


EASA	AIRWORTHINESS DIRECTIVE	
	<p>AD No.: 2010-0081R1</p> <p>Date: 27 February 2014</p> <p>Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.</p>	
<p>This AD is issued in accordance with EU 748/2012, Part 21.A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p>		
<p>Design Approval Holder's Name: AIRBUS</p>		<p>Type/Model designation(s): A330 and A340-200/-300 aeroplanes</p>
<p>TCDS Number: EASA.A.004 and EASA.A.015</p>		
<p>Foreign AD: Not applicable</p>		
<p>Revision: This AD revises EASA AD 2010-0081 dated 27 April 2010, which superseded EASA AD 2007-0009 dated 09 January 2007.</p>		
ATA 27	<p>Flight Controls – Elevator Servo Control Solenoid Valve O-ring Seals – Replacement</p> <p style="text-align: center;">&</p> <p>Airplane Flight Manual / Master MEL – Temporary Revision</p> <p style="text-align: center;">&</p> <p>Elevator Servo Controls – Modification</p> <p style="text-align: center;">&</p> <p>Primary and Secondary Computers – Modification</p>	
<p>Manufacturer(s):</p>		<p>Airbus (formerly Airbus Industrie)</p>
<p>Applicability:</p>		<p>Airbus A330-201, A330-202, A330-203, A330-223, A330-243, A330-301, A330-302, A330-303, A330-321, A330-322, A330-323, A330-341, A330-342 and A330-343 aeroplanes, all manufacturer serial numbers.</p> <p>Airbus A340-211, A340-212, A340-213, A340-311, A340-312 and A340-313 aeroplanes, all manufacturer serial numbers.</p> <p>The requirements of paragraphs (1), (2) and (4) of this AD are not applicable to Airbus A330-200 aeroplanes on which Airbus modification 53969 or 54833 has been embodied in production.</p> <p>The requirements of paragraphs (3.1) and (8) of this AD are not applicable to:</p> <ul style="list-style-type: none"> - Airbus A330-200/-300 aeroplanes on which both Airbus modifications 53468 and 55697 have been embodied in production, and - Airbus A340-200/-300 aeroplanes on which both Airbus modifications 55879 and 55697 have been embodied in production.

Reason:

This AD deals with the two following points, A and B:

A. Case of an elevator blocked in down position due to two independent failures one of which is hidden:

Each elevator is controlled by two servo controls. In normal operation:

- one servo control in active mode controlled by PRIM 1 (Green servo control),
- one servo control in damping mode (Yellow or Blue servo control) monitored by PRIM 2.

Change from active mode to damped mode is obtained by means of a mode selector which is controlled by two identical solenoid valves housed on the servo control. The sealing of each solenoid valve is ensured by four O-ring seals.

During pre-flight control checks, the flight crew of an A330-200 aeroplane observed that one of the elevators was blocked in down position, the ECAM screen displaying "F/CTL PRIM 1 PITCH FAULT".

This condition was due to two independent failures, one of which was dormant, which occurred on one of the elevators.

Investigations revealed that the origin of the elevator malfunction was due to the inability of the Yellow servo control to switch to active mode.

This inability:

- was caused by an internal hydraulic leak due to the deterioration of an O-ring seal on a solenoid valve,
- was not detected by the PRIM 2 computer nor announced to the flight crew.

B. Incorrect Part Number (P/N) for solenoid valve O-ring seals in IPC:

An incorrect O-ring seal Part Number (P/N) shown in Illustrated Parts Catalogue (IPC) 27-34-51-1 could have led to the installation of O-ring seals incompatible with the hydraulic fluid, causing them to deteriorate.

These conditions, if not detected and corrected, could lead to the loss of an elevator on takeoff and potentially reduce the controllability of the aeroplane.

The aim of EASA AD 2007-0009 was to :

- take over the requirements of DGAC France AD F-2004-158, and
- require the terminating action for § (1), (2) and (4) of this AD by introducing new capped seals on solenoid valves for A330-200 only.

To address this unsafe condition, EASA issued AD 2010-0081, retaining the requirements of EASA AD 2007-0009, which was superseded, and required the embodiment of the latest software standard on all three Flight Control Primary Computers (FCPC) and on both Flight Control Secondary Computers (FCSC), which cancelled the operational requirements of paragraph (3.1) of the AD.

This AD is revised to specify that installation of more recent FCPC software in accordance with Airbus Service Bulletin (SB) SB A330-27-3176 or Airbus SB A330-27-3177 or Airbus SB A340-27-4174 or Airbus SB A340-27-4162 is acceptable to comply with the requirements of paragraph (8.1) of this AD. In addition, the paragraph (9) is updated to list further optional modifications that cancel the operational requirements of paragraph (3.1) and the dispatch restriction requirements of paragraph (3.3) of this AD for those fitted with latest software standard FCPCs and FCSCs.

Further editorial changes have been made to improve the AD readability.

Effective Date:	Revision 1: 06 March 2014 Original issue: 11 May 2010
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <p>(1) For elevator servo controls installed in damping position on A330-200 aeroplanes only:</p> <p>Before the accumulation of 3 000 flight cycles (FC) by the servo control since first installation on an aeroplane, or 3 000 FC since the installation of the solenoid valve on the servo control, or</p> <p>Within 700 flight hours (FH) after 09 October 2004 [the effective date of DGAC France AD F-2004-158], whichever occurs later:</p> <p>replace the O-ring seals installed on the two solenoid valves of each servo control with new O-ring seals in accordance with Airbus All Operator Telex (AOT) A330-27A3129 Revision 01.</p> <p>(2) For spare elevator servo controls which were installed on an A330-200 aeroplane whose O-ring seals were not replaced as required in paragraph (1) of this AD:</p> <p>Before installation on an aeroplane, replace the O-ring seals installed on the two spare servo control solenoid valves with new O-ring seals in accordance with Airbus AOT A330-27A3129 Revision 01.</p> <p>(3) For A330-200, A330-300, A340-200, A340-300 aeroplanes:</p> <p>(3.1) After 09 October 2004 [effective date of AD F-2004-158], amend the Airplane Flight Manual (AFM) to include the operational procedure as specified in Table 1 of this AD, and operate the aeroplane accordingly.</p> <p style="text-align: center;">Table 1 – AFM Operational Procedure</p> <div style="border: 1px solid black; padding: 5px;"> <p>Undetected Elevator Control Loss in case of Dual Failure</p> <p><i>“On ground, before take-off until take-off power thrust setting, apply the following procedure:</i></p> <ul style="list-style-type: none"> • <i>In the case of a F/CTL PRIM 1 FAULT, or F/CTL PRIM 1 PITCH FAULT</i> <p style="margin-left: 20px;"><i>Select the PRIM 1 switch to OFF then ON to perform a FCPC PRIM 1 reset</i></p> <ul style="list-style-type: none"> • <i>If successful</i> <p style="margin-left: 40px;"><i>Perform the normal pre-flight Flight Control check</i></p> <ul style="list-style-type: none"> • <i>If unsuccessful</i> <p style="margin-left: 40px;"><i>Return to the gate and require appropriate maintenance actions.</i></p> <ul style="list-style-type: none"> • <i>In the case of a F/CTL ELEV SERVO FAULT or HYD G SYS LO PR</i> <p style="margin-left: 20px;"><i>Return to the gate and require appropriate maintenance actions”.</i></p> </div> <p>(3.2) The incorporation of Airbus Flight Manual temporary revision (TR) 4.02.00/25 issue 02 (A330) or 4.02.00/40 issue 02 (A340) or inserting a copy of this AD into the aeroplane operations manual and their strict application by the flight crew meets the requirements of paragraph (3.1) of this AD.</p> <p>Note 1: These AFM TRs have been introduced into the general revision of the AFM.</p>

	<p>(3.3) After 09 October 2004 [effective date of AD F-2004-158]:</p> <p>Introduce into the aeroplane Minimum Equipment List (MEL) the following temporary revisions relevant to the TC holder's MMEL:</p> <ul style="list-style-type: none"> - SECTION 01: A330 MMEL TR No. 01-27/01K issue 01 - SECTION 01: A330 MMEL TR No. 01-27/02K issue 01 (WV 50 series A330 fitted with Rudder Fly-by-wire) - SECTION 01: A340 MMEL TR No. 01-27/01M issue 01 - SECTION 01: A340 MMEL TR No. 01-27/02M issue 01 (WV 50 series A340 fitted with Rudder Fly-by-wire), <p>and comply with the instructions contained therein.</p> <p>Note 2: These MMEL TRs have been introduced into the general revision of the MMEL.</p> <p>(4) For all A330-200 aeroplanes which have been modified in accordance with the instructions of AOT A330-27A3129 and which have not been modified in accordance with the instructions of AOT A330-27A3129 Revision 01:</p> <p>(4.1) before next flight after 09 October 2004 [effective date of DGAC France AD F-2004-158], check the Part Numbers (P/N) of the seals installed on the solenoid valve of the servo control of the elevator in damping position.</p> <p>(4.2) If the seals installed have P/N MS28775-XXX or a P/N that cannot be identified, replace them before the next flight by the following seals:</p> <ul style="list-style-type: none"> • IPC 27-34-51-1 item 130: NAS1611-011 or NAS1611-011A • IPC 27-34-51-1 item 140: NAS1611-012 or NAS1611-012A • IPC 27-34-51-1 item 150: NAS1611-013 or NAS1611-013A <p>(5) For A330-200, A330-300, A340-200, A340-300 aeroplanes equipped with elevator servo controls P/N SC4800-2/-4/-7/-8 or SC4800-7/-8 modified into SC4800-7A/-9 by embodiment in service of Airbus SB A340-27-4083 or SB A330-27-3076:</p> <p>Within 1 400 FH after 09 October 2004 [the effective date of DGAC France AD F-2004-158], replace the O-ring seals installed on the two solenoid valves of each elevator servo control:</p> <ul style="list-style-type: none"> - in damping position (except for A330-200 aeroplanes which have to comply with paragraph (1) of this AD), - in active position, <p>with new O-ring seals P/N NAS1611-XXX or P/N NAS1611-XXXXA, in accordance with the instructions of Airbus SB A330-27A3131 or SB A340-27A4130.</p> <p>(6) For the spare elevator servo controls SC 4800-2/-4/-7/-8 or SC4800-7/-8 modified into SC4800-7A/-9 by embodiment in service of Airbus SB A340-27-4083 or SB A330-27-3076:</p> <p>Before installation on an aeroplane, replace the O-ring seals installed on the two spare servo control solenoid valves with new O-ring seals P/N NAS1611-XXX or P/N NAS1611-XXXXA in accordance with the instructions of Airbus SB A330-27A3131 or SB A340-27A4130.</p> <p>(7) Modification of elevator servo controls installed on A330-200 aeroplanes: No later than 30 June 2008, modify the four elevator servo-controls in accordance with the instructions of Airbus SB A330-27-3134.</p>
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	<p>(8) Within 24 months after 11 May 2010 [the effective date of this AD at original issue], accomplish the actions as specified in paragraphs (8.1) and (8.2):</p> <p>(8.1) Modify the three FCPCs in accordance with the instructions of Airbus SB A330-27-3144 or Airbus SB A330-27-3148 or Airbus SB A340-27-4144 or Airbus SB A340-27-4148, as applicable to the aeroplane model, and</p> <p>(8.2) Modify both FCSCs in accordance with the instructions of Airbus SB A330-27-3146 or Airbus SB A330-27-3145 or Airbus SB A340-27-4146 or SB A340-27-4145, as applicable to the aeroplane model.</p> <p>(9) Modification of an aeroplane in accordance with the instructions of 2 (two) modification SBs as listed in Appendix - Table 2 of this AD, as applicable to aeroplane type, cancels the operational requirements of paragraph (3.1) of this AD and the dispatch restriction requirements of paragraph (3.3) of this AD for that aeroplane.</p> <p>(10) Installation of modified servo-controls at all positions on A330-200 aeroplanes in accordance with the instructions of Airbus SB A330-27-3134 or Airbus SB A330-27-3136, as applicable to aeroplane type, cancels the requirements of paragraphs (1), (2) and (4) of this AD.</p> <p>(11) Modification of an aeroplane by installation of FCPC software standard in accordance with the instructions of Airbus SB A330-27-3176 (Airbus modification 201654) or Airbus SB A330-27-3177 or Airbus SB A340-27-4174 or Airbus SB A340-27-4162, as applicable to aeroplane type, is acceptable to comply with the requirements of paragraph (8.1) of this AD for that aeroplane.</p>
Ref. Publications:	<p>Airbus All Operator Telex A330-27A3129 dated 24 June 2004.</p> <p>Airbus All Operator Telex A330-27A3129 Revision 01 dated 16 July 2004.</p> <p>A330 AFM TR 4.02.00/25 issue 02 approved on 02 September 2004.</p> <p>A340 AFM TR 4.02.00/40 issue 02 approved on 02 September 2004.</p> <p>A330 MMEL TR N° 01-27/01K issue 01 approved on 06 September 2004.</p> <p>A330 MMEL TR N° 01-27/02K issue 01 approved on 06 September 2004.</p> <p>A340 MMEL TR N° 01-27/01M issue 01 approved on 06 September 2004.</p> <p>A340 MMEL TR N° 01-27/02M issue 01 approved on 06 September 2004.</p> <p>Airbus SB A330-27A3131 original issue dated 22 September 2004.</p> <p>Airbus SB A340-27A4130 original issue dated 22 September 2004.</p> <p>Airbus SB A330-27-3134 original issue dated 13 October 2005.</p> <p>Airbus SB A330-27-3136 original issue dated 12 January 2006.</p> <p>Airbus SB A330-27-3144 original issue dated 02 April 2009.</p> <p>Airbus SB A330-27-3145 original issue dated 16 December 2008.</p> <p>Airbus SB A330-27-3146 original issue dated 01 June 2007.</p> <p>Airbus SB A330-27-3148 original issue dated 17 July 2008.</p> <p>Airbus SB A330-27-3176 original issue dated 26 July 2011.</p> <p>Airbus SB A330-27-3177 original issue dated 21 December 2011.</p> <p>Airbus SB A340-27-4144 original issue dated 19 October 2009.</p> <p>Airbus SB A340-27-4145 original issue dated 16 December 2008.</p>

	<p>Airbus SB A340-27-4146 original issue dated 01 June 2007.</p> <p>Airbus SB A340-27-4148 original issue dated 13 June 2008.</p> <p>Airbus SB A340-27-4162 original issue dated 10 January 2012.</p> <p>Airbus SB A340-27-4174 original issue dated 21 November 2011.</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks:	<ol style="list-style-type: none"> 1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication. 3. Enquiries regarding this AD should be referred to the Safety Information Section, Executive Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS – Airworthiness Office – EIAL; E-mail: airworthiness.A330-A340@airbus.com.

Appendix

Table 2 – Combinations of 2 SB modifications

Type		Combination of 2 SBs
A330	Previous Combination as specified in EASA AD 2010-0081 at original issue, or	SB A330-27-3144 and SB A330-27-3145
		SB A330-27-3144 and SB A330-27-3146
		SB A330-27-3148 and SB A330-27-3145
		SB A330-27-3148 and SB A330-27-3146
	New combination with EASA AD 2010-0081R1	SB A330-27-3176 and SB A330-27-3145
		SB A330-27-3176 and SB A330-27-3146
		SB A330-27-3177 and SB A330-27-3145
		SB A330-27-3177 and SB A330-27-3146
A340	Previous Combination as specified in EASA AD 2010-0081 at original issue, or	SB A340-27-4144 and SB A340-27-4145
		SB A340-27-4144 and SB A340-27-4146
		SB A340-27-4148 and SB A340-27-4145
		SB A340-27-4148 and SB A340-27-4146
	New combination with EASA AD 2010-0081R1	SB A340-27-4162 and SB A340-27-4145
		SB A340-27-4162 and SB A340-27-4146
		SB A340-27-4174 and SB A340-27-4145
		SB A340-27-4174 and SB A340-27-4146