適航指令發布單
Airworthiness Directive Issuance Form

民航局 AD 編號 AD number	CAA-2019-05-012	發布日期 Date issued	2019/6/3
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	AW169 helicopters, all serial numbers (s/n); and AW189 helicopters, all s/n.		
主旨摘要	Tail Rotor – Tail Rotor Servo Actuator / Duplex Bearing – Inspection / Check		

民航局
CAA
☐本國產品
Native products

☐其他個案
Other

設計國民航主管機構
Original Authorities

☐FAA
■EASA
☐Brazil
☐Transport Canada Civil Aviation
☐DGAC
☐Germany LBA
☐CAA-NL
☐UK CAA
☐Japan CAB
☐CAA of Israel
☐Other_____

設計國 AD 編號 Original AD number	2019-0121

1. 直接採用原 AD 之內容?(Is the original AD directly adopted?)
   ■是(Yes) ☐否(No) _
   a. 生效日期另訂為(Re-specify the effective date as)：_____
   b. 執行時限另訂為(Re-specify the compliance time or period as)：_____
2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?)
   ☐是(Yes) ■否(No)

備註 Note	ATA 64. This AD supersedes EASA AD 2019-0023(CAA-2019-02-002) dated 01 February 2019. Ref. Publications: Leonardo S.p.A. Emergency ASB 169-148 original issue dated 29 May 2019. and Leonardo S.p.A. Emergency ASB 189-237 original issue dated 29 May 2019.

註：
1. AD 內容後附。
2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。
3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail：adcaa@mail.caa.gov.tw

Note：
1. The AD text is enclosed.
2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval.
3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail：adcaa@mail.caa.gov.tw

Airworthiness Directive

AD No.: 2019-0121

Issued: 29 May 2019

Note: This Airworthiness Directive (AD) 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.

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 (EU) 2018/1139, Article 71 exemption].

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

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

Effective Date: 03 June 2019

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

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2019-0023 dated 01 February 2019.

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

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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:

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

Groups: Group 1 helicopters are those that have been inspected in accordance with the instructions of Leonardo ASB 169-135 or ASB 189-224, as applicable.
Group 2 helicopters are those that have not been inspected in accordance with the instructions of Leonardo ASB 169-135 or ASB 189-224, as applicable.

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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 a precautionary measure, Leonardo issued ASB 169-120 for AW169 helicopters to provide inspection instructions to check correct installation of the tail rotor (TR) servo-actuator and, subsequently, ASB 189-213 with the same instructions for AW189 helicopters, since these have a TR flight control system of similar design to AW169 helicopters.

The incorrect installation of the TR servo-actuator, if not detected and corrected, depending on the flight condition, could possibly result in loss of control of the helicopter.

EASA issued Emergency AD 2018-0241-E to require a one-time visual inspection of the TR servo-actuator 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, building on further information, EASA issued Emergency AD 2018-0250-E, retaining the requirements of EASA AD 2018-0241-E, which was superseded, and requiring a precautionary one-time inspection of the TR duplex bearing and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, Leonardo published ASB 169-125 and ASB 189-214, providing further instructions to inspect the TR duplex bearing. Consequently, EASA issued Emergency AD 2018-0252-E, partially retaining the requirements of AD 2018-0250-E, which was superseded, to require a one-time inspection and breakaway torque check of the TR duplex bearing, inspection and reinstallation of the TR servo-actuator castellated nut and, depending on findings, accomplishment of applicable corrective action(s). That AD also defined conditions for installation of TR servo-actuators.

After that AD was issued, it was determined that certain repetitive inspections were necessary for continued monitoring of the fleet while complementary analyses were ongoing and Leonardo published ASB 169-126 and ASB 189-217 accordingly, providing instructions and EASA issued Emergency AD 2018-0261-E to require accomplishment of these actions.

After that AD was issued, TR duplex bearing test results showed that temperature is a reliable parameter to determine functional condition of the bearing. It was therefore decided to install and repetitively inspect a thermal strip as an additional means to monitor the condition of the TR duplex bearing, combined with a revision of the current inspection regime. Leonardo published ASB 169-135 and ASB 189-224 to provide the necessary instructions and EASA issued AD 2019-0023 to require installation of a thermal strip and monitoring of the TR duplex bearing condition.

Since EASA AD 2019-0023 was issued, continuous feedback from the fleet allowed to define improved inspection methods and Leonardo published the applicable ASB to provide instructions for additional repetitive inspections of the TR duplex bearing.

For the reasons described above, this AD retains the requirements of EASA AD 2019-0023, which is superseded, and requires more in-depth inspections of the TR duplex bearing for absence of particle release, associated with additional repetitive roughness checks of the TR duplex bearing.

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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 Inspection:

(1) Within the compliance time specified in Table 1 of this AD, as applicable, and, thereafter, at intervals not exceeding the value as specified in Table 1 of this AD, as applicable, inspect the slippage marking of the castellated nut installed on the back-end of the TR servo actuator in accordance with the instructions of Part I of the applicable ASB, and inspect the roughness and breakaway force of the TR duplex bearing in accordance with the instructions of Part II of the applicable ASB.

Table 1 – Inspection Thresholds and Intervals

Group	**Initial Inspection**	**Interval** (not to exceed)	**Part of applicable ASB**
1	Within 10 flight hours (FH) after last accomplishment of Part I of Leonardo ASB 169-135 or ASB 189-224	10 FH	Part I
2	Within 10 FH after the effective date of this AD		
1	Within 50 FH after last accomplishment of Part II of Leonardo ASB 169-135 or ASB 189-224	50 FH	Part II
2	Within 50 FH after the effective date of this AD		

Repetitive Thermal Strip Installation:

(2) Within the compliance time specified in Table 2 of this AD, as applicable, and, thereafter, at intervals not exceeding 20 FH, install a thermal strip on the spacer next to the TR duplex bearing in accordance with the instructions of Part III of the applicable ASB.

Table 2 – Thermal Strip Installation Threshold

Group	**Initial Installation**
1	Within 10 FH after last accomplishment of Part III of Leonardo ASB 169-135 or ASB 189-224
2	Within 10 FH after the effective date of this AD

Repetitive Thermal Strip Check:

(3) Within 10 FH after installing the initial thermal strip as required by paragraph (2) of this AD and, thereafter, at intervals not to exceed 10 FH, check the condition of the thermal strip and the indicated temperature in accordance with the instructions of Part IV of the applicable ASB.

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Additional Repetitive Inspections / Checks

(4) Within the compliance time specified in Table 3 of this AD, as applicable, and, thereafter, at intervals not exceeding the value as specified in Table 3 of this AD, as applicable, inspect/check the TR duplex bearing in accordance with the instructions of Part V and Part VI of the applicable ASB.

Table 3 – Additional Inspection/Check Thresholds and Intervals

Group	**Initial Inspection / Check**	**Interval** (not to exceed)	**Part of applicable ASB**
1	Within 10 FH after last accomplishment of Part I of Leonardo ASB 169-135 or ASB 189-224	10 FH	Part V (particles)
2	Within 10 FH after the effective date of this AD		
1	Within 10 FH after last accomplishment of Part I of Leonardo ASB 169-135 or ASB 189-224	200 FH	Part VI (additional roughness)
2	Within 10 FH after the effective date of this AD		

Corrective Action(s):

(5) If, during any inspection in accordance with the instructions of Part I of the applicable ASB, as required by paragraph (1) of this AD, any evidence of rotation of TR servo-actuator nut is found, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(6) If, during any thermal strip check as required by paragraph (3) of this AD, the thermal strip is detached, partially detached or unreadable, before next flight, inspect the roughness and breakaway force of the TR duplex bearing in accordance with the instructions of Part II of the applicable ASB.

(7) If, during any thermal strip check as required by paragraph (3) of this AD, the indicated temperature exceeds the value specified in Part IV of the applicable ASB, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(8) If, during any inspection in accordance with the instructions of Part II of the applicable ASB, as required by paragraph (1) or (6) of this AD, any discrepancy is found, before next flight, contact Leonardo for approved corrective action instructions and accomplish those instructions accordingly.

(9) If, during any inspection as required by paragraph (6) of this AD, no discrepancy of the TR duplex bearing is detected, before next flight, install a thermal strip on the spacer next to the TR duplex bearing in accordance with the instructions of Part III of the applicable ASB (see paragraph (3) of this AD for next thermal strip checks).

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(10) If, during any additional TR duplex bearing inspection or check as required by paragraph (4) 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:

(11) Within 2 days after each inspection or check as required by paragraph (1), (3), (4), or (6) of this AD, as applicable, report the results (including no findings) to Leonardo. This can be done by using the instructions of the applicable ASB.

Part Removal and Send to Leonardo:

(12) From the effective date of this AD, within 2 days after removal of a TR duplex bearing, if part of the corrective actions as required by paragraph (5), (7), (8) or (10) of this AD, as applicable, send the TR duplex bearing and the collecting containers of the grease to Leonardo for in-shop inspection. This can be done by using the instructions of the applicable ASB.

Terminating Action:

(13) None.

Ref. Publications:

Leonardo S.p.A. Emergency ASB 169-148 original issue dated 29 May 2019.

Leonardo S.p.A. Emergency ASB 189-237 original issue dated 29 May 2019.

The use of later approved revisions of the above-mentioned 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. The results of the safety assessment have indicated the need for immediate publication and notification, without the full consultation process.

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

4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system.

5. For any question concerning the technical content of the requirements in this AD, please contact: Leonardo S.p.A. Helicopters,
   E-mail: PSE_AW169.MBX.AW@leonardocompany.com, or
   E-mail: PSE_AW189.MBX.AW@leonardocompany.com.

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