



Emergency Airworthiness Directive

AD No.: 2018-0265R1

Issued: 09 January 2019

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, 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:

BRP-ROTAX GmbH & Co KG

Type/Model designation(s):

Rotax 914 and 915 engines

Effective Date: Revision 1: 09 January 2019
Original issue: 11 December 2018

TCDS Number(s): EASA.E.121 and EASA.E.122

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2018-0265-E dated 07 December 2018.

ATA 72 – Engine – Exhaust Valve – Replacement

Manufacturer(s):

BRP-Rotax GmbH & Co KG, formerly BRP-Powertrain GmbH & Co. KG; Bombardier-Rotax GmbH & Co. KG; Bombardier-Rotax GmbH

Applicability:

Rotax 915 iSc3 A, 915 iSc3 B engines and Rotax 914 F2, 914 F3 and 914 F4 engines, all serial numbers.

These engines are known to be installed on, but not limited to, the aeroplane types and models as listed in Appendix 1 of this AD. The installation of these engines was either done by the respective aeroplane manufacturer, or through modification of the aircraft by Supplemental Type Certificate (STC).

Definitions:

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

The ASB: BRP Rotax Alert Service Bulletin (ASB) ASB-915 i A-003 / ASB-915 i B-003 / ASB-914-054 (single document).

Affected exhaust valve: Exhaust valve part number (P/N) 854113 with a production lot number 0317 or 0517.



Serviceable exhaust valve: Exhaust valve which is not an affected exhaust valve.

Groups: Group 1 engines have an affected exhaust valve installed. Group 2 engines do not have an affected exhaust valve installed.

Reason:

A broken exhaust valve has been reported on a non-certified Rotax 914 UL2-01 engine. Subsequent investigation identified deviation in the manufacturing process of the affected exhaust valve.

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

Due to similarity of design, this condition may affect also Rotax 915 iSc3 A, 915 iSc3 B engines and Rotax 914 F2, 914 F3 and 914 F4 engines.

To address this potential unsafe condition, BRP-Rotax issued the ASB, later revised, providing applicable instructions, and EASA issued AD 2018-0265-E requiring replacement of affected exhaust valves, and prohibiting installation thereof on an engine.

Since that AD was issued, it has been determined that only exhaust valve P/N 854113 of certain lot numbers are affected, and BRP-Rotax revised the ASB accordingly (now at revision 2).

This AD is revised to reduce the scope of the definition of affected exhaust valve.

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

Required as indicated, unless accomplished previously:

Modification:

- (1) For Group 1 engines: Within 10 flight hours or 3 months, whichever occurs first after 11 December 2018 [the effective date of the original issue of this AD], replace each affected exhaust valve with a serviceable exhaust valve, in accordance with the instructions of the ASB.
- (2) [MERGED WITH PARAGRAPH (1) OF THIS AD].

Part(s) Installation:

- (3) Do not install on any engine an affected exhaust valve as required by paragraph (3.1) or (3.2) of this AD, as applicable.
 - (3.1) For Group 1 engines: After modification of that engine as required by paragraph (1) of this AD.
 - (3.2) For Group 2 engines: From 11 December 2018 [the effective date of the original issue of this AD].

Ref. Publications:

BRP Rotax ASB-915 i A-003 / ASB-915 i B-003 / ASB-914-054 (single document) original issue dated 04 December 2018, revision 1 dated 06 December 2018, or revision 2 dated 21 December 2018.



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

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the [EU aviation safety reporting system](#).
5. For any question concerning the technical content of the requirements in this AD, please contact: BRP-Rotax GmbH & Co KG, Telephone: +43 7246 601 0, Fax: +43 7246 601 9130, E-mail: airworthiness@brp.com, Website www.flyrotax.com.



Appendix 1 – List of Aircraft known to have Rotax engine(s) installed,
either done by the respective aircraft manufacturer or through modification of the aircraft by
Supplemental Type Certificate

Type Certificate Holder / Manufacturer	Type/model
3XTRIM SP.Z.O.O	3XTRIM
AAC AMPHIBIAN AIRCR. OF CANADA	TANGO, XP RFS
AEROSPOOL, SPOL. S.R.O.	DYNAMIC WT 9, WT10 ADVANTIC
ALPI AVIATION	PIONEER 300
Aquila Aviation GmbH	Aquila AT01
AUSTRALIAN AIRCRAFT COMPANY	HORNET
AUTOGYRO	CAVALON, MTO SPORT
AVIATION ARTUR TREDAK & SON	TAURUS, TERCEL
COMCO IKARUS	IKARUS C 22
Costruzioni Aeronautiche TECNAM S.r.l.	P2006T
Diamond Aircraft Industries GmbH	H 36 "Dimona", HK 36 "Super Dimona", HK 36 TTS, HK 36 TTC, HK 36 TTC-ECO
Diamond Aircraft Industries Inc.	DA20-A1 "Katana"
DYN AÉRO	MCR 01 UL, MCR-4S
ELA AVIACION	ELA-07
Flight - Design	CTLS-ELA
HANSA	HANSA-3
HELI SPORT SRL	CH-7 ANGEL
HOFFMANN AIRCRAFT	H36 DIMONA
JMB AIRCRAFT SRO	VL-3 EVOLUTION
RAINER KORFF LUFTFAHRT	TAIFUN 17E
M&D Flugzeugbau GmbH & Co. KG	AVO 68 aeroplanes "Samburo"
MAGNI GYRO	M-18 SPARTAN, M-24
MARC-INGEGNO	PARROT
PRO.MECC	01 SPARVIERO
ROTORSPORT UK LTD	CAVALON
Scheibe Aircraft GmbH	SF 25 C
SKYETON AIRCRAFT	K-10 SWIFT
Stemme AG	S10-VT, S12, S15-1, S6
Textron Aviation (formerly Cessna Aircraft Company)	150 and A150 aeroplanes (and Reims F150 and FA150), modified by various STC
TL ULTRALIGHT	TL 2000 STING
ZENITH AIRCRAFT (ZENAIR)	ZODIAC CH 601 XL





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Exchange of exhaust valves on ROTAX® Engine Types 915 i A, 915 i B (Series) and 914 (Series)

ATA System: 72-00-00 Engine

MANDATORY

1) Planning information

To obtain satisfactory results, procedures specified in this publication must be accomplished with accepted methods in accordance with prevailing legal regulations.

BRP-Rotax GmbH & Co KG cannot accept any responsibility for the quality of work performed in accomplishing the requirements of this publication.

1.1) Applicability

Criterion A) Engine serial number:

The engines below have been fitted by the manufacturer with an exhaust valve 32 mm (1.26 in.) part no. 854113 with a variety of production lots from which the production lot numbers 0317 and 0517 (see Fig. 2) are affected.

All versions of ROTAX® engine types 915 i A, 915 i B (Series) and 914 Series are affected, if at least one of the described criteria applies:

Engine type	Serial number
915 iSc A	from S/N 9127301 up to S/N 9127316 inclusive
915 iSc B	from S/N 9122510 up to S/N 9122523 inclusive
914 F	from S/N 4421923 up to S/N 4421964 inclusive

NOTE: Engines with serial numbers higher than in Criterion A have already been equipped with exhaust valve 32 mm (1.26 in.) with part no. 854113 with a production lot number higher than 0517 and are therefore not affected.

For relevant information, see the maintenance records and/or the logbook.

Criterion B) Spare parts (installed on engines):

All engines are affected, which have been equipped with an exhaust valve 32 mm (1.26 in.) with part no. 854113 with a production lot number 0317 and 0517 during engine repair, maintenance or general overhaul (see Fig. 2).

Criterion C) Spare parts (in inventory/not installed):

Further all exhaust valve 32 mm (1.26 in.) with part no. 854113 with a production lot number 0317 and 0517 sold as a spare part are also affected (see section 1.13).

1.2) Concurrent ASB/SB/SI and SL

None.

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1.3) Reason

Due to deviations in the manufacturing process of the exhaust valve 32 mm (1.26 in.) with part no. 854113 (for production lots affected see section 1.1) an exhaust valve cracking / fracture may occur. In consequence this may result in a malfunction of the valve train and a subsequent engine stoppage.

1.4) Subject

Exchange of exhaust valves on ROTAX Engine Type 915 i A, 915 i B (Series) and 914 (Series).

1.5) Compliance

- Immediately, on undelivered engines / spare parts
- Before the initial installation of engine and/or spare part, but at the latest by 31. December 2019, the "Exchange of sodium filled exhaust valves" must be conducted according to the following instructions in section 3
- Before the next flight

Carry out this exchange on the engines listed in section 1.1, according to the instructions in section 3, but at the latest after 1 year (from the date of the initial issue of this Alert Service Bulletin).



WARNING

Non-compliance with these instructions could result in engine damages, personal injuries or death.

These maintenance instructions shall be considered at any maintenance events, retrofitting, repair and overhaul.

1.6) Approval

The technical content of this document is approved under the authority of DOA ref. EASA.21J.048.

1.7) Labor time and credit

Estimated labor hours:

Engine installed in the aircraft - - - labor time will depend on airframe installation and therefore no estimate is available from the engine manufacturer.

A labor credit will be provided for work performed by a technician with current applicable iRMT rating.

Work performed	iRMT rating required	Labor credit
Exchange, replacement and reassembly as per Chapter 3.	iRMT Maintenance Heavy	6 hour

To apply for labor credit, contact your ROTAX® Authorized Distributor or their independent Service Centers.

1.8) Mass data

Change of weight - - - none.

Moment of inertia - - - unaffected.

1.9) Electrical load data

No change.

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1.10) Software modifications

No change.

1.11) References

In addition to this technical information refer to current issue of

- Illustrated Parts Catalog (IPC)
- Maintenance Manual Heavy (MMH)

NOTE: The status of the Manuals can be determined by checking the table of amendments. The 1st column of this table shows the revision status. Compare this number to the one listed on the ROTAX website:
www.flyrotax.com. Updates and current revisions can be downloaded for free.

1.12) Other Publications affected

None.

1.13) Interchangeability of parts

- All affected parts cannot further be used and must be marked unserviceable. These parts must be returned FCA (Free CArrier) to ROTAX[®] Authorized Distributors or their independent Service Centers
- Further sale, use or shipment of all affected exhaust valves part no. 854113 (see section 1.1) in stores (e.g. replacement parts) is not allowed and must be returned FCA to ROTAX[®] Authorized Distributors or their independent Service Centers

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2) Material Information

2.1) Material

Price and availability will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

2.2) Company support information

- Any possible support by BRP-Rotax will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers
- Exchanged parts must be returned FCA to ROTAX® Authorized Distributors or their independent Service Centers
- Shipping costs, downtime costs, loss of income, telephone costs etc. or costs of conversion to other engine versions or additional work, as for instance simultaneous engine overhauls are not covered in this scope and will not be borne or reimbursed by ROTAX®

2.3) Material requirement and credit per engine

A retrofit kit part no. 481375 of sodium valves is available. It includes the following parts required for exhaust valve exchange for 915 i A (Series), 915 i B (Series) and 914 (Series) engines.

Part no.	Qty/ engine	Description	Application
854113	4	Exhaust valve 32 mm	Cylinder head
253092	8	Valve cotter	Exhaust valve
850930	8	O-ring 16x5	Pushrod tubes
250285	4	O-ring 105x2.5	Valve covers
430205	4	O-ring 6.4x1.8	Valve covers
850091**	2	Isolating flange	Intake manifold
230910*	4	O-ring 34x2-N	Intake manifold
950180	4	O-ring 19x2-N	Coolant outlet
842950	8	Lock nut M8-SW12	Exhaust flange

* for 914 (Series) engine only.

** for 915 i A and 915 i B (Series) engine only.

NOTE: For 914 Series engines only, exhaust valves may be replaced with exhaust valve part no. 854111 if necessary.

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2.4) Material requirement and credit per spare part

None.

2.5) Rework of parts

None.

2.6) Special tooling/lubricants- /adhesives- /sealing compounds

Price and availability will be supplied on request by ROTAX® Authorized Distributors or their independent Service Centers:

Description	Part no.	Application
Cylinder aligning tool	877263	Cylinder head installation
Spring clamp pliers	877840	Water hose removal
Valve spring mounting device	877380	Valve removal and installation
Socket driver T30 ball head**	876180**	Intake manifold**

** Required for 915 i A/915 i B (Series) engines only.

NOTICE

If using these special tools observe the manufacturers specifications.

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3) Accomplishment/Instructions

- ROTAX® reserves the right to make any amendments to existing documents, which might become necessary due to this standardization, at the time of next revision or issue.

NOTE: Before maintenance, review the entire documentation to make sure you have a complete understanding of the procedure and requirements.

Accomplishment

All measures must be implemented and confirmed by at least one of the following persons or organizations:

- ROTAX® - Authorized Distributors or their independent Service Centers
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (iRMT, Level Heavy Maintenance) are entitled to carry out this work
- Persons with type-specific training

NOTE: All work has to be performed in accordance with the relevant Maintenance Manual.

Safety notice



WARNING

Identifies an instruction which, if not followed, may cause serious injury or even fatal injury.



CAUTION

Identifies an instruction which, if not followed, may cause minor or moderate injury.

NOTICE

Identifies an instruction which, if not followed, may severely damage the engine or could void any warranty.

ENVIRONMENTAL NOTE

Environmental notes give you tips on environmental protection.

NOTE: Indicates supplementary information which may be needed to fully complete or understand an instruction.

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3.1) General

Safety notice Following steps are important, read them carefully!



Danger of severe burns and scalds! Allow the engine to cool sufficiently and use appropriate safety gear while performing work.



Proceed with this work only in a non-smoking area and not close to sparks or open flames. Switch off ignition and secure engine against unintentional operation. Secure aircraft against unauthorized operation. Disconnect negative terminal of aircraft battery.

Check the criteria given in section 1.1, if the aircraft/engine/spare part is affected by this Alert Service Bulletin.

Check the engine logbook and maintenance documentation if this ASB has already been accomplished.

3.2) Remove cylinder heads

Remove cylinder heads in accordance to relevant Maintenance Manual Heavy.

3.3) Exchange exhaust valves 32 mm (1.26 in.) on cylinder heads

Step	Procedure
1	Remove the affected exhaust valves according to relevant Maintenance Manual Heavy (MMH).
2	Install new exhaust valves according to relevant Maintenance Manual Heavy (MMH).

3.4) Install cylinder heads

Install cylinder heads in accordance to relevant Maintenance Manual Heavy.

3.5) Finishing work

- Restore aircraft to original operating configuration according to the instruction of the aircraft manufacturer
- Connect negative terminal of aircraft battery

3.6) Test run

Conduct test run including leakage test. See Chapter 12-20-00 of the latest Maintenance Manual Line for the respective engine type.

3.7) Summary

These instructions (section 3) have to be followed in accordance with the deadlines specified in section 1.5.

The execution of the mandatory Alert Service Bulletin must be confirmed in the logbook.

A revision bar outside of the page margin indicates a change to text or graphic.

Translation into other languages might be performed in the course of language localization but does not lie within ROTAX® scope of responsibility.

In any case the original text in English language and the metric units are authoritative.

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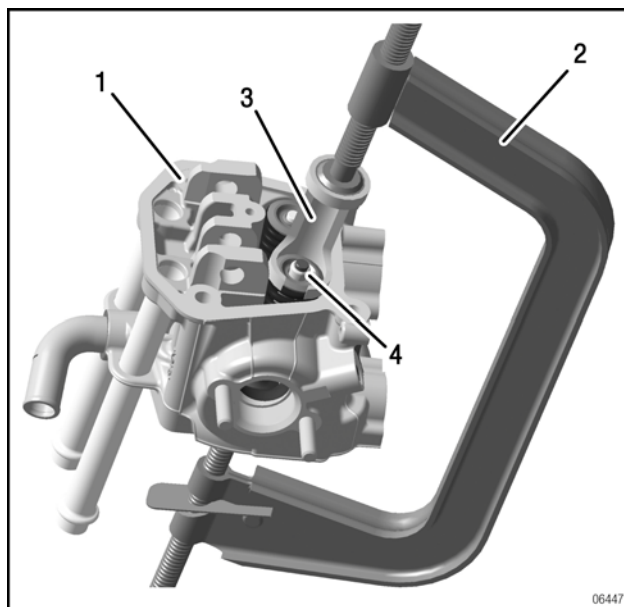
3.8) Inquiries

Inquiries regarding this Alert Service Bulletin should be sent to the ROTAX® Authorized Distributor of your area.

A list of all ROTAX® Authorized Distributors or their independent Service Centers is provided on www.flyrotax.com.

4) Appendix

The following drawings should convey additional information:



- 1 Cylinder head assy.
- 2 Valve spring hand-clamp
- 3 Valve spring mounting device part no. 877380
- 4 Valve cotter

Fig. 1
Exchange of exhaust valves

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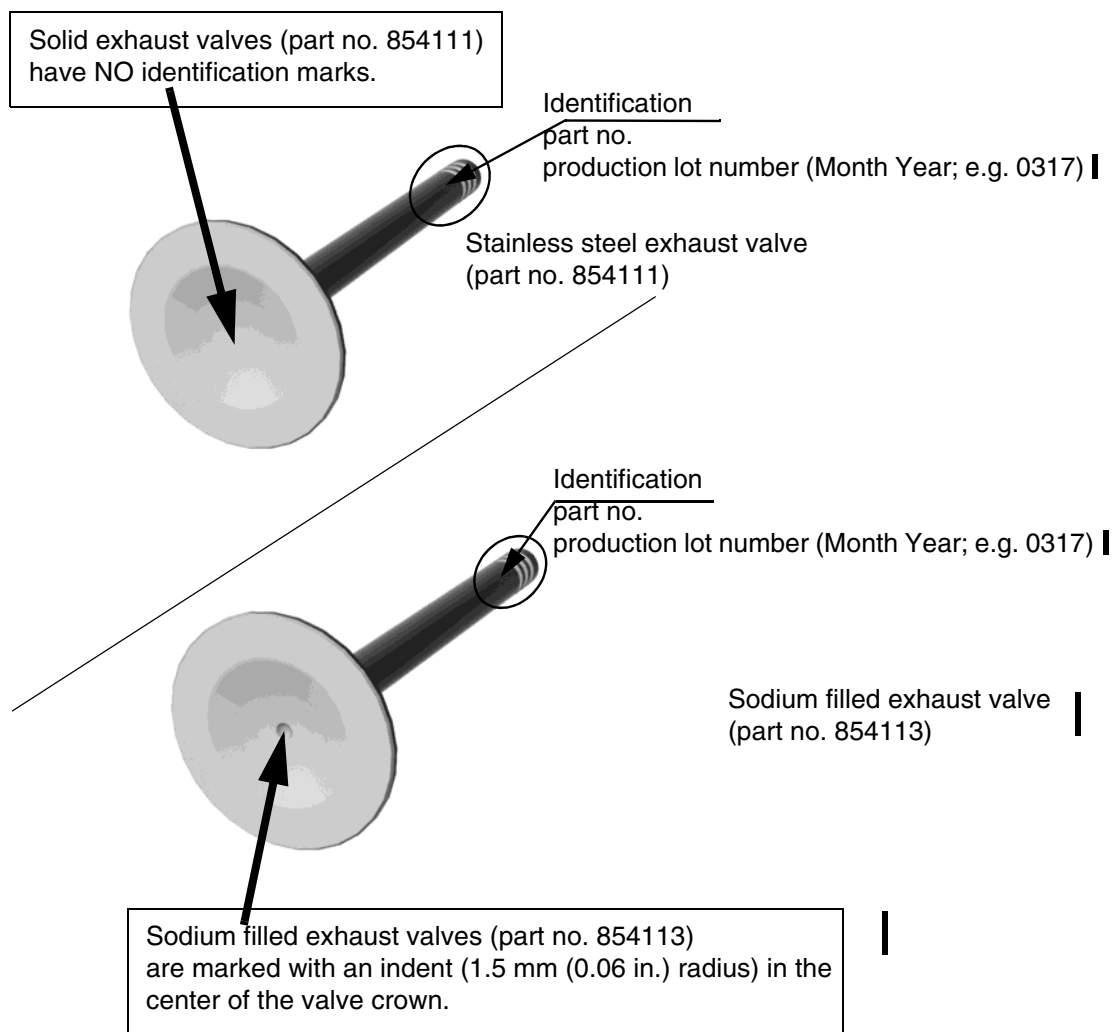


Fig. 2
Identification of exhaust valves

NOTE: The illustrations in this document show the typical construction. They may not represent full detail or the exact shape of the parts which have the same or similar function.

Exploded views are **not technical drawings** and are for reference only. For specific detail, refer to the current documents of the respective engine type.

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