URGENT

***TB 1-1520-238-20-89**

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

ONE TIME AND RECURRING INSPECTION OF MAIN ROTOR STRAP PACK OUTBOARD BOLTS AND LEAD LAG LINK TEFLON SLEEVE BEARINGS FOR ALL AH-64 AIRCRAFT

Headquarters, Department of the Army, Washington, D.C.
30 March 1998

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NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED

1. Priority Classification. URGENT.

NOTE

Reference AR 95-1, paragraph 6-6.a., for noncompliance authority of major commanders.

a. Aircraft in Use. Upon receipt of this 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. 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 paragraph 1a.

***This TB supersedes USAAMCOM Aviation Safety Action Message 241907Z Feb 98 (AH-64-98-ASAM-04)**

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

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

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

For assets in wholesale stock the inspection in paragraph 8 is not required until receipt by a retail activity.

For stock at retail activities: Zero Time Strap Packs do not require inspection until the next 125 hour inspection. This Technical Bulletin (TB) will be complied with on all Strap Packs prior to installation.

g. Components/Parts in Work (Depot Level and Others). Items listed in paragraphs 6 and 7 in work will not be issued until compliance with this TB is completed.

2. Task/Inspection Suspense Date. Within next 50 flight hours.

3. Reporting Compliance Suspense Date. No later the 15 April 98 per paragraph 14a of this message.

4. Summary of Problem.

NOTE

This message contains two separate inspections.

a. History.

(1) Main Rotor Strap Pack. Cracks may develop around the inner diameter of the outboard main rotor strap pack bolt. Task entails a Fluorescent Dye Penetrate Inspection of all Outboard Main Rotor Strap Pack Bolts.

NOTE

Lead Lag Links -11 configuration must be removed for the Bearing Inspection in the following task.

(2) **Lead Lag Link Assembly**. Several maintenance activities have recently found Teflon Liners in Sleeve Bearings (P/N 7-311411154-1) of the Lead Lag Link (P/N 7-311411155-11) debonding/deteriorating. This deterioration is occurring after a very short period of use. All premature Sleeve Bearing failures have been traced to a single vendor, Southwest Products (SWPCO, Cage 81376). Task entails the removal of the -11 configuration Lead Lag Links and visual inspection of Sleeve Bearings for serviceability.

b. For Manpower/Downtime and Funding Impacts. See paragraph 12.

c. The purpose of this message.

(1) Direct a one time and recurring inspection of all Strap Pack Outboard Bolts for cracks. All strap packs with flight hours will be inspected within the next 50 flight hours and each 125 flight hours thereafter.

(2) Direct a one-time inspection of all AH-64 Aircraft to determine if any 7-311411155-11 (dash 11) Lead Lag Links are installed. If so, disassemble and inspect for Sleeve Bearings manufactured by Southwest Products in the link as well as the condition of the Teflon. A 50 flight hour recurring inspection of all aircraft with sleeve bearings manufactured by Southwest Products are required.

(3) The 50-hour and 125 hour inspection intervals were chosen to allow aligning the inspections with scheduled Phase Maintenance Inspections. Every effort should be made to coordinate inspections so that all Strap Packs on each Main Rotor Hub Assembly are inspected at the same time.

5. End items to be inspected. All AH-64 Aircraft.

6. Assembly components to be inspected.

Nomenclature	Part Number	NSN
Head, Rotary Wing	7-311411003-601	N/A
	7-311411003-603	N/A
	7-311411003-605	1615-01-209-9169
	7-311411003-607	1615-01-245-3148
	7-311411003-609	1615-01-249-3989
	7-311411003-611	1615-01-306-6948
	7-311411003-613(fsp)	1615-01-306-6948
	7-311411003-615	1615-01-334-4933
	7-311411003-617	N/A
	7-311411003-619(fsp)	1615-01-306-6948
	7-311411003-621	N/A
	7-311411004-623	N/A
Lead-Lag Link	7-311411155-11	3040-01-352-1531

7. Parts to be inspected.

Nomenclature	Part Number	NSN
Strap Assembly	7-311411146-5	1615-01-154-7076
	7-311411146-7	1615-01-154-7076
Sleeve Bearing	7-311411154-1	3120-01-352-0217

8. Inspection Procedures.

a. Strap Pack Bolt Inspection.

NOTE

Perform the following inspection at ambient temperatures of 50 degrees F to 120 degrees F (10 degrees C to 49 degrees C). Do not wear sunglasses or glasses with polarized or photometric grey lenses while performing this inspection. This inspection is to be done without developer, do not apply developer. Critical detectable flaw size is 0.020 inch long x 0.010 inch deep.

(1) Within the next 50 flight hours, remove Lead Lag Link IAW paragraph 5.33, TM 1-1520-238-23.

(2) Clean inner diameter of Strap Pack Outboard Bolt using Isopropyl Alcohol. Do not use any abrasive.

(3) Visually inspect for cracks, none allowed.

(4) Using a cotton swab soaked in Type I, Method C, Sensitivity Level 4, Fluorescent Penetrant Dye (MIL-1-25135) wet entire inner diameter of Strap Pack Bolt. Use black light to ensure complete coverage. At temperatures below 60 degrees F (15 Degrees C), allow penetrant to remain on part for at least one hour. At temperatures above 60 degrees F (15 degrees C), allow the penetrant to remain on the part for at least 30 minutes. Make sure the surface remains wet throughout the entire dwell time. Reapply penetrant if necessary.

(5) Use a clean dry cloth to remove as much excess surface penetrant as possible. Using a clean Lint Free Cloth dampened with solvent (MIL-1-25135), remove residual background surface penetrant. Use black light to ensure all excess penetrant is removed. Allow 30 minutes dwell time before continuing the inspection.

(6) Place opaque (dark colored blanket, black poly sheet, etc.) cover over inspector and area to be inspected. Use Black and White Light Meters to assure proper light intensities (less than 2 ft-candles). Allow at least one minute for eyes to adjust to dark conditions.

(7) Inspect entire inner diameter of bolt with black light. Use inspection mirror for closer inspection. Pay particular attention to middle of Strap Pack Bolt.

NOTE

The minimum size flaw of 0.020 inch long may show as nothing more than a pin hole.

(8) If bleed out occurs, wipe indication with solvent dampened swab. Allow 30 minute dwell time and reinspect. If indication does not reappear it is not a defect. If the indication reappears, replace the Strap Pack and submit a Cat 1 QDR, and contact Technical Point of Contact.

(9) If no cracks are present, clean area. Reassemble Main Rotor Head.

(10) Reinspect every 125 hours.

b. Lead Lag Link Sleeve Bearing Inspection.

(1) Inspect all Lead Lag Links (7-311411155) for the -11 configuration. If no -11 configured Lead Lag Links are found, inspection is complete, no corrective action required. If a -11 configuration link is found, continue with inspection procedures.

(2) Main Rotor Blade from all -11 links IAW paragraph 5.3 of TM 1-1520-238-23.

(3) Remove -11 Lead Lag Link IAW paragraph 5.33 of TM 1-1520-238-23.

(4) Inspect Lead Lag Link for Sleeve Bearings manufactured by Southwest Products. Teflon Liners in the Southwest Products Sleeve Bearings have a milky white film. Teflon Liners in Sleeve Bearings produced by other manufactures are dark brown or black.

(5) If Liners in all Sleeve Bearings are brown or black and overall condition is serviceable, IAW paragraph 5.33.5 TM 1-1520-238-23, inspection is complete, no corrective action required. No recurring inspection is required for these Sleeve Bearings/Links. If liner(s) are milky white, proceed with Inspection of paragraph 8b(6).

(6) If Teflon Liners in any Sleeve Bearing has a milky white film, inspect for overall condition. If its condition is unserviceable, IAW paragraph 5.33.5 TM 1-1520-238-23, proceed to paragraph 9 below. If its condition is serviceable, no correction procedure is necessary. Reassemble Link and Blades.

(7) Reinspect every 50 hours.

9. Correction Procedures.

a. Strap Pack Bolt.

(1) If any cracks are found in the Strap Pack Bolt, replace Strap Pack IAW paragraph 5.35, TM 1-1520-238-23. A Category 1 Deficiency Report will be required. Contact the Technical Point of Contact for disposition.

(2) Repeat Fluorescent Penetrant Inspection every 125 flight hours.

b. Lead Lag Link Bearings.

(1) Remove and Replace Sleeve Bearing(s) IAW paragraph 5.33a, TM 1-1520-238-23.

(2) Reinstall Lead Lag Links lAW paragraph 5.33, TM 1-1520-238-23.

(3) Repeat Lead Lag Link Bearing inspection of Southwest Products Bearings every 50 hours.

(4) Reinstall Main Rotor Blades IAW paragraph 5.4, TM 1-1520-238-23.

10. Supply/Parts and Disposition.

a. Parts Required. Items cited in paragraphs 6, 7, and 12 may be required to replace defective items.

b. Requisitioning Instructions. Requisition replacement parts using normal supply procedures. All requisitions shall use Project Code (cc 57-59) "XDS", XRAY-DELTA-SIERRA.

NOTE

Project code "XDS" is required to track and establish a data base of expenditures incurred by the field as a result of Technical Bulletin actions.

c. Bulk and Consumable Materials.

Nomenclature	Part Number	NSN
Isopropyl Alcohol	2200200	6810-00-753-4993
Fluorescent Dye Kit Penetrant, Type I, Method C, Sensitivity Level 4	MIL-1-25135	6635-00-566-5198
Lint Free Cloth	MIL-C-85043	7920-00-044-9281
Cotton Swabs		

11. Special Tools and Fixtures Required.

Nomenclature	Part Number	NSN
Radiometer-Photometer	DSE-100X	6635-01-253-1343
Visible Light Sensor Head	DIX-555	6635-01-255-3238
Blacklight Sensor Sensor Head	DIX-365	6635-01-255-3239

An equivalent to the above items may be used.

12. Application.

a. Category of Maintenance. AVUM with AVIM support. Aircraft downtime will be charged to AVUM.

b. Estimated time required.

(1) Strap Pack Inspection.

Total of 20 man-hours using 2 persons for inspection.
Total of 10 hours down time for one end item.

(2) Lead Lag Link Bushing Inspection.

Total of 5 hours using 1 person.
Total of 5 hours downtime for one end item.

c. Estimated cost impact to the field.

Nomenclature	Part Number/NSN	Qty.	Cost Ea.	Total $
Lead Lag Link	7-31141155-11 3040-01-352-1531	4	$ 5,351.00	$ 21,404.00
Housing Assembly	7-311411215-13/-15 1615-01-235-5845	4	$ 3,726.00	$ 14,904.00

Nomenclature	Part Number/NSN	Qty.	Cost Ea.	Total $
Strap Assembly, Main Rotor	7-311411146-7 1615-01-154-7076	4	$ 5,403.00	$ 21,612.00
Bushing, sleeve	7-311411154-1 3120-01-352-0217	8	$ 135.00	$ 1,080.00
Pin, Blade Main Rotor	7-211411185-3 1615-01-164-3917	8	$ 187.00	$ 1,496.00
Pin Assembly	7-211411199-3 1615-01-163-4514	4	$ 333.00	$ 1,332.00
Bolt, Shear	HS 4924-14D48 5306-01-179-0901	8	$ 127.93	$ 1,023.44
Nut, Self Lock	AS679A5 5310-00-807-1476	8	$ 19.90	$ 159.20
Nut, Self Lock	HS262-1216 5310-01-164-5854	24	$ 5.92	$ 142.08
Retainer, Bearing	7-211411207 1615-01-170-5230	8	$ 23.59	$ 188.72
Bearing, Sleeve	7-311411164 3120-01-156-3671	8	$ 93.31	$ 746.48
Nut, Self Lock	HS4133-14 5310-01-179-0862	8	$ 89.75	$ 718.00
Washer, Flat	HS4742-14G635A 5310-01-176-7026	8	$ 27.41	$ 219.28
Washer, Flat	NAS1149D0563J 5310-01-123-0913	16	$ 1.59	$ 5.44
Bolt, Shear	NAS6612H38 5306-01-313-9194	8	$ 9.61	$ 76.88
Bushing, Sleeve	7-211411198-7 3120-01-170-5298	8	$ 7.60	$ 60.80
Washer, Flat	NAS143-12 5310-00-595-6612	8	$ 3.38	$ 27.04
Washer, Flat	AN960JD516 5310-01-123-0913	8	$ 1.59	$ 12.72
Nut, Self Lock	MS2104214 5310-00-807-1475	4	$ 8.04	$ 32.16
Bolt, Shear	NAS1304-120 5306-01-068-0483	4	$ 8.94	$ 35.76
Bracket, Angle	7-211411208 5340-01-170-7455	4	$ 4.03	$ 16.12
Bearing, Sleeve	7-211411200 3120-01-170-5295	8	$ 3.37	$ 26.96
Shim	7-211411204-5 5365-01-172-5205	4	$ 11.92	$ 47.68
Washer, Flat	7-311411220 5310-01-254-7278	16	$ 1.86	$ 29.76
Bolt, Shear	NAS6605-3 5306-01-150-3993	8	$ 0.37	$ 2.96
Bolt, Shear	NAS1305-4H 5306-00-806-7698	8	$ 0.85	$ 6.80
Bolt, Shear	NAS1305-2H 5306-00-027-8103	8	$ 0.77	$ 6.16
Washer, Flat	AN960KD416 5310-01-145-3153	4	$ 2.28	$ 9.12
Washer, Flat	HS4244-14 5310-01-179-0860	8	$ 0.54	$ 4.32
Washer, Flat	AN960KD516L	8	$ 0.03	$ 0.24

Nomenclature	Part Number/NSN	Qty.	Cost Ea.	Total $
	5310-01-135-2886			
Washer, Flat	MS9549-17	8	$ 0.10	$ 0.80
	5310-00-013-9992			
Shim	7-211411207	variable	$ 5.17	$ variable
	5365-01-170-7000			
	Total Potential Cost Per Aircraft		=	$ 65,446.92

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 1-1520-238-23.

13. Reference. TM 1-1520-238-23, Aviation Unit and Intermediate Maintenance Manual for Army AH-64A Helicopter, 16 May 1994.

14. Recording and Reporting Requirements.

a. Reporting Compliance Suspense Date (Aircraft). Upon entering requirements of this message on DA form 2408-13-1 on all subject Boeing Aircraft, forward a priority message, Datafax or E-Mail to CDR, AMCOM, ATTN: AMSAM-SF-A (SOF Compliance Officer), Redstone Arsenal, Al 35898-5222, IAW AR 95-1. Datafax number is DSN 897-2111 or (205) 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. The following forms are applicable and are to be completed IAW DA PAM 738-751, 15 Jun 92.

NOTE
ULLS-A users will use the applicable "E" forms

(1) DA form 2408-5-1, Equipment Modification Record (Lead Lag Link Assembly and Head, Rotary Wing).

(2) DA form 2408-13, Aircraft Status Information Record.

(3) DA form 2408-13-1, Aircraft Inspection and Maintenance record.

(4) DA form 2408-14, Uncorrected Fault Record.

(5) DA form 2408-15, Historical Record for Aircraft.

(6) DA form 2408-16, Aircraft Component Historical Record. Used only if Lead Lag Link or Head Rotary Wing is replaced.

(7) DA form 2408-18, Equipment Inspection List. ULLS-A users will add the following inspections to the Master Inspection List: Inspection Number 150 for the 50 hour recurring Lead Lag Link Bearing Inspection. Inspection Number 225, (AH-64A), Inspection Number 230 (AH-64D) for the 125 hour Strap Pack Bolt Fluorescent Penetrant Inspection.

(8) DA form 2410, Component Removal and Repair/Overhaul Record. Only if the Lead Lag Link assembly or Strap Pack Assembly is replaced.

15. Weight and Balance. N/A.

16. Points of Contact.

a. Technical point of contact for this message is Mr. Kenneth Muzzo, AMSAM-AR-EI-P-A, DSN 897-4812 or (205) 313-4812. E-mail is muzzo-kw@avrdecr.redstone.army.mil. Datafax is DSN 897-4923 or (205) 313-4923.

b. Logistical point of contact for this message is Mr. John

Patton, SFAE-AV-AAH, DSN 897-4244 or (205) 313-4244, E-mail is pattonj@peoavn.redstone.army.mil. Datafax is DSN 897-4343 or (205) 313-4343.

c. Forms and Records point of contact for this message is Ms. Ann Waldeck, AMSAM-MMC-RE-FF, DSN 746-5564 or (205) 876-5564, Datafax is DSN 746-4904 or (205) 876-4904. E-mail is waldeck-ab @ redstone.army.mil.

d. Safety point of contact for this message is Mr. Howard Chilton, AMSAM-SF-A, DSN 746-7271 or (205) 876-7271, Datafax is (205) 313-2111. E-mail is chilton-hl @ redstone.army.mil.

e. Foreign Military Sales recipients requiring clarification of action advised by this message should contact:
CW 5 Joseph I. Wittstrom, security assistance management, AMSAM-SA, DSN 897-0681 or (205) 313-0681. Email is wittstrom-jl@ redstone.army.mil or Mr. Ronnie W. Sammons, AMSAM-SA-CS-NF, Dsn 897-0869 or (205) 313-0869. Datafax is dsn 897-0411 or (205) 313-0411.
Email is sammonsrw@redstone.army.mil. Huntsville, AL is GMT minus 6 hrs.

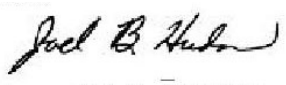
f. After hours contact the AMCOM COMMAND OPERATIONS CENTER (COC) DSN 897-2066/7 or (205) 313-2066/7.

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 Missile Command. ATTN: AMSAT-MMC-LS-P, Redstone Arsenal, AL 35898-5238. A reply will be furnished directly to you. You may also submit your recommended changes by E-mail directly to ls - lp@redstone.army.mil or by fax 205-842-6546/DSN 788-6546. Instructions for sending an electronic 2028 may be found at the back of this manual.

By Order of the Secretary of the Army:

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

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
04634

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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

'VEIGHTS

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

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

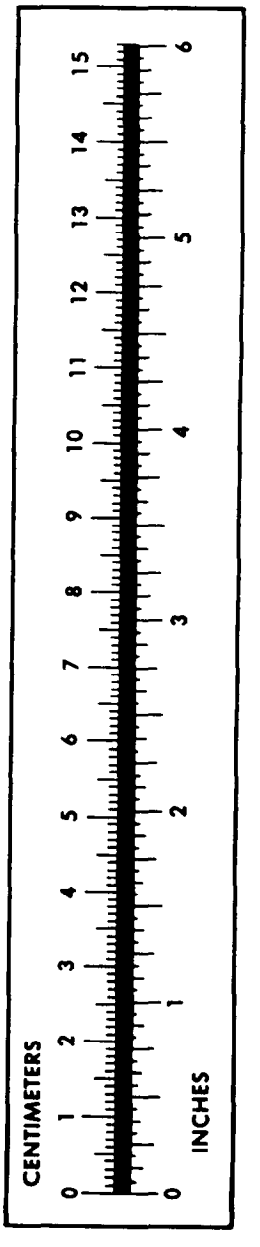
TEMPERATURE

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

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
'ers	Gallons	0.264
.ms	Ounces	0.035
.ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
›meters per Hour	Miles per Hour	0.621



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