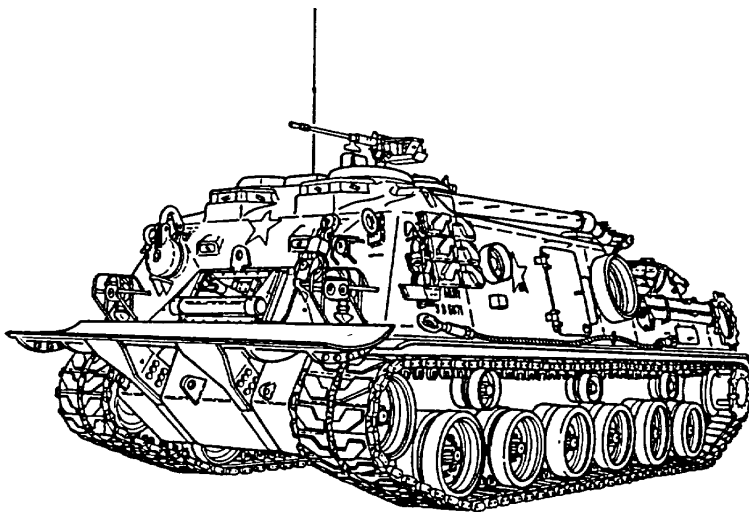


OPERATOR'S MANUAL



Recovery Vehicle,
Full-Track:
Medium, M 88A1
(NSN 2350-00-122-6826)

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31 MARCH 1998

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DEPARTMENT OF THE ARMY
Washington D.C., 31 March 1998

**OPERATOR'S MANUAL
FOR
RECOVERY VEHICLE, FULL-TRACKED:
MEDIUM, M88A1
(NSN 2350-00-122-6826)**

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to publications and Blank Forms) or DA Form 2028-2 located in the back of this manual direct to Commander, U.S. Army Tank-Automotive and Armaments Command, Attn. AMSTA-IM-OPIT, Warren, MI 48397-5000. You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail:

- TACOM's fax number is DSN 786-6323
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HOW TO USE THIS MANUAL

- a. General.** This manual contains operation and maintenance information for the M88A1 Medium Full-Track Recovery Vehicle crew.

This manual is divided into 4 chapters and 6 appendices. Each chapter and appendix starts on a right-hand page with the page number of 1. Pages are numbered after the chapter number or appendix letter. For example, 1-14 means Chapter 1, page 14, and A-2 means Appendix A, page 2.

At the end of this manual are an alphabetical index and a DA Form 2028-2.

- b. Front Matter.** The front cover has an index for the major divisions in this manual. The first page of the associated major division has a black edge that lines up with the applicable cover boxed-in area.

There are general warnings that start on the first right-hand page immediately after the cover that should be read before operating or performing any maintenance on the M88A1.

The table of contents has the page where each chapter, appendix, and section starts.

c. Chapters.

- Chapter 1 provides general information, equipment descriptions, and principles of operation of the M88A1.
- Chapter 2 provides a description and usage instructions of the Operator's controls and indicators, PMCS, and operation instructions under usual and unusual conditions.
- Chapter 3 provides lubricating instructions, troubleshooting procedures, and maintenance procedures.
- Chapter 4 provides maintenance instructions for communication systems, deep water fording, and the M239 smoke grenade launcher.

d. Appendices.

- Appendix A provides titles of publications referenced in this manual.
- Appendix B provides the COEI and BII lists.
- Appendix C provides the AAL.

HOW TO USE THIS MANUAL-Continued.

- Appendix D provides the expendable and durable items list.
 - Appendix E provides the stowage and sign guide.
 - Appendix F provides lubrication instructions.
- e. **Alphabetical Index.** The alphabetical index is located after the last appendix and provides an alphabetical listing of information contained in this manual.
- f. **DA Form 2028-2.** DA Form 2028-2 is used to report errors and to recommend improvements for the tasks in this manual.
- g. **Warnings, Cautions, and Notes.** Warnings, cautions, and notes are provided throughout this manual. A warning is provided where injury may occur to personnel on or near the vehicle. A caution is provided where equipment may be damaged, but no injuries to personnel should result. A note provides information, but no personnel injury or equipment damage should result.
- h. **Referencing.** In this manual, internal referencing is done by paragraph. For example, (see para. 2-3) refers you to Chapter 2, paragraph 3.

Referencing outside this manual is done by the military publication J number. For example, (refer to TM 9-2350-256-20) refers you to that manual.

i. **Locating Information.**

This manual provides five ways by which you can locate information quickly:

- The cover index lists the most frequently used major divisions by title and starting page number.
- The table of contents lists the chapters, sections, and paragraphs by name with their corresponding page number.
- The chapter and appendix indexes list the sections or paragraphs that are in those chapters/appendices.
- The malfunction index provides a quick guide to troubleshooting malfunctions.
- The index provides an alphabetical listing of information contained in this manual.

CHAPTER 1 INTRODUCTION

SECTION I. GENERAL INFORMATION

1-1. SCOPE. This operator's manual contains instructions for your use in operating and maintaining the Recovery Vehicle, Full-Track: Medium, M88A1. The purpose of the M88A1 is to provide recovery of medium and light combat vehicles by towing, winching, and hoisting. This manual includes lists of components, Components Of End Items (COEI), Basic Issue Items (BII), Additional Authorized List (AAL), expendable and durable items list, a stowage and sign guide, and lubrication instructions.

1-2. MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment will be those prescribed by DA PAM 738-750 as contained in the Maintenance Management Update.

1-3. CORROSION PREVENTION AND CONTROL (CPC). Primary responsibility for CPC lies with unit maintenance and will be handled at depot level. Operators will notify unit maintenance of any excessive corrosion or wear that occurs with the M88A1.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Instructions on destruction of the vehicle to prevent enemy use are contained in TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment To Prevent Enemy Use.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs). If your M88A1 needs improvement, let us know. Send us an EIR You, the user, are the only one who can tell us what you do not like about the equipment. Let us know why you do not like the design or performance. Put it on an SF 368, Product Quality Deficiency Report. Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, Attn: AMSTA-IM-OPIT, Warren, MI 48397-5000. We will send you a reply.

You may also provide DA Form 2028-2 information to TACOM via datafax or email:

- TACOM's fax number is DSN 786-6323
- TACOM's e-mail address is tacom-tech-pubs@cc.tacom.army.mil

1-6. NOMENCLATURE CROSS-REFERENCE LIST.

Manual Nomenclature

Official Nomenclature

Ammo	Ammunition
Dipstick	Gage rod
Lockwire	Safety wire, nonelectrical
M1A1 collimeter	Infinity aiming reference

1-7. LIST OF ABBREVIATIONS.

%	percent
AAL	Additional Authorization List
AOAP	Army Oil Analysis Program
APU	Auxiliary Power Unit
ammo	ammunition
B.O	blackout
BII	Basic Issue Item
CAGEC	Commercial and Government Entity Code
cal	caliber
CARC	Chemical Agent Resistant Coating
°C	degree Celsius
cm	centimeter
COEI	Component of End Item
CPC	Corrosion Prevention and Control
CTA	Common Table of Allowance
cu in.	cubic inch
cu. ft	cubic foot
c. m	cubic meter
DA	Department of the Army
dc	direct current
dia	diameter
DOD	Department of Defense
ea	each
EIR	Equipment Improvement Report
fpm	foot per minute
ft	foot
gal	gallon
gen	generator
GPFU	Gas-Particulate Filter Unit
HD	heavy duty
IAW	In accordance with
ICE	Internal Combustion Engine
in	inch
IR	infrared
IR-B.O	infrared blackout
JTA	Joint Table of Allowance
kg	kilogram
km	kilometer
km /h	kilometers per hour
kPa	kilopascal
L	liter
LAW	Light Assault Weapon
lb	pound
lb-ft	pound-foot
lg	long
LSA	Lubricant, Small Arm s
lt	light

lube.....	lubrication or lubricate
m	meter
max	maximum
min	minimum
m.....	millimeter
mph	mile per hour
mps	meter per second
MTOE	Modified Table of Organization and Equipment
N	neutral
NBC.....	Nuclear, Biological, and Chemical
NBC NCO	Nuclear, Biological, and Chemical Non-Commissioned Officer
No.....	number
NSN.....	National Stock Number
N•m	Newton-meter
P	park
pc	piece
PMCS	Preventive Maintenance Checks and Services
PN.....	part number
press.....	pressure
psi	pound per square inch
pt.....	pint
qt.....	quart
Qty. Recm.....	quantity recommended
R	reverse
rpm	revolutions per minute
SOP.....	Standard Operating Procedure
sq. dr	square drive
TACOM.....	U.S. Army Tank-automotive and Armaments Command
TAMMS.....	The Army Maintenance Management System
TDA	Table of Distribution and Allowance
TM	Technical Manual
temp	temperature
TOE.....	Table of Organization and Equipment
U/I.....	Unit of Issue
U/M.....	Unit of Measure
USAREUR.....	United States Army Europe
vent	ventilating
w	wide
w/	with
w/e.....	with equipment
w/o.....	without
w/oe.....	without equipment
x.....	by (as in2 x4)

1-8. GLOSSARY.

AcetyleneA colorless gas used in metal cutting and welding.

1-8. GLOSSARY-Continued.

Amine	Any of a class of compounds derived from ammonia by replacement of one or more hydrogen atoms with organic groups.
Celsius	Pertaining to or noting a temperature scale in which 0° represents the ice point and 100° the steam point.
Chromate.....	A salt of chromic acid.
Collimation	To make parallel.
E-mail	Electronic mail.
Fahrenheit.....	Pertaining to or noting a temperature scale in which 32° represents the ice point and 212° the steam point.
Fax	Transmission and reproduction of documents over a telephone line.
Initialized.....	To set, prepare, or format.
Isocyanate.....	A salt or ester of an unstable acid, CHNO, tautomeric with cyanic acid.

SECTION II. EQUIPMENT DESCRIPTION

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

- a. **General.** The Recovery Vehicle, Full-Track: Medium, M88A1 is an armored, full-track-laying, low silhouette vehicle. It is used for hoisting, winching, and towing operations for tanks and other vehicles. It is equipped to assist in repairing disabled vehicles under general field conditions. The vehicle carries a crew of three: driver, mechanic, and commander.

NOTE

Refer to FM 20-22, Vehicle Recovery Operations for recovery methods.

b. **Major Vehicle Systems and Assemblies.**

- (1) The M88A1 is powered by a 12 cylinder, diesel engine. The vehicle transmission is a combined transmission, differential, steering and braking unit. Controls for these components are located in the driver's area.
- (2) The suspension system for each side consists of six pairs of roadwheels with support arms, three pairs of track support rollers, three shock absorbers, one track adjusting link, two bumper assemblies, track drive sprockets and hubs, compensating idler wheel, and track. Primary springing is done by individual torsion bars for each roadwheel arm.
- (3) The hull and cab assembly armor protects the crew and equipment against small arms fire, medium artillery, shell fragments, and 20-lb anti-tank mines. The vehicle is divided into three sections: crew compartment, hydraulics compartment, and engine compartment.
- (4) The vehicle is equipped with a main and an auxiliary hydraulic system used for recovery and maintenance operations. These systems power the spade, boom, main winch, hoist winch, refuel pump, and the hydraulic impact wrench. The primary purpose of the auxiliary system is to allow emergency retrieval of hydraulic systems in the event of main engine failure.
- (5) The vehicle is also equipped with a main and auxiliary generating system. The primary purpose of the auxiliary system is to charge the vehicle batteries when they are too low to start the main engine.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Refer to figures 1-1 thru 1-5 for location of major components.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS--
Continued.

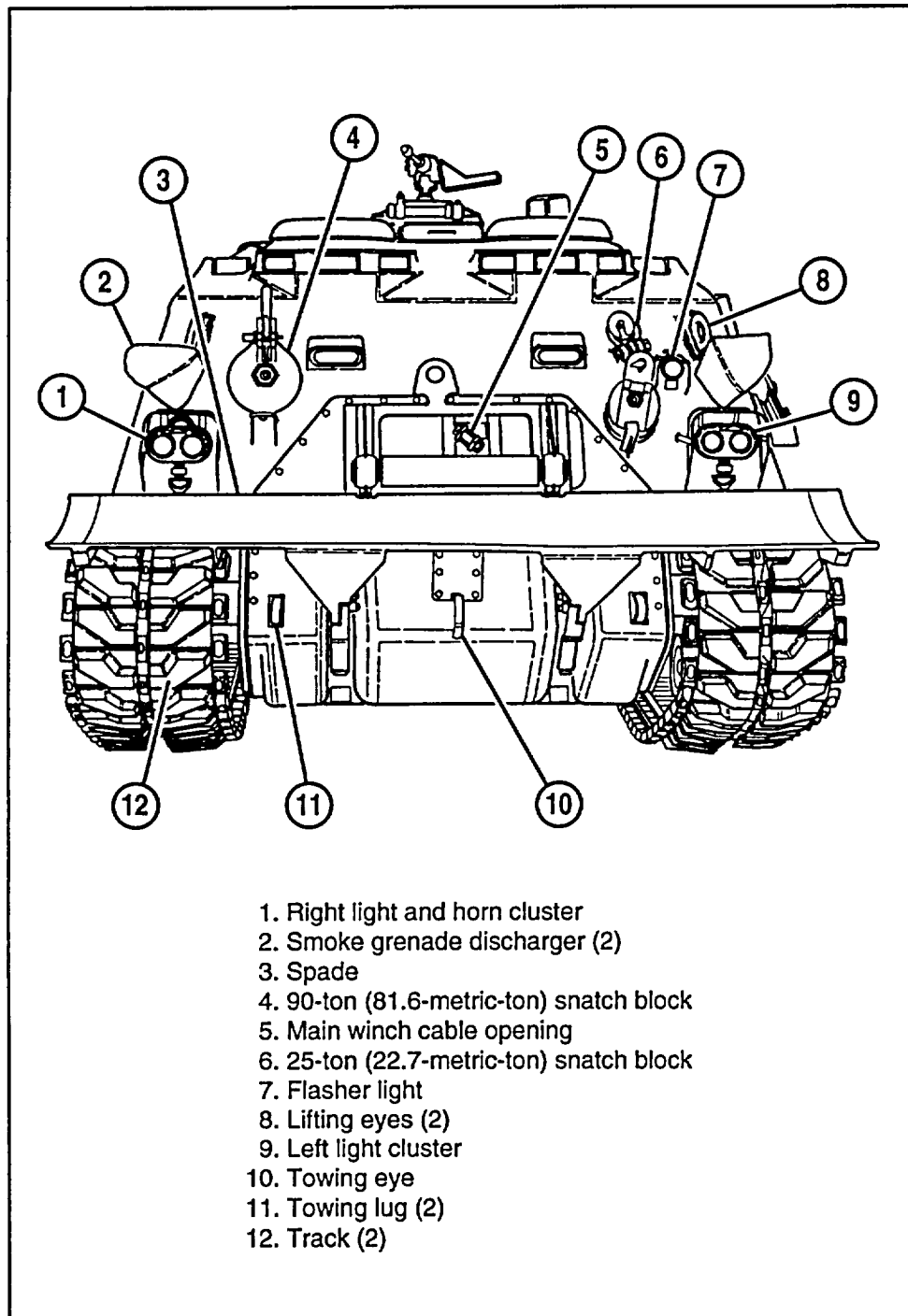


Figure 1-1. M88A1-Front View.