



SERVICE BULLETIN

DATE: 2 SEPTEMBER 1980

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* Supersedes Service Information Notice No. HN- 131, dated

REPLACEMENT OF PN 369A1602 TAIL ROTOR DRIVE FORK HINGE BOLT AND PN 369A1603 NUT; NEW ASSEMBLY PROCEDURE FOR TAIL ROTOR HUB AND DRIVE FORK UNIT; PERIODIC CHECK OF FLAPPING HINGE BOLT PRELOAD

1. PLANNING INFORMATION

A. Models Affected:

PART I:

All 500 Model 369H, 369HS, 369HM and 369HE Helicopters.

All Spares Tail Rotor Assemblies received from Hughes Helicopters prior to 15 February 1979.

All Installed Tail Rotor Hub and Drive Fork Units Field Overhauled/Assembled per below referenced HMI Appendix C Component Overhaul Manual.

PART II:

All 500 Model 369H, 369HS, 369HM and 369HE Helicopters.

B. Time of Compliance:

Part I - Shall be accomplished within next 100 hours of helicopter operation after receipt of parts, or prior to installation of above affected Spares tail rotor assembly on helicopter.

Part II - Shall be accomplished at first 25 hours of operation following installation of PN 369A1602 tail rotor drive fork hinge bolt, and at each subsequent Annual or 300-Hour Inspection Period.

C. Preface:

Part I of this Service Information Notice lists a procedure for a one-time replacement of the subject PN 369A1602 tail rotor drive fork hinge bolt, to remove from service all hinge bolts previously subjected to the 170 to 210 inch-pounds torque specified in the HMI Appendix C Component Overhaul Manual. A new procedure utilizing a bolt elongation method for

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torquing (140 to 160 inch-pounds) the hinge bolt nut is provided for assembling and shimming the hub and drive fork unit. This new procedure supersedes existing reassembly instructions in the Appendix C, and will be incorporated in the next scheduled revision to the below referenced handbooks.

Replacement of the PN 369A1603 nut is also required, if not already accomplished, with a new PN VCU0001 or 79325-428 nut made of an improved material to resist stress corrosion. It is to be noted that there is little or no visual difference between the PN 369A1603 nut and the replacement PN VCU0001 or 79325-428 nut. The PN 369A1603 nut, however, has magnetic properties; the replacement nut is non-magnetic. Prior to installation of replacement nut, check that nut is non-magnetic. The replacement PN 369A1602 bolt (and the PN VCU0001 or 79325-428 nut if required) will be provided by Hughes Helicopters. Contact your authorized Service Center or Distributor.

Part II of this Notice provides instructions for a periodic inspection of the flapping hinge bolt to ensure that the bolt is fully seated and proper preload is maintained.

D. Reference:

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500 Series - Basic HMI, Issued 1 October 1972; Revision No. 7, 15 December 1976.

500 Series - HMI Appendix B, Issued 1 October 1972; Revision No. 6, 1 August 1976.

500 Series - HMI Appendix C, Issued 1 April 1976; Revision No. 1, 1 August 1976.

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2. ACCOMPLISHMENT INSTRUCTIONS

REPLACEMENT PARTS/SUPPLIES			
Nomenclature	Part No.	Qty.	Source
** Bolt – tail rotor drive fork hinge	369A1602	1	HH
†** Nut	VCU0001 or 79325 –428	1	HH
Pin, cotter	MS24665–153	1	Commercial
Washer, tang	HS1551S290	1	HH

** Provided by HH

† Not required if presently installed

TOOLS AND EQUIPMENT	
Nomenclature	Source
Torque Wrench – 0 to 500 pounds	Commercial
Bushing Wrench Set, PN 369A1600–80902	HH
Pin, Alignment: 1/4–inch drill rod – 0. 2485/ 0.2495 inch diameter x 1.75 inches long, with one end chamfered or rounded off.	Field Fabricate

A. Part I - Replacement of Tail Rotor Drive Fork Nut and Bolt



- Do not remove hub-to-drive fork hinge bolt to remove tail rotor assembly. Damage to strap pack may occur.
- Whenever blades are assembled on the tail rotor hub and drive fork assembly and the unit is handled, do not allow blade pitch to exceed 30 degrees from neutral pitch position (this is equal to movement of blade pitch arm approximately one inch in either direction). Unrestricted rotation of blades on the hub can excessively bend or stretch the internal tension-torsion strap assembly and an out-of-balance condition for the tail rotor.

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- (1). As applicable, remove tail rotor assembly from helicopter. Refer to Basic HMI.

NOTE: If conical type teeter bearings are installed, each PN 369A1726 bearing inner race can fall free after removal of attaching hardware and fork bolt. Immediately remove and identify inner races to prevent damage and ensure proper reinstallation. Replace bearing inner race if worn, frayed or excessively loose.

- (2). Disassemble tail rotor drive fork and hub assembly. (Refer to Appendix C.)
 - (3). Discard existing PN 369A1602 flapping hinge bolt.
 - (4). Check existing nut for flapping hinge bolt for magnetic properties.
 - (a). Discard nut if magnetic. PN 369A1603 nut is magnetic and is NOT to be used.
 - (b). Retain nut if NON-magnetic. PN VCU0001 or 79325-428 nut is non-magnetic and may be reinstalled at reassembly of hub and drive fork unit.
 - (5). If drive fork has spherical bearings, perform the following:
 - (a). Reassemble hub and drive fork unit per HMI Appendix C, using new PN 369A1602 fork bolt. Install existing washer(s) and VCU0001 or 79325-428 nut on fork bolt.
 - (b). Measure length of bolt with zero torque applied. Torque nut to elongate bolt 0.008 to 0.011 inch and install cotter pin.
- OR
- Torque nut to 140 to 160 inch-pounds and install cotter pin.

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Overtorquing the nut can elongate the fork bolt 0.011 inch or more and requires replacement of bolt. Bolt elongation method of torquing nut is preferred.

(6). If drive fork has conical bearings, reassemble hub and drive fork assembly as follows:

- (a). Determine that fork conical bearings are serviceable and bearing outer races are installed in fork.
- (b). Determine spacing thickness for centering the hub in the fork as follows (see example in Figure 1):
 - 1). Temporarily install bearing inner races of fork.

NOTE: Inboard ends of inner races must extend a minimum of 0.002 inch inboard from inner faces of outer races at the inner surfaces of the fork.

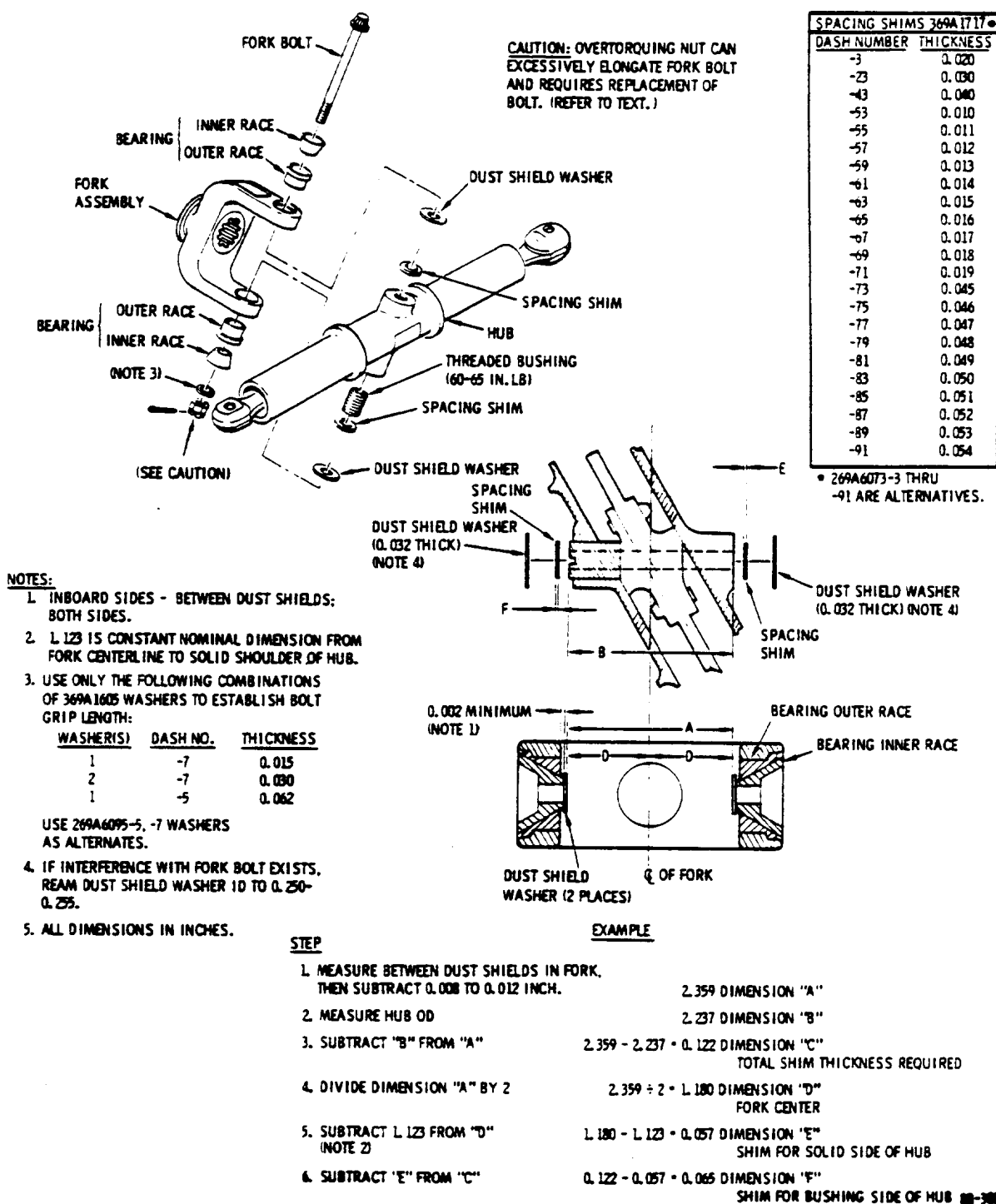
- 2). Temporarily insert new PN 369A1602 fork bolt through fork bearings and dust shields; install VCU0001 or 79325-428 nut. Snug nut only enough to remove all looseness.
- 3). Press dust shields firmly against bearing inner races. Measure distance between dust shields, then subtract 0.008 to 0.012 inch. Record this as dimension "A".
- 4). Measure and record distance from solid shoulder of hub to opposite side (outer face of threaded bushing). Label this dimension "B".
- 5). Subtract dimension "B" from dimension "A" to determine total required shim thickness (dimension "C").
- 6). Divide dimension "A" by 2; label this dimension "D".
- 7). Subtract 1.123 inches from dimension "D" to determine shim thickness for solid state of hub (dimension "E").

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Figure 1. Assembly and Shimming - Fork Conical Type Bearings

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- 8). Subtract dimension "E" from dimension "C" to determine shim thickness for bushing side of hub (dimension "F").
 - 9). Remove nut and fork bolt, while following bolt through fork with chamfered end of alignment pin.
- (c). Reassemble hub and drive fork assembly as follows:
- 1). With the respective bearing inner race installed, start new PN 369A1602 fork bolt through the bearings. Place spacing shims of correct combined thickness with dust shield washer at solid side of hub as shown in Figure 1. Position hub in fork; then slowly displace the alignment pin by pushing the bolt through fork and hub until bolt is flush with face of bushing. Light tapping with a soft mallet may be required.
 - 2). Align spacing shims of correct combined thickness with dust shield washer. Maintain alignment and slide shim back in place at opposite side of hub.
 - 3). When shims are in position with hub and installed bearings in line, push bolt through and seat the bolt head.

NOTE: Prior to installation of VCU0001 or 79325-428 nut, check that nut is NON-magnetic. PN 369A1603 nut is magnetic and is NOT to be used.

- 4). Install washer(s) and VCU0001 or 79325-428 nut on bolt. Use washer combinations shown in Figure 1 to establish bolt grip length and cotter pin hole alignment.
- 5). Measure length of fork bolt with zero torque applied. Torque nut to elongate bolt 0.008 to 0.011 inch and install cotter pin. If bolt is inadvertently elongated over 0.011 inch, discard bolt and install new one.

OR

Torque bolt to 140 to 160 inch-pounds and install cotter pin.

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Overtorquing the nut can elongate bolt over 0.011 inch or more and requires replacement of bolt. Bolt elongation method of torquing nut is preferred.

- 6). Pivot hub and fork throughout full range. There should be no axial play between hub and fork bearings, or bearing roughness when hub is pivoted from one extreme to the other. If axial play exists, refer to HMI Appendix C.
- (7). As applicable, reinstall tail rotor assembly on helicopter per Basic HMI.
- (8). Record installation of new PN 369A1602 flapping hinge bolt (and PN VCU0001 or 79325-428 nut if required) per Part I of this Notice in Compliance Record of helicopter Log Book.
- (9). Record reassembly (and shimming as required) of hub and fork unit in compliance with Part I of this Notice in Compliance Record of helicopter Log Book.

NOTE: Perform PART II of this Notice at the following intervals:

- At first 25 hours of helicopter operation following installation of PN 369A1602 flapping hinge bolt.
- At each Annual or 300-Hour Inspection Interval.

B. Part II - Inspection of Flapping Hinge Bolt Preload

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- (1). Using torque wrench, apply 125 inch-pounds torque to PN VCU0001 or 79325-428 nut.

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NOTE:

- If 125 inch-pounds torque does not rotate nut on bolt, preload is correct.
- If 125 inch-pounds torque rotates nut on bolt, retorque per step 5). of Part I (page 7).
- Overtorquing the nut can excessively elongate bolt and require replacement of bolt. Bolt elongation method of torquing nut is preferred.

(2). Record compliance with Part II of this Notice in Compliance Record of helicopter Log Book.

3. WEIGHT AND BALANCE

Weight and balance not affected.

4. FAA APPROVAL

FAA/DER APPROVED 20 AUGUST 1980

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REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing inspection or maintenance of tail rotor hub and fork assembly, refer to Service Information Notice No. HN- 131.1.

HMI Reference: Insert this sheet in 500 Series - HMI Appendix B, Section 2, Table B-2, Periodic Inspections, Page 2-10.

This reference sheet shall be kept as a part of the manual until the data is incorporated at the next revision of HMI Appendix B. (See Service Information Summary, HMI Appendix B, page i.)

REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing maintenance or replacement of rotor assembly, refer to Notice No. HN-131.1.

HMI Reference: Insert this sheet in 500 Series Basic HMI, Section 8, Page 8-6.

This reference sheet shall be kept as a part of the manual until the data is incorporated at the next revision of the Basic HMI. (See Service Information Summary, Basic HMI, page i.)

REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing maintenance or assembly of tail rotor hub and fork assembly, refer to Service Information Notice No. HN- 131.1.

Reference: Insert this sheet in 500 Series - HMI, Appendix C, Part VIII, Section 1, Page 1-1.

This reference sheet shall be kept as a part of the manual until the data is incorporated at the next revision to 500 Series - HMI Appendix C. (See Service Information Summary, HMI Appendix C, Part VIII, page i.)

REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing inspection or maintenance of tail rotor hub and drive fork assembly, refer to Service Information Notice No. HN- 131.1.

HMI Reference: Insert this sheet in 500 Series HMI Appendix B, Section 2, Table B-3 Special Inspections, Page 2-18.

This reference sheet shall be kept as a part of the manual until the data is incorporated at the next revision of HMI Appendix B. (See Service Information Summary, HMI Appendix B, page i.)