



Airworthiness Directive

AD No.: 2020-0041

Issued: 28 February 2020

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):

RB211 Trent 900 engines

Effective Date: 13 March 2020

TCDS Number(s): EASA.E.012

Foreign AD: Not applicable

Supersedure: None

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

Manufacturer(s):

Rolls-Royce plc

Applicability:

RB211 Trent 970-84, Trent 972-84 and Trent 972E-84 engines, all serial numbers.

Definitions:

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

Affected part: Intermediate pressure compressor (IPC) rotor shaft, Part Number (P/N) FW20677.

The NMSB: Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AK493. 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.

Reason:

An occurrence was reported where, during a shop visit visual inspection of a Trent 900 IPC rotor shaft P/N FW20677, a crack was found in an interstage spacer between the Stage 2 and Stage 3 IPC discs. During subsequent shop inspections of other IPC rotor shafts P/N FW20677, a similar crack was found in the same location. While investigation is on-going to identify the cause of these cracks, it has been determined that more engines could be affected by this cracking phenomenon.



This condition, if not detected and corrected, could lead to IPC rotor shaft failure, possibly resulting in release of high-energy debris, with consequent damage to, and/or reduced control of, the aeroplane.

To address this potential unsafe condition, Rolls-Royce published the NMSB, providing inspection instructions.

For the reasons described above, this AD requires, for certain engines, a one-time on-wing borescope inspection and, for all engines, repetitive in-shop inspections of each affected part and, depending on findings, accomplishment of applicable corrective action(s). This AD also requires inspection of certain IPC rotor shafts, prior to installation.

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

Required as indicated, unless accomplished previously:

Inspection(s):

- (1) For engines in the condition as specified in Section 1.D.(1)(a) of the NMSB, within 200 flight cycles after the effective date of this AD, accomplish a one-time on-wing borescope inspection of the affected part in accordance with the instructions of the NMSB.
- (2) For all engines: From the effective date of this AD, during each engine shop visit, inspect the affected part in accordance with the instructions of the NMSB.

Corrective Action(s):

- (3) If, during the inspection as required by paragraph (1) of this AD, any crack is detected, before next flight, remove the engine from service and, before release to service of the engine, contact Rolls-Royce for approved corrective action instructions and accomplish those instructions accordingly.
- (4) If, during any inspection as required by paragraph (2) of this AD, any crack is detected, before release to service of the engine, contact Rolls-Royce for approved corrective action instructions and accomplish those instructions accordingly.

Alternative Method(s):

- (5) Inspection and, depending on findings, correction of an engine, or modification of an engine, accomplished in accordance with an inspection method or SB embodiment as identified in Section 1.D.(1) "Note:" of the NMSB, is an acceptable alternative method to comply with the on-wing inspection and correction requirements of paragraphs (1) and (3), respectively, of this AD for that engine.

Terminating Action:

- (6) None.

Parts Installation:

- (7) From the effective date of this AD, it is allowed to install on any engine an IPC rotor shaft P/N FW20677, provided the part is new (not previously installed on any engine), or the part



has, prior to installation, passed an inspection (no defect detected) in accordance with the instructions of the NMSB.

Engine Installation:

- (8) From the effective date of this AD, an engine in the condition as specified in Section 1.D.(1)(a) of the NMSB can be installed on an aeroplane, provided that, following installation, the engine is inspected as required by paragraph (1) of this AD.
- (9) From the effective date of this AD, it is allowed to install on any aeroplane a spare engine (not in service, nor in-shop), provided that, following installation, the engine is inspected as required by paragraph (1) or (2) of this AD, as applicable.

Ref. Publications:

Rolls-Royce Alert NMSB RB.211-72-AK493 original issue dated 03 February 2020.

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 23 January 2020 as PAD 20-015 for consultation until 20 February 2020. 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 Programming and Continued Airworthiness 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](#).
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**.

