Airworthiness Directive

AD No.: 2017-0088R1

Issued: 12 October 2017

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 XWB engines

Effective Date:	Revision 1: 12 October 2017 Original issue: 30 May 2017
TCDS Number(s):	EASA.E.111
Foreign AD:	Not applicable
Revision:	This AD revises EASA AD 2017-0088 dated 16 May 2017.

ATA 72 – Engine – Intermediate Pressure Turbine Stage 2 Locking Plates – Inspection

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Manufacturer(s):
Rolls-Royce plc (RR)

Applicability:
RR TRENT XWB-75, XWB-79, XWB-79B and XWB-84 engines, serial numbers (ESN) as listed in RR Alert Non-Modification Service Bulletin (NMSB) TRENT XWB 72-AJ738.

These engines are known to be installed on, but not limited to, Airbus A350 aeroplanes.

Reason:
During module assembly, cracking was observed on several intermediate pressure (IP) turbine stage 2 locking plates from one particular supplier. These locking plates form part of the IP turbine stage 2 assembly, providing axial retention of the IP turbine stage 2 blades onto the disc, and constitute a seal for the local air system. These locking plates are pre-bent during manufacture and are pressed flat during installation such that they fit between grooves in the IP turbine stage 2 disc and blades. There are 16 locking plates, Part Number (P/N) KH12922 or P/N KH16183, installed on an IP turbine stage 2 assembly. It is possible that parts, manufactured by this supplier, may have cracked during module assembly, without those cracks being detectable prior to release to service of an engine. Propagation of cracks during engine operation may lead to loss of a locking plate.

Missing locking plates will allow hot gas ingestion which will locally overheat the blade retention features of the disc.

This condition, if not detected and corrected, could lead to accelerated fatigue of the blade retention features of the disc and release of one or more IP turbine stage 2 blades, possibly resulting in high energy uncontained debris release from the engine, with consequent damage to, and reduced control of, the aeroplane.

To address this potential unsafe condition, RR identified the engines that may have these affected locking plates installed and published Alert NMSB TRENT XWB 72-AJ738, providing instructions to inspect these locking plates. Consequently, EASA issued AD 2017-0088 to require repetitive inspections of the IP turbine stage 2 assembly locking plates, and, depending on findings, removal from service of the engine for in-shop corrective action(s).

Since that AD was issued, RR has removed all affected locking plates from spares inventories and issued NMSB TRENT XWB 72-J818 to provide instructions to record replacement the affected plates on in-service engines, after which no further inspections are necessary. In addition, where the original inspection requirements were based on a conservative assessment of the life of an affected disc, further analysis has determined that an extension of the inspection threshold and interval can be justified, and NMSB TRENT XWB 72-AJ738 has been revised accordingly.

For the reason described above, this AD is revised to include references to the latest service publications and introduces the actions of NMSB TRENT XWB 72-J818 as an optional terminating action to the requirements of this AD.

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

Required as indicated, unless accomplished previously:

Note 1: Where, in this AD, reference is made to an RR NMSB with an ‘A’ (Alert) in the number, it should be recognised that a later revision may not have that ‘A’. This kind of change does not effectively alter the publication references for the purpose of this AD.

Note 2: IP turbine stage 2 assembly locking plates P/N KH12922 and P/N KH16183 are hereafter collectively referred to as ‘affected locking plate’ in this AD, except those with a serial number (s/n) beginning with 20452, and those without having a s/n marked on it.

Note 3: RR Alert NMSB TRENT XWB 72-AJ738 is hereafter referred to as ‘the NMSB’ in this AD.

Repetitive On-Wing Inspections:

(1) Before exceeding 3 500 engine flight cycles (EFC) since first installation of the engine on an aeroplane, or within 100 EFC after 30 May 2017 [the effective date of the original issue of this AD], whichever occurs later, and, thereafter, at intervals not to exceed 3 500 EFC, inspect each affected locking plate (see Note 2 of this AD) in accordance with the instructions of Section 3.A. of the NMSB.

In-Shop Inspection:

(2) During the next qualified shop visit (see Note 4 of this AD) after 30 May 2017 [the effective date of the original issue of this AD], or, if on that date, an engine is in a qualified shop visit, during that shop visit, inspect each affected locking plate (see Note 2 of this AD) in accordance with the instructions of Section 3.B. of the NMSB.

Note 4: For the purpose of this AD, a qualified shop visit is where the work scope is Level 1 (serviceability) or higher.

Note 5: Any in-shop inspection of an engine in accordance with the instructions of Section 3.B. of the NMSB is acceptable in lieu of an on-wing inspection as required by paragraph (1) of this AD for that engine.

Corrective Action:

(3) If, during any on-wing inspection as required by paragraph (1) of this AD, it is found that one or more affected locking plates are missing, within the compliance time specified in Section 3 of the NMSB, as applicable depending on findings, remove the engine from service and, before release to service of that engine, contact RR for approved corrective action instructions and accomplish those instructions accordingly.

(4) If, during the shop inspection as required by paragraph (2) of this AD, it is found that one or more affected locking plates are missing, before release to service of that engine, contact RR for approved corrective action instructions and accomplish those instructions accordingly.

Terminating Action:

(5) Replacement on an engine of all affected locking plates (see Note 2 of this AD) in accordance with the applicable RR overhaul instructions and recording that replacement (RR NMSB TRENT XWB 72-J818 may be used) constitutes terminating action for the inspection requirements of paragraphs (1) and (2) this AD for that engine.

Engine Installation:

(6) From the effective date of this AD, it is allowed to install an engine on an aeroplane, provided that the actions as required by paragraph (6.1) or (6.2) of this AD, as applicable, are accomplished.

(6.1) Before installation, it has been determined that no affected locking plates (see Note 2 of this AD) are installed on the engine.

(6.2) Before installation, the engine has passed an inspection in accordance with the instructions of Section 3.A. or 3.B. of the NMSB, and, following installation, the engine is inspected as required by this AD, or corrected as specified in paragraph (5) of this AD.

Ref. Publications:

RR Alert NMSB TRENT XWB 72-AJ738 original issue dated 11 April 2017, or Revision 1 dated 06 October 2017.

RR NMSB TRENT XWB 72-J818 original issue dated 06 October 2017.

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 12 April 2017 as PAD 17-047 for consultation until 26 April 2017. The Comment Response Document can be found in the EASA Safety Publications Tool, in the compressed (zipped) file attached to the record for this AD.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. 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 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**.