

Router Knowhow

NEW SERIES



Straight cutters (Part 1)

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

In the first part of this brand new series, **Anthony Bailey** introduces you to a variety of cutters

Welcome to 'Router Know How', a new series devoted to routing by our very own router devotee Anthony Bailey, otherwise known as 'the Editor'. Following on from Router Class, Anthony now looks at the subject more from the 'sharp end'; telling you all that he knows about cutters, how to use them, care for them, and the best routers and jigs to use with them. As always, Anthony would like to hear your questions and views on this very broad subject, and who knows, you may get published in our brand new 'Community' pages. Read on...

There are certain things that are guaranteed to wind me up, and one of them is the average 'starter' cutter set; a manufacturer's perception of what a new router user needs in the way of cutters, tempered by the 'price point' of these sets which tends to partially determine the contents. Cutters that are all shank and not much carbide or random dovetail cutters with no jig to match, are just two 'no-nos' as far as I am concerned.

MANY APPLICATIONS

Even the most low budget router supplied with a cutter or two will have a straight cutter, and that is where we need to start. If we consider how many things a straight cutter can do which other cutters cannot – because they are for more specific tasks – it becomes apparent as to why the simple-straight is the router user's best friend in cutters.

Overleaf are a few applications for standard one- or two-bladed TCT – tungsten carbide tipped – straight cutters.



Left: A good quality starter cutter set. However, it may not contain all of the profiles you really need



Slotting using a T-square



Dentil mould and frieze can be done using a jig

- Slotting (short grooving)
- Grooves (continuous machining)
- Trenching (wide grooves)
- Drilling and counterboring (limited size range but exactly perpendicular)
- Rebating (with guidance)
- Biscuit jointing (mid panel slotting)
- Template making
- Inlay lines and bandings
- Shelf stud holes
- First stage machining before bearing guided moulding
- Dentil (toothed) moulding
- Mortising
- Trimming sawn edges
- Hinge recessing
- Kitchen worktop joints
- Lock mortising
- Honeycomb worktop machining
- Kitchen hinge sinking

CHOOSE YOUR CUTTERS

I'm sure you can think of more applications I haven't mentioned, but you can get the idea; the plain old straight cutter is exceptionally versatile and the one that should be most popular in your cutter set. However, most of us just have a few when we should have many.

The standard sizes such as 6.4mm, 9.5mm, 12.7mm, 16mm and 19mm tend to get a pounding and often end up rather scorched and worn. It makes sense to have duplicates or even triplicates of the most used



Discreet shelf studs



A mortise box makes joints easy to do



Trimming a board edge smooth



Standard straight cutters looking worse for wear



This jig makes hole drilling very easy

sizes so you never run out of a sharp cutter. Kitchen worktop installers can buy sets of three or four cutters of the same size for this very reason.

You also need to consider whether you have the right diameters or lengths. Most shelf stud holes are 5mm diameter, so why not make up a hole drilling jig for use with guidebush and 5mm cutter,

rather than resorting to a less neat and predictable 5mm bradpoint mounted in a drill?

A standard 6.4mm cutter is nearly 0.5mm wider than 6mm MDF or ply so it can be loose in a panel slot – maybe a 6mm cutter



Left: Single flute
Right: HSS and twin flute



A variety of straight cutters

would be a good investment?

If it is veneered sheet then check the thickness before selecting a cutter in case it is thicker than 6mm, in which case a 6.4mm might be correct. However, veneered ply is 'sanded back to thickness', unfortunately leaving rather more glue than veneer.

Standard cutters – especially in sets – tend to be short but you can get longer versions in all diameters, which are invariably needed; another reason to eschew a starter set and build your own custom set of cutters.

CUTTER TYPES

TCT single flute

These have better chip clearance but as they only cut once per revolution, do not give quite such a good finish. These are normally available in smaller sizes where cutter construction and chippings clearance rate make it more useful and practical.

TCT twin flute

Twin flute cutters are available in sizes from 1.5mm diameter upwards to a



Board thickness is variable

monstrous 50mm diameter, with every size variation in between. Of course, you should buy good quality cutters of any description; you cannot expect cheap sets to last well or even be safe, and it is very true of straight cutters. Many cuts are not very deep, such as shallow grooving, while things like mortising will require much longer shanked and bladed cutters; so it pays to have some variety to suit different situations while keeping your budget under control.

HSS (High Speed Steel)

While TCT is pretty universal among router cutters there are times when HSS has the edge, so to speak. It is primarily used with softwood or at least softer wood. It is intrinsically sharper than TCT but that finer cutting edge is lost much more



A good thin, even brazing line



Safe working shank depth mark



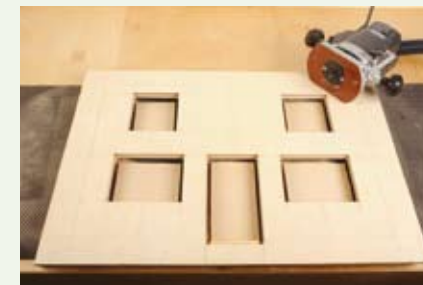
Proper cutter storage

quickly. Because the cutting edges are machined from one piece of solid steel these cutters will often have a swept waveform from the cutting edge to the middle of the cutter which helps the chippings escape easily. However, English manufacturer Titman make a range of TCT cutters intended for softwood; this is done by altering the cutter geometry so the cutting edges are more acute and slice the wood better. These cutters should fare better than HSS if they hit a knot or other defect.

WHAT TO LOOK FOR

These comments pretty much apply to all cutters irrespective of type. Ideally all cutters should carry laser etched shank markings including a collet depth mark. The carbide blanks that form the cutting edges should be of reasonable thickness in relation to the size of the cutter. Very cheap cutters usually have thin carbide that may fracture in use. Cheap cutters often lack a bottom cutting insert which is essential for plunge cutting. The slightly golden coloured brazing line where each blank is secured to the cutter body should be bright and without any holes in the brazing that could indicate a joint weakness. Better quality, well designed cutters will often have a chip limiting feature in the form of a 'shoulder' of body metal opposing the cutting edge and its supporting shoulder. All in all, this makes for safer machining. Small straight cutters are one of just a few types that are sometimes made from solid one-piece carbide – the darker metal shank without blade inserts is the giveaway here.

STRAIGHT CUTTERS IN USE



Using a template to make a dolls' house



Quick circle cutting with a trammel



A frieze jig in use



Edge slotting with an L-jig



Use a longer shank cutter in a table



Scraping deposits off a cutter

GETTING THE BEST FROM YOUR CUTTERS

- Store cutters correctly so they cannot touch and damage the carbide
- Insert the correct amount of shank in the collet (usually about 19mm)
- Choose a longer cutter instead of not mounting the cutter in the collet sufficiently
- Take limited depth passes especially with 1/4in shank cutters – no more than the shank diameter
- Keep cutters clean as resin and dust will cause a blunting effect and make them heat up
- Have several cutters in the most used sizes – never run out of a sharp cutter
- If they seem blunt, hone cutters using a diamond hone
- When housing, use a straight cutter for a primary cut before a dovetail cutter

We will look at more specialised straight pattern cutters in the next issue but hopefully this opening article will persuade you of the value of the humble 'straight' in your cutter arsenal. ■