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## SERVICE BULLETIN

SB No. AX2010

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3 PAGES.

**TITLE**                    **AX-3 and AX2000 Aileron Control System:**  
i)        **Aileron Return Pulley Bracket.**  
ii)       **Batten Extraction loops.**

**CLASSIFICATION** **This service bulletin has been classified as mandatory by the CAA.**

**COMPLIANCE**        **Within Next 25 hours for aircraft that have completed more than 200 flights or 400 hours.**

**APPLICABILITY**    **Cyclone AX-3 and AX 2000 aircraft .**

### **INTRODUCTION**

During taxiing the aileron return pulley bracket failed and detached from the fuselage. It failed close to the mounting hole where it is bolted to the fuselage keel.

An inspection of an AX2000 aircraft showed that it was feasible for the root batten extraction cord loop to engage over the aileron horn.

Aileron control would be affected in both cases. The AX3 and AX2000 can be flown by rudder only, but obviously restriction or partial disconnection of a primary control system is potentially hazardous.

#### **i) Circumstances of return pulley bracket failure:**

The AX-3 aircraft involved had flown 650 hours of training.

Vertical vibration during taxiing on rough ground was probably responsible for causing the bracket to crack. The mass of the aileron pulley moving up and down bends the pulley bracket. The bracket is made from two pieces of light alloy strip and it is necessary for both to fail before it will detach from the fuselage.

This is the first reported case of this problem over the production run of AX3 and AX2000 aeroplanes. The bracket is produced straight and then bent in situ to line up with the aileron horns. This initial bend across the mounting hole may have work

hardened the material and/or started a crack. Production procedures will be changed to pre-bend the bracket away from the hole, before installation.

The consequences of failure in flight would be to lose perhaps half the aileron authority. If it happened, it would be advisable to fly at moderate speeds to guard against flutter.

The bracket must be removed and inspected for cracking by close visual examination or dye penetrant paying particular attention to the mounting hole area.

A simple modification AX136 has been designed to prevent vertical vibration of the pulley bracket. This modification should be installed when replacing or renewing the pulley bracket.

The modification adds a plastic buffer between the pulley bolt and the fuselage keel. The plastic buffer is tie-wrapped to the keel, so preventing vertical movement of the pulley bracket.

## **ii) Circumstances of batten retention cord fouling.**

The possibility of the batten extraction cord loop falling over the aileron horn was noted on inspection of an AX2000.

This has never happened to our knowledge. However if it did, the aileron control could be restricted.

## **ACTION**

### **i) Return Pulley Bracket:**

Referring to fig 1,

- 1) Unlace the rear fuselage top rear covering and detach aileron top cables.
- 2) Detach the aileron return cables from the aileron lower horns.
- 3) Remove the castle nut and split pin from the elevator relay arm bracket and remove the relay arm. Be sure to keep the plastic bearing washers from the relay arm sides.
- 4) Remove the vertical bolt securing the aileron return pulley bracket.
- 5) Remove the pulley from the bracket, inspect pulley for condition.
- 6) Inspect bracket for cracks especially at the mounting hole. Replace if any found.
- 7) Refit pulley with M6 (early type) or M8 (later) 35mm long bolt and PEP-6-001 drilled buffer moulding.
- 8) Refit return bracket, noting that the bolt is installed head downwards and the nut is safetied with a ring to prevent the bolt head fouling the relay arm.
- 9) Secure the buffer to the keel with the tie wrap provided.
- 10) Refit relay arm and washers, castle nut and new stainless steel split pin.
- 11) Reattach aileron return cable to aileron horns.
- 12) Reattach the rear fuselage covering.
- 13) Reattach the aileron top cables.
- 14) Inspect and check operation of all controls for full and free movement in the correct sense.

**ii) Batten extraction loop.**

The extraction cord loop on the batten end adjacent to the aileron horn must be shortened so that it is impossible for it to engage over the aileron horn, at any position of the aileron movement.

**INSPECTION.**

This service bulletin requires some work on the primary control system not normally designed for rigging/derigging and so **MUST** be signed off by a Factory or BMAA inspector. The aircraft technical log must be signed “SBAX2010 (aileron system) carried out.”

ISSUED BY: W.G.BROOKS

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