



SUBJ: POWERPLANT – Alternator Drive Coupling

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts registered owners, operators, and certified repair facilities of all airplanes equipped with **Continental Motors, Inc. (CMI) IO-520, GTSIO-520, TSIO-520, IO-550, IOF-550, TSIO-550, TSIOF-550, and TSIOL-550 model engines (operating with AVGAS)** with direct drive alternator systems of the possible failure of the alternator drive coupling following maintenance events and/or improper installation. This failure could result in loss of engine power in flight and forced landing. This airworthiness concern applies to CMI part number 646655, FAA-approved Parts Manufacturer Approval (PMA) article number AEC646655, and couplings repaired by appropriately rated repair stations.

At this time, the FAA has determined that this airworthiness concern is not an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

Background

This SAIB is prompted by a June 28, 2015, fatal accident in Plainville, Massachusetts involving a Beechcraft A36 airplane with an IO-550 engine installed. The National Transportation Safety Board (NTSB) accident investigation report (ERA15FA254) “revealed that the alternator drive coupling had failed, which resulted in damage to other internal engine components and ultimately resulted in a catastrophic engine failure due to a lack of oil lubrication.” The NTSB report goes on to say, “Either an out-of-tolerance coupling or an improperly installed one can result in insufficient clamping force holding the coupling against the alternator. If there is insufficient clamping force, the coupling can rotate on the shaft and cause unusual wear and the ultimate failure of the coupling.” The NTSB report is available at: <https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20150628X90626&AKey=1&RType=Final&IType=FA>.

In the accident engine, the unusual wear of the coupling led to the introduction of metal particles and elastomer material into the engine oil system. Foreign material in the oil system can obstruct oil passages that supply oil to engine bearings resulting in oil starvation, bearing failure, and ultimately catastrophic loss of engine power. These engines have a direct, gear-driven alternator with a coupling “clutch” between the engine crankshaft face gear and the alternator drive gear. In the event of an alternator seizure or failure during engine operation, the coupling is designed to slip to minimize core engine damage.

CMI Maintenance Manual Standard Practice for Spark Ignited Engines M-0, Section 6-4.5, provides a 500-hour engine inspection requirement, which includes performing an “Alternator Inspection” in accordance with Section 6-4.22. The maintainer is then directed to M-0, Section 10-4.1.4 which outlines the slippage check criteria for the alternator drive coupling. It is noteworthy that CMI revised the “NOTE” in Section 10-4-1.4 to say “Do not remove the drive coupling for the slippage inspection.” This will ensure the clamping force on the alternator drive coupling is maintained during the slippage inspection. Additionally, to ensure proper clamping force whenever installing the coupling, we recommend that you use the CMI M-0 Manual, Section 10-4.1.3.

Recommendations

The FAA recommends that owners, operators and maintenance personnel, as well as repair stations, follow the guidance in the CMI Maintenance Manual Standard Practice for Spark Ignited Engines M-0, when installing and inspecting original equipment manufacturer, PMA, or repaired alternator drive couplings.

For Further Information, Contact

Erik Bedillion, Aerospace Engineer, Atlanta ACO Branch, 1701 Columbia Ave., College Park, GA 30337; phone: (404) 474-5583; fax: (404) 474-5606; email: erik.bedillion@faa.gov

For Related Service Information Contact

Continental Motors, Inc. Customer Services, 2039 South Broad Street, Mobile, AL 36615; Phone: (800) 326-0089