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MANDATORY

SERVICE BULLETIN

DATE: July 6, 2015

Service Bulletin No. 593B
(Supersedes Service Bulletin 593A)
Engineering Aspects are
FAA (DER) Approved

SUBJECT: Intake Valve P/N 17A23942 Inspection for Date Stamp

MODELS AFFECTED: Lycoming Engine Models: IO-540-AC1A5, (L)TIO-540-V2AD, TIO-540-AJ1A, TIO-540-W2A, TO-360-C1A6D, TIO-360-C1A6D, TIO-541-E Series, TIGO-541-E1A, and IO-580-A1A

Applies to:

- Engines with the serial numbers identified in Table 3
- Cylinder kits identified in Table 2 shipped from the factory between March 2, 2009 and August 17, 2011
- Intake valves (P/N 17A23942) sold as spares with the date stamp identified in Table 1, and shipped from the factory between March 2, 2009 and August 17, 2011. (BOTH conditions must be met, the date stamp on the valve stem AND within the shipping date range.)

TIME OF COMPLIANCE: At next maintenance, 50 hour inspection, or on or before July 23, 2015, whichever occurs first.

REASON FOR REVISION: Date Stamp 4 11 does not apply to this Service Bulletin. Warranty consideration is available until 07/23/2015. See Warranty Instructions for further details.

NOTE

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.

Lycoming Engines now has identified a slightly more narrow range of date stamps that apply to possible non-conforming intake valves P/N 17A23942 up to the 1 11 date stamp (instead of 4 11) of the same intake valve in the original version of this Service Bulletin. The date stamps of affected intake valves are identified in Table 1 of this revision of the Service Bulletin No. 593. Although a limited number of engines, cylinder kits, and parts within a specific time frame are involved, an inspection is required to make sure all suspect intake valves in the field are identified and returned to the factory in exchange for conforming replacement intake valves.

If you've already complied with SB593A, dated 7/23/2014, no further action is required.

If an inspection was completed in compliance with Service Bulletin 593 (dated August 24, 2010), you will need to review your maintenance records, parts shipment invoices, warranty claims, and logbook entries related to SB-593 to identify those affected Lycoming engine models, engine serial numbers, cylinder kits, and intake valves. Even if any intake valves with the date stamp 4 10 were replaced, you still must review your maintenance records to identify whether the date stamp for the replacement intake valve is identified in Table 1 of this revision of the Service Bulletin.



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This Service Bulletin identifies the serial numbers of the affected engines, affected Lycoming engine models, (that could use the suspect intake valve P/N 17A23942), the part numbers of the affected cylinder kits and intake valves and inspection instructions to identify the suspect intake valves.

- Table 1 identifies the date stamp of the suspect valves.
- Table 2 shows all of the known affected cylinder kits.
- Table 3 shows all of the known affected serial numbers for the respective engine models.

If you have received engines with the serial numbers shown in Table 3 or have Lycoming engine models in the “MODELS AFFECTED” front section of this Service Bulletin, or a cylinder kit identified in Table 2 or intake valve P/N 17A23942 with a date stamp identified in Table 1 and shipped from Lycoming between March 2, 2009 and August 17, 2011 (as indicated on the Form 8130-3) you must complete the inspection procedure as instructed in this Service Bulletin to identify the date stamp on the intake valve and take the necessary action as directed in this Service Bulletin.

NOTE

The engine models identified in “MODELS AFFECTED” can use the affected intake valve P/N 17A23942 or cylinder kits (in Table 2). All of the cylinders on these engine models must be examined for the intake valve date stamp per the inspection procedure herein.

Table 1
Date Stamp on Suspect Intake Valves

3 09
5 09
10 09
1 10
2 10
3 10
4 10
6 10
7 10
8 10
10 10
1 11

Table 2
Cylinder Kit

Part Number
05K22680
05K22672
05K21276
05K21260
05K21116
05K21261

Table 3
Affected Engine Models And Serial Numbers

Prefix	Serial Number	Model	Prefix	Serial Number	Model
L-	11629-48E	IO-540-AC1A5	L-	34170-48E	IO-540-AC1A5
L-	20444-48E	IO-540-AC1A5	L-	34209-48E	IO-540-AC1A5
L-	26370-48E	IO-540-AC1A5	L-	34232-48E	IO-540-AC1A5
L-	28582-48E	IO-540-AC1A5	L-	34304-48E	IO-540-AC1A5
L-	29020-48E	IO-540-AC1A5	L-	34318-48E	IO-540-AC1A5
L-	29040-48E	IO-540-AC1A5	L-	34360-48E	IO-540-AC1A5
L-	29116-48E	IO-540-AC1A5	L-	34367-48E	IO-540-AC1A5
L-	29186-48E	IO-540-AC1A5	L-	34399-48E	IO-540-AC1A5
L-	29462-48E	IO-540-AC1A5	L-	34431-48E	IO-540-AC1A5
L-	30228-48E	IO-540-AC1A5	L-	34459-48E	IO-540-AC1A5
L-	30529-48E	IO-540-AC1A5	L-	34575-48E	IO-540-AC1A5
L-	33771-48E	IO-540-AC1A5	L-	34582-48E	IO-540-AC1A5
L-	33773-48E	IO-540-AC1A5	RL-	12530-48E	IO-540-AC1A5
L-	33792-48E	IO-540-AC1A5	RL-	13373-48E	IO-540-AC1A5
L-	34057-48E	IO-540-AC1A5	RL-	13914-48E	IO-540-AC1A5

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Table 3 (Cont.)
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Prefix	Serial Number	Model	Prefix	Serial Number	Model
RL-	15465-48E	IO-540-AC1A5	L-	12202-61E	TIO-540-AJ1A
RL-	15587-48E	IO-540-AC1A5	L-	10987-61E	TIO-540-AJ1A
RL-	16578-48E	IO-540-AC1A5	L-	12424-61E	TIO-540-AJ1A
RL-	17340-48E	IO-540-AC1A5	L-	12439-61E	TIO-540-AJ1A
RL-	17351-48E	IO-540-AC1A5	L-	12601-61E	TIO-540-AJ1A
RL-	18533-48E	IO-540-AC1A5	L-	12870-61E	TIO-540-AJ1A
RL-	20137-48E	IO-540-AC1A5	L-	13055-61E	TIO-540-AJ1A
RL-	20386-48E	IO-540-AC1A5	L-	13365-61E	TIO-540-AJ1A
RL-	2208-48E	IO-540-AC1A5	L-	13375-61E	TIO-540-AJ1A
RL-	25988-48E	IO-540-AC1A5	L-	13376-61E	TIO-540-AJ1A
RL-	26145-48E	IO-540-AC1A5	L-	13390-61E	TIO-540-AJ1A
RL-	26207-48E	IO-540-AC1A5	L-	13400-61E	TIO-540-AJ1A
RL-	26585-48E	IO-540-AC1A5	L-	13435-61E	TIO-540-AJ1A
RL-	26586-48E	IO-540-AC1A5	L-	13440-61E	TIO-540-AJ1A
RL-	26716-48E	IO-540-AC1A5	L-	13447-61E	TIO-540-AJ1A
RL-	27058-48E	IO-540-AC1A5	L-	13457-61E	TIO-540-AJ1A
RL-	27986-48E	IO-540-AC1A5	L-	13463-61E	TIO-540-AJ1A
RL-	28007-48E	IO-540-AC1A5	L-	13469-61E	TIO-540-AJ1A
RL-	30024-48E	IO-540-AC1A5	L-	13470-61E	TIO-540-AJ1A
RL-	30424-48E	IO-540-AC1A5	L-	13471-61E	TIO-540-AJ1A
RL-	30792-48E	IO-540-AC1A5	L-	13475-61E	TIO-540-AJ1A
RL-	31641-48E	IO-540-AC1A5	L-	13476-61E	TIO-540-AJ1A
RL-	31997-48E	IO-540-AC1A5	L-	13478-61E	TIO-540-AJ1A
RL-	34646-48E	IO-540-AC1A5	L-	13479-61E	TIO-540-AJ1A
RL-	3739-48E	IO-540-AC1A5	L-	13483-61E	TIO-540-AJ1A
RL-	6240-48E	IO-540-AC1A5	L-	13491-61E	TIO-540-AJ1A
RL-	8943-48E	IO-540-AC1A5	L-	13492-61E	TIO-540-AJ1A
L-	246-64A	TIO-360-C1A6D	L-	13498-61E	TIO-540-AJ1A
L-	247-64A	TIO-360-C1A6D	L-	13499-61E	TIO-540-AJ1A
L-	248-64A	TIO-360-C1A6D	L-	13500-61E	TIO-540-AJ1A
L-	249-64A	TIO-360-C1A6D	L-	13501-61E	TIO-540-AJ1A
L-	250-64A	TIO-360-C1A6D	L-	13504-61E	TIO-540-AJ1A
L-	251-64A	TIO-360-C1A6D	L-	13506-61E	TIO-540-AJ1A
L-	252-64A	TIO-360-C1A6D	L-	13507-61E	TIO-540-AJ1A
L-	253-64A	TIO-360-C1A6D	L-	13509-61E	TIO-540-AJ1A
RL-	219-64A	TIO-360-C1A6D	L-	13511-61E	TIO-540-AJ1A
RL-	220-64A	TIO-360-C1A6D	L-	13512-61E	TIO-540-AJ1A
L-	10226-61A	TIO-540-AJ1A	L-	13513-61E	TIO-540-AJ1A
L-	10358-61E	TIO-540-AJ1A	L-	13516-61E	TIO-540-AJ1A
L-	10857-61A	TIO-540-AJ1A	L-	13517-61E	TIO-540-AJ1A
L-	11286-61A	TIO-540-AJ1A	L-	13521-61E	TIO-540-AJ1A

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Table 3 (Cont.)
Affected Engine Models And Serial Numbers

Prefix	Serial Number	Model	Prefix	Serial Number	Model
L-	13522-61E	TIO-540-AJ1A	L-	13666-61E	TIO-540-AJ1A
L-	13523-61E	TIO-540-AJ1A	L-	13675-61E	TIO-540-AJ1A
L-	13524-61E	TIO-540-AJ1A	L-	13676-61E	TIO-540-AJ1A
L-	13533-61E	TIO-540-AJ1A	L-	13678-61E	TIO-540-AJ1A
L-	13534-61E	TIO-540-AJ1A	L-	13682-61E	TIO-540-AJ1A
L-	13535-61E	TIO-540-AJ1A	L-	13683-61E	TIO-540-AJ1A
L-	13537-61E	TIO-540-AJ1A	L-	13690-61E	TIO-540-AJ1A
L-	13539-61E	TIO-540-AJ1A	L-	13693-61E	TIO-540-AJ1A
L-	13540-61E	TIO-540-AJ1A	L-	13695-61E	TIO-540-AJ1A
L-	13542-61E	TIO-540-AJ1A	L-	2406-61E	TIO-540-AJ1A
L-	13543-61E	TIO-540-AJ1A	L-	2436-61E	TIO-540-AJ1A
L-	13546-61E	TIO-540-AJ1A	L-	7162-61E	TIO-540-AJ1A
L-	13550-61E	TIO-540-AJ1A	L-	7264-61E	TIO-540-AJ1A
L-	13556-61E	TIO-540-AJ1A	L-	797-61E	TIO-540-AJ1A
L-	13557-61E	TIO-540-AJ1A	RL-	10044-61E	TIO-540-AJ1A
L-	13560-61E	TIO-540-AJ1A	RL-	10152-61E	TIO-540-AJ1A
L-	13561-61E	TIO-540-AJ1A	RL-	10797-61E	TIO-540-AJ1A
L-	13566-61E	TIO-540-AJ1A	RL-	11109-61E	TIO-540-AJ1A
L-	13567-61E	TIO-540-AJ1A	RL-	1135-61E	TIO-540-AJ1A
L-	13571-61E	TIO-540-AJ1A	RL-	11447-61E	TIO-540-AJ1A
L-	13574-61E	TIO-540-AJ1A	RL-	1654-61E	TIO-540-AJ1A
L-	13578-61E	TIO-540-AJ1A	RL-	1679-61E	TIO-540-AJ1A
L-	13579-61E	TIO-540-AJ1A	RL-	1810-61E	TIO-540-AJ1A
L-	13582-61E	TIO-540-AJ1A	RL-	1898-61E	TIO-540-AJ1A
L-	13586-61E	TIO-540-AJ1A	RL-	2567-61E	TIO-540-AJ1A
L-	13592-61E	TIO-540-AJ1A	RL-	3260-61E	TIO-540-AJ1A
L-	13593-61E	TIO-540-AJ1A	RL-	4694-61E	TIO-540-AJ1A
L-	13594-61E	TIO-540-AJ1A	RL-	476-61E	TIO-540-AJ1A
L-	13597-61E	TIO-540-AJ1A	RL-	6224-61E	TIO-540-AJ1A
L-	13598-61E	TIO-540-AJ1A	RL-	6422-61E	TIO-540-AJ1A
L-	13623-61E	TIO-540-AJ1A	RL-	6465-61E	TIO-540-AJ1A
L-	13624-61E	TIO-540-AJ1A	RL-	6778-61E	TIO-540-AJ1A
L-	13626-61E	TIO-540-AJ1A	RL-	7524-61E	TIO-540-AJ1A
L-	13633-61E	TIO-540-AJ1A	RL-	7596-61E	TIO-540-AJ1A
L-	13637-61E	TIO-540-AJ1A	RL-	9353-61E	TIO-540-AJ1A
L-	13649-61E	TIO-540-AJ1A	RL-	9468-61E	TIO-540-AJ1A
L-	13651-61E	TIO-540-AJ1A	RL-	9491-61E	TIO-540-AJ1A
L-	13652-61E	TIO-540-AJ1A	RL-	202-69A	TO-360-C1A6D
L-	13653-61E	TIO-540-AJ1A	RL-	281-69A	TO-360-C1A6D
L-	13665-61E	TIO-540-AJ1A			

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Inspection Procedure for Date Stamp

NOTE

If you've already complied with SB593A, dated 7/23/2014, no further action is required.

To identify the date stamp on the intake valve stem tip on an installed engine:

1. Disconnect all power to the engine.
2. Make sure the engine is cool to the touch.
3. Remove the top spark plugs and rotate the propeller until the piston of the affected cylinder is at the top center of the compression stroke.

NOTE

1. Complete the proceeding steps on one engine cylinder at a time to make sure an inspection for the date stamp has been done on the intake valve on all cylinders.
4. Remove the rocker box cover and gasket from engine cylinder. Discard the gasket.

CAUTION

PHYSICALLY SEPARATE AND IDENTIFY BY CYLINDER AND VALVE LOCATION THE INTAKE VALVE COMPONENTS AS THEY ARE DISASSEMBLED FOR REFERENCE ON ASSEMBLY TO MAKE SURE THAT EACH PART IS INSTALLED IN EXACTLY THE SAME LOCATION FROM WHICH IT WAS REMOVED. PAY PARTICULAR ATTENTION TO THE VALVE KEYS WHICH TEND TO WEAR IN UNIFORM DISTINCTIVE PATTERNS. REPLACE WORN OR DAMAGED VALVE KEYS. IF THE KEYS DO NOT NEED TO BE REPLACED, THEY MUST BE INSTALLED IN THE SAME POSITION FROM WHERE THEY WERE REMOVED.

NOTE

1. Do not remove the exhaust valve or any parts associated with the exhaust valve. The removal and replacement labor of the exhaust valve or any parts associated with the exhaust valve will NOT be reimbursed under the warranty terms of the Service Bulletin.
5. Remove the valve rocker shaft (Figure 1), rocker assembly, valve stem cap, push rod, shroud tube, and hydraulic tappet socket. Remove and discard the shroud seals.
6. Rotate the propeller to position the piston at the bottom center.

NOTE

The intake valve is located on the left side of the engine cylinder.

7. To hold the intake valve in position, insert approximately 8 feet (2.4 m) of 3/8 in. (9.5 mm) nylon rope through the spark plug hole. Turn the crankshaft until the piston moves the rope snugly against the intake valve.

As an alternate technique for holding the intake valve in position, use shop air pressure and a compression check fitting.

CAUTION

WEAR GLOVES (TO PROTECT YOUR HANDS) AND FIRMLY HOLD THE PROPELLER SECURELY IN PLACE TO KEEP THE PISTON AT BOTTOM DEAD CENTER AND TO PREVENT THE ENGINE FROM TURNING WHEN PRESSURE IS APPLIED. DO NOT APPLY EXCESSIVE PRESSURE TO PREVENT PROPELLER ROTATION.

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- Compress the intake (inner and outer) valve springs and remove the valve keys. (The rope or air pressure that had been in the combustion chamber provides a base to support the intake valve in the event the valve keys tend to stick.)

NOTE:
Exhaust valve not shown.
Do not remove the exhaust valve.

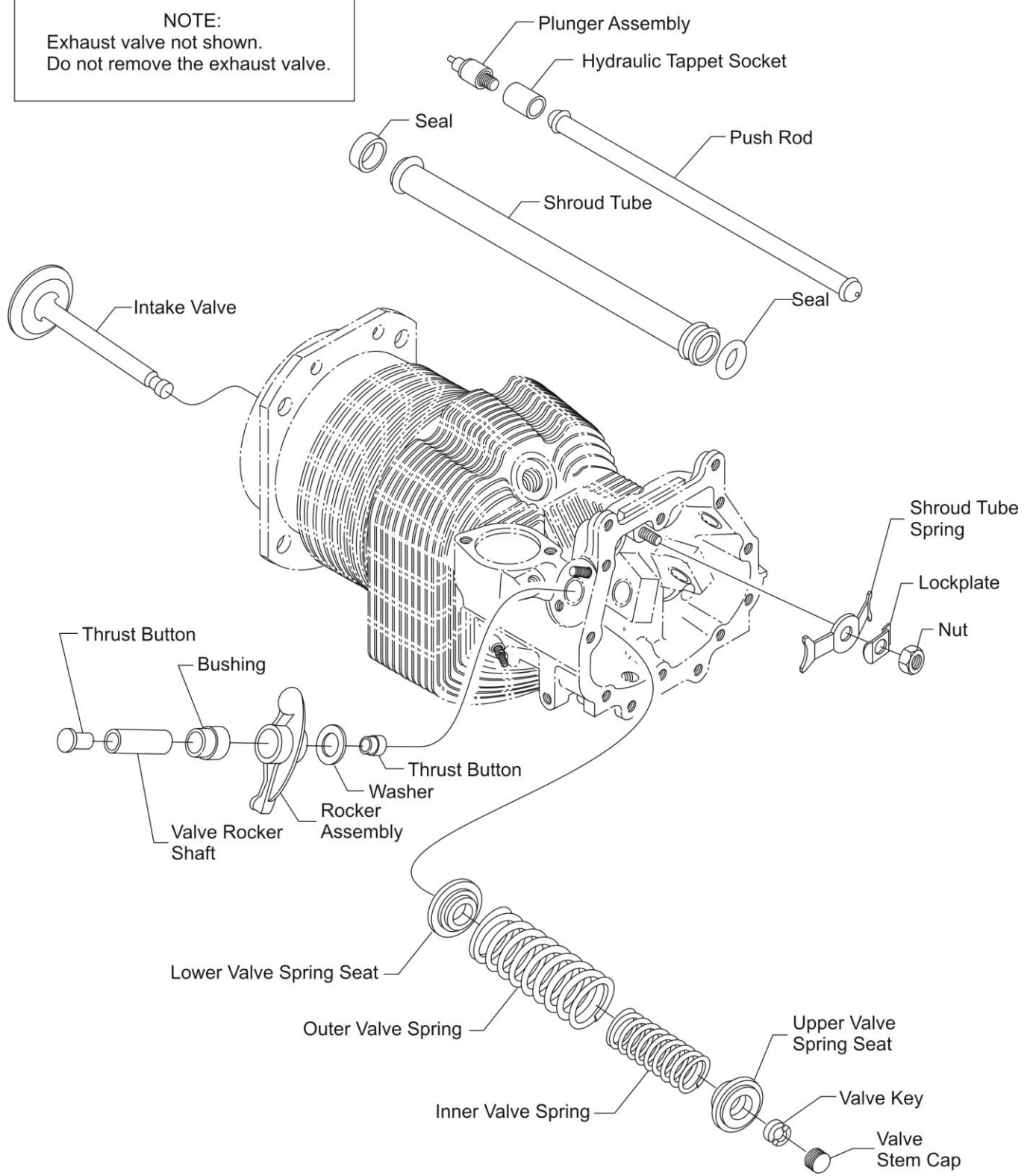


Figure 1
Engine Cylinder and Components

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9. Remove the upper valve spring seat (Figure 2) and valve spring.

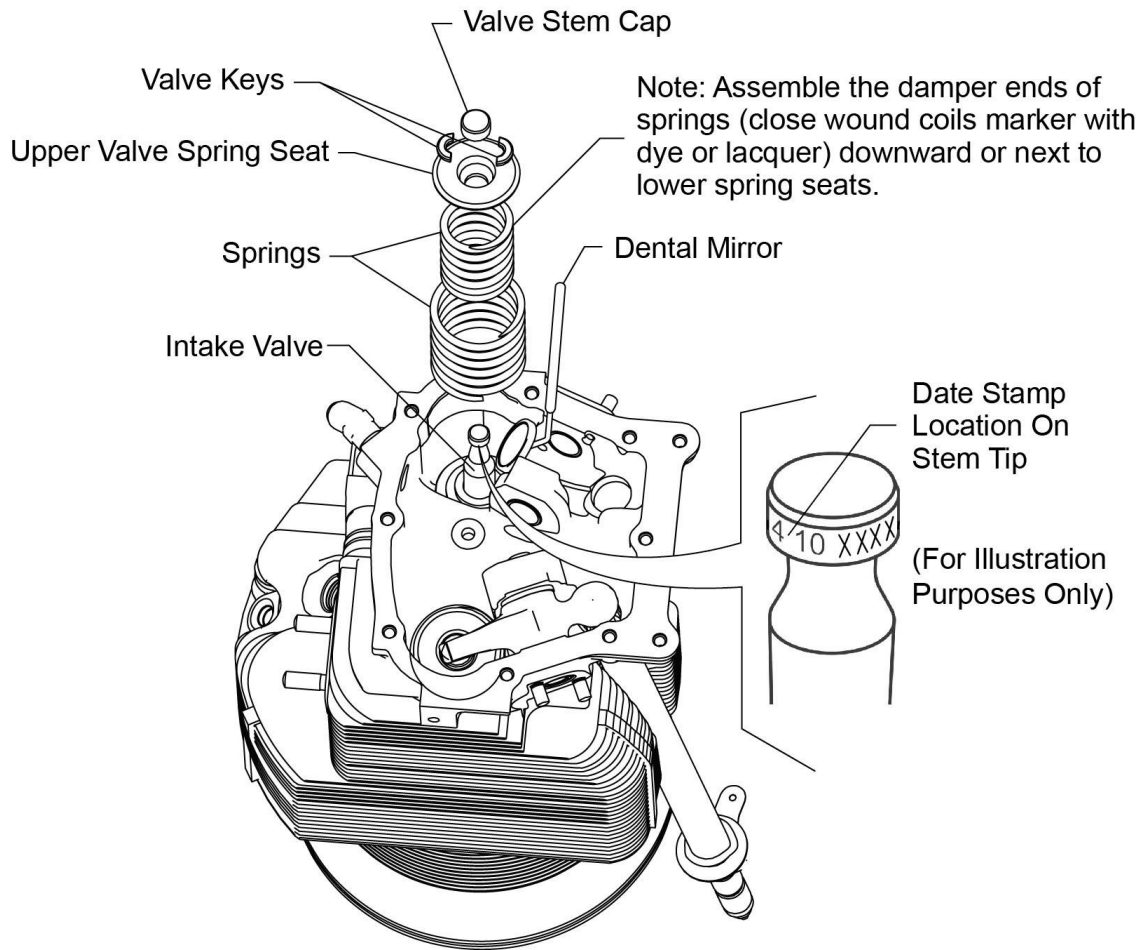


Figure 2
Intake Valve Stem Tip and Date Stamp Location

10. Insert a long reach dental mirror tool around the perimeter of the stem tip of the intake valve and look for the date stamp (Figure 2).
11. If the date stamp (Figure 2) is one of the date stamps identified in Table 1:
 - a. Remove the cylinder assembly and discard the piston rings.
 - b. Replace the removed intake valve for TIO-541-E series and TIGO-541-E1A engine models with a new intake valve P/N 17A23942 which does not have any of the date stamps identified in Table 1. Replace the removed intake valve for all other affected engine models with a new intake valve P/N 17A26621 which does not have any of the date stamps identified in Table 1.
 - c. Send the suspect intake valve back to Lycoming Engines per warranty terms herein.
 - d. Apply a thin coat of undiluted lubricant (as specified in the latest revision of Service Instruction No. 1059) to the stem of the new intake valve.
 - e. Complete a valve leak check in accordance with the latest revision of Service Instruction No. 1483.
 - f. Hone the cylinder. Refer to the latest revision of Service Instruction No. SI-1047.
 - g. Install new piston rings. Refer to the latest revision of Service Instruction No. SI-1037.

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- h. Install the cylinder assembly in accordance with the latest revision of the Direct Drive Overhaul Manual.
 - i. Record the part number and date stamp of the new replacement intake valve and the cylinder number in which it is installed in the engine logbook.
12. If the date stamp is not visible, contact Lycoming Engines' Field Service by phone at 570-327-7222 or 877-839-7878 for guidance.
 13. If the intake valve stem tip did not have one of the date stamps identified in Table 1, record the date stamp that was found for each intake valve and the cylinder number in which it is installed in the engine logbook.
 14. Install the inner and outer valve springs and upper and lower valve spring seats (Figure 1) in the same position as removed in the correct orientation.

 CAUTION

DURING ASSEMBLY, INSTALL THE VALVE COMPONENTS IN THEIR ORIGINAL LOCATION.

NOTE

Assemble the dampener ends of the valve springs (close wound coils marked with dye or lacquer) downward or next to the lower valve spring seat.

15. Compress the inner and outer valve springs. Install the valve keys in their respective positions.
16. Remove the hydraulic lifter. Clean and examine the hydraulic lifter in accordance with the latest revision of Service Instruction No. 1011.
17. Clean the inside diameter of the tappet body and install the hydraulic lifter.
18. Install the hydraulic tappet socket (Figure 1), shroud tube with new shroud seals, push rod, valve stem cap, rocker assembly, and rocker shaft on the engine cylinder with fastening hardware. Torque the hardware fasteners in accordance with the latest revision of the Table of Limits, SSP-1776.
19. Set the dry tappet clearance in accordance with the latest revision of the Table of Limits, SSP-1776.
20. Install the rocker box cover with a new gasket.
21. Remove the nylon rope from within the cylinder or bleed off the shop air pressure and remove the compression check fitting before proceeding to the next cylinder.
22. Continue to examine the intake valves in the remaining engine cylinders as per the previous steps.
23. After all of the intake valves for all of the engine cylinders have been examined and assembled, examine the removed spark plug(s). Refer to the latest revision of Service Instruction 1042 for guidelines on spark plug inspections. Replace any worn spark plug(s).
24. Install the correct spark plug(s).
25. To prevent an accident caused by foreign object debris (FOD), make sure that no tools were left in the engine compartment.
26. Connect power to the engine.
27. Operate the engine as a check for correct operation.

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Warranty Instructions:

1. Upon inspection, for engines/cylinder kit and where NO affected date stamps are found per SB593 dated 8/24/2010 and this Service Bulletin SB593B, contact an Authorized Lycoming Distributor and file a warranty claim for:

Labor for the inspection in accordance with the current applicable Lycoming Warranty Policy and latest revision of Lycoming’s SSP-875 Removal and Installation Labor Allowance Guidebook not to exceed 2 hours per cylinder.

2. Upon inspection, for engines/cylinder kits where affected date stamps ARE found per SB593 dated 8/24/2010 and this Service Bulletin SB593B, please proceed as follows:

- A. Contact an Authorized Lycoming Distributor to order a replacement intake valve:

- P/N17A23942 for TIO-541-E series, TIGO-541-E1A engine models ONLY.
- P/N 17A26621 for all other affected engine models.

- B. Upon receipt, replace the suspect intake valve P/N17A23942 with:

- P/N17A23942 for TIO-541-E series, TIGO-541-E1A engine models ONLY.
- P/N 17A26621 for all other affected engine models.

- C. Return the suspect intake valve P/N17A23942 to Lycoming through the same Authorized Lycoming Distributor that ordered the replacement intake valve and file a warranty claim for:

- Reimbursement of the replacement parts, if applicable.
- Associated Freight.
- Removal and Reinstallation Labor for inspection, repair and installation in accordance with the current applicable Lycoming Warranty Policy and latest revision of Lycoming’s SSP-875 Removal and Installation Labor Allowance Guidebook as instructed in the Service Bulletin.
- The maximum labor allowance is not to exceed a total of 24 hours for a 4 cylinder engine or 30 hours for a 6 cylinder engine. The maximum labor allowance includes the labor required to perform the inspection, per the instructions in this Service Bulletin, and the labor for all intake valves requiring replacement after inspection.

If you have any questions, contact Lycoming Field Service by phone at 570-327-7222 or 877-839-7878.

This revision of this Service Bulletin does not extend the compliance time.

Warranty consideration is available until 07/23/2015.

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