

## DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

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# ONE TIME REFURBISHMENT OF MAIN ROTOR SPINDLE, AND REPLACEMENT OF CERTAIN MAIN ROTOR THRUST BEARINGS FOR ALL UH-60 AIRCRAFT

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Headquarters, Department of the Army, Washington, D. C.  
24 March 1997

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### NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

#### 1. Priority Classification. Routine

a. Aircraft in Use. Upon receipt of this Technical Bulletin (TB) the condition status symbol of the cited aircraft will be changed to a **red horizontal dash "-"**. The **red horizontal dash "-"** may be cleared when the inspection of paragraph 8 below is completed. Failure to comply with the requirements of this TB within the time frame will cause the status symbol to be upgraded to a red "X".

b. Aircraft in Depot Maintenance. Same as paragraph 1a.

c. Aircraft Undergoing Maintenance. Same as paragraph 1a.

d. Aircraft in Transit.

(1) Surface/Air Shipment. Same as paragraph 1a.

(2) Ferry Status. Same as paragraph 1a.

e. Maintenance Trainers (Category A, B, and C). Same as paragraph 1a.

f. Component/Parts in Stock Including War Reserves at All Levels (Depot and Others).

(1) For main rotor spindles. N/A.

(2) Upon receipt of this TB all items listed in paragraph 7 below shall be placed in condition code "J" and retagged with a material condition tag/label - suspended (brown tag) DD Form 1575 or label DD Form 1575-1. The remarks block must reference inspection required per this TB. Upon completion of this required inspection, item will be retagged either serviceable (yellow tag) DD Form 1574 or unserviceable/repairable (green tag) DD Form 1577-2 dependent upon the results.

\*This TB supersedes TB 1-1520-237-20-151, dated 16 August 1996.

**NOTE**

Depots that do not have the capability to inspect the subject assemblies in accordance with this TB, contact the logistical point of contact. Do not issue until this TB has been complied with.

**2. Task/Inspection Suspense Date.** Within 10 hours/14 days from receipt of superseded message or receipt of this TB, whichever is received first (if not previously complied with).

**3. Reporting Compliance Suspense Date.** Report compliance to Commander, ATCOM, ATTN: AMSAT-C-XS no later than 3 February 1994 per paragraph 14a of this TB (if not previously complied with).

**4. Summary of the Problem.**

a. During overhaul, some main rotor spindles have been found with localized debonding of the spindle liner. To correct this problem a new bonding procedure has been developed which must be incorporated on all previously produced spindle assemblies.

b. Sikorsky Aircraft has identified a potential problem with delamination of some Chicago Rawhide elastomeric thrust bearings. This delamination can potentially allow metal to metal contact between the spindle assembly and the bearing shims.

c. For manpower/downtime and funding impacts, see paragraph 12.

d. The purpose of this TB is to:

(1) Identify spindle assemblies which may require future removal/rework.

(2) Provide instructions/procedures to:

(a) At the next PMS-2 inspection, replace all Part Number (P/A) SB7002-046, P/N (B40-80-9597), Serial Number (S/N) C325-00001 through S/N C325-02408 Chicago Rawhide thrust bearings with P/N SB7002-048 (LB5-1034-1-3 Lord Corporation) or Chicago Rawhide P/N (840-80-9601) S/N C325-02409 and subsequent thrust bearings.

(b) Issue new thrust bearings directly to each MACOM/installation for distribution at no cost to the user/government.

(c) Eliminate the recurring 30 hour special inspection required of thrust bearings after above suspect bearings are replaced.

**5. End Items to be Inspected.** All H-60 Army aircraft

**6. Assembly Components to be Inspected**

<b>NOMENCLATURE</b>	<b>PART NUMBER</b>	<b>NATIONAL STOCK NUMBER</b>
Main Rotor Spndl Assy	70102-08200-041	NNSN
Main Rotor Spndl Assy	70102-08200-042	1615-01-209-1759
Main Rotor Spndl Assy	70102-08200-043	NNSN
Main Rotor Spndl Assy	70102-08200-044	1615-01-214-6602
Main Rotor Spndl Assy	70102-08200-053	NNSN
Main Rotor Spndl Assy	70102-08200-054	1615-01-372-9604
Main Rotor Spndl Assy w/ Tie Rod	70070-10030-041	NNSN
Main Rotor Spndl Assy w/ Tie Rod	70070-10030-042	1615-01-331-2480
Main Rotor Spndl Assy w/ Tie Rod	70070-10030-044	1615-01-353-4884
Main Rotor Spndl Assy w/ Tie Rod	70070-10030-045	NNSN

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Main Rotor Spndl Assy w/ Tie Rod	70070-10030-046	1615-01-249-4107
Main Rotor Spndl Assy w/ Tie Rod	70083-10001-045	NNSN
Main Rotor Spndl and Liner Assy	70070-10030-043	NNSN
Main Rotor Spndl and Liner Assy w/Tie Rod	70070-10030-047	NNSN

**7. Parts to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Spindle and Liner Assy	70102-08216-041	1615-01-233-1812
Bearing, Thrust, Elastomeric	SB7002-046	3110-01-087-4101
Bearing, Thrust, Elastomeric	SB7002-048	3110-01-158-9607
Bearing, Thrust, Elastomeric	840-80-9597 (S/N C-325-00001 -02408)	3110-01-220-7221
Bearing Assy, Spindle	70102-08100-044	1615-01-082-9250
Bearing Assy, Spindle	70102-08100-056	1615-01-116-4181

**8. Inspection Procedures.**

a. Spindle Assembly. Review aircraft records to determine which spindle assembly is installed. If P/N 70102-08200-055 or later spindle is installed, no further action is required. If any other spindle is installed, then perform corrective actions in paragraph 9a.

b. Elastomeric Thrust Bearing. Annotate aircraft record that inspection is due at the next PMS-2 inspection, to determine which elastomeric thrust bearing is installed. The inspection is to be conducted per paragraph 9b of this TB.

**9. Correction Procedures.**

a. At the next PMS-2 inspection, remove all identified part number (-054 and prior) spindle assemblies and return to depot for corrective action. Again, if P/N 70102-08200-055 or later spindle is installed, no further action is required for the spindle assembly. If a -054 or previous spindle is received from stock, it may be utilized until the next PMS-2 inspection. At that time it is to be removed and returned to depot for corrective action.

b. Repair/Replacement Procedures.

(1) Remove bearing assembly from aircraft and place on a suitable working surface. Visually inspect the thrust bearing to determine which part number is installed. If P/N B40-80-9597 S/N sequence C325-00001 through C325-02408 is found, thrust bearing must be replaced. If P/N LB5-1034-1-3 with S/N sequence B325-XXXXX or P/N 840-80-9601, S/N C325-02409 or higher is found, inspection is complete.

(2) The following disassembly/maintenance procedures will be followed when separating the thrust and spherical bearings after they have been removed from the aircraft and placed on a suitable working surface:

(a) Remove the 8 each MS 21083N4 nuts, the 8 each MS20002C4 washers and 8 each NAS 1304 9H/NAS 6604-8/NAS 6604-H7 bolts.

(b) Separate the bearings and discard the 1 each 70102-08119-101 shim and shim SS52C3000Z3237. if installed.

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(c) inspect aluminum end plates of the spherical bearing for corner and surface damage, corrosion, cracks, nicks, and scratches. No cracks allowed. Surface damage may be repaired/blended out using 400 grit abrasive cloth (P-C-451). Blend reworked area with crocus cloth (P-C-458). Polish to 0.001 to 0.002 inch below damage depth. Repair may not exceed 0.005 inch in depth and a minimum of one part depth required between multiple damages not to exceed 20 percent of total surface area. No blending is allowed around the 0.255 to 0.260 holes or in the spline area. Apply alodine (MIL-C-81706) to blended aluminum surfaces.

**CAUTION**

Alodine, MIL-C-81706, contains a chromium compound recognized as a potential carcinogen. Goggles, skin protection, and respiratory protection are mandatory. Extreme fire hazard if powder is allowed to contact organic materials such as sawdust, paper, or rags.

(d) Locate the index marks (0, three places, one each on the bearing mating flanges and the thrust bearing endplate) and align the elastomeric thrust and spherical bearings.

(e) Apply a thin, even coat of MIL-P-23377 or equivalent primer to bolts and washers. Install the MS20002C4 washers with the countersunk side of the washer facing the bolt head.

(f) Install replacement NAS1304-6 or NAS1954-6 with washers installed through the bolt holes while primer is wet with bolt heads facing the thrust bearing side. Install the AN960-416L washers and MS21083N4 nuts. Torque nuts to 45 inch-pounds.

(g) Apply MIL-S-8802 Class B2 sealant to edges of bolt heads and edges of nuts and allow to dry.

**10. Supply/Parts and Disposition.**

a. Parts Required. Items cited in paragraphs 6 and 7 may be required to replace defective items. The following items which may be required when bearing is disassembled should be requisitioned as required.

<b>NOMENCLATURE</b>	<b>PART NO</b>	<b>NSN</b>	<b>QTY</b>	<b>U I</b>	<b>COST</b>
Bolt, Shear	NAS1304-6	5306-00-722-1788	8	EA	0.26
	NAS1954-6	5306-01-308-9780	8	EA	0.26
Washer, Rec	MS20002C4	5310-00-596-1766	8	HD	2.56
Washer, Flt	AN960-416L	5310-00-167-0835	8	HD	0.59
Nut, Self LK	MS21083N4	5310-00-903-8282	8	EA	0.06

b. Requisitioning Instructions. All requirements for replacement bearings must be consolidated at the MACOM level for OCONUS units or DMMC/installation level for CONUS units. After consolidation, requests in the form of a memorandum, or message, shall be submitted, memorandum or message must include:

(1) Subject: Request for replacement main rotor elastomeric thrust bearings.

(2) The quantity required and whether or not the replacement bearings are for installation on aircraft or replacement stock.

(3) DODAAC.

(4) In-The-Clear shipping address.

(5) Point of contact and phone number

(6) S/N of cr bearings to be replaced.

Memorandums and messages will be datafaxed or mailed to the Logistical point of contact at the following telephone number or address:

Mailing Address  
Utility Helicopters PMO  
ATTN: SFAE-AV-BH-L (Mr. Hoover)  
4300 Goodfellow Blvd.  
St. Louis, MO 63120-1798  
Telephone - DSN 693-0484 or commercial (314) 263-0484  
Datafax - DSN 693-1898 or commercial (314) 263-1898

- c. Bulk and Consumable Materials. N/A.
- d. Disposition. Dispose of removed parts/components in accordance with normal supply procedures. A QDR is not required.
- e. Disposition of Hazardous Material. N/A.

**11. Special Tools, Jigs and Fixtures Required.** See paragraph 10a.

**12. Application.**

- a. Category of Maintenance. AVUM. Aircraft downtime will be charged to AVUM.
- b. Time Required. Total of 0.5 man-hours using 1 person.
- c. Estimated Cost Impact of Stock Fund Items to the Field. N/A.
- d. TB/MWOs to be Applied Prior to or Concurrently with this Inspection. N/A.
- e. Publications Which Require Change as a Result of This Inspection. TM 1-1520-237-23-3 shall be changed to reflect this TB. A copy of this TB shall be inserted in the appropriate TM as authority to implement the change until the printed change is received.

**13. References.**

- a. TM 1-1520-237-23-3, Aviation Unit and Intermediate Maintenance for UH-60A/L Helicopters, dated 31 August 1994, with C3 dated 31 May 1996.
- b. TM 1-1520-237-PMS-2, Preventive Maintenance Services Periodic inspection Checklist, dated 31 August 1994, with C2 dated 29 February 1996.

**14. Recording and Reporting Requirements.**

a. Reporting Compliance Suspense Date (Aircraft). Upon entering requirements of this TB on DA Form 2408-13-1 on all subject MDS aircraft, forward a priority message, datafax or E-Mail to Commander, ATCOM, ATTN: AMSAT-C-XS (SOF Compliance Officer), per AR 95-3. Datafax number is DSN 693-2064 or commercial (314) 263-2064. E-Mail address is "AMSATCXS@ST-LOUIS-EMH4.ARMY.MIL". The report will cite this TB number, date of entry in DA Form 2408-13-1) the aircraft mission design series and serial numbers of aircraft in numerical order.

b. The following forms are applicable and are to be completed in accordance with DA PAM 738-751, 15 June 1992:

- (1) DA Form 2408-13, Aircraft Status information Record.
- (2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
  - (a) Record the TB requirement.

(b) if any spindles must be replaced at the next PMS-2 inspection, make an entry stating which spindles are due replacement at the next PMS-2 inspection. Use a red dash status symbol. This entry may be reentered on the DA Form 2408-14 with the justification of awaiting PMS-2 inspection.

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(c) Make an entry stating that the thrust bearings must be inspected at the next PMS-2 inspection. Use a red dash status symbol. This entry may be reentered on the DA Form 2408-14 with the justification of awaiting PMS-2 inspection.

(3) DA Form 2408-13-2, Related Maintenance Actions Record.

(4) DA Form 2408-5-1, Equipment Modification Record Component (each spindle assembly).

(5) DA Form 2408-15, Historical Record for Aircraft. Make an entry when the thrust bearing inspection is completed stating that the thrust bearing inspection was completed per this TB.

(6) DA Form 2408-16, Aircraft Component Historical Record (Aircraft). Equipment Inspection List (after replacement of the SB7002-46 or SB7002-48 Chicago Rawhide thrust bearing, delete the 30 hour inspection requirement).

(a) Change the replacement due in block 6k for each spindle assembly (with a part number below 70102-08200-055) to the aircraft hours when the next PMS-2 inspection is due.

(b) Make the required entries when each spindle assembly is replaced. If the replacement spindle assembly has a part number below 70102-08200-055 follow the procedures in paragraphs 14.b(2)(b) and 14.b(6)(a).

(7) DA Form 2408-18, Equipment Inspection List (after replacement of the SB7002-46 or SB7002-48 Chicago Rawhide thrust bearing, delete the 30-hour inspection requirement).

(8) DA Form 2410, Component Removal and Repair/Overhaul Record (Normal Removal, Evacuation, Repair, and Installation Cycle) (when replacement of the spindle assembly is required).

(9) DD Form 1574 (Yellow Tag) for in stock items that are determined to be serviceable. (Mark inspected serviceable in accordance with this TB.)

(10) DD Form 1575 (Brown Tag) for in stock items in suspended status awaiting inspection. (Mark suspended in accordance with this TB.)

(11) DD Form 1577-2 (Green Tag) unserviceable (repairable) for in stock items that are determined to be repairable. (Mark unserviceable in accordance with this TB.)

**15. Weight and Balance.** N/A.

### **16. Points of Contact.**

a. Technical point of contact for this TB is Mr. Robert Rosansky, AMSAT-R-ECU, DSN 693-0434 or commercial (314)263-0434.

b. Logistical point of contact for this TB is Mr. Hoover, SFAE-AV-BH-L, DSN 693-0484 or commercial (314)263-0484. The datafax number is DSN 693-1898 or commercial (314)263-1898.

c. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAT-I-MDM, DSN 490-2318 or commercial (314)260-2318.

d. Safety point of contact for this TB is Mr. Jim Wilkins, AMSAT-R-X, DSN 693-2258 or commercial (314)263-2258.

e. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact Mr. Ron Van Rees or CW5 Jay Nance, AMSAT-D-S, DSN 693-7844/3216 or commercial (314)263-7844/3216. The datafax number is DSN 693-2917 or commercial (314)263-2917.

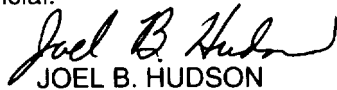
f. After hours contact ATCOM Command Operations Center (COC) DSN 693-2066/7 or commercial (314)263-2066/7.

17. Reporting of Errors and Recommending Improvements. You can help improve this TB. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you. You may also submit your recommended changes by E-mail directly to

<mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual.

By Order of the Secretary of the Army:

Official:



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Chief of Staff

**DISTRIBUTION:**

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The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@avma27.army.mil>  
To: <mpmt%avma28@st-louis-emh7.army.mil>

Subject: DA Form 2028

1. **From:** Joe Smith
2. Unit: home
3. **Address:** 4300 Park
4. **City;** Hometown
5. **St:** MO
6. **Zip:** 7777
7. **Date Sent:** 19-OCT-93
8. **Pub no:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName:** Joe
14. Submitter MName: T
15. **Submitter LName:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text:**

This is the text for the problem below line 27.