



AWAL Engineering Bulletin 16-001

Piston Engine 'On-Condition' Policy

The AWAL board has approved the following 'On-Condition' policy for the continued operation of piston engines beyond the manufacturers or defence operators published flight hour and calendar TBO's

Maintenance Organisations should consult their insurers to make sure their professional indemnity covers certifying maintenance on engines that have exceeded the manufacturers or defence operators recommended TBO's.

'On-condition' maintenance means an inspection/functional check that determines an item's performance and may result in the removal of an item before it fails in service. **It is not a philosophy of fit until failure or fit and forget.**

The process of **'on-condition'** maintenance is applied to items on which a determination of their continued airworthiness can be made by visual inspection, measurements, tests or other means without disassembly inspection or overhaul. The condition of an item is monitored either continuously or at specified periods. The item's performance is compared to an appropriate standard to determine if it can continue in service.

Amendment to all AWAL Approved Piston Engine Aircraft Maintenance Programs pursuant to CAR 42CA

Despite any engine TBO requirements in an approved AWAL Maintenance Program, the following is now approved.

Please attach a copy of this bulletin to your AWAL approved Maintenance Program.

Engines approaching flight hour TBO

For the preceding two annual inspections prior to reaching TBO, carry out requirements A1, A2, A3 and A4 of CASA AD/ENG/4 Appendix A as amended, then at each 'Maintenance Release' inspection thereafter.

After TBO has been reached, requirement A2 (cylinder leak down test) of AD/ENG/4 will be carried out every 100 flight hours or 2nd 'Maintenance Release' Inspection, whichever occurs first, due low utilisation and to reduce the risk of spark plug insert damage from excessive removal of plugs.

Note: If two annual inspections cannot be carried out prior to reaching the flight hour TBO, then the requirements laid down in CASA AWB 85-004 Piston Engine Calendar Time Overhaul should be carried out and recorded in the aircraft log book.



Engines that have reached the flight hour TBO

Engines that are serviceable, but have already reached the flight hour TBO and have been maintained IAW the on-going airworthiness requirements of CASA AD/ENG/4 App A as amended, prior to reaching the TBO and are still being maintained that way, may continue to operate IAW the on-going airworthiness requirements A1, A3 and A4 of CASA AD/ENG/4 Appendix A as amended at each 'Maintenance Release' inspection.

Requirement A2 (cylinder leak down test) of AD/ENG/4 will be carried out every 100 flight hours or 2nd 'Maintenance Release' Inspection, whichever occurs first, due low utilisation and to reduce the risk of spark plug insert damage from excessive removal of plugs.

If the engine has already reached the flight hour TBO and there is no record of the on-going airworthiness requirements of CASA AD/ENG/4 App A as amended, being carried out then the recommendations laid down in CASA AWB 85-004 Piston Engine Calendar Time Overhaul should be carried out and recorded in the aircraft log book. If the engine is considered serviceable then it can continue to operate IAW the ongoing airworthiness requirements A1, A3 and A4 of CASA AD/ENG/4 Appendix A as amended at each 'Maintenance Release' inspection.

Requirement A2 (cylinder leak down test) of AD/ENG/4 will be carried out every 100 flight hours or 2nd 'Maintenance Release' Inspection, whichever occurs first, due low utilisation and to reduce the risk of spark plug insert damage from excessive removal of plugs.

Engines that have passed the calendar TBO

If the engine has already passed the calendar TBO then it is *recommended* that the requirements laid down in CASA AWB 85-004 Piston Engine Calendar Time Overhaul be carried out and recorded in the aircraft log book. If the engine is considered serviceable then it can continue to operate IAW the ongoing airworthiness requirements A1, A3 and A4 of CASA AD/ENG/4 Appendix A as amended at each 'Maintenance Release' inspection. Requirement A2 (cylinder leak down test) of AD/ENG/4 will be carried out every 100 flight hours or 2nd 'Maintenance Release' Inspection, whichever occurs first, due low utilisation and to reduce the risk of spark plug insert damage from excessive removal of plugs.

Components

Due to the age based deterioration of rubber based parts the following schedule will be complied with.

Flexible Hose Assy's - Flammable liquid (Aeroquip/Stratoflex)	10 year replacement
Flexible Hose Assy's - Flammable liquid (OEM or Non-aviation, Pirtek etc.)	5 year replacement



Due to their critical nature, the following is *recommended*.

Carburettor

At the calendar or flight hour TBO for the engine, whichever occurs first, carry out an IROAN¹, thereafter every 500 hours or 10 years, whichever occurs first.

Engine Driven Fuel Pump

At the calendar or flight hour TBO for the engine, whichever occurs first, carry out an IROAN¹, thereafter every 500 hours or 10 years, whichever occurs first.

Note 1: 'IROAN' Inspect, Repair Only As Necessary. "That maintenance technique which determines the minimum repairs necessary to restore equipment, components, or assemblies to prescribed serviceability standards by utilizing all diagnostic equipment and test procedures to minimize unnecessary disassembly and parts replacement". Definition taken from US MIL-STD-91621 Principles of IROAN Procedures

P A Pring-Shambler
DSA, AWAL
25th November 2016