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## NOTES

# TOA) Table of amendments

## Approval\*

The technical content of this document is approved  
under the authority DOA No. EASA.21J.048.

Current no.	chapter	page	date of change	remark for approval	date of approval from authorities	date of issue	signature
0	1 to 9	all	04 01 2010	DOA*			
1	LEP	LEP-1	04 01 2011	DOA*			
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## NOTES

## TOA) Summary of changes

### Content

Summary of the relevant amendments in this context, but makes no claim to completeness.

current no.	chapter	page	date of change	comment
0	1 up to 9	all	04 01 2010	New layout
1	2	2-4	04 01 2011	Engine start operating temperature description
		2-7	04 01 2011	Operating fluids - definition
1	9	9-6,7,8	04 01 2011	Overview of authorized distributor

## NOTES

**Critical flying altitude**

available boost pressure

**NOTICE**

Up to the stated critical flight altitude the respective manifold pressure is available.

Take-off performance	up to max. 2450 m (8000 ft.) above sea level
Continuous performance	up to max. 4875 m (16000 ft.) above sea level

**Airbox temperature**

Intervention temperature	72 °C (160 °F)
Intervention temperature	* 88 °C (190 °F) * 914 F starting with S/N 4,420.200 (TCU TNr. 966741) * 914 UL starting with S/N 4,417.598 (TCU TNr. 966471)

**Oil pressure**

Max.	7 bar (102 psi)
<b>NOTICE</b>	For a short period admissible at cold start.
Min.	0.8 bar (12 psi) (below 3500 rpm) * 1.5 bar (22 psi)
Normal	2.0 to 5.0 bar (29 to 73 psi) (above 3500 rpm) * 1.5 to 5.0 bar (22 to 73 psi) * 914 F up to S/N 4,420.085 * 914 UL up to S/N 4,417.665

**Oil temperature**

Max.	130 °C (266 °F)
Min.	50 °C (120 °F)
normal operating temperature	approx. 90 to 110 °C (190 - 230 °F)

**EGT**

exhaust gas temperature

Max.	950 °C (1742 °F)
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**Conventional coolant**

See also [Chapter 2.2](#)).

Coolant temperature: (coolant exit temperature)	
Max.	120 °C (248 °F)

  

Cylinder head temperature:	
Max.	135 °C (275 °F)
Permanent monitoring of coolant temperature and cylinder head temperature is necessary.	

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**Waterless coolant**

See also [Chapter 2.2](#)).

Cylinder head temperature:	
Max.	135 °C (275 °F)
Permanent monitoring of cylinder head temperature is necessary.	

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**Engine start, operating temperature**

Max.	50 °C (120 °F) (ambient temperature)
Min.	-25 °C (-13 °F) (oil temperature)

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**Fuel pressure**



**WARNING**

Non-compliance can result in serious injuries or death!

Exceeding the max. admissible fuel pressure will override the float valve of the carburetor and to engine failure.

Max.	Airbox pressure + 0.35 bar (5.08 psi)
Min.	Airbox pressure + 0.15 bar (2.18 psi)
Normal	Airbox pressure + 0.25 bar (3.63 psi)

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## 2.3) Operating media-Fuel

### General note

**NOTICE**

Obey the local codes and the latest edition of Service Instruction SI-914-019 for the selection of the correct fuel.

**NOTICE**

Use only fuel suitable for the respective climatic zone.

NOTE: Risk of vapour formation if using winter fuel for summer operation.

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### Knock resistance

The fuels with following specifications can be used:

	Usage/Description
<b>Knock resistance</b>	<b>914 F/UL</b>
	Min. RON 95 (min. AKI* 91)

\* Anti Knock Index (RON+MON)/2

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### Mogas

	Usage/Description
<b>Mogas</b>	<b>914 F/UL</b>
European standard	EN 228 Super EN 228 Super plus

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### AVGAS

AVGAS 100LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. Thus it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

	Usage/Description
<b>AVGAS</b>	<b>914 F/UL</b>
Aviation Standard	AVGAS 100 LL (ASTM D910)

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## 2.4) Operating media-Lubricants

### General note

#### NOTICE

Obey the manufacturers instructions about the lubricants.  
If the engine is mainly run on AVGAS more frequent oil changes will be required. See Service Instruction SI-914-019, latest edition.

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### Oil type

**Motorcycle oil of a registered brand with gear additives.** Do not use aircraft engine oil for direct driven engines.

#### NOTICE

At the selection of suitable lubricants refer to the additional information in the Service Instruction SI-914-019, latest edition.

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### Oil consumption

Max. 0.06 l/h (0.13 liq pt/h).

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### Oil specification

- Use only oil with API classification "**SG**" or higher!
  - Due to the high stresses in the reduction gears, oils with gear additives such as high performance motor cycle oils are recommended.
  - Because of the incorporated overload clutch, oils with friction modifier additives are unsuitable as this could result in a slipping clutch during normal operation.
  - Heavy duty 4-stroke motor cycle oils meet all the requirements. These oils are normally not mineral oils but semi- or full synthetic oils.
  - Oils primarily for Diesel engines have **insufficient high temperature properties and additives which favour clutch slipping, and are generally unsuitable.**
- 

### Oil viscosity

Use of multi-grade oils is recommended.

#### NOTE:

Multi-viscosity grade oils are less sensitive to temperature variations than single grade oils.

They are suitable for use throughout the seasons, ensure rapid lubrication of all engine components at cold start and get less fluid at higher temperatures.

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**Starting problems****Engine does not start**

Possible cause	Remedy
Ignition off.	switch on.
Closed fuel valve or clogged filter.	open valve, clean or renew filter, check fuel system for leaks.
No fuel in tank.	refuel.
Starting speed too low, faulty or discharged battery.	fit fully charged battery.
Starting speed too low, start problems on cold engine.	use top quality, low friction oil; allow for sufficient cooling period to counter for performance drop on hot starter; pre-heat engine.
Fuel air-ratio to rich	start without electric booster pump. start without start carb (Choke).

**Engine run****Engine idles rough after warm-up period, smoky exhaust emission**

Possible cause	Remedy
Starting carb (Choke) activated.	close starting carb (Choke).

**Engine keeps running with ignition off**

Possible cause	Remedy
Overheating of engine.	let engine cool down at idling at approx. 2000 rpm.

**Knocking under load**

Possible cause	Remedy
Octane rating of fuel too low.	use fuel with higher octane rating.

**Oil pressure****Low oil pressure**

Possible cause	Remedy
Not enough oil in oil tank.	Check oil return line for free passage, renew oil seal.

**Oil level****Oil level is increasing**

Possible cause	Remedy
Oil too cold during engine operation.	cover oil cooler surface, maintain the oil temperature prescribed.

**Cold engine start****Engine hard to start at low temperature**

Possible cause	Remedy
Starting speed too low.	preheat engine.
Low charge battery.	fit fully charged battery.
High oil pressure.	At cold start a pressure reading of up to around 7 bar (102 psi) does not indicate a malfunction.
Oil pressure too low after cold start.	Too much resistance in the oil suction tube at low temperatures. Stop engine and preheat oil. At oil pressure reading too low than 1 bar oils with lower viscosity are to be used. See Service Instruction SI-914-019, current issue.
NOTE:	Oil pressure must be measured at idle at an oil temperature of minimum 50 °C (120 °F). Be sure the oil pressure does not go below minimum at idle.

## 9.2) Authorized Distributor

**General note** See the official ROTAX<sup>®</sup> AIRCRAFT ENGINES Homepage  
[www.rotax-aircraft-engines.com](http://www.rotax-aircraft-engines.com)

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**List** Overview of authorized distributors of ROTAX aircraft engines.

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Europe	<a href="#">page 9-6</a>
America	<a href="#">page 9-7</a>
Australia	<a href="#">page 9-7</a>
Africa	<a href="#">page 9-7</a>
Asia	<a href="#">page 9-8</a>

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**CROATIA / FORMER YUGOSLAVIA  
(EXCEPT SLOVENIA):****►SHAFT D.O.O.**

B.L. Mandica 161 a  
HR-54000 OSIJEK  
Tel.: +385 (0) 31 /280-046,  
Fax: +385 (0) 31 /281-602  
E-mail: shaft@os.tel.hr  
Contact person: Ing. Ivan Vdovjak

**CZECHIA / SLOVAKIA:****►TEVESO S.R.O.**

Skroupova 441  
CS-50002 HRADEC KRALOVE  
Tel.: +42 049 / 5217 127,  
Fax: +42 049 / 5217 226  
E-mail: motory@teveso.cz  
Website: [www.teveso.cz](http://www.teveso.cz)  
Contact persons: Ing. Jiri Samal

**SWEDEN / FINLAND / NORWAY /  
ESTONIA / LATVIA / LITHUANIA /  
DENMARK:****►LYCON ENGINEERING AB**

Härkeberga, SE-74596 ENKÖPING  
Tel.: +46 (0) 171 / 414039,  
E-mail: info@lycon.se  
Website: [www.aeronord.eu](http://www.aeronord.eu)

**FRANCE / ALGERIA / BELGIUM / LU-  
XEMBURG / MAROCCO /  
MONACO / TUNESIA:****►MOTEUR AERO DISTRIBUTION**

11 Blvd Albert 1  
98000 MONACO  
Tel.: +377 (0) 93 30 17 40,  
Fax: +377 (0) 93 30 17 60  
E-mail: mad@libello.com  
Website: [www.moteuraerodistribution.com](http://www.moteuraerodistribution.com)  
Contact person: Philippe Thys

**GERMANY / AUSTRIA / BULGARIA /  
HUNGARY / LIECHTENSTEIN /  
ROMANIA / SWITZERLAND /  
THE NETHERLANDS:****►FRANZ AIRCRAFT ENGINES VERTRIEB  
GMBH**

Am Weidengrund 1a, 83135 Schechen,  
GERMANY  
Tel.: +49 (0) 8039 / 90350,  
Fax: +49 (0) 8039 / 9035-35  
E-mail: info@franz-aircraft.de  
Website: [www.franz-aircraft.de](http://www.franz-aircraft.de)  
Contact person: Eduard Franz

**GREAT BRITAIN / IRELAND /  
ICELAND:****►SKYDRIVE LTD.**

Burnside, Deppers Bridge  
SOUTHAM, WARWICKSHIRE CV47 2SU  
Tel.: +44 (0) 1926 / 612 188,  
Fax: +44 (0) 1926 / 613 781  
E-mail: sales@skydrive.co.uk  
Website: [www.skydrive.co.uk](http://www.skydrive.co.uk)  
Contact person: Nigel Beale

**SLOVENIA:****►PIPISTREL D.O.O. AJDOVSCINA**

Goriska Cesta 50A  
5270 AJDOVSCINA  
Tel.: +386 (0) 5 / 3663 873,  
Fax: +386 (0) 5 / 3661 263  
E-mail: info@pipistrel.si  
Website: [www.pipistrel.si](http://www.pipistrel.si)  
Contact person: Leon Brecejl

**POLAND:****►FASTON LTD.**

ul. Zwirki i Wigury 47  
PL-21-040 SWIDNIK  
Tel.: +48 (0) 81 / 751-2882;  
Fax: +48 (0) 81 / 751-5740  
E-mail: faston@go2.pl  
Contact person: Mariusz Oltarzewski

**ITALY / CYPRUS / GREECE / MALTA /  
PORTUGAL / SPAIN / TURKEY:****►LUCIANO SORLINI S.P.A.**

Piazza Roma, 1  
Carzago di Calvagese Riviera (Brescia), Italy  
Tel.: +39 030 / 601 033,  
Fax: +39 030 / 601 463  
E-mail: avio@sorlini.com  
Website: [www.sorlini.com](http://www.sorlini.com)  
Contact person: Alberto Comincioli

## 2) A M E R I C A

### CANADA:

➤ **ROTECH RESEARCH CANADA, LTD.**

6235 Okanagan Landing Rd.  
VERNON, B.C., V1H 1M5, CANADA  
Tel.: +1 250 / 260-6299,  
Fax: +1 250 / 260-6269  
E-mail: [inquiries@rotec.com](mailto:inquiries@rotec.com)  
Website: [www.rotec.com](http://www.rotec.com)

## NORTH / MIDDLE / SOUTH AMERICA:

➤ **KODIAK RESEARCH LTD.**

P.O. Box N 658  
Bay & Deveaux Street  
NASSAU, BAHAMAS  
Tel.: +1 242 / 356 5377,  
Fax: +1 242 / 356 2409  
E-mail: [custsupport@kodiakbs.com](mailto:custsupport@kodiakbs.com)  
Website: [www.kodiakbs.com](http://www.kodiakbs.com)

## 3) A U S T R A L I A /

## N E W Z E A L A N D /

## P A P U A N E W G U I N E A:

➤ **BERT FLOOD IMPORTS PTY. LTD.**

P.O. Box 61, 16-17 Chris Drive  
LILYDALE, VICTORIA 3140  
Tel.: +61 (0) 3 / 9735 5655,  
Fax: +61 (0) 3 / 9735 5699  
E-mail: [wal@bertfloodimports.com.au](mailto:wal@bertfloodimports.com.au)  
Website: [www.bertfloodimports.com.au](http://www.bertfloodimports.com.au)  
Contact person: Mark Lester

## 4) A F R I C A

### EGYPT:

➤ **AL MOALLA**

P.O. Box 7787, ABU DHABI  
Tel.: +971 (0) 2/ 444 7378,  
Fax: +971 (0) 2/444 6896  
E-mail: [almoalla@emirates.net.ae](mailto:almoalla@emirates.net.ae)  
Contact person: Hussain Al Moalla

### LIBYA:

➤ **LUCIANO SORLINI S.P.A.**

Piazza Roma, 1  
Carzago di Calvagese Riviera (Brescia), Italy  
Tel.: +39 030 / 601 033,  
Fax: +39 030 / 601 463  
E-mail: [avio@sorlini.com](mailto:avio@sorlini.com)  
Website: [www.sorlini.com](http://www.sorlini.com)  
Contact person: Alberto Comincioli

## ANGOLA / BOTSWANA / LESOTHO/ MADAGASCAR / MALAWI / MOZAMBIQUE/ NAMIBIA / SOUTH AFRICA / SWAZILAND/ ZAMBIA / ZIMBABWE:

➤ **AVIATION ENGINES ANDACCESSORIES (PTY) LTD**

P.O. Box 15749, Lambton 1414,  
SOUTH AFRICA  
Tel.: +27 (0) 11 / 824 3368,  
Fax: +27 (0) 11 / 824 3339  
E-mail: [niren@cometaviationsupplies.co.za](mailto:niren@cometaviationsupplies.co.za)  
Website: [www.aviation-engines.co.za](http://www.aviation-engines.co.za)  
Contact person: Niren Chotoki

## GHANA / BENIN / BURKINA FASO / CAMEROON / CENTRAL AFRICAN REPUBLIC / CONGO / GABON / GUINEA / IVORY COAST / MALI / MAURITANIA / NIGER/ NIGERIA / SENEGAL / TOGO:

➤ **WAASPS LTD**

PMB KA49, Kotoka International Airport, Accra, GHANA  
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E-mail: [info@waasps.com](mailto:info@waasps.com)  
Website: [www.waasps.com](http://www.waasps.com)  
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## 5) A S I A

### CHINA / HONG KONG / MACAO:

#### ►PEIPOINT INDUSTRIES LTD.

Rm. 1302, Westlands Centre  
20 Westlands Road, Quarry Bay  
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E-mail: varman@blr.vsnl.net.in  
Website: [www.varman.com](http://www.varman.com)  
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### IRAN:

#### ►ASEMAN PISHRANEH CO.

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### UNITED ARAB. EMIRATES:

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