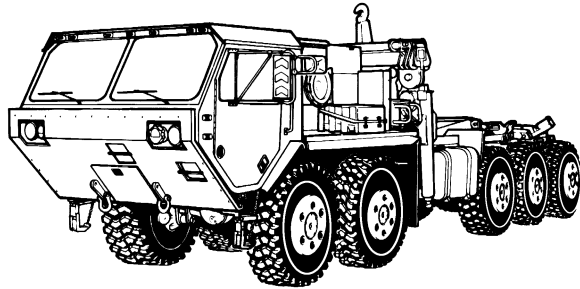


TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE VOLUME I

PALLETIZED LOAD SYSTEM



MODEL M1074/M1075

NSN 2320-01-304-2277

NSN 2320-01-304-2278

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TECHNICAL MANUAL

No. 9-2320-364-34

**HEADQUARTERS
DEPARTMENT OF THE ARMY**
Washington, D.C. 01 August 1999

Direct Support and General Support Maintenance Manual**PALLETIZED LOAD SYSTEM**

**MODEL M1074/M1075
NSN 2320-01-304-2277
NSN 2320-01-304-2278**

Current as of 01 August 1999

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

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HOW TO USE THIS MANUAL

This manual is designed to help maintain the Model M1074/M1075 Palletized Load System (PLS) truck. Listed below are some special features included in this manual to help locate and use the needed information:

- A front cover table of contents is provided for quick reference to chapters and sections that will be used often.
- Warning, caution, and note headings, subject headings, and other essential information are printed in bold type making them easier to see.
- The maintenance tasks describe what must be done to the truck before starting the task (Equipment Condition), and what must be done to return the vehicle to operating condition after the task is finished (Follow-On Maintenance).
- The Appendixes are located at the end of the manual. They contain a reference guide to other manuals, a list of expendable supplies and materials, and other material for maintaining the PLS truck.
- In addition to text, there are exploded-view illustrations showing how to take a component off and put it back on. Cleaning and inspection procedures are also included as required.
- Chapter 2 of this manual covers basic troubleshooting and Direct Support Maintenance for each PLS truck.

Follow these guidelines when using this manual:

- Read all WARNINGS and CAUTIONS before performing any procedure.
- The equipment conditions found in the maintenance procedures are of a general nature and the mechanic may be able to perform only certain steps within a procedure to accomplish the equipment condition.

CHAPTER 1

INTRODUCTION

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Section I. GENERAL INFORMATION

1-1. SCOPE.

This chapter provides general information, equipment descriptions and principles of operation for the M1074/M1075 Palletized Load System (PLS). The PLS will herein be referred to as the truck.

- a. Type of Manual.** Direct and General Support Maintenance Instructions, TM 9-2320-364-34.
- b. Model Numbers and Equipment Names.** The different truck models are listed below:

M1074	Truck with crane (Figure 1-1)
M1075	Truck without crane (Figure 1-2)
M1076	Trailer (Figure 1-3)
M1077	Flatrack (Figure 1-4)

- c. Purpose of Equipment.** The PLS is an ammunition-hauling tactical wheeled truck and trailer combination with integral self-load/unload capability using the PLS flatrack (FR).

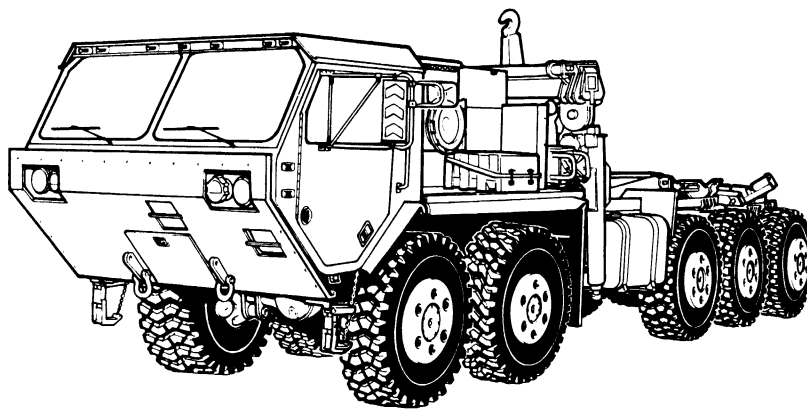
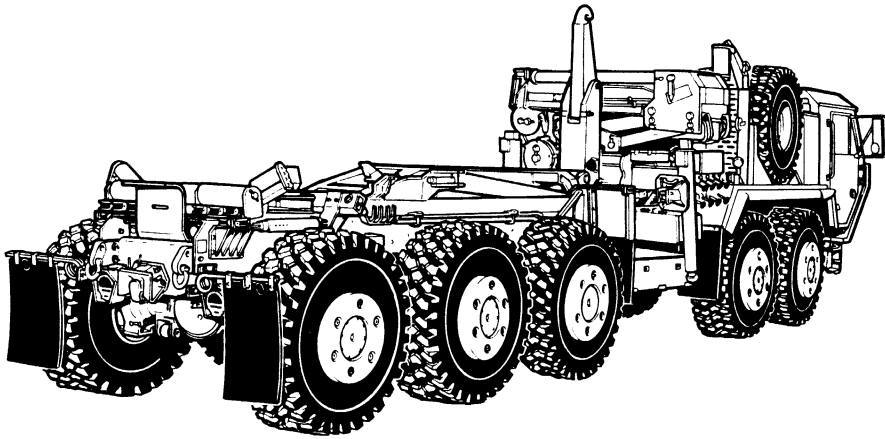


Figure 1-1. M1074 Palletized Load System Truck (With Crane)

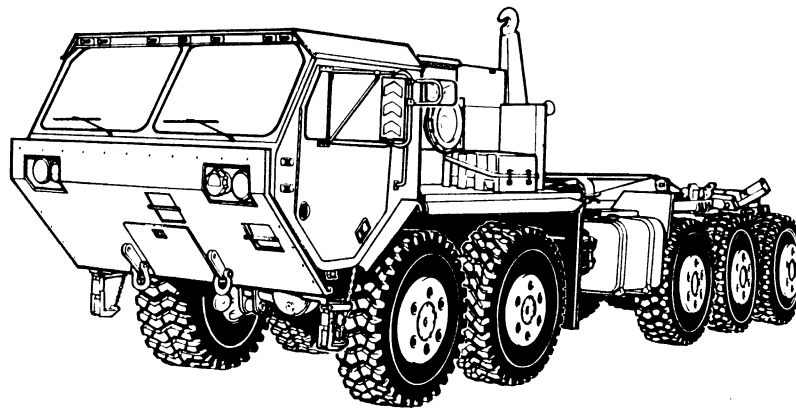
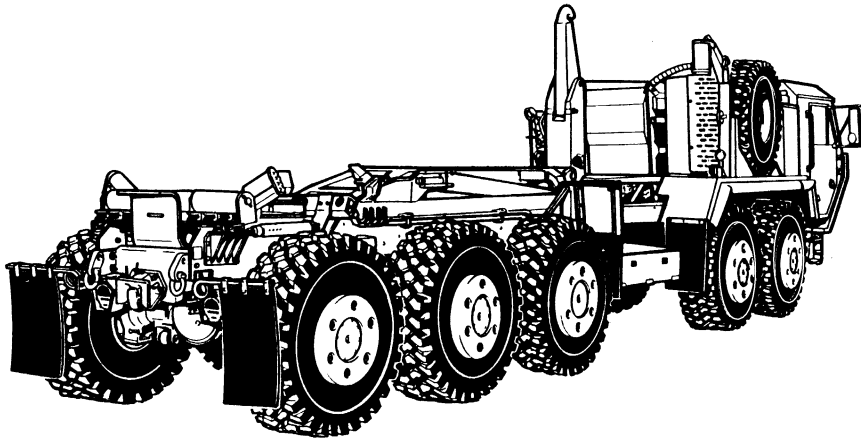


Figure 1-2. M1075 Palletized Load System Truck (Without Crane)

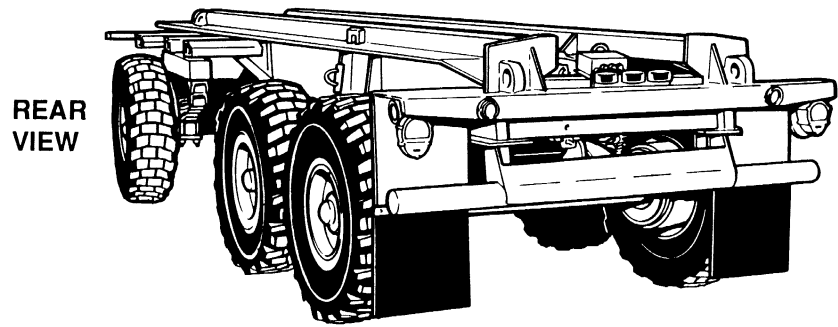
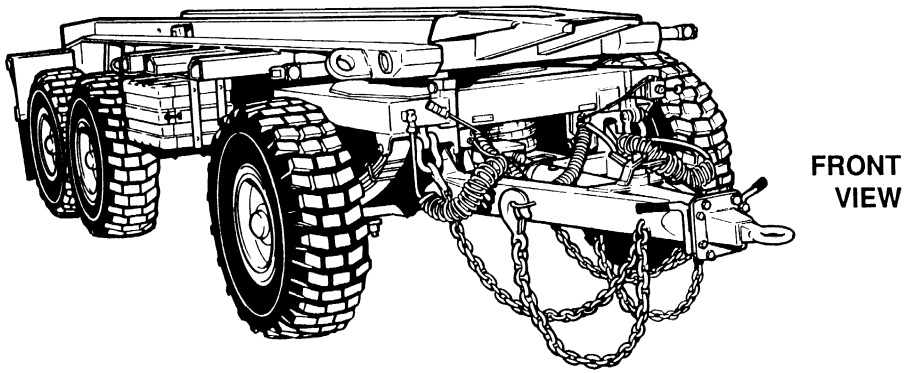


Figure 1-3. M1076 PLS Trailer

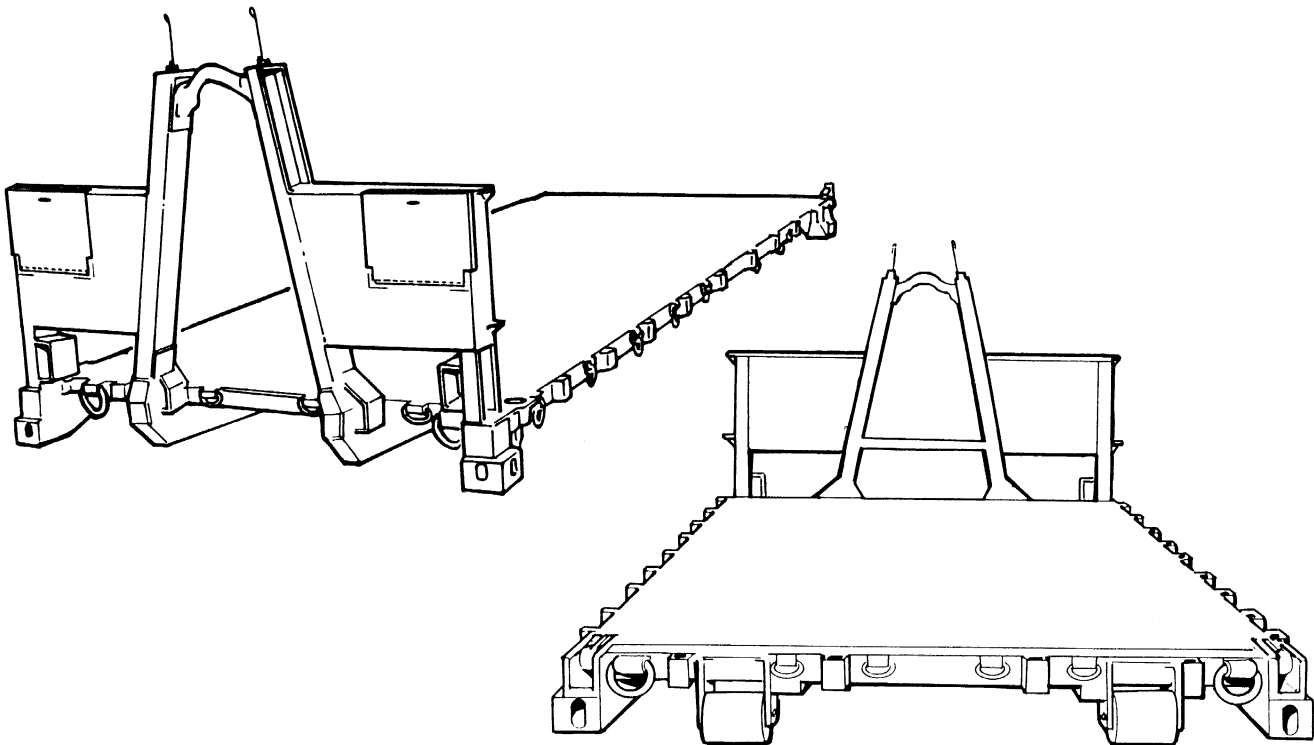


Figure 1-4. M1077 PLS Flatrack

1-2. MAINTENANCE FORMS, RECORDS AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS) (Maintenance Management UPDATE).

1-3. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE.

Command decision, according to tactical situation, will determine when the destruction of the truck will be accomplished. A destruction plan will be prepared by the using organization unless one has been prepared by a higher authority. For general destruction procedures for this truck, refer to TM 750-224-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (US Army Tank-Automotive Command).

1-4. OFFICIAL NOMENCLATURE, NAMES AND DESIGNATIONS.

Table 1-1 lists the nomenclature cross-references used in this manual.

Table 1-1. Nomenclature Cross-Reference

<u>Common Name</u>	<u>Official Nomenclature</u>
Cable	Wire rope
Cold Start System	Ether quick-start system
Engine Coolant	Antifreeze, ethylene glycol mixture
Gladhand	Quick-disconnect coupling
Truck	Palletized Load System
Jacobs Brake	Engine Retarder

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your Palletized Load System 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 SF368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E-MPA, Warren, Michigan 48397-5000. We'll send you a reply.

1-6. WARRANTY INFORMATION.

Refer to PLS Warranty Technical Bulletin, TB 9-2320-364-15 for complete warranty information covering the truck. Warranty starts on the date found in block 23, DA Form 2408-9, in the logbook. Report all defects in material or workmanship to the supervisor, who will take appropriate action.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

Refer to TM 9-2320-364-10 for equipment characteristics, capabilities and features.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Refer to TM 9-2320-364-10 for location and description of major components.

1-9. EQUIPMENT DATA.

Refer to TM 9-2320-364-10 for equipment data.

Section III. PRINCIPLES OF OPERATION

1-10. POWER TRAIN.

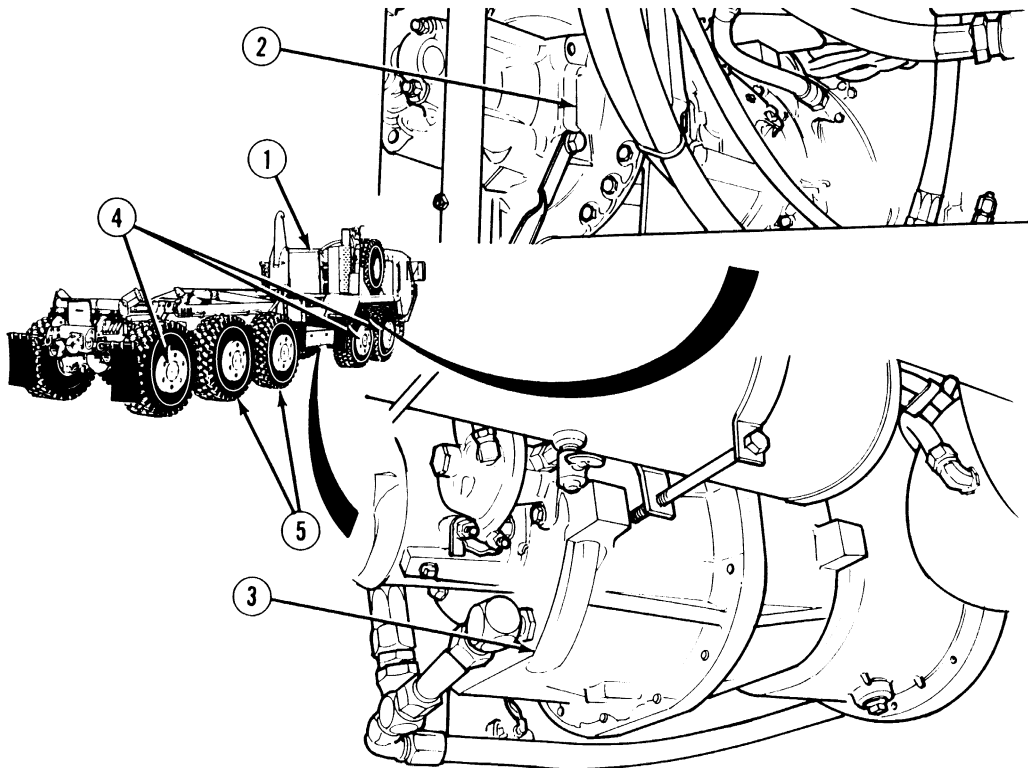


Figure 1-5. Power Train

Power for the truck is provided by a diesel engine (1) (Figure 1-5) which is coupled directly to an automatic transmission (2). Power from the transmission is transferred to the transfer case (3) and on to the drive and steering axles (4) and the drive only axles (5) through a series of drive shafts and universal joints. The truck drive train is enhanced through the use of the Detroit Diesel Electronic Control II (DDEC II) or Detroit Diesel Electronic Control III (DDEC III) electronic engine controller and the Allison Transmission Electronic Control (ATEC) electronic transmission controller. The primary components of the ATEC system are an Electronic Control Unit (ECU) and shifter in the truck cab, an electrohydraulic valve module beneath the transmission gearing section that contains solenoid valves for clutch control, a throttle sensor that is activated by the accelerator pedal and an output speed sensor that relays the transmission out speed to the ECU for shifting and control functions.

a. Engine. The truck is equipped with a Detroit Diesel Corporation (DDC) Model 8V92TA engine rated at 500 HP. The drive train control system consists of the engine and transmission systems.

(1) The DDEC II and DDEC III contain a microprocessor-based electronic control module to regulate the electronic distributor unit. This distributor unit controls the individual or unit injectors that regulate both the amount and timing of fuel delivery. The DDEC II and DDEC III electronically govern engine speed and can be programmed to accommodate truck configuration changes. The DDEC II and DDEC III are electronically linked with the transmission, through the ATEC, to improve truck performance.

(2) The DDEC and ATEC systems perform self diagnostics, engine/transmission system diagnostics and truck performance diagnostics. Self diagnostics includes personnel initiated checks of main electronic components such as solenoids, wiring, sensors and control modules. System diagnostics monitor critical engine and transmission parameters such as oil temperature, oil pressure, coolant temperature, voltage and gear range attained. Truck performance diagnostic capabilities aid the mechanic in isolating problems outside of the electronic control system. Operating data is stored in the DDEC II's and DDEC III's memory for display at a later time. Stored data includes total engine hours and fuel consumed. The DDEC also tracks intermittent problems by logging the number of occurrences and the engine hours of each occurrence.

b. Transmission. The truck uses an Allison 700 Series Transmission, Model CLT-755. This hydro-kinetic type transmission has an integral-locking torque converter, lock-up clutch, constant mesh planetary gearing, the ATEC, a speedometer and a control valve body assembly.

(1) The Electronic Control Unit (ECU), which contains the microprocessor based electronics, is located in a protected area within the truck. The ECU receives information, in the form of signals from switches and sensors, processes the information and sends electrical signals to the appropriate solenoids which control the transmission operation. The ECU features diagnostics which can sense many electronic system malfunctions and identify them with a displayed code. The ECU also protects the transmission from cold weather start-ups by inhibiting normal shifting functions until a minimum sump oil temperature of 20 degrees F (-7 degrees C) is attained.

(a) The CHECK TRANS light alerts the operator, momentarily, every time the system is activated, as a lamp check, and/or when the ECU finds a problem in the system. If the check transmission light comes on, the problem is minor. In most cases, the transmission will continue to operate in a normal manner. However, in some cases the ECU will take action to reduce the possibility of damage to the truck or the transmission. The transmission should be serviced at the next opportunity.

(b) The DO NOT SHIFT light and/or buzzer alerts the operator, momentarily, every time the system is activated as a lamp check and any time the ECU has detected a more severe problem in the system. The ECU will cause the transmission to hold-in-gear and disengage the lock-up clutch.

(2) The push button range selector is totally electronic. Range selection is achieved by means of seven snap dome switches. To select a range, touch the pad. The pad will light up, a beep will be heard and a "click" will be felt. The transmission will be ready to operate in the selected range. The range selector also has a "DO NOT SHIFT" light and a warning tone or buzzer.

(a) Select the Drive position and the truck will start in first (low range only) or second range and automatically upshift to a higher range as output speed increases. As the truck slows down, output speed decreases and the transmission automatically downshifts to the correct range. If a locked brake or a slick-surface condition should occur, the ECU will command converter operation and inhibit downshifts for a period of time or until normal wheel speed has been restored. Drive (4) should be selected for moderate loads, grades and over-the-road operation with restrictive speed limits. Drive (3) is appropriate for operating in rough terrain or in heavy traffic. Drive (2) should be selected when need for speed control requires a second gear hold condition such as descending steep grades where additional engine braking is required, for operation on rough terrain, or greater retarder action. Selecting Drive (1) permits the driver to operate the truck in areas where maximum performance in extremely rough terrain is required.