



## Airworthiness Directive

**AD No.:** 2015-0233

**Issued:** 04 December 2015

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):**

Trent 1000 engines

**Effective Date:** 07 December 2015

**TCDS Number(s):** EASA.E.036

**Foreign AD:** Not applicable

**Supersedure:** This AD supersedes EASA AD 2015-0222 dated 11 November 2015.

### ATA 72 – Engine – Intermediate Pressure Turbine Blade Rear Seal Fins – Inspection

**Manufacturer(s):**

Rolls-Royce plc (RR)

**Applicability:**

Trent 1000-A, Trent 1000-C, Trent 1000-D, Trent 1000-E, Trent 1000-G, Trent 1000-H, Trent 1000-AE and Trent 1000-CE engines, serial numbers 10062, 10067, 10081, 10099, 10146, 10154, 10162, 10166, 10172, 10186 and 10195.

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

**Reason:**

Intermediate Pressure Turbine (IPT) Blades with missing rear seal fins have been reportedly found on Trent 1000 engines in-shop and on-wing. The fins were released during engine running. The release of a fin during engine running may cause secondary impact damage to the rear of the IPT and to the Low Pressure Turbine (LPT).

This condition, if not detected and corrected, could lead to engine power loss and consequent in-flight shut-down, possibly resulting in reduced control to the aeroplane.

To improve the understanding of this issue, RR published Non-Modification-Service-Bulletin (NMSB) TRENT 1000 72-J125 to provide inspection instructions for a sample of 7 engines. To ensure that



these engines were inspected, EASA issued AD 2015-0222 to require a one-time borescope inspection of the affected engines, removal from service of engines where seal fin damage or loss is detected, and the reporting of all findings to RR.

Since that AD was issued, based on a revised process to predict seal fin damage or release, RR issued NMSB TRENT 1000 72-J125 Revision 1 (hereafter referred to as 'the NMSB' in this AD), adding four (4) engines to the sample group.

For the reasons described above, this AD retains the requirements of EASA AD 2015-0222, which is superseded, and expands the Applicability.

This AD is still considered an interim action and further AD action may follow.

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

Required as indicated, unless accomplished previously:

- (1) Within the compliance time specified in Table 1 of this AD, as applicable, accomplish a borescope inspection in accordance with the instructions of Section 3.A or Section 3.B, as applicable, of the NMSB.

Table 1 – Borescope Inspection

<b>Affected Engines</b> (serial numbers)	<b>Compliance Time</b>
10062, 10081, 10146, 10154, 10166, 10172 and 10186	Within 30 days after 13 November 2015 [the effective date of EASA AD 2015-0222]
10067, 10099, 10162 and 10195	Within 30 days after the effective date of this AD

- (2) If the inspection as required by paragraph (1) of this AD is accomplished on-wing, and any IPT blade rear seal fins are found damaged or missing, within the compliance time specified in Table 2 of this AD, as applicable, remove the engine from service, contact RR for approved rework instructions and, before release to service of the engine, accomplish those instructions accordingly.

Table 2 – Inspection Results – Corrective Action

<b>Damage Detected</b>	<b>Compliance Time</b> (after the inspection as required by paragraph (1) of this AD)
Up to 4 IPT blade rear seal fins damaged or missing, damage within the criteria as specified in Section 3 A.(2)(a) of the NMSB	Within 80 flight cycles (FC) or 200 FH, whichever occurs first
Up to 4 IPT blade rear seal fins damaged or missing, damage exceeding the criteria as specified in Section 3 A.(2)(a) of the NMSB	Before next flight
Five or more IPT blade rear seal fins damaged or missing	



- (3) If the inspection as required by paragraph (1) of this AD is accomplished in-shop, and any IPT blade rear seal fin is found damaged or missing, before release to service of the engine, contact RR for approved rework instructions and accomplish those instructions accordingly.
- (4) Within 30 days after the inspection as required by paragraph (1) of this AD, report all findings (including none) to RR.
- (5) Inspection and corrective action on an engine, accomplished before the effective date of this AD in accordance with the instructions of RR NMSB TRENT 1000 72-J125 at original issue, is acceptable to comply with the requirements of paragraphs (1) and (2) of this AD, or paragraphs (1) and (3) of this AD, as applicable, for that engine.

**Ref. Publications:**

Rolls-Royce Trent 1000 NMSB 72-J125, original issue, dated 06 November 2015, or Revision 1, dated 20 November 2015.

The use of later approved revisions of this document 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. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
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**.

