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No. CF-88-07R2

AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to Canadian Aviation Regulation (CAR) 593. Pursuant to CAR 605.84 and the further details of CAR Standard 625, Appendix H, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with CAR 605.84 and the above- referenced Standard.

This AD has been issued by the Continuing Airworthiness Division (AARDG), Aircraft Certification Branch, Transport Canada, Ottawa, telephone (613) 952-4357.

CF-88-07R2 MESSERSCHMITT-BOLKOW-BLOHM

Applies to all models of the BK 117 and BO 105 equipped with main rotor blade rotating control rod-ends, P/N 105-13141.01 and 105-13142.01.

Compliance is required as indicated unless already accomplished.

Fatigue cracks have been found in the main rotor pitch link rod-ends. Loss of control of the helicopter could occur if a rod-end failed.

To detect and prevent fatigue cracks in the threads of the main rotor pitch link rod-ends, accomplish the following:

A) Before the first flight of each day after the effective date of this Directive, check the main rotor control rods for binding of the spherical bearings as follows:

- 1) Check the bearings on each control rod for smooth operation by rotating the rod about its longitudinal axis by hand.
- 2) If the control rod is found to be binding, inspect and rework control rods containing a binding bearing in accordance with paragraphs (B)(1) through (B)(7) of this Directive before further use.

B) Within the next 50 hours air time, after the effective date of this AD, if not already accomplished in accordance with Alert Service Bulletin BK 117-10-103 dated 9 November 1987, BO 105LS-10-103 dated 28 October 1987, or BO 105-10-103 dated 28 October 1987, conduct the following main rotor control rod inspection for cracks and for correct spherical bearing torque:

- 1) Remove the control rods from the helicopter.
- 2) Remove the rod-ends from the control rods.
- 3) Measure the force required to rotate the inner race of the rod-end bearings in the circumferential direction around a bolt centerline (ref. Figure 1).
- 4) If the bearing torque (FORCE X MOMENT ARM) required to rotate the bearing inner race is more than 1.5 N-m (13.3 in-lb), accomplish either of the following:
 - (i) Replace the affected bearing and repeat the step in paragraph (B)(3); MBB has recommended that staking tools P/N 105-13141 W4 be returned to MBB Department LV52 for modification. The modified staking tool is re-identified to the new part number 105-13141 W5; or
 - (ii) Reduce the bearing friction by installing a bolt through the bearing inner race and tighten with a nut. Then, using a drill, spin the bearing at 60 to 100 RPM for 1- or 2-minute periods until friction torque is reduced to 1.5 N-m (13.3 in-lb) or below. Monitor temperature constantly to avoid overheating. (Bearing axial and radial play is not allowed.)
- 5) Inspect the rod-end threads as follows:
 - (i) Wrap the spherical bearing and rod-end head in suitable adhesive tape to prevent cleaning solvent and

NDT inspection liquids from entering the bearing (ref. Figure 2).

- (ii) Remove residual sealing compound, grease, and dirt from the threaded area of the rod ends.
 - (iii) Visually inspect the threaded area of the rod-ends for corrosion.
 - (iv) Inspect the threaded area of the rod-ends for cracks by fluorescent magnetic particle or fluorescent dye penetrant inspection methods. The inspection must be performed by a person certified to Level II of CGSB Standard 48-GP-8M or 48-GP-9M where applicable.
- 6) Replace cracked or corroded rod-ends with serviceable parts before further flight.

NOTE: Operators are to submit rod-ends removed as a result of this AD to MBB, Department LV52, together with the helicopter serial number, flight hours, and service time, if known.

- 7) Install serviceable main rotor control rods in accordance with the applicable maintenance manual instructions.

NOTE: ASB No. BK 117-10-103 dated 9 November 1987, ASB No. BO 105LS-10-103 dated 28 October 1987, and ASB No. BO 105-10-103 dated 28 October 1987 pertain to this inspection and rework.

- C) Repeat the inspections of paragraphs (B)(3) through (B)(6) after each rod-endbearing replacement.
- D) Any pitch links found to be cracked should be reported to Transport Canada in accordance with Airworthiness Manual (AWM) Chapter 591. Provide aircraft serial numbers, total air time, time since the last pitch link rework, if any, and cross refer to this Directive.

Alternative means of compliance with this directive may be used only if approved by the Director, Airworthiness Branch, Transport Canada, Ottawa.

This revision supersedes Airworthiness Directive CF-88-07R1 issued 22 November 1988.

This directive retains the original effectivity date of 16 May 1988.

