

**ROTAX**

AIRCRAFT ENGINES

# SERVICE BULLETIN

## CHECKING OF THE ENGINE IN CASE OF EXCESSIVE PROPELLER BACKLASH FOR ROTAX® ENGINE TYPE 912 S SB-912-042 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:

- 912 S (Series) from S/N 4,922.501

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

In addition to this Service Bulletin the following additional Service Bulletins/Instructions must be observed and complied with:

- SB-912-030 / SB-914-019 "Cracks, wear and distortion on the carburetor flange" current issue.
- SI-03-1998 "Cold start for ROTAX® engine Type 912 (Series) and 914 (Series)" current issue.

##### 1.3) Reason

Excessive propeller backlash or hard metallic backlash, which substantially differs from the common starting procedure.

One or more of the reasons that follow can cause starting problems or propeller backlash and cause excess loads on the starter drive and damage the engine components:

- Unapproved and untested modifications
- Engine oil with a viscosity class that is too high
- Non-suitable battery or bad charging state
- Cable cross-section to the electric starter too small
- Maintenance deficiencies (particularly on the carburetor)
- Worn sprag clutch
- Bad carburetor-choke synchronization
- Non-suitable, old, or contaminated fuel (especially in the float chambers)
- Non-suitable idle speed (too low)
- Friction torque in the backlash range of gearbox not within tolerance (should be set to the max. permitted value)
- Electrode gap in the spark plugs too large
- Trigger-coil clearance to the fly wheel set incorrectly
- Non-suitable propeller (namely, moment of inertia too large)
- Non-suitable engine suspension

Vibrations and impacts, which usually occur during starting can cause damage, namely to the gear reduction, the engine suspension, the carburetor socket as well as to the starter drive. In extreme cases the crankshaft can be damaged.

In case of doubt contact your aircraft manufacturer.

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APRIL 2004

SB-912-042 R1

page 1 of 4

**1.4) Subject**

Checking of the engine in case of excessive propeller backlash on ROTAX® engine type 912 S.

**1.5) Compliance**

- In case of operating malfunction, the work described in section 3 should be done within no later than the next 10 hours of operation.

▲ **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 DOA Nr. MOT. JA-03.

**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

- Maintenance Manual (MM)

**1.12) Other publications affected**

none

**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® Authorized Distributors or their Service Centers.

**2.2) Company support information**

none

**2.3) Material requirement per engine**

Fig.no.	New part no.	Qty/engine	Description	Old part no.	Application
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As required depending on damage.

**2.4) Material requirement per spare part**

none

**2.5) Rework of parts**

none

**2.6) Special tooling/lubricant/adhesive/sealing compound - price and availability**

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

Parts requirement:

Fig. No	part no.	Qty/engine	Description	Old part no.	Application
	n.a	1	Clamp meter	n.a	

### 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 Center
- 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:** Perform work on a cold engine only.

▲ **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 check

A visual inspection must be performed in accordance with the relevant Maintenance Manual (Line Maintenance) 912 Series 05-20-00 chapter 2.2.2a.) up to and including i.).

#### 3.2) Inspecting the gearbox preload

see fig. 1

The friction torque in the 30° backlash must be inspected (only for versions with slipper clutch); refer to the instructions in the most recent Maintenance Manual for the related engine type.

■ **CAUTION:** If the value is less than the minimum of **25 Nm** (220 in.lb), it is necessary to repair the entire gearbox or do an overhaul; refer to the instructions on maintaining airworthiness.

#### 3.3) Inspecting the carburetor socket

The carburetor socket must be inspected; refer to the instructions in the most recent Maintenance Manual for the related engine type.

#### 3.4) Inspecting the function of the starter sprag clutch

see fig. 2

The current flow to the electric starter must be inspected during actual starting as follows:

Connect negative terminal of aircraft battery.

##### 3.4.1) Measuring the current input to the starter

- Using a commercial clamp meter (fig. 3), the current flow to the electric starter is measured during starting. A constant starting measurement value is necessary (no temporary current peaks or drops).

◆ **NOTE:** In case of a defective sprag clutch or sprag clutch body, the frictional connection is decreased or during starting even sometimes interrupted and the starter spins idly. This reduces the current input to the electric starter, which is the measurement criterion.

- The current input from the electric starter should be minimum 75 A. If this measurement value is less or if the sprag clutch can be heard to disengage during starting, the starter sprag clutch must be replaced; refer to the related Maintenance Manual current issue.

#### 3.5) Test run

Conduct test run including ignition check and leakage test.

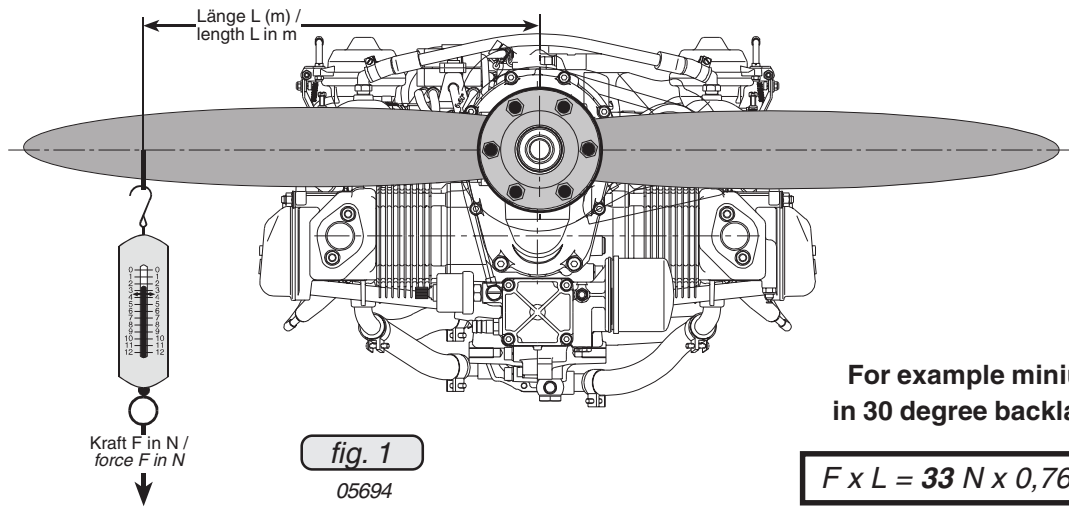
#### 3.6) Summary

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

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

#### 4) Appendix

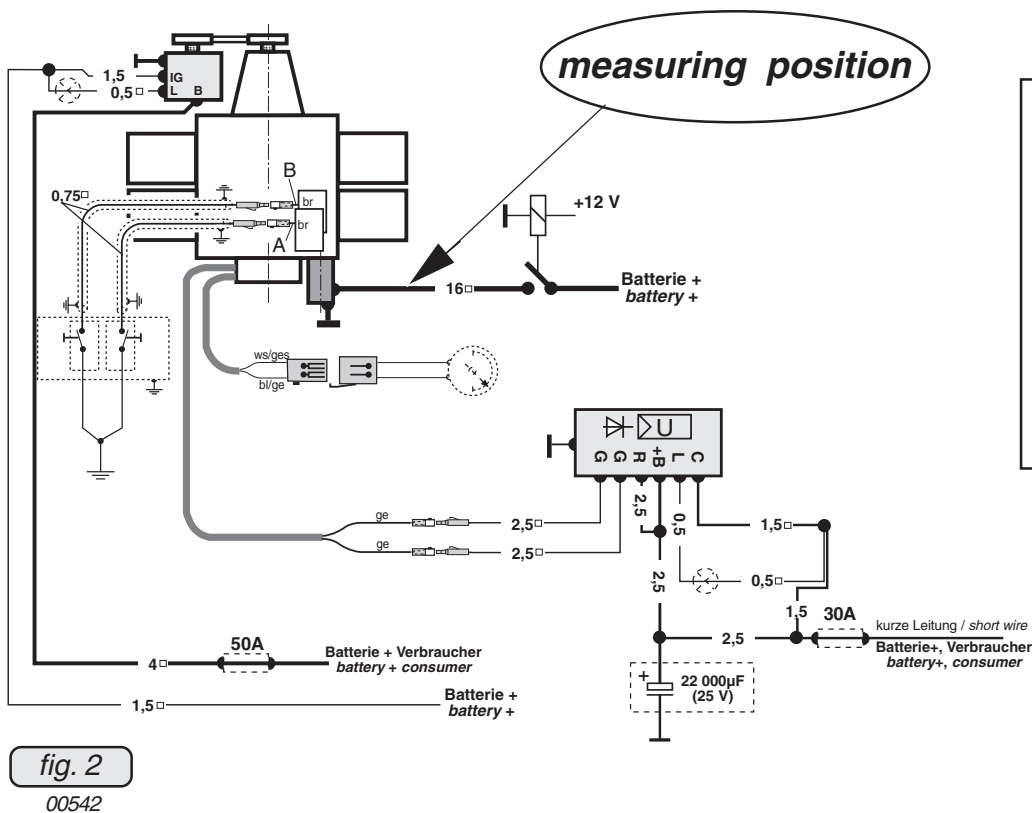
The following drawings should provide additional information:



For example minium torque  
in 30 degree backlash range <sup>1)</sup>:

$$F \times L = 33 \text{ N} \times 0,76 \text{ m} = 25 \text{ Nm}$$

<sup>1)</sup> only for versions with slipper clutch



◆ 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.