

<b>EASA</b>	<b>AIRWORTHINESS DIRECTIVE</b>
	<p><b>AD No.: 2014-0221</b></p> <p><b>Date: 30 September 2014</b></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><b>Design Approval Holder's Name:</b></p> <p>AIRBUS</p>	<p><b>Type/Model designation(s):</b></p> <p>A318, A319, A320 and A321 aeroplanes</p>
TCDS Number:	EASA.A.064
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2013-0288 dated 06 December 2013.
<b>ATA 32</b>	<b>Landing Gear – Main Landing Gear Door Actuator – Monitoring / Inspection / Replacement / Modification</b>
Manufacturer(s):	Airbus (formerly Airbus Industrie)
Applicability:	Airbus A318-111, A318-112, A318-121, A318-122, A319-111, A319-112, A319-113, A319-114, A319-115, A319-131, A319-132, A319-133, A320-211, A320-212, A320-214, A320-215, A320-216, A320-231, A320-232, A320-233, A321-111, A321-112, A321-131, A321-211, A321-212, A321-213, A321-231 and A321-232 aeroplanes, all manufacturer serial numbers.
Reason:	<p>Some operators reported slow operation of the main landing gear (MLG) door opening/closing sequence, leading to the generation of ECAM warnings during the landing gear retraction or extension sequence.</p> <p>Investigations showed that the damping ring and associated retaining ring of the MLG door actuator may deteriorate. The resultant debris increases the friction inside the actuator which can be sufficiently high to restrict opening of the MLG door by gravity, during operation of the landing gear alternate (free-fall) extension system.</p> <p>This condition, if not corrected, could prevent the full extension and/or down locking of the MLG, possibly resulting in MLG collapse during landing or rollout and consequent damage to the aeroplane and injury to occupants.</p> <p>EASA AD 2006-0112 (later revised) was issued to require repetitive inspections of the opening sequence of the MLG door in order to identify the affected actuators, and to introduce as an optional terminating action Airbus production Modification (mod) 38274 and associated Service Bulletin (SB) A320-32-1338, which incorporate an improved retaining ring, located on the</p>

piston rod's extension end, and a new piston rod with machined shoulder to accommodate the thicker section of the modified retaining ring.

After in-service introduction of the new MLG door actuator, Part Number (P/N) 114122012 (Post-mod 38274 – SB A320-32-1338), several operators reported failures of internal parts of the MLG door actuator. Investigations confirmed that these failures could result in slow extension of the actuator rod, delaying the MLG door operation, or possibly stopping just before the end of the stroke, preventing the door to reach the fully open position.

EASA AD 2011-0069 (later revised), which superseded EASA AD 2006-0112R1, was issued to require amendment of the applicable Airplane Flight Manual (AFM), repetitive checks of specific Centralized Fault Display System (CFDS) messages, repetitive inspections of the opening sequence of the MLG door actuator and, depending on findings, corrective action(s).

Since EASA AD 2011-0069R1 was issued, Airbus introduced a reinforced MLG door actuator P/N 114122014 (mod 153655). Airbus issued SB A320-32-1407 containing instructions for in-service replacement of the affected MLG door actuators, or modification of the actuators to the new standard.

In addition, following a recent occurrence with a gear extension problem, the result of additional analyses by Airbus revealed that the CFDS expected specific messages may not be generated and as a result, repetitive checks of messages are not effective for aeroplanes fitted with landing gear control interface unit (LGCIU) interlink communication ARINC 429 (applied in production through Airbus mod 39303, or in service through Airbus SB A320-32-1409), in combination with LGCIUs 80-178-02-88012 or 80-178-03-88013 in both positions and at least one MLG door actuator pre-mod 153655 (pre-Airbus SB A320-32-1407 – pre-GE SB 114122-32-105) installed.

Prompted by these findings, EASA issued Emergency AD 2013-0132-E to require identification of the affected aeroplanes to establish the configuration and, for those aeroplanes, repetitive inspections of the opening sequence of the MLG door actuator and, depending on findings, replacement of the MLG door actuator. That AD also provided an optional terminating action by disconnection of the interlink for certain LGCIUs, or in-service modification of the aeroplane through Airbus SB A320-32-1407 (equivalent to Airbus production mod 153655).

Since those ADs (EASA AD 2011-0069R1 and EASA AD 2013-0132-E) were issued, analyses performed by Airbus have revealed that the MLG door opening sequence inspection interval needed to be reduced, and that the (previously optional) terminating action needed to be made mandatory.

Prompted by these findings, EASA issued AD 2013-0288, retaining the requirements of EASA AD 2011-0069R1 and EASA AD 2013-0132-E, which were superseded, but with reduced inspection intervals, and to require replacement or modification, as applicable, of the affected MLG door actuators as terminating action to the monitoring and repetitive checks and inspections.

Following introduction of post-mod 153655 MLG door actuators on in-service aeroplanes, it has been observed that, in case the removed pre-mod MLG door actuator has internal damage, contamination of the hydraulic system could have occurred.

This condition, if not detected and corrected, could result in performance degradation (damping degradation) of the post-mod MLG door actuator. Testing performed with a new actuator tested in heavily contaminated hydraulic system did not show abnormal hydraulic restriction/blockage. It is thus not requested to perform this "flushing procedure" on aircraft already retrofitted with std-14 actuators.

In addition, since EASA AD 2013-0288 was issued, the applicable AFM was revised and repetitive checks of specific CFDS messages are no longer considered to be required, due to the reduced intervals required by EASA AD 2013-0288.

	For the reasons described above, this AD partially retains the requirements of EASA AD 2013-0288, which is superseded, introduces improved wording for clarification and requires, in addition to the revised operational (AFM) procedure, hydraulic flushing prior to any installation of a post-mod MLG door actuator.
Effective Date:	14 October 2014
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <p><b>Operational procedure</b></p> <p>(1) Within 14 days after the effective date of this AD, amend the applicable AFM with Temporary Revision (TR) 437 to incorporate the operational procedure as specified below, and thereafter, operate the aeroplane accordingly.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Recycle landing gear.</p> <p><i>Note: For recycling, select landing gear lever up, wait for landing gear uplock and doors to close, then select landing gear lever down.</i></p> <p>Wait 60 s with landing gear lever down:</p> <ul style="list-style-type: none"> <li>• <b>If not successful :</b> The recycling must be attempted up to 5 times, if necessary.</li> <li>Recycle landing gear.</li> <li>Wait 60 s between each recycling.</li> <li>• <b>If not successful after 5 recycles:</b> Wait 120 s. Extend landing gear by gravity. <i>Refer to ABN-32 L/G GRAVITY EXTENSION</i></li> </ul> </div> <p>Inserting a copy of this AD into the AFM is an acceptable method to comply with the requirement of paragraph (1) of this AD.</p> <p><i>Note :</i> This operational procedure was introduced in a global AFM TR 437 approved by EASA on 06 June 2014.</p> <p><b>MLG Door Actuator Opening Sequence Inspection</b></p> <p>(2) Within 800 FC after 02 May 2011 [the effective date of the original issue of EASA AD 2011-0069] and, thereafter, at intervals not to exceed 8 calendar days or 5 FC, whichever occurs later, inspect the door opening sequence of the LH and RH doors of the MLG in accordance with the instructions of Airbus SB A320-32-1390 Revision 03.</p> <p>In case an aeroplane is not operated for a period longer than 8 days, accomplish the next inspection as required by paragraph (2) of this AD before next flight.</p> <p>(3) If, during any inspection as required by paragraph (2) of this AD, any discrepancy is found, before next flight, replace the affected MLG door actuator in accordance with the instructions of Airbus SB A320-32-1390 Revision 03.</p> <p>(4) MLG door opening sequence inspections and corrective actions, accomplished before the effective date of this AD in accordance with the instructions of Airbus AOT A320-32A1390, or Airbus SB A320-32-1390 at Revision 01 or Revision 2, are acceptable to comply with the initial requirements of paragraphs (2) and (3) of this AD, as applicable.</p>

Table 1 – Affected MLG Door Actuator P/Ns

114122006	114122007	114122009
114122010	114122011	114122012

**MLG Door Actuator Replacement / Modification**

- (5) For aeroplanes with a MLG door actuator P/N 114122012 installed, within 12 months after 20 December 2013 [the effective date of EASA AD 2013-0288], replace each P/N 114122012 MLG door actuator in accordance with the instructions of Airbus SB A320-32-1407, or modify each actuator in accordance with the instructions of General Electric (GE) SB 114122-32-105, as applicable and, prior to installation of the new or modified P/N 114122014 MLG door actuator, flush the affected hydraulic system in accordance with the instructions of Airbus SB A320-32-1407 Revision 01.
- (6) For aeroplanes with a MLG door actuator installed, having a P/N as listed in Table 1 of this AD (except P/N 114122012, see paragraph (5) of this AD), within 24 months after 20 December 2013 [the effective date of EASA AD 2013-0288], replace each MLG door actuator with a P/N 114122014 MLG door actuator in accordance with the instructions of Airbus SB A320-32-1407, or modify the actuator (P/N change) in accordance with the instructions of GE SB 114122-32-105, as applicable and, prior to installation of the new or modified P/N 114122014 MLG door actuator, flush the affected hydraulic system in accordance with the instructions of Airbus SB A320-32-1407 Revision 01.
- (7) Modification of an aeroplane as required by paragraph (5) or (6) of this AD, as applicable, constitutes terminating action for the repetitive inspections required by paragraph (2) of this AD for that aeroplane.
- (8) Installation, prior to the effective date of this AD, of a new or modified MLG door actuator as required by paragraph (5) or (6) of this AD without hydraulic flushing is acceptable to comply with the requirements of paragraphs (5) or (6) of this AD, as applicable.
- (9) Replacement of a MLG door actuator on an aeroplane as required by paragraph (3) of this AD, does not constitute terminating action for the repetitive inspections required by paragraph (2) of this AD for that aeroplane, unless MLG door actuators P/N 114122014 are installed on both LH and RH sides of that aeroplane in accordance with the instructions of Airbus SB A320-32-1407.

**Terminating / Alternative Action(s)**

- (10) An aeroplane on which MLG door actuators P/N 114122014 have been installed on both LH and RH sides (Airbus mod 153655 applied in production, or modified in service in accordance with the instructions of Airbus SB A320-32-1407) is not affected by the repetitive inspection requirements of paragraph (2) of this AD, provided that, since aeroplane date of manufacture, or since in-service modification, as applicable, no MLG door actuator with a P/N as listed in Table 1 of this AD, has been installed on that aeroplane.
- (11) An aeroplane in the configuration as specified in paragraph (10) of this AD and with flight warning computers (FWC) P/N 350E053021212 (H2F7) installed (Airbus mod 153741 applied in production, or modified in service in accordance with the instructions of Airbus SB A320-31-1414) is not affected by the requirement of paragraph (1) (operational procedure) of this AD and, following modification, TR 437 (if inserted) may be removed from the AFM of that aeroplane.

**MLG Door Actuator Installation**

- (12) Do not install on any aeroplane a MLG door actuator, having a P/N as listed in Table 1 of this AD, as required by paragraph (12.1) or (12.2) of this AD, as applicable.
- (12.1) For aeroplanes with a MLG door actuator installed, having a P/N as listed in Table 1 of this AD: After modification of the aeroplane as required by paragraph (5) or (6) of this AD, as applicable.
- (12.2) For aeroplanes that, on the effective date of this AD, do not have a MLG door actuator installed with a P/N as listed in Table 1 of this AD: From the effective date of this AD.

**Flight Warning Computer Installation**

- (13) Do not install a FWC having a P/N as listed in Table 2 of this AD on certain aeroplanes, as defined in, and as required by, paragraph (13.1) or (13.2) of this AD, as applicable.
- (13.1) For aeroplanes that have FWC P/N 350E053021212 (H2F7) installed: After modification of the aeroplane as required by paragraph (5) or (6) of this AD, as applicable.
- (13.2) For aeroplanes that, on the effective date of this AD, do not have a FWC installed having a P/N as listed in Table 2 of this AD: From the effective date of this AD.

Table 2: FWC (P/N) No Longer to be Installed

350E016187171 (C5)	350E053020303 (H2E3)
350E017238484 (H1D1)	350E053020404 (H2E4)
350E017248685 (H1D2)	350E053020606 (H2F2)
350E017251414 (H1E1)	350E053020707 (H2F3)
350E017271616 (H1E2)	350E053021010 (H2F3P)
350E018291818 (H1E3CJ)	350E053020808 (H2F4)
350E018301919 (H1E3P)	350E053020909 (H2F5)
350E018312020 (H1E3Q)	350E053021111 (H2F6)
350E053020202 (H2E2)	

**Ref. Publications:**

Airbus AFM TR 437 dated 06 June 2014.

Airbus AOT A320-32A1390 original issue dated 10 February 2011.

Airbus SB A320-32-1390 Revision 01 dated 21 September 2011, or Revision 02 dated 23 October 2013, or Revision 03 dated 13 July 2014.

Airbus AOT A32N001-13 original issue dated 24 June 2013.

Airbus SB A320-32-1409 original issue dated 19 March 2013.

Airbus SB A320-32-1407 original issue dated 14 May 2013, or Revision 01 dated 03 July 2014.

Airbus SB A320-31-1414 original issue dated 19 December 2012, or Revision 01 dated 21 March 2013, or Revision 02 dated 30 July 2013.

GE SB 114122-32-105 original issue dated 17 January 2013.

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

**Remarks:**

1. If requested and appropriately substantiated, EASA can approve

	<p>Alternative Methods of Compliance for this AD.</p> <ol style="list-style-type: none"><li>2. This AD was posted on 18 August 2014 as PAD 14-131 for consultation until 15 September 2014. The Comment Response Document can be found at <a href="http://ad.easa.europa.eu/">http://ad.easa.europa.eu/</a>.</li><li>3. Enquiries regarding this AD should be referred to the Safety Information Section, Certification Directorate, EASA. E-mail: <a href="mailto:ADs@easa.europa.eu">ADs@easa.europa.eu</a>.</li><li>4. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS – Airworthiness Office – EIAS, Fax +33 5 61 93 44 51, E-mail: <a href="mailto:account.airworth-eas@airbus.com">account.airworth-eas@airbus.com</a>.</li></ol>
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