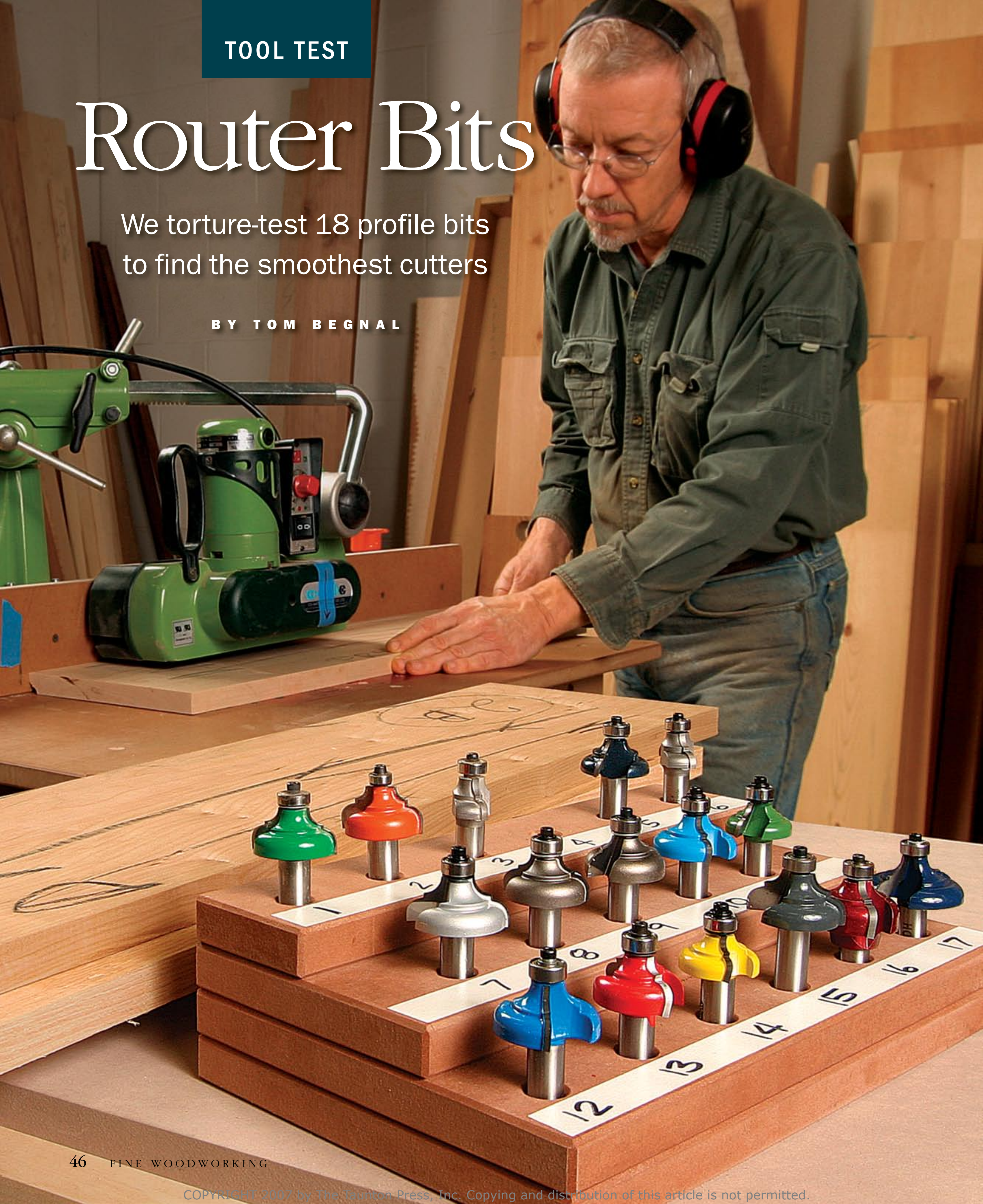
Router Bits

We torture-test 18 profile bits to find the smoothest cutters

BY TOM BEGNAL



Woodworkers want a router bit to do just two things: cut cleanly and stay sharp a long time. But with a long list of companies selling bits, it's hard to identify the top-of-the-line performers. So to find out how bits measure up when it comes to smoothness and longevity, we purchased the same-style bit from 18 companies and tested the lot.

The bit goes by several names. Commonly called a cove-and-bead bit, it also can be labeled a bead-and-cove bit, a rounding-over cove bit, or a classical bit. We chose that bit because it cuts two profiles, a cove and a bead, with a shallow step in between. As a result, we could evaluate the bit's ability to make a concave cut, a convex cut, and two sharp corners.

Our goal was to use carbide-tipped bits with a ¼-in. radius on both the cove and the bead. However, we soon learned that some are available only with a radius of 3⁄16 in., or a combination of 3⁄16 in. and ¼ in. So, with one exception, all the bits we tested have cove and bead radii that range from ¼ in. to 3⁄16 in. The Holbren bit is the exception, as it creates a ¼-in. cove and a ⅜-in. bead. However, we did not see a significant correlation between size of bit and test results. Also, we tested only bits with ½-in.-dia. shanks.

How we tested the bits

The tests were done on a rock-solid router table with a massive fence made specifically for the test. A sturdy 3¼-hp fixed-base router provided the get-up-and-go. A power-feeder ensured that the test stock was fed through each bit at a constant rate of 5 ft. per minute (fpm), a speed that mimicked our typical hand-feed rate. Each bit was tested with the fence in line with the bearing, so the bit would make a full cut.

The test was designed to include a number of materials, feed rates, and grain orientations, as well as performance after a few hundred feet of wear. First, we made edge-grain cuts on 30-in. lengths of knot-free sugar maple, black cherry, red oak, and eastern white pine, four woods that offer a mix of hardness and cutting characteristics. We also made end-grain cuts on 6-in.-wide sections of the same woods. Finally, we made edge-grain cuts on 30-in. lengths of Premium MDF (medium-density fiberboard) a product that, unlike regular MDF, has the same density across the entire thickness, allowing us to better evaluate the cut quality of each bit.

Then, to accelerate wear on each bit, we cut through 100 ft. of standard MDF, which, according to a number of experts and manufacturers, would equal at least 200 ft. of hardwood. After that, we repeated the edge-grain, end-grain, and Premium MDF tests. Not surprisingly, all the bits lost sharpness after cutting the 100 ft. of MDF. When the tests were completed, our cuts on all the bits totaled nearly a half mile.

Before the test started, to level the playing field, we planed all the boards to ¾-in. thickness. Also, because wood can vary from one board to another, we made sure each type of test cut was always made on the same board.

At the end of the test, we had 216 carefully labeled sample strips. Then, in a blind test, four editors independently

BITS WERE TESTED ON A VARIETY OF WOODS

Longevity, too. *Each bit made test cuts on edge grain (facing page), end grain (above), and then Premium MDF (right). Then, to accelerate wear, the testers ran 100 ft. of standard MDF past each bit. After that, they ran the edge grain, end grain, and Premium MDF cuts again.*

Two bits stood out

At the end of the day, the Whiteside (left) and the Eagle (right) bits had risen to the top of the mix, tying for the highest score. Lee Valley had the second-highest score, followed by Southeast and Woodtek in a tie for third. By the way, Whiteside also had the best bit when we reviewed straight bits in our August 1999 issue (*FWW* #137).

We named the Eagle and Whiteside bits best overall. And, since the Whiteside had one of the lowest prices of the top bits, we also named it best value.

Photos, except where noted: Michael Pekovich; this page (top two): Tom Begnal

ROUTER-BIT SCORES

SUPPLIER	STREET PRICE	MAPLE	CHERRY	OAK	PINE	END GRAIN	MDF	OVERALL AVERAGE	OVERALL RATING
AMANA 54134 www.amanatool.com	$52	3.38	6.5	4	7.87	5.88	6.75	5.73	Good
BC SAW 43272 www.bcsaw.com	$70	4.75	5.75	6.13	7.13	5.5	7.25	6.09	Very good
BOSCH 85605M www.boschtools.com	$40	4.88	6.25	6	6.88	5.13	5.75	5.82	Good
CMT 845.850.11 www.cmtusa.com	$40	4.25	4.63	3.63	8	5.63	7.38	5.59	Good
AUTHOR'S BEST OVERALL CHOICE EAGLE 171-2605 www.eagleamerica.com	$36	6	7.38	7.63	8.13	6.63	6.88	7.11	Excellent
FREUD 38-614 www.freudtools.com	$40	4.5	4	3.5	7.25	6	6.88	5.36	Good
GRIZZLY C1755 www.grizzly.com	$28	2.75	6.88	5.25	7.38	5.63	5.5	5.57	Good
HOLBREN 24229 www.holbren.com	$17	6.63	4.25	4.25	6.38	4.5	7.63	5.61	Good
INFINITY 44-850 www.infinitytools.com	$35	5.13	6.75	6.25	7.75	6.75	7.63	6.71	Excellent
LEE VALLEY 16J34.52 www.leevalley.com	$30	5.5	7.88	7.25	6.75	7.13	7.38	6.98	Excellent
MLCS 8788 www.mlcswoodworking.com	$25	3.38	3.88	4.25	6.5	4	5.63	4.61	Fair
PORTER-CABLE 43179PC www.porter-cable.com	$27	4.13	4.75	4	7.13	4.5	6.63	5.19	Fair
RIDGE 23-515 www.ridgecarbidetool.com	$47	5.63	5.88	4.88	7	4.75	6	5.69	Good
ROCKLER 91680 www.rockler.com	$33	5.38	7.88	5	7.63	6.13	6.5	6.42	Very good
SOUTHEAST SE3212 www.southeasttool.com	$32	6.63	6.75	6.63	8.25	5.88	6.75	6.82	Excellent
AUTHOR'S BEST OVERALL CHOICE, AUTHOR'S BEST VALUE CHOICE WHITESIDE 3212 www.whitesiderouterbits.com	$31	6.63	7.5	7.13	7.63	6.38	7.38	7.11	Excellent
WOODLINE WL-1253 www.woodline.com	$22	4.25	4	3.5	6.5	4.75	5.38	4.73	Fair
WOODTEK 820-228 www.woodworker.com	$30	5.63	7.75	6.88	6.88	6.63	7.13	6.82	Excellent

Fair to excellent. *We rated the lowest-scoring bits "fair," as they showed significant but still sandable amounts of bumpiness, tear-out, and burning (top). "Excellent" results (bottom) required little to no sanding.*

examined each strip and rated them for cut quality using a scale of 1 to 10. Then we averaged the scores for each bit.

How we ranked the bits

Each bit was rated fair, good, very good, or excellent based on its overall average. A "poor" category wasn't included because none of the bits met our definition of poor—a bit that cut so badly that the molding was unusable. To determine the range of each rating, we calculated the difference between the highest and lowest averages, and then divided that number by four. □

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