Civil Aviation Authority

PROPOSED AIRWORTHINESS DIRECTIVE

Number: 2007

Issue date: 19 May 2023

In accordance with the CAA Continuing Airworthiness Procedures, the issuance of an Airworthiness Directive (AD) is proposed which will be applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

Type Approval Holder's Name:	**Type/Model Designation(s):**
BAE SYSTEMS (OPERATIONS) LTD	BAe 146 and AVRO 146-RJ aeroplanes

Effective Date:	**[TBD - standard: 14 days after AD issue date]**
TCDS:	EASA.A.182 & BA29
Foreign AD (if applicable):	Not applicable
Supersedure:	This AD supersedes AD G-2022-0018 dated 18 October 2022

ATA 32 – Landing Gear – Main Landing Gear Sidestay Outer Link (LH & RH) – Inspection and Lubrication

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Manufacturer(s):

BAE Systems (Operations) Ltd, British Aerospace plc, British Aerospace (Commercial Aircraft) Ltd, British Aerospace (Operations) Ltd, British Aerospace Regional Aircraft Ltd and British Aerospace Regional Aircraft trading as Avro International Aerospace.

Applicability:

BAe 146 and AVRO 146-RJ, aeroplanes, all models, all serial numbers.

Note: The Required Actions defined in this AD must also be completed for any used, BAe 146 and AVRO 146-RJ main landing gear (MLG) Sidestay Outer Links before being reinstalled on an affected aeroplane.

Definitions:

For the purposes of this AD, the following definitions apply:

The ASB**:** BAE Systems (Operations) Ltd ASB.32-A189 Revision 1 dated 13 March 2023 Title: Landing Gear – Main Landing Gear Sidestay – Inspection of the Outer Link (LH and RH) for cracks and dimensional checks.

Unpaved runway modification Service Bulletins: BAE Systems (Operations) Ltd: MSB 53-217-61122A, 53-223-60809G, 53-227-60877A, 53-232-60809H and 53-248-61147A.

Reason:

During routine maintenance, cracks have been found on the shoulders of the Main Landing Gear (MLG) Sidestay Outer Link. Cracking leading to failure of the Sidestay Outer Link, if not detected and corrected, may result in Main Landing Gear collapse, which could result in runway departure.

This issue was previously addressed by BAE Systems (Operations) Ltd ISB 32-144. Consequently, CAA published CAA AD 005-12-1996. Following further events and investigation, BAE Systems (Operations) Ltd issued ISB 32-156. The applicability of this requirement was limited to Sidestay Outer Links identified in Messier-Dowty SB 146-32-147, dated 29 May 2001. Consequently, CAA issued CAA AD 004-05-2001, superseding AD 005-12-1996, requiring revised inspection requirements.

Since AD 004-05-2001 was issued, a further occurrence was reported, where the affected parts had been subject to compliance with the terminating action identified in AD 004-05-2001. Consequently, BAE Systems (Operations) Ltd issued ASB.32-A189, at initial issue, to provide inspection and dimensional measurement instructions, to address the revised applicability of this potential unsafe condition. AD G-2022-0018 was issued to mandate the inspection requirements of ASB.32-A189, initial issue. This was considered to be an interim action. Since that time, further investigation of the causes of the cracking has been undertaken and as a result of the findings, BAE Systems (Operations) Ltd have reissued ASB.32-A189, at Revision 1 to provide details of:

- Revised repeat inspection requirements (with a shorter interval than that required by AD G-2022-0018).
- A revised one-off dimensional tolerance check, which is now included in this AD
- A calendar backstop on Maintenance Review Board Report (MRBR) 32-8 lubrication task.

For the reasons described above, this AD supersedes the requirements of AD G-2022-0018 and is issued to revise the interval of the repetitive inspection requirement, add the requirement of a revised one-off dimensional tolerance check and add a calendar backstop to the Maintenance Review Board Report (MRBR) 32-8 lubrication task.

It is anticipated that a subsequent revision to the ASB, will be made by BAE Systems (Operations) Ltd, covering instructions addressing repetitive inspections, where aeroplanes have been modified to operate from unpaved/gravel runways.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously in accordance with ASB.32-A189.

Note: Prior accomplishment of inspection requirements performed in accordance with ASB.32-A189 original issue, paragraph 2.C.(1) are acceptable to satisfy the initial inspection as required by this AD. Noting at the original issue of the Service Bulletin, the detailed inspection required the use of a x5 magnification or greater. Prior accomplishment of the one-off dimensional tolerance checks given in ASB.32-A189 original issue **do not** satisfy the one-off dimensional tolerance check required by ASB.32-A189 Revision 1.

Inspections:

(1) Within 28 days of the effective date of this AD or within 500 flight cycles since the performance of the last inspection in accordance with ASB.32-A189 original issue, paragraph 2.C.(1), (whichever occurs first) perform the inspection per ASB.32-A189 Revision 1 per paragraph 2.C.(1). Thereafter repeat every 500 flights or 6 months (whichever occurs first).

(2) Additional steps, (which are not addressed in the ASB), are required for aeroplanes modified to operate from unpaved runways and modified in accordance with applicable and relevant instructions given in, unpaved runway modification Service Bulletins (as listed under definitions). These aeroplanes require, prior to inspection, local paint strip in accordance with Safran Landing Systems: CMM 32-10-36, 32-10-65 or 32-10-73 (as appropriate) Repair paragraph 2.B (as defined in ASB, Drawing 3). Following inspection per paragraph (2) restoration/repair is to be performed in accordance with Safran Landing Systems: CMM 32-10-36, 32-10-65 or 32-10-73 (as appropriate) Repair paragraph 3.A (as defined in the ASB, Drawing 3). The gravel paint is to be reapplied in accordance with BAE Systems (Operations) Ltd MSB 53-217-61122A, 53-223-60809G, 53-227-60877A, 53-232-60809H or 53-248-61147A, as applicable and appropriate.

One-off dimensional check, airworthiness assessment and reporting:

(3) Within 3 months of the effective date of this AD perform the dimensional checks, the assessment of dimensional check results, reporting and all applicable instructions in accordance with the ASB paragraphs: 2.C.(2) para (a) through (d). If applicable, all paint and cadmium plating removal and subsequent restoration, is required to be performed as given in ASB.32-A189 Revision 1 Drawing 3.

(4) Additional steps, (which are not addressed in the ASB), are required for aeroplanes modified to operate from unpaved runways and modified in accordance with applicable and relevant instructions given in, unpaved runway modification Service Bulletins (as listed under definitions). These aeroplanes require, prior to dimensional check, local paint strip in accordance with Safran Landing Systems: CMM 32-10-36, 32-10-65 or 32-10-73 (as appropriate) Repair paragraph 2.B (as defined in ASB, Drawing 3). Following dimensional check per paragraph (3) restoration/repair is to be performed in accordance with Safran Landing Systems: CMM 32-10-36, 32-10-65 or 32-10-73 (as appropriate) Repair paragraph 3.A (as defined in the ASB, Drawing 3). The gravel paint is to be reapplied in accordance with BAE Systems (Operations) Ltd MSB 53-217-61122A, 53-223-60809G, 53-227-60877A, 53-232-60809H or 53-248-61147A, as applicable and appropriate.

Note: ASB.32-A189 Revision 1 Appendix 2 is to be completed, recording the results of the dimensional checks. The completed Appendix 2 is to be sent to BAE Systems (Operations) Ltd as detailed in Appendix 2. Additionally, if the results of the dimensional checks are such that the part cannot be returned to service, in accordance with the dimensional limits provided in Appendix 2 then Safran Landing Systems must additionally be contacted to provide further instructions in association with BAE Systems (Operations) Ltd.

Lubrication:

(5) Within 3 months of the effective date of this AD perform the lubrication of the MLG sidestay outer link pivots, in accordance with ASB.32-A189 Revision 1 paragraph: 2.C.(3). Thereafter repeat every 500 flights or 6 months, (whichever occurs first).

Corrective actions:

(6) In the case of discrepancies (i.e. cracks or other *adverse findings**) found during accomplishment of the inspection task or the dimensional checks, as required by paragraphs (1) and (3) of this AD, then before further flight, install a replacement Sidestay Outer Link in accordance with applicable BAE Systems (Operations) Ltd Aircraft Maintenance Manual.

Note: Prior to installation of any used replacement part, the part must have been inspected in accordance with paragraph (1) of this AD and a one-off dimensional check**,** airworthiness assessment and reporting performed in accordance with paragraph (3) of this AD. The part must be confirmed to be free of discrepancies/*adverse findings**. Parts that are new, i.e. zero hours/cycles Time Since New (TSN), do not require this prior inspection and dimensional check.

**Adverse findings* include, cases where the results of dimensional checks per ASB.32-A189 Revision 1 Drawing 3, requires the part to be removed from service and BAE Systems (Operations) Ltd and Safran Landing Systems to be contacted for further assessment.

Reference Publications:

BAE Systems (Operations) Ltd Alert Service Bulletin ASB.32-A189, Initial issue, dated 16 September 2022. Title: Landing Gear – Main Landing Gear Sidestay – Inspection of the Outer Link (LH and RH) for cracks and dimensional checks

BAE Systems (Operations) Ltd Alert Service Bulletin ASB.32-A189 Revision 1 dated 13 March 2023 Title: Landing Gear – Main Landing Gear Sidestay – Inspection of the Outer Link (LH and RH) for cracks and dimensional checks.

BAE Systems (Operations) Ltd Inspection Service Bulletin ISB.32-156, Revision 0, dated 11 December 1996. Title: Main Landing Gear – Inspection of the Outer Link for cracks.

BAE Systems (Operations) Ltd Inspection Service Bulletin ISB.32-156, Revision 1, dated 3 July 2001. Title: Landing Gear – Main Landing Gear Sidestay – Inspection of the Outer Link for cracks (LH and RH).

BAE Systems (Operations) Ltd Modification Service Bulletin MSB 53-217-61122A, Revision 7, dated 28 January 2016. Title: Fuselage – Introduction of changes to enable the retrospective embodiment of existing mods for operation from unpaved runways.

BAE Systems (Operations) Ltd Modification Service Bulletin MSB 53-223-60809G, Initial issue, dated 24 June 2010. Title: Introduction of changes to enable operation from unpaved runways with the Avro 146-RJ100 series aircraft.

BAE Systems (Operations) Ltd Modification Service Bulletin MSB 53-227-60877A, Initial issue, dated 28 June 2010. Title: Introduction of changes to enable operation from unpaved runways with BAE 146-100 Series aircraft.

BAE Systems (Operations) Ltd Modification Service Bulletin MSB 53-232-60809H, Revision 3, dated 17 December 2013. Title: Fuselage – Introduction of airframe protection for unpaved runway operations (for 146 series).

BAE Systems (Operations) Ltd Modification Service Bulletin MSB 53-248-61147A, Revision 4, dated 24 April 2023. Title: Fuselage – Introduction of existing approved changes to part-provision an aircraft for operation from unpaved runways.

Safran Landing Systems SB 146-32-179 dated 10 March 2023

BAE Systems (Operations) Ltd Maintenance Review Board Report, 32-8

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. This PAD will be closed for consultation on 16 June 2023.

2. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this PAD, and which may occur, or have occurred on a product, part or appliance not affected by this PAD, can be reported to the CAA aviation safety reporting system Occurrence reporting | Civil Aviation Authority (caa.co.uk). This may include reporting on the same or similar components, other than those covered by the design to which this PAD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.

3. Enquiries regarding this PAD should be referred to: Continued.Airworthiness@caa.co.uk

4. For any questions concerning the technical content of the requirements in this PAD, please contact: BAE Systems (Operations) Ltd, Customer Technical Support Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, The United Kingdom. E-mail: raengliaison@baesystems.com