Table of Contents

1. Operating Instructions
   2-1
2. Preventive Maintenance Checks and Services (PMCS)
   2-37
3. Maintenance Instructions
   3-1
4. Troubleshooting Procedures
   3-3
5. Alphabetical Index
   Index 1

This Publication Not Available From Adjutant General's Office

April 1982
SUMMARY OF WARNINGS
AND FIRST AID

This list summarizes critical WARNINGs in this manual. They are repeated here to let you know how important they are. Study these WARNINGs carefully; they can save your life and the lives of soldiers with whom you work.

WARNING

HEATER AND ENGINE EXHAUST FUMES CONTAIN DEADLY POISONOUS GASES.

SEVERE EXPOSURE CAN CAUSE DEATH OR PERMANENT BRAIN DAMAGE.

EXHAUST GASES ARE MOST DANGEROUS IN PLACES WITH POOR AIR FLOW.

THE BEST DEFENSE AGAINST EXHAUST GAS POISONING IS VERY GOOD AIR FLOW.

To protect yourself and your partners, always obey the following rules:

• Do not run heater or engine indoors unless you have VERY GOOD AIR FLOW.

• Do not idle engine for a long time unless there is VERY GOOD AIR FLOW.

• Do not drive vehicle with any power plant access covers, plates, or doors open.

• BE ALERT at all times. Check for the smell of exhaust fumes. If you notice any fumes, OPEN HATCH AND WINDOWS RIGHT AWAY. USE VENT FANS.

• REMEMBER: The best defense against exhaust gas poisoning is VERY GOOD AIR FLOW.

Exhaust gas poisoning causes dizziness, headache, loss of muscle control, sleepiness, coma, and death. If anyone shows signs of exhaust gas poisoning, get ALL SOLDIERS out of the vehicle. Make sure they have lots of fresh air. Keep them warm. DO NOT LET ANYONE DO HARD EXERCISE. GET MEDICAL HELP. If anyone stops breathing, give artificial respiration. See FM 21-11 for first aid.
WARNING

Cleaning solvent is poisonous, and can burn. Continued exposure to solvent can cause skin problems.

- Always use in area with good air flow, away from heat or flames.
- Do not breathe solvent fumes.
- Do not put hands in solvent.
- Apply solvent with brush.
- If solvent gets on hands, wash them.
- If solvent gets in eyes, flush with fresh water and get medical help.
- Keep fire extinguisher nearby.

LAND TRAVEL

WARNING

Rapid starts, sudden stops, and sharp turns can throw riders off vehicle. Riders thrown from vehicle can be killed or injured. Riders must sit inside vehicle on seats that are provided.

Vehicle can move forward or stop suddenly. Soldiers could be injured.

To avoid sudden starts, step on brake pedal before you release handbrake or shift to a driving range.

When tow starting tow vehicle, do not accelerate when you shift to drive.
WARNING

- Do not move gear selector to PIVOT STEER while vehicle is moving.

WARNING

Operating vehicle in reverse is dangerous due to limited vision and reversed steering. Always post ground guides before you back up.

WARNING

Vehicle can roll over and kill or injure you. Do not drive up a hill steeper than a 60% grade (31° angle from horizontal). Do not drive on side slopes steeper than a 40% grade (22° angle from horizontal).

WATER TRAVEL

WARNING

Check each piece of water barrier to be sure it is correctly installed and locked in place. A collapsed water barrier can cause vehicle to sink. Soldiers could drown or be injured.
WARNING

Vehicle could swamp or sink if you enter water faster than 5 mph.

Vehicle may not steer to left in water if vehicle is too heavy on the right side. Soldiers could be killed or injured. Distribute load to get level trim.

An underwater obstruction which does not support both tracks may cause vehicle to swamp or be stranded. Soldiers could drown. Watch for and avoid underwater obstacles.

Towing another vehicle in water may cause vehicle to swamp or sink. Soldiers could drown. Except in an emergency, do not tow another vehicle in water. When towing vehicle in water, attach towline so it can be released quickly.

NUCLEAR, BIOLOGICAL, CHEMICAL (NBC) AGENTS

WARNING

NBC agents can kill you. Decontaminate air cleaner and vent system after NBC attack.
GENERAL

WARNING

Gas from batteries can explode and injure you. Do not allow sparks near batteries. Battery acid can burn or blind you. Do not get acid on your skin or eyes.

WARNING

Battery posts and cables touched by metal objects can short circuit and burn you or injure you. Use caution when you work with tools or other metal objects. Do not wear jewelry when you work on electrical system.

WARNING

Sparks from static electricity could cause a fire or explosion. Metal nozzle must touch metal in filler neck when fueling vehicle. Fuel can catch fire and burn you. Do not smoke. Wipe up spilled fuel.

Starting engine right after a fire could restart fire. Do not turn MASTER POWER switch ON until cause of fire has been repaired or removed.
WARNING

Fire bottles can discharge and injure you. Insert lock pin before you inspect fire bottles.

WARNING

Hot parts can burn you. Let power unit cool before you start work.

WARNING

Power unit parts could injure you. Stay clear of moving parts when power unit is running.

Moving sprockets could injure you. Keep hands and fingers away from sprockets when you seat and guide track. Always use crowbar and track pin to move track.

WARNING

Soldiers near moving turret or guns could be killed or injured. Equipment could be damaged. Clear soldiers and equipment from top of vehicle before you move turret or guns.
WARNING

Ramp access door is heavy. It can swing and injure soldiers. Warn soldiers who are outside vehicle before you open door. Make sure door stops swinging before you go out.

WARNING

Noise from vehicle or weapons could damage hearing of soldiers in or near vehicle. All crew members should use earplugs or other hearing protectors when vehicle or gun is operated.

FIRST AID

For artificial respiration and first aid, see FM 21-11.
TM 9-2350-252-10-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C.

OPERATOR'S MANUAL
FOR
FIGHTING VEHICLE, INFANTRY, M2
(2350-01-048-5920)
FIGHTING VEHICLE, CAVALRY, M3
(2350-01-049-2659)
HULL

REPORTING ERRORS AND RECOMMENDING IMPROVEMENT

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 Command, ATTN: DRSTA-MB, Warren, Michigan 48090. A reply will be sent to you.

TABLE OF CONTENTS

HOW TO USE THIS MANUAL ............... III

CHAPTER 1 INTRODUCTION ................. 1-1
Section I General Information ............... 1-1
II Equipment Description .................. 1-6
III Technical Principles of Operation ...... 1-14

CHAPTER 2 OPERATING INSTRUCTIONS ........ 2-1
Section I Description and Use of Operator's Controls and Indicators .............. 2-1
II Preventive Maintenance Checks and Services (PMCS) .................. 2-37
III Operation Under Usual Conditions ...... 2-93
IV Operation Under Unusual Conditions .... 2-243
# TABLE OF CONTENTS (cont)

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>MAINTENANCE INSTRUCTIONS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Lubrication</td>
<td>3-1</td>
</tr>
<tr>
<td></td>
<td>Troubleshooting Procedures</td>
<td>3-3</td>
</tr>
<tr>
<td></td>
<td>Maintenance Procedures</td>
<td>3-39</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>MAINTENANCE OF AUXILIARY EQUIPMENT</th>
<th>4-1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>AMMO</th>
<th>5-1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>REFERENCES</th>
<th>A-1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS</th>
<th>B-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>I Introduction</td>
<td>B-1</td>
</tr>
<tr>
<td></td>
<td>II Components of End Item</td>
<td>B-3</td>
</tr>
<tr>
<td></td>
<td>III Basic Issue Items</td>
<td>B-4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>ADDITIONAL AUTHORIZATION LIST</th>
<th>C-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>I Introduction</td>
<td>C-1</td>
</tr>
<tr>
<td></td>
<td>II Additional Authorization List</td>
<td>C-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>EXPENDABLE SUPPLIES AND MATERIALS LIST</th>
<th>D-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>I Introduction</td>
<td>D-1</td>
</tr>
<tr>
<td></td>
<td>II Expendable Supplies and Materials List</td>
<td>D-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>STOWAGE AND SIGN GUIDE</th>
<th>E-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>I Introduction</td>
<td>E-1</td>
</tr>
<tr>
<td></td>
<td>II Outside Stowage — IFV</td>
<td>E-2</td>
</tr>
<tr>
<td></td>
<td>III Inside Stowage — IFV</td>
<td>E-6</td>
</tr>
<tr>
<td></td>
<td>IV Outside Stowage — CFV</td>
<td>E-18</td>
</tr>
<tr>
<td></td>
<td>V Inside Stowage — CFV</td>
<td>E-22</td>
</tr>
<tr>
<td></td>
<td>VI Identification Plates</td>
<td>E-35</td>
</tr>
</tbody>
</table>

**ALPHABETICAL INDEX** | Index 1

DA FORM 2028-2

METRIC CONVERSION CHART
HOW TO USE THIS MANUAL

This manual tells you how to use the Infantry Fighting Vehicle and the Cavalry Fighting Vehicle (without the turret).

Before starting a task or procedure, read HOW TO USE THIS MANUAL and CHAPTER 2, Section I. DESCRIPTION AND USE OF OPERATOR'S 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 procedures.

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

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

CHAPTER 2 covers descriptions and functions of all controls and indicators. It also includes preventive maintenance checks and services (PMCS).

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

CHAPTER 4 lists manuals which tell you how to operate auxiliary equipment on the vehicles.

CHAPTER 5 covers handling of ammo. It also describes the markings on ammo.

APPENDIX A lists references to be used by personnel in operating and maintaining the vehicles. These references include technical manuals and other publications.
HOW TO USE THIS MANUAL (cont)

APPENDIX B lists essential parts of the vehicles and all basic issue items. Essential parts are those items permanently mounted on the vehicles. Basic issue items are tools, repair parts, publications, and other items required to place the vehicles in operation and perform emergency repairs.

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

APPENDIX D lists expendable supplies and materials.

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

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.

Metric conversion chart converts U.S. measurements to their metric equivalents. Measurements in this manual are given in both U.S. and metric units.
USING YOUR MANUAL ON THE JOB

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 of the four types of tasks you need to use.

How do you find the correct task or procedure?

Pick a key word from the vehicle 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 SQUAD SEATS, could be found:

Under “A”
  Adjust:
     Squad seats ........................................ page 2-75

Under “S”
  Seats, squad:
     Adjust .................................................. page 2-75

     Squad seats:
     Adjust .................................................. page 2-75

How do you read the tasks?

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

Start with step 1 and do each step in the order given. Numbered (or primary) steps tell you WHAT to do. Substeps tell you HOW to do it.
HOW TO USE THIS MANUAL (cont)

Look at the illustrations. These show you where the equipment and parts are located on the vehicle. Illustrations in this manual may 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 IFV and CFV (except the turrets) and their parts. Each operation task details steps which need to be performed to complete the task.

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

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

Example of Setup Items

The example 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 example.

1. DESCRIPTION
   - This task covers: Right Front Bilge Pump (page 3-87), Left Front Bilge Pump (page 3-88), Right Rear Bilge Pump (page 3-89), Left Rear Bilge Pump (page 3-90), Bilge Pumps Operation Check (page 3-92).

2. INITIAL SETUP
   - Tools: Screwdriver (Item 44, App B)
   - Materials/Parts: Wiping rag (Item 9, App D)
   - Personnel Required: Driver
   - Helper (H)
   - References: TM 9-2350-252-10-2
   - Equipment Conditions: Engine stopped (page 2-161)
Legend to Example Above

<table>
<thead>
<tr>
<th>No.</th>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TITLE</td>
<td>This is the name of the task.</td>
</tr>
<tr>
<td>2</td>
<td>DESCRIPTION</td>
<td>This describes the overall actions you will perform. It also gives you the page where each action begins.</td>
</tr>
<tr>
<td>3</td>
<td>TOOLS</td>
<td>These are the tools and equipment you will need to do the task.</td>
</tr>
<tr>
<td>4</td>
<td>MATERIALS/PARTS</td>
<td>These are the supplies and parts you will need to do the task. These can be obtained from organizational maintenance.</td>
</tr>
<tr>
<td>5</td>
<td>PERSONNEL</td>
<td>These are the personnel needed to do the task.</td>
</tr>
<tr>
<td>6</td>
<td>REFERENCES</td>
<td>These are the other technical publications you will need to do the task.</td>
</tr>
<tr>
<td>7</td>
<td>EQUIPMENT</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

Read the INITIAL SETUP section carefully before you start any task. Get the tools and supplies listed and the personnel needed. Be sure the equipment is in the condition required.
HOW TO USE THIS MANUAL (cont)

Example of Task Steps

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

1. **CAUTION**
   - Gun port vents can be damaged if firing port vents are closed. Check that firing port vents are open before you turn on gun port vent fans.

2. **NOTE**
   - Steps 1 thru 5 are for the IFV.
   - Steps 7 thru 13 are for CFV.

3. 1. OPEN FIRING PORT VENTS.

4. a. Push firing port vent levers up.

5. **WARNING**
   - Gases from firing port weapons are poisonous. Before you fire weapons, attach brass-catcher bags to weapons and turn gun port vent fans on.

6. 2. MOVE GUN PORT VENT FAN SWITCHES TO ON.

Legend to Example Above

1. **CAUTION**
   - This describes possible damage to equipment.

2. **NOTE**
   - This tells you about conditions that affect the step immediately following it.

3. **STEP**
   - This tells you WHAT to do.

4. **SUBSTEP**
   - This tells you HOW to do it.

5. **WARNING**
   - This describes danger to yourself and other personnel.
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 vehicle running.

There are five types of PMCS, as follows:

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

The DURING (D) PMCS should be done when you operate the vehicle. Monitor the vehicle and its systems as you operate the vehicle. 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 vehicle or its systems and you cannot fix it yourself, notify organizational maintenance. Use DA Form 2404. 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 example below shows you what to look for when you read a PMCS procedure. For more information on PMCS, see page 2-1.
HOW TO USE THIS MANUAL (cont)

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

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO.</td>
<td>Procedure</td>
<td></td>
</tr>
</tbody>
</table>

HULL DRAIN PLUGS (cont)

1. Pull up and turn fastener. Remove floor plate.
2. Check for open or missing rear hull drain plug.
3. If rear hull drain plug is not missing, check that bridge plates are fully seated.
4. Turn valve to secure rear hull drain plug.
5. Install floor plate.
6. Pull up and turn fastener.

Legend to Example Above

1) TITLE
This is the name of the vehiclesystem or part being checked.

2) STEP(S)
These are usually steps which must be done to access the vehicle system or part being checked.

3) CHECK
This tells you what needs to be checked.

4) CHECK NUMBER
This tells you the sequence for doing the PMCS.

5) NOT READY/AVAILABLE CONDITION
This tells you what conditions will make your vehicle NOT READY/AVAILABLE for your mission.
**Troubleshooting Tasks**

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

**Example of Troubleshooting Task**

The example 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 example.

---

**Troubleshooting Table (cont)**

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EMERGENCY START</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. EXCESSIVE SMOKE FROM EXHAUST SYSTEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1. Check that AIR CLEANER CLOGGED warning light is off.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. AIR CLEANER CLOGGED WARNING LIGHT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. If AIR CLEANER CLOGGED warning light is on, notify organizational maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. TRANSMISSION SYSTEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. TRANSMISSION OVERHEATS DURING NORMAL OPERATIONS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1. Check that TRANS OIL TEMP warning light is off.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. TRANS OIL TEMP WARNING LIGHT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. If TRANS OIL TEMP warning light flashes or stays on, check transmission oil level. See task: CHECK/ADD TRANSMISSION OIL, page 3-103.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HOW TO USE THIS MANUAL (cont)

Legend to Example Above

1) SYSTEM This tells you which vehicle system the troubleshooting task is covering.

2) MALFUNCTION This tells you the vehicle 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.

5) LOCATOR This helps you locate equipment on the vehicle.

6) CLOSEUP This shows you a closeup of the equipment.

DEFINITION OF TASK TERMS

WARNINGS, CAUTIONS, AND NOTES

Pay attention to all warnings and cautions within 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 things that could kill or injure personnel. Warnings are also listed at the front of the manual.

WARNING Lowering ramp could injure soldiers. Make sure no one is in ramp zone before you lower ramp. If tactical situation permits, sound horn before dropping 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: Personnel Required:
Driver
Helper (H)

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

Example: 3. PUSH UP TRIM VANE.
HAVE HELPER ASSIST.

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

Example: 2. (H) MOVE MASTER POWER SWITCH TO ON.
LOCATIONAL TERMS

The terms "front," "rear," "left," and "right" are used to indicate where items are located on the vehicle. Think of these locations as if you were standing on the ramp facing the inside of the vehicle.
CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

INFANTRY FIGHTING VEHICLE (IFV), M2/CAVALRY FIGHTING VEHICLE (CFV), M3

Left Front View
INFANTRY FIGHTING VEHICLE (IFV), M2/CAVALRY FIGHTING VEHICLE (CFV), M3 (cont)

Right Rear View
SCOPE

This manual tells how to operate and maintain the hulls of the IFV and the CFV. Another manual, TM 9-2350-252-10-2, tells how to operate and maintain the turret.

MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, the Army Maintenance Management System (TAMMS). The forms you need are described briefly below.

DA FORM 2408-1 (Daily). Look at block 3 to see if lube service is due. Fill out columns b through e and g when you are through for the day.

DA FORM 2408-14. Look at column a before you use the vehicle. See if there are any serious faults. Then put the fault symbol in column f of your DA Form 2408-1 (daily).

DA FORM 2404. This is a report to organizational maintenance and to your commander. Fill it out as needed each day you use the vehicle. Also, use this form for recording Combat Operability ratings.

DA FORM 2400. Fill out this form daily to report equipment usage.

DD FORM 518. Use as needed for accident identification purposes.

SF 91. Use this form to report accident details.

SF 368. Use this form to report problems that come up often, and ideas for making the IFV and the CFV better.

HAND RECEIPT (-HR) MANUALS

This manual has a companion document with a TM number followed by -HR (Hand Receipt). TM 9-2350-252-10-1-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL). You must account for equipment listed in TM 9-2350-252-10-1-HR. To help you account for this equipment, you may order more -HR manuals. To order more -HR manuals, follow the procedures in AR 310-2, Chapter 3. Send your order to: The U.S. Army Adjutant General Publications Center, ATTN: AGLD-OD, 1655 Woodson Road, St. Louis, MO 63114.
REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your IFV or your CFV 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. Tell us why a procedure is hard to perform. Put your ideas on an SF 368 (Quality Deficiency Report). Mail it to us at Department of the Army, Program Manager, Fighting Vehicle Systems, ATTN: DRCPM-FVS-LM, Warren, MI 48090. A reply will be sent to you.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

The following manuals tell you how and when to destroy Army materiel to prevent enemy use:

TM 750-244-2
TM 750-244-5-1
TM 750-244-6

NOMENCLATURE CROSS REFERENCE LIST

This listing includes nomenclature cross references used in this manual.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>OFFICIAL NOMENCLATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAGON missile</td>
<td>Missile round</td>
</tr>
<tr>
<td>Driver's night viewer</td>
<td>Night vision sight</td>
</tr>
<tr>
<td>Firing port weapon</td>
<td>5.56mm submachine gun</td>
</tr>
<tr>
<td>Lock wire</td>
<td>Nonelectrical wire</td>
</tr>
<tr>
<td>TOW missile</td>
<td>Guided missile, surface attack, telemetry, XBGM-71A, TOW</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>After</td>
</tr>
<tr>
<td>Ammo</td>
<td>Ammunition</td>
</tr>
<tr>
<td>AP</td>
<td>Armor Piercing</td>
</tr>
<tr>
<td>Assy</td>
<td>Assembly</td>
</tr>
<tr>
<td>AUTO</td>
<td>Automatic</td>
</tr>
<tr>
<td>B</td>
<td>Before</td>
</tr>
<tr>
<td>BO</td>
<td>Blackout</td>
</tr>
<tr>
<td>BRT</td>
<td>Bright</td>
</tr>
<tr>
<td>CFV</td>
<td>Cavalry Fighting Vehicle</td>
</tr>
<tr>
<td>CKT BKR</td>
<td>Circuit Breaker</td>
</tr>
<tr>
<td>CVC</td>
<td>Combat Vehicle Communications</td>
</tr>
<tr>
<td>D</td>
<td>During</td>
</tr>
<tr>
<td>Decontn Appar</td>
<td>Decontamination Apparatus</td>
</tr>
<tr>
<td>DISCH</td>
<td>Discharge</td>
</tr>
<tr>
<td>Flex hose</td>
<td>Flexible hose</td>
</tr>
<tr>
<td>FWD</td>
<td>Forward</td>
</tr>
<tr>
<td>HE</td>
<td>High Explosive</td>
</tr>
<tr>
<td>Hex</td>
<td>Hexagonal, having six sides</td>
</tr>
<tr>
<td>HI-TEMP</td>
<td>High Temperature</td>
</tr>
<tr>
<td>ID PLATE</td>
<td>Identification plate</td>
</tr>
<tr>
<td>IFV</td>
<td>Infantry Fighting Vehicle</td>
</tr>
<tr>
<td>INT</td>
<td>Internal</td>
</tr>
<tr>
<td>Intercom</td>
<td>Intercommunication</td>
</tr>
<tr>
<td>ITV</td>
<td>Improved TOW Vehicle</td>
</tr>
<tr>
<td>LO</td>
<td>Lubrication Order</td>
</tr>
<tr>
<td>M</td>
<td>Monthly</td>
</tr>
<tr>
<td>N</td>
<td>Neutral</td>
</tr>
<tr>
<td>PMCS</td>
<td>Preventive Maintenance Checks and Services</td>
</tr>
<tr>
<td>PRESS</td>
<td>Pressure</td>
</tr>
<tr>
<td>RAD</td>
<td>Radio</td>
</tr>
<tr>
<td>TEMP</td>
<td>Temperature</td>
</tr>
<tr>
<td>TRANS</td>
<td>Transmission</td>
</tr>
<tr>
<td>Vent</td>
<td>Ventilation</td>
</tr>
<tr>
<td>W</td>
<td>Weekly</td>
</tr>
</tbody>
</table>
Section II. EQUIPMENT DESCRIPTION

PURPOSE

The IFV and the CFV, with long-range mobility and fire power, are for land combat. They are also designed for high first round kill probability and light armor crew protection. Troops can be carried cross-country up to 30 miles per hour while using turret and firing port weapons for attack.

CAPABILITIES AND FEATURES

- Squad seating in hull for 6 soldiers (IFV) or 2 soldiers (CFV)
- Fully tracked
- Light armor protection
- High mobility
- Swim capability
- Fire power:
  - 25mm gun
  - Coax machine gun
  - Six firing ports for troops (IFV only)
  - TOW and DRAGON missiles
- Equipped for fire suppression
- Day and night vision sighting for guns
- Smoke grenade launchers
- Stabilized fire control system
### DIFFERENCES BETWEEN MODELS

<table>
<thead>
<tr>
<th></th>
<th>IFV</th>
<th>CFV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel:</strong></td>
<td>3 crew members 6 squad members</td>
<td>3 crew members 2 squad members</td>
</tr>
<tr>
<td><strong>Firing Ports:</strong></td>
<td>6</td>
<td>None</td>
</tr>
<tr>
<td><strong>Missiles:</strong></td>
<td>2 ready</td>
<td>2 ready 10 stowed</td>
</tr>
<tr>
<td>TOW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOW/DRAGON</td>
<td>5 stowed, any combination</td>
<td>None</td>
</tr>
<tr>
<td>LAW</td>
<td>3 stowed</td>
<td>None</td>
</tr>
<tr>
<td><strong>Ammunition:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25mm</td>
<td>300 ready 600 stowed</td>
<td>300 ready</td>
</tr>
<tr>
<td>7.62mm (M240C)</td>
<td>600 ready 1540 stowed</td>
<td>800 ready 3600 stowed</td>
</tr>
<tr>
<td>7.62mm (M60)</td>
<td>2200 stowed</td>
<td>5060 stowed</td>
</tr>
<tr>
<td>5.56mm (M231)</td>
<td>4200 stowed</td>
<td>None</td>
</tr>
<tr>
<td>5.56mm (M16A1)</td>
<td>2520 stowed</td>
<td>1460 stowed</td>
</tr>
</tbody>
</table>

### EQUIPMENT DATA

**GENERAL**

- Weight (combat loaded) ................. 49,138 lb (22,285 kg)
- Weight (less fuel, crew, and OVE) ....... 41,600 lb (18,869 kg)
- Weight (air transportable) .............. 41,136 lb (18,656 kg)
- Ground pressure (combat loaded) ........ 7.7 psi (0.54 kg/cm²)
- Personnel capacity:
  - IFV ................................... 9
  - CFV ................................... 5
- Fuel tank capacity ...................... 175 gal (662 liters)
EQUIPMENT DATA (cont)

PERFORMANCE

- Speed on land: 41 mph (66 km/h)
- Speed on water (with track): 4.5 mph (7.2 km/h)
- Cruising range: 300 mi (483 km)
- Turning radius: pivot to infinite
- Slope: 60%
- Side slope: 40%
- Trench crossing: 100 in. (2.5 m)
- Vertical wall climbing: 36 in. (91 cm)
- Gross horsepower-to-weight ratio: 20.62 hp/ton

ENGINE

- Make and model: Cummins VTA-903T
- Displacement: 903 cu. in. (14.8 liters)
- Type: 4 cycle
- Fuel: Diesel
- Gross horsepower: 500 (506 metric)

TRANSMISSION, AUTOMATIC

- Make and model: G.E. HMPT-500
- Type: Hydromechanical
- Steering: Hydrostatic
- Brake: Multidisc, oil-cooled

RUNNING GEAR

- Suspension: Return roller
- Springing media: Torsion bar
- Number of road wheels: 6 per side
- Road wheel size:
  - Diameter: 24 in. (61.0 cm)
  - Width: 4 in. (10.2 cm)
- Track type: Steel single pin with detachable rubber pads
- Shock absorbers: 3 per side
- Number of track shoes:
  - 83, left side
  - 82, right side
- Track pitch:
  - 6 in. (15.2 cm)
  - 21 in. (53.3 cm)
ELECTRICAL SYSTEM:

Generator:
- Amperes: 220 amp
- Volts, dc: 28 V
- Batteries: 4, type 6TN, 100 amp hr, 12 V each

FIRE EXTINGUISHERS:

Fixed:
- Engine compartment: 7 lb (3.2 kg) Halon
- Squad compartment: 2.5 lb (2.3 kg) Halon
- Portable: 2.75 lb (1.2 kg) Halon
DESCRIPTION AND LOCATION OF MAJOR PARTS

**POWER UNIT COMPARTMENT.** The engine and transmission are located in this compartment. The engine powers the transmission which drives the vehicle tracks.

**TRIM VANE.** The trim vane supports the water barrier. When lowered to horizontal position, it also serves as a work platform.

**FUEL TANKS.** Diesel fuel is stored in two separate but interconnected tanks.

**BILGE PUMPS.** There are four bilge pumps; two at the rear and two up front. Bilge pumps are located under the floor. When turned on, they remove water that may accumulate during swim or fording operations.
RAMP. A ramp is located at the rear of the vehicle to permit rapid entry and exit.

FIRING PORTS — IFV ONLY. Six firing ports enable soldiers to fire from inside the vehicle at external targets. Two firing ports are located on each side of the vehicle. Two firing ports are in the ramp.

WATER BARRIER. When erected, the water barrier allows the vehicle to swim.
CREW VENTILATION AND HEATING. Two vent fans provide fresh air for the crew. The personnel heater operates on diesel fuel.

TRACK AND SUSPENSION SYSTEM. The track and suspension system helps propel the vehicle and provides a cushioned ride. The main parts of the track and suspension system are as follows:

- **Drive sprockets.** The drive sprockets deliver power from the power unit to the tracks.
- **Tracks.** The tracks are closed chains of track shoes driven by the drive sprockets.
- **Road wheels.** The road wheels support the hull on the tracks.
- **Road arms.** The road arms connect the road wheels to the torsion bars. The road arms pivot to press the road wheels against the tracks.
- **Shock absorbers.** The shock absorbers work with the torsion bars to reduce bounce on rough ground.
- **Idler wheels.** The idler wheels support the rear track loop ends and keep the tracks tight.
- **Track adjusters.** The track adjusters permit the idler wheels to be moved to tighten or loosen the tracks.
- **Support rollers.** The support rollers keep the top of the track from hitting the road wheels.
FIRE SUPPRESSION SYSTEM. The automatic fire suppression system releases halon to quickly put out fires in the fuel tank area.

EXTERIOR LIGHTING. Exterior lights include blackout lights, headlights, and stop light.
Section III. TECHNICAL PRINCIPLES OF OPERATION

HULL

CARGO HATCH COVER. The torsion bar assisted cargo hatch cover opens and closes on a set of hinges. From inside the vehicle, the cargo hatch cover can be latched in the CLOSED, POP-UP, MID, UPRIGHT, or FULL-OPEN position.

DRIVER'S HATCH COVER. The torsion bar assisted driver's hatch cover is over the driver's opening. The driver's hatch cover can be locked in the CLOSED position or latched in POP-UP, MID, or FULL-OPEN position.

POWER UNIT ACCESS PANELS. There are two power unit access panels located to the right of the driver. These panels provide side access to the engine compartment. The panels reduce heat transfer from the engine and keep exhaust fumes from squad and driver's compartments.

ENGINE ACCESS PANELS. There are two engine access panels located to the right of the driver. These panels provide side access to the engine compartment. The panels reduce heat transfer from the engine and keep exhaust fumes from squad and driver's compartments.

DRAIN PLUGS. The vehicle has two 4-inch diameter drain plugs for the vehicle interior. The vehicle also has two 1-inch diameter drain plugs for the final drives. These drain plugs are designed to quickly drain the vehicle of water or other liquids.

TRIM VANE. When locked in upright position, the trim vane provides forward support for the water barrier. When in horizontal position, the trim vane serves as a work platform. When used as a work platform, the trim vane has a maximum safe load of 650 pounds.

RAMP. The ramp is located at the rear of the vehicle to permit rapid entry and exit. The ramp is hinged at the bottom and has two locks at the top. The ramp is raised or lowered by an electro-hydraulic system. This system consists of an electric motor attached to a pump, a dual acting cylinder, a solenoid valve, and a fluid reservoir.
FIRING PORTS (IFV ONLY)

Six threaded ball ports serve as firing ports for the 5.56mm M231 Firing Port Weapon. Each firing port permits the squad member to fire at external targets from behind armor protection.

FIRING PORT VENT SYSTEM

The firing port vent system removes toxic gases produced by firing port weapons. Gases from firing port weapons are first collected in the brass-catcher bag attached to each firing port weapon. An external fan sucks these gases from the brass-catcher bag through a duct system and outside the vehicle.

DRIVER’S CONTROLS

The engine, transmission, steering system, and braking system are driver controlled. Engine startup and shutdown are controlled by electrical signals and mechanical linkages connected to the accelerator pedal and the hand throttle cable. Steering and braking are controlled through linkages connected to the transmission. The hand brake is hand controlled.

ENGINE SYSTEM AND DRIVE TRAIN

The engine converts air and diesel fuel into energy. The engine delivers this power to the transmission, generator, and cooling fan. Air for combustion flows through the air cleaner turbocharger and the engine. Fuel flows from the fuel tank to fuel injectors which inject the fuel into the combustion chambers. A drive train transfers power from the engine to the vehicle tracks. The drive train consists of the engine, transmission, drive lines, final drive assemblies, and drive sprockets.

COOLING SYSTEM

The engine and transmission generate heat during normal operation. The cooling system transfers some of this heat to the outside to maintain safe operating temperatures. A mixture of antifreeze and water is pumped through the cooling system to cool the engine.
SMOKE GENERATOR SYSTEM

An engine exhaust smoke generator system uses the vehicle fuel supply. A valve admits fuel into the exhaust system. The fuel is converted to smoke and is exhausted to the outside of the vehicle.

HULL ELECTRICAL SYSTEM

The hull electrical system operates on four wet cell batteries connected in a series/parallel arrangement. Electrical power flows from the batteries through the distribution box, cables, subsystems, assemblies, and to the hull. The hull is a ground. The turret also receives power from the hull power distribution system.

Major electrical assemblies are as follows:

- Interior and Exterior Lighting
- Fuel Pumps
- Starter and Generator
- Radio/Intercom
- Fire Suppression System
- Personnel Heater and Vent Fans
- Bilge Pumps
CHAPTER 2
OPERATING INSTRUCTIONS
Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

DRIVER'S HATCH CONTROLS

**HATCH COVER LOCK**
Locks and unlocks driver's hatch cover from inside vehicle. Driver's hatch cover opens to POP-UP position when unlocked.

**HATCH COVER HANDLE**
Controls opening, positioning, and closing of driver's hatch cover from inside vehicle.

**LOCK LEVER**
Locks and unlocks driver's hatch cover from outside vehicle.
FWD BILGE PUMPS SWITCH AND INDICATOR LIGHT

Two-position toggle switch to turn two forward bilge pumps on or off. Indicator light goes on when switch is moved to ON.

REAR BILGE PUMPS SWITCH AND INDICATOR LIGHT

Two-position toggle switch to turn two rear bilge pumps on or off. Indicator light goes on when switch is moved to ON.
FIRE SUPPRESSION SWITCH Two-position toggle switch to select MANUAL or AUTO mode of operation for fire suppression system. In MANUAL mode, the fire suppression system in the personnel compartment must be operated manually. In AUTO mode, fire is detected by sensors and halon is automatically discharged into the personnel compartment.

MANUAL INDICATOR LIGHT Goes on when FIRE SUPPRESSION switch is moved to MANUAL.

DISCH INDICATOR LIGHT Goes on when fire suppression system has been discharged.

GO TO NEXT PAGE
SMOKE SCREEN GENERATOR SWITCH AND INDICATOR LIGHT

Two-position toggle switch to turn smoke screen generator on or off. Indicator light goes on when switch is moved to ON.
LIGHTS UNLOCK SWITCH

Spring-loaded, two-position lever. Must be held in UNLOCK position when setting driving light switch to any position other than BO MARKER. Returns to locking position when released.

GO TO NEXT PAGE
Five-position rotary switch controls outside vehicle lights, as follows:

**BO DRIVE** — Turns on blackout driving light, outside front white blackout markers, and outside rear red blackout markers.

**BO MARKER** — Turns on all blackout markers and activates white blackout stop lights.

**OFF** — Turns off all exterior lights.

**STOP LIGHT** — Allows stop lights to function during daytime operation without headlights.

**SER DRIVE** — Turns on headlights and allows conventional stop lights to operate.
PANEL LIGHTS SWITCH

Four-position rotary switch controls panel lights, as follows:

PANEL BRIGHT — Turns on panel lights to bright.

DIM — Turns on panel lights to dim.

OFF — Turns off panel light system.

PARK — Turns on taillights.

GO TO NEXT PAGE

2-7
ENGINE OIL PRESS GAGE

Indicates engine oil pressure, as follows:

Lower band — Indicates oil pressure with engine at idle speed.

Upper band — Indicates oil pressure with engine at operating speed.

ENGINE OIL LOW PRESSURE WARNING LIGHT

Goes on when engine oil pressure is low.
TURN INDICATOR LIGHTS

TURN INDICATOR SWITCH

Five-position switch controls turn indicator lights, as follows:

- Center position is off.
- Switch at first detent left of center turns on left directional lights.
- Switch at first detent right of center turns on right directional lights.
- Switch at far left or far right turns on hazard lights.

TURN INDICATOR LIGHTS

Left or right indicator light comes on to match setting of switch. Both indicator lights come on when switch is set to hazard light position.

GO TO NEXT PAGE
HORN BUTTON
Sounds horn when pushed.

FUEL GAGE
Indicates level of fuel in lower fuel cell.
TURRET POWER INDICATOR LIGHT
Goes on when turret power is on.

LAUNCHER UP INDICATOR LIGHT
Goes on when TOW launcher is in firing position.

AIR CLEANER CLOGGED WARNING LIGHT
Goes on when air cleaner is clogged while engine is running.

GO TO NEXT PAGE
SPEEDOMETER Indicates vehicle speed in kilometers and miles per hour.

ODOMETER Indicates total vehicle distance traveled in kilometers.

HIGH BEAM INDICATOR LIGHT Goes on when headlight high beams are on.
Indicates battery and generator conditions, as follows:

Left red zone — Indicates low battery charge with engine off. Battery may not start engine.

Yellow zone — Indicates normal battery voltage with engine off. Indicates generator not charging with engine running.

Green zone — Indicates generator charging normally with engine running.

Right red zone — Indicates generator overcharging with engine running.
TYM 9-2350-252-10-1

DRIVER'S INSTRUMENT PANEL (cont)

TRANS OIL PRESS WARNING LIGHT

Goes on when transmission oil pressure is low.

TRANS OIL TEMP WARNING LIGHT

Goes on when transmission oil temperature is too hot.

FUEL FILTER CLOGGED WARNING LIGHT

Goes on when fuel filter is clogged while engine is running.

2-14
ENGINE COOLANT TEMP GAGE

Indicates relative temperature of engine coolant, as follows:

Red zone — Indicates that engine is overheating.

Yellow zone — Indicates that engine is operating at higher than normal temperatures.

Green zone — Indicates that engine is operating at normal temperatures.

TEST SENSOR BUTTON

Tests COOLANT HI TEMP and LOW LEVEL warning lights. When button is pushed, warning lights should go on.

COOLANT HI TEMP WARNING LIGHT

Goes on when engine coolant temperature is too hot.

COOLANT LOW LEVEL WARNING LIGHT

Goes on when engine coolant level is too low.
RAMP SWITCH

RAMP UNLOCKED INDICATOR LIGHT

STARTER CUTOUT OVERRIDE SWITCH

**RAMP SWITCH**

Ramps and lowers ramp.

**RAMP UNLOCKED INDICATOR LIGHT**

Indicates that ramp is unlocked.

**STARTER CUTOUT OVERRIDE SWITCH**

Allows starter to crank longer in cold start conditions. Overrides automatic starter cutout.
MASTER POWER SWITCH AND INDICATOR LIGHT

Turns primary vehicle electrical power on or off, except for turret emergency batteries. Indicator light goes on when MASTER POWER switch is on.

ENGINE ACCESSORY SWITCH AND INDICATOR LIGHT

Turns engine accessories on and off. Indicator light goes on when ENGINE ACCESSORY switch is on.
COLD START SWITCH
AND INDICATOR LIGHT

Used while starting engine during cold weather. Preheats glow plugs. Indicator light goes on when COLD START switch is on.

TONE CANCEL/PUSH TO TEST SWITCH

Tests instrument panel indicator lights (DOWN) and cancels warning tone (UP).
GEAR SELECTOR PANEL

GEAR SELECTOR
Selects driving range of automatic transmission.

REVERSE
Used to drive vehicle to the rear.

N (NEUTRAL)
Disengages transmission from engine.

START
Engages engine starter.

PIVOT STEER
Used to turn vehicle on its own center.

GO TO NEXT PAGE
GEAR SELECTOR PANEL (cont)

DRIVE Used to drive vehicle forward in normal operating range.
LOW Used to hold vehicle in low driving range.
TOW START Used to start engine while being towed by another vehicle.
TOW Used when vehicle is being towed.
HAND BRAKE Engages parking brake.

2-20
DRIVER'S NIGHT VIEWER

OFF/BRIGHT ROTARY SWITCH

Adjusts brightness of view.

GO TO NEXT PAGE
STEERING YOKE AND PEDALS

- **STEERING YOKE**: Steers vehicle.
- **DRIVER'S INTERCOM SWITCH**: Allows driver to use intercom while steering vehicle.
- **BEAM SELECTOR SWITCH**: Selects high or low headlight beams.
- **BRAKE PEDAL**: Slows and stops vehicle.
- **BRAKE PEDAL HEIGHT ADJUSTER**: Allows height of brake pedal to be adjusted within reach of driver.
- **ACCELERATOR PEDAL**: Controls engine speed.
FUEL AND THROTTLE CONTROL PANEL

FUEL PUSH TO RELEASE BUTTON

Starts and stops fuel flow to engine.

FUEL CONTROL HANDLE

Locks and releases fuel control handle.

THROTTLE PUSH TO RELEASE BUTTON

Locks and releases throttle control handle.

THROTTLE CONTROL HANDLE

Controls idle speed of engine.

GO TO NEXT PAGE
RAMP LOCK RELEASE BUTTON
Releases ramp locking handle.

RAMP LOCKING HANDLE
Locks ramp in raised position and unlocks ramp for lowering.
PERSONNEL HEATER CONTROL BOX

HI/LO SWITCH
- Controls personnel heater fan speed.

RUN/OFF/START SWITCH
- Controls operation of personnel heater.

PERSONNEL HEATER INDICATOR LIGHT
- Indicates that personnel heater is on.

GO TO NEXT PAGE
ENERGIZE SLAVE RECEPTACLE
PUSHBUTTON

SLAVE RECEPTACLE POWER INDICATOR LIGHT

SLOPE INDICATOR

ENERGIZE SLAVE RECEPTACLE
PUSHBUTTON Energizes slave receptacle.

SLAVE RECEPTACLE POWER INDICATOR LIGHT Indicates that slave receptacle has been energized.

SLOPE INDICATOR Indicates whether vehicle is on slope or level ground.
WINTERIZATION KIT HEATER

WINTERIZATION KIT HEATER INDICATOR LIGHT
Indicates that winterization kit heater is operating.

HI/LO SWITCH
Controls winterization kit heater fan speed.

RESET BUTTON
Resets winterization kit heater.

RUN/OFF/START SWITCH
Controls operation of winterization kit heater.

GO TO NEXT PAGE

2-27
FIRE SUPPRESSION SYSTEM

EXTERIOR FIRE SUPPRESSION HANDLE
Discharges fire suppression system manually from outside vehicle.

INTERIOR FIRE SUPPRESSION HANDLE
Discharges fire suppression system manually from inside vehicle.
BLACKOUT RELEASE BUTTON

Releases light selector switch from blackout position.

LIGHT SELECTOR SWITCH

Selects red or white light.

GO TO NEXT PAGE
BLACKOUT RELEASE BUTTON

Releases light selector switch from blackout position.

LIGHT SELECTOR SWITCH

Selects red or white light.

2-30
FAN CONTROL BOX

FAN CONTROL SWITCH

Turns on and adjusts ventilation fan speed.

DOOR HANDLE

Slides up and down to control flow of air into driver and squad areas. Opens filter box.

GO TO NEXT PAGE
FIRING PORT VENT FAN CONTROLS — IFV ONLY

GUN PORT VENT FAN SWITCHES AND INDICATOR LIGHTS

Turn gun port vent fans on and off. Indicator lights go on when switches are on.

FIRING PORT VENT LEVER

Closes firing port vents for vehicle swimming operations. Opens firing port vents for firing port weapon operations.
CARGO HATCH CONTROLS

CARGO HATCH COVER HANDLE

Opens and closes cargo hatch cover.

LATCH LEVER

Locks and unlocks cargo hatch cover.

GO TO NEXT PAGE

2-33
MONITOR SWITCH
   Allows selection of intercom channels.

VOLUME KNOB
   Controls intercom volume.
DOOR HANDLE
Opens and closes ramp access door.

HOLD-OPEN LATCH
Secures door to ramp when door is open.

COMBAT LOCK
Locks ramp access door from inside.

END OF TASK
Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

SCOPE

This section details preventive maintenance checks and services (PMCS) required for the hull (automotive parts). See TM 9-2350-252-10-2 for the PMCS required for the turret (including “before firing” checks and services).

MAINTENANCE FORMS AND RECORDS

Every mission begins and ends with paperwork. There isn’t much of it, but you have to keep it up. The forms and records you fill out have many uses. They are a permanent record of the services, repairs, and changes made to your vehicle. They are reports to organizational maintenance and to your commander. They are checklists that tell you what was wrong with the vehicle after its last use. They also tell you whether those faults have been repaired. For information on forms and records, see TM 38-750.

PMCS PROCEDURES

1 Obey all WARNINGS and CAUTIONS when you do your PMCS.

2 Do your BEFORE (B) PMCS just before you operate the Infantry Fighting Vehicle (IFV) or Cavalry Fighting Vehicle (CFV).

3 Do your DURING (D) PMCS during operation. Monitor your vehicle and its systems while you are actually operating your vehicle. Perform a (D) check of a system only when actual operation of that system is required for a mission.

4 Do your AFTER (A) PMCS right after operating your vehicle.

5 Do your WEEKLY (W) PMCS weekly.

6 Do your MONTHLY (M) PMCS monthly.

7 If something doesn’t work, troubleshoot it using the Troubleshooting Procedures on page 3-3 of this manual. Notify your supervisor.
PMCS PROCEDURES (cont)

8 Always do your PMCS in the same order so it gets to be a habit. With practice, you’ll spot anything that is wrong.

9 If you find anything wrong which will make your vehicle NOT READY/AVAILABLE, notify organizational maintenance right away. If you find something wrong, but you can still complete your mission, write it up. Use the DA Form 2404 (Equipment Inspection and Maintenance Worksheet). Use item numbers from the PMCS chart for the “TM Number” column on the form.

10 When you do your PMCS, take along the tools you will need to make all the checks. You will always need wiping rags.

11 Keep your vehicle clean. Dirt, grease, oil, and debris only get in the way, and may cover up a serious problem. Clean your vehicle as you work and as needed.

WARNING
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

12 Use cleaning solvent (Item 2, App D) on metal surfaces. Use soap (Item 10, App D) and water when you clean rubber or plastic parts.

13 Bolts, nuts, and screws: Check them all for looseness, and missing, bent, or broken parts. If you find a loose one, tighten it. If you can’t tighten it, notify organizational maintenance. Look for chipped paint, bare metal, or rust around bolt threads.

14 Welds: Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, notify organizational maintenance.

15 Electrical wires and connectors: Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors. Make sure wires are in good shape. If you find cracked or broken insulation, bare wires, or broken connectors, notify organizational maintenance.
16 Hoses and fluid lines: Look for wear, damage, and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course. A stain around a fitting or connector can also mean there is a leak. If a leak comes from a loose fitting or connector, tighten the fitting or connector. If something is broken or worn out, notify organizational maintenance.

17 You need to know how fluid leaks affect your vehicle. Definitions of the types and classes of leaks are given below. You need to know them to determine the condition of your vehicle. Learn them. REMEMBER: WHEN IN DOUBT, NOTIFY YOUR SUPERVISOR!

CLASS I Seepage of fluid is not great enough to form drops, but is shown by wetness or color changes.

CLASS II Leakage of fluid is great enough to form drops, but drops do not drip from the item being checked or inspected.

CLASS III Leakage of fluid is great enough to form drops that fall from the item being checked or inspected.

NOTE
You are allowed to operate equipment with minor leaks (Class I or II). You must consider how much fluid the item or system being checked or inspected can hold. When in doubt, notify your supervisor. When operating equipment with Class I or II leaks, continue to check fluid levels as required in your PMCS. Report Class III leaks to your supervisor, or notify organizational maintenance for corrective action right away.

18 Perform all lubrication in accordance with LO 9-2350-252-12.
NOTE

- Perform WEEKLY (W) PMCS, as well as BEFORE (B) PMCS, if:
  1. You are the assigned operator and have not operated the equipment since the last weekly PMCS, or
  2. You are operating the equipment for the first time.

- Perform ALL PMCS OPERATION CHECKS if the vehicle has not been operated since the last monthly PMCS.
BEFORE (B) OPERATION CHECKS

You may need to clean the inside of your vehicle in order to perform the required checks. If you clean the inside of your vehicle, be sure to observe the following:

**WARNING**
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

**WARNING**
Benzene (benzol), paint thinner, gasoline, and diesel fuel oil can burn and could poison you. Do not use benzene (benzol), paint thinner, gasoline, or diesel fuel oil for cleaning.

**CAUTION**
- Steam, water, or air under pressure can damage sighting and fire control equipment gears and bearings. Do not clean inside of vehicle with steam, water, or air under pressure.
- Water entering engine exhaust system can damage engine. Do not allow water to enter engine exhaust system.
- Petroleum products will damage rubber that is not resistant to petroleum. Don’t get petroleum products on rubber parts.
## SUSPENSION SYSTEM

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check road wheel, idler wheel, and support roller oil levels through sight glasses.</td>
<td>Any Class III oil leak is found.</td>
</tr>
<tr>
<td>2</td>
<td>Check road wheels, idler wheels, support rollers, shock absorbers, and track shoes for signs of oil leaks.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Check road wheel, idler wheel, and support roller sight glasses for cracks and breaks.</td>
<td></td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED</td>
<td>Equipment will be reported NOT READY/AVAILABLE if:</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>TORSION BARS</td>
<td></td>
</tr>
</tbody>
</table>

**ROAD WHEELS NO. 4 THRU NO. 6**

4 Check road wheels No. 1 thru No. 6 on either side of vehicle for broken torsion bars.

Lift each road wheel from front with crowbar. If crowbar lifts road wheel easily, torsion bar is broken.

**VEHICLE EXTERIOR**

5 Check outside of vehicle for signs of fuel or oil leaks.

Any Class III fuel or oil leak is found.

Torsion bar No. 1 or No. 6 or any two other torsion bars are broken.
## ITEM TO BE INSPECTED

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>D21</td>
<td>EXTERNAL FIRE EXTINGUISHER HANDLES</td>
<td></td>
</tr>
</tbody>
</table>

### External Fire Extinguisher Handles

Check wires and lead seals on external fire extinguisher handles.

Wire or lead seal on external fire extinguisher handle is missing or broken.
### Internal Fire Extinguisher Handles

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Internal Fire Extinguisher Handles</td>
<td>Check that FIRE SUPPRESSION switch is in AUTO.</td>
</tr>
<tr>
<td>8</td>
<td>Internal Fire Extinguisher Handle</td>
<td>Check wire and lead seal on internal fire extinguisher handle.</td>
</tr>
</tbody>
</table>

Wire or lead seal on internal fire extinguisher handle is missing or broken.
ITEM

NO.

ITEM TO BE INSPECTED

Procedure

Equipment will be reported

NOT READY/AVAILABLE if:

HULL DRAIN PLUGS

Open drain plug access door.

Check for open or missing front hull drain plug.

If front hull drain plug is not missing, check that bridge plates are fully seated.

Turn valve to secure front hull drain plug.

Close drain plug access door.

Front hull drain plug is missing and swimming operation is planned.
HULL DRAIN PLUGS (cont)

Check for open or missing rear hull drain plug.

If rear hull drain plug is not missing, check that bridge plates are fully seated.
Turn valve to secure rear hull drain plug.
Install floor plate.
Pull up and turn fastener.

Rear hull drain plug is missing and swimming operation is planned.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Check seals on portable fire extinguishers.</td>
<td>Seal on portable fire extinguisher is missing or broken. Portable fire extinguisher is missing.</td>
</tr>
</tbody>
</table>

**INTERNAL FIRE EXTINGUISHERS**

Check seals on portable fire extinguishers.
### Internal Fire Extinguishers (cont)

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Squad Area Fire Extinguishers

- **Pressure Gage**
  - MAROTTA
  - PSIG x 100
  - TEMP °F
  - PRESSURE - PSIG

<table>
<thead>
<tr>
<th>TEMP °F</th>
<th>PRESSURE - PSIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>690</td>
</tr>
<tr>
<td>60</td>
<td>720</td>
</tr>
<tr>
<td>70</td>
<td>750</td>
</tr>
<tr>
<td>80</td>
<td>790</td>
</tr>
<tr>
<td>90</td>
<td>810</td>
</tr>
<tr>
<td>100</td>
<td>870</td>
</tr>
</tbody>
</table>

Check that pressure gages on both squad area fire extinguishers read within 50 psig of correct pressure reading.

Estimate temperature (°F) in squad area.
Find correct pressure reading on decal.

Pressure gage on squad area fire extinguisher reads more than 50 psig above or below correct pressure reading.
ITEM TO BE INSPECTED

13

Check pressure gage on engine compartment fire extinguisher.

Pressure gage on engine compartment fire extinguisher reads in red zone.

DRIVER'S SEAT

14

Check driver's seat. See task: ADJUST DRIVER'S SEAT, page 2-121.

Driver's seat will not adjust.
DURING (D) OPERATION CHECKS

You may need to clean the inside of your vehicle in order to perform the required checks. If you clean the inside of your vehicle, be sure to observe the following:

**WARNING**
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

**WARNING**
Benzene (benzol), paint thinner, gasoline, and diesel fuel oil can burn and could poison you. Do not use benzene (benzol), paint thinner, gasoline, or diesel fuel oil for cleaning.

**CAUTION**
- Steam, water, or air under pressure can damage sighting and fire control equipment gears and bearings. Do not clean inside of vehicle with steam, water, or air under pressure.
- Water entering engine exhaust system can damage engine. Do not allow water to enter engine exhaust system.
- Petroleum products will damage rubber that is not resistant to petroleum. Don't get petroleum products on rubber parts.
### Preventive Maintenance Checks and Services during (D) Operation Checks

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Driver's Hatch**

Open and close driver's hatch cover. See task: OPEN/CLOSE DRIVER'S HATCH COVER, page 2-101.

15 Check that driver's hatch cover opens and closes freely.

16 Check that safety pin is not missing.

17 Check that hatch cover handle moves freely and that safety pin is fully engaged in storage hole.

Driver's hatch cover will not lock in OPEN or CLOSED position.
### DRIVER'S INSTRUMENT PANEL

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Master Power Switch</td>
<td>Move MASTER POWER switch to ON. Move ENGINE ACCESSORY switch to ON.</td>
</tr>
<tr>
<td>19</td>
<td>Engine Coolant Temp Gage</td>
<td>Check ENGINE COOLANT TEMP gage. ENGINE COOLANT TEMP gage pointer is in red zone.</td>
</tr>
</tbody>
</table>

- Move MASTER POWER switch to ON.
- Move ENGINE ACCESSORY switch to ON.

Check VOLTS gage.

- VOLTS gage pointer is in red zone.
### DRIVER'S INSTRUMENT PANEL (cont)

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 20 Check COOLANT LOW LEVEL warning light.

- COOLANT LOW LEVEL warning light is on.

#### 21 Check TRANS OIL PRESS warning light.

- TRANS OIL PRESS warning light is on.

#### 22 Check TRANS OIL TEMP warning light.

- TRANS OIL TEMP warning light is on.
WARNING

NBC agents can kill you. Decontaminate air cleaner and vent system after NBC attack.

Start engine. See page 2-137.

Check that AIR CLEANER CLOGGED warning light is off.
### DRIVER'S PERISCOPE

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>PERISCOPE LENSES</td>
<td>Check periscope lenses for dirt and cracks. If periscope lenses are dirty, wipe periscope lenses clean with clean, lint-free cloth (Item 3, App D).</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Check that blackout covers stay in place when closed. Open blackout covers. See task: CLOSE/OPEN BLACKOUT COVERS, page 2-205.</td>
</tr>
</tbody>
</table>

2-56
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RAMP</td>
<td></td>
</tr>
</tbody>
</table>

**RAMP**

Lower and raise ramp. See task: LOWER/RAISE RAMP, page 2-115.

Check ramp operation.

Ramp does not move up and down freely. Ramp does not lock when up.
### PREVENTIVE MAINTENANCE CHECKS AND SERVICES
**DURING (D) OPERATION CHECKS** (cont)

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
</table>

#### PERSONNEL HEATER

- **SQUAD AREA DUCT OUTLET**

Turn personnel heater on. See task: OPERATE PERSONNEL HEATER, page 2-181.

- **28** Check squad area duct outlet for steady heat output.
### PREVENTIVE MAINTENANCE CHECKS AND SERVICES
**DURING (D) OPERATION CHECKS (cont)**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
</table>

**PERSONNEL HEATER** (cont)

Traverse turret to 5200 mils. See TM 9-2350-252-10-2.

![PERSONNEL HEATER Diagram](image)

**WARNING**

Exhaust from engine and heater can poison you. Do not breathe exhaust gases. See warning on front page of this manual.

Have gunner check around personnel heater for smoke or strong diesel fumes.

Exhaust leak is present.

---

29

2-59
Have gunner check fuel lines, fittings, and personnel heater for fuel leaks. Have gunner make check through turret door opening.

Class III fuel leak is found.

## Squad Seats

### 31
Check that squad seats are secured by locking pins.

### 32
Check that lap safety belts adjust and release easily.
### CARGO HATCH

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Procedure</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CARGO HATCH</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CARGO HATCH COVER</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RELEASE LATCH</strong></td>
<td></td>
</tr>
</tbody>
</table>

Open and close cargo hatch cover. See task: OPEN/CLOSE CARGO HATCH COVER, page 2-107.

Check that release latch releases cargo hatch cover easily.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARGO HATCH (cont)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **HINGE LATCH**
- **CARGO HATCH COVER**

**CARGO HATCH COVER**

- **POP-UP POSITION**
- **TOW LOAD POSITION**
- **UPRIGHT POSITION**
- **FULL-OPEN POSITION**

Check that hinge latch locks cargo hatch cover in POP-UP, TOW LOAD, UPRIGHT, and FULL-OPEN positions.

Cargo hatch cover will not lock in any one position.
### SQUAD AREA PERISCOPES

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Check periscope lenses for dirt and cracks.</td>
<td>If periscope lenses are dirty, wipe periscope lenses clean with clean, lint-free cloth (Item 3, App D).</td>
</tr>
<tr>
<td>37</td>
<td>Check that blackout covers stay in place when closed.</td>
<td>Open blackout covers. See task: CLOSE/OPEN BLACKOUT COVERS, page 2-205.</td>
</tr>
</tbody>
</table>

---

**Note:**
- **Periscope Lenses:** Inspect for dirt and cracks. If dirty, clean with lint-free cloth.
- **Blackout Covers:** Check for tears and ensure they stay in place when closed. Follow specific closure procedures.
## DRIVER'S CONTROLS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED Procedure</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Drive vehicle. See page 2-153.

38 Check accelerator pedal operation.

Accelerator pedal binds when pressed down and released.

39 Check gear selector operation.

Gear selector binds when moved. Transmission does not engage when gear selector is put in gear.

40 Check steering yoke operation.

Vehicle wanders to right or to left when steering yoke is centered. Steering yoke does not center itself when released.

2-65 (2-66 blank)
AFTER (A) OPERATION CHECKS

You may need to clean the inside of your vehicle in order to perform the required checks. If you clean the inside of your vehicle, be sure to observe the following:

**WARNING**
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

**WARNING**
Benzene (benzol), paint thinner, gasoline, and diesel fuel oil can burn and could poison you. Do not use benzene (benzol), paint thinner, gasoline, or diesel fuel oil for cleaning.

**CAUTION**
- Steam, water, or air under pressure can damage sighting and fire control equipment gears and bearings. Do not clean inside of vehicle with steam, water, or air under pressure.
- Water entering engine exhaust system can damage engine. Do not allow water to enter engine exhaust system.
- Petroleum products will damage rubber that is not resistant to petroleum. Don't get petroleum products on rubber parts.
Start engine. See page 2-137.
Drive vehicle to firm. level ground. Allow vehicle to coast
to a stop. See task: DRIVE VEHICLE, page 2-153.
Move gear selector to N (NEUTRAL).
Set hand brake.

Check FUEL gage.

If FUEL gage pointer is not in green zone, add fuel. See
task: FUEL VEHICLE, page 2-173.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Check brake pedal.</td>
<td>Brake pedal touches floor when pushed down.</td>
</tr>
<tr>
<td>43</td>
<td>Check steering yoke.</td>
<td>Steering yoke does not center itself when moved to right or left and released.</td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED Procedure</td>
<td>Equipment will be reported NOT READY / AVAILABLE if:</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>DRIVER'S CONTROLS (cont)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Diagram of accelerator pedal" /></td>
</tr>
<tr>
<td>44</td>
<td>Check accelerator pedal.</td>
<td>Accelerator pedal sticks or binds when pushed down and released.</td>
</tr>
<tr>
<td>45</td>
<td>Check that door brace is correctly secured to power unit access door.</td>
<td></td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED</td>
<td>Equipment will be reported NOT READY/AVAILABLE if:</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>TRANSMISSION OIL FILTER INDICATOR</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Check transmission oil level. Add transmission oil as needed. See task: CHECK/ADD TRANSMISSION OIL, page 3-103.</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Check transmission oil filter indicator. If transmission oil filter indicator is tripped, reset it.</td>
<td></td>
</tr>
</tbody>
</table>

Transmission oil filter indicator trips after being reset once.
### COOLING SYSTEM

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### COOLING SYSTEM HOSES

- **Check engine coolant level. Add engine coolant as needed.**
  - See task: CHECK/FILL RADIATOR, page 3-95.

- **Check cooling system hoses for leaks.**
  - **Class III coolant leak is found.**

- **Check bilge for coolant.**
  - **Coolant is in bilge.**

#### INTAKE SCREEN

- **Check intake screen for debris or damage.**
  - See task: RAISE/INSPECT/LOWER INTAKE SCREEN, page 3-41.
**PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

**AFTER (A) OPERATION CHECKS (cont)**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUEL FILTER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WARNING**

*Fuel can catch fire and burn you. Do not smoke. Wipe up spilled fuel.*

Pull out drain hose, and hold end of drain hose in container. Open toggle valve and drain fuel filter until fuel starts draining into container.

52 Check drained water for contaminants.

53 Check that fuel filter is clear of water.

Insert drain hose back into engine compartment.

2-73
### FINAL DRIVES

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>Check oil level in right and left final drives. Add oil as needed. See task: SERVICE FINAL DRIVE, page 3-77.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Close power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stow trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remove power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.</td>
<td></td>
</tr>
</tbody>
</table>

### ENGINE COMPARTMENT

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Check hoses, clamps, and fittings for oil and coolant leaks.</td>
<td>Class III oil or coolant leak is found.</td>
</tr>
<tr>
<td>56</td>
<td>Check engine oil level. Add oil as needed. See task: CHECK/ADD ENGINE OIL, page 3-99.</td>
<td>Install power unit access panels. See task, REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.</td>
</tr>
</tbody>
</table>
## SUSPENSION

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>Shock absorbers</td>
<td>Left and right tracks are checked in the same way. Check for missing, broken, or leaking shock absorbers.</td>
</tr>
<tr>
<td>58</td>
<td>Road wheels, idler wheels, and support rollers. Check for missing or damaged road wheels, idler wheels, and support rollers.</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Worn mounting holes by looking for shiny area around nuts and washers.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Shock absorber is missing, broken, or leaking.
- Road wheel, idler wheel, or support roller is missing.
### SUSPENSION (cont)

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Check for missing track pin nuts and cracked, bent, or broken track guides.</td>
<td>Two or more track guides in a row are broken.</td>
</tr>
<tr>
<td></td>
<td>Drive vehicle 1/2 length of track. See task: DRIVE VEHICLE, page 2-153. Stop engine. See page 2-161. Check again for cracked, bent, or broken track guides.</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Check track tension. Adjust track tension as needed. See task: ADJUST TRACK TENSION, page 3-45.</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Check track adjuster grease fittings for leaks.</td>
<td>Track adjuster grease fitting leaks and track is loose.</td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED</td>
<td>Equipment will be reported</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOT READY/AVAILABLE if:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SUSPENSION (cont)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

63  Check hubs for large temperature differences from other hubs.

   Any hub is overheated.

64  Check road wheel, idler wheel, and support roller oil levels through sight glasses.

65  Check road wheel, idler wheel, and support roller oil through sight glasses. Look for milky color and other signs of contamination.
You may need to clean the inside of your vehicle in order to perform the required checks. If you clean the inside of your vehicle, be sure to observe the following:

**WARNING**
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

**WARNING**
Benzene (benzol), paint thinner, gasoline, and diesel fuel oil can burn and could poison you. Do not use benzene (benzol), paint thinner, gasoline, or diesel fuel oil for cleaning.

**CAUTION**
- Steam, water, or air under pressure can damage sighting and fire control equipment gears and bearings. Do not clean inside of vehicle with steam, water, or air under pressure.
- Water entering engine exhaust system can damage engine. Do not allow water to enter engine exhaust system.
- Petroleum products will damage rubber that is not resistant to petroleum. Don't get petroleum products on rubber parts.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TORSION BARS</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>ROAD WHEELS</strong> NO. 4 THRU NO. 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CROWBAR</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>ROAD WHEELS NO. 1 THRU NO. 3</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Lift each road wheel from front with crowbar. If crowbar lifts road wheel easily, torsion bar is broken.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>66</strong></td>
<td><strong>Check road wheels No. 1 thru No. 6 on either side of vehicle for broken torsion bars.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Torsion bar No. 1 or No. 6 or any two other torsion bars are broken.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>BATTERIES</strong></td>
<td></td>
</tr>
<tr>
<td><strong>67</strong></td>
<td><strong>Check batteries. See task: CHECK VEHICLE BATTERIES, page 3-81.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Battery is missing or cracked. Battery terminal is broken.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Lower ramp. See task: LOWER/RAISE RAMP, page 2-115.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RAMP HYDRAULIC POWER UNIT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>68</strong></td>
<td><strong>Check ramp hydraulic power unit. See page 3-11.</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Weekly (W) Operation Checks (cont)

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TRIM VANE</td>
<td></td>
</tr>
</tbody>
</table>


69  
Check trim vane for damaged parts or broken mesh.

Stow trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.

70  
Check that trim vane latch holds trim vane securely in stowed position.

2-81 (2-82 blank)
MONTHLY (M) OPERATION CHECKS

You may need to clean the inside of your vehicle in order to perform the required checks. If you clean the inside of your vehicle, be sure to observe the following:

**WARNING**
Solvent fumes can burn and could poison you. Read warning on front page of this manual.

**WARNING**
Benzene (benzol), paint thinner, gasoline, and diesel fuel oil can burn and could poison you. Do not use benzene (benzol), paint thinner, gasoline, or diesel fuel oil for cleaning.

**CAUTION**
- Steam, water, or air under pressure can damage sighting and fire control equipment gears and bearings. Do not clean inside of vehicle with steam, water, or air under pressure.
- Water entering engine exhaust system can damage engine. Do not allow water to enter engine exhaust system.
- Petroleum products will damage rubber that is not resistant to petroleum. Don’t get petroleum products on rubber parts.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>FINAL DRIVE HULL DRAIN PLUGS</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check right and left final drive hull drain plugs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final drive hull drain plug is missing and swimming or fording operation is planned.</td>
<td></td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED</td>
<td>Equipment will be reported NOT READY/AVAILABLE if:</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>SUSPENSION SYSTEM</strong></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>Check road wheels and support rollers for loss of rubber, pitting, and separation of rubber from metal backing.</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Check for worn or missing track shoe pads.</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Check drive sprocket teeth for wear to wear indicator.</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Check drive sprocket teeth for breaks and cracks.</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>Check track shoes for breaks and cracks.</td>
<td></td>
</tr>
</tbody>
</table>
### Right Angle Fan Drive

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item To Be Inspected Procedure</th>
<th>Equipment Will Be Reported Not Ready/Available If:</th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>Check right angle fan drive oil level.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If oil level is below indicator mark on dipstick, add engine oil. See LO 9-2350-252-12.</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>Check right angle fan drive for leaks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screw in dipstick. Tighten dipstick. Use 3/8 inch open end wrench.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Close power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stow trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.</td>
<td></td>
</tr>
</tbody>
</table>

Lower trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.
Open power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.
Unscrew and remove dipstick. Use 3/8 inch open end wrench.

---

**Diagram:**

- **Dipstick**
- **Indicator Mark**
- **Right Angle Fan Drive**
### EXTERIOR VEHICLE LIGHTS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Equipment will be reported NOT READY/AVAILABLE if:</td>
</tr>
</tbody>
</table>

#### Station one helper at front of vehicle and another helper at rear of vehicle.

- Move MASTER POWER switch to ON.
- Move ENGINE ACCESSORY switch to ON.
- Turn on vehicle lights. See task: OPERATE VEHICLE LIGHTS, page 2-185.

Check that all exterior vehicle lights operate correctly and are not damaged.

- Turn off vehicle lights. See task: OPERATE VEHICLE LIGHTS, page 2-185.
## BILGE PUMPS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>Check bilge pump operation. See task: SERVICE BILGE PUMPS, page 3-87.</td>
<td>A bilge pump does not work and operation in water is planned.</td>
</tr>
</tbody>
</table>

## COOLING SYSTEM

Remove power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>Check for worn, cracked, or missing coolant pump belt.</td>
<td>Coolant pump belt is missing, very worn, or cracked.</td>
</tr>
<tr>
<td>82</td>
<td>Check that coolant pump belt does not slip on pulleys.</td>
<td>Install power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.</td>
</tr>
<tr>
<td>ITEM NO.</td>
<td>ITEM TO BE INSPECTED</td>
<td>Equipment will be reported NOT READY/AVAILABLE if:</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>FIRING PORTS—IFV ONLY</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRASS-CATCHER BAG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FIRING PORT PLUG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FIRING PORT HOSE</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>Check that firing port plugs are secure when installed.</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Check firing port hoses and brass-catcher bags for cracks or severe wear.</td>
<td></td>
</tr>
</tbody>
</table>

Firing port hoses or brass-catcher bags are missing, cracked, or very worn.
## TM 9-2350-252-10-1

### PREVENTIVE MAINTENANCE CHECKS AND SERVICES

**MONTHLY (M) OPERATION CHECKS (cont)**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>FIRING PORTS—IFV ONLY (cont)</strong></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td><strong>GUN PORT VENT FAN SWITHCES</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>GUN PORT VENT FAN INDICATOR LIGHTS</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>FIRING PORT HOSE</strong></td>
<td></td>
</tr>
</tbody>
</table>

Lower ramp. See task: LOWER/RAISE RAMP, page 2-115. Move GUN PORT VENT FAN switches to ON.

Check that air flows out of firing port hoses and that GUN PORT VENT FAN indicator lights are on.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM TO BE INSPECTED</th>
<th>Equipment will be reported NOT READY/AVAILABLE if:</th>
</tr>
</thead>
</table>

**FIRING PORTS—IFV ONLY (cont)**

86  
Check that duct covers open and close smoothly when firing port vent lever is pushed up and down.

Move GUN PORT VENT FAN switches to OFF.
FIRING PORTS—IFV ONLY (cont)

MASTER POWER SWITCH

ENGINE ACCESSORY SWITCH

Move ENGINE ACCESSORY switch to OFF.
Move MASTER POWER switch to OFF.

PORTABLE FIRE EXTINGUISHERS

Check tags on both portable fire extinguishers. Tags must show weighing date within past 90 days.
# Section III. OPERATION UNDER USUAL CONDITIONS

## TASK INDEX

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open/Close Ramp Access Door</td>
<td>2-95</td>
</tr>
<tr>
<td>Open/Close Driver's Hatch Cover</td>
<td>2-101</td>
</tr>
<tr>
<td>Open/Close Cargo Hatch Cover</td>
<td>2-107</td>
</tr>
<tr>
<td>Open/Close Turret Shield Door</td>
<td>2-111</td>
</tr>
<tr>
<td>Open/Close Power Unit Access Door</td>
<td>2-113</td>
</tr>
<tr>
<td>Lower/Raise Ramp</td>
<td>2-115</td>
</tr>
<tr>
<td>Adjust Brake Pedal Height</td>
<td>2-119</td>
</tr>
<tr>
<td>Adjust Driver's Seat</td>
<td>2-121</td>
</tr>
<tr>
<td>Stow/Unstow Driver's Seat</td>
<td>2-123</td>
</tr>
<tr>
<td>Adjust Squad Seats</td>
<td>2-127</td>
</tr>
<tr>
<td>Stow/Unstow Squad Seats</td>
<td>2-129</td>
</tr>
<tr>
<td>Operate Intercom System</td>
<td>2-133</td>
</tr>
<tr>
<td>Start Engine</td>
<td>2-137</td>
</tr>
<tr>
<td>Start Engine With Outside Power Source</td>
<td>2-147</td>
</tr>
<tr>
<td>Drive Vehicle</td>
<td>2-153</td>
</tr>
<tr>
<td>Stop Engine</td>
<td>2-161</td>
</tr>
<tr>
<td>Shut Down Vehicle</td>
<td>2-163</td>
</tr>
<tr>
<td>Fuel Vehicle</td>
<td>2-173</td>
</tr>
<tr>
<td>Unstow/Install/Stow Windshield Kit</td>
<td>2-177</td>
</tr>
<tr>
<td>Operate Personnel Heater</td>
<td>2-181</td>
</tr>
<tr>
<td>Operate Vent System</td>
<td>2-183</td>
</tr>
<tr>
<td>Operate Vehicle Lights</td>
<td>2-185</td>
</tr>
<tr>
<td>Operate Fire Suppression System</td>
<td>2-189</td>
</tr>
<tr>
<td>Install/Remove Driver's Night Viewer</td>
<td>2-193</td>
</tr>
<tr>
<td>Operate Driver's Night Viewer</td>
<td>2-199</td>
</tr>
<tr>
<td>Close/Open Blackout Covers</td>
<td>2-205</td>
</tr>
<tr>
<td>Stow 25mm Ammo</td>
<td>2-207</td>
</tr>
<tr>
<td>Stow DRAGON Missiles — IFV Only</td>
<td>2-211</td>
</tr>
<tr>
<td>Stow TOW Missiles</td>
<td>2-215</td>
</tr>
<tr>
<td>Install Firing Port Weapon — IFV Only</td>
<td>2-225</td>
</tr>
<tr>
<td>Operate Firing Port Weapon — IFV Only</td>
<td>2-229</td>
</tr>
<tr>
<td>Remove Firing Port Weapon — IFV Only</td>
<td>2-231</td>
</tr>
<tr>
<td>Operate Smoke Screen Generator</td>
<td>2-235</td>
</tr>
<tr>
<td>Lower/Stow Trim Vane</td>
<td>2-237</td>
</tr>
<tr>
<td>Remove/Install Power Unit Access Panels</td>
<td>2-239</td>
</tr>
<tr>
<td>Raise/Lower Side Armor Plates</td>
<td>2-241</td>
</tr>
</tbody>
</table>

2-93 (2-94 blank)
OPEN/CLOSE RAMP ACCESS DOOR

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions:
Vehicle parked
Combat lock off

WARNING
Ramp access door is heavy. It can swing and injure soldiers. Do not stand behind ramp access door. Keep hands out from between handle and ramp access door.

1. OPEN RAMP ACCESS DOOR FROM OUTSIDE OF VEHICLE.
   a. Unlock and remove padlock.
   b. Lean against ramp access door and raise door handle.
   c. Move to left of ramp access door. Pull door handle up until ramp access door is released.
   d. Push ramp access door open until hold-open latch engages.

GO TO NEXT PAGE
2. STOW PADLOCK.
   a. Stow padlock on stowage bracket in IFV.
   b. Stow padlock under strap in CFV.

3. UNSTOW PADLOCK.
   a. Unstow padlock from under strap in CFV.
   b. Unstow padlock from stowage bracket in IFV.

4. CLOSE RAMP ACCESS DOOR FROM OUTSIDE OF VEHICLE.
   a. Pull hold-open latch and release ramp access door.
b. Push ramp access door shut, and lower door handle.

c. Secure door handle with padlock.

---

**WARNING**

Ramp access door is heavy. It can swing and injure soldiers. Warn soldiers outside vehicle before you open ramp access door. Make sure ramp access door stops swinging before you go out.

**NOTE**

Padlock must be removed from outside before you open ramp access door from inside.

---

5. OPEN RAMP ACCESS DOOR FROM INSIDE OF VEHICLE.

a. Raise inside door handle until ramp access door is released.
b. Push ramp access door open, and step down from vehicle.

RAMP ACCESS DOOR

6. CLOSE RAMP ACCESS DOOR FROM INSIDE OF VEHICLE.
   a. Pull hold-open latch from outside of vehicle and release ramp access door.
   b. Hold handhold and step into vehicle.

WARNING
Ramp access door is heavy. It can swing and injure soldiers. Stand clear when you release hold-open latch.

HOLD-OPEN LATCH
c. Pull ramp access door shut. Lower inside door handle to secure ramp access door.

END OF TASK
OPEN/CLOSE DRIVER'S HATCH COVER

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Vehicle parked
Hand brake set

WARNING
Driver's hatch cover could fall and injure you. Keep hands clear when you open or close driver's hatch cover.

1. OPEN DRIVER'S HATCH COVER FROM OUTSIDE VEHICLE.
   a. Unlock and remove padlock.
   b. Push lock lever toward right of vehicle. Driver's hatch cover will rise to POP-UP position.
   c. Reach under driver's hatch cover and pull out hatch cover handle towards left of vehicle. Raise driver's hatch cover to MID- or FULL-OPEN position.
   d. Secure driver's hatch cover in position by pushing hatch cover handle toward turret.

GO TO NEXT PAGE
e. Remove safety pin from storage hole. Insert safety pin in hatch cover handle base.

2. STOW PADLOCK.
   a. Stow padlock on stowage bracket in IFV.
   b. Stow padlock under strap in CFV.

3. UNSTOW PADLOCK.
   a. Unstow padlock from under strap in CFV.
   b. Unstow padlock from stowage bracket in IFV.
4. CLOSE DRIVER'S HATCH COVER FROM OUTSIDE VEHICLE.

a. Remove safety pin from hatch cover handle base. Put safety pin in storage hole.

b. Hold driver's hatch cover, and pull hatch cover handle toward center of driver's hatch cover. Push driver's hatch cover down to POP-UP position.

c. Pull hatch cover handle toward center of driver's hatch cover, and push driver's hatch cover down.

GO TO NEXT PAGE
d. Lock padlock on lock lever.

5. OPEN DRIVER'S HATCH COVER FROM INSIDE VEHICLE.

a. Push in hatch cover lock. Driver's hatch cover will rise to POP-UP position.

b. Pull out hatch cover handle. Lift driver's hatch cover to MID- or FULL-OPEN position.
c. Secure driver's hatch cover in position by pushing hatch cover handle toward turret.

6. CLOSE DRIVER'S HATCH COVER FROM INSIDE VEHICLE.
   a. Pull up on safety pin to remove it from hatch cover handle base. Insert safety pin in storage hole.
   b. Pull hatch cover handle toward you to release driver's hatch cover. Pull driver's hatch cover down to closed position.
c. Check hatch cover lock to make sure driver's hatch cover is locked.

END OF TASK
OPEN/CLOSE CARGO HATCH COVER

INITIAL SETUP

Personnel Required:

Soldier

NOTE
Turret should be at 6400 mils to open cargo hatch cover to FULL-OPEN position.

1. OPEN CARGO HATCH COVER.
   a. Hold hatch strap down and push latch release lever forward to release cargo hatch cover. Push up cargo hatch cover to POP-UP position.
2. PLACE CARGO HATCH COVER IN MID, UPRIGHT, OR FULL-OPEN POSITION.

   a. Hold hatch strap. Pull out and hold hinge position handle.

   b. Raise or lower cargo hatch cover to MID, UPRIGHT, or FULL-OPEN position.
c. Release hinge position handle to lock cargo hatch cover in place.

**WARNING**

Cargo hatch cover is heavy. It can close rapidly and injure you. Keep your head lower than CLOSED position when you close cargo hatch cover.

3. **CLOSE CARGO HATCH COVER.**

   a. Hold hatch strap. Pull out hinge position handle.
   
   b. Lower cargo hatch cover to CLOSED position.
   
   c. Check latch release lever to make sure cargo hatch cover is closed.

**END OF TASK**

2-109 (2-110 blank)
OPEN/CLOSE TURRET SHIELD DOOR

INITIAL SETUP

Personnel Required:
Soldier

Equipment Conditions:
MASTER POWER switch OFF
(page 2-17)
TURRET POWER switch OFF
(TM 9-2350-252-10-2)

References:
TM 9-2350-252-10-2

1. OPEN TURRET SHIELD DOOR.
   a. Push down free end of door latch to release it from right catch.
   b. Slide turret shield door to left until door latch locks on left catch.

2. CLOSE TURRET SHIELD DOOR.
   a. Lift free end of door latch to release it from left catch.
   b. Slide turret shield door to right until door latch locks on right catch.

END OF TASK

2-111 (2-112 blank)
OPEN/CLOSE POWER UNIT ACCESS DOOR

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Engine stopped (page 2-161)

WARNING
Power unit access door could fall and injure you. Install door brace before you work under door.

1. LOWER TRIM VANE. See task: LOWER/STOW TRIM VANE, page 2-237.

2. OPEN POWER UNIT ACCESS DOOR.
   a. Unlock and remove padlock from handle. Turn handle slightly, and stow padlock on bracket.
   b. Turn handle to right, and raise power unit access door.
   c. Remove free end of door brace from clip.

GO TO NEXT PAGE

2-113
d. Place end of door brace in hole in door frame.

**NOTE**
Handle must be in open position before you close power unit access door.

3. CLOSE POWER UNIT ACCESS DOOR.
   a. Raise power unit access door to remove free end of door brace from hole in door frame.
   b. Stow free end of door brace in clip.
   c. Lower power unit access door.
   d. Remove padlock from bracket. Turn handle all the way to left. Lock padlock on handle.


**END OF TASK**

2-114
LOWE R/RAISE RAMP

INITIAL SETUP

Personnel Required:
Driver

Equipment Conditions:
Vehicle parked
MASTER POWER switch ON (page 2-17)
Weapons removed from ramp firing ports (page 2-231)
Ramp access door closed (page 2-95)

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

CAUTION
Operation of RAMP switch for over 30 seconds without any ramp movement may damage ramp hydraulic system. If ramp fails to move after 30 seconds, notify organizational maintenance.

1. LOWER RAMP.
   a. Move RAMP switch to UP, and hold.

GO TO NEXT PAGE
To RAMP LOCKING HANDLE

b. Push ramp lock release button on ramp locking handle.

c. Pull down ramp locking handle to unlocked position, and hold. RAMP UNLOCKED indicator light will come on.

d. Move RAMP switch to DOWN and hold RAMP switch until ramp is in down position.

e. Release ramp locking handle.
NOTE
If tactical situation permits, sound horn before raising ramp.

2. SOUND HORN.
   a. Press HORN button.

3. RAISE RAMP.
   a. Hold ramp locking handle in unlocked position (down).

   b. Move RAMP switch to UP and hold RAMP switch until ramp is in up position.

   c. Raise ramp locking handle until ramp locks in place and RAMP UNLOCKED indicator light goes out.

   d. Release RAMP switch.

END OF TASK

2-117 (2-118 blank)
ADJUST BRAKE PEDAL HEIGHT

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

NOTE

• Brake pedal must be in upper position to drive vehicle with driver's hatch cover open. Brake pedal must be in lower position to drive vehicle with driver's hatch cover closed.

• Step 1 tells how to adjust brake pedal height to upper position. Step 2 tells how to adjust brake pedal height to lower position.

1. RAISE BRAKE PEDAL TO UPPER POSITION.
   a. Press down adjuster pedal with foot and raise brake pedal.
   b. Release adjuster pedal.

2. LOWER BRAKE PEDAL TO LOWER POSITION.
   a. Press down adjuster pedal with foot and lower brake pedal.
   b. Release adjuster pedal.

END OF TASK

2-119 (2-120 blank)
ADJUST DRIVER'S SEAT

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

WARNING
Seat can fall to bottom of travel when latch is released. Lift your weight off of seat before releasing control knob.

1. RAISE OR LOWER DRIVER'S SEAT.
   a. Pull up control knob and raise or lower driver's seat.
2. MOVE DRIVER’S SEAT TO FRONT OR REAR.
   a. Pull control lever forward and move driver’s seat to front or rear.
STOW/UNSTOW DRIVER’S SEAT

DESCRIPTION

This task covers: Stow Driver’s Seat (page 2-123). Unstow Driver’s Seat (page 2-125).

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

STOW DRIVER’S SEAT

NOTE

• Seat No. 4 must be stowed.
• Stow driver’s seat from behind driver’s seat.

1. LOWER SEAT BACKREST.
   a. Move backrest release handle to rear.
   b. Lower seat backrest.
2. RAISE DRIVER'S SEAT.
   a. Pull up on control knob.
      Raise driver's seat.

3. MOVE DRIVER'S SEAT FORWARD.
   a. Push out on lever control.
      Move driver's seat forward.

   NOTE
   Make sure lap safety belt is out of way before stowing driver's seat against hull.

4. STOW DRIVER'S SEAT.
   a. Pull out and hold locking pin.
   b. Stow driver's seat against hull.
   c. Release locking pin.
5. LOWER DRIVER'S SEAT.
   a. Pull out and hold locking pin.
   b. Fold driver's seat down.
   c. Release locking pin.

6. RAISE SEAT BACKREST.

7. ADJUST DRIVER'S SEAT.
   See page 2-121.

END OF TASK
ADJUST SQUAD SEATS

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Engine stopped (page 2-161)

NOTE

• There are six IFV squad seats. Each seat is adjusted the same way. Steps 1 thru 3 tell you how to adjust an IFV squad seat.

• There are three CFV squad seats. Each seat is adjusted the same way. Step 4 tells you how to adjust a CFV squad seat.

1. FOLD SEAT BACKREST DOWN ONTO SEAT CUSHION.

2. ADJUST IFV SQUAD SEAT HEIGHT.
   a. Pull four locking pins from two seat mounting brackets.
   b. Lower or raise seat to desired height.
   c. Position seat on seat mounting bracket.
   d. Insert four locking pins.

3. RAISE SEAT BACKREST.
4. ADJUST CFV SQUAD SEAT.
   a. Pull seat adjusting handle up.
   b. Lower or raise seat to height wanted.
   c. Release seat adjusting handle.

END OF TASK
STOW/UNSTOW SQUAD SEATS

INITIAL SETUP

Personnel Required:
Soldier

WARNING
Jump seat in CFV has no safety belt. You could fall and be injured. Do not use jump seat when vehicle is moving.

NOTE
There are six squad seats in the IFV. There are two squad seats and one jump seat in the CFV. Seat No. 6 in the IFV and the jump seat in the CFV have locking pins.

1. STOW SEATS WITHOUT LOCKING PINS.
   a. Fold seat backrest down on seat cushion.
   b. Lift folded seat until upright.

2. UNSTOW SEATS WITHOUT LOCKING PINS.
   a. Push folded seat down into unstowed position.
   b. Lift seat backrest until upright.

GO TO NEXT PAGE
3. STOW SEAT NO. 6 IN IFV.
   a. Lift seat cushion toward seat backrest until seat No. 6 locks in stowed position.

4. UNSTOW SEAT NO. 6 IN IFV.
   a. Push in seat No. 6 and pull locking pin under seat No. 6.
   b. Push down seat No. 6 into unstowed position.
   c. Release locking pin.
5. STOW JUMP SEAT IN CFV.
   a. Pull out two locking pins on each side of jump seat. Let jump seat drop into stowed position.

6. UNSTOW JUMP SEAT IN CFV.
   a. Raise jump seat to unstowed position.
   b. Insert two locking pins on each side of jump seat.

END OF TASK

2-131 (2-132 blank)
OPERATE INTERCOM SYSTEM

INITIAL SETUP

Personnel Required:
- Driver
- Soldier

Equipment Conditions:
- MASTER POWER switch ON (page 2-17)
- TURRET POWER switch ON (TM 9-2350-252-10-2)
- Relay box assembly switch ON (TM 9-2350-252-10-2)
- Intercom switch ON

References:
- TM 9-2350-252-10-2

NOTE

- Steps 1 and 3 thru 7 tell you how to operate intercom system from driver's compartment.
- Steps 2 thru 7 tell you how to operate intercom system from squad area.

1. PLUG IN CVC HELMET IN DRIVER'S COMPARTMENT.
   a. Plug helmet cord into quick disconnect plug.
   b. Plug short cord into INT jack extension.
   c. Plug long cord into RAD jack.

GO TO NEXT PAGE 2-133
2. PLUG IN CVC HELMET IN SQUAD AREA.
   
a. Plug helmet cord into quick disconnect plug.
   
b. Plug short cord into INT jack.

   c. Plug long cord into RAD jack.
3. PUT ON CVC HELMET.
   a. Place CVC helmet on head.
   b. Adjust chin strap as needed.

NOTE
ALL position operates radios and intercom. INT ONLY position operates only intercom. ALL position allows you to talk to another vehicle.

4. SELECT CHANNEL ON INTERCOM CONTROL BOX.
   a. Move selector switch to ALL or INT ONLY.

NOTE
Soldiers can talk and listen when helmet switch on left of CVC helmet is moved to rear.

5. MOVE HELMET SWITCH ON LEFT OF CVC HELMET TO REAR.

6. ADJUST VOLUME KNOB ON INTERCOM CONTROL BOX.

GO TO NEXT PAGE
7. PRESS TRANSMIT SWITCH ON STEERING YOKE TO TALK. RELEASE TRANSMIT SWITCH TO LISTEN.

END OF TASK
START ENGINE

DESCRIPTION

This task covers: Prepare to Start Engine (page 2-137). Start Engine Above +40°F (+4°C) (page 2-140). Start Engine Below +40°F (+4°C) (page 2-142).

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

WARNING

Engine exhaust gas is deadly poison. Make sure power unit access panels are closed tight before you start the engine.

PREPARE TO START ENGINE

1. CHECK POWER UNIT ACCESS PANELS.
   a. Check that panel edges are flat against bulkhead and that T-bolts are tight.

2. ADJUST BRAKE PEDAL TO DESIRED HEIGHT. See task: ADJUST BRAKE PEDAL HEIGHT, page 2-119.

3. FASTEN LAP SAFETY BELT.

GO TO NEXT PAGE
WARNING
Noise levels in vehicle could damage hearing. Wear ear protection.

4. PUT ON AND PLUG IN CVC HELMET. See task: OPERATE INTERCOM SYSTEM, page 2-133.

5. CHECK THAT FIRE SUPPRESSION SWITCH IS IN AUTO.

6. MOVE MASTER POWER SWITCH TO ON.

7. MOVE ENGINE ACCESSORY SWITCH TO ON.
8. CHECK DRIVER'S INSTRUMENT PANEL.
   a. Check that ENGINE OIL LOW PRESSURE warning light flashes.
   b. Check that FUEL gage pointer moves to green zone.
   c. Check that VOLTS gage pointer moves to yellow zone.
   d. Check that TRANS OIL PRESS warning light flashes.
   e. Check that warning tone begins to sound.

GO TO NEXT PAGE
9. TURN ON FUEL CONTROL.
   a. Press FUEL PUSH TO RELEASE button.
   b. Push in FUEL control handle.
   c. Release FUEL PUSH TO RELEASE button to lock FUEL control handle.

   **NOTE**
   - Steps 10 thru 12 and step 23 tell you how to start engine when air temperature is above +40°F (+4°C).
   - Steps 13 thru 23 tell you how to start engine when air temperature is below +40°F (+4°C).

   **START ENGINE ABOVE + 40°F (+4°C)**

   **NOTE**
   If tactical situation permits, horn should be sounded to warn soldiers that engine is about to be started.

10. SOUND HORN.
    a. Press HORN button.
CAUTION
Holding gear selector in START for more than 15 seconds can damage starter. Do not hold gear selector in START for more than 15 seconds at a time.

11. MOVE GEAR SELECTOR TO START AND HOLD UNTIL ENGINE STARTS, BUT NO LONGER THAN 15 SECONDS.
   a. If engine does not start on first try, wait 1 minute and try again.
   b. If engine does not start after three tries, notify organizational maintenance.

12. CHECK DRIVER'S INSTRUMENT PANEL.
   a. Check that TRANS OIL PRESS warning light goes off.
   b. Check that ENGINE OIL LOW PRESSURE warning light goes off.
   c. Check that warning tone stops sounding.
   d. If warning lights and warning tone do not go off within 30 seconds after engine is running, stop engine. Notify organizational maintenance.
   e. Check that VOLTS gage pointer is in green zone.
START ENGINE BELOW + 40°F (+4°C)

CAUTION
If COLD START switch is left on, it will burn out engine glow plugs and drain batteries. Turn off COLD START switch as soon as starting heat is not needed.

13. MOVE COLD START SWITCH TO ON.
   a. If COLD START indicator light does not come on, notify organizational maintenance.
   b. Wait 30 seconds for glow plug to heat.

NOTE
If tactical situation permits, horn should be sounded to warn soldiers that engine is about to be started.

14. SOUND HORN.
   a. Press HORN button.

15. PRESS DOWN ACCELERATOR PEDAL ABOUT 1/4 INCH.
CAUTION
Holding gear selector in START for more than 15 seconds can damage starter. Do not hold gear selector in START for more than 15 seconds at a time.

16. MOVE GEAR SELECTOR TO START AND HOLD UNTIL ENGINE STARTS, BUT NO LONGER THAN 15 SECONDS.

17. IF STARTER FAILS TO REMAIN ENGAGED, STOP CRANKING AND MOVE STARTER CUTOUT OVERRIDE SWITCH TO ON.

CAUTION
Holding gear selector in START for more than 15 seconds can damage starter. Do not hold gear selector in START for more than 15 seconds at a time.

18. MOVE GEAR SELECTOR TO START AND HOLD UNTIL ENGINE STARTS, BUT NO LONGER THAN 15 SECONDS.

19. MOVE STARTER CUTOUT OVERRIDE SWITCH TO OFF.

20. MOVE COLD START SWITCH TO OFF.

GO TO NEXT PAGE
21. CHECK DRIVER'S INSTRUMENT PANEL.
   a. Check that TRANS OIL PRESS warning light goes off.
   b. Check that ENGINE OIL LOW PRESSURE warning light goes off.
   c. Check that warning tone stops sounding.
   d. If warning lights and warning tone do not go off within 30 seconds after engine is running, stop engine. Notify organizational maintenance.
   e. Check that VOLTS gage pointer is in green zone.

WARNING
If gear selector is moved from N (neutral), brakes may not stop vehicle when engine is at fast idle. Soldiers could be killed or injured. Engage hand brake and keep gear selector at N (neutral) when you fast idle the engine.
22. FAST IDLE ENGINE.
   a. Press down accelerator pedal about 1 inch and hold.
   b. Press THROTTLE PUSH TO RELEASE button and pull back on throttle control handle until you feel resistance.
   c. Remove foot from accelerator pedal. Let engine run for 2-5 minutes or until you are ready to move out.
   d. Press THROTTLE PUSH TO RELEASE button and push in throttle control handle.

NOTE
Step 23 applies only if vehicle is to be driven.

23. RELEASE HAND BRAKE.
   a. Press brake pedal.
   b. Turn up hand brake handle.
   c. Release brake pedal.
   d. Lower hand brake handle to vertical position.

END OF TASK
START ENGINE WITH OUTSIDE POWER SOURCE

INITIAL SETUP

Tools:
Slave cable - 2590-00-148-7961
24 volts power source - 8750010

Equipment Conditions:
Vehicle unable to start under own power
Operational vehicle engine stopped (page 2-161)

Personnel Required:
Driver (2)
ITV/CFV/ITV Systems Mechanic

CAUTION
Battery or electrical damage can occur if electrical switches are left on. Turn off all electrical switches in both vehicles.

1. INSTALL SLAVE CABLE.
   a. Remove cap from slave receptacle of disabled vehicle.
   b. Plug slave cable into slave receptacle of disabled vehicle.
   c. When using operational vehicle as power source, repeat steps a and b in operational vehicle.
   d. When using 24 volt power source, install slave cable on power source.

GO TO NEXT PAGE
NOTE
Step 2 should be performed only when using operational vehicle as power source.

2. START ENGINE OF OPERATIONAL VEHICLE. See task: START ENGINE, page 2-137.

3. CHECK THAT MASTER POWER SWITCH IN DISABLED VEHICLE IS OFF.

4. MOVE ENGINE ACCESSORY SWITCH TO ON IN DISABLED VEHICLE.
WARNING
Turning on slave power when SLAVE RECEPTACLE POWER light is red can cause batteries to explode. Soldiers could be killed or injured. Do not turn on slave power if SLAVE RECEPTACLE POWER light is red.

CAUTION
Battery and/or electrical system can be damaged if SLAVE RECEPTACLE POWER light is red. Both SLAVE RECEPTACLE POWER lights must be green before you try to start disabled vehicle with other vehicle. SLAVE RECEPTACLE POWER light in disabled vehicle must be green when using 24 volt power source.

NOTE
Step 5 should be performed only when using operational vehicle as power source.

5. CHECK SLAVE RECEPTACLE POWER LIGHT IN OPERATIONAL VEHICLE AND DISABLED VEHICLE.
   a. Press ENERGIZE SLAVE RECEPTACLE button in operational vehicle only.
   b. If both SLAVE RECEPTACLE POWER lights are green, go to step 6.
   c. If either SLAVE RECEPTACLE POWER light is red, immediately go to step 8 and stop task. Do not attempt to start vehicle. Notify organizational maintenance.

GO TO NEXT PAGE
6. TURN ON FUEL CONTROL IN DISABLED VEHICLE.
   a. Press FUEL PUSH TO RELEASE button.
   b. Push FUEL control handle toward instrument panel to ON.
   c. Release FUEL PUSH TO RELEASE button.

   CAUTION
   Do not hold gear selector in start position for more than 15 seconds at a time. Starter may be damaged.

7. MOVE GEAR SELECTOR TO START AND HOLD UNTIL ENGINE STARTS.
8. REMOVE SLAVE CABLE.
   a. Unplug slave cable from slave receptacle of disabled vehicle.
   b. Install cap on slave receptacle.
   c. When using operational vehicle, repeat steps a and b.
   d. When using 24 volt power source, remove slave cable from power source.

9. MOVE MASTER POWER Switch to ON in DISABLED VEHICLE.

10. WHEN ENGINE STARTS, CHECK THAT VOLTMETER READS IN GREEN REGION.
   a. If voltmeter reads in yellow or red regions, notify organizational maintenance.

END OF TASK

2-151 (2-152 blank)
DRIVE VEHICLE

INITIAL SETUP

Personnel Required:  
Driver  
Ground guides (as required)

Equipment Conditions:  
Engine started (page 2-137)

DO'S AND DON'TS

DO

Wear lap safety belts.  
Approach objects blocking path of vehicle squarely so both tracks touch object at same time.

Wear approved hearing protectors.  
Give vehicle enough power so it won't stall on steep hills.

Wear CVC helmet.  
Hold vehicle on steep hills with brakes.

Secure all doors and hatches in position.  
Reduce speed at top of hills.  
Keep in control going down.

Keep an eye on your instruments. If you get an unusual reading, stop and check it out.

Warn crew if accelerator or throttle jams. Unlock and pull fuel control handle to off, and stop vehicle with brake pedal.

Just as you get to the bottom of steep hills, step on accelerator. This lifts final drive assemblies from dirt and suspension does not bottom.

Observe traffic safety rules.

Turn in a series of short turning motions when in loose dirt or dense mud.

Be alert for hazards or objects blocking path of vehicle.

Be alert to unusual sounds or action of vehicle. Cross trenches squarely and keep steering yoke centered.

Brake before a turn and keep power to tracks during turn.

GO TO NEXT PAGE
Table: DON'T

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Don't</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sharp turns at high speeds.</td>
<td>Climb objects more than 36 inches (91 cm) high.</td>
</tr>
<tr>
<td>Brake while turning.</td>
<td>Drive on side slopes steeper than 22 degrees.</td>
</tr>
<tr>
<td>Slide vehicle sideways into loose dirt or against rut.</td>
<td>Break through large objects blocking path of vehicle.</td>
</tr>
<tr>
<td>Make continuous sharp turns in loose dirt or dense mud.</td>
<td>Hold vehicle on steep slopes or hills with engine and transmission.</td>
</tr>
<tr>
<td>Drive over large objects. You could throw a track.</td>
<td>Transmission could overheat.</td>
</tr>
<tr>
<td>Cross a trench more than 8 feet (2.5 m) wide.</td>
<td>Drive up a hill steeper than 31 degrees.</td>
</tr>
</tbody>
</table>

1. SET GEAR SELECTOR.
   a. Step on brake pedal and move gear selector from N (NEUTRAL) to desired position.
NOTE
If tactical situation permits, sound horn to warn soldiers vehicle is about to move.

2. SOUND HORN.
   a. Press HORN button.

WARNING
Rapid starts, sudden stops, and sharp turns can throw riders off of vehicle. Riders thrown from vehicle can be killed or injured. Riders must sit inside vehicle on seats provided.

3. MOVE VEHICLE AND CONTROL SPEED.
   a. Take foot off brake pedal.
   b. Put foot on accelerator pedal and slowly press down until vehicle moves at speed you want.

GO TO NEXT PAGE

2-155
4. STEER VEHICLE IN FORWARD RANGE.
   a. Turn steering yoke slowly to left to turn vehicle left.
   b. Turn steering yoke slowly to right to turn vehicle right.
   c. Press down on accelerator pedal as vehicle turns, to maintain speed.
WARNING
Operating vehicle in reverse is dangerous due to limited vision and reversed steering. Always post ground guides before you back up.

5. STEER VEHICLE IN REVERSE (BACKING UP).

a. Move gear selector to R (REVERSE).

b. Turn steering yoke slowly to left to turn rear of vehicle right.

c. Turn steering yoke slowly to right to turn rear of vehicle left.
d. Press down on accelerator pedal, as vehicle turns, to maintain speed.

**CAUTION**
Pivoting on soft soil or gravel may cause track to come off. After pivoting, drive ahead at least one vehicle length to clear track.

**CAUTION**
Pivot steering used to stop vehicle from speeds over 30 mph (48 kmh) may damage engine and transmission. Do not use pivot steer when vehicle is moving except in a brake failure emergency.

**NOTE**
Use pivot steer only when normal turns cannot be made in close areas. Stop vehicle before making pivot steer.

**NOTE**
For emergency stop during pivot steering, release steering yoke and gear selector.

6. **PIVOT STEER VEHICLE.**
   
a. Move gear selector to PIVOT STEER and hold there until turn is completed.
   
b. Press down hard on accelerator pedal.
c. Turn steering yoke left to pivot left.

d. Turn steering yoke right to pivot right.

e. Center steering yoke to stop pivot.

7. STOP VEHICLE.

a. Press down on brake pedal with smooth, gradual pressure.

b. Move gear selector to N (NEUTRAL).

END OF TASK

2-159 (2-160 blank)
STOP ENGINE

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions:
- Engine started (page 2-137)
- Transmission in neutral (page 2-19)

NOTE
Step 1 applies only if vehicle has been driven.

1. SET HAND BRAKE, AND LET ENGINE IDLE.
   a. Push brake pedal down and pull hand brake straight back.
   b. Release foot pressure. Brake pedal should stay down.

GO TO NEXT PAGE
CAUTION
Stopping engine when coolant temperature gage reads in red area can damage engine. Idling engine until gage reads in green area.

2. TURN OFF FUEL CONTROL.
   a. Press FUEL PUSH TO RELEASE button.
   b. Pull FUEL control handle all the way out to OFF.
   c. Release FUEL PUSH TO RELEASE button.

3. MOVE MASTER POWER SWITCH TO OFF.

4. MOVE ENGINE ACCESSORY SWITCH TO OFF.

END OF TASK

2-162
SHUT DOWN VEHICLE

INITIAL SETUP

Personnel Required:
Driver

References:
TM 9-2350-252-10-2

Equipment Conditions:
Engine stopped (page 2-161)
Turret shut down
(TM 9-2350-252-10-2)
Ramp access door closed
(page 2-95)

1. CHECK THAT FIRE SUPPRESSION SWITCH IS IN AUTO.

GO TO NEXT PAGE

2-163
2. REMOVE BRASS-CATCHER BAG.
   a. Lift brass-catcher bag holder pin out of receiver handle hole.
   b. Remove brass-catcher bag from firing port weapon.

3. REMOVE FIRING PORT WEAPON.
   a. Pull pin out. Unscrew firing port weapon to left.
   b. Remove firing port weapon and release pin.
4. INSTALL FIRING PORT PLUG.
   a. Push firing port plug into firing port.
   b. Press down on plug lever to lock firing port plug in place.

NOTE
Step 5 is for ramp firing ports only.
Side firing ports do not have covers.

5. CLOSE RAMP FIRING PORT COVERS.
   a. Place finger in cover latch hole and pull upward to release ramp firing port cover.

GO TO NEXT PAGE
b. Raise ramp firing port cover to closed position.

c. Press against ramp firing port cover until spring-loaded latch slides into lock.

6. MOVE MASTER POWER SWITCH TO ON.
CAUTION
Operation of RAMP switch for over 30 seconds without any ramp movement may damage ramp hydraulic system. If ramp fails to move after 30 seconds, report to organizational maintenance.

7. LOWER RAMP.
   a. Move RAMP switch to UP position and hold.

   b. Push ramp lock release button on ramp locking handle.

   c. Pull and hold ramp locking handle down to unlocked position. RAMP UNLOCKED indicator light will come on.

GO TO NEXT PAGE
d. Move RAMP switch to DOWN position and hold until ramp is in down position.

e. Release ramp locking handle.

8. TELL CREW TO EXIT VEHICLE.

NOTE

• Check that ramp locking handle is down in unlocked position.

• If tactical situation permits, sound horn before raising ramp.

9. SOUND HORN.

a. Press HORN button.

10. RAISE RAMP.

a. Hold ramp locking handle down in unlocked position.

b. Move RAMP switch to UP position and hold until ramp is in up position.
c. Raise ramp locking handle until ramp locks in place and RAMP UNLOCKED indicator light goes out.

d. Release RAMP switch.

11. MOVE MASTER POWER SWITCH TO OFF.
12. CLOSE CARGO HATCH COVER.
   a. Hold hatch strap. Pull hinge position handle out.
   b. Lower cargo hatch cover to CLOSED position.
   c. Check latch release lever to make sure cargo hatch cover is closed.

13. UNSTOW PADLOCK FROM CFV.
14. UNSTOW PADLOCK FROM IFV.

15. CLOSE DRIVER'S HATCH COVER FROM OUTSIDE VEHICLE.
   a. Remove safety pin from storage hole. Insert safety pin in hatch cover handle base.
b. Hold driver's hatch cover and pull hatch cover handle toward center of driver's hatch cover. Push driver's hatch cover down to pop-up position.

c. Pull hatch cover handle toward center of driver's hatch cover and push driver's hatch cover down.

d. Lock padlock on lock lever.
FUEL VEHICLE

INITIAL SETUP

Materials/Parts:
- Wiping rag (Item 9, App D)

Equipment Conditions:
- Engine stopped (page 2-161)

Personnel Required:
- Driver

WARNING
Sparks from static electricity could cause a fire or explosion. Metal nozzle must touch metal in fuel filler neck when fuel is running.

1. GROUND VEHICLE.
   a. Install fueling vehicle ground wire to bare metal on vehicle to be fueled.

2. RELEASE FUEL FILLER COMBAT LOCK FROM INSIDE VEHICLE.
   a. Push in PUSH TO RELEASE button and push handle in.
3. OPEN FUEL FILLER COVER.
   a. Pull locking pin and open fuel filler cover.
   b. Release locking pin.

4. CLEAN FUEL FILLER AREA.
   a. Remove any dirt and water around fuel filler cap. Use wiping rag.

5. CHECK FUEL FILLER NECK SCREEN.
   a. Lift ring on fuel filler cap and unscrew to left.
   b. Check fuel filler neck screen for damage and remove any trash. If fuel filler neck screen is damaged, report to organizational maintenance.
6. FUEL VEHICLE.
   a. Insert fuel nozzle in fuel filler neck.
   b. Fill fuel tank until fuel backs up into fuel filler neck screen. Do not top off.
   c. Remove fuel nozzle.

CAUTION
Fuel filler cap vent should be closed only during fording or swimming operations.

7. INSTALL FUEL FILLER CAP.
   a. Check that fuel filler cap vent is in OPEN position.
   b. Screw fuel filler cap on. Tighten fuel filler cap and lower ring.

8. CLOSE FUEL FILLER COVER.
   a. Pull out locking pin and close fuel filler cover.
   b. Release locking pin.

GO TO NEXT PAGE
9. REMOVE FUELING VEHICLE GROUND WIRE.

10. ENGAGE FUEL FILLER COMBAT LOCK.
   a. Push in PUSH TO RELEASE button and pull out handle.

END OF TASK
UNSTOW/INSTALL/STOW WINDSHIELD KIT

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)


   CAUTION
   Plastic panels are easily scratched. Handle windshield kit with care.

2. UNSTOW WINDSHIELD KIT.
   a. Loosen strap on storage container and windshield kit.
   b. Remove windshield kit from storage container.

GO TO NEXT PAGE
3. INSTALL WINDSHIELD KIT.
   a. Unfold windshield kit.
   b. Install two center supports in two inner brackets.
   c. Insert two quick release pins into two outer brackets.

4. REMOVE WINDSHIELD KIT.
   a. Pull two quick release pins from two outer brackets.
b. Slide two center supports out of two inner brackets.

5. STOW WINDSHIELD KIT.
   a. Fold windshield kit.
   b. Stow windshield kit in storage container, and secure windshield kit with strap.


END OF TASK

2-179 (2-180 blank)
OPERATE PERSONNEL HEATER

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions:
MASTER POWER switch ON
(page 2-17)

WARNING
Exhaust from heater can kill you. If exhaust grille cover is installed, 12 inches of grille cover must be pulled back for exhaust to discharge. See warning on front page of this manual.

1. TURN PERSONNEL HEATER ON.
   b. Move RUN-OFF-START switch to START. Hold switch in START until PERSONNEL HEATER light comes on, but not more than 3 minutes.
   c. Move RUN-OFF-START switch straight to RUN as soon as PERSONNEL HEATER light comes on. Do not stop in OFF.
   d. If PERSONNEL HEATER light does not come on, repeat substeps a and b above. If PERSONNEL HEATER light does not come on after three tries, notify organizational maintenance.

GO TO NEXT PAGE
NOTE
Personnel heater always starts at low heat. It changes to high heat if HI-LO switch is set at HI.

2. SELECT HIGH OR LOW HEAT.
   a. Move HI-LO switch to HI or LO.

   NOTE
   When personnel heater is turned off, blower will run until personnel heater cools off. PERSONNEL HEATER light will go off when personnel heater cools off.

3. TURN PERSONNEL HEATER OFF.
   a. Move RUN-OFF-START switch to OFF.

END OF TASK
OPERATE VENT SYSTEM

INITIAL SETUP

Personnel Required: Soldier

References:
TM 9-2350-252-10-2

Equipment Conditions:
MASTER POWER switch ON (page 2-17)

1. MOVE DRIVER'S COMPARTMENT FAN CONTROL SWITCH TO LO, MED, OR HI.

2. MOVE DOOR HANDLE ON FRONT FILTER BOX UP OR DOWN TO CONTROL AIR FLOW MIX FROM OUTSIDE OR INSIDE.

3. MOVE SQUAD AREA FAN CONTROL SWITCH TO LO, MED, OR HI.

GO TO NEXT PAGE
4. Traverse turret to 5100 mils to access rear filter box. See TM 9-2350-252-10-2.

5. Move door handle on rear filter box up or down to control air flow mix from outside or inside.


7. Move squad area fan control switch to off.

8. Move driver's compartment fan control switch to off.

END OF TASK
OPERATE VEHICLE LIGHTS

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions:
- MASTER POWER switch ON (page 2-17)
- ENGINE ACCESSORY switch ON (page 2-17)

1. OPERATE HEADLIGHTS.
   a. Move LIGHTS UNLOCK switch to UNLOCK, and hold.
   b. Move DRIVING LIGHTS switch to SER DRIVE.
   c. Release LIGHTS UNLOCK switch.
   d. Move DRIVING LIGHTS switch to OFF.

2. OPERATE BLACKOUT MARKER.
   a. Move DRIVING LIGHTS switch to BO MARKER.
   b. Move DRIVING LIGHTS switch to OFF.

GO TO NEXT PAGE
3. OPERATE BLACKOUT MARKER AND DRIVING LIGHTS.
   a. Move LIGHTS UNLOCK switch to UNLOCK, and hold.
   b. Move DRIVING LIGHTS switch to UNLOCK, and hold.
   c. Release LIGHTS UNLOCK switch.
   d. Move DRIVING LIGHTS switch to OFF.

4. OPERATE STOP LIGHT.
   a. Move LIGHTS UNLOCK switch to UNLOCK, and hold.
   b. Move DRIVING LIGHTS switch to STOP LIGHT.
   c. Release LIGHTS UNLOCK switch.
   d. Move DRIVING LIGHTS switch to OFF.

   NOTE
   To operate panel lights, DRIVING LIGHTS switch can be in any position except OFF.

5. OPERATE PANEL LIGHTS.
   a. Move PANEL LIGHTS switch to DIM, and then to PANEL BRIGHT.
   b. Move PANEL LIGHTS switch to OFF.
6. OPERATE PARKING LIGHTS.
   a. Move PANEL LIGHTS switch to PARK.
   b. Move LIGHTS UNLOCK switch to UNLOCK, and hold.
   c. Move DRIVING LIGHTS switch to SER DRIVE.
   d. Move PANEL LIGHTS switch to OFF.

   NOTE
   • Ramp must be closed to operate white and red dome lights.
   • All white dome lights are operated in the same way.

7. OPERATE WHITE DOME LIGHTS.
   a. Press blackout release button. Turn light selector switch past stop toward edge of dome light.
   b. Press blackout release button. Turn light selector switch past stop to off position.
8. OPERATE RED DOME LIGHTS (BLACKOUT).

a. Turn light selector switch toward center of dome light.

b. Turn light selector switch to off position.

END OF TASK
OPERATE FIRE SUPPRESSION SYSTEM

INITIAL SETUP

Personnel Required: Driver or Soldier

Equipment Conditions: All fire extinguishers installed and seals unbroken

WARNING
Toxic gases can injure you. Halon is toxic at normal temperatures. At flame temperatures, halon becomes a highly toxic gas. Get everyone out of vehicle after discharging fire extinguisher. If you can't get out, get as much air into vehicle as you can.

1. OPERATE ENGINE COMPARTMENT FIRE EXTINGUISHER.
   a. Stop engine. See page 2-161.
   b. Turn knob left to activate.
   c. After discharge of engine compartment fire extinguisher, notify organizational maintenance.
2. OPERATE PORTABLE FIRE EXTINGUISHERS.
   a. Release clip on bracket, and remove portable fire extinguisher.
   b. Pull lock ring.
   c. Point horn at base of fire, and squeeze trigger for discharge.
   d. After discharge of portable fire extinguisher, notify organizational maintenance.

3. OPERATE FIXED FIRE SUPPRESSION SYSTEM FROM INSIDE OF VEHICLE.
   a. Reach into handle guard.
   b. Pull handle.
   c. After discharge of fixed fire suppression system, notify organizational maintenance.

2-190
4. OPERATE ENGINE COMPARTMENT FIRE EXTINGUISHER FROM OUTSIDE OF VEHICLE.
   a. Reach under handle guard.
   b. Pull handle.
   c. After discharge of engine compartment fire extinguisher, notify organizational maintenance.

   **NOTE**
   When fixed fire suppression system is activated, safety wire will snap and halon will immediately discharge.

5. OPERATE FIXED FIRE SUPPRESSION SYSTEM FROM OUTSIDE VEHICLE.
   a. Reach under handle guard.
   b. Pull handle.
   c. After discharge of fixed suppression system notify organizational maintenance.

END OF TASK
INSTALL/REMOVE DRIVER'S NIGHT VIEWER

DESCRIPTION

This task covers: Install (page 2-193). Remove (page 2-197).

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

INSTALL

DRIVER'S PERISCOPE

NOTE

• Steps 1 thru 6 tell how to install driver's night viewer for battery operation.

• Steps 1 thru 8 tell how to install driver's night viewer for operation in power mode.

1. REMOVE DRIVER'S PERISCOPE FROM DRIVER'S HATCH COVER.
   a. Loosen two thumbscrews on two clamps.
   b. Move two clamps clear of driver's periscope.
   c. Gently twist driver's periscope and pull down at the same time.

GO TO NEXT PAGE

2-193
2. UNSTOW DRIVER'S NIGHT VIEWER.
   a. Loosen and remove straps.
   b. Remove driver's night viewer from bracket.

3. SET TWO LATCH HANDLES IN OPEN POSITION.
   a. Aline two latch handles to point toward rear of vehicle.

4. REMOVE ENTRANCE WINDOW COVER AND EYEPIECE PROTECTIVE CAP.

   CAUTION
   Driver's night viewer is easily damaged. Do not use tools to lock latch handles.

5. INSTALL AND LOCK DRIVER'S NIGHT VIEWER.
   a. Push driver's night viewer straight up into hatch cover slot until driver's night viewer is fully seated.
   b. Move two latch handles down and forward.
c. Check that OFF/BRIGHT rotary switch is in OFF.

6. STOW DRIVER'S PERISCOPE.
   a. Place driver's periscope in bracket.
   b. Fasten straps.

GO TO NEXT PAGE
7. REMOVE BATTERY FROM DRIVER'S NIGHT VIEWER.
   a. Unscrew battery compartment cap, and remove battery from driver's night viewer.
   b. Screw battery compartment cap onto driver's night viewer.

   CAUTION
   Battery could explode and damage driver's night viewer. Do not install vehicle power cable before battery is removed from driver's night viewer.

8. INSTALL VEHICLE POWER CABLE ON DRIVER'S NIGHT VIEWER.
   a. Unscrew vehicle power cable from hatch cover adapter.
   b. Unscrew and remove receptacle cap.
   c. Screw vehicle power cable into vehicle power receptacle.
**NOTE**

- Steps 9 thru 14 tell how to remove driver's night viewer after operation in power mode.
- Steps 10 thru 14 tell how to remove driver's night viewer after battery operation.

9. **REMOVE VEHICLE POWER CABLE FROM DRIVER'S NIGHT VIEWER.**
   
   a. Unscrew vehicle power cable from vehicle power receptacle.
   
   b. Screw vehicle power cable onto hatch cover adapter.
   
   c. Screw on receptacle cap.

10. **UNLOCK AND REMOVE DRIVER'S NIGHT VIEWER FROM DRIVER'S HATCH COVER.**

   a. Support driver's night viewer.
   
   b. Pull two latch handles toward rear of vehicle.
   
   c. Gently twist driver's night viewer and pull down at the same time.

11. **INSTALL EYEPiece PROTECTIVE CAP AND ENTRANCE WINDOW COVER.**
12. UNSTOW DRIVER’S PERISCOPE.
   a. Loosen and remove straps.
   b. Remove driver’s periscope from bracket.

13. INSTALL DRIVER’S PERISCOPE.
   a. Push driver’s periscope straight up into hatch cover slot until driver’s periscope is fully seated.
   b. Move two clamps under driver’s periscope.
   c. Tighten two thumbscrews.

14. STOW DRIVER’S NIGHT VIEWER.
   a. Place driver’s night viewer in bracket.
   b. Fasten straps.
OPERATE DRIVER'S NIGHT VIEWER

DESCRIPTION

This task covers: Operate Driver's Night Viewer with Vehicle Power (page 2-199). Operate Driver's Night Viewer With Battery (page 2-201).

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Driver's night viewer installed with protective covers removed

OPERATE DRIVER'S NIGHT VIEWER WITH VEHICLE POWER

1. MOVE MASTER POWER SWITCH TO ON.

GO TO NEXT PAGE

2-199
2. TURN OFF/BRIGHT ROTARY SWITCH TO MAXIMUM BRIGHT POSITION.

3. ADJUST BRIGHTNESS OF DRIVER'S NIGHT VIEWER.
   a. Look through lens and turn OFF/BRIGHT rotary switch to desired brightness.

4. POSITION DRIVER'S NIGHT VIEWER.
   a. Turn driver's night viewer by hand to right or to left, as needed.
5. TURN OFF/BRIGHT ROTARY SWITCH TO OFF.

6. MOVE MASTER POWER SWITCH TO OFF.

OPERATE DRIVER'S NIGHT VIEWER WITH BATTERY

CAUTION
Battery will overheat and could explode if vehicle power cable is connected. Check that MASTER POWER switch is OFF.

7. CHECK THAT MASTER POWER SWITCH IS OFF.

GO TO NEXT PAGE
8. REMOVE VEHICLE POWER CABLE FROM DRIVER'S NIGHT VIEWER.
   a. Unscrew vehicle power cable from vehicle power receptacle.
   b. Screw vehicle power cable onto hatch cover adapter.
   c. Screw on receptacle cap.

9. TURN OFF/BRIGHT ROTARY SWITCH TO MAXIMUM BRIGHT POSITION.

10. ADJUST BRIGHTNESS OF DRIVER'S NIGHT VIEWER.
    a. Look through lens and turn OFF/BRIGHT rotary switch to desired brightness.
11. POSITION DRIVER’S NIGHT VIEWER.
   a. Turn driver’s night viewer by hand to right or to left as needed.

12. TURN OFF/BRIGHT ROTARY SWITCH TO OFF.

13. REMOVE BATTERY FROM DRIVER’S NIGHT VIEWER.
   a. Unscrew battery compartment cap.
   b. Remove battery from battery compartment.
   c. Screw on battery compartment cap.

END OF TASK
CLOSE/OPEN BLACKOUT COVERS

INITIAL SETUP

Personnel Required:
Soldiers

NOTE
There is one blackout cover for each of the 11 periscopes on the IFV/CFV. The two shown here are rear of the cargo hatch.

1. CLOSE BLACKOUT COVERS.
   a. Pull blackout cover tab up.
   b. Press edges of blackout cover against periscope glass to secure cover in place.

2. OPEN BLACKOUT COVERS.
   a. Pull blackout cover down.
   b. Press blackout cover against bottom of periscope to secure.

END OF TASK

2-205 (2-206 blank)
STOW 25MM AMMO

INITIAL SETUP

Personnel Required:
Soldier

Equipment Conditions:
Vehicle stopped

WARNING
A cartridge explosion could kill or injure soldiers. Handle ammo with care. Don't bump primers against any hard surface.


2. STOW SQUAD SEATS. See task: STOW/UNSTOW SQUAD SEATS, page 2-129.

NOTE
Twenty boxes of 25mm ammo can be stowed in the IFV. Forty boxes of 25mm ammo can be stowed in the CFV.

3. STACK AMMO BOXES BY AMMO TYPE.
   a. Place HE and AP ammo boxes in separate stacks on ramp or on ground nearby.

GO TO NEXT PAGE
NOTE
Seven boxes of 25mm ammo can be stowed in IFV floor. Eight boxes of 25mm ammo can be stowed in CFV floor.

4. STOW AMMO BOXES IN FLOOR.
   a. Lift and turn nine fasteners.
   b. Remove three floor plates.
   c. Stow ammo boxes on their sides in floor.
   d. Install three floor plates.
   e. Lift and turn nine fasteners to secure three floor plates.
5. STOW 13 AMMO BOXES IN IFV 25MM AMMO RACKS.
   a. Fold down seats No. 4, No. 5, and No. 9.
   b. Unbuckle straps from 25mm ammo racks.
   c. Stow 13 ammo boxes in 25mm ammo racks.
   d. Fasten and tighten straps on 25mm ammo racks.
   e. Lift up seats No. 4, No. 5, and No. 9.

NOTE
- Thirteen boxes of 25mm ammo can be stowed in IFV 25mm ammo racks. Step 5 gives instructions.
- Thirty-two boxes of 25mm ammo can be stowed in CFV 25mm ammo racks. Step 6 gives instructions.
6. STOW 32 AMMO BOXES IN CFV 25MM AMMO RACKS.
   a. Unbuckle straps from 25mm ammo racks.
   b. Stow 32 ammo boxes in 25mm ammo racks.
   c. Fasten and tighten straps on 25mm ammo racks.

7. UNSTOW SQUAD SEATS. See task: STOW/UNSTOW SQUAD SEATS, page 2-129.


END OF TASK
STOW DRAGON MISSILES — IFV ONLY

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions:
Engine stopped (page 2-161)


2. FOLD DOWN SEAT NO. 6 BACKREST.

NOTE

• Two DRAGON missiles are stowed in lower missile rack.

• Procedure for stowing both DRAGON missiles in lower missile rack is the same.

• For ease of stowage, first DRAGON missile should be stowed in saddles closest to wall.

3. STOW DRAGON MISSILE IN LOWER MISSILE RACK.

   a. Place DRAGON missile in saddles with nose end forward and bipod facing up.

GO TO NEXT PAGE
b. Pull strap over DRAGON missile. Hook latch to upper rung. Pull up top of latch to secure.

c. Rock DRAGON missile to check that it is secure.

NOTE
Check that upper TOW missile rack is in stowed position before stowing DRAGON missiles in upper stowage cones.

4. UNSTOW UPPER STOWAGE CONES.

   a. Push in latch button and lower rear stowage cone.

   b. Turn cam lever left and lower front stowage cone.
5. STOW DRAGON MISSILE IN UPPER STOWAGE CONES.
   a. Place rear of DRAGON missile in rear stowage cone. Place nose end of DRAGON missile in front stowage cone.

   **NOTE**
   - Check that top stowage cones are stowed and latched in place before stowing DRAGON missile vertically.
   - Two DRAGON missiles are stowed vertically.
   - Procedure for stowing both DRAGON missiles vertically is the same.

6. STOW DRAGON MISSILE VERTICALLY.
   a. Push in latch button and lower bottom stowage cone.

   b. Place DRAGON missile in bottom stowage cone with nose end up.

   **GO TO NEXT PAGE**
c. Turn cam lever left and pull top stowage cone over nose end of DRAGON missile.

d. Hold DRAGON missile in center and rock to check that it is secure. If DRAGON missile is loose, turn cam lever until secure.

7. NOTIFY ORGANIZATIONAL MAINTENANCE IF ANY DRAGON MISSILES ARE DROPPED OR DAMAGED.

8. RAISE SEAT NO. 6 BACKREST.


END OF TASK
STOW TOW MISSILES

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Engine stopped (page 2-161)


WARNING
Loose TOW missiles could come out of stowed position during vehicle travel and injure soldiers. Make sure clamps hold securely.

CAUTION
Missiles in cases are easily damaged. Handle missile cases with care. Do not drop missiles.

NOTE
- Steps 2 thru 7, 16, and 17 tell you how to stow TOW missiles in IFV.
- Steps 8 thru 17 tell you how to stow TOW missiles in CFV.
- The IFV holds maximum of seven TOW missiles: five stowed and two in TOW launcher.

2. FOLD DOWN SEAT NO. 6 BACKREST.

GO TO NEXT PAGE
NOTE

- Two TOW missiles are stowed in lower missile rack.
- Procedure for stowing both TOW missiles in lower missile rack is the same.
- For ease of stowage, first TOW missile should be stowed in saddles closest to wall of vehicle.

3. STOW TOW MISSILE IN LOWER MISSILE RACK.

a. Place TOW missile in saddles. Position TOW missile with nose end forward and ring in rear saddle slot.

b. Rotate TOW missile until electrical connector cover faces you.

c. Pull two straps over TOW missile, and hook two latches to two upper rungs. Pull up on latches.

d. Rock TOW missile to check that it is secure.
4. UNSTOW UPPER MISSILE RACK.
   a. Release latch, and lower upper missile rack.

5. STOW TOW MISSILE IN UPPER MISSILE RACK.
   a. Place TOW missile in saddles. Position TOW missile with nose end forward and ring in rear saddle slot.
   b. Rotate TOW missile until electrical connector cover faces you.
   c. Pull two straps over TOW missile, and hook two latches to two lower rungs. Pull up on latches.
   d. Rock TOW missile to check that it is secure.

GO TO NEXT PAGE
TM 9-2350-252-10-1

NOTE

- Top stowage cones should be in stowed position.
- Two TOW missiles are stowed vertically.
- Procedure for stowing both TOW missiles vertically is the same.
- For ease of stowage, first TOW missile should be stowed in front TOW stowage well.

6. STOW TOW MISSILE VERTICALLY.

   a. Clear trash and debris out of TOW stowage well.
   b. Place TOW missile in TOW stowage well. Position TOW missile with nose end up and electrical connector cover facing you.
   c. Turn cam lever to left to release top stowage cone. Pull top stowage cone down over nose end of TOW missile.
   d. Turn cam lever to right to tighten top stowage cone on TOW missile.
   e. Rock TOW missile to check that it is secure.

7. RAISE SEAT NO. 6 BACKREST. GO TO STEP 16.
NOTE
The CFV holds maximum of 12 TOW missiles: 10 stowed and 2 in TOW launcher.

8. FOLD DOWN SEAT NO. 2 BACKREST.

WARNING
Missile racks can spring up and hit you. Hold rack with one hand when releasing latches.

9. RAISE MIDDLE MISSILE RACK AND UPPER MISSILE RACK.
   a. Pull down four latches.
   b. Pull four hooks free from four brackets.

GO TO NEXT PAGE
NOTE

• Four TOW missiles are stowed in lower missile rack.

• Procedure for stowing all TOW missiles in lower missile rack is the same.

• For ease of stowage, first TOW missile should be stowed in saddles closest to wall of vehicle.

10. STOW TOW MISSILE IN LOWER MISSILE RACK.
   a. Place TOW missile in saddles. Position TOW missile with nose end forward and ring in rear saddle slot.
   b. Rotate TOW missile until electrical connector cover faces you.

11. LOWER AND SECURE MIDDLE MISSILE RACK.
   a. Pull down middle missile rack until two hooks catch on two brackets.
   b. Raise two latches to secure middle missile rack.
NOTE

- Four TOW missiles are stowed in middle missile rack.
- Step 12, substeps a and b, apply to stowing all TOW missiles in middle missile rack. Step 12, substeps c and d, apply only to stowing TOW missile nearest to side wall of vehicle.
- For ease of stowage, first TOW missile should be stowed in saddles closest to side wall of vehicle.

12. STOW TOW MISSILE IN MIDDLE MISSILE RACK.

a. Place TOW missile in saddles. Position TOW missile with nose end forward and ring in rear saddle slot.

b. Rotate TOW missile until electrical connector cover faces you.

c. For TOW missile nearest to side wall, pull two straps over TOW missile and hook two latches to the clips. Pull up on latches.

d. For TOW missile nearest to side wall, rock TOW missile to check that it is secure.
13. LOWER AND SECURE UPPER MISSILE RACK.

   a. Pull down upper missile rack until two hooks catch on two brackets.
   b. Raise two latches to secure upper missile rack.

   **NOTE**
   - Two TOW missiles are stowed in upper missile rack.
   - Procedure for stowing both TOW missiles in upper missile rack is the same.
   - For ease of stowage, first TOW missile should be stowed in saddles closest to side wall of vehicle.

14. STOW TOW MISSILE IN UPPER MISSILE RACK.

   a. Place TOW missile in saddles. Position TOW missile with nose end forward and ring in rear saddle slot.
   b. Rotate TOW missile until electrical connector cover faces you.
   c. Pull two straps over TOW missile, and hook two latches to two clips. Pull up on latches.
   d. Rock TOW missile to check that it is secure.
15. RAISE SEAT NO. 2 BACKREST.

16. IF ANY TOW MISSILES ARE DROPPED OR DAMAGED, NOTIFY ORGANIZATIONAL MAINTENANCE.


END OF TASK
INSTALL FIRING PORT WEAPON — IFV ONLY

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Firing port weapon cleared

References: TM 9-1005-309-10

NOTE

• There are two ramp firing port weapons. Each weapon is installed the same way. Instructions begin with step 1.

• There are four side firing port weapons. Each weapon is installed the same way. Instructions begin with step 2.

1. OPEN RAMP FIRING PORT COVER.

   a. Place finger in latch hole, and press down.

   b. Pull ramp firing port cover out, and lower it.

   c. Press ramp firing port cover down until latch slides under lower latch lock.

GO TO NEXT PAGE
2. REMOVE PLUG.
   a. Lift plug lever up to unlock.
   b. Pull out plug from firing port.
3. INSTALL FIRING PORT WEAPON.
   a. Insert firing port weapon into firing port, and align pin in groove on barrel of weapon.
   b. Screw in firing port weapon to right until pin locks in hole.

   NOTE
   Brass-catcher bags for ramp firing ports are located to right and left of ramp.

4. INSTALL BRASS-CATCHER BAG.
   a. Insert holder pin into receiver handle hole.
b. Close flap on bottom of brasscatcher bag.
OPERATE FIRING PORT WEAPON — IFV ONLY

INITIAL SETUP

Personnel Required: Soldier

References:
TM 9-1005-309-10

Equipment Conditions:
Firing port weapon installed (page 2-225)

CAUTION
Gun port vent fans can be damaged if firing port vents are closed. Check that firing port vents are open before you turn on gun port vent fans.

1. OPEN FIRING PORT VENTS.
   a. Push firing port vent levers up.

WARNING
Gases from firing port weapons are poisonous. Before you fire weapons, attach brass-catcher bags to weapons and turn gun port vent fans on.

2. MOVE GUN PORT VENT FAN SWITCHES TO ON.

4. EMPTY BRASS-CATCHER BAG.
   a. Open flap at bottom of brass-catcher bag.
   b. Remove brass.

5. MOVE GUN PORT VENT FAN SWITCHES TO OFF.

6. CLOSE FIRING PORT VENTS.
   a. Push firing port vent levers down.

END OF TASK
REMOVE FIRING PORT WEAPON — IFV ONLY

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Firing port weapon cleared and unlocked (TM 9-1005-309-10)

References: TM 9-1005-309-10

NOTE

• Steps 1 thru 3 tell how to remove firing port weapon from side firing ports.
• Steps 1 thru 4 tell how to remove firing port weapon from ramp firing ports.

1. REMOVE BRASS-CATCHER BAG.
   a. Lift brass-catcher bag holder pin out of receiver handle hole.
   b. Remove brass-catcher bag from firing port weapon.

GO TO NEXT PAGE

2-231
2. REMOVE FIRING PORT WEAPON.
   a. Pull pin out, and unscrew firing port weapon to left.
   b. Remove firing port weapon, and release pin.

3. INSTALL FIRING PORT PLUG.
   a. Push firing port plug into firing port.
   b. Press down on plug lever to lock firing port plug in place.
NOTE
Step 4 is for ramp firing ports only. Side firing ports do not have covers.

4. CLOSE RAMP FIRING PORT COVER.
   a. Place finger in cover latch hole and pull upward to release ramp firing port cover.
   b. Raise ramp firing port cover to closed position.
   c. Press against ramp firing port cover until spring-loaded latch slides into lock.

END OF TASK

2-233 (2-234 blank)
OPERATE SMOKE SCREEN GENERATOR

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Vehicle being driven (page 2-153)

WARNING
Breathing smoke from smoke screen generator can make you sick. If smoke enters vehicle, wear your gas mask. Turn off vent fans and close hatch covers.

NOTE
Smoke may take 5 seconds before it starts coming out exhaust.

1. MOVE SMOKE SCREEN GENERATOR SWITCH TO ON.

NOTE
Smoke will continue for about 1 minute after smoke screen generator is turned off.

2. MOVE SMOKE SCREEN GENERATOR SWITCH TO OFF.

END OF TASK

2-235 (2-236 blank)
LOWER/STOW TRIM VANE

INITIAL SETUP

- Personnel Required:
  Soldier

- Equipment Conditions:
  Vehicle stopped

WARNING
Trim vane can fall and injure soldiers. Make sure trim vane zone is clear when you lower or stow trim vane.

1. LOWER TRIM VANE.
   a. Pull strap and release trim vane latch.

GO TO NEXT PAGE

2-237
b. Lower trim vane.

c. Stand on trim vane, and push trim vane lock forward.

2. STOW TRIM VANE.

a. Stand on trim vane, and release trim vane lock.

b. Raise trim vane to stowed position.

c. Check that trim vane latch is engaged.

END OF TASK
REMOVE/INSTALL POWER UNIT ACCESS PANELS

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine stopped (page 2-161)

1. STOW DRIVER'S SEAT. See task STOW/UNSTOW DRIVER'S SEAT, page 2-123.

2. FOLD SEAT NO. 4 BACKREST DOWN (IFV ONLY).

WARNING
Exhaust from heater and engine contains poison gases. See warning on front page of this manual.

3. REMOVE POWER UNIT ACCESS PANELS.
   a. Loosen T-bolts.
   b. Lift both power unit access panels out of bulkhead floor slots.

4. INSTALL POWER UNIT ACCESS PANELS.
   a. Place power unit access panels into bulkhead floor slots.
   b. Tighten T-bolts.
5. RAISE SEAT NO. 4 BACKREST UP (IFV ONLY).

6. UNSTOW DRIVER'S SEAT. See task: STOW/UNSTOW DRIVER'S SEAT, page 2-123.

END OF TASK
RAISE/LOWER SIDE ARMOR PLATES

INITIAL SETUP

Tools:
- T-bar handle, 3/4 inch drive (Item 22, App B)
- Socket, 15/16 inch (Item 47, App B)

Equipment Conditions:
- Engine stopped (page 2-161)

Personnel Required:
- Driver
- Helper (H)

NOTE
Side armor plate is in four sections.
Raise only the section needed to perform your task.

1. RAISE SIDE ARMOR PLATE.
   a. Remove screws and washers that secure lowered side armor plate. Use 3/4 inch drive T-bar handle with 15/16 inch socket.
   b. Raise side armor plate against hull armor. Have helper help raise center side armor plates.
   c. Install screws and washers in raised side armor plate. Tighten screws. Use 3/4 inch drive T-bar handle with 15/16 inch socket.
2. LOWER SIDE ARMOR PLATE.

a. Remove screws and washers that secure raised side armor plate. Use 3/4 inch drive T-bar handle with 15/16 inch socket. Have helper hold up center side armor plates while screws are removed.

b. Lower side armor plate.

c. Install screws and washers in lowered side armor plate. Tighten screws. Use 3/4 inch drive T-bar handle with 15/16 inch socket.

END OF TASK
### Section IV. OPERATION UNDER UNUSUAL CONDITIONS

#### TASK INDEX

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operate in Extreme Cold</td>
<td>2-245</td>
<td>Perform Post-swimming</td>
<td>2-297</td>
</tr>
<tr>
<td>Operate Winterization Kit</td>
<td>2-249</td>
<td>Operations</td>
<td></td>
</tr>
<tr>
<td>Prepare to Enter Water</td>
<td>2-251</td>
<td>Operate Vehicle Over Rough Terrain</td>
<td>2-305</td>
</tr>
<tr>
<td>Ford Water Less Than 3 1/2 Feet Deep</td>
<td>2-259</td>
<td>Tow/Tow Start Disabled Vehicle</td>
<td>2-311</td>
</tr>
<tr>
<td>Erect Water Barrier</td>
<td>2-263</td>
<td>Gain Access to Turned Turret in an Emergency</td>
<td>2-323</td>
</tr>
<tr>
<td>Drive In Water</td>
<td>2-277</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stow Water Barrier</td>
<td>2-285</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OPERATE IN EXTREME COLD

INITIAL SETUP

Personnel Required:
Driver

Equipment Conditions:
Winterization kit in operation
(page 2-249)

References:
TM 9-2350-252-20-1

1. MOVE RUN-OFF-START SWITCH TO OFF.

CAUTION
Running engine at high speed after cold start could damage engine. Before driving vehicle, run engine at normal idle for 3-5 minutes.

2. COLD START ENGINE. See task: START ENGINE, page 2-137.

WARNING
Shifting and steering may be difficult when grease and oil are cold. Soldiers could be killed or injured. Drive slowly until grease and oil have had time to warm up.

GO TO NEXT PAGE
1. NOTE
When using winterization kit, engine should be run daily to recharge batteries. Vehicle should be driven slowly for first mile (0.6 km).

3. PARK VEHICLE IN SHELTERED AREA, FACED AWAY FROM WIND IF POSSIBLE, WHEN MISSION IS COMPLETED. See task: DRIVE VEHICLE, page 2-153.

4. STOP ENGINE. See page 2-161.

5. PLACE PLANKS OR BRUSH UNDER TRACKS TO PREVENT FROM FREEZING TO GROUND.

6. CAUTION
Brakes could freeze in locked position. Release hand brake.

6. RELEASE HAND BRAKE IF ENGAGED.

7. BLOCK TRACKS WITH ROCKS OR WOOD BLOCKS.


CAUTION
Condensation in fuel tanks and lines can freeze. Drain water from filters, and keep fuel tanks full.

10. DRAIN FUEL FILTER OF WATER.
   a. Pull drain hose out of engine and place end in container.
   b. Open toggle valve and allow water to drain in container.
   c. Close toggle valve when fuel begins to drain.
   d. Place drain hose back in engine.


13. OPERATE WINTERIZATION KIT. See page 2-249.

END OF TASK
OPERATE WINTERIZATION KIT

INITIAL SETUP

Personnel Required:  
Driver

Equipment Conditions:  
Air temperature below –25°F  
(-10 °C)  
Engine stopped (page 2-161)

CAUTION
If winterization kit has shut down by itself, equipment has malfunctioned. Do not try to start engine. Notify organizational maintenance.

1. MOVE MASTER POWER SWITCH TO ON.

GO TO NEXT PAGE
CAUTION
Winterization heater will drain vehicle batteries when engine is not running. Run engine at intervals to charge batteries.

2. START AND OPERATE WINTERIZATION KIT.
   a. Move heater RUN-OFF-START switch to START and hold it until indicator light comes on.
   b. Move RUN-OFF-START switch to RUN and leave it there until vehicle is ready for operation.
   c. If winterization kit does not start, press RESET button and repeat substeps a and b above.
   d. If winterization kit does not start after three tries, notify organizational maintenance.

END OF TASK

2-250
PREPARE TO ENTER WATER

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Engine stopped (page 2-161)

References:
TM 9-2350-252-10-2


2. OPEN COMMANDER'S HATCH COVER. See TM 9-2350-252-10-2.


5. OPEN CARGO HATCH COVER TO UPRIGHT POSITION. See task: OPEN/CLOSE CARGO HATCH COVER, page 2-107.


7. CLOSE FIRING PORT VENTS (IFV ONLY).
   a. Push down left and right firing port vent levers.

GO TO NEXT PAGE
8. CHECK DRAIN PLUGS.
   a. Check that left and right final drive hull drain plugs are secure.
   b. Check that front and rear hull drain plugs are evenly and tightly seated.
9. CLOSE FRONT HULL DRAIN PLUG.

a. Open drain plug access door.

b. Turn valve to close front hull drain plug. Check that bridge plates are fully seated.

c. Close drain plug access door.
10. CLOSE REAR HULL DRAIN PLUG.
   a. Pull up and turn fastener.
   b. Remove floor plate.
   c. Turn valve to close rear hull drain plug. Check that bridge plates are fully seated.
   d. Install floor plate.
   e. Pull up and turn fastener.

12. REMOVE TWO FRONT UPPER HULL DRAIN PLUGS.

13. REMOVE TWO REAR UPPER HULL DRAIN PLUGS.
14. RELEASE FUEL FILLER COMBAT LOCK.
   a. Press PUSH TO RELEASE button and push in combat lock handle.

15. CLOSE VENT ON FUEL FILLER CAP.
   a. Pull out on locking pin and open fuel filler cover. Release locking pin.
   b. Lift ring and unscrew fuel filler cap to left.
c. Turn vent on inside of fuel filler cap to CLOSED.

d. Install fuel filler cap. Tighten fuel filler cap, and lower ring.

e. Pull out on locking pin and close fuel filler cover. Release locking pin.

16. ENGAGE FUEL FILLER COMBAT LOCK.

a. Press PUSH TO RELEASE button and pull out combat lock handle.


18. ERECT WATER BARRIER. See page 2-263.

END OF TASK

2-257 (2-258 blank)
FORD WATER LESS THAN 3 1/2 FEET DEEP

INITIAL SETUP

Personnel Required:
Driver

Equipment Conditions:
Engine stopped (page 2-161)
Ramp down (page 2-115)

WARNING
Without water barrier erected, vehicle will sink in deep water. Soldiers could drown. Do not drive in water deeper than 3 1/2 feet (1.07 m).

1. CLOSE FRONT HULL DRAIN PLUG.
   a. Open drain plug access door.
   b. Turn valve to close front hull drain plug. Check that bridge plates are fully seated.
   c. Close drain plug access door.
2. CLOSE REAR HULL DRAIN PLUG.
   a. Pull up and turn fastener.
   b. Remove floor plate.
   c. Turn valve to close rear hull drain plug. Check that bridge plates are fully seated.
   d. Install floor plate.
   e. Pull up and turn fastener.

3. CHECK THAT TWO FINAL DRIVE HULL DRAIN PLUGS ARE IN PLACE AND SECURED.
4. CHECK THAT FOUR UPPER HULL DRAIN PLUGS ARE IN PLACE AND SECURED.

GO TO NEXT PAGE

6. START ENGINE. See page 2-137.

7. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO ON.

8. FORD WATER.

9. AFTER BILGES EMPTY, MOVE FWD AND REAR BILGE PUMPS SWITCHES TO OFF.

END OF TASK
ERECT WATER BARRIER

DESCRIPTION


INITIAL SETUP

Tools:
- Wrench, 9/16 inch open end (Item 51, App B)

Personnel Required:
- Driver
- Helper (2)

Equipment Conditions:
- Engine stopped (page 2-161)
- Vehicle prepared to enter water (page 2-251)

ERECT TRIPODS

WARNING
Water barrier can collapse. Collapsed water barrier can cause vehicle to sink. Soldiers could drown or be injured.

Check each piece of equipment to be sure it is correctly installed and locked in place.

1. ERECT LEFT SIDE TRIPOD.
   a. Release rubber hold down.
   b. Raise left side tripod.
   c. Put two "T" ends of left side tripod into hull mounting slots.

GO TO NEXT PAGE
2. UNSTOW RIGHT SIDE TRIPOD.
   a. Release two rubber hold downs.
   b. Remove right side tripod, and move it to right rear of vehicle.

3. ERECT RIGHT SIDE TRIPOD.
   a. Remove pin from clevis.
   b. Put "eye" end of right side tripod in clevis. Have helper hold tripod.
   c. Install pin through clevis and "eye" end of right side tripod.
   d. Put two "T" ends of right side tripod into two mounting slots.
UNSTOW WATER BARRIER

NOTE
Bilge pump exhaust pipes are on right side of water barrier only.

4. UNSTOW WATER BARRIER.
   a. Lift rubber flaps on sides of vehicle.
   b. Pull out left and right sides of water barrier with attached struts and bilge pump exhaust pipes.
   c. Release four rubber hold downs on front of vehicle.
   d. Lift rubber flaps on front of vehicle.
   e. Unroll front of water barrier.

GO TO NEXT PAGE
f. Unlatch and open metal cover over ramp.

g. Pull out rear of water barrier.

h. Pull water barrier up onto sides of hull. Place struts and bilge pump exhaust pipes on inside of water barrier.

i. Pull water barrier up on top of trim vane.

j. Fasten snaps of water barrier to trim vane.
5. ERECT REAR OF WATER BARRIER.

   a. Pull up rear of water barrier and put ends of rear cable in tripod slots. Check that balls of rear cable are seated in tripod slots.

   b. If rear cable does not reach tripod slots, go to step 6.

   c. If rear cable reaches tripod slots, finish step 5, then go to step 7.

   d. Put center strut into cup on hull.

   e. Put ends of left and right side cables in tripod slots. Check that balls on cables are seated in tripod slots.

   f. Pull rear corners of water barrier up over tripods.

   GO TO NEXT PAGE
The procedure for adjusting each tripod "T" end is the same.

6. ADJUST "T" END OF TRIPOD.
   a. Remove "T" end of tripod from mounting slot.
   b. Loosen jam nut, and turn "T" end to adjust. Tighten jam nut.
   c. Put "T" end of tripod in mounting slot.
   d. Repeat step 5.

7. ERECT TRIM VANE.
   a. Pull trim vane latch strap to release trim vane latch.
   b. Push up trim vane. Have helper assist.
   c. Hold trim vane straight up. Have helper assist.
8. ATTACH TWO CABLE EYELETS TO TRIM VANE.
   a. Aline each cable eyelet with each outside clevis hole.
   b. Insert pin through clevis and cable. Check that side support end is inside pin.

9. PULL WATER BARRIER OVER TOP OF TRIM VANE. HAVE HELPER ASSIST.

   NOTE
   Check that water barrier is pulled up over upper trim vane.

10. RAISE AND LOCK UPPER TRIM VANE
    a. Release latch on trim vane under water barrier.
    b. Raise and lock upper trim vane.

GO TO NEXT PAGE
c. Check that locking pins are engaged in holes in hinges.

d. Check that rotating lock shafts are locking ends of hinges.

**WARNING**

If links are not secure at slot ends, barrier may collapse and cause vehicle to sink. Soldiers could drown. Check both sides to see that links are all the way to rear of slots.

11. LOCK TRIM VANE IN PLACE.

a. Place trim vane all the way out.

b. Lift side supports on trim vane.

c. Check that link is fully seated.
d. Check that water barrier release lever (under driver's instrument panel) is in forward position and latched.

12. REMOVE BLOCKS FROM RIGHT AND LEFT BRACKETS.
   a. Remove four screws, washers, and block from each bracket. Use 9/16 inch open end wrench.

13. INSTALL BLOCKS IN RIGHT AND LEFT SLIDES.
   a. Install block in center of each slide.
   b. Install four washers and screws on slide and block. Use 9/16 inch open end wrench.
14. ATTACH OUTSIDE ELASTIC CORDS TO GROMMETS ON LEFT AND RIGHT SIDES OF WATER BARRIER.

15. TIE INSIDE ELASTIC CORD TO LIFTING EYE.

16. SNAP END OF RELEASE LANYARD TO FOOTMAN LOOP.

2-272
17. INSTALL BILGE PUMP EXHAUST PIPES IN FRONT BILGE PUMP OUTLETS.
   a. Pull locking pin and open dust cover.
   b. Release locking pin.
   c. Hook bilge pump exhaust pipes on side cable.
   d. Put bilge pump exhaust pipes into front bilge pump outlets.

18. PUT STRUTS INTO CUPS ON LEFT AND RIGHT SIDES OF HULL.
19. **MOVE MASTER POWER SWITCH TO ON.**

20. **MOVE FWD AND REAR BILGE PUMPS SWITCHES TO ON.**

21. **CHECK THAT AIR FLOWS OUT OF BILGE PUMP EXHAUST PIPES AND REAR BILGE PUMP OUTLETS.**
22. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO OFF.

23. MOVE MASTER POWER SWITCH TO OFF.

24. RAISE METAL COVER.


END OF TASK
DRIVE IN WATER

INITIAL SETUP

Personnel Required:
- Driver
- Gunner

Equipment Conditions:
- Water barrier erected (page 2-263)
- Engine started (page 2-137)

1. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO ON.
WARNING
Water going over water barrier can swamp vehicle. Soldiers could drown. Do not go into water with choppy waves or swift currents.

WARNING
Ice, debris, logs, or other objects can tear water barrier. A torn water barrier can cause vehicles to sink. Soldiers could drown. Look for ice, debris, logs, or other objects before you enter water.

2. CHOOSE SPOT TO ENTER AND EXIT WATER.

a. Look for firm ground without rocks, stumps, or other obstacles.

b. Avoid steep slopes and soft ground.

c. Watch out for obstacles under water.

2-278
WARNING
Vehicle could swamp or sink if you enter water faster than 5 mph (8 km/hr). Do not go faster than 5 mph (8 km/hr) when you enter water.

NOTE
Have gunner stand on his seat to act as a lookout for obstacles.

3. ENTER WATER.

a. Center steering yoke.

b. Move gear selector to LOW.

c. Enter water no faster than 5 mph (8 km/hr).

GO TO NEXT PAGE
WARNING
An underwater obstruction which does not support both tracks may cause vehicle to swamp or be stranded. Soldiers could drown. Watch for and avoid underwater obstacles.

WARNING
Towing another vehicle in water may cause vehicle to swamp or sink. Soldiers could drown. Except in an emergency, do not tow another vehicle in water. When towing vehicle in water, attach towline so it can be released quickly.

4. DRIVE VEHICLE IN WATER.
   a. Move gear selector to DRIVE after vehicle is off solid ground and afloat.

   CAUTION
   Vehicle response is slower than normal while driving in water. Before shifting into REVERSE or PIVOT STEER make sure tracks have stopped moving by looking at speedometer.

5. TURN VEHICLE IN WATER.
   a. Turn steering yoke in direction you wish to go.
   b. Release steering yoke before completing turn to avoid overshooting turn.
WARNING

Braking in water could cause engine to stall. You can lose control of vehicle with a stalled engine. Soldiers could drown. Do not apply brakes when driving in water.

6. STOP VEHICLE QUICKLY IN WATER.

a. Take foot off accelerator pedal and allow speedometer to go to zero.

b. Put gear selector in N (NEUTRAL).

c. Move gear selector to REVERSE and step on accelerator pedal to stop.

GO TO NEXT PAGE
7. REVERSE VEHICLE IN WATER.
   a. Take foot off accelerator pedal and allow speedometer to go to zero.
   b. Move gear selector to NEUTRAL.
   c. Move gear selector to REVERSE and step on accelerator pedal.

8. DRIVE VEHICLE FORWARD IN WATER AFTER REVERSING.
   a. Take foot off accelerator pedal and allow speedometer to go to zero.
   b. Move gear selector to NEUTRAL.
   c. Move gear selector to DRIVE and step on accelerator pedal.

9. TURN VEHICLE QUICKLY IN WATER.
   a. Take foot off accelerator pedal and allow speedometer to go to zero.
   b. Move gear selector to NEUTRAL.
   c. Move gear selector to PIVOT STEER and turn steering yoke in direction you wish to go.
10. DRIVE VEHICLE FORWARD IN WATER AFTER TURNING QUICKLY.
   a. Take foot off accelerator pedal and allow speedometer to go to zero.
   b. Move gear selector to NEUTRAL.
   c. Move gear selector to DRIVE and step on accelerator pedal.

11. EXIT WATER.
   a. Move gear selector to LOW.
   b. Make sure both tracks contact solid ground at the same time.
   c. Drive vehicle smoothly straight up bank.

12. PERFORM POST-SWIMMING OPERATIONS. See page 2-297.

END OF TASK
STOW WATER BARRIER

DESCRIPTION

This task covers: Stow Trim Vane (page 2-285), Stow Tripods (page 2-290), Stow Front of Water Barrier (page 2-292), Stow Rear of Water Barrier (page 2-293), Stow Sides of Water Barrier (page 2-294).

INITIAL SETUP

Tools:
- Wrench, 9/16 inch open end (Item 51, App B)
- Hammer, 2 lb (Item 18, App B)

Equipment Conditions:
- Vehicle on level surface
- Engine stopped (page 2-161)

Personnel Required:
- Driver
- Helper (H) (2)

STOW TRIM VANE


2. UNTIE INSIDE ELASTIC CORD FROM LIFTING EYE.

GO TO NEXT PAGE
3. REMOVE OUTSIDE ELASTIC CORDS FROM LEFT AND RIGHT SIDES OF WATER BARRIER.

4. REMOVE BILGE PUMP EXHAUST PIPES FROM FRONT BILGE PUMP OUTLETS.
   a. Pull bilge pump exhaust pipes out of front bilge pump outlets.
   b. Unhook bilge pump exhaust pipes from side cable.
   c. Pull locking pin and close dust cover.
   d. Release locking pin.
5. REMOVE STRUTS FROM CUPS ON LEFT AND RIGHT SIDES OF HULL.

6. REMOVE BLOCKS FROM RIGHT AND LEFT SLIDES.
   a. Remove four screws, washers, and block from each slide. Use 9/16 inch open end wrench.

7. INSTALL BLOCKS ON RIGHT AND LEFT BRACKETS.
   a. Install block, four washers, and screws on each bracket. Use 9/16 inch open end wrench.
8. STOW RELEASE LANYARD.
   a. Unsnap release lanyard from footman loop, and roll it up to trim vane.

   b. Stow release lanyard under upper trim vane.

9. PULL WATER BARRIER RELEASE LEVER (UNDER DRIVER'S INSTRUMENT PANEL) BACK TO RAISE TRIM VANE TO VERTICAL POSITION.
10. PUSH WATER BARRIER OFF UPPER TRIM VANE. HAVE HELPER ASSIST.

11. UNFASTEN SNAPS ON WATER BARRIER FROM TRIM VANE.

12. REMOVE TWO CABLE EYELETS FROM TRIM VANE.
    a. Remove pin and cable eyelet from each clevis.

GO TO NEXT PAGE
WARNING
Raising trim vane could injure soldiers. Stay clear when you fold trim vane against hull.

13. FOLD TRIM VANE AGAINST HULL. HAVE HELPER ASSIST.

14. REMOVE FOUR CABLE ENDS OF WATER BARRIER FROM TWO TRIPODS.
   a. Remove center strut from cup on hull.
   b. Remove corner of water barrier from top of each tripod.
   c. Remove two cable ends from each tripod slot.

15. STOW LEFT SIDE TRIPOD.
   a. Remove two “T” ends of left side tripod from mounting slots.
b. Lower left side tripod.
c. Secure left side tripod with rubber hold down.

16. REMOVE RIGHT SIDE TRIPOD.
   a. Remove two "T" ends of right side tripod from mounting slots.
   b. Remove pin from clevis and "eye" end of right side tripod.
   c. Remove right side tripod.
   d. Install pin in clevis.
17. STOW RIGHT SIDE TRIPOD.
   a. Install right side tripod below TOW launcher.
   b. Secure tripod with two rubber hold downs.

**STOW FRONT OF WATER BARRIER**

18. STOW FRONT OF WATER BARRIER.
   a. Pull water barrier down and off hull.
   b. Tuck elastic cords inside front water barrier. Roll up front water barrier evenly. Secure with four rubber hold downs.
   c. Fold corners of water barrier. Push water barrier into trough. Use hammer handle.
d. Roll up front of water barrier. Secure with rubber flap and four rubber hold downs.

**STOW REAR OF WATER BARRIER**

19. STOW REAR CORNERS OF WATER BARRIER.
   a. Fold water barrier.
   b. Push water barrier into trough. Use hammer handle.
   c. Secure water barrier with rubber flap.

20. STOW REAR OF WATER BARRIER.
   a. Fold water barrier.
   b. Push water barrier into trough. Use hammer handle.
c. Close and latch metal cover.

21. STOW RIGHT SIDE OF WATER BARRIER.
   a. Fold water barrier onto hull.
   b. Push water barrier into trough. Use hammer handle.
   c. Place bilge pump exhaust pipe with short cord in front side trough pointing toward front of vehicle.
   d. Place bilge pump exhaust pipe with long cord in front side trough pointing toward rear of vehicle.
e. Place rear strut in trough pointing toward front of vehicle.

f. Place remaining struts in trough with ends pointing toward rear of vehicle.

g. Secure water barrier with rubber flaps.

22. STOW LEFT SIDE OF WATER BARRIER.

a. Fold water barrier onto hull.

b. Push water barrier into trough. Use hammer handle.

c. Place struts in trough with ends pointing toward rear of vehicle.
d. Secure water barrier with rubber flaps.


END OF TASK
PERFORM POST-SWIMMING OPERATIONS

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Vehicle has been driven in water (page 2-277)

1. RELEASE UPPER TRIM VANE.
   a. Pull lanyard and lower trim vane.

2. DRIVE VEHICLE TO FIRM, LEVEL GROUND. See page

3. SET HAND BRAKE AND LET ENGINE IDLE.
   a. Push brake pedal down.
      Pull hand brake straight back.

GO TO NEXT PAGE

2-297
b. Release foot pressure. Brake pedal should stay down.

4. TURN OFF FUEL CONTROL.
   a. Press FUEL PUSH TO RELEASE button.
   b. Pull FUEL control handle all the way out to OFF.
   c. Release FUEL PUSH TO RELEASE button.
5. MOVE ENGINE ACCESSORY SWITCH TO OFF.

6. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO OFF AFTER WATER IS OUT OF VEHICLE.

7. MOVE MASTER POWER SWITCH TO OFF.

8. STOW WATER BARRIER. See page

9. DRAIN WATER FROM FRONT BILGE.
   a. Open drain plug access door.

GO TO NEXT PAGE
b. Turn valve to left.
c. Allow water to drain out.
d. Turn valve to right.
e. Close drain plug access door.

10. DRAIN WATER FROM REAR BILGE.
   a. Pull up and turn fastener.
   b. Remove floor plate.
   c. Turn valve to left.
   d. Allow water to drain out.
   e. Turn valve to right.
   f. Install floor plate.
   g. Pull up and turn fastener.
11. OPEN FIRING PORT VENTS (IFV ONLY).
   a. Push left and right firing port vent levers up.

12. INSTALL UPPER HULL DRAIN PLUGS.
   a. Screw four upper hull drain plugs into holes.

GO TO NEXT PAGE
13. RELEASE FUEL FILLER COMBAT LOCK FROM INSIDE VEHICLE.
   a. Push in PUSH TO RELEASE button.
   b. Push FUEL FILLER control handle all the way in.
   c. Release PUSH TO RELEASE button.

**NOTE**
Fuel filler cap must be removed slowly to let out pressure.

14. OPEN VENT ON FUEL FILLER CAP.
   b. Lift ring on fuel filler cap and unscrew to left.
c. Turn vent on inside of fuel filler cap to open.

d. Screw fuel filler cap tight. Lower ring.

e. Pull out locking pin. Close fuel filler cover. Release locking pin.

15. ENGAGE FUEL FILLER COMBAT LOCK.

a. Push in PUSH TO RELEASE button.

b. Pull out on FUEL FILLER control handle.

c. Release PUSH TO RELEASE button.
16. CHECK FOR WATER IN HUB CAP OIL.
   a. Look in sight glasses on hub caps of road wheels, return idler, and rollers. If bubbles or white color is seen, water is in oil. Notify organizational maintenance.

17. CHECK FOR WATER IN FINAL DRIVE OIL. See task: SERVICE FINAL DRIVE, page .
   a. If bubbles or white color is seen, water is in oil. Notify organizational maintenance.

END OF TASK
OPERATE VEHICLE OVER ROUGH TERRAIN

INITIAL SETUP

Personnel Required: Driver

Equipment Conditions: Engine started (page 2-137)

WARNING

Vehicle can roll over and kill or injure soldiers. Avoid high speeds and sudden turns when driving on hills or rough terrain. Wear seat belts.

CAUTION

Vehicle will get stuck in trenches wider than 8ft. Do not cross trenches wider than 8ft (2.5m).

1. DRIVE VEHICLE OVER TRENCHES.
   a. Drive up to trench straight on.
   b. Move gear selector to LOW.

GO TO NEXT PAGE

2-305
c. Drive slowly over trench with steering yoke centered.

d. Accelerate when vehicle clears trench.

CAUTION
Obstacles higher than 36 inches (91 cm) can damage vehicle drive sprocket. Do not drive over obstacles higher than 36 inches (91 cm).

2. DRIVE VEHICLE OVER OBSTACLE.

a. Drive vehicle up to obstacle straight on.

b. Move gear selector to LOW.

b. Move gear selector to LOW.

c. Drive slowly over obstacle with steering yoke centered.
CAUTION
Holding vehicle on hill with engine will burn out transmission. Hold vehicle on hill with brakes.

WARNING
Vehicle can roll over and kill or injure soldiers. Do not drive up hill steeper than 60 percent grade (31 degrees).

3. DRIVE VEHICLE ON HILLS.
   a. Accelerate enough to keep vehicle from stalling on steep hills.
   b. Slow down at top of hill, and keep vehicle under control going downhill.
   c. Step on accelerator at bottom of hill to keep suspension from bottoming out.
   d. Avoid snow covered hills if possible.
WARNING
Vehicle can roll over and kill or injure soldiers. Do not drive on side slopes steeper than 40 percent slope (22 degrees).

CAUTION
Sharp turns on steep side slopes can cause vehicle to throw a track. Make a series of small wide turns instead of one sharp turn.

4. DRIVE VEHICLE ON SIDE SLOPES.
   a. Move gear selector to LOW before driving on steep side slope.
   b. Keep vehicle from sliding by turning uphill if rear of vehicle is sliding downhill. Turn downhill if front of vehicle is sliding downhill.

CAUTION
Sharp turns on snow, ice, or mud can cause vehicle to throw a track. Make a series of small wide turns instead of one sharp turn.

5. DRIVE VEHICLE ON SNOW, ICE, OR MUD.
   a. Control vehicle speed, and drive as smoothly as possible.
b. Slow vehicle smoothly before making a turn on ice.

c. When vehicle will be driven in mud or snow for a long time, raise track armor plates.

d. If vehicle breaks through crust of deep snow, steer straight to get back on crust.

e. Remove track shoe pads if vehicle commander directs. See task: REMOVE/INSTALL TRACK SHOE PADS, page 3-71.

**CAUTION**
Handbrake and tracks could freeze in cold weather. Do not set handbrake. Block vehicle. Do not park vehicle where tracks could freeze in snow or mud. Use brush, planks, or rocks to keep vehicle out of mud or snow. Clear snow, ice, and mud off road wheels and tracks after you park.

6. PARK VEHICLE ON SNOW, ICE, OR MUD.

a. If possible, stop vehicle on firm surface.

b. Block road wheels.

c. Clear snow, ice, and mud off road wheels and track after parking.

**END OF TASK**
TOW/TOW START DISABLED VEHICLE

DESCRIPTION


INITIAL SETUP

Tools:
- Tow bar
- Tow cable (Item 49, App B)

Personnel Required:
- Driver (2)
- Helper (4)

Equipment Conditions:
- Operational vehicle
- Disabled vehicle

DO’S AND DON'TS

DO

Use tow bar when both track assemblies are missing or if propeller shafts are removed.

Use tow bar to tow downhill.

Have organizational maintenance remove propeller shafts from disabled vehicle when transmission is damaged or when towing over ten miles.

Lease gear selector in N (neutral) when towing with propeller shafts removed.

Use driver in disabled vehicle when towing with tow cables.

Connect tow cables in an “X” pattern.

Coast to a stop without braking when towing.

GO TO NEXT PAGE
Use vehicle of same or larger size to tow.

Aline towing vehicle directly in front of disabled vehicle before connecting tow bar or tow cables.

Tow disabled vehicle backward only when necessary.

**DON'T**

- Exceed 15 mph (25 km/hr) when tow starting disabled vehicle.
- Exceed 8 mph (13 km/hr) when towing disabled vehicle forward.
- Exceed 5 mph (8 km/hr) when towing disabled vehicle backward.

**CAUTION**

A small vehicle will not tow a larger one. Towing vehicle must be the same size or larger than disabled vehicle.

**CAUTION**

Towing vehicle with damaged transmission can damage final drives. Have organizational maintenance remove propeller shafts if disabled vehicle has damaged transmission.
NOTE

Disabled vehicle may be towed backward if necessary. Tow bar or cables may be attached to rear towing eyes of disabled vehicle. Except in emergency, disabled vehicle must not be towed backward over 5 mph (8 km/hr).

1. ALINE REAR OF TOWING VEHICLE WITH FRONT OF DISABLED VEHICLE.

CONNECT VEHICLES WITH TOW BAR

NOTE

Tow bar must be used when towing starting vehicle, when tracks or propeller shafts are removed, and when towing downhill.

2. REMOVE TWO PINS AND SHACKLES FROM TWO TOWING EYES ON DISABLED VEHICLE.

a. Remove two pins and shackles.

b. Stow pins and shackles in vehicle.

GO TO NEXT PAGE
3. INSTALL TOW BAR ON FRONT OF DISABLED VEHICLE.
   a. (H) Hold up tow bar.
   b. Insert pin through tow bar clevis and towing eye.
   c. Insert retainer clip.
   d. Repeat steps a thru c for second towing eye.

   **NOTE**
   Two helpers, one at front left and one at rear left of vehicle, act as road guides. Two helpers install tow bar.

4. INSTALL TOW BAR ON PINTLE OF TOWING VEHICLE.
   a. Remove cotter pin.
   b. Pull pintle hook latch towards you.
   c. Lift pintle open.
   d. Drive towing vehicle backwards until tow bar reaches pintle. See task: DRIVE VEHICLE, page 2-153.
   e. Lift tow bar and place on pintle. Have helper assist.
   f. Close pintle over tow bar, and lock with cotter pin.
CONNECT VEHICLES WITH TOW CABLES

WARNING
Vehicle with tracks or propeller shafts removed has no steering or braking control. Soldiers could be injured. Do not tow vehicle with cables if tracks or propeller shafts are removed. Use tow bar.

5. REMOVE TOW CABLE FROM DISABLED VEHICLE.

6. REMOVE TOW CABLE FROM TOWING VEHICLE.

NOTE
Shackles are removed from front and rear in same way.

7. REMOVE FOUR PINS AND SHACKLES FROM REAR OF TOWING VEHICLE AND FRONT OF DISABLED VEHICLE.
   a. Remove four pins and shackles from four towing eyes.

GO TO NEXT PAGE
NOTE
Left rear of towing vehicle is connected to right front of disabled vehicle. Right rear of towing vehicle is connected to left front of disabled vehicle.

8. INSTALL TWO TOWING CABLES ON FRONT OF DISABLED VEHICLE AND REAR OF TOWING VEHICLE IN AN "X" PATTERN.
   a. Put shackle through end of tow cable.
   b. Place shackle on towing eye.
   c. Install pin through shackle and towing eye.
   d. Repeat steps a thru c until cables are connected.

PREPARE TO TOW DISABLED VEHICLE

CAUTION
Failure to put gear selector in TOW position may damage transmission of disabled vehicle. Check that gear selector of disabled vehicle is in TOW position.

NOTE
- Gear selector in TOW disables all transmission ranges. This lets vehicle freewheel. Vehicle still has brakes.
- Gear selector can be left in N (NEUTRAL) if propeller shafts have been removed.

9. MOVE DISABLED VEHICLE GEAR SELECTOR TO TOW AND PUSH DOWN TO LOCK.
10. RELEASE DISABLED VEHICLE HAND BRAKE.

11. START TOWING VEHICLE ENGINE. See task: START ENGINE, page 2-137.

**TOW DISABLED VEHICLE**

**WARNING**

Braking from high speeds when you tow with tow cables or tow bar can jackknife vehicles. Jackknife could injure soldiers and damage vehicles. Do not tow at speeds over 15 mph (25 km/hr).


13. STOP TOWING VEHICLE ENGINE. See task: STOP ENGINE, page 2-161.

**TOW START DISABLED VEHICLE**

14. DO BEFORE (B) PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

GO TO NEXT PAGE
15. MOVE MASTER POWER SWITCH IN DISABLED VEHICLE TO ON.

16. MOVE ENGINE ACCESSORY SWITCH IN DISABLED VEHICLE TO ON.

**WARNING**
Starting engine of disabled vehicle at high towing speed may cause disabled vehicle to hit towing vehicle. Soldiers could be injured. Check that throttle control on disabled vehicle is pushed all the way in.

17. MOVE FUEL CONTROL HANDLE TO ON.
   a. Press disabled vehicle FUEL PUSH TO RELEASE button.
   b. Push FUEL control handle to ON.
   c. Release FUEL PUSH TO RELEASE button.
CAUTION
Holding gear selector in TOW START for more than ten seconds will damage engine. Do not hold gear selector in TOW START for more than ten seconds.

NOTE
The next step requires a driver in both towing and disabled vehicles.

18. TOW START VEHICLE.
   a. Tow disabled vehicle at a speed of 10-15 mph (15-25 km/hr).
   b. When speed of 10-15 mph (15-25 km/hr) is reached, move disabled vehicle gear selector to TOW START.

WARNING
Shifting from TOW START to DRIVE could cause vehicle to jump forward and hit towing vehicle. Do not accelerate when you shift to DRIVE.

19. WHEN DISABLED VEHICLE STARTS:
   a. Move disabled vehicle gear selector to DRIVE.
   b. Slowly bring both vehicles to a stop.
   c. Move gear selector in both vehicle to N (NEUTRAL).
d. Pull hand brake of both vehicles all the way back.

20. CHECK DISABLED VEHICLE INSTRUMENT PANEL FOR NORMAL GAGE READINGS AND LIGHT INDICATIONS.

NOTE
Organizational maintenance must be notified if engine fails to start after three tries.


DISCONNECT VEHICLES WHEN USING TOW BAR

22. DISCONNECT TOW BAR FROM PINTLE OF TOWING VEHICLE.
   a. Remove cotter pin.
   b. Pull pintle hook latch towards you, and lift pintle open.
   c. Lift tow bar from pintle and set on ground. Have helper assist.
   d. Close pintle and lock with cotter pin.
23. DISCONNECT TOW BAR FROM TOWING EYES OF DISABLED VEHICLE.
   a. Have helper support tow bar.
   b. Remove retainer clip and remove pin.
   c. Lower tow bar to ground.
   d. Repeat a through c for second towing eye.

DISCONNECT VEHICLES WHEN USING TOW CABLES

24. REMOVE TOW CABLES FROM TOWING EYES.
   a. Drive towing vehicle backward until tow cables are slack. See task: DRIVE VEHICLE, page 2-153.
   b. Remove four pins and shackles from four towing eyes.
   c. Remove two tow cables from four shackles.
d. Stow two tow cables on vehicles.

TOW CABLE

e. Install four shackles and pins on four towing eyes.

TOWING EYE
PIN
SHACKLE

END OF TASK
GAIN ACCESS TO TURNED TURRET IN AN EMERGENCY

INITIAL SETUP

Personnel Required: Soldier

Equipment Conditions: Engine stopped (page 2-161)

WARNING
If you enter turret with turret power on, you may be injured or killed. Do not enter turret while turret power is on. Keep turret shield door closed and latched while turret power is on.

1. OPEN TURRET SHIELD DOOR.
   a. Push down free end of door latch to release it from right catch.
   b. Slide turret shield door to left until door latch locks on left catch.

2. PULL EMERGENCY RELEASE CABLE TO RELEASE COMMANDER'S HATCH COVER.

END OF TASK
CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION

OVERVIEW

This task explains the lubrication procedures you should use to keep your vehicle running trouble free. All lubrication equipment you will need is stowed on the vehicle.

LO 9-2350-252-12 lists lubrication procedures for crew and organizational maintenance of the vehicle. The driver and the gunner will lubricate the vehicle and check fluid levels.
Section II. TROUBLESHOOTING PROCEDURES

GENERAL

The TROUBLESHOOTING TABLE lists common malfunctions found while operating or servicing the IFV/CFV and its components. The TROUBLESHOOTING TABLE is divided into sections. Each section covers malfunctions common to the different systems of the vehicle (e.g., engine, track, suspension, ramp, etc.).

The TROUBLESHOOTING TABLE has three divisions: MALFUNCTION, TEST OR INSPECTION, and CORRECTIVE ACTION. The MALFUNCTIONS, or symptoms, are numbered in sequence through the TROUBLESHOOTING TABLE. The MALFUNCTION is what will bring you to the TROUBLESHOOTING TABLE.

TEST OR INSPECTION is a step you take to isolate the MALFUNCTION. Each TEST OR INSPECTION has a CORRECTIVE ACTION. These are “if” statements which tell you what to do when the MALFUNCTION is not fixed.

When you think you have solved the problem, go back to the MALFUNCTION and recheck all steps. Check that the original MALFUNCTION is no longer there.

The manual cannot list all possible malfunctions, nor all the tests and inspections, and corrective actions. If a malfunction is not listed, or is not corrected by the listed corrective action, notify your supervisor.

The TROUBLESHOOTING SYMPTOM INDEX is below. Note that the MALFUNCTIONS are listed in alphabetical order.

TROUBLESHOOTING SYMPTOM INDEX

BILGE PUMPS

Bilge pumps discharge little or no water ............... 3-34

GO TO NEXT PAGE

3-3
## TROUBLESHOOTING SYMPTOM INDEX (cont)

### ENGINE

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE COOLANT TEMP gage is in red zone</td>
<td>3-5</td>
</tr>
<tr>
<td>COOLANT HI TEMP warning light is on</td>
<td>3-11</td>
</tr>
<tr>
<td>TRANS OIL PRESS warning light is on</td>
<td>3-15</td>
</tr>
</tbody>
</table>

### EXHAUST

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive smoke from exhaust system</td>
<td>3-20</td>
</tr>
</tbody>
</table>

### PERSONNEL HEATER

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel heater will not start, or starts but shuts off</td>
<td>3-34</td>
</tr>
</tbody>
</table>

### RAMP

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp does not work properly</td>
<td>3-36</td>
</tr>
</tbody>
</table>

### TRACK AND SUSPENSION

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle leans or bottoms while driving</td>
<td>3-25</td>
</tr>
<tr>
<td>Vehicle pulls to one side on level ground</td>
<td>3-22</td>
</tr>
<tr>
<td>Road wheel and support roller hubs are hot</td>
<td>3-27</td>
</tr>
<tr>
<td>Track adjuster leaks grease</td>
<td>3-28</td>
</tr>
<tr>
<td>Track is loose</td>
<td>3-32</td>
</tr>
<tr>
<td>Track thumps while driving</td>
<td>3-23</td>
</tr>
</tbody>
</table>

### TRANSMISSION

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission overheats during normal operation</td>
<td>3-20</td>
</tr>
</tbody>
</table>
### TROUBLESHOOTING TABLE

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
</table>

**ENGINE SYSTEM**

1. ENGINE COOLANT TEMP GAGE IS IN RED ZONE.

Step 1. Check that COOLANT LOW LEVEL warning light is on.

a. IF ENGINE COOLANT TEMP gage is in red zone and COOLANT LOW LEVEL warning light is on:

Stop engine immediately. See task: STOP ENGINE, page 2-161.

**GO TO NEXT PAGE**
### TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 2.** Check coolant system for malfunction.

Remove power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

Lower trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.

Open power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113. Check bilge for coolant.

Check hoses, clamps, and fittings for coolant leaks.

---

**WARNING**

Hot power unit can burn you. Use care when working near power unit.
If leak is found, notify organizational maintenance.

If no leak is found, check coolant level. See task: CHECK/FILL RADIATOR, page 3-95.

If coolant level is low and no leaks are found, notify organizational maintenance.

If coolant level is OK, coolant low level warning system is malfunctioning.

Close power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.

Stow trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.

Install power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

Move TONE CANCEL/PUSH TO TEST switch up. Continue mission.

Notify organizational maintenance.

Step 3. Check that COOLANT LOW LEVEL warning light is off.

a. If ENGINE COOLANT TEMP gage is in red zone and COOLANT LOW LEVEL warning light is off:

![Coolant Temperature Gage Diagram]
<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop engine immediately. See task: STOP ENGINE, page 2-161.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4. Check coolant system for malfunction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WARNING**

How power unit can burn you. Use care when working near power unit.

Check for broken or loose coolant pump belt. If coolant pump belt is broken or loose, notify organizational maintenance.

Check for clogged intake screen. See task: RAISE/INSPECT/LOWER INTAKE SCREEN, page 3-41.
### TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td>Hot power unit can burn you. Use care when working near power unit.</td>
<td></td>
</tr>
</tbody>
</table>

Step 3. Check fan drive system.
- Remove quick release pin and open fan guard. Turn prop shaft.
- If fan does not turn, fan drive system is broken.
- Do not operate vehicle.
- Notify organizational maintenance.
- Close fan guard and install quick release pin.
- Push in and lock BYPASS button.

---

**GO TO NEXT PAGE**

3-13
### TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stow trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start engine. See page 2-137.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive vehicle under similar conditions of reported overheat. See task: DRIVE VEHICLE, page 2-153.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. If ENGINE COOLANT TEMP gage remains in green zone, fan controller is malfunctioning.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of engine coolant temp gage with green zone]
### TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Move TONE CANCEL / PUSH TO TEST switch up.

Continue mission.

Notify organizational maintenance.

#### TONE CANCEL / PUSH TO TEST SWITCH

2. COOLANT HI TEMP WARNING LIGHT IS ON.

   Step 1. Check that ENGINE COOLANT TEMP gage is not in red zone.

   a. If COOLANT HI TEMP warning light is on and ENGINE COOLANT TEMP gage is in red zone:

   - ENGINE COOLANT TEMP GAGE
   - RED ZONE
   - COOLANT HI TEMP WARNING LIGHT
   - GO TO NEXT PAGE

3-11
TROUBLESHOOTING TABLE (cont)

**ENGINE SYSTEM (cont)**

Stop engine immediately. See task: STOP ENGINE, page 2-161.

Step 2. Check coolant system for malfunction.

Remove power unit access panels. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

Lower trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.

Open power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.

**WARNING**

How power unit can burn you. Use care when working near power unit.

Check for broken or loose coolant pump belt. If coolant pump belt is broken or loose, notify organizational maintenance.

Check for clogged intake screen. See task: RAISE/INSPECT/LOWER INTAKE SCREEN, page 3-41.
<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move TONE CANCEL/PUSH TO TEST switch up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continue mission.</td>
<td>Notify organizational maintenance.</td>
<td></td>
</tr>
</tbody>
</table>

3. TRANS OIL PRESS WARNING LIGHT IS ON.

Step 1. Check for transmission oil leakage.

Stop engine immediately. See task: STOP ENGINE, page 2-161.
<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower trim vane. See task: LOWER/STOW TRIM VANE, page 2-237.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open power unit access door. See task: OPEN/CLOSE POWER UNIT ACCESS DOOR, page 2-113.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WARNING**

Hot power unit can burn you. Use care when working near power unit.

Look for oil leaks in bilge, around transmission, and on fan.
ENGINE SYSTEM (cont)

a. If transmission oil leak is found, do not operate vehicle. Notify organizational maintenance.

b. If no transmission oil leak is found, turn handle to left until dipstick can be removed.
Pull dipstick from tube.
Wipe dipstick with wiping rag.
Insert dipstick into tube.
Pull dipstick from tube.
Check transmission oil level.
Insert dipstick into tube.
Turn handle to right until secure.

If transmission oil level is below ADD mark, do not start engine.

Notify organizational maintenance.
TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If transmission oil level is above ADD mark, start engine. See page 2-137.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check oil level with engine running. See task: CHECK/ADD TRANSMISSION OIL, page 3-103.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If transmission oil level is below ADD mark, stop engine. See page 2-161.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notify organizational maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If transmission oil level is above ADD mark, move gear selector to DRIVE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerate at full power to about 20 mph (30 kmh).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALFUNCTION</td>
<td>TEST OR INSPECTION</td>
<td>CORRECTIVE ACTION</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>ENGINE SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If acceleration feels sluggish and engine is running at full speed, transmission hydraulic system is malfunctioning.

Stop engine. See page 2-161.

Notify organizational maintenance.

If full power acceleration is normal and transmission oil level is at or above ADD mark, transmission oil pressure warning system is malfunctioning.

![ADD MARK](image)

Move TONE CANCEL/PUSH TO TEST switch up.

Continue mission.

Notify organizational maintenance.

![TONE CANCEL/PUSH TO TEST SWITCH](image)
**EXHAUST SYSTEM**

4. **EXCESSIVE SMOKE FROM EXHAUST SYSTEM.**

   Step 1. Check that **AIR CLEANER CLOGGED** warning light is off.

   ![Diagram of air cleaner clogged warning light]

   a. If **AIR CLEANER CLOGGED** warning light is on, notify organizational maintenance.

**TRANSMISSION SYSTEM**

5. **TRANSMISSION OVERHEATS DURING NORMAL OPERATIONS.**

   Step 1. Check that **TRANS OIL TEMP** warning light is off.

   ![Diagram of transmission oil temp warning light]

   a. If **TRANS OIL TEMP** warning light flashes or stays on, check transmission oil level. See task: CHECK/ADD TRANSMISSION OIL, page 3-103.
### TRANSMISSION SYSTEM (cont)

**WARNING**

Hot power unit can burn you. Use care when working near hot power unit.

Step 2. Check that transmission oil filter indicator is not tripped.

1. **TRANSMISSION OIL FILTER INDICATOR**
   - If transmission oil indicator is tripped, notify organizational maintenance.

**GO TO NEXT PAGE**

3-21
6. VEHICLE PULLS TO ONE SIDE ON LEVEL GROUND.

   Step 1. Check that steering yoke returns to centered position.

   Turn steering yoke all the way to either right or left.
   Release steering yoke.
   a. If steering yoke does not return to centered position, notify organizational maintenance.

   Step 2. Adjust track tension. See page 3-45.
   a. If track cannot be adjusted to proper tension, notify organizational maintenance.
### TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
</table>

#### TRACK AND SUSPENSION SYSTEM (cont)

7. TRACK THUMPS WHILE DRIVING.

Step 1. Check that track shoe pads are not badly worn, severely chunked, or missing.

Look at bottom of track shoe pads to see if they are worn below the metal, badly chunked, or missing.

a. If track shoe pads are worn below the metal, badly chunked, or missing, notify organizational maintenance.

GO TO NEXT PAGE
**TROUBLESHOOTING TABLE** (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
</table>

**TRACK AND SUSPENSION SYSTEM** (cont)

Step 2. Check that road wheels are not chunked or defective.

Look on bottoms and round edges of road wheels for loose rubber or missing chunks.

a. If road wheels are chunked or defective, notify organizational maintenance.

3-24
## TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
</table>

### TRACK AND SUSPENSION SYSTEM (cont)

8. VEHICLE LEANS OR BOTTOMS WHILE DRIVING.

Step 1. Check that torsion bars are not broken.

Lift each roadwheel with crowbar.

a. If road wheel can be raised easily, torsion bar is broken. Notify organizational maintenance.

**GO TO NEXT PAGE**
Step 2. Check shock absorbers for leaks.

a. If shock absorbers leak, notify organizational maintenance.

b. If shock absorbers do not leak and vehicle continues to lean or bottom, notify organizational maintenance.
9. ROAD WHEEL AND SUPPORT ROLLER HUBS ARE HOT.

   Step 1. Check that oil level in sight glass is full. Check that there are not bubbles and oil is not milky.

   a. If oil level is less than full or oil has bubbles or is milky, notify organizational maintenance.
## Troubleshooting Table (cont)

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Test or Inspection</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>

### Track and Suspension System (cont)

10. Track Adjuster Leaks Grease.

   Step 1. Check that track adjuster does not leak grease at point where piston fits into cylinder.

   a. If track adjuster leaks grease at point where piston fits into cylinder, go to step 2.

   b. If track adjuster does not leak grease, go to step 4.

---

3-28
### TRACK AND SUSPENSION SYSTEM (cont)

**Step 2.** Check that piston on track adjuster is not extended to its maximum position.

- **a.** If piston is fully extended, go to step 3.
- **b.** If piston is not fully extended, notify organizational maintenance.

**Step 3.** Adjust track tension. See page 3-45.

**GO TO NEXT PAGE**
### TRACK AND SUSPENSION SYSTEM (cont)

**Step 4.** Check that track adjuster grease fitting does not leak.

**a.** If track adjuster grease fitting leaks, replace it. See task: REPLACE TRACK ADJUSTER GREASE FITTING, page 3-75.
Step 5. Check that track adjuster does not leak grease from bleed valve.

NOTE
On right side of vehicle, bleed valve is on top of track adjuster. On left side of vehicle, bleed valve is on bottom of track adjuster.

a. If track adjuster leaks grease from bleed valve, tighten bleed valve with 5/8 inch combination wrench.

b. If track adjuster still leaks grease from bleed valve, notify organizational maintenance.

GO TO NEXT PAGE
### TRACK AND SUSPENSION SYSTEM (cont)

**WARNING**

Hot hubs can burn you. Use care when working near support rollers.

11. TRACK IS LOOSE.

   **Step 1.** Check that support roller mount is firmly in place and support roller is not loose or missing.

   a. If support roller mount is not firmly in place or support roller is loose or missing, notify organizational maintenance.

   b. If support roller mount is firmly in place and support roller is not loose or missing, go to step 2.
## TROUBLESHOOTING TABLE (cont)

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>TEST OR INSPECTION</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACK AND SUSPENSION SYSTEM (cont)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Step 2.
Check that torsion bars are not broken.

Lift each road wheel with crowbar.

![Tank with road wheel and crowbar highlighted](image)

- If road wheel can be raised easily, torsion bar is broken. Notify organizational maintenance.

### Step 3.
Adjust track tension. See page 3-45.

- If track still cannot be adjusted, notify organizational maintenance.

GO TO NEXT PAGE

---

3-33
TROUBLESHOOTING TABLE (cont)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

BILGE PUMPS SYSTEM

12. BILGE PUMPS DISCHARGE LITTLE OR NO WATER.

Step 1. Service bilge pumps. See page 3-87.

   a. If bilge pumps still fail to pump water, notify organizational maintenance.

PERSONNEL HEATER SYSTEM

13. PERSONNEL HEATER WILL NOT START, OR STARTS BUT SHUTS OFF.

Step 1. Check that personnel heater fuel valve is open.

Traverse turret to 5200 mils. See TM 9-2350-252-10-2.

Reach down and turn personnel heater fuel valve to left until fully open.

   a. If personnel heater does not start, or starts but shuts off, go to step 2.
TROUBLESHOOTING TABLE (cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

PERSONNEL HEATER SYSTEM (cont)

Step 2. Check that hot air ducts are not clogged.

a. If hot air ducts are clogged, clean debris from ducts.

b. If personnel heater still does not start, or starts but shuts off, notify organizational maintenance.

GO TO NEXT PAGE
14. RAMP DOES NOT WORK PROPERLY.

   Step 1. Check ramp hydraulic power unit. See page 3-107.


   a. If nothing is found blocking the ramp closure and ramp still does not work properly, notify organizational maintenance.
# Section III. MAINTENANCE PROCEDURES

## TASK INDEX

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raise/Inspect/Lower Intake Screen</td>
<td>3-41</td>
</tr>
<tr>
<td>Patch Water Barrier</td>
<td>3-43</td>
</tr>
<tr>
<td>Adjust Track Tension</td>
<td>3-45</td>
</tr>
<tr>
<td>Install Track</td>
<td>3-49</td>
</tr>
<tr>
<td>Remove Track Shoe From Stretched</td>
<td>3-53</td>
</tr>
<tr>
<td>Replace Track Shoe</td>
<td>3-57</td>
</tr>
<tr>
<td>Break/Join Track</td>
<td>3-63</td>
</tr>
<tr>
<td>Remove/Install Track Shoe Pads</td>
<td>3-71</td>
</tr>
<tr>
<td>Replace Track Adjuster</td>
<td></td>
</tr>
<tr>
<td>Grease Fitting</td>
<td>3-75</td>
</tr>
<tr>
<td>Service Final Drive</td>
<td>3-77</td>
</tr>
<tr>
<td>Check Vehicle Batteries</td>
<td>3-81</td>
</tr>
<tr>
<td>Service Bilge Pumps</td>
<td>3-87</td>
</tr>
<tr>
<td>Check/Fill Radiator</td>
<td>3-95</td>
</tr>
<tr>
<td>Check/Add Engine Oil</td>
<td>3-99</td>
</tr>
<tr>
<td>Check/Add Transmission Oil</td>
<td>3-103</td>
</tr>
<tr>
<td>Check Ramp Hydraulic Power Unit</td>
<td>3-107</td>
</tr>
</tbody>
</table>

3-39 (3-40 blank)
RAISE/INSPECT/LOWER INTAKE SCREEN

INITIAL SETUP

Personnel Required:
Driver

References:
TM 9-2350-252-10-2

Equipment Conditions:
Engine stopped (page 2-161)

1. ELEVATE 25MM GUN TO 1050 MILS. See TM 9-2350-252-10-2.

2. RAISE INTAKE SCREEN.
   a. Push in two buttons of two quick release pins.
   b. Pull two quick release pins out.
   c. Unlock two tab locks on intake screen.
   d. Raise intake screen.

GO TO NEXT PAGE
3. INSPECT INTAKE SCREEN.
   a. Clean debris from intake screen.
   b. Check intake screen for damage.
   c. Report damaged intake screen to organizational maintenance.

4. LOWER INTAKE SCREEN.
   a. Lower intake screen.
   b. Push in two buttons of two quick release pins.
   c. Insert two quick release pins into holes.
   d. Lock two tab locks.

5. DEPRESS 25MM GUN TO 0 MILS. See TM 9-2350-252-10-2.

END OF TASK
PATCH WATER BARRIER

INITIAL SETUP

Tools: Water barrier repair kit (Item 27, App B)

Personnel Required: Soldier

Helper (H)

Material/Parts: Wiping rag (Item 9, App D)

Equipment Conditions: Engine stopped (page 2-161)

NOTE If water barrier is to be repaired in front, it will not be possible to fully erect it.

1. ERECT WATER BARRIER. See page 2-263.

2. UNSTOW WATER BARRIER REPAIR KIT FROM STOWAGE BOX.

CAUTION Petroleum products will damage water barrier. Use only water and clean wiping rag to clean water barrier.

3. EXAMINE HOLE OR DAMAGE TO WATER BARRIER.
   a. If hole or damaged area is larger than patch in water barrier repair kit, notify organizational maintenance. Go to step 7.
   b. If hole or damaged area is not larger than patch in water barrier repair kit, go to step 4.
4. CLEAN DAMAGED AREA OF WATER BARRIER.
   a. Clean damaged area with water and allow to dry. Use wiping rag.

5. APPLY ADHESIVE.
   a. Apply adhesive evenly on two patches. Allow adhesive to dry until tacky.

   NOTE
   Patch must overlap hole by at least 3/4 inch (1.9 cm).

6. APPLY PATCHES TO BOTH SIDES OF WATER BARRIER.
   b. Press out all bubbles.

7. STOW WATER BARRIER REPAIR KIT IN STOWAGE BOX.


END OF TASK
ADJUST TRACK TENSION

INITIAL SETUP

Tools:
- Open end wrench, 5/8 inch (Item 51, App B)
- Grease gun (Item 29, App B)

Materials/Parts:
- Grease, GAA (Item 6, App D)
- Wiping rag (Item 9, App D)
- Pencil

Personnel Required:
- Soldier

Equipment Conditions:
- Engine stopped (page 2-161)

1. START ENGINE. See page 2-137.

2. DRIVE VEHICLE SLOWLY TO FIRM, LEVEL GROUND. See task: DRIVE VEHICLE, page 2-153.

NOTE
- Vehicle should not be stopped with brake pedal or hand brake.
- Vehicle should not be steered while coasting to a stop.

3. LET VEHICLE COAST TO A STOP.

4. STOP ENGINE. See page 2-161.

GO TO NEXT PAGE
NOTE
This procedure tells how to adjust tension on right track. The procedure for adjusting tension on left track is the same. Checks for both right and left tracks are made at rear support roller.

5. CHECK TRACK TENSION.
   a. Reach under bolt-on armor and try to turn rear support roller. If rear support roller does not turn freely, track is too loose. Go to step 6.
   b. If rear support roller turns freely, try to pass your index finger between track and rear support roller. If your index finger passes, track is too tight. Go to step 9.
   c. If your index finger cannot pass between track and rear support roller, and rear support roller turns freely, track needs no adjustment.
6. TIGHTEN TRACK TENSION.
   a. Clean all dirt from grease fitting on track adjuster and grease gun nozzle.
   b. Place grease gun nozzle on grease fitting, and pump grease into track adjuster.
   c. Place pencil between track and rear support roller. When pencil will fit between track and rear support roller, but your index finger will not, stop adding grease.
   d. Remove grease gun nozzle from grease fitting. Wipe away excess grease. Use wiping rag.
   e. If correct adjustment cannot be made, go to step 7.
7. CHECK TRACK ADJUSTER.
   a. If grease is coming out of track adjuster through bleed hole, track adjuster has reached its limit. Go to step 8.
   b. If no grease is coming out of bleed hole, go to step 9.


9. LOOSEN TRACK TENSION.
   a. Loosen, but do not remove, bleed valve. Use 5/8 inch open end wrench.
   b. Let small amount of grease flow out.
   c. Check distance between track and rear support roller. Pass pencil between track and rear support roller. When pencil will pass between track and rear support roller, but your index finger will not, stop removing grease from track adjuster.
   d. Tighten bleed valve. Use 5/8 inch open end wrench.
   e. Wipe up excess grease. Use wiping rag.

END OF TASK

3-48
INSTALL TRACK

INITIAL SETUP

Tools:
Crowbar (Item 7, App B)

Equipment Conditions:
Engine stopped (page 2-161)
Track thrown, partially thrown, or to be replaced

Personnel Required:
Driver
Helper (H) (3)

NOTE
This procedure tells how to install left track from front of vehicle. Procedure for installing right track from front of vehicle is the same. Track can also be installed from rear of vehicle.

1. BREAK TRACK. See task: BREAK JOIN TRACK, page 3-63.

   NOTE
   The following steps will require three helpers. Two helpers will move track while vehicle is driven backward or forward very slowly. One helper will act as ground guide.

2. START ENGINE. See page 2-137.

3. DRIVE VEHICLE BACKWARD VERY SLOWLY UNTIL IT IS ALL THE WAY OFF TRACK. HAVE HELPER ACT AS GROUND GUIDE. See task: DRIVE VEHICLE, page 2-153.

GO TO NEXT PAGE
4. STOP ENGINE. See page 2-161.

5. PLACE TRACK IN STRAIGHT LINE IN FRONT OF VEHICLE'S ROAD WHEELS.

6. START ENGINE. See page 2-137.

7. DRIVE VEHICLE FORWARD VERY SLOWLY OVER TRACK UNTIL NINE TRACK SHOES ARE AHEAD OF FIRST ROAD WHEEL. CHECK THAT TRACK GUIDES ARE CENTERED IN ROAD WHEEL SLOTS. See task: DRIVE VEHICLE, page 2-153.

8. STOP ENGINE. See page 2-161.

WARNING

Hands could be crushed. Do not put hands near sprocket or track while engine is running. Always use crowbar and track pin to move track.

9. (H) (2) GUIDE TRACK OVER SPROCKET.
   a. Insert track pin part way into first track shoe hole.
   b. Lift track with crowbar and track pin, and place it on sprocket.
   c. Lever crowbar against ground and track to hold track against sprocket.
10. START ENGINE. See page 2-137.

NOTE
Driver should turn steering yoke to left to take up slack on left track.
Driver should turn steering yoke to right to take up slack on right track.

11. DRIVE VEHICLE BACKWARD VERY SLOWLY UNTIL TRACK IS OVER SPROCKET. HAVE HELPERS GUIDE TRACK BACK OVER ROAD WHEELS. ONE HELPER SHOULD HOLD TRACK PIN AND THE OTHER HELPER SHOULD MOVE TRACK WITH CROWBAR. See task: DRIVE VEHICLE, page 2-153.

12. STOP ENGINE. See page 2-161.

13. REMOVE TRACK PIN.


END OF TASK
**INITIAL SETUP**

**Tools:**
- Socket, 9/16 inch (Item 46, App B)
- Socket wrench, 1/2 inch drive (Item 21, App B)
- T-bar handle, 3/4 inch drive (Item 22, App B)
- Socket, 15/16 inch (Item 47, App B)
- Drift pin (Item 10, App B)
- Sledge hammer (Item 19, App B)
- Hammer, 2 lb (Item 18, App B)

**Personnel Required:**
- Driver
- Helper (H)

**Equipment Conditions:**
- Vehicle on level surface
- Engine stopped (page 2-161)

1. **BREAK TRACK.** See task: BREAK/JOIN TRACK, page 3-63.

2. **REMOVE TRACK SHOE FROM BROKEN TRACK.**
   a. Remove nut from track pin of track shoe to be replaced. Use 3/4 inch drive T-bar and 15/16 inch socket.
b. Drive track pin partly out. Use sledge hammer and short end of drift pin. Remove drift pin.

c. Drive track pin farther out. Use sledge hammer and medium end of drift pin. Remove drift pin.

d. Drive track pin all the way out. Use sledge hammer and long end of drift pin. Remove drift pin.

e. Tap track shoe loose. Use sledge hammer.
NOTE
The following procedure is the same for both mounting areas.

3. STOW SPARE TRACK SHOE AND TRACK PIN.
   a. Tap track pin into track shoe. Use hammer.
   b. Install nut on track pin. Use 3/4 inch drive T-bar and 15/16 inch socket.
   c. Remove two screws, washers, and clamps from hull. Use 1/2 inch drive ratchet and 9/16 inch socket.
   d. Put track shoe over mounting holes.
   e. Install and tighten washers and screws. Use 1/2 inch drive ratchet and 9/16 inch socket.

4. JOIN TRACK. See task: BREAK/JOIN TRACK, page 3-63.

END OF TASK

3-55 (3-56 blank)
REPLACE TRACK SHOE

INITIAL SETUP

Tools:
- T-bar handle, 3/4 inch drive (Item 22, App B)
- Socket, 15/16 inch (Item 47, App B)
- Socket, 9/16 inch (Item 46, App B)
- Socket wrench, 1/2 inch drive (Item 21, App B)
- Sledge hammer (Item 19, App B)
- Hammer, 2 lb (Item 18, App B)
- Drift pin (Item 10, App B)

Personnel Required:
- Driver

Equipment Conditions:
- Vehicle on level surface
- Engine stopped (page 2-161)

NOTE
This procedure tells how to replace track shoe in left track (front or rear). Procedure to replace track shoe in right track (front or rear) is the same.

1. BREAK TRACK TO REMOVE TRACK SHOE. See task: BREAK JOIN TRACK, page 3-63.

NOTE
Removal of spare track shoe and track pin is the same for both mounting areas.

2. REMOVE SPARE TRACK SHOE AND TRACK PIN.
   a. Remove two screws, washers, and clamps from hull. Use 1/2 inch drive socket wrench and 9/16 inch socket.
   b. Remove spare track shoe and track pin.

GO TO NEXT PAGE
c. Install two clamps, washers, and screws. Tighten screws. Use 1/2 inch drive socket wrench and 9/16 inch socket.

3. REMOVE TRACK SHOE FROM BROKEN TRACK.
   a. Remove nut from track pin of shoe to be replaced. Use 3/4 inch drive T-bar handle and 15/16 inch socket.
   b. Drive track pin partly free. Use sledge hammer and short end of drift pin. Remove drift pin.
   c. Drive track pin farther out. Use sledge hammer and medium end of drift pin. Remove drift pin.
d. Drive track pin all the way out. Use sledge hammer and long end of drift pin. Keep medium end up and remove drift pin.

e. Tap track shoe loose. Use sledge hammer.

4. INSTALL SPARE TRACK SHOE ON BROKEN TRACK.
   a. Remove nut from track pin. Use 3/4 inch drive T-bar handle and 15/16 inch socket.
   b. Drive track pin partly free. Use sledge hammer and medium end of drift pin. Remove drift pin.
c. Drive track pin all the way out. Use sledge hammer and long end of drift pin. Keep medium end up and remove drift pin.

![Diagram of track pin]

- **MEDIUM END**
- **DRIFT PIN**
- **LONG END**

![Diagram of track pin holes]

- **TRACK SHOE**
- **TRACK PIN HOLE**
- **LEVEL SURFACE**

**3-60**

d. Place track shoe in lower part of track. Aline track pin holes. Use hammer.

![Diagram of track shoe]

- **TRACK SHOE**
- **15° LEVEL SURFACE**

**3-60**

e. Adjust track shoe with hammer to get 15 degree offset of track shoe. From inside of track, drive track pin into track pin hole. Use hammer.

![Diagram of track pin and hammer]

- **TRACK PIN**
- **HOLE**
- **HAMMER**

**3-60**
f. Install nut on track pin. Use 3/4 inch drive T-bar handle and 15/16 inch socket.

g. Mark nut for torquing by organizational maintenance.

5. JOIN TRACK. See task: BREAK/JOIN TRACK, page 3-63.
BREAK/JOIN TRACK

DESCRIPTION

This task covers: Break Track (page 3-63). Join Track (page 3-66).

INITIAL SETUP

Tools:

T-bar handle, 3/4 inch drive (Item 22, App B)
Socket, 15/16 inch (Item 47, App B)
Open end wrench, 5/8 inch (Item 51, App B)
Open end wrench, 1 3/8 inch (Item 52, App B)
Sledge hammer (Item 19, App B)
Drift pin (Item 10, App B)
Track fixtures (2) (Item 15, App B)
Crowbar (Item 7, App B)
Ruler, 6 inch (Item 41, App B)
Hammer, 2 lb (Item 18, App B)

Materials/Parts:

Wiping rag (Item 9, App D)

Personnel Required:

Driver
Helper (H)

Equipment Conditions:

Engine stopped (page 2-161)

NOTE

This procedure tells how to break and join left track (front). The procedure to break and join right and left tracks (front and rear) is the same.

BREAK TRACK

1. UNSTOW TWO TRACK FIXTURES AND DRIFT PIN.
   a. Pull out and lift up two rubber straps.
   b. Remove two track fixtures and drift pin.

GO TO NEXT PAGE
2. START ENGINE. See page 2-137.

3. DRIVE VEHICLE SLOWLY UNTIL TRACK BREAK POINT IS REACHED. See task: DRIVE VEHICLE, page 2-153.

4. STOP ENGINE. See page 2-161.

5. RELEASE TRACK TENSION.
   a. Loosen, but do not remove, bleed valve on track adjuster. Use 5/8 inch open end wrench.
   b. Let grease flow out.
   c. Tighten bleed valve. Use 5/8 inch open end wrench.
   d. Wipe away spilled grease. Use wiping rag.

6. BREAK TRACK.
   a. Remove nut from track pin to be removed. Use 3/4 inch drive T-bar handle and 15/16 inch socket.
b. Drive track pin partly free with short end of drift pin. Use sledge hammer. Remove drift pin.

c. Drive track pin farther out with medium end of drift pin. Use sledge hammer. Remove drift pin.

d. Drive track pin all the way out with long end of drift pin. Use sledge hammer. Keep medium end up and remove drift pin.

e. To break track, hit track shoe from inside of track. Use sledge hammer.
7. RELEASE HAND BRAKE.

NOTE
Hex nut on track fixture must be centered between hooks for correct use.

8. INSTALL TWO TRACK FIXTURES.
   a. Position hooks same distance apart at ends of two track fixtures. Turn hex nuts to position hooks.
   b. Move ends of track together with crowbar.
   c. Install track fixture on outside of track. Place hooks of track fixture in second track shoe slots.
d. Install track fixture on inside of track. Place hooks of track fixture in second track shoe slots.

e. Tighten two track fixtures evenly. Use 1 3/8 inch open end wrench. Turn two hex nuts until ends of track are about 1/16 inch apart. Use 6 inch ruler.

CAUTION
Track pin threads are easily damaged. Do not force track pin. Tap track pin lightly with hammer.

NOTE
• If track is difficult to join, step 5 can be repeated to release more track tension.

• As track pin moves through track pin hole, track pin will push drift pin out ahead of it.

9. JOIN TRACK.
a. Aline track pin holes. Use crowbar and sledge hammer.
b. Tap long end of drift pin through track pin holes to other side of track. Use sledge hammer. Loosen or tighten track fixture as needed. Use 1 3/8 inch open end wrench.

c. Have helper hold track about 1 1/2 inches from track fixture. Have helper use crowbar to hold track. Use 6 inch ruler to measure distance.

d. From inside of track, install track pin in track pin hole. As helper aligns track pin holes with crowbar, lightly tap in track pin. Drive track pin all the way through track. Use hammer.
e. Install and tighten nut on track pin until one full thread shows on track pin. Use 3/4 inch drive T-bar handle and 15/16 inch socket.

f. Mark nut so organizational maintenance can torque it.

10. REMOVE TWO TRACK FIXTURES.
   a. Loosen two track fixtures. Use 1 3/8 inch open end wrench.
   b. Remove two track fixtures.

11. ADJUST TRACK TENSION. See page 3-45.

12. STOW DRIFT PIN AND TWO TRACK FIXTURES.
   a. Position drift pin and two track fixtures on hull.
   b. Secure drift pin and two track fixtures with two rubber straps.

END OF TASK

3-69 (3-70 blank)
REMOVE/INSTALL TRACK SHOE PADS

INITIAL SETUP

Tools:
- T-bar handle, 3/4 inch drive (Item 22, App B)
- Socket, 15/16 inch (Item 47, App B)
- Hammer, 2 lb (Item 18, App B)

Personnel Required:
- Driver
- Helper (H)

Equipment Conditions:
- Engine stopped (page 2-161)

REMOVE

CAUTION
Grousers wear out quickly without track shoe pads. Do not drive on pavement without pads. Remove pads only to drive on slippery soil, snow or ice.

NOTE
Track shoe pads should be removed from track shoes between drive sprocket and first road wheel or between idler wheel and sixth road wheel.

1. REMOVE TRACK SHOE PADS.
   a. Remove nut. Use 3/4 inch drive T-bar handle and 15/16 inch socket.
   b. Tap on threaded stud, and remove track shoe pad. Use hammer.

2. START ENGINE. See page 2-137.
WARNING
Vehicle tracks with track shoe pads can slide on pavement. Soldiers could be injured. Allow plenty of room for stops, and slow down for turns.

WARNING
Hands could be crushed. Do not work on track shoe pads while engine is running.

3. REMOVE ALL TRACK SHOE PADS YOU CAN REACH. DRIVE VEHICLE VERY SLOWLY TO BRING UP MORE TRACK SHOE PADS. HAVE HELPER SIGNAL WHEN TRACK SHOES ARE POSITIONED. See task: DRIVE VEHICLE, page 2-153.

4. STOP ENGINE. See page 2-161.

5. REPEAT STEPS 1 THRU 4 UNTIL ALL TRACK SHOE PADS ARE REMOVED.

6. STOW TRACK SHOE PADS IN VEHICLE.

INSTALL

7. UNSTOW TRACK SHOE PADS FROM VEHICLE.

3-72
NOTE
• Track shoe hole should be cleaned before installing track shoe pads.
• Track shoe pads can be installed in track shoes between drive sprocket and first road wheel or between idler wheel and the sixth road wheel.

8. INSTALL TRACK SHOE PADS.
   a. Put threaded stud through track shoe hole from under track.
   b. Install nut on threaded stud. Use 3/4 inch drive T-bar handle and 15/16 inch socket.

9. START ENGINE. See page 2-137.

10. INSTALL ALL TRACK SHOE PADS YOU CAN REACH. DRIVE VEHICLE VERY SLOWLY TO BRING UP MORE TRACK. HAVE HELPER SIGNAL WHEN TRACK IS POSITIONED. See task: DRIVE VEHICLE, page 2-153.

11. STOP ENGINE. See page 2-161.

12. REPEAT STEPS 8 THRU 11 UNTIL ALL TRACK SHOE PADS ARE INSTALLED.

13. MARK ALL TRACK SHOE PADS THAT HAVE BEEN REPLACED. NOTIFY ORGANIZATIONAL MAINTENANCE TO TORQUE NUTS.

END OF TASK
REPLACE TRACK ADJUSTER GREASE FITTING

INITIAL SETUP

Tools:
- Socket wrench, 1/2 inch drive (Item 21, App B)
- Socket, 7/16 inch (Item 47, App B)
- Open end wrench, 5/8 inch (Item 51, App B)

Personnel Required:
- Driver

Equipment Conditions:
- Engine stopped (page 2-161)

Materials/Parts:
- Wiping rag (Item 9, App D)
- Grease fitting — MS 15003-1

1. RELEASE TRACK TENSION.
   a. Loosen, but do not remove, bleed valve on track adjuster. Use 5/8 inch open end wrench.
   b. Let grease flow out.
   c. Tighten bleed valve. Use 5/8 inch open end wrench.
   d. Wipe away grease. Use wiping rag.

GO TO NEXT PAGE
2. REMOVE GREASE FITTING FROM TRACK ADJUSTER.
   a. Wipe dirt or sand from grease fitting. Use wiping rag.
   b. Unscrew grease fitting from track adjuster. Use 1/2 inch drive socket wrench and 7/16 inch socket.

3. INSTALL NEW GREASE FITTING ON TRACK ADJUSTER.
   a. Install new grease fitting on track adjuster. Tighten grease fitting. Use 1/2 inch drive socket wrench and 7/16 inch socket.

4. ADJUST TRACK TENSION. See page 3-45.

END OF TASK
SERVICE FINAL DRIVE

INITIAL SETUP

Tools:
- Crowbar (Item 7, App B)
- Socket wrench, 1/2 inch drive (Item 21, App B)
- Socket, 3/4 inch (Item 47, App B)
- Funnel — 7240-00-559-7364

Personnel Required:
- Driver

Materials/Parts:
- Engine oil, HDO-grade 30 (Item 7, App D)
- Wiping rag (Item 9, App D)

References:
- LO 9-2350-252-12

Equipment Conditions:
- Engine stopped (page 2-161)

1. LOWER TRIM VANE. See task: LOWER/STOW TRIM VANE, page 2-237.


WARNING
Transmission could be hot. Hot transmission can burn you. Use care when working near transmission casing.

3. CHECK RIGHT FINAL DRIVE OIL LEVEL.
   a. Turn handle 1/4 turn left, and remove dipstick.
   b. Wipe dipstick. Use wiping rag.
   c. Install dipstick in dipstick tube.

GO TO NEXT PAGE
d. Remove dipstick, and check oil level.

e. If oil level is below ADD mark on dipstick, go to step 4. If oil level is between FULL mark and ADD mark, install dipstick and go to step 6.

4. ADD OIL TO RIGHT FINAL DRIVE.

a. Add oil, as needed, into dipstick tube. See LO 9-2350-252-12. Use funnel.

b. Install dipstick in dipstick tube.

5. CHECK RIGHT FINAL DRIVE OIL LEVEL. REPEAT STEP 3.

6. REMOVE ROUND ACCESS COVER.

a. Remove four screws and washers. Use 1/2 inch drive socket wrench and 3/4 inch socket.

b. Pry open and remove round access cover. Use crowbar.

7. CHECK LEFT FINAL DRIVE OIL LEVEL.

a. Turn handle 1/4 turn left, and remove dipstick.

b. Wipe dipstick. Use wiping rag.

c. Install dipstick in dipstick tube.
d. Remove dipstick, and check oil level.

e. If oil level is below ADD mark on dipstick, go to step 8. If oil level is between FULL mark and ADD mark, install dipstick and go to step 10.

8. ADD OIL TO LEFT FINAL DRIVE.

a. Add oil, as needed, into dipstick tube. See LO 9-2350-252-12. Use funnel.

b. Install dipstick in dipstick tube.

9. CHECK LEFT FINAL DRIVE OIL LEVEL. REPEAT STEP 7.

10. INSTALL ROUND ACCESS COVER.

a. Install round access cover, four washers, and screws. Use 1/2 inch drive socket wrench and 3/4 inch socket.


END OF TASK
CHECK VEHICLE BATTERIES

INITIAL SETUP

Tools:

Flashlight (Item 16, App B)

Materials/Parts:

Wiping rag (Item 9, App D)

Personnel Required:

Driver

Equipment Conditions:

Engine stopped (page 2-161)

NOTE

Steps 1 and 2 are for IFV only. If checking batteries in CFV, instructions begin with step 3.

1. RAISE SEAT NO. 4 TO TOP POSITION.
   a. Pull four locking pins from mounting bracket.
   b. Raise seat No. 4 to top position.
   c. Install four locking pins in mounting bracket.


GO TO NEXT PAGE
WARNING

Battery posts and cables touched by metal objects can short circuit and burn you or injure you. Use caution when you work with tools or other metal objects. Do not wear jewelry when you work on electrical system.

3. REMOVE REAR BATTERY COMPARTMENT COVER.
   a. Pull up on two latches.
   b. Unhook two latches from slots.
   c. Remove rear battery compartment cover.

WARNING

Gas from batteries can explode and injure you. Do not allow sparks near batteries. Battery acid can burn or blind you. Do not get acid on your skin or eyes.

NOTE

If batteries are missing, notify organizational maintenance.

4. CHECK BATTERY HOLD DOWNS.
   a. Hold each battery hold down with both hands and try to move it.
   b. If batteries move or seem loose, notify organizational maintenance.
5. CHECK BATTERY CONNECTIONS.
   a. Check that each clamp is all the way down on terminal post.

   b. Try to twist each clamp with thumb and first two fingers.

   c. Check to see if cables are securely connected to clamp.

   d. If any clamp or connection is loose, notify organizational maintenance.

6. CHECK BATTERY ELECTROLYTE LEVEL.
   a. Remove filler cap from each battery cell.
   b. Using a flashlight, look down into each cell and check for "eye shape".
   c. If you don't see the eye shape in each cell, battery electrolyte level is low. Notify organizational maintenance.
   d. Install filler cap on each battery cell.
7. CLEAN BATTERY.
   a. Wipe off battery casing and surrounding metal parts. Use clean, dry wiping rag.
   b. If wiping rag will not remove the dirt, notify organizational maintenance.

8. INSTALL REAR BATTERY COMPARTMENT COVER.
   a. Slide rear battery compartment cover over battery compartment.
   b. Hook two latches in slots.
   c. Push down on two latches.


10. STOW DRIVER'S SEAT. See task: STOW/UNSTOW DRIVER'S SEAT, page 2-123.

11. REMOVE FRONT BATTERY COMPARTMENT COVER.
   a. Pull up on two latches.
   b. Unhook two latches from slots.
   c. Remove front battery compartment cover.

3-84
12. REPEAT STEPS 4 THRU 7 TO CHECK FRONT BATTERIES.

13. INSTALL FRONT BATTERY COMPARTMENT COVER.
   a. Slide front battery compartment cover over battery compartment.
   b. Hook two latches in slots.
   c. Push down on two latches.

14. UNSTOW DRIVER'S SEAT. See task: STOW/UNSTOW DRIVER'S SEAT, page, 2-123.

END OF TASK
SERVICE BILGE PUMPS

DESCRIPTION

This task covers: Right Front Bilge Pump (page 3-87). Left Front Bilge Pump (page 3-88). Right Rear Bilge Pump (page 3-89). Left Rear Bilge Pump (page 3-90). Bilge Pumps Operation Check (page 3-92).

INITIAL SETUP

Personnel Required:

Tools:
  - Screwdriver (Item 44, App B)

Materials/Parts:
  - Wiping rag (Item 9, App D)

Equipment Conditions:
  - Engine stopped (page 2-161)

RIGHT FRONT BILGE PUMP

1. LOWER TRIM VANE. See task: LOWER/STOW TRIM VANE, page 2-237.


3. SERVICE RIGHT FRONT BILGE PUMP.
   a. Remove mud or other material from bilge pump and filter screen. Use hands.
   b. If hose seems to be loose, cracked, or broken, notify organizational maintenance.

5. STOW TRIM VANE. See task: LOWER/STOW TRIM VANE, page 2-237.

6. STOW DRIVER'S SEAT. See task: STOW/UNSTOW DRIVER'S SEAT, page 2-123.

7. REMOVE FRONT FLOOR PLATE.
   a. Pull up and turn three fasteners.
   b. Remove front floor plate.

8. SERVICE LEFT FRONT BILGE PUMP.
   a. Remove mud or other material from bilge pump and filter screen. Use hands. Use wiping rag to clean filter screen.
   b. Check for loose hose. If hose is loose, tighten hose clamps. Use screwdriver.
   c. Check hose for cracks or breaks. If hose is cracked or broken, notify organizational maintenance.
9. INSTALL FRONT FLOOR PLATE.
   a. Position front floor plate.
   b. Pull up and turn three fasteners to secure front floor plate.

10. UNSTOW DRIVER’S SEAT. See task: STOW/UNSTOW DRIVER’S SEAT, page 2-123.


12. REMOVE RIGHT REAR FLOOR PLATE.
   a. Pull up and turn fastener.
   b. Remove right rear floor plate.
13. SERVICE RIGHT REAR BILGE PUMP.
   a. Remove mud or other material from bilge pump and filter screen. Use hands. Use wiping rag to clean filter screen.
   b. Check for loose hose. If hose is loose, tighten hose clamps. Use screwdriver.
   c. Check hose for cracks or breaks. If hose is cracked or broken, notify organizational maintenance.

14. INSTALL RIGHT REAR FLOOR PLATE.
   a. Position right rear floor plate.
   b. Pull up and turn fastener to secure right rear floor plate.

LEFT REAR BILGE PUMP

15. STOW SQUAD SEAT NO. 6.
    See task: STOW/UNSTOW SQUAD SEATS, page 2-129.
16. REMOVE RAMP HYDRAULIC POWER UNIT COVER.
   a. Pull two hooks up and out.
   b. Slide ramp hydraulic power unit cover out from under bracket. Remove ramp hydraulic power unit cover.

17. SERVICE LEFT REAR BILGE PUMP.
   a. Remove mud or other material from bilge pump and filter screen. Use hands.
   b. If hose seems to be loose, cracked, or broken, notify organizational maintenance.
18. INSTALL RAMP HYDRAULIC POWER UNIT COVER.
   a. Slide ramp hydraulic power unit cover under bracket.
   b. Pull up and secure two hooks.


BILGE PUMPS OPERATION CHECK

CAUTION
Bilge pumps are easily damaged. Do not run dry bilge pumps for more than 1 minute.

20. OPEN FORWARD BILGE PUMP OUTLET COVER.
   a. Pull pin and open forward bilge pump outlet cover.
   b. Release pin.
21. MOVE MASTER POWER SWITCH TO ON.

22. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO ON.

23. (H) CHECK FORWARD AND REAR BILGE PUMP OUTLETS BY HAND FOR PUMPED AIR FLOW.

GO TO NEXT PAGE
24. MOVE FWD AND REAR BILGE PUMPS SWITCHES TO OFF.

25. MOVE MASTER POWER SWITCH TO OFF.

26. CLOSE FORWARD BILGE PUMP OUTLET COVER.
   a. Pull pin and close forward bilge pump outlet cover.
   b. Release pin.

27. IF FAULTY BILGE PUMP(S) IS (ARE) FOUND, NOTIFY ORGANIZATIONAL MAINTENANCE.

END OF TASK
CHECK/FILL RADIATOR

INITIAL SETUP

Materials/Parts:
- Antifreeze (Item 1, App D)

Equipment Conditions:
- Engine stopped (page 2-161)

Personnel Required:
- Driver

WARNING
Hot coolant can burn you. Turn radiator cap slowly to let out pressure.

1. OPEN RADIATOR COVER.
   a. Pull latch pin, and pull radiator cover open.
   b. Release latch pin.

GO TO NEXT PAGE
2. REMOVE RADIATOR CAP.
   a. Press down, unscrew, and remove radiator cap.

3. CHECK COOLANT LEVEL.
   a. Look into radiator filler neck. If coolant level is below ADD marker, go to step 4. If coolant level is above ADD marker, go to step 5.

   CAUTION
   Add only approved antifreeze coolant to radiator. In an emergency, water may be added if specified coolant is not available.

4. FILL RADIATOR.
   a. Pour coolant into radiator filler neck until coolant level reaches FULL marker.

5. INSTALL RADIATOR CAP.
   a. Put radiator cap into radiator filler neck. Press down radiator cap, and screw it on tight.
6. CLOSE RADIATOR COVER.
   a. Pull latch pin, and close radiator cover.
   b. Release latch pin.

END OF TASK
CHECK/ADD ENGINE OIL

INITIAL SETUP

Tools:
- Funnel — 7240-00-559-7364

Materials/Parts:
- Wiping rag (Item 9, App D)
- Engine oil HDO-grade 30 (Item 7, App D)

Personnel Required:
- Driver

References:
- LO 9-2350-252-12

Equipment Conditions:
- Engine stopped (page 2-161)

1. REMOVE POWER UNIT ACCESS PANELS. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

2. CHECK OIL LEVEL.
   a. Turn dipstick handle to left until dipstick can be removed.
   b. Pull dipstick from dipstick tube.
   c. Wipe dipstick. Use wiping rag.
   d. Insert dipstick into dipstick tube.
e. Pull dipstick from dipstick tube. Check oil level. If oil level is above the ADD 4 QT mark, go to step 6. If oil level is at or below the ADD 4 QT mark, go to step 3.

3. ADD OIL.
   a. Turn handle to left until oil filler cap can be removed.
   b. Remove oil filler cap.
   c. Add oil, as needed, into oil filler tube. See LO 9-2350-252-12. Use funnel.

4. CHECK OIL LEVEL.
   a. Wipe dipstick. Use wiping rag.
   b. Insert dipstick into dipstick tube.
   c. Pull dipstick from dipstick tube. Check oil level. Oil must be at FULL mark. If oil is below FULL mark, repeat steps 3 and 4.
5. INSTALL OIL FILLER CAP.
   a. Install oil filler cap.
   b. Turn handle to right until secure.

6. INSTALL DIPSTICK.
   a. Insert dipstick into dipstick tube.
   b. Turn dipstick handle to right until secure.

7. INSTALL POWER UNIT ACCESS PANELS. See task: REMOVE/INSTALL POWER UNIT ACCESS PANELS, page 2-239.

END OF TASK
CHECK/ADD TRANSMISSION OIL

INITIAL SETUP

Tools:  
Funnel — 7240-00-559-7364

Personnel Required:
Driver

Materials/Parts:
Engine oil, HDO-grade 30  
(Item 7, App D)
Wiping rag (Item 9, App D)

References:
LO 9-2350-252-12

Equipment Conditions:
Vehicle driven/transmission hot (page 2-153)
Engine stopped (page 2-161)

1. LOWER TRIM VANE. See task: LOWER/STOW TRIM VANE, page 2-237.


NOTE
Transmission oil must be at normal operating temperature when checked. Engine must be at idle when checking transmission oil level.

3. START ENGINE. See page 2-137.

GO TO NEXT PAGE
NOTE
If hand brake is not engaged, false reading will be given on dipstick. Dipstick must be all the way in dipstick tube.

4. CHECK OIL LEVEL.
   a. Turn dipstick handle to left until dipstick can be removed.
   b. Remove dipstick.
   c. Wipe dipstick. Use wiping rag.
   d. Insert dipstick into dipstick tube.
   e. Remove dipstick. Check oil level. If oil level is below ADD mark, go to step 5. If oil level is between ADD mark and FULL mark, go to step 7.

5. ADD OIL.
   a. Add oil, as needed, into dipstick tube. See LO 9-2350-252-12. Use funnel.

6. CHECK OIL LEVEL. REPEAT STEP 4.
7. INSTALL DIPSTICK.
   a. Insert dipstick into dipstick tube.
   b. Turn dipstick handle to right until secure.

8. STOP ENGINE. See page 2-161.


END OF TASK
CHECK RAMP HYDRAULIC POWER UNIT

INITIAL SETUP

Tools:
Open end wrench, 7/16 inch — 5120-00-277-2342

Personnel Required:
Driver

References:
LO 9-2350-252-12

Materials/Parts:
Hydraulic fluid (Item 5, App D)

Equipment Conditions:
Engine stopped (page 2-161)


2. REMOVE RAMP HYDRAULIC POWER UNIT COVER.
   a. Pull two hooks up and out.
   b. Slide ramp hydraulic power unit cover out from under bracket. Remove ramp hydraulic power unit cover.

GO TO NEXT PAGE
3. INSPECT RAMP HYDRAULIC POWER UNIT.
   a. Check electrical and hydraulic connections.
   b. Tighten any loose connections.

4. CHECK SIGHT GLASS.
   a. If hydraulic fluid level is at FULL mark, go to step 6.
   b. If hydraulic fluid level is below FULL mark, go to step 5.
5. ADD HYDRAULIC FLUID.
   a. Remove filler plug. Use 7/16 inch open end wrench.
   b. Add hydraulic fluid as needed. See LO 9-2350-252-12.
   c. Install filler plug. Use 7/16 inch open end wrench.

6. INSTALL RAMP HYDRAULIC POWER UNIT COVER.
   a. Slide ramp hydraulic power unit cover under bracket.
   b. Pull up and secure two hooks.


END OF TASK
CHAPTER 4
MAINTENANCE OF AUXILIARY EQUIPMENT

SCOPE
This chapter tells you where to find maintenance instructions for auxiliary equipment.

M16A1 RIFLE
See TM 9-1005-249-10.

M60 MACHINE GUN
See TM 9-1005-224-10.

M231 SUBMACHINE GUN

M79 GRENADE LAUNCHER
See TM 9-1010-221-10.

DRAGON MISSILE
See TM 9-6920-480-12-1.

TRACKER DRAGON MISSILE
See TM 9-6920-480-12-2.

M8 ALARM (CHEMICAL AGENT)
See TM 3-6665-225-12.

AN-M15A2A DETECTOR KIT (CHEMICAL AGENT)
See TM 3-6665-253-12.

DS2 DECONTAMINATING APPARATUS
See TM 3-4230-204-12&P.
CHAPTER 5
AMMO

5.56MM AMMO

CARE Keep ammo clean of dirt and grease. Do not use damaged ammo.

HANDLING Keep ammo away from electric sparks and high heat. Do not drop or bump ammo.

PRESERVATION Do not open sealed ammo containers until you are ready to use ammo.

PACKING Pack unused ammo in its original container. Use that ammo first the next time you fire.

NUMBER OF ROUNDS AUTHORIZED

<table>
<thead>
<tr>
<th></th>
<th>IFV</th>
<th>CFV</th>
</tr>
</thead>
<tbody>
<tr>
<td>M16 Rifle</td>
<td>2160</td>
<td>1680</td>
</tr>
<tr>
<td>M231 Submachine Gun</td>
<td>4000</td>
<td>—</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6160</td>
<td>1680</td>
</tr>
</tbody>
</table>

AUTHORIZED ROUND IDENTIFICATION

| Cartridge, 5.56mm, Ball, M193 | None |

GO TO NEXT PAGE

5-1
7.62MM AMMO

CARE
Keep ammo clean of dirt and grease. Do not use damaged ammo. See that links and cartridges line up correctly along each belt.

HANDLING
Keep ammo away from electric sparks and high heat. Do not drop or bump ammo.

PRESERVATION
Do not open sealed ammo containers until you are ready to use ammo.

PACKING
Pack unused ammo in its original container. Use that ammo first the next time you fire.

NUMBER OF ROUNDS AUTHORIZED

<table>
<thead>
<tr>
<th></th>
<th>IFV</th>
<th>CFV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Rounds Number</td>
<td>Rounds Total Number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ready Rounds Number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Turret Rounds</td>
</tr>
<tr>
<td>M60 Machine Gun</td>
<td>2200</td>
<td>—</td>
</tr>
<tr>
<td>M240 Coax Machine Gun</td>
<td>2200</td>
<td>800</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4400 800</td>
<td>7400 800</td>
</tr>
<tr>
<td>Authorized Rounds</td>
<td>Identification (see illustration)</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Cartridge, 7.62mm, Ball, M59 or M80</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Cartridge, 7.62mm, Tracer, M62</td>
<td>Red tip</td>
<td></td>
</tr>
<tr>
<td>Cartridge, 7.62mm, Armor-piercing, M61</td>
<td>Black tip</td>
<td></td>
</tr>
<tr>
<td>Cartridge, 7.62mm, Dummy M63</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Diagram:
- M59
- M60
- M61 (Black)
- M62 (Red)
- M63

4 to 1 Combat Mix
APPENDIX A

REFERENCES

PURPOSE

This appendix lists publications which apply to operating the IFV and CFV and their parts.

REQUISITIONING PUBLICATIONS

Additional copies of the publications listed below may be ordered. Use DA Form 17 to order copies from the CO, AG Publications Center, 1655 Woodson Road, St. Louis, Missouri 63144.

ARRANGEMENT

The publications listed below are arranged by type and then in numerical order by publication number.

PUBLICATION INDEXES

The following indexes should be consulted often. Check these indexes for the latest changes or revisions to references given in this appendix. Check these indexes for new publications relating to material covered in this technical manual.

DA Pam 310-1     Index of Administrative Publications
DA Pam 310-2     Index of Blank Forms
DA Pam 310-4     Index of Technical Manuals, Technical Bulletins, Supply Bulletins, and Lubrication Orders

FORMS

DA Form 17       Requisition Form
DA Form 2028     Recommended Changes to DA Publications
DA Form 2062     Hand Receipt
DA Form 2400     Equipment Utilization Record

A-1
TM 9-2350-252-10-1

FORMS (cont)

DA Form 2404  Equipment Inspection and Maintenance Work Sheet
DA Form 2407  Maintenance Requests
DA Form 2408-1  Equipment Daily Log
DA Form 2408-14  Uncorrected Fault Record
DD Form 518  Accident Identification Card
SF 91  Vehicle Accident Report
SF 368  Quality Deficiency Report, Category 2

REGULATIONS


LUBRICATION

LO 9-2350-252-12  Lubrication Order for Fighting Vehicle, Infantry, M2 (2350-01-048-5920) and Fighting Vehicle, Cavalry, M3 (2350-01-049-2659)

FIELD MANUALS

FM 9-207  Operation and Maintenance of Ordnance Manual: In Cold Weather
FM 31-70  Basic Cold Weather Manual
FM 31-71  Northern Operations
FM 31-72  Mountain Operations

TECHNICAL MANUALS

CTA 50-970  Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
TM 3-4230-204-12&P  Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) For Decontaminating Apparatus, Portable, DS2, 1 1/2 Quart, ABC-M11

A-2
<table>
<thead>
<tr>
<th>Manual Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM 3-6665-253-12</td>
<td>Operator and Organizational Maintenance Manual: Detector Kit, Chemical Agent, VGH, AN-M15A2A</td>
</tr>
<tr>
<td>TM 9-1300-200</td>
<td>General Ammunition</td>
</tr>
<tr>
<td>TM 9-1300-206</td>
<td>Care, Handling, Preservation, and Destruction of Ammunition</td>
</tr>
<tr>
<td>TM 9-2350-252-10-1-HR</td>
<td>Hand Receipt</td>
</tr>
<tr>
<td>TM 9-6140-200-14</td>
<td>Operator's, Organizational, DS, and GS Maintenance Manual: Storage Batteries, Lead-Acid Type</td>
</tr>
<tr>
<td>TM 9-6920-480-12-1</td>
<td>Operator and Organizational Maintenance Manual: Guided Missile System, Surface Attack, M47</td>
</tr>
<tr>
<td>TM 9-6920-480-12-2</td>
<td>Operator and Organizational Maintenance Manual: Transmitting Set, Infrared M89</td>
</tr>
<tr>
<td>TM 31-306</td>
<td>Manual for Tracked Combat Vehicle Driver</td>
</tr>
<tr>
<td>TM 38-750</td>
<td>The Army Maintenance Management System (TAMMS)</td>
</tr>
<tr>
<td>TM 750-244-2</td>
<td>Procedures for Destruction of Electronics Material to Prevent Enemy Use</td>
</tr>
<tr>
<td>TM 750-244-5-1</td>
<td>Destruction of Conventional Ammunition and Improved Conventional Munitions to Prevent Enemy Use</td>
</tr>
<tr>
<td>TM 750-244-6</td>
<td>Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use</td>
</tr>
</tbody>
</table>
APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

SCOPE

This appendix lists integral components of end item and basic issue items for the M2 IFV and M3 CFV to help you inventory items required for safe and efficient operation.

GENERAL

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section I. Introduction.

b. Section II. Integral Components of End Item. These items, when assembled, comprise the M2 Infantry Fighting Vehicle and the M3 Cavalry Fighting Vehicle and must accompany each vehicle whenever it is transferred or turned in. The illustrations will help you identify these items.

c. Section III. Basic Issue Items. These are the minimal essential items required to place the vehicle in operation, to operate it, and to perform emergency repairs. Although shipped separately packed, they must accompany the vehicle during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE-MTOE authorization of the end item.
APPENDIX B (cont)

EXPLANATION OF COLUMNS

a. Column 1, Illustration Number. This column indicates the number of the illustration in which the item is shown.

b. Column 2, National Stock Number. This column indicates the National Stock Number assigned to the item, and will be used for requisitioning purposes.

c. Column 3, Description. This column indicates the Federal Item name, the part number in parentheses, and the Federal Supply Code for Manufacturer (FSCM).

d. Column 4, Usable On Code (UOC). The following codes identify items found only on either the M2 or M3 vehicle:

   A — M2 items only
   B — M3 items only

All other items appear on both the IFV M2 and CFV M3 vehicles.

e. Column 5, Unit of Measure (U/M). This column indicates the measure used in performing the actual operation/maintenance function. This measure is shown as a two-character alphabetical abbreviation (e.g., EA, PR, IN).

f. Column 6, Quantity Required (Qty Rqr). This column indicates the quantity of the item authorized to be used with/on the equipment.
### Section II. COMPONENTS OF END ITEM

#### COMPONENTS OF END ITEM

<table>
<thead>
<tr>
<th>ILLUSTRATION NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2540-01-096-4559</td>
<td>BOX, VEHICULAR ACCESSORIES STOWAGE (EXTERIOR) (D13-12-40) 81361</td>
<td>EA 2</td>
<td></td>
</tr>
<tr>
<td>5820-01-056-0992</td>
<td>INSTALLATION, HARNESS, ELECTRONIC EQUIPMENT (INTERIOR) (PPL-5234) 80063</td>
<td>EA 1</td>
<td></td>
</tr>
<tr>
<td>6650-00-704-3549</td>
<td>PERISCOPE, M17 (INTERIOR) (7043549) 19207</td>
<td>EA 11</td>
<td></td>
</tr>
<tr>
<td>6650-00-344-4543</td>
<td>PERISCOPE, M27 (INTERIOR) (7633132) 19207</td>
<td>EA 1</td>
<td></td>
</tr>
<tr>
<td>6650-00-098-7366</td>
<td>PERISCOPE, 15° UP-LOOK (INTERIOR) (12297131) 19207</td>
<td>EA 7</td>
<td></td>
</tr>
<tr>
<td>6650-01-098-7386</td>
<td>PERISCOPE, 20° UP-LOOK (INTERIOR) (12297131) 19207</td>
<td>EA 2</td>
<td></td>
</tr>
<tr>
<td>4030-00-162-7545</td>
<td>SHACKLE, ANCHOR (2 IN FRONT TOWING EYE, 2 IN REAR TOWING EYE) (G209-8112 TON)</td>
<td>EA 4</td>
<td></td>
</tr>
</tbody>
</table>
## SECTION III. BASIC ISSUE ITEMS

### BASIC ISSUE ITEMS

<table>
<thead>
<tr>
<th>ILLUSTRATION NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>UOC</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12524011</td>
<td>ADAPTER ASSEMBLY, BORESIGHT, 25MM (TOOL BAG)</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>6300333</td>
<td>ADAPTER, GREASE GUN COUPLING, FLEXIBLE, 12 IN. LONG (POWER UNIT COMPARTMENT TOOL BAG)</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>5349744</td>
<td>ADAPTER, GREASE GUN COUPLING, 6 IN. LONG (TOOL BAG)</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>8300333</td>
<td>AX, SINGLE BIT, 4 LB. HEAD, 31 IN. HANDLE (EXTERIOR, TOP LEFT)</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>11676920</td>
<td>BAG ASSEMBLY, PAMPHLET (DRIVER'S STATION)</td>
<td>EA</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>11655979</td>
<td>BAG, TOOL, SATCHEL, 19 IN. LONG, 6 IN. WIDE, 8 1/2 IN. HIGH (POWER UNIT COMPARTMENT)</td>
<td>EA</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>GGG-B-101</td>
<td>CROWBAR, 59 IN. LONG (EXTERIOR TOP LEFT)</td>
<td>EA</td>
<td>1</td>
</tr>
</tbody>
</table>

---

[Image showing illustrations of items]
## BASIC ISSUE ITEMS (cont)

<table>
<thead>
<tr>
<th>ILLUSTRATION NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>PART NUMBER &amp; FSCM</th>
<th>QUANTITY</th>
<th>UNIT OF ISSUE</th>
<th>UNITS</th>
<th>REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5110-00-595-8229</td>
<td>CUTTER, WIRE ROPE, HAND OPERATED W/INSULATED HANDLES (POWER UNIT COMPARTMENT TOOL BAG)</td>
<td>(11655981) 19207</td>
<td>8</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>DIAGRAM, STRAP LOCATION (IN PAMPHLET BAG)</td>
<td>(12307494) 19207</td>
<td>9</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2530-00-075-8292</td>
<td>DRIFT PIN, TRACK (EXTERIOR, LEFT HULLSLOPE)</td>
<td>(2590157) 80064</td>
<td>10</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>5120-00-243-7326</td>
<td>EXTENSION, SOCKET WRENCH, RIGID, 1/2 IN. SQ. DR., 5 IN. LONG (TOOL BAG)</td>
<td>(GGG-W-641) 81348</td>
<td>11</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4210-00-555-8837</td>
<td>EXTINGUISHER, FIRE, HAND HELD, 2 3/4 LB. (LEFT REAR INTERIOR ABOVE SPONSON. RIGHT FWD. INTERIOR ABOVE HEATER)</td>
<td>(10596569-1) 18876</td>
<td>12</td>
<td>EA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>5110-00-156-0059</td>
<td>FILE, HAND, SMOOTH, 10 IN. LONG (TOOL BAG)</td>
<td>(GGG-F-00325) 81348</td>
<td>13</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>4730-00-050-4208</td>
<td>FITTING, LUBRICATION, STRAIGHT (POWER UNIT COMPARTMENT TOOL BAG)</td>
<td>(MS15003-1) 96906</td>
<td>14</td>
<td>EA</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>ILLUS NO.</td>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION</td>
<td>UOC</td>
<td>QTY</td>
<td>ROR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------</td>
<td>-------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>5120-00-708-3799</td>
<td>Fixture, track connecting (exterior, top rear) (7083799) 19207</td>
<td>EA</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>6230-00-264-8261</td>
<td>Flashlight, 8 in. long (driver's station, right wall) (MX991U) 80083</td>
<td>EA</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>7530-01-065-0166</td>
<td>Folder, equipment record, 8 in. by 10 in. (in pamphlet bag) (43966-1) 19207</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>5120-00-061-8546</td>
<td>Hammer, hand, machinists, ball peen, 2 lb. head with fiber-glass handle (tool bag) (GGG-H-0086) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>5120-00-243-2957</td>
<td>Hammer, hand, sledge, blacksmith double-faced (exterior, left fwd) (GGG-H-0086) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>5120-00-288-8574</td>
<td>Handle, mattock-pick, 36 in. long (exterior, top rear) (NN-H-0093) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>5120-00-230-6385</td>
<td>Handle, socket wrench, ratchet 1/2 in. sq. dr., 9 in. long (tool bag) (GGG-W-841) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### BASIC ISSUE ITEMS (cont)

<table>
<thead>
<tr>
<th>ILLUSTRATION NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>UOM</th>
<th>U/M</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>5120-00-709-4072</td>
<td>HANDLE, SOCKET WRENCH, SLIDING T 3/4 IN. SQ. DR., 17 IN. LONG (TOOL BAG) (GGG-W-641) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>2540-00-706-8219</td>
<td>HOOK, TOW CABLE (EXTERIOR, RAMP) (7068219) 19207</td>
<td>EA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>4933-00-930-1957</td>
<td>KIT, BORESIGHT, 7.62 MM GUN (INTERIOR, TURRET FWD) (1186583) 19204 CONSISTING OF:</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 EA ADAPTER, BORESIGHT 4933-00-930-8951</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 EA CASE, CARRYING 4933-00-930-1958</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 EA STREAMER, RED 4933-00-930-8952</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 EA TELESCOPE, BORESIGHT 4930-00-867-6607</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>6545-00-922-1200</td>
<td>KIT, FIRST AID, MOTOR VEHICLE (TURRET SHIELD, RIGHT PANEL) (57K34012) 19207</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>KIT, WINDSHIELD, (INTERIOR, LEFT STOWAGE) (12298236) 19207</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
## BASIC ISSUE ITEMS (cont)

<table>
<thead>
<tr>
<th>(1) ILLUS NO.</th>
<th>(2) NATIONAL STOCK NUMBER</th>
<th>(3) DESCRIPTION Part Number &amp; FSCM</th>
<th>(4) UOC</th>
<th>(5) U/M</th>
<th>(6) QTY RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>5120-00-221-1536</td>
<td>KIT, REPAIR, WATER BARRIER (EXTERIOR, LEFT STOWAGE BOX) (12307367) 19207</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>4930-00-253-2478</td>
<td>KNIFE, PUTTY, 1 1/4 IN. WIDE BLADE, FLEXIBLE (TOOL BAG) (GGG-K-00481) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>4930-00-253-2478</td>
<td>LUBRICATING GUN, HAND, LEVER OPERATED, 15 OZ. (POWER UNIT COMPARTMENT, RIGHT SIDE) (1008370) 10001</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>5120-00-243-2395</td>
<td>MATTOCK, PICK UNIT, W/O HANDLE (EXTERIOR, LEFT FWD SIDE OBLIQUE) (GGG-H-506) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>8415-00-266-8843</td>
<td>MITTEN, HEAT PROTECTIVE, ASBESTOS WITH CLOTH LINING (POWER UNIT COMPARTMENT TOOL KIT) (11655982) 19207</td>
<td>EA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>5340-00-682-1645</td>
<td>MODE KIT TO M240C M.G. (12308278) 19207</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>4930-00-262-8868</td>
<td>OILER, HAND, 6 OZ. (POWER UNIT COMPARTMENT LOWER FWD CELL) (GGG-0-591) 81348</td>
<td>EA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>5340-00-682-1645</td>
<td>PADLOCK, BRASS OR BRONZE, KEY OPERATED W/2 KEYS (INTERIOR, LEFT REAR WALL) (MS35647-6) 96906</td>
<td>EA</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
# BASIC ISSUE ITEMS (cont)

<table>
<thead>
<tr>
<th>ILLUS NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>UOC</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>5315-00-706-9195</td>
<td>PIN, GROOVED, HEADLESS, 4 1/2 IN. LONG BY 1 1/2 IN. DIA. (TOOL KIT) (7069195) 19207</td>
<td>EA</td>
<td>4</td>
</tr>
<tr>
<td>36</td>
<td>5315-00-350-4328</td>
<td>PIN, LOCK, 3 IN. LONG (TOOL KIT) (5213744) 19207</td>
<td>EA</td>
<td>8</td>
</tr>
<tr>
<td>37</td>
<td>5120-00-278-0352</td>
<td>PLIERS, SLIPJOINT, ANGLED NOSE, MULTIPLE TONGUE &amp; GROOVE, 10 IN. LONG (GGG-P-00471) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>5120-00-223-7397</td>
<td>PLIERS, SLIP JOINT, STRAIGHT NOSE, INSULATED HANDLES. 10 IN. LONG (TOOL BAG) (5214421) 19207</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PLUG ASSEMBLY, DRAIN (INTERIOR, RIGHT FWD) (12307280) 19207</td>
<td>EA</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>4730-00-042-9674</td>
<td>PLUG, PIPE (INTERIOR, RIGHT FWD) (2623132-3) 80064</td>
<td>EA</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>8465-00-261-4998</td>
<td>POCKET, AMMO MAGAZINE (M3 ONLY) (7052438) 19207</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>5210-00-234-5223</td>
<td>RULE, STEEL, MACHINISTS, 6 IN. LONG, 3/4 IN. WIDE (TOOL BAG) (GGG-R-791) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>5120-00-234-8913</td>
<td>SCREWDRIVER, CROSS TIP, PHILLIPS, NO. 2, 4 IN. LONG (TOOL BAG) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>5120-00-224-7375</td>
<td>SCREWDRIVER, CROSS TIP, PHILLIPS, NO. 4, 8 IN. LONG (TOOL BAG) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>ILLUSSION NO.</td>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION</td>
<td>UOC</td>
<td>U/M</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------</td>
<td>-------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>44</td>
<td>5120-00-278-1283</td>
<td>SCREWDRIVER, FLAT TIP, 3/16 IN. WIDE BLADE, 6 IN. LONG (TOOL BAG) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>44</td>
<td>5120-00-596-8502</td>
<td>SCREWDRIVER, FLAT TIP, 1/4 IN. WIDE BLADE, 1 1/2 IN. LONG (TOOL BAG) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>44</td>
<td>5120-00-763-8061</td>
<td>SCREWDRIVER, FLAT TIP, 3/8 IN. WIDE BLADE, 12 IN. LONG (TOOL BAG) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>5120-00-293-3336</td>
<td>SHOVEL, HAND, ROUND POINT, D-STYLE HANDLE (EXTERIOR, LEFT SIDE SLOPE) (GGG-S-121) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>5120-00-237-0982</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR., 3/8 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>5120-00-189-7924</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR., 7/16 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>5120-00-237-0984</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR., 1/2 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>5120-00-189-7932</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR. 9/16 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>ILLUSTRATION NO.</td>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION</td>
<td>QUANTITY</td>
<td>U/M</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------</td>
<td>-------------</td>
<td>----------</td>
<td>-----</td>
</tr>
<tr>
<td>46</td>
<td>5120-00-189-7946</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR., 5/8 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>46 EA</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>5120-00-189-7985</td>
<td>SOCKET, SOCKET WRENCH, 1/2 SQ. DR., 3/4 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>47 EA</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>5120-00-189-7934</td>
<td>SOCKET, SOCKET WRENCH, 1/2 IN. SQ. DR., 7/18 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>47 EA</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>5120-00-181-6813</td>
<td>SOCKET, SOCKET WRENCH, 3/4 IN. SQ. DR., 15/16 IN. 12 PT. OPENING (TOOL BAG) (GGG-W-641) 81348</td>
<td>47 EA</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>2540-00-587-2532</td>
<td>TARPALIN, POLYMINE NYLON, 17 FT. BY 12 FT. (EXTERIOR, TOP STOWAGE) (10936264) 19207</td>
<td>48 EA</td>
<td>1</td>
</tr>
<tr>
<td>49</td>
<td>4010-00-767-3149</td>
<td>WIRE ROPE ASSEMBLY, TOW CABLE (EXTERIOR, RAMP) (10861718) 19207</td>
<td>49 EA</td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>5120-00-264-3796</td>
<td>WRENCH, ADJUSTABLE, 1 5/16 IN. MAX. OPENING, 12 IN. LONG (TOOL BAG) (GGG-W-631) 81348</td>
<td>50 EA</td>
<td>1</td>
</tr>
</tbody>
</table>
### BASIC ISSUE ITEMS (cont)

<table>
<thead>
<tr>
<th>ILLUSTRATION NO.</th>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>PART NUMBER &amp; FSCM</th>
<th>UOC</th>
<th>U/M</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>5120-00-277-2307</td>
<td>WRENCH, OPEN END, DOUBLE HEAD 5/16 IN. AND 3/8 IN., 3 5/8 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>5120-00-187-7123</td>
<td>WRENCH, OPEN END, DOUBLE HEAD 13/32 IN. AND 1/2 IN., 4 1/2 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>5120-00-293-2134</td>
<td>WRENCH, OPEN END, DOUBLE HEAD 9/16 IN. AND 11/16 IN., 8 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>5120-00-224-3102</td>
<td>WRENCH, OPEN END, DOUBLE HEAD 5/8 IN. AND 3/4 IN., 7 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>5120-00-187-7130</td>
<td>WRENCH, OPEN END, DOUBLE HEAD 13/16 IN. AND 7/8 IN., 8 1/2 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>5120-00-293-1324</td>
<td>WRENCH, OPEN END, SINGLE HEAD 1 3/8 IN., 11 1/2 IN. LONG (TOOL BAG) (GGG-W-636) 81348</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td></td>
<td>WRENCH, RATCHET, 14MM (TURRET SHIELD STOWAGE) (12295165) 19207</td>
<td>EA 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

B-12
APPENDIX C
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

SCOPE
This appendix lists additional items you are authorized for the support of the Infantry Fighting Vehicle (IFV) and the Cavalry Fighting Vehicle (CFV).

GENERAL
This list identifies items that do not have to accompany the IFV and the CFV, and that do not have to be turned in with either of them. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

EXPLANATION OF LISTING
National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.
### Additional Authorization List

<table>
<thead>
<tr>
<th>National Stock Number</th>
<th>Description</th>
<th>U/M</th>
<th>QTY RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>6665-00-935-6955</td>
<td>ALARM, CHEMICAL AGENT, M8 VG W/ACCESSORIES (D5-15-4444) 81361 CONSIDING OF:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6665-00-859-2215</td>
<td>1 EA ALARM UNIT, CHEMICAL M42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6135-00-935-8738</td>
<td>4 EA BATTERY, DRY CELL, BA3202 (M2 ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6665-00-859-2201</td>
<td>1 EA DETECTOR UNIT, CHEMICAL M43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6665-00-859-2215</td>
<td>1 EA REFILL KIT, CHEMICAL AGENT, AUTOMATIC ALARM, M229</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5820-00-086-7651</td>
<td>ANTENNA, AT-784/PRC (M3 SQD LDR ONLY) (AT-784/PRC) 80058</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1240-00-930-3833</td>
<td>BINOCULAR, 7X50, M17A1 (10547052) 19200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1240-00-930-3837</td>
<td>1 EA CASE BINOCULAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6145-00-226-8812</td>
<td>CABLE, TELEPHONE, 2 CONDUCTOR, WD-1/TT, 1320 FT (2 EA PLT LDR VEH ONLY) (WD-1/TT) 81349 CARTRIDGE, 25MM, 300 READY ROUNDS, 1200 STOWAGE ROUNDS, 30 ROUNDS/CAN CONSISTING OF ANY COMBINATION OF THE FOLLOWING TYPES:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1305-01-092-0428</td>
<td>CARTRIDGE, 25MM, M791, APDS-T (12013720) 19200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1305-01-094-1035</td>
<td>CARTRIDGE, 25MM, M792, HEI-T (12013722) 19200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1305-01-092-0429</td>
<td>CARTRIDGE, 25MM, M793, TP-T (12013724) 19200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1305-01-926-3930</td>
<td>CARTRIDGE, 5.56MM, M193 BALL W/CIPS, MAGAZINE FILLERS AND BANDOLIERS, 840 ROUNDS/CAN (10523632) 19200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ADDITIONAL AUTHORIZATION LIST (cont)

<table>
<thead>
<tr>
<th>(1) NATIONAL STOCK NUMBER</th>
<th>(2) DESCRIPTION</th>
<th>(3) QTY U/M</th>
<th>(4) RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1305-00-926-3929</td>
<td>CARTRIDGE, 5.56MM, M196, TRACER, (M2 ONLY) (10534193)</td>
<td>19200</td>
<td>EA 22</td>
</tr>
<tr>
<td>1305-00-892-2330</td>
<td>CARTRIDGE, 7.62MM, 200 ROUNDS/CAN (10521998)</td>
<td>19200</td>
<td>EA 9</td>
</tr>
<tr>
<td>1305-00-926-3929</td>
<td>COMBAT ROLL, 24 IN BY 18 IN (M2 ONLY) CONSISTING OF:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6165-00-242-7855, 8466-00-237-8719</td>
<td>1 EA SLEEPING BAG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6165-00-242-7855, 8466-00-237-8719</td>
<td>1 EA CASE, SLEEPING BAG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6165-00-242-7855, 8466-00-237-8719</td>
<td>1 EA SHELTER HALF, ROPES, TENT PINS AND POLES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6165-00-242-7855, 8466-00-237-8719</td>
<td>COMBAT ROLL, 24 IN BY 18 IN (M3 ONLY) CONSISTING OF:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5810-00-434-3644</td>
<td>COMMUNICATION SECURITY EQUIPMENT TSEC/KY-57 (ON241700)</td>
<td>98230</td>
<td>EA 1</td>
</tr>
<tr>
<td>4230-00-720-1618</td>
<td>DECONTAMINATION APPARATUS, PORTABLE 1 1/2 QT (D5-51-269)</td>
<td>81361</td>
<td>EA 1</td>
</tr>
<tr>
<td>6665-00-903-4765</td>
<td>DETECTOR KIT, CHEMICAL AGENT, AN/M15A2A (AN/M15A2A)</td>
<td>81361</td>
<td>EA 1</td>
</tr>
<tr>
<td>6650-00-144-7998</td>
<td>DETECTING SET, MINE PTBL, METALLIC AND NON METALLIC, (M3 SQD LDR VEH ONLY) (4D6) 07661</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6650-00-144-7655</td>
<td>DETECTOR SET, MINE, AN/PSS11, PTDL, METALLIC, (M3 SQD LDR VEH ONLY) (MIL-D-23359)</td>
<td>81349</td>
<td>EA 1</td>
</tr>
<tr>
<td>8345-00-375-0223</td>
<td>FLAG SET, M238 (CMRD ONLY) (MIL-F-40045)</td>
<td>81349</td>
<td>EA 1</td>
</tr>
</tbody>
</table>

C-3
<table>
<thead>
<tr>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>RQR</th>
<th>U/M</th>
<th>RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1371-00-752-8060</td>
<td>FLARE, SURFACE TRIP, M49A1 (M2 ONLY)</td>
<td>13</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1371-00-752-8060</td>
<td>FLARE, SURFACE TRIP, M49A1 (M3 ONLY)</td>
<td>10</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>5855-00-150-1820</td>
<td>GOGGLES, IMAGE INTENSIFICATION, AN/PVS5</td>
<td>1</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>5855-00-150-1820</td>
<td>GOGGLES, IMAGE INTENSIFICATION, AN/PVS5</td>
<td>2</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1330-00-133-8244</td>
<td>GRENADE, HAND, FRAGMENTARY, M-67 (M3 ONLY)</td>
<td>8</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1330-00-219-8557</td>
<td>GRENADE, HAND INCendiary, TH3, MODEL AN/M14</td>
<td>4</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1330-00-289-6851</td>
<td>GRENADE, HAND, SMOKE</td>
<td>4</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1330-00-020-0504</td>
<td>GRENADE, SMOKE SCREENING, RP, UK/L8A1</td>
<td>16</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1310-00-724-8081</td>
<td>GRENADE, 40MM, M406 (M3 ONLY) (M-406)</td>
<td>6</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td>1410-00-087-1521</td>
<td>GUIDED MISSILE, SURFACE ATTACK, TELEMETRY,</td>
<td>7</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XBGM-71A, TOW (M2 ONLY)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1410-00-087-1521</td>
<td>GUIDED MISSILE, SURFACE ATTACK, TELEMETRY,</td>
<td>12</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XBGM-71A, TOW (M3 ONLY)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8345-00-174-6865</td>
<td>GUIDON, SWALLOW TAILED, AERIAL LIASON,</td>
<td>1</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORANGE/RED, VS171GVX</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5965-00-043-3460</td>
<td>HEADSET, ELECTRICAL H251U</td>
<td>1</td>
<td></td>
<td>EA</td>
<td></td>
</tr>
</tbody>
</table>

C-4
<table>
<thead>
<tr>
<th>NATIONAL STOCK NUMBER</th>
<th>DESCRIPTION</th>
<th>QTY RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>8415-00-094-2684</td>
<td>HELMET, COMBAT VEHICLE CREWMAN'S, LARGE (72F2510-3) 81377</td>
<td>5</td>
</tr>
<tr>
<td>8415-00-094-2691</td>
<td>HELMET, COMBAT VEHICLE CREWMAN'S, MEDIUM (72F2510-2) 81377</td>
<td>1</td>
</tr>
<tr>
<td>8415-00-094-2679</td>
<td>HELMET, COMBAT VEHICLE CREWMAN'S, SMALL (72F2510-1) 81377</td>
<td>1</td>
</tr>
<tr>
<td>5810-01-026-9621</td>
<td>INSTALLATION KIT, ELECTRONIC EQUIPMENT FOR TSEC/KY-57</td>
<td>1</td>
</tr>
<tr>
<td>1375-00-047-3751</td>
<td>KIT, DEMOLITION, EXPLOSIVE, NON-METALLIC (M3 SQD LDR VEH ONLY)</td>
<td>1</td>
</tr>
<tr>
<td>1040-01-070-1213</td>
<td>LAUNCHER, GRENADE, SMOKE SCREENING, RP, M257 (B13-12-129) 81361</td>
<td>2</td>
</tr>
<tr>
<td>5340-01-095-0297</td>
<td>8 EA CAP, DISCHARGER</td>
<td>8</td>
</tr>
<tr>
<td>1040-01-095-0091</td>
<td>2 EA DISCHARGER, GRENADE</td>
<td>2</td>
</tr>
<tr>
<td>1010-00-179-6447</td>
<td>LAUNCHER, GRENADE, 40MM, M203; W/BII (11838703) 19204</td>
<td>2</td>
</tr>
<tr>
<td>1010-00-483-1155</td>
<td>1 EA SIGHT, GRENADE LAUNCHER</td>
<td>1</td>
</tr>
<tr>
<td>1005-01-085-4758</td>
<td>MACHINE GUN, 7.62MM, M240C; W/BII (11826175) 19200</td>
<td>1</td>
</tr>
<tr>
<td>1005-01-044-1026</td>
<td>1 EA BARREL ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>1005-01-038-6025</td>
<td>1 EA CASE, SPARE BARREL</td>
<td>1</td>
</tr>
<tr>
<td>4933-01-033-1510</td>
<td>1 EA EXTRACTOR, RUPTURED CARTRIDGE</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-605-7710</td>
<td>MACHINE GUN, 7.62MM, M60; W/BII (841399) 19204</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-808-5001</td>
<td>1 EA BARREL ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-791-5420</td>
<td>1 EA CASE, CARRYING</td>
<td>1</td>
</tr>
<tr>
<td>4933-00-652-9950</td>
<td>1 EA EXTRACTOR, RUPTURED CARTRIDGE CASE</td>
<td>1</td>
</tr>
<tr>
<td>8415-00-266-8843</td>
<td>1 EA MITTEN, HEAT PROTECTIVE</td>
<td>1</td>
</tr>
<tr>
<td>5120-00-491-1075</td>
<td>1 EA TOOL, COMBINATION</td>
<td>1</td>
</tr>
<tr>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION Part Number &amp; FSCM</td>
<td>U/M</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>1005-00-921-5004</td>
<td>MAGAZINE, CARTRIDGE, 30 ROUND, 5.56MM (8448670) 19204</td>
<td>EA</td>
</tr>
<tr>
<td></td>
<td>MANUAL, OPERATORS, M16A1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MANUAL, OPERATOR'S, M231 (M2 ONLY)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MANUAL, OPERATOR'S, M240C</td>
<td></td>
</tr>
<tr>
<td>1345-00-926-3950</td>
<td>MINE, ANTI-PERSONNEL, M18, (CLAYMORE) (8835116) 19203</td>
<td>EA</td>
</tr>
<tr>
<td>1345-11-529-7303</td>
<td>MINE, ANTI-PERSONNEL, M18A1, (BOUNDING) (8796365) 19203</td>
<td>EA</td>
</tr>
<tr>
<td>1345-00-729-4263</td>
<td>MINE, ANTI-TANK, M21 (M2 ONLY) (8831341) 19203</td>
<td>EA</td>
</tr>
<tr>
<td>8970-00-577-4513</td>
<td>MEAL, COMBAT, INDIVIDUAL, 12 MEALS/CASE (M2 ONLY) (MIL-M-35048) 81349</td>
<td>EA</td>
</tr>
<tr>
<td>8970-00-577-4513</td>
<td>MEAL, COMBAT, INDIVIDUAL, 12 MEALS/CASE (M3 ONLY) (MIL-M-35048) 81349</td>
<td>EA</td>
</tr>
<tr>
<td>1005-00-710-5599</td>
<td>MOUNT, TRIPOD, MACHINE GUN, 7.62MM, M122, W/PIN TLE AND TRAVERSING UNIT (7790723) 19205</td>
<td>EA</td>
</tr>
<tr>
<td>5855-00-629-5334</td>
<td>NIGHT VISION SIGHT, INDIVIDUAL SERVED WEAPONS, AN/PVS 4, W/IMG (SM-D-850300-1) 80063</td>
<td></td>
</tr>
<tr>
<td>5855-00-629-5343</td>
<td>NIGHT VISION SIGHT, INDIVIDUAL SERVED WEAPONS, AN/PVS 4, WO/IMG (SM-D-850300-2) 80063</td>
<td></td>
</tr>
<tr>
<td>5855-00-906-0994</td>
<td>NIGHT VISION SIGHT, ANTVS-4 (M3 PLT LDR VEH ONLY) (AN/TVS-4) 80058</td>
<td></td>
</tr>
<tr>
<td>8345-00-174-8885</td>
<td>PANEL MARKERS, VS-17</td>
<td></td>
</tr>
<tr>
<td>5810-01-026-9621</td>
<td>POWER SUPPLY, HYP-57-TSEC, FOR TSEC/KY-57 (ON241780) 98230</td>
<td></td>
</tr>
<tr>
<td>5820-00-930-3724</td>
<td>RADIO SET, AN/PRC-77 (M3 ONLY) (AN/PRC-77) 80058</td>
<td></td>
</tr>
<tr>
<td>(1) NATIONAL STOCK NUMBER</td>
<td>(2) DESCRIPTION Part Number &amp; FSCM</td>
<td>(3) QTY</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>5820-00-223-7473</td>
<td>RADIO SET, CONSISTING OF ANY OF THE FOLLOWING TYPES:</td>
<td></td>
</tr>
<tr>
<td>5820-00-223-7433</td>
<td>RADIO SET, AN/GRC160 (AN/GRC160) 80058</td>
<td></td>
</tr>
<tr>
<td>5805-00-407-7722</td>
<td>REEL EQUIPMENT, CE-11 (CE-11) 80063 CONSISTING OF:</td>
<td></td>
</tr>
<tr>
<td>3895-00-127-0999</td>
<td>1 EA CRANK, REEL</td>
<td></td>
</tr>
<tr>
<td>3895-00-498-8343</td>
<td>1 EA REEL UNIT, CABLE, HAND RE-39B</td>
<td></td>
</tr>
<tr>
<td>8465-00-498-7992</td>
<td>1 EA SLING, BAG AND CARRYING CASE, 32 IN LONG</td>
<td></td>
</tr>
<tr>
<td>8465-00-498-7991</td>
<td>1 EA SLING, BAG AND CARRYING CASE</td>
<td></td>
</tr>
<tr>
<td>5805-00-521-1320</td>
<td>1 EA TELEPHONE SET, TA-1/PT</td>
<td></td>
</tr>
<tr>
<td>6665-00-856-8037</td>
<td>RADIAC METER, IM-174PD (M3 ONLY) (IM-174PD) 80058</td>
<td></td>
</tr>
<tr>
<td>6665-00-069-8906</td>
<td>RADIAC SET, TACTICAL MONITORING, VEHICLE, AN/VDR-1 (AN/VDR-1) 80058</td>
<td></td>
</tr>
<tr>
<td>5820-00-889-3860</td>
<td>RADIO SET, CONTROL GROUP, AN/GRA-39 (M3 ONLY) (AN/GRA-39) 80058</td>
<td></td>
</tr>
<tr>
<td>1240-01-062-3543</td>
<td>RANGE FINDER, LASER, AN/GVS-5 (AN/GVS-5) 80058</td>
<td></td>
</tr>
<tr>
<td>1005-00-073-9421</td>
<td>RIFLE, 5.56MM, M16A1 (M2 ONLY) (8448500) 19204</td>
<td></td>
</tr>
<tr>
<td>1005-00-073-9421</td>
<td>RIFLE, 5.56MM, M16A1 (M3 ONLY) (8448500) 19204</td>
<td></td>
</tr>
<tr>
<td>1340-00-782-5846</td>
<td>ROCKET, M72A2 LAW (9210276) 19203</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ADDITIONAL AUTHORIZATION LIST (cont)

<table>
<thead>
<tr>
<th>(1) NATIONAL STOCK NUMBER</th>
<th>(2) DESCRIPTION</th>
<th>(3) U/M</th>
<th>(4) QTY RQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1005-00-081-4579</td>
<td>SET, SPARE PARTS FOR 5.56 MM, M231 FIRING PORT WEAPON CONSISTING OF: 2 EA BOLT ASSEMBLY</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>8465-00-781-9564</td>
<td>1 EA CASE, MAINTENANCE EQUIPMENT, SMALL ARMS</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-992-7294</td>
<td>2 EA PIN, BOLT CAM</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-999-1509</td>
<td>2 EA PIN, FIRING</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-694-1662</td>
<td>SET, TOOLS AND CLEANING EQUIPMENT FOR M240C MACHINE GUN, M60 MACHINE GUN, M16A1 RIFLE, M231 FIRING PORT WEAPON, M242 25MM GUN (M2 ONLY) CONSISTING OF: 1 EA BUFFER, CLEANING ROD</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-999-1435</td>
<td>6 EA BRUSH, CLEANING, CHAMBER</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-690-3115</td>
<td>1 EA BRUSH, CLEANING, CHAMBER</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1010-00-474-5466</td>
<td>1 EA BRUSH, CLEANING, BORE, 40MM</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-903-1296</td>
<td>6 EA BRUSH, CLEANING, BORE</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-556-4174</td>
<td>1 EA BRUSH, BORE</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-350-4100</td>
<td>1 EA BRUSH, CLEANING, RECEIVER</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-494-6602</td>
<td>2 EA BRUSH, CLEANING, TOOTH, 7 IN LONG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-01-033-3925</td>
<td>1 EA BRUSH, GAS CYLINDER</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>9920-00-292-9946</td>
<td>1 EA CLEANER, PIPE, 6 IN LONG, 36/PKG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>6850-00-224-6657</td>
<td>6 EA CLEANER, RIFLE BORE, (RBC), 6 OZ CAN</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>9150-00-754-2585</td>
<td>1 EA GREASE, MOLIBDENUM, DISULFIDE, 1 LB CAN</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-793-6761</td>
<td>1 EA HANDLE ASSEMBLY, CLEANING ROD</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>9150-00-899-3522</td>
<td>6 EA LUBRICATING OIL, SEMI FLUID (LSA) 4 OZ BTL</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-089-3994</td>
<td>4 EA ROD ASSEMBLY, CLEANING M1E3 (5.56MM)</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-726-6109</td>
<td>5 EA ROD, CLEANING, SECTION, 11 IN LONG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-726-6110</td>
<td>1 EA SWAB HOLDER SECTION, SMALL ARMS CLEANING ROD</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-912-4248</td>
<td>1 EA SWAB, SMALL ARMS COTTON, 1 1/4 BY 1 1/4 IN 1000/PKG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1005-00-288-3565</td>
<td>1 EA SWAB, SMALL ARMS COTTON, 2 1/2 IN BY 2 1/2 IN, 1000 PKG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1010-00-474-5465</td>
<td>1 EA THONG, BORE BRUSH, 24 IN LONG</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION</td>
<td>U/M</td>
<td>QTY</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>1005-00-694-1662</td>
<td>1 EA BUFFER, CLEANING ROD</td>
<td>EA 1</td>
<td></td>
</tr>
<tr>
<td>1005-00-999-1435</td>
<td>3 EA BRUSH, CLEANING, CHAMBER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-690-3115</td>
<td>1 EA BRUSH, CLEANING, CHAMBER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1010-00-474-5466</td>
<td>1 EA BRUSH, CLEANING, BORE, 40MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-903-1296</td>
<td>3 EA BRUSH, CLEANING, BORE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-556-4174</td>
<td>1 EA BRUSH, CLEANING, BORE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-350-4100</td>
<td>1 EA BRUSH, CLEANING, RECEIVER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-494-6602</td>
<td>2 EA BRUSH, CLEANING, TOOTH, 7 IN LONG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-01-033-3925</td>
<td>1 EA BRUSH, GAS CYLINDER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9920-00-292-9946</td>
<td>1 EA CLEANER, PIPE, 6 IN LONG, 36/PKG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6850-00-224-6657</td>
<td>6 EA CLEANER, RIFLE BORE, (RBC), 6 OZ CAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9150-00-754-2595</td>
<td>1 EA GREASE, MOLIBDENUM, DISULFIDE, 1 LB CAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-793-6761</td>
<td>1 EA HANDLE ASSEMBLY, CLEANING ROD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9150-00-899-3522</td>
<td>6 EA LUBRICATING OIL, SEMI FLUID (LSA) 4 OZ BTL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-089-3994</td>
<td>3 EA ROD ASSEMBLY, CLEANING MIE3 (5.56MM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-728-6109</td>
<td>5 EA ROD, CLEANING, SECTION, 11 IN LONG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-726-6110</td>
<td>1 EA SWAB HOLDER SECTION, SMALL ARMS CLEANING ROD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-912-4248</td>
<td>1 EA SWAB, SMALL ARMS COTTON, 1 1/4 BY 1 1/4 IN 1000/PKG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-00-288-3585</td>
<td>1 EA SWAB, SMALL ARMS COTTON, 2 1/2 IN BY 2 1/2 IN, 1000 PKG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1010-00-474-5485</td>
<td>1 EA THONG, BORE BRUSH, 24 IN LONG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1370-00-301-1131</td>
<td>SIGNAL ILLUMINATION (M3 ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7310-00-285-6155</td>
<td>STOVE, GASOLINE BURNER, HEAVY DUTY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1005-01-081-4582</td>
<td>SUBMACHINE GUN, 5.56MM, M231 (M2 ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5805-00-543-0012</td>
<td>TELEPHONE SET, TA-312/TP (M3 PLT LDR VEH ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6650-00-530-0960</td>
<td>TELESCOPE, STRAIGHT, M49 W/E (M3 SQD LDR AND PLT LDT VEH ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NATIONAL STOCK NUMBER</td>
<td>DESCRIPTION</td>
<td>U/M</td>
<td>QTY</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>1430-01-046-9594</td>
<td>TRACKER, GUIDED MISSILE, AN/TAS-5 W/BACKPACK, BAG, BATTERIES, AND CASES (M2 ONLY) (SM-C-806917) 80063</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>1430-00-078-8340</td>
<td>TRACKER, INFRARED, GUIDED MISSILE, SU-36 (M2 ONLY) (5422779) 18876</td>
<td>EA</td>
<td>1</td>
</tr>
<tr>
<td>4933-00-481-3871</td>
<td>WRENCH AND GAGE COMBINATION (8448381) 19204</td>
<td>EA</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the Infantry Fighting Vehicle (IFV) and the Cavalry Fighting Vehicle (CFV). These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

EXPLANATION OF COLUMNS

a. *Column 1, Item Number.* This number is assigned to the entry in the listing. It is referenced in the Materials/Parts section of the task to identify the material (e.g., "Cleaning solvent (Item 2, App D)").

b. *Column 2, Level.* This column identifies the lowest level of maintenance below that requires the listed item.

C — Operator/Crew (IFV/CFV)

c. *Column 3, National Stock Number.* This is the National Stock Number (NSN) assigned to the item; use it to order the item.

d. *Column 4, Description.* This column indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number in parentheses followed by the Federal Supply Code for Manufacturer (FSCM).

e. *Column 5, Unit of Measure (U/M).* This column indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., EA, IN, PR). If the unit of measure differs from the unit of issue, order the lowest unit of issue that will satisfy your requirements.
## Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

### EXPENDABLE SUPPLIES AND MATERIALS LIST

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>LEVEL</th>
<th>NATIONAL STOCK-NUMBER</th>
<th>DESCRIPTION</th>
<th>U/M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>6850-00-664-1409</td>
<td>ANTIFREEZE, O-A-548, TYPE 1 (AA870) 59536</td>
<td>DR</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
<td>6850-00-664-5885</td>
<td>CLEANING SOLVENT, DCS-11 (PD660) 81348</td>
<td>QT</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>7920-00-044-9281</td>
<td>CLOTH, LINT-FREE</td>
<td>BX</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
<td>9140-00-286-5294</td>
<td>DIESEL FUEL, DF-2 (MIL-VV-F-800) 81348</td>
<td>GA</td>
</tr>
<tr>
<td>5</td>
<td>C</td>
<td>9150-00-935-9807</td>
<td>FLUID, HYDRAULIC, FOR RAMP-CONSISTING OF ONE OF THE FOLLOWING TYPES: (OHT MIL-H-6083) 81349 (MIL-H-5600) 81349 (AVERX904) 81349</td>
<td>QT</td>
</tr>
<tr>
<td>6</td>
<td>C</td>
<td>9150-00-190-0907</td>
<td>GREASE (GAA), AUTOMOTIVE AND ARTILLERY, BRAYCOTE610 (MIL-G-10924) 98308</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>C</td>
<td>9150-00-186-6681</td>
<td>OIL, ENGINE, OE/HDO-30 (MIL-L-2104) 81349</td>
<td>QT</td>
</tr>
<tr>
<td>8</td>
<td>C</td>
<td>9150-00-186-6681</td>
<td>OIL, LUBRICATION, OEA-30 (MIL-L-46167) 81340</td>
<td>QT</td>
</tr>
<tr>
<td>9</td>
<td>C</td>
<td>7920-00-205-1711</td>
<td>RAG, WIPING (AA531) 58536</td>
<td>BE</td>
</tr>
<tr>
<td>10</td>
<td>C</td>
<td>7930-00-253-0779</td>
<td>SOAP, ALKALINE (AA44) 58536</td>
<td>LB</td>
</tr>
</tbody>
</table>
APPENDIX E
STOWAGE AND SIGN GUIDE

Section I. INTRODUCTION

SCOPE
This appendix shows you where to stow equipment on the Infantry Fighting Vehicle, M2, and the Cavalry Fighting Vehicle, M3. It covers all stowed items carried on the M2 and M3, except those in the turret. For stowage in the turret, see TM 9-2350-252-10-2, Operator's Manual, Fighting Vehicle Infantry, M2, and Fighting Vehicle Cavalry, M3, Turret.

GENERAL
This stowage guide is divided into the following sections:

Section I.  INTRODUCTION
Section II. OUTSIDE STOWAGE — IFV
Section III. INSIDE STOWAGE — IFV
Section IV. OUTSIDE STOWAGE — CFV
Section V. INSIDE STOWAGE — CFV
Section VI. IDENTIFICATION PLATES
Section II. OUTSIDE STOWAGE — IFV

SMOKE GRENADE STOWAGE BIN (2)

MATTOCK

SMOKE GRENADE (8)

5.56MM AMMO CAN (3)

WATER BARRIER

LEFT SIDE TRIPOD

SPARE TRACK SHOE

IFV HULL — LEFT FRONT VIEW
IFV HULL — LEFT REAR VIEW
OUTSIDE STOWAGE — IFV (cont)

DRIFT PIN

TRACK FIXTURE

7.62MM AMMO CAN (6)

SPARE TRACK SHOE

TOWING CABLE

IFV HULL — RIGHT REAR VIEW
Section III. INSIDE STOWAGE — IFV

SQUAD AREA — UNDER FLOOR PLATES
RIGHT WALL PORTABLE FIRE EXTINGUISHER

TELEPHONE KIT

AN/PVS-4 STARLIGHT SCOPE

RATIONS (2)

M16A1 RIFLE

M60 MACHINE GUN

FIRST AID KIT

SQUAD AREA — TURRET SHIELD AND RIGHT FORWARD CORNER
INSIDE STOWAGE — IFV (cont)

7.62MM AMMO CAN (4)
5.56MM AMMO POUCH (2)
5.56MM AMMO BOX
25MM AP AMMO BOX (2)
25MM HE AMMO BOX (4)
5.56MM AMMO BOX
5.56MM AMMO POUCH (2)

SQUAD AREA — RIGHT REAR CORNER AND RIGHT SIDE LOWER WALL
Squad Area — Right Rear Corner and Right Side Lower Wall (cont)
INSIDE STOWAGE — IFV (cont)

M42 ALARM UNIT

M43 ALARM DETECTOR

BATTERY (BA35171/U)

DRAGON NIGHTSIGHT BATTERY CASE

DRAGON NIGHTSIGHT BOTTLE CASE

SQUAD AREA — RIGHT REAR CORNER AND RIGHT SIDE LOWER WALL (cont)
SQUAD AREA — LEFT REAR CORNER (MISSILE STOWAGE AREA)
INSIDE STOWAGE — IFV (cont)

5.56MM AMMO CAN (2)
7.62MM AMMO CAN (2)
25MM HE AMMO BOX (4)
5.56MM AMMO POUCH (4)
REAR
25MM AP AMMO BOX (3)

SQUAD AREA — LEFT SIDE UPPER WALL AND SPONSON (FORWARD OF MISSILE STOWAGE)
SQUAD AREA — LEFT SIDE UPPER WALL AND SPONSON
(FORWARD OF MISSILE STOWAGE) (cont)
INSIDE STOWAGE — IFV (cont)

M49A1 TRIP FLARE (12)
SPOOL TRIP WIRE (12)
INCENDIARY GRENADE (4)
MISSILE TRACKER
REAR
AP MINE BOUNDING (3)

M16A1 RIFLE
AP MINE FUSE PACKAGE
SMOKE GRENADE (4)

SQUAD AREA — LEFT SIDE LOWER WALL AND SPONSON
(FORWARD OF MISSILE STOWAGE)

E-14
AN/VDR-1 RADIAC SET

DAY PERISCOPE

CVC HELMET

WINDSHIELD KIT

DRIVER'S NIGHT VIEWER

PAMPHLET BAG

DRIVER'S STATION — LEFT SIDE
INSIDE STOWAGE — IFV (cont)

M60 SPARE BARREL AND PARTS

M16A1 RIFLE (2)

FLASHLIGHT

PAMPHLET BAG

BORESIGHT KIT

DRIVER'S STATION — RIGHT SIDE

E-16
COMMON TOOLS

GREASE GUN

HAND OILER

POWER UNIT COMPARTMENT
Section IV. OUTSIDE STOWAGE — CFV

SMOKE GRENADE STOWAGE BIN (2)

MATTOCK

SMOKE GRENADE (8)

7.62MM AMMO BOX (3)

WATER BARRIER LEFT SIDE TRIPOD

SPARE TRACK SHOE

CFV HULL — LEFT FRONT VIEW
OUTSIDE STOWAGE — CFV (cont)

CFV HULL — RIGHT REAR VIEW
5.56MM AMMO CAN (2)

WATER BARRIER REPAIR KIT

PANEL MARKER

RATIONS (12)

5.56MM AMMO CAN (2)

STOVE

RATIONS (12)

7.62MM AMMO BOX (4)

CFV HULL — REAR STOWAGE BOXES
Section V. INSIDE STOWAGE — CFV

SQUAD AREA — UNDER FLOOR PLATES

25MM AMMO BOX (8)
SQUAD AREA — TURRET SHIELD
INSIDE STOWAGE — CFV (cont)

- M229 CHEMICAL AGENT
- PADLOCK (2)
- AUTO ALARM REFILL KIT
- AN/PRC-77 RADIO SET
- 25MM AMMO BOX (3)
- AN/PVS-4 NIGHT VISION
- CHEMICAL CLOTHING (3)
- CHEMICAL CLOTHING
- FORWARD
- BORESIGHT KIT
- TELEPHONE SET
-向前
- 7.62MM AMMO BOX (11)

SPONSOR — LEFT CENTER
INSIDE STOWAGE — CFV (cont)

SQUAD AREA — LEFT REAR CORNER
SQUAD AREA — LEFT REAR CORNER (cont)
INSIDE STOWAGE — CFV (cont)

CABLE SPOOL AND REEL

25MM AMMO CAN (16)

CABLE SPOOL (PLATOON LEADER ONLY)

7.62MM AMMO CAN (9)

25MM AMMO CAN (5)

CLAYMORE MINE (2)

SQUAD AREA — LEFT REAR CORNER (cont)

E-28
INCENDIARY GRENADE (4)
FRAGMENT GRENADE (4)
SMOKE GRENADE (4)
MG7 FRAGMENT GRENADE

25MM AMMO CAN (2)
25MM AMMO CAN (9)

SQUAD AREA — RIGHT REAR CORNER
SQUAD AREA — RIGHT REAR CORNER (cont)
TOW MISSILE (10)

SQUAD AREA — RIGHT REAR CORNER (cont)
INSIDE STOWAGE — CFV (cont)

LAW ROCKET (2)

M16A1 RIFLE

PAMPHLET BAG

FLASHLIGHT

ABC-M11 DECONTAMINATION APPARATUS

DRIVER'S STATION — RIGHT SIDE
DRIVER'S STATION — LEFT SIDE
INSIDE STOWAGE — CFV (cont)

COMMON TOOLS

GREASE GUN

HAND OILER

POWER UNIT COMPARTMENT

E-34
Section VI. IDENTIFICATION PLATES

HULL ID PLATE

BILGE PUMP ID PLATE
IDENTIFICATION PLATES (cont)

DIESEL ENGINE ID PLATE
IDENTIFICATION PLATES (cont)

- VANEAXIAL FAN ID PLATE
- FUEL PUMP ID PLATE
- RIGHT ANGLE DRIVE ID PLATE
- PTO ID PLATE
- VANEAXIAL FAN SPEED CONTROL ID PLATE
- TRANSMISSION ID PLATE
- FINAL DRIVE ID PLATE

E-38
## ALPHABETICAL INDEX

<table>
<thead>
<tr>
<th>Subject</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td></td>
</tr>
<tr>
<td>Abbreviations, list of</td>
<td>1-5</td>
</tr>
<tr>
<td>Access, gain:</td>
<td></td>
</tr>
<tr>
<td>- Turret, turned in an emergency</td>
<td>2-323</td>
</tr>
<tr>
<td>Access door, power unit:</td>
<td></td>
</tr>
<tr>
<td>- Open</td>
<td>2-113</td>
</tr>
<tr>
<td>- PMCS (A)</td>
<td>2-70</td>
</tr>
<tr>
<td>Access door, ramp:</td>
<td></td>
</tr>
<tr>
<td>- Close</td>
<td>2-95</td>
</tr>
<tr>
<td>- Description</td>
<td>2-35</td>
</tr>
<tr>
<td>- Open</td>
<td>2-95</td>
</tr>
<tr>
<td>Access panels, engine (principles of operation)</td>
<td>1-14</td>
</tr>
<tr>
<td>Access panels, power unit:</td>
<td></td>
</tr>
<tr>
<td>- Install</td>
<td>2-239</td>
</tr>
<tr>
<td>- Principles of operation</td>
<td>1-14</td>
</tr>
<tr>
<td>- Remove</td>
<td>2-239</td>
</tr>
<tr>
<td>Add:</td>
<td></td>
</tr>
<tr>
<td>- Oil, engine</td>
<td>3-99</td>
</tr>
<tr>
<td>- Oil, transmission</td>
<td>3-103</td>
</tr>
<tr>
<td>Additional authorization list, C-2</td>
<td></td>
</tr>
<tr>
<td>Adjust:</td>
<td></td>
</tr>
<tr>
<td>- Brake pedal height</td>
<td>2-119</td>
</tr>
<tr>
<td>- Driver's seat</td>
<td>2-121</td>
</tr>
<tr>
<td>- Squad seats</td>
<td>2-127</td>
</tr>
<tr>
<td>- Track tension</td>
<td>3-45</td>
</tr>
<tr>
<td>Alarm, M8 (chemical agent)</td>
<td>4-1</td>
</tr>
<tr>
<td>Ammo:</td>
<td></td>
</tr>
<tr>
<td>- 25mm, stow</td>
<td>2-207</td>
</tr>
<tr>
<td>- 5.56mm</td>
<td>5-1</td>
</tr>
<tr>
<td>- 7.62mm</td>
<td>5-2</td>
</tr>
<tr>
<td>Armor plates, side:</td>
<td></td>
</tr>
<tr>
<td>- Lower</td>
<td>2-241</td>
</tr>
<tr>
<td>- Raise</td>
<td>2-241</td>
</tr>
<tr>
<td>Authorization list, additional, C-2</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td></td>
</tr>
<tr>
<td>Barrier, water:</td>
<td></td>
</tr>
<tr>
<td>- Description</td>
<td>1-11</td>
</tr>
<tr>
<td>- Erect</td>
<td>2-263</td>
</tr>
<tr>
<td>- Patch</td>
<td>3-43</td>
</tr>
<tr>
<td>- Stow</td>
<td>2-285</td>
</tr>
<tr>
<td>Basic issue items</td>
<td></td>
</tr>
<tr>
<td>- B-4</td>
<td></td>
</tr>
<tr>
<td>Batteries, PMCS (W)</td>
<td>2-80</td>
</tr>
<tr>
<td>Batteries, vehicle, check</td>
<td>3-81</td>
</tr>
<tr>
<td>Bilge pumps:</td>
<td></td>
</tr>
<tr>
<td>- Description</td>
<td>1-10</td>
</tr>
<tr>
<td>- PMCS (M)</td>
<td>2-88</td>
</tr>
<tr>
<td>- Service</td>
<td>3-87</td>
</tr>
<tr>
<td>Bilge pumps system</td>
<td></td>
</tr>
<tr>
<td>(troubleshooting)</td>
<td></td>
</tr>
<tr>
<td>Blackout covers:</td>
<td></td>
</tr>
<tr>
<td>- Close</td>
<td>2-205</td>
</tr>
<tr>
<td>- Open</td>
<td>2-205</td>
</tr>
<tr>
<td>Brake pedal height, adjust</td>
<td>2-119</td>
</tr>
<tr>
<td>Break track</td>
<td>3-63</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td></td>
</tr>
<tr>
<td>Capabilities (equipment)</td>
<td>1-6</td>
</tr>
<tr>
<td>Cargo hatch, PMCS (D)</td>
<td>2-62</td>
</tr>
<tr>
<td>Cargo hatch controls (description)</td>
<td>2-33</td>
</tr>
<tr>
<td>Cargo hatch cover:</td>
<td></td>
</tr>
<tr>
<td>- Close</td>
<td>2-107</td>
</tr>
<tr>
<td>- Open</td>
<td>2-107</td>
</tr>
<tr>
<td>- Principles of operation</td>
<td>1-14</td>
</tr>
<tr>
<td>Cautions (how to use)</td>
<td>xii</td>
</tr>
<tr>
<td>Cavalry fighting vehicle (CFV):</td>
<td></td>
</tr>
<tr>
<td>- General information</td>
<td>1-1</td>
</tr>
<tr>
<td>- Stowage, inside</td>
<td>E-22</td>
</tr>
<tr>
<td>- Stowage, outside</td>
<td>E-18</td>
</tr>
</tbody>
</table>

Index 1
Subject, Page

C (cont)

Check:
- Batteries, vehicle, 3-81
- Hydraulic power unit, ramp, 3-107
- Oil, engine, 3-99
- Oil, transmission, 3-103
- Power unit, hydraulic, ramp, 3-107
- Radiator, 3-95
- Ramp hydraulic power unit, 3-107

Chemical agent:
- AN-M15A2A detector kit, 4-1
- M8 alarm, 4-1

Close:
- Blackout covers, 2-205
- Cargo hatch cover, 2-107
- Driver's hatch cover, 2-101
- Power unit access door, 2-113
- Ramp access door, 2-95
- Turret shield door, 2-111

Cold, extreme, operate (vehicle) in, 2-245

Components of end item, B-3

Control box:
- Fan (description), 2-31
- Intercom (IFV) (description), 2-34
- Personnel heater (description), 2-25

Control panel:
- Fuel (description), 2-23
- Throttle (description), 2-23

Controls:
- Cargo hatch (description), 2-33
- Driver's hatch (description), 2-1
- Ramp lock (description), 2-24
- Vent fan, firing port (IFV only) (description), 2-32

Controls, driver's:
- PMCS (A), 2-69
- PMCS (D), 2-65
- Principles of operation, 1-15

Controls, operator's (description and use of), 2-1

Cooling system:
- PMCS (A), 2-72
- PMCS (M), 2-88
- Principles of operation, 1-15

Cover, hatch, cargo:
- Close, 2-107
- Open, 2-107
- Principles of operation, 1-14

Cover, hatch, driver's:
- Close, 2-101
- Open, 2-101
- Principles of operation, 1-14

Covers, blackout:
- Close, 2-205
- Open, 2-205

D

Data, equipment, 1-7
Decontaminating apparatus, DS2, 4-1
Definition of task terms, xii
Description, equipment, 1-6
Description of major parts, 1-10
Destruction of Army materiel to prevent enemy use, 1-4
Detector kit, AN-M15A2A (chemical agent), 4-1
Differences between models, 1-7

Index 2
Subject, Page

**D (cont)**

Disabled vehicle:
- Tow, 2-311
- Tow start, 2-311

Distribution box (description), 2-26

Dome lights:
- CFV (description), 2-29
- IFV (description), 2-30

Door, access, power unit:
- Close, 2-113
- Open, 2-113
- PMCS (A), 2-70

Door, access, ramp:
- Close, 2-95
- Description, 2-35
- Open, 2-95

Door, shield, turret:
- Close, 2-111
- Open, 2-111

DRAGON missile, 4-1
DRAGON missile, tracker, 4-1
DRAGON missiles (IFV only), stow, 2-211

Drain plugs:
- Hull, final drive, PMCS (M), 2-84
- Hull, PMCS (B), 2-46
- Principles of operation, 1-14

Drive in water, 2-277

Driver's controls:
- PMCS (A), 2-69
- PMCS (D), 2-65
- Principles of operation, 1-15

Driver's hatch, PMCS (D), 2-52

Driver's hatch controls (description), 2-1

Driver's hatch cover:
- Close, 2-101
- Open, 2-101
- Principles of operation, 1-14

Driver's instrument panel:
- Description, 2-2
- PMCS (D), 2-53

Driver's night viewer:
- Description, 2-21
- Install, 2-193
- Operate, 2-199
- Remove, 2-193

Driver's periscopes, PMCS (D), 2-56

Driver's seat:
- Adjust, 2-121
- PMCS (B), 2-50
- Stow, 2-123
- Unstow, 2-123

Drive train (principles of operation), 1-15

Drive vehicle, 2-153

E

EIR, reporting, 1-4

Electrical system, hull (principles of operation), 1-16

Emergency:
- Access to turned turret, gain, 2-323
- Turret, turned, gain access to, 2-323

End item, components of, B-3

Enemy use, to prevent, destruction of Army materiel, 1-4

Engine:
- Start, 2-137
- Start (with outside power source), 2-147
- Stop, 2-161
### E (cont)

- Engine access panels (principles of operation), 1-14
- Engine compartment, PMCS (A), 2-74
- Engine oil:
  - Add, 3-99
  - Check, 3-99
- Engine system:
  - Principles of operation, 1-15
  - Troubleshooting, 3-5
- Enter water, prepare to, 2-251
- Erect water barrier, 2-263
- Exhaust system (troubleshooting), 3-20
- Expendable supplies and materials list, D-2
- Exterior, vehicle, PMCS (B), 2-43
- Extinguisher handles, fire:
  - External, PMCS (B), 2-44
  - Internal, PMCS (B), 2-45
- Extinguishers, fire:
  - Internal, PMCS (B), 2-48
  - Portable, PMCS (M), 2-92

### F (cont)

- Filter, fuel, PMCS (A), 2-73
- Final drive:
  - Hull drain plugs, PMCS (M), 2-84
  - Service, 3-77
- Final drives, PMCS (A), 2-74
- Fire extinguisher handles:
  - External, PMCS (B), 2-44
  - Internal, PMCS (B), 2-45
- Fire extinguishers:
  - Internal, PMCS (B), 2-48
  - Portable, PMCS (M), 2-92
- Fire suppression system:
  - Description, 1-13, 2-28
  - Operate, 2-189
- Firing port vent fan controls (IFV only) (description), 2-32
- Firing port vent system (principles of operation), 1-15
- Firing port weapon (IFV only):
  - Install, 2-225
  - Operate, 2-229
  - Remove, 2-231
- Firing ports (IFV only):
  - Description, 1-11
  - PMCS (M), 2-89
  - Principles of operation, 1-15
- Ford water less than 3 1/2 feet deep, 2-259
- Forms:
  - Maintenance, 1-3
  - Maintenance (PMCS), 2-37
- Fuel and throttle control panel (description), 2-23
- Fuel filter, PMCS (A), 2-73
- Fuel gage, PMCS (A), 2-68
- Fuel tanks (description), 1-10
- Fuel vehicle, 2-173

Index 4
Subject, Page

**G**

Gage, fuel, PMCS (A), 2-68
Gear selector panel (description), 2-19
General information, 1-1
Generator, smoke screen, operate, 2-235
Generator system, smoke (principles of operation), 1-16
Grease fitting, track adjuster, replace, 3-75
Grenade launcher, M79, 4-1
Gun:
  Machine, M60, 4-1
  Submachine, M231, 4-1

**H**

Hand receipt (HR) manuals, 1-3
Handles, fire extinguisher:
  External, PMCS (B), 2-44
  Internal, PMCS (B), 2-45
Hatch:
  Cargo, PMCS (D), 2-62
  Driver's, PMCS (D), 2-52
Hatch controls:
  Cargo (description), 2-33
  Driver's (description), 2-1
Hatch cover, cargo:
  Close, 2-107
  Open, 2-107
  Principles of operation, 1-14
Hatch cover, driver's:
  Close, 2-101
  Open, 2-101
  Principles of operation, 1-14
Heater, personnel:
  Control box (description), 2-25
  Operate, 2-181
  PMCS (D), 2-58

Heater, winterization kit (description), 2-27
Heater system, personnel (troubleshooting), 3-34
Heating, crew (description), 1-12
Height, brake pedal, adjust, 2-119
Helper (how to use), xiii
How to use this manual, iii
HR (hand receipt) manuals, 1-3
Hull:
  Electrical system (principles of operation), 1-16
  Principles of operation, 1-14
Hull drain plugs:
  Final drive, PMCS (M), 2-84
  PMCS (B), 2-46
Hydraulic power unit, ramp:
  Check, 3-107
  PMCS (W), 2-80

ID (identification) plates, E-35
Indicators, operator's (description and use of), 2-1
Infantry fighting vehicle (IFV):
  General Information, 1-1
  Stowage, inside, E-6
  Stowage, outside, E-2
Inspect intake screen, 3-41
Install:
  Driver's night viewer, 2-193
  Firing port weapon (IFV only), 2-225
  Power unit access panels, 2-239
  Track, 3-49
  Track shoe pads, 3-71
  Windshield kit, 2-177

Index 5
Subject, Page

I (cont)

Instrument panel, driver's:
   Description, 2-2
   PMCS (D), 2-53
Intake screen:
   Inspect, 3-41
   Lower, 3-41
   PMCS (A), 2-72
   Raise, 3-41
Intercom control box (IFV)
   (description), 2-34
Intercom system, operate, 2-133
Issue items, basic, B-4

Join track, 3-63

K

L

Launcher, grenade, M79, 4-1
Lighting, exterior (description), 1-13
Lights, dome:
   CFV (description), 2-29
   IFV (description), 2-30
Lights, vehicle:
   Exterior, PMCS (M), 2-87
   Operate, 2-185
Location of major parts, 1-10
Locational terms, xiv
Lower:
   Armor plates, side, 2-241
   Intake screen, 3-41
   Ramp, 2-115
   Trim vane, 2-237

Index 6
Open:
- Blackout covers, 2-205
- Cargo hatch cover, 2-107
- Driver's hatch cover, 2-101
- Power unit access door, 2-113
- Ramp access door, 2-95
- Turret shield door, 2-111

Operate:
- Cold, extreme (operate vehicle in), 2-245
- Driver's night viewer, 2-199
- Fire suppression system, 2-189
- Firing port weapon (IFV only), 2-229
- Intercom system, 2-133
- Lights, vehicle, 2-185
- Personnel heater, 2-181
- Rough terrain (operate vehicle over), 2-305
- Smoke screen generator, 2-235
- Vent system, 2-183
- Winterization kit, 2-249

Operation, technical principles of, 1-14
Operation task (how to use), vi

P

Pads, track shoe:
- Install, 3-71
- Remove, 3-71

Panel, control:
- Fuel (description), 2-23
- Throttle (description), 2-23
- Panel, gear selector (description), 2-19
- Panel, instrument, driver's (description), 2-2
Power unit, hydraulic, ramp:
- Check, 3-107
- PMCS (W), 2-80

Power unit access door:
- Close, 2-113
- Open, 2-113
- PMCS (A), 2-70

Power unit access panels:
- Install, 2-239
- Principles of operation, 1-14
- Remove, 2-239

Power unit compartment (description), 1-10

Prepare to enter water, 2-251

Preventive maintenance checks and services (PMCS):
- After (A) operation checks, 2-67
- Before (B) operation checks, 2-41
- During (D) operation checks, 2-51
- Maintenance forms and records, 2-37
- Monthly (M) operation checks, 2-83
- PMCS procedure (how to use), ix
- PMCS procedures, 2-37
- Scope, 2-37
- Weekly (W) operation checks, 2-79

Principles of operation, technical, 1-14

Pumps, bilge:
- Description, 1-10
- PMCS (M), 2-88
- Service, 3-87

Pumps system, bilge
- (troubleshooting), 3-34

Index 8
Subject, Page

R (cont)

Replace:
- Grease fitting, track adjuster, 3-75
- Track adjuster grease fitting, 3-75
- Track shoe, 3-57

Reporting EIR, 1-4

Rifle, M16A1, 4-1

Right angle fan drive, PMCS (M), 2-86

Rough terrain, operate vehicle over, 2-305

S

Scope, 1-3

Screen, intake:
- Inspect, 3-41
- Lower, 3-41
- PMCS (A), 2-72
- Raise, 3-41

Seat, driver's:
- Adjust, 2-121
- PMCS (B), 2-50
- Stow, 2-123
- Unstow, 2-123

Seats, squad:
- Adjust, 2-127
- PMCS (D), 2-61
- Stow, 2-129
- Unstow, 2-129

Service:
- Bilge pumps, 3-87
- Final drive, 3-77

Shield door, turret:
- Close, 2-111
- Open, 2-111

S (cont)

Shoe, track:
- Remove (from stretched track), 3-53
- Replace, 3-57

Shoe pads, track:
- Install, 3-71
- Remove, 3-71

Shut down vehicle, 2-163

Slope indicator (description), 2-26

Smoke generator system (principles of operation), 1-16

Smoke screen generator, operate, 2-235

Squad area periscopes, PMCS (D), 2-64

Squad seats:
- Adjust, 2-127
- PMCS (D), 2-61
- Stow, 2-129
- Unstow, 2-129

Start:
- Engine, 2-137
- Engine (with outside power source), 2-147

Start, tow (disabled vehicle), 2-311

Steering yoke (description), 2-22

Stop engine, 2-161

Stow:
- Ammo, 25mm, 2-207
- DRAGON missiles (IFV only), 2-211
- Driver's seat, 2-123
- Squad seats, 2-129
- TOW missiles, 2-215
- Trim vane, 2-237
- Water barrier, 2-285
- Windshield kit, 2-177

Index 9
Stowage:
- Inside (CFV), E-22
- Inside (IFV), E-6
- Outside (CFV), E-18
- Outside (IFV), E-2

Submachine gun, M231, 4-1

Supplies list, expendable, D-2

Suspension, PMCS (A), 2-75

Suspension system:
- Description, 1-12
- PMCS (B), 2-42
- PMCS (M), 2-85
- Troubleshooting, 3-22

Swimming (perform post-swimming operations), 2-297

Symptom index, troubleshooting, 3-3

Track:
- Adjust (track tension), 3-45
- Break, 3-63
- Description, 1-12
- Install, 3-49
- Join, 3-63
- Remove track shoe from, 3-53
- Troubleshooting, 3-22

Track adjuster grease fitting, replace, 3-75

Track shoe:
- Remove (from stretched track), 3-53
- Replace, 3-57

Track shoe pads:
- Install, 3-71
- Remove, 3-71

Track tension, adjust, 3-45

Tracker DRAGON missile, 4-1

Transmission, PMCS (A), 2-71

Transmission oil:
- Add, 3-103
- Check, 3-103

Transmission system (troubleshooting), 3-20

Trim vane:
- Description, 1-10
- Lower, 2-237
- PMCS (W), 2-81
- Principles of operation, 1-14
- Stow, 2-237

Troubleshooting:
- Procedures, 3-3
- Symptom index, 3-3
- Task (how to use), xi

Turret, turned (gain access in an emergency), 3-232

Index 10
Subject, Page

T (cont)
Turret shield door:
Close, 2-111
Open, 2-111

U
Unstow:
Driver's seat, 2-123
Squad seats, 2-129
Windshield kit, 2-177

Use this manual, how to, iii

V
Vent fan controls, firing port (IFV only) (description), 2-32
Vent system, firing port (principles of operation), 1-15
Vent system, operate, 2-183
Ventilation, crew (description), 1-12

W
Warnings (how to use), xii
Water:
Drive in, 2-277
Ford (water less than 3 1/2 feet deep), 2-259
Prepare to enter, 2-251

Water barrier:
Description, 1-11
Erect, 2-263
Patch, 3-43
Stow, 2-285

Weapon, firing port (IFV only):
Install, 2-225
Operate, 2-229
Remove, 2-231

Windshield kit:
Install, 2-177
Stow, 2-177
Unstow, 2-177

Winterization kit, operate, 2-249
Winterization kit heater (description), 2-27

X

Yoke, steering (description), 2-22

Z
<table>
<thead>
<tr>
<th>PAGE</th>
<th>PARAGRAPH NO.</th>
<th>FIGURE NO.</th>
<th>TABLE NO.</th>
<th>IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-177</td>
<td></td>
<td></td>
<td></td>
<td>Step 6. On-off switch is shown in OFF position, and it should be shown in&quot;ON&quot; position. Move switch to &quot;ON&quot; position.</td>
</tr>
<tr>
<td>3-4</td>
<td></td>
<td></td>
<td></td>
<td>Step 9. Wire identified as 234P2 in manual is 2WAP7. Change wire identification to 2WAP7.</td>
</tr>
<tr>
<td>3-8</td>
<td></td>
<td></td>
<td></td>
<td>Step 3. Seat shown as unstowed. Change to stowed position to match step.</td>
</tr>
</tbody>
</table>

P.S. - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.
RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

THEN JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

DATE SENT

PUBLICATION NUMBER
TM 9-2350-252-10-1

PUBLICATION DATE
APRIL 1982

PUBLICATION TITLE
OPERATOR'S MANUAL, IFV/CFV, HULL

BE EXACT...PIN-POINT WHERE IT IS IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

<table>
<thead>
<tr>
<th>PAGE NO</th>
<th>PARA. NO</th>
<th>FIGURE NO</th>
<th>TABLE NO</th>
</tr>
</thead>
</table>

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S. - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.
Commander:
U.S. Army Tank-Automotive
Command
ATTN: DRSTA-MB
Warren, Michigan 48090
THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 100 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

5/9 (°F — 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.3° Celsius
32°Fahrenheit is equivalent to 0° Celsius
9/5 (°C + 32) = °F
<table>
<thead>
<tr>
<th>TO CHANGE</th>
<th>TO</th>
<th>MULTIPLY BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>Centimeters</td>
<td>2.540</td>
</tr>
<tr>
<td>Feet</td>
<td>Meters</td>
<td>0.305</td>
</tr>
<tr>
<td>Yards</td>
<td>Meters</td>
<td>0.914</td>
</tr>
<tr>
<td>Miles</td>
<td>Kilometers</td>
<td>1.609</td>
</tr>
<tr>
<td>Square Inches</td>
<td>Square Centimeters</td>
<td>6.451</td>
</tr>
<tr>
<td>Square Feet</td>
<td>Square Meters</td>
<td>0.093</td>
</tr>
<tr>
<td>Square Yards</td>
<td>Square Meters</td>
<td>0.836</td>
</tr>
<tr>
<td>Square Miles</td>
<td>Square Kilometers</td>
<td>2.590</td>
</tr>
<tr>
<td>Acres</td>
<td>Square Hectometers</td>
<td>0.405</td>
</tr>
<tr>
<td>Cubic Feet</td>
<td>Cubic Meters</td>
<td>0.028</td>
</tr>
<tr>
<td>Cubic Yards</td>
<td>Cubic Meters</td>
<td>0.765</td>
</tr>
<tr>
<td>Fluid Ounces</td>
<td>Milliliters</td>
<td>29.573</td>
</tr>
<tr>
<td>Pints</td>
<td>Liters</td>
<td>0.473</td>
</tr>
<tr>
<td>Quarts</td>
<td>Liters</td>
<td>0.946</td>
</tr>
<tr>
<td>Gallons</td>
<td>Liters</td>
<td>3.785</td>
</tr>
<tr>
<td>Ounces</td>
<td>Grams</td>
<td>28.349</td>
</tr>
<tr>
<td>Pounds</td>
<td>Kilograms</td>
<td>0.454</td>
</tr>
<tr>
<td>Short Tons</td>
<td>Metric Tons</td>
<td>0.907</td>
</tr>
<tr>
<td>Pound-Feet</td>
<td>Newton-Meters</td>
<td>1.356</td>
</tr>
<tr>
<td>Pounds per Square Inch</td>
<td>Kilopascals</td>
<td>6.895</td>
</tr>
<tr>
<td>Miles per Gallon</td>
<td>Kilometers per Liter</td>
<td>0.425</td>
</tr>
<tr>
<td>Miles per Hour</td>
<td>Kilometers per Hour</td>
<td>1.609</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TO CHANGE</th>
<th>TO</th>
<th>MULTIPLY BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centimeters</td>
<td>Inches</td>
<td>0.394</td>
</tr>
<tr>
<td>Meters</td>
<td>Feet</td>
<td>3.280</td>
</tr>
<tr>
<td>Meters</td>
<td>Yards</td>
<td>1.094</td>
</tr>
<tr>
<td>Kilometers</td>
<td>Miles</td>
<td>0.621</td>
</tr>
<tr>
<td>Square Centimeters</td>
<td>Square Inches</td>
<td>0.155</td>
</tr>
<tr>
<td>Square Meters</td>
<td>Square Feet</td>
<td>10.764</td>
</tr>
<tr>
<td>Square Meters</td>
<td>Square Yards</td>
<td>1.196</td>
</tr>
<tr>
<td>Square Kilometers</td>
<td>Square Miles</td>
<td>0.386</td>
</tr>
<tr>
<td>Square Hectometers</td>
<td>Acres</td>
<td>2.471</td>
</tr>
<tr>
<td>Cubic Meters</td>
<td>Cubic Feet</td>
<td>35.315</td>
</tr>
<tr>
<td>Cubic Meters</td>
<td>Cubic Yards</td>
<td>1.308</td>
</tr>
<tr>
<td>Milliliters</td>
<td>Fluid Ounces</td>
<td>0.034</td>
</tr>
<tr>
<td>Liters</td>
<td>Pints</td>
<td>2.113</td>
</tr>
<tr>
<td>Liters</td>
<td>Quarts</td>
<td>1.057</td>
</tr>
<tr>
<td>Liters</td>
<td>Gallons</td>
<td>0.264</td>
</tr>
<tr>
<td>Grams</td>
<td>Ounces</td>
<td>0.035</td>
</tr>
<tr>
<td>Kilograms</td>
<td>Pounds</td>
<td>2.205</td>
</tr>
<tr>
<td>Metric Tons</td>
<td>Short Tons</td>
<td>1.102</td>
</tr>
<tr>
<td>Newton-Meters</td>
<td>Pound-Feet</td>
<td>0.738</td>
</tr>
<tr>
<td>Kilopascals</td>
<td>Pounds per Square Inch</td>
<td>0.145</td>
</tr>
<tr>
<td>Kilometers per Liter</td>
<td>Miles per Gallon</td>
<td>2.354</td>
</tr>
<tr>
<td>Kilometers per Hour</td>
<td>Miles per Hour</td>
<td>0.621</td>
</tr>
</tbody>
</table>

**CAUTION** — **USE SCALE FOR COMPARISON ONLY, NOT FOR MEASURING PARTS.**
HULL

FIGHTING VEHICLE, INFANTRY, M2 (2350-01-048-5920) AND

FIGHTING VEHICLE, CAVALRY, M3 (2350-01-049-2659)

OPERATOR'S MANUAL

APRIL 1982