



Airworthiness Directive

AD No.: 2016-0227

Issued: 10 November 2016

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 Trent 500 engines

Effective Date: 24 November 2016

TCDS Number(s): EASA.E.060

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2012-0237R1 dated 14 November 2012.

ATA 73 – Engine – Low Pressure Fuel Tubes, Clips and Fuel Oil Heat Exchanger Mounts – Inspection

Manufacturer(s):

Rolls-Royce plc (RR)

Applicability:

RB211 Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61 and 560A2-61 engines, all serial numbers.

These engines are known to be installed on, but not limited to, Airbus A340-500 and A340-600 series aeroplanes.

Reason:

Fuel leaks from the low pressure (LP) fuel tubes, which run between the LP fuel pumps and high pressure (HP) fuel pumps, occurred in-service. The results of subsequent technical investigations showed that these were caused by fretting between the securing clips and the LP fuel tube outer surface, which reduces the fuel tube thickness, leading to fracture of the fuel tube and consequent fuel leak.

This condition, if not detected early enough or if not correctly managed, could lead to critical fuel unbalance or in-flight fuel starvation. Fuel leak detection and the associated aeroplane procedures can be complex, leading to some flight crews failing to detect and/or address such situations.



To address this potential unsafe condition, RR published Alert Non-Modification Service Bulletin (NMSB) RB.211-73-AG797 to provide inspection instructions as a precautionary measure to mitigate the risk of in-flight fuel starvation. Consequently, EASA issued AD 2011-0243 to require a one-time on-wing inspection of the LP fuel tubes and the associated clips and, depending on findings, replacement of the affected parts with serviceable parts.

After that AD was issued, further engineering evaluation based on the reported inspection results showed the need for repetitive inspections. Prompted by these findings, RR published Alert NMSB RB.211-73-AG948 to provide inspection instructions, and EASA issued AD 2012-0237 (later revised), retaining the requirements of EASA AD 2011-0243, which was superseded, and introduced additional repetitive inspections of LP fuel tubes, clips and fuel-to-oil heat exchanger (FOHE) mounts and, depending on findings, accomplishment of applicable corrective action(s).

Since EASA AD 2012-0237R1 was issued, further evaluation of the reported inspection results showed the need to correct some technical instructions and to reduce the inspection interval. Prompted by these findings, RR issued Alert NMSB RB.211-73-AG948 Revision 2 to provide those amended instructions, and Revision 3 to revise the associated compliance times.

For the reasons described above, this AD retains the requirements of EASA AD 2012-0237R1, which is superseded, but requires the use of the instructions as provided in the NMSB.

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 RB.211-73-AG948 Revision 3 is hereafter referred to as 'the NMSB' in this AD.

On-wing Inspections:

- (1) Within the compliance time specified in Table 1 of this AD, as applicable, and, thereafter, at intervals not to exceed 5 000 engine flight hours (EFH), accomplish an on-wing inspection of the LP fuel tubes, clips and FOHE mounts (hereafter referred to as 'the affected parts' in this AD) in accordance with the instructions of Section 3 of the NMSB.

Table 1 – Initial On-Wing Inspection (see Note 3 of this AD)

EFH Accumulated	Compliance Time
Less than 5 000 EFH	Within 800 EFH after the effective date of this AD, or before exceeding 5 000 EFH, whichever occurs later
5 000 EFH or more	Within 800 EFH after the effective date of this AD, or before exceeding 6 000 EFH, whichever occurs first



Note 3: Unless stated otherwise, the EFH specified in Table 1 are those accumulated by the engine, on the effective date of this AD, since the accomplishment of one of the following, whichever occurred latest:

- (i) Embodiment of RR SB RB.211-73-F737 (any revision) or RB.211-73-F738 (any revision).
- (ii) Last inspection in accordance with NMSB RB.211-73-AG797 (any revision).
- (iii) Last inspection in accordance with NMSB RB.211-73-G723 (any revision).
- (iv) Last inspection in accordance with NMSB RB.211-73-AG948 (any revision).

Corrective Action(s):

- (2) If, during any inspection as required by paragraph (1) of this AD, any discrepancy is identified, before next flight, replace the defective or damaged parts with serviceable parts in accordance with the instructions of Section 3 of the NMSB.

In-shop Inspection(s) / Corrective Action(s):

- (3) From the effective date of this AD, during each qualified shop visit (see Note 4 of this AD) and during each engine overhaul, inspect the affected parts in accordance with the instructions of Section 3 of the NMSB and, depending on findings, accomplish all applicable corrective actions before release to service of the engine.

Note 4: For the purpose of this AD, a qualified shop visit is defined as any shop visit for an engine subject to a Level 1 to Level 4 workscope, as defined by the Trent 500 Generic Engine Management Programme (RM1870 Issue 28), and includes 'hospital' shop visits.

Note 5: A shop visit inspection as required by paragraph (3) of this AD may be accomplished as a substitute to an on-wing inspection as required by paragraph (1) of this AD.

- (4) If, on the effective date of this AD, an engine is in a qualified shop visit (see Note 4 of this AD), before release to service of that engine, inspect the affected parts and, depending on findings, accomplish all applicable corrective actions in accordance with the instructions of Section 3 of the NMSB.

Ref. Publications:

Rolls-Royce NMSB RB.211-73-AG948 original issue dated 28 September 2012, or Revision 1 dated 10 June 2013, or Revision 2 dated 01 August 2016, or Revision 3 dated 09 September 2016.

The use of later approved revisions of this 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 20 September 2016 as PAD 16-135 for consultation until 18 October 2016. The Comment Response Document can be found at <http://ad.easa.europa.eu>.
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**.

