

**BRP-Powertrain**  
MAINTENANCE MANUAL

**1) Scheduled maintenance checks**

**Definition** This section lists the periodic inspections which must be carried out after a specified periods of operation.

**Intervals** Periodic inspections are those which must be performed at 50, 100, 200, 600 hr. intervals in accordance with chap. 05-20-00. section: 5.1).

This means for example that **every 100 hr.** of operation a 100 hr. check and all 200 hr. additional checks as per maintenance check list must be carried out.

	Intervals - hours								to	2000 hr
	25 hr	100 hr	200 hr	300 hr	400 hr	500 hr	600 hr	700 hr		
100 hr	X	X	X	X	X	X	X	X		X
200 hr			X		X		X			
600 hr							X			

**100 hr. check**

- In order to demonstrate continued airworthiness, an engine must be inspected after every 100 hours of operation.
- For the intervals between maintenance work, a tolerance of  $\pm 10$  hr. is permissible, but these tolerances must not be exceeded. This means that if a 100 hr. check is actually carried out at 110 hr., the next check will be due at 200 hr.  $\pm 10$  hr. and not at 210 hr.  $\pm 10$  hr.
- If maintenance is performed before the prescribed interval, the next maintenance check is to be done at the same interval (e.g. if first 100 hr. check is done after 87 hours of operation, the next 100 hr. check must be carried out after 187 hours of operation).

**Special hr. check**

**NOTES:** This maintenance schedule contains a column for a 50 hr. check. This check is recommended by the manufacturer but not essential, with the exception of oil change when operating with leaded AVGAS.

**25-hr. check**

- In order to demonstrate continued airworthiness, an engine must be inspected after the first 25 hours of operation.
- The checks performed at the 25 hr. inspection are the same as for the 100 hr. inspection. This applies both to newly delivered engines and to overhauled engines.

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**2) Unscheduled maintenance checks**

**Operating limits exceeded**

An inspection of the engine must be performed if the operating limits of the engine have been exceeded (e.g. overspeed, excessive temperature etc.), or if unusual operating conditions have occurred during operation (e.g. lightning strike). In such cases the engine must be inspected in accordance with the applicable unscheduled maintenance checks. (See [chapter 05-50-00](#)).

**Recommends inspections**

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).

part	inspection	possible danger
<b>Engine cowling</b>	- for discoloring and warping.	Danger of overheating
<b>Exhaust fixation</b>	- re-tighten the exhaust fixation on the cylinder head after the first 2 hr. of operation.	Leakage
<b>Exhaust</b>	- of the exhaust unit (where necessary, replaced application of LOCTITE Anti-Seize).	Risk of fracture, wear. Smooth engine running.
<b>Fuel filter</b>	- of fuel filter on airframe side (for foreign bodies, sealing material and loose fragmented material).	Engine to misfire. Power loss. Engine running too lean (Engine malfunction and damage).
<b>Electr. fuel pump</b>	- correct function.	Insufficient fuel supply. Engine running too lean (Engine malfunction and damage).
<b>Battery</b>	- acid concentration for each cell Observe the manufacturers instruction.	Starting problems
<b>Oil</b>	- for oil contamination. - analyse the oil (provides additional information on the condition of the engine).	Possible engine wear
<b>Radiators, Lines</b>	- for damage. - check for discoloration - and cracks.	Danger of overheating
<b>Propeller</b>	- undamaged and runs true - carry out dynamically balancing including verification of propeller track.	Engine damage, unusual vibrations

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### 3) Visual inspection

<b>General note</b>	The scope of a visual inspection generally includes, but is not necessarily limited to, the following.
<b>Moving parts</b>	Normal operating condition, accurate alignment, leak-tightness, cleanliness, ease of movement, adjustment, mechanical stress, travel, catching, extreme wear, cracks, corrosion, deformation and other visually evident damage.
<b>Parts</b>	Secure seating, surface condition, cleanliness, deformation, cracks in welding seams or due to material fatigue or stress, corrosion and other visually evident damage.
<b>Fuel-, Air- and Oil lines</b>	Cracks, dents, kinks, required flexibility, collapsed lines/hoses, abrasion, cleanliness, secure seating and other visually evident damage.
<b>Wiring</b>	General cleanliness; loose, corroded or broken terminals; chafed, broken or worn insulation; secure seating, heat damage and other visually evident damage.
<b>Screws and Nuts</b>	Surface damage, secure seating, locking wire, securing paint and other visually evident damage.
<b>Filter</b>	Filters and screens must be inspected for contamination and potential blockages, cleaned and replaced as required.

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**4) Maintenance schedule procedures (maintenance check list)**

<b>Inspections</b>	All stated checks are visual inspections for damage and wear, unless otherwise stated.
<b>Specified period</b>	All listed work must be carried out within the specified period.
<b>Maintenance check lists</b>	Checks are carried out as per the maintenance check lists, where type and volume of maintenance work is outlined in key words. <ul style="list-style-type: none"><li>- The lists must be photocopied and filled out for each maintenance check.</li></ul>
<b>Extra inspections</b>	<ul style="list-style-type: none"><li>- The respective check (e.g. 100 hr. check) must be noted on the top of each page of the maintenance check list.</li><li>- All the maintenance work carried out must be initialled in the "signature" area by the aircraft mechanic performing the task.</li></ul>
<b>Maintenance records</b>	After maintenance, the completed check lists must be entered in the maintenance records. The maintenance must be confirmed in the log book.
<b>Discrepancies/remedial action</b>	All discrepancies and remedial action must be recorded in a report of findings to be generated and maintained by the company authorized to carry out maintenance work. It is the responsibility of the aircraft operator to store and keep the records.
<b>Replacement of equipment</b>	Replacement of equipment (e.g. fuel pump, governor....) and execution of SB (LTA) must be entered in the engine log book, stating S/N, TSN and date.

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**5) Check List/Maintenance Schedule**

<b>Identification</b>	
<b>AIRCRAFT</b>	
Registration number	
Aircraft make	
Aircraft model and S/N	
Time since new	
Propeller brand	
Propeller model and S/N	
<b>ENGINE</b>	
Engine type	
Engine S/N	
TSN (time since new)	
TSO (time since overhaul)	
Used operating fluids:	
coolant	
- mixture ratio	
fuel	
oil	
<b>AIRCRAFT OPERATOR</b>	
Name	
Contact	
Address	
Telephone/Fax/E-mail	

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<b>Identification</b>					
<b>MAINTENANCE FACILITY</b>					
Maintenance workshop					
Address					
Telephone/Fax/E-mail					
Certificate					
This check is applicable (circle on)	25 hr.	50 hr.	100 hr.	200 hr.	600 hr.
<b>Next check due at:</b>	_____ hr.				
	(TS _____) (engine hr.)				

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**5.1) Maintenance Schedule**

**General note** Perform the following maintenance tasks at the intervals shown in the maintenance check list. See [chapter 05-20-00](#) 25 hr. check.

Legend: X = do the task  
blank = no task required

**NOTES:** If the points 1-3 in order to continue with the maintenance schedule.  
If one of the points 1-3 not OK, the engine must be checked and repaired in accordance with the BRP-Powertrain instructions for continued airworthiness.

Points of Inspection	Interval Operating hours		Chapter Reference	Signature
	as indicated	100 hr.		
<b>1.) Visual inspection of the engine</b>				
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.	recommended 50 hr.	X	12-20-00 sec. 3)	
Visual inspection of the temperature sensor and the oil pressure sensor. Inspect for tight fit and good condition.		X		
Inspect all coolant hoses for damage, including leakage, hardening from heat, porosity, loose connections and secure attachment. Verify routing is free of kinks and restrictions.		X	12-20-00 sec. 9.1)	
Carry out visual inspection of leakage bore at the base of the water pump for signs of leakage.		X	12-20-00 sec. 4)	
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	12-20-00 sec. 9.1)	
Inspect the overflow bottle for damage and abnormalities. Verify coolant level, replenish as necessary. Inspect line from expansion tank to overflow bottle for damage, leakage and clear passage. Inspect venting bore in cap of overflow bottle for clear passage.		X	12-20-00 sec. 9.5)	

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Points of Inspection	Interval Operating hours		Chapter Reference	Signature															
	as indicated	100 hr.																	
Inspect all oil lines for damage, leakage, hardening from heat, porosity, security of connections and attachments. Verify routing is free of kinks and restrictions.		X	12-20-00 sec. 4)																
Inspect all fuel lines for damage, leakage, hardening from heat, porosity, security connections and attachments. Verify routing is free of kinks and restrictions. In the case of steel fuel lines (912 F, 912 S and/or optional), also check for any cracks and/or scuffing marks.		X	12-20-00 sec. 4)																
Inspect the wiring and its connections for secure fit, damage and signs of wear.		X	12-20-00 sec. 14.1)																
<b>2.) Magnetic plug</b>																			
Check the magnetic plug.		X	12-20-00 sec. 12)																
<b>3.) Compression check</b>																			
Check the compression by the differential pressure method. Test pressure_____hPa (psi)	every 200 hr.		12-20-00 sec. 5)																
<table border="1"> <thead> <tr> <th align="center" colspan="5">Pressure drop (% or fraction)</th> </tr> <tr> <th align="center">Cyl #</th> <th align="center">1</th> <th align="center">2</th> <th align="center">3</th> <th align="center">4</th> </tr> </thead> <tbody> <tr> <td align="center">bar/psi</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Pressure drop (% or fraction)					Cyl #	1	2	3	4	bar/psi				
Pressure drop (% or fraction)																			
Cyl #	1	2	3	4															
bar/psi																			
<b>4.) Checking the engine suspension</b>																			
Inspect engine suspension and fasteners for secure fit, including damage from heat, deformation, cracks.		X	12-20-00 sec. 3.1)																
<b>5.) Engine external parts</b>																			
Inspect screws and nuts of all external parts for tight fit. Inspect safety wiring, replace as necessary.		X																	
<b>6.) Engine cleaning</b>																			
Engine cleaning		X	12-20-00 sec. 1)																
<b>7.) Checking the air filter</b>																			
Checking the air filter.		X	12-20-00 sec. 2)																

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Points of Inspection	Interval Operating hours		Chapter Reference	Signature
	as indicated	100 hr.		
<b>8.) Checking the carburetors</b>				
Checking the idle speed.		X	12-20-00 sec.10.3.1)	
Checking the ventilation of the float chambers. Any trouble with the float chamber ventilation impairs engine and carburetor function and must therefore be avoided. Check that the passage of the ventilation lines is free and that no kinks can arise.	200 hr.			
Check for free movement of the carburetor actuation (throttle lever and starting carburetor). Check that the bowden cable allows the full travel of the throttle lever from stop to stop.		X	12-20-00 sec. 10.5)	
Removal/assembly of the two carburetors for carburetor inspection.	every 200 hr.		Heavy MM 73-00-00 sec. 3.1)	
Check carburetor synchronization. Mechanical or pneumatic synchronization.		X	12-20-00 sec. 10.2)	
Inspect the float chamber assy. for contamination and corrosion.	annual inspection		12-20-00 sec. 10.5)	
<b>9.) Inspecting carburetor sockets and drip tray</b>				
Inspect the carburetor sockets for damage and abnormalities, checking for cracks, wear and good condition. Take note of changes caused by temperature influence.  ( <sup>1</sup> See SB-912-030 - latest edition.	every 200 hr. ( <sup>1</sup> )		Heavy MM 73-00-00 sec. 3.4.3)	
<b>10.) Spark plug connectors</b>				
Check that resistance spark plug connectors fit tightly on the spark plugs. Minimum pull-off force is 30 N (7 lb).	every 200 hr.			
<b>11.) Spark plugs</b>				
Remove all spark plugs, check the heat range designation, clean, check electrode gap and adjust if necessary. Check electrode gap and adjust as necessary. Replace as required.		X	12-20-00 sec. 14.2)	
Replacing spark plugs.	every 200 hr.	X <sup>(1)</sup>	12-20-00 sec. 14.2)	
( <sup>1</sup> use of leaded fuel more than 30% of operation.				

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Points of Inspection	Interval Operating hours		Chapter Reference	Signature
	as indicated	100 hr.		
<b>12.) Flushing the cooling system</b>				
Flushing the cooling system where conventional coolants are used.	when replacing the coolant		12-20-00 sec. 9.3)	
<b>13.) Checking the propeller gear box</b>				
Check the friction torque in free rotation on gearboxes with overload clutch. Actual friction torque _____ Nm (in.lbs)		X	12-20-00 sec. 15)	
Gearboxes of series 3 (with overload clutch) and use of leaded fuel more than 30% of operation. Inspect overload clutch.	every 600 hr.		05-50-00 sec. 2) SB-912-033	
Checking the propeller gearbox (with overload clutch). <sup>(1)</sup> only applicable for engine type 912 S/ULS/ULSFR	every 1000 hr. <sup>(1)</sup>		12-20-00 sec. 15.2)	
Checking the propeller gearbox (without overload clutch). <sup>(2)</sup> only applicable for engine type 912 UL/ULS/ULSFR	every 600 hr. <sup>(2)</sup>		12-20-00 sec. 15.2)	
<b>14.) Oil change</b>				
Remove old oil filter from engine and install new oil filter.	50 hr. <sup>(1)</sup>	X	12-20-00 sec. 11.3), 11.4))	
Cut old oil filter without producing any metal chips and inspect filter mat. Findings: _____	50 hr. <sup>(1)</sup>	X	12-20-00 sec. 11.5)	
Check oil tank. Refill oil tank with approx. 3 litres of oil. For oil quality, see Operators Manual and SI-912-016, latest edition.	50 hr. <sup>(1)</sup>	X	12-20-00 sec. 11.2), 11.6)	
<sup>(1)</sup> In the case more than 30% of operation with leaded fuel e.g.: AVGAS 100 LL			12-20-00 sec. 11.2) SI-912-016	
<b>15.) Oil level check</b>				
Verify oil level, replenish as necessary.		X	12-10-00 sec. 4.1)	
<b>16.) Checking the V-belt tension</b>				
On configurations with auxiliary generator, check the attachment and the V-belt tension.		X	12-20-00 sec. 6)	

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Points of Inspection	Interval Operating hours		Chapter Reference	Signature
	as indicated	100 hr.		
<b>17.) Engine test run</b>				
Observe the safety instructions!				
Start the engine and run to operating temperature. Limits see Operators Manual 912 series. Ignition check at _____ rpm engine speed. Speed drop without ignition circuit: A (Off) _____ rpm B (Off) _____ rpm A/B (difference) _____ rpm Inspect carb heat system. Hit the preheating and make a note of speed drop. Speed drop _____ rpm. Preheating "OFF", engine idle running and make a note of idle speed running _____ rpm. After engine test run, re-tighten the oil filter by hand (only at cold engine). Checks for leaks.		X	12-20-00 sec. 8)	
<b>General note</b>				
All Service Instructions and Service Bulletins are complied with.		X		
<b>Returning engine to service</b> 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 Log book.  Location, Date _____  Inspector _____  Aircraft mechanic _____  Certificate No. _____				

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