

WPR23LA004

AIRWORTHINESS

Group Chair's Factual Report - Attachment 3
Transport Canada Airworthiness Directive No. CF-2022-33



AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) with ADs.

Number:

CF-2022-33

Effective Date:

29 June 2022

ATA:

65

Type Certificate:

H-92

Subject:

Tail Rotor Drive – Failure of Tail Rotor Drive Shaft with Bonded Adapters

Applicability:

Bell Textron Canada Limited (Bell) model 206A, 206A-1, 206B, 206B-1, 206L, 206L-1, 206L-3 and 206L-4 helicopters, all serial numbers.

Compliance:

As indicated below, unless already accomplished.

Background:

A model 206L-1 helicopter experienced loss of tail rotor drive during a maintenance test flight. The failure occurred when the helicopter was in a low altitude hover. The pilot completed an emergency landing in response to the failure. An investigation revealed a failure of an adhesively bonded joint between an adapter and a tube on one of the segmented tail rotor drive shaft (TRDS) assemblies. The TRDS was inspected during a periodic inspection, approximately 22 hours before the occurrence, with no discrepancies found. Transport Canada is aware of several occurrences of TRDS adhesively bonded joint failure.

Most of the helicopters affected by this AD were manufactured with bonded TRDS assemblies, on which the adapters are only adhesively bonded to the shaft. Bell introduced riveted TRDSs during production starting in 1999. Subsequently, Bell issued Technical Bulletins (TBs) 206L-02-207 and 206-06-186 to provide instructions for replacing the bonded TRDS with the riveted TRDS configuration in-service. For the purposes of this AD, an affected TRDS is a bonded TRDS. Because the bonded and the riveted TRDSs are interchangeable and also because the TBs that retrofit the riveted TRDS to in-service helicopters are optional, this AD contains a corrective action to determine if the helicopter contains a bonded TRDS.

Bell investigated the occurrence of the failure and concluded that the existing inspections of the bonded TRDSs may not be effective at detecting degradation of the adhesive bond. This condition, if not detected and corrected, could result in loss of tail rotor drive and consequent loss of control of the helicopter.

To mitigate the risk of failure, Bell issued Alert Service Bulletins (ASBs) 206-20-139 (for 206A, 206A-1, 206B and 206B-1 helicopters) and 206L-20-184 (for 206L, 206L-1, 206L-3, and 206L-4 helicopters) providing instructions for repetitive detailed inspections and proof load tests of the tail rotor drive system of helicopters with affected TRDSs installed. This AD mandates compliance with the above-mentioned ASBs.

This AD differs from the Bell ASBs by targeting the repetitive corrective actions at the affected TRDS assemblies rather than the helicopters that may have these TRDS assemblies installed.

Corrective Actions:

For the purpose of this AD, the following definitions apply:

The applicable ASB: ASB 206-20-139, Revision A, dated 21 August 2020, for 206A, 206A-1, 206B and 206B-1 helicopters or ASB 206L-20-184, Revision C, dated 14 January 2021, for 206L, 206L-1, 206L-3, and 206L-4 helicopters, as applicable, or later revisions of these ASBs approved by the Chief, Continuing Airworthiness, Transport Canada.

Affected TRDS: A TRDS with a part number that is not one of the riveted TRDS part numbers listed in the accomplishment instructions of the applicable ASB.

Serviceable part: A riveted TRDS with a part number that is listed in the accomplishment instructions of the applicable ASB, or an affected TRDS that has been inspected and proof load tested in accordance with this AD within the past 300 hours air time and within the last 12 months and found to be acceptable.

- A. Within 75 hours air time or 3 months, whichever occurs first, from the effective date of this AD, determine if the helicopter has an affected TRDS installed.
- B. For helicopters with an affected TRDS installed, before further flight after Corrective Action A has been completed, and thereafter at intervals not to exceed 300 hours air time or 12 months, whichever occurs first, perform a detailed inspection of the bond line on the inboard end of the flange of all the affected TRDSs and a proof load test of the TRDS assemblies in accordance with the accomplishment instructions of the applicable ASB.
- C. If the bond line of any affected TRDS shows damage during the detailed inspection, replace the TRDS with a serviceable part before carrying out the proof load test. If the TRDS assemblies failed the proof load test, replace any damaged TRDS with a serviceable part and repeat the proof load test before further flight.
- D. From the effective date of this AD, only a serviceable part is eligible for installation as a replacement part for a TRDS.

Note: A helicopter that currently has no affected TRDS installed will need to comply with the repetitive inspection and proof load test requirements of Corrective Action B when a serviceable part which is an affected TRDS is subsequently installed.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Zack Teclamarium
Acting Chief, Continuing Airworthiness
Issued on 15 June 2022

Contact:

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