
SERVICE INFORMATION LETTER NO. SI62-032

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

See Austro Engine MSB-E4-036, latest approved revision

1.2 Subject

Austro Engine Mandatory Service Bulletin MSB-E4-036 - High Pressure Pump (HPP) Inspection and Replacement, and EASA AD 2021-0274-E.

ATA-Code: 72-00

1.3 Reason

Occurrences of HPP driving gear failure causing uncommanded engine shutdown have been reported. Investigation has revealed that improper use of an assembly tool was causing certain HPP driving gears to fail prematurely. During this investigation, it was discovered that certain combinations of engine components such as cylinder heads, camshafts, and HPP gears were contributing to premature HPP gear failure. Austro Engine has issued MSB-E4-036, which incorporates the requirements of MSB-E4-034 and MSB-E4-035, both of which were previously issued to address premature failures of the HPP driving gear.

EASA has issued AD 2021-0274-E mandating the execution of MSB-E4-036.

1.4 Information

For detailed technical information, refer to the latest approved revision of Austro Engine MSB-E4-036, and EASA AD 2021-0274-E, which are applicable without any further additions or restrictions.

Austro Engine MSB-E4-036 at revision 0, and EASA AD 2021-0274-E are attached to this SIL. In case of doubt, contact Austro Engine GmbH.

Diamond Aircraft Industries
SERVICE INFORMATION LETTER



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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Emergency Airworthiness Directive

AD No.: 2021-0274-E

Issued: 09 December 2021

Note: This Emergency 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, 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 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: 13 December 2021

TCDS Number(s): EASA.E.200

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2021-0203R1 dated 24 September 2021.

ATA 72 – Engine – High Pressure Pump Driving Gear – Inspection / Replacement

Manufacturer(s):

Austro Engine GmbH

Applicability:

Model 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 SB: Austro Engine Service Bulletin (SB) MSB-E4-036.

Affected cylinder head/HPP driving gear combination: Cylinder heads, having Part Number (P/N) E4A-12-500-000, if installed in combination with a high pressure pump (HPP) driving gear P/N E4A-30-000-601 (any revision) or P/N E4A-30-000-201 rev. AB.1.

Affected HPP driving gear: HPP driving gears, having P/N E4A-30-000-201 and having a s/n as listed in Table 1 of the SB, as defined in this AD.



Serviceable part: Any HPP driving gear, eligible for installation, which is not an affected part, provided its installation does not introduce an affected cylinder head/HPP driving gear combination on the engine.

Groups: Group 1 are Model E4 engines in configuration “-A”, installed on single engine aeroplanes. Group 2 are Model E4 engines in configuration “-B” or “-C” and Model E4P engines, installed on twin-engine aeroplanes.

Reason:

Occurrences were reported of HPP driving gear failure. Subsequent investigation determined that a certain batch of HPP driving gears was produced with a worn out assembly tool P/N AE300T012-1. Those HPP driving gears may have been damaged during assembly. Concurrently, it was determined that, for engines equipped with a certain cylinder head, a stack up of tolerances exists between the cylinder head, cylinder head backside cover, camshaft gear and HPP driving gear. Both scenarios could result in premature HPP driving gear failure.

This condition, if not detected and corrected, could lead to engine in-flight shut-down with consequent forced landing, possibly resulting in damage to the aeroplane and injury to occupants.

To address this potential unsafe condition, Austro Engine published MSB-E4-035 to provide instructions for HPP driving gear inspection on engines equipped with a cylinder head P/N E4A-12-500-000, and MSB-E4-034/1 to provide instructions for replacement of affected HPP gears, as defined in this AD. Consequently, EASA issued Emergency AD 2021-0203-E (later revised) to require inspection and/or replacement of HPP gears.

Since that AD was issued, it has been determined that an affected cylinder head/HPP driving gear combination, as defined in this AD, may cause damage to the HPP driving gears. Austro Engine issued the SB, as defined in this AD, incorporating the requirements of MSB-E4-034/1 and MSB-E4-035, to provide instructions for HPP driving gear inspection and replacement. The SB also prohibits (re-)installation of a HPP driving gear E4A-30-000-601 or P/N E4A-30-000-201 rev. AB.1 on engines having a cylinder head P/N E4A-12-500-000 installed. The SB further removes from the list of affected HPP driving gears certain engines and HPPs, which were reworked by Austro Engine pending approval of MSB-E4-034.

For the reason described above, this AD partially retains the requirements of EASA AD 2021-0203R1, which is superseded, and requires replacement of the HPP driving gear on engines with an affected cylinder head/HPP driving gear combination installed. This AD also provides requirements for HPP driving gear installation.

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

Required as indicated, unless accomplished previously:

Inspection and Replacement:

- (1) For engines equipped with an affected cylinder head/HPP driving gear combination: Before next flight after the effective date of this AD, inspect and replace the HPP driving gear in accordance with the instructions of the SB.



Corrective Action(s):

- (2) If, during the inspection as required by paragraph (1) of this AD, the HPP driving gear does not meet the acceptable criteria, as defined in the SB, before next flight, inspect the HPP shaft, the cylinder head, the camshaft gear and the inlet/outlet camshaft bushing in accordance with the instructions of the SB and, depending on findings, replace the parts with serviceable parts in accordance with the instructions of Austro Engine E4/E4P Maintenance Manual, Doc. No. E4.08.04, chapter 85.

Replacement:

- (3) For engines equipped with an affected HPP driving gear: Within the compliance time specified in Table 1 of this AD, as applicable, replace each affected HPP driving gear with a serviceable part in accordance with the instructions of the SB.

Table 1 – HPP Driving Gear Replacement

Engine Group / Flight Hours (FH) accumulated (see Note 1)		Compliance Time
1	40 FH or more	Before next flight after 14 September 2021 [the effective date of EASA AD 2021-0203-E]
	less than 40 FH	Before exceeding 40 FH
2	80 FH or more	Before next flight after 14 September 2021 [the effective date of EASA AD 2021-0203-E]
	less than 80 FH	Before exceeding 80 FH

Note 1: Unless specified otherwise, the FH in Table 1 of this AD are those accumulated by the affected HPP driving gear since first installation on the HPP.

Credit:

- (4) Inspection and replacement of the HPP driving gear on an engine, accomplished before the effective date of this AD in accordance with the instructions of MSB-E4-034 Revision 1 or MSB-E4-035, as applicable, are acceptable to comply with the requirements of paragraphs (1) to (3) of this AD for that engine, provided no affected cylinder head/HPP driving gear combination has been installed on that engine at any time after that inspection.

Ferry Flight:

- (5) For a twin-engine aeroplane that has one or two Group 2 engine(s) installed, a single ferry flight is allowed to position that aeroplane to a location where the actions required by this AD can be accomplished on the affected engine(s).

Part(s) Installation:

- (6) From the effective date of this AD, do not install an affected HPP gear on any engine.
- (7) From the effective date of this AD, do not install an affected cylinder head/HPP driving gear combination on any engine.



Ref. Publications:

Austro Engine SB MSB-E4-036 original issue dated 30 November 2021.

Austro Engine E4/E4P Maintenance Manual, Doc. No. E4.08.04 rev. 30 dated 01 July 2021.

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

Austro Engine SB MSB-E4-034 Revision 1 dated 10 September 2021.

Austro Engine SB MSB-E4-035 original issue dated 10 September 2021.

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, Telephone +43-2622-23000-2525, E-mail support@austroengine.at.



MANDATORY SERVICE BULLETIN

No. MSB-E4-036

Supersedes MSB-E4-035 and MSB-E4-034

Distribution:	Portal
Date:	01.12.2021

1. Basic information

1.1. Subject

High Pressure Pump (HPP) Inspection and Replacement

1.2. Record of revisions

Rev.	Date	Reason
0	30.11.2021	Initial release

1.3. Definitions and Acronyms


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


CH:	Cylinder Head
FH:	Flight Hours
HPP:	High Pressure Pump
n/a:	Not applicable
p/n or p/ns:	Part number or Part Numbers
SB:	Service Bulletin
s/n or s/ns:	Serial Number or Serial Numbers
Group 1 engines:	Model E4 engines in configuration “-A”, installed on single engine aeroplanes
Group 2 engines:	Model E4 engines in configuration “-B” or “-C” and Model E4P engines, installed on twin-engine aeroplanes
Serviceable part:	Any HPP driving gear, eligible for installation, which is not an affected part


First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		1-31

1.4. Engines affected

Engine affected:	E4 Series
Serial numbers affected:	All E4/E4P engine s/ns having an affected CH installed All E4/E4P engine s/ns having an affected HPP gear installed
Affected HPP gear:	HPP driving gear p/n E4A-30-000-201 having s/n listed in the following Table 1
Affected cylinder head:	CH p/n E4A-12-500-000, installed in combination with a HPP gear p/n E4A-30-000-601 (any revision) or p/n E4A-30-000-201 rev. AB.1

 **Note:** Table 1 lists the s/ns of the affected driving gears installed on certain batches of HPP p/n E4A-30-000-000 and E4A-30-000-BHY. To determine if an affected part is installed, s/ns of the HPP on which an affected part is installed and the engine s/n on which such HPP is installed are provided. Where the engine s/n is not indicated, the HPP was provided as a spare part. Please note that only the gear s/ns identify an affected part, engine and HPP s/ns are provided for reference only

 **Note:** To identify the cylinder head installed, refer to the maintenance manual E4.08.04 chapter 85. Additional Cylinder Head identification methods are provided in the Service Instruction no. SI-E4-016

 **Note:** In respect of the Service Bulletin no. MSB-E4-034, engines and parts were reworked by Austro Engine pending approval of the initial release. To ease the identification, removed s/ns are marked in grey and strikethrough (~~example~~)


 **Note:** For these engines where the MSB-034 or/and MSB-035 were performed, refer to the paragraph 1.9 for compliance credits

Table 1 – Affected HPP driving gear serial numbers

High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N
19-09-11-02-01162	0246		20-06-18-02-00889	1049		20-10-26-02-00628	1950	
19-09-11-02-01167	0414	E4-C-05107	20-06-18-02-00890	1051		20-10-26-02-00629	1968	
19-09-11-02-01168	0270	E4P-C-05003	20-06-18-02-00891	1001		20-10-26-02-00630	1775	
19-09-11-02-01169	0240		20-06-18-02-00893	1028	E4-A-00198	20-10-26-02-00631	1773	
19-09-11-02-01170	0410	E4P-C-05005	20-06-18-02-00894	0550		20-10-26-02-00632	1903	
19-09-11-02-01171	0412	E4-A-00232	20-06-18-02-00895	1041	E4-C-06042	20-10-26-02-00633	1211	
19-09-11-02-01172	0415	E4-C-05109	20-06-18-02-00896	1048	E4-C-06031	20-10-26-02-00634	1233	
19-09-11-02-01189	0382		20-06-18-02-00897	1030		20-10-26-02-00635	1363	E4-A-06082
19-09-11-02-01190	0267		20-06-18-02-00898	1027		20-10-26-02-00637	1785	
19-09-11-02-01191	0258		20-06-18-02-00899	1056	E4P-C-06027	20-10-26-02-00638	1958	
19-09-11-02-01192	0256		20-06-18-02-00900	0664	E4-A-06021	20-10-26-02-00639	1887	
19-09-11-02-01193	0261		20-06-18-02-00901	1114		20-10-26-02-00640	1982	
19-09-11-02-01194	0257		20-06-18-02-00902	0979		20-10-26-02-00641	1953	
19-09-11-02-01195	0264		20-06-18-02-00903	1061		20-10-26-02-00642	1811	
19-09-11-02-01196	0255		20-06-18-02-00904	0762		20-10-26-02-00643	1818	
19-09-11-02-01197	0274		20-06-18-02-00905	0756		20-10-26-02-00644	1890	
19-09-11-02-01198	0408		20-06-18-02-00906	1060	E4-A-00475	20-10-26-02-00645	1781	
19-09-11-02-01199	0272		20-06-18-02-00907	1023	E4-A-00408	20-12-14-02-00002	1955	
19-09-11-02-01200	0333		20-06-18-02-00908	1073		20-12-14-02-00003	1449	E4-A-06088

First Issue Date			Rev. No.		Revision Date		Page
30	Nov.	2021	---	---	---	---	2-31

Mandatory Service Bulletin No. MSB-E4-036

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High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N
19-09-11-02-01201	0332		20-06-18-02-00909	1042		20-12-14-02-00004	1976	
19-09-11-02-01202	0244		20-06-18-02-00910	1066	E4-C-06043	20-12-14-02-00005	1938	
19-09-11-02-01203	0330		20-06-18-02-00911	0766		20-12-14-02-00006	1816	
19-09-11-02-01204	0383		20-06-18-02-00912	1046		20-12-14-02-00007	1947	
19-09-11-02-01205	0254		20-06-18-02-00913	1044		20-12-14-02-00009	1929	
19-09-11-02-01206	0324		20-06-18-02-00914	1103	E4-C-06032	20-12-14-02-00010	1988	
19-09-11-02-01207	0262		20-06-18-02-00915	1128	E4-B-00112	20-12-14-02-00011	1799	
19-09-11-02-01208	0237		20-06-18-02-00916	0699		20-12-14-02-00012	1986	
19-09-11-02-01209	0329		20-06-18-02-00917	1026	E4-A-00214	20-12-14-02-00013	1936	
19-09-11-02-01210	0386		20-06-18-02-00918	1100		20-12-14-02-00014	1368	
19-09-11-02-01211	0265		20-06-18-02-00919	1069		20-12-14-02-00017	1940	
19-10-01-02-00755	0233		20-06-18-02-00920	0723	E4-A-06025	20-12-14-02-00020	1422	E4-A-06080
19-10-01-02-00756	0224	E4-B-05006	20-06-18-02-00921	1127		20-12-14-02-00021	1941	
19-10-01-02-00760	0226	E4-B-05004	20-06-18-02-00922	1034	E4-A-00367	20-12-14-02-00024	1779	
19-10-01-02-00763	0241	E4-B-05001	20-06-18-02-00923	1032		20-12-14-02-00025	1946	
19-10-01-02-00764	0416		20-06-18-02-00924	1036		20-12-14-02-00026	1974	
19-10-01-02-00768	0260		20-06-18-02-00925	1094		20-12-14-02-00028	1969	
19-10-01-02-00772	0268	E4-A-05086	20-06-18-02-00926	1011	E4-A-06061	20-12-14-02-00035	1921	
19-10-01-02-00775	0248		20-06-18-02-00927	1038		20-12-14-02-00036	1817	
19-10-01-02-00779	0370		20-06-18-02-00928	1031	E4-C-00041	20-12-14-02-00038	1881	
19-10-01-02-00784	0231		20-06-18-02-00929	1037		20-12-14-02-00039	1346	
19-10-01-02-00786	0242		20-06-18-02-00930	1015	E4-A-00604	20-12-14-02-00043	1830	
19-10-01-02-00788	0235		20-06-18-02-00931	0632	E4-A-06024	20-12-14-02-00048	1178	
19-10-01-02-00790	0266		20-06-18-02-00932	1082		20-12-14-02-00052	1350	E4-C-00604
19-10-01-02-00796	0131	E4-C-05106	20-06-18-02-00933	1024	E4-A-06060	20-12-14-02-00053	1437	
19-10-01-02-00804	0228	E4-B-05002	20-06-18-02-00934	0833	E4-A-00456	20-12-14-02-00059	1167	
19-10-01-02-00809	0227	E4-A-05085	20-06-18-02-00935	1012		20-12-14-02-00064	1405	
19-10-14-02-00404	0222		20-06-18-02-00936	1006		20-12-14-02-00065	1331	E4-A-06076
19-10-14-02-00405	0247	E4-C-05110	20-06-18-02-00937	1021		20-12-14-02-00069	1434	E4-A-06087
19-10-14-02-00409	0364	E4-A-05084	20-06-18-02-00938	1004		20-12-14-02-00073	1375	
19-10-14-02-00410	0253		20-06-18-02-00939	0622		20-12-14-02-00074	1389	E4-A-06092
19-10-14-02-00415	0365	E4-C-05105	20-06-18-02-00940	0729		20-12-14-02-00075	1403	E4-C-06057
19-10-14-02-00416	0232		20-06-18-02-00941	0585		20-12-14-02-00079	1342	
19-10-14-02-00420	0236		20-06-18-02-00942	0769		20-12-14-02-00080	1380	
19-10-14-02-00432	0229	E4-B-05008	20-06-18-02-00943	0830		20-12-14-02-00081	1343	E4-A-06068
19-10-14-02-00437	0411	E4-A-05075	20-06-18-02-00944	0849		20-12-14-02-00086	1400	E4P-C-06049
19-10-14-02-00438	0239	E4-B-05005	20-06-18-02-00945	0820		21-02-08-02-00002	1349	
19-10-14-02-00446	0374	E4-A-05087	20-06-18-02-00946	0571		21-02-08-02-00003	1446	
19-10-14-02-00454	0193	E4P-B-05004	20-06-18-02-00947	0825	E4-A-06030	21-02-08-02-00004	1319	E4-A-00115
19-10-14-02-00457	0251	E4-C-05108	20-06-18-02-00948	0683	E4-A-06013	21-02-08-02-00005	1340	E4-B-00541
19-12-12-02-00002	0195	E4-A-05081	20-06-18-02-00949	0734		21-02-08-02-00006	1439	E4P-C-06056
19-12-12-02-00004	0366		20-06-18-02-00950	0738		21-02-08-02-00007	1402	
19-12-12-02-00005	0169		20-06-18-02-00951	1081		21-02-08-02-00008	1384	
19-12-12-02-00009	0363		20-06-18-02-00952	0690		21-02-08-02-00009	1412	
19-12-12-02-00011	0358		20-06-18-02-00953	0827		21-02-08-02-00010	1372	
19-12-12-02-00015	0190		20-06-18-02-00954	0641		21-02-08-02-00011	1355	E4-A-06095
19-12-12-02-00016	0376		20-06-18-02-00955	0805		21-02-08-02-00013	1163	E4-C-06055
19-12-12-02-00017	0369	E4-A-05079	20-06-18-02-00956	0625		21-02-08-02-00015	1479	
19-12-12-02-00020	0146		20-06-18-02-00957	0792		21-02-08-02-00016	1432	
19-12-12-02-00023	0225		20-06-18-02-00958	0815		21-02-08-02-00017	1360	
19-12-12-02-00029	0361	E4P-C-05001	20-06-18-02-00959	0840		21-02-08-02-00018	1383	
19-12-12-02-00031	0372	E4P-C-05004	20-06-18-02-00960	0839		21-02-08-02-00019	1329	
19-12-12-02-00032	0127		20-06-18-02-00961	0644	E4P-C-06008	21-02-08-02-00020	1330	E4-A-06085
19-12-12-02-00033	0177		20-06-18-02-00962	0802	E4-A-00323	21-02-08-02-00021	1435	
19-12-12-02-00034	0179		20-06-18-02-00963	0810	E4-C-00091	21-02-08-02-00022	1410	
19-12-12-02-00035	0118		20-06-18-02-00964	0793		21-02-08-02-00023	1373	E4-C-00344
19-12-12-02-00039	0223		20-06-18-02-00965	0966		21-02-08-02-00024	1395	
19-12-12-02-00046	0367	E4-C-05111	20-06-18-02-00966	0783		21-02-08-02-00025	1367	E4-C-06068
19-12-12-02-00047	0120	E4P-B-05003	20-06-18-02-00967	0848		21-02-08-02-00026	1320	
19-12-12-02-00048	0362		20-06-18-02-00968	0974		21-02-08-02-00027	1414	
19-12-12-02-00049	0197		20-06-18-02-00970	0736		21-02-08-02-00028	1392	
19-12-12-02-00057	0122		20-06-18-02-00971	0856		21-02-08-02-00029	1431	
19-12-12-02-00058	0155		20-06-18-02-00972	1079	E4-A-00507	21-02-08-02-00030	1333	E4-A-00504
19-12-12-02-00064	0205		20-06-18-02-00973	0732		21-02-08-02-00031	1493	
19-12-12-02-00065	0119	E4P-C-05002	20-06-18-02-00974	0674		21-02-08-02-00032	1376	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		3-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
Rudolf-Diesel-Strasse 11
A-2700 Wiener Neustadt
Tel: +43 2622 23000
FAX: +43 2622 23000-2711

High Pressure Pump S/N	Gear S/N	Engine S/N
19-12-12-02-00066	0407	E4-C-05112
19-12-12-02-00068	0263	E4-B-05012
19-12-12-02-00070	0371	E4-A-05083
19-12-12-02-00071	0238	E4-C-05117
19-12-12-02-00072	0413	E4-B-05007
19-12-12-02-00076	0117	
19-12-12-02-00077	0249	
19-12-12-02-00079	0245	E4-C-05116
19-12-12-02-00080	0409	E4-B-05010
20-01-15-02-00861	0271	E4P-C-05008
20-01-15-02-00864	0348	
20-01-15-02-00888	0425	
20-01-15-02-00912	0288	E4-C-00001
20-01-15-02-00926	0315	E4P-C-005011
20-01-15-02-00929	0385	
20-01-15-02-00933	0375	
20-01-15-02-00934	0180	E4-C-05093
20-01-15-02-00938	0360	
20-01-15-02-00939	0143	
20-01-15-02-00940	0250	E4-B-05003
20-01-15-02-00941	0147	
20-01-15-02-00942	0230	E4-A-05082
20-01-15-02-00943	0368	
20-01-15-02-00944	0252	
20-01-15-02-00945	0359	E4-C-05094
20-02-13-02-01378	0338	
20-02-13-02-01379	0399	E4P-C-05007
20-02-13-02-01380	0297	E4-C-05119
20-02-13-02-01381	0351	E4-A-05089
20-02-13-02-01382	0350	
20-02-13-02-01383	0393	
20-02-13-02-01384	0378	
20-02-13-02-01385	0380	
20-02-13-02-01386	0278	
20-02-13-02-01387	0286	E4-C-00263
20-02-13-02-01388	0273	
20-02-13-02-01389	0443	
20-02-13-02-01390	0284	E4-B-05009
20-02-13-02-01391	0296	E4-C-05115
20-02-13-02-01392	0419	E4-A-05088
20-02-13-02-01393	0334	
20-02-13-02-01394	0402	
20-02-13-02-01395	0314	
20-02-13-02-01396	0280	
20-02-13-02-01397	0381	
20-02-13-02-01398	0421	
20-02-13-02-01399	0319	E4-A-00487
20-02-13-02-01400	0259	
20-02-13-02-01401	0384	
20-02-13-02-01402	0377	
20-02-13-02-01403	0331	
20-02-13-02-01404	0345	
20-02-13-02-01405	0276	
20-02-13-02-01406	0275	
20-02-13-02-01407	0304	
20-02-13-02-01408	0355	E4-C-05113
20-02-13-02-01409	0279	E4-B-05011
20-02-13-02-01410	0341	
20-02-13-02-01411	0282	
20-02-13-02-01412	0404	
20-02-13-02-01413	0306	E4-C-05126
20-02-13-02-01414	0283	
20-02-13-02-01415	0356	
20-02-13-02-01416	0269	E4P-C-05009
20-02-13-02-01417	0298	

High Pressure Pump S/N	Gear S/N	Engine S/N
20-06-18-02-00975	1050	
20-06-18-02-00976	0671	
20-06-18-02-00977	0647	
20-06-18-02-00978	1101	E4-B-00061
20-06-18-02-00979	1105	E4-C-06036
20-06-18-02-00980	0844	
20-06-18-02-00981	0743	
20-06-18-02-00982	0841	
20-06-18-02-00983	1043	E4P-C-06019
20-06-18-02-00984	1116	
20-06-18-02-00985	1047	
20-06-18-02-00986	0752	
20-06-18-02-00987	0789	
20-06-18-02-00988	0661	
20-06-18-02-00989	1045	E4-A-06047
20-06-18-02-00990	1093	E4-C-06033
20-06-18-02-00991	1059	
20-06-18-02-00992	1106	
20-06-18-02-00993	0895	
20-06-18-02-00994	1065	
20-06-18-02-00995	1022	
20-06-18-02-00997	1039	
20-06-18-02-00998	1013	
20-06-18-02-01000	1089	E4-B-00050
20-06-18-02-01001	1064	
20-06-18-02-01003	1067	
20-06-18-02-01004	1070	
20-06-18-02-01005	1017	E4-A-06046
20-06-18-02-01006	1035	
20-06-18-02-01007	1080	E4-A-00508
20-06-18-02-01008	1075	
20-06-18-02-01009	1052	E4P-C-06020
20-06-18-02-01010	1115	
20-06-18-02-01011	1074	E4-C-06029
20-06-18-02-01012	1018	E4-C-06024
20-06-18-02-01013	1072	
20-06-18-02-01014	1033	
20-06-18-02-01015	1062	
20-06-18-02-01016	1020	
20-06-18-02-01017	1029	
20-07-10-02-00002	0698	
20-07-10-02-00003	1309	E4P-C-06038
20-07-10-02-00004	0861	E4P-C-06011
20-07-10-02-00005	0898	
20-07-10-02-00006	0854	
20-07-10-02-00007	0741	
20-07-10-02-00008	0889	
20-07-10-02-00009	0867	E4-A-00207
20-07-10-02-00010	0697	
20-07-10-02-00011	0748	
20-07-10-02-00012	0711	
20-07-10-02-00013	0862	
20-07-10-02-00015	0912	E4P-C-06010
20-07-10-02-00016	0864	E4-C-06018
20-07-10-02-00017	1154	
20-07-10-02-00018	0946	E4-B-00039
20-07-10-02-00019	0750	
20-07-10-02-00020	0704	
20-07-10-02-00021	0911	
20-07-10-02-00022	0803	
20-07-10-02-00023	0885	E4-A-06031
20-07-10-02-00024	0710	E4-A-05091
20-07-10-02-00025	0910	E4P-Z-06002
20-07-10-02-00026	0836	
20-07-10-02-00027	0852	E4-A-05092

High Pressure Pump S/N	Gear S/N	Engine S/N
21-02-08-02-00033	1317	
21-02-08-02-00034	1409	E4-A-06079
21-02-08-02-00035	1377	
21-02-08-02-00036	1394	
21-02-08-02-00037	1345	E4-A-06093
21-02-08-02-00038	1454	
21-02-08-02-00040	1335	E4P-C-06048
21-02-08-02-00041	1406	
21-02-08-02-00042	1420	
21-02-08-02-00043	1404	
21-02-08-02-00044	1387	
21-02-08-02-00045	1452	E4P-C-06050
21-02-08-02-00047	1353	
21-02-08-02-00048	1322	E4-C-06067
21-02-08-02-00049	1430	E4-C-06058
21-02-08-02-00050	1397	
21-02-08-02-00051	1448	E4P-C-00067
21-02-08-02-00052	1168	E4-A-06084
21-02-08-02-00053	1464	
21-02-08-02-00054	1433	E4-C-06064
21-02-08-02-00055	1341	E4-A-00270
21-02-08-02-00056	1374	
21-02-08-02-00057	1423	
21-02-08-02-00059	1166	
21-02-08-02-00060	1407	E4-B-00382
21-02-08-02-00061	1323	E4-A-00492
21-02-08-02-00062	1445	E4-A-06090
21-02-08-02-00063	1165	E4-B-00143
21-02-08-02-00064	1413	
21-02-08-02-00065	1386	E4-A-00428
21-02-08-02-00066	1356	E4-C-06059
21-02-08-02-00067	1382	E4-C-06054
21-02-08-02-00068	1436	
21-02-08-02-00069	1450	E4-B-00540
21-02-08-02-00070	1344	
21-02-08-02-00071	1324	
21-02-08-02-00072	1357	
21-02-08-02-00073	1460	E4-C-00008
21-02-08-02-00074	1461	
21-02-08-02-00075	1408	E4-A-06081
21-02-08-02-00076	1339	
21-02-08-02-00077	1326	
21-02-08-02-00078	1337	
21-02-08-02-00079	1371	
21-02-08-02-00080	1458	E4-C-06079
21-02-08-02-00081	1532	
21-02-08-02-00082	1421	E4-C-06056
21-02-08-02-00083	1459	
21-02-08-02-00084	1318	
21-02-08-02-00085	1327	E4-B-06002
21-02-08-02-00086	1393	E4-A-06094
21-02-08-02-00087	1418	E4P-C-06047
21-02-08-02-00088	1416	
21-02-08-02-00089	1495	
21-02-08-02-00091	1453	
21-02-08-02-00092	1455	E4-C-06072
21-02-08-02-00093	1465	
21-02-08-02-00095	1425	
21-02-08-02-00096	1472	
21-02-08-02-00098	1359	E4-A-06078
21-02-08-02-00099	1332	
21-02-08-02-00100	1415	
21-02-08-02-00101	1378	
21-02-08-02-00102	1370	
21-02-08-02-00103	1500	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		4-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
Rudolf-Diesel-Strasse 11
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High Pressure Pump S/N	Gear S/N	Engine S/N
20-02-13-02-01418	0426	E4-C-05125
20-02-13-02-01419	0405	
20-02-13-02-01420	0310	
20-02-13-02-01421	0318	E4-A-05077
20-02-13-02-01422	0292	
20-02-13-02-01423	0325	
20-02-13-02-01424	0511	
20-02-13-02-01425	0307	E4-A-00397
20-02-13-02-01426	0527	
20-02-13-02-01427	0302	E4-C-05122
20-02-13-02-01428	0316	
20-02-13-02-01429	0401	E4-C-06001
20-02-13-02-01430	0347	E4-C-00218
20-02-13-02-01431	0394	
20-02-13-02-01432	0352	E4-A-00037
20-02-13-02-01433	0285	
20-02-13-02-01434	0289	
20-02-13-02-01435	0301	E4P-C-05010
20-02-13-02-01436	0388	
20-02-13-02-01437	0295	
20-02-13-02-01438	0397	E4-C-05114
20-02-13-02-01439	0234	
20-02-13-02-01440	0303	E4P-C-05006
20-02-13-02-01441	0343	
20-02-13-02-01442	0373	
20-02-13-02-01443	0353	E4-A-05090
20-02-13-02-01444	0320	E4-C-05120
20-02-13-02-01445	0354	
20-02-13-02-01446	0502	
20-02-13-02-01447	0321	
20-02-13-02-01448	0300	E4-A-00266
20-02-13-02-01449	0337	
20-02-13-02-01450	0281	
20-02-13-02-01451	0396	E4-A-05076
20-02-13-02-01452	0392	E4-C-05121
20-02-13-02-01453	0507	
20-02-13-02-01454	0328	
20-02-13-02-01455	0290	
20-02-13-02-01456	0349	E4-A-00079
20-02-13-02-01457	0390	E4-C-00233
20-02-13-02-01458	0294	
20-02-13-02-01459	0339	
20-02-13-02-01460	0441	
20-02-13-02-01461	0291	
20-02-13-02-01462	0336	
20-02-13-02-01463	0277	E4-B-00110
20-02-13-02-01464	0406	E4P-C-05012
20-02-13-02-01465	0461	
20-02-13-02-01466	0293	E4-C-05118
20-02-13-02-01467	0503	
20-02-13-02-01468	0530	
20-02-13-02-01470	0379	
20-02-13-02-01471	0299	E4-C-05123
20-02-13-02-01472	0287	
20-02-13-02-01473	0453	
20-02-13-02-01474	0423	
20-02-13-02-01475	0540	
20-02-13-02-01476	0395	
20-02-13-02-01477	0440	
20-02-13-02-01478	0444	
20-02-13-02-01479	0476	
20-02-13-02-01480	0486	
20-02-13-02-01481	0439	
20-02-13-02-01482	0497	E4-A-06008
20-02-13-02-01483	0449	

High Pressure Pump S/N	Gear S/N	Engine S/N
20-07-10-02-00028	0724	
20-07-10-02-00029	0733	
20-07-10-02-00030	0873	E4P-C-00224
20-07-10-02-00031	1085	
20-07-10-02-00032	0942	
20-07-10-02-00033	1153	
20-07-10-02-00034	0832	
20-07-10-02-00035	0929	
20-07-10-02-00036	0703	
20-07-10-02-00037	0948	E4-A-06036
20-07-10-02-00038	0860	E4-C-00122
20-07-10-02-00039	0821	
20-07-10-02-00040	1310	
20-07-10-02-00041	1158	E4-A-00066
20-07-10-02-00042	0930	
20-07-10-02-00043	0877	
20-07-10-02-00044	1151	
20-07-10-02-00045	0917	E4-A-00116
20-07-10-02-00046	0878	E4P-C-05013
20-07-10-02-00047	0788	
20-07-10-02-00048	1132	
20-07-10-02-00049	1141	
20-07-10-02-00050	1170	
20-07-10-02-00051	1184	
20-07-10-02-00052	1122	E4-C-06044
20-07-10-02-00053	1109	
20-07-10-02-00054	1155	
20-07-10-02-00055	1058	
20-07-10-02-00056	1147	
20-07-10-02-00057	1144	
20-07-10-02-00058	1121	
20-07-10-02-00059	1126	E4-A-00485
20-07-10-02-00060	1133	
20-07-10-02-00061	1095	
20-07-10-02-00062	1098	
20-07-10-02-00063	1148	
20-07-10-02-00064	1161	E4-C-06035
20-07-10-02-00065	1136	
20-07-10-02-00066	1130	
20-07-10-02-00067	1125	E4P-C-06026
20-07-10-02-00068	1152	
20-07-10-02-00069	1096	E4-A-06059
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20-07-10-02-00071	1294	
20-07-10-02-00072	1143	
20-07-10-02-00073	1140	E4-A-06065
20-07-10-02-00074	1173	
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20-07-10-02-00076	1171	
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20-07-10-02-00083	1188	
20-07-10-02-00084	1305	
20-07-10-02-00085	1102	
20-07-10-02-00086	1181	E4-C-06046
20-07-10-02-00088	1180	
20-07-10-02-00090	1183	E4-A-06052
20-07-10-02-00091	1304	E4P-C-06031
20-08-21-02-00582	1149	
20-08-21-02-00583	1162	
20-08-21-02-00584	1123	
20-08-21-02-00585	1150	

High Pressure Pump S/N	Gear S/N	Engine S/N
21-02-08-02-00104	1338	E4-A-06086
21-02-08-02-00105	1398	E4-A-06083
21-02-08-02-00106	1336	E4-C-06065
21-02-08-02-00107	1419	E4-B-06001
21-02-08-02-00108	1411	
21-02-08-02-00109	1463	
21-02-08-02-00110	1426	E4-A-06077
21-02-08-02-00111	1399	
21-02-08-02-00112	1328	
21-02-08-02-00113	1427	
21-02-08-02-00114	1523	E4-C-00473
21-02-08-02-00115	1191	
21-02-08-02-00116	1352	
21-02-08-02-00117	1417	
21-02-08-02-00118	1429	
21-02-08-02-00119	1424	
21-02-08-02-00120	1192	
21-02-08-02-00121	1469	E4-C-06070
21-02-08-02-00122	1447	
21-02-08-02-00123	1484	
21-02-08-02-00124	1177	
21-02-08-02-00125	1364	
21-02-08-02-00126	1396	E4-A-00455
21-02-08-02-00127	1379	
21-02-08-02-00128	1348	
21-02-08-02-00129	1321	
21-02-08-02-00130	1451	E4-A-00532
21-02-08-02-01548	1179	
21-02-08-02-01549	1477	
21-02-08-02-01550	1515	
21-02-08-08-00014	1476	E4-C-06073
21-02-08-08-00090	1496	
21-03-03-02-02275	1533	
21-03-03-02-02276	1478	
21-03-03-02-02277	1837	
21-03-03-02-02278	1485	
21-03-03-02-02279	1517	
21-03-03-02-02280	1487	
21-03-03-02-02281	1547	
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21-03-03-02-02283	1499	
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21-03-03-02-02290	1483	
21-03-03-02-02291	1536	
21-03-03-02-02292	1481	
21-03-03-02-02293	1491	E4-C-06071
21-03-03-02-02294	1504	
21-03-03-02-02295	1501	
21-03-03-02-02296	1525	
21-03-03-02-02297	1490	
21-03-03-02-02298	1518	
21-03-03-02-02299	1521	E4P-C-00066
21-03-03-02-02300	1497	
21-03-03-02-02302	1751	
21-03-03-02-02303	1699	
21-03-03-02-02304	1527	E4-C-00018
21-03-03-02-02305	1468	
21-03-03-02-02306	1489	
21-03-03-02-02307	1466	
21-03-03-02-02308	1482	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		5-31

Mandatory Service Bulletin No. MSB-E4-036

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High Pressure Pump S/N	Gear S/N	Engine S/N
20-02-13-02-01484	0542	
20-02-13-02-01485	0450	
20-02-13-02-01486	0446	
20-02-13-02-01487	0462	
20-02-13-02-01488	0536	
20-02-13-02-01489	0454	
20-02-13-02-01490	0531	
20-02-13-02-01491	0445	
20-02-13-02-01492	0428	
20-02-13-02-01493	0524	
20-02-13-02-01494	0491	
20-02-13-02-01495	0504	
20-02-13-02-01496	0547	
20-02-13-02-01497	0520	
20-02-13-02-01498	0455	E4-A-06010
20-02-13-02-01499	0487	
20-02-13-02-01500	0479	
20-02-13-02-01501	0422	
20-02-13-02-01502	0432	
20-02-13-02-01503	0559	
20-02-13-02-01504	0556	
20-02-13-02-01505	0528	
20-02-13-02-01506	0452	E4-A-06006
20-02-13-02-01507	0489	
20-02-13-02-01508	0317	
20-02-13-02-01509	0529	E4-A-06011
20-02-13-02-01510	0631	
20-02-13-02-01511	0451	
20-02-13-02-01512	0472	E4-A-06009
20-02-13-02-01513	0600	
20-02-14-02-00084	1494	E4P-C-06051
20-03-04-02-00003	0563	
20-03-04-02-00004	0460	
20-03-04-02-00005	0435	
20-03-04-02-00006	0538	
20-03-04-02-00007	0434	
20-03-04-02-00008	0311	
20-03-04-02-00009	0463	
20-03-04-02-00010	0344	
20-03-04-02-00011	0346	E4-C-06005
20-03-04-02-00012	0387	
20-03-04-02-00013	0447	
20-03-04-02-00014	0492	
20-03-04-02-00015	0465	
20-03-04-02-00016	0357	
20-03-04-02-00017	0420	E4-C-06003
20-03-04-02-00018	0433	
20-03-04-02-00019	0309	
20-03-04-02-00020	0391	
20-03-04-02-00021	0424	E4-C-06004
20-03-04-02-00022	0570	
20-03-04-02-00023	0430	
20-03-04-02-00024	0305	
20-03-04-02-00025	0398	E4-C-06006
20-03-04-02-00026	0322	
20-03-04-02-00027	0484	
20-03-04-02-00029	0323	E4-C-06002
20-03-04-02-00030	0417	
20-03-04-02-00031	0403	E4-A-06001
20-03-04-02-00032	0490	
20-03-04-02-00033	0096	
20-03-04-02-00034	0313	
20-03-04-02-00035	0342	
20-03-04-02-00036	0308	
20-03-04-02-00037	0418	

High Pressure Pump S/N	Gear S/N	Engine S/N
20-08-21-02-00586	1104	
20-08-21-02-00587	1366	E4-C-06066
20-08-21-02-00588	1253	
20-08-21-02-00589	1117	
20-08-21-02-00590	1107	
20-08-21-02-00591	1176	
20-08-21-02-00592	0686	E4-A-06014
20-08-21-02-00594	1203	
20-08-21-02-00595	1189	
20-08-21-02-00596	1083	
20-08-21-02-00597	1137	
20-08-21-02-00598	1124	
20-08-21-02-00599	1175	
20-08-21-02-00600	1160	
20-08-21-02-00601	1142	
20-08-21-02-00602	1185	
20-08-21-02-00603	0779	
20-08-21-02-00604	1084	
20-08-21-02-00605	1135	
20-08-21-02-00606	1187	
20-08-21-02-00607	1156	
20-08-21-02-00608	1241	E4P-C-06029
20-08-21-02-00609	1129	
20-08-21-02-00610	1097	
20-08-21-02-00611	1157	
20-08-21-02-00612	1086	
20-08-21-02-00613	1146	
20-08-21-02-00614	1145	
20-08-21-02-00615	1120	
20-08-21-02-00616	1174	
20-08-21-02-00617	1139	
20-08-21-02-00618	1087	
20-08-21-02-00619	1099	
20-08-21-02-00620	1131	
20-08-21-02-00621	1186	E4-C-00182
20-08-21-02-00622	1223	E4-A-00216
20-08-21-02-00623	1108	
20-08-21-02-00624	1306	E4-C-06037
20-08-21-02-00625	1200	
20-08-21-02-00626	1182	E4-C-06047
20-08-21-02-00627	1245	E4-C-06041
20-08-21-02-00628	1312	
20-08-21-02-00629	1071	
20-08-21-02-00630	1159	
20-08-21-02-00631	1172	E4-A-06050
20-08-21-02-00632	1134	
20-08-21-02-00633	1239	
20-08-21-02-00634	1365	E4-A-00603
20-08-21-02-00635	1444	
20-08-21-02-00636	0814	
20-08-21-02-00637	1266	
20-08-21-02-00638	1164	
20-08-21-02-00639	1248	E4-C-06048
20-08-21-02-00640	1232	E4P-C-06044
20-08-21-02-00641	1218	
20-08-21-02-00642	1197	E4-C-00042
20-08-21-02-00643	1438	E4P-C-00069
20-08-21-02-00644	1195	
20-08-21-02-00645	1262	E4-A-00491
20-08-21-02-00646	1257	
20-08-21-02-00647	0834	
20-08-21-02-00648	1231	
20-08-21-02-00649	1267	E4-A-06053
20-08-21-02-00650	1212	
20-08-21-02-00651	1235	

High Pressure Pump S/N	Gear S/N	Engine S/N
21-03-03-02-02309	1505	
21-03-03-02-02310	1522	
21-03-03-02-02311	1519	E4-A-06102
21-03-03-02-02312	1539	
21-03-03-02-02313	1725	
21-03-03-02-02314	1492	
21-03-03-02-02315	1546	
21-03-03-02-02316	1524	
21-03-03-02-02317	1502	
21-03-03-02-02318	1516	
21-03-03-02-02319	1510	
21-03-03-02-02320	1475	
21-03-03-02-02321	1701	
21-03-03-02-02322	1443	
21-03-03-02-02323	1512	E4-C-00119
21-03-03-02-02325	1538	E4-A-00660
21-03-03-02-02326	1514	
21-03-03-02-02327	1526	E4-B-00063
21-03-03-02-02328	1700	
21-03-03-02-02329	1545	
21-03-03-02-02330	1556	
21-03-03-02-02331	1530	
21-03-03-02-02332	1509	E4-A-00018
21-03-03-02-02333	1513	
21-03-03-02-02334	1508	
21-03-03-02-02335	1697	
21-03-03-02-02336	1520	
21-03-03-02-02337	1537	
21-03-03-02-02339	1528	
21-03-03-02-02340	1578	
21-03-03-02-02341	1548	
21-03-03-02-02342	1565	
21-03-03-02-02343	1726	
21-03-03-02-02344	1569	
21-03-03-02-02345	1571	
21-03-03-02-02346	1511	E4-C-00088
21-03-03-02-02347	1665	
21-03-03-02-02349	1541	
21-03-03-02-02350	1550	E4-A-06100
21-03-03-02-02351	1480	
21-03-03-02-02352	1748	
21-03-03-02-02353	1531	
21-03-03-02-02354	1554	
21-03-03-02-02355	1618	
21-03-03-02-02356	1576	
21-03-03-02-02357	1486	
21-03-03-02-02358	1568	
21-03-03-02-02359	1580	
21-03-03-02-02360	1507	
21-03-03-02-02361	1567	
21-03-03-02-02362	1638	
21-03-03-02-02363	1586	
21-03-03-02-02364	1470	
21-03-03-02-02365	1577	E4-C-06077
21-03-03-02-02366	1473	
21-03-03-02-02367	1558	
21-03-03-02-02369	1555	
21-03-03-02-02370	1823	
21-03-03-02-02371	1559	
21-03-03-02-02372	1579	
21-03-03-02-02373	1440	E4-A-06097
21-03-03-02-02374	1692	
21-03-03-02-02375	1573	
21-03-03-02-02376	1549	
21-03-03-02-02377	1647	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		6-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
Rudolf-Diesel-Strasse 11
A-2700 Wiener Neustadt
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High Pressure Pump S/N	Gear S/N	Engine S/N
20-03-04-02-00038	0400	E4-C-05124
20-03-04-02-00039	0500	E4P-C-06012
20-03-04-02-00040	0535	E4P-C-06006
20-03-04-02-00041	0437	
20-03-04-02-00042	0543	
20-03-04-02-00043	0473	
20-03-04-02-00044	0494	E4-C-06007
20-03-04-02-00045	0340	
20-03-04-02-00046	0515	
20-03-04-02-00047	0498	
20-03-04-02-00048	0588	
20-03-04-02-00049	0478	
20-03-04-02-00050	0541	
20-03-04-02-00051	0448	E4P-C-06002
20-03-04-02-00052	0519	E4-A-06003
20-03-04-02-00053	0495	
20-03-04-02-00054	0483	
20-03-04-02-00055	0389	
20-03-04-02-00057	0518	
20-03-04-02-00058	0506	
20-03-04-02-00059	0505	
20-03-04-02-00060	0464	
20-03-04-02-00061	0456	E4-A-06005
20-03-04-02-00062	0499	
20-03-04-02-00063	0532	
20-03-04-02-00064	0436	E4P-C-06003
20-03-04-02-00065	0427	
20-03-04-02-00066	0493	E4-A-06012
20-03-04-02-00068	0564	
20-03-04-02-00071	0458	E4P-C-06005
20-03-04-02-00072	0474	
20-03-04-02-00073	0513	E4-A-06007
20-03-04-02-00074	0534	
20-03-04-02-00075	0533	E4P-C-06004
20-03-04-02-00076	0508	E4P-C-06001
20-03-04-02-00078	0501	
20-03-04-02-00079	0610	E4-A-06017
20-03-04-02-00081	0481	
20-03-04-02-00082	0509	
20-03-04-02-00083	0488	E4-A-06002
20-03-04-02-00085	0438	
20-03-04-02-00086	0517	E4-A-06004
20-03-04-02-00088	0521	
20-03-04-02-00089	0457	
20-03-04-02-00091	0526	
20-03-31-02-00182	0624	
20-03-31-02-00183	0681	
20-03-31-02-00184	0568	
20-03-31-02-00185	0525	
20-03-31-02-00186	0687	
20-03-31-02-00187	0584	
20-03-31-02-00188	0689	
20-03-31-02-00189	0576	
20-03-31-02-00190	0609	
20-03-31-02-00191	0605	
20-03-31-02-00192	0618	
20-03-31-02-00193	0679	E4P-C-06007
20-03-31-02-00194	0663	
20-03-31-02-00195	0596	
20-03-31-02-00196	0655	
20-03-31-02-00197	0475	
20-03-31-02-00198	0636	
20-03-31-02-00199	0695	E4-A-00498
20-03-31-02-00200	0551	
20-03-31-02-00201	0552	E4-A-06015

High Pressure Pump S/N	Gear S/N	Engine S/N
20-08-21-02-00652	1226	E4-A-00244
20-08-21-02-00653	1369	
20-08-21-02-00654	1351	E4-C-00118
20-08-21-02-00655	1385	E4-C-00243
20-08-21-02-00656	0747	
20-08-21-02-00657	1264	E4-A-06064
20-08-21-02-00659	1222	E4-C-06060
20-08-21-02-00660	1208	
20-08-21-02-00661	1390	E4-C-06069
20-08-21-02-00662	1255	E4-A-06072
20-08-21-02-00663	1388	E4-A-00514
20-08-21-02-00664	1290	E4-C-06051
20-08-21-02-00665	1225	E4-A-06074
20-08-21-02-00666	1391	E4-A-00192
20-08-21-02-00667	1215	
20-08-21-02-00668	1299	E4P-C-06036
20-08-21-02-00669	1193	
20-08-21-02-00670	1361	
20-08-21-02-00671	1300	E4P-C-06037
20-08-21-02-00672	1219	
20-08-21-02-00673	1198	
20-08-21-02-00674	1213	E4-C-06063
20-08-21-02-00675	1196	
20-08-21-02-00676	1362	E4P-C-06045
20-08-21-02-00677	1354	
20-08-21-02-00678	1291	E4-A-06056
20-08-21-02-00679	1249	
20-08-21-02-00680	1263	
20-08-21-02-00681	1313	
20-08-21-02-00682	1216	
20-08-21-02-00683	1347	
20-08-21-02-00684	1381	
20-08-21-02-00685	1259	E4-C-06040
20-08-21-02-00686	1311	E4-A-06066
20-08-21-02-00687	1227	E4P-C-06043
20-08-21-02-00688	1281	
20-08-21-02-00689	1271	
20-08-21-02-00690	0581	
20-08-21-02-00691	1279	E4-A-06063
20-08-21-02-00692	1254	E4-C-06045
20-08-21-02-00693	1258	
20-08-21-02-00694	1283	
20-08-21-02-00695	1277	E4-A-06070
20-08-21-02-00696	1238	E4-C-00138
20-08-21-02-00697	1261	
20-08-21-02-00698	0824	
20-08-21-02-00699	1302	E4P-C-06039
20-08-21-02-00700	1307	E4-C-06039
20-08-21-02-00701	1284	E4P-C-06035
20-08-21-02-00702	1252	E4-B-00202
20-08-21-02-00703	1268	
20-08-21-02-00704	1244	E4-A-06069
20-08-21-02-00705	1296	E4-A-06071
20-08-21-02-00706	1276	
20-08-21-02-00707	1247	
20-08-21-02-00708	1240	
20-08-21-02-00709	1275	
20-08-21-02-00710	1251	
20-08-21-02-00711	1287	E4-A-06062
20-08-21-02-00712	1272	
20-08-21-02-00713	1297	
20-08-21-02-00714	1242	
20-08-21-02-00715	1295	E4-C-06038
20-08-21-02-00716	1289	
20-08-21-02-00717	0691	

High Pressure Pump S/N	Gear S/N	Engine S/N
21-03-03-02-02379	1582	E4P-C-06053
21-03-03-02-02380	1560	
21-03-03-02-02381	1428	E4-A-06089
21-03-03-02-02382	1574	
21-03-03-02-02384	1563	
21-03-03-02-02385	1441	
21-03-03-02-02386	1358	E4-A-06098
21-03-03-02-02387	1506	
21-03-03-02-02388	1589	E4-C-06075
21-03-03-02-02389	1572	E4-C-06080
21-03-03-02-02390	1581	
21-03-03-02-02391	1551	
21-03-03-02-02392	1557	E4P-C-06054
21-03-03-02-02393	1474	
21-03-03-02-02394	1564	E4P-C-06052
21-03-03-02-02395	1540	
21-03-03-02-02396	1553	
21-03-03-02-02397	1561	
21-03-03-02-02398	1488	
21-03-03-02-02399	1456	
21-03-03-02-02400	1657	
21-03-03-02-02401	1706	
21-03-03-02-02402	1713	
21-03-03-02-02403	1840	
21-03-03-02-02404	1907	
21-03-03-02-02405	1810	
21-03-03-02-02406	1828	
21-03-03-02-02407	1752	
21-03-03-02-02408	1325	
21-03-03-02-02409	1829	
21-03-03-02-02410	1822	
21-03-03-02-02411	1707	
21-03-03-02-02412	1742	
21-03-03-02-02414	1850	
21-03-03-02-02415	1562	
21-03-03-02-02416	1841	
21-03-03-02-02417	1658	
21-03-03-02-02418	1629	
21-03-03-02-02419	1813	
21-04-08-02-00592	1722	
21-04-08-02-00593	1610	
21-04-08-02-00594	1671	
21-04-08-02-00595	1593	
21-04-08-02-00596	1591	
21-04-08-02-00597	1724	
21-04-08-02-00598	1769	
21-04-08-02-00599	1702	
21-04-08-02-00600	1597	
21-04-08-02-00601	1602	
21-04-08-02-00602	1603	
21-04-08-02-00603	1614	E4-A-06104
21-04-08-02-00604	1672	
21-04-08-02-00605	1640	
21-04-08-02-00606	1599	
21-04-08-02-00607	1694	
21-04-08-02-00608	1595	
21-04-08-02-00609	1617	
21-04-08-02-00610	1611	
21-04-08-02-00611	1656	
21-04-08-02-00612	1728	
21-04-08-02-00613	1605	
21-04-08-02-00614	1757	
21-04-08-02-00615	1826	
21-04-08-02-00616	1649	
21-04-08-02-00617	1880	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		7-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
Rudolf-Diesel-Strasse 11
A-2700 Wiener Neustadt
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High Pressure Pump S/N	Gear S/N	Engine S/N
20-03-31-02-00202	0546	
20-03-31-02-00203	0672	
20-03-31-02-00204	0482	
20-03-31-02-00205	0567	
20-03-31-02-00206	0649	
20-03-31-02-00207	0677	
20-03-31-02-00208	0512	
20-03-31-02-00209	0587	
20-03-31-02-00210	0560	
20-03-31-02-00211	0562	
20-03-31-02-00212	0952	
20-03-31-02-00213	0659	
20-03-31-02-00214	0660	
20-03-31-02-00216	0601	
20-03-31-02-00217	0586	
20-03-31-02-00218	0459	
20-03-31-02-00219	0565	
20-03-31-02-00220	0558	
20-03-31-02-00221	0684	
20-03-31-02-00222	0654	
20-03-31-02-00223	0595	
20-03-31-02-00224	0553	
20-03-31-02-00225	0544	
20-03-31-02-00226	0656	
20-03-31-02-00227	0575	
20-03-31-02-00228	0642	
20-03-31-02-00229	0617	
20-03-31-02-00230	0599	
20-03-31-02-00231	0666	
20-03-31-02-00232	0580	
20-03-31-02-00233	0592	
20-03-31-02-00234	0572	
20-03-31-02-00235	0904	E4P-C-06018
20-03-31-02-00236	0971	E4-A-06041
20-03-31-02-00237	0549	
20-03-31-02-00238	0594	
20-03-31-02-00239	0569	
20-03-31-02-00240	0668	
20-03-31-02-00241	0692	
20-03-31-02-00242	0496	
20-03-31-02-00243	0676	
20-03-31-02-00244	0693	
20-03-31-02-00245	0566	
20-03-31-02-00246	0593	E4-A-00219
20-03-31-02-00248	0653	
20-03-31-02-00249	0614	E4-C-00069
20-03-31-02-00250	0619	E4-C-00172
20-03-31-02-00251	0669	
20-03-31-02-00252	0635	
20-03-31-02-00253	0638	
20-03-31-02-00254	0637	E4-A-06022
20-03-31-02-00255	0608	
20-03-31-02-00256	0442	
20-03-31-02-00257	0645	E4-A-00509
20-03-31-02-00258	0744	
20-03-31-02-00259	0598	E4-C-06014
20-03-31-02-00260	0634	
20-03-31-02-00261	0688	
20-03-31-02-00262	0555	E4-A-06016
20-03-31-02-00263	0651	
20-03-31-02-00264	0795	E4-A-05097
20-03-31-02-00265	0658	
20-03-31-02-00266	0611	
20-03-31-02-00267	0602	E4-C-06013
20-03-31-02-00268	0582	

High Pressure Pump S/N	Gear S/N	Engine S/N
20-08-21-02-00718	1303	E4P-C-06034
20-08-21-02-00719	0799	
20-08-21-02-00720	0818	
20-08-21-02-00721	1314	E4-C-06052
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High Pressure Pump S/N	Gear S/N	Engine S/N
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21-04-08-02-00684	1708	
21-04-08-02-00685	1661	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	8-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
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High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N
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First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	9-31

Mandatory Service Bulletin No. MSB-E4-036

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High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N
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20-05-14-02-00064	0947		20-10-19-02-00539	1274	E4-C-00199	21-05-10-02-00094	1849	
20-05-14-02-00065	1054		20-10-19-02-00540	1236	E4-A-00075	21-05-10-02-00095	1914	
20-05-14-02-00066	1111		20-10-19-02-00541	1278	E4P-C-06033	21-05-10-02-00096	1756	
20-05-14-02-00067	0997		20-10-19-02-00542	0798		21-05-10-02-00097	1820	
20-05-14-02-00068	1057	E4-A-06048	20-10-19-02-00544	1292	E4P-C-06040	21-05-10-02-00098	1838	
20-05-14-02-00069	0984		20-10-19-02-00545	1260	E4-A-00279	21-05-10-02-00099	1743	
20-05-14-02-00070	1055		20-10-19-02-00546	1269		21-05-10-02-00100	1801	
20-05-14-02-00071	0981		20-10-19-02-00547	1273		21-05-10-02-00101	1851	
20-05-14-02-00072	0980		20-10-19-02-00548	1214		21-05-10-02-00102	1688	
20-05-14-02-00073	0977	E4-A-06049	20-10-19-02-00549	1288	E4-A-06067	21-05-10-02-00103	1735	
20-05-14-02-00074	0993		20-10-19-02-00550	1270	E4-A-06073	21-05-10-02-00104	1885	
20-05-14-02-00075	0986		20-10-19-02-00551	1243	E4-C-06049	21-05-10-02-00105	1899	
20-05-14-02-00076	1007		20-10-19-02-00552	1217		21-05-10-02-00106	1858	
20-05-14-02-00077	0963		20-10-19-02-00553	1229	E4-C-06062	21-05-10-02-00107	1736	
20-05-14-02-00078	0983		20-10-19-02-00554	1256		21-05-10-02-00108	1772	
20-05-14-02-00079	1003		20-10-19-02-00555	1282		21-05-10-02-00109	1764	
20-05-14-02-00080	1000		20-10-19-02-00556	1246		21-05-10-02-00110	1867	
20-05-14-02-00081	0989		20-10-19-02-00558	1220		21-05-10-02-00111	1855	
20-05-14-02-00082	0998		20-10-19-02-00559	1207	E4-A-00513	21-05-10-02-00112	1734	
20-05-14-02-00083	1002		20-10-19-02-00560	1286	E4-C-06050	21-05-10-02-00113	1762	

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		10-31

Mandatory Service Bulletin No. MSB-E4-036

Austro Engine GmbH
 Rudolf-Diesel-Strasse 11
 A-2700 Wiener Neustadt
 Tel: +43 2622 23000
 FAX: +43 2622 23000-2711

High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N	High Pressure Pump S/N	Gear S/N	Engine S/N
20-05-14-02-00084	0995		20-10-19-02-00561	1228		21-05-10-02-00114	1852	
20-05-14-02-00085	0960		20-10-19-02-00562	1401		21-05-10-02-00115	1832	
20-05-15-02-00420	0548		20-10-19-02-00563	1298	E4-A-06055	21-05-10-02-00116	1898	
20-05-15-02-00421	1010		20-10-19-02-00564	1334	E4P-C-06046	21-05-10-02-00117	1901	
20-05-15-02-00422	0975		20-10-19-02-00565	1201	E4-C-06061	21-05-10-02-00118	1659	
20-05-15-02-00423	0990		20-10-19-02-00566	1237	E4P-C-06030	21-05-10-02-00119	1864	
20-05-15-02-00424	0999		20-10-19-02-00567	1234		21-05-10-02-00120	1919	
20-05-15-02-00425	0970		20-10-19-02-00568	1190		21-05-10-02-00121	1730	
20-05-15-02-00426	1008		20-10-19-02-00569	1285	E4-A-06051	21-05-10-02-00122	1732	
20-05-15-02-00430	0967		20-10-19-02-00570	1230		21-05-10-02-00123	1741	
20-05-15-02-00432	0968		20-10-19-02-00571	1202		21-05-10-02-00124	1861	
20-06-18-02-00879	1076		20-10-19-02-00572	1205	E4P-C-06042	21-05-10-02-00125	1916	
20-06-18-02-00880	0813		20-10-19-02-00573	1204	E4-A-00441	21-05-10-02-00126	1845	
20-06-18-02-00881	1014	E4P-C-06023	20-10-19-02-00574	1194		21-05-10-02-00127	1766	
20-06-18-02-00882	1078	E4P-C-06024	20-10-19-02-00575	1206		21-05-10-02-00129	1738	
20-06-18-02-00883	1092	E4P-C-06025	20-10-26-02-00622	1791		21-05-10-02-00130	1714	
20-06-18-02-00884	1090		20-10-26-02-00623	1959		21-05-10-02-00131	1737	
20-06-18-02-00885	1019	E4-C-06034	20-10-26-02-00624	1806		21-05-10-02-00132	1904	
20-06-18-02-00886	1091	E4-B-00383	20-10-26-02-00625	1797		21-05-10-02-00133	1745	
20-06-18-02-00887	1077		20-10-26-02-00626	1934		21-05-10-02-00134	1920	
20-06-18-02-00888	0639		20-10-26-02-00627	1210		21-05-10-02-00135	1873	



Note:

A Cylinder Head p/n E4A-12-500-000 is an Affected Cylinder Head only when installed in combination with a HPP gear p/n E4A-30-000-601 (any revision) or p/n E4A-30-000-201 rev. AB.1. In case of doubt, contact Austro Engine.

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		11-31

1.5. Reason

Occurrences were reported of HPP driving gear failure. Subsequent investigation determined that a certain batch of HPP driving gears was produced with a worn-out assembly tool P/N AE300T012-1. Those HPP driving gears may have been damaged during assembly.

Concurrently, it was determined that, for engines equipped with a certain cylinder head, a stack up of tolerances exists between the cylinder head, cylinder head cover, camshaft gear and HPP gear.

Cases of coloured HPP gears p/n E4A-30-000-601 or E4A-30-000-201 rev. AB.1 appeared after limited flight time on engines having CH p/n E4A-12-500-000 installed, for that reason an insufficient tolerance can only be avoided by installing, on such engines, gears p/n E4A-30-000-201 rev. AE.1. To correct the possible unsafe condition, this Mandatory Service Bulletin supersedes the MSB-E4-034 and MSB-E4-035 incorporating their requirements and prohibit the installation of HPP gears p/n E4A-30-000-601 or E4A-30-000-201 rev. AB.1 on an engine equipped with the CH p/n E4A-12-500-000.

These conditions, if not corrected, may cause premature failure of the high-pressure pump drive gear, resulting in rail pressure loss and engine shutdown.

1.6. Required Actions and Time of Compliance

E4A/B/C/P Engines having an affected CH installed	Inspect and Replace the gear with p/n E4A-30-000-201 rev. AE.1	Before the next flight ⁽²⁾
E4A/B/C/P Engines having an affected CH <u>and</u> an affected HPP driving gear installed	Inspect and Replace the gear with p/n E4A-30-000-201 rev. AE.1	Before the next flight ⁽²⁾

E4A Engines having an affected HPP driving gear installed	Replace the gear	Before the total time in service of the affected driving gear reaches 40 FH ⁽¹⁾ or during the next scheduled maintenance whichever occurs first
E4B/C/P Engines having an affected HPP driving gear installed	Replace the gear	Before the total time in service of the affected driving gear reaches 80 FH ⁽¹⁾ or during the next scheduled maintenance whichever occurs first



Note ⁽¹⁾:

Total time in service of the affected driving gear must be counted from the installation of such part on an engine. For example, if an affected part is installed on an E4A Engine having 480FH, the HPP driving gear must be replaced before reaching 520FH; if an affected part is installed on an E4B/C/P engine having 480FH, the HPP driving gear must be replaced before reaching 560FH.



Note ⁽²⁾:

For a twin-engine aeroplane that has one or two Group 2 engine(s) installed, a single ferry flight is allowed to position that aeroplane to a location where the actions required by this Service Bulletin can be accomplished on the affected engine(s).



Note:

Paragraph 1.9 provides Credits for these engines complying with MSB-E4-034 and MSB-E4-035

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		12-31

1.7. Concurrent documents / references

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

- Maintenance Manual E4.08.04
- Service Instruction SI-E4-016
- Mandatory Service Bulletin MSB-E4-034 rev. 1 or subsequent approved revisions
- Mandatory Service Bulletin MSB-E4-035 rev. 0 or subsequent approved revisions

1.8. Other publications affected

None

1.9. Credits

For those engines having an affected HPP driving gear installed:

- Replacement of an affected HPP driving gear, accomplished before the effective date of this Mandatory Service Bulletin and in accordance with the instructions of Austro Engine MSB-E4-034 at Revision 1 or subsequent, is an acceptable method to comply with the requirements of the chapter 2 of this service bulletin.

For those engines having an affected CH installed, or an affected CH and an affected HPP driving gear installed:

- Inspection and replacement of an affected HPP driving gear, accomplished before the effective date of this Mandatory Service Bulletin and in accordance with the instructions of Austro Engine MSB-E4-034 at Revision 3 or subsequent, is an acceptable method to comply with the requirements of the chapter 2 of this service bulletin provided the installed HPP driving gear is the p/n E4A-30-000-201 rev. AE.1

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		13-31

2. Technical Details

2.1. Removal and inspection of the HPP driving gear

1. Remove the HPP in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph A.
2. Remove the drive gear from the HPP in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph C.



Caution: Use only the tool p/n AE300T012-1 provided in the kit of this Service Bulletin to block the gear.

3. To remove the gear from the shaft, use a bearing extractor shown in Chapter 0
4. Clean the driving gear with non-chlorinated brake cleaner (recommended product Manufacturer: Förch, Product ID.: R510)
5. Visually inspect the driving gear against colour criteria of **Appendix II** Table 6; if the acceptable criteria are not met:
 - remove the camshafts according to the Maintenance Manual, Doc. No. E4.08.04, Section 85-30-00 Subparagraph 4A (a) - (h)
 - Inspect the HPP shaft, the cylinder head, camshaft gear, the inlet/outlet camshaft bushing in accordance with the **Appendix II** of this service bulletin and replace the parts as necessary.

2.2. Installation of the new HPP driving gear

2.2.1 Driving Gear p/n E4A-30-000-201 rev. AB1 or p/n E4A-30-000-601



Caution: DO NOT INSTALL the gear p/n E4A-30-000-201 rev. AB1 or E4A-30-000-601 if a Cylinder Head p/n E4A-12-500-000 is installed on the engine

1. Install the new drive gear in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph D (replace the nut, if required).



Note: Lubricate the gear and the O-ring with engine oil before installing the HPP



Caution: Use only the tool p/n AE300T012-1 provided in the kit of this Service Bulletin to block the gear

2. Install the HPP in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph B. Refer also to chapter 6 Table 2 for the tightening sequence of the screws.
3. Mark a tool cycle on the Tool Cycle Recording Sheet and fill the execution report (both included in the chapter 6 of this Service Bulletin).
4. Perform an engine ground run according to the EMM



Note: One cycle equals the disassembly of the old gear and the installation of the new gear





Caution: When the assembly tool p/n AE300T012-1 has reached 100 cycles, discard the tool

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	14-31

 DOA no. EASA.21J.399	Mandatory Service Bulletin No. MSB-E4-036	Austro Engine GmbH Rudolf-Diesel-Strasse 11 A-2700 Wiener Neustadt Tel: +43 2622 23000 FAX: +43 2622 23000-2711
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2.2.2 Driving gear p/n E4A-30-000-201 Rev. AE.1 or subsequent

1. Install the new drive gear in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph D (replace the nut, if required).

	Note:	Use a standard low-profile open-ended wrench (27 mm) instead of the special tool.
	Note:	Lubricate the gear and the O-ring with engine oil before installing the HPP

2. Install the HPP in accordance with the instructions in Maintenance Manual, Doc. No. E4.08.04, Section 73-10-03, Paragraph B. Refer also to chapter 6 Table 2 for the tightening sequence of the screws.
3. Perform an Engine Ground Run according to the Engine Maintenance Manual

2.3. Illustrations

Provided as appendix to this service bulletin

2.4. Mass (weight)

Not affected

2.5. Approval statement

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

First Issue Date				Rev. No.	Revision Date					Page
30	Nov.	2021		---	---	---	---	15-31		

3. Planning Information

3.1. Material & Availability

Quantity	Part Description	Part Number
1	HPP Drive Gear	E4A-30-000-601 ⁽¹⁾ <u>or</u> E4A-30-000-201 Rev. AB.1 ⁽¹⁾ <u>or</u> E4A-30-000-201 Rev. AE.1
1	Gasket	DIN7603-12x16x2.0
1	Gasket	DIN7603-A12x16-AL
1	Holder wrench HPP	AE300T012-1




	(1)Caution:	DO NOT INSTALL the gear p/n E4A-30-000-201 rev. AB1 or E4A-30-000-601 if a Cylinder Head p/n E4A-12-500-000 is installed on the engine
	Caution:	The holder wrench HPP p/n AE300T012-1 can be used for only for 100 cycles, after that the tool is not serviceable and must be scrapped.
	Note:	One cycle equals the disassembly of the old gear and the installation of the new gear



Figure 1 – Driving gear E4A-30-000-201 Rev. AE.1

3.2. Special tools

No.	Description	Note
1	Holder wrench HPP	This special tool is provided as part of this SB and it is limited to 100 cycles
2	Bearing extractor	Refer to Figure 2 (not part of the service bulletin kit)



Figure 2 – Bearing extractor

First Issue Date			Rev. No.	Revision Date			Page
30	Nov.	2021	---	---	---	---	16-31

3.3. Labor effort

2 Hours for an acceptable gear up to 16 hours for a non-acceptable gear that requires additional inspections and/or parts replacement. The exact time depends on the components that might require replacement and do not include the waiting time between correspondence.

4. 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 log book
- The accomplishment of the instructions must be carried out within the time of compliance according chapter 1.6
- In case of doubt please contact the Austro Engine GmbH – After Sales Support
(e-mail: service@austroengine.at; Tel: +43 2622 23000 2525)
- For credit information contact Austro Engine GmbH – After Sales Support
(e-mail: service@austroengine.at; Tel: +43 2622 23000 2525)

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		17-31

5. Explanatory notes

5.1. 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

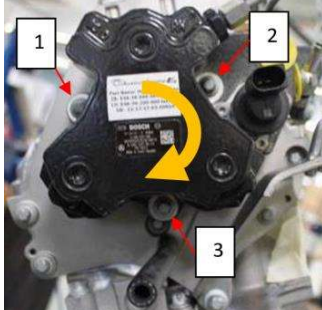


NOTE: Additional note or instruction for better understanding of an instruction

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		18-31

6. Appendix I


Table 2 – HPP tightening sequence

 <p>Figure 3</p>	<p>Install the HPP tightening the screws clockwise, according to the Figure 3 sequence with 12 Nm.:</p> <ul style="list-style-type: none"> - Step 1 – 1 at 50% - Step 2 – 2 at 50% - Step 3 – 3 at 50% - Step 4 - 1 at 100% - Step 5 - 2 at 100% - Step 6 - 3 at 100%
--	---



CAUTION: DO NOT over torque

Table 3 – HPP Wrench Cycles recording sheet

		<p align="center">HPP Wrench Cycles recording sheet</p>							
<p align="center">Note: For each cycle, mark a cross on the corresponding box. When 100 cycles are reached, discard the wrench.</p>									
<p align="center">1 Gear replacement (removal & installation) = 1 cycle</p>									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
<p align="center"><i>HPP Drive gear wrench p/n</i></p>									

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---		19-31

 DOA no. EASA.21J.399	Mandatory Service Bulletin No. MSB-E4-036	Austro Engine GmbH Rudolf-Diesel-Strasse 11 A-2700 Wiener Neustadt Tel: +43 2622 23000 FAX: +43 2622 23000-2711
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Table 4 – Service Bulletin Execution Report (SBER)


	Service Bulletin Execution Report	Note:
Aircraft owner:		
Aircraft Operator:		<i>If different from the owner</i>
Aircraft:		
Aircraft Serial Number:		
Aircraft Marks:		
Engine (RH) s/n:		<i>For single engine a/c, fill only one row</i>
Engine (LH) s/n:		
Flight Hours:		
Service center:		<i>Company Name or reference of the person(s) performing the oil pump replacement</i>
Removed HPP Gear s/n: Or Inspected HPP p/n and s/n:		<i>Refer to the figure below to identify the serial number</i>
NOTE: A scanned version of this form must be provided to: service@austroengine.at copy to: support-austria@diamondaircraft.com support-canada@diamondaircraft.com support@wfit.com		
NOTE: The original filled version of this form, must be packed with the removed gear, and provided to Austro Engine		



Figure 4 – Gear s/n location











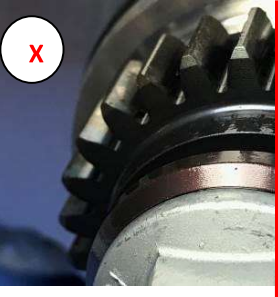



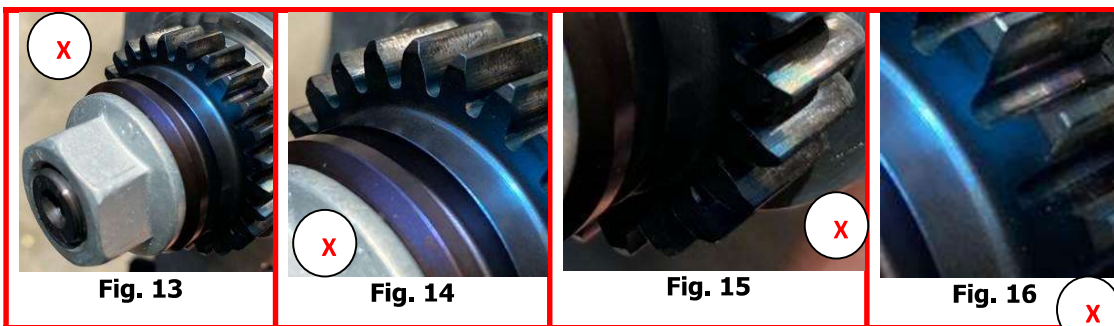
Figure 5 – HPP p/n and s/n location

First Issue Date 30 Nov. 2021			Rev. No. ---	Revision Date --- --- --- ---				Page 20-31
--	--	--	-----------------	---	--	--	--	---------------

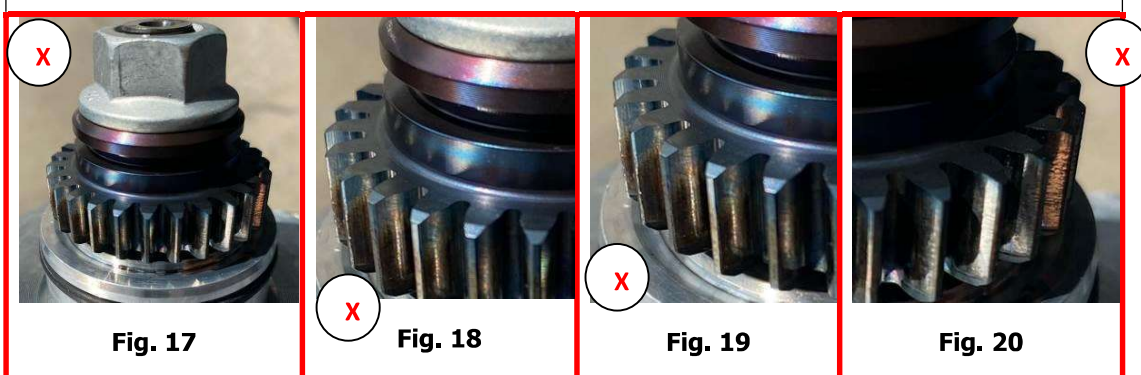
7. Appendix II

Table 5 - HPP Driving gear assembled - inspection chart

			
Fig. 1	Fig. 2	Fig. 3	Fig. 4
Examples of HPP gear in <u>acceptable</u> conditions			
			
Fig. 5	Fig. 6	Fig. 7	Fig. 8
Examples of HPP gear in <u>not acceptable</u> condition			
			
Fig. 9	Fig. 10	Fig. 11	Fig. 12
Examples of HPP gear in <u>not acceptable</u> condition			



Examples of HPP gear in not acceptable condition



Examples of HPP gear in not acceptable condition

	YES	NO	Consultation with AE required
HPP Driving gear acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note:	<ul style="list-style-type: none"> The possible discoloration shown in the non-acceptable gears is due to high friction, which generates heat. When present, the typical discoloration is not homogeneous and presents different shades from black/blue to violet/bronze. Check the gear according to the discoloration criteria provided. Discoloration is clearly visible on the outer surface of the gear. Check also for visible discoloration on the face of the teeth. Check for excessive wear of the gear. <p>In case of doubt, fill the Appendix III and contact Austro Engine</p>		

Table 6 - HPP Driving Gear Disassembled - Inspection chart


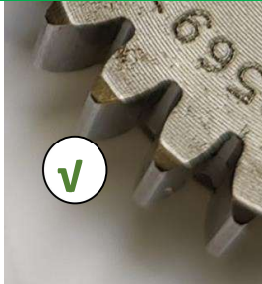




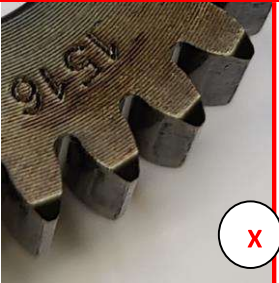


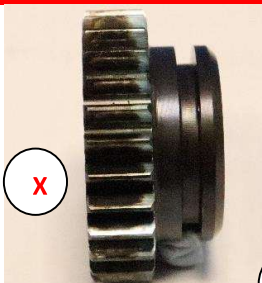

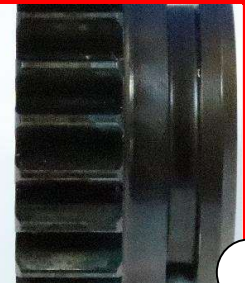
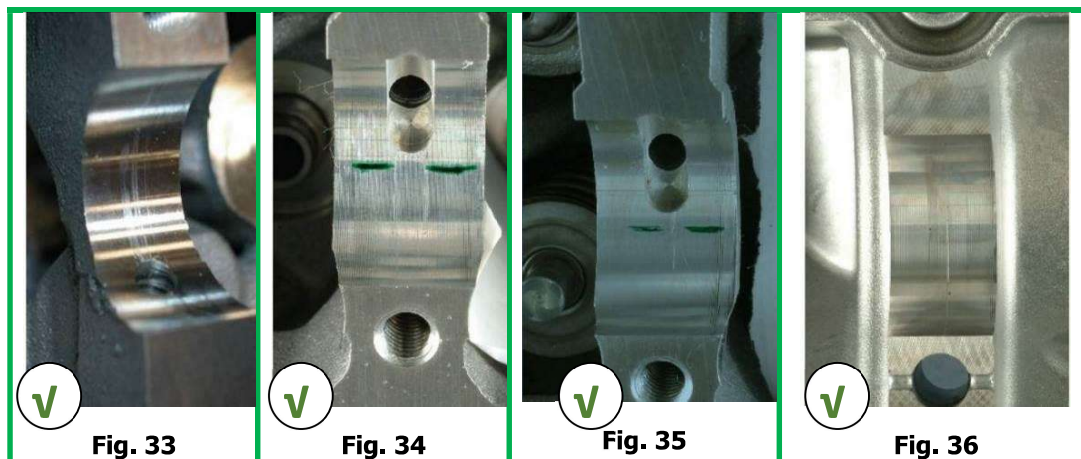
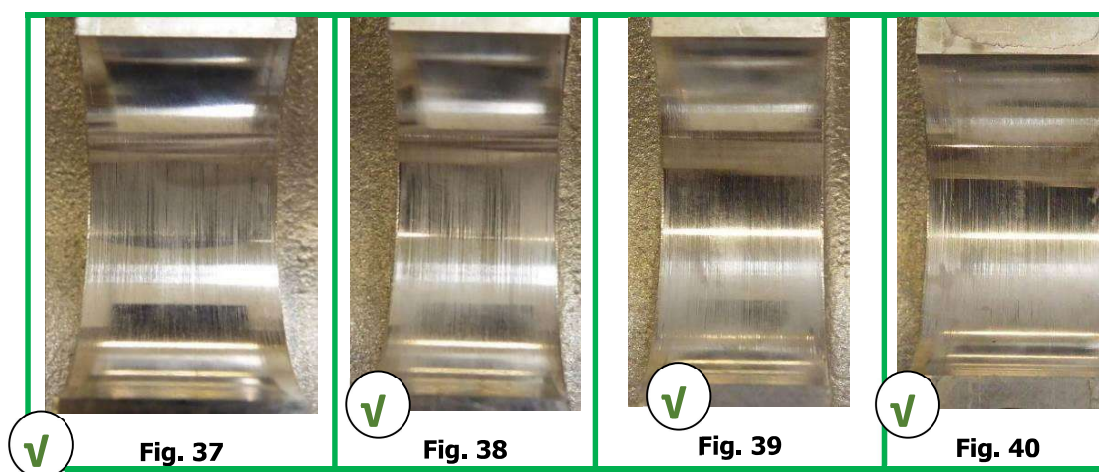
			
Fig. 21	Fig. 22	Fig. 23	Fig. 24
Examples of gear in acceptable conditions			
			
Fig. 25	Fig. 26	Fig. 27	Fig. 28
Examples of gear in not acceptable condition			
			
Fig. 29	Fig. 30	Fig. 31	Fig. 32
Examples of gear in not acceptable condition			
	YES	NO	Consultation with AE required
Part acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note:	<ul style="list-style-type: none"> The possible discoloration shown in the non-acceptable gears is due to high friction, which generates heat. When present, the typical discoloration is not homogeneous and presents different shades from black/blue to violet/bronze. Check the gear according to the discoloration criteria provided. Discoloration is clearly visible on the outer surface of the gear and in the marking zone of the gear. Check also for visible discoloration on the face of the teeth. Check for excessive wear of the gear. <p>In case of doubt, fill the Appendix III and contact Austro Engine</p>		

Table 7 - Camshaft/camshaft gear - Camshaft inlet/outlet bearing - Cylinder head – HPP Shaft inspection chart

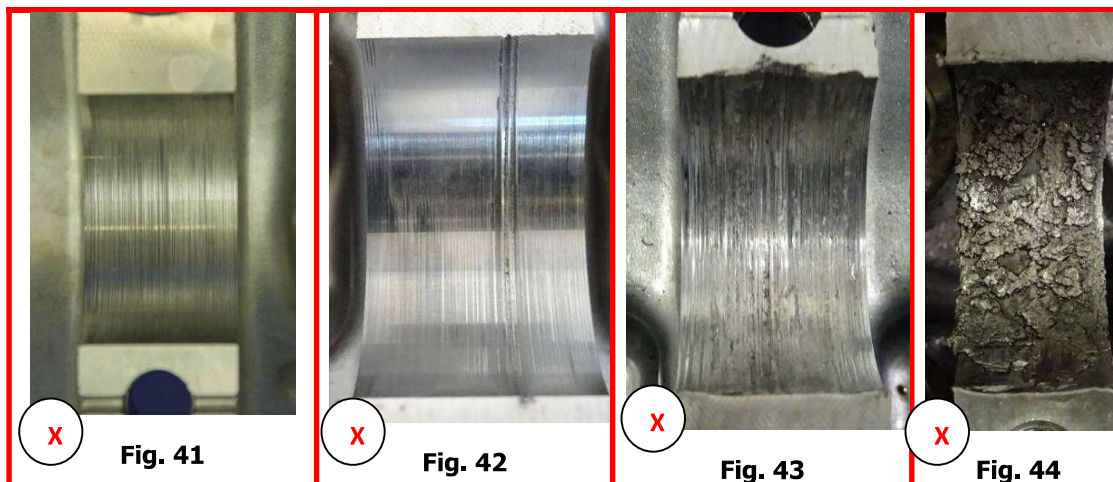


Examples of **normal wear** of the cylinder head at camshaft bearings



Examples of **normal wear** of the cylinder head at camshaft bearings

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	24-31



Examples of **excessive wear** of the cylinder head at camshaft bearings

	YES	NO	Consultation with AE required
Cylinder Head acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<p>The wear rate of the upper bearing segments, which are located inside the cylinder head cover, and upper bearing brackets is normally higher compared to the lower bearing surfaces. This is caused by the force of the valve springs applied to the camshafts.</p> <p>Examine the bearing segments at the cylinder cover and the cylinder cover for grooves and/or scratches detectable by finger.</p> <p>In case of doubt, fill the Appendix III and contact Austro Engine.</p>		

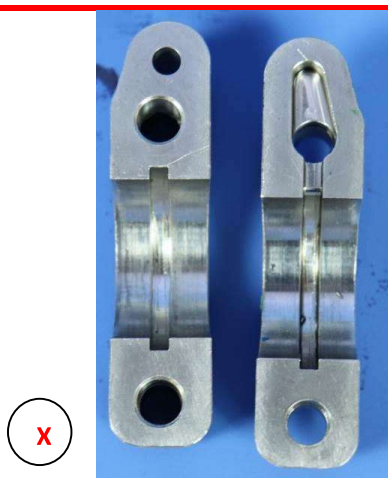


Fig. 45

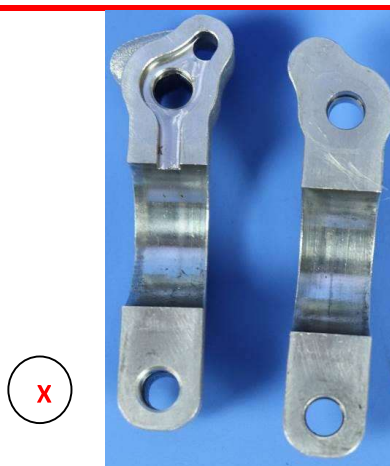


Fig. 46

Examples of camshaft bearings in not acceptable conditions



Fig. 47



Fig. 48

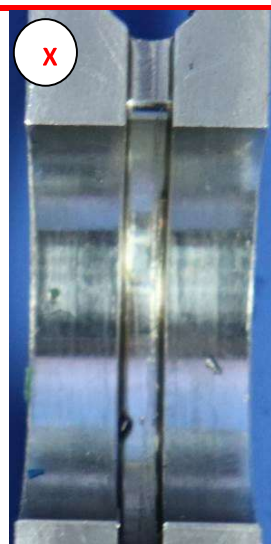


Fig. 49

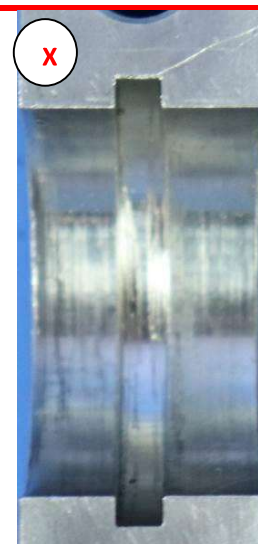
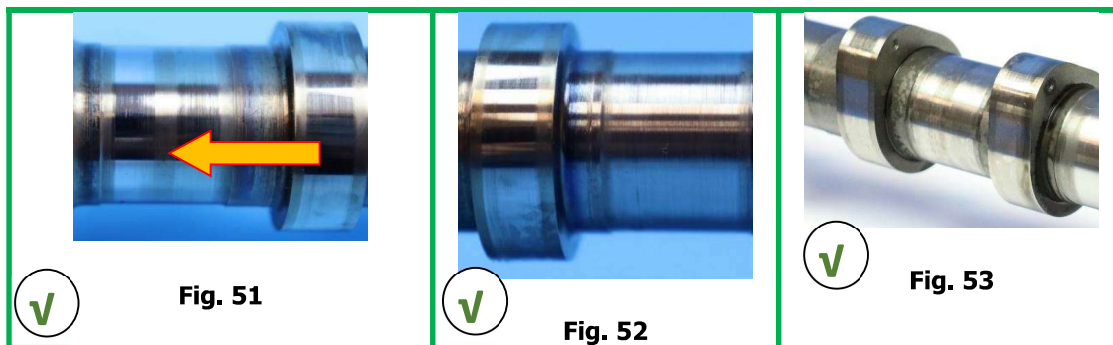


Fig. 50

Examples of camshaft bearings in not acceptable conditions

	YES	NO	Consultation with AE required
Camshaft Bearings acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note:	Examine the inlet/outlet bearings of the camshafts for discoloration, wear, grooves detectable by finger. In case of doubt, fill the Appendix III and contact Austro Engine		

First Issue Date			Rev. No.	Revision Date			Page
30	Nov.	2021	---	---	---	---	26-31



Examples of camshaft in **acceptable** conditions



Examples of camshaft in **not acceptable** conditions



Examples of camshaft in **not acceptable** conditions

	YES	NO	Consultation with AE required
Camshaft acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note:	<p>Some bearing positions show a circular discoloration; this is a normal sign of the oil supply bore located inside the lower bearing segment. Bearing surfaces are acceptable when they have:</p> <ul style="list-style-type: none"> - a homogenous, even surface - no circular sensitive running mark detectable by fingernail. <p>Camshafts with sensitive running marks detectable by fingernail are not permitted for re-use. Replace them by new ones.</p> <p>In case of doubt, fill the Appendix III and contact Austro Engine</p>		

First Issue Date	Rev. No.	Revision Date	Page
30 Nov. 2021	---	---	27-31



Fig. 58



Fig. 59



Fig. 60

Examples of camshaft gear in acceptable conditions



Fig. 61



Fig. 62

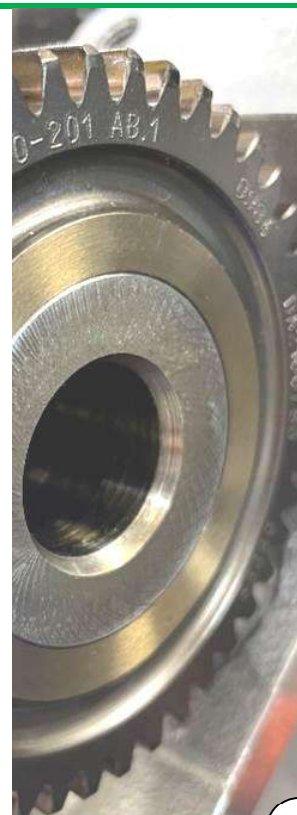
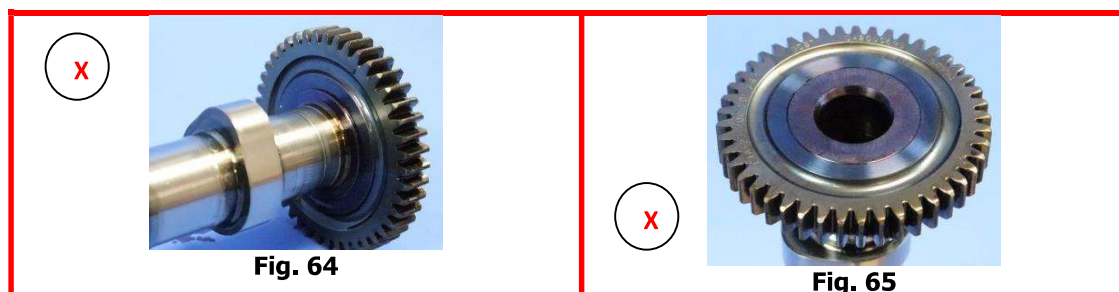


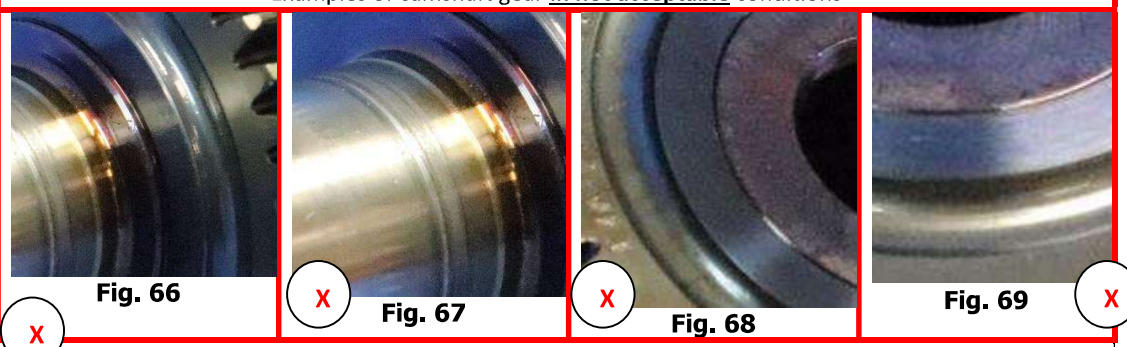
Fig. 63

Examples of camshaft gear in acceptable conditions

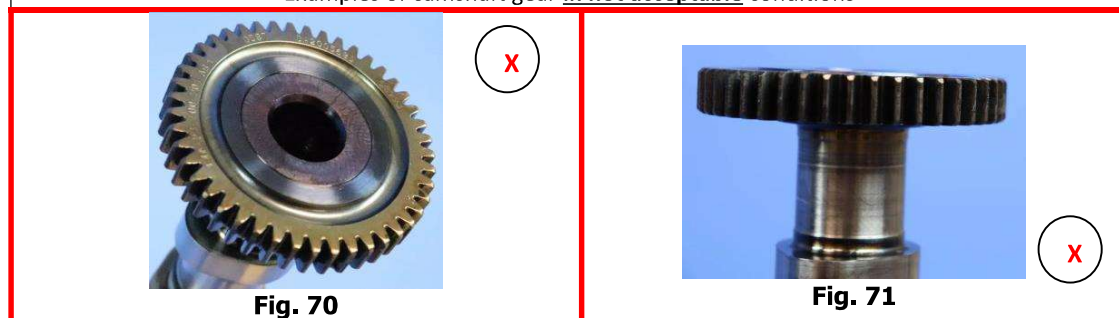
First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	28-31



Examples of camshaft gear **in not acceptable** conditions



Examples of camshaft gear **in not acceptable** conditions



Examples of camshaft gear **in not acceptable** conditions

	YES	NO	Consultation with AE required
Camshaft gear acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note:

- Check the gear according to the discoloration criteria provided.
- Darken gear without clear “overburn” discoloration are acceptable as it is the typical colour of the heat treatment of the material (e.g. figs. 61, 62, 63).
- The possible discoloration shown in the non-acceptable gears is due to high friction, which generates heat. When present the typical discoloration is not homogeneous and presents different shades from black/blue to violet/bronze.
- Shades of “burnt” material are typically present on both face of the gear, such discoloration is clearly visible on the outer surface of the gear; use a magnifier, if required, to check the inner surface.
- Check also for visible discoloration on the face of the teeth.

In case of doubt, fill the Appendix III and contact Austro Engine

First Issue Date			Rev. No.		Revision Date		Page
30	Nov.	2021	---	---	---	---	29-31

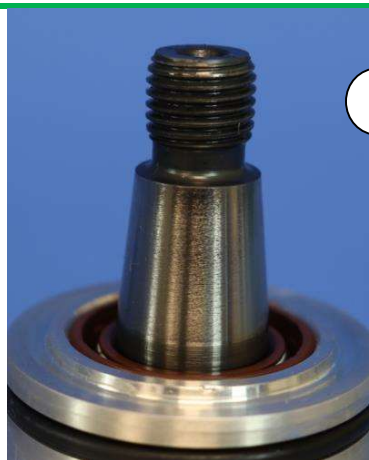


Fig. 72

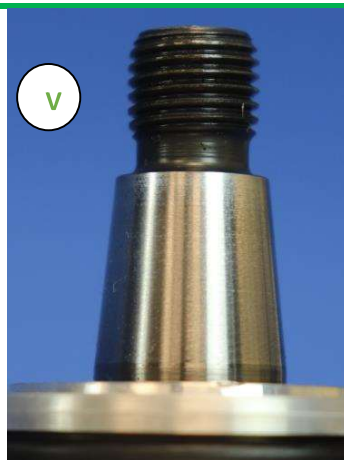


Fig. 73

Examples of HPP Shaft in acceptable conditions

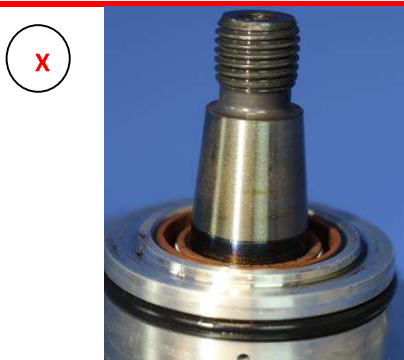


Fig. 74



Fig. 75

Examples of HPP Shaft in not acceptable conditions



Fig. 76

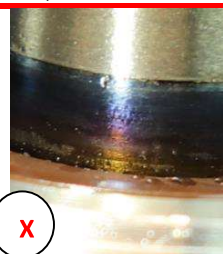


Fig. 77

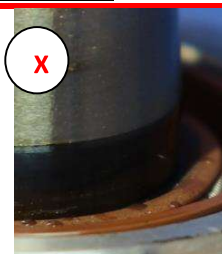


Fig. 78

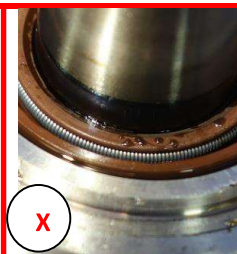


Fig. 79

Examples of HPP Shaft in not acceptable conditions

	YES	NO	Consultation with AE required
HPP Shaft acceptable:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note:	<ul style="list-style-type: none"> Check the shaft according to the discoloration criteria provided. Shaft darken in the lower area (e.g. figs. 74 to 79). <p>In case of doubt, fill the Appendix III and contact Austro Engine</p>		

First Issue Date			Rev. No.	Revision Date				Page
30	Nov.	2021	---	---	---	---	---	30-31

