

TM 9-1427-475-30

TECHNICAL MANUAL

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**AVIATION INTERMEDIATE
MAINTENANCE MANUAL**

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**ARMY
AH-64A HELICOPTER**

ALPHABETICAL INDEX

HELLFIRE MISSILE EQUIPMENT

This copy is a reprint which includes current
pages from Changes 1 through 6.

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TECHNICAL MANUAL

No. 9-1427-475-30

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 22 March 1985

**AVIATION INTERMEDIATE
MAINTENANCE MANUAL**

**ARMY
AH-64A HELICOPTER**

HELLFIRE MISSILE EQUIPMENT

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this Manual. If you find any errors or if you know of a way to improve the procedures, please let us know. Mail your letter or 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, US. 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 in your comments electronically to our e-mail address: ls-lp@redstone.army.mil or FAX us at (205) 842.6546/DSN 788-6546.

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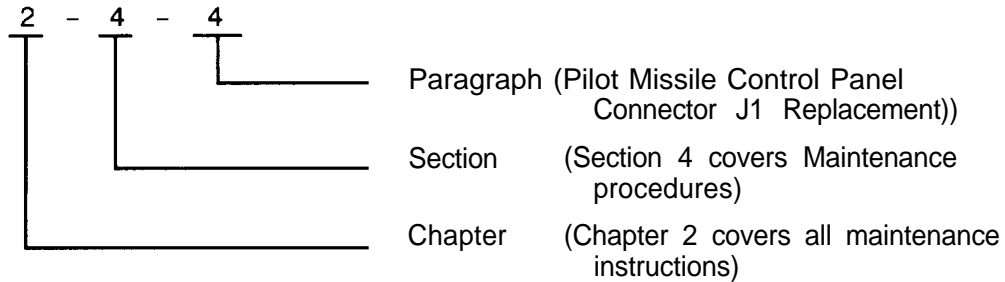
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HOW TO USE THIS MANUAL

A. OVERVIEW.

If you can't find the information, you can't do the job. Learn how to use this manual. Check how the manual is put together. Look at these examples. Before using the manual, learn how it works

The manual is made up of chapters, The chapters are made up of sections. Sections are made up of paragraphs, and all are numbered. Every job and the information you need has a number. This lets you find it when you need it.



B. DELETED

C. CHAPTERS.

Each chapter has one or more sections.

- 1 Chapter 1 has two sections which cover general information.
- 2 Chapter 2 has four sections.

D. SECTIONS.

Sections cover special information about the system for which the chapter is titled. Sections have the following kinds of information:

- 1 General Information
- 2 Equipment and Description
- 3 Aviation Intermediate Maintenance Instructions (AVIM).

E. PARAGRAPHS.

Paragraphs make up sections. It is the paragraphs that have the information you need for any job. USE THE INDEX TO FIND THE PARAGRAPH YOU NEED. DON'T USE THE PAGE NUMBERS.

GO TO NEXT PAGE

HOW TO USE THIS MANUAL (cont)

F. SETUP TABLE. Each maintenance task is headed by a setup table. This table outlines what is needed as well as certain conditions which must be met before starting the task.

(a) **2-4-4. PILOT MISSILE CONTROL PANEL CONNECTOR J1 REPLACEMENT(b) 2-4-4**

(c) This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

(d) **Tools:**

(e) Tool Set,
Aircraft Armament
Repairman's Basic
Tool, Contact
Insertion-
Extraction

(f) **Materials/Parts:**

Self Locknuts (4)
Connector J1
(9) (B3) Cloth, Lint-Free
Tape, Masking
(B3) Plug, Sealing

(h) **Personnel Required:**

68J10 Aircraft Fire Control
Repairer

SETUP TABLE KEY

- (a) Task paragraph number.
- (b) Task name.
- (c) What this task does.
- (d) A list of tools and equipment needed to do this task.
- (e) A typical tool set. Part number/NSN can be found in the MAC (TM 9-1427-575-20) .
- (f) The list of materials and parts needed to do this task.
- (g) Expendable material also listed in Appendix B. Items without B numbers are replacement parts.
- (h) A list of the personnel required.

GO TO NEXT PAGE

HOW TO USE THIS MANUAL (cont)

G. MAINTENANCE INSTRUCTIONS. This is how the maintenance instructions look. These instructions tell you how to do the job.

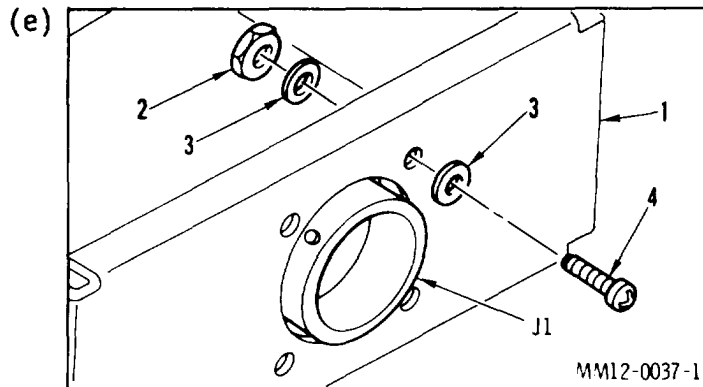
(a) 2-4-4. PILOT MISSILE CONTROL PANEL CONNECTOR J1 REPLACEMENT

2-4-4

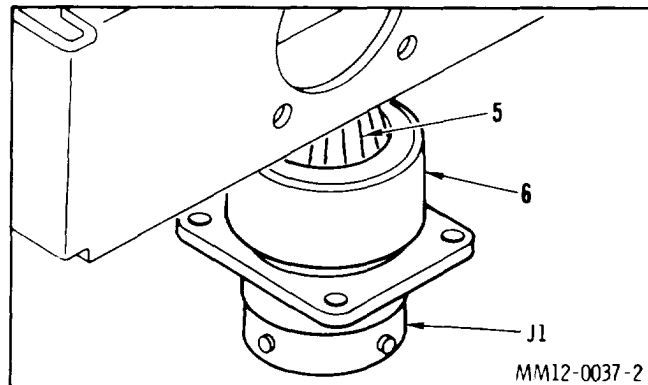
(b) A. REMOVAL

(c) 1. Remove connector J1 from chassis (1).

- (d)
- a. Remove four locknuts (2), eight washers (3), and four screws (4).
 - b. Push connector J1 through chassis (1).



- 2. Tag and remove wires (5) from connector J1.
 - a. Unscrew backshell (6) from connector J1.
 - b. Identify wires (5) with masking tape (B2).
 - c. Remove wires (5) from connector J1. Use insertion-extraction tool.



GO TO NEXT PAGE

SAMPLE MAINTENANCE TASK

MAINTENANCE INSTRUCTION KEY

- (a) Task paragraph number and title (located at the top of all maintenance task pages).
- (b) Heading name which describes type of maintenance action being performed on the component.
- (c) Primary instruction steps (in bold type), describes, in order, how to do the task. It is used by the experienced and inexperienced repairer.
- (d) Substeps explain in greater detail how to do to the primary steps which precede them. It is used by both the experienced and inexperienced repairer.
- (e) This maintenance illustration will show what has been described by one or more of the primary and secondary instruction steps.

GO TO NEXT PAGE

 HOW TO USE THIS MANUAL (cont)

H. GLOSSARY. A glossary in the back of the manual lists words that may be new to you. Or, the word may be used in a different way from the meaning you already know.

1. ALPHABETICAL INDEX. The alphabetical index in the back of the manual lists all subjects in the manual in alphabetic order. Information you are looking for is listed under the first letter of the first word in the title. The number at the right of the task is the paragraph number. Black tabs on the manual cover show you where you will find information inside the manual. Look for a black tab on the page edge that is adjacent to the black index tab on the cover. That thin black line shows you where to open the manual.

Appendices:

A

B

Information:

REFERENCES: Contains a list of other manuals you might need to do your job

EXPENDABLE SUPPLIES AND MATERIALS LIST:

Lists all supplies and materials used (rags, grease, dry-cleaning solvent, cotter pins, safety wire, etc.)

END OF HOW TO USE THIS MANUAL

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1-1. SCOPE

1-1-1

A. TYPE OF MANUAL: AVIATION INTERMEDIATE MAINTENANCE (AVIM).

B. EQUIPMENT NAME AND MODEL NUMBER: THE HELLFIRE MISSILE EQUIPMENT (HME)
CONSISTS OF THE FOLLOWING:

Pilot Missile Control Panel

CPG Missile Control Panel

Remote Hellfire Electronics (RHE)

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

1-1-2

Department of the Army forms, and procedures used for equipment maintenance will be those prescribed by DA PAM 738-751, The Army Maintenance Management System (TAMMS). The DA PAM is published in the Maintenance Management UPDATE: Units may subscribe to Maintenance Management UPDATE by submitting a completed DA Form 12-13 to: Commander, USAAG Publication Center, ATTN: AGDM-OD, 2800 Eastern Boulevard, Baltimore, MD 21220.

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

1-1-3

Destruction procedures you need to know are found in TM 750-244-1-5.

1-1-4. PREPARATION FOR STORAGE AND SHIPMENT

1-1-4

Procedures for packing, storage and shipping electrostatic discharge sensitive (ESDS) devices are in Chapter 3.

1-1-5. QUALITY ASSURANCE/QUALITY CONTROL

1-1-5

Quality assurance information you are required to use is explained in FM 55-411.

1-1-6 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

1-1-6

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 what you don't like about the design. Put it on SF 368 (Quality Deficiency Report). Mail it to us at Commander, US Missile Command, ATTN: AMSAM-MMC-RE-FD, Redstone Arsenal, AL 35898-5230. We'll send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-2-1. HELLFIRE MISSILE SYSTEM

1-2-1

A. PURPOSE. The Hellfire Missile Equipment is a functional element of the Point Target Weapon System (PTWS). It provides logic, processing, control, display data, and switching functions to support the system in the selection, launch preparation, self-test, and firing of the on-board HELLFIRE missiles.

1-2-2. HME CHARACTERISTICS, CAPABILITIES, AND FEATURES

1-2-2

A. PILOT MISSILE CONTROL PANEL.

1. Characteristics. The pilot missile control panel contains switches to direct missile fire against remotely selected targets.
2. Capabilities. The panel permits the pilot to:
 - a. Select one of two launch modes of operation,
 - (1) Lock-On Before Launch (LOBL)
 - (2) Lock-On After Launch (LOAL)
 - b. Select the missile trajectory if the LOAL mode is selected; the selectable trajectories are direct, low, or high,
 - c. Select either the upper or lower missile channel as the priority channel.
3. Features.
 - a. The pilot missile control panel is a self-contained Line Replaceable Unit (LRU).
 - b. The major components are:
 - (1) LOAL switch
 - (2) LSR (Laser) CODE switch

1-2-2. HME CHARACTERISTICS, CAPABILITIES, AND FEATURES (cont)

1-2-2

B. CPG MISSILE CONTROL PANEL.

1. **Characteristics.** The CPG missile control panel contains switches to direct missile fire against either autonomous or remotely designated targets or both.
2. **Capabilities.** The CPG missile control panel enables the copilot to:
 - a. Select the missile type. The PTWS has growth capability to accommodate two additional Hellfire missile types:
 - (1) Radar Frequency and Infrared (RF/IR) missile
 - (2) Infrared Image Seeking (IRIS) missile
 - b. Select one of three firing modes (or standby operation):
 - (1) Normal
 - (2) Ripple
 - (3) Manual
 - c. Manually advance missile selection in the manual firing mode,
 - d. Select one of two missile launch modes of operation:
 - (1) LOBL
 - (2) LOAL
 - e. Select the missile trajectory; if the LOAL mode is selected; the selectable trajectories are direct, low, or high.
 - f. Cause removal of selected missile seeker device domes.
3. **Features.**
 - a. The CPG missile control panel is a self-contained LRU.
 - b. The major components are:
 - (1) TYPE switch
 - (2) MODE switch
 - (3) MAN ADV (manual advance/device) pushbutton
 - (4) LOAL switch

1-2-2. HME CHARACTERISTICS, CAPABILITIES, AND FEATURES (cont)

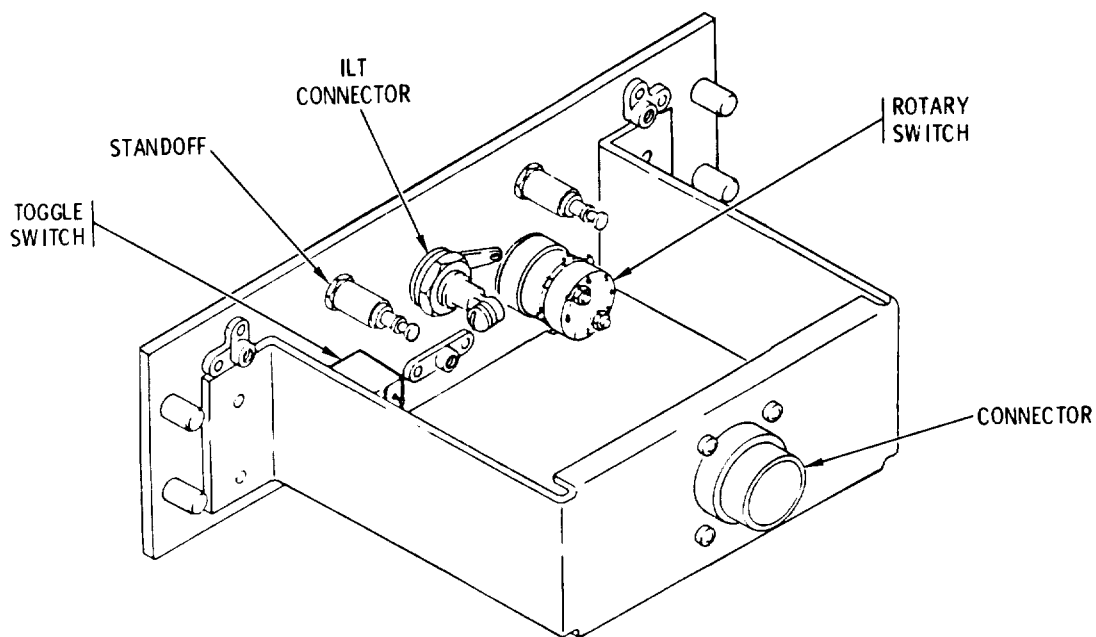
1-2-2

c. REMOTE HELLFIRE ELECTRONICS (RHE).

1. Characteristics. The RHE, the basic functional unit of the HME, provides the logic, processing, and fire control functions for the PTWS.
2. Capabilities. The RHE can:
 - a. Control up to four pylon-mounted missile launchers that contain up to four Hellfire missiles per launcher.
 - b. Control any mix of Hellfire missile types. Currently, only the Hellfire Laser seeking missile is available; however, the RHE is capable of operating with RF/IR and IRIS Hellfire missiles.
 - c. Select and prepare up to three laser missiles for launch in each of two laser coded channels.
 - d. Conduct Built-In Tests (BIT) of itself, of each launcher, and of each missile.
 - e. Override any BIT in progress if any automatic (normal or ripple) firing mode is selected by the crew.
 - f. Monitor the missile inventory and automatically select and prepare missiles from inventory to replace missiles that fail or are fired.
 - g. Function as a Multiplex Remote Terminal Unit (MRTU) of the Multiplex (MUX) system.
 - h. Provide the crew displays with the following data:
 - (1) Missile system fault indications
 - (2) Missile seeker gimbal angles
 - (3) Missile launch constraints (symbol generator)
 - (4) Missile inventory and status
 - (5) Steering cues to help the crew fly the helicopter to within launch constraints
 - (6) Missile lock-on indication

3. Features. The RHE:

- a. Is an LRU of modular construction.
- b. Operates from a 28V dc power source.
- c. Operates from sea level to an altitude of 20,000 feet.
- d. Has a Mean Time Between Failure (MTBF) rate of 3,500 hours.
- e. The major components of the RHE are 12 Circuit Card Assemblies (CCA), and the power supply. The circuit card assemblies are:
 - (1) Multiplexer
 - (2) 1553 Controller
 - (3) 1553 DMA-I/O
 - (4) 1553 RTLE
 - (5) Central Processing Unit (CPU)
 - (6) RAM 8K
 - (7) PROM 24K each (2)
 - (8) Hellfire Interface (2)
 - (9) Coaxial Switching
 - (10) Laser Coding
 - (11) Power Supply



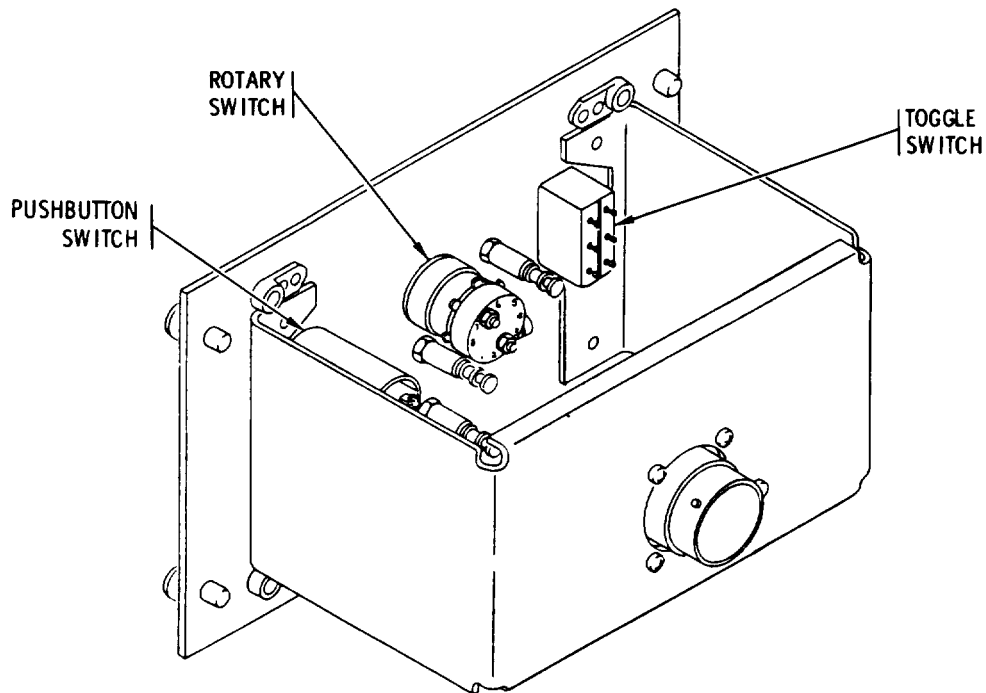
PILOT MISSILE CONTROL PANEL

1012-0050B

A. PILOT MISSILE CONTROL PANEL. The missile control panel houses a toggle switch and a rotary switch which allow the pilot control of launch modes and laser code. Each component of the panel is easily and individually removed.

1-2-3. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (cont)

1-2-3

**CPG MISSILE CONTROL PANEL**

MM12-0060

B. CPG MISSILE CONTROL PANEL. The missile control panel houses a toggle switch, two rotary switches, and a pushbutton switch allowing the CPG to select Hellfire missile type, firing mode, and launch mode. Also cause the removal of selected missile seeker device domes. Each component is easily and individually removed.