EDGE PERFORMANCE

“EP918Ti”

(185HP)

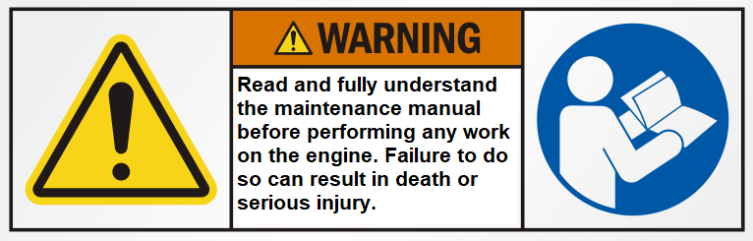
(PRELIMINARY)

Line Maintenance Manual

When Performance Meets Perfection And Reliability.

Table of Content

1) **GENERAL NOTE**
2) **AIRWORTHINESS LIMITATIONS**
3) **MAINTENANCE**
4) **TIME LIMITS**
5) **SCHEDULED MAINTENANCE CHECKS**
6) **UNSCHEDULED MAINTENANCE CHECKS**



1) GENERAL NOTE

- Before performing and maintenance of the engine, read the manual carefully and ensure you fully understand the tasks, and pay attention to all highlighted notes. If anything is unclear, contact your nearest EdgePerformance distributor, service center or EdgePerformance tech support.
- Failing to comply with the scheduled maintenance as well as the unscheduled maintenance can result in injury or fatality. Never assume anything, always advice whenever in doubt.
- We believe your new EdgePerformance engine will bring you lots of joy and take you places you never though were possible to go.

Purpose - The purpose of this manual is to give aircraft manufactures and aircraft builders and owners help and guidance during operation and maintenance. As the engine is based on a Rotax © engine, a lot of the information found in the Rotax © manuals are relevant to this engine. Most of the information that is unique to this engine is listed in the EdgePerformance manuals.

Serial Number – The engines serial number can be found on the rear side of the gearbox, closest to cylinder 2. The SN is the same as given from Rotax. This allows the end user of whoever performs the maintenance tasks to ensure if there are any SB, ASB, SI issued by Rotax that still applies to this engine. If in doubt, always consult with you nearest EdgePerformance distributor, service center or with EdgePerformance tech support.

2) AIRWORTHINESS LIMITATIONS

AIRWORTHINESS LIMITATIONS

- None
- For the EdgePerformance EP918Ti the airworthiness limitations are not applicable

Continued Airworthiness

- Scheduled inspections of the engine including replacement and overhaul of defined components are required in order to ensure Continued Airworthiness of EdgePerformance aircraft engines.

3) MAINTENANCE

Non-compliance can result in serious injuries or death!
Besides our instructions in the documentation supplied, also respect generally valid safety and accident preventive directives and legal regulations.

General note

The procedures and limits in this Manual constitute the manufacturers official recommendation for engine maintenance and operation.

The guidelines given in the Maintenance Manual are useful and necessary supplements to training. They, however, cannot substitute competent theoretical and practical personal instruction.

Non-authorized modifications as well as the use of components and auxiliary components not corresponding to the installation instructions exclude any liability of the engine manufacturer.

Maintenance of engines and systems requires special knowledge and special tools. Use only the special tools recommended by BRP-Rotax or EdgePerformance when disassembling and assembling the engine.

Tighten fasteners to the torque specified in the exploded view(s) and/or in the written procedure.

Accepted accuracy for different measuring tools:
Torque: +/- 10%

In order to avoid a poor assembly, tighten screws, bolts, or nuts in accordance with the following procedure:

- Manually screw all screws, bolts and/or nuts
- Apply half the recommended torque value
- Tighten fastener to the recommended torque value

Authorized Personnel

Except for scheduled maintenance such as oil and oil filter replacement, air filter cleaning and oiling, spark plug replacement and fuel filter replacement, only Rotax iRMT trained personnel shall perform any heavier maintenance. Alternatively, your nearest EdgePerformance distributor, service center or EdgePerformance Technicians.

Procedure Notes

When performing maintenance, ensure that the following has been performed before any work on the engine starts.

Ignition OFF

- Lane select switch A **“OFF”**
- Lane select switch B **“OFF”**
- Main master switch **“OFF”**
- Fuel pump(s) **“OFF”**
- Backup battery switch **“OFF”**

Ignition ON

During maintenance work which requires the ignition and power to be switched “ON”, ensure the following.

- Ensure the propeller cannot be turned by hand unintentionally
- Secure the propeller aera in case of unintentional starter engagement

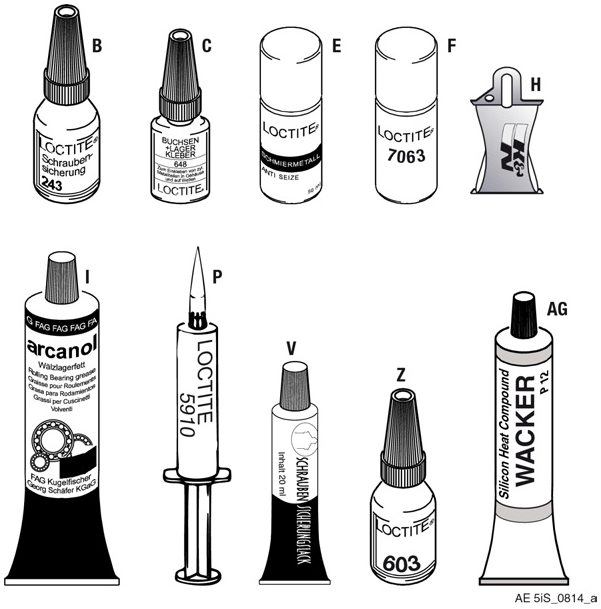
General maintenance guidelines

- All fluids when removed from the engine shall be properly and safely discarded.
- Always mark or “bag & tag” all parts removed from the engine when performing repair or parts replacements.
- Always replaced any removed safety wire with new aviation grade stainless steel safety wire in the correct manner.
- Any parts removed from the engine shall be properly cleaned, visually inspected, and if require or if in any doubt control measured to ensure that they are within any wear limitation.
- Always replaced any nylock or self-securing nuts whenever removed.
- Whenever removing a part which uses o-ring as a gasket seal, always replace them. They are made from viton high temperature rubber, and only genuine once must be used. Failing to do so can result in loss of engine oil, with loss of engine power, injury or death as a result. The same applies for oil seals and copper crush washer. All these items are 100% replace items.
- When re-assembling parts or the engine, always use the proper torque valves, tightening sequences, suitable lubrication and thread lockers.

Consumables

No.	part no.	Description, Application	Qty.
B	897651	**LOCTITE 243, blue** Blue medium duty screw locking agent, oil tolerant	10 ml (0.003 gal (US))
C	899788	**LOCTITE 648 green,** Green high temperature screw locking agent + retaining compound	5 ml (0.001 gal (US))
E	297434	**LOCTITE ANTI SEIZE 8151** Long-term lubricant for shaft seals	50 ml (0.013 gal (US))
F	xxx	**LOCTITE 7063 (or equivalent)** For degreasing and cleaning surfaces	AR
H	897870	**K&N FILTER OIL 99–11312**	14.8 ml (0.004 gal (US))
I	897330	**Lithium-base grease** Electrical insolating	250 g (0.55 lb)
O	297997	Engine oil Aeroshell Sport Plus 4	1 Liter
P	899791	**LOCTITE 5910** Flange sealant provides flexibility and adhesion	50 ml (0.013 gal (US))
V	297386	Locking paint	
AG	897186	**SILICONE HEAT CONDUCTION COMPOUND (torque seal or whiteness paint),**	150 g

		Application of the heat conduction compound will improve heat transfer. The greaselike, temperature-resistant silicon compound fills cavities between components and the cooling element (e.g.: spark plug-cylinder head), which otherwise do not contribute to heat conduction.Flange sealant provides flexibility and adhesion	(0.33 lb) (0.013 gal (US))
Z	899789	**LOCTITE 603** Oil tolerant retaining compound, heavy-duty	10 ml (0.003 gal (US))



4) TIME LIMITS

4.1 Definition of terms
4,2 Operating hours
4.3 Terminology
4.4 Time limit
4.5 Life cycle
4.6 General overhaul (TBO
4.7 Purging the oil system
4.8 Time Limit
4.9 Time limit for parts
4.10 Time limit for the coolant
4.11 Annual inspection

4.1 Operating hours All of the maintenance intervals, such as the 100 hr. inspection and the engine TBO, relate to the number of operating hours of the engine.

4.3 Terminology The following terminology is used throughout this Manual, and the meanings are defined as follows:

Inspection An inspection must be done only by trained technicians who has either a Rotax iRMT rating on the subject, an EdgePerformance distributor, service center or EdgePerformance technician.

Check A check can be done by pilots and/or mechanics who are approved on this engine and can perform inspections that compare condition with written standards to make sure of condition, precision and tolerances.

Test A test is the operation of engine components, appliances or systems to make an analysis of performance.

4.4 Time limit Time limits are predetermined time spans and intervals which are based either on calendar intervals or the number of engine operating hours. Once the time limits have been reached, the affected parts must either be replaced for a general overhaul, or maintenance work must be performed. These precautionary maintenance measures are designed to avoid engine malfunctions or defects and ensure continued airworthiness of the engine.

4.5 Life cycle The life cycle is always specified as an exact time span and is also quoted in flight hours.
NOTE *Parts with a limited life cycle must be taken out of operation and overhauled if the specified time span or number of flight hours is reached (whichever comes first).*

4.6 General overhaul (TBO Definition The time between overhauls (TBO) for all objects (such as the engine, component assemblies, add-on components) is the approved length of operation under normal operating conditions before it becomes mandatory to send in these objects for an overhaul. Normal operating conditions are the conditions which comply with the manufacturer's and the aviation authority's recommendations for the certification of airworthiness.
Maintenance of operation The TBO values approved by the relevant authorities are based on performance tests and empirical values which have been gathered through operation of the engine and are required for the acceptance and certification of airworthiness. TBO values can be changed in response to possible upgrade/expansion programs.
Legal obligation to keep TBO values for the engine are always shown in operating hours and years. The user must record the operating hours in the engine log book.

4.7 Purging the oil system Correct procedure for purging of the oil system is very important to establish correct oil level, and to prevent entrapped air in the oil system. Refer to the Rotax © Installation manual for 915iS Chapter 79-00-00 for the correct procedure.

4.8 Time Limit The engines TBO is specified by the TBO. TBO can be either operating hours or calendar time, whichever comes first. For overhaul the engine must be sent to an authorized overhaul facility. The engine must be removed from the aircraft, fluids drained, engine cleaned, and all open ports plugged and sealed off to prevent dirt entering the engines internals.
Storage The engine shall never be stored for more than 24 months. If 24 months are passed, the engine shall be sent in to an EdgePerformance overhaul facility for inspection.

Engine Model	Engine affected SN	TBO – Time Between Overhaul
EP918TI	**From start of production**	**2000 Hours – 15 years, whichever comes first**

Authorized exceeding Extension of the TBO by 5% or 6 months, whichever comes first is allowed "on condition".

Shipment If sending the engine to an approved overhaul facility, the following must be included.

- *Engine logbook.*
- *Maintenance records of the engine (i.e. all maintenance check lists, and reports of operation, of maintenance, of findings and of oil analysis).*
- *The engine assembly as per supply volume. Additionally, all added-on parts as in the supply volume such as filters, intake silencer, fuel pump, external generator, sensors, ignition unit, electric starter, oil tank.*
- *Indication of total engine operating hours (TSN) and where applicable, engine operating hours since a previous overhaul (TSO). NOTE: This information must be supplied to allow the service history of components to be traced.*
- *ECU incl. a statement of the number of times it has been plugged in/unplugged.*
- *FUSE BOX incl. a statement of the number of times it has been plugged in/unplugged.*
- *Harness incl. a statement of the number of times it has been plugged in/unplugged.*
- *Data about the type of aircraft used.*
- *Data about the type of propeller used.*
- *Data about the type of governor used.*
- *Useful remarks and observations concerning the engine.*

4.9 Time limit for parts The following components and systems must be replaced every 5 years:

• All rubber hoses of the cooling system (except GENUINE ROTAX® or EdgePerformance silicon hoses), which need to be checked by "on-condition" maintenance according to the instructions of continued airworthiness.
• All rubber hoses of the lubrication system which are part of the engine supply volume and if they are not in the maintenance schedule of aircraft manufacturer
• Connecting hose of the air intake system shall be inspected “on condition” and are silicone not required scheduled replacement.
• V-belt for external alternator
• Rubber plate (under expansion tank) Inspect and replace during annul if tears are noted.
• Fuel pressure regulator assy. (only pressure regulator, not pressure regulator housing)
• Air intake hose (connection between turbocharger and airbox) These are silicone and should only be replaced if defects are found during scheduled maintenance.

4.10 Time limit for the coolant Engine coolant should be controlled for freezing point and contamination annually. It is recommended to replace it every 500 hours.

4.11 Annual inspection A 100-hour inspection is to be caried out every 100 hours of operation, or every 12 months, whichever comes first.

5) SCHEDULED MAINTENANCE CHECKS

Maintenance Schedule

Points of inspection	Interval Operating Hours						Findings \ Results	Signature
*** no periodic maintenance (requirement after the first 25 hours of operation)**	**25***	**50**	**100**	**200**	**600**	**1000**		
All applicable (Alert) Service Bulletins are complied with and documented.	X	X	X	X	X	X		
All applicable SI-PAC (Service Instruction Part and Accessories) for additional GENUINE-ROTAX®-parts and accessories used on the relevant aircraft are complied with and documented.	X	X	X	X	X	X		
Check the compression by the differential pressure method. Test pressure_____hPa (psi) **Pressure drop (% or fraction)** CYL# 1 2 3 4 Bar\ psi (1 use of leaded fuel more than 30% of operation			X[1]	X				
Check that spark plug connectors fit tightly on the spark plugs. Minimum pull-off force is 30 N (7 lb).			X					
Remove all spark plugs and check for spark plug defects (deposits, melting,...). Check if GENUINE-ROTAX®-spark plugs are used.	X		X					
Replacing spark plugs. (2 use of not leaded fuel (MOGAS) of operation (3 use of leaded fuel more than 30%(AVGAS) of operation			X[3]	X[2]				
Check the magnetic plug.	X		X					
Remove oil filter from engine. Cut old filter without producing any metal chips and inspect following components for wear and/or missing material Filter mat: Findings: (3 use of leaded fuel more than 30% of operation.		X[3]	X					
General visual inspection of the engine for damage or abnormalities. Check cooling air duct and cooling fins of the cylinders for obstruction, cracks, wear and good condition. Take note of changes caused by temperature influence.	X		X					

* no periodic maintenance (requirement after the first 25 hours of operation)	25*	50	100	200	600	1000		
Inspect temperature sensors and oil pressure sensor for secure fit and signs of wear.			X					
Inspect all coolant hoses of the engine for damage, including leakage, hardening from heat, porosity, loose connections and secure attachment. Verify routing is free of kinks and restrictions.	X		X					
Carry out visual inspection of leakage bore at the base of the water pump for signs of leakage.	X		X					
Check aluminum fuel rails for any cracks, leaks and/or scuffing marks.	X		X					
Inspect the wiring (wiring harness) and its connections for secure fit, damage and signs of wear.	X			X				
Check the airbox incl. throttle body actuation. Inspect sensors for tight fit, damage from heat, damage and signs of wear.	X		X					
Inspection of the GENUINE ROTAX® exhaust system included in the standard delivery. **NOTE** *If there is no GENUINE ROTAX® exhaust system in use, the specifications of the manufacturer must be observed.*			X					
Drain oil from oil tank.	X	X[4]	X					
Check the oil tank and clean the oil tank if contaminated.			X[4]	X				
Refill oil tank with approx. 3 liters of oil. For oil quality, see Operators Manual latest edition.	X	X[4]	X					
Inspect and clean screen in turbo oil sump.		X[4]	X					
Install new oil filter	X	X[4]	X					
(4 In the case more than 30% of operation with leaded fuel e.g.: AVGAS 100 LL								
Inspect the fuel system on the engine side for leaks.			X					
Inspect the fuel system for damages.			X					
Check the ECU and its mountings.					X			
Read out the ECU fault memory (fault and data logs).	X		X					
Check the FUSE BOX, and its mounting.					X			
Visual inspection of the fuses.	X		X					
Check the wastegate lever for free running and correct position	X		X					
Lubricate the wastegate lever.	X		X					
Check gear set (pittings)					X			
Check wear on tooth of overload clutches					X			
*** no periodic maintenance (requirement**	**25***	**50**	**100**	**200**	**600**	**1000**		

after the first 25 hours of operation)								
Check overload clutches					X			
Check wear on the intermediate shaft					X			
Change torsion shaft					X			
Inspect the expansion tank for damage and abnormalities. Check coolant level, replenish as necessary. Inspect radiator cap. Inspect protection rubber on expansion tank base for correct fit.	X		X					
Flushing the cooling system if massive deposits on the expansion tank or radiator cap and/or if the coolant manufacturer required an change interval.	When replacing the coolant							
Engine cleaning.	X		X					
Verify liquid level, replenish as necessary.	X		X					
Check the pop-off valve for 700 mbar /10.15 PSI low-pressure and its full opening.			X					
Start the engine and run to operating temperature. Limits see Operators Manual 915 i A Series LANE check at _____ rpm engine speed. Speed drop without LANE: A (Off)_____rpm B (Off)_____rpm A/B (difference)_____rpm	X		X					

Returning engine to service

On the engine identified as per point 5, on the _____the_____hr.
Check at_____hr. (TSN___, TSO___) was carried out according to recommendations of the engine manufacturer and was recorded in the Engine Logbook.
Location, Date_____
Inspector_____
Aircraft mechanic_____
Certificate No._____

6) UNSCHEDULED MAINTENANCE CHECKS

Refer to Rotax HMM Chapter: 05–50–00

Also refer to the Rotax® 916iS Line Maintenance Manual (Supplementary to EP918Ti MM)