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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

[Docket No. FAA-2009-0367; Directorate Identifier 2009-NE-10-AD; Amendment 39-16023;  
AD 2009-19-07]

**RIN 2120-AA64**

#### **Airworthiness Directives; Teledyne Continental Motors O-470, IO-470, TSIO-470, IO-520, TSIO-520, IO-550, and IOF-550 Series Reciprocating Engines**

**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 Teledyne Continental Motors (TCM) O-470, IO-470, TSIO-470, IO-520, TSIO-520, IO-550, and IOF-550 series reciprocating engines with TCM EQ3 cylinders installed. This AD requires initial and repetitive visual inspections of TCM EQ3 cylinders for cracks. This AD also requires removal of all EQ3 cylinders as terminating action to the repetitive visual inspections. This AD results from reports of 35 EQ3 cylinders found cracked. We are issuing this AD to prevent loss of engine power due to cracks in the cylinder head, possible engine failure, and fire in the engine compartment.

**DATES:** This AD becomes effective October 7, 2009. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of October 7, 2009.

We must receive any comments on this AD by November 23, 2009.

**ADDRESSES:** Use one of the following addresses to comment on this AD:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.
- Mail: U.S. Docket Management Facility, Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: (202) 493-2251.

**FOR FURTHER INFORMATION CONTACT:** Anthony Holton, Engineer, Propulsion, Atlanta Aircraft Certification Office, FAA, Small Airplane Directorate, 1701 Columbia Avenue, College Park, Georgia 30337; e-mail [anthony.holton@faa.gov](mailto:anthony.holton@faa.gov); telephone: (404) 474-5567; fax: (404) 474-5606.

Contact Teledyne Continental Motors, Inc., PO Box 90, Mobile, AL 36601; telephone (251) 438-3411, or go to: <http://tcmlink.com/servicebulletins.cfm>, for the service information in this AD.

**SUPPLEMENTARY INFORMATION:** In February 2009, we were made aware by TCM of reports of 35 EQ3 cylinders found with cracks during inspection. Cracked cylinders occurred on engines with times ranging from about 430 to 1,300 hours of operation. TCM investigated the cause and discovered that their EQ3 configuration cylinder head casting tool used in the cylinder manufacturing process created an area of reduced wall thickness. This reduced wall thickness can result in a crack in the area between the upper spark plug bore and the fuel injector/primer nozzle bore during operation. TCM shipped engines with EQ3 cylinders and shipped individual EQ3 cylinders from November 1, 2007, through January 30, 2009. Also, TCM produced a group of about 300 EQ3 cylinders in August and September of 2006. This condition, if not corrected, could result in loss of engine power due to cracks in the cylinder head, possible engine failure, and fire in the engine compartment.

### **Relevant Service Information**

We have reviewed and approved the technical contents of TCM Mandatory Service Bulletin (MSB) No. MSB09-1B, dated July 14, 2009. That MSB describes procedures for initial and repetitive visual inspections of EQ3 cylinders for cracks, and requires replacing those cylinders no later than December 31, 2009.

### **Differences Between This AD and the Service Information**

TCM MSB No. MSB09-1B, dated July 14, 2009, requires that the EQ3 cylinders be identified and initially inspected within the next 20 flight hours, but no later than April 30, 2009. However, this AD requires the EQ3 cylinders be identified and initially inspected within 20 flight hours after the effective date of this AD. The MSB also requires that all EQ3 cylinders be removed from service no later than December 31, 2009. This AD requires that the cylinders be removed from service within 1,300 hours total time of operation.

### **FAA's Determination and Requirements of This AD**

The unsafe condition described previously is likely to exist or develop on other TCM O-470, IO-470, TSIO-470, IO-520, TSIO-520, IO-550, and IOF-550 series reciprocating engines with EQ3 cylinders installed. For that reason, we are issuing this AD to prevent loss of engine power due to cracks in the cylinder head, possible engine failure, and fire in the engine compartment. This AD requires initial and repetitive visual inspections of all EQ3 cylinders for cracks within 20 flight hours of the effective date of this AD. This AD also requires replacement of all EQ3 cylinders within 1,300 hours total time of operation after the effective date of this AD. You must use the service information described previously to perform the actions required by this AD.

### **FAA's Determination of the Effective Date**

Since an unsafe condition exists that requires the immediate adoption of this AD, we have found that notice and opportunity for public comment before issuing this AD are impracticable, and that good cause exists 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, we invite you to send us any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under ADDRESSES. Include "AD Docket No. FAA-2009-0367; Directorate Identifier 2009-NE-10-AD" in the subject line of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify it.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact with FAA personnel concerning this AD. Using the search function of the Web site, anyone can find and read the comments in any of our dockets, including, if provided, the name of the individual who sent the comment (or signed the comment on behalf of an association, business, labor union, etc.). You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78).

## **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is the same as the Mail address provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

## **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.

## **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 the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); 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.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

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

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

### **Adoption of the Amendment**

Under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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:



**CORRECTED:** The AD number has been corrected. We will issue a correction to the Federal Register.

**2009-19-07 Teledyne Continental Motors:** Amendment 39-16023. Docket No. FAA-2009-0367; Directorate Identifier 2009-NE-10-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective October 7, 2009.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to Teledyne Continental Motors (TCM) O-470, IO-470, TSIO-470, IO-520, TSIO-520, IO-550, and IOF-550 reciprocating engine models listed in Table 1 of this AD that have one or more affected TCM cylinders installed. To identify the affected cylinders, cross reference the engine models in Table 1 of this AD with the engine serial numbers found in Tables 1, 1A, 2, and 2A of TCM Mandatory Service Bulletin (MSB) No. MSB09-1B, dated July 14, 2009. Use the tables found in MSB No. MSB09-1B, dated July 14, 2009, to also identify spare EQ3 cylinders by cylinder part number and cylinder serial number that may have been installed on these engines.

**Table 1 - Engine Models Affected**

O-470-G, K, L, R, S, M, U
IO-470-C, D, E, F, H, L, M, N, S, U, V, VO
TSIO-470-B, C, D
IO-520-A, B, BA, BB, C, CB, D, E, F, J, K, L, M, MB
TSIO-520-AF, B, BB, C, CE, D, DB, E, EB, G, H, J, JB, K, KB, L, LB, M, N, NB, P, R, T, UB, VB, WB
IO-550-A, B, C, D, E, F, L
IOF-550-B, C, D, E, F, L

(d) These engines are installed on, but not limited to, Alexandria Aircraft LLC (formerly Bellanca) model 300 Super Viking; Beech Bonanza 33, 35 and 36 series, Beech Baron 56 and 58 series, Cessna 180, 182, 188, 205, 206, 207, 210, 303, 310, 320, 402, and 414 model series; Aero Commander 200 and 500; certain Rockwell (formerly Meyers) Windecker Eagle 200, and Navion airplanes.

## **Unsafe Condition**

(e) This AD results from reports of 35 EQ3 cylinders found cracked. We are issuing this AD to prevent loss of engine power due to cracks in the cylinder head, possible engine failure, and fire in the engine compartment.

## **Compliance**

(f) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

## **Identification and Initial Visual Inspection**

(g) Within 20 flight hours after the effective date of this AD, identify EQ3 cylinders using Step 1 of TCM MSB No. MSB09-1B, dated July 14, 2009.

(1) Within 20 flight hours after the effective date of this AD, for EQ3 cylinders with 400 or more hours total time of operation on the effective date of this AD, perform an initial visual inspection of the cylinder for cracks using Step 2, paragraph B, of TCM MSB No. MSB09-1B, dated July 14, 2009.

(2) For EQ3 cylinders with fewer than 400 hours total time of operation on the effective date of this AD, perform an initial visual inspection of the cylinder for cracks before reaching 400 hours total time of operation, using Step 2, paragraph B, of TCM MSB No. MSB09-1B, dated July 14, 2009.

(3) Remove from service before flight, any cylinders found cracked.

## **Repetitive Visual Inspections**

(h) Repeat the visual inspections required by this AD every 50 hours of operation. Use Step 2, paragraph B, of TCM MSB No. MSB09-1B, dated July 14, 2009, to perform the inspection.

(i) Remove from service before flight, any cylinders found cracked.

## **Removal of All EQ3 Cylinders From Service**

(j) Within 1,300 hours total time of operation after the effective date of this AD, remove all EQ3 cylinders from service.

## **EQ3 Cylinder Installation Prohibition**

(k) After the effective date of this AD, do not install any EQ3 cylinder onto any engine, or any EQ3 cylinder-equipped engine, onto any aircraft.

## **Previous Credit**

(l) Initial visual inspections done before the effective date of this AD per TCM MSB No. MSB09-1A, dated March 11, 2009, comply with the initial inspection requirements specified in this AD.

## **Alternative Methods of Compliance**

(m) The Manager, Atlanta Aircraft Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

## **Special Flight Permits**

(n) Under 14 CFR 39.23, we are limiting the special flight permits for this AD to engines that have no evidence of fuel or combustion staining in the cylinder crack location, and for a total special flight time of 5 hours.

## **Related Information**

(o) Contact Anthony Holton, Engineer, Propulsion, Atlanta Aircraft Certification Office, FAA, Small Airplane Directorate, 1701 Columbia Avenue, College Park, Georgia 30337; e-mail [anthony.holton@faa.gov](mailto:anthony.holton@faa.gov); telephone: (404) 474-5567; fax: (404) 474-5606, for more information about this AD.

## **Material Incorporated by Reference**

(p) You must use Teledyne Continental Motors Mandatory Service Bulletin No. MSB09-1B, dated July 14, 2009, to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Teledyne Continental Motors, Inc., PO Box 90, Mobile, AL 36601; telephone (251) 438-3411, or go to: <http://tcmlink.com/servicebulletins.cfm>, for a copy of this service information. You may review copies at the FAA, New England Region, 12 New England Executive Park, Burlington, MA; or 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 Burlington, Massachusetts, on September 8, 2009.  
Peter A. White,  
Assistant Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.