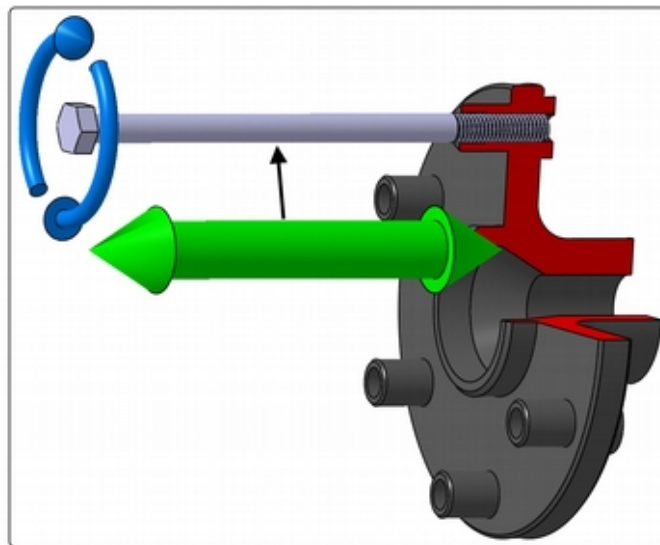


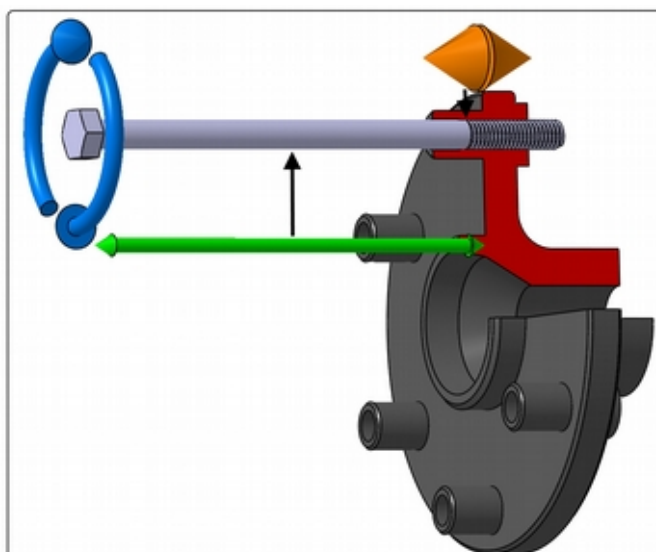
## PLOUGHING EFFECT CHECKING METHOD

### 1 – PLOUGHING EFFECT

Ploughing effect is the contact between the smooth part of the screw and the end of the threading. This well-known phenomenon of mechanics prevents a complete tightening of the screw. When you do not know it, it can be a rather vicious problem because you do not detect it by tightening to the torque: you feel to have tightened well to the torque while the smooth part of the screw is stuck against the end of the threading.

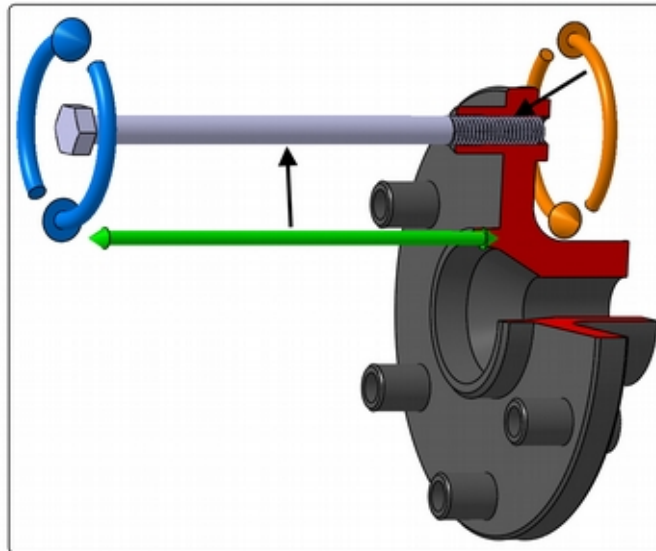


**NORMAL CASE:** Tightening torque tightens the screw and compresses the hub.



**PLOUGHING EFFECT CASE :** the tightening torque gives rise to an effort between the end of the thread and the start of tapping. The screw is little or no tightened, the hub is not compressed enough.

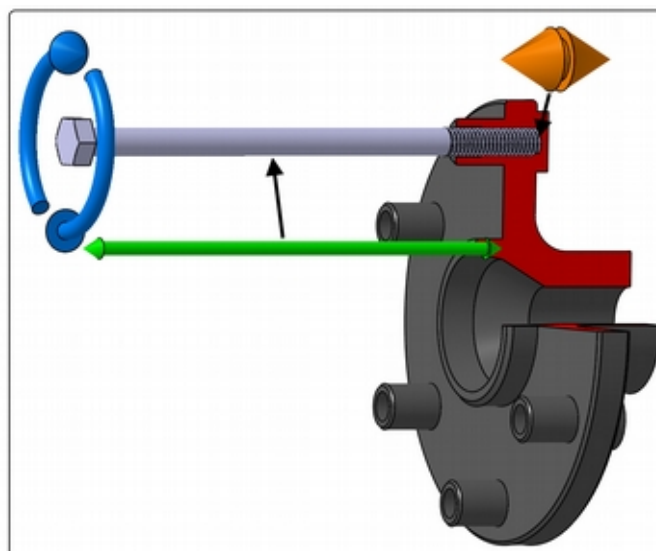
## 2 – OTHER CASES WHERE THE SCREW IS NOT TIGHTENED



### **DAMAGED THREADING or THREAD LOCK CASE :**

The tightening torque gives a torque between the threading and the tapping. The screw is little or no tightened, the hub is not compressed enough.

On the E-Props Instruction and Service Manual, E-PROPS strictly forbids the use of thread lock (Loctite) on the hub screws of all its propellers.



**BLIND THREADING CASE :** the tightening torque results in an effort between the end of the screw and the bottom of the tapping. The screw is little or no tightened, the hub is not compressed enough.

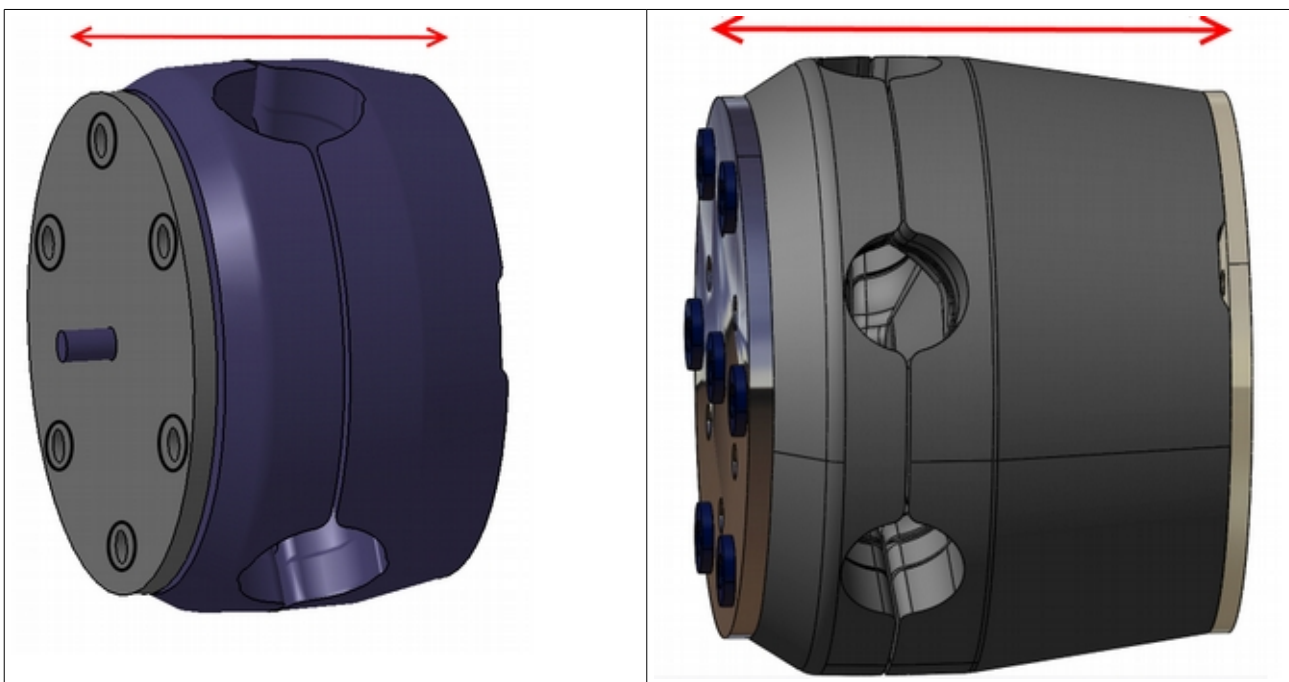
## 3 – CHECKING METHOD

To check if the E-PROPS screws are not impacted by a ploughing effect, just take two measurements using a ruler.

### PROCEDURE

**1-** Remove the propeller hub from the reducer flange equipped with Rotax drive lugs. Leave the Rotax drive lugs in place.  
Loosen all screws gradually, including the center screw. Do not keep the center screw tightened while the other screws are loose; this would cause excessive strain.  
Remove the hub from the flange for both measurements.

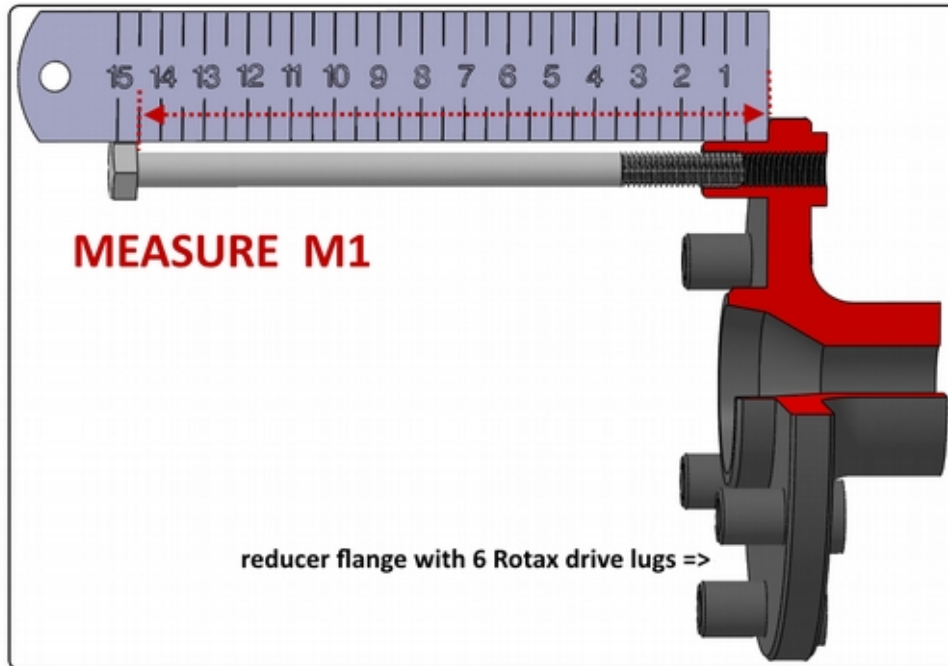
**2-** The hub with the Nord-Lock washers, its aluminium flange and its thermic spacer has a thickness **T**.  
Check with a sliding foot that this is the case for your set [washers + aluminium flange + hub + possibly thermic spacer]



Take the mesure **T** : thickness of the complete set washers + aluminium flange + hub + possibly thermic spacer

**3-** Engage a screw in the drive lug, by hand, and bite the thread one turn

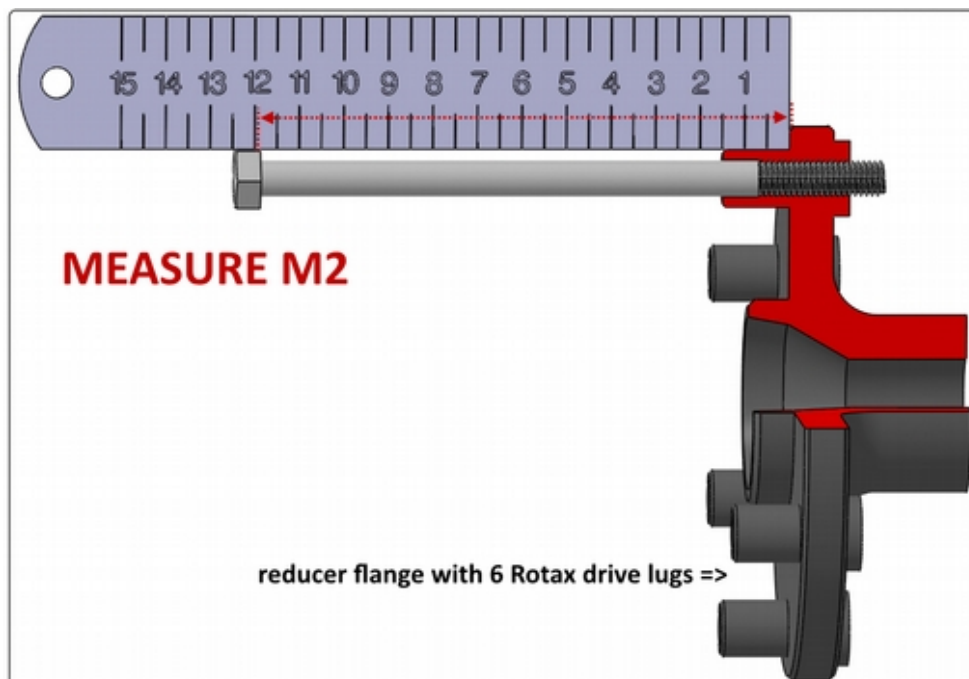
**4-** Measure the length **M1** in mm: between the support face of the reducer and under the head of the screw



*bite the thread one turn and take the measure **M1***

**5-** Screw the same screw by hand, without forcing, completely in the drive lug, to the maximum possible

**6-** Measure **M2** length in mm: between the bearing face of the reducer and under the screw head



*Screw the same screw by hand, without forcing, and take the measure **M2***

**The measure M1 must be higher than 10 mm to the thickness T of the hub.**

**The measure M2 must be lower than 4 mm to the thickness T of the hub.**

$$\mathbf{M1 > T + 10 \text{ mm}}$$

$$\mathbf{M2 < T - 4 \text{ mm}}$$

**If it is NOT the case, your assembly is not correct.**

**DO NOT FLY with such bad assembly.**

**Contact E-PROPS to change your screws.**

**7-** Try the 5 other screws and verify the measures M1 and M2 are the same as the first screws.

REMINDER : to take these measurements, the screws must be able to screw by hand. Do not use a key or force.

PLEASE NOTE :

- if the assembly is not correct, and if you have to change the screws, contact E-PROPS to change them or to advise you.

- if the threading is damaged, an assembly with stud bolts will be the best solution. Contact E-PROPS.

The "Instruction and Service Manual of the E-PROPS propellers" is given with all new E-PROPS propellers.

Last updated version is published on the E-Props website [www.e-props.fr](http://www.e-props.fr), AIRCRAFT, menu Manuals / Documentations.

The instructions in this Manual must be followed and the parameters IMPERATIVELY respected.