

Routers in the Woodshop

For beginners and a review for others.

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Overview

Any electric tool in the workshop needs care and attention to operate successfully. If there is a manual for the router that you are planning to use, it is either in the tool's box or in the file storage in the shop. If in doubt, ask for help. This is especially important with routers whether in a router table or jig, where unique safety rules may come into play. Common sense is essential. Tragic router incidences are not uncommon!

There are several types of routers and also the bits to go in them. There are also many jigs and tables that you can use to go in routers. This topic is far too much to cover here, but I will attempt it with a discussion on the following:

Router types: Trim routers, fixed- base routers, plunge routers

Router jigs: router tables, custom setups

Router bits: straight bits, profile bits, bearing bits (for following a substrate or pattern).

Safety

As with any other situation in the shop, you should make a plan of how to accomplish your task in a safe and productive way. Consider the hazards: Is the workpiece fastened securely? Do I have the right tool? Is it within the limits of the router? Is the bit in good condition? Bearing turns freely? Is the nut that holds the bearing on the bit tight? Are all the router base clamps tight? Should you have a breathing mask? Where will the chips go? Some routing operations produce a lot of waste.

The router types

1. The Trim Router - This class of router is manufactured by many companies and come in various "kits" that are suited in varying degrees to specific purposes. Laminate trimmers, one of these "kits" were very common, but have become less popular as the solid counters became more so. These routers have ¼ inch collet size and are light and handy for many round overs and small recess type of work. They are for light work and for heavier jobs, a larger router is available. The base is usually square, and this is an advantage when following a straight edge for running veins or other grooves. They come in handy for thick and thin Butterfly patches. These patches can be used to remedy cracks or splits in your work in conspicuous places. As with any router that is faced with a heavy job that will slow the motor, you can first run the router backwards along the edge. Then do the final cut. This is called climb cutting. This should not be done on any piece where the cut is not linear in one plane, or the setup is delicate. Dust collection is not usually an option in this class of router.

2. The Fixed Base Router - This is the standard router and it is produced by DeWalt, Bosch, Milwaukee, Porter Cable and Makita. They offer models that are varied, such as the newer plunge-fixed base option. Generally, they are of good quality, but if you need a lot of power, look elsewhere. The collet size is usually ½ inch, with capability to handle ¼ inch shanks as well. These routers have more power than trim routers and are suitable in some table and jig

applications. Usually they are 1 to 2 ¼ Horsepower in size. The larger ones come with variable speed (see below) and or slow start.

3. Plunge router- These routers include any in the two-spring category, such as the Triton (in the router table at the north end of the shop). When used as a stand-alone router, these machines can be made to drop to a set height and start cutting. The DeWalt plunge router that I am using as a display also comes with a fence. Generally, some of the features on these machines are not for the beginner to use. A good example of this is a fence (not on a router table). The force on the fence is very dependent on the direction of feed and the rotational force from the bit. This type of issue is avoided by use of a router table with a table fence if you wish. This class of router is in the 2 ¼ to 3 ¼ Horsepower range. Things to watch for; If the springs are still in your router, don't release the height clamp without holding the motor housing down, as there are many pinch points. The depth of cut can be set for 3 different heights. There is a speed control on most plunge routers. The reason for this is that;

Big bits need slow speeds.

Little bits use higher speeds.

Router bits This is a bit of a zoo! Let's try to make sense of it all. Three sizes of shank ¼ “, ½”, and 8 mm. All of them need a collet in their correct size. The various styles of bits are in HSS or carbide. By task here are some categories.

Dovetail - for corners

Onsrud Upcut Spiral - for self-clearing dados or channels

Straight cutters - for clean slots or rebating on a table application

Beading bits - for running beads on edges

Molding bits - for running coves or ogees

Panel and frame - to create door elements or frames

Cupboard door - to shape the edge of cabinet doors

3 wing slot cutters - to make slots or rebates

Finger Joint - to extend pieces that are too short

Round-over

There are many others that are dedicated to a single use.

Router Tables There are many brands of router tables. The Triton table needs personal orientation on its use. The Veritas table is also available in the shop. This comes with an entire booklet on its use. There are others on the market. My only advice is to find one that works well with your router and plans.

Climb cuts This term relates to the relative motion between the feed direction and bit rotation. Simply stated. Before your final finish cut, run the cut oppositely with the force from the router, as if out of control, but holding it back slightly to give a preliminary cut for the planned length of your cut. This has the advantage of roughing out your profile so that your perfect final cut will be much easier to achieve. Warning: a climb cut on a router table is inherently dangerous. You should be confident with off-table routing first.