



Airworthiness Directive

AD No.: 2023-0165

Issued: 22 August 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: 05 September 2023

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 72 – Engine – Low Pressure Turbine Stage 1 Blade Assemblies – Inspection / Replacement

Manufacturer(s):

Rolls-Royce plc

Applicability:

Trent 1000-A, Trent 1000-AE, Trent 1000-C, Trent 1000-CE, Trent 1000-D, Trent 1000-E, Trent 1000-G and Trent 1000-H engines, all engine serial numbers.

These engines are known to be installed on, but not limited to, Boeing 787 aeroplanes.

Definitions:

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

The NMSB: Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) TRENT 1000 72-AK919. Where, in this AD, reference is made to a Rolls-Royce modification (mod), Service Bulletin (SB) or NMSB with an 'A' (Alert) in the number, it should be recognised that an earlier or later revision may not have that 'A'. This kind of change does not effectively alter the publication references for the purpose of this AD.



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

Serviceable part: An affected part which is new (not previously installed) or has accumulated less than 30 000 flight hours (FH) since first installation on an engine; or an affected part which has passed an inspection (no defects found that would result in rejecting the blade pair) in accordance with the instructions of section 3.A of the NMSB.

Serviceable LPT disc: A serviceable LPT disc is one that meets the acceptance criteria as specified in the current Engine Manual T-Trent-10RR.

Qualified shop visit: Module 52 Level 3 Refurbishment or Module 52 Level 4 Overhaul.

Reason:

Occurrences have been reported of finding cracking and separation in the weld region on a small number of affected parts during engine inspections. If a significant number of blade pairs in a blade set are separated, this could change the vibration characteristics of the LPT stage 1 blade set and lead to the release of blade material during engine running.

This condition, if not detected and corrected, may cause secondary damage to the LPT module and lead to engine in-flight shut-down (IFSD), possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, Rolls-Royce issued the NMSB, as defined in this AD, to provide inspection instructions.

For the reason described above, this AD requires inspection of the affected parts, and, depending on findings, replacement. This AD also regulates the (re)installation of affected parts.

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

Required as indicated, unless accomplished previously:

Inspection (on-wing or in-shop):

- (1) Before exceeding 30 000 FH accumulated by the affected part since first installation on an engine, or within 90 days after the effective date of this AD, whichever occurs later, and, thereafter, at intervals not to exceed 4 500 FH, inspect each affected part in accordance with the instructions of section 3.A of the NMSB.
- (2) For an engine with affected parts installed that have reached or exceeded the 30 000 FH threshold and that, on the effective date of this AD, is in a shop visit where the engine pass-off test has not yet concluded, before release to service of that engine, inspect each affected part in accordance with the instructions of section 3.A of the NMSB.
- (3) If, during any on-wing inspection as required by paragraph (1) of this AD, any cracking or separation is found on one or more affected parts, but not more than 32 blade pairs, reduce the inspection interval in accordance with the instructions of section 3 (Table 1) of the NMSB.



Corrective Action:

- (4) If, during any on-wing inspection as required by paragraph (1) or (3) of this AD, any cracking or separation is found on more than 32 blade pairs, before next flight, remove the engine from service and, before release to service of that engine, replace all affected parts and ensure that a serviceable LPT disc is (re)installed in accordance with the instructions of section 3.B of the NMSB.
- (5) If, during any in-shop inspection as required by paragraph (1) or (2) of this AD, as applicable, any cracking or separation is found on one or more affected parts, before release to service of the engine, replace all affected parts and ensure that a serviceable LPT disc is (re)installed in accordance with the instructions of section 3.B of the NMSB.

Replacement:

- (6) During each qualified shop visit after the effective date of this AD, replace all affected parts with new affected parts, as defined in this AD, and ensure that a serviceable LPT disc is (re)installed in accordance with the instructions of section 3.B of the NMSB.

Terminating Action:

- (7) None.

Part(s) Installation:

- (8) From the effective date of this AD, it is allowed to install on any engine an affected part, provided it is a serviceable part, as defined in this AD.

Ref. Publications:

Rolls-Royce TRENT 1000 Alert NMSB 72-AK919 original issue dated 26 April 2023, or Revision 1 dated 01 June 2023.

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 07 June 2023 as PAD 23-065 for consultation until 05 July 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**.

