

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE

**CARRIER, CARGO, TRACKED, 1 /2 TON, M973
SMALL UNIT SUPPORT VEHICLE (SUSV)
(NSN 2350-01-132-9099)**

**TABLE OF
CONTENTS
PAGE i**

**EQUIPMENT
DESCRIPTION
AND DATA
PAGE 1-5**

**LUBRICATION
INSTRUCTIONS
PAGE 2-11**

**PREVENTIVE
MAINTENANCE
(PCMS)
PAGE 2-11**

**TROUBLESHOOTING
SYMPTOM INDEX
PAGE 2-27**

**MAINTENANCE
INSTRUCTIONS
PAGE 3-1**

**SUBJECT INDEX
INDEX-1**

**This copy is a reprint which includes current pages from
Change 1.**

**H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y
M A R C H 1 9 8 4**

**ORGANIZATIONAL MAINTENANCE MANUAL
CARRIER, CARGO, TRACKED, 1 1/2 TON, M973
SMALL UNIT SUPPORT VEHICLE (SUSV)
(NSN 2350-01-132-9099)**

REPORTING OF ERRORS

You can help improve this publication. 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 Publication and Blank Forms), or DA Form 2028-2 located in the back of this publication direct to: US Army Tank-Automotive Command, ATTN: DRSTA-MBP, Warren, MI 48090. A reply will be furnished to you.

TABLE OF CONTENTS

		Page
	HOW TO USE THIS MANUAL	ii
CHAPTER	1. INTRODUCTION	1-1
Section	I. General Information	1-1
	II. Equipment Description and Data.....	1-5
CHAPTER	2. SERVICE AND TROUBLESHOOTING INSTRUCTIONS	2-1
Section	I. Service Upon Receipt of Material.....	2-1
	II. Repair Parts, Special Tools, and Equipment	2-3
	III. Lubrication Instructions	2-11
	IV. Preventive Maintenance Checks and Services (PMCS)	2-11
	V. Troubleshooting Instructions	2-25
	VI. Troubleshooting Symptom Index	2-27
CHAPTER	3. MAINTENANCE INSTRUCTIONS	3-1
Section	I. General Information	3-1
	II. Engine and Related Systems Maintenance Instructions.....	3-3
	III. Drive Train Maintenance Instructions.....	3-41
	IV. Electrical System Maintenance Instructions.....	3-67
	V. Brake System Maintenance Instructions.....	3-107
	VI. Steering System Maintenance Instructions.....	3-124
	VII. Suspension System Maintenance Instructions.....	3-133
	VIII. Body Maintenance Instructions	3-163
	IX. Accessory Items Maintenance Instructions.....	3-207
APPENDIX	A. REFERENCES	A-1
	B. MAINTENANCE ALLOCATION CHART	B-1
	C. STANDARD CAPSCREW MARKINGS AND TORQUE SPECIFICATIONS	C-1
	D. EXPENDABLE SUPPLIES AND MATERIALS LIST	D-1
INDEX	Index-1

HOW TO USE THIS MANUAL

This manual is designed to help you maintain the M973 Cargo Carrier and accessory equipment. Listed below are special features which will help you locate the information you need:

Front cover table of contents for quick reference to important information, An index to the manual contents is located in the final pages of this manual. Use the index to locate specific items of information.

Measurements in this manual are given in both English and Metric units.

A Metric to English conversion chart is also provided on the inside back cover of this manual.

Read all information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

Warning pages are located in the front of this manual. You should learn the warnings before operating or doing maintenance on the vehicle. Important warnings and cautions are also located on other pages in the manual. They appear before a step that may result in personnel injury or damage to equipment. If the instructions are not followed, or care is not taken, you may injure yourself. Notes are located before a step. Notes are provided to make the steps that follow easier. Always read all cautions, warnings, and notes before performing the next step.

Instructions on how to use the troubleshooting tables are located in paragraph 2-6.

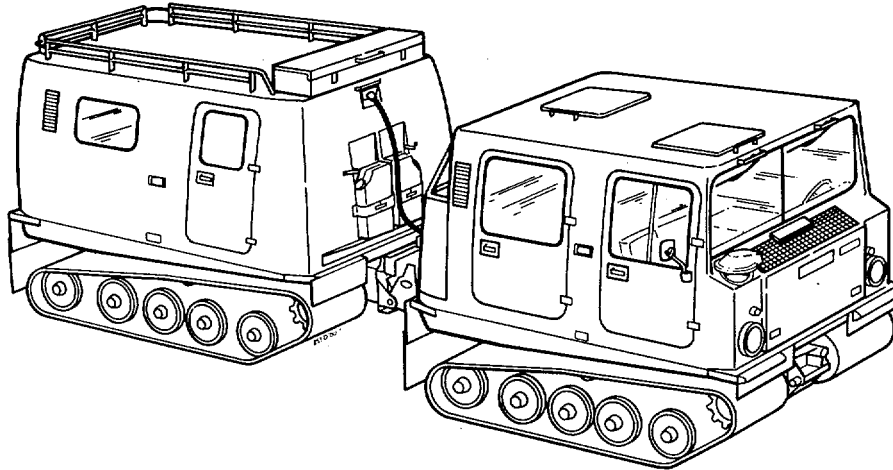
Instructions on performing PMCS are located in paragraph 2-5.

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

- a. This manual contains instructions for organizational maintenance for the M973 Cargo Carrier. A description of the vehicle and vehicle major components are also given in this manual.



**CARRIER, CARGO, TRACKED, 1 H TON M973
RIGHT FRONT VIEW**

- b. Appendix A contains a list of technical references you can use to support the vehicle. Appendix B contains the Maintenance Allocation Chart (MAC). The MAC lists the maintenance tasks that you are authorized to perform.
- c. This manual also lists the following information:
 - (1) Service upon receipt of vehicles
 - (2) Special tools and equipment
 - (3) Lubrication
 - (4) Preventive maintenance checks and service (PMCS)
 - (5) Troubleshooting the vehicle

TA259159

1-2. MAINTENANCE ALLOCATION.

Maintenance responsibilities will apply as shown in the MAC CHART, Appendix B. Your support maintenance unit should be informed when repairs are beyond the scope of organizational maintenance. Your support maintenance activity can provide the trained personnel, tools or other instructions needed.

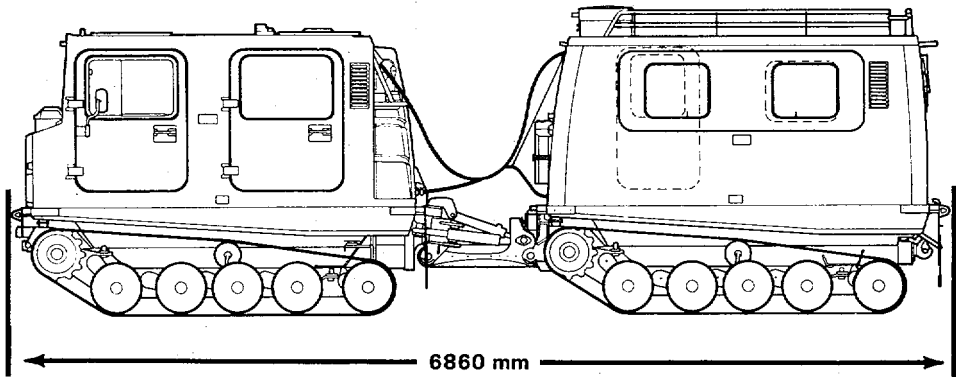
1-3. FORMS, RECORDS AND REPORTS.

a. Forms and Records.

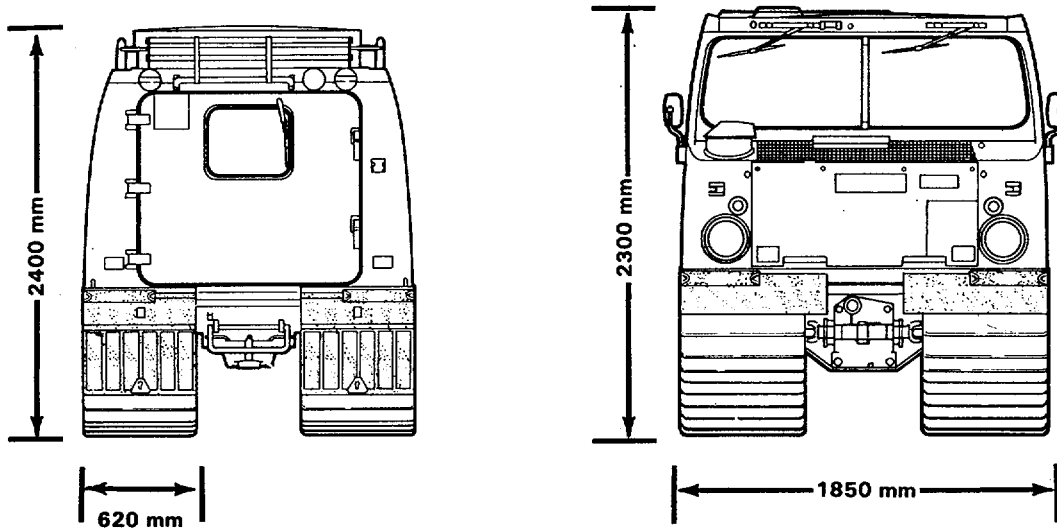
Forms required to support the vehicles are listed in Appendix A. For a listing of all current forms, refer to DA PAM 310-1. DA PAM 738-750 authorizes forms required to maintain the vehicles.

b. Reporting Equipment Improvement Recommendations.

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at US ARMY TANK-AUTOMOTIVE COMMAND, ATTN: DRSTA-MP, Warren MI, 48090. We will send you a reply.



Overall Length	270.28 in (6860 mm)
Overall Height Front Car	90.62 in (2300 mm)
Overall Height Rear Car	94.56 in (2400 mm)
Overall Width	72.89 in (1850 mm)
Track Width	24.42 in (620 mm)
Distance Between Tracks	24.03 in (610 mm)



Shipping Cubage
 Shipping Weight 2,927.27 lbs. (6440 KG)
 Shipping Tonnage 1.46 Ton

1-4. METRIC SYSTEM.

Equipment and system is metric. Metric tools are required for equipment maintenance. Metric to English conversion tables are on inside back cover.

1-5. NOMENCLATURE CROSS REFERENCE.

All nomenclatures are standard U.S. Army.

1-6. ADMINISTRATIVE STORAGE.

TM 740-90-1 has information on administrative storage of vehicles.

1-7. DESTRUCTION TO PREVENT ENEMY USE.

Refer to TM 750-244-6.

TA259161

Section II. EQUIPMENT DESCRIPTION AND DATA**1-8. DESCRIPTION.****a. Vehicle.**

Description of vehicle and major component systems are given in TM 9-2350-272-10. The paragraphs and subparagraphs that follow give vehicle component descriptions.

b. Engine.

Drive train torque is provided by a Mercedes-Benz, water cooled, five cylinder in line turbocharged diesel engine.

- (1) Engine Lubrication. The engine is lubricated by a forced oil circulation system. An oil pump pumps the oil through the oil cooler and oil filter into the lubrication system. If the oil filter becomes plugged, a bypass valve opens to allow oil to flow through the system. An oil pressure valve regulates oil pressure under all load conditions.
- (2) Cold Start System. To guarantee the engine starting quickly even at extremely low outside temperatures, a cold start aid is provided. The cold start system has five glow plugs, one in the left side of each cylinder. The pressurized fuel is injected into the cylinders where the air has been preheated by the glow plugs.

c. Electric System.

- (1) Batteries. Two 12-volt batteries for storage of electric power are installed under the left rear seat in the front car. Batteries are connected in series. In this manner there is an operating voltage of 24 volts.
- (2) Fuses. The central electric fuse box is located on the front panel to the left of the steering wheel. A second fuse box is located on the left side of the operator's seat mount. The fuses protect the electrical system from overload.

d. Transmission.

The transmission is a Mercedes Model W4AO18. It is a fully-automatic, 5 (4 forward, 1 reverse) speed planetary transmission which requires no conventional clutching and shifting.

- (1) Torque Converter. The torque converter is a self-contained unit. The turbine rotates freely in the cover shell which is connected to the primary oil pump. The stator is mounted on a one-way roller clutch and prevents the oil flowing counter-to direction of the engine.

- (2) Transmission. The transmission is bolted to the torque converter housing. Components are: Input shaft, intermediate shaft, hollow shaft, and output shaft, 2 compound planetary gear sets, 2 disc clutches as well as 3 brake drums with the respective brake bands. The individual elements of the planetary gear sets are held stationary by the brake bands. The entire planetary gear train is interlocked by means of a disc clutch. The governor, secondary pump, and the modulation pressure transmitter are located in the rear housing. The hydraulic control system is the shift valve housing. It is secured to the transmission from below. The shift valve housing holds a number of pistons and valves. The pistons and valves are connected to each other by means of oil passages.

e. Transfer.

The transfer is mounted on the chassis beam at the rear of the front car. The transfer transfers power to both the front and rear car differentials. The transfer can be shifted into 3 positions, neutral, high and low to provide all terrain driving.

f. Brakes.

The carrier has two independent brake systems, a service brake and a parking brake.

- (1) Service Brake. The hydraulic brake system is divided into two circuits. Each circuit operates its own brake caliper by pressing brake pads against the brake disc. The brake disc is mounted on the brake shaft in the transfer and is thus always mechanically connected to the final drive gears of the transfer. If a pressure difference develops between the two brake circuits, an electric contact in the warning valve is actuated and switches on the BRAKE CIRCUIT/PARKING BRAKE warning lamp.
- (2) Parking Brake. The parking brake acts on the right brake caliper on the service brake. The calipers adjust automatically to wear. The parking brake is engaged mechanically by depressing the parking brake pedal. It is released by disengaging the latch mechanism. The BRAKE CIRCUIT/PARKING BRAKE warning lamp is ON when the parking brake is engaged.

g. Propeller Shafts.

Torque is transmitted from the engine to the steering pump by way of a damper and a propeller shaft. Torque is also transmitted from the transmission to transfer. Torque is then provided to the differentials by way of the transfer. The differentials provide torque to the front and rear car drive sprockets.

h. Steering.

The steering system consist of a hydraulic oil tank, pump, steering valve with steering shaft, servo valve, two steering cylinders, a steering unit, and hydraulic lines. The steering cylinders are hydraulically operated by the pump and steering valve. The design of the steering unit insures that the two cars will track perfectly.

i. Suspension.

The suspension system is the same on both the front and rear car. Track girders are connected to a center chassis beam with a flat spring located in the front and rear of the car. Eight swing arms are mounted in the rubber torsion bars of the track girder. Road wheels are mounted on the swing arms. Two road wheels are also mounted on the track tensioner. The track tensioner has an adjusting screw to adjust proper track tension. The track girder has a track support wheel mounted to the upper side to support the track. Two drive sprockets are mounted on the front of the track girder to drive the track. The endless track is made of rubber and reinforced by steel cross members. Guides are placed inside the tracks to keep them in line.

j. Frame.

The frames of both cars are basically the same. The frame is made of a central chassis beam connected to the track girders with flat springs.

k. Tachometer.

Measures engine revolutions per minute (RPM). Source of the input is from the alternator which provides an alternating current (pulse). The pulse is transmitted from terminal W on the alternator through a wire to terminal W on the tachometer. The pulse energizes a transmitter in the tachometer which causes the indicator to measure engine RPM. Frequency of alternating current (pulse) is dependent upon engine speed.

Change 1 1-7(1-8 Blank)