

## MICROLIGHT AIRWORTHINESS APPROVAL NOTE

MAAN NO: 2298

ISSUE 1

DATE: 9 NOVEMBER 2010

**TITLE:** Microlight Airworthiness Approval Note 2298: inspection and replacement of turnbuckles in the aileron control lines.

**APPLICABILITY:** Raj Hamsa X'Air and X'Air Falcon

**STAGE:** AUTHORISATION

### 1. INTRODUCTION

The X'Air and X'Air Falcon are amateur built microlight aeroplanes described in Microlight HADS HM01 and HM05 respectively. The BMAA is responsible for continued airworthiness.

This MAAN authorises the issue of a service bulletin in response to in-service experience of this type. The service bulletin relates to inspection and replacement of aileron turnbuckles. The bulletin is appended to this MAAN.

### 2. BASIS FOR APPROVAL

The basis for approval of these modifications is BCAR Section S issue 5. Paragraphs affected are S455, S605, S619, S626, S627, S629, S685 and S689.

### 3. DESCRIPTION

It was reported to the BMAA by one of its inspectors that an aileron turnbuckle on an X'Air was found to have witness marks from the tooling / extrusion process. One mark appeared to have developed into a crack. Once the turnbuckle was removed and inspected it could be clearly seen that the crack went all the way through and for the entire length of the thread.

All the turnbuckles were different, as the tolerances seemed to vary considerably. The cracked one had a taper that made the threaded area very thin. This is from the manufacturing process and not from any wear or damage. New turnbuckles, sourced directly from X'Air, also have the manufacturing marks on them.

The machine in question has only 190 hours flight time. The aileron is a cable closed loop system and, although the loads are relatively light, a failure would lead to both ailerons becoming uncontrolled.

BMAA Service Bulletin 2298, appended to this MAAN, introduces the following for UK X'Air and X'Air Falcon aircraft:

- An inspection of all three aileron turnbuckles.
- Replacement of any found to have cracks or deep tooling marks.

### 4. TECHNICAL INVESTIGATION

When the defect was first reported an Airworthiness Alert was issued to all UK owners of X'Airs and X'Air Falcons. Following this no other cracked turnbuckles have subsequently been reported to the BMAA, although this is based on a response rate of only 12%. However some deeply marked examples have come to light and these have been replaced.

This service bulletin formalises the inspection schedule.

5. FLIGHT TESTING

No flight-testing is required.

6. MANUALS, PLACARDS AND INFORMATION

A copy of this service bulletin must be retained with the Aircraft Manual.

7. NOISE CERTIFICATION

Not affected.

8. RADIO

Any radio installation is not affected.

9. INSPECTION

To the service bulletin appended to this MAAN and HADS HM01 or HM05 in its latest version.

10. WEIGHT AND BALANCE

Not affected.

11. SIGNIFICANT FEATURES AND LIMITATIONS

See section 3. All limitations remain unchanged.

12. CERTIFICATION

I authorise issue of BMAA Service Bulletin 2298 Issue 1, as appended to this MAAN.

Prepared by:

Authorised by:

A P Jones  
Design Approval Engineer  
British Microlight Aircraft Association

B J Syson  
Chief Technical Officer  
British Microlight Aircraft Association

Initial Distribution.

MAAN (including SB):

Mr A Love, CAA Aircraft Projects Dept (Gatwick)  
Mr N Rockhill, CAA Southern Regional Office (Gatwick)  
CAA Applications and Approvals Section (Gatwick)  
Mr G Salter, The Wessex Light Aeroplane Company  
X' Air and X' Air Falcon post approval files  
MAAN File 2298

Service bulletin:

All UK X' Air and X' Air Falcon registered owners  
Malcolm McBride, Light Aircraft Association



## BRITISH MICROLIGHT AIRCRAFT ASSOCIATION SERVICE BULLETIN

**Reference:** BMAA Service Bulletin 2298 Issue 1  
**Title:** Inspection and replacement of aileron turnbuckles  
**Applicability:** UK X' Air and X' Air Falcon aircraft  
**Author:** Adrian Jones, Design Approval Engineer, BMAA  
**Effective date:** 9 November 2010  
**Classification:** Strongly recommended

### 1. Introduction

It was recently reported by one of our inspectors that an aileron turnbuckle on an X' Air had witness marks from the tooling / extrusion process. One mark appeared to have developed into a crack. Once the turnbuckle was removed and inspected it could be clearly seen that the crack went all the way through and for the entire length of the thread. See the accompanying images.

All the turnbuckles were different, as the tolerances seemed to vary considerably. The cracked one had a taper that made the threaded area very thin. This is from the manufacturing process and not from any wear or damage. New turnbuckles, sourced directly from X'Air, also have the manufacturing marks on them.

The aircraft in question has only 190 hours flight time. The aileron is a cable closed loop system and, although the loads are relatively light, a failure would lead to both ailerons becoming uncontrolled.

This service bulletin introduces an annual inspection and a recommendation that any cracked or deeply marked turnbuckles are replaced.

### 2. Aircraft Affected by this Service Bulletin

UK registered X' Air and X' Air Falcon aircraft.

### 3. Implementation of this Service Bulletin

The three turnbuckles in the aileron control cables must be inspected within 2 months of the effective date of this service bulletin and then at least annually.

To inspect the turnbuckles they should be clean and well illuminated. Check the entire surface of each tapered end of both turnbuckles.

Look for any significant tooling marks and check each mark for a possible crack propagating from the end. If a crack is suspected or there are deep tooling marks remove the turnbuckle from the aircraft and then disassemble the suspect end for a closer look. Hold it up to a bright light to help identify a crack, and to check whether it penetrates right through the thread.

Any cracked turnbuckles must be replaced before the next flight. Also any that have deep tooling marks must be replaced. Replacement turnbuckles must be sourced from the Wessex Light Aeroplane Company.

Refit the turnbuckles in accordance with the X' Air Falcon UK Build Manual and the control deflections in the HADS. Ensure the turnbuckles are appropriately wire-locked and the control system tension is satisfactory. Consider recording the aileron control deflections before disconnection. If the turnbuckles have been removed and reassembled they must be inspected by a BMAA Inspector with category B (3-axis) authorisation before further flight.

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4. Who may Implement this Service Bulletin

The owner, if he considers himself competent, or a BMAA Inspector may perform the inspection part of this service bulletin. However if the turnbuckles have been removed and reassembled the aileron control system must be inspected by a BMAA Inspector with category B (3-axis) authorisation before further flight.

5. Documentation and Manuals

After completion of this service bulletin an entry must be made, signed and dated in the airframe logbook by the owner stating that:

**“BMAA Service Bulletin 2298 satisfactorily completed.”**

Record in the airframe logbook if any of the turnbuckles were replaced, or if any of the turnbuckles had minor tooling marks but were not replaced.

This service bulletin must be kept with the aircraft manual.

6. Contact Details

BMAA  
Bullring  
Deddington  
BANBURY  
OX15 0TT  
01869 336006  
cto@bmaa.org

The Wessex Light Aeroplane Company  
7 Fullands Avenue  
TAUNTON  
Somerset  
TA1 3DE  
01823 256258  
gordon@xair.flyer.co.uk

7. Images

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