Leading or Trailing Strokes

Posted by wickededge - 21 Aug 2012 16:45

I did a quick experiment with the .6 Micro-Fine Ceramic stones and edge-leading and edge-trailing sharpening. First I polished the edge .25um with the kangaroo strops. Here is the clean edge:

I didn't go for perfect, just good enough to have a clean slate.

Next I did 5 very light trailing strokes with the .6um Micro-Fines at 5 degrees wider. Here is the result:

I did another 20 strokes, edge-trailing:

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Re: Leading or Trailing Strokes

Posted by cbwx34 - 19 Dec 2012 19:38

No... (I actually was going to put that in the post) 🙂
I'm thinking someone that may not be biased one way or the other (I think I might be, although I try and keep an open mind)... one reason I thought someone relatively new to sharpening might be a good candidate.

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Re: Leading or Trailing Strokes

Posted by PhilipPasteur - 19 Dec 2012 19:53

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cbwx34 wrote:

No... (I actually was going to put that in the post) 🙂
I'm thinking someone that may not be biased one way or the other (I think I might be, although I try and keep an open mind)... one reason I thought someone relatively new to sharpening might be a good candidate.

I would think that consistency would be critical in drawing any conclusions. Someone with less experiece may not be able to provide that.

I am curious though. Clay is doing this to answer a question posed. I think he is trying to be unbiased until he has some evidence one way or another. Of course there might possibly be sub-concious biases at work. I just don't think that this is very likely.

I would guess that a double blind test where the person sharpening did not know the orientation of the blade including placebo blades, or where we would just throw out a random number of blades and photgraph the others.. would be the best way to go... Of course we would need many operators so we could make this statistically sound...

Not sure how to design that ... or if it would be worth the effort.

Phil

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Re: Leading or Trailing Strokes
Posted by xuzme720 - 19 Dec 2012 21:04

PhilipPasteur wrote:

...placebo blades...

PhilInteresting concept...

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Re: Leading or Trailing Strokes
Posted by Geocyclist - 20 Dec 2012 01:06

Very good discussion going on.

I think this can easily be 2 separate studies -

1. is to use an expert operator (Clay) and only one operator to remove the human influence as much as possible to concentrate on leading vs. trailing, as shown by Clay. True any other operator could have different results. This can be repeated by other operators for comparison.

2. A 2nd study to show the affect the human influence, different operators would need everything else constant but the operator. Same blade, same WE, have the blade set in the vice by the administrator each time. I think (haven't tested) the #1 human influence is pressure that creates different results. Also speed, length of stroke etc.

In the end it I think it is hard to remove the human element from sharpening, at least for a controlled experiment, without being able to measure and control critical variables such as pressure.

I searched the web on this one a while and found more questions than answers. I did like this post here .

Key points I picked up were:

- Some people talk about the edge getting duller as they progress through stones
- May be due to "snow plow" effect of the blade rolling on edge leading instead of cutting the steel
- Edge trailing will polish more

Do both leading and trailing on coarse stones

Finish on fine stones with trailing only

Strop

I am now wondering if this is what Clay's photo of edge leading is showing, a rolled or deformed edge? I am very curious to see how this knife does in the same sharpness tests.

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Re: Leading or Trailing Strokes
Posted by wickededge - 20 Dec 2012 11:56

Something we need to add in is BassLakeDan's point sharpness tester. The data from that test alone would be really useful to determine at least one point of efficacy of varying techniques. Has anyone built one yet?

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Re: Leading or Trailing Strokes
Posted by FredHermann - 27 Dec 2012 17:29

Ok, I have been reading this ongoing, and it's fascinating.

But please forgive my ignorance...I thought I knew what you were talking about, until I didn't.

Can someone please define 'leading vs trailing'? I thought you were talking about going tip to heel or vice versa. Call me a noob, but this one has confused me.

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Re: Leading or Trailing Strokes
Posted by Jet B - 27 Dec 2012 17:34

FredHermann wrote:

Ok, I have been reading this ongoing, and it's fascinating.

But please forgive my ignorance...I thought I knew what you were talking about, until I didn't.

Can someone please define 'leading vs trailing'? I thought you were talking about going tip to heel or vice versa. Call me a noob, but this one has confused me.

Think of edge leading as if you were trying to cut the medium. Edge facing the direction of movement. Edge trailing is the opposite where you drag the blade across with the 'edge trailing'.

Hope that helps you. It's actually a controversial topic in the sharpening community... haha;)

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Re: Leading or Trailing Strokes
Posted by BluntCut - 27 Dec 2012 19:41

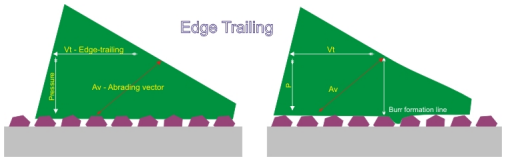
An edited post (mine) from my thread (not here) 10/31/2012 ...

This 2 images are what I've envisioned a few months back. These are (~ 30% resemblance) my mental images that I stared at for countless hours and they still make sense today as the day I came up with them. Please hold-on to other variables (abrasive shape, steel composition/ht, etc) while we look at this simplified models.

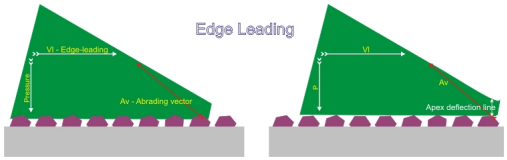
V t/l is the velocity - blade or abrasive movement.

P is the blade normal force against the abrasive.

Av (Abrading Vector) is the cutting vector imparts torque on the blade. The edge will deflect/bend when the torque exceed the tensile strength at given edge thickness.



Burr-nana peel.



Apex deflect or roll but no burrnana.

These models should provide reasonable answer to alot of nagging questions.

ex1: 'how come the burr seem long but blade height wasn't shorten by the same amount?'

burr-nana peel around the apex, so blade height loss usually much less than burr length.

ex2: 'raised burr 2 sides, deburred but didn't apexed?'

Too much press, burr-nana peel around a blunted apex. Once burr removed, you end up with a blunted/un-apexed edge.

ex3: lip

Whenever Av too large for the apex area, abraded area will occur below the apex.

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Re: Leading or Trailing Strokes

Posted by PhilipPasteur - 30 Dec 2012 20:49

Nice illustrations...and I have seen the post where you put it up originally. I still don't follow it or see how you get your three examples. Maybe you can explain.

In any case, when using the WEPS... or even bench stones, I can't say that I have seen anything... via edge perfomance nor micrographs to allow me to buy into your theory. I do have several bench stones that I can't use edge leading, but obviously (to me) do produce significant edge refinement when used edge trailing. No "burnana-peel" or false burrs, that I can detect.

Would like to hear more explanation from you... and more hard evidence with Clay's tests and photos.

Phil

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Re: Leading or Trailing Strokes

Posted by BluntCut - 30 Dec 2012 23:28

PhilipPasteur wrote:

Nice illustrations...and I have seen the post where you put it up originally. I still don't follow it or see how you get your three examples. Maybe you can explain.

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Would like to hear more explanation from you... and more hard evidence with Clay's tests and photos.

Phil

Envision an edge cross section (a geometrical 2D triangle, where the area is the blade edge):

* Steel S requires force N to penetrate surface 1 molecule deep by an abrading fixed-plane abrasive. Lateral tensile strenght (bending) per molecular line is 0.2N.

* Start with a molecule thick apex.

* Abrading Vectors (Avt & Avl) for Edge Trail & Lead.

Burr form at the bend because the abrasive no longer able to penetrate the upward bent surface. If the sharpen stroke is super slow, so Av is mostly normal/perpendicular pressure to the surface. Then in this case, neither Trailing or Leading can create an apex thinner than 5 molecules thick.

Using this envisioned model to add more details to my Prev post:

ex1: 'how come the burr seem long but blade height wasn't shorten by the same amount?'

If start out with a flat-top edge, as abrading material reach the flat edge and thickness is less than the tensile/bend strength, these material will hinge/flop over the flat-top. Now you've the burr but far from apexed. Many beginers ran into this by feel the burr alone without looking at the edge reflection.

ex2: 'raised burr 2 sides, deburred but didn't apexed?'

ex1 applied to both side of bevel face

ex3: lip

Whenever Av N exceed tensile strength in area below apex, thus kept abrade more and more below where sufficient thickness to support abrasion. This problems are more applicable for advanced sharpeners.

Again, my posts don't addressed the complete complexity picture of steel+abrasive+interaction

characteristics. I merely focused simplistic edge lead or trail abrading interaction.

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