



Airworthiness Bulletin

AWB 85-004 Issue 2 - 19 July 2024

Aircraft Piston Engine Calendar Time Overhaul

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters. Recommendations in this bulletin are not mandatory.

1. Effectivity

This Airworthiness Bulletin (AWB) is applicable to piston engines installed on aeroplanes maintained in accordance with Civil Aviation Regulation CAR 42B CASA Maintenance Schedule.

2. Purpose

This AWB provides guidelines for procedures to be followed to ensure continued airworthiness of engines that have exceeded the overhaul calendar time period specified by the manufacturer. These guidelines are in addition to recommendations by the engine manufacturers and CASA relating to inspections for corrosion.

This AWB can also be used to inspect engines where there is evidence of prolonged inactivity under conditions conducive to corrosion damage.

3. Background

Civil Aviation Regulation CAR 42B allows for on-condition maintenance of aircraft piston engines with no specified time limit for overhaul as recommended by the manufacturers, which includes overhaul based on engine operating hours and calendar time.

Airworthiness directive AD/ENG/4 specifies condition checks at regular intervals to ensure satisfactory engine performance, but does not include those inspections required to identify potential for engine deterioration that occurs with age, including corrosion of metallic components and degradation of non-metallic components such as gaskets, seals, O-rings, flexible hoses, fuel pump diaphragms etc.

NOTE: Engine components should also be evaluated independently, keeping component history and manufacturers maintenance recommendations in perspective.

Issue 2 of this AWB adds related information and reference materials to define intent more accurately, with minor editorial changes throughout the text.

4. Recommendations

It is recommended that the following procedures are followed for engines that have exceeded the calendar time overhaul recommendations of the engine manufacturer. All



procedures listed below, should be performed per approved data as applicable and in conjunction with the condition checks given in AD/ENG/4, as amended from time-to-time.

4.1 Review engine records

Identify the period of engine inactivity and potential for corrosion. Average engine operating hours per year is not a reliable indicator of corrosion potential when compared to the period of inactivity between engine runs, especially if it exceeds more than one year. Review the relevant manufacturers publications such as service bulletins, information letters etc. with a focus on those that impact corrosion.

4.2 Review aircraft storage data

Identify engine preservation status, protection from environmental elements and other factors that can accelerate corrosion. Aircraft stored per manufacturers data may not require additional inspections per this AWB. Refer to the latest issue of AWB 85-021 for recommended maintenance practices for piston engine aircraft with low utilisation.

4.3 Perform engine external inspection

External corrosion is an indicator of adverse storage conditions with potential for unacceptable internal corrosion requiring engine dis-assembly. Oil and fuel leaks should be investigated for time dependant deterioration of gaskets, seals, O-rings, etc. and may require engine dis-assembly. Refer to the latest issue of AWB 85-017 for recommended corrosion control maintenance practices relating to the external surfaces of an engine and engine-mounted components.

4.4 Inspect elastomeric components and other parts

Evaluate the condition of hoses, engine mounts, insulations, diaphragms, etc. for time dependant deterioration. For example, refer to the latest issue of AWB 02-006 for recommended flexible hose assembly maintenance practices.

4.5 Check electrical items

Evaluate the condition of magnetos, spark plugs, harnesses, ignition leads, electrical connectors, etc for corrosion, malfunction due to moisture ingress, thermal breakdown or time dependant deterioration. For example, refer to the latest issue of AWB 74-005 for age related deterioration of magnetos.

4.6 Perform engine internal inspection

Remove cylinders and inspect for corrosion and damage to valves, barrels, crank shaft, connecting rods and other internal parts using borescope where required. Perform internal crank shaft corrosion inspection where possible. Remove any internal oil sludge accumulations.



4.7 Perform induction and exhaust system inspection

Evaluate physical integrity and condition of the inlet and exhaust manifolds, stacks, risers, joints, ducts, seals, gaskets etc, for corrosion and any time dependant deterioration.

4.8 Perform spectrographic oil analysis

Establish a spectrographic oil analysis program (SOAP) of oil samples and review the data with focus on oil acidity and evidence of corrosion products as indicators of undetected corrosion.

4.9 Review inspection intervals

Where the repair of any observable damage or deterioration was required as a result of the recommended actions per paragraphs 4.3 thru 4.8 of this AWB and with due consideration to the utilisation and storage data per paragraphs 4.1 and 4.2, recommend and establish an appropriate repetitive inspection regime to assure the continued airworthiness of the engine.

For a better understanding of inspections / checks used to detect degradation in condition or performance refer to the latest issue of CASA AWB 02-001 - On-Condition Maintenance.

5. Reporting

All instances where inspections per this AWB have resulted in engine removal to facilitate appropriate follow-up actions are to be reported to CASA via the Defect Reporting Service (DRS) portal available on the CASA website.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

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