

EASA	AIRWORTHINESS DIRECTIVE
	AD No : 2005-0024 Issued : 14 October 2005

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name: ROLLS-ROYCE PLC	Type/Model designation(s): RB211 TRENT 768-60, 772-60, 772B-60
TCDS No: United Kingdom 1050	
Foreign AD number: N/A	
This AD revises and replaces EASA AD: G-2005-0016R1	
Note: Compliance with United Kingdom G-2005-0016 or AD G-2005-0016R1 satisfies the requirements of this AD.	

ATA 72	IP Turbine Bearing – Oil Vent and Scavenge Tube Fretage - Inspection /Modification
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Manufacturer(s):	Rolls-Royce plc
Applicability:	Models RB211 Trent 768-60, 772-60, 772B-60 engines (installed on Airbus A330 aeroplanes) pre SB 72-E708 and pre SB 72-E965.
Reason:	In 2004 two Trent 700 engines were removed due to high oil consumption. Investigation has established that the HP/IP turbine bearing oil tubes had been fretted by the tubes' damaged heat shields. On both occasions the outer heat shield had fretted through the tube wall, in one case affecting the feed tube and the other on the scavenge tube. A previous service incident has shown that ingestion of HP3 cooling air into either the scavenge or vent tubes can cause over-pressurisation of the HP/IP bearing chamber leading to oil ejection from the rear of the chamber. If this oil spray ignites, the fire can then trigger IPT shaft failure, IPT disc overspeed with resultant release of hazardous high energy debris. It is considered that the risk of a hazardous outcome increases as a function of

	tube total time and heat shield damage. This Airworthiness Directive instructs inspection of the vent and scavenge tube heat shields for damage which might lead to fretting of the oil tubes and as Terminating Action instructs modification of the tubes to delete the outer heat shield, in order to remove the cause of the fretting.
Effective Date:	6 July 2005
Compliance:	1) <u>Inspection- On wing</u> Inspect and assess the condition of the HP/IP turbine bearing internal oil vent and scavenge tubes in accordance with Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AE792 original issue (or later approved issue) section 3 Accomplishment Instructions Part A as follows: a) For HP/IP turbine bearing internal oil vent and scavenge tubes which <u>have not</u> been previously inspected in accordance with this Airworthiness Directive: i) Inspect the tubes at an 05 module threshold life of 10,000 hours or 2,500 cycles (whichever occurs first) since new or since overhaul: (a) For 05 modules that exceed the threshold life at the effective date of this Airworthiness Directive, carry out the inspection within 4 months of the effective date of this Airworthiness Directive. (b) For 05 modules that are below the threshold life at the effective date of this Airworthiness Directive, carry out the inspection within 3 months of reaching the threshold life. ii) Determine the serviceability and establish interval to next inspection as follows: (a) Tubes with no visible damage to the outer heat shields must be re-inspected at a 'never exceed' interval of 10,000 hours or 2,500 cycles, whichever occurs first. (b) Tubes with partial cracking up to 90 degrees around the circumference or 10 mm along the length of either outer heat shield must be re-inspected at a 'never exceed' interval of 6,400 hours or 1600 cycles, whichever occurs first. (c) Tubes with cracking in excess of that in 1(ii)(b) but less than 360 degrees around the circumference of either outer heat shield must be re-inspected at a 'never exceed' interval of 1,600 hours or 400 cycles whichever occurs first. (d) Tubes with cracking around the complete circumference of either outer heat shield, or if there is any missing material from either outer heat shield, re-inspect or reject in accordance with the following; (i) If the insulation blanket is in place inside the heat shield and preventing fretage between the heat shield and the tube, then the tubes must be re-inspect at a 'never exceed' interval of 1,600 hours or 400 cycles, whichever occurs first. (ii) If either tube is fretted by loose heat shield material where the maximum depth of fretage around the full 360 degrees of each tube is less than 0.46mm/0.018 inch, then the tubes must be re-inspect at a 'never exceed' interval of 400 hours or 100 cycles, whichever occurs first. (iii) If it is not possible to determine the depth of fretage

	around the full 360 degrees of each tube, then the tubes must be rejected from service within 50 cycles of the inspection being carried out. (iv) If either tube is fretted by loose heat shield material and the maximum depth of fretage is greater than 0,46mm/0.018 inch, then the tubes must be rejected from service within 10 cycles of the inspection being carried out. b) For HP/IP turbine bearing internal oil vent and scavenge tubes which <u>have</u> been previously inspected in accordance with this Airworthiness Directive: i) Inspect the tubes before reaching the 'never exceed' period as established in 1 a) ii) or 2 a) i). ii) Determine the serviceability and 'never exceed' period to the next inspection as detailed in 1 a) ii) above. 2) <u>Inspection- In shop</u> a) For 05 modules in-shop which <u>are not</u> undergoing strip and overhaul. Inspect and assess the condition of the HP/IP turbine bearing internal oil vent and scavenge tubes in accordance with Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AE792 original issue (or later approved issue) section 3 Accomplishment Instructions Part B as follows: i) Determine the serviceability and establish interval to next inspection of the HP/IP turbine bearing internal oil vent and scavenge tubes as follows: (a) Tubes with no visible damage to the outer heat shields must be re-inspected at a 'never exceed' interval of 10,000 hours or 2,500 cycles, which ever occurs first. (b) Tubes with visible cracking up to 90 degrees around the circumference or 10 mm along the length of either outer heat shield must be re-inspected at a 'never exceed' interval of 6,400 hours or 1600 cycles, which ever occurs first. (c) Tubes with visible cracking greater than 90 degrees of the circumference or 10 mm in length of either heat shield must be rejected and the Terminating Action as detailed in 3) below should be carried out. b) For 05 modules in-shop which <u>are</u> undergoing strip and overhaul carry out the Terminating Action as detailed in 3) below. 3) <u>Terminating Action</u> a) Introduce revised HP/IP turbine bearing support structure in accordance with RR Modification Service Bulletin RB211-72-E708 original (or later approved) issue at next 05 module overhaul or before 31 May 2010 which ever is the sooner. Notes: 1) The hours and cycles quoted in paragraph 1(a) and 2(a) of this Airworthiness Directive refer to those hours and cycles accrued on the 05 module. 2) For the purposes of this Airworthiness Directive, the term "05 module overhaul" quoted in paragraph 2 of this Airworthiness Directive refers to an 05 module shop visit where the HP/IP turbine internal vent and scavenge
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	tubes have been exposed and the tube heat shields subjected to a detailed visual inspection in accordance with the Trent 700 Engine Manual task 72-51-24-200-801.
Ref. Publications:	Rolls-Royce Service Bulletins may be obtained from Publication Services, Rolls-Royce plc. PO Box 31, Derby, DE24 8BJ, United Kingdom. Phone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936.
Remarks:	Revision History G-2005-0016R1 introduced an alleviation, substantiated by the Manufacturer following increased service experience and investigative work, of the requirements of Compliance/Action paragraph 1) a) ii) (d). A reference is also added in the Applicability section to SB standard, the effect of this is reducing applicability. 2005-0024 is issued as a revision to G-2005-0016 R1 to correct an error in the Effectivity Date, the correct Effectivity Date is included in this AD and is identical to that quoted in the original G-2005-0016. An EASA number has been applied to this AD. Enquiries regarding this Airworthiness Directive should be referred to Mr. Tony Boud, EASA Propulsion Airworthiness Directives Focal Point –Certification Directorate. E-mail: tony.boud@easa.eu.int European Aviation Safety Agency