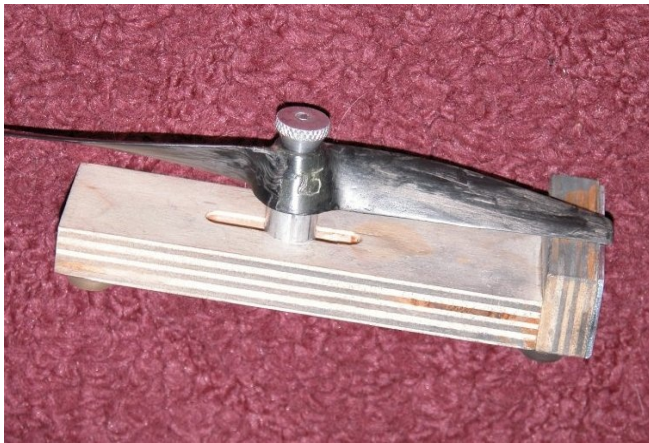


Prop Diameter Trimming Jig

Bill Lee

Accurately trimming a prop diameter is an essential part of setting up a CL Racing rig for competition. Most set-ups are sensitive to diameter changes as little as $1/10^{\text{th}}$ of an inch. Always in the past I had tried to use a scale or a dial caliper to mark the proper diameter on each blade, and then a sanding block to try and trim to the mark. Always close but always not “just right”.

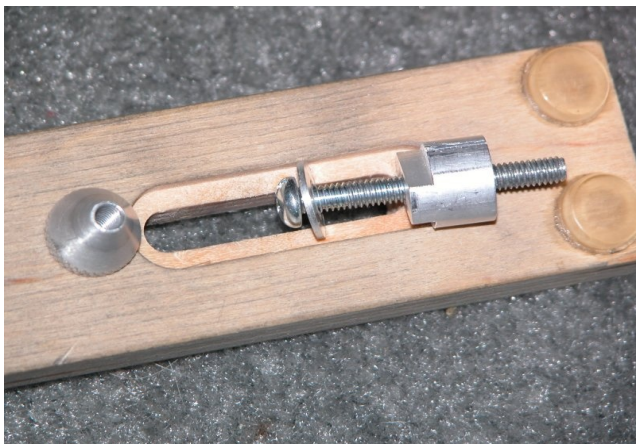
A few years ago I saw a little jig that Dick Lambert was using. I copied it and now use it for all of my TR prop work. Basically it is a way to mount the prop so that the tip falls over the end of the jig where it can be sanded accurately to the dimension of the jig. The jig is made so that you can mount the prop very accurately in relation to the end of the jig and thereby cut its diameter to an accuracy measured in a few thousandths.



Here's a photo of the jig with a TR prop on it. Note that the prop is mounted on a piece of aluminum and held down with a conical nut with a knurl. If you're familiar with a Prather pitch gauge, this is the same way the prop is mounted there.

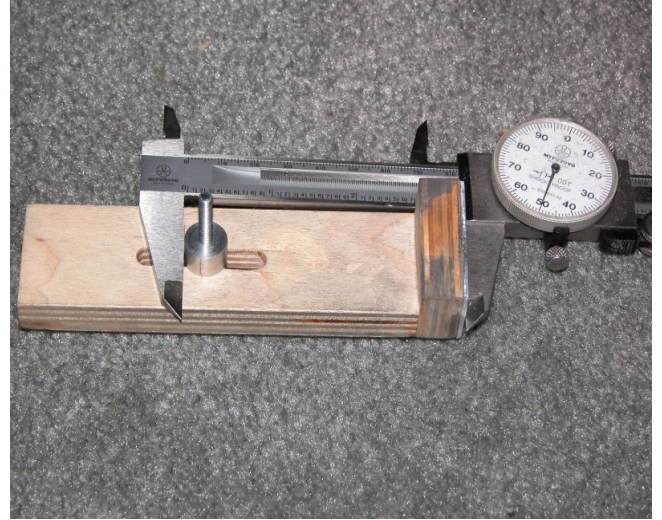
The aluminum mount is held to the base with an 8-32 x 1-1/2" bolt from the bottom. The mount has a flat-sided stub that matches the slot in the base.

The next picture shows the hardware laying on the underside



of the base. (The two round dots are plastic “feet” that I added to make the thing sit firmly on a bench.) In the picture you can see the conical nut and the aluminum mount with the flat-sided stub on the bottom.

Using the jig is quite simple. Since the diameter of the aluminum mount is 1/2" I use a dial caliper set to the radius of the prop I'm wanting to make, and then add 1/4".



Here is a picture showing how the jig was set to make a prop of exactly 6" diameter. The dial calipers are set to 3-1/4" and the mount set so that its “back side” is just that distance from the sanding face of the end piece.

Below you will find a set of 3-views for the jig. You will need a lathe and a mill to make it easily, but I am sure it can be done with more ordinary shop tools. Since I have a mill and a lathe, that's what I used! :-)

First item is the base. It needs to have a groove milled half-way through from the bottom. This provides a place for the head of the screw and the washer to locate. Then a narrower slot needs to be milled all the way through. This slot guides the aluminum mount and provides for the adjustment to set the prop diameter.

The end-piece is cut as shown. The 20° angle on the top is approximate and is close to what a TR prop will be at about 6" diameter. The end-piece is epoxied to the end of the base.

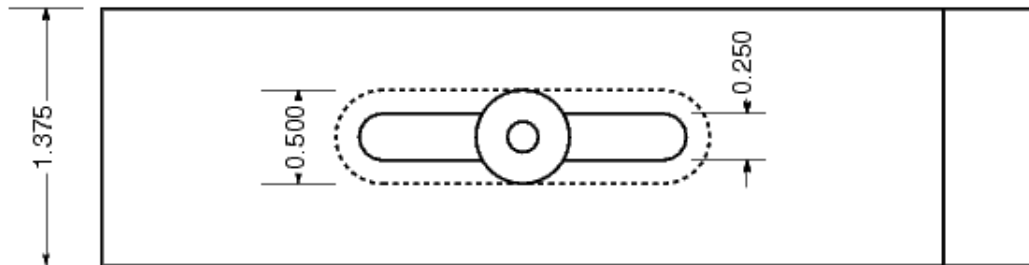
The mount is a piece of 1/2" aluminum bar stock, drilled and tapped all the way through for an 8-32 bolt. The bottom of the mount is machined flat on both sides for 1/8" until the thickness matches the slot in the base.

The conical nut is also cut from 1/2" bar stock, drilled and tapped all the way through for 8-32. The angle of the cone is TLAR. (That Looks About Right)

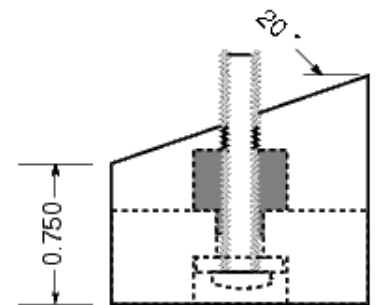
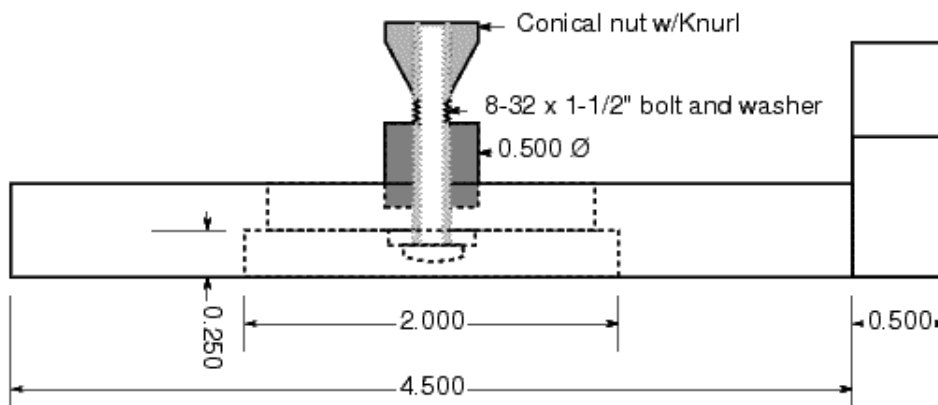
Not shown on the drawings but evident on the pictures is a piece of 1/16" aluminum sheet glued to the end of the end-piece. It is there so that when you use the sanding block against that surface, you don't eat up the wooden end-piece.

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Bill Lee - April 2007 Torque Roll



(Base and Endpiece: 1/2" Baltic Birch plywood)



The dimensions on the 3-view are for props in the 6"-7" range. The dimensions can be adjusted to suit your needs for larger and/or smaller props. Just make the base longer, make the groove and slot longer, and perhaps adjust the height of the aluminum mount and the end-piece.