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# Sharpening and Reprofilng Traditional Convex Blades

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- Skills and guides - DIY, Making things. -



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## **Description :**

Some tips about how to make these big blades really chop.

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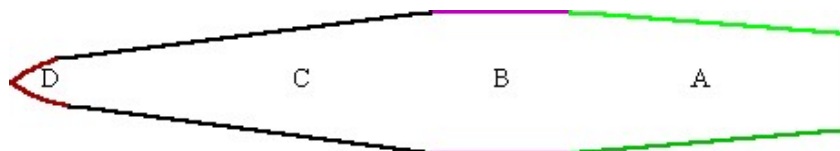
**It seems that I might have confused a few people with regards to sharpening and reprofilng the Valiant blades. These are a few techniques that I have used successfully on the traditional blades and on axes. I debated with myself whether or not to put this page up: sharpening and reprofilng a traditional blade makes it incredibly efficient and so dangerous. Chopping efficiency will be many times more than even with a thin highly sharpened machete - because the traditional blades are capable of the draw cut. Tonight, though, I came back from a day's chopping with my Bolo Camp - and I was just so happy with what I'd achieved through sharpening and reprofilng. I've just finished shredding a whole pile of papers with no snagging, and so the blade not only went out sharp - it returned that way! I'm an old guy who goes out alone most of the time, so I'm careful to a point that most people can't imagine. It would be as well to be that careful when using highly refined blades!**

I don't claim to be any great authority, I'm just reporting what works for me. It may be that I don't explain things well - or that you have something to teach me. I'll be pleased to hear from people if they found problems with my explanation.

## Let's get on!

I've made the diagram pretty small to hide my poor drawing skills - and so that it'll fit on most people's screens no matter what their resolution. It doesn't need to be so great as it's greatly distorted to show some points:

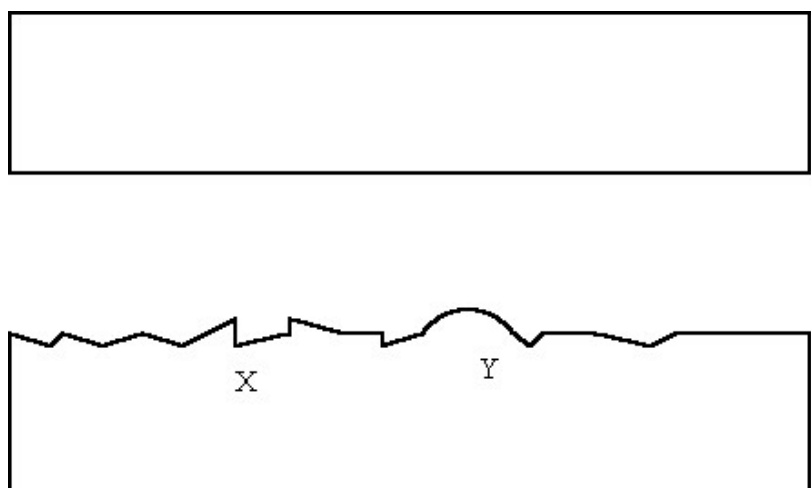
1. You'll see that the blade is thickest in the middle - at least mine are, and gets thinner both toward the edge and the back of the blade. This tapering to the back is shown by the green lines at the right, and letter A.
2. Depending on the blade, the thickest part might not be exactly in the middle (B) - but in any case friction will be reduced as the back part of the blade will not be touching the material cut through. Now the real blades aren't as exaggerated as this - but you'll certainly be able to feel the thinning toward the back.
3. The black lines leading to the edge on the left (C) will be convex, rather than straight - but the degree of convexity is variable. The less convex it is, the less resistance to the blade moving through material - but the more the blade is likely to wedge. This is the part for reprofilng.
4. The last 1.5-2 cm leading to the edge (D) will be convex and this is where the steel is zone hardened. It may have a greater degree of convexity for durability or the same as the rest of the leading edge of the blade for performance. Obviously, this is the section for sharpening.
- 5.



### Starting Out:

The best recommendation for people who have never used one of Wandi's blades before is to start out with the blade as it comes from the box. It'll be sharp enough to cut, and won't be so efficient as to cause immediate grief. Most people will be shocked at what they see with the supplied edge as compared to a lot of factory blades., in terms of chopping efficiency. The one problem that's likely to come up is with people who insist on trying the blade against some hard material. I did with my first blades, but I was lucky enough to have blades with well finished edges.

To most people's naked eyes, the edge will appear as in the top picture, but in reality or under a lens, it will look like the lower:



Most inexpensive blades have edges as shown in the lower picture. Lots of expensive ones do too, because with stainless steels, it's a time consuming process to use a fine grit on them. The problems that come up may be minor or they may be major. Rounded pieces of edge (Y) that protrude usually just get folded over gradually and don't so any major harm except lead to fast bluntening and people thinking that their blades aren't too great in edge holding. The nasty piece of edge is at X. This will get bent over fast and often such a jagged piece of edge has deep grinding scratches at the hollows on either side. As it bends over, it can cause a split to develop downwards into the edge. Such splitting isn't common with chopping regular wood, but if an edge is used on hard material such as knots or bone, then a blade might chip out. The even edge as shown on top has all parts of the edge supported on either side, so that it's less likely to roll over, chip out, or blunten.

To make matters worse, small segments of edge that protrude are likely not to lose grinding heat quickly, and might be left decarburized or softer..

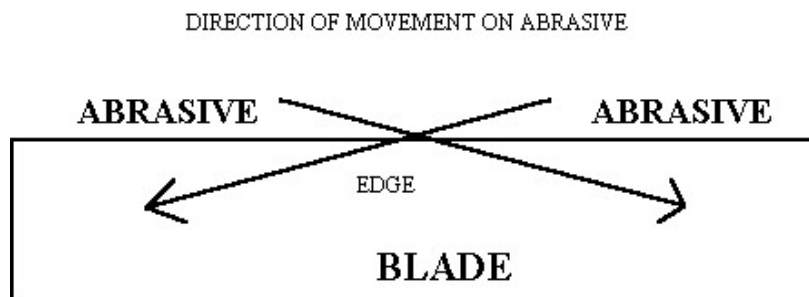
It's a horrible feeling to hear the sound of a well sharpened golok hitting a piece of granite, and you just don't want to look at the damage at first. When I did I was amazed to see that the damage was fairly minor and that a little grinding would make things as good as new. My feeling is that many people who have rushed out with a new blade to try it on the hardest stuff imaginable - and seen rolling and chipping of the edge - wouldn't if they had spent half an hour sharpening first.

### The actual Sharpening:

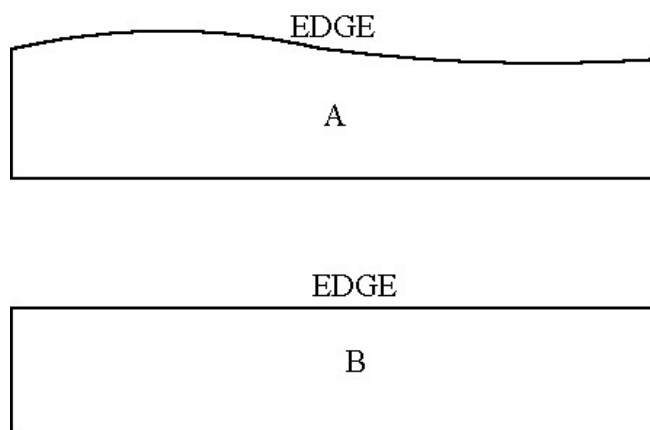
## Sharpening and Reprofilng Traditional Convex Blades

Most people will start having some doubts when they hear that a Valiant blade has a zone hardened edge - which is hardened only 1.5cm back from the edge. This doesn't sound like much! They will then use a large piece of emery cloth on some rubber backing, and start seeing things move pretty quickly as all the high points are removed, and jagged pieces of the edge. Suddenly though, everything will start slowing to a halt! With a grinder, you can quite suddenly feel a difference. All the high points and surface decarburized metal is gone and now you are into the real metal. The best thing to say is that patience will eventually be rewarded! You are dealing with a lot more edge than a pocket knife, and the steel at the edge is remarkably tough for simple carbon steel. That narrow band of hardened steel now does look like a lifetime's worth of chopping and cutting potential for most people. It really is too - I rarely do more than strop my blades on a piece of leather loaded with valve grinding compound, once they've been properly sharpened. Even with dings that have to be ground out, these blades will last my lifetime, and probably the lifetime of whoever gets them after.

I use a belt grinder to get edges into shape fast - and fast here means half an hour or much more. Once the edge is close to being in shape, I switch to using a large sheet of emery paper on a rubber mat (old mousepad). Normally I lay the blade on the emery paper with the back held up slightly to focus the abrasive onto the convex edge, and I use a stropping technique, pulling the blade back and forth at a very narrow angle to the edge. I like to mark from 1.5cm back to the edge with felt marker: it shows the high spots - and how much work is left to do, as some of it stays on the edge despite sanding. Without a belt grinder - and any other type will overheat the edge - you are left with starting at 300 grit emery on a mousepad, and doing the shaping with it. Once everything is consistent, then you move to finer grit. The important part is that you use a large abrasive surface so that you don't just follow any bumps, hollows or other imperfections on the edge steel.



This ensures that you get the straightest edge possible as in the bottom pic rather than gradual hollows and high points like the top. Laying the edge down on a dead flat surface will quickly show how you are doing. Holding a ruler to the edge will ensure that the phone rings and you move your hand, cutting yourself...



## Sharpening and Reprofilng Traditional Convex Blades

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The edge is the most critical when it comes to performance and keeping the blade free of rolls and chips. I like a polished edge, that's sharp enough that it easily slices through those flyers that I seem to get all the time in the mail. If I can slice flyers for as long as I have patience and there are still no spots on the blade, that snag, then I figure that I've Done well.

Sharpening seems to take forever at first, and it gets very frustrating when after another half an hour of sharpening by hand, the blade still isn't slicing those flyers smoothly. I use a lens to look at the edge - but using flyers is good enough to test sharpness. If you do use a lens, you'll notice that if you have some traces of secondary bevel, the closer you come to removing them, the more things slow down. That's just life and you have to be philosophical! Extreme sharpening like this will only be done once on the blade unless you hit a rock! You'll know when you are finally there - because a wire edge will develop **that will lean to the side not being sharpened**. If the wire edge only folds over when sharpening one side, then the other side needs a lot more work.

When you have a good wire edge, then it's time to strop on some leather loaded with carborundum - or in other words some valve grinding paste on a thrift store belt. This pulls off the wire edge fast. and you keep stropping until things really get polished into shape -and the blade is scary sharp. Just as an aside, most valve lapping compound is pretty coarse - but don't worry about that because the grains sink into the leather. Any oil such as vegetable oil from the kitchen, or even motor oil will prepare the leather to take the carborundum. If you forgot to get valve grinding paste, then use the carborundum that comes off the emery paper. When the blade gets the black gunk on it, wipe it off on the leather. Same stuff!

Sharpening is the hardest part of the battle - but now you have an edge which will lead to much more cutting performance, and hold longer. You'll be very impressed - but further stropping each day after chopping will improve things even more. Stropping is five minutes of fun at the end of a day - and even if the blade doesn't appear to need it - it gets teh blade out of the sheath in a warm room where any moisture on it will evaporate. The stropping will leave enough oil on the blade to prevent rust too, if you give the whole edge a wipe on the leather.

Extreme sharpening is achieved with green buffing compound. Not red, brown, etc but green. This is chromium oxide and the grains are very hard and jagged - but only 5 microns in size. It polishes fast and puts on the sort of edge that will slice a thin cigarette paper if you want to show off. It works well on cardboard on a flat surface, and I don't worry about the slight straightening of the convex that it will cause. Naturally it works on leather too.. If you do your final stropping of the day with this stuff, its wax base prevents rust too.

## Step Two - Reprofilng:

It's unfortunate that you have to sharpen first, because that makes even reprofiling much more hazardous. you need a sharp blade, though, to see how reprofiling is helping, and where to stop.

If a person has really gone to great trouble on the sharpening, they should be having great trepidation with the idea of reprofiling! Just getting that little strip of hard tough steel properly sharpened is often a huge amount of work. The good news is that as the rest of the blade is softer, this part goes faster - well it does up to a point....

The problem with reprofiling is simple. You re-profile so that your best chop into the softest material you chop regularly - should not stick or wedge. Obviously this demands a lot of reprofiling, chopping, back to reprofiling..... The good news is that once you've reprofiled a few of these blades, you can get pretty close with a new one - so that the whole process with it goes more quickly. I use 60 grit belts on a belt sander, but the same grit on a BIG sanding pad goes fast too. The whole object is to gradually thin the blade making a continuous convex that goes from the edge to

the part of the blade where it tapers toward the back. The big things to be aware of if you use sandpaper on a pad are:

1. Safety. You sure don't want to get impatient and careless and slice yourself! Go slow, and carefully!!!!!!
2. If you use a sanding pad, taking strokes from handle to tip along the blade, then you are going to leave scratches. These will polish out fine, but they will cause friction that will make a blade appear to wedge when it won't after polishing. For your first few blades, you are going to have to invest time polishing out scratches, only to have to take the coarse emery to the blade again. A cheap belt grinder will soon come to look like a good deal!

## The Tools for Sharpening:

The only expensive tool I have is a 1" grinder which I bought on sale. I use blue zirconium oxide belts, but even woodworking belts will work. As they wear, they can be used for polishing - just beware of heat. Otherwise, a few old mouse pads and emery cloth in 200, 300 and 600 grit. Old leather belts from a thrift store, loaded with valve grinding paste (carburundum) work well for final touches, as does green buffing compound on leather or cardboard.

## So What do you end up with?

If you've worked carefully, then you've ended up with the most efficient blade achievable for you. It's as simple as that. If you've decided that all of this is too much trouble, and that a \$500 full convex forged bowie is the only way - then you have a generic blade that's not set up for you. Hopefully it'll be great - but obviously it may not be, as we all have different strength and technique - and chop different material. In some ways, perhaps the most valuable thing a person ends up with is knowledge of how blades and edges work.

## The Thirsty/Hungry Edge:

I'm sure that many have heard of the fabled swords such as Joyuse, Durendal, Excalibur. You don't get one of those from any maker these days, despite all the hype. There is though, the aspect of super sharp blades, and what happens when you set up such an edge on a large blade. Obviously it's very dangerous, just because the weight of the blade itself will push it through material - including your flesh. As you sharpen more and more and get better at the whole process - and get some neat goodies like green buffing compound - then you get capable of putting some very sharp edges on tools. Despite what lots of people believe, very sharp edges last well in chopping: axes were sharpened to the point where shaving with them was quite possible. As you sharpen, you are gradually making the edge more consistent and polished. At some point in your slicing of flyers and newspapers you will notice a change in the blade where it appears to want to slice the material. Nothing magical, though it may appear so at first. The blade sharpness has increased to the point where the weight of the blade will make the edge cruise though stuff.

Lots of people believe that some blades are malevolent and will cut you if ever given the chance. I believe in something simpler: that few people have the delicacy of touch to handle very sharp blades. I hate to hand one of my blades to anyone because they'll either touch the edge with predicable results - or cut with force and maybe put the blade into themselves. Following the simple instructions on this page will result in a blade of pretty devastating performance. You simply cannot leave such a blade around where children or careless adults might come across it

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and try to use it.

In the bush, you are often far from medical attention, and serious people are careful not to walk around with unsheathed blades when they don't have to, and wear high grip footwear such as caulked boots when they do. A person can probably get away with a few careful chops on wood if there's a block between themselves and the blade - but for the thousands of chops of real work, I'm not too proud to go around with safety gear like kevlar chaps. I don't even trust them to stop the blade...

About the last word, is that no matter how impressed you are with the edge you have, gradual reprofiling will likely give very sudden changes in efficiency with the draw cut. Nothing except experience will prepare you for what the blade travels through. Always expect the blade to go through that 4" tree without slowing - because one day it will..

Here's a pic of a 5" alder that when lightly chopped split and broke. Naturally the blade kept on going. If I'd have been careless, because no blade can cut through a 5" hardwood - then my name would now be pegleg...



*Post-scriptum :*

*Follow-up:* [Convex Profiling and Sharpening by Hand HOW-TO.](#)

Original article at [OldJimbo's site.](#)