

**DEPARTMENT OF TRANSPORTATION****Federal Aviation Administration****14 CFR Part 39**

[Docket No. FAA-2020-0424; Project Identifier MCAI-2019-00130-E; Amendment 39-21171; AD 2020-15-08]

RIN 2120-AA64

**Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate Previously Held by Rolls-Royce plc) Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for all Rolls-Royce Deutschland Ltd & Co KG (RRD) Trent 1000-A, Trent 1000-A2, Trent 1000-AE, Trent 1000-AE2, Trent 1000-C, Trent 1000-C2, Trent 1000-CE, Trent 1000-CE2, 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, and Trent 1000-L2 model turbofan engines. This AD was prompted by the manufacturer identifying 38 low-pressure compressor (LPC) front cases that have non-optimal properties that could inhibit their ability to contain certain engine failures. This AD requires removing the LPC front case from service and replacing it with a part eligible for installation. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 31, 2020.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of August 31, 2020.

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 708 6 0; email: <https://www.rolls-royce.com/contact-us.aspx>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0424.

**Examining the AD Docket**

You may examine the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0424; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Stephen Elwin, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7236; fax: 781-238-7199; email: [stephen.l.elwin@faa.gov](mailto:stephen.l.elwin@faa.gov).

**SUPPLEMENTARY INFORMATION:****Discussion**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all RRD Trent 1000-A, Trent 1000-A2, Trent 1000-AE, Trent 1000-AE2, Trent 1000-C, Trent 1000-C2, Trent 1000-CE, Trent 1000-CE2, 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, and Trent 1000-L2 model turbofan engines. The NPRM published in the **Federal Register** on April 30, 2020 (85 FR 23929). The NPRM was prompted by the manufacturer identifying 38 LPC front cases that have non-optimal properties that could inhibit their ability to contain certain engine failures. The NPRM proposed to require removing the LPC front case from service and replacing it with a part eligible for installation. The FAA is issuing this AD to address the unsafe condition on these products.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2019-0286, dated November 26, 2019 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Engineering analysis has identified that 38 LPC front cases have non-optimal material properties. This could inhibit the intended

function of the LPC front case to contain certain engine failures.

This condition, if not corrected, could, in case of fan blade failure, lead to high energy debris release, possibly resulting in damage to, and reduced control of, the aeroplane.

To address this potential unsafe condition, Rolls-Royce developed an updated life management and issued the NMSB, identifying those ESN that have an affected part installed, and providing the corresponding limit (date) for in-shop front fan case replacement.

For the reason described above, this [EASA] AD requires removal from service of the affected engines to replace the affected parts. This [EASA] AD also prohibits re-installation of affected parts.

You may obtain further information by examining the MCAI in the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0424.

**Comments**

The FAA gave the public the opportunity to participate in developing this final rule. The FAA has considered the comment received. Boeing Commercial Airplanes supported the NPRM.

**Conclusion**

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule as proposed.

**Related Service Information Under 14 CFR Part 51**

The FAA reviewed Rolls-Royce plc Alert Non-Modification Service Bulletin (NMSB) Trent 1000 72-AK294, dated July 16, 2019. The NMSB contains the serial numbers of the affected LPC front cases, the engine serial numbers on which these LPC front cases are installed, and the date to remove each engine from service. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the **ADDRESSES** section.

**Costs of Compliance**

The FAA estimates that this AD affects three engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

ESTIMATED COSTS

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Remove and replace the LPC front case .....	390 work-hours × \$85 per hour = \$33,150 ...	\$1,238,654	\$1,271,804	\$3,815,412

**Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

**Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

**List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

**Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

**PART 39—AIRWORTHINESS DIRECTIVES**

■ 1. The authority citation for part 39 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**2020–15–08 Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce plc):** Amendment 39–21171; Docket No. FAA–2020–0424; Project Identifier MCAI–2019–00130–E.

**(a) Effective Date**

This AD is effective August 31, 2020.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce plc) Trent 1000–A, Trent 1000–A2, Trent 1000–AE, Trent 1000–AE2, Trent 1000–C, Trent 1000–C2, Trent 1000–CE, Trent 1000–CE2, 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, and Trent 1000–L2 model turbofan engines.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

**(e) Unsafe Condition**

This AD was prompted by the manufacturer identifying 38 low-pressure compressor (LPC) front cases, part number (P/N) KH26266 with individual serial numbers (S/Ns), that have non-optimal properties that could inhibit their ability to contain certain engine failures. The FAA is issuing this AD to prevent failure of the LPC front case when subjected to high-energy debris release. The unsafe condition, if not addressed, could result in uncontained release of high-energy debris, damage to the engine, and damage to the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

After the effective date of this AD, no later than the required removal date specified in Appendix 1 of Rolls-Royce Alert Non-Modification Service Bulletin (NMSB) Trent

1000 72–AK294, dated July 16, 2019 (“Rolls-Royce Alert NMSB Trent 1000 72–AK294”):

(1) Remove LPC front case, P/N KH26266 and with a S/N identified in Appendix 1 of Rolls-Royce Alert NMSB Trent 1000 72–AK294, and

(2) Replace the LPC front case with a part eligible for installation.

**(h) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in paragraph (i)(1) of this AD. You may email your request to: [ANE-AD-AMOC@faa.gov](mailto:ANE-AD-AMOC@faa.gov).

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(i) Related Information**

(1) For more information about this AD, contact Stephen Elwin, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781–238–7236; fax: 781–238–7199; email: [stephen.i.elwin@faa.gov](mailto:stephen.i.elwin@faa.gov).

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2019–0286, dated November 26, 2019, for more information. You may examine the EASA AD in the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA–2020–0424.

**(j) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce plc (RR) Alert Non-Modification Service Bulletin Trent 1000 72–AK294, dated July 16, 2019.

(ii) [Reserved]

(3) For RR service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 708 6 0; email: <https://www.rolls-royce.com/contact-us.aspx>.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781–238–7759.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: [fedreg.legal@nara.gov](mailto:fedreg.legal@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on July 10, 2020.

**Lance T. Gant,**

Director, Compliance & Airworthiness  
Division, Aircraft Certification Service.

[FR Doc. 2020-16119 Filed 7-24-20; 8:45 am]

**BILLING CODE 4910-13-P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2020-0009; Project Identifier MCAI-2019-00111-E; Amendment 39-21175; AD 2020-15-12]

RIN 2120-AA64

#### Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate Previously Held by Rolls-Royce plc) Turbofan Engines

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2018-08-02 for all Rolls-Royce Deutschland Ltd & Co KG (RRD) Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 model turbofan engines. AD 2018-08-02 required initial and repetitive ultrasonic or visual inspections of the intermediate-pressure compressor (IPC) stage 1 rotor blades, IPC stage 2 rotor blades, and IPC shaft stage 2 dovetail posts, and removal of any cracked parts from service. This AD requires new inspections based on updated inspection thresholds and intervals for these IPC parts. This AD also adds an optional terminating action, amends the asymmetric power condition for engine inspection, and requires an inspection after a cabin depressurization event. This AD was prompted by IPC blade separations resulting in engine failures. Subsequently, the manufacturer identified the need to add new inspections and an optional terminating action, amend the asymmetric power condition for engine inspection, and require an inspection after a cabin depressurization event. The FAA is

issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective August 31, 2020.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of August 31, 2020.

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 708 6 0; email: <https://www.rolls-royce.com/contact-us.aspx>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803 For information on the availability of this material at the FAA, call 781-238-7759. It is also available on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0009.

#### Examining the AD Docket

You may examine the AD docket on the internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2020-0009; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Stephen Elwin, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7236; fax: 781-238-7199; email: [Stephen.L.Elwin@faa.gov](mailto:Stephen.L.Elwin@faa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2018-08-02, Amendment 39-19255 (83 FR 17746, April 24, 2018), (“AD 2018-08-02”). AD 2018-08-02 applied to all RRD Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 model turbofan engines. The NPRM published in the **Federal Register** on April 30, 2020 (85 FR 23925). The NPRM was prompted by IPC blade separations resulting in

engine failures. Subsequently, the manufacturer identified cracking of parts in-service resulting in the need to require new inspections using new inspection thresholds and intervals. The manufacturer also determined the need to add an optional terminating action, amend the asymmetric power condition for engine inspection, and require an inspection after a cabin depressurization event. The NPRM proposed to require new inspections based on updated inspection thresholds and intervals for these IPC parts. The NPRM also proposed to add an optional terminating action, amend the asymmetric power condition for engine inspection, and require an inspection after a cabin depressurization event. The FAA is issuing this AD to address the unsafe condition on these products.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2019-0250, dated October 9, 2019 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Occurrences were reported on Rolls-Royce Trent 1000 ‘Pack C’ engines, where some IPC Rotor 1 and Rotor 2 blades were found cracked.

This condition, if not detected and corrected, could lead to in-flight blade release, possibly resulting in reduced control of the aeroplane.

To address this potential unsafe condition, Rolls-Royce initially issued Alert NMSB TRENT 1000 72-AJ814 and 72-AJ819 to provide inspection instructions for IPC Rotor 1 blades, and IPC Rotor 2 blades and IPC shaft Stage 2 dovetail posts, respectively. Rolls-Royce also issued NMSB TRENT 1000 72-J871 to provide rework instructions for the affected parts, and Alert NMSB TRENT 1000 72-AJ869 to inspect those post-rework parts. Consequently, EASA issued AD 2017-0248 to require repetitive inspections of the affected IPC Rotor blades and IPC shaft Stage 2 dovetail posts and, depending on findings, removal from service of the engine for corrective action.

After that [EASA] AD was issued, Rolls-Royce issued Alert NMSB TRENT 1000 72-AK058 to provide instructions for a one-time on-wing inspection. Consequently, EASA issued AD 2018-0073, retaining the requirements of EASA AD 2017-0248, which was superseded, to require an additional borescope inspection of certain engines and, depending on findings, removal from service of the engine for corrective action.

After that [EASA] AD was issued, it was determined that repetitive borescope inspections are necessary on all engines to ensure fleet-wide continued safe operation. Consequently, Rolls-Royce revised Alert NMSB TRENT 1000 72-AJ869, Alert NMSB TRENT 1000 72-AJ814, Alert NMSB TRENT 1000 72-AJ819 and NMSB TRENT 1000 72-J871, and issued NMSB TRENT 1000 72-AK060 to consolidate all inspection