



## Tune up your block plane

BY MIKE KORSAK

**T**he humble block plane, though often overlooked, is an extremely versatile tool, and I definitely wouldn't want to work without one (for more, see my article "Seven Tasks for a Block Plane," p. 40). If you would like to get your brand-new or decades-old block plane tuned and

running at full capacity, here is a series of steps that will help.

The first thing to do is check the flatness of the sole. I do this with a quality straightedge, like the steel rule of a Starrett combination square. With the plane's cap iron and blade in place (but with the blade retracted) hold the plane up to a light source and put the

straightedge along the sole, looking for gaps between the sole and straightedge. Start with the straightedge running parallel to the plane's length, at about the center of the sole. Then check for flatness at both edges of the sole, and check the diagonals. Any gaps, visible as slivers of light, indicate low spots. I use a black marker to identify these.



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## START WITH THE **Body**

*Holding the plane up to a light source, check with a straightedge to see if the sole is flat. Check down the middle, at the sides, and on the diagonals as well. If you see any glint of light, mark the location.*

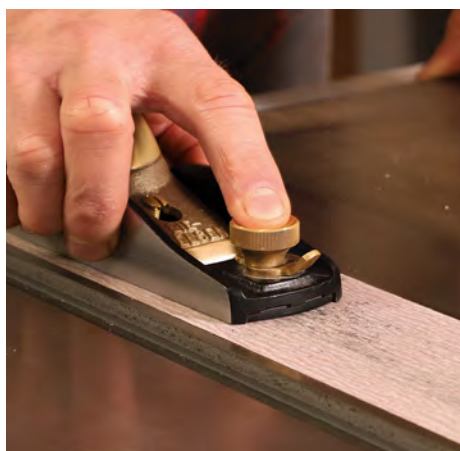


I flatten plane soles using 320-grit PSA sandpaper stuck to a known flat surface, such as the cast iron top of my tablesaw or a piece of float glass. When flattening the sole, again be sure to have the blade and cap iron installed (to introduce any stress put on the block plane when in use), but retract the blade so that it does not project beyond the sole. Sanding will work fine for minor flatness issues; but if the sole of a new block plane is significantly out of flat, I'd return it to the manufacturer.

Next I check the plane's other critical machined surface, the angled bed where the blade rests. I use a straightedge again to assess flatness.

Because of the confined nature of the bed, it can be extremely difficult to do any major reshaping of it with sandpaper or files, so I'd recommend returning a new plane if the bed is significantly out of flat. But assuming the bed is flat, I'd use a small diamond hone to remove any burrs created during machining.

The next task is cleaning up the leading edge of the plane's mouth. Any nicks or burrs on the edge of the mouth could catch shavings as they pass through, so make sure this surface is flat and smooth. I do this by removing the adjustable shoe at the front of the sole and working its back edge on sandpaper adhered to a flat surface. If your block plane doesn't



*Rubbing the plane over 320-grit sandpaper adhered to a flat surface makes quick work of minor imperfections. To simulate the stresses on the plane when in use, be sure to have the blade in place (though retracted) and the cap iron on while flattening.*





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## STRAIGHTEN THE Shoe

*If your block plane has an adjustable shoe, remove it and sand its rear edge smooth. Any burrs there could slow the passage of shavings through the mouth.*

## TUNE-UP THE Cap iron

*Use sandpaper to flatten the underside of the cap iron where it will contact the blade. With a file and diamond hones, smooth and polish the cap iron's rounded front edge to ease the flow of shavings over it.*

have an adjustable mouth (and thus no removable shoe), use a fine file to clean up the mouth's leading edge.

It's important that the cap iron makes complete contact with the blade, so flatten the contact area beneath the front edge of the cap iron. Again you can use sandpaper on a flat surface.

The nose of the cap iron, which the shavings ride against as they're curling off the cut, is another surface that can cause shavings to clog if it is not cleaned and polished. To eliminate any irregularities that could snag shavings, I first use a file to shape the nose so that it is rounded over completely, with no flat spots. Then I switch to small diamond hones and progress through three different grits (400, 600, 1200) until the surface is polished.

The last thing I do to the plane's body is to remove all sharp edges from the sole. This makes the plane feel a little nicer in your hand and also eliminates the possibility of sharp edges or burrs making drag marks on your work. You can do this work with sandpaper, a fine file, or hones.

With the body of the plane now in good working condition, I switch my focus to the plane's blade. Or, in my case, blades.



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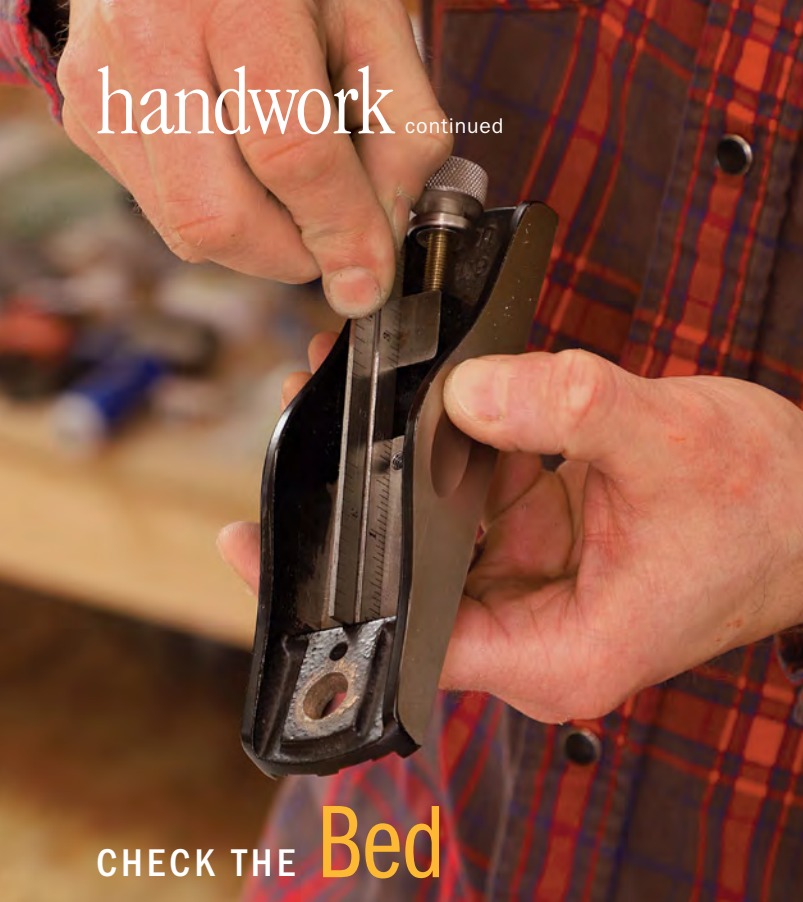
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## CHECK THE Bed

*Korsak uses a straightedge to assess the flatness of the bed. If it is badly out of flat—and the plane is new—it's best to return the plane. If it's flat, use diamond hones to smooth any burrs or dings.*



## EASE THE Edges



*Rounding over any sharp edges around the perimeter of the sole makes the plane friendlier to handle and prevents scratches to the workpiece.*

I have multiple block-plane blades, which I use for different tasks. I have one blade whose bevel is ground to a fairly low angle, somewhere around 25°, with a straight cutting edge. I also use two other blades, ground to slightly higher angles—30° or so—and their cutting edges are cambered. Having multiple blades with slightly different cutting geometries

adds to the versatility of the tool.

When preparing a blade for use, the first thing I do is to flatten the back. I generally do this on waterstones, but if the blade is way out of flat I'd start with 320-grit sandpaper before moving to waterstones. Don't worry about getting the entire back flat; only the ½ in. to ¾ in. of the back closest to the cutting

edge needs to be flattened. Once I have the back flat, I hollow-grind the bevel using a 6-in. grinder with an 80-grit CBN wheel. Then I move to honing and polishing the bevel on waterstones. Now the blade is ready to make shavings.

With blades that I'll be using for the finest smoothing and to prepare surfaces for finishing, I hone the edge to a very



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## HONE THE Blade

After hollow-grinding the bevel, Korsak uses a waterstone to flatten the back of the blade. Then he hones the bevel.

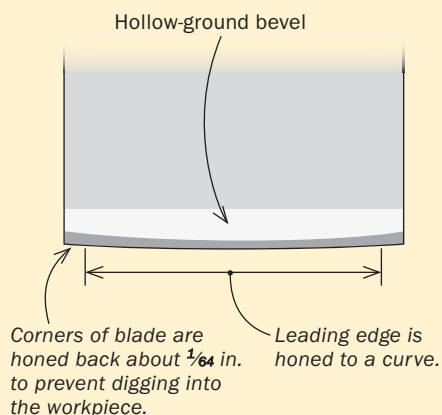


slight curve, or camber. Cambering the cutting edge eliminates the possibility of lines or ridges in the work caused by the protruding corners of blades. The amount of curvature is minimal—the corners of the blade are swept back only about  $\frac{1}{64}$  in. compared with the center of the blade.

I shape the camber while honing with waterstones, focusing light pressure with a finger first on one corner of the blade and then the other. This removes just slightly more steel from the corners and creates a nice, fair camber. The next time I need to regrind the bevel, I just follow the shape of the camber with the grinding wheel.

Mike Korsak makes custom furniture in Pittsburgh, Pa.

### CREATE A CAMBER



Cambering the blade slightly keeps the corners from digging into the wood and leaving tracks. To produce the camber, hone the blade as usual, then take a few strokes while focusing pressure first on one corner, then the other.



## ADJUST THE Shoe



## AND Blade

Set the mouth opening with the movable shoe. Base the setting on the work you'll do—wider for coarse shavings, tighter for finer ones. Then set the blade, checking its projection with your thumb.