

# URGENT

\*TB 1-1520-240-20-111

## DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

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### CH-47D, MH-47D AND MH-47E, ONE TIME INSPECTION OF SYNC SHAFT MOUNTING BRACKETS FOR PROPER CLEARANCE TO SYNC SHAFT

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Headquarters, Department of the Army, Washington, D. C.  
15 July 1999

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**DISTRIBUTION STATEMENT A:** Approved for public release; distribution is unlimited.

#### NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

**1. Priority Classification** NOTE- SEE AR 95-1, PARA 6-6A, FOR EXCEPTION AUTHORITY OF MAJOR COMMANDERS.

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 //- entry shall state "complete the inspection procedures IAW SOF message CH-47-99-01, TB 1-1520-240-20-111 within the next 10 hours/14 days". The red horizontal dash //- may be cleared when the inspection of para 8 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 - Aircraft will not be issued until compliance with this TB has been completed.

c. Aircraft Undergoing Maintenance - Aircraft will not be released until compliance with this TB has been completed.

d. Aircraft in Transit -

(1) Surface/air shipment - same as para 1a.

(2) Ferry status -

(a) Same as para 1a.

(b) Those aircraft that have a DD 250 and are at Boeing will be inspected prior to ferry to final destination.

e. Maintenance Trainers (Category A and B) - Comply within 30 days of receipt of this TB.

f. Component/Parts in Stock at all Levels (Depot and Others) Including War Reserves - Upon receipt of this TB the material condition tags of all items in all condition codes listed in paragraph 7 shall be annotated

\*This TB supersedes USAAMCOM Message 301510 JUN 99 CH-47-99-SOF-01.

## TB 1-1520-240-20-111

to read "CH-47-99-01 (TB 1-1520-240-20-111, One Time Inspection Of Sync Shaft Mounting Brackets For Proper Clearance To Sync Shaft Not Complied With".

(1) Wholesale Stock - N/A.

(2) Retail Stock - N/A.

g. Component/Parts in Work (Depot Level and Others) - N/A.

**2. Task/Inspection Suspense Date.** Within next 10 flight hours/14 days.

**3. Reporting Compliance Suspense Date.** No later than 23 July 1999 in accordance with paragraph 14a of this TB.

### **4. Summary of the Problem.**

a. A deficiency report has been received on unacceptable clearance between the sync shaft assembly and the mounting bracket (commonly referred to as the lord mount mounting bracket). The clearance was reported to be .010 inch. A specific manufacturer for this bracket has been identified as Davidson Fabricating Co. (FSCM 31684). The installation drawing states the proper clearance between structure and the rotating sync shafts is .25 inches. Inspection by the unit revealed that other brackets also exhibited clearance of less than .25 inches.

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

c. The purpose of this TB is to perform a one time inspection of all sync shaft mounting brackets to ensure proper clearance from the rotating sync shafts and surrounding structure.

**5. End Items to be inspected.** All CH/MH-47D/E aircraft.

**6. Assembly Components to be Inspected.** - N/A

**7. Parts to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
BRACKET	114S2352-35	1560-00-925-2884
BRACKET	114S2352-36	5340-00-945-5770
BRACKET	114S2352-37	5340-00-925-2893
BRACKET	114S2352-38	1560-00-925-2892
BRACKET	114S2352-39	1560-00-179-0400
BRACKET	114S2352-40	5342-00-179-0399
BRACKET	114S2352-41	1560-00-179-0398
BRACKET	114S2352-42	1560-00-925-2950
BRACKET	114S3365-37	5342-00-113-5972
BRACKET	114S3365-38	5342-00-113-5971

### **8. Inspection Procedures.**

a. Gain access to sync shafts.

b. Verify that clearance between any aircraft non rotating structure (pay particular attention to the shaft mounting brackets) and the rotating sync shaft is at least .25 inches. Rotate the shaft at least one full revolution while checking to ensure that minimum clearances are obtained. Move the shaft by hand as far forward and aft as possible while making check, as clearance may be reduced by shaft rivets.

c. If clearance is less than .25 inches, perform correction procedures of paragraph 9.

d. If evidence of contact has been made, contact the technical POC listed in para 16a for further instructions.

## 9. Correction Procedures

### CAUTION

As damage to the sync shaft may occur if corrections are done with sync shafts installed, it is recommended the shafts be removed IAW Tasks 6-2/6-3 and 6-4 of TM 55-1520-240-23-5 or Tasks 6-2/6-3 and 6-4 of TM 1-1520-252-23-6.

- a. Mark mounting bracket at place where proper clearance will be obtained.

### CAUTION

Minimum distance from the edge of the mounting bolt hole to the edge of the bracket shall be no less than .244 inches.

- b. File/grind excess material required to obtain the required .25 inch clearance between the sync shaft and the bracket edge.
- c. Deburr.
- d. Remove all metal shavings.
- e. Clean exposed areas of the mounting bracket with acetone.
- f. Apply MIL-P-23377 primer to the bare metal surfaces of bracket.
- g. Reinstall shafts if removal was required IAW Tasks 6-17/6-18 and 6-19 of TM 55-1520-240-23-5 or tasks 6-18/6-19 and 6-20 of TM 1-1520-252-23-6.
- h. If drive shafts were removed perform maintenance operation check as required TM 55-1520-240-10 or TM 1-1520-252-10.

## 10. Supply/Parts and Disposition.

- a. Parts Required - Items cited in paragraph 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 "XFU" (X-RAY-FOXTROT-UNIFORM), per this TB.

### NOTE

Project code "XFU", (X-RAY-FOXTROT-UNIFORM), is required to track and establish a data base of stock fund expenditures incurred by the field as a result of SOF actions.

- c. Bulk and Consumable Materials - N/A.
- d. Disposition - Dispose of removed parts/components IAW normal supply procedures. A category 2 QDR is required for each bracket that requires the correction procedures in paragraph 9.
- 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. - As required.

## TB 1-1520-240-20-111

### 12. Application.

- a. Category of Maintenance - AVUM. Aircraft downtime will be charged to AVUM.
- b. Estimated Time Required -
  - (1) For inspection -
    - (a) Total of 5 man-hours using 2 persons.
    - (b) Total of 2.5 hours downtime for one end item.
  - (2) Repair of the sync shaft mounting bracket can vary depending on the location of the bracket and the requirement to remove the sync shaft prior to repair of the bracket. If the sync shaft must be removed, use the following to estimate the time required to repair one mounting bracket -
    - (a) Total of 8 man-hours using 2 persons.
    - (b) Total of 4 hours downtime for one end item.
- c. Estimated Cost Impact 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 - References 13a and 13b shall be changed to reflect clearance check requirement contained in this TB any time maintenance is performed in this area. 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 55-1520-240-23, CH-47D Maintenance Manual.
- b. TM 1-1520-252-23, MH-47E Maintenance Manual.

### 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, 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 (256) 313-2111. E-Mail address is safeadm@redstone.army.mil. The report will cite CH-47-99-01, 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) - No special report of the results of this inspection is required.
- c. Reporting message receipt (SPARES).
  - (1) Materiel in wholesale depot storage - N/A.
  - (2) Materiel in retail storage - 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 2408-13, Aircraft Status Information Record.
- (2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.

(3) DA Form 2408-14, Uncorrected Fault Record.

(4) DA Form 2408-15, Historical Record for Aircraft.

(5) DD Form 1574/DD Form 1574-1, Serviceable Tag/Label - Materiel (Color Yellow). (Annotate Remarks Block With "Inspected Serviceable IAW CH-47-99-01").

(6) DD Form 1577-2/DD Form 1577-3, Unserviceable (Repairable) Tag/Label - Materiel (Color Green). (Annotate Remarks Block With "Unserviceable IAW CH-47-99-01").

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

**16. Points of Contact.**

a. Technical point of contact for this TB is Mr. Dennis Ganey, AMSAM-AR-E-I-C-H, DSN 897-3361 Or (256) 313-3361, Datafax Is (256) 313-4348. E-mail is "ganeyd@redstone.army.mil".

b. Logistical point of contact for this TB is Mr. Bill Olson, SFAE-AV-CH-L, DSN 897-4304 or (256) 313-4304, datafax is DSN 897-4348 or (256) 313-4348. E-mail is "olsonw@peoavn.redstone.army.mil".

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

d. Safety point of contact for this TB is Mr. Robert D. Brock, AMSAM-SF-A, DSN 788-8632 or (256) 842-8632, datafax is DSN 897-2111 or (256) 313-2111. E-mail is "bob.brock@redstone.army.mil".

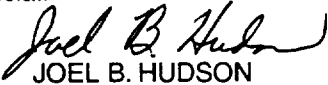
e. Foreign military sales recipients requiring clarification of action advised by this TB should contact: CW5 Joseph L. Wittstrom, Security Assistance Management, AMSAM-SA, DSN 897-0681 or (256) 313-0681. E-mail is "wittstromjl@redstone.army.mil" or Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, DSN 897-0869 or (256) 313-0869. Datafax is DSN 897-0411 or (256) 313-0411. E-mail is "sammonsrw@redstone.army.mil". Huntsville, AL is GMT minus 6 hrs.

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

**17. Reporting of Errors and Recommending Improvements.** You can 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 Missile Command, ATTN.: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by E-Mail directly to "ls-lp@redstone.army.mil". A reply will be furnished directly to you.

By Order of the Secretary of the Army:

Official:

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

05860

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

DISTRIBUTION:

To be distributed in accordance with Initial Distribution Number (ID) 313834, requirements for TM 1-2840-240-20-111.

**TB 1-1520-240-20-111**

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: <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
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.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE  
NO.

PARA-  
GRAPH

FIGURE  
NO.

TABLE  
NO.

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

TEAR ALONG PERFORATED LINE

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 decigrams = .035 ounce  
 1 dekagram = 10 grams = .35 ounce  
 1 hectogram = 10 dekagrams = 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

To change	To	Multiply by	To change	To	Multiply by
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

**PIN: 077440-000**