TECHNICAL MANUAL
UNIT MAINTENANCE

**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, M121;
SELF-PROPELLED, M1064
2350-01-338-3116**

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

**COMBAT VEHICLE, ANTI-TANK,
IMPROVED TOW VEHICLE, M901A1
2350-01-103-5641**

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

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This manual supersedes TM 9-2350-261-20-1 dated July 1985, including all changes.

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**HEADQUARTERS, DEPARTMENT OF THE ARMY
11 JULY 1990**

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Technical Manual

No. 9-2350-261-20-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *11 July* 1990

TECHNICAL MANUAL
UNIT MAINTENANCE

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

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2350-01-068-4087

CARRIER, MORTAR, 120-MM, M121; SELF-PROPELLED, Ml064
2350-01-338-3116

CARRIER, SMOKE GENERATOR, FULL TRACKED, Ml059
2350-01-203-0188

COMBAT VEHICLE, ANTI-TANK, IMPROVED TOW VEHICLE, M901Al
2350-01-103-5641

CARRIER, STANDARDIZED INTEGRATED COMMAND POST SYSTEM, Ml068
2350-01-345-5657

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 Island, IL. 61201-9948. A reply will be furnished to you.

This manual supersedes TM 9-2350-261-20 dated July, 1985, including all changes.

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HOW TO USE THIS MANUAL

This manual tells you how to perform unit maintenance for the M113A2, M106A2, M125A2, M577A2, M741A1, M1059, M1064, M1068, and M901A1 Carriers.

Before starting a task or procedure, read HOW TO USE THIS MANUAL and CHAPTER 2, PRINCIPLES OF OPERATION.

USING YOUR MANUAL ON THE JOB

The best way to learn about this manual is to practice using it. Knowing how to use this manual will save both time and energy.

WHICH TYPE OF TASK DO YOU USE?

There are two different types of tasks in this manual. They are maintenance tasks and troubleshooting tasks. Decide which type of task you need to use.

TROUBLESHOOTING TASKS

Troubleshooting tasks help YOU locate faulty parts. They direct YOU to the maintenance task to correct these faults. CHAPTER *3,* TROUBLESHOOTING, contains detailed information on how to perfrom troubleshooting tasks. Read CHAPTER 3, Section I, before performing the troubleshooting tasks in the chapter.

MAINTENANCE TASKS

Doing maintenance tasks will keep the carrier in shape to operate. Maintenance tasks are used to present maintenance instructions. Each maintenance task details steps which you need to perform. If the vehicle and parts need maintenance that is not included in any task in the manual, report this to your supervisor.

HOW DO YOU FIND THE CORRECT TASK?

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, REPLACE TOWING PINTLE, could be found:

Under "P"
Pintle, towing:
Repair: 24-4

Under "T"
Towing pintle:
Repair: 24-4

HOW DO YOU READ MAINTENANCE TASKS?

Be sure to read all warnings, cautions, and notes. These are in all 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 listed on the setup page needed to do the task. Be sure to read the task before performing the maintenance. If any other tasks are referenced, you must go to the setup page for each of those tasks to find out what tools, parts and materials will be needed.

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

Look at the drawings. These show you what to look for when reading a maintenance task.

REFERENCES

References within a task refer to a different manual or to another task in the same manual. They are found in the INITIAL SETUP and in the FOLLOW-THROUGH STEPS. Below is an example.

MASTER SWITCH OFF (see your -10)
Battery ground lead disconnected (page 13-2)

For all tasks, the following comments apply:

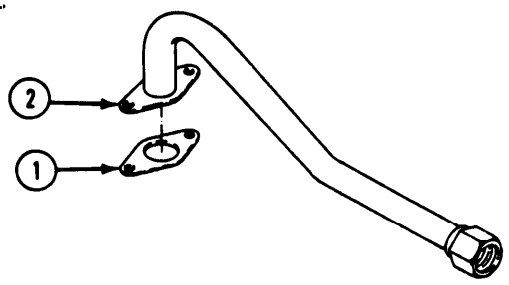
Parts which are listed on the setup page will be referred to as “new” in the task setup when installed.

Examples are:
gaskets
lockwashers
some preformed packings
some retaining rings

These and other new parts are listed under MATERIALS/PARTS in the initial set up.

GENERAL MAINTENANCE

Cleaning, inspecting, checking for leaks, and similar procedures which apply to most tasks are found in CHAPTER 2, Section IV, GENERAL MAINTENANCE PROCEDURES. Use these steps to clean and inspect any part being removed, repaired, or installed. Special cleaning will be covered in the task step. Below is a step that would require general cleaning.

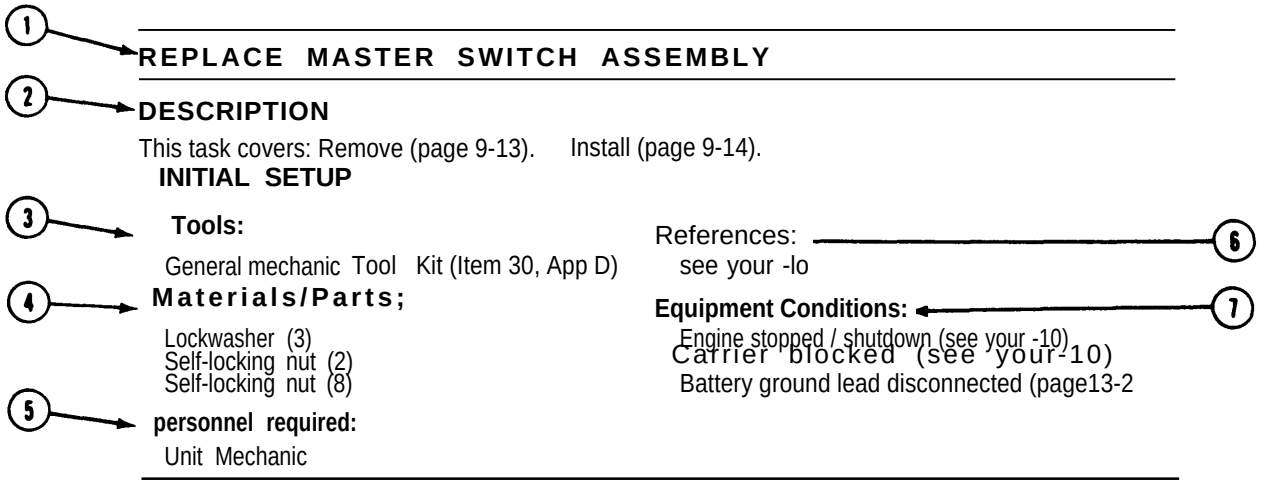


5. Remove gasket (1) from upper tube flange (2). Discard gasket.

After doing this step, you would clean the mating surface with cleaning solvent and a wiping rag according to the general cleaning procedures. In other tasks, hoses or rubber hatch seals will need to be checked for leaks. Refer to CHAPTER 2 for general procedures.

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.



Legend *to Sample*

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**	These are supplies you will need to do the task. If more than one part is needed, the quantity will be in parenthesis following the name of the part. The only parts listed are those you must replace every time the task is performed. Use the Repair Parts and Special Tools List (RPSTL), TM9-2350-261-24P, to order parts you need for the task.
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 parenthesis after each equipment condition.

NOTE

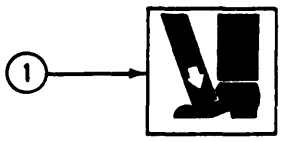
When performing equipment conditions tasks, do only those steps required to gain access to complete the major task. Some tasks will include all of the items listed in the legend. Others will only include some of the items.

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 of the signs to watch for when you are performing a task. Read all the steps, warnings, cautions and notes before starting each task. Some items to watch for are listed in the legend, match them with the sample.

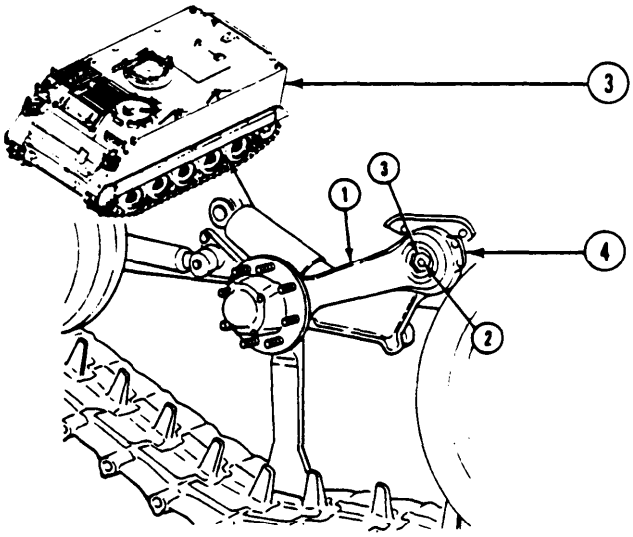
REMOVE



WARNING
If road wheel lifter slips while lowering road arm, it could injure you. Stand clear before you lower road arm.

2 → **1.** With road wheel removed and road arm *raised on lifter, start engine (see your - 10).* Place range selector in 1. Slowly drive carrier *forward* off lifter so that road wheel support arm (1) hangs freely.

2. Remove screw (2) from plug (3).



Legend to *Sample Above*

(1)	**WARNING**	This describes possible injury to personnel.
(2)	**STEP**	This tells you what to do and how to do it.
(3)	**LOCATOR**	This helps you locate equipment on the earner or major components. An arrow will lead you from the locator to the closeup. If the arrow is dotted, it means that the item is located behind something.
(4)	**CLOSEUP**	This shows you a closeup of the equipment.

In addition to the items listed, cautions and notes may be listed. Cautions deal with things or actions which could damage equipment. Notes contain facts to make tasks easier. Also, notes tell you about conditions that effect the step that follows them.

Each task includes step-by-step illustrated instructions. The numbered steps tell you WHAT to do and HOW to do it. Each numbered part in the instructions matches the same number in the drawings of the task. When they are needed, warnings, cautions, and notes always appear just above the task step to which they apply.

Read all steps, warnings, cautions and notes before starting to do the task. It is important to do each step in the order given. **FOLLOW-THROUGH STEPS** tell you what to do after the maintenance task is done. The words **END OF TASK** will tell you when you have finished the job.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Preventive maintenance is required to keep your carrier in good running condition. Preventive Maintenance Checks and Services (PMCS) for unit maintenance are made on a periodic basis, and are found in CHAPTER 2, Section V of this manual.

SAMPLE OF PMCS PROCEDURES

The sample below shows you what to look for when you read a PMCS procedure. Items to watch for are listed in the legend. Match them with the sample.

UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

(2) → **SEMIANNUAL (S) OPERATION CHECKS**

ITEM NO.	ITEM TO BE INSPECTED	PR OCEDURES ← (4)
(1) → 7	TRACKS PIN/NUTS	Check track pin nuts (1)for looseness or cracks. Replace cracked nuts. Check track pins (2) for stripped threads. Replace stripped track pine. Tighten loose nuts to 115-135 lb-ft (156-183 N•m) torque. Use torque wrench (Item 96, App D).
8 ← (3)	TRACK "GROUSER	Check grouser (3) for wear or cracks on both tracks Replace track shoe if grouser measures less than 1/8 inch (3mm) in height or is cracked.

Legend to Sample

(1)	**ITEM NO.**	This tells you the number of the item to be checked or serviced.
(2)	**INTERVAL**	This tells you how often the items are checked or serviced.
(3)	**ITEM TO BE INSPECTED**	This tells you the item to be checked or serviced.
(4)	**PROCEDURES**	This tells you what to do. Illustrations may be included in this section to help you perform the procedures or you will be directed to another manual.

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 task step to which they apply.

WARNINGS: Call attention to the things that could injure personnel.

WARNING

Lowering ramp could injure personnel. Make sure ramp zone is clear before you lower ramp.

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

CAUTION

Improper cable actions or removal can cause a short circuit. Remove negative cable prior to removing positive cable.

NOTES: Contain information you should know.

NOTE

Two personnel are required to perform this task.

HELPER

Helpers are needed in tasks that require more than one person such as to help lift heavy objects. A helper may also be needed to act as an outside observer, drive the earner, or do similar tasks.

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

Example: Personnel required:
Unit Mechanic
Helper (H)

If a helper assists with a step or substep, the step or substep will include: 'Have helper assist.'

Example: 3. Remove panel. Have helper assist.

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

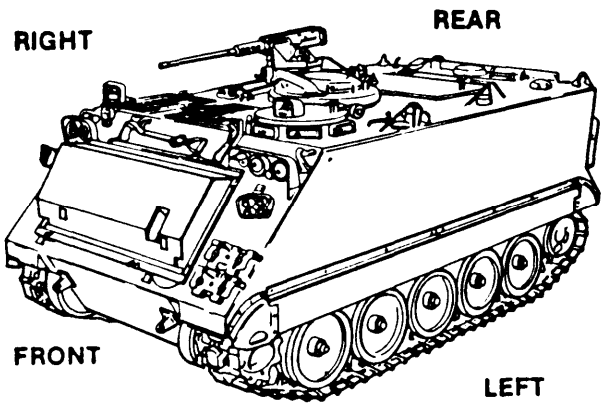
Example: 2. (H) Turn MASTER SWITCH ON.

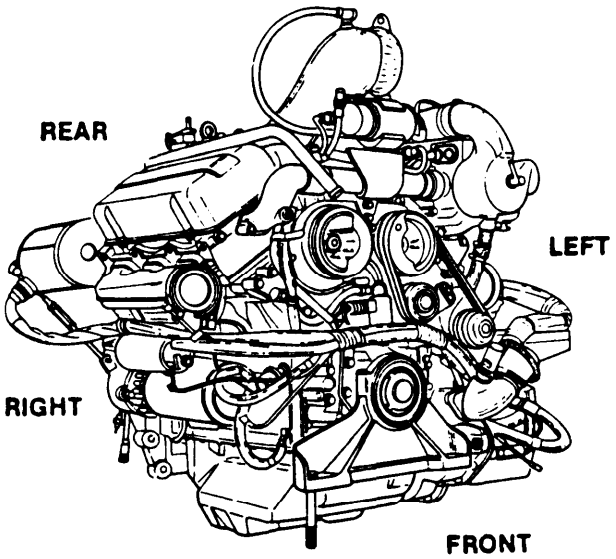
LOCATIONAL TERMS

The terms FRONT, REAR, LEFT AND RIGHT are used to describe where items are located. THE POINT OF REFERENCE FOR THESE TERMS IS DIFFERENT FOR CARRIER ITEMS AND POWER UNIT ITEMS. (Carrier items are items which are not on the power unit. Power unit items are items on the engine, transmission, differential, or transfer gearcase.)

If you are working with carrier items, use this point of reference. Think of the location as if you were sitting in the driver's seat looking forward.

If you are working with power unit items, use this point of reference. Think of the locations as if you were standing at the transfer gearcase end of the power unit and facing the flywheel. This rule applies whether the power unit is IN or OUT of the carrier.





HOW TO USE THE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL) WITH THIS MANUAL

The RPSTL (TM 9-2350-261-24P) gives the National Stock Number (NSN) required to order parts used in the maintenance tasks. To use the RPSTL to identify and order a part, do the following:

1. In this manual, turn to the first page of the task to be performed.

2. Find Materials/Parts under INITIAL SETUP, and read the part(s) that need replacement. If required, find the illustrated part in the task steps.

3. Go to the RPSTL and find the same illustrated part. That part will have an item number assigned to it. Look this item number up in the listing for that figure. The NSN can be found in the NSN column.

4. If you inspect an item and find that it is damaged, go to the RPSTL and find the SMR code for the item. If the SMR code does not authorize you to repair the item, reassemble it and send it to the authorized level of maintenance.

5. The usable on code in the RPSTL appears in the lower left comer of the Description column heading. Usable on codes are shown as 'UOC . . . . . .'in the Description Column justified left) on the fist line following the item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes in the RPSTL are:

Code	Used On
V35	M113A2 Carrier, Personnel
V36	M125A2 Carrier, 81 mm Mortar
V37	M577A2 Carrier, Command Post
V38	M106A2 Carrier, 107 mm Mortar
V83	M981 Carrier, Personnel, Armored Fire Support
V95	M741A1 Chassis, 20 mm Anti-Aircraft Gun
011	M901A1 Combat Vehicle, Anti-Tank Improved TOW Vehicle
056	M1059 Carrier, Personnel, Smoke
120	M1064 Carrier, 120 mm Mortar
ACP	M1068 Carrier, Standardized Integrated coremand Post System

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

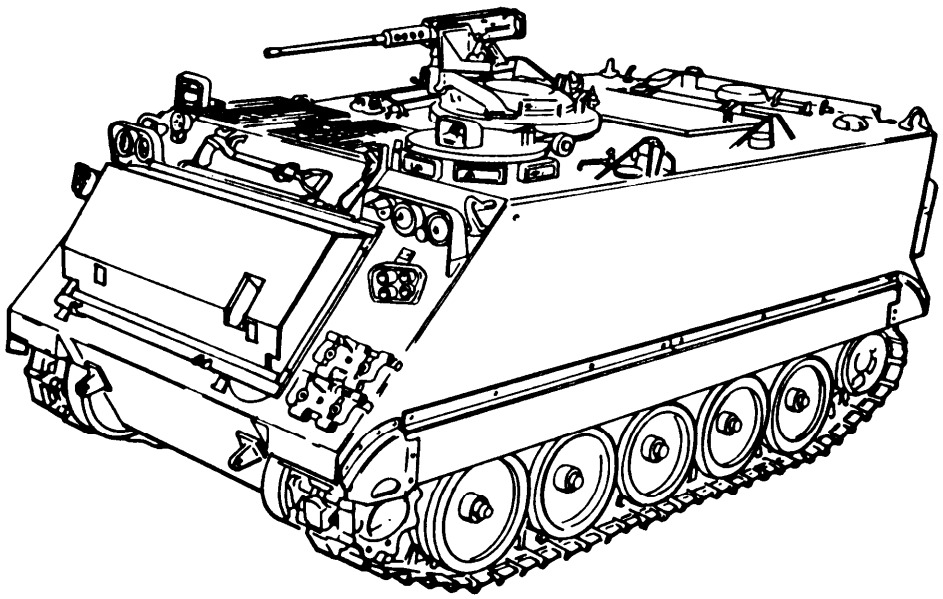
SCOPE

Type of Manual: Unit Maintenance

Model Number and Equipment Name:

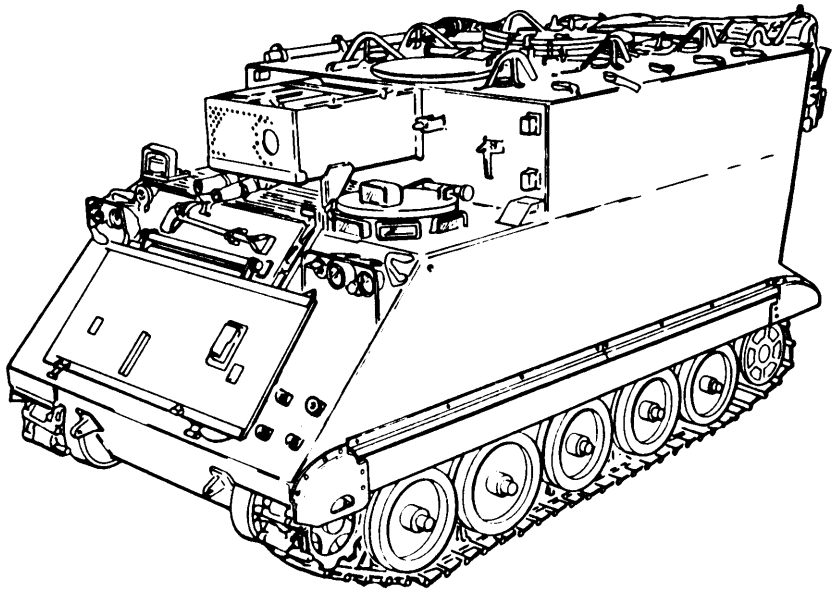
M113A2 - Armored Personnel Carrier, Full Tracked

Purpose of Equipment: Transportation and positioning combat troops and supplies.



M577A2 - Light Tracked Command Post Carrier.

Purpose of Equipment: Provides protection and mobility for field commanders in a tactical environment.

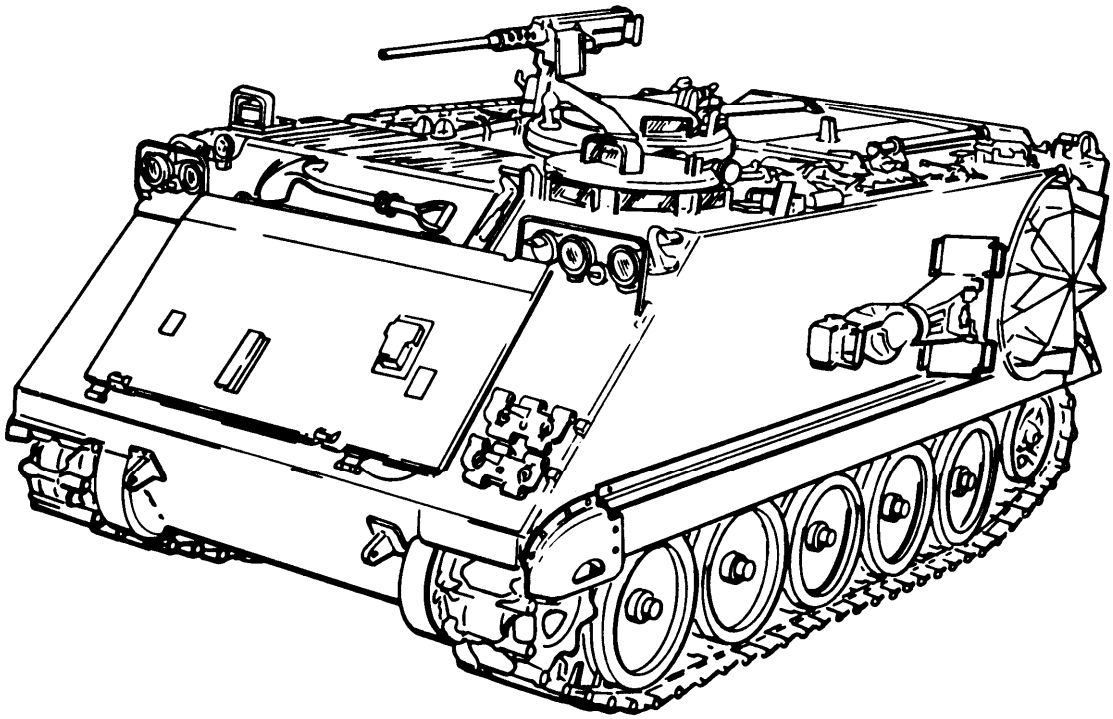


M106A2 - Self-propelled 107-mm Mortar Carrier.

Purpose of Equipment: Provides mobility for the 4.2 inch (107-mm) mortar M30. The mortar can be fired from a turntable mounted in the carrier or from a portable off vehicle mount.

See TM 9-1015-232-23&P for Unit and D S maintenance and repair parts for the 81-mm turntable and mount and the 4.2 inch (107-mm) turntable and mount.

See TM 9-1015-215-20&P for Unit maintenance and repair parts for the 4.2 inch (107-mm) mortar M30.

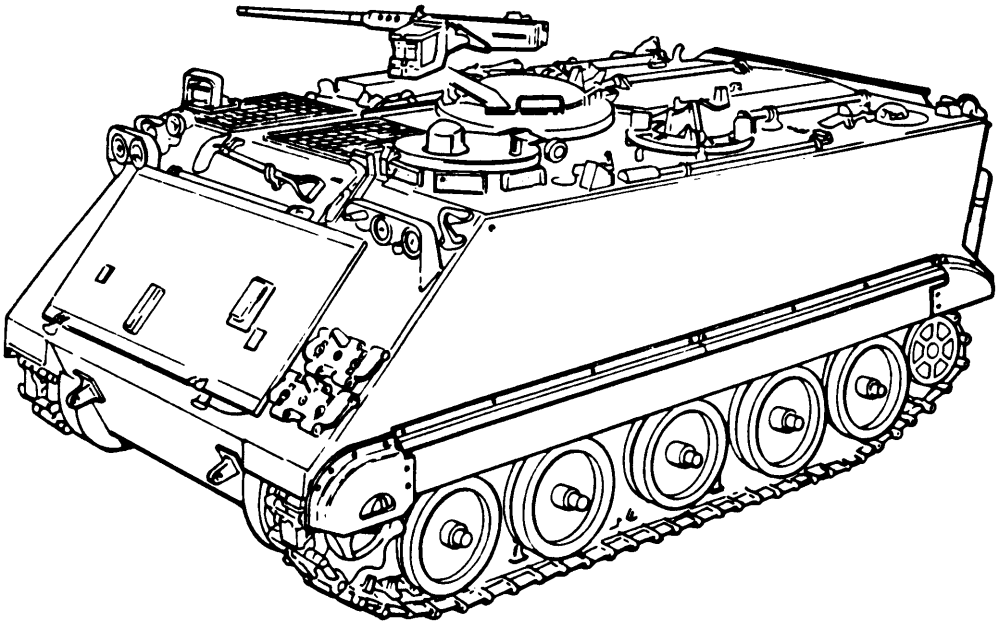


M125A2 - Self-propelled **81-mm Mortar Carrier.**

Purpose of Equipment: Provides mobility for the **81-mm mortar cannon. The mortar can be fired from a** turntable mounted in the carrier or from a portable off vehicle mount.

See TM 9-1015-232-23&P for Unit and D S maintenance and repair parts for the **81-mm** turntable and mount and the **4.2** inch **(107-mm)** turntable and mount.

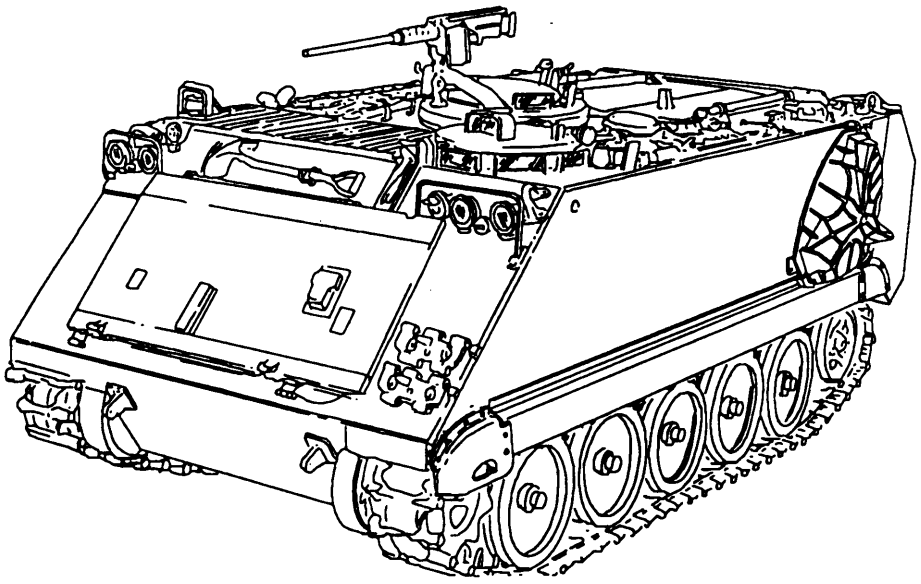
See TM 9-1015-200-20&P for Unit maintenance and repair parts for the 81-mm mortar M29A1.



M1064 - Self-propelled 120-mm Mortar Carrier.

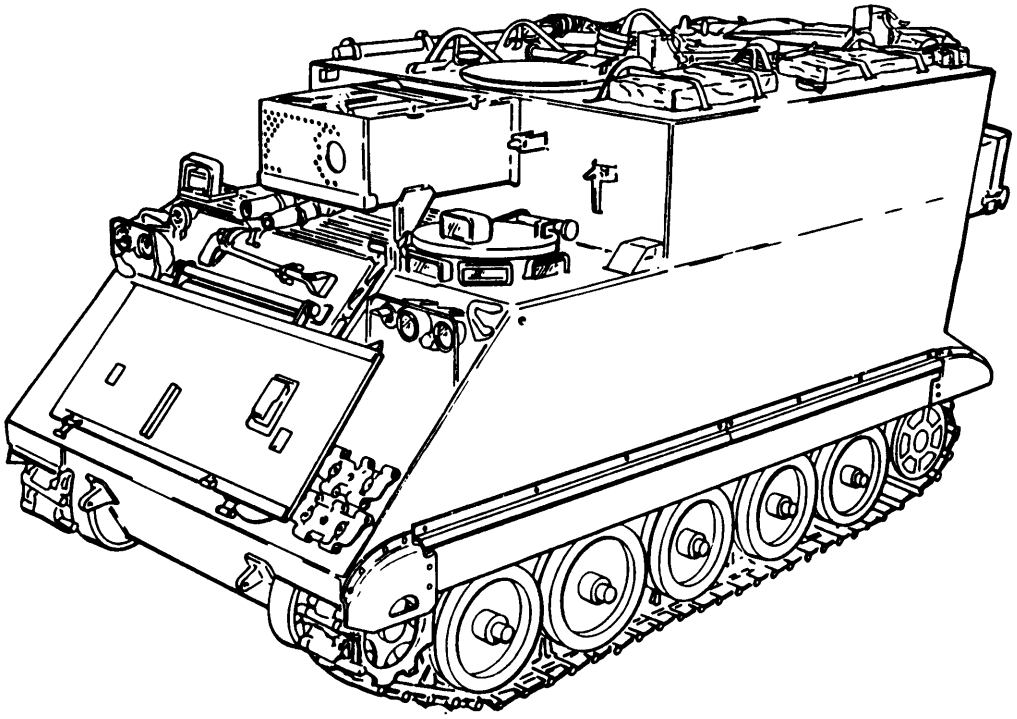
Purpose of Equipment: Provides mobility for the 4.7 inch (120-mm) mortar, M121 or M120. The M121 mortar can be fired from a turntable mounted in the carrier and the M120 mortar from a portable mount off the vehicle.

See TM 9-1015-250-23 and TM 9-1015-250-23&P for Unit and DS maintenance and repair parts for the 4.7 inch (120-mm) mortar, M121 or M120.



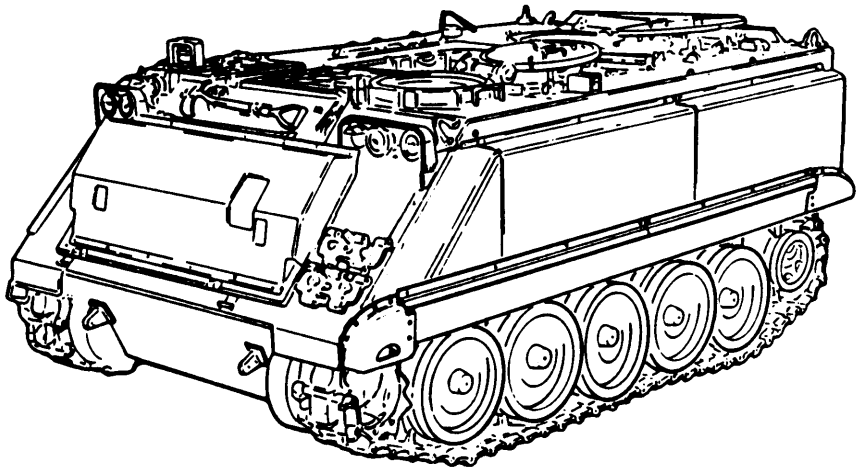
M1068 - Standardized Integrated Command Post System Carrier

Purpose of Equipment: Designed as a command post and field office to support the various configurations and installation layouts of the ATCCS Army Tactical Command And Control System and provide protection for field commanders in a tactical environment.



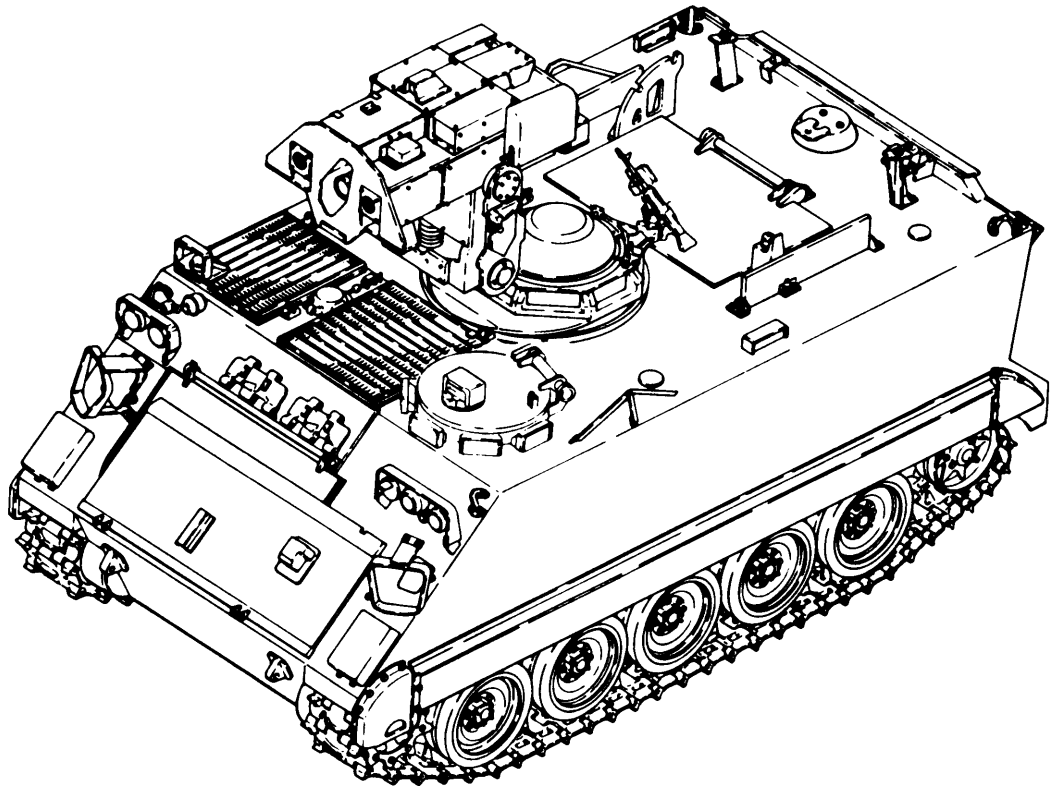
M741A1 - Self-Propelled 20-mm Anti-Aircraft Artillery Gun Chassis Carrier.

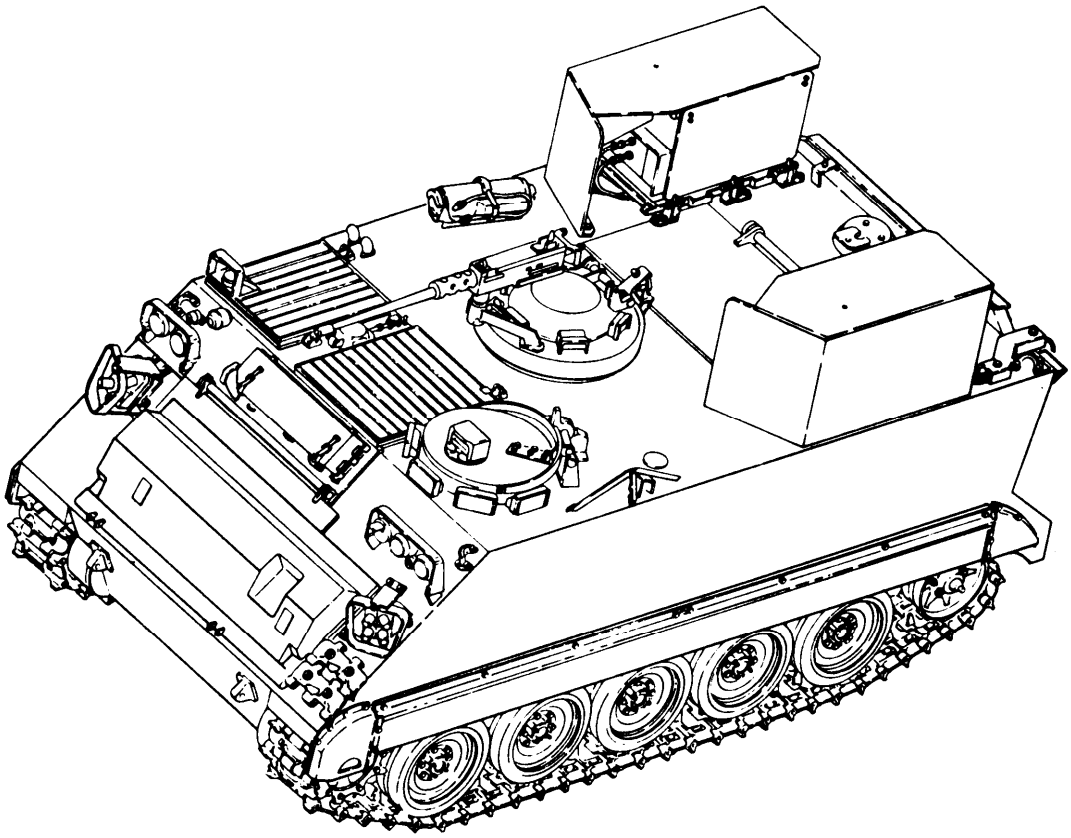
Purpose of Equipment: **Provides mobility for the M168 20-mm cannon.**



M901A1 - Combat Vehicle, Anti-Tank, Improved Tow Vehicle.

Purpose of Equipment: Provides mobility for heavy anti-tank weapon designed and built to attack and defeat armored vehicles and other targets such as field fortifications.



M1059 - Full Tracked Smoke Generator Carrier.

Purpose of Equipment: Designed to generate a smoke screen in the battlefield environment.