



Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 20-197

Issued: 11 December 2020

Note: This Proposed Airworthiness Directive (PAD) 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.

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: **Type/Model designation(s):**

ROLLS-ROYCE DEUTSCHLAND Ltd & Co KG Trent 1000 engines

Effective Date: [TBD - planned: 7 days after AD issue date]

TCDS Number(s): EASA.E.036

Foreign AD: Not applicable

Supersedure: None

ATA 75 – Air – Modulated Air System Control Valves – Lock-Out / Deactivation

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 75-AK642.

Reason:

Occurrences have been reported of finding high levels of wear on the seal fins on a small number of high pressure (HP) turbine triple seals, Part Number (P/N) FW34485. The effect on the secondary air system was conservatively assessed due to the resultant increased turbine cooling air leakage, which changes the cooling flow around the intermediate pressure (IP) turbine disc. The Modulated



Air System (MAS) optimises cooling air, extracted from the compressor, where full flow is not required at cruise conditions. It is only active during cruise.

This condition, if not corrected, could lead to significant wear on the HP turbine triple seal under flight conditions with MAS activated, possibly resulting in reduced internal air system margins and a temperature increase at the IP turbine disc rim.

To address this potential unsafe condition, Rolls-Royce has issued the NMSB, providing instructions to manually 'lock-out' (deactivate) the MAS control valves.

For the reason described above, this AD requires to deactivate the MAS control valves. This AD also specifies that the Master Minimum Equipment List (MMEL) item for 'MAS inoperative', which has a limit of 120 days, does not apply when the system is manually deactivated.

This AD is considered an interim action and further AD action may follow, when improved understanding of the seal fin wear and its effects is established.

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

Required as indicated, unless accomplished previously:

MAS Deactivation:

- (1) Within the compliance times specified in Table 1 of this AD, deactivate the MAS control valves in accordance with the instructions of the NMSB.

Table 1 – MAS Deactivation

Compliance Time (whichever occurs later, A or B)	
A	Before exceeding 50 flight cycles (FC) since first installation of the engine on an aeroplane
B	Within 30 days or 100 FC, whichever occurs first after the effective date of this AD

MMEL:

- (2) Following deactivation of the MAS control valves on both engines of an aeroplane, as required by paragraph (1) of this AD, flight operations can be conducted without the need to consider the limit of 120 days indicated in the affected aeroplane MMEL (see Notes 1 and 2 of this AD).

Note 1: Deactivation of the MAS control valves on an engine as required by paragraph (1) of this AD changes the engine to an approved configuration that will produce engine indicating and crew alerting system (EICAS) status messages "ENG MAS VALVE L(R)" and "ENG MAS SYS TEST L(R)". Whereas MAS is purposely disabled by complying with paragraph (1) of this AD, the status messages are not indicative of inoperative (failed) equipment and consequently, the associated (M)MEL instructions and limitations are not applicable in that context. This has been agreed with the Airframe Manufacturer and its State of Design Authority.

Note 2: Deactivation of the MAS control valves on an engine as required by paragraph (1) of this AD does not produce the EICAS status message "ENG MAS VALVE SENSOR L(R)". Consequently, when this EICAS message appears, it remains indicative of inoperative equipment, even if the MAS has



been disabled as required by paragraph (1) of this AD. As a result, the corresponding MEL instructions and limitations remain applicable whenever the EICAS status message “ENG MAS VALVE SENSOR L(R)” is produced.

Ref. Publications:

Rolls-Royce Alert NMSB TRENT 1000 75-AK642 dated 30 November 2020.

The use of later approved revisions of the above-mentioned document is acceptable for compliance with the requirements of this AD.

Remarks:

1. This Proposed AD will be closed for consultation on 25 December 2020.
2. Enquiries regarding this PAD should be referred to the EASA Programming and Continued Airworthiness Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
3. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this PAD, and which may occur, or have occurred on a product, part or appliance not affected by this PAD, 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 PAD 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.
4. 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 <https://www.rolls-royce.com/contact-us/civil-aerospace.aspx> identifying the correspondence as being related to **Airworthiness Directives**.

