Australian Government
Civil Aviation Safety Authority

# Airworthiness Bulletin

## AWB 65-001 Issue 1 - 27 September 2022

## Helicopter Tail Rotor Drive Couplings

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters. Recommendations in this bulletin are not mandatory.

## 1. Effectivity

All rotorcraft that utilise flexible couplings or cartridge type assemblies to connect the drive shaft to the tail rotor gearbox (TRGB).

## 2. Purpose

The purpose of this AWB is to inform operators, pilots and engineers of reports detailing the failure of flexible couplings associated with the tail rotor drive system. A recent event was highlighted by a change in noise with slight vibration observed through the rotorcraft airframe and flight controls.

At this time, the airworthiness concern described in this Airworthiness Bulletin is not considered an unsafe condition that would warrant an Airworthiness Directive to be issued under Part 39 of the Civil Aviation Safety Regulations 1998.

## 3. Background

During normal operations a EC135 rotorcraft encountered unusual noise and vibration. The pilot landed the rotorcraft and further investigation revealed that the flexible coupling aft of the rotor brake had failed, (warped and cracked). Investigation of the operator's fleet revealed a second aircraft with a similar cracked flexible coupling.

Figure 1. EC135 Tail Rotor flexible coupling failure.

Figure 2. EC135 Tail Rotor flexible coupling failure.

Figure 3. Eurocopter AS365 Dauphin flexible coupling failure.

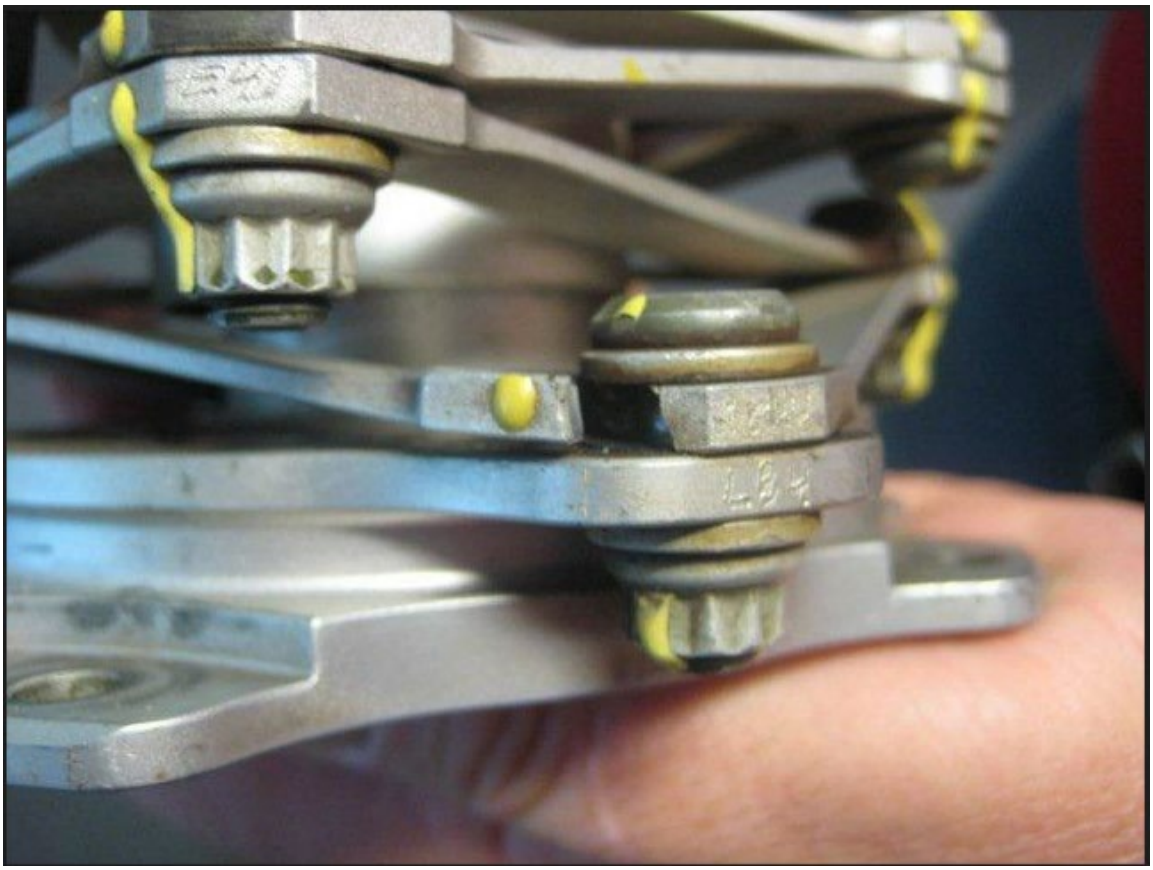

Figure 4. KAflex coupling segment failure.

## 4. Recommendations

All rotorcraft pilots need to remain vigilant of any changes in vibration levels or noise being transmitted through the flight controls or airframe. Land the rotorcraft immediately for a thorough defect resolution process by appropriate licenced engineers. Engineers should examine the rotorcraft in accordance with manufacturer's instructions for signs of failing rotating components such as couplings, bearings and pitch change links. Engineers should look for indirect indicators such as smoking residue, budging (movement) of disks or noise during manipulation, pilots may not be aware of such indicators and may gain from understating what to look for during a pre-flight inspection.

The rotorcraft maintenance release/tech log must be endorsed invoking the rotorcraft as unserviceable and not to be flown until causal factors are rectified. Where the aircraft may need to be operated for further diagnosis, or to validate rectification, the operation is to be in a staged regime (i.e light on skids, hover, taxi flight) by pilots trained, primed and prepared for an emergency response.

## 5. Reporting

Any defects found are to be reported to CASA via the Defect Reporting Service to facilitate a detailed review of potential causal factors related to the failure of tail rotor drive mechanisms. Photographs are an excellent way to convey information effectively in support of describing the mechanism of failure.

## 6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

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National Operations and Standards
Civil Aviation Safety Authority
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