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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-20440; Directorate Identifier 2005-CE-05-AD; Amendment 39-14472; AD 2006-03-08]

RIN 2120-AA64

Airworthiness Directives; Aero Advantage ADV200 Series (Part Numbers ADV211CC and ADV212CW) Vacuum Pumps

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA adopts a new airworthiness directive (AD) for all airplanes equipped with Aero Advantage ADV200 series (part numbers ADV211CC and ADV212CW) vacuum pumps installed under supplemental type certificate number SA10126SC, through field approval, or other methods. This AD requires you to remove from service any affected vacuum pump and install an FAA-approved vacuum pump other than the affected part numbers. This AD results from several reports of pump chamber failure. We are issuing this AD to prevent vacuum pump failure or malfunction during instrument flight rules (IFR) flight that could lead to loss of flight instruments critical for flight. The loss of flight instruments could cause pilot disorientation and loss of control of the aircraft.

DATES: This AD becomes effective on March 10, 2006.

As of March 10, 2006, the Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulation.

ADDRESSES: To view the AD docket, go to the Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-001 or on the Internet at <http://dms.dot.gov>. The docket number is FAA-2005-20440; Directorate Identifier 2005-CE-05-AD.

FOR FURTHER INFORMATION CONTACT: Peter Hakala, Aerospace Engineer, Special Certification Office, Rotorcraft Directorate, FAA, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5145; facsimile: (817) 222-5785.

SUPPLEMENTARY INFORMATION:

Discussion

What events have caused this AD? For the Aero Advantage ADV200 series (part numbers (P/Ns) ADV211CC and ADV212CW) vacuum pumps, FAA has received reports of 14 single-shaft failures and 11 dual-shaft failures in a population of 285 pumps. Nine of the failures occurred with less than 100 hours time-in-service.

In May 2004, Aero Advantage reported to FAA that they had stopped production and sales of the pumps, and they were quitting the business.

The Aero Advantage ADV200 series vacuum pumps are installed under supplemental type certificate number SA10126SC, through field approval, or other methods. The installation of the vacuum pump includes a monitor system, AFMS, and a placard.

What is the potential impact if FAA took no action? Failure or malfunction of the vacuum pump during IFR flight could lead to loss of flight instruments critical for flight. The loss of flight instruments could cause pilot disorientation and loss of control of the aircraft.

Has FAA taken any action to this point? We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to all airplanes equipped with Aero Advantage ADV200 series (part numbers ADV211CC and ADV212CW) vacuum pumps installed under supplemental type certificate number SA10126SC, through field approval, or other methods. This proposal was published in the Federal Register as a notice of proposed rulemaking (NPRM) on May 11, 2005 (70 FR 24731). The NPRM proposed to require you to remove any affected vacuum pump and related monitor system, remove the applicable AFMS and placard, and install an FAA-approved vacuum pump other than the affected part numbers.

Comments

Was the public invited to comment? We provided the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and FAA's response to each comment:

Comment Issue No. 1: Allow the Vacuum Pump Monitoring System To Remain Installed

What is the commenter's concern? Forty commenters recommend that the vacuum pump monitoring system be allowed to remain in their airplanes. Several of the commenters point out that the vacuum pump warning system can easily be adapted to operate with a replacement FAA-approved vacuum pump. In general, the commenters feel that the vacuum pump monitoring system enhanced safety by letting the pilot know if the vacuum pump was not working.

What is FAA's response to the concern? The FAA agrees with the commenters that the vacuum pump monitoring system enhances safety. However, the pump monitoring system is optional equipment and its installation does not address the unsafe condition. Phoenix Group Service Bulletin Number 05-01, dated November 22, 2005, gives instructions to operators for the hook-up and usage of the vacuum monitoring system now installed.

We will change the final rule to eliminate the mandatory removal of the vacuum pump monitoring system and allow the optional use of the existing monitoring system.

Comment Issue No. 2: Limit the Effectivity of the Final Rule to Airplanes With Installation of the Lycoming Engines (Lycoming) IO-540 Series Engines

What is the commenter's concern? Eleven commenters state that the final rule should only apply to airplanes with installation of the Lycoming IO-540 series reciprocating engines. We infer from the comments received that the commenters conclude that failures of the vacuum pump system occur only on airplanes with installation of the Lycoming IO-540 series engines.

What is FAA's response to the concern? We disagree with the comments that the final rule should only apply to airplanes with installation of the Lycoming IO-540 series engines. The Aero Advantage vacuum pumps, part numbers ADV211CC and ADV212CW, use the same internal components and could be installed on a six-cylinder or a four-cylinder engine. The only difference in the two models is that one runs clockwise, while the other runs counterclockwise. Failures of the Aero Advantage vacuum pumps have been reported in both four-cylinder and six-cylinder engine installations. Therefore, a chance of a vacuum pump failure also exists with the four-cylinder installations.

We are not changing the final rule as a result of these comments.

Comment Issue No. 3: Estimated Work Hours Required for the Removal and Replacement of the Aero Advantage Vacuum Pump

What is the commenter's concern? One commenter, an owner of an airplane with a Continental E185-8 engine installation, comments that 5 work hours should be allotted for the removal of the existing pump and warning system and the replacement with another FAA-approved vacuum pump.

What is FAA's response to the concern? The FAA is not revising the Cost Impact section based on the clarification in the final rule that the current monitoring system is optional equipment and its installation does not cause or contribute to the unsafe condition. Therefore, we believe that our original estimate of three work hours is realistic.

We are not changing the final rule as a result of this comment.

Conclusion

What is FAA's final determination on this issue? We have carefully reviewed the available data and determined that air safety and the public interest require adopting the AD as proposed except for the changes discussed above and minor editorial corrections. We have determined that these changes and minor corrections:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

Docket Information

Where can I go to view the docket information? You may view the AD docket that contains information relating to this subject in person at the DMS Docket Offices between 9 a.m. and 5 p.m. (eastern time), Monday through Friday, except Federal holidays. The Docket Office (telephone 1-800-647-5227) is located on the plaza level of the Department of Transportation NASSIF Building at the street address stated in ADDRESSES. You may also view the AD docket on the Internet at <http://dms.dot.gov>.

Changes to 14 CFR Part 39—Effect on the AD

How does the revision to 14 CFR part 39 affect this AD? On July 10, 2002, the FAA published a new version of 14 CFR part 39 (67 FR 47997, July 22, 2002), which governs the FAA's AD system. This regulation now includes material that relates to altered products, special flight permits, and alternative methods of compliance. This material previously was included in each individual AD. Since this material is included in 14 CFR part 39, we will not include it in future AD actions.

Costs of Compliance

How many airplanes does this AD impact? We estimate that this AD affects 285 airplanes in the U.S. registry.

What is the cost impact of this AD on owners/operators of the affected airplanes? We estimate the following costs to do this removal and replacement. We have no way of determining the exact number of airplanes that will need this removal and replacement:

Labor cost	Average parts cost	Total cost per airplane
3 work hours × \$65 = \$195	\$400	\$595

Authority for This Rulemaking

What authority does FAA have for issuing this rulemaking action? 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 AD.

Regulatory Findings

Will this AD impact various entities? 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.

Will this AD involve a significant rule or regulatory action? 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 other information as included in the Regulatory Evaluation) and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "Docket No. FAA-2005-20440; Directorate Identifier 2005-CE-05-AD" in your request.

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 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. FAA amends § 39.13 by adding a new AD to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2006-03-08 Aero Advantage: Amendment 39-14472; Docket No. FAA-2005-20440; Directorate Identifier 2005-CE-05-AD.

When Does This AD Become Effective?

- (a) This AD becomes effective on March 10, 2006.

What Other ADs Are Affected by This Action?

- (b) None.

What Airplanes Are Affected by This AD?

- (c) This AD affects ADV200 series (part numbers (P/Ns)

ADV211CC and ADV212CW) vacuum pumps installed on, but not limited to, the following aircraft that are certificated in any category. These vacuum pumps can be installed under supplemental type certificate number SA10126SC, through field approval, or other methods:

Make	Model
Alexandria Aircraft, LLC	14-19, 14-19-2, 14-19-3, 17-30, 17-31, 17-31TC, 17-30A, 17-31A, and 17-31ATC.
Alliance Aircraft Group, LLC	H-295 (USAF U10D).
American Champion Aircraft Corp.	7AC, 7ECA, 7GC, 7GCA, 7GCAA, 7GCB, 7GCBC, 7HC, 7KC, 7KCAB, 8GCBC, and 8KCAB.
Cessna Aircraft Company, The	172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, R182, T182, TR182, 172RG, R172E, R172F, R172H, R172J, 152, A152, 210, 210-5 (205), 210-5A (205A), 210A, 210B, 210C, 210D, 210E, 210F, 210G, 210H, 210J, 210K, 210L, 210M, 210N, P210N, T210G, T210H, T210M, T210N, T210R, 185, 185A, 185B, 185C, 185D, 185E, 180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 120, 140, 170, 170A, 170B, 177, 177A, 177B, 207, 207A, T207, T207A, 177RG, 206, P206, P206A, P206B, P206C, P206D, P206E, TP206A, TP206B, TP206C, TP206D, TP206E, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, 188, 188A, 188B, A188, A188A, and A188B.

Make	Model
Commander Aircraft Company	112, 112B, 112TC, 114, and 114A.
Dynac Aerospace Corporation	Aero Commander 100.
Global Amphibians, LLC	Lake LA-4-200, Lake Model 250.
Maule Aerospace Technology, Inc.	M-4-210, M-4-220, M-5-180C, M-5-200, M-5-235C, M-6-180, and M-6-235.
Mooney Aircraft Corporation	M20, M20A, M20B, M20C, M20D, M20E, M20F, M20G, M20J, M20K, M20M, and M22.
Navion Aircraft Company, Ltd.	Navion G and Navion H.
Piper Aircraft, Inc., The New	PA-23, PA-23-160, PA-23-235, PA-23-250 (Navy UO-1), PA-E23-250, PA-24, PA-24-250, PA-24-260, PA-18, PA-18-105 (Special), PA-18-135, PA-18-150, PA-20-115, PA-20-135, PA-22-108, PA-22-135, PA-22-150, PA-22-160, PA-25, PA-25-235, PA-25-260, PA-28-140, PA-28-150, PA-28-151, PA-28-160, PA-28-161, PA-28-180, PA-28-181, PA-28-201T, PA-28-235, PA-28-236, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, PA-28RT-201T, PA-25, PA-25-235, PA-25-260, J5A-80, J5A (Army L-4F), J5B (Army L-4G), J5C, PA-12, PA-36-285, PA-36-300, PA-36-375, PA-38-112, PA-30, PA-39, PA-40, PA-31, PA-31-300, PA-31-325, PA-31-350, PA-32-260, PA-32-300, PA-32-301, PA-32-301T, PA-32R-300, PA-32R-301 (HP), PA-32R-301T, PA-32RT-300T, PA-31P, and PA-36-300.
Raytheon Aircraft Company	35-33, 35-A33, 35-B33, 35-C33, 35-C33A, 36, A36, A36TC, B36TC, E33, E33A, E33C, F33, F33A, F33C, G33, H35, J35, V35, V35A, V35B, D45 (Military T-34B), 35, 35R, A35, B35, C35, D35, E35, F35, G35, 19A, 23, A23, A23A, A24, A24R, B19, B23, B24R, C23, and C24R.
Rogers, Burl A.	15AC and S15AC.
SOCATA—Groupe Aerospatiale	MS 885, MS 892A-150, MS 892E-150, MS 893A, MS 893E, Rallye 150 ST, Rallye 150 T, TB 10, TB 20, and TB 9
Tiger Aircraft LLC	AA-1, AA-1A, AA-1B, AA-1C, AA-5, AA-5A, and AA-5B.

What Is the Unsafe Condition Presented in This AD?

(d) This AD is the result of several reports of pump chamber failure. The actions specified in this AD are intended to prevent the vacuum pump failure or malfunction during instrument flight rules (IFR) flight that could lead to loss of flight instruments critical for flight. The loss of flight instruments could cause pilot disorientation and loss of control of the aircraft.

What Must I Do To Address This Problem?

(e) To address this problem, you must do the following:

Actions	Compliance	Procedures
(1) Remove from service any Aero Advantage ADV200 series (P/Ns ADV211CC and ADV212CW) vacuum pump.	Within 100 hours time-in-service (TIS) or the next 12 calendar months after March 10, 2006 (the effective date of this AD), whichever occurs first, unless already done.	Not Applicable.
(2) Install an FAA-approved vacuum pump that is not an Aero Advantage ADV200 series vacuum pump.	Prior to further flight after removing any Aero Advantage ADV200 series vacuum pump.	Not Applicable.
(3) If you choose not to utilize the Aero Advantage vacuum pump monitoring system per STC SA10126SC, then do the following: (i) Remove the Airplane Flight Manual Supplement (AFMS) for STC SA10126SC and the placard for the vacuum pump monitoring system. (ii) Complete the appropriate logbook entry and Form 337 to show that the airplane is no longer equipped with STC SA10126SC.	Prior to further flight after removing any Aero Advantage ADV200 series vacuum pump.	Not Applicable.
(4) If you choose to utilize the Aero Advantage vacuum pump monitoring system per STC SA10126SC, then do the following: (i) Connect the replacement vacuum pump to the vacuum pump monitoring system. (ii) Make the following notation to the front of the AFMS for STC SA10126SC: "The Aero Advantage vacuum pump was removed to comply with AD 2005-**-**, and this AFMS now gives instructions for the operation of the vacuum pump monitoring system with a replacement vacuum pump." (iii) Attach a copy of the Phoenix Group Service Bulletin No. 05-01, dated November 22, 2005, to the AFMS for STC SA10126SC.	Prior to further flight after removing any Aero Advantage ADV200 series vacuum pump.	Connect the vacuum pump monitoring system with the procedures in Phoenix Group, Service Bulletin No. 05-01, dated November 22, 2005.
(5) Do not install any Aero Advantage ADV200 series (P/Ns ADV211CC and ADV212CW) vacuum pump.	As of March 10, 2006 (the effective date of this AD).	Not Applicable.

May I Request an Alternative Method of Compliance?

(f) The Manager, Special Certification Office, Rotorcraft Directorate, FAA, has the authority to approve alternative methods of compliance for this AD, if requested using the procedures found in 14 CFR 39.19. For information on any already approved alternative methods of compliance, contact

Peter Hakala, Aerospace Engineer, Special Certification Office, Rotorcraft Directorate, FAA, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5145; facsimile: (817) 222-5785.

May I Get Copies of the Document Referenced in This AD?

(g) If you choose to utilize the vacuum pump monitoring system, you must connect the replacement vacuum pump with the instructions in Phoenix Group, Service Bulletin No. 05-01, dated November 22, 2005. 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. To get a copy of this service information, contact Phoenix Group, 9608 Taxiway Dr., Granbury, TX 76049; e-mail: phoenixgroup2@yahoo.com. To review copies of this service information, go to the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html or call (202) 741-6030. To view the AD docket, go to the Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-001 or on the Internet at *http://dms.dot.gov*. The docket number is FAA-200520440; Directorate Identifier 2005-CE-05-AD.

Issued in Kansas City, Missouri, on January 26, 2006.

David R. Showers,
Acting Manager, Small Airplane Directorate, Aircraft Certification Service.
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