



# SERVICE BULLETIN

## EXTENSION OF TIME BETWEEN OVERHAULS (TBO) FOR ROTAX® ENGINE TYPE 912 AND 914 (SERIES)

SB-912-041

SB-914-027

### OPTIONAL

#### 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

a) Extension of TBO is already valid for engine type 912 A/F/S (Series) from 1200 h to 1500 h or from 10 years to 12 years period of operation for all engines of type:

- 912 A from S/N 4,410.472

- 912 F from S/N 4,412.817

- 912 S from S/N 4,922.777, provided the 800<sup>h</sup> special check has been performed. Refer to section 3.3).

b) Extension of TBO is already valid for engine type 914 F (Series) from 1000 h to 1200 h or from 10 years to 12 years period of operation for all engines of type:

- 914 F from S/N 4,420.314

c) For all engine S/N lower than given in a) and b) a TBO extension, to 1000 h, 1200 h, 1500 h or from 10 years to 12 years period of operation, according to the Service Bulletins mentioned in section 3) can be effected.

Prerequisite for that is accomplishment of all specified and appropriate Service Bulletins as well as modifications stated in section 3.2), 3.3), and 3.4).

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

Further to this Service Bulletin the following additional Service Bulletins must be observed and complied with:

-SB-912-004 R1, "TBO increase 1000 h" current issue.

-SB-912-014 R1, "TBO increase 1200 h" current issue.

-SB-912-022 / SB-914-011, "Replacement of valve spring retainer" current issue.

-SB-912-026 R3 / SB-914-014 R3, "Checking and replacement of stator assy." current issue.

-SB-912-027 R1 / SB-914-010 R1, "Checking or replacement of the propeller gearbox" current issue.

-SB-912-028 R1 / SB-914-016 R1, "Inspection or replacement of engine suspension frame" current issue.

-SB-912-029 R1 / SB-914-018 R1, "Checking of the crankcase" current issue.

-SB-912-030 / SB-914-019, "Cracks, wear and distortion on the carburetor flange" current issue.

-SB-912-031, "Checking or replacement of the fuel pump assy. part no. 996596" current issue.

-SB-912-033 / SB-914-020, "Inspection of the propeller gearbox when using leaded fuel" current issue.

-SB-914-015, "Checking or replacement of the exhaust muffler of reduced noise emission part no. 979405" current issue.

-SB-914-017 R1, "Checking or replacement of the exhaust bend" current issue.

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**1.3) Reason**

A program for extending the period of operation was carried out in agreement with the type Certificate Authority Austro Control GmbH (ACG). The TBO (engines concerned see section 1.1.) can be extended on account of the positive results of the examined engines.

**1.4) Subject**

Extension of Time Between Overhauls (TBO).

**1.5) Compliance**

At release of this Service Bulletins.

**1.6) Approval**

not required

**1.7) Manpower**

none

**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

- Operator's Manual (OM)
- all relevant Service Bulletins (SB)
- Maintenance Manual (MM)

**1.12) Other publications affected**

The following amendments will become effective with this Service Bulletin. The replacement pages have to be incorporated without delay into the Maintenance Manuals listed below as well as any respective documentation of the aircraft manufacture:

<b>Description</b>	<b>Part no.</b>	<b>Issue</b>	<b>Date</b>	<b>Rev.</b>	<b>Section</b>	<b>Page</b>
Maintenance Manual 912 Serie	899422	0	1998 09 01	2		
Maintenance Manual 914 F	897802	0	1997 02 01	5		

**1.13) Interchangeability of parts**

not affected

## 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

Shipping cost, down time, loss of income, telephone costs etc. or cost of conversion to other engine versions or additional work will not be borne or reimbursed by ROTAX<sup>®</sup>.

### 2.3) Material requirement per engine

Parts requirement:

Depending on the engine modification state (see section 3)

### 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:

- according relevant Maintenance Manual

■ CAUTION: When using 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® -Airworthiness representative
- ROTAX® -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 (namely lock tabs, self-locking fasteners) 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) General

A program for extending the period of operation (extension of the TBO) for engines from a certain manufacturing period and onward has been introduced. For engines which have already been accepted into this program, see section 1.1a) and b).

However, engines not listed in section 1.1a) and b) can increase the TBO according to the following instructions. The following table 1 gives an overview of the current engine TBO status at the time of delivery and the associated SB's that, if complied with, can allow. TBO's of 1000 h, 1200 h, or 1500 h to be reached accordingly.

Engine Type description	engines affected engine S/N	TBO Time Between Overhaul <sup>(1)</sup>	deliverables SB for extensions of the TBO <sup>(1)</sup>
<b>912 A</b>	up to and incl. 4,076.191	600 h or 10 years, whichever comes first	SB-912-004R1 (600 h to 1000 h)
<b>912 A</b>	from 4,076.192 up to and incl. 4,410.065	1000 h or 10 years, whichever comes first	SB-912-014R1 (1000 h to 1200 h)
<b>912 A</b>	from 4,410.066 up to and incl. 4,410.471	1200 h oder 10 years, whichever comes first	SB-912-041 (1200 h to 1500 h)
<b>912 A</b>	from 4,410.472	1500 h oder 12 years, whichever comes first	none
<b>912 F</b>	up to and incl. 4,412.585	1000 h oder 10 years, whichever comes first	SB-912-014R1 (1000 h to 1200 h)
<b>912 F</b>	from 4,412.586 up to and incl. 4,412.816	1200 h oder 10 years, whichever comes first	SB-912-041 (1200 h to 1500 h)
<b>912 F</b>	from 4,412.817	1500 h oder 12 years, whichever comes first	none
<b>912 S</b>	up to and incl. 4,922.776	1200 h oder 10 years, whichever comes first	SB-912-041 (1200 h to 1500 h)
<b>912 S</b>	from 4,922.777	1500 h oder 12 years, whichever comes first	none
<b>914 F</b>	up to and incl. 4,420.313	1000 h oder 10 years, whichever comes first	SB-914-027 (1000 h to 1200 h)
<b>914 F</b>	from 4,420.314	1200 h oder 12 years, whichever comes first	none

Table 1

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<sup>(1)</sup> An extension of the TBO is possible and regulated by the Service Bulletin (SB) complied with for the respective engine type. Respective engine SB's that have already been complied with should be verified by the technical records such as the engine log book and/or the release certificate.

### 3.2) Extension of the TBO

An extension of the TBO for applicable is basically possible according to table 1. A necessary prerequisite would be the implementation of all relevant SB's. See section 1.2

■ CAUTION: An engine may be affected again by a previous modification. Retrieve the necessary information from the respective maintenance documents or the engine log book.

The SB's to be performed are assigned to the respective engine S/N ranges. All SB's need to be carried out in ascending order.

◆ NOTE: You need to keep the correct sequence and order to attain an extension of the TBO according to the respective engine types (600 h to 1000 h, 1000 h to 1200 h and 1200 h to 1500 h).

### 3.3) Inspecting the propeller gearbox 912 S (Series)

◆ NOTE: All engines of type 912 S (Series) need to receive a inspection of the propeller gearbox at 800 Hrs TSN. If a TSN of 800 Hrs has already been exceeded the check must be done at the next 100 Hr inspection. Perform check according to the latest relevant Maintenance Manual (see section 7.2).

### 3.4) Extension of TBO from 1200 h to 1500 h according to SB-912.041 or from 1000 h to 1200 h according to SB-914-027

An extension of the TBO according to SB-912-041 / SB-914-027 is possible provided all stated retrofits (if applicable) are performed.

The following list gives an overview for which engine or S/N the modifications mentioned have already been introduced in series production.

The components on the affected engines need to be retrofitted to extend the TBO.

Besides the part no. also the Amendment Modification (AM) number per engine type is stated. The respective AM numbers can be taken from the maintenance documents or the engine log book and JAA FORM ONE.

◆ NOTE: Check the technical records to see if the components listed (Propeller shaft, Dog hub and Circlip) have already been upgraded for any reason (maintenance, repair etc.) if they have, they do not have to be replaced again for the purposes of this SB.

#### 3.4.1) Propeller shaft

Installation of a propeller shaft with additional lubricating bore is required for TBO extension.

◆ NOTE: Only applicable for engines of configuration 3 (912 A3, 912 F3, 914 F3) Take this into account when re-retrofitting Series 4 to 3 or Series 2 to 3.

Following engines are affected:

912 A up to S/N 4,410.266 or gearbox up to S/N 14194

912 F up to S/N 4,412.764 or gearbox up to S/N 14194

914 F3 up to S/N 4,420.085 or gearbox up to S/N 14194

This modified propeller shaft has already been installed on engines beyond this S/N.

The amendment modifications (AMs) that have been introduced into series production after the above-mentioned time of modification can be identified in the technical records or JAA FORM ONE by using the following tables.

**Propeller shaft part no. 837283**

or

**Propeller shaft part no. 837284**

engine type	AM No.
912 A	48-02
912 F	F13-02
914 F	F06-03

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engine type	AM No.
912 A	52-02
912 F	F17-01
912 S	S01-15
914 F	F11-02

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### 3.4.2) Dog hub

To extend the TBO, installation of a dog hub with 30° backlash (instead of 15°) is required.

Following engines are affected:

912 A from S/N 4,410.066 up to S/N 4,410.366 or gearbox from S/N 11910 to S/N 15527

912 F from S/N 4,412.586 up to S/N 4,412.791 or gearbox from S/N 11899 to S/N 15527

914 F from S/N 4,420.001 up to S/N 4,420.156 or gearbox from S/N 11899 to S/N 15527

This modified dog hub has already been installed on engines before or beyond these S/N ranges.

◆ NOTE: Type 912 S was manufactured with 30° dog hub from start of series production and is therefore not affected.

The amendment modifications (AM's) that have been introduced into series production after the above-mentioned time of modification can be identified in the technical records or JAA FORM ONE by using the following table.

#### Dog hub part no. 958920 with 30°

engine type	AM No.
912 A	52-11
912 F	F17-11
914 F	F11-10

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### 3.4.3) Circlip SB 70

To extend the TBO, installation of a circlip SB 70 part no. 845425 is necessary. See also SI-912-006 / SI-914-008, latest edition.

Following engines are affected:

912 A up to S/N 4,410.429

912 F up to S/N 4,412.809

912 S up to S/N 4,922.660

914 F up to S/N 4,420.267

This modified circlip SB 70 has already been installed on engines beyond this S/N.

The amendment modifications (AM's) that have been introduced into series production after the above-mentioned time of modification can be identified in the technical records or JAA FORM ONE by using the following table.

#### Circlip SB 70 part no. 845425

engine type	AM No.
912 A	59-16
912 F	F24-16
912 S	S08-14
914 F	F19-16

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

### 3.5) Test run

Conduct test run including ignition check and leakage test.

## 4.) Appendix

none