

# SERVICE BULLETIN

## REPLACEMENT OF THE PROPELLER GEARBOX

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

#### SB-912-056 UL R1

#### SB-914-038 UL R1

## 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

5,649.643 / 5,649.649 to 5,649.652 / 5,649.654 to 5,649.658 / 5,649.660 / 5,649.663 to 5,649.771 / 5,649.773 to 5,649.853 / 5,649.864 to 5,649.986 / 5,649.989 to 5,650.082 / 5,650.085 to 5,650.086 / 5,650.088 to 5,650.089 / 5,650.093 to 5,650.097 / 5,650.099 to 5,650.106 / 5,650.108 / 5,650.112 / 5,650.117 to 5,650.125 / 5,650.128 / 5,650.130 / 5,650.132 to 5,650.136 / 5,650.138

#### - 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  
5,649.854 to 5,649.863 / 5,649.987 to 5,649.988 / 6,374.202 to 6,374.205

#### - 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

4,419.925 to 4,419.976 / 4,419.978 to 4,419.980 / 4,419.982 / 4,419.984 to 4,419.985 / 4,419.987 / 4,419.989 to 4,419.991 / 4,419.994 / 4,419.996 to 4,419.998

#### Propeller gearboxes affected

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

30310 / 30311 / 30313 / 30316 / 30408 / 30418 / 30433 / 30436 to 30452 / 30493 to 30562 / 30595 to 30679 / 30699 to 30778 / 30802 to 30814 / 30816 to 30856 / 30867 to 30876 / 30898 to 30985 / 31011 to 31048 / 31062 to 31124 / 31128 to 31138 / 31140 / 31169 to 31174 / 31179 to 31247 / 31249 / 31251 / 31286 to 31294 / 31296 to 31308 / 32063 to 32078 / 32080 / 32082 / 32084 to 32091 / 32106 / 32107 / 32118 to 32136 / 32152 to 32182

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/ 32197 to 32257 / 32259 to 32285 / 32348 to 32397 / 32399 to 32402 / 32404 / 32405 / 32407 / 32409 to 32418  
/ 32421 / 32423 / 32425 / 32426 / 32430 / 32431 / 32433 / 32435 / 32437 / 32438 / 32440 / 32476 to 32483  
/ 32485 / 32487 / 32490 / 32491 / 32493 / 32495 to 32498 / 32500 to 32517 / 32519 to 32611 / 32628 to 32729  
/ 32735 to 03.2737 / 32759 to 32826 / 32832 to 33007 / 33046 / 33055 to 33127 / 33129 / 33132 to 33149 /  
33187 to 33337 / 33339 to 33362 / 33364 / 33366 to 33378 / 33443 to 33506 / 33508 to 33510  
37894 / 37896 / 37898 to 37901 / 37904 / 37906 to 37908 / 37910 to 37959 / 38006 to 38072 / 38074 to 38282  
/ 38284 to 38315 / 38334 to 38469 / 38487 to 38500 / 38502 to 38504 / 38506 / 38509 / 38511 / 38513 / 38515  
/ 38518 to 38519 / 38521 to 38522 / 38526 / 38529 to 38530 / 38532 / 38535 to 38536 / 38538 to 38541 / 38543  
/ 38545 / 38548 to 38552 / 38554 to 38560 / 38562 / 38564 / 38569 to 38570 / 38573 to 38579 / 38582 to 38585  
/ 38587 to 38591 / 38596 to 38597

- ◆ 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  
07.3854 to 07.3855 / 07.3857 / 07.3860 to 07.3861 / 07.4228 / 07.4269 / 07.4271

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 R1

SB-914-038 R1

### **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

|| 4,923.586 to 4,923.616

- 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

|| 4,420.755 to 4,420.758 / 4,420.760 / 4,420.763 / 4,420.766 / 4,420.768 to 4,420.769

##### Propeller gearboxes affected

- propeller gearboxes with a serial number listed below:

30310 / 30311 / 30313 / 30316 / 30408 / 30418 / 30433 / 30436 to 30452 / 30493 to 30562 / 30595 to 30679 / 30699 to 30778 / 30802 to 30814 / 30816 to 30856 / 30867 to 30876 / 30898 to 30985 / 31011 to 31048 / 31062 to 31124 / 31128 to 31138 / 31140 / 31169 to 31174 / 31179 to 31247 / 31249 / 31251 / 31286 to 31294 / 31296 to 31308 / 32063 to 32078 / 32080 / 32082 / 32084 to 32091 / 32106 / 32107 / 32118 to 32136 / 32152 to 32182 / 32197 to 32257 / 32259 to 32285 / 32348 to 32397 / 32399 to 32402 / 32404 / 32405 / 32407 / 32409 to 32418 / 32421 / 32423 / 32425 / 32426 / 32430 / 32431 / 32433 / 32435 / 32437 / 32438 / 32440 / 32476 to 32483 / 32485 / 32487 / 32490 / 32491 / 32493 / 32495 to 32498 / 32500 to 32517 / 32519 to 32611 / 32628 to 32729 / 32735 to 32737 / 32759 to 32826 / 32832 to 33007 / 33046 / 33055 to 33127 / 33129 / 33132 to 33149 / 33187 to 33337 / 33339 to 33362 / 33364 / 33366 to 33378 / 33443 to 33506 / 33508 to 33510

37894 / 37896 / 37898 to 37901 / 37904 / 37906 to 37908 / 37910 to 37959 / 38006 to 38072 / 38074 to 38282 / 38284 to 38315 / 38334 to 38469 / 38487 to 38500 / 38502 to 38504 / 38506 / 38509 / 38511 / 38513 / 38515 / 38518 to 38519 / 38521 to 38522 / 38526 / 38529 to 38530 / 38532 / 38535 to 38536 / 38538 to 38541 / 38543 / 38545 / 38548 to 38552 / 38554 to 38560 / 38562 / 38564 / 38569 to 38570 / 38573 to 38579 / 38582 to 38585 / 38587 to 38591 / 38596 to 38597

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

AUGUST 5<sup>th</sup> 2008

Current valid documentation see:

[www.rotax-aircraft-engines.com](http://www.rotax-aircraft-engines.com)

SB-912-056R1

SB-914-038R1

## 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  
07.3854 to 07.3855 / 07.3857 / 07.3860 to 07.3861 / 07.4228 / 07.4269 / 07.4271

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.

- Due to additional information the range of engine serial numbers of the affected engines has been extended.

### 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 November 30<sup>th</sup> 2008\*

\* if the Service Bulletin (Initial Issue) has not been carried out yet.

▲ **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.

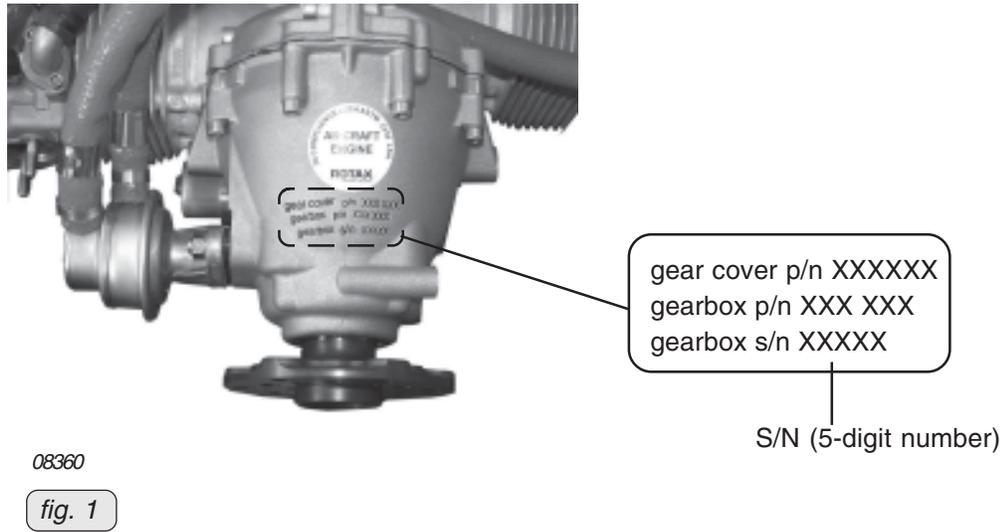
The execution of the mandatory Service Bulletin must be confirmed in the logbook.

▲ **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.