

Sharpening Ornamental Cutters

Q: Should there be a secondary bevel on ornamental cutters?

A: Grinding a second bevel is your choice. The big bevel takes a while to grind, so some people re-sharpen with a second bevel for quickness as it takes much less time to do. However, a long, single bevel is at a more acute angle than a secondary, so some might say it weakens the tool. I suggest you grind a second bevel if you are in a hurry or if you desire maximum strength of the edge; but remember, if you are to maintain the optimum clearance angle, you will need to restore the first bevel eventually.

There is, in some circumstances, a very good reason for grinding a second bevel: when the tool is to be used in a fixed position for cutting:

- (1) a cylindrical ellipse (the clearance angle is constantly changing so it must be sufficiently acute to avoid the 'heel' of the grind from rubbing on the surface of the work). The secondary bevel is only really necessary for TCT cutters which are brittle and prone to crumble at the edge if sharpened at too acute an angle.
- (2) rose-engine patterns with sudden changes in depth of cut which also require an acute angle for adequate clearance.

I recommend only using powered grinding wheels for shaping the cutter. I prefer honing by hand for finishing, using a goniostat to maintain flatness of the bevel. I use diamond paste, starting at 6 micron grade, then 3, then 2, then 1 micron to ensure a polished finish. I also hone across the edge of the cutter, not at right-angles to it. This is because a polished edge comprises a series of scratches and if they are at right-angles to the edge of the cutter they appear, under magnification, like the edge of a saw. And these scratches would be reflected on the surface of the work.

Once I have sharpened a tool I tend generally to re-sharpen the whole bevel at the same angle, simply by sighting it on a flat board. This takes very little extra time if done on every occasion and avoids the considerable task of restoring the original bevel after many re-sharpenings. However, when sharpening TCT cutters with a generous clearance angle, I do usually increase the clearance angle slightly for the final polishing grind; thus creating a tiny second bevel.

Use a jeweller's loupe: about 10 or more times magnification. That is sufficient for you to inspect the edge. A good edge is when you can't see any saw-like scratches nor any reflection off the edge line.

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