



HN-197.2*
DN-130.2*
EN-19.2*
FN-17.1*

SERVICE BULLETIN

DATE: 23 MARCH 1987
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* Supersedes Service Information Notices HN-197.1, DN-150.1, EN-19.1 and FN-17 dated 15 April 1986.

INSPECTION OF TAIL ROTOR BLADE LEADING EDGE ABRASION STRIP BONDING.

1. PLANNING INFORMATION

A. MODELS AFFECTED:

PART I and PART II - All MD Helicopters, Inc. 369 Series helicopters including the 369A (OH-6A) which have the following tail rotor blades installed 369D21606, 369D21613-11, -41, -51, 369D21615, 369A1613-7, 369A1613-503 and 421-088.

B. PREFACE:

PART I of this Notice describes procedures for a dye penetrant and tap test inspection of all tail rotor blades for evidence of abrasion strip to blade bond separation. This procedure may also be used to confirm suspected abrasion strip separation while performing PART II of this Notice.

PART II describes a visual pilot preflight check of the tail rotor blade leading edge abrasion strip for evidence of possible separation between epoxy bond and abrasion strip, particularly along the abrasion strip to blade bond line at the blade tip. It is to be noted that a closer check with a 10X magnifying shall be performed if any evidence of bond separation is suspected.

C. TIME OF COMPLIANCE:

PART I of this Notice shall be accomplished on all helicopters within the next 100 hours of helicopter operation or three months, whichever comes first. PART I shall be accomplished on all tail rotor blades and tail rotor assemblies in spares inventory prior to installation on any helicopter. PART II shall be accomplished at each preflight check (Pilot's walkaround check).

D. FAA APPROVAL:

The resultant alteration to the affected models described by the one-time inspection and preflight procedures in this Notice has been shown to comply with Federal Aviation Regulations and is FAA Approved.

E. WEIGHT AND BALANCE:

Weight and balance not affected

F. REFERENCE:

369D HMI Vol. I (CSP-D-2) Revised 15 June 1985
369F HMI Vol. I (CSP-P-2) Revised 15 April 1986
369H HMI Basic (CSP-H-2) Revised 15 June 1985
Applicable FAA Approved Pilot's Flight Manual

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G. MATERIALS:

MATERIALS	
Nomenclature	Source
Masking Tape	Commercial
Abrasive paper, silicon carbide (220 grit)	Commercial
Dye Penetrant Kit (Visible dye, Solvent removable)	Commercial

H. TOOLS AND EQUIPMENT:

TOOLS AND EQUIPMENT	
Nomenclature	Source
Magnifying glass (5X and 10X)	Commercial
Drill bit, 1/8 inch	Commercial

PART I - Dye Penetrant and Tap Test Inspection

A. Using a standard 1/8 inch drill bit and a pencil, fabricate a tapping hammer by taping drill bit to pencil as shown in Figure 1. Drill bit should be minimum of six inches from end of pencil that is to be held while tapping.

B. Using the fabricated tapping hammer, tap test the entire abrasion strip. Hold end of pencil opposite drill bit and tap with shank (rounded) end of drill bit. If void indications are noted, remove blade from service.

NOTE: Voids are indicated by a dull, dead tone. Slight tone changes will occur near the tip cap and along the length of the strip. These should not be mistaken for voids.

C. Mask area of blade around abrasion strip with masking tape.

CAUTION Do not use chemical paint remover to remove paint from abrasion strip. Chemicals can attack the abrasion strip to blade bonding agent.

D. Using 220 grit abrasive paper, sand dry, removing all paint from abrasion strip. Ensure abrasion to airfoil bondline is exposed. Clean paint dust from blade.

NOTE: Do not remove masking tape from blade until completion of dye penetrant inspection.

E. Visually check abrasion strip to blade bonding using a 10X magnifying glass. If bond failure is obvious, remove blade from service.

F. Dye penetrant inspect, according to manufacturer's instructions and this Notice, entire abrasion strip to blade bond line, including abrasion strip bond in blade tip cap area. Apply penetrant using a small brush or swab to prevent damage to blade paint, and to minimize clean-up. Allow penetrant to remain on surface of abrasion strip bondline for five minutes minimum. Use dry lint free cloth or paper towel to remove excess penetrant. Apply remover to cloth or lint free towel to remove remaining surface penetrant. Never spray or flush area of inspection with cleaner. Ensure thorough penetrant removal from surface before applying developer.

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G. Apply a light film of developer on the area of examination.

H. Using a 5X magnifying glass, examine bond line to determine if penetrant dye is indicating a bond separation (refer to NOTE which follows). If any bond separation is noted, remove blade from service.

NOTE: The epoxy adhesive used to bond abrasion strip to blade may have porosity voids. The penetrant will form a circular pattern around voids resulting from porosity. These circular patterns do not indicate bond failure. Bond failure is indicated by penetrant bleedout from under the abrasion strip, and will appear as a line along the edge of the strip. The 5X magnifying glass will aid distinguishing between porosity voids and bleedout from under the abrasion strip. It may be necessary to wipe off then reapply the developer to distinguish between porosity voids and bond separations. The most positive indication of bond failure will normally appear during the first one to seven minutes following developer application.

I. Remove masking tape from blade.

J. Inspect blade for cleanliness and paint damage. Clean and repair paint damage as necessary (Section 2, HMI Vol. I and Basic HMI).

NOTE: Do not repaint abrasion strip or abrasion strip to bond line.

K Check tail rotor balance (Section 8, HMI Vol. I and Basic HMI).

L. Record compliance with Part I of this Notice in Compliance Record section of the helicopter Log Book.

M. If blade is removed from service because of separation or voids, notify an Approved MDHC Service Center or Distributor for disposition. Those blades in which voids are found shall be sent to an Approved repair station for abrasion strip replacement.

PART II - Pilot's Preflight Check Procedure

A. Visually check each tail rotor blade abrasion strip for any evidence of bond failure along the abrasion strip/airfoil bond line. (See Figure 1.)

NOTE: Step B is to be performed only if evidence separation along the abrasion strip/airfoil bond line is suspected.

B. Using a 10X magnifying glass, closely check along abrasion strip/airfoil bond line and at blade tip for any separation between epoxy adhesive and abrasion strip. Any separation between bonding adhesive and abrasion strip is cause for removal of blade from service. (See Figure 1.) If separation is suspected, but not confirmed, inspect per PART I of this Notice.

NOTE: The epoxy adhesive used to bond the abrasion strip to the blade may have porosity voids. Small porosity voids should not be mistaken for separation.

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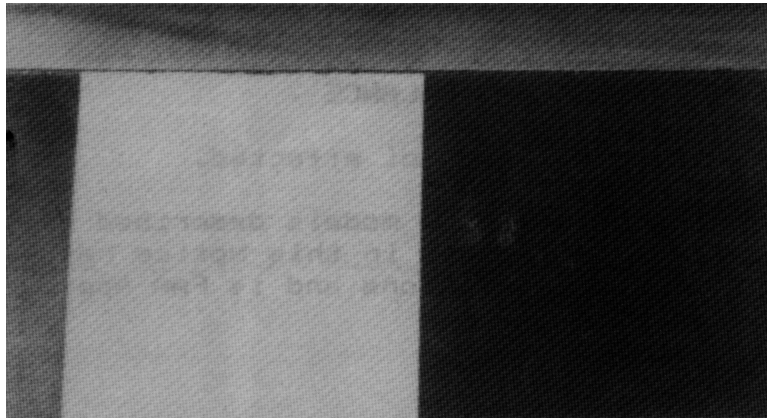
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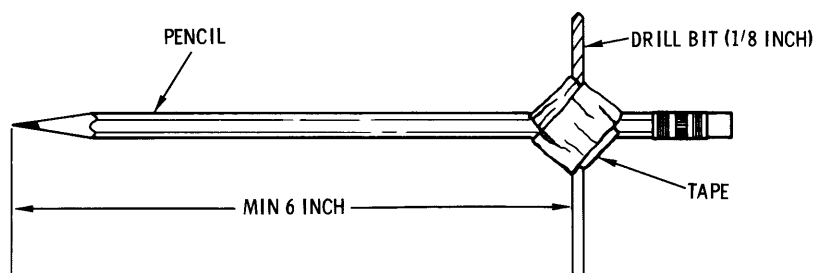
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SHOWN ABOVE: UNBONDING OF EPOXY ADHESIVE AND ABRASION STRIP WITH SEPARATION BETWEEN ABRASION STRIP AND AIRFOIL SURFACE, BLADE UNACCEPTABLE FOR SERVICE.

SHOWN RIGHT: UNBONDED AND DISPLACED ABRASION STRIP AT BLADE TIP; SEPARATION BETWEEN ABRASION STRIP/AIRFOIL SURFACE ALONG BOND LINE, BLADE UNACCEPTABLE FOR SERVICE.



TAPPING TOOL FOR FABICATION

88-570-2A

Figure 1. Inspection of Tail Rotor Blade Abrasion Strip.

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