



# 適航指令發布單

## Airworthiness Directive Issuance Form

民航局 AD 編號 AD number	CAA-2018-10-018	發布日期 Date issued	2018/10/26
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	This AD applies to all The Boeing Company Model 787 series airplanes, certificated in any category.		
主旨摘要	The inboard and outboard trailing edge flap rotary actuator-inspection		
民航局 CAA <input type="checkbox"/> 本國產品 Native products <input type="checkbox"/> 其他個案 Other	設計國民航主管機構 Original Authorities <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> FAA  <input type="checkbox"/> EASA  <input type="checkbox"/> Brazil  <input type="checkbox"/> Transport Canada Civil Aviation  <input type="checkbox"/> DGAC             </div> <div> <input type="checkbox"/> Germany LBA  <input type="checkbox"/> CAA-NL  <input type="checkbox"/> UK CAA  <input type="checkbox"/> Japan CAB  <input type="checkbox"/> CAA of Israel  <input type="checkbox"/> Other _____             </div> </div>		
	設計國 AD 編號 Original AD number	2018-22-04	
	1. 直接採用原 AD 之內容?(Is the original AD directly adopted?) <input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _ a. 生效日期另訂為(Re-specify the effective date as) : _____ b. 執行時限另訂為(Re-specify the compliance time or period as) : _____ 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?) <input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)		
備註 Note	ATA 27. Re. Publication: Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015.		
註： 1. AD 內容後附。 2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。 3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a> Note： 1. The AD text is enclosed. 2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval. 3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a>			

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2018-0078; Product Identifier 2017-NM-107-AD; Amendment 39-19477; AD 2018-22-04]**

**RIN 2120-AA64**

### **Airworthiness Directives; The Boeing Company Airplanes**

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

**ACTION:** Final rule.

---

**SUMMARY:** We are superseding Airworthiness Directive (AD) 2017-01-02, which applied to certain The Boeing Company Model 787-8 and 787-9 airplanes. AD 2017-01-02 required an inspection for discrepant inboard and outboard trailing edge flap rotary actuators, and replacing the rotary actuator or doing related investigative and corrective actions if necessary. This AD continues to retain those actions. This AD also adds airplanes to the applicability and reduces the number of affected actuators. This AD was prompted by a report indicating that some inboard and outboard trailing edge flap rotary actuators may have been assembled with an incorrect no-back brake rotor-stator stack sequence during manufacturing. We are issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective November 28, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of November 28, 2018.

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of February 21, 2017 (82 FR 4775, January 17, 2017).

**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, Transport Standards 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 <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0078.

## **Examining the AD Docket**

You may examine the AD docket on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0078; 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 regulatory evaluation, any comments received, and other information. The address for Docket Operations (phone: 800-647-5527) 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:** Douglas Tsuji, Senior Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3548; email: [douglas.tsuji@faa.gov](mailto:douglas.tsuji@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2017-01-02, Amendment 39-18769 (82 FR 4775, January 17, 2017) ("AD 2017-01-02"). AD 2017-01-02 applied to certain The Boeing Company Model 787-8 and 787-9 airplanes. The NPRM published in the Federal Register on February 14, 2018 (83 FR 6477). The NPRM was prompted by a report indicating that some inboard and outboard trailing edge flap rotary actuators may have been assembled with an incorrect no-back brake rotor-stator stack sequence during manufacturing. The NPRM proposed to continue to require an inspection of the inboard and outboard trailing edge flap rotary actuator for any discrepant rotary actuator, and corrective actions if necessary. The NPRM also proposed to add airplanes to the applicability and reduce the number of affected actuators. We are issuing this AD to address incorrectly assembled rotary actuators, which could cause accelerated unit wear that will eventually reduce braking performance. This degradation could lead to loss of no-back brake function and reduced controllability of the airplane.

### **Comments**

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM and the FAA's response to each comment. Boeing stated that it supported the NPRM.

### **Request To Revise the Applicability**

One commenter, Takayoshi Aimoto, requested that we revise the applicability of the NPRM. Mr. Aimoto stated that the applicability should be limited to certain Boeing Model 787-8 and 787-9 airplanes because Boeing has not installed the suspected rotary actuators on newly delivered Model 787-8 and 787-9 airplanes.

We disagree with the commenter's request. While the number of discrepant rotary actuators are limited, these parts are considered rotatable, and they could be removed and installed on other Model 787-8 or 787-9 series airplanes outside the group suspected of being delivered with the discrepant part and serial numbers. Therefore, the unsafe condition identified in the AD could exist in the future on all Model 787-8 and 787-9 airplanes. We have not changed the AD in this regard.

## **Request for Clarification of Part Marking Requirements**

United Airlines (UAL) requested clarification of paragraph (i) of the proposed AD and whether the FAA will allow installation of applicable parts that are marked with the appropriate component service bulletin number, instead of the service bulletin number identified in paragraph (i) of the proposed AD, as specified in Task 2 of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017. UAL commented that Task 2 is invoked only as part of one option (option 2) if a discrepant part is found; there is also the option to replace the part.

UAL stated that replaced parts removed from the airplane and any affected spare parts may be dispositioned to a shop for repair using a component service bulletin, and in that case, the marking would indicate the component service bulletin number. UAL commented that Table 1 of paragraph 3.B., “Parts and Materials Supplied by the Operator,” of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, states that parts supplied by the operator may be marked by the Boeing service information, or they may be marked with the component service information. UAL stated, for example, P689A0001-01 may be marked with “SB P689A0001-27-01 INCORPORATED” or “B787-81205-SB270032-00 INCORPORATED”.

UAL also commented that paragraph 2.E. of the Work Instructions of the “Part 1: Inboard and Outboard Flap Rotary Actuator” of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, allows for listed parts marked with “SB P689A0001-27-01 INCORPORATED,” “SB P690A0001-27-01 INCORPORATED,” “SB P700A0001-27-01 INCORPORATED,” “SB CB10130-27-01 INCORPORATED,” or “B787-81205-SB270032-00 INCORPORATED.”

We agree to provide clarification for the commenter. Having the additional component service information incorporated means that a discrepant part has been inspected and/or modified to ensure that it is in the acceptable configuration. Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, defines discrepant and acceptable parts. For clarification, we have revised paragraph (i) of this AD to include additional rotary actuator part markings that are acceptable for this AD.

## **Conclusion**

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the change described previously, and minor editorial changes. We have 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.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

## **Related Service Information Under 1 CFR Part 51**

We reviewed Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017. The service information describes procedures for an inspection of the inboard and outboard trailing edge flap rotary actuator for any discrepant rotary actuator, and related investigative and corrective actions if necessary. The related investigative actions include a functional test of the trailing edge flap no-back brake. The corrective actions include replacement of the discrepant rotary actuator with a nondiscrepant rotary actuator. 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

We estimate that this AD affects 89 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

### Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection	5 work-hours $\times$ \$85 per hour = \$425	\$0	\$425	\$37,825

We estimate the following costs to do any necessary on-condition actions that would be required based on the results of the proposed inspection. We have no way of determining the number of aircraft or the number of rotary actuators (up to 8 per shipset) that might need these on-condition actions:

### On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Check to determine flight cycles on the rotary actuator	1 work-hour $\times$ \$85 per hour = \$85	\$0	\$85 per rotary actuator.
Functional Test per rotary actuator	2 work-hours $\times$ \$85 per hour = \$170	0	\$170 per rotary actuator.
Replacement per rotary actuator	2 work-hours $\times$ \$85 per hour = \$170	0	\$170 per rotary actuator.
System Test after rotary actuator replacement(s) per airplane	24 work-hours $\times$ \$85 per hour = \$2,040	0	\$2,040 per airplane.

## 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.

We are 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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

## **Regulatory Findings**

We have 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) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) 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 removing Airworthiness Directive (AD) 2017-01-02, Amendment 39-18769 (82 FR 4775, January 17, 2017), and adding the following new AD:



**FAA**  
**Aviation Safety**

## **AIRWORTHINESS DIRECTIVE**

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

---

**2018-22-04 The Boeing Company:** Amendment 39-19477; Docket No. FAA-2018-0078; Product Identifier 2017-NM-107-AD.

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

This AD is effective November 28, 2018.

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

This AD replaces AD 2017-01-02, Amendment 39-18769 (82 FR 4775, January 17, 2017) ("AD 2017-01-02").

### **(c) Applicability**

This AD applies to all The Boeing Company Model 787 series airplanes, certificated in any category.

### **(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight control systems.

### **(e) Unsafe Condition**

This AD was prompted by a report indicating that some inboard and outboard trailing edge flap rotary actuators may have been assembled with an incorrect no-back brake rotor-stator stack sequence during manufacturing. We are issuing this AD to detect and replace incorrectly assembled rotary actuators, which could cause accelerated unit wear that will eventually reduce braking performance. This degradation could lead to loss of no-back brake function and reduced controllability of the airplane.

### **(f) Compliance**

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

### **(g) Retained Inspection and Other Actions**

For The Boeing Company Model 787-8 and 787-9 airplanes identified in Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015: Within 60 months after February 21, 2017 (the effective date of AD 2017-01-02), do an inspection of the inboard and outboard trailing edge flap rotary actuator for any discrepant rotary actuator, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015; or Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017. If any discrepant rotary actuator is found, within 60 months after February 21, 2017, do the actions specified in paragraph (g)(1) or (g)(2) of this AD, in accordance with the

Accomplishment Instructions of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015; or Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017. After the effective date of this AD only Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, may be used.

(1) Replace the discrepant rotary actuator.

(2) Check the maintenance records to determine the flight cycles of each discrepant rotary actuator and, within 60 months after February 21, 2017 (the effective date of AD 2017-01-02), do all applicable related investigative and corrective actions.

#### **(h) New Requirements: Inspection, Related Investigative and Corrective Actions**

For airplanes not identified in Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015, which have an Original Certificate of Airworthiness or Export Certificate of Airworthiness with a date on or before the effective date of this AD: Within 60 months after the effective date of this AD, do an inspection of the inboard and outboard trailing edge flap rotary actuator for any discrepant rotary actuator, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017. If any discrepant rotary actuator is found, within 60 months after the effective date of this AD, do the actions specified in paragraph (h)(1) or (h)(2) of this AD, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017.

(1) Replace the discrepant rotary actuator.

(2) Check the maintenance records to determine the flight cycles of each discrepant rotary actuator and, within 60 months after the effective date of this AD, do all applicable related investigative and corrective actions.

#### **(i) Parts Installation Limitation**

As of the effective date of this AD, no person may install, on any airplane, a rotary actuator with a part number and serial number identified in Appendix A of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, unless the actuator has been permanently marked in accordance with Task 2 of Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017, with "B787-81205-SB270032-00 INCORPORATED." Rotary actuators marked with "SB P689A0001-27-01 INCORPORATED," "SB P690A0001-27-01 INCORPORATED," "SB P700A0001-27-01 INCORPORATED," or "SB CB10130-27-01 INCORPORATED" are also acceptable.

#### **(j) Credit for Previous Actions**

(1) This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 002, dated November 3, 2016.

(2) This paragraph provides credit for the actions specified in paragraph (h) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015, or Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 002, dated November 3, 2016.

#### **(k) 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 (l)(1) 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 Commercial Airplanes 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) AMOCs approved previously for AD 2017-01-02 are approved as AMOCs for the corresponding provisions of this AD.

(5) For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (k)(5)(i) and (k)(5)(ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled "RC Exempt," then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

## **(l) Related Information**

(1) For more information about this AD, contact Douglas Tsuji, Senior Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3548; email: douglas.tsuji@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (m)(5) and (m)(6) of this AD.

## **(m) 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.

(3) The following service information was approved for IBR on November 28, 2018.

(i) Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 003, dated July 28, 2017.

(ii) Reserved.

(4) The following service information was approved for IBR on February 21, 2017 (82 FR 4775, January 17, 2017).

(i) Boeing Alert Service Bulletin B787-81205-SB270032-00, Issue 001, dated November 3, 2015.

(ii) Reserved.

(5) 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>.

(6) You may view this service information at FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(7) 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, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on October 12, 2018.

Michael Kaszycki,  
Acting Director, System Oversight Division,  
Aircraft Certification Service.