Measuring the angel of the bevel

Posted by ScottSherman - 28 Aug 2012 11:15

So I was just curious how or IF it was possible for someone to measure the actual angle of the bevel on a knife. I see many posts where people talk about reprofiling from say a 20 degree bevel to an 18 or 15 degree bevel or something similar. We are talking about some very precise measurments here on a very small surface. Even using the great WEPS with the angel cube and detant markers there will likely be variations in the actual angel from one sharpener to another.

I should say this is a bit rhetorical and more for idle conversation, but I am stil wondering how do you know if your factory bevel is what the factory says it is? I am guessing there is a way to paint the bevel set the angle on the rods and start scraping away the paint to see where it is wearing away.

This will tell you if the bevel is flat or concave but not the actual angel of the pre existing bevel. Again we are talking about 2 to 5 degrees difference which can make a big difference in the life and usage of your knife. I know the main advantage of a "system" sharpener like WEPS is repeating desired results and knowing the actual angle is not that big a deal, but I was just wondering, and also wondered what some of my fellow OCD forum members think about this subject.

Obviously I have way too much idle time on my hands

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Re: Measuring the angel of the bevel

Posted by AnthonyYan - 28 Aug 2012 13:27

I haven't done much measuring of bevel angles, but hope to do so in the future.

Here is a brief list of ways I've heard about for measuring bevel angles:

(1) Sharpie Method: Use a Sharpie marker on the entire bevel, then adjust your sharpener so that it removes all of the marker ink. Then measure the angle of your sharpener.

(2) Laser Goniometer: Buy a laser goniometer from CATRA, or make one yourself. This bounces a laser off the knife edge, and measures the bevel angle from the angle of the reflected beam. You can also make one yourself using a laser-pointer.

CATRA sells several models, here is one:

www.catra.org/pages/products/kniveslevel1/lgpm.htm

Or you can make your own (see Appendix):

www-archive.mse.iastate.edu/fileadmin/ww...even/KnifeShExps.pdf

(3) Make a Mold: Spray the knife blade with a mold-release agent, or WD-40. Then make a mold of the knife edge, say using epoxy-putty or anything that will be rigid enough. After the mold sets, remove the knife, and then cut/saw a cross section of the mold. Smooth/polish the cross section, and take a photo of it under a microscope. Measure the angle in the image.

There are probably many other ways. I suspect that making a mold is the most reliable way, but probably the most work. To be super-precise, you will need the plane of the cross-section to be perpendicular to the edge of the knife. The laser goniometer sounds neat, but the reflected laser beam might need some interpreting if the beam spreads out due to micro-scratches or convexing.

Sincerely,

--Lagrangian

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Re: Measuring the angel of the bevel
Posted by wickededge - 28 Aug 2012 14:23

I have the hobby version of the goniometer though it doesn't see much use anymore. I find the Sharpie/Angle Cube method more than accurate enough for knife sharpening.

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Re: Measuring the angel of the bevel
Posted by ScottSherman - 28 Aug 2012 14:33

Thanks for the responses. I am amazed at how consumed I have become and from reading posts here and elsewhere others are with knives and sharpening and metals and stones and leather and diamonds and angles and all that goes with collecting knives. It really makes no sense on some level, but despite that, I still find myself reading post after post on sharpening, collecting, using and buying knives. I suppose it would make sense to anyone reading this but to my wife and probably most outside of the knife collecting community, they would think me crazy or worse.

I can assure you I am a very conservative, middle class, tax paying, law abiding, "normal" guy by most measures. Except that I have just paid almost a thousand dollars for a sharpening system for a small collection of folding and kitchen knives worth much less than the sharpener. Whaaaaaat?

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