

URGENT

*TB 1-2840-229-20-16

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

INSTALLATION OF COATED N2 SPUR GEARS
FOR ALL UH-1H/ SERIES AIRCRAFT
WITH T53-L-13B ENGINES
(P/N 1-000-060-22) INSTALLED

Headquarters, Department of the Army, Washington, D. C.
10 June 1998

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NOTE
THIS PUBUCATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

NOTE
This TB DOES NOT supersede TB 1-2840-229-20-15 (SOFUH-1-98-05). Unless otherwise specified in this TB, all requirements of TB 1-2840-229-20-15 shall continue to be adhered to.

1. **Priority Classification.** Urgent

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

a. Aircraft in Use. TB 1-1520-210-15-1 (SOF UH-1-98-04) placed all affected aircraft on a **Red X** condition status symbol. TB 1-2840-229-20-15 (SOF UH-1 -98-05) changed the status symbol to a **Circled Red X** for the purpose of doing the engine vibration inspection. Aircraft that have not been inspected per TB 1-2840-229-20-15 (SOF UH-1-98-05) shall remain on condition status **Red X** pending completion of that inspection. Those aircraft that failed the inspection of TB 1-2840-229-20-15 (SOF UH-1-98-05) shall remain on condition status symbol **Red X**, and shall not be inspected/corrected by this TB. Aircraft that passed the inspection of TB 1-2840-229-20-15 (SOF UH-1 -98-05) shall continue to carry the condition status symbol **Circled Red X**. The **Circled Red X** shall be cleared on priority aircraft that have the coated N2 spur gear installed perthis TB. The **Red Dash** status required by TB 1-2840-229-20-15 (SOF UH-1-98-05) shall continue for all mission-capable aircraft.

- b. Aircraft In Depot Maintenance.** Same as paragraph 1.a.

*This TB supersedes USAAMCOM Safety of Flight Message (SOF) UH-1-98-06 41508Z MAY 98.

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

d. **Aircraft In Transit** Same as paragraph 1.a.

e. **Maintenance Trainers.** Same as paragraph 1.a

f. **Component/Parts In Stock at All Levels (Depot and Others) Including War Reserves.** Upon receipt of this TB, the materiel condition tags of all items in all condition codes listed in paragraphs 6. and 7. shall be annotated to read TB 1-2840-229-20-15 (SOF UH-1-98-05) and TB 1-2840-229-20-16 (SOF UH-1-98-06) not complied with".

2. **Task/Inspection Suspense Date.** Within the next 10 flight hours/7 days.

3. **Reporting Compliance Suspense Date.** No later than 5 June 1998 IAW paragraph 14.a. of this TB.

4. **Summary of the Problem.**

a. **Background.**

(1) All UH-1H/V series aircraft were grounded, due to T53 Engine N2 spur gear failures, via TB1-1520-210-15-1. TB 1-2840-229-20-15 was then issued to implement an N2 spur gear vibration inspection utilizing AVA test equipment. Aircraft that passed the vibration inspection were allowed to be flown under certain flight restrictions and were required to perform a recurring 25-hour vibration inspection. Those aircraft that have failed the initial, or a subsequent, 25-hour vibration inspection remain grounded until future corrective actions are directed or the engine is replaced and the vibration inspection of TB 1-2840-229-20-15 is passed.

(2) A coated N2 spur gear has been developed that attenuates the stresses in the gear to lower levels. This coated N2 spur gear will be installed on some aircraft that have passed the vibration inspection of TB 1-2840-229-20-15. Aircraft that receive the coated spur gear will be cleared from flight restrictions, but are still required to perform the 25-hour recurring vibration inspection of TB 1-2840-229-20-15. A limited number of these coated spur gears have been procured and will be installed on a priority basis. Aircraft priority has been established jointly by the Department of the Army and the MACOMs. Units will be notified separately by their MACOMs of their priority status.

(3) Effort continues on development/testing of long-term corrective action. The corrective action is expected to begin fielding by the second quarter of FY 99.

b. **For Manpower/Downtime and Funding Impacts, See Paragraph 12.**

c. **The Purpose of this TB is** to direct installation of coated N2 spur gears in a limited number of engines, and to identify the procedure for scheduling the N2 spur gear replacement.

5. **End items to be Inspected.** All UH-1H/V series aircraft with T53-L-13B engines (P/N 1-000-060-22) installed.

6. **Assembly Components to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
T53-L-13B Engine	1-000-060-22	2840-00-134-4803

7. **Parts to be Inspected.**

NOMENCLATURE	PART NUMBER	NATIONAL STOCK NUMBER
N2 Spur Gear	1-070-062-04	3020-00-453-9441

8. Inspection Procedures.

NOTE

In order to determine aircraft eligibility for replacement of the N2 spur gear, the vibration inspection of TB 1-2840-229-20-15 (SOF UH-1-98-05) must be completed and the results submitted to your MACOM POC. If this has not been accomplished, ensure that the vibration inspection is scheduled, completed and reported as soon as possible.

CAUTION

No parts are to be removed from engines that failed the Inspection required by TB 1-2840-229-20-15 (SOF UH-1-98-05) and Installed on other serviceable engines.

- a. Determine aircraft eligibility for coated N2 spur gear replacement by contacting your MACOM POC listed in paragraph 16.
- b. Schedule installation of coated N2 spur gear as directed by your MACOM.

9. Correction Procedures.

- a. Only AMCOM-approved, depot-trained teams shall replace the N2 spur gear (P/N 1-070-062-04) on priority aircraft.

NOTE

The 25-hour recurring vibration inspection specified in TB 1-2840-229-20-15 shall continue to be performed on engines that have the coated spur gear installed. It is allowable to apply a plus or minus ten percent time tolerance, per TM 1-1500-328-23, for the purpose of completing the 25-hour recurring inspection.

NOTE

The authorized repair teams will be using a revised AMCOM-approved procedure to install the N2 spur gear. The DMWR and TM 1-2840-260-23P will be updated to show changes and parts.

- b. Upon completion of coated N2 spur gear installation, the AVA vibration inspection shall be performed IAW the procedures specified in TB 1-2840-229-20-15.
- c. If the engine passes the vibration inspection after installation of the coated N2 spur gear, the condition status symbol, **Circled Red X**, may be cleared and the aircraft shall be released from all flight restrictions imposed by TB 1-2840-229-20-15.

NOTE

Some engines may have been pre-screened for vibration in a test cell using the AVA procedure of TB 1-1840-229-20-15. Engines that exhibit acceptable vibration levels in a test cell may be installed on an aircraft. However, the vibration screening of TB 1-2840-229-20-15 must again be performed on the engine after installation.

NOTE

Further information/guidance will be provided in a follow-on SOF message concerning the long-term corrective action which will clear all UH-1H/V aircraft for unrestricted flight and eliminate the need for the 25-hour recurring inspection.

- d. If the engine fails the vibration inspection after installation of the coated N2 spur gear, the aircraft condition status symbol shall be changed to **Red X** and shall not be flown. If the engine fails the vibration test during this inspection, contact the logistics POC listed in paragraph 16.b.

e. Aircraft with engines that do not receive the coated N2 spur gear and have passed the vibration inspection of TB 1-2840-229-20-15, shall continue to adhere to the inspection requirements and flight restrictions of TB 1-2840-229-20-15.

f. At the discretion of the local commander, all aircraft that fail the AVA vibration inspection (**Red X** status symbol) shall be placed in an appropriate aircraft storage category per TM 55-1520-210-23-3.

10. Supply/Parts and Disposition.

a. **Parts Required.** Coated N2 spur gear, P/N 1-070-062-06, is required to replace defective items.

b. **Requisitioning Instructions.** N/A.

c. **Bulk and Consumable Materials.** A bulk and consumable materials kit will be issued to priority units. The components of the kit are listed below:.

NOMENCLATURE	P/N	NSN	QTY
Retainer Nut/locknut	1-070-065-01	5340-00-916-2591	1 EA
Packing	1-020-017-01	5331-00-766-8653	1 EA
Packing	M83248/1 -008	5331-00-166-0967	2 EA
Packing	M83248/1-012	5331-00-166-0980	2 EA
Packing	M83248/1-013	5331-00-166-0988	6 EA
Packing	M83248/1-014	5331-00-166-0990	7 EA
Packing	M83248/1-015	5331-00-166-0991	5 EA
Packing	M83248/1-113	5331-00-166-1062	2 EA
Packing	M83248/1-114	5331-00-166-1063	1 EA
Packing	M83248/1-122	5331-00-167-5111	2 EA
Packing	M83248/1-128	5331-00-167-5116	1 EA
Packing	M83248/1-131	5331-00-167-5119	1 EA
Packing	M83248/1-138	5331-00-537-3929	1 EA
Packing	M83248/1-144	5331-00-167-5126	1 EA
Washer Convex	1-030-138-04	5310-00-161-7435	1 EA
Retainer Bolt	1-030-141-03	2840-00-084-7761	1 EA
Gasket	1-080-026-01	5330-01-388-3065	1 EA
Gasket	1-080-025-02	5330-01-330-9629	1 EA
Seal Tubing	1-300-368-01	5330-00-570-9811	1 EA
Gasket	1-160-454-01	5330-01-374-9261	1 EA
Washer	STD3023K2	5310-00-658-5299	3 EA
Lockcup	1-070-066-03	5340-01-430-0385	1 EA

d. **Disposition.** Demilitarize/mutilate N2 spur gears (P/N 1-070-062-04) IAW TM 1-1500-328-23 by cutting, crushing or grinding to prevent further use.

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, Jigs and Fixtures Required.

NOMENCLATURE	P/N	NSN
Holding Focture Carrier Assy	LTCT3040	4920-00-946-2188
Wrench Assy Nut	LTCT4020	5120-00-917-7116
Sungear Holding Foiture	LTCT2075	4920-00-923-2773
Installation Tool	LTCT4576	2840-00-842-6130
Puller	LTCT2021	5120-00-804-2629
Flag Backlash Gauge	LTCT4564	4920-00-842-6126
Driver Wrench	LTCT258	5120-00-778-0661
Flag	LTCT2099	5220-00-906-3926
Puller	LTCT2028	5120-00-757-4910
Wrench	LTCT2133	5120-00-952-7257
Installation Tool	LTCT108	5120-00-716-5581
Wrench	LTCT696	5120-00-923-3445
Holder Gear Assy	CCAD Tool # 73 SAVAE-D-0068	
Holder Gear (same as above)	LTCT4946	4920-00-105-3033
Puller Bearing	LTCT675	5120-00-780-4423
Bushing Sleeve	LTCT3636	3120-00-071-8261
Lifting Fixture	LTCT4182	4920-00-994-1129
T-Handle Bolts (3 EA)	LTCT1429	5120-00-959-7634
Tool Set	LTCT509	5120-00-446-1586
Bushing Sleeve	LTCT3640	3120-00-067-8320
Guide	LTCT4602	4920-00-891-8372

12. Application.

a. Category of Maintenance. Depot

b. Estimated Time Required.

(1) Total of 14 man-hour using 3 persons.

(2) Total of 14 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.

TB 1-2840-229-20-15 (SOF UH-1-98-05).

e. Publications which Require Change as a Result of this Inspection. TM 1-2840-260-23P and DMWR 1-2840-113, Volumes 1-4 shall be changed to reflect this TB. 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 1-6625-724-13&P.
- b. TM 55-1520-210-23P-1.
- c. TM 55-1520-210-23.
- d. TM 1-1500-328-23.
- e. TM 55-1520-210-10.
- f. TM 55-1520-242-MTF.
- g. TM 1-2840-260-23P.
- h. TB 1-2840-229-20-9 (UH-1-96-03).
- i. TB 1-2840-229-20-13 (UH-1-98-02).
- i. TB 1-1520-210-15-1 (UH-1-98-04).
- k. TB 1-2840-229-20-15 (SOF UH-1-98-05).
- l. DMWR 1-2840-113, Volumes 1-4.

14. Recording and Reporting Requirements.

a. Reporting Compliance Suspense Date (Aircraft). Upon entering requirements of this TB on DA Form 2408-13-1 for all subject mission design series (MDS) aircraft, forward a priority message, datafax or E-mail to CDR, AMCOM, ATTN: AMSAM-SF-A (SOF Compliance Officer), IAW AR 95-1. Datafax number is DSN 897-2111 or commercial (256) 313-2111. E-Mail address is <safeadmrrredstone.army.mil>. The report will cite this TB number, date of entry on DA Form 2408-13-1, the aircraft MDS, and serial numbers of aircraft in numerical order.

b. Task/inspection Reporting Suspense Date (Aircraft).

(1) Within 10 days of installation, units installing coated N2 spur gears will provide the results of the installation on the backlash worksheet forms supplied with the repair procedures, signed by the technical inspector, to their MACOM POC listed in paragraph 16.c. Assure that both the aircraft serial number and the engine serial number are entered on the data sheet for each engine screened.

(2) MACOMs shall forward the data sheets to the logistics POC listed in paragraph 16.b. The MACOM POC will be provided routine updates as further information becomes available on long term corrective action.

c. Reporting TB Receipt (Spares). N/A**d. Task/inspection Reporting Suspense Date (Spares). N/A.**

e. The following forms are applicable and are to be completed in accordance with DA PAM 738-751, 15 June 1992:

NOTE

For Unit Level Logistics System-Aviation (ULLS-A) users, use applicable electronic E forms.

- (1) DA Form 2408-5-1, Equipment Modification Record (Engine).

(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 2408-18, Equipment Inspection List.

(6) DD Form 1577-2/DD Form 1577-3, Unserviceable (Reparable) Tag/Label-Materiel (Color Green). Annotate the Remarks block with 'Unserviceable IAW TB 1-2840-229-20-16 (SOF UH-1-98-06).

15. Weight and Balance. N/A.

16. Points of Contact.

a. Technical points of contact for this TB are Mr. Mark Heitert, AMSAM-AR-E-P-E, DSN 897-4964 or (256) 313-4964; datafax is DSN 897-4961 or (256) 313-4961; E-mail is <heitertm@avrdecr.redstone.army.mil> and Mr. Ralph Vemmer, AMSAM-AR-E-I-B, DSN 645-0663 or (256) 955-0663; E-mail is <vemmer-rc@redstone.army.mil>.

b. Logistical point of contact for UH-1 aircraft is Mr. Charles Elkins, AMSAM-DSA-UH-U, DSN 645-0073 or commercial (256) 955-0073. Datafax is DSN 645-6590 or (256) 955-6590. E-mail is <elkins-ce@redstone.army.mil>. The AVA Logistical point of contact is Mr. Larry Quinton, AMSAM-DSA-WAG, DSN 788-0570, (256) 842-0570. E-mail is <quinton-ld@redstone.army.mil>. The Aviation Ground Support Equipment Logistical point of contact is Mike Carty, AMSAM-DSA-WAG, DSN 788-9945 or (256) 842-9945. E-mail is <carty-ma@redstone.army.mil>.

c. The MACOM points of contact are as follows:

AMC John Savelli	DSN 767-9891
USAR Monte McDonald	DSN 367-8310
FORSCOM MSG Crawford	DSN 367-5369
NGB Bobby Brown	DSN 327-7769
TRADOC Judy Dyer	DSN 680-5683
USAREUR Dave Spinks	011-49-631-413-8900
USARPAC Mitt Ford	DSN 438-8623
INSCOM Ken Harvey	DSN 235-1170
EUSA Dennis Reiland	DSN 315-723-4417

d. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAM-MMC-RE-F, DSN 746-5564 or commercial (256) 876-5564. Datafax is DSN 746-4904 or (256) 876-4904. E-mail is <waldeck-ab@redstone.army.mil>.

e. Safety point of contact for this TB is Mr. Robert Brock, AMSAM-SF-A, DSN 788-8632 or commercial (256) 842-8632. Datafax is DSN 897-2111 or (256) 313-2111. E-mail is <brock-rd@redstone.army.mil>. The alternate POC is Mr. Howard Chilton, AMSAM-SF-A, DSN 897-2068 or commercial (256) 313-2068. Datafax is DSN 897-2111 or (256) 313-2111. E-mail is <chilton-hl@redstone.army.mil>.

f. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact either CW5 Joseph L Wittstrom, Security Assistance Management, AMSAM-SA, DSN 897-0681 or commercial (256) 313-0681; E-mail is <wittstrom-jl@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 <sammons-rw@redstone.army.mil>. Huntsville, Alabama is GMT minus 6 hrs.

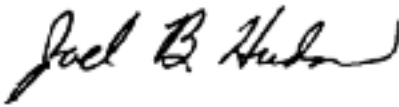
g. After hours contact AMCOM Command Operations Center (COC) DSN 897-2066/2067 or commercial (256) 313-2066/2067.

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, Alabama 35898-5230. A reply will be furnished to you. You may also send in your comments electronically to our E-mail address at <ds-lp@redstone.army.mil> or by datafax at DSN 788-6546 or commercial (256) 842-6546. Instructions for sending a DA Form 2028 by E-mail may be found at the back of most TMs.

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
04643

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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

SOMETHING WRONG WITH PUBLICATION

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NO.

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

TEAR ALONG PERFORATED LINE

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THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 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

1 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

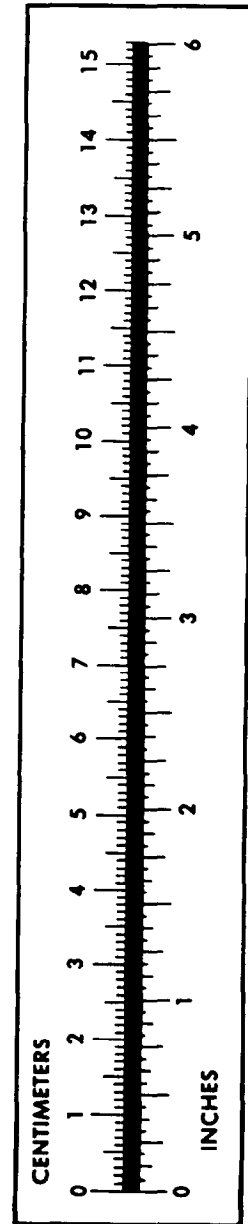
TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

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
its	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
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



PIN: 076631-000