ROTAX AIRCRAFT ENGINES

SERVICE BULLETIN

Checking of the axial clearance of wastegate shaft on turbocharger for ROTAX® Engine Type 915 i (Series)

ATA System: 78-10-00 Exhaust system

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

All versions of ROTAX® engine types 915 i Series are affected, if at least one of the following criteria applies:

Criterion A) Engine serial number:

Engine type	Serial number
915 iSc A	S/N 9127301
915 iSc B	from S/N 9122510 up to S/N 9122522 inclusive

Criterion B) Turbocharger part no. 893106:

Turbocharger	Serial number
Part no. 893106	S/N 202-01-171114-00020 / S/N 202-01-171130-00013 S/N 202-01-171130-00014 / S/N 202-01-171201-00001 S/N 202-01-171201-00002 / S/N 202-01-171201-00006 S/N 202-01-171201-00007 / S/N 202-01-171201-00008 S/N 202-01-171201-00009 / S/N 202-01-171201-00013 S/N 202-01-171201-00015 / S/N 202-01-171208-00003 S/N 202-01-171208-00007 / S/N 202-01-171208-00009

Criterion C) Spare parts:

Further all engines are affected, which have been equipped with turbocharger with part no. 893106 and with serial numbers listed within Criterion B) above during engine repair, maintenance or general overhaul or any other exchange action.

1.2) Concurrent ASB/SB/SI and SL

None.

1.3) Reason

Internal quality checks and field observations have shown that in isolated cases, the turbocharger wastegate shaft axial clearance is below acceptable limits. In rare cases, this may lead to a buildup of combustion by-products within the area of the wastegate shaft and subsequently to increased resistance which could lead to wastegate sticking.

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1.4) Subject

Checking of the axial clearance of wastegate shaft on turbocharger for ROTAX® Engine Type 915 i (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 2018, the “Checking of the axial clearance of wastegate shaft on turbocharger” must be conducted according to the following instructions in section 3.
- Carry out this inspection on the engines listed in section 1.1, according to the instructions in section 3 at the next ROTAX® scheduled maintenance event or within the next 25 hours of operation, but at the latest after 200 days (from the date of the initial issue of this Service Bulletin).
- At rough engine running, or unusual engine operating behavior carry out an inspection in accordance to this Service Bulletin before the next flight.

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

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

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

Work performed	iRMT rating required	Labor credit
Inspection, re-work and re-assembly as per chapter 3.	iRMT Maintenance Heavy	1 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.

1.10) Software modifications

No change.

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1.11) References

In addition to this technical information refer to current issue of

- Illustrated Parts Catalog (IPC)
- Installation Manual (IM)
- Maintenance Manual (MM)

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 that 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 parts are interchangeable

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

None.

2.3) Material requirement and credit per engine

None.

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
Feeler gauge 0.038 mm - 0.30 mm (0.0015 in - 0.012 in.)	-	Axial clearance measurement
LOCTITE ANTI SEIZE 8151	297434	Pressure box bar bushing
Steel hammer 500g	-	Rework of wastegate axial gap

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.

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.

3.1) Check the specified axial clearance of the turbocharger wastegate shaft

Following steps are important, read them carefully!

See Fig. 1 and Fig. 2.

Step	Procedure
1	Depending upon the aircraft, remove cowling. Follow the instructions of the aircraft manufacturer.
2	Mark the position of the pressure control rod locking nut. Ensure that the locking nut (1) and the rod end (2) do not rotate during the measurement procedure.
3	Remove the wastegate shaft locking clip (3) by gently bending the beveled edge of the clip over the wastegate shaft and sliding the clip towards the open end.

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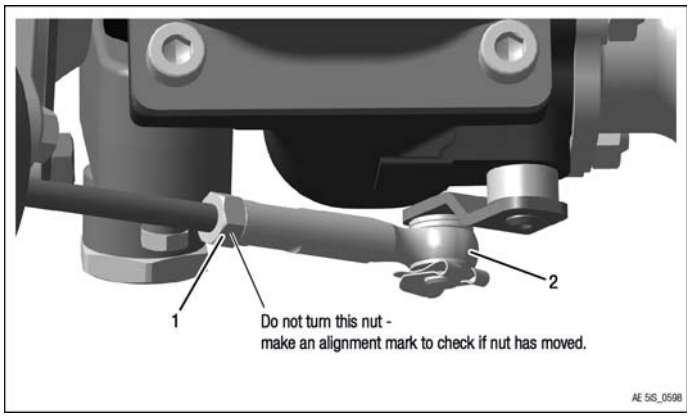
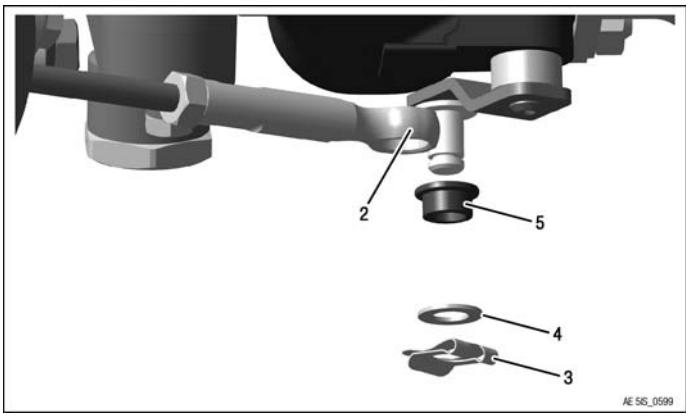


1 Locking nut
2 Rod end

Fig. 1
wastegate shaft

See Fig. 2.

Step	Procedure
4	Remove the shim (4), the pressure control rod and the bushing (5) from the wastegate control rod pin.



2 Rod end
3 Locking clip
4 Shim
5 Bushing

Fig. 2
Removal locking clip and bushing

See Fig. 3.

Step	Procedure
5	Using feeler gauge(s) (6) check the axial clearance gap between the turbocharger bushing and the wastegate shaft (7).

6 Feeler gauge
7 Wastegate shaft
8 Bushing

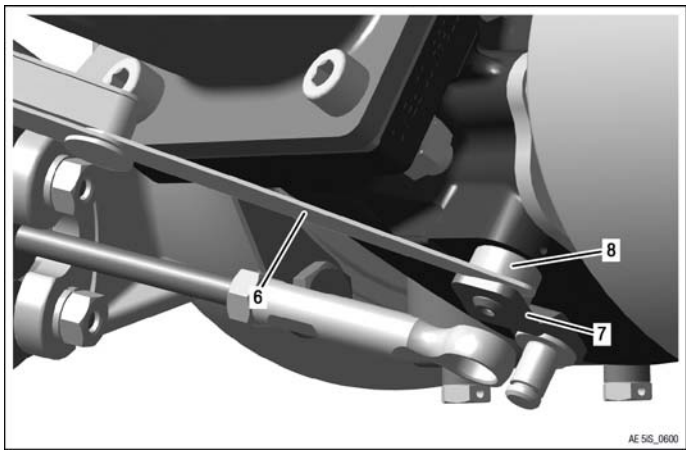
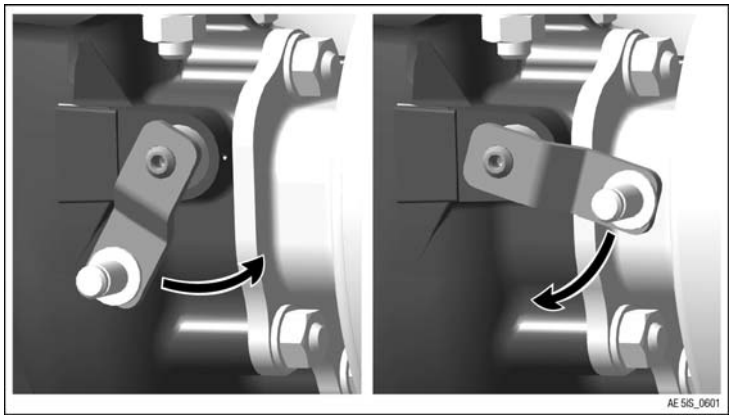


Fig. 3
Axial clearance measurement

See Fig. 3 and Fig. 4.

Step	Procedure
6	Move the wastegate shaft from fully open to fully closed and check the clearance gap at all positions 360° around the bushing. Clearance values between the turbocharger bushing (8) and the wastegate shaft must be: min. 0.1 mm (0.0039 in.).

Wastegate closed



Wastegate open

Fig. 4
Wastegate position

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Step	Procedure
7	If axial clearance values are **above 0.1 mm (0.0039 in.)**, continue with the instructions for re-assembly as per section 3.3 below. If axial clearance values are **below 0.1 mm (0.0039 in.)**, continue with the rework instructions as per section 3.2 below.

3.2) Rework of axial clearance (gap) of the turbocharger wastegate shaft

See Fig. 5.

Step	Procedure
1	With the turbocharger control rod removed as per section 3.1 above, align the hammer directly with the weld on the bottom of the wastegate shaft (marked area Fig. 5). Ensure adequate room to swing the hammer. The removal of components such as coolant radiator may be necessary depending upon aircraft installation.
2	Keeping the hammer perpendicular to the wastegate shaft, carefully hit the center of the weld with a soft test blow. Once adequate clearance for hammer swing is assured, carefully hit the center of the weld once with increased force.

NOTICE

Avoid hammer contact with any other area of the wastegate shaft. If the wastegate shaft is bent, the turbocharger must be replaced. Avoid damage to other engine and airframe components.

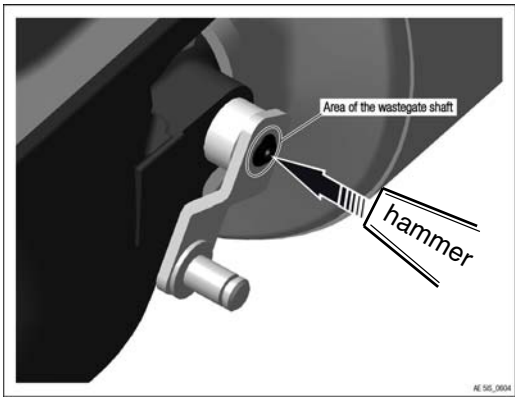

Fig. 5
Marked area

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Step	Procedure
3	Check the axial clearance of the wastegate arm following the directions in section 3.1 above. If axial clearance values are above 0.1 mm (0.0039 in.), continue with the instructions for re-assembly as per section 3.3 above. If axial clearance values are still below 0.1 mm (0.0039 in.), perform another adjustment as per section 3.2, step 1 above with gradually increasing force and repeat the clearance measurement. It is possible to gain sufficient clearance using this adjustment method. Repeat the adjustment procedure until clearance values of **0.1 mm - 0.2 mm* (0.0039 - 0.0079 in.)** are achieved. * max. limit to avoid exceeding hammering force.

3.3) Re-assembly of pressure box

See Fig. 6.

Step	Procedure
1	Lubricate the control rod bar bushing (1) with LOCTITE ANTI SEIZE 8151.
2	Place the bushing (1) onto the pin with the bushing collar facing towards the wastegate arm.
3	Place the pressure control pin (2) over the bushing.

1 Bushing
2 Pressure control rod

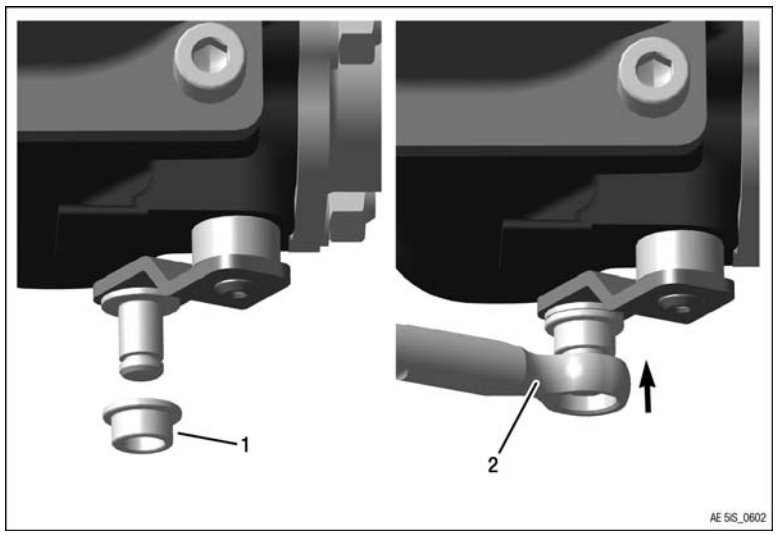

Fig. 6
Installation bushing

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See Fig. 7.

Step	Procedure
4	Place the shim (3) over the pin and hold in place.
5	Place the open end of the locking clip (4) into the groove of the pin and the beveled portion of the clip over the end of the pin.
6	Push the locking clip (4) into place until the beveled end retains the clip over the pin.

3 Shim
4 Locking clip

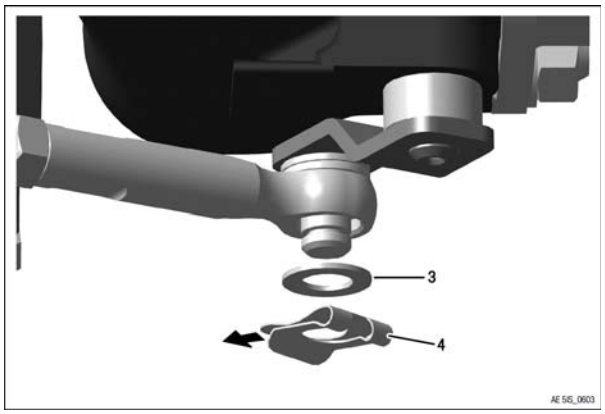

Fig. 7
Installation shim and locking clip

3.4) Test run

Perform an on-ground engine test run and ensure that the pressure box bar and wastegate shaft actuate normally and that proper operation of the engine is achieved including a full power (full boost) run.

NOTE: Check with aircraft manufacturer whether a full power ground run is allowed without engine cowling in place.

3.5) Summary

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

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

I 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.

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.

3.6) Inquiries

Inquiries regarding this 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.