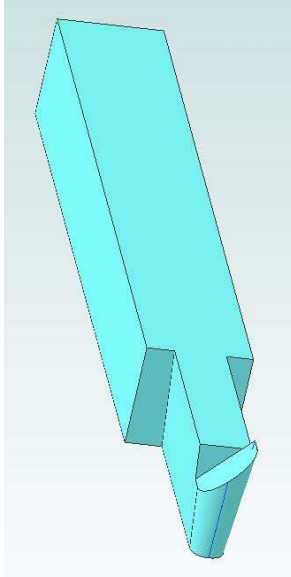


A Tiny Shear Grind Bit, version 3

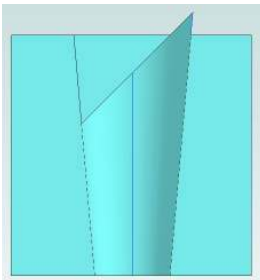
By R. G. Sparber

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I wanted to cut a narrow area using my Gingery Shaper so decided to try a cutter called a Shear Grind Bit. The Shear tool is described by Henry D. Burghart in "Machine Tool Operation, Part II" but seems to have its roots in wood working.

I took a piece of 1/4" x 1/4" HSS and hogged the width at the end until it was about 0.075". Then I ground the diagonal flat on the end. A 5° relief was ground using my tool grinder. The rounded end was also done on the tool grinder. This radius is normally much larger but I was doing this freehand so ended up with a much smaller one. The cutting edge was then stoned. If you started with a round piece of HSS, it would be possible to rotate it in the tool holder and change the angle of the cutting face.



I'm still a novice with Alibre[®], my 3D drawing program. You may notice that the cutting edge's tip is above the top face of the cutter blank. This is a problem with my use of the draft function. It is even more noticeable with the front view. However, this view does a good job of showing you the 5° relief.

I chose this profile in order to provide strength behind the cutting face while presenting a very narrow edge. I had no visible or audible chatter.

I did take pictures of this tool but this 3D rendering drawn with Alibre is far clearer. You will have to take my word that the finish is very good.

¹ You are free to copy and distribute this document but not change it.

Acknowledgements

Thanks to Mathew Tinker and “doc” of the Metal_Shaper yahoo group for teaching me about the Shear Grind Bit. Thanks to Neil of Valley Metal Club for telling me of the prior art in woodworking. These generous people again demonstrate that “all of us are smarter than any one of us”.

I welcome your comments and questions.

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