

# URGENT

\* TB 1-1520-240-20-93

## DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

---

### ONE TIME INSPECTION FOR AND REPLACEMENT OF AN320-12 CASTELLATED NUTS MADE BY GREER STOP NUT INC FOR ALL CH-47D, MH-47D, AND MH-47E AIRCRAFT

---

Headquarters, Department of the Army, Washington, D. C.  
27 March 1997

---

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

#### NOTE

THIS PUBLICATION IS EFFECTIVE UNTIL RESCINDED OR SUPERSEDED.

#### 1. Priority Classification. Urgent

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 "-"** 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 required will cause the status symbol to be upgraded to a red "X".

b. Aircraft in Depot Maintenance. Inspect and correct prior to issue. Aircraft shall not be issued until compliance with this TB has been completed.

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

d. Aircraft in Transit.

(1) Surface/Air Shipment. Same as paragraph 1a.

(2) Ferry Status. Same as paragraph 1a.

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

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 listed in paragraph 7 below in all condition codes shall be annotated to read "TB 1-1520-240-20-93, One Time Inspection and Replacement of AN320-12 Castellated Nuts Made by Greer Stop Nut Inc., must be complied with prior to issue."

\* This TB supersedes USAATCOM Message 131508Z MAR 97 (CH-47-97-ASAM-05)

## TB 1-1520-240-20-93

(1) Wholesale Stock. Upon receipt of this TB, depot commanders shall ensure inspection of all items listed in paragraph 7 below located in all wholesale depots including all satellite wholesale depots and war reserve depots. Upon receipt of this TB, commanders and others maintaining wholesale stock shall ensure that serviceable materiel (condition code "A","B" and "C") is placed in condition code "J" and tagged with a suspended tag/label - DD Form 1576/1576-1. The authority block must reference inspection required per this TB (TB 1-1520-240-20-93). Any nuts found discrepant per the inspection procedures cited in paragraph 8 below shall be disposed of by mutilation to prevent resale, or reuse.

(2) Retail Stock. Upon receipt of this TB, commanders and others maintaining retail stock of items listed in paragraph 7 below shall contact their support aviation organization to perform the inspection required by paragraph 8 below and to perform the correction procedures of paragraph 9 below on discrepant materiel. All items listed in paragraph 7 below shall be immediately placed in condition code "D" and retagged with a test/modification tag/label - DD Form 1576/1576-1 (blue color). The authority block must reference inspection required per this TB (TB 1-1520-240-20-93). Items identified as serviceable in accordance with (IAW) paragraph 8 below shall be retagged with a serviceable tag/label - DD Form 1574/1574-1 (yellow color). Indicate compliance with this TB (TB 1-1520-240-20-93) in the remarks block. Any items found discrepant per the inspection procedures cited in paragraph 8 below shall be disposed of by mutilation to prevent resale, or reuse. Report compliance with this TB in accordance with paragraph 14d(2) below.

g. Components/Parts in Work. N/A.

2. **Task/Inspection Suspense Date.** Within 10 hours/14 days.
3. **Reporting Compliance Suspense Date.** No later than 03 April 1997 per paragraph 14a of this TB.
4. **Summary of the Problem.**

a. There have been three reported instances of AN320-12 castellated nuts found cracked. One during pre-flight inspection of a CH-47D helicopter where a lag damper attachment nut at the rotor head connection was found cracked. The second during post flight inspection of a MH-47E helicopter. Both nuts were forwarded to Corpus Christi Army Depot (CCAD) for failure analysis which revealed the nuts were cracked at the manufacturer's designation (logo) impression stamp. The defective nuts were both double impression stamp with the capital letter G, which is the registered logo of Greer Stop Nut Inc (CAGE 27687). A third instance involving a MH-47E helicopter was very recently reported and is being investigated.

b. The CCAD failure analyses concluded that there were three contributing causes of failure. The double stamp impression on the cracked nuts and the excessive depth of the impressions provided an area of stress concentration that assisted in the cracking. The torque value for the nut in the TMs were too high in the drive arm attachment installation and needed to be lowered to not to exceed 3,000 inch-pounds. Also, the grain structure contained islands of pearlite and ferrite, both of which are characteristic of soft phases of steel. The nuts should have been quenched and tempered steel.

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

d. The purpose of this TB is to inspect the forward and aft rotor system and controls installations, as delineated in paragraph 8 below, and to replace AN320-12 castellated nuts that exhibit a capital letter G vendor identification impression stamp.

5. **End Items to be Inspected.** All CH-47D, MH-47D, and MH-47E aircraft.
6. **Assembly Components to be Inspected.**

| NOMENCLATURE                        | PART NUMBER     | NATIONAL STOCK NUMBER |
|-------------------------------------|-----------------|-----------------------|
| Rotor System Instl, Forward and Aft | 145R0002-Series | N/A (XC)              |
| Control Instl, Forward and Aft      | 145R3550-Series | N/A (XC)              |

7. **Parts to be Inspected.**

| NOMENCLATURE                         | PART NUMBER | NATIONAL STOCK NUMBER |
|--------------------------------------|-------------|-----------------------|
| Nut, Thin, Plain, Castellated, Shear | AN320-12    | 5310-00-176-8115      |

**8. Inspection Procedures.**

- a. Prepare the aircraft for safe ground maintenance.
- b. Visually inspect the forward and aft rotor system installation at the lag damper (shock absorber) attachments (refer to TM 55-1520-240-23P-1, Figure 173, Item No. 5 or TM 1-1520-252-23P-2, Figure 05-1, Item No. 5) and the forward and aft controls installation at drive arm attachment to the drive collar (refer to TM 55-1520-240-23P-1, Figure 177, Item No. 41 or TM 1-1520-252-23P-2, Figure 05-6, Item No. 41), for AN320-12 castellated nuts exhibiting the capital letter G vendor identification impression stamp.
- c. If the impression stamp is anything other than a capital G, or there is none, no further action is required. Record and report compliance with this TB IAW paragraph 14 below.
- d. If the impression stamp is the capital letter G, proceed to paragraph 9 below for corrective action.

**9. Correction Procedures.**

- a. Replace AN320-12 castellated nuts exhibiting the impression stamped letter "G", which is the registered logo of Greer Stop Nut Inc (CAGE 27687) with any other manufacturers AN320-12 castellated nut.
- b. Any AN320-12 castellated nuts in supply with an impression stamped letter "G" was manufactured by Greer Stop Nut Inc and shall be disposed of by mutilation to prevent resale, or reuse.

**10. Supply/Parts and Disposition.**

- a. Parts Required. Items cited in paragraph 7 above may be required to replace defective items.
- b. Requisitioning Instructions.
  - (1) Requisition replacement parts through normal supply channels using normal supply procedures. All requisitions shall use Project Code XC6 per this TB.
  - (2) Project Code is XC6 is required to track and establish a data base of stock fund expenditures incurred by the field as a result of this TB.
- c. Bulk and Consumable Materials. N/A.
- d. Disposition. After mutilation, dispose of removed components/parts IAW normal supply procedures. A QDR is not required.
- e. Disposition of Hazardous Material. N/A.

**11. Special Tools, Jigs and Fixtures Required. N/A.**

**12. Application.**

- a. Category of Maintenance. AVUM.
- b. Estimated Time Required. Total of 1 man-hours using 1 person.
- c. Estimated Cost Impact of Stock Fund Items to the Field. A total of eight P/N AN320-12, NSN 5310-00-176-8115 castellated nuts are required per aircraft at a cost of \$39.29 per bag of 20.
- 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. The following publications were previously changed to incorporate the correct torque values reflected in this TB:
  - (1) TM 55-1520-240-23-4, Chapter 5, Task 5-112.
  - (2) TM 1-1520-252-23-5, Chapter 5, Task 5-163.

**13. References.**

- a. TM 55-1520-240-23-4.
- b. TM 1-1520-252-23-5.

## **TB 1-1520-240-20-93**

- c. TM 55-1520-240-23P-1.
- d. TM 1-1520-252-23P-2.

### **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, ATCOM, ATTN: AMSAT-R-X (SOF Compliance Officer), per AR 95-3. Datafax number is DSN 693-2064 or commercial (314) 263-2064. E-Mail address is "AMSATRXS@EMH4.STL.ARMY.MIL". The report will cite this TB 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 Compliance Suspense Date (Spares). N/A.
- d. Task/Inspection Reporting Suspense Date (Spares).

(1) Materiel in Wholesale Depot Storage. Report compliance with this TB to the wholesale materiel point of contact (spares) listed in paragraph 16c within 5 working days from the date of this TB. Provide an estimate of the cost reimbursable funding required to move the items listed in paragraph 7 above to a work area, unpack the materiel, repack the materiel after inspection by ATCOM inspectors, and to return the materiel to storage. Report by e-mail or data fax and provide local point of contact.

(2) Materiel in Retail Storage. Report compliance with this TB by e-mail or data fax and provide local point of contact to the logistical point of contact in paragraph 16b within 5 working days from the date of this TB. Report the quantity inspected by condition code, and the resulting condition code.

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

- (1) DA Form 2408-13, Aircraft Status Information Record.
- (2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
- (3) 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 TB is Mr. Robert A, Lawyer, AMSAT-R-ECC, DSN 693-3820 or commercial (314)263-3820. His data fax number is DSN 693-1485 or commercial (314)263-1485.

b. Logistical point of contact for this TB is Mr. Norm Huston, AMCPM-CH-L, DSN 693-1415 or commercial (314)263-1415. His data fax number is DSN 693-1485 or commercial (314)263-1485.

c. Wholesale materiel point of contact (Spares) for this TB is Mr. Hal Barnes, AMSAT-I-SACA, DSN 693-6031, commercial (314)263-6031, fax DSN 693-6022 or commercial (314)263-6022.

d. Forms and records point of contact for this TB is Ms. Ann Waldeck, AMSAT-I-MDM, DSN 693-2378 or commercial (314)263-2378.

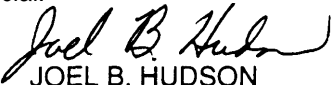
e. Safety point of contact for this TB is Mr. Jim Wilkins. AMSAT-R-X, DSN 693-2258 or commercial (314)263-2258.

f. Foreign Military Sales (FMS) recipients requiring clarification of action advised by this TB should contact CW5 Jay Nance/Mr. Ron Van Rees, AMSAT-D-S, DSN 693-7844/3216 or commercial (314)263-7844/3216.

g. After hours contact ATCOM Command Operations Center (COC) DSN 693-2066/7 or commercial (314)263-2066/7.

By Order of the Secretary of the Army:

Official:

  
JOEL B. HUDSON  
*Administrative Assistant to the*  
Secretary of the Army  
03226

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

**DISTRIBUTION:**

To be distributed in accordance with DA Form 12-31-E, block no. 3649, requirements for TB 1-1520-240-20-93.

