



Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 16-173

Issued: 15 December 2016

Note: This Proposed Airworthiness Directive (PAD) 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.

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 plc

Type/Model designation(s):

Trent 1000 engines

Effective Date: [TBD – expected: 7 days after Final AD issue date]

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 72 – Engine – Intermediate Pressure Compressor Rotor Seal – Inspection

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.

These engines are known to be installed on, but not limited to, Boeing 787-8 and 787-9 aeroplanes.

Reason:

Recently, a low speed abort (60 to 65 knots) occurred on take-off on a Trent 1000-powered Boeing 787 aeroplane. The pilot performed a commanded engine shutdown and the aeroplane safely returned to the gate. Following investigation, failure and release of the intermediate pressure compressor (IPC) rotor seal was confirmed as having caused this event. RR have confirmed that other IPC rotor seals, Part Number (P/N) KH19098, have been found with cracking at the seal head.

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 Alert Non-Modification Service Bulletin (NMSB) TRENT 1000 72- AJ467, providing inspection instructions for the affected engines.

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

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

Required as indicated, unless accomplished previously:

Note 1: Where, in this AD, reference is made to an RR Mod, 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.

Note 2: RR Alert NMSB TRENT 1000 72-AJ467 is hereafter referred to as 'the NMSB' in this AD.

Note 3: IPC rotor seal P/N KH19098 is hereafter identified as 'the affected seal' in this AD.

Repetitive Inspections:

- (1) Within the compliance times as specified in the NMSB, accomplish an on-wing borescope inspection of the affected seal in accordance with the instructions of Section 3, Part A (front face) of the NMSB, and/or, depending on findings (see Figure 1 of the NMSB), Part B (rear face) of the NMSB, as applicable. Thereafter, depending on findings, repeat the on-wing borescope inspection at intervals not to exceed the value(s) as specified in Figures 1, 2 or 4 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:

- (3) From the effective date of this AD, do not operate an aeroplane, having two engines installed that are both subject to the 20 engine flight cycles inspection interval (see Figure 4 of the NMSB).

Corrective Action(s):

- (4) If, during any on-wing inspection as required by paragraph (1) of this AD, or any in-shop inspection as specified in paragraph (2) of this AD, as applicable, any crack is found on the rear face of the affected seal, that is at or beyond the reject limits as specified in the NMSB, before next flight, or before release to service of the engine, as applicable, replace the affected seal with a new part.

Credit:

- (5) Inspections and corrective actions on an engine, accomplished before the effective date of this AD in accordance with the instructions of the NMSB (on wing), or that meet the intent of the NMSB, or RR NMSB TRENT 1000 72-J353 (in-shop), are acceptable to comply with the initial requirements of paragraphs (1) and (4) of this AD, for that engine.



Terminating Action:

- (6) Replacement of an affected seal on an engine, as required by paragraph (4) of this AD, does not constitute terminating action for the repetitive inspections required by paragraph (1) of this AD for that engine.

Ref. Publications:

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

Rolls-Royce Alert NMSB TRENT 1000 72-AJ467, original issue, dated 9 November 2016.

The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. This Proposed AD will be closed for consultation on 29 December 2016.
2. Enquiries regarding this PAD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
3. 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 http://www.rolls-royce.com/contact/civil_team.jsp identifying the correspondence as being related to **Airworthiness Directives**.

