

The Jabiru Engine

Cylinder Head Service and Overhaul



Roger Lewis



Table of Contents

Foreword	1
Preparing the Engine for Cylinder Head Removal	2
Inspection of a Cylinder Head.....	3
Removing the Valve Train.....	8
Renewing the Valve Guides.....	17
Checking and Servicing the Valves	18
Lapping-in the Valves	19
Reassembling the Engine.....	22

Foreword

In an air-cooled aero engine the cylinder heads are the components that need the most care and attention. Overall weight is an important factor in engine design, so manufacturers will endeavour to make the cylinder heads as light as possible commensurate with the ability for the engine to operate to TBO. However, if the engine is operated outside the limits then the heads will distort, compression will be lost and remedial action will have to be taken.

Dismantling the top end should be done in stages with a detailed visual inspection carried out between each stage. The purpose of the inspection is to identify any unusual wear or witness marks and the causes for such wear. Sometimes important clues can be lost once the head is dismantled and cleaned.

This e-manual is a step-by-step pictorial guide to assist owners in servicing and overhauling Jabiru cylinder heads. It should be used in conjunction with the Jabiru Technical Manuals. Readers can also refer to my e-manual 'Building the Jabiru Engine from the Crankshaft Up' (e-manual 1) for more information on removing and re-installing the cylinder heads.

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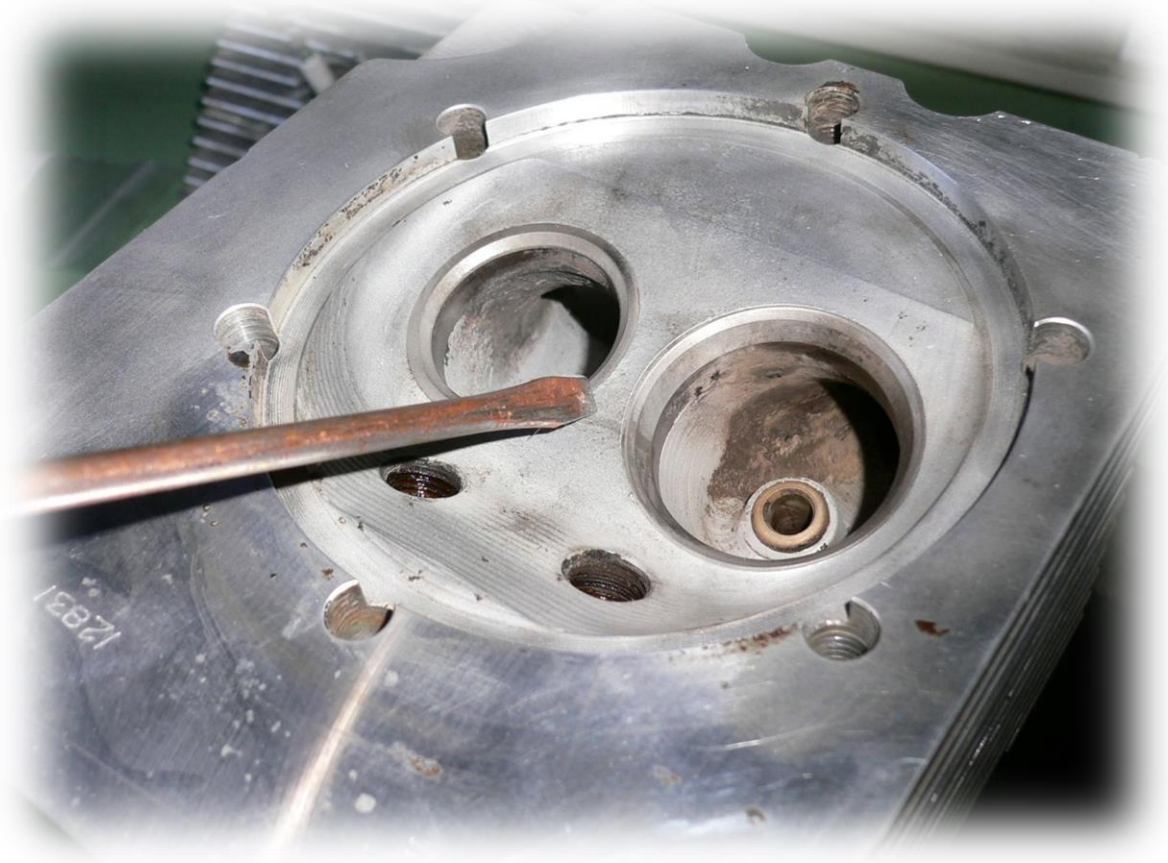
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Removing the Valve Train (cont)

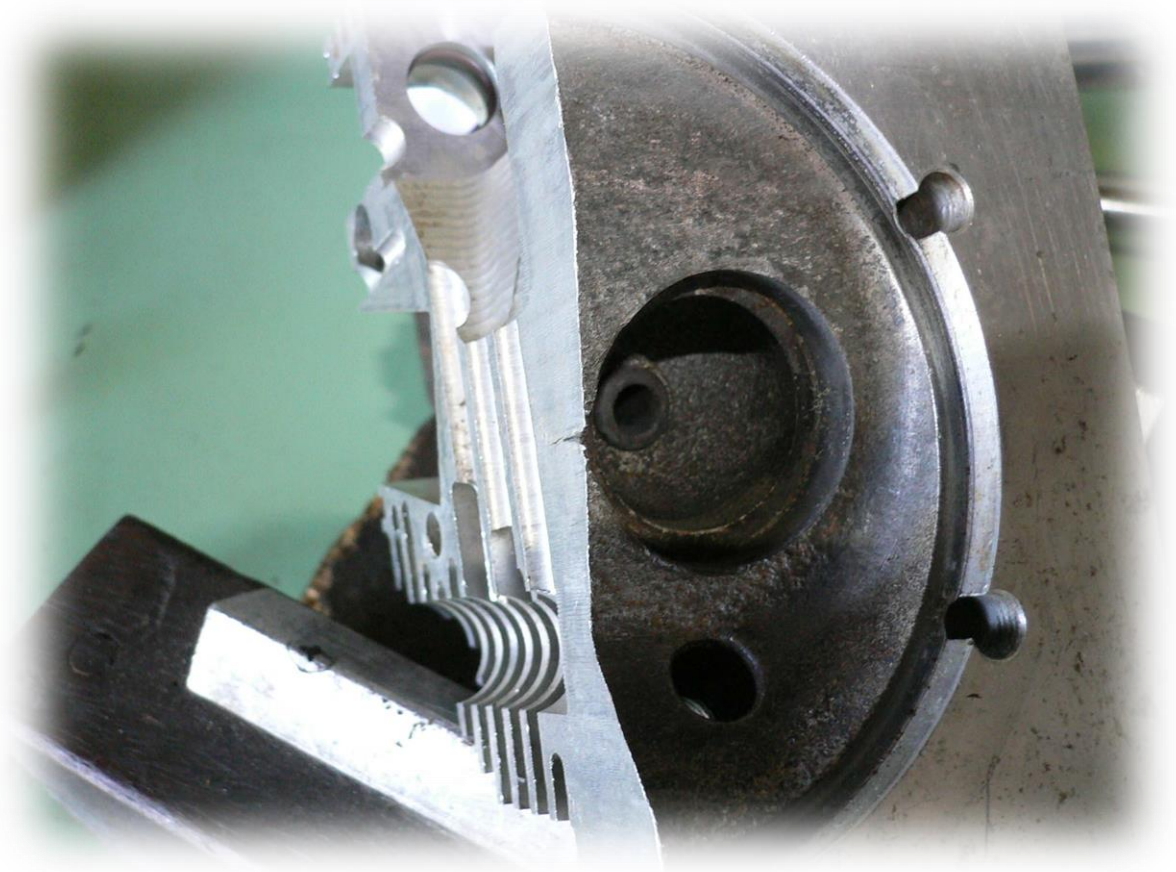
- Step 18** Check the area between the valve seats. Any suggestion of a 'hump' between the valve seats means that the seats have sunk in towards the middle.



The picture shows that the induction seat has sunk very slightly and will need re-grinding to ensure a 100% seal with the valve.

Removing the Valve Train (cont)

This picture shows a cylinder head cut in half and the extent of the damage done to a cylinder head when the seats have sunk significantly.



The small crack on the 'hump' extends down into the head. The cause is partially a design fault (lack of metal between seats) and partially operating outside the cht limits. Later generation heads have more metal and are more robust, but can still suffer this problem if the chts have been exceeded. (See blog Engine Cooling - April 15, 2013)