



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2019-1071; Project Identifier AD-2019-NM-165-AD; Amendment 39-21494; AD 2021-07-17]

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 Model 737-900ER series airplanes. This AD was prompted by reports of significant corrosion of electrical connectors located in the main landing gear (MLG) wheel well. This AD requires repetitive records checks to determine exposure to certain deicing fluids or repetitive inspections for corrosion of the electrical connectors, and corrective actions if necessary. 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: For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this service

information 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 on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2019-1071.

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-2019-1071; 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.

FOR FURTHER INFORMATION CONTACT: Julio C. Alvarez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3657; email: julio.c.alvarez@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 The Boeing Company Model 737-900ER series airplanes. The NPRM published in the *Federal Register* on January 10, 2020 (85 FR 1290). The NPRM was prompted by reports of significant corrosion of electrical connectors located in the MLG wheel well. The NPRM proposed to require repetitive records checks to determine exposure to certain deicing fluids or repetitive inspections for corrosion of the electrical connectors, and corrective actions if necessary.

The FAA is issuing this AD to address corrosion and subsequent moisture ingress that may lead to electrical shorting of the connectors and incorrect functioning of critical systems necessary for safe flight and landing.

Comments

The FAA gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment.

Support for the NPRM

Air Line Pilots Association, International (ALPA) and two other commenters supported the NPRM.

Request to Revise Resistance Values

Boeing requested that Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003, which incorrectly specified a maximum electrical bonding resistance of 5 milliohms for aluminum and 10 milliohms for stainless steel, be replaced with Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020, which updates the maximum allowable resistance values to 3 milliohms for both aluminum and stainless steel, per AWL No. 28-AWL-04, as identified in Subsection G of Boeing Temporary Revision (TR) 09-020, dated March 2008, to the Boeing 737-600/700/800/900 Maintenance Planning Document (MPD), D626A001-Certification Maintenance Requirements (CMR), Revision March 2008. Boeing also advised that operators who have incorporated Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003, should restore the fuel quantity indicating system (FQIS) aluminum and stainless steel connectors to a maximum resistance of 3 milliohms at the next inspection interval per Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020. Boeing observed that the maximum allowable resistance values of 5 milliohms (aluminum) and 10 milliohms (stainless steel) specified in Boeing

Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003, are greater than the values specified in AWL No. 28-AWL-04, and that the proposed AD is in conflict with AD 2008-10-10 R1, Amendment 39-16164 (75 FR 1529, January 12, 2010) (AD 2008-10-10 R1), and AD 2018-20-24, Amendment 39-19458 (83 FR 51815, October 15, 2018) (AD 2018-20-24), both of which reference AWL No. 28-AWL-04. ADs 2008-10-10 and 2018-20-24 currently require revising the Airworthiness Limitations (AWLs) section of the Instructions for Continued Airworthiness by incorporating new limitations for fuel tank systems to satisfy Special Federal Aviation Regulation No. 88 (in 14 CFR part 21) for FQIS connectors in unpressurized area. The critical design configuration control limitations (CDCCLs) require that if the FQIS connector D4850 is disturbed or repaired, the electrical bonding resistance value from the backshell to the structure must be 3 milliohms or less.

The FAA agrees with the request to require the revised service information, which updates the maximum allowable resistance values to 3 milliohms. These values are consistent with AD 2008-10-10 R1 and AD 2018-20-24 and SFAR No. 88 requirements. The FAA has revised paragraph (g)(2) of this AD to specify Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020, and has also updated the “Related Service Information under CFR Part 51” paragraph in this final rule.

Request to Specify Initial Compliance Time

Delta Air Lines (DAL) suggested that paragraph (g) specify the compliance time as within 24 months of issuance of the original certificate of airworthiness or 12 months after the effective date of this AD, whichever comes later. DAL noted that newer airplanes having accumulated less than 24 months since the issuance of the original certificate of airworthiness should not require inspection prior to the accumulation of 24 months since the issuance of the original certificate of airworthiness, because these aircraft were in a known corrosion-free condition upon completion of production. This

condition, DAL asserted, is equivalent to an aircraft that has just been inspected as required by this AD. DAL maintained that because the repeat interval after initial inspection given in the proposed rule is 24 months, an equivalent level of safety would be provided if the initial inspection were accomplished within 24 months of delivery or 12 months after the effective date of this AD, whichever occurs later.

The FAA agrees with the request. An affected airplane that has just received an original airworthiness certificate or original export certificate of airworthiness is in a condition equivalent to that of completing the repetitive inspection; therefore, conducting an initial inspection within 24 months is appropriate to address the concern of the AD for that airplane. The initial compliance time specified in paragraph (g) of this AD has been changed to include this information.

Request to Modify Compliance Times

DAL suggested that paragraph (g)(2) of the proposed AD be changed to add a new paragraph (g)(2)(iv) specifying “If connectors or contacts show signs of corrosion or connector resistance measurements are greater than the specified milliohm limit given in Boeing Alert Service Bulletin 737-24A1148, Revision 1, accomplish appropriate corrective action(s) prior to further flight in accordance with Boeing Alert Service Bulletin 737-24A1148, Revision 1.” DAL observed that the applicable times specified in paragraphs (g)(2)(i) through (iii) of the proposed AD are specific to corrosion of the backshells, and that the proposed AD does not clearly define corrective actions for the connectors and contacts, which would also be inspected in paragraph (g)(2) of the proposed AD. DAL contended that the intended action of the proposed AD is for discrepant connectors and contacts to have corrective action accomplished prior to further flight.

The FAA disagrees with the request to modify paragraph (g)(2) of this AD. The service information adequately specifies when to perform corrective actions for connectors and contacts. The FAA has not changed this AD with regard to this request.

Request to Address Discrepancies in NPRM

DAL noted the following discrepancies with Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003: The Work Instructions, paragraph 3.B of the Accomplishment Instructions, indicate that the accomplishment instructions are divided into two parts; however, they are actually divided into three parts. Also, part 3 of the Work Instructions does not give the instruction to remove electrical power from the airplane, yet Figure 5, Step 10, of the ASB instructs to restore electrical power. DAL noted that if electrical power was not removed, it cannot be restored. The FAA infers a request to address the discrepancies in the proposed AD.

The FAA agrees with addressing the stated discrepancies in this AD. The 57 discrepancies have been rectified in Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020, and this AD has been changed to reference that revision.

Request to Include AMOC Notices

DAL requested that the proposed AD be revised to include references to two FAA-approved AMOCs to the mandated service information: AMOC Notice 737-24A1148-AMOC-01, dated May 06, 2013, and FAA AMOC Letter 130S-09-9, dated April 28, 2009. DAL observed that the AMOCs are applicable service documentation that should be specifically included in the final rule to facilitate operators in correctly incorporating the requirements of the final rule.

The FAA partially agrees with the request. To facilitate operators in correctly incorporating the requirements of the final rule, paragraph (i)(4) of this AD has been changed to include reference to FAA AMOC Letter 130S-09-9, dated April 28, 2009.

However, Boeing AMOC Notice 737-24A1148-AMOC-01, dated May 6, 2013, has been incorporated into the revised service bulletin that is mandated by this AD and therefore is not included in paragraph (i)(4) of this AD.

Request to Give Credit for Previous Actions

United Airlines (UAL) generally supported the NPRM and requested that credit be given for actions previously accomplished in their maintenance inspection program per their publication EA 2400-01516, addressing Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003. UAL stated it has incorporated inspections of its 737-900ER fleet starting May 2010, using their publication EA 2400-01516.

The FAA agrees that operators should get credit for performing actions of Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003, referenced in the NPRM. As stated previously, this final rule has been revised to refer to the latest service bulletin, Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020, which contains updated service information to address the unsafe condition. Operators who previously performed the work before the effective date of this AD using Boeing Alert Service Bulletin 737-24A1148, dated December 6, 2001, or Revision 1, dated July 10, 2003, may receive credit for accomplishment of the initial detailed inspection specified in paragraph (g)(2) of this AD; however, the updated FQIS connector D4850 resistance values must be used at the next repetitive inspection interval, in accordance with Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020. The FAA has added paragraph (h) of this AD to provide credit for Boeing Alert Service Bulletin 737-24A1148, dated December 6, 2001, and Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003.

Effect of Winglets on Accomplishment of the Proposed Actions

Aviation Partners Boeing stated that the installation of winglets per Supplemental Type Certificate STC ST00830SE does not affect the accomplishment of the

manufacturer's service instructions. Blended winglets are part of the production type certificate for the 737-900ER and are not an STC installation.

The FAA agrees with the commenter that STC ST00830SE does not affect the accomplishment of the manufacturer's service instructions. Therefore, the installation of STC ST00830SE does not affect the ability to accomplish the actions required by this AD. The FAA has not changed this AD as a result of this comment.

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 with the changes described previously and minor editorial changes. The FAA has determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

The FAA also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Related Service Information under 1 CFR Part 51

The FAA reviewed Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020. This service information describes procedures for repetitive records checks to determine exposure to certain deicing fluids or repetitive inspections for corrosion of the electrical connectors, and corrective actions if necessary. 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 346 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
Repetitive records check	1 work-hour X \$85 per hour = \$85 per inspection cycle	\$0	\$85 per inspection cycle	Up to \$29,410 per inspection cycle
Repetitive detailed inspection	3 work-hours X \$85 per hour = \$255 per inspection cycle	\$0	\$255 per inspection cycle	Up to \$88,230 per inspection cycle

The FAA estimates the following costs to do any necessary repairs or replacements that would be required based on the results of the inspection. The FAA has no way of determining the number of aircraft that might need these repairs or replacements:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Cleaning or replacement	Up to 5 work-hours X \$85 per hour = Up to \$425	Up to \$831	Up to \$1,256

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.

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:

2021-07-17 The Boeing Company: Amendment 39-21494 ; Docket No. FAA-2019-1071; Product Identifier 2019-NM-165-AD.

(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 737-900ER series airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 24, Electrical power.

(e) Unsafe Condition

This AD was prompted by reports of significant corrosion of electrical connectors located in the main landing gear (MLG) wheel well. The FAA is issuing this AD to address corrosion and subsequent moisture ingress that may lead to electrical shorting of the connectors and incorrect functioning of critical systems necessary for safe flight and landing.

(f) Compliance

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

(g) Required Actions

Within 24 months after the date of issuance of the original airworthiness certificate or the date of issuance of the original export certificate of airworthiness or 12 months after the effective date of this AD, whichever is later: Do the actions required by paragraph (g)(1) or (2) of this AD.

(1) Determine airplane exposure to runway deicing fluids containing potassium formate or potassium acetate by reviewing airport data on the types of components in the deicing fluid used at airports that support airplane operations.

(i) If the airplane has not been exposed: Repeat the requirements specified in paragraph (g)(1) of this AD thereafter at intervals not to exceed 24 months.

(ii) If the airplane has been exposed: Within 90 days after that determination is made, do the inspection required by paragraph (g)(2) of this AD. Repeat the inspection thereafter at intervals not to exceed 24 months.

(2) Do a detailed inspection of the electrical connectors, including the contacts and backshells of the line replaceable unit (LRU) in the wheel well of the MLG, for corrosion in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020. Perform applicable corrective actions at the applicable times, as specified in paragraphs (g)(2)(i) through (iii) of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020. Repeat the inspection thereafter at intervals not to exceed 24 months. For the purposes of this AD, a detailed inspection is defined as an intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required.

(i) If the total backshell surface area corrosion is 10 percent or less, clean the backshell(s) before further flight.

(ii) If the total backshell surface area corrosion is greater than 10 percent but less than 20 percent, replace the connectors and backshells within 30 days after the detailed inspection.

(iii) If the total backshell surface area corrosion is 20 percent or more, replace the connectors and backshells before further flight.

(h) Credit for Previous Actions

This paragraph provides credit for the initial detailed inspection and applicable corrective actions specified in paragraph (g)(2) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 737-24A1148, dated December 6, 2001, or Boeing Alert Service Bulletin 737-24A1148, Revision 1, dated July 10, 2003.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO 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 certification office, send it to the attention of the person identified in paragraph (j) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@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.

(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, Seattle ACO 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.

(4) FAA AMOC Letter 130S-09-9, dated April 28, 2009, and AMOCs approved previously for AD 2005-18-23, Amendment 39-14264 (70 FR 54253, September 14, 2005), are approved as AMOCs for the corresponding provisions of this AD.

(j) Related Information

For more information about this AD, contact Julio C. Alvarez, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3657; email: julio.c.alvarez@faa.gov.

(k) 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) Boeing Alert Service Bulletin 737-24A1148, Revision 2, dated September 14, 2020.

(ii) [Reserved]

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>.

(4) You may view this service information 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.

(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, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on March 29, 2021.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

[FR Doc. 2021-08058 Filed: 4/19/2021 8:45 am; Publication Date: 4/20/2021]