

Routers: Taking the Plunge

As a finish carpenter, I wouldn't part with any of my tools, especially my plunge routers. They are my tool of choice for production work: A plunge router makes installing flush bolts, door closers, mortised custom pulls and strikes, and cutting dadoes easier and safer (photo left).

Each of these tasks could be handled with a fixed-base router, but changing depth of cut for each task requires several time-consuming adjustments. A plunge router, on the other hand, can be pushed directly into the work, and the depth of cut can be changed in midoperation to several preset positions. The ease and accuracy of the depth adjustments also makes a plunge router the ideal tool for mounting in a router table.

PLUNGE ROUTERS SMALLER THAN 2 HP.



FESTOOL OF 1000 E

(888) 463-3786
www.festool-usa.com

Street price: $330
Motor: 1½ hp. (9 amps)
Weight: 6 lb.
Six speed/soft start
¼-in. collet adapter for metric-size collet

For those who can afford it, this router is a versatile tool that has a number of good (and expensive) accessories, making cabinetwork in the field much easier. Like the DeWalt DW621, the Festool has an offset base and a good spring-to-weight ratio that's easy to plunge one-handed. The twist knob in front is the plunge lock, which works well because the router is so small. The trigger-power switch has a push-button lock that's easy to operate. The integral dust port is one of the best, and the depth rod has a three-stop turret with a precise microadjustment. Template guides and edge-cutting and hole-drilling kits are available to make joining, circle cuts and patterned boring an everyday function of this router.



HITACHI M8V

(800) 829-4752
www.hitachi.com/hpt

Street price: $185
Motor: 1½ hp. (7.3 amps)
Weight: 6.4 lb.
Five-speed/no soft start
¼-in. collet only

This small machine shares some of the same features as the larger Hitachi models: the plunge-lock/power-switch arrangement, non-spring-loaded plunge-lock lever and weak spring return. The Porter-Cable style template adapter is offered only as an option here. It also has a variable-speed motor that lacks a soft-start feature, which means there's some initial torque. At its highest rpm setting, the motor is loud. The M8V does have a one-wrench bit change, a good rack-and-pinion depth rod with a three-stop turret and a depth-adjustment knob that limits the upper travel of the router.

There are lots of models on the market; here's advice from a carpenter who tried out 16 of the best

BY GARY M. KATZ

After checking out more than 20 plunge routers on the market, I chose 16 models designed for day-in, day-out professional use. I tried these routers on the job site for handheld jobs as well as set up in a table. The testing was subjective; I didn't use meters or gauges, just my 30 years of experience as a carpenter and what seemed to feel right (or wrong). I think some specific features are important on plunge routers in general, and individual machines have their own details to consider. (Check FineHomebuilding.com for information on collets.)

Horsepower equals weight

Routers range in power from about 1½ hp. to 3½ hp., and the more horsepower a router has, the more it weighs. The few plunge routers that have less than 2 hp. are perfect for light dadoes and edge-beading with ¼-in. shank bits. Medium-size routers that range from 2 hp. to 3 hp. usually weigh about 10 lb. and handle a variety of bits (some with cutting profiles as wide as 3 in.). The largest routers, 3 hp. and up, are powerful enough to plow through solid-surface counters all day long and are perfect for mounting in a table as mini-shapers; however, they can weigh as much as 17 lb.

Soft start takes out the torque

No matter how often I use my older single-speed routers, I'm never prepared for that first wrist-wrenching twist of torque, espe-



Variable speed makes cutting more efficient. Controlled with a small dial near the top of the motor housing, variable-speed motors allow the operator to slow larger bits to their optimum speed.

PLUNGE ROUTERS BETWEEN 2 HP. AND 3 HP.



PORTER-CABLE 693PK

(800) 487-8665
www.porter-cable.com

Street price: $200
Motor: 1½ hp. (10 amps)
Weight: 11.5 lb.
Single speed/no soft start
¼-in. and ½-in. collets

If I were to buy a no-frills router that gave me some options, this would be it. This model is packaged as a kit that includes both fixed and plunge bases with a 1½-hp. motor that has been a job-site standard for a long time. The plunge base has a good spring-loaded plunge lock that's easy to operate, a plunge depth of 2½ in. and a stiff spring action. The plunge base also has a good depth rod, four-stop adjustable turret and travel-limiting knob. The two-wrench bit change and toggle switch are antiquated, but they work. The optional basic accessory fence isn't worth the extra money, but remember, no frills. Mount the fixed base in a table, use the plunge base for handheld work, and you've got a basic setup for a good price.



BOSCH 1613EVS

(877) 267-2499
www.boschtools.com

Street price: $200
Motor: 2 hp. (11 amps)
Weight: 9.7 lb.
Six speed/soft start
¼-in. and ½-in. collets

I like this midsize router a lot, mostly because it feels comfortable to use and because the micro-depth-adjustment knob really works. Like the better tools, the 1613EVS has a one-wrench bit change and a functioning dust port. The motor is fairly quiet and seems to have lots of power. The plunge-lock lever is easy to use during operation; the trigger switch and locking button require no effort at all; and the plunge action is both smooth and strong. I also like the Bosch template guides, which don't require any tools. The depth-stop turret has eight positions, none of which is adjustable; the plunge depth is only 2¼ in.; and the optional fence is just okay. All in all, though, it's a wonderful tool.

cially from the larger motors. With soft start, there's never any fear of throwing the switch and losing your grip on the tool or having the tool lurch at start-up. This feature is particularly important for routers with toggle switches or other devices that aren't easy to reach while your hand is on the handle. Soft start is a particular feature I always look for in a router.

Turning on the power isn't always easy

Of all the features that routers share, manufacturers seem to disagree on the elemental on/off switch, and most have missed the proverbial boat. Personally, I don't understand the dilemma: Trigger switches with lock-on buttons (which have been around for decades), such as the Bosch and Porter-Cable 7539, work perfectly. They're on the handle directly beneath your fingers or thumb, making them easy to turn on and easier to shut off. Other switch designs require unnecessary contortion or hand movement (top photos, facing page).

The Porter-Cable 7529's safety/lock-on switch is typical; it's a challenging feat of dexterity. I've been using my PC 7529 for more than a year, and I still can't remember which part of the switch to push first and which one to release first. The DeWalt DW621's safety switch is a little easier to use, but I still have to work unnecessarily hard to turn on these two routers. Simple designs, such as toggle switches, seem to work unless they're mounted too far from the handle, as is the case on the Makita RP1101. There are some toggle-type switches mounted beside the handle (Hitachi, Freud), and although they're easy to shut off in an emergency, these switches are still a little clumsy to turn on.

Springs make plunging possible

The feature that defines a plunge router is the return spring. The spring pulls the bit up out of the work when the plunge lock is released, which is important when changing bit depths and when removing the tool from a template or workpiece. You shouldn't have to fight a spring that's too strong, but at the same time, you want the spring to do its job. The strength of the return springs on all these routers varied dramatically. Some were barely strong enough to raise the motor, and others could have raised two motors at the same time.

The plunge depth is also a fundamental feature of a plunge router. The plunge depth can vary from 1½ in. on some models to 3 in. on others. Obviously, the router with the greater depth capacity is going to be more

SOME SWITCHES MAKE SENSE, AND OTHERS DON'T

Power switches ought to be both comfortable and easy to operate. However, some models, such as the DeWalt DW621 (photo 1), combine power switches with safety locks that confuse the hand. Other models employ toggle switches that can be difficult to turn on or off, such as the Hitachi M12V (photo 2) or aren't easy to reach, such as Makita's RP1101 (photo 3). The easiest power and lock switches to operate seem to be the trigger types that are mounted in the handles, such as the Craftsman, Fein and Bosch (photo 4).

PLUNGE ROUTERS BETWEEN 2 HP. AND 3 HP. (continued)



DEWALT DW621
(800) 433-9258
www.dewalt.com

Street price: $200
Motor: 2 hp. (10 amps)
Weight: 9 lb.
Seven speeds/soft start
¼-in. and ½-in. collets

I like this router: It has a base offset from the axis of the bit that allows one-handed plunges, a great dust port that vents through the top of the router and a unique plunge-lock system. One handle rotates to release or lock the plunge action, which takes some getting used to if you grip the handle during operation; an inadvertent twist releases the mechanism. The power and lock switch on the opposing handle is somewhat difficult to engage at first. The template adapter included uses Porter-Cable style templates, and the adapter is nearly flush with the 3½-in. hole in the baseplate. A rack-and-pinion depth rod with a three-stop turret, one-wrench bit change and a relatively quiet, smooth motor round out the package. The only problems were a weak plunge spring and the lack of an extended depth-adjustment knob, which would make any light table work less convenient.



MAKITA RP1101
(800) 462-5482
www.makita.com

Street price: $200
Motor: 2¼ hp. (11 amps)
Weight: 9.3 lb.
Six speed/soft start
¼-in. and ½-in. collets

Makita's midsize router is a combination of old and new features. Its variable-speed motor has a fairly acceptable level of noise and vibration along with soft start and a simple toggle switch mounted out of reach on top of the motor housing. The plunge action is nice and smooth; its 2⁹⁄₁₆-in. plunge depth is average; it has a simple plunge-lock lever that's easy to operate in midcut. The threaded depth-stop rod has a quick-release button that doesn't work easily and a three-stop adjustable turret. To limit the upper travel, you have to fool with a clumsy nut system instead of a knob. Both collet sizes are standard issue, as is the older two-wrench bit change. That the Porter-Cable-type base takes Porter-Cable template guides is handy, but if you want to run big bits, you'll need an accessory baseplate with a larger aperture. The simple accessory fence is available as an option, but a dust port is not.









PLUNGE ROUTERS LARGER THAN 3 HP.



PORTER-CABLE 7529

(800) 487-8665
www.porter-cable.com

Street price: $240
Motor: 2 hp. (12 amps)
Weight: 11 lb.
Four speed/soft start
1/4-in. and 1/2-in. collets

Porter-Cable's midsize router has plenty going for it: a good, smooth motor with comfortable handles and a smooth plunge. Common to the other Porter-Cable plunge routers, the plunge-lock lever is spring-loaded and easy to access while the tool is operating. In addition to the basic optional fence, Porter-Cable also offers a microadjustable fence (about $50) that's one of the best available; I wish it could be adapted to other makes of routers. The dust port works, too. The 7529 also has a bizarre trigger switch and lock-on device. It's on the handle, but I found it difficult to make my hand turn the switch on and lock it without reaching over with my other hand to help. Another bit of weirdness is that the depth rod rotates instead of the turret; I had a tough time grabbing the knob at the top of the rod and thought it was a little dangerous to grab the bottom of the rod, at least while the bit was running.



BOSCH 1619EVS

(877) 267-2499
www.boschtools.com

Street price: $310
Motor: 3.25 hp. (15 amp)
Weight: 14.2 lb.
Six speed/soft start
1/4-in. and 1/2-in. collets

Three-hp. routers are a little too big for hand-held jobs, and I prefer to use them in a table. Bosch's new 1619EVS stood out from the pack of big routers because of its superior design as a table-mounted router. The plunge-lock lever has a built-in override, so when mounted in a table, the router is always free to travel up or down. Another table-related feature is that the return spring can be disabled with the press of a button on the router base, which means you don't have to fight against the pressure of the spring to adjust the depth of cut. The micro-depth-adjustment knob is not the same as the Bosch 1613EVS's adjustment; it's meant exclusively for table-mounted operation. As a hand-held router, the 1619EVS still feels comfortable: The power switch, plunge action and tool-free template guides all make the router easy to use. The model includes a dust port, a one-wrench bit change and a 3-in. plunge depth.

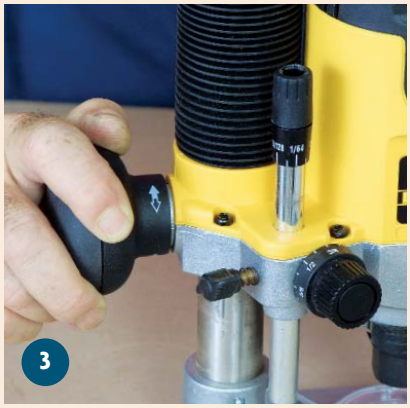
Photo bottom right this page: Gary M. Katz

PLUNGE LOCKS WORK BEST WHEN THEY'RE EASY TO REACH

With plenty of length for leverage, plunge locks such as those used by Porter-Cable (photo 1) and Bosch are mounted close to the handle and are easy to use. Bosch's new 1619EVS even has a plunge-lock override (photo 2). DeWalt's DW621 plunge lock is operated by twisting the handle (photo 3), a feature that may be prone to causing accidental engagement while the router is in use. Craftsman's solution to the access problem is to install the lock as a trigger in the handle (photo 4) opposite the power switch.









PLUNGE ROUTERS LARGER THAN 3 HP. (continued)



CRAFTSMAN 3½ HP.

(800) 948-8800
www.sears.com

Street price: $250
Motor: 3½ hp. (15 amps)
Weight: 12.8 lb.
Five speed/soft start
½-in. collet with ¼-in. adapter

Sears' entry in the professional class of big 3-hp. routers has some good features that unfortunately don't outweigh the router's shortcomings. The plunge-lock lever is unique: Its trigger-type release is mounted in the handle, a setup that seems to work nicely. Changing bits is made easier, too, with a motor lock on top of the motor housing. The plunge action is smooth, the spring action is good, and the 2¾-in. plunge depth is better than some. The rack-and-pinion depth bar has a five-position turret. No problems so far. My biggest complaint is that the router feels too big and clumsy. Also, the locking button for the handle-mounted trigger switch is too hard to engage, the proprietary template guide is too shallow, the guide base doesn't sit flush with the baseplate, the motor is noisy and vibrates excessively, and instead of a dust port, Craftsman includes a chip shield that collects sawdust and obscures the bit.



DEWALT DW625

(800) 433-9258
www.dewalt.com

Street price: $260
Motor: 3 hp. (15 amps)
Weight: 11.25 lb.
Five speed/soft start
½-in. collet with ¼-in. insert

This larger DeWalt isn't as well thought out as the DW621. The motor is loud but fairly smooth; the plunge action is smooth, too, but short (only 2¼ in.). The plunge-lock lever is not spring-loaded, and it isn't comfortable or easy to operate if you want to keep that hand firmly on the handle. The toggle/slide switch is difficult to turn on but easy to turn off while working, and the threaded rod with a quick-release stop is not nearly as useful when the router is mounted upside down in a table. As with the 2-hp. models, the template adapter that's included takes Porter-Cable template guides, the depth gauge is rack and pinion, and the bit change uses only one wrench. The dust-port attachment snaps into the base.

Photo top right this page: Gary M. Katz

versatile and, therefore, more valuable. So if many of your everyday tasks include cutting deep mortises, then plunge depth is an important factor.

Plunge locks should be within easy reach

The plunge lock might not seem important, but it is. Designed to lock the router at a preset depth, the plunge lock should release the plunge easily and conveniently while you're holding the router (photos facing page). Lever action can make the difference between a friendly tool and one that's your enemy.

Lever-type locks found on the Porter-Cable and Bosch models are right at fingertip reach and are easy to activate. Others are more difficult. On the Fein, for instance, the plunge-lock lever is mounted too far from the handle to be used easily. The Hitachi, Fein and Makita 3612C levers aren't spring-activated, and you have to use the lever both to release and to lock the depth of cut. Other models, such as the DeWalt DW621, the Freud and the Craftsman, have solutions that work with varying degrees of success.

Depth gauges and turret stops predetermine cuts

The depth gauge and stop system on a plunge router are handy when making repet-

SETTING THE DEPTH-STOP ROD

Craftsman, DeWalt, Hitachi and Fein routers (photo 1) use a rack-and-pinion knob that incrementally raises or lowers the depth-control rod, making the operation more precise. Although mechanically simple, the plain rod-and-set-screw design used by Porter-Cable (photo 2) and Bosch works efficiently. The threaded depth rod with push-button release used by Freud and Makita (photo 3) doesn't work as smoothly.









FEIN RT 1800
(800) 441-9878
www.feinus.com

Street price: $300
Weight: 12 lb.
Motor: 3¼ hp. (15 amp)
Six-speed/soft-start
½-in. collet

Brought to you by the company that makes orbital-sander/vacuum combos, this router is relatively new to the market. Overall, it's a solid tool, but it has some inconsistencies. The motor is quiet and smooth, and the rack-and-pinion depth stop is easy to use. The router also takes Porter-Cable template guides, always a handy feature. Although the 3-in. plunge depth is deeper than most, the plunge action is stiff, and the plunge-lock lever is not spring-loaded. Another annoyance is that the power switch accidentally locks into the on position. It comes with a ½-in. collet only (the ¼-in. collet is available as an accessory), and it has a one-wrench bit change.



FREUD FT2000E
(800) 472-7307

Street price: $185
Weight: 11 lb.
Motor: 3¼ hp. (15 amps)
Six speed/soft start
½-in. collet with ¼-in. adapter

This machine costs about $100 less than others in the same power range, which makes it attractive to those with limited budgets. It seems to offer all the popular bells and whistles—variable speed, a dust port, a one-wrench bit-changing system, a travel-limiting adjustment knob—but has some rough edges. The motor is noisy and vibrates uncomfortably; the plunge action is stiff and is difficult to push down. The three-stop turret is difficult to turn. The plunge lock works the opposite of most other spring-loaded levers (locking in the up, rather than down, position). But the threaded depth-stop rod has a quick-release button that works well, and the toggle-type power switch is easy to reach from from the handle. It does have a 3-in. plunge depth and marries a ½-in. collet to a ¼-in. adapter. Freud has its own template guides.

DEPTH-ADJUSTMENT METHODS ARE MEANT FOR THE ROUTER TABLE

Most plunge routers have a threaded-rod assembly (photo 1) that adjusts the bit's depth by limiting its travel. However, Bosch has designed an adjustment that works without interfering with the router's plunge movement (photo 2). Other manufacturers offer a knob that makes adjusting the nuts easier (photo 3), a handy feature when the router is mounted in a table (photo 4).









PLUNGE ROUTERS LARGER THAN 3 HP. (continued)



HITACHI M12V

(800) 829-4752
www.hitachi.com/hpt

Street price: $210
Motor: 3¼ hp. (15 amps)
Weight: 11.7 lb.
Five speed/soft start
½-in. collet with ¼-in. adapter

The M12V is the larger version of the M8V and has many of the same features, along with the addition of a soft-start motor. (You'd think that Hitachi could combine the best features of all three routers into one and have a better tool.) The sliding power switch and plunge-lock lever are both on the same handle; the plunge-lock lever is not spring-loaded, but it's easy to access. The motor is loud and has a high level of vibration. Yet for a 3¼-hp. router, it can handle only a 2-in. dia. bit. The plunge depth is 2½ in., but the spring action is good and has plenty of strength. A depth-adjustment knob is included for use in a router table; the package also comes with a solid accessory fence and a template guide and adapter.



HITACHI TR12

(800) 829-4752
www.hitachi.com/hpt

Street price: $210
Motor: 3 hp. (12.2 amps)
Weight: 11 lb.
One speed/no soft start
½-in. collet with ¼-in. adapter

The TR12 has a one-speed motor only a bit quieter than the noisy M12V. Its toggle switch is on same side of the handle as the plunge-lock lever, which has the potential to be confusing. The plunge-lock lever itself is not spring-loaded, though it's somewhat easy to access from the handle. In plunge mode, the weak spring doesn't return the carriage to full upright position without assistance; the plunge depth is 2½ in. Travel-limiting nuts are standard, but you can get an optional accessory knob that makes turning the nuts easier, especially handy when mounting the router upside down in a table. The baseplate has a large 3½-in. aperture, but the template-guide adapter doesn't sit flush with the baseplate. Other standard equipment includes a solid but clumsy accessory fence, a depth-stop rod with a three-stop turret and a two-wrench bit change.

itive, stepped cuts. The depth rod can be adjusted to control the initial depth of cut, and the turret stop can be used to control depth of successive cuts. For production work, I often set up both the depth rod and the turret stops to mortise for a piece of hardware, then hand the tool and task to a helper.

Depth rods are either smooth or threaded (top photos, p. 57). The threaded rods on the Makita and Freud routers can't be adjusted as quickly as a smooth rod secured by a set screw. Several models have rack-and-pinion knobs that give even more control when depth of rod is adjusted. The rack-and-pinion depth rods on several models (Hitachi, Craftsman, Fein, DeWalt) were certainly the best, although the smooth rods on the Porter-Cable and Bosch worked well enough.

Most of the routers have a swivel turret for adjustable stops that works in conjunction with the depth rod; Bosch's turret stops are fixed in incremental steps. The Porter-Cable 7529's depth rod swivels, and the turret is stationary, which I didn't think was necessarily an improvement; even with my small fingers, I had difficulty gripping and turning the depth rod.

Fine-tuning the plunge depth

Plunge routers have a mechanism that fine-tunes the bit's depth once the depth stops have been set. For the majority of tools, that mechanism consists of a pair of nuts that are threaded onto a rod that limits the distance of the router's spring-loaded return (photos facing page). The problem is that after the depth of the bit has been adjusted, the knob limits the router housing from making any additional upward travel, so the bit can't be withdrawn cleanly from the workpiece.

However, a travel-limiting knob is extremely useful when the router is hung from the underside of a router table, which, as Craftsman points out in its instruction manual, is "the primary use of the depth-control knob." Manufacturers such as Craftsman, Hitachi, Makita and Bosch have even improved these adjustment knobs and now include (or offer as an accessory) an adjustment-knob extension that makes it easier to adjust the depth of a table-mounted plunge router.

The Bosch routers are the only models with a fine adjustment knob that really works well. A partial turn of the Bosch routers' knob increases or decreases depth of cut by as little as the thickness of a sheet of paper, and the knob does not affect the bit's upper travel.

My picks of the litter

Because there's such a wide range of plunge-router sizes, it wouldn't be fair or accurate for me to narrow my recommendations to only one router. In the smaller-than-2-hp. class, the 1½-hp. Porter-Cable 693PK convertible kit is a solid buy. The Porter-Cable router comes with both fixed and plunge bases, and although it does not have multiple speeds, a soft-start function and a dust port, it is a good basic machine.

In the 2-hp. class, the DeWalt DW621 is fairly light and powerful, and it comes with a number of important plunge-router accessories, such as a dust port, a template-guide system and soft start. But I like the Bosch 1613EVS better. This router's handles and switches are comfortable to use, its microadjusting feature is great, its template-guide system is well engineered, and its motor has plenty of power.

The Bosch router is my favorite for the 3-hp. class, too; Bosch's new 1619EVS is a bigger version of the 2-hp. model (the 1613EVS) and has all of the best bells and whistles, along with an override for the plunge lock that is located conveniently within thumb's reach. □

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MAKITA 3612C
(800) 462-5482
www.makita.com

Street price: $250
Motor: 3¼ hp. (15 amps)
Weight: 14.5 lb.
Five-speed/soft-start with electric brake
½-in. collet with ¼-in. adapter

The largest Makita plunge doesn't have much to recommend it. Like the smaller RP1101, the push-button depth stop is difficult to operate, and the plunge-lock lever isn't spring-loaded; I had to take my hand off the handle to use it. Likewise, the toggle power switch near the handle is easy to reach, but only if you're right-handed. The Makita template system doesn't sit flush in the base, the plunge carriage has a weak spring, the plunge depth is only 2⅜ in., it comes with a ½-in. collet but with a ¼-in. collet insert, and there's still no dust port. On the plus side, the motor seems smooth and quiet, and the router comes with a one-wrench bit change and a fine-adjustment knob. The electric brake is a good safety item, but is a little disconcerting when it kicks in. Makita's model 3612 is also available with a single-speed motor and no soft start.



PORTER-CABLE 7539
(800) 487-8665
www.porter-cable.com

Street price: $330
Motor: 3¼ hp. (15 amps)
Weight: 17.25 lb.
Five speed/soft start
½-in. collet

If this router were any bigger, you might mistake it for an outboard motor that fell off a fishing boat. It has plenty of power, and even though the baseplate aperture is too small for big bits, it's a router that is made to spend its life in a table setup. (Porter-Cable offers a large-bit baseplate for about $20.) It has a 3-in. plunge depth, a depth rod with a six-stop turret, smooth plunge action and the easy-to-use plunge-lock lever. It doesn't come with a dust port or fence (more accessories are available for extra money), and the motor's heavy vibration and loud noise make it a tool that ought to be stored with the chainsaw and the lawn mower. This same router is available with a single-speed motor (model 7538) for about $30 less.