

OPERATOR'S MANUAL

**CARRIER, PERSONNEL,
FULL TRACKED, ARMORED, M113A2
2350-01-068-4077**

**CARRIER, COMMAND POST,
LIGHT TRACKED, M577A2
2350-01-068-4089**

**CARRIER, MORTAR, 107-MM, M30;
SELF-PROPELLED, M106A2
2350-01-069-6931**

**CARRIER, MORTAR, 81-MM, M29A1;
SELF-PROPELLED, M125A2
2350-01-068-4087**

**CARRIER, MORTAR, 120-MM,
SELF-PROPELLED, M1064
2350-01-338-3116**

**CARRIER, SMOKE GENERATOR,
FULL TRACKED, M1059
2350-01-203-0188**

**CARRIER, STANDARDIZED
INTEGRATED COMMAND POST
SYSTEM, M1068
2350-01-354-5657**

This manual supersedes TM 9-2350-261-10 dated 8 May 1984.

DISTRIBUTION STATEMENT A: Approved for public
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Technical Manual
No. 9-2350-261-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C. 12 July 1990

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CARRIER, PERSONNEL, FULL TRACKED,
ARMORED, M113A2
2350-01-068-4077
CARRIER, COMMAND, POST LIGHT,
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FULL TRACKED, M1069
2350-01-203-0188
CARRIER, MORTAR,, 120-MM,
SELF-PROPELLED, M1064
2350-01-338-3116
CARRIER, STANDARDIZED INTEGRATED
COMMAND POST SYSTEM, M1068
2350-01-354-5657

Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes, or if you know 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, directly to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN AMSTA-AC-NML Rock IL, 61201-9948. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

This manual tells you how to use the M113A2 Armored Personnel Carrier, M577A2 Command Post Carrier, M106A2 Self-propelled Mortar Carrier, M125A2 self-Propelled Mortar Carrier, M1064 Self-propelled Mortar Carrier, M1059 Smoke Generator Carrier, and M1068 Standardized Integrated Command Post System. The M1068 Standardized Integrated Command Post System Operations is covered by TM 11-7010-256-12&P.

Before starting a task or procedure, read HOW TO USE THIS MANUAL and CHAPTER 2, Section 1, DESCRIPTION AND USE OF OPERATORS CONTROLS AND INDICATORS.

WHAT'S IN THE MANUAL - FRONT TO BACK

SUMMARY OF WARNINGS AND FIRST AID lists the warnings and first aid information in this manual. The warnings cover hazards that could kill or injure personnel. Shorter versions of these warnings may appear in the task procedure.

TABLE OF CONTENTS tells you where each chapter, section and appendix starts. Information you need most often is listed on the front cover index.

CHAPTER 1 covers general information. It gives a brief description of the major parts and features of the carrier.

CHAPTER 2 covers descriptions and functions of all controls and indicators. It also includes Preventive Maintenance Checks and Services (PMCS) and operation procedures.

CHAPTER 3 covers troubleshooting and maintenance procedures authorized for crew performance.

CHAPTER 4 covers information peculiar to the M577A2 Command Post Carrier and M1068 Standardized Integrated Command Post System.

CHAPTER 5 covers operation and maintenance of the M106A2, M1064, and M125A2 Mortar Carriers. For 81-mm, M29A1, see TM 9-1015-200-10. For 170-mm mortar, M30, see TM 9-1015-215-10. For 120-mm mortar, M121, see TM 9-1015-250-10.

CHAPTER 6 covers information peculiar to the M1059 Full Tracked Smoke Generator Carrier. For operating under usual or unusual conditions refer to TM 3-1040-279-12&P.

APPENDIX A lists references to be used by personnel in operating and maintaining this carrier. These references include technical manuals and other publications.

APPENDIX B lists the components of the end item and basic issue items. Components of the end item are those items which are assembled and become a permanent part of the carrier. Basic issue items are items needed to put the earner in operation, operate it and do emergency repairs.

APPENDIX C lists additional items required to support the earners during operation.

APPENDIX D lists the expendable/durable supplies and materials.

APPENDIX E is a stowage guide for all removable equipment carried in and on the carriers. This appendix includes a guide to identification (ID) plates on the earners.

APPENDIX F provides standard load plan for the carriers.

ALPHABETICAL INDEX lists the page number where major controls, procedures, indicators, systems, and subsystems are found in this manual.

DA FORM 2028-2 is used to report errors and to recommend improvements for procedures in this manual. Three blank DA Forms 2028-2 are in the back of this manual. A sample is provided to show you how to fill out the DA Form 2028-2.

METRIC CONVERSION CHART converts U.S. customary measurements to metric equivalents. Measurements in the manual are given both in U.S. customary and metric units.

Which type of procedure do you use?

There are four different types of procedures or tasks in this manual. They are: operation tasks, maintenance tasks, Preventive Maintenance Checks and Services (PMCS) tasks, and troubleshooting tasks. Decide which type of task you need to use.

How do you find the correct task or procedure?

Pick a key word from the carrier part or system to be used during the task. Look in the ALPHABETICAL INDEX for this key word or the name of the action you will perform. Turn to the page indicated.

The ALPHABETICAL INDEX lists each task under one or more headings. The task, ADJUST DRIVER'S SEAT, could be found:

Under "A"

Adjust:	
Driver's seat.....	page 2-155

Under "S"

Seats, Driver's	
Adjust	page 2-155

Under "D"

Driver's seat:	
Adjust	page 2-155

How do you read the tasks?

Pay attention to all warnings, cautions, and notes. These can appear in all four types of tasks. They help you avoid harm to yourself, other personnel and equipment. They also tell you things you should know about the task. Before starting, get all tools, supplies, and personnel you need to do the task.

Start with step 1 and do each step in given order.

Look at the illustrations. These show you where the equipment and parts are located on the earner. Illustrations in this manual show you close-ups of equipment, special tools, parts, and other helpful information.

The following examples show you what to look for when reading a task.

Operation Tasks and Maintenance Tasks

Operation tasks tell you how to operate the carrier and its equipment. Each operation task details steps which need to be performed to complete the task.

Maintenance tasks help the crew keep the carrier in operating condition. Crew members are authorized to remove, clean, inspect, lubricate, and install certain parts on the carrier.

Both operation and maintenance tasks use the same format. Look at the sample given below.

Sample of Setup Items

The sample below shows the DESCRIPTION and INITIAL SETUP sections on the first page of a task. Items to watch for are listed in the legend. Match them with the sample.

TM 9-2350-261-10

1

TOW START DISABLED CARRIER

2

DESCRIPTION

This task covers: Install Tow Bar on Disabled Carrier and Recovery Vehicle (page 2-254). Tow Start Disabled Carrier (page 2-255). Remove Tow Bar From Disabled Carrier and Recovery Vehicle (page 2-258).

3

INITIAL SETUP

Tools:

Crowbar (Item 8, App B)
Tow Cable (Item 5, App B)

Personnel Required:

Driver (2)
Helper (4)

References:

TM 11-5820498-12

Equipment Conditions:

Recovery vehicle
Disabled carrier

6

Legend to Sample Above

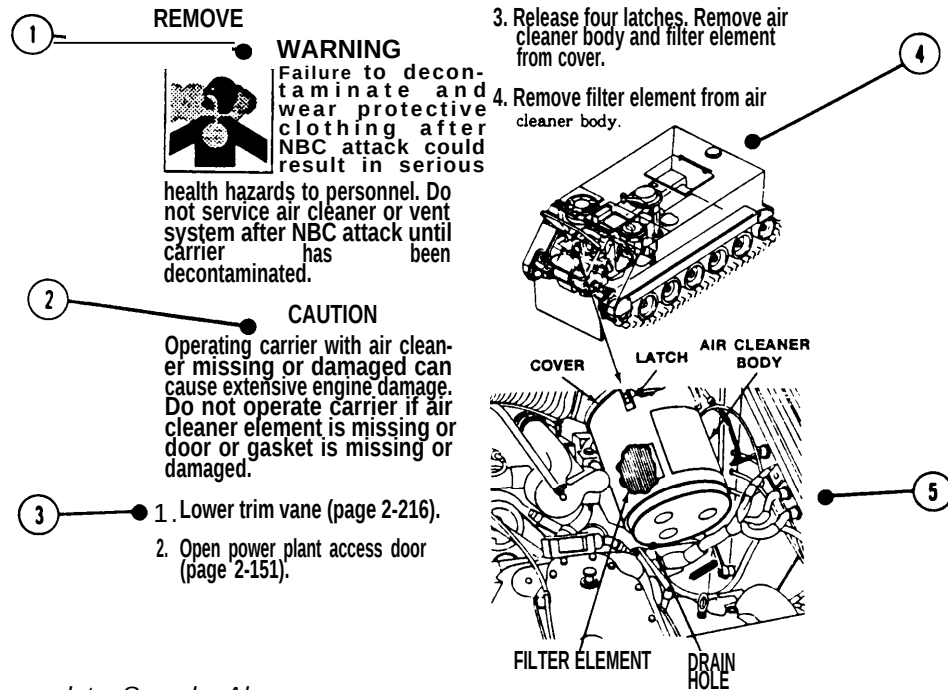
- | | | |
|---|------------------------------------|---|
| ① | TITLE | This is the name of the task. |
| ② | DESCRIPTION | This describes the overall actions you will perform. Also, it tells you the page where each action begins. |
| ③ | TOOLS | These are the tools and equipment you will need to do the task. |
| ④ | MATERIALS/
PARTS
(not shown) | These are the supplies and parts you will need to do the task. These can be obtained from unit maintenance. |
| ⑤ | PERSONNEL
REQUIRED | These are the personnel needed to do the task. |
| ⑥ | REFERENCES | These are the other technical publications you will need to do the task. |
| ⑦ | EQUIPMENT
CONDITIONS | These are the conditions the equipment must be in before you start the task. You will be referred to the task or technical publication needed to meet each equipment condition. This reference will be given in parentheses after each equipment condition. |

Some tasks will include all of the items above. Other tasks will only include some of the above items.

Read the INITIAL SETUP section carefully before you start each task. Get the tools and supplies listed and the personnel needed. Be sure the equipment is in the condition required.

Sample of Task Steps

The sample below shows you some things to watch for when performing a task. Read all steps, warnings, cautions and notes before starting each task. Items to watch for are listed in the legend. Match them with the sample.



Legend to Sample Above

- | | | |
|---|----------|--|
| ① | WARNING | This describes danger to yourself and other personnel. |
| ② | CAUTION | This describes possible damage to equipment. |
| ③ | STEP | This tells you WHAT to do. |
| ④ | LOCATOR | This helps you locate equipment on the carrier. |
| ⑤ | CLOSE-UP | This shows you a close-up of the equipment. |

Some tasks will include all of the above items. Some will not. In addition to the items listed, notes may be listed. Notes tell you about conditions that affect the step immediately following the note.

Read all the task before starting. Follow the steps in the order given. The words END OF TASK will tell you when you have finished the task.

Preventive Maintenance Checks and Services

Preventive Maintenance Checks and Services (PMCS) are made on a daily, weekly, and monthly basis. Preventive maintenance must be performed to keep your earner running.

There are five types of PMCS, as follows:

The BEFORE (B) PMCS should be done before you operate the earner.

The DURING (D) PMCS should be done when you operate the carrier. Monitor the carrier and its systems as you operate the carrier. Perform During (D) PMCS on a system only when the system is required to complete your mission.

The AFTER (A) PMCS should be done after completing your mission.

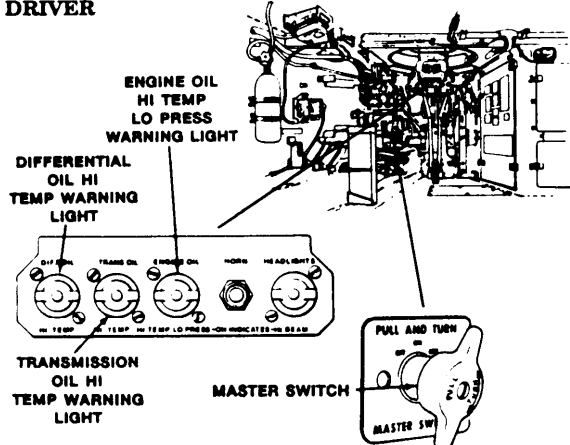
The WEEKLY (W) PMCS should be done weekly.

The MONTHLY (M) PMCS should be done monthly.

If anything seems wrong with the carrier or its systems and you cannot fix it yourself, notify unit maintenance. Common things to watch for in every area inspected are loose bolts or damaged welds. Watch for wear, leaks, loose clamps, and loose fittings when checking hoses and fluid lines.

The following sample shows you what to look for when you read a PMCS procedure. For more information on PMCS, see page 2-30.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES BEFORE (B) OPERATION CHECKS (cont)

1	ITEM No.	ITEM TO BE INSPECTED Procedure	Equipment will be reported NOT READY/AVAILABLE if:
		DRIVER 	
2		INSTRUMENT PANEL WARNING LIGHTS	
3	20	Check for damaged or missing instrument panel warning lights.	
4		Check that TRANS OIL HI TEMP and DIFF OIL TEMP warning lights are present and bulbs are not broken. Turn MASTER SWITCH to ON and check that ENGINE OIL HI TEMP LO PRESS warning light comes on.	
5			Any warning light missing or bulb broken. ENGINE OIL HI TEMP LOW PRESS warning light does not come on after turning MASTER SWITCH to ON.

Legend to Sample Above

- ① PERSONNEL This tells you who should perform the PMCS task.
- ② TITLE This is the name of the carrier system or part being checked.
- ③ ITEM NO. This tells you the sequence for doing the PMCS.
- ④ CHECK This tells you what to check.
- ⑤ NOT READY/ AVAILABLE CONDITION This tells you what conditions will have to be corrected before you perform your mission.

Troubleshooting Tasks

Troubleshooting tasks help the crew solve common problems and malfunctions. The Troubleshooting Symptom Index on page 3-2 lists some malfunctions common to your carrier. You will be guided to the Troubleshooting Table by the Troubleshooting Symptom Index.

Sample of a Troubleshooting Task

The sample below shows you things to watch for when performing a troubleshooting task. Items to watch for are listed in the legend. Match them with the sample.

TROUBLESHOOTING TABLE		
1	MALFUNCTION	
2	TEST OR INSPECTION	
3	CORRECTIVE ACTION	
	ENGINE	
1	1. ENGINE DOES NOT CRANK WHEN YOU PRESS START SWITCH.	
2	Step 1. Check to see if MASTER SWITCH is OFF.	
3	Turn MASTER SWITCH ON (page 2-163).	
4	Step 2. Check to see if range selector controller is in N position.	
	Place range selector in N position (page 2-162).	
	Step 3. Check to see if batteries are in good condition.	
	Troubleshoot electrical system (page 3-12).	
	2. ENGINE CRANKS BUT DOES NOT START.	
	Step 1. Check to see if fuel cutoff control is pulled out.	
	Push fuel cutoff control in (page 2-164).	

Legend to Sample Above

1	SYSTEM	This tells you which carrier system the troubleshooting task is covering.
2	MALFUNCTION	This tells you the carrier malfunction.
3	TEST OR INSPECTION	This tells you the test or inspection you should make to find the cause of the malfunction.
4	CORRECTIVE ACTION	This tells you what to do to fix the malfunction.

DEFINITION OF TASK TERMS

WARNINGS, CAUTIONS, AND NOTES

Be sure to read all warnings and cautions in the task. Ignoring a warning could cause death or injury to yourself or other personnel. Ignoring a caution could cause damage to equipment. Notes contain facts to make the task easier. Warnings, cautions, and notes always appear just above the step to which they apply.

WARNINGS; *Call* attention to the things that could kill or injure personnel. Warnings are also listed at the front of the manual.

WARNING



Lowering ramp could injure personnel. Make sure no one is in ramp zone before you lower ramp. If tactical situation permits, sound horn before lowering ramp.

CAUTIONS: *Call* attention to actions or materials that could damage equipment.

CAUTION

Improper cable removal can cause a short circuit. Remove negative cable before you remove positive cable.

NOTES: Contain important facts to make the task easier.

NOTE

When quick release pin is removed, mirror control knob will spring back into locked position.

HELPER

Helpers are needed in tasks that require more than one person. A helper may be needed to help lift heavy objects or act as an outside observer.

If a helper is needed to perform a task, the INITIAL SETUP will tell you:

Example: 1. Personnel required:
Driver
Helper (H)

If a helper assists with a step, the step will include: "Have helper assist".

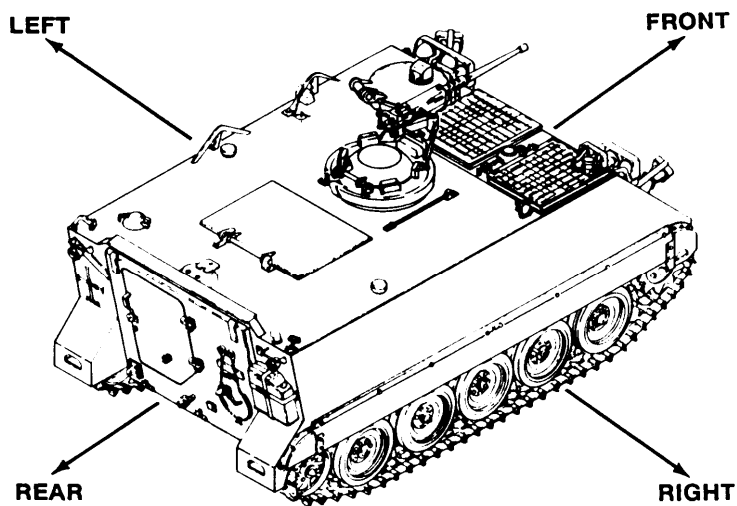
Example: 3. Push up trim vane.
Have helper assist.

If a helper performs the action alone, the step will start with (H).

Example: 2. (H) Turn MASTER SWITCH ON.

LOCATIONAL TERMS

The terms FRONT, REAR, LEFT AND RIGHT are used to describe where items are located on the carrier. Think of these locations as if you were standing on the ramp facing the inside of the carrier.



CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

SCOPE

This manual tells how to operate and maintain the following carriers:

- M113A2 Full Tracked Armored Personnel Carrier
- M577A2 Light Tracked Command Post Carrier
- M106A2 Self-propelled 107-mm Mortar Carrier
- M125A2 Self-propelled 81-mm Mortar Carrier
- M1064 Self-propelled 120-mm Mortar Carrier
- M1059 Full Tracked Smoke Generator Carrier
- M1068 Standardized Integrated Command Post System

NOTE

The operation of the 107-mm, 4.2 inch Mortar, M30 used on the M106A2 Carrier is covered in TM 9-1015-215-10. The operation of the 81-mm Mortar, M29A1 used on the M125A2 Carrier is covered in TM 9-1015-200-10. The operation of the 120-mm Mortar, used on the M1064 Carrier is covered in TM 9-1015-250-10.

MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms and procedure⁶ used for equipment maintenance will be those prescribed by DA Pamphlet 738-750, The Army Maintenance Management System⁶ (TAMMS).

REPORTING OF EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

EIR can and must be submitted by anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. EIR maybe submitted on SF 368 (Quality Deficiency Report). Mail directly to Commander, U.S. ARMY Tank-automotive and Arma-ment Command, Attn: AMSTA-TR-QCL, Warren, ML, 48397-5000.

Change 5 1-1

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

See the following technical manuals for information on destruction of Army materiel:

TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.
TM 750-244-5-1	Procedures for Destruction of Conventional Ammunition and Improved Conventional Munitions to Prevent Enemy Use.
TM 750-244-6	Procedures for Destruction of Tank Automotive Equipment to Prevent Enemy Use.
TM 750-244-7	Procedure for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1520, 2530, 5590, 5595 to Prevent Enemy Use.

NOMENCLATURE CROSS REFERENCE LIST

This listing includes nomenclature cross references used in this manual.

COMMON NAME	OFFICIAL NOMENCLATURE
CVC Helmet	DH 132 Helmet
Dipstick	Liquid measure gage rod
Track and sprocket gage	Track tension, track bushing and sprocket
Transmission	Transmission, Hydraulic

LIST OF ABBREVIATIONS

Many abbreviations are used in this manual. They are listed below. Learn what each one means. It will make your job easier.

ABBREVIATION	MEANING
A	After
B	Before
BATT	Battery
BO	Blackout
BRT	Bright
CVC	Combat Vehicle Communications
D	During
ENG	Engine
GEN	Generator
HI TEMP	High Temperature
Intercom	Intercommunication
IR	Infrared
KW	Kilowatt
LO	Lubrication Order
M	Monthly
MCPS	Modular Command Post System
NBC	Nuclear, Biological, Chemical
OVE	On Vehicle Equipment
PMCS	Preventive Maintenance Checks and Services
PRESS	Pressure
SICPS	Standardized Integrated Command Post System
TEMP	Temperature
TRANS	Transmission
Vent	Ventilation
W	Weekly