

**SOUTH AFRICAN CIVIL AVIATION AUTHORITY
AIRWORTHINESS DIVISION**

**MAINTENANCE ADVISORY NOTICE
ROBINSON #002 Rev 1**

**ROBINSON R22 AND R44 HELICOPTERS
FLEX PLATE FAILURE**

1. Three accidents where the failure of a Flex Plate has been identified as the cause of the accident have necessitated the issuance of this Maintenance Advisory Notice.
2. Numerous discussions regarding this subject matter have taken place with the Manufacturer, industry (AMOs), AMEs and CAA Inspectors with experience and training on these helicopters (R22, R44 & R66 factory courses) and the following have emerged:
 - When looking at the layout and design of the drive train it is evident that correct alignment of the drive system is required to avoid excessive fatigue loading of the flex plates.
 - The flex plates can be damaged during maintenance through excessive bending caused by inadequate support of the shafts while the flex couplings are disassembled.
 - Since the issuance of FAA AD 99.02.02 (effective date Feb 1, 1999), no new ADs or SBs have been issued by either the State of Type Design or the Manufacturer of the Flex Plate.
 - The metallurgic reports of the plates involved in the accidents indicate that the metal conformed to specification.
 - In the Maintenance Manual, the 2200 hour overhaul instructions mandate the replacement of the flex plates at 2200 hours.
3. The following recommendations are made:
 - Disturbance (including removal, partial removal, etc.) of the Flex Plates to facilitate additional inspection of the Flex Plates increases the risk of disturbing the alignment of the drive train, damaging the Flex Plates, or possibly introducing other maintenance errors.
 - Inspections should remain as per the Manufacturer Instructions, as we believe that the failure of the flex plates emanated from incorrect alignment that lead to increased flexing of the plates, or Flex Plate damage during maintenance, and ultimately failure due to metal fatigue.
 - The Flex Plates must be replaced at the 2200 Hour overhaul, yet they are not serialized. It is recommended that for traceability the Lot Number stamped on the Flex Plates be recorded in the Maintenance Records when the Flex Plates are replaced.
 - The requirements of SACAR Part 43.02.5, read with SA-CATS-GMR 43.02.5 6(4) and (5) shall be complied with.

- Flex plates should be replaced if it is suspected that the helicopter has been operated with shaft alignment outside of limits, or if any of the four bolted connections at a Flex plate were incorrectly torqued or missing a palnut.
- To prevent damage to the Flex Plates caused by excessive misalignment of the drive shafts during maintenance, ensure the clutch shaft and tail rotor drive shaft are adequately supported per the instructions given in Section 7 of the Maintenance Manual.
- All Owners/Operators should also bear in mind that any disturbance of the drive train requires a Duplicate Inspection.

4. This Notice is issued in the interest of Aviation Safety.


for DIRECTOR of CIVIL AVIATION

2013-05-22
DATE