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MANDATORY SERVICE BULLETIN

DATE: August 24, 2010 Service Bulletin No. 593
Engineering Aspects are
FAA (DER) Approved

SUBJECT: Intake Valve Inspection for Date Stamp

MODELS AFFECTED: Engines with the serial number shown in Table 1 or a cylinder kit identified in Table 2 or intake valve P/N 17A23942 shipped from the factory between April 7, 2010 and July 20, 2010 (associated with engine models IO-540-AC1A5, (L)TIO-540-V2AD, TIO-540-AJ1A, TIO-540-W2A, TIO-360-C1A6D, TIO-541-E series, TIGO-541-E1A, and IO-580-A1A)

TIME OF COMPLIANCE: At next maintenance or 50 hour inspection, whichever comes first.

Lycoming Engines has identified a specific lot of intake valves P/N 17A23942-stamped with the date 4 10 (which means 4/10) that may not have been manufactured in conformance with Lycoming specifications. Although only a limited number of engines, cylinder kits, and parts within a narrow time frame may be 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.

This Service Bulletin identifies the serial numbers of the affected engines, the part numbers of the affected cylinder kits and intake valves, and inspection instructions to identify the errant intake valves.

Table 1 shows all of the affected serial numbers for the respective engine models. Table 2 shows the affected cylinder kits.

If you have received engines with the serial numbers shown in Table 1 or a cylinder kit identified in Table 2 or intake valve P/N 17A23942 shipped from Lycoming between April 7, 2010 and July 20, 2010 (as indicated on the Form 8130) you must perform 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.



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TABLE 1 AFFECTED ENGINE MODELS AND SERIAL NUMBERS		
Prefix	Serial Number	Model
RL-	12530-48E	IO-540-AC1A5
RL-	15587-48E	IO-540-AC1A5
RL-	16578-48E	IO-540-AC1A5
RL-	17340-48E	IO-540-AC1A5
RL-	17351-48E	IO-540-AC1A5
RL-	18533-48E	IO-540-AC1A5
RL-	20137-48E	IO-540-AC1A5
L-	29040-48E	IO-540-AC1A5
L-	29462-48E	IO-540-AC1A5
L-	34232-48E	IO-540-AC1A5
L-	2406-61E	TIO-540-AJ1A
L-	13506-61E	TIO-540-AJ1A
L-	13507-61E	TIO-540-AJ1A
L-	13513-61E	TIO-540-AJ1A
L-	13533-61E	TIO-540-AJ1A
RL-	1810-61E	TIO-540-AJ1A
RL-	1898-61E	TIO-540-AJ1A
RL-	7524-61E	TIO-540-AJ1A

TABLE 2 CYLINDER KIT	
Part Number	
05K22680	
05K22672	
05K21276	
05K21260	
05K21116	

Inspection Procedure for Date Stamp

To identify the time 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

Perform the proceeding steps on one engine cylinder at a time to make sure an inspection has been done on all cylinders for the date stamp.

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 stem keys which tend to wear in uniform distinctive patterns. Replace worn or damaged valve stem keys. If the keys do not need to be replaced, they must be installed in the same position as they were removed.

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NOTE

Do not remove the exhaust valve or any parts associated with the exhaust valve.

5. Remove the rocker shaft (Figure 1), rocker arm, valve stem cap, push rod, shroud tube, and 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 (2.4m) of 3/8 in. (9.5mm) 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

The piston is held at bottom dead center by firmly holding the propeller to prevent the engine from turning when air pressure is applied through the differential compression device to the combustion chamber. Use gloves or rags to protect your hands while holding the propeller blade. Also, before attaching the compression tester, make sure the air pressure to the cylinder is not excessive. Air pressure in the cylinder can cause the propeller to turn. Keep clear of the path of the blades.

8. Compress the intake valve spring 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.)
9. Remove the upper valve spring seat (Figure 2) and valve spring.
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.
11. If the date stamp is 4 10 (as shown in Figure 2):
 - a. Remove the cylinder assembly and discard the rings.
 - b. Replace the intake valve with a new intake valve (P/N 17A23942) that does not have the 4 10 date stamp.
 - c. 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.
 - d. Do a leak check in accordance with the latest revision of Service Instruction No. 1483.
 - e. Hone the cylinder.
 - f. Install new rings.
 - g. Install the cylinder assembly in accordance with the latest revision of the Direct Drive Overhaul Manual.
 - h. Record the date stamp of the new replacement intake valve in the engine logbook.

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12. If the intake valve stem tip did not have the 4 10 date stamp:
 - a. Record the date stamp that was found for each intake valve in the engine logbook.
 - b. Install the valve spring and upper valve spring seat 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 spring seats.

13. Compress the valve spring and install the valve keys in their respective position.
14. Remove the hydraulic lifter. Clean and inspect the hydraulic lifter in accordance with the latest revision of Service Instruction No. 1011.
15. Clean the inside diameter of the tappet body and install the hydraulic lifter.
16. Install the tappet socket (Figure 1), shroud tube with new shroud seals, push rod, valve stem cap, rocker arm and rocker shaft on the engine cylinder with fastening hardware.
17. Set the dry tappet clearance in accordance with the Service Table of Limits in the appropriate Lycoming Overhaul Manual.
18. Install the rocker box cover with a new gasket.
19. Remove all flashlights and the nylon rope from within the cylinder before proceeding to the next cylinder.
20. Continue to inspect the remaining engine cylinders as per the previous steps.
21. After all engine cylinders have been inspected 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).
22. Install the correct spark plug(s).
23. Connect power to the engine.
24. Operate the engine as a check for correct operation.
25. Record compliance with this publication in the engine logbook.

WARRANTY

Warranty is available for the inspection and material required for intake valve replacement (if applicable) covered by this Service Bulletin. Labor for installation will be reimbursed in accordance with the current revision of Removal and Installation Labor Allowance guidebook, SSP-875 through an authorized Lycoming distributor, using the standard Warranty Procedure.

Warranty claims for inspection and/or replacement (if applicable) for the affected engines in Table 1, must be accompanied with the removed intake valve/valves, and the engine serial number.

Warranty claims for inspections associated with cylinder kits in Table 2 and P/N 17A23942 valves shipped as service parts between April 7, 2010 and July 20, 2010, that do not result in the discovery of a non-conforming intake valve, must be accompanied with a copy of the Lycoming engines issued FAA form

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8130-3 (as noted above) with a shipment date between April 7, 2010 and July 20, 2010 designated in Box 18, and the engine serial number.

Warranty claims for inspection and replacement (if applicable) must be accompanied with the removed intake valve/valves, and the engine serial number.

Lycoming warranty participation for Service Bulletin No. 593 remains in effect until August 24, 2011.

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NOTE
 Exhaust Valve Not Shown.
 Do not remove the exhaust valve.

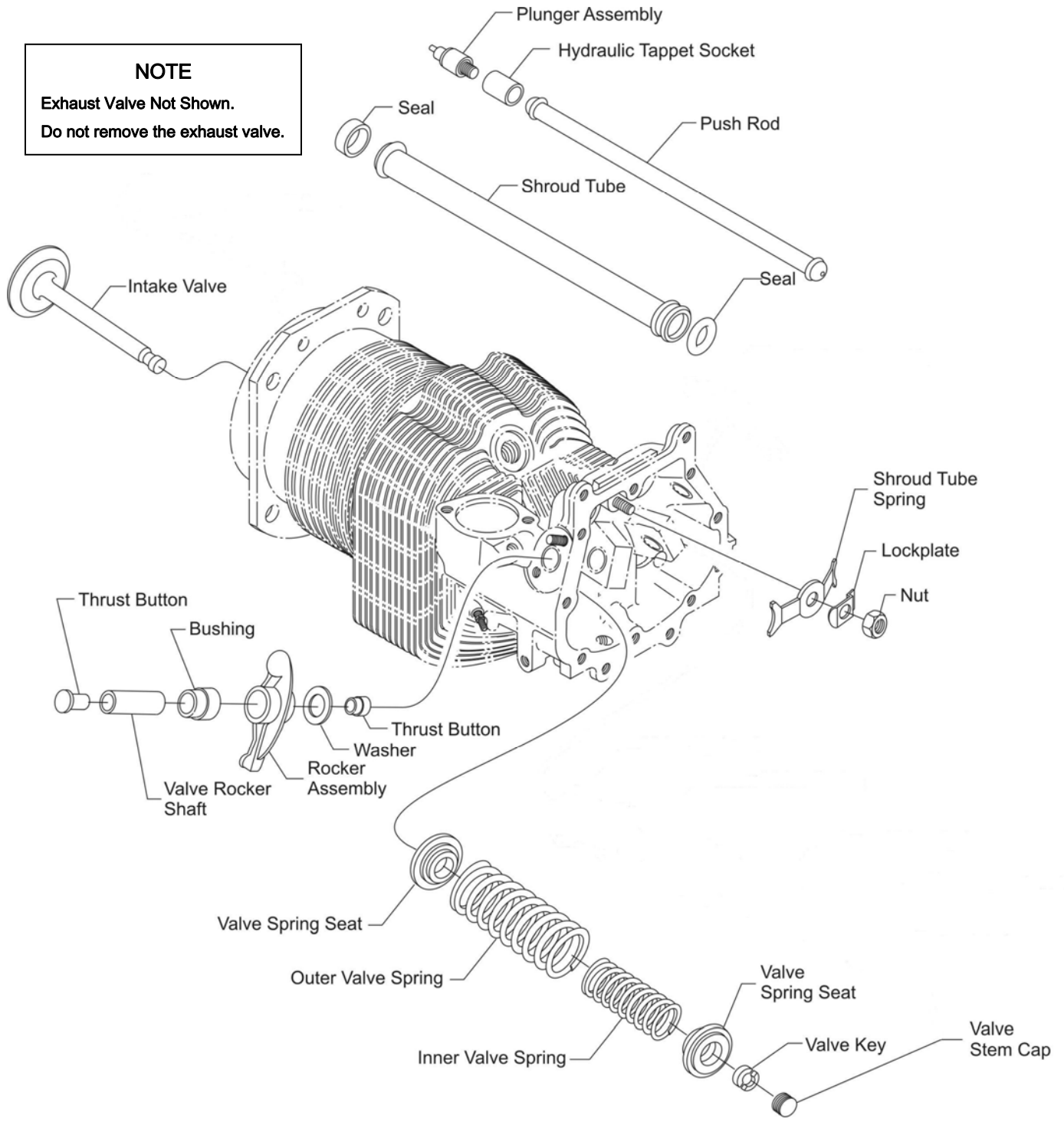


Figure 1
 Engine Cylinder and Components

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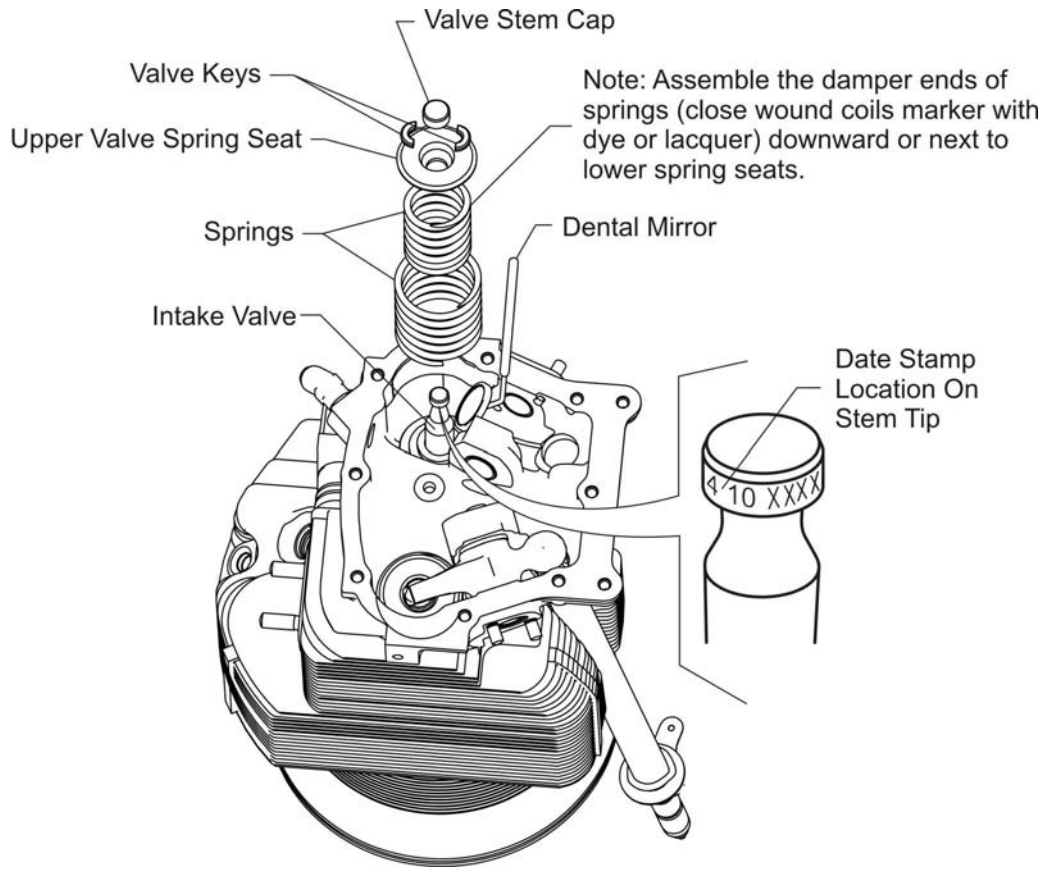


Figure 2
Intake Valve Stem Tip and Date Stamp

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