



適航指令發布單

Airworthiness Directive Issuance Form

民航局 AD 編號 AD number	CAA-2023-08-012	發布日期 Date issued	2023/8/28
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	Model E4 and E4P engines, all serial numbers (s/n) listed in Table 1, 2, 3 and 4 of the Mandatory Service Bulletin (MSB), as defined in this AD. These engines are known to be installed on, but not limited to, Diamond Aircraft Industries DA 40 NG, DA 42 NG, DA 42 M-NG and DA 62 aeroplanes.		
主旨摘要 Subject	Engine - Pistons - Oil Analysis / Replacement		
民航局 CAA <input type="checkbox"/> 本國產品 Native product <input type="checkbox"/> 其他個案 Other	設計國民航主管機構 Original Authority <input type="checkbox"/> FAA <input type="checkbox"/> Germany LBA <input checked="" type="checkbox"/> EASA <input type="checkbox"/> CAA-NL <input type="checkbox"/> Brazil <input type="checkbox"/> UK CAA <input type="checkbox"/> Transport Canada Civil Aviation <input type="checkbox"/> Japan CAB <input type="checkbox"/> DGAC <input type="checkbox"/> CAA of Israel <input type="checkbox"/> Other _____		
	設計國 AD 編號 Original AD number	2023-0163	
	1. 直接採用原 AD 之內容?(Is the original AD directly adopted?) <input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _ a. 生效日期另訂為(Re-specify the effective date as) : _____ b. 執行時限另訂為(Re-specify the compliance time or period as) : _____ 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?) <input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)		
備註 Note	This AD supersedes EASA AD 2022-0240R1(CAA-2022-12-005A) dated 15 December 2022.		
註： 1. AD 內容後附。 2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。 3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6330 / 6332, Fax：(02)2545-8464, e-mail： adcaa@mail.caa.gov.tw Note： 1. The AD text is enclosed. 2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval. 3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6330 / 6332, Fax： (02)2545-8464, e-mail： adcaa@mail.caa.gov.tw			



Airworthiness Directive

AD No.: 2023-0163

Issued: 18 August 2023

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I Part M.A.301, or Annex Vb Part ML.A.301, as applicable, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I Part M.A.303, or Annex Vb Part ML.A.303, as applicable] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:

AUSTRO ENGINE GmbH

Type/Model designation(s):

E4 and E4P engines

Effective Date: 01 September 2023

TCDS Number(s): EASA.E.200

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2022-0240R1 dated 15 December 2022.

ATA 72 – Engine – Pistons – Oil Analysis / Replacement

Manufacturer(s):

Austro Engine GmbH

Applicability:

Model E4 and E4P engines, all serial numbers (s/n) listed in Table 1, 2, 3 and 4 of the Mandatory Service Bulletin (MSB), as defined in this AD.

These engines are known to be installed on, but not limited to, Diamond Aircraft Industries DA 40 NG, DA 42 NG, DA 42 M-NG and DA 62 aeroplanes.

Definitions:

For the purpose of this AD, the following definitions apply:

The MSB: Austro Engine MSB MSB-E4-039 Revision 2.

Groups:

Group 1 engines are those having an s/n listed in Table 1 of the MSB.

Group 2 engines are those having an s/n listed in Table 2 of the MSB.

Group 3 engines are those having an s/n listed in Table 3 of the MSB.

Group 4 engines are those having an s/n listed in Table 4 of the MSB.



Group 1 and Group 3 engines are model E4 engines in “-A” configuration (installed on single engine aeroplanes). Group 2 and Group 4 engines are model E4 engines in “-B” or “-C” configuration, and all model E4P engines (installed on twin-engine aeroplanes).

Reason:

Occurrences were reported of piston failures on E4 and E4P engines. Subsequent investigation determined that certain batches of pistons were manufactured with dimensional deviations in the piston pin bore and in the piston diameter.

This condition, if not detected and corrected, could lead to piston failure, with consequent oil loss and engine power loss, possibly resulting in reduced control of the aeroplane and (for single engine aeroplanes) in an emergency landing, possibly resulting in damage to the aeroplane and injury to occupants.

To address this potential unsafe condition, Austro Engine published MSB-E4-039 (at original issue) to provide instructions for oil analysis and parts replacement. Consequently, EASA issued AD 2022-0240 to require repetitive oil analyses and replacement of certain engine parts or, as an alternative, replacement of the complete engine core. That AD also prohibited release to service of an affected engine until receipt of the result of each oil analysis and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, it was determined that high aluminium levels, above the limit, would only be found during the first oil analysis and unlikely to be found during subsequent oil analyses. Consequently, EASA revised AD 2022-0240 to allow release to service of the engine after the second and subsequent oil analyses for a limited number of flight hours (FH), depending on the defined Group to which the engine belongs; after the first oil analysis still the analysis result must be completed before an engine could be released to service. That revised AD also provided more precise information on the replacement of parts.

Since AD 2022-0240R1 was issued, Austro Engine identified errors in the lists of affected engines (s/n) in the published MSB (Revision 1) and issued the MSB, as defined in this AD, to add the s/n of additional affected engines and to remove the s/n of several non-affected engines.

For the reason described above, this AD retains the requirements of EASA AD 2022-0240R1, which is superseded, and amends the applicability, in accordance with the updated tables with s/n of affected engines in the MSB.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

Oil Analysis:

- (1) Within the compliance time and, thereafter, at intervals as specified in Table 1 of this AD, as applicable, accomplish an oil analysis in accordance with the instructions of the MSB (see Note 1 of this AD).



Table 1 – Oil Analysis

Engine Groups	Compliance Time (after 20 December 2022 [the effective date of AD 2022-0240R1])	Interval
1 and 3	Within 15 FH	50 FH
2 and 4	Within 25 FH	100 FH

Note 1: Following the first oil analysis as required by paragraph (1) of this AD, the engine may be released to service only after receipt of the oil analysis result, provided that the aluminium content found is below the limit as specified in the MSB. Following each subsequent oil analysis as required by paragraph (1) of this AD, the engine may, pending the receipt of the oil analysis result, be released to service for 50 FH (for Group 1 and Group 3 engines) or 100 FH (for Group 2 and Group 4 engines), as applicable.

Corrective Action(s):

- (2) If, during any oil analysis as required by paragraph (1) of this AD, the aluminium content is found to be above the limit as specified in the MSB, before next flight after receipt of the oil analysis result (see Note 1 of this AD), replace the pistons, the piston rings, the con-rods assembly and the crankcase, or replace the (complete) engine core, in accordance with the instructions of the MSB.

Credit:

- (3) An oil analysis, accomplished on a Group 1 or Group 3 engine during the last 50 FH before the effective date of this AD, or on a Group 2 or Group 4 engine during the last 100 FH before the effective date of this AD, is acceptable to comply with the initial oil analysis as required by paragraph (1) of this AD for that engine, provided the aluminium content found was below the limit as specified in the MSB or corrective action(s) have been accomplished as required by paragraph (2) of this AD.

Replacement:

- (4) For Group 3 and Group 4 engines: Unless already accomplished as required by paragraph (2) or as specified in paragraph (3) of this AD, within the compliance time as specified in Table 2 of this AD, as applicable, replace the pistons, the piston rings and the con-rods assembly, or replace the (complete) engine core, in accordance with the instructions of the MSB.

Table 2 – Replacement (see Note 2 of this AD)

Engine Group	Compliance Time (whichever occurs later)
3	Before exceeding 900 FH, or within 15 FH after 20 December 2022 [the effective date of AD 2022-0240R1]
4	Before exceeding 1 000 FH, or within 25 FH after 20 December 2022 [the effective date of AD 2022-0240R1]

Note 2: Unless specified otherwise, the FH in Table 2 of this AD are those accumulated by the engine since first installation on an aeroplane, or since last overhaul.



Terminating Action:

- (5) Replacement of the parts on an engine as required by paragraph (2) or (4) of this AD, or as specified in paragraph (3) of this AD, as applicable, constitutes terminating action for the oil analyses as required by paragraph (1) of this AD for that engine.
- (6) For Group 1 and Group 2 engines: Accomplishment on an engine of the next scheduled overhaul after 20 December 2022 [the effective date of AD 2022-0240R1], constitutes terminating action for the oil analyses as required by paragraph (1) of this AD for that engine.

Ref. Publications:

Austro Engine MSB MSB-E4-039 original issue dated 24 October 2022, or Revision 1 dated 24 April 2023, or Revision 2 dated 26 July 2023.

The use of later approved revisions of the above-mentioned document is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the [EU aviation safety reporting system](#). This may include reporting on the same or similar components, other than those covered by the design to which this AD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.
5. For any question concerning the technical content of the requirements in this AD, please contact Austro Engine GmbH, Rudolf-Diesel-Str. 11, 2700 Wiener Neustadt, Austria, via [Diamond Partners Portal](#), or by Telephone: +43 2622 23000 2525.

