



Airworthiness Directive

AD No.: 2016-0145R1

Issued: 17 January 2018

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:

LEONARDO S.p.A

Type/Model designation(s):

AW189 helicopters

Effective Date: Revision 1: 17 January 2018
Original issue: 03 August 2016

TCDS Number(s): EASA.R.510

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2016-0145 dated 20 July 2016, which superseded EASA AD 2016-0088 dated 03 May 2016.

ATA 62 – Main Rotor – Main Rotor Damper – Inspection / Replacement

Manufacturer(s):

Leonardo S.p.A. Helicopters (formerly Finmeccanica S.p.A., AgustaWestland S.p.A.)

Applicability:

AW189 helicopters, all serial numbers (s/n), if equipped with Main Rotor (MR) damper Part Number (P/N) 4F6220V00251.

Reason:

One failure of the MR damper P/N 4F6220V00251 occurred on AW189 in-service helicopters, leading to a complete seizure of the body end lug and to the disconnection of the damper in flight. The results of preliminary investigation determined that a combination of several factors could lead to disconnection of a MR damper.

This condition, if not detected and corrected, could lead to loss of the lead-lag damping function of the MR blade, possibly resulting in damage to adjacent critical rotors components and consequent reduced control of the helicopter.

The AW189 MR damper is very similar to those installed on AW139 helicopters, where multiple damper failures were reported, involving the body end lug, the eye end lug and the rod end.



Consequently, it was decided to apply a similar strategy in defining the corrective actions for AW139 as well as for AW189 helicopter.

To initially address the unsafe condition, AgustaWestland published Mandatory Bollettino Tecnico (BT) 189-014, in 2015, and later Finmeccanica S.p.A., Helicopter Division (FHD) published BT 189-069, providing interim inspection instructions.

After those BTs were issued, further investigation highlighted the need for a one-time non-destructive inspection (NDI) followed by repetitive detailed visual inspections to detect cracks on the MR damper rod end and body end.

Consequently, FHD issued Mandatory BT 189-080, superseding Mandatory BT 189-014 and Mandatory BT 189-069, incorporating the inspections contained in these two BTs and, in addition, providing instructions for a one time dye penetrant inspection for cracks of a limited area of MR damper (rod end and body end) and repetitive detailed visual inspections for cracks in the same area; EASA issued AD 2016-0088 requiring various one-time and repetitive inspections of the MR damper and a torque check and, depending on findings, accomplishment of applicable corrective action(s).

After EASA AD 2016-0088 was issued, an additional case of in-service MR damper failure was reported. Subsequent analyses performed by FHD revealed the need of introducing additional actions which led to the issuance of BT 189-080 Revision (Rev.) A, with reduced compliance times, and to the issuance of BT 189-102 for additional actions.

Consequently, EASA issued AD 2016-0145, retaining the requirements of EASA AD 2016-0088, which was superseded, and requiring accomplishment of additional actions as specified in BT 189-102 and in the revised BT 189-080. In addition, that AD introduced an eddy current inspection as an alternative action to the dye penetrant inspection and to the detailed visual inspections as required by that AD.

Since EASA AD 2016-0145 was issued, Leonardo developed a new improved MR damper P/N 8G6220V00151 and published Leonardo SB 189-102 Rev. A to provide instructions for replacement of the MR damper P/N 4F6220V00251 with the improved part.

For the reason described above, this AD is revised to introduce installation of the improved MR damper as an optional terminating action for the repetitive inspections as required by this AD.

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

Required as indicated, unless accomplished previously:

Inspection / Torque Check:

- (1) Within 10 flight hours (FH), or after the last flight of the day, whichever occurs later after the effective date of this AD, reduce the installation torque of the bolts fixing the MR damper to the MR hub in accordance with the instructions of Part I of FHD BT 189-102.



- (2) Within the compliance times defined in Table 1 of this AD, depending on the FH accumulated by each affected MR damper, as applicable, accomplish a one-time dye penetrant inspection (see Note 2 of this AD) of the rod end and body end of each MR damper in accordance with the instructions of Part I of FHD BT 189-080.

Table 1 – MR Damper One-time Inspection

FH accumulated (see Note 1 of this AD)	Compliance Time
Less than 300	Before exceeding 300 FH, or within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0088], whichever occurs later
300 or more	Within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0088], or at the first MR damper removal, whichever occurs first

Note 1: Unless specified otherwise, the number of FH specified in this AD are those accumulated by the MR damper (or rod end or body end) since its first installation (new) or since its first installation after overhaul on a helicopter.

Note 2: As an alternative to a dye penetrant inspection as required by this AD, it is allowed to accomplish an eddy current inspection in accordance with the instructions of Annex B of FHD BT 189-080.

- (3) Following the inspection as required by paragraph (2) of this AD, each time a replacement rod end P/N M006-01H004-045 not marked as per BT189-080 is installed, within 300 FH after installation of that rod end, accomplish a one-time dye penetrant inspection (see Note 2 of this AD) of that rod end of the MR damper in accordance with the instructions of Part II of FHD BT 189-080.
- (4) Following the inspection as required by paragraph (2) of this AD, before the first flight of each day, or after the last flight of each day, accomplish a detailed visual inspection of the rod end and body end of each affected MR damper in accordance with the instructions of Part III of FHD BT 189-080.

Note 3: As an alternative to the detailed visual inspection, it is allowed to accomplish an eddy current inspection in accordance with the instructions of Annex B of BT 189-080.

- (5) Within the compliance times defined in Table 2 and Table 3 of this AD, depending on the FH accumulated by each affected MR damper rod end or each affected MR damper body end, as applicable, inspect the rod end and/or body end bearings of each affected MR damper in accordance with the instructions of Part IV of FHD BT 189-080.



Table 2 – Rod End bearing inspection for rotation

FH accumulated by rod end (See Note 1 of this AD)	Compliance Time/Inspection Interval
Less than 300	Within 30 FH after 10 May 2016 [the effective date of AD 2016-0088] and, thereafter, at intervals not to exceed 10 FH
300 or more	Within 5 FH after the effective date of this AD and, thereafter, after the last flight of each day or before the first flight of each day

Table 3 – Body End bearing inspection for rotation

FH accumulated by body end (see Note 1 of this AD)	Compliance Time/Inspection intervals
Less than 300	Within 30 FH after 10 May 2016 [the effective date of AD 2016-0088] and, thereafter, at intervals not to exceed 10 FH
300 or more	Within 5 FH after the effective date of this AD and, thereafter, after the last flight of each day or before the first flight of each day

- (6) For a helicopter equipped with an affected MR damper, having a s/n specified in Part V of FHD BT 189-080: Within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0088] and, thereafter, at intervals not to exceed 20 FH, visually inspect the rod end broached ring nut of each affected MR damper, in accordance with the instructions of Part V of FHD BT 189-080. These repetitive inspections can be terminated when an affected MR damper accumulates 600 FH since first installation on a helicopter.
- (7) Within 50 FH after 10 May 2016 [the effective date of EASA AD 2016-0088], or within 100 FH after the latest inspection in accordance with the instructions of FHD BT 189-069 Part I accomplished before 10 May 2016 [the effective date of EASA AD 2016-0088], and, thereafter, at intervals not to exceed 100 FH, accomplish a bearing friction inspection of the body end and rod end bearings of each affected MR damper, and a detailed inspection of the anti-rotation block of each affected MR damper, in accordance with the instructions of Part VI of FHD BT 189-080.
- (8) For a helicopter equipped with an affected MR damper, having a s/n specified in Part VII of FHD BT 189-080: Within 50 FH after 10 May 2016 [the effective date of EASA AD 2016-0088], accomplish a visual inspection of each affected MR damper rod end installation and a torque check of the MR damper broached ring nut, in accordance with the instructions of Part VII of FHD BT 189-080.



- (9) Within 30 FH after 03 August 2016 [the effective date of EASA AD 2016-0145], or when a MR damper body end P/N M006-01H002-041 or P/N M006-01H002-047 accumulates 500 FH since first installation on a helicopter, whichever occurs later, and, thereafter, each time a MR damper body end P/N M006-01H002-041 or P/N M006-01H002-047 accumulates 500 FH since first installation on a helicopter, replace the affected MR damper P/N 4F6220V00251 in accordance with the instructions of FHD BT 189-102 Part II.

Corrective actions:

- (10) If, during the inspection as required by paragraph (8) of this AD, any special washer P/N 3G6220A05051 is found installed, before next flight, replace that special washer P/N 3G6220A05051 with a new washer P/N 3G6220A05052 in accordance with the instructions of Part VII of FHD BT 189-080.
- (11) If, during any inspection as required by paragraph (2), (3), (4) or (6) of this AD, as applicable, any crack or other damage is detected, before next flight, contact Leonardo in accordance with the instructions of FHD BT 189-080 and BT 189-102, as applicable, and, if the discrepancy is confirmed, replace the affected part with a serviceable part.
- (12) If, during any inspection or torque check as required by paragraph (5), (7) or (8) of this AD, as applicable, any discrepancy as defined in FHD BT 189-080 or FHD BT 189-102, as applicable, is detected, before next flight, accomplish the applicable corrective action(s) as specified in, and in accordance with, the instructions of FHD BT 189-080 or FHD BT 189-102, as applicable.
- (13) Accomplishment of corrective action(s) on a helicopter, as required by paragraph (10), (11) or (12) of this AD, as applicable, does not constitute terminating action for any repetitive action as required by this AD for that helicopter.

Conditions for installation of parts on a helicopter:

- (14) From the effective date of this AD, installation of a MR damper P/N 4F6220V00251 on a helicopter is allowed, provided that the part has not exceeded 300 FH since its first installation on a helicopter, unless it has passed an inspection in accordance with the instructions of Part I of FHD BT 189-080, and provided that, following installation, the part is inspected as required by, and within the compliance times as specified in this AD.
- (15) From the effective date of this AD, installation on a helicopter of an affected MR damper, having a s/n specified in Part VIII of FHD BT 189-080, is allowed, provided that, prior to installation, each broached ring nut of that MR damper has passed a torque check in accordance with the instructions of Part VIII of FHD BT 189-080.

Terminating action:

- (16) Installation on a helicopter of a MR damper P/N 8G6220V00151 in accordance with the instructions specified in Part II of Leonardo SB 189-102 Rev. A constitutes terminating action for the repetitive inspections required by paragraphs (3), (4), (5), (6), (7) and (9) of this AD for that helicopter.



Ref. Publications:

FHD BT 189-014 Rev. A dated 23 February 2016.

FHD BT 189-069 original issue dated 12 February 2016.

FHD BT 189-080 Rev. A dated 15 July 2016.

FHD BT 189-102 original issue dated 15 July 2016, or Rev. A dated 21 December 2017.

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 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: Leonardo S.p.A. Helicopters, E-mail: PSE_AW189.MBX@leonardocompany.com.

