

 <b>適航指令發布單</b> <b>Airworthiness Directive Issuance Form</b>			
民航局 AD 編號 AD number	CAA-2017-12-002	發布日期 Date issued	2017/12/8
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	RB211 Trent 768-60, 772-60, 772B-60 and 772C-60 engines, all serial numbers. These engines are known to be installed on, but not limited to, Airbus A330 aeroplanes.		
主旨摘要	Engine - Low Pressure Compressor Blades - Inspection / Replacement		
民航局 CAA <input type="checkbox"/> 本國產品 Native products <input type="checkbox"/> 其他個案 Other	設計國民航主管機構 Original Authorities <input type="checkbox"/> FAA <input type="checkbox"/> Germany LBA <input checked="" type="checkbox"/> EASA <input type="checkbox"/> CAA-NL <input type="checkbox"/> Brazil <input type="checkbox"/> UK CAA <input type="checkbox"/> Transport Canada Civil Aviation <input type="checkbox"/> Japan CAB <input type="checkbox"/> DGAC <input type="checkbox"/> CAA of Israel <input type="checkbox"/> Other _____		
	設計國 AD 編號 Original AD number	2017-0241	
	1. 直接採用原 AD 之內容?(Is the original AD directly adopted?) <input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _ a. 生效日期另訂為(Re-specify the effective date as) : _____ b. 執行時限另訂為(Re-specify the compliance time or period as) : _____ 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?) <input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)		
備註 Note	ATA 72. This AD supersedes EASA AD 2016-0141(CAA-2016-07-008) dated 18 July 2016, including its Correction dated 20 July 2016. Ref. Publications: Rolls-Royce NMSB RB.211-72-G702 dated 23 May 2011. Rolls-Royce NMSB RB.211-72-G872 dated 2 April 2012, or Revision 1 dated 2 July 2012, or Revision 2 dated 08 March 2013. and Rolls-Royce NMSB RB.211-72-H311 dated 08 March 2013. Rolls-Royce NMSB RB.211-72-AH465 dated 15 July 2013, or Revision 1 dated 10 July 2015, or Revision 2 dated 11 May 2016, or Revision 3 dated 27 April 2017, or Revision 4 dated 03 October 2017. RR Trent 700 EM E-Trent-1RR. RR Trent 700 TLM T-Trent-1RR. The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD. Airbus A330 AMM Task 72-31-41-270-801. and Airbus A330 AMM Task 72-31-41-270-802.		
註： 1. AD 內容後附。 2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。 3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a> Note： 1. The AD text is enclosed. 2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval. 3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a>			



## Airworthiness Directive

**AD No.:** 2017-0241

**Issued:** 06 December 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 Trent 700 engines

**Effective Date:** 20 December 2017

**TCDS Number(s):** EASA.E.042

**Foreign AD:** Not applicable

**Supersedure:** This AD supersedes EASA AD 2016-0141 dated 18 July 2016, including its Correction dated 20 July 2016.

### ATA 72 – Engine – Low Pressure Compressor Blades – Inspection / Replacement

**Manufacturer(s):**

Rolls-Royce plc (RR)

**Applicability:**

RB211 Trent 768-60, 772-60, 772B-60 and 772C-60 engines, all serial numbers. These engines are known to be installed on, but not limited to, Airbus A330 aeroplanes.

**Reason:**

Low Pressure (LP) compressor partial aerofoil blade release events occurred in service on RR Trent 700 engines. While primary containment of the released sections was achieved in each case, some of the releases did exhibit secondary effects that are considered to present a potential hazard.

This condition, if not detected and corrected, could lead to LP compressor blade release with possible consequent loss of the engine nose cowl, under cowl fires and forward projection of secondary debris, possibly resulting in damage to the aeroplane and/or injury to persons on the ground.

To address this potential unsafe condition, RR published Non-Modification Service Bulletin (NMSB) RB.211-72-G872, providing inspection instructions and, consequently, EASA issued AD 2012-0247 to require a one-time inspection of the higher life LP compressor blades. After identification of a



population of these LP compressor blades that were incorrectly inspected, RR issued NMSB RB.211-72-H311 and, consequently, EASA issued AD 2013-0060, retaining the requirements of EASA AD 2012-0247, which was superseded, to require a one-time re-inspection of the affected blades.

After EASA AD 2013-0060 was issued, to mitigate the risk of further partial LP compressor blade release events, RR issued NMSB RB.211-72-AH465, providing instructions for a programme of repetitive ultrasonic inspections of the affected LP compressor blades to detect sub-surface anomalies in the aerofoil. Consequently, EASA issued AD 2014-0031, superseding AD 2013-0060, to require repetitive inspections of all affected LP compressor blades and, depending on findings, replacement.

Since EASA AD 2014-0031 was issued, the results of further analysis determined that the inspection threshold must be reduced and, consequently, RR issued Alert NMSB RB.211-72-AH465 Revision 2 to implement this change. Consequently, EASA issued AD 2016-0141, retaining the requirements of AD 2014-0031, which was superseded, to reduce inspection threshold.

Since that AD was issued, the results of further analysis determined that the inspection threshold must be further reduced and, consequently, RR issued Alert RR Alert NMSB RB.211-72-AH465 Revision 4 (hereafter referred to as 'the NMSB' in this AD) to implement this change.

For the reason described above, this AD retains the requirements of EASA AD 2016-0141, which is superseded, but reduces the inspection threshold and interval.

#### **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 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: LP compressor blades Part Number (P/N) FK23411, P/N FK25441, P/N FK25968, P/N FW11901, P/N FW15393, P/N FW23643, P/N FW23741, P/N FW23744, P/N KH23403 and P/N KH23404 are hereafter collectively referred to as 'affected blade' in this AD.

#### **Inspection(s):**

- (1) Within the compliance time specified in Table 1 of this AD, as applicable, and, thereafter, at intervals not to exceed 1 200 flight cycles (FC), accomplish an ultrasonic inspection of each affected blade (see Note 2 of this AD) in accordance with the instructions of Section 3 of the NMSB.

Table 1 – Inspection Threshold (see Note 3 of this AD)

<b>FC accumulated</b>	<b>Compliance Time</b>
600 FC or less	Before exceeding 1 200 FC
More than 600 FC	Within 600 FC after the effective date of this AD, or before exceeding 2 400 FC, whichever occurs first



Note 3: Unless specified otherwise, the FC referenced in Table 1 of this AD are those accumulated, on the effective date of this AD, by the affected blade since new (first installation on an engine), or since last inspection per Alert NMSB RB.211-72-AH465 (any Revision).

**Credit:**

- (2) LP compressor blade ultrasonic inspections accomplished in accordance with the instructions referenced in the mandatory inspection section of the applicable engine Time Limits Manual (TLM) T-Trent-1RR are acceptable as an alternative method for the repetitive inspections as required by paragraph (1) of this AD, provided the compliance times of this AD are not exceeded.
- (3) LP compressor blade ultrasonic inspections, accomplished before 18 July 2016 [the effective date of EASA AD 2016-0141] in accordance with the instructions of Rolls-Royce NMSB RB.211-72-G702, or NMSB RB.211-72-G872, or NMSB RB.211-72-H311, or NMSB RB.211-72-AH465 original issue, Revision 1, Revision 2, or Revision 3, or Engine Manual (EM) E-Trent-1RR, Task 72-31-11-200-806, or Airbus A330 AMM Task 72-31-41-270-801, or AMM Task 72-31-41-270-802, are acceptable to comply with the initial inspection requirements of paragraph (1) of this AD.

**Corrective action(s):**

- (4) If, during any inspection as required by paragraph (1) of this AD, an affected blade fails the ultrasonic inspection, before next flight, or before release to service of the engine, as applicable, replace the affected blade with a serviceable part in accordance with the instructions of the NMSB.

**Part(s) Installation:**

- (5) From the effective date of this AD, installation of an affected blade (see Note 2 of this AD) is allowed, provided that conditions, as required by paragraphs (5.1) or (5.2), as applicable, and (5.3) are met.
  - (5.1) The part has not exceeded 1 200 FC since new, or since inspection in accordance with RR NMSB RB.211-72-AH465 (at any Revision), or since an inspection as specified in paragraph (2) or (3) of this AD, whichever occurred later.
  - (5.2) Prior to installation, the affected blade has passed an ultrasonic inspection in accordance with the instructions of Section 3 of the NMSB.
  - (5.3) Following installation, the part is inspected as required by this AD.

**Ref. Publications:**

Rolls-Royce NMSB RB.211-72-G702 dated 23 May 2011.

Rolls-Royce NMSB RB.211-72-G872 dated 2 April 2012, or Revision 1 dated 2 July 2012, or Revision 2 dated 08 March 2013.

Rolls-Royce NMSB RB.211-72-H311 dated 08 March 2013.



Rolls-Royce NMSB RB.211-72-AH465 dated 15 July 2013, or Revision 1 dated 10 July 2015, or Revision 2 dated 11 May 2016, or Revision 3 dated 27 April 2017, or Revision 4 dated 03 October 2017.

RR Trent 700 EM E-Trent-1RR.

RR Trent 700 TLM T-Trent-1RR.

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

Airbus A330 AMM Task 72-31-41-270-801.

Airbus A330 AMM Task 72-31-41-270-802.

#### Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. This AD was posted on 09 October 2017 as PAD 17-144 for consultation until 06 November 2017. 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 Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto: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](http://www.rolls-royce.com/contact/civil_team.jsp) identifying the correspondence as being related to **Airworthiness Directives**.

