

# **SERVICE BULLETIN**

## **REPLACEMENT OF THE PROPELLER GEARBOX**

### **FOR SOME ROTAX® ENGINES TYPE 912/914 (SERIES)**

#### **SB-912-056 UL**

#### **SB-914-038 UL**

## **MANDATORY**

### **Repeating symbols:**

Please, pay attention to the following symbols throughout this document emphasizing particular information.

▲ **WARNING:** Identifies an instruction, which if not followed, may cause serious injury or even death.

■ **CAUTION:** Denotes an instruction which if not followed, may severely damage the engine or could lead to suspension of warranty.

◆ **NOTE:** Information useful for better handling.

### **1) Planning information**

#### **1.1) Engines affected**

All versions of the engine type:

◆ **Note:** At the time of shipping the affected propeller gearboxes were installed on the engines with the serial numbers listed below. However, the determining factor is the serial number of the propeller gearbox and not the serial number of the engine.

- 912 ULS

5,645.684 to 5,645.776 / 5,645.778 to 5,645.788 / 5,645.790 to 5,645.872 / 5,645.874 to 5,646.141 / 5,646.558 to 5,646.561 / 5,646.563 to 5,646.577 / 5,646.580 / 5,646.582 to 5,646.630 / 5,646.632 to 5,646.693 / 5,646.695 / 5,646.698 to 5,646.707 / 5,646.710 / 5,646.711 / 5,646.716 to 5,646.747 / 5,646.750 to 5,647.175 / 5,647.177 to 5,647.295 / 5,647.297 to 5,647.305

- 912 ULSFR

4,430.233 to 4,430.250 / 4,430.252 to 4,430.266 / 4,430.311 to 4,430.315 / 4,430.317 to 4,430.405

- 914 UL

4,419.179 to 4,419.182 / 4,419.184 to 4,419.216 / 4,419.220 to 4,419.223 / 4,419.288 to 4,419.295 / 4,419.299 to 4,419.331 / 4,419.333 / 4,419.334 / 4,419.336 to 4,419.340 / 4,419.344 to 4,419.346 / 4,419.349 / 4,419.351 to 4,419.353 / 4,419.356 to 4,419.441

#### **Propeller gearboxes affected**

- propeller gearboxes with a serial number from the list below:

03.0310 / 03.0311 / 03.0313 / 03.0316 / 03.0408 / 03.0418 / 03.0433 / 03.0436 to 03.0452 / 03.0493 to 03.0562 / 03.0595 to 03.0679 / 03.0699 to 03.0778 / 03.0802 to 03.0814 / 03.0816 to 03.0856 / 03.0867 to 03.0876 / 03.0898 to 03.0985 / 03.1011 to 03.1048 / 03.1062 to 03.1124 / 03.1128 to 03.1138 / 03.1140 / 03.1169 to 03.1174 / 03.1179 to 03.1247 / 03.1249 / 03.1251 / 03.1286 to 03.1294 / 03.1296 to 03.1308 / 03.2063 to 03.2078 / 03.2080 / 03.2082 / 03.2084 to 03.2091 / 03.2106 / 03.2107 / 03.2118 to 03.2136 / 03.2152 to 03.2182 / 03.2197 to 03.2257 / 03.2259 to 03.2285 / 03.2348 to 03.2397 / 03.2399 to 03.2402 / 03.2404 / 03.2405 / 03.2407 / 03.2409 to 03.2418 / 03.2421 / 03.2423 / 03.2425 / 03.2426 / 03.2430 / 03.2431 / 03.2433 / 03.2435 / 03.2437 / 03.2438 / 03.2440 / 03.2476 to 03.2483 / 03.2485 / 03.2487 / 03.2490 / 03.2491 / 03.2493 / 03.2495 to 03.2498 / 03.2500 to 03.2517 / 03.2519 to 03.2611 / 03.2628 to 03.2729 / 03.2735 to 03.2737 / 03.2759 to 03.2826

/ 03.2832 to 03.3007 / 03.3046 / 03.3055 to 03.3127 / 03.3129 / 03.3132 to 03.3149 / 03.3187 to 03.3337 / 03.3339 to 03.3362 / 03.3364 / 03.3366 to 03.3378 / 03.3443 to 03.3506 / 03.3508 to 03.3510

- ◆ NOTE: The respective serial number of the propeller gearbox is visible on the gearbox housing (see fig. 1)

#### **Parts affected**

- All gear sets supplied as spare parts with a serial number from the list below:

06.1068 to 06.1070 / 06.1275 to 06.1279 / 06.1296 / 06.1298 / 06.1428 / 06.1429 / 06.1432 / 06.1443 to 06.1448 / 06.1450 / 06.1474 / 06.1657 to 06.1660 / 06.1662 to 06.1664 / 06.1667 to 06.1669 / 06.1672 / 06.1673 / 06.1679 / 06.1758 / 06.1764 / 06.2068 / 06.2071 / 06.2078 / 06.2080 to 06.2083 / 06.2420 / 06.2422 to 06.2425 / 06.2529 / 06.2532 / 06.2579 / 06.2581

In addition, all propeller gears are affected if they have received a gear set from an engine listed above. This could have happened, if in the course of a maintenance or an overhauling procedure the gear set part no. 886518 was removed from an affected engine for later use in a different propeller gear.

For complete instructions and compliance to this Service Bulletin refer to Service Bulletin-SB-912-056/SB-914-038, latest edition section 1.2 onward.

- ◆ NOTE: Section 1.6) Approval: Is not required for engines of the type UL (series).  
Section 3) Accomplishment: In addition: persons with adequate type-specific training.

# SERVICE BULLETIN

## REPLACEMENT OF THE PROPELLER GEARBOX FOR SOME ROTAX® ENGINES TYPE 912/914 (SERIES)

SB-912-056

SB-914-038

### **MANDATORY**

#### Repeating symbols:

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- ▲ **WARNING:** Identifies an instruction, which if not followed, may cause serious injury or even death.
- **CAUTION:** Denotes an instruction which if not followed, may severely damage the engine or could lead to suspension of warranty.
- ◆ **NOTE:** Information useful for better handling.

#### 1) Planning information

##### 1.1) Engines affected

All versions of the engine type:

- ◆ **NOTE:** At the time of shipping the affected propeller gearboxes were installed on the engines with the serial numbers listed below. However, the determining factor is the serial number of the propeller gearbox and not the serial number of the engine.

- 912 S

4,923.238 to 4,923.253 / 4,923.256 to 4,923.267 / 4,923.269 to 4,923.273 / 4,923.309 to 4,923.326 / 4,923.329 to 4,923.333 / 4,923.335 to 4,923.380

- 914 F

4,420.517 / 4,420.519 to 4,420.569 / 4,420.571 / 4,420.574 / 4,420.576 / 4,420.606 / 4,420.608 to 4,420.610 / 4,420.612 / 4,420.614 to 4,420.617 / 4,420.619 / 4,420.622 to 4,420.626 / 4,420.629 to 4,420.632

##### Propeller gearboxes affected

- propeller gearboxes with a serial number listed below:

03.0310 / 03.0311 / 03.0313 / 03.0316 / 03.0408 / 03.0418 / 03.0433 / 03.0436 to 03.0452 / 03.0493 to 03.0562 / 03.0595 to 03.0679 / 03.0699 to 03.0778 / 03.0802 to 03.0814 / 03.0816 to 03.0856 / 03.0867 to 03.0876 / 03.0898 to 03.0985 / 03.1011 to 03.1048 / 03.1062 to 03.1124 / 03.1128 to 03.1138 / 03.1140 / 03.1169 to 03.1174 / 03.1179 to 03.1247 / 03.1249 / 03.1251 / 03.1286 to 03.1294 / 03.1296 to 03.1308 / 03.2063 to 03.2078 / 03.2080 / 03.2082 / 03.2084 to 03.2091 / 03.2106 / 03.2107 / 03.2118 to 03.2136 / 03.2152 to 03.2182 / 03.2197 to 03.2257 / 03.2259 to 03.2285 / 03.2348 to 03.2397 / 03.2399 to 03.2402 / 03.2404 / 03.2405 / 03.2407 / 03.2409 to 03.2418 / 03.2421 / 03.2423 / 03.2425 / 03.2426 / 03.2430 / 03.2431 / 03.2433 / 03.2435 / 03.2437 / 03.2438 / 03.2440 / 03.2476 to 03.2483 / 03.2485 / 03.2487 / 03.2490 / 03.2491 / 03.2493 / 03.2495 to 03.2498 / 03.2500 to 03.2517 / 03.2519 to 03.2611 / 03.2628 to 03.2729 / 03.2735 to 03.2737 / 03.2759 to 03.2826 / 03.2832 to 03.3007 / 03.3046 / 03.3055 to 03.3127 / 03.3129 / 03.3132 to 03.3149 / 03.3187 to 03.3337 / 03.3339 to 03.3362 / 03.3364 / 03.3366 to 03.3378 / 03.3443 to 03.3506 / 03.3508 to 03.3510

- ◆ **NOTE:** The relevant serial number of the gearbox is visible on the gearbox housing (see fig.1).

## Parts affected

- All gear sets supplied as spare part with a serial number listed below:

06.1068 to 06.1070 / 06.1275 to 06.1279 / 06.1296 / 06.1298 / 06.1428 / 06.1429 / 06.1432 / 06.1443 to 06.1448 / 06.1450 / 06.1474 / 06.1657 to 06.1660 / 06.1662 to 06.1664 / 06.1667 to 06.1669 / 06.1672 / 06.1673 / 06.1679 / 06.1758 / 06.1764 / 06.2068 / 06.2071 / 06.2078 / 06.2080 to 06.2083 / 06.2420 / 06.2422 to 06.2425 / 06.2529 / 06.2532 / 06.2579 / 06.2581

If in the course of a maintenance/overhaul procedure a gear set part no. 886518 was removed from one of the propeller gearboxes listed above and if this removed gear set was later used in a different propeller gear box, then this propeller gear box is also affected.

### 1.2) Concurrent ASB/SB/SI and SL

none

### 1.3) Reason

Due to a slightly increased amount of irregularity in the form of material inclusions some isolated problems were detected on the gearbox and/or the gear set in the field.

Such material inclusions in the area of the tooth base can lead to a tooth break under severe operating conditions.

Normally broken metal fragments are dropping to the lower portion of the gearbox and are retained captive by the magnetic plug, but in individual cases they may get squeezed by rotating gear sets further damaging the gearbox housing.

### 1.4) Subject

Replacement of the propeller gearbox of some ROTAX<sup>®</sup> engines of type 912/914 (Series)

### 1.5) Compliance

- during the next maintenance event

- at the latest April 30th 2008.

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

### 1.6) Approval

The technical content is approved under the authority of DOA Nr. EASA.21J.048.

### 1.7) Manpower

Estimated man-hours:

engine installed in the aircraft - - - manpower time will depend on 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 accomplishment summary

no change

### 1.11) References

In addition to this technical information refer to current issue of

- Illustrated Parts Catalog (IPC)

- Maintenance Manual (MM)

◆ **NOTE:** The status of Manuals can be determined by checking the table of amendments of the Manual. The 1<sup>st</sup> column of this table is the revision status. Compare this number to that listed on the ROTAX<sup>®</sup> WebSite: [www.rotax-aircraft-engines.com](http://www.rotax-aircraft-engines.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 in accordance to the IPC.
- All used parts which cannot be used must be returned F.O.B. to a ROTAX<sup>®</sup> Authorized Distributor or Service Center.

## 2) Material Information

### 2.1) Material - cost and availability

Price and availability will be supplied on request by ROTAX<sup>®</sup> Authorized Distributors or their Service Center.

### 2.2) Company support information

- Redundant parts must be returned F.O.B. to a ROTAX<sup>®</sup> Authorized Distributor or Service Center.
- Shipping cost, down time, loss of income, telephone costs etc. or cost of conversion to other engine versions or additional work, as for instance simultaneous engine overhaul is not covered in this scope and will not be borne or reimbursed by ROTAX<sup>®</sup>.

### 2.3) Material requirement per engine

parts requirement:

Fig.no.	New p/n	Qty/engine	Description	Old p/n	Application
	XXXXXX*	1	gearbox assy.	-	engine
	-	1	gasket	950141	crankshaft locking
	-	1	friction washer	845430	drive gear
	-	1	insulating flange	950226*	mechanical fuel pump
	-	1	oil filter	825703	oil pump

\* depending on the engine type (see IPC)

Version with **wide** gear set: ROTAX<sup>®</sup> part no. 887703 / 887708 / 887713 / 888560 / 888565 / 887720 / 887721 / 887722

\*\* only affected of the engine type 912 Series

### 2.4) Material requirement per spare part

none

### 2.5) Rework of parts

none

### 2.6) Special tooling/lubricant-/adhesives-/sealing compound - Price and availability

Price and availability will be supplied on request by ROTAX<sup>®</sup> Authorized Distributors or their Service Centers.  
parts requirement:

Fig.no.	New p/n	Qty/engine	Description	Old p/n	Application
	-	1	filter wrench	877620*	oil filter
	-	1	crankshaft locking pin	240880	crankshaft housing
	-	1	pull-out fixture ** or	877660	gearbox housing
	877540	1	pushing jig assy**	-	gearbox housing
	-	as required	LOCTITE 574** or	899784	gearbox housing sealing surf.
	-	as required	LOCTITE 5910**	899791	
	-	as required	LOCTITE 648	899788	hex nut. M30

\* or equivalent

\*\* either of the two options may be used

■ CAUTION: In using these special tools observe the manufacturer's specifications.

### 3) Accomplishment / Instructions

#### Accomplishment

All the measures must be taken and confirmed by the following persons or facilities:

- ROTAX<sup>®</sup> -Airworthiness representative
- ROTAX<sup>®</sup> -Distributors or their Service Centers
- Persons approved by the respective Aviation Authority

▲ **WARNING:** 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.

▲ **WARNING:** Risk of scalds and burns! Allow engine to cool sufficiently and use appropriate safety gear while performing work.

▲ **WARNING:** Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be required when undergoing disassembly/assembly, always replace with a new one.

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

#### 3.1) Instructions

##### 3.1.1) Remove of the propeller gearbox

1. Lock the crankshaft
2. Remove the propeller gearbox. Perform relevant work depending on gearbox type in accordance with the current Maintenance Manual. The propeller gearbox needs to be sent to a ROTAX<sup>®</sup> Authorized Distributor for repair.
3. Install the new propeller gearbox.
4. Restore aircraft to original operating configuration.
5. Connect negative terminal of aircraft battery.
6. Conduct test run including ignition check and leakage test.

■ **CAUTION:** After the exchange of the propeller gearbox it is necessary to check the oil filter in accordance with the latest relevant Maintenance Manual (Line Maintenance, chapter 12-00-00).

##### 3.1.2) Inspection of the oil filter

1. Unscrew oil filter with filter wrench.
2. Cut open the oil filter.
3. Detailed inspection of the filter insert for contamination. In case of doubt contact your ROTAX<sup>®</sup> Authorized Distributor or their Service Center
4. Install new oil filter in accordance with the Maintenance Manual and inspect tight fit of the oil filter.

#### 3.2) Test run

Conduct test run including ignition check and leakage test.

#### 3.3) Summary

These instructions (section 3) have to be conducted in accordance with compliance in section 1.5.

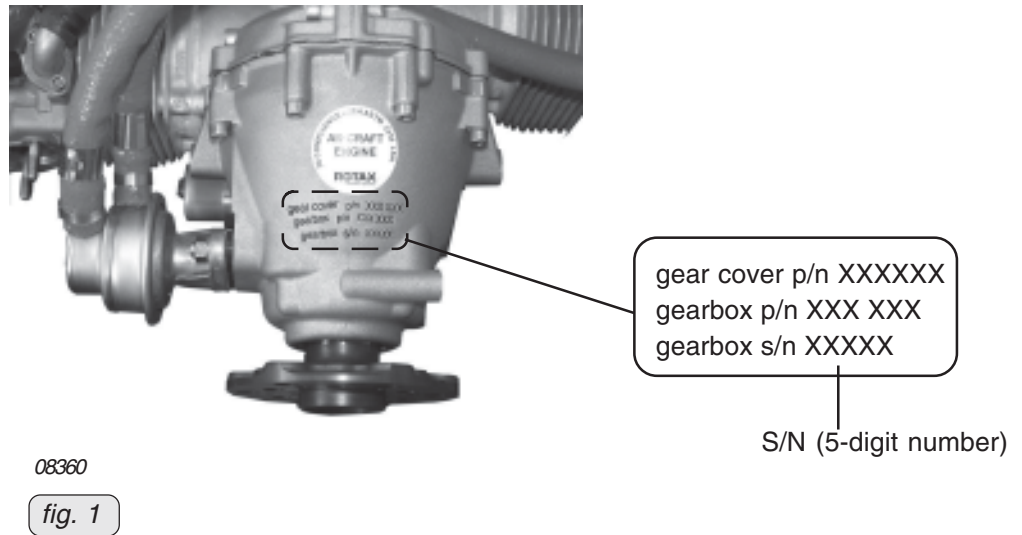
The execution of the mandatory Service Bulletin must be confirmed in the logbook.

▲ **WARNING:** Non-compliance with these instructions/recommendations/could result in engine damage, personal injury or death!

Approval of translation to best knowledge and judgement - in any case the original text in German language and the metric units (SI-system) are authoritative.

#### 4) Appendix

the following image should convey additional information:



◆ 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 **no technical** drawings and are for reference only. For specific detail, refer to the current documents of the respective engine type.