


<b>EASA</b>	<b>AIRWORTHINESS DIRECTIVE</b>
	<p><b>AD No.: 2009-0069</b></p> <p><b>Date: 25 March 2009</b></p> <p>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.</p>
<p>This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 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 Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p>	
<b>Type Approval Holder's Name :</b> Rolls-Royce plc	<b>Type/Model designation(s) :</b> RB211 TRENT 768-60, 772-60, 772B-60, 772C-60 engines
TCDS Number : EASA.E.042	
Foreign AD : Not applicable	
Supersedure : This AD supersedes EASA AD 2007-0255 dated 14 September 2007.	
<b>ATA 72</b>	<b>Engine – IP Turbine Bearing Oil Vent &amp; Scavenge Tube – Inspection / Modification</b>
Manufacturer(s):	Rolls-Royce plc
Applicability:	<p>RB211 Trent 768-60, 772-60, 772B-60 and 772C-60 engines, except when previously modified in accordance with Rolls-Royce SB 72-E708, SB 72-E965 or SB72-F227.</p> <p>These engines are known to be installed on, but not limited to, Airbus A330 series aircraft.</p>
Reason:	<p>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 a breached scavenge- or vent tube can cause over-pressurisation of the HP/IP bearing chamber. This would cause oil ejection from the rear of the chamber. The possible ignition of this oil could result in an IPT shaft failure, leading to IPT disc overspeed and resultant release of hazardous high energy debris.</p> <p>For the reasons described above, CAA United Kingdom issued Airworthiness Directive (AD) G-2005-0016, requiring the inspection of the vent- and scavenge tubes and heatshields for damage. That AD was revised and subsequently superseded by EASA AD 2005-0024, retaining the requirements thereof and requiring the modification of the tubes to delete or upgrade the outer heatshield. EASA AD 2007-0255 superseded EASA AD 2005-0024, retaining the requirements thereof and adding an inspection of the vent pipe restrictor, to ensure that blockage of the restrictor, due to carbon deposits</p>

	<p>loosened by the heatshield inspection, does not occur.</p> <p>This AD, superseding EASA AD 2007-0255 for the addition of 772C-60 engine type to the Applicability and retaining its requirements, extends the deadline for accomplishing the terminating action. This has been necessary to avoid a situation where operators are forced to apply IOR SB 72-E965 to remove undamaged heatshields on-wing to satisfy the compliance date. The compliance date has been extended to allow an appropriate interval for in-shop modification of all engines to SB 72-F227, which is the preferred terminating action for engines which have undamaged heatshields. Compliance paragraph (1)a)ii)(d) has also been added to clarify the action for the case of no possible further fretting, reflecting the form of the requirements in the RR Service Bulletin. Minor editorial changes have also been made.</p> <p>Note: EASA AD 2007-0260R1 instructs similar corrective action for the HP/IP turbine bearing <u>oil feed</u> tube and should not be confused with this Airworthiness Directive.</p>
Effective Date:	08 April 2009
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <p>(1) <u>Inspection - On wing</u></p> <p>Inspect and assess the condition of the HP/IP turbine support assembly internal oil vent and scavenge tubes and heatshields in accordance with Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AE792 revision 4 (or later approved issue) section 3 Accomplishment Instructions Part A as follows:</p> <p>a) For 05 modules which <b>have not</b> been previously inspected in accordance with the requirements of this AD (see Note 1 below):</p> <p>i) Carry out the inspection within 3 months of reaching the 05 module threshold life of 10 000 hours or 2 500 cycles (whichever occurs first) since new or since overhaul.</p> <p>ii) Determine the serviceability and establish interval to next inspection as follows:</p> <p>(a) HP/IPT support assemblies with no visible damage to the internal oil vent and scavenge tubes outer heatshields must be re-inspected at a 'never exceed' interval of 10 000 hours or 2 500 cycles, whichever occurs first.</p> <p>(b) HP/IPT support assemblies with partial cracking up to 90 degrees around the circumference or 10 mm along the length of the internal oil vent and/or scavenge tube outer heatshields must be re-inspected at a 'never exceed' interval of 6 400 hours or 1 600 cycles, whichever occurs first.</p> <p>(c) HP/IPT support assemblies with cracking in excess of that in (1) a) ii) (b) but less than 360 degrees around the circumference of either of the internal oil vent and scavenge tube outer heatshields must be re-inspected at a 'never exceed' interval of 1 600 hours or 400 cycles, whichever occurs first.</p> <p>(d) HP/IPT support assemblies with no internal oil vent and scavenge tube outer heatshield material remaining that can cause further fretting are acceptable for continued operation with no further inspection, subject to any existing fretting being less than 0,46 mm (0.018in.) depth.</p> <p>(e) HP/IPT support assemblies with cracking around the complete circumference of either internal oil vent or scavenge tube outer heatshield, or if there is any missing material from either outer heat shield, re-inspect or reject in accordance with the following;</p> <p>(i) If the insulation blanket is in place inside the heat shield and</p>

preventing fretting between the heat shield and the tube, re-inspect at a 'never exceed' interval of 1 600 hours or 400 cycles, whichever occurs first.

- (ii) If either vent or scavenge tube is fretted at the outer heatshield position where the maximum depth of fretting at any point around the full 360 degrees of each tube is less than 0,46 mm (0.018in.), 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 maximum depth of fretting around the full 360 degrees of either vent or scavenge tube and (1) a) ii) (e) (i) is not applicable, then the HP/IP turbine support assembly must be rejected from service within 50 cycles of the inspection being carried out.
  - (iv) If either vent or scavenge tube is fretted at the outer heatshield position and the maximum depth of fretting is greater than 0,46 mm (0.018in.), then the HP/IP turbine support assembly must be rejected from service within 10 cycles of the inspection being carried out.
- b) For 05 modules which **have** been previously inspected in accordance with the requirements of this AD (see Note 1 below):
- ii) Inspect the HP/IPT support assembly internal oil vent and scavenge tube and heatshield before reaching the 'never exceed' period as previously established by the previous inspection (per (1) a) ii) or (2) a) ii) ).
  - iii) Determine the serviceability and 'never exceed' period to the next inspection as detailed in (1) a) ii) above.
- c) After a high power ground run or not later than 25 service cycles after heatshield inspection, inspect the Vent Flow Restrictor in accordance with Section 3 Accomplishment Instructions of Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AE792 Revision 4 (or later approved revision).

**Note 1:** For the purposes of compliance with this AD, 05 module inspections carried out previously in accordance with the superseded ADs (G-2005-0016, 2005-0024, 2007-0255) are deemed to be valid.

**(2) Inspection in shop**

- a) For 05 modules in-shop which **are not** undergoing strip and overhaul (See Note 3 below). Inspect and assess the condition of the HP/IPT support assembly internal oil vent and scavenge tubes and heatshields in accordance with Rolls-Royce Alert Non-Modification Service Bulletin RB211-72-AE792 revision 4 (or later approved issue) section 3 Accomplishment Instructions Part B as follows:
- i) At every shop visit (regardless of module life since new or overhaul, and regardless of life since previous inspection).
  - ii) Determine the serviceability and establish interval to next inspection as follows:
    - (a) HP/IPT support assemblies with no visible damage to the internal oil vent and scavenge tubes outer heatshields must be re-inspected at a 'never exceed' interval of 10 000 hours or 2 500 cycles, whichever occurs first.
    - (b) HP/IPT support assemblies with visible cracking up to 90 degrees around the circumference or 10 mm along the length of either the internal oil vent or scavenge tube outer heatshields must be re-inspected at a 'never exceed' interval of 6 400 hours or 1 600 cycles, whichever occurs first.

	<p>(c) HP/IPT support assemblies with visible cracking greater than 90 degrees of the circumference or 10 mm in length of either the internal oil vent or scavenge tube outer heatshields must be rejected and the Terminating Action as detailed in 3) below should be carried out.</p> <p>b) For 05 modules in-shop, which <b>are</b> undergoing strip and overhaul carry out the Terminating Action as detailed in 3) below (See Note 3 below).</p> <p>c) Inspect the Vent Flow Restrictor following the engine pass-off test in accordance with Section 3 Accomplishment Instructions of Rolls-Royce Alert Non Modification Service Bulletin RB211-72-AE792 Revision 4 (or later approved revision).</p> <p>(3) <u>Terminating Action</u></p> <p>At the next 05 module overhaul, but not later than 31 May 2014, whichever occurs first, introduce revised HP/IP turbine bearing support structure in accordance with either:</p> <p>a) RR Modification Service Bulletin RB211-72-F227 original (or later approved issue) (this is the preferred Terminating Action) or;</p> <p>b) RR Modification Service Bulletin RB211-72-E708 revision 2 (or later approved issue) or;</p> <p>c) RR Immediate Operational Request RB211-72-E965 revision 1 (or later approved issue) (only available upon request from RR).</p> <p><b>Note 2:</b> The hours and cycles quoted in paragraph 1(a) and 2(a) above refer to those hours and cycles accumulated on the 05 module.</p> <p><b>Note 3:</b> For the purposes of this AD, the references to "overhaul" refer to an 05 module shop visit where the HP/IP turbine internal vent and scavenge 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.</p> <p><b>Note 4:</b> Rolls-Royce Modification Service Bulletins 72-F227 rework a Turbine Bearing Support Assembly which embodies SB 72-E708 and 72-F117.</p>
Ref. Publications:	<p>RR Non-Modification Service Bulletin RB211-72-AE792 Revision 4;  RR Modification Service Bulletin RB211-72-F227 original issue;  RR Modification Service Bulletin RB211-72-AE708 revision 2;  RR Modification Service Bulletin RB211-72-F117 original issue;  RR Modification Service Bulletin RB211-72-E965 revision 1.  The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks:	<ol style="list-style-type: none"> <li>1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.</li> <li>2. The required actions and the risk allowance have granted the issuance of a Final AD with Request for Comments, postponing the public consultation process after publication. PAD 09-005, related to this AD but later cancelled, was posted on 07 January 2009 for consultation until 04 February 2009. The Comment Response Document can be found at <a href="http://ad.easa.europa.eu">http://ad.easa.europa.eu</a>.</li> <li>3. Enquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management &amp; Research Section, Certification Directorate, EASA. E-mail: <a href="mailto:ADs@easa.europa.eu">ADs@easa.europa.eu</a>.</li> <li>4. For any question concerning the technical content of the requirements in this AD, please contact: Rolls-Royce plc, Publication Services, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; Telephone: +44 (0) 1332 242424, Fax: +44 (0) 1332 249936.</li> </ol>