



## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2024-2318; Project Identifier MCAI-2023-00981-E; Amendment 39-22945; AD 2025-02-12]

RIN 2120-AA64

#### Airworthiness Directives; Austro Engine GmbH Engines

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

**ACTION:** Final rule.

**SUMMARY:** The FAA is superseding Airworthiness Directive (AD) 2023-20-03 for certain Austro Engine GmbH Model E4 and E4P engines. AD 2023-20-03 required repetitive engine oil analysis for aluminum content outside the acceptable limits and, if necessary, replacement of the pistons, piston rings, con-rods assembly, and crankcase or, as an alternative, replacement of the engine core. Since the FAA issued AD 2023-20-03, the manufacturer identified errors in the lists of affected engines and provided updated information, which prompted this AD. This AD retains the requirements of AD 2023-20-03, adds compliance times for additional affected engine serial numbers, and removes certain engine serial numbers from the applicability of the existing AD. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:**

*AD Docket:* You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2024-2318; 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, the mandatory continuing airworthiness information (MCAI), 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 Austro Engine GmbH material identified in this AD, contact Austro Engine GmbH, Rudolf-Diesel-Strasse 11, A-2700 Weiner Neustadt, Austria; phone: +43 2622 23000; website: [austroengine.at](https://www.austroengine.at).

- 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-2024-2318.

**FOR FURTHER INFORMATION CONTACT:** Morton Lee, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; phone: (860) 386-1791; email: [morton.y.lee@faa.gov](mailto:morton.y.lee@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2023-20-03, Amendment 39-22562 (88 FR 76104, November 6, 2023) (AD 2023-20-03). AD 2023-20-03 applied to certain Austro Engine GmbH Model E4 and E4P engines. AD 2023-20-03 was prompted by European Union Aviation Safety Agency (EASA) AD 2022-0240R1, dated December 15, 2022 (EASA AD 2022-

0240R1). EASA is the Technical Agent for the Member States of the European Union and issued EASA AD 2022-0240R1 to address reports of piston failures.

AD 2023-20-03 required repetitive engine oil analysis for aluminum content outside the acceptable limits and, if necessary, replacement of the pistons, piston rings, con-rods assembly, and crankcase or as an alternative, replacement of the engine core. The FAA issued AD 2023-20-03 to prevent piston failure, which could result in loss of oil, loss of engine power, and reduced control of the airplane.

Since the FAA issued AD 2023-20-03, EASA superseded EASA AD 2022-0240R1 and issued EASA AD 2023-0163, dated August 18, 2023 (EASA AD 2023-0163) (also referred to as the MCAI). The MCAI states that a manufacturer investigation into reports of piston failures determined that certain batches of pistons were manufactured with a dimensional deviation in the piston pin bore and in the piston diameter, which could cause piston failure, with consequent loss of oil, loss of engine power, and reduced control of the airplane. The MCAI requires repetitive oil analyses and replacement of the pistons, piston rings, con-rods assembly, and crankcase, or as an alternative, replacement of the engine core. Since EASA issued EASA AD 2023-0163, the manufacturer revised the service information and issued Mandatory Service Bulletin No. MSB-E4-039/3, Revision 3, dated November 22, 2023, to amend the labor efforts section.

The NPRM published in the *Federal Register* on September 30, 2024 (89 FR 79474). The NPRM was prompted by EASA AD 2023-0163. In the NPRM, the FAA proposed to continue to require the requirements of AD 2023-20-03, add compliance times for additional affected engine serial numbers, and remove certain engine serial numbers from the applicability of AD 2023-20-03. The FAA is issuing this AD to address the unsafe condition on these products.

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

## **Comments**

The FAA received no comments on the NPRM or on the determination of the costs.

## **Conclusion**

These products have been approved by the aviation authority of another country and are approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA reviewed the relevant data 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. This AD is adopted as proposed in the NPRM.

## **Material Incorporated by Reference under 1 CFR Part 51**

The FAA reviewed Austro Engine GmbH Mandatory Service Bulletin No. MSB-E4-039/3, Revision 3, dated November 22, 2023, which identifies affected engine serial numbers and specifies procedures for oil analysis and replacement of the pistons, piston rings, con-rods assembly, crankcase, and engine core.

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 357 engines installed on airplanes of U.S. registry.

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

### **Estimated costs**

| <b>Action</b> | <b>Labor Cost</b>                        | <b>Parts Cost</b> | <b>Cost per product</b> | <b>Cost on U.S. operators</b> |
|---------------|--|-------------------|-------------------------|-------------------------------|
| Oil analysis  | 1 work-hour x<br>\$85 per hour =<br>\$85 | \$0               | \$85                    | \$30,345                      |

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The agency has no way of determining the number of engines that might need these replacements:

#### **On-condition costs**

| <b>Action</b>  | <b>Labor Cost</b>                             | <b>Parts Cost</b> | <b>Cost per product</b> |
|--|---|-------------------|-------------------------|
| Replace engine core  | 35 work-hours x<br>\$85 per hour =<br>\$2,975 | \$15,524          | \$18,499                |
| Replace pistons, piston rings and con-rods assembly            | 65 work-hours x<br>\$85 per hour =<br>\$5,525 | \$2,216           | \$7,741                 |
| Replace pistons, piston rings, con-rod assembly, and crankcase | 75 work-hours x<br>\$85 per hour =<br>\$6,375 | \$4,141           | \$10,516                |

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

#### **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**

The FAA has 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) 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(f), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by:

- a. Removing Airworthiness Directive 2023-20-03, Amendment 39-22562 (88 FR 76104, November 6, 2023); and

- b. Adding the following new airworthiness directive:

**2025-02-12 Austro Engine GmbH:** Amendment 39-22945; Docket No.FAA-2024-2318;

Project Identifier MCAI-2023-00981-E.

**(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

This AD replaces AD 2023-20-03, Amendment 39-22562 (88 FR 76104, November 6, 2023) (AD 2023-20-03).

**(c) Applicability**

This AD applies to Austro Engine GmbH Model E4 and E4P engines with an engine serial number (ESN) listed in Tables 1, 2, 3, and 4 of Austro Engine GmbH Mandatory Service Bulletin No. MSB-E4-039/3, Revision 3, dated November 22, 2023 (Austro MSB-E4-039/3).

**(d) Subject**

Joint Aircraft System Component (JASC) Code 8530, Reciprocating Engine Cylinder Section; 8550, Reciprocating Engine Oil System.

**(e) Unsafe Condition**

This AD was prompted by reports of piston failures and the determination that certain batches of pistons were manufactured with a dimensional deviation in the piston pin bore and piston diameter. The FAA is issuing this AD to prevent piston failure. The unsafe condition, if not addressed, could result in loss of oil, loss of engine power, and reduced control of the airplane.

**(f) Compliance**

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

**(g) Required Actions**

(1) For all affected engines, within the applicable compliance times specified in table 1 to paragraph (g)(1) of this AD, perform an oil analysis in accordance with

paragraph 2., Technical Details, Engine Oil Analysis of Austro MSB-E4-039/3, and do not return the engine to service until the results of the oil analysis have been determined.

**Table 1 to Paragraph (g)(1) - Oil Analysis for All Affected Engines**

| <b>Engine Group</b>  | <b>Compliance Time</b>  | <b>Interval</b>                                  |
|--|---|--|
| Group 1 and Group 3 engines that do not have an ESN identified in table 2 to paragraph (g)(1) of this AD | Within 15 flight hours (FHs) from December 11, 2023 (the effective date of AD 2023-20-03) | Before exceeding 50 FHs since last oil analysis  |
| Group 1 and Group 3 engines that have an ESN identified in table 2 to paragraph (g)(1) of this AD        | Within 15 FHs from the effective date of this AD  | Before exceeding 50 FHs since last oil analysis  |
| Group 2 and Group 4 engines that do not have an ESN identified in table 2 to paragraph (g)(1) of this AD | Within 25 FHs from December 11, 2023 (the effective date of AD 2023-20-03)                | Before exceeding 100 FHs since last oil analysis |
| Group 2 and Group 4 engines that have an ESN identified in table 2 to paragraph (g)(1) of this AD        | Within 25 FHs from the effective date of this AD  | Before exceeding 100 FHs since last oil analysis |

**Table 2 to Paragraph (g)(1) - Affected ESNs Not Included in AD 2023-20-03**

| <b>Engine Group</b> | <b>ESN</b> | <b>ESN</b>  | <b>ESN</b> | <b>ESN</b> |
|---------------------|------------|-------------|------------|------------|
| Group 1             | E4-A-06367 | E4-A-06248  | --         | --         |
| Group 2             | E4-C-06249 | E4P-C-06185 | --         | --         |
| Group 3             | E4-A-05072 | E4-A-05074  | E4-A-05075 | E4-A-05078 |
| Group 3             | E4-A-05079 | E4-A-05080  | E4-A-05081 | E4-A-05082 |
| Group 3             | E4-A-05083 | E4-A-05084  | E4-A-05085 | E4-A-05086 |
| Group 3             | E4-A-05087 | --          | --         | --         |
| Group 4             | E4-C-00559 | E4-C-05089  | E4-C-05090 | E4-C-05091 |
| Group 4             | E4-C-05092 | E4-C-05093  | E4-C-05094 | E4-C-05096 |
| Group 4             | E4-C-05098 | E4-C-05099  | E4-C-05100 | E4-C-05101 |
| Group 4             | E4-C-05102 | E4-C-05103  | E4-C-05104 | E4-C-05105 |
| Group 4             | E4-C-05106 | E4-C-05107  | E4-C-05108 | E4-C-05109 |

| <b>Engine Group</b> | <b>ESN</b> | <b>ESN</b> | <b>ESN</b>  | <b>ESN</b> |
|---------------------|------------|------------|-------------|------------|
| Group 4             | E4-C-05110 | E4-C-05111 | E4P-C-06073 | --         |

(2) Thereafter, repeat the oil analysis required by paragraph (g)(1) of this AD before exceeding the applicable interval specified in table 1 to paragraph (g)(1) of this AD.

(3) Following each repetitive oil analysis, the engine may be returned to service for no more than the applicable interval specified in table 1 to paragraph (g)(1) of this AD, until receipt of the oil analysis result.

(4) If the result of any oil analysis required by paragraph (g)(1) of this AD indicates the aluminum content of the oil is greater than the limit specified in paragraph 2., Technical Details, Engine Oil Analysis, Table 5 - Oil check analysis Aluminum PPM allowable; of Austro MSB-E4-039/3, before further flight, replace the pistons, piston rings, con-rods assembly, and crankcase, or replace the engine core in accordance with paragraph 2., Technical Details, Engine core replacement; or Pistons, piston rings, crankcase and con-rod assy replacement; as applicable, of Austro MSB-E4-039/3.

(5) For Group 3 and Group 4 engines, within the applicable compliance times specified in table 3 to paragraph (g)(5) of this AD, replace the pistons, piston rings, and con-rods assembly, or replace the engine core in accordance with paragraph 2., Technical Details, Engine core replacement; or Pistons, piston rings and con-rod assy replacement, as applicable, of Austro MSB-E4-039/3.

**Table 3 to Paragraph (g)(5) - Replacement for Group 3 and 4 Engines**

| <b>Engine Group</b>  | <b>Compliance Time</b>   |
|--|--|
| Group 3 engines that do not have an ESN identified in table 2 to paragraph (g)(1) of this AD | Before exceeding 900 FHs since new, or within 15 FHs after December 11, 2023 (the effective date of AD 2023-20-03), whichever occurs later   |
| Group 3 engines that have an ESN identified in table 2 to paragraph (g)(1) of this AD        | Before exceeding 900 FHs since new, or within 15 FHs after the effective date of this AD, whichever occurs later                             |
| Group 4 engines that do not have an ESN identified in table 2 to paragraph (g)(1) of this AD | Before exceeding 1,000 FHs since new, or within 25 FHs after December 11, 2023 (the effective date of AD 2023-20-03), whichever occurs later |
| Group 4 engines that have an ESN identified in table 2 to paragraph (g)(1) of this AD        | Before exceeding 1,000 FHs since new, or within 25 FHs after the effective date of this AD, whichever occurs later                           |

**Note 1 to paragraph (g)(5):** FHs since new indicated in table 3 to paragraph (g)(5) of this AD are FHs accumulated by the engine since first installation on an airplane or since last overhaul as of December 11, 2023 (the effective date of AD 2023-20-03) for Group 3 and 4 engines that do not have an ESN identified in table 2 to paragraph (g)(1) of this AD, or as of the effective date of this AD for Group 3 and 4 engines that have an ESN identified in table 2 to paragraph (g)(1) of this AD.

**(h) Terminating Action**

(1) Replacement of the pistons, piston rings, con-rods assembly, and crankcase, or replacement of the engine core, as specified in paragraph (g)(4) of this AD, constitutes terminating action for the repetitive oil analysis required by paragraph (g)(2) of this AD.

(2) Replacement of the pistons, piston rings, and con-rods assembly, or replacement of the engine core, as specified in paragraph (g)(5) of this AD, constitutes terminating action for the repetitive oil analysis required by paragraph (g)(2) of this AD.

**(i) Definitions**

For the purpose of this AD:

(1) Group 1 engines are engines having an ESN listed in Table 1 of Austro MSB-E4-039/3.

(2) Group 2 engines are engines having an ESN listed in Table 2 of Austro MSB-E4-039/3 MSB-E4-039/3.

(3) Group 3 engines are engines having an ESN listed in Table 3 of Austro MSB-E4-039/3.

(4) Group 4 engines are engines having an ESN listed in Table 4 of Austro MSB-E4-039/3.

**(j) Credit for Previous Actions**

(1) You may take credit for the actions required by paragraph (g)(1), (4), or (5) of this AD, if you performed those actions before December 11, 2023 (the effective date of AD 2023-20-03) using Austro Engine GmbH Mandatory Service Bulletin No. MSB-E4-039/0, dated October 24, 2022.

(2) You may take credit for the actions required by paragraph (g)(1), (4), or (5) of this AD if you performed those actions before the effective date of this AD using Austro Engine GmbH Mandatory Service Bulletin No. MSB-E4-039/2, Revision 2, dated July 26, 2023.

**(k) No Return of Parts/Reporting Requirement**

Although the service information specifies returning certain parts and submitting certain information to the manufacturer, this AD does not include those requirements.

**(l) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, International Validation 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 International Validation Branch, send it to the attention of the person identified in paragraph (m)(1) of this AD and email to [AMOC@faa.gov](mailto:AMOC@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.

**(m) Additional Information**

(1) For more information about this AD, contact Morton Lee, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; phone: (860) 386-1791; email: [morton.y.lee@faa.gov](mailto:morton.y.lee@faa.gov).

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

**(n) 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) Austro Engine GmbH Mandatory Service Bulletin No. MSB-E4-039/3, Revision 3, dated November 22, 2023.

(ii) [Reserved]

(3) For Austro Engine GmbH material identified in this AD, contact Austro Engine GmbH, Rudolf-Diesel-Strasse 11, A-2700 Weiner Neustadt, Austria; phone: +43 2622 23000; website: [austroengine.at](http://austroengine.at).

(4) You may view this material at 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 February 19, 2025.

Victor Wicklund,

Deputy Director, Compliance & Airworthiness Division,

Aircraft Certification Service.

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