

**TECHNICAL MANUAL
UNIT, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE MANUAL
FOR
LAUNDRY ADVANCED SYSTEM (LADS)
(NSN: 3510-01-463-0114)**

DISTRIBUTION STATEMENT A- Approved for public release; distribution is unlimited.

*This manual supercedes TM 10-3510-221-24 dated 31 October 2000.

HEADQUARTERS, DEPARTMENT OF THE ARMY

31 OCTOBER 2003

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 OCTOBER 2003

TECHNICAL MANUAL

UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR LAUNDRY ADVANCED SYSTEM (LADS)

(NSN: 3510-01-463-0114)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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 directly to: Commander, US Army Soldier and Biological Chemical Command, ATTN: AMSSB-RIM-L(N), Kansas St., Natick, MA 01760. You may also submit your recommended changes by E-mail directly to: <amssbriml@natick.army.mil>. A reply will be furnished directly to you. Instructions for sending electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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HOW TO USE THIS MANUAL

In this manual, primary chapters appear in upper case/capital letters; work packages are presented in numeric sequence, e.g., 0001 00; paragraphs within a work package are not numbered and are presented in a titles format. For a first level paragraph title all upper case/capital letters , e.g., INTRODUCTION, the next subordinate paragraph title will have the first letter of the first word and of each principle word all upper case/capital letters , e.g., How to Use This Manual. The location of additional material that must be referenced is clearly marked. Figures supporting maintenance procedures/text are located as close as possible to their references.

FRONT MATTER. Front matter consists of front cover, warning summary, title block, table of contents, and how to use this manual page.

CHAPTER 1 – INTRODUCTION. Chapter 1 contains general information, equipment description, and theory of operation.

CHAPTER 2 – TROUBLESHOOTING PROCEDURES. Chapter 2 contains a description and use of controls and indicators, general troubleshooting information, a malfunctions/symptom index, and troubleshooting procedures authorized at unit level.

CHAPTER 3 – UNIT MAINTENANCE INSTRUCTIONS. Chapter 3 provides preventive maintenance checks and services (PMCS), and maintenance procedures authorized at unit level.

CHAPTER 4 – DIRECT SUPPORT MAINTENANCE INSTRUCTIONS. Chapter 4 provides maintenance procedures authorized at direct support level.

CHAPTER 5 – GENERAL SUPPORT. Chapter 5 provides maintenance procedures authorized at general support level.

CHAPTER 6 – SUPPORTING INFORMATION. Chapter 6 contains references, maintenance allocation chart (MAC), expendable and durable items list, tool identification list, illustrated list of manufactured items, torque limits, mandatory replacement parts list, and wiring diagrams.

REAR MATTER – Rear matter consists of alphabetical index, DA Form 2028, authentication page, and back cover.

CHAPTER 1
INTRODUCTORY INFORMATION WITH
THEORY OF OPERATION
FOR
LAUNDRY ADVANCED SYSTEM

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT**LAUNDRY ADVANCED SYSTEM****(NSN 3510-01-463-0114)****GENERAL INFORMATION**

SCOPE

This manual contains instructions for unit, direct support, and general support maintenance procedures for the Laundry Advanced System.

Type of Manual: Maintenance.

Model Number and Equipment Names: Laundry Advanced System.

Purpose of Equipment: The system is used to perform field laundering of Army clothing and equipment.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 738-750, The Army Maintenance Management System (TAMMS), DA PAM 738-751, The Army Maintenance Management System-Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your Laundry Advanced 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 or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to the address specified in DA PAM 738-750, The Army Maintenance Management System (TAMMS), or as specified by the contracting activity. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using Standard Form SF 368, Product Quality Deficiency Report. Use of keywords such as "corrosion", "rust", "deterioration", or "cracking" will ensure that the information is identified as a CPC problem.

The form should be submitted to the address specified in DA PAM 738-750, The Army Maintenance Management System (TAMMS).

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

References to "destruction of Army materiel to prevent enemy use" are contained in TM 750-244-3.

PREPARATION FOR STORAGE AND SHIPMENT

Refer to TM 10-3510-221-10.

WARRANTY INFORMATION

The Laundry Advanced System does not contain warranty provisions.

NOMENCLATURE CROSS-REFERENCE LIST

Common Name	Official Nomenclature
LADS	Laundry Advanced System
Laundry Unit	Laundry Advanced System

LIST OF ABBREVIATIONS

#	Number (Used to designate wire numbers.)
AC	Alternating Current
C	Centigrade
CAGEC	Commercial and Government Entity Code
cm	centimeter
CCW	Counter-Clockwise
CW	Clockwise
CPC	Corrosion Prevention and Control
DA	Department of the Army
DC	Direct Current
EIR	Equipment Improvement Recommendation
ESD	Electrostatic Discharge Sensitive
F	Fahrenheit
FRS	Finish Reapplication System
ft	foot
Gal	gallon
GFI	Ground Fault Interrupt
hp	horsepower
h	hour
Hz	Hertz (frequency or cycles per second)
in	inches
I/O	Input/Output
ISO	International Organization for Standardization
kg	Kilogram

LIST OF ABBREVIATIONS – Continued

kW	Kilowatt
kPa	Kilopascal
l	liter
lbs	pounds
ltrs	liters
MAC	Maintenance Allocation Chart
NSN	National Stock Number
PCB	Printed Circuit Board
psi	Pounds per square inch
psig	Pounds per square inch gauge
RPM	Revolutions Per Minute
RPSTL	Repair Parts and Special Tools List
SCF	Standard Cubic Feet
SMR	Source, Maintenance, and Recoverability [Code]
SSR	Solid State Relays
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostics Equipment
VAC	Volts Alternating Current
VDC	Volts Direct Current

SAFETY, CARE, AND HANDLING

The following procedures should be observed when handling all electrostatic discharge sensitive (ESD) components and units containing such components. Failure to observe all of these precautions can cause permanent damage to the electrostatic device. This damage can cause the device to fail immediately or at a later date when exposed to an adverse environment.

1. Turn off and/or disconnect all power, signal sources and loads used with the unit.
2. Place the unit on a grounded non–conductive work surface.
3. Ground the repair operator using a non–conductive wrist strap or other device using a 50 megohm resistor to protect the operator.
4. Ground any tools (including soldering equipment) that will come into contact with unit. Contact with the operator’s hand provides a sufficient ground for tools that are otherwise electrically isolated.

SAFETY, CARE, AND HANDLING – Continued

5. All electrostatic discharge sensitive replacement components are shipped in non-conductive foam or tubes and must be stored in the original shipping container until installed.
6. When these devices or assemblies are removed from the unit, they should be placed on the non-conductive work surface or in non-conductive containers.
7. When not being worked on, place disconnected circuit boards in plastic bags that have been coated or impregnated with a non-conductive material.
8. Do not handle these devices unnecessarily or remove them from their packages until actually used or tested.

END OF WORK PACKAGE

UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT

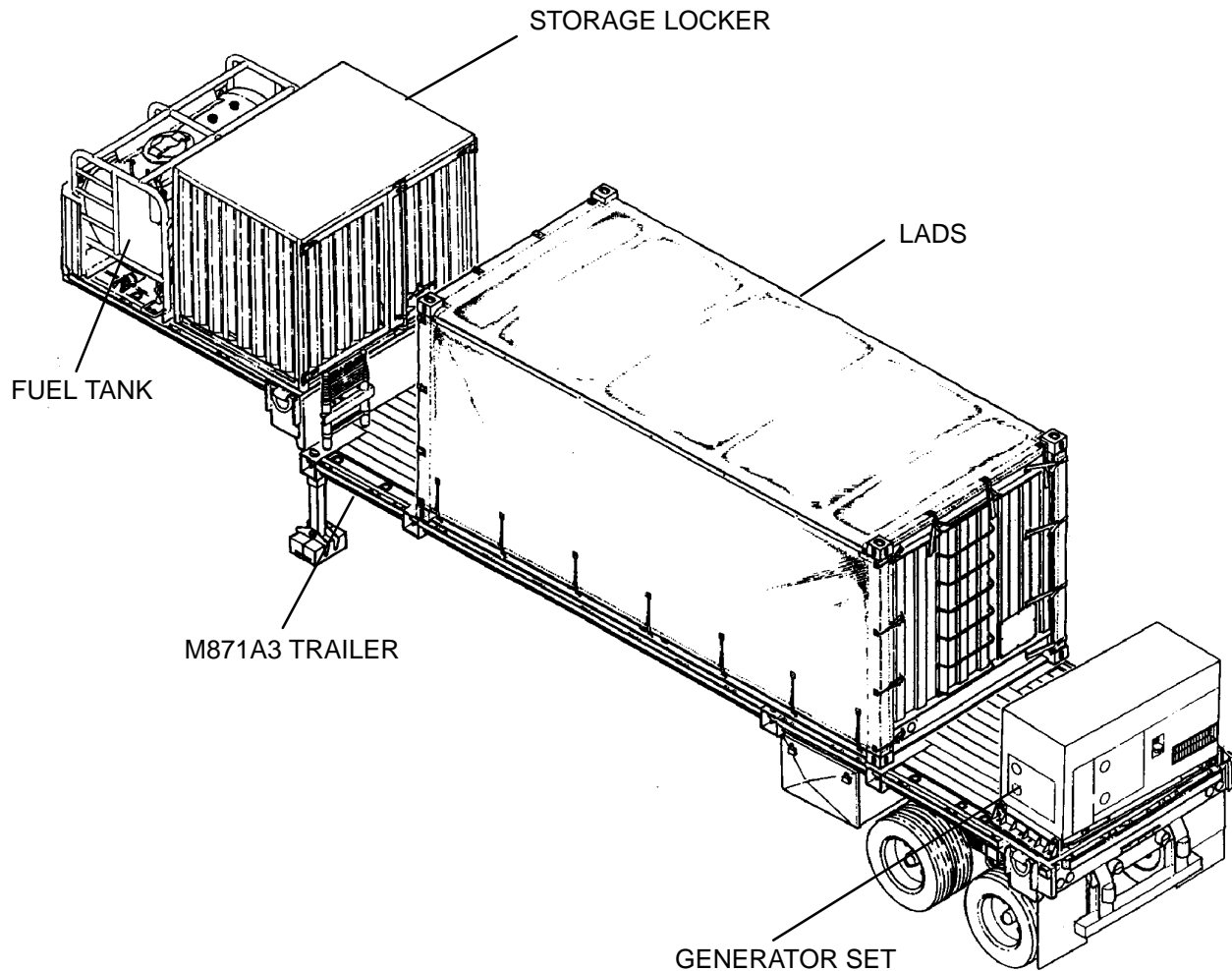
LAUNDRY ADVANCED SYSTEM

(NSN 3510-01-463-0114)

EQUIPMENT DESCRIPTION AND DATA

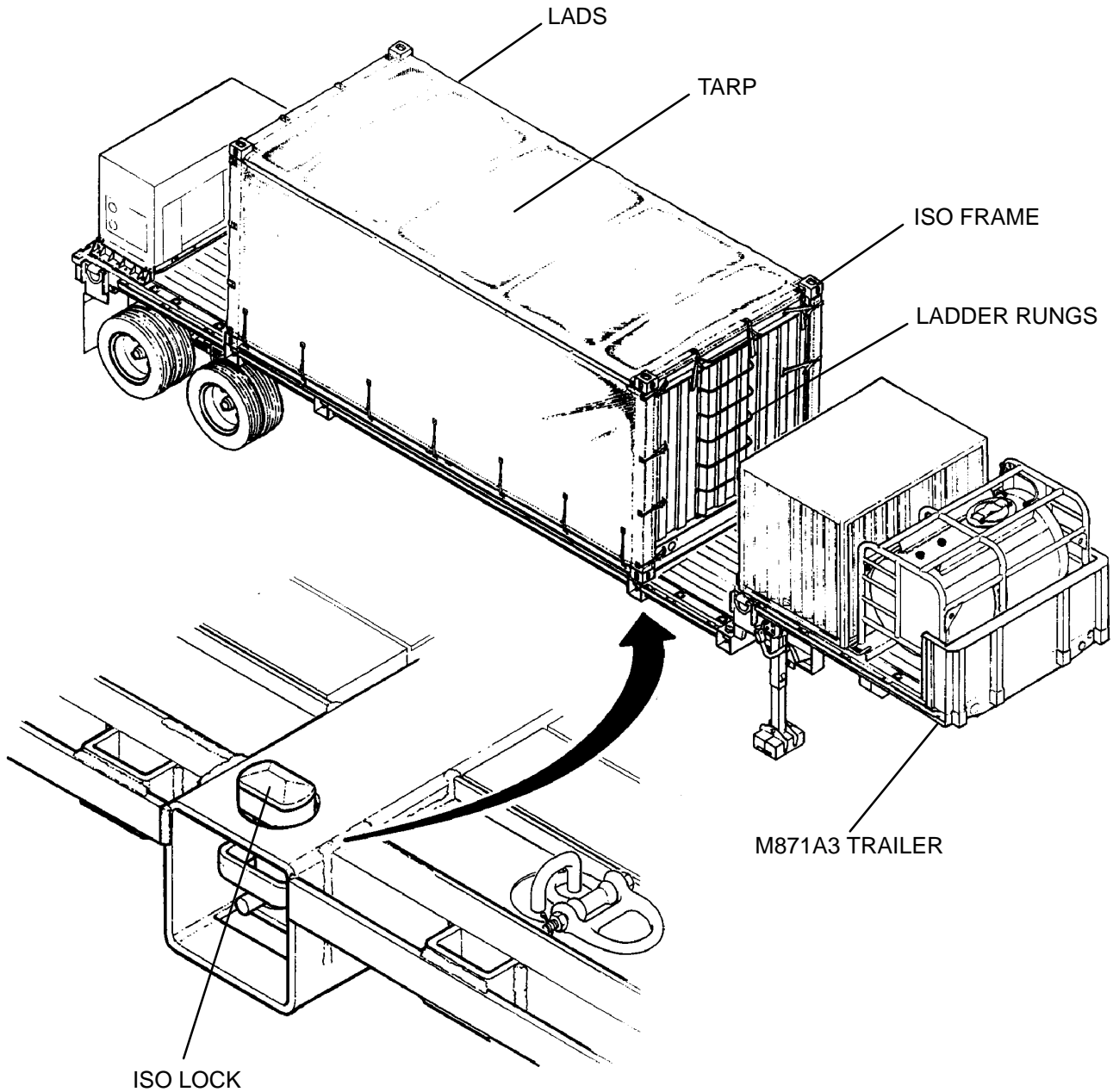
EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Laundry Advanced System (LADS) consists of two washing/drying systems. The LADS also includes a water recycle system, heating system, air system, and control system. These systems support the operation of both washing/drying systems. The LADS components are mounted on an International Organization for Standardization (ISO) frame which is mounted on a 22-1/2 ton M871A3 semi-trailer. The LADS uses external electrical power. This power is normally provided by a 30 kilowatt (kW), MEP-805A Tactical Quiet Generator Set. The LADS can also be operated with other field generators or commercial power. The LADS requires an external supply of potable water and an external supply of JP-8 fuel. Fuel is normally provided from a 400-gallon fuel tank. A storage locker is provided to store accessories, auxiliary equipment, and consumables.



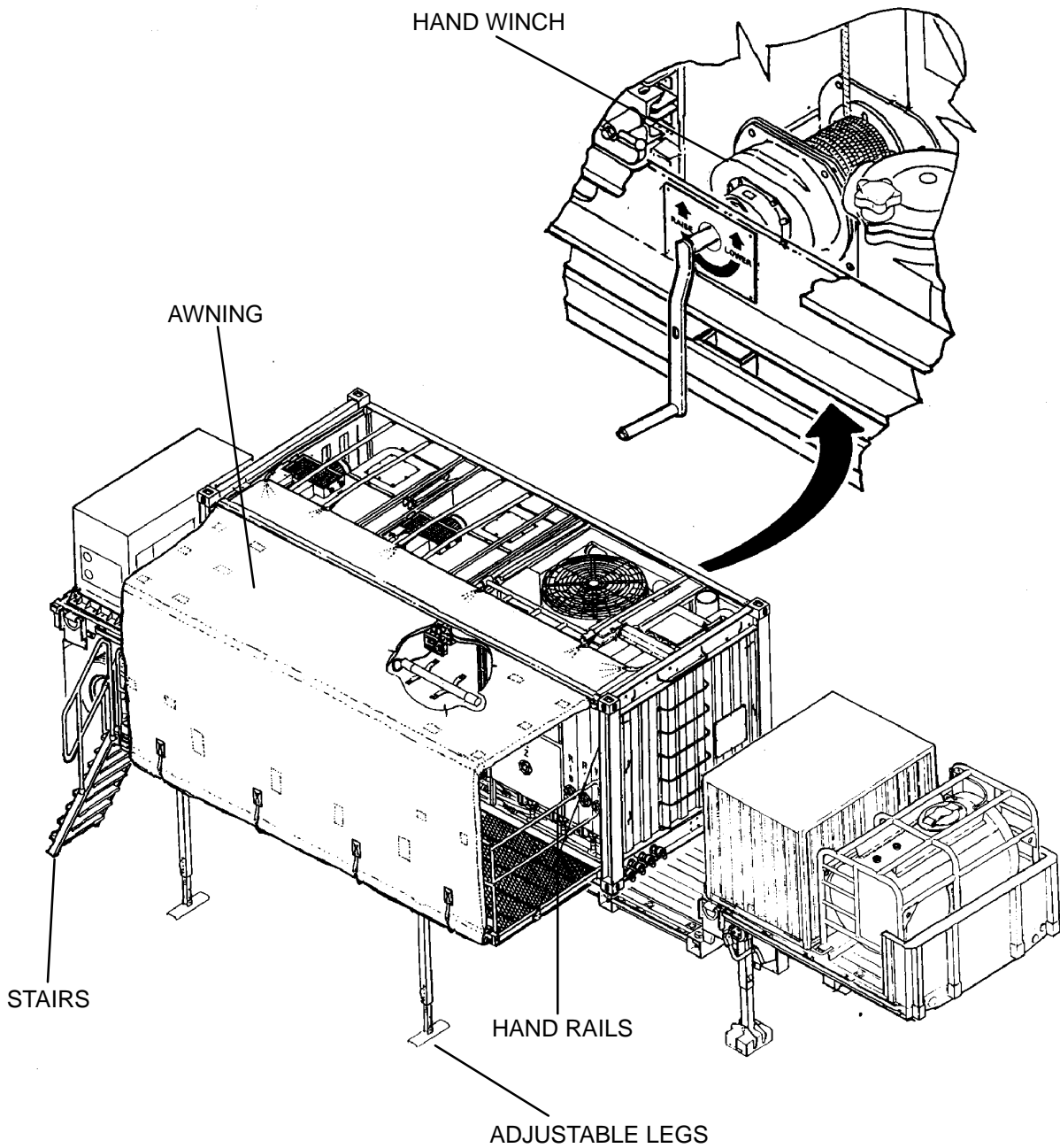
LOCATION AND DESCRIPTION OF MAJOR COMPONENTS**ISO FRAME**

The LADS components are mounted to an 8 foot (ft) wide X 8 ft high X 20 ft long ISO frame. The frame mounts to the M871A3 Trailer via ISO locks. Ladder rungs are provided at both ends of the frame to access the top of the LADS. A protective tarp is provided to cover the front, rear, and top of the LADS during transport.



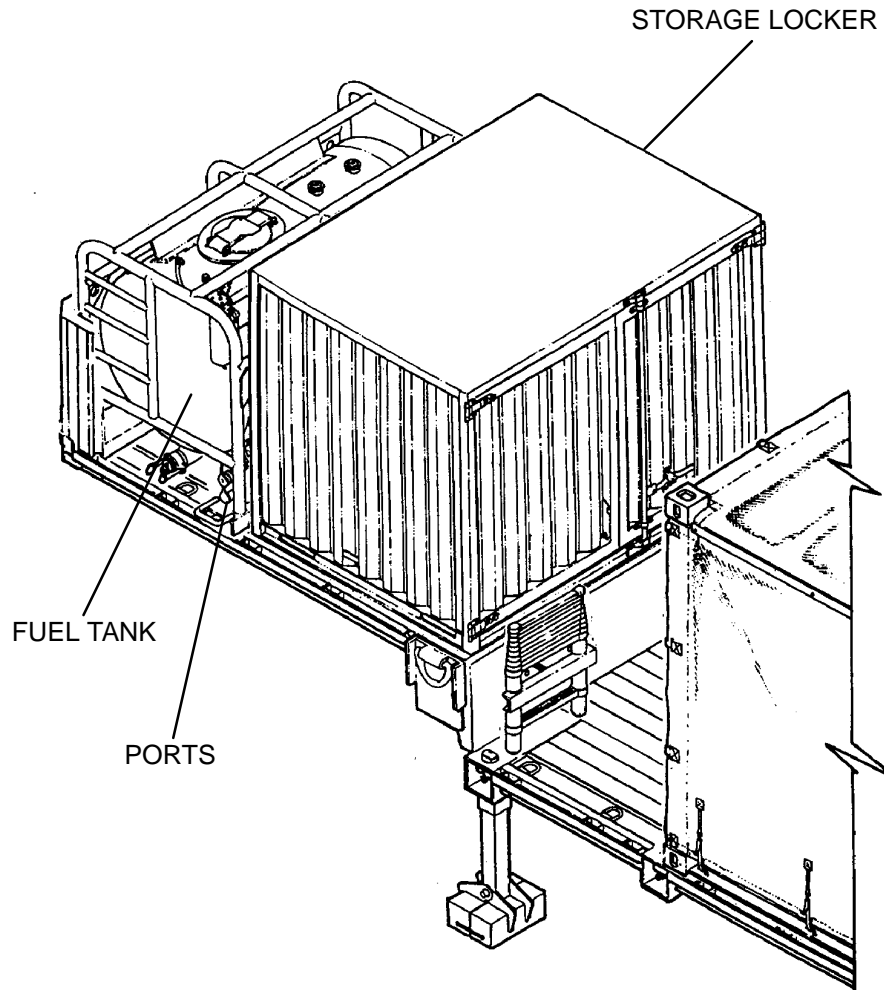
PLATFORM

A work platform is provided at the curbside of the LADS to facilitate laundry and maintenance operations. A hand winch is used to raise and lower the platform. Two adjustable legs are provided to support the front of the platform. Hand rails are provided at the platform sides to prevent personnel from falling. Stairs are located on the side of the platform for ground-level access. The protective tarp used to cover the LADS during transport converts into an awning to protect personnel on the platform from exposure to rain, sun, and wind.



STORAGE LOCKER AND FUEL TANK

A 400-gallon fuel tank and storage locker are mounted on the upper deck of the trailer. The fuel tank has ports that connect directly to the LADS heater and 30 kW generator. The storage locker has a 200 cubic foot capacity and is used to store the LADS accessories, auxiliary equipment, and consumable supplies. Document holders are also provided for storage of the LADS Technical Manuals.



WASHING/DRYING SYSTEM

The washing/drying system contains two washing/drying drums. Each drum is capable of washing, rinsing, extracting, and drying 175 – 200 pounds of laundry per hour. Each drum is independently mounted to the LADS frame with four air bags and four shock absorbers. The air bags and shock absorbers reduce the amount of vibration that is transferred to the LADS structure when the drum(s) is rotating. Each drum consists of an outer shell which supports the basket, drive motor, brake, dryer ducting, blower, and front door. The basket consists of a metal housing with four flights that contain and distribute the laundry as it is rotated. The basket and outer edge of the flights are perforated to allow hot drying air to flow onto the laundry.

The basket is connected to a drive shaft that is attached to the drum housing with two pillow block bearings. This shaft is rotated by an electric motor that is connected to the shaft with two sheaves and a drive belt. The shaft also contains a brake rotor that is mounted between the calipers of an air brake. Laundry is loaded into the drum through the see-through front door. The door contains a lock that prevents it from being opened while the basket is rotating. Air used to dry the laundry is provided to each drum by independent electric blowers. A protective screen is located at the fresh air inlet to each blower. These screens prevent debris (sand, dirt, leaves, etc.) from entering the dryer ducting. A lint filter is used in the air recirculation path for each blower. These filters remove lint and other particles from the air that is circulating from the drum back to the blower. The screens and filters are easily removed and are reusable after cleaning.

The LADS contains five water tanks. Each washing/drying drum has a wash tank and a rinse 1 tank. These tanks have an 80 gallon capacity. The rinse 2 tank has a 150 gallon capacity and is shared by both drums. Each tank has a sight glass that provides a visual indication to the operator that the tank is full. Pumps and valves are used to control the flow of water between the tanks and drums.

