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6) List of amendments

00521

Currt. no.	Chap-ter	Pages	Date of modification	Note of approval	Date of approval by authority	Date of insertion	Marks / Signature
0	1÷5 7÷9 11÷15	all all all	98 12 01	not required		98 12 01	AA/HeC
0	6,10	all*	98 12 01	english version not required	german version 1.12.1998	98 12 01	AA/HeC
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* The note of approval of the Aviation Authority refers only to the certified engines of the Type 914 F (TW10 - ACG).

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8) Technical data

8.1) Dimensions

Description	914 UL / F
Bore	79,5 mm (3,13 in.)
Stroke	61 mm (2,40 in.)
Displacement	1211 cm ³ (13,9 in ³)
Compression ratio	9,0 : 1

03116

8.2) Weights

◆ NOTE: The stated weights are dry weights (without operating fluids)

with: carburetors, generator, ignition unit and oil container, electric starter, stainless steel muffler, engine suspension frame, turbo charger and TCU (turbocharge control unit)

without: radiator and fuel pump

Weight in kg (lb)	914 UL	914 F
Configuration 2/4	71,7 (158) with overload clutch	71,7 (158)
	70,0 (154) without clutch	
Configuration 3	74,4 (164)	

03117

Equipment (optional):

External alternator: 3,0 kg (6,6 lb)

Vacuum pump: 0,8 kg (1,8 lb)

Overload clutch: 1,7 kg (3,7 lb)

◆ NOTE: The overload clutch is installed on all certified aircraft engines and on non-certified aircraft engines of the configuration 3.

8.3) Fuel consumption

Fuel consumption in l/h (USgal/h)	914 UL / F
at take-off performance	33,0 (8,7)
at max. continuous performance	27,2 (7,2)
at 75 % continuous performance	20,4 (5,4)
specific fuel consumption at max. continuous performance	276 g/kWh (0,458 lb/hph)

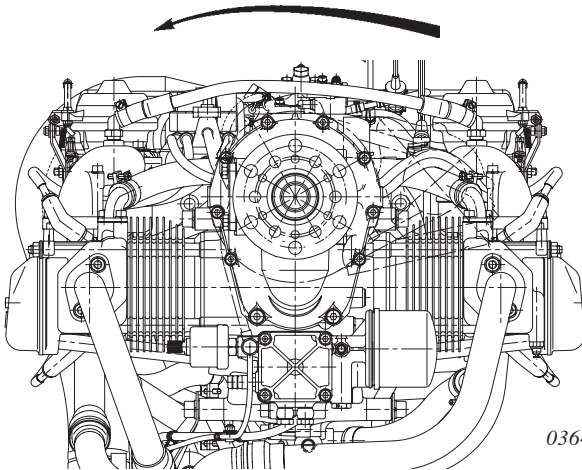
03118

8.4) Direction of rotation

Direction of rotation on propeller shaft: counter-clockwise,
looking at p.t.o. side of
engine.

▲ **WARNING:** Propeller may not be turned reverse the normal direction
of engine rotation. See also section 10.1) General limits
of operation.

normal direction of propeller rotation (engine)



03646

10) Operating instructions

The data of the certified engines are based on type certificate of type 914 F (TW10 - ACG).

10.1) General limits of operation

10.1.1) Operating speeds and limits

1. **Speed:**

Take-off speed 5800 rpm (5 min.)

Max. continuous speed 5500 rpm

Idle speed ca. 1400 rpm

2. **Manifold pressure:**

Take-off performance max. 1350 hPa (39,9 in.HG)

Max. continuous performance ... max. 1200 hPa (35,4 in.HG)

■ **ATTENTION:** Due to the control behaviour an overshooting of the manifold pressure is possible. But within 2 seconds this pressure has to stabilize within the allowance.

3. **Acceleration:**

Limit of engine operation at zero gravity and in **negative "g"** conditions

max. 5 seconds at max. -0,5 g

4. **Critical flying altitude:**

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

Continuous performance up to max. 4500 m (16000 ft)
above sea level

■ **ATTENTION:** Up to the stated critical flight altitude the respective manifold pressure is available.

5. **Oil pressure:**

max. 7 bar (102 psi)

■ **ATTENTION:** 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 ÷ 5,0 bar (29 ÷ 73 psi) (above 3500 rpm)

*1,5 ÷ *5,0 bar (22 ÷ 73 psi)

*914 UL starting with S/N 4,417.665

*914 F starting with S/N 4,420.085

6. **Oil temperature:**

max. 130° C (255° F)

min. 50° C (120° F)

normal operating temperature ... ca. 90 ÷ 110° C (190÷230°F)

7. **Cylinder head temperature:**

max. 135°C (275° F)

reading at observation point of the hotter cylinder head, either no. 2 or no.3.

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10.3) Standard operation

To warrant reliability and efficiency of the engine, meet and carefully observe all the operating and maintenance instructions.

10.3.1) Daily checks

▲ **WARNING:** **Risk of burnings and scalds!**
Conduct checks on the cold engine only!

▲ **WARNING:** **Ignition "OFF"**. Before cranking the propeller switch off both ignition circuits and anchor the aircraft. Have the cockpit occupied by a competent person.

Coolant level:

Verify coolant level in the expansion tank, replenish as required up to max. 2/3 in expansion tank.

◆ **NOTE:** The level in the overflow bottle should be between max. and min. mark.

Check of mechanical components:

Turn propeller by hand in direction of engine rotation several times and observe engine for odd noises or excessive resistance and normal compression.

Gear box:

— **Version without overload clutch:**

No further checks are necessary.

— **Version with overload clutch:**

Turn the propeller by hand to and fro, feeling the free rotation of 15 ° or 30 ° before the crankshaft starts to rotate. At reverse rotation the noise of tooth engagement of the el. starter has to be noticed as soon as the crankshaft starts to rotate.

The torque by friction in the free rotation range must be between a minimum of 15 Nm (133 in.lb) and a maximum of 45 Nm (400 in.lb).

If the propeller can be turned between the dogs with practically **no friction** at all (less than 15 Nm / 135 in.lb) further investigation is necessary.

■ **ATTENTION:** Do not release the engine into service before rectification.

Carburetor:

- Verify free movement of throttle cable and starting carburetor over the complete range. Check from the cockpit.

Exhaust system and turbocharger:

- Inspect for cracks, damages, leakage and general condition.

10.3.2) Before engine start

Carry out pre-flight checks.

10.3.3) Pre-flight checks

▲ **WARNING:** **Ignition "OFF"** Before cranking the propeller switch off both ignition circuits and anchor the aircraft. Have the cockpit occupied by a competent person.

Operating media:

▲ **WARNING:** Carry out pre-flight checks on the cold or luke warm engine only! **Risk of burning and scalds.**

— Check for any oil-, coolant- and fuel leaks.

If leaks are evident, rectify before flight.

— Check coolant level in the overflow bottle.

◆ **NOTE:** The level in the overflow bottle should be between min. and max. mark.

— Check oil level and replenish as required.

▲ **WARNING:** Propeller may not be turned reverse the normal direction of rotation. See also section 10.1) General limits of operation.

— Prior to oil check, turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank, or let the engine idle for 1 minute.

This process is finished when air is returning back to the oil tank and can be noticed by a murmur from the open oil tank.

◆ **NOTE:** Oil level should be between max. and min. mark of the oil level gauge but must never be below min. mark. Before longer periods of operation ensure that oil level is at least up to mid-position.


12.1) Reporting

According to the regulation of JAR / FAR 21.3 the manufacturer shall evaluate field information and report to the authority. In case of any relevant occurrences that may involve malfunction of the engine, the form on the next page should be filled out and sent to the responsible authorized ROTAX® distributor.

- ◆ NOTE: The form is also available from the official ROTAX® AIRCRAFT ENGINES Homepage

www.rotax-aircraft-engines.com

in electronic version.

 ROTAX AIRCRAFT ENGINES CUSTOMER SERVICE INFORMATION REPORT		OPER. Control No.		ATA Code		1. A/C Reg. No.		SERIAL NUMBER					
		2. AIRCRAFT		3. POWERPLANT		4. PROPELLER		5. SPECIFIC PART (of component) CAUSING TROUBLE					
Enter pertinent data		MANUFACTURER		MODEL/SERIES		MFG. Model or Part No.		Serial No.		Part/Defect Location			
6. ENGINE COMPONENT (Assembly that includes part)		MANUFACTURER		MODEL or PART No.		SERIAL NUMBER		ENGINE COMP. Name		MFG. Model or Part No.			
Engine TSN		Engine TSO		Engine Condition		7. Date Sub.		Engine TSN		Engine TSO			
8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)		OPER. CONTROL No.		ATA Code		1. A/C Reg. No.		SERIAL NUMBER		DATE SUB.			
6. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)		OPER. CONTROL No.		ATA Code		1. A/C Reg. No.		SERIAL NUMBER		DATE SUB.			
		2. AIRCRAFT		3. POWERPLANT		4. PROPELLER		5. SPECIFIC PART (of component) CAUSING TROUBLE		SERIAL NUMBER			
		Enter pertinent data		MANUFACTURER		MODEL/SERIES		MFG. Model or Part No.		Serial No.		Part/Defect Location	
		6. ENGINE COMPONENT (Assembly that includes part)		MANUFACTURER		MODEL or PART No.		SERIAL NUMBER		ENGINE COMP. Name		MFG. Model or Part No.	
		Engine TSN		Engine TSO		Engine Condition		7. Date Sub.		Engine TSN		Engine TSO	
		8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)		OPER. CONTROL No.		ATA Code		1. A/C Reg. No.		SERIAL NUMBER		DATE SUB.	

Optional Information:
 Check a box below, if this report is related to an aircraft
 Accident; Date Incident; Date

OPERATOR DESIGNATOR	SUBMITTED BY: <input type="text"/>							TELEPHONE NUMBER: () — — —
DISTRICT OFFICE	<input type="checkbox"/> REP. STA	<input type="checkbox"/> OPER	<input type="checkbox"/> MECH	<input type="checkbox"/> AIR TAXI	<input type="checkbox"/> MFG	<input type="checkbox"/> ACG	<input type="checkbox"/> COMPUTER	<input type="checkbox"/> OTHER