Airworthiness Directive

AD No.: 2023-0027

Issued: 31 January 2023

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 or Annex Vb Part ML.A.301, as applicable, 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 Annex Vb Part ML.A.303, as applicable] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:
ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG

Type/Model designation(s):
Trent 1000 engines

Effective Date: 14 February 2023

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 72 – Engine – Low Pressure Turbine Stage 1 Blades – Inspection

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Manufacturer(s):
Rolls-Royce plc

Applicability:
Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2 and Trent 1000-L2 engines, all serial numbers.

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

The NMSB: Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) TRENT 1000 72-AK913.

Affected part: Low pressure (LP) turbine stage 1 blade assemblies, having Part Number (P/N) FW68788, which consist of a pair of blades welded together at the outer shroud. There are 85 LP turbine stage 1 blade assemblies in one set.

Reason:
Occurrences have been reported where, during inspection of affected parts on a small number of engines, cracking and separation of blade pairs were detected in the weld region. If a significant

number of blade pairs in a blade set are separated, this could change the vibration characteristics of the LP turbine stage 1 blade set.

This condition, if not detected and corrected, could lead to failure of affected parts with secondary damage to the LP turbine module, possibly resulting in release of high energy debris, with consequent damage to, and reduced control of, the aeroplane.

To address this potential unsafe condition, Rolls-Royce published the NMSB, as defined in this AD, providing inspection instructions.

For the reason described above, this AD requires repetitive inspections of affected parts and, depending on findings, reduction of the inspection interval or replacement of the LP turbine stage 1 blade set and disc.

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

Required as indicated, unless accomplished previously:

Inspection(s):

(1) Within the compliance time specified in Table 1 of this AD, and, thereafter, at intervals not to exceed 4 500 engine flight hours (EFH), inspect (on-wing or in-shop) the affected parts in accordance with the instructions of section 3.A of the NMSB. If, on the effective date of this AD, an engine that has reached or exceeded the 22 500 EFH threshold (see Note 1 of this AD) is in a shop visit where the engine pass off test has not yet concluded, the initial inspection must be accomplished before release to service of that engine.

Table 1 – Initial Inspection of Affected Parts

Accumulated EFH	Compliance Time
Less than 22 500 EFH	Before exceeding 22 500 EFH, or within 90 days after the effective date of this AD, whichever occurs later
22 500 EFH or more	Within 90 days after the effective date of this AD

Note 1: The EFH threshold indicated in Table 1 and paragraph (1) of this AD are EFH accumulated by the Module 52 since new (first installation on an engine).

(2) If, during any on-wing inspection as required by paragraph (1) of this AD, damage (cracking or separation) is found on one or more affected parts, depending on the damage found, reduce the on-wing inspection interval to the value specified in Table 1 of Section 3.A of the NMSB, as applicable.

Corrective Action(s):

(3) If, during any on-wing inspection as required by paragraph (1) of this AD, damage (cracking or separation) is found on more than 29 affected parts, before next flight, remove the engine from service and, before release to service of that engine, replace the LP turbine stage 1 blades and disc in accordance with the instructions of section 3.B of the NMSB.

(4) If, during any in-shop inspection as required by paragraph (1) of this AD, damage (cracking or separation) is found on one or more affected parts, before release to service of the engine, replace the LP turbine stage 1 blades and disc in accordance with the instructions of section 3.B of the NMSB.

Terminating Action:

(5) None.

Ref. Publications:

Rolls-Royce Alert NMSB TRENT 1000 72-AK913 original issue dated 08 December 2022.

The use of later approved revisions of the above-mentioned document 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. This AD was posted on 20 December 2022 as PAD 22-180 for consultation until 17 January 2023. The Comment Response Document can be found in the EASA Safety Publications Tool, in the compressed (zipped) file attached to the record for this AD.

3. Enquiries regarding this AD should be referred to the EASA Safety 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. This may include reporting on the same or similar components, other than those covered by the design to which this AD 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.

5. For any question concerning the technical content of the requirements in this AD, please contact your designated Rolls-Royce representative, or download the publication from your Rolls-Royce Care account at https://customers.rolls-royce.com.

   If you do not have a designated representative or Rolls-Royce Care account, please contact **Corporate Communications** at **Rolls-Royce plc**, P.O. Box 31, Derby, DE24 8BJ, United Kingdom Telephone +44 (0)1332 242424,

   or send an email through https://www.rolls-royce.com/contact-us/civil-aerospace.aspx identifying the correspondence as being related to **Airworthiness Directives**.