TECHNICAL MANUAL

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

CH-47D HELICOPTER

This manual together with TM 55-1520-240-23-2, TM 55-1520-240-23-3, TM 55-1520-240-23-4, TM 55-1520-240-23-5, TM 55-1520-240-23-6, TM 55-1520-240-23-7, TM 55-1520-240-23-8, TM 55-1520-240-23-9, TM 55-1520-240-23-10, TM 55-1520-240-23-11, supersedes TM 55-1520-240-23-1, TM 55-1520-240-23-2, TM 55-1520-240-23-3, TM 55-1520-240-23-4, TM 55-1520-240-23-5, TM 55-1520-240-23-7, TM 55-1520-240-23-8, TM 55-1520-240-23-9, TM 55-1520-240-23-10, 10 May 1983, and TM 55-1520-240-23-6, 6 May 1983, including all changes.

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HEADQUARTERS, DEPARTMENT OF THE ARMY
19 SEPTEMBER 2002

TECHNICAL MANUAL
NO. 55-1520-240-23-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 19 SEPTEMBER 2002

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

CH-47D HELICOPTER

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. 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) located in the back of this manual, directly to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. 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 immediately preceding the hard copy 2028. For the World Wide Web use: https://amcom2028.redstone.army.mil.

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HOW TO USE THIS MANUAL (TM 55-1520-240-23)

This manual has 17 chapters and 10 appendixes.

1. Chapter 1 has instructions on servicing, ground handling, and other tasks that apply to the entire helicopter.
2. Chapter 2 thru Chapter 17 have descriptions and maintenance instructions for major systems of the helicopter. They are arranged as follows:
   SYSTEM DESCRIPTION, with locator figure.
   MAINTENANCE TASKS, with step-by-step procedures and figures.
3. The appendixes contain general reference information.

HOW TO FIND WHAT YOU NEED

Troubleshooting. Refer to TM 55-1520-240-T.

Operational Tests. Part of troubleshooting procedures. Refer to TM 55-1520-240-T.

Wiring and Schematic Diagrams. Refer to TM 55-1520-240-T.

Inspections. Refer to Chapter 1. There are three kinds of inspection requirements listed:

1. Calendar Inspections/Maintenance Actions. This category includes scheduled inspections based on elapsed calendar time.

2. Operating Time Special Inspections/Actions. This category includes inspections and maintenance actions based on aircraft operating time which are not compatible with phased inspection intervals.

3. Inspections/Maintenance Actions as a Result of Specific Conditions or Incidents. This category covers actions/inspections required as a result of overspeed, overtorque, hard landing, unusual environmental conditions, etc. It also covers items such as retorque of attaching hardware a certain number of hours after installation.

Maintenance. To find a task, use the alphabetical index in the back of Volume 11. Each task is listed to enable the user to find important items under those names most likely to be looked for.

TASK PREPARATION

Each task begins with INITIAL SETUP information. Read it carefully before starting. It tells what you will need and what you have to know to do the job.

1. Applicable Configurations. Tells you what configurations or effectivity the task applies to.

2. Tools. If any tools from your tool kit are needed, just the kit is listed. Tools needed that are not in the kit are called for by name. Special tools, containers, and test equipment are listed by tool number (TXX). Find these items in Chapter 1, Section IV.

3. Materials. Materials needed are listed by expendable number (EXX). Find these items in Chapter 1, Section IV.

4. Parts. New parts required, such as gaskets, packings, and washers, are listed by name only.

5. Personnel Required. Each skill level needed to do the task is listed. When more than one person of any skill level is needed, the number of persons is shown in parentheses. The assigned skill level should not be construed as the only skill level authorized to accomplish that task. (Refer to Appendix B.) The Maintenance Allocation Chart (MAC) assigns maintenance functions to the authorized maintenance level without regard to the MOS skill level.

6. References. Lists applicable maintenance manuals. Lists the TM 55-1520-240-23P if it supports installation, assembly, and/or replacement of maintenance-significant components. Also lists related tasks or texts which are references in Task steps.

7. Equipment Condition. Procedures which must be done before starting the task are listed and task numbers are given. Install tasks and assembly tasks do not normally list Equipment Conditions.

8. General Safety Instructions. These are safety precautions that must be observed throughout the task. Warnings include basic first aid instructions. Safety goggles must be worn when handling or working in close proximity to all fluids and compressed air.

9. Locator Figure. The area of the helicopter where the task will be performed is shown, with components to be worked on called out. On off helicopter tasks, the component to be worked on is shown.

TASK PERFORMANCE

1. Before starting, read the entire task. Familiarize yourself with the entire procedure before beginning the task. The task heading at the top of each page specifies the task to be performed and the lowest maintenance level authorized to perform that task. Tasks to be accomplished by the Aviation Intermediate Maintenance level only, will be reflected by the term (AVIM) at the end of the task heading. If the term AVIM is not at the end of the task heading, then either the Aviation Unit or Aviation Intermediate Maintenance (AVUM or AVIM) level can accomplish that task.
2. As you read, pay attention to **WARNINGS, CAUTIONS**, and **NOTES**.
   WARNINGS are used when there is danger of injury or death.
   CAUTIONS are used when there is danger of damage to equipment.
   NOTES are used to bring special attention to a step or subject.
3. When critical torques and dimensions are bolded, you may not see the word inspect; however, an inspector must ok the completed step.
4. Tasks are written in detail for inexperienced personnel.
5. The **GLOSSARY** lists special words and terms used in this manual and gives their meaning.
6. When the special tool is used or a common tool is used in an unusual way, the use of the tool will be shown.
7. When the word **INSPECT** is in a task, an inspector must approve the completed steps.

STANDARD MAINTENANCE PRACTICES

The following are considered standard maintenance practices. Instructions about these practices will not normally be included in Task steps. Task steps will tell you when standard maintenance practices do not apply.

1. Tag tubes, hoses, and wires before they are disconnected. Tubes will be capped and open ports will be plugged when tubes or hoses are disconnected.

2. Discard used performed packings and retainers. Install new packings and retainers. Packings, retainers, and thread of fittings are coated with system lubricant before they are installed.
3. Tie tubes, hoses, and related parts out of the way with twine, not lockwire.
4. Disassembly procedures reflect the total breakdown of a part as it is provisioned. You may not need to disassemble a part as far as described in the task. Follow the steps to disassemble as far as needed to replace worn or damaged parts.
5. Use judgment when performing Follow-On Maintenance. Depending on the nature of the task performed, it may only be necessary to perform certain relevant parts of the referenced follow-on task to ensure that the affected system is working properly. This is especially true of Follow-On requirements for extensive tasks such as rigging and operational checks.
6. Before inspecting a component or the disassembled parts of a component, clean them if required.
7. Inspect components and installation area for condition before installation.
   a. Inspect procedures do not assume failure. Procedures are written as passing inspection.
   b. There will be no references or direction in inspection procedures to repair, replace, or adjust.
   c. Should a part fail inspection, either a repair, replacement, or adjust task in maintenance manual will determine what has to be done.
8. Use guide lines when any item is hoisted overhead.
9. Make-item specifics are listed in Appendix E.
10. When a nut is tightened or loosened on a bolt, hold the bolthead with a wrench.
11. A special torque will be cited when the words torque to are used. A standard torque is required when word install is used.
12. When torquing hardware, observe compliance with friction torque as required (TM 1-1500-204-23).
13. Task 1-13 contains tables of standard torque limits for threaded fasteners, hose and tube coupling nuts, and pipe thread fittings. Included in the torque tables are the applicable torque wrenches. These standard torques apply only when special torques are not specified in procedures. In the instances where additional tools are required, as a duplication of tools found in the Army tool kits, those tools shall be listed individually in the INITIAL SETUP.
14. Task 1-13 also contains tables of standard torque limits for positive retention and impedance bolts. Included in the torque tables are the applicable torque wrenches. These standard torques apply only when special torques are not specified in procedures.
15. Task 1-13 also contains a table of standard torque limits for general type nuts and bolts. These standard torques apply only when special torques are not specified in procedures. Included in the torque tables are the applicable torque wrenches.

16. When cotter pin is required, torque nuts to lowest value of allowable torque range. Continue tightening only as needed to align cotter pin holes. Do not exceed maximum value of allowable range.

17. Following installation, paint will be touched up as needed. Components which are issued with a primer coat will be painted.

18. Following maintenance, work area will be inspected for foreign objects.

19. Testing hydraulic components in OFF HELICOPTER tasks shall be conducted behind a protective shield, **5/8 inch** plexiglass or equivalent.

20. Test setups are shown as schematics. Specific attaching hardware is not listed to allow you flexibility in using equivalent equipment.

21. Dissimilar Metal Protection:

    a. Where dissimilar metal protection is required in a procedure involving three or more steps, you will see the following note preceding the first step of the task.

NOTE

All dissimilar metal parts are coated with primer.

    b. Then each time you see a part where (dissimilar metal) follows the part name, you must apply primer to that item. For example:

        1. Install bellcrank (dissimilar metal) (12), etc.
           This bellcrank requires a coat of primer applied before it is installed.

    c. The type of primer you will need will be listed in each task, as required.

22. "Replace" means remove old part and install serviceable part.

23. When it is required to hold components, tubing, or fittings made of aluminum or other soft material in a vise, a soft-jawed vise shall be used. All components, tubing, and fittings used in the hydraulic systems shall also be held in a soft-jawed vise.

24. To ensure a good grounding bond, make sure all electrical components and mating surfaces are clean and free of paint before installation. Make sure all wire contact points are clean.

CHAPTER 1
INTRODUCTION AND HELICOPTER GENERAL

SECTION I
GENERAL INFORMATION

1-1. SCOPE

This manual is for the use of AVUM and AVIM personnel in maintaining the CH-47D medium-lift helicopter.

1-2. MAINTENANCE, FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-751, The Army Maintenance System-Aviation (TAMMS-A).

1-3. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE

For destruction of Army material to prevent enemy use, refer to TM 750-244-1-5.

1-4. PREPARATION FOR STORAGE OR SHIPMENT

Storage requirements for the helicopter are in Chapter 1. Refer to TM 740-90-1 and TM 1-1500-204-23 for general storage information.

1-5. QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control personnel shall verify the dimensions and tolerances contained in this manual are met. Qualified personnel shall inspect completed work for full compliance with technical requirements of instructions. Inspection shall be in accordance with an approved prescribed inspection system to be determined at work site.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on a SF 368 (Quality Deficiency Report). Mail it to us at:

Commander, USA AMCOM
ATTN: AMSAM-MMC-RE-FD
Redstone Arsenal, AL 35898-5230

We'll send you a reply.