

Continuing Airworthiness Notice – 63-002



Robinson R44 Series Helicopters - Sprag Clutch Assembly

6 October 2021

Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains information and guidance about an airworthiness concern that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91.

CAN numbering is by ATA Chapter followed by a sequential number for the next CAN in that ATA Chapter.

Applicability:

Robinson R44 series helicopters fitted with a clutch assembly P/N C018-4 or -5, which includes a sprag clutch P/N C188-3 and a shaft P/N C166-5.

Purpose:

The purpose of this Continuing Airworthiness Notice (CAN) is to inform aircraft operators and maintenance providers that the CAA recently became aware of a clutch assembly defect (i.e. spalling damage to a C166-5 shaft).

There have been several mid-life sprag failures in R44 helicopters over the past 15 years. In response to these failures the CAA issued DCA/R44/23B to inspect the clutch oil for contamination every 500 hours TIS.

The damaged shaft was not found as a result of an inspection in accordance with DCA/R44/23B and there were no sprags found damaged or broken.

Background:

This CAN is prompted by a recent defect found after a R44 II landed at a maintenance facility. During shutdown, a maintenance engineer listened for unusual noises around the V-belt/clutch assembly area. A squeaking and rumbling noise was detected from the clutch area.

The clutch assembly was then removed, stripped and inspected. The inner race on shaft P/N C166-5 was found with significant spalling damage (see photo on page 2 of this CAN). The clutch oil was dark in colour burnt and the sprag clutch was found in good condition, with very little wear.

It was determined that the spalling caused the abnormal noise. An aircraft maintenance record review determined that the clutch assembly had been in service for approximately 350 hours since the last inspection in accordance with DCA/R44/23B.

Recommendation:

The CAA is concerned that this kind of defect may occur and not be detected during the inspections required by DCA/R44/23B.

The CAA recommends that operators and engineers be vigilant in identifying abnormal noises from the clutch assembly area on engine shut down, which may be an indicator of a pending failure of shaft P/N C166-5. A stethoscope etc. is recommended to identify the source of abnormal noises.

Flight conditions that can aggravate, or cause damage to sprag clutch P/N C188-3, or shaft P/N C166-5 are low power descents.

If any defects are found with a clutch assembly including the sprag clutch, please complete a CA005 Defect Report form and submit the completed form to the CAA at CA005@caa.govt.nz, or report defects found via the online reporting system available at <https://occurrences.caa.govt.nz/ProdUI/>. Please include all findings and any other relevant technical information. A CA005D Defect Report form can be obtained from <https://www.aviation.govt.nz/about-us/forms/Filter/?SearchTerm=&Rule=8>



Shaft P/N C166-5 - Spalling damage.