



Airworthiness Directive

AD No.: 2012-0085R6

Issued: 05 February 2016

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 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 [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:

AIRBUS HELICOPTERS DEUTSCHLAND GmbH

Type/Model designation(s):

EC 135 and EC 635 helicopters

Effective Date: Revision 6: 09 February 2016

Revision 5: 30 October 2012

Revision 4: 04 October 2012

Revision 3: 11 September 2012

Revision 2: 24 August 2012

Revision 1: 10 August 2012

Original issue: 18 May 2012

TCDS Number(s): EASA.R.009

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2012-0085R5 dated 30 October 2012. The original EASA Emergency AD 2012-0085-E dated 17 May 2012 superseded EASA AD 2012-0041R1 dated 15 March 2012.

ATA 62 – Main Rotor System – Main Rotor Hub – Inspection / Replacement

Manufacturer(s):

Airbus Helicopters Deutschland GmbH (AHD), formerly Eurocopter Deutschland GmbH (ECD), Eurocopter España S.A., Eurocopter S.A.

Applicability:

EC 135 P1(CDS), EC 135 P1(CPDS), EC 135 P2(CPDS), EC 135 P2+, EC 135 T1(CDS), EC 135 T1(CPDS), EC 135 T2(CPDS), EC 135 T2+, EC 635 T1(CPDS), EC 635 P2+ and EC 635 T2+ helicopters, all serial numbers.



Reason:

During a periodical inspection of an EC 135 helicopter, a crack was detected on the lower hub-shaft flange of a main rotor hub (MRH) shaft.

This condition, if not detected, could lead to further crack propagation, possibly resulting in MRH failure and consequent loss of the helicopter.

To address this condition, EASA issued Emergency AD 2012-0041-E, which was later revised for clarification. Since issuance of AD 2012-0041R1, further cracks were detected on the lower hub shaft flange of three other helicopters (now in total four helicopters) during accomplishment of the pre-flight checks. In addition, it was determined that the identification of deformed safety pins may not be sufficient to detect the cracks on the MRH shaft.

Prompted by these findings, ECD developed new inspection procedures and EASA issued Emergency AD 2012-0085-E, superseding AD 2012-0041R1, to require repetitive pre-flight visual inspections of the main rotor blade attachment area in the upper and lower MRH shaft flanges, and repetitive visual inspections on the upper and lower MRH shaft flanges and the blade bolt area and, in case cracks are detected, replacement of the MRH. That AD also required reporting of any findings to ECD.

After that AD was issued, further investigation results showed that the repetitive visual inspections of the blade bolt area, as described in Part 3 of ECD Alert Service Bulletin (ASB) No. EC135-62A-029 Revision (Rev.) 1, were no longer required to ensure safe operation. ECD ASB EC135-62A-029 Revision 3 was published to provide the amended instructions.

Consequently, EASA issued AD 2012-0085R1 to delete the relevant required actions from paragraph (2) of the AD and, at the same time, to correct the Note for paragraph (1), providing further clarification.

Prompted by results of full scale component testing which demonstrated that the interval for the repetitive visual inspections of the upper and lower hub shaft flanges could be extended from 10 to 15 flight hours (FH), EASA issued AD 2012-0085R2. In addition, rework procedures had been developed by ECD to allow deference of the next inspection to 400 FH after rework.

Since AD 2012-0085R2 was issued, based on results of further full scale component testing which demonstrated that the interval for the repetitive visual inspections of the upper and lower hub shaft flanges could be extended, EASA issued AD 2012-0085R3 to extend the inspection intervals in paragraph (2) of the AD from 15 to 25 FH. Thereafter, based on further test results, EASA issued AD 2012-0085R4 to extend the inspection intervals in paragraph (2) of the AD from 25 to 40 FH.

Since AD 2012-0085R4 was issued, based on results of further full scale component testing, it was determined that the interval for the repetitive visual inspections of the upper and lower hub shaft flanges can be extended from 40 to 50 FH.

EASA issued AD 2012-0085R5 to amend the inspection intervals in paragraph (2) of the AD and to make reference to ECD ASB EC135-62A-029 Rev. 7 for related information.



Since AD 2012-0085R5 was issued, AHD issued ASB EC135-62A-029 Rev. 8 to specify the affected MRH shaft P/N and SB EC135-62-036 to introduce an optional modification to terminate the repetitive inspections required by this AD.

For the reason described above, this AD is issued to reduce the applicability to helicopters equipped with affected MRH shaft P/N and to introduce the optional terminating modification. The repetitive inspections, as detailed in paragraph (1) and (2) of this AD, are not required for helicopter equipped with a MRH shaft that is identified with "L623M1003881", or which P/N is not included in Appendix 2 of this AD.

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

Required as indicated, unless accomplished previously:

- (1) Within 3 days after 18 May 2012 [the effective date of the original issue of this AD] and thereafter, before each flight, accomplish a pre-flight visual inspection in accordance with the instructions of section 3.B.Part 1 of ECD Alert Service Bulletin (ASB) No. EC135-62A-029 Rev. 1 (or later revision), or in accordance with the applicable Rotorcraft Flight Manual (RFM) FLM 135/635 (see Appendix 3 for required applicable RFM temporary revision), as referenced in AHD ASB EC135-62A-029 Rev. 8.

The flight duration between 2 pre-flight inspections must not exceed 6 FH.

Note 1: The inspections required by paragraph (1) of this AD may be accomplished by an appropriately trained and authorized flight crew member and/or pilot owner, in accordance with Commission Regulation (EU) [1321/2014](#) Part M and Part 145 provisions. Prior authorizations, given to the flight crew by the corresponding approved maintenance organisation based on EASA AD 2012-0041 (including R1) or EASA AD 2012-0085-E, remain valid for actions accomplished as required by this AD.

- (2) Upon accumulation of 400 FH by the MRH (see below and Appendix 1 of this AD) since first MRH installation on a helicopter (specified as time since new (TSN) in the ECD ASB), or within 50 FH, whichever occurs later after 18 May 2012 [the effective date of the original issue of this AD], and, thereafter, at intervals not to exceed 50 FH, accomplish a visual inspection of the upper and lower hub shaft flanges in accordance with the instructions of section 3.B.Part 2 of ECD ASB No. EC135-62A-029 Revision 1 (or later revision).
For a MRH which has been reworked in accordance with the instructions of ECD SB No. EC135-62-030 or SB No. EC135-62-032 (or later revisions), the next inspection can be deferred until 400 FH accumulated by the MRH after that rework has been accomplished.
After that inspection, repetitive inspections are required at intervals not to exceed 50 FH. Appendix 1 of this AD provides detailed information.
- (3) If, during any inspection as required by paragraph (1) and (2) of this AD, cracks are detected, before next flight, replace the MRH with a serviceable unit.
- (4) Replacement of a MRH as required by paragraph (3) of this AD does not constitute terminating action for the repetitive inspections as required by paragraph (1) and (2) of this AD, except as specified in paragraph (7) of this AD.



- (5) Within 1 week after replacement of the MRH as required by paragraph (3) of this AD, report the findings and send the removed MRH for further investigation to AHD.
- (6) From 18 May 2012 [the effective date of the original issue of this AD], do not install a MRH with a P/N as listed in Appendix 2 of this AD and that has accumulated more than 400 FH since first installation on a helicopter unless that MRH has passed an inspection as required by paragraph (2) of this AD, or it is identified with “L623M1003881” (see Appendix 4 of this AD).
- (7) A helicopter equipped with a MRH shaft, that meets any of the criteria as specified in paragraph (7.1) or (7.2) of this AD, is not affected by the requirement of paragraph (1) and (2) of this AD:
- (7.1) MRH shaft having a P/N as listed in Appendix 2 of this AD, which is identified with “L623M1003881” (see Note 2 and Appendix 4 of this AD).
- (7.2) MRH shaft having a P/N not listed in Appendix 2 of this AD.

Note 2: MRH shafts identified with “L623M1003881” have been modified in accordance with the instructions of AHD SB EC135-62-036 or reworked at AHD through drawing L623M1003881.

Ref. Publications:

ECD/AHD ASB No. EC135-62A-029 Rev. 1, dated 16 May 2012, or Rev. 2 dated 17 May 2012, or Rev. 3 dated 09 August 2012, or Rev. 4 dated 23 August 2012, or Rev. 5 dated 10 September 2012, or Rev. 6 dated 02 October 2012, or Rev. 7 dated 22 October 2012, or Rev. 8 dated 22 April 2015.

ECD SB No. EC135-62-030 original issue dated 16 August 2012, or Rev. 1 dated 31 August 2012, or Rev. 2 dated 15 October 2012.

ECD SB No. EC135-62-032 original issue dated 04 September 2012, or Rev. 1 dated 15 October 2012.

AHD SB No. EC 135-62-036 original issue dated 29 July 2015.

The use of later approved revisions of these documents (that may be published by AHD, the current design approval holder) is acceptable for compliance with the requirements of this AD.

Remarks:

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 EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.



4. For any question concerning the technical content of the requirements in this AD, please contact: Airbus Helicopters Deutschland GmbH, Industriestrasse 4, 86607 Donauwörth, Federal Republic of Germany; Telephone: + 49 (0)151-1422 8976; Facsimile: + 49 (0)906-71 4111.



Appendix 1 – Required Actions on MRH

MRH FH and condition	Part 1 of ASB	Part 2 of ASB
Less than 400 FH TSN	Yes	No
Less than 400 FH time since rework (TSR) in accordance with ECD SB EC135-62-030 or SB EC135-62-032 (or later revisions)	Yes	No
400 FH TSN or more	Yes	Yes
400 FH or more TSR in accordance with ECD SB EC135-62-030 or SB EC135-62-032 (or later revisions)	Yes	Yes

Note 3: At the time of issuance of AD 2012-0085R2, the MRH rework of SB No. EC135-62-030 can be applied by ECD/AHD or in-service by the operator after training and authorization by ECD/AHD, while the MRH rework of SB No. EC135-62-032 can only be applied by an authorized (by ECD/AHD) overhaul station.

Appendix 2 – Affected MRH P/N

L623M1003102
L623M1003103
L623M1003104
L623M1006101
L623M1006102
L623M1006103
L623M1203103
L623M1206102
L623M1206103



Appendix 3 - List of RFM Temporary Revision including instructions for pre-flight inspection as required by paragraph (1) of this AD

Helicopter Model	RFM Temporary Revision
EC 135 T2+	Temp. Rev. 5
EC 135 P2+	Temp. Rev. 5
EC 635 T2+	Temp. Rev. 5
EC 635 P2+	Temp. Rev. 5
EC 135 P2(CPDS)	Temp. Rev. 10
EC 135 T2(CPDS)	Temp. Rev. 12
EC 135 T1(CPDS)	Temp. Rev. 17
EC 635 T1(CPDS)	Temp. Rev. 17
EC 135 P1(CPDS)	Temp. Rev. 13
EC 135 T1(CDS)	Temp. Rev. 23
EC 135 P1(CDS)	Temp. Rev. 19

Appendix 4 – MRH additional identification

