Airworthiness Directive

AD No.: 2018-0095

Issued: 24 April 2018

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 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 (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:

ROLLS-ROYCE plc

Type/Model designation(s):

Trent 1000 engines

Effective Date: 08 May 2018

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

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

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Manufacturer(s):

Rolls-Royce plc (RR)

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: RR 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.

Affected seal: Intermediate pressure compressor (IPC) rotor seals, Part Number (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, RR published the NMSB, providing instructions for on-wing borescope inspections. RR previously issued NMSB TRENT 1000 72-J353, which contains instructions for in-shop inspections.

For the reasons described above, this AD requires repetitive borescope inspections of the front face of the affected seals and, depending on findings, accomplishment of applicable corrective action(s).

This AD is related to EASA AD 2018-0094, which superseded EASA AD 2017-0017R2, as these 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 RR 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 the effective date 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 RR 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 RR for approved repair instructions and accomplish those instructions accordingly.

Modification:

(6) For Group 2 engines: From the effective date of this AD, it is allowed to modify an engine in accordance with the instructions of RR 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 RR 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 RR, 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) None.

Ref. Publications:

Rolls-Royce NMSB TRENT 1000 72-J353, original issue, dated 25 August 2016.

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.

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. This AD was posted on 07 March 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. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. 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**.