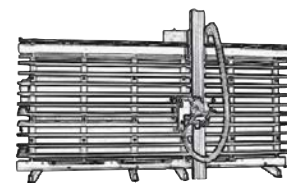
Fine cut-off saw blades for two-sided melamine *industrial line***283**

APPLICATION: for sizing cuts, perfect finishing on both sides of double-sided panels without using scoring blades.

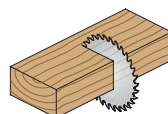
MACHINES: table and vertical saws, sizing and portable machines.

MATERIAL: single or double-sided laminated panels with coating and veneered.

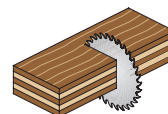
ISO:	KCR06
HV10:	1.950
N/mm ² :	2.300

**EXCELLENT**

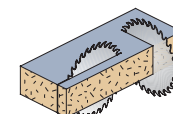
Cross wood



Crosscut plywood



Two-sided melamine



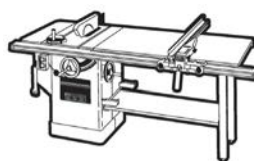
D mm	B mm	Pin Hole 	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	80	3,2	2,2	-2°	40° ATB	283.080.10M	£76.60	£91.92
300	30	COMBI3	96	3,2	2,2	2°	40° ATB	283.096.12M	£92.15	£110.58

Laminated and chipboard saw blades *industrial line***281**

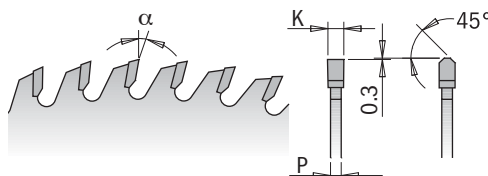
APPLICATION: for sizing cuts, perfect finishing by using scoring blades.

MACHINES: table and mitre saws, horizontal and vertical sizing machines.

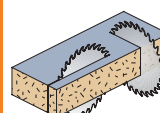
MATERIAL: single or double-sided plastic-laminated panels.

**TECHNICAL DETAILS OF CARBIDE TEETH:**

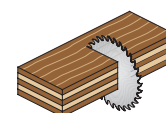
- Teeth height mm: 8
- **CHROMIUM** Grade ISO: KCR06
- Hardness (HV10): 1.950
- Transverse rupture strength (N/mm²): 2.300

**EXCELLENT**

Two-sided melamine



Crosscut plywood

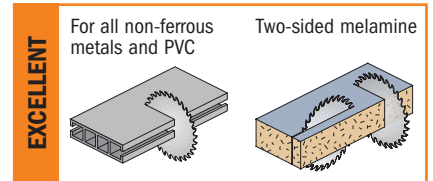
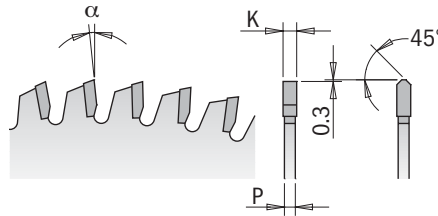


D mm	B mm	Pin Hole 	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
200*	30	2/7/42	64	3,2	2,2	10°	TCG	281.064.08M	£60.05	£72.06
250	30	COMBI3	80	3,2	2,2	10°	TCG	281.080.10M	£72.65	£87.18
300	30	COMBI3	96	3,2	2,2	10°	TCG	281.096.12M	£86.15	£103.38
350	30	COMBI3	108	3,5	2,5	10°	TCG	281.108.14M	£104.35	£125.22

* Non-low noise

**TECHNICAL DETAILS OF CARBIDE TEETH:**

- Teeth height series 296, mm: 6
- Teeth height series 297, mm: 8
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150

296-297**APPLICATION:** for cutting and dividing tubes, drawn products and solid blocks.**MACHINES:** single or double mitre saws, radial saws.
Recommended use with the saw blade over the workpiece.
Use series 296 for portable machines.**MATERIAL:** aluminum, brass, copper alloys, plastic, composite material, melamine and laminated panels.**WARNING:** it is recommended to use a liquid lubricant.
Wax stick for lubrication NOT RECOMMENDED**Saw blades for portable machines. Negative hook angle**

D mm	B mm	Pin Hole ⊕⊕	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
160*	20	2/6/32	56	2,2	1,6	-6° Neg.	TCG	296.160.56H	£35.00	£42.00
210*	30	2/7/42	64	2,8	2,2	-6° Neg.	TCG	296.210.64M	£53.80	£64.56
216*	30	2/7/42	64	2,8	2,2	-6° Neg.	TCG	297.064.09M	£60.05	£72.06

* Non-low noise

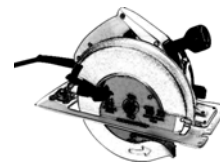
Remarks: in plastic carry case

Saw blades to fit on mitre saws, table saws and combined joinery machines. Negative hook angle

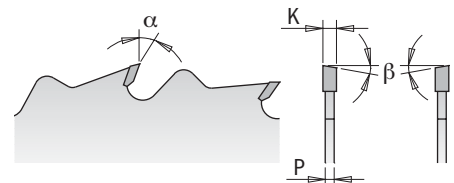
D mm	B mm	Pin Hole ⊕⊕	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	80	3,2	2,5	-6° Neg.	TCG	297.080.10M	£71.35	£85.62
300	30	COMBI3	96	3,2	2,5	-6° Neg.	TCG	297.096.12M	£86.15	£103.38
305*	30	2/10/60 + 2/7/42	96	3,2	2,5	-6° Neg.	TCG	297.096.13M	£99.30	£119.16

* Non-low noise

Remarks: in cardboard box

Rip saw blades for portable machines**290****APPLICATION:** for rip cuts.**MACHINES:** mitre saws and portable machines.**MATERIAL:** soft and hardwood.**TECHNICAL DETAILS OF CARBIDE TEETH:**

- Teeth height mm: 6~8
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150

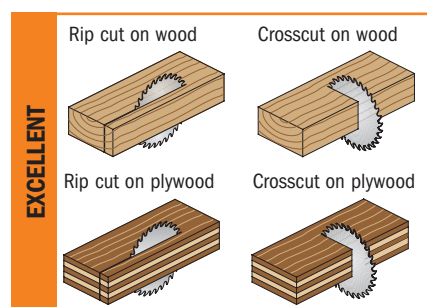


D mm	B mm	Pin Hole ⊕⊕	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
160	20	2/6/32	12	2,2	1,6	20°	10° ATB	290.160.12H	£17.35	£20.82
190	30	2/7/42	12	2,6	1,6	20°	10° ATB	290.190.12M	£19.60	£23.52
200	30	2/7/42	24	2,8	1,8	20°	10° ATB	290.200.24M	£26.10	£31.32
210	30	2/7/42	24	2,8	1,8	20°	10° ATB	290.210.24M	£27.45	£32.94
216	30	2/7/42	24	2,8	1,8	-5° Neg.	15° ATB	290.216.24M	£28.40	£34.08
220	30	2/7/42	24	2,8	1,8	20°	10° ATB	290.220.24M	£29.15	£34.98
235	30	2/7/42	24	2,8	1,8	20°	10° ATB	290.235.24M	£30.75	£36.90

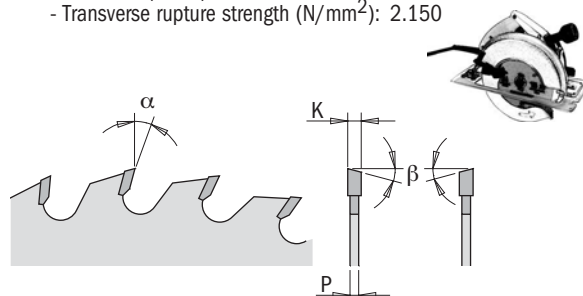
Crosscut saw blades for portable machines



291

APPLICATION: for rip and crosscuts.**MACHINES:** table and mitre saws, portable machines.**MATERIAL:** soft and hardwood, plywood.**TECHNICAL DETAILS OF CARBIDE TEETH:**

- Teeth height mm: 6~8
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150

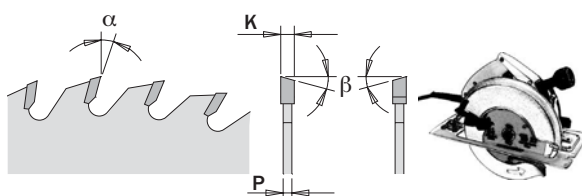


D mm	B mm	Pin Hole ⊕⊗	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
125	20		20	2,4	1,4	15°	15° ATB	291.125.20H	£21.45	£25.74
150	20		24	2,4	1,4	15°	15° ATB	291.150.24H	£23.45	£28.14
160	20	2/6/32	24	2,2	1,6	15°	15° ATB	291.160.24H	£25.19	£30.23
170	30	2/7/42	24	2,6	1,6	20°	10° ATB	291.170.24M	£24.30	£29.16
180	30	2/7/42	24	2,6	1,6	20°	10° ATB	291.180.24M	£24.65	£29.58
184	30		24	2,6	1,6	20°	10° ATB	291.184.24M	£25.25	£30.30
190	30	2/7/42	24	2,6	1,6	20°	10° ATB	291.190.24M	£24.65	£29.58
190	20 (Festool® FF)	5/7/2,5	32	2,6	1,6	10°	10° ATB	291.190.32FF	£35.00	£42.00
200	30	2/7/42	36	2,8	1,8	15°	15° ATB	291.200.36M	£30.45	£36.54
210	30	2/7/42	36	2,8	1,8	15°	15° ATB	291.210.36M	£33.85	£40.62
216	30	2/7/42	48	2,8	1,8	-5° Neg.	15° ATB	291.216.48M	£39.70	£47.64
220	30	2/7/42	36	2,8	1,8	15°	15° ATB	291.220.36M	£34.75	£41.70
230	30	2/7/42	36	2,8	1,8	15°	15° ATB	291.230.36M	£35.70	£42.84
235	30	2/7/42	36	2,8	1,8	15°	15° ATB	291.235.36M	£35.85	£43.02

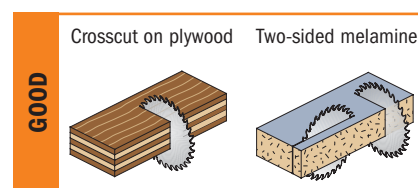
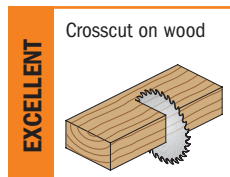
Fine cut-off saw blades for portable machines



292

APPLICATION: for crosscuts, perfect finishing.**MACHINES:** table and mitre saws, portable machines.**MATERIAL:** soft, hard and exotic wood, wood-based panels, one-sided veneered, paper-based laminated.**TECHNICAL DETAILS OF CARBIDE TEETH:**

- Teeth height mm: 6~8
- Grade ISO: K10
- Hardness (HV10): 1.765
- Transverse rupture strength (N/mm²): 2.150



D mm	B mm	Pin Hole ⊕⊗	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
150	20		40	2,4	1,4	15°	15° ATB	292.150.40H	£29.00	£34.80
160	20	2/6/32	40	2,2	1,6	10°	15° ATB	292.160.40H	£31.90	£38.28
160	30	2/7/42	40	2,2	1,6	10°	15° ATB	292.160.40M	£29.00	£34.80
160	20	2/6/32	56	2,2	1,6	15°	15° ATB	292.160.56H	£38.50	£46.20
165	20	2/6/32	40	2,2	1,6	10°	15° ATB	292.165.40H	£29.60	£35.52
165	20	2/6/32	56	2,2	1,6	10°	15° ATB	292.165.56H	£35.60	£42.72
170	30	2/7/42	40	2,6	1,6	15°	15° ATB	292.170.40M	£30.40	£36.48
180	30	2/7/42	40	2,6	1,6	15°	15° ATB	292.180.40M	£31.35	£37.62
184	16		40	2,6	1,6	15°	15° ATB	292.184.40E	£32.05	£38.46
190	30	2/7/42	40	2,6	1,6	15°	15° ATB	292.190.40M	£31.80	£38.16
190	20 (Festool® FF)	Key 5/7/2,5	48	2,4	1,6	10°	15° ATB	292.190.48FF	£38.15	£45.78
200	30	2/7/42	48	2,8	1,8	15°	15° ATB	292.200.48M	£36.15	£43.38
210	30	2/7/42	48	2,8	1,8	15°	15° ATB	292.210.48M	£39.35	£47.22
216	30	2/7/42	64	2,8	1,8	-5° Neg.	15° ATB	292.216.64M	£47.80	£57.36
220	30	2/7/42	48	2,8	1,8	15°	15° ATB	292.220.48M	£43.45	£52.14
235	30	2/7/42	48	2,8	1,8	15°	15° ATB	292.235.48M	£43.95	£52.74

Ultra industrial thin-kerf blades

- Ultra thin kerf
- Laser cut arbor and plate
- High quality steel
- Tri-metal brazing
- Finest micrograin carbide
- Low noise

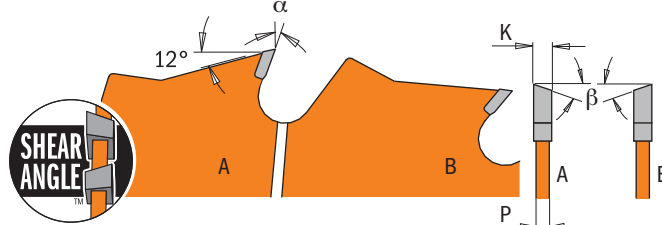


271

APPLICATION: for rip cuts where the ultra thin-kerf reduces material wastes.

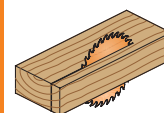
MACHINES: table and mitre saws, portable and cordless machines.

MATERIAL: soft and hardwood.



EXCELLENT

Rip cut on wood



Ultra thin-kerf rip and crosscut blades

D mm	B mm	Pin Hole	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
165	20	2/6/32	24	1,7	1,1	18°	10° ATB + 8° Shear	271.165.24H	£19.91	£23.89
250	30	COMBI3	24	2,4	1,6	20°	10° ATB + 8° Shear	271.250.24M	£26.00	£31.20
250	30	COMBI3	42	2,4	1,6	18°	10° ATB + 8° Shear	271.250.42M	£34.35	£41.22

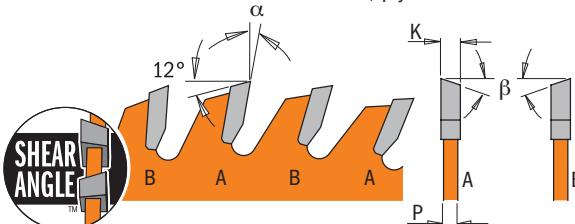


272

APPLICATION: for rip and crosscuts where the ultra thin-kerf reduces material wastes.

MACHINES: table and mitre saws, portable and cordless machines.

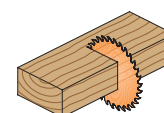
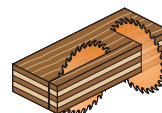
MATERIAL: soft and hardwood, plywood.



EXCELLENT

Cut on plywood

Crosscut on wood



Ultra thin-kerf fine crosscut blades

D mm	B mm	Pin Hole	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
165	20	2/6/32	36	1,7	1,1	20°	10° ATB + 8° Shear	272.165.36H	£22.17	£26.60
190	30	2/7/42	42	1,7	1,1	18°	10° ATB + 8° Shear	272.190.42M	£28.61	£34.33
250	30	COMBI3	60	2,4	1,6	15°	10° ATB + 8° Shear	272.250.60M	£39.13	£46.96

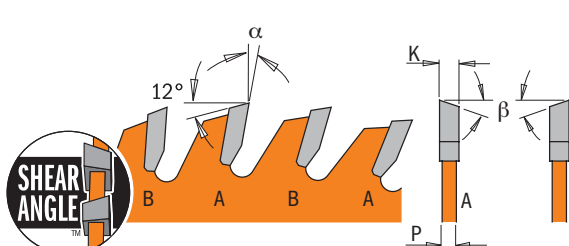


273

APPLICATION: for crosscuts, perfect finishing where the ultra thin-kerf reduces material wastes.

MACHINES: table and mitre saws, portable and cordless machines.

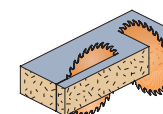
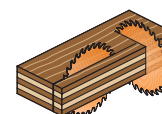
MATERIAL: soft, hard and exotic wood, wood-based panels, one-sided veneered, paper-based laminated.



EXCELLENT

Plywood

Two-sided melamine



Ultra thin-kerf fine finishing saw blades

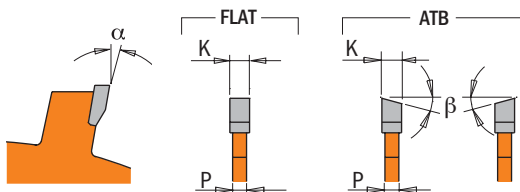
D mm	B mm	Pin Hole	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
250	30	COMBI3	80	2,4	1,6	12°	10° ATB + 8° Shear	273.250.80M	£43.39	£52.07

Biscuit joiner saw blades



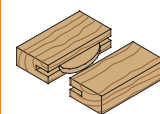
240-241

CMT's 100mm biscuit joiner saw blades with orange PTFE industrial coating trademark make biscuit joints quickly and easily. High-grade German steel and 8 micrograin carbide-tipped teeth guarantee years of use. These blades fit Lamello, Dewalt, Porter-Cable, Skil, Bosch, Freud and other popular biscuit joints models.



Biscuit joint

EXCELLENT



D mm	B mm	Pin Hole 	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
100	22	4/4,5 - 9,5/36	8	3,96	3,0	15°	10° ATB	240.008.04	£26.10	£31.32
100*	22	-	8	3,96	3/3,1	15°	FLAT	241.008.04	£32.15	£38.58

* For Virutex, Portable-Cable machines.

Grooving saw blades for spindle moulders *industrial line*

240

APPLICATION: for grooving cuts or for rebating, chamfering, grooving and profiling as a set of tools.

MACHINES: double-end tenoner and moulding machines.

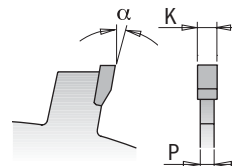
MATERIAL: soft and hardwood, wood-based panels, plastic.



The new design allows multi-rip grooves using different kerf thickness.

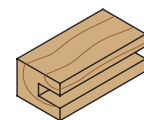
TECHNICAL DETAILS OF CARBIDE TEETH:

- Teeth height mm: 10
- Grade ISO: K01
- Hardness (HV10): 1.840
- Transverse rupture strength (N/mm²): 2.050



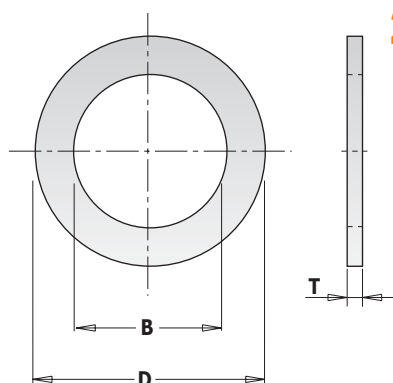
Grooving

EXCELLENT



D mm	B mm	Z	K mm	P mm	α	β	ORDER NO.	Ex. Vat.	Inc. Vat.
150	30	12	2,0	1,4	15°	FLAT	240.020.06M	£20.80	£24.96
150	30	12	3,0	2,0	15°	FLAT	240.030.06M	£25.95	£31.14
150	30	12	4,0	3,0	15°	FLAT	240.040.06M	£30.30	£36.36
150	30	12	5,0	3,0	15°	FLAT	240.050.06M	£33.70	£40.44
150	30	12	6,0	3,0	15°	FLAT	240.060.06M	£36.65	£43.98

Bore reduction rings for saw blades



299

D mm	B mm	T mm	ORDER NO.	Ex. Vat.	Inc. Vat.
20	12,7	1,2	299.221.00	£2.55	£3.06
20	16	1,2	299.222.00	£2.55	£3.06
20	18	1,4	299.236.00	£2.55	£3.06
30	15,87	1,4	299.211.00	£2.55	£3.06
30	16	1,4	299.223.00	£2.55	£3.06
30	16	2,0	299.226.00	£2.55	£3.06
30	18	1,4	299.232.00	£2.55	£3.06
30	20	1,4	299.224.00	£2.55	£3.06
30	22	1,4	299.231.00	£2.55	£3.06
30	20	2,0	299.227.00	£2.55	£3.06
30	25	1,4	299.225.00	£2.55	£3.06
30	25	2,0	299.228.00	£2.55	£3.06
30	25,4	2,0	299.212.00	£2.55	£3.06

FASTX4® SYSTEM: THE HOLE SAW REVOLUTION!

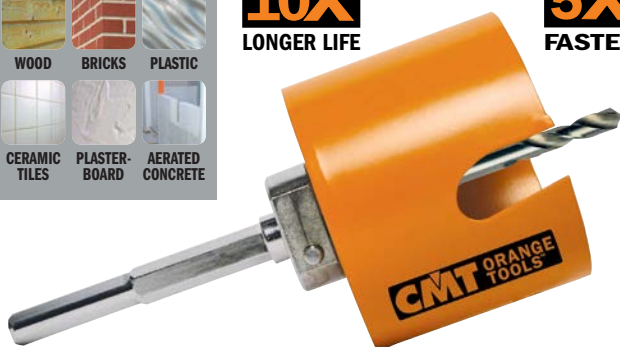
The innovative patented FASTX4 system makes the hole saw arbor obsolete. These hole saws have been specifically designed to ensure maximum productivity, lifetime and performance in all materials. CMT offers a professional range for electricians, carpenters, builders, kitchen fitters and all related heating, ventilation and plumbing trades.

SERIES 550 TUNGSTEN CARBIDE-TIPPED



10X
LONGER LIFE

5X
FASTER



Long Lasting Construction Grade Carbide.

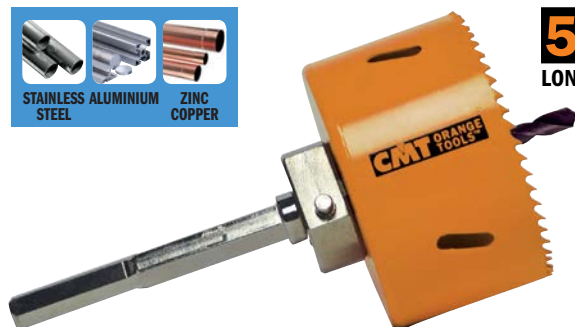
A special formulated construction grade carbide is used for the cutting teeth, which provides 10 times longer cutting life.

Tungsten carbide-tipped multi-purpose hole saws are designed for use in a wide variety of materials such as soft and hardwoods, chipboard, plywood, MDF, plastic, gypsum/plasterboard, tiles, solid brick, brick with cavities, aerated concrete block, lightweight aggregate block, breeze block and soft density lime-sandstone building block (max 30 N/mm² hardness).

SERIES 551 BI-METAL PLUS 8% COBALT



50%
LONGER LIFE

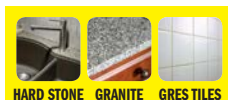


Bi-Metal Plus 8% Cobalt

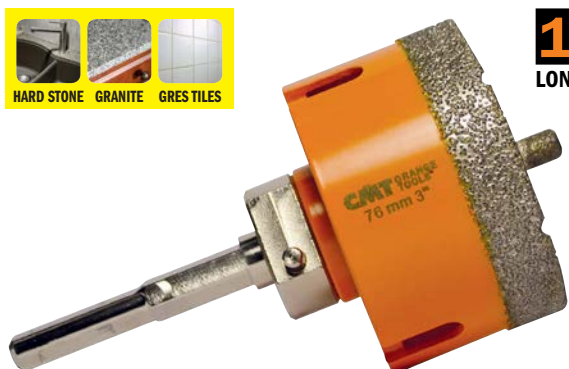
Premium bi-metal with 8% cobalt provides Xtreme results in performance and up to 50% longer lifetime than the competition.

Special tooth geometry with regular pitch provides a smoother cut and better chip clearance preventing clogging and heat build-up. Teeth are alternate & side set to minimize binding and friction requiring less feed pressure. Ideal for mild steel (up to 1000 N/mm² strength), stainless steel, non-ferrous metal, aluminium, cast iron, copper and zinc.

SERIES 552 DIAMOND DRY



10X
LONGER LIFE



Diamond Grit Premium Grade

Very well-shaped and extremely strong cubo-octahedral inclusion-free heat-resistant crystals to deliver fast clean cuts up to 10 times longer life.

Diamond grit edge hole saws have been specially developed for professionals that need to drill in extremely hard materials such as ceramic tile (porcelain, gres, quarry, granite, hard stone), fiberglass, gypsum/plasterboard, fibercement board, Perspex®, where it is increasingly difficult to drill with conventional hole saws. These hole saws guarantee excellent performance and superior lifetime even in the hardest materials.

EYE-CATCHING PACKAGING



03.01.0297 (empty box)



03.01.0296 (empty box)



Teeth are protected with heat shrink wrap film

FASTX4 SYSTEM: THE HOLE SAW REVOLUTION!

CMT's innovative system offers great advantages to all professionals!

X1 FAST LOCK

ALL IN ONE CLICK!

We developed a unique patented Fast Lock System to quickly change between sizes and types in seconds!

It is the only system that allows the hole saw and the pilot drill to be changed without tools.

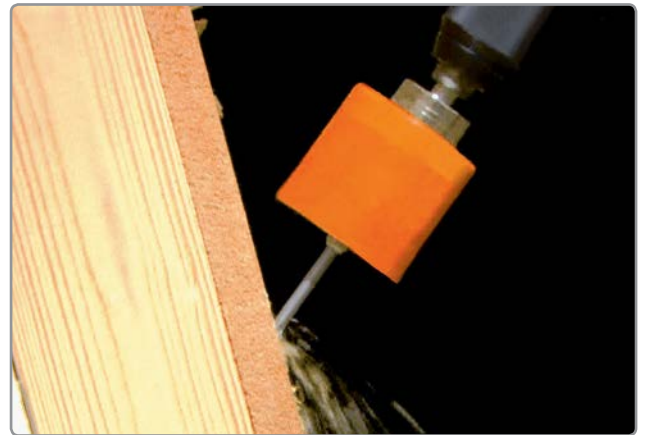


X2 FAST DRILL

FAST DRILLING IN ALL CONDITIONS!

Our hole saws have unique body geometry and teeth sharpening which provides fast, precise drilling at Xtreme angles.

- pre-drill at the desired angle
- push the hole saw forward back in position and complete the hole.



X3 FAST BORE ENLARGEMENT

UNIQUE SOLUTION FOR BORE ENLARGEMENT!

CMT's has a unique and fast solution to enlarge your bores. Our innovative pilot drill bit can fit two hole saws, allowing you to enlarge a hole in seconds.



X4 FAST PLUG REMOVAL

EASY PLUG REMOVAL IN ONE CLICK!

No more screwdrivers or tools!

The plug is effortlessly removed by reversing the pilot drill bit.



Material		Series 550 	Series 551 	Series 552 	Tips
Soft and hardwood		>500 holes	<30 holes		
Plywood, table top		>500 holes	<30 holes		
MDF, chipboard, veneered		>500 holes	<30 holes		
Laminated, Trespa®, HPL		>500 holes	<10 holes		
Gypsum and plasterboard		>500 holes	<50 holes	<20 holes	
Fibercement boards, Eternit®		>500 holes	<30 holes	<20 holes	
Sandwich materials			50~75 holes		
Plastic		>100 holes	<20 holes		
Fiberglass		50~100 holes			
Acrylic glass		>100 holes			Use coolant
Roofing tiles		>50 holes			No concrete tiles
Solid bricks, masonry		>50 holes		<20 holes	
Perforated bricks		>50 holes		<20 holes	
Lime bricks		>50 holes			
Porous and lightweight concrete		>500 holes	<20 holes		
Metals and thin sheet metals			10~40 holes		Use coolant oil
Non-ferrous metals			50~75 holes		Use coolant oil
Aluminium			50~75 holes		Use coolant oil
Stainless steel			30~50 holes		Use coolant oil. Low speed
Cast iron			5~10 holes		Use coolant oil
Copper, zinc, brass			50~75 holes		Use coolant oil
Tiles (porcelain, gres, quarry)				10~50 holes	
Hard stone (granite, marble), Okite				10~50 holes	

The number of holes is approximate. Material's type, thickness and speed can affect such performance.

Examples of applications by diameter and user (it may change country by country)

Diameter in mm	19	22	25	30	35	40	44	48	51	54	57	60	64	68	70	76	83	86	92	102	105	127	152	
Application																								User
Fitted light	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•			Electrician
Cable feedthrough box				•	•							•						•						
Switch boxes													•											
Plug sockets														•										
Junction boxes															•	•								
Distributor boxes																	•	•						Heating fitter
Air conditioning pipes																				•	•			
Sanitary and heating pipes	•		•	•	•																			Plumber and heating fitter
Sanitary, drain and water pipes (insulated)						•	•	•																

FASTX4 Multi-Purpose Hole Saws**CMT ORANGE TOOLS™****550****CHROME COATED****PERFECT ROUND BACK PLATE****HEXAGONAL SHANK****FAST & EASY CHANGE****LARGE CHIP CLEARANCE SLOTS**I=52
L=63**LONG LASTING CONSTRUCTION GRADE CARBIDE.**
Cutting teeth are made of a special formulated construction grade carbide which provides a longer cutting life.**SECURED TOOTH TECHNOLOGY**

As a result of the latest technology, teeth are secured to prevent any breakage during impact with hard materials.

10X
LONGER LIFE**5X**
FASTER*The plug is effortlessly removed thanks to the innovative slots.***MATERIALS**

- soft, hardwoods and plywood
- chipboard, MDF, veneered, laminated and table top
(*pre-drill the laminate/melamine by using left-hand rotation for clean finishing*)
- gypsum, plasterboard, fibercement boards, Eternit®
- plastics (PVC, nylon, Trespa®, polyester)
- fiberglass and acrylic glass
- tiles, solid bricks and bricks with cavities, aerated concrete blocks, lightweight aggregate blocks and breeze blocks, soft density lime-sandstone building blocks (max 30 N/mm² hardness); for hardness >30 N/mm² use the diamond dry hole saws.

**Ceramic tiles****Wood & MDF****Trespa® & Plastic****Plasterboard****Soft bricks****Lime bricks**

Use the recommended speeds to get optimum lifetime. The speed affects the hole quality.
Always pre-drill with the center drill to achieve best performance.
The percussion/hammer action mode must be turned off when using these hole saws.



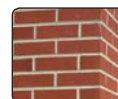
D		Wood & MDF	PVC & Fiberglass	Masonry, brick	Tiles	S	ORDER NO.	Ex. Vat.	Inc. Vat.
mm	inches	RPM	RPM	RPM	RPM				
19	3/4	1.600	1.000	1.000	640	Hexagonal	550-019	£18.18	£21.82
20	25/32	1.600	1.000	1.000	640	Hexagonal	550-020	£18.18	£21.82
22	7/8	1.460	1.000	1.000	580	Hexagonal	550-022	£18.18	£21.82
25	1	1.280	1.000	1.000	510	Hexagonal	550-025	£18.18	£21.82
29	1-1/8	1.100	940	940	440	Hexagonal	550-029	£19.38	£23.26
30	1-3/16	1.070	910	910	430	Hexagonal	550-030	£19.38	£23.26
32	1-1/4	1.000	850	850	400	Hexagonal	550-032	£19.38	£23.26
35	1-3/8	920	780	780	370	Hexagonal	550-035	£21.21	£25.45
38	1-1/2	840	720	720	340	Hexagonal	550-038	£21.21	£25.45
40	1-9/16	800	680	680	320	Hexagonal	550-040	£23.37	£28.04
44	1-3/4	730	620	620	290	Hexagonal	550-044	£26.07	£31.28
51	2	630	540	540	250	Hexagonal	550-051	£26.64	£31.97
52	2-3/64	620	530	530	250	Hexagonal	550-052	£26.64	£31.97
54	2-1/8	590	510	510	240	Hexagonal	550-054	£31.59	£37.91
56	2-3/16	570	490	490	230	Hexagonal	550-056	£31.68	£38.02
57	2-1/4	560	480	480	220	Hexagonal	550-057	£31.68	£38.02
60	2-3/8	530	460	460	210	Hexagonal	550-060	£31.68	£38.02
64	2-1/2	500	430	430	200	Hexagonal	550-064	£34.08	£40.90
68	2-43/64	470	400	400	190	Hexagonal	550-068	£35.04	£42.05
70	2-3/4	460	390	390	180	Hexagonal	550-070	£35.04	£42.05
73	2-7/8	440	370	370	180	Hexagonal	550-073	£35.04	£42.05
76	3	420	360	360	170	Hexagonal	550-076	£38.73	£46.48
79	3-1/8	410	350	350	160	Hexagonal	550-079	£38.73	£46.48
80	3-5/32	400	340	340	160	Hexagonal	550-080	£38.73	£46.48
82	3-15/64	390	330	330	160	Hexagonal	550-082	£38.73	£46.48
83	3-1/4	390	330	330	150	Hexagonal	550-083	£39.30	£47.16
89	3-1/2	360	310	310	140	Hexagonal	550-089	£45.00	£54.00
92	3-5/8	350	300	300	140	Hexagonal	550-092	£45.36	£54.43
102	4	310	270	270	130	Hexagonal	550-102	£54.63	£65.56
105	4-1/8	310	260	260	120	Hexagonal	550-105	£56.34	£67.61
108	4-1/4	300	250	250	120	Hexagonal	550-108	£72.90	£87.48
111	4-1/4	290	250	250	120	Hexagonal	550-111	£79.35	£95.22
114	4-1/2	280	240	240	110	Hexagonal	550-114	£90.57	£108.68
127	5	250	220	220	100	Hexagonal	550-127	£110.82	£132.98
133	5-1/4	240	210	210	100	Hexagonal	550-133	£125.85	£151.02
152	6	210	180	180	80	Hexagonal	550-152	£140.34	£168.41
168	6-5/8	200	150	150	120	Hexagonal	550-168	£172.90	£207.48
210	8-5/16	200	150	150	120	Hexagonal	550-210	£301.70	£362.04
225	8-7/8	160	120	120	95	Hexagonal	550-225	£339.80	£407.04
260	10-15/64	150	110	110	80	Hexagonal	550-260	£390.20	£468.24
270	10-5/8	140	100	100	70	Hexagonal	550-270	£390.20	£468.24

550-HS1 For **Ø20-30mm (25/32" - 1-3/16")**.
Hexagonal shank for **10mm (25/64")** chuck, HSS center drill, total length 180mm (7-5/64").



Ex. Vat.	Inc. Vat.
£15.00	£18.00

550-HW1 For **Ø20-30mm (25/32" - 1-3/16")**.
Hexagonal shank for **10mm (25/64")** chuck, HW center drill, total length 180mm (7-5/64").



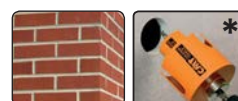
Ex. Vat.	Inc. Vat.
£15.00	£18.00

550-HS2 For **Ø32-152mm (1-1/4" - 6")**.
Hexagonal shank for **13mm (1/2")** chuck, HSS center drill, total length 180mm (7-5/64").



Ex. Vat.	Inc. Vat.
£20.00	£24.00

550-HW2 For **Ø32-152mm (1-1/4" - 6")**.
Hexagonal shank for **13mm (1/2")** chuck, HW center drill, total length 180mm (7-5/64").



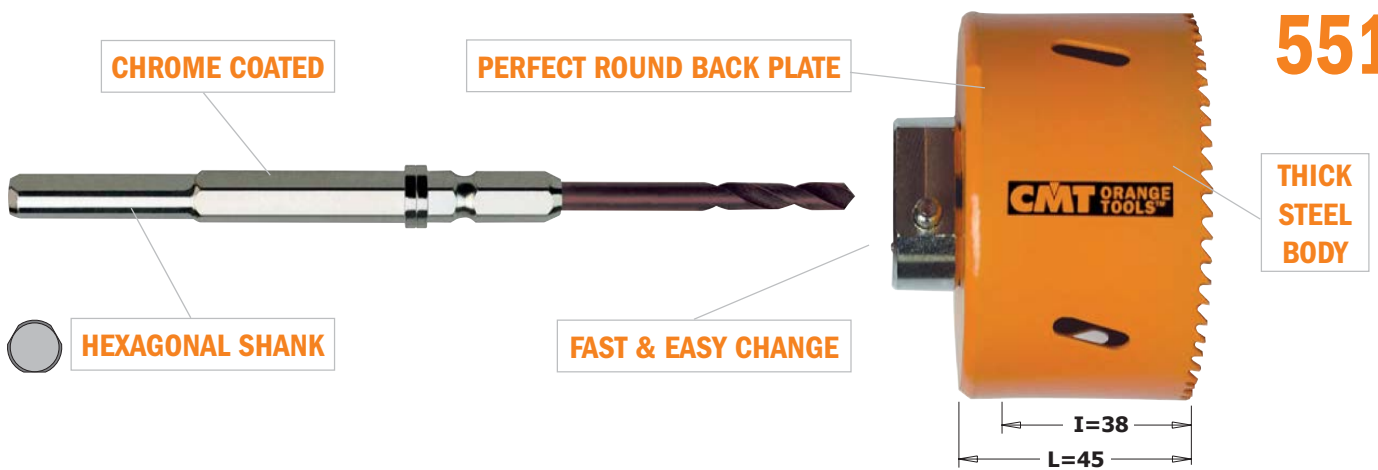
Ex. Vat.	Inc. Vat.
£20.00	£24.00

550-DB1 For plug removal and bore enlargement (in hole saws with different hexagonal shank sizes).
Hexagonal shank for **13mm (1/2")** chuck.



Ex. Vat.	Inc. Vat.
£20.00	£24.00

*Bore enlargement: feasible with hole saws with 9mm minimum difference between largest and smallest diameter.

FASTX4 Bi-Metal Plus Hole Saws**CMT ORANGE TOOLS™****551****MATERIALS**

- metals (up to 1000 N/mm² strength)
- mild steel,
- stainless steel
- non-ferrous metals, aluminium
- sandwich materials
- cast iron
- copper, zinc, brass

**BI-METAL PLUS 8% COBALT**

Premium bi-metal with 8% cobalt provides Xtreme results in performance and up to 50% longer lifetime than the competition.

**50%
LONGER LIFE****ALTERNATE & SIDE SET TEETH****TEETH DESIGN**

Special tooth geometry with regular pitch provides a smoother cut and better chip clearance preventing clogging and heat build-up. Teeth are alternate & side set to minimize binding and friction, requiring less feed pressure.

*Stainless steel and cast iron.**Zinc, aluminium and copper.***SPEED
KILLS!**

Operating at higher speeds than those recommended will shorten hole saw life and produce very inefficient cutting.

**FEED
PRESSURE:**

Variables in material, work configuration should be considered. Apply sufficient feed pressure to aid good chip removal. Reduce the pressure when hole saw becomes hot or if teeth start to clog with material. Insufficient feed pressure will dull tooth points prematurely, but too much pressure can totally destroy teeth.

**COOLING
LUBRICANT:**

Cutting oil serves several purposes when sawing in metals:

- it cools saw and workpiece
- it reduces heat and abrasion, which can shorten cutting life
- it also aids re-moving swarf from the cutting surface
- using a cooling lubricant will extend your hole saw life by 500%.



Percussion/hammer action mode must be turned off when using these hole saws.



D		Metal	Stainless steel	Cast iron	Aluminium	S	ORDER NO.	Ex. Vat.	Inc. Vat.
mm	inches	RPM	RPM	RPM	RPM				
16	5/8	550	270	370	800	Hexagonal	551-016	£17.13	£20.56
19	3/4	470	230	310	670	Hexagonal	551-019	£17.13	£20.56
20	25/32	440	220	290	640	Hexagonal	551-020	£17.13	£20.56
22	7/8	400	200	270	580	Hexagonal	551-022	£17.13	£20.56
25	1	350	170	230	510	Hexagonal	551-025	£17.94	£21.53
27	1-1/16	330	160	220	470	Hexagonal	551-027	£17.94	£21.53
29	1-1/8	310	150	200	440	Hexagonal	551-029	£17.94	£21.53
30	1-3/16	300	140	190	430	Hexagonal	551-030	£17.94	£21.53
32	1-1/4	280	140	180	400	Hexagonal	551-032	£18.72	£22.46
35	1-3/8	250	120	170	370	Hexagonal	551-035	£19.77	£23.72
38	1-1/2	230	110	150	340	Hexagonal	551-038	£19.77	£23.72
40	1-9/16	220	110	150	320	Hexagonal	551-040	£21.69	£26.03
43	1-11/16	210	100	140	300	Hexagonal	551-043	£24.18	£29.02
44	1-3/4	200	100	130	290	Hexagonal	551-044	£25.14	£30.17
48	1-7/8	180	90	120	270	Hexagonal	551-048	£25.14	£30.17
51	2	170	85	110	250	Hexagonal	551-051	£25.14	£30.17
52	2-3/64	160	80	110	240	Hexagonal	551-052	£26.00	£31.20
54	2-1/8	160	80	110	240	Hexagonal	551-054	£26.88	£32.26
57	2-1/4	160	75	100	220	Hexagonal	551-057	£29.04	£34.85
60	2-3/8	150	70	95	210	Hexagonal	551-060	£30.48	£36.58
64	2-1/2	140	70	90	205	Hexagonal	551-064	£32.49	£38.99
65	2-9/16	140	70	90	205	Hexagonal	551-065	£33.00	£39.60
68	2-43/64	130	65	80	185	Hexagonal	551-068	£33.27	£39.92
70	2-3/4	130	60	80	185	Hexagonal	551-070	£34.26	£41.11
73	2-7/8	120	60	80	180	Hexagonal	551-073	£34.26	£41.11
76	3	120	55	75	170	Hexagonal	551-076	£36.42	£43.70
79	3-1/8	110	55	70	165	Hexagonal	551-079	£37.20	£44.64
83	3-1/4	105	50	70	155	Hexagonal	551-083	£37.20	£44.64
86	3-3/8	105	50	65	150	Hexagonal	551-086	£37.20	£44.64
89	3-1/2	100	50	65	145	Hexagonal	551-089	£37.20	£44.64
92	3-5/8	95	45	60	140	Hexagonal	551-092	£43.53	£52.24
102	4	85	45	55	130	Hexagonal	551-102	£50.49	£60.59
105	4-1/8	80	40	55	120	Hexagonal	551-105	£58.00	£69.60
108	4-1/4	80	40	55	120	Hexagonal	551-108	£65.28	£78.34
114	4-1/2	80	40	55	120	Hexagonal	551-114	£80.00	£96.00
127	5	70	35	45	90	Hexagonal	551-127	£86.55	£103.86
133	5-1/4	65	35	45	90	Hexagonal	551-133	£92.94	£111.53
140	5-1/2	65	30	40	85	Hexagonal	551-140	£99.93	£119.92
152	6	55	25	35	75	Hexagonal	551-152	£112.50	£135.00
168	6-5/8	55	25	35	75	Hexagonal	551-168	£170.16	£204.19



**Cutting
oil**

**Cutting
oil**

Dry

Turpentine



551-HS1

For Bi-Metal PLUS hole saws **16-30mm (5/8" - 1-3/16")**. Hexagonal shank for **10mm (25/64")** chuck, HSS center drill, total length 160mm (6-5/16").



Ex. Vat.

£15.00

Inc. Vat.

£18.00



551-HS2

For Bi-Metal PLUS hole saws **32-168mm (1-1/4" - 6-5/8")**. Hexagonal shank for **13mm (1/2")** chuck, HSS center drill, total length 160mm (6-5/16").

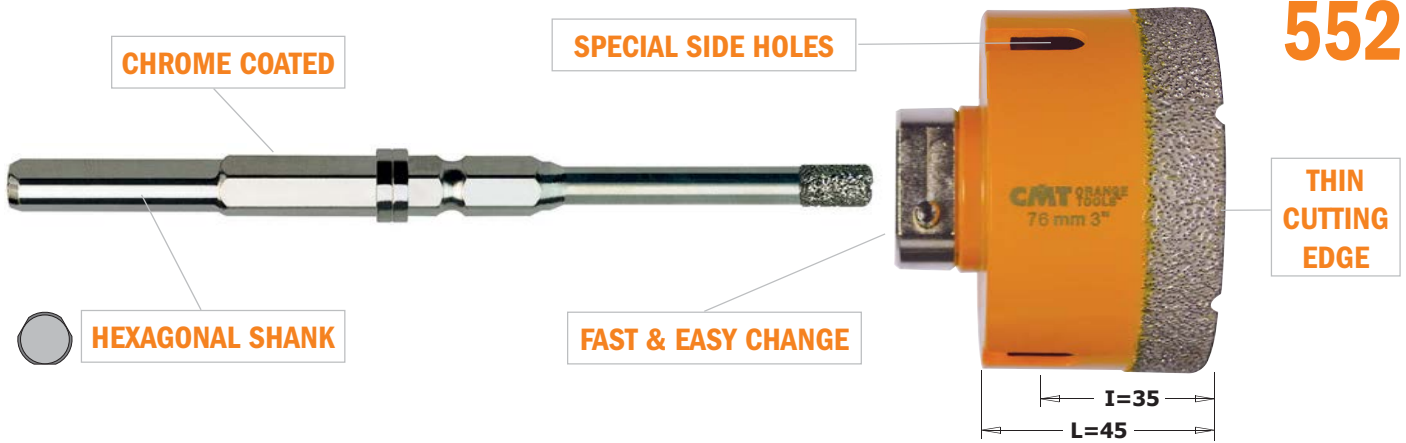


Ex. Vat.

£20.00

Inc. Vat.

£24.00

FASTX4 Diamond Dry Hole Saws**CMT ORANGE TOOLS™****552****MATERIALS**

- floor tiles (porcelain, gres, quarry)
- wall tiles (porcelain, gres, quarry)
- hard stones (granite, marble), Okite
- solid bricks
- masonry
- gypsum/plasterboard
- fiber cement board
- fiberglass

**DIAMOND GRIT PREMIUM GRADE**

Well-shaped and extremely strong cubo-octahedral inclusion-free heat-resistant crystals delivers fast, clean cuts up to 10 times longer life.

10X
LONGER LIFE

Diamond grit edge hole saws have been specially developed for professionals that need to drill in extremely hard materials where it is increasingly difficult to drill with conventional hole saws.

These hole saws guarantee excellent performance and superior lifetime!

*Gres, porcelain and ceramic tiles**Granite and Marble***HARD STONE****GRANITE****GRES TILES**

Percussion/hammer action mode must be turned off when using these hole saws.
NO angle grinder, just a high speed drilling machine (minimum 14V recommended).
Always pre-drill with the center drill to achieve the best performance.
Accurate drill positioning. Center drill reduces the risk of slipping.



D	Tiles (ceramic & gres) Hard stone, bricks, masonry	S	ORDER NO.	Ex. Vat.	Inc. Vat.
mm inches					
5 13/64	RPM 1500 ~ 4000	Hexagonal	552-005	£29.58	£35.50
6 1/4	RPM 1500 ~ 4000	Hexagonal	552-006	£29.58	£35.50
8 5/16	RPM 1500 ~ 4000	Hexagonal	552-008	£29.58	£35.50
10 3/8	RPM 1500 ~ 4000	Hexagonal	552-010	£29.58	£35.50
12 15/32	RPM 1500 ~ 4000	Hexagonal	552-012	£32.40	£38.88
14 9/16	RPM 1500 ~ 4000	Hexagonal	552-014	£32.00	£38.40
16 5/8	RPM 1500 ~ 4000	Hexagonal	552-016	£32.01	£38.41

Filled with cooling wax

D	Tiles (ceramic & gres) Hard stone, bricks, masonry	S	ORDER NO.	Ex. Vat.	Inc. Vat.
mm inches					
18 45/64	RPM 1500 ~ 4000	Hexagonal	552-018	£37.59	£45.11
20 25/32	RPM 1500 ~ 4000	Hexagonal	552-020	£45.03	£54.04
25 1	RPM 1500 ~ 4000	Hexagonal	552-025	£50.25	£60.30
32 1-1/4	RPM 1500 ~ 4000	Hexagonal	552-032	£62.49	£74.99
35 1-3/8	RPM 1500 ~ 4000	Hexagonal	552-035	£67.62	£81.14
38 1-1/2	RPM 1500 ~ 4000	Hexagonal	552-038	£75.00	£90.00
51 2	RPM 1500 ~ 4000	Hexagonal	552-051	£99.00	£118.80
55 2-11/64	RPM 1500 ~ 4000	Hexagonal	552-055	£102.96	£123.55
68 2-23/64	RPM 1500 ~ 4000	Hexagonal	552-068	£125.85	£151.02
76 3	RPM 1500 ~ 4000	Hexagonal	552-076	£139.86	£167.83
111 4-3/8	RPM 1500 ~ 4000	Hexagonal	552-111	£200.00	£240.00



← Filled with cooling wax

552-DD1

For diamond dry hole saws ≤ **30mm (1-3/16")**. Hexagonal shank for **10mm (25/64")** chuck, 8mm diamond center drill, total length 143mm (5-5/8").



← Filled with cooling wax

552-DD2

For diamond dry hole saws ≥ **32mm (1-1/4")**. Hexagonal shank for **13mm (1/2")** chuck, 10mm diamond center drill, total length 143mm (5-5/8").



552-WAX

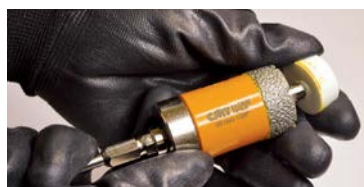
Jar **100ml. (3.4oz)**. Cooling Wax, for perfect cooling and lubrication.

ORDER NO.	Ex. Vat.	Inc. Vat.
552-DD1	£36.96	£44.35
552-DD2	£36.96	£44.35
552-WAX	£8.46	£10.15

**Diamond
dry
step-by-step**



**NO WATER,
LESS MESS!**



BUY HOLE SAWS + ARBORS AND YOU'LL GET THE CASE TO COLLECT THE WHOLE SET FOR FREE!



03.01.0297

The big case is provided empty, image is purely indicative.



03.01.0296

The small case is provided empty, image is purely indicative.



SERIES 550 TUNGSTEN CARBIDE-TIPPED

ORDER NO.	Ø	ORDER NO.	Ø	ORDER NO.	Ø
550-020	20	550-056	56	550-HS2	
550-022	22	550-060	60	550-HW2	
550-025	25	550-064	64	550-HS1	
550-029	29	550-068	68	550-HW1	
550-030	30	550-070	70	20+4 pcs.	
550-032	32	550-073	73		
550-035	35	550-076	76		
550-040	40	550-080	80		
550-044	44	550-102	102		
550-051	51	550-152	152		



SERIES 550 TUNGSTEN CARBIDE-TIPPED

ORDER NO.	Ø	ORDER NO.	Ø	ORDER NO.
550-025	25	550-060	60	550-HS2
550-032	32	550-064	64	550-HW2
550-035	35	550-068	68	550-HS1
550-040	40	550-080	80	550-HW1
550-051	51	550-102	102	

10+4
pcs.



SERIES 551 BI-METAL PLUS 8% COBALT

ORDER NO.	Ø	ORDER NO.	Ø	ORDER NO.
551-020	20	551-040	40	551-HS2
551-022	22	551-043	43	551-HS1
551-025	25	551-051	51	
551-030	30	551-060	60	
551-035	35	551-079	79	

10+2
pcs.



SERIES 551 BI-METAL PLUS 8% COBALT

ORDER NO.	Ø	ORDER NO.	Ø	ORDER NO.	Ø
551-020	20	551-057	57	551-HS2	
551-022	22	551-060	60	551-HS1	
551-025	25	551-064	64	20+2 pcs.	
551-027	27	551-068	68		
551-030	30	551-076	76		
551-035	35	551-079	79		
551-040	40	551-083	83		
551-043	43	551-089	89		
551-048	48	551-102	102		
551-051	51	551-108	108		



SERIES 552 DIAMOND DRY

ORDER NO.	Ø	ORDER NO.	Ø	ORDER NO.
552-005	5	552-016	16	552-DD2
552-006	6	552-020	20	552-DD1
552-008	8	552-025	25	552-WAX
552-010	10	552-032	32	
552-012	12	552-035	35	

10+3
pcs.

QUALITY MATERIALS FOR OUTSTANDING PERFORMANCE

Produced by following state-of-the-art processes and by using high-tech machines, these jig saw blades have been specifically designed for precise cuts on soft & hardwood, plywood, OSB, laminates, plastics, HPL, multiplex panels, metals, ferrous & non-ferrous materials, aluminium, fiberglass and also stainless steel. These are made of three different materials.

new

What else? Geometry is important!

HCS

HCS (High Carbon Steel)

For use when cutting softwood, wood fiberboard and soft plastic.

BIM

BIM (Bimetal)

Suitable for use in hardwood, abrasive wooden and harder materials such as non-ferrous and ferrous metals. This special bond of HCS and HSS fits the most diverse needs.

Resistant to shank breakage thanks to its flexibility, this material lasts much longer than HCS and HSS.

An excellent value for your money.

HSS

HSS (High Speed Steel)

For use when cutting harder materials, such as metals, aluminium and non-ferrous metals.



Milled and side set teeth

Jig saw blades featuring this kind of geometry feature a quick rough cut into soft/hardwood, aluminium, plastic and non-ferrous metals.



Milled and wavy set teeth

Suitable for fine straight cuts into plywood, soft steel, aluminium, non-ferrous metals and plastic.



Ground and side set teeth

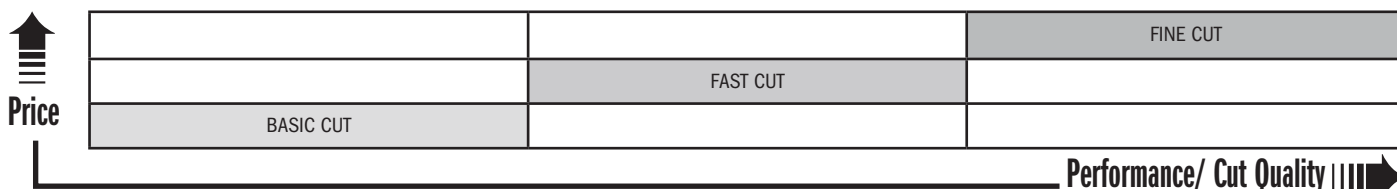
To be used for quick cuts in wood.



Ground and taper ground teeth

This geometry delivers fine and clear cuts in wood and plastic.

Series	Material	Thickness	Line	Fine Straight 	Coarse Straight 	Fine Curve 	Coarse Curve 	Page
WOOD	Softwood	1,5-15	Fine			JT101AO		26
		2-15	Basic			JT119B0		25
		3-65	Fine, Splinter-Free	JT234X				27
		3-30	Fine	JT101B				26
		3-30	Fine, Splinter-Free	JT101BR				26
		4-60	Basic		JT111C			25
		5-60	Fast		JT144D		JT244D	25
		5-100	Fast		JT344D			26
		7-55	Fine	JT101D				27
		7-65	Fine	JT301CD				27
	Hardwood	1,5-15	Fine			JT101AO		26
		3-30	Fine	JT101B				26
		3-30	Fine, Splinter-Free	JT101BR				26
		3-65	Fine, Splinter-Free	JT234X				27
		5-60	Fast		JT144D		JT244D	25
		5-100	Fast		JT344D			26
		7-55	Fine	JT101D				27
		7-65	Fine	JT301CD				27
	OSB	2-15	Basic			JT119B0		25
		3-30	Fine	JT101B				26
		4-60	Basic		JT111C			25
		5-60	Fast		JT144D		JT244D	25
		7-55	Fine	JT101D				27
	Plywood	1,5-15	Fine			JT101AO		26
		2-15	Basic			JT119B0		25
		3-30	Fine	JT101B				26
		3-30	Fine, Splinter-Free	JT101BR				26
		3-65	Fine, Splinter-Free	JT234X				27
		4-60	Basic		JT111C			25
		5-60	Fast		JT144D		JT244D	25
		5-100	Fast		JT344D			26
		7-55	Fine	JT101D				27
		7-65	Fine	JT301CD				27
	Construction Wood	<30	Fine	JT101B				26
		3-65	Fine, Splinter-Free	JT234X				27
		<100	Fast		JT344D			26
		<135	Fast		JT744D			26
		7-65	Fine	JT301CD				27
	Chipboard	2-15	Basic			JT119B0		25
		3-30	Fine	JT101B				26
		3-65	Fine, Splinter-Free	JT234X				27
		4-60	Basic		JT111C			25
		5-60	Fast		JT144D		JT244D	25
	Laminated panels Kitchen Tops Worktops	1,5-15	Fine			JT101AO		26
		1,5-15	Fine, Long Life	JT101BIF				27
		3-30	Fine	JT101B				26
		3-30	Fine, Splinter-Free	JT101BR				26
		3-65	Fine, Splinter-Free	JT234X				27
METAL	Sheet metals	1-3	Basic	JT118A		JT218A		28
		1,5-10	Fast, Long life	JT123X				28
		2,5-6	Basic	JT118B				28
	Aluminium, non-ferrous	<30	Fast	JT127D				28
		1,5-10	Fast	JT123X				28
	Pipes	<30	Fast	JT123X				28
	Inox Sheets	1,5-3	Fast	JT123X				28
	Sandwich Material	<120	Fast, Flexible	JT718BF				28
	GRP (Fiberglass)	<30	Fast	JT127D				28
	Plastic (PP, PE, PVC, PA, PS)	<30	Fine	JT101D				27
		<30	Fast	JT123X				28
		7-65	Fine	JT301CD				27





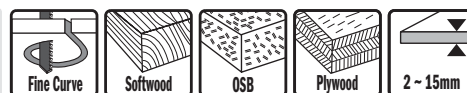
5-PIECE MASTERPACK



JT119B0

Curve cuts on softwood (2 ~ 15mm), plywood, OSB.

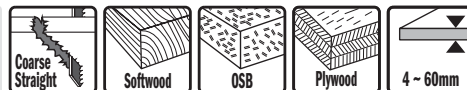
Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	50	76	2	JT119B0-5	£2.96	£3.55



JT111C

Fast coarse cuts on softwood (4 ~ 60mm), plywood, OSB.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	75	100	3	JT111C-5	£2.96	£3.55



JT144D

Very fast cuts, straight and coarse, on hard/soft woods (5 ~ 60mm), plywood, OSB. Plunge cutting.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	75	100	4	JT144D-5	£4.26	£5.11
25	75	100	4	JT144D-25	£18.17	£21.80
100	75	100	4	JT144D-100	£68.61	£82.33



JT244D

Fast, curve, coarse cut on soft and hardwood from 5mm to 60mm, plywood, OSB. Plunge cutting.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	75	100	4	JT244D-5	£4.26	£5.11



Jig Saw Blades



JT344D

Very fast cuts, straight and coarse on thick construction timber, hard/soft woods (5 ~ 100mm), plywood, OSB.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	110	132	4	JT344D-5	£6.26	£7.51



JT744D

Very fast cuts, straight and coarse on thick construction timber, hard/soft woods (5 ~ 135mm) and sandwich material.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
3	155	180	4	JT744D-3	£7.35	£8.82



JT101A0

Curved cuts, fine finishing on both sides of surface on hard/soft woods, plywood, MDF, double sided laminates (1,5 ~ 15mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	50	76	1,4	JT101A0-5	£5.74	£6.89



JT101B

Fine straight cuts on hard/soft woods, plywood, OSB and plastics (3 ~ 30mm). Plunge cutting.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	75	100	2,5	JT101B-5	£4.43	£5.32
25	75	100	2,5	JT101B-25	£21.13	£25.36



JT101BR

Straight cuts, fine finishing on the surface, on hard/soft woods, plywood, OSB, laminated panels, plastics (3 ~ 30mm). Reverse tooth.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	75	100	2,5	JT101BR-5	£5.22	£6.26
25	75	100	2,5	JT101BR-25	£22.96	£27.55





JT101D

Good straight cuts on hard/soft woods, plywood, OSB, plastics (7 ~ 55mm). Plunge cutting.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	75	100	4	JT101D-5	£4.96	£5.95						



JT301CD

Straight cuts, fine finishing, on hard/soft woods, plywood, laminates, plastics (7 ~ 65mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	90	116	3	JT301CD-5	£6.26	£7.51						



JT234X

Extra-clean splinter-free straight cuts on hard/soft woods, plywood, OSB, laminates (3 ~ 65mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	90	116	2-3	JT234X-5	£9.39	£11.27						



JT101BIF

Splinter-free cuts. Special for all laminates, HPL and multiplex panels (1,5 ~ 15mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	58	83	1,7	JT101BIF-5	£10.43	£12.52						



JT141HM

Plasterboard, fibre cement boards (<50mm). Glass fibre reinforced plastic/epoxy (5 ~ 20mm), Eternit®, MDF, HDF.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	75	100	4,3	JT141HM-3	£	£						



JT341HM

Plasterboard, fibre cement boards (<80mm). Glass fibre reinforced plastic/epoxy (5 ~ 50mm), Eternit®, MDF, HDF.

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.						
5	110	132	4,3	JT341HM-3	£	£						

Jig saw blades



JT118A

Straight cuts on thin sheet metals, ferrous and non-ferrous (1 ~ 3mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	50	76	1,2	JT118A-5	£5.22	£6.26



JT218A

Curve cuts on thin sheet metals, ferrous and non-ferrous (1 ~ 3mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	50	76	1,2	JT218A-5	£5.74	£6.89



JT118B

Straight cuts on medium-thick metals, ferrous and non-ferrous (2,5 ~ 6mm).

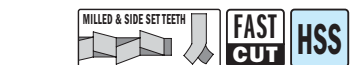
Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
5	50	76	2	JT118B-5	£5.22	£6.26



JT123X

Straight cuts on thin to thick sheet metals (1,5 ~ 10mm), pipes, profiles in plastic and aluminium (diameter <30mm), stainless steel (1,5 ~ 3mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.	1,5 ~ 10mm	<30mm	<30mm	<30mm	1,5 ~ 3mm
5	75	100	1,2-2,6	JT123X-5	£7.30	£8.76					



JT127D

Special for aluminium, thin to thick (3 ~ 15mm), pipes + profiles, (diameter <30mm) as well as plastic and fiberglass.

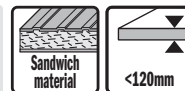
Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.	3 ~ 15mm	<30mm	<30mm	<30mm	3 ~ 15mm
5	75	100	3	JT127D-5	£6.00	£7.20					



JT718BF

Special for sandwich material (<120mm).

Pack Quantity	I mm	L mm	TS Tooth spacing mm	ORDER NO. T shank	Ex. Vat.	Inc. Vat.
3	160	185	1,8	JT718BF-3	£13.05	£15.66



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QUALITY MATERIALS FOR MAXIMUM PRODUCTIVITY

Produced by following state-of-the-art processes, using high-tech machines and premium quality raw materials, these sabre saw blades have been specifically designed to ensure maximum lifetime and performance in all materials.



HCS

High Carbon Steel
Use for cutting wood and plastic.

BIM

Bi-Metal with 8% Cobalt
Premium bi-metal with 8% cobalt provides Xtreme results in performance and lifetime when cutting metal, nail embedded wood and plastic.

HW

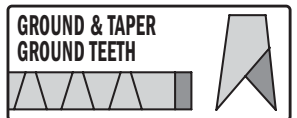
Tungsten Carbide Tipped
Use for cutting fiber cement board, brick and porous concrete.

THE RIGHT BLADE FOR THE BEST RESULTS!

Quick reference charts, color coding and pictograms help you choose the right blade for your application.



Why geometry is important!



Easily cut construction wood, plywood, framing lumber and plastic.



For quick and Xtreme cuts into soft or hardwood, aluminium, plastic, ferrous and non-ferrous metal.



For fine and precise cuts into thin and thick metal, pipe, open and closed profiles.

Sabre Saw Blades Application Chart

Series	Material	Material Thickness  mm	Line	L	Fine Straight 	Coarse Straight 	Curve 	Fine angle cut  Accurate angle cut	Flush cut 	Thin & Thick 	Demolition 	TPI	Page
WOOD	Coarse wood (free of nails)	<100	Basic			JS617K	JS617K					3	32
	Pruning green wood	<175	Basic			JS1111K						3	32
	Coolant: dry	<190	Top			JS1531L						5	32
	MAX RPM 2500	<250	Basic			JS1617K						3	32
	Construction wood	<100	Top	150	JS644D		JS644D					6	32
	Coolant: dry	<150	Progressive	200	JS2345X					JS2345X		6-10	33
	MAX RPM 2500	<150	Pallet	200	JS725VFR			JS725VFR		JS725VFR	JS725VFR	8-12	33
	Boards	<60	Top	150	JS644D		JS644D					6	32
	Coolant: dry	<60	Progressive	200	JS2345X					JS2345		6-10	33
	MAX RPM 2500	<60	Pallet	200	JS725VFR			JS725VFR		JS725VFR		8-12	33
	Wooden wall cutout	<100	Top	150	JS644D		JS644D					6	32
WOOD & METAL	Coolant: dry	<150	Progressive	200	JS2345X					JS2345X		6-10	33
	MAX RPM 2500	<150	Pallet	200	JS725VFR			JS725VFR		JS725VFR	JS725VFR	8-12	33
		<190	Top	240		JS1531L						5	32
	Plastic	<100	Top	150	JS644D		JS644D					6	32
	Coolant: water MAX RPM 500	<150	Progressive	200	JS2345X					JS2345X		6-10	33
	Wood with nails/metal	<100	Flexible	150	JS922HF							10	33
	Coolant: dry	<100	Flexible	150	JS922VF							10-14	34
	MAX RPM 2500	<100	Heavy	150		JS611DF	JS711DF					6	34
		<100	Heavy	150		JS610VF		JS610VF			JS610VF	5-8	35
		<150	Progressive	200		JS3456XF				JS3456XF		6-12	33
		<150	Pallet	200	JS725VFR			JS725VFR		JS725VFR	JS725VFR	8-12	33
		<175	Flexible	225	JS1122HF				JS1122HF			10	33
		<175	Flexible	225	JS1122VF				JS1122HF			10-14	34
		<175	Heavy	225		JS1111DF						6	35
		<175	Heavy	225		JS1110VF		JS1110VF			JS1110VF	5-8	35
		<250	Flexible	300	JS1222VF				JS1222VF			10-14	34
		<250	Heavy	300		JS1210VF		JS1210VF			JS1210VF	5-8	35
		<250	Heavy	300		JS1411DF						6	35
	Pallets	<100	Flexible	150	JS922HF							10	33
	Coolant: dry	<150	Pallet	200	JS725VFR			JS725VFR		JS725VFR	JS725VFR	8-12	33
	MAX RPM 2500	<175	Flexible	225	JS1122HF				JS1122HF			10	33
	Wood, chipboard	<100	Heavy	150		JS611DF	JS711DF					6	34
	Coolant: dry	<100	Heavy	150		JS610VF		JS610VF			JS610VF	5-8	35
	MAX RPM 2500	<150	Progressive	200		JS3456XF				JS3456XF		6-12	33
		<150	Pallet	200	JS725VFR			JS725VFR		JS725VFR	JS725VFR	8-12	33
		<175	Heavy	225		JS1111DF						6	35
		<175	Heavy	225		JS1110VF		JS1110VF			JS1110VF	5-8	35
		<250	Heavy	300		JS1210VF		JS1210VF			JS1210VF	5-8	35
		<250	Heavy	300		JS1411DF						6	35
	Sheet metals	3-10	Flexible	150	JS922VF							10-14	34
	Coolant: cutting oil	3-10	Flexible	225	JS1122VF				JS1122HF			10-14	34
	MAX RPM 500~2000	3-10	Flexible	300	JS1222VF				JS1222HF			10-14	33
		3-18	Progressive	200		JS3456XF				JS3456XF		6-12	33
	Pipes, profiles	<100	Flexible	150	JS922VF							10-14	34
	Coolant: cutting oil	<150	Progressive	200		JS3456XF				JS3456XF		6-12	33
	MAX RPM 1500	<175	Flexible	225	JS1122VF				JS1122HF			10-14	33
		<250	Flexible	300	JS1222VF				JS1222VF			10-14	34
	Plastic, pipes, profiles	<100	Heavy	150		JS611DF	JS711DF					6	34
	Coolant: water	<150	Progressive	200		JS3456XF				JS3456XF		6-12	33
	MAX RPM 500	<175	Heavy	225		JS1111DF						6	35
		<250	Heavy	300		JS1411DF						6	35
	Glass fiber reinforced plastic/epoxy	<50	Heavy	150		JS611DF	JS711DF					6	34
	Coolant: water	<60	Heavy	300		JS1411DF						6	35
	MAX RPM 500	<60	Heavy	150		JS610VF		JS610VF			JS610VF	5-8	35
		<60	Heavy	225		JS1111DF						6	35
		<60	Heavy	225		JS1110VF		JS1110VF			JS1110VF	5-8	35
		<100	Flexible	150	JS922VF							10-14	34
		<150	Progressive	200		JS3456XF				JS3456XF		6-12	33
		<175	Flexible	225	JS1122VF				JS1122HF			10-14	33
		<250	Flexible	300	JS1222VF				JS1222VF			10-14	34
		<250	Heavy	300		JS1210VF		JS1210VF			JS1210VF	5-8	35

Tip: Using a lubricant can extend blade lifetime up to 500%.

Series	Material	Material Thickness 	Line	L	Fine Straight 	Coarse Straight 	Curve 	Fine angle cut 	Flush cut 	Thin & Thick 	Demolition 	TPI	Page
METAL	Sheet, perforated metals, (thin & thick) Coolant: cutting oil MAX RPM 500~2000	0,7-3	Flexible	150	JS922AF							24	36
		0,7-3	Flexible	225	JS1122AF				JS1122AF			24	36
		1-8	Progressive	150	JS123XF					JS123XF		8-14	37
		1,5-4	Flexible	150	JS922EF							18	36
		1,5-4	Flexible	225	JS1122EF				JS1122EF			18	36
		2-10	Heavy	150	JS925VF						JS925VF	10-14	37
		2-10	Heavy	200	JS1025VF						JS1025VF	10-14	37
		2-10	Heavy	225	JS1125VF						JS1125VF	10-14	37
		2-10	Heavy	300	JS1225VF						JS1225VF	10-14	38
		3-8	Flexible	150	JS922BF							14	36
		3-8	Flexible	225	JS1122BF				JS1122BF			14	36
		4-12	Heavy	150		JS920CF		JS920CF			JS920CF	9	38
		4-12	Heavy	225		JS1120CF		JS1120CF			JS1120CF	9	38
	Pipes, profiles, thin-walled (open & closed) Coolant: cutting oil MAX RPM 500~2000	<100	Flexible	150	JS922AF							24	36
		<100	Flexible	150	JS922EF							18	36
		<100	Progressive	150	JS123XF					JS123XF		8-14	37
		<100	Heavy	150	JS925VF						JS925VF	10-14	37
		<150	Heavy	200	JS1025VF						JS1025VF	10-14	37
		<175	Flexible	225	JS1122AF				JS1122AF			24	36
		<175	Flexible	225	JS1122EF				JS1122EF			18	36
		<175	Heavy	225	JS1125VF						JS1125VF	10-14	37
		<250	Heavy	300	JS1225VF						JS1225VF	10-14	38
	Pipes, profiles, thick-walled (open & closed) Coolant: cutting oil MAX RPM 500~2000	<100	Flexible	150	JS922BF							14	36
		<100	Progressive	150	JS123XF					JS123XF		8-14	37
		<100	Heavy	150	JS925VF						JS925VF	10-14	37
		<100	Heavy	150		JS920CF		JS920CF			JS920CF	9	38
		<150	Heavy	200	JS1025VF						JS1025VF	10-14	37
		<175	Flexible	225	JS1122BF				JS1122BF			14	37
		<175	Heavy	225	JS1125VF						JS1125VF	10-14	37
		<175	Heavy	225		JS1120CF		JS1120VF			JS1120CF	9	38
		<250	Heavy	300	JS1225CF						JS1225VF	10-14	38
	Pipes, profiles (solid) Coolant: cutting oil MAX RPM 500~2000	<100	Progressive	150	JS123XF					JS123XF		8-14	37
		<100	Flexible	150	JS922BF							14	36
		<100	Heavy	150		JS920CF		JS920CF			JS920CF	9	38
		<175	Flexible	225	JS1122BF					JS1122BF		14	37
		<175	Heavy	225		JS1120CF		JS1120CF			JS1120CF	9	38
SPECIAL	Plasterboard	<100	Heavy	150		JS611DF	JS711DF					6	34
	Fibre Cement panels	<215	Special	305		JS1243HM		JS1243HM				2	38
		<365	Special	455		JS2243HM		JS2243HM				2	38
	Porous concrete, red brick	<215	Special	305		JS1243HM		JS1243HM				2	38
		<365	Special	455		JS2243HM		JS2243HM				2	38

Tip: Using a lubricant can extend blade lifetime up to 500%.

BLADES LINE DESCRIPTION

Different lines help you choose the ideal blade for optimal results!

BASIC: Cost effective

FLEXIBLE: Breakproof, long lifetime

PROGRESSIVE: Fast cutting through thin and thick material

TOP: Fast and efficient

HEAVY: Sturdy and precise

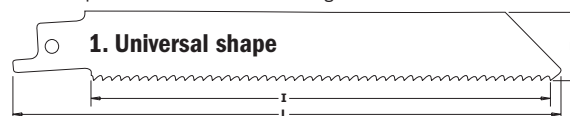
1/2" UNIVERSAL SHANK

Fits: AEG, B&D, Bosch, DeWalt, Fein, Flex, Hilti, Makita, Metabo, Milwaukee, Porter Cable, Ridgid, Rothenberger, Ryobi, Skil.

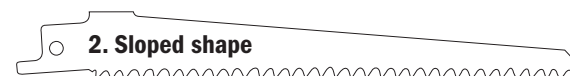


BLADES SHAPES & THICKNESS

Sabre saw blades can be manufactured in many various shapes and thickness. Shape and thickness are adjusted to fit the application and required flexibility. Demanding applications such as cutting tube/pipe require thick blade, while less demanding applications require narrower blade. Blade shapes are divided into three categories below:



Universal blades are for general use. Their even width guarantees good cutting stability and excellent control. This enables straight edge cutting through many different materials.



Sloped blades are commonly used for cutting wood and for demolition applications. Their narrow tip allows for plunge and curve cutting. This shape is rarely used for metal, since the tip does not have the strength required for this application.



Scroll blades are especially used for curve cutting. The narrower the blade, the smaller the radius it can cut.

Sabre saw blades

JS617K



Cut coarse wood, free of nails (<100mm), pruning green wood (diameter <100mm), excellent for curved and plunge cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	19	1,25	8,5	3	JS617K-5	£12.54	£15.05



JS1111K



Coarse wood, free of nails (<175mm), firewood (diameter <175mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	225	205	19	1,25	8,5	3	JS1111K-5	£15.06	£18.07



JS1617K



Coarse wood, free of nails (<250mm), pruning green wood (diameter <250mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	300	280	19	1,25	8,5	3	JS1617K-5	£18.06	£21.67



JS644D



Cut construction wood (<100mm), wooden wall (<100mm), boards: chipboard, MDF (6-60mm), plywood, plastic (<100mm), excellent for plunge cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	19	1,25	4,3	6	JS644D-5	£11.04	£13.25



JS1531L



Coarse wood, free of nails (<190mm), pruning green wood (diameter <190mm), firewood (diameter <190mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	240	220	19	1,50	5	5	JS1531L-5	£18.06	£21.67

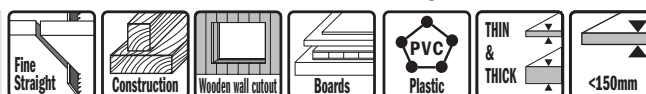


JS2345X



Cut construction wood (<150mm), boards: chipboard, MDF (6-60mm), plywood, plastic (<150mm), wooden wall (<150mm). Effortless fine cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	200	180	19	1,25	2,4-4	6-10	JS2345X-5	£18.06	£21.67



JS922HF



For pallet repair, wood with nails/metal (<100mm), sheet metal, pipe, aluminium profiles (3-12mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	150	130	19	0,90	2,5	10	JS922HF-5	£15.06	£18.07



JS1122HF



For pallet repair, wood with nails/metal (<175mm), sheet metal, pipe, aluminium profiles (3-12mm), flexible flush cut.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	225	205	19	0,90	2,5	10	JS1122HF-5	£20.82	£24.98
20	225	205	19	0,90	2,5	10	JS1122HF-20	£75.18	£90.22

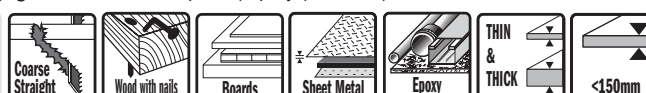


JS3456XF



Cut wood with nails/metal, chipboard (<150mm), sheet metal, aluminium profiles (3-18mm), glass fiber reinforced plastic/epoxy (<150mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	200	180	19	1,25	2,1-4,3	6-12	JS3456XF-5	£24.57	£29.48



JS725VFR



Special saw blade for pallet repairs. Cutting depth 150mm. Optimized saw blade dimensions for low vibration.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	200	180	19	1,27	2,1-3,2	8-12	JS725VFR-5	£17.04	£20.45
20	200	180	19	1,27	2,1-3,2	8-12	JS725VFR-20	£59.13	£70.96



Sabre saw blades



JS922VF



Cut wood with nails/metal (<100mm), sheet metal, pipe, aluminium profiles (3-10mm), glass fiber reinforced plastic/epoxy (<100mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	19	0,90	1,8-2,6	10-14	JS922VF-5	£15.06	£18.07



JS1122VF



Cut wood with nails/metal (<175mm), sheet metal, aluminium profiles (3-10mm), glass fiber reinforced plastic/epoxy (<175mm), flexible flush cut.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	225	205	19	0,90	1,8-2,6	10-14	JS1122VF-5	£20.82	£24.98



JS1222VF



Cut wood with nails/metal (<250mm), sheet metal, aluminium profiles (3-10mm), glass fiber reinforced plastic/epoxy (<250mm), flexible flush cut.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	300	280	19	0,90	1,8-2,6	10-14	JS1222VF-5	£27.54	£33.05

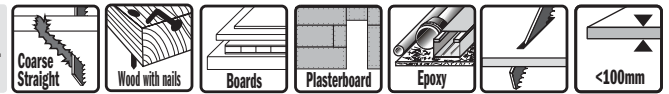


JS611DF



Cut wood with nails/metal, chipboard (<100mm), plastic profiles (<100mm), glass fiber reinforced plastic/epoxy (<50mm), window frames: wood + metal, plasterboard, excellent for plunge cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	19	1,25	4,3	6	JS611DF-5	£16.02	£19.22

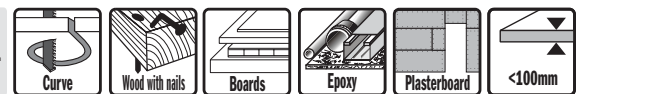


JS711DF



Cut wood with nails/metal, chipboard (<100mm), glass fiber reinforced plastic/epoxy (<50mm), plasterboard, excellent for curved cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	12	1,25	4,3	6	JS711DF-5	£16.02	£19.22



JS1111DF



Cut wood with nails/metal, chipboard (<175mm), plastic profiles (diameter <175mm), glass fiber reinforced plastic/epoxy (<50mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	225	205	19	1,25	4,3	6	JS1111DF-5	£22.56	£27.07



JS1411DF



Cut wood with nails/metal, chipboard (<250mm), glass fiber reinforced plastic/epoxy (<60mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	300	280	19	1,25	4,3	6	JS1411DF-5	£30.09	£36.11

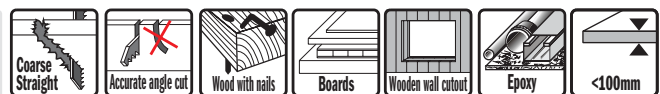


JS610VF



Cut wood with nails/metal, wood, chipboard (<100mm), glass fiber reinforced plastic/epoxy and solid (<100mm), wall cut-outs: wood+metal (<100mm), excellent for rescue/demolition work.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	22	1,60	3,2-5	5-8	JS610VF-5	£22.08	£26.50



JS1110VF



Cut wood with nails/metal, wood, chipboard (<175mm), glass fiber reinforced plastic/epoxy, and solid (<175mm), wall cut-outs: wood+metal (<175mm), excellent for rescue/demolition work.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	225	205	22	1,60	3,2-5	5-8	JS1110VF-5	£31.59	£37.91



JS1210VF



Cut wood with nails/metal, wood, chipboard (<250mm), glass fiber reinforced plastic/epoxy, and solid (<250mm), wall cut-outs: wood+metal (<250mm), excellent for rescue/demolition work.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	300	280	22	1,60	3,2-5	5-8	JS1210VF-5	£39.06	£46.87



Sabre saw blades

JS922AF



Cut thin sheet metal (0,7-3mm), fine pipe and profiles (diameter <100mm), effortless fine cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	150	130	19	0,90	1	24	JS922AF-5	£15.06	£18.07



JS1122AF



Cut thin sheet metal (0,7-3mm), fine pipe and profiles (diameter <175mm), effortless fine cuts and flexible flush cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	225	205	19	0,90	1	24	JS1122AF-5	£21.54	£25.85



JS922EF



Cut thin sheet metal (1,5-4mm), pipe and profiles (diameter <100mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	150	130	19	0,90	1,4	18	JS922EF-5	£52.14	£62.57
20	150	130	19	0,90	1,4	18	JS922EF-20	£15.06	£18.07



JS1122EF



Cut thin sheet metal (1,5-4mm), pipe and profiles (diameter <175mm), flexible flush cuts.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	225	205	19	0,90	1,4	18	JS1122EF-5	£20.82	£24.98
20	225	205	19	0,90	1,4	18	JS1122EF-20	£70.14	£84.17



JS922BF



Cut thick sheet metal (3-8mm), solid pipe and profiles (diameter <100mm), quick cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.
5	150	130	19	0,90	1,8	14	JS922BF-5	£15.06	£18.07
20	150	130	19	0,90	1,8	14	JS922BF-20	£52.14	£62.57



JS1122BF



Cut thick sheet metal (3-8mm), solid pipe and profiles (diameter <175mm), flexible flush cuts, quick cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.	Fine Straight	Flush cut	Sheet Metal	Pipes	Pipes, profiles	<175mm	<3-8mm
5	225	205	19	0,90	1,8	14	JS1122BF-5	£20.82	£24.98							
20	225	205	19	0,90	1,8	14	JS1122BF-20	£70.14	£84.17							

JS123XF



Cuts thin to thick sheet metal (1-8mm) and thin to thick profiles (diameter <100mm).

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.	Fine Straight	THIN & THICK	Sheet Metal	Pipes, profiles	<100mm	<1-8mm
5	150	130	19	0,90	1,8-3,2	8-14	JS123XF-5	£18.06	£21.67						

JS925VF



Cut medium-thick to thick sheet metal (2-10mm), thin-walled and thick-walled pipe and profiles (<100mm). Ideal for demolition work in metal. Effortless, fine cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.	Fine Straight	Sheet Metal	Pipes, profiles	<100mm	<2-10mm
5	150	130	19	1,25	1,8-2,6	10-14	JS925VF-5	£18.06	£21.67					

JS1025VF



Cut medium-thick to thick sheet metal (2-10mm), thin-walled and thick-walled pipe and profiles (<150mm). Ideal for demolition work in metal. Effortless, fine cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.	Fine Straight	Sheet Metal	Pipes, profiles	<150mm	<2-10mm
5	200	180	19	1,25	1,8-2,6	10-14	JS1025VF-5	£24.57	£29.48					

JS1125VF



Cut medium-thick to thick sheet metal (2-10mm), thin-walled and thick-walled pipe and profiles (<175mm). Ideal for demolition work in metal. Effortless, fine cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO. Universal shank	Ex. Vat.	Inc. Vat.	Fine Straight	Sheet Metal	Pipes, profiles	<175mm	<2-10mm
5	225	205	19	1,25	1,8-2,6	10-14	JS1125VF-5	£25.05	£30.06					

Sabre saw blades

JS1225VF



Cut medium-thick to thick sheet metal (2-10mm), thin-walled and thick-walled pipe and profiles (<250mm). Ideal for demolition work in metal. Effortless, fine cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	300	280	19	1,25	1,8-2,6	10-14	JS1225VF-5	£30.09	£36.11



JS920CF



Cut thick sheet metal (4-12mm), thick-walled pipe, solid pipe and profiles (<100mm). Ideal for pipe cutting, for rescue/demolition work. Powerful, coarse cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	150	130	22	1,60	2,9	9	JS920CF-5	£25.05	£30.06



JS1120CF

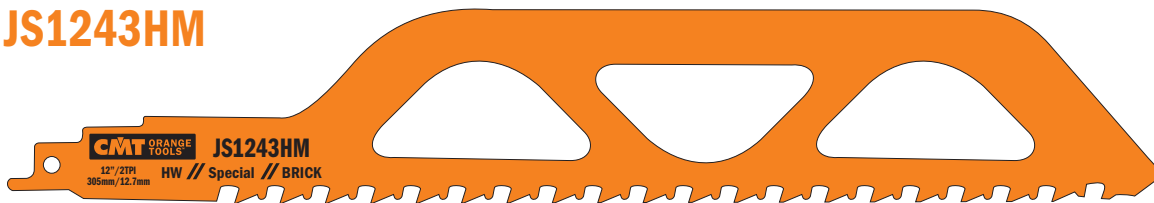


Cut thick sheet metal (4-12mm), thick-walled pipe, solid pipe and profiles (<175mm). Ideal for pipe cutting, for rescue/demolition work. Powerful, coarse cutting.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
5	225	205	22	1,60	2,9	9	JS1120CF-5	£36.57	£43.88

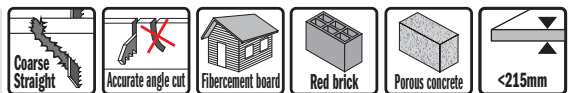


JS1243HM



Cut medium-sized brick up to a material thickness of 215mm.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
1	305	250	50	1,50	12,7	2	JS1243HM	£36.57	£43.88

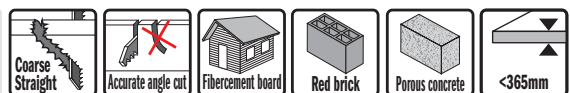


JS2243HM



Cut large brick up to a material thickness of 365mm.

Pack Quantity	L mm	I mm	H mm	K mm	TS mm	TPI	ORDER NO.	Ex. Vat.	Inc. Vat.
1	455	400	50	1,50	12,7	2	JS2243HM	£55.11	£66.13





- 2 cutter heads type (A) Z4 + V4
- 1 cutter head type (B) Z2
- 12 spacer rings from 0.1 to 2mm

For use on your spindle moulder machines, double-end tenoner and shaper machines. Perfect grooving on all materials, but ideal on solid wood, plywood and laminated panels.

- Super-strength steel body
- 2 HWM Knives 7,65x12x1,5mm [Z2]
- 4 HWM Knives 18x18x1,5mm [Z4]
- 4 HWM Knives 14x14x1,2mm [V4]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

min. 4
max 7,5

min. 8
max 15

max 32 (Ø140)

A

B

D mm	B mm	Z + V	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
										
140	30	4+4	5500~9500	694.001.30	£250.02	£300.02	790.181.00	790.140.10	790.076.00	695.998.21
140	31,75	4+4	5500~9500	694.001.31	£291.95	£350.33	790.181.00	790.140.10	790.076.00	695.998.22

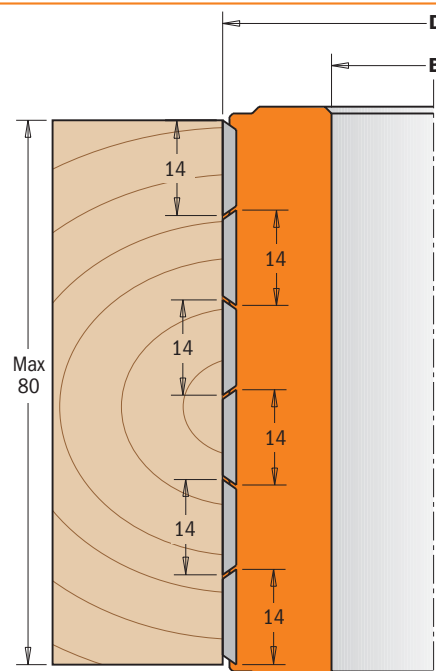
991.069.00 T9 Torx key
991.072.00 T20 Torx key



These new cutter heads have been designed for planing and jointing on soft or hard wood and wooden boards on spindle moulder machines. Ideal for routing our curved elements by using a bearing guide (sold separately) and a template.

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 12 HWM Knives 14x14x2mm (Z2) with 4 spiral indexing
- Tools for manual feed MAN

An illustration of a wooden barrel with metal hoops and a wooden block. The barrel is orange-brown with diagonal wood grain lines and is secured with five metal hoops, each featuring a star-shaped bolt. To the left of the barrel is a separate wooden block with a similar grain pattern.



D mm	I mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts		
62	80	30	12	8000~12000	694.019.30	£128.33	£154.00			
								790.140.00	990.093.00	991.073.00

790.140.00	990.093.00	991.073.00

45° chamfer cutter head



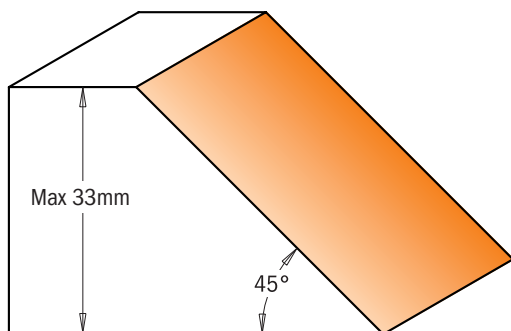
694.002

CMT chamfer cutter heads carry out clean accurate bevels and joints for excellent edge work. For use on spindle moulder machines, double-end tenoner and shaper machines. Perfect on all materials, but ideal on solid wood, veneered, panel and plastic-coated materials.

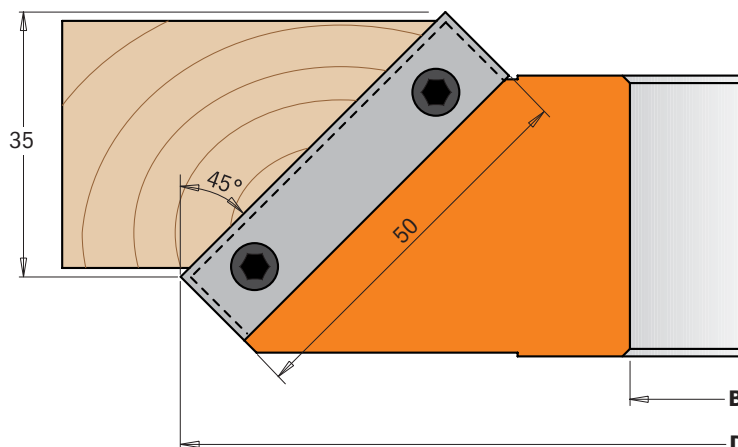
TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM Knives 50x12x1,5mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box



Drawings are 1:1 scale



D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
150	30	2	5100~8800	694.002.30	£126.02	£151.23				
							790.500.00	695.999.41	990.086.00	991.064.00

Adjustable chamfer cutter head with positive stop



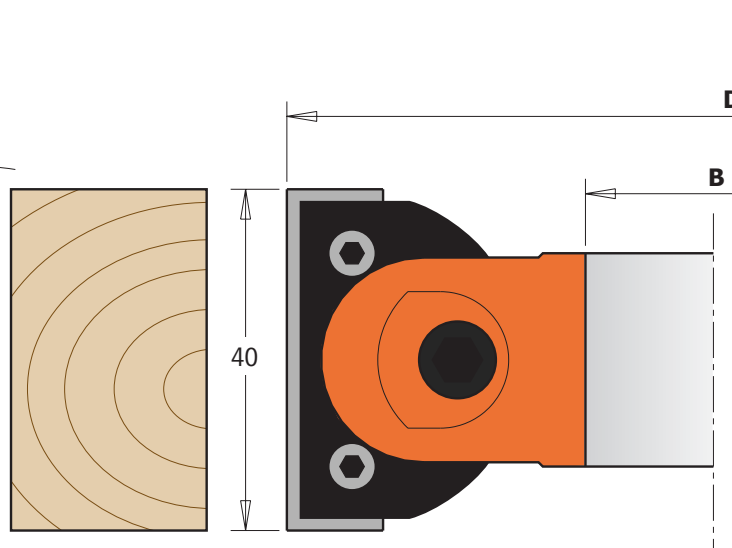
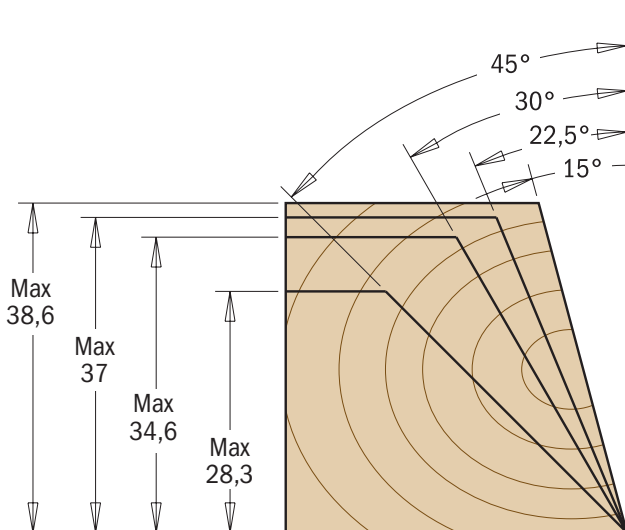
Supplied in a solid plastic box

694.018

These new adjustable chamfer cutter heads carry out precise cuts, accurate bevels and joints on wooden boards and solid timber. For use on your spindle moulder machines, double-end tenoner and shaper machines.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM Knives 40x12x1,5mm (Z2)
- Tools for manual feed MAN
- Positive lock hold of HWM knives, swivel bodies infinitely adjustable on both sides from 0 to 45°, with positive stop every 7,5° step, thanks to the special built-in geared mechanism.



D mm	I mm	B mm	Z	D_Max 45° mm	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
120	40	30	2	140	7000~9000	694.018.30	£226.66	£271.99				
									695.018.01	790.400.00	990.094.00	991.072.00



694.007

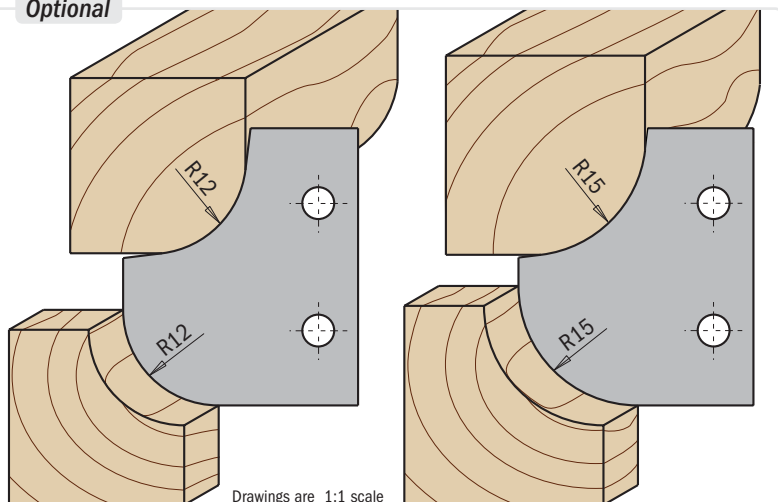
These cutter heads are perfect for making furniture, doors and drawer fronts simply and stylishly by giving them a final touch with a CMT cove bit. It is also used for making perfect roundover profiles, drop leaf counters and table tops. You can use three different knives for carrying out roundover and cove profiles with radius 10, 12 and 15mm. For use on spindle moulder machines, double-end tenoner and shaper machines. Perfect on all materials, but ideal on solid wood and panel materials.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM knives radius 10mm (34,8x29,3x2mm) [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box.

Optional

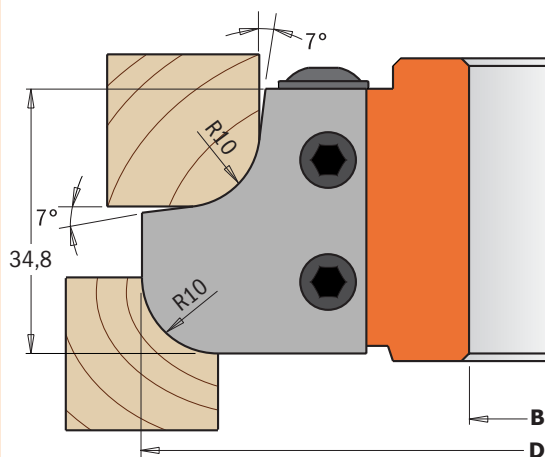


Pair of knives 695.007.12

Pair of knives 695.007.15

Pair of knives 695.007.10

Standard



D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
121	30	2	6300~10500	694.007.30	£152.23	£182.67	x2			
				695.007.10	695.999.31	990.086.00	991.064.00			

Optional: 695.007.12 R=12mm (34,8x29,3x2mm) pair of roundover/cove knives

695.007.15 R=15mm (34,8x29,3x2mm) pair of roundover/cove knives

Professional finger joint cutter head



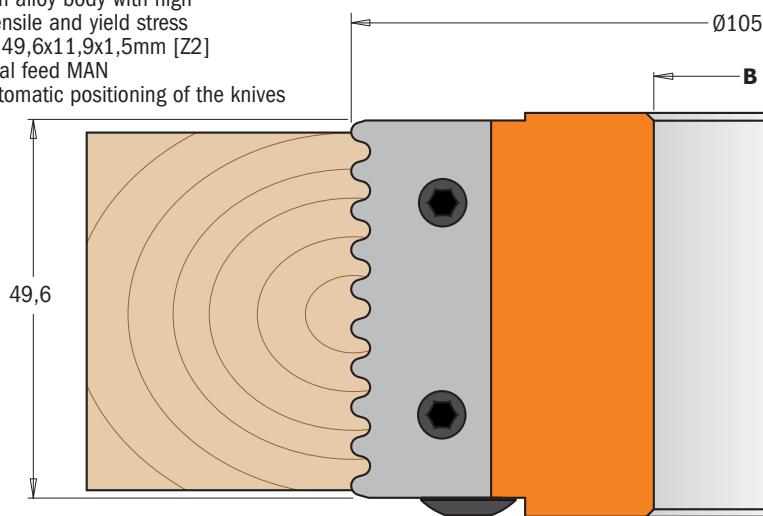
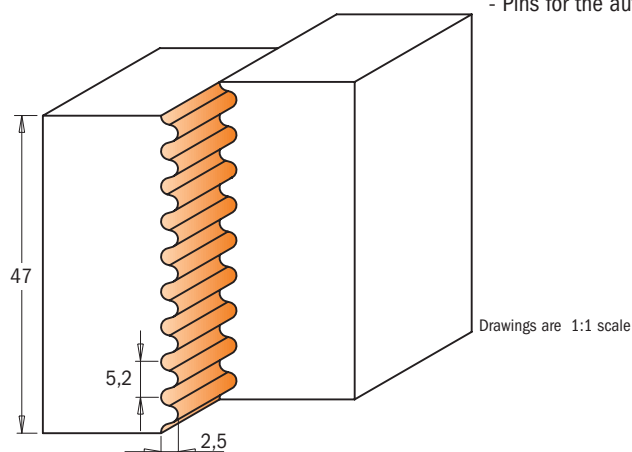
Supplied in a solid plastic box.

694.008

The professional CMT finger joint cutter heads allow for making the most incredibly strong side-to-side joints on all wood types and composites. The tightness of the joint and the maximum glue surface make the joint itself stronger than an unworked piece of wood, in stock with maximum 47mm in thickness. Ideal for molding manufactures and furniture makers. For use on spindle moulder machines, double-end tenoner and shaper machines. Perfect on all materials, but ideal on solid wood and panel materials.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM knives 49,6x11,9x1,5mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives



D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
105	30	2	7300~11500	694.008.30	£127.45	£152.94	x2			
				695.008.01	695.999.49	990.066.00	991.067.00			

Optional: 695.998.2630 Ø50x2,6x30mm guide ring

Reverse glue joint cutter head



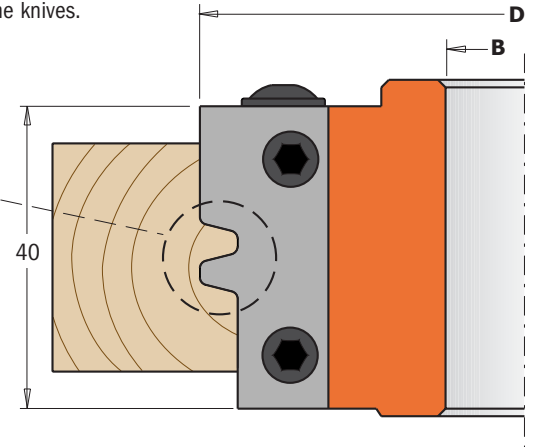
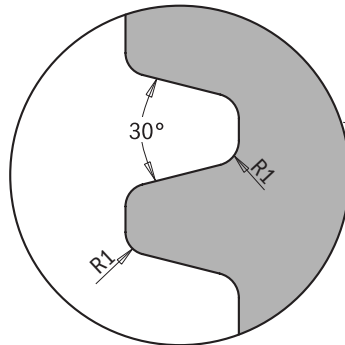
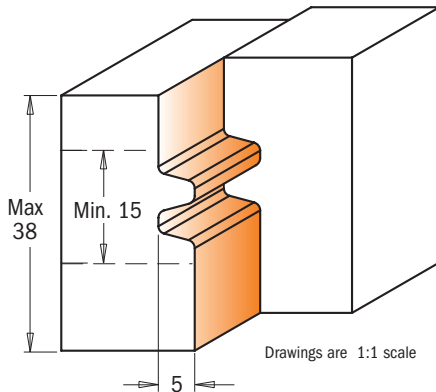
Supplied in a solid plastic box

694.009

The most unique and important feature of these CMT cutter heads is the capacity to produce almost indestructible glue joints quickly and accurately. Ideal for shaping wide dimension panels, doors and furniture pieces. By accurately centering the cutter head to the wood, the upper and lower vertical cutting edges will cut equal proportions. Simply run one side of the panel, turn the panel over, and then run the opposite side - you will produce perfectly harmonized reverse cuts matching up to make flawless joints. Excellent results on most materials, but ideal on solid wood, coated and uncoated man-made materials.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM knives 40x18x2mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives.



Spare parts

 x2			
695.009.01	695.999.38	990.086.00	991.064.00

45° lock miter cutter head



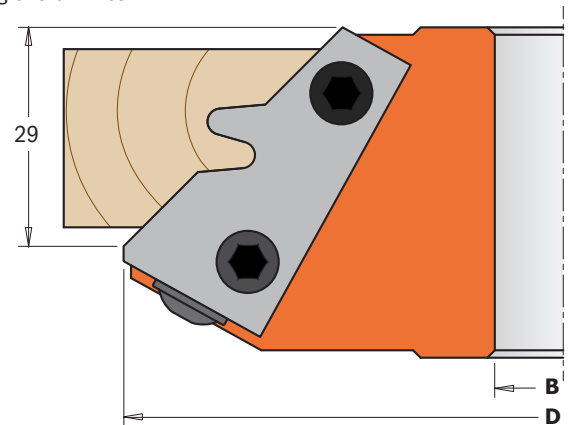
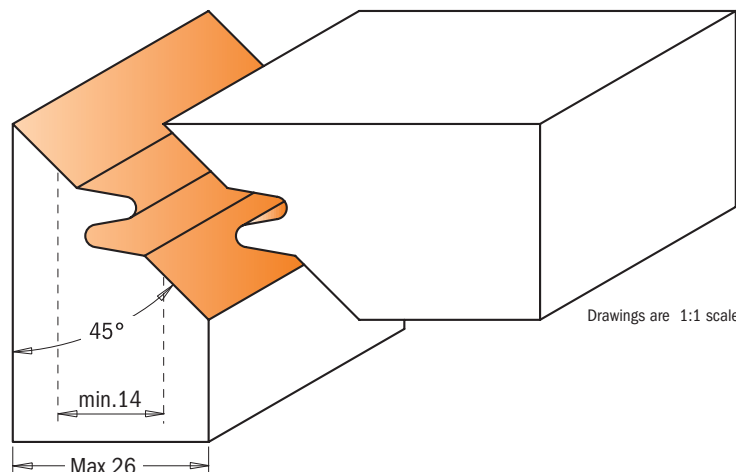
Supplied in a solid plastic box

694.011

CMT's lock miter cutter heads are ideal for milling miter joints in stock with maximum 26mm (1") in thickness. Create boxes, stretcher bars, frames and any assortment of right angle or parallel joint projects. Two easy steps to produce perfectly fitting 45° miter joints: first, position your workpiece horizontally, then vertically. Also, create parallel glue joints in two steps: place your workpiece horizontally, internal side facing down, and then turn it facing up. For use on spindle moulder and shaper machines. Perfect on all materials, but ideal on solid wood and panels.

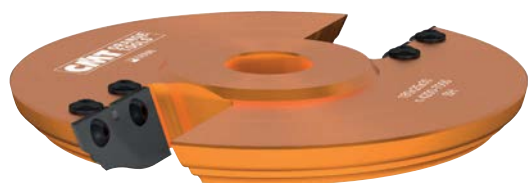
TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM knives 43x23x2mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives.



Spare parts

 x2			
695.011.01	695.999.42	990.086.00	991.064.00



694.012

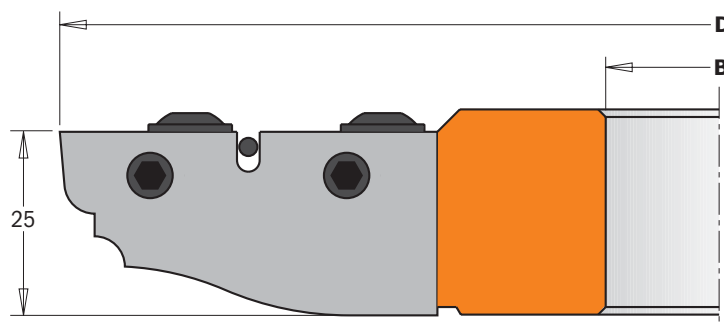


These new CMT cutter heads will allow you to make classic raised panels on furniture, interior and cabinet doors. One exceptional tool that will let you make up 6 different profiles by exploiting both the included and the optional knives. A practical and economical solution. We recommend multiple passes for safe and accurate finishing. For use on spindle moulders. Perfect on all materials, but ideal on solid wood and panels.

TECHNICAL DETAILS:

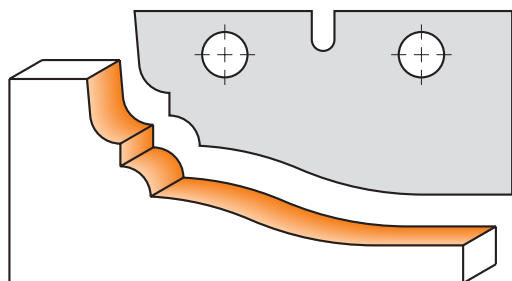
- Hard aluminium alloy body with high resistance to tensile and yield stress.
- 2 HWM Knives type (A) 50x25x2mm [Z2].
- Tools for manual feed MAN.
- Pins for the automatic positioning of the knives.

Supplied in a solid plastic box.



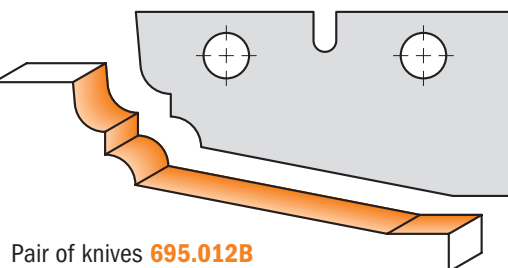
Standard

Pair of knives **695.012A**

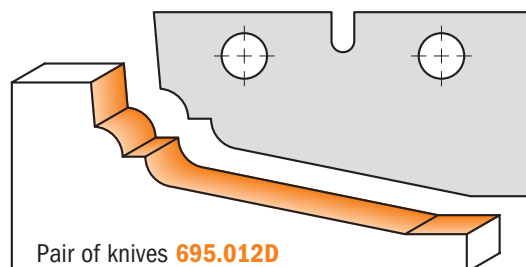


Drawings are 1:1 scale

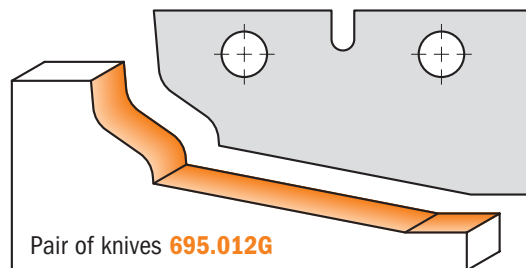
Optional



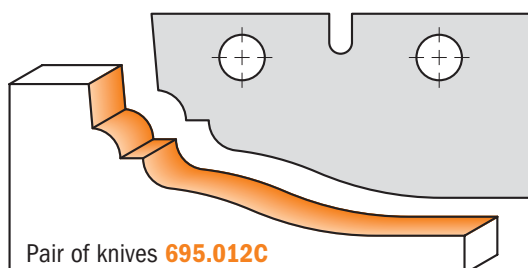
Pair of knives **695.012B**



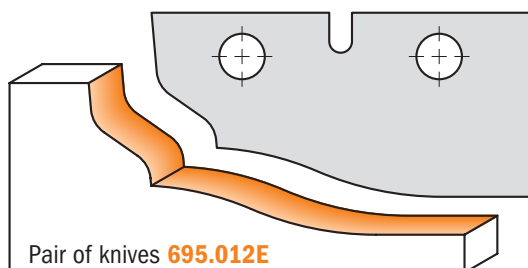
Pair of knives **695.012D**



Pair of knives **695.012G**



Pair of knives **695.012C**



Pair of knives **695.012E**

D mm	I mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts		
180	25	30	2	4200 ~ 7000	694.012.30	£188.84	£226.60	x2		
180	25	35	2	4200 ~ 7000	694.012.35	£188.84	£226.60	695.012A	990.107.00	991.067.00
180	25	40	2	4200 ~ 7000	694.012.40	£188.84	£226.60	695.012A	990.107.00	991.067.00
180	25	50	2	4200 ~ 7000	694.012.50	£188.84	£226.60	695.012A	990.107.00	991.067.00
Optional		695.012B	50x25x2mm pair of knives type (B)			695.012E	50x25x2mm pair of knives type (E)			
		695.012C	50x25x2mm pair of knives type (C)			695.012G	50x25x2mm pair of knives type (G)			
		695.012D	50x25x2mm pair of knives type (D)							

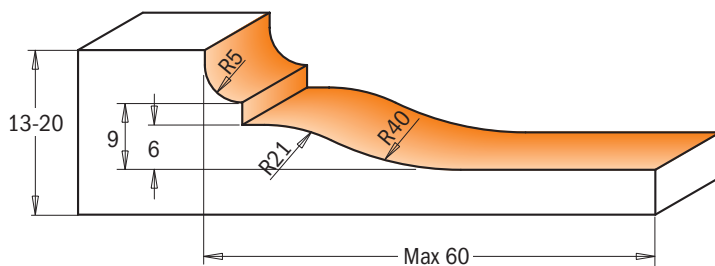
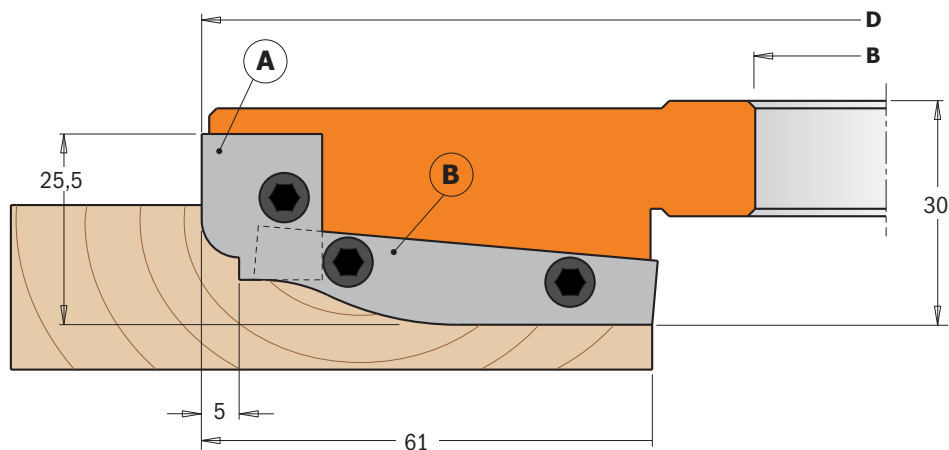
Professional raised panel cutter head

CMT ORANGE TOOLS™**694.013**

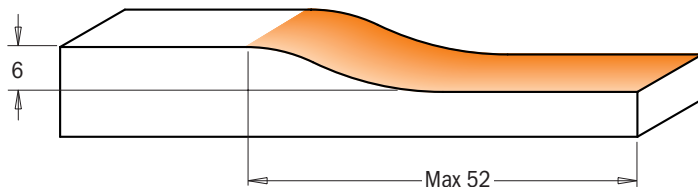
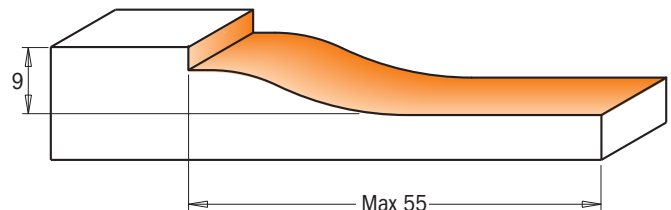
We offer the traditional approach to panel construction with these CMT raised panel cutter heads. Make classic raised panels on furniture, interior and cabinet doors on solid wood and wooden boards, and achieve three different profiles by adjusting the cutting depth. We recommend multiple passes for safe and accurate finishing. For use on spindle moulders. Perfect on all materials, but ideal on solid wood and panels.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM Knives type (A) 19,8x11,9x1,5mm [Z2]
- 2 HWM Knives type (B) 60x11,9x1,5mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box

Drawings are 1:1 scale



D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts				
183	30	2+2	4100~7000	694.013.30	£173.02	£207.62	 x2	 16x11x9,5mm	 x2	 53x11x9,5mm	
							695.013.A1	695.999.16	695.013.A2	695.999.53	990.066.00

Spare parts 991.083.00 3x90x135mm hex key



694.014

These are unique products made by combining two cutter heads, ideal for making furniture doors and drawers. By adjusting the height of the head it is possible to cut two perfectly fitting profiles with no waste of time or efforts to move the fence or to replace the tool. Save money by purchasing one single head and improve your production's efficiency. For use on spindle moulders. Perfect on hardwood and panels with thickness between 22mm and 25mm.

TECHNICAL DETAILS:

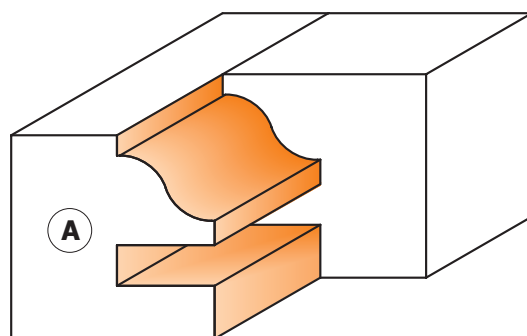
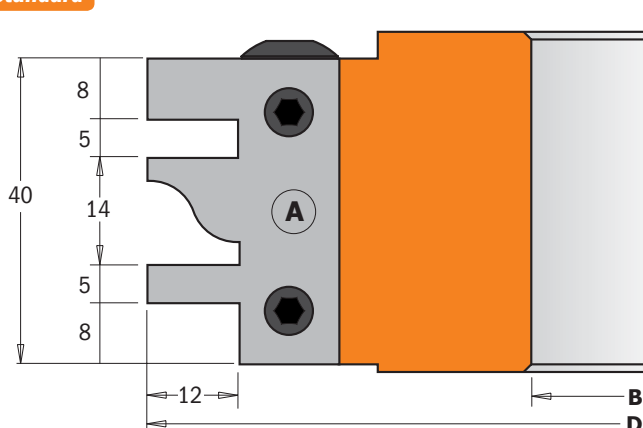
- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 HWM Knives type (A) 40x24,5x2mm [Z2]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box



Standard

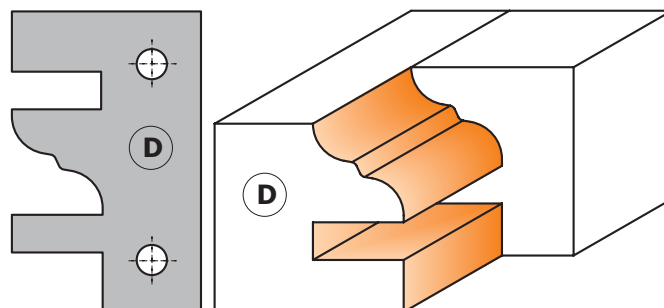
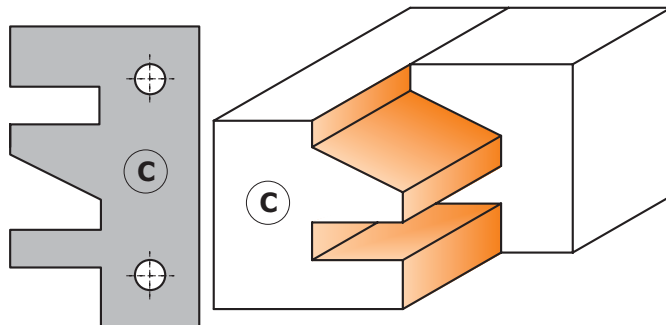
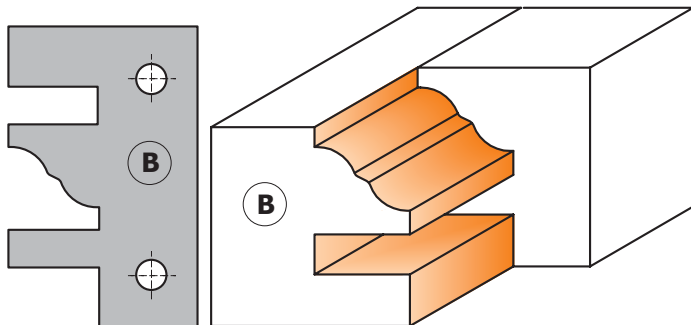
Pair of knives **695.014A**



Optional

Pair of knives **695.014B**

Pair of knives **695.014C**



Pair of knives **695.014D**

Drawings are 1:1 scale

D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts			
120	30	2	6400~10500	694.014.30	£152.86	£183.43	x2			
							695.014A	695.999.39	990.066.00	991.067.00

Optional:

695.014B	40x24,5x2mm pair of knives type (B)
695.014C	40x24,5x2mm pair of knives type (C)
695.014D	40x24,5x2mm pair of knives type (D)

Profile and counter profile cutter head set

CMT ORANGE TOOLS™

 INSERT
CARBIDE

MAN

Z2

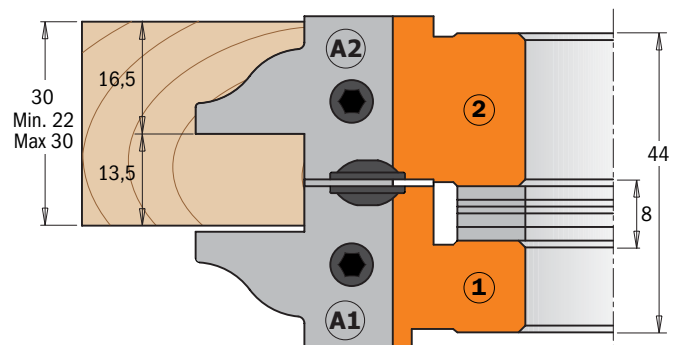
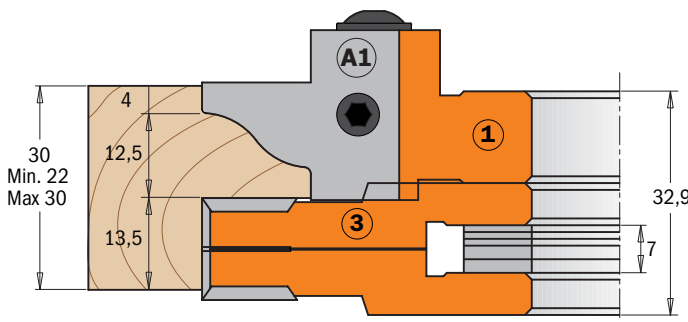
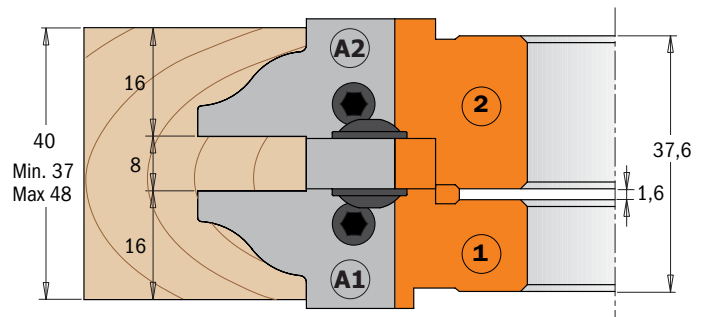
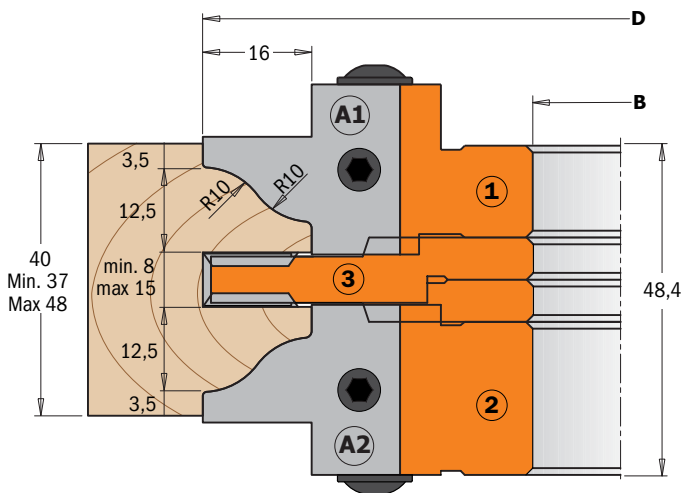
V4


694.015

These versatile sets have been designed to make furniture and doors on soft and hardwood. It allows the insertion of five different knives to produce the most popular and classical profiles. The adjustable cutter, included in the set, can also be used individually to carry out grooves from 8mm 15mm thick. For use on spindle moulders. Perfect on solid wood and panels with maximum 48mm (1-7/8") in thickness.

TECHNICAL DETAILS:

- Hard aluminium alloy body with high resistance to tensile and yield stress for cutter heads (1 & 2);
- Super-strength steel body for cutter head (3)
- 2 HWM knives type (A1) 25x29,8x2mm [Z2]
- 2 HWM knives type (A2) 25x29,8x2mm [Z2]
- 4 HWM knives 7,65x12x1,5mm [Z4]
- 4 HWM knives 14x14x2mm for heads type (1 & 2)
- 12 spacer rings from 0,1 to 3mm for heads type (1 & 2)
- 12 spacer rings from 0,1 to 2mm for heads type (3)
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box


D mm	B mm	Z + V	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.
132	30	2+2	5700~9500	694.015.30	£436.75	£524.10

Spare parts


695.998.01

695.998.21

695.998.301

Spare parts
Head type (1)

695.015.A1	25x29,8x2mm HWM pair of knives (A1)
695.015.B1	25x29,8x2mm HWM pair of knives (B1)
695.015.C1	25x29,8x2mm HWM pair of knives (C1)
695.015.D1	25x29,8x2mm HWM pair of knives (D1)
695.015.E1	25x29,8x2mm HWM pair of knives (E1)
695.999.23	23x11x9,5mm wedge for knives
990.066.00	M6x16mm screw

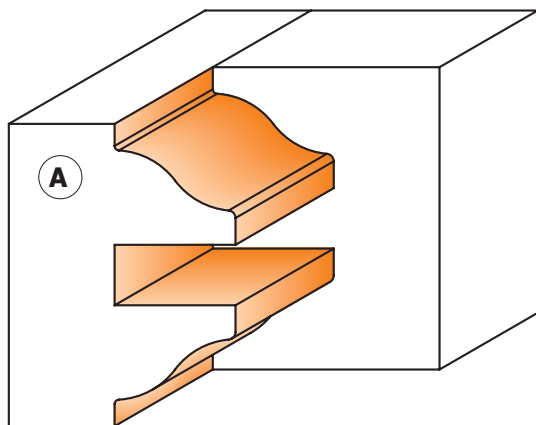
Head type (2)

695.015.A2	25x29,8x2mm HWM pair of knives (A2)
695.015.B2	25x29,8x2mm HWM pair of knives (B2)
695.015.C2	25x29,8x2mm HWM pair of knives (C2)
695.015.D2	25x29,8x2mm HWM pair of knives (D2)
695.015.E2	25x29,8x2mm HWM pair of knives (E2)
695.999.24	23x11x9,5mm wedge for knives
990.066.00	M6x16mm screws

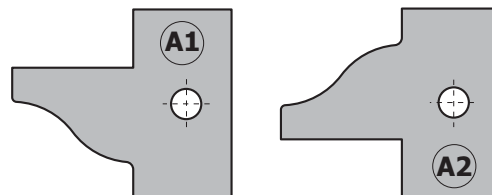
Head type (3)

790.076.00	7,65x12x1,5mm HWM knives
695.999.07	6,8x11x9,5mm wedge for knives
990.063.00	M5x18mm screw
790.140.00	14x14x2mm HWM Knives
990.080.00	M5x6,5mm screw
991.061.00	T15 hex key
991.072.00	T20 hex key

Standard



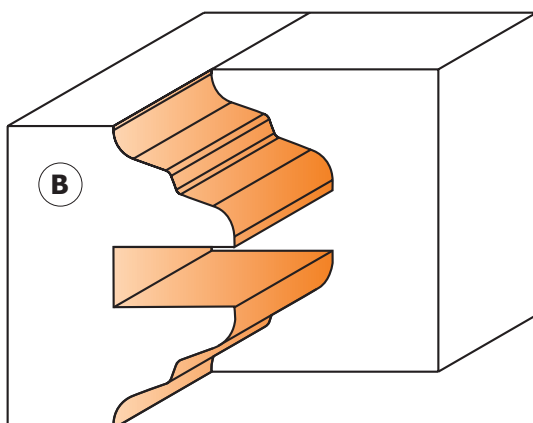
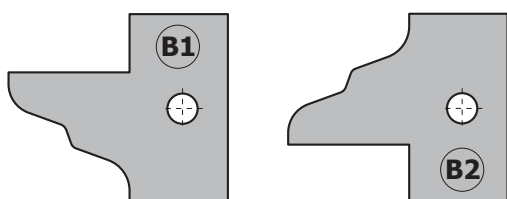
Drawings are 1:1 scale



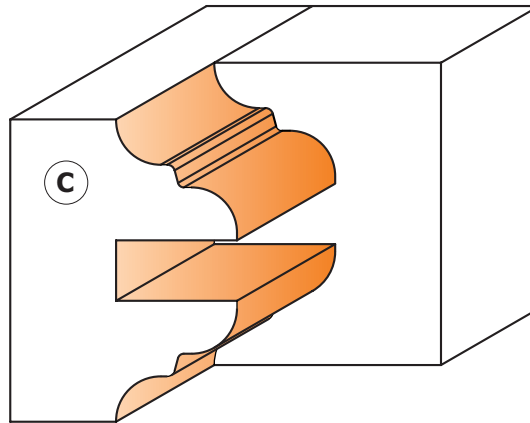
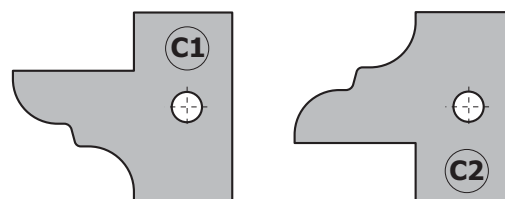
Pair of knives **695.015.A1**
Pair of knives **695.015.A2**

Optional

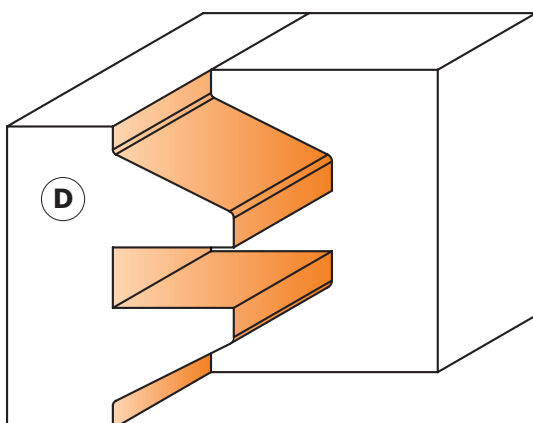
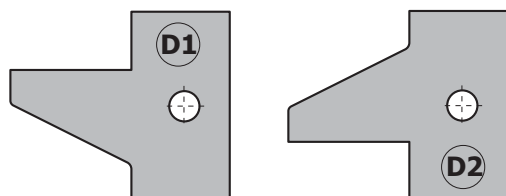
Pair of knives **695.015.B1**
Pair of knives **695.015.B2**



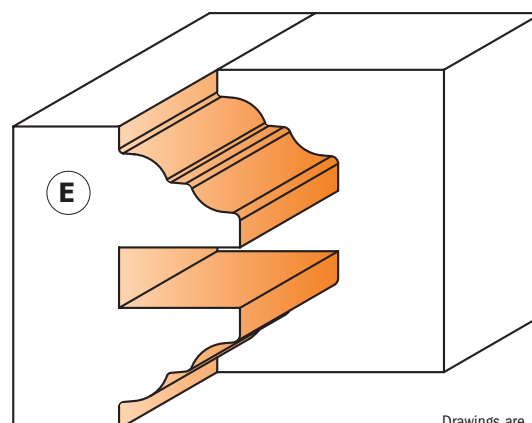
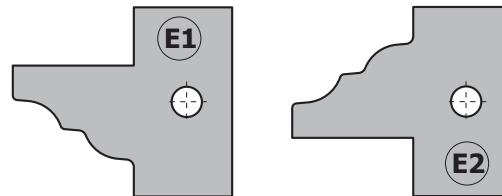
Pair of knives **695.015.C1**
Pair of knives **695.015.C2**



Pair of knives **695.015.D1**
Pair of knives **695.015.D2**

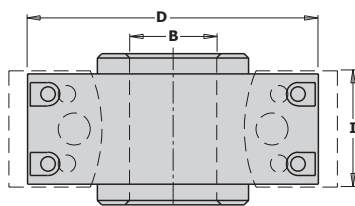


Pair of knives **695.015.E1**
Pair of knives **695.015.E2**



Drawings are 1:1 scale

Cutter heads with limiters


693


For use on all types of moulder and spindle moulder machines.

TECHNICAL CHARACTERISTICS:

- Hard aluminum or steel alloy cutter head without limiters, highly resistant to tensile and yield stress;
- Pair of universal straight knives;
- Tools for manual feed (MAN);
- Pins for the automatic positioning of the knives;
- Possibility to use knives with a height of 40mm or 50mm (order no. 690) and limiters (order no. 691).

Made in compliance with the European Normative EN 847-1

Supplied in a solid plastic box.

D mm	I mm	B mm	RPM	ORDER NO. Steel body	ORDER NO. Alu body	Ex. Vat.	Ex. Vat.	Spare parts		
78	40	30	7000~9000	693.078.30		£88.20	£105.84			
100	40-50	30	5500~8400		693.100.30	£112.77	£135.32	693.999.01	990.065.00	991.064.00
								693.999.01	990.065.00	991.064.00

Rebating cutter head

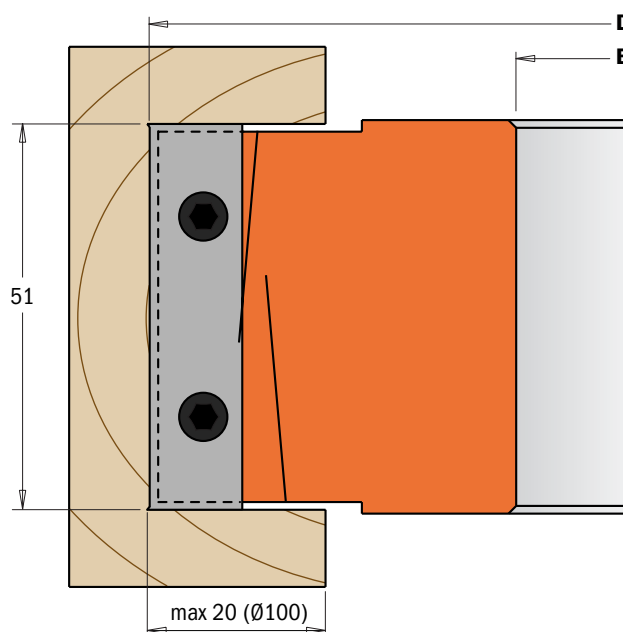
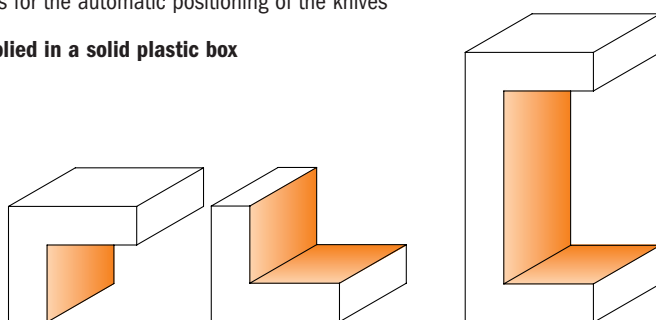

694.100


These cutter heads have been designed for rabbeting from top and from bottom, jointing, grooving on your spindle moulder machines, double-end tenoner and edging machines. Perfect on all materials, but better results are achieved using chipboard, MDF, wood composites, plastic materials and laminates. Improved design with shear angle.

TECHNICAL DETAILS:

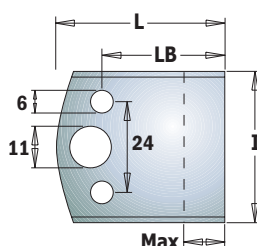
- Hard aluminium alloy body with high resistance to tensile and yield stress
- 2 universal HWM straight knives 50x12x1,5mm [Z2]
- 4 universal HWM scoring knives 14x14x2mm [V4]
- Tools for manual feed MAN
- Pins for the automatic positioning of the knives

Supplied in a solid plastic box



D mm	B mm	Z	RPM	ORDER NO.	Ex. Vat.	Inc. Vat.	Spare parts				
100	30	2+4	7500~12500	694.100.30	£101.85	£122.22					
							790.140.00	990.080.00	991.061.00	790.500.00	695.999.46
										990.064.00	991.064.00

Blank knives and limiters (to be sharpened)


690-691
SP

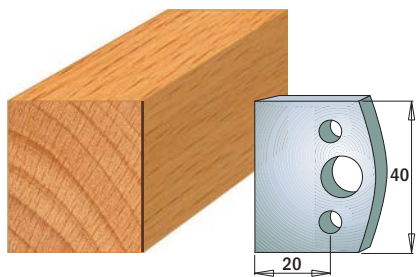
Description	I mm	LB mm	L mm	Max profile mm	ORDER NO.	Ex. Vat.	Inc. Vat.
Pair of knives	40	32,5	44,5	18	690.193	£11.25	£13.50
Pair of blank limiters	50	34	46	20	690.599	£20.55	£24.66
Pair of knives	38	32,5	44,5	18	691.193	£10.20	£12.24
Pair of blank limiters	48	34	46	20	691.599	£17.25	£20.70

Profile knives and limiters

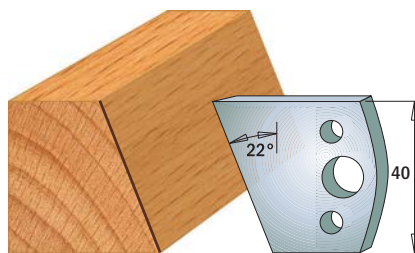
Cutting length=40mm

Thickness=4mm

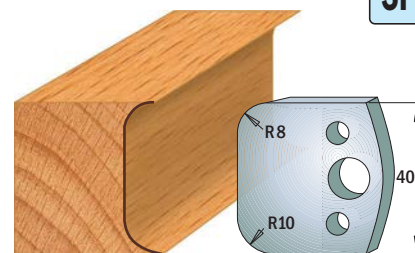
SP



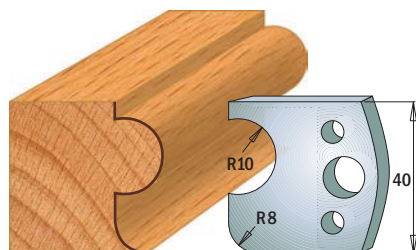
Pair of knives	690.000	£12.65	£15.18
Pair of limiters	691.000	£11.25	£13.50



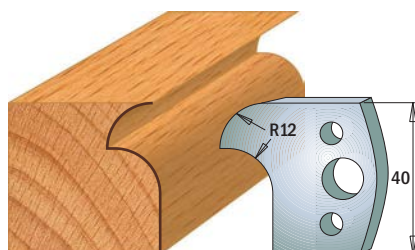
Pair of knives	690.001	£12.65	£15.18
Pair of limiters	691.001	£11.25	£13.50



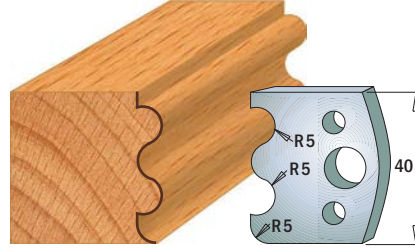
Pair of knives	690.003	£12.65	£15.18
Pair of limiters	691.003	£11.25	£13.50



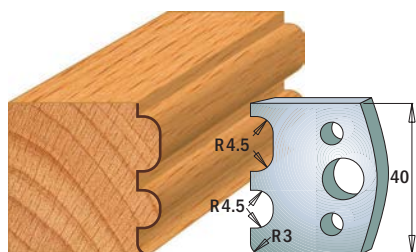
Pair of knives	690.004	£12.65	£15.18
Pair of limiters	691.004	£11.25	£13.50



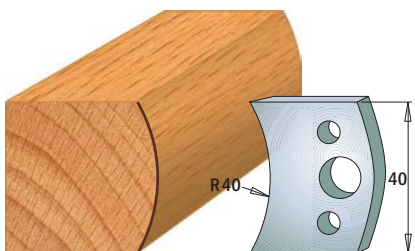
Pair of knives	690.005	£12.65	£15.18
Pair of limiters	691.005	£11.25	£13.50



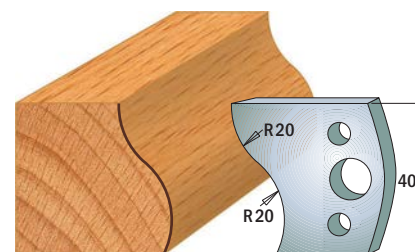
Pair of knives	690.006	£12.65	£15.18
Pair of limiters	691.006	£11.25	£13.50



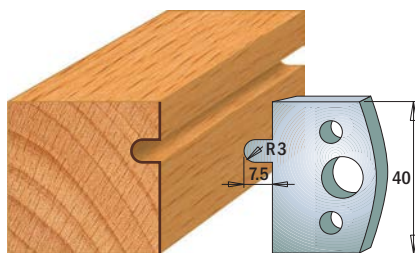
Pair of knives	690.007	£12.65	£15.18
Pair of limiters	691.007	£11.25	£13.50



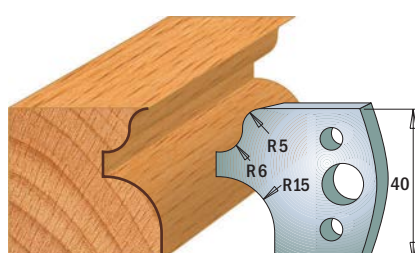
Pair of knives	690.008	£12.65	£15.18
Pair of limiters	691.008	£11.25	£13.50



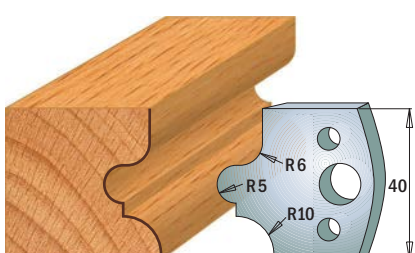
Pair of knives	690.009	£12.65	£15.18
Pair of limiters	691.009	£11.25	£13.50



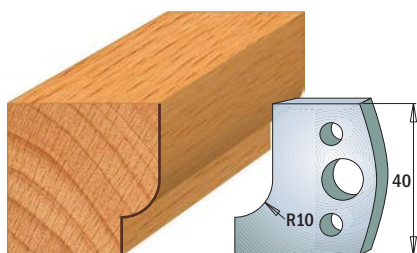
Pair of knives	690.010	£12.65	£15.18
Pair of limiters	691.010	£11.25	£13.50



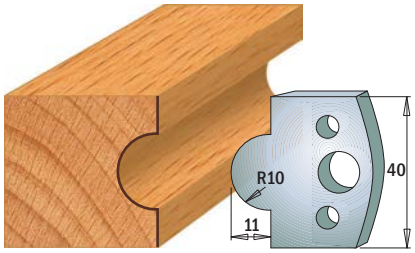
Pair of knives	690.011	£12.65	£15.18
Pair of limiters	691.011	£11.25	£13.50



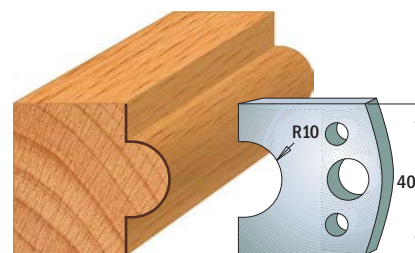
Pair of knives	690.012	£12.65	£15.18
Pair of limiters	691.012	£11.25	£13.50



Pair of knives	690.013	£12.65	£15.18
Pair of limiters	691.013	£11.25	£13.50



Pair of knives	690.014	£12.65	£15.18
Pair of limiters	691.014	£11.25	£13.50



Pair of knives	690.015	£12.65	£15.18
Pair of limiters	691.015	£11.25	£13.50

Note: all knives and limiters only available in pairs

Drawings are 1:2 scale

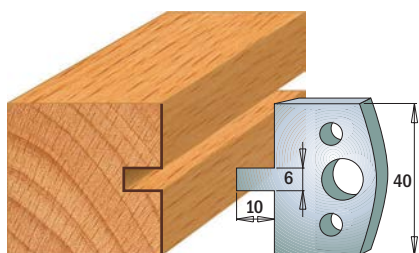
Dimensions in mm.

Profile knives and limiters

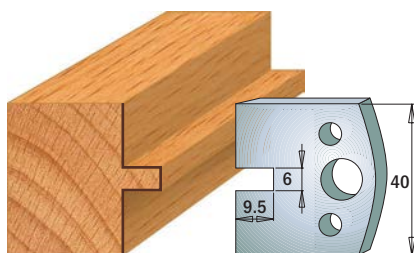
Cutting length=40mm Thickness=4mm

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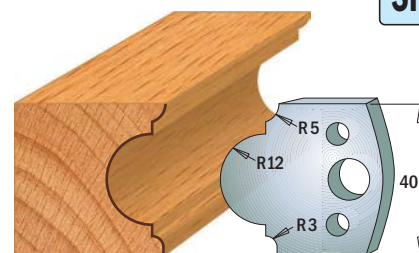
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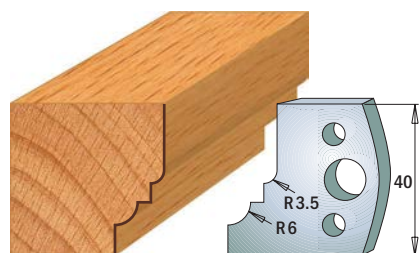
Pair of knives	690.016	£12.65	£15.18
Pair of limiters	691.016	£11.25	£13.50



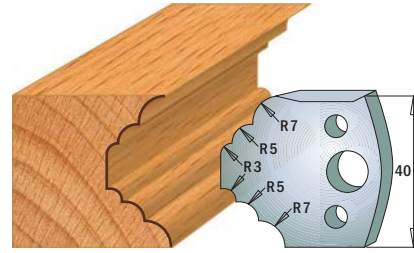
Pair of knives	690.017	£12.65	£15.18
Pair of limiters	691.017	£11.25	£13.50



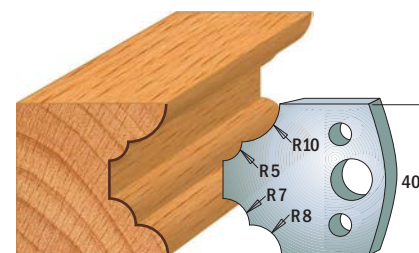
Pair of knives	690.018	£12.65	£15.18
Pair of limiters	691.018	£11.25	£13.50



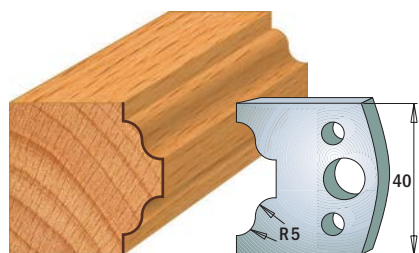
Pair of knives	690.019	£12.65	£15.18
Pair of limiters	691.019	£11.25	£13.50



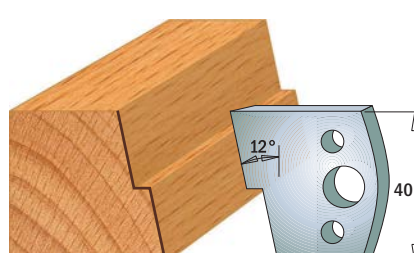
Pair of knives	690.021	£12.65	£15.18
Pair of limiters	691.021	£11.25	£13.50



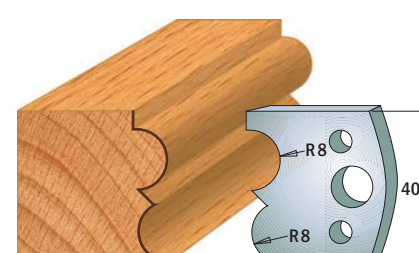
Pair of knives	690.022	£12.65	£15.18
Pair of limiters	691.022	£11.25	£13.50



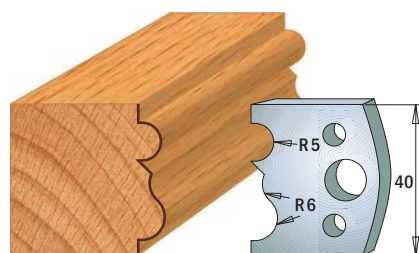
Pair of knives	690.025	£12.65	£15.18
Pair of limiters	691.025	£11.25	£13.50



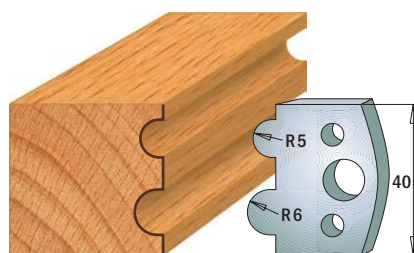
Pair of knives	690.027	£12.65	£15.18
Pair of limiters	691.027	£11.25	£13.50



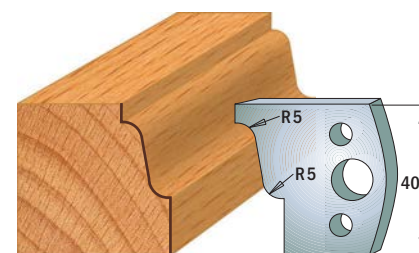
Pair of knives	690.028	£12.65	£15.18
Pair of limiters	691.028	£11.25	£13.50



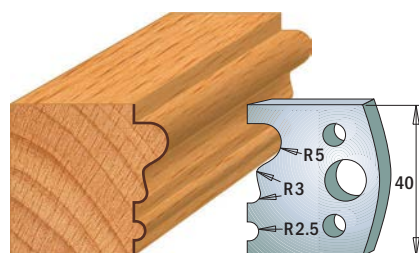
Pair of knives	690.029	£12.65	£15.18
Pair of limiters	691.029	£11.25	£13.50



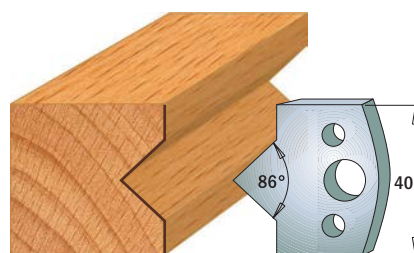
Pair of knives	690.030	£12.65	£15.18
Pair of limiters	691.030	£11.25	£13.50



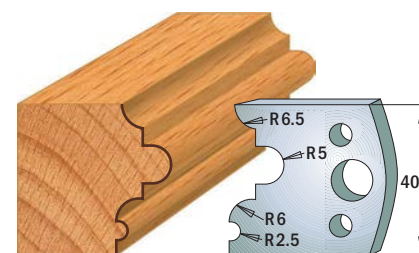
Pair of knives	690.031	£12.65	£15.18
Pair of limiters	691.031	£11.25	£13.50



Pair of knives	690.033	£12.65	£15.18
Pair of limiters	691.033	£11.25	£13.50



Pair of knives	690.035	£12.65	£15.18
Pair of limiters	691.035	£11.25	£13.50



Pair of knives	690.036	£12.65	£15.18
Pair of limiters	691.036	£11.25	£13.50

Note: all knives and limiters only available in pairs

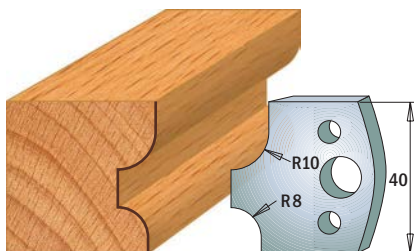
Drawings are 1:2 scale

Dimensions in mm.

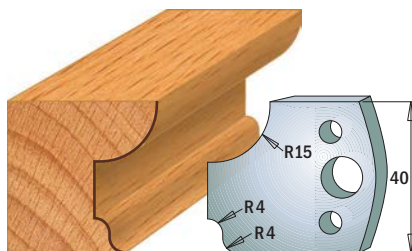
Profile knives and limiters

Cutting length=40mm Thickness=4mm

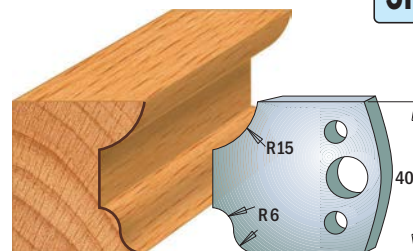
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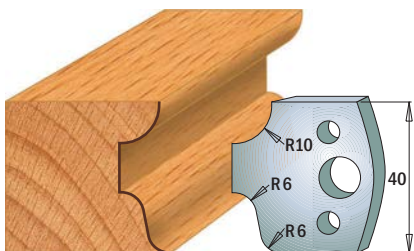
Pair of knives	690.040	£12.65	£15.18
Pair of limiters	691.040	£11.25	£13.50



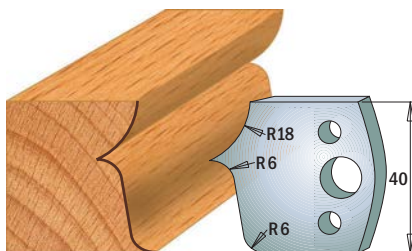
Pair of knives	690.043	£12.65	£15.18
Pair of limiters	691.043	£11.25	£13.50



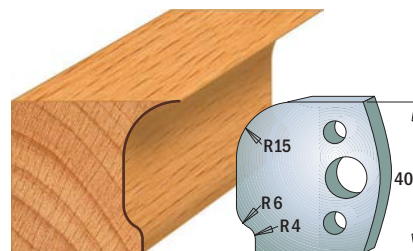
Pair of knives	690.044	£12.65	£15.18
Pair of limiters	691.044	£11.25	£13.50



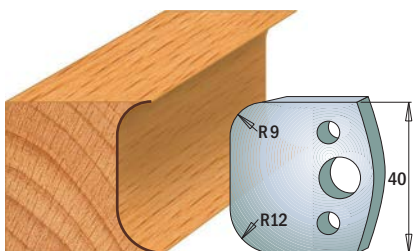
Pair of knives	690.045	£12.65	£15.18
Pair of limiters	691.045	£11.25	£13.50



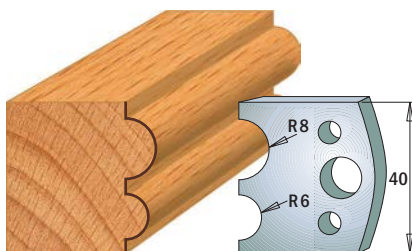
Pair of knives	690.046	£12.65	£15.18
Pair of limiters	691.046	£11.25	£13.50



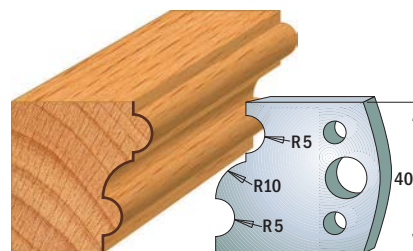
Pair of knives	690.047	£12.65	£15.18
Pair of limiters	691.047	£11.25	£13.50



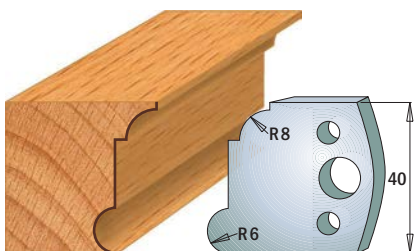
Pair of knives	690.050	£12.65	£15.18
Pair of limiters	691.050	£11.25	£13.50



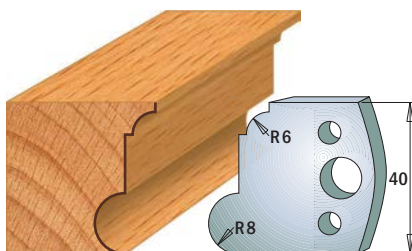
Pair of knives	690.051	£12.65	£15.18
Pair of limiters	691.051	£11.25	£13.50



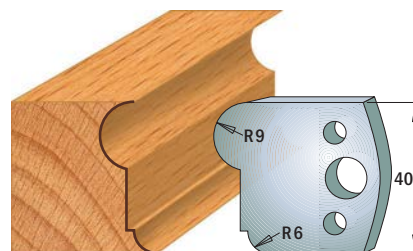
Pair of knives	690.052	£12.65	£15.18
Pair of limiters	691.052	£11.25	£13.50



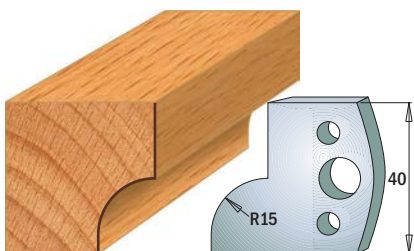
Pair of knives	690.053	£12.65	£15.18
Pair of limiters	691.053	£11.25	£13.50



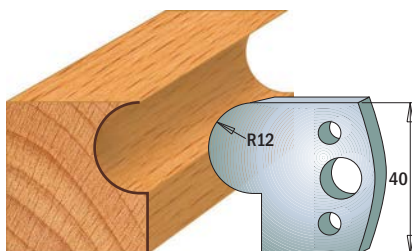
Pair of knives	690.054	£12.65	£15.18
Pair of limiters	691.054	£11.25	£13.50



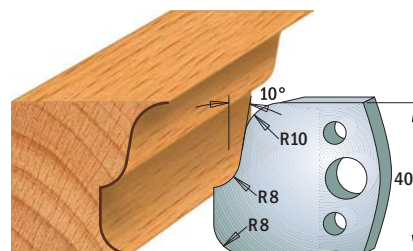
Pair of knives	690.055	£12.65	£15.18
Pair of limiters	691.055	£11.25	£13.50



Pair of knives	690.057	£12.65	£15.18
Pair of limiters	691.057	£11.25	£13.50



Pair of knives	690.058	£12.65	£15.18
Pair of limiters	691.058	£11.25	£13.50



Pair of knives	690.059	£12.65	£15.18
Pair of limiters	691.059	£11.25	£13.50

Note: all knives and limiters only available in pairs

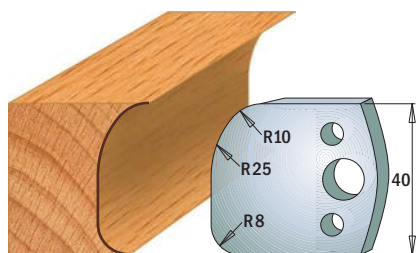
Drawings are 1:2 scale

Dimensions in mm.

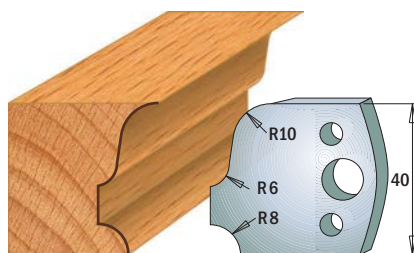
Profile knives and limiters

Cutting length=40mm Thickness=4mm

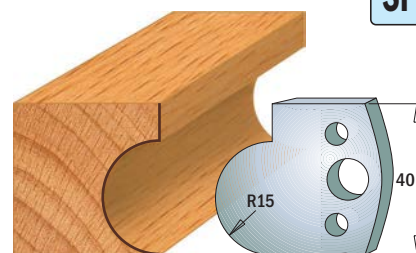
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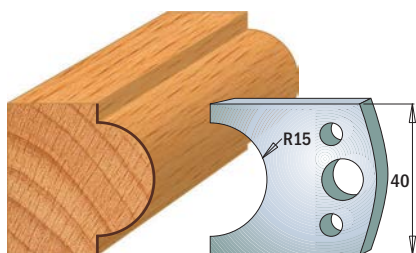
Pair of knives	690.062	£12.65	£15.18
Pair of limiters	691.062	£11.25	£13.50



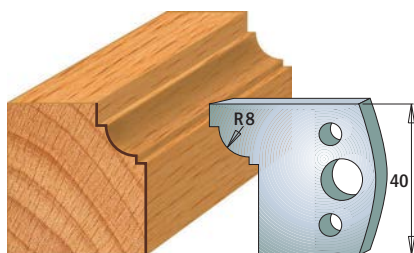
Pair of knives	690.064	£12.65	£15.18
Pair of limiters	691.064	£11.25	£13.50



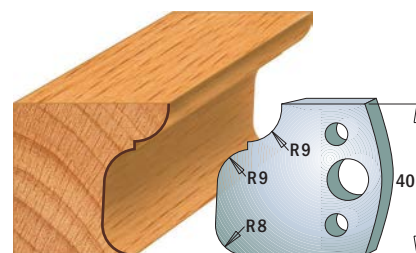
Pair of knives	690.065	£12.65	£15.18
Pair of limiters	691.065	£11.25	£13.50



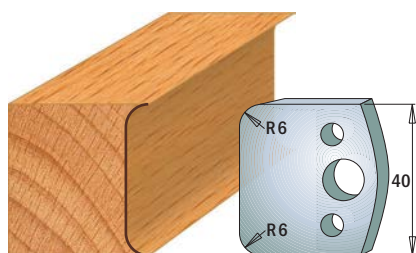
Pair of knives	690.066	£12.65	£15.18
Pair of limiters	691.066	£11.25	£13.50



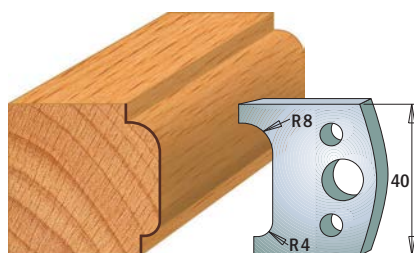
Pair of knives	690.067	£12.65	£15.18
Pair of limiters	691.067	£11.25	£13.50



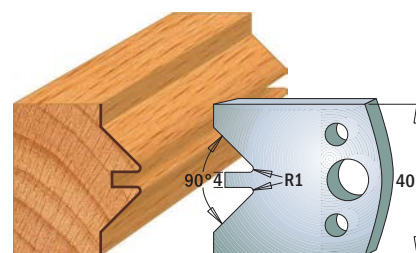
Pair of knives	690.068	£12.65	£15.18
Pair of limiters	691.068	£11.25	£13.50



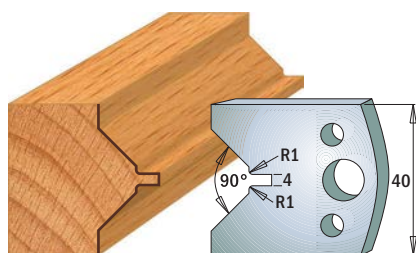
Pair of knives	690.069	£12.65	£15.18
Pair of limiters	691.069	£11.25	£13.50



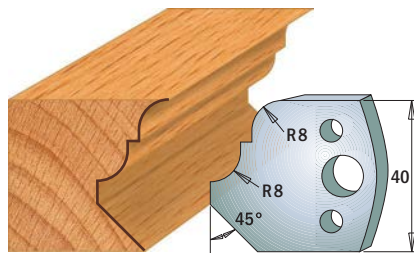
Pair of knives	690.070	£12.65	£15.18
Pair of limiters	691.070	£11.25	£13.50



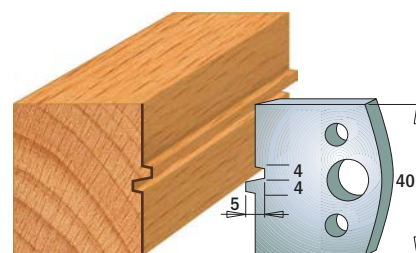
Pair of knives	690.071	£12.65	£15.18
Pair of limiters	691.071	£11.25	£13.50



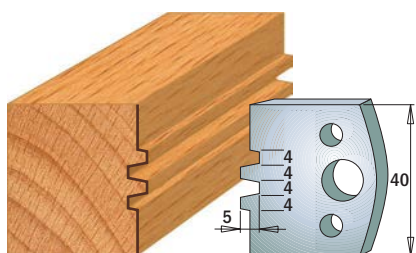
Pair of knives	690.072	£12.65	£15.18
Pair of limiters	691.072	£11.25	£13.50



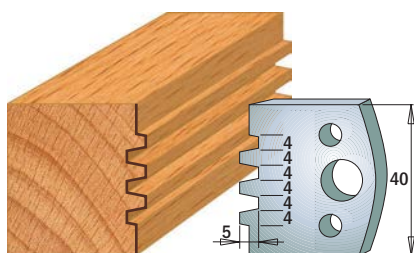
Pair of knives	690.073	£12.65	£15.18
Pair of limiters	691.073	£11.25	£13.50



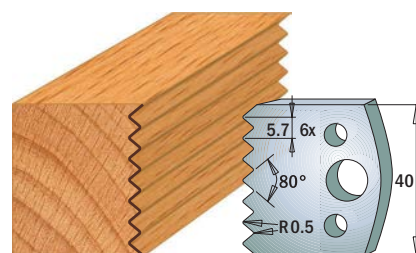
Pair of knives	690.074	£12.65	£15.18
Pair of limiters	691.074	£11.25	£13.50



Pair of knives	690.075	£12.65	£15.18
Pair of limiters	691.075	£11.25	£13.50



Pair of knives	690.076	£12.65	£15.18
Pair of limiters	691.076	£11.25	£13.50



Pair of knives	690.077	£12.65	£15.18
Pair of limiters	691.077	£11.25	£13.50

Note: all knives and limiters only available in pairs

Drawings are 1:2 scale

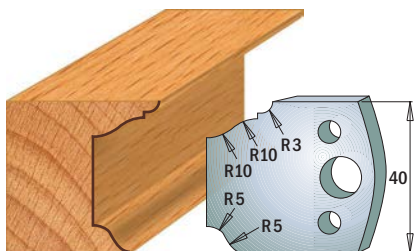
Dimensions in mm.

Profile knives and limiters

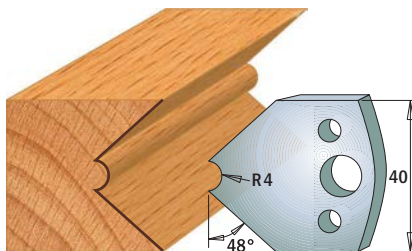
Cutting length=40mm Thickness=4mm

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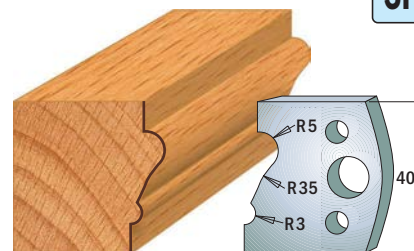
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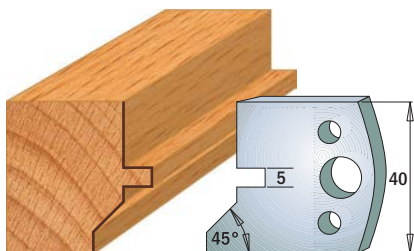
Pair of knives	690.079	£12.65	£15.18
Pair of limiters	691.079	£11.25	£13.50



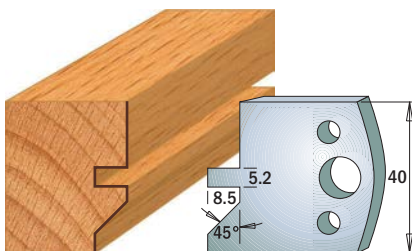
Pair of knives	690.080	£12.65	£15.18
Pair of limiters	691.080	£11.25	£13.50



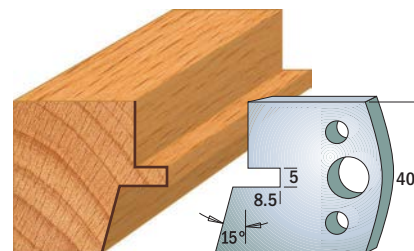
Pair of knives	690.081	£12.65	£15.18
Pair of limiters	691.081	£11.25	£13.50



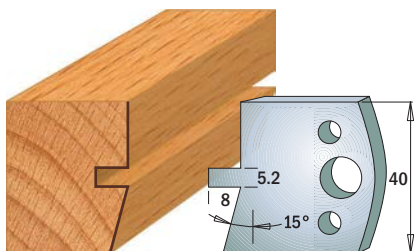
Pair of knives	690.083	£12.65	£15.18
Pair of limiters	691.083	£11.25	£13.50



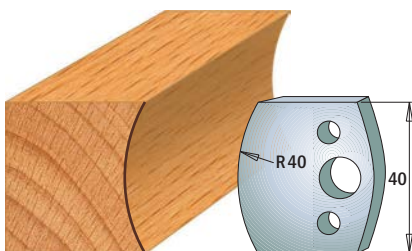
Pair of knives	690.084	£12.65	£15.18
Pair of limiters	691.084	£11.25	£13.50



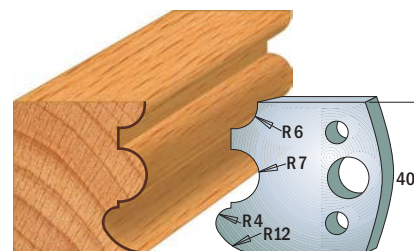
Pair of knives	690.085	£12.65	£15.18
Pair of limiters	691.085	£11.25	£13.50



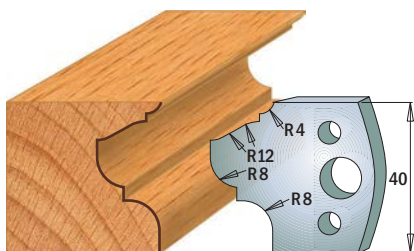
Pair of knives	690.086	£12.65	£15.18
Pair of limiters	691.086	£11.25	£13.50



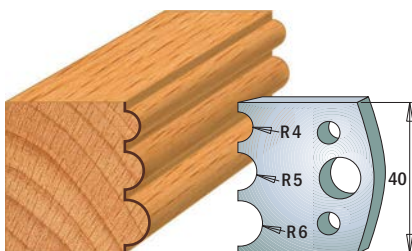
Pair of knives	690.087	£12.65	£15.18
Pair of limiters	691.087	£11.25	£13.50



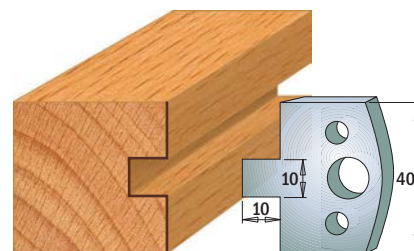
Pair of knives	690.088	£12.65	£15.18
Pair of limiters	691.088	£11.25	£13.50



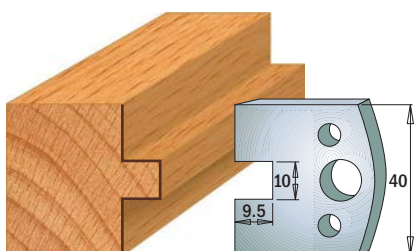
Pair of knives	690.089	£12.65	£15.18
Pair of limiters	691.089	£11.25	£13.50



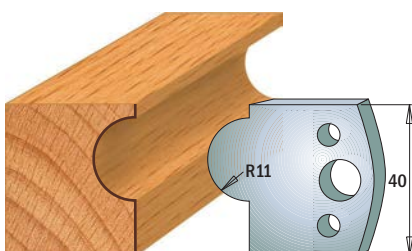
Pair of knives	690.090	£12.65	£15.18
Pair of limiters	691.090	£11.25	£13.50



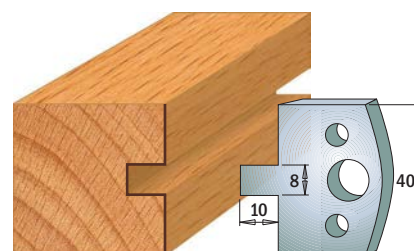
Pair of knives	690.091	£12.65	£15.18
Pair of limiters	691.091	£11.25	£13.50



Pair of knives	690.092	£12.65	£15.18
Pair of limiters	691.092	£11.25	£13.50



Pair of knives	690.093	£12.65	£15.18
Pair of limiters	691.093	£11.25	£13.50



Pair of knives	690.094	£12.65	£15.18
Pair of limiters	691.094	£11.25	£13.50

Note: all knives and limiters only available in pairs

Drawings are 1:2 scale

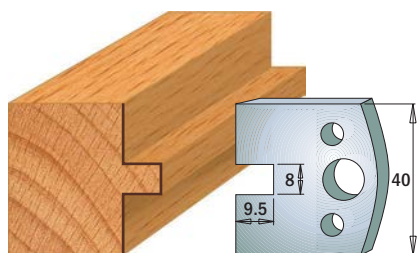
Dimensions in mm.

Profile knives and limiters

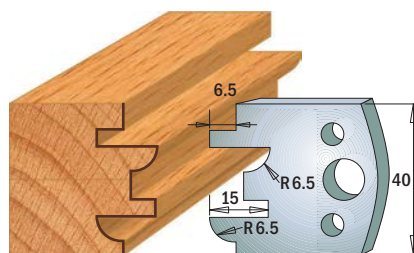
Cutting length=40mm Thickness=4mm

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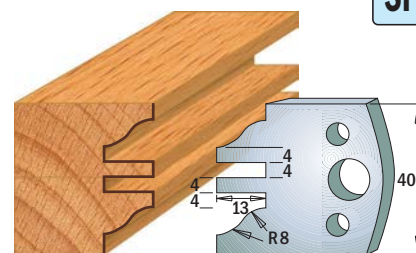
SP



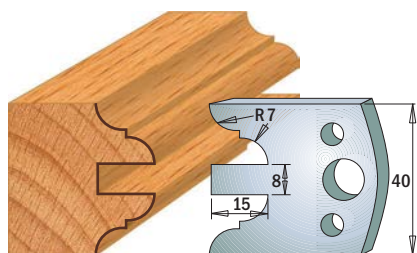
Pair of knives	690.095	£12.65	£15.18
Pair of limiters	691.095	£11.25	£13.50



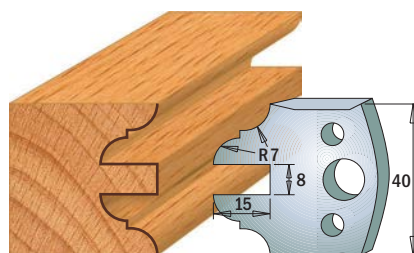
Pair of knives	690.096	£12.65	£15.18
Pair of limiters	691.096	£11.25	£13.50



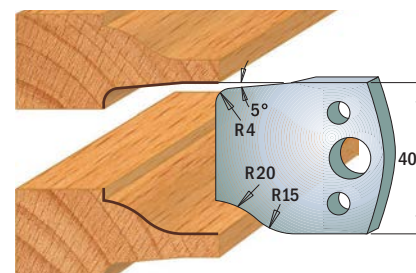
Pair of knives	690.097	£12.65	£15.18
Pair of limiters	691.097	£11.25	£13.50



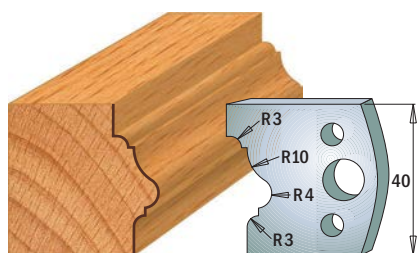
Pair of knives	690.098	£12.65	£15.18
Pair of limiters	691.098	£11.25	£13.50



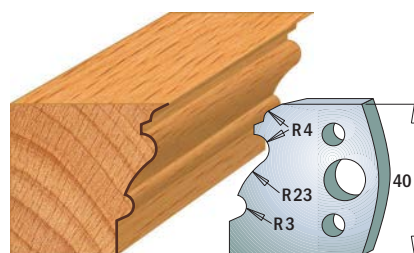
Pair of knives	690.099	£12.65	£15.18
Pair of limiters	691.099	£11.25	£13.50



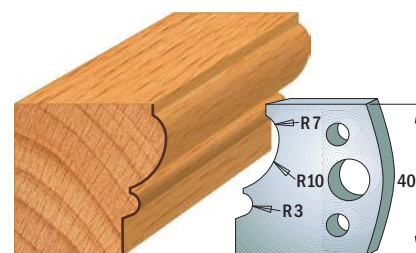
Pair of knives	690.100	£12.65	£15.18
Pair of limiters	691.100	£11.25	£13.50



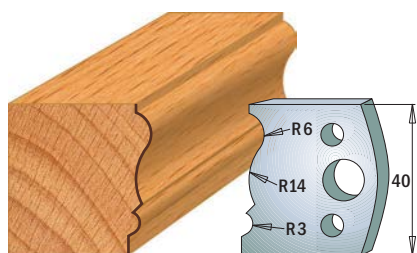
Pair of knives	690.102	£12.65	£15.18
Pair of limiters	691.102	£11.25	£13.50



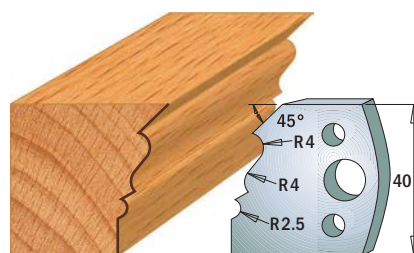
Pair of knives	690.103	£12.65	£15.18
Pair of limiters	691.103	£11.25	£13.50



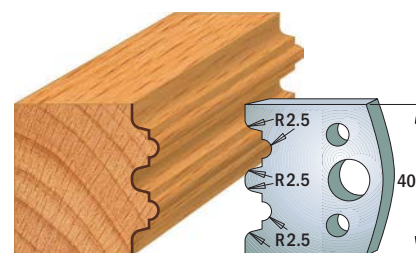
Pair of knives	690.105	£12.65	£15.18
Pair of limiters	691.105	£11.25	£13.50



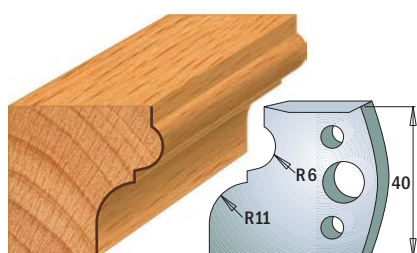
Pair of knives	690.106	£12.65	£15.18
Pair of limiters	691.106	£11.25	£13.50



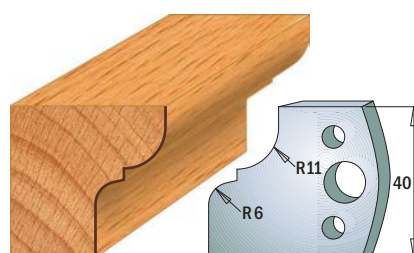
Pair of knives	690.107	£12.65	£15.18
Pair of limiters	691.107	£11.25	£13.50



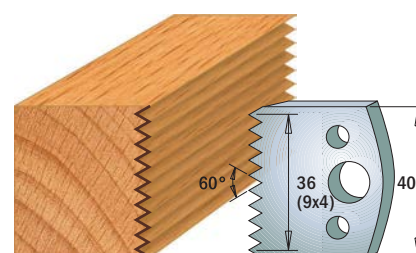
Pair of knives	690.108	£12.65	£15.18
Pair of limiters	691.108	£11.25	£13.50



Pair of knives	690.111	£12.65	£15.18
Pair of limiters	691.111	£11.25	£13.50



Pair of knives	690.112	£12.65	£15.18
Pair of limiters	691.112	£11.25	£13.50



Pair of knives	690.117	£12.65	£15.18
Pair of limiters	691.117	£11.25	£13.50

Note: all knives and limiters only available in pairs

Drawings are 1:2 scale

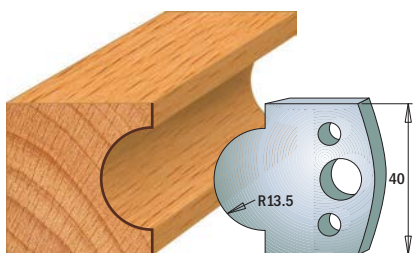
Dimensions in mm.

Profile knives and limiters

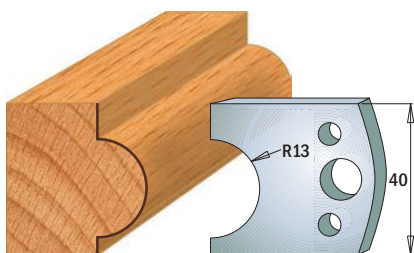
Cutting length=40mm Thickness=4mm

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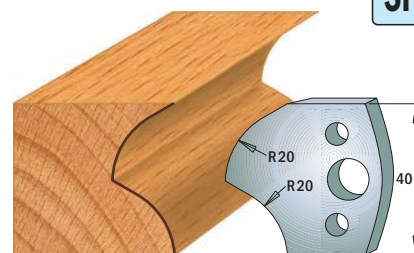
SP



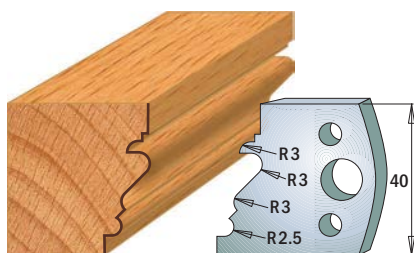
Pair of knives	690.118	£12.65	£15.18
Pair of limiters	691.118	£11.25	£13.50



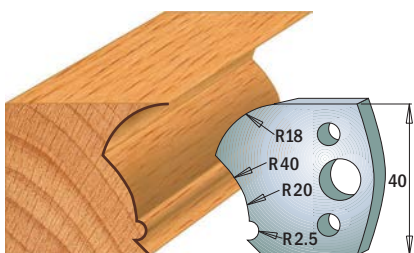
Pair of knives	690.119	£12.65	£15.18
Pair of limiters	691.119	£11.25	£13.50



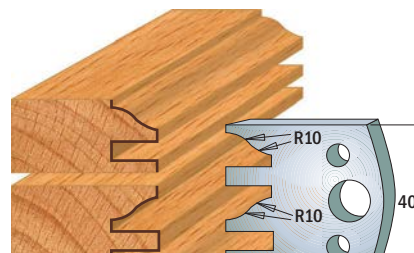
Pair of knives	690.120	£12.65	£15.18
Pair of limiters	691.120	£11.25	£13.50



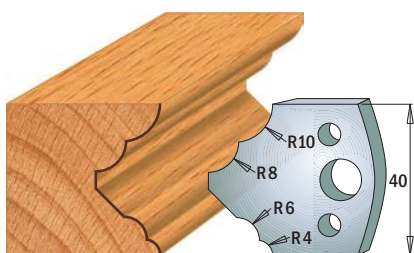
Pair of knives	690.122	£12.65	£15.18
Pair of limiters	691.122	£11.25	£13.50



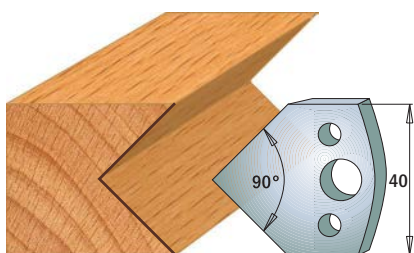
Pair of knives	690.123	£12.65	£15.18
Pair of limiters	691.123	£11.25	£13.50



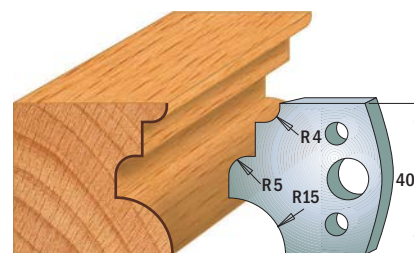
Pair of knives	690.124	£12.65	£15.18
Pair of limiters	691.124	£11.25	£13.50



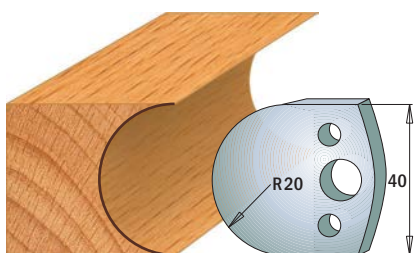
Pair of knives	690.125	£12.65	£15.18
Pair of limiters	691.125	£11.25	£13.50



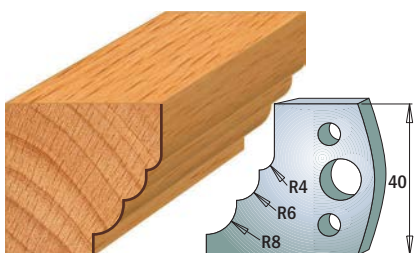
Pair of knives	690.127	£12.65	£15.18
Pair of limiters	691.127	£11.25	£13.50



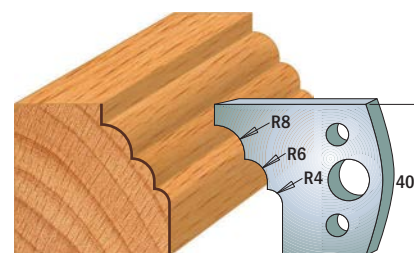
Pair of knives	690.129	£12.65	£15.18
Pair of limiters	691.129	£11.25	£13.50



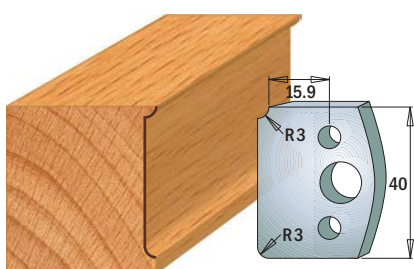
Pair of knives	690.131	£12.65	£15.18
Pair of limiters	691.131	£11.25	£13.50



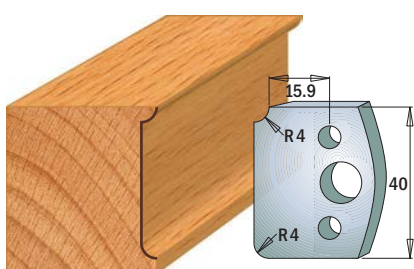
Pair of knives	690.132	£12.65	£15.18
Pair of limiters	691.132	£11.25	£13.50



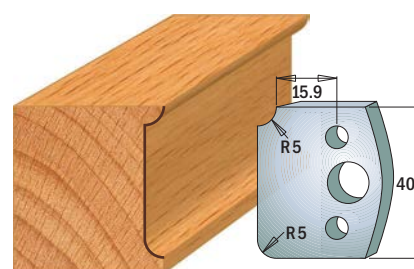
Pair of knives	690.133	£12.65	£15.18
Pair of limiters	691.133	£11.25	£13.50



Pair of knives	690.170	£12.65	£15.18
Pair of limiters	691.170	£11.25	£13.50



Pair of knives	690.171	£12.65	£15.18
Pair of limiters	691.171	£11.25	£13.50



Pair of knives	690.172	£12.65	£15.18
Pair of limiters	691.172	£11.25	£13.50

Note: all knives and limiters only available in pairs

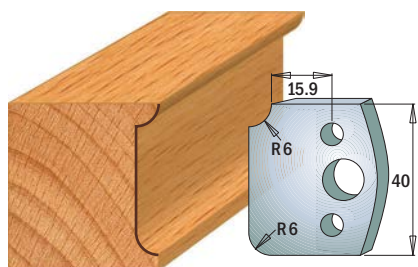
Drawings are 1:2 scale

Dimensions in mm.

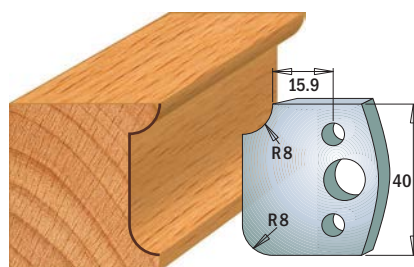
Profile knives and limiters

Cutting length=40mm Thickness=4mm

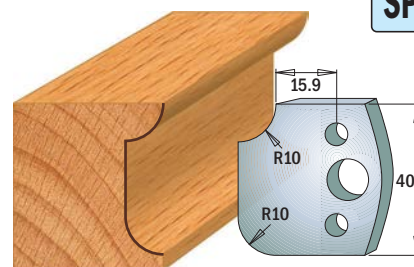
SP



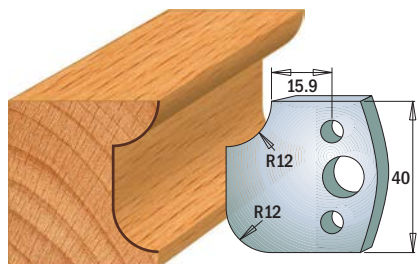
Pair of knives	690.173	£12.65	£15.18
Pair of limiters	691.173	£11.25	£13.50



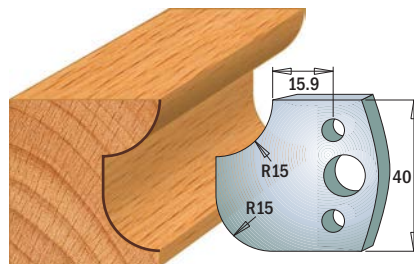
Pair of knives	690.174	£12.65	£15.18
Pair of limiters	691.174	£11.25	£13.50



Pair of knives	690.175	£12.65	£15.18
Pair of limiters	691.175	£11.25	£13.50



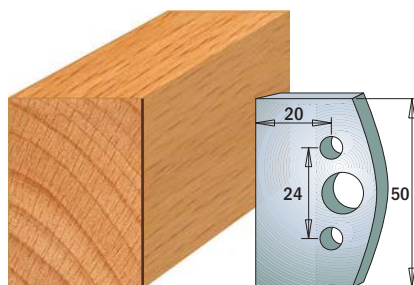
Pair of knives	690.176	£12.65	£15.18
Pair of limiters	691.176	£11.25	£13.50



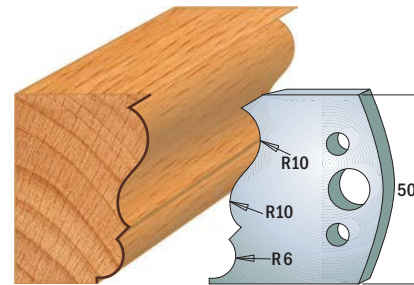
Pair of knives	690.177	£12.65	£15.18
Pair of limiters	691.177	£11.25	£13.50

Profile knives and limiters

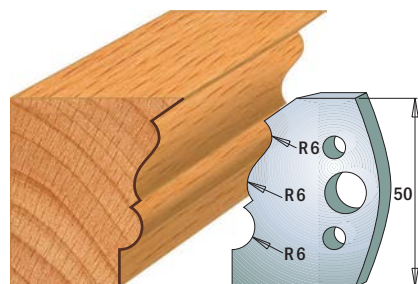
Cutting length=50mm Thickness=4mm



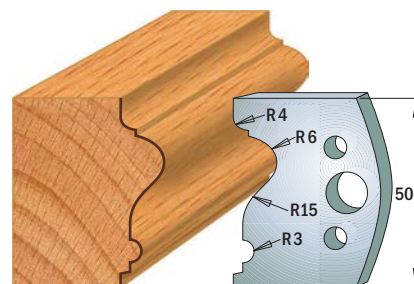
Pair of knives	690.500	£23.45	£28.14
Pair of limiters	691.500	£19.85	£23.82



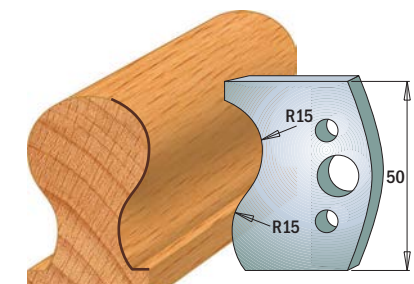
Pair of knives	690.506	£23.45	£28.14
Pair of limiters	691.506	£19.85	£23.82



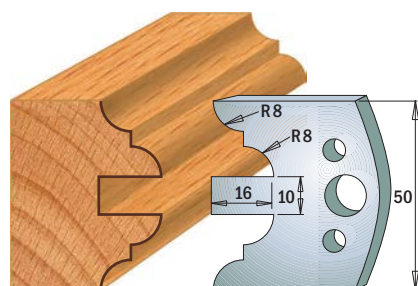
Pair of knives	690.509	£23.45	£28.14
Pair of limiters	691.509	£19.85	£23.82



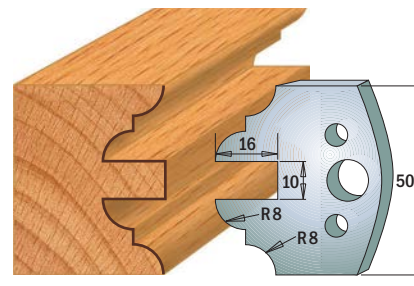
Pair of knives	690.512	£23.45	£28.14
Pair of limiters	691.512	£19.85	£23.82



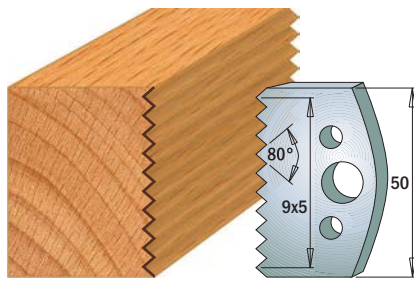
Pair of knives	690.514	£23.45	£28.14
Pair of limiters	691.514	£19.85	£23.82



Pair of knives	690.522	£23.45	£28.14
Pair of limiters	691.522	£19.85	£23.82



Pair of knives	690.523	£23.45	£28.14
Pair of limiters	691.523	£19.85	£23.82



Pair of knives	690.524	£23.45	£28.14
Pair of limiters	691.524	£19.85	£23.82

Note: all knives and limiters only available in pairs

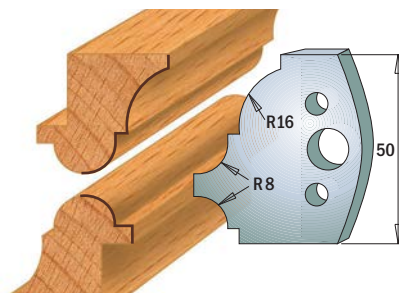
Drawings are 1:2 scale

Dimensions in mm.

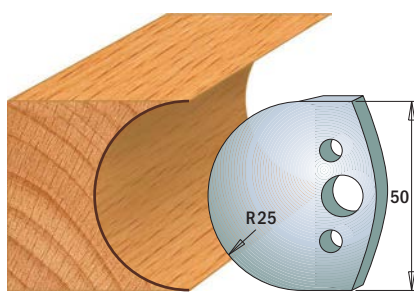
Profile knives and limiters

Cutting length=50mm Thickness=4mm

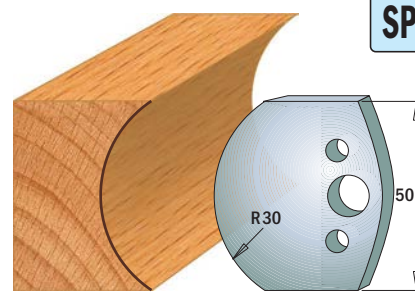
SP



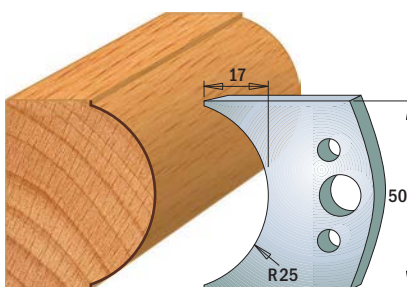
Pair of knives	690.541	£23.45	£28.14
Pair of limiters	691.541	£19.85	£23.82



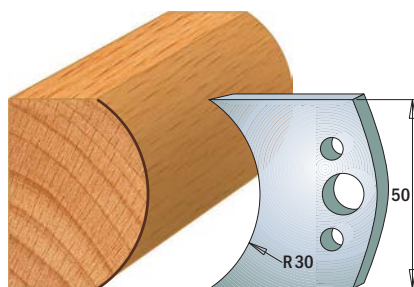
Pair of knives	690.543	£23.45	£28.14
Pair of limiters	691.543	£19.85	£23.82



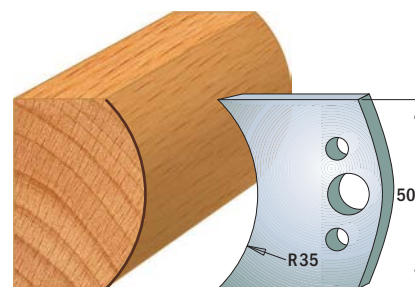
Pair of knives	690.544	£23.45	£28.14
Pair of limiters	691.544	£19.85	£23.82



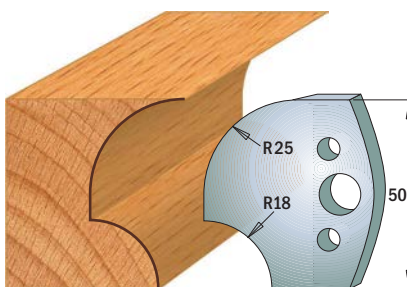
Pair of knives	690.546	£23.45	£28.14
Pair of limiters	691.546	£19.85	£23.82



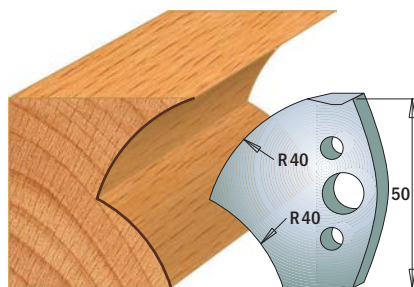
Pair of knives	690.547	£23.45	£28.14
Pair of limiters	691.547	£19.85	£23.82



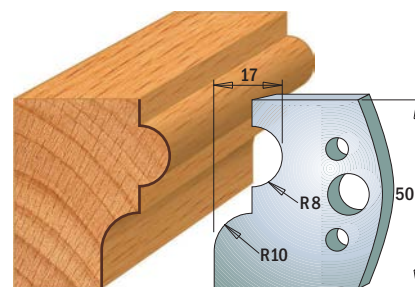
Pair of knives	690.548	£23.45	£28.14
Pair of limiters	691.548	£19.85	£23.82



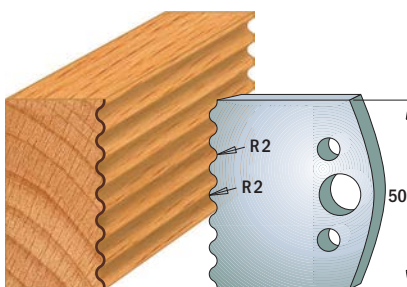
Pair of knives	690.549	£23.45	£28.14
Pair of limiters	691.549	£19.85	£23.82



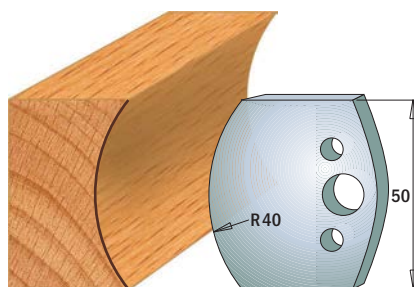
Pair of knives	690.550	£23.45	£28.14
Pair of limiters	691.550	£19.85	£23.82



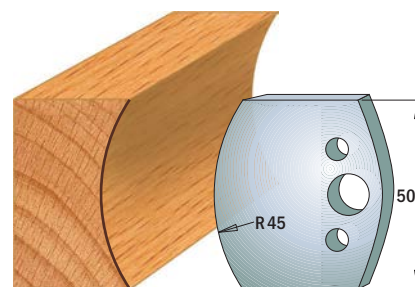
Pair of knives	690.551	£23.45	£28.14
Pair of limiters	691.551	£19.85	£23.82



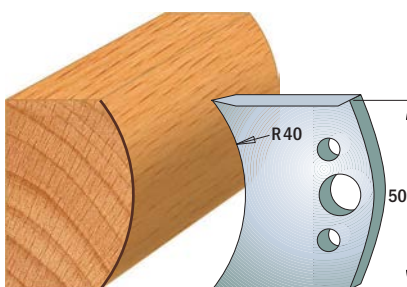
Pair of knives	690.552	£23.45	£28.14
Pair of limiters	691.552	£19.85	£23.82



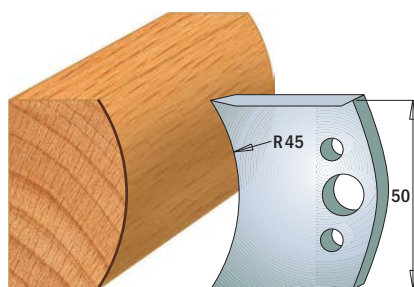
Pair of knives	690.553	£23.45	£28.14
Pair of limiters	691.553	£19.85	£23.82



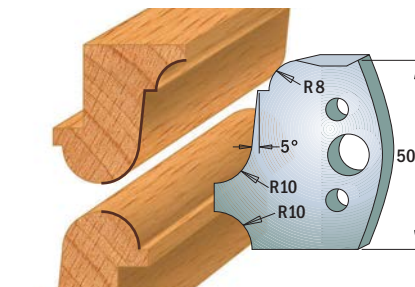
Pair of knives	690.554	£23.45	£28.14
Pair of limiters	691.554	£19.85	£23.82



Pair of knives	690.555	£23.45	£28.14
Pair of limiters	691.555	£19.85	£23.82



Pair of knives	690.556	£23.45	£28.14
Pair of limiters	691.556	£19.85	£23.82



Pair of knives	690.557	£23.45	£28.14
Pair of limiters	691.557	£19.85	£23.82

Note: all knives and limiters only available in pairs

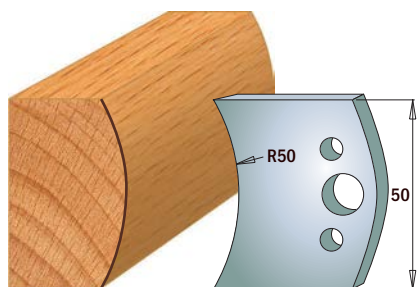
Drawings are 1:2 scale

Dimensions in mm.

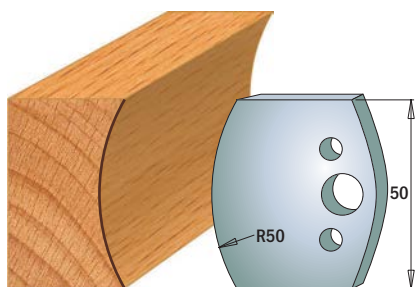
Profile knives and limiters

Cutting length=50mm Thickness=4mm

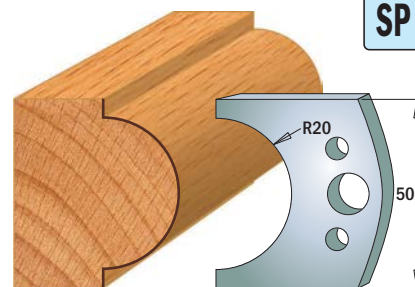
SP



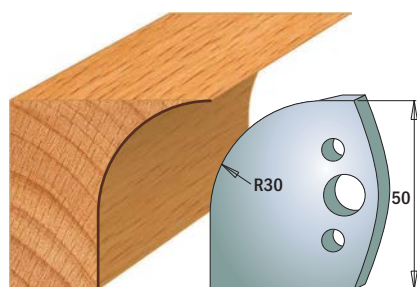
Pair of knives	690.559	£23.45	£28.14
Pair of limiters	691.559	£19.85	£23.82



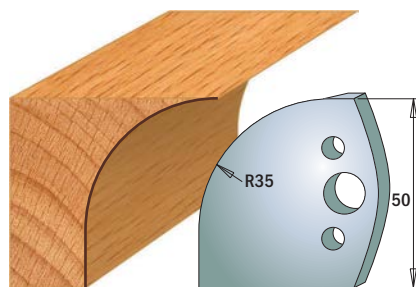
Pair of knives	690.560	£23.45	£28.14
Pair of limiters	691.560	£19.85	£23.82



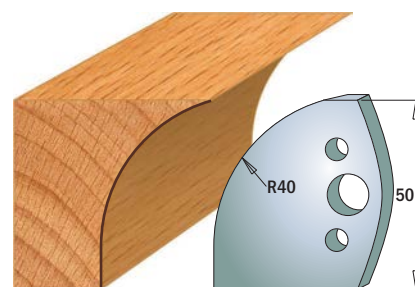
Pair of knives	690.561	£23.45	£28.14
Pair of limiters	691.561	£19.85	£23.82



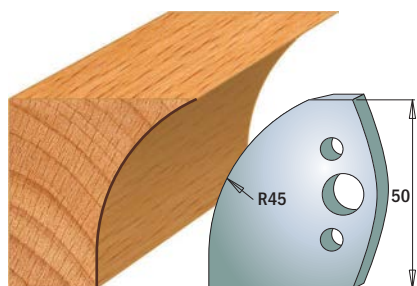
Pair of knives	690.563	£23.45	£28.14
Pair of limiters	691.563	£19.85	£23.82



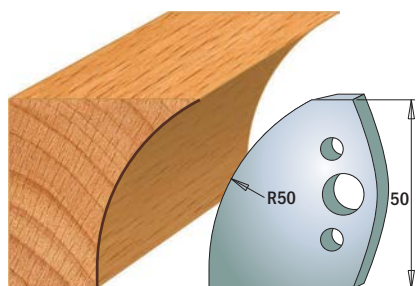
Pair of knives	690.564	£23.45	£28.14
Pair of limiters	691.564	£19.85	£23.82



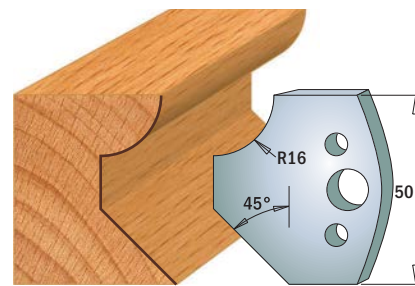
Pair of knives	690.565	£23.45	£28.14
Pair of limiters	691.565	£19.85	£23.82



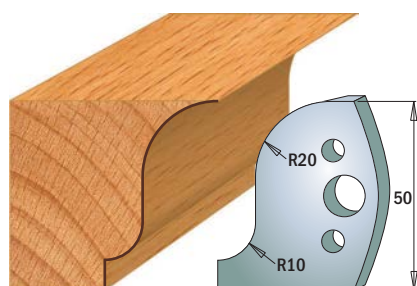
Pair of knives	690.566	£23.45	£28.14
Pair of limiters	691.566	£19.85	£23.82



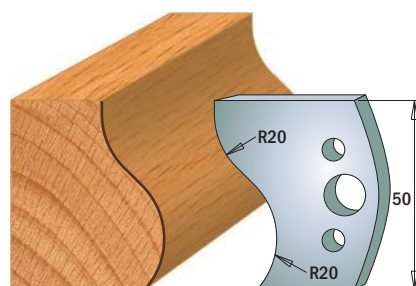
Pair of knives	690.567	£23.45	£28.14
Pair of limiters	691.567	£19.85	£23.82



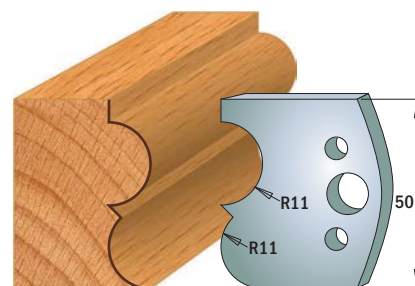
Pair of knives	690.569	£23.45	£28.14
Pair of limiters	691.569	£19.85	£23.82



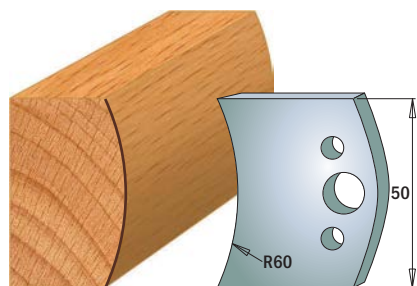
Pair of knives	690.570	£23.45	£28.14
Pair of limiters	691.570	£19.85	£23.82



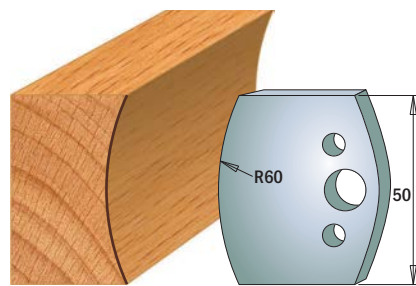
Pair of knives	690.571	£23.45	£28.14
Pair of limiters	691.571	£19.85	£23.82



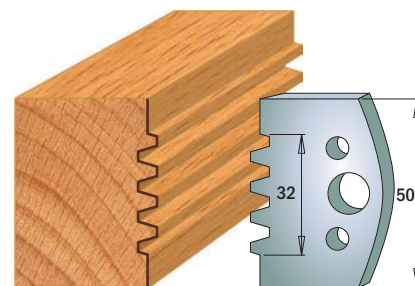
Pair of knives	690.572	£23.45	£28.14
Pair of limiters	691.572	£19.85	£23.82



Pair of knives	690.573	£23.45	£28.14
Pair of limiters	691.573	£19.85	£23.82



Pair of knives	690.574	£23.45	£28.14
Pair of limiters	691.574	£19.85	£23.82

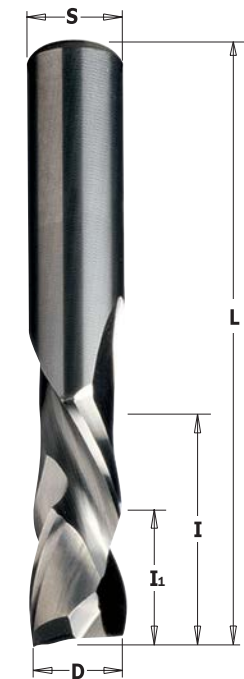


Pair of knives	690.576	£23.45	£28.14
Pair of limiters	691.576	£19.85	£23.82

Note: all knives and limiters only available in pairs

Drawings are 1:2 scale

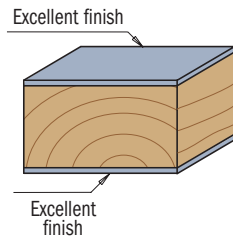
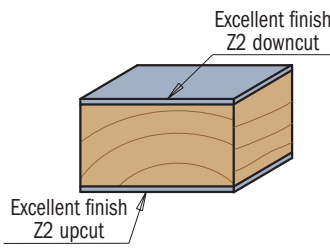
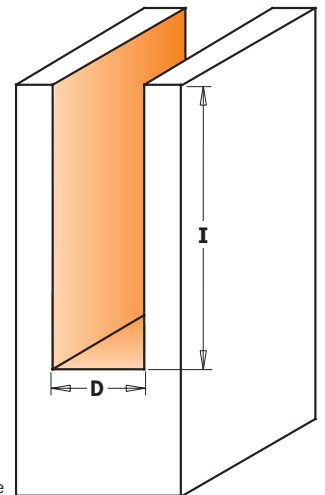
Dimensions in mm.


**Upcut & Downcut
190**

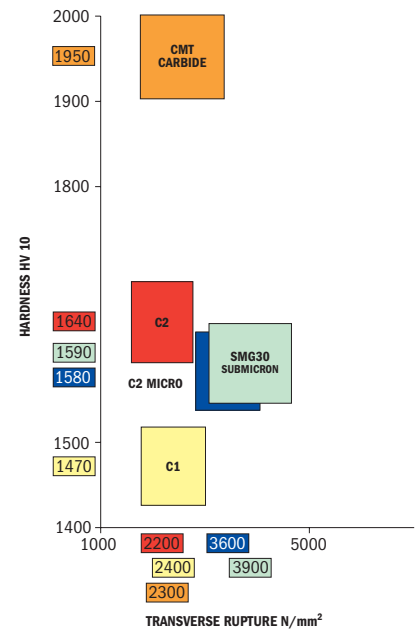
190-191-192

Due to their spiral cutting edge which stays in continuous contact with the workpiece, these bits give a smooth, chatter-free cutting action, unlike conventional bits which have intermittent contact with the workpiece. Unsurpassed for cleaner cuts in ordinary or difficult materials, softwood, hardwood, plywood, composites etc. This new range of spiral bits with 6, 8, 12mm and 6,35 and 12,7mm shanks allow them to be used with C.N.C. router and hand-routers.

Test check yourself the extraordinary quality-price ratio of these bits!

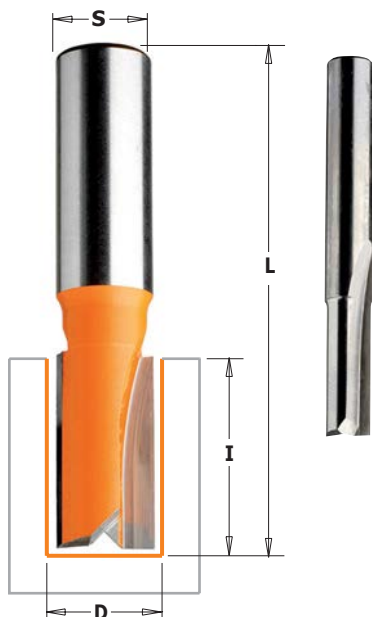

**Upcut
191**

**Downcut
192**
HWM **Z2+2** **Z2** **RH**


Drawing are 1:1 scale



190-191-192

D mm	I mm	I ₁ mm	L mm	Z	SHANK Ømm	ORDER NO.	Ex. Vat.	Inc. Vat.
190 Z2+2 upcut & downcut spiral								
8	32	7	80	2+2	8	190.080.11	£43.01	£51.62
191 Z2 upcut spiral								
3,18	12,7		50,8	2	6,35	191.001.11	£20.25	£24.30
3,97	12,7		50,8	2	6,35	191.003.11	£20.25	£24.30
4,76	19,05		50,8	2	6,35	191.005.11	£20.25	£24.30
6,35	19,05		50,8	2	6,35	191.007.11	£18.30	£21.96
7,94	25,4		76,2	2	12,7	191.501.11	£58.69	£70.43
8	22		70	2	8	191.080.11	£25.65	£30.78
12,7	50,8		101,6	2	12,7	191.507.11	£76.76	£92.12
192 Z2 downcut spiral								
3,97	12,7		50,8	2	6,35	192.003.11	£20.25	£24.30
4,76	19,05		50,8	2	6,35	192.005.11	£20.25	£24.30
6,35	25,4		63,5	2	6,35	192.008.11	£19.20	£23.04
7,94	25,4		76,2	2	12,7	192.501.11	£58.69	£70.43
8	32		80	2	8	192.081.11	£28.39	£34.07
12,7	50,8		101,6	2	12,7	192.507.11	£76.76	£92.12

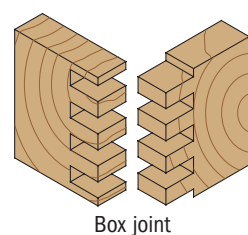
**811**

If you are looking to get the most out of your time and money through more efficient production, but want nothing less than a beautiful clean edge on your finished piece, then you definitely must include CMT straight bits in your collection. These razor-sharp, double-faced cutters perfectly synthesize the characteristics and advantages that define quality CMT products. Made of special Fatigue Proof® steel and micrograin carbide, our straight bits can withstand even the heaviest work load and still give you a smooth, precise cut every time. You also get exceptional chip ejection to allow cleaner and more constant cutting.

The surface of all CMT bits is protected with our trademark orange non-stick PTFE to help keep the bit from collecting resin, pitch and other residue.

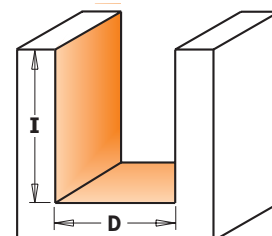
Every bit is submitted to strict quality tests to guarantee perfect cutting tolerance, balance and concentricity.

CMT bits allow production on an industrial scale using a variety of plywood, composites and natural woods. CMT produces 91 types of straight bits in a wide range of diameters so you can find exactly what you want.

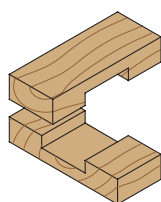


Box joint

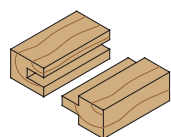
The cutting edge top sharpening on 9mm diameter bits and larger allows for short plunging operations.



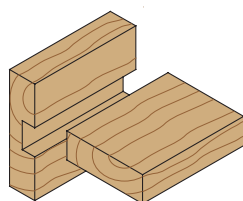
Drawing are 1:1 scale



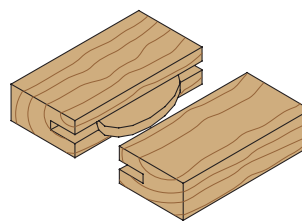
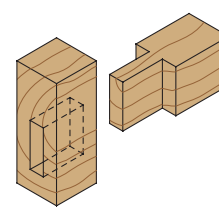
Union



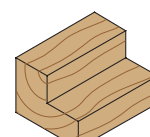
Tongue and groove joint



Right-angle joint

Biscuit joint using bit
#811.040.11

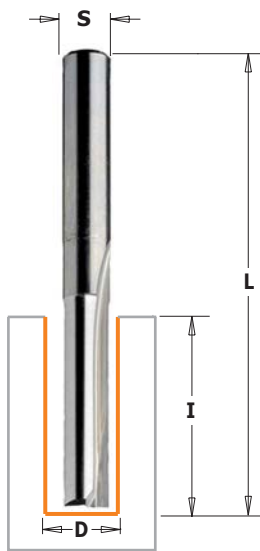
Mortise and tenon



Rabbet

D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
• 2*	4	45	811.020.11		£17.49	£20.99
• 3	8	45	811.030.11		£17.49	£20.99
• 3,2	9,5	45	811.032.11		£17.49	£20.99
• 4	10	45	811.040.11		£17.49	£20.99
• 4,75	12,7	50,8	811.047.11		£17.91	£21.49
• 5	12	50,8	811.050.11		£17.91	£21.49
• 6	16	50,8	811.060.11		£17.91	£21.49
• 6,35	19	57,2	811.065.11		£18.87	£22.64
• 6,35	19	60,3		811.564.11	£22.53	£27.04
• 7	18	49	811.070.11		£19.86	£23.83
• 8	20	48	811.080.11		£19.86	£23.83
• 8	25,4	70		811.581.11	£24.21	£29.05
9,5	25,4	63,5	811.096.11		£19.86	£23.83
10	20	48	811.100.11		£19.29	£23.15
10	25,4	63,5		811.600.11	£20.49	£24.59
12	20	50	811.120.11		£19.29	£23.15
12	25,4	63,5		811.620.11	£19.77	£23.72
12,7	19	57,2	811.127.11		£19.77	£23.72
12,7	31,7	82,5		811.628.11	£21.78	£26.14
14	20	50	811.140.11		£19.35	£23.22
15	20	57,2	811.150.11		£20.10	£24.12
15,8	19	66,7	811.158.11		£18.87	£22.64
15,8	25,4	63,5		811.660.11	£21.21	£25.45
16	20	57,2	811.160.11		£20.10	£24.12
18	20	50	811.180.11		£21.06	£25.27
18,2	25,4	63,5		811.682.11	£21.63	£25.96
19	20	57,2	811.191.11		£21.63	£25.96
19	25,4	63,5		811.690.11	£21.63	£25.96
20	20	50	811.200.11		£21.63	£25.96
22	20	57,2	811.220.11		£22.68	£27.22
25,4	19	50,8	811.254.11		£25.92	£31.10
25,4	31,7	76,2		811.754.11	£25.92	£31.10

• HWM - * Z1



812

Safety precautions: never use damaged or worn bits. Always work at the proper feed rate without forcing the bit. Pay particular attention when making the initial cut with a small diameter bit. For best results when working with small diameter bits, make the cut in more than one pass.

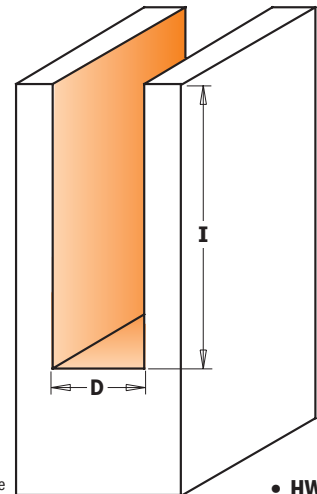
The cutting edge top sharpening on 9mm diameter bits and larger allows for short plunging operations.



10 pcs. in Masterpack

Drawing are 1:1 scale

HW HWM Z2 RH



• HWM

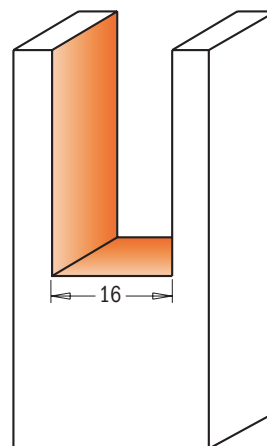
D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
• 6	25,4	60	812.060.11		£19.35	£23.22
• 8	31,7	60	812.080.11		£21.54	£25.85
9,5	31,7	63,5	812.095.11		£20.58	£24.70
9,5	31,7	73		812.595.11	£21.30	£25.56
10	31,7	60	812.100.11		£20.58	£24.70
10	31,7	70		812.600.11	£21.30	£25.56
11,1	31,7	82,5		812.611.11	£22.53	£27.04
12	31,7	60	812.120.11		£20.58	£24.70
12	38,1	95		812.621.11	£21.63	£25.96
12,7	31,7	70	812.127.11		£20.58	£24.70
12,7	50,8	108		812.628.11	£27.96	£33.55
12,7	63,5	111		812.629.11	£34.83	£41.80
14	31,7	60	812.140.11		£21.63	£25.96
15	31,7	66	812.150.11		£21.78	£26.14
15,8	31,7	70	812.158.11		£22.20	£26.64
16	31,7	66	812.160.11		£22.68	£27.22
16	31,7	70		812.660.11	£22.20	£26.64
19	50,8	92		812.691.11	£28.35	£34.02
10 pcs. in masterpack						
12,7	50,8	108		812.628.11-X10	£180.00	£216.00



Straight router bits with insert knives

654

Straight router bit with two replaceable knives fixed by special Torx screws. Their blades are sharpened on the top with 3° angle for better plunging operations.

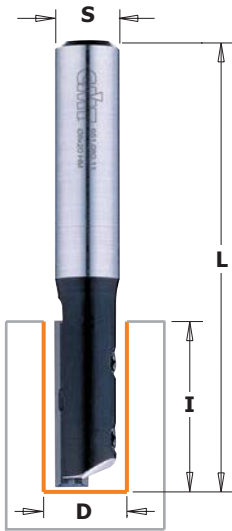


Drawings are 1:1 scale

INSERT CARBIDE Z2 RH

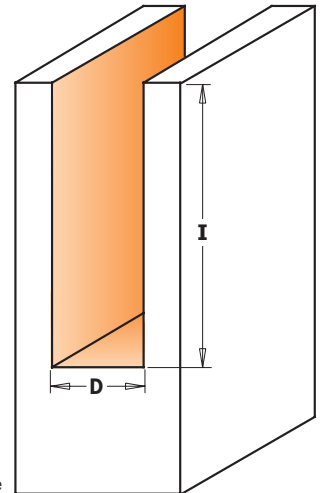
D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
16	28,3	87	654.661.11	£77.67	£93.20			
						790.283.12	990.073.00	991.061.00

Straight router bits with insert knives

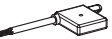


651-652

Straight router bit with one replaceable mini knife and fixing wedge. Radial and axial groove for better and safe knife insertion. For finishing, routing and grooving in board materials (DTD laminated, MDF and hardwood). For use on portable routers or CNC machining centres.

INSERT CARBIDE **Z1** **RH**


Drawings are 1:1 scale

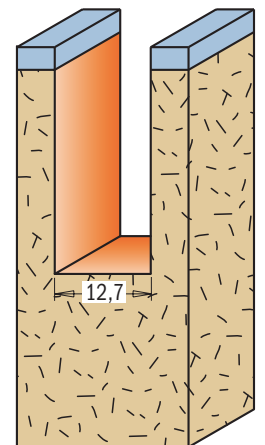
D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
8	20	67	651.681.11	£59.46	£71.35				
9,5	30	80	651.695.11	£59.46	£71.35	790.200.01	651.999.01	990.070.00	991.063.00
10	30	80	651.701.11	£59.46	£71.35	790.300.01	651.999.02	990.071.00	991.063.00
12	30	80	651.721.11	£66.33	£79.60	790.300.01	651.999.02	990.071.00	991.063.00
12,7	30	80	651.727.11	£66.33	£79.60	790.300.01	651.999.02	990.071.00	991.063.00
12,7	50	103	652.628.11	£66.42	£79.70	790.300.01	651.999.02	990.071.00	991.063.00
						790.500.01	651.999.03	990.016.00	991.060.00

Straight router bits with insert knives for laminates

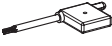
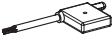


652

Straight trimmer bits with one replaceable knife fixed by Torx screw. For economical specialist applications requiring low down-time. The 29,5x9x1,5mm knives provide a 40mm cutting length when operating in multiple passes. For routing, trimming and grooving on board materials (laminated chipboards, worktop panels and MDF). For use on portable routers.

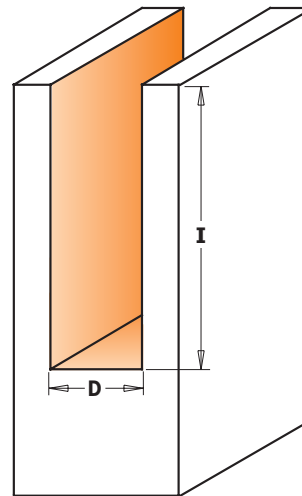
INSERT CARBIDE **Z1** **RH**


Drawings are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
12,7	29,5	89	652.627.11	£49.89	£59.87				
						790.295.09	990.072.00	991.061.00	

653

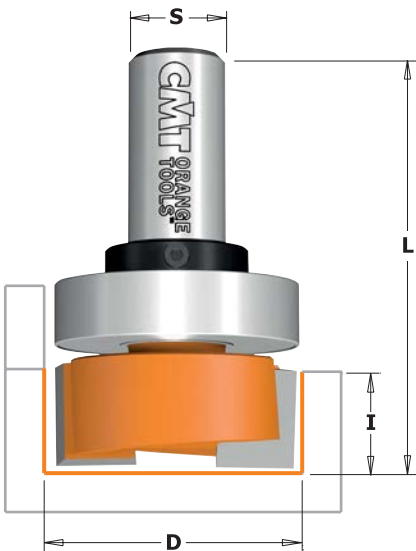
Straight router bits with on replaceable plunging knife and side knife fixed by a special Torx screw. The tool bodies are precisely balanced. For finishing, routing, plunging and grooving on board materials (laminated chipboards and MDF) and hardwood. For use on portable routers or CNC machining centres.



Drawings are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts					
15,8	48,3	112	653.159.11	£86.58	£103.90						
						790.483.12	990.074.00	990.075.00	790.075.00	990.072.00	991.061.00

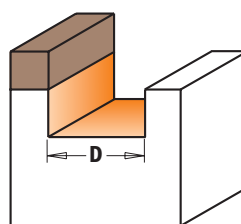
Mortising bits



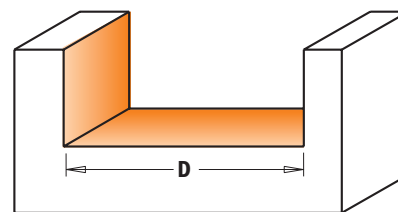
801B

Equipped with thick carbide tips and negative shear angle design, CMT mortising bits guarantee you flawless performance. Mortise perfect hinges with no splintered edges or rough bottoms. They also make an easy job on both natural wood and wood composites. Fit most popular mortising jigs. The CMT mortising bit with top bearing guide is the perfect bit for sign making or any kind of template work.

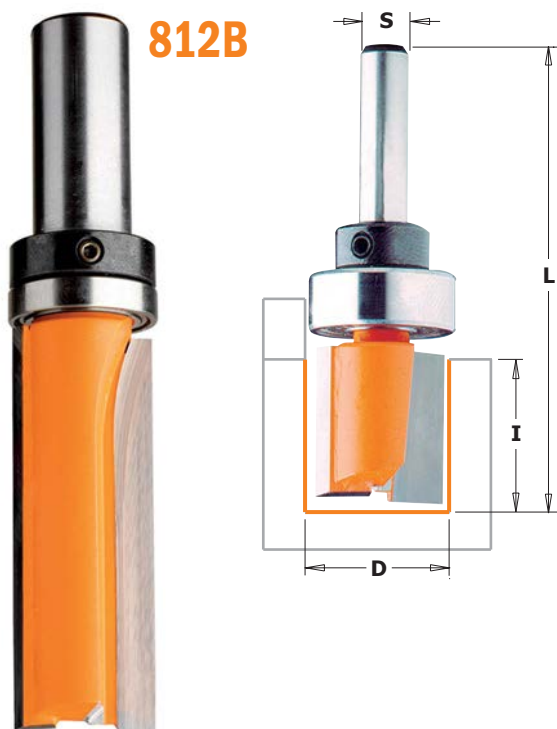
801



Drawings are 1:1 scale



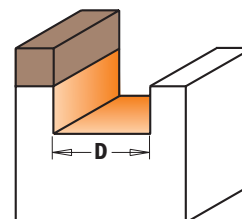
D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
12,7	19	54	801.127.11		£14.43	£17.32			
12,7	19	60		801.627.11	£14.43	£17.32			
15,8	19	57	801.158.11		£16.62	£19.94			
19	19	54	801.190.11		£16.77	£20.12			
19	19	57		801.690.11	£16.77	£20.12			
31,7	12,7	48	801.317.11		£21.06	£25.25			
31,7	12,7	54		801.817.11	£21.06	£25.27			
with top bearing									
12,7	6,35	46	801.128.11B		£13.64	£16.36	791.010.00	541.001.00	991.056.00
15,8	19	57	801.158.11B		£23.01	£27.61	791.009.00	541.001.00	991.056.00
19	19	54	801.190.11B		£23.64	£28.37	791.004.00	541.001.00	991.056.00
31,7	12,7	54		801.817.11B	£28.92	£34.70	791.015.00	541.002.00	991.056.00



811B

Whether you are a full time professional or a part time woodworking enthusiast, discover the unlimited possibilities of template routing with a CMT pattern bit. Pair up these double fluted bits with your choice of template to produce cabinet and furniture pieces, signs, toys and any other creative projects. Carbide tipped to last longer, CMT pattern bits are equipped with top bearing for working with the bearing above the wood piece. This gives you a clear view of what you are routing so you can work confidently and accurately.

Safety tips: Make sure your router is in top condition. The template must be securely fastened to the workpiece. When choosing a bit, carefully consider the thickness of the template and all the implications of the cut. Opt for the shortest bit possible for the project you are working on.



Drawings are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
8	25,4	70	811.081.11B*		£29.01	£34.81			
12,7	19	57,2	811.127.11B		£25.92	£31.10	791.010.00	541.001.00	991.056.00
14,2	14,2	57,2	811.142.11B		£27.69	£33.23	791.010.00	541.001.00	991.056.00
15,8	12,7	58	811.159.11B		£25.83	£31.00	791.009.00	541.001.00	991.056.00
15,8	19	66,5	811.158.11B		£29.37	£35.24	791.009.00	541.001.00	991.056.00
19	20	57,2	811.191.11B		£27.96	£33.55	791.009.00	541.001.00	991.056.00
19	25,4	63,5		811.690.11B	£32.82	£39.38	791.004.00	541.001.00	991.056.00
19	25,4	63,5					791.011.00	541.002.00	991.056.00
long series									
12,7	31,7	70	812.127.11B		£27.21	£32.65			
19	38,1	82,5		812.690.11B	£36.36	£43.63	791.010.00	541.001.00	991.056.00
							791.011.00	541.002.00	991.056.00

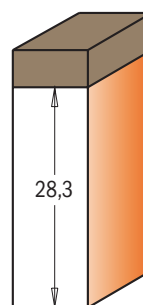
* This item requires a slightly larger bearing than its cutting diameter



Pattern router bits with insert knives for laminates

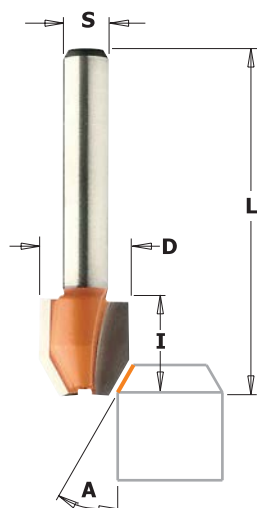
656

This bit type is equipped with top bearing for template use. For finishing, routing and grooving in board materials (laminated chipboards, MDF) and hardwood. For use on portable routers or CNC machining centres.



Drawings are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts				
19	28,3	79	656.691.11	£84.96	£101.95					
						790.283.12	990.075.00	991.061.00	791.011.00	541.002.00
										991.056.00

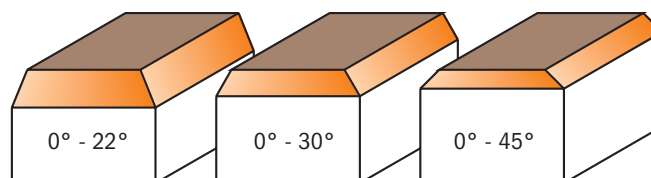


821



Work to your highest standards with the CMT combination trimmer bits. Now you can cut, trim and bevel all laminated without changing the bits. Achieve great results in straight or angled cuts on both soft and hardwood. Three popular sizes, each with carbide-tipped cutting edges for efficient bevel and straight trimming.

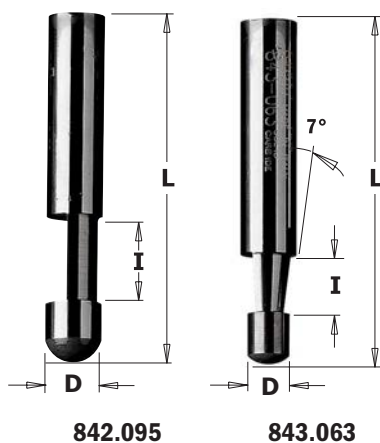
Notice: these bits must be used with an edge, separate guide or fence.



Drawings are 1:1 scale

A	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.
0° - 22°	12	12,7	44,5	821.022.11	£17.73	£21.28
0° - 30°	12	12,7	44,5	821.030.11	£17.73	£21.28
0° - 45°	12	12,7	44,5	821.045.11	£17.73	£21.28

Combination trimmer bits



842-843

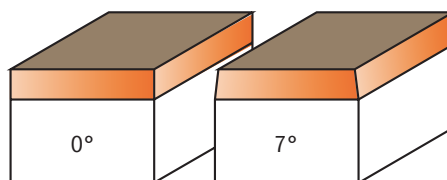


Work to your highest standards with the CMT combination trimmer bits. Now you can cut, trim and bevel all laminated without changing the bits.

Achieve great results in straight or angled cuts on both soft and hardwood.

Three popular sizes, each with carbide-tipped cutting edges for efficient bevel and straight trimming.

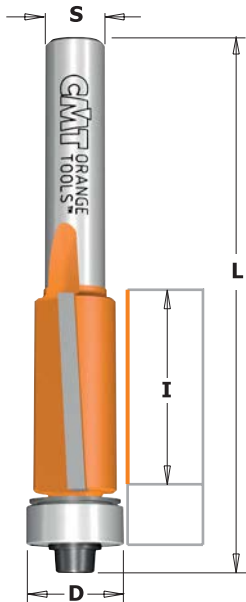
Notice: these bits must be used with an edge, separate guide or fence.



Drawings are 1:1 scale

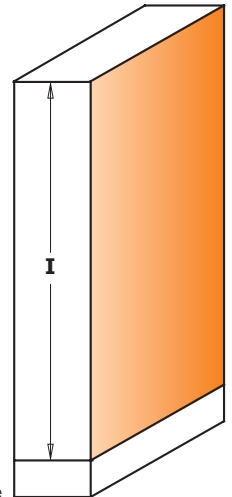
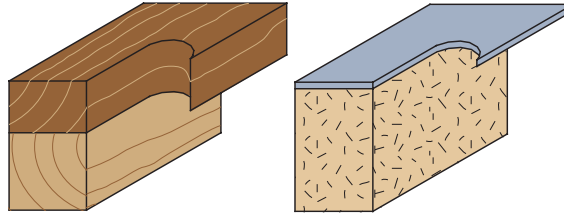
A	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.
0°	6,35	9,5	38,1	842.095.11	£11.25	£13.50
7°	4,76 - 6,35	6,35	38,1	843.063.11	£12.72	£15.26

Flush trim bits

**806**

We have designed a series of truly indispensable bits available in a wide range of sizes for your woodworking needs and your most difficult projects. For precision work on laminates or quick template work with excellent finishing.

Shop tips: these bits are excellent for making through mortises. Use a straight bit (#711.130.11) to groove the through mortise area, then use the drill bit (#517.130.31) to bore a through hole at the end of the groove. Turn the workpiece over to end the mortise. Use the flush trim bit with a cutting length slightly longer than the fillet, following the groove made on the opposite side of the workpiece with the ball bearing guide.



Drawings are 1:1 scale

I mm	D mm	L mm	α	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
12,7	9,5	55,5	0°	806.096.11		£19.35	£23.22
25,4	9,5	68,2	0°	806.095.11		£20.82	£24.98
25,4	12,7	70,7	-3°	806.127.11		£20.82	£24.98
25,4	12,7	86,6	-3°		806.627.11	£21.63	£25.96
38,1	12,7	94	0°		806.629.11	£28.11	£33.73
50,8	12,7	104	0°		806.630.11	£30.45	£36.54

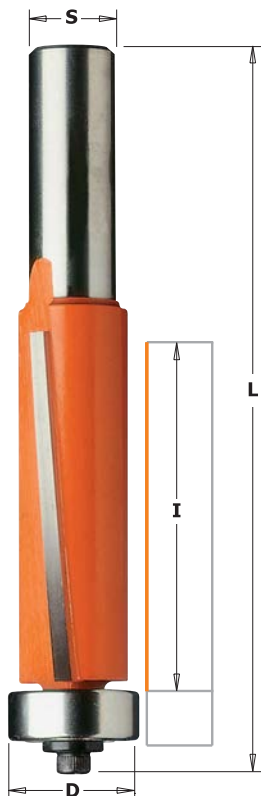
Spare parts



990.422.00	791.002.00	990.058.00
990.422.00	791.002.00	990.058.00
990.423.00	791.003.00	990.058.00
990.423.00	791.003.00	990.058.00
990.423.00	791.003.00	990.058.00
990.423.00	791.003.00	990.058.00

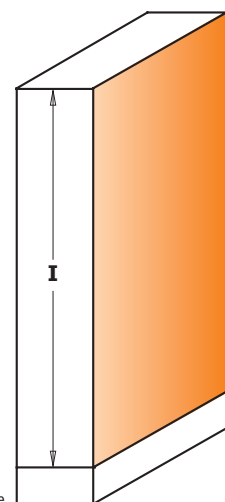
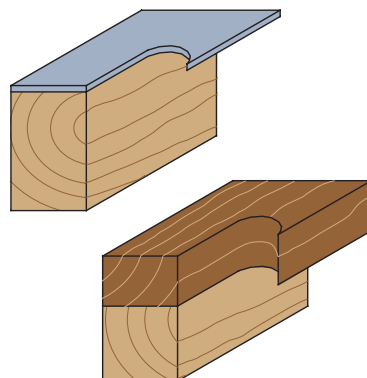
Spare parts 991.057.00 3/32" hex key for screw (990.058.00)

Super-duty flush trim bits

**806**

These new super duty bits represent the finest of the extensive line of CMT flush trim bits with ball bearing guides. A negative shear angle cutting edge and 19mm cutting diameter set CMT flush trim bits apart from standard bits. Work quickly and safely to get a superior finishing with absolute minimal chipping.

Safety tips: dust and chips from laminate materials are hazardous to your health and safety. Always wear a dust mask and eye protection when routing.



Drawings are 1:1 scale

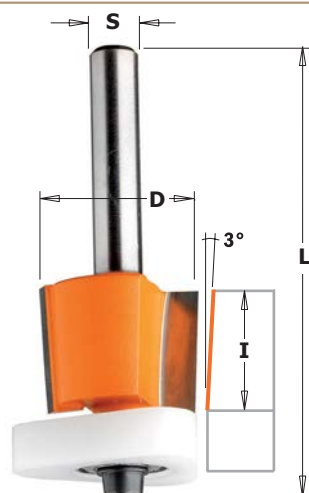
I mm	D mm	L mm	α	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
25,4	19	73,9	-5°	806.191.11		£29.58	£35.50
25,4	19	86,5	-5°		806.691.11	£28.92	£34.70
50,8	19	109,5	-3°		806.690.11	£36.12	£43.34

Spare parts



791.004.00	541.550.00	990.058.00
791.004.00	541.550.00	990.058.00
791.004.00	541.550.00	990.058.00

Spare parts 991.057.00 3/32" hex key

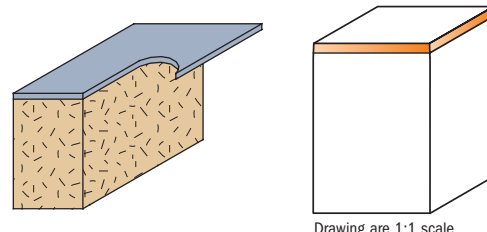
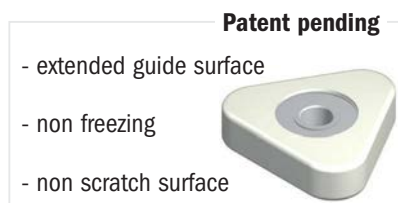


807

The new 3-in-1 flush trim bits with Delrin® triangular bearings is your best partner for laminate trimming. In fact it solves 3 of the most common problems that may occur during flush trimming in cabinet shops:

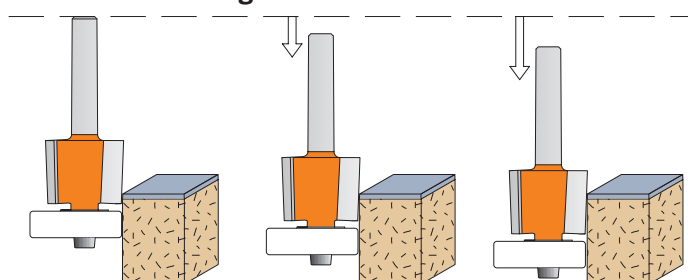
- 1) the freezing of the bearings from glue; in fact the Delrin® with his anti-stick properties greatly reduces the likelihood of bearing failure;
- 2) the extended guide surface of the new Delrin® bearing will perfectly match the work surface without scratching like the steel bearing and guarantees the maximum stability;
- 3) The shear angle cutting edge reduces the need for filing.

3-in-1 bits are ideal on plastic laminates, as well as on aluminium laminates!



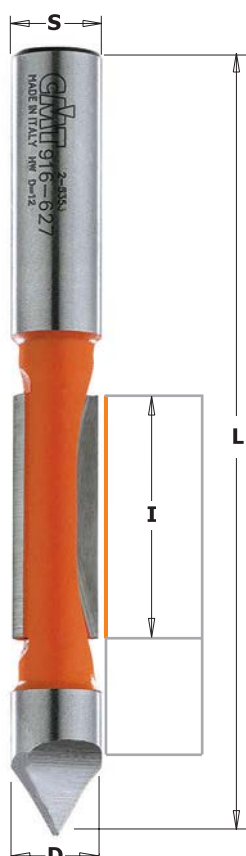
Perfect trimming with the conical edges!

Thanks to the innovating conical edges of this bit you will always get perfect cuts even after resharpening. In fact the most popular problem you have with the standard flush trim bits is the undersize diameter after resharpening, which leaves the mark on the material; now with the new CMT construction you could resharpen up to six times without any problem. Remember to adjust your bit up or down as illustrated.



I mm	D mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
12,7	12,7	54,2	807.128.11		£22.35	£26.82				
15,87	19	65,7		807.690.11	£30.78	£36.94	990.422.00	791.042.00	990.058.00	991.057.00
							990.423.00	791.043.00	990.058.00	991.057.00

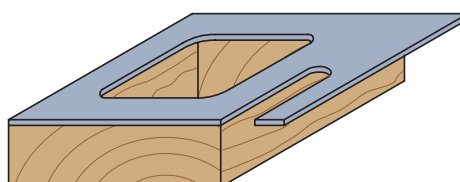
Panel pilot bits with guide



816

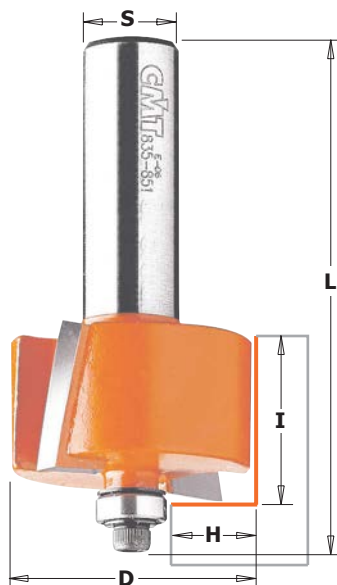
How much time do you end up spending making openings in paneling, drywall, siding, doors or windows? With the CMT panel pilot bit, the job just got quicker. The point plunges smoothly and easily and the carbide edges cut clean and fast. All of this adds up to accurate cuts in less time and with less effort - great for trimming formica, veneer and other laminates.

Safety Tips: Always use extra caution when working near electrical outlets and boxes - always disconnect the current. Make sure the bit does not go so deep as to cut the wires.



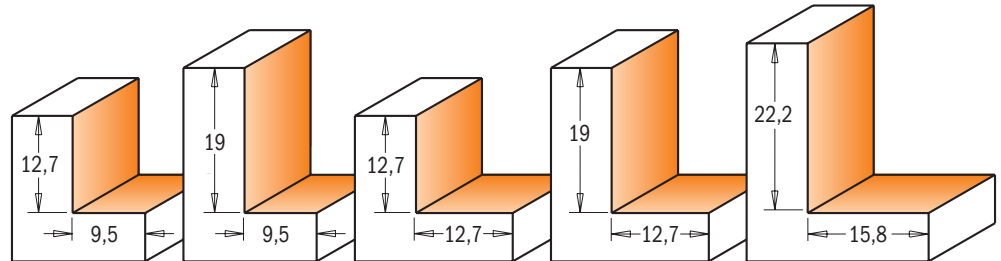
D mm	I mm	L mm	Z	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.
6,35	19	64	1	816.064.11	£15.51	£18.61

Rebating bits



835

CMT carbide-faced rabbeting bits are fast and accurate - you can quickly produce inset doors and drawer fronts, make strong rabbet joints, mill perfect tongue and groove joints or any number of other jobs that before were time consuming and difficult. You can even re-groove old window frames to fit insulated glass panes with the extra long CMT 19mm (3/4") rabbeting bit. Other possibilities are illustrated below and on the following pages. Look at our slot cutters and round over bits for ideas on how to put extra finishing touches on all your grooving and rabbeting projects.



Drawings are 1:1 scale

H mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat	Inc. Vat	Spare parts		
9,5	31,7	12,7	58,4	835.317.11		£26.34	£31.61	990.423.00	791.003.00	990.058.00
12,7	34,9	12,7	59,4	835.350.11		£28.44	£34.13	990.422.00	791.002.00	990.058.00
12,7	34,9	19	65,8		835.851.11	£30.78	£36.94	990.422.00	791.002.00	990.058.00
15,8	50,8	22,2	77,8		835.990.11	£44.07	£52.88	990.408.00	791.010.00	990.058.00

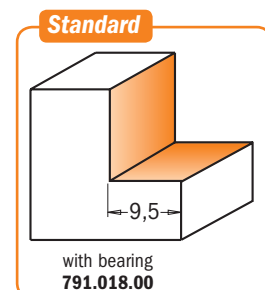
Spare parts 991.057.00 3/32" hex key 799.503.00 19,05mm bushings 541.514.00 2mm spacer (835.990.11)

Rebating bits with insert knives

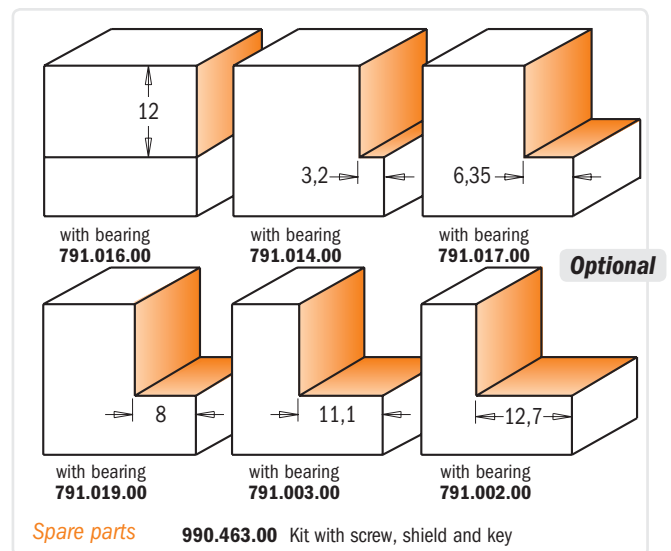


660

Rabbeting bits with two replaceable knives fixed by special Torx screws. The blades are 4 sided sharpened and gives high economy of your work with board materials. Rabbeting bits are equipped with the ball bearing guides for rabbeting width H= 9,5mm. Optionals you can choose bearings for rabbeting width 12,7 - 11,1 - 8 - 6,35 - 3,2 - 0mm. For chipboards, hard wood or MDF. For use on portable Routers.



Drawings are 1:1 scale



Spare parts 990.463.00 Kit with screw, shield and key

H mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat	Inc. Vat	Spare parts			
9,5	34,9	12	55	660.351.11		£57.36	£68.83	790.120.00	990.075.00	991.061.00	791.018.00
9,5	34,9	12	65		660.851.11	£57.36	£68.83	790.120.00	990.075.00	991.061.00	791.018.00

Spare parts 990.400.00 Ø3.2/Ø7mm shield for M3 screw 990.051.00 M3x6mm TCEI screws 990.054.00 M3x16mm TCEI screws
541.552.00 Ø3.25/Ø15.8mm shield for M3 screw 990.053.00 M3x10mm TCEI screws 991.062.00 Hex key 2,5mm



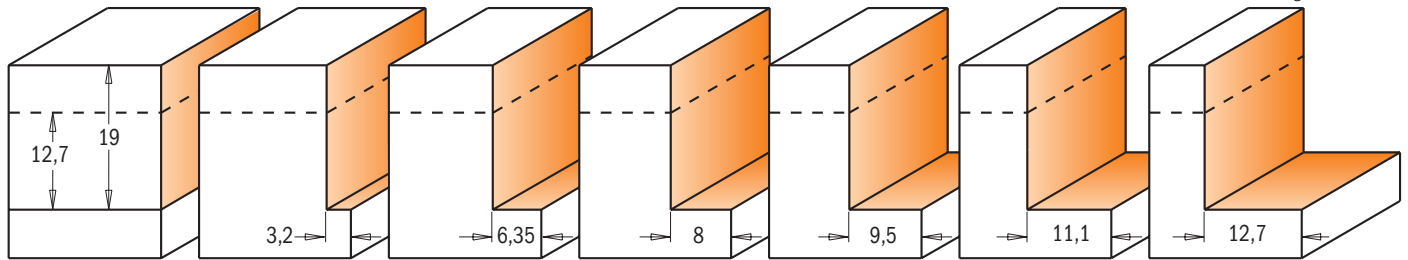
835.001

CMT rabbeting sets allow you to make a limitless number of cuts by adjusting the cutting height on your router and changing the bearing on the bit.

791.703.00



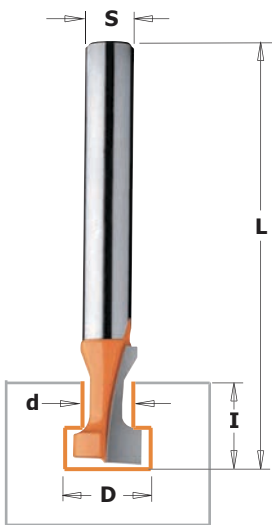
BE SURE to keep the black bearing washer right side up to correspond with the bearing rotation when re-assembling the bearing. Improper re-assembly can cause the screw to come loose. Each set comes complete with one rabbeting bit and six interchangeable ball bearing guides.



Drawings are 1:1 scale

H mm	D mm	I mm	ORDER NO. S=Ø6,5mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
0-12,7	34,9	12,7	835.001.11		£60.51	£72.61
0-12,7	34,9	19		835.502.11	£62.85	£75.42

Keyhole bits

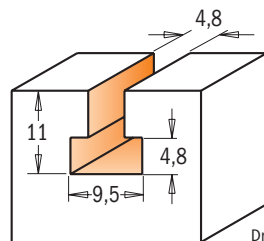


850.001

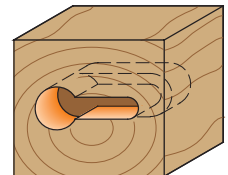
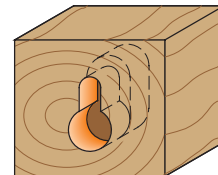
With the CMT keyhole bit you can make holes that keep your frames, plaques or any wall hanging perfectly straight and attached to the wall. The bit bores an entry hole in the wood, then proceeds to cut a 4,8mm hole and finishes by boring a larger opening under the surface. The perfect way to securely mount wall hangings on screws and nails.

Safety Tips: Be sure the workpiece is securely fastened to the router table or work bench.

Shop Tips: Recommended for use with a plunge router.



Drawings are 1:1 scale

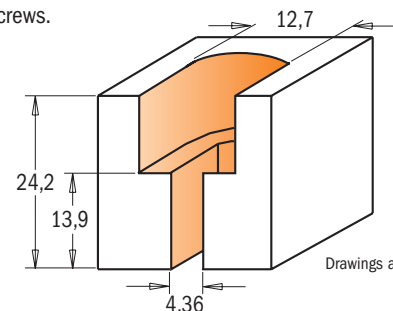
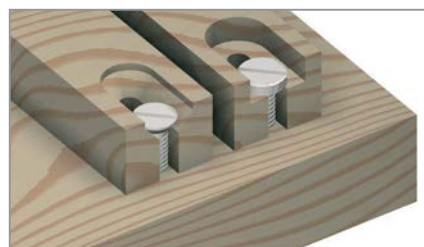
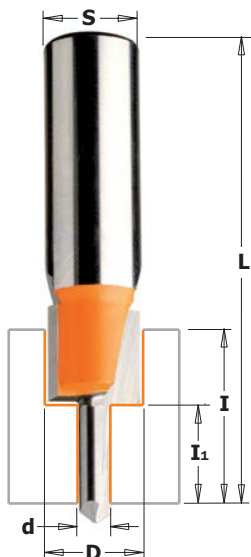


D mm	d mm	I mm	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.
9,5	4,8	11	54	850.001.11	£20.91	£25.09

Screw slot bits

813.601

This bit features 12,7mm shank and is suitable for counterbored screws.



Drawings are 1:1 scale

D mm	d mm	I1 mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
12,7	4,36	13,9	24,2	63,5	813.601.11	£33.93	£40.72

Three wing slot cutter set

CMT ORANGE TOOLS™

800.506

Create slots, grooves and rabbets in materials from 3,2mm to 18mm in depth by using the adjustable CMT Three Wing slot cutter set. See chart below for details on spacing and correct cutter combinations. Ideal for biscuit joints and milling perfect tongue and groove joints.

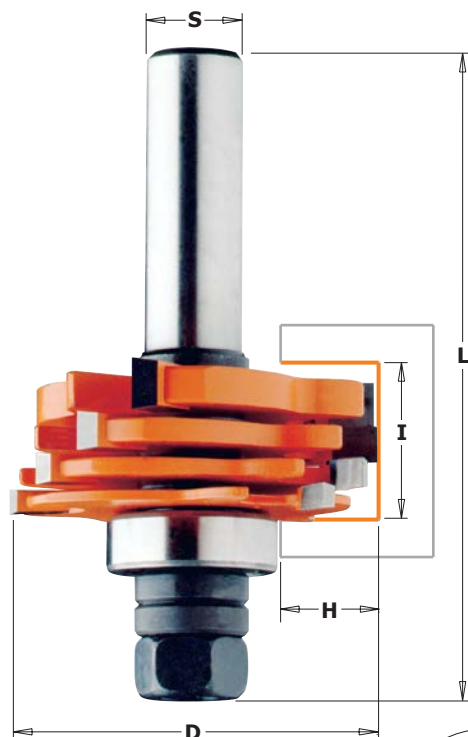
This set includes:

- 4 carbide tipped cutters 3,2mm, 4mm, 4,8mm, 6,4mm
- 1 arbor 12mm or 12,7mm
- 1 ball bearing (22mm) for 12,7mm cut
- 17 shims: (8x0,1mm - 4x0,5mm - 3x1mm and 2x4mm)

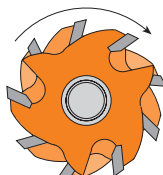
Safety tips: Never use the slot cutter set without shims between the cutters.

The distance between the cutters can vary from 1mm to 1,7mm. A shim must also be positioned between the ball bearing and the cutters.

Shop tips: The bearings kit 791.711.00 allows to make 6,35 and 9,5mm cutting depth.

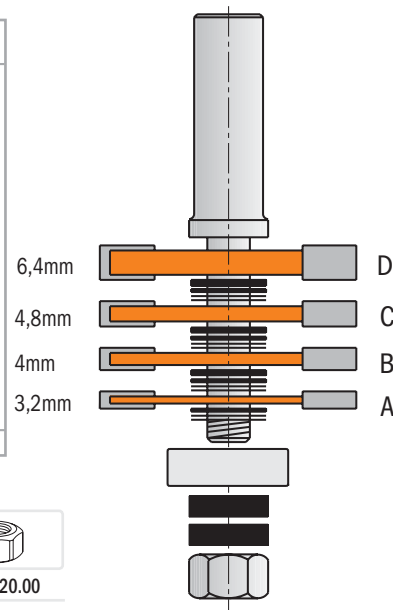


Note: The carbide edges of the cutters should never touch; arrange the shims as illustrated below. Use only the thicknesses provided in the set. Be sure all cutters are assembled in the proper right rotational direction below. Looking down the arbor the cutters will turn clockwise.



Cutter combinations	Cutter height	
	mm	mm
A	3,2	
B	4	
C	4,8	
D	6,4	
A + B	6,4	a 7,1
A + C	7,2	a 7,9
A + D	8,8	a 9,5
B + C	8	a 8,7
B + D	9,6	a 10,3
C + D	10,4	a 11,1
A + B + C	10,4	a 11,8
A + B + D	11,9	a 13,3
A + C + D	12,7	a 14,1
B + C + D	13,5	a 14,9
A + B + C + D	15,9	a 18

Use shims to adjust cut width: MIN.1mm - MAX 1,7mm



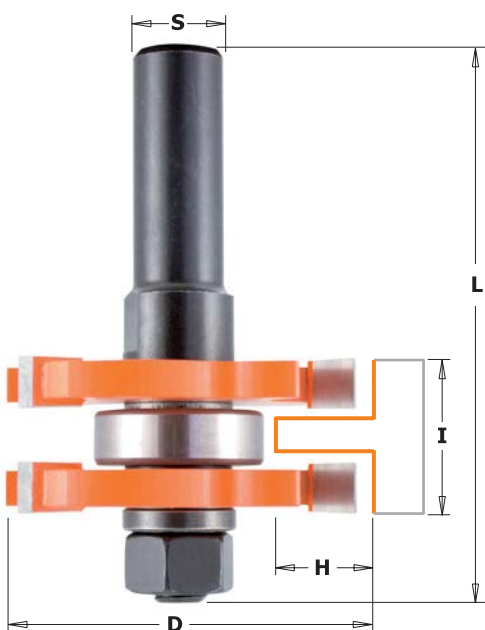
I mm	D mm	H mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts	
3,2-18	47,6	12,8	81	800.506.11	£59.92	£71.90		
							791.005.00	990.020.00

Spare parts

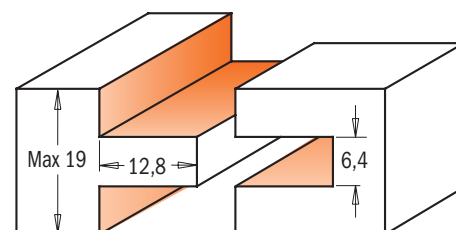
824.128.00	Ø12,7mm arbor with shims
541.515.00	0,1mm spacer
541.517.00	0,5mm spacer

541.518.00	1mm spacer
541.501.00	4mm spacer
791.711.00	Two bearing kit (28,5 and 34,9mm) for slot cutter

Tongue and groove set


800.626

Make tongue and groove joints without the complicated process of taking apart and reassembling bits. The new CMT tongue and groove set gives you one bit to groove the slot and a separate bit to mill the tongue. Or use your imagination and put them to work individually on other projects. Makes tongue and groove cuts in wood up to 19mm thick.



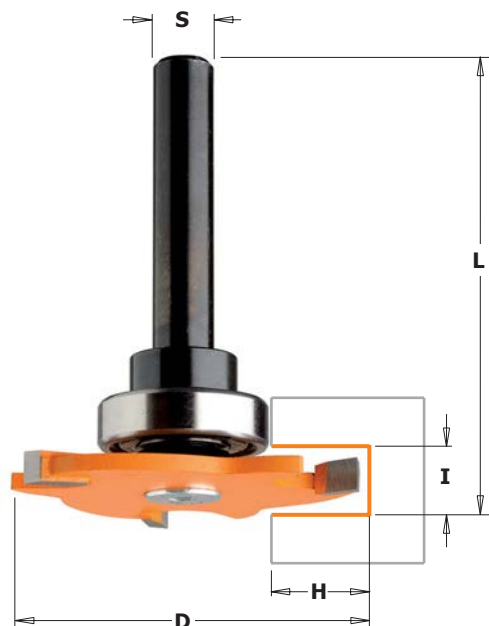
Drawings are 1:1 scale

I mm	D mm	H mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
19	47,6	12,8	71	800.626.11	£59.97	£71.96			
							791.005.00	822.364.11	990.020.00

Spare parts

824.131.00	Ø12,7mm arbor with shims
541.515.00	0,1mm spacer
541.516.00	0,3mm spacer

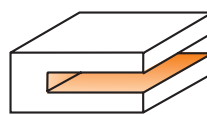
541.517.00	0,5mm spacer
541.518.00	1mm spacer



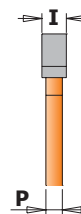
823B



The possible uses of this bit are almost: you can rout grooves and rabbets, T or dovetail joints on wood panels. Each bit has three carbide tipped cutters and has an orange coloured PTFE coating, it features anti-kickback design too. The 22mm bearing is included for a cutting depth of 12,8mm. The bit and the slot cutter are available also separately.

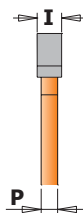
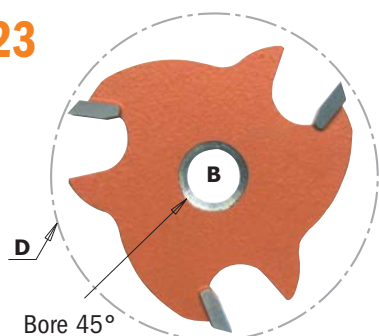


Drawings are 1:1 scale



I mm	P mm	D mm	H mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
3,2	1,27	47,6	12,8	57,6	823.332.11B	£33.93	£40.72
4	2,07	47,6	12,8	58	823.340.11B	£33.93	£40.72
6,4	4,45	47,6	12,8	61	823.364.11B	£33.93	£40.72

823



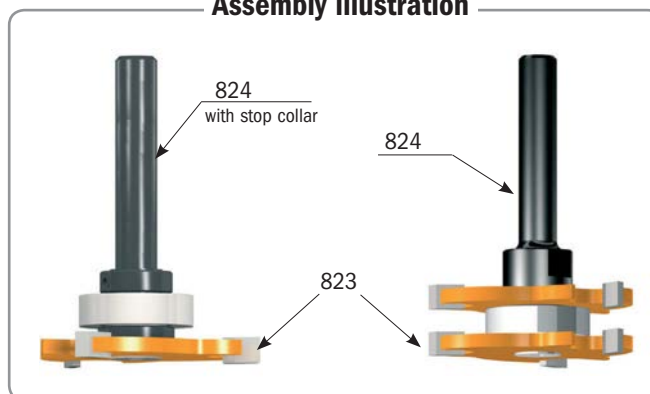
These three wing carbide tipped slot cutters feature anti-kickback three wing blade design and CMT's trademark orange PTFE Industrial Coating. All cutters feature an 8mm bore that fits CMT's arbors (items 824).

I mm	P mm	D mm	B mm	ORDER NO.	Ex. Vat.	Inc. Vat.
3	1,27	47,6	8	823.330.11	£18.63	£22.36
3,2	1,27	47,6	8	823.332.11	£18.63	£22.36
4	2,07	47,6	8	823.340.11	£18.63	£22.36
5	2,86	47,6	8	823.350.11	£19.05	£22.86
6,4	4,45	47,6	8	823.364.11	£19.44	£23.33



824

Assembly illustration



DESCRIPTION	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
① Slot cutter arbor with bearing and stop collar	824.061.10		£13.05	£15.66
② Slot cutter arbor with bearing		824.122.10	£9.68	£11.61

Spare parts	791.012.00 Ø8-22mm bearing	541.515.00 0,1mm spacer	990.055.00 M5x12mm TSPEI screw
	541.001.00 Stop collar for Ø6,35mm shanks	541.516.00 0,3mm spacer	
	541.002.00 Stop collar for Ø12,7mm shanks	541.517.00 0,5mm spacer	
	791.013.00 Ø12,7-22mm bearing	541.518.00 1mm spacer	



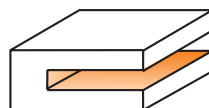
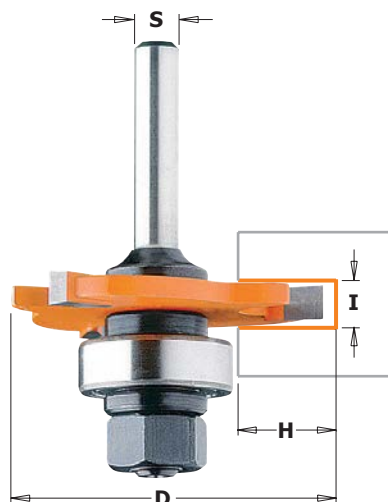
822A/B

Uses for the CMT three wing slot cutter are almost infinite. Cut slots and grooves for splines, biscuits, T-molding or tongue and groove joints.

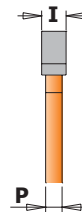
Every cutter features anti-kickback design, micrograin carbide tips and orange CMT trademark non-stick PTFE coating.

CMT slot cutters are available as a blade only or with your choice of a 6,35 or 12,7mm diameter arbor which includes a 22mm diameter bearing for a cutting depth of up to 12,7mm.

Note: For biscuit joints, use I=4mm slot cutter.



Drawing are 1:1 scale

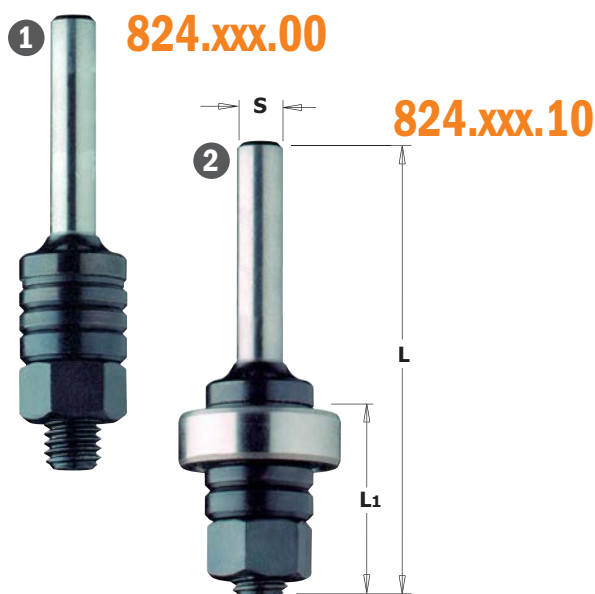


I mm	P mm	D mm	H mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
1,6	1,07	47,6	12,8	822.316.11A	822.316.11B	£28.35	£34.02
2	1,27	47,6	12,8	822.320.11A	822.320.11B	£28.35	£34.02
2,4	1,27	47,6	12,8	822.324.11A	822.324.11B	£28.35	£34.02
3,2	1,27	47,6	12,8	822.332.11A	822.332.11B	£28.35	£34.02
4	2,07	47,6	12,8	822.340.11A	822.340.11B	£28.35	£34.02
4,8	2,86	47,6	12,8	822.348.11A	822.348.11B	£28.35	£34.02
6	4,45	47,6	12,8	822.360.11A	822.360.11B	£29.16	£34.99
6,4	4,45	47,6	12,8	822.364.11A	822.364.11B	£29.16	£34.99

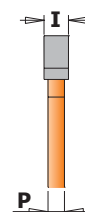
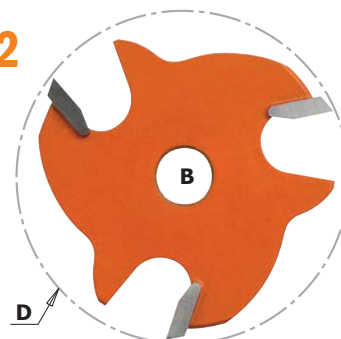
These three wing carbide tipped Slot Cutters feature anti-kickback three wing blade design and CMT's trademark orange P.T.F.E. Industrial Coating.

All cutters feature an 8mm bore that fits CMT's arbors (items 824).

I mm	P mm	D mm	B mm	ORDER NO.	Ex. Vat.	Inc. Vat.
1,6	1,07	47,6	8	822.316.11	£15.72	£18.86
1,8	1,27	47,6	8	822.318.11	£15.72	£18.86
2	1,27	47,6	8	822.320.11	£15.72	£18.86
2,2	1,27	47,6	8	822.322.11	£15.72	£18.86
2,4	1,27	47,6	8	822.324.11	£15.72	£18.86
2,5	1,27	47,6	8	822.325.11	£15.72	£18.86
2,8	1,27	47,6	8	822.328.11	£15.72	£18.86
3	1,27	47,6	8	822.330.11	£15.72	£18.86
3,2	1,27	47,6	8	822.332.11	£15.72	£18.86
3,5	2,07	47,6	8	822.335.11	£15.72	£18.86
4	2,07	47,6	8	822.340.11	£15.72	£18.86
4,8	2,86	47,6	8	822.348.11	£15.72	£18.86
5	2,86	47,6	8	822.350.11	£15.72	£18.86
6	4,45	47,6	8	822.360.11	£16.11	£19.33
6,4	4,45	47,6	8	822.364.11	£16.11	£19.33



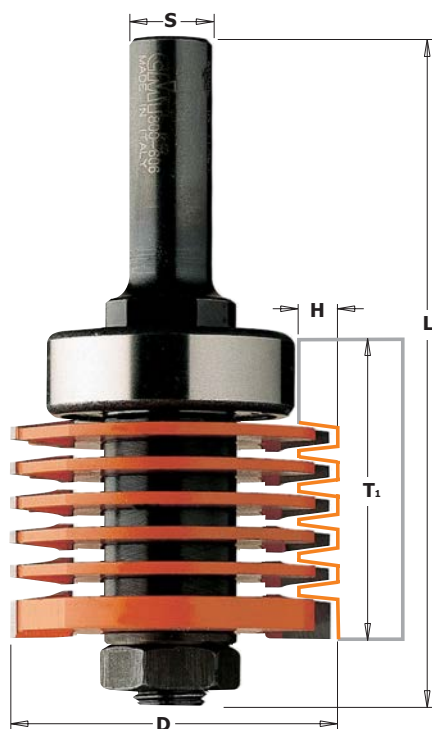
822



DESCRIPTION	L1 mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
① Slot cutter arbor without bearing	26	61	824.064.00		£9.48	£11.38
① Slot cutter arbor without bearing	26	67,5		824.127.00	£9.48	£11.38
② Slot cutter arbor with bearing	26	61	824.064.10		£13.05	£15.66
② Slot cutter arbor with bearing	26	67,5		824.127.10	£13.05	£15.66

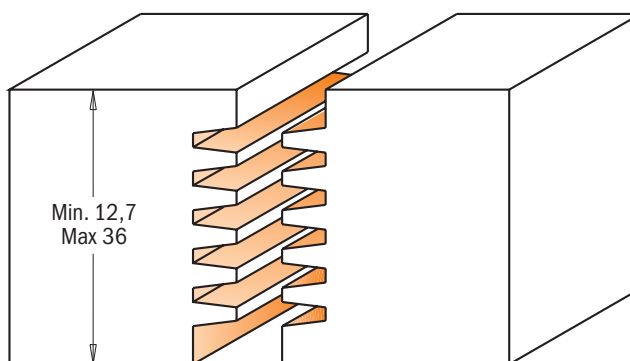
Spare parts
 791.005.00 Ø8-22mm bearing
 541.501.00 4mm spacer
 541.500.00 3mm spacer

541.518.00 1mm spacer
 990.020.00 M8 nut



800.606

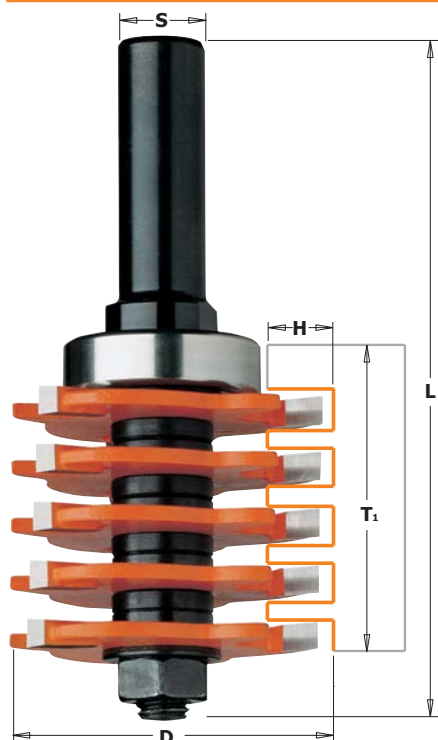
This versatile CMT finger joint bit lets you make one of the most incredibly strong side-to-side or end-to-end joints in all wood and wood composites. The tightness of the accurately cut joint and the maximum glue surface create a joint that is actually stronger than an unworked piece of wood. CMT's professional finger joint features two flute design, carbide teeth and six removable cutters so you can make joints in a wide range of stock thicknesses, from 12,7mm to 36mm. Ideal for molding manufacturers and furniture makers.



Drawings are 1:1 scale

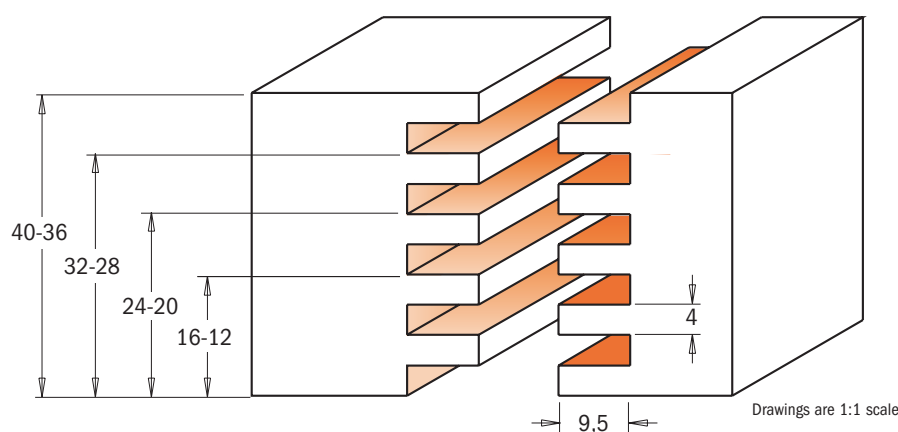
T ₁ mm	D mm	H mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat	Inc. Vat	Spare parts				
12,7-36	47,6	5,5	97	800.606.11	£85.42	£102.51	824.129.00	791.028.00	822.005.11	822.006.11	990.022.00
Spare parts		541.511.00	3mm spacer			541.513.00	0,1mm spacer				
		541.512.00	2mm spacer			990.458.00	Kit with spacers				

Finger & box joint bit



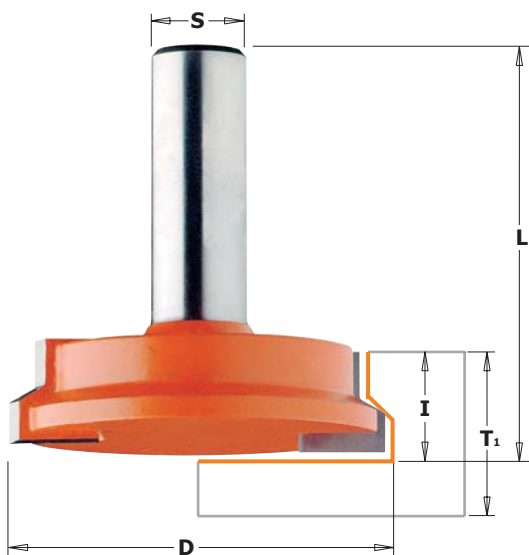
800.616

This router allows you to carry out accurate and functional finger joints in a much easier way. Without any adjustment you will be able to work woods with different thicknesses as indicated in the drawing. The bearing allows you to reach a 9,5mm cutting depth. For further cutting depths you need to use a fence.



T ₁ mm	D mm	H mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts				
12 - 40	47,6	9,5	97	800.616.11	£71.75	£86.10	824.130.00	791.027.00	822.340.11	990.020.00	
Spare parts		541.515.00	0,1mm spacer			Optional:	791.020.00	Ø38,1mm bearing (for depth 4,75mm)			
		541.519.00	5,8mm spacer				791.029.00	Ø34,9mm bearing (for depth 6,35mm)			
		990.403.00	1,6mm washer				791.015.00	Ø31,7mm bearing (for depth 8mm)			
		990.459.00	Kit with spacers				791.011.00	Ø19mm bearing (for depth 14,3mm)			

Drawer lock bits

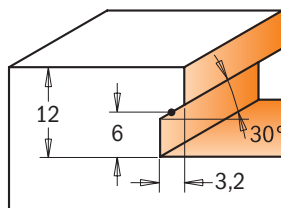


855.002 - 855.502

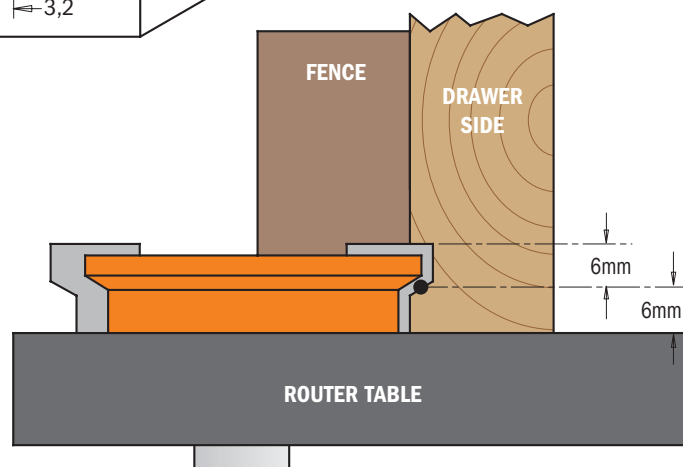
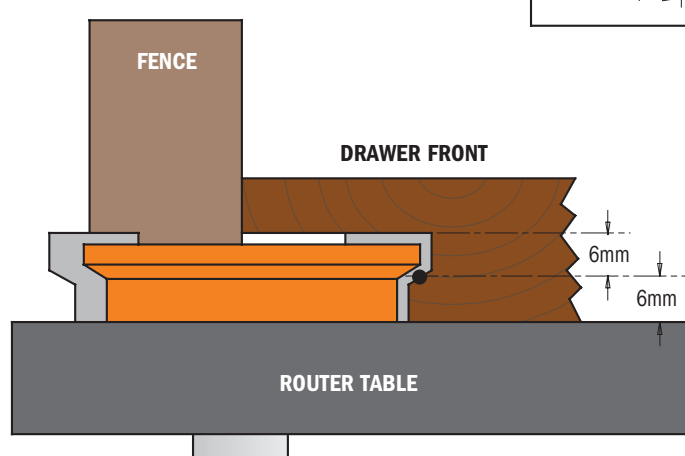
The key to success when constructing quality drawers is in the quality of the drawer lock bit you use. With CMT drawer lock bits you can make strong, perfectly fitting joints quickly and easily. As illustrated below, mill the drawer front with the inside face-down on the work table.

Mill the sides of the drawer with the inside face placed vertical to the bit and fence, and perpendicular to the table.

These bits are to be used on router tables only and are not to be used on hand-held routers.



Drawings are 1:1 scale



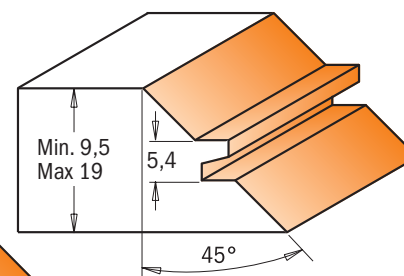
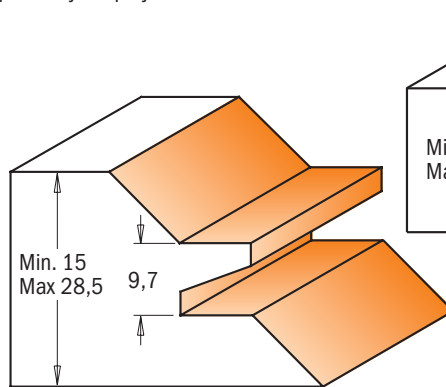
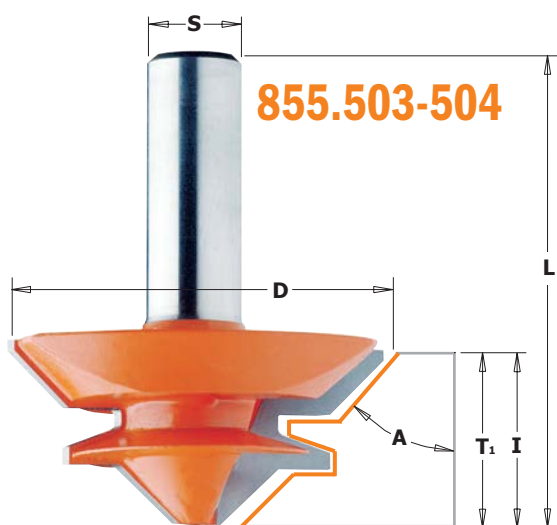
D mm	T ₁ min. mm	T ₁ max. mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
31,7	15,87	25,4	12,7	44,5	855.002.11		£30.12	£36.14
50,8	15,87	25,4	12,7	50,8		855.502.11	£52.50	£63.00

Lock mitre bits



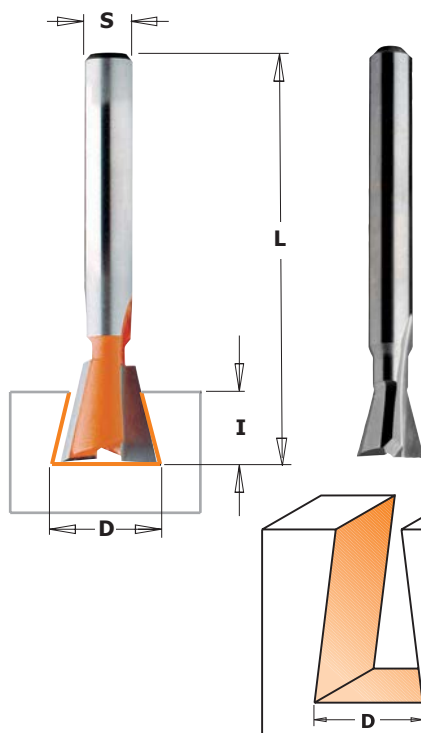
855.503-504

CMT lock miter bits are ideal for milling miter joints in 28,5mm stock. The quick and easy way to accurately create boxes, stretcher bars, frames and any assortment of right angle or parallel joint projects.



Drawings are 1:1 scale

D mm	I mm	A	T ₁ mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
50,8	22,2	45°	9,5 ÷ 19	60,3	855.504.11	£66.33	£79.60
70	31,7	45°	15 ÷ 28,5	69,9	855.503.11	£88.43	£106.11


818


The beautifully crafted dovetail joint is a classic that appeals to both professionals and novices alike. Admired for its attractiveness in box and exposed joint projects, the dovetail is remarkably strong and functional. CMT dovetail bits are available in many different sizes so you can stretch your creativity to the limit.

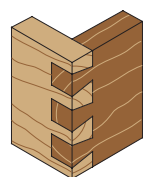
CMT dovetail bits are designed to fit all popular jigs including Leigh, Keller, JointTECH and Omnijig systems. You are sure to find the bit you are looking for in our vast selection of cutting sizes and angles.

Shop Tips: Two passes are recommended when routing dovetails with a template. Check that the dovetails have been cut through completely and smoothly before removing the workpiece. For even easier routing and less stress on your dovetail bit, run the first pass with a straight bit. Use a dovetail on your router table equipped with a fence to achieve difficult chamfer angles.

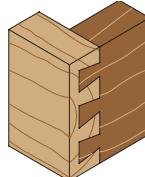
Safety Tips: If a dovetail bit jams while working, adjust the position of the bit in the collet and make sure the cutting depth is correct. Do not lift the router out of the template.

Here are a few of the beautiful dovetail joints you can produce using CMT bits

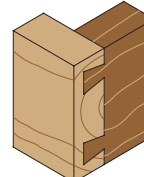
Through dovetail



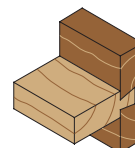
Half-blind dovetail



Variably-spaced dovetail



Sliding dovetail



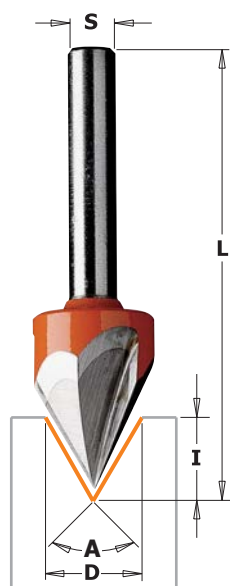
D mm	I mm	L mm	A	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
• 6,35	8,3	63,5	7,5°	818.064.11		£19.29	£23.15
• 9,5	9,5	52,5	9°	818.096.11		£22.68	£27.22
• 9,5	12,7	60,3	8°	818.097.11		£23.64	£28.37
12,7	10,3	60,3	18°	818.132.11		£19.11	£22.93
12,7	12,7	52,4	14°	818.128.11		£18.39	£22.07
12,7	12,7	63,5	14°		818.628.11	£18.39	£22.07
12,7	16	60,3	10°	818.133.11		£19.11	£22.93
12,7	20,6	69,8	8°	818.129.11		£18.39	£22.07
14,2	9,5	50,8	14°	818.142.11		£18.39	£22.07
16	22	60,3	7°	818.158.11		£25.53	£30.64
16	22	66,7	7°		818.658.11	£26.40	£31.68
19	19	77,6	14°		818.691.11	£27.21	£32.65
20,6	31,7	84,1	8°		818.706.11	£29.07	£34.88

Spare parts

990.005.00 M3x3mm TSEI screw

991.056.00 1,5mm hex key

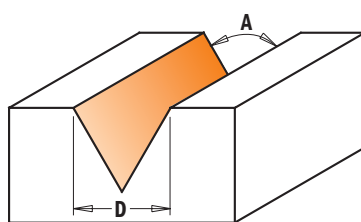
• HWM



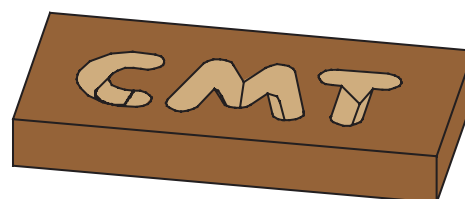
Laser point bit (60°) Z=3

858


This new bit lets you make delicate grooves and incisions with laser precision. Make one of a kind effects with single run 30° bevel edges. Three super sharp cutting edges and this perfectly balanced bit allow you to work with superior accuracy with no risk of burning. Raise the bit and produce a delicate fine point incision, or work the whole 12,7mm diameter to render bold highlighted lettering. Super strong steel shank and micrograin carbide cutting edges guarantee long lasting performance.



Drawing are 1:1 scale

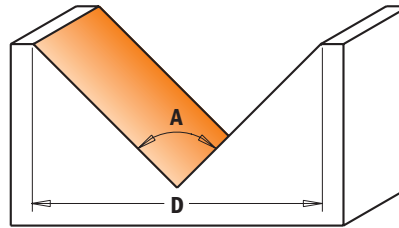
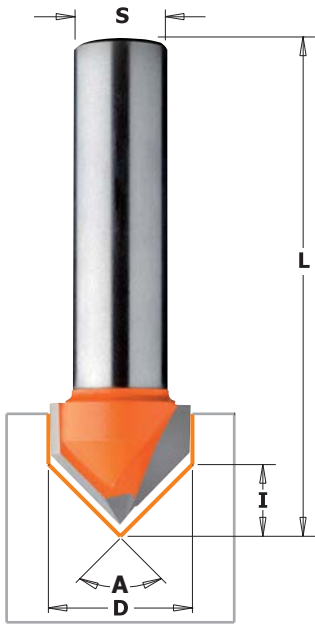


D mm	I mm	A	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.
12,7	11	60°	57,2	858.001.11	£25.11	£30.13

V-Grooving bits (90°)

**815**

These double cutting edge CMT bits offer an almost endless range of woodworking possibilities. Make clean, perfect cuts in panels, drawer fronts or even plasterboard panels; chamfer edges or engrave beautiful lettering.



Drawings are 1:1 scale

D mm	I mm	A	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
• 6,35	8	90°	38,1	815.064.11		£18.96	£22.75
12,7	12,7	90°	44,5	815.127.11		£18.48	£22.18
19	16	90°	63,5		815.690.11	£25.77	£30.92

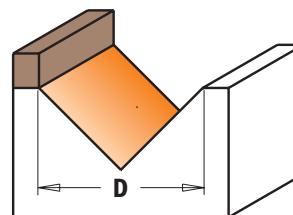
• HWM

V-Grooving bits (90°)

**815B**

In addition, CMT has versatile top bearing bits that allow for several template options of your choice. Like all CMT bits, they are made of super strength Fatigue Proof® steel with carbide-tipped cutting edges and are coated with our trademark orange PTFE non-stick coating. These bits are ideal for routing signs, or almost any project that is suitable for accurate template routing.

Tips: V-grooving bits can perfectly chamfer 45°. Two tools in one!



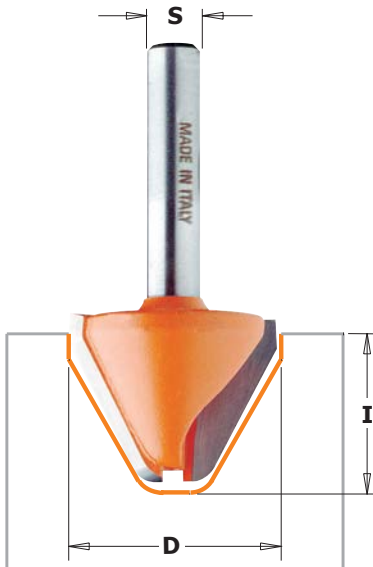
Drawings are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
12,7	12,7	44,5	815.127.11B		£24.21	£29.05			
19	16	63,5		815.690.11B	£37.17	£44.60	791.010.00	541.001.00	991.056.00
							791.011.00	541.002.00	991.056.00

Spare parts

Spare parts 990.005.00 M3x3mm TSEI screw

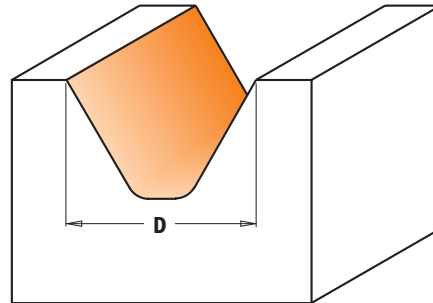
60° Lettering bit



849



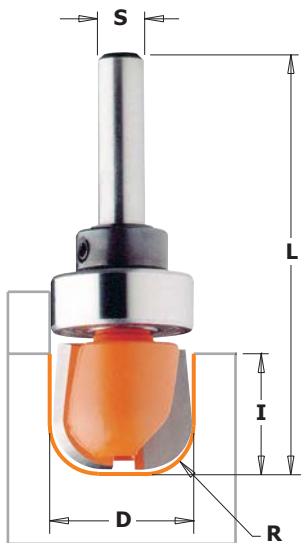
The ideal bit for routing signs. CMT has designed a bit with a 60° curved profile, a 3,2mm (1/8") radius and a flattened bottom to make relief letter-making easy and accurate. This exclusive design allows you to efficiently level off the area around the base of the letter and bevel the letter edges to eliminate aggravating splintering. Try our 60° lettering bit with top bearing guide to get even more precise decorative effects.



Drawings are 1:1 scale

D mm	I mm	A	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc.Vat.
25,4	19	60°	50,8	849.001.11	£29.31	£35.17

Bowl and tray bits



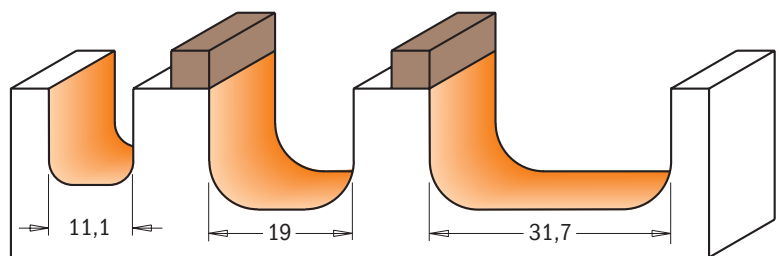
851B



This CMT bit is ideal for making bowls, trays, boxes, cutting boards or any other specialty or craft item. The round corner of the bit shapes the inner radius while the sides and bottom create the smooth flat surfaces. Makes pattern work quick and easy. For best results on jobs where accuracy is a priority we recommend using our top bearing bowl and tray bits shown at bottom of page. Bowl and Tray bits with top bearings are great for pattern work. Use them to create raised sign lettering, trays and many other items.



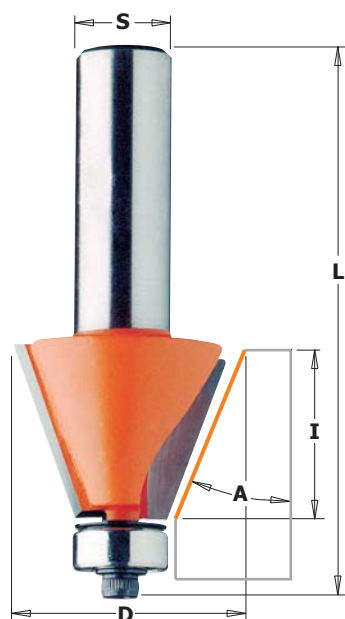
851



Drawings are 1:1 scale

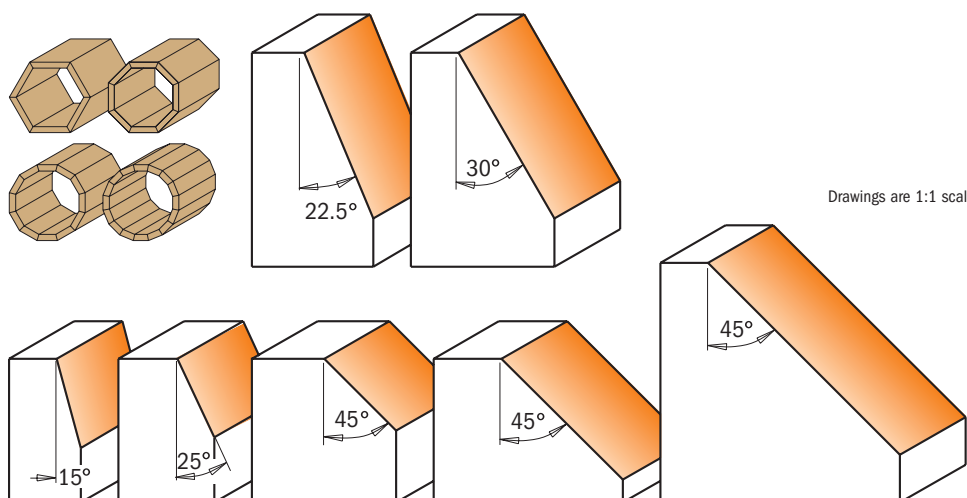
D mm	I mm	R mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
11,1	12,7	3,2	45,5	851.001.11		£25.92	£31.10			
19	16	6,4	54	851.002.11		£32.31	£38.77			
31,7	16	6,4	60,4		851.502.11	£35.07	£42.08			
with top bearing										
19	16	6,4	54	851.002.11B		£37.68	£45.22	791.004.00	541.001.00	991.056.00
31,7	16	6,4	60,4		851.502.11B	£43.89	£52.67	791.015.00	541.002.00	991.056.00

Spare parts 990.005.00 M3x3mm STEI screw



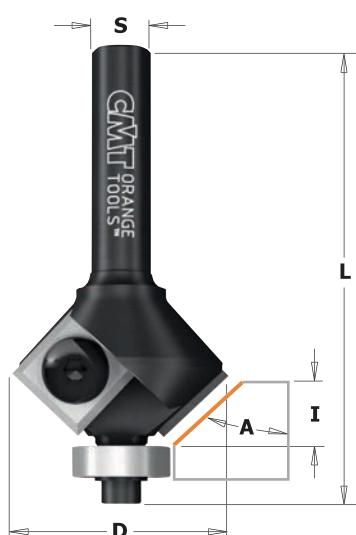
836 - 857

CMT chamfer bits can cut clean, accurate bevels and chamfers and are great for edge work or for making perfectly aligned multi-sided containers, boxes and other decorative projects. See illustration below for examples. Can be used for working larger scale projects such as beams and columns with excellent results.



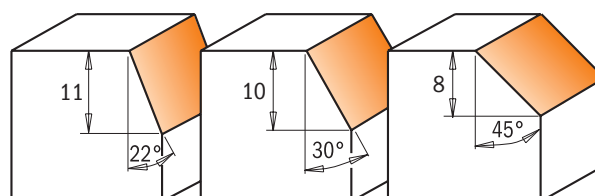
A	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
15°	19	11,5	54,9	836.130.11		£21.87	£26.24	990.423.00	791.003.00	990.058.00	991.057.00
25°	22,2	10	54,9	836.190.11		£23.10	£27.72	990.423.00	791.003.00	990.058.00	991.057.00
45°	31,7	9,5	53	836.280.11		£24.54	£29.45	990.423.00	791.003.00	990.058.00	991.057.00
45°	45	18	60,2	836.420.11		£30.93	£37.12	990.423.00	791.003.00	990.058.00	991.057.00
45°	45	18	66,5		836.920.11	£31.74	£38.09	990.423.00	791.003.00	990.058.00	991.057.00
45°	65	26	76,7		836.950.11	£56.04	£67.25	990.423.00	791.003.00	990.058.00	991.057.00
22,5°	31	22	71,1		857.502.11	£34.92	£41.90	990.423.00	791.003.00	990.058.00	991.057.00
30°	38,5	22	71,1		857.501.11	£38.64	£46.37	990.423.00	791.003.00	990.058.00	991.057.00

Chamfer Bits with Insert Knives



659

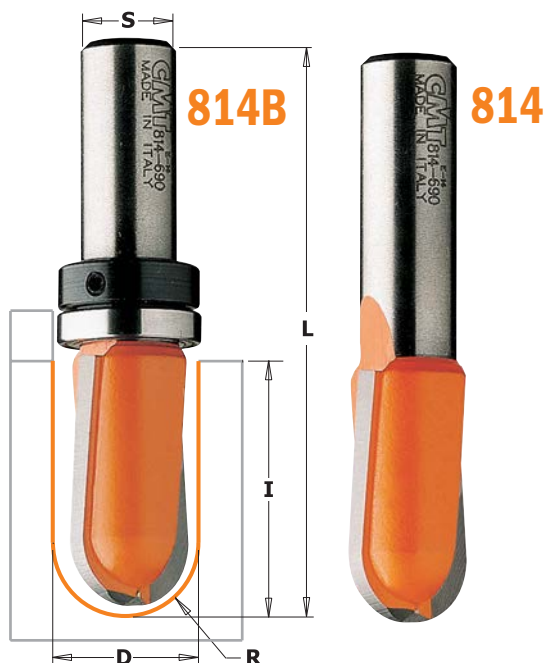
Bevel and Chamfer trim bits with two replaceable knives fixed by special Torx screws. The knives are 4 sided sharpened and gives three extra new edges. Guided bevel and chamfer trim bits are equipped with the ball bearing guides. For specialist applications requiring economy of replaceable tips. For precision work on laminates, MDF or for quick rounded edges in hard wood. For use on portable Routers or CNC machining centers.



A	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	Ex. Vat.	Inc. Vat.	Spare parts			
22°	25	11	65	659.023.11	£53.37	£64.04	790.120.00	990.075.00	791.006.00	
30°	28	10	66	659.031.11	£53.37	£64.04	790.120.00	990.075.00	791.006.00	
45°	29	8	60	659.046.11	£53.37	£64.04	790.120.00	990.075.00	791.022.00	

Spare parts
 990.400.00 Ø3.2/Ø7mm shield for M3 screw
 990.051.00 M3x6mm TCEI screw

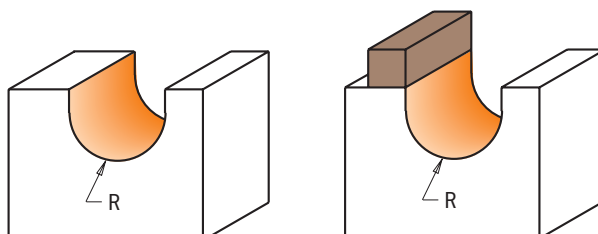
991.062.00 2,5mm hex key
 991.061.00 T15 Torx key



Personalize your doors, drawer fronts, panels or any surface you choose with your own signature motif. CMT round nose bits in solid carbide or with carbide tipped flutes let you create engraving in any wood or wood product. We offer a complete selection of diameters and cutting depths so you can achieve the effects you want. Mounted on your router table, you can work materials up to 31,7mm in depth.

For even more elaborate decorations, we also offer top bearing bits - use your own template with one of these bits to produce truly unique doors and drawer fronts. A favourite item for professional sign makers, craft makers and hobbyists.

Shop Tips: more than one pass is recommended when making cove edges. To prevent splintering, begin with a shallow initial pass and deepen gradually.



Drawings are 1:1 scale

R mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
• 1,6	3,2	9,5	50,8	814.032.11		£20.16	£24.19
• 3,2	6,4	12,7	50,8	814.064.11		£20.16	£24.19
4,75	9,5	6,4	50,8	814.095.11		£18.30	£21.96
6,35	12,7	9,5	50,8	814.127.11		£19.35	£23.22
8	15,8	31,7	73		814.660.11	£34.11	£40.93
9,5	19	31,7	73		814.690.11	£34.11	£40.93
12,7	25,4	31,7	73		814.754.11	£44.16	£52.99
with top bearing							
6,35	12,7	9,5	50,8	814.127.11B		£25.44	£30.53
8	15,8	9,5	50,8	814.160.11B		£28.26	£33.91
9,5	19	31,7	73		814.690.11B	£45.93	£55.12

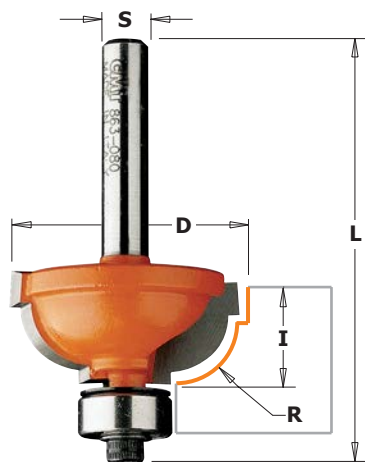
Spare parts



Spare parts 990.005.00 M3x3mm screw

• HWM

Cavetto Edge Mold Bits

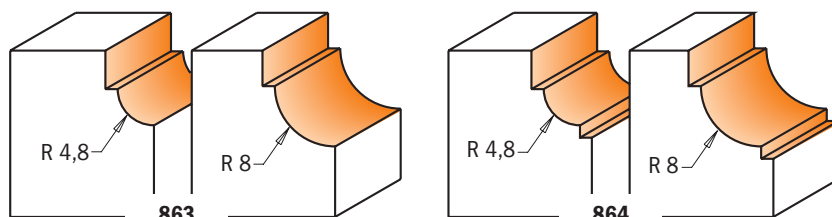


863 - 864



The cavetto bit cuts beautiful, traditional profiles, but you may also use just a portion of the bit to cut a more simple and cleaner cove edge. This bit add a special touch to furniture pieces by making traditional cove profiles with top and bottom fillet grooves in any kind of wood and wood composites.

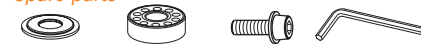
Important: always assemble the black bearing heat shield with the raised side up when changing the bearing. Improper assembly will cause the screw to come loose and the bearing to fall off when routing.



Drawings are 1:1 scale

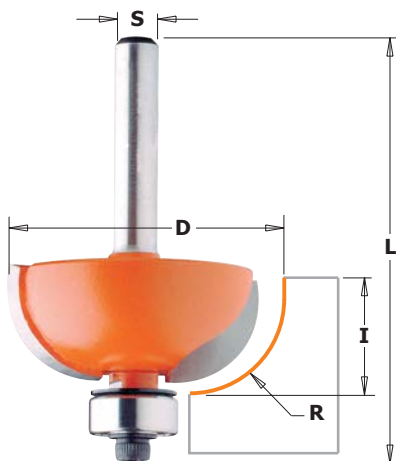
R mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
4,8	25,4	11,5	54,6	863.048.11		£29.73	£35.68
8	31,7	14,3	63		863.580.11	£33.78	£40.54

Spare parts



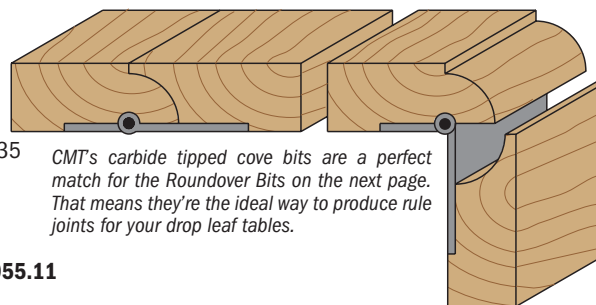
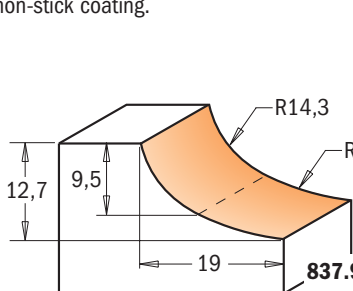
990.423.00	791.003.00	990.058.00	991.057.00
990.423.00	791.003.00	990.058.00	991.057.00

Cove Bits

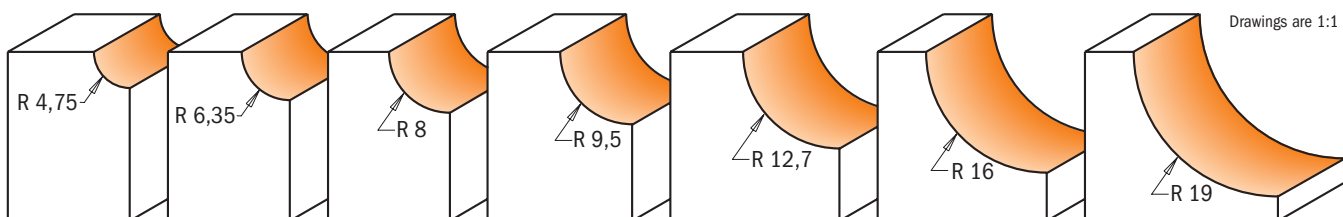


837

Make simple or elegant furniture, doors and drawer fronts by adding a final touch with CMT cove bits. Join them together with a CMT roundover bit and make perfectly fitting rule joints, ideal for drop leaf counter and table tops. These bits feature anti-kickback design, carbide-tipped cutting edges, Fatigue Proof® steel body and PTFE non-stick coating.



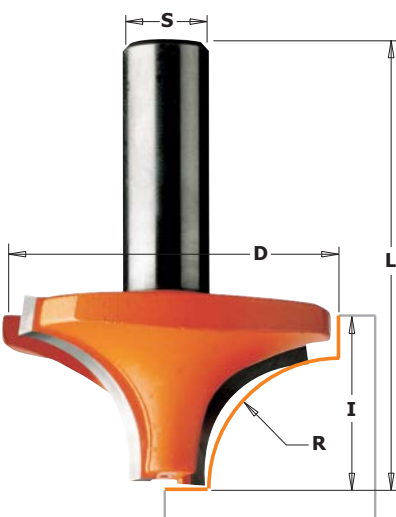
CMT's carbide tipped cove bits are a perfect match for the Roundover Bits on the next page. That means they're the ideal way to produce rule joints for your drop leaf tables.



Drawings are 1:1 scale

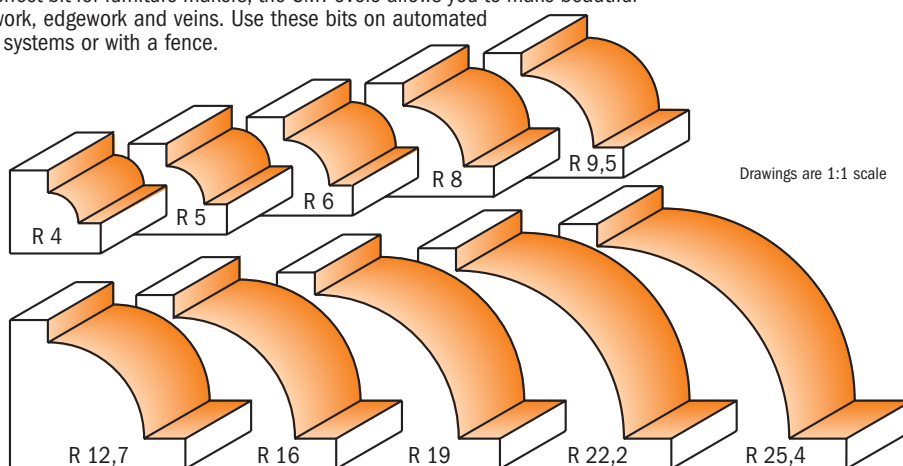
R mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
4,75	22,2	12,7	54,9	837.190.11		£24.30	£29.16				
6,35	25,4	12,7	54,9	837.222.11		£25.20	£30.24	990.423.00	791.003.00	990.058.00	991.057.00
8	28,7	12,7	54,2	837.254.11		£28.02	£33.62	990.423.00	791.003.00	990.058.00	991.057.00
9,5	31,7	12,7	54,2	837.286.11		£29.73	£35.68	990.423.00	791.003.00	990.058.00	991.057.00
12,7	38,1	15,5	64		837.850.11	£34.98	£41.98	990.423.00	791.003.00	990.058.00	991.057.00
16	44,5	18,5	67		837.950.11	£40.74	£48.89	990.423.00	791.003.00	990.058.00	991.057.00
19	50,8	22,2	70,7		837.951.11	£50.37	£60.44	990.423.00	791.003.00	990.058.00	991.057.00
14,3-35	50,8	12,7	61,2		837.955.11	£50.37	£60.44	990.423.00	791.003.00	990.058.00	991.057.00

Ovolo Bits



827

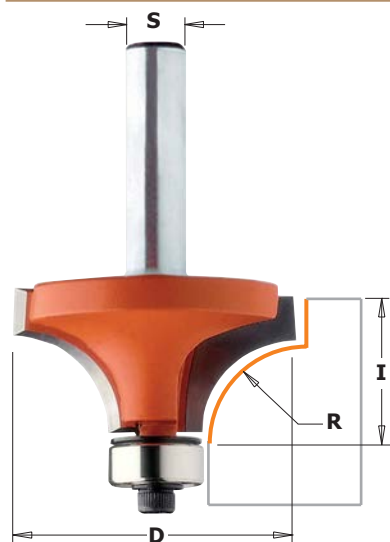
The perfect bit for furniture makers, the CMT ovolo allows you to make beautiful beadwork, edgework and veins. Use these bits on automated router systems or with a fence.



Drawings are 1:1 scale

R mm	D mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
5	21	12	43,8	827.050.11		£23.10	£27.72
6	23	12	43,8	827.060.11		£24.54	£29.45
9,5	31,7	15,8	47,6	827.095.11		£26.58	£31.90
12,7	38,1	19	50,8	827.127.11		£31.44	£37.73
16	44,5	22,2	60,3		827.660.11	£38.31	£45.97
19	50,8	25,4	63,5		827.690.11	£42.36	£50.83
22,2	57,1	28,5	66,6		827.722.11	£57.42	£68.90
25,4	63,5	33,3	71,4		827.754.11	£69.18	£83.02

Roundover Bits



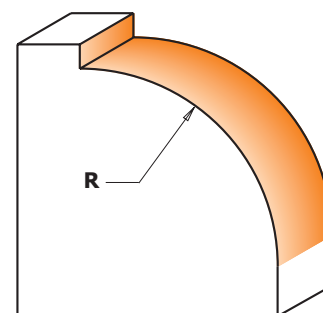
838

The smaller bearing on the CMT Beading bits makes a delicate inset at the base of the cut, giving you the advantage of an extra decorative option.

BE SURE to keep the black bearing washer right side up to correspond with the bearing rotation when reassembling the bearing. Improper reassembly can cause the bit to unscrew. All CMT roundover bits have a 12,7mm bearing diameter with the exception of the radius 28,6mm.

Shop Tips: The CMT 1.6mm radius roundover bit is excellent for finishing laminates. Virtually eliminates the filing required when using conventional trim bits.

Safety Tips: Use caution when working with large diameter bits and make more than one pass to gradually remove stock. Pay particular attention when routing small pieces; and always rout on a router table equipped with a fence.

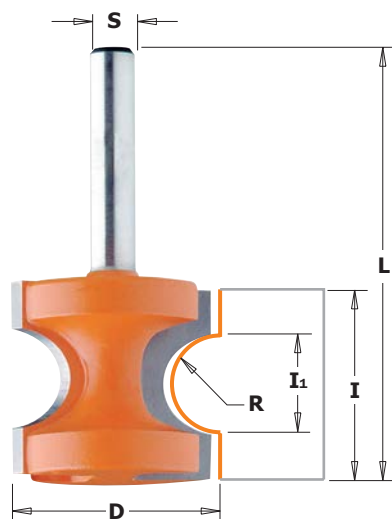


Drawings are 1:1 scale

R mm	D mm	I mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
1,6	15,9	12,7	838.160.11		£24.39	£29.27				
3,2	19,1	12,7	838.190.11		£25.02	£30.02	990.423.00	791.003.00	990.058.00	991.057.00
4,75	22,2	12,7	838.222.11		£26.82	£32.18	990.423.00	791.003.00	990.058.00	991.057.00
6,35	25,4	12,7	838.254.11		£27.96	£33.55	990.423.00	791.003.00	990.058.00	991.057.00
6,35	25,4	12,7		838.754.11	£28.44	£34.13	990.423.00	791.003.00	990.058.00	991.057.00
8	28,6	12,7	838.285.11		£28.68	£34.42	990.423.00	791.003.00	990.058.00	991.057.00
9,5	31,7	14	838.317.11	838.817.11	£31.92	£38.30	990.423.00	791.003.00	990.058.00	991.057.00
12,7	38,1	19	838.380.11		£36.60	£43.92	990.423.00	791.003.00	990.058.00	991.057.00
12,7	38,1	19		838.880.11	£37.26	£44.71	990.423.00	791.003.00	990.058.00	991.057.00
16	44,5	22		838.945.11	£45.21	£54.25	990.423.00	791.003.00	990.058.00	991.057.00
19	50,8	25,4		838.990.11	£46.59	£55.91	990.423.00	791.003.00	990.058.00	991.057.00
22,2	57,1	28,5		838.991.11	£63.18	£75.82	990.423.00	791.003.00	990.058.00	991.057.00
25,4	63,5	33,3		838.992.11*	£73.14	£87.77	990.423.00	791.003.00	990.058.00	991.057.00
28,6	76,2	38,1		838.993.11*	£91.53	£109.84	541.550.00	791.004.00	990.058.00	991.057.00

*Use only on router table

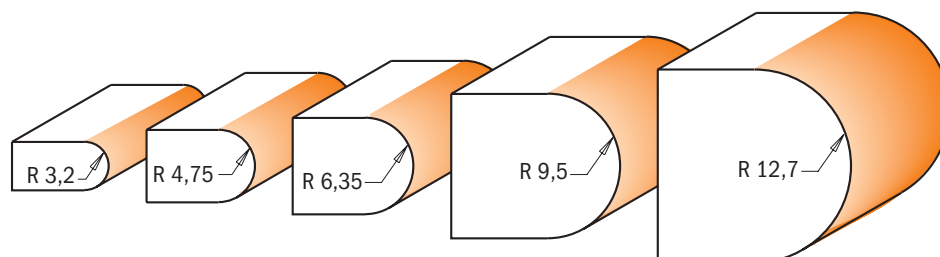
Bead & Bull Nose Bits



854

CMT bull nose bits create beautifully finished edges on stair treads, window sills and shelves in a pass. Add a final touch by using a cutter with a bead diameter wider than the stock thickness. CMT bull nose bits have bead diameters from 6,35mm (1/4") to 25,4mm (1") and each bit features carbide-tipped cutting edges, anti-kickback design and the orange PTFE non-stick coating trademark.

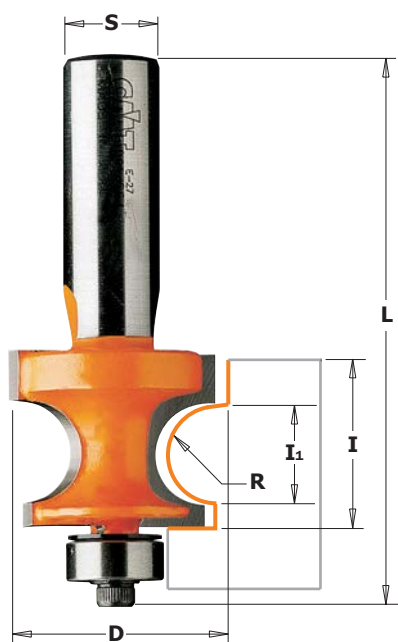
Safety tips: to be used only on router tables equipped with a fence. Do not remove the workpiece while the bit is routing.



Drawings are 1:1 scale

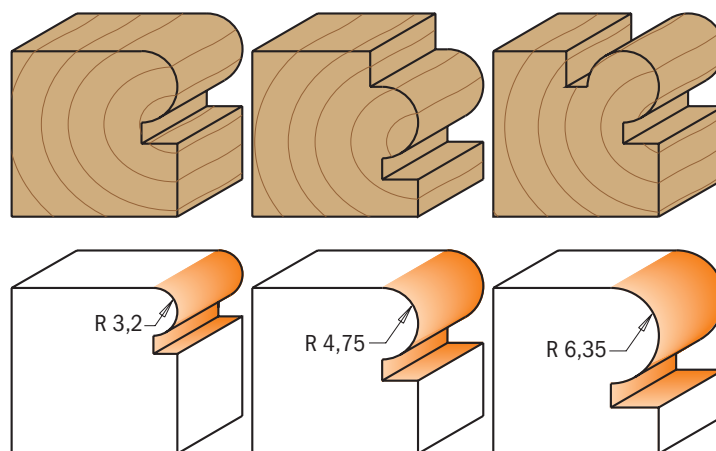
R mm	D mm	I ₁ mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
3,2	22,2	6,56	19	50,8	854.002.11		£25.92	£31.10
4,75	25,4	9,85	22	54	854.003.11		£29.07	£34.88
6,35	28,6	13,15	25,5	63,5		854.504.11	£32.01	£38.41
9,5	34,9	19,71	35	73		854.507.11	£45.69	£54.83
12,7	44,5	26,30	41	79,4		854.509.11	£56.61	£67.93

Corner Beading Bits



861

Make beautiful traditional beads and edge beads or turn old beads into new moldings with the new CMT corner beading bits with bearing. Featuring carbide-tipped cutting edges and orange PTFE non-stick coating, these bits provide excellent results on corner beads. Run the bead twice to form a complete corner bead.

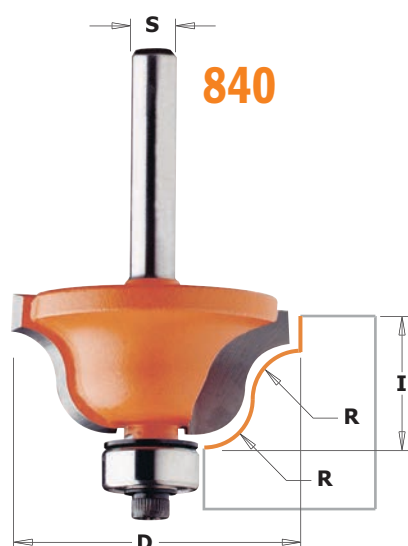


Drawings are 1:1 scale

R mm	D mm	I ₁ mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø8mm	Ex. Vat.	Inc. Vat.	Spare parts		
3,2	22,2	6,50	15	57,7	861.032.11		£29.73	£35.68			
4,75	25,4	9,68	18,6	61,2	861.048.11		£33.12	£39.74	990.423.00	791.003.00	990.058.00
4,75	25,4	9,68	18,6	67,6		861.548.11	£33.12	£39.74	990.423.00	791.003.00	990.058.00
6,35	28,6	12,86	22,2	70,7		861.564.11	£35.16	£42.19	990.423.00	791.003.00	990.058.00

Spare parts 991.057.00 3/32" hex key

Roman Ogee Bits

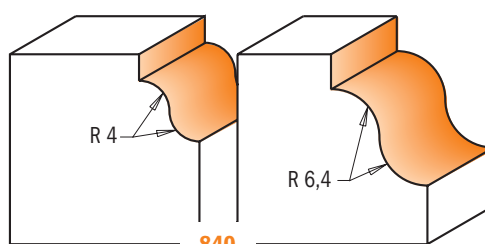


840



The roman ogee may be the most popular edge treatment in woodworking, and it is certainly one of the most beautiful. This bit includes all CMT bit features and produces a perfect rendition of classic design.

Shop tips: for best results, multiple passes are recommended.



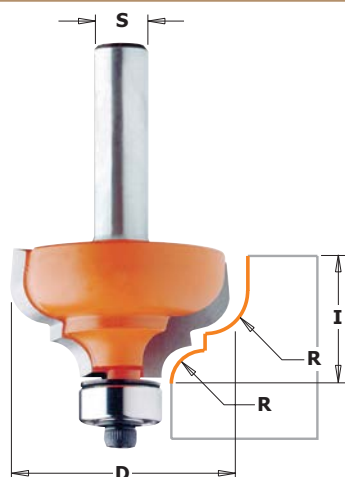
Drawings are 1:1 scale

This bit takes the Roman ogee a step further. The horizontal bead adds style and elegance to the traditional shape.

Shop tips: for best results, multiple passes are recommended.

R mm	D mm	I mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. vat	Inc. vat	Spare parts			
4	28,7	11,5	840.270.11		£29.95	£35.10				
6,4	38,1	17,3		840.850.11	£34.92	£41.90	990.423.00	791.003.00	990.058.00	991.057.00
4	33,4	13	841.285.11		£34.68	£41.62	990.423.00	791.003.00	990.058.00	991.057.00
6,4	42,8	18,5		841.880.11	£40.17	£48.20	990.423.00	791.003.00	990.058.00	991.057.00

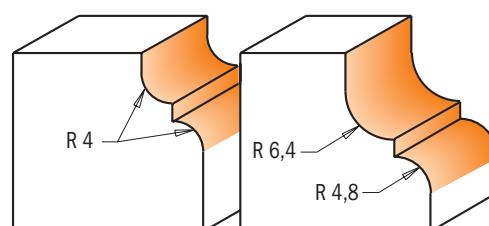
Classical Ogee Bits



844

CMT's classical ogee bits feature an inverted ogee profile, with the concave edge adjacent to the upper surface of the workpiece. A vertical bead was added to separate the curves and creates an eye-catching shape.

Shop tips: for best results, multiple passes are recommended.



Drawings are 1:1 scale

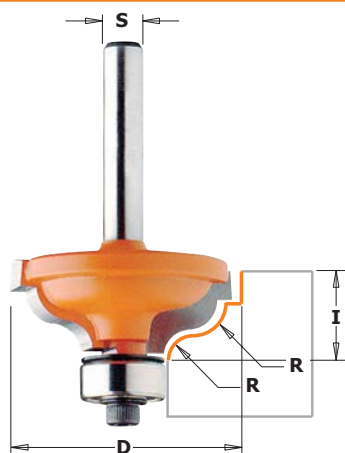
R mm	D mm	I mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. vat	Inc. vat
4	28,7	13	844.287.11		£34.26	£41.11
6,4-4,8	35	18,5		844.850.11	£39.93	£47.92

Spare parts



990.423.00	791.003.00	990.058.00	991.057.00
990.423.00	791.003.00	990.058.00	991.057.00

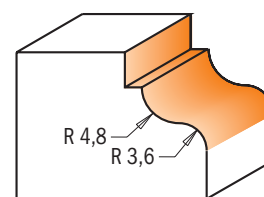
Ogee with Fillet Bits



846

Take a complete assortment of CMT ogee bits into your shop. These bits feature micrograin carbide edges, high strength steel and the trademarked orange non-stick PTFE coating.

Shop tips: for best results, multiple passes are recommended.



Drawings are 1:1 scale

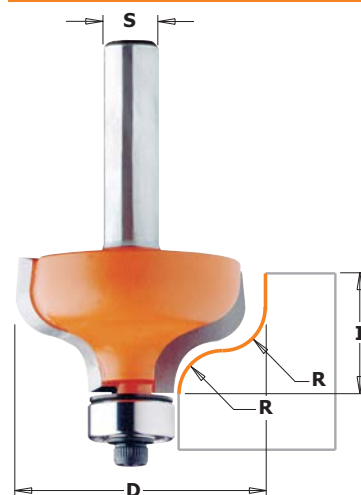
R mm	D mm	I mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
4,8-3,6	34,2	13	846.325.11		£36.60	£43.92
4,8-3,6	34,2	13		846.825.11	£37.26	£44.71

Spare parts



990.423.00	791.003.00	990.058.00	991.057.00
990.423.00	791.003.00	990.058.00	991.057.00

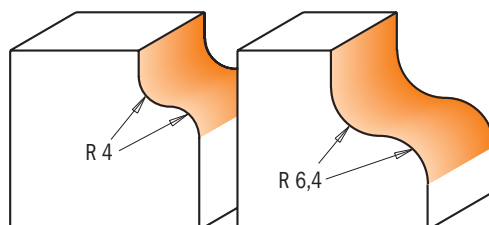
Ogee Bits



859

These profiles are the mirror image of the traditional roman ogee. They add a sharp defining details to the edges of cabinets and furniture, before rolling into a smooth convex shape.

Shop tips: for best results, multiple passes are recommended.



Drawings are 1:1 scale

R mm	D mm	I mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
4	28,7	13	859.040.11		£32.31	£38.77
6,4	38,1	18		859.564.11	£38.40	£46.08

Spare parts



990.423.00	791.003.00	990.058.00	991.057.00
990.423.00	791.003.00	990.058.00	991.057.00

Plunge Ogee Bits

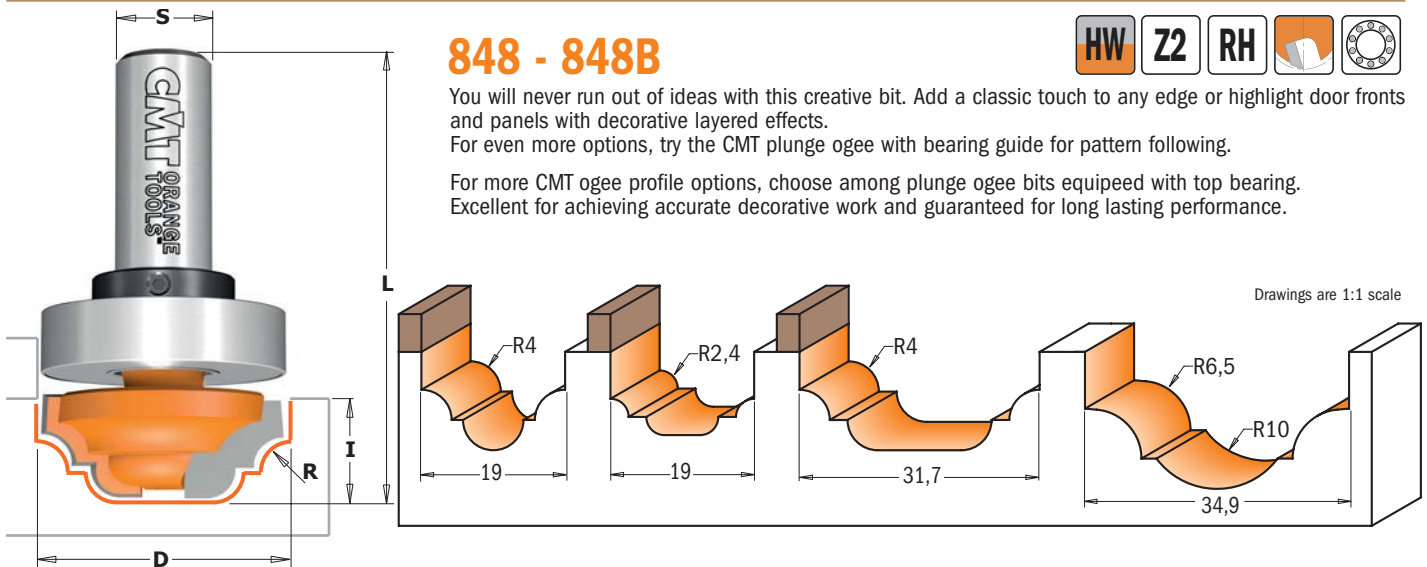
CMT ORANGE TOOLS™


848 - 848B

You will never run out of ideas with this creative bit. Add a classic touch to any edge or highlight door fronts and panels with decorative layered effects.

For even more options, try the CMT plunge ogee with bearing guide for pattern following.

For more CMT ogee profile options, choose among plunge ogee bits equipped with top bearing. Excellent for achieving accurate decorative work and guaranteed for long lasting performance.



D mm	R mm	I mm	L mm	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
19	4	13	51,1	848.190.11		£29.58	£35.50
31,7	4	13	58		848.817.11	£30.78	£36.94

Spare parts

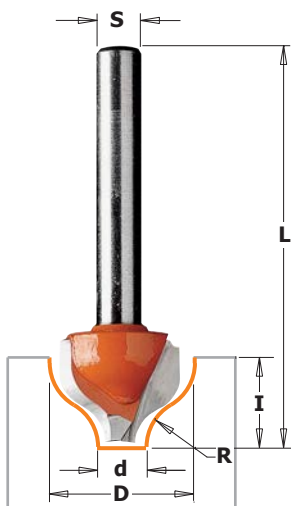


with top bearing

19	4	13	51,1	848.190.11B		£36.36	£43.63	791.004.00	541.001.00	991.056.00
19	2,4	12	53	848.191.11B		£36.36	£43.63	791.004.00	541.001.00	991.056.00
31,7	4	13	58		848.817.11B	£40.41	£48.49	791.015.00	541.002.00	991.056.00

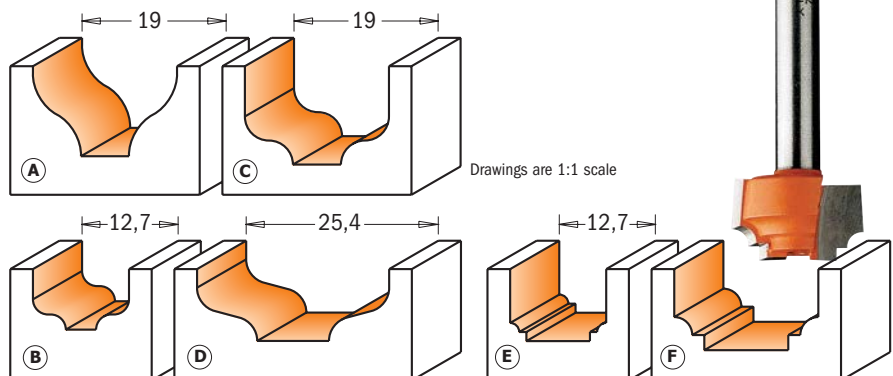
Spare parts 990.005.00 M3x3mm screw

Decorative Ogee Bits

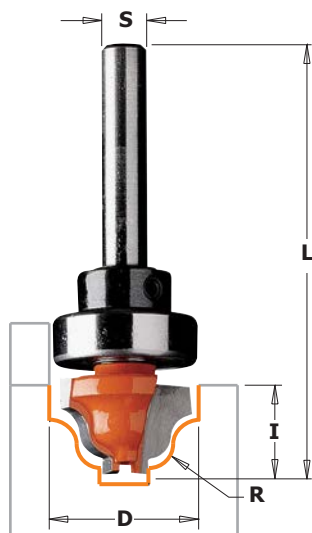


865

This new CMT bit produces a classic single or double edged bead. Ideal for creating a marked decorative effect on panel, door and drawer work.

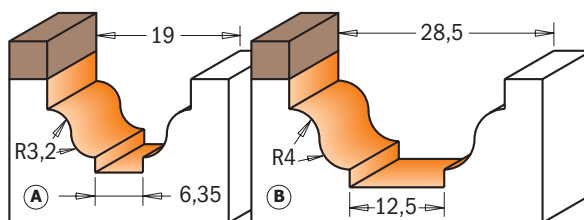


D mm	d mm	R mm	I mm	L mm	Profile	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
19	6,35	6,4	11	50,8	A	865.001.11		£30.93	£37.12
12,7	4	2	8	51	B	865.002.11		£24.39	£29.27
19	6,35	3,2	13	68	C		865.503.11	£30.78	£36.94
25,4	9,5	3,2	9,5	49	D		865.504.11	£30.78	£36.94
12,7	8,4	1,2	12,7	50,8	E	865.101.11		£24.39	£29.27
19	11,1	2,4	11	50,8	F	865.102.11		£25.35	£30.42

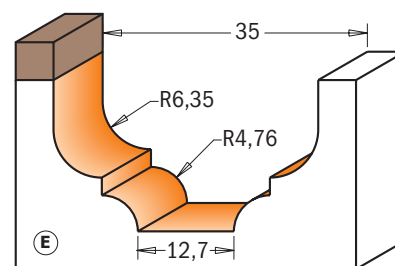


865B

This bit gives you even more decorative possibilities for panel and edge work. The bit design gives a wide flat bottom cut and a longer shank allows for a greater depth in the detail of the profile.



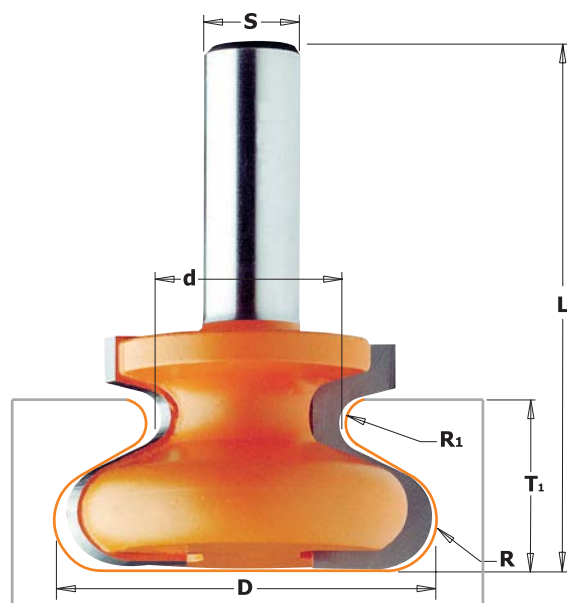
Drawings are 1:1 scale



D mm	R mm	I mm	L mm	Profile	ORDER NO. S=Ø6,35mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
19	3,2	12,3	54	A	865.201.11B		£34.02	£40.82			
28,6	4	14,3	58,8	B		865.702.11B	£30.78	£36.94	791.004.00	541.001.00	991.056.00
34,9	4,76 - 6,35	18,5	66,1	E		865.803.11B	£39.93	£47.92	791.027.00	541.002.00	991.056.00
									791.029.00	541.002.00	991.056.00

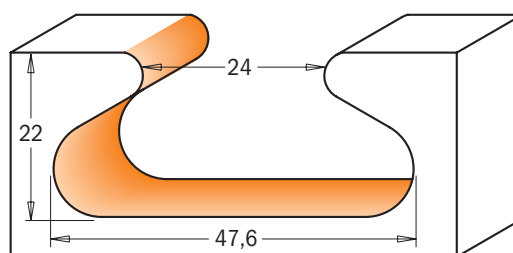
Spare parts 990.005.00 M3x3mm screw

Finger Pull Bit

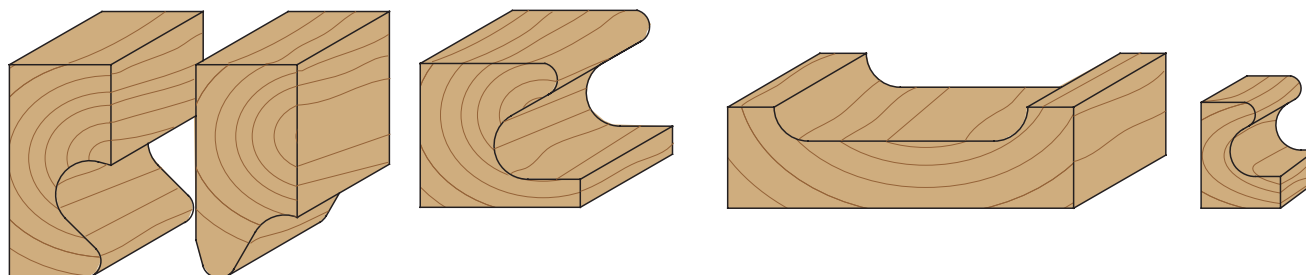


855.601

Why interrupt the subtle linearity of an all-wood drawer front or cabinet door with a metal knob or handle? Use a CMT finger pull bit and make a harmonious wooden handle. Choose your preference - a template profile made directly in the wood or a European-style hardwood pull as illustrated below.



Drawings are 1:1 scale



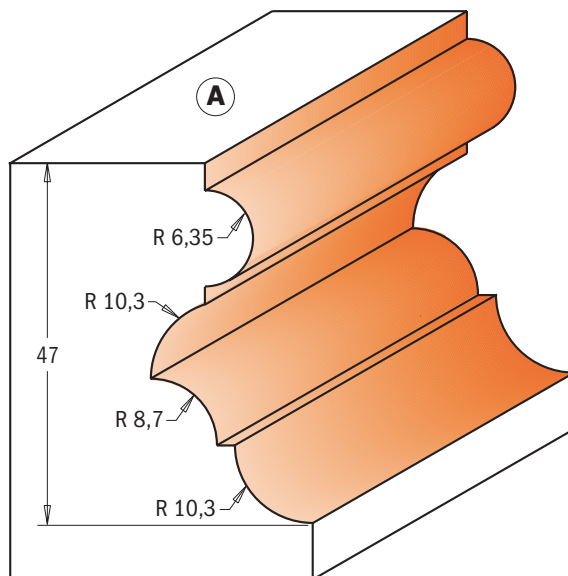
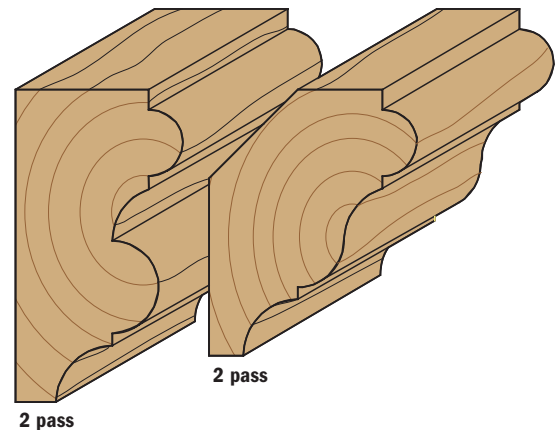
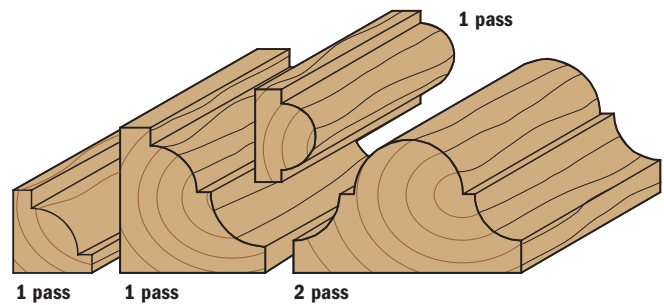
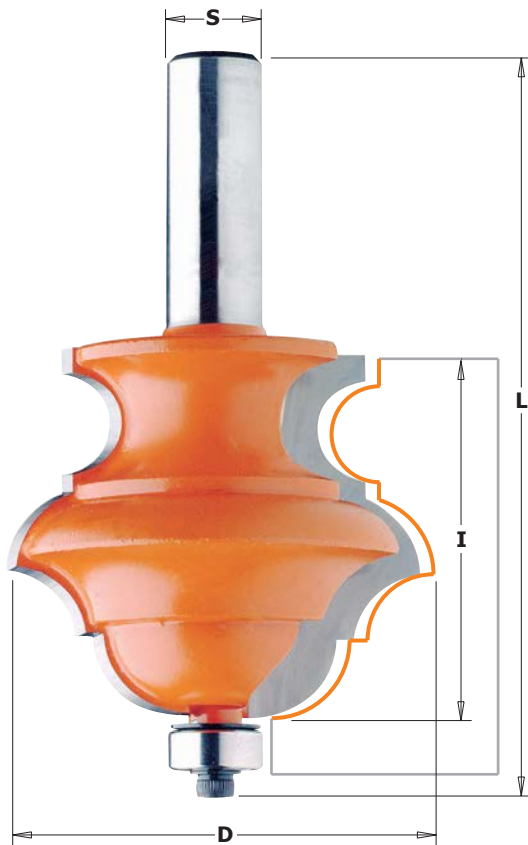
D mm	d mm	T ₁ mm	I mm	R mm	R ₁ mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
47,6	24	22	28,5	6,35	3,2	66,6	855.601.11	£56.61	£67.93

Multiprofile Bits

CMT ORANGE TOOLS™
856.8


Create endless profiles with CMT multiprofile bits. Simply adjust the height of the bit to create classic profiles in one single pass, or make more complex decorative effects in multiple passes. The bits super-strength steel body can withstand long-lasting cutting operations, and the micrograin carbide tips remain sharp longer for superior performance. In addition these bits feature baked-on non-stick PTFE coating and anti-kickback design. To be used on tables equipped with a fence.

Safety tips: to make small molding as shown below, cut the profile from very wide stock. Remove the excess material and work on the bigger piece to give you easier control. Keep hands far from the bit when working.



Drawings are 1:1 scale

Spare parts

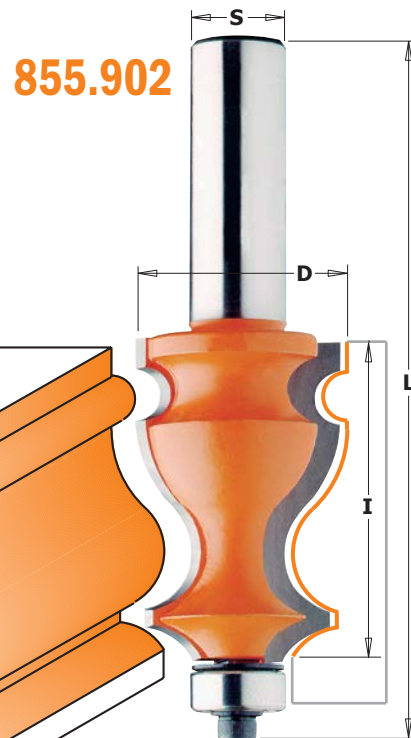
Profile	D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.				
A	55,6	47	96,4	856.802.11	£82.53	£99.04	990.423.00	791.003.00	990.058.00	991.057.00

Moulding Bits

Why waste time searching for a particular style of frame molding when you can just as quickly and easily make your own. With the wide range of decorative possibilities offered by CMT molding bits, you can always create the edge profile you want, anywhere you want and any time you want. These CMT bits are made to last a lifetime - carbide-tipped cutters and solid bar stock steel shanks can withstand serious use and the baked-on non-stick PTFE coating makes sure you continuously get clean, smooth-running cuts. Our anti-kickback feature helps guarantee you work more safely when using these wide profile bits.

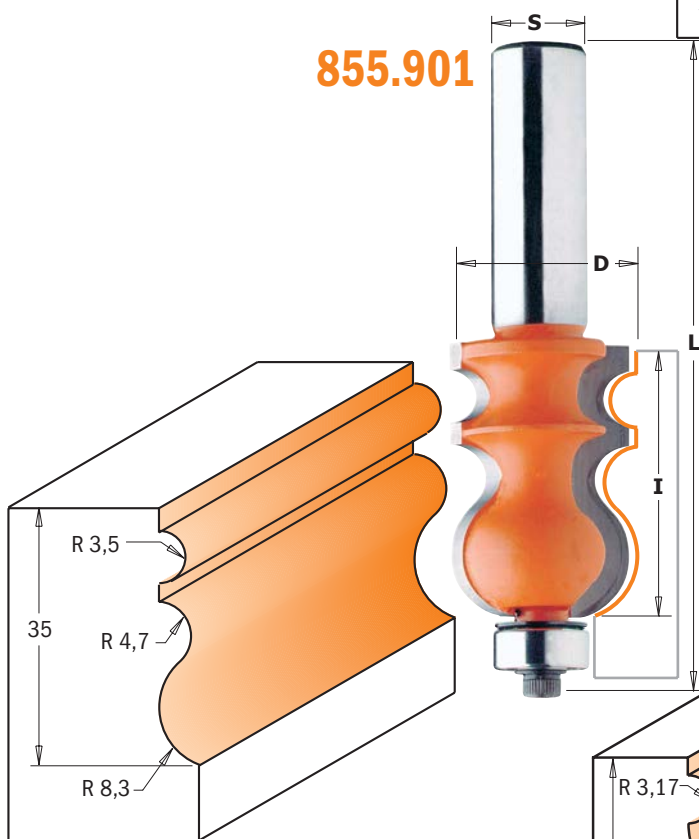
Shop tips: multiple pass operations require advance planning. To avoid making a mistake that could render it impossible to finish the job, carefully consider the entire cutting sequence before you begin.

Safety tips: all large diameter bits such as these should be used with caution and on router tables equipped with a fence. For best results, 1700 Watt routers are recommended. Routers as low-powered as 1100 Watt can be used if limited to shorter, shallower runs. When possible, reduce the RPMs of the router for operations requiring the use of these bits.



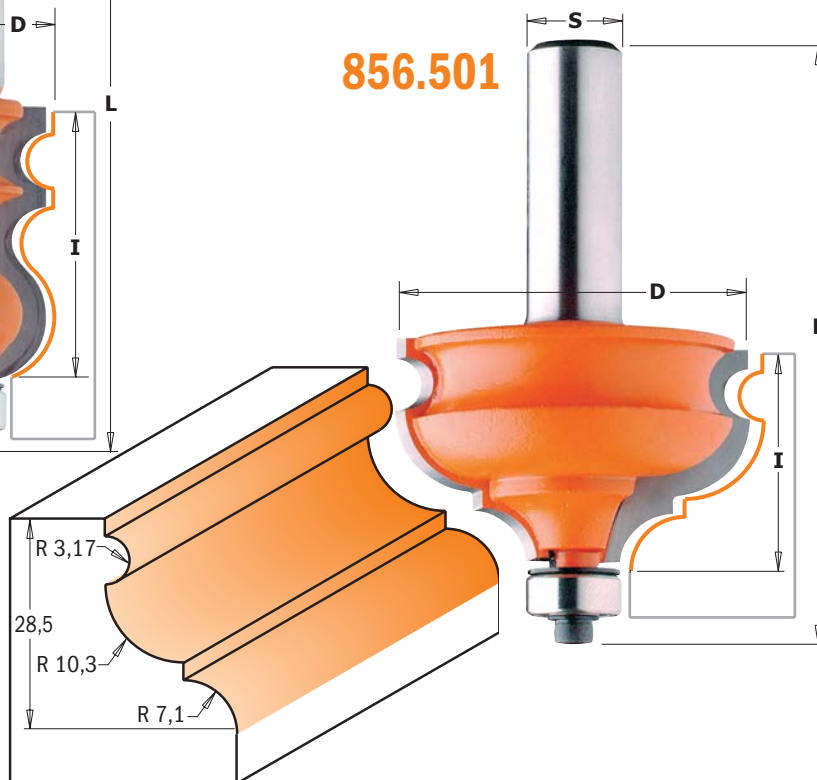
Drawing are 1:1 scale

855.901



Drawing are 1:1 scale

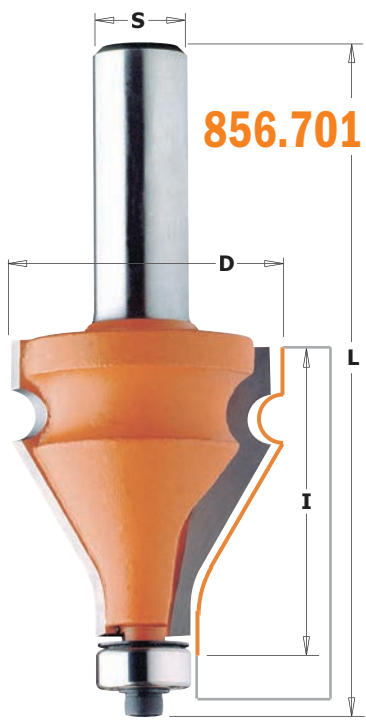
856.501



Drawing are 1:1 scale

D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
23,8	35	83,8	855.901.11	£52.50	£63.00				
27	41	90,2	855.902.11	£55.23	£66.28	990.423.00	791.003.00	990.058.00	991.057.00
47,5	28,5	77,4	856.501.11	£58.98	£70.78	990.423.00	791.003.00	990.058.00	991.057.00

Table Edge & Hand Rail Bits



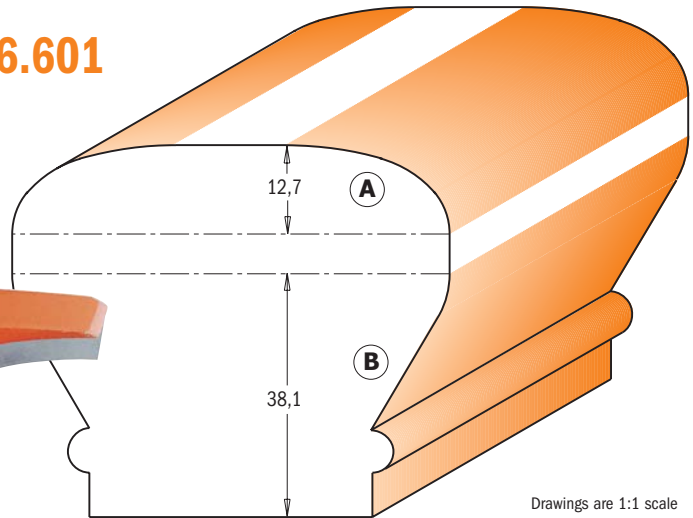
856.701

Turn a small investment into a big return with these CMT bits! They give you well-proportioned smooth curves for elegant eye-catching work on your tables. CMT hand rail bits feature 30° bevel edge and 3,2mm bead that allow you to make beautiful and functional hand rails. Add a touch of class to your architectural settings!

Safety tips: these profile bits remove large amounts of stock and make consistent quantities of dust. We recommend using a vacuum to keep the work area safe.



856.601



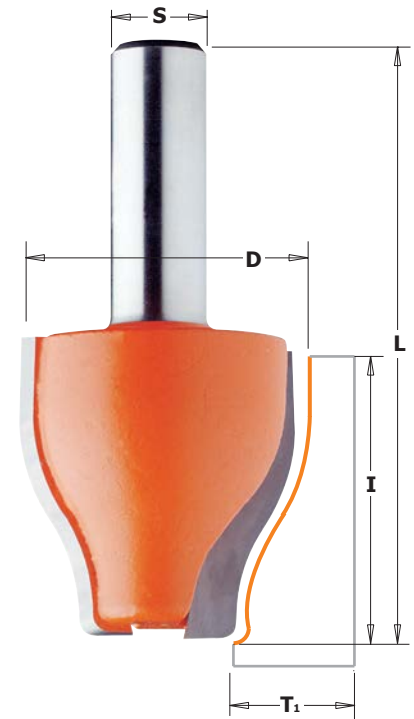
Drawings are 1:1 scale

Profile	D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
A	63,5	19	67,9	856.601.11	£69.57	£83.48
B	35	38,1	87	856.701.11	£60.66	£72.79

Spare parts

990.423.00	791.003.00	990.058.00	991.057.00
990.423.00	791.003.00	990.058.00	991.057.00

Vertical Raised Panel Bits



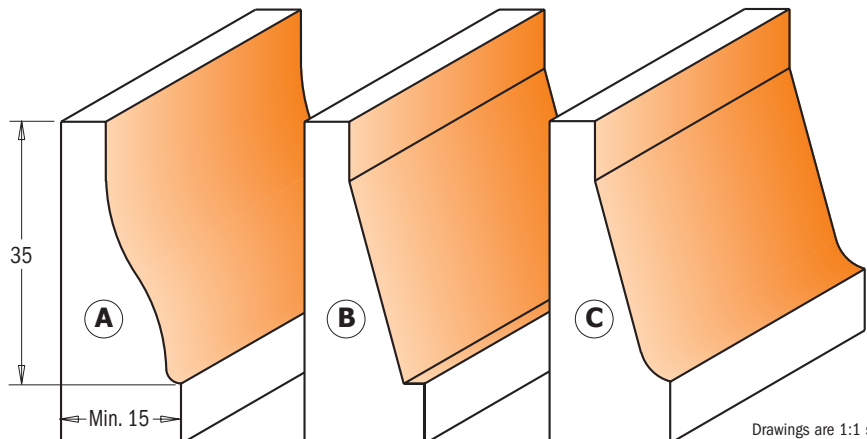
890.6



Mill raised panel doors and drawer fronts easily and economically just by putting a CMT vertical raised panel bit in your router* and a sturdy 90° fence on your router table. Meticulously studied, designed and crafted using the highest technology available, these bits are perfected down to the smallest detail. And just like any true craftsman, we are as proud of our work as you are of yours. Choose any of the three vertical profile designs for the style you want.

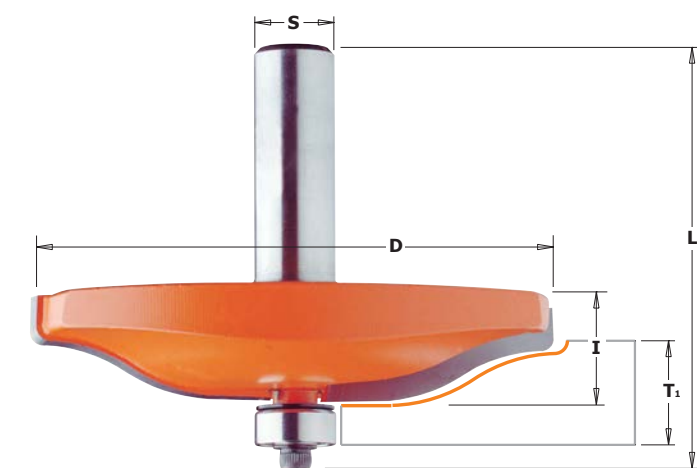
* Recommended for use on routers with a minimum speed of 1700 Watt. Routers as low-powered as 1100 Watt can be used but we suggest limiting their use to shorter, shallower runs.

Safety Tips: the template must be at least 150mm and clamps should be used whenever possible. Three to five passes are recommended to safely and accurately obtain the profile you desire.



Drawings are 1:1 scale

Profile	D mm	I mm	T ₁ mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
A	38	38	15 ÷ 18	76,2	890.601.11	£64.08	£76.90
B	38	38	15 ÷ 18	76,2	890.602.11	£64.08	£76.90
C	38	38	15 ÷ 18	76,2	890.603.11	£64.08	£76.90



890.5



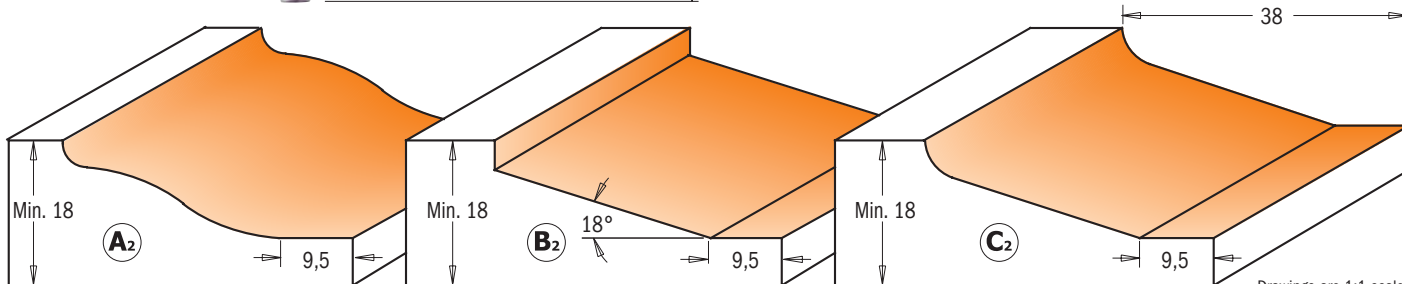
We offer you the traditional approach to panel construction with the CMT raised panel bit. Make classic raised panel doors as shown in the profiles below.

These raised panel bits have carbide-faced cutting edges and are equipped with our anti-kickback design and orange non-stick coating to further increase your safety when working with larger diameter bits.

Safety Tips: Horizontally employed bits should be used at a lower speed, between 10,000 and 12,000 RPMs.

Three to five passes are recommended to safely and accurately obtain the profile you desire.

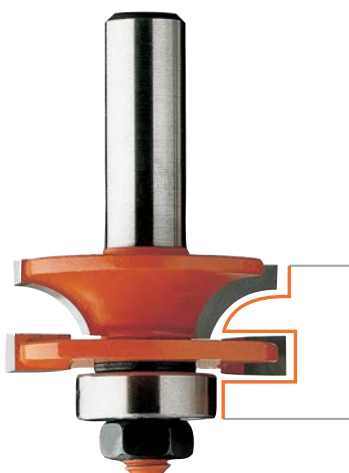
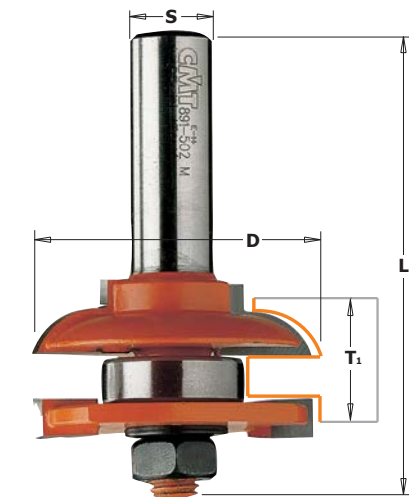
To be used on jigs with at least 1700 Watt.



Drawings are 1:1 scale

Profile	D mm	I mm	L mm	T1 mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts			
A	82,5	15	63,8	15 ÷ 18	890.501.11	£87.39	£104.87				
B	82,5	15	63,8	15 ÷ 18	890.502.11	£87.39	£104.87	990.423.00	791.003.00	990.058.00	991.057.00
C	82,5	15	64,6	15 ÷ 18	890.503.11	£87.39	£104.87	990.423.00	791.003.00	990.058.00	991.057.00

Rail & Stile Sets

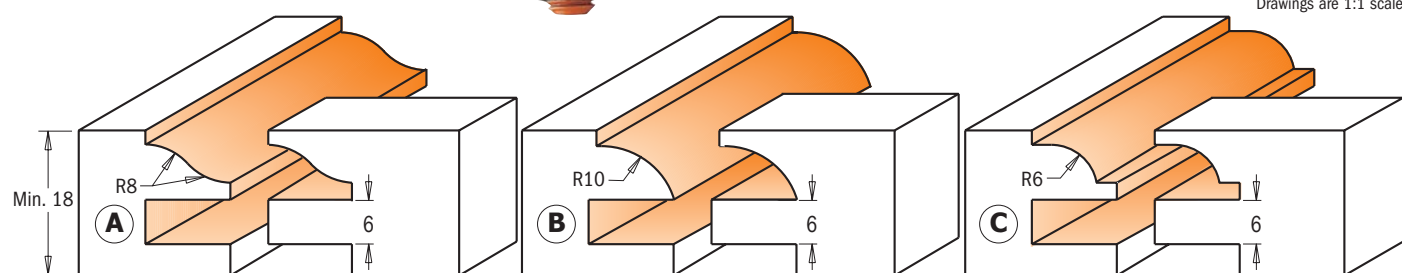


891.5



A well-constructed door will bear the mark of a perfect joint-clean, exact and well-crafted for strength. For this project, the CMT male-female rail and stile sets are the perfect pair. Made to our specifications they match exactly; not simply approximated like standard reversible cutters.

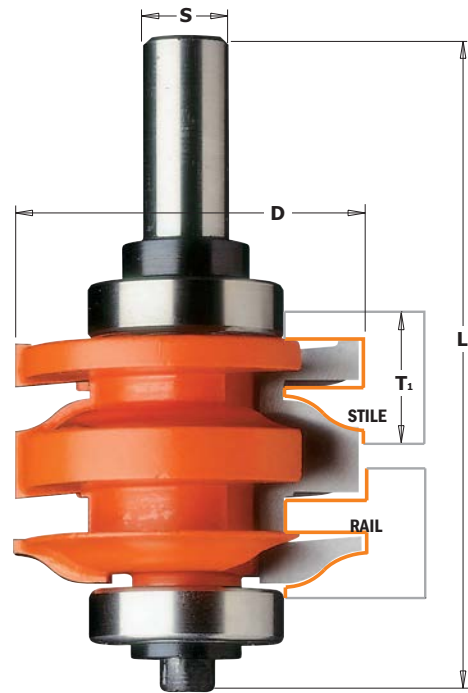
Choose the style of CMT rail and stile set that best suits your needs and create smooth, perfect joints in hard and soft woods with accuracy and speed. Perfect for working in stock from 18mm to 22mm. See chart and illustrations below for profile options available.



Drawings are 1:1 scale

Profile	D mm	L mm	T1 mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts					
A	44,4	71	18 ÷ 22	891.501.11	£123.93	£148.72						
B	44,4	71	18 ÷ 22	891.502.11	£123.93	£148.72	822.003.11	791.012.00	541.515.00	514.516.00	990.407.00	990.020.00
C	44,4	71	18 ÷ 22	891.503.11	£123.93	£148.72	822.003.11	791.012.00	541.515.00	514.516.00	990.407.00	990.020.00

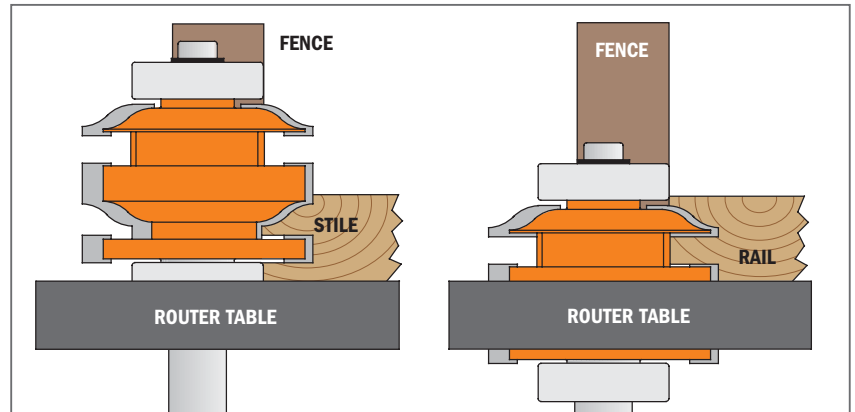
Rail & Stile Sets



891.521



The most innovative bit for the construction of furniture doors and drawers. The new CMT One-Piece Rail and Stile Bit represents the union of two cutters in one bit. By simply adjusting the height of the bit, you can cut two perfectly joining profiles with no wasted time or effort moving the fence or changing the bit. Save money by investing in a single CMT bit and a more efficient production. For working in stock from 18mm to 22,2mm.



Profile	D mm	L mm	T1 mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
A	50,87	96	18 ÷ 22	891.521.11	£97.11	£116.53

Spare parts

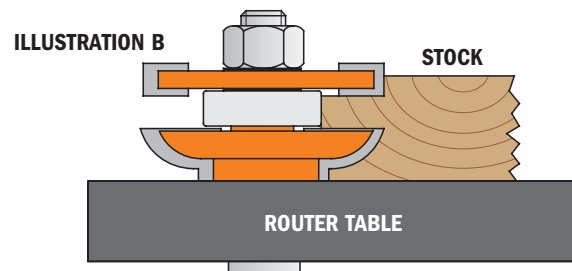
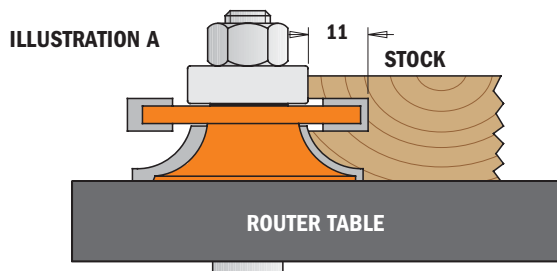
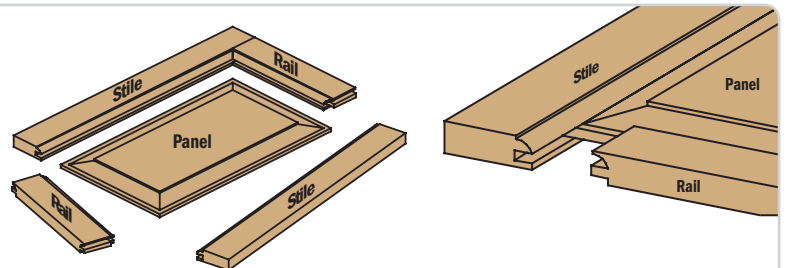
791.027.00	541.002.00	990.005.00	991.056.00	541.551.00	990.010.00	991.064.00

The ABC's of Panel Door Construction

Example of panel door construction, we used the following:

- CMT Rail & Stile set (item #891.502.11)
- pre-cut to length stiles - 19mm thick x 57mm wide
- pre-cut to length rails - 19mm thick x 57mm wide
- panel - 16mm thick
- scrap stock

The CMT Rail & Stile set was designed ideally for the construction of panel doors from 19mm thick stock, however any variation of size up to 22mm thick can be used. Remember to adjust your measurements and cutting depths according to the wood thickness you use.



MILLING THE RAILS AND STILES

First make trial cuts of the cope profile (rail) and the stick profile (stile) in scrap stock and check the accuracy of the joint. This is extremely important when working at maximum thickness (22mm). Make sure your stock is flat and cut straight with square edges. Using the CMT Stile Bit shown in illustration A, place the stock front face-down on the router table and mill the stick profile in the stile and rail pieces. To mill the rails, use the CMT Rail Bit shown in illustration A, position the rails face-down on the router table and mill the cope profile in the ends. If you are milling cope and stick profiles before cutting the rails and stiles to length, be sure to make the proper calculations before cutting the rails. The stiles are the same length as the door. The rails must be calculated by the following equation (CMT standard tenon length is 22mm): (total door width - sum of stile widths) + sum of 2 tenons = total rail length therefore, using our example measurements listed above, for a 300mm cabinet door: $300 - 114 + 22 = 208\text{mm}$

MILLING THE FLOATING PANEL

Make trial cuts in scrap stock to create a tongue that fits snugly into the groove in the stile without forcing it. To cut your panel to size be sure to make the proper calculations, taking into account the length of the tongue. The CMT Raised Panel Bit in our example has a standard tongue length of 8mm.

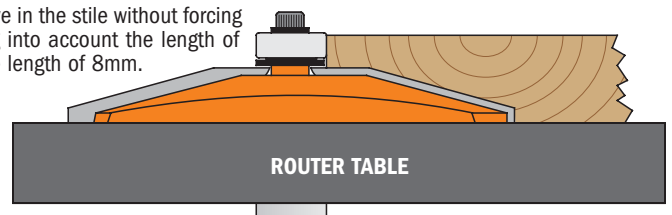
Use the following equation:

$$(\text{Total door length} - \text{Sum of Stile widths}) + \text{Sum of 2 Tongues} = \text{Overall Panel Length}$$

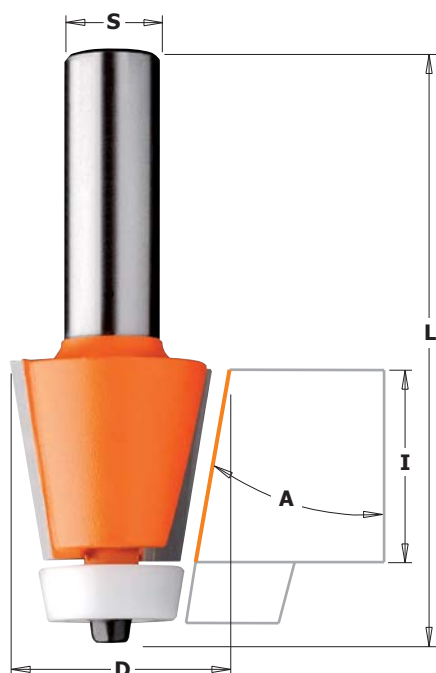
Therefore, using our example measurements listed above for a 600mm long cabinet door: $(600 - 114) + 16\text{mm} = 502\text{mm}$ And accordingly:

$$(\text{Total door width} - \text{Sum of Stile widths}) + \text{Sum of 2 Tongues} = \text{Overall Panel Width}$$

Once the panel has been cut to proper dimensions, position the panel front face side down on the router table tongue and use the CMT Raised Panel Bit to mill the tongue. ATTENTION: to safely and effectively produce the profile you want, we suggest making several shallow passes. It can be dangerous to try to mill the entire profile in a single run.



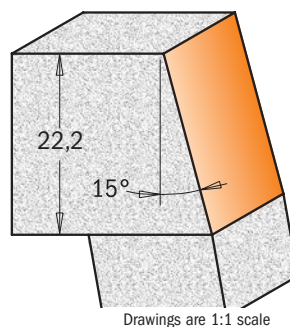
Solid Surface Bevel Bowl Bit



866.501

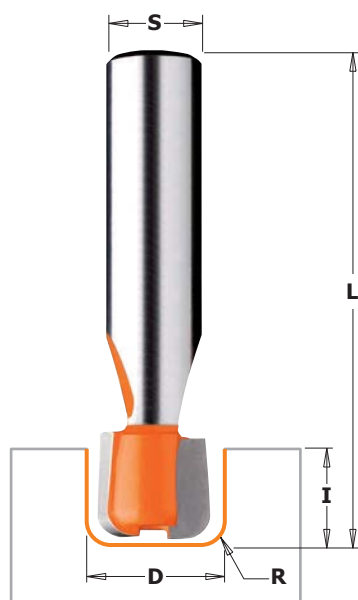
These bits are designed for undermount applications joining the countertops and sink bowls with a 10 (degree) beveled edge. For use on hand-held routers. Features a non-marring Delrin® bearing to protect the finished edges.

Special angled Delrin® sleeve on the bearing of the CMT bevel cutter lets you work without leaving marks on the workpiece. Trims and shapes all wood and wood materials. Perfect for kitchen and bathroom counter top work.



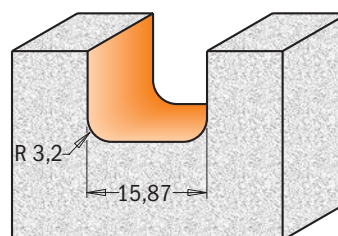
A	D mm	I mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts		
15°	31,7	22,2	72	866.501.11	£49.65	£59.58			
							791.041.00	990.058.00	991.057.00

Solid Surface Draining Board Bit



881.511

This bit is ideal for creating custom Drainboard patterns in solid surface countertops. For use on hand-held portable routers.

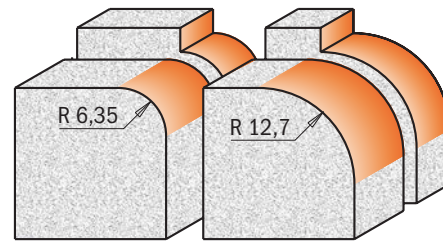
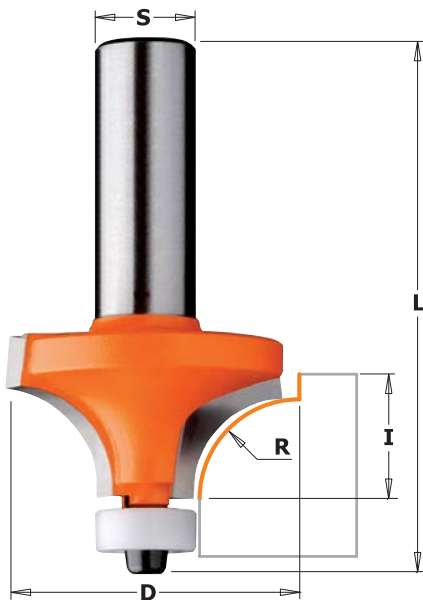


D mm	I mm	R mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
15,87	12,7	3,2	63,5	881.511.11	£25.26	£30.31

Solid Surface Rounding Over Bits

**880.502-504**

Use these bits to create a traditional roundover edge on solid surface countertops. Equipped with a non-marring Delrin® bearing to protect the finished edges. For use on hand-held portable routers.



Drawings are 1:1 scale

D mm	I mm	R mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
25,4	12,7	6,35	59,4	880.502.11	£31.59	£37.91
38,1	19,05	12,7	65,8	880.504.11	£42.78	£51.34

Spare parts

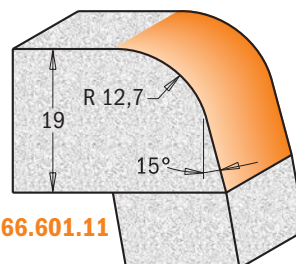
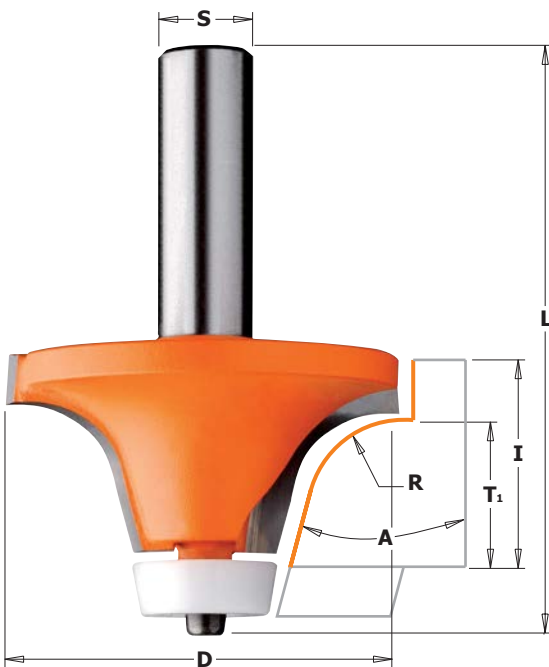
791.044.00	990.058.00	991.057.00
791.044.00	990.058.00	991.057.00

Solid Surface Rounding Over Bowl Bits

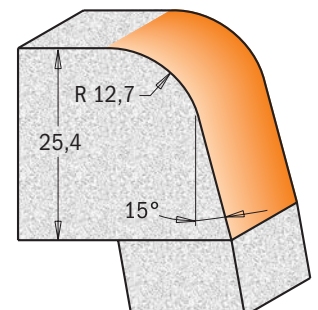
866.601/602

These bits roundover and trim the countertop edges after the bowl is mounted. For use on hand-held portable routers. Features a non-marring Delrin® bearing to protect the finished edges.

Special angled Delrin® sleeve on the bearing of the CMT bevel cutter lets you work without leaving marks on the workpiece. Trims and shapes all wood and wood materials. Perfect for kitchen and bathroom counter top work.

**866.601.11**

Drawings are 1:1 scale

**866.602.11**

A	D mm	T ₁ mm	I mm	R mm	L mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
15°	50,8	19	25,4	12,7	74,9	866.601.11	£65.52	£78.62
15°	50,8	25,4	31,75	12,7	81,3	866.602.11	£68.76	£82.51

Spare parts

791.041.00	990.058.00	991.057.00
791.041.00	990.058.00	991.057.00

Tenon Cutting Router Bit

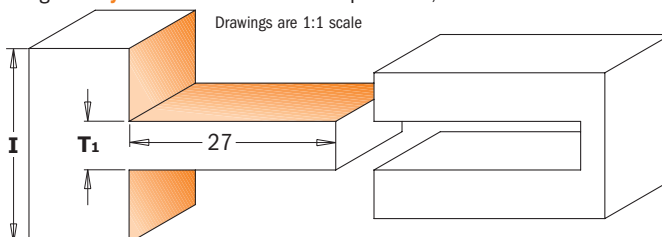


PATENT NO. 7,703,605 B2

800.627



Cut perfectly fitting tenons, every time! If you've struggled cutting fitting tenons, here's the perfect solution for you in every board you cut, even if the boards vary slightly in thickness. Simply set the distance between the cutters using the included spacers, so you can easily cut tenons from 4,76mm to 9,5mm thick, up to 27mm long. **Safety Precautions:** maximum speed: 12,000 RPM.



Tenon Cutting	No. Spacer		
	6,35mm	3,2mm	1,6mm
4,76mm	1	0	0
6,35mm	1	0	1
8mm	1	1	0
9,5mm	1	1	1

I mm	D mm	H mm	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.	Spare parts								
34,9	75	27	800.627.11	£94.13	£112.95									
						541.513.00	541.520.00	541.521.00	541.522.00	541.523.00	824.134.00	822.020.11	990.022.00	

Small Arch Door Sets

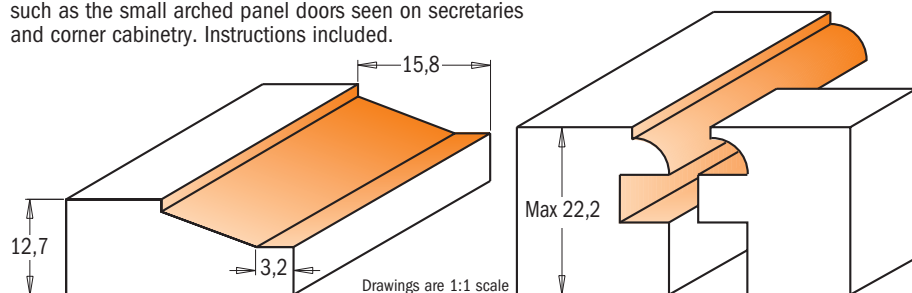


PATENT NO. 7,703,605 B2

800.524



This 3-piece set will produce beautiful raised panel doors with a classic bevelled profile. Designed for use in fine furniture making, these sets include two matched cope and stick bits to produce frames from 15,87mm to 19mm in thickness. All bits are equipped with guide bearings for shaping curved work such as the small arched panel doors seen on secretaries and corner cabinetry. Instructions included.



DESCRIPTION	ORDER NO. S=Ø12,7mm	Ex. Vat.	Inc. Vat.
Small arch door set (3 HW pcs.)	800.524.11	£112.89	£135.46

The Raised Panel Sets with Backcutter

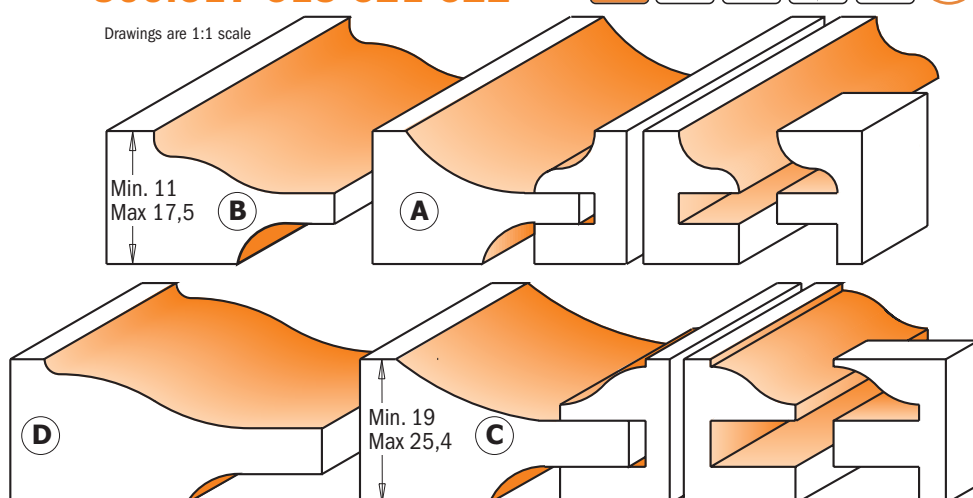


PATENT NO. 7,703,605 B2

800.517-518-521-522



Drawings are 1:1 scale



CMT's junior raised panel sets add intricate detail on a whole new scale! You will make frame and panel details as small as 70mm square in material as thin as 11mm. Delicate panel doors are only the beginning – use these bits with templates to add interesting arches to your work. The sets include a choice of a cove or an ogee raised panel bit and an ogee rail & stile pair. Packaged in beautiful hardwood cases.

DESCRIPTION	ORDER NO. S=Ø12mm	Ex. Vat.	Inc. Vat.
The junior raised panel set - Profile A (3 HW pcs.)	800.518.11	£173.18	£207.82
The junior raised panel set - Profile B (3 HW pcs.)	800.522.11	£173.18	£207.82
The raised panel set - Profile C (3 HW pcs.)	800.517.11	£183.96	£220.75
The raised panel set - Profile D (3 HW pcs.)	800.521.11	£183.96	£220.75

New Professional Router Table



999.110.00

Router table dimensions:
80x60x(h)90cm. - 26,5 kg. weight



Our quality bits have been designed for you, the professional craftsman, to allow you to confidently work at your best. CMT now offers even more possibilities with our professional router table: the perfect place to combine your skills and CMT quality.

The professional router table system has a strong and sturdy MDF laminate work surface measuring 80x60x2,5cm for easy mobility when working. This free standing table sits at a comfortable height of 90cm on solid high gauge steel legs and weighs 26,5 kg.

The plate is already pre-bored for CMT routers CMT7E but is adaptable to all brands and models of routers on the market. Plate can also fit any router bit up to 98mm in diameter. Choose any from our wide range of bits, including multi profile and molding bits or even kitchen bit set. Work easily and safely on this table!

Optional

999.100.11
(mandatory for CE legislation)



order separately

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
CMT professional router table system:	999.110.00	£350.62	£420.74
1) Plate (pre-bored for CMT7E) with reduction rings	999.110.33	£49.11	£58.93
2) Lexan® safety shield	999.110.06	£14.07	£16.88
3) Standing spring press	999.110.08	£7.05	£8.46
4) Moulded ABS feather board	999.110.09	£24.57	£29.48
5) Transversal mitre gauge	999.110.10	£24.57	£29.48

Set of 2 Magnetic Knife Setting Jigs

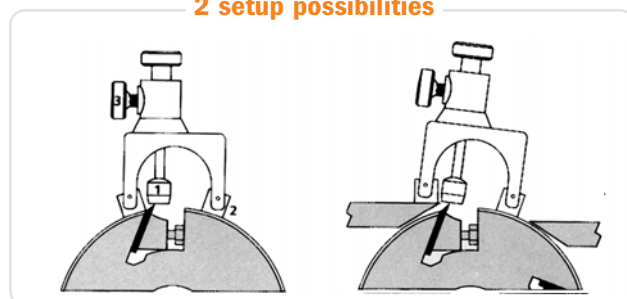
Insert your knives into your tool holders and align them perfectly with this set! Perfect micro adjustments on your knives will guarantee excellent cutting performance!

CMT792

1. MAGNETIC STOP
2. JOINTS WITH MAGNETIC CONNECTORS
3. LOCK SCREW



2 setup possibilities



Positioning on the tool holder body with detection of the knife position.

Direct positioning on both the planer table and the tool holder body with detection of the knife position.

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Set of 2 magnetic knife setting jigs	CMT792	£50.70	£60.84

Supplied in a solid wooden box

Laminate/Veneered Cutter

A very useful hand tool for clean, splinter-free cuts on laminates and veneered with no waste. Place your material into the fence provided and have the cutter run along the edge of the panel. The two opposing steel-made circular cutting blades mounted on roller bearings will trace the cutting line. Use the micrometer knob on the top of the tool to set the cutting thickness, or adjust the strip width by using the metric/inch scale provided. Loosen the lock knob on the scale, move the metal bracket which holds the fence and tighten the lock knob again on the desired cutting width.

TECHNICAL FEATURES:

- Cutting width: 12~110mm (15/32" ~ 4-21/64").
- Cutting depth: 0~2mm (0 ~ 5/64").
- Weight: 1.2 kg (2.65 lbs).

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Laminate/veneered cutter	DET-003	£103.52	£124.22



DET-003

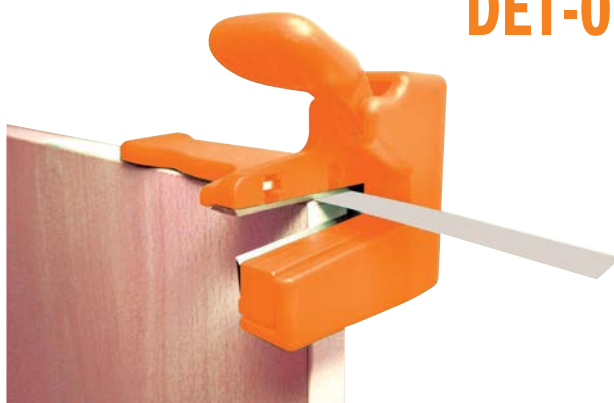
Edge Banding end Trimmer

An indispensable tool for easy and safe end trimming after edge banding. Position the tool on the banding, press down on the handle to operate the blade in a shearing action. The cutting knives are interchangeable, so when the cutting knife becomes dull, you can simply replace it with the anvil knife for a double lifetime. For cutting banding up to 0,5mm thick with a maximum cutting width of 54mm.

This tool can also be paired up with our double edge trimmer DET-001. We recommend using our edge banding end trimmer DET-002 before using our double-edge trimmer DET-001.

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Edge banding end trimmer	DET-002	£30.08	£36.10

Spare parts DET-002K 2pcs replacement blade set 55x13x1,5mm



DET-002

Double-Edge Trimmer

Attach this trimmer to your workpiece, press both ends against the board for a cutting range between 13mm (1/2") and 25mm (1"), move the trimmer in the correct direction indicated by the arrow. This will cut on both sides easily. The first cutter will cut straight, the second one can be adjusted for a tapering cut. Both cutters are made from high-quality hardened steel and can be easily replaced when worn out.

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Double-edge trimmer	DET-001	£13.86	£16.63

Spare parts DET-001K Spare knives for double-edge trimmer



DET-001

Folding Ruler

- Fiberglass material, water & scratch resistant.
- Impact resistant, tough yet flexible.
- No rust.
- Guaranteed professional quality.
- Merchandising display with 12 rulers.



DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Folding ruler	FR2M	£8.31	£9.97



FR2M

Digital Height Gauge



Horizontal and vertical measuring.

Self-standing for setting cutting depth on router tables and low profiles for backfence adjustment.

Measuring ruler with metric/imperial scale and locking screw.

Instruction manual.



DHG-001

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Digital Height Gauge	DHG-001	£26.66	£31.99

TECHNICAL DETAILS:

- Measuring range: Scale: 0~80mm (0~3")
Needle: 0~50mm (0~2").
- Resolution: 0.05mm/0.002".
- Accuracy: ±0.1mm (±0.004").
- Power: CR2032 3V - 1500 hours.

Digital Angle Finder



This digital angle finder is a multi-functional tool for many measuring applications. Easy to operate the base unit carries the electronics giving a very clear detailed LCD display as well as a pair of levelling vials and a pivoting measuring arm. When the arm is extended the angle it makes with the base is indicated clearly on digital read-out to the nearest 0,05°. The measuring range is 0 - 360°. The vials allow variations from the vertical and the horizontal to be accurately measured. Other features include a lock function to prevent the last measurement being lost, a low battery indicator and automatic shut off function. Being robust but light in weight this is a very well thought out tool with a lot of uses. Instructions included.

Easy and simple to use;
Calculates angles in seconds;
Large detailed LCD display;
Robust, lightweight aluminium construction;
0 - 360° measuring range.

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Digital Angle Finder	DAF-001	£33.38	£40.06

DAF-001

TECHNICAL DETAILS:

- 265x50x25mm size;
- ±0-360° range;
- 0,05° resolution.

Digital Angle Gauge



The digital angle gauge is a mini waterproof digital protractor that provides digital readings between ±180° with a resolution of 0,1° and auto shut off after 5 minutes. It is small enough to be carried around in a pocket and the LED screen is convenient to read. It incorporates magnets in the base for adhesion to any ferrous surface to accurately measure mitre and bevel angles on mitre saws, saw benches, etc.

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Digital Angle Gauge	DAG-001	£28.64	£34.37

DAG-001

TECHNICAL DETAILS:

- battery voltage/type 3V/L lithium;
- 51x51x33mm size;
- ±180° range;
- 0,1° resolution.
- Set to ZERO.

Digital Moisture Meter



Ideal for use in woodworking, building construction and agriculture industries. The DMM-001 is also an invaluable tool in the restoration field. Ideal for locating moisture in carpets and sub-flooring. General ultra-sensitive Digital Moisture Meter easily detects hidden leaks in wood, concrete, plaster and carpet.

The accurate moisture level readings make this tool great for new home inspections, locating roof leaks or even selecting dry lumber at the yard. Ideal for use in woodworking, building construction, agriculture restoration and floor-laying. Used to check wood, drywall and concrete before painting, sealing or treating and to locate and identify water leaks in roofs, floors and walls. Display will show the moisture content in Percent Moisture Content directly. Ergonomically designed and CE approved.



DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Digital Moisture Meter	DMM-001	£34.93	£41.92

TECHNICAL FEATURES:

- Measuring range in wood: 5~50%
- Measuring range in building material: 1.5~33%
- Measuring accuracy: ±2%
- Backlight shut off: In about 15 seconds
- Auto power off: 3 minutes idle
- Low battery indicator: <7V
- Power supply: a 9V battery block (6F22 or 6LR6)
- Working current: <25mA
- Working temperature: 32°F~122°F
- Working humidity: <90%RH non-condensing
- Storage: -4°F~140°F ±85% (without battery)
- Dimensions: 5-11/16" x 2-7/16" x 1-1/16"
- Weight: About 3oz (without battery)

DMM-001

Bench Block Set

These blocks are great for holding your workpiece without any clamps. Their anti-slip surface grip both your bench top and the underside of your workpiece. Raise your work above the bench and benefit from plenty of clearance for your router bits, cutters, etc.

BBS-001

Length: 75mm - Width: 50mm - Height: 25mm

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Bench block set (4pcs.) 75x50x25	BBS-001	£16.02	£19.22



Formula 2050: Blade & Bit Cleaner

Finally a safe, environmentally-friendly cleaner that is more effective than all those hazardous chemicals used for cleaning cutting tools.

Saw shops know how to get the most out of cutting tools. They know that the pitch and resin left by wood on tools greatly shortens the useful life of carbide. Therefore we asked many blade sharpeners to test Formula 2050 and they rated it as an excellent product. Most blade and bit cleaning products work with dissolving action, but it takes some power and nasty chemicals to dissolve wood residues and adhesives. CMT's non-toxic and safe Formula 2050 penetrates the microscopic cracks in the resin and attacks the bond between carbide or steel surfaces and the resin itself. Formula 2050 keeps your tools clean and helps you increase the life span between sharpening and replacement.



998

- Removes pitch, resin and adhesive residue from all woodworking cutting tools (saw blades, router bits, drill bits, shaper cutters, planer blades, etc.).
- Completely non-toxic, non-flammable and certified biodegradable. Formula 2050 is a safe, earth-friendly product.

- Do not rinse after cleaning. Formula 2050 provides protection from rust and corrosion. Keeps your table saw top rust free too!
- Can be applied by spray bottle or used in ultrasonic cleaners and dip tanks.

★★★★★ *This product received a five-star performance rating from "Wood" Magazine*

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
0,500 lt. spray bottle	998.001.01	£15.10	£18.12
3,780 lt. plastic jug	998.001.03	£49.05	£58.86

Lubricant for Wood, Neutralizes Resin

- Neutralizes resin, preventing it from being stuck on chips and sawdust.
- Cleans knobs, barbell handles, etc.
- Anti-corrosion action on woodworking machine table.
- Excellent against humidity.

Instruction:

Spray or apply the product on the desired parts of your woodworking machine.

You will obtain a uniform layer on its surface that will aid in the sliding of your workpiece.

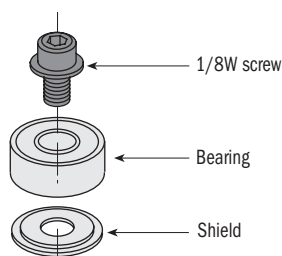


**FLAMMABLE PRODUCT.
AIR FREIGHT IS NOT ALLOWED.**



998

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
1 lt. spray bottle (master packaging 12 bottles)	998.002.01	£14.22	£17.06
5 lt. plastic jug	998.002.03	£55.83	£67.00



Be Sure: to keep the black washer right side up to correspond with the bearing rotation during reassembly.

Bearings

D		B		Thickness	ORDER NO.	Ex. Vat.	Inc. Vat.
mm	inches	mm	inches	mm			
9,5	3/8	4,76	3/16	3,2	791.002.00	£4.62	£5.54
12,7	1/2	4,76	3/16	5	791.003.00	£4.14	£4.97
12,7	1/2	6,35	1/4	4,8	791.010.00	£4.62	£5.54
13		5		4	791.022.00	£8.25	£9.90
15,8	5/8	4,76	3/16	5	791.018.00	£5.82	£6.98
15,8	5/8	6,35	1/4	5	791.009.00	£4.62	£5.54
16		5		5	791.006.00	£4.14	£4.97
19		6		6	791.007.00	£4.14	£4.97
19	3/4	6,35	1/4	7	791.004.00	£4.62	£5.54
19	3/4	12,7	1/2	4	791.011.00	£10.62	£12.74
22		8		6	791.012.00	£4.14	£4.97
22		8		7	791.005.00	£4.14	£4.97
22,2	7/8	12,7	1/2	7	791.013.00	£4.14	£4.97
28,5	1-1/8	12,7	1/2	8	791.027.00	£5.82	£6.98
31,7	1-1/4	12,7	1/2	10	791.015.00	£7.77	£9.32
34,9	1-3/8	12,7	1/2	11	791.029.00	£7.95	£9.54
37		12		12	791.028.00	£7.95	£9.54
38,1	1-1/2	12,7	1/2	13,3	791.020.00	£10.56	£12.67
62		30		16	791.051.00	£19.85	£23.81
10° Delrin® conical bearing							
19	3/4	4,76	3/16	6,8	791.041.00*	£10.44	£12.53
Delrin® triangular bearings							
12,7	1/2	4,76	3/16	5,8	791.042.00**	£10.62	£12.74
19	3/4	4,76	3/16	7	791.043.00**	£10.62	£12.74
Delrin® cylindrical bearing							
12,7	1/2	4,76	3/16	5	791.044.00***	£7.71	£9.25



*10° Delrin® conical bearing



**Delrin® triangular bearing



***Delrin® cylindrical bearing

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Wedges for router bits with knives			
D=8x20mm	651.999.01	£29.16	£34.99
D=10-12-12,7x30mm	651.999.02	£29.16	£34.99
D=12-12,7x50mm	651.999.03	£29.16	£34.99
Wedges for cutter heads			
D=7x11x9,5mm	695.999.07	£18.95	£22.74
D=16x11x9,5mm	695.999.16	£18.95	£22.74
D=23x11x9,5mm	695.999.23	£18.95	£22.74
D=23x11x9,5mm	695.999.24	£18.95	£22.74
D=31x11x9,5mm	695.999.31	£18.95	£22.74
D=38x11x9,5mm	695.999.38	£21.95	£26.34
D=39x11x9,5mm	695.999.39	£21.95	£26.34
D=41x11x9,5mm	695.999.41	£23.09	£27.70
D=42x11x9,5mm	695.999.42	£23.09	£27.70
D=46x11x9,5mm	695.999.46	£23.09	£27.70
D=49x11x9,5mm	695.999.49	£23.09	£27.70
D=53x11x9,5mm	695.999.53	£29.40	£35.28
D=38x26x13mm	693.999.01	£8.19	£9.83
D=38x15x16mm	695.018.01	£117.45	£140.94
Spacer sets			
D=50x9x30mm	695.998.01	£31.59	£37.91
D=65x8x30mm	695.998.21	£45.68	£54.82
D=50x2,6x30mm	695.998.2630	£15.90	£19.08

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Pair of knives			
D=8x20mm	695.007.10	£57.35	£68.82
D=10-12-12,7x30mm	695.007.12	£57.35	£68.82
D=12-12,7x50mm	695.007.15	£57.35	£68.82
D=7x11x9,5mm	695.008.01	£24.30	£29.16
D=16x11x9,5mm	695.009.01	£45.52	£54.63
D=23x11x9,5mm	695.011.01	£60.18	£72.22
D=23x11x9,5mm	695.013.A1	£31.83	£38.20
D=31x11x9,5mm	695.013.A2	£39.29	£47.14
D=38x11x9,5mm	695.014A	£52.57	£63.08
D=39x11x9,5mm	695.014B	£52.57	£63.08
D=41x11x9,5mm	695.014C	£52.57	£63.08
D=42x11x9,5mm	695.014D	£52.57	£63.08
D=46x11x9,5mm	695.015.A1	£43.17	£51.81
D=49x11x9,5mm	695.015.A2	£43.17	£51.81
D=53x11x9,5mm	695.015.B1	£43.17	£51.81
D=38x26x13mm	695.015.B2	£43.17	£51.81
D=38x15x16mm	695.015.C1	£43.17	£51.81
D=50x9x30mm	695.015.C2	£43.17	£51.81
D=65x8x30mm	695.015.D1	£43.17	£51.81
D=50x2,6x30mm	695.015.D2	£43.17	£51.81
D=50x2,6x30mm	695.015.E1	£43.17	£51.81
D=50x2,6x30mm	695.015.E2	£43.17	£51.81



Router chuck extensions

796.001

S mm	D ₃ mm	L mm	ORDER NO.	Ex. Vat.	Inc. Vat.
12,7	6,35	81	796.001.01	£26.70	£32.04
12,7	12,7	88	796.001.00	£26.70	£32.04

TECHNICAL DETAILS:

- Super strength steel
- Precisely machined for accuracy.

Collet not included



Collets

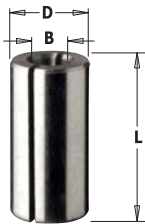
796.500/600

D ₃ mm	ORDER NO.	Ex. Vat.	Inc. Vat.
6,35	796.564.00	£5.04	£6.05
8	796.580.00	£5.04	£6.05
12	796.620.00	£5.04	£6.05
12,7	796.627.00	£5.04	£6.05



Collets for CMT, DeWalt, Felisatti, Fein, Metabo, Trend hand-held routers 796.8

D ₃ mm	ORDER NO.	Ex. Vat.	Inc. Vat.
6,35	796.864.00	£24.24	£29.09
8	796.880.00	£24.24	£29.09
12,7	796.927.00	£24.24	£29.09



Bushings

799

B mm	D mm	L mm	ORDER NO.	Ex. Vat.	Inc. Vat.
6,35	8	25	799.064.00	£6.78	£8.14
6,35	12,7	25	799.264.00	£6.78	£8.14
8	12,7	25	799.480.00	£6.78	£8.14



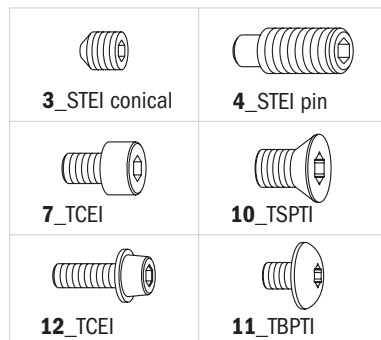
Screws

990

D mm	REFERENCE	ORDER NO.	Ex. Vat.	Inc. Vat.
M3x3	3_STEI	990.005.00	£0.96	£1.15
M4x4	3_STEI	990.016.00	£0.96	£1.15
M6x16	4_STEI	990.066.00	£1.78	£2.14
M8x16	4_STEI	990.064.00	£1.22	£1.46
M8x12	4_STEI	990.065.00	£1.22	£1.46
M8x20	4_STEI	990.086.00	£1.78	£2.14
M3x6	7_TCEI	990.051.00	£1.35	£1.62
M5x10	7_TCEI	990.010.00	£0.96	£1.15
M5x12	8_TSPEI	990.055.00	£0.96	£1.15
1/8Wx3/8"	12_TCEI	990.058.00	£0.96	£1.15

Torx screw

M2,5x3x4,5	10_TSPTI	990.070.00	£2.58	£3.10
M2,5x4,5x6	10_TSPTI	990.071.00	£2.64	£3.17
M4x2x3	10_TSPTI	990.079.00	£4.37	£5.25
M5x4,75x6,5	10_TSPTI	990.080.00	£4.37	£5.25
M5x5x8	10_TSPTI	990.093.00	£2.43	£2.92
M5x12x18	10_TSPTI	990.063.00	£6.40	£7.68
M3,5x3,5x6	11_TBPTI	990.072.00	£2.64	£3.17
M3,5x5x7,2	11_TBPTI	990.073.00	£1.83	£2.20
M4x3,5x5,7	11_TBPTI	990.074.00	£2.64	£3.17
M4x6x8,2	11_TBPTI	990.075.00	£1.83	£2.20
M4x4,5x8	11_TBPTI	990.094.00	£1.26	£1.51





Shields for bearings

990.4

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Ø9,5mm shield	990.422.00	£0.96	£1.15
Ø12,7mm shield	990.423.00	£0.96	£1.15
Ø8,2mm shield	990.407.00	£0.96	£1.15
Ø3x9mm shield	990.408.00	£0.96	£1.15



Nuts for arbors

990.0

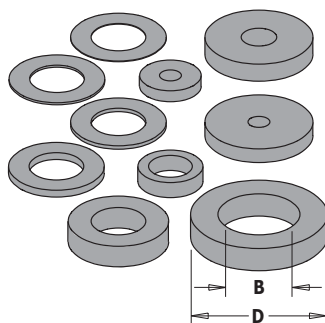
DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Nut for M8 thread arbor	990.020.00	£0.96	£1.15
Nut for M12x1,25mm thread arbor	990.022.00	£1.23	£1.48



Stop collars

541

B mm	ORDER NO.	Ex. Vat.	Inc. Vat.
6,35	541.001.00	£2.64	£3.17
12,7	541.002.00	£2.64	£3.17



Shields for assembly

541

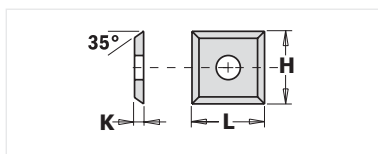
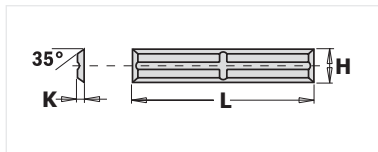
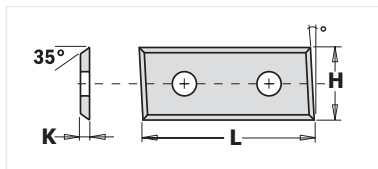
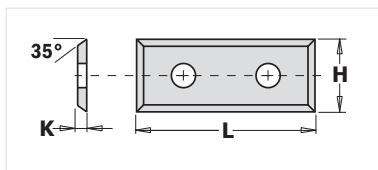
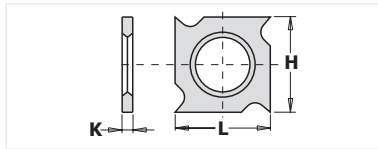
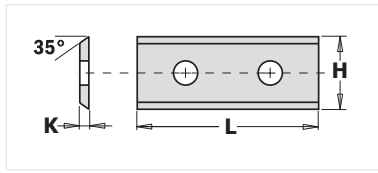
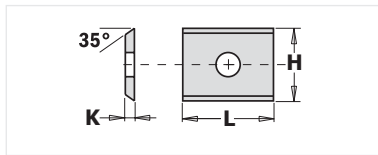
B mm	D mm	Thickness mm	ORDER NO.	Ex. Vat.	Inc. Vat.
3,25	9	1,6	541.550.00	£1.62	£1.94
5,2	15,8	2,5	541.551.00	£1.62	£1.94
6,4	9,52	2,2	541.514.00	£2.55	£3.06
8	14	0,1	541.515.00	£1.62	£1.94
8	14	0,3	541.516.00	£1.62	£1.94
8	14	0,5	541.517.00	£1.62	£1.94
8	14	1	541.518.00	£1.62	£1.94
8	14,7	3	541.500.00	£1.62	£1.94
8	14,7	4	541.501.00	£1.62	£1.94
8	14,7	5,8	541.519.00	£1.62	£1.94
12	20	2	541.512.00	£1.62	£1.94
12	20	3	541.511.00	£1.62	£1.94
12	21	0,1	541.513.00	£1.62	£1.94
12	21	0,3	541.520.00	£1.62	£1.94
12	21	1,59	541.521.00	£2.04	£2.45
12	21	3,18	541.522.00	£2.04	£2.45
12	21	6,16	541.523.00	£2.04	£2.45
12	21	1	541.524.00	£1.62	£1.94
12	21	0,5	541.525.00	£1.62	£1.94



Keys for screws

991

DESCRIPTION	ORDER NO.	Ex. Vat.	Inc. Vat.
Hex keys			
3/32" hex key (for 1/8W screws)	991.057.00	£3.39	£4.07
1,5mm hex key (for M3 screws)	991.056.00	£2.64	£3.17
2mm hex key	991.060.00	£2.64	£3.17
2,5mm hex key (for M4 screws)	991.062.00	£3.03	£3.64
3mm hex key	991.067.00	£2.63	£3.16
3x90mm hex key	991.083.00	£7.29	£8.75
4mm hex key	991.064.00	£4.86	£5.83
Torx key			
T8 Torx key	991.063.00	£7.29	£8.75
T9 Torx key	991.069.00	£7.29	£8.75
T15 Torx key	991.061.00	£5.35	£6.42
T20 Torx key	991.072.00	£12.64	£15.16
T25 Torx key	991.073.00	£12.64	£15.16



790 Standard reversible knives 2 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
7,5 x 12 x 1,5	35°	790.075.00	£1.95	£2.34
7,65 x 12 x 1,5	35°	790.076.00	£2.84	£3.40
15 x 12 x 1,5	35°	790.150.00	£2.19	£2.63
20 x 12 x 1,5	35°	790.200.00	£2.34	£2.81
30 x 12 x 1,5	35°	790.300.00	£2.70	£3.24
40 x 12 x 1,5	35°	790.400.00	£3.97	£4.76
50 x 12 x 1,5	35°	790.500.00	£3.89	£4.67
60 x 12 x 1,5	35°	790.600.00	£5.34	£6.41

790 Standard reversible knives 4 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
18 x 18 x 1,95	35°	790.181.00	£6.89	£8.26

790 Standard reversible knives 4 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
29,5 x 9 x 1,5	35°	790.295.09	£5.76	£6.91

790 Standard reversible knives 4 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
28,3 x 12 x 1,5	35°	790.283.12	£9.39	£11.27
48,3 x 12 x 1,5	35°	790.483.12	£11.49	£13.79

790 Standard reversible knives 4 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
20 x 4,1 x 1,1	35°	790.200.01	£6.00	£7.20
30 x 5,5 x 1,1	35°	790.300.01	£6.24	£7.49
50 x 5,5 x 1,1	35°	790.500.01	£5.40	£6.48

790 Standard reversible knives 4 cutting edges

Sizes_mm L H K	Angle	ORDER NO. HC05	Ex. Vat.	Inc. Vat.
12 x 12 x 1,5	35°	790.120.00	£2.34	£2.81
14 x 14 x 1,2	30°	790.140.10	£2.43	£2.92
14 x 14 x 2	30°	790.140.00	£2.19	£2.62

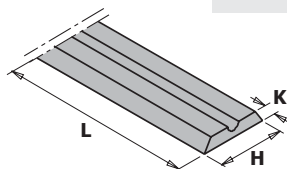
HWM Reversible Knives for Portable Planers



790



Sizes_mm L H K	Machine	ORDER NO. 2 pcs. blister case	Ex. Vat.	Inc. Vat.
80,5 x 5,5 x 1,1	Elu (MFF80), Aeg, Bosch, Haffner	790.805	£7.53	£9.04
82,0 x 5,5 x 1,1	Aeg, Black & Decker, Bosch, Casals, DeWalt, Elu, Fein, Felisatti, Haffner, Hitachi, Holz-Her, Legna, Mafell, Makita, Metabo, Perles, Peugeot, Ryobi, Skil, Stayer	790.820	£7.86	£9.43



APPLICATION:

Soft wood	Good
Hard wood	Suitable
Plywood	Suitable

Numerical Index

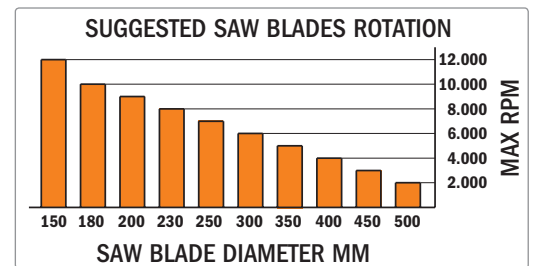
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190	59	694.014	44	823B	71	865B	85	JS1617K	32
191	59	694.015	46-47	824	71	866.501	91	JS2243HM	38
192	59	694.018	40	824.xxx.00	72	866.601	92	JS2345X	33
240	12	694.019	39	824.xxx.10	72	866.602	92	JS3456XF	33
241	12	694.100	48	827	80	880.502	92	JS610VF	35
271	11	695	97	835	68	880.504	92	JS611DF	34
272	11	790	100	835.001	69	881.511	91	JS617K	32
273	11	791	97	836	78	890.5	89	JS644D	32
281	8	796.001	98	837	80	890.6	88	JS711DF	34
283	8	796.500	98	838	81	891.5	89	JS725VFR	33
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292	10	800.517	93	844	83	991	99	JS922HF	33
293	6	800.518	93	846	83	998	96	JS922VF	34
294	7	800.521	93	848	84	999.110.00	94	JS925VF	37
296	9	800.522	93	848B	84	BBS-001	96	JT101AO	26
297	9	800.524	93	849	77	CMT792	94	JT101B	26
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694.002	40	815	76	857	78	JS1210VF	35	JT341HM	27
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694.009	42	818	75	861	82	JS123XF	37	JT744D	26
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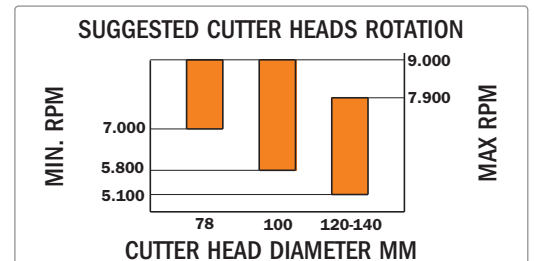
Saw blade safety

- ALWAYS** thoroughly check all blades for damage and flaws before using. Do not use blades with missing or damaged teeth.
- ALWAYS** wear safety glasses and ear protection when using power tools.
- ALWAYS** thoroughly read the owners manual and manufacturer's instructions before working with tools.
- ALWAYS** use a fence and splitter when using the table saw. Do not make freehand cuts.
- ALWAYS** use pusher blocks or a pusher stick, especially when working with small or narrow pieces.
- ALWAYS** unplug your saw before cleaning or adjusting the tool, or before making blade changes.
- ALWAYS** keep your tools sharpened, clean and stored in a safe place to avoid breakage and accidents and to extend the life of your bits and blades.
- ALWAYS** feed the work against the rotation of the blade on table saws.
- ALWAYS** be sure your workpiece is completely supported, before and after the cut.
- NEVER** remove guards from radial arm saws and miter saws.
- NEVER** remove the splitter or anti-kickback devices from table saws.
- NEVER** use dull or damaged blades.
- NEVER** use blades with missing or chipped teeth.
- NEVER** force the cut or overload the saw.
- NEVER** change blades with the saw plugged in.
- NEVER** make adjustments to any saw while the blade is turning.



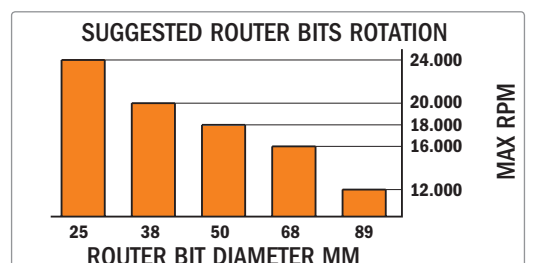
Cutter head safety

- ALWAYS** thoroughly check all cutters for damage and flaws before using.
- ALWAYS** wear safety glasses and ear protection when using power tools.
- ALWAYS** thoroughly read the owners manual and manufacturer's instructions before working with tools.
- ALWAYS** use guards that were supplied with your shaper.
- ALWAYS** use a fence with your shaper. Do not make freehand cuts.
- ALWAYS** use pusher blocks, especially when working with small or narrow pieces.
- ALWAYS** unplug your shaper before cleaning or adjusting the tool, or before making cutter or knife changes.
- ALWAYS** be sure the spindle nut is tight before plugging in the shaper.
- ALWAYS** check that knives are properly and securely installed in the cutterhead when using interchangeable-knife systems.
- ALWAYS** keep your tools sharpened, clean and stored in a safe place to avoid breakage and accidents and to extend the life of your bits and blades.
- ALWAYS** feed the work against the rotation of the knives.
- ALWAYS** be sure your workpiece is completely supported, before and after the cut.
- NEVER** remove guards or any other safety devices from your shaper.
- NEVER** use dull or damaged knives.
- NEVER** force the cut or overload the shaper.
- NEVER** change cutters or knives or make adjustments with the shaper plugged in.
- NEVER** make adjustments to the shaper while the cutter is turning.



Router bits safety

- ALWAYS** thoroughly check all tools for possible flaws before using.
- ALWAYS** wear safety glasses and ear protection.
- ALWAYS** thoroughly read the owners manual and manufacturer instructions before using.
- ALWAYS** check that at least 75% of the shank is securely inserted into the collet of the router.
- ALWAYS** use template guide collars when possible to absorb lateral bit deflection.
- ALWAYS** use a fence when working on the router table.
- ALWAYS** reduce the router speed when working with larger diameter bits.
- ALWAYS** keep your fence adjusted so there is some clearance between the bearing guide and the workpiece.
- ALWAYS** take care to remove large quantities of stock (cross section > 10mm) in more than one run.
- ALWAYS** keep your tools sharpened, clean and stored in a safe place to avoid breakage and accidents and to extend the life of your bits and blades.
- NEVER** use dull or defective, even suspiciously defective, tools.
- NEVER** force the shank entirely into the collet (bottoming out). Leave about a 3,2mm (1/8") space from the bottom.
- NEVER** force the bit into your router or overload the router.



Explanation of symbol

	Antikick-back		Radial relief		Axial angle		Tool with bearing
	Not for hand held use for router table only		Low noise saw blade		Tungsten carbide tipped		Solid tungsten carbide
	High speed steel		Alloyed tools steel		High carbon steel		Bimetal
	High speed steel		Insert carbide		Polycrystalline diamond		One cutting edge
	One + one cutting edges		Two cutting edges		Two + two cutting edges		Three cutting edges
	Four cutting edges		Four cutting edges		Twelve cutting edges		Four spur
	Right-hand rotation		Manual feed		Cardboard box for saw blades		Plastic carry case for saw blades
	Clamshell carry case for saw blades		Plastic box for cutter head		Wear dust mask		Wear safety helmet
	Wear safety glasses		Wear safety shoes		Wear five finger gloves		Wear ear protection
	Warning		Non-Stick Orange Shield Coating™		Shear Angle Grind		



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