

Changing Speeds: Choosing Router RPM



Do I need variable speed on a router? I'm not planning on making raised panels or doing much table mounted kind of work, just general edge moldings and maybe some dovetails.



Lots of us have gotten away with single-speed routers for an enormous variety of work, and you'll still run into plenty of woodworkers who find 25,000 RPM adequate for just about all their needs. If you equip yourself with variable speed, however, you may find yourself using the feature more and more until you hardly ever run your router as fast as 20,000 RPM.

Run a few experiments, and you'll find that rounding over an edge (or cutting a groove, or doing any other routing chore) with a reasonable feed rate at 12,000 RPM will usually yield just as good a cut as the same job at the same feed rate at 23,000 RPM. Is there any advantage to one speed over the other? Well, sure. At 12,000 RPM you're asking the bit to make 48% fewer cuts than at the higher speed, so it seems reasonable to expect the bit to stay sharp and cut well for about twice as long. If you pause for just 1/4 second while negotiating an inside corner, the fast bit (2 flutes, we presume) whacks the same area 191 times—no wonder it gets burned! The slower bit whacks it “just” 100 times, which sounds like plenty of whacks but will not leave you with charred corners and endless sanding chores. Further, your router will be as much as 20 decibels quieter than at high speed. You'll still want ear protection for comfort, but your neighbors won't need it too.

Cutting dovetails is a job that works best at high RPM despite all the foregoing. In this case high speed minimizes the shaving thickness each flute must cut as you push the bit through a full-depth cut. At 23,000 RPM, a modest feed rate of 6 inches per second makes a 2-flute dovetail bit cut shavings just a few thousandths of an inch thick. You might heat up the wood, but you're not very likely to break the bit by asking too much of it.

The bottom line is this: run your router at the lowest RPM that delivers clean results at a comfortable feed rate. If you get good results at one speed, try again 1000 RPM slower. When cut quality declines, you just identified optimum RPM as the next higher speed.