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[Page 34336-34339]  
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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. 93-ANE-07-AD; Amendment 39-14122; AD 2005-12-06]**

**RIN 2120-AA64**

### **Airworthiness Directives; Teledyne Continental Motors (Formerly Bendix) S-20, S-1200, D-2000, and D-3000 Series Magnetos**

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

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding an existing airworthiness directive (AD) for Teledyne Continental Motors (TCM) (formerly Bendix) S-20, S-1200, D-2000, and D-3000 series magnetos equipped with impulse coupling assemblies. That AD currently requires replacing riveted-impulse coupling assemblies and snap-ring coupling assemblies, which are worn beyond limits, with serviceable riveted-impulse coupling assemblies or snap-ring impulse coupling assemblies. This ad requires a reduced inspection interval for magnetos with riveted-impulse coupling assemblies installed on certain Lycoming engine models. This AD does not lower the inspection interval for magnetos with snap-ring impulse coupling assemblies. This AD also limits the applicability to certain Lycoming engine models. This AD results from data provided by the manufacturer that shows a need to reduce the inspection intervals for riveted-impulse coupling assemblies used on certain Lycoming engine models. We are issuing this AD to prevent failure of the magneto impulse coupling assembly and possible engine failure.

**DATES:** This AD becomes effective July 19, 2005. The Director of the Federal Register previously approved the incorporation by reference of certain publications as listed in the regulations as of July 18, 1996 (61 FR 29934, June 13, 1996).

**ADDRESSES:** You can get the service information identified in this AD from Teledyne Continental Motors, P.O. Box 90, Mobile, AL 36601; telephone (334) 438-3411. For the Teledyne Continental Motors Web site: Go to *http://www.TCMLINK.com*.

You may examine the AD docket at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA. You may examine the service information, 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/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

**FOR FURTHER INFORMATION CONTACT:** Jerry Robinette, Senior Aerospace Engineer, Propulsion, Atlanta Aircraft Certification Office, FAA, Small Airplane Directorate, 1 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 airworthiness directive (AD). The proposed AD applies to TCM S-20, S-1200, D-2000, and D-3000 series magnetos equipped with impulse coupling assemblies. We published the proposed AD in the Federal Register on December 22, 2004 (69 FR 76632). That action proposed to require:

- An initial visual inspection of riveted-impulse coupling assemblies that have 100 or more hours time-since-new (TSN) or time-since-last-inspection (TSLI) on the effective date of the proposed AD, within 10 hours time-in-service (TIS) after the effective date of this AD, or
- An initial visual inspection of riveted-impulse coupling assemblies that have fewer than 100 hours TSN or TSLI on the effective date of the proposed AD, before accumulating 100 hours TSN or TSLI, and
- Repetitive inspections of riveted-impulse coupling assemblies within intervals of 100 hours TSLI.
- An initial visual inspection of snap-ring impulse coupling assemblies that have 450 or more hours TSN or TSLI on the effective date of the proposed AD, within 50 hours TIS after the effective date of the AD, or
- An initial visual inspection of snap-ring impulse coupling assemblies that have fewer than 450 hours TSN or TSLI before accumulating 500 hours TSN or TSLI, and
- Repetitive inspections of snap-ring impulse coupling assemblies within intervals of 500 hours TSLI.
- Replacing impulse coupling assemblies that fail the inspection.

### **Examining the AD Docket**

You may examine the AD Docket (including any comments and service information), by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. See ADDRESSES for the location.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

### **Request To Not Change the Eligibility From the Current AD**

One commenter requests that we not change the eligibility from the current AD. The commenter states that experience has shown that the current AD is preventing failures and there is no difference between the wear or reliability of the impulse coupling assemblies installed on one make and model of engine, or another.

We do not agree. Responses we received to the Airworthiness Concern Sheet and Special Airworthiness Information Bulletin from owners and operators, and the manufacturer's data, indicate that there is a significant difference in the wear and reliability of magnetos installed on Lycoming 540 series engines as compared with other engines. Based on these responses, we have appropriately reduced the inspection interval for magnetos with riveted-impulse coupling assemblies installed on Lycoming 540 series engines.

## **Request To Not Change From the Current AD**

One commenter states that without the current AD, owners and operators will not have the manufacturer's recommended maintenance performed, and safety will suffer.

We do not agree. While a small percentage of operators may not voluntarily comply with the manufacturer's recommended maintenance, we anticipate virtually all will comply. The response to the Airworthiness Concern Sheet, Special Airworthiness Information Bulletin, and manufacturer's data, indicates the AD is only needed for the Lycoming 540 series engines. This action does not negate the 500-hour inspection recommended by TCM. That inspection is part of the total inspection program to ensure the continued airworthiness of the engine. Therefore, we anticipate that safety will not suffer.

## **Addition of Description of Magneto Model Numbering System**

To assist owners and operators, we have added the description of the magneto numbering system used for TCM S-20, S-1200, D-2000, and D-3000 series magnetos to the compliance section of the AD.

## **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 about 4,200 magnetos installed on airplanes of U.S. registry. We also estimate that it will take about 1 work hour per magneto to perform the actions, and that the average labor rate is \$65 per work hour. The reduced inspection interval will require doing the inspections about four times more often. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$1,092,000.

## **Special Flight Permits Paragraph Removed**

Paragraph (d) of the current AD, AD 96-12-07, contains a paragraph pertaining to special flight permits. Even though this final rule does not contain a similar paragraph, we have made no changes with regard to the use of special flight permits to operate the airplane to a repair facility to do the work required by this AD. In July 2002, we published a new 14 CFR part 39 that contains a general authority regarding special flight permits and airworthiness directives; see Docket No. FAA-2004-8460, Amendment 39-9474 (69 FR 47998, July 22, 2002). Thus, when we now supersede ADs we will not include a specific paragraph on special flight permits unless we want to limit the use of that general authority granted in section 39.23.

## **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 by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 93-ANE-07-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 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 39-9649 (61 FR 29934, June 13, 1996) and by adding a new airworthiness directive, Amendment 39-14122, to read as follows:

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

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

*We post ADs on the internet at "www.faa.gov"*

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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).

**2005-12-06 Teledyne Continental Motors:** Amendment 39-14122. Docket No. 93-ANE-07-AD.

## **Effective Date**

- (a) This AD becomes effective July 19, 2005.

## **Affected ADs**

- (b) This AD supersedes AD 96-12-07, Amendment 39-9649.

## **Applicability**

(c) This AD applies to Teledyne Continental Motors (TCM) (formerly Bendix) magnetos that have a magneto part number (P/N) listed in Table 1 of TCM Mandatory Service Bulletin (MSB) No. MSB645, dated April 4, 1994, installed on Lycoming AEIO-540, HIO-540, IO-540, O-540, and TIO-540 series engines. These engines are installed on, but not limited to, airplanes manufactured by the Cessna Aircraft Company, Maule Aerospace Technology Corporation, Mooney Aircraft Corporation, The New Piper Aircraft Inc., and Raytheon Aircraft Company (Formerly Beech Aircraft Company).

## **Unsafe Condition**

(d) This AD results from data provided by the manufacturer that indicates a need to reduce the inspection intervals for riveted-impulse coupling assemblies used on certain Lycoming engine models. We are issuing this AD to prevent failure of the magneto impulse coupling assembly and possible engine failure.

## **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.

## **Initial Inspections of Impulse Coupling Assemblies**

(f) For all magnetos that have a P/N listed in Table 1 of TCM MSB No. MSB645, dated April 4, 1994, that have never been inspected, perform an initial inspection of the impulse coupling assembly for wear using paragraphs 1.2 through 1.4.5 of the Detailed Instructions of TCM MSB No. MSB645, dated April 4, 1994. Use the following Table 1 for the compliance times. Snap-ring impulse coupling assemblies will have an "A" stamped in the lower-right quarter of the magneto data plate.

**TABLE 1.—INITIAL INSPECTION COMPLIANCE TIMES**

<b>Engine Model</b>	<b>Type of impulse coupling assembly</b>	<b>Time on impulse coupling assembly on the effective date of this AD</b>	<b>Inspect</b>
Lycoming AEIO-540, HIO-540, IO-540, O-540, and TIO-540 series engines.	(1) Riveted	(i) 100 or more hours time-since-new or overhaul (TSN) or if the TSN is unknown.	Within 10 hours time-in-service (TIS) after the effective date of this AD.
		(ii) Fewer than 100 hours TSN	Before accumulating 100 hours TSN.
	(2) Snap ring	(i) 450 or more hours TSN	Within 50 hours TIS after the effective date of this AD.
		(ii) Fewer than 450 hours TSN	Before accumulating 500 hours TSN.

(g) Replace any impulse coupling assembly that fails the inspection with a serviceable riveted or snap-ring impulse coupling assembly. Paragraphs 2 through 2.6 of the Detailed Instructions of TCM MSB No. MSB645, dated April 4, 1994 contain information on replacing the impulse coupling assembly.

(h) If you replace a snap-ring impulse coupling assembly with a riveted-impulse coupling assembly, strike out the "A" on the magneto data plate.

### **Repetitive Inspections of Impulse Coupling Assemblies**

(i) For all magnetos that have a P/N listed in Table 1 of TCM MSB No. MSB645, dated April 4, 1994, that have had an initial inspection as specified in paragraph (f) of this AD, perform repetitive inspections of the impulse coupling assembly for wear using paragraphs 1.2 through 1.4.5 of the Detailed Instructions of TCM MSB No. MSB645, dated April 4, 1994. Use the following Table 2 for the compliance times. Snap-ring impulse coupling assemblies will have an "A" stamped in the lower-right quarter of the magneto data plate.

**TABLE 2.—REPETITIVE INSPECTION COMPLIANCE TIMES**

<b>Engine model</b>	<b>Type of impulse coupling assembly</b>	<b>Inspect</b>
Lycoming AEIO-540, HIO-540, IO-540, O-540, and TIO-540 series engines	(1) Riveted	Within 100 hours time-since-last inspection (TSLI).
	(2) Snap ring	Within 500 hours TSLI.

(j) Replace any impulse coupling assembly that fails the inspection with a serviceable riveted or snap-ring impulse coupling assembly. Paragraphs 2 through 2.6 of the Detailed Instructions of TCM MSB No. MSB645, dated April 4, 1994 contain information on replacing the impulse coupling assembly.

(k) If you replace a snap-ring impulse coupling assembly with a riveted-impulse coupling assembly, strike out the "A" on the magneto data plate.

### **Optional Terminating Action**

(l) Installing a "Shower-of-Sparks" ignition system in place of a magneto system that has a riveted-impulse coupling assembly or a snap-ring impulse coupling assembly ends the repetitive

inspection requirements specified in paragraph (i) of this AD. You can find more information on installing a "Shower-of-Sparks" ignition system in TCM Service Information Letter No. SIL648, dated October 18, 1994.

### Description of Magneto Model Numbering System

(m) To assist owners and operators, the description of the magneto numbering system used for TCM S-20, S-1200, D-2000, and D-3000 series magnetos is in the following Table 3:

**TABLE 3.—MAGNETO NUMBERING SYSTEM**

<b>Code:</b>	<b>Signifies:</b>
S or D	Ignition Type (Single or Dual)
6	Number of Cylinders
L or R	Direction of Rotation (Left-hand or Right-hand)
N (Not used on SC Models)	Manufacturer Designation
SC (if applicable)	Short Cover Configuration
-25, -1209, or -3200	Magneto Series
<b>Examples:</b>	<b>Description:</b>
S6LN-1209	Single type ignition, 6-cylinder engine, left-hand rotation, TCM (formerly Bendix), S-1200 series
D6RN-3200	Dual type ignition, 6-cylinder engine, right-hand rotation, TCM (formerly Bendix), D-3000 series
S6LSC-25	Single type ignition, 6-cylinder engine, left-hand rotation, short cover configuration, S-20 series

### Alternative Methods of Compliance

(n) 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.

### Related Information

(o) TCM SB No. 639, dated March 1993, contains additional information for replacing impulse coupling assemblies on a TCM magneto. TCM Service Information Letter No. SIL648, dated October 18, 1994, contains information for converting an engine to a "Shower-of-Sparks" ignition system.

### Material Incorporated by Reference

(p) You must use Teledyne Continental Motors Mandatory Service Bulletin No. MSB645, dated April 4, 1994 to perform the inspections and replacements required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin as of July 18, 1996 (61 FR 29934, June 13, 1996). You can get a copy from Teledyne Continental Motors, P.O. Box 90, Mobile, AL 36601; telephone (334) 438-3411. For the Teledyne Continental Motors Web site: Go to <http://www.TCMLINK.com>. You can 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/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Burlington, Massachusetts, on June 6, 2005.

Jay J. Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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