Airworthiness Directive

AD No.: 2023-0119

Issued: 12 June 2023

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 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 or Annex Vb Part ML.A.301, as applicable, 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 Annex Vb Part ML.A.303, as applicable] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:
ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG

Type/Model designation(s):
Trent 1000 engines

Effective Date: 26 June 2023

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 73 – Engine Fuel & Control – Hydromechanical Units – Replacement

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Manufacturer(s):
Rolls-Royce plc

Applicability:
Trent 1000-AE3, Trent 1000-CE3, Trent 1000-D3, Trent 1000-G3, Trent 1000-H3, Trent 1000-J3, Trent 1000-K3, Trent 1000-L3, Trent 1000-M3, Trent 1000-N3, Trent 1000-P3, Trent 1000-Q3 and Trent 1000-R3 engines, all serial numbers.

Definitions:
For the purpose of this AD, the following definitions apply:

The NMSB: Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) TRENT 1000 73-AK733.

Affected part: Hydro-mechanical units (HMU), having Part Number (P/N) G5040HMU01.

Serviceable part: An affected part that has not exceeded the engine flight hours (EFH) limit as specified in Table 1 of this AD, as applicable.

The SB: Rolls-Royce Service Bulletin (SB) TRENT 1000 73-K891, which introduces HMU P/N G5040HMU02 and refers to Rolls-Royce Control Systems SB G5040HMU-73-8497.

The CSV SB: Rolls-Royce Control Systems SB G5040HMU-73-02 which contains instructions to replace the combining spill-valve (CSV).

Groups: Group 1 engines are those that have an affected part installed. Group 2 engines are those on which Rolls-Royce modification 73-K891 has been embodied in production, or on which SB TRENT 1000 73-K891 has been embodied in service.

Reason:

Occurrences have been reported of finding wear in the CSV assembly of the affected parts. When an engine is operated at high power conditions, this can reduce the fuel flow output.

This condition, if not corrected, could lead to thrust reduction, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, Rolls-Royce published the NMSB, as defined in this AD, providing instructions to remove the affected part from service for the purpose of in-shop HMU repair where the CSV is replaced.

For the reason described above, this AD requires implementation of EFH limits for replacement of each affected part with a serviceable part. This AD also prohibits (re)installation of affected parts that have exceeded the applicable EFH limit without CSV replacement.

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

Required as indicated, unless accomplished previously:

Inspection(s):

(1) For Group 1 engines: Before an affected part exceeds the EFH limit as specified in Table 1 of this AD, as applicable, replace that affected part with a serviceable part in accordance with the instructions of section 3 of the NMSB.

Table 1 – On-Wing Replacement of Affected Parts (see Note 1 of this AD)

Implementation date	Compliance Time
26 June 2023	Before exceeding 6 000 EFH, or within 30 days after the effective date of this AD, whichever occurs later
01 October 2024	Before exceeding 4 500 EFH

Note 1: The EFH indicated in Table 1 of this AD are those accumulated by the affected part since new (first installation on an engine), or since affected part last overhaul, or since last CSV replacement (see Note 2 of this AD), as applicable. CSV replacement on an affected part can be accomplished in accordance with the instructions of the CSV SB.

Note 2: Appendix 1 of the NMSB contains a list of affected parts with a corresponding date on which the CSV of that part was replaced, but without the shop paperwork declaring HMU overhaul.

Modification:

(2) For Group 1 engines: Modification of an engine in accordance with the instructions of the SB is an acceptable method to comply with the requirements of paragraph (1) of this AD for that engine.

Part Installation:

(3) For Group 1 engines: After the applicable implementation date (see Table 1 of this AD), it is allowed to install on any engine an affected part, provided it is a serviceable part, as defined in this AD.

(4) Do not install an affected part on any engine, as required by paragraph (4.1) or (4.2) of this AD, as applicable.

(4.1) For Group 1 engines: After modification of the engine as specified in paragraph (2) of this AD.

(4.2) For Group 2 engines: From the effective date of this AD.

Ref. Publications:

Rolls-Royce Alert NMSB TRENT 1000 73-AK733 original issue dated 23 July 2021, or Revision 1 dated 10 January 2022, or Revision 2 dated 03 March 2022, or Revision 3 dated 30 March 2023.

Rolls-Royce SB TRENT 1000 73-K891 original issue dated 07 December 2022.

Rolls-Royce Control Systems SB G5040HMU-73-02 original issue dated 13 July 2021, or Revision 1 dated 13 December 2021, or Revision 2 dated 28 March 2023.

Rolls-Royce Control Systems SB G5040HMU-73-8497 original issue dated 29 November 2022.

The use of later approved revisions of the above-mentioned 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. This AD was posted on 24 April 2023 as PAD 23-051 for consultation until 22 May 2023. 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. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system. This may include reporting on the same or similar components, other than

those covered by the design to which this AD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.

5. 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 https://www.rolls-royce.com/contact-us/civil-aerospace.aspx identifying the correspondence as being related to **Airworthiness Directives**.