Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 21-152

Issued: 14 October 2021

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:
AIRBUS

Type/Model designation(s):
A380 aeroplanes

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

TCDS Number(s): EASA.A.110

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2020-0183 dated 17 August 2020.

ATA 24 – Electrical Power – Ram Air Turbine Gearbox – Inspection / Modification

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Manufacturer(s):
Airbus

Applicability:
Airbus A380-841, A380-842 and A380-861 aeroplanes, all manufacturer serial number (MSN).

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

Affected part: Ram air turbines (RAT), having Part Number (P/N) 1704287G or P/N 1704287H, except those which have been modified (and reidentified as P/N 1704287J) in accordance with the modification SB.

Serviceable part: Any RAT, having P/N 1704287J.

The SB: Airbus Service Bulletin (SB) A380-24-8158 Revision 01.

The modification SB: Airbus SB A380-24-8164.

Groups: Group 1 aeroplanes are those that have an affected part installed.
Group 2 aeroplanes are those that do not have an affected part installed. An A380 aeroplane that has embodied Airbus modification (mod) 78302 in production is a Group 2 aeroplane, provided that the aeroplane remains in that configuration.

Aeroplane date of manufacture: The date of transfer of title, which is referenced in Airbus documentation at the time of first delivery to an operator.

Reason:
An occurrence was reported where an RAT installed on an aeroplane failed a manual ground torque check in accordance with the instructions of Airbus SB A380-24-8133, with the RAT gearbox drain hole not plugged. Subsequent disassembly of the RAT gearbox revealed excess water in the gearbox and corrosion. After investigation by the RAT manufacturer (previously Hamilton Sundstrand Corporation, currently Collins Aerospace), a significant amount of water, oil and metallic particles were found in the gearbox.

Prompted by that event, Airbus published SB A380-24-8147 (which includes reference to Hamilton Sundstrand Corporation SB ERPS38M-24-9) to provide inspection instructions, and EASA issued AD 2019-0124, applicable to a limited number of MSN, later superseded by EASA AD 2019-0192, reducing the compliance time, to require a one-time manual turbine free rotation check of each affected part and, depending on results, accomplishment of applicable corrective action(s). That AD also required reporting certain findings to Collins Aerospace.

After that AD was issued, reported results of the rotation check revealed several cases with water in the gearbox of a quantity in excess of 25 ml. This could surround the turbine shaft gear and lead to freezing at high altitude or cause corrosion in the gearbox components, possibly preventing RAT operation.

This condition, if not detected and corrected, could lead to loss of emergency electrical generation, which, in combination with an electrical system emergency condition, could possibly result in reduced control of the aeroplane.

To address this unsafe condition, Airbus issued SB A380-24-8158 (original issue) to provide inspection instructions. Consequently, EASA issued AD 2020-0009, requiring repetitive detailed inspections (DET) of the gearbox oil of each affected part, and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, Airbus issued the SB, as defined in this AD, to add a manual torque check test in the corrective action(s) procedure to detect corrosion on RAT forward bearings having any water contamination history. Consequently, EASA issued AD 2020-0183, retaining the requirements of EASA AD 2020-0009, which was superseded, to require an additional manual torque check test as part of the applicable corrective action(s).

Since that AD was issued, a new RAT standard was developed (introduced on the production line as Airbus mod 78302) and Airbus published the modification SB, as defined in this AD, providing instructions for modification / reidentification or replacement of the affected part as alternative options.

For the reasons described above, this AD retains the requirements of EASA AD 2020-0183, which is superseded, and requires either the modification / reidentification (by on-wing replacement of the RAT turbine gearbox assembly) or replacement of the affected part with a serviceable part, as defined in this AD. This AD also prohibits (re)installation of an affected part.

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

Required as indicated, unless accomplished previously:

Inspection(s):

(1) Within the compliance times as defined in Table 1 of this AD, as applicable, and, thereafter, at intervals not to exceed 6 months or 4 000 flight hours (FH) whichever occurs first, accomplish a DET of the gearbox oil of the affected part in accordance with the instructions of the SB.

Corrective Action(s):

(2) If, during any DET as required by paragraph (1) of this AD, the calculated water ingress rate exceeds the value specified in the SB, or if contaminant was found in the RAT during previous or current inspection(s), before next flight, accomplish the applicable corrective action(s), and, thereafter, depending on findings, accomplish any applicable follow-on action(s) in accordance with the instructions of the SB.

Table 1 – Initial DET

Aeroplane Date of Manufacture	**Compliance Time**	
Before 01 January 2019	whichever occurs later, **A** or **B**:	
	A	Within 6 months or 4 000 FH, whichever occurs first after accomplishment of Airbus SB A380-24-8147
	B	Within 3 months or 2 000 FH, whichever occurs first after 06 February 2020 [the effective date of EASA AD 2020-0009]
From 01 January 2019 to 06 February 2020 inclusive	Within 3 months or 2 000 FH, whichever occurs first after 06 February 2020 [the effective date of EASA AD 2020-0009]	
After 06 February 2020	Before exceeding 6 months or 4 000 FH, whichever occurs first since aeroplane date of manufacture	

Reporting:

(3) Report the results of each inspection to Airbus, as required by paragraph (3.1) or (3.2) of this AD, as applicable.

(3.1) In case of any finding: Within 10 days after the inspection.

(3.2) In case of no findings, as defined in the SB: Within 30 days after the inspection.

Credit:

(4) DET(s) and corrective action(s) on an aeroplane, accomplished before 31 August 2020 [the effective date of EASA AD 2020-0183] in accordance with the instructions of the SB at original issue, are acceptable to comply with the initial requirements of paragraphs (1) and (2) of this AD for that aeroplane. From 31 August 2020 [the effective date of EASA AD 2020-0183], DET and corrective action(s) must be accomplished in accordance with the instructions of the SB, as defined in this AD.

Modification:

(5) Within 48 months after the effective date of this AD, modify and re-identify the affected part, or replace the affected part with a serviceable part, as defined in this AD, in accordance with the instructions of the modification SB.

Terminating Action:

(6) Modification of an aeroplane as required by paragraph (5) of this AD constitutes terminating action for the repetitive inspections as required by paragraph (1) of this AD for that aeroplane.

Part installation:

(7) Do not install an affected part on any aeroplane, as required by paragraph (7.1) or (7.2) of this AD, as applicable.

(7.1) For Group 1 aeroplanes: After modification of an aeroplane as required by paragraph (5) of this AD.

(7.2) For Group 2 aeroplanes: From the effective date of this AD.

Ref. Publications:

Airbus SB A380-24-8158 original issue dated 15 November 2019, and Revision 01 dated 12 June 2020.

Airbus SB A380-24-8164 original issue dated 29 September 2021.

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 11 November 2021.

2. Enquiries regarding this PAD should be referred to the EASA Safety 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: AIRBUS SAS - IIANA (Airworthiness Office), Telephone: +33 562 110 253, Fax: +33 562 110 307, E-mail: account.airworth-A380@airbus.com.