Removal of play in the tailplane drive train

Classification Mandatory

Applicability All Europa aircraft

Compliance Within the next 10 flying hours

Introduction

Mod 73 and PFA Airworthiness Information PFA247/FSB-006 addressed the problem of play between the mass balance arm, TP9 drive horn assembly, TP12 drive plates and the torque tubeTP04 - see figure 1.

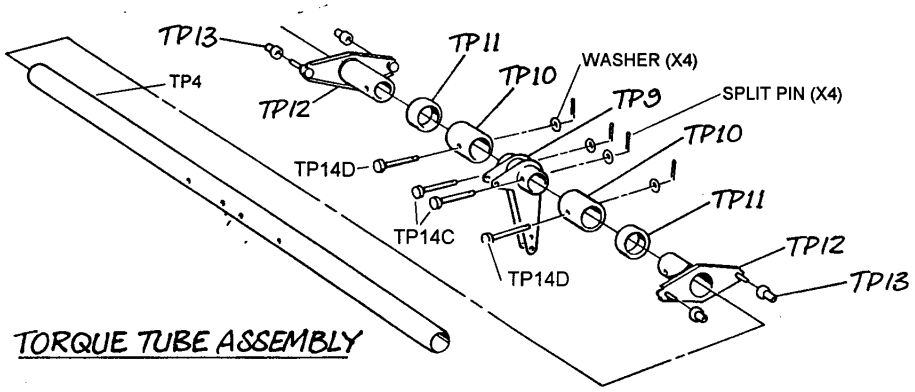

Fig 1. Torque tube components

Included in these documents is a limit of ½" free play measured at the tailplane trailing edge. A repeating inspection at 10 hourly intervals is called up, primarily because it is possible for play to develop quite rapidly, probably as a result of inertia loads when the tailplane mass balance arm hits the stops while taxying over rough ground.

This Service Bulletin describes a method for eliminating play between the TP4 torque tube and the TP9 tailplane drive horn and the TP12 drive plates.

This Service Bulletin introduces Loctite 603 as a recommended method of ensuring ongoing airworthiness, and will contribute to a relaxation of the current 10 hourly inspections. However, the PFA FSB- 006 issue 4 is the document that dictates the inspection intervals that must be adhered to.

It is recognised that other methods of avoiding play are already approved by the PFA. Such methods necessarily change the load path such that it no longer travels through the interference fit shear pins.

Action - Loctite

Materials required:

Degreasing liquid
Loctite 603

Method

Loctite 603 is to be introduced between the torque tube and TP9 drive horn assembly, and between the torque tube and TP12 drive plates.

Gaining access via the access hole, thoroughly degrease the torque tube at both edges of TP9, and the inner edge of the two TP12's. Note that the plastic sleeve TP10 extends slightly beyond the inner edge of TP12. It may be necessary to use pressurised air to blow degreaser out from between the parts.

Apply Loctite 603 to both edges of the central control horn tube of TP9; it will run round the torque tube and between the torque tube and TP9 by capillary action. It is not necessary for the whole mating surfaces to be covered with Loctite.

Carry out the same technique with the **inner** edge only of the drive plates TP12. Note again that the TP10 nylon bushes extend beyond the inner edge of TP12, so ensure that the Loctite reaches the edge of TP12.

Take especial care not to contaminate with Loctite those areas where movement is required, such as the torque tube bearings.

Do not attempt to apply Loctite other than by capillary action: it sets very quickly indeed, and it is necessary to ensure that the shear pins are correctly fitted before applying any Loctite.

The application of Loctite is intended to be a permanent one-off operation, and it should not be necessary to remove components subsequently. If such removal does become necessary for any reason significant heat is needed to soften the Loctite, and details of a suitable method can be obtained from Europa Aircraft.