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Airworthiness Alert 2020-4

ASK 21 Tailplane Mounting Bolt and Safety Pin

Overview

One Aircraft Defect Report (ADR) and one SOAR Operational Report has been received within the last month detailing two separate occurrences of a ASK 21 tailplane mounting bolt working loose. One occurrence led to an unnerving experience for two pilots as the defect was discovered in flight, rather than at the Daily Inspection and or the pre-flight inspection. It is baffling after so many years of reliable service that this occurrence on this type was reported twice in such a short period.

Investigation

Both investigations stated the following:

- a. The tailplane rigging was carried out in accordance with accepted and approved methods and by experienced members.*
- b. Both aircraft had undergone an annual 'Form 2' inspection within the previous two months, and both had multiple Daily Inspections recorded since the aircraft had been returned to service.*
- c. Both aircraft had safety spring loaded safety pins which were described as 'engaged, but loose in the slot'.*
- d. The mounting bolt and spring-loaded safety pin condition was described as 'gritty' and covered in foreign matter.*
- e. Both had their tailplane and access hole taped after rigging.*

Whilst the exact cause has not been determined, it is considered possible that either:

- a. The mounting bolt was not done up securely after rigging and the tailplane was held in place by the gap seal tape until the tape started to fail, or*
- b. There was an amount of material in the mounting bolt slots / detents that prevented the safety pin from engaging properly, or*
- c. The tape over the access hole was applying pressure on the safety pin to prevent it from engaging fully, or*
- d. The safety pin has become deformed through abuse or misapplication and is no longer applying sufficient force to prevent rotation of the mounting bolt. The spring-loaded safety pin on one of the affected gliders has since been 'worked' to engage with greater force.*
CAUTION: Continual forced bending of the safety pin will lead to fracture of the safety pin.

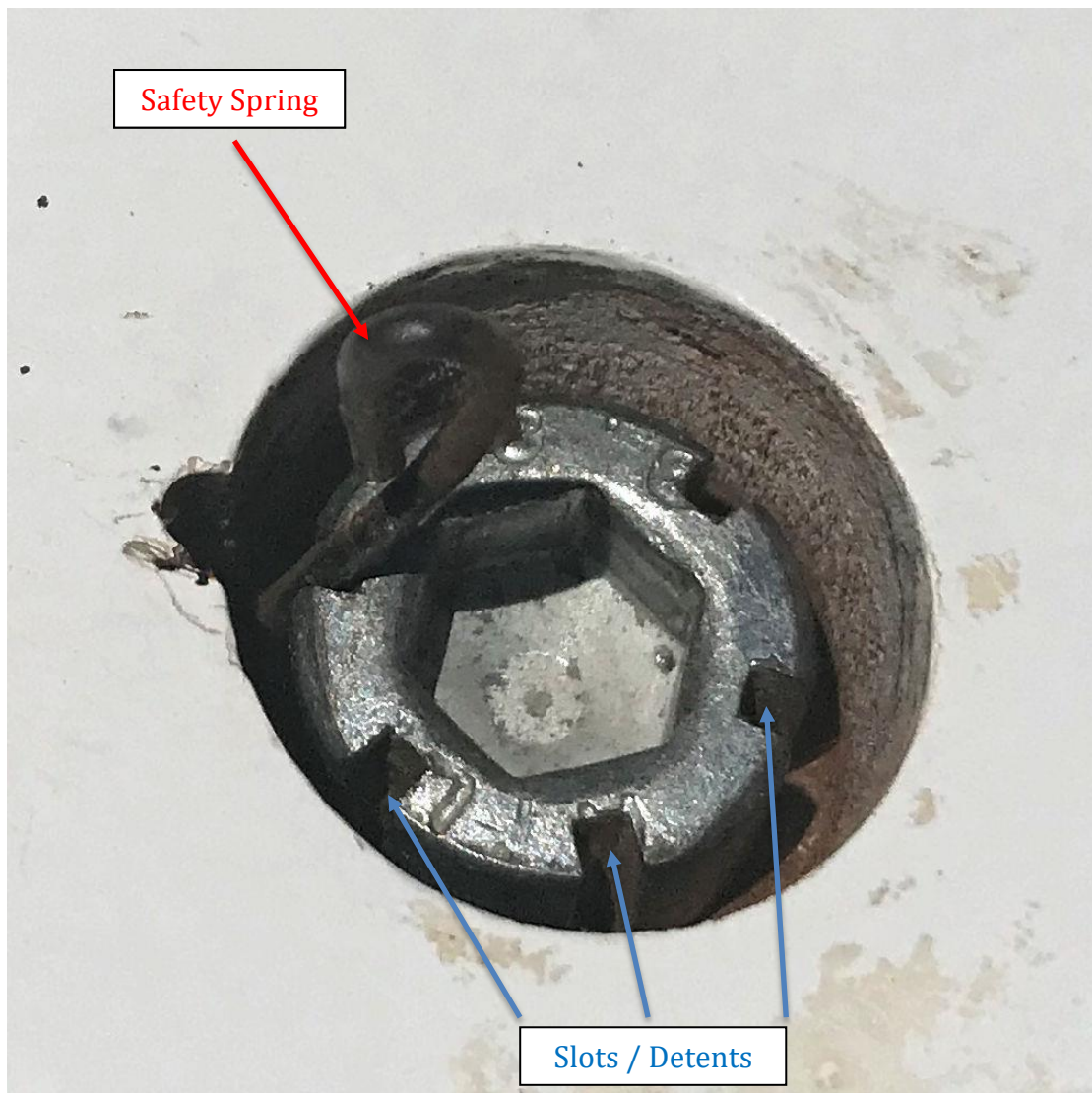


Figure 1: Tailplane Mounting Bolt and Safety Spring

Recommendation/Action

Daily Inspection: Be alert! Do not fall into complacency with an attitude 'it flew OK yesterday, it will be OK today'. Be vigilant and thorough with the checks. The daily inspector should be aware this occurrence is a possibility and ensure the mounting bolt can and has become loose under certain conditions.

The ASK 21 Flight Manual states for the daily inspection:

'Check tailplane for correct assembly, for correct engagement.
Elevator and actuator condition, free movement or play'

The daily inspector and the pilot performing the pre-flight inspection must use suitable inspection methods and techniques to satisfy the DI inspector / pilot the tailplane is attached as per the aircrafts flight manual.

Rigging: When rigging, it is recommended all components are clean, the mounting bolt is screwed in tightly as per the aircraft instructions and the spring-loaded safety pin has **positively** snapped into position.

The ASK 21 Flight Manual states when rigging:

“NOTE: If your glider uses automatic elevator connection: after cleaning and lightly greasing the plug in elevator connection, the tailplane is fitted onto the fin from the front; both elevator panels into their connectors simultaneously. Then the tailplane is pushed back until the Allen bolt at the leading edge can be screwed in; this should be screwed in tightly until the spring- loaded safety pin snaps out over the screw head as far as the socket”.

*Any tape covering the mounting bolt access hole should be arranged so the **tape does not hinder the spring in its function**. It is suggested that a cover for the mounting bolt access hole be fabricated from thin clear plastic sheet. The cover should have a slot cut in it so that the spring is free to function. This cover should be held in place with tape around the edges of the cover.*

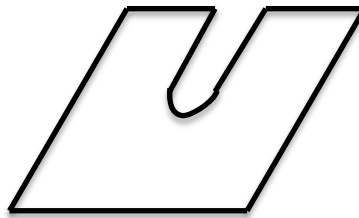


Figure 2: Sketch of transparent tailplane mounting bolt cover

In summary, all pilots and instructors must assure themselves the gliders tailplane is correctly rigged, the mounting bolt is fully ‘home’ and the spring safety catch is fully engaged in its slot.

Reporting:

Notify the GFA in the usual manner by submitting an online ADR or Defect Report if maintenance action is required.

Dennis Stacey
GFA CTO
22/10/2020