

## Coolant radiator for ROTAX® Aircraft Engines

ATA System: 75-00-00 Cooling system

### 1) Planning information

“PAC” Service Instruction Documents provide detailed information on ROTAX® Aircraft Engine Parts and Accessories. Depending on the engine type used, the referenced parts and accessories may be provided with or without EASA certification or ASTM compliance. Certification / Compliance of referenced Parts and Accessories must in such cases be completed by the aircraft OEM.

To obtain satisfactory results, procedures specified in this publication must be accomplished with accepted methods in accordance with prevailing legal regulations.

BRP-Rotax GmbH & Co KG cannot accept any responsibility for the quality of work performed in accomplishing the requirements of this publication.

#### 1.1) Applicability

Refer to the latest issue of the relevant Illustrated Parts Catalog of your specific engine type.

#### **NOTICE**

The coolant radiator may be declared as part of the cooling system on aircraft-side and so might not be a part of the Engine Type Design. Such a PAC part has been then tested and released by BRP-Rotax, but it might not be certified for the relevant engine type.

In such a case the correct function in conjunction with the entire system is the responsibility of the aircraft manufacturer and must be carried out jointly with the aircraft.

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

In addition to this Service Instruction - PAC the following Service documents must be observed and complied with:

- in general all relevant Alert Service Bulletins (ASB), Service Bulletins (SB), Service Instructions (SI), Service Letters (SL), Service Instruction - Parts and Accessories (SI-PAC) with relevance to perform this maintenance, repair or overhaul task.

#### 1.3) Reason

In the course of continuous development and standardization, a coolant radiator has been introduced as an optional extra part.

#### 1.4) Subject

Coolant radiator for ROTAX® Aircraft Engines

#### 1.5) Compliance

None - For Information Only.

#### 1.6) Approval

None.

# SERVICE INSTRUCTION - PAC

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## 1.7) Labor time

Estimated labor hours:

Engine installed in the aircraft - - - labor time will depend on airframe installation and therefore no estimate is available from the engine manufacturer.

## 1.8) Mass data

Coolant radiator weight - 1.10 kg (2.42 lb).

Moment of inertia - - - unaffected.

## 1.9) Electrical load data

No change.

## 1.10) Software modifications

No change.

## 1.11) References

In addition to this technical information refer to current issue of

- in general Illustrated Parts Catalog (IPC) and in particular:  
Chapter 75-00-00
- in general Operators Manual (OM)
- in general Installation Manual (IM)
- in general Maintenance Manual Line (MML) and in particular:  
Chapter 05-20-00 - section Maintenance Schedule  
Chapter 12-20-00 - section Test run of engine
- in general Maintenance Manual Heavy (MMH) and in particular:  
Chapter 75-00-00

NOTE: The status of the Manuals can be determined by checking the table of amendments. The 1<sup>st</sup> column of this table shows the revision status. Compare this number to that listed on the ROTAX website:  
[www.FLYROTAX.com](http://www.FLYROTAX.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

# SERVICE INSTRUCTION - PAC

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## 2) Material Information

### 2.1) Material- cost and availability

Price and availability will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

### 2.2) Company support information

- Any possible support by BRP-Rotax will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

### 2.3) Material requirement per engine

Parts requirement:

Fig.no.	Part no.	Qty/ engine	Description	Application
1	997086	1	Coolant radiator	

### 2.4) Material requirement per spare part

None.

### 2.5) Rework of parts

None.

### 2.6) Special tooling/lubricants- /adhesives- /sealing compound- /price and availability

None.

# SERVICE INSTRUCTION - PAC

## 3) Accomplishment/Instructions

- ROTAX reserves the right to make any amendments to existing documents which might become necessary due to this standardization, at the time of next revision or issue.

NOTE: Before maintenance, review the entire documentation to make sure you have a complete understanding of the procedure and requirements.

### Accomplishment

All measures must be implemented and confirmed by at least one of the following persons or organizations:

- ROTAX® - Airworthiness representatives
- ROTAX® - Authorized Distributors or their independent Service Centers
- Persons approved by the respective Aviation Authority
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (e.g. iRMT) are entitled to carry out this work.

### General

Further material on general inspection, maintenance and repair can be found also in relevant Advisory Circular AC 43.13 from FAA.

### Advisory Circular

The Advisory Circular (AC) contains maintenance methods, techniques and practices.

### 3.1) Spare Parts - related information



See current Illustrated Parts Catalog (IPC) for the respective engine type.

### 3.2) Operation - related information



See current Operators Manual (OM) for the respective engine type.

### 3.3) Installation - related information



See current Installation Manual (IM) for the respective engine type.

#### 3.3.1) Technical data

- Mass data see section 1.8
- Dimensions see Chapter Appendix, [Fig. 2](#)

# SERVICE INSTRUCTION - PAC

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## 3.3.2) General information on installation

### Radiator

See Fig. 1.

**NOTICE**

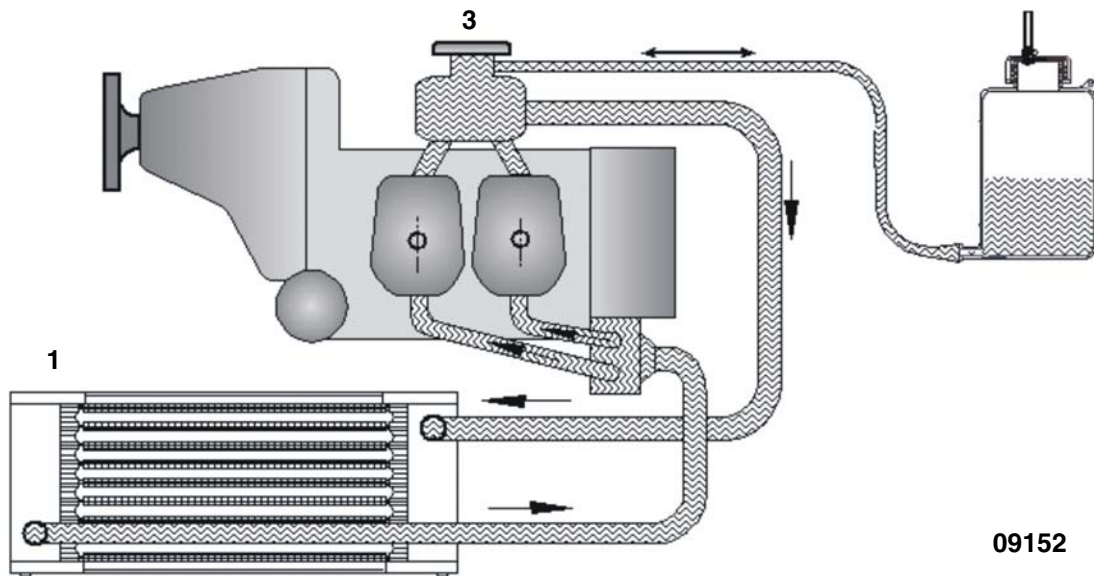
The size and type of radiator should be adequate to transfer thermal energy of approx. 30 kW (28.43 BTU/s) at take-off power.

In an installation as depicted with the radiator (1) in a higher position than the standard supplied expansion tank (3), a water accumulator (2) has to be fitted instead of the expansion tank (3). Additionally a suitable expansion tank (3) has to be installed at the highest point of the cooling circuit.

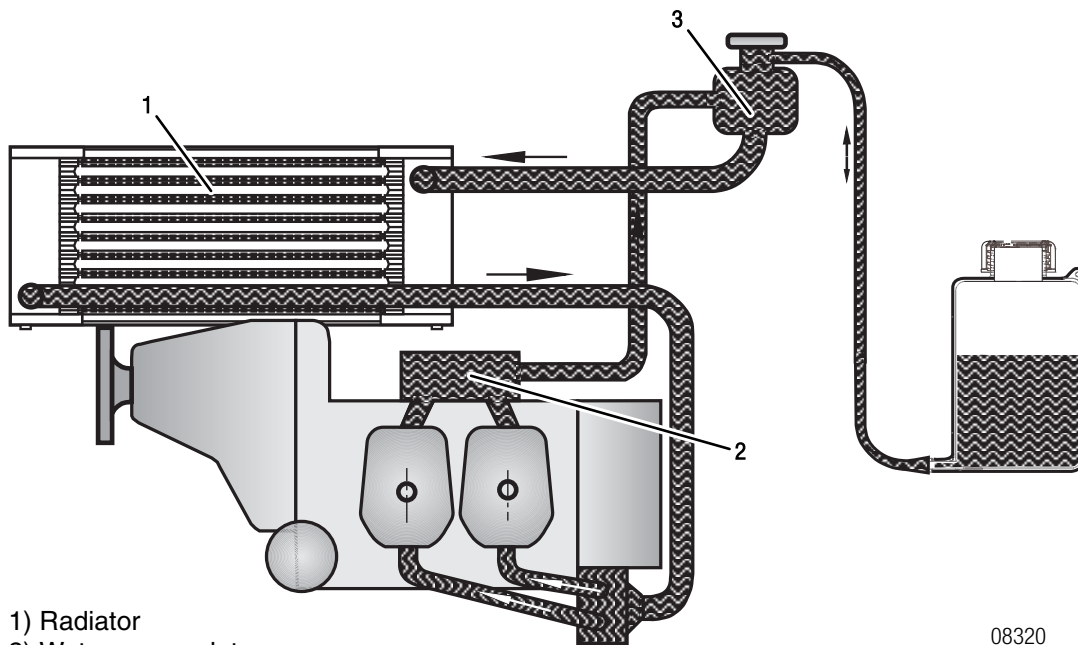
NOTE: Experience has shown that with good airflow, a radiator with an area of 500 cm<sup>2</sup> (77.5 in<sup>2</sup>) is required for trouble-free operation.

# SERVICE INSTRUCTION - PAC

Fig. 1.



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- 1) Radiator
- 2) Water accumulator
- 3) Expansion tank

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**Flow rate** The flow rate in the coolant circuit is approx. 70 l/min (18.49 USgal/min.) at 5800 rpm. At full throttle, an approximate value of around 0.75 m<sup>3</sup>/s (28.59 cu.ft/sec) can be assumed for the required cooling air flow.

**Flow resistance** The flow resistance of the coolant in the optional ROTAX® radiator is correctly adjusted for the cooling system. If using other radiators, check the flow rate and cooling capacity.

**Installation of the radiator** No provision has been made for attachment of the radiator(s) on the engine. The usage of rubber mounts is recommended.

**NOTICE** The radiator must be installed without distortion or stress and be free of vibrations. If a GENUINE ROTAX® radiator is not being installed, ensure sufficient cooling capacity.

**NOTICE** To attach the coolant radiator within the airframe design four fixation points are provided. M6 screws with a max 10 mm (0.394 in.) thread penetration must be used.

**NOTICE** - Ensure proper dampening of the 4 fixation points.  
- Ensure stress-free installation (see Fig. 2) on these 4 fixation points.

### 3.4) Operation - related information

The coolant flow is forced by a water pump, driven from the camshaft, from the radiator to the cylinder heads. From the top of the cylinder heads the coolant passes on to the expansion tank. Since the standard location of the radiator is below engine level, the expansion tank located on top of the engine allows for coolant expansion.

### 3.5) Maintenance (Line) - related information

See relevant Maintenance Manual Line (MML) for the respective engine type and its periodical maintenance information.

Points of inspection	Interval Operating hours		Chapter Reference
	*50 h	100 h	
* recommended			
General visual inspection of the engine for damage or abnormalities.	X	X	See relevant Maintenance Manual Line (MML) for the respective engine type and its periodical maintenance information.

**NOTICE** Pay attention to the latest Maintenance Manual Line (MML) for the respective engine type, Chapter 05-20-00 section "Maintenance Schedule" for other points of inspection for the entire cooling system.

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## 3.5.1) Unscheduled maintenance checks

The manufacturer also recommends the following inspections whenever maintenance is carried out (where not already prescribed by the airframe manufacturer, as possible malfunctions could have negative effects on engine operation):

- Check radiator and hoses for damage
- Check for discoloration and cracks

### NOTICE

Danger of overheating.

Observe all checks listed here and in the respective Maintenance Manual to prevent overheating of the engine.

## 3.6) Maintenance (Heavy) - related information

Regarding proper disassembly, assembly, cleaning etc. and further heavy maintenance tasks of the radiator see the aircraft manufacturers instruction for continued airworthiness.

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

## 3.7) Test run

Conduct test run and perform leakage check. See Chapter 12-20-00 of the latest Maintenance Manual Line (MML) for the respective engine type.

## 3.8) Troubleshooting

A rise in coolant temperature above normal operating limits (see Operators Manual, OM) is a clear signal for a failure in the cooling system.

Possible cause:

- Radiator contaminated
- Broken sealing of coolant radiator to cowling
- Poor cooling flow

## 3.9) Summary

The execution of the Service Instruction - PAC must be confirmed in the logbook.



A revision bar outside of the page margin indicates a change to text or graphic.

Translation into other languages might be performed in the course of language localization but does not lie within ROTAX® scope of responsibility.

In any case the original text in English language and the metric units are authoritative.

## 3.10) Inquiries

Inquiries regarding this Service Instruction - PAC should be sent to the ROTAX® Authorized Distributor of your area.

A list of all ROTAX® Authorized Distributors or their independent Service Centers is provided on [www.FLYROTAX.com](http://www.FLYROTAX.com).

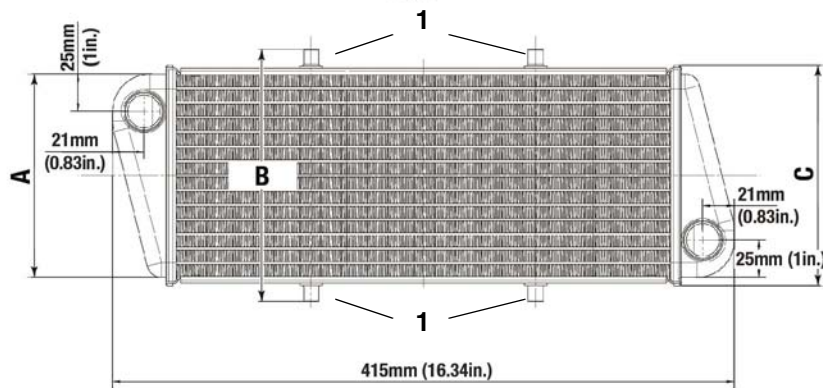
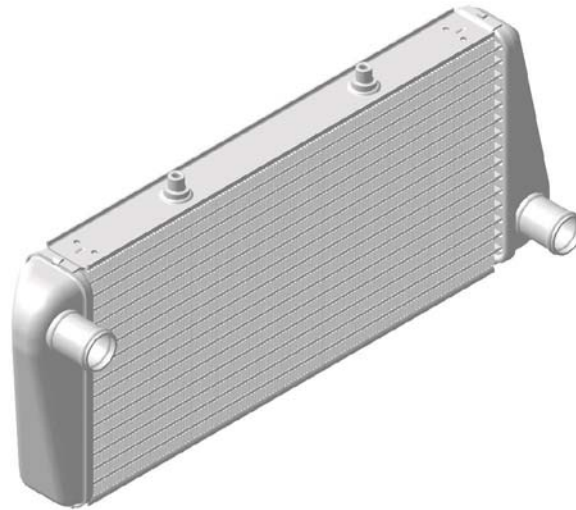
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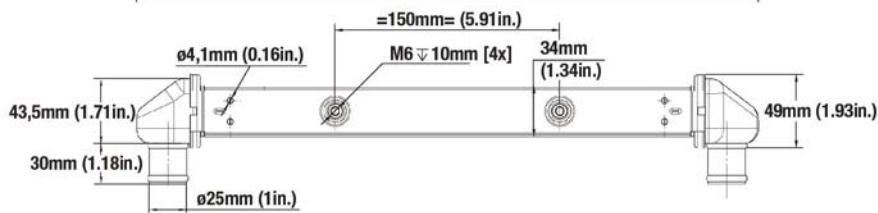
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## 4) Appendix

The following drawings should convey additional information:



	A	B	C
997086	156mm (6.14in.)	188mm (7.40in.)	167,5mm (6.59in.)



1) Fixation points

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Fig. 2. Radiator dimensions

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