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# SERVICE INSTRUCTION

DATE: January 25, 2023

Service Instruction No. 1577A  
(Supersedes Service Instruction No. 1577)  
Engineering Aspects are FAA Approved

SUBJECT: Intake Valve In-Service Data

MODELS AFFECTED: O-540-F1B5 engines with serial number ending with “-40E” installed in Robinson R44 Raven I and R44 Cadet helicopters

TIME OF COMPLIANCE: During the next scheduled 50-hour inspection for engines with less than 500 hours since new, rebuild, overhaul, or cylinder replacement. Then every 50 hours until 500 hours since new, rebuild, overhaul, or cylinder replacement. At next scheduled 100-hour inspection for engines with more than 500 hours since new, rebuild, overhaul, or cylinder replacement.

REASON FOR REVISION: Add exemptions to the 50-hour compression test for engines with rotator type intake valves.

**NOTICE:** Incomplete review of all the information in this document can cause errors. Read the entire Service Instruction to make sure you have a complete understanding of the requirements.

This service instruction provides guidance for surveying operators to collect field data on the condition of intake valves across the O-540-F1B5 engine population referenced in MODELS AFFECTED within TIME OF COMPLIANCE. A differential compression test is used to assess valve condition. For lower time engines or cylinders, the compression test must be completed at 50-hour intervals rather than the scheduled 100-hour intervals to provide early trend analysis.

See also the Robinson Safety Alert dated 14 October 2020 regarding intake valves [R44 I/R44 Cadet Safety Alert](#).

**NOTICE:** Lycoming recommends completion of this test as soon as safely possible after engine shutdown (a hot engine provides the best test results).

If this test is completed for replaced cylinders with less than 500 hours since installation, only those cylinders with less than 500 hours time in service must be tested every 50-hours. Cylinders with more than 500 hours time in service are to be tested at the scheduled 100-hour intervals.

1. Complete a differential compression test on each affected cylinder in accordance with the latest revision of 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.
2. Record the differential compression test results in the engine maintenance records.
3. To accurately and efficiently compile data, Lycoming Engines must collect certain information. Each time you complete the Differential Compression Check, please visit <http://www.lycoming.com/SI1577questionnaire> and fill out all pages of the questionnaire completely. Note that when page 1 is completed, additional pages to add data will appear.



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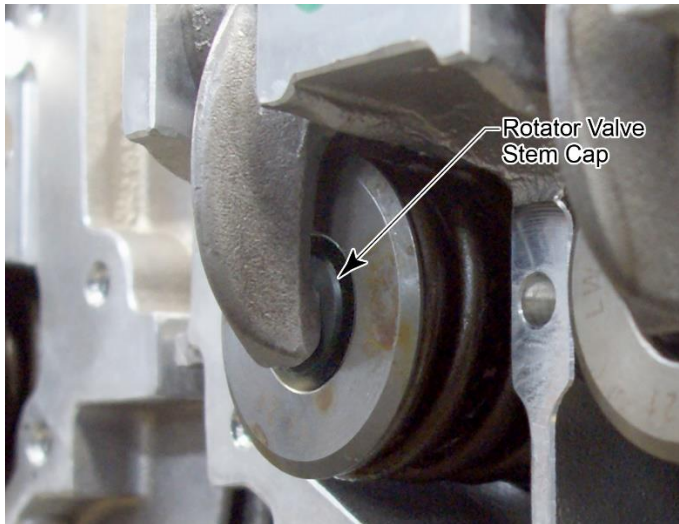
## Exemptions for Rotary Type Intake Valves

Engines equipped with rotator type intake valves are exempt from SI 1577 and are not required to complete a 50-hour compression test. Factory new Lycoming O-540-F1B5 engines beginning with serial number L-28017-40E and up have already incorporated rotator type intake valves at the time of their manufacture. Lycoming factory overhauled, factory rebuilt, and field overhauled O-540-F1B5 engines or those which have had cylinder replacements in the field cannot be excluded based on serial number. These engines will require a one-time inspection to determine if rotator type intake valves have been installed.

**NOTICE:** All exhaust valves will already be equipped with a rotator valve stem cap.

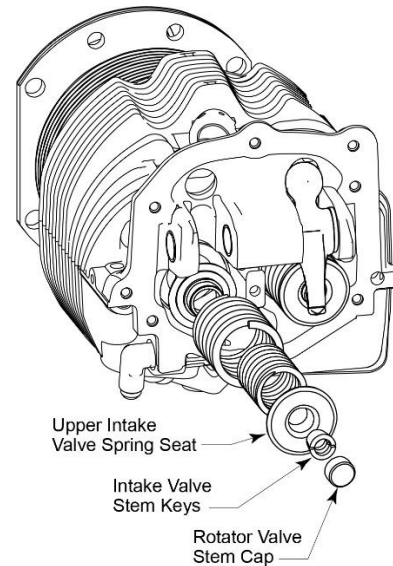
To determine if rotator type intake valves are installed:

- Remove rocker box covers in accordance with the appropriate maintenance or overhaul manual
- Inspect for the presence of a Rotator Valve Stem Cap (Figure 1 & 2) on the intake valves
- Cork rocker box cover gaskets (PN 75906) are to be replaced. Silicone rocker box gaskets (PN 06B26669) can be inspected and reused if not damaged, replace damaged silicone rocker box gaskets as necessary
- Reinstall the rocker box covers in accordance with the appropriate maintenance or overhaul manual. Refer to the latest revision of SSP-1776 for rocker box screw torque values for cork or silicone gaskets



**Figure 1**

**Rotator Valve Stem Cap on Intake Valve**



**Figure 2**

**Rotator Valve Stem Cap on Intake Valve**

Refer to the latest revisions of Service Instruction No. 1280 and 1037 for additional part information on rotator type intake valves for the O-540-F1B5 engine.

**NOTICE:** Engines having a mixture of cylinders with rotator type and non-rotator type intake valves will require completion of the 50-hour compression check in accordance with the latest revision of Service Instruction No. 1191. The 50-hour compression check is only required on cylinders without rotator type intake valves.

If you have any questions, contact Lycoming Technical Support by phone at 570-327-7222 or 877-839-7878 or email to [Technicalsupport@lycoming.com](mailto:Technicalsupport@lycoming.com).

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