Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

BK117 Tail Rotor Flapping Hinge / Head Attachment

AWB 64-002 **Issue** : 1
Date : 1 May 2012

1. Effectivity

All BK 117 Helicopters.

2. Purpose

To remind operators and maintainers of the importance of correct assembly and regular and vigilant inspection of the tail rotor head mechanical components.

3. Background

An operator of a Kawasaki BK117 noticed abnormal vibration of the tail rotor during an engine cool down cycle. A post flight inspection revealed severe wear of both the close tolerance bolt and the retaining nut.

Kawasaki Heavy Industries published KSB-117-346 alerting operators to the potential problem of close tolerance bolt wear and this SB was mandated by the Japanese Civil Aviation Bureau (JCAB) in Airworthiness Directive TCD-8021-2012 (12 April 2012).

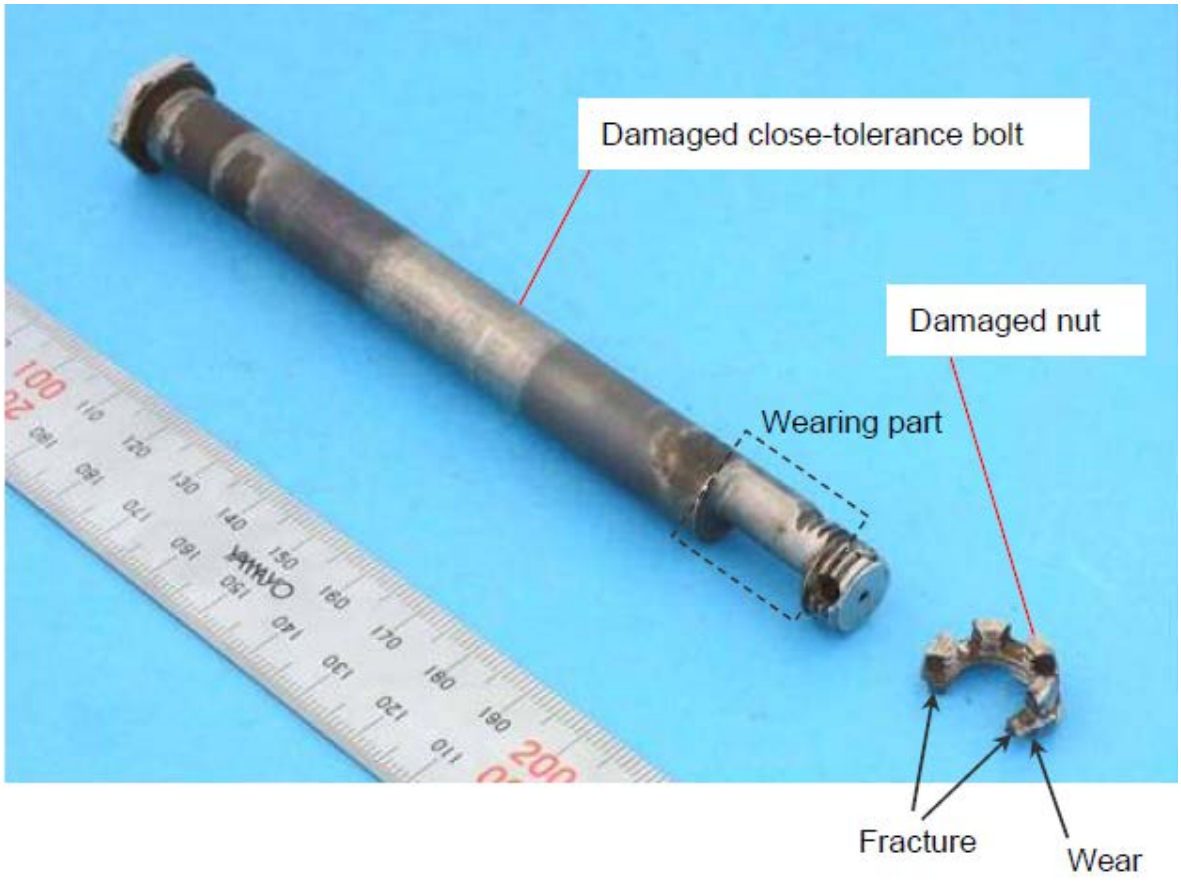

Figure 1 - Damaged close-tolerance bolt and nut.

Source - Kawasaki Heavy Industries Service Bulletin KSB117-346.

Although the JCAB AD was issued for the Kawasaki BK117 aircraft, the FAA SDR system contains several reports of damage to the same close tolerance bolt in Eurocopter BK117 aircraft.

While the Eurocopter SIN 2273-S-64 (30 June 2011) describes adverse wear in tail rotor flapping hinge bearings and discusses potential damage to the tail rotor gearbox bearings and gearbox housing caused by imbalance in the tail rotor, it does not identify wear on the close tolerance hinge bolt, on which these bearings are fitted.

Due to the commonality of design between the manufacturers of this type and the potential for undetected wear to rapidly escalate in both the tail rotor flapping hinge bearings and the close tolerance bolt, CASA takes this opportunity to highlight the need for correct installation, including accurate dynamic balancing and continual vigilant inspection of all components in the tail rotor assembly of the BK117 type.

The first signs of excessive wear or impending failure of one of the components may be indicated by increased in-flight pedal vibration.

4. Recommendations

CASA recommends the following:

1. Pilots and maintenance personnel for both the Kawasaki BK117 and the Eurocopter BK117 aircraft should pay close attention to the tail rotor assembly, including the flapping hinge bolt, bearings and pitch control links during all pre-flight and periodic maintenance inspections for signs of wear.
2. Accurate dynamic balancing of the tail rotor assembly in accordance with approved data.
3. Immediately investigate any increased in-flight pedal vibration.
4. Investigate potential damage to the tail rotor gearbox bearings and gearbox housing caused by in-service vibration/ imbalance in the tail rotor assembly.
5. Immediate replacement of any bearings or shafts which exceed the tolerances in the MM/AMM.

5. Enquiries

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

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