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6) List of amendments

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Currt. no.	Chap-ter	Pages	Date of modification	Note of approval	Date of approval by authority	Date of insertion	Marks / Signature
	1÷5	all		not			
0	7÷9	all	98 07 01			98 07 01	AA/HeC
	11÷15	all		required			
0	6,10	all*	98 07 01	english version not required	german version 1.7.1998	98 07 01	AA/HeC
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* The note of approval of the Aviation Authority refers only to the certified engines of the Type 912 A (TW 8/89), 912 F / S (TW9 - ACG).

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8) Technical data

8.1) Dimensions

Description	912 UL / A / F	912 ULS / S
Bore	79,5 mm (3,13 in)	84 mm (3,31 in)
Stroke	61 mm (2,40 in)	61 mm (2,4 in)
Displacement	1211 cm3 (13,9 in3)	1352 cm3 (82,5 in3)
Compression ratio.	9,0 : 1	10,5 : 1

02715

8.2) Weights

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

with: electric starter, carburetors, internal generator, ignition unit and oil tank

without: exhaust system, radiator, airbox

Weight in kg (lb)	912 UL	912 A	912 F	912 ULS	912 S
Configuration 2/4	57,1 (126) with overload clutch 55,4 (122) without clutch	57,1 (126)	57,1 (126)	58,3 (128) with overload clutch 56,6 (125) without clutch	58,3 (128)
Configuration 3	59,8 (132)			61 (134)	

02716

Equipment:

External alternator: ..... 3,0 kg

Vacuum pump: ..... 0,8 kg

Overload clutch: ..... 1,7 kg.

◆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)	912 UL / A / F	912 ULS / S
at take-off performance	24,0 (6,3)	27,0 (7,1)
at max. continuous performance	22,6 (5,6)	25,0 (6,6)
at 75 % continuous performance	16,2 (4,3)	18,5 (4,9)
specific consumption at max. continuous performance	285 g/kWh (0,47 lb/hph)	285 g/kWh (0,47 lb/hph)

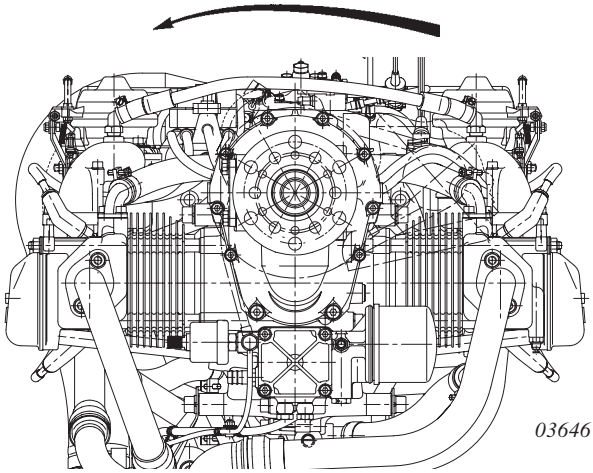
02717

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 operations.

normal direction of propeller rotation (engine)



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10) Operating instructions

The data of the certified engines are based on type certificate of type 912 A (TW 8/89), 912 F / S (TW9 - ACG).

10.1) General limits of operation

10.1.1) Operating speeds and limits (912 UL / A / F)

1. Speed:

Take-off speed ..... 5800 1/min (5 min.)
Max. continuous speed 5500 1/min
Idle speed ..... ca. 1400 1/min

2. Performance (ISA): (**I**nternational **S**tandard **A**tmosphere)

Take-off performance ..... 59,6 kW at 5800 1/min
Max. continuous performance ... 58 kW at 5500 1/min

3. Acceleration:

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

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

4. Oil pressure:

max. ..... 7 bar

■ ATTENTION: For a short period admissible at cold start.

min. ..... 0,8 bar (12 psi) (below 3500 rpm)
normal ..... 2,0 ÷ 5,0 bar (29 ÷ 73 psi) (above 3500 rpm)

5. Oil temperature:

max. ..... 140° C ..... (285° F)
min. ..... 50° C ..... (120° F)
normal operating temperature ... ca. 90 ÷ 110° C ... (190÷230° F)

6. Cylinder head temperature:

max. ..... 150°C ..... (300° F)
reading at observation point of the hotter cylinder head, either no. 2 or no.3.

7. Engine start, operating temperature:

max. ..... 50° C ..... (120° F)
min. ..... -25° C ..... (- 13° F)

8. Fuel pressure:

max. ..... 0,4 bar ..... (5,8 psi)
min. ..... 0,15 bar ..... (2,2 psi)

◆ NOTE: Exceeding the max. admissible fuel pressure will override the float valve of the carburetor.

The delivery pressure of an additional backing pump (e.g. electric standby pump) must not exceed 0,3 bar (4.4 psi) in order not to override the float valve.

9. Power consumption of the hydraulic propeller governor:
max. ..... 600 W

10. Power consumption of the vacuum pump:
max. ..... 300 W

11. Power consumption of the external alternator:
max. ..... 1200 W

12. Deviation from bank angle
max. ..... 40°

◆ NOTE: Up to this value the dry sump lubrication system warrants lubrication in every flight situation.

13. Rotation reverse the direction of engine rotation
max. ..... 1 rotation

10.1.2) Operating speeds and limits (912 ULS / S)

1. Speed:

Take-off speed ..... 5800 1/min (5 min.)
Max. continuous speed 5500 1/min
Idle speed ..... ca. 1400 1/min

2. Performance (ISA): (**I**nternational **S**tandard **A**tmosphere)

Take-off performance ..... 73,5 kW at 5800 1/min
Max. continuous performance ... 69 kW at 5500 1/min

3. Acceleration:

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

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

4. Oil pressure:

max. ..... 7 bar
■ ATTENTION: For a short period admissible at cold start.

min. ..... 0,8 bar (12 psi) (below 3500 rpm)
normal ..... 2,0 ÷ 5,0 bar (29 ÷ 73 psi) (above 3500 rpm)

5. Oil temperature:

max. ..... 130° C ..... (266° F)
min. ..... 50° C ..... (120° F)
normal operating temperature ... ca. 90 ÷ 110° C ... (190÷230° F)

6. Cylinder head temperature:

max. ..... 135°C ..... (284° F)
reading at observation point of the hotter cylinder head, either no. 2 or no.3.

7. Engine start, operating temperature:

max. ..... 50° C ..... (120° F)
min. ..... -25° C ..... (- 13° F)

8. Fuel pressure:

max. ..... 0,4 bar ..... (5,8 psi)
min. ..... 0,15 bar ..... (2,2 psi)

◆ NOTE: Exceeding the max. admissible fuel pressure will override the float valve of the carburetor.

The delivery pressure of an additional backing pump (e.g. electric standby pump) must not exceed 0,3 bar (4.4 psi) in order not to override the float valve.

9. Power consumption of the hydraulic propeller governor:
max. ..... 600 W

10. Power consumption of the vacuum pump:
max. ..... 300 W

11. Power consumption of the external alternator:
max. ..... 1200 W

12. Deviation from bank angle
max. ..... 40°

◆NOTE: Up to this value the dry sump lubrication system warrants lubrication in every flight situation.

13. Rotation reverse the direction of engine rotation
max. 1rotation

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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:**

The propeller can be turned by hand approx. 15° to 30° against slight friction, without noticing any odd noises or resistance.

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:

— Inspect for 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.

Difference between max.- and min.- mark = 0,75 litre (1.6 liq pt)

10.3.4) Engine start

▲ WARNING! Do not take the engine into operation if any person is near the aircraft.

Fuel cock. ..... open

Starting carb. ..... activated

◆ NOTE: If the engine is already in operating temperature, start the engine without choke.

Throttle lever. ..... set to idle position

Master switch. ..... on

Ignition. ..... both circuits switched on

Starter button. ..... actuate

■ ATTENTION: Activate starter for max. 10 sec. only (without interruption), followed by a cooling period of 2 minutes!

As soon as engine runs, adjust throttle to achieve smooth running at approx. 2500 r.p.m.

Check if oil pressure has risen within 10 seconds and monitor oil pressure. Increase of engine speed is only permitted at steady oil pressure readings above 2 bar (30 psi).

At an engine start with low oil temperature, continue to observe the oil pressure as it could drop again due to the increased flow resistance in the suction line.

De-activate starting carb.

■ ATTENTION: Since the engine comprises a reduction gear with shock absorber, take special care of the following:

To prevent impact load, start with throttle lever in idle position or at the most up to 10% open. For the same reason, wait for around 3 sec. after throttling back to partial load to reach constant speed before re-acceleration.

For checking the two ignition circuits, only one circuit may be switched off and on at times.

■ ATTENTION: Do not actuate starter button (switch) as long as the engine is running. Wait until complete stop of engine!

12.1) Reporting

According to the regulation of JAR / FAR 21.3 the manfacturer 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.	

Enter pertinent data	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT	ROTAX		
4. PROPELLER			

5. SPECIFIC PART *(of component)* CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. ENGINE COMPONENT *(Assembly that includes part)*

Engine/Comp. Name	Manufacturer	Model or Part No.	Serial Number

Engine TSN	Engine TSO	Engine Condition	7. Date Sub.

8. Comments *(Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)*

Optional Information:

Check a box below, if this report is related to an aircraft

☐ Accident; Date _____ ☐ Incident; Date _____

DISTRICT OFFICE	OPERATOR DESIGNATOR
OTHER	
COMMUTER	
ACG	
MFG	
AIR TAXI	
MECH	
OPER	
REP. STA	

SUBMITTED BY:

TELEPHONE NUMBER: ( ) _____

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