

# SERVICE BULLETIN

## CHANGE OF COOLANT SPECIFICATION ON ROTAX® ENGINE TYPE 912 AND 914 (SERIES)

SB-912-043 R2

SB-914-029 R2

### **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 A all
- 912 F all
- 912 S all
- 914 F all
- all aircraft manufacturer which aircraft equipped with ROTAX® engine type as listed.

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

More to this Service Bulletin the following additional Service Instruction must be observed and complied with:

- SI-912-016 / SI-914-019 "Selection of suitable operating fluids" current issue

##### 1.3) Reason

Using conventional coolant with a mixing ratio of 50% coolant and 50% water may cause in some applications boiling of the coolant before reaching the max. allowable cylinder head temperature.

On all affected engines the following changes have to be considered and accomplished (if applicable).

- Change of coolant specification
- Change of the cylinder head temperature limits
- Introduction of a new coolant temperature limit and the requirement to measure and monitor this parameter
- Change of radiator cap

##### 1.4) Subject

Change of coolant specification on ROTAX® engine type 912 (Series) and 914 (Series)

##### 1.5) Compliance

- at latest December 31, 2007, incorporate the mandatory use of waterless coolant into the relevant documentation of the aircraft.

|| Alternatively the use of conventional coolant is possible. In such case the new operating limit (coolant temperature) has to be applied. The work/compliance has to be performed according to section 3.

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

## 1.6) Approval

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

## 1.7) Manpower

Engine installed in the aircraft - - - manpower time will depend on installation and thus, 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

- Operator's Manual (OM)
- Illustrated Parts Catalog (IPC)
- Maintenance Manual (MM)
- all relevant Service Instructions (SI)

◆ 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 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

The following documentations become effective with this Service Bulletin:

Description	part no.	Issue	Date	Rev.	Chapter	Page
Operator's Manual 912 Series	899370	0	1998 07 01	4*		
Operator's Manual 914 Series	899641	0	1998 12 01	4*		
Installation Manual 912 A	897860	0	1997 01 16	2*		
Installation Manual 912 F	897796	0	1996 01 23	3*		
Installation Manual 912 S	899376	0	1998 09 01	2*		
Installation Manual 912 UL	897711	2	1997 03 26	2*		
Installation Manual 914 Series	897816	1	2006 07 01	0*		

\* or higher revision

The replacement pages have to be included without delay into the respective documentation of the aircraft manufacturer.

## 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 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
	922070	1	radiator cap	922075*	ROTAX <sup>®</sup> 912/914 (Series)

\* if not part no. 922070 installed already . See SI-25-1997 „Running Modifications“ current issue.

### 2.4) Rework of parts

None

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

None

### 3) Accomplishment/Instructions

#### Accomplishment

##### 3.1) Replacement of the radiator cap

Replace on all affected engines the radiator cap part no. 922075 (0,9 bar) (13 psi) with a new radiator cap part no. 922070 (1,2 bar) (18 psi).

◆ NOTE: The boiling point depends additionally on other factors such as the system pressure. At higher system pressure slightly higher boiling point can be obtained.

All work has to be performed in accordance with the relevant Maintenance Manual.

##### 3.2) Check cooling system - Efficiency of the cooling system

These measures must be performed by the aircraft manufacturer.

◆ NOTE: All work has to be performed in accordance with the relevant Installation Manual (section Cooling system).

##### 3.2.1) Determination of the achievable maximum coolant temperature and cylinder head temperature

Depending on the maximum operating temperature achieved following measures have to be taken:

maximum values for		coolant used for tests	
Coolant temperature	Cylinder head temperature	Conventional coolant	Waterless coolant
less than 120 °C (248 °F)	less than 135 °C <sup>1)</sup> (275 °F) 150 °C <sup>2)</sup> (300 °F)	Additional instruments for displaying coolant temperature is necessary <sup>3)</sup>	Modifications to the instruments or limit not necessary
more than 120 °C (248 °F)	less than 135 °C <sup>1)</sup> (275 °F) 150 °C <sup>2)</sup> (300 °F)	Cooling capacity too low. Check of the installation necessary	
less than 120 °C (248 °F)	more than 135 °C <sup>1)</sup> (275 °F) 150 °C <sup>2)</sup> (300 °F)		Cooling capacity too low. Check of the installation necessary
more than 120 °C (248 °F)	more than 135 °C <sup>1)</sup> (275 °F) 150 °C <sup>2)</sup> (300 °F)		

◆ NOTE: Depending on the gained temperatures (coolant outlet temperature compared to cylinder head temperature) the aircraft manufacturer has to adapt the obtained limits in the relevant documentation (Operators Manual and/or Flight Manual).

<sup>1)</sup> engine type 912S / 914F

<sup>2)</sup> engine type 912A / 912F

<sup>3)</sup> Additional instruments for displaying coolant temperature marked with a 120 °C (248 °F) max. limit is necessary or new calibration of the CHT gauge to an aircraft specific cylinder head temp. See current relevant Installation Manual section "cooling system".

Procedure for engine installations for which the CHT-limit was reduced previously to 120 °C (248 °F) with the initial issue of this Service Bulletin:

This limit is conservative, as the actual temperature of the liquid is normally lower than the temperature of the aluminium head material. If no problems occur with exceeding of this limit of 120 °C (248 °F) no further verification is necessary.

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.