ROTAX

SERVICE BULLETIN

Inspection and maintenance after an overload clutch slipping event on ROTAX® 915 i and 916 i (Series) Aircraft Engines

ATA System: 72-10-00 – Overload Clutch

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:

Engine type	Serial number
916 i (Series)	all
915 i (Series)	all

1.2) Concurrent ASB/SB/SI and SL

In addition to this Service Bulletin the following documents must be observed and complied with:

- SI-915 i-001 /916 i-001, Selection of suitable operating fluids for ROTAX® Engine Types 916 i & 915 i (Series), current revision.
- In general, all relevant Alert Service Bulletins (ASB), Service Bulletins (SB), Service Instructions (SI), Service Letters (SL), Service Instruction - Parts and Accessories (SI-PAC) with relevance to perform this maintenance, repair, or overhaul task.

1.3) Reason

In isolated cases a momentary slipping of the overload clutch may lead to a slight exceedance (explanation see section 3.3) of the maximum rpm limit (for further explanation see section 3.3), followed by the engine rpm quickly normalizing.

1.4) Subject

Inspection and maintenance after an overload clutch slipping event on ROTAX® 915 i and 916 i (Series) Aircraft Engines.

1.5) Compliance

If a documented overspeed condition (for example see section 3.3) is identified (evidence has to be shown by corresponding log file), perform inspection and maintenance in accordance with the following instructions in section 3 before the next flight.

NOTE: Any further operation (such as ferry flight) is dependent on the following conditions: 1) if the slipping event did occur just once a ferry flight without further limitations is permitted. Operations like e.g. glider towing should not be performed any longer.
2) if multiple slipping events did occur no ferry flight should be considered.

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

1.6) Approval

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

1.7) Labor time

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.

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.

1.11) References

In addition to this technical information refer to current issue of

- in general, Operators Manual (OM) and in particular: Section 2.1
- in general, Illustrated Parts Catalog (IPC) and in particular: Chapter 72-10-00
- in general, Installation Manual (IM) and in particular: Chapter 61-00-00
- in general, Maintenance Manual Line (MML) and in particular: Chapters 05-50-00
- in general, Maintenance Manual Heavy (MMH) and in particular: Chapters 72-10-00

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 used parts are unserviceable and must be returned FCA (Free CArrier) to ROTAX® authorized distributors or their independent Service Centers

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 GmbH & Co KG will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

2.3) Material requirement per engine

Parts requirements:

See Fig. 1.

Fig. no.	Part no.	Qty / engine	Description	Application
1	958425	1	OVERLOAD CLUTCH ASSY.	Gearbox assy.

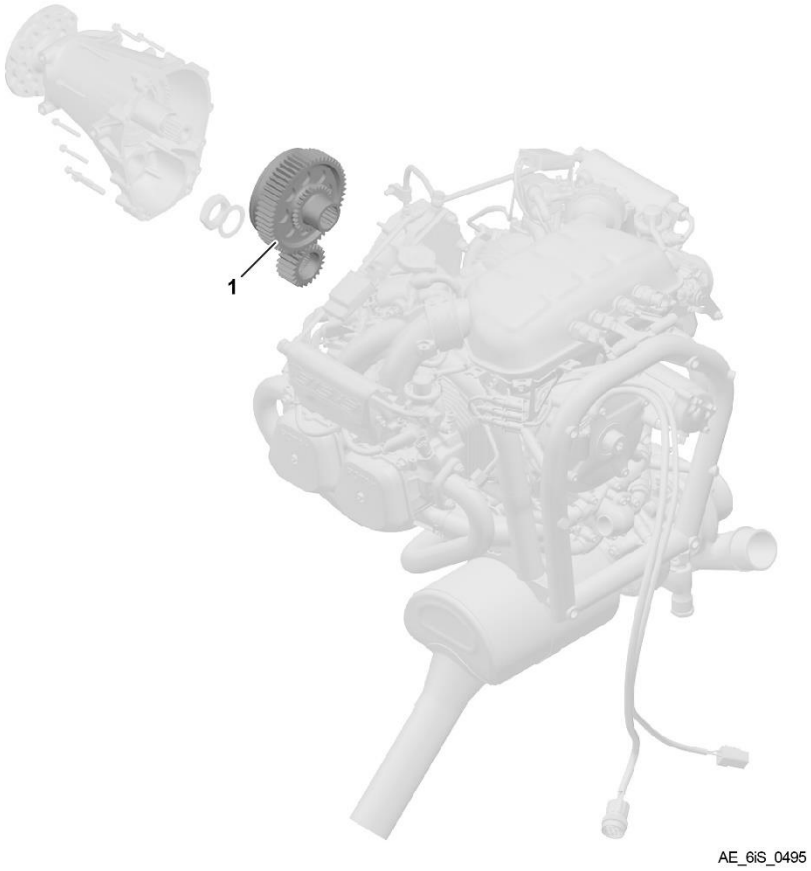

Fig. 1
Overload clutch assy.

2.4) Material requirement per spare part

None.

2.5) Rework of parts

None.

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

Description	Qty / engine	Part no.	Application
LOCTITE 5910	-	899791	Gearbox assy.
LOCTITE 648	-	899788	Drive gear hex. nut

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® - Airworthiness representatives
- ROTAX® - Authorized Distributors or their independent Service Centers
- Persons approved by the respective Aviation Authorities
- 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: Indicates supplementary information which may be needed to fully complete or understand an instruction.

All work must be performed in accordance with the relevant ROTAX® Instructions for Continued Airworthiness (ICA) of the respective engine type.

General

Further material on general inspection, maintenance and repair can also be found in relevant Advisory Circular AC 43.13 from FAA.

Advisory Circular

The Advisory Circular (AC) contains maintenance methods, techniques and practices.

3.1) Illustrated Parts Catalog – related information

See current Illustrated Parts Catalog (IPC) for the respective engine type, Chapter 72-10-00

3.2) Installation – related information

See current Installation Manual (IM) for the respective engine type, Chapter 24-20-00

ROTAX® would like to once again raise awareness that the following requirements are valid and must be adhered to in order to prevent unintended overload clutch slippage:

- Proper installation and calibration of the propeller governor
- The maximum propeller moment of inertia must not be exceeded.

3.3) Operation – related information

See current Operators Manual (OM) for the respective engine type, Chapter 3
See also Aircraft Manufacturer's POH

NOTE: The overspeed event can be characterized as following.

The engine speed setting is actually between 5500 rpm and 5800 rpm at WOT stabilized, followed by a sudden overspeed up to 6500 rpm for less than a second. The clutch increases its transmittable torque during slipping condition and synchronizes the engine speed with the propeller again, which consequently lead to an undercut of the engine speed down to 4000 rpm followed by a recovery of the initial engine setting between 5500 rpm and 5800 rpm. The entire event is lasting up to 3 seconds.

In rare cases, if upper sequence happened more times unidentified, the transmittable torque of the overload clutch will be reduced and the speed fluctuation just can be stabilized by a slight reduction of the throttle down to 96%. If the engine speed has stabilized the throttle setting could be increased to WOT again.

ROTAX® would like to once again raise awareness that the following requirements are valid and must be adhered to in order to prevent unintended overload clutch slippage:

- Exclusive use of the released oils as per Service Instruction SI-915 i-001 / SI-916 i-001.

  a) Engine oils tested according to RON 424 for use with our ROTAX® engine types:

Brand	Description	Specification	Viscosity	Engine type
SHELL®	AeroShell Oil Sport Plus 4	RON 424	SAE 10W-40	916 iSc B
SHELL®	AeroShell Oil Sport Plus 4	RON 424	SAE 10W-40	915 i Series

  b) Engine oils tested according to RON 451 for use with our ROTAX® engine types:

Brand	Description	Specification	Viscosity	Engine type
XPS®	Fully Synthetic Aviation Engine Oil	RON 451	SAE 5W-50	916 iSc/iS C24 Series
XPS®	Fully Synthetic Aviation Engine Oil	RON 451	SAE 5W-50	916 iSc/iS A Series
XPS®	Fully Synthetic Aviation Engine Oil	RON 451	SAE 5W-50	916 iSc B
XPS®	Fully Synthetic Aviation Engine Oil	RON 451	SAE 5W-50	915 i Series

NOTICE In case of using other oil than the released oils the overload clutch must be replaced.

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

- Minimum oil temperature must be reached before applying take-off power.
- Proper handling at ground checks (prop check) and adjustment of propeller and propeller governor.
- Avoid rapid rpm changes caused by:
  - Rapid manipulating of the prop control.
  - Rapid throttle changes during cruise.

3.4) Maintenance (Line) – related information

See current Maintenance Manual Line (MML) for the respective engine type, Chapter 05-20-00 & 05-50-00

NOTE: Any exceedance of the maximum rpm limit and the necessary steps to be taken can be found in the Maintenance Manual Line (MML).

3.5) Maintenance (Heavy) – related information

See current Maintenance Manual Line (MMH) for the respective engine type, Chapter 72-10-00

3.5.1) Maintenance after an overload clutch slipping event

See Fig. 2.

Step	Procedure
1	Remove the gearbox oil line assy. Config. 3, see Maintenance Manual Heavy (MMH), Chapter 61-20-00. Config. 2, see Maintenance Manual Heavy (MMH), Chapter 72-10-00.
2	Remove the gearbox assy. See Maintenance Manual Line (MML) Chapter 05-50-00. NOTE: Removal of hex. screw M12x20 and torsion shaft is not necessary.
3	Remove the overload clutch and drive gear.

1) Overload clutch
2) Drive gear

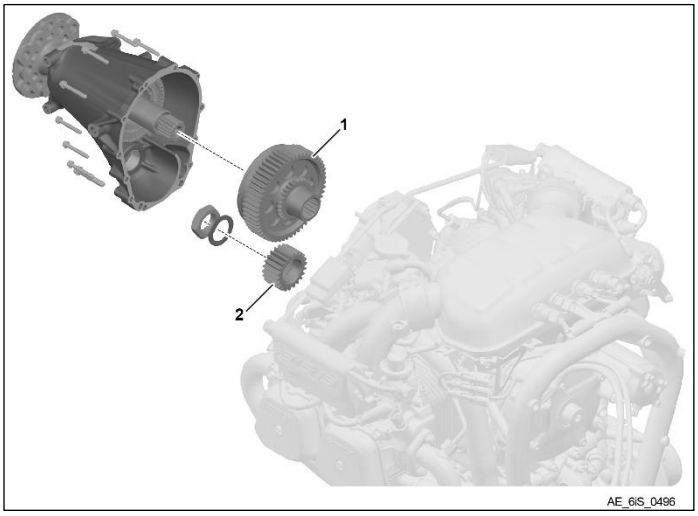

Fig. 2

See Fig. 3

Step	Procedure
4	Install new overload clutch assy. part no. 958425.
5	Install matching new drive gear.

NOTICE

The whole gear set including the drive gear must always be replaced.

P) LOCTITE 5910
C) LOCTITE 648

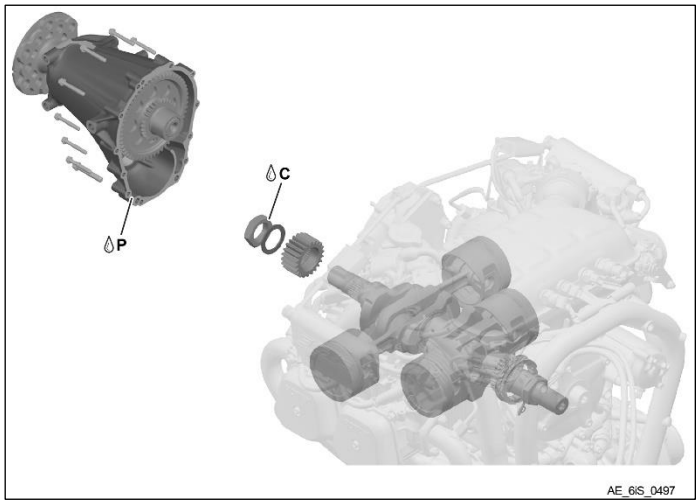

Fig. 3

See Fig. 4

Step	Procedure
6	Install gearbox assy. See Maintenance Manual Line (MML) Chapter 05-50-00.
7	Install gearbox oil line assy.

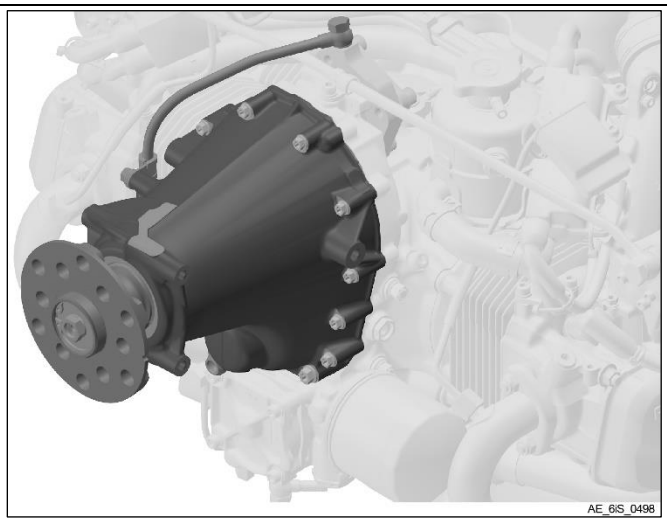

Fig. 4

3.6) Finishing Work

- Restore aircraft to original operating configuration.
- Connect negative terminal of aircraft battery.

3.7) Test run

Conduct test run.

See current Maintenance Manual Line (MML) for the respective engine type, Chapter 12-20-00

3.8) Summary

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

The execution of the 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.

3.9) Inquiries

Inquiries regarding this Service Bulletin should be sent to the ROTAX® Authorized Distributor of your area.
A list of all ROTAX® Authorized Distributors and their independent Service Centers is provided on www.flyrotax.com.

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.