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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2025-0478; Project Identifier MCAI-2024-00647-A; Amendment  
39-23254; AD 2026-03-05]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Embraer S.A. Airplanes**

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

**ACTION:** Final rule.

**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2023-22-11, which applied to certain Embraer S.A. (Embraer) Model EMB-505 airplanes. AD 2023-22-11 required repetitively replacing the clutch retaining bolt and washer of the aileron autopilot servo mount. Since the FAA issued AD 2023-22-11, the FAA has determined that the applicability should include certain Model EMB-505 airplanes and, for certain airplanes, an additional requirement is necessary for the initial replacement of the retaining bolt and washer. This AD incorporates these additional airplanes into the applicability, adds the additional requirement, and also provides an optional terminating action for the repetitive retaining bolt and washer replacement. 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-2025-0478; 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.

*Material Incorporated by Reference:*

- For Agência Nacional de Aviação Civil (ANAC) material identified in this AD, contact ANAC, Continuing Airworthiness Technical Branch (GTAC), Rua Doutor Orlando Feirabend Filho, 230 - Centro Empresarial Aquarius-Torre B-Andares 14 a 18, Parque Residencial Aquarius, CEP 12.246-190 - São José dos Campos - SP, Brazil; phone: 55 (12) 3203-6600; email: [pac@anac.gov.br](mailto:pac@anac.gov.br); website: [anac.gov.br/en/](https://anac.gov.br/en/). You may find this material on the ANAC website at [sistemas.anac.gov.br/certificacao/DA/DAE.asp](https://sistemas.anac.gov.br/certificacao/DA/DAE.asp).

- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, MO 64106. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2025-0478.

**FOR FURTHER INFORMATION CONTACT:** Jim Rutherford, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; phone: (816) 329-4165; email: [jim.rutherford@faa.gov](mailto:jim.rutherford@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2023-22-11, Amendment 39-22595 (88 FR 80565, November 20,

2023) (AD 2023-22-11). AD 2023-22-11 applied to certain serial-numbered Embraer Model EMB-505 airplanes. The FAA issued AD 2023-22-11 to address failure of the clutch retaining bolt of the aileron autopilot servo mount, which could disengage the clutch from the drive pin and jam the aileron controls and result in reduced controllability of the airplane.

The NPRM was published in the *Federal Register* on April 3, 2025 (90 FR 14587). The NPRM was prompted by ANAC AD 2023-02-01R3, effective October 25, 2024 (ANAC AD 2023-02-01R3) (also referred to as the MCAI), issued by ANAC, which is the aviation authority for Brazil. The MCAI maintains the applicability of ANAC AD 2023-02-01R2, effective October 16, 2024 (ANAC AD 2023-02-01R2) [no FAA corresponding AD], to include all Embraer Model EMB-505 airplanes, require initial replacement of the retaining bolt and washer, and require repetitively replacing the aileron autopilot servo mount clutch retaining bolt and washer. It also includes an optional terminating action for the repetitive replacement of the aileron autopilot servo mount clutch retaining bolt and washer by replacing the cable guard, clutch cartridge, bolt, and washer with new parts having new part numbers.

In the NPRM, the FAA proposed to retain some of the requirements of AD 2023-22-11, specifically the repetitive replacement requirements. Additionally, in the NPRM, the FAA proposed to require accomplishing the actions specified in ANAC AD 2023-02-01R3 described previously, except for any differences identified as exceptions in the regulatory text of this AD. The FAA is issuing this AD to address the unsafe condition on these products.

You may examine the MCAI in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2025-0478.

## **Discussion of Final Airworthiness Directive**

### **Supportive Comments**

The FAA received comments from four commenters; three anonymous commenters and one individual commenter. All four commenters supported the NPRM without change.

### **Other Comments**

The FAA also received 10 other comments from one anonymous commenter. Six comments were questions for the FAA. Four comments were recommendations made to the FAA. In summary, the anonymous commenter's concerns involved a question on the FAA evaluation of the environmental impact of increased maintenance, a recommendation for the FAA to consider subsidies to help defray the financial burden on small operators, a question about what measures are in place to maintain safety from exposure to hazards resulting from increased maintenance, a recommendation that the FAA should encourage data collection through voluntary reporting for future safety analysis, a question on how the FAA plans to coordinate implementation of this AD with international aviation authorities, a recommendation about seeking a long-term solution eliminating repetitive replacements, a question on specific training to ensure proper replacement procedures for the proposed required actions, a recommendation that the FAA assesses the availability of replacement parts, a question about how the FAA will assess the effectiveness of this AD and mitigate additional safety risks, and a recommendation that the FAA maintain transparency about the outcomes of this AD. The following presents the comments received on the NPRM and the FAA's response to each comment.

### **Question Regarding the Environmental Impact of Increased Maintenance Activities**

The anonymous commenter questioned whether the FAA evaluated the environmental implications of increased maintenance, specifically, the waste

management of replaced components. The anonymous commenter noted that the aviation industry is under scrutiny for its environmental footprint and emphasized the need for sustainable maintenance practices. The FAA infers that the commenter wants information added as to what the environmental effects of this AD would be.

The FAA disagrees with the request. In accordance with 14 CFR 39.5, the FAA issues an AD when an unsafe condition exists on an aircraft, aircraft engines, propellers, or appliances, and the condition is likely to exist or develop in other products of the same type design. Mandating how operators dispose of parts removed from an airplane or their spares inventory does not address the unsafe condition. Further, according to § 39.11, an AD specifies the actions that must be taken to resolve the unsafe condition. Any actions required beyond that may create an unnecessary burden on operators. This AD has not been changed as a result of this comment.

### **Request For the FAA to Consider Subsidies to Help Defray the Financial Burden on Small Operators**

The anonymous commenter stated the AD may impose financial strains upon small operators. The commenter requested the FAA consider subsidies or financial assistance programs to help mitigate the financial costs on small operators. The anonymous commenter discussed the financial challenges faced by small operators in complying with regulatory mandates.

The FAA acknowledges the commenter's concern. The FAA recognizes that the AD imposes operational costs on operators, and that operators have an obligation to maintain their airplanes in airworthy condition. For this AD, the cost to replace the bolt and washer and to replace cable guard, clutch cartridge, bolt, and washer with new parts, an optional terminating action, would not have a significant economic impact on small operators. Under certain circumstances, the airplane manufacturer might provide

financial relief, but the FAA does not provide economic mitigation to small or large operators. The FAA has not changed this AD in this regard.

### **Question Regarding Worker Safety During Maintenance**

The anonymous commenter asked what measures are in place to ensure the safety of technicians from exposure to potential hazards during repetitive replacement procedures. The anonymous commenter highlighted the importance of safety protocols during aircraft maintenance to prevent occupational hazards.

The FAA acknowledges the concern regarding worker safety but considers the question to be outside the scope of this rulemaking and highly recommends that maintenance technicians follow any safety protocols outlined in Agência Nacional de Aviação Civil (ANAC) AD 2023-02-01R3, effective October 25, 2024. This AD has not been changed as a result of this comment.

### **Comment Regarding Data Collection and Reporting**

The anonymous commenter requested the FAA encourage voluntary reporting. The commenter stated that voluntary reporting could enhance data collection for future safety analyses. The MCAI, which was proposed for incorporation by reference in the NPRM, specified the use of service material that states that operators should take pictures of the removed parts and email them, along with additional information, to Embraer S.A. and Garmin. However, the MCAI does not specifically require this task. The FAA also determined that those tasks were not necessary to address the unsafe condition, thus the FAA is not requiring the reporting of removed parts. However, operators may report the information specified in the service material referenced in the MCAI, but are not required to report any information by this AD. This AD has not been changed as a result of this comment.

### **Comment Regarding FAA Coordination with International Aviation Authorities**

The anonymous commenter questioned if the FAA has a plan to coordinate with international authorities to ensure the consistent implementation of this AD. The anonymous commenter mentioned the importance of harmonized global safety. The FAA acknowledges this concern and explained in the NPRM that there is a process to use civil aviation authority (CAA) ADs as the primary source of information for compliance with requirements for corresponding FAA ADs. The NPRM further explained that the FAA has been coordinating this process with manufacturers and CAAs, and as a result, proposed to incorporate by reference an AD issued by ANAC. Additionally, the NPRM explained that the FAA is acting in accordance with the bilateral agreement it has with ANAC, the Brazilian state of design authority for the identified products. ANAC notified the FAA of the unsafe condition as described in ANAC AD 2023-02-01R3. By proposing an AD that incorporates the MCAI actions by reference, the FAA is ensuring consistent implementation of these actions for the identified products approved for operation in the United States. In addition, all ADs are sent to foreign airworthiness authorities with bilateral agreement by the State of Design for the corresponding aviation product. This AD has not been changed as a result of this comment.

#### **Comment Regarding Long-Term Solutions**

The anonymous commenter requested the FAA explore long-term design modifications to eliminate the need for repetitive replacements. The commenter stated that long-term modifications could enhance safety and reduce maintenance burdens. The anonymous commenter noted that the FAA previously endorsed design changes as effective long-term solutions for recurring maintenance issues.

The FAA acknowledges that in certain cases, long-term continued operational safety is better ensured by design changes that remove the source of the problem and the need for repetitive inspections. In those cases, we mandate terminating action. In other

cases, mandating a terminating action is not necessary to ensure the continued operational safety of a product. Regarding this comment and how it specifically relates to this AD, the FAA refers to paragraph (c) of ANAC AD 2023-02-01R3, which is incorporated by reference in this AD and provides an optional terminating action for the repetitive replacement of the identified affected parts. ANAC and the FAA have both determined that the unsafe condition is addressed by both the repetitive actions of this AD and the terminating action. This AD has not been changed as a result of this comment.

### **Question Regarding Training to Accomplish the AD Requirements**

The anonymous commenter questioned if there are specific training requirements for maintenance personnel that will ensure proper execution of replacement procedures. The commenter cited the “Aviation Maintenance Technician Handbook” (FAA, 2020) outlining the necessity of specialized training for complex maintenance tasks as a source for the question.

The FAA acknowledges this concern. FAA-certified maintenance technicians must meet the qualifications and maintain the criteria outlined in FAA regulations (14 CFR). This AD has not been changed as a result of this comment.

### **Comment Regarding the Availability of Replacement Parts**

The anonymous commenter requested the FAA assess the supply chain’s capacity to meet the demand for replacement parts. The commenter noted that having replacement parts available is crucial to prevent maintenance delays.

The FAA agrees that having available replacement parts is crucial to preventing maintenance delays; however, the FAA does not manage parts for the supplier. When proposing or mandating AD actions, the FAA does take into consideration the availability of replacement parts versus the risk of not addressing an unsafe condition. To the extent replacement parts may not exist to replace the specified parts of this AD, the FAA cannot base its AD action on whether replacement parts are available or can be produced. While

every effort is made to avoid grounding aircraft, the FAA must address the unsafe condition. This AD has not been changed as a result of this comment.

### **Question Regarding Monitoring Effectiveness**

The anonymous commenter requested information regarding the metrics the FAA will use to assess the effectiveness of the AD in mitigating the identified safety risks.

The FAA acknowledges this question. The FAA utilizes data obtained through voluntary reporting using the service difficulty report (SDR) system and, for this AD, any additional information received from the State of Design. This AD has not been changed as a result of this comment.

### **Comment on Public Transparency**

The anonymous commenter requested the FAA maintain transparency about the AD's implementation and outcome. The commenter noted that this could bolster public trust in aviation safety measures.

The FAA acknowledges the commenter's statement; however, ADs are issued to address a known unsafe condition and the actions required to correct that unsafe condition. The FAA maintains transparency with the public by publishing the final rule in the *Federal Register* with discussion of public comments made on the NPRM along with responses made by the FAA. This AD has not been changed as a result of this comment.

### **Additional Changes Between the Final Rule and the NPRM**

ANAC AD 2023-02-01R3 maintains the same applicability as MCAI 2023-02-01R2 to all Embraer Model EMB-505 airplanes. However, this AD has a reduced applicability reflecting what the service material referenced by ANAC AD 2023-02-01R3 states as certain serial numbers and onward have the terminating action installed at the factory. ANAC approved the request made by the FAA to use the reduced applicability. Additionally, a new calculation was run on the number of affected airplanes within the reduced applicability. Based on that calculation, the material identified in the MCAI

identifies 773 airplanes worldwide of the reduced applicability. Of those 773 airplanes, 638 airplanes are on the U.S. Registry. Although 638 airplanes is more than identified in the NPRM, it is based on the total number of U.S.-registered airplanes identified as of the issuance of this final rule.

### **Conclusion**

These products have been approved by the civil aviation authority of another country and are approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, that authority has notified the FAA of the unsafe condition described in the MCAI referenced above. 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 ANAC AD 2023-02-01R3, which specifies procedures for repetitively replacing the clutch retaining bolt and washer of the aileron autopilot servo mount. ANAC AD 2023-02-01R3 also provides a terminating action for repetitively replacing the clutch retaining bolt and washer of the aileron autopilot servo mount by replacing the cable guard, clutch cartridge, bolt, and washer with new parts having new part numbers.

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.

## Differences Between this AD and the MCAI

The material specified in ANAC AD 2023-02-01R3 states that operators should take pictures of the removed clutch retaining bolt and the removed washer and email them, along with additional information, to Embraer S.A and Garmin. ANAC AD 2023-02-01R3 does not specifically require this task, and this AD does not include this task.

## Costs of Compliance

The FAA estimates that this AD affects 638 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
Replace bolt and washer	1 work-hour x \$85 per hour = \$85 per replacement interval	\$50	\$135 per replacement interval	\$86,130 per replacement interval

The FAA estimates the following costs to do any necessary replacements that are required based on selection of the terminating action. The agency has no way of determining the number of airplanes that might need these replacements:

### On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Optional terminating action (replace cable guard, clutch cartridge, bolt, and washer with new parts)	6 work-hours x \$85 per hour = \$510	\$300	\$810

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

## **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**

The FAA has determined that 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:

a. Removing Airworthiness Directive AD 2023-22-11, Amendment 39-22595 (88 FR 80565, November 20, 2023); and

b. Adding the following new airworthiness directive:

**2026-03-05 Embraer S.A.:** Amendment 39-23254; Docket No. FAA-2025-0478; Project Identifier MCAI-2024-00647-A.

#### **(a) Effective Date**

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

#### **(b) Affected ADs**

This AD replaces AD 2023-22-11, Amendment 39-22595 (88 FR 80565, November 20, 2023) (AD 2023-22-11).

#### **(c) Applicability**

This AD applies to Embraer S.A. Model EMB-505 airplanes, serial numbers 50500004 through 50500012, 50500014, 50500016 through 50500665, and 50500667 through 50500779, certificated in any category.

#### **(d) Subject**

Joint Aircraft System Component (JASC) Code 2215, Autopilot Main Servo.

**(e) Unsafe Condition**

This AD was prompted by corrosion on the clutch retaining bolt of the aileron autopilot servo mount. The FAA is issuing this AD to address the unsafe condition. The unsafe condition, if not addressed, could result in failure of the clutch retaining bolt of the aileron autopilot servo mount, which could disengage the clutch from the drive pin and jam the aileron controls, which could result in reduced controllability of the airplane.

**(f) Compliance**

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

**(g) Required Actions**

Except as specified in paragraphs (h) and (i) of this AD: Comply with all required actions and compliance times specified in, and in accordance with, Agência Nacional de Aviação Civil (ANAC) AD 2023-02-01R3, effective October 25, 2024 (ANAC AD 2023-02-01R3).

Note 1 to paragraph (g): TASK 22-11-03-960-801-A of Embraer Phenom 300 AMM 4610 Part II MPP, Revision 65, dated November 8, 2024, contains procedures for the replacement of the aileron autopilot servo mount clutch-retaining bolt and washer.

**(h) Exceptions to ANAC AD 2023-02-01R3**

(1) Where ANAC AD 2023-02-01R3 refers to February 6, 2023, the effective date of ANAC AD 2023-02-01, this AD requires using December 26, 2023, the effective date of AD 2023-22-11.

(2) Where ANAC AD 2023-02-01R3 refers to its effective date, this AD requires using the effective date of this AD.

(3) Where ANAC AD 2023-02-01R3 requires replacing a part with a new part, for the purposes of this AD, a new part means a part that has accumulated zero flight hours.

(4) Where the “NOTE” to Table 01 in ANAC AD 2023-02-01R3 specifies “If the airplane operation age and/or the flight hours criteria change before the SB

accomplishment, the most restrictive criteria must be obeyed”, this AD requires replacing that text with “comply with the most restrictive criteria for each applicability range (in months and flight hours) in Table 01 of ANAC AD 2023-02-01R3”.

(5) This AD does not adopt paragraph (e) of ANAC AD 2023-02-01R3.

**(i) No Reporting Requirement**

Although the service material referenced in ANAC AD 2023-02-01R3 specifies to submit certain information to the manufacturer, this AD does not include that requirement.

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

(1) The Manager, International Validation 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 International Validation Branch, send it to the attention of the person identified in paragraph (k) of this AD and email to: AMOC@faa.gov. If mailing information, also submit information by email. 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.

(2) AMOCs approved for AD 2023-22-11 are approved as AMOCs for the corresponding provisions of this AD.

**(k) Additional Information**

For more information about this AD, contact Jim Rutherford, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; phone: (816) 329-4165; email: jim.rutherford@faa.gov.

**(I) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) 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) Agência Nacional de Aviação Civil (ANAC) AD 2023-02-01R3, effective October 25, 2024.

(ii) [Reserved]

(3) For ANAC material identified in this AD, contact ANAC, Continuing Airworthiness Technical Branch (GTAC), Rua Doutor Orlando Feirabend Filho, 230 - Centro Empresarial Aquarius-Torre B-Andares 14 a 18, Parque Residencial Aquarius, CEP 12.246-190 - São José dos Campos - SP, Brazil; phone: 55 (12) 3203-6600; email: [pac@anac.gov.br](mailto:pac@anac.gov.br); website: [anac.gov.br/en/](http://anac.gov.br/en/). You may find this material on the ANAC website at [sistemas.anac.gov.br/certificacao/DA/DAE.asp](http://sistemas.anac.gov.br/certificacao/DA/DAE.asp).

(4) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 901 Locust, Kansas City, MO 64106. For information on the availability of this material at the FAA, call (817) 222-5110.

(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](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov).

Issued on January 30, 2026.

Steven W. Thompson,  
Acting Deputy Director, Compliance & Airworthiness Division,  
Aircraft Certification Service.

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