



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2020-0222; Project Identifier AD-2019-00116-E]**

**RIN 2120-AA64**

**Airworthiness Directives; Continental Aerospace Technologies, Inc. (Type Certificate previously held by Continental Motors, Inc.) Reciprocating Engines**

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

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for all Continental Aerospace Technologies, Inc. model GTSIO-520-C, GTSIO-520-D, GTSIO-520-H, GTSIO-520-K, GTSIO-520-L, GTSIO-520-M, GTSIO-520-N, IO-550-G, IO-550-N, IO-550-P, IO-550-R, IOF-550-N, IOF-550-P, IOF-550-R, TSIO-520-BE, TSIO-550-A, TSIO-550-B, TSIO-550-C, TSIO-550-E, TSIO-550-G, TSIO-550-K, TSIO-550-N, TSIOF-550-D, TSIOF-550-J, TSIOF-550-K, and TSIOF-550-P reciprocating aviation gasoline (AvGas) engines with a certain cross-flow cylinder assembly installed. This proposed AD was prompted by reports of in-flight engine failures due to fractured cross-flow cylinder assemblies. This proposed AD would require visual inspection and, depending on the results of the inspection, modification or replacement of the cross-flow cylinder assembly. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**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 <https://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.

For service information identified in this NPRM, contact Continental Aerospace Technologies, Inc., 2039 South Broad Street, Mobile, Alabama, 36615, United States; phone: 251-436-8299; website: <http://www.continentalmotors.aero>. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

### **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-2020-0222; 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 NPRM, 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:** Boyce Jones, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: 404-474-5535; fax: 404-474-5606; email: [boyce.jones@faa.gov](mailto:boyce.jones@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2020-0222; Project Identifier AD-2019-00116-E” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. The FAA will consider all comments received by the closing date and may amend this NPRM because of those comments.

Except for Confidential Business Information 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 <https://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this NPRM.

### **Confidential Business Information**

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 NPRM 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 NPRM, 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 NPRM. Submissions containing CBI should be sent to Boyce Jones, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337. Any commentary that the FAA

receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Discussion**

The FAA received reports of six in-flight engine failures due to fractured cross-flow cylinder assemblies, all of which resulted in the loss of oil pressure, loss of engine power, and forced landings. Analysis by the manufacturer identified that the casting vendor incorporated a new production tooling that created casting material build-up on the radius edge of the cross-flow cylinder assemblies. Fracture initiation began at the radius edge of cross-flow cylinder assembly. This condition, if not addressed, could result in failure of the engine, in-flight shutdown, and forced landing.

### **Related Service Information under 1 CFR part 51**

The FAA reviewed Continental Aerospace Technologies, Inc. Mandatory Service Bulletin (MSB) 18-08, Revision B, dated January 13, 2020. The MSB describes procedures for inspection, modification, or replacement of the cross-flow cylinder assembly. 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.

### **FAA's Determination**

The FAA is proposing this AD because it 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.

### **Proposed AD Requirements**

This proposed AD would require visual inspection of the cross-flow cylinder assembly and, depending on the results of the visual inspection, modification or replacement of the cross-flow cylinder assembly.

## Costs of Compliance

The FAA estimates that this proposed AD affects 4,000 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

### Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Visual inspection of the cross-flow cylinder assembly	2 work-hours x \$85 per hour = \$170	\$0	\$170	\$680,000

The FAA estimates the following costs to do any necessary modification or replacement of the cross-flow cylinder assembly that would be required based on the results of the proposed visual inspection. The FAA has no way of determining the number of cross-flow cylinder assemblies that might need this modification or replacement.

### On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Modify the cross-flow cylinder assembly	1 work-hour x \$85 per hour = \$85	\$0	\$85
Replace the cross-flow cylinder assembly	11.5 work-hours x \$85 per hour = \$977.50	\$1,933.28	\$2,910.78

According to the manufacturer, some of the costs of this proposed 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 costs in our 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.

### **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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 this proposed regulation:

- (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 Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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):

**Continental Aerospace Technologies, Inc. (Type Certificate previously held by Continental Motors, Inc.): Docket No. FAA-2020-0222; Project Identifier AD-2019-00116-E.**

#### **(a) Comments Due Date**

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

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

None.

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

This AD applies to Continental Aerospace Technologies, Inc. (Type Certificate previously held by Continental Motors, Inc.) model GTSIO-520-C, GTSIO-520-D, GTSIO-520-H, GTSIO-520-K, GTSIO-520-L, GTSIO-520-M, GTSIO-520-N, IO-550-G, IO-550-N, IO-550-P, IO-550-R, IOF-550-N, IOF-550-P, IOF-550-R, TSIO-520-BE, TSIO-550-A, TSIO-550-B, TSIO-550-C, TSIO-550-E, TSIO-550-G, TSIO-550-K, TSIO-550-N, TSIOF-550-D, TSIOF-550-J, TSIOF-550-K, and TSIOF-550-P reciprocating aviation gasoline (AvGas) engines, originally manufactured, rebuilt, or modified with a cross-flow cylinder assembly replacement, on or after November 1, 2014, and with a cross-flow cylinder assembly, part number (P/N) 658538, 658540, 658542, 658591, 658595, 658613, 658624, 658539, 658541, 658590, 658594, 658603, 658623, or 658630, installed.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 8530, Reciprocating Cylinder Section.

**(e) Unsafe Condition**

This AD was prompted by reports of in-flight engine failures due to fractured cross-flow cylinder assemblies. The FAA is issuing this AD to prevent failure of the engine. The unsafe condition, if not addressed, could result in failure of the engine, in-flight shutdown, and forced landing.

**(f) Compliance**

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

**(g) Required Actions**

(1) If the engine has fewer than 500 engine operating hours on the effective date of this AD, no later than the next scheduled 100-hour/annual inspection after the effective date of this AD, perform a visual inspection of the cross-flow cylinder assembly in accordance with paragraphs III.1 through III.3, Action Required, of Continental Aerospace Technologies, Inc. Mandatory Service Bulletin (MSB) 18-08, Revision B, dated January 13, 2020 (“Continental Aerospace Technologies MSB18-08B”).

(i) If the radius corner angle of the cross-flow cylinder assembly shows casting flash build-up or a sharp radius edge, modify the cross-flow cylinder assembly in accordance with paragraphs III.4 through III.8, Action Required, of Continental Aerospace Technologies MSB 18-08B; or

(ii) If a fissure, crack or physical damage is identified, remove the cross-flow cylinder assembly and replace with a part eligible for installation.

(2) If the engine has 500 engine operating hours or greater on the effective date of this AD, at the next maintenance event after the effective date of this AD, not to exceed 50 engine operating hours after the effective date of this AD, perform a visual inspection

of the cross-flow cylinder assembly in accordance with paragraphs III.1 through III.3, Action Required, of Continental Aerospace Technologies MSB18-08B.

(i) If the radius corner angle of the cross-flow cylinder assembly shows casting flash build-up or a sharp radius edge, modify the cross-flow cylinder assembly in accordance with paragraphs III.4 through III.8, Action Required, of Continental Aerospace Technologies MSB 18-08B; or

(ii) If a fissure, crack or physical damage is identified, remove the cross-flow cylinder assembly and replace with a part eligible for installation.

**(h) Installation Prohibition**

After the effective date of this AD, do not install any cross-flow cylinder assembly having a P/N identified in paragraph (c) of this AD on any affected engine unless the cross-flow cylinder assembly has been visually inspected and modified in accordance with paragraph III, Action Required, of Continental Aerospace Technologies MSB18-08B.

**(i) No Reporting Requirement**

The reporting requirement in paragraph III, Action Required, of Continental Aerospace Technologies MSB18-08B is not required by this AD.

**(j) Definition**

(1) For the purpose of this AD, “the next maintenance event” is the next scheduled 100-hour/annual inspection, overhaul, or the next time the airplane enters maintenance for a non-engine issue, whichever occurs first.

(2) For the purpose of this AD, “modify the cross-flow cylinder assembly” is the removal of the casting material build-up by blending the cross-flow cylinder assembly radius corner.

**(k) Credit for Previous Actions**

You may take credit for the visual inspection and modification that is required by paragraph (g) of this AD, if the inspection or modification was performed before the effective date of this AD using Continental Motors Aircraft Engine Service Bulletin 18-08, Revision A, dated January 11, 2019.

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

(1) The Manager, Atlanta 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 (m)(1) of this AD.

(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.

**(m) Related Information**

(1) For more information about this AD, contact Boyce Jones, Aerospace Engineer, Atlanta ACO Branch, FAA, 1701 Columbia Avenue, College Park, Georgia 30337; phone: 404-474-5535; fax: 404-474-5606; email: boyce.jones@faa.gov.

(2) For service information identified in this AD, contact Continental Aerospace Technologies, Inc., 2039 South Broad Street, Mobile, Alabama, 36615, United States; phone: 251-436-8299; website: <http://www.continentalmotors.aero>. You may view this referenced service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Issued on April 14, 2020.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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