

# The Jack of All Planes

From flattening to smoothing, the No. 5 can do it all

BY JEFF MILLER

Jack planes are the workhorses of the shop and the go-to tool for a variety of woodworking tasks. The jack plane handles smoothing as well as the shorter No. 2, 3, or 4. It also can be used for the flattening and straightening tasks often reserved for the longer planes: the No. 6, 7, or 8. As its name suggests, this plane is a jack of all trades.

Ideally, a jack plane should be capable of taking very fine shavings and leaving a great finish, and yet be able to remove lots of wood in a hurry when set for a deeper cut. It should also be adept at jointing edges prior to gluing up a panel. With all of these important attributes in mind, I put 12 jack planes through their paces to see which ones I'd give a permanent home in my workshop. The list includes planes



JOINT

## ONE PLANE, MANY TALENTS

A jack plane set up for a fine cut is a perfect smoother for most projects. With a few adjustments, the plane can transition to heavy cuts, flattening rough surfaces—even a workbench. Its added length over the No. 4 makes it adept at jointing edges as well.



FLATTEN



SMOOTH

from Clifton, Footprint, Kunz, Lie-Nielsen, Stanley, Veritas, and Wood River.

### A close look at the critical parts

After unpacking and degreasing the planes, I checked the soles for flatness, and looked to see if the sides were ground square to the sole, critical if you're going to use the jack for shooting (a task it is well sized for). All but a few planes needed some work to flatten the soles, and some needed work on the frogs. The least expensive planes in the test needed a lot of work.

**Blade and chipbreaker**—All planes need sharpening out of the box, a straight-forward job. But if the back of the blade isn't ground flat at the factory, you have some labor to do. I flattened and polished the blade backs and sharpened all the blades. The amount of work required varied among the different models.

I also looked at the chipbreakers to see if they made solid contact with the plane iron, and if they were stamped or machined. Without perfect contact, the blade will vibrate and chatter, and any gap can cause chips to clog the plane. The stamped type are thinner and generally need more attention to ensure they contact the back of the blade properly. Because they're thin, they don't dampen vibration at the tip of the blade as well as the thicker, machined chipbreakers. But even the machined chipbreakers will occasionally need fine-tuning to be sure that they seat well and that the machined contact face is smooth and flat.

**Blade adjustments**—An easy-to-use blade-adjustment mechanism—one that holds its settings—is incredibly important. Jack planes come with one of two types, the Bailey-style mechanism (Stanley, Footprint, Wood River, Clifton, and Lie-Nielsen) or the Norris-style adjuster (Kunz and both Veritas planes). The choice is really one of personal preference. Do you want all the adjustment on one lever, or the depth and the angle adjustments separate? More importantly, can you reach the knob with

## Features to consider

### FAST AND PRECISE BLADE ADJUSTMENTS



**Split adjustments.** Planes with Bailey-type adjusters use a wheel to set the blade depth (top) and a lever for lateral changes (bottom).



**Two in one.** Planes with Norris-type adjusters, like the Veritas 5¼ W, combine depth and lateral adjustment into one mechanism. Turning the knob changes the depth and swinging the lever makes lateral adjustments.

### CONVENIENT MOUTH ADJUSTMENTS



**You shouldn't have to remove the blade.** Mouth adjustments are made by moving the frog or by sliding a toe, or shoe, at the front of the plane. Planes with a Bedrock-style frog (or similar) let you move the frog with the blade in place by turning screws at the back of the frog. With planes that use a sliding toe to adjust the mouth opening, like the Veritas Custom No. 5, you never have to remove the blade for mouth adjustments.

### Bevel-up jack planes: In a category of their own



The bevel-down jack planes are truly the grab-and-go tool for a multitude of shop tasks. But the bevel-up (low-angle) jack planes—originally designed to surface end grain—are versatile tools as well, especially considering that simply regrinding the bevel gives you the ability to have a low cutting angle for end grain or a high cutting angle for difficult grain. So I tested each type separately, awarding a winner for each. The bevel-up models are featured on pp. 46-47.

your hands in place on the plane? You can probably get used to either type, but I prefer the Bailey-style controls.

There was great variation in how well the plane's mechanisms were designed and machined. Most worked well, but a few had more slop and backlash.

**Mouth adjustments**—You typically set the mouth opening tight to the blade for fine work and more open to keep the mouth from clogging when removing heavier shavings. The jack plane is one of the few planes where you'll regularly use this adjustment, since it tends to be used for a wide range of tasks. On the planes I tested, you can adjust the mouth either by moving the frog (with the blade in place or out), or by sliding a toe, or shoe, at the front of the plane. Planes with a sliding toe let you keep the blade in place for mouth adjustments.

The Veritas planes have additional convenient features. They employ set screws in the plane body to restrict any side-to-side movement of the blade. And the Veritas Custom No. 5 has a stop to prevent the toe from smacking into the blade when you close up the mouth.

### Put to the test

For the real-world tests, I set up two jobs at opposite ends of the spectrum. First, I did some finish smoothing on straight-grained walnut, curly maple, and finally teak. Once the smoothing tests were done, I reflattened a couple of heavily used workbenches (a brutal task for a plane, with all of the embedded dirt and grit in the top). I cycled through the planes on both tasks, evaluating how they held up under fine work and then under hard work, resharpening as needed. I noted how the planes felt in use—which seemed to make the task easier or harder, and which seemed the most responsive.

### Conclusions

I was able to tune up each plane, but the Lie-Nielsen No. 5 stood out for overall quality, ease in getting it to work perfectly, and good, solid adjustments. It had tight machining, the most positive feedback, and could do any job from finish smoothing to rough flattening, or shooting end grain. The Veritas No. 5¼ W was close behind the leader and priced well below it, making it the Best Value.

*Jeff Miller makes custom furniture and teaches woodworking in Chicago (furnituremaking.com).*

## LIE-NIELSEN NO. 5

Price: \$325

Blade material: A-2

Chipbreaker: Machined



The Lie-Nielsen No. 5 was very well-machined overall, with lateral and depth adjustments that had the least backlash of any of the Bailey-style planes. The back of the blade was perfectly flat, and the chipbreaker seated fully against the blade. The sole was flat and the sides were square. The Bedrock-style frog made adjustments to the mouth quick and easy without the need to remove the blade. With a quick honing of the blade, this plane cut very well and adjusted easily between fine smoothing and heavier flattening. This is a quality plane that feels reliable and precise in your hands.

## VERITAS 5¼ W

Price: \$258

Blade material: PM-V11

Chipbreaker: Stamped



The Veritas 5¼ W had a great overall fit and finish. The Norris-style adjuster was tight and precise. The blade was flat, easy to sharpen, and withstood the bench-flattening test with barely any dulling, unlike some of the other blades. The stamped chipbreaker set up well and mated tightly to the blade. The 5¼ W has a handful of useful features at an affordable price, such as toolless mouth adjustment via a sliding toe and screws in the plane body that prevent lateral movement of the blade during adjustment. Combine this with solid machining and quality throughout, and choosing this as Best Value was an easy call.

### CLIFTON NO. 5

Price: \$320



Blade material: Cryogenically treated high-carbon steel  
Chipbreaker: Machined, two-piece

This is a well-machined plane with only a small amount of backlash in the Bailey-style adjustment mechanisms. The blade was ground slightly unevenly and had to be flattened, but the unique, two-piece chipbreaker worked well and contacted the blade solidly. The sole was flat, but the sides were slightly out of square, which limits the plane's use with a shooting board. A Bedrock-style frog allows the mouth to be adjusted without removing the blade, a great time-saver.

### FOOTPRINT NO. 5

Price: \$60



Blade material: Carbon steel  
Chipbreaker: Stamped

This plane required a lot of work. The stamped chipbreaker initially had very little contact and the back of the blade was convex, with a high spot in the middle. The frog was poorly machined and neither flat nor smooth. The sole needed the most work—I spent at least 30 minutes flattening it. After all of this work and a careful sharpening, the plane cut fairly well but excessive slop in the Bailey-style blade adjustments and overall poor machining hindered its performance. The frog was a rudimentary Bailey type that required blade removal for mouth adjustments.

### KUNZ 5PLUS

Price: \$240



Blade material: High-carbon steel  
Chipbreaker: Machined

The cap-iron screw on the Kunz 5Plus was very fussy in use and while the back of the blade was very close to flat, it was ground coarsely, and it took a while to remove the scratches from it. The plane needed a lot of work to get the sole flat as well, although the sides were square to the sole. The Norris-style adjuster had a lot of slop, which translated to unpredictable cuts and settings that didn't quite keep. The mouth adjustment requires blade removal, which slows down setup.

### STANLEY NO. 5

Price: \$75



Blade material: Carbon steel  
Chipbreaker: Stamped

Out of the box, the Stanley's stamped chipbreaker was easy to tune up, but the blade suffered from a high spot in the center that was hard to remove. The plane iron did not sit flat on the frog and I discovered a significant hollow area (almost  $\frac{1}{32}$  in.) on the frog. The sole of the plane was seriously out of flat and took 45 minutes to flatten. Despite all of my efforts, the plane still cut poorly, mostly due to poor machining. The Bailey-style frog worked decently but required removing the blade for mouth adjustments.

### VERITAS CUSTOM NO. 5

Price: \$330



Blade material: PM-V11  
Chipbreaker: Machined

The Veritas Custom No. 5 was well-machined and its Norris-style adjuster was tight and precise. It has a unique system for setting the chipbreaker with two small Allen-head bolts: one sets the location of the chipbreaker and one attaches the blade to the chipbreaker. This system is cool in that it retains your chipbreaker location setting perfectly, but the button-head bolt is very small and not easy to get a hand on. The back of the blade required only minimal work to flatten. The sole was flat and the sides were square to the sole. Adjusting the mouth was easy and quick via an adjustable toe.

### WOOD RIVER NO. 5

Price: \$170



Blade material: High-carbon steel  
Chipbreaker: Machined

The thick blade on this plane is a nice feature but its back was high in the center, making it difficult to flatten. The chipbreaker fit well and was also thick, but its machined edge needed a little refining for optimal contact. The sole needed flattening, but the sides were square to the sole. The Bedrock-style frog worked well and made mouth adjustments easy. After a small amount of work the Wood River planed fairly well but the Bailey-style depth and lateral adjusters both had a significant amount of backlash.

## The best of the bevel-ups

As I mentioned, when compared with bevel-up models, I find that standard jack planes are a better choice for first-time buyers because they leave a slightly better surface when doing fine work and they adjust more easily, characteristics that are beneficial, especially for someone relatively new to planing. That doesn't mean bevel-up planes don't have a place in the shop. Four planes in the test are bevel-up models. With the blade bedded at a low angle, these planes were originally designed for surfacing end-grain butcher-block tops, but they have gained popularity as a general jack plane alternative. The likely reason is their versatility.

Out of the box, a bevel-up plane is typically sharpened for a 37° cutting angle, which is the bed angle plus a 25° bevel on the blade. That's great for end grain and wood with highly cooperative grain, but they tend to tear out with more challenging grain. In these situations, you need to increase the effective cutting angle by sharpening the blade's bevel at a steeper angle. For instance, to match the 45° cutting angle of a standard jack plane, the blade needs a 33° microbevel (or a completely reground bevel, if you want to go through all that work). And you can go steeper. I keep two extra blades on hand: one for a 45° cutting angle and another for a 75° cutting angle. My steepest blade basically turns the plane into a very effective scraper plane. Keep in mind that these steeper angles aren't as durable and will dull more quickly than a blade sharpened at 25° to 30°; that's an optimal angle taking into account smoothness of cut and durability of the edge.

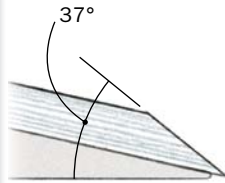
Two of the models feature a Norris-style blade adjuster, which handles both lateral and depth adjustments. A couple of planes come without a lateral adjusting mechanism. To square up the blade, I use a light hammer. This can be something with a brass head, but I've also used a rawhide hammer, or even one with a wooden or a steel head. Once you get a feel for how much your hammer moves the blade when you tap it on the side, adjustments can be at least as precise as those made with a lever.

These can be a good replacement for the bevel-down jack planes, as long as you're willing to spend the time resharpening the blade for different tasks or have the budget to invest in extra blades to have at the ready. But that's not for everyone.

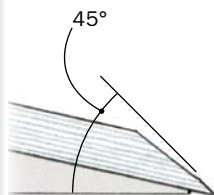
Of the bevel-up planes, the Lie-Nielsen and Veritas models stand out due to the quality of their machining and precise adjustments.

### CHANGE THE ANGLE TO SUIT THE TASK

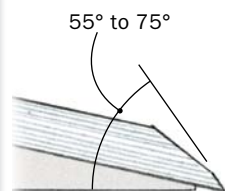
The bevel-up jack plane's effective cutting angle can be changed with ease just by regrinding the bevel or adding a microbevel. Switching the angles gives a single plane the ability to tackle many tasks other planes cannot.



**Low angle for end grain.** A blade ground at 25° results in a cutting angle of 37°, which is perfect for cleanly slicing end grain. That's why a low-angle plane is ideal for use with a shooting board.



**Most useful angle.** A 33° grind will turn your bevel-up plane into a standard jack plane, making easy work of smoothing and flattening tasks.



**High angle for difficult woods.** With the blade ground to an even steeper angle, bevel-up jacks can tackle heavily figured or wild wood with ease.



### LIE-NIELSEN NO. 62

Price: \$245

Blade material: A-2



This plane was very well machined, with a flat blade back, a flat sole, and square sides, and it cut very well. Mouth adjustments were precise. Blade-depth adjustments were precise and easy, but using a hammer for lateral adjustments takes getting used to. Once made, the adjustments held. An accessory handle (\$60) is also available for use with a shooting board.



**Tap to square it up.** The Lie-Nielsen and Wood River No. 62 (below) have no mechanism for lateral blade adjustment, so it is done with a small hammer after the blade depth has been set.

### VERITAS NO. 62½

Price: \$257

Blade material: PM-V11

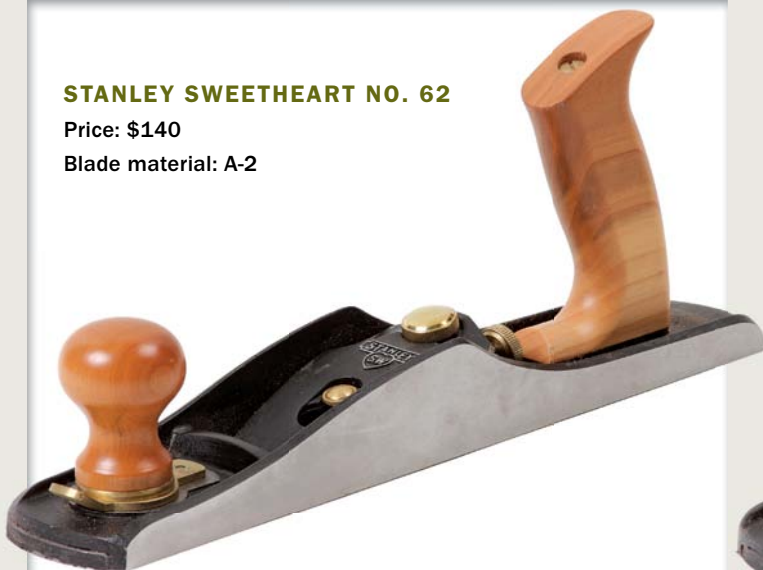


This plane was machined well, and the Norris-style adjuster was spot-on. It's wider and heavier than the rest of the bevel-up jacks, which means it takes a wider cut and has the momentum to power through some heavy flattening. On the other hand, the added width also meant the plane was a bit hard on the user and could be a bear to push through heavy cuts. The sole was flat, the sides were square, and the PM-V11 blade sharpened easily and took a beating without flinching.

### STANLEY SWEETHEART NO. 62

Price: \$140

Blade material: A-2



The back of the blade was mounded in the middle, but I was able to flatten it. The adjustment mechanism had a lot of slop and backlash, and allowed very limited movement. I had to file the bed of the plane a little to allow the blade to sit square. The sole of the plane needed a fair amount of work to get flat and the sides were not square with the sole. Once tuned up the plane cut well, but it suffered because of the poor machining and a cast aluminum cap-iron screw that was not easy to grip.

### WOOD RIVER NO. 62

Price: \$200

Blade material: High-carbon steel



One corner of the blade did not clean up even after 10 minutes of flattening. The small front knob was noticeably less comfortable than those found on the other planes. The sole needed a fair amount of flattening, but the sides came square and the unit planed well after this work. The depth adjuster had a small amount of backlash. The relieved area at the back of the blade made lateral adjustments via hammer difficult.