Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 25-163

Issued: 22 October 2025

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:
ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG

Type/Model designation(s):
Trent 7000 engines

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

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2025-0021R1 dated 22 January 2025.

ATA 72 – Engine – High Pressure Turbine Blades – Inspection

Manufacturer(s):
Rolls-Royce plc

Applicability:
Trent 7000-72 and Trent 7000-72C engines, all serial numbers, except those on which modification (mod) 72-K336 has been embodied in production.

These engines are known to be installed on, but not limited to, Airbus A330 (NEO) 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-AK449 Revision 5. The NMSB has an 'A' (Alert) in the number, but an earlier or later revision may not have that 'A'. This kind of change does not effectively alter the publication references.

The modification SB: Rolls-Royce Service Bulletin (SB) TRENT 1000 72−K336.

Affected part: High pressure turbine (HPT) blades, having Part Number (P/N) KH64485.

Note 1: HPT blades, having P/N KH64485 can also be installed as a kit comprising a set of 66-off HPT blades in accordance with the instructions of the Rolls-Royce SB TRENT 1000 72−L043.

Serviceable part: HPT blades eligible for installation, which are not an affected part, or an affected part which is new (never previously installed).

Reason:

In-service experience has shown that the affected parts may deteriorate, and that the piece-part level inspections as specified in the Rolls-Royce Trent 7000 Time Limits Manual (TLM) T-T7000-1RR, Chapter 05-20 and in the Maintenance Planning Document (MPD) might not timely detect their damage.

This condition, if not detected and corrected, could lead to failure of an affected part, possibly resulting in engine in-flight shut-down (IFSD) and consequent reduced control of the aeroplane.

To address this potential unsafe condition, Rolls-Royce determined a flight cycle (FC) threshold and on-wing borescope inspection method and issued Revision 2 of the NMSB TRENT 1000 72-AK449 accordingly. Consequently, EASA published AD 2021-0169 to require initial and repetitive inspections of the affected parts to detect axial cracking and, depending on findings, removal from service of the engine for in-shop replacement of the affected parts. That AD also required implementation of a reduced life limit for the affected parts.

After EASA AD 2021-0169 (later revised) was issued, it was determined that the population of the serviceable parts can be expanded to include eligible HPT blades having P/Ns different from P/N KH64485. Rolls-Royce developed mod 72-K336 to introduce revised HPT blades featuring additional cooling holes in the blade aerofoil and shroud, geometry changes to the blade root inlet duct feature to increase the cooling air flow, and revised combustion rear inner case bypass case assembly featuring geometry changes to the top-up holes to increase the pre-swirl air flow to the blades. Further, Rolls-Royce issued the modification SB making this mod available for in-service engines. HPT blades introduced by mod 72-K336 are not affected by the unsafe condition addressed by that AD. Consequently, Rolls-Royce issued Revision 3 of Rolls-Royce NMSB TRENT 1000 72−AK449 excluding engines in post-mod 72-K336 configuration from the Effectivity.

After EASA AD 2021-0169R1 was issued, Rolls-Royce issued Revision 4 of the NMSB TRENT 1000 72-AK449 introducing instructions and corrective actions for inspection of the Convex surface (Area C4) and more detailed criteria for cracking identified within leading edge (LE) (Area A); and EASA issued AD 2025-0021 (later revised), retaining the requirements of EASA AD 2021-0169R1, which was superseded and, additionally, requiring inspection of the Convex surface (Area C4).

Since that AD was issued, Rolls-Royce issued the NMSB, as defined in this AD, removing the reduced life limit introduced earlier by AD 2021-0169, revising the size of the allowable axial cracking damage and improving the inspection instructions.

For the reasons described above, this AD partially retains the requirements of EASA AD 2025-0021R1, which is superseded (including its original issue), removes the reduced life limit, and introduces improved instructions and corrective actions within new compliance time.

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

Required as indicated by this AD, unless the action(s) required by this AD have been already accomplished:

Inspection(s):

(1) Before exceeding the compliance time as specified in Table 1 of this AD, as applicable, accomplish on-wing borescope inspection of all affected parts in accordance with the instructions of Section 3.A of the NMSB.

Table 1 – Inspection Threshold(s) (see Note 2 of this AD)

FC Accumulated	Compliance Time
Less than 475 FC	Before exceeding 500 FC
475 FC or more	Within 25 FC after 02 August 2021 [the effective date of EASA AD 2021-0169 at original issue]

Note 2: Unless indicated otherwise, the FC specified in Table 1 and Table 2 of this AD are those accumulated on 02 August 2021 [the effective date of EASA AD 2021-0169 at original issue] by the engine since first flight, or since last in-service HPT blade set replacement, as applicable.

(2) Within the compliance time as specified in Table 2 of this AD, as applicable, and, thereafter, at intervals not to exceed 50 FC, accomplish on-wing borescope inspection of all affected parts in accordance with the instructions of Section 3.A of the NMSB.

Table 2 – First Repeat Inspection Threshold(s) (see Note 2 of this AD)

FC Accumulated	Compliance Time
Less than 725 FC	Before exceeding 750 FC
725 FC or more	Within 25 FC after 02 August 2021 [the effective date of EASA AD 2021-0169 at original issue]

(3) From 02 August 2021 [the effective date of EASA AD 2021-0169 at original issue], before next flight after IFSD of an engine on an aeroplane, if the accumulated life of the affected parts installed on the not-affected (no IFSD) engine of that aeroplane have exceeded 450 FC, accomplish an on-wing borescope inspection of all affected parts on that not-affected (no IFSD) engine in accordance with the instructions of Section 3.A of the NMSB.

Follow-On Inspection:

(4) From the effective date of this AD, if, during any inspection as required by paragraph (1), (2) or (3) of this AD, any crack indication, as defined in the NMSB, is found on the leading edge (Area A) or Convex surface (Area C4) area of one or more affected parts, having a length less than or equal to 3 mm (0.12 in), within 10 FC after the inspection detecting crack(s) and, thereafter at intervals not to exceed 10 FC accomplish follow-on on-wing borescope inspections of the leading edge (Area A) and Convex surface (Area C4) of all affected parts in accordance with the instructions of Section 3.A of the NMSB.

Corrective Action(s):

(5) If, during any inspection as required by paragraph (1), (2), (3) or (4) of this AD, axial crack above 3 mm (0.12 inch) is found on the LE (Area A) of an affected part, within the compliance time specified in Table 3 of this AD, as applicable, remove the engine from service and, before release to service of that engine, replace all the affected parts with a full set of serviceable parts, as defined in this AD in accordance with approved Rolls-Royce maintenance instructions.

Table 3 – Engine Removal from Service – LE Area Cracking

Cracking of the LE Area (Area A)	Compliance Time
Axial crack exceeding 4 mm (0.16 inch) in length	Before next flight
Axial crack exceeding 3 mm (0.12 inch) but not exceeding 4 mm (0.16 inch), inclusive, in length	Within 10 FC after the inspection detecting crack(s)

(6) If, during any inspection as required by paragraph (1), (2), (3) or (4) of this AD, axial crack indication, as defined in the NMSB, is found on the Convex surface (Area C4) of an affected part, having a length of more than 3 mm (0.12 in), before next flight remove the engine from service and, before release to service of that engine, replace all the affected parts with a full set of serviceable parts, as defined in this AD in accordance with approved Rolls-Royce maintenance instructions.

(7) For engines operated in accordance with Airbus A330 Aircraft Maintenance Manual (AMM) Task 72-00-00-290-842-A “Special Detailed Borescope Inspection of HP Turbine Blades ”: From the effective date of this AD, during any inspection accomplished in accordance with Airbus A330 AMM Task 72-00-00-290-842-A, if a follow-on inspection is required with a repeat interval of less than 50 FC (also considering any hour-based limitation), accomplish the actions as required by paragraphs (7.1) and (7.2) of this AD, as applicable.

(7.1) Concurrently with the accomplishment of the follow-on inspection, perform a detailed inspection of the Convex surface (Area C4) of all affected parts in accordance with the instructions of Section 3.A of the NMSB.

(7.2) If, during any inspection of the Convex surface (Area C4), as required by paragraph (7.1) of this AD, any discrepancy is found, as defined in the NMSB, before next flight, accomplish the applicable corrective actions in accordance with the instructions of Section 3.A of the NMSB.

Credit:

(8) Inspections and, depending on findings, corrective actions accomplished on an engine, before the effective date of this AD, in accordance with the instructions of the original issue, Revision 1, Revision 2, Revision 3 or Revision 4 of the NMSB TRENT 1000 72-AK449 are acceptable to comply with the requirements of this AD for that engine.

Terminating Action:

(9) Modification of an engine in accordance with the instructions of the modification SB constitutes terminating action for the repetitive inspections as required by this AD for that engine.

Ref. Publications:

Rolls-Royce Alert NMSB TRENT 1000 72-AK449 Revision 1 dated 12 December 2019, or Revision 2 dated 05 July 2021, or Revision 3 dated 30 August 2023, or Revision 4 dated 19 December 2024, or Revision 5 dated 11 August 2025.

Rolls-Royce SB TRENT 1000 72−K336 original issue 03 August 2022, or Revision 1 dated 03 October 2023.

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 19 November 2025.

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 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**.