# TAIG lathe slide-in-a-toolpost

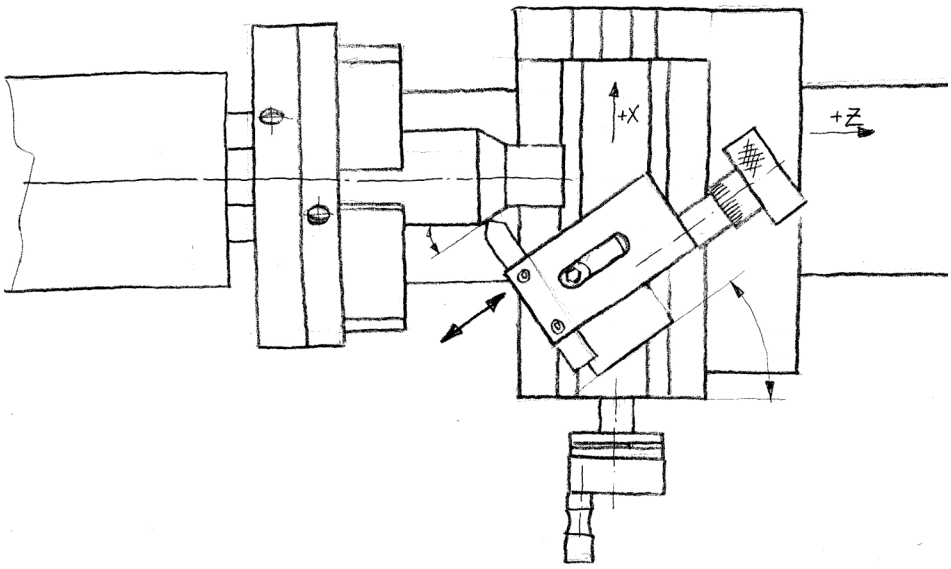


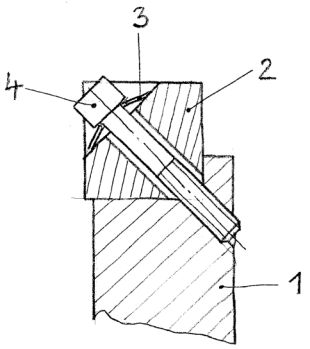
by Ulrich Viebahn

August 17th 2021

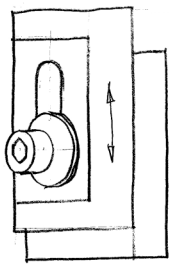
TAIG lathe: Chamfers, cones and tapers need the installation of the accessory compound slide. Mounting and adjusting the tool bits is cumbersome. And chamfers, cones and tapers are very useful and common design elements. With a normal size lathe one can cut small chamfers with a width of 3mm (1/8“) in one pass with the turning tool. But the small TAIG responds to chip sizes (chamfers) over 0.5 mm (20 thousanths) with ugly chatter.

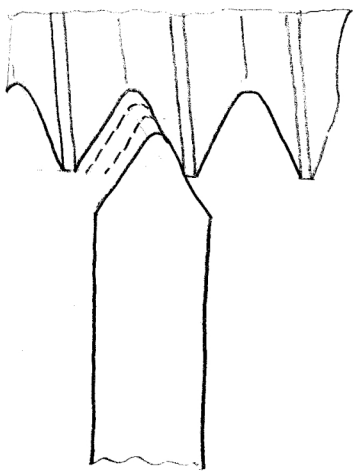
As every mechanical engineer tends to re-use proven solutions I had the idea to integrate the poor man’s cross slide in a TAIG tool post. That means that the tool post stays mounted, while you do rectangular x or z turning.




What is a poor man’s slide? A square bar sitting in a milled corner. The milled corner has a slot of 15 mm (5/8“) for a slide travel of 10 mm (3/8“). The screw ensures that it stays in the corner. But a lonely screw would be too difficult to adjust. Add a set of disc springs and you get a relatively rigid slide with zero play and smooth adjustability.

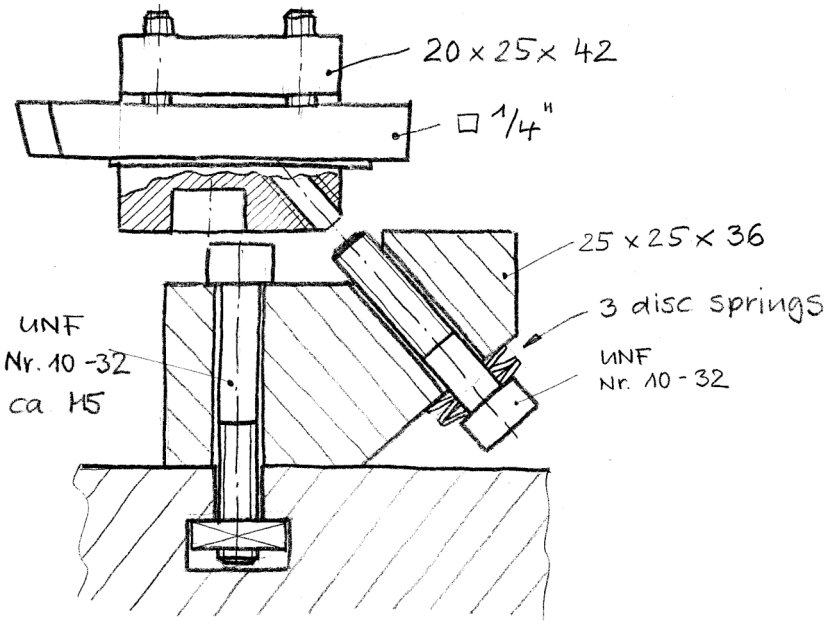




When you cut threads you set the little compound slide parallel to z. Then you get the big advantage to adjust the threading tool bit at each pass by a small amount in order to cut the thread with just one edge of the tool.
TAIG thread cutting increment in steel (Diameter) is 0.05 mm.
Cross slide increment therefore 0.025 mm (1 thousanth Inch).
Compound slide increment to the left is 0.025 / 1.732 = 0.014 mm. (per pass)

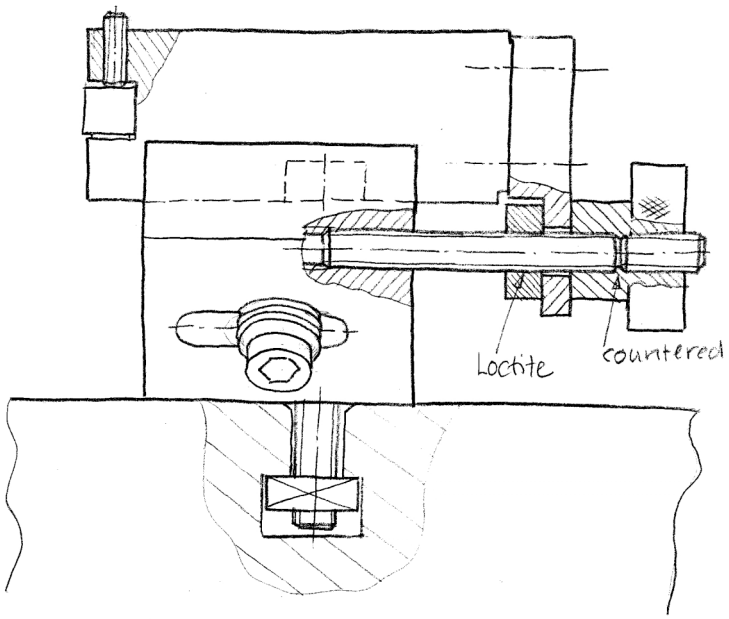
The principal components are show in the following figure. As a TAIG tool post is mounted with just one screw, it can be set to any angle. Just a scale is missing. A protractor between tool post and the TAIG's cross slide edge does a good job too.

The head of the tool post mounting Allen screw (an UNF Nr.10-32) hides within the slide. In order to be accessible for a 5/32" allen key one has to mill a slot into the slide.




A longitudinal cut shows the M6 ‚spindle' (or 1/4 - 20 Inch) with a pitch of 1 mm (25.4/20=1.27mm respectively). The coordinates for the spindle position are tricky as you have to avoid the 2 other bores.

All parts are milled out of free-machining steel bars 25x25 mm oder 1 x 1 inch.
‚Free machining' means easy machining, brittle and benevolent chips and a relatively hight yield strength steel.
(Ask for SAE 1213, or SAE12L14 or SAE1215) In Europe: 9SMnPb28 Automatenstahl.




One can imaging some improvements... Scales, a crank, angle adjustment knobs, etc.

Most of the time a 10mm long taper was sufficient for clamping jigs or arbors or centering.

A sensible improvement is to reduce the ‚slide' where it may collide with a cylindrical continuation of a taper. But it is an uglification.