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[Page 10918-10920]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-20850; Directorate Identifier 2005-NE-05-AD; Amendment 39-14976; AD 2007-05-15]

RIN 2120-AA64

Airworthiness Directives; Teledyne Continental Motors GTSIO-520 Series Reciprocating Engines

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is superseding an existing airworthiness directive (AD) for Teledyne Continental Motors (TCM) GTSIO-520 series reciprocating engines. That AD currently requires initial and repetitive visual inspections of the starter adapter assembly and crankshaft gear and unscheduled visual inspections of the starter adapter assembly and crankshaft gear due to a rough-running engine. That AD also requires replacement of the starter adapter shaft gear needle bearing with a certain bushing and installation of a certain TCM service kit at the next engine overhaul, or at the next starter adapter replacement, whichever occurs first. This AD requires performing the inspection ordered in paragraph (h) of this AD every 100 hours time-in-service (TIS), or annually. This proposed AD results from an error discovered in AD 2005-20-04. We are issuing this AD to failure of the starter adapter assembly and or crankshaft gear, resulting in failure of the engine and possible forced landing.

DATES: This AD becomes effective April 16, 2007. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of April 16, 2007.

ADDRESSES: You can get the service information identified in this AD from Teledyne Continental Motors, Inc., PO Box 90, Mobile, AL 36601; telephone (251) 438-3411.

You may examine the AD docket on the Internet at <http://dms.dot.gov> or in Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Jerry Robinette, Senior Engineer, Propulsion, Atlanta Aircraft Certification Office, FAA, Small Airplane Directorate, One Crown Center, 1895 Phoenix Blvd., Suite 450, Atlanta, GA 30349; telephone: (770) 703-6096, fax: (770) 703-6097.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to TCM GTSIO-520 series reciprocating engines. We published the proposed AD in the Federal Register on October 26, 2006, (71 FR 62570). That action proposed to require performing the inspection ordered in paragraph (h) of AD 2005-20-04 every 100 hours time-in-service (TIS), or annually to correct an error that required the inspection at every 100-hour inspection.

Examining the AD Docket

You may examine the docket that contains the AD, any comments received, and any final disposition in person at the Docket Management Facility Docket Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5227) is located on the plaza level of the Department of Transportation Nassif Building at the street address stated in ADDRESSES. Comments will be available in the AD docket shortly after the DMS receives them.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comment[s] received.

Remove the Requirement for a Placard

Two commenters propose dropping the placard from the requirements of the proposed AD. The commenters do not believe the placard is necessary. We agree. It appears the commenters are basing their comment on the original notice of proposed rulemaking (NPRM) that we issued on April 6, 2005, not the current NPRM. We received comments to the original NPRM similar to these comments and removed the requirement to add a placard before we issued AD 2005-20-05. We didn't change this AD.

Request to Change the Required Inspection

The same two commenters request we mandate a more detailed inspection for the components. The commenters state that a visual inspection might not be sufficient. We don't agree. The commenters didn't specify any additional inspections. We consider a visual inspection the best method to detect abnormal surface wear. We don't have any requirement for nondestructive testing because we have no indication of subsurface deterioration. We didn't change the AD.

Request To Perform Additional Economic Assessment

One commenter asks us to perform additional economic assessment. The commenter states we didn't consider the economic effects on other small entities. We don't agree. We used our current procedures to consider the economic effects of this action. We didn't change the AD.

Editorial Changes To Improve Clarity and Correct an Omission

We changed paragraph (f) of this AD from "If, during an inspection * * * crankcase, replace it with a serviceable bushing before reassembling components" to "(f) If, during an inspection required by paragraph (g), (h), (i), or (j) of this AD, you find needle bearing, part number (P/N) 537721, installed in the crankcase, replace it with a serviceable bushing, P/N 654472 or equivalent FAA approved bearing, before reassembling components" to clarify the intent of that requirement.

We also added paragraph (h)(3) to make the compliance times in that requirement consistent with paragraph (i)(3).

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 4,240 engines installed on airplanes of U.S. registry. We also estimate that it will take about one work-hour per engine to perform the inspection, about one work-hour per engine to perform the proposed bushing installation and about six work-hours per engine to install the TCM service kit. The average labor rate is \$80 per work-hour. We estimate that about 25 percent of the engines will require an unscheduled (rough-running engine) inspection and about half of the engines will require the bushing and TCM service kit. Required bushings would cost about \$16 per engine and service kits about \$800 per engine. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$6,393,432.

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 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

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration 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 Amendment 39-14297 (70 FR 56355, September 27, 2005) and by adding a new airworthiness directive, Amendment 39-14976, to read as follows:



2007-05-15 Teledyne Continental Motors: Amendment 39-14976. Docket No. FAA-2005-20850; Directorate Identifier 2005-NE-05-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective April 16, 2007.

Affected ADs

- (b) This AD supersedes AD 2005-20-04, Amendment 39-14297.

Applicability

(c) This AD applies to Teledyne Continental Motors (TCM) GTSIO-520 series reciprocating engines. These engines are installed on, but not limited to, Twin Commander (formerly Aero Commander) model 685, Cessna model 404, 411 series, and 421 series, British Aerospace, Aircraft Group, Scottish Division model B.206 series 2 and Aeronautica Macchi model AM-3 airplanes.

Unsafe Condition

(d) This AD results from an error discovered in AD 2005-20-04. We are issuing this AD to prevent failure of the starter adapter assembly and or crankshaft gear, resulting in failure of the engine and possible forced landing.

Compliance

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

Starter Adapter Shaft Gear Needle Bearing Replacement

(f) If, during an inspection required by paragraph (g), (h), (i), or (j) of this AD, you find needle bearing, part number (P/N) 537721, installed in the crankcase, replace it with a serviceable bushing, P/N 654472 or equivalent FAA approved bearing, before reassembling components. Use the bushing installation procedure specified in Part 4 of TCM Mandatory Service Bulletin (MSB) No. MSB94-4G, dated October 31, 2005.

Unscheduled Inspections for Rough-Running Engines

(g) For any engine that experiences rough running conditions regardless of time-in-service (TIS), do the following:

(1) Before further flight, perform the inspection procedures specified in Part 1 and Part 3 of TCM MSB No. MSB94-4G, dated October 31, 2005, and replace components as necessary.

(2) An engine is considered rough-running if there is a sudden increase in the perceived vibration levels that cannot be cleared by adjustment of the engine controls; particularly the fuel mixture setting. Information on rough running engines can be found in the aircraft manufacturer's Airplane Flight Manual, Pilot's Operating Handbook, or Aircraft Owners Manual.

100-Hour and Annual Inspections

(h) For any engine that has been inspected using paragraph (h) of AD 2005-20-04 and the 100-hour inspection procedures or 100 hour TIS intervals or annual inspection procedures, continue the inspections as follows:

(1) Perform the inspection procedures specified in Part 2 of TCM MSB No. MSB94-4G, dated October 31, 2005 and replace components as necessary at each 100 hour TIS interval (plus or minus 10 hours TIS) or annual inspection, whichever occurs first.

(2) Thereafter, at each 100 hour TIS interval (plus or minus 10 hours TIS) perform repetitive inspections and component replacements as specified in paragraph (h)(1) of this AD.

(3) If the inspection is performed at more than 100 hour intervals, subtract the additional hours from the next scheduled 100 hour inspection.

(i) For any engine that has not been inspected using paragraph (h) of AD 2005-20-04, within 25 hours TIS or at the annual inspection, whichever occurs first, do the following:

(1) Perform the inspection procedures specified in Part 2 of TCM MSB No. MSB94-4G, dated October 31, 2005 and replace components as necessary.

(2) Thereafter, at each 100-hour TIS interval (plus or minus 10 hours TIS) perform repetitive inspections and component replacements as specified in paragraph (i)(1) of this AD.

(3) If the inspection is performed at more than 100 hour intervals, subtract the additional hours from the next scheduled 100 hour inspection.

Starter Adapters With 400 Hours or More Time-In-Service (TIS) or Unknown TIS

(j) For any starter adapter with 400 hours or more TIS or unknown TIS on the effective date of this AD, do the following:

(1) Within 25 hours TIS, perform the inspection procedures specified in Part 3 of TCM MSB No. MSB94-4G, dated October 31, 2005, and replace components as necessary.

(2) Thereafter, at 400-hour TIS intervals, (plus or minus 10 hours TIS), perform repetitive inspections and component replacements specified in Part 3 of TCM MSB No. MSB94-4G, dated October 31, 2005, and replace components as necessary.

Starter Adapters With Fewer Than 400 Hours TIS

(k) For any starter adapter with fewer than 400 hours TIS on the effective date of this AD, do the following:

(1) Upon accumulation of 400 hours TIS, (plus or minus 10 hours TIS), perform the inspection procedures specified in Part 3 of TCM MSB No. MSB94-4G, dated October 31, 2005, and replace components as necessary.

(2) Thereafter, at 400-hour TIS intervals, (plus or minus 10 hours TIS), perform repetitive inspections and component replacements, as specified in Part 3 of TCM MSB No. MSB94-4G, dated October 31, 2005, and replace components as necessary.

Installation of TCM Service Kit, EQ6642 or EQ6642R

(l) At the next engine overhaul or starter adapter replacement after the effective date of this AD, whichever occurs first, do the following:

(1) Install TCM service kit, P/N EQ6642 (new) or EQ6642R (rebuilt). Use the service kit installation procedures specified in Part 5 of TCM MSB No. MSB94-4G, dated October 31, 2005.

(2) Continue performing the inspections and component replacements specified in paragraphs (g), (h), (i), (j) and (k) of this AD.

Prohibition of Special Flight Permits for Rough-Running Engines

(m) Special flight permits are prohibited for rough-running engines described in paragraph (g)(2) of this AD.

Alternative Methods of Compliance (AMOCs)

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

Related Information

(o) None.

Material Incorporated by Reference

(p) You must use TCM MSB No. MSB94-4G, dated October 31, 2005, 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 for a copy of this service information. For the Teledyne Continental Motors Web site: Go to <http://www.TCMLINK.com>. You may review copies at the FAA, New England Region, Office of the Regional Counsel, 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 February 26, 2007.

Peter A. White,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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