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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

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

**[Docket No. FAA-2024-1695; Project Identifier AD-2023-00783-E; Amendment 39-22869; AD 2024-21-02]**

**RIN 2120-AA64**

### **Airworthiness Directives; Lycoming Engines**

#### **AGENCY:**

Federal Aviation Administration (FAA), DOT.

#### **ACTION:**

Final rule.

#### **SUMMARY:**

The FAA is adopting a new airworthiness directive (AD) for Lycoming Engines (Lycoming) model engines that have a certain connecting rod assemblies installed. This AD was prompted by several reports of connecting rod failures, which resulted in uncontained engine failure and in-flight shutdowns (IFSDs). This AD requires repetitive oil inspections for bronze metal particulates and, if found, additional inspections of the connecting rod bushings for damage, proper fit, movement, and wear, and replacement if necessary. As terminating action to the connecting rod bushing inspections, this AD requires replacement of the connecting rod bushings with parts eligible for installation. The FAA is issuing this AD to address the unsafe condition on these products.

#### **DATES:**

This AD is effective December 5, 2024.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of December 5, 2024.

#### **ADDRESSES:**

*AD Docket:* You may examine the AD docket at *regulations.gov* under Docket No. FAA-2024-1695; 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 final rule, any comments received, and other information. The address for Docket

Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

### *Material Incorporated by Reference:*

- For Lycoming material identified in this AD, contact Lycoming Engines, 652 Oliver Street, Williamsport, PA 17701; phone: (800) 258-3279; website:[lycoming.com/contact/knowledge-base/publications](https://www.lycoming.com/contact/knowledge-base/publications).
- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2024-1695.

### **FOR FURTHER INFORMATION CONTACT:**

James Delisio, Aviation Safety Engineer, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (516) 228-7321; email: [james.delisio@faa.gov](mailto:james.delisio@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend [14 CFR part 39](#) by adding an AD that would apply to Lycoming model engines that have certain connecting rod assemblies installed. The NPRM published in the **Federal Register** on June 28, 2024 ([89 FR 53911](#)). The NPRM was prompted by several reports of connecting rod failures, which resulted in uncontained engine failure and IFSDs, and a manufacturer investigation where it was determined that affected connecting rod small end bushings may be installed on additional populations of Lycoming engines. The manufacturer also determined that degradation of the connecting rod small end bushings is detectable during oil change inspections. In the NPRM, the FAA proposed to require repetitive oil inspections for bronze metal particulates and, if found, additional inspections of the connecting rod bushings for damage ( *e.g.* deterioration, missing metal), proper fit, movement, and wear, and replacement if necessary. As terminating action to the connecting rod bushing inspections, the NPRM also proposed to require replacement of the connecting rod bushings with parts eligible for installation. The FAA is issuing this AD to address the unsafe condition on these products.

#### **Discussion of Final Airworthiness Directive**

#### **Comments**

The FAA received one comment from Aeroclub de Columbia. The following presents the comment received on the NPRM and the FAA's response to the comment.

#### **Request To Clarify Scheduling of Inspections**

Aeroclub de Columbia requested that the FAA confirm whether the recurrent inspections required by paragraph (g) of the proposed AD should also be scheduled monthly for aircraft in [14 CFR part 91](#) (non-commercial) operations. Aeroclub de Columbia noted that Lycoming Service Bulletin 480F suggests changing the oil every 50 hours or every 4 months, but several aircraft maintenance manuals specify oil replacement every 50 hours without a calendar time restriction.

To clarify, this AD does not define or mandate the frequency of oil changes after the initial oil change. Subsequent oil changes are part of the engine's regular maintenance program, therefore the recurring frequency is outside the scope of this AD. Although repetitive inspections are required during this regular maintenance interval, they are

tied to the operator's oil change frequency and that frequency is not being defined by this AD. The FAA did not change this AD as a result of this comment.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Material Incorporated by Reference Under [1 CFR Part 51](#)

The FAA reviewed Lycoming Mandatory Service Bulletin No. 630A, dated June 13, 2017, which specifies procedures for inspection of the connecting rod bushings for damage, proper fit, movement, and wear. This material 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.

Costs of Compliance

The FAA estimates that this AD affects 16,000 engines installed on airplanes of U.S. registry.

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

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspect oil	2 work-hours × \$85 per hour = \$170	\$65	\$235	\$3,760,000
Inspect connecting rod bushings	1 work-hour × \$85 per hour = \$85	0	85	1,360,000
Replace connecting rod bushings (per bushing)	4.5 work-hours × \$85 per hour = \$382	380	762	12,192,000

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

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) 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 Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA 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 adding the following new airworthiness directive:

**2024-21-02 Lycoming Engines:** Amendment 39-22869; Docket No. FAA-2024-1695; Project Identifier AD-2023-00783-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective December 5, 2024.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to Lycoming Engines (Lycoming) model engines that have an affected part and part number (P/N) installed and are assembled within the ship date range, as specified in Table 1 to paragraph (c) of this AD.

**Table 1 to Paragraph ( c )—Affected P/Ns**

P/N	Affected part	Ship date range
LW-13923	Connecting Rod Bushing	01/30/2009-11/17/2015
LW-11750	Connecting Rod Assembly	01/30/2009-11/19/2015
78030	Connecting Rod Assembly	01/30/2009-03/31/2016
LW-19332	Connecting Rod Assembly	01/30/2009-01/03/2016
LW-13865	Connecting Rod Assembly	01/30/2009-02/14/2017
77450	Connecting Rod Assembly	01/30/2009-02/14/2017
LW-13422	Connecting Rod Assembly	01/30/2009-02/14/2017
LW-13937	Connecting Rod Assembly	01/30/2009-02/14/2017
LW-15288	Connecting Rod Assembly	01/30/2009-02/14/2017

**Note 1 to paragraph (c):** The affected parts are known to be installed on Lycoming Model AEIO-320 series, AEIO-360 series, AEIO-390 series, AEIO-540 series, AEIO-580-B1A, AIO-320 series, AIO-360 series, HIO-360 series, HIO-390-A1A, HIO-540-A1A, HO-360 series, IO-320 series, IO-360 series, IO-390 series, IO-540 series, IVO-360-A1A, IVO-540-A1A, LHIO-360 series, LIO-320 series, LIO-360 series, LO-360 series, LTIO-540 series, LTO-360 series, O-233-A1, O-235 series, O-320 series, O-340 series, O-360 series, O-435 series, O-540 series, SO-580 series, TEO-540 series, TIGO-541 series, TIO-360 series, TIO-540 series, TIO-541 series, TIVO-540-A2A, TO-360 series, TVO-435 series, TVO-540-A1A, VO-360 series, VO-435 series, VO-540 series, and VSO-580-A1A engines.

#### (d) Subject

Joint Aircraft System Component (JASC) Code 8500, Engine (Reciprocating).

#### (e) Unsafe Condition

This AD was prompted by several reports of connecting rod failures resulting in uncontained engine failure and in-flight shutdowns (IFSDs). The FAA is issuing this AD to prevent connecting rod failure. The unsafe condition, if not addressed, could result in engine failure, an IFSD, and loss of control of the aircraft.

#### (f) Compliance

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

#### (g) Required Actions

(1) At the next oil change or within 4 months after the effective date of this AD, whichever occurs first, and thereafter at every oil change until the bushing replacement required by either paragraph (g)(3) or (4) of this AD is done, perform a visual inspection of the engine oil filter, oil pressure screen, and oil suction screen (depending on the engine configuration) for bronze metal particulates. The actions required by this paragraph may be performed by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD in accordance with [14 CFR 43.9\(a\)](#) and [91.417\(a\)\(2\)\(v\)](#). The record must be maintained as required by [14 CFR 91.417](#), [121.380](#), or [135.439](#).

**Note 2 to paragraph (g)(1):** Guidance for engine oil filter, oil pressure screen, and oil suction screen inspection instructions and identification of metallic solids may be found in Lycoming Mandatory Service

(2) If, during any inspection required by paragraph (g)(1) of this AD, any bronze metal particulates are found and the source is identified as the connecting rod bushings, before further flight, inspect all affected connecting rod bushings for damage ( *e.g.* deterioration, missing metal), proper fit, movement, and wear in accordance with “Connecting Rod Bushing Inspection,” of Lycoming MSB 630A, dated June 13, 2017.

**Note 3 to paragraph (g)(2):** Guidance for identifying the source of metallic contamination may be found in Table 3 of Lycoming MSB 480F.

(3) If the connecting rod bushings fail any inspection required by paragraph (g)(2) of this AD, before further flight, replace the connecting rod bushings with parts eligible for installation. This terminates the repetitive inspection required by paragraph (g)(1) of this AD.

(4) At the next engine overhaul, replace the connecting rod bushings with parts eligible for installation. This terminates the repetitive inspection required by paragraph (g)(1) of this AD.

### **(h) Definition**

For the purpose of this AD, a “part eligible for installation” is any connecting rod bushing having P/N 01K28983.

### **(i) Credit for Previous Actions**

You may take credit for the actions required by paragraph (g)(1) of this AD if you performed those actions before the effective date of this AD using Lycoming MSB 480F.

### **(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, East Certification 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 branch office, send it to the attention of the person identified in paragraph (k)(1) of this AD and email to: [9-avs-nyaco-cos@faa.gov](mailto:9-avs-nyaco-cos@faa.gov).

(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.

### **(k) Additional Information**

(1) For more information about this AD, contact James Delisio, Aviation Safety Engineer, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (516) 228-7321; email: [james.delisio@faa.gov](mailto:james.delisio@faa.gov).

(2) Service information identified in this AD that is not incorporated by reference is available at the address specified in paragraph (l)(3) of this AD.

### **(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the material listed in this paragraph under [5 U.S.C. 552\(a\)](#) and [1 CFR part 51](#).

(2) You must use this material as applicable to do the actions required by this AD, unless the AD specifies otherwise.



(i) Lycoming Engines Mandatory Service Bulletin No. 630A, dated June 13, 2017.

(ii) [Reserved]

(3) For Lycoming Engines material identified in this AD, contact Lycoming Engines, 652 Oliver Street, Williamsport, PA 17701; phone: (800) 258-3279; website: [lycoming.com/contact/knowledge-base/publications](http://lycoming.com/contact/knowledge-base/publications).

(4) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

(5) You may view this material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations](http://www.archives.gov/federal-register/cfr/ibr-locations) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov).

Issued on October 28, 2024.

Victor Wicklund,

Deputy Director, Compliance & Airworthiness Division, Aircraft Certification Service.

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