
SERVICE INFORMATION LETTER NO. SI40NG-090

NOTE: Service information letters (SILs) are used only:

1. To distribute information from Diamond Aircraft Industries Inc. to our customers.
2. To distribute applicable information/documents from our suppliers to our customers with additional information.

NOTE: Typically there is no revision service for SILs. Each new information or change will be sent along with a new SIL.

1. TECHNICAL DETAILS

1.1 Aircraft Affected

DA 40 NG aircraft with component serial numbers indicated in the Austro Engine MSB-E4-042_r0 or subsequent approved revisions.

1.2 Subject

Austro Engine Mandatory Service Bulletin MSB-E4-042 - Crankshaft-bearing cap screws replacement.

ATA-Code: 72-00

1.3 Reason

Occurrences of E4 series engines have been reported recently. Investigation of the occurrences has shown in some cases the failure of one inner main bearing cap screw. Subsequent investigations have determined that certain batches of inner main bearing cap screws were produced at the lower end of the material strength tolerance for Class 8.8 screws. Depending on the magnitude of the screw's strength properties, the potential for screw failure, leading to engine failure, exists in cases where abnormal operating conditions are experienced such as fuel quality issues or significant deviations from the fuel system requirements. To address this possible unsafe condition, this Service Bulletin requires the replacement of the inner main bearing cap screws, with screws having highest safety factor, to be completed within the timeframe specified in EASA AD 2024-0037R1.

1.4 Information

For detailed technical information, refer to Austro Engine MSB-E4-042_r0, WI-MSB-E4-042 and EASA AD 2024-0037R1, which are applicable without any further additions or restrictions.

Austro Engine MSB-E4-042_r0, WI-MSB-E4-042 and EASA AD 2024-0037R1 are attached to this SIL. In case of doubt, contact Austro Engine GmbH.

2. OTHER DETAILS

To obtain satisfactory results, procedures specified in this service information letter must be accomplished in accordance with accepted methods and current government regulations. Diamond Aircraft Industries Inc. cannot be responsible for the quality of work performed in accomplishing the requirements of this service information letter. Diamond Aircraft reserves the right to void continued warranty coverage in the area affected by this service information letter if it is not incorporated. If you no longer own the aircraft to which this service information letter applies, please forward it to the current owner and send the name of the current owner to Diamond Aircraft Industries Inc. at the address below.

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N5V 1S2

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Airworthiness Directive

AD No.: 2024-0037R1

Issued: 06 February 2024

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: 06 February 2024 (same as original issue)

TCDS Number(s): EASA.E.200

Foreign AD: Not applicable

Revision: This AD revises EASA Emergency AD 2024-0037-E dated 02 February 2024.

ATA 72 – Engine – Main Bearing / Studs – Replacement

Manufacturer(s):

Austro Engine GmbH; Wuhu Diamond Aeroengine Co. Ltd

Applicability:

E4 and E4P engines, all serial numbers (s/n).

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 Mandatory Service Bulletin (MSB) MSB-E4-042.

Affected part: Main bearing screws, class 8.8, having Part Number (P/N) E4A-10-100-201.

Serviceable part: Main bearing screws, class 12.9, having P/N E4A-10-100-202.

Groups: Group 1 are engines having a s/n listed in Table 1 of the MSB, or engines equipped with an engine core having a s/n listed in Table 1 of the MSB.



Group 2 are engines having a s/n listed in Table 2 of the MSB or engines equipped with an engine core having a s/n listed in Table 2 of the MSB.

Group 3 are engines which are not Group 1 and are not Group 2.

Reason:

Occurrences of engines failures have been reported, where, during subsequent engine inspection, failure of one inner main bearing screw was identified. Subsequent investigation determined that certain screws, meeting the lower end of their design specification, could fail when installed on the inner main bearing position and the engine is operated in specific operating conditions.

This condition, if not corrected, could lead to engine failure, reduced control of the aeroplane and, for single engine aeroplanes, in emergency landing, possibly resulting in damage to the aeroplane and injury to occupants.

To address this potential unsafe condition, Austro Engine published the MSB, providing instructions to replace the affected part with screws of higher class, and EASA issued Emergency AD 2024-0037-E, requiring replacement of affected parts with serviceable parts and providing additional criteria for installation of the affected parts and engines.

Since that AD was issued, requests for clarification about the compliance time for Group 2 engines have been received. This AD is revised accordingly, to provide clarifications, and to introduce an allowance for ferry flights for Group 2 engines.

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

Required as indicated by this AD, unless the actions required by this AD have been already accomplished:

Replacement:

- (1) For Group 1 and Group 2 engines: Within the compliance time as specified in Table 1 of this AD, as applicable, replace each affected part installed on the inner main bearings with a serviceable part in accordance with the instructions of the MSB.



Table 1 – Main Bearing Screws Replacement

Group	Compliance Time
1	<p>Before next flight after the effective date of this AD.</p> <p>A single ferry flight, without passengers and not exceeding 3 flight hours (FH), is allowed to a maintenance location, where the action required by this AD can be accomplished</p>
2	<p>A or B, whichever occurs first:</p> <p>A) Within 300 FH since first installation on an aeroplane, or since last overhaul, as applicable, or before next flight after the effective date of this AD, whichever occurs later. A single ferry flight, without passengers and not exceeding 3 flight hours (FH), is allowed to a maintenance location, where the action required by this AD can be accomplished.</p> <p>B) During the next scheduled engine maintenance, starting after the effective date of this AD</p>

Part(s) Installation:

- (2) For Group 1, Group 2 and Group 3 engines: From the effective date of this AD, do not install an engine core, having a s/n listed in Table 1 or Table 2 of the MSB, on any engine, unless the main bearing screws installed on the inner main bearings of that engine core have been replaced with serviceable parts in accordance with the instructions of the MSB.
- (3) For Group 1, Group 2 and Group 3 engines: From the effective date of this AD, do not install any affected part on the inner main bearings of any engine (position 3 to 8 inclusive, as shown in Figure 1 of the MSB).

Ref. Publications:

Austro Engine MSB MSB-E4-042 original issue dated 31 January 2024 and Revision 1 dated 05 February 2024.

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. The results of the safety assessment have indicated the need for immediate publication and notification, without the full consultation process.
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.





MANDATORY SERVICE BULLETIN

No. MSB-E4-042

Distribution:	Portal
Date:	31.01.2024

1. Basic information

1.1. Subject

Crankshaft-bearing cap screws replacement

1.2. Record of revisions

Rev.	Date	Reason
0	31.01.2024	Initial approval

Revised portions of this Mandatory Service Bulletin are marked **highlighting the revised text in yellow**.
Removed text is highlighted in grey and strikethrough ~~example~~.

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1.3. Definitions and Acronyms

For the purpose of this Service Bulletin, the following definitions and acronyms apply:

AD:	Airworthiness Directive.
Diamond partners portal:	partners.diamondaircraft.com
EAD:	Emergency Airworthiness Directive.
FH:	Flight Hours.
Flight Hours:	Means the cumulative number of airborne hours in operation of each Engine computed from the time an aircraft leaves the ground until it touches the ground at the end of a flight.
GTC:	General Terms of Commerce.
MSB:	Mandatory Service Bulletin.
n/a:	Not applicable.
no.:	Number.
p/n or p/ns:	Part number or Part numbers.
SB:	Service Bulletin.
s/n or s/ns:	Serial number or Serial numbers.
TBO:	Time Between Overhaul.
Time Between Overhaul:	Is the maximum number of Flight Hours that may be logged on an engine before the Maintenance Manual requires the product be removed for overhaul or replacement. For E4 and E4P engines the recommended Time Between Overhaul is 1800 FH.
TSN:	Time Since New.
Time Since New:	Is the amount of Flight Hours elapsed since new.
Time Since Overhaul:	Is the amount of Flight Hours elapsed since the last engine overhaul.
VFR:	Visual flight rules

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1.4. Reason

Occurrences of E4 series engines have been reported recently. Investigation of the occurrences has shown in some cases the failure of one inner main bearing cap screw. Subsequent investigations have determined that certain batches of inner main bearing cap screws were produced at the lower end of the material strength tolerance for Class 8.8 screws. Depending on the magnitude of the screw's strength properties, the potential for screw failure, leading to engine failure, exists in cases where abnormal operating conditions are experienced such as fuel quality issues or significant deviations from the fuel system requirements. To address this possible unsafe condition, this Service Bulletin requires the replacement of the inner main bearing cap screws, with screws having highest safety factor, to be completed within the timeframe specified in §1.6.

1.5. Engines affected

Engine affected: E4 Series
Serial numbers affected: All E4/E4P engines listed in Table 1 and Table 2

Table 1 - Affected Engine Serial Numbers

E4-A				
E4-A-00228	E4-A-06322	E4-A-06383	E4-A-06448	E4-A-06491
E4-A-00425	E4-A-06323	E4-A-06384	E4-A-06452	E4-A-06492
E4-A-00441	E4-A-06324	E4-A-06385	E4-A-06458	E4-A-06493
E4-A-00485	E4-A-06325	E4-A-06386	E4-A-06459	E4-A-06494
E4-A-00549	E4-A-06326	E4-A-06387	E4-A-06460	E4-A-06499
E4-A-05077	E4-A-06327	E4-A-06388	E4-A-06461	E4-A-06500
E4-A-06276	E4-A-06328	E4-A-06389	E4-A-06462	E4-A-06502
E4-A-06277	E4-A-06329	E4-A-06390	E4-A-06463	E4-A-06504
E4-A-06279	E4-A-06332	E4-A-06391	E4-A-06464	E4-A-06506
E4-A-06280	E4-A-06333	E4-A-06392	E4-A-06468	E4-A-06507
E4-A-06281	E4-A-06340	E4-A-06393	E4-A-06469	E4-A-06508
E4-A-06282	E4-A-06341	E4-A-06394	E4-A-06470	E4-A-06509
E4-A-06283	E4-A-06343	E4-A-06397	E4-A-06471	E4-A-06510
E4-A-06285	E4-A-06349	E4-A-06398	E4-A-06472	E4-A-06511
E4-A-06286	E4-A-06353	E4-A-06400	E4-A-06473	E4-A-06512
E4-A-06287	E4-A-06354	E4-A-06401	E4-A-06474	E4-A-06513
E4-A-06289	E4-A-06359	E4-A-06402	E4-A-06475	E4-A-06515
E4-A-06290	E4-A-06360	E4-A-06403	E4-A-06476	E4-A-06516
E4-A-06292	E4-A-06361	E4-A-06404	E4-A-06477	E4-A-06517
E4-A-06306	E4-A-06362	E4-A-06405	E4-A-06478	E4-A-06519
E4-A-06310	E4-A-06366	E4-A-06406	E4-A-06479	E4-A-06521
E4-A-06311	E4-A-06367	E4-A-06407	E4-A-06480	E4-A-06522
E4-A-06312	E4-A-06368	E4-A-06408	E4-A-06481	E4-A-06523
E4-A-06313	E4-A-06370	E4-A-06409	E4-A-06482	E4-A-06525
E4-A-06314	E4-A-06371	E4-A-06410	E4-A-06483	E4-A-06526
E4-A-06315	E4-A-06372	E4-A-06413	E4-A-06484	E4-A-06527
E4-A-06316	E4-A-06373	E4-A-06414	E4-A-06485	E4-A-06528
E4-A-06317	E4-A-06374	E4-A-06424	E4-A-06486	E4-A-06531
E4-A-06318	E4-A-06375	E4-A-06425	E4-A-06487	E4-A-06533
E4-A-06319	E4-A-06376	E4-A-06435	E4-A-06488	E4-A-06534
E4-A-06320	E4-A-06378	E4-A-06441	E4-A-06489	E4-A-06535
E4-A-06321	E4-A-06379	E4-A-06442	E4-A-06490	E4-A-06536

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E4-A-06539	E4-A-06605	E4-A-06721	E4-A-06761	E4-A-06801			
E4-A-06540	E4-A-06606	E4-A-06722	E4-A-06762	E4-A-06802			
E4-A-06541	E4-A-06607	E4-A-06723	E4-A-06763	E4-A-06803			
E4-A-06542	E4-A-06608	E4-A-06724	E4-A-06764	E4-A-06804			
E4-A-06543	E4-A-06609	E4-A-06725	E4-A-06765				
E4-A-06544	E4-A-06610	E4-A-06727	E4-A-06766				
E4-A-06545	E4-A-06611	E4-A-06729	E4-A-06767				
E4-A-06546	E4-A-06612	E4-A-06730	E4-A-06768				
E4-A-06549	E4-A-06613	E4-A-06731	E4-A-06769				
E4-A-06555	E4-A-06614	E4-A-06732	E4-A-06770				
E4-A-06556	E4-A-06616	E4-A-06733	E4-A-06771				
E4-A-06557	E4-A-06621	E4-A-06734	E4-A-06772				
E4-A-06558	E4-A-06622	E4-A-06735	E4-A-06773				
E4-A-06561	E4-A-06623	E4-A-06736	E4-A-06774				
E4-A-06562	E4-A-06626	E4-A-06737	E4-A-06775				
E4-A-06564	E4-A-06628	E4-A-06738	E4-A-06776				
E4-A-06565	E4-A-06637	E4-A-06739	E4-A-06777				
E4-A-06566	E4-A-06639	E4-A-06741	E4-A-06778				
E4-A-06567	E4-A-06644	E4-A-06742	E4-A-06779				
E4-A-06568	E4-A-06648	E4-A-06743	E4-A-06780				
E4-A-06570	E4-A-06667	E4-A-06744	E4-A-06781				
E4-A-06574	E4-A-06670	E4-A-06745	E4-A-06782				
E4-A-06577	E4-A-06671	E4-A-06746	E4-A-06783				
E4-A-06579	E4-A-06693	E4-A-06747	E4-A-06784				
E4-A-06580	E4-A-06694	E4-A-06748	E4-A-06785				
E4-A-06581	E4-A-06697	E4-A-06749	E4-A-06786				
E4-A-06583	E4-A-06700	E4-A-06750	E4-A-06787				
E4-A-06584	E4-A-06701	E4-A-06751	E4-A-06788				
E4-A-06586	E4-A-06703	E4-A-06752	E4-A-06789				
E4-A-06591	E4-A-06710	E4-A-06753	E4-A-06790				
E4-A-06594	E4-A-06711	E4-A-06754	E4-A-06791				
E4-A-06595	E4-A-06712	E4-A-06755	E4-A-06792				
E4-A-06596	E4-A-06713	E4-A-06756	E4-A-06793				
E4-A-06597	E4-A-06714	E4-A-06757	E4-A-06794				
E4-A-06598	E4-A-06715	E4-A-06758	E4-A-06795				
E4-A-06600	E4-A-06716	E4-A-06759	E4-A-06796				
E4-A-06601	E4-A-06717		E4-A-06797				
E4-A-06602	E4-A-06718		E4-A-06798				
	E4-A-06719		E4-A-06799				
E4-B							
E4-B-06038	E4-B-06057	E4-B-06069	E4-B-06084	E4-B-06098			
E4-B-06040	E4-B-06058	E4-B-06070	E4-B-06085	E4-B-06099			
E4-B-06041	E4-B-06059	E4-B-06072	E4-B-06086	E4-B-06100			
E4-B-06046	E4-B-06060	E4-B-06076	E4-B-06088	E4-B-06101			
E4-B-06047	E4-B-06061	E4-B-06077	E4-B-06089	E4-B-06103			
E4-B-06048	E4-B-06062	E4-B-06078	E4-B-06091	E4-B-06104			
E4-B-06050	E4-B-06063	E4-B-06079	E4-B-06092	E4-B-06105			
E4-B-06051	E4-B-06064	E4-B-06080	E4-B-06094	E4-B-06106			
E4-B-06052	E4-B-06065	E4-B-06081	E4-B-06096	E4-B-06108			
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E4-B-06121	E4-B-06132	E4-B-06140		
E4-B-06123	E4-B-06133	E4-B-06141		
E4-B-06125	E4-B-06134	E4-B-06142		
E4-B-06127	E4-B-06135			
E4-B-06128	E4-B-06136			
E4-B-06129	E4-B-06137			
E4C				
E4-C-00018	E4-C-06281	E4-C-06356	E4-C-06408	E4-C-06477
E4-C-00020	E4-C-06283	E4-C-06357	E4-C-06409	E4-C-06478
E4-C-00038	E4-C-06284	E4-C-06358	E4-C-06410	E4-C-06479
E4-C-00039	E4-C-06285	E4-C-06359	E4-C-06411	E4-C-06481
E4-C-00041	E4-C-06286	E4-C-06360	E4-C-06413	E4-C-06482
E4-C-00059	E4-C-06287	E4-C-06362	E4-C-06415	E4-C-06483
E4-C-00085	E4-C-06288	E4-C-06363	E4-C-06417	E4-C-06484
E4-C-00086	E4-C-06289	E4-C-06364	E4-C-06419	E4-C-06485
E4-C-00212	E4-C-06290	E4-C-06365	E4-C-06420	E4-C-06486
E4-C-00262	E4-C-06291	E4-C-06366	E4-C-06420	E4-C-06487
E4-C-00304	E4-C-06292	E4-C-06367	E4-C-06421	E4-C-06494
E4-C-00307	E4-C-06293	E4-C-06368	E4-C-06423	E4-C-06495
E4-C-00314	E4-C-06296	E4-C-06369	E4-C-06424	E4-C-06496
E4-C-00400	E4-C-06297	E4-C-06371	E4-C-06431	E4-C-06497
E4-C-00510	E4-C-06298	E4-C-06372	E4-C-06432	E4-C-06498
E4-C-05125	E4-C-06299	E4-C-06373	E4-C-06438	E4-C-06500
E4-C-05126	E4-C-06300	E4-C-06374	E4-C-06439	E4-C-06501
E4-C-06207	E4-C-06304	E4-C-06375	E4-C-06440	E4-C-06503
E4-C-06218	E4-C-06305	E4-C-06376	E4-C-06441	E4-C-06504
E4-C-06219	E4-C-06306	E4-C-06377	E4-C-06443	E4-C-06505
E4-C-06224	E4-C-06307	E4-C-06379	E4-C-06444	E4-C-06507
E4-C-06225	E4-C-06311	E4-C-06380	E4-C-06445	E4-C-06508
E4-C-06227	E4-C-06313	E4-C-06381	E4-C-06447	E4-C-06509
E4-C-06231	E4-C-06320	E4-C-06383	E4-C-06449	E4-C-06510
E4-C-06237	E4-C-06332	E4-C-06384	E4-C-06452	E4-C-06512
E4-C-06238	E4-C-06333	E4-C-06386	E4-C-06453	E4-C-06515
E4-C-06243	E4-C-06336	E4-C-06387	E4-C-06454	E4-C-06519
E4-C-06244	E4-C-06337	E4-C-06388	E4-C-06458	E4-C-06534
E4-C-06245	E4-C-06339	E4-C-06389	E4-C-06459	E4-C-06535
E4-C-06246	E4-C-06340	E4-C-06390	E4-C-06460	E4-C-06536
E4-C-06248	E4-C-06343	E4-C-06391	E4-C-06461	E4-C-06537
E4-C-06249	E4-C-06345	E4-C-06392	E4-C-06463	E4-C-06538
E4-C-06250	E4-C-06346	E4-C-06395	E4-C-06464	E4-C-06539
E4-C-06251	E4-C-06347	E4-C-06396	E4-C-06465	E4-C-06541
E4-C-06252	E4-C-06348	E4-C-06397	E4-C-06466	E4-C-06542
E4-C-06253	E4-C-06349	E4-C-06398	E4-C-06467	E4-C-06543
E4-C-06260	E4-C-06350	E4-C-06400	E4-C-06468	E4-C-06545
E4-C-06264	E4-C-06351	E4-C-06403	E4-C-06472	E4-C-06548
E4-C-06269	E4-C-06352	E4-C-06404	E4-C-06473	E4-C-06551
E4-C-06270	E4-C-06353	E4-C-06405	E4-C-06474	E4-C-06562
E4-C-06273	E4-C-06354	E4-C-06406	E4-C-06475	E4-C-06563
E4-C-06280	E4-C-06355	E4-C-06407	E4-C-06476	E4-C-06564

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E4-C-06565	E4-C-06603	E4-C-06627			
E4-C-06566	E4-C-06604	E4-C-06628			
E4-C-06567	E4-C-06605	E4-C-06629			
E4-C-06568	E4-C-06606	E4-C-06630			
E4-C-06569	E4-C-06607	E4-C-06631			
E4-C-06573	E4-C-06608	E4-C-06632			
E4-C-06575	E4-C-06611	E4-C-06633			
E4-C-06576	E4-C-06612	E4-C-06634			
E4-C-06577	E4-C-06613	E4-C-06635			
E4-C-06578	E4-C-06614	E4-C-06636			
E4-C-06579	E4-C-06615	E4-C-06637			
E4-C-06580	E4-C-06616	E4-C-06638			
E4-C-06583	E4-C-06617	E4-C-06639			
E4-C-06584	E4-C-06618	E4-C-06640			
E4-C-06585	E4-C-06619	E4-C-06641			
E4-C-06586	E4-C-06620	E4-C-06642			
E4-C-06587	E4-C-06621	E4-C-06643			
E4-C-06588	E4-C-06622	E4-C-06644			
E4-C-06589	E4-C-06623	E4-C-06645			
E4-C-06590	E4-C-06624	E4-C-06646			
E4-C-06591	E4-C-06625	E4-C-06647			
E4-C-06592	E4-C-06626				
E4-C-06593					
E4-C-06594					
E4-C-06595					
E4-C-06596					
E4-C-06597					
E4-C-06598					
E4-C-06599					
E4-C-06600					
E4-C-06601					
E4-C-06602					
E4P					
E4P-C-06065	E4P-C-06190	E4P-C-06208	E4P-C-06247	E4P-C-06270	
E4P-C-06143	E4P-C-06191	E4P-C-06215	E4P-C-06248	E4P-C-06272	
E4P-C-06145	E4P-C-06192	E4P-C-06221	E4P-C-06249	E4P-C-06277	
E4P-C-06146	E4P-C-06193	E4P-C-06222	E4P-C-06250	E4P-C-06278	
E4P-C-06148	E4P-C-06194	E4P-C-06223	E4P-C-06251	E4P-C-06279	
E4P-C-06150	E4P-C-06195	E4P-C-06226	E4P-C-06252	E4P-C-06281	
E4P-C-06151	E4P-C-06196	E4P-C-06228	E4P-C-06253	E4P-C-06282	
E4P-C-06156	E4P-C-06197	E4P-C-06230	E4P-C-06254	E4P-C-06283	
E4P-C-06167	E4P-C-06198	E4P-C-06234	E4P-C-06256	E4P-C-06284	
E4P-C-06168	E4P-C-06199	E4P-C-06236	E4P-C-06257	E4P-C-06286	
E4P-C-06169	E4P-C-06200	E4P-C-06237	E4P-C-06260	E4P-C-06287	
E4P-C-06170	E4P-C-06201	E4P-C-06238	E4P-C-06261	E4P-C-06292	
E4P-C-06177	E4P-C-06202	E4P-C-06239	E4P-C-06262	E4P-C-06293	
E4P-C-06183	E4P-C-06203	E4P-C-06241	E4P-C-06263	E4P-C-06298	
E4P-C-06186	E4P-C-06204	E4P-C-06243	E4P-C-06264	E4P-C-06299	
E4P-C-06187	E4P-C-06205	E4P-C-06244	E4P-C-06265	E4P-C-06301	
E4P-C-06188	E4P-C-06206	E4P-C-06245	E4P-C-06266	E4P-C-06302	
E4P-C-06189	E4P-C-06207	E4P-C-06246	E4P-C-06268	E4P-C-06303	
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E4P-C-06304	E4P-C-06359	E4P-C-06381	E4P-C-06402	
E4P-C-06305	E4P-C-06360	E4P-C-06382	E4P-C-06403	
E4P-C-06306	E4P-C-06361	E4P-C-06383	E4P-C-06404	
E4P-C-06307	E4P-C-06362	E4P-C-06384		
E4P-C-06308	E4P-C-06363	E4P-C-06385		
E4P-C-06310	E4P-C-06364	E4P-C-06386		
E4P-C-06311	E4P-C-06365	E4P-C-06387		
E4P-C-06312	E4P-C-06366	E4P-C-06388		
E4P-C-06315	E4P-C-06367	E4P-C-06389		
E4P-C-06319	E4P-C-06368	E4P-C-06390		
E4P-C-06323	E4P-C-06369	E4P-C-06391		
E4P-C-06326	E4P-C-06370	E4P-C-06392		
E4P-C-06328	E4P-C-06371	E4P-C-06393		
E4P-C-06330	E4P-C-06373	E4P-C-06394		
E4P-C-06331	E4P-C-06376	E4P-C-06395		
E4P-C-06342	E4P-C-06377	E4P-C-06396		
E4P-C-06344	E4P-C-06378	E4P-C-06397		
E4P-C-06353	E4P-C-06379	E4P-C-06398		
E4P-C-06354	E4P-C-06380	E4P-C-06399		
		E4P-C-06400		
		E4P-C-06401		

Engine Core s/n

00206	02229	02263	02933	
01941	02230	02264	03179	
02175	02231	02265	03183	
02176	02232	02266	03188	
02177	02233	02267	03192	
02178	02234	02268	03271	
02179	02235	02279	03294	
02180	02236	02280	03313	
02181	02237	02281	03343	
02182	02238	02288	03367	
02195	02239	02308	03411	
02197	02240	02319	03413	
02198	02241	02321		
02199	02242	02323		
02200	02243	02325		
02205	02244	02328		
02206	02245	02340		
02207	02246	02358		
02208	02247	02367		
02209	02248	02379		
02210	02249	02381		
02211	02250	02382		
02212	02251	02383		
02213	02252	02408		
02214	02253	02628		
02225	02259	02656		
02226	02260	02893		
02227	02261	02914		
02228	02262	02917		

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Table 2 - Affected Engine Serial Numbers

E4-A				
E4-A-06134	E4-A-06432	E4-A-06576	E4-A-06663	
E4-A-06138	E4-A-06433	E4-A-06578	E4-A-06664	
E4-A-06149	E4-A-06434	E4-A-06582	E4-A-06665	
E4-A-06180	E4-A-06438	E4-A-06585	E4-A-06666	
E4-A-06216	E4-A-06439	E4-A-06587	E4-A-06668	
E4-A-06218	E4-A-06440	E4-A-06588	E4-A-06669	
E4-A-06219	E4-A-06444	E4-A-06589	E4-A-06672	
E4-A-06222	E4-A-06446	E4-A-06590	E4-A-06673	
E4-A-06223	E4-A-06447	E4-A-06592	E4-A-06674	
E4-A-06225	E4-A-06450	E4-A-06593	E4-A-06675	
E4-A-06226	E4-A-06451	E4-A-06599	E4-A-06676	
E4-A-06227	E4-A-06453	E4-A-06615	E4-A-06677	
E4-A-06233	E4-A-06454	E4-A-06617	E4-A-06678	
E4-A-06239	E4-A-06455	E4-A-06618	E4-A-06679	
E4-A-06242	E4-A-06456	E4-A-06619	E4-A-06680	
E4-A-06246	E4-A-06457	E4-A-06620	E4-A-06681	
E4-A-06300	E4-A-06465	E4-A-06624	E4-A-06682	
E4-A-06302	E4-A-06466	E4-A-06625	E4-A-06683	
E4-A-06303	E4-A-06467	E4-A-06627	E4-A-06684	
E4-A-06304	E4-A-06495	E4-A-06629	E4-A-06685	
E4-A-06307	E4-A-06496	E4-A-06630	E4-A-06686	
E4-A-06308	E4-A-06497	E4-A-06631	E4-A-06687	
E4-A-06334	E4-A-06498	E4-A-06632	E4-A-06688	
E4-A-06338	E4-A-06501	E4-A-06633	E4-A-06689	
E4-A-06347	E4-A-06503	E4-A-06634	E4-A-06690	
E4-A-06350	E4-A-06505	E4-A-06635	E4-A-06691	
E4-A-06351	E4-A-06514	E4-A-06636	E4-A-06692	
E4-A-06352	E4-A-06518	E4-A-06638	E4-A-06695	
E4-A-06357	E4-A-06520	E4-A-06640	E4-A-06696	
E4-A-06369	E4-A-06524	E4-A-06641	E4-A-06698	
E4-A-06395	E4-A-06529	E4-A-06642	E4-A-06699	
E4-A-06399	E4-A-06530	E4-A-06643	E4-A-06702	
E4-A-06411	E4-A-06532	E4-A-06645	E4-A-06704	
E4-A-06412	E4-A-06538	E4-A-06646	E4-A-06705	
E4-A-06415	E4-A-06547	E4-A-06647	E4-A-06706	
E4-A-06416	E4-A-06548	E4-A-06649	E4-A-06707	
E4-A-06417	E4-A-06550	E4-A-06650	E4-A-06708	
E4-A-06418	E4-A-06551	E4-A-06651	E4-A-06709	
E4-A-06419	E4-A-06552	E4-A-06652		
E4-A-06420	E4-A-06553	E4-A-06653		
E4-A-06421	E4-A-06554	E4-A-06654		
E4-A-06422	E4-A-06559	E4-A-06655		
E4-A-06423	E4-A-06560	E4-A-06656		
E4-A-06426	E4-A-06563	E4-A-06657		
E4-A-06427	E4-A-06569	E4-A-06658		
E4-A-06428	E4-A-06571	E4-A-06659		
E4-A-06429	E4-A-06572	E4-A-06660		
E4-A-06430	E4-A-06573	E4-A-06661		
E4-A-06431	E4-A-06575	E4-A-06662		

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E4-B							
E4-B-06027	E4-B-06082	E4-B-06116					
E4-B-06028	E4-B-06087	E4-B-06117					
E4-B-06029	E4-B-06090	E4-B-06118					
E4-B-06044	E4-B-06093	E4-B-06119					
E4-B-06045	E4-B-06095	E4-B-06120					
E4-B-06067	E4-B-06102	E4-B-06122					
E4-B-06068	E4-B-06107	E4-B-06124					
E4-B-06071	E4-B-06110	E4-B-06126					
E4-B-06073	E4-B-06113						
E4-B-06074	E4-B-06114						
E4-B-06075	E4-B-06115						
E4-C							
E4-C-00267	E4-C-06326	E4-C-06448	E4-C-06532				
E4-C-00354	E4-C-06327	E4-C-06450	E4-C-06533				
E4-C-00406	E4-C-06328	E4-C-06451	E4-C-06540				
E4-C-00681	E4-C-06329	E4-C-06455	E4-C-06544				
E4-C-06191	E4-C-06330	E4-C-06456	E4-C-06546				
E4-C-06196	E4-C-06331	E4-C-06457	E4-C-06547				
E4-C-06201	E4-C-06334	E4-C-06462	E4-C-06549				
E4-C-06205	E4-C-06335	E4-C-06469	E4-C-06550				
E4-C-06239	E4-C-06338	E4-C-06470	E4-C-06552				
E4-C-06241	E4-C-06342	E4-C-06471	E4-C-06553				
E4-C-06254	E4-C-06344	E4-C-06480	E4-C-06554				
E4-C-06256	E4-C-06361	E4-C-06488	E4-C-06555				
E4-C-06257	E4-C-06378	E4-C-06489	E4-C-06556				
E4-C-06265	E4-C-06382	E4-C-06490	E4-C-06557				
E4-C-06266	E4-C-06385	E4-C-06491	E4-C-06558				
E4-C-06275	E4-C-06393	E4-C-06492	E4-C-06559				
E4-C-06276	E4-C-06394	E4-C-06493	E4-C-06560				
E4-C-06282	E4-C-06399	E4-C-06499	E4-C-06561				
E4-C-06294	E4-C-06401	E4-C-06502					
E4-C-06295	E4-C-06402	E4-C-06506					
E4-C-06301	E4-C-06412	E4-C-06511					
E4-C-06302	E4-C-06414	E4-C-06513					
E4-C-06303	E4-C-06416	E4-C-06514					
E4-C-06308	E4-C-06418	E4-C-06516					
E4-C-06309	E4-C-06422	E4-C-06517					
E4-C-06310	E4-C-06425	E4-C-06518					
E4-C-06312	E4-C-06426	E4-C-06520					
E4-C-06314	E4-C-06427	E4-C-06521					
E4-C-06315	E4-C-06428	E4-C-06522					
E4-C-06316	E4-C-06429	E4-C-06523					
E4-C-06317	E4-C-06430	E4-C-06524					
E4-C-06318	E4-C-06433	E4-C-06525					
E4-C-06319	E4-C-06434	E4-C-06526					
E4-C-06321	E4-C-06435	E4-C-06527					
E4-C-06322	E4-C-06436	E4-C-06528					
E4-C-06323	E4-C-06437	E4-C-06529					
E4-C-06324	E4-C-06442	E4-C-06530					
E4-C-06325	E4-C-06446	E4-C-06531					
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E4P				
E4P-C-06118	E4P-C-06211	E4P-C-06275	E4P-C-06317	E4P-C-06340
E4P-C-06119	E4P-C-06212	E4P-C-06276	E4P-C-06318	E4P-C-06341
E4P-C-06124	E4P-C-06213	E4P-C-06280	E4P-C-06320	E4P-C-06343
E4P-C-06127	E4P-C-06216	E4P-C-06285	E4P-C-06321	E4P-C-06345
E4P-C-06129	E4P-C-06217	E4P-C-06288	E4P-C-06322	E4P-C-06346
E4P-C-06132	E4P-C-06218	E4P-C-06289	E4P-C-06324	E4P-C-06347
E4P-C-06155	E4P-C-06219	E4P-C-06290	E4P-C-06325	E4P-C-06348
E4P-C-06159	E4P-C-06220	E4P-C-06291	E4P-C-06327	E4P-C-06349
E4P-C-06160	E4P-C-06224	E4P-C-06294	E4P-C-06329	E4P-C-06350
E4P-C-06161	E4P-C-06227	E4P-C-06295	E4P-C-06332	E4P-C-06351
E4P-C-06165	E4P-C-06229	E4P-C-06296	E4P-C-06333	E4P-C-06352
E4P-C-06166	E4P-C-06255	E4P-C-06297	E4P-C-06334	E4P-C-06355
E4P-C-06173	E4P-C-06258	E4P-C-06300	E4P-C-06335	E4P-C-06356
E4P-C-06178	E4P-C-06267	E4P-C-06309	E4P-C-06336	E4P-C-06357
E4P-C-06184	E4P-C-06271	E4P-C-06313	E4P-C-06337	E4P-C-06358
E4P-C-06209	E4P-C-06273	E4P-C-06314	E4P-C-06338	E4P-C-06372
E4P-C-06210	E4P-C-06274	E4P-C-06316	E4P-C-06339	
Engine core s/n				
02327	02343	02533		
02421	02341	02532		
02282	02361	02552		
02286	02347	02536		
02287	02385	02541		
02402	02360	02548		
02304	02362	02539		
02284	02364	02543		
02283	02346	02422		
02299	02366	02538		
02339	02400	02423		
02300	02405	02534		
02307	02380	02551		
02320	02365	02549		
02301	02542	02537		
02306	02407	02424		
02363	02406	02428		
02305	02399	02545		
02285	02420	02553		
02303	02535	02554		
02359	02540	02427		
02302	02404	02544		
02345	02386	02546		
02344	02384	02426		
02324	02368	02547		
02326	02388	02550		
02342	02403	02425		
02322	02401	02993		
02387	02419	02992		

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1.6. Required Actions and Time of Compliance

GROUP "1" ENGINES		
ALL the s/n listed in Table 1	Replace the inner main bearing cap screws, position (3) (4) (5) (6) (7) (8) of figure 1	<p>Measures must be accomplished immediately.</p> <p>A single ferry flight to the next maintenance station to meet the requirements of this service bulletin is allowed. The maximum flight duration is 3 hours and is limited to VFR-Day condition.</p>
GROUP "2" ENGINES		
ALL the s/n listed in Table 2	Replace the inner main bearing cap screws, position (3) (4) (5) (6) (7) (8) of figure 1	<p>Before accumulating 300 Flight Hours or with the next scheduled maintenance action, whichever occurs first⁽¹⁾</p>

(1) Time of compliance for Engines where an Overhaul was accomplished:



The FH specified in §1.6 of this MSB are those accumulated by the engine since first installation on an aeroplane, or since last overhaul:

e.g., For an engine which was overhauled at 1800FH, the required replacement actions must be accomplished before accumulating 2100FH (300FH since overhaul)

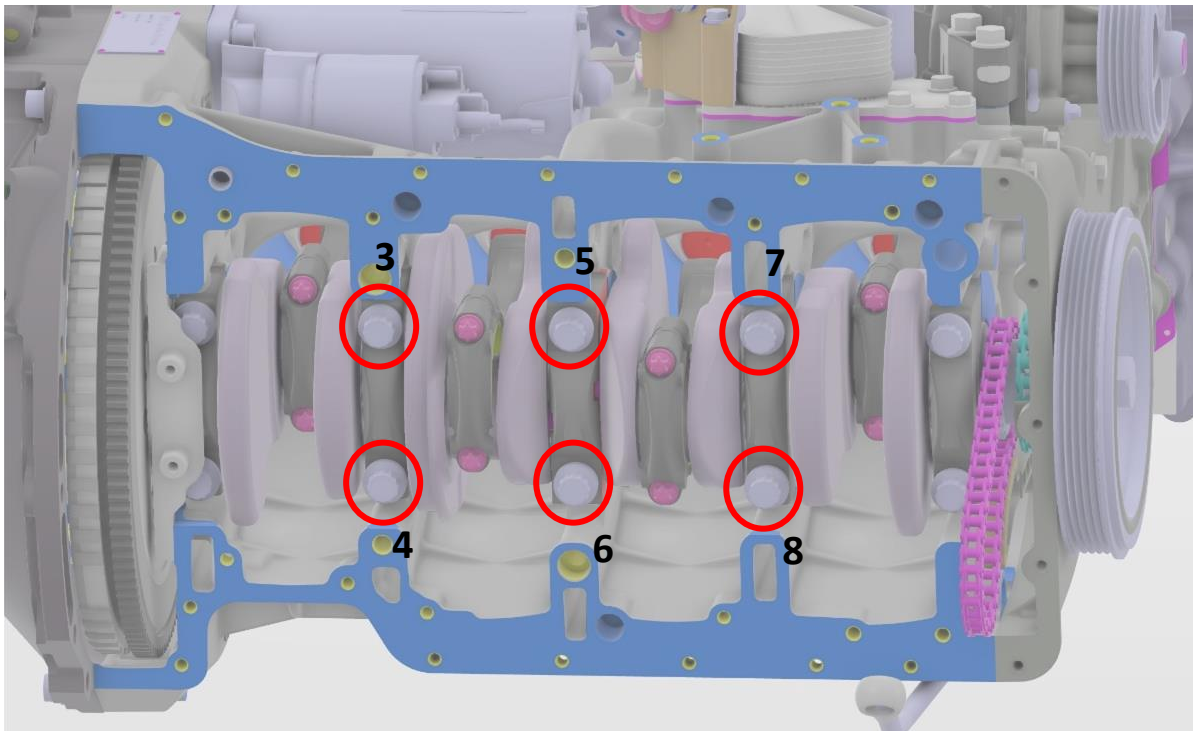


Figure 1 – Main bearing cap screws to be replaced.

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1.7. Concurrent documents / references

Note: If not specified, the latest revision of the referenced documents applies.

- Work instruction WI-MSB-E4-042

1.8. Other publications affected

None

1.9. Credits

None

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2. Technical Details

Main bearing cap screw replacement

- Perform the replacement of the main bearing cap screws in accordance with the instruction provided in the work instruction no. WI-MSB-E4-042 rev. 0 or latest approved revision.
- Mark the service bulletin as executed on the *Diamond partners portal*

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2.1. Illustrations

None

2.2. Mass (weight)

Not affected

2.3. Approval statement

The technical content of this document is approved under the authority of the DOA ref. EASA. 21J.399.

3. Planning Information

3.1. Material & Special tools

The list of materials and special tools is provided in the WI-MSB-E4-042, latest applicable revision.

3.2. Labour effort

8 hours for main bearing cap screws replacement according to WI-MSB-E4-042

4. Warranty

Costs for labour and parts related to the applicability of this MSB will be covered by Austro Engine GmbH warranty under the limitations outlined in paragraph 3.2 and within the currently valid GTC. For engine units affected by this MSB and approaching end TBO/TBR deadline pro-rated solutions may be offered on a case-by-case basis.

Diamond and Austro Engine GmbH GTCs are available at <https://www.diamondaircraft.com/en/GTC>

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5. Remarks

NOTE:

- All measures must be carried out by a certified engine station and certified engine mechanics.
- The accomplishment of the instructions shown under chapter 2 must be confirmed in the respective engine logbook.
- The accomplishment of the instructions must be carried out within the time of compliance according to chapter 1.6
- In case of doubt, please contact Austro Engine GmbH via the Diamond Partner Portal
- If you are not a Diamond Partner / Service Centre, please contact a Diamond/Austro Engine Authorized Service Centre near you.

6. Explanatory notes

6.1. Symbol explanation



WARNING: Disregarding these safety rules can cause personal injury or even death



CAUTION: Disregarding these special instructions and safety measures can cause damage to the engine or other components




NOTE: Additional note or instruction for better understanding of an instruction

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7. Appendix I

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	Type: E4 Series	Subject: Main bearing screws Replacement

WORK INSTRUCTION

WI-MSB-E4-042

Main bearing screws replacement

	Name / Position	Date:	Signature / Stamp:
Prepared:	G. ARENA D.o.A	06/02/24	
Checked/ Verified:	MORGENDRESSER/LDE	06.02.2024	 

	<ul style="list-style-type: none"> ○ <u>Position</u>: the jobholders position in the company signing the document e.g. LDE (Lead Design Engineer) or CVE Hardware (Compliance Verification Engineer responsible for Electronic Hardware) ○ <u>Prepared</u>: preparation of this certification report under the CE responsibility ○ <u>Checked/Verified</u>: checking and verification of the content of this certification report and checking that the defined requirements (e.g. CS-E) are met. ○ For details refer to: AE-VA-T-12-03 / Erstellen von Berichten zur Nachweisführung
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0 General

This work instruction describes the procedure for replacing the six inner main bearing screws on E4 series engines without removing the bearing caps. Screws number 3 – 8 acc. to Fig. 1 are affected.

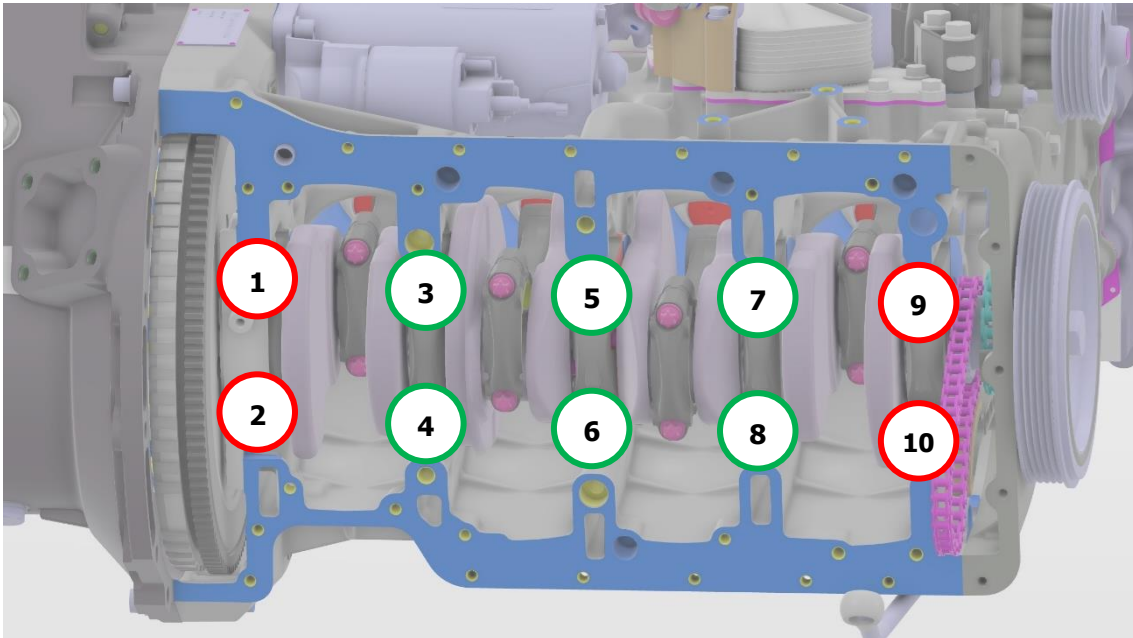


Fig. 1 affected main bearing screws



Screws number 1,2,9 and 10 must not be removed!

The replacement-screws with a higher tensile-strength can be identified by the imprint "12.9" on the screw head:

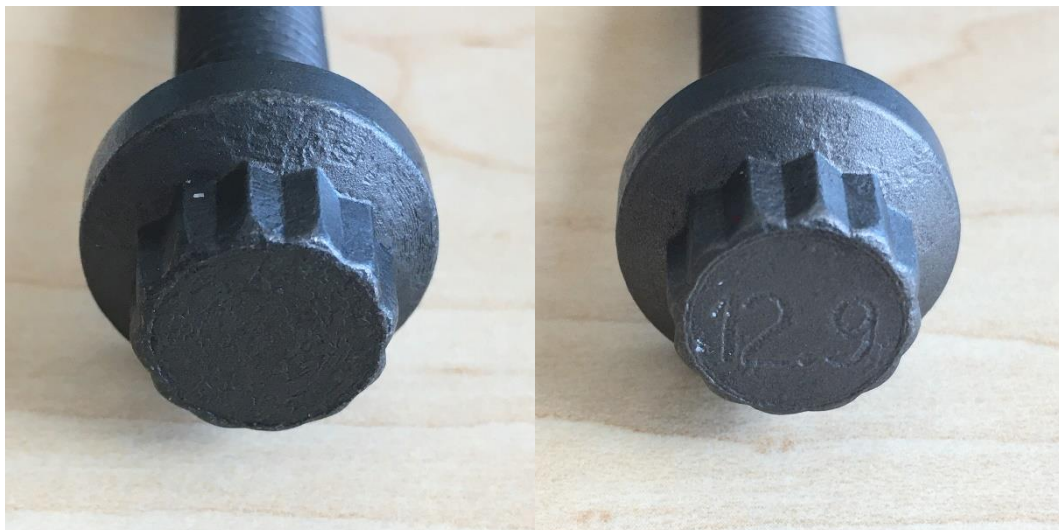



Fig. 2 comparison of the old (left) and the new (right) screw-head

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1 Power evaluation before replacement

Before disassembling the engine, perform a power evaluation to obtain data for comparison purposes. The data collected before and after replacement will be compared to ensure correct operation of the engine after replacement.

Do the following steps in accordance with the Maintenance Manual, Doc. E4.08.04, Chapter 85-30-00 p.4A:

- Start cold engine, bring temperatures to normal operating conditions (>50°C Engine Oil Temp, >60°C Coolant Temp, >35°C Gearbox Oil Temp)
- Start recording with attached LiveView-Config (LiveView Config MSB-E4-039 file on the Diamond Partner Portal)




Avoid any kind of wind exposure during the self-test procedure. If wind cannot be avoided, note the wind conditions (direction, wind strength).

- Perform self-test
- Bring Power Lever to Max. Continuous Power (92%)
- Record 30s on ECU A, then 30s on ECU B
- Bring Power Lever to Idle and stop LiveView-Recording
- Collect and store the recorded data.



In case of uninstalled engine or uninstalled engine core, this step is not necessary. As alternative:

- For engine core: perform the ground run with the old engine core installed and record the results.
- For new engine: after installation, perform the EECU download of the last 10 hrs (the power performance check is recorded).

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2 Main bearing screw replacement

2.1 Parts

Replacement parts list:

Part Number	Parts Description	Qty
E4A-05-000-003	Gasket for oil sump	1
E4A-10-100-202	Main bearing screw	6
DIN3771-16X3-ACM70	O-Ring 16x3 ACM	1
DIN 7603-C 14x18-CuFa	Oil return line sealing ring (oil sump)	2
E4A-05-000-104	Sealing (T/C – oil return line)	1
OR_7.8X3.2-ACM70	O-Ring for oil return line	1
DIN7603-A12X16-AL	Oil backflow line sealing rings	2
DIN7603-A14X20CU	Oil drain plug sealing ring	1
E4A-04-000-003	T/C - Exhaust pipe sealing	1
2142110	Exhaust flange nut	4



Make sure the working area is clean. Use clean gloves. Use appropriate plugs to cover all engine openings and protect them against ingress of dirt and moisture.



Following 3D-pictures pictures are only for reference. The actual engine can remain in the airframe.

2.2 Preliminary work

- Check the ease of movement of the crankshaft by slightly turning it in flight direction with installed propeller, or propeller flange or from the flywheel gearing. You will need to subjectively compare the friction before replacement of the screws to that after replacement, in order to exclude abnormal assembly of the main bearing.
- Remove the upper and lower part of the engine cowling acc. to aircraft manufacturers manual.
- Remove the engine oil filter according to Maintenance Manual, Ch. 79. Visually examine the used Oil Filter for contamination and metal abrasion. If an abnormal condition is found (metal shavings exceeding 1.5 mm; concentration of particles; clogged filter), please contact Austro Engine for further instructions. Reinstall engine oil filter if no abnormalities could be found.




For uninstalled engines, perform the following steps using a lifting crane to lift the engine.



For uninstalled engine cores, perform the following steps using a lifting crane to lift the engine core.



For installed engines, perform the following steps using a lifting crane to secure and sustain the engine.

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2.2.1 Oil sump removal

a) Remove the oil sump acc. to the procedure below:

Detail steps/Work items		Engine Maintenance Manual ref.
1	Untighten the screws that attach the GPC bracket.	Section 80-10-00
2	Remove the belt tensioner.	Section 85-40-00 para 2.A.
3	Drain the engine oil from the oil sump.	Section 79-20-00 para 5.A.
4	Remove the oil filter housing drain line.	Section 79-20-00 para 4.A.
5	Disconnect the cable from the crankshaft sensor (CRS).	
6	Disconnect the cable from the oil level sensor (MOK).	Section 79-30-00 para 2.A.
7	Remove the "Engine Mounting Arm FWD LH" of the engine bearing	
8	Remove the 3 screws of the Engine Mounting Arm REAR LH installed onto the oil sump.	
9	Tilt engine as far to the right as possible with the remaining 2 engine bearings	
10	Remove the screws that attach the oil sump to the crankcase	Fig. 79-2
11	Carefully remove the oil sump.	Fig. 79-2

2.2.2 Oil repellent removal

- a) Remove oil repellent screws (7x M6; 2x M10 with washers) acc. to Fig. 3
- b) Remove the oil repellent.

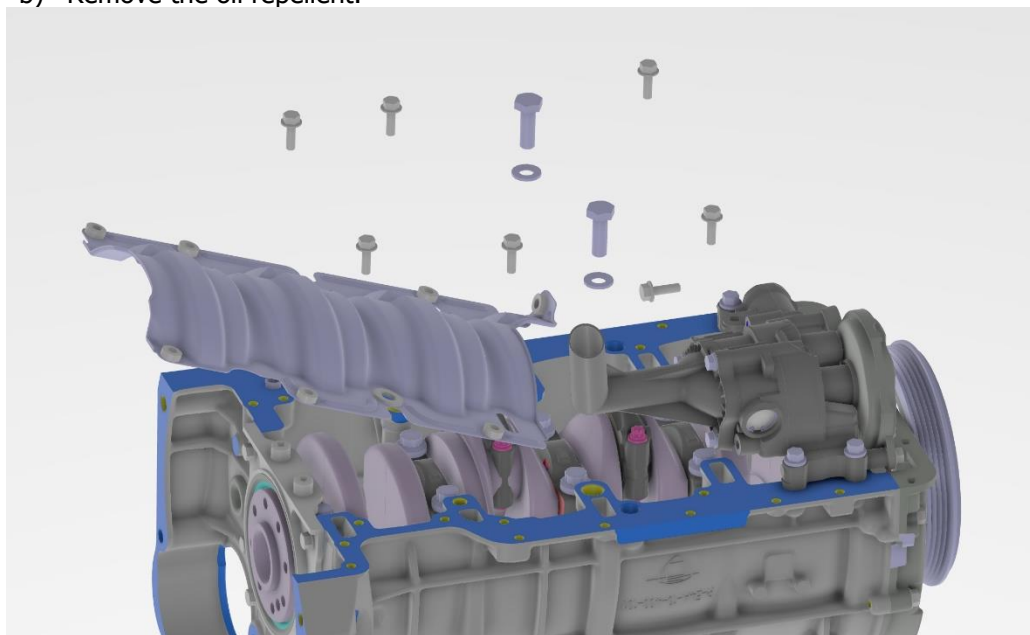



Fig. 3 oil repellent removal

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2.2.3 Oil pump drive removal

- a) Loosen two screws [01] that attach the chain cover [02] to the oil pump and remove the chain cover.

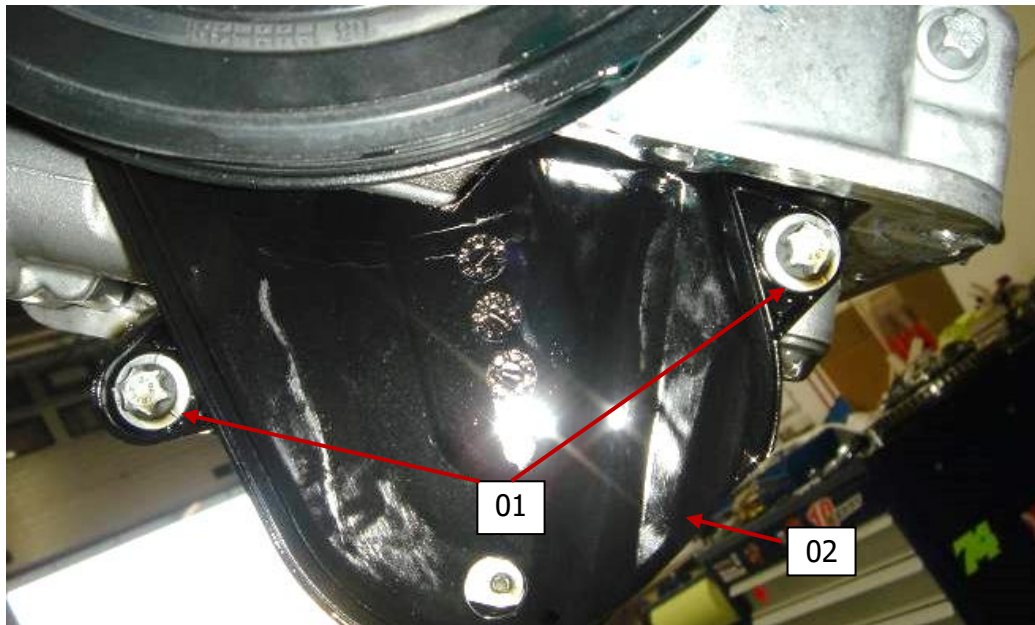



Fig. 4 oil pump chain cover removal

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- Remove three screws [03] that attach the oil pump to the crankcase.

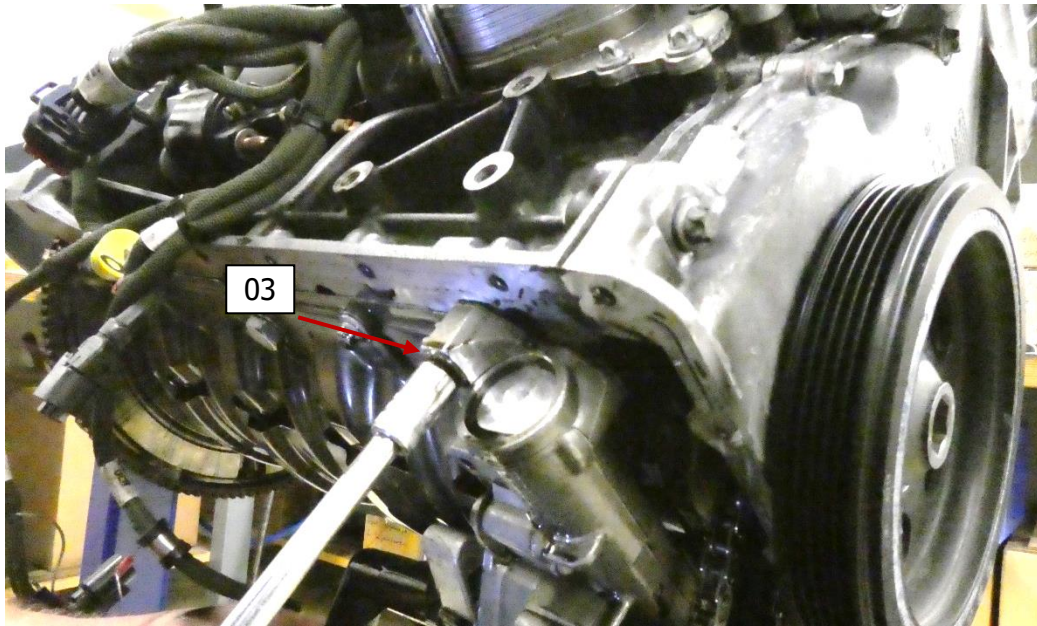


Fig. 5 oil pump screw removal (1)

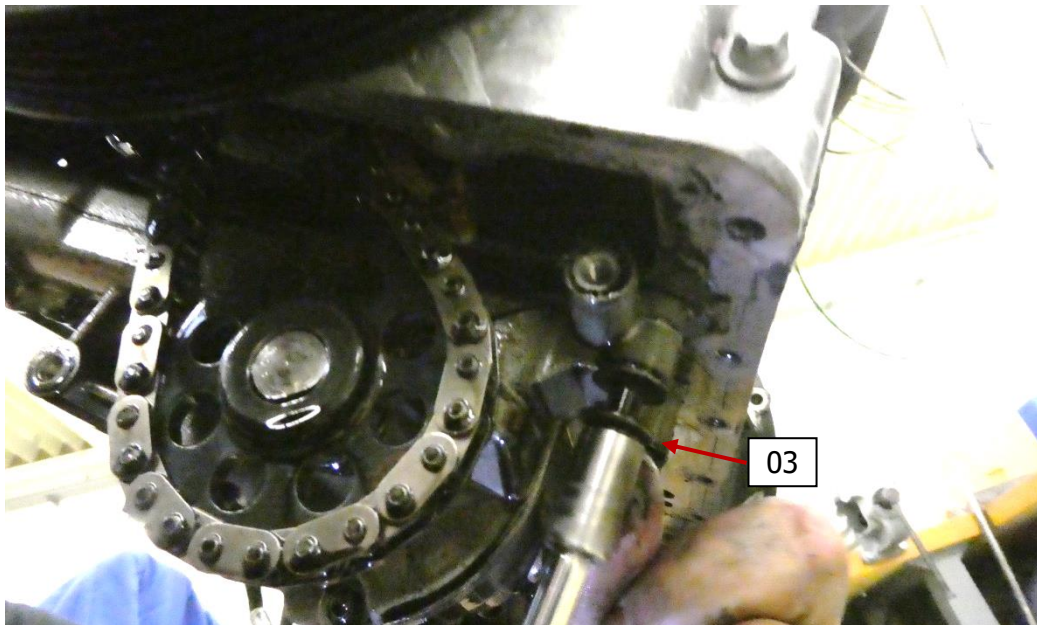



Fig. 6 oil pump screw removal (2)

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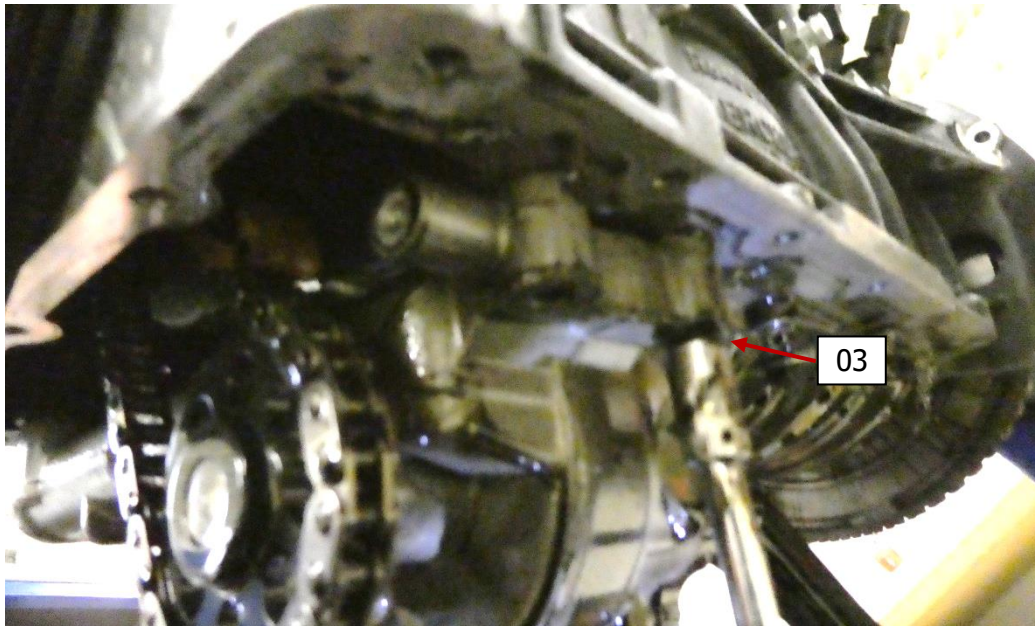


Fig. 7 oil pump screw removal (3)


- a) Loosen the oil pump chain gear from the oil pump chain.
- b) Remove the oil pump.
- c) Examine the oil pump for blockage. Make sure that the pump gears move freely when turned by hand.



Fig. 8 oil pump removal



In case of a blocked, partially blocked, and/or damaged oil pump, please contact Austro Engine for further instructions.

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2.3 Main bearing screws replacement



- i. Only the screws of the inner three main bearings are replaced (Screws No. 3, 4, 5, 6, 7 and 8)!
The screws of the outer bearings (1,2,9 and 10) must not be loosened!
- ii. The bearing caps stay in place! Do not remove them from the engine!
- iii. The screws of the con-rods must not be loosened!



Following pictures are only for reference, parts may differ slightly.

- a) Loosen the six screws of the inner three main bearings. Leave the loosened screws hand-tight in place until the last of the six screws is loosened.



CAUTION:
REMOVE ONE BEARING CAP SCREW AT A TIME; OTHERWISE, THE BEARING CAPS MIGHT FALL OUT OF PLACE.

- b) Apply engine oil thoroughly to the head contact surface and the thread of the new screws.
- c) First replace only the lower three screws, leaving the old upper three screws retaining the bearing caps (see Fig. 9).

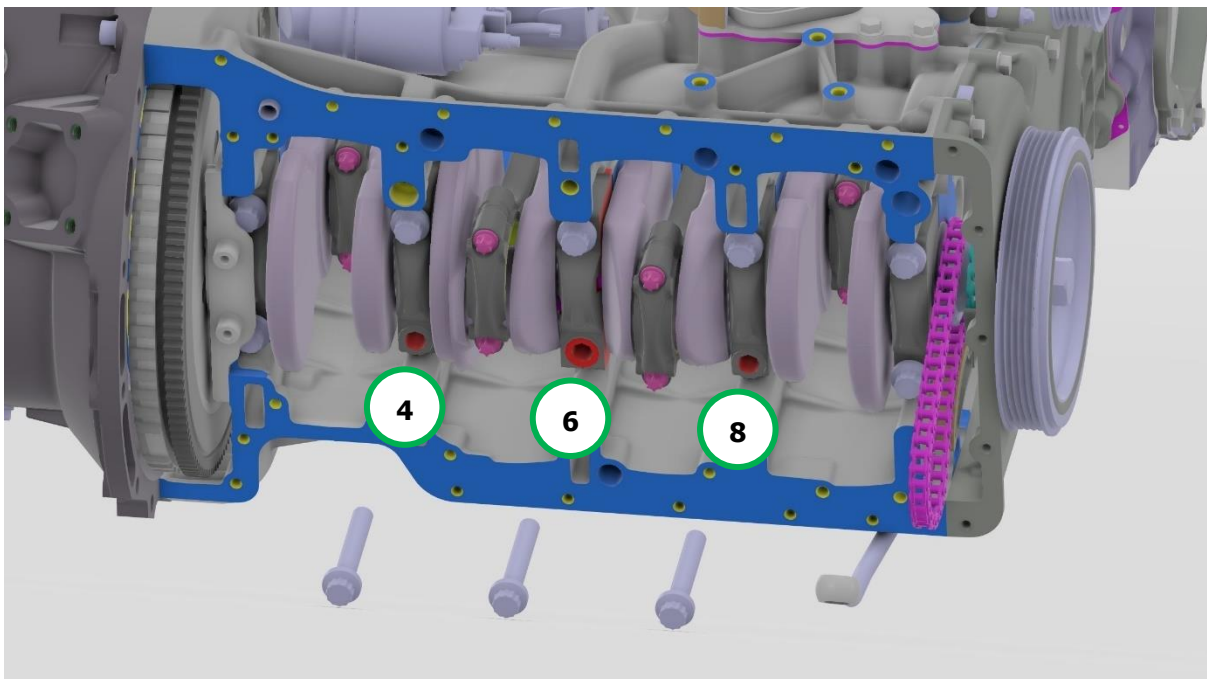



Fig. 9 replacement of screws No. 4,6,8

- d) Insert the new screws to the lower positions of the bearing shells and torque it to 10Nm.

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e) Now remove the upper three screws, insert the new ones and torque it to 10Nm (see Fig. 10)

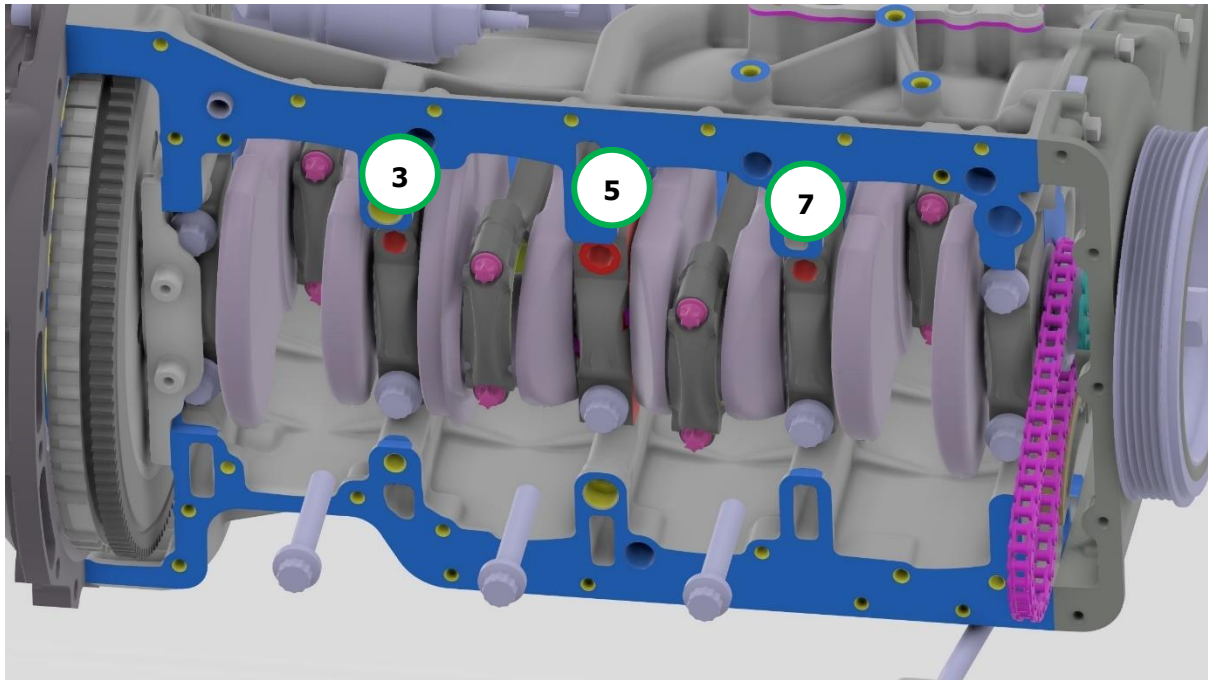



Fig. 10 replacement of screws No. 3,5,7

- f) Apply 55Nm to screws No 3 – 8 (Sequence: 5 – 6 – 3 – 4 – 7 – 8). The shown sequence must be followed.
- g) Tighten the screws another 90°. This may be done in max.3 directly consecutive steps (3x30°). Start with the center bearing (Sequence: 5 – 6 – 3 – 4 – 7 – 8). The shown sequence must be followed. It is recommended to use a rotation angle measurement device.
- h) Check the ease of movement of the crankshaft after replacement, compared to the one before replacement of the screws by slightly turning it back and forth on the flywheel gearing (or from the propeller, or from the propeller flange) by hand. If the crankshaft ease of movement is significantly less than the one before replacement of the screws repeat the chapter 2.3 procedure, or contact Austro Engine Tech Support

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2.4 Reassembly of the engine

2.4.1 Oil pump installation

- i) Make sure that the circlips [04] (E4A-50-300-801) [05] (E4A-50-400-801) used to secure both plugs on the oil pump are in the correct position.

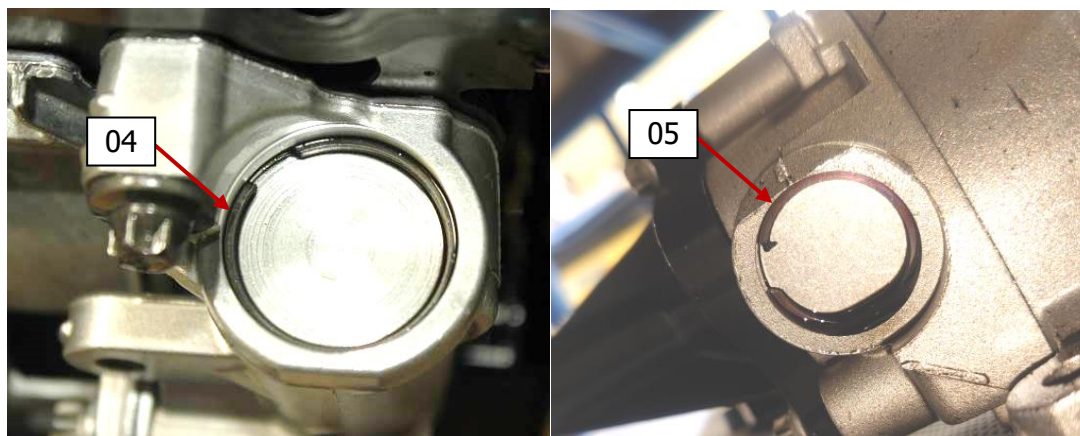


Fig. 11 circlips to check

- j) Install the new O-Ring between the oil pump and the crankshaft housing, make sure it is correctly fitted (see Fig. 12 and Fig. 13)

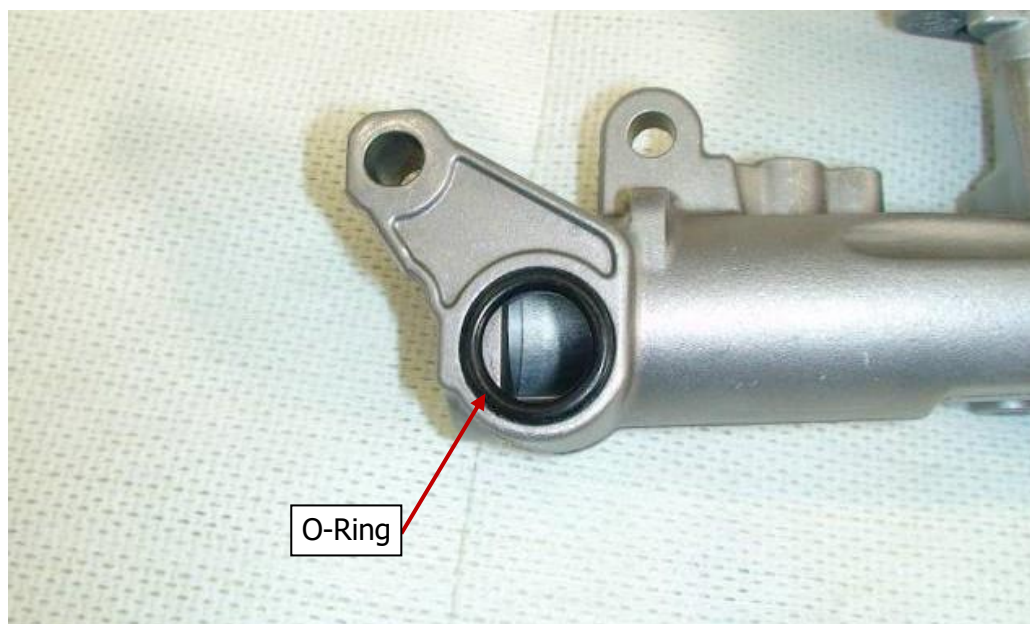


Fig. 12 Oil pump o-ring


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Fig. 13 Oil pump o-ring

- k) Apply some approved engine oil (refer to the MM) on the chain before installation.
- l) Install the oil pump chain onto the oil pump sprocket



Fig. 14 Oil pump chain installation

- m) Install the oil pump with O-Ring and three screws [04] (M7x27) on the crankcase. (see Fig. 15, Fig. 16 and Fig. 17)
- n) Apply Loctite 2701 or 278 on the thread and tighten with a torque of 14 Nm.

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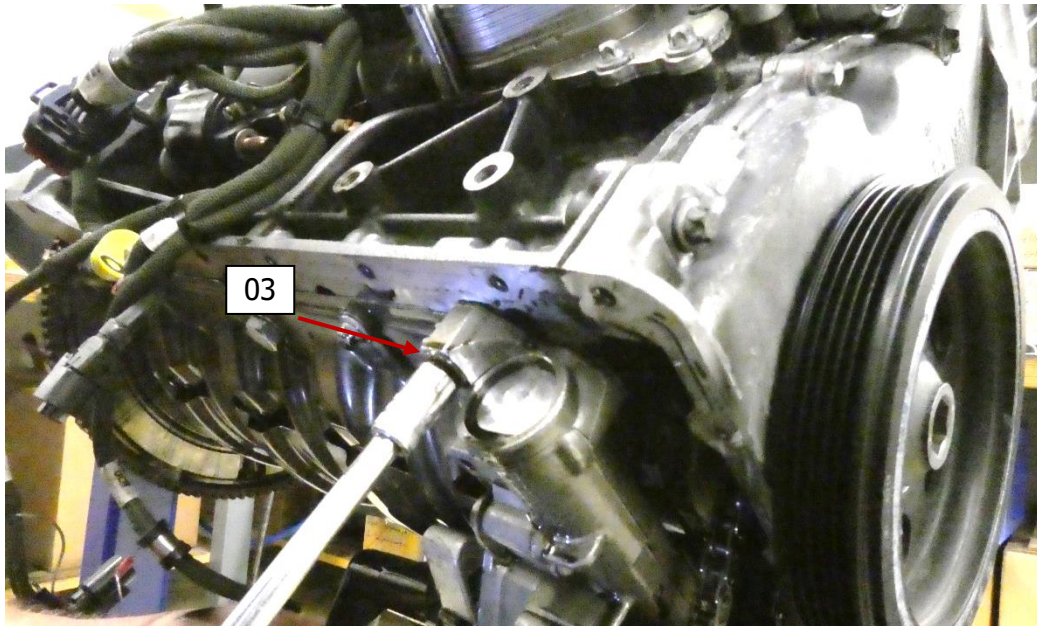


Fig. 15 oil pump screw (1)

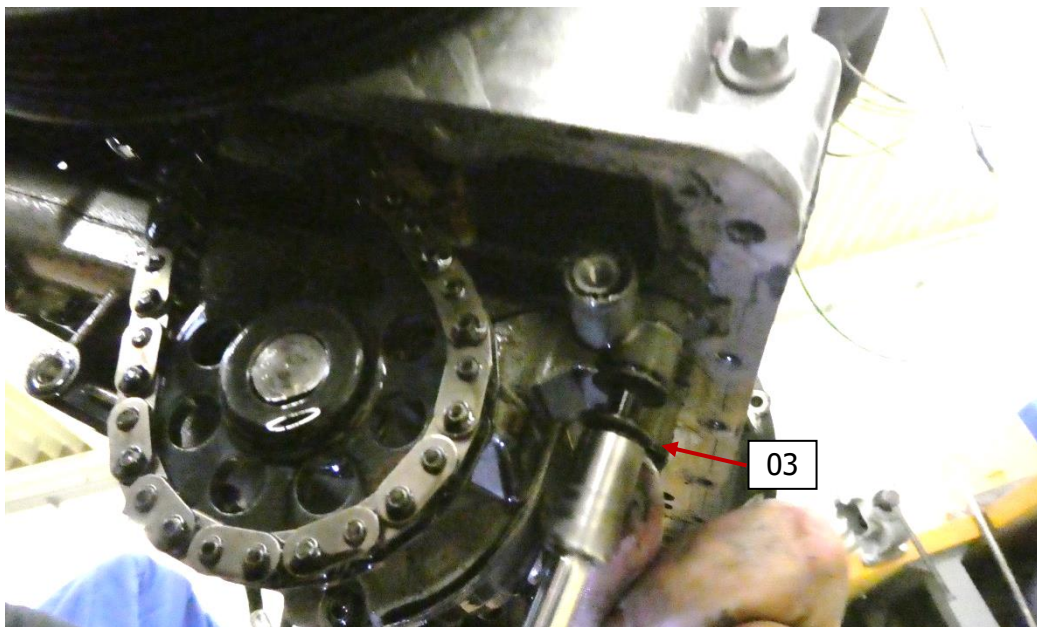



Fig. 16 oil pump screw (2)

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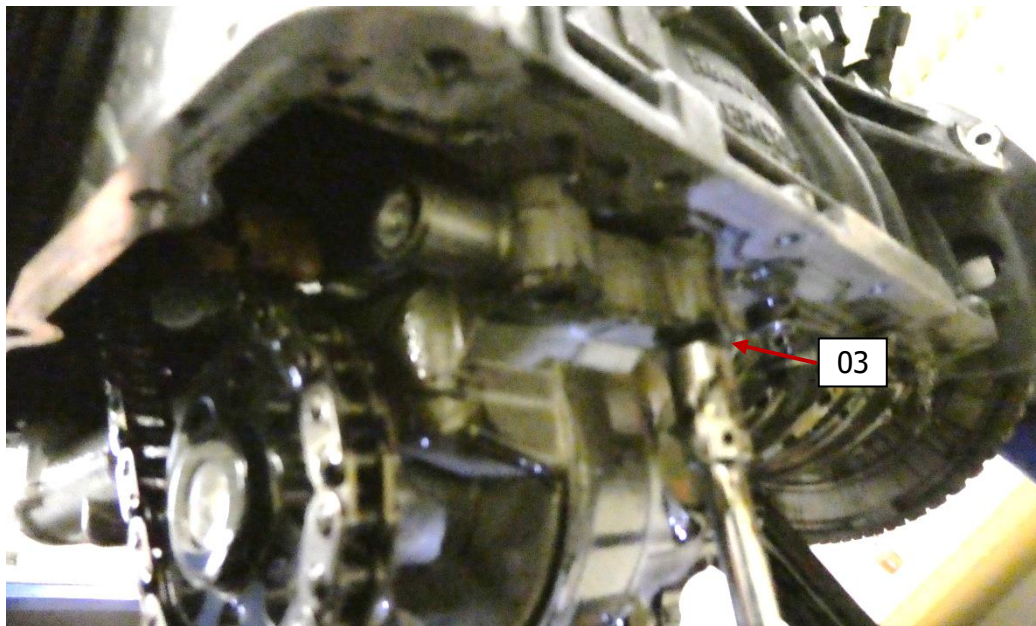


Fig. 17 oil pump screw (3)

2.4.2 Oil pump chain cover installation

- o) Slide the chain cover [02] in place on the oil pump and tighten the screws [01] (ISO8102-M6x20) (x2) with 12 Nm

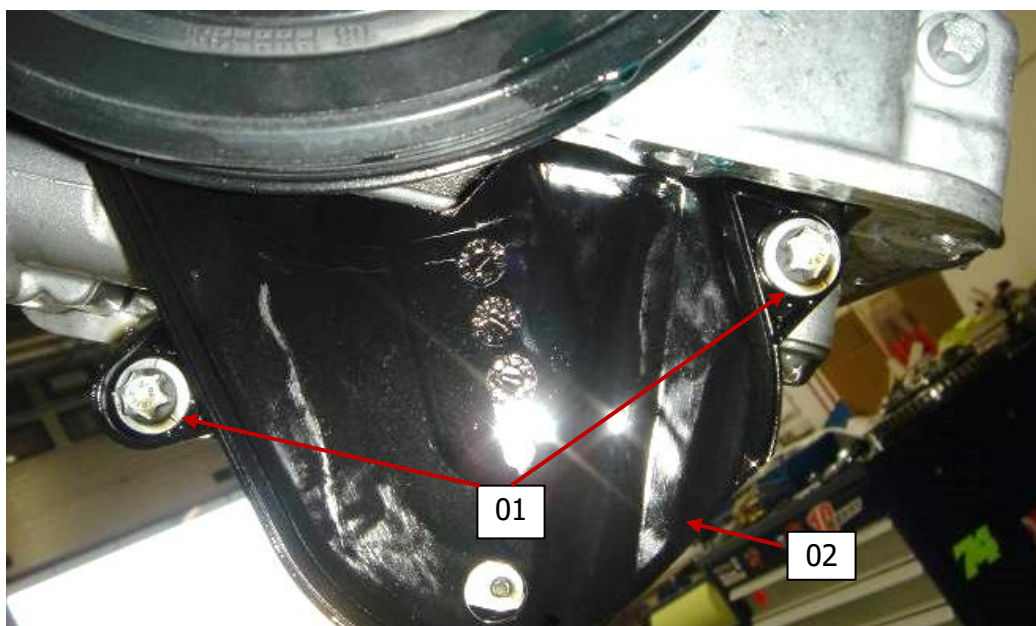



Fig. 18 oil pump chain cover installation

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2.4.3 Oil repellent installation

- a) Place the oil repellent [06] on the crankcase by sliding it underneath the oil pump suction pipe acc. to Fig. 19
- b) Tighten the screws with the following torques:
 - 7x M6 [07] with 12 Nm and Loctite 243 applied on the thread;
 - 2x M10 [08] and washer with 53 Nm and Loctite 243 applied on the thread.

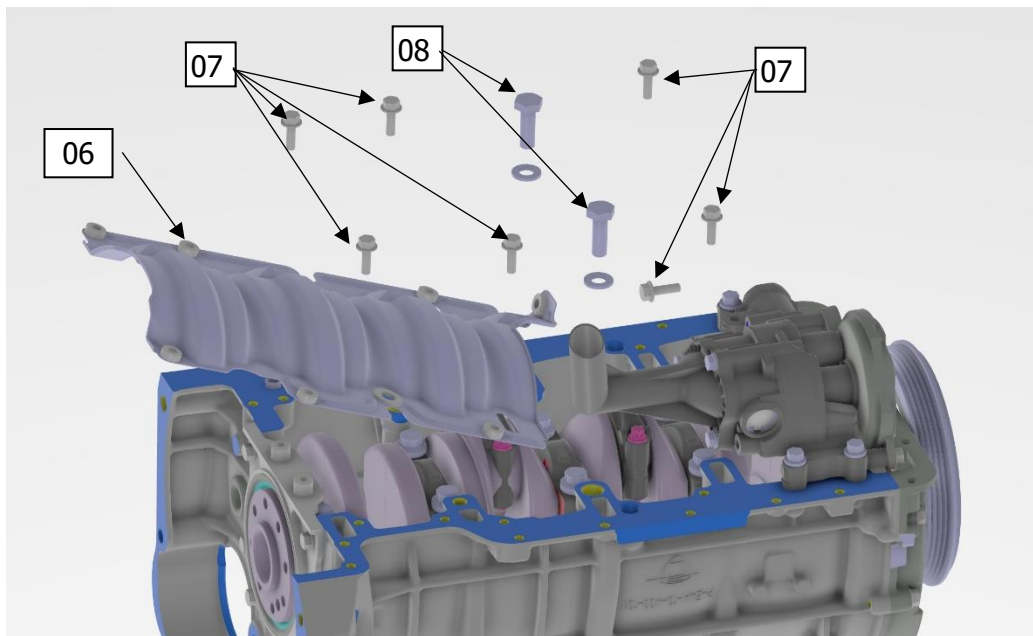



Fig. 19 oil repellent installation

2.4.4 Oil sump installation

- a) Install the oil sump, reversing the steps listed in the procedure 2.2.1
- b) NAS1758L8 Engine Munt Locking Nut can be reused provided:
 - The nut must be free of:
 - Defects,
 - Excessive wear and
 - Excessive corrosion
 - The minimum remainin torque must be greater than 1.1 Nm (10 in.lb) (ref. to FAA AC 43.13-1B ch.7)
 - The self-locking nut must be secured with Loctite 243 or equivalent

2.4.5 Final procedures

- a) Fill up the engine oil according to Maintenance Manual, Ch. 79.
- b) Reinstall aircraft related parts acc. to aircraft manufacturers manual
- c) Fill up all operating fluids
- d) Conduct a ground run acc. to Chapter 3

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3 Power evaluation after screw replacement

After the main bearing screw replacement procedure as outlined in **Chapter 2** has been carried out, do the following power evaluation procedure:


- c) Start the engine and let it warm up with <20% power lever until all following conditions are reached:
- d) Engine oil temperature >50°C
- e) Coolant temperature >60°C
- f) Gearbox oil temperature >35°C
- g) Conduct engine power evaluation as described in Chapter 1. The data collected before and after replacement can be compared in case of different engine behaviour.



For engine core: compare the data with the ground run performed with the old engine core.

For new engine: compare the data with the previous download.

- h) Cool down the engine (approx. 2min idle)
- i) Shut down the engine
- j) Check entire engine installation for leaks and abnormalities.


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4 Tools and Consumable

Consumable List

Consumables	Material definition	Parts applicability
Sealant	MERCEDES BENZ A003989982010 Alternative: Loctite No. 5970, 5900 or 5910	Oil Sump
	Dow Corning 736 Heat Resistant/Sealant	Service lid and fire sleeves
	Loctite No. 5970, alternative 5900 or 5910	Engine sealants
Screw lock	Loctite No. 243 Loctite No. 2701 or 278	Screw locks For applicability refer to the relevant chapters of this document.
	Loctite No. 542	Thread sealant
Grease Lubricant (acid-free lubrication)	Released AE300 engine oils which are defined in the AE300 Operation Manual.	O-ring and Rubber Gaskets
Safety wire	Suitable for flight purposes stainless safety wire. Wire thickness 0.81 mm	For applicability refer to the relevant chapters of this manual
Cleaning agent	customary brake cleaner	parts cleaning

■ Refer also to the Maintenance Manual E4.08.04.

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5 Shipping Info

Removed parts shall be quarantined for 6 month and eventually destroyed.

6 Remarks

NOTE:

- k) All measures must be carried out by an authorized diamond service center.
- l) The accomplishment of the instructions shown must be confirmed in the respective engine log book.
- m) Replace the main bearing screws in accordance with MSB-E4-042 and mark the Service Bulletin as executed in the engine logbook and via Diamond Partners Portal;
- n) In case of doubt, please contact Austro Engine GmbH via the Diamond Partners Portal
 - o If you are not a Diamond Partner / Service Centre, please contact a Diamond Authorized Service Centre near you.

7 Referenced Documents

- Maintenance Manual, Doc. E4.08.04, latest revision
- MSB-E4-042, latest revision

8 Appendix

None