DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

INITIAL AND RECURRING INSPECTIONS AND REPLACEMENT OF HORIZONTAL HINGE PIN SHOULDERED BOLTS FOR ALL CH–47D, MH–47D AND MH–47E SERIES AIRCRAFT

Version: 1.0

1. Priority Classification. Urgent

NOTE

In accordance with AR 95–1, paragraph 6–6A, MACOM Commanders may authorize temporary exception from ASAM message requirements. Exception may only occur when combat operations or matter of life or death in civil disasters or other emergencies are so urgent that they override the consequences of continued aircraft operation.

a. Aircraft in Use. Upon receipt of this Technical Bulletin the condition status symbol of the cited aircraft will be changed to a red horizontal dash //—//. The red horizontal dash //—// entry shall state ‘Inspect in accordance with CH–47–00–ASAM–02 (TB 1–1520–240–20–118) at the next daily inspection, but no later than 25 May 2000.’ The red horizontal dash //—// may be cleared when the inspection of paragraph 8 is completed. The affected aircraft shall be inspected as soon as practical but no later than 25 May 2000. Failure to comply with the requirements of this message within the specified time frame will cause the status symbol of the affected aircraft to be upgraded to a red //X//.

b. Aircraft in Depot Maintenance. Aircraft will not be issued until compliance with paragraph 8 of this message has been completed. This includes aircraft undergoing refurbishment at CCAD.

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

d. Aircraft in Transit.
(1) Surface/Air Shipment. Inspect prior to first flight.

(2) Ferry Status. Same as paragraph 1a. Those aircraft that have a DD 250 and are at Boeing Helicopter will be inspected prior to ferry to final destination.

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

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

      (1) Wholesale Stock. N/A.

      (2) Retail Stock. N/A.

   g. Components/Parts in Work (Depot Level and Others). Items listed in paragraph 6 in work will not be issued until compliance with paragraph 9 of this Technical Bulletin.

2. Task/Inspection Suspense Date. At the next daily inspection but no later than 25 May 2000 and report in accordance with paragraph 14b.

3. Reporting Compliance Suspense Date. Report compliance in accordance with paragraph 14a no later than 2 June 2000.

4. Summary of the Problem.

   a. During post flight inspection a horizontal hinge pin shouldered bolt, P/N 114R2201–1, was found to have the bolt head separated. Failure analysis determined a crack had initiated at the groove between the shank and the head of the bolt. The crack propagated until the bolt head broke off. A redesigned bolt, P/N 114R2201–2, which does not have a groove is now being procured.

   b. For manpower/downtime and funding impacts see paragraph 12.

   c. The purpose of this Technical Bulletin is to direct the initial inspection of each P/N 114R2201–1 bolt, and direct a recurring inspection to be performed during each scheduled daily inspection, preflight inspection, and postflight inspection. Replacement of the P/N 114R2201–1 bolt is required at each 1200 hour horizontal hinge pin rotation or at any unscheduled maintenance requiring horizontal hinge pin removal.

5. End Items to be inspected. All CH–47D, MH–47D, and MH–47E Aircraft.

6. Assembly Components to be Inspected.

<table>
<thead>
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<th>NOMENCLATURE</th>
<th>PART NUMBER</th>
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<tbody>
<tr>
<td>Head, Rotary Wing, FWD</td>
<td>145R2003 – All</td>
</tr>
<tr>
<td>Head, Rotary Wing, AFT</td>
<td>145R2004 – All</td>
</tr>
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7. Parts to be Inspected.

<table>
<thead>
<tr>
<th>NOMENCLATURE</th>
<th>PART NUMBER</th>
<th>NATIONAL STOCK NUMBER</th>
</tr>
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<tbody>
<tr>
<td>Bolt</td>
<td>114R2201–1</td>
<td>5306–00–843–7117</td>
</tr>
</tbody>
</table>

8. Inspection Procedures.

   NOTE
   If bolt, P/N 114R2201–2, is installed, it does not require this special daily inspection and is covered by existing daily inspection of rotor head.

   NOTE
   On initial inspection bolt heads may be covered with adhesive (RTV 730). The bolt may appear to be secure when it is being held by the adhesive. If the bolt head is completely covered remove the adhesive using a plastic scraper before performing the inspection in paragraph 8a, below. Following the initial inspection re–apply adhesive with a thin bead
covering only the base of the bolt head and washer to prevent moisture from entering horizontal hinge pin.

NOTE
Commanders will insure that all crew members are made aware of this special interest inspection and the importance of conducting the inspection during pre and post flight inspections.

a. Perform the following inspections.

(1) Initial Inspection. Inspect each bolt, P/N 114R2201–1, apply hand pressure to the head to assure the adhesive is not holding the bolt head in place. If the bolt head is broken off the rotor head is considered unserviceable until the inspection of paragraph 8b is completed. If it is necessary to remove excessive adhesive RTV, the units have 10 flight hours but no later than 25 May 2000 to comply with proper application of adhesive RTV in accordance with the note above.

(2) Recurring Inspections. During each daily inspection, preflight and postflight, inspect each bolt, P/N 114R2201–1. Apply hand pressure to the head to assure the adhesive is not holding the bolt head in place. If the bolt head is broken off, the rotor head is considered unserviceable.

b. If a broken bolt head is found, inspect the following parts while the horizontal hinge pin is disassembled: horizontal hinge pin, tie bar, and nut (reference 13a, figure 176, item 113, 87, and 121 respectively) or (reference 13b, figure 5–4, item 98, 87, and 121 respectively). Inspect for scoring, deformation or any evidence that parts have abnormal wear.

9. Correction Procedures.

a. If a broken bolt head is found, replace bolt with P/N 114R2201–1 or 114R2201–2 in accordance with Task 5–44 and Task 5–46, reference 13d or Task 5–55 and Task 5–57, reference 13e. Use adhesive (E63.1 of reference 13d or E67 of reference 13e) and apply a thin bead covering the base of the bolt head and washer.

b. Bolt P/N 114R2201–1 shall be replaced with a new bolt (either a –1 or –2) at each 1200 hour horizontal hinge pin inspection (rotation or replacement) or during any unscheduled maintenance requiring horizontal hinge pin removal or during depot overhaul.

10. Supply/Parts and Disposition.

a. Parts Required. Bolt, P/N 114R2201–1 or 114R2201–2 may be required to replace defective items or those required to be changed in accordance with paragraph 9b above. Bolt, P/N 114R2201 will be issued until stock is depleted or P/N 114R2201–2 bolts are available in the supply system.


NOTE
Project code ‘XC8”, “X–RAY–CHARLIE–EIGHT” is required to track and establish a data base of stock fund expenditures incurred by the field as a result of Safety of Flight actions.


d. Disposition.

(1) Heads. Dispose of removed parts/components using normal supply procedures. All turn–in documents must include project code (CC 57–59) “X–RAY–CHARLIE–EIGHT”.

(2) Bolts. Demilitarize/mutilate in accordance with TM 1–1500–328–23 any part/component which does not meet inspection criteria.

(3) Tie Bars or Horizontal Hinge Pins. Hold any discrepant part/component pending disposition instructions from technical point of contact in paragraph 16.

e. Disposition of Hazardous Material. In accordance with Environmental Protection Agency directives as implemented by your servicing environmental coordinator (AR 200–1).
11. **Special Tools and Fixtures Required.** Plastic scraper.

12. **Application.**
   a. **Category of Maintenance.** AVUM. Aircraft downtime will be charged to AVUM maintenance.
   b. **Estimated Time Required.**
      (1) **For Inspection –**
         (a) Total of 1 man-hours using 1 persons.
         (b) Total of 9 hours downtime for one end item, one hour for the inspection plus eight hours for the adhesive RTV to dry, if required.
      (2) **For Replacement –**
         (a) Total of 200 man-hours using 4 persons.
         (b) Total of 50 hours downtime for one end item.
   c. **Estimated Cost Impact to the Field –**

<table>
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<tr>
<th>NOMENCLATURE</th>
<th>PART NUMBER/ NATIONAL STOCK NUMBER</th>
<th>QUANTITY</th>
<th>COST EACH</th>
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<td>114R2201-1/5306-00-843-7117</td>
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<td>$19.41</td>
<td>$116.46</td>
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<td>$19.41</td>
<td>$116.46</td>
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</table>

Total cost per aircraft = $116.46

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, TM 1–1520–252–23, **TM 55–1520–240–PMD** and TM 1–1520–252–PMD shall be changed to reflect this Technical Bulletin. A copy of this Technical Bulletin shall be inserted in the appropriate TM as authority to implement the change until the printed change is received.

13. **References.**
   a. DA PAM 738–751
   b. TM 55–1520–240–23P
   c. TM 1–1520–252–23P
   d. TM 55–1520–240–23
   e. TM 1–1520–252–23
   f. **TM 55–1520–240–PMD**
   g. TM 1–1520–252–PMD

14. **Recording and Reporting Requirements.**
   a. **Reporting Compliance Suspense Date (Aircraft).** Upon entering requirements of this Technical Bulletin on DA Form 2408-13-1 on all subject MDS aircraft, forward a priority message, datafax or e-mail to Commander, AMCOM, ATTN: AMSAM–SF–A (SOF Compliance Officer), Redstone Arsenal, AL 35898–5000, in accordance with AR 95–1. Datafax number is DSN 897–2111 or commercial (256) 313–2111. E-mail address is “safeadm@redstone.army.mil”. The report will cite this Technical Bulletin number, date of entry in DA Form 2408-13-1, the aircraft mission design series and serial numbers of aircraft in numerical order.
   b. **Task/Inspection Reporting Suspense Date (Aircraft).** N/A.
   c. **Reporting Message Receipt (SPARES).** N/A.
d. Task/Inspection Reporting Suspense Date (SPARES).
   (1) Materiel in Wholesale Depot Storage. N/A.
   (2) Materiel in Retail Storage. N/A.

e. The following forms are applicable and are to be completed in accordance with DA PAM 738-751, 15 Mar 99:
   
   **NOTE**
   ULLS–A users will use applicable “E” forms.

   (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.

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

16. **Points of Contact.**

   a. Technical point of contact for this Technical Bulletin is Mr. Wesselschmidt, AMSAM–RD–AE–I–P–C, DSN 897–3380 or (256) 313–3380, datafax is 897–4348. E-mail is “matthew.wesselschmidt@redstone.army.mil”.

   b. Logistical point of contact for this Technical Bulletin is Mr. Bill Olson, SFAE-AV–CH-L, DSN 897–3379 or (256) 313–3379, datafax is DSN 897–4348. E-mail is “olsonw@peoavn.redstone.army.mil”.

   c. Forms and records point of contact for this Technical Bulletin is Ms. Ann Waldeck, AMSAM–MMC–RE–FF, DSN 746–5564 or (256) 876–5564, datafax is DSN 746–4904. E-mail is “ann.waldeck@redstone.army.mil”.

   d. Safety points of contact for this Technical Bulletin are–

      (1) Mr. Frank Rosebery (SAIC) AMSAM–SF–A, DSN 788–8631 or (256) 842–8631, datafax is DSN 897–2111. E-mail is “frank.roseberry@redstone.army.mil”.

      (2) Mr. Howard Chilton, AMSAM–SF–A, DSN 897–2068 or(256) 313–2068, datafax is (256) 313–2111. E-mail is “howard.chilton@redstone.army.mil”.

   e. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this Technical Bulletin should contact: CW5 Joseph L. Wittstrom, Security Assistance Management, AMSAM–SA, DSN 897–0410 or (256) 313–0410. E-mail is “wittstromjl@redstone.army.mil” or Mr. Ronnie W. Sammons, AMSAM–SA–CS–NF, DSN 897–0408 or (256) 313–0408, datafax is DSN 897–0411 or (256) 313–0411. E-mail is “sammonsrw@redstone.army.mil”. Huntsville, AL is GMT minus 5 hrs.

   f. After hours contact the AMCOM Command Operations Center (COC) DSN 897–2066/7 or commercial (256) 313–2066/7.

17. **Reporting of Errors and Recommending Improvements.** You can improve this Technical Bulletin. 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 Missile Command, ATTN: AMSAM–MMC–LS–LP, Redstone Arsenal, AL 35898-5230.
TB 1-1520-240-20-118

You may also submit your recommended changes by E-Mail directly to “Is-Ip-@redstone.army.mil”. A reply will be furnished directly to you.

By Order of the Secretary of the Army:

Official:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

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From: “Whomever” <whomever@avma27.army.mil>
To: <ls–lp–@redstone.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: 77777
7. Date Sent: 19–OCT–93
9. Pub Title: TM
10. Publication Date: 04–J UL–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. NS N: 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.
**RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS**

**SOMETHING WRONG WITH PUBLICATION**

**THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.**

| FROM: (PRINT YOUR UNIT’S COMPLETE ADDRESS) |
| DATE SENT |

| PUBLICATION NUMBER | PUBLICATION DATE | PUBLICATION TITLE |

**BE EXACT PIN-POINT WHERE IT IS**

**IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.**

**PAGE NO.** | **PARA. NO.** | **FIGURE NO.** | **TABLE NO.**

**PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER**

**SIGN HERE**

**P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.**

**DA 1 JUL 79 2028-2**
## THE METRIC SYSTEM AND EQUIVALENTS

### NEAR MEASURE
- Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
- 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
- 1 Kilometer = 1000 Meters = 0.621 Miles

### WEIGHTS
- Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
- 1 Kilogram = 1000 Grams = 2.2 lb.
- 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

### LIQUID MEASURE
- 1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
- 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

### APPROXIMATE CONVERSION FACTORS

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### SQUARE MEASURE
- 1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
- 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
- 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

### CUBIC MEASURE
- 1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
- 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

### TEMPERATURE
- $5/9(°F - 32) = °C$
- 212° Fahrenheit is equivalent to 100° Celsius
- 90° Fahrenheit is equivalent to 32.2° Celsius
- 32° Fahrenheit is equivalent to 0° Celsius
- $9/5°C + 32 = °F$