



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2024-1690; Project Identifier AD-2024-00083-T; Amendment 39-22938; AD 2025-02-05]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company (Boeing) Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SP, and 747SR series airplanes. This AD was prompted by a report of improper inner diameter grinding of landing gear outer cylinders, resulting in possible heat damage to the outer cylinder of the nose landing gear (NLG), body landing gear (BLG), and wing landing gear (WLG). This AD requires replacing any affected outer cylinders. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2024-1690; 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, 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.

Material Incorporated by Reference:

- For The Boeing Company material identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Boulevard, MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; website myboeingfleet.com.

- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at regulations.gov under Docket No. FAA-2024-1690.

FOR FURTHER INFORMATION CONTACT: Stefanie Roesli, Aviation Safety Engineer, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone 206-231-3964; email stefanie.n.roesli@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SP, and 747SR series airplanes. The NPRM published in the *Federal Register* on June 20, 2024 (89 FR 51861). The NPRM was prompted by a report of improper inner diameter grinding of landing gear outer cylinders, resulting in possible heat damage to the outer cylinder of the NLG, BLG, and WLG. In the NPRM, the FAA proposed to require

replacing any affected outer cylinders. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received one comment from The Air Line Pilots Association, International (ALPA) who supported the NPRM without change.

The FAA received two additional comments from Boeing. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Clarify Affected Outer Cylinder Serial Numbers.

Boeing requested that an exception paragraph be added to clarify affected outer cylinder numbers. Boeing stated Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, inadvertently lists nine serial numbers without the correct number of leading zeros. Boeing requested that the FAA add the following language to paragraph (h) of the proposed AD, "Where Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, Original Issue dated January 22, 2024, specifies two-digit serial numbers, add two leading zeros (e.g. serial number 47 should be 0047). Where Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, Original Issue dated January 22, 2024, specifies three-digit serial numbers, add one leading zero (e.g. serial number 109 should be 0109)."

The FAA concurs with the comment. The serial numbers listed in Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, are part of the required action to find the parts affected by the unsafe condition. Furthermore, the two-digit and three-digit serial numbers listed in Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, do not exist and the request is for clarification only. The FAA has revised this AD accordingly.

Request to Add a Parts Installation Prohibition

Boeing requested that a parts installation prohibition paragraph be added to the proposed AD. Boeing stated the outer cylinders of the NLG, BLG, and WLG are rotatable structural components which may be moved from one airplane to another. Boeing stated the applicability of the AD covers all in-service Model 747 airplanes noted in Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024; however the parts installation prohibition is needed to prevent the affected outer cylinders from being moved onto airplanes which have already complied with the required actions of the AD.

The FAA agrees to clarify. 14 CFR 39.7 specifies that once an AD is issued, no person may operate a product to which the AD applies except in accordance with the requirements of that AD. Further, 14 CFR 39.9 imposes a continuing obligation to maintain compliance with an AD by establishing a separate violation for each time an aircraft is operated that fails to meet AD requirements. Thus, operators have an ongoing obligation to ensure that the AD-mandated configuration is maintained. The FAA has not changed this AD as a result of the request.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Material Incorporated by Reference under 1 CFR Part 51

The FAA reviewed Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024. This material specifies procedures for determining whether the outer

cylinder of the NLG, the right and left WLG, and the right and left BLG have an affected part number and serial number and replacing all affected outer cylinders.

This material 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 168 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
Inspection or maintenance records check for affected parts	3 work-hours X \$85 per hour = \$255	\$0	\$255	\$42,840

The FAA estimates the following costs to do any replacements that would be required based on the results of the inspection or maintenance records check. The agency has no way of determining the number of airplanes that might need this replacement:

On-condition costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Replacement of outer cylinder (67 affected parts)	161 work-hours X \$85 per hour = \$13,685	\$325,000	\$338,685	\$22,691,895 (67 affected parts)

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 that 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.

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:

2025-02-05 The Boeing Company: Amendment 39-22938; Docket No. FAA-2024-1690; Project Identifier AD-2024-00083-T.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SP, and 747SR series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 32, Landing gear.

(e) Unsafe Condition

This AD was prompted by a report of improper inner diameter grinding of landing gear outer cylinders, resulting in possible heat damage to the outer cylinder of the nose landing gear (NLG), body landing gear (BLG), and wing landing gear (WLG). The FAA is issuing this AD to address heat damage to the outer cylinder of the NLG, BLG, and WLG. The unsafe condition, if not addressed, could cause failure of a principal structural element to sustain its limit load or collapse of the landing gear, which may result in loss of control of the airplane or a runway departure.

(f) Compliance

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

(g) Required Actions

Except as specified in paragraph (h) of this AD: At the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024.

Note 1 to paragraph (g): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 747-32A2535, dated January 22, 2024, which is referred to in Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024.

(h) Exceptions to Requirements Bulletin Specifications

(1) Where the “Boeing Recommended Compliance Time” column in the table under the “Compliance” paragraph of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, refers to “the Original Issue date of Requirements Bulletin 747-32A2535 RB,” this AD requires using the effective date of this AD.

(2) Where Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, specifies two-digit serial numbers, add two leading zeros (e.g. serial number 47 should be 0047).

(3) Where Appendix B of Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024, specifies three-digit serial numbers, add one leading zero (e.g. serial number 109 should be 0109).

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, AIR-520, Continued Operational Safety 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 responsible Flight Standards Office, as appropriate. If sending information

directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD. Information may be emailed to:

AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, AIR-520, Continued Operational Safety Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(j) Related Information

(1) For more information about this AD, contact Stefanie Roesli, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; telephone 206-231-3964; email stefanie.n.roesli@faa.gov.

(2) Material identified in this AD that is not incorporated by reference is available at the address specified in paragraph (k)(3) of this AD.

(k) Material Incorporated by Reference

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

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

(i) Boeing Alert Requirements Bulletin 747-32A2535 RB, dated January 22, 2024.

(ii) [Reserved]

(3) For The Boeing Company material identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Boulevard., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; website myboeingfleet.com.

(4) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th Street, Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit www.archives.gov/federal-register/cfr/ibr-locations or email fr.inspection@nara.gov.

Issued on January 16, 2025.

Suzanne Masterson,
Deputy Director, Integrated Certificate Management Division,
Aircraft Certification Service.
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