

Get to Know Japanese Handplanes

A guide to setting up and using these rewarding tools

BY ANDREW HUNTER

I first took the plunge into the unfamiliar waters of the *kanna*, or Japanese handplane, more than 15 years ago. Learning to use one took time and dedication, but the reward of the shimmering surface it leaves was well worth it. There is more to Japanese handplanes than can be expressed in a single article, but my aim here is to provide a kind of diving board for anyone else interested in taking the plunge. I promise the water is delightful.

What makes these planes different

Japanese planes cut on the pull stroke, and it can take a while to adapt to this, though when you do you'll discover it gives you both more power and more control. But the first challenge with a Japanese plane is that it isn't ready to use out of the box. You get great ingredients, but it is up to you to make the tool perform well. This responsibility might seem daunting at first, but as you grow more comfortable with your plane you will be glad for the control.

The heart and soul of the Japanese plane is its massive tapered blade. A de-

scendant of the samurai sword, the blade has a thin layer of superhard steel laminated to a thick layer of softer mild steel or iron. The hard steel provides a cutting edge of unparalleled sharpness, while the softer backing metal dampens the heat and vibration of the cut. The flat face of the blade—the hard steel side—comes hollowed at the center. So when you lay it on a stone for flattening, only a small amount of metal at the edges contacts the stone, greatly speeding the process.

The blade fits snugly into angled grooves on either side of the body, or block of the plane. On a typical



Prepare the blade

Start by cleaning up the bevel. The thick Japanese blade makes for a wide bevel and easier freehand sharpening. Honing guides made for Japanese blades are another option. The sharpening goes quickly, as most of the bevel is soft metal.



Flatten the back. The hard steel back of a new blade comes hollowed, leaving only narrow areas around the perimeter to be polished during flattening. The narrower you keep these flats, the more efficient your sharpening will be.

Japanese plane, the blade, which is inserted bevel down, is bedded at around 39°. All of my blades are in this range except a 45° finish plane I use on difficult grain. You can order blocks with specific bedding angles or make your own.

The blade is adjusted with light hammer blows. To advance the blade, strike its blunt back edge, favoring the left or right to effect skew adjustment. To withdraw the blade, strike the plane block on its chamfered back edge, alternating taps left and right.

The chipbreaker is wedged in place beneath a removable pin. Like the blade, the chipbreaker is adjusted with a hammer. Its purpose is twofold. It exerts pressure on the blade, stabilizing it and helping reduce chatter. But also its steep secondary bevel contacts the shaving right after it is cut, bending it back and greatly reducing the chance of tearout.

Setup starts with the blade

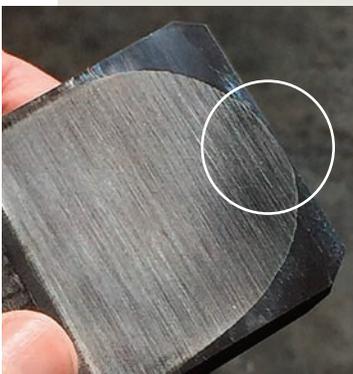
There are five steps in setting up a new Japanese plane: shaping the blade, fitting the blade into the block, fitting the chipbreaker, tuning the sole, and adjusting the mouth opening.

Begin shaping the blade by addressing the bevel. Most blades come with a bevel of about 28°, a good standard angle. If you're happy with that, you can move on to the back; if you want to change it, do so now. Next, flatten the back of the blade. Rub it on a flat, medium-grit stone and then read the scratch pattern. You are looking for consis-

Online Extra

To watch Andrew Hunter tap out a blade, go to FineWoodworking.com/260.

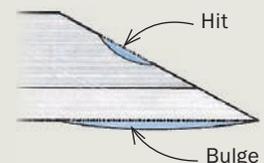
Tapping out the blade



Through repeated sharpening of the bevel, the front flat on the back of a Japanese blade will begin to disappear (left). The solution is to tap the layer of soft steel above the cutting edge to press the hard steel downward slightly, which presents more hard steel at the edge for flattening. This particular blade has been ground flat too often without tapping out, and now has wide side flats that slow the flattening process.



Tap, then flatten the back. When tapping the blade, be careful not to crack the hard steel. Strike the upper half of the bevel with light blows, backing them up from below with a block or anvil.



Seat the blade in the block



Remove the pin. With the plane over a dog hole, grip the retaining pin with padded pliers and tap to remove it.



Look for high spots. Cover the face and the side edges of the blade with a graphite and light oil slurry. Tap the blade into the block and remove. Black marks reveal high spots.



Pare high spots and repeat. Lightly scrape and pare away black marks on the ramp (above) and at the sides (right). Continue this process until the blade fits just shy of protruding.



tent scratches across the entire front edge. If there is a spot with no scratches it may be tempting to grind the whole surface on a coarse stone, but each time you do you'll widen the side flats and shrink the hollow, increasing the amount of hard steel you have to flatten with each sharpening. Instead, Japanese blades are usually "tapped out"—struck on the bevel with light hammer blows so the blade bulges slightly on the back, presenting a little more hard steel for flattening.

With each sharpening of the bevel, the front flat on the back gets slightly narrower. Over time, it will disappear altogether; when it does, instead of grinding the whole back you can tap out the blade again and grind briefly to reestablish the front flat. In this way the narrow flats can be maintained for the life of the blade.

When this preliminary shaping is done, the blade is ready to be fitted to the block. Final sharpening will happen in the end.

Fit the blade into the block

A new plane blade will not perfectly fit its block. It is up to you to get the fit just right. As you insert the blade, flat side up and bevel down, it is captured in two shallow, angled grooves. The upper shoulder of these grooves, against which the flattened face of the blade presses, is the bedding angle for the blade and should not be adjusted. Instead, you'll shape the broad ramp the blade rests on. The better the fit of blade to ramp, the less the blade will vibrate.

To begin, remove the pin and cover the front face of the blade with a graphite



The goal is dark and even. The ramp should be covered with graphite. It's most important to have black along the edges and front.

Fit the chipbreaker



Preparing the chipbreaker. After flattening the back (above) and working a primary bevel, Hunter creates a steep secondary bevel (right). To do so he holds the chipbreaker still and moves the stone, guided by a bevel gauge.



Breaking point. The chipbreaker's secondary bevel, which can be as narrow as $\frac{1}{32}$ in., bends the wood fibers back just after they've been cut for a very clean shave.



it's snug. Then remove the blade and study the black marks left on the ramp where the fit was tight. Lightly pare these spots and reinsert the blade, repeating the process until the blade is just shy of protruding. I like the fit to be tight; it will ease up with time. If the fit becomes too loose either from age or overzealous tuning, glue a paper or veneer shim to the ramp.

Shape and fit the chipbreaker

Now it's time to work on the chipbreaker. First, sharpen it like a blade, with a flat back and a straight bevel. Then create a narrow secondary bevel of around 60° .

This steep surface is what bends the chip back. The chipbreaker has two ears at the top end that bend downward to contact the blade; don't flatten these.

Next, with the blade out of the block, rest the chipbreaker in position on it and check for wobble. If there is any, you'll adjust the ears, either hammering one ear down to make it protrude farther or filing the other back to make it protrude less. The choice depends on the fit of the blade and chipbreaker in the block. So tap the blade into the block just shy of protruding, then press the chipbreaker under the pin with your fingers. A few light taps with a



Eliminate wobble. Rest the chipbreaker in place on the blade. There should be no gaps across the front edge, and the back corners, or ears, should sit on the blade without rocking. Make adjustments by bending an ear down with a hammer or filing it back.

Tune the sole

Get your landings in the same plane. Start by flattening the whole sole. Then, once you've hollowed it, leaving only narrow landings to contact the workpiece, use winding sticks to be certain the landings are in the same plane.



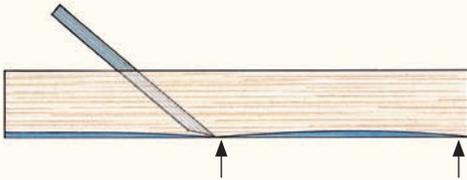
hammer should bring it to the front edge of the blade. Adjust the ears until the fit is snug. Then remove the blade and chip-breaker from the block to be sure they fit together without wobbling.

Create landings on the sole

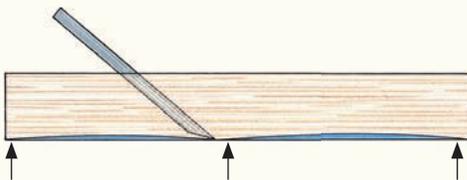
For best performance, any bench plane needs to have a bearing surface that is true and applies pressure to the wood fibers just before they are cut. With Japanese planes this is cleverly accomplished by relieving the sole so that only a few gliding strips, or landings, contact the workpiece. Not only do these narrow landings magnify the pressure applied by the user and deliver it just where it's needed, they are easily adjusted true to one another.

SOLE LANDINGS

Relieve the sole so only narrow strips, or landings, contact the workpiece



Smoothing planes have two landings, one at the leading edge and one just ahead of the blade. This ensures maximum pressure right ahead of the cut.



For a jointer plane, used to make a board perfectly flat, an additional landing at the trailing end of the body is necessary.



The hollows shouldn't be deep. Check the sole with a straightedge. You should see only a hair of light. Tune the sole with the blade and breaker in place, but retracted slightly.



Create the sole profile. With a Japanese scraper plane Hunter creates long, shallow reliefs, leaving $\frac{1}{2}$ -in.-wide landings across the sole. A card scraper also works fine.

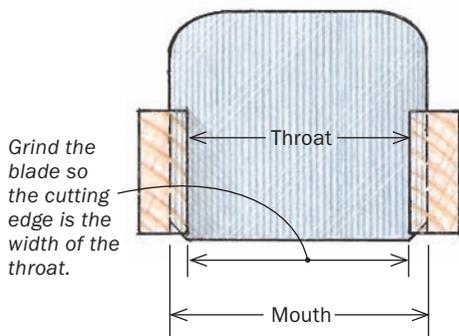


Focused attention. The area behind the mouth can bulge due to pressure from the blade and breaker. Relieve it with a chisel.



Address each side of the mouth. Shallow relief cuts eliminate having to work this area when shaping the sole.

Adjust the blade width and mouth



Limit the width of the blade's cutting edge. It should not be more than the width of the throat, or shavings will jam. Reduce its width by grinding back the bevels at the front corners of the blade.



Adjust the opening. The gap between blade and body should be just wide enough to allow shavings through. Use a chisel and guide block to adjust it.

To work on the sole, keep the blade and breaker in place, since the pressure they exert slightly distorts the block. Start by making the whole sole true so that the landings start out in plane with one another. This can be done using winding sticks and planes or with sandpaper and a dead-flat surface.

The hollowing is best done with scrapers. Once that's done, check to be sure the landing ahead of the blade is flat. Then use winding sticks to see if the other landings are in plane with it and adjust accordingly. Finally, use a straightedge along the length of the block to be sure the hollows are sufficiently relieved. Periodically the condition of the sole should be checked.

Adjust the mouth and throat

You want the mouth open just enough to admit shavings, but not so much that the benefits of exerting pressure ahead of the cut are lost. Adjust the opening with a chisel. Also, be sure the blade's cutting edge is not wider than the throat, or shavings will jam. Reduce the width by grinding back the two bevels at the front corners of the blade. These adjustments will need to be periodically maintained.

Give the blade a final sharpening and have at it. On flat stock, your plane should pull a thin, consistent shaving with only moderate effort. The plane should be very sensitive now and the blade only needs to protrude a hair. If the blade is protruding but you are not getting a cut, recheck the landings and hollows. □

Andrew Hunter builds furniture in Accord, N.Y. He'll be a featured presenter at Fine Woodworking Live 2017 this April.



Using a Japanese plane: The potent pull stroke

Using a Japanese plane is similar to using a Japanese saw in that they both cut with a pull stroke. The plane gives you greater control as it is drawn in. Your hands should be strong but relaxed. Keep the energy out of your shoulders and elbows and draw back with your legs and abdomen. You are not aiming for an explosive power but a controlled, steady strength.

For short strokes, keep the plane close to your center where you have the most control. For longer cuts, reach out to the end of your balance and draw back in to your center. Your body should be like a spring that is straightened and then recoils, using the power from the large muscles of your back and core. Sink into your legs; they provide the stability to counter the pulling force. Without lifting the plane, reposition your feet and repeat. With practice you will be able to walk backward while keeping the connection to the cut with your center. There is a lot to take in when first learning to use a kanna. Hang in there; it will become second nature and your boards will be shining in no time.



Get a grip. Hold the plane with your dominant hand about halfway between the blade and the leading edge, favoring the blade. Most of the pressure is applied with this hand and care must be given to distribute it equally across the block. The other hand supports the blade and helps with the pulling.



Short strokes or long. On shorter boards, keep the plane close to your center, where you have the most control. For long cuts, reach out to the end of your balance and draw back in to your center.



SETTING THE BLADE

Advance the blade by tapping on its blunt back edge. Withdraw it by tapping the chamfered back upper corner of the plane block. Adjust for skew with taps to the blade's back corners.

