

# URGENT

MWO effective date 1 August 1987 completion date 31 January 1988.

MWO 55-1520-240-20-2

## MODIFICATION WORK ORDER

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REPLACEMENT OF ENGINE CROSS SHAFT BOLTS

(CH-47D HELICOPTERS)

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HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, DC

4 August 1987

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### REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this MWO. If you find technical errors that could cause personal injury or damage to materiel, please let us know. Contact: Commander; US Army Aviation Systems Command and report the needed correction by telephoning AUTOVON 693-1440 or Commercial (314) 263-1440. Additionally, complete a DA Form 2028, Recommended Changes to Publications and Blank Forms, and mail to: Commander, US Army Aviation Systems Command, ATTN : AMSAV-MPSD, 4300 Goodfellow Blvd., Saint Louis, Missouri 63120-1798. A reply will be provided to you.

1. PURPOSE. The purpose of this modification is to replace the present CH-47D hollow cross shaft bolts, P/N 145DS303-1 and -2 with solid shaft bolts, P/N 145DS303-3 and -4 respectively.
2. PRIORITY. This modification is classified URGENT as a result of an Emergency Safety of Flight Message CH-47-87-06, which deadlined/grounded the equipment. The restriction remains in effect until this modification is applied.
3. END ITEM OR SYSTEM TO BE MODIFIED. Aircraft having the following serial numbers will be modified in accordance with the instructions contained in paragraph 10.

<u>NOMENCLATURE</u>	<u>NATIONAL STOCK NUMBER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>
Helicopter, Cargo Transport	1520-01-088-3669	CH-47D	81-23381 thru 86-1662

4. MODULES(S) (COMPONENTS, ASSEMBLIES, SUBASSEMBLIES, BOARDS, AND CARDS) TO BE MODIFIED.

The following item, whether installed or in stock, shall be modified.

NOTE

Action has been initiated to have driveshaft assemblies in Depot stock shipped to the contractor for modification. Driveshaft assemblies at AVUM/AVIM stock shall be reported to Mr. Norm Houston or CPT Paul Hutzky, AUTOVON 693-1440 or Commercial (314) 263-1440, by serial number. AWM/AVIM units should not requisition replacement driveshafts.

<u>NOMENCLATURE</u>	<u>NATIONAL STOCK</u>		<u>FSCM</u>	<u>PART NUMBER</u>
	<u>NUMBER</u>			
Shaft Assy, Cross	1615-01-113-0293		77272	145D3500-8

5. PARTS TO BE MODIFIED. Not applicable.

6. APPLICATION.

a. Time Compliance Schedule. The effective date of this MWO is 1 August 1987 and its completion date 31 January 1988.

b. Level of Maintenance. AVUM with assistance from AVIM.

c. Requirements for one end item are:

<u>WORK FORCE/SKILLS</u>	<u>MAN-HOURS</u>
2 Medium Helicopter Repairers	8

7. TECHNICAL PUBLICATIONS AFFECTED/CHANGED.

TM 55-1520-240-23P-1	4 March 1985
TM 55-1520-240-PPM	30 June 1986

8. MWO KITS/PART(S) AND THEIR DISPOSITION,

a. Parts needed to apply this MWO. The following items are required for one end item application of this MWO.

<u>NOMENCLATURE</u>	<u>NATIONAL STOCK</u>		<u>FSCM</u>	<u>PART NUMBER</u>	<u>QTY</u>
	<u>NUMBER</u>				
Bolt	To be assigned		77272	145DS303-3	12
Bolt	To be assigned		77272	145DS303-4	12

## NOTE

Bolts have been shipped to CH-47D users. For additional information contact USAAVSCOM CH-47 PMO. POC is Mr. Norm Huston or CPT Paul Hutzky, AUTOVON 693-1440 or Commercial (314) 263-1440.

b. Parts Disposition. Mutilate and demilitarize the following removed items.

<u>NOMENCLATURE</u>	<u>NATIONAL STOCK NUMBER</u>	<u>FSCM</u>	<u>PART NUMBER</u>
Bolt	5306-01-115-9684	77272	145DS303-1
Bolt	5306-01-115-9685	77272	145DS303-2

9. SPECIAL TOOLS, TOOL KITS: JIGS: TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE) AND FIXTURES REQUIRED. Not Applicable.

10. MODIFICATION PROCEDURES.

a. Prepare the aircraft for safe ground maintenance and gain access to the left and right engine drive shafts in accordance with TM55-1520-240-23, Task 2-2.

b. Inspect each shaft assembly to determine its part number.

(1) If it is P/N 145D3550-15, the assembly has strong bolts and reworked adapters. No further action is required other than reporting compliance with this MWO. This assembly does not require a recurring 100 hour bolt inspection.

(2) If it is P/N 145D3500-12, the assembly already has strong bolts, but both adapters have not been reworked. Bolts, P/N 145DS303-3, require inspection at 100 hours since new, and every 100 flight hours thereafter. See paragraph 10d.

(3) If it is P/N 145D3500-8, the assembly has hollow bolts and the adapters have not been reworked. The bolts must be replaced with the stronger P/N 145DS303-3 and P/N 145DS303-4 bolts within the next 5 flight hours or ten days, whichever occurs first. The P/N 145DS303-3 must be inspected at the next 100 hour interval and at each 100 hour interval thereafter. See paragraph 10d. The P/N 145D3500-8 assembly has now become a P/N 145D3500-12 assembly.

c. If bolt replacement is required, replace all twenty four (24) shaft attachment bolts in the left and right drive shaft assemblies as follows:

(1) Replace P/N 145DS303-1 (TM 55-1520-240-23P-1, Fig. 199, items 179 and 193) with P/N 145DS303-3 and replace P/N 145DS303-2 (TM 55-1520-240-23P-1, Fig. 199 items 175) with P/N 145DS303-4.

NOTE

Do not loosen more than one (1) nut at a time on the 145D3500-10 and -11 adapters. Failure to adhere to this procedure will necessitate the entire cross shaft assembly be returned to depot for balancing.

(2) Remove existing bolts and install new bolts, one at a time, in accordance with TM 55-1520-240-23, Tasks 6-30 and 6-32. Lubricate threads and check nut run-on torque. If nut does not meet the 10 (ten) inch pound minimum friction requirement, replace the nut. Hold the head of the bolt and torque the nut to 420 to 456 (four hundred twenty to four hundred fifty six) inch pounds. Verify after first flight.

d. Bolts, P/N 145DS303-3, require nondestructive inspection for cracks every 100 flight hours if installed on P/N 145D3500-12 assembly. If bolt is cracked or suspect, replace with new like bolt. Contact USAAVSCOM CH-47 PMO. POC is Norm Huston or CPT Paul Hutzky, AUTOVON 693-1440 or Commercial (314) 263-1440.

11. CALIBRATION REQUIREMENTS. Not applicable.

12. WEIGHT AND BALANCE DATA. Weight and balance are not significantly affected.

13. QUALITY ASSURANCE REQUIREMENTS. Inspection of complete MWO application for full compliance with the technical requirements of the instructions will be accomplished by qualified personnel in accordance with TM 750-245-5.

14. RECORDING AND REPORTING OF THE MODIFICATION.

a. Reporting suspense date (aircraft). Upon entering requirements of this MWO on DA Form 2408-13, forward a priority message to Commander, AVSCOM, ATTN: AMSAV-XSOF (SOF Compliance Officer), per AR 95-18. The report will cite this MWO number, date of entry in DA Form 2408-13, the aircraft mission design series and serial numbers of aircraft in numerical order. Negative reports are required.

b. Tasking/inspection suspense date (aircraft). In addition to reporting suspense date of paragraph 14a, report weekly compliance to USAAVSCOM CH-47 PMO. POC is Norm Huston or CPT Paul Hutzky, AUTOVON 693-1440 or Commercial (314) 263-1440. This report is submitted weekly (Thursdays) until 100 percent compliance and shall consist of aircraft serial number, serial number of drive shaft inspected, type defect found (if any), part number and national stock number of parts required/replaced.

c. Reporting Suspense Date (Spares). Not applicable.

d. The following forms are applicable and are to be completed in accordance with DA PAM 738-751.

- (1) DA Form 2408-5, Equipment Modification Record.
- (2) DA Form 2408-13, Aircraft Inspection and Maintenance Record.
- (3) DA Form 2408-15, Historical Record for Aircraft.
- (4) DA Form 2408-16, Aircraft Component Historical Record.
- (5) DA Form 2408-18, Equipment Inspection List.

a. Identification Data.

(1) Adapter serial numbers are located in the barrel section of the inboard adapter (TM 55-1520-240-23P-1, Figure 199, Item 195) and on the side of a lug on the outboard, adapter (Item 181).

(2) Driveshaft assemblies with both adapter serial numbers ending with "E.B." (Edge Break) shall be identified as 145D3500-15. Drive shaft assemblies without "E.B." behind both adapter serial numbers shall be identified as 145D3500-12 when the provisions of paragraph 10 have been completed.

(3) The dash number of the shaft assembly shown on its tube shall be repainted to the new dash number.

15. PRODUCT IMPROVEMENT PROPOSAL (PIP) NUMBER. This MWO is authorized by PIP number 1-86-01-0861.

16. MODIFICATION IDENTIFICATION. Application of this MWO can easily be identified by looking at the cross-shaft bolts. If the bolts have a hole or hollowed out end then this MWO has not been complied with. If the bolts are solid then this MWO has been completed.

By Order of the Secretary of the Army:

CARLE VUONO  
*General, United States Army*  
*Chief of Staff*

Official:

R.L. DILWORTH  
*Brigadier General, United States Army*  
*The Adjutant General*

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31, AVUM Maintenance requirements for CH-47D Helicopter, Cargo Transport.

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