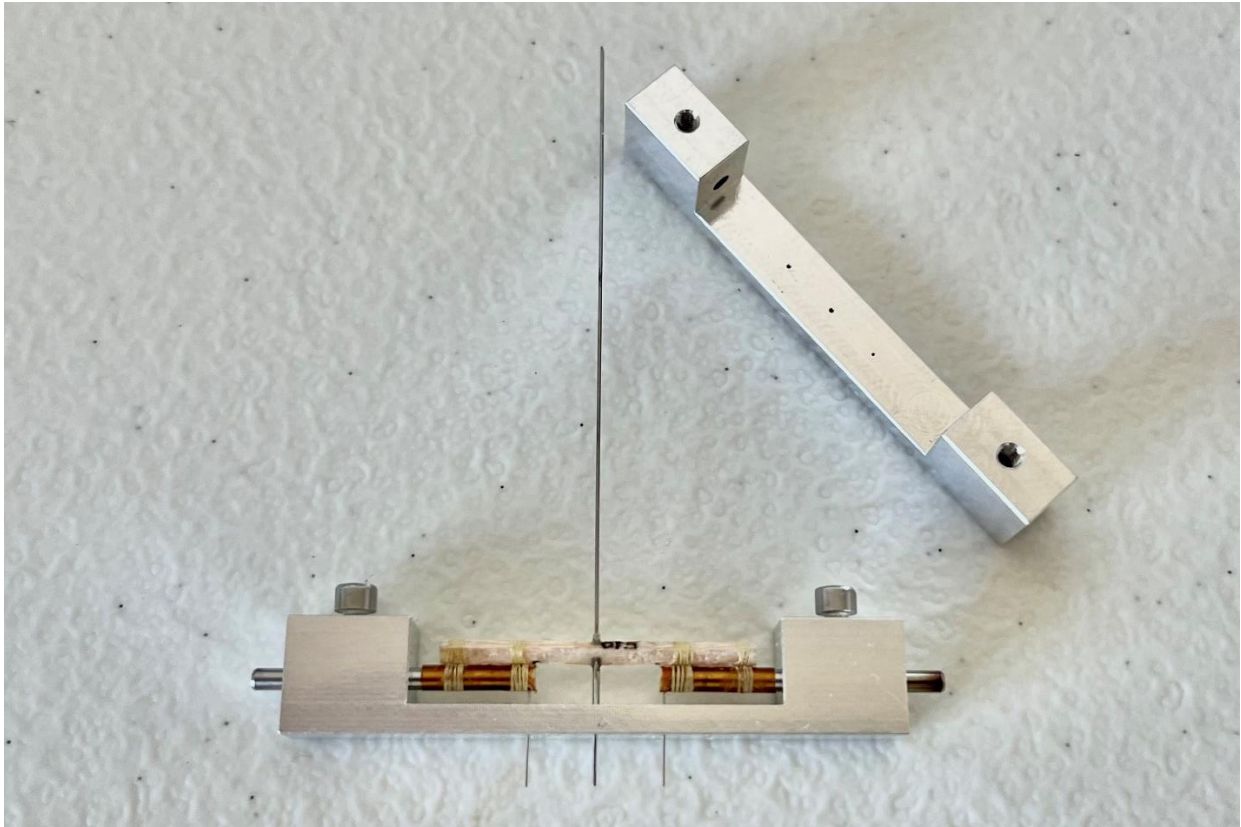


VP Hub Alignment Tool

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I wanted to share this tool that I designed for aligning variable pitch hubs. Smooth flight depends on maintaining equal blade pitch without hub wobble. For the hub to function properly, the prop spar sockets must be orthogonal to the hypotube, and the drive pins need to be coplanar with the sockets and the hypotube, while being equally spaced and parallel to the shaft. This fixture holds the sockets, hypotube, and drive pins in perfect alignment while gluing. It used to be quite tedious to align everything by eye using a caliper, and then having to rework things if they weren't right. Now it's only necessary to insert the prop shaft and pins in their holes in the base and align the sockets using the lateral shafts to insure perfect alignment. No more guess work. The fixture can also be used to check and realign worn hubs that may have developed a wobble.

Since I don't yet have a CNC machine, I first designed the fixture in Shapr3D for iPad and sent the STEP file out to be fabricated. I use Xometry, an online machine shop. You just upload the file to their website along with your credit card and the finished parts show up in your mailbox about 10 days later. A single part costs about \$60 and \$80 for two.

The fixture is dimensioned for Treger style hubs with 1.8 mm sockets, 0.0125" prop shaft, and 0.0075" drive pins. The STEP file and construction notes for the machine shop are in the files section. The only other parts needed are the 1.8mm shafts and the 4-40 cap screws. If you decide to make your own be aware that not all 1.8mm shafts are created equal. After obtaining some slightly undersize ones, I bought some 1.8mm HSS drills from uxcell on Amazon.

If you have any questions or want to share your experiences feel free to email me.