



## 適航指令發布單

### Airworthiness Directive Issuance Form

民航局 AD 編號 AD number	CAA-2019-09-010	發布日期 Date issued	2019/9/23
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 737 series airplanes, certificated in any category, excluding Model 737-100, -200, -200C, -300, -400, and -500 series airplanes.		
主旨摘要	This AD requires revising the existing maintenance or inspection program to remove text that allows the size of the thrust reverser upper locking actuator lock sensor target to be changed, and, for certain airplanes, performing repetitive integrity tests of the thrust reverser upper locking actuator.		
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 style="width: 48%;"> <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 style="width: 48%;"> <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	2019-18-03	
	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	None		
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-2019-0696; Product Identifier 2019-NM-136-AD; Amendment 39-19730; AD 2019-18-03]**

**RIN 2120-AA64**

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

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company Model 737 series airplanes, excluding Model 737-100, -200, -200C, -300, -400, and -500 series airplanes. This AD requires revising the existing maintenance or inspection program to remove text that allows the size of the thrust reverser upper locking actuator lock sensor target to be changed, and, for certain airplanes, performing repetitive integrity tests of the thrust reverser upper locking actuator. This AD was prompted by a report indicating that alteration of thrust reverser upper locking actuators in accordance with certain data in the Boeing aircraft maintenance manual (AMM) could delay or prevent detection of the failure of the locking mechanism of a thrust reverser upper locking actuator. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective October 3, 2019.

The FAA must receive comments on this AD by November 4, 2019.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

Fax: 202-493-2251.

Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

## **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-2019-0696; 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 street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Christopher Baker, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3552; email: Christopher.R.Baker@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

In May 2019, Boeing informed the FAA that alteration of thrust reverser upper locking actuators, in accordance with unapproved data in the Boeing AMM, could cause a locking mechanism failure of a thrust reverser upper locking actuator to remain undetected for thousands of flights.

Boeing informed the FAA of the risk that operators could use an existing AMM procedure that was intended for use in rigging a newly installed thrust reverser upper locking actuator to instead alter the functioning of a worn upper locking actuator's lock indication. That procedure removes material from the upper locking actuator's lock sensor target until the upper locking actuator's unlocked indication (the "REVERSER" light on the flight deck aft overhead panel, which is illuminated when the upper locking actuator is unlocked or when other system failures are detected) is no longer illuminated. However, that procedure does not require a check to verify that the thrust reverser upper locking actuator locking mechanism is operative or that the unlocked indication functions normally after removal of the material. As a result, it is possible that use of this procedure could prevent actuator unlocked indications to the flight crew if the thrust reverser upper locking actuator locking mechanism has already failed or subsequently fails.

An undetected unlocked thrust reverser upper locking actuator in flight significantly increases the likelihood of an in-flight deployment of the thrust reverser. In-flight thrust reverser deployment in some phases of flight would likely result in loss of airplane control.

## **FAA's Determination**

The FAA is issuing this AD because the agency evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

## **AD Requirements**

This AD requires revising the existing maintenance or inspection program to remove certain text from all locations in the existing maintenance and inspection program that instructs the maintainers to remove material from or grind or trim the sensor target of the thrust reverser upper locking actuator. For Model 737-600, -700, -700C, -800, -900, and -900ER series (737 NG) airplanes, this AD also requires repetitive integrity tests of the thrust reverser upper locking actuator.

The Model 737-8 and -9 (737 MAX) airplane fleet is a young fleet and those airplanes have not been subjected to enough wear to warrant the use by any operator of the sensor target trimming procedure that leads to the upper locking actuator lock indication failure that may exist on 737 NG airplanes. The FAA therefore has determined that the integrity test is not necessary for the 737 MAX fleet.

## **Interim Action**

The FAA considers this AD interim action. The manufacturer is currently developing a modification that will address the unsafe condition identified in this AD. Once this modification is developed, approved, and available, the FAA might consider additional rulemaking.

## **Justification for Immediate Adoption and Determination of the Effective Date**

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C.) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this section, an agency, upon finding good cause, may issue a final rule without seeking comment prior to the rulemaking. Similarly, Section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies forgoing notice and comment prior to adoption of this rule because alteration of thrust reverser upper locking actuators in accordance with certain unapproved AMM data could cause a thrust reverser upper locking actuator that is unlocked in flight to remain undetected, which could significantly increase the likelihood of an in-flight deployment of the thrust reverser and consequent loss of airplane control. The compliance time for the required action is shorter than the time necessary for the public to comment and for publication of the final rule.

Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B). In addition, for the reasons stated above, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days.

## **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment. However, the FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2019-0696 and Product Identifier 2019-NM-136-AD at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this final rule. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <http://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this final rule.

## **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Christopher Baker, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA

98198; phone and fax: 206-231-3552; email: Christopher.R.Baker@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

## Regulatory Flexibility Act

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because the FAA has determined that it has good cause to adopt this rule without notice and comment, RFA analysis is not required.

## Costs of Compliance

The FAA estimates that this AD affects 2,149 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
Integrity test (2,039 airplanes)	8 work-hours × \$85 per hour = \$680 per test cycle	\$0	\$680 per test cycle	\$1,386,520 per test cycle.

The FAA has determined that revising the existing maintenance or inspection program takes an average of 90 work-hours per operator, although the agency recognizes that this number may vary from operator to operator. In the past, the FAA has estimated that this action takes 1 work-hour per airplane. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), the FAA has determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, the FAA estimates the total cost per operator to be \$7,650 (90 work-hours x \$85 per work-hour).

The FAA estimates the following costs to do any necessary replacement that would be required based on the results of the integrity test. The FAA has no way of determining the number of aircraft that might need this replacement:

### On-Condition Costs

Action	Labor cost	Parts cost	Cost per product
Actuator replacement	8 work-hours × \$85 per hour = \$680	\$38,908	\$39,588

According to the manufacturer, some or all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected individuals. The FAA does not control warranty coverage for affected individuals. As a result, the FAA has included all known costs in the cost estimate.

## 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.

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**

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, and
- (2) Will not affect intrastate aviation in Alaska.

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

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

## **Adoption of the Amendment**

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

### **PART 39—AIRWORTHINESS DIRECTIVES**

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

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

#### **§ 39.13 [Amended]**

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



**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)

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**2019-18-03 The Boeing Company:** Amendment 39-19730; Docket No. FAA-2019-0696; Product Identifier 2019-NM-136-AD.

**(a) Effective Date**

This AD is effective October 3, 2019.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all The Boeing Company Model 737 series airplanes, certificated in any category, excluding Model 737-100, -200, -200C, -300, -400, and -500 series airplanes.

**(d) Subject**

Air Transport Association (ATA) of America Code 78, Exhaust.

**(e) Unsafe Condition**

This AD was prompted by a report indicating that alteration of thrust reverser upper locking actuators in accordance with certain data contained in the Boeing aircraft maintenance manual (AMM) could delay or prevent detection of the failure of the locking mechanism of a thrust reverser upper locking actuator. The FAA is issuing this AD to address the potential for an undetected unlocked condition of the thrust reverser upper locking actuator locking mechanism in flight, which could significantly increase the likelihood of an in-flight deployment of the thrust reverser and consequent loss of airplane control.

**(f) Compliance**

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

**(g) Maintenance/Inspection Program Revision**

For all airplanes: Within 30 days after the effective date of this AD, revise the existing maintenance or inspection program, as applicable, by removing any steps that change the size of the thrust reverser upper locking actuator lock sensor target.

## **(h) Prohibition From Altering Locking Actuator Target**

For all airplanes: As of the effective date of this AD, no person may alter the thrust reverser upper locking actuator lock sensor target by grinding or trimming or otherwise removing material from the lock sensor target.

## **(i) Actuator Integrity Test**

For Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes: Within 90 days after the effective date of this AD, conduct an integrity test of the thrust reverser upper locking actuator on all 4 locking actuators on the airplane. The integrity test must include at least the steps specified in figure 1 to paragraphs (i) and (k) of this AD. The integrity test is not required to be completed for all 4 actuators in one maintenance visit, provided all 4 actuators are tested within the compliance times specified in this paragraph. During the test, a slight movement from fully stowed on the lower portion of the thrust reverser is acceptable due to the wind up in the flexible shafts between the synchronization lock and the upper actuator lock.

**Figure 1 to paragraphs (i) and (k) – Thrust reverser upper locking actuator integrity test**

### **Critical steps contained in the locking actuator integrity test:**

- **Secure the thrust reverser for ground maintenance ensuring the control valve module manual isolation valve handle is pinned in bypass mode**
- **Do a check of the thrust reverser upper locking actuator**
  - From the fully stowed position, attempt to manually extend the thrust reverser through the synchronization lock manual drive in the deploy direction
  - Gradually apply torque up to 50 in-lbs or until you hear the override clutch on the synchronization lock manual drive making the “ratcheting” sound
    - Verify that the thrust reverser does not deploy

Note 1 to paragraph (i): Additional guidance for the integrity test can be found in Boeing 737 AMM Task 78-31-03.

## **(j) Repetitive Test Interval**

After the initial integrity test required by paragraph (i) of this AD, repeat the test thereafter at intervals not to exceed 750 flight hours.

## **(k) Corrective Action for Failed Integrity Test**

If, during any integrity test required by paragraph (i) or (j) of this AD, the movement of the thrust reverser exceeds the acceptable “slight movement” described in paragraph (i) of this AD, replace the locking actuator before further flight.

## **(l) Parts Installation Prohibition**

For airplanes identified in paragraph (c) of this AD, excluding Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes: As of the effective date of this AD, no person may install a thrust reverser upper locking actuator part number 315A2801-1, -2, -3, -4, or -5.



**(m) 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 (n) 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.

**(n) Related Information**

For more information about this AD, contact Christopher Baker, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3552; email: Christopher.R.Baker@faa.gov.

**(o) Material Incorporated by Reference**

None.

Issued in Des Moines, Washington, on September 11, 2019.  
Dionne Palermo,  
Acting Director, System Oversight Division,  
Aircraft Certification Service.