

TECHNICAL MANUAL

**AVIATION UNIT AND
AVIATION INTERMEDIATE
TROUBLESHOOTING MANUAL
CH-47D HELICOPTER**

This copy is a reprint which includes current
pages from Changes 1 through 10.

HEADQUARTERS, DEPARTMENT OF THE ARMY

10 MAY 1983

Aviation Unit and Aviation Intermediate
Troubleshooting Manual
CH-47D HELICOPTER

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal, AL 35898-5230. A reply will be furnished to you. You may also send your comments electronically to our e-mail address: Is-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 immediately preceding the hard copy 2028

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

This manual has 17 Chapters that have instructions for troubleshooting 72 CH-47 Helicopter Systems.

Chapter 1 has:

- The Complete List of Troubleshooting Symptoms you will find in this manual, This list outlines each chapter by system and symptom.
- Complete wiring for 300 Series Connectors and Receptacles, Terminal Boards, and Ground Devices,

Chapters 2 thru 17 have sets of troubleshooting instructions that include:

- **A Chapter outline** of all systems and symptoms found in the beginning of each Chapter.
- **Connector part numbers and pin patterns** for each connector and receptacle in systems contained in chapter. Also included are **relay termination views** and **ground termination types** and **location**.
- **System Component Diagrams**
- **System Block Diagrams**
- **System Schematics, Ladder Schematics and Wiring Diagrams**
- **Fuel Piping Diagrams**
- **Hydraulic Piping Diagrams**
- **Tables**
- **Visual Checks** with locator figures and step by step procedures.
- **Operational Checks** with locator figures and step by step procedures.
- **Fault Isolation Procedures** with locator figures and troubleshooting logic for specific system faults.

HOW TO FIND WHAT YOU NEED

Maintenance — Refer to TM 55-1520-240-23.

Troubleshooting — Use the index in Chapter 1 or in the beginning of each chapter. This is where you will find the system troubleshooting procedures (visual checks, operational checks and fault isolation procedures).

1. The troubleshooting procedures are listed under the name of the system that the component or system belongs to.
2. Each system has a number:
Example:

System No.	System
9-15	Cabin and Ramp Lights
3. Each item in your set of troubleshooting instructions has a task number. The system number is prefixed to each of the item task numbers.

Example:

System No.	System Symptom	Task No.
9-15	Cabin and Ramp Lights	
	Wiring Diagram	9-15.1
	Visual Check	9-15.2
	Operational Check	9-15.3
	Cabin and Ramp Circuit Breaker Does not Stay Closed	9-15.4

TASK PREPARATION

Each Troubleshooting procedure begins with INITIAL SETUP information. Read it carefully before starting. It tells you what you need and what you have to know before you begin 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 ground support tools, containers, and test equipment are listed by tool number (Txx). Find these Items in TM 55-1520-240-23.
3. **Materials.** Materials needed are listed by expendable number (EXX). Find these items in TM 55-1520-240-23.
4. **Parts.** New parts required, such as gaskets, packings, and washers, are listed by name only. If parts are not needed, you will not see this heading.
5. **Personnel Required.** Each MOS needed to do the task is listed. When more than one of any MOS is needed, the number is shown in parentheses.
6. **References.** Lists references such as TM 55-1520-240-23. These references will provide where information can be found when you need to repair or replace a part or component. When more than one reference is listed, the Fault Isolation Procedure blocks will contain a refer to statement for all references other than TM 55-1520-240-23.
7. **Equipment Condition.** Procedures which must be done before starting the task are listed and task or TM number is given. Tasks that are not indented under a TM manual can be found in this manual. Refer to the TM manual listed above the indented tasks.
8. **General Safety Instructions.** These are safety precautions that must be observed throughout task. Warnings include basic first aid instructions.
9. **Locator Figure.** The area of the helicopter where the task will be performed is shown, with components to be worked on called out.

TASK PERFORMANCE

1. Visual Checks are performed to determine if the cause of the system fault is visually apparent.
2. Operational Checks are performed step by step on the system to determine the system fault. Continue the operational check TASK until the symptom is confirmed in the RESULT column.
3. Fault Isolation Procedures are performed to identify the specific trouble in the system. Start with the first block. Read it through and answer the question. The questions will always have a YES or NO answer. If you answer the question YES, follow the direction of the YES arrow to the next block. If you answer the question NO, follow the direction of the NO arrow to the next block. Continue troubleshooting until the symptom cause is identified.
4. Use the integrated schematic during troubleshooting for a view of system component connections and system interfaces.
5. Use the wiring diagram when the troubleshooting instructions require wire tests to isolate the symptom cause.

- Before starting, read the entire task. Familiarize yourself with the entire procedure before beginning the task.
- As you read, pay attention to **WARNINGS, CAUTIONS,** and **NOTES.**
- When the word INSPECT** is in your procedures, an inspector must ok the completed step(s).
- Major steps and key words are printed in **boldface** for experienced repairers.
- A glossary is on page 1-87. It lists the abbreviations, special words and terms used in this manual and gives their meaning.
- When a special tool is used or a common tool is used in an unusual way, the use of the tool will be shown.
- When a block states, "Repair or replace wire as required.", refer to TM 55-1500-323-24 for recommended maintenance practices.
- Voltages specified in blocks are nominal values unless a range is given. These nominal values and their acceptable ranges are as follows:

Nominal voltage	Range
28 VDC	24 to 30
26 VAC	24 to 28
24 VDC (Battery)	20 to 24
5 VAC	4 to 6
115 VAC	110 to 120

- In the event of the necessity to add or replace electrical wiring, the colors of wire received from supply may not be the same as the original wire colors. Use wire numbers only for identification of wires. Tag or Identify wires by proper number when disconnecting or replacing.

AIRCRAFT MODIFICATION (ECP/MWO) RETROFIT INFORMATION

Throughout this manual, black squares containing white numerals are used to distinguish information relating to helicopters modified by an MWO or ECP. Refer to Helicopter Configuration Legend on the following pages for specific modification and effectivities relating to each numeral. A list of delivered helicopters serial numbers is included with the legend.

Information pertaining only to unmodified helicopters is identified by the appropriate effectivity symbol preceded by WITHOUT. For example, WITHOUT  indicates that the information that follows is applicable only to helicopters **not** modified by ECP DO18. Information pertaining only to helicopters that have been modified by ECP D018 is preceded by WITH . All information not preceded by an effectivity symbol is common to all helicopters.

The following helicopter Designation Legend pages are solely for user convenience. They have no official status.

DELIVERED HELICOPTER SERIAL NUMBERS

81-23382 through 81-23389	82-23762 through 82-23780	83-24102 through 83-24125	84-24152 through 84-24187	85-24322 through 85-24336
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