

# CNC: Having a Second Home, version 1.1

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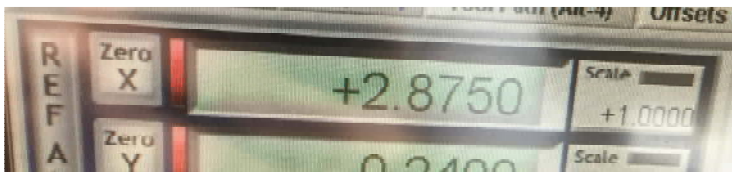
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I have a fixture that clamps onto my mill table. A flat cut in the bottom enables me to set it true to the X axis. Once clamped down, I use flats cut in the top to find the center. This is my X=0, Y=0 position and is also my temporary Home. If I lose position, I can always use these flats to reestablish (0,0). However, there is a faster way to recover: have a second Home.



First I touchdown<sup>2</sup> my 0.750 inch dowel on the vertical surface on the right side of my fixture. From previous tests, I know that the X=0 point is -2.875 inches away.



I set my X DRO value to 2.875 at the point of touchdown. This puts X=0 in the correct place<sup>3</sup>.

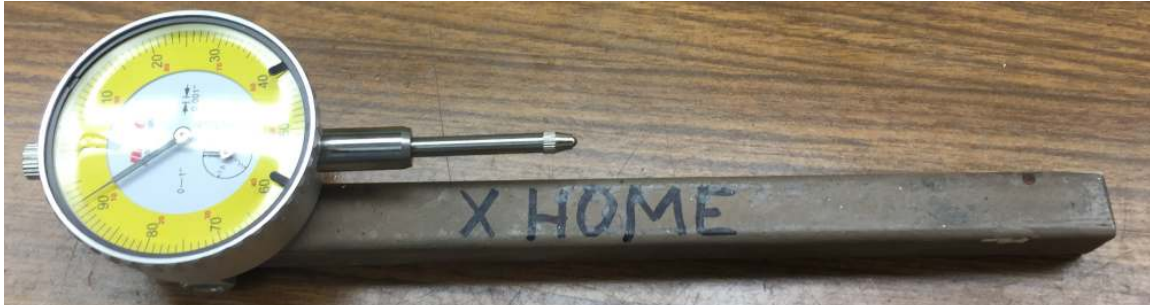
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<sup>1</sup> You are free to distribute this article but not to change it.

<sup>2</sup> Details of how I detect touchdown will be presented in a future article.

<sup>3</sup> In a similar fashion, I set Y=0.

Then I pull out this high-tech instrument: a length of scrap square tubing with a reasonably good<sup>4</sup> push rod dial indicator attached.



The ends of the tubing have been sawed square and sanded to a smooth finish. The rest of the tubing was lightly sanded to remove any burrs. The dial indicated is bolted to the tubing using a Belleville washer. This washer gives me enough pressure on the dial indicator lug to prevent unwanted movement yet still lets me make adjustments.



After cleaning the area of swarf, I gently placed the tubing into the X ways on the left end of the table. The end of the tubing contacted the apron.

I then drove the table until the dial read 0.500 inches. Care must be taken to move in the same direction as used for touchdown so as to avoid backlash error. I then read the X DRO and recorded my second Home value.

In this case it was at  $X = -0.3836$ .

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<sup>4</sup> I only use the dial indicator to tell me when I am back to the original position so repeatability is essential. Accuracy is not important.



If/when I lose position, I just place my tool back into the ways and drive the table until the dial again reads 0.500. Then set the X DRO to -0.3836.

I repeated this set up 10 times and was within  $\pm 0.3$  thou in all cases.

Care must be taken when handling the tool since any pivoting of the dial indicator causes error. Furthermore, if you are lowering the rod down to the reference surface, do it gently. Letting it slam down also causes error.

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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