

## Tuning Metal Bench Planes for the Rest of Us

By Chris Black



It's an unfortunate reality that most metal bench planes don't work to their full potential right out of the box, and that a certain amount of tuning needs to be done by the end user. With apologies to all engineer/machinist woodworkers, I will endeavor to explain how to tune a metal bench plane without involving a machine shop or taking up vast amounts of your valuable woodworking time or money. I'll leave out the small stuff like after market blades and accessories. This is by no means the final word on this subject, but maybe you can pick up a thing or two from my many years of making a living with these wonderful tools. If you find my methods rudimentary or crude, let me paraphrase Jim Krenov who said at some point the engineer and artisan must part ways.

### SHARPEN THE IRON

If there's a given principle in woodworking, it must be sharp tools. If your steel isn't keen, not much happens. Learn to sharpen and everything else in woodworking will begin to fall into place. 80% of all plane problems can be fixed by getting your irons as sharp as possible. There's a ton of information about sharpening out there, but stick with the basics and worry about other stuff like cambered edges and different bevel angles later. I recommend Thomas Lie-Nielsen's book *Complete Illustrated Guide to Sharpening* (202299), Leonard Lee's *Complete Guide to Sharpening* (200831), or Jim Kingshott's video *Sharpening the Professional Way* (221508). Remember, even a new iron off the shelf isn't sufficiently honed for fine work.

### FIT THE CHIP BREAKER TO THE BLADE

Most metal bench planes' irons have a cap iron or chip breaker attached to the back of the iron with a short screw. Once the blade is honed and at least part of the back, near the edge, is flat, then you can make sure the chip breaker fits properly. The chip breaker has several jobs like stiffening the blade and breaking chips into lovely curls. It also clogs with chips if it's not tight with the back of the iron. Clogging causes all sort of unimaginable misery and at least 5% of bench plane problems. It's easy to fix. Attach the chip breaker to the back of the iron about 1/16" away from the cutting edge and tighten the screw. Now, hold it up to a light source and see if you can see light between where the two surfaces meet. File, sand or scrape metal away from the cap iron until they meet reasonably well. Don't obsess about it, because you'll never get it perfect. Just be aware of it if problems occur, so you'll know how to fix them.

### INSPECT THE FROG

The frog is the inclined plane that the blade assembly beds against in the center of your tool. Typically it's held to the body of the plane with two screws and advanced and retracted by a screw just below the brass depth adjustment knob. Remove the frog and run your fingers over it to make sure there aren't any burrs, catches or paint that will keep your iron from mating nicely against it. You don't have to get it dead flat or anything like that. Just file or sand away the rough edges and any other obvious impediments. The whole process shouldn't take 6 minutes. Now lubricate the screws and reassemble the thing. When putting the frog back, try to visually square it up with the body of the plane. Also make sure front of the frog is no further back than even with the rear of the mouth opening, otherwise the blade assembly will flex when the lever cap is applied.

### LEVER CAP

The lever cap keeps the blade assembly (iron and chip breaker) fastened to the frog. It's held in place by a screw. The lever cap should operate smoothly and shouldn't be so tight that it requires great force to

remove it. A snug fit is all that's required. If it's difficult to advance the blade or move the lateral adjustment lever, then loosen the screw that holds the lever cap.

## **A FLAT SOLE OR NOT**

From age 16 to 30 I worked with my planes every day at the bench and at the jobsite before I was made aware that planes needed to be flattened. Suddenly they stopped working properly and I labored night and day to get them dead flat. Checking constantly with an expensive straightedge and grinding away with sandpaper on glass, I struggled and eventually gave up. What had changed between one day my planes working and the next day them not? I must have read some magazine article or talked to someone who had

convinced me this was the way it had to be: flat soles equal flat work, etc. Then I attended a seminar with Toshio Odate. He was taking beautifully thin, gossamer shavings with a wooden plane that was purposefully out of flat, and my suspicions were confirmed. The only thing that changed was my attitude and my planes suddenly worked again. They've been fine ever since.

Okay, how much flattening or sole conditioning do you need to do? The answer is, not as much as you've been led to believe. First, find something that's reasonably flat like a tablesaw wing, a jointer out-feed table or a melamine-coated piece of MDF, and stick some 120-grit paper to it. Next, take a magic marker and color a 1/8" stripe across the sole of your plane directly in front of the mouth opening. With the plane assembled and the blade retracted, take a couple of passes atop the paper with your plane. Flip the thing over and inspect the mark. Is the abrasive cutting through the marker line? If so, you're done. Or course, you could keep polishing and using finer papers until you had a mirror finish on your sole. Many people do. For all practical purposes, as long as that first millionth of an inch of plane sole hits the wood before the cutting edge does, you're good to go. If not, keep going. Switch to a coarser paper if necessary, but don't spend more than 10 or 15 minutes on this. The worse case scenario is that your tool is concave along its length and you've got to spend some time lapping before you hit the marker line. Remember that temperature and weather affect these things, so if your tool is working one day and not the next, try the magic marker trick. Sole flatness only accounts for 5% of plane unhappiness.

More important than sole flatness is skill. You guessed it - skill is the last 10%. To obtain skill you must practice and gain experience by doing. Only then can you make sound judgments about what's going on. Now wax (any wax, really) up that sole and get to work.

## **OTHER STUFF**

Bad news, your metal plane probably isn't going on Antiques Road Show for big bucks. Good news, you can modify it in anyway you see fit to personalize it or to make it more comfortable. Go ahead and strip off all the shipping lacquer, file the handles and edges, or paint it teal so you can recognize it in the plumber's tool bucket at the end of the day. The bottom line is that it's your baby. Get it how you like it and enjoy the journey and joys of woodworking. Lastly, try not to get wrapped around the axle about something you read or something someone told you about the way things should be. Planes have been around for 10,000 years and have been doing fine work long before machine shops, straightedges, feeler gauges, dial indicators and micrometers. Trust yourself and your ability to problem solve and you might find you didn't have a problem after all. For further reading try Garrett Hack's *The Handplane Book* (201255) and Toshio Odate's *Japanese Tools: Their Tradition, Spirit and Use* (290426).