



Service Instruction

ENGINE COMPONENTS, INC.

S.I. No.: **04-5**

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Title: OVERHAUL OF ECi AEL72877 LIFTERS

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Technical Portions are FAA DER Approved.

1.0 PURPOSE: This service instruction clarifies ECi's recommendation on overhaul of ECi AEL72877 lifters.

2.0 MODELS AFFECTED: All Lycoming engines using AEL72877.

3.0 TIME OF COMPLIANCE: At engine overhaul or at engine disassembly if an unsafe condition is identified.

4.0 BACKGROUND:

Textron Lycoming lifter bodies (cam followers, tappets, etc.) used with forged camshafts are made from cast iron, which is poured such that the faces are rapidly cooled to produce a very hard structure known as "chill-cast". In addition to this chill cast face, Lycoming lifters generally have a "Ferrox" sacrificial break-in wear surface.

Lifters are one of the highest stressed parts in aircraft piston engines. Accordingly, these components have a high failure rate. ECi has recognized this high failure rate and has worked to reduce it through geometry and metallurgy. The spherical geometry of the lifter face produces rotation when it contacts the tapered face of the camshaft, and this also moves the contact load rather than allowing it to remain fixed. New or properly overhauled lifters are considered essential if a new or reground camshaft is installed.

The metallurgy of the ECi lifters is similar to the Lycoming lifters with one exception: ECi has found that resistance to wear and spalling is enhanced by replacing the Ferrox surface with a special nitride surface over the chill-cast iron. This nitride layer increases the hardness of the chilled lifter face. Furthermore, R&D and FAA Certification testing has shown that this production technique results in longer service life with a much lower incidence of spalling.

5.0 OVERHAUL RECOMMENDATION:

Reference is made to Lycoming Service Instruction No. 1011H, which details Lycoming's recommendations for determining airworthiness for used lifters. ECi AEL72877 lifters are eligible for overhaul by Repair Stations that have special approval from the FAA for lifter overhaul. The overhauled AEL72877 lifter will function like a Lycoming or Superior Air Parts lifter after overhaul, but the performance improvements realized by nitriding will diminish as material is removed from the lifter face during grinding. ECi will provide no warranty on ECi lifters that are reworked or repaired by any facility other than ECi.