



Fixed-Base 2-hp Routers

A midsized machine
may provide all the power
and versatility you need

BY TOM BEGNAL

For all-around shop use, midsized fixed-base routers make sense to me. At 2 hp to 2¼ hp, they have enough testosterone to handle most cuts without the bulk that can make bigger versions a chore to run freehand. And as a general rule, fixed-base routers are easier to use in router tables than plunge routers. So as a sequel to my review of midsized plunge routers (*FWW* #149, pp. 46-53), I gathered all of the fixed-base 2-hp to 2¼-hp machines currently on the market. And with the *Fine Woodworking* shop serving as a test lab, I gave each router a hands-on examination.

The test had three main parts. First, I considered ergonomics of the routers, using them by hand and in a router table. Then I checked them for noise, runout and vibration. And finally, they were given a handheld run to see how effectively they plowed through wood.

Eight routers were tested: the Bosch 1617EVS and 1618EVS; Craftsman 17506 and 27500; Japson 7112; Makita RF1100 and

Router-table manners

When using these routers inverted in a table, a motor-mounted switch is an asset. It is relatively easy to activate the switch on the two Bosches, the two Makitas and the Milwaukee. For the motor-mounted switch to work on the D-handled versions of the Bosch and Makita, the switch on the handle must be locked on.

Because the tests were done using a mocked-up table with a one-piece top, my bit-changing evaluations for some of the routers are based on how easy it is to remove the motor from the base. If your table has a removable top plate, the bit-changing procedure should

be easier. The highest bit-changing marks go to the two Bosch routers. By removing the motor from the base, the bits can be changed on top of the table with little fuss. The Makita router motors are easy to remove from their bases, but that slipping wrench is an annoyance.

Removing the motor isn't an option with the two Sears models. However, with the spindle locked in place, it is reasonably easy to use the single wrench to turn the collet.

The motors on the Jepson and Milwaukee routers can't be removed from their bases, either. Because two



Router-table mock-up. To judge accessibility, each router was mounted to a piece of MDF clamped to a pair of sawhorses.

wrenches are required, it is awkward to change bits.

Putting the router in a table doesn't change anything when it comes to setting the cutter depth. I still favor the Bosch, with the Makita second.

RD1101; and Milwaukee 5682. Four have variable speed. Three have a D-handle, a style preferred by some woodworkers. Four have a soft-start feature that briefly limits the speed of the router at startup, so the tool doesn't twist in your hands when it's turned on.

User-friendliness is a big plus

A router should feel good in your mitts. And it shouldn't require a lot of fiddling and fussing of the controls and adjustments. So I spent a good part of my quiet time looking to see how much effort it took to install a bit, set it to just the right depth and fire up the router.

Keep in mind that some of the tests are subjective, in which cases the conclusions are based on the size, shape and flexibility of my average-sized hands. And what feels good to me might not appeal to you.

Comfortable handles are a good start—

Among the routers with conventional handles (those with identical handles on each side), the single-speed Craftsman 27500 makes my hands feel most at home. I can wrap both hands around the handles, so the router always feels secure in my grip.

With its large, classy-looking wooden knobs, the Bosch 1617EVS also feels pretty good, and I rate it just behind the Craftsman. The Makita RF1100 has knob handles, too. The knobs feel okay, but they don't fit my hands quite as well as the Bosch handles do. The handles on the variable-speed Craftsman 17506 seem too big for me; the Milwaukee's feel too small.

In the D-handled category, the Makita RD1101 has the best feel, mostly because the D-handle has an upward angle that

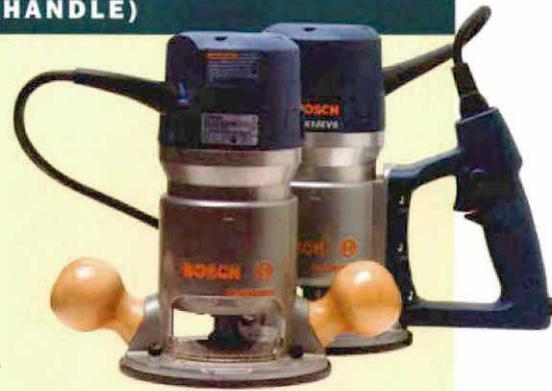
aligns perfectly with my arm. With its lower-angled D-handle, the Bosch 1618EVS just doesn't work as well for me. The same is true for the Jepson.

Machine should be easy to turn on and off—When handheld, the D-handled Bosch 1618EVS, Craftsman, Jepson and D-handled Makita RD 1101 routers are dirt-simple to turn on. Simply squeeze a spring-loaded trigger in the handle to start the router; release the trigger to shut off the machine. By the way, in addition to the trig-

BOSCH 1617EVS, 1618EVS (D-HANDLE)

(877) 267-2499

Both of these routers can accept large bits, and bit changing is a snap. The micro-adjust features work well, and the housing locks are rated as the best (tied with the Makita). Both score well in the vibration category and have soft-start and variable-speed options. The 1617EVS has the most comfortable of the knob-type handles. The switch and switch lock on the 1618EVS are easy to use. This model did well in the runout test, although it is a little noisier than average.



Street price (average)	\$184; \$204 (D-handle)
Amperage	12
Horsepower	2
Collet size	3/8 in., 1/2 in. (3/16 in. and 8mm optional)
Soft start	Yes
Variable speed	Yes (8,000 to 25,000 rpm)
Dust port	No
Size of opening in plastic subbase	2 3/8 in.
Runout	0.0050 in.; 0.0015 in. (D-handle)
No-load noise level	95 dB; 97 dB (D-handle)
Vibration rating at handles	Good



CRAFTSMAN 17506

(800) 697-3277

The 17506 has an easy-to-use switch and switch lock, changing bits is easy, and the dust bag works well. But the motor rotated during test cuts, and the depth-adjusting ring is sticky. The locking knob isn't easy to turn. It accepts only ¼-in. shank bits. The machine is less user-friendly in a table.

Street price (average)	\$100
Amperage	9
Horsepower	2
Collet size	¼ in.
Soft start	No
Variable speed	Yes (15,000 to 25,000 rpm)
Dust port	Yes
Size of opening in plastic subbase	1½ in.
Runout	0.0015 in.
No-load noise level	96 dB
Vibration rating at handles	Fair



CRAFTSMAN 27500

(800) 697-3277

The 27500 has an easy-to-use switch and switch lock. Bit changing is a breeze, and it can accept large bits. But it's a little noisier than average. There is no variable-speed option, and the depth-adjusting ring can be sticky. The motor locking lever is hard to turn. The machine is less user-friendly mounted in a table.

Street price (average)	\$130
Amperage	9
Horsepower	2
Collet size	¼ in., ½ in.
Soft start	No
Variable speed	No (25,000 rpm)
Dust port	No
Size of opening in plastic subbase	2½ in.
Runout	0.0050 in.
No-load noise level	97 dB
Vibration rating at handles	Fair

ger switch in the D-handle, the Bosch 1618EVS and Makita RD1101 also have a toggle switch on the motor. The handle switch won't work until the motor-mounted switch has been turned on.

The Milwaukee has an on/off switch on the body that works pretty well. But I have to reposition my right hand to reach the switch with my thumb.

The Bosch 1617EVS and Makita RF1100 have a toggle switch on the motor. The Bosch switch is high on the side of the motor. And although it is awkward to reach the switch with my thumb, I

can manage it without releasing my hand from the router. The switch on the Makita is on the very top of the motor, so my hand has to come off the handle to reach it. And that's something I don't like to do.

Switch lock should engage easily—When making long cuts with a handheld router, I like to lock the switch in the on position to give my trigger finger a rest.

The Bosch 1617EVS, Makita RF1100 and Milwaukee have toggle switches that stay on until you shut them off. Among the remaining routers, I favor the switch locks on the two Craftsman routers. These locks engage easily, requiring little more than a subtle push by the inside of my thumb. The Jepson and the D-handled Makita RD1101 work fine, too; they just feel a little harder to engage than the two Craftsman. On the other hand, it is a chore to lock the Bosch 1618EVS, mostly because it takes some awkward thumb work to engage its recessed button.

Changing bits shouldn't be a challenge—Except for the two Craftsman machines, all of the routers come with a pair of wrenches. One wrench holds the arbor nut; the other turns the spindle. The Craftsman routers have a system for locking the spindle in place. Once locked, it takes just one wrench to turn the spindle. For handheld work, I prefer the one-wrench Craftsman system.

Among those using two wrenches, the Bosch routers work nicely. A large opening in the side of the base makes it easy to work the wrenches. Using another accepted option, the entire motor may be removed from the base to change bits.

The two Makitas have somewhat smaller openings in the sides of the base, so it's not quite as easy to use the wrenches. So I removed the motor when changing bits on the Makitas.

On the Milwaukee, the motor doesn't easily remove from the

CONSIDER THE SWITCH LOCATION



A trigger switch on the handle, like the one shown here on the Craftsman 17506 (left), is simple to use. Both of the Makita routers have the switch on top of the motor, so you have to let go of one of the handles to reach it.

CHANGING BITS



The Bosch (far left) and Makita motors quickly remove from their bases, so it's easier to get at the collets with the wrenches. The Jepson motor (near left) can't be removed, and with smallish openings in the sides of the base, bit changing is more challenging.

base. That makes it more of a challenge to loosen the collet with the wrenches. I rate it just behind the Makita in this category.

The Jepson router has a pair of flats machined in both the spindle and the collet. So there aren't a lot of options when it comes to placing the wrenches in a convenient position for tightening or loosening the collet. Plus, because the wrenches are close to being the same size (the larger one goes on the spindle), you have to guess which one goes where.

Setting the cutter depth is fairly straightforward—Once the bit has been mounted, setting the cutter depth is just a matter of raising or lowering the motor on these routers. The two Bosch routers have a motor that simply slides straight up and down. A series of three coarse-adjustment notches serve as stops and allow you to get close to the desired depth of cut. Then, a fine-adjustment knob is used to set the exact depth. To me, it is the easiest of the bunch to adjust.

The motors on both Makitas are threaded. The parts are nicely machined, and the system works well. The Jepson motor slides up and down, but the ride isn't all that smooth. The Milwaukee slides in much the same way, although it's a little smoother going.

The Craftsman routers use a depth-adjusting ring to control the depth of cut. But both are difficult to turn, so I rank them at the bottom of this category.

Motor should lock securely—Once the depth of cut has been set, you want to be able to lock the motor in place. The Bosch and Makita routers use a simple lever system. Snap the lever shut, and the motor is locked tight. It's quick and easy, and it works well.

On the Jepson, the left handle also serves as the locking knob. Just rotate the handle a turn or so to lock the motor. The Jepson's large handle/locking knob is easy to turn, so I rate it just behind the Bosch and Makita routers.

The variable-speed Craftsman 17506 and the Milwaukee also use a locking knob, but they're located on the back of the router. Both use a star-type knob that takes some effort to turn, so I don't find them especially friendly to my fingers. Ranked at the bottom of the

pack is the single-speed Craftsman 27500. It has a good-sized clamping lever on the back. But it is hard to pivot the lever from either the locked or unlocked position.

The locking mechanisms scored in the same order when the routers went in the table. But because the levers on the Bosch and Makita are easy to use, I'd say they would prove even more of a plus when used in a cramped table setup.

A look at vibration, noise and runout

While some of the router testing is subjective, other attributes can be looked at through the eye of a coldly objective instrument. So I

JEPSON 7112

(800) 456-8665

The Jepson has an easy-to-use switch and switch lock (though they are less user-friendly in a table), and the knob for locking the motor works well. The housing tends to stick as it slides, and the machine is the noisiest of the lot. There's no variable speed, and the depth-adjusting ring is hard to read.



Street price (average)	\$114
Amperage	10
Horsepower	2
Collet size	½ in. (sleeves accept ¼-in. and ⅜-in. shanks)
Soft start	No
Variable speed	No (25,500 rpm)
Dust port	No
Size of opening in plastic subbase	1½ in.
Runout	0.0050 in.
No-load noise level	100 dB
Vibration rating at handles	Good



MAKITA RF1100, RD1101 (D-HANDLE)

(800) 462-5482

Both routers have a housing that slides smoothly and locks easily. They score best in the noise and vibration tests. Soft start and variable speed are also pluses. But the adjusting rings are hard to read. And the openings in both subbases are small (a subbase with a larger opening is an option). The RF1100 has the switch on top of the motor, so when handholding the router, a hand must be removed from the handle to engage the switch. But the top-mounted switch becomes a

plus when the router is in a table. The RD1101 is the most comfortable of the D-handles. Plus, the switch and switch lock are easy to use.

Street price (average)	\$186; \$215 (D-handle)
Amperage	11
Horsepower	2 $\frac{1}{4}$
Collet size	$\frac{1}{4}$ in., $\frac{1}{2}$ in.
Soft start	Yes
Variable speed	No (24,000 rpm); Yes (D-handle, 8,000 to 24,000 rpm)
Dust port	No
Size of opening in plastic subbase	1 $\frac{3}{16}$ in.
Runout	0.0045 in.; 0.0047 in. (D-handle)
No-load noise level	90 dB; 91 dB (D-handle)
Vibration rating at handles	Excellent

put a few tools to work to check the vibration, noise and runout of the routers. Look for individual results in the charts.

Vibration—There is just no avoiding vibration with a router. But less is more here, because a router with minimal vibration is indicative of a well-balanced tool.

To check for vibration in each of the routers, I used a rather unconventional test method, with a dial indicator serving as the measuring device. And when the test was completed, I rated the vibration levels as excellent, very good, good or fair.

Routers were placed on a steel plate and allowed to run while a dial indicator, whose stylus was pressed against the tool's handle, measured the amount of movement. To isolate the vibration, the steel plate rested on a piece of foam laid on top of a heavy jointer. The test produced numbers that range from less than 0.001 in. (an excellent rating) to 0.010 in. (a fair rating). The Makitas aced this test.

Noise—All routers are noisy; so ear protection is a must. When you consider that the noise level doubles with each 5-decibel

(dB) increase, some routers are considerably noisier than others.

The tests were done with a decibel meter fixed to a tripod. The meter was positioned 24 in. above and 12 in. in front of each router, a point that's about ear level. Again, the Makitas rated best.

Runout—In short, runout is the amount a bit wobbles as it spins. Too much runout can affect the accuracy of a cut. The test was done with a test pin in the collet. Then, with the dial indicator measuring the pin at a point 1 in. above the collet, the pin was slowly turned to get a reading. All of the measurements fell within acceptable standards, but the D-handled Bosch and the variable-speed Craftsman 17506 have the least amount of runout.

Most machines handled the test track pretty well

I gave the routers a short test drive. Each router was equipped with a $\frac{1}{2}$ -in.-dia. straight bit and was set to make a $\frac{1}{4}$ -in.-deep cut. The routers with variable speed were set to the highest setting. Then, using a straightedge to guide the router, I made three, 36-in.-long plowing cuts in fir plywood while moving the router right to left at what I considered to be a reasonably fast pace (roughly 12 ft. per minute) for such a cut. By the way, the same $\frac{1}{2}$ -in.-shank bit was used in all the routers except the variable-speed Craftsman 17506, which was fitted with a $\frac{1}{4}$ -in.-shank bit, the only size it accepts.

My goal here simply was to find out whether any of the routers bogged down. But all of the routers handled the cuts without any noticeable struggle. So I'd expect each one of them to have enough power for most cutting assignments.

But one problem did show up. As I cut with the Craftsman 17506, the motor slowly rotated, lowering the bit farther into the plywood. At the end of the 36-in.-long cut, the bit had lowered more

ADJUSTING THE DEPTH OF CUT



The two Bosch routers use a fine-adjustment dial to fine-tune the depth of cut, with each graduation on the dial representing $\frac{1}{256}$ in. (0.0039 in.). It's a step above the ring system used on all other routers in the review.





Why choose a D-handle?

Having never owned a D-handled router, I had almost no experience using one. But the three D-handled routers reviewed in this article feel pretty good in my hands. And that leads me to ask

why more woodworkers don't favor D-handled routers.

As it turns out, those who like them simply feel the D-handle offers more comfort, control and safety: comfort because they can wrap their fingers around the big pistol grip; control because the D-handle position lets you easily shift the

pressure from one area of the base to another, a feature that's especially handy when doing edge work with a bearing-guided bit; and safety because the on/off switch is on the handle, always within reach of your finger.

But a D-handle has at least a couple of drawbacks. When at a workbench and moving the router around a large shape (a rectangle, for example), it can become awkward to keep the handles in a comfortable position. And then there's the matter of cost—you'll pay a few bucks more for the D-handled version.

Because I often find myself holding the router at odd angles, I'll always need a router with conventional handles. But now, for the first time, I'm starting to think about adding a D-handled router to my shop for all of the routine cuts I make.

than ¼ in., and it was cutting through the ½-in.-thick plywood. (One bright spot: The router made the cut without bogging down.)

At first I suspected I hadn't tightened the locking knob enough. But even after retightening it, the motor still rotated, although to a lesser extent. It wasn't until the depth of cut was reduced to ⅛ in. that I was able to make a cut without the motor rotating. In fairness to Craftsman, the company does not recommend making any cuts deeper than ⅛ in. with the 17506. Still, I was surprised that a ½-in.-dia. bit making a ¼-in.-deep cut would create such a problem.

Bosch scored best overall, but it was a tight race

All things considered, I rate the Bosch 1617EVS as my favorite of the conventional-handled routers. It receives honors for the cate-

gories of handle comfort, bit changing, depth setting and motor lock. Plus it has soft start, variable speed and low vibration. And it adapts well to the router table.

The Makita RF1100 comes in just behind the Bosch. I like its depth setting and handle-lock features. The soft start and variable speed are pluses. And none runs quieter or smoother. But I prefer not to have to reach on top of the housing for the on/off switch (although in a router table, the switch location is an advantage). Like the Bosch, it takes well to the router table. However, reading the depth-adjusting ring is a real eye-strainer. And perhaps it's just me, but when changing bits, the lower wrench always slips off the spindle nut.

I like a lot of things about the single-speed Craftsman 27500. The machine has comfortable handles, easy-to-reach on/off switch, simple switch lock and a collet lock for faster bit changes. And it adapts well to the router table. But it doesn't have variable speed. Also, the depth-adjusting ring tends to stick. My main complaint, however, is that the motor locking lever is a struggle to turn, especially when unlocking it.

The Milwaukee 5682 is a compact, rugged-looking machine that doesn't offer soft start or variable speed. It doesn't excel in any categories, generally ending up around midrange. Runout is higher than the others, and it is noisier than most.

The variable-speed Craftsman 17506 has a good on/off switch, switch lock and collet lock. The dust bag (or dust port) is a nice feature. But the depth-adjustment ring is often sticky. And even though I took a deeper-than-recommended test cut, I was surprised to find the motor had rotated, causing the bit to lower.

When it comes to choosing my favorite D-handled router, it's a toss-up between the Bosch 1618EVS and the Makita RD 1101. The handle angle on the Bosch isn't perfect for me, but most everything else is a plus. The Makita has the most comfortable of the D-handles. And it has the lowest noise and vibration ratings.

For the price, the Jepson might be just the right tool for someone who plans to use a router only occasionally. It doesn't score high marks often. But, like all of the others, it has enough power to handle most cuts. □

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MILWAUKEE 5682

(262) 781-3600

Handle comfort is okay on the 5682. But it has a small opening in the subbase and the highest runout. The machine is a little noisier than most and doesn't offer variable speed. Black graduations on a black background make it hard to read

Street price (average)	\$260
Amperage	12
Horsepower	2
Collet size	¼ in., ½ in.
Soft start	No
Variable speed	No (26,000 rpm)
Dust port	No
Size of opening in plastic subbase	1¼ in.
Runout	0.0060 in.
No-load noise level	97 dB
Vibration rating at handles	Fair