URGENT

TB 1–1520–240–20–152

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

INSPECTION OF SWASHPLATE BEARING, FORWARD AND AFT ON ALL H-47 SERIES AIRCRAFT

Headquarters, Department of the Army, Washington, D. C.
12 February 2004

NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

NOTE

MACOM Commanders may authorize temporary exception from message requirements in accordance with AR 95-1, Chapter 6. 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.

1. **Priority Classification. Urgent**

2. **Summary**

a. Background — Safety of Flight message, CH-47-03-01, established inspection requirements for the H-47 Forward and Aft Swashplate Assemblies. These inspection requirements included submitting a grease sample for analysis by the Army Oil Analysis Program (AOAP). Inconsistent results from this program do not show correlation between grease sample results and actual swashplate assembly damage/condition. The AOAP grease sampling results can not be considered a reliable method to indicate pending bearing failure or even used to assess the condition of the swashplate bearings.

b. Message Purpose —

(1) Supercede CH-47-03-01.

(2) Revise the procedure in accordance with paragraph 7.2 of CH-47-03-01.

(3) The visual inspection in accordance with paragraph 7.1 of CH-47-03-01 remains the same.

3. **End Items to be inspected**. All H–47 series aircraft.

This TB supersedes USAAMCOM Message, 052030Z FEB 04 SOF CH-47-04-01

4. **Assemblies/Components/Parts Affected**.

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Swashplate Assy, Forward	145R3551−19	1615−01−473−4376
Swashplate Assy, Forward	145R3551−17	1615−01−395−0006
Swashplate Assy, Forward	145R3551−1	1615−01−115−3623
Swashplate Assy, Forward	145R3551−11	1615−01−352−8575
Swashplate Assy, Forward	145R3551−5	1615−01−315−5133
Swashplate Assy Aft	145R3551−20	1615−01−475−9838
Swashplate Assy Aft	145R3551−18	1615−01−395−0007
Swashplate Assy Aft	145R3551−2	1615−01−115−3610
Swashplate Assy Aft	145R3551−12	1615−01−352−8576
Swashplate Assy Aft	145R3551−6	1615−01−317−2432
Bearing, Swashplate	114RS308−1	3110−00−141−3750
Bearing, Swashplate	114RS308−2	3110−01−356−0489

NOTE

When complying with the requirements of this message, complete forms and records entries in accordance with DA PAM 738−751. ULLS-A users will use applicable “E” forms.

5. **Initial TAMMS (The Army Maintenance Management System) Compliance Requirements**.

a. Upon receipt of this Technical Bulletin (TB) make the following entry on the DA Form 2408-13-1. Enter a red horizontal dash **//–//** status symbol with the following statement: “Comply with requirements of SOF CH-47-04-01 (TB 1-1520-240-20-152) at the next scheduled 50 hour swashplate lubrication/purge.” Commanders who are unable to comply with the requirements of this Technical Bulletin within the time frame specified will upgrade the affected aircraft status symbol to a red **//X//**.

NOTE

The TAMMS Compliance Reporting Form is available at “www.redstone.army.mil/sof/tamms.xls” (use lower case letters only) or may be obtained from the units servicing LAR. Alternate forms may be approved by the AMCOM SOF Compliance Officer.

NOTE

The TAMMS Compliance Report only confirms the unit has made the initial logbook entry for assigned aircraft. TAMMS Compliance Reports will include aircraft serial numbers (in numerical order), date of entry on DA Form 2408-13-1, unit address, local point of contact name and phone number.

b. TAMMS Compliance Report − Submit TAMMS Compliance Report via priority email to “safe-adm@redstone.army.mil” no later than 20 February 2004

6. **Task/Inspection Compliance Requirements.** N/A

7. **Special Provisions to Message Requirements (Aircraft)**

a. Aircraft in AVUM, AVIM or Depot level maintenance - Commanders, facility managers and contractors will not issue aircraft until they are in compliance with this message.

b. Maintenance Trainers (Category A and B) comply with message requirements no later than 6 August 2004.

8. **Technical Procedures/Instructions.**.

NOTE
Do not lubricate the swashplate prior to performing the visual inspection of the swashplate bearing.

NOTE
Lubrication and visual inspections will remain on the same schedule as determined by CH-47-03-01.

a. Visual 100 (CH-47D/F)/ 150 (all MH-47 aircraft) hour recurring inspection (the following visual inspection remains the same as required in accordance with CH-47-03-01).

NOTE
This inspection can be performed on or off aircraft.

CAUTION

It is imperative that the Rotor Head be locked out prior to performing the bearing inspection or damage to components will occur.

(1) Lock out the Rotor Heads: H−47D/F per TM 55−1520−240−23; Task 11−28, Install Servocylinder Safety Blocks and Task 5−97, Remove Pitch Link (Pitch Link Lockpins installed). MH−47E per TM 1−1520−252−23; Task 11−33, Install Servocylinder Safety Blocks and Task 5−145, Remove Pitch Link (Pitch Link Lockpins Installed).

NOTE
Prior to removing hardware, thoroughly wipe clean all upper seal surfaces (only), by hand with a lint free cloth. Remove only the Upper Seal, P/N 114R3428−1. Do not remove the Upper Bearing Retainer, P/N 114R3126−4. Only 12 bolts and washers (Aft) or nuts and washers (Fwd) need to be removed.

(2) Remove Forward and Aft Swashplate Upper Seal, P/N 114R3428−1, per TM 55−1520−240−23, Task 5−122, paragraphs 1a and 2a (H−47D/F) or TM 1−1520−252−23, Task 5−175, paragraphs 1a and 2a (MH−47E).

WARNING

If this inspection is performed on aircraft, ensure no FOD enters the bearing. Do not attempt to clean or wipe the bearing prior to performing the next step.

(3) Use a flashlight or other suitable light source to visually inspect for raised, overlapping or broken cage segments. Inspect for orange/red pieces of debris. The lower grease seal is elastomeric orange/red in color: therefore this type of rubber debris may be indicative of damage to this lower seal.

WARNING

Do not use cloths or rags to clean the bearing area, as this may snag or catch on the bearing cage and disturb the balls.

(4) Wipe away excess grease in cavity using fingers. Use a flashlight or other suitable light source to visually inspect for raised, overlapping or broken cage segments or multiple adjacent uncaged ball bearings. Inspect for orange/red pieces of rubber debris.

NOTE

The design of the bearing allows for up to 3 individual cage segments with each segment separated by one uncaged ball.

(5) If any of these conditions are found, except for those in the note above, the Swashplate Assembly shall be considered unserviceable. Dispose of in accordance with paragraph 11d of this message.

NOTE

If replacement self−locking nuts are not available, re−use of the original nuts is authorized provided they meet the following torque requirement. The torque required to start the nut rotating with a minimum of one full thread extending from the end of the nut shall be at least 7 inch−pounds. The standard procedure of using new nuts at each removal and reinstallation shall be followed as soon as new nuts are available.

(6) If the bearing passes in accordance with paragraphs 3 and 4, install the Swashplate Upper Seal, P/N 114R3428−1, per TM 55−1520−240−23, Task 5−125, Paragraphs 7b and 8e−h (H−47D/F) or TM 1−1520−252−23, Task 5−179, Paragraphs 7b and 8e−h (MH−47E). If nuts were reused on forward swashplate, apply a torque stripe to all nuts for visual inspection reference. A recurring entry for a Daily Inspection will be required on DA Form 2408-13-1 until new nuts are installed.

(7) Unlock Rotor Heads; H−47D/F per TM 55−1520−240−23; Task 5−99, Install Pitch Links (remove Pitch Link Lockpins) and Task 11−29, Remove Servocylinder Safety Blocks. MH−47E per TM 1−1520−252−23; Task 5−148, Install Pitch Links (remove Pitch Link Lockpins) and Task 11−34, Remove Servocylinder Safety Blocks.

CAUTION

For the purpose of this Safety of Flight only, a test flight to track the rotor blades is not required as long as no adjustments were made to the Pitch Links and the Pitch Links are installed back in their original location.

b. 50 hour recurring lubrication/purge and 50 hour recurring grease inspection.

(1) Using a soft, clean, lint−free cloth, dampened with cleaning solvent (MIL−PRF−680) −

(a) Clean the inner and and outer dust cover. Ensure all surface grit, sand, and other foreign material is removed. This will ensure that no FOD is included in the grease sample and that only recently used grease will be included in the sample.

(b) Wipe dirt and grease from lubrication fitting to ensure that no foreign material is introduced to the bearings during purging and re-greasing.

(2) Grease inspection procedure.

CAUTION

Pumping grease into swashplate without turning/rotating ring can result in bearing damage.

NOTE

If you cannot pump grease and rotate the swashplate at the same time, rotate swashplate in 12 equal steps, 30 degrees each step. Pump in grease between steps.

NOTE

Proper purging of the bearing requires at least 16 ounces of new grease.

(a) Have helper rotate ring by pulling blades around with tie down line. As ring rotates, use a hand lubricating grease gun with a flexible hose to pump grease into fitting. Rotate the ring through at

least one full turn (360 degrees) to ensure thorough purging of the bearing. Pump until clean grease appears all the way around the line between the stationary upper seal and rotating upper seal.

NOTE

It is important to collect as much purged used grease as possible to improve chances of capturing any grease areas that have a higher concentration of metal contaminates.

(b) As the old/used grease appears from between the seals, use a clean wooden tongue depressor to collect as much of the grease as possible in a clean container. Label the container with the date, aircraft number, swashplate assembly part number and serial number, swashplate time since overhaul, and hours since last purge.

(c) Thoroughly stir the collected grease to ensure a homogenous moisture. While stirring, visually inspect for orange/red/grey/brown rubber pieces/slivers. If there are any visible pieces/slivers, the swashplate is considered unserviceable and will be disposed of in accordance with paragraph 11d of this Technical Bulletin.

(d) After stirring the grease, feel for metal particles. If there are particles, the swashplate is considered unserviceable and will be disposed of in accordance with paragraph 11d of this message.

(e) If the swashplate is considered serviceable, retain the collected grease pending the results of next 50 hour lubrication/purge and grease inspection.

c. Change the DA Form 2408-18, Block 6 (Reference) from “CH-47-03-01” to CH-47-04-01” for the 100/150 flight hour recurring FWD & AFT Swashplate bearings and the 50 flight hour recurring FWD & AFT Swashplate bearings inspections. ULLS-A units shall use this message as authority to change the Reference for inspections A-182 and A-121.

d. Change the initial entry from 5a and note compliance on DA Form 2408-5-1 (Swashplate Assy).

9. **Procedures/Instructions for Assemblies/Components/Parts In Work or In Stock (at all levels including war reserves)**

a. Items in Retail Stock - Commanders and facility managers that maintain retail stock at installation level and below will complete the following procedures.

(1) Contact the supported aviation unit, as required, to perform the procedures required on affected items.

(2) Submit a Task/Inspection report in accordance with paragraph 5b.

b. Items in Single Stock Fund and in Work (Overhaul/Repair Facility) - N/A.

c. Items in Wholesale Stock - N/A.

10. **Special Tools and Fixtures Required**. N/A.

11. Supply/Parts (Requisition/Disposition)

a. Parts Required. The following parts/components may be required to return aircraft to a serviceable condition.

NOMENCLATURE	PART NUMBER/ NATIONAL STOCK NUMBER	QUANTITY	COST EACH	TOTAL $
Swashplate, Aft	145R3551−20 1615−01−475−9838	1	$133,245.00	$133,245.00
Swashplate, Fwd	145R3551−19 1615−01−473−4376	1	$133,245.00	$133,245.00
Bearing	114R3104−4 3120−01−342−0061	2	$3599.40	$7198.80
Seal	114RS306−6 5330−00−999−4077	2	$533.60	$1067.20
Retainer	114R3417−3 5330−01−474−4303	4	$317.98	$1271.92
Ring Assembly	114R3490−1 1615−01−476−0755	1	$4354.32	$4354.32
Bolt	BACB30LC6−38 5306−01−474−3835	36	$2.77	$99.72
Bolt	BACB30FD5H14 5306−01−476−1906	36	$3.07	$110.52
Nut, Self−Locking	FN22M524 5310−01−070−9314	12	$6.11	$73.32
Bolt, Shear	MS21134H05004 5306−01−108−7462	12	$4.19	$50.28
Gasket	114R3428−1 5330−00−849−4366	2	$74.16	$148.32
Nut, Self−Locking	FN22M−428 5310−01−184−0356	10	$3.92	$39.20
Nut, Self−Locking	FN22M−624 5310−01−184−0354	36	$1.62	$58.32
Retainer, Swashplate	114R3126−4 1615−00−181−4127	2	$108.49	$216.98
				Total max cost per aircraft = $281178.90

b. Bulk and Consumable Materials.

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
Cleaning Compound, Solvent	MIL-PRF-680	6850-01-474-2309
Grease, WTR	MIL−G−81322	9150−00−145−0268
Tongue depressor (wooden)	GGD226	6515−00−324−5500
Cloth, Lint Free	MIL−C−24671	4470−01−498−8080

c. Requisitioning Instructions. N/A.

d. Disposition of discrepant parts/components. Submit a Category I Quality Deficiency Report (QDR) on any Swashplate Assembly unserviceable in accordance with paragraph 8 of this message. Retain the current and previous grease collections and await Cat I QDR disposition instructions.

e. Disposition of Hazardous Material. In accordance with Environmental Protection Agency directives as implemented by your servicing environmental coordinator (AR 200-1).

12. **Maintenance Application**.

a. Category of Maintenance – AVUM. Aircraft downtime will be charged to AVUM.

b. Estimated Time Required – total of 0.5 man-hours using 1 person to update aircraft records.

13. **Publication Requirements**

a. References

(1) AR 95-1.

(2) DA PAM 738-751.

(3) TM 55-1520-240-23, Aviation Unit and Aviation Intermediate Maintenance Manual, CH-47D Helicopter.

(4) TM 1-1520-252-23, Aviation Unit and Aviation Intermediate Maintenance Manual, MH-47E Helicopter.

b. Publications Which Require Change as a Result of This Inspection. The following publications shall be changed to reflect this Technical Bulletin. A copy of this Technical Bulletin will be used as authority to implement the change until the official change is recieved.

(1) TM 55-1520-240-23 – Delete the 50 hour recurring AOAP grease sample of the Forward and Aft Swashplate Bearings.

(2) TM 1-1520-252-23 – Delete the 50 hour recurring AOAP grease sample of the Forward and Aft Swashplate Bearings.

(3) TB 43-0106 Appendix A for the CH-47 – Delete the 50 hour recurring grease sample of the Forward and Aft Swashplate Bearings.

(4) TB 1-1520-240-30-02 – Delete the paragraph 9.b. requirement for an AOAP grease sample of the Forward and Aft Swashplates.

14. **Points of Contact**.

a. Technical points of contacts are;

(1) Primary – Mr. Timothy Rickmeyer, AMSRD-AMR-AE-C, DSN 897-2350 extension 9854 or (256) 705-9854, fax is (256)705–9900. E-mail is “timothy.rickmeyer@rdec.redstone.army.mil”.

(2) Alternate – Mr. Michael McCall,AMSRD-AMR-AE-C, DSN 897–2350, extension 5243 or (256) 319-5243, fax is (256) 705–9900. Email is “mike.mccall@rdec.redstone.army.mil”.

b. Logistical point of contacts are;

(1) Primary – Mr. Bill Olson, SFAE-AV-CH-L, DSN 897-3379 or (256) 313-3379, fax is DSN 897-4348 or (256) 313-4348. E–mail is “william.olson@peoavn.redstone.army.mil”.

(2) Alternate – Mr. Jack Martin(AEPCO), SFAE–AV–CH–L, DSN 897–3617 or (256) 313–3617, fax is DSN 897–4348 or (256) 313–4348. Email is “john.martin@peoavn.redstone.army.mil”.

c. Wholesale Materiel point of contact (SPARES) is Ms. Geri Reddy, AMSAM-MMC-AV-CA, DSN 897-1454 or (256) 313-1454, fax is DSN 897-1106. E-mail is “geri.reddy@redstone.army.mil”.

d. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAM-MMC-MA-NM, DSN 746-5564 or commercial (256) 876-5564, fax is DSN 746-4904 or (256) 876–4904.
E–mail is “ann.waldeck@redstone. army.mil”.

e. Safety points of contact are ;

(1) Primary – Mr. Harry Trumball (SAIC), AMSAM–SF–A, DSN 897–2095 or (256) 313–2095, fax is DSN 897–2111 or (256) 313–2111.
E–mail is “harry.trumball@redstone.army.mil”.

(2) Alternate – Mr. Russell Peusch, AMSAM-SF-A, DSN 788-8632 or (256) 842-8632, fax is DSN 897-2111 or (256) 313-2111.
E–mail is “russell.peusch@redstone.army.mil”.

f. Foreign Military Sales (FMS) point of contact is Mr. Ronnie Sammons, AMSAM-SA-AS-UT, DSN 897-0875 or (256) 313-0875, fax is DSN 897-0411 or (256) 313-0411. E-mail is “ronnie.sammons@redstone.army.mil”.

g. After hours contact AMCOM Operations Center (AOC) DSN 897-2066/7 or (256) 313-2066/7.

15. **Reporting of Errors and Recommending Improvements**. You can help improve this manual. If you find mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM–MMC–MA–NP, Redstone Arsenal, AL 35898–5230. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax or the world wide web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web use: https://amcom2028.redstone.army.mil.

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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
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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
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