

EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2012-0220R2 Date: 27 August 2015 Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, 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 EU 748/2012, Part 21.A.3B. In accordance with 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 [EU 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].	
Design Approval Holder's Name : ROLLS-ROYCE plc	Type/Model designation(s) : RB211 Trent 900 engines
TCDS Number :	EASA.E.012
Foreign AD :	Not applicable
Revision:	This AD revises EASA AD 2012-0220R1 dated 13 May 2013.
ATA 72	Engine – Low Pressure Turbine Disc Seal Fins and Interstage Seals – Inspection / Replacement
Manufacturer(s):	Rolls-Royce plc
Applicability:	RB211 Trent 970-84, 970B-84, 972-84, 972B-84, 977-84, 977B-84 and 980-84 engines, all serial numbers. These engines are known to be installed on, but not limited to, Airbus A380 aeroplanes.
Reason:	Following a revenue service flight, a Trent 900 engine experienced increased low pressure vibration. The vibration did not exceed any engine limits, and the engine was not shut down during flight. Upon post-flight inspection of the engine, debris was found in the exhaust tail pipe and the engine was removed. The results of a subsequent strip inspection revealed that the stage 2 Low Pressure Turbine (LPT) disc had suffered material loss from a portion of the rear disc seal fin area of the disc, with impact damage to downstream LPT stages. All debris was contained within the engine casings. Preliminary findings showed that the rear disc seal fins had rubbed into the stage 3 Interstage Seal (ISS) honeycomb seal, which overheated and cracked, finally resulting in releasing a portion of the seal fin area of the disc. This condition, if not detected and corrected, could lead to LPT stage 2 disc cracks, possibly resulting in an uncontained engine failure and subsequent damage to the aeroplane. To address this potential unsafe condition, EASA issued AD 2012-0220 (later revised) to require on-wing inspections of LPT disc seal fins and

	interstage seals, each time it has been determined that the Engine Health Monitoring (EHM) vibratory levels have been exceeded in flight, and in-shop inspections of the LPT disc seal fins and interstage seals, to detect cracks or damage and, depending on findings, the accomplishment of applicable corrections action(s). Since EASA AD 2012-0220R1 was issued, it has been found that additional conditions, which do not originate from damage to LPT disc seal fins or interstage seals, such as LP compressor unbalance following maintenance, may lead to vibratory level exceedances. Those exceedances are normally cleared by performing applicable maintenance actions, but do not require inspections of the LPT disc seal fins and interstage seals. Therefore this AD is revised to further clarify conditions when inspections are required. This AD is still considered an interim measure and further AD action may follow.
Effective Date:	Revision 2: 27 August 2015 Revision 1: 20 May 2013 Original issue: 05 November 2012
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplish previously: (1) From 05 November 2012 [the effective date of the original issue of this AD], accomplish the following actions: (1.1) Within 10 engine flight cycles (EFC) following receipt of an Engine Health Monitoring (EHM) notification for N1 vibration levels exceeding the alert limits during flight (see Note 1), perform trouble shooting to determine vibration indication fault or high vibration, in accordance with the Airbus A380 Trouble Shooting Manual (TSM) Task 77-00-00-810-803-A, paragraph 2 - Fault Confirmation. If it cannot be confirmed that the vibration increase has been caused by an indication fault, and if acceptable vibration levels have not been restored through applicable corrective actions (see Note 2 of this AD), inspect the LPT disc seal fins and interstage seals in accordance with the instructions of Rolls-Royce Technical Variance (TV) 125060, or instructions as specified in Airbus A380 Aircraft Maintenance Manual (AMM) Task 72-00-00-200-822-A. Note 1: Rolls-Royce Operational Service Desk (OSD) automatically receives, monitors and analyses EHM data, and will send a notification containing the wording as shown below. <i>This alert is the subject of an EASA AD, and inspection of the LPT interstage seals may be required.</i> Note 2: Vibration levels caused by LP compressor unbalance following maintenance may be restored through corrective actions defined in the Airbus A380 AMM. (1.2) For operators who are not using the Rolls-Royce EHM service, within 200 EFC after the effective date of this AD and thereafter, at intervals not to exceed 200 EFC, inspect the LPT disc seal fins and interstage seals in accordance with the instructions of Rolls-Royce TV125060, or Airbus A380 AMM Task 72-00-00-200-822-A. (2) From 05 November 2012 [the effective date of the original issue of this AD], each time the engine is subject to an "Engine Check and Repair Shop Visit" or "Engine Refurbishment Shop Visit" (see Note 3), or if the engine is in such a shop visit on the effective date of this AD,

	inspect the LPT disc seal fins and interstage seals in accordance with the instructions of Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AH054. If, during this inspection, any crack or material loss from the disc seal fin is found, before release to service of the engine, replace the affected parts with serviceable parts. Note 3: "Engine Check and Repair Shop Visit", "Engine Refurbishment Shop Visit" and "Hospital Shop Visits" are defined in the applicable paragraphs of Trent 900 Generic Engine Management Programme (EMP). (3) Inspections and corrective actions, accomplished before the effective date of this AD, in accordance with the instructions of Rolls-Royce TV125658 are acceptable for compliance with the initial requirements of paragraphs (1.2) and (2) of this AD. (4) If, during any inspection as required by paragraph (1.1) or (1.2) of this AD, as applicable, any crack or material loss from the disc seal fin is found, before next flight, remove the engine from the aeroplane and, before release to service of the engine, replace the affected parts with serviceable parts. (5) Corrective actions, as required by paragraphs (2) or (4) of this AD, as applicable, do not constitute terminating action for the repetitive inspections required by paragraphs (1) and (2) of this AD. (6) Inspections as defined in paragraph (2) of this AD are not required when the engine is in one of the following conditions: - removed from the aeroplane, but not inducted into a Repair or Overhaul Shop. - subject to a "Hospital Shop Visit" (see Note 3). - in a shop visit, but areas to be inspected are exposed (see Note 4). Note 4: When the areas to be inspected are exposed, they are subject to inspections and acceptance criteria in accordance with the Engine Manual.
Ref. Publications:	Airbus A380 AMM and TSM. Rolls-Royce Trent 900 Generic EMP issue 14, dated 14 September 2012, or issue 15, dated 12 December 2012, currently at issue 21, dated 29 May 2015. Rolls-Royce Alert NMSB RB.211-72-AH054 dated 14 September 2012, or Revision 1 dated 05 November 2012. Rolls-Royce Technical Variance TV125060 issue 1, dated 27 July 2012, or issue 2 dated 30 January 2013. Rolls-Royce Technical Variance TV125658 issue 2, dated 14 August 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. The original issue of this AD was posted on 17 September 2012 as PAD 12-120 for consultation until 01 October 2012. The Comment Response Document can be found at http://ad.easa.europa.eu. 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 Aeromanager account at www.aeromanager.com.

	If you do not have a designated representative or Aeromanager account, please contact Corporate Communications at Rolls-Royce plc, P.O. Box 31, Derby, DE24 8BJ, The United Kingdom. Telephone: +44 (0) 1332 242424, or email from http://www.rolls-royce.com/contact/civil_team.jsp identifying the correspondence as being related to Airworthiness Directives.
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