AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/ENG/4 Amdt 10 and issues the following AD under subregulation 39.001(1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Engines - General

AD/ENG/4 Amdt 11 — Piston Engine Continuing Airworthiness Requirements — 1/2009

Applicability: Piston engines and those components necessary for the operation of the engine, installed in aeroplanes maintained in accordance with Civil Aviation Regulation CAR 42B CASA Maintenance Schedule.

This Airworthiness Directive (AD) is not applicable to compression-ignition piston engines using diesel, jet A-1, Avtur, aviation kerosene or similar fuels.

Requirement:

1. For aircraft in <u>Private</u> operations and / or <u>Aerial Work</u> 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 Schedule 5 of the Civil Aviation Regulations; carry out the maintenance actions detailed in Appendix A of this Airworthiness Directive (AD).

2. For aircraft in <u>Charter</u> 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 Schedule 5 of the Civil Aviation Regulations:

a. Carry out the maintenance actions detailed in Appendix A of this AD; and

b. Overhaul the engine; and

c. Overhaul or replace those components necessary for the operation of the engine.

Definitions:

For the purpose of this AD, following definitions apply:

Aerial Work operations: Operations as detailed in Civil Aviation Regulation CAR 206 (1) (a).

Airworthy: Airworthy is defined as when an aircraft, including its component parts, meets its 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.

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Engines - General

AD/ENG/4 Amdt 11 (continued)

Bulk strip: For the purpose of this AD, a bulk strip is defined as the partial disassembly of the engine for the purpose of inspection or repair; the extent of which requires the separation of the crankcase parting flange or removal of the crankshaft.

For the purpose of this AD, a bulk strip of an engine shall be carried out by an organisation approved for the purpose and in accordance with approved data. CASA Airworthiness Bulletin (AWB) 85-005 elaborates on elements of an engine bulkstrip, where manufacturer's instructions are not available.

Charter Operations: Operations as detailed in Civil Aviation Regulation CAR 206 (1) (b).

Overhaul: This definition addresses the issue of varying definitions of overhaul and for the purpose of this AD, when carrying out an overhaul of a piston engine or a component necessary for the operation of the engine, the overhaul shall be carried out by an organisation approved for the purpose and in accordance with the engine and component manufacturer's published overhaul procedures; and / or other approved data, where manufacturer's data is not available.

Private operations: Operations as detailed in Civil Aviation Regulation (CAR) 2 (7) (d) and 2 (7A).

Schedule 5: Schedule 5 is the CASA maintenance schedule as described in Civil Aviation Regulations 1988.

Compliance:

1. From the effective date of this AD, as detailed in the Appendix A.

2. a. From the effective date of this AD, as detailed in the Appendix A.

2. b. At intervals in accordance with the engine manufacturer's published time between overhaul (TBO) periods for the engine.

2. c. At intervals specified for that component, in the following order of priority:

    i) Aircraft manufacturer's published TBO for that component.

    ii) If the aircraft manufacturer does not provide the schedule, then at intervals listed in the engine manufacturer's published TBO for that component.

    iii) If the engine manufacturer does not provide the schedule, then at intervals listed in the component manufacturers published TBO for that component.

This Amendment becomes effective on 15 January 2009.

Engines - General

AD/ENG/4 Amdt 11 (continued)

Background: This Airworthiness Directive introduces condition checks for engines maintained in accordance with CASA maintenance schedule (CAR 42B). This AD also mandates the overhaul periods for engines engaged in charter operations reflecting CASA policy related to the aircraft engaged in fare-paying passenger operations.

Amendment 10 excluded compression-ignition engines from applicability list. The current amendment clarifies the requirement for time between overhaul for engine components and makes some editorial changes, where appropriate.

Amendment 10 of this AD became effective on 26 October 2006.

Amendment 9 of this AD became effective on 22 January 2004.

Amendment 8 of this AD became effective on 26 December 2001.

Amendment 7 of this AD became effective on 08 October 1998

Amendment 6 of this AD was rescinded prior to the effective date.

Amendment 5 of this AD became effective on 30 March 1995.

The original issue of this Airworthiness Directive superseded Air Navigation Order 108.5.2.1.

James Coyne
Delegate of the Civil Aviation Safety Authority

28 November 2008

Engines - General

AD/ENG/4 Amdt 11 (continued)

AD/ENG/4 Amdt 11 Piston Engine Condition Check 1/2009 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" (CASA Form 728) or an equivalent form. 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.

iii. For a turbocharged/supercharged engine aircraft, take-off power shall be maximum RPM at the manifold pressure 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.

Engines - General

AD/ENG/4 Amdt 11 (continued)

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 CASA AAC 6-32, 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. Engine oil and the engine oil filter replacement in the period between the aircraft periodic inspections may be carried out by a pilot, other than a student pilot. CAR 42ZC (4) and Schedule 8 refers.

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

All engine oil and engine oil filter replacements, including those carried out in the period between the aircraft periodic inspections, unless carried out by a pilot, 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 uplifts

Record all oil uplifts. Review oil uplift records and take corrective actions, where necessary.

Requirement A4:

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

Note A2: AWB 85-4 "Aircraft Piston Engine Calendar Time Overhaul" provides guidelines for additional inspections related to the calendar time overhaul.

Compliance:

Requirement A1 - At each aircraft periodic inspection.

Requirement A2 - At the intervals not exceeding 100 hours with a planning tolerance of plus or minus 10 hours.

Requirement A3(a) - At intervals as published by the engine manufacturer with a planning tolerance of plus or minus 10%.

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

Engines - General

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Requirement A3(c) - At each oil uplift.

Requirement A4 - At each aircraft periodic inspection.