FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: MAIN ROTOR DRIVE SYSTEM,TAIL ROTOR DRIVE SYSTEM **SAIB:** AIR-22-08
Date: April 11, 2022

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) is intended to remind owners and operators of any Robinson R44 rotorcraft of the importance of adhering to existing inspection procedures in the applicable operating handbooks and maintenance manuals.

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

The FAA received a report of a failed C907 yoke in the R44 main rotor drive system. This failure occurred during preparation to land. A loud bang was heard from the rear of the helicopter. The helicopter descended rapidly and there was significant resistance from the flight controls. The helicopter collided heavily with an adjacent loading vehicle, coming to rest on its side. No injuries were reported.

A fatigue crack was found in the R44 C907 yoke. The fatigue crack appears to have initiated near the bolt hole of the C907 on the side of the C907 arm that mates with the C947-1 forward flex plate. An initial metallurgical exam found corrosion products and fretting damage on the surface near the fatigue crack. The C907 yoke failure may have been caused by corrosion and/or improper hardware torque.

Inadequate inspection and maintenance of all driveshaft yokes may result in undetected wear and/or corrosion that could lead to yoke failure and loss of main and tail rotor drive.

Recommendations

We recommend owners and operators of Robinson R44 and R22 series rotorcraft follow Robinson's published pre-flight inspection and periodic maintenance criteria regarding main rotor and tail rotor driveshaft yokes in order to prevent future failures. The reiterated items below relate to the yoke and flex plate:

1. During the preflight inspection, inspect all torqued joint locations for loose fasteners, unusual wear, fretting, or corrosion. Since the components are steel, fretting at the yoke-to-flex plate interface will appear as reddish-brown colored dust.
2. During the 100-hour/annual inspection, inspect clutch shaft forward yoke for cracks, corrosion, or fretting, and inspect the yoke-to-flex-plate joint to verify the security of the bonded washers on each side of the flex plate arm.
3. During the 12-year/2200-hour overhaul, the yoke-to-flex-plate joint is disassembled to facilitate removal of nearby clutch and gearbox components. We recommend ensuring the clamping surfaces of yoke-to-flex-plate interfaces are smooth and clean prior to reassembly.

For Further Information Contact

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