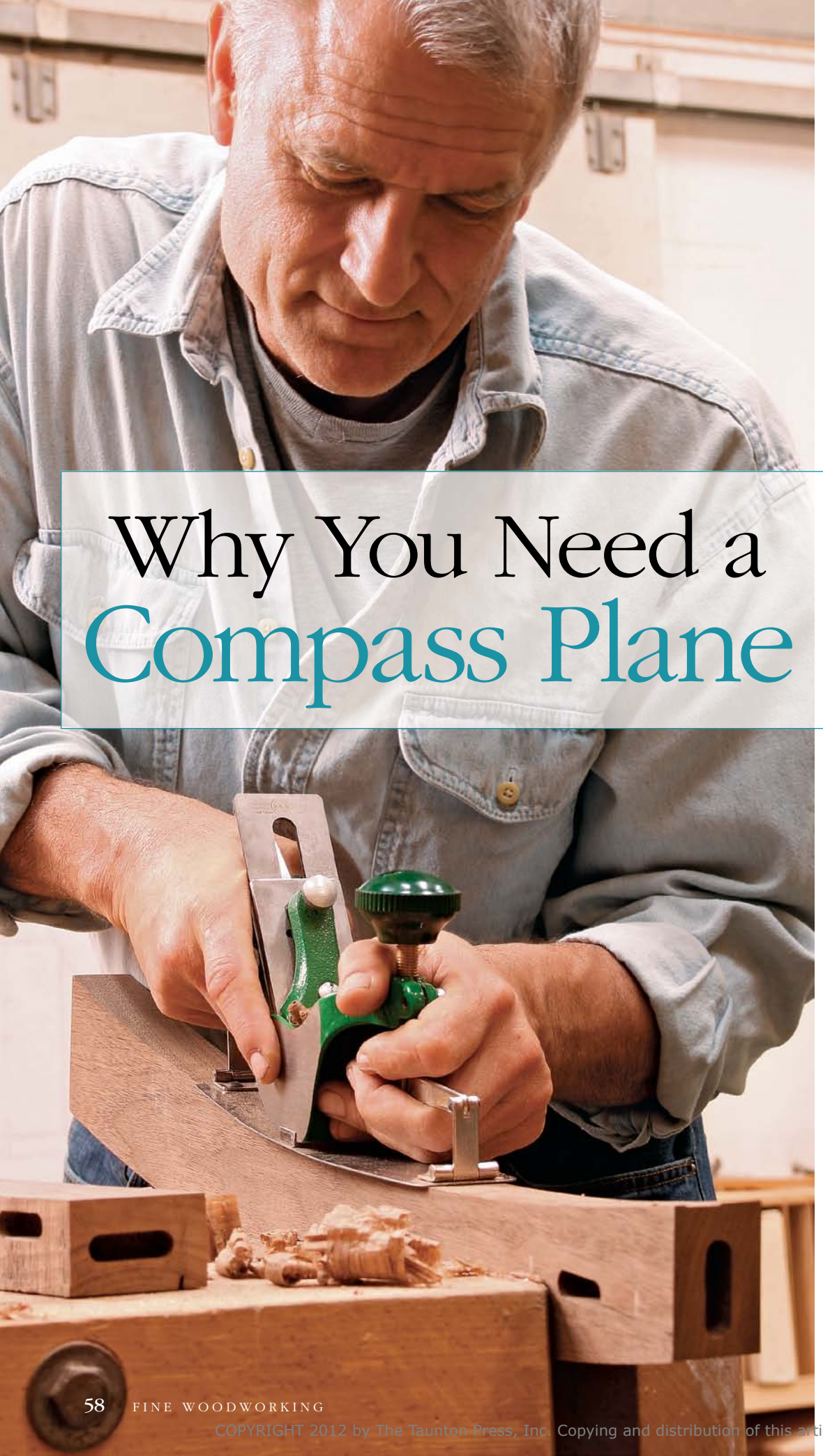


Why You Need a Compass Plane

Create smooth curves that are fair to the eye and hand

BY PAUL SCHÜRCH

Compass planes, also called circular planes, have a rich history but are strangely overlooked by modern woodworkers. In the past, they were used by shipwrights, carriage builders, and furniture makers. Today, for sweeping curves, the plane is still unchallenged. It beats a spokeshave on wide stock because it has more mass and momentum, with a long, adjustable sole that creates smoother curves, free of flat spots and kinks. And it's faster than the contoured and flexible sanding blocks that I've used in the past. I use this plane for all sorts of furniture parts, as well as for router templates.

I grab my old Stanley compass plane for both regular curves with a uniform arc and organic curves with an ever-changing radius, called "fair curves," using the adjustment knob to alter the curve of the sole on the fly. Since almost all of my furniture has curved components, almost every project is touched by a compass plane.

I use the tool on solid wood, plywood, and MDF. I use it to smooth the bandsawn curves on router templates, and then I use it again on actual workpieces, to remove the machine

Photos: Asa Christiana

Good options new and used

No one makes a new compass plane that's as good as the classic Stanley No. 113, but Kunz comes close.

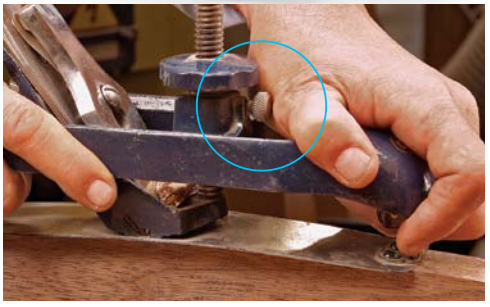
VINTAGE PLANES

STANLEY IS STILL KING

You can find good Stanley No. 113 "circular" planes on the used tool market for $50 to $200. They are nicely made and comfortable to use, with very little slop between the moving parts.

RECORD HAS ISSUES

Record No. 20 compass planes are also available used, but they are uncomfortable to hold.



Pain in the knuckle. *To get good results with a compass plane, you need to push harder on the front. Unfortunately, the Record has a little locking knob near the front that digs into your hand.*

NEW MODELS

KUNZ: GOOD AFTER A TUNE-UP

With some elbow grease, you can get the Kunz 113 Circular Plane ($300; highlandwoodworking.com) working well. It is based on the Stanley No. 113, and is a close second in quality.

Comfy enough. *You can get a good grip on Stanley-style compass planes, and the adjustment knob is easy to reach on the fly.*

ANANT ISN'T AS PRECISE

The Anant 113 Circular Plane ($240, highlandwoodworking.com) is also based on the Stanley, but has rough castings and too much slop in the moving parts.

marks. Although the tool handles concave and convex curves with equal aplomb, there is a limit to how tight a curve it can handle. However, my favorite curves are long and graceful, and the compass plane handles them beautifully. For tips on designing and using fair, organic curves, see my article, "Drawing Big Curves," in *FWW* #175.

Where to get one, and which one to get

The first adjustable-sole compass plane was designed by Leonard Bailey in 1871. This Stanley No. 13 was a crude affair and went through many design changes, reaching its pinnacle as the Stanley No. 113 Circular Plane. The adjustment of the front and rear sole occurs in unison with a single adjustment knob, bending the spring-steel sole into a convex or concave curve. I find myself constantly micro-adjusting the curve when using a compass plane, and the front-knob adjustment on the No. 113 style works better for me than other systems.

Although Stanley stopped making the No. 113 in 1942, there are plenty on the used-tool market. You can get a good one on eBay for between $50 and $200. If you buy an older

All compass planes need a tune-up

To cut precisely and adjust easily, all of these planes, both old and new, need a flat sole and a bit of TLC.

Comfort first. *Start by taking the plane apart, especially if it's a new one, and using a file to knock off the burrs and sharp edges that would dig into your hands.*

plane, make sure that both sole plates are riveted cleanly and securely to the plane body, and that neither is bent or twisted from the plane being dropped. Also, there should be little-to-no play in the adjustment gears or the arms that connect the sole to the plane body, and no missing or cracked parts.

Your other main compass-plane option on the vintage-tool market is the Record No. 20. But I find these uncomfortable to hold, with a small locking knob that digs into the back of my front hand.

As for new tools, there are two circular planes being manufactured today, both based on the Stanley No. 113: the German-made Kunz, and the Anant, which is made in India.

HOW TO FLATTEN THE SOLE

Seal the mouth. *First, put painter's caulk into the mouth to keep water and abrasive grit from getting under the riveted sole, where it will be hard to remove.*

Stone the bottom. *Adjust the sole flat, lock down the plane using a vise and blocks as shown, and sand the area around the mouth flat, finishing with honing stones.*

Flat where it matters. *You might not be able to reach the shallow depressions just ahead of and behind the mouth, but the narrow areas on each side are critical reference surfaces.*

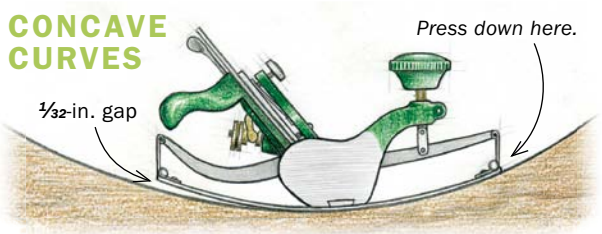
Lube job. *Use a light oil like camellia to lubricate the moving parts, and to protect all of the exposed steel in general.*

Thicker chipbreaker is a good upgrade. *An aftermarket chipbreaker will stabilize the stock blade for smoother cuts.*

Drawings: John Tetreault

Compass planing 101

The setup is slightly different for inside and outside curves, and the planing direction is, too.



Leave a gap. *Pressing the plane forward, adjust the sole for a 1/32-in. gap between the back of the sole and the work.*

Outside in. *With all curves, always plane from high to low to work with the grain and avoid tearout. On concave curves, this means planing from the ends toward the center.*

No gap. *On outside curves, set the gap close to zero, but always feel free to adjust on the fly to improve the action.*

Inside out. *Work from the center outward, and whether concave or convex, try reversing direction if you are getting tearout.*

I took a very close look at both planes and found that the Kunz is fairly well-machined, and works well after a tune-up. The Anant has rougher castings and a sloppier fit between critical parts.

I was happy to discover that Lie-Nielsen Toolworks is also working on a compass plane, and is planning a late-2012 release.

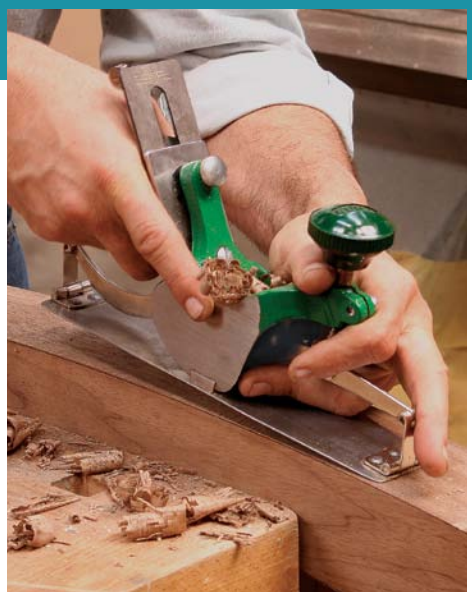
Start with a tune-up

All of the available planes, new or old, need a tune-up to do their best work. Some require more and some less.

Start by taking the plane completely apart and filing all the sharp edges down to make handling more comfortable. Next, you might need to level the sole. But first, squirt some caulk down into the throat to keep the water and wet grit from getting under the riveted sole, where it will be difficult to impossible to remove. Then flip the plane over, adjust the sole as flat as possible, and clamp it in a vise as shown on the opposite page. If the sole is especially bumpy, start flattening it with 220-grit wet-or-dry sandpaper on a block. I've even used a belt sander, clamped upside down on my bench, moving the plane lightly over the belt to do the initial flattening. A diamond plate makes a good intermediate step, but I always finish by polishing the sole with my waterstones.

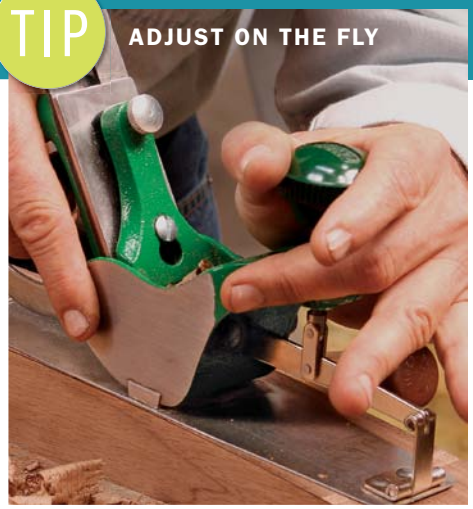
In the end, there might be a depressed area in front of or behind the blade opening that you can't quite remove, but as

Compass planing 101 continued



Quicker, shorter strokes. *Plane more quickly than you would with a normal bench plane, with shorter strokes of 6 in. to 12 in. And focus the pressure on the front of the sole (above). On the return stroke, tip the plane upward (right) to avoid dulling the exposed blade.*

TIP **ADJUST ON THE FLY**



As the curve changes and the plane stops making shavings, the Stanley design makes it easy to fine-tune the sole between strokes.

Work in sections. *On long pieces with changing curves, work one section at a time, adjusting the sole as you go.*

long as the narrow sides of the opening are polished, you'll have a good continuous surface to plane on.

Last, blow out all the moisture, and lubricate all the metal parts with camellia oil or another silicon-free lubricant to keep them running smoothly.

The full monte—Although I'd never tried these upgrades before, I also tested both a better aftermarket blade and thicker chipbreaker to see if I could improve the performance even further.

The chipbreaker had a significant effect, stabilizing the standard blade for less chatter and a smoother cut. Be aware that the chipbreaker for a compass plane must have a slightly different hole pattern than one for a bench plane. Ron Hock made a custom model for my testing, and has agreed to make more for $30 each (No. BK113; HockTools.com). As for the thicker blade, I wouldn't bother unless you buy a vintage plane that has a rusted or pitted one. In that case, most 1¾-in.-wide bench-plane blades will work, with

thicker ones requiring you to file the mouth a bit.

Successful planing

The plane is easy to use, but a few tips will help a lot. For a start, always press down harder on the front of a compass plane. That keeps the blade engaged in the wood, and also happens to create a slight gap between the back of the sole and the surface. For good planing action, the size of that gap should be different for inner and outer curves. For inside (concave) curves, set the curve of the sole a hair (1/32 in. or so) short of the desired shape. For outside curves, the back of the sole should be close to zero, barely touching the wood as you set the curve. If you are having a difficult time getting a good shaving, make slight adjustments to the sole and blade as you plane. You'll get there.

The other key is to take quick 6- to 12-in. strokes, shorter and faster than you would with a bench plane. Also, since the blade is exposed, lift up the back slightly on the return stroke to avoid dulling it without breaking your rhythm.

For long, changing curves, tackle the job in sections, turning the screw-adjustment knob to dial in the proper arc as you work the plane along the length of the curve. If the grain begins tearing in the direction of travel, change your direction, the same way you would with a regular bench plane.

This plane has strongly influenced my design work and furniture making, giving each piece an organic feel and grace unobtainable in any other way. Try it. It might become one of the most cherished hand tools in your collection, too. □

Paul Schürch builds furniture in Santa Barbara, Calif., and teaches widely. Go to Schurchwoodwork.com for info.

From perfect pattern to finished piece

Schürch uses his compass plane to create smooth, fair curves on templates and then to quickly smooth and fair the workpieces themselves.

Making templates. *After laying out his curves on paper, he glues that to template stock and planes to the line. Where a sander would leave a bumpy surface, the compass plane creates smooth, flowing curves.*

Roughing out. *Template routing doesn't work well on thicker workpieces, so Schürch lays these out with the template (left) and then bandsaws close to the line (right).*

Perfect curves. *Schürch then uses his compass plane to quickly remove the bandsaw marks and leave a smooth surface for final sanding and finishing.*