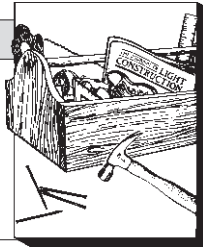


Variable-Speed Plunge Routers

by Clayton DeKorne



Routers have come of age in the last decade, and in the past few years, plunge routers in particular have become more common and affordable. I tested four top-of-the-line machines: the Bosch 161IEVS, the Elu 3338, the Hitachi M12V, and Ryobi RE600. These relatively new plunge routers all feature heavy-duty motors and electronic controls.

Taking The Plunge

Prior to this evaluation, I had never used a plunge router. To gain a proper perspective, I had several veteran plunge router users work with the tools regularly during a six-month period. I also used them periodically, and soon became a true believer in the school of plunge routing.

The most obvious advantage of a

plunge router compared to a fixed-base model is its ability to start a cut in the middle of a board. This proved especially useful when cutting dutchmans and replacing pieces in a damaged floor. Plunge routers also shine when you have a lot of stock to remove, such as cutting dadoes, grooves, rabbets, or mortise-and-tenons. They allow you to remove the stock gradually without having to repeatedly set the depth-of-cut.

But perhaps the most important feature of a plunge router is safety. Since the bit is always housed within the base, there is less chance you (or your work) will be damaged if the router is turned on unexpectedly. The automatically retracted bit also allowed me to set the router down before the bit stopped spinning, which increased my productivity

by permitting me to focus on the next task sooner.

Variable Speed Advantages

Variable speed routers are advertised to provide better control in different materials and with different size bits. Manufacturers claim that cuts in hardwood or those made with large diameter bits are smoother at slower speeds (8,000 to 15,000 rpm). They say there is less tear out, less chatter, and less burning, which is true.

Of course, in most situations the same effect can be accomplished with a standard non-variable speed router by moving the tool more slowly.

But the true advantage of the variable speed router is that once the speed is set correctly, the operator does not need to rely on his skill at maintaining a constant feed rate.

After reducing the speed, I found I could pull the router through the work faster with a large bit or cutting very dense materials. And when taking a deep or an especially wide cut, such as when using a large (over 3/4-inch) round over or cove bit, or a panel-raising bit, I found it easier to hold the machine steady. In addition, the bit runs cooler at a slower speed, which helps preserve delicate, sharp points on ornate bits.

Clearly, these are special situations. For most routing on job sites—such as rounding over stair treads and mortising for hinges—a variable speed motor is unnecessary. Variable speeds only extend the versatility of the router.

Variable speed on these routers, however, is part of an "electronic control system," that includes two other features that I found even more useful. Those features are a feedback response that prevents the motor from bogging down under load, and a "slow" or "soft start" that causes the motor to build speed gradually. This latter feature eliminates the strong jerk (the "torque reaction") that occurs when a motor jumps quickly to full speed.

While all of the 1/2-inch collet routers I tested have other features that are typically found on first-class machines—such as a motor spindle that rides on ball bearings and locks in place

for changing bits, and an airstream that keeps the view of the bit and cut line clear—each has a few differences in design and capability.

Bosch 161IEVS. Of the four routers I tested, the Bosch had the smoothest plunging action and was the most comfortable to use. Unlike the other three routers, the Bosch plunges only when you release the locking lever. The other three machines are always set to plunge unless you pull a lever to lock them in place. On the Bosch router, this lever is especially large, easy to reach, and is spring-loaded. In addition, the trigger switch is located on the handle of the 161IEVS, so it can be turned on easily. The switches on the other machines are still within close reach, but I preferred the Bosch configuration.

The 161IEVS motor is rated at 15 amps (3 1/4 hp) and runs at speeds between 12,000 and 18,000 rpm, and is protected from burnout by an overload circuit.

Elu 3338. The plunging action of the Elu is as smooth as the Bosch, but the springs are a bit stiffer and require more force to plunge down. What makes the Elu exceptional is its precise depth-of-cut setting. With most routers I've used, the scale is fixed, so the zero-point fluctuates depending on the length of the bit. Finding a precise setting requires counting fractions, or (abandoning the scale) a trial-and-error process of test cuts and measurements. The Elu allows you to adjust the zero-point of the scale for each bit. And the hairline indicator is magnified, so the 1/16-inch scale can be read precisely.

Compared to the other three routers, the Elu 3338 has a slightly smaller motor rated at 12 amps (2 1/2 hp). Still, I never overloaded this motor. It runs between 8,000 and 20,000 RPM—both faster and slower than the Bosch.

Hitachi M12V. In many respects, the Hitachi runs neck and neck with the Elu. It has good action (though a bit freer than the Elu), a precise and fully adjustable depth-of-cut setting, a thumb switch that is easily reached, and runs between 8,000 and 20,000 RPM. But it has a full 15-amp (3 1/4 hp) motor.

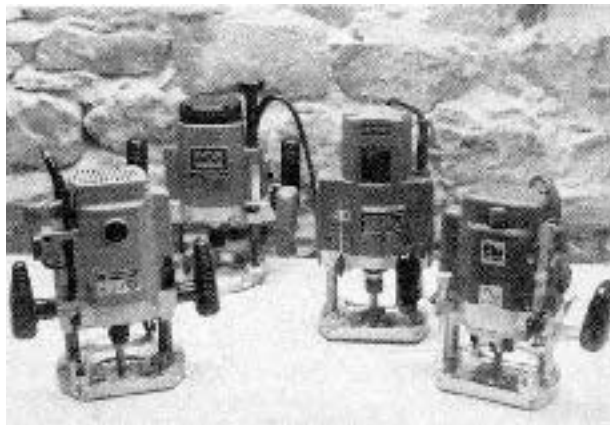
Ryobi RE-600. Coming out of the box, the action on the Ryobi was a bit sticky. But with a few squirts of WD-40 and some liberal exercise, it loosened up and didn't present any lasting difficulty.

The RE-600 has a 15-amp (3 hp) motor that runs between 10,000 and 22,000 RPM—the fastest of the lot, and the least expensive.

The Bottom Line

Compared to a fixed-base, single-speed machine, you'll pay between \$100 to \$200 more for the added control and versatility of these production-size plunge routers. I called around to a number of tool houses for prices. Including an edge guide and a 1/4-inch collet, prices ranged from \$281 to \$412 for the Elu; \$270 to \$425 for the Bosch; \$250 to \$400 for the Hitachi; and \$215 to \$340 for the Ryobi. In addition to the guide and small collet, Hitachi includes a straight 1/2-inch carbide bit as standard equipment, and Ryobi includes a roller guide for routing along curved or uneven edges and for making a flush cut with a conventional straight bit.

To rank these machines, I would compare the Bosch, Elu, Hitachi, and Ryobi to a Mercedes-Benz, BMW, Acura, and Toyota, respectively. They are all good tools. If pressed to choose, I would pick the Elu or the Hitachi for the ability to quickly and accurately set the depth-of-cut. ■



Top-of-the-line plunge routers made by (left to right) Hitachi, Ryobi, Bosch, and Elu all tested well.

TOOLBITS

The National Hardware Show, held in Chicago each August, is best described as one giant tool store. This year we checked out 800,000 square feet of displays set up by some 3,000 exhibitors, and came back with these "finds":

Hitachi's compact planer/jointer was an announcement that caught our eye. Like its compact predecessors (see Toolbox, 8/90), the P12RA combines a 12-inch planer and a 6-inch jointer in one unit that can be lugged home each night (Hitachi Power Tools USA, Ltd., 4487-E Park Dr., Norcross, GA 30093; 404/925-1774). Besides the useful addition of a jointer, the Hitachi planer is built around four steel guide posts, rather than two. The Hitachi also uses a 15-amp motor that turns the two-blade cutterhead at a fast 10,400 rpm. The company claims 50% greater feed torque than the competition.

Makita filled a gap in their tool line by announcing a 10-inch slide compound miter saw (Makita USA, Inc., 1430 Northam St., La Mirada, CA 90638; 714/522-8088). We haven't

had a chance to use it yet. Stay tuned.

An aluminum level we hadn't seen before was imported from Germany by BMI (Banner Mechanical Instruments, Box 8421, Roanoke, VA 24014; 703/344-8649). A competitor of Stabila, BMI specializes in the European "box-beam" level with sealed, plexiglass vials that are ultrasonically welded in place and guaranteed for five years. The manufacturer claims an accuracy of .057 inch in three feet. They also carried some impressive, small "universal" levels in ABS plastic. Besides reading level and plumb, these function as an inclinometer. You can read a given slope or "dial" an angle and reproduce it manually by rotating the vial within the unit, locking it down, and then centering the bubble between the lines as usual.

An even more surprising "level"—the LASERAIM—combines a spirit level with optical laser technology. Manufactured by a company that builds laser gunsights (Emerging Technologies, Box 581, Little Rock, AR 72203; 501/375-2227), they come in four-foot and one-foot models. Unlike a true laser level that revolves (at five to six times the price), this aluminum level projects a steady-state laser

"beam" from one end cap, which the company claims is accurate to within 1/8 inch in 100 feet. It operates on "AA" batteries and reportedly can take some abuse. We'll have to play with this one.

Another tool we're waiting to test is Panasonic's new 12-volt, cordless cut-out trimmer (Matsushita Electric Corp. of America, One Panasonic Way, Secaucus, NJ 07094; 201/348-5334). Like a mini-router, it operates at 13,000 rpm with a titanium-coated bit that will cut holes for electrical and plumbing fixtures in drywall and plywood. A clear plastic nose cone adjusts for depth up to 5/8 inch. It charges on their "Coffee Break" charger that brings the 12-volt battery up to full load in an incredible 15 minutes.

One of the smaller, but no less useful tools at the show was the Protape from Hart Tool Company (P.O. Box 862, Fullerton, CA 92632; 800/331-4495). Like other Hart tools, the Protape is rugged and fills a serious trade need: it's the first automatic rewind, 100-foot steel tape. Its open spool design and geared rewinding mechanism come from the logging industry, where this tape has been used for decades.

—Paul Spring