



Notification of a proposal to issue an Airworthiness Directive

PAD No.: 16-133

Issued: 15 September 2016

Note: This Proposed Airworthiness Directive (PAD) 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.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

Design Approval Holder's Name:

ROLLS-ROYCE plc

Type/Model designation(s):

Trent 1000 engines

Effective Date: [TBD - standard: 14 days after AD issue date]

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 72 – Engine – High Pressure Turbine Blades – Inspection / Replacement

Manufacturer(s):

Rolls-Royce plc (RR)

Applicability:

Trent 1000-A, Trent 1000-A2, Trent 1000-C, Trent 1000-C2, Trent 1000-D, Trent 1000-D2, Trent 1000-E, Trent 1000-E2, Trent 1000-G, Trent 1000-G2, Trent 1000-H, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, Trent 1000-L2, Trent 1000-AE, Trent 1000-AE2, Trent 1000-CE and Trent 1000-CE2 engines, all serial number.

These engines are known to be installed on, but not limited to, Boeing 787 aeroplanes.

Reason:

Occurrences were reported involving high engine vibration indication experienced during climb. Subsequent investigation of affected engines identified damage to some high pressure turbine (HPT) blades. These events have been attributed to cracks, which originated at the tip of the leading edge, and at the mid-height pressure surface, of the HPT blades. Investigation also determined that HPT blades Part Number (P/N) FW63853 (corresponding to RR Service Bulletin (SB) SB 72-G275 modification standard) are affected by this phenomenon. Four occurrences have been reported within the last two years.



This condition, if not detected and corrected, could lead to high vibration indication and commanded in-flight shut-down, possibly resulting in reduced control of the aeroplane.

To address this potentially unsafe condition, RR published Non-Modification-Service-Bulletin (NMSB) TRENT 1000 72-J039 (now at Revision 2) to provide inspection instructions applicable to HPT blades. RR also developed an improved HPT blade design, P/N KH15741, which is more resistant to premature crack initiation and available for installation in-service through RR SB TRENT 1000 72-H114 (now at Revision 1).

For the reasons described above, this AD requires repetitive inspections of the HPT blades P/N FW63853 and, depending on findings, corrective action. This AD also requires replacement of HPT blades P/N FW63853 with improved blades P/N KH15741.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

RR Trent 1000 engines equipped with HPT blades P/N FW63853 (RR mod/SB 72-G275 standard):

- (1) Before exceeding the threshold as defined in Table 1 of this AD and, thereafter, at intervals not to exceed 250 engine flight cycles (EFC) or 1 125 engine flight hours (EFH), whichever occurs first, inspect each HPT blade in accordance with the instructions of the RR NMSB TRENT 1000 72-J039 Revision 2.

Table 1 – Initial Inspection Threshold

Compliance Time (A or B whichever occurs later)	
A	1 750 EFC or 11 000 EFH, whichever occurs first
B	30 days after the effective date of this AD

Note: The EFC and EFH referred to in Table 1 of this AD are those accumulated by the blades since new.

- (2) If, during any inspection as required by paragraph (1) of this AD, any discrepancy is detected, as defined in the RR NMSB TRENT 1000 72-J039 Revision 2, before next flight, accomplish all applicable corrective actions and, thereafter accomplish follow-on inspections within reduced interval, as applicable, in accordance with the instructions of RR NMSB TRENT 1000 72-J039 Revision 2.
- (3) Inspection(s) and corrective action(s) accomplished on an engine, before the effective date of this AD, in accordance with the instructions of RR NMSB TRENT 1000 72-J039 original issue or Revision 1, are acceptable to comply with the initial requirements of paragraphs (1) and (2) of this AD, for that engine.
- (4) During the next shop visit, when the HPT blades are accessible, replace each HPT blade P/N FW63853 (RR SB 72-G275 modification standard) with a serviceable HPT blade P/N KH15741 in accordance with the instructions of RR SB 72-H114.



All RR Trent 1000 engines:

(5) From the effective date of this AD, do not install an HPT blade P/N FW63853 on any engine.

Ref. Publications:

RR TRENT 1000 NMSB 72-J039 original issue dated 29 May 2015, or Revision 1 dated 09 November 2015, or Revision 2 dated 01 June 2016.

RR SB TRENT 1000 72-H114 original issue dated 17 April 2013, or Revision 1 dated 14 October 2013.

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

Remarks:

1. This Proposed AD will be closed for consultation on 13 October 2016.
2. Enquiries regarding this PAD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
3. For any question concerning the technical content of the requirements in this PAD, 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**.

