Undercarriage mounting frame strengthening

Classification: This bulletin, which comprises inspection and modification, has been classified as mandatory by the PFA (UK).

Applicability (Inspection): All Europas (Classic and XS models) fitted with landing gear frames supplied before January 2007.

Applicability (Modification) All Rotax engined Europas except those with the classic engine installation (radiators each side of the spinner) with the Rotax 912 or 912S engine and Warp Drive ground adjustable propeller or other propeller weighing less than 25lb (912S engine) or 28lb (912 engine) and no cracks found in the landing gear frame, or those with landing gear frames supplied by Europa after January 2007.

Aircraft with engines other than Rotax must contact Europa to establish applicability.

Compliance: Inspection: Before the next flight.

Compliance: Modification Within the next 25 flying hours or by the next annual Permit renewal, whichever is the sooner.

Introduction

A failure has occurred to the undercarriage mounting frame of a Europa. Examination of the mode of failure has shown that the upper horizontal tubes are insufficiently strong in the area indicated in figure 1.

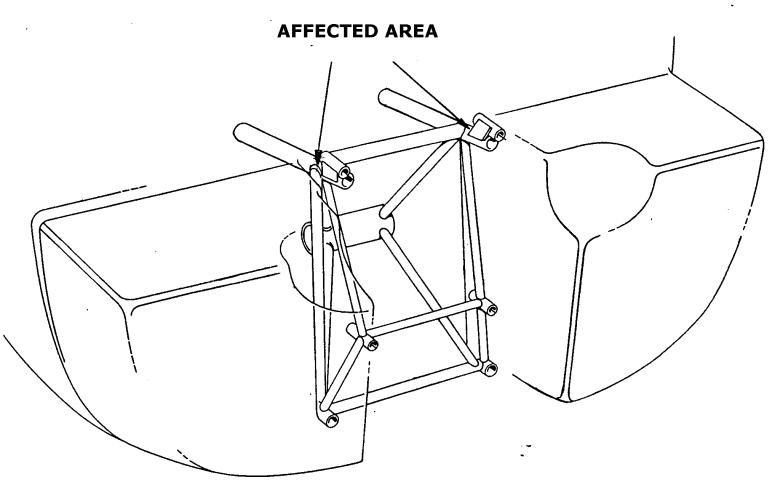

Fig 1. Affected area of frame.

This is due to the offset distance of the engine frame mounting tubes from the main horizontal upper tubes, resulting in high bending stresses at the welded joint. This modification introduces inserts in the upper tubes which provide extra support to those tubes. The upper tubes require reaming to ensure correct fit of the inserts and to clean away any weld penetration.

Inspection (all Europas)

Inspect the area affected as shown in figure 1. If any crack is found the aircraft must be grounded immediately and the frame replaced with an upgraded unit from Europa.

Modification (applicability as above)

Parts needed

Mod 72 kit, obtainable from Europa Aircraft (2004) Ltd.
16.5mm parallel hand reamer - obtainable from Europa, but not included in kit.
Acetone or similar cleaner
ACF 50 penetrating protectant - obtainable from Europa, but not included in kit
Etch primer paint

Step 1

It will be necessary to remove the engine and its mounting frame from the undercarriage frame. It is not necessary to remove the engine completely - lowering it by approximately 50 - 75mm (2 - 3") and moving it forward by 100 - 125mm (4 - 5") will be sufficient.

The extent of the operations needed to remove the engine from the undercarriage mounting frame will vary depending on the individual installation. You should consider fuel lines, electrical, engine control cables, water and oil connections as well as ducting, etc.

Prior to starting any removal work the aircraft must be securely supported. Tri-gear aircraft will need a padded trestle under the tail.

Disconnect the battery positive cable. Disconnect the fuel flow and return lines from the engine. For XS engine installations refer to the engine installation manual and disconnect the ducting side plates CD2 and CD3 from the angle plates CD4 and CD5 that connect the ducting to the firewall footwells, and remove the AN3-5A bolts connecting the duct side plates to the inside of the footwells. Disconnect all other lines, cables and fittings as necessary to enable the engine to be lowered approximately 75mm (3") and moved forward 100mm (4"). Remove the stainless steel firewall plates as necessary.

With a suitable engine hoist and lifting straps, take the weight of the engine and remove the four AN5-41 bolts, discarding the split pins. Make a note of the number and position of the shimming washers on these bolts to ensure correct replacement.

Lower the engine approximately 50 - 75 mm (2 - 3”) and swing it forward to gain access to the upper horizontal tubes. Figure 2 shows the engine lowered to enable the tube reaming to take place.

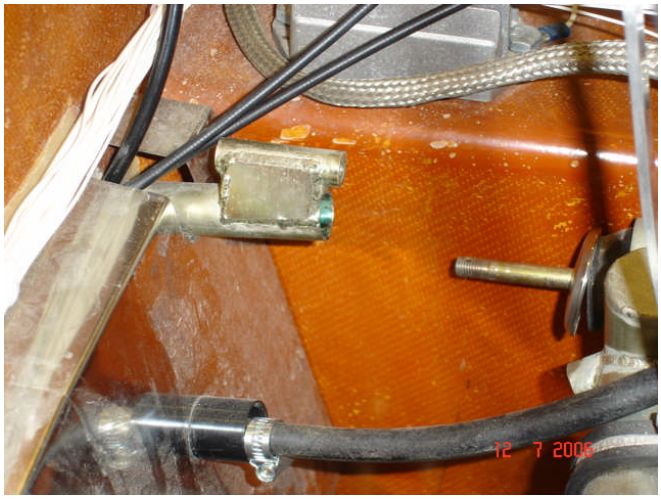

Fig 2. Engine lowered to give access to upper horizontal tube.

Step 2

Using the 16.5mm reamer, ream out the two upper horizontal tubes as far as possible - the end of the reamer will contact the most forward of the bolts connecting the frame to the tunnel. There is not much metal to remove, and it will normally be possible to carry out this operation dry. You may encounter resistance where the other tubes are welded - keep a firm pressure on the end of the reamer to ensure it keeps cutting. Figure 3 shows the reaming being carried out.

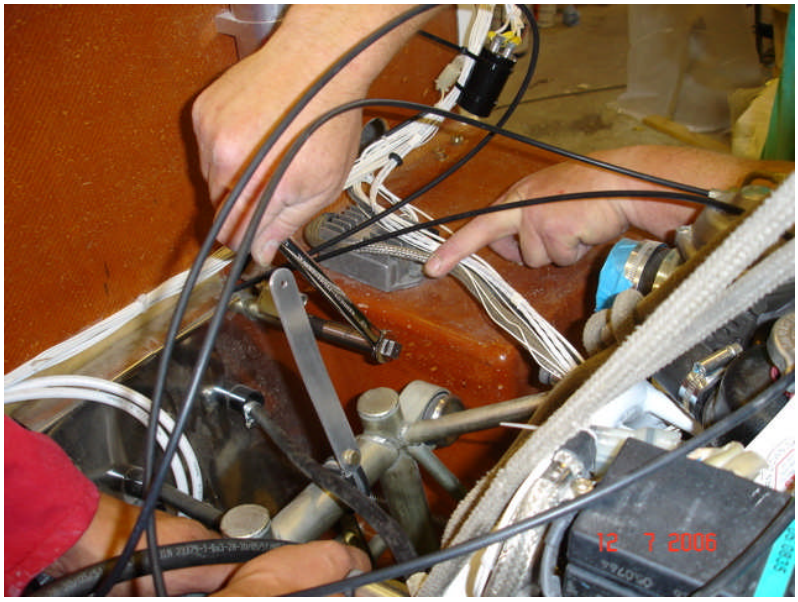

Fig 3. Reaming tube using a spanner (wrench) to drive the reamer.

Thoroughly clean the inserts and the tubes to remove all swarf, and any accumulated grease or dirt, using acetone or similar solvent.

Thoroughly coat the insert with etch primer, including the bore, and allow to dry completely.

Coat the inserts, part number LG31, with a light film of ACF 50, which will act as a protectant against corrosion. Insert the tubes - they will probably need a light tap to fit them. Figure 4 shows the tube inserts in place.

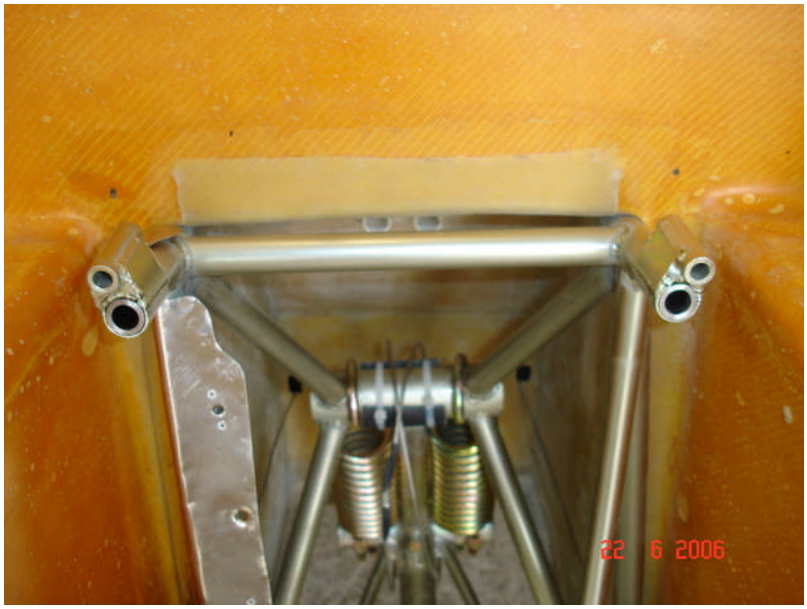

Fig 4. Tube inserts in place.

Step 3

Reassemble the engine in the reverse order of step 1.

Arrange duplicate inspection of controls.

Amend the Maintenance section of the Owners Manual to include a requirement to re-apply ACF50 to the visible parts of the installed inserts at each annual inspection.

Annotate the aircraft log book - Mod 72 incorporated.