28/11/2019 - Control column fitting - 4H

Category: 3.12. Systems
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Another open task is mounting the control column in the fuselage. I started analysing the plans and came to the conclusion there is a bit more to this than just bolting it to the control column mounts.

This shouldn't be a surprise as nothing is ever that simple when building an aircraft :)

One of those terrible tasks they make you do is enlarge the diamer (or in other words drill) the inner part of a long bushing.

This bushing is used at the base of the WD-611 and WD-612 control sticks and needs to have a slip fit in the clevis on WD-610.
In other words, the bushing you get is too long and the inner diameter of the bushing needs to be enlarged 1/4" for an AN4 bolt.

The stick itself slides over this bushing and the steel of the stick should be slightly shorter than the bushing so that it rotates nicely and freely around the bushing without squeezing agains the WD-610 clevis.

Enlarging the inner diameter of a long bushing is easier said than done if you don't posses a metal lathe.

As I don't know anyone who has one, we'll have to go the old style way on this.

I decided to ream to 1/4" using the bench drill. I have a clamp that holds with some jaws that hold the bushing nicely at 90°. To ensure this, I used a straight angle to verify.

Then gently sent the reamer through with plenty of boelube lubricant.

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The result is not bad, but it's certainly not perfect. On the top side where you enter the material it's dead center. On the other end it tried to find it's way down and was little off center.

The other one was even more off. I'm assuming this is not going to be an issue. There's plenty of material left to support the AN4 bolt. In the end the bolt will take the load and the busing serves as a support for rotation.

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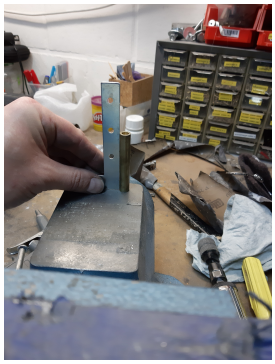
Then I started shortening the bushing in length so that it would slip between the clevis of the WD-610.

Started the rough work on the 3M wheel but soon found out that it would be impossible to keep the base nice straight and perpendicular to the shaft.

Instead I started using the good old sandpaper and bench drill technicque to gently shorten it. This ensures absolutly perfect perpendicular bottom and top.



I made a little video of the process below.

Than I installed bushing and WD-611 and torqued the AN310 castle nut on the AN4 bolt. To my surprise this completly jammed the controls. Not good...

After evaluating this a bit, found out that actually the sides of the WD-611 and WD-612 are welded and are a bit wider than the actual place where the bushing runs through.

Started grinding it down a bit using a key file. Be gentle and make sure you don't change the shape of the circular tube where the bushing runs through.

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they annoying part in this is that you take away the powder coating of the steel and thus you must prime that exposed metal again... did that and now it's paint curing time again.

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