

SERVICE INSTRUCTION

INSTALLATION OF ROTARY WATER PUMP SEAL / PUMP IMPELLER

SI-912-001

SI-914-001

Repeating symbols:

Please, pay attention to the following symbols throughout the Service Bulletin emphasizing particular information.

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

914 (serial production/pre production)

912 (serial production/pre production)

1.2) Concurrent ASB/SB/SI und SL

none

1.3) Reason

Feedback from the field indicates that in the course of maintenance the installation of the rotary seal has not been done proper. Improper installation can cause damage on the rotary seal, possibly resulting in leakage of coolant.

1.4) Subject

Important instructions for installation of the rotary seal on the water pump of all versions of the ROTAX[®] engine type 912 / 914.

1.5) Compliance

INFORMATION

This information is intended to assist the aircraft builder and operator in achieving the proper operating conditions, correct engine installation and consequently optimum performance and reliability.

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At renewal of the rotary seal proceed as per the following instructions.

At leakage of the rotary seal proceed with the following instructions.

- ◆ **NOTE:** Due to the design of the rotary seal, the manufacturer tolerates a certain amount of leakage. If the leakage is in excess of the limit rotary seal must be renewed.

Tolerated leakage:

For this check the engine must be operated until all temperatures have stabilized for a period of 5 minutes. At that point shut down engine and ensure the ignition is switched off and engine secured against unintentional operation.

Coolant must not drip through leakage bore, located at the base of the igniton housing, for a period of 1 minute after the engine has been stopped.

In case this leakage test can not be passed, the rotary seal must be renewed.

1.6) Approval

not required

1.7) Manpower

estimated man-hours:

- (1) engine is installed in the aircraft, manpower depends on installation and therefore no statement can be made by 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

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1.11) References

In addition to this technical information refer to

- current issue of the Operator's Manual (OM)
- engine data sheet
- power, torque and fuel consumption curves
- current issue of the Illustrated Parts Catalog (IPC)
- Installation Manual (IM) and Check List
- all relevant Service Information
- all relevant Technical Bulletins
- Collective Manual (CM)
- Repair Manual (RM)
- Maintenance Manual (MM)

1.12) Other publications affected

none

1.13) Interchangeability of parts

all redundant parts which cannot be used must be scrapped

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2) Material Information

2.1) Material - cost and availability

cost and availability will be supplied on request by our ROTAX[®] Authorized Distributors or their Service Center.

2.2) Company support information

none

2.3) Material volume per engine

parts volume:

For the replacement of the impeller and the rotary seal the following new parts are necessary:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(1)	922.224	1	impeller		water pump
(2)	850.945	1	rotary seal		water pump
(4)	926.273	1	washer		water pump
(5)	850.977	1	oil seal 12x30x7		water pump

◆ NOTE: The gasket set (part no. 996.943) includes the new rotary seal (part no. 850.945) and replaces the old gasket set (part no. 996.942).

For all engines of the Type:

912 UL up to and including S/N 4,403.283

912 A up to and including S/N 4,410.366

912 F up to and including S/N 4,412.791

914 UL up to and including S/N 4,417.783

914 F up to and including S/N 4,420.157

the impeller (part no. 922.224) and the washer (part no. 926.273) have to be ordered additionally to the gasket set.

All versions of the engine Type:

912 ULS (Serie) beginning with and inclusive S/N 4,425.001

912 S (Serie) beginning with and inclusive S/N 4,922.501

are already equipped with the impeller (part no. 922.224) and the washer (part no. 926.273).

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2.4) Material volume 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 our ROTAX[®] Authorized Distributors or their Service Center.

parts volume:

For the replacement of the impeller and the rotary seal the following new parts are necessary:

item no.	New part no.	Qty.	Description	Old part no.	remarks
(3)	877.259	1	insertion punch		rotary seal
	897.651	NB	LOCTITE 243		pump shaft

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3) Accomplishment / Instructions

Accomplishment

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

ROTAX[®] -Distributors or their Service Center

Persons with the respective Aviation Authority permission.

Persons with type-specific training (applicable only for non-certified engines)

▲ **WARNING:** Proceed with this work only in a non-smoking area and not near open flames. Switch off ignition and secure engine against unintentional operation.

Secure aircraft against unintentional operation.

Disconnect negative pole of aircraft battery.

▲ **WARNING:** Proceed with work on a cold engine and grounded ignition only.

3.1) Removal of rotary seal and impeller:

- Remove the waterpump, water pump housing, the magneto hub, the ignition housing, the oil seal, the rotary seal, the washer and the pump impeller as per instructions found in the current relevant Maintenance Manual and/or Repair Manual (ICR-Manual).

3.2) Installation of the new rotary seal (part no. 850.945):

See fig. 1, fig. 3 and fig. 4 .

- The oil seal ⑤ must be replaced as per the instructions found in the current relevant Maintenance Manual and/or Repair Manual (ICR-Manual).
- The **new rotary seal (part no. 850.945) ②** and the **new washer (part no. 926.273) ④** must be installed as per the instructions found in the current relevant Maintenance Manual and/or Repair Manual (ICR-Manual). The **new rotary seal insertion punch (part no. 877.259) ③** must be used. Very careful handling and installation of the rotary seal is vital in preventing coolant loss.
- Ensure that water pump shaft is parallel to seal bore during installation.
- If the shaft is not parallel to the bore when installed, the edge of the shaft can dimple the soft material of the seal bore, reducing the sealing effectiveness of the press fit. To increase the effectiveness of the press fit **between the pump shaft ⑥ and the seal, a small amount of LOCTITE 243 adhesive** must be applied around the shaft.
- If **distance (shown in fig. 1) is not within 8,9 ±0,15 mm (0,35 ±0,006 in.)**, the seal spring has been over-compressed and the seal must be replaced.

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3.3) Installation of the new impeller (part no. 922.224):

See fig. 1, fig. 2 and fig. 4.

- Impeller of new design (part no. 922.224) **①** must be installed with new rotary seal. Installation as per instructions in the current relevant Maintenance Manual and/or Repair Manual (ICR-Manual).
- The **distance** (shown in fig. 1) **between 0,4 mm ÷ 0,5 mm (0,016 in. ÷ 0,02 in.)** must be verified in accordance with the current, relevant Maintenance Manual and/or Repair Manual (ICR-Manual). If measurement is not within manufacturers recommendations the installation procedure wasn't followed properly and the rotary seal and oil seal is no longer serviceable. The seals must be removed and a new rotary seal and a new oil seal must be installed as per manufacturers recommendations.
- Reconnect the aircraft battery.

3.4) Test run:

Start the engine. Conduct testrun inclusive ignition check and leakage test in accordance with the current Maintenance Manual of the engine type.

3.5) Summary

- ▲ **WARNING:** Non-compliance with these 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.

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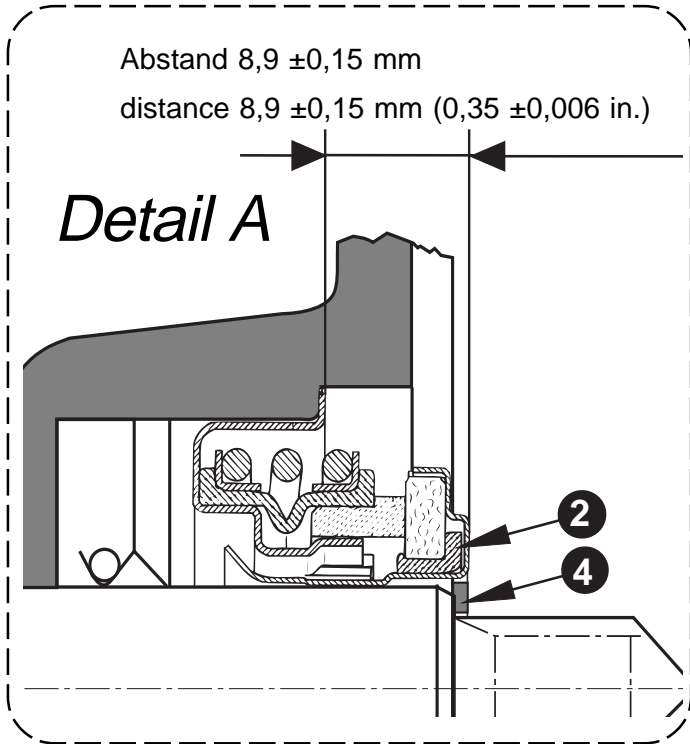
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4) Appendix

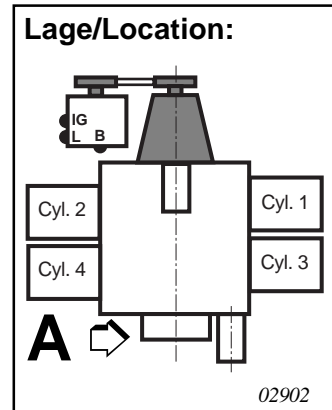
The following drawings should convey additional information:

The drawings below show the rotary seal of new design (part no. 850.945), the new washer (926.273) and the new impeller (part no. 922.224):

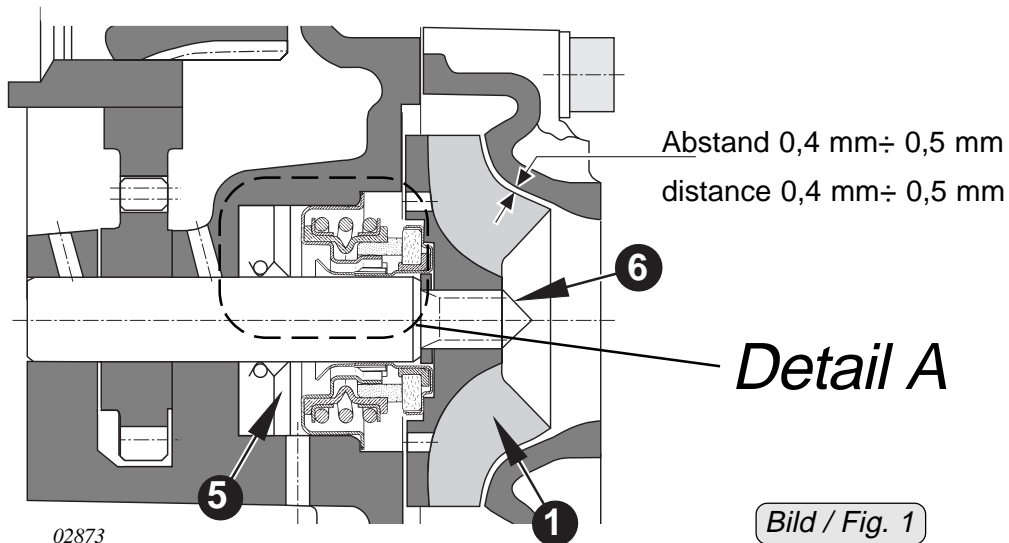
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- ① Laufrad impeller
- ② Gleitringdichtung rotary seal
- ③ Montagestempel insertion punch
- ④ Scheibe washer
- ⑤ WD-Ring oil seal
- ⑥ Pumpenwelle pump shaft



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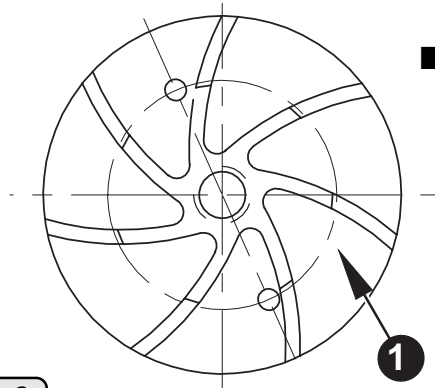
Bild / Fig. 1

cross-section of waterpump

Fig.: 1

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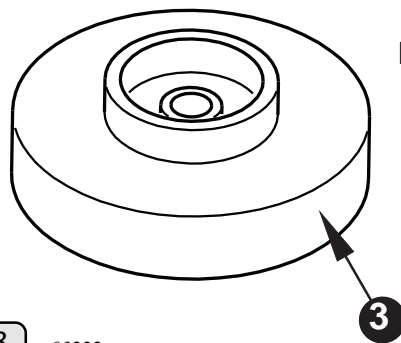
The illustration below shows the new impeller with 2 holes:



■ **ATTENTION:**The impeller can only be utilized for the new rotary seal (part no. 850.945).

Bild 2/ fig. 2 02722

The illustration below shows the new insertion punch:



■ **ATTENTION:**The new insertion punch can only be utilized for the new rotary seal (part no. 850.945).

Bild 3/ fig. 3 03222

The illustration below show the rotary seal of the old and new design:

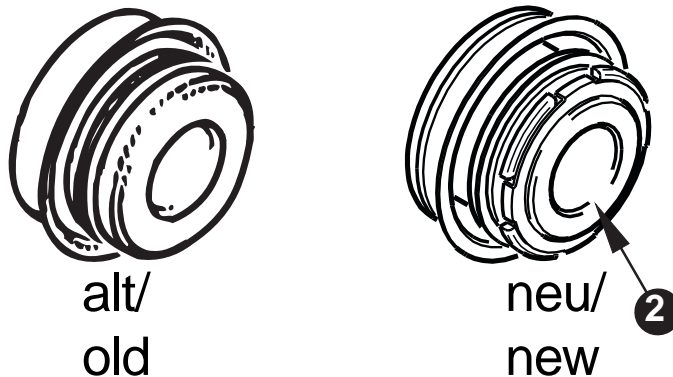


Bild 4/ fig. 4 03502

**new impeller, new tool and
new rotary seal**

Fig.: **2, 3 and 4**