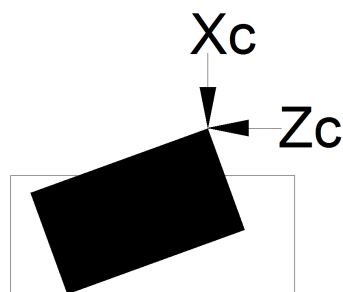# Locating A Corner on a Mill, Version 1.1
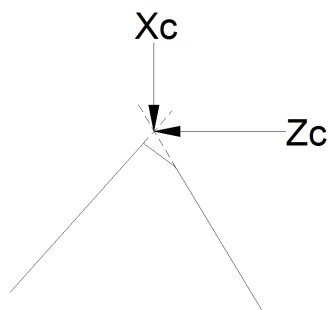
By R. G. Sparber

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This work was inspired by a very clever tool presented by Marv Klotz on Homemadetools.net (http://www.homemadetools.net/forum/one-tool-two-uses-27184).

The challenge is to locate the corner of a tilted block in a mill vise without a special tool.

I assume the surfaces are flat but not necessarily perpendicular. The actual corner does not even have to exist.

I will present the procedure and leave the derivation of the equation to the tiny number of math geeks that also enjoy machining. While they are at it, maybe one of them would like to estimate the error associated with this approach.

Marv's method takes one measurement while mine takes four. This means his error should be smaller as long as the corner of the block is 90°.

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Finding the Corner of the Block

1. Mount an edge finder in the spindle and zero the Z axis near the top of the block. Lock the quill. Then touch down on the face of the block as shown here and zero *X*. Finally, without disturbing the Z axis, move the edge finder over to the opposite face and record X3. Unlock the quill.
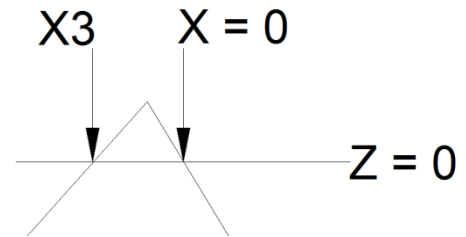
2. Move the quill down as much as possible without hitting the vise jaws. Lock the quill. Record Z1, X1, and X2.
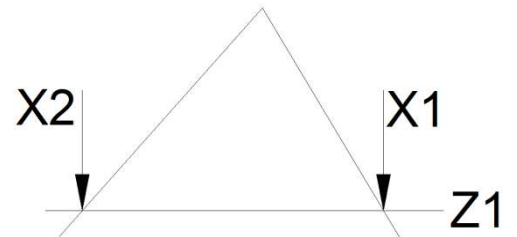
3. $X_c = \dfrac{X_1\,X_3}{X_1 + X_3 - X_2}$ and $Z_c = \dfrac{Z_1\,X_c}{X_1}$
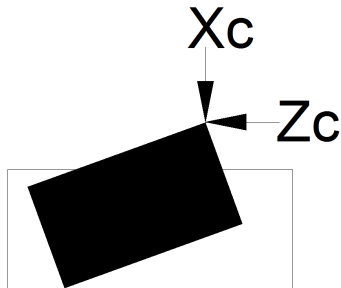
Acknowledgments
Thanks to Marv for the very cool measurement tool and inspiration. Thanks to Anthony Nagy for pointing out that the corner X and Y labels were confusing. They are better now.

I welcome your comments and questions.

If you wish to be contacted each time I publish an article, email me with just "Article Alias" in the subject line.

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