



Airworthiness Directive

AD No.: 2017-0162

[Correction: 12 September 2017]

Issued: 01 September 2017

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):

RB211-22 and RB211-524 engines

Effective Date: 23 September 2017

TCDS Number(s): EASA.E.062

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2015-0187 dated 09 September 2015.

ATA 72 – Engine – Low Pressure Turbine Roller Bearing – Replacement

Manufacturer(s):

Rolls-Royce plc (RR)

Applicability:

RB211-22B-02, RB211-524B-02, RB211-524B-B-02, RB211-524B2-19, RB211-524B2-B-19, RB211-524B3-02, RB211-524B4-02, RB211-524B4-D-02, RB211-524C2-19, RB211-524C2-B-19, RB211-524D4-19, RB211-524D4-B-19, RB211-524D4-39, RB211-524D4-B-39, RB211-524D4X-19, RB211-524D4X-B-19, RB211-524G2-19, RB211-524G2-T-19, RB211-524G3-19, RB211-524G3-T-19, RB211-524H-36, RB211-524H-T-36, RB211-524H2-19 and RB211-524H2-T-19 engines, all serial numbers.

These engines are known to be installed on, but not limited to, Lockheed Martin Corporation L-1011 (TriStar), Boeing 747 and Boeing 767 aeroplanes.

Reason:

An RB211-524G2-T engine experienced an in-service event that resulted in breach of a turbine casing and some release of core engine debris through a hole in the engine nacelle. Investigation result of the event determined the primary cause to have been fracture and release of a low pressure (LP) turbine stage 2 blade. The blade release caused secondary damage to the LP turbine, producing significant out-of-balance forces. The event engine was fitted with an LP turbine support



bearing where the roller retention cage is constructed from two halves that are riveted together. The LP turbine imbalance resulted in an overload of the LP turbine support bearing and caused separation of the riveted, two-piece roller retention cage. Radial location of the LP turbine shaft was lost, allowing further progression of the event that resulted in a breach of the IP turbine casing.

This condition, if not corrected, could lead to breach of the turbine casing and release of high energy debris, possibly resulting in damage to the aeroplane and/or injury to the occupants.

To address this potentially unsafe condition, RR issued Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AG729 and NMSB RB.211-72-AG800 to introduce a modified LP turbine support roller bearing. This modified LP turbine support roller bearing can withstand greater abnormal loads that could be generated when a turbine blade release occurs, therefore preventing the failure progression as occurred during the event.

Consequently, EASA issued AD 2015-0187 to require modification of the affected engines by replacing the two-piece LP turbine support roller bearing with an improved, one-piece part.

Since that AD was issued, further analysis indicated that the compliance time for modification could be extended. In addition, it was determined that AD 2015-0187 did not adequately take into account unmodified spare engines held in store for extended periods.

For the reasons described above, this AD retains the requirements of EASA AD 2015-0187, which is superseded, extends the compliance time by 39 months, and amends the requirements for engine installation.

This AD has been republished to include reference to the current EASA TCDS, and to correct a typographical error in paragraph (4).

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 NMSB RB.211-72-AG729 and NMSB RB.211-72-AG800, as applicable, are hereafter collectively referred to as 'applicable NMSB' in this AD.

Note 3: For the purpose of this AD, Group 1 engines are those that have a LP turbine support two-piece riveted cage roller bearing, Part Number (P/N) LK30313 or P/N UL29651, installed. Group 2 engines are those that have a P/N FB500000 LP turbine support roller bearing installed.

Modification:

- (1) For Group 1 engines: Within 63 months after 23 September 2015 [the effective date of EASA AD 2015-0187], replace the LP turbine support two-piece riveted cage roller bearing, P/N LK30313 or P/N UL29651, as applicable, with a P/N FB500000 LP turbine support roller bearing in accordance with the instructions of the applicable NMSB.



Parts Installation:

(2) Do not to install an LP turbine support two-piece riveted cage roller bearing P/N LK30313 or P/N UL29651 on an engine, as required by paragraph (2.1) or (2.2) of this AD, as applicable.

(2.1) For a Group 1 engine: After modification of that engine as required by paragraph (1) of this AD.

(2.2) For Group 2 engines: From 23 September 2015 [the effective date of EASA AD 2015-0187].

Engine Installation:

(3) From the effective date of this AD, do not release an engine to service from a shop visit, unless it has been determined the engine has P/N FB500000 LP turbine support roller bearing installed.

(4) From the effective date of this AD, do not operate an engine, as defined in Note 4 of this AD, on any aeroplane, unless it has been determined the engine has P/N FB500000 LP turbine support roller bearing installed.

Note 4: The requirement of paragraph (4) of this AD affects non-operational (uninstalled or installed) engines held in long-time storage, in accordance with applicable storage procedures.

Ref. Publications:

Rolls-Royce NMSB RB.211-72-AG729 original issue dated 01 August 2011.

Rolls-Royce NMSB RB.211-72-AG800 original issue dated 05 March 2012.

The use of later approved revisions of these 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. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the Safety Information Section, Certification Directorate, EASA. 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



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send an email through http://www.rolls-royce.com/contact/civil_team.jsp identifying the correspondence as being related to **Airworthiness Directives**.

