



SUBJ: Turbine Engine Accessory Drive

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts you, owners, operators, and certificated repair facilities of potential problems associated with accessory gearbox bevel gear fractures on **all Pratt & Whitney JT8D series engines** due to forward movement of the constant speed drive (CSD) bearing bushing. At this time, the 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

Since 1988, we have received 31 reports of fractured CSD accessory drive bevel gears in JT8D series engines related to forward movement of the CSD steel bushing. Eight of the 31 fractures were uncontained by the main gear box (MGB) and resulted in in-flight shutdowns. Three resulted in nacelle uncontainment. None resulted in damage to the aircraft. Due to the low energy of the uncontained part and the exit path, no nacelle uncontainment event will result in a hazard to the aircraft. However, with no corrective action, there is a risk of having further in-flight shutdowns and nacelle uncontainments.

The running position of the accessory gear box drive shaft bevel gear and the CSD accessory drive bevel gear is determined by the axial position of the respective bearings, and the bearing axial position relative to the respective steel bushings. The current bushing that houses the bearing on the CSD shaft opposes the axial load that is generated, with a small outside diameter lip and three pins. Pratt & Whitney determined that the axial load can overcome the bushing's retention features, causing it to shift forward and misalign the CSD shaft and bevel gear. This increases the stresses in the roots of the gear teeth and causes cracking in the root. The cracks can propagate into the web of the gear and result in fracture.

To correct the problem, Pratt & Whitney improved the retention features in the gearbox rear housing assembly by redesigning an aluminum repair bushing. The aluminum bushing is installed into the gearbox rear housing assembly, and then the steel bushing is installed into the aluminum bushing. A large shoulder feature increases the axial load retention by 13 times that of the previous design. The new aluminum bushing-to-gearbox rear housing assembly fit is also tighter to increase axial retention.

Recommendation

We recommend installing the redesigned aluminum bushing using Pratt & Whitney Alert Service Bulletin A6495, dated December 17, 2009, when the engine or module first goes to a maintenance base that can do these procedures regardless of the scheduled maintenance action or the reason for engine removal.

For Further Information Contact

James Gray, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA 01803; e-mail: james.gray@faa.gov; phone: (781) 238 7742; fax: (781) 238 7199.

For Related Service Information Contact

Pratt & Whitney, 400 Main St., East Hartford, CT 06108; phone: (860) 565-7700; fax: (860) 565-1605.