

URGENT

***TB 1-1520-240-20-83**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

**ONE TIME INSPECTION OF
THE FORWARD AND AFT ROTARY WING HEADS TO
ENSURE FLOW OF LUBRICATING OIL
TO THE HORIZONTAL HINGE PIN BEARING
FOR
ALL CH-47D, MH-47D, AND MH-47E AIRCRAFT**

**Headquarters, Department of the Army, Washington, D. C.
28 June 1996**

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NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

1. Priority Classification. Urgent

- 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. The affected aircraft shall be inspected as soon as practical but no later than the task/inspection suspense date. 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. Within 10 hours or 30 days of arrival.
 - (2) Ferry Status. Same as paragraph 1 a.
- e. Maintenance Trainers (Category A and B). Same as paragraph 1a.
- f. Component/Parts in Stock Including War Reserves at All Levels (Depot and Others). Upon receipt of this Technical Bulletin the materiel condition tags of all items in all condition codes listed in paragraph 7 below shall be annotated to read "TB 1-1 520-240-20-83, Rotor Head Oil Flow Inspection not complied with. Head to inspected prior to installation".

*This TB supersedes USAATCOM Message 061523Z June 1996 (CH-47-96-ASAM-04)

2. **Task/Inspection Suspense Date.** Within 10 flight hours or 30 days.
3. **Reporting Compliance Suspense Date.** No later than 27 June 1996 per paragraph 14a of this TB.
4. **Summary of the Problem.**
 - a. During the scheduled maintenance of a rotor head assembly, tape was discovered covering one of six oil lube ports on the upper surface of the rotor hub. These ports are used to provide lubrication to the horizontal hinge pin bearings. The tape is used to protect the oil passages during painting and may have been accidentally left in place during overhaul production. A complete or partial restriction of lubricating oil to the horizontal hinge pin bearings causes premature wear and results in damage to the bearings and related components.
 - b. For manpower/downtime and funding impacts, see paragraph 12.
 - c. The purpose of this TB is a one time inspection of all CH-47D, MH-47D, and MH-47E forward aft rotor hubs to ensure flow of lubricating oil to the horizontal hinge pin bearings. Rotor hubs received from the supply system shall have this TB complied with prior to installation on the aircraft.

5. End Items to be Inspected. All CH-47D, MH-47D, and MH-47E aircraft.

6. Assembly Components to be Inspected.

| NOMENCLATURE | PART NUMBER | NATIONAL STOCK NUMBER |
|----------------------|-------------|-----------------------|
| FWD ROTARY WING HEAD | 145R2003-10 | 1615-01-301-4398 |
| | 145R2003-9 | 1615-01-314-8863 |
| | 145R2003-6 | 1615-01-296-9503 |
| | 145R2003-5 | 1514-01-345-0477 |
| | 145R2003-4 | 1615-01-184-3875 |
| | 145R2003-3 | 1615-01-198-7555 |
| AFT ROTARY WING HEAD | 145R2004-20 | 1615-01-391-4399 |
| | 145R2004-18 | 1615-01-315-3972 |
| | 145R2004-12 | 1615-01-298-0763 |
| | 145R2004-10 | 1615-01-312-6833 |
| | 145R2004-8 | 1615-01-184-3874 |
| | 145R2004-6 | 1615-01-199-1814 |
| | 145R2004-2 | 1615-01-115-3607 |

7. Parts to be Inspected. N/A.

8. Inspection Procedures.

NOTE

If the 400 hour hinge pin inspection has already been accomplished IAW TM 55-1520-240-23-1, Task 1-92 or TM 1-1520-252-23-1, Task 1 -100 the inspection is complete. This inspection is required on all rotor hubs received from the supply system prior to installation on the aircraft.

- a. Remove lockwire (MS20995NC32) from drain plug (AN814-2L or MS24391 -2L) located below each horizontal hinge bearing on the rotor (12 per A/C).
- b. Remove lockwire (MS20995NC32) from one (1) of the three (3) filler plugs (AN814-5DL) located on top of the horizontal hinge pin bearing (main) oil tank mounted on top of the rotor hub. Two (2) tanks per A/C.

- c. Remove filler plugs. One from each tank.
- d. Remove one drain plug. Observe oil flow. If oil flow is present, 1 oz. minimum, inspection is complete for that drain. Reinstall drain plug and torque to 16-32 lb-in. If oil flow is not observed, probe the drain hole with a piece of safety wire to free any obstructions. If oil flow is not observed, proceed to paragraph 9.
- e. Repeat inspection of each drain (12 per aircraft).
- f. Fill the tank with lubricating oil per manual. Reinstall filler plugs. Torque plugs to 60-108 lb-in. Lock-wire filler plugs and drain plugs per MS33540 (12 per A/C).

9. Correction Procedures. If oil flow is not observed, rotor head shall be removed from the aircraft and a QDR submitted.

10. Supply/Parts and Disposition.

- a. Parts Required. Items cited in paragraphs 6 and 7 may be required to replace defective items.
- b. Requisitioning Instructions. Requisition replacement parts through normal supply channels using normal supply procedures. All requisitions shall use project code "XCA" per this TB.

NOTE

Project code "XCA" is required to and establish a data base of stock fund expenditures.

- c. Bulk and Consumable Materials.

| NOMENCLATURE | PART NUMBER | NATIONAL STOCK NUMBER |
|-----------------|-------------|-----------------------|
| LOCKWIRE | MS20995NC32 | 9505-00-355-6072 |
| LUBRICATING OIL | MIL-L-7808 | 9150-00-782-2627 |

- d. Disposition. Dispose of removed parts/components in accordance with normal supply procedures. A QDR is required. Hold any unserviceable part/component pending disposition instructions from technical/logistical point of contact per paragraph 16 below.
- e. Disposition of Hazardous Material. N/A.

11. Special Tools, Jigs and Fixtures Required. N/A.

12. Application.

- a. Category of Maintenance. AVUM. Aircraft downtime will be charged to AVUM.
- b. Estimated Time Required.
 - (1) Total of 2 man-hours using 1 person.
 - (2) Total of 2 hours downtime for one end item.
- c. The cost of doing the inspection. The estimated cost impact of stock fund items to the field for replacement of either forward or aft head, if required:

| NOMENCLATURE | PART NUMBER/ NATIONAL STOCK NUMBER | COST EACH |
|---------------------|---------------------------------------|-----------|
| AFT ROTOR WING HEAD | 145R2004-20/1615-01-391-4399 | \$178,167 |
| FWD ROTOR WING HEAD | 145R2003-10/1615-01-301-4398 | \$167,677 |

Maximum total cost per aircraft = \$345,844

- 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 55-1520-240-23-4 and TM 1 -1520-252-23-5 shall be changed to reflect this TB requiring this inspection prior to installation of the

rotor heads. A copy of this TB shall be inserted in the appropriate TMs as authority to implement the change until the printed change is received.

13. References.

- a. TM 55-1520-240-23-4
- b. TM 1 -1520-252-23-5

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-R-X (SOF Compliance Officer), per AR 95-3. Datafax number is DSN 693-2064 or commercial (314) 263-2064. E-Mail address is 'AMSATRXS@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. Reporting Compliance Suspense Date (Spares).
 - (1) Materiel in Wholesale Depot Storage. Report receipt of this TB to the wholesale materiel (spares) point of contact listed in paragraph 16c within 3 working days from the date of this TB.
 - (2) Materiel in Retail Storage. Report receipt of this TB to logistical point of contact listed in paragraph 16b within 7 days from the date of this TB.
- c. Task/Inspection Reporting Suspense Date (Spares). N/A.
- d. The following forms are applicable and are to be completed in accordance with DA PAM 738-751, 15 June 1992:
 - (1) DA Form 2408-5-1, Equipment Modification Record (Rotary Wing Head).
 - (2) DA Form 2408-13, Aircraft Status Information Record.
 - (3) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
 - (4) DA Form 2408-15, Historical Record for Aircraft.
 - (5) DA Form 2408-16, Aircraft Component Historical Record (if rotary wing head is replaced).
 - (6) DA Form 2410, Component Removal and Repair/Overhaul Record (if rotary wing head is replaced).

15. Weight and Balance. N/A.

16. Points of Contact.

- a. Technical point of contact for this TB is Mr. Michael Wright, AMSAT-R-ECC, DSN 693-3550 or commercial (314)263-3550.
- b. Logistical point of contact for this TB is Mr. Norm Huston, AMCPM-CH-L, DSN 693-1415 or commercial (314)263-1415.
- c. Wholesale Materiel point of contact (spares) for this TB is Mr. Hal Barnes, AMSAT-I-SACA, commercial (314)263-6031 and Fax (314)263-6022.
- d. Forms and records point of contact for this TB is Ms Ann Waldeck, AMSAT-I-MDM, DSN 693-2318 or commercial (314)263-2318.
- e. Safety point of contact for this TB is Mr. Lyell Myers. AMSAT-R-X, DSN 693-2085 or commercial (314)263-2085.
- f. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact Mr. Ron Van Rees, AMSAT-D-SAF, DSN 693-7844/3659 or commercial (314)263-7844/3659. FAX 2917.

- g. After hours contact ATCOM Command Operations Center (COC) DSN 693-206617 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-1-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/oavma28@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.

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By Order of the Secretary of the Army:

Official:




JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
01879

DENNIS J. REIMER
General, United States Army
Chief of Staff

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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|--|--|----------------------|---|
|  <p>THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.</p> | SOMETHING WRONG WITH PUBLICATION | | |
| | FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS) | | |
| DATE SENT | | | |
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| BE EXACT PIN-POINT WHERE IT IS | | | IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT. |
| PAGE NO. | PARA-GRAPH | FIGURE NO. TABLE NO. | |
| PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER | | | SIGN HERE |

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigram = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

| <i>To change</i> | <i>To</i> | <i>Multiply by</i> | <i>To change</i> | <i>To</i> | <i>Multiply by</i> |
|------------------|--------------------|--------------------|--------------------|---------------|--------------------|
| inches | centimeters | 2.540 | ounce-inches | Newton-meters | .007062 |
| feet | meters | .305 | centimeters | inches | .394 |
| yards | meters | .914 | meters | feet | 3.280 |
| miles | kilometers | 1.609 | meters | yards | 1.094 |
| square inches | square centimeters | 6.451 | kilometers | miles | .621 |
| square feet | square meters | .093 | square centimeters | square inches | .155 |
| square yards | square meters | .836 | square meters | square feet | 10.764 |
| square miles | square kilometers | 2.590 | square meters | square yards | 1.196 |
| acres | square hectometers | .405 | square kilometers | square miles | .386 |
| cubic feet | cubic meters | .028 | square hectometers | acres | 2.471 |
| cubic yards | cubic meters | .765 | cubic meters | cubic feet | 35.315 |
| fluid ounces | milliliters | 29.573 | cubic meters | cubic yards | 1.308 |
| pints | liters | .473 | milliliters | fluid ounces | .034 |
| quarts | liters | .946 | liters | pints | 2.113 |
| gallons | liters | 3.785 | liters | quarts | 1.057 |
| ounces | grams | 28.349 | liters | gallons | .264 |
| pounds | kilograms | .454 | grams | ounces | .035 |
| short tons | metric tons | .907 | kilograms | pounds | 2.205 |
| pound-feet | Newton-meters | 1.356 | metric tons | short tons | 1.102 |
| pound-inches | Newton-meters | .11296 | | | |

Temperature (Exact)

| | | | | |
|----|---------------------------|-------------------------------|------------------------|----|
| °F | Fahrenheit temperature | 5/9 (after subtracting 32) | Celsius temperature | °C |
|----|---------------------------|-------------------------------|------------------------|----|

