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# MANDATORY

# SERVICE BULLETIN

DATE: September 29, 2022 Service Bulletin No. 651  
Engineering Aspects are  
FAA Approved

SUBJECT: Inspection for Rotator Caps on Intake Valves

MODELS AFFECTED: O-540-F1B5 and O-360-J2A engines with serial number identified in Table 1

TIME OF COMPLIANCE: Engines with less than 300 hours, inspect at next scheduled maintenance event not to exceed 50 hours of operation.  
Engines with 300 hours or more must be inspected within next 10 hours of operation.

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

Engines with serial numbers identified in Table 1 are to be inspected in accordance with the Inspection procedure in this service bulletin to determine if valve stem caps are installed on the rotator type intake valves. If the rotator valve stem caps are installed on all engine cylinders, reinstall the rocker covers, report the inspection results to Lycoming Technical Support, record compliance with this service bulletin in the engine’s maintenance records, and return the engine to service. If rotator valve stem caps are not installed on all cylinders, complete the Rotator Valve Stem Cap Installation Procedure in this Service Bulletin, report the inspection results and installation of rotator valve stem caps to Lycoming Technical Support, record compliance with this service bulletin in the engine’s maintenance records, and return the engine to service.

**Table 1  
Affected Engine Serial Numbers**

Engine Model	Engine S/N	Engine Model	Engine S/N	Engine Model	Engine S/N
O-360-J2A	EL-43829-36E	O-360-J2A	L-41749-36E	O-360-J2A	L-43856-36E
O-360-J2A	L-11711-36E	O-360-J2A	L-41989-36E	O-360-J2A	L-43861-36E
O-360-J2A	L-20748-36E	O-360-J2A	L-43693-36E	O-360-J2A	L-43867-36E
O-360-J2A	L-21893-36E	O-360-J2A	L-43703-36E	O-360-J2A	L-43868-36E
O-360-J2A	L-22017-36E	O-360-J2A	L-43828-36E	O-360-J2A	L-43877-36E
O-360-J2A	L-23078-36E	O-360-J2A	L-43833-36E	O-360-J2A	L-43883-36E
O-360-J2A	L-25737-36E	O-360-J2A	L-43837-36E	O-360-J2A	L-43884-36E
O-360-J2A	L-28578-36E	O-360-J2A	L-43838-36E	O-360-J2A	L-43885-36E
O-360-J2A	L-29327-36E	O-360-J2A	L-43848-36E	O-360-J2A	L-43886-36E
O-360-J2A	L-33415-36E	O-360-J2A	L-43849-36E	O-360-J2A	L-43887-36E
O-360-J2A	L-36288-36E	O-360-J2A	L-43850-36E	O-360-J2A	L-43889-36E
O-360-J2A	L-40659-36E	O-360-J2A	L-43851-36E	O-360-J2A	L-43895-36E



ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR	1 of 4	--
09	29	22	--	--	--		

**Table 1 (Cont.)  
Affected Engine Serial Numbers**

Engine Model	Engine S/N	Engine Model	Engine S/N	Engine Model	Engine S/N
O-360-J2A	L-43896-36E	O-360-J2A	RL-39816-36E	O-540-F1B5	L-28039-40E
O-360-J2A	L-43900-36E	O-360-J2A	RL-39894-36E	O-540-F1B5	L-28040-40E
O-360-J2A	L-43903-36E	O-360-J2A	RL-39936-36E	O-540-F1B5	L-28041-40E
O-360-J2A	L-43904-36E	O-360-J2A	RL-40559-36E	O-540-F1B5	L-28043-40E
O-360-J2A	L-43907-36E	O-360-J2A	RL-41499-36E	O-540-F1B5	L-28044-40E
O-360-J2A	L-43916-36E	O-360-J2A	RL-8046-36E	O-540-F1B5	L-28045-40E
O-360-J2A	L-43928-36E	O-540-F1B5	L-15258-40E	O-540-F1B5	L-28064-40E
O-360-J2A	L-43931-36E	O-540-F1B5	L-25438-40E	O-540-F1B5	L-28065-40E
O-360-J2A	L-43932-36E	O-540-F1B5	L-28017-40E	O-540-F1B5	L-28079-40E
O-360-J2A	L-43933-36E	O-540-F1B5	L-28018-40E	O-540-F1B5	L-28080-40E
O-360-J2A	L-43954-36E	O-540-F1B5	L-28019-40E	O-540-F1B5	L-28081-40E
O-360-J2A	L-43955-36E	O-540-F1B5	L-28020-40E	O-540-F1B5	L-28082-40E
O-360-J2A	L-43957-36E	O-540-F1B5	L-28021-40E	O-540-F1B5	L-28083-40E
O-360-J2A	L-43958-36E	O-540-F1B5	L-28022-40E	O-540-F1B5	L-28084-40E
O-360-J2A	L-43980-36E	O-540-F1B5	L-28023-40E	O-540-F1B5	L-28087-40E
O-360-J2A	L-43982-36E	O-540-F1B5	L-28024-40E	O-540-F1B5	RL-19322-40E
O-360-J2A	L-43984-36E	O-540-F1B5	L-28025-40E	O-540-F1B5	RL-25841-40E
O-360-J2A	L-43985-36E	O-540-F1B5	L-28027-40E	O-540-F1B5	RL-27079-40E
O-360-J2A	L-43988-36E	O-540-F1B5	L-28028-40E	O-540-F1B5	RL-27112-40E
O-360-J2A	RL-27038-36E	O-540-F1B5	L-28029-40E	O-540-F1B5	RL-27226-40E
O-360-J2A	RL-29293-36E	O-540-F1B5	L-28030-40E	O-540-F1B5	RL-2961-40E
O-360-J2A	RL-31855-36E	O-540-F1B5	L-28032-40E	O-540-F1B5	RL-4682-40E
O-360-J2A	RL-37078-36E	O-540-F1B5	L-28033-40E	O-540-F1B5	RL-588-40E
O-360-J2A	RL-37211-36E	O-540-F1B5	L-28034-40E	O-540-F1B5	RL-7232-40E
O-360-J2A	RL-39311-36E	O-540-F1B5	L-28037-40E	O-540-F1B5	RL-7687-40E
O-360-J2A	RL-3966-36E	O-540-F1B5	L-28038-40E	O-540-F1B5	RL-8815-40E

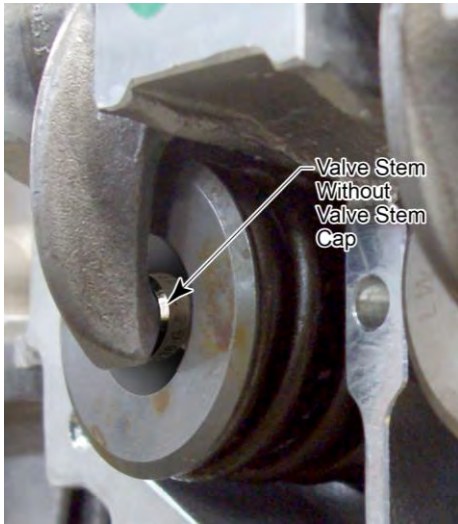
**Inspection Procedure to Determine if Rotator Valve Stem Caps are Installed on the Intake Valves:**

**NOTICE:** All engine cylinders must be inspected to determine that rotator valve stem caps are installed on the intake valves. If rotator valve stem caps are not installed on all cylinders, contact Lycoming Technical Support

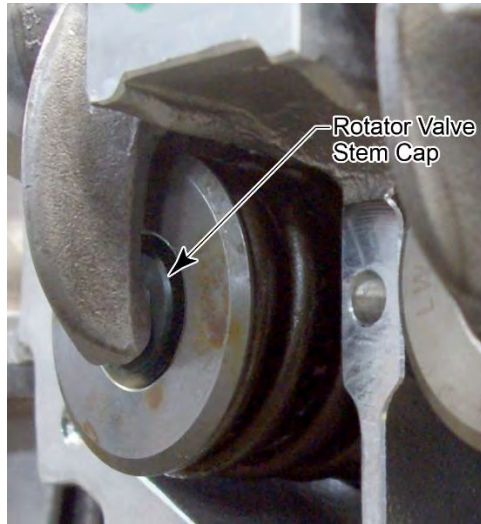
1. Remove rocker box covers in accordance with the appropriate maintenance or overhaul manual.

ISSUED			REVISED			PAGE NO.	REVISION	S.B. 651
MO	DAY	YEAR	MO	DAY	YEAR			
09	29	22	--	--	--	2 of 4	--	

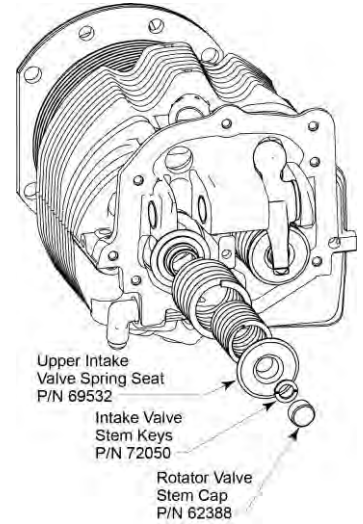
**NOTICE:** Figure 1 is for reference, to show the intake valve with the Rotator Valve Stem Cap not installed.



**Figure 1**  
Intake Valve Without the Rotator Valve Stem Cap

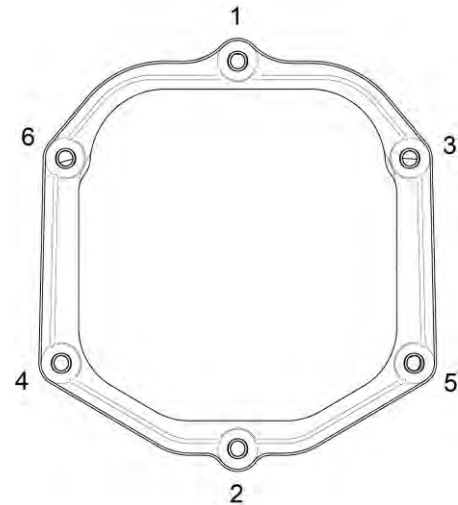


**Figure 2**  
Rotator Valve Stem Cap on Intake Valve



**Figure 3**  
Rotator Valve Stem Cap on Intake Valve

2. Inspect for the presence of a Rotator Valve Stem Cap (Figure 2 & 3) on the intake valves.
  - If any of the Rotator Valve Stem Caps are not installed on the intake valves of all cylinders, reinstall the rocker box covers on cylinders with the Rotator Valve Stem Caps installed then complete the **Rotator Valve Stem Cap Installation Procedure** for each cylinder found to be missing the Rotator Valve Stem Cap from the intake valve.
  - If the Rotator Valve Stem Caps are installed on all intake valves, proceed to the next step.
3. Discard and replace cork rocker box cover gaskets (PN 75906). Silicone rocker box gaskets (PN 06B26669) can be inspected and reused if not damaged. Replace damaged silicone rocker box gaskets as necessary.
4. Reinstall the rocker box covers. Torque the rocker box cover screws using the proper torque sequence (Figure 4). For silicone gaskets, torque the screws in two steps, first to 20-25 in.-lb. (2.6-2.8 Nm) and then 35 in.-lb. (4.0 Nm), following the torque sequence for each step. For cork gaskets, torque the screws to 20-25 in.-lb. (2.6-2.8 Nm) and then 50 in.-lb. (5.6 Nm).



**Figure 4**  
Torque Sequence

Refer to the latest revisions of Service Instruction No. 1280 and 1037 for additional part information on rotator type intake valves for O-360-J2A and O-540-F1B5 engines.

5. Report inspection results including engine model and serial number to Lycoming Technical Support by phone at +1-570-327-7222 +1-877-839-7878 or by email at [Technicalsupport@lycoming.com](mailto:Technicalsupport@lycoming.com).
6. Record compliance with this Service Bulletin and any parts replacement in the engine maintenance records.

ISSUED			REVISED			PAGE NO.	REVISION	S.B. 651
MO	DAY	YEAR	MO	DAY	YEAR			
09	29	22	--	--	--	3 of 4	--	

## Rotator Valve Stem Cap Installation Procedure

For each cylinder that was found to be missing the intake valve rotator cap, complete the following:

- Contact an authorized Lycoming Distributor and order the following parts per each affected cylinder:
  - Qty. 1: Kit P/N 05K29641 (Refer to the latest revision of SI 1280)
  - Qty. 1: Seal and Gasket Kit 05K22940 (for O-540-F1B5 engines), or 05K22946 (for O-360-J2A engines) (Refer to the latest revision of SI 1037)
  - Qty. 1: 77611 Exhaust Gasket
  - Qty. 2: STD-475 Lock Washer
- Remove the affected cylinder in accordance with the applicable maintenance or overhaul manual.
- Replace the parts listed in kit 05K29641 (Refer to the latest revision of SI 1280) in accordance with the applicable maintenance or overhaul manual.
- Complete a Cylinder Leak Check in accordance with the latest revision of SI 1483.
- Inspect push rods and rocker shoes for abnormal wear in accordance with the applicable maintenance or overhaul manual.
- Complete the hydraulic lifter leak down check in accordance with the Plunger Inspection Guidelines in the latest revision of SI 1011.
- (This step is only for engines with 1000 Hours or more)* Complete a visual inspection of intake camshaft lobes and check for resistance in roller by manually rotating roller and feeling for resistance. Abnormal indications on the camshaft and/or follower require replacement in accordance with the applicable maintenance or overhaul manual.
- Reinstall the cylinder in accordance with the applicable maintenance or overhaul manual.
- Complete a dry tappet clearance check in accordance with the applicable maintenance or overhaul manual – order replacement pushrods of the appropriate length as necessary (Refer to the latest revision of SI 1060).
- Discard and replace cork rocker box cover gaskets (PN 75906). 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. Torque the rocker box cover screws using the proper torque sequence (Figure 4). For silicone gaskets, torque the screws in two steps, first to 20-25 in.-lb. (2.6-2.8 Nm) and then 35 in.-lb. (4.0 Nm), following the torque sequence for each step. For cork gaskets, torque the screws to 20-25 in.-lb. (2.6-2.8 Nm) and then 50 in.-lb. (5.6 Nm).
- Report inspection results and installation of rotator valve stem caps including engine model and serial number to Lycoming Technical Support by phone at +1-570-327-7222 or +1-877-839-7878 or by email at [Technicalsupport@lycoming.com](mailto:Technicalsupport@lycoming.com).
- Record compliance with this Service Bulletin and any parts replacement in the engine maintenance records.

### Warranty

Lycoming will provide warranty coverage for completion of Mandatory Service Bulletin No. 651 for 12 months from the date of this publication. File a warranty claim for labor, parts, and standard shipping. Please refer to your Lycoming Engine's Limited Warranty for procedures, details, and limitations related to your warranty. Information is available online at [www.lycoming.com/Warranty](http://www.lycoming.com/Warranty). Contact an Authorized Lycoming Distributor for assistance in filing a warranty claim and to order all necessary parts.

If you have any questions, contact Lycoming Technical Support by phone at +1-570-327-7222 or +1-877-839-7878 or email to [Technicalsupport@lycoming.com](mailto:Technicalsupport@lycoming.com).

ISSUED			REVISED			PAGE NO.	REVISION	S.B. 651
MO	DAY	YEAR	MO	DAY	YEAR	4 of 4	--	
09	29	22	--	--	--			