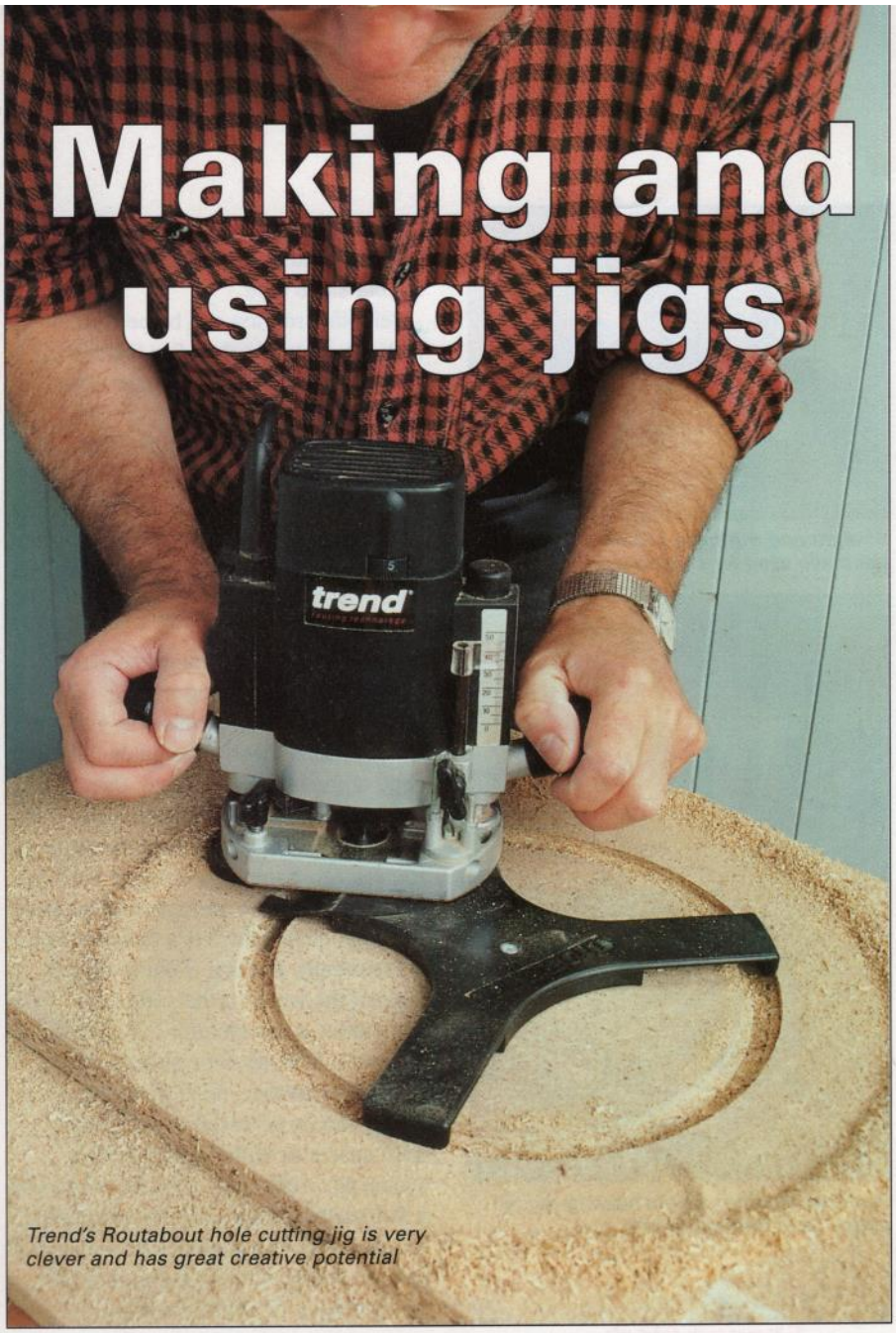
PRACTICAL WOODWORKING & ROUTING

Making and using jigs



Trend's Routabout hole cutting jig is very clever and has great creative potential

Jeremy Broun moves on a step further with expert tips and guidance on making and using specialist routing jigs

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trend routing technology

In the previous article (August 2000) I looked at the router as a jigged device, introducing guide bush routing and showing some basic templates and jigs for a variety of purposes. In this article I'm going to explore jigs and jigmaking further, dealing with some novel jigs for shaping, jointcutting and decorative work. Once you understand the notion of jigging and you're able to free up your imagination, the full potential of routing will become evident.

Circles, arcs and ellipses

The router can be easily used to cut circles, arcs and ellipses of varying sizes for table tops, mirror frames and decorative features (e.g. for inlaying). The simplest method for cutting circles and arcs is to use a trammel bar which attaches to the router baseplate. A straight cutter is used and a series of staged depth cuts will form a perfectly trimmed circular profile.

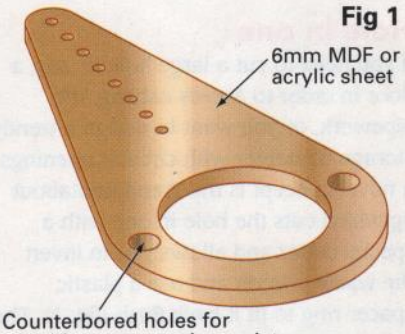
If you wish to avoid indenting the surface of the workpiece with the trammel point, a thin MDF pad can be temporarily attached to the surface using double-sided tape. Alternatively, a sub-base for the router can be made from clear acrylic or 6mm thick MDF with a series of holes in it for driving the centre pin through (fig. 1).

Smaller circles can be cut using a guide bush and MDF template with a hole cut in it. You can cut the hole using a large flatbit (e.g. up to 38mm diameter), a tank cutter or a large Forstner bit. If you're very skilful, you can bandsaw it with a fine blade and then finish off with a curved abrasive stick.

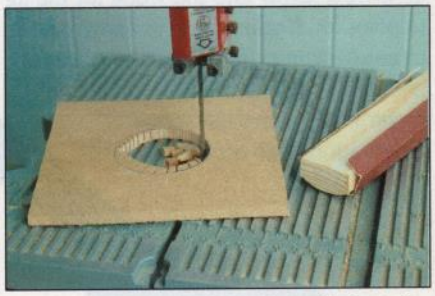
Small diameter elliptical table tops can be cut with the router using the Trend

A circle-cutting sub base can be easily made from MDF or clear acrylic sheet

Fig 1



A bandsaw and shaped abrading stick are your best friends for making jigs. If the blade can't quite turn the corner, try a series of radiating cuts to relieve the tension



The Trend Ellipse jig in action

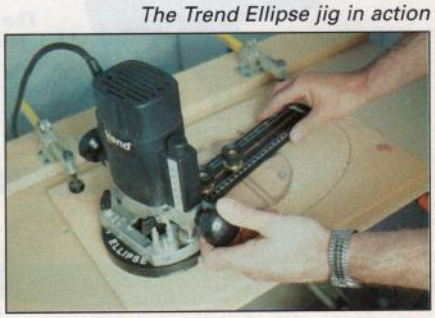
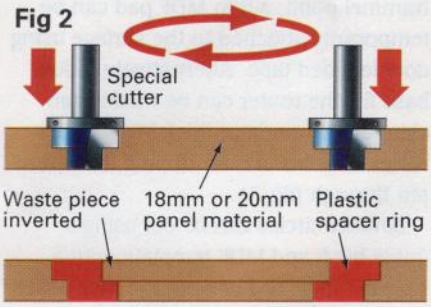


Fig 2



The Trend Routabout jig includes a special cutter. The waste piece is inverted and a rebated spacer ring seats it in flush

Mini Ellipse jig which works in the same way as a trammel bar but has two sliding pivots for setting the long and short axis. Moulding the profiled edges can then be performed afterwards with a variety of bearing-guided cutters.

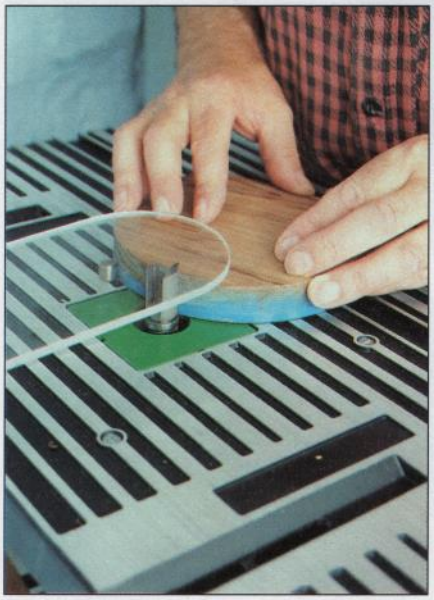
Hole in one

If you need to cut a large hole in, say, a floor in order to access cabling and pipework, or you want to design a trendy storage container with circular openings, a novel concept is the Trend Routabout jig which cuts the hole in one with a special cutter and allows you to invert the waste portion and use a plastic spacer ring to fit it back flush (fig. 2). The creative possibilities are exciting and although the jig is primarily designed for chipboard flooring (18mm or 22mm thick) it can be used on MDF, plywood or even solid wood.

The jig is delightfully simple. All you do is fix a screw into the wood for the jig to pivot on. If you decide to apply this jig to constructing circular lids for containers, you can simply cut a small finger hole, where the screw indentation is, to access the lid.

The author's 1980s rocking chair design profiled with the router

Straight and trimming profiler cutters are generally used for shaped work



Template routing using a bearing-guided cutter. Note the lead-in pin

Shaped work with the router

The router comes into its own for cutting precise and sometimes repeat shapes using jigs or templates. Jigs can also be used to advantage for making one-off pieces. For instance, the one-piece side members of my 1980s rocking chair are 30mm thick and edge profiled from a 3mm-thick template. It obviously takes much less time to accurately make the template than trim the chair members independently by hand (fig. 3).

As mentioned in the previous article, you can easily make templates and jigs for shaped work from plywood, MDF and softwood using PVA glue, panel pins and a hotmelt glue gun. The golden rule is to work to a line and not beyond it. The final finish is achieved by abrading with a stick exactly to the line. Templates are best attached to the workpiece by using double-sided tape.

Template routing can be performed with the router freehand or fixed in a router table. Indeed, the router table is probably the first jigged device/accessory you are likely to purchase. The straight fence is removed and a lead-in pin (to prevent snatching) inserted into the table top and a bearing-guided cutter inserted into the router.

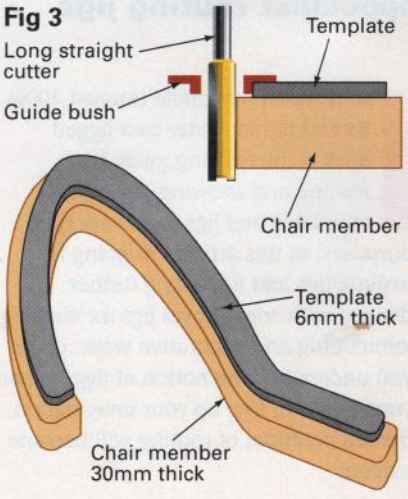
Cutters

The cutters used for shaped work are generally either bearing-guided trimming/template profilers or straight cutters which involve the guide bush or edge of the router baseplate. Usually a fairly stout shank is preferable, e.g. 1/2" diameter, which is typical of the larger routers. Most small 1/4" routers, such as the Trend T5, offer the option of an 8mm diameter collet which is a better choice.

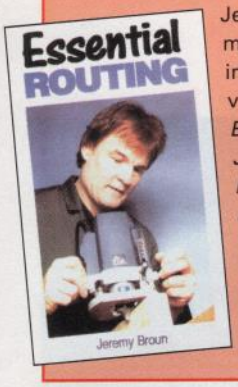
Essentially, shaping is either on the edge of the wood or the surface or sometimes a combination. The profile of the cutter is likely to be either long or wide. For instance, flush trimming — which can be achieved with a simple MDF spacer or with the Trend Pivot Frame jig — demands a wider cutter with a flat-bottomed tip. Conversely, shaping an edge which is around 50mm thick will require a long, straight cutter and will need to be a 1/2" shank cutter.

Template routing making construction fast and accurate on the author's rocking chair design

Fig 3



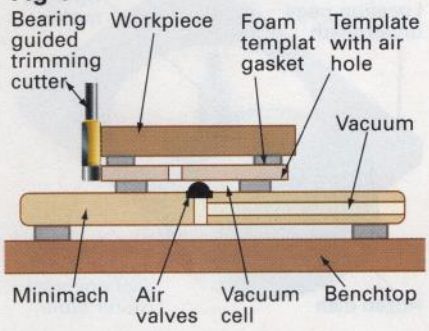
Routing videos



Jeremy Broun has made three instructional routing videos which include *Essential Routing, Jointcutting with the Router*, and *Router Jigging*. For details of these and special offer prices call Trend on 01923 249911

When operating the router, the general rule about feed direction is to move against the rotation of the cutter, but intuitively I find that I often work in both directions, skimming light cuts one way then the other, listening to the pitch of the router as the cutter engages with the wood fibres and going with the irregularities of the grain. It's interesting to note that, despite its immense versatility, the router is not a finishing tool and most work demands an abrasive paper final finish.

Fig 4



A section through the Trend Minimach and template routing set up

Holding work

Integral to any successful woodworking is holding the workpiece securely. Vacuum clamping has been use in industrial routing for some time, but now it's possible for small-scale and home workshops to practice this highly-convenient method of routing.

Conventional holding devices often hinder access of the cutter to the edge of the workpiece. A vacuum clamping device such as the Trend Minimach attaches to a dust extraction unit and kills three birds with one stone: it clamps the template to the workpiece, the workpiece to the device and the device itself to the bench. Foam adhesive strip (supplied with the Minimach) is carefully attached as a loop to the MDF template which has a hole drilled in it for the suction to occur (fig. 4). Bearing-guided trimming profilers are used to trim the slightly-oversize workpiece. The template material has to be at least 15mm thick to give clearance for the cutter bearing.

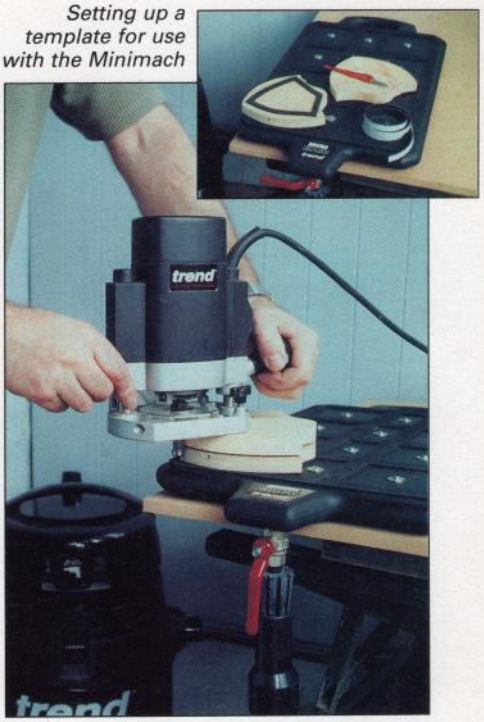
Jointcutting with the router

A variety of joints can be cut with the router using dedicated devices such as dovetail, comb joint and tenon cutting jigs. However you can make jointcutting jigs yourself. My own JKB Omni-jig is an inexpensive yet highly versatile shop-made jig combining a range of two-part MDF inserts with a guide bush and straight or special cutter. The jig can be used to cut single dovetails, single and twin tenons, dowel joints and halving joints in frame material (fig. 5). Its only limitation is that a standard section of material has to be used (eg. around 60mm x 20mm), but you can choose that section and it may very well be convenient to obtain it off the shelf from one of the DIY sheds (eg. 63mm x 19mm). Making the Omni-jig is featured in my most recent video *Router Jigging*.

The JKB Omni-jig is an ingenious device for cutting a range of frame joints

A two-piece template insert for the JKB Omni-jig

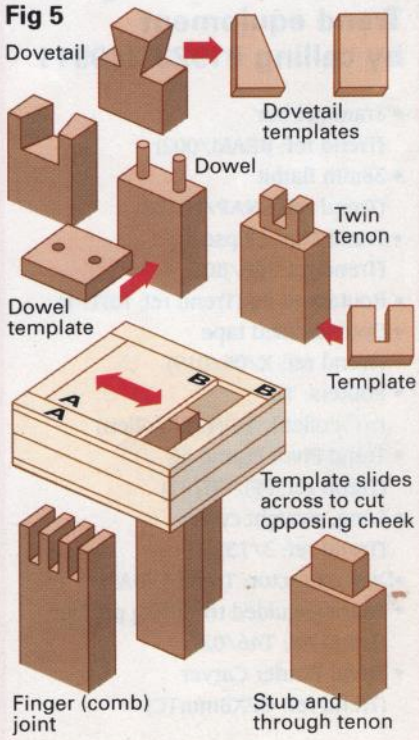
Setting up a template for use with the Minimach

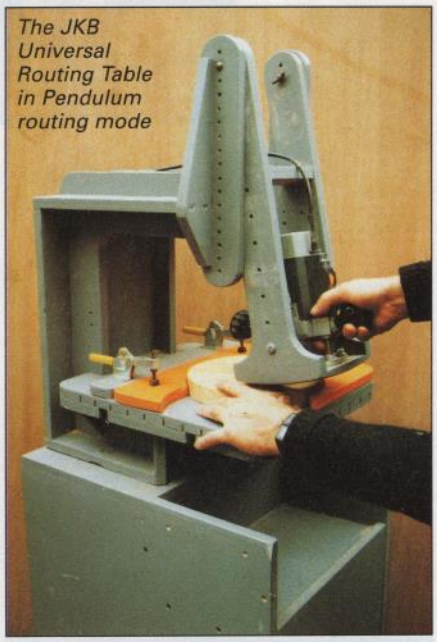


Vacuum clamping of the workpiece to template, template to Trend Minimach and device to the workbench using a chippings extractor

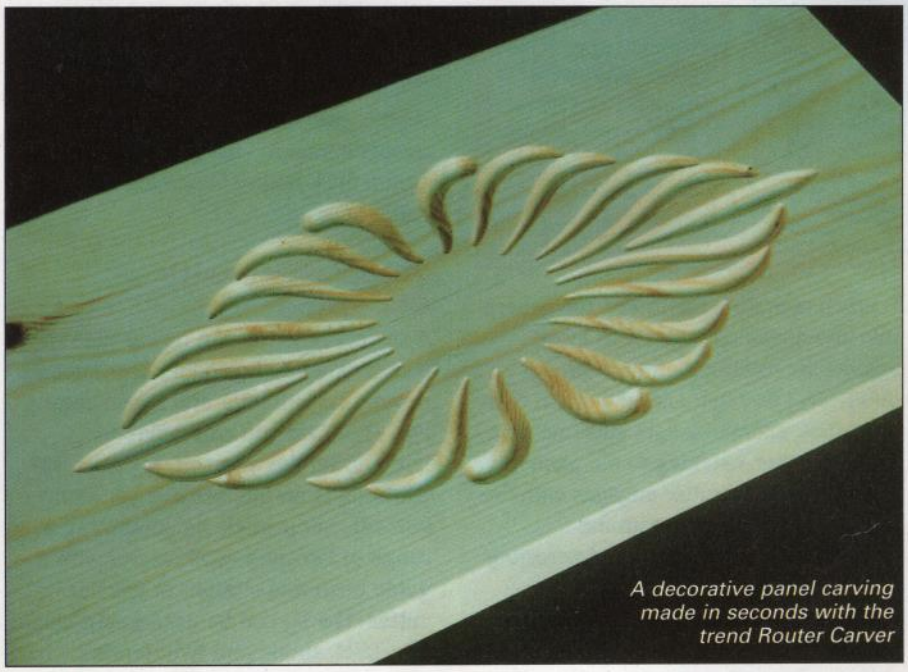
A range of frame joints with the JKB Omni-Jig

Fig 5

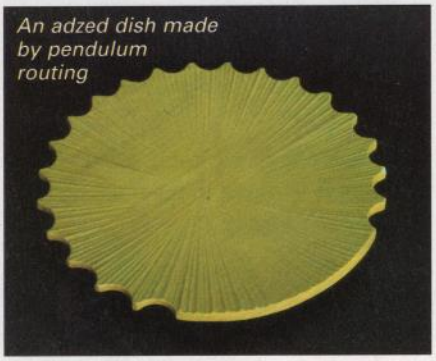




The JKB Universal Routing Table in Pendulum routing mode



A decorative panel carving made in seconds with the trend Router Carver



An adzed dish made by pendulum routing

Order the following Trend equipment by calling 01923 249911

- Trammel bar (Trend ref: BEAM/002)
- 38mm flatbit (Trend ref: SNAP/FB/38)
- Trend Mini Ellipse jig (Trend ref: ME/JIG)
- Routabout jig (Trend ref: RBT/1)
- Double-sided tape (Trend ref: X/05/019)
- Routers: T5 (1/4" collett), T9 (1/2" collett)
- Trend Pivot Frame jig (Trend ref: PFJ/SET/1)
- Long, straight cutter (Trend ref: 3/73)
- Dust extractor: Trend T30A
- Bearing-guided trimming profiler (Trend ref: T46/02)
- Trend Router Carver (Trend ref: CCX8mmTC)

The wonder of wood

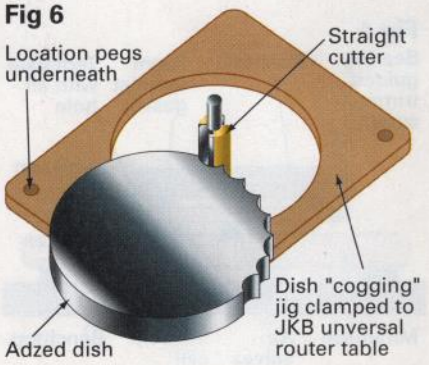
Wood is a great material from which to make routing jigs because you can easily pin or screw attachments, and the material itself absorbs vibration and cuts down on noise pollution. You can make the most basic of router tables using a batten and G-clamp for the fence, or take a little more time to build the JKB Universal Routing Table which offers three modes of routing: inverted, fixed overhead, and pendulum. Plans to make it are included in my book *The Incredible Router*.

Pendulum routing

This novel method allows you to shape 'adzed' bowls using small straight and radius cutters. Various novel edge effects such as 'cogging' can be created with optional jigs with the table set in the fixed overhead mode (fig. 6).

Trend's router carver system uses a special vee groove cutter housed in a conical bearing guide

Fig 6



The router cogging jig attachment for the JKB Universal Routing Table

Carving with the router

Routing technology has made it possible to shape and carve wood in a fraction of the time it would have taken by hand. A simple and novel concept for applying engraved carving to wood panels, drawer fronts and doors is the Trend Router Carver which comprises a special vee groove cutter housed in a conical bearing guide which operates against a series of interchangeable decorative MDF templates. The cutter works horizontally and vertically to achieve the chiselled effects and is very quick to use. Each template sits in a frame and there is an attractive range of traditional carved designs to choose from.