Rigotti Knives and Chatter
Posted by wickededge - 27 Jul 2012 09:00

Robert sent me a Rigotti which was giving him a lot of chatter while sharpening. I worked on it for several hours with the diamond stones, ceramics and strops but couldn't get rid of the chatter. Under the 60x loupe I could easily see a very ragged edge which was also easily discernible with a sharpness tester. No matter how long I worked, how gentle I was etc..., the edge remained ragged. The diamonds and hard ceramics were pulling chunks off the very edge. This morning I got my 800# and 1000# Choseras wet and went to work. In three minutes I had a perfect, chatter-free edge that looks great at 60x. The next step is to look at it under higher magnification and then test it out on the reeds. I wish I'd photographed it before switching to the Choseras so everyone could see the difference. I'll report back with photos and more results as I progress...

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Re: Rigotti Knives and Chatter
Posted by wickededge - 27 Jul 2012 12:40

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mark76 wrote:

Wow, those pictures are drop dead gorgeous! I'm wondering, though, why the diamond and ceramic stones tore out chunks from the edge and the Chosera's don't.

I think the difference is in the hardness of the abrasives and how they're bound in the matrix.

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Re: Rigotti Knives and Chatter
Posted by wickededge - 27 Jul 2012 16:50

Here is the knife sharpened with the 3k Chosera stones and then stropped lightly with the 1um diamond and leather strops:

Zoom

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Re: Rigotti Knives and Chatter
Posted by wickededge - 27 Jul 2012 16:57

All the chatter has been eliminated and I can run the sharpness tester along the edge and feel no bumps at all. It is scraping reeds exquisitely and although I have no real experience with reed making, I can tell the the control reed makers will have is very fine.

Overall, I think the Rigotti knife I got to play with has some flaws in the heat treatment making it very brittle, especially in a one inch section along the middle of the blade. Using the Chosera stones, I was able to overcome the problem and create a very straight, refined edge.

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Re: Rigotti Knives and Chatter

Posted by jendeindustries - 27 Jul 2012 18:35

Actual Reed knife talk!!!

The diamonds cut through the steel MUCH deeper than the Choseras in general, and the Rigotti knives aren't very hard to begin with (they are a standard beginner's knife), so lower grit diamonds plates were pure overkill in this situation.

While it is interesting to see the differences in performance between the diamonds and Choseras, the edge shouldn't chatter based solely on the use of the diamonds or ceramics vs. the Choseras...

In my experience, the chattering is a combination of the thickness of the blade at the edge being too thin (usually a full hollow ground straight razor), and the edge shape and angles being off. Rigottis usually have enough meat, so it must be an angle thing.

I just looked at my Rigotti hollow ground, and the "resting angle" is about 20 degrees per side. I used the angle cube to check what "my" angles would be, and they work out to be about ~23 and ~27. If you wouldn't mind, go back to the diamonds with the right hand paddle at 27 degrees and keep the left hand one at 23 degrees. If you do a bunch of light alternating strokes and end with the right hand, it would be what the edge would look like after using the WEPS.

In retrospect, when at the IDRS show, I suggested 21 and 23 degrees to Robert, and he ran into a similar problem, and the only solutions were the steel was crap, or the angles were too low. We were on opposite ends of the room, and I didn't get enough chance to play with it or focus on it. Thanks for looking into it more, Clay!

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Re: Rigotti Knives and Chatter
Posted by wickededge - 27 Jul 2012 21:54

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I used the 23/21 degree profile and checked the edge with a 60x loupe throughout. It was very easy to see where the metal was coming off in chunks with the diamond and ceramic stones. It was interesting that effect always occurred within the same 1" range of the blade - the blade on either side of that one inch section didn't experience any of the micro-chipping. I could clearly see that I was reaching the edge with each grit and watched hunks of metal continue to peel off. The Choseras cleaned up the chipping right away.

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Re: Rigotti Knives and Chatter
Posted by wickededge - 30 Jul 2012 09:32

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After the .25 Kangaroo strops, I went on to sharpen the knife on the 5000# and 10000# Chosera Stones. I was surprised to find the edge a little ragged afterward though it was still wonderfully sharp:

Zoom

After sharpening the Rigotti on the 10000# Chosera Stones I went back to the .25um Diamond on Kangaroo strops and got a very nice result:

Zoom

I lowered the angle significantly before stropping the knife to prevent any convex shaping, which worked out really well but didn't clean up the knife edge as much as I'd like so the next step will probably be to strop the knife again a few degrees wider per side.

At this point, the knife is so sharp that its weight alone is almost too much pressure on the reed and I have to pull back a little to only take a single fiber.

I decided to widen the angle by two degrees per side and re-strop the knife with the .25um Diamond on Leather Strops:

Zoom

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