Welcome to the Router Buying Guide!

For many years, we have been answering questions concerning power tools and woodworking machinery. One of the most frequently asked questions above all, has always been related to routers.

Being amongst the most versatile tools in a cabinet makers workshop, it is also one of the most sophisticated machines. With this little router buying guide, we want to give you a basic overview on what to look for when you purchase a router.

Have fun and discover the world of woodworking routers!

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About the Author

With over 20 years of experience as a cabinet maker, Hubert Keil worked for various woodworking machinery distributors and power tool manufacturers in Germany, England, Italy and Spain. Amongst them, Fortune 500 companies such as Black&Decker (DeWalt, PorterCable) and well known router equipment supplier such as Leigh Industries.

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Index

What to look at when purchasing a woodworking router? 4

Handles and Motor Power 5

Motor Power - 1hp, 2hp or above? 6

Variable Speed Control 7

Collet Bit Sizes 8

Router Bit Types 9

Most important Parts of a Router 10

Accessories 11

Recommended Resources and Suppliers 12
The Router Buyers Guide

What to look at when purchasing a woodworking router?

The router is certainly one of the most versatile power tools used in woodworking. It's an essential machine in today's workshop and becoming increasingly useful to the woodworking beginner.

In this book we want to cover all the important parts and aspects of a modern router and what you should look at before you purchase a new one.

Two different types of Routers

The different types of routers available, we can basically separate them into two categories:

- Fixed Base Router
- Plunge Router

While the fixed base model is simply speaking about a motor with a base plate attached to it, the plunge router allows the motor to be moved in and out of the wood.

Which one is used for what?

A fixed base router is by design, limited to edge routing and cutting in from outside towards the board. Allowing everything except cut out and dive in cuts.

The plunge router models can be used as a fixed base router, by simply fixing the motor on the plunge bars, but can also be used to cut into the wood using the plunge mechanism.

What's better - fix base or plunge router?

Generally speaking, in normal woodworking, using **plunge router models are the best choice**, as they are more versatile in use. The only exception I could think of would be in high precision guide bush related work (e.g. using a router on jig), where you use the router strictly in a fixed position.

Here, the **fixed base models have a certain advantage** in centricity of the guide bush vs. the base due to less movable parts.
Handles and Motor Power

Different Handles

As with different types of routers, the different handles available are also of importance. The standard double knob handle on either fixed base or plunge routers covers most applications best. Especially when you do groove cutting and freehand signage routing, the two parallel handle knobs are an excellent choice.

The alternative D-handle grip mostly found on some fixed base models allows a kind of single hand movement. Similar to the pistol grip on some edge and plunge routers, the woodworker can control the router more easily along the edge of the board. Especially for edge trimming work, the pistol grip routers give you an advantage of easy handling.

Motor Power - 1hp, 2hp or above?

The simple answer "the more the better" is NOT working here. Let's look at what we are talking about here. Generally speaking, routers can be divided into 3 groups:

- Up to 1hp (800 Watt)
- 1hp to 2 hp (800 - 1600 Watt)
- Above 2 hp (1600 Watt and above)
Motor Power - 1hp, 2hp or above?

The light - 1 hp - Router

Let's just call these models 1hp models for simplicity; even some of them might have up to 1000 Watts. These routers are the perfect model for edge trimming and most routing jobs. The router usually fits router bits with shank dia: 8mm allowing e.g. to cut grooves up to 20-24 mm wide. The very low end units in this category (up to 500 Watts) usually only take ¼” or 6mm shank diam. and are really only of use for very limited edge trimming or a bit of DIY work.

The medium - 2 hp - Router

This is the standard category for most professional router models. The difference between the 1hp and this class is foremost the collet size. On 2hp models you should be able to fit router bits with ½, 12,7mm and 12mm as well as the smaller 8mm and ¼ bits. Being able to fit bits with these large shank diameters and the motor power allows you to cut e.g. grooves in width of up to 30 mm in one pass.

These 2hp models are the most versatile routers, but has the disadvantage of a higher weight compared to the 1hp routers. Especially when doing lots of edge trimming, you might consider a lighter unit.

The heavy - 2hpPLUS - Router

These very heavy duty units, and I am not referring to precisely more than 2hp, are most often used for industrial applications and staircase building. Most of the units have especially large collets which allow shanks diameters of 16mm or bits with thread M16x1,5 to be used.

These models sometimes even come with 380 Volt motors, allowing them permanent work on fixed dovetail jigs or overhead routing tables. Their use for portable routing applications is rather limited, due to its heaviness.

Which one to choose?

If you start woodworking and especially using a router, you are almost certain to go with a light 1hp router model using 8mm shank size cutters. These units are perfect for edge trimming applications and allow you to do the basic groove and cutting work. An 800-1000 Watt unit would be my first choice.

If you are an experienced woodworker or even a professional, than it’s really not a question of which one you should go for, you really need both types. One 1 hp unit for your basic edge routing and a 2hp unit for your heavy duty work.
Variable Speed Control - Collet Bit Sizes

Router Speed Control (fix vs. variable speed) - why would I need it?

Some router models come with a choice to select a fix speed model or a variable speed version. As the name says, the variable speed models allow you to slow down the speed of the router motor.

Why would you need variable speed?

Basically, an electronic regulated variable speed router provides two advantages:
- it allows you to adapt the router speed to your wood and router bit used
- it maintains the router speed at the same level, even when cutting fast into the grain

The ability to adapt the speed of your router prevents the cutter from burning along the wood, in case you are cutting cross grain at a very low feed rate. In addition, if you are using your router to cut other materials such as PVC or Aluminium, the variable Speed Option allows you to slow down the motor and adapt it perfectly to the cutter diameter used.

Collet and Router Bit Size

Depending on where you are living, you will find various router models with different collet sizes to allow different router bits to be fitted.

"The Metric world"
In metric countries you will most likely find these collet and shank sizes:
6mm, 8 mm, 12 mm - and occasionally M12x1 and M16x1,5 threaded

"The Inch World"
In inch measures you will come across these sizes:
¼" (6,35mm) and ½" (12,7mm)

<table>
<thead>
<tr>
<th>Most common Router Bit Shank Sizes</th>
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<tbody>
<tr>
<td>6mm</td>
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<tr>
<td>12mm</td>
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Drawing exaggerated for better demonstration

We try to keep this info sheet up-to-date. If you find that any address has changed, please let us know. However, as a general comment, allow us to mention that the views, statements and information expressed on the www.inside-woodworking.com web site or publication represent the opinions of the authors. The authors do not assume any liability for the information contained herein.

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Collet Bit Sizes - Router Bit Types

This is just a rule of some, as in recent years 8mm bits become even more standard in North America.
However, the shank size of the router bit used relates highly to the rigidness and therefore to the overall size of the router bit. Simple rule of thumb:
The bigger the bit shank, the larger the diameter of the cutter can be and the more powerful the router needs to be.

What collet / router bit size to look for?

I would try to go for 8mm shank bits if you go for a 1hp router. An 8mm shank diameter offers up to 60% more shank surface and therefore even more stability to the bit.
In case you are looking for a 2hp router, it depends on which country you live in, use either a 12mm or a ½ bit and collet sizes.

Router Bit Types

Generally you can choose from two different types of router bits.

- Edge Routing
- Groove Routing

Edge Routing Bits are used, as their name says, for edge routing. Be it a profile or a chamfer or whatever, they are guided along the edge of the wood; either guided by the router guide fence or by a pin or bearing on top of the router bit itself.

Samples of Edge Routing Bits

- Rabetting Bit
- Chamfer Bit
- Ogee Bit

Drawing exaggerated for better demonstration
Router Bit Types

Groove Routing Bits are used to cut inside a workpiece. Either simple grooves or cut outs or different shapes and profiles. Signage or V-Shape bits also belong to this category.

Samples of Groove Routing Bits

Dovetail Bit  Straight Flute  Spiral Upcut
Drawing exaggerated for better demonstration

Router bits are made out of different materials. The most common ones are HSS and TCT. HSS stands for High Speed Steel and is mostly used to cut soft woods like pine e.g. The harder TCT (Tungsten Carbide Tipped) router bits are used to rout hardwoods (oak e.g.) and plywood or MDF boards.

Which bit should I use?

If you rout hardwoods, MDF or plywood you have not much choice but to use the more expensive TCT router bits.

If you cut softwood, you can use HSS bits, as they are much cheaper. However, keep in mind that they do not last as long as TCT bits.

Exception!

There is one exception to this use which are TCT bits, if you can afford them Rule:
In case of cutting softwood or very delicate hardwood which tends to splinter a lot, you should use SPIRAL-UP-CUT HSS (or TCT) router bits. These spiral shaped router bits cut smoother into the wood and prevent it from splintering. Mostly available in plain straight shape, they guarantee the best cutting results.
Most important Parts of a Router

Router Base

When looking for a good router, you may pay special attention to the base plate. This area and especially the surface will be later in permanent contact with your workpiece. You want the base plate made of a durable material which prevents scratching the surface. Most often plastic, steel or phenol pieces are attached to the base. On excellent routers, these base plates can be exchanged easily (screws) in case they wear out.

I personally prefer phenol base plates as they last longer than plastic inserts.

Depth Adjustment and Stop

Make sure the router has a precise depths stop with fine adjustment capability so you can fine tune the depth of cut you want. Most routers have also triple or quadruple depth stops which allow, in addition to fast changes in an different depth of cut. This is very useful if you cut deep cuts in various instant so you rout step by step a bit deeper.

Guide Fence

Almost all routers come with a guide fence so you can cut along the edge of the workpiece. However, it's worth examining the quality of the guide fence carefully as here are some of the most significant differences in quality. A good router guide fence can be firmly attached to the router by one or better two rods through the base plate. Make sure that the fence itself is made of steel or even better, of aluminium cast in order to be plain and rigid. The part of the fence which touches the workpiece should be non-scratching and replaceable, as you so might rout into it accidentally. Some very high quality routers offer additional fine adjustment for the guide fence to fine tune the fence even more.

Guide Bush System

One of the most vital parts on a router is the guide bush system. A guide bush is attached to the base of the router and allows the machine to be guided along a little recess out of the base plate. You can either make your own templates where you guide your router along while routing or you can use ready made templates and jigs for various applications. Most common templates are for staircase building, dovetailing and cutting mortise and tenons.

If you examine the guide bush system used on a router, make sure that the bush can be fitted firmly and cantered precisely to the centre of the base. Both things are important if you plan to use your router in the future with a jig.

Samples of Router Guide Bushes

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Accessories

Dust Extraction

If you buy a router make sure you check if the tool comes with a dust extraction adapter where you can attach your vacuum cleaner to it. Especially when routing long hours, you will find good dust extraction more and more important.

Guide Rail System

With many manufacturers offering guide rail systems mostly for circular saws, there are some router manufacturers who also offer the capability to use your router with a guide rail system. A guide rail system is simply spoken, an aluminium guide (available in various length from 800 mm to 2400 mm) clamped to your workpiece where you hook your saw or router onto. This way, the tool makes absolutely straight cuts. In case of a router, it's ideal to perform high precision cut outs e.g. for kitchen sinks or door inlays.

Router Table

If you are a bit more advanced with your router, you may well want to use it (upside down) in a router table. If possible make sure you check before you buy a router as to whether or not your router table is available for your desired model. At least you should check if your favourite router could be easily attached to one of the most common stand alone router tables on the market.
Recommended Resources and Suppliers

Instead of printing directions of router suppliers and manufacturers directly in this ebook, we have set up a special website to keep this Recommended Resources List updated.

Please click on the webaddress below to find our resource list online:

http://www.inside-woodworking.com/router-ebook/resources.html