

Service Bulletin

Checking of elevator trim cable assembly

Applicability: All EuroFOX aircraft operating under a UK LAA or BMAA administered Permit to Fly.

Compliance By: Required at the annual inspection and 100 hr. service intervals, though recommended as part of a normal daily inspection.

Ongoing compliance: Assembly is easily visible and is already part of the recommended aircraft inspection and lubrication schedule

Background: Some of the UK fleet of EuroFOX aircraft are heavy use tug aircraft operating in conditions the majority of the single owner fleet do not encounter. Some tug aircraft will complete 500 hours a year and 3000 full power take offs to 2000 ft and immediate landing sequences. In many of these tug aircraft one year's usage can replicate a typical private aircraft 8-10 year life. Therefore, even though the EuroFOX design and production stretches back almost 30 years, the UK tug fleet offers good forward visibility regarding any potential aircraft issues that may affect the rest of the UK fleet.

How the design works

This assembly is designed so the low forces applied needed to move the elevator trim tab are transferred to the tab by a manually operated trim tab lever inside the cabin. There is no tension setting of the 1mm wire cable, just pulled through with no slack and crimped on initial build. Cable tension is then set using the adjusters at the trim lever end in the cabin.

The cable runs through the U clamp and acts as a single unit rotating around the pivot pin, the wire does not rotate around the U channel so there is no wear. If the pivot pin become stiff or seized the U Channel will be prevented from rotating, the wire will rotate around the U channel bracket and wire wear with cable fraying will eventually occur. The links below will download videos that will show how the system is designed to work.

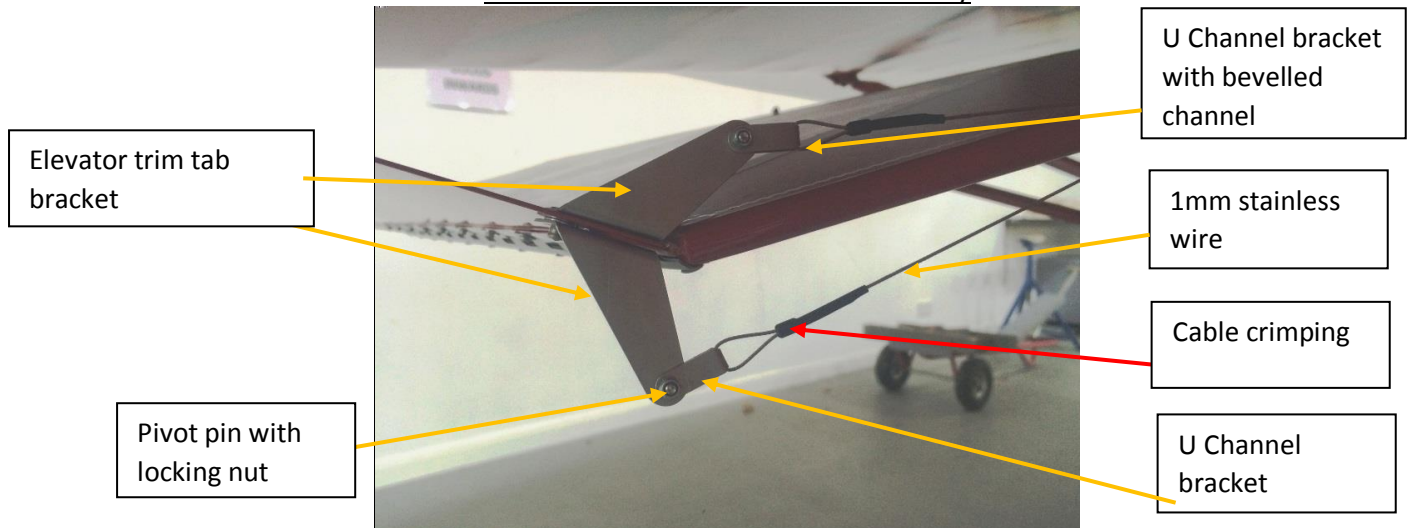
Correct with pivot pin rotation (example shown is temporarily clamped and not final crimped):

<https://dl.dropboxusercontent.com/u/48737227/trim%20tab/Clevis%20free%20as%20designed.MOV>

With the pivot pin seized or stiff:

<https://dl.dropboxusercontent.com/u/48737227/trim%20tab/Clevis%20coked.MOV>

View of the elevator trim cable assembly



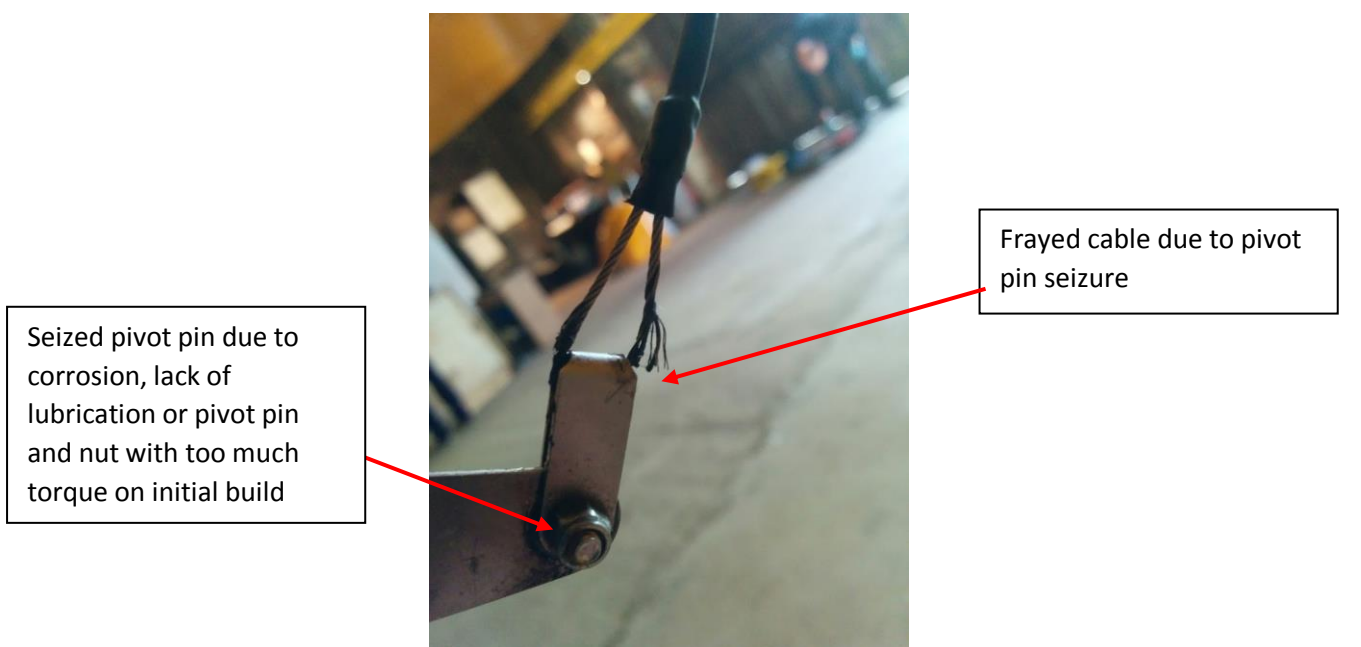
SB content:

In one particular 800 hours high use aircraft with many 1000's of take-off/landing cycles, it was noted that the trim cable had started to fray. This aircraft had not been maintained in a methodical and systematic manner and in line with published maintenance and lubrication guidelines. This SB is to remind and inform owner/operators that this is an area to pay attention to and the photo below shows a good example of cable fraying and what may happen if regular detailed inspection and maintenance is not performed.

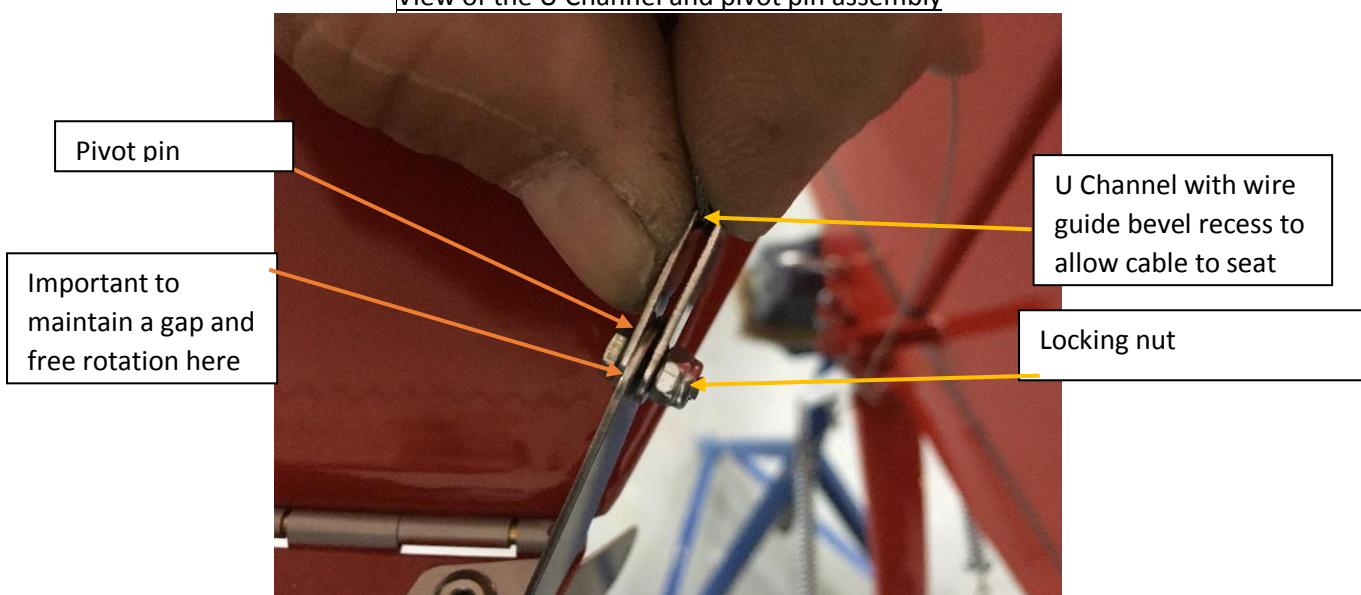
This example illustrates the cable being forced through a 90 degree change over a short distance and that if the pivot point is seized there will be an angular movement of the cable each time the trim is operated ... this will, and has, work hardened (fatigued) the individual strands which has eventually, albeit after many cycles, led to cable failure.

The elevator trim cable is part of the 100 hour inspection and lubrication schedule for the aircraft, this SB is to remind all owners to comply with this and make additional inspections if deemed fit or the aircraft is operated/stored in a particularly harsh environment.

The initial aircraft build and sign off of the trim cable crimping along with the U channel and pivot pin assembly will affect the long term correct and safe operation of the whole unit. Your inspector should consult EuroFOX Aviation if not completely familiar with the assembly techniques.



View of the U Channel and pivot pin assembly



Inspection and lubrication method:

1. Ensure the U clamp has sufficient clearance to allow the assembly to freely rotate around the pivot pin
2. Ensure the pivot pin nut is not tightened so as to reduce the clearance in the U channel which restricts movement
3. Ensure on initial build that the crimp in the stainless wire is not too close to the U bracket and the U channel is free from any burrs where the 1mm wire locates inside the bevelled end.
4. Keep the pivot pin assembly free from dirt, debris and any corrosion by using a suitable grease lubricant or ACF 50
5. Ensure that the 1mm cable ends (loops) are inspected for fraying and replaced if there is any evidence of such

Certification: Owner inspection satisfactory and logbook entries quoting the SB number and compliance to this SB on annual inspections.

Tools or materials required. Mark one eyeball and suitable lubrication. If any new parts are required, please contact EuroFOX Aviation.

Publications affected: None, regular inspection and lubrication of this area already listed in the Aeropro and EuroFOX Aviation publications.

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