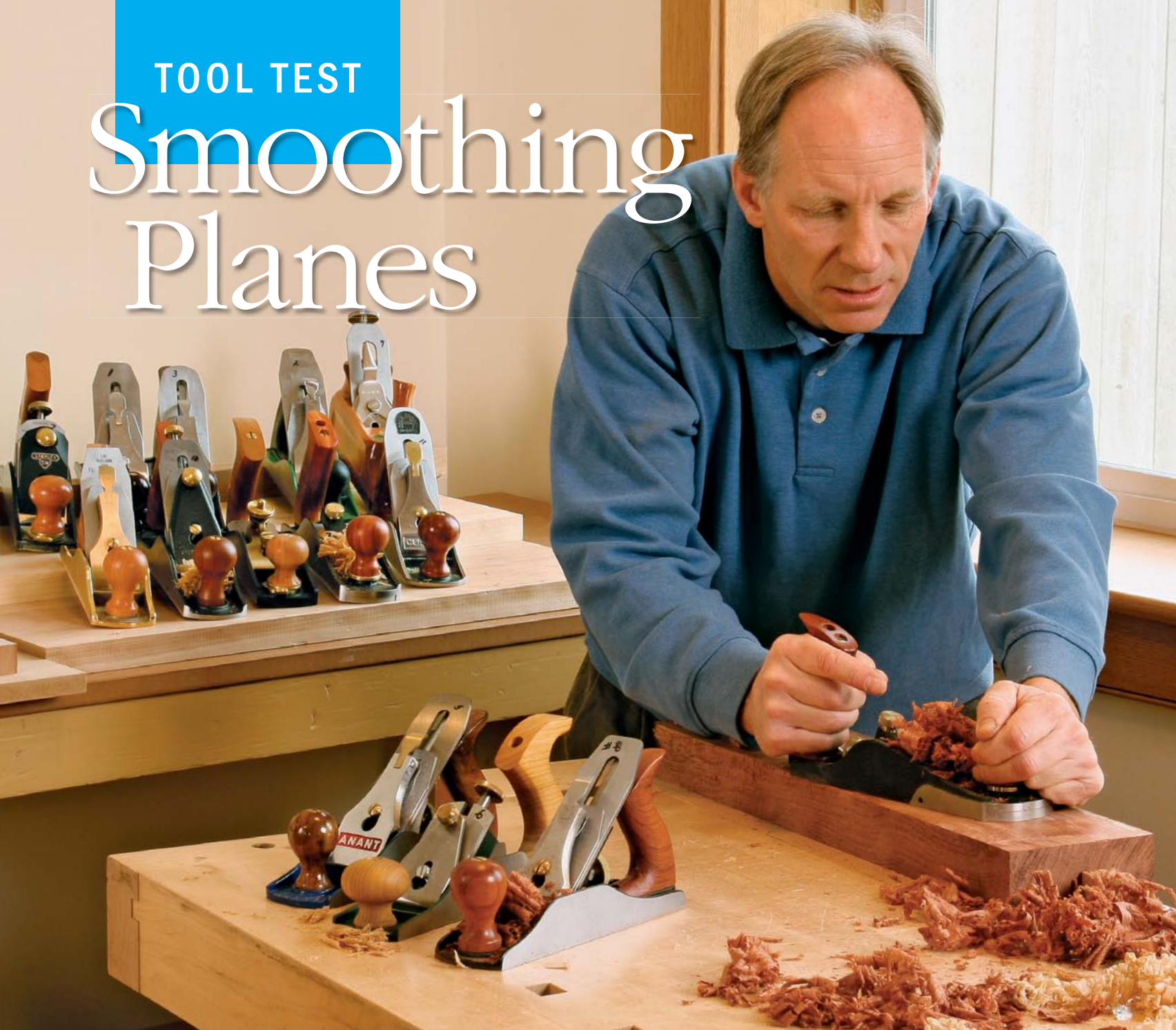


TOOL TEST

Smoothing Planes



It's the most important hand tool in the shop, and there are more great choices than ever

BY CHRIS GOCHNOUR

If there is one handplane that every woodworker should have, it is the smoothing plane. It is, in essence, a finishing tool, stepping in where machines and rougher hand tools leave off. Properly tuned and sharpened, a smoothing plane can leave a pristine finish on almost any board. Yet it is still compact enough to be ideal for general planing jobs like fitting and trimming parts.

Because the smoothing plane is so essential, it's important that you purchase the best one you can afford. To help you make this critical choice, I put 14 smoothing planes ranging in price from \$33 to \$350 through their paces, testing both of the common styles: bevel-down and bevel-up. First, I judged the overall condition out of the box. Then I sharpened the blade and put the plane to work. If needed, I diagnosed and tried to correct any

A winner for every budget

When it comes to craftsmanship and performance, you can't go wrong with any of these five planes. And there's one for every budget.



CLIFTON NO. 4
\$300



LIE-NIELSEN NO. 4
\$350



The Clifton No. 4 is a finely detailed, superb performer. It handled every test with ease and elegance, leaving perfect surfaces in its wake. It's a hefty tool, but it's perfectly balanced. The thick blade holds an edge well and has a stout, two-part chipbreaker that keeps the blade flat and in full contact with the frog. Blade adjustments are easy and convenient. The only downside is that the back of the blade needed lapping before putting it to use, a minor inconvenience.

The Lie-Nielsen No. 4 is a well-crafted tool and a fabulous performer. For this review, I chose the cast bronze version over the ductile iron because the bronze looks great, won't rust, and adds nice heft to the plane. That heft, perfectly balanced, helps the plane power through any cut. It feels smooth and steady in action, with blade adjustments that are easy and precise. The back of the blade arrived perfectly flat.



VERITAS NO. 4
\$200



VERITAS LOW-ANGLE SMOOTH PLANE
\$195



WOODRIVER NO. 4, V3
\$120



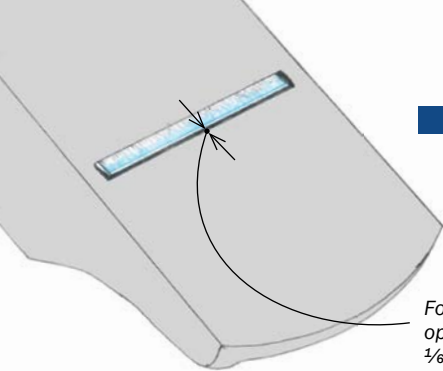
The Veritas No. 4 is a finely crafted tool. The machining is accurate, clean, and smooth, and the blade was lapped perfectly flat, but I was disappointed with the thin, old-style chipbreaker (see p. 45). To make mouth adjustments, the frog is moved forward or backward, with no need to remove the blade. Blade adjustments, made with a Norris-style mechanism, are easy but less convenient and precise than the separate lever and knob on the Clifton and Lie-Nielsen above.

Among the bevel-up smoothers, the Veritas was best. I reground the factory-shipped blade from 25° to 33° to achieve a 45° cutting angle, essentially converting it to a smoother. Like all bevel-up smoothers, the blade requires more camber to eliminate tracks, and getting it right takes finessing. If you add an extra low-angle blade, you can have both a smoother and a low-angle plane for working end grain. The plane also works well on its side, with a shooting board.

The WoodRiver No. 4, V3, felt and performed like a first-rate tool with excellent results. The machining is clean and accurate, and in use, the plane didn't disappoint. Frog adjustments are made without removing the blade—a plus—but they are finicky because the frog does not travel in a machined slot to keep it aligned laterally. It was the one detail where the plane came up short. Once the frog is set, however, blade adjustments are smooth and effective.

■ MOUTH ADJUSTMENTS SHOULD BE EASY

How big a shaving you can take depends partly on the mouth opening. On most smoothers in the review, the opening is set by moving the frog. Others set the opening with an adjustable shoe at the front of the plane. Adjustments are quicker and easier if you can make them with the blade in the plane.



For fine cuts,
open the mouth
1/64 in. to 1/32 in.

THESE TWO TYPES MAKE IT SIMPLE

INCONVENIENT



Remove the blade. With some planes, like the Kunz Plus No. 4, you have to remove the blade assembly to access the frog-attachment screws on top, then move the frog with a screw in back.



On the fly. You can't beat a plane design that allows you to make mouth adjustments with the blade installed. On some bevel-down planes, like the Lie-Nielsen (left), the frog-attachment and adjustment screws are in the back, so you don't have to remove the blade to access them. Bevel-up planes, and the bevel-down Stanley Sweetheart, feature an adjustable toe (right), another convenient method.

problems with the tool. Not all of the planes needed help.

First a sharpening

A plane must have a razor-sharp blade to work well, and it's a bit much to ask manufacturers to ship them that way. So before use, I honed each blade. I started with 150-grit sandpaper on a granite block and progressed using Japanese waterstones, beginning with 1,000 grit, then 4,000 grit, and ending with 8,000 grit. And I gave each one my usual subtle camber (slightly relieved

corners) to eliminate blade tracks (bevel-ups needed more camber). Bevel up or down, I honed each blade to an effective cutting angle of 45°. The ECE Primus was the only exception among the bevel-down planes, as its blade is bedded at 50°.

Then a torture test

I used three boards for my tough test: pine, cherry, and white oak, each 1½ in. thick by 20 in. wide by 30 in. long. I planed the face of each panel: pine first, then cherry, then white oak. I made the first series of

passes diagonally across the surface. I made the second series with the grain to clean up the diagonal plane marks. I made the final series of passes with the grain and with the blade set for a lighter cut. After that, I judged how the final surface looked and felt.

Next, I used each plane on the face grain of some figured bubinga to see how it responded to a challenging, dense, and figured hardwood.

The final test was to plane the end grain of the first three panels. I took five passes

Bevel-up or bevel-down?

Up, like a block plane. Bevel-up planes, like the Veritas low-angle smooth plane, are simple and versatile. However, the blade must have a more pronounced camber to prevent track marks, so sharpening takes some practice.



Down is traditional. All bevel-down planes have a chipbreaker atop the blade, which curls chips forward and works to prevent tearout.

■ TWO WAYS TO ADJUST THE BLADE

Once you have the mouth opening set, you'll want to adjust the blade for a gossamer-thin shaving that spans the full width. These depth and lateral adjustments should be simple and precise. Some planes have one mechanism for each adjustment, while others use one for both.

1. SEPARATE KNOB AND LEVER



Twist. On most planes in the review, you set depth of cut by turning a knob located behind the blade.



Swing. Once the depth is set, swing a lever behind the blade to make lateral adjustments.

2. ALL-IN-ONE ADJUSTER



Twist and swing. A Norris-style adjuster handles both types of adjustment. Gochnour finds this style less convenient because it's easy to ruin one setting while adjusting the other.

on the pine, five passes on the cherry, and then 25 passes on the white oak, in an effort to dull the blade. I then took a final, telling pass on the edge of a white oak panel to see how well the plane was still cutting. The performance of each plane is noted in the chart on pp. 46-47.

The envelope, please...

After weeks of testing, I was impressed with the overall performance of these planes. I'm happy to report that there is no shortage of high-quality smoothing planes out there for any budget.

Among this impressive group, however, two planes rose above the rest: The Clifton No. 4 and the Lie-Nielsen No. 4. They tied for Best Overall. Both are fabulous performers.

I had a more difficult time choosing Best Value. After much retesting, I whittled the list down to the WoodRiver No. 4, V3 and two from Veritas: the No. 4 and the low-angle smooth plane. You couldn't go wrong with any of these planes, so the Best Value is a tie among the three.

Chris Gochnour is a furniture maker and hand-tool expert near Salt Lake City.

Chipbreakers: Thicker is better

Bevel-up planes don't have chipbreakers, but all of the bevel-down planes do. The chipbreaker's job is to deflect shavings up and out of the plane and support the blade close to the cutting edge, which helps reduce tearout and dampen vibration. To do these jobs well, the front of the chipbreaker must meet the back of the blade seamlessly.

Many of these planes use an old-style chipbreaker made from thin pressed steel, which typically requires a good amount of tuning. In the last decade, I've seen a new style of chipbreaker: thicker, machined dead-flat, with a beveled edge at the tip that is easy to fine-tune for a perfect fit with the blade.

My favorite in this group is a two-piece design (unique to the Clifton). If you sharpen freehand, it is great because you simply lift off the front section and sharpen away. The design also doesn't flex the blade, so in theory it stays in full contact with the frog, providing maximum support.

OLD STYLE

NEW STYLE

TWO-PIECE

14 smoothers, head to head

A great smoothing plane has precise components that are well machined. In use, you want the plane to be easy to set up and adjust, to leave a pristine surface, and to have a blade that will stand up to rigorous use.



Anant Kamal No. 4



Clifton No. 4



ECE Primus 711



Footprint No. 4



Groz No. 4



Kunz Plus No. 4



Lie-Nielsen No. 4



Lie-Nielsen No. 164 Low-angle Smoothing Plane



Stanley Bailey No. 4



Stanley Sweetheart No. 4



Veritas Bevel-Up Smoother Plane



Veritas Low-Angle Smooth Plane



Veritas No. 4



Wood River No. 4, V3

**AUTHOR'S
BEST OVERALL
CHOICE**

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MODEL/SOURCE	STREET PRICE	WEIGHT	BLADE MATERIAL
Anant Kamal No. 4 highlandwoodworking.com	\$60	4 lb. 2 oz.	0.117-in.-thick high-carbon steel
AUTHOR'S BEST OVERALL CHOICE Clifton No. 4 toolsforworkingwood.com	\$300	4 lb. 7 oz.	0.130-in.-thick hand-forged high-carbon steel
ECE Primus 711 toolsforworkingwood.com	\$200	2 lb. 7 oz.	0.110-in.-thick chrome/Vanadium
Footprint No. 4 woodcraft.com	\$55	4 lb.	0.080-in.-thick high-carbon steel
Groz No. 4 rockler.com	\$33	3 lb. 4 oz.	0.075-in.-thick high-carbon steel
Kunz Plus No. 4 traditionalwoodworker.com	\$200	3 lb. 15 oz.	0.135-in.-thick high-carbon steel
AUTHOR'S BEST OVERALL CHOICE Lie-Nielsen No. 4 lie-nielsen.com	\$350	4 lb. 13 oz.	0.125-in.-thick A2/Cryo
Lie-Nielsen No. 164 Low-angle Smoothing Plane lie-nielsen.com	\$265	3 lb. 12 oz.	0.180-in.-thick A2/Cryo
Stanley Bailey No. 4 rockler.com	\$75	3 lb. 14 oz.	0.082-in.-thick high-carbon steel
Stanley Sweetheart No. 4 rockler.com	\$180	4 lb. 14 oz.	0.125-in.-thick A2
Veritas Bevel-Up Smoother Plane leevalley.com	\$220	4 lb. 14 oz.	0.185-in.-thick A2
AUTHOR'S BEST VALUE CHOICE Veritas Low-Angle Smooth Plane leevalley.com	\$195	4 lb. 9 oz.	0.120-in.-thick A2
AUTHOR'S BEST VALUE CHOICE Veritas No. 4 leevalley.com	\$200	4 lb. 11 oz.	0.125-in.-thick A2
AUTHOR'S BEST VALUE CHOICE Wood River No. 4, V3 woodcraft.com	\$120	5 lb.	0.125-in.-thick A2

Online Extra

To learn more about the details that make a great plane, watch the video at FineWoodworking.com/extras.

EDGE RETENTION	CHIP-BREAKER	EASE OF ADJUSTMENTS	FIT AND FINISH	OVERALL RATING	COMMENTS
Good	Old style, 0.115 in. thick	Depth: Very good Lateral: Very good Mouth: Fair	Good	Good	Of all the planes under \$100, the Anant performed best; chipbreaker needed tuning for a better fit with the blade.
Very good	Two-piece, 0.125 in. thick	Depth: Excellent Lateral: Excellent Mouth: Very good	Excellent	Excellent	Almost ready to go out of the box (blade needed lapping); unique, two-piece chipbreaker was author's favorite.
Very good	New style, 0.120 in. thick	Depth: Excellent Lateral: Fair Mouth: Good	Very good	Very good	Glides easily on its slick lignum vitae sole but light weight didn't provide much inertia; most precise vertical adjuster of any plane in the test—absolutely no backlash; left- and right-hand models available.
NA*	Old style, 0.075 in. thick	Depth: Very good Lateral: Very good Mouth: Fair	Poor	Poor	Too much blade deflection and chatter on white oak and bubinga panels and on cherry and oak end grain; poor machining and casting.
NA*	Old style, 0.075 in. thick	Depth: Good Lateral: Very good Mouth: Fair	Fair	Fair	Too much blade deflection and chatter on the bubinga and cherry and white oak end grain.
Very good	New style, 0.095 in. thick	Depth: Fair Lateral: Fair Mouth: Good	Good	Good	Blade adjuster was a weak spot: too much backlash in vertical adjustments, and lateral adjustments had to be fine-tuned by tapping blade with a hammer.
Excellent	New style, 0.125 in. thick	Depth: Excellent Lateral: Excellent Mouth: Very good	Excellent	Excellent	Exceptional quality; needed only to hone the blade to put the tool to work; Lie-Nielsen sells higher-angle replacement frogs for this plane.
Excellent	None	Depth: Excellent Lateral: Fair Mouth: Excellent	Excellent	Very good	Bevel-up design; vertical adjuster is integrated into lever cap, making blade replacement after sharpening more cumbersome; however, adjuster nut is located in a convenient spot; blade requires more camber to eliminate tracks.
NA*	Old style, 0.075 in. thick	Depth: Very good Lateral: Very good Mouth: Fair	Fair	Fair	Too much blade deflection and chatter on bubinga panel and cherry and white oak end grain; sole needed significant lapping.
Very good	New style, 0.110 in. thick	Depth: Good Lateral: Good Mouth: Excellent	Very good	Very good	Frog is cast into plane body, a rock-solid design; adjustable mouth makes for precise mouth adjustments.
Excellent	None	Depth: Very good Lateral: Good Mouth: Excellent	Excellent	Excellent	Bevel-up design; blade is wider (2¼ in.) than others tested and quick and easy to remove and replace; has convenient adjustable mouth; set screws on body help hold lateral adjustments; handled end grain tests the best; blade requires more camber to eliminate tracks.
Excellent	None	Depth: Very good Lateral: Very good Mouth: Excellent	Excellent	Excellent	Bevel-up design; square sides make plane suitable for use with a shooting board, versatility the other Veritas bevel-up plane does not have; set screws on body help hold lateral adjustments; blade requires more camber to eliminate tracks; when removing the blade, the adjustment mechanism sticks to it and lifts out, a minor nuisance.
Excellent	Old style, 0.075 in. thick	Depth: Very good Lateral: Very good Mouth: Very good	Excellent	Excellent	Frog and tote are one piece, a strong design; mouth adjustments are easily made without removing the blade; set screws on body help hold lateral adjustments.
Excellent	New style, 0.110 in. thick	Depth: Excellent Lateral: Excellent Mouth: Good	Very good	Very good	Machining is clean and accurate; depth and lateral adjustments were great, but mouth adjustments were a bit fussy.

*Unable to complete test; see comments.