

SECTION 4.2.5

Piston Engine Continuing Airworthiness Requirements

NOTE: The RA-Aus recommends that the manufacturers overhaul schedules be followed, however, in full responsibility of the owner of the aircraft or Level 2 wishing to extend their TBO, the following schedule is the minimum required by RA-Aus to show that an adequate and reasonable inspection has been carried out in order to track the performance of an engine.

Applicability: Piston engines and those components necessary for the operation of the engine installed in aeroplanes and maintained in accordance with the manufacturers schedules.

This section is not applicable to compression-ignition (diesel) piston engines using fuels other than Avgas or Mogas.

Requirement: 1. For aircraft in Private operations:

To ensure the continuing airworthiness of the engine, and those components necessary for the operation of the engine, in addition to the requirements of normal servicing as per the manufacturers schedule; the following maintenance actions detailed in Appendix A of this section can be carried out.

2. For aircraft in School / Hire and Reward operations:

To ensure the continuing airworthiness of the engine, and those components necessary for the operation of the engine, in addition to the requirements of normal servicing as per the manufacturers schedule; the following maintenance actions detailed in;

- a) Appendix A for four stroke engines; or
- b) Appendix B for two stroke engines [Not yet finalised]

of this section can be carried out. Work on aircraft used for these purposes can only be conducted by a Level 2 maintainer or person authorised to conduct such work.

Definition: **Airworthy:** An aircraft, including its component parts can be defined as Airworthy when it meets its manufactured state, type design or properly altered condition (e.g.; the engine incorporates an STC or a CAR 35 approved modification), and it is in a condition for safe operation.

- Compliance:**
1. At intervals in accordance with the engine manufacturer's published overhaul periods.
 2. At intervals not to exceed:
 - a. As listed in the aircraft manufacturer's maintenance schedule;
or
 - b. The engine manufacturer's published time in service between overhaul period; or
 - c. The component manufacturer's published overhaul or replacement period;

Whichever is the greater.

Logging: The completed form located at Section 4.2.5 Annex B is to be completed for all four stroke engines completing this process, and entered into the aircraft log book.

4 Stroke Piston Engine Condition Check

APPENDIX A

Requirement A1:

Carry out an engine performance run to determine the engine performance in accordance with approved data.

For turbocharged / supercharged engines, the output parameters shall be adjusted in accordance with manufacturer's data.

Record engine and aircraft details and parameters achieved during the engine run on "Piston Engine Condition Report" suitable to the type of engine. All completed forms shall be part of the engine maintenance record.

Note A1: Where possible, maximum RPM is to be attained with the aircraft stationary. However, where the aircraft manufacturer details in approved maintenance data that maximum RPM can only be achieved during take-off or climb, or the aircraft type does not permit maximum RPM to be safely obtained whilst the aircraft is stationary, an entry on the aircraft maintenance release by the pilot in command of the maximum RPM during the last flight prior to the periodic engine inspection is acceptable data.

Engine run parameters to be recorded include:

a. Take-off power

Take-off power shall be:

- i. For a fixed pitch propeller aircraft - static RPM.
- ii. For a constant speed propeller, normally aspirated engine aircraft, take-off power shall be maximum RPM at a manifold pressure, not less than 2" of static manifold pressure, or at full fine pitch for electric variable propellers.
- iii. For a turbocharged/supercharged engine aircraft, take-off power shall be maximum RPM at the manifold pressure, or pitch setting as detailed in the aircraft flight manual.

b. With the engine at operating temperature

- i. Oil pressure at idle and at take-off power.
- ii. Oil temperature at idle and at take-off power.
- iii. Cylinder head or exhaust gas temperature at take-off power.
- iv. Fuel pressure/flow at take-off power.
- v. Ambient temperature and location altitude.

Requirement A2:

Carry out a cylinder leak check in accordance with:

- a. The procedure(s) published by the engine manufacturer; or
- b. In accordance with RA-Aus Section 4.2.5 Annex A – 4 Stroke Piston Engine Cylinder Leak Check, where data from the engine manufacturer is not available. Record the results of each cylinder leak check and / or inspection in the engine logbook.

Requirement A3:**A3(a) Oil change**

Replace the engine oil and engine oil filter.

A3(b) Engine oil filter, visible oil pressure indicators and screen inspection

All engine oil and engine oil filter replacements, including those carried out in the period between the aircraft periodic inspections, shall include inspecting the engine oil pressure filter, oil pressure screen and, if applicable, the oil suction screen, for evidence of metallic particles, shavings or flakes. Take corrective action, where necessary.

A3(c) Engine oil inputs

Record all oil inputs. Review oil usage records and take corrective actions, where necessary.

Note: Oil inputs are determined to be any additional oil that is added to the engine between servicing. The amount of oil added is to be recorded on a maintenance record form or similar.

Requirement A4:

Review all data recorded per Requirement A1, A2 and A3 of this Appendix in order to assess the engine condition.

Note A2: Engines that fail the condition check per this Appendix even after defect rectifications per the manufacturer's recommendations are to be overhauled. Only airworthy engines (see definition) are to be placed in service.

Compliance: Requirement A1 - At each aircraft periodic inspection.

Requirement A2 - At the intervals not exceeding 100 hours.

Requirement A3(a) - At intervals as published by the engine manufacturer.

Requirement A3(b) - At each oil change and oil filter replacement, if applicable.

Requirement A3(c) - At each oil addition.

Requirement A4 - At each aircraft periodic inspection.

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