Continuing Airworthiness Notice – 85-010

Lycoming O-540-F1B5 engines with a S/N ending in "-40E" installed in Robinson R44 Raven I and R44 Cadet Helicopters

12 November 2020

Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains non-regulatory information and guidance that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91. CAN numbering is by ATA Chapter followed by a sequential number for the next CAN in that ATA Chapter.

Applicability:

Lycoming O-540-F1B5 engines with a S/N ending in "-40E" installed in Robinson R44 Raven I and R44 Cadet helicopters.

Purpose:

To advise aircraft operators and maintainers of possible burnt intake valves on O-540-F1B5 engines, which can result in partial, or complete loss of engine power.

Background:

This Continuing Airworthiness Notice (CAN) is prompted by reports received by Robinson Helicopters and Lycoming of operators experiencing a loss of engine power on certain Robinson R44 helicopters. For some incidents, the pilot noticed engine roughness, or a sudden momentary left yaw during flight. For these incidents, maintenance engineers were able to diagnose a burned valve using a compression check, prior to more significant symptoms developing.

Recommendations:

Robinson Safety Alert dated 14 October 2020 applicable to R44 I and R44 Cadet helicopters, advises that pilots/operators should observe the following precautions:

- Perform a complete run up and a stabilised hover check, prior to every flight. Do not initiate flight if there is any indication of engine roughness, or a sudden yaw.
- If engine roughness, or a sudden yaw is experienced in flight, be prepared to land as soon as practical.
- Following any engine roughness, or a sudden yaw, an engineer must check the condition of the valves before further flight. The engineer should listen for sound of leakage at every intake valve while performing a compression check. Any intake valve with an audible leakage requires repair, prior to further flight.

Lycoming Service Instruction (SI) No. 1577 dated 10 November 2020, is applicable to O-540-F1B5 engines with a S/N ending with "-40E" installed in R44 Raven I and R44 Cadet helicopters. This Lycoming SI advises maintainers accomplish the following:

- Maintenance engineers should accomplish a differential compression test on every affected cylinder in accordance with the latest revision of Lycoming Service Instruction No. 1191.
- If, during the differential compression test, an audible leak past the intake valve is detected, contact Lycoming Technical Support for further guidance.
- An initial compression test should be accomplished at the next scheduled 50-hour inspection for engines with less than 500 hours TSN, rebuild, overhaul, or cylinder replacement, then every 50 hours until 500 hours TSN, rebuild, overhaul, or cylinder replacement. An initial compression test at the next scheduled 100-hour inspection for engines with more than 500 hours since new, rebuild, overhaul, or cylinder replacement.

Report findings to the CAA by completing a CA005D Defect Report form and submit the completed form to the CAA at CA005@caa.govt.nz or report findings via the online reporting system available at https://occurrences.caa.govt.nz/ProdUI/
Please include details of all findings and any other relevant technical information.
Defect report forms can be obtained from https://www.aviation.govt.nz/about-us/forms/Filter/?SearchTerm=&Rule=8

Note:

Robinson Safety Alert dated 14 October 2020 applicable to R44 I and R44 Cadet helicopters can be obtained from https://robinsonheli.com/wp-content/uploads/2020/10/r44_sa_engine_intake_valves-1.pdf

Lycoming Service Instruction (SI) No. 1577 dated 10 November 2020 can be obtained from https://www.lycoming.com/service-instruction-no-1577