

# EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

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**DATE: November 28, 2003**  
**AD #: 2003-24-51**

Send to all U.S. owners and operators of Robinson Helicopter Company (RHC) Model R44 and R44 II helicopters.

This Emergency Airworthiness Directive (AD) is prompted by a report of the failure of the bolt that secures parts of the main rotor swashplate and attaches the tail rotor blade. An examination revealed that the bolt failed due to hydrogen embrittlement. Hydrogen embrittlement is suspected to have occurred during the cadmium plating process of an entire batch of bolts, which makes the batch suspect. This condition, if not corrected, could result in failure of the bolt that secures parts of the main rotor swashplate and attaches the tail rotor blade, and subsequent loss of control of the helicopter.

The FAA has reviewed RHC Service Bulletin No. SB-51, dated November 24, 2003, that describes a daily preflight inspection and replacement of bolt, part number (P/N) NAS6605-31.

This unsafe condition is likely to exist or develop on other helicopters of the same type design. Therefore, this AD requires, the following:

- Determining if maintenance has been performed on certain areas of the helicopter, determining if any bolt, P/N NAS6605-31, has been replaced, determining if the bolt vendor identification is 01DO, and determining the helicopter serial number.
- Visually inspecting and replacing if necessary, any unairworthy bolt before further flight and before the first flight each day of operation.
- Replacing certain bolts within 10 hours time-in-service or by December 31, 2003, whichever occurs first.

The AD also makes any bolt, P/N NAS6605-31, with vendor identification marking 01DO on the bolt head, ineligible for installation on any helicopter.

This rule is issued under 49 U.S.C. Section 44701 pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this emergency AD.

**2003-24-51 ROBINSON HELICOPTER COMPANY: Docket No. 2003-SW-48-AD.**

Applicability: Model R44 and R44 II helicopters, certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

To prevent failure of the bolt that secures parts of the main rotor swashplate and attaches the tail rotor blade, and subsequent loss of control of the helicopter, accomplish the following:

(a) Before further flight, for all R44 and R44 II helicopters except those serial numbers (S/N) specified in paragraph (c) of this AD:

(1) Determine if maintenance has been performed after February 7, 2003 on the areas specified in Figure 1 of this AD, and determine if any bolt, part number (P/N) NAS6605-31, shown in Figure 1 has been replaced for any reason.

(2) If any bolt has been replaced, or if it is uncertain whether any bolt has been replaced after February 7, 2003, remove the paint from the bolt head to reveal the vendor identification marking. Determine if the bolt vendor identification is 01DO.

(b) If the bolt vendor identification is 01DO in step (a)(2) of this AD, comply with paragraphs (d) and (e) of this AD.

(c) The following R44 and R44 II helicopters must comply with paragraphs (d) and (e) of this AD:

(1) Model R44 helicopters, S/N 0210, 0565, 0641, 0987, and 1312 through 1349, except 1345 and 1346, and

(2) Model R44 II helicopters, S/N 10010, 10062, and 10083 through 10212, except 10092, 10173, 10204, 10207, 10210, and 10211.

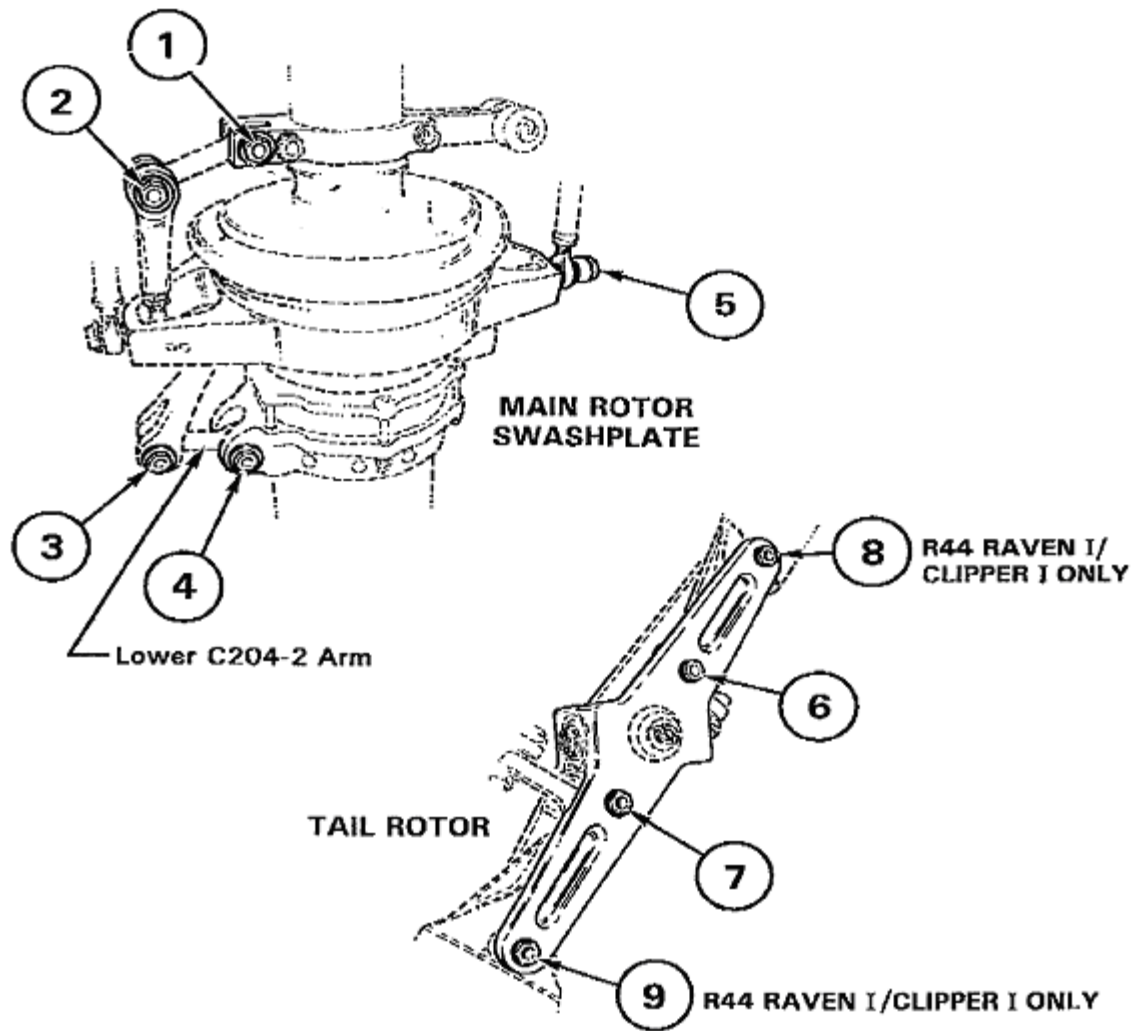
(d) For the helicopters specified in paragraphs (b) and (c) of this AD, before further flight, and before first flight each day of operation, do the following:

(1) Visually inspect each bolt for fretting residue under the bolt head, which indicates a loose, potentially cracked bolt.

(2) Apply 10-15 ft-lb (13-20 Nm) torque to each bolt head and verify no rotation. See Figure 1 of this AD.

(3) If residue or rotation of the bolt is found, before further flight, replace each unairworthy bolt with an airworthy bolt that does not have a vendor identification marking of 01DO.

Note 1: Robinson Helicopter Company Service Bulletin SB-51, dated November 24, 2003, pertains to the subject of this AD.



Suspect NAS6605-31 Bolts

9 Place on R44

7 Places on R44 II

Figure 1

(e) For the helicopters specified in paragraphs (b) and (c) of this AD, within 10 hours time-in-service or by December 31, 2003, whichever occurs first, replace each bolt, P/N NAS6605-31, that has vendor identification marking 01DO on the bolt head, with an airworthy bolt, P/N NAS6605-31, that has an alternate vendor identification marking.

(f) Bolt, P/N NAS6605-31, with vendor identification marking 01DO on the bolt head, is NOT ELIGIBLE for installation on any helicopter.

(g) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Contact the Los Angeles Aircraft Certification Office, FAA, for information about previously approved alternative methods of compliance.

(h) **Emergency AD 2003-24-51, issued November 28, 2003, becomes effective upon receipt.**

FOR FURTHER INFORMATION CONTACT: Fred Guerin, Aviation Safety Engineer, FAA, Los Angeles Aircraft Certification Office, Airframe Branch, 3960 Paramount Blvd., Lakewood, California 90712, telephone (562) 627-5232, fax (562) 627-5210.

Issued in Fort Worth, Texas, on November 28, 2003.

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Acting Manager, Rotorcraft Directorate,  
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