Airworthiness Directive

AD No.: 2020-0208

Issued: 05 October 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:	Type/Model designation(s):
ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG	RB211 Trent 900 engines

Effective Date:	19 October 2020
TCDS Number(s):	EASA.E.012
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2020-0041 dated 28 February 2020.

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

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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 shafts, Part Number (P/N) FW20677.

The NMSB: Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AK493 Revision 1. 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.

CSSV: Cycles since last shop visit (CSSV), where a Level 4 (CSSV L4) overhaul was completed on the module 32 (IPC Module); or a Level 2 (CSSV L2) check and repair was completed on the module 32.

CSN: Cycles since new (CSN), i.e. those accumulated by an affected part or module since its first installation on an engine.

Reason:

An occurrence was reported where, during a shop visit visual inspection of an affected part, a crack was found in an interstage spacer between the Stage 2 and Stage 3 IPC discs. During a subsequent shop inspection of another affected part, a similar crack was found in the same location. While investigation was on-going to identify the cause of these cracks, it was 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 Alert NMSB RB.211-72-AK493 (original issue), providing inspection instructions. Consequently, EASA issued AD 2020-0041 to require, for certain engines, a one-time on-wing borescope inspection and, for all engines, repetitive in-shop inspections of the affected part and, depending on findings, accomplishment of applicable corrective action(s).

Since that AD was issued, it was decided that repetitive on-wing inspections are necessary, and Rolls-Royce accordingly issued the NMSB, as defined in this AD, also introducing acceptance criteria.

For the reasons described above, this AD retains the requirements of EASA AD 2020-0041, which is superseded, and introduces repetitive on-wing inspections.

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

Required as indicated, unless accomplished previously:

On-Wing Inspection(s):

(1) Depending on the condition of the affected part or module on the effective date of this AD, within the compliance time(s) as specified in Table 1 of this AD, as applicable, and thereafter, at intervals not to exceed 500 flight cycles (FC) or 5 000 flight hours (FH), whichever occurs first, accomplish an on-wing borescope inspection of the affected part in accordance with the instructions of the NMSB.

Table 1 – Engine / Module Conditions (see Note 1 of this AD)

Condition	Compliance Time(s)
Section 1.D.(1)(a)(i)	Within 500 FC or 5 000 FH, whichever occurs first since the last visual inspection of the affected part in accordance with the instructions of Rolls-Royce Alert NMSB RB.211-72-AK493
Section 1.D.(1)(a)(ii)	Within 200 FC or 2 000 FH, whichever occurs first after the effective date of this AD
Section 1.D.(1)(b)(i)	Within 200 FC or 2 000 FH, whichever occurs first after the effective date of this AD
Section 1.D.(1)(b)(ii)	Before the affected part exceeds 2 500 CSN, or before the module 32 exceeds 2 500 CSN, whichever occurs first

Table 1 – Engine / Module Conditions (see Note 1 of this AD)

Condition	Compliance Time(s)
Section 1.D.(1)(b)(iii)	Before the affected part exceeds 2 500 CSN, or before the module 32 exceeds 2 500 CSSV L4, whichever occurs first
Section 1.D.(1)(c)(i)	Before the affected part exceeds 2 500 CSN, or before the module 32 exceeds 2 500 CSN, whichever occurs first
Section 1.D.(1)(c)(ii)	Before the affected part exceeds 2 500 CSN, or before the module 32 exceeds 2 500 CSSV L4, whichever occurs first
Section 1.D.(1)(c)(iii)	Before the module 32 exceeds 500 CSSV L2

Note 1: The conditions of the affected part or module referenced in Table 1 of this AD are those as specified in the referenced Section of the NMSB.

In-Shop Inspections:

(2) For all engines: From 13 March 2020 [the effective date of EASA AD 2020-0041], during each engine shop visit, inspect the affected part in accordance with the instructions of the NMSB.

For an engine that, on the effective date of this AD, is in a shop visit as specified in Section 1.D.(2)(a) of the NMSB, before release to service of that engine, inspect the affected part in accordance with the instructions of the NMSB.

Corrective Action(s):

(3) If, during any 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 requirements of paragraph (1) of this AD, and the correction requirements of paragraph (3), respectively, of this AD for that engine.

(6) An in-shop inspection of an engine in accordance with the instructions of the NMSB, as required by paragraph (2) of this AD, is an acceptable alternative method in lieu of an on-wing inspection as required by paragraph (1) of this AD for that engine, provided the compliance times are not exceeded.

Credit:

(7) Inspection(s) and corrective action(s) on an engine, accomplished before the effective date of this AD in accordance with the instructions of Rolls-Royce Alert NMSB RB.211-72-AK493 at original issue, are acceptable to comply with the initial requirements of this AD for that engine.

(8) An in-shop inspection of an engine, accomplished before the effective date of this AD in accordance with the instructions of Rolls-Royce Trent 900 NMSB RB.211-72-K497 is acceptable to comply with the initial in-shop inspection as required by paragraph (2) of this AD.

Terminating Action:

(9) None.

Parts Installation:

(10) From 13 March 2020 [the effective date of EASA AD 2020-0041], it is allowed to install on any engine an affected part, 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:

(11) From the effective date of this AD, it is allowed to install an engine on any aeroplane, provided that, following installation, and within the applicable compliance time(s) as specified in Table 1 of this AD, depending on engine or module condition, the affected part of that engine is inspected in accordance with the instructions of the NMSB and, thereafter, as required by paragraphs (1) and (2) of this AD.

Ref. Publications:

Rolls-Royce Trent 900 Alert NMSB RB.211-72-AK493 original issue dated 03 February 2020, and Revision 1 dated 14 September 2020.

The use of later approved revisions of the above-mentioned document is acceptable for compliance with the requirements of this AD.

Rolls-Royce Trent 900 NMSB RB.211-72-K497 original issue dated 23 January 2020.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. This AD was posted on 25 August 2020 as PAD 20-124 and re-published on 28 August 2020 as PAD 20-124R1 for consultation until 22 September 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. This may include reporting on the same or similar components, other than those covered by the design to which this AD 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.

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**.