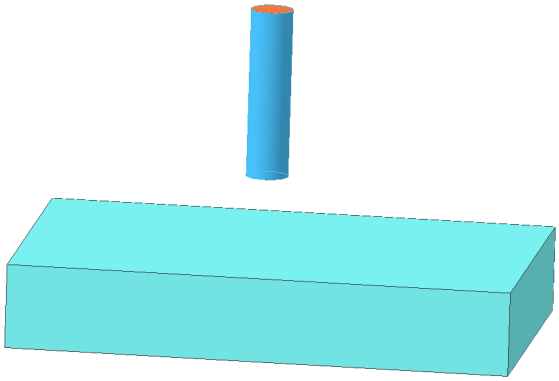
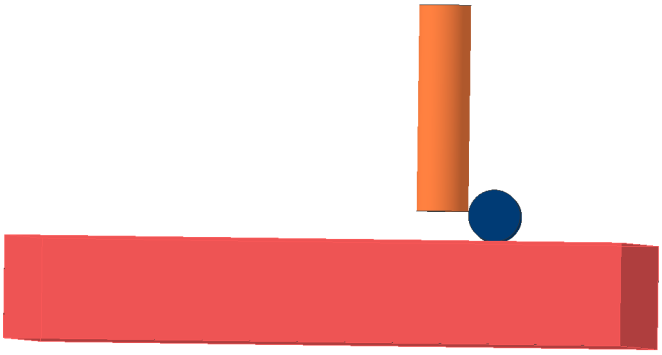
A Safe and Accurate Way to Set Zero on a Vertical Mill, version 1.1

By R. G. Sparber

I was visiting Toolcraft in Glendale, Arizona (http://www.aztoolcraft.com/) and was lucky enough to spend some time talking with a rather gifted machinist, Phuong Dang, who showed me a trick I had not seen before.

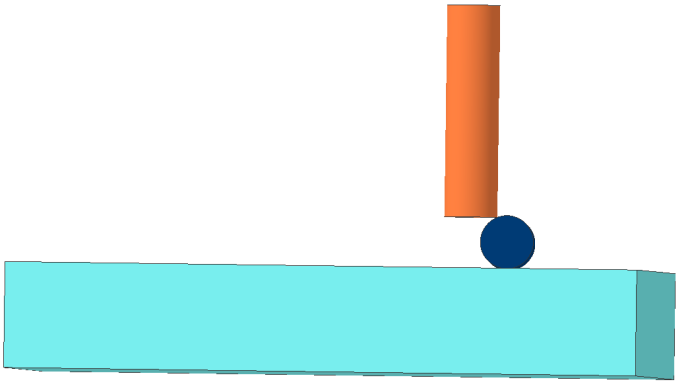


When establishing an end mill above a reference surface using a CNC machine, the operator must jog the cutter down in discrete steps. Even at 0.0001" per step, there comes a point where the cutter crashes. The crash might be only 0.00005", but that can be enough to crack the cutting edge given that the reference surface is hardened.

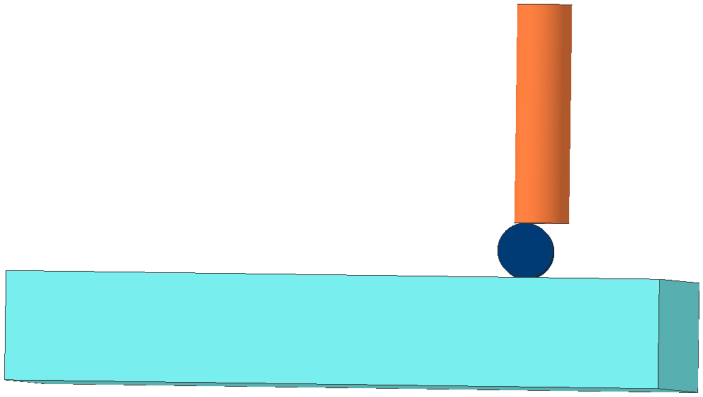


The solution is to use a precision round dowel pin. The pin lays down on the reference surface. It is rolled until it touches the end mill which is less than its diameter from the reference surface.

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



Next the end mill is jogged ***upward*** as the dowel pin remains in contact with the bottom edge. You can see how, as we raise the end mill, the dowel pin moves under it.



By watching the dowel pin move over, you can easily see the progress. At the point where the dowel pin just rolls under the end mill, we are exactly the diameter of the dowel pin above the reference surface.

No tool crash is possible.

Acknowledgements

Thanks to Bob Sanders for letting me wander around Toolcraft and to Phuong Dang for sharing his technique.

I welcome your comments and questions.

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