



Airworthiness Directive

AD No.: 2018-0095R1

Issued: 29 November 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:

ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG

Type/Model designation(s):

Trent 1000 engines

Effective Date: Revision 1: 06 December 2019
Original issue: 08 May 2018

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2018-0095 dated 24 April 2018.

ATA 72 – Engine – Intermediate Pressure Compressor Rotor Seal – Inspection / De-Pairing Limitation

Manufacturer(s):

Rolls-Royce plc

Applicability:

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

These engines are known to be installed on, but not limited to, Boeing 787-8 and 787-9 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-AJ929. The NMSB has an 'A' (Alert) in the number, but a later revision may not have that 'A'. This kind of change does not effectively alter the publication references.



The SB: Rolls-Royce Service Bulletin (SB) TRENT 1000 72-K216, which introduces the combination of intermediate pressure compressor (IPC) static buffer seal to mod/SB 72-J603 standard and Part Number (P/N) KH19098 IPC rotor buffer seal.

Affected seal: IPC rotor buffer seals, P/N KH77674.

Groups: Group 1 engines are those that have an affected seal installed. Group 2 engines are those that do not have an affected seal installed. An engine in pre-modification (mod) 72-J704 configuration, ESN below 10554, is a Group 2 engine, provided the engine remains in that configuration.

Reason:

During an engine shop visit, an affected seal was found with cracking at the seal head. Propagation of such cracking may lead to failure, causing secondary impact damage to the IPC module.

This condition, if not detected and corrected, could lead to engine power loss, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, Rolls-Royce published the NMSB, providing instructions for on-wing borescope inspections. Rolls-Royce previously issued NMSB TRENT 1000 72-J353, which contains instructions for in-shop inspections. Consequently, EASA issued AD 2018-0095 to require repetitive borescope inspections of the front face of the affected seals and, depending on findings, accomplishment of applicable corrective action(s).

Since that AD was issued, Rolls-Royce issued the SB, as defined in this AD. Modification in accordance with the SB allows terminating the repetitive inspections as required by this AD.

For the reason described above, this AD is revised to introduce the SB as optional terminating action. This AD is related to EASA AD 2018-0094R1, as the requirements for post-mod/SB 72-J704 engines affect the de-pairing requirements of that AD.

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

Required as indicated, unless accomplished previously:

Repetitive Inspections:

- (1) For Group 1 engines: Within the compliance times as specified in the NMSB, accomplish an on-wing borescope inspection of the affected seal front face in accordance with the instructions of Section 3, Part A of the NMSB. Thereafter, depending on findings, repeat the on-wing borescope inspection at intervals not to exceed the value(s) as specified in Figures 1 and 2 of the NMSB, as applicable.
- (2) An in-shop inspection in accordance with the instructions of Rolls-Royce NMSB TRENT 1000 72-J353 may be substituted for an on-wing inspection as required by paragraph (1) of this AD, provided the compliance times are not exceeded.



Limitation(s):

- (3) From 08 May 2018 [the effective date of the original issue of this AD], do not operate an aeroplane, having two Group 1 engines installed that are either subject to the 50 engine flight cycles (EFC) inspection interval, or to the single 100 EFC fly-on period (see Figure 2 of the NMSB), as required by paragraph (1) of this AD. For further related de-pairing requirements, see EASA AD 2018-0094.

Corrective Action(s):

- (4) If, during any on-wing inspection as required by paragraph (1) of this AD, any evidence of cracking is found on the affected seal front face, that is at or beyond the reject limits as specified in the NMSB, before next flight, remove the engine from service and, before release to service of that engine, contact Rolls-Royce for approved repair instructions and accomplish those instructions accordingly.
- (5) If, during any in-shop inspection as specified in paragraph (2) of this AD, any evidence of cracking is found on the affected seal front face, that is at or beyond the reject limits as specified in the NMSB, before release to service of the engine, contact Rolls-Royce for approved repair instructions and accomplish those instructions accordingly.

Modification:

- (6) For Group 2 engines: From 08 May 2018 [the effective date of the original issue of this AD], it is allowed to modify an engine in accordance with the instructions of Rolls-Royce SB TRENT 1000 72-J704 provided that, following modification, inspections on that engine are started as required by paragraph (7) of this AD.
- (7) Before release to service of an engine after modification as specified in paragraph (6) of this AD, contact Rolls-Royce to determine when the repetitive inspections, as required by paragraph (1) of this AD, must be started on that post-SB 72-J704 engine.

Reporting Requirement(s):

- (8) If, during any inspection as required by this AD, evidence of cracking is found, within 30 days, report the inspection result to Rolls-Royce, in accordance with the instructions of Section 1.C. (2) of the NMSB. Appendix 1 of the NMSB can be used for this reporting requirement.

Terminating Action(s):

- (9) Modification of a Group 1 engine in accordance with the instructions of the SB constitutes terminating action for the repetitive inspections as required by this AD for that engine, provided the engine remains in that configuration.

Ref. Publications:

Rolls-Royce NMSB TRENT 1000 72-J353 original issue dated 25 August 2016, or Revision 1 dated 24 November 2016, or Revision 2 dated 14 February 2018.

Rolls-Royce SB TRENT 1000 72-J704 original issue dated 23 June 2017.

Rolls-Royce Alert NMSB TRENT 1000 72-AJ929 original issue dated 23 November 2017.



Rolls-Royce SB TRENT 1000 72-K216 original issue dated 18 June 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 original issue of this AD was posted on 07 March January 2018 as PAD 18-034 for consultation until 04 April 2018. 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. This revised AD was posted on 11 November 2019 as PAD 19-201 for consultation until 25 November 2019. No comments were received during the consultation period.
4. Enquiries regarding this AD should be referred to the EASA Programming and Continued Airworthiness Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
5. 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](#).
6. 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 http://www.rolls-royce.com/contact/civil_team.jsp identifying the correspondence as being related to **Airworthiness Directives**.

