



**DATE: July 23, 2020**  
**AD #: 2020-16-51**

Emergency Airworthiness Directive (AD) 2020-16-51 is sent to owners and operators of The Boeing Company Model 737-300, -400, -500, -600, -700, -700C, -800, -900, and -900ER series airplanes.

### **Background**

This emergency AD was prompted by four recent reports of single-engine shutdowns due to engine bleed air 5<sup>th</sup> stage check valves being stuck open. Corrosion of the engine bleed air 5<sup>th</sup> stage check valve internal parts during airplane storage may cause the valve to stick in the open position. If this valve opens normally at takeoff power, it may become stuck in the open position during flight and fail to close when power is reduced at top of descent, resulting in an unrecoverable compressor stall and the inability to restart the engine. Corrosion of these valves on both engines could result in a dual-engine power loss without the ability to restart. This condition, if not addressed, could result in compressor stalls and dual-engine power loss without the ability to restart, which could result in a forced off-airport landing.

### **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 inspections of the engine bleed air 5<sup>th</sup> stage check valve on each engine and replacement of the engine bleed air 5<sup>th</sup> stage check valve if any inspection is not passed.

### **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.

## **Presentation of the Actual AD**

The FAA is issuing this AD under 49 U.S.C. Section 44701 according to the authority delegated to me by the Administrator.

**2020-16-51 The Boeing Company:** Project Identifier AD-2020-01032-T.

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

This emergency AD is effective upon receipt.

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

None.

### **(c) Applicability**

This AD applies to all The Boeing Company Model 737-300, -400, -500, -600, -700, -700C, -800, -900, and -900ER series airplanes, certificated in any category.

### **(d) Subject**

Air Transport Association (ATA) of America Code 36, Pneumatic.

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

This AD was prompted by four recent reports of single-engine shutdowns caused by engine bleed air 5<sup>th</sup> stage check valves stuck in the open position. The FAA is issuing this AD to address corrosion of the engine bleed air 5<sup>th</sup> stage check valves for both engines, which could result in compressor stalls and dual-engine power loss without the ability to restart, which could result in a forced off-airport landing.

### **(f) Compliance**

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

### **(g) Definition**

Any airplane that, for 7 or more consecutive days, has not been operated in flight is considered to be in "storage."

### **(h) Inspections and Corrective Actions**

(1) For any airplane that is in storage on or after the date of receipt of this AD, and any airplane that, as of the date of receipt of this AD, has been operated for 10 or fewer flight cycles since returning to service from the most recent period of storage: Before further flight, do the inspections specified in paragraphs (h)(1)(i) and (ii) of this AD on the engine bleed air 5<sup>th</sup> stage check valve on each engine. If any engine bleed air 5<sup>th</sup> stage check valve fails any inspection, replace that engine bleed air 5<sup>th</sup> stage check valve before further flight. For each engine bleed air 5<sup>th</sup> stage check valve that passes both inspections specified in paragraphs (h)(1)(i) and (ii) of this AD, do the actions

specified in paragraph (h)(2) of this AD on that engine bleed air 5<sup>th</sup> stage check valve before further flight.

(i) Rotate the flapper plates by hand at least 3 times. If the flapper plate moves smoothly, without signs of binding or sticking, from the fully closed position to the stop tube using gravity force alone, the engine bleed air 5<sup>th</sup> stage check valve has passed this inspection.

(ii) Measure the clearance between the flapper bushings at both locations on each engine bleed air 5<sup>th</sup> stage check valve. If the clearance between the flapper bushings is a minimum of 0.004 inch (0.102 mm) at both locations, the engine bleed air 5<sup>th</sup> stage check valve at that location has passed this inspection.

(2) For each engine bleed air 5<sup>th</sup> stage check valve that passes the inspections specified in paragraphs (h)(1)(i) and (ii) of this AD, do the inspections specified in paragraphs (h)(2)(i) through (iii) of this AD before further flight on the engine bleed air 5<sup>th</sup> stage check valve on each engine. If any engine bleed air 5<sup>th</sup> stage check valve fails any of the inspections specified in paragraphs (h)(2)(i) through (iii) of this AD, replace that engine bleed air 5<sup>th</sup> stage check valve before further flight.

(i) Do a general visual inspection of the flapper bushings for signs of cracks, fractures, and missing bushing heads. If the flapper bushings do not show any signs of cracks, fractures, or missing bushing heads, the engine bleed air 5<sup>th</sup> stage check valve has passed this inspection. Signs of corrosion are not a cause for replacing the engine bleed air 5<sup>th</sup> stage check valve if the engine bleed air 5<sup>th</sup> stage check valve did not fail any of the inspections specified in paragraph (h)(1) of this AD.

(ii) Using only hand pressure, try to rotate the flapper bushings in the flapper plates. If the bushings do not rotate in the flapper plate, the engine bleed air 5<sup>th</sup> stage check valve has passed this inspection.

(iii) Do a general visual inspection of the check valve for signs of the flappers rubbing against the valve body. If the flappers do not show any signs of rubbing against the valve body, the engine bleed air 5<sup>th</sup> stage check valve has passed this inspection.

#### **(i) Minimum Equipment List Relief for Certain Airplanes**

For airplanes that have operated 10 or fewer flight cycles since the most recent period of storage prior to receipt of this AD, as an alternative to compliance with paragraph (h): If allowed by the operator's FAA-approved Minimum Equipment List, the airplane may be dispatched with one engine's engine bleed air high stage valve locked closed. Thereafter, within 5 additional flight cycles, inspect the engine bleed air 5<sup>th</sup> stage check valve on both engines as required by paragraph (h) of this AD.

#### **(j) Special Flight Permit**

Special flight permits may be issued in accordance with 14 CFR 21.197 and 21.199 to operate the airplane to a location where the airplane can be inspected, provided one engine's engine bleed air high stage valve has been locked closed. This option is only available if the operator's FAA-approved Minimum Equipment List allows dispatching the airplane with one engine's engine bleed air high stage valve locked closed.

### **(k) Alternative Methods of Compliance (AMOCs)**

(1) For Boeing Model 737-300, -400, and -500 series airplanes, the Manager, Los Angeles 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 (1)(1) of this AD. Information may be emailed to: 9-ANM-LAACO-AMOC-Requests@faa.gov.

(2) For Boeing Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, 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 (1)(2) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(3) 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.

(4) 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.

### **(l) Related Information**

(1) For Boeing Model 737-300, -400, and -500 series airplanes, for further information about this AD, contact Serj Harutunian, Aerospace Engineer, Propulsion Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5254; fax: 562-627-5210; email: serj.harutunian@faa.gov.

(2) For Boeing Model 737-600, -700, -700C, -800, -900, and -900ER series airplanes, for further information about this AD, contact Rajendran Mohanraj, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3621; email: rajendran.mohanraj@faa.gov.

Issued on July 23, 2020.

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