

Saw maintenance

Mark Harrell shows how to make your own saw maintenance and sharpening system

(Photography by Michelle L'Abbé-Harrell)



PHOTOGRAPHS BY MICHELLE L'ABBE-HARRELL

When it comes to sharpening, retensioning and maintaining your own backsaw, here's a highly effective way you can take matters into your own hands by creating your own saw sharpening vice, sawback mounting, adjustment and removal device, and handle tightening system for less than a hundred pounds. You can complete making the components for this system inside of one afternoon, using inexpensive materials readily available online or at larger DIY stores, and components you probably already have in your own shop.

System concept

Virtually everyone has an old vice in their



When broken down the kit is easily stored

workshop likely gathering dust. You can quite easily extend its jaws with angle iron and secure within those extended jaws a sawplate for sharpening with two 18in lengths of flat iron. Line all the clamping surfaces with rubberised cork, and you wind up with a vibration-free, and incredibly tight workholding system that allows you not only to sharpen a saw but perform various other backsaw maintenance tasks with ease. When you're done with it, simply stack the components and move them out of the way.

Here's a breakdown of the parts and how these simple tools work together as a system:

Angle iron jaw extenders:

- Deburr two 18 x 2 x 1/2in pieces of angle iron and line them with rubberised cork; you have now extended the jaws of your 4in mechanic's vice into an 18in vice. With this and the sawback lifter we'll cover in the following paragraph you can remove the sawback from a vintage saw and re-mount it to its correctly intended plate-depth under the back after having scrubbed the plate clean.
- You can also use the jaw extenders to tighten a handle gone loose over the wintertime. Just secure your backsaw in place and give the toe end of the sawback

a series of taps to make it shift laterally towards the handle. This closes the little airgap between the back wall of the handle's mortise receiving the plate and back assembly and the back edge of the sawback, where wood and metal should just touch – thus fixing in place handles that loosen up over time, or as they so frequently do in the dry air of your workshop during winter.

- Sawback lifter:* Here is a simple prybar you can make to maintain correct spacing between the spine and the inside fold of the traditional folded sawback (or remove the sawback altogether). Simply deburr a 14 x 1 1/2 x 1/4in thick bar of flat iron, cut a



Angle iron jaw extenders for your mechanic's vice

2 1/2in kerf along the middle of one end (use a metal-cutting blade with your jigsaw), line both sides at the kerf end with rubberised cork. Now you have a prybar with which to lift the sawback from a saw you've secured with your angle iron jaw extenders.

- Sawbacks on vintage backsaws picked up on eBay and flea markets are also frequently jammed all the way down onto the spine of the plate at the toe end, leading some to believe they had been deliberately canted by the maker back in the day. What actually happened is far more mundane: the owner knocked his saw off the bench (like we all do). The saw bounced on the toe end, did a somersault, chipped one of the horns and lost tension along the toothline thus creating what the owner interprets as a kink (but is simply a loss of clamping tension along the spine – super-easy to fix). The maker (cursing loudly) then tapped the toe end of the back

to retension the toothline, and over time crammed it all the way inside the sawback making the plate/back assembly look like a trapezoid. The sawback lifter fixes all of that, and will become a heavily relied-upon tool in your workshop as you dive ever deeper into backsaw restoration and maintenance.

***Disclaimer:** Using the sawback lifter for retensioning purposes will only work with vintage saws and current sawmakers who employ the traditional folded sawback. Do not attempt to lift the back from static-backed saws made from the mid-1990s on, which are permanently affixed to the sawplate with epoxy and/or pins, and not intended for adjustment or removal. You'll ruin the saw otherwise.

Flat iron sharpening vice

Here we have two 18in long x 2in wide x 1/4in thick pieces of flat iron – again deburred and

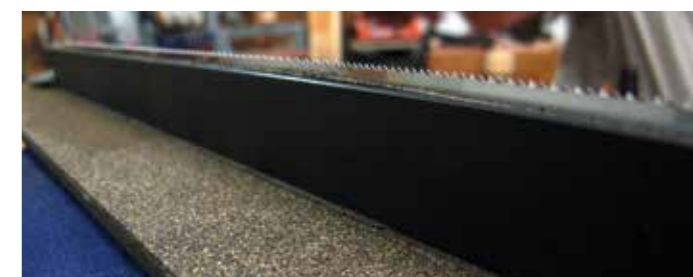
lined with rubberised cork, with which you can sandwich a sawplate in place with about 1/4in of exposed teeth and gullets just over the top. Clamp the ends to hold it together as a unit, then insert the assembly in-between the angle iron jaw extenders explained above and cinch the works tight with your mechanic's vice. Now you have a rigid, rock-solid and vibration-free sharpening solution. For smaller saws, you can simply put the unit in a woodworking face vice to fix it in place. It's super-easy sharpening both sides of your toothline: just flip the unit around in your angle iron or woodworking face vice with no careful readjustments required like you normally have to make with a standalone saw vice. Though set-up takes longer than a standalone saw vice, you'll come to prize the vibration-free aspect of sharpening which also adds life to your saw files (which tend to degrade faster with vibration during the sharpening process).



Gently tap the folded back towards the handle to close up any gaps



Apply rubberised cork to one end of the prybar



Clamp the saw plate into the flat iron plates and mount into the angle iron jaws

Sourcing the parts

Finding the parts for your saw sharpening and maintenance system are inexpensive and some of which you may already have at home. The one major item you'll need outside of this system is some sort of vice – which is again, something you most likely have in your shop already. If not, then pick something up at a flea market or secondhand store with 3-4in of throat depth. You'll also find quite nice vices with 6in jaws by Yost or Wilton for less than £200 on Amazon, some of which come with a modest yet very useful anvil – something you'll find many other uses for in your shop if you don't have something like it already. Finally, there are fabulous woodworking vices made by Benchcrafted (such as their new Hi-Vise), or a Moxon-style dovetailing vice which are also great solutions for cinching your saw maintenance and sharpening system in place. The bottom line? You really do

not need a standalone, dedicated saw sharpening vice like one of the Acmes we use at the Bad Axe shop, which occupies a serious amount of real estate. Let's face it: most of our workshops are carved out of dedicated space in a basement or garage, where every square inch counts.

Components list

- 36 x 2 x 1 1/2 x 3/16in angle iron
- 36 x 2 x 1/4in flat iron
- 14 x 1 1/2 x 1/4in flat iron
- 1/4in thick sheet of rubberised cork (with adhesive backing)
- 2 ea 1in C-clamps

All parts listed above can be obtained online through McMaster-Carr. Alternatively, any home store will carry the metal components and clamps, and most auto parts store will carry the rubberised cork.

Tools and Supplies

- Jigsaw with metal cutting blade.
- Drill with 1/4in metal cutting drill bit.
- Craft knife
- Mill file
- Chainsaw file or Dremel with conical grinding stone.
- Your choice of spray adhesive: 3M, Loctite or Gorilla Glue works best with rubber-cork sourced without adhesive backing.
- Emery cloth
- Plastic sheeting (like cut up grocery bags or drop-cloth plastic)
- Surgical gloves
- Gun-Blue. Blue-Wonder is my favourite – it's what we use at the Bad Axe workshop for touching-up our black-oxide finishes. You can source it on-line at Brownell's or Blue-Wonder's webpage at shop.bluewonder.us/. Alternatively, you may simply spray-paint the colour of your choice onto the metal components.

Tool-making process

Safety first! Use appropriate eye protection and gloves when cutting metal and ensure your work area is well-ventilated.

Jaw extenders

Using your jigsaw with metal cutting blade, cut a 36in piece of angle iron in half, making two 18in long pieces. Use a mill file to deburr all metal edges. Scrub all metal surfaces thoroughly with emery cloth, followed by coarse then medium sandpaper; go as fine as you want. The intent here is to ensure you strip the works down to bare metal. Put on some surgical gloves (or anything that will keep your fingerprints off the metal) and degrease the metal thoroughly with alcohol until your metal wipes clean. Apply the gun-blue or paint treatment of your choice. Allow to cure for 24 hours.



Fit your jigsaw with a metal blade

Adhere cork-rubber onto the jaw extenders

Wipe down the painted or gun-blued surface again with alcohol to thoroughly de-grease any remaining residue. Apply the cork-rubber to the angle iron, completely covering the top surfaces and inside surfaces as shown. Cork-rubber with an adhesive strip surface is fast and convenient, but I've also found 3M 90 spray adhesive to be highly effective for non-adhesive cork-rubber. My technique is to expose the surface(s) I want to adhere and mask everything else off from possible contact. Spray both cork/rubber and metal mating surfaces with a generous coat. Wait 60-90 seconds for it to start getting tacky, then lay the angle iron adhesive face down on the cork-rubber; press down for 60 seconds, then trace out the cut with your craft knife. Carefully tug the cut away from your bonded materials and examine all edges to ensure they are securely mated, adjusting where required. Set the first piece aside and repeat for the second piece. Secure both pieces into your shop vice, but before clamping them together, place a sheet of plastic between the two cork-rubber linings which will be facing one another – you don't want the adhesive to seep through and



Press the edges of the rubberised cork tightly together

lock up your two angle iron pieces. Even out the two angle iron jaw extenders in your vice and firmly clamp them together. Use c-clamps to tighten the ends. Feel free to use additional clamps across the length of your jaw extenders. Allow to cure overnight. Upon removing the clamps, you'll find blobs of adhesive and excess cork-rubber along the edges. Use your craft knife to trim away the excess. Ensure you run the sharp edge from the cork-rubber side towards the metal to ensure a clean trim.

Saw vice

Cut the 36in long flat iron piece in half, making two 18in pieces. Use the mill file to deburr all metal edges. Sight down each piece – you'll find that there is a very slight concave side and a convex side. Repeat the same procedure listed above



Use a craft knife to open up a slot in the prybar



Trim away the waste with a craft knife

to scour your metal clean, blue or paint it, and adhere cork-rubber to the two pieces on the concave sides.

Sawback lifter

Cut a 14in length from your 24in flat iron piece for the sawback lifter. Put the remainder aside for future use. Kerf one end on-center for 2½in with your jigsaw equipped with metal-cutting blade. Use emery cloth to sand out the rough edges inside the kerf. Drill a ¼in hang hole on the opposite end ¾in down and on-centre. Use a chainsaw file or your Dremel to deburr the rough edges. Repeat the same steps listed in previous paragraphs to scour your metal clean, blue or paint it. Adhere cork-rubber to both sides of the kerfed area for at least 6in from the kerfed end. Use your craft knife to clear away the kerf and trim all metal edges.

Put your system to work

I prefer to lift the sawback completely off when restoring a backsaw, scrub off the rust and grime lines on the plate, sharpen the teeth, then re-mount the sawback forwards and high on the plate. Then I tap the back down and back towards the mounted handle, such that I achieve positive contact between wood and metal along the floor and back wall of the mortise receiving the

1. Peel off the sawback



Remove the handle and clamp the plate/back assembly in the jaw extenders, leaving ½in clearance at the toe with the heel making positive contact on the surface of the jaw extenders

2. Mount your plate into the flat iron vice



Once you've peeled off your sawback, remove the plate from the jaw extenders and lay it (teeth up) on one of the saw vice pieces with ½in to ¾in of the toothline exposed...



Slide your sawback lifter underneath the toe end as far as it will go. Then lift upwards. Do NOT fulcrum the lifter down, or else you'll gouge the underside of the sawback



...then sandwich the plate with the other half of the vice; secure both ends and inch-down with c-clamps

3. Mount the sharpening vice into the jaw extenders and file your toothline



Insert the vice/plate assembly into the jaw extenders, joint your toothline...



...and sharpen your saw

4. After sharpening, re-mount your sawback onto the spine of the plate

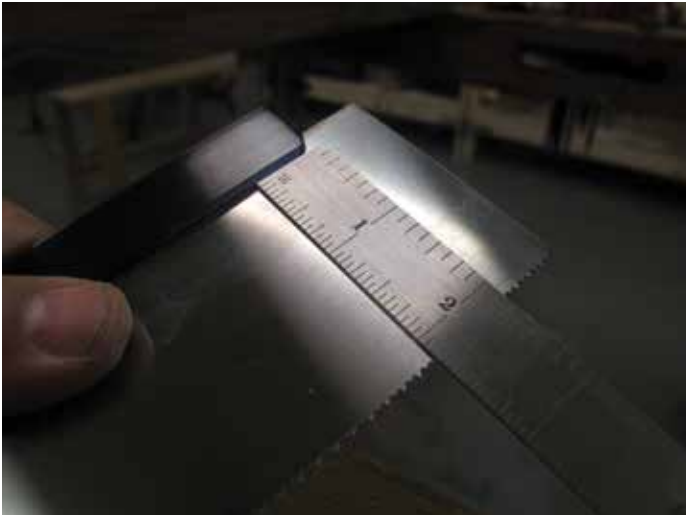


Flip the plate spine up into the jaw extenders and lubricate the exposed ¼in of spine with some canning wax. Tap the toe end of the sawback onto the lead corner of the plate



Tap the sawback onto the spine of your plate with a stout mallet and begin rotating the sawback down, tapping as you go to get the sawback to grab

5. Tap to desired plate depth below the back using a light mallet and a ruler



Frequently check plate depth adjustment with a ruler in between taps to creep up on desired plate depth

6. Re-mount the handle



Screw on the handle, mount saw into the jaw extenders and tap sawback towards the back wall of the mortise



At the end of the day, you will have constructed a simple and highly versatile saw maintenance and sharpening system without breaking the bank. Unlike a dedicated saw vice occupying valuable real estate in your shop, this system folds up into a neat little stack when not in use and can be moved out of the way onto a shelf.

And this simple and easy-to-make saw maintenance and sharpening system is a great afternoon project anyone can construct that will prove its use time and again, whether tightening your handle, restoring an old saw back to factory settings, or giving your sawplate a vibration-free sharpening.

You'll be able to keep your saws in top condition with your new maintenance system