# A Low Cost Longitudinal Axis DRO For my Lathe

***By R. G. Sparber***

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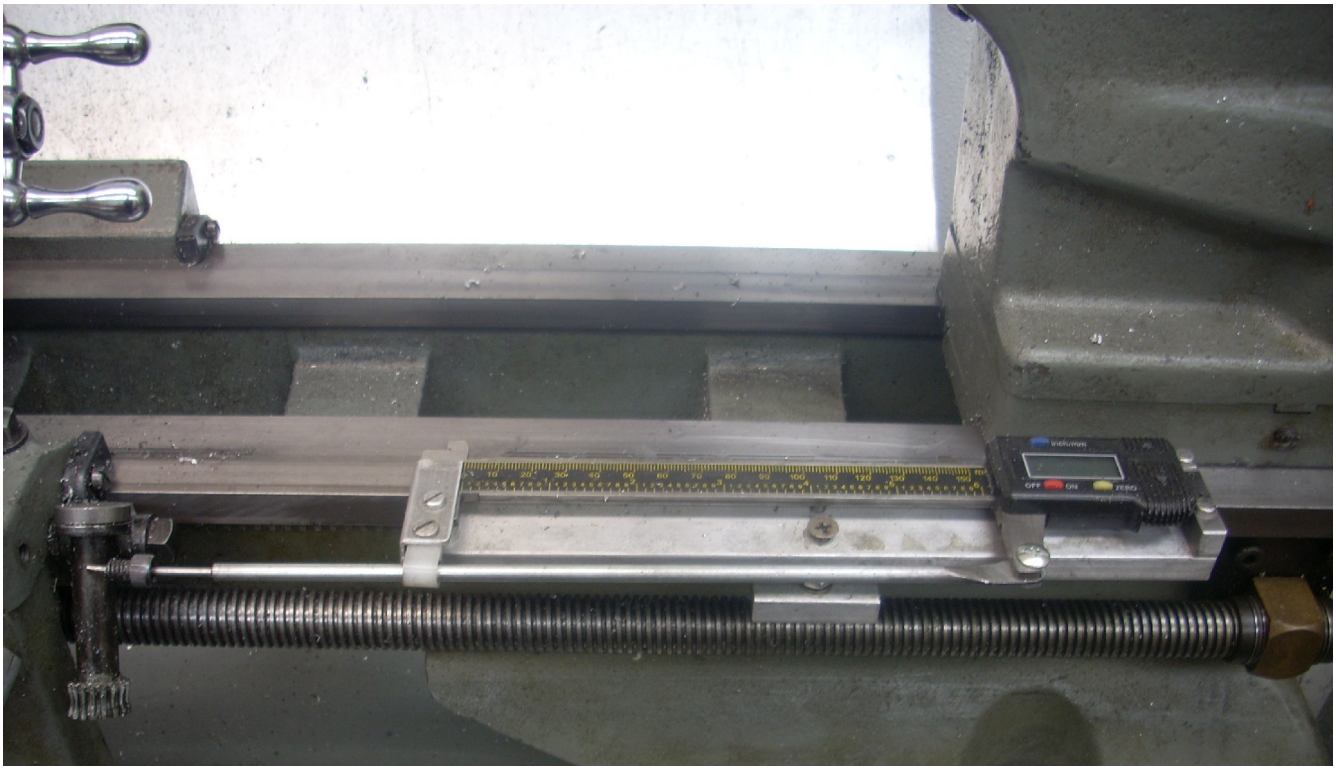
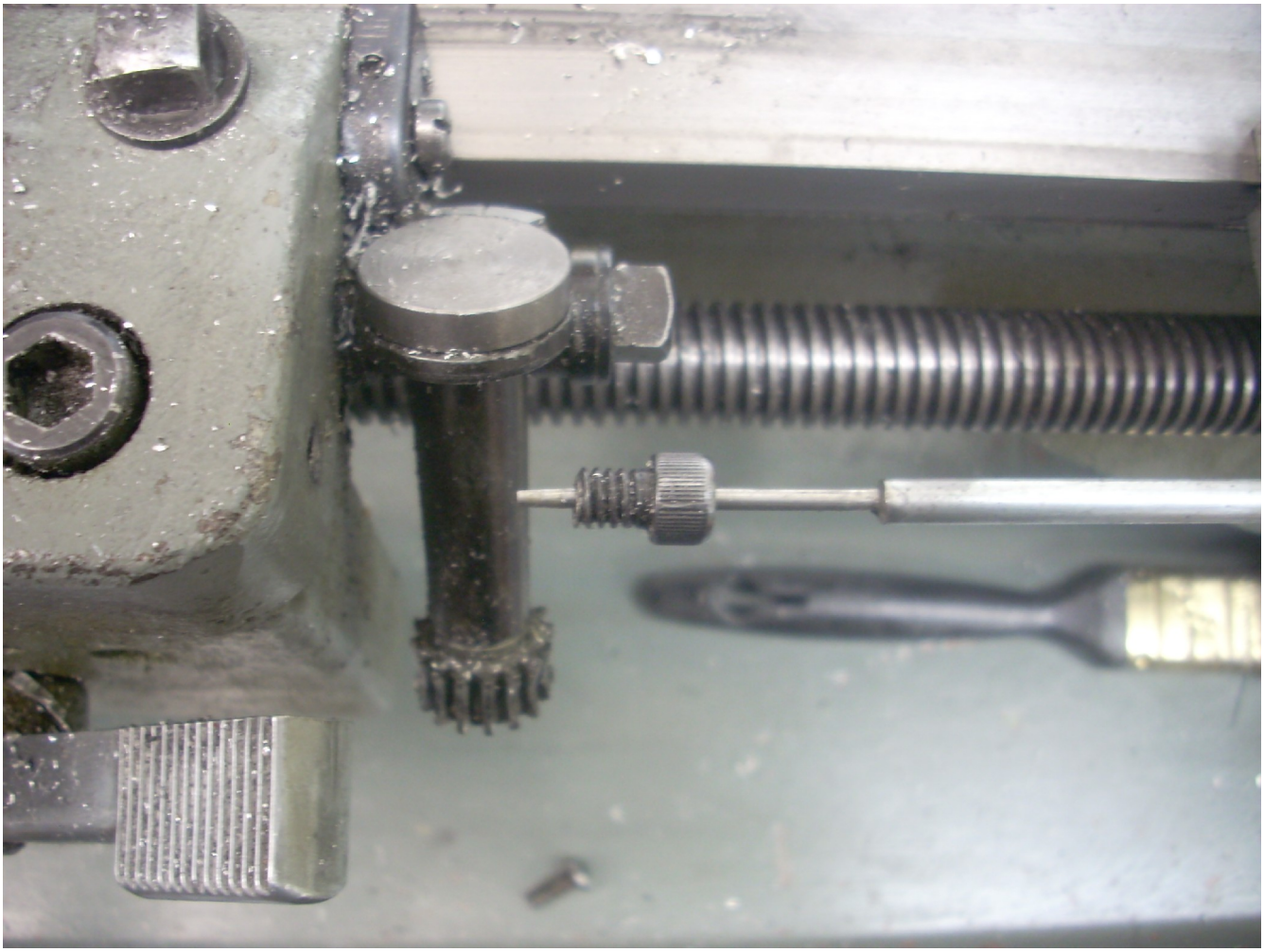
For many years I put up with clamping dial indicators to my lathe ways in order to accurately measure longitudinal motion. Then one day I woke up to the fact that a Harbor Freight© digital caliper would be far easier to use and not cost a lot of money. They are often on sale for less than $18 for a 6” scale able to display 0.001”. In most cases, this is plenty of range, resolution, and accuracy.

I will present the basic idea of this DRO rather than detailed plans which probably won't be right for you anyway.

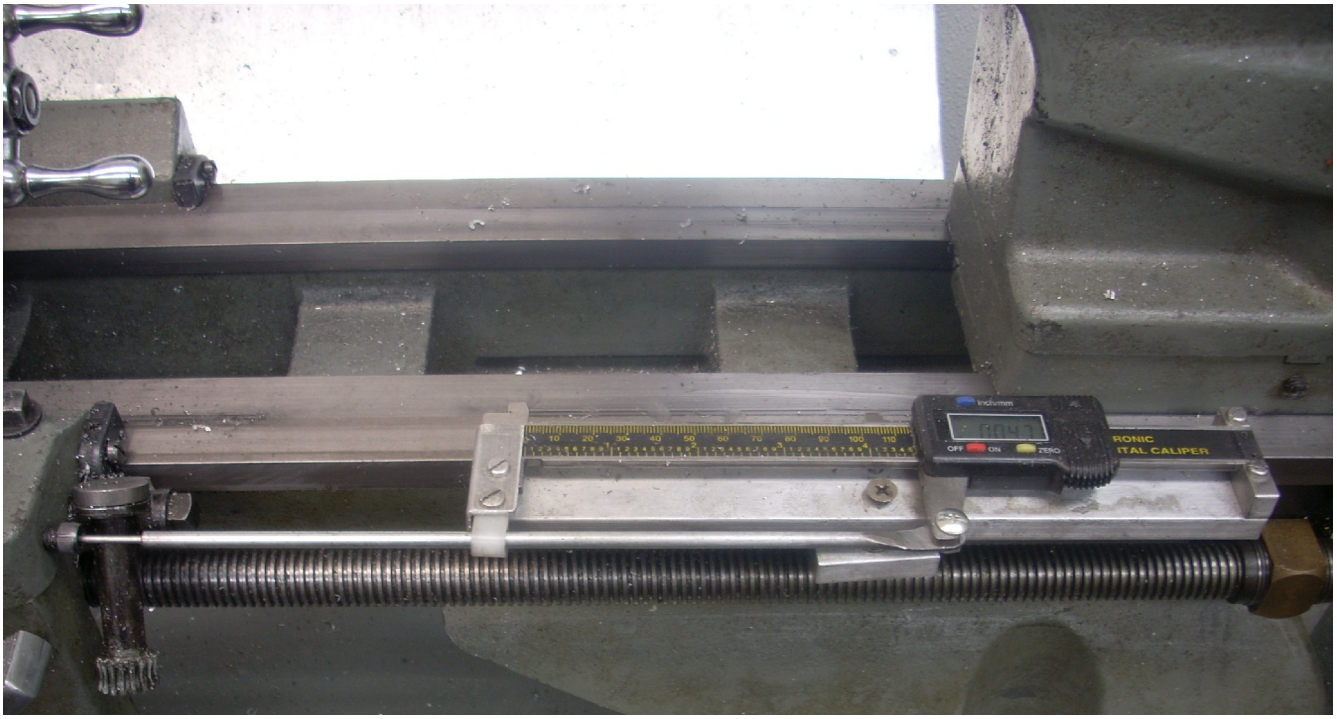


Here you see the entire attachment. It consists of a digital caliper that has been modified and clamped to a plate of aluminum. A steel rod links the slider of the caliper to a screw that can be seen on the left. The right end of this rod was heated and flattened in order to make bolting it to the slider easier. Under the center of the plate is a clamp that secures the attachment to the ways. The rod is supported by a cable clamp on the left so it does not flop around when not in use.



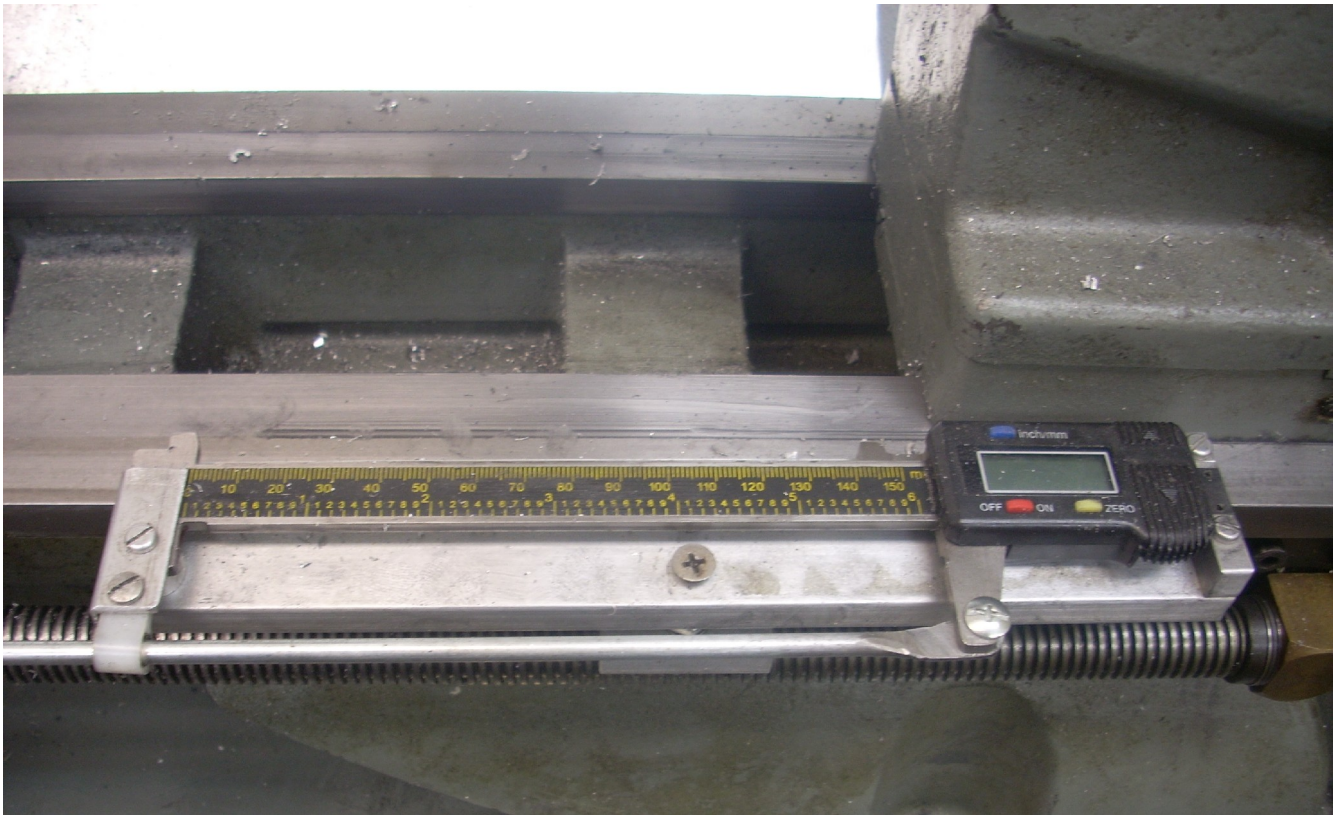
Here is a close up of the screw. It is just a cap screw drilled out and slid over the stiff wire. Fortunately, the center of the screw was soft.

The wire is brazed into a hole in the end of the rod. The other end of the wire is flattened so the screw can't come off. The apron has a blind  threaded hole in it that accepts this screw. When tightened down, the wire is secured to the apron.




With the way clamp and screw tight, movement of the apron is measured by the caliper.

Note that the left end of the caliper is clamped down to its support block. The right support block permits the caliper body to slide back and forth due to thermal expansion but not lift out. This arrangement prevents stresses from building up in the caliper's body.




The caliper is made from stainless steel of unknown hardness. I drilled one of them easily with a HSS drill bit. The next one I tried to drill was barely scratched by such a drill. Recently I needed to drill another one and found that a new 3/16” carbide tipped concrete drill worked very well.

In order to protect the electronics in the slider, I took it apart so only the stainless steel body was left. Grinding the steel and using a cut off wheel can get things rather hot. I guess if you are careful, you can get away without taking it all apart.

This little attachment has withstood the test of time. I use it every time I need to advance my apron along the ways of my lathe.

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