Routers

Survey

Sorting out the MOFS from the POFS

Jeremy Broun

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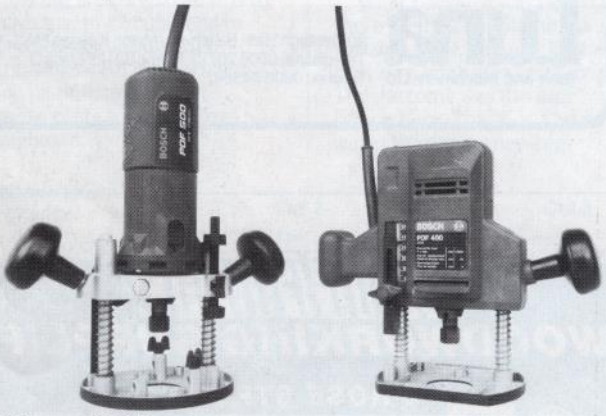
Have you ever sat in a restaurant gazing at the menu not being able to come to a decision as to what to eat? Well, apart from the problem of translating the exotic language, it may be that there is simply too much choice. Certainly a little education on the subject helps, and so it is with electric kettles, vacuum cleaners, videos and not least – routers.

The portable router is revolutionizing woodworking for an increasing number of people, amateur and professional alike, and fuelling this revolution is the ever-growing army of routers of diverse specifications entering the marketplace.

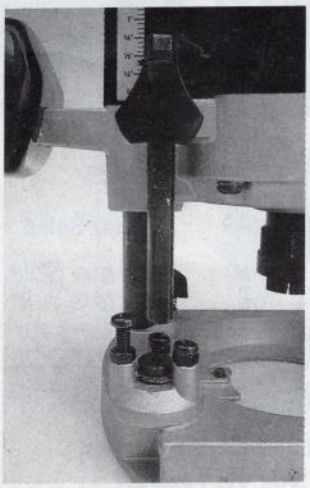
compared the merits of the 'GOFS', and 'MOFS' and the 'POFS', you come across one word in particular which is common to all routers – and that is the word 'versatile'.

The router is an amazingly versatile power tool. In fact, I would go as far as to say it has *unlimited potential* for the woodworker today. Suffice to say here what the tool *can't* do rather than what it can. Well – it can't actually *think* for you! (Yet.)

Given the flexibility of the router, it is *almost* true to say that all routers basically do the same job, but that some (the lower powered ones) just take a little longer. But there's more to it than that of course.



A brace of POFS!



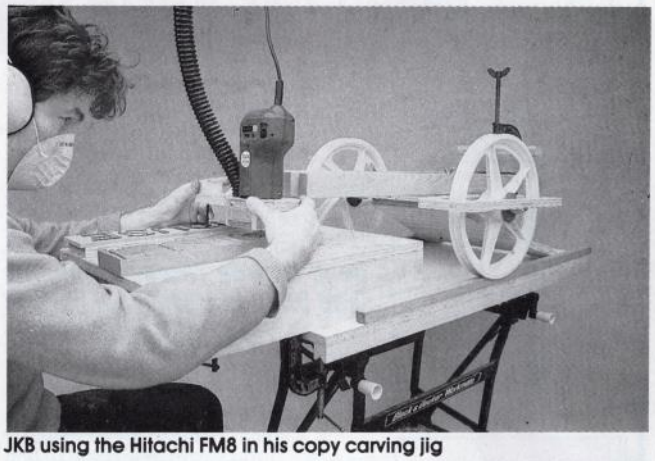
3 stage turret and base opening (R500)

When you have waded through the manufacturers' jargon ('Full wave Electronic', '3 stage turret', 'Professional', 'Heavy Duty' etc.) and

The basics

Let's briefly take a look at this remarkable tool. The router is a very simple concept. It is a high-speed electric motor (around 25,000 rpm) which drives a razor-sharp cutter at its business end, held in a chuck or collet, and the cutter is normally fed or lowered into the wood by a spring-loaded plunging mechanism integral to the body of the machine and its base. The main controls are a power on/off switch, a plunging lock, and depth guide with fine adjuster to control the depth of cut.

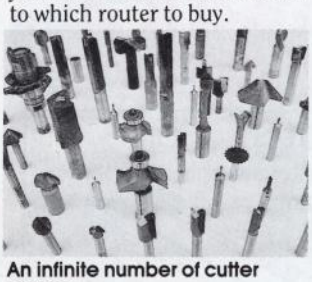
By lowering the cutter into the wood and then drawing the tool across the wood (normally against some kind of guide or jig) a simple hole is translated into a groove – at its simplest. But the applications range from edge profiling, joint cutting and screw thread making to bowl making and three-dimensional copy



JKB using the Hitachi FM8 in his copy carving jig

carving – they are just too numerous to mention here. The router can be hand held or fixed in a table, either overhead or underneath as a spindle moulder.

It is not strictly true to say that the larger the router the more it will do, as I have a very small router in my kit which 'reaches the parts the other . . .' However, in general there is probably an optimum size and specification for the kind and amount of work you are doing and at the end of the day *you* have to make the choice as to which router to buy.



An infinite number of cutter profiles

There are three main factors determining the function and versatility of a router:–

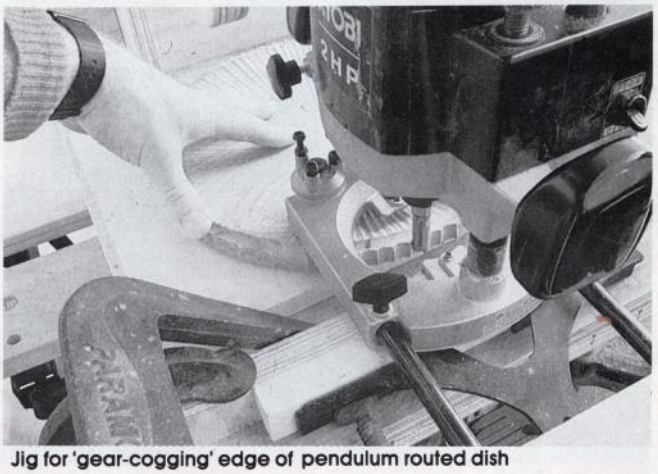
1. The power rating (from about 500 watts to 2000 watts.
2. An infinite variety of cutter profiles.
3. Attachments and jigs.

Power groups

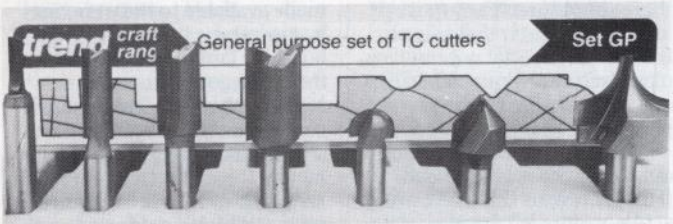
Taking each of these factors in turn, we can broadly categorise routers into three general ratings with corresponding collet diameters:–

500–750 watts ¼" or 6.35mm collet (optional 6 & 8mm)
750–1300 watts ¼", ⅜" or 9mm collet
1300–2000 watts ½" or 12mm collet

The collet sizes relate to cutter shank diameters and where the small routers are limited is in the range of available ¼" or 6.35mm diameter cutters.



Jig for 'gear-cogging' edge of pendulum routed dish



A versatile set of cutter profiles from TREND offering unlimited creative potential for the imaginative woodworker

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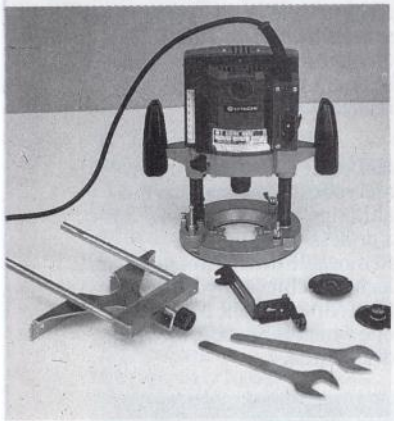
Cutters and jigs

Router cutters (or bits) therefore are available in three main shank sizes, are of high-speed steel (HSS) or the longer-lasting tungsten carbide tipped (TCT) or solid carbide (TC) and come in an infinite variety of profiles.

Some of the router manufacturers supply their own range of cutters and there are other specialist suppliers such as Trend, Axminster Power Tools, Method Tools, and Wealden Tools, etc.

The last factor determining the capability of the router is the 'jig' which in its basic sense includes the manufacturers' standard accessory straight and template guides, but which



Hitachi TR12 with standard accessories

really puts routing into the fast lane when you build your own steadying and guiding devices (out of MDF or plywood, etc.) and is really the very essence of creative routing.

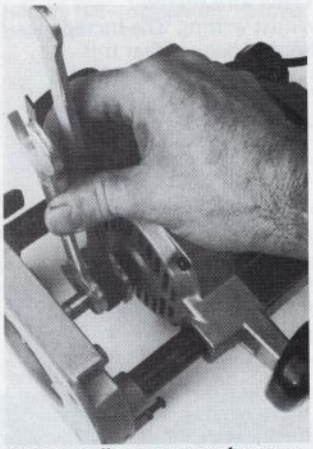
Various accessories (which can be broadly described as jigs and attachments) are also available from the main manufacturers and include items such as router tables, dovetailing attachments and drill and mill stands. Trend and Wolfcraft, for instance, supply a range of router attachments too numerous to list here.

However, each router manufacturer supplies a few standard accessories in their package, such as straight fence, template guide bush, collet sleeves (for reducing cutter shank diameters), a TCT straight twin flute cutter and, if you are lucky, a plug on the end of the router cable (but don't be too optimistic about that!)

Safety rules

Having touched briefly on the capability of the router, there is one aspect which ought to be mentioned here and that is – safety. Of course any tool or machine is only as safe as the user and no amount of chip guards and blade protectors, etc. can prevent an accident when the tool is irresponsibly used. In this respect I personally approach all my machines with fear.

Given that the operator protects him/herself with earmuffs, dustmask and a visor, the router should be



Lining up the spanners for easy tightening of chuck

double-insulated and properly earthed and ideally it should have a thick power cable. The latest generation of routers are beginning to be equipped with chip guards and dust extraction adaptors.

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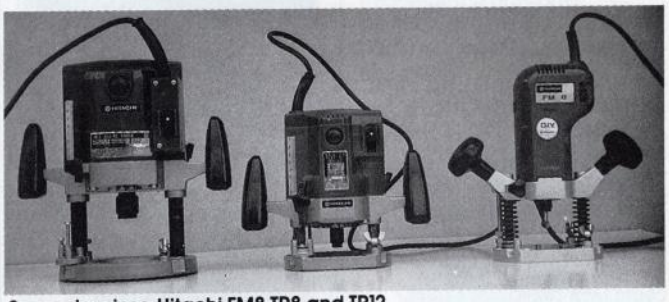
Decision time

Well, if you are considering buying a router, no doubt you will be wanting to know what things to look for, in order to make a good choice and, of course, how much you can expect to pay.

Perhaps the main decision will be about the size of router as obviously this is reflected in the price, but it must suit your particular needs as well.

This is the difficult one, because the router is so versatile, as I have already said.

If you are a complete beginner, then it makes sense to start with a smaller model which is light enough to master and so you may be thinking of the 450–750 watt power range, of which there are several to choose from,



3 popular sizes, Hitachi FM8 TR8 and TR12

some under the DIY label, but all of which will take ¼" or 6.35mm shank diameter cutters.

If you consider yourself a serious amateur or 'semi-pro' (these are loose but convenient categories) then perhaps a router rated between 750–1500 watts would suit. This category covers ¼", ⅜" and ½" collet capacities and as I have mentioned before, the larger collet capacities allow greater cutter options, but then you can go a long way with just a few cutters!!

Perhaps the best distinction is to look at the power rating in the same light as a car engine. Some would argue there is no shortcut to horse-power and a relatively unstressed motor will perform better and last longer.

For heavy-duty use (continuous 'professional' work) perhaps a router of around 1500 watts and ½" collet capacity is desirable (Hitachi produce a good one at slightly under- the TR12 at

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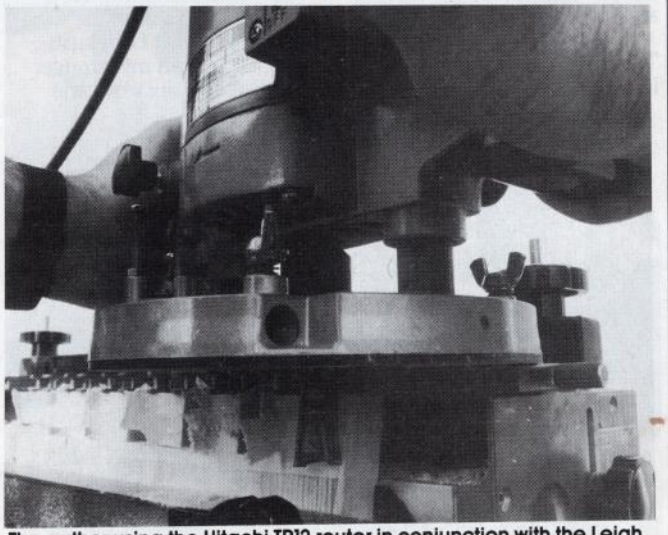


The author using the Hitachi TR12 router in conjunction with the Leigh Dovetail jig to produce attractive precision cut dovetails

HITACHI TR8 – A well engineered, compact, light-to-middle-weight router. Accessible carbon brushes, three-stage depth turret, flat depth bar and well positioned on/off switch and plunge lock lever for easy use. The vertically inclined handle grips give this router a business feel to it. A flat-sided base is useful for accurate batten routing. A very manageable size router.

ELU MOF96E – Perhaps the only router I sampled without needing to wear earmuffs, this router is compact and robust. Slider on/off switch and twist handle plunge lock are fairly easy to operate. The variable speed (electronic) spares one the vicious grab of conventional routers on start-up. The fence extension rods are sensible as longer sections can be easily obtained. The high build quality is apparent (and, of course) is reflected in the price. Elu accessories are plentiful.

I ought to mention that the Elu MOF96E and Hitachi FM8 and TR8 models share the same section base and fence-bar housings, hence allowing interchangeability of accessories such as router tables.

½" collet range

The other routers I sampled fell into the ½" collet capacity category with power ratings ranging from 1300 to 2000 watts and included the Hitachi TR12, Ryobi R500, Makita 3600B, Bosch GOF1700E and Hitachi M12V.

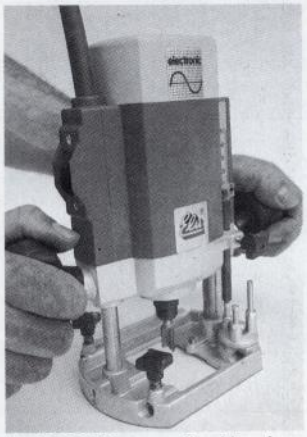
HITACHI TR12 – Similar looking to the smaller TR8, this is a professional-quality router with a more than adequate 'appetite' for most woodworking tasks. An altogether heavier router (as all routers of this power rating are), this model boasts excellent visibility through the base and easy to use controls. The carbon brushes are accessible from the outside of the casing. The base is circular.

RYOBI R500 – A robust, no-pretence machine at excellent value for money. Its meaty 1500 watt motor is compact and manageable. The standard accessories include a wheel guide as well as the usual straight and template guide. The old-fashioned on/off switch protrudes sensibly and is easily controlled, and the oblong base helps prevent the router rolling off the bench which does occasionally happen!

MAKITA 3600B – My 'old faithful' which has served me well for over fifteen years and has had one set of replacement bearings in this time. Purchased originally by chance, this router has eaten its way through a lot of wood and still seems hungry! Its power is more than adequate and there is one small detail which is hard to beat and that is the sprung depth stop which is threaded – this allows macro depth adjustment by simply releasing and turning with one finger. (There is no finer adjustment than a screw thread.)

Bosch POF 400 – simple concept

Hitachi TR8 – accessible carbon brushes



Elu MOF96E – excellent track record

'My old faithful' Makita 3600B – intelligent fine adjuster

The heavyweights

The two heavyweight class routers I tried out were the Bosch GOF1700E and the Hitachi M12V.

BOSCH GOF1700E – A monster to use. I engaged a massive finger joint cutter in my trials (one of the meatiest router cutters available) and the machine hardly twitched and of course the easy start made all the difference with such a hefty cutter. The controls are sensible, with a trigger-type on/off switch in the handle and a massively engineered plunge-locking lever. Cutter changing is simplified with the integral spring-loaded spindle lock necessitating only one spanner. Impressive plunge depth of 75mm and long reach fence bars.

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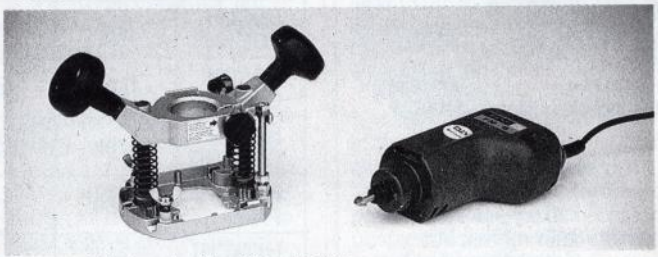
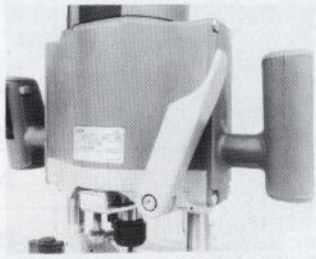
A typical manufacturer's router outfit – The Bosch POF 500 with standard accessories. This one comes with a plug!

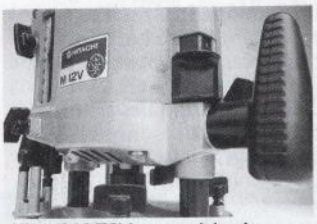


Removable head of the Hitachi FM8

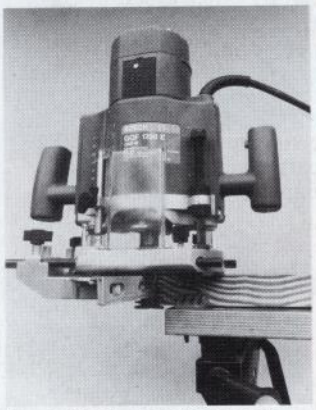
The relation of the controls to the fingers



The massive Bosch 1700E. Note the spindle lock for single spanner cutter removal.



Hitachi M12V – surprisingly compact.



Bosch 1700E – hardly winced when the finger joint cutter bites the wood

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HITACHI M12V – Surprisingly compact for its 1850 watt capacity. It is actually no bigger than the 1300 watt TR12 model and fractionally heavier. Well engineered and designed, its controls are easy to use. The accessible slider on/off switch and plunge lock lever are definite, and the depth adjuster is knob controlled (winding up and down). I thought the router was going to take off when I set the electronic control to its maximum speed as the powerful motor wound up to full knots. On deep plunge cutting the motor did not wince.

Cordless trimmer

Finally, and in direct contrast, there is one other router which I wish to mention here. Not strictly a router as it is not labelled as such, the little cordless MAKITA 3700DW trimmer did not escape my attention as a 'router which reaches those parts . . .'!

The cordless Makita 3700DW

It is surely worth mentioning here, not only because battery powered tools do have their merits, but because its height (around 200mm) does allow it to get into confined spaces, i.e. routing out shelf housing after the carcass has been glued up.

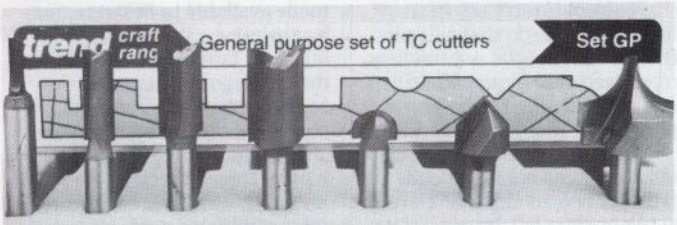
The manufacturer deliberately supplies a 6mm collet (not ¼") as it restricts cutter options, which if too large would burn out the little motor, so I take licence here to suggest that although intended as an edge trimmer it can rout shallow grooves up to 6mm diameter, if you are patient, but in short it makes possible otherwise impossible techniques – and isn't this just the fun of woodworking generally and routing in particular? Making the impossible possible!

Jeremy Broun's book *The Incredible Router* will be published by Guild of Master Craftsman Publications in October 1989. A review appears in the Book Reviews section of this issue.

David and Goliath!

Accessories code:
f = fence. tgb = template guide bush + diam.
c = cutter. r = roller fence.
tr = trimmer guide.
cs = collet sleeve + no.
* = routers sampled by JKB

Model	Power watts	speed rpm	collet sizes	plunge depth	weight kg	stndrd accsrs	price ex VAT
B & D BD66	480	26k	¼"	50mm	—	f.c.	54.70
ELU MOF96	600	24k	¼"	50mm	2.7	f.tgb17	137.00
ELU MOF96E*	750	8–24k	¼"	50mm	2.8	f.tgb17	167.00
ELU MOF131	1300	22k	¼"	65mm	4.8	f.tgb30	215.00
ELU MOF177	1600	20k	½"	65mm	5.1	f.tgb30 cs2	270.00
ELU 177E	1850	8–20k	½"	65mm	5.1	f.tgb30 cs2	300.00
BOSCH POF400*	400	27k	¼"	48mm	1.8	f.tgb.	64.57
BOSCH POF500*	500	27k	¼"	52mm	2.3	f.tgb.	76.39
BOSCH GOF1600	1600	22k	½"	75mm	5.7	f.tgb.	215.00
BOSCH* GOF1700E	1700	8–22k	½"	75mm	5.8	f.tgb.	240.00
HITACHI FM8*	550	27k	¼"	52mm	2.3	f.tgb18	71.31
HITACHI TR8*	730	24k	¼"	52mm	2.7	f.tgb18	131.00
HITACHI M8	800	24k	¼"	50mm	2.7	f.tgb18	137.00
HITACHI M8V	800	8–24k	¼"	50mm	2.8	f.tgb18	167.00
HITACHI TR12*	1300	22k	½"	60mm	5.0	f.tgb18 tr.c.cs2	208.00
HITACHI M12V*	1850	8–20k	½"	62mm	5.3	f.tgb18 c.cs2	249.00
HITACHI M12SA	1600	22k	½"	62mm	5.2	f.tgb18 c.cs2	220.00
MAKITA 3700DW*	7.2v	8k	6.0mm	—	0.8	f.c. charger	110.00
MAKITA M362	860	24k	⅜"	35mm	2.5	f.cs.	108.00
MAKITA 3620	860	24k	⅜"	35mm	2.4	f.cs.	130.00
MAKITA 3600B*	1500	22k	½"	60mm	5.0	tgb18 f.t.c.cs2	215.00
MAKITA 3612BR	1600	23k	½"	65mm	5.7	f.tr.tgb. 2cs.c.cs2	219.00
RYOBI R150	750	24k	¼"	50mm	2.8	f.tgb.c.	115.00
RYOBI R500*	1500	22k	½"	60mm	5.0	f.tgb18 c.r.cs2	192.00
RYOBI RE600	2050	10–22k	½"	60mm	6.2	f.tgb18 r.c.cs2	246.00



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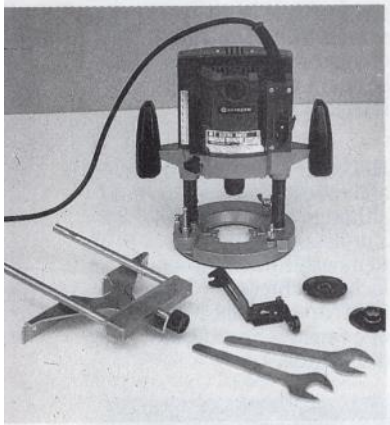

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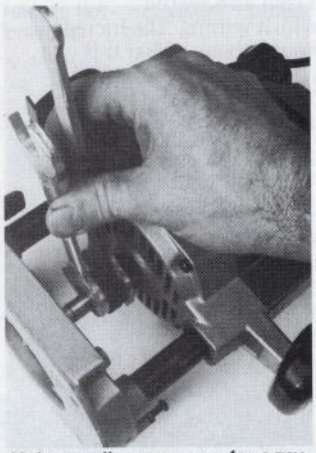

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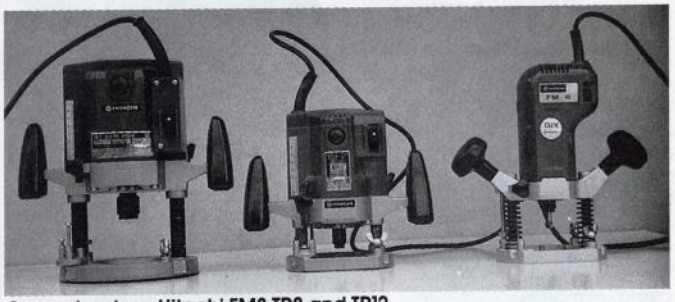

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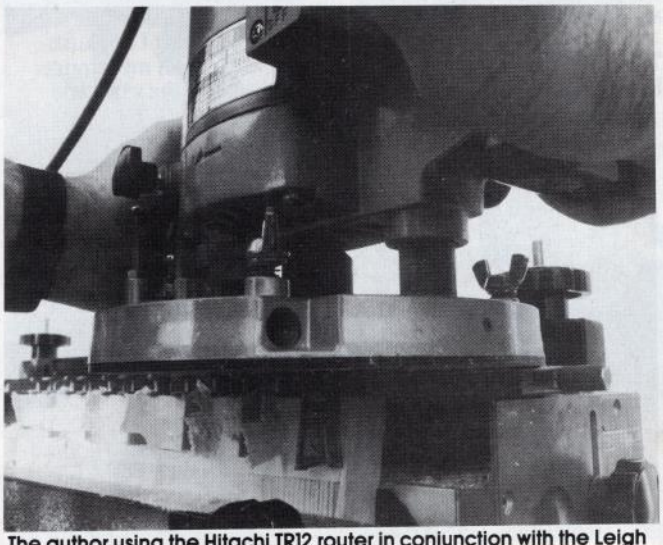

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