Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 20-117

Issued: 06 August 2020

Note: This Proposed Airworthiness Directive (PAD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), 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.

Design Approval Holder's Name:
LEONARDO S.p.A.

Type/Model designation(s):
AW169 and AW189 helicopters

Effective Date: [TBD standard: 14 days after AD issued date]

TCDS Number(s): EASA.R.509, EASA.R.510

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2020-0048 dated 06 March 2020.

ATA 64 – Tail Rotor – Tail Rotor Servo Actuator / Duplex Bearing – Inspection / Check / Modification

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

Applicability:
AW169 helicopters, all serial numbers (s/n); and
AW189 helicopters, all s/n.

Definitions:
For the purpose of this AD, the following definitions apply:

Affected TRA: Tail rotor servo-actuators (TRA), having Part Number (P/N) 6F6730V00331.

Affected TR DB: Tail rotor duplex bearings (TR DB), having P/N 4F6430V00551.

Improved TRA: TRA, having P/N 6F6730V00332.

Improved TR DB: TR DB, having P/N MM6430V00151.

The applicable inspection ASB1: Leonardo Emergency Alert Service Bulletin (ASB) 169-148 and Emergency ASB 189-237, as applicable.

The applicable inspection ASB2: Leonardo Emergency ASB 169-178 and Emergency ASB 189-272 (including 'Errata Corrige'), as applicable.

The applicable modification SB1: Leonardo SB 169-153 and SB 189-249, as applicable.

The applicable modification SB2: Leonardo SB 169-162 and SB 189-254 (including 'Errata Corrige'), as applicable.

The applicable HUMS retro-mod: Health and usage monitoring system (HUMS) upgrade, known as retro-mod P/N 6F3130P00811 for AW169 (available for in-service installation by Leonardo SB 169-140) and retro-mod P/N 8G3130P02011 for AW189 (available for in-service installation by Leonardo SB 189-227), as applicable.

Groups: Groups of helicopters are defined in Table 1 of this AD.

Table 1

Group	Helicopter Configuration - Parts Installed
1	Affected TRA and affected TR DB
2	Improved TRA and affected TR DB
3	Affected TRA and improved TR DB
4	Improved TRA and improved TR DB

Reason:

An accident occurred with an AW169 helicopter, the root cause of which is still under investigation. While the helicopter was on a take-off phase at low forward speed, a loss of yaw control has been observed. As incorrect installation of the TRA might have been a factor, as a precautionary measure, Leonardo issued ASB 169-120 to provide instructions to check the installation of the TRA and, subsequently, ASB 189-213 with the same instructions, since AW189 helicopters have a similar design TR flight control system.

This condition, if not detected and corrected, depending on the flight condition, could possibly result in loss of control of the helicopter.

Consequently, EASA issued Emergency AD 2018-0241-E to require a one-time visual inspection of the TRA installation and, depending on findings, accomplishment of applicable corrective action(s), as well as reporting of inspection results to Leonardo.

After that AD was issued, based on further information, Leonardo issued several successive ASB (including the applicable inspection ASB1) and EASA issued Emergency AD 2018-0250-E, Emergency AD 2018-0252-E, Emergency AD 2018-0261-E, AD 2019-0023 and AD 2019-0121 (later revised), each AD superseding the previous AD, completely or partially retaining requirements, to additionally require accomplishment of certain inspections and checks of the TR DB and, depending on findings, applicable corrective action(s).

After EASA AD 2019-0121R1 was issued, the mandatory reporting requirements of that AD were reassessed, including consideration of an upgrade of the HUMS done by Leonardo. The applicable HUMS retro-mod relocates an existing HUMS accelerometer sensor to the TRA lever to allow monitoring of the vibration signature of the TR DB. Consequently, EASA issued AD 2019-0193, retaining the requirements of EASA AD 2019-0121R1, which was superseded, to require a revised reporting regime, including the reporting of HUMS data for helicopters equipped with the applicable HUMS retro-mod.

After that AD was issued, Leonardo developed the improved TRA, as defined by this AD, introducing a control rod and related castellated nut on the back-end side with left-hand thread. Leonardo issued the applicable modification SB1 to provide instructions for installation of the improved TRA and concurrently revised the applicable inspection ASB1. Consequently, EASA issued AD 2020-0048, retaining the requirements of EASA AD 2019-0193, which was superseded, to require installation of the improved TRA and to also prohibit (re)installation of an affected TRA on a helicopter.

Since that AD was issued, Leonardo developed the improved TR DB, as defined in this AD. Leonardo issued the applicable modification SB2 to provide instructions for installation of the improved TR DB, and concurrently revised the applicable inspection ASB1 and published the applicable inspection ASB2 to provide inspection instructions for helicopters having the improved TR DB installed.

For the reasons described above, this AD retains the requirements of EASA AD 2020-0048, which is superseded, and requires installation of the improved TR DB. This AD also requires specific inspection for helicopters that have the improved TR DB installed. Finally, this AD prohibits (re)installation of an affected TR DB on a helicopter.

This AD is still considered to be an interim action and further AD action may follow.

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

Required as indicated, unless accomplished previously:

Repetitive Inspections:

(1) Within the compliance times specified in Table 2 of this AD, and, thereafter, at intervals not to exceed 10 flight hours (FH), (see Note 1 of this AD), inspect the slippage marking of the castellated nut installed on the back-end of the affected TRA in accordance with the instructions of the ASB specified in Table 2 of this AD.

Table 2 – Castellated Nut Slippage Marking Inspection

Group	Threshold	Applicable ASB
1	Within 10 FH after last accomplishment of Part I of the applicable inspection ASB1	Part I of the applicable inspection ASB1
3	Within 10 FH after installation of an improved TR DB	Part I of the applicable inspection ASB2

Note 1: A non-cumulative tolerance of 10% may be applied to the compliance times applicable to thresholds and intervals of this AD for the applicable inspection ASB2 and applicable modification

SB2, to allow synchronization of the required actions of this AD with other required maintenance tasks for which a non-cumulative tolerance is already granted in the applicable Aircraft Maintenance Planning Information.

(2) For Group 1 and Group 2 helicopters: Within 50 FH after last accomplishment of Part II of the applicable inspection ASB1, and, thereafter, at intervals not to exceed 50 FH, inspect the roughness and breakaway force of the affected TR DB in accordance with the instructions of Part II of the applicable inspection ASB1.

Repetitive Thermal Strip Installation:

(3) Within the compliance times specified in Table 3 of this AD and, thereafter, at intervals not to exceed the values specified in Table 3 of this AD (see Note 1 of this AD), install a thermal strip on the spacer next to the TR DB in accordance with the instructions of the inspection ASB specified in Table 3 of this AD.

Table 3 – Thermal Strip Installation

Groups	**Threshold**	**Interval** (not to exceed)	**Applicable ASB**
1 and 2	Within 20 FH after last accomplishment of Part III of the applicable inspection ASB1	20 FH	Part III of the applicable inspection ASB1
3 and 4	Upon installation of an improved TR DB	100 FH	Part III of the applicable inspection ASB2

Repetitive Thermal Strip Check:

(4) Within the compliance times specified in Table 4 of this AD, and, thereafter, at intervals not to exceed the value specified in Table 4 of this AD (see Note 1 of this AD), check the condition of the thermal strip and the indicated temperature in accordance with the instructions of the ASB specified in Table 4 of this AD.

Table 4 – Thermal Strip Checks

Groups	**Threshold**	**Interval** (not to exceed)	**Applicable SB**
1 and 2	Within 10 FH after last accomplishment of Part IV of the applicable inspection ASB1	10 FH	Part IV of the applicable inspection ASB1
3 and 4	Within 50 FH after installation of an improved TR DB	50 FH	Part II of the applicable inspection ASB2

Additional Repetitive Inspections / Checks:

(5) Within the compliance time specified in Table 5 of this AD, and, thereafter, at intervals not to exceed the value as specified in Table 5 of this AD (see Note 1 of this AD), as applicable, inspect/check the TR DB in accordance with the instructions of the ASB specified in Table 5 of this AD.

Table 5 – Additional Inspection/Check Intervals

Groups	**Threshold**	**Interval** (not to exceed)	**Applicable SB**
1 and 2	Within 10 FH after last accomplishment of Part I of the applicable inspection ASB1	10 FH	Part V (particles) of the applicable inspection ASB1
	Within 10 FH after last accomplishment of Part I of the applicable inspection ASB1	200 FH	Part VI (additional roughness) of the applicable inspection ASB1
3 and 4	Within 50 FH after installation of an improved TR DB	50 FH	Part II (particles) of the applicable inspection ASB2
	Within 100 FH after installation of an improved TR DB	100 FH	Part IV (additional roughness) of the applicable inspection ASB2

Corrective Action(s):

(6) If, during any inspection as required by paragraph (1) of this AD, any evidence of rotation of the affected TRA nut is found, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(7) If, during any thermal strip check as required by paragraph (4) of this AD, the thermal strip is detached, partially detached or unreadable, before next flight, inspect the TR DB in accordance with the instructions of Part II of the applicable inspection ASB1 or ASB2, as applicable.

(8) If, during any thermal strip check as required by paragraph (4) of this AD, the indicated temperature exceeds the value specified in Part IV of the applicable inspection ASB1 or in Part II of the applicable inspection ASB2, as applicable, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(9) If, during any inspection as required by paragraph (2) or (7) of this AD, as applicable, any discrepancy is found, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(10) If, during any inspection as required by paragraph (7) of this AD, no discrepancy of the TR DB is detected, before next flight, install a thermal strip on the spacer next to the TR DB, in

accordance with the instructions of Part III of the applicable inspection ASB1 or ASB2, as applicable (see paragraph (4) of this AD for next thermal strip checks).

(11) If, during any additional inspection or check of the TR DB, as required by paragraph (5) of this AD, any particles or roughness are found, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

Reporting:

(12) If, during any inspection and check as required by paragraph (1), (2), (4), (5) or (7) of this AD, as applicable, any discrepancy is found, within 2 days after that inspection and check, report information to Leonardo as required by paragraphs (12.1) and (12.2) of this AD, as applicable.

(12.1) For all helicopters: Report inspection and check finding results, along with records of previous inspections and checks. This can be accomplished by using the instructions of the applicable inspection ASB1 or ASB2, as applicable.

(12.2) For helicopters with the applicable HUMS retro-mod installed: In addition to the reporting as required by paragraph (12.1) of this AD, download the HUMS data, which includes the “A24” health indicator related to the vibration signature of the TR duplex bearing, and perform the HUMS data post-processing and analysis using the Heliwise maintenance software tool. Instructions can be provided by Leonardo on operator request.

Part Removal and Sending to Leonardo:

(13) For all helicopters: From the effective date of this AD, within 2 days after removal of a TR DB, if part of the corrective actions as required by paragraph (6), (8), (9) or (11) of this AD, as applicable, send the TR DB and the collecting containers of the grease to Leonardo for in-shop inspection. This can be done by using the instructions of the applicable inspection ASB1 or ASB2, as applicable.

Modification:

(14) For Group 1 and Group 3 helicopters: Within 9 months after 20 March 2020 [the effective date of EASA AD 2020-0048], modify the helicopter by installing an improved TRA, as defined in this AD, in accordance with the instructions of the applicable modification SB1.

(15) For Group 1 and Group 2 helicopters: Within 400 FH or 4 months, whichever occurs first after the effective date of this AD, modify the helicopter by installing an improved TR DB, as defined in this AD, in accordance with the instructions of the applicable modification SB2.

Improved TR DB Life Limit:

(16) For Group 3 and Group 4 helicopters: Before an improved TR DB exceeds 400 FH (see Note 1 of this AD), replace it in accordance with the instructions of the applicable modification SB2.

Terminating Action:

(17) Accomplishment of corrective action(s) on a helicopter as required by paragraph (6), (7), (8), (9), (10) or (11) of this AD, as applicable, does not constitute terminating action for any repetitive actions as required by this AD for that helicopter.

(18) Modification of a Group 1 or Group 3 helicopter as required by paragraph (14) of this AD constitutes terminating action for the repetitive inspections as required by paragraph (1) of this AD for that helicopter. All other repetitive actions of this AD remain required.

(19) Modification of a Group 1 or Group 2 helicopter as required by paragraph (15) of this AD effectively makes these Group 3 and Group 4 helicopters, respectively. Following modification, the relevant requirements as specified in this AD apply to those helicopters.

Part Installation:

(20) Do not install on any helicopter an affected TRA, as defined in this AD, as required by paragraph (20.1) or (20.2) of this AD, as applicable.

(20.1) For Group 1 and Group 3 helicopters: After modification of the helicopter as required by paragraph (14) of this AD.

(20.2) For Group 2 and Group 4 helicopters: From 20 March 2020 [the effective date of EASA AD 2020-0048].

(21) Do not install on any helicopter an affected TR DB, as defined in this AD, as required by paragraph (21.1) or (21.2) of this AD, as applicable.

(21.1) For Group 1 and Group 2 helicopters: After modification of the helicopter as required by paragraph (15) of this AD.

(21.2) For Group 3 and Group 4 helicopters: From the effective date of this AD.

(22) It is allowed to install on any helicopter an improved TR DB (by moving the Sliding Control Assembly from one helicopter to another), provided the part has not exceeded 400 FH since first installation on a helicopter, as required by paragraph (22.1) or (22.2) of this AD, as applicable.

(22.1) For Group 1 and Group 2 helicopters: After modification of the helicopter as required by paragraph (15) of this AD.

(22.2) For Group 3 and Group 4 helicopters: From the effective date of this AD.

Ref. Publications:

Leonardo S.p.A. ASB 169-148 original issue dated 29 May 2019, Revision A dated 05 September 2019, Revision B dated 04 February 2020, Revision C dated 06 April 2020 and Revision D dated 04 August 2020.

Leonardo S.p.A. ASB 189-237 original issue dated 29 May 2019, Revision A dated 05 September 2019, Revision B dated 04 February 2020 or Revision B dated 04 February 2020 with Errata Corrige, Revision C dated 06 April 2020 and Revision D dated 04 August 2020.

Leonardo S.p.A. SB 169-153 original issue dated 04 February 2020.

Leonardo S.p.A. SB 189-249 original issue dated 04 February 2020.

Leonardo S.p.A. SB 169-162 original issue dated 04 August 2020.

Leonardo S.p.A. ASB 169-178 original issue dated 04 August 2020.

Leonardo S.p.A. SB 189-254 original issue dated 04 August 2020, including 'Errata Corrige' released 05 August 2020.

Leonardo S.p.A. ASB 189-272 original issue dated 04 August 2020, including 'Errata Corrige' released 05 August 2020.

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

Remarks:

1. This Proposed AD will be closed for consultation on 03 September 2020.

2. Enquiries regarding this PAD should be referred to the EASA Programming and Continued Airworthiness Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

3. 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 EU aviation safety reporting system. 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.

4. For any question concerning the technical content of the requirements in this PAD, please contact: Leonardo S.p.A. Helicopters, E-mail: engineering.support.lhd@leonardocompany.com.