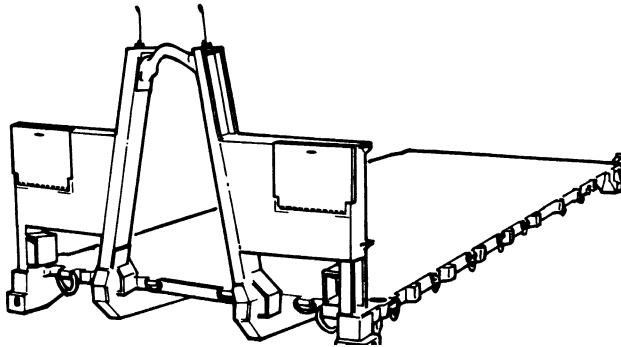


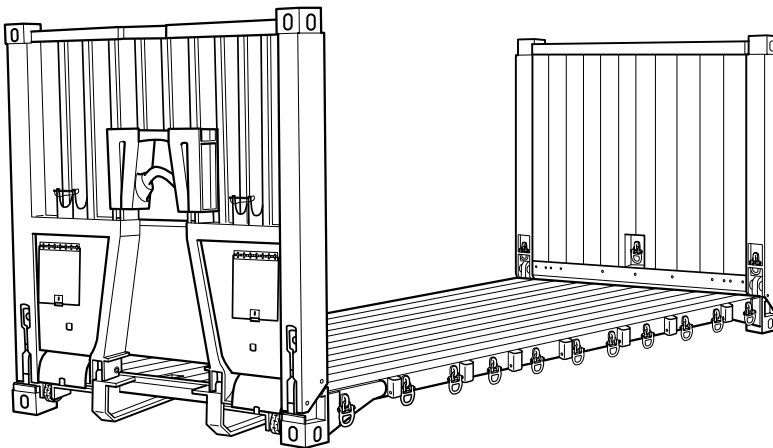
# TM 9-3990-206-14&P

THIS MANUAL SUPERSEDES TM 9-3990-206-14&P DATED 31 MAR 1994, INCLUDING ALL CHANGES.

## TECHNICAL MANUAL OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)



**PALLETIZED LOAD SYSTEM (PLS)  
FLATRACK  
MODEL M1077/M1077A1  
NSN 3990-01-307-7676**



**ISO COMPATIBLE PALLETIZED  
FLATRACK M1 (IPF)  
NSN 3990-01-406-1340**

### DISTRIBUTION RESTRICTION

Approved for public release; distribution is unlimited.

INTRODUCTION (Model M1077)	1-1
OPERATING INSTRUCTIONS (Model M1077)	2-1
OPERATOR'S MAINTENANCE INSTRUCTIONS (Model M1077)	3-1
UNIT MAINTENANCE INSTRUCTIONS	4-1
DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS (Model M1077)	5-1
INTRODUCTION (Model M1 (IPF))	6-1
OPERATING INSTRUCTIONS (Model M1 (IPF))	7-1
OPERATOR'S MAINTENANCE INSTRUCTIONS (Model M1 (IPF))	8-1
UNIT MAINTENANCE INSTRUCTIONS (Model M1 (IPF))	9-1
DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS (Model M1 (IPF))	10-1
REFERENCES	A-1
MAINTENANCE ALLOCATION CHART	B-1
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST	C-1
EXPENDABLE/DURABLE ITEMS LIST	E-1
REPAIR PARTS AND SPECIAL TOOLS LIST	F-1
ILLUSTRATED LIST OF MANUFACTURED ITEMS	G-1
MANDATORY REPLACEMENT PARTS	H-1
TOOL IDENTIFICATION LIST	I-1
FLATRACK CONTAINER INSPECTION CHECKLIST (Model M1 (IPF))	J-1
LUBRICATION INSTRUCTIONS (Model M1 (IPF))	K-1



**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg). M1077A1 Flatrack weighs 3,900 lbs (1,771 kg). Ensure all personnel stand clear of flatrack when flatrack is being moved. Failure to comply may result in severe injury or death to personnel.

**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg), without side boards. M1077A1 Flatrack weighs 3,900 lbs (1,771 kg), without side boards. Attach suitable lifting device prior to removal or installation to prevent possible injury to personnel.

**WARNING**

Ensure flatracks are loaded on or unloaded from trailer one at a time. MHC on truck is not capable of handling more than one flatrack at a time. Failure to comply may result in severe injury or death to personnel.

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Attach suitable lifting device prior to lifting to avoid possible injury or death to personnel.

**WARNING**

Unsafe welding practices can cause serious injury from fire, explosions, or harmful agents. Allow only authorized personnel to weld or cut metals, and follow safety precautions in TC 9-237. Protective clothing and goggles must be worn; adjustable protective equipment used, and suitable fire extinguisher kit near by; and requirements of TC 9-237 strictly followed.

**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc).
- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

**WARNING**

Roller must be supported while removing retaining pins or roller may drop causing injury to personnel.

**WARNING**

Hook bar may have metal slivers or sharp edges. Wear gloves if handling or injury to personnel could result.

**WARNING**

Flatracks must be empty when stacked. Attempting to stack loaded flatracks could cause serious injury or death to personnel.

**WARNING**

Support roller while removing lynch pins or roller may drop causing injury to personnel.

**WARNING**

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or severe injury or death could result.

**WARNING**

Spring and steel balls are under tension. Use caution when removing steel balls and spring or serious injury could result.

**WARNING**

Front wall weighs 1,500 lbs (681 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the front wall to prevent serious injury or death to personnel.

**WARNING**

Use extreme care when removing nuts from springs. Springs are under tension and can act as projectiles when released. Ensure all personnel wear proper eye protection to avoid injury to personnel.

**WARNING**

Flatracks are designed to be stacked in loaded condition up to nine using shipboard double twist locks. Stacking more than nine flatracks could cause damage to equipment and serious injury or death to personnel.

**WARNING**

Flatrack and load weighs up to 38,500 lbs (17,479 kg). Flatrack and load, including sideboards and tarp, loaded on PLS truck or trailer must not exceed 36,600 lbs (16,616 kg). Attach suitable lifting device to avoid serious injury or death to personnel.

**WARNING**

During unstacking operations, unlock the twist locks on only one flatrack at a time. Do not attempt to unload multiple flatracks that are unlocked. For example, it is permissible to remove up to two flatracks at a time, however, both flatracks must be locked together. Failure to follow this procedure may cause flatracks to fall causing serious injury or death to personnel.

**WARNING**

Twist locks must be completely locked in place. Ensure that twist locks have snapped fully into place. Failure to completely lock twist locks could cause serious injury or death to personnel.

**WARNING**

- Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). Attach suitable lifting device prior to removing or lifting wall to prevent injury or death to personnel.
- Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the front or rear walls to prevent serious injury or death to personnel.
- Lifting device must remain on wall. Lifting device is providing all the support for the wall. Failure to comply will result in wall falling causing serious injury or death to personnel.

**WARNING**

- Flatracks have two sets of forklift pockets. Outside set must be used when lifting a loaded flatrack. Either set may be used when lifting an empty flatrack. Failure to comply could result in serious injury or death to personnel.
- Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- Flatrack weighs 7,300 lbs (3,312 kg). Ensure all personnel stand clear of flatrack when lifting. Failure to comply could result in serious injury or death to personnel.

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Use a suitable lifting device or forklift to lift flatrack. Failure to comply may result in injury or death to personnel.

**WARNING**

Rear wall weighs 1,200 lbs (545 kg). Do not stand under walls when raising or lowering. Use the aid of a lifting device when raising or lowering the rear wall to prevent serious injury or death to personnel.

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

**WARNING**

Spring and chain removal must never be performed with the walls of the flatrack lowered. Walls must always be raised prior to performing this task. Failure to comply can result in too much tension on chain causing severe injury or death to personnel.

**WARNING**

Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.

**WARNING**

Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.

**WARNING**

Three M1 flatracks stacked together weigh 21,900 lbs (9,934 kg). Use suitable forklift to lift flatracks. Failure to comply may result in injury or death to personnel.

**WARNING**

Ensure walls are raised and pins are installed prior to performing this task. Failure to comply could result in wall falling causing severe injury or death to personnel.

**WARNING**

Wall may raise abruptly when ratchet strap is released. Ensure personnel are clear of wall when releasing ratchet strap. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Flatrack must be removed from truck and trailer prior to any welding being performed.

**WARNING**

Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use an assistant when raising or lowering the rear wall to prevent serious injury or death to personnel.

**WARNING**

Wall raises very quickly. Ensure personnel do not hold onto wall when raising. Failure to comply may result in serious injury or death to personnel.

**WARNING**

Ensure T-hooks are locked into place before tightening load binders. T-hooks, chain and load binders could come apart causing serious injury to personnel.

**WARNING**

Floor boards must be replaced with same laminated wood as specified. Using a substitution of alternative wood will result in lower deck strength and capability, which could lead to deck failure. Injury to personnel and/or damage to equipment may result.

**WARNING**

Spring adjustments must be made with walls raised and pinned. Failure to comply may result in injury or death to personnel.

**WARNING**

Support pulley when removing pin. When pin is removed, pulley will fall to ground. Failure to comply could result in injury to personnel.

**WARNING**

Ensure all personnel wear protective gloves when handling main rail caps to protect hands from wood splinters. Failure to comply may result in injury to personnel.

**WARNING**

Rear wall weighs 1,200 lbs (545 kg). Attach suitable lifting device after raising wall to prevent injury or death to personnel.



**WARNING**

Ensure guide rope is installed on opposite corners of wall as shown. Failure to comply can result in injury or death to personnel.



**LIST OF EFFECTIVE PAGES**

Insert latest changed pages. Destroy superseded pages.

**NOTE**

The portion of the text effected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by shadowed or screened areas, or by miniature pointing hands.

Dates of issue for original and changed pages are:

Original ..... 0 ... 31 March 1994      Revision 1      0      1 August 1999

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 336 CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Title .....	0	C-1 - C-2 .....	0		
Blank .....	0	D-1 .....	0		
a - g .....	0	D-2 Blank .....	0		
h Blank .....	0	E-1 - E-3 .....	0		
A .....	0	E-4 Blank .....	0		
B Blank .....	0	F-1 - F-7 .....	0		
i - iv .....	0	Figure 1 - Figure 19 .....	0		
1-1 - 1-7 .....	0	Kit-1 .....	0		
1-8 Blank .....	0	Bulk-1 .....	0		
2-1 - 2-32 .....	0	I-1 - I-8 .....	0		
3-1 - 3-2 .....	0	G-1 - G-6 .....	0		
4-1 - 4-21 .....	0	H-1 - H-2 .....	0		
4-22 Blank .....	0	I-1 - I-2 .....	0		
5-1 - 5-14 .....	0	J-1 .....	0		
6-1 - 6-7 .....	0	J-2 Blank .....	0		
6-8 Blank .....	0	K-1 - K-4 .....	0		
7-1 - 7-30 .....	0	L-1 - L-4 .....	0		
8-1 - 8-4 .....	0	M-1 - M-3 .....	0		
9-1 - 9-68 .....	0	M-4 Blank .....	0		
10-1 - 10-14 .....	0	INDEX-1 - INDEX-2 .....	0		
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B-1 - B-5 .....	0				
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TECHNICAL MANUAL

No. 9-3990-206-14&P

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

**OPERATOR’S, UNIT, DIRECT SUPPORT AND  
GENERAL SUPPORT MAINTENANCE MANUAL  
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)  
FOR  
PALLETIZED LOAD SYSTEM (PLS) FLATRACK**

**Model M1077/M1077A1**

**NSN 3990-01-307-7676**

**Model M1 (IPF)**

**NSN 3990-01-406-1340**

Current as of 01 August 1999

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

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**TABLE OF CONTENTS**

	<b>Page</b>
CHAPTER 1 INTRODUCTION .....	1-1
Section I General Information .....	1-1
Section II Equipment Description .....	1-5
Section III Principles of Operation .....	1-7
CHAPTER 2 OPERATING INSTRUCTIONS .....	2-1
Section I Operator’s Preventive Maintenance Checks and Services (PMCS) .....	2-1
Section II Operation Under Usual Conditions .....	2-8
CHAPTER 3 OPERATOR MAINTENANCE INSTRUCTIONS .....	3-1
Section I Maintenance Instructions .....	3-1

\* This manual supersedes TM 9-3990-206-14&P, 31 March 1994.

## TABLE OF CONTENTS (CONT).

		Page
CHAPTER 4	UNIT MAINTENANCE INSTRUCTIONS	4-1
Section I	Repair Parts, Special Tools, Test, Measurement and Diagnostic (TMDE) and Support Equipment	4-1
Section II	Service Upon Receipt	4-2
Section III	Unit Maintenance Preventive Maintenance Checks and Services (PMCS)	4-4
Section IV	Unit Maintenance Procedures	4-6
CHAPTER 5	DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE	5-1
Section I	Repair Parts, Special Tools, Test, Measurement and Diagnostic (TMDE), and Support Equipment	5-1
Section II	Service Upon Receipt	5-1
Section III	Direct Support and General Support Maintenance Procedures	5-2
CHAPTER 6	INTRODUCTION	6-1
Section I	General Information	6-1
Section II	Equipment Description	6-4
Section III	Principles of Operation	6-7
CHAPTER 7	OPERATING INSTRUCTIONS	7-1
Section I	Operator's Preventive Maintenance Checks and Services (PMCS)	7-1
Section II	Operation Under Usual Conditions	7-10
CHAPTER 8	OPERATOR MAINTENANCE INSTRUCTIONS	8-1
Section I	Troubleshooting Procedures	8-1
Section II	Maintenance Instructions	8-3
CHAPTER 9	UNIT MAINTENANCE INSTRUCTIONS	9-1
Section I	Repair Parts, Special Tools, Test, Measurement and Diagnostic (TMDE) and Support Equipment	9-1
Section II	Service Upon Receipt	9-2
Section III	Unit Maintenance Preventive Maintenance Checks and Services (PMCS)	9-4
Section IV	Unit Maintenance Procedures	9-23
CHAPTER 10	DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE	10-1
Section I	Repair Parts, Special Tools, Test, Measurement and Diagnostic (TMDE), and Support Equipment	10-1
Section II	Service Upon Receipt	10-1
Section III	Direct Support and General Support Maintenance Procedures	10-2
APPENDIX A	REFERENCES	A-1
APPENDIX B	MAINTENANCE ALLOCATION CHART (MAC)	B-1
APPENDIX C	COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS	C-1
APPENDIX D	ADDITIONAL AUTHORIZATION LIST	D-1
APPENDIX E	EXPENDABLE AND DURABLE ITEMS LIST	E-1

## TABLE OF CONTENTS (CONT).

		Page	Illus/ Figure
APPENDIX F	UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)	F-1	
Section I	Introduction .....	F-1	
Section II	Repair Parts List (M1077, M1077A1, M1 (IPF))		
Group 33	Special Purpose Kits		
Group 3301	Reusable Shipping Containers		
	M1077 Sideboard Kit .....	1-1	1
	Marker Spring and Stowage Box Door .....	2-1	2
	Sling and Tiedown Rings .....	3-1	3
	Side Tiedown Rings .....	4-1	4
	Front ISO Locks .....	5-1	5
	Rear ISO Locking Pins .....	6-1	6
	Rollers .....	7-1	7
	Data Plates .....	8-1	8
	IPF Sideboard Kit .....	9-1	9
	IPF Stowage Box Assembly .....	10-1	10
	IPF 10K and 25K Cargo Tie Down Assembly .....	11-1	11
	IPF Front and Rear Wall Assembly .....	12-1	12
	IPF Mud Flaps .....	13-1	13
	IPF Bracket and Pin Assemblies .....	14-1	14
	IPF Base Assembly .....	15-1	15
	IPF Pulley Assembly .....	16-1	16
	IPF Spring and Chain Installation .....	17-1	17
	IPF Roller Assembly .....	18-1	18
	IPF Data Plates .....	19-1	19
Group 94	Repair Kits		
Group 9401	Repair Kits		
	Kits Sideboard Kits .....	Kit-1	
Group 95	General Use Standardized Parts		
Group 9501	Hardware Supplies and Bulk Material		
	Bulk Bulk Material .....	Bulk-1	
Section III	Special Tool List (Not Applicable)		
Section IV	Cross References Indexes		
	National Stock Number Index .....	I-1	
	Part Number Index .....	I-3	
APPENDIX G	ILLUSTRATED LIST OF MANUFACTURED ITEMS	G-1	
APPENDIX H	MANDATORY REPLACEMENT PARTS LIST	H-1	
APPENDIX I	TOOL IDENTIFICATION LIST	I-1	
APPENDIX J	FLATRACK CONTAINER INSPECTION CHECKLIST	J-1	
APPENDIX K	LUBRICATION INSTRUCTIONS	K-1	
APPENDIX L	TORQUE LIMITS .....	L-1	
APPENDIX M	STOWAGE AND SIGN GUIDE .....	M-1	
INDEX	ALPHABETICAL INDEX .....	INDEX 1	

## HOW TO USE THIS MANUAL

This manual is designed to help operate and maintain the Model M1077/M1077A1 PLS Flatrack, NSN 3990-01-307-7676 and Model ISO Compatible Palletized Flatrack M1 (IPF), NSN 3990-01-406-1340. Listed below are some of the 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.
- In addition to text, there are exploded-view illustrations showing how to take a component off and put it back on. Cleaning and inspection criteria are also included where necessary.
- Chapters 1 and 2 (model M1077), and Chapters 6 and 7 (model M1 (IPF)) of this manual are directed at the operator of the flatrack. These chapters include an overall description and instructions for operation, as well as operator PMCS.
- Chapter 3 (model M1077) and Chapter 8 (model M1 (IPF)) of this manual cover Operator Maintenance.
- Chapter 4 (model M1077) and Chapter 9 (model M1 (IPF)) of this manual cover Unit Maintenance, including PMCS.
- Chapter 5 (model M1077) and Chapter 10 (model M1 (IPF)) of this manual cover Direct Support and General Support Maintenance.
- Appendix A covers the References used in this manual.
- Appendix B covers the Maintenance Allocation Chart (MAC).
- Appendix C covers the Components of End Item (COEI) and Basic Issue Items (BII) lists.
- Appendix D covers the Additional Authorized List (AAL) of items authorized for the flatrack.
- Appendix E covers the Expendable and Durable Items List for the flatrack.
- Appendix F covers the Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (RPSTL) for the flatrack.
- Appendix G lists the Manufactured Items for the flatrack.
- Appendix H lists the Mandatory Replacement Parts.
- Appendix I lists the Common Tools, Supplements, and Special Tools/Fixtures.
- Appendix J shows the ISO Compatible Flatrack M1 Inspection Checklist (model M1 (IPF)).
- Appendix K lists all Lubrication Instructions (model M1 (IPF)).
- Appendix L lists all Common Torque Limits for the flatrack.
- Appendix M lists the Stowage and Sign Guides for the flatrack.
- An Alphabetical Index is provided to help locate items in the text.

Follow these guidelines when using this manual:

- The operator must read through this manual and become familiar with the contents before attempting to operate the flatrack.
- Read all WARNINGS and CAUTIONS before performing any procedure.



# CHAPTER 1

## INTRODUCTION

Para	Contents	Page
1-1	Scope .....	1-1
1-2	Maintenance Forms and Records .....	1-1
1-3	Corrosion Prevention and Control .....	1-2
1-4	Destruction of Army Materiel to Prevent Enemy Use .....	1-2
1-5	Reporting Equipment Improvement Recommendations (EIR) .....	1-2
1-6	Preparation for Storage or Shipment .....	1-2
1-7	Quality Assurance/Quality Control (QA/QC) .....	1-2
1-8	Equipment Configuration .....	1-2
1-9	Safety, Care and Handling .....	1-4
1-10	Warranty Information .....	1-4
1-11	List of Abbreviations .....	1-4
1-12	Equipment Characteristics, Capabilities and Features .....	1-5
1-13	Location and Description of Major Components .....	1-6
1-14	Equipment Data .....	1-7
1-15	Normal Operation .....	1-7

### Section I. GENERAL INFORMATION

#### 1-1. SCOPE.

This chapter provides general information, equipment description and principles of operation for the PLS Flatrack.

- a. Type of Manual.** Operator, Unit, Direct Support and General Support Maintenance Manual, including Repair Parts and Special Tools List (RPSTL).
- b. Model Number and Equipment Name.** The PLS Flatrack Part Number is 1881430, Model M1077/M1077A1, NSN 3990-01-307-7676. Figure 1-1 illustrates the flatrack with various payloads.
- c. Purpose of Equipment.** The PLS Flatrack is a flat cargo body with a wall, used as a lifting point, for securing the flatrack during all modes of transportation and during all specified load/unload operations.

#### 1-2. MAINTENANCE FORMS AND RECORDS.

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. CORROSION PREVENTION AND CONTROL.**

The flatrack has a total service life of 10 years which allows for extended periods of operation in a corrosive environment. A corrosive environment includes exposure to high humidity, salt spray, road-deicing chemicals, gravel, and atmospheric contamination. No action beyond normal washing and repair of damaged areas is necessary to control corrosion. To prevent moisture accumulation, drain holes are provided on structural and sheet metal areas where necessary. Stowage boxes are provided with drains.

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

Refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.

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

If your flatrack needs improvement, let us know. Send us an EIR. You, the user, are the only ones 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 (Product Quality Deficiency Report). Mail it to us at: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E-MPA, Warren, MI 48397-5000. We'll send you a reply.

### **1-6. PREPARATION FOR STORAGE OR SHIPMENT.**

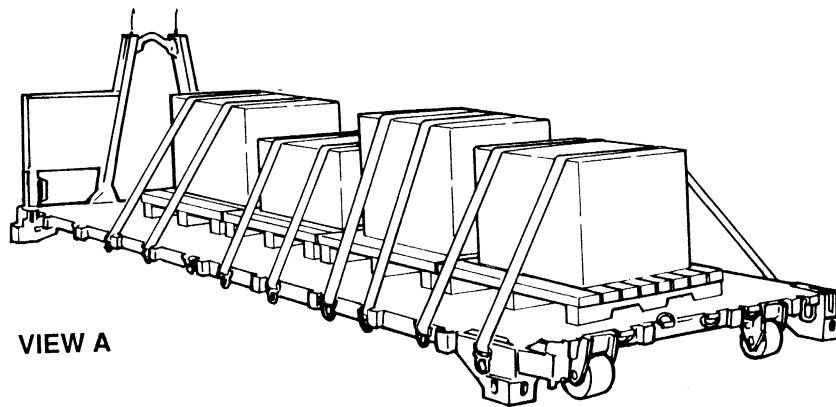
Refer to Para 2-13 for storage or shipment instructions for the flatrack.

### **1-7. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC).**

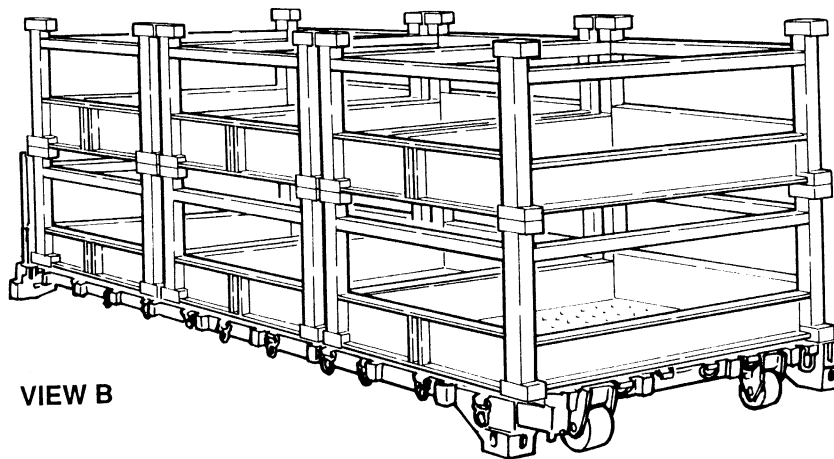
If there are any Quality Assurance/Quality Control problems with the flatrack, put the problem on an SF 368 Quality Deficiency Report and mail it to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E-MPA, Warren, MI 48397-5000. A reply will be furnished to you.

### **1-8. EQUIPMENT CONFIGURATION.**

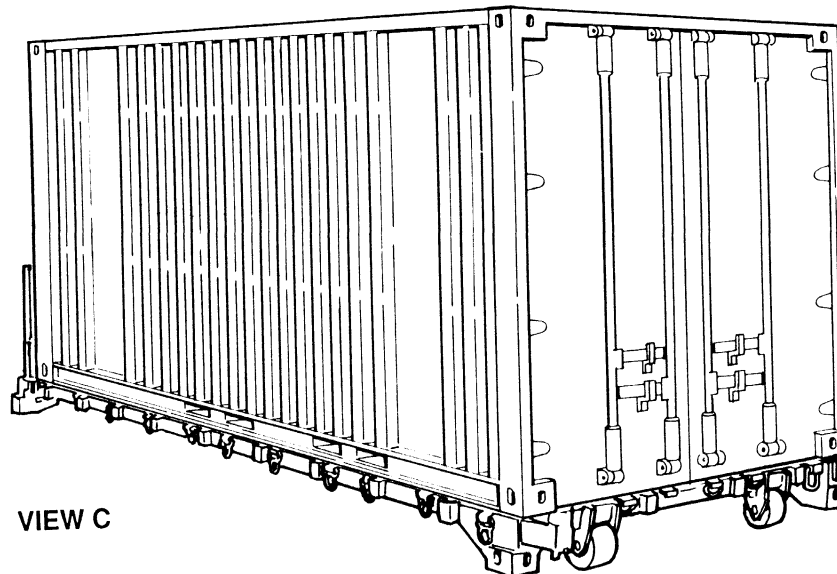
The flatrack can be configured to carry palletized (View A), break-bulk (View B), or 20 foot International Standards Organization (ISO) container (View C) payloads (Figure 1-1).



VIEW A



VIEW B



VIEW C

Figure 1-1. Flatrack Payloads.

**1-9. SAFETY, CARE AND HANDLING.**

Beware of payload movement during normal loading/unloading operations. Ensure tiedown straps and cargo net are correctly installed. Flatrack should be loaded on truck or trailer using Load Handling System (LHS), Material Handling Crane (MHC) or other suitable lifting device. Never walk under flatrack while it is being lifted, loaded or unloaded.

**1-10. WARRANTY INFORMATION.**

Refer to TB 9-2320-364-15 Warranty Technical Bulletin for information concerning the flatrack. The warranty starts on the date found in block 23, DA Form 2408-9 in the logbook. Report all defects in material and workmanship to your supervisor, who will take the appropriate action.

**1-11. LIST OF ABBREVIATIONS.**

The following abbreviations are used extensively throughout this manual:

AAL	Additional Authorization List
BII	Basic Issue Items
BOI	Basis of Issue
CAGE	Contractor and Government Entity
CBR	Chemical, Biological and Radiological
COEI	Components of End Item
ea	each
EIR	Equipment Improvement Recommendation
FR	Flatrack
in.	inch
ISO	International Standards Organization
LHS	Load Handling System
MHC	Material Handling Crane
NBC	Nuclear, Biological and Chemical
NSN	National Stock Number
qt	quart
pk	package
pr	pair
PLS	Palletized Load System
PLST	Palletized Load System Trailer
PMCS	Preventive Maintenance Checks and Services
SMR	Source, Material and Recovery
TAMMS	The Army Maintenance Management System
TMDE	Test, Measurement and Diagnostic Equipment
U/I	Unit of Issue
U/M	Unit of Measure

## Section II. EQUIPMENT DESCRIPTION

### 1-12. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

#### **a. Equipment Characteristics.**

- (1) The flatrack is a welded-steel, flat cargo body with a wall used as a lifting point. Flatrack is usually loaded and unloaded by the Load Handling System (LHS).
- (2) The flatrack has four ISO corner castings on the bottom that allow it to be secured and transported on flatbed railcar, M871 semitrailer and stacked one on top of another. Two flatracks can be transported on the M872 semitrailer. These configurations require only existing railcar and trailer-mounted ISO corner castings.
- (3) In addition the flatrack has four ISO corner castings on top which allow a standard 8 ft by 8 ft by 20 ft container to be secured and transported on the flatrack.
- (4) The flatrack is provided with a sideboard kit and tiedown straps to allow transport of break-bulk materials.

#### **b. Capabilities.**

- (1) The flatrack can be loaded from the ground or a loading dock and loaded between truck and trailer using the truck-mounted LHS. The M1077 Flatrack will accommodate uniformly distributed payloads of 33,000 lbs (14,982 kg). The M1077A1 Flatrack will accommodate uniformly distributed payloads of 32,300 lbs (14,664 kg). To meet the uniformly distributed payload requirements, the rear corner fittings should be 1,100 lbs (499 kg) to 1,200 lbs (545 kg) heavier than the front corner fittings.
- (2) The flatrack is capable of being transported without restrictions on C-141 aircraft.
- (3) The flatrack is capable of being sling-lifted by a CH-47D helicopter with a reduced payload. The maximum permissible reduced payload for a M1077 is 20,000 lb (9,080 kg), and for a M1077A1 is 19,300 lbs (8,762 kg) at 2,000 ft (610 m), 70 degrees F (21 degrees C), for 30 nautical miles.
- (4) A fully loaded flatrack, excluding ISO container, is capable of being stowed within the cell of a container vessel.
- (5) The flatrack can be moved by a forklift with forks that are a minimum of 68 in. (173 cm) in length.

#### **c. Features.**

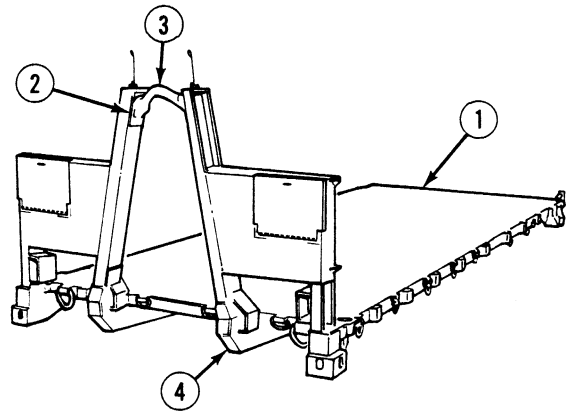
- (1) A welded frame forming a single, integral unit.
- (2) Two enclosed stowage boxes.
- (3) Removable rollers at the rear of the flatrack.
- (4) Capable of accepting a sideboard kit to carry break-bulk materials.
- (5) Tiedown rings to secure payloads.
- (6) Forklift pockets to allow movement of the flatrack in loaded/unloaded situation.
- (7) ISO corner casting in the front and rear.
- (8) Maximum weight for the M1077 is 3,200 lbs (1,453 kg). Maximum weight for the M1077A1 is 3,900 lbs (1,771 kg). Both without sideboard kit.

**1-13. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.**

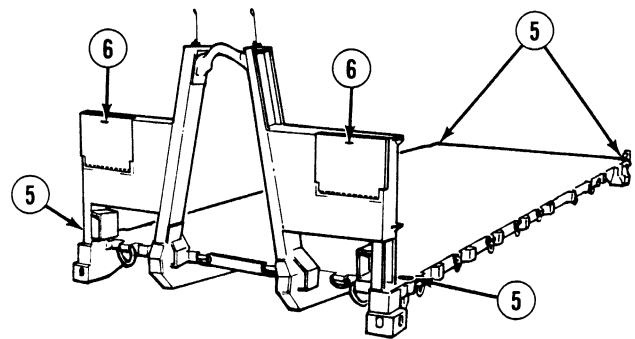
a. **Flatrack.** The flatrack (1) is a welded frame and wall forming a cargo carrier used with the truck.

b. **Wall and Hookbar.** The wall (2) of the flatrack is used as a lifting point for the flatrack. The wall has a hookbar (3) which couples with the LHS hook arm to lift and pull the flatrack onto the truck.

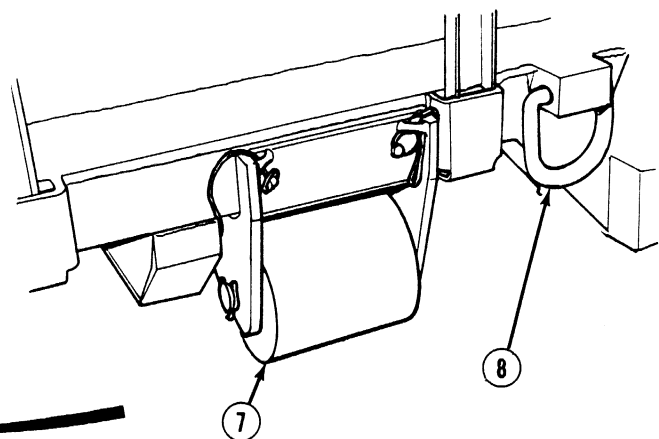
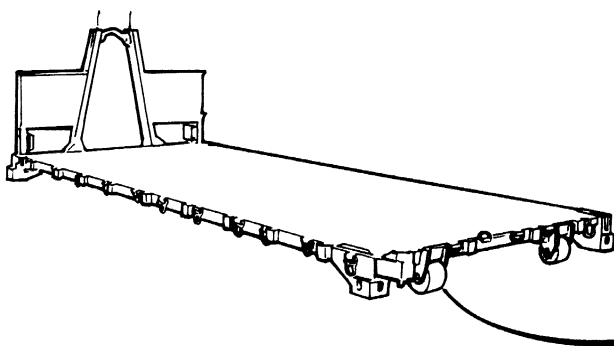
c. **Rails.** The flatrack rails (4) have locking plates that mate with plates on the truck and trailer to secure the flatrack for road operations.



d. **ISO Locks/Fittings.** Corner ISO locks/fittings (5) have the same dimensions as a 20 ft (6.10 m) ISO container. This allows the flatrack to be secured on any equipment capable of locking down a 20 ft (6.10 m) ISO container, including ships and trailers.



e. **Stowage Boxes.** Two stowage boxes (6) are sized to allow storage of tiedown straps and other items. The stowage box covers are hinged and have provisions for locking.



f. **Rollers.** Removable rollers (7) are used for loading/unloading flatrack onto the trailer or docks.

g. **Lifting Rings and Straps.** Lifting rings (8) and straps are provided to secure payloads or to secure flatrack for modes of shipping when flatrack is not on truck or trailer.

**1-14. EQUIPMENT DATA.**

Table 1-1 contains the equipment data that applies to the flatrack:

**Table 1-1. Equipment Data**

Item	Specification
Width	95.99 in. (244 cm)
Height	62.48 in. (159 cm)
Length	248.5 in. (631 cm)
Weight	
M1077 without sideboard kit	3,200 lb (1,453 kg)
M1077 with sideboard kit	3,625 lb (1,646 kg)
M1077A1 without sideboard kit	3,900 lb (1,771 kg)
M1077A1 with sideboard kit	4,325 lb (1,964 kg)

**Section III. PRINCIPLES OF OPERATION**

**1-15. NORMAL OPERATION.**

The flatrack has no operating systems. All parts are permanently connected to the flatrack with exception of the rollers and the sideboards which the operator can easily remove or install. Refer to TM 9-2320-364-10 for PLS operating principles.





## CHAPTER 2

### OPERATING INSTRUCTIONS

Para	Contents	Page
2-1	Operator’s PMCS Procedures .....	2-1
2-2	PMCS Warnings and Cautions .....	2-1
2-3	Explanation of PMCS Table Entries .....	2-1
2-4	Routing Diagram .....	2-2
2-5	Interval Groupings .....	2-2
2-6	Shortened Intervals .....	2-2
2-7	Assembly and Preparation for Use .....	2-8
2-8	Decals and Instruction Plates .....	2-10
2-9	Sideboard Kit .....	2-11
2-10	Nuclear, Biological and Chemical (NBC) Decontamination Procedures .....	2-11
2-11	Flatrack Stacking and Loading On PLS .....	2-12
2-12	Flatrack Stacking and Loading On PLS Trailer .....	2-20
2-13	Preparation for Storage or Shipment .....	2-32

#### Section I. OPERATOR’S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

**2-1. OPERATOR’S PMCS PROCEDURES.**

Table 2-1 (PMCS Table) has been provided so you can keep your equipment in good operating condition and ready for its primary mission.

**2-2. PMCS WARNINGS AND CAUTIONS.**

Always observe the Warnings and Cautions appearing in your PMCS Table. Warnings and Cautions appear before applicable procedures. You must observe these Warnings and Cautions to prevent serious injury to yourself and others or prevent your equipment from being damaged.

**2-3. EXPLANATION OF PMCS TABLE ENTRIES.**

**a. Item Number Column.** Item numbers appear in the order checks and services must be done for the interval listed. Numbers in this column are also for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault.

## 2-3. EXPLANATION OF PMCS TABLE ENTRIES (CONT).

**b. Interval Column.** This column tells you when you must perform the procedure in the procedure column.

- Perform the (Before) CHECKS prior to using the equipment.
- Perform the (During) CHECKS during the time you are using the equipment.
- Perform the (After) CHECKS after you have used the equipment.

**c. Location Check/Service Column.** This column provides the location and the item to be checked or serviced.

**d. Procedure Column.** This column gives the procedure you must perform to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must perform the procedure at the time stated in the interval column.

**e. Not Fully Mission Capable If: Column.** Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you experience check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the flatrack or reporting equipment failure.

**f. Other Table Entries.** Be sure to observe all special information and notes that appear in your table.

## 2-4. ROUTING DIAGRAM.

Figure 2-1 is a routing diagram showing the path to use around the flatrack during PMCS. Perform PMCS in the same order and following the same route each time.

## 2-5. INTERVAL GROUPINGS.

Operator PMCS for the flatrack will not go beyond a weekly interval.

## 2-6. SHORTENED INTERVALS.

When check and service intervals are shortened because of unusual conditions an asterisk (\*) will precede the interval. A footnote will explain the asterisk and the reason for the interval.

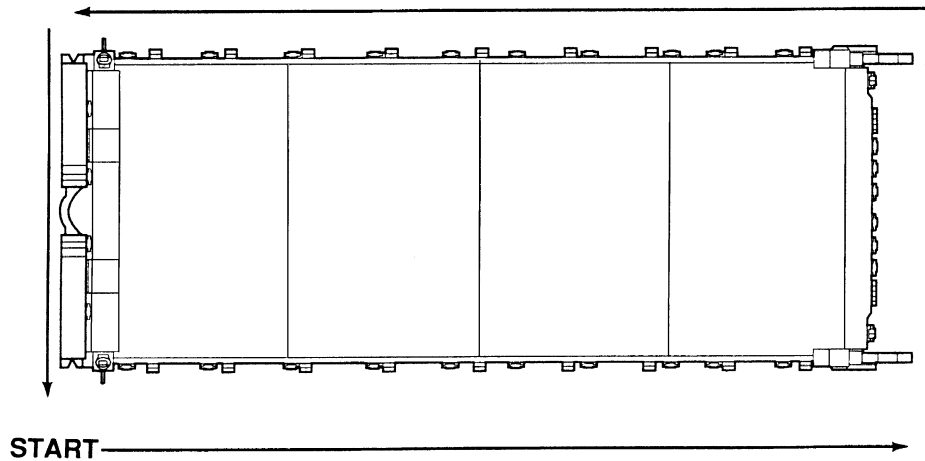


Figure 2-1. PMCS Walk-Around.

Table 2-1. Operator's Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
<b>NOTE</b>				
Perform Items No. (1) through (4) whether sideboard kit, cargo tarp and tiedown straps will or will not be used during the next mission.				
1	During	Cargo tarp; tiedown straps	Shortly after starting a mission and after driving over rough terrain, stop driving, get out and ensure cargo tarp (1) or tiedown straps are not damaged. Ensure cargo has not shifted. Tighten straps if required.	Tiedown straps are damaged and allow cargo to move. Insufficient straps to complete the mission.
2	After	Sideboard pockets	Visually inspect pockets (2) for corrosion, dirt, oil and damage. Clean equipment as required. Refer to TM 9-247.	Not all sideboards can be installed in pockets.

Table 2-1. Operator's Preventive Maintenance Checks and Services - CONT.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
3	After	Sideboards (if equipped).	Ensure that all sideboards (1) properly fit in pockets (2).	Not all sideboards can be installed in pockets.
4	After	Sideboard retaining clips.	Ensure all sideboard retaining clips (3) are not damaged or missing.	
5	After	Two rear ISO locks.	<p>a. Remove pin (1) from extension (2) and rotate extension upward.</p> <p>b. Fix extension (2) in position by installing pin (1).</p> <p>c. Pull pin (3) from lock (4). Rotate lock up to locked position (as shown) and install pin in lock.</p> <p>d. Pull pin (3) from lock (4) and rotate lock to the stowed position and install pin in lock.</p> <p>e. Pull pin (1) from extension (2) and rotate extension to the stowed position. Install pin in extension.</p>	Pin or lock damaged or extension will not rotate.

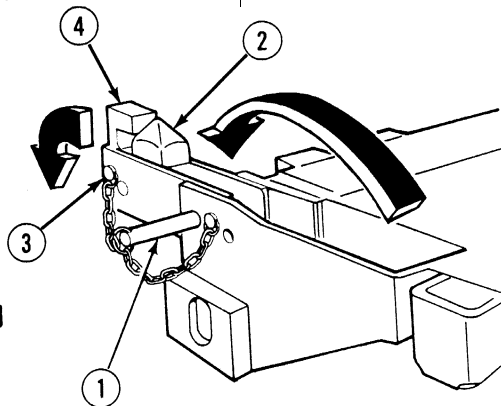
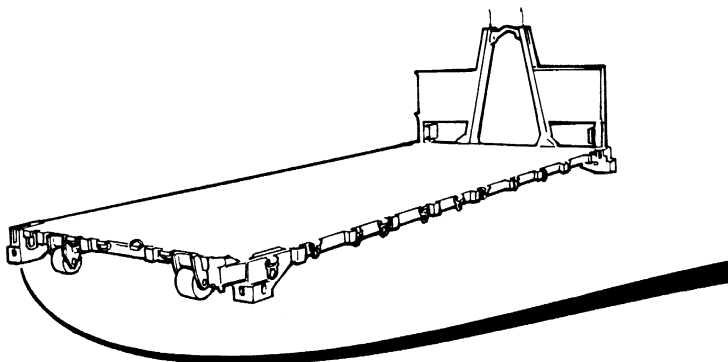
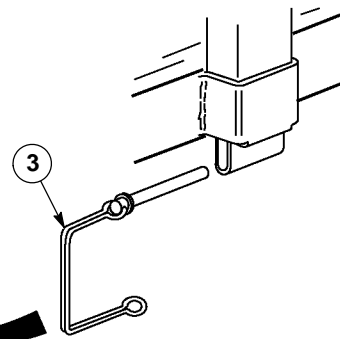
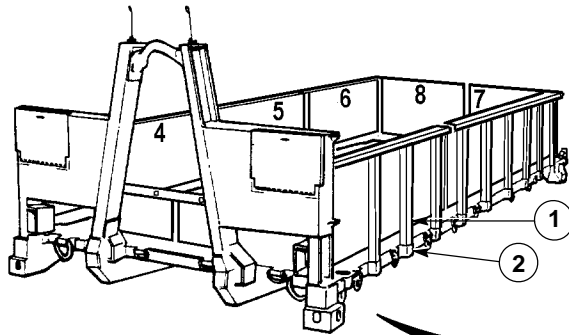
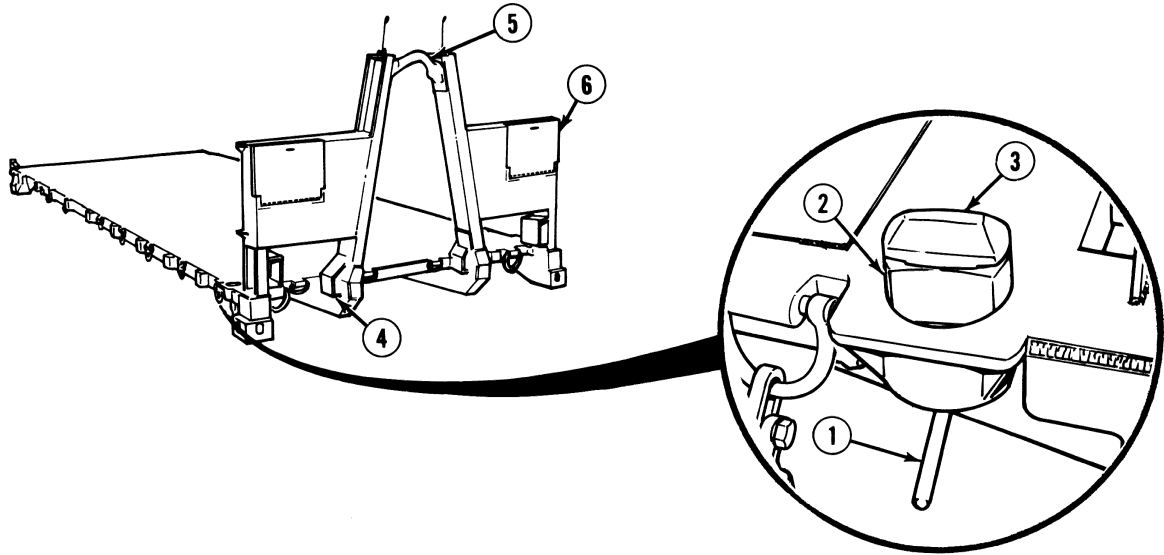


Table 2-1. Operator's Preventive Maintenance Checks and Services - CONT.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
<div style="border: 1px solid black; padding: 5px; display: inline-block;"><b>WARNING</b></div>				
<p>Roller must be supported while removing retaining pins or roller may drop causing injury to personnel.</p>				
6	After	Two rollers.	<ol style="list-style-type: none"> <li>a. Hold roller (1) in place. Remove holding pin (2) from each retaining pin (3). Lift on ring (4), pull retaining pin out far enough to ensure it is removable, then push back in. Perform same with other pin.</li> <li>b. Ensure that roller (1) will rotate.</li> <li>c. Ensure roll pins (5) are not damaged.</li> </ol>	Neither roller functions correctly.

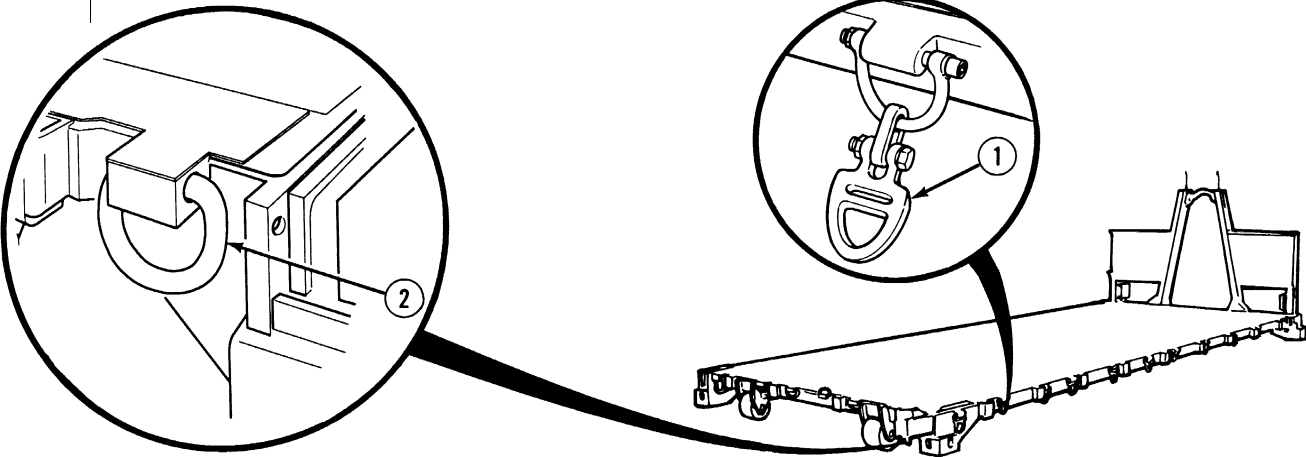
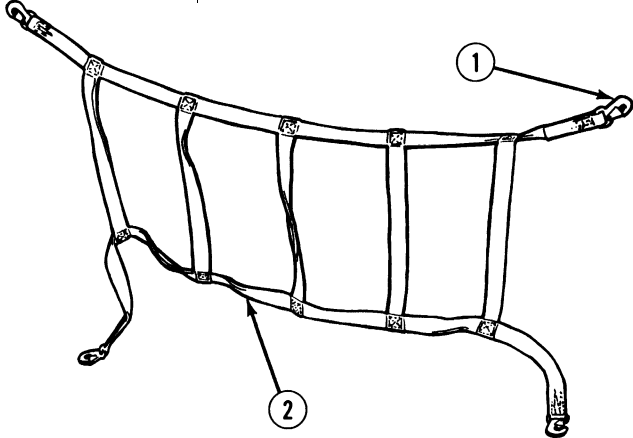
Table 2-1. Operator's Preventive Maintenance Checks and Services – CONT.

Item No.	Interval	<u>Location</u> Item to Check/Service	Procedure	Not Fully Mission Capable If:
7	After	Front ISO locks.	 <p>a. Lift handle (1) on locking body (2) and rotate CCW to lift locking body.</p> <p>b. Twist handle 1/4 of a turn more so that top (3) of lock will be in position to engage ISO container.</p> <p>c. Return locking body (2) to original position.</p>	Lock cannot engage ISO container.
		Flatrack rails.	Ensure ends of rails (4) are undamaged and clean.	One or both rails are damaged and will not fit on truck or trailer.
		Hook bar.	Check hook bar (5) for cracks and bent bar.	Hook bar has cracks or is bent.
Storage boxes.	Ensure door (6), hinges, lynch pins and fasteners are not damaged.			

**WARNING**

Hook bar may have metal slivers or sharp edges. Wear gloves if handling or injury to personnel could result.

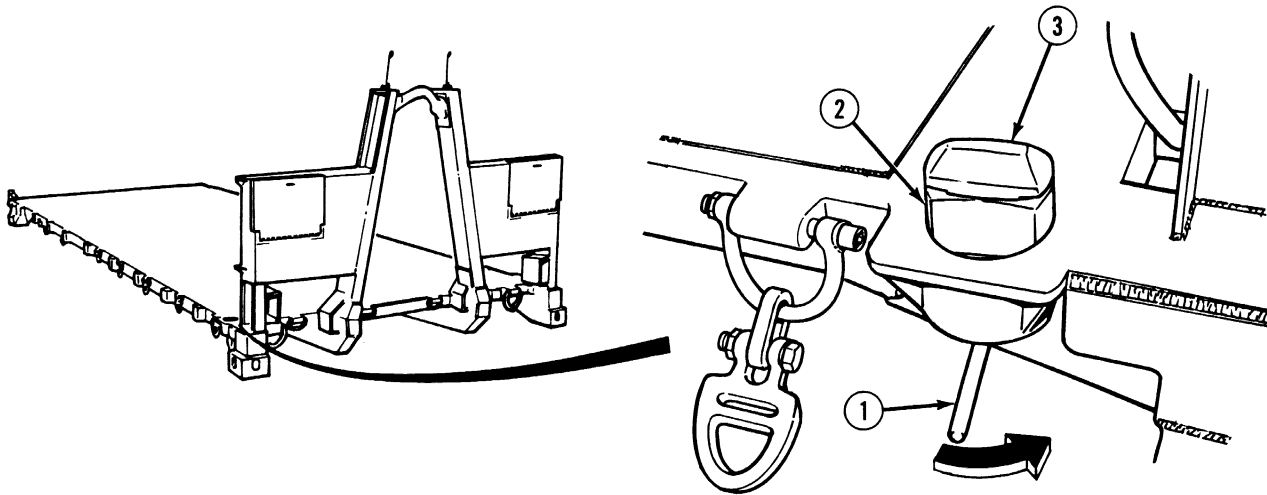
Table 2-1. Operator's Preventive Maintenance Checks and Services – CONT.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Perform Item No. 12 at the same time that you perform Item No. 11 if sideboards are installed.</p> 				
11	After	Tiedown rings and sling rings.	Ensure all tiedown rings (1) and sling rings (2) can be moved up and down and are not damaged.	
				
12	After	Cargo net.	Ensure cargo net snap hooks (1) and cargo net (2) are not damaged.	

## Section II. OPERATION UNDER USUAL CONDITIONS

### 2-7. ASSEMBLY AND PREPARATION FOR USE.

- a. **Unpacking.** Refer to Chapter 4, Unpacking and Packing, for unpacking instructions.
- b. **Assembly and Installation.** Refer to Chapter 4, Loose Parts Installation, for assembly and installation instructions, including removal of rollers from stowage points. Refer to Sideboard Kit, Para 2-9 if sideboards and straps must be installed.
- c. **Lock and Unlock Front ISO Locks.**



#### CAUTION

- Ensure all ISO container locks are unlocked before trying to load container on flatrack. Damage to both container and ISO locks could occur if locks are not correct.
- Ensure sideboards have been removed from flatrack before trying to load ISO container or damage to equipment may result.

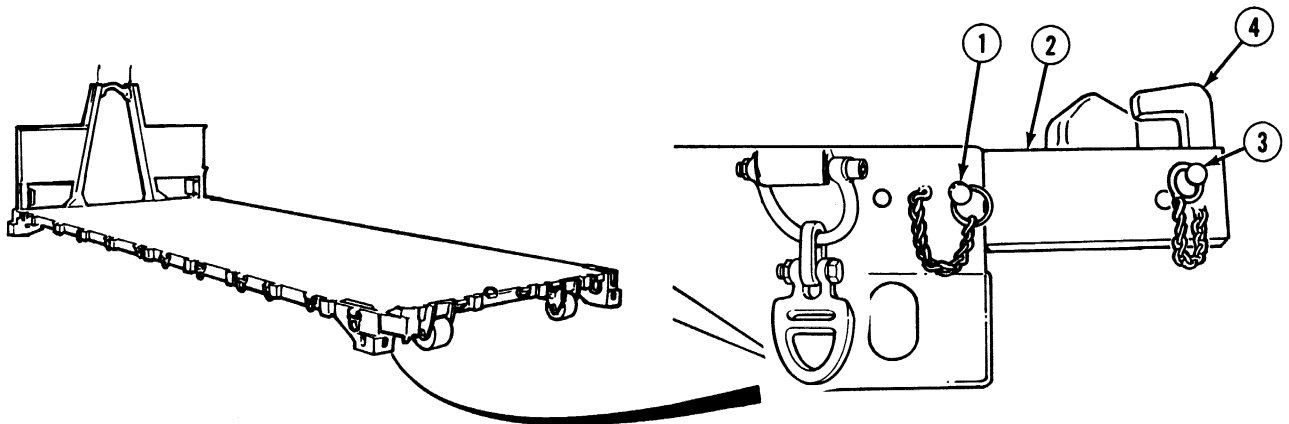
#### NOTE

Steps (1) and (2) must be performed before loading ISO container.

- (1) Lift up handle (1) and rotate to the left to lift lock body (2).
- (2) Twist handle (1) further to allow top (3) of lock to be in position to engage ISO container.
- (3) After installing ISO container, twist handle (1) to lock ISO container and flatrack together.



**d. Lock and Unlock Rear ISO Locks.**



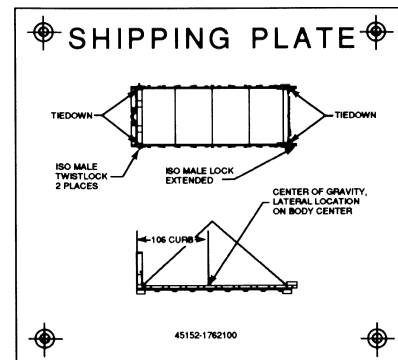
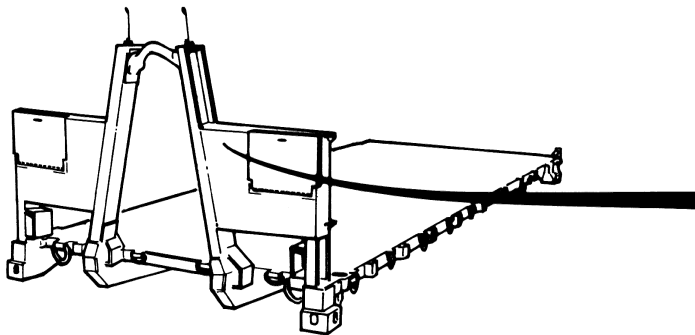
**CAUTION**

- Ensure all ISO container locks are unlocked before trying to load container on flatrack. Damage to both container and ISO locks could occur if locks are not unlocked.
- Ensure sideboards have been removed from flatrack before trying to load ISO container. Damage to sideboard or ISO container may result.

- (1) Pull pin (1) from extension (2).
- (2) Rotate extension (2) back and install pin (1) in hole.
- (3) After loading ISO container, remove pin (3) from lock (4) and rotate lock upward.
- (4) Hold lock (4) in place by reinstalling pin (3) in lock (4).

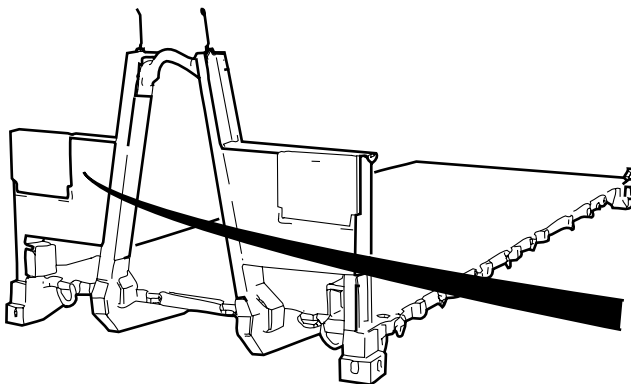
**e. Loading and Unloading Flatrack.** Refer to TM 9-2320-364-10 for detailed procedures on loading and unloading the flatrack using the LHS.

**2-8. DECALS AND INSTRUCTION PLATES.**



**SHIPPING LABEL**

- a. **Shipping Label.** Shipping label is riveted to the left front of the flatrack wall.
- b. **Data Plate.** The flatrack data plate is riveted to the right front of the flatrack wall.



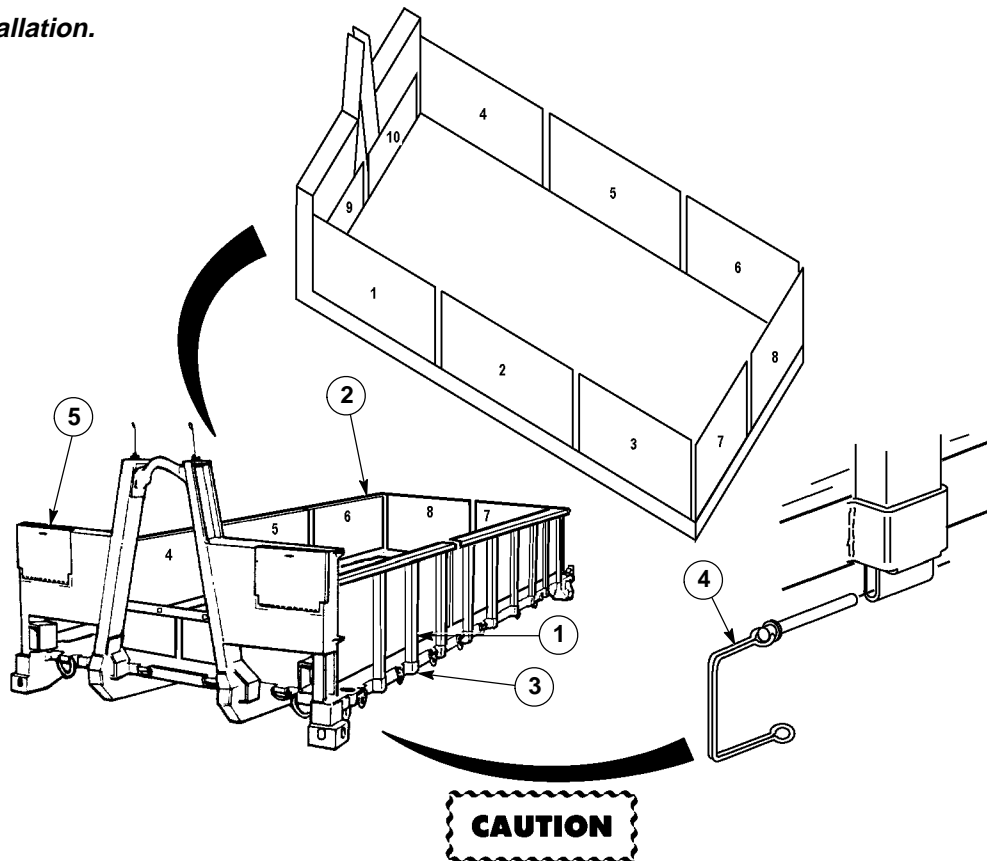
FLATRACK	
<b>WARRANTY</b>	
NSN NO	<input type="text"/>
MFG CAGE NUMBER	<input type="text"/>
WARRANTY STARTS	<input type="text"/>
WARRANTY EXPIRES	<input type="text"/>
REPORT FAILURES TO YOUR LOCAL WARRANTY COORDINATOR FOR PROCESSING IN ACCORDANCE WITH WARRANTY TB 9-2320-384-15	
MAKE	OSHKOSH TRUCK CORP
MODEL NO	<input type="text" value="M1077"/>
SERIAL NO	<input type="text"/>
CURB WT	<input type="text" value="3200 LBS"/>
PAYLOAD MAX 33,000 LBS UNIFORMLY LOADED ON FLATRACK	
DATE OF MFG	<input type="text"/>
CONTRACT NO	DAAE07-90-C-R035
U.S. PROPERTY	
45152-1782190	

**c. Stencils.**

- (1) The words LIFT and TIEDOWN are stenciled at four places on the flatrack, two on the front and two on the rear.
- (2) The words U.S. ARMY are stenciled at two places on the flatrack, left front and right rear.
- (3) The registration number is stenciled at two places on the flatrack, left front and right rear.
- (4) A five-point star is stenciled in four places on the side of the flatrack. Two stars are centered front and rear and two stars are at left front and right front.
- (5) The word CARC is stenciled under the data plate.

## 2-9. SIDEBOARD KIT.

### a. Installation.



Sideboards and straps secure the load to flatrack. Install sideboards and straps to flatrack before trying to move load or damage to equipment or the load may result.

### NOTE

- Refer to illustration for correct panel location.
- For installation of panels No. 9 and No. 10, refer to Para 4-19.

- (1) Line up stakes (1) of sideboard sections (2) with pockets (3) on flatrack. Push sideboard sections down until seated in pockets.
- (2) Anchor sideboard sections (2) to sideboard pockets (3) with retaining clips (4).
- (3) Install tiedown straps to cargo.

### b. Removal.

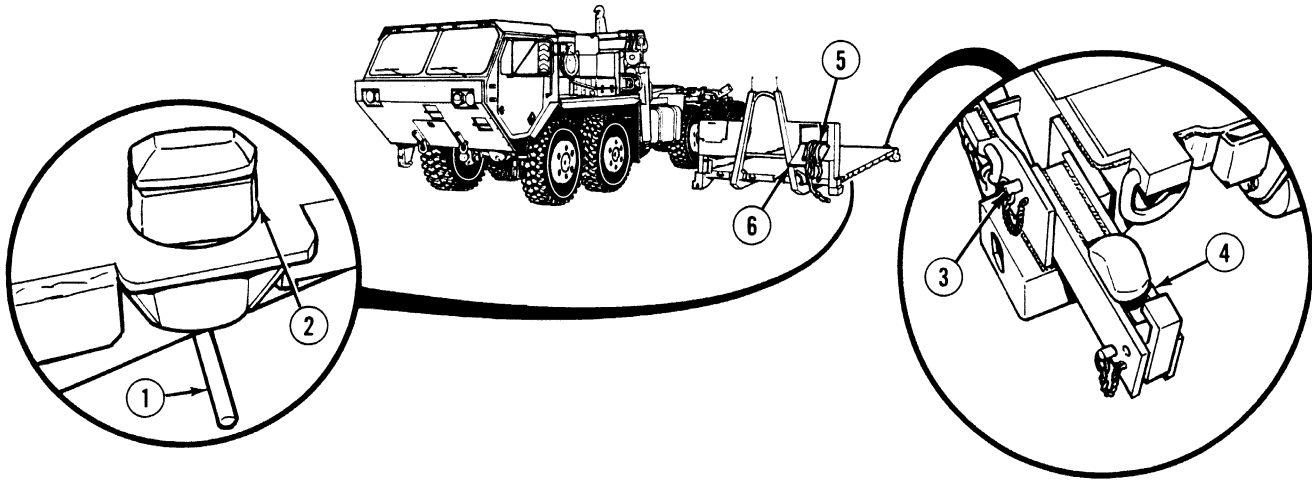
- (1) Remove tiedown straps from cargo and stow in stowage box (5).
- (2) Remove retaining clips (4) from sideboard pockets (3) and stakes (1).
- (3) Lift sideboard sections (2) out of pockets (3).

## 2-10. NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES.

Refer to FM 3-5, Chemical, Biological, and Radiological Decontamination, for CBR instructions.

**2-11. FLATRACK STACKING AND LOADING ON PLS.**

*a. Stacking/Loading.*



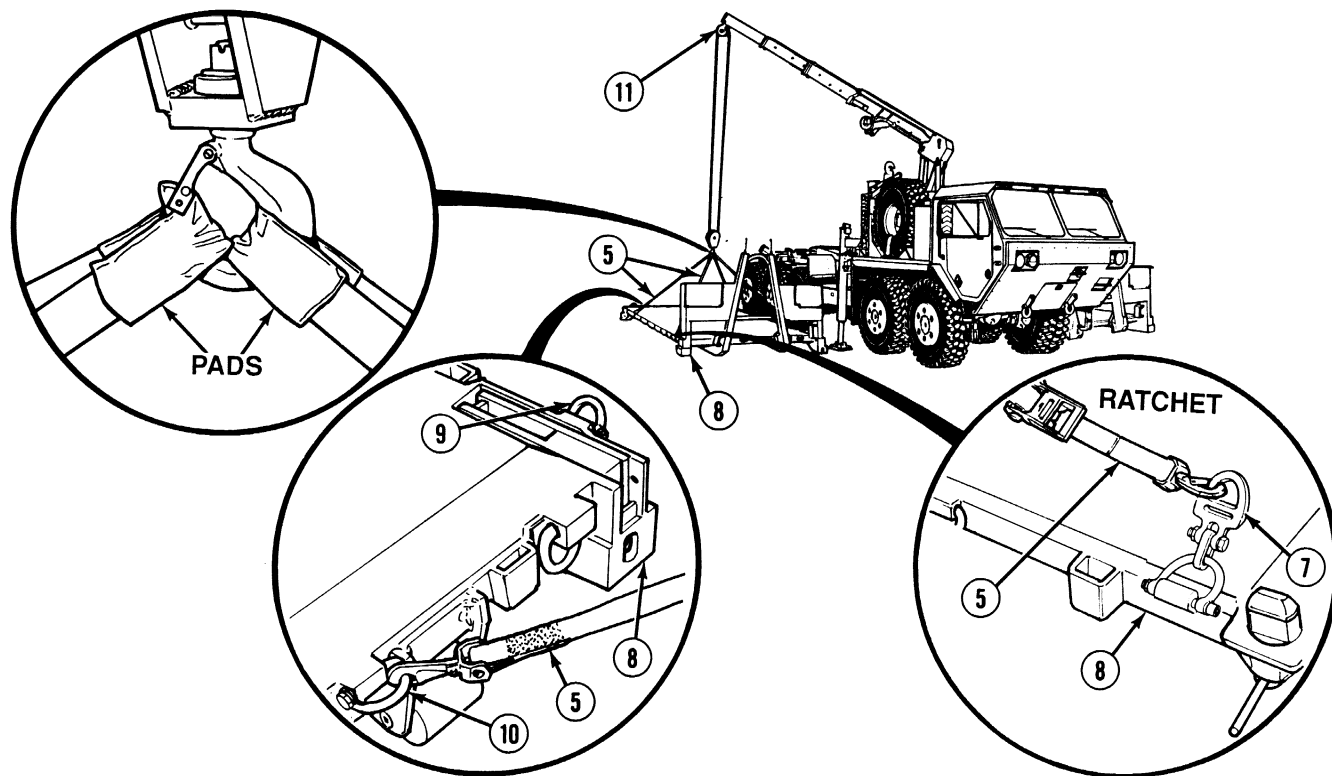
**WARNING**

Flatracks must be empty when stacked. Attempting to stack loaded flatracks could cause serious injury or death to personnel.

**NOTE**

- Two flatracks loaded on PLS truck is maximum if legal length requirement must be met. If no legal length requirement must be met, maximum of four flatracks may be loaded on PLS truck.
- Steps (1) through (4) are done only on flatrack that will be located below flatrack to be loaded.
- Flatracks may be stacked either on the ground or on the truck.
- When stacking flatracks directly to truck, there must be at least one empty flatrack already on the truck.
- Two people are required for stacking/loading flatracks.

- (1) Push up and turn handle (1) on two front locks (2) to UNLOCK position as shown.
- (2) Remove pin (3) from rear extension (4) and rotate extension outward.
- (3) Install pin (3) to secure rear extension (4) in place.
- (4) Remove three lifting straps (5) from flatrack stowage box (6).



**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

**CAUTION**

The Material Handling Crane (MHC) can lift only one flatrack at a time. Lifting more than one flatrack can cause damage to equipment.

- (5) Attach one lifting strap (5) from left to right, to two front tiedown rings (7) on flatrack (8).
- (6) Attach one lifting strap (5) from left to right, to two rear tiedown rings (9) on flatrack (8).
- (7) Attach lifting strap (5) to tiedown ring (10) at rear of flatrack (8).

**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

- (8) Attach two lifting straps (5) to MHC (11).

**2-11. FLATRACK STACKING AND LOADING ON PLS (CONT).**

**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg). M1077A1 Flatrack weighs 3,900 lbs (1,771 kg). Ensure all personnel stand clear of flatrack when flatrack is being moved. Failure to comply may result in severe injury or death to personnel.

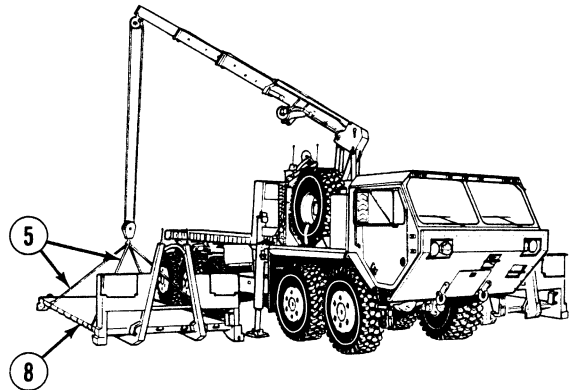
**CAUTION**

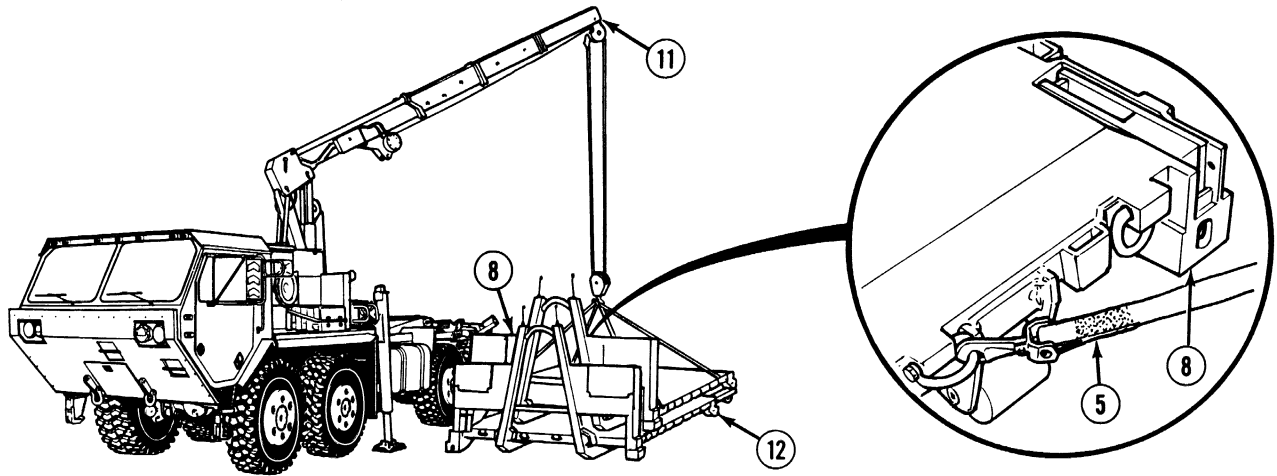
Ensure boom of MHC is positioned directly over center of flatrack prior to lifting flatrack off ground. Failure to comply may result in uneven lifting of flatrack and damage to equipment may result.

**NOTE**

If flatrack is not being raised level, Perform Steps (9) through (12). If flatrack is level, go on to Step (13).

- (9) With the aid of an assistant, raise flatrack (8) until flatrack clears ground and ensure flatrack is level.
- (10) Lower flatrack (8) to ground.
- (11) Shorten or lengthen two lifting straps (5) as required.
- (12) Repeat Steps (8) through (11) until flatrack (8) is level when raised.



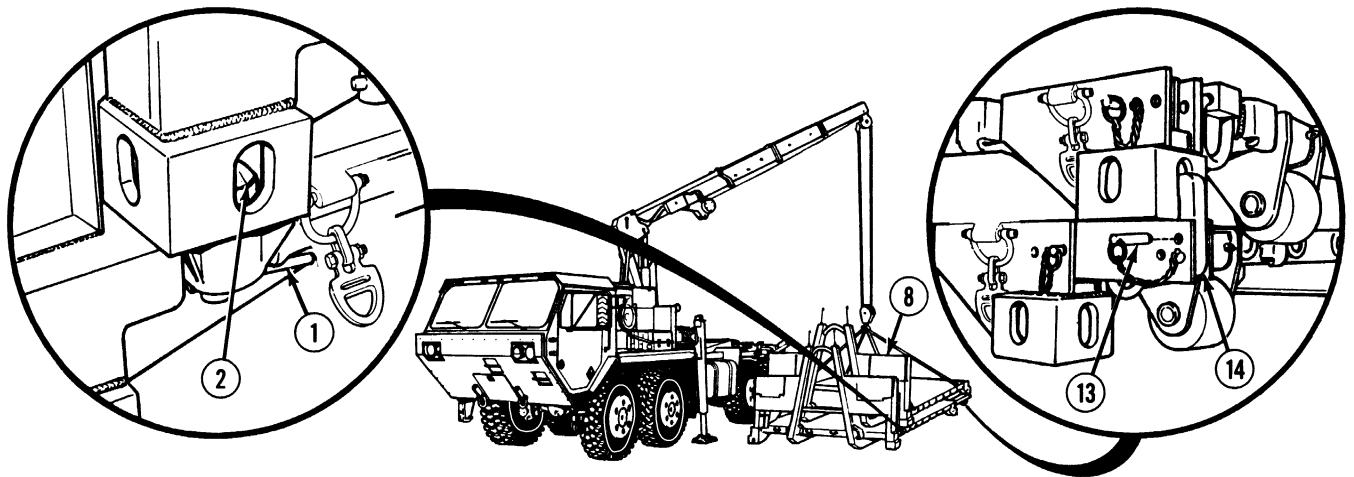


- (13) With the aid of an assistant, use lift strap (5) on rear of flatrack (8) to guide flatrack (8) in position, while operating MHC (11) and position flatrack (8) on flatrack (12).

**CAUTION**

Ensure flatrack locks are free of snow, dirt and debris prior to lowering flatrack or proper locking will not occur.

- (14) Position flatrack (8) securely on flatrack (12).

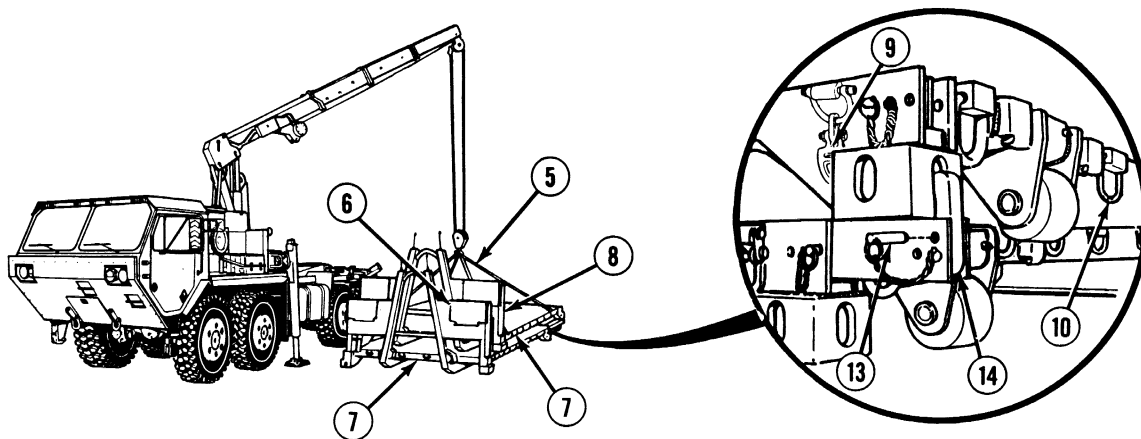


**NOTE**

Flatrack is in locked position when top of lock is positioned across flatrack mount as shown.

- (15) Turn handle (1) on two locks (2) until flatrack (8) is locked in.  
 (16) Remove pin (13) from lock (14) and rotate lock to LOCKED position.

**2-11. FLATRACK STACKING AND LOADING ON PLS (CONT).**



- (17) Install pin (13) to secure lock (14) in place.
- (18) Remove three lifting straps (5) from five tiedown rings (7), (9) and (10) on flatrack (8).
- (19) Repeat Steps (1) through (18) for additional flatracks being stacked.
- (20) Stow three lifting straps (5) in flatrack stowage box (6).

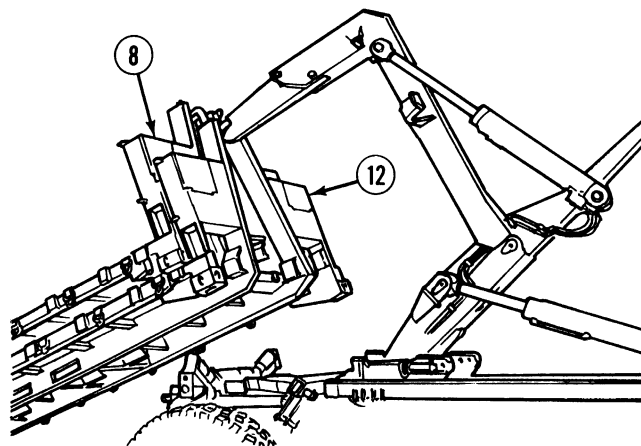
**CAUTION**

Ensure LHS hook is hooked only in flatrack located on bottom of stack. Failure to comply will result in improper loading of flatrack stack and damage will occur to equipment.

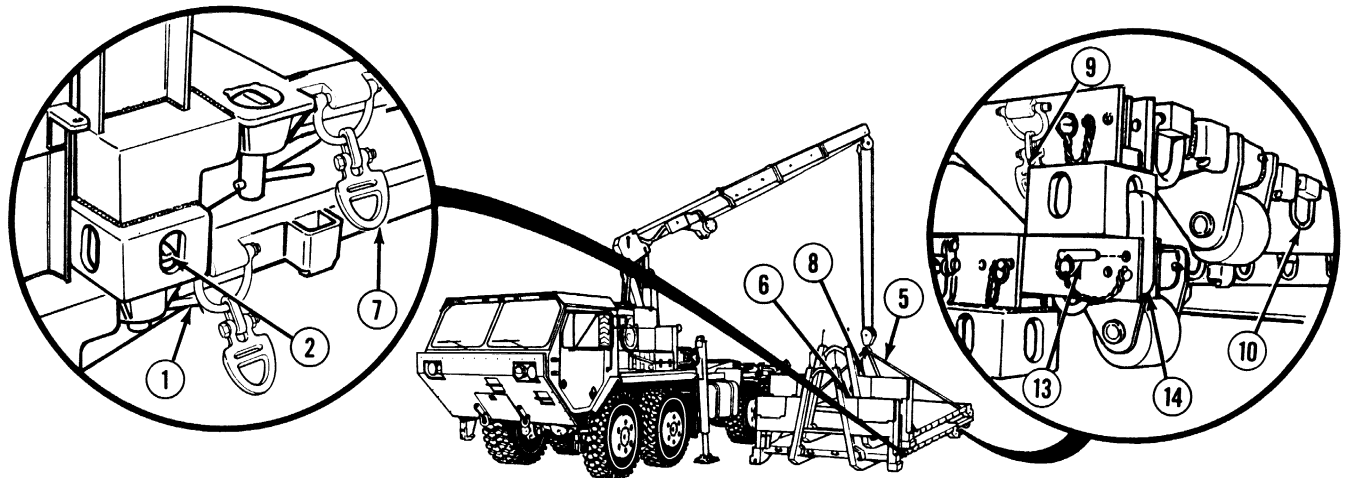
- (21) Position truck in front of flatracks (8) and (12) and use Load Handling System (LHS) to load flatracks on truck (TM 9-2320-364-10).

**b. Unstacking/Unloading.**

- (1) Using LHS, remove flatracks (8) and (12) from truck (TM 9-2320-364-10).







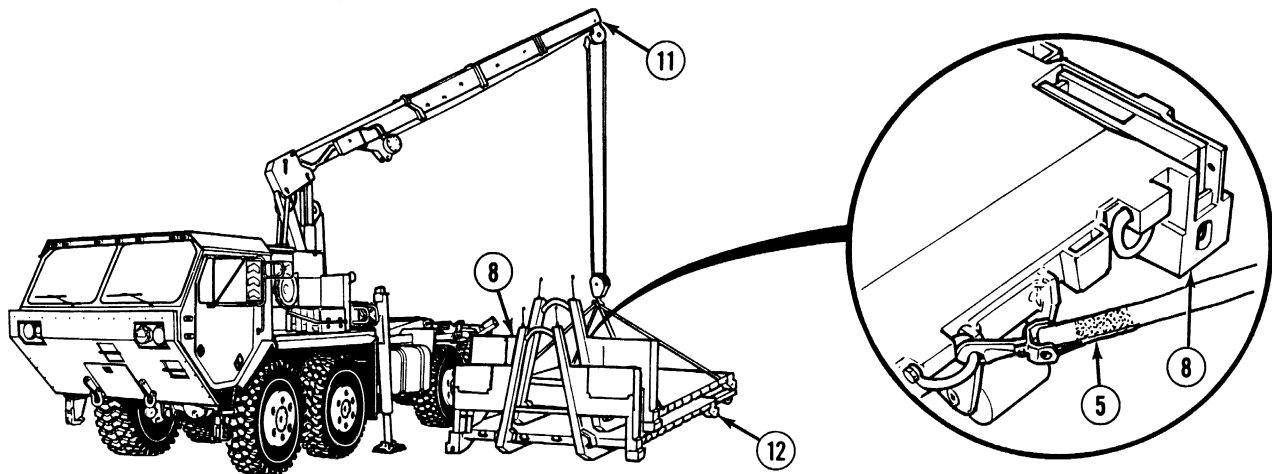
- (2) Remove three lifting straps (5) from flatrack stowage box (6).

**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

- (3) Attach one lifting strap (5) from left to right, to two front tiedown rings (7) on flatrack (8).
- (4) Attach one lifting strap (5) from left to right, to two rear tiedown rings (9) on flatrack (8).
- (5) Attach lifting strap (5) to tiedown ring (10) at rear of flatrack (8).
- (6) Turn handle (1) on two front locks (2) to UNLOCK position.
- (7) Remove pin (13) from lock (14).
- (8) Rotate lock (14) downward.

**2-11. FLATRACK STACKING AND LOADING ON PLS (CONT).**



**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg). M1077A1 Flatrack weighs 3,900 lbs (1,771 kg). Ensure all personnel stand clear of flatrack when flatrack is being moved. Failure to comply may result in severe injury or death to personnel.

- (9) Position MHC (11) directly over center of flatracks (8) and (12).

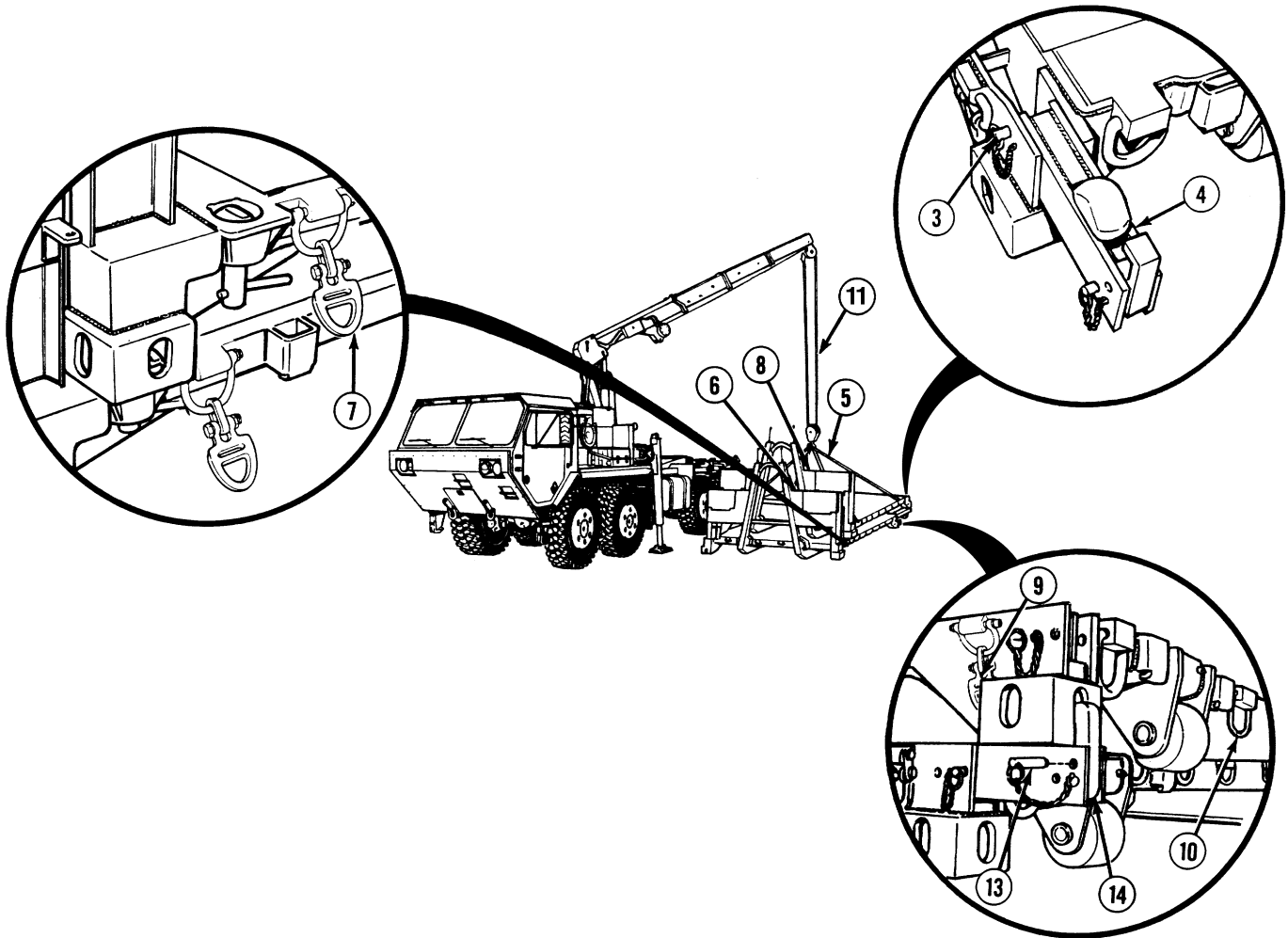
**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

**CAUTION**

The MHC can lift only one flatrack at a time. Lifting more than one flatrack can cause damage to equipment.

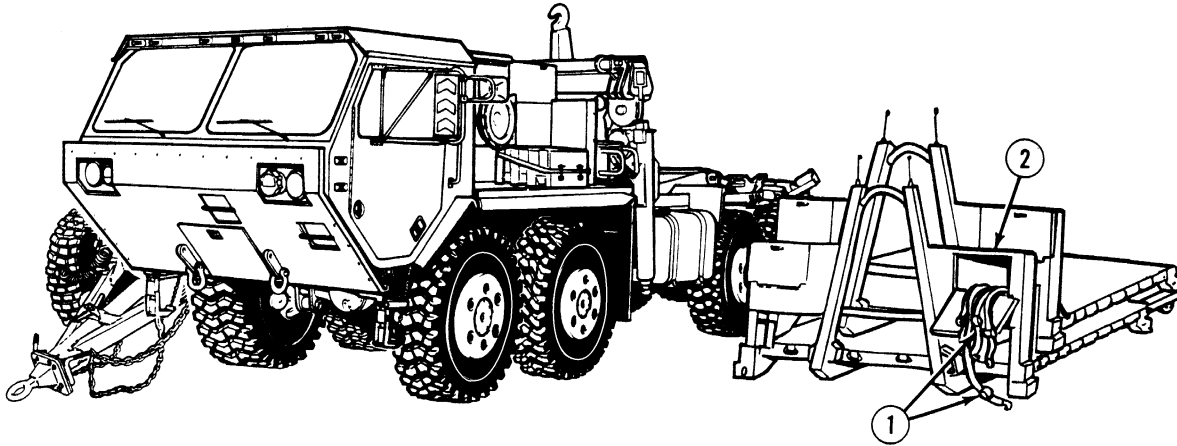
- (10) Attach two lifting straps (5) to MHC (11).
- (11) With the aid of an assistant, hold lifting strap (5) on rear of flatrack (8) to guide flatrack in position while operating MHC (11) and position flatrack on ground.



- (12) Remove two lifting straps (5) from MHC (11).
- (13) Remove three lifting straps (5) from five tiedown rings (7), (9) and (10) on flatrack (8).
- (14) Rotate lock (14) inward and install pin (13) to secure lock.
- (15) Remove pin (3) from extension (4) and rotate extension inward to stowed position.
- (16) Install pin (3) in extension (4).
- (17) Repeat Steps (1) through (16) for additional flatracks being removed from stack.
- (18) Stow three lifting straps (5) in flatrack stowage box (6).

## 2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER.

### a. Loading/Stacking.



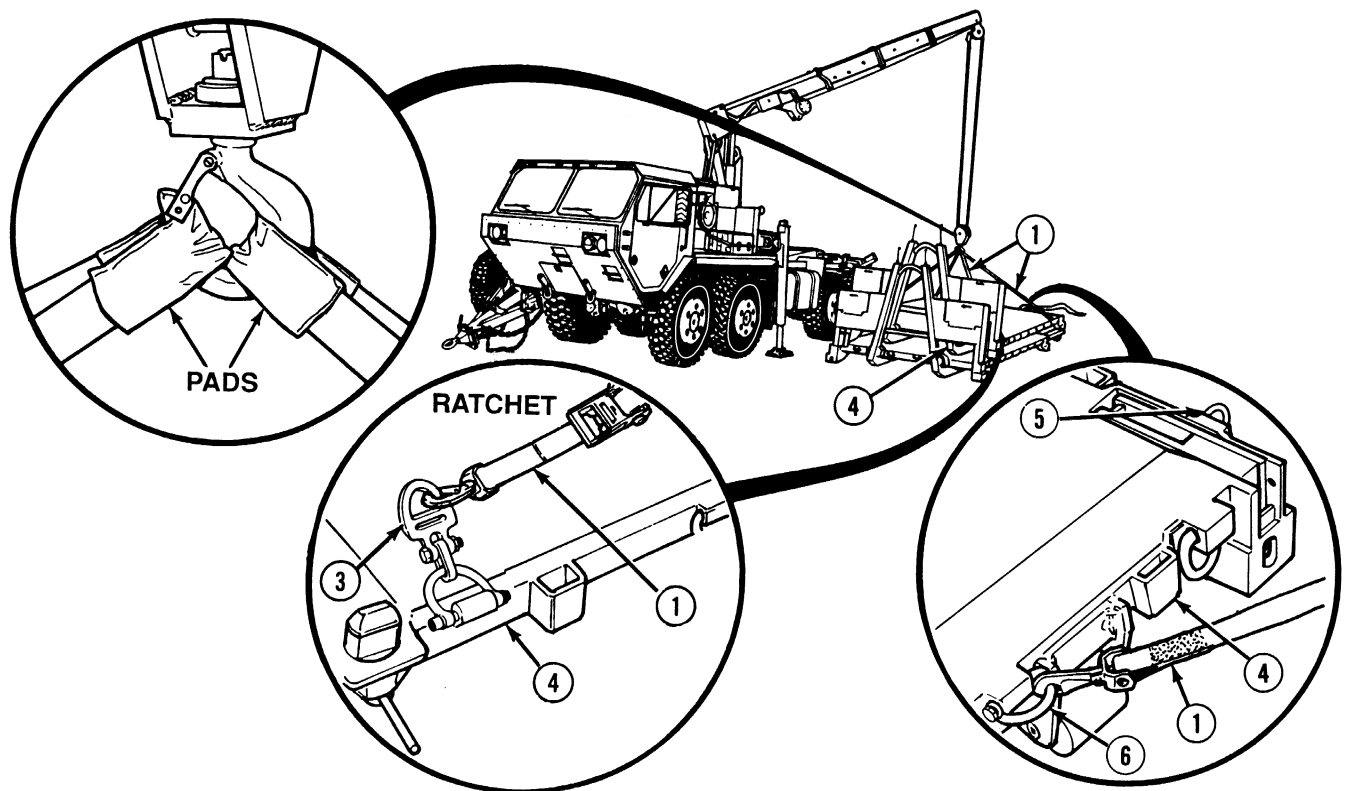
### WARNING

- Ensure flatracks are loaded on trailer one at a time. MHC on truck is not capable of handling more than one flatrack at a time. Failure to comply may result in severe injury or death to personnel.
- Flatracks must be empty when stacked. Attempting to stack loaded flatracks could cause serious injury or death to personnel.

### NOTE

- If legal length requirement needs to be met, maximum of two flatracks may be loaded on PLS trailer. If no legal length requirement needs to be met, maximum of five flatracks may be loaded on PLS trailer.
- If truck towing trailer has two flatracks loaded on PLS truck and legal length requirement needs to be met, two flatracks loaded on PLS trailer is maximum. If no legal length requirement needs to be met, PLS truck towing trailer can carry two flatracks loaded on truck, maximum of five flatracks may be loaded on PLS trailer.
- If vehicle towing trailer is not a PLS truck, maximum of five flatracks may be loaded on trailer at any time.
- Ensure trailer air system is fully charged (TM 9-2330-385-14).
- Ensure truck is positioned between trailer and flatrack prior to Step (1).

(1) Remove three lifting straps (1) from flatrack stowage box (2).



**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

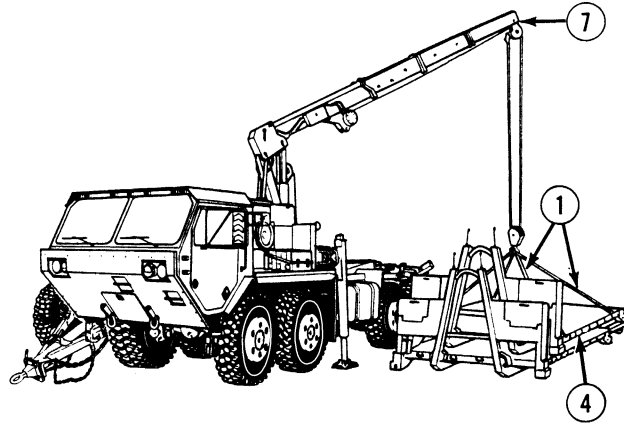
- (2) Attach one lifting strap (1) from left to right, to two front tiedown rings (3) on flatrack (4).
- (3) Attach one lifting strap (1) from left to right, to two rear tiedown rings (5) on flatrack (4).
- (4) Attach lifting strap (1) to tiedown ring (6) at rear of flatrack (4).

**2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER (CONT).**

**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

- (5) Attach two lifting straps (1) to MHC (7).



**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg). M1077A1 Flatrack weighs 3,900 lbs (1,771 kg). Ensure all personnel stand clear of flatrack when flatrack is being moved. Failure to comply may result in severe injury or death to personnel.

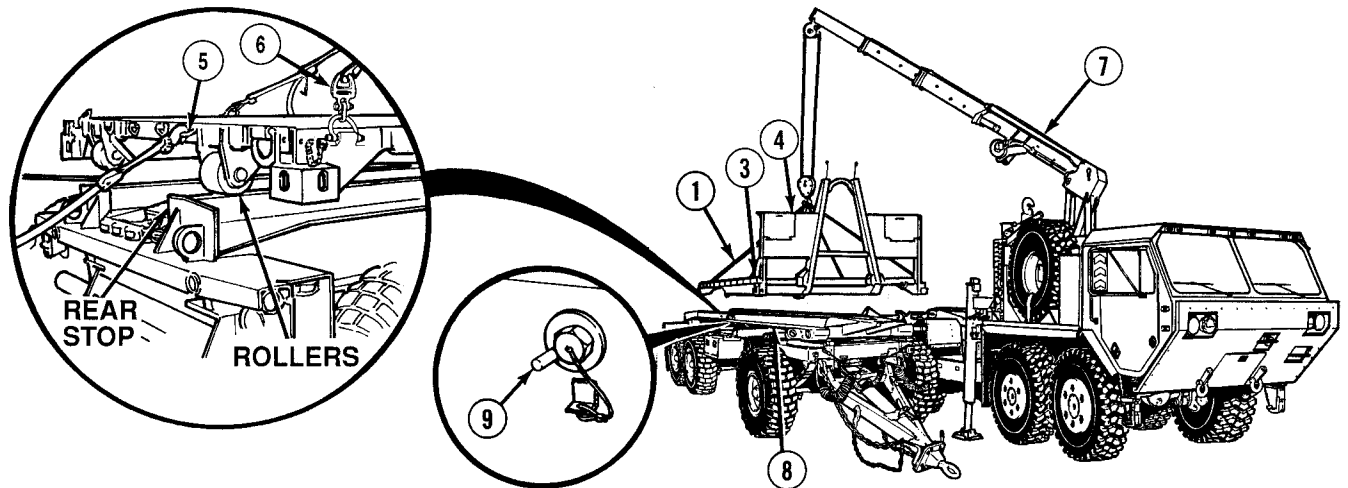
**CAUTION**

Ensure boom of MHC is positioned directly over center of flatrack prior to lifting flatrack off ground. Failure to comply may result in uneven lifting of flatrack and damage to equipment may result.

**NOTE**

If flatrack is not being raised level, Perform Steps (6) through (8). If flatrack is level, go to Step (10).

- (6) Raise flatrack (4) until flatrack clears ground and ensure flatrack is level.
- (7) Lower flatrack (4) to ground.
- (8) Shorten or lengthen two lifting straps (1) as required.
- (9) Repeat Steps (6) through (8) until flatrack is level when raised.



**CAUTION**

Use extreme care when positioning flatrack from ground to trailer. If flatrack is not moved slowly, flatrack may contact winch on MHC and damage may occur to equipment.

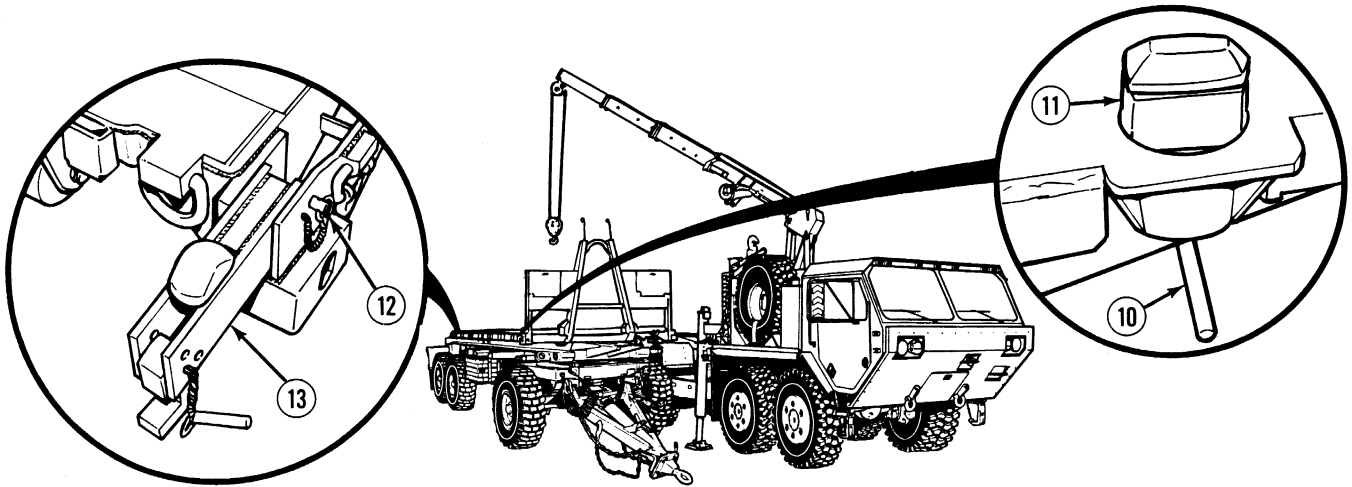
- (10) With the aid of an assistant, hold lifting strap (1) on rear of flatrack (4) to guide flatrack in position while operating MHC (7) and position flatrack over trailer (8).
- (11) Ensure two load locks (9) on trailer (8) are retracted.

**CAUTION**

Ensure flatrack rollers are positioned tight against rear stop on trailer. Failure to comply will result in improper loading of flatracks and damage to equipment may result.

- (12) Lower flatrack (4) on trailer (8).
- (13) Engage load locks (9) on trailer (8) to secure flatrack (4).
- (14) Remove two lifting straps (1) from MHC (7).
- (15) Remove three lifting straps (1) from tiedown rings (3), (5) and (6) on flatrack (4).

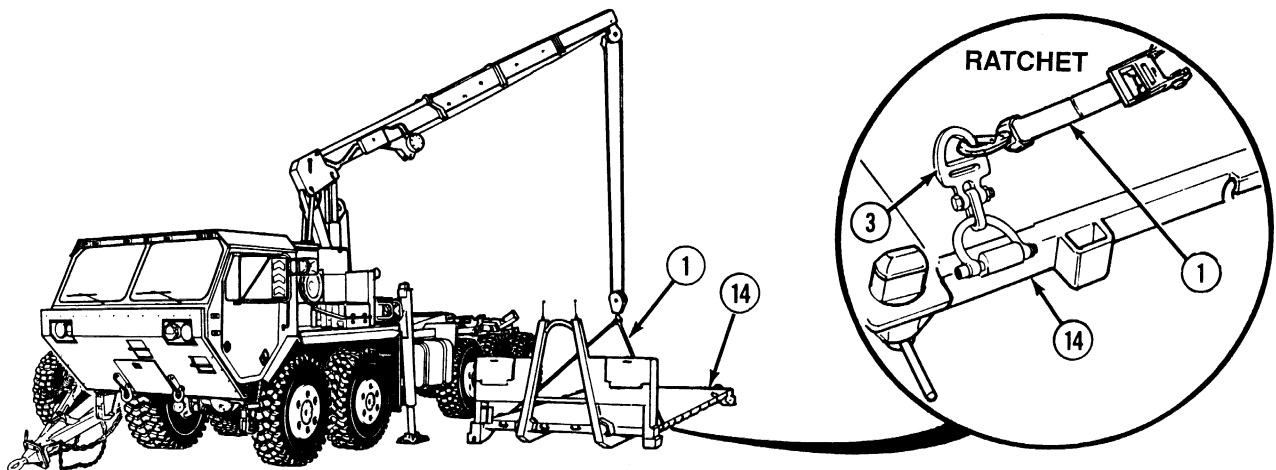
**2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER (CONT).**



**NOTE**

- If additional flatracks will be loaded on trailer, go to Step (16). If not, go to Step (35).
- Steps (16) through (18) are performed on flatrack located on trailer only.

- (16) Push up and turn handle (10) on two locks (11) to UNLOCK position as shown.
- (17) Remove pin (12) from extension (13) and rotate extension outward.
- (18) Install pin (12) to secure extension (13) in place.

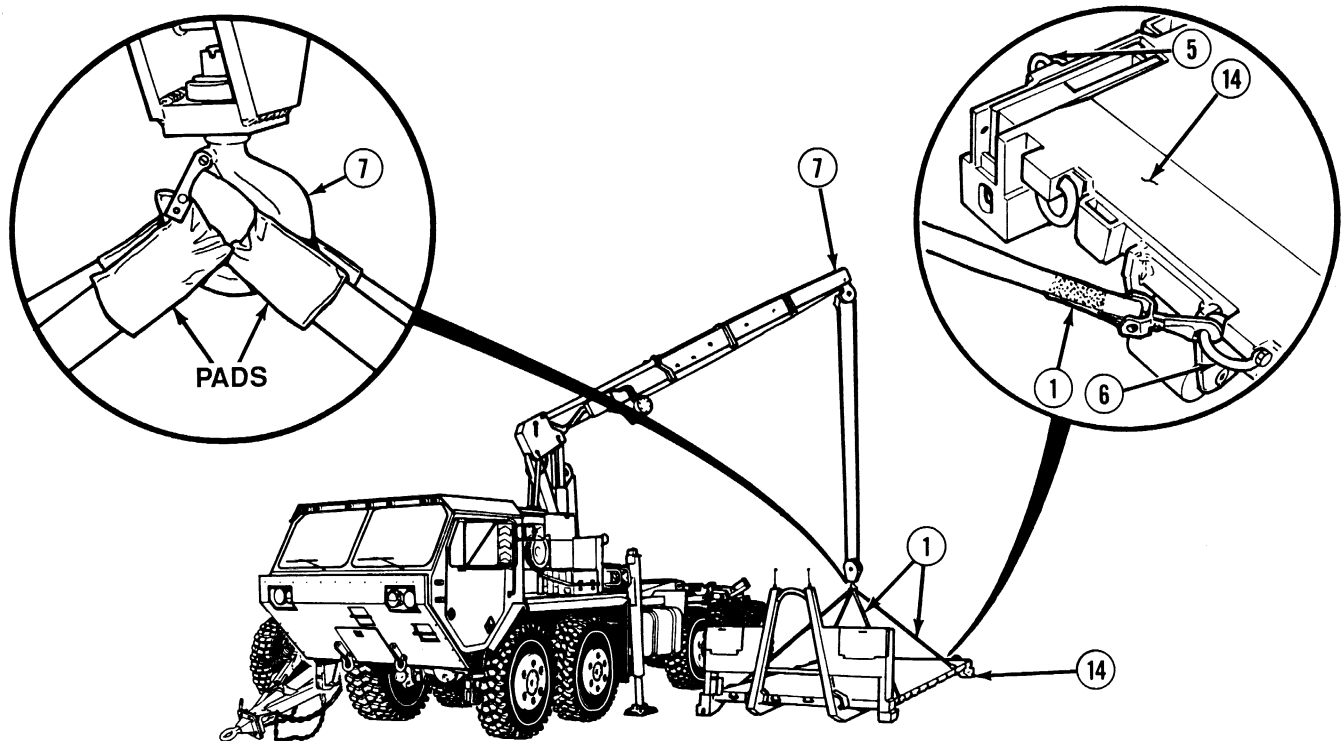


**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

- (19) Attach one lifting strap (1) from left to right, to two front tiedown rings (3) on flatrack (14).





- (20) Attach one lifting strap (1) from left to right, to two rear tiedown rings (5) on flatrack (14).
- (21) Attach lifting strap (1) to tiedown ring (6) at rear of flatrack (14).

**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

- (22) Attach two lifting straps (1) to MHC (7).

**CAUTION**

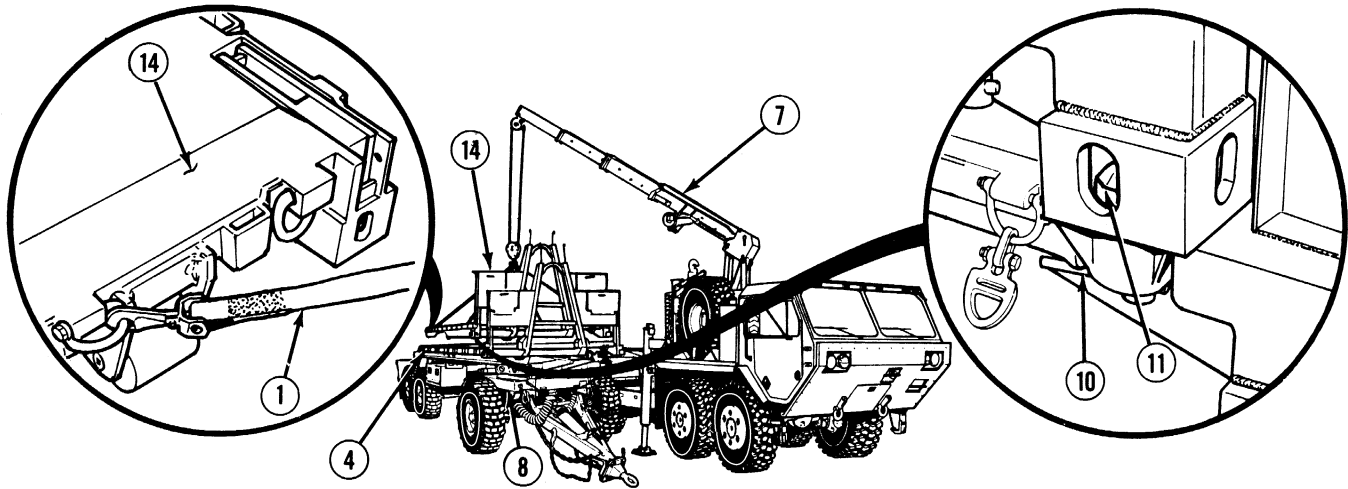
Ensure boom of MHC is positioned directly over center of flatrack prior to lifting flatrack off ground. Failure to comply may result in uneven lifting of flatrack and damage to equipment may result.

**NOTE**

If flatrack is not raised level, Perform Steps (23) through (26). If flatrack is level, go to Step (27).

- (23) Raise flatrack (14) until flatrack clears ground and ensure flatrack is level.
- (24) Lower flatrack (14) to ground.
- (25) Shorten or lengthen two lifting straps (1) as required.
- (26) Repeat Steps (23) through (25) until flatrack is level when raised.

**2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER (CONT).**



**CAUTION**

Use extreme care when positioning flatrack from ground to trailer. If flatrack is not moved slowly, flatrack may contact winch on MHC and damage may occur to equipment.

- (27) With the aid of an assistant, hold lifting strap (1) on rear of flatrack (14) to guide flatrack in position while operating MHC (7) and position flatrack (14) over flatrack (4) on trailer (8).

**CAUTION**

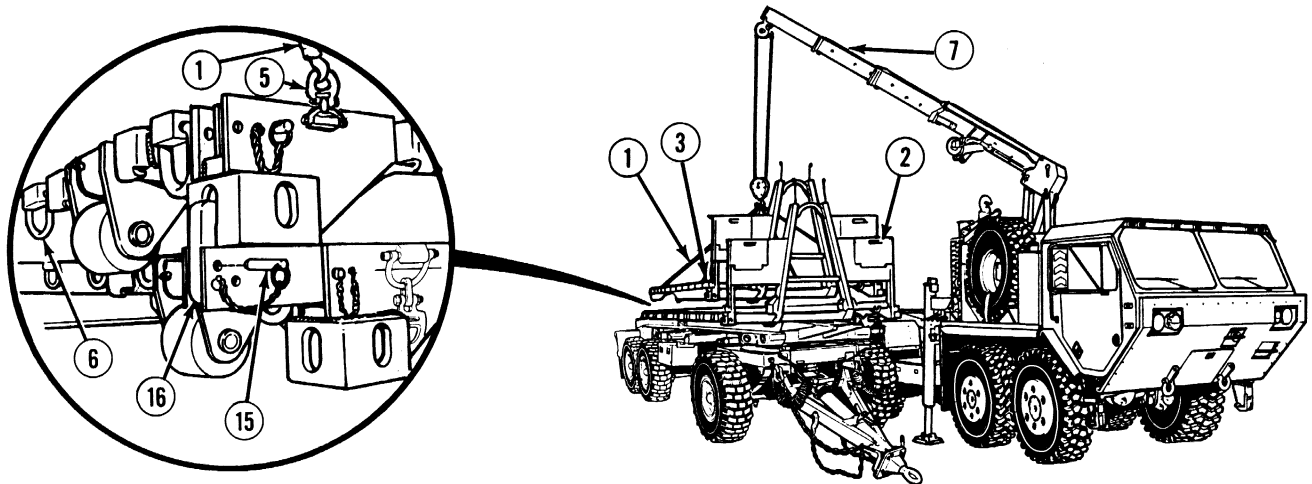
Ensure flatrack locks are free of snow, dirt and debris prior to lowering flatrack or proper locking will not occur.

- (28) Lower and position flatrack (14) on flatrack (4).

**NOTE**

Flatrack is in locked position when top of lock is positioned across flatrack mount as shown.

- (29) Turn handle (10) on two locks (11) on flatrack (4) until flatrack (14) is locked.



- (30) Remove pin (15) from lock (16) and rotate lock to LOCKED position.
- (31) Install pin (15) to secure lock (16) in place.
- (32) Remove two lifting straps (1) from MHC (7).
- (33) Remove three lifting straps (1) from tiedown rings (3), (5) and (6).
- (34) Repeat Steps (15) through (33) for additional flatracks being stacked.

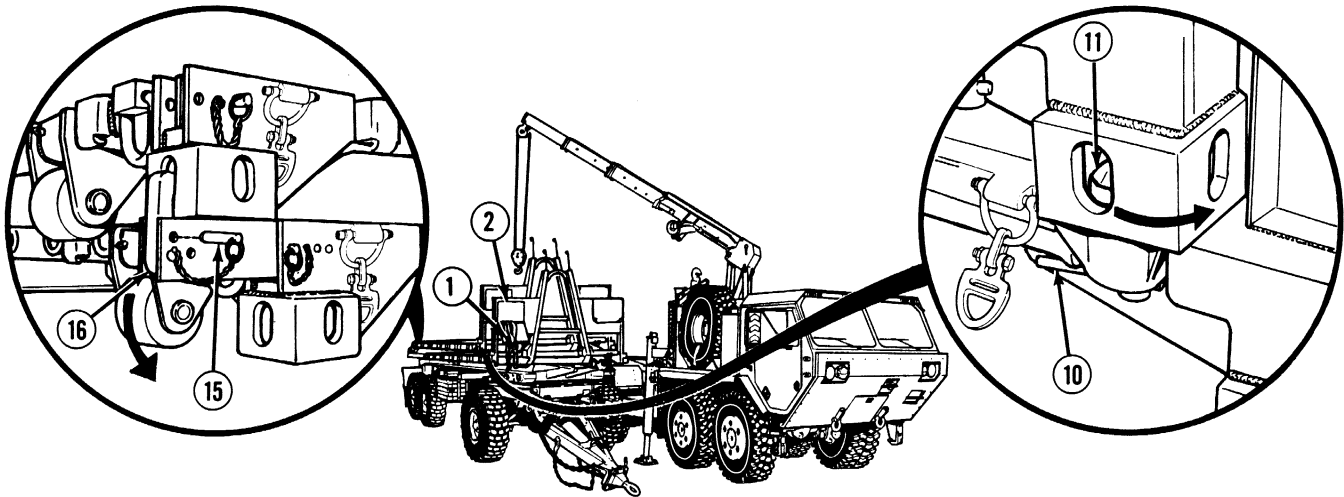
**NOTE**

Ensure lifting straps are installed in same flatrack stowage box that lifting straps were removed from in Step (1).

- (35) Stow three lifting straps (1) in flatrack stowage box (2).

**2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER (CONT).**

**b. Unloading.**



**WARNING**

Ensure flatracks are unloaded from trailer one at a time. MHC on truck is not capable of handling more than one flatrack at a time. Failure to comply may result in severe injury or death to personnel.

**NOTE**

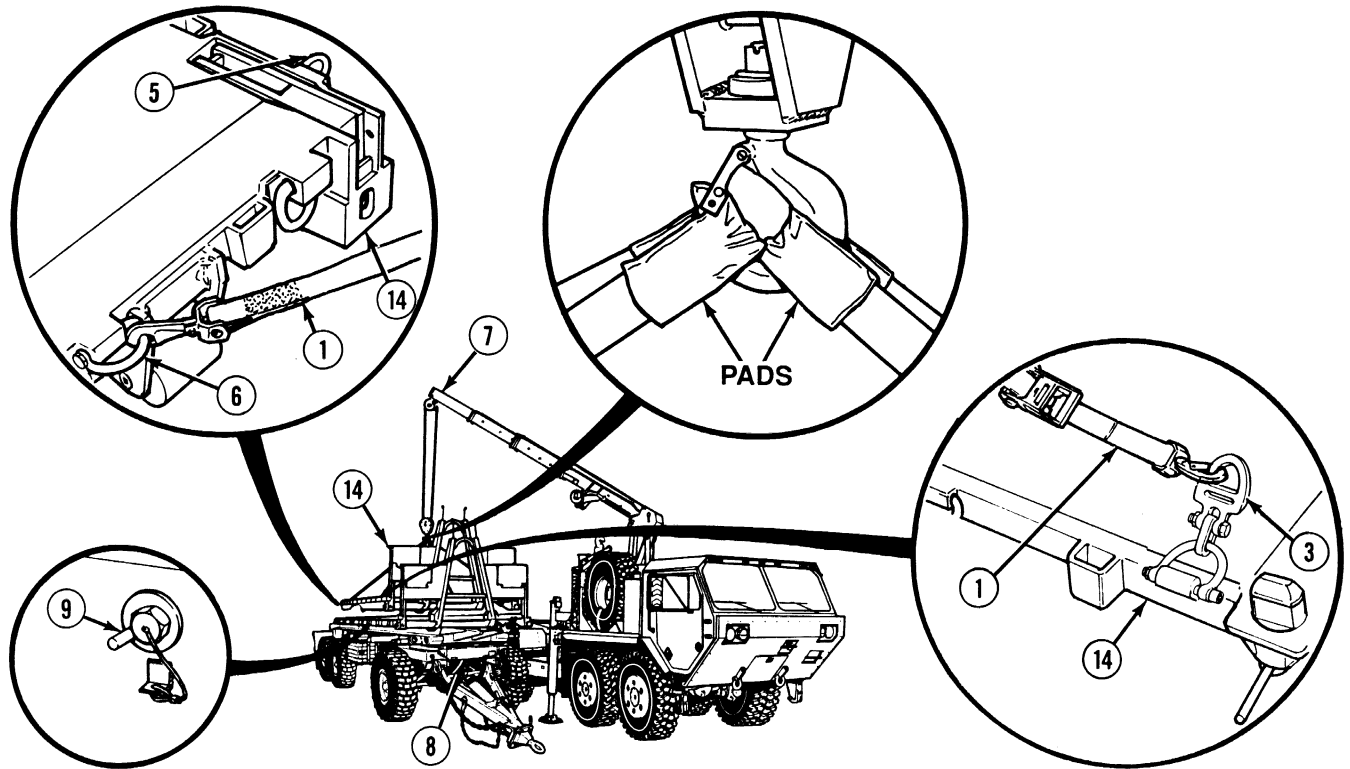
- Ensure air system on trailer is fully charged (TM 9-2320-364-10).
- Ensure truck is positioned along side of trailer.

- (1) Remove three lifting straps (1) from flatrack stowage box (2).

**NOTE**

- If there is more than one flatrack on trailer, Steps (2) through (4) are performed on top flatrack only.
- If there is more than one flatrack on trailer, perform Steps (2) through (4) and skip Step (5). If there is only one flatrack on trailer, go on to Step (5).

- (2) Turn handle (10) on two locks (11) to UNLOCK position.
- (3) Remove pin (15) from lock (16).
- (4) Rotate lock (16) downward.



- (5) Retract two load locks (9) on trailer (8).

**WARNING**

Ensure lifting straps are wrapped a minimum of three times around ratchet of lifting strap. Failure to comply may result in lifting strap being released and flatrack may fall causing severe injury or death to personnel.

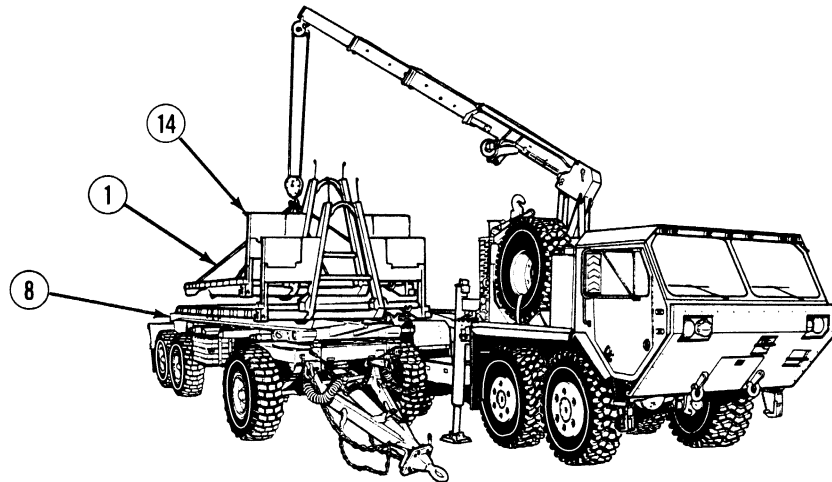
- (6) Attach lifting strap (1) to two front tiedown rings (3) on flatrack (14).
- (7) Attach lifting strap (1) to two rear tiedown rings (5) on flatrack (14).
- (8) Attach lifting strap (1) to tiedown (6) at rear of flatrack (14).

**WARNING**

Ensure pads on lifting straps are positioned in lifting clevis of MHC. Failure to comply may result in breakage of lifting straps causing severe injury or death to personnel.

- (9) Attach two lifting straps (1) to MHC (7).

**2-12. FLATRACK STACKING AND LOADING ON PLS TRAILER (CONT).**



**WARNING**

M1077 Flatrack weighs 3,200 lbs (1,453 kg). M1077A1 Flatrack weighs 3,900 lbs (1,771 kg). Ensure all personnel stand clear of flatrack when flatrack is being moved. Failure to comply may result in severe injury or death to personnel.

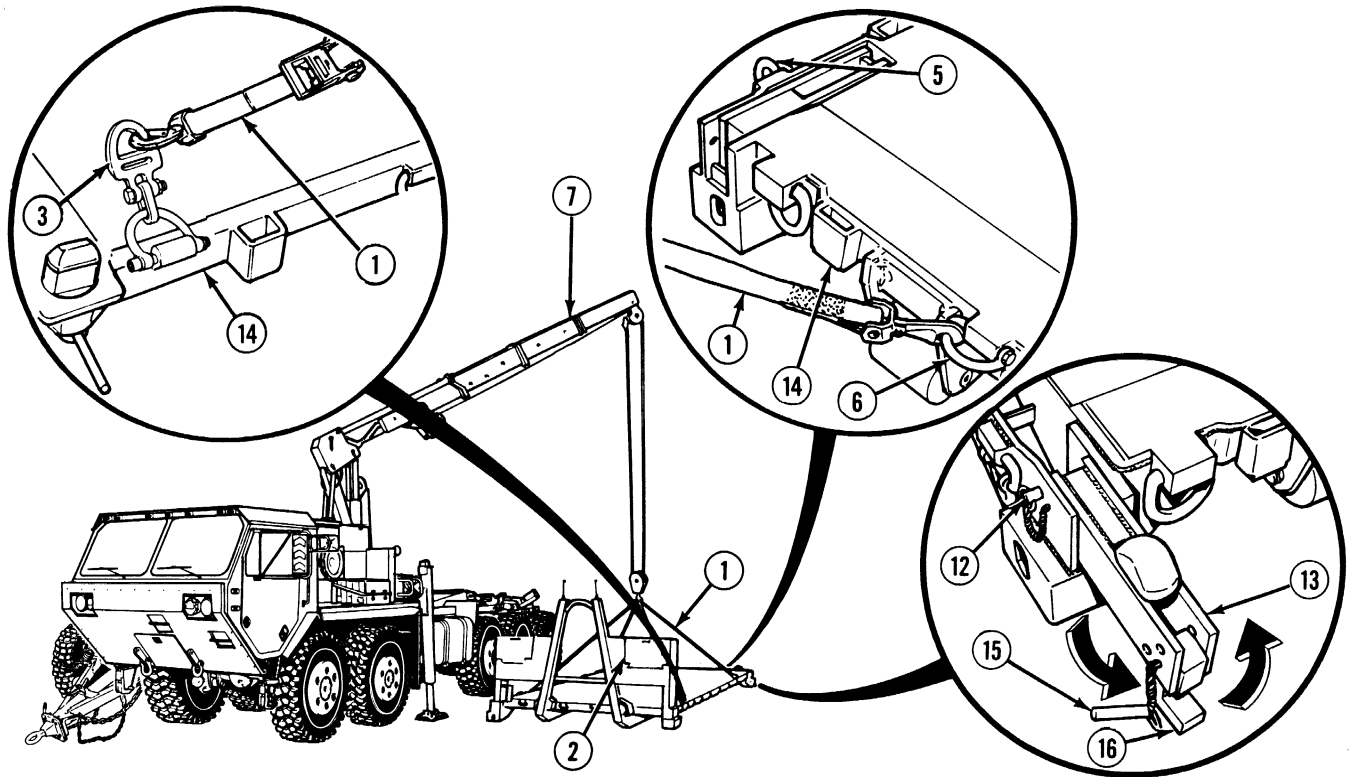
**CAUTION**

Ensure boom of MHC is positioned directly over center of flatrack prior to lifting flatrack from trailer. Failure to comply may result in uneven lifting of flatrack and damage to equipment may result.

**NOTE**

If flatrack is not being raised level, perform Steps (10) through (12). If flatrack is level, go to Step (14).

- (10) Raise flatrack (14) until flatrack clears trailer (8) and ensure flatrack is level.
- (11) Lower flatrack (14) to trailer.
- (12) Shorten or lengthen two lifting straps (1) as required.
- (13) Repeat Steps (9) through (11) until flatrack (14) is level when raised.



**CAUTION**

Use extreme care when positioning flatrack from trailer to ground. If flatrack is not moved slowly, flatrack may contact winch on MHC and damage may occur to equipment.

- (14) With the aid of an assistant, hold lifting strap (1) on rear of flatrack (14) to guide flatrack in position while operating MHC (7) and position flatrack on ground.
- (15) Remove two lifting straps (1) from MHC (7).
- (16) Remove three lifting straps (1) from tiedown rings (3), (5) and (6) on flatrack (14).
- (17) Rotate lock (16) upward and install pin (15) to secure lock.
- (18) Remove pin (12) from extension (13) and rotate extension inward to stowed position.
- (19) Install pin (12) in extension (13).
- (20) Repeat Steps (2) through (19) for additional flatracks being unloaded.
- (21) Stow three lifting straps (1) in flatrack stowage box (2).

## 2-13. PREPARATION FOR STORAGE OR SHIPMENT.

### **a. Preparation for Storage.**

- (1) Refer to AR 750-1 for administrative storage procedures. If short-term storage is indicated, go on to Step (2).

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (2) Use drycleaning solvent (Item 14, Appendix E) to clean or wash grease or oil from all metal parts. All surfaces must be clean to ensure removal of corrosion, soil, grease, or residues.
  - (3) After cleaning, use cold water to rinse flatrack. Dry all parts thoroughly with a lint-free cloth (Item 4, Appendix E).
  - (4) Perform the Preventive Maintenance Checks and Services in Tables 2-1 and 4-1.
  - (5) Lubricate hinges, pins, rollers and ISO locks with penetrating oil (Item 9, Appendix E), if necessary.
  - (6) Schedule the next Preventive Maintenance Checks and Services on DD Form 314, Preventive Maintenance Schedule and Record.
  - (7) Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.
  - (8) Spot paint all surfaces as necessary (TM 43-0139).

### **b. Preparation for Shipment.**

- (1) Complete storage instructions.
- (2) Refer to AR 746-1, Packaging of Army Material for Shipment and Storage and AR 746-2, Marking, Packaging and Shipment of Supplies and Equipment.
- (3) Refer to AR 725-50 and prepare all shipping documents to accompany flatrack.
- (4) Refer to TB 9-2300-281-35, Standards for Overseas Shipment or Domestic Issue of Special Purpose Vehicles if flatrack is to be shipped overseas.



## CHAPTER 3

### OPERATOR MAINTENANCE INSTRUCTIONS

Para	Contents	Page
3-1	Introduction .....	3-1
3-2	Roller Replacement .....	3-1

#### Section I. MAINTENANCE INSTRUCTIONS

### 3-1. INTRODUCTION.

This section covers maintenance tasks authorized at the Operator Level of Maintenance.

### 3-2. ROLLER REPLACEMENT.

This task covers:

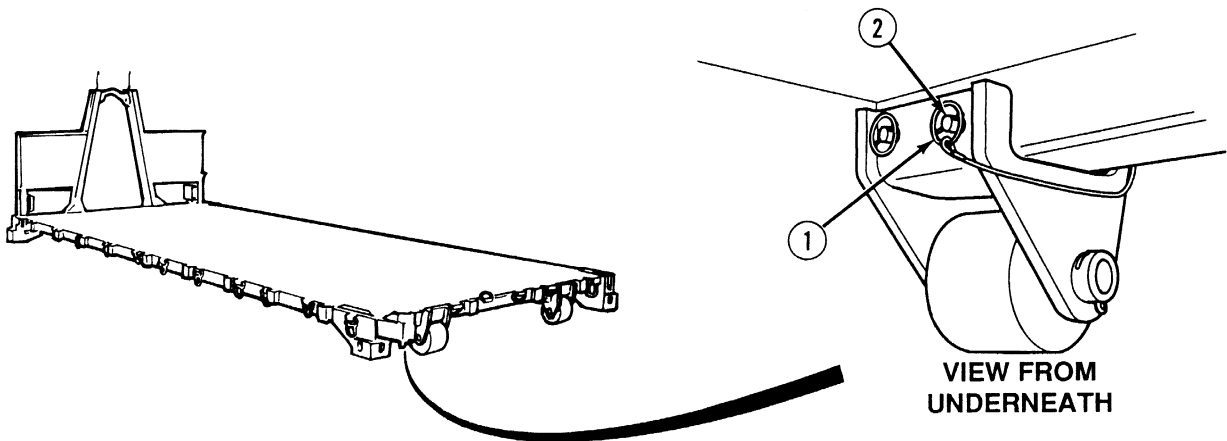
- |            |                 |                          |
|------------|-----------------|--------------------------|
| a. Removal | b. Installation | c. Follow-On Maintenance |
|------------|-----------------|--------------------------|

#### INITIAL SETUP

*Equipment Condition*

Flatrack loaded on truck or trailer,  
(TM 9-2320-364-10)

#### a. Removal.



#### WARNING

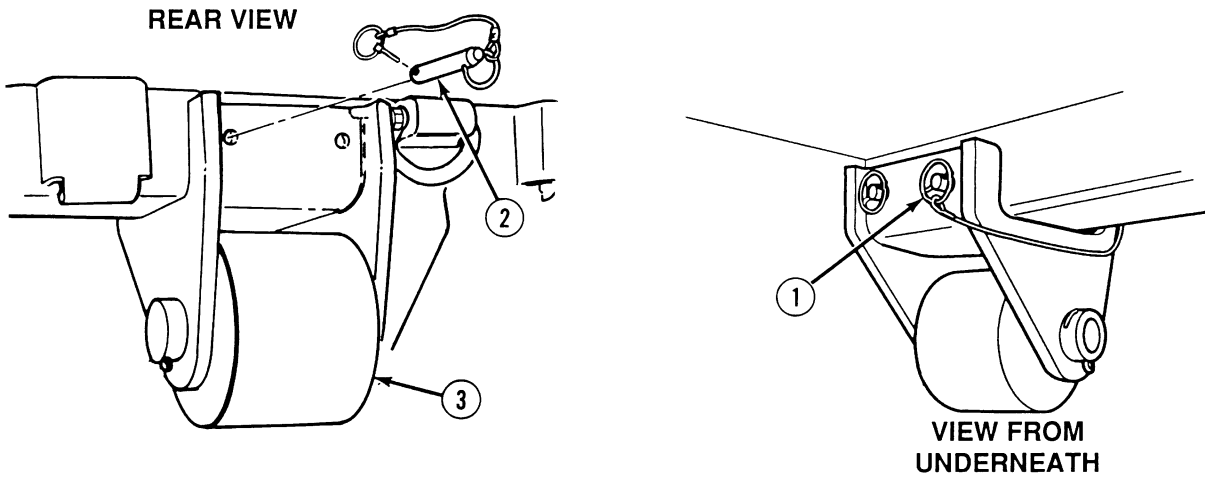
Roller must be supported while removing retaining pins or roller may drop causing injury to personnel.

#### NOTE

This procedure shows replacement of one roller. Replacement is the same for both rollers.

- (1) Remove two holding pins (1) from retaining pins (2).

**3-2. ROLLER REPLACEMENT (CONT).**



- (2) Support roller (3) and remove two retaining pins (2). Remove roller (3) from flatrack.
- (3) Position roller (3) on roller stowage bracket (4) and install two retaining pins (2).
- (4) Install two holding pins (1) in retaining pins (2).

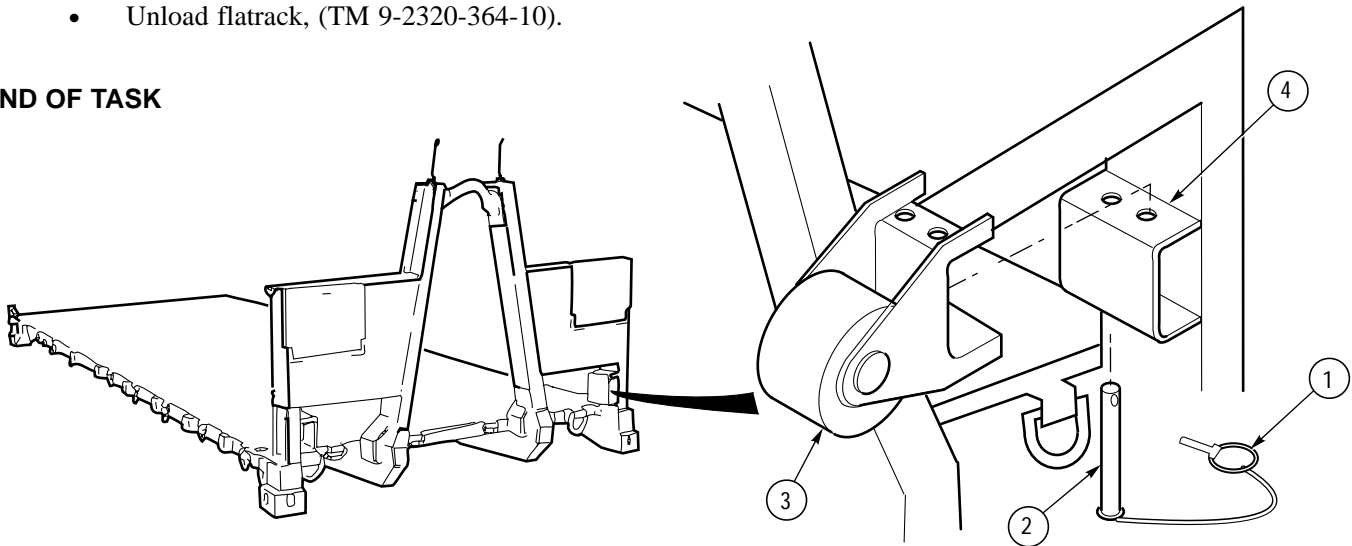
**b. Installation.**

- (1) Remove two holding pins (1) from retaining pins (2).
- (2) Support roller (3) and remove two retaining pins (2) and roller (3) from roller stowage bracket (4).
- (3) Install roller (3) on flatrack using two retaining pins (2).
- (4) Install two holding pins (1) in retaining pins (2).

**c. Follow-On Maintenance:**

- Unload flatrack, (TM 9-2320-364-10).

**END OF TASK**



## CHAPTER 4

### UNIT MAINTENANCE INSTRUCTIONS

Para	Contents	Page
4-1	Common Tools and Equipment .....	4-1
4-2	Special Tools, TMDE and Support Equipment .....	4-1
4-3	Repair Parts .....	4-1
4-4	Unpacking and Packing .....	4-2
4-5	Lubrication .....	4-3
4-6	Loose Parts Installation .....	4-3
4-7	Inventory and Control Procedures .....	4-3
4-8	Introduction .....	4-4
4-9	Unit PMCS Procedures .....	4-4
4-10	PMCS Table Explanation .....	4-5
4-11	Introduction .....	4-6
4-12	General Maintenance Instructions .....	4-6
4-13	Roller Repair .....	4-8
4-14	Data Plate and Shipping Label Replacement .....	4-10
4-15	Marker Spring Replacement .....	4-11
4-16	Stowage Box Repair .....	4-12
4-17	Side Tiedown Ring Replacement .....	4-15
4-18	Front and Rear Tiedown Ring Replacement .....	4-16
4-19	Sideboard Panels No. 9 and No. 10 Replacement .....	4-17
4-20	Cargo Tarp Installation and Removal Instructions .....	4-20

#### **Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC (TMDE) AND SUPPORT EQUIPMENT**

#### **4-1. COMMON TOOLS AND EQUIPMENT.**

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

#### **4-2. SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT.**

Refer to Appendix B, the Maintenance Allocation Chart (MAC) and Appendix F, Repair Parts and Special Tools List (RPSTL) to determine special tools, Test, Measurement and Diagnostic Equipment (TMDE) and support equipment for the flatrack. No fabricated tools are needed.

#### **4-3. REPAIR PARTS.**

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), Appendix F, covering Unit, Direct Support and General Support Maintenance for the flatrack.

## Section II. SERVICE UPON RECEIPT

### 4-4. UNPACKING AND PACKING.

This paragraph provides information required to ensure the flatrack is adequately inspected, serviced and operationally tested before it is subjected to normal everyday use. These procedures cover unpacking, deprocessing and packing.

#### *a. Unpacking.*

- (1) Remove any metal strapping, plywood, tapes, seals, wrapping or any other shipping and protective items.

#### **WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (2) If any parts are coated with lubricating oil, remove it with drycleaning solvent (Item 14, Appendix E).
  - (3) Read and follow all instructions contained in DD Form 1397, "Processing and Deprocessing Record of Shipping, Storage, and Issue of Trucks and Spare Engines".
  - (4) Inspect flatrack for damage incurred during shipping. If flatrack has been damaged, report the damage on DD Form 6, Packing Improvement Report.
  - (5) Check the equipment against the packing slip to ensure shipment is complete. Report all discrepancies in accordance with DA PAM 738-750.

#### *b. Servicing.*

- (1) Perform the Preventive Maintenance Checks and Services in Tables 2-1 and 4-1.
- (2) Schedule the next Preventive Maintenance Checks and Services on DD Form 314, Preventive Maintenance Schedule and Record.
- (3) Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.

*c. Packing.* Preservation and other protective measures taken in the preparation of material and accompanying tools and equipment for shipment must be sufficient to protect the material against deterioration and physical damage during shipment.

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

(1) Use drycleaning solvent (Item 14, Appendix E) to clean or wash grease or oil from all metal parts. All surfaces must be clean to ensure removal of corrosion, soil, grease, or residues.

(2) After cleaning, use cold water to rinse flatrack. Dry all parts thoroughly with a lint-free cloth (Item 4, Appendix E).

(3) Spot paint all surfaces as necessary (TM 43-0139).

**4-5. LUBRICATION.**

Lubricate hinges, pins, rollers and ISO locks with penetrating oil (Item 9, Appendix E), if necessary.

**4-6. LOOSE PARTS INSTALLATION.**

The flatrack rollers might or might not be installed on the flatrack upon receipt. If rollers are not installed, proceed as follows:

- (1) Remove roller from stowed position on flatrack wall.
- (2) Install roller on flatrack using two retaining pins.
- (3) Install one holding pin in each retaining pin.

**4-7. INVENTORY AND CONTROL PROCEDURES.**

Refer to Appendix C, Components of End Item (COEI) and Basic Issue Items (BII) List and Appendix D, Additional Authorization List (AAL) for proper inventory and control procedures.

### Section III. UNIT MAINTENANCE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

#### 4-8. INTRODUCTION.

This section presents Unit Maintenance checks and services. Figure 4-1 illustrates the route to use in completing the PMCS procedures. Table 4-1 provides PMCS procedures. Unit Maintenance should also perform Operator PMCS (Para 2-1).

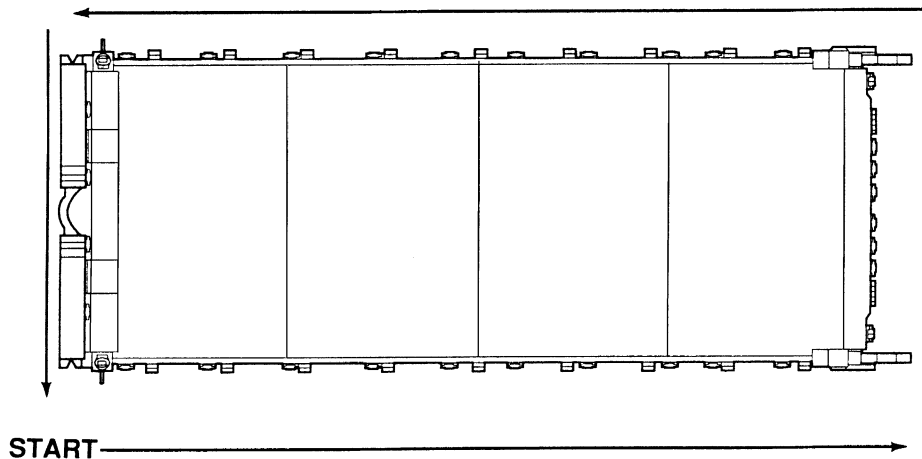


Figure 4-1. PMCS Walk-Around

#### 4-9. UNIT PMCS PROCEDURES.

- a. Always perform your preventive maintenance in the same order, so it gets to be a habit. Once you have some practice, you will spot anything wrong in a hurry.
- b. If something looks wrong and you can not fix it, write it down on DA Form 2404.

#### WARNING

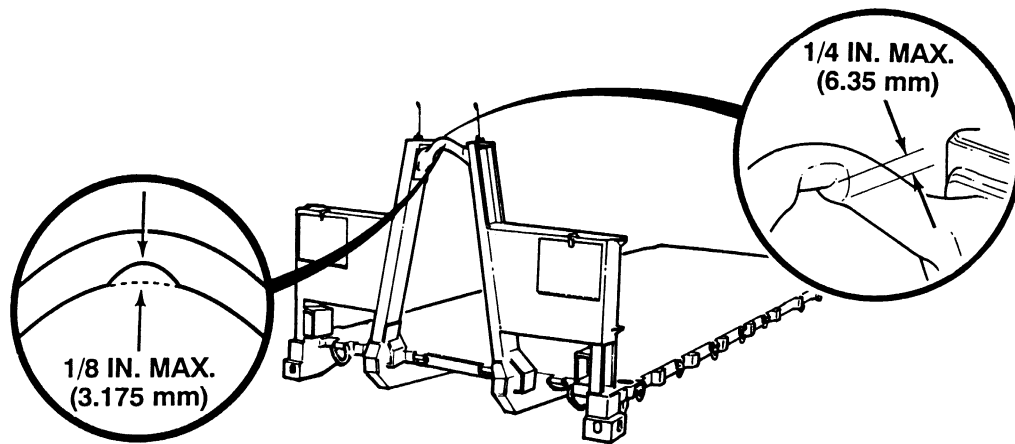
- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- c. Clean as you work and as needed. Dirt, grease, oil and debris may get in the way and cover up a problem. Use drycleaning solvent (Item 14, Appendix E) to clean flattrack where dirt, grease, or oil has accumulated.
  - d. Check for missing, loose, bent or broken bolts, nuts and screws. Look for chipped paint, bare metal, or rust around bolt heads. Tighten loose parts.
  - e. Look for loose paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to Direct Support Maintenance.

**4-10. PMCS TABLE EXPLANATION.**

- a. Do the SEMIANNUAL PREVENTIVE MAINTENANCE (Table 4-1) once every six months.
- b. Always do the Preventive Maintenance in the same order until it gets to be a habit. Once practiced, it will be easy to spot anything wrong in a hurry.
- c. If anything looks wrong and is not fixed, write a DA Form 2404.
- d. When doing Preventive Maintenance, take along the tools and supplies needed to make all the checks, including a clean cloth or two.
- e. The following is a breakdown of the PMCS table:
  - (1) "Item No." column. Checks and services are numbered in a logical order for moving around the flatrack. The item number column is used as a source of items numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording results of the PMCS.
  - (2) "Interval" column. The column identifies when the PMCS should be performed.
  - (3) "Item To Check/Service" column. This column identifies the item to be checked/serviced.
  - (4) "Procedure" column. This column contains all the information required to do the check/inspection.
  - (5) "Not Mission Capable If:" column. This column contains a brief statement of the condition (e.g., malfunction, shortage) that would cause the flatrack to be less than fully ready to perform its assigned mission.

**Table 4-1. Unit Maintenance Preventive Maintenance Checks and Services**

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
1	Semi-Annually	Flatrack Floor	Visually check flatrack floor for corrosion, dirt, oil and damage.	
2	Semi-Annually	Flatrack Weldments	Visually inspect all weldments for cracks and other damage. Report damage to supervisor.	
3	Semi-Annually	Hook Bar	Check hook bar for wear. If wear at lower back side of hook bar is greater than 1/4 in. (6.35 mm) or greater than 1/8 in. (3.175 mm) at bottom of hook bar, notify supervisor.	Wear at lower back side of hook bar is greater than 1/4 in. (6.35 mm) or greater than 1/8 in. (3.175 mm) at bottom of hook bar.



## Section IV. UNIT MAINTENANCE PROCEDURES

### 4-11. INTRODUCTION.

This section contains Unit Maintenance procedures for the flatrack. These procedures may include servicing, hoisting, inspection, cleaning, removal and disassembly, inspection, assembly and installation, adjustments and any procedures needed for placing the flatrack or its components into service.

### 4-12. GENERAL MAINTENANCE INSTRUCTIONS.

- a. **Servicing.** The flatrack requires only lubrication and cleaning.
- b. **Hoisting Loaded Flatrack.**

#### WARNING

M1077 Flatrack weighs 3,200 lbs (1,453 kg) without side boards. M1077A1 Flatrack weighs 3,900 lbs (1,771 kg) without side boards. Attach suitable lifting device prior to removal or installation to prevent possible injury to personnel.

- (1) For other than ordinary operation, flatrack must be secured and lifted with a crane or other suitable lifting device. Normally, the flatrack is moved onto and off truck or trailer using LHS.
- (2) Install sideboards and straps before hoisting any load except an ISO container. Sideboards cannot be installed with an ISO container.
- (3) See Figure 4-2 for view showing sling rings. When lifting a loaded flatrack, use appropriate spreader bar and chains to avoid side contact with load.

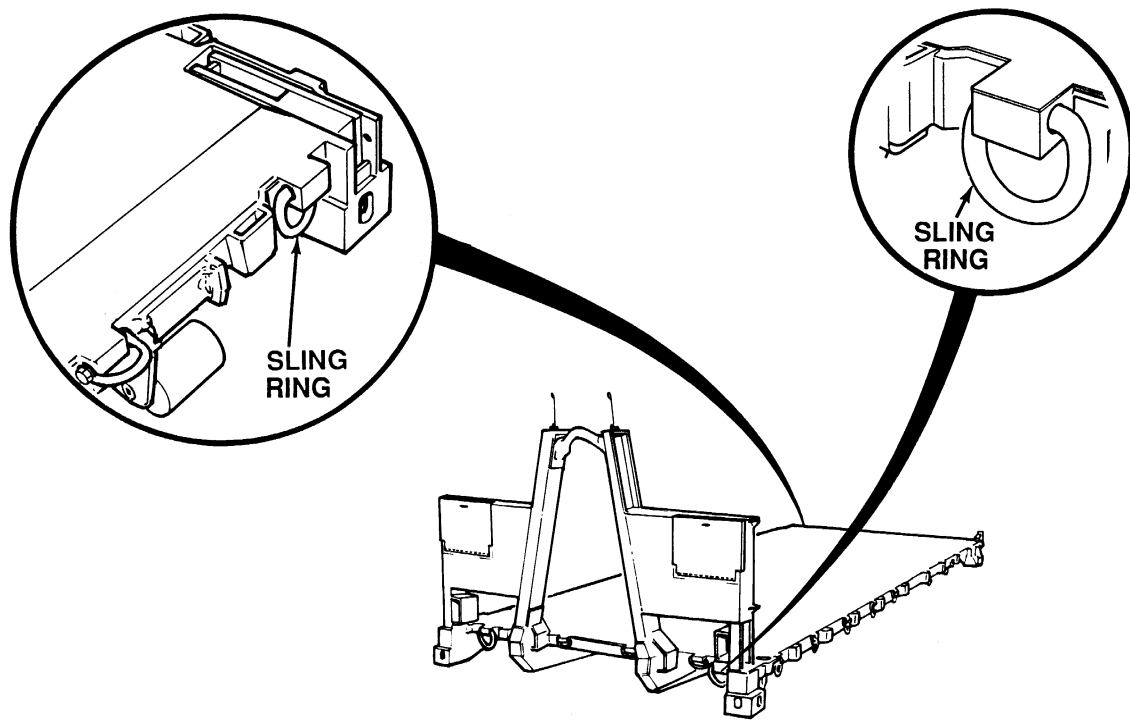


Figure 4-2. Location of Sling Rings



**c. Inspection of Installed Parts.** Perform inspection with the item in its normal installed position/condition, considering accessibility and visibility of the item being inspected. The purpose of the inspection is to determine if the item is damaged or incomplete to the extent that it should be replaced/repaired.

- (1) Inspect for loose, missing, or damaged parts.
- (2) Inspect parts for dents, holes, worn spots, scratches, marred finish, cracks, rust and corrosion.
- (3) Look for loose or chipped paint, rust or gaps where parts are welded together. If a bad weld is found, notify the supervisor.

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

**d. Cleaning.** Remove buildup of dirt and rust by wiping with an abrasive paper (Item 10, Appendix E). Use a cloth (Item 4, Appendix E) or wire scratch brush (Item 1, Appendix I) and drycleaning solvent (Item 14, Appendix E) to clean metal parts. Allow to dry.

**e. Removal.** During the removal process tag (Item 15, Appendix E) similar parts for ease of assembly.

**f. Disassembly.** During disassembly tag (Item 15, Appendix E) similar parts for ease at assembly.

**g. Painting.** Refer to FM 20-3, Camouflage Pattern Painting; and TB 43-0209, Color Marking and Camouflage Painting of Military Vehicles, Construction Equipment and Material Handling Equipment.

**h. Lubrication.** Lubrication instructions are contained in the maintenance procedures.

**i. Assembly.** Assembly instructions contain all necessary sealing, torquing and lockwiring procedures.

**j. Installation.** Installation instructions include procedures for checking alignment and adjustment of items.

**k. Adjustment.** Make adjustments to the flatrack or components as needed before operation of the system.

**l. Placing in Service.** These instructions include any final servicing, checks, calibration and operation checks not previously covered that may be required for an assembly, component, or end item.

### 4-13. ROLLER REPAIR.

This task covers:

- a. Disassembly
- b. Cleaning/Inspection
- c. Assembly
- d. Follow-On Maintenance

#### INITIAL SETUP

##### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Compressor Unit, Air (Item 2, Appendix I)  
 Gloves, Chemical and Oil Protective (Item 5, Appendix I)  
 Goggles, Industrial (Item 6, Appendix I)  
 Gun, Air Blow (Item 7, Appendix I)

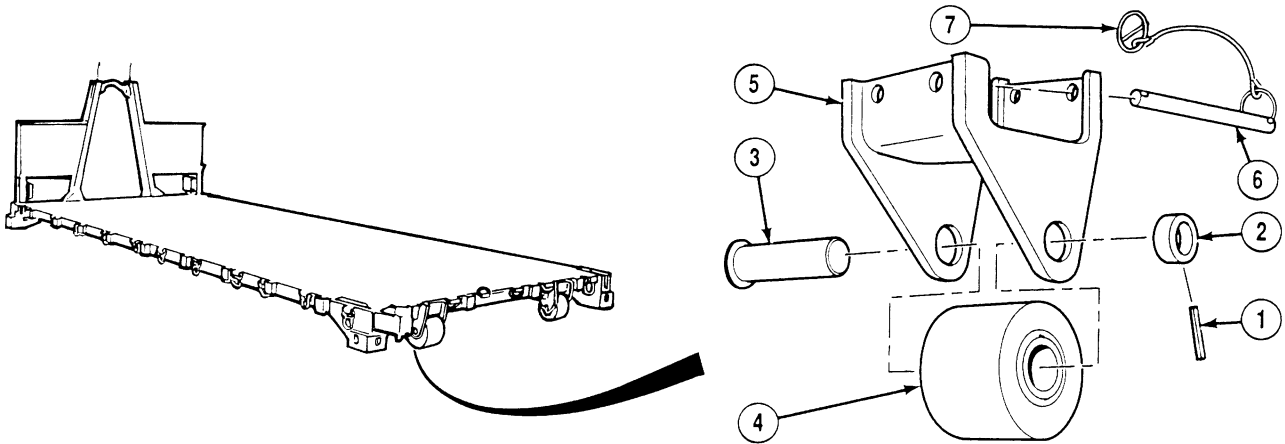
##### *Materials/Parts*

Cloth, Lint-free (Item 4, Appendix E)  
 Solvent, Drycleaning (Item 14, Appendix E)  
 Pin, Roll (Item 18, Appendix H)

##### *Equipment Condition*

Roller removed, (Para 3-2)

#### a. Disassembly.



#### NOTE

Both left and right rollers are repaired the same way. Left side is shown.

- (1) Remove and discard roll pin (1) from collar (2).
- (2) Remove collar (2), roller shaft (3) and roller (4) from bracket (5).

#### NOTE

Perform Step (3) if retaining pins are damaged.

- (3) Disconnect retaining pins (6) from holding pins (7).

**b. Cleaning/Inspection.**

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Visually inspect all components for dirt or other contamination and clean with a lint-free cloth and drycleaning solvent.

**WARNING**

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or severe injury or death could result.

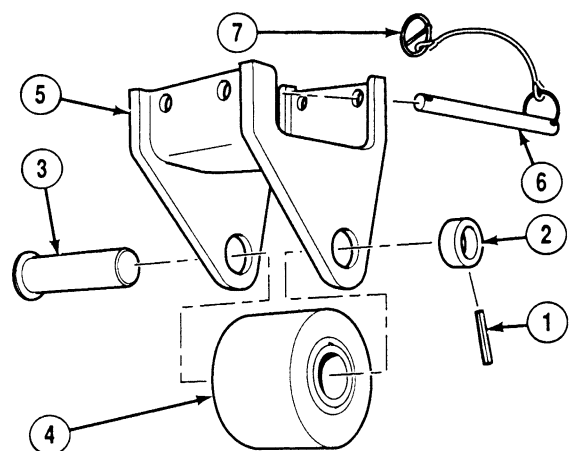
- (2) Dry components with compressed air.
- (3) Inspect lockwires and retaining rings for damage. Refer to Appendix G, Manufactured Items List, for replacement.
- (4) Inspect roller for damage that would interfere with rotation.

**c. Assembly.**

**NOTE**

Perform Step (1) if retaining pins were removed.

- (1) Install retaining pins (6) on holding pins (7).
- (2) Install roller (4) in bracket (5) and secure with roller shaft (3).
- (3) Install collar (2) on roller shaft (3).
- (4) Secure collar (2) on roller shaft (3) with roll pin (1).



**d. Follow-On Maintenance:**

- Install roller, (Para 3-2).

**END OF TASK**

### 4-14. DATA PLATE AND SHIPPING LABEL REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

#### INITIAL SETUP

*Tools and Special Tools*

- Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)
- Drill Electric, Portable (Item 3, Appendix I)
- Drill Set, Twist (Item 4, Appendix I)
- Tool Kit, Blind Rivet (Item 14, Appendix I)

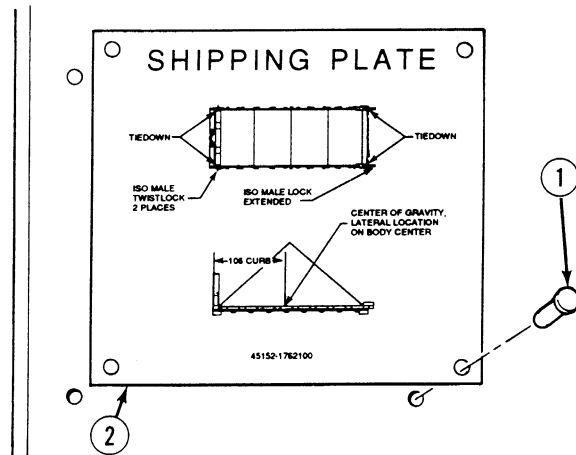
*Materials/Parts*

- Rivet (4) (Item 24, Appendix H)

#### NOTE

Refer to Para 2-8 for data plate and shipping label locations.

- a. **Removal.** Drill out four rivets (1) on data plate and/or shipping label (2) using a 1/4 inch drill bit. Discard rivets.
- b. **Installation.** Install data plate and/or shipping label (2) on flatrack with four rivets (1).



END OF TASK



## 4-16. STOWAGE BOX REPAIR.

This task covers:

- |                        |                          |
|------------------------|--------------------------|
| a. Disassembly         | c. Assembly              |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Brush, Wire, Scratch (Item 1, Appendix I)  
 Drill Electric, Portable (Item 3, Appendix I)  
 Drill Set, Twist (Item 4, Appendix I)  
 Sander, Disk Electric (Item 11, Appendix I)  
 Tool Kit, Blind Rivet (Item 14, Appendix I)  
 Torch Set, Cutting and Welding (Item 16, Appendix I)

#### *Materials/Parts*

Brush, Stiff Bristle (Item 2, Appendix E)  
 Detergent (Item 5, Appendix E)

#### *Materials/Parts - Continued*

Oil, Penetrating (Item 9, Appendix E)  
 Rivet (14) (Item 25, Appendix H)

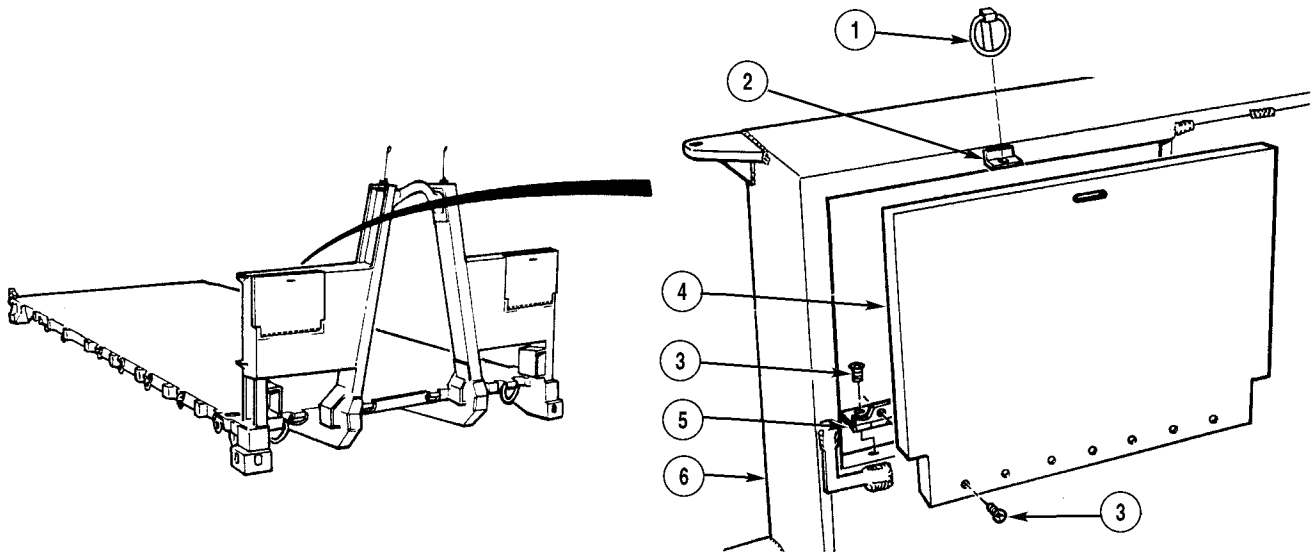
#### *References*

TC 9-237  
 TB 43-0209

#### *Equipment Condition*

Flatrack removed from truck or trailer prior to welding, (TM 9-2320-364-10)

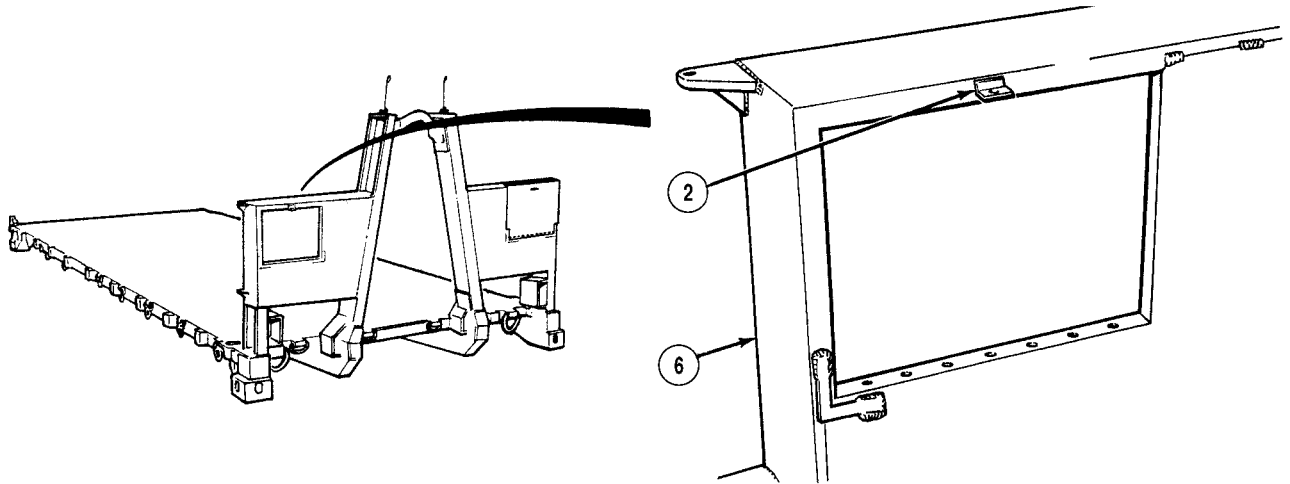
### a. Disassembly.



### NOTE

Both left and right storage box doors are removed the same way. Left one shown.

- (1) Remove lynch pin (1) from hasp (2).
- (2) Drill out seven rivets (3) and remove storage box door (4) from hinge (5).
- (3) Drill out seven rivets (3) and remove hinge (5) from storage box (6).



**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc).
  - DO NOT use CARC paint without adequate ventilation.
  - NEVER weld or cut CARC-coated materials.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
- (4) Using a wire scratch brush, remove paint from area at least four in. (102 mm) around area to be repaired.
- (5) Cut hasp (2) from stowage box (6).

**b. Cleaning/Inspection.**

- (1) Inspect latch, lid and inside of stowage box (6) for dirt and debris and clean all components with water, detergent and stiff bristled brush.
- (2) Inspect all weldments for cracks or other damage.

**4-16. STOWAGE BOX REPAIR (CONT).**

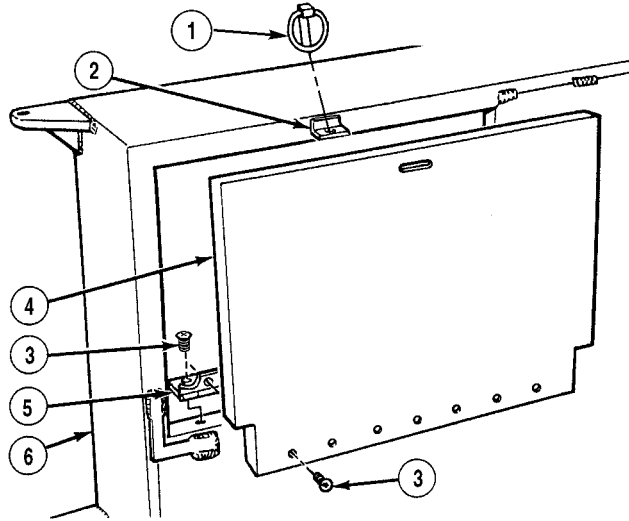
**c. Assembly.**

- (1) Install hinge (5) to stowage box (6) with seven rivets (3).
- (2) Install stowage box door (4) to hinge (5) with seven rivets (3).

**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

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  - DO NOT use CARC paint without adequate ventilation.
  - NEVER weld or cut CARC-coated materials.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
- (3) Refer to TC 9-237 for welding procedures and weld hasp (2) to stowage box (6).
  - (4) Refer to TB 43-0209 for proper painting procedures.
  - (5) Close stowage box door (4) and install lynch pin (1) in hasp (2).



**d. Follow-On Maintenance:**

- Load flatrack on truck or trailer, (TM 9-2320-364-10).

**END OF TASK**





## 4-18. FRONT AND REAR TIEDOWN RING REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

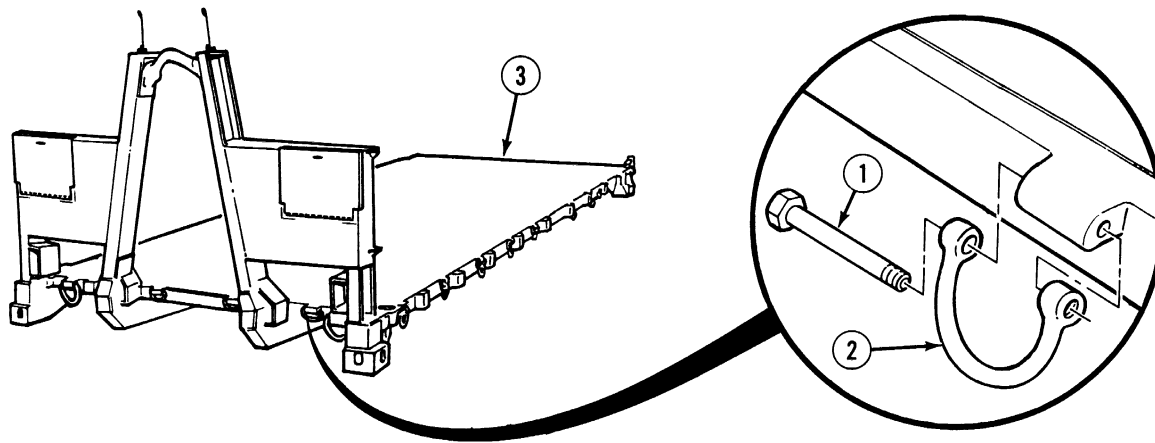
### INITIAL SETUP

*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

*Materials/Parts*

Sealing Compound (Item 13, Appendix E)



### NOTE

There are eight front and rear tiedown rings on flatrack. All eight front and rear tiedown rings are removed and installed the same way.

- a. **Removal.** Remove screw (1) and shackle (2) from flatrack (3).
- b. **Installation.**

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of screw (1).
- (2) Install shackle (2) on flatrack (3) with screw (1).

### END OF TASK

**4-19. SIDEBORD PANELS NO. 9 AND NO. 10 REPLACEMENT.**

This task covers:

- a. Removal
- b. Installation

**INITIAL SETUP**

*Tools and Special Tools*

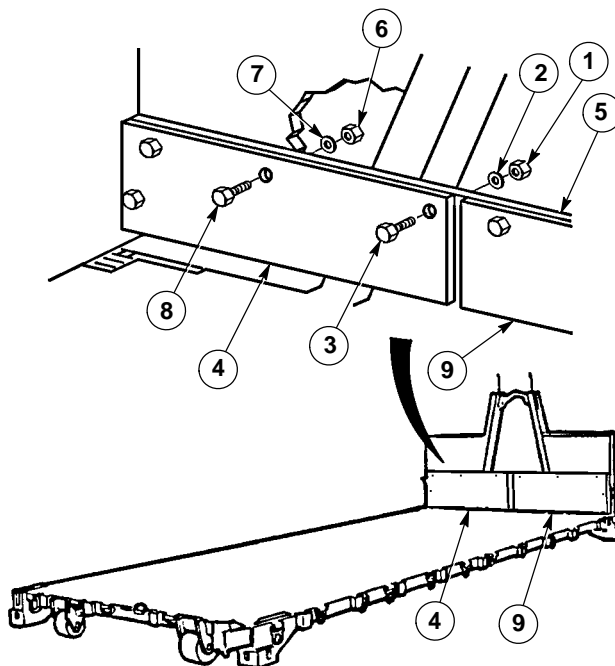
Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Drill, Electric, Portable (Item 3, Appendix I)  
 Drill Set, Twist (Item 4, Appendix I)

*Materials/Parts*

Locknut (8) (Item 11, Appendix H)

**a. Removal.**

- (1) Remove one locknut (1), washer (2) and screw (3) from panel No. 9 (4) on flatrack (5). Discard locknut.
- (2) Remove three locknuts (6), washers (7) and screws (8) from panel No. 9 (4). Remove panel No. 9 from flatrack (5). Discard locknuts.
- (3) Repeat Steps (1) and (2) for panel No. 10 (9).



**4-19. SIDEBORD PANELS NO. 9 AND NO. 10 REPLACEMENT (CONT).**

**b. Installation.**

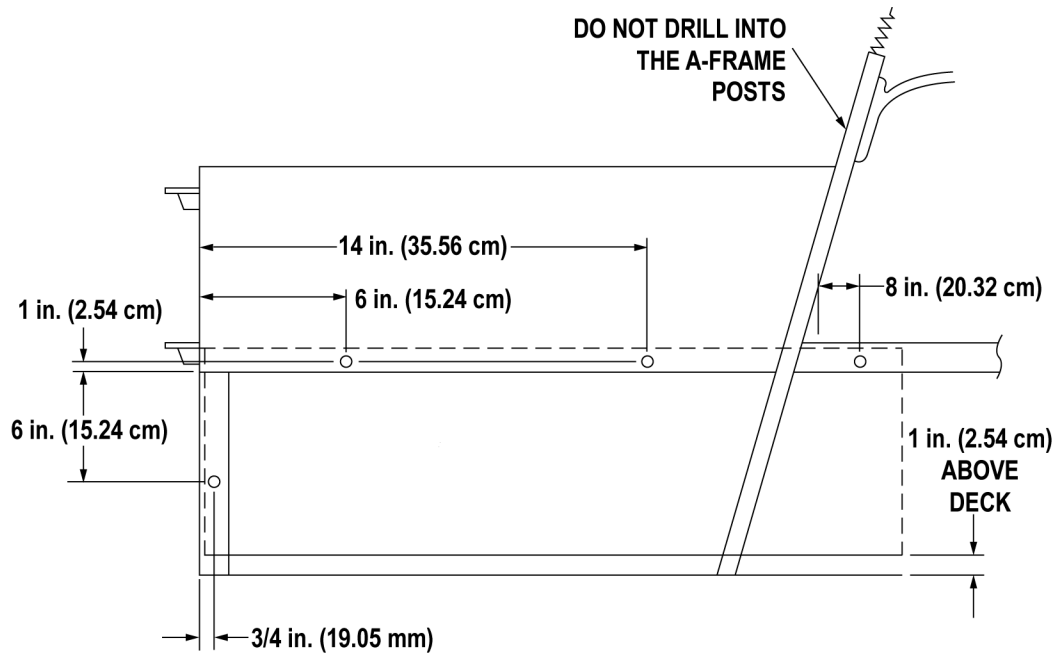
**CAUTION**

Do not drill into the A-frame posts or damage to flatrack may occur.

**NOTE**

- If installing panels No. 9 and No. 10 for the first time, perform Step (1).
- Use panels No. 9 and No. 10 as a template to ensure correct location of holes.

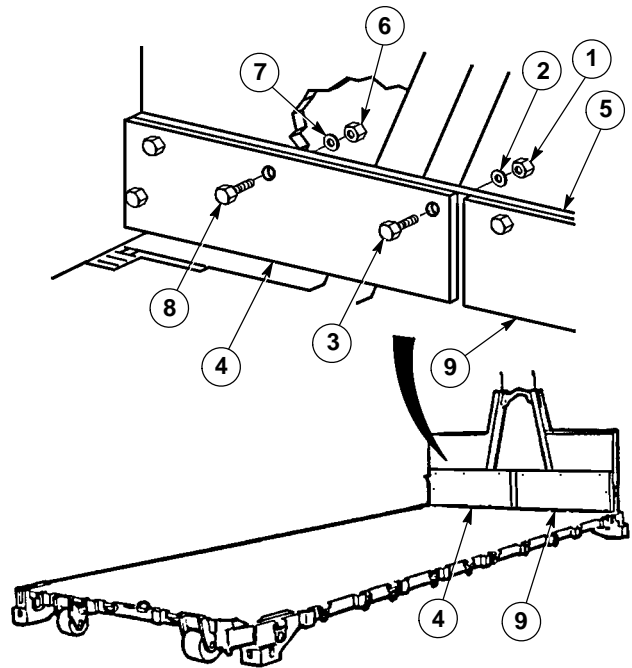
(1) Drill four 5/16" (7.94 mm) holes in flatrack (5) as shown.



PANEL No. 9 SHOWN.  
 PANEL No. 10 IS THE  
 MIRROR IMAGE.

- (2) Install panel No. 9 (4) on flatrack (5) with three screws (8), washers (7) and locknuts (6).
- (3) Install screw (3), washer (2) and locknut (1) in panel No. 9 (4) and flatrack (5).
- (4) Repeat Steps (1) through (3) for panel No. 10 (9).

**END OF TASK**



## 4-20. CARGO TARP INSTALLATION AND REMOVAL INSTRUCTIONS.

This task covers:

a. Installation

b. Removal

c. Follow-On Maintenance

### INITIAL SETUP

#### *Tools and Special Tools*

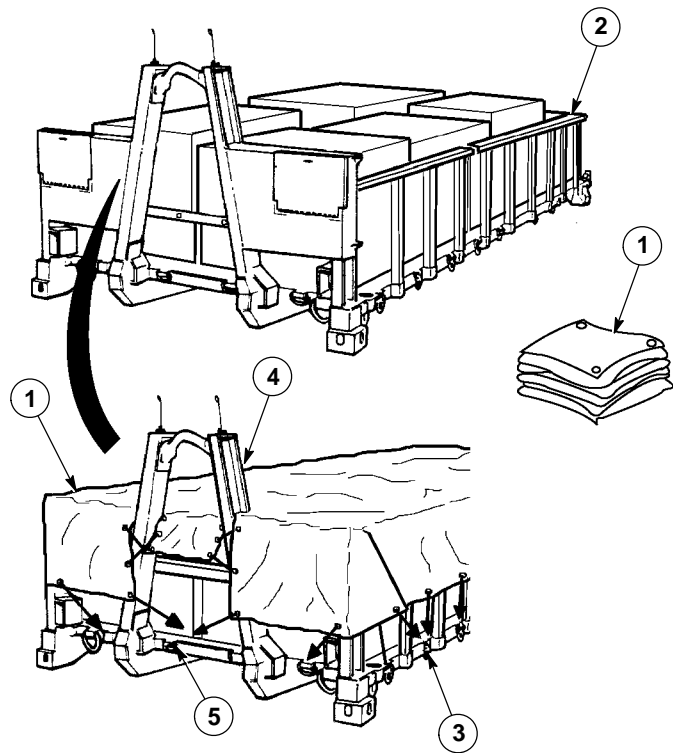
Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

#### *Equipment Condition*

Sideboards installed (Para 2-9)

#### **a. Installation.**

- (1) Remove cargo tarp (1) from stowage location.
- (2) Place cargo tarp (1) on top of cargo on right rear corner.
- (3) Unfold all four sides, positioning cargo tarp on the side boards (2).
- (4) Secure the side and rear tiedown ropes to flatrack tiedown rings (3).
- (5) Install front flap over A-frame (4) and secure as shown in illustration.
- (6) Secure front tiedown ropes to flatrack tiedown rings (5).
- (7) Check and tighten all tiedown ropes to ensure cargo tarp (1) is stretched tightly over cargo and does not flag or flap during transport.

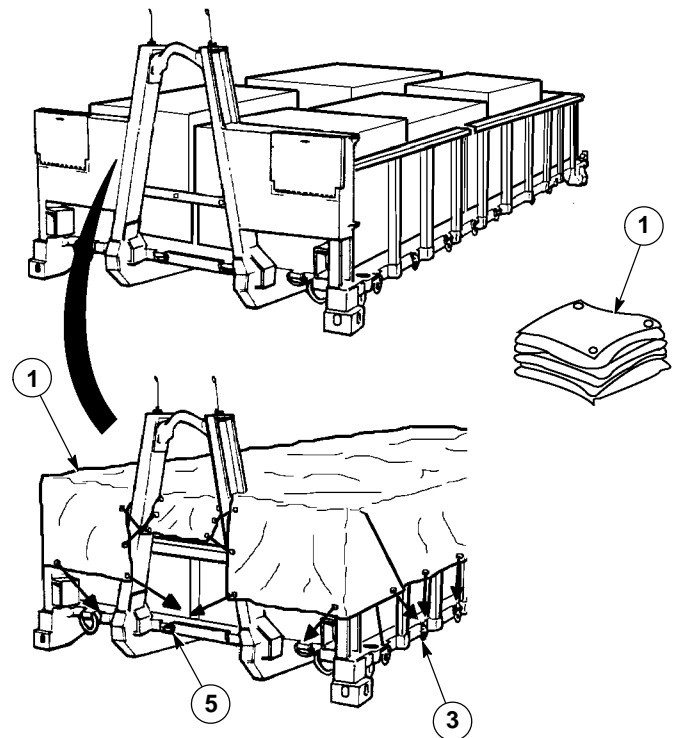


**b. Removal.**

- (1) Remove all tiedown ropes of cargo tarp (1) from flatrack tiedown rings (3) and (5).
- (2) Lift left side of cargo tarp (1) and pull over top. Lift right side of cargo tarp and pull over top. Lift front of cargo tarp and pull over top. Lift rear of cargo tarp and pull over top. Stow all tiedown ropes inside of cargo tarp (1).
- (3) Fold cargo tarp (1) toward rear. Ensure all tiedown ropes are inside of cargo tarp (1).
- (4) Fold cargo tarp (1) from left to right until completely folded.
- (5) Return cargo tarp (1) to stowage location.

**c. Follow-On Maintenance.**

- Remove sideboards, (Para 2-9).



**END OF TASK**





## CHAPTER 5

### DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Para	Contents	Page
5-1	Common Tools and Equipment .....	5-1
5-2	Special Tools, TMDE and Support Equipment .....	5-1
5-3	Repair Parts .....	5-1
5-4	Service Upon Receipt .....	5-1
5-5	Introduction .....	5-2
5-6	General Welding Maintenance .....	5-3
5-7	Front ISO Lock Repair .....	5-6
5-8	Rear ISO Lock Repair .....	5-10

#### Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC (TMDE) AND SUPPORT EQUIPMENT

##### 5-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

##### 5-2. SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT.

Refer to Appendix B, the Maintenance Allocation Chart (MAC) and Appendix F, Repair Parts and Special Tools List (RPSTL) to determine special tools, Test, Measurement and Diagnostic Equipment (TMDE) and support equipment for the flatrack. No fabricated tools are needed.

##### 5-3. REPAIR PARTS.

Repair parts are listed and illustrated in Appendix F, Repair Parts and Special Tools List (RPSTL), covering Unit, Direct Support and General Support Maintenance for the flatrack.

#### Section II. SERVICE UPON RECEIPT

##### 5-4. SERVICE UPON RECEIPT.

Chapter 4 contains service upon receipt instructions. Specific paragraphs are referenced for different instructions.

- a. Unpacking.** Refer to Para 4-4.
- b. Special Service.** Refer to Para 4-4.

### Section III. DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE PROCEDURES

#### 5-5. INTRODUCTION.

This section will cover Direct Support and General Support Maintenance procedures for the flatrack. All Direct Support Maintenance procedures are listed first followed by all General Support Maintenance procedures. The following are general maintenance procedures to keep in mind:

**a. Removal and Disassembly.**

(1) Precision matched or mated components, assemblies, subassemblies, or parts (other than common hardware) should be marked, handled and stored to preclude damage and to ensure reassembly and installation in their matched positions.

(2) Do not separate bonded, press-fitted, soldered, welded, or riveted parts unless such removal is necessary to clean, inspect, or test that part separately.

**b. Inspection.**

(1) Inspect for loose, missing or damaged parts.

(2) Check for cracks, rust or pits, especially at weld points.

(3) Inspect all parts to determine if they conform to the wear limits, fits and tolerances established.

**c. Lubrication.** General lubrication needed before assembly or installation is called out in the maintenance procedures.

**d. Assembly.**

(1) Refer to notes or diagram made during disassembly to install precision matched or mated parts.

(2) Check and record shimming requirements as applicable.

(3) Torque bolts and nuts as noted in the maintenance procedure.

**e. Testing.** If needed, test procedures to verify proper operation will be called out in the maintenance procedure. Perform testing as it is listed.

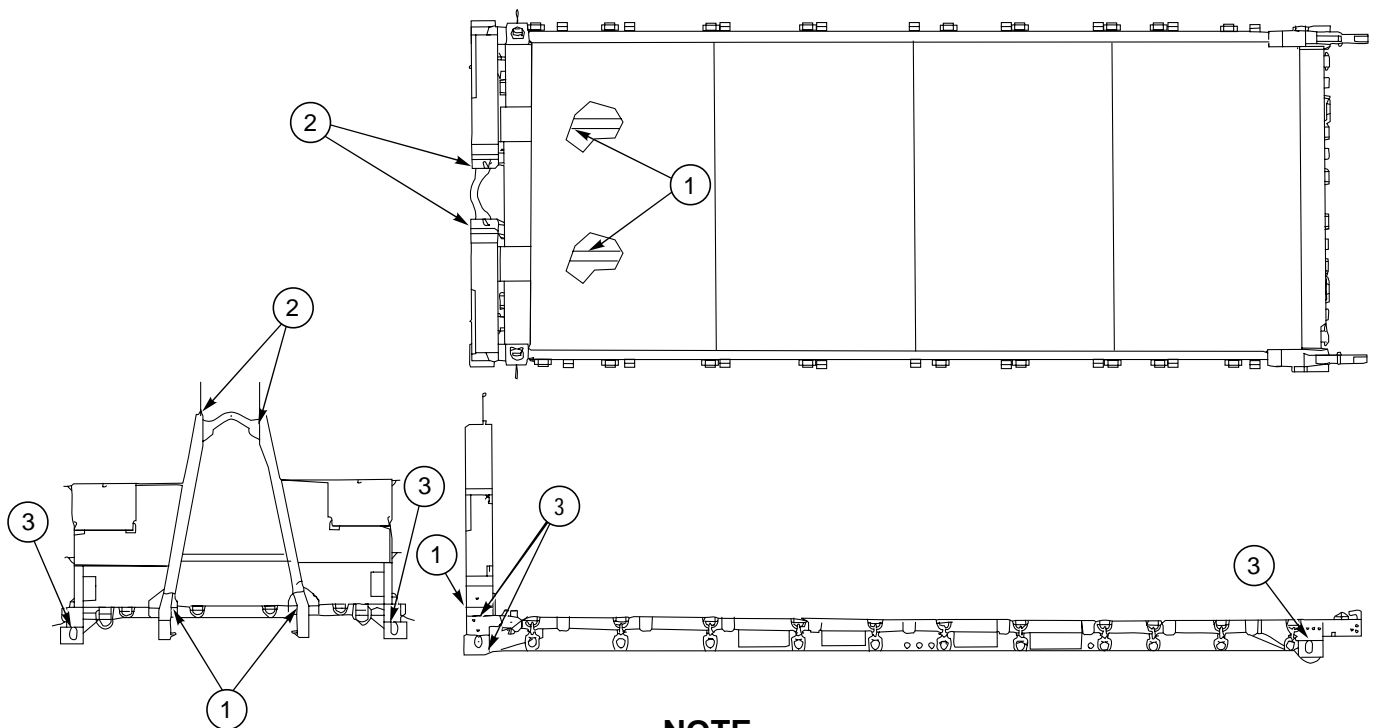
**f. Installation.**

(1) Perform alignment and adjustment procedures as listed in the maintenance procedure. Complete any testing required before the flatrack is returned to operation.

(2) Pay special attention to requirements for lockwiring, installing cotter pins and similar operations.

**g. Adjustments.** Refer to Chapter 4 for flatrack adjustments. No adjustments to the flatrack are authorized at the Direct Support/General Support level.

## 5-6. GENERAL WELDING MAINTENANCE.

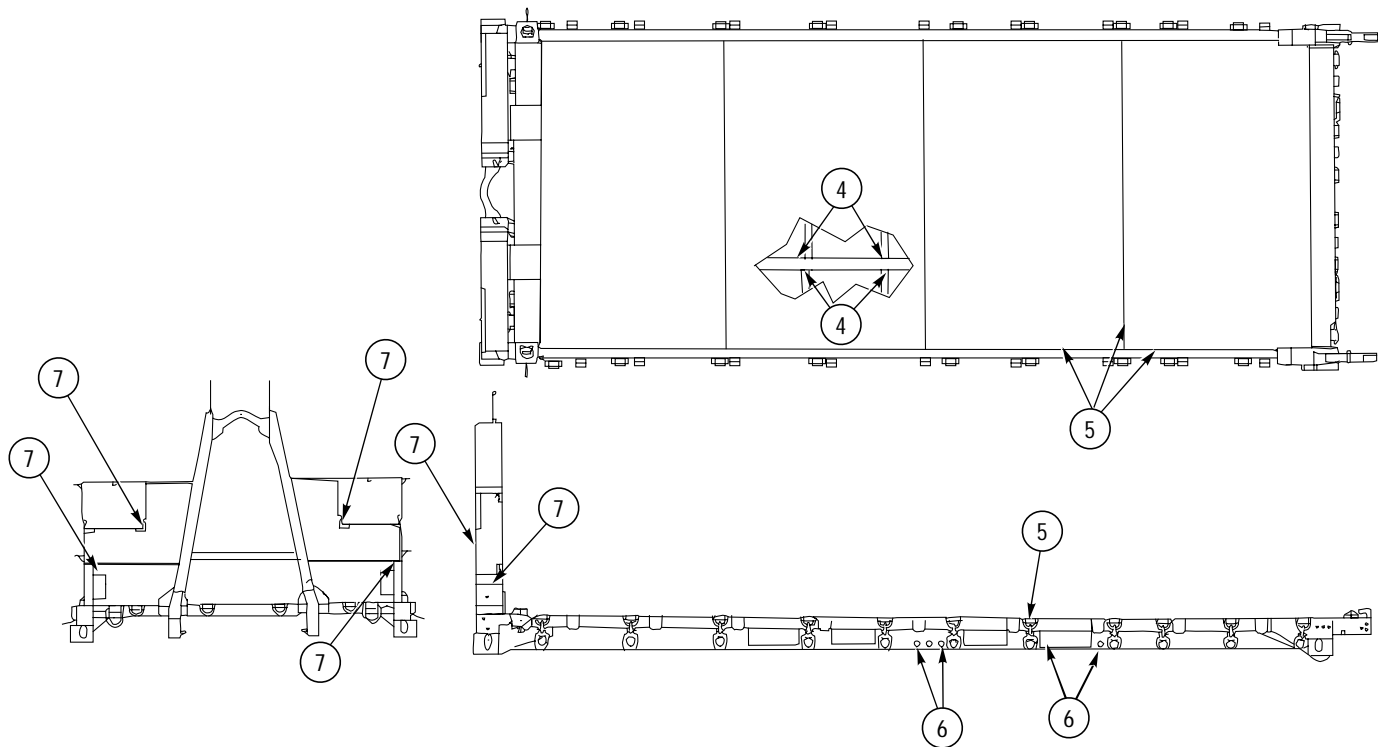


### NOTE

When weldment cracks are discovered, it is recommended that they be repaired at the next service interval to prevent the length of the crack from increasing and to minimize repair. The following inspection procedures are to be considered as guidelines only. Any cracks discovered during inspections considered more significant, especially from a safety stand point, should be referred to the supervisor for weld repair decisions. This would include cracks identified in any main structural areas (A-Frame and main rail flanges) and cracks that have opened and could lengthen rapidly during loading/unloading operations.

- a. **Weldment Points.** Thoroughly inspect all weldments for cracks, chips or other damage. Areas include the front and rear ISO locks, flatrack floor joints and wall, tiedown rings and the hookbar. Inspect welds for acceptable crack length limits using the following guidelines.
- (1) *A-Frame Interface (1).* This area includes the A-Frame channel to main rail interface, the top and outboard wrapper plates, and the front wrapper plate and gussets. Solid welds in this area are necessary to ensure safe loading and unloading of the flatrack. A crack should be repaired before it has reached two in. (5 cm). The combined length of multiple cracks at any one location should not exceed four in. (10 cm).
  - (2) *Hookbar (2).* These welds are located at the base of the hookbar casting on the A-Frame of the flatrack. These welds secure the hookbar to the structure and are subjected to a significant portion of the total load during loading and unloading operations. Cracks should be repaired prior to reaching one inch (2 cm) in length. The combined length of multiple cracks at this location should not exceed 1 1/2 in. (4 cm).
  - (3) *Corner Fitting and Adjacent Structure (3).* The corner fittings of the flatrack are used for transportation. They may be used to secure the flatrack to a trailer, container or another flatrack. Due to the high loads that these fittings can see in a transport mode, the crack should be repaired before reaching 1/2 inch (1 cm) in length. The combined length of multiple cracks at any one location should not exceed 1/2 inch (1 cm). This applies to cracks present in the adjoining structure also.

**5-6. GENERAL WELDING MAINTENANCE (CONT).**



- (4) *Crossmembers (4)*. These welds are located at the junction of the crossmember and the main rails. A crack should be repaired before it has reached two in. (5 cm) at one location. The total length of all cracks on a single crossmember should not exceed two in. (5 cm). When cracks are present on several crossmembers, action should be taken to repair it at the next service. If a crossmember is completely missing, repairs should be made prior to use.
- (5) *Decking (5)*. The decking is secured to the structure in a number of ways. It is welded at the perimeter of the main rails and front and rear crossmembers. It is also attached from underneath by skip welds between the crossmember and the deck. The maximum allowable single crack in the deck seams is 6 in. (15 cm) long. When multiple cracks are present, the combined length of the cracks cannot exceed 10 in. (25 cm).
- (6) *Main Rails (6)*. The main rails provide a major portion of the load carrying capacity of the flatrack. They support a portion of the load while loaded on the truck and trailer. Cracks between the main rail and the pinning boss and the main rail and the fork pocket should be repaired before reaching one in. (2 cm). Cracks at other locations on the main rails should be repaired before reaching 1/2 in. (1 cm).
- (7) *Stowage Boxes (7)*. Cracks in the sheet metal welds of the stowage box should be repaired before reaching two in. (5 cm).

**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

**CAUTION**

Do not weld the flatrack while on trailer or truck or damage to equipment may result.

**b. Flatrack Welding.** Welding on the flatrack must be performed off the trailer or truck. Different areas of the flatrack require different weld electrodes. Use the following guidelines to determine the correct weld.

- (1) *Hookbar.* Two different welding methods can be used to repair the hookbar.

**NOTE**

Use minimum preheat and maintain the interpass temperature of 300 degrees F (136 degrees C).

- (a) *ER110S-1 Gas Metal Arc Welding (GMAW).* This method requires the use of a wire feed welder with argon and oxygen shielding gas and ER110S-1 welding wire.
- (b) *E11018-M Submerged Metal Arc Welding (SMAW).* This process utilizes a E11018-M stick electrode and an arc welder.
- (2) *Rear ISO Lock Retaining Pin.* Repairing welds on this retaining pin requires the use of an arc welder and a ER308 stainless steel stick electrode.
- (3) *Remaining Flatrack Welds.* Welding wire ER80S-D2 is used to repair welds on the majority of the flatrack with the exception of the hookbar and the rear ISO lock retaining pin. Welding with ER80S-D2 weld wire requires a wire feed welder and carbon dioxide shielding gas.

## 5-7. FRONT ISO LOCK REPAIR.

This task covers:

- a. Removal
- b. Inspection
- c. Installation
- d. Follow-On Maintenance

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
Brush, Wire, Scratch (Item 1, Appendix I)  
Gloves, Chemical and Oil Protective (Item 5, Appendix I)  
Goggles, Industrial (Item 6, Appendix I)  
Sander, Disk Electric (Item 11, Appendix I)  
Torch Set, Cutting and Welding (Item 16, Appendix I)  
Welding Machine, Arc (Item 19, Appendix I)

#### *Materials/Parts*

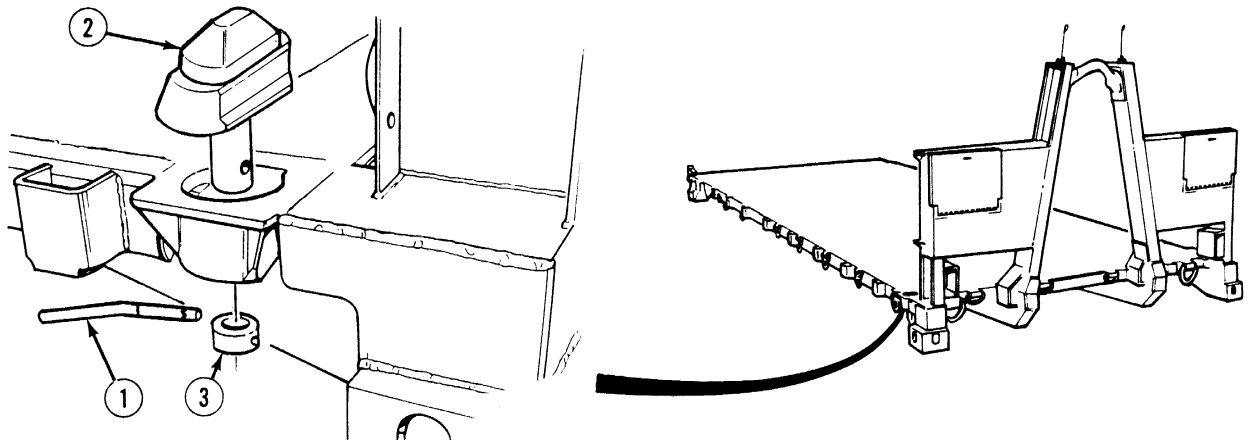
Collar, Shaft (Item 5, Appendix H)  
Handle (Item 6, Appendix H)  
Spring (Item 28, Appendix H)

#### *References*

TC 9-237  
TB 43-0209

#### *Equipment Condition*

Flatrack removed from truck or trailer prior to welding, (TM 9-2320-364-10)

a. *Removal.***WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

**NOTE**

Both left and right front ISO locks are removed the same way. Right front ISO lock is shown.

- (1) Using a wire scratch brush, remove CARC paint from area four in. (102 mm) around cutting point.
- (2) Cut weldments and remove handle (1) from stem (2). Discard handle.
- (3) Cut collar (3) from stem (2). Discard collar.

**5-7. FRONT ISO LOCK REPAIR (CONT).**

- (4) Remove shear block (4) and stem (2) from housing (5).
- (5) Remove pin (6) from stem (2).

**WARNING**

Spring and steel balls are under tension. Use caution when removing steel balls and spring or serious injury could result.

- (6) Remove stem (2), two balls (7) and spring (8) from shear block (4). Discard spring.

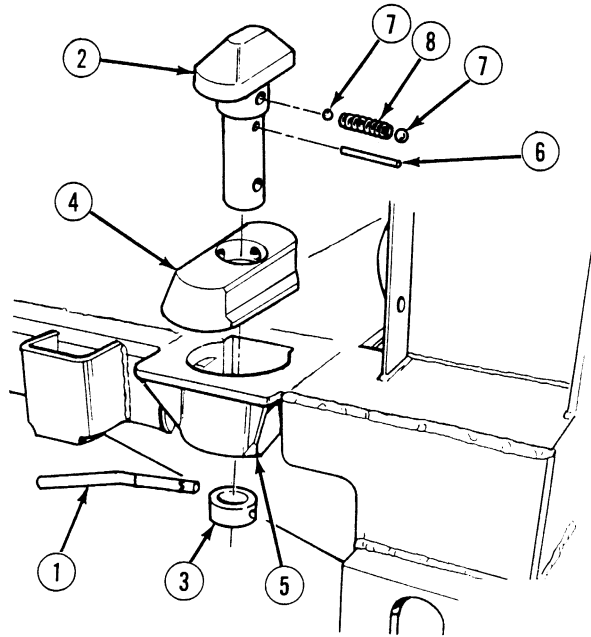
**b. Inspection.** Inspect spring (8), balls (7) and pin (6) for damage. Discard if damaged.

**c. Installation.**

**NOTE**

Both left and right front ISO locks are installed the same way. Right front ISO lock is shown.

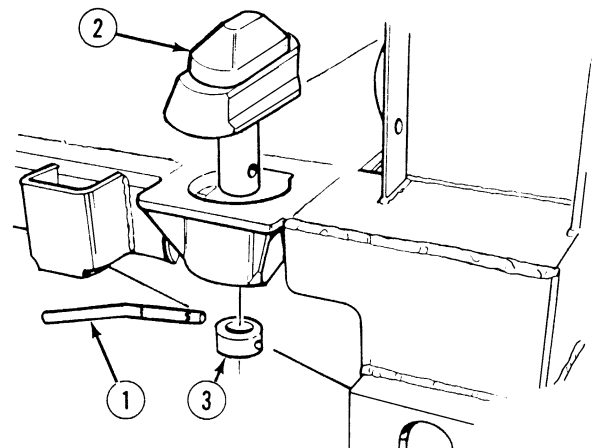
- (1) Install two balls (7), spring (8) and stem (2) in shear block (4).
- (2) Install pin (6) in stem (2).
- (3) Install shear block (4) in housing (5).
- (4) Install collar (3) on stem (2).
- (5) Install handle (1) in stem (2).





**WARNING**

- CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:
  - ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
  - DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
  - DO NOT use CARC paint without adequate ventilation.
  - NEVER weld or cut CARC-coated materials.
  - DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
  - Unsafe welding practices can cause serious injury from fire, explosions, or harmful agents. Allow only authorized personnel to weld or cut metals, and follow safety precautions TC 9-237. Protective clothing and goggles must be worn; adequate protective equipment used, and suitable fire extinguisher kit near by; and requirements of TC 9-237 strictly followed.
  - Flatrack must be removed from truck and trailer prior to any welding being performed.
- (6) Refer to TC 9-237 and weld handle (1) and collar (3) to stem (2).
- (7) Refer to TB 43-0209 for painting procedures.



**d. Follow-On Maintenance:**

- Load flatrack on truck or trailer, (TM 9-2320-364-10).

**END OF TASK**

## 5-8. REAR ISO LOCK REPAIR.

This task covers:

- |                        |                          |
|------------------------|--------------------------|
| a. Disassembly         | c. Assembly              |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Brush, Wire, Scratch (Item 1, Appendix I)  
 Compressor Unit, Air (Item 2, Appendix I)  
 Gloves, Chemical and Oil Protective (Item 5, Appendix I)  
 Goggles, Industrial (Item 6, Appendix I)  
 Gun, Air Blow (Item 7, Appendix I)  
 Sander, Disk Electric (Item 11, Appendix I)  
 Torch Set, Cutting and Welding (Item 16, Appendix I)  
 Welding Machine, Arc (Item 19, Appendix I)

#### *Materials/Parts*

Cloth, Lint-free (Item 4, Appendix E)  
 Oil, Penetrating (Item 9, Appendix E)  
 Solvent, Drycleaning (Item 14, Appendix E)

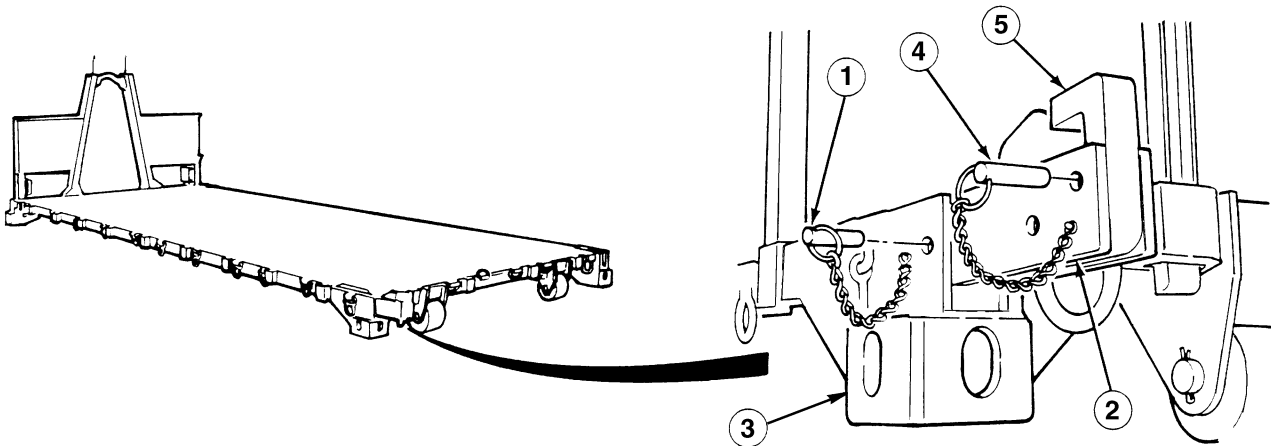
#### *References*

TB 43-0209  
 TC 9-237

#### *Equipment Condition*

Flatrack removed from truck and trailer prior to welding, (TM 9-2320-364-10)

### a. *Disassembly.*



### NOTE

- This repair procedure applies only to later flatrack models. Early flatracks have the pivot pin welded on both ends and are non-repairable.
- Both left and right rear ISO locks are repaired the same way. Left rear ISO lock is shown.

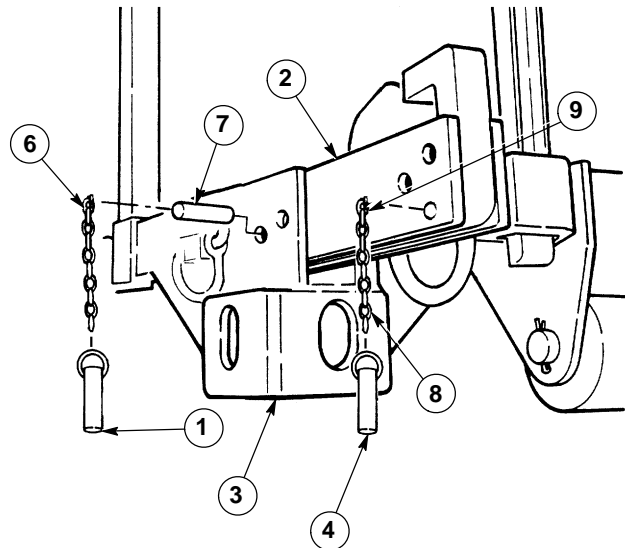
(1) Pull pin (1) from extension (2) and rotate extension out of flatrack (3).

(2) Pull pin (4) from lock (5) and rotate lock out of extension (2).

**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:

- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
  - DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
  - DO NOT use CARC paint without adequate ventilation.
  - NEVER weld or cut CARC-coated materials.
  - DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
- (3) Using a wire scratch brush, remove CARC paint from area four in. (102 mm) around cutting point.
  - (4) Cut weldment and remove chain (6) and pin (1) from pivot pin (7).
  - (5) Remove chain (6) from pin (1).
  - (6) Using a wire scratch brush, remove CARC paint from area four in. (102 mm) around cutting point.
  - (7) Cut weldment and remove chain (8) and pin (4) from pin (9).
  - (8) Remove chain (8) from pin (4).
  - (9) Cut weldment and remove pivot pin (7) and extension (2) from flatrack (3).



**5-8. REAR ISO LOCK REPAIR (CONT).**

**b. Cleaning/Inspection.**

**WARNING**

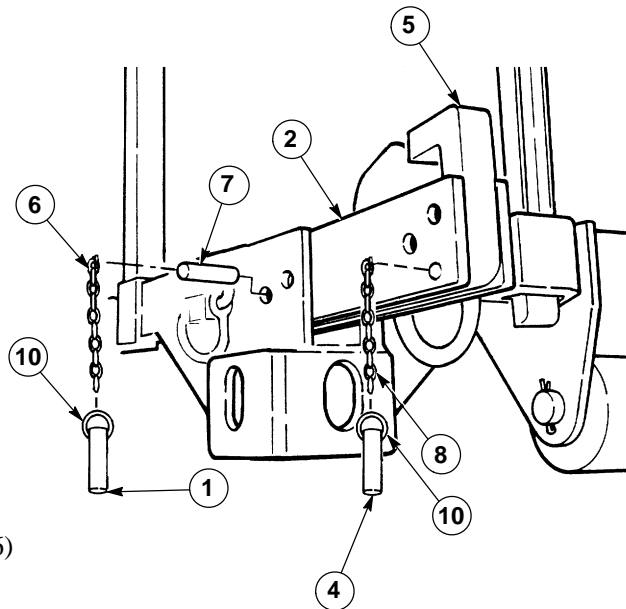
- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Visually inspect rear ISO locks (5) for damage or dirt. Use a lint-free cloth and drycleaning solvent to clean ISO locks as required.

**WARNING**

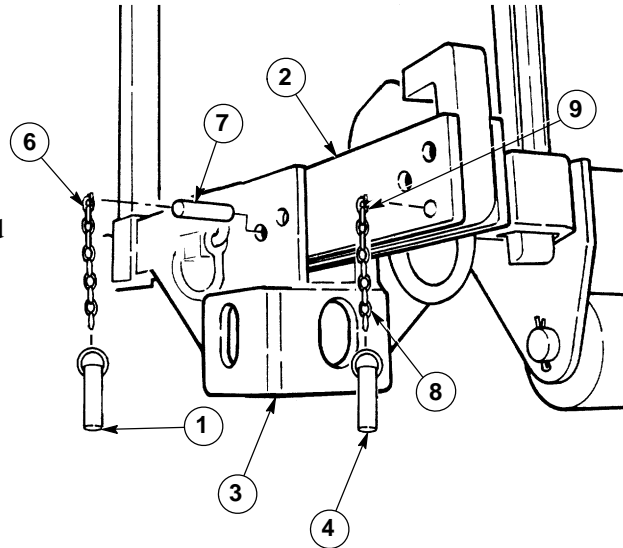
Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or severe injury or death could result.

- (2) Dry ISO locks (5) with compressed air.
- (3) Check for proper ISO lock operation (Para 2-7). If binding, use penetrating oil.
- (4) Visually inspect pivot pin (7), two chains (6) and (8), retaining rings (10), two pins (1) and (4) and extension (2) for damage. Refer to Appendix G, Manufactured Items List, for replacement of damaged parts.



c. *Assembly.***WARNING**

- CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production, and chest tightness. The following precautions must be taken whenever using CARC paint:



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- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.
- Unsafe welding practices can cause serious injury from fire, explosions, or harmful agents. Allow only authorized personnel to weld or cut metals, and follow safety precautions TC 9-237. Protective clothing and goggles must be worn; adjustable protective equipment used, and suitable fire extinguisher kit near by; and requirements of TC 9-237 strictly followed.
- Flatrack must be removed from truck and trailer prior to any welding being performed.

- (1) Install extension (2) on flatrack (3) with pivot pin (7).

**NOTE**

Weld pivot pin on outside only. Do not weld inside.

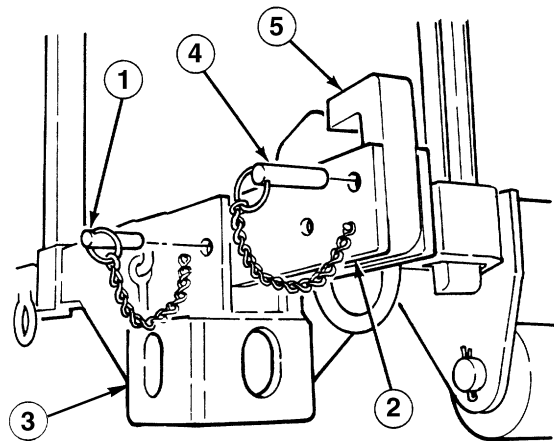
- (2) Refer to TC 9-237 and weld pivot pin (7) on flatrack (3).
- (3) Install chain (8) on pin (4).
- (4) Refer to TC 9-237 and weld chain (8) on pin (9).
- (5) Install chain (6) on pin (1).
- (6) Refer to TC 9-237 and weld chain (6) on pivot pin (7).

**5-8. REAR ISO LOCK REPAIR (CONT).**

- (7) Rotate lock (5) into extension (2) and secure with pin (4).
- (8) Rotate extension (2) into flatrack (3) and secure with pin (1).

**WARNING**

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  - NEVER weld or cut CARC-coated materials.
  - DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
  - BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.



- (9) Refer to TB 43-0209 for painting procedures.

**d. Follow-On Maintenance:**

- Load flatrack on truck or trailer, (TM 9-2320-364-10).

**END OF TASK**

## CHAPTER 6

### INTRODUCTION

Para	Contents	Page
6-1	Scope .....	6-1
6-2	Corrosion Prevention and Control .....	6-1
6-3	Preparation for Storage or Shipment .....	6-1
6-4	Equipment Configuration .....	6-2
6-5	Safety, Care and Handling .....	6-2
6-6	Warranty Information .....	6-2
6-7	List of Abbreviations .....	6-2
6-8	Equipment Characteristics, Capabilities and Features .....	6-4
6-9	Location and Description of Major Components .....	6-5
6-10	Equipment Data .....	6-7
6-11	Normal Operation .....	6-7

#### Section I. GENERAL INFORMATION

#### 6-1. SCOPE.

This chapter provides general information, equipment description and principles of operation for the ISO-Compatible Palletized Flatrack (IPF).

- a. *Type of Manual.*** Operation and maintenance manual.
- b. *Model Number and Equipment Name.*** The ISO-Compatible Palletized Flatrack (IPF) Part Number is 12440653, Model M1, NSN 3990-01-406-1340. Figure 6-1 illustrates the flatrack in various configurations.
- c. *Purpose of Equipment.*** The flatrack is a flat cargo body with folding end walls, designed for use with the Palletized Load System (PLS) truck. The flatrack is designed to be loaded on the PLS using the Load Handling System (LHS). The flatrack is capable of being transported by other modes of transportation through the supply distribution system.

#### 6-2. CORROSION PREVENTION AND CONTROL.

Clean and lubricate the flatrack as scheduled in the PMCS in Chapter 7.

#### 6-3. PREPARATION FOR STORAGE OR SHIPMENT.

Refer to Para 7-18 and Para 7-20 for storage or shipment instructions for the flatrack.

**6-4. EQUIPMENT CONFIGURATION.**

The flatrack can be configured to carry unit equipment (Figure 6-1, View A) or equipped with a sideboard kit (View B).

**6-5. SAFETY, CARE AND HANDLING.**

Beware of payload movement during normal loading/unloading operations. Ensure tiedown straps, cargo tarp and sideboard kit are correctly installed. The flatrack should be loaded on truck or trailer using Load Handling System (LHS). Flatracks should be stacked using a forklift. When lifting loaded flatracks, the forklift pockets located nearest the ends of the flatrack must be used. Never walk under flatrack while it is being lifted, loaded or unloaded.

**6-6. WARRANTY INFORMATION.**

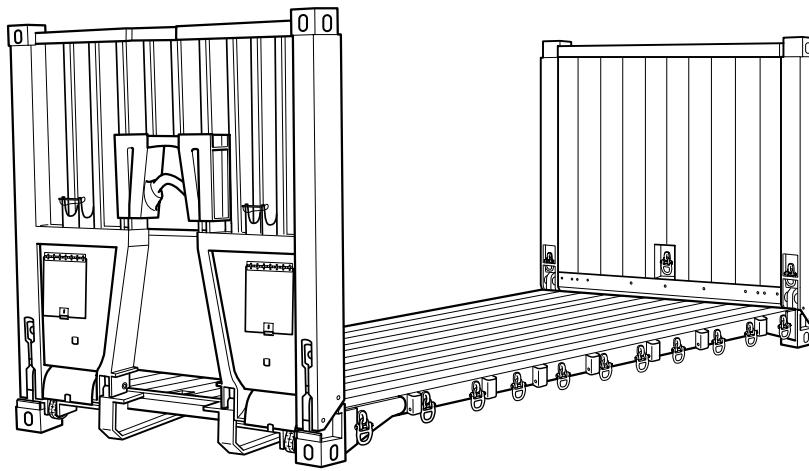
Refer to TB 9-2320-364-15 Warranty Technical Bulletin for information concerning the flatrack. The warranty starts on the date found in block 23, DA Form 2408-9 in the logbook. Report all defects in material and workmanship to your supervisor, who will take the appropriate action.

**6-7. LIST OF ABBREVIATIONS.**

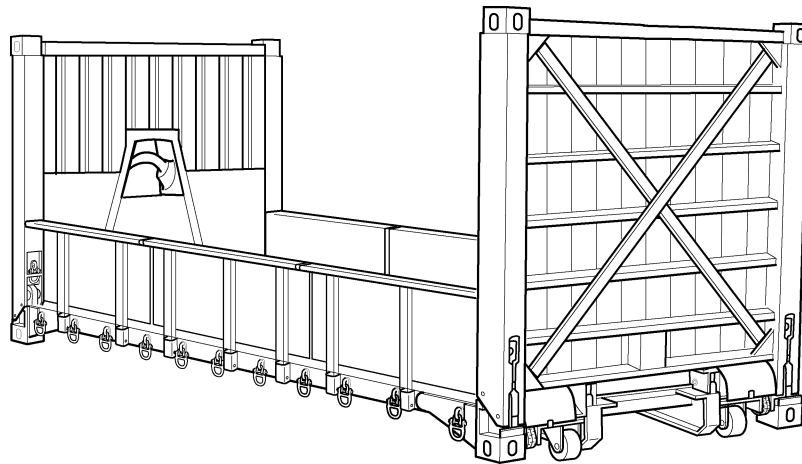
The following abbreviations are used extensively throughout this manual:

AAL	Additional Authorization List
BII	Basic Issue Items
BOI	Basis of Issue
CAGE	Contractor and Government Entity
COEI	Components of End Item
CSC	International Convention For Safe Containers
IPF	ISO-Compatible Palletized Flatrack
ISO	International Standards Organization
LHS	Load Handling System
MLRS	Multiple Launch Rocket System
NSN	National Stock Number
PLS	Palletized Load System
PLST	Palletized Load System Trailer
PMCS	Preventive Maintenance Checks and Services
RPC	Rocket Pod Containers
SMR	Source, Maintenance and Recoverability
TMDE	Test, Measurement and Diagnostic Equipment
U/I	Unit of Issue
U/M	Unit of Measure





VIEW A



VIEW B

*Figure 6-1. Flatrack Configurations.*

## Section II. EQUIPMENT DESCRIPTION

### 6-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

#### a. *Equipment Characteristics.*

- (1) The flatrack is a welded steel, wooden floored, flat cargo body with folding walls for stacking. The flatrack usually is loaded and unloaded by the Load Handling System (LHS).
- (2) The flatrack has four bottom ISO corner castings that allow one flatrack to be secured and transported on a flatbed railcar or M871 semitrailer. Two flatracks can be transported on the M872 semitrailer. These configurations require only existing railcar and trailer-mounted ISO corner castings. The bottom ISO corner castings allow three unloaded and folded flatracks to be stacked and locked together for transport using LHS and a M1077 flatrack. Up to five unloaded and folded flatracks secured with chains and load binders may be transported on a flatbed rail car.
- (3) In addition, the flatrack has four upper ISO corner castings that allow loaded flatracks to be stacked up to nine high in the cargo cell of a container ship.
- (4) The flatrack is provided with a sideboard kit, cargo tarp and tiedown straps to allow transport of cargo.

#### b. *Capabilities.*

- (1) The flatrack can be loaded from the ground, a loading dock or truck to trailer using the truck-mounted LHS. The flatrack will accommodate nominal loads of 29,500 lbs (13,393 kg) including sideboards and tarp when loaded on PLS truck or trailer. The flatrack will accommodate loads up to 31,400 lbs (14,255 kg) including sideboards and tarp when not loaded on PLS truck or trailer.
- (2) The flatrack is capable of being transported on C-130, C-141, C-5 and C-17 aircraft.
- (3) The flatrack is capable of being sling-lifted by a CH-47D helicopter with a reduced payload. The maximum permissible payload of the flatrack, payload and slinging assemblies will not exceed the maximum permissible 22,900 lb (10,387 kg) at 2,000 ft (610 m), 70 degrees F (21 degrees C), for 30 nautical miles.
- (4) Up to nine fully loaded flatracks can be stacked and locked together in the cell of a containership.
- (5) Three empty flatracks, with the end walls folded down, can be stacked together. A stack of three M1 flatracks may be loaded on the PLS truck using the LHS and a M1077 flatrack.
- (6) Two empty flatracks, with the top flatrack end walls folded down and the rear wall of the bottom flatrack folded down, can be stacked and locked together using suitable blocking and bracing material. In this configuration, the flatracks can be loaded on the PLS truck using the LHS and the hook bar on the lower flatrack.

### **CAUTION**

Two sets of forklift pockets are provided underneath the flatrack. The set nearest the ends of the flatrack must be used when lifting loaded flatracks. The set closest to the center of the flatrack is for lifting unloaded flatracks only. Use of the wrong forklift pockets could cause damage to equipment.

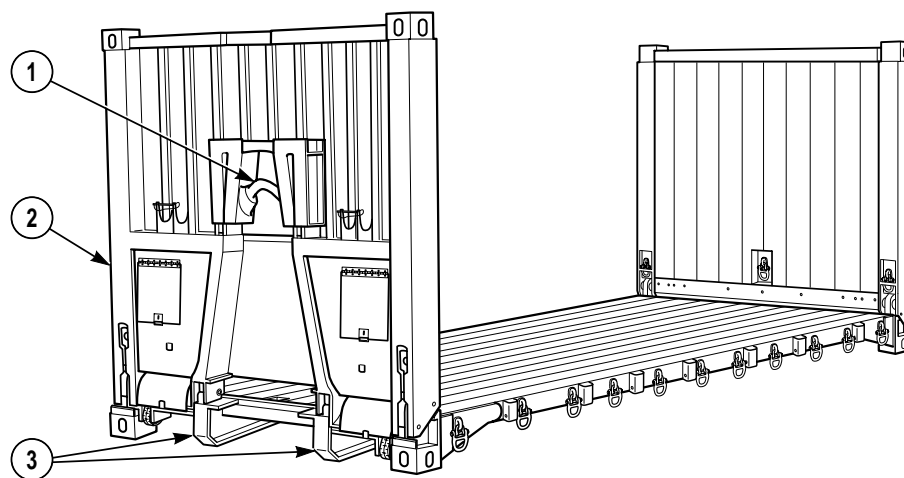
- (7) The flatrack can be moved by a forklift with forks that are a minimum of 70.0 in. (177.8 cm) in length.

#### c. *Features.*

- (1) A welded frame forming a single integral unit with wood flooring.

- (2) Two removable, enclosed stowage boxes.
- (3) Folding front and rear walls.
- (4) Capable of accepting a sideboard kit to carry cargo.
- (5) Tiedown rings, 25,000 lb (11,350 kg) and 10,000 lb (4,540 kg) capacity, to secure payloads.
- (6) Forklift pockets to allow movement of the flatrack in loaded/unloaded situations.
- (7) ISO corner castings at the top and bottom of the front and rear walls.
- (8) Removable rollers at the rear of the flatrack.
- (9) Sideboard kit and cargo tarp.
- (10) Twist locks at the front and rear of the flatrack for stacking.
- (11) Pin assemblies at front and rear of the flatrack to allow lowering of front and rear walls.

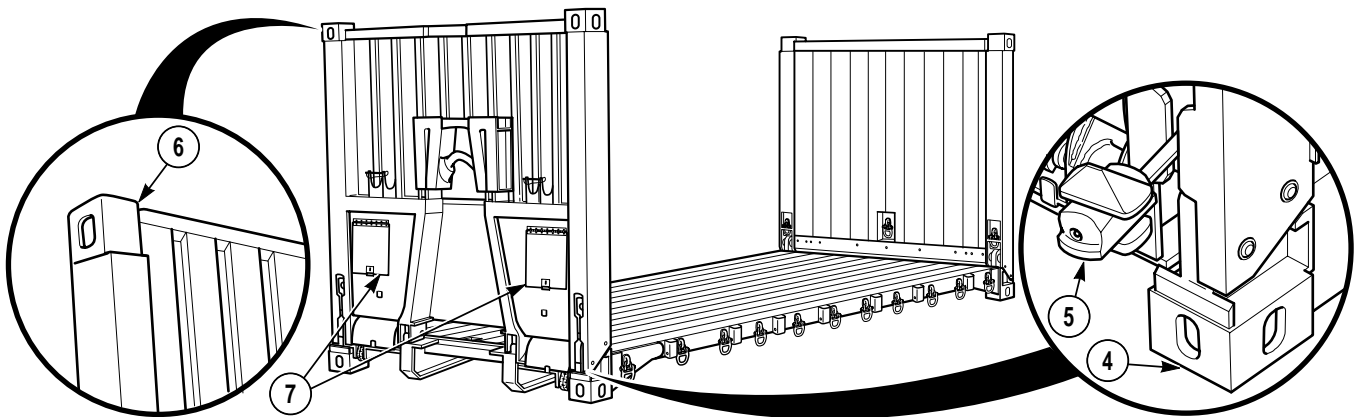
### 6-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



**a. Front Wall and Hook Bar.** The hook bar (1) on the front wall (2) of the flatrack is used as a lifting point for the flatrack. The hook bar (1) couples with the LHS hook arm to lift and pull the flatrack onto the truck. The entire front wall can be lowered onto the flatrack deck to prepare the flatrack for unloaded stacking.

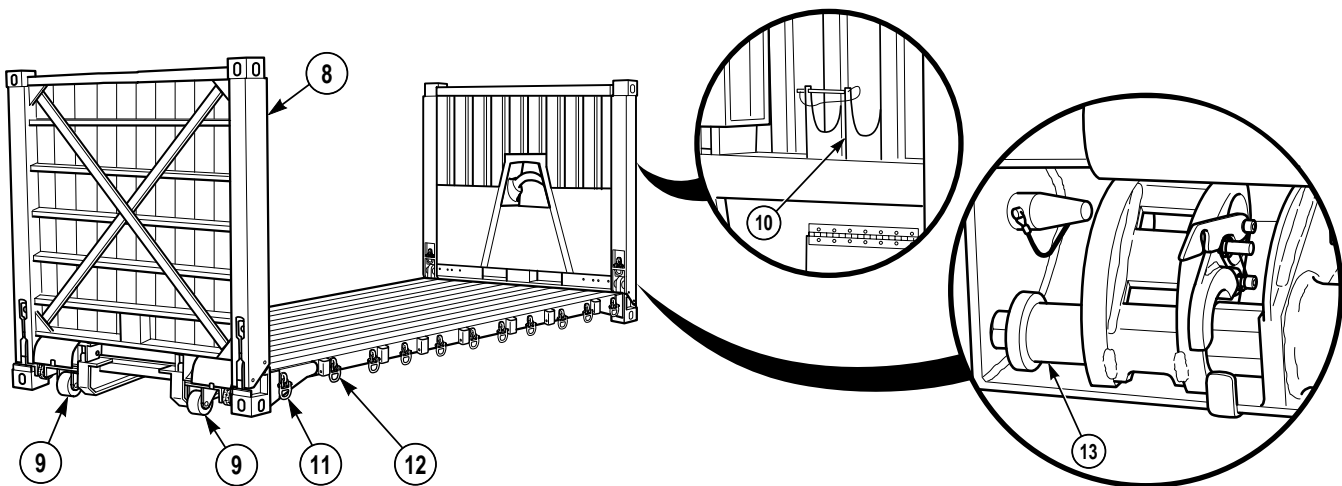
**b. Rails.** The flatrack rails (3) have locking plates that mate with locks on the truck and trailer to secure the flatrack for road operations.

**6-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (CONT).**



**c. Twist Locks and ISO Corner Castings.** The lower ISO corner castings (4) and twist locks (5), allow three empty folded flatracks to be stacked and locked together. The lower ISO corner castings allow the flatrack to be interchangeable between the truck, trailer, M871 semitrailer, M872 semitrailer, container chassis, containerized ships and ISO transportation system. The upper ISO corner castings (6) allow up to nine loaded flatracks to be stacked in the cargo cell of a containership.

**d. Stowage Boxes.** Two stowage boxes (7) are sized to allow storage of Basic Issue Items (BII) and other items. The stowage boxes are hinged and have provisions for locking.



**e. Rear Wall and Rollers.** The rear wall (8) folds forward to prepare unloaded flatrack for stacking. Removable rollers (9) are used for loading/unloading flatrack onto the trailer or docks. The rollers can be detached from the deck and stowed on the upper front wall stowage points (10).

**f. Tiedown Rings.** Six 25,000 lb (11,350 kg), capacity tiedown rings (11) and twenty-two 10,000 lb (4,540 kg), capacity tiedown rings (12) and twenty-two straps are provided to secure payloads or to secure flatrack for modes of shipping when flatrack is not on truck or trailer.

**g. Pin Assemblies.** Pin assemblies (13) at the front and rear of the flatrack allow front and rear walls to be lowered.

**6-10. EQUIPMENT DATA.**

Table 6-1 contains the equipment data that applies to the flatrack.

**Table 6-1. Equipment Data**

Item	Specification
Width (Between ISO corner castings):	95.98 in. (243.79 cm)
Height:	
(Deck to upper ISO corner castings)	75.5 in. (191.8 cm)
(Ground to upper ISO corner castings)	82.0 in. (208.3 cm)
Length:	238.5 in. (605.8 cm)
Weight:	
(Without cargo tarp and sideboard kit):	7,300 lbs (3,312 kg)
(With cargo tarp and sideboard kit):	8,100 lbs (3,677 kg)

**Section III. PRINCIPLES OF OPERATION**

**6-11. NORMAL OPERATION.**

The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the walls to be lowered by two soldiers. Pin assemblies, located at the front and rear flatrack walls, provide a means to lower the walls. All components are permanently attached to the flatrack with the exception of the sideboards, rear rollers, BII and cargo tarp that the operator can remove or install. Refer to TM 9-2320-364-10 for PLS operating procedures.



## CHAPTER 7

### OPERATING INSTRUCTIONS

Para	Contents	Page
7-1	Operator’s PMCS Procedures .....	7-1
7-2	PMCS Warnings and Cautions .....	7-1
7-3	Explanation of PMCS Table Entries .....	7-1
7-4	Routing Diagram .....	7-2
7-5	Interval Groupings .....	7-2
7-6	Lubrication Instructions .....	7-2
7-7	Shortened Intervals .....	7-2
7-8	Assembly and Preparation for Use .....	7-10
7-9	Unlock and Lock Twist Locks .....	7-10
7-10	Lower and Raise Front and Rear Wall .....	7-11
7-11	Sideboard Kit .....	7-14
7-12	Cargo Tarp Installation and Removal Instructions .....	7-15
7-13	Nuclear, Biological and Chemical (NBC) Decontamination Procedures .....	7-16
7-14	Loading Single Flatrack On PLS Truck Or Trailer .....	7-16
7-15	Stacking/Loading Two Flatracks On PLS Truck or Trailer .....	7-17
7-16	Stacking/Loading Three Flatracks On PLS Truck or Trailer .....	7-19
7-17	Stacking/Unstacking Loaded Flatracks .....	7-25
7-18	Preparation for Storage or Shipment .....	7-27
7-19	Decals and Instruction Plates .....	7-27
7-20	Preparation for Rail Transport .....	7-29

#### Section I. OPERATOR’S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

**7-1. OPERATOR’S PMCS PROCEDURES.**

Table 7-1 (PMCS Table) has been provided so you can keep your equipment in good operating condition and ready for its primary mission.

**7-2. PMCS WARNINGS AND CAUTIONS.**

Always observe the Warnings and Cautions appearing in your PMCS Table. Warnings and Cautions appear before applicable procedures. You must observe these Warnings and Cautions to prevent serious injury to yourself and others, or to prevent your equipment from being damaged.

**7-3. EXPLANATION OF PMCS TABLE ENTRIES.**

**a. Item Number Column.** Item numbers appear in the order checks and services must be done for the interval listed. Numbers in this column are also for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault.

### 7-3. EXPLANATION OF PMCS TABLE ENTRIES (CONT).

**b. Interval Column.** This column tells you when you must perform the procedure in the procedure column.

- Perform the “Before” CHECKS prior to using the equipment.
- Perform the “During” CHECKS during the time you are using the equipment.
- Perform the “After” CHECKS after you have used the equipment.

**c. Location Check/Service Column.** This column provides the location and the item to be checked or serviced.

**d. Procedure Column.** This column gives the procedure you must perform to check or service the item listed in the Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must perform the procedure at the time stated in the interval column.

**e. Not Fully Mission Capable If: Column.** Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you experience check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the flatrack or reporting equipment failure.

**f. Other Table Entries.** Be sure to observe all special information and notes that appear in your table.

### 7-4. ROUTING DIAGRAM.

Figure 7-1 is a routing diagram showing the path to use around the flatrack during PMCS. Perform PMCS in the same order and following the same route each time.

### 7-5. INTERVAL GROUPINGS.

Operator PMCS for the flatrack will not go beyond a weekly interval.

### 7-6. LUBRICATION INSTRUCTIONS.

Perform all lubrication requirements in accordance with Appendix K.

### 7-7. SHORTENED INTERVALS.

When check and service intervals are shortened because of unusual conditions, an asterisk (\*) will precede the interval. A footnote will explain the asterisk and the reason for the interval.



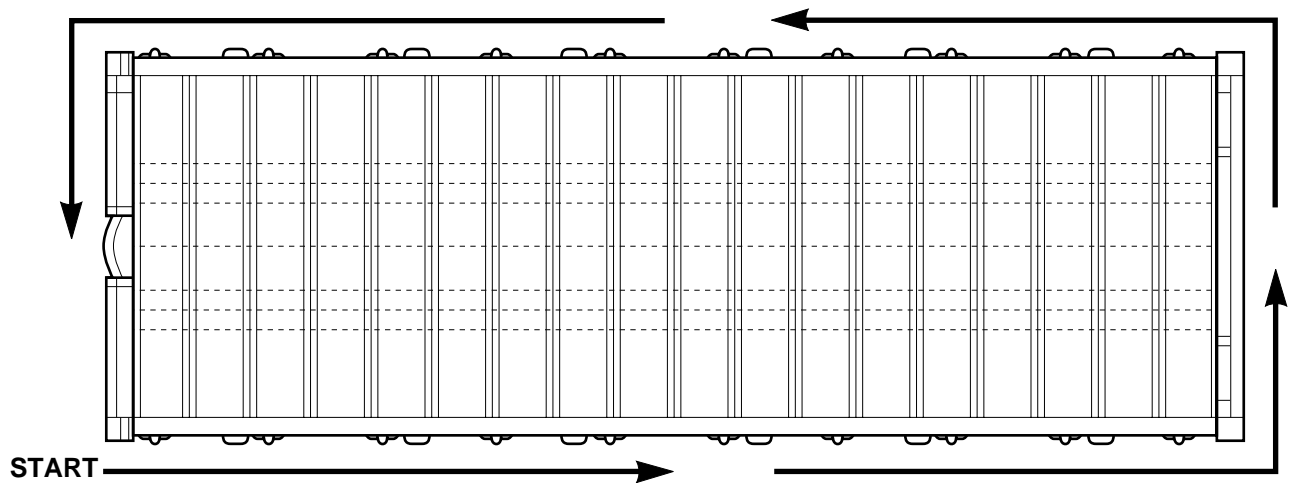
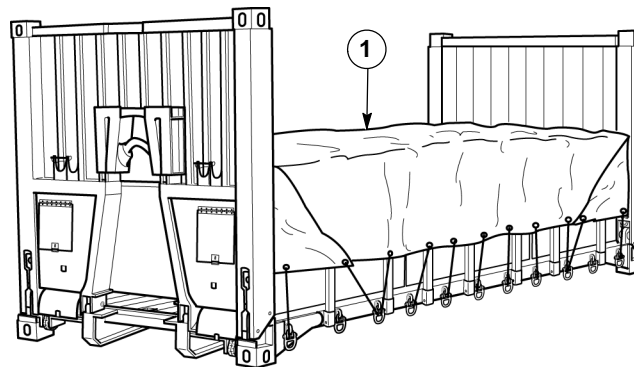


Figure 7-1. PMCS Walk-Around

Table 7-1. Operator's Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
1	Before	Flatrack	Have qualified unit inspector perform a preload inspection in accordance with Para 9-11 to ensure flatrack is structurally serviceable prior to loading.	Flatrack does not pass preload inspection.
2	During	Cargo tarp; tiedown straps (if equipped).	Shortly after starting a mission and after driving over rough terrain, stop driving, get out and ensure cargo tarp (1) or tiedown straps are not damaged. Ensure cargo has not shifted. Tighten straps if required.	Tiedown straps are damaged and allow cargo to move. Insufficient straps to complete the mission.



**NOTE**

Perform Items No. 2 through 7 whether sideboard kit, cargo tarp and tiedown straps will or will not be used during the next mission.

**Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued**

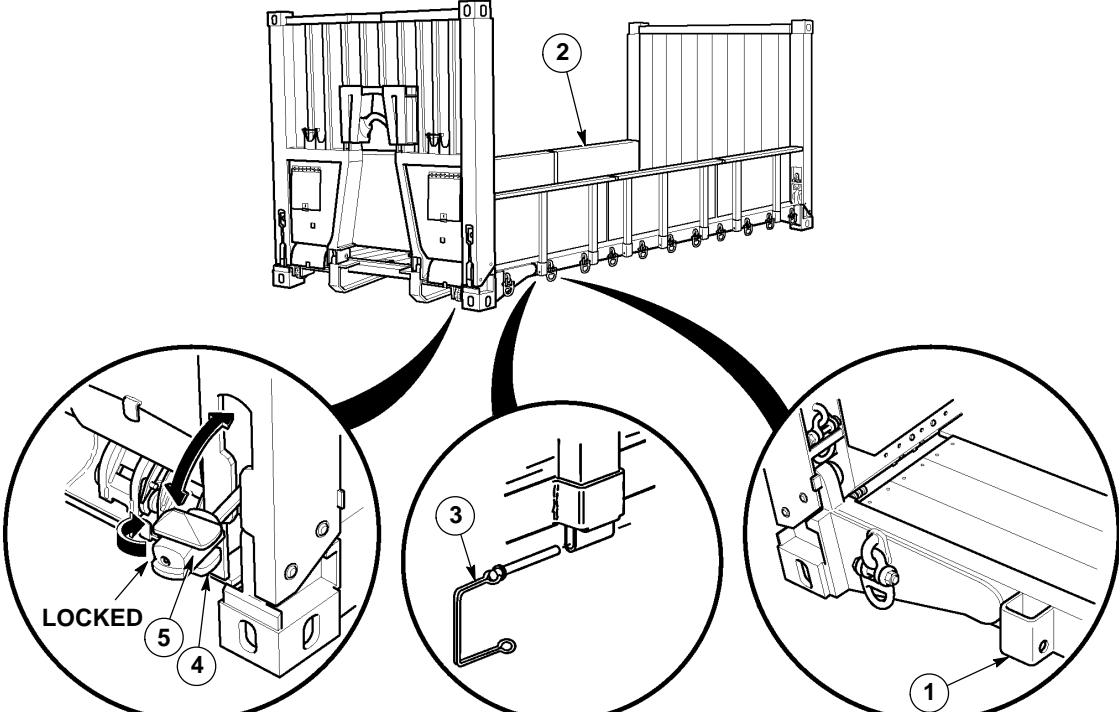
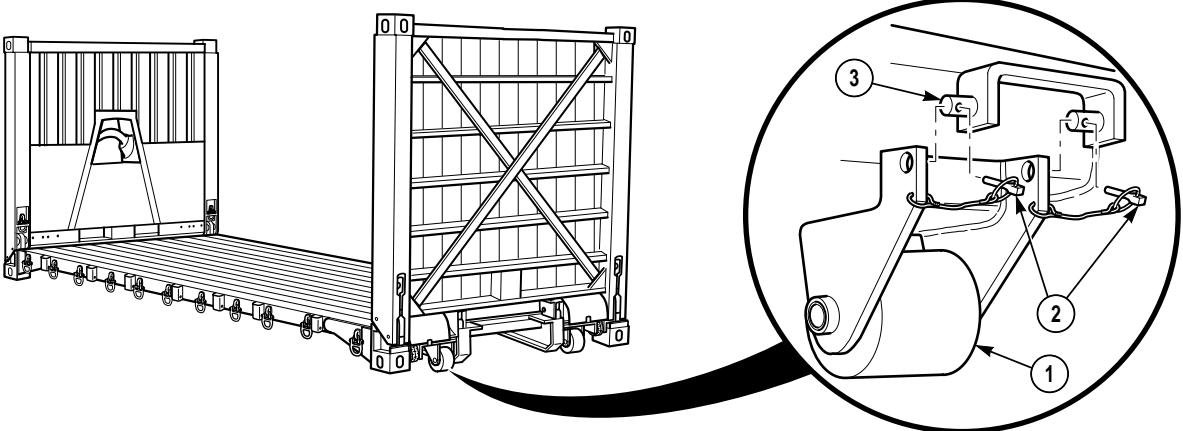
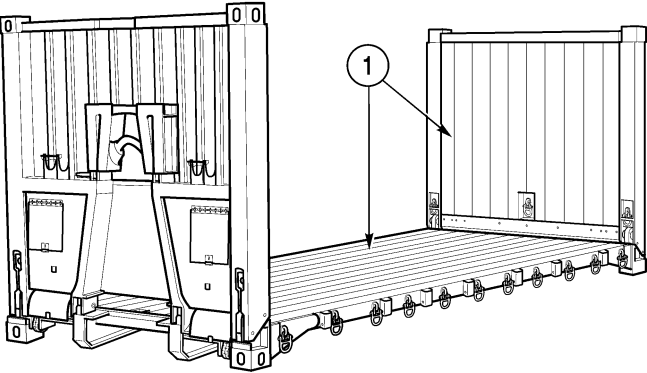
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
3	After	Sideboard pockets.	Visually inspect pockets (1) for corrosion, dirt, oil and damage. Clean equipment as required. Refer to TM 9-247.	
4	After	Sideboards (if equipped).	Ensure that all sideboards (2) properly fit in pockets.	Not all sideboards can be installed in pockets.
5	After	Sideboard retaining clips.	Ensure that all sideboard retaining clips (3) are not damaged or missing.	
<b>NOTE</b>				
Sliding handle may be used from Basic Issue Items (BII) to rotate twist lock.				
6	After	Twist locks	a. Rotate locking handle (4) 90 degrees in either direction. b. Rotate twist lock (5) backwards from stowage position. c. Inspect twist lock (5) for damage or corrosion. d. Rotate twist lock (5) into stowage position. e. Rotate locking handle (4) 90 degrees to lock twist lock into stowage position.	Either twist lock damaged or will not rotate.

Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
<p><b>WARNING</b></p>				
<p>Roller must be supported while removing retaining pins or roller may drop causing injury to personnel.</p>				
<p><b>NOTE</b></p>				
<p>Flatrack must be on truck prior to performing Item No. 7.</p>				
7	After	Two rollers	<p>a. Hold roller (1) in place. Remove two safety pins (2) from retaining pins (3). Lift roller (1) out far enough to ensure it is removable, then push back in and install safety pins. Perform same with other roller.</p> <p>b. Ensure that roller (1) will rotate.</p>	Either roller does not function correctly.
				
8	After	Wooden flooring	Inspect wooden flooring (1) on flatrack floor and rear wall for missing or damaged boards.	Any boards are missing or broken.

**Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued**

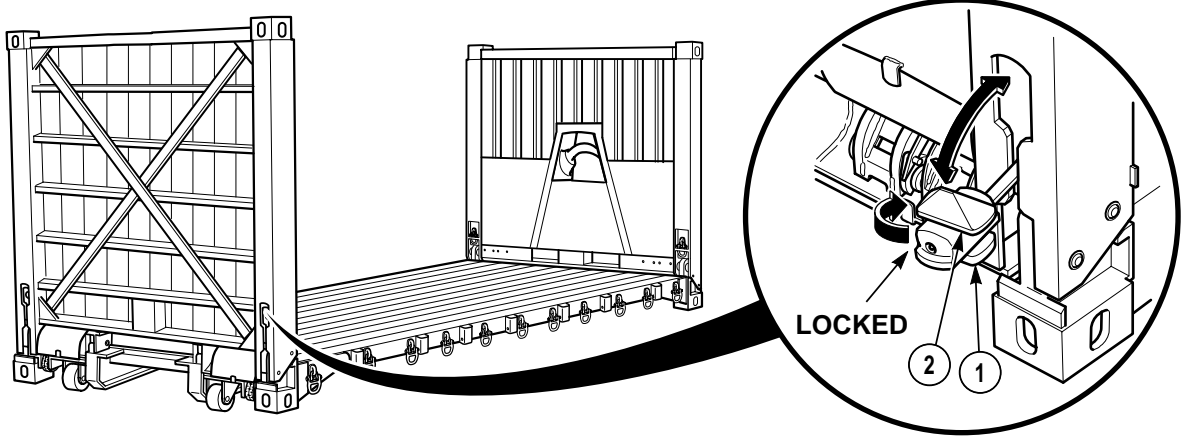
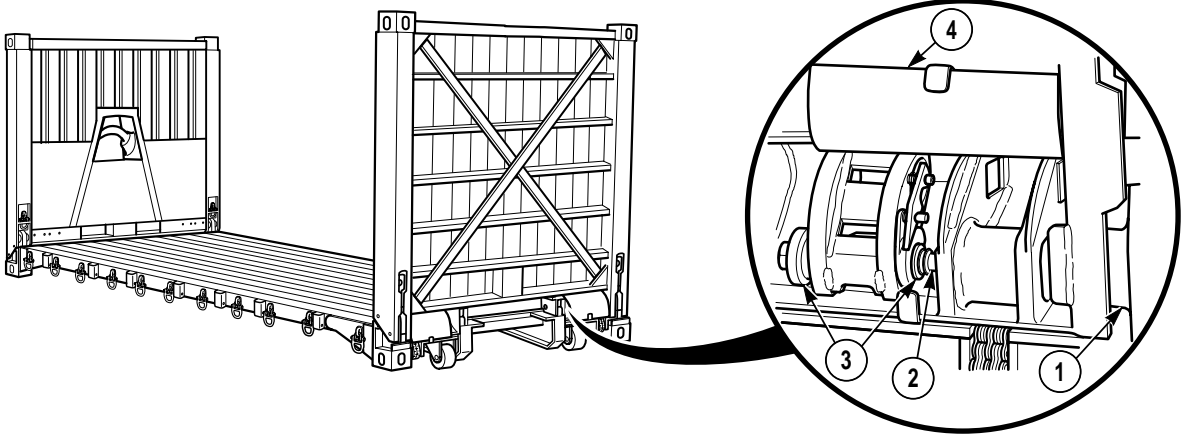
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
<p><b>NOTE</b></p> <p>Sliding handle may be used from Basic Issue Items (BII) to rotate twist lock.</p>				
9	After	Twist locks	<ol style="list-style-type: none"> <li>a. Rotate locking handle (1) 90 degrees in either direction.</li> <li>b. Rotate twist lock (2) backwards from stowage position.</li> <li>c. Inspect twist lock (2) for damage or corrosion.</li> <li>d. Rotate twist lock (2) into stowage position.</li> <li>e. Rotate locking handle (1) 90 degrees to lock twist lock into stowage position.</li> </ol>	Either twist lock damaged or will not rotate.

Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
<div style="border: 2px solid black; padding: 5px; display: inline-block;"><b>WARNING</b></div>				
<p>Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use an assistant when raising or lowering the rear wall to prevent serious injury or death to personnel.</p>				
10	After	Rear wall hinges	Inspect rear wall hinges (1) for damage or corrosion.	Any hinge is cracked or has damage that would impair operation.
11	After	Rear wall hinge pins	Inspect for missing or damaged hinge pins (2).	Any pin is cracked or missing or has damage that would impair operation.
12	After	Pin assemblies	Inspect pin assemblies (3) for damage or corrosion. If pin assemblies are corroded or do not operate freely, notify Unit Maintenance.	Any pin assembly is missing or has damage that would impair operation.
13	After	Mud flaps	Inspect for missing or damaged mud flaps (4).	

**Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued**

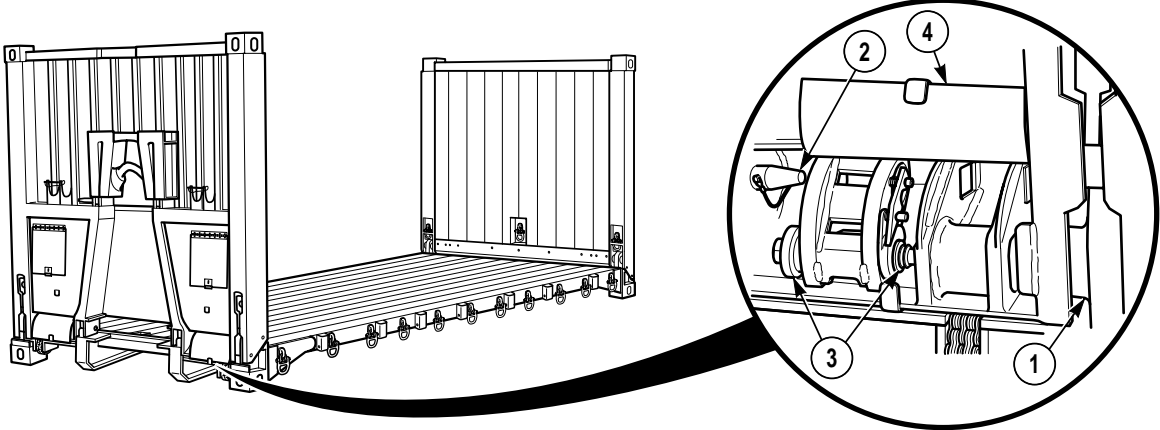
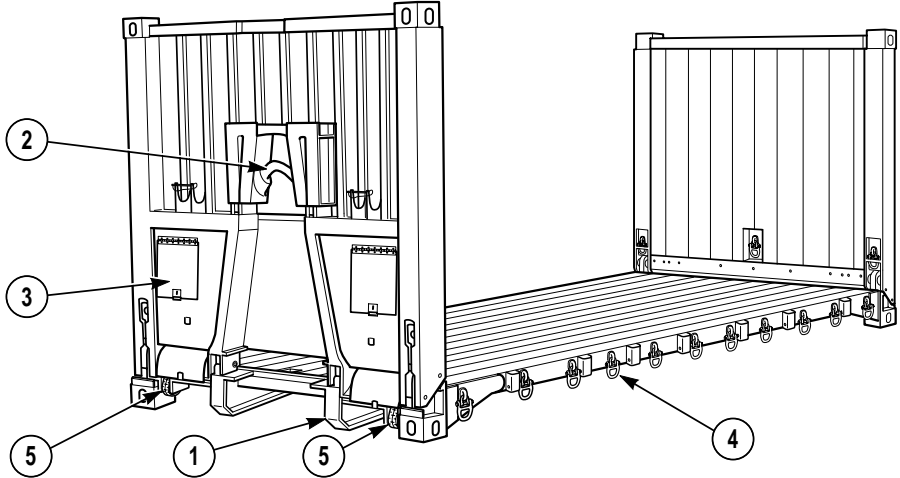
Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
<div style="border: 2px solid black; padding: 5px; width: fit-content; margin: 0 auto;"><b>WARNING</b></div> <p>Front wall weighs 1,500 lbs (681 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the front wall to prevent serious injury or death to personnel.</p>				
14	After	Front wall hinges	Inspect front wall hinges (1) for damage or corrosion.	Any hinge is cracked or has damage that would impair operation.
15	After	Front wall hinge pins	Inspect for missing or damaged hinge pins (2).	Any pin is cracked or missing or has damage that would impair operation.
16	After	Pin assemblies	Inspect pin assemblies (3) for damage or corrosion. If pin assemblies are corroded or do not operate freely, notify Unit Maintenance.	Any pin assembly is missing or has damage that would impair operation.
17	After	Mud flaps	Inspect for missing or damaged mud flaps (4).	

Table 7-1. Operator's Preventive Maintenance Checks and Services - Continued

Item No.	Interval	Location Item to Check/Service	Procedure	Not Fully Mission Capable If:
				
18	After	Flattrack rails	Ensure both ends of rails (1) are undamaged and clean.	One or both rails are damaged and will not fit on truck or trailer.
<div style="border: 2px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;"><b>WARNING</b></div> <p>Hook bar may have metal slivers or sharp edges. Wear gloves if handling or injury to personnel could result.</p>				
19	After	Hook bar	Check hook bar (2) for cracks or bent bar.	Hook bar has cracks or is bent.
20	After	Ratchet straps	Check quantity and condition of ratchet straps. Twenty-two ratchet straps are located in stowage boxes.	Missing or damaged ratchet straps.
21	After	Stowage boxes	Ensure door (3), hinges and fasteners are not damaged.	
22	After	Tiedown rings	Ensure all tiedown rings (4) can be moved up and down and are not damaged.	
23	After	Rollers, pulleys and chains	Ensure rollers, pulleys and chains (5) are not damaged.	Rollers, pulleys or chains have damage that would impair operation.

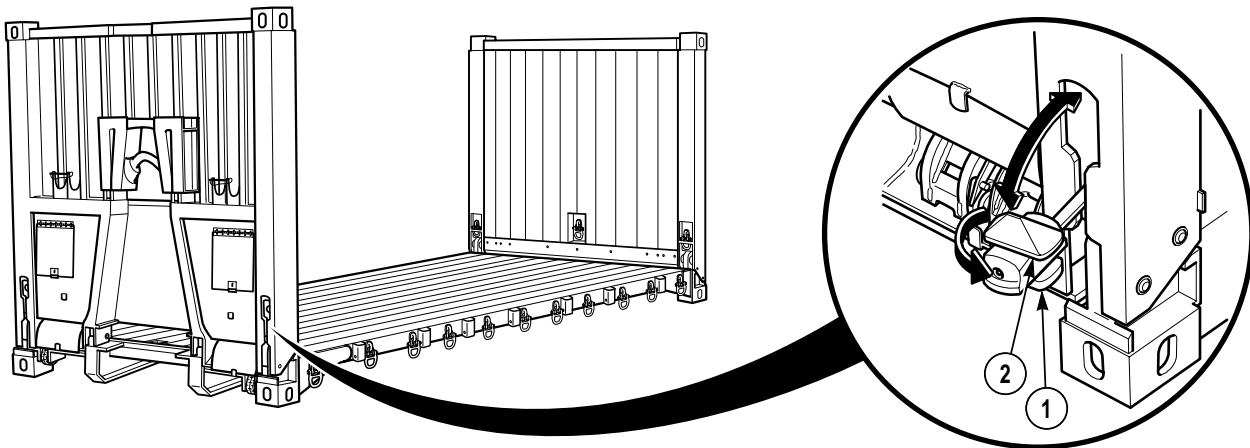
## Section II. OPERATION UNDER USUAL CONDITIONS

### 7-8. ASSEMBLY AND PREPARATION FOR USE.

- a. Unpacking.** Refer to Para 9-4, Unpacking and Packing, for unpacking instructions.
- b. Assembly and Installation.** Refer to Chapter 9, Loose Parts Installation, for assembly and installation instructions, including removal of rollers from stowage points. Refer to Sideboard Kit and Cargo Tarp Installation and Removal Instructions, Paras 7-11 and 7-12 if sideboards, straps and cargo tarp must be installed.

### 7-9. UNLOCK AND LOCK TWIST LOCKS.

- a. Unlock Twist Locks.**



#### NOTE

- Sliding handle may be used from Basic Issue Items (BII) to rotate twist lock.
- Right and left pin assemblies are operated the same way. Front and rear pin assemblies are operated the same way. Left front shown.

- (1) Rotate locking handle (1) of twist lock (2) approximately 1/8 turn in either direction.
- (2) Rotate twist lock (2) backwards from stowage position.

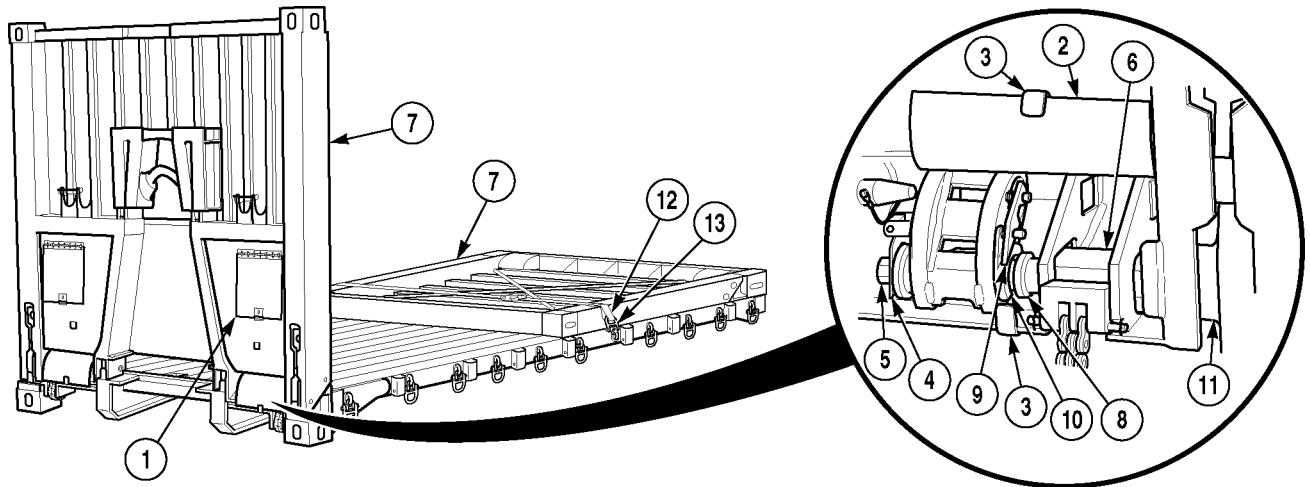
- b. Lock Twist Locks.**

- (1) Rotate twist lock (2) into stowage position.
- (2) Rotate locking handle (1) of twist lock approximately 1/8 turn in either direction to lock twist lock in stowage position.



## 7-10. LOWER AND RAISE FRONT AND REAR WALL.

### a. Lower Wall.



### WARNING

Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the front or rear wall to prevent serious injury or death to personnel.

### NOTE

- Front and rear walls are lowered and raised the same way. Front wall is shown.
- Right and left pin assemblies are removed the same way. Front left shown.
- Perform Step (1) for front wall only.

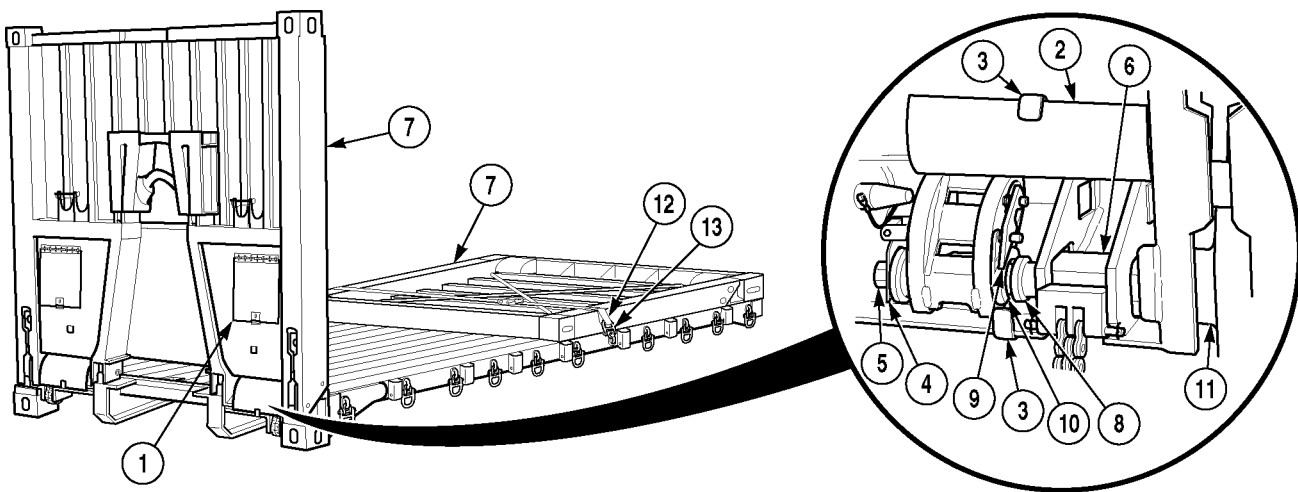
- (1) Install rollers in front wall (Para 8-4).
- (2) Remove handle, socket and two ratchet straps from stowage box (1).
- (3) Position mud flap (2) in upper clip (3).
- (4) Raise pin lock (4) from adjusting nut (5).
- (5) Turn adjusting nut (5) counterclockwise to loosen pin (6) in wall (7) until collar (8) contacts pin (6).

### CAUTION

- Ensure pin is slid completely out of hinge or damage to equipment will occur when wall is lowered.
  - Ensure wall mounted tiedown rings and other equipment are properly stowed prior to lowering wall or damage to equipment could result.
- (6) Lift safety catch (9) and collar (10) and slide pin (6) out of hinge (11).
  - (7) Repeat Steps (2) through (5) to release remaining pin (6).
  - (8) Stow handle and socket in stowage box (1).
  - (9) Position mud flap (2) in lower clip (3).
  - (10) With the aid of an assistant, lower wall (7).
  - (11) Install ratchet strap (12) on two tiedown rings (13) and wall (7).

**7-10. LOWER AND RAISE FRONT AND REAR WALL (CONT).**

**b. Raise Wall.**



**WARNING**

Wall may raise abruptly when ratchet strap is released. Ensure personnel are clear of wall when releasing ratchet strap. Failure to comply may result in serious injury or death.

- (1) Remove ratchet strap (12) from two tiedown rings (13) and wall (7).
- (2) Remove mud flap (2) from lower clip (3) and position in upper clip.
- (3) Remove handle and socket from stowage box (1).

**WARNING**

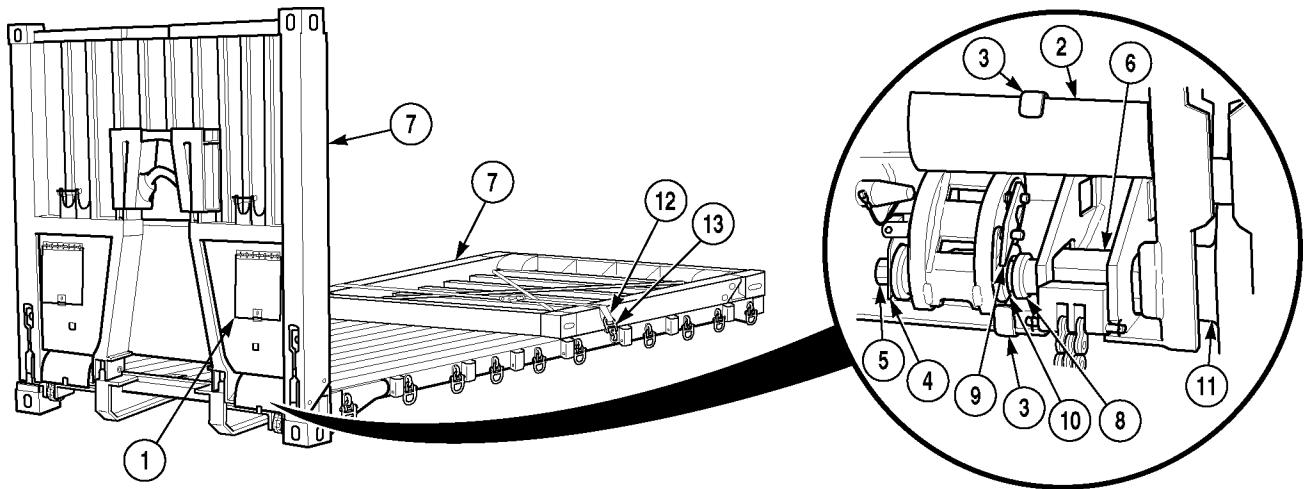
- Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the front or rear wall to prevent serious injury or death to personnel.
- Wall raises very quickly. Ensure personnel do not hold onto wall when raising. Failure to comply may result in serious injury or death to personnel.

**CAUTION**

Ensure pins are positioned completely out of hinge or damage to equipment will occur when wall is raised.

**NOTE**

- Front and rear walls are lowered and raised in the same way. Front wall is shown.
  - Ensure twist locks are in stowed position prior to raising wall.
- (4) With the aid of an assistant, raise wall (7).



**NOTE**

- Pin may need to be lifted slightly to position into alignment slots.
  - Ensure flat sides of pin align with flat sides of alignment slots.
- (5) Lift safety catch (9) and collar (10) and slide pin (6) towards hinge (11) until safety catch and collar fit securely over pin.
  - (6) Secure safety catch (9) and collar (10) over pin (6).

**CAUTION**

Ensure area is free of dirt and debris where pin is installed. Failure to comply will result in pin being hard to install and damage to equipment.

- (7) Tighten adjusting nut (5) until end of pin (6) is approximately even with outside edge of wall (7).

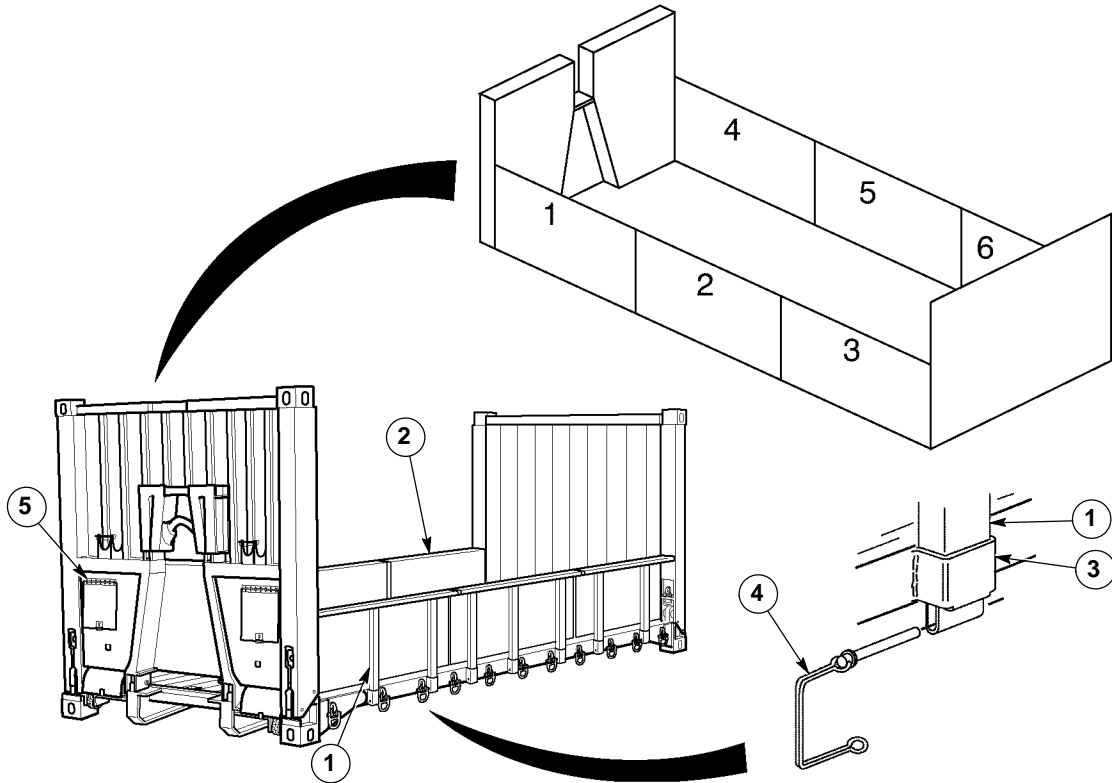
**NOTE**

Adjusting nut may have to be adjusted slightly for pin lock to lock properly over adjusting nut.

- (8) Install lock pin (4) over adjusting nut (5).
- (9) Position mud flap (2) in lower clip (3).
- (10) Repeat Steps (5) through (9) to install remaining pin (6).
- (11) Stow handle, socket and two ratchet straps in stowage box (1).

**7-11. SIDEBOARD KIT.**

**a. Installation.**



**CAUTION**

Sideboards and straps secure load to flatrack. Install sideboards and straps to flatrack before trying to move load or damage to equipment or load may result.

**NOTE**

Refer to illustration for correct panel location.

- (1) Line up stakes (1) of sideboard sections (2) with sideboard pockets (3) on flatrack. Push sideboard sections down until seated in pockets.
- (2) Anchor sideboard sections (2) to sideboard pockets (3) with retaining clips (4).
- (3) Install tiedown straps to cargo.

**b. Removal.**

- (1) Remove tiedown straps from cargo and stow in stowage box (5).
- (2) Remove retaining clips (4) from sideboard pockets (3) and stakes (1).
- (3) Lift sideboard sections (2) out of sideboard pockets (3).

## 7-12. CARGO TARP INSTALLATION AND REMOVAL INSTRUCTIONS.

This task covers:

a. Installation

b. Removal

c. Follow-On Maintenance

### INITIAL SETUP

#### *Tools and Special Tools*

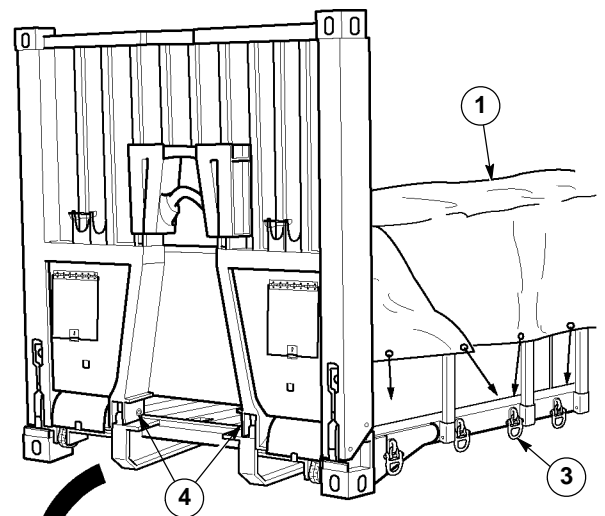
Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

#### *Equipment Condition*

Sideboards installed (Para 7-11)

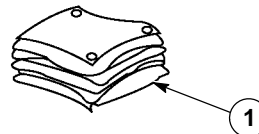
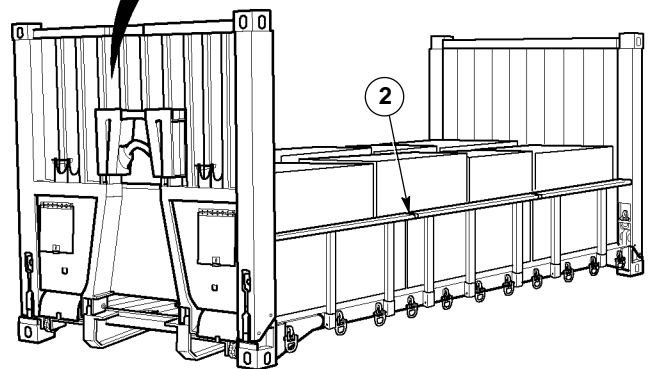
#### **a. Installation.**

- (1) Remove cargo tarp (1) from stowage location.
- (2) Place cargo tarp (1) on top of cargo on right rear corner.
- (3) Unfold all four sides, positioning cargo tarp on the sideboards (2).
- (4) Secure the side and rear tiedown ropes to flatrack tiedown rings (3).
- (5) Secure front tiedown ropes to flatrack tiedown rings (4).
- (6) Check and tighten all tiedown ropes to ensure cargo tarp (1) is stretched tightly over cargo and does not flag or flap during transport.



#### **b. Removal.**

- (1) Remove all tiedown ropes of cargo tarp (1) from flatrack tiedown rings (3) and (4).
- (2) Lift left side of cargo tarp (1) and pull over top. Lift right side of cargo tarp and pull over top. Lift front of cargo tarp and pull over top. Lift rear of cargo tarp and pull over top. Stow all tiedown ropes inside of cargo tarp.
- (3) Fold cargo tarp (1) toward rear. Ensure all tiedown ropes are inside of cargo tarp (1).
- (4) Fold cargo tarp (1) from left to right until completely folded.
- (5) Return cargo tarp (1) to stowage location.



#### **c. Follow-On Maintenance.**

- Remove sideboards, (Para 7-11).

**END OF TASK**

**7-13. NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES.**

Refer to FM 3-5, Chemical, Biological, and Radiological Decontamination, for CBR instructions.

**7-14. LOADING SINGLE FLATRACK ON PLS TRUCK OR TRAILER.**

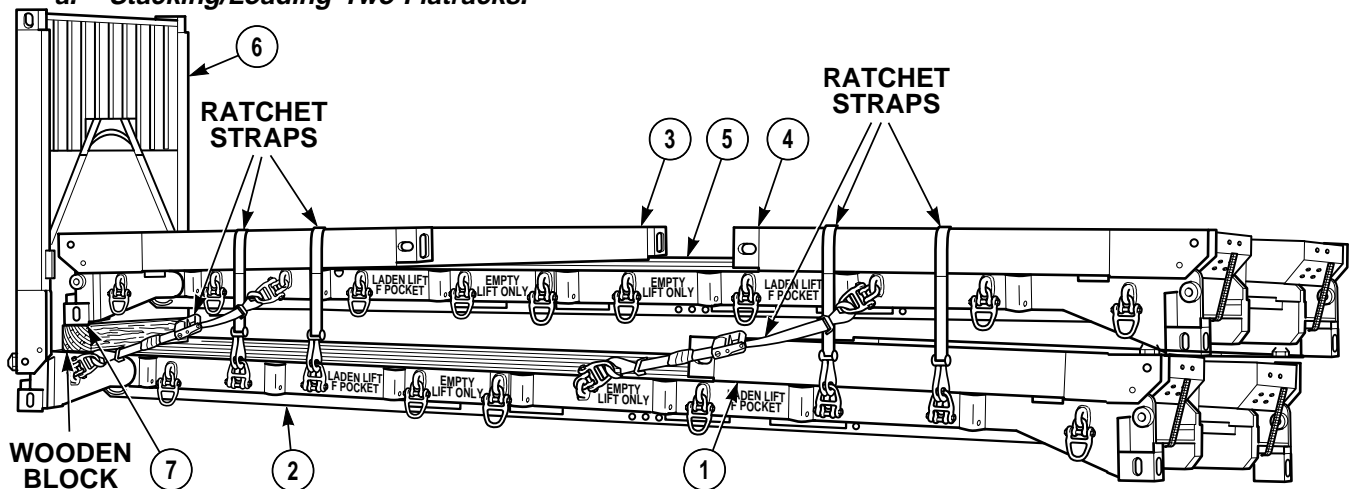
**CAUTION**

For loading and transport of single loaded or unloaded flatracks on truck or trailer, the walls must be in the raised position. Failure to follow this procedure could cause damage to equipment.

Refer to TM 9-2320-364-10 for procedures to load and unload the flatrack to truck or trailer using the Load Handling System (LHS).

**7-15. STACKING/LOADING TWO FLATRACKS ON PLS TRUCK OR TRAILER.**

**a. Stacking/Loading Two Flatracks.**



- (1) Remove ratchet straps from stowage box.
- (2) Refer to Para 7-10 and fold down rear wall (1) of lower flatrack (2).
- (3) Refer to Para 7-10 and fold down front wall (3) and rear wall (4) of upper flatrack (5).
- (4) Install wooden block, 8 by 8 by 96 in. (20 by 20 by 244 cm) (Appendix G) against raised front wall (6) of lower flatrack (2).

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Use a suitable lifting device or forklift to lift flatrack. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the lowest flatrack.
  - Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- (5) Using a lifting device, position upper flatrack (5) over lower flatrack (2) so that front ISO corner castings (7) of upper flatrack (5) are aligned over wooden block and the sides of both flatracks are evenly aligned.

**CAUTION**

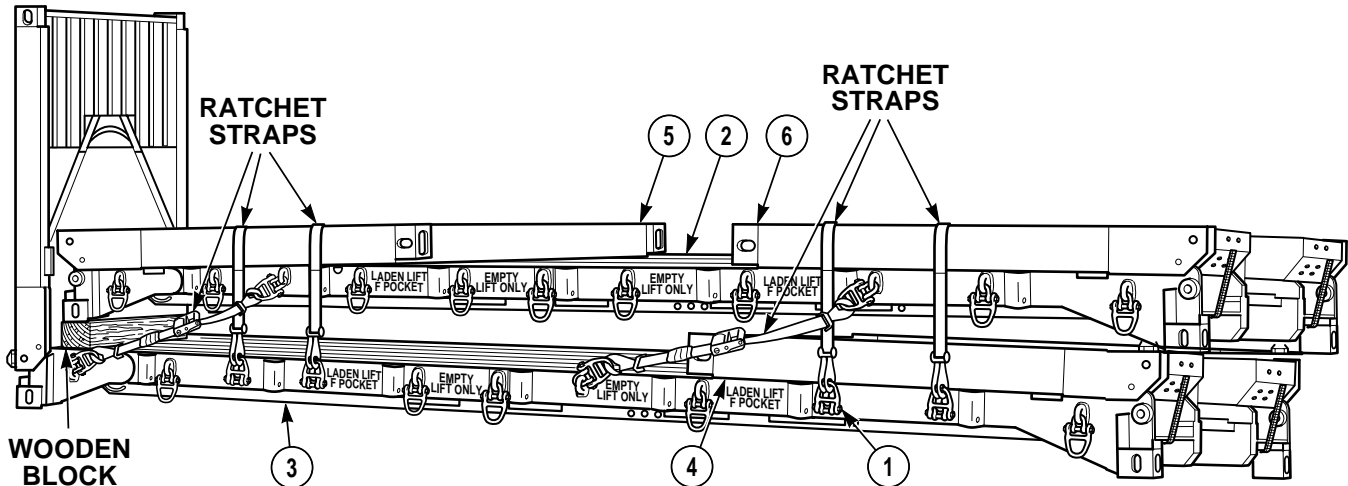
Ensure ratchet straps are attached to tiedown rings in the exact position shown. Failure to comply could result in flatrack sliding backwards resulting in damage to equipment.

**NOTE**

- Four ratchet straps are positioned over top flatrack and secured to lower flatrack tiedown rings. Four ratchet straps are attached to upper and lower flatrack tiedown rings.
- (6) Attach eight ratchet straps to both sides of lower and upper flatrack (2) and (5).
  - (7) Tighten ratchet straps to secure upper flatrack (5) to lower flatrack (2). Tie off excess strap.
  - (8) Refer to TM 9-2320-364-10 and load flatracks to truck or trailer using Load Handling System (LHS).

**7-15. STACKING/LOADING TWO FLATRACKS ON PLS TRUCK OR TRAILER (CONT).**

**b. Unstacking/Unloading Two Flatracks.**



- (1) Refer to TM 9-2320-364-10 to unload flatracks using the LHS.
- (2) Remove eight ratchet straps from tiedown rings (1) and stow in stowage box.

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Use a suitable lifting device or forklift to lift flatrack. Failure to comply may result in injury or death to personnel.

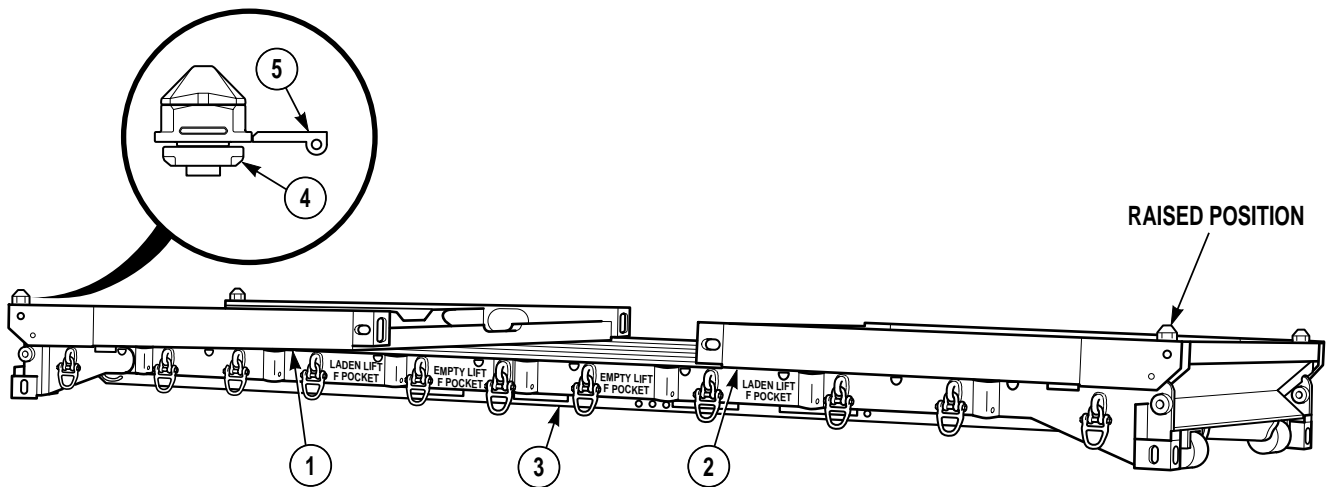
**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the lowest flatrack.
  - Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- (3) Using a lifting device, remove upper flatrack (2) from lower flatrack (3).
  - (4) Remove wooden block from lower flatrack (3).
  - (5) Refer to Para 7-10 and raise rear wall (4) of lower flatrack (3).
  - (6) Refer to Para 7-10 and raise front wall (5) and rear wall (6) of upper flatrack (2).



**7-16. STACKING/LOADING THREE FLATRACKS ON PLS TRUCK OR TRAILER.**

**a. Stacking/Loading Three Flatracks.**



**WARNING**

Flatracks must be empty when stacked. Attempting to stack loaded flatracks could cause serious injury or death to personnel.

**CAUTION**

Only three flatracks may be stacked and loaded on the PLS truck and trailer using the Load Handling System and a M1077 flatrack. Failure to comply may cause damage to equipment.

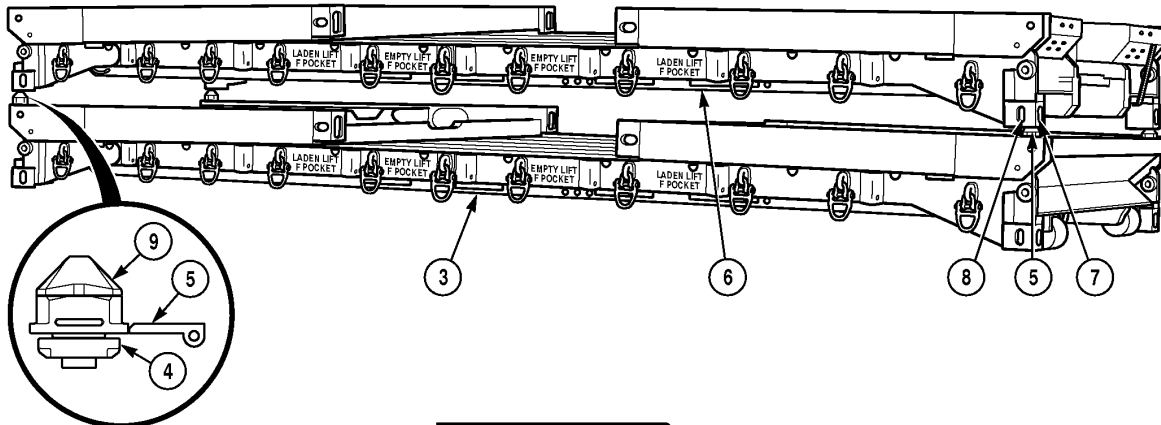
- (1) Refer to Para 8-4 and remove rollers from three flatracks to be stacked.
- (2) Refer to Para 7-10 and lower front and rear walls (1) and (2) of flatrack (3).

**NOTE**

Sliding handle from stowage box may be used if locking handle is difficult to turn.

- (3) On lower flatrack (3), rotate locking handle (4) of four twist locks (5) 45 degrees.
- (4) Rotate twist locks (5) back to the raised position.
- (5) Rotate locking handle (4) of four twist locks (5) 45 degrees.

**7-16. STACKING/LOADING THREE FLATRACKS ON PLS TRUCK OR TRAILER (CONT.)**



**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Use a suitable lifting device or forklift to lift flatrack. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the lowest flatrack.
  - Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- (6) With the aid of two assistants and using a lifting device, position upper flatrack (6) over lower flatrack (3) so that ISO corner castings (7) are aligned over the raised twist locks (5) of lower flatrack (3).

**CAUTION**

When stacking flatracks, ensure that twist locks of lower flatracks are aligned with ISO corner castings of upper flatracks. Failure to align twist locks and ISO corner castings could cause damage to equipment.

- (7) Lower upper flatrack (6) onto lower flatrack (3).

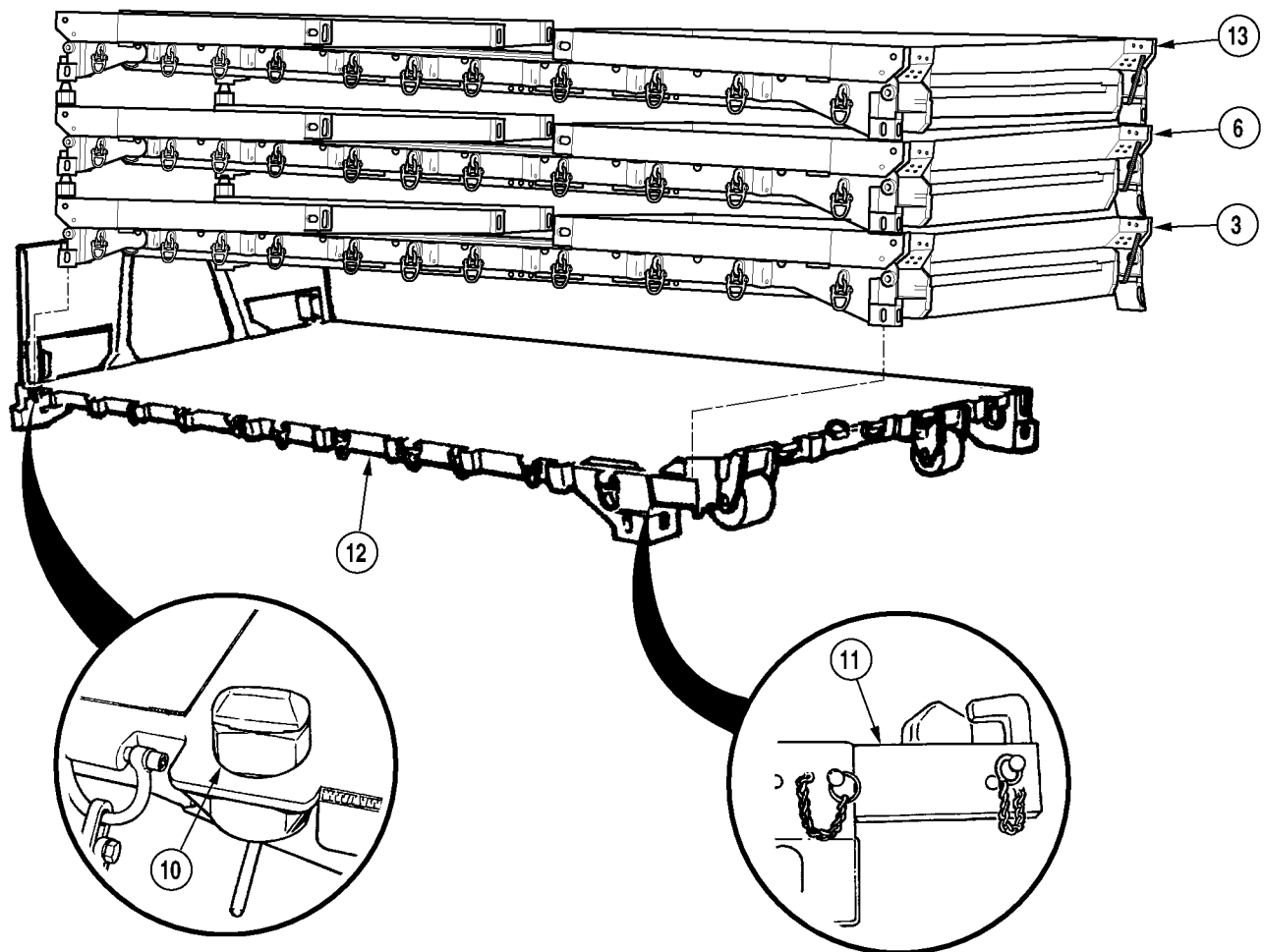
**WARNING**

Twist locks must be completely locked in place. Ensure that twist locks have snapped fully into place. Failure to completely lock twist locks could cause serious injury or death to personnel.

**NOTE**

Sliding handle from stowage box may be used if locking handle is difficult to turn.

- (8) Reach through openings (8) of ISO corner castings (7) of upper flatrack (6) and rotate locking handles (4) of four twist locks (5) 45 degrees in either direction to lock both flatracks together.
- (9) Visually inspect four twist locks (5) to ensure that stems (9) have engaged ISO corner castings (7) of upper flatrack (6).
- (10) Repeat Steps (1) through (9) for stacking the third (top) flatrack.



- (11) Refer to Para 2-7 and unlock front ISO locks (10) and rear ISO locks (11) on M1077 flatrack (12).

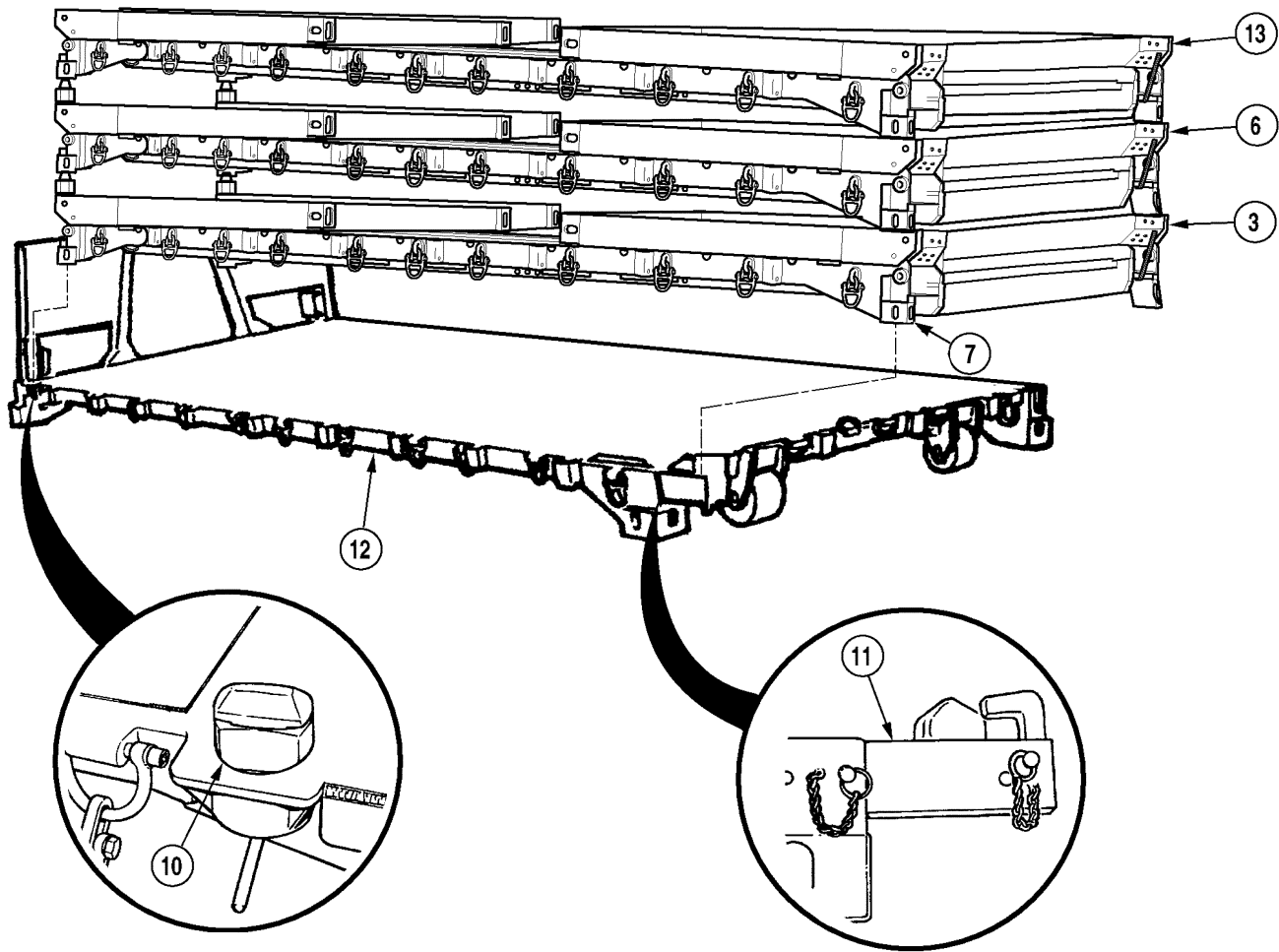
**WARNING**

Three M1 flatracks stacked together weigh 21,900 lbs (9,934 kg). Use suitable forklift to lift flatracks. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the bottom flatrack.
  - Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- (12) With the aid of an assistant and using a suitable forklift, position three flatracks (3), (6) and (13) over M1077 flatrack (12).

**7-16. STACKING/LOADING THREE FLATRACKS ON PLS TRUCK OR TRAILER (CONT).**

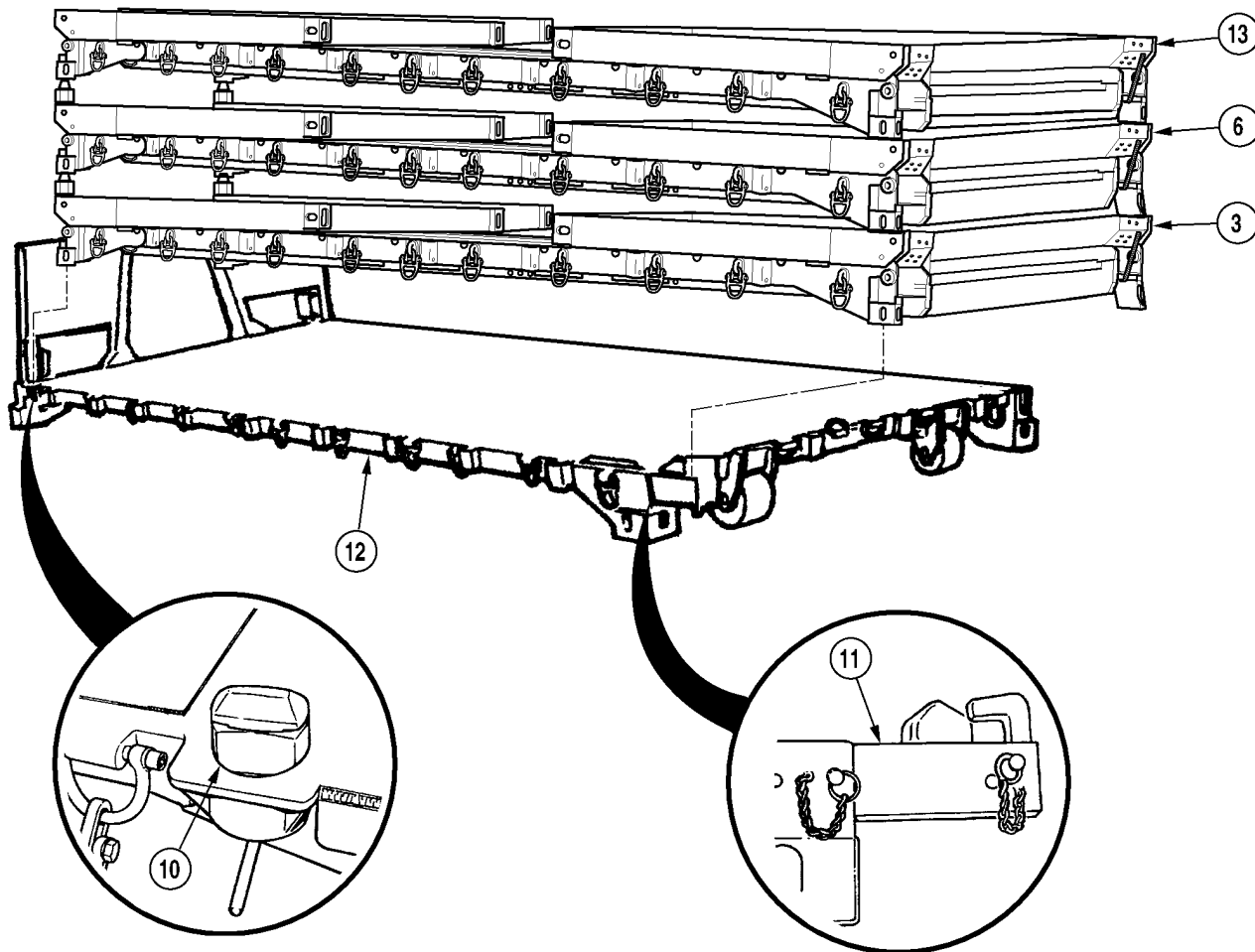


**CAUTION**

- Ensure flatrack locks are free of snow, dirt and debris prior to lowering flatrack or proper locking will not occur.
- When stacking flatracks, ensure that twist locks of lower flatracks are aligned with ISO corner castings of upper flatracks. Failure to align twist locks and ISO corner castings could cause damage to equipment.

- (13) Align ISO corner castings (7) on flatrack (3) with ISO locks (10) and (11) on M1077 flatrack (12). Lower flatracks (3), (6) and (13) on M1077 flatrack (12).
- (14) Refer to Para 2-7 and lock front ISO locks (10) and rear ISO locks (11) on M1077 flatrack (12) to flatrack (3).
- (15) Refer to TM 9-2320-364-10 and load M1077 flatrack (12) with three flatracks (3), (6) and (13) to PLS truck or trailer using LHS.

**b. Unstacking/Unloading Three Flatracks.**



- (1) Refer to TM 9-2320-364-10 and unload M1077 flatrack (12) with three flatracks (3), (6) and (13) from PLS truck or trailer using the LHS.
- (2) Refer to Para 2-7 and unlock front ISO locks (10) and rear ISO locks (11) on M1077 flatrack (12) from flatrack (3).

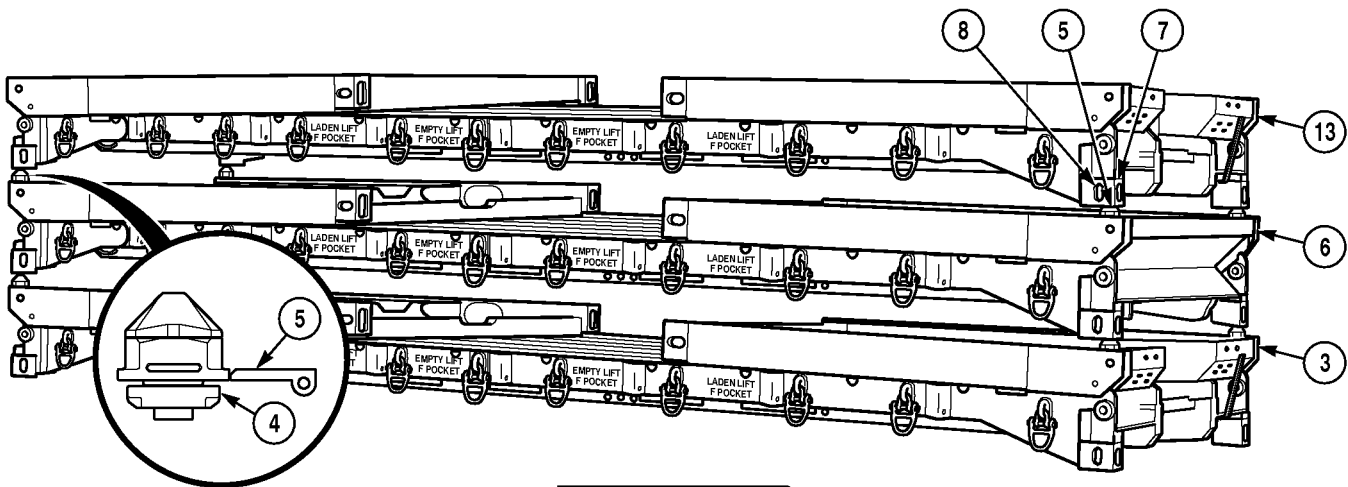
**WARNING**

Three M1 flatracks stacked together weigh 21,900 lbs. (9,934 kg). Use suitable forklift to lift flatracks. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the bottom flatrack.
  - Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- (3) With the aid of an assistant and using a suitable forklift, remove three flatracks (3), (6) and (13) from M1077 flatrack (12).
  - (4) Refer to Para 2-7 and lock ISO locks (10) and (11) on M1077 flatrack (12).

**7-16. STACKING/LOADING THREE FLATRACKS ON PLS TRUCK OR TRAILER (CONT).**



**WARNING**

During unstacking operations, unlock the twist locks on only one flatrack at a time. Do not attempt to unload multiple flatracks that are unlocked. For example, it is permissible to remove up to two flatracks at a time, however, both flatracks must be locked together. Failure to follow this procedure may cause flatracks to fall causing serious injury or death to personnel.

**NOTE**

Sliding handle from stowage box may be used if locking handle is difficult to turn.

- (5) Reach through openings (8) of ISO corner casting (7) of top flatrack (13) and turn locking handles (4) of twist locks (5) 90 degrees to release top flatrack.

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Use a suitable lifting device or forklift to lift flatrack. Failure to comply may result in injury or death to personnel.

**CAUTION**

- Flatracks have two sets of forklift pockets. If lifting one empty flatrack, use the inside set of forklift pockets. If lifting a loaded flatrack or lifting multiple stacked empty flatracks, use the outside set of forklift pockets. Always use the forklift pockets of the bottom flatrack.
- Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.

- (6) Using a lifting device, lift upper flatrack (13) from center flatrack (6).
- (7) Repeat Steps (5) and (6) to remove center flatrack (6) from lower flatrack (3).
- (8) Rotate twist locks (5) forward into their stowed positions.
- (9) Rotate locking handles (4) of twist locks (5) 90 degrees in either direction to lock twist locks in stowage position.
- (10) Repeat Step (9) to return all twist locks (5) to stowage position.

**7-17. STACKING/UNSTACKING LOADED FLATRACKS.**

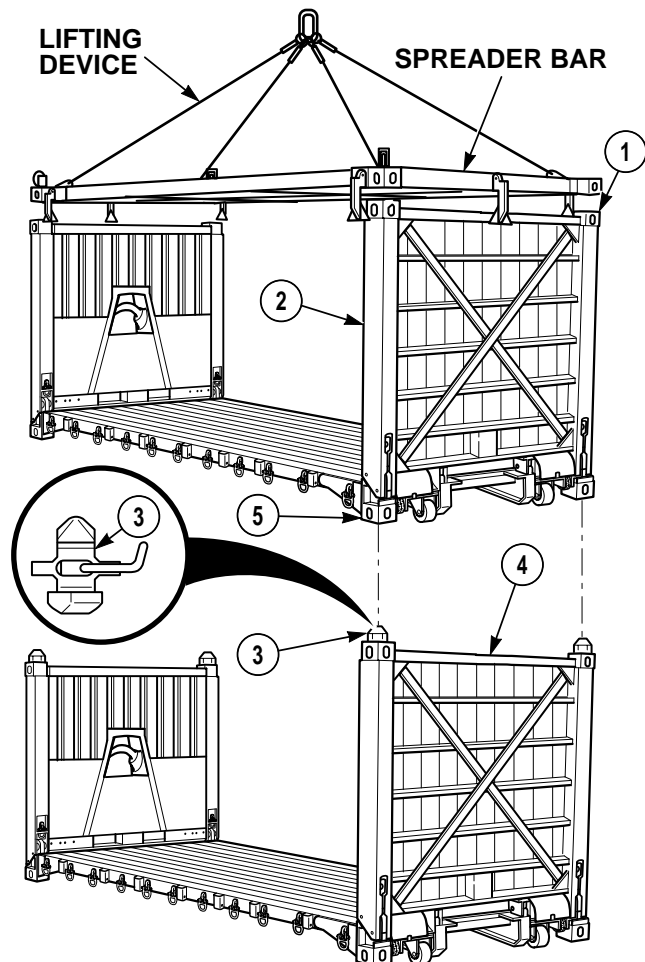
**a. Stacking.**

**WARNING**

- Flatracks are designed to be stacked in a loaded condition up to nine high using shipboard double twist locks. Stacking more than nine flatracks could cause damage to equipment and serious injury or death to personnel.
- Flatrack and load weighs up to 38,500 lbs (17,479 kg). Flatrack and load, including sideboards and tarp, loaded on PLS truck or trailer must not exceed 36,600 lbs (16,616 kg). Attach suitable lifting device to avoid serious injury or death to personnel.

**NOTE**

Double twist locks are not in Basic Issue Items (BII) of the flatrack. These devices are provided on board shipping vessels.



- (1) Attach lifting device and spreader bar to four upper ISO corner castings (1) of upper flatrack (2).
- (2) Position four double twist locks (3) in upper ISO corner castings (1) of lower flatrack (4).
- (3) Raise flatrack and align lower ISO corner castings (5) of upper flatrack (2) over upper ISO corner castings (1) and double twist locks (3) of lower flatrack (4).
- (4) Position upper flatrack (2) on lower flatrack (4).
- (5) Secure upper flatrack (2) to lower flatrack (4) with four double twist locks (3) by turning double twist locks 90 degrees in either direction.
- (6) Remove lifting device and spreader bar.

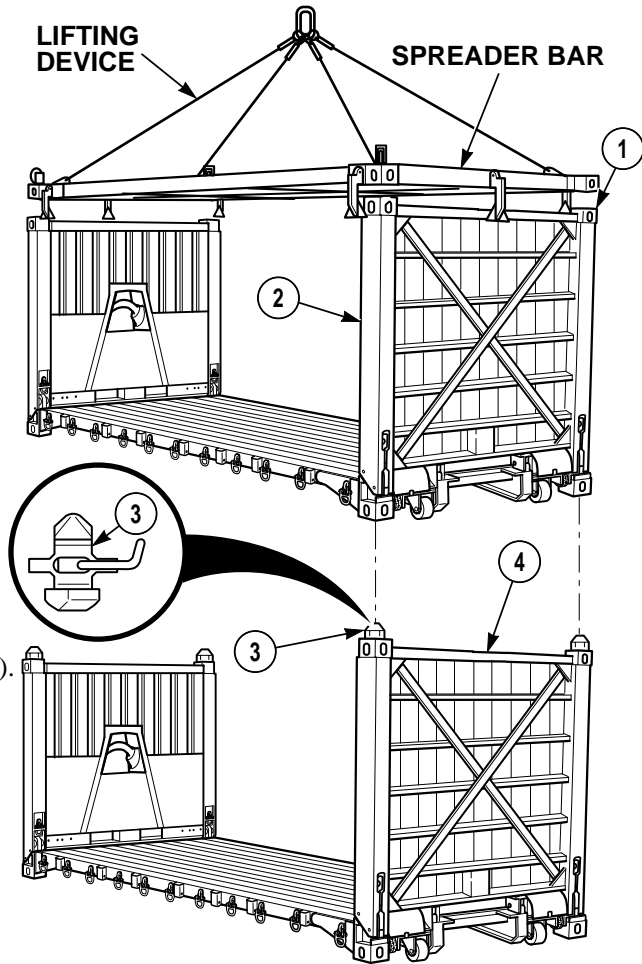
**7-17. STACKING/UNSTACKING LOADED FLATRACKS (CONT).**

**b. Unstacking.**

**WARNING**

Flatrack and load weigh up to 38,500 lbs (17,479 kg). Flatrack and load, including sideboards and tarp, loaded on PLS truck or trailer must not exceed 36,600 lbs (16,616 kg). Attach suitable lifting device to avoid serious injury or death to personnel.

- (1) Attach lifting device and spreader bar to four upper ISO corner castings (1) of upper flatrack (2).
- (2) Unlock double twist locks (3) by turning 90 degrees in either direction.
- (3) Lift upper flatrack (2) from lower flatrack (4).
- (4) Lower upper flatrack (2) to ground.
- (5) Remove lifting device from upper flatrack (2).





## 7-18. PREPARATION FOR STORAGE OR SHIPMENT.

### a. *Preparation for Storage.*

- (1) Refer to AR 750-1 for administrative storage procedures. If short-term storage is indicated, go to Step (2).

### WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (2) Use drycleaning solvent (Item 14, Appendix E) to clean or wash grease or oil from all metal parts. All surfaces must be clean to ensure removal of corrosion, soil, grease or residues.
  - (3) After cleaning, use cold water to rinse flatrack. Dry all parts thoroughly with a lint-free cloth (Item 4, Appendix E).
  - (4) Perform the Preventive Maintenance Checks and Services in Tables 7-1 and 9-1.
  - (5) Refer to Appendix K and perform all lubrication procedures.
  - (6) Schedule the next preventive maintenance checks and services on DD Form 314, Preventive Maintenance Schedule and Record.
  - (7) Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.
  - (8) Spot paint all surfaces as necessary (TB 43-0209).

### b. *Preparation for Shipment.*

- (1) Complete storage instructions.
- (2) Refer to AR 746-80 for Marking of Supplies for Shipment.
- (3) Refer to AR 725-50 and prepare all shipping documents to accompany flatrack.
- (4) Refer to TB 9-2300-281-35, Standards for Overseas Shipment or Domestic Issue of Special Purpose Vehicles, if flatrack is to be shipped overseas.
- (5) Refer to MIL-HDBK-138, Container Inspection Handbook for Commercial and Military Intermodal Containers.

## 7-19. DECALS AND INSTRUCTION PLATES.

- a. **Stencils.** The words EMPTY LIFT ONLY and LADEN LIFT F POCKET are stenciled at four places on flatrack, two on each side.
- b. **Decals and Instruction Plates.** Refer to Figure 7-2 for location and description of decals and instruction plates.

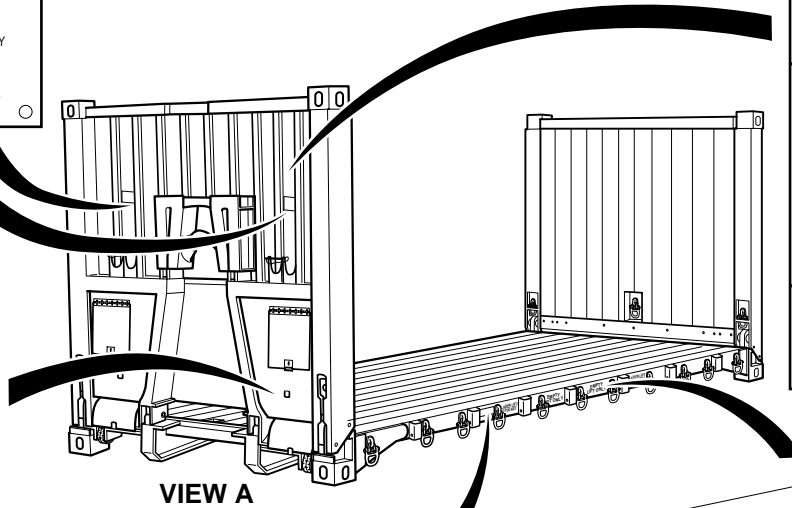
7-19. DECALS AND INSTRUCTION PLATES (CONT.)

**WARNING**

**WALLS**  
STAY CLEAR WHEN RAISING OR LOWERING WALLS TO PREVENT SERIOUS INJURY OR EVEN DEATH.

**TWIST LOCKS**  
ENSURE THAT TWIST LOCKS ARE FULLY ROTATED TO THE LOCKED POSITION BEFORE TRANSPORTING STACKED FLATRACKS.  
DAMAGE TO EQUIPMENT AND SERIOUS INJURY OR EVEN DEATH MAY OCCUR.

MAX GROSS WT 17,460 KG 38,500 LBS.  
TARE WT 32,221 KG 7,100 LBS.  
PAYLOAD 14,240 KG 31,400 LBS.



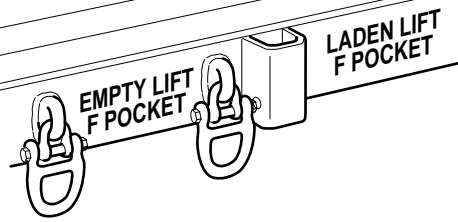
**SHIPPING DATA FOR M1**

**SHIPPING DATA FOR M1 (STACKED)**

**WARNING**  
NEVER EXCEED MAXIMUM PAYLOAD OR CENTER OF GRAVITY.  
DAMAGE TO EQUIPMENT AND SERIOUS INJURY OR EVEN DEATH MAY OCCUR.

**FLATRACK WARRANTY**

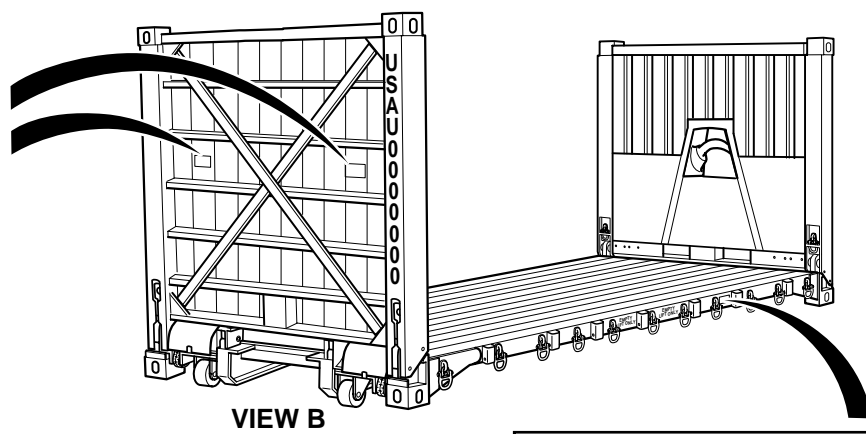
NSN NO.	_____	MAKE	OSHKOSH TRUCK CORPORATION
MFG. CAGE NUMBER	_____	MODEL NO.	M1
WARRANTY STARTS	_____	SERIAL NO.	_____
WARRANTY EXPIRES	_____	CURB WT.	LBS
REPORT FAILURES TO YOUR LOCAL WARRANTY COORDINATOR FOR PROCESSING IN ACCORDANCE WITH WARRANTY TB 9-2320-384-15		PAYLOAD MAX. 31,000 LBS (28,700 FOR PLS) UNIFORMLY LOADED ON FLATRACK.	DATE OF MFG.
		CONTRACT NO.	DAAE07-92-C-063
		U.S. PROPERTY	



**WARNING**

**WALLS**  
STAY CLEAR WHEN RAISING OR LOWERING WALLS TO PREVENT SERIOUS INJURY OR EVEN DEATH.

**TWIST LOCKS**  
ENSURE THAT TWIST LOCKS ARE FULLY ROTATED TO THE LOCKED POSITION BEFORE TRANSPORTING STACKED FLATRACKS.  
DAMAGE TO EQUIPMENT AND SERIOUS INJURY OR EVEN DEATH MAY OCCUR.



**CSC SAFETY APPROVAL**

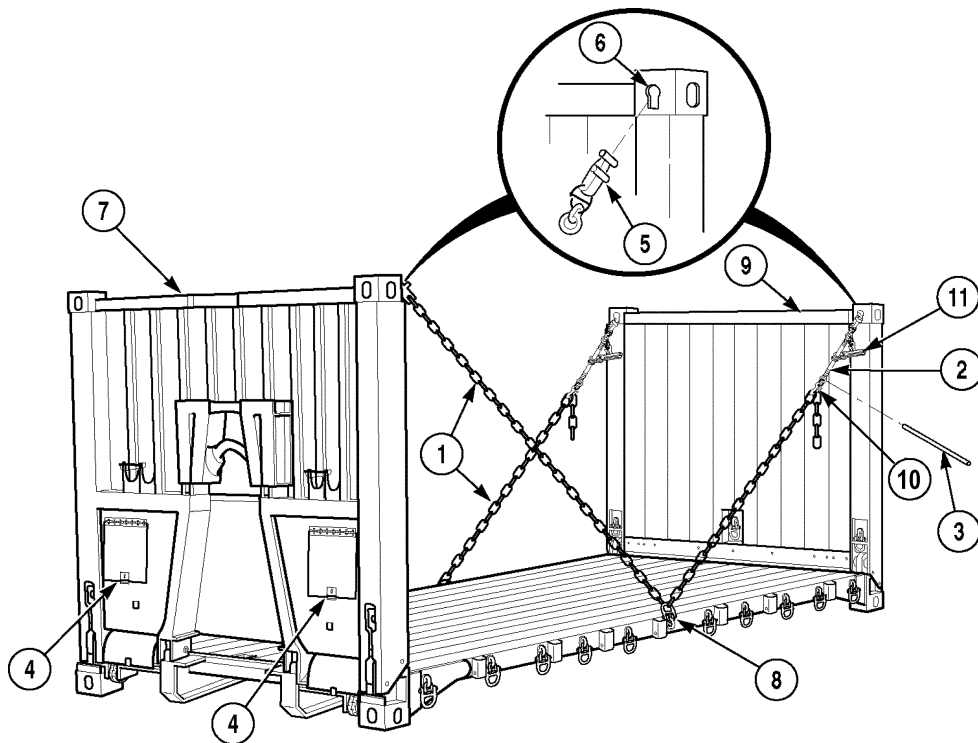
USA/MS3163	_____	APPLY REINSPECTION DECAL HERE
DATE MANUFACTURED	_____	
IDENTIFICATION NO.	_____	
MAXIMUM GROSS WEIGHT	_____ KG / _____ LBS	
ALLOWABLE STACKING WEIGHT FOR 1.8 G	_____ KG / _____ LBS	
RACKING TEST LOAD VALUE	_____ KG / _____ LBS	
END WALL STRENGTH TEST	_____ KG / _____ LBS	

49102-206-480

Figure 7-2. Location and Description of Decals and Instruction Plates.

**7-20. PREPARATION FOR RAIL TRANSPORT.**

**a. Preparation for Rail Transport (With Load).**



- (1) Remove two chains (1), load binders (2) and pry bar (3) from stowage boxes (4).
- (2) Install T-hook (5) on chain (1) into slot (6) on upper corner of front wall (7). Rotate T-hook (5) to lock in place.
- (3) Position chain (1) through middle 25K tiedown ring (8).
- (4) Install T-hook (5) on load binder (2) into slot (6) on upper corner of rear wall (9). Rotate T-hook (5) to lock in place.
- (5) Extend load binder (2).
- (6) Take up slack of chain (1) and attach tightest link of chain (1) into hook (10) of load binder (2).

**WARNING**

Ensure T-hooks are locked into place before tightening load binders. T-hooks, chain and load binders could come apart causing serious injury to personnel.

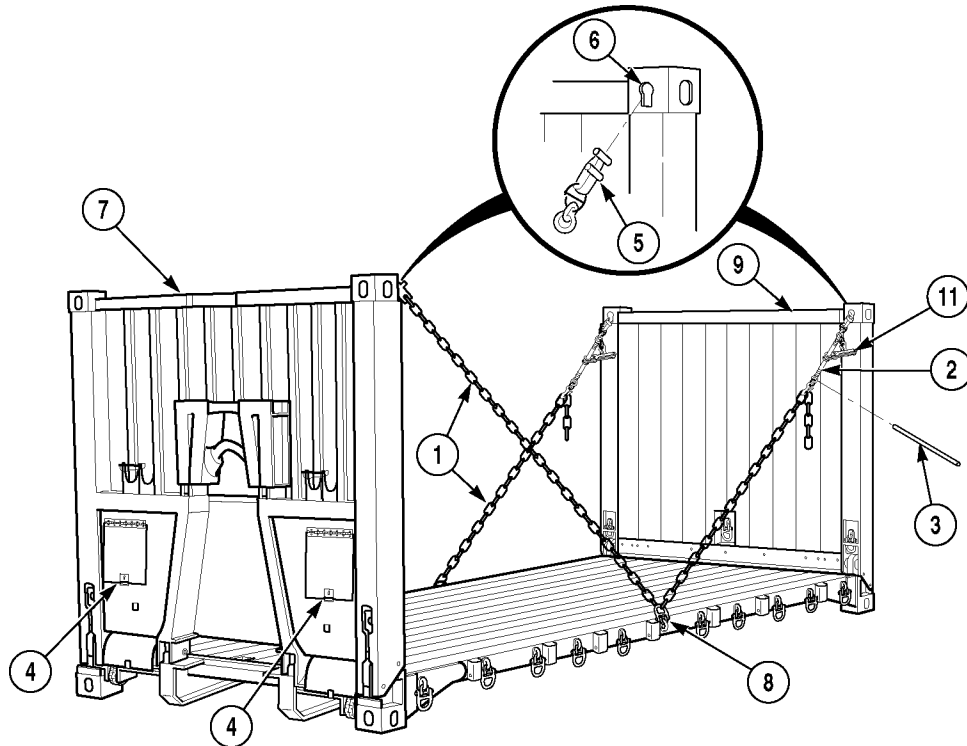
**NOTE**

Positioning pry bar in eyelet of load binder will prevent chain from twisting.

- (7) Position pry bar (3) in eyelet of load binder (2) and tighten load binder (2) using handle (11).
- (8) Repeat Steps (2) through (7) for remaining side.

**7-20. PREPARATION FOR RAIL TRANSPORT (CONT).**

**b. Preparation After Rail Transport (With Load).**



- (1) Position pry bar (3) in eyelet of load binder (2) and loosen load binder (2) using handle (11).
- (2) Remove chain (1) from hook (10) of load binder (2).
- (3) Remove load binder (2) and T-hook (5) from slot (6) on upper corner of rear wall (9).
- (4) Remove chain (1) and T-hook (5) from slot (6) on upper corner of front wall (7) and middle 25K tiedown ring (8).
- (5) Repeat Steps (1) through (4) for remaining side.
- (6) Stow two chains (1), load binders (2) and pry bar (3) in stowage boxes (4).

## CHAPTER 8

### OPERATOR MAINTENANCE INSTRUCTIONS

Para	Contents	Page
8-1	Troubleshooting Introduction .....	8-1
8-2	Troubleshooting Symptoms .....	8-1
8-3	Maintenance Introduction .....	8-3
8-4	Roller Replacement .....	8-3

#### Section I. TROUBLESHOOTING PROCEDURES

**8-1. TROUBLESHOOTING INTRODUCTION.**

This section contains step by step procedures for identifying, locating and isolating equipment malfunctions.

**8-2. TROUBLESHOOTING SYMPTOMS.**

Refer to Table 8-1 for a list of Troubleshooting Symptoms. Table 8-2 lists the most common troubleshooting procedures found during operation or maintenance of the flatrack. Tests or inspections and corrective actions should be performed in the order listed. If a malfunction is not listed, or is not corrected by listed corrective actions, notify the supervisor.

*Table 8-1. Operator Troubleshooting Symptom Index*

Troubleshooting Procedure	Page
1. Pin Assemblies will not turn .....	8-2
2. Front or rear wall is difficult to lift (too heavy) .....	8-2
3. Front or rear wall lowers too rapidly .....	8-2

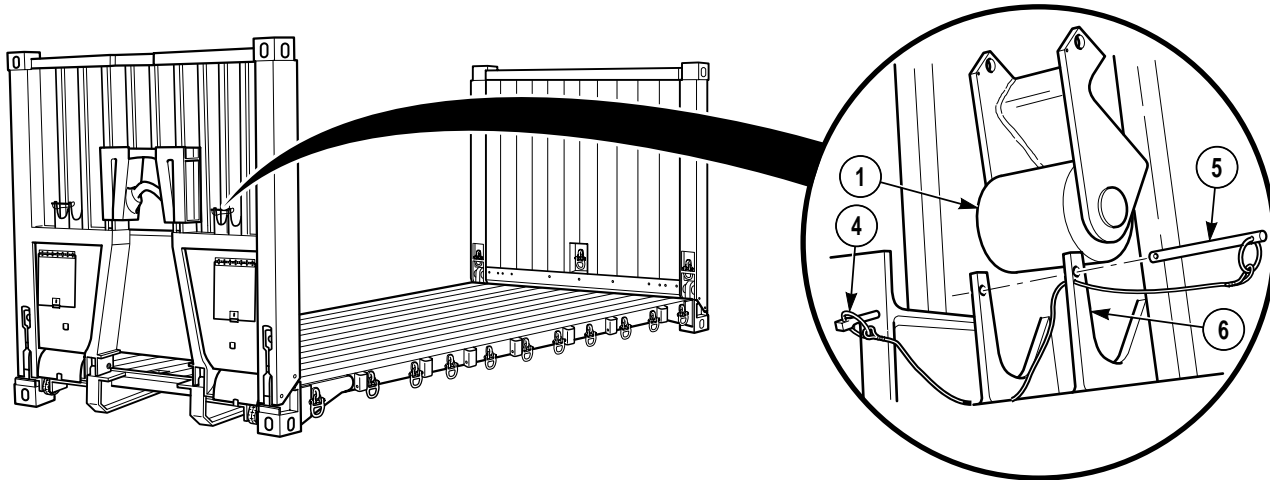
**8-2. TROUBLESHOOTING SYMPTOMS (CONT).**

*Table 8-2. Operator Troubleshooting Procedures*

<b>Malfunction</b>	<b>Test or Inspection</b>	<b>Corrective Action</b>
<b>1.</b>	<b>PIN ASSEMBLIES WILL NOT TURN.</b>	<p>Is the safety catch and collar in proper position?</p> <p>If the safety catch and collar are not properly positioned, move to correct positions (Para 7-10).</p> <p>If the safety catch and collar are OK, notify Unit Maintenance.</p>
<b>2.</b>	<b>FRONT OR REAR WALL IS DIFFICULT TO LIFT (TOO HEAVY).</b>	<p>Are one or both springs, pulleys, rollers or chains missing or damaged?</p> <p>If one or both springs, pulleys, rollers or chains are missing or damaged, notify Unit Maintenance.</p>
<b>3.</b>	<b>FRONT OR REAR WALL LOWERS TOO RAPIDLY.</b>	<div style="text-align: center; border: 2px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>WARNING</b></p> </div> <p>Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). The flatrack is equipped with spring-loaded counterbalance mechanisms that allow the wall to be lowered by two soldiers. Raising and lowering operations must be conducted on level ground. Do not stand under walls when raising or lowering. Use the aid of an assistant when raising or lowering the rear wall to prevent serious injury or death to personnel.</p> <p>One or both springs or chains are broken, notify Unit Maintenance.</p>



**8-4. ROLLER REPLACEMENT (CONT).**



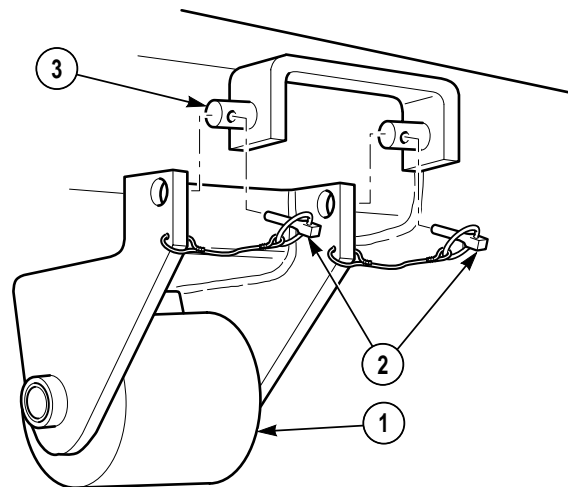
- (3) Remove lynch pin (4) and pin (5) from roller storage bracket (6).
- (4) Position roller (1) in roller storage bracket (6).
- (5) Install pin (5) and lynch pin (4) in roller storage bracket (6).

**b. Installation.**

- (1) Remove lynch pin (4) and pin (5) from roller storage bracket (6).
- (2) Remove roller (1) from roller storage bracket (6).
- (3) Install pin (5) and lynch pin (4) in roller storage bracket (6).

**NOTE**

- There is a right side and left side roller. Left side is shown.
- Ensure roller pin collar faces towards outside edge of flatrack.



- (4) Position roller (1) on bracket and pin assembly (3).
- (5) Support roller (1) and install two lynch pins (2) in bracket and pin assembly (3).

**c. Follow-On Maintenance:** Unload flatrack, (TM 9-2320-364-10).

**END OF TASK**



## CHAPTER 9

### UNIT MAINTENANCE INSTRUCTIONS

Para	Contents	Page
9-1	Common Tools and Equipment .....	9-1
9-2	Special Tools, TMDE and Support Equipment .....	9-1
9-3	Repair Parts .....	9-1
9-4	Unpacking and Packing .....	9-2
9-5	Lubrication .....	9-3
9-6	Loose Parts Installation .....	9-3
9-7	Hand Receipt .....	9-3
9-8	Introduction .....	9-4
9-9	Unit PMCS Procedures .....	9-4
9-10	PMCS Table Explanation .....	9-5
9-11	Additional Inspection Criteria .....	9-7
9-12	Introduction .....	9-23
9-13	General Maintenance Instructions .....	9-23
9-14	Roller Repair .....	9-25
9-15	Floor Board Replacement .....	9-27
9-16	Stowage Box Repair .....	9-30
9-17	Spring and Chain Replacement .....	9-32
9-18	Spring Adjustment .....	9-37
9-19	Tiedown Ring Replacement .....	9-43
9-20	Pulley and Roller Replacement .....	9-45
9-21	Pin Assembly and Bracket Repair .....	9-48
9-22	Mud Flap Replacement .....	9-57
9-23	Main Rail Cap Replacement .....	9-58
9-24	Pin Lock Assembly Replacement .....	9-61
9-25	Data Plate and Shipping Label Replacement .....	9-63
9-26	Twist Lock Replacement .....	9-64
9-27	Securing Pin Bushing Replacement .....	9-65
9-28	Rear Wall Floor Board Replacement .....	9-67

#### **Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC (TMDE) AND SUPPORT EQUIPMENT**

##### **9-1. COMMON TOOLS AND EQUIPMENT.**

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

##### **9-2. SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT.**

Refer to Appendix B, the Maintenance Allocation Chart (MAC) and Appendix F, Repair Parts and Special Tools List (RPSTL), to determine special tools, Test, Measurement and Diagnostic Equipment (TMDE) and support equipment for the flatrack. No fabricated tools are needed.

##### **9-3. REPAIR PARTS.**

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), Appendix F, covering Unit, Direct Support and General Support Maintenance for the flatrack.

## Section II. SERVICE UPON RECEIPT

### 9-4. UNPACKING AND PACKING.

This paragraph provides information required to ensure the flatrack is adequately inspected, serviced and operationally tested before it is subjected to normal everyday use. These procedures cover unpacking, deprocessing and packing.

#### *a. Unpacking.*

- (1) Remove any metal strapping, plywood, tapes, seals, wrapping or any other shipping and protective items.

#### **WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (2) If any parts are coated with lubricating oil (Item 8, Appendix E), remove it with drycleaning solvent (Item 14, Appendix E).

- (3) Read and follow all instructions contained in DD Form 1397, "Processing and Deprocessing Record of Shipping, Storage, and Issue of Vehicles and Spare Engines".

- (4) Inspect flatrack for damage incurred during shipping. If flatrack has been damaged, report the damage on DD Form 6, Packing Improvement Report.

- (5) Check the equipment against the packing slip to ensure shipment is complete. Report all discrepancies in accordance with DA PAM 738-750.

#### *b. Servicing.*

- (1) Perform the Preventive Maintenance Checks and Services in Tables 7-1 and 9-1.

- (2) Schedule the next Preventive Maintenance Checks and Services on DD Form 314, Preventive Maintenance Schedule and Record.

- (3) Report all deficiencies on DA Form 2407 if the deficiencies appear to involve unsatisfactory design.

*c. Packing.* Preservation and other protective measures taken in the preparation of material and accompanying tools and equipment for shipment must be sufficient to protect the material against deterioration and physical damage during shipment.

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

(1) Use drycleaning solvent (Item 14, Appendix E) to clean or wash grease or oil from all metal parts. All surfaces must be clean to ensure removal of corrosion, soil, grease or residues.

(2) After cleaning, use cold water to rinse flatrack. Dry all parts thoroughly with a lint-free cloth (Item 4, Appendix E).

(3) Spot paint all surfaces as necessary (TB 43-0209).

**9-5. LUBRICATION.**

Refer to Appendix K for lubrication instructions pertaining to the flatrack.

**9-6. LOOSE PARTS INSTALLATION.**

Refer to Para 8-4 for procedures to install the roller assemblies.

**9-7. HAND RECEIPT.**

Refer to Appendix C, Components of End Item (COEI) and Basic Issue Items (BII) List and Appendix D, Additional Authorization List (AAL), for proper inventory and control procedures.

## Section III. UNIT MAINTENANCE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

### 9-8. INTRODUCTION.

This section presents Unit Maintenance checks and services. Figure 9-1 illustrates the route to use in completing the PMCS procedures. Table 9-1 provides PMCS procedures. Unit Maintenance should also perform Operator PMCS (Para 7-1).

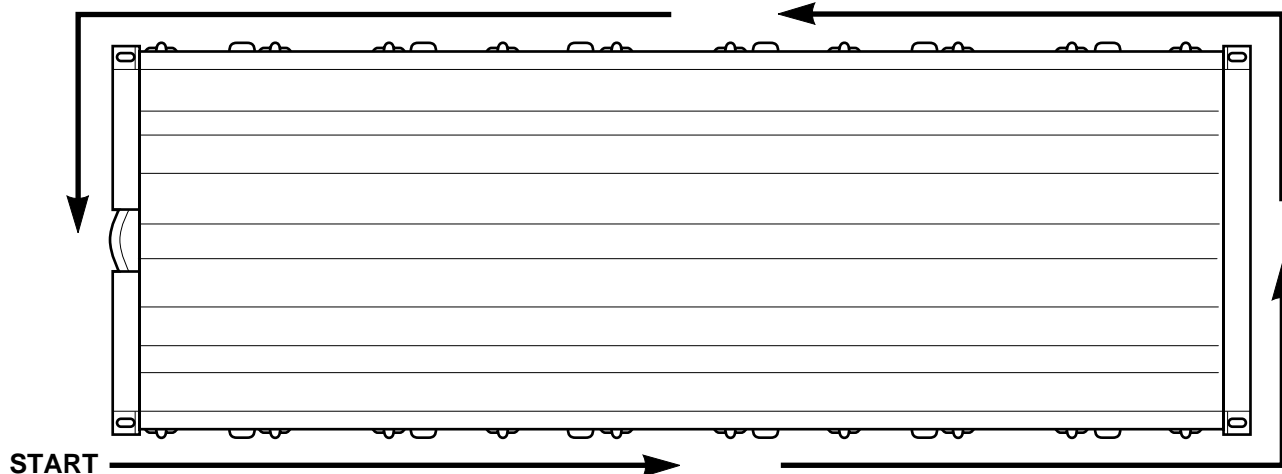


Figure 9-1. PMCS Walk-Around

### 9-9. UNIT PMCS PROCEDURES.

- a. Always perform your preventive maintenance in the same order, so it gets to be a habit. Once you have some practice, you will spot anything wrong in a hurry.
- b. If something looks wrong and you can not fix it, write it down on DA Form 2404.

#### **WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- c. Clean as you work and as needed. Dirt, grease, oil and debris may get in the way and cover up a problem. Use drycleaning solvent (Item 14, Appendix E) to clean flatrack where dirt, grease or oil has accumulated.
  - d. Check for missing, loose, bent or broken bolts, nuts and screws. Look for chipped paint, bare metal or rust around bolt heads. Tighten loose parts.
  - e. Look for loose paint, rust or gaps where parts are welded together. If you find a bad weld, report it to Direct Support Maintenance.

**9-10. PMCS TABLE EXPLANATION.**

- a.** Do the SEMIANNUAL PREVENTIVE MAINTENANCE (Table 9-1) once every six months.
- b.** Do the BIENNEL PREVENTIVE MAINTENANCE (Table 9-1) once every two years.
- c.** Always do the Preventive Maintenance in the same order until it gets to be a habit. Once practiced, it will be easy to spot anything wrong in a hurry.
- d.** If anything looks wrong and is not fixed, write a DA Form 2404.
- e.** When doing Preventive Maintenance, take along the tools and supplies needed to make all the checks, including a clean cloth or two.
- f.** The following is a breakdown of the PMCS table:
  - (1) "Item No." column. Checks and services are numbered in a logical order for moving around the flatrack. The item number column is used as a source of items numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording results of the PMCS.
  - (2) "Interval" column. The column identifies when the PMCS should be performed.
  - (3) "Item To Check/Service" column. This column identifies the item to be checked/serviced.
  - (4) "Procedure" column. This column contains all the information required to do the check/inspection.
  - (5) "Not Mission Capable If:" column. This column contains a brief statement of the condition (e.g., malfunction, shortage) that would cause the flatrack to be less than fully ready to perform its assigned mission.

**Table 9-1. Unit Maintenance Preventive Maintenance Checks and Services**

Item No.	Interval	<u>Location</u> Item to Check/Service	Procedure	Not Fully Mission Capable If:
1	Semi-Annually	Flatrack Weldments	Visually inspect all weldments for cracks and other damage. Report damage to supervisor.	Cracks or broken welds are found that will impair operation.

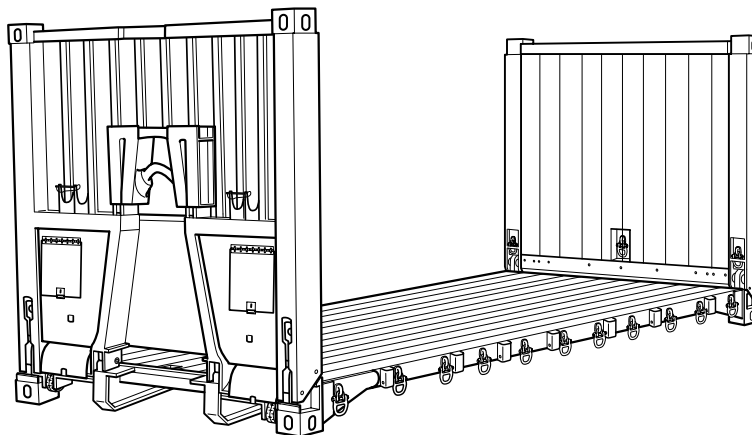


Table 9-1. Unit Maintenance Preventive Maintenance Checks and Services - Continued

Item No.	Interval	<u>Location</u> Item to Check/Service	Procedure	Not Fully Mission Capable If:
2	Semi-Annually	Flatrack hook bar	Check hook bar for wear. If wear at lower back side of hook bar is greater than 1/4 in. (6.35 mm) or greater than 1/8 in. (3.175 mm) at bottom of hook bar, notify supervisor.	Wear found exceeds specification.
3	Semi-Annually		Remove, clean and lubricate all front and rear tapered pin assemblies (1). Refer to Para 9-21.	Tapered pin assembly does not operate or does not operate freely.
4	Biennial	ISO Container	CSC reinspection certification performed by certified CSC Inspector. Refer to Appendix J for Container Inspection Checklist. Also see Para 9-11 for additional inspection criteria.	Wear found exceeds specification.

**9-11. ADDITIONAL INSPECTION CRITERIA.**

**a. General.**

(1) This paragraph provides specific guidance on inspection procedures as required for any ISO Compatible Palletized Flatrack used as an intermodal container. An intermodal freight container may not be offered for the carriage of any type of cargo through the marine environment unless the container is structurally serviceable as evidenced by an International Convention for Safe Containers (CSC) Safety Approval Plate and verified by a detailed visual examination. Before a freight container is loaded with cargo, it must be free of any residue of previous cargo, its interior walls and floor must be free from protrusions, and it must also meet specific structural serviceability requirements as prescribed in this Paragraph. If a container has any safety related deficiency or damage that could place any person in danger, it shall not be used.

(2) CSC certification initial inspection of new containers will not be greater than 5 years from date of manufacture.

**b. CSC Safety Approval Plate.** A durable data plate is required by CSC and certified by an approved certification agency to indicate CSC approval. The CSC plate may also indicate the next examination or reinspection date. The required CSC plate is shown in Figure 9-2.

**Figure 9-2. CSC Safety Approval Plate.**

**c. Documents.**

(1) *Inspection Checklist.* A Flatrack Container Inspection Checklist should be used to ensure complete examination and to identify acceptance of reason(s) for rejections. Appendix J contains the recommended checklist to be used for the IPF. Checklist items not relevant to the IPF being inspected should be marked “NA” for not applicable.

**9-11. ADDITIONAL INSPECTION CRITERIA (CONT).**

(2) *DD Form 2282 Decal.* A CSC reinspection due date (month and year) must be marked on the CSC plate. A DD Form 2282 Decal should be used for this purpose. When performing a CSC examination, the DoD inspector will apply a DD Form 2282 decal if the container is found to be acceptable. This decal is not required on a new container since the first reinspection due date must be inscribed on the original CSC plate. The first CSC reinspection due date assigned to a newly manufactured container provides a maximum interval of 5 years. Each subsequent CSC examination is only current for a maximum interval of 30 months. A CSC reinspection should always be performed upon completion of maintenance and a new decal should then be applied to indicate a new due date at 30 months away. A container is unacceptable for loading with cargo if the DD Form 2282 decal indicates that CSC reinspection is due within 60 days or less. CSC Reinspection Decals (DD Forms 2282) can be obtained from Container Fleet Division, HQ MTMCEA, Bayonne, New Jersey, 07002-5302, DSN 247-5126 or (201) 823-5216.

(3) *Inspection Report.* Inspection of DoD owned containers or containers under the maintenance purview of the DoD must also be reported on the proper Service form such as DA Form 2404, "Equipment Inspection and Maintenance Worksheet". A copy of the inspection report must be completed and forwarded to the Container Control Office of the owning service. Inspection reports for containers in the Common User Fleet must be sent to the Joint Container Control Office (JCCO) at the following address: Commander, Military Traffic Management Command Eastern Area, ATTN: MTEOP-ITC, Bayonne, NJ 07002-5302. Note: Centralized control of this documentation is important since the law (CFR 49 part 452.3b) requires that the container inspection report must be made available to the U.S. Coast Guard upon their request.

**d. Recommended Inspection Sequence.** Inspection should be performed on the container while empty. Although any sequence of inspection is permissible, the sequence of the inspection contained herein is recommended and coincides with the checklists provided in this paragraph. A complete examination must be performed prior to acceptance. Even if cause for rejection is identified, a complete inspection of DoD owned containers under the maintenance purview of the DoD must be performed so a complete report of container condition can be provided in accordance with the Inspection Report.

(1) *Markings and Data Plates.* Check for appropriate markings and data plates. Annotate the ISO owner code serial number and the existing CSC reinspection date on the Inspection Checklist.

(2) *Overall Configuration.* Check for any distortion of the overall configuration great enough to preclude proper engagement of handling/lifting equipment, mounting and securing on chassis or vehicle, or insertion into the cell of a ship. If container alignment is in question, use a measuring tape to check dimensions in accordance with Figure 9-3 and Table 9-2.



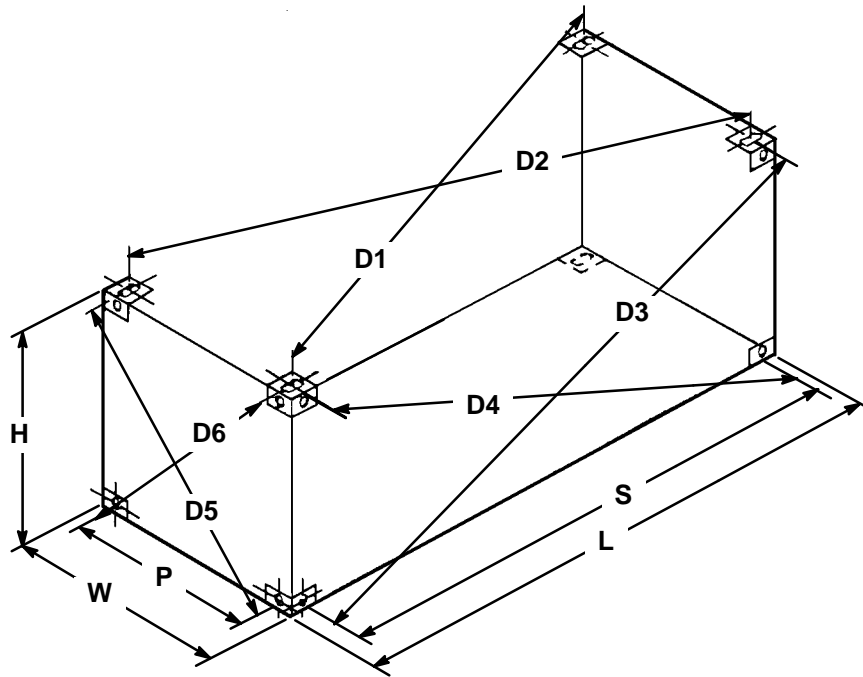


Figure 9-3. Configuration Measuring Points.

Table 9-2. External Dimensions and Tolerances.

L (EXTERNAL LENGTH)			S			K1 MAX.		
FT	IN	MM	FT	IN	MM	FT	IN	MM
19	10-1/2 <sup>+0</sup> -1/4	6,058 <sup>+0</sup> -6	19	2-7/16 <sup>+3/16</sup> -3/16	5,853 <sup>+5</sup> -5	13	1/2	3,975

W (EXTERNAL WIDTH)			P			K2 MAX.		
FT	IN	MM	FT	IN	MM	FT	IN	MM
8	0 <sup>+0</sup> -3/16	2,438 <sup>+0</sup> -5	7	4-31/32 <sup>+5/32</sup> -5/32	2,259 <sup>+4</sup> -4	10	3/8	3,058

H (OVERALL HEIGHT)		
FT	IN	MM
6	0 <sup>+0</sup> -3/16	2,083 <sup>+0</sup> -5

- S = LENGTH BETWEEN CENTERS OF CORNER FITTING APERTURES
- P = WIDTH BETWEEN CENTERS OF CORNER FITTING APERTURES
- D = DISTANCE BETWEEN CENTERS OF APERTURES OF DIAGONALLY OPPOSITE CORNER FITTINGS
- K1 = DIFFERENCE BETWEEN D1 AND D2 OR D3 AND D4
- K2 = DIFFERENCE BETWEEN D5 AND D6

## 9-11. ADDITIONAL INSPECTION CRITERIA (CONT).

(3) *Exterior Sides and Ends.* Proceed to examine the flatrack exterior on all remaining sides and ends for any defects on main structural components or unacceptable damage on wall panels.

(4) *Understructure.* Position the flatrack on jackstands to enable safe viewing of the flatrack understructure. Examine the corner fitting apertures, side and end rails, sill, crossmembers and forklift tunnels for defects.

(5) *Interior.* Check condition of interior walls and flooring for defects.

**e. Inspector Qualifications.** The CSC reinspection must be performed by certified personnel. DoD personnel may be certified by attending the AMMO-L-10 Intermodal Dry Cargo Container CSC Reinspection Course conducted by the U.S. Army Defense Ammunition Center and School, Savanna, IL 61074-9639. DoD inspectors must be re-certified every 48 months. Serviceability (pre-loading) inspection should be performed by fully qualified and competent personnel. Personnel are considered to be fully qualified if they have at one time received formal training and are experienced in the detection of container structural damage.

(1) *Judgement of Criteria.* The flatrack inspection criteria will be met through a visual examination and, except where tolerances are provided, acceptance of the flatrack will be based on the judgement of the inspector. Any unacceptable deficiencies disclosed by the examination must be corrected before the container may be used for shipment.

### **f. Suggested Tools and Equipment.**

(1) *Straight Edge.* A wire, string or other form of a straight edge is needed to determine whether any portion of the flatrack (e.g., a panel or a rail) protrudes past the outside surfaces of the corner fittings.

(2) *Measuring Tape (Ruler).* A measuring tape (ruler) is required to check dimensional tolerances and flatrack alignment.

(3) *Welder's Hammer.* A welder's hammer (NSN 5120-00-240-3096 or equivalent) is helpful in determining the strength of welds or metal structural components.

(4) *Inspection Stands.* Inspection stands built in accordance with USADACS Drawing No. AC 200000210 (or equivalent) provide a safe means for supporting the empty flatrack to enable proper viewing of the flatrack understructure. DoD personnel should also refer to service specific safety guidelines about "Working Under a Suspended Load".

(5) *Flashlight.* A flashlight improves visual acuity, especially during examination of the recesses of the understructure.

(6) *Chalk.* Marking (circling) location of defects with chalk as they are discovered facilitates preparation of inspection report and helps maintenance personnel locate areas to be repaired.

(7) *Feeler Gage.* Excessive gaps in flooring may be determined by use of a 1 inch (2.54 cm) wide by 1/16 inch (1.59 mm) thick feeler gage. Any suitable strip of metal may be used.

**g. Primary Structural Components.** A flatrack with any major defect in any component of its primary structure is unacceptable. For purposes of this criteria, primary (main) structural components (members) include: corner fittings, corner posts, end rails, side rails, floor crossmembers and forklift pockets.

(1) *Major Defects.* A major defect includes:

- (a) A dent or bend in any primary structural components that is greater than 3/4 in. (19 mm) in depth, regardless of length;
- (b) A crack, break, cut, tear, puncture or corrosive failure in any primary structural component;
- (c) A missing, cracked or broken weld at the juncture between any primary structural component;
- (d) More than one splice or an improper splice (such as a lapped splice) in an end rail;
- (e) More than two splices or an improper splice in any one side rail;
- (f) More than two splices of an improper splice in any one floor crossmember, including a crossmember that forms a side of a forklift pocket;
- (g) Any splice in a corner post;
- (h) Any damage or degradation within a component that could place any person in danger during subsequent handling, stacking or transport of the flatrack.

(2) *Acceptable Welding Patterns.* Welding patterns conforming to the original manufacturer's design are acceptable. Only abnormal welding patterns due to damage and/or improper repair are cause for rejection. Inspection should be directed at looking for broken junctures or welded repairs that are not consistent with other similar welds of that flatrack.

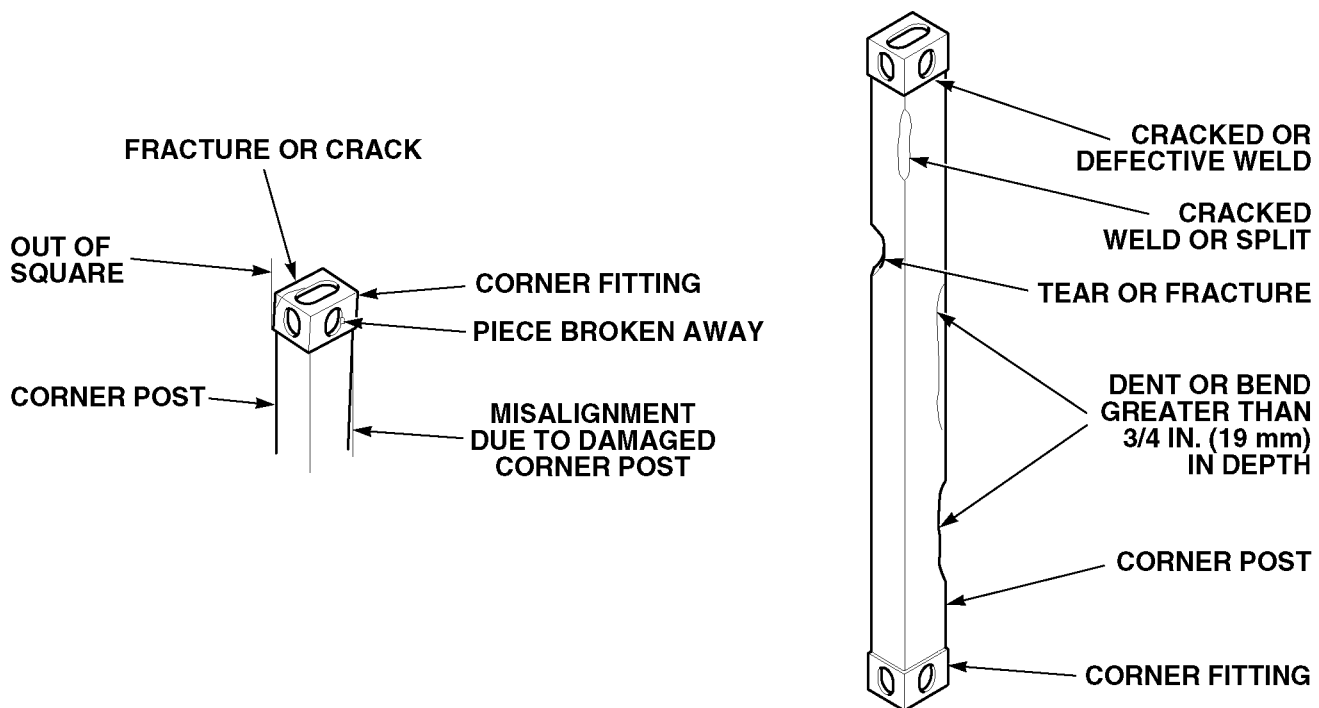
(3) *Acceptable Splicing.* A splice is any repair of a primary structural member that replaces material without complete replacement of the member. Areas repaired by straightening and bead welding are not to be construed as splices. Gussets, backup plates or other reinforcement (protector) plates are not to be construed as splices. An acceptable splice is a minimum of 6 in. (15 cm) long and is a butt-welded insert. If a splice would end within 12 in. (30 cm) of another weld, such as at the juncture with the corner fitting, it must be extended to that weld. An acceptable splice is flush fitting and restores the original size and cross-sectional profile of the repaired component. Backup plates installed on the backside of a splice are permissible if the backup plate extends a minimum of 6 in. (15 cm) beyond each end of the splice.

**9-11. ADDITIONAL INSPECTION CRITERIA (CONT).**

(4) *Corner Fittings.* See Figure 9-4. Corner fittings must not be distorted or cracked and must not have any worn, broken or gouged apertures that would prevent engagement or safe use of vehicle securement devices or container lifting devices. Corner fittings must not have any repairs.

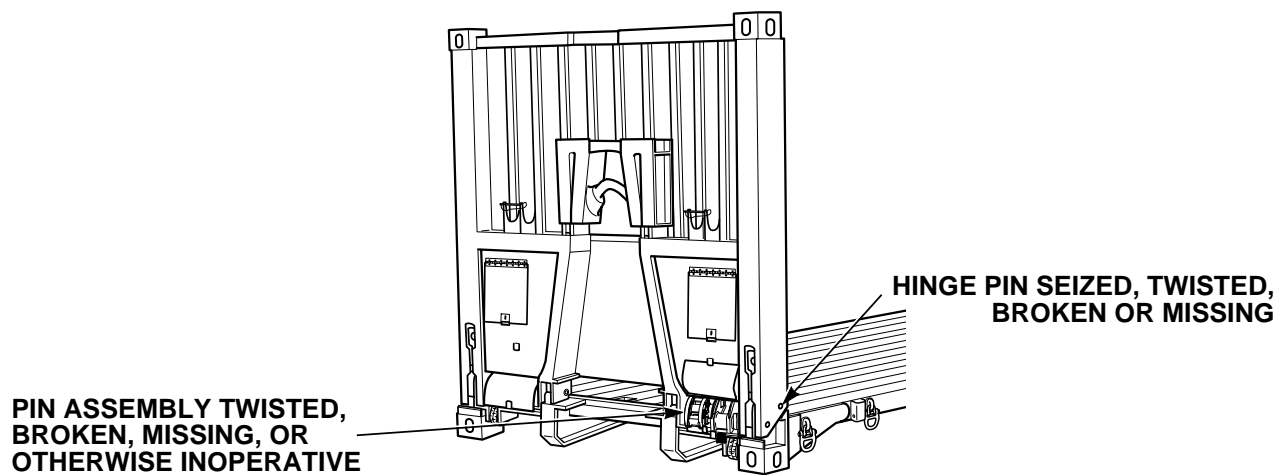
(5) *Corner Posts.* See Figure 9-4. A flatrack is unacceptable if a corner post has any of the following major defects:

- (a) A dent or bend that is greater than 3/4 in. (19 mm) in depth, regardless of length;
- (b) A crack, break, cut, tear, puncture or corrosive failure;
- (c) A defective, cracked or broken weld at the juncture with a corner fitting;
- (d) Any splice.



**Figure 9-4. Corner Fitting and Corner Post Damage**

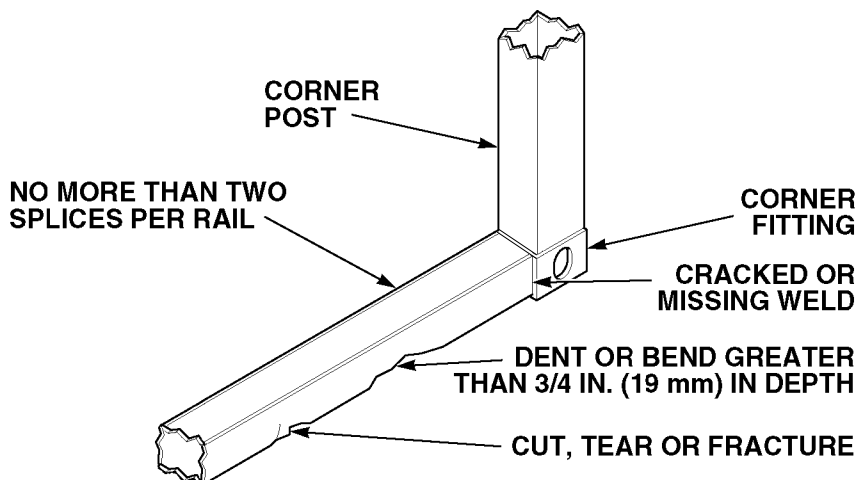
(6) *End Walls.* See Figure 9-5. The end wall locking hardware for the flatrack must not be seized, twisted, broken, missing or otherwise inoperative. Any twist, dent or bend that renders the folding end wall inoperable is cause for rejection.



**Figure 9-5. End Wall Damage**

(7) *Side Rails.* See Figure 9-6. A flatrack is unacceptable if any side rail has any of the following major defects:

- (a) A dent or bend that is greater than 3/4 in. (19 mm) in depth, regardless of length;
- (b) A crack, break, cut, tear, puncture or corrosive failure;
- (c) A missing, cracked or broken weld at the juncture with other primary structural components;
- (d) More than two splices in any one side rail.



**Figure 9-6. Side Rail Damage**

## 9-11. ADDITIONAL INSPECTION CRITERIA (CONT).

(8) *Floor Crossmembers.* See Figure 9-7 and 9-8. Floor crossmembers are considered to be a part of the primary structure and a flatrack is unacceptable if any floor crossmember has any of the following major defects:

- (a) A dent or bend that is greater than 3/4 in. (19 mm) in depth, regardless of length;
- (b) A crack, break, cut, tear, puncture or corrosive failure;
- (c) A missing, cracked or broken weld at the juncture with the bottom rail;
- (d) More than two splices or an improper splice (such as a full profile section) in any one crossmember;
- (e) A separation between the top of a crossmember and underside of the flooring that is greater than 3/8 in. (9.53 mm) at point of attachment.

(9) *Crossmember Juncture with Side Rail.* Welding patterns conforming to the original manufacturer's design are acceptable. Only abnormal welding patterns due to damage and/or improper repair are cause for rejection. Typically, the juncture between a crossmember and a side rail is welded continuously on one side of the joint. Inspection should be directed at looking for broken junctures or welded repairs that are not consistent with other similar welds of the flatrack.

**CAUTION**

When splicing or removing a splice from crossmembers, ensure the original manufacturer specifications are maintained and not exceeded or damage to equipment will occur.

(10) *Acceptable Splicing on Crossmembers.* A maximum of two splices per floor crossmember is permissible. An acceptable splice is a minimum of 6 in. (15 cm) long and is a butt-welded insert. If a splice would end within 12 in. (30 cm) of another weld, such as at the juncture with the bottom side rail, it must be extended to that weld. An acceptable splice restores the original size and cross-sectional profile of the crossmember.

(11) *Crossmember Stiffeners.* Any number of full length angle stiffeners are permissible on the flatrack. Each stiffener must extend the full length of the crossmember, be fully welded to the bottom side rails on each end and not protrude beneath the surface of the lower edge of the bottom side rail.

(12) *Gussets and End Rail Stiffeners.* There are no specific dent or bend limitations for gussets and end rail stiffeners. Dents and bends not affecting the structural integrity of the flatrack are permissible. A flatrack is unacceptable if any weld is broken or a gusset or stiffeners is removed, broken, cut, torn or punctured.

(13) *Structural Integrity of Understructure.* Slightly oxidized (rusted), twisted, bent, dented or bowed floor crossmembers are not a cause for rejection provided criteria of Step (8) above is met, welds are not broken and in the judgement of the inspector, the structural integrity of the container has not been reduced beyond safe limits. If the strength of the floor is in doubt, the dynamic floor weight (concentrated load) test specified in Annex II of the International CSC should be conducted to ascertain that: the understructure will not deflect more than 9/32 in. (7 mm) below the bottom surfaces of the bottom corner fittings; no component will be permanently deformed; and no component or weld will fail.

- (a) **Test Loadings and Applied Forces:** Two concentrated loads each of 6,000 lb (2,730 kg) and each applied to the container floor through a contact area of 22 sq. in. (142 cm<sup>2</sup>).
- (b) **Test Procedure:** The test procedure should be made with the container resting on four level supports under its four bottom corners in such a manner that the base structure of the container is free to deflect.

A testing device loaded to a weight of 12,000 lbs (5,460 kg) that is 6,000 lbs (2,730 kg) on each of two surfaces having, when loaded, a total contact area of 44 sq. in. (284 cm<sup>2</sup>) that is 22 sq. in. (142 cm<sup>2</sup>) on each surface, the surface width being 7 in. (180 mm) spaced 30 in. (760 mm) apart, center to center, should be maneuvered over the entire floor area of the container.

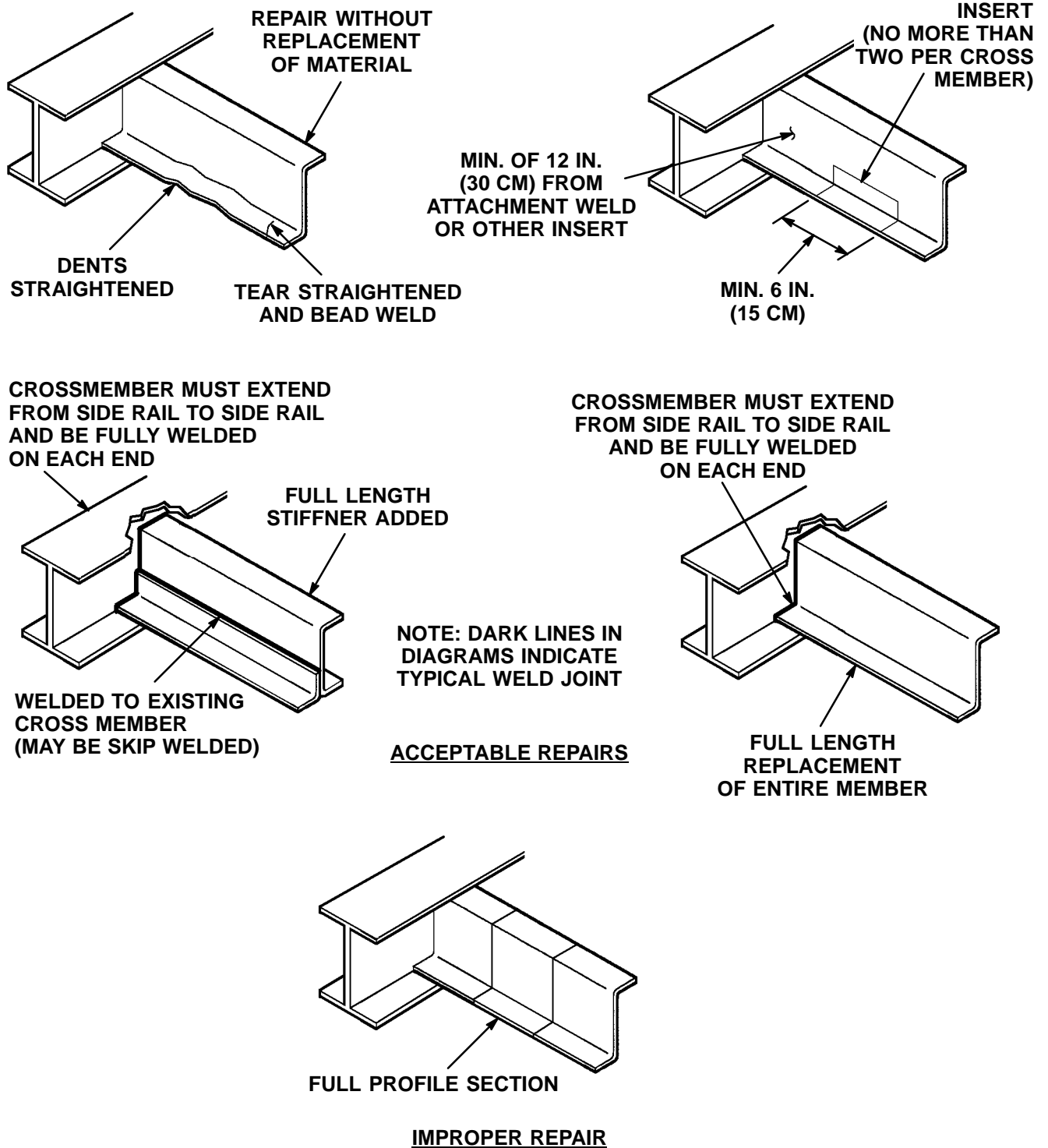
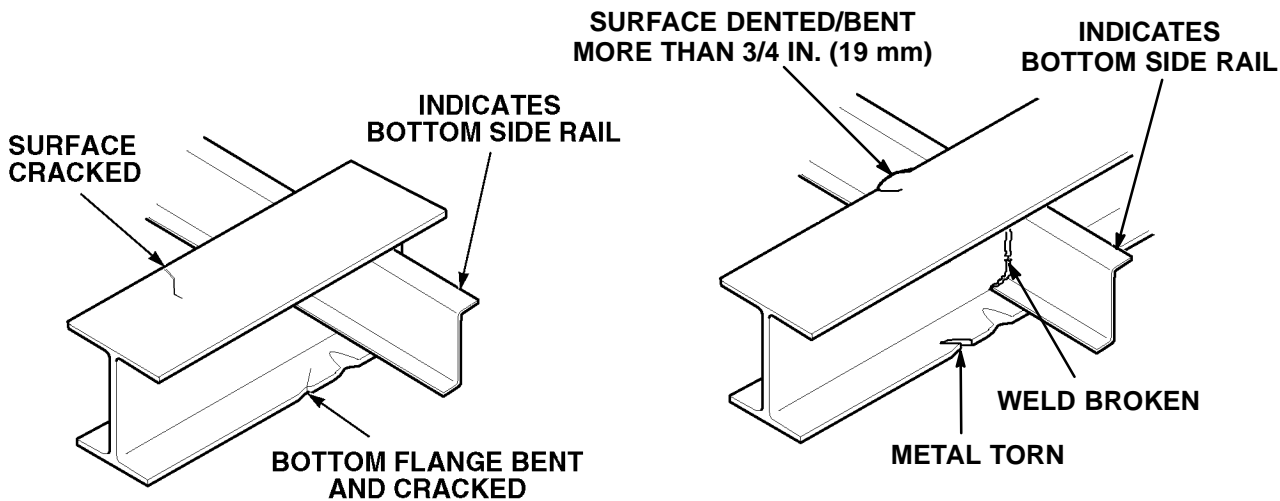


Figure 9-7. Crossmember Repair Limitations

<b>9-11. ADDITIONAL INSPECTION CRITERIA (CONT).</b>
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**Figure 9-8. Unacceptable Crossmember Damage**

**h. Non-Primary Components.** For purposes of this criteria, non-primary components are all items such as wall panels or hardware that are not otherwise specifically identified as primary (main) structural components (members).

(1) *Serviceability of Panels.* Normal wear including oxidation (rust), slight dents and scratches and other damage that does not affect serviceability or the structural integrity of the flatrack is permissible.

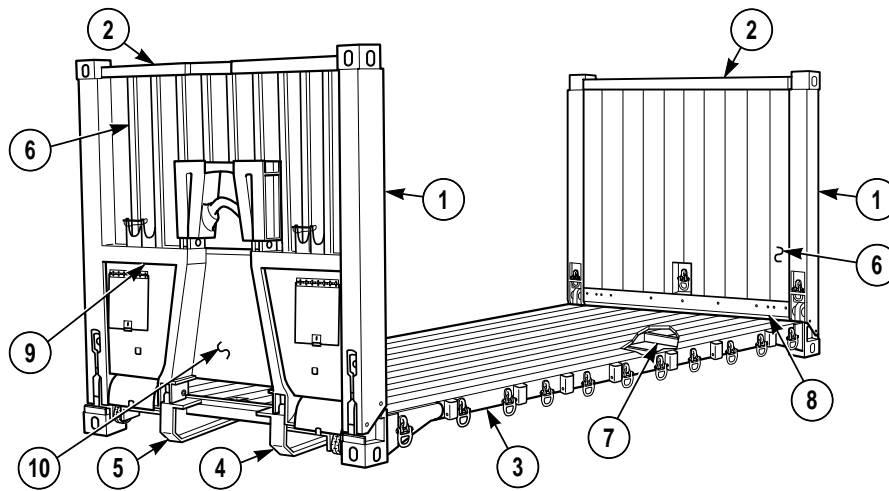
(2) *Acceptable Patching.* See Figure 9-9. Repairs (patches) in wall panels are permissible and may either be an overlapping lap-welded type, an overlapping buck-riveted type or inserted butt-welded type of repair. Lap-welded patches should overlap existing panel by at least 1/2 in. (12.7 mm). Riveted patches should overlap existing panel by at least 2 in. (5 cm). Butt-welded patches should be flush fitting. All repairs on corrugated sections must be neatly made, have a similar cross sectional profile and not affect the structural integrity of the flatrack. All repairs, regardless of size, must be of a permanent nature. Rivets, or other special fasteners used for affixing patches to panels, should be of a closed or blind mandril design. If hollow core pop rivets are used, holes must be caulked. There is no limit on the number of patches on a wall panel provided the structural integrity of the flatrack is not impaired. Patches must not overlap other patches.

(3) *End Wall Panels.* A flatrack is unacceptable if a wall panel has any of the following deficiencies:

- (a) Any hole, tear, puncture or corrosive failure in the panel, regardless of the material of construction;
- (b) Any broken weld at juncture with main structural rail or corner post;
- (c) Inward bulging of the panel that reduces cargo space by more than 1-1/2 in. (3.8 cm) in any direction or that restricts cargo loading;
- (d) Outward bulging of the panel that extends beyond the outside surfaces of the corner fittings.



i. **Primary Structural Component Identification.** Refer to Table 9-3 for identification of materials to be used when repairing any primary structural component on the flatrack.



**Table 9-3. Primary Structural Component Identification**

	ITEM	SHAPE	MATERIAL	THICK
1	CORNER POST (TUBING, 8X6)		ASTM A500 GR. B	.250
2	END RAIL HEADER (TUBING, 8X3)		ASTM A500 GR. B	.188
3	SIDE RAIL (TUBING, 5X3)		ASTM A500 GR. B	.250
4	MAIN RAIL (FLANGE)		ASTM A 36	.77
5	MAIN RAIL (WEBB)		ASTM A 36	.47
6	END WALL PANELS		ASTM A569	.0598
7	FLOOR XMBR		ASTM A572 GR. 50	.187
8	REAR WALL XMBR		ASTM A572 GR. 50	.250
9	FRONT WALL XMBR (TUBING, 8X3)		ASTM A500 GR. B	.250
10	STORAGE BOX BACKING PLATE	FLAT	ASTM A 36	.1345

9-11. ADDITIONAL INSPECTION CRITERIA (CONT).

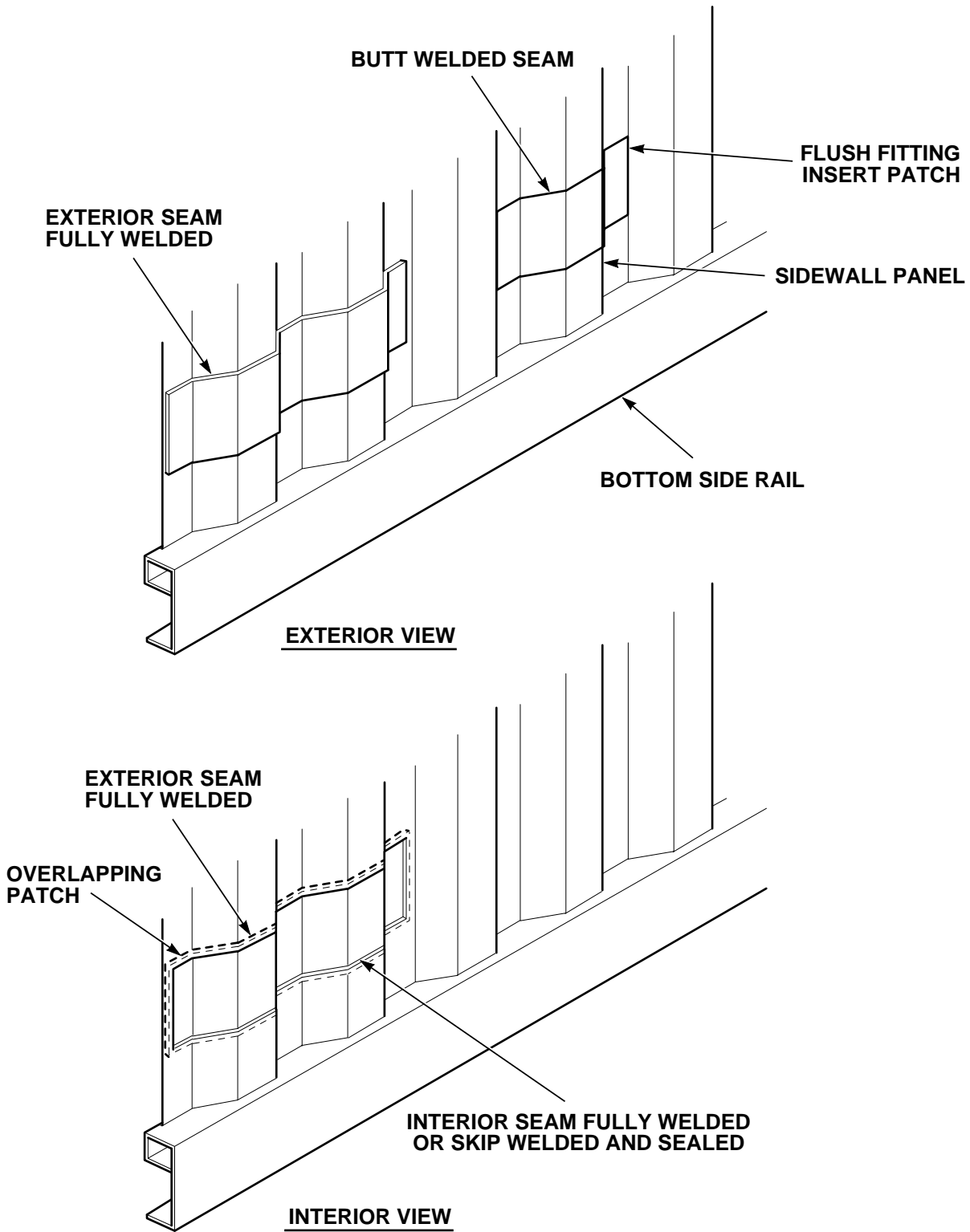
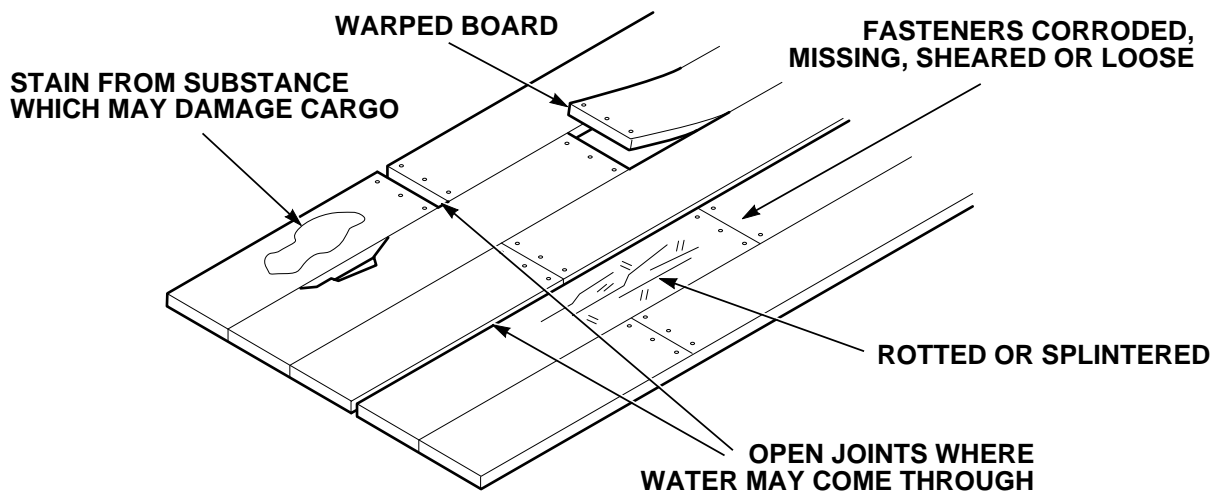


Figure 9-9. Acceptable Wall Patches

(1) *Tiedown Rings*. Provisions used for attachment of straps or other cargo restraint devices must be in working order. Tiedown rings that are deformed or broken are not cause for rejection of the flatrack as long as the damaged tiedown ring is not required for securing the cargo and the structural integrity of the flatrack is not otherwise impaired.

(2) *Flooring*. See Figure 9-10. A flatrack is unacceptable if the flooring has any of the following deficiencies:

- (a) Any protrusion above the top surface of the flooring;
- (b) Any floor fastener that is not flush or countersunk with the surface of the flooring;
- (c) Any loose or missing floor fastener;
- (d) Floor not free of debris or residue from a previous cargo;
- (e) Flooring soaked with hazardous or flammable fluid;
- (f) Floor contains rotted or broken board;
- (g) Floor contains one or more cracked, splintered, warped, stained or delaminated boards that impair either the structural integrity of the container or the safe loading or cargo.



**Figure 9-10. Flooring Damage**

**9-11. ADDITIONAL INSPECTION CRITERIA (CONT).****WARNING**

Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.

**NOTE**

Notify direct support maintenance or supervisor if welding or repair is required.

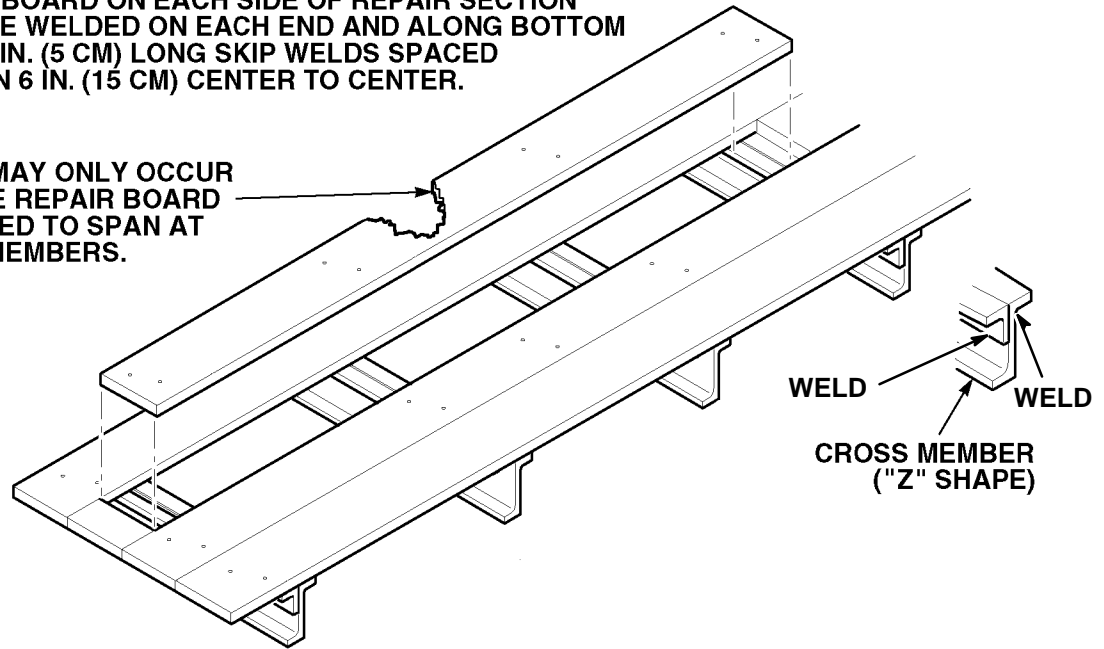
(3) *Acceptable Flooring Repairs.* See Figure 9-11. Only one partial length repair board section per container length and no more than three partial length repair board sections throughout the entire flatrack floor are permissible. Partial length repair board sections must span at least four crossmembers and be a material of similar size and configuration as the rest of the flooring. Laterally adjacent repair board sections must not have joints on the same crossmember. Both sides of each joint must be adequately supported by and securely fastened to the top surface of a crossmember. If the top surface of the crossmember, such as a “Z” shaped type crossmember, is too narrow a structural angle must be welded to it to provide an adequate support surface. The added angle must be sized to extend beyond the adjacent floor board on each side of the repair section joint.

(4) *Acceptable Floor Gaps.* A flatrack is unacceptable if there is any excessive gap around the perimeter of the flooring or between the floor boards. If a 1 in. (2.54 cm) wide by 1/16 in. (1.59 mm) thick feeler gage can be easily inserted “vertically” through a gap to the underside of the flatrack, the gap is considered excessive. Narrow gaps less than 1/2 in. (12.7 mm) wide, however, are permissible if sealed with caulking.

(5) *Structural Integrity of Floor Structure.* If the strength of the floor is in doubt, the dynamic floor weight (concentrated load) test specified in Annex II (see Para 9-11j) of the International CSC should be conducted to ascertain that: the understructure will not deflect more than 9/32 in. (7 mm) below the bottom surfaces of the bottom corner fittings, no component will be permanently deformed and no component or weld will fail.

STRUCTURAL ANGLE MUST BE WELDED TO NARROW "Z" SHAPED CROSS MEMBER UNDER EACH END OF REPAIR BOARD SECTION TO PROVIDE ADEQUATE SUPPORT SURFACE FOR ATTACHMENT OF SECTION END. ANGLE MUST BE SIZED TO EXTEND BEYOND AND BE ATTACHED TO ADJACENT FLOOR BOARD ON EACH SIDE OF REPAIR SECTION JOINT. ANGLE MUST BE WELDED ON EACH END AND ALONG BOTTOM WITH A MINIMUM OF 2 IN. (5 CM) LONG SKIP WELDS SPACED APART NO MORE THAN 6 IN. (15 CM) CENTER TO CENTER.

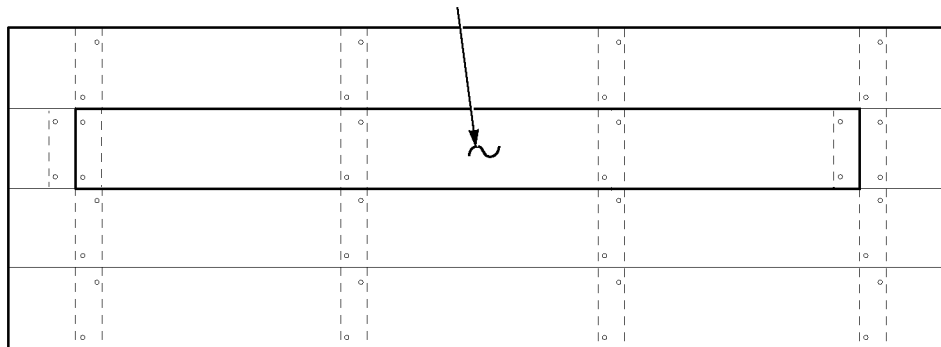
ALTHOUGH DAMAGE MAY ONLY OCCUR IN A SMALL AREA. THE REPAIR BOARD SECTION MUST BE SIZED TO SPAN AT LEAST FOUR CROSS MEMBERS.



REMOVAL OF DAMAGED BOARD

NOTE: ONLY ONE PARTIAL LENGTH REPAIR BOARD SECTION PER LENGTH OF CONTAINER IS PERMITTED AND NO MORE THAN THREE PARTIAL LENGTH REPAIR BOARD SECTIONS THROUGHOUT THE ENTIRE CONTAINER FLOOR ARE PERMITTED. LATERALLY ADJACENT REPAIR BOARD SECTIONS MUST NOT HAVE JOINTS RESTING ON THE SAME CROSS MEMBER.

PARTIAL LENGTH REPAIR BOARD SECTION MUST SPAN AT LEAST FOUR CROSS MEMBERS



FINISHED REPAIR

*Figure 9-11. Example of Flooring Repair.*

<b>9-11. ADDITIONAL INSPECTION CRITERIA (CONT).</b>
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<b>WARNING</b>
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Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.

**NOTE**

Notify direct support maintenance or supervisor if welding is required.

**j. Damage and Repair.**

- (1) *Patch.* Any repair of a wall panel that adds or replaces material without complete replacement of the panel. An acceptable patch is of permanent design, of similar material and configuration and weather-proof. Patch is a generic repair term, which for purposes of this inspection criteria, is reserved exclusively for repairs of non-primary components such as wall panels.
- (2) *Splice.* Any repair of a primary (main) structural component (member) that replaces material without complete replacement of the member. Gussets, backup plates or other reinforcement (protector) plates are not to be construed as splices. Splice is a regulatory repair term, which for purposes of this inspection criteria, is reserved exclusively for repairs on components of the primary structure.
- (3) *Gusset.* Reinforcement plate, usually triangular in shape, welded between adjacent components to reinforce the structure and provide added resistance to handling damage.
- (4) *Backup Plate.* A reinforcement (doubler) plate installed on the backside of a structural component and not on the exterior of the component's profile. The backup plate serves to stiffen and strengthen the component.
- (5) *Insert.* A specific type of repair in which replacement material is fitted flush with the original component and only a partial profile of the component's cross section is replaced.
- (6) *Section.* A specific type of repair in which replacement material is fitted flush with the original component and the entire profile of the component's cross section is replaced.
- (7) *Hole.* A circular penetrating puncture through any part of the flatrack.
- (8) *Pinhole.* A small hole less than 1/8 in. (3.18 mm) in diameter. A pinhole typically results from a tiny skip or porosity in a weld and usually is only detected during a light leak test.
- (9) *Welder's Hammer.* A hammer with a chisel shaped head used to tap on a welded joint and/or the surface of a structural component to ascertain the strength and integrity.
- (10) *Corrosive Failure.* Corrosive failure (galvanic or electrolytic) is determined when the corroded metal can be punctured by striking the area lightly with a welder's hammer.
- (11) *Caulking.* A sealant compound used to provide water tightness around patches in panels, around riveted seams, in holes of pop rivets, in joints between dissimilar metals, in gaps between floor board edges and in gaps where the floor boards adjoin the interior flatrack wall.
- (12) *Undercoating.* Bituminous material or other waterproof coating brushed or sprayed on the entire underside of the container floor to protect all the metal understructure against corrosion and to waterproof the wooden flooring.

## Section IV. UNIT MAINTENANCE PROCEDURES

### 9-12. INTRODUCTION.

This section contains Unit Maintenance procedures for the flatrack. These procedures may include servicing, hoisting, inspection, cleaning, removal and disassembly, inspection, assembly and installation, adjustments and any procedures needed for placing the flatrack or its components into service.

### 9-13. GENERAL MAINTENANCE INSTRUCTIONS.

- a. **Servicing.** The flatrack requires only lubrication and cleaning as service.
- b. **Hoisting Loaded Flatrack.**

#### WARNING

Flatrack and load weigh up to 38,500 lbs (17,479 kg). Flatrack and load, including sideboards and tarp, loaded on PLS truck or trailer must not exceed 36,600 lbs (16,616 kg). Attach suitable lifting device to avoid serious injury or death to personnel.

- (1) For other than ordinary operation, flatrack must be secured and lifted with a forklift or other lifting device. The flatrack is loaded on and off the Palletized Load System (PLS) truck or the Palletized Load System Trailer (PLST) using the Load Handling System (LHS). Refer to TM 9-2320-364-10.

#### CAUTION

Do not load or unload flatrack with loose cargo or damage to equipment or cargo may result.

- (2) Install sideboards, straps and cargo tarp before lifting any loose load.
  - (3) When lifting a loaded flatrack from upper ISO corner castings, use spreader bar and chains to avoid damage to flatrack.
- c. **Inspection of Installed Parts.** Perform inspection with the item in its normally installed position/condition, considering accessibility and visibility of the item being inspected. The purpose of the inspection is to determine if the item is damaged or incomplete to the extent that it should be replaced/repaired.
- (1) Inspect for loose, missing or damaged parts.
  - (2) Inspect parts for dents, holes, worn spots, scratches, marred finish, cracks, rust and corrosion.
  - (3) Look for loose or chipped paint, rust or gaps where parts are welded together. If a bad weld is found, notify your supervisor.

**9-13. GENERAL MAINTENANCE INSTRUCTIONS (CONT).**

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

**d. Cleaning.** Remove buildup of dirt and grease by wiping with a cloth (Item 4, Appendix E). Use a cloth or wire scratch brush (Item 1, Appendix I) and drycleaning solvent (Item 14, Appendix E) to clean metal parts. Allow to dry.

**e. Removal.** During removal process, tag (Item 15, Appendix E) similar parts for ease of installation.

**f. Disassembly.** During disassembly, tag (Item 15, Appendix E) similar parts for ease of assembly.

**g. Inspection - Acceptance/Rejection Criteria.** Verify that repaired or used components conform to the wear limits, fits and tolerances established.

**h. Painting.** Refer to FM 2-30, Camouflage Pattern Painting; and TB 43-0209, Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Material Handling Equipment.

**i. Lubrication.** Lubrication instructions are contained in Appendix K.

**j. Assembly.** Assembly instructions contain all necessary sealing and torquing procedures.

**k. Installation.** Installation instructions include procedures for checking alignment and adjustment of items.

**l. Adjustment.** Make adjustments to the flatrack or components as needed before operation of the system.

**m. Placing in Service.** These instructions include any final servicing, checks, calibration and operation checks not previously covered that may be required for an assembly, component or end item.



**9-14. ROLLER REPAIR.**

This task covers:

- |                        |                          |
|------------------------|--------------------------|
| a. Disassembly         | c. Assembly              |
| b. Cleaning/Inspection | d. Follow-On Maintenance |

**INITIAL SETUP***Tools and Special Tools*

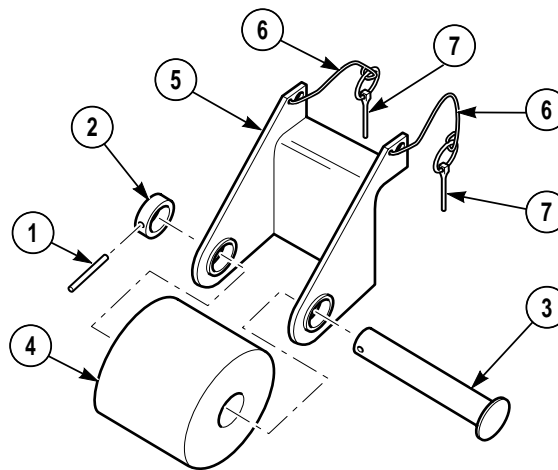
Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)  
Gloves, Chemical and Oil Protective  
(Item 5, Appendix I)  
Goggles, Industrial (Item 6, Appendix I)  
Gun, Air Blow (Item 7, Appendix I)

*Materials/Parts*

Cloth, Lint-free (Item 4, Appendix E)  
Solvent, Drycleaning (Item 14, Appendix E)  
Pin, Spring (Item 21, Appendix H)

*Equipment Condition*

Roller removed, (Para 8-4)

**a. Disassembly.****NOTE**

- Procedure shows left side roller; repair is the same for both rollers.
- Right side roller has pin installed in opposite direction.
- Note location of pin and collar prior to removal to ensure proper installation.

- (1) Remove and discard spring pin (1) from collar (2).
- (2) Remove collar (2), pin (3) and roller (4) from bracket (5).

**NOTE**

Perform Step (3) only if lockwire or safety pin is damaged.

- (3) Remove lockwire (6) from bracket (5) and safety pin (7).

**9-14. ROLLER REPAIR (CONT).**

**b. Cleaning/Inspection.**

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
  - If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.
- (1) Visually inspect all components for dirt or other contamination and clean with a lint-free cloth and drycleaning solvent.

**WARNING**

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or severe injury or death could result.

- (2) Dry components with compressed air.
- (3) Inspect lockwires for damage.
- (4) Inspect roller for damage that would interfere with rotation.

**c. Assembly.**

**NOTE**

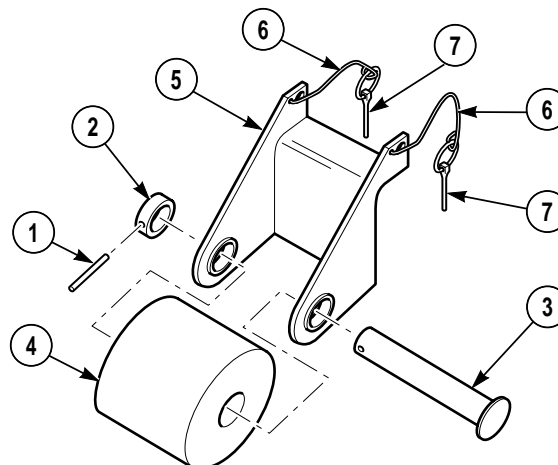
Perform Step (1) only if lockwire or safety pin was removed.

- (1) Cut lockwire (6) to size and crimp on safety pin (7) and bracket (5).

**NOTE**

- Holes in pin and collar must be aligned prior to installing spring pin.
- Ensure pin and collar are installed as noted during disassembly. Left side shown.

- (2) Install roller (4) in bracket (5) with pin (3), collar (2) and spring pin (1).



**d. Follow-On Maintenance:**

- Install roller, (Para 8-4).

**END OF TASK**

## 9-15. FLOOR BOARD REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Drill, Electric, Portable (Item 3, Appendix I)  
 Drill Set, Twist (Item 4, Appendix I)  
 Gloves, Chemical and Oil Protective (Item 5, Appendix I)  
 Goggles, Industrial (Item 6, Appendix I)  
 Socket, T-30 (Item 13, Appendix I)

#### *Materials/Parts*

Waterproofing, Wood (Item 16, Appendix E)  
 Floor Board (a/r) (Appendix G)  
 Screw, Flooring (a/r) (Item 26, Appendix H)

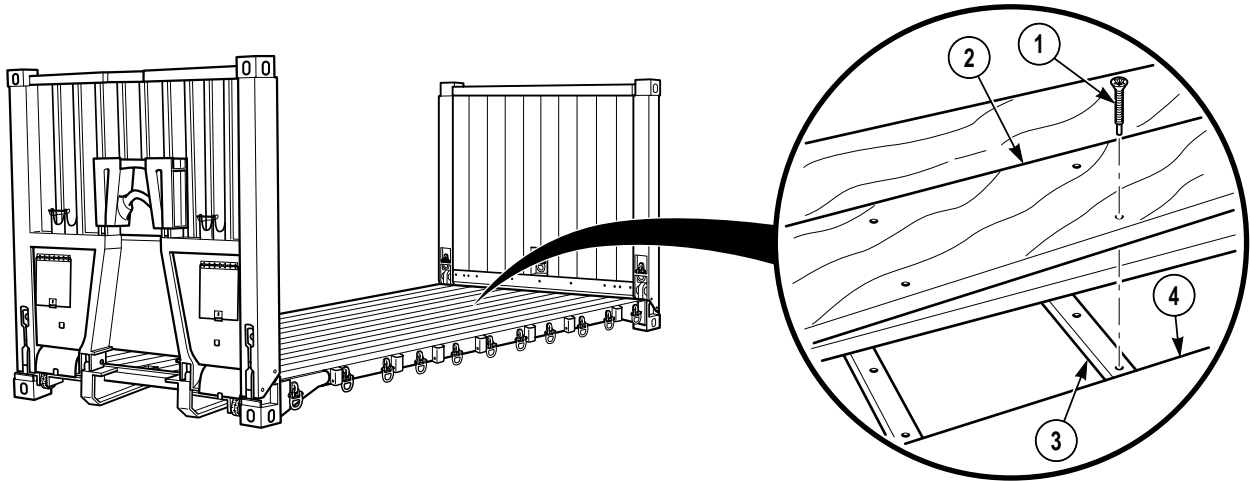
#### *Personnel Required*

Two

#### *Equipment Condition*

Front and rear wall raised, (Para 7-10)  
 Main rail cap removed, (Para 9-23)

### a. Removal.



- (1) Remove screws (1) from floor board (2) and crossmember (3). Discard screws.

### **WARNING**

Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.

- (2) With the aid of an assistant, remove floor board (2) from flatrack (4).

**9-15. FLOOR BOARD REPLACEMENT (CONT).**

**b. Installation.**

**WARNING**

- Floor boards must be replaced with same laminated wood as specified. Using a substitution of alternative wood will result in lower deck strength and capability, which could lead to deck failure. Injury to personnel and/or damage to equipment may result.
- Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.
- Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.
- Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.

**CAUTION**

Lap joint on ends of floor board being patched and repair piece must have lap joint same width as crossmember. Floor boards and patches must be fastened to a minimum of four crossmembers. Do not fasten floor boards or patches to removable crossmember. Failure to comply may result in damage to equipment.

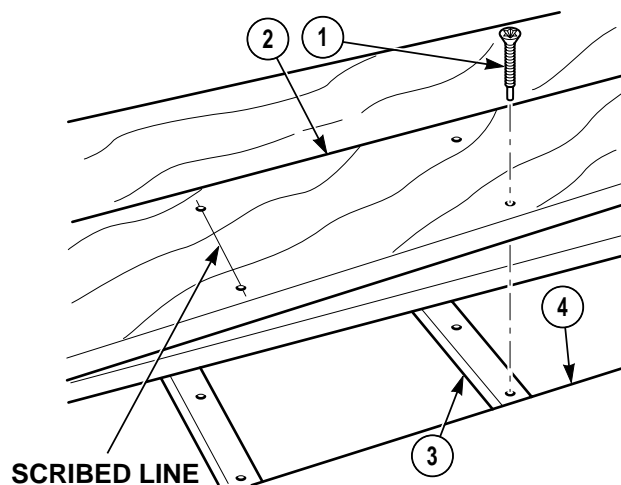
**NOTE**

- If required floor board is unavailable, a combination of two narrower floor boards may be combined or a wider floor board may be cut narrower to achieve required width.
  - Floor boards must be overlapped.
  - Floor boards must be installed with a gap of no more than 1/16 in. (1.6 mm) between upper edges.
  - Floor boards may be patched instead of replacing entire length. Ends of patched floor boards must overlap and be fastened to crossmember.
- (1) Apply waterproofing to all wood surfaces that have been cut and all exposed surfaces that do not have waterproofing applied.
  - (2) With the aid of an assistant, position floor board (2) on flattrack (4).
  - (3) Scribe a line on floor board (2) to correspond with center of each crossmember (3).

**NOTE**

Screws must be installed 1/4 in. (6.35 mm) to either side of original hole in crossmember depending on amount of wood at location of hole.

- (4) Drill 7/32 in. (5.56 mm) pilot holes in floor board (2) and crossmember (3).
- (5) Install screws (1) in floor board (2). Tighten screws until head of screw is below surface of the floor board.



**c. *Follow-On Maintenance:***

- Install main rail cap, (Para 9-23).
- Lower front and rear wall, (Para 7-10).

**END OF TASK**

## 9-16. STOWAGE BOX REPAIR.

This task covers:

- |                |                        |                          |
|----------------|------------------------|--------------------------|
| a. Removal     | c. Cleaning/Inspection | e. Installation          |
| b. Disassembly | d. Assembly            | f. Follow-On Maintenance |

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Tool Kit, Blind Rivet (Item 14, Appendix I)  
 Drill, Electric, Portable (Item 3, Appendix I)  
 Drill Set, Twist (Item 4, Appendix I)

#### *Materials/Parts*

Brush, Stiff Bristle (Item 2, Appendix E)  
 Detergent (Item 5, Appendix E)

#### *Materials/Parts - Continued*

Locknut (4) (Item 9, Appendix H)  
 Rivet (14) (Item 24, Appendix H)

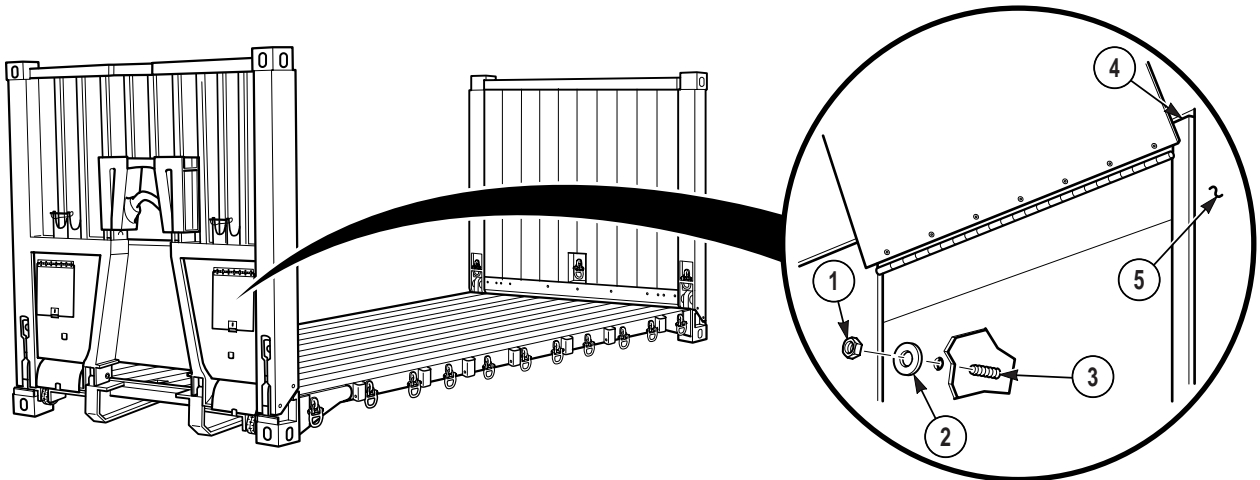
#### *Personnel Required*

Two

#### *Equipment Condition*

Flatrack removed from truck, (TM 9-2320-364-10)

### a. Removal.



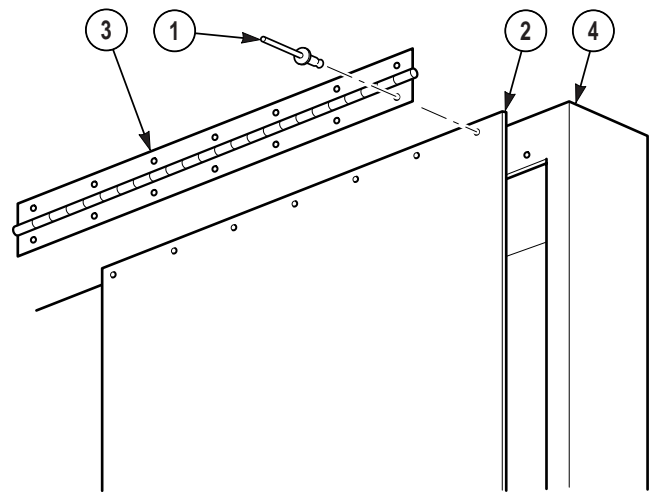
### NOTE

Both left and right storage boxes and doors are removed the same way. Left one shown.

- (1) Remove four locknuts (1) and washers (2) from studs (3). Discard locknuts.
- (2) With the aid of an assistant, remove storage box (4) from front wall (5).

**b. Disassembly.**

- (1) Drill out seven rivets (1) and remove stowage box door (2) from hinge (3). Discard rivets.
- (2) Drill out seven rivets (1) and remove hinge (3) from stowage box (4). Discard rivets.

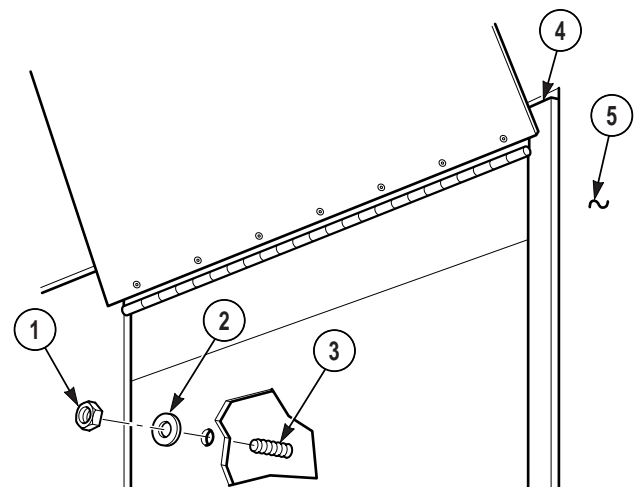


**c. Cleaning/Inspection.**

- (1) Inspect latch, lid and inside of stowage box (4) for dirt and debris, and clean all components with water, detergent and stiff-bristled brush.
- (2) Inspect all weldments for cracks or other damage.
- (3) Inspect that drain holes are open.

**d. Assembly.**

- (1) Install hinge (3) on stowage box (4) with seven rivets (1).
- (2) Install stowage box door (2) on hinge (3) with seven rivets (1).



- e. Installation.** With the aid of an assistant, install stowage box (4) on front wall (5) and studs (3) with four washers (2) and locknuts (1).

**f. Follow-On Maintenance:**

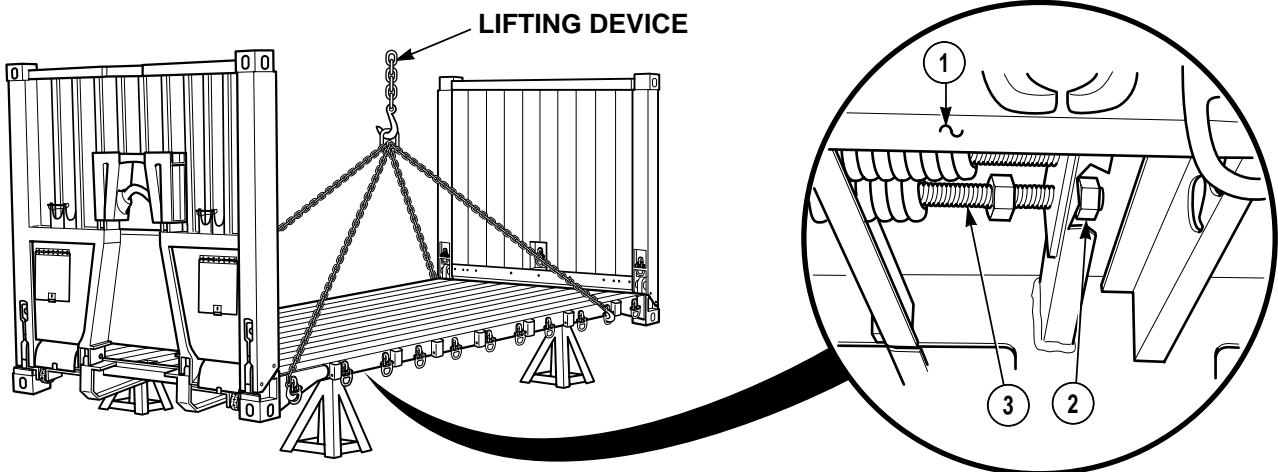
- Load flatrack on truck or trailer, (TM 9-2320-364-10).

**END OF TASK**





a. **Removal.**



**WARNING**

- Flatrack weighs 7,300 lbs (3,312 kg). Attach suitable lifting device prior to lifting to avoid possible injury or death to personnel.
- This task must never be performed with the walls of the flatrack lowered. Walls must always be raised prior to performing Step (1). Failure to comply can result in too much tension on chain causing severe injury or death to personnel.
- Ensure walls are raised and pins are installed prior to performing this task. Failure to comply could result in wall falling causing severe injury or death to personnel.

**NOTE**

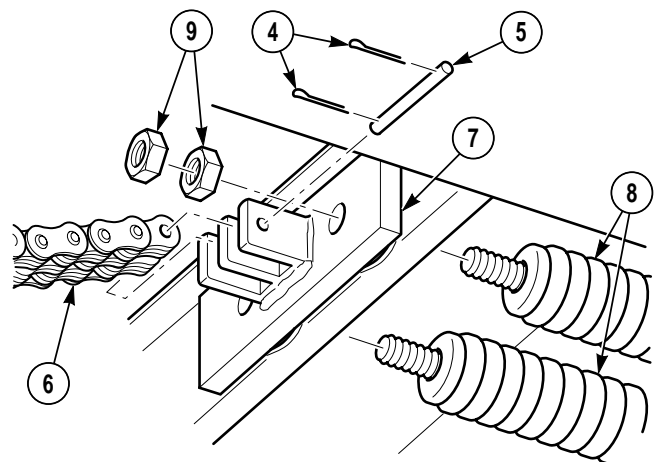
Front and rear springs and chains are removed the same way except where noted. Left and right springs and chains are removed the same way except where noted. Left front shown.

- (1) Attach lifting device to four corners of flatrack (1).
- (2) With the aid of an assistant and using a lifting device, raise flatrack (1) and support on jackstands.
- (3) Remove two nuts (2) from threaded rods (3).
- (4) Remove two cotter pins (4), pin (5) and chain (6) from clevis (7). Discard cotter pins.

**NOTE**

Pipe wrench may be used to hold springs in Step (5).

- (5) While holding springs (8), remove four nuts (9) and clevis (7) from springs.



**9-17. SPRING AND CHAIN REPLACEMENT (CONT).**

- (6) Remove four screws (10) and removable crossmember (11) from flatrack (1).
- (7) Remove two springs (8) from flatrack (1).
- (8) Remove two nuts (12) from threaded rods (3).
- (9) Remove mud flap (13) from lower clip (14) and position in upper clip (15).

**NOTE**

- Pins are not removable on front wall.
- Chain connection point is slightly different on front and rear walls. Front wall shown.

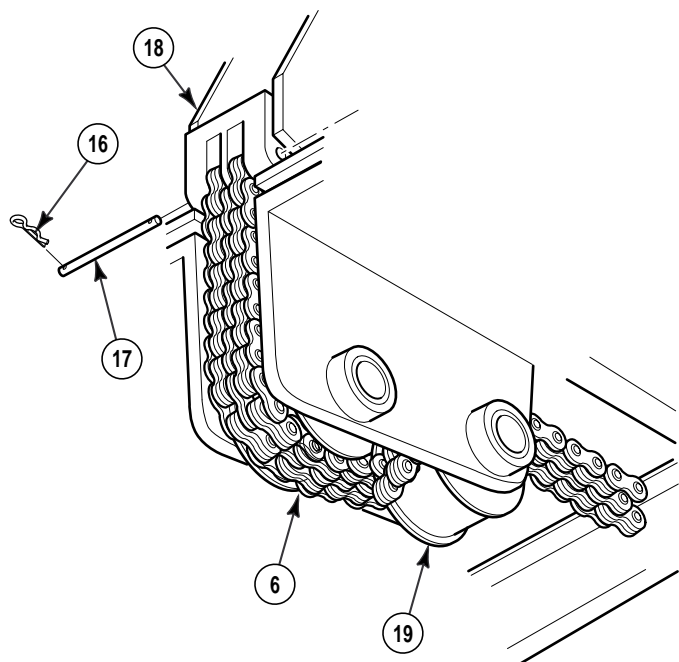
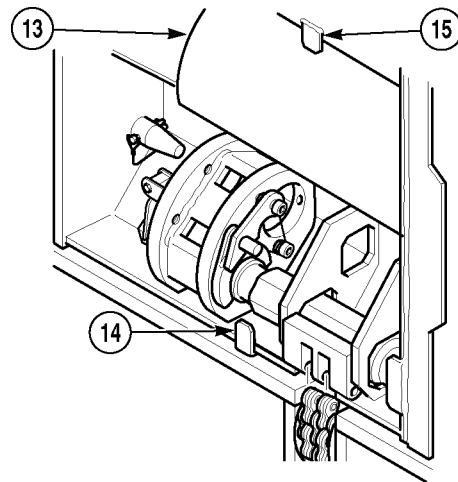
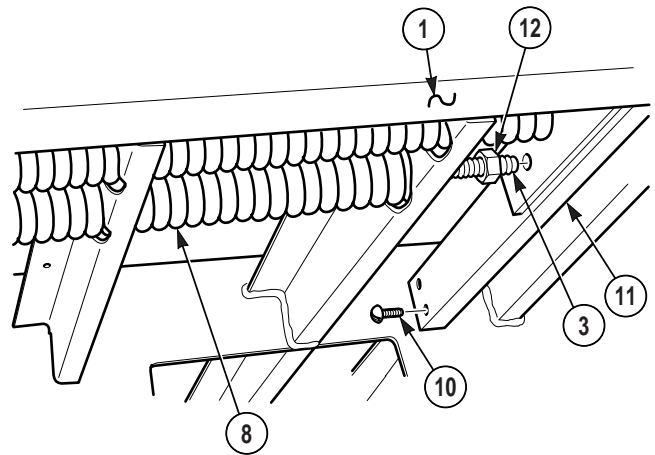
- (10) Remove two cotter pins (16), pin (17) and chain (6) from clevis (18). Discard cotter pins.
- (11) Remove chain (6) from roller (19).

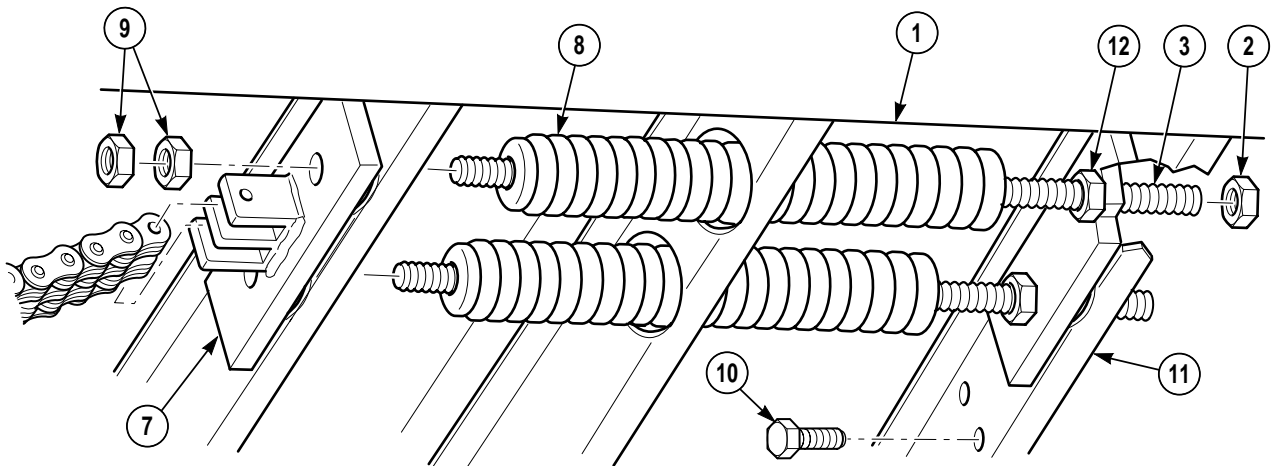
**b. Installation.**

**NOTE**

Front and rear spring and chain assemblies are installed the same way except where noted.

- (1) Install chain (6) on clevis (18) with pin (17) and two cotter pins (16).
- (2) Position chain (6) on roller (19).
- (3) Remove mud flap (13) from upper clip (15) and position in lower clip (14).



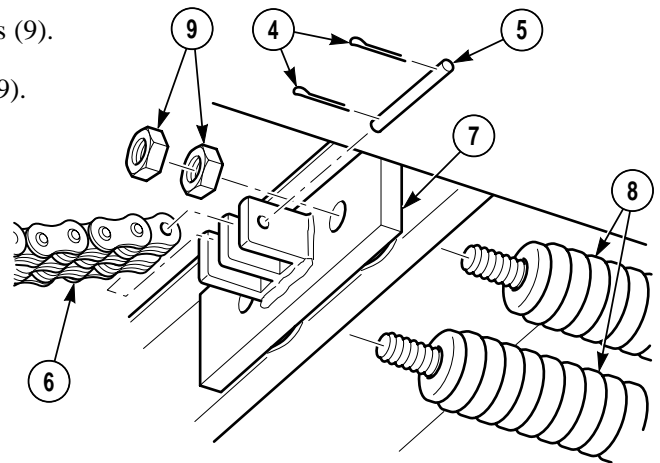


- (4) Position two nuts (12) on threaded rods (3).
- (5) Position two springs (8) on flatrack (1).

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (6) Apply sealing compound to threads of four screws (10).
- (7) Install removable crossmember (11) on flatrack (1) with four screws (10). Tighten screws to 35 lb-ft. (47 N·m).
- (8) Apply sealing compound to threads of four nuts (9).
- (9) Install clevis (7) on springs (8) with four nuts (9).
- (10) Position two threaded rods (3) through removable crossmember (11).
- (11) Position two nuts (2) on threaded rods (3).
- (12) Install chain (6) on clevis (7) with pin (5) and two cotter pins (4).
- (13) Adjust springs. Refer to Para 9-18.



**9-17. SPRING AND CHAIN REPLACEMENT (CONT).**

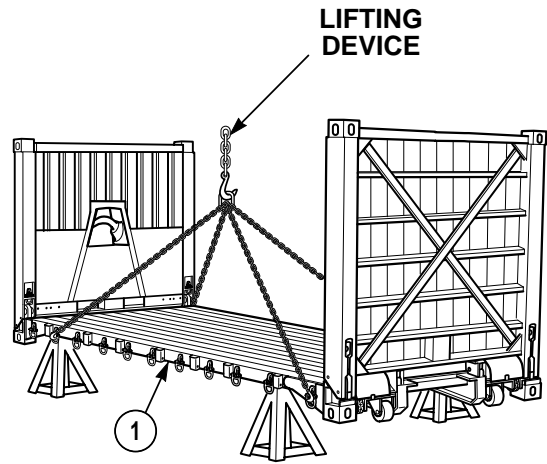
**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Attach suitable lifting device prior to lifting to avoid possible injury or death to personnel.

- (14) Attach lifting device to four corners of flatrack (1).
- (15) With the aid of an assistant and using lifting device, raise flatrack (1) and remove jackstands.
- (16) With the aid of an assistant, lower flatrack (1) to floor.
- (17) Remove lifting device from flatrack (1).

**c. Follow-On Maintenance:**

- Lower front and rear wall, (Para 7-10).



**END OF TASK**

**9-18. SPRING ADJUSTMENT.**

This task covers:

- a. Adjustment
- b. Follow-On Maintenance

**INITIAL SETUP**

*Tools and Special Tools*

- Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)
- Jackstand (4) (Item 9, Appendix I)
- Lifting Device, Minimum Capacity 8,000 lbs
- Socket Set, Deepwell, 1/2 in. (Item 12, Appendix I)
- Wrench, Combination 1-1/8 in. (Item 20, Appendix I)
- Wrench, Torque (0 to 300 lb-ft [0-407 N·m]) (Item 24, Appendix I)

*Materials/Parts*

- Sealing Compound (Item 12, Appendix E)

*Personnel Required*

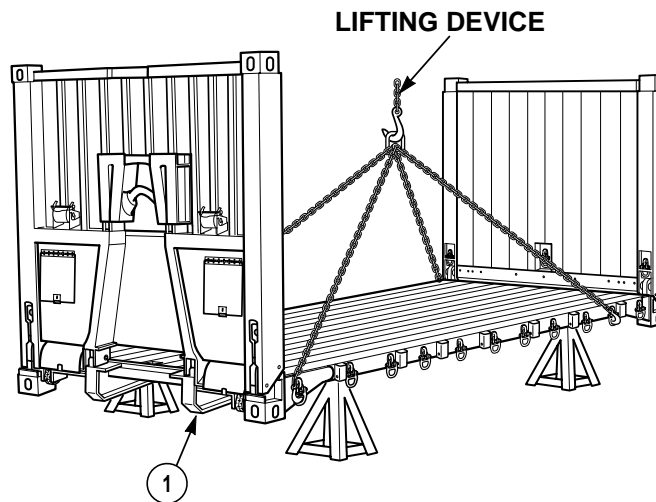
- Two

*Equipment Condition*

- Front and rear wall raised, (Para 7-10)
- Flatrack removed from truck or trailer, (TM 9-2320-364-10)
- Rollers installed on front wall, (Para 8-4) for front wall spring adjustment only

## 9-18. SPRING ADJUSTMENT (CONT).

### a. Adjustment.



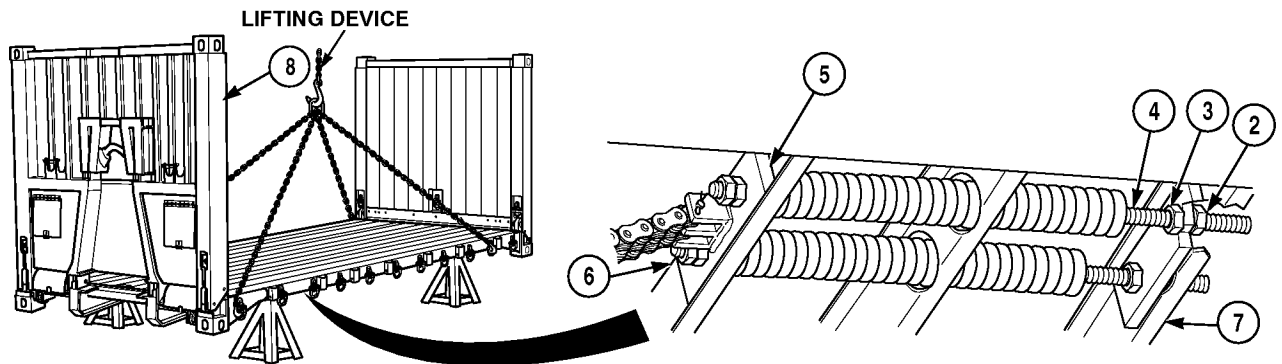
### WARNING

- Flatrack weighs 7,300 lbs (3,312 kg). Attach suitable lifting device prior to lifting to avoid possible injury or death to personnel.
- This task must never be performed with the walls of the flatrack lowered. Walls must always be raised prior to performing Step (1). Failure to comply can result in too much tension on chain causing severe injury or death to personnel.
- Ensure walls are raised and pins are installed prior to performing this task. Failure to comply could result in wall falling causing severe injury or death to personnel.

### NOTE

Front and rear springs are adjusted the same way except where noted. Left and right springs are adjusted the same way. Left front shown.

- (1) Attach lifting device to four corners of flatrack (1).
- (2) With the aid of an assistant and using a lifting device, raise flatrack (1) and support on jackstands.



### WARNING

Spring adjustments must be made with walls raised and pinned. Failure to comply may result in injury or death to personnel.

### CAUTION

Nuts on threaded rods must be adjusted evenly on all spring assemblies to ensure equal tension on springs. Failure to comply may result in damage to equipment.

### NOTE

- For front wall spring adjustment, Perform Steps (3) through (16).
- For rear wall spring adjustment, Perform Steps (17) through (33).

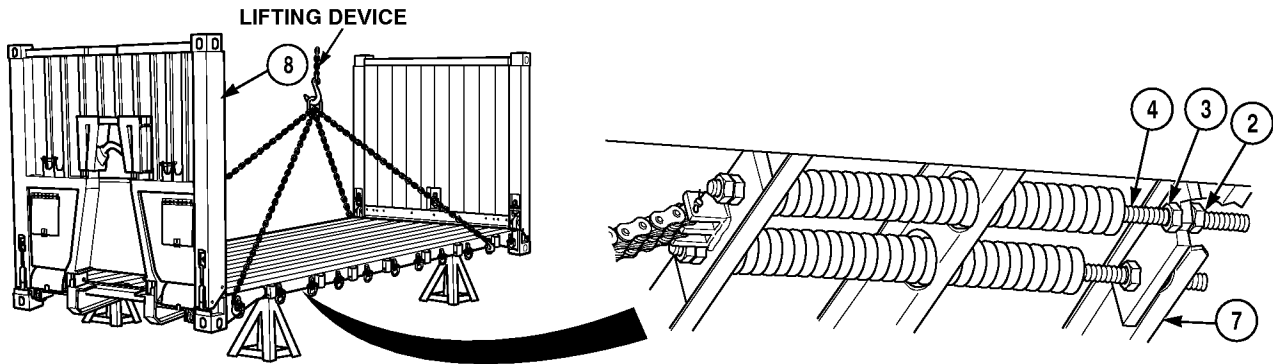
- (3) Loosen four nuts (2) and jam nuts (3) on threaded rods (4) until clevis (5) can be separated from crossmember (6).
- (4) Tighten four nuts (2) on threaded rods (4) until clevis (5) contacts crossmember (6).

### WARNING

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Apply sealing compound to threads of four threaded rods (4) on spring side of crossmember (7).
- (6) Tighten four jam nuts (3) on threaded rods (4) until jam nuts contact crossmember (7).
- (7) Tighten four nuts (2) on threaded rods (4) to 200 lbs-ft (271 N·m).
- (8) Lower front wall (8). Refer to Para 7-10.
- (9) With the aid of an assistant, raise front wall (8). Refer to Para 7-10.

**9-18. SPRING ADJUSTMENT (CONT).**

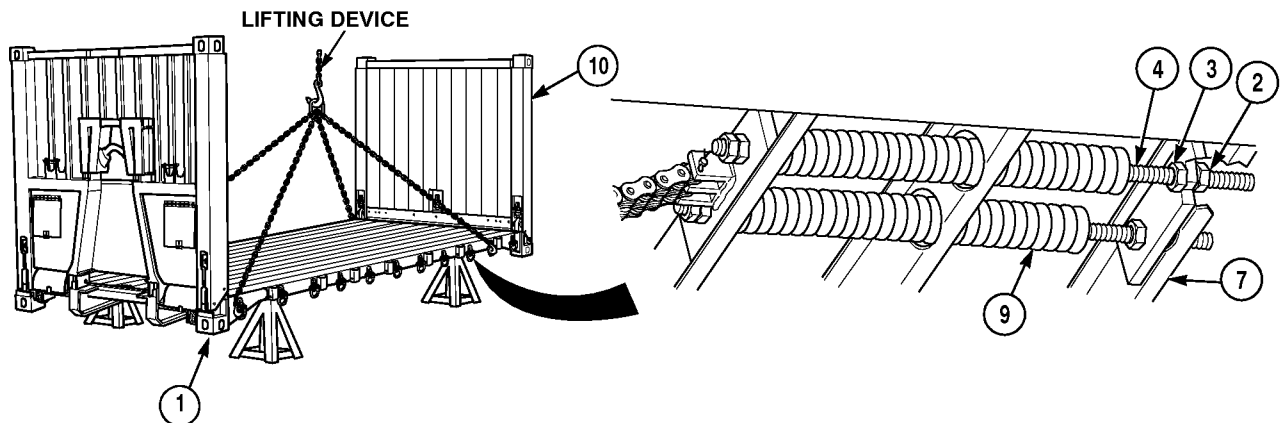


**NOTE**

- If wall is too heavy, Perform Steps (10) through (12). If wall raises too easily, or if wall starts to raise by itself, Perform Steps (13) through (16).
- Nut may be marked to ensure a complete revolution.

- (10) Loosen four jam nuts (3), on threaded rods (4), one complete turn.
- (11) Tighten four nuts (2) on threaded rod (4).
- (12) Repeat Steps (8) through (11) until wall (8) is easy to raise but does not raise by itself.
- (13) Loosen four nuts (2) on threaded rods (4) one complete turn.
- (14) Tighten four jam nuts (3) against crossmember (7) one complete turn.
- (15) Tighten four nuts (2) on threaded rods (4).
- (16) Repeat Steps (8) and (13) through (15) until wall is easy to raise but does not raise by itself.



**NOTE**

Perform Steps (17) through (33) for rear wall spring adjustment.

- (17) Loosen four jam nuts (3) on threaded rods (4) until jam nuts are against springs (9).
- (18) Loosen, but do not remove, four nuts (2) on threaded rods (4).
- (19) Slide springs (9) toward center of flatrack (1).
- (20) Tighten four nuts (2) until nuts contact removable crossmember (7).

**NOTE**

Nut may be marked to ensure a complete revolution.

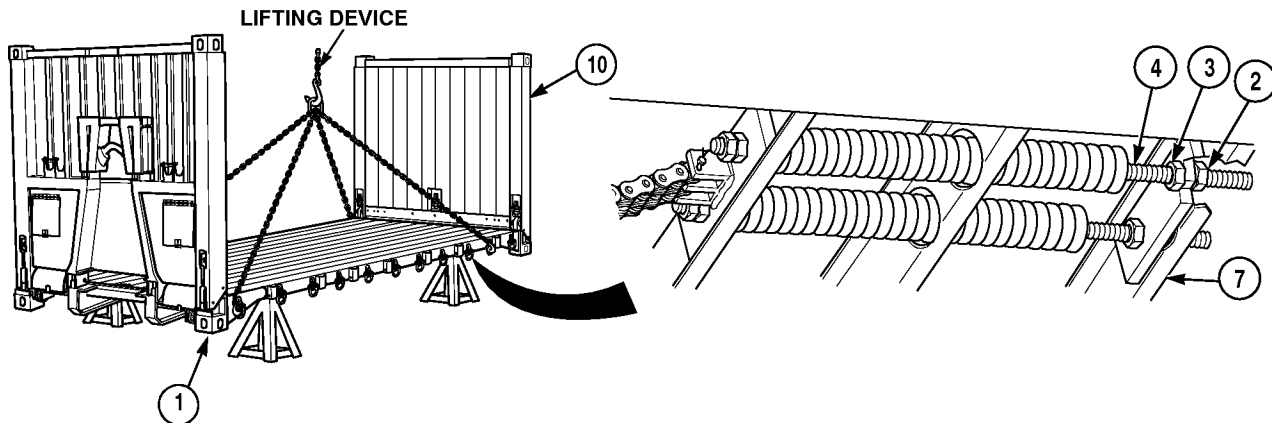
- (21) Tighten four nuts (2), an additional five complete turns.

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (22) Apply sealing compound to threads of four threaded rods (4) on spring side of removable crossmember (7).
- (23) Tighten jam nuts (3) on threaded rods (4) until jam nuts contact removable crossmember (7).
- (24) Tighten four nuts (2) on threaded rods (4) to 200 lbs-ft (271 N·m).
- (25) With the aid of an assistant, lower rear wall (10). Refer to Para 7-10.
- (26) With the aid of an assistant, raise rear wall (10). Refer to Para 7-10.

**9-18. SPRING ADJUSTMENT (CONT).**



**NOTE**

If wall is too heavy, Perform Steps (27) through (29). If wall raises too easily, or if wall starts to raise by itself, Perform Steps (30) through (33).

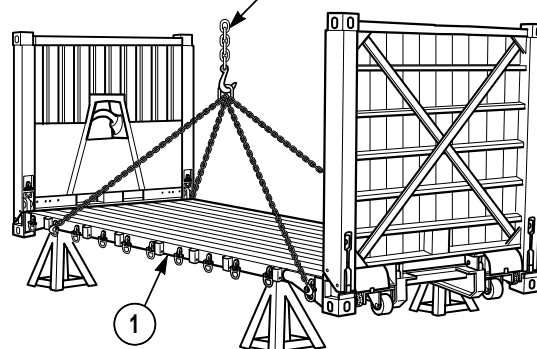
- (27) Loosen four jam nuts (3) on threaded rods (4) one full turn.
- (28) Tighten four nuts (2) on threaded rods (4).
- (29) Repeat Steps (25) through (28) until rear wall (10) is easy to raise but does not raise by itself.
- (30) Loosen four nuts (2) on threaded rods (4) one full turn.
- (31) Tighten jam nuts (3) until jam nuts contact removable crossmember (7).
- (32) Tighten nuts (2) on threaded rods (4).
- (33) Repeat Steps (25), (26) and (30) through (32) until rear wall (10) is easy to raise but does not raise by itself.

**WARNING**

Flatrack weighs 7,300 lbs (3,312 kg). Attach suitable lifting device prior to lifting to avoid possible injury or death to personnel.

- (34) Attach lifting device to four corners of flatrack (1).
- (35) With the aid of an assistant and using lifting device, raise flatrack (1) and remove jackstands.
- (36) With the aid of an assistant, lower flatrack (1) to floor.
- (37) Remove lifting device from flatrack (1).

**LIFTING DEVICE**



**b. Follow-On Maintenance:**

- Lower front and rear wall, (Para 7-10).

**END OF TASK**



**9-19. TIEDOWN RING REPLACEMENT (CONT).**

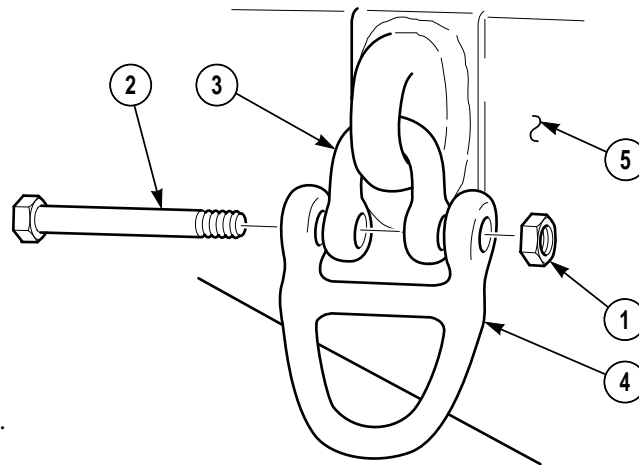
**b. Installation.**

**CAUTION**

Do not over tighten locknuts or damage to equipment could result.

**NOTE**

- There are 28 tiedown rings on flatrack. All 28 tiedown rings are installed the same way.
- The flatrack has twenty-two 10,000 lb (4,540 kg) capacity tiedown rings and six 25,000 lb (11,350 kg) capacity tiedown rings. The 25,000 lb (11,350) capacity tiedown rings are larger in appearance.
- Note location and size of tiedown rings prior to removal to ensure the proper capacity tiedown ring is installed in the proper location.
- The 25,000 lb (11,350 kg) capacity tiedown rings are located at each end and in the center position on each side rail.
- After tightening, approximately six threads of screws should show through locknuts on 10,000 lb (4,540 kg) capacity tiedown rings and approximately two threads of screws should show through locknuts on 25,000 lb (11,350 kg) capacity tiedown rings. The locknut must contact the D-ring.



- (1) Position U-ring (3) and D-ring (4) on flatrack (5) with screw (2) and locknut (1).
- (2) Tighten locknut (1) until it contacts D-ring (4) and proper number of screw threads are showing.

**END OF TASK**



**9-20. PULLEY AND ROLLER REPLACEMENT (CONT).**

- (2) Remove spring pin (5), pin (6) and roller (7) from bracket (4). Discard spring pin.

- (3) Position roller (7) in vise.

**NOTE**

Note position of seals prior to removal.

- (4) Remove and discard two seals (8) from roller (7).

**NOTE**

Perform Steps (5) through (7) only if bushing is damaged.

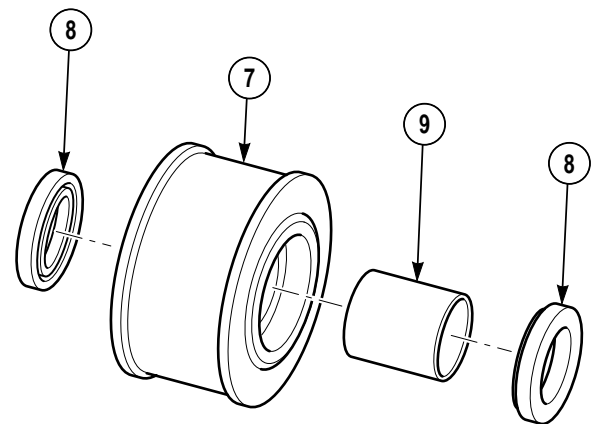
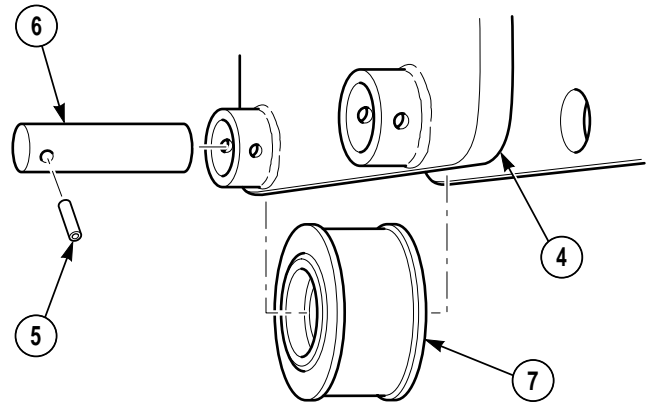
- (5) Position roller (7) in press.

**NOTE**

Note position of bushing prior to removal.

- (6) Remove and discard bushing (9) from roller (7).

- (7) Remove roller (7) from press.



**b. Installation.**

**NOTE**

Perform Steps (1) through (3) only if bushing was removed.

- (1) Position roller (7) in press.

**NOTE**

Install bushing in position as noted during removal.

- (2) Install bushing (9) in roller (7).

- (3) Remove roller (7) from press.

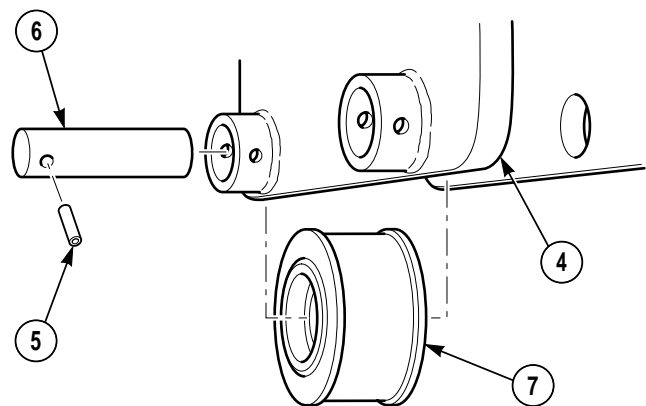
**NOTE**

Install seals in position as noted during removal.

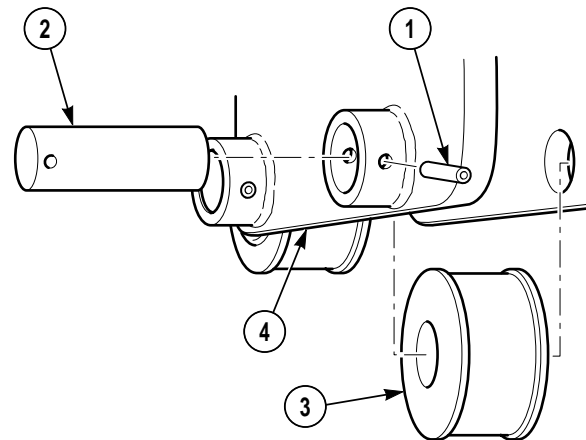
- (4) Install two seals (8) in roller (7).

- (5) Remove roller (7) from vise.

- (6) Install roller (7) on bracket (4) with pin (6) and spring pin (5).



- (7) Install pulley (3) on bracket (4) with pin (2) and spring pin (1).



**c. Follow-On Maintenance:**

- Install spring and chain, (Para 9-17).

**END OF TASK**

## 9-21. PIN ASSEMBLY AND BRACKET REPAIR.

This task covers:

- |                |                        |                          |
|----------------|------------------------|--------------------------|
| a. Removal     | c. Cleaning/Inspection | e. Installation          |
| b. Disassembly | d. Assembly            | f. Follow-On Maintenance |

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Goggles, Industrial (Item 6, Appendix I)  
 Gun, Air Blow (Item 7, Appendix I)  
 Lifting Device, Minimum Capacity 1500 lbs (681 kg)  
 Vise, Machinist's (Item 17, Appendix I)  
 Wrench, Combination 1-1/2 in. (Item 21, Appendix I)  
 Wrench, Torque (0-175 lb-ft [0-237 N·m]) (Item 23, Appendix I)

#### *Materials/Parts*

Cloth, Lint-free (Item 4, Appendix E)  
 Grease, GAA (Item 6, Appendix E)  
 Oil, Lubricating (Item 8, Appendix E)

#### *Materials/Parts (Cont'd)*

Sealing Compound (Item 12, Appendix E)  
 Solvent, Drycleaning (Item 14, Appendix E)  
 Packing, Preformed (Item 15, Appendix H)  
 Packing, Preformed (Item 16, Appendix H)  
 Pin, Cotter (4) (Item 17, Appendix H)  
 Pin, Roll (Item 19, Appendix H)  
 Pin, Roll (Item 20, Appendix H)  
 Pin, Spring (Item 22, Appendix H)  
 Pin, Spring (Item 23, Appendix H)

#### *Personnel Required*

Two

#### *Equipment Condition*

Front and rear wall lowered, (Para 7-10)  
 Pin lock assembly removed, (Para 9-24)  
 (on pin assembly and bracket to be removed only)

### a. Removal.

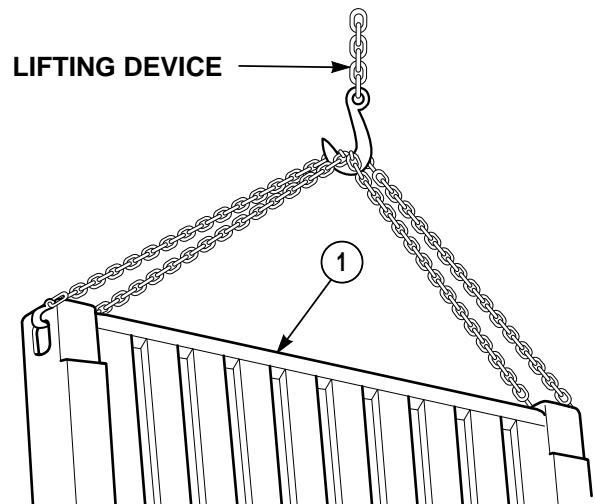
### WARNING

- Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 (545 kg). Do not stand under walls when raising or lowering. Use the aid of a lifting device when raising or lowering the front or rear wall to prevent serious injury or death to personnel.
- Lifting device must remain on wall. Lifting device is providing all the support for the wall. Failure to comply will result in wall falling causing serious injury or death to personnel.

### NOTE

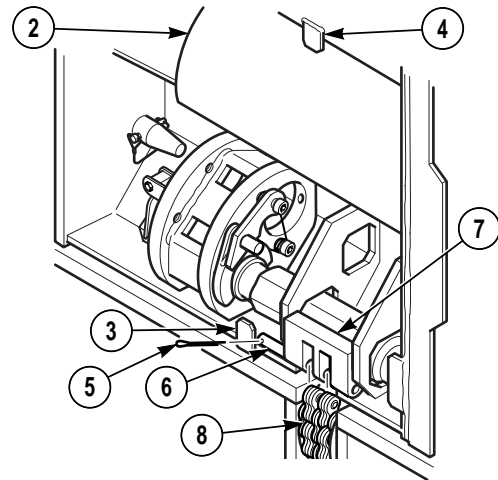
- Steps (1) through (7) are for front pin assemblies only. If removing rear pin assemblies, go to Step (8).
- All four pin assemblies are removed the same way except where noted. Left pin assembly shown.

- (1) Attach lifting device to wall (1).
- (2) Using lifting device, raise wall (1) to full upright position.

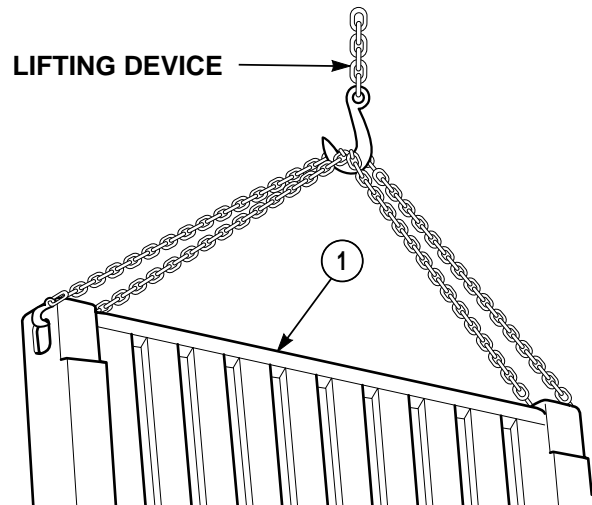




- (3) Remove mud flap (2) from lower clip (3) and install in upper clip (4).
- (4) Remove and discard two cotter pins (5) from pin (6).
- (5) Slide pin (6) out from clevis (7) and remove chain (8) from clevis.
- (6) Repeat Steps (3) through (5) for other pin assembly.



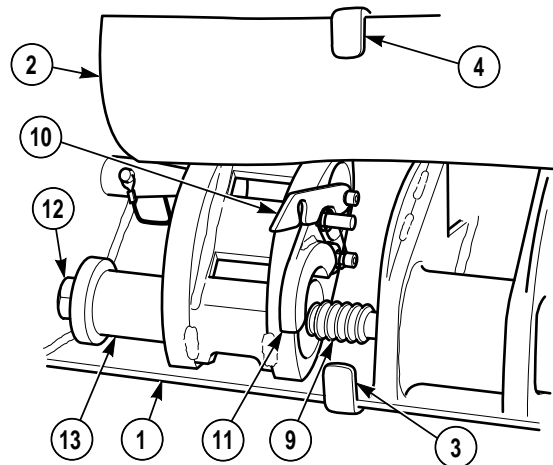
- (7) Using lifting device, lower wall (1).



**NOTE**

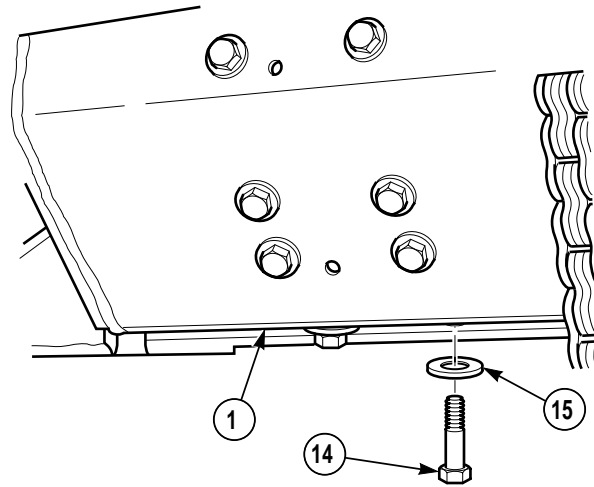
If removing rear pin assembly, Perform Step (8). If removing front pin assembly, go on to Step (9).

- (8) Remove mud flap (2) from lower clip (3) and install in upper clip (4).
- (9) Slide pin (9) towards outside of wall (1).
- (10) Lift safety catch (10) and collar (11) and turn adjusting nut (12) clockwise until tube assembly (13) separates from pin (9).



**9-21. PIN ASSEMBLY AND BRACKET REPAIR (CONT).**

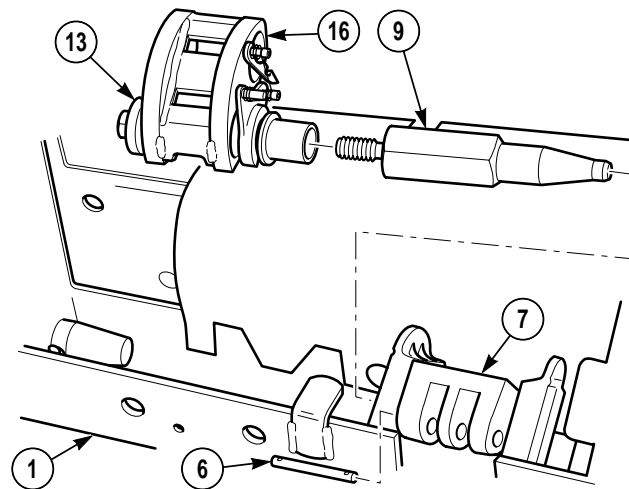
- (11) Remove eight screws (14) and washers (15) from wall (1).



**NOTE**

Tube assembly and bracket are removed as an assembly.

- (12) Remove tube assembly (13) and bracket (16) from wall (1).
- (13) Remove pin (9) from wall (1).



**NOTE**

Perform Step (14) for front pin assembly only.

- (14) Remove pin (6) from clevis (7).

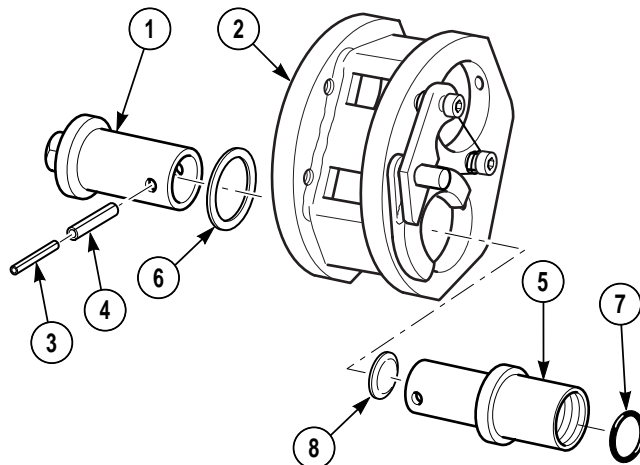
**b. Disassembly.**

- (1) Position tube assembly (1) and bracket (2) in vise.
- (2) Remove and discard spring pins (3) and (4) from tube assembly (1).
- (3) Remove nut (5) and thrust washer (6) from tube assembly (1).

**NOTE**

Perform Step (4) only if freeze plug is damaged.

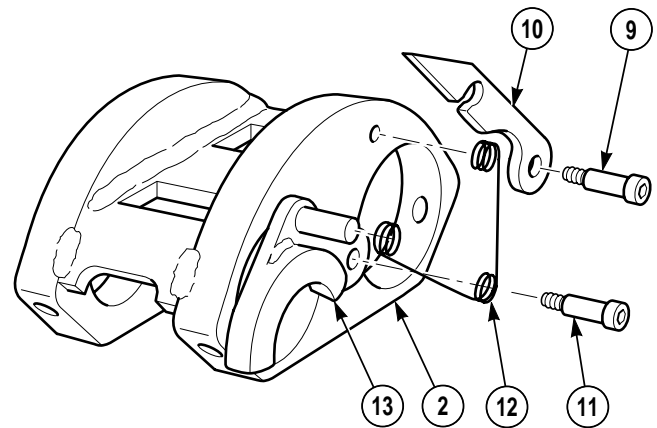
- (4) Remove and discard preformed packing (7) and freeze plug (8) from nut (5).



**NOTE**

Note position of safety catch prior to removal to ensure proper installation.

- (5) Remove shoulder bolt (9) and safety catch (10) from bracket (2).

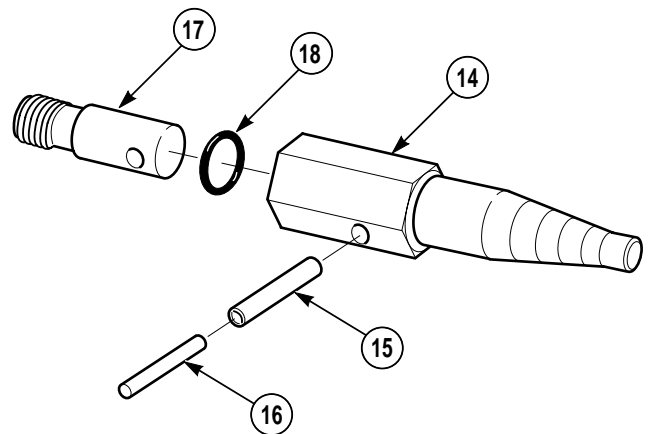


**NOTE**

Note position of spring prior to removal to ensure proper installation.

- (6) Remove shoulder bolt (11), spring (12) and collar (13) from bracket (2).
- (7) Remove bracket (2) from vise.

- (8) Position pin (14) in vise.
- (9) Remove and discard roll pins (15) and (16) from pin (14).



**NOTE**

Nut removed in Step (3) may be installed on stud pin to aid in removal of stud pin.

- (10) Remove stud pin (17) from pin (14).
- (11) Remove and discard preformed packing (18) from pin (14).
- (12) Remove pin (14) from vise.

**9-21. PIN ASSEMBLY AND BRACKET REPAIR (CONT).**

*c. Cleaning/Inspection.*

**WARNING**

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

- (1) Clean all parts with dry cleaning solvent and clean lint-free cloth.

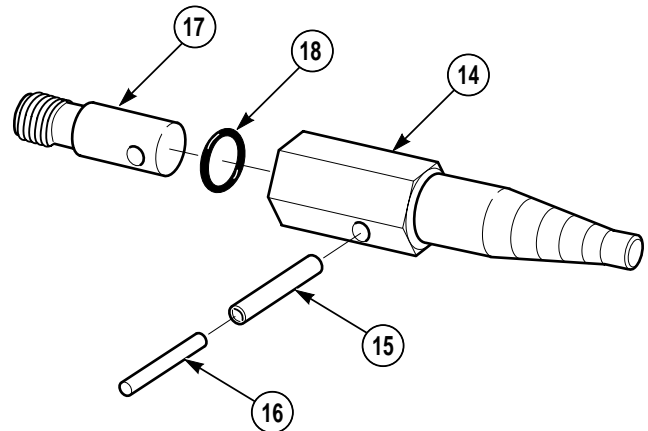
**WARNING**

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc) or severe injury or death could result.

- (2) Dry all parts with compressed air.
- (3) Inspect all parts for damage that would impair operation.
- (4) Inspect pin for roughness or gouging.
- (5) Inspect nut and stud pin for bad threads.
- (6) Discard all damaged parts.

*d. Assembly.*

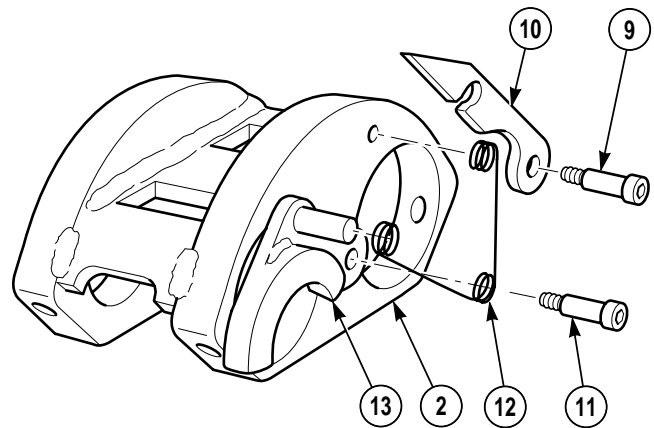
- (1) Install stud pin (17) in pin (14) with two roll pins (15) and (16).
- (2) Lubricate preformed packing (18) with lubricating oil.
- (3) Install preformed packing (18) in pin (14).



- (4) Position bracket (2) in vise.
- (5) Position spring (12) on collar (13).

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.



- (6) Apply sealing compound to threads of shoulder bolt (11).

**NOTE**

Ensure spring is installed as noted during removal.

- (7) Install collar (13) and spring (12) on bracket (2) with shoulder bolt (11).
- (8) Apply sealing compound to threads of shoulder bolt (9).

**NOTE**

- Shoulder bolt is installed through spring in Step (9).
- Ensure safety catch is installed as noted during disassembly.

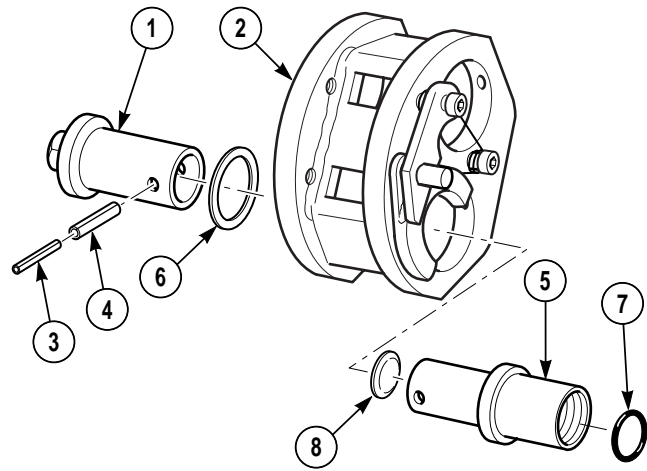
- (9) Install safety catch (10) on bracket (2) with shoulder bolt (9).

**9-21. PIN ASSEMBLY AND BRACKET REPAIR (CONT).**

**NOTE**

Perform Step (10) only if freeze plug was removed during disassembly.

- (10) Install freeze plug (8) in nut (5).
- (11) Lubricate preformed packing (7) with lubricating oil.
- (12) Install preformed packing (7) in nut (5).
- (13) Install thrust washer (6) on tube assembly (1).
- (14) Position tube assembly (1) and nut (5) in bracket (2).
- (15) Install nut (5) in tube assembly (1) with spring pins (4) and (3).

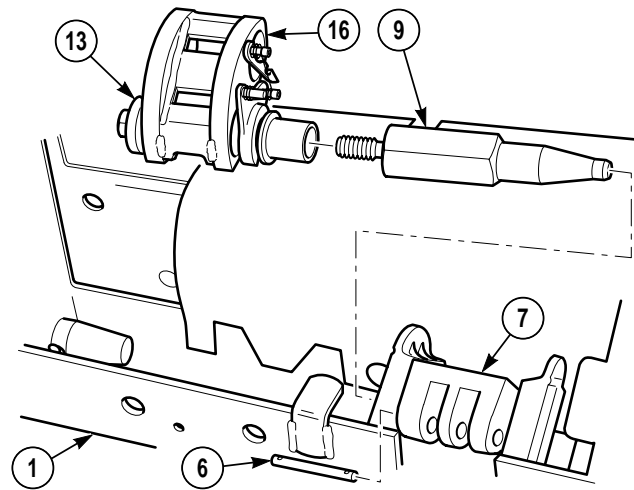


**e. Installation.**

**NOTE**

Perform Step (1) for front pin assembly only.

- (1) Position pin (6) in clevis (7).
- (2) Coat threads of pin (9) with grease.
- (3) Position pin (9) in wall (1) and slide pin through wall until pin protrudes from outside of wall.
- (4) Position tube assembly (13) and bracket (16) in wall (1).



**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (5) Apply sealing compound to threads of eight screws (14).

**NOTE**

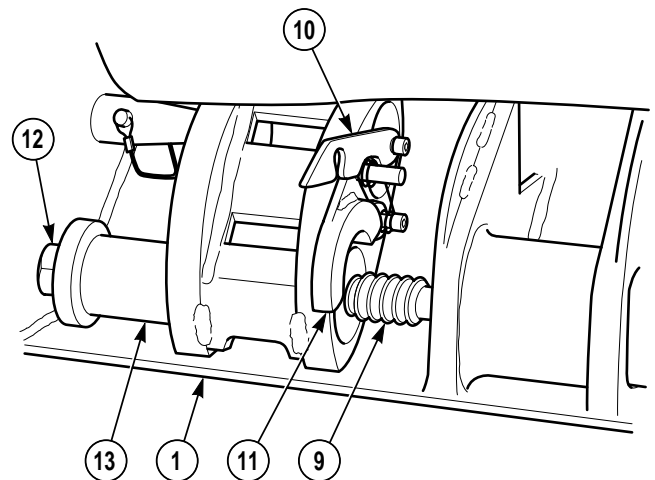
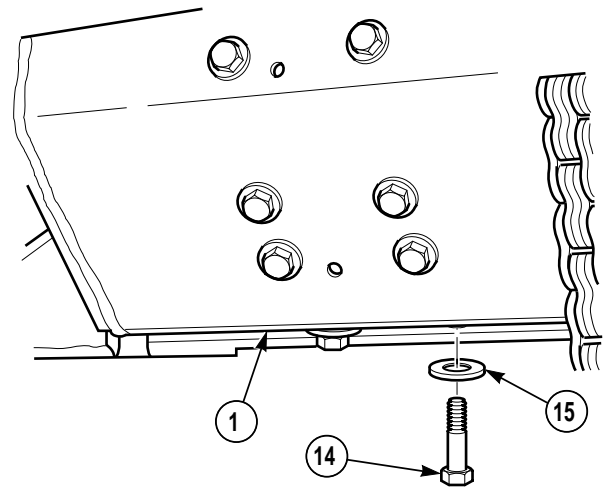
Only six screws can be tightened in Step (6). The remaining two screws will be tightened in Step (12).

- (6) Install eight washers (15) and screws (14) in wall (1).

**NOTE**

Tube is threaded on pin until collar on tube contacts shoulder of pin.

- (7) Lift safety catch (10) and collar (11) and turn adjusting nut (12) counterclockwise to thread tube assembly (13) on pin (9).
- (8) Slide pin (9) towards inside of wall (1).



**9-21. PIN ASSEMBLY AND BRACKET REPAIR (CONT).**

**WARNING**

- Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 (545 kg). Do not stand under walls when raising or lowering. Use the aid of a lifting device when raising or lowering the front or rear wall to prevent serious injury or death to personnel.
- Lifting device must remain on wall. Lifting device is providing all the support for the wall. Failure to comply will result in wall falling causing serious injury or death to personnel.

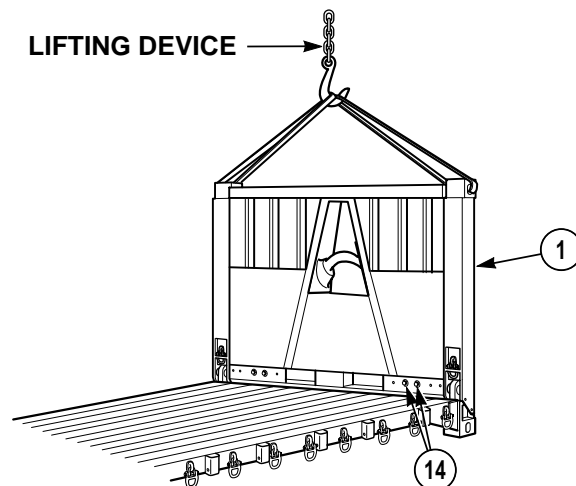
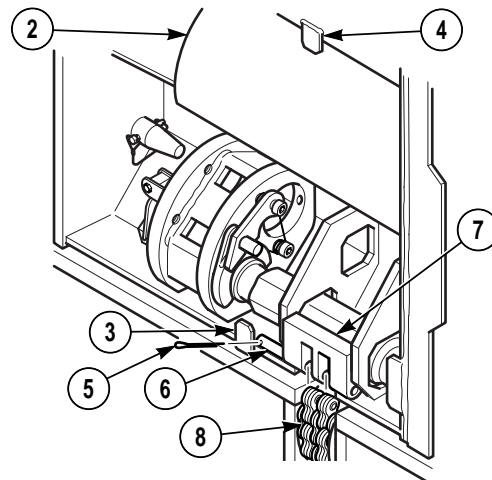
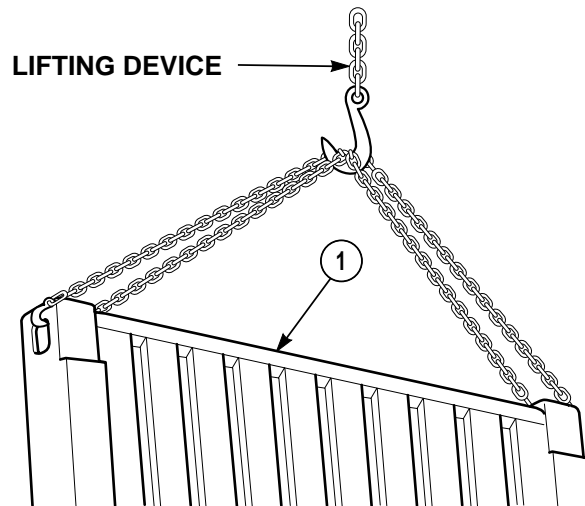
**NOTE**

If installing front pin assembly, perform Step (9). If installing rear pin assembly, go on to Step (11).

- (9) Using lifting device, raise wall (1) to full upright position.
- (10) Slide pin (6) out and install chain (8) on clevis (7) with pin and two cotter pins (5).
- (11) Remove mud flap (2) from upper clip (4) and install in lower clip (3).
- (12) Tighten two screws (14) on side of wall (1).
- (13) Repeat Steps (10) through (12) for remaining pin assembly.
- (14) Remove lifting device from wall (1).
- (15) With the aid of an assistant, lower wall (1).

**f. Follow-On Maintenance:**

- Install pin lock assembly, (Para 9-24).
- Lubricate pins, (Appendix K)



**END OF TASK**



## 9-22. MUD FLAP REPLACEMENT.

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

### INITIAL SETUP

#### *Tools and Special Tools*

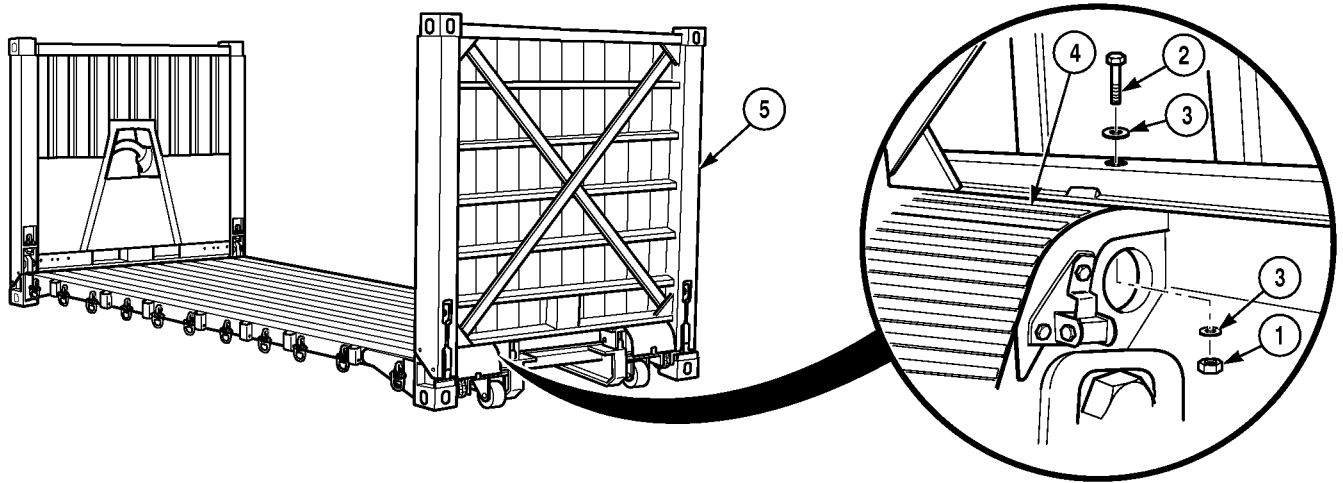
Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

#### *Equipment Condition*

Stowage box removed, (Para 9-16)  
(For front mud flaps only)

#### *Materials/Parts*

Locknuts (3) (Item 13, Appendix H)



### NOTE

Both front and rear mud flaps are removed the same way. Rear mud flap shown.

- a. **Removal.** Remove three locknuts (1), screws (2), six washers (3) and mud flap (4) from wall (5). Discard locknuts.
- b. **Installation.** Install mud flap (4) on wall (5) with three screws (2), six washers (3) and three locknuts (1). Tighten locknuts until mud flap begins to compress.
- c. **Follow-On Maintenance:**
  - Install stowage box (if removed), (Para 9-16).

END OF TASK



**b. Installation.**

**WARNING**

- Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.
- Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.
- Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.

**CAUTION**

Ensure that main rail is free of old adhesive, dirt and grease. Dirty surface will cause premature failure.

- (1) Apply waterproofing to all wood surfaces that have been cut and all exposed surfaces that do not have waterproofing applied.
- (2) Apply 3/8 in. (9.925 mm) bead of adhesive 1-1/5 in. (3.81 cm) in from each edge of main rail (3).

**WARNING**

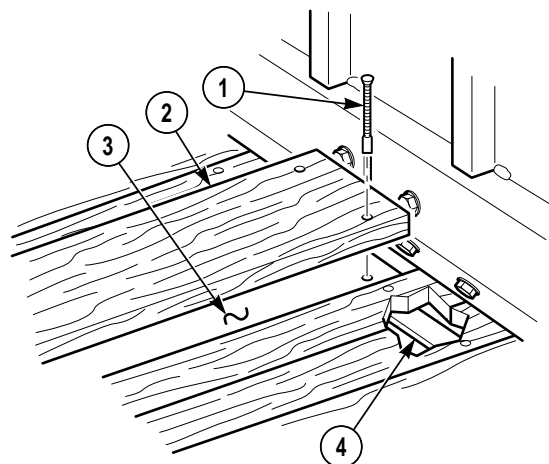
Ensure all personnel wear protective gloves when handling main rail caps to protect hands from wood splinters. Failure to comply may result in injury to personnel.

- (3) Position main rail cap (2) on main rail (3).
- (4) Scribe a line on main rail cap (2) to correspond with center of each crossmember (4).

**NOTE**

Do not install screw in removable crossmember.

- (5) Drill 7/32 in. (5.56 mm) pilot holes in main rail cap (2) and crossmember (4).
- (6) Install screws (1) in main rail cap (2) and crossmember (4). Tighten screws until head of screw is below surface of main rail cap.



**9-23. MAIN RAIL CAP REPLACEMENT. (CONT).**

**c. *Follow-On Maintenance:***

- Lower front and rear wall, (Para 7-10).

**END OF TASK**



**9-24. PIN LOCK ASSEMBLY REPLACEMENT (CONT).**

**WARNING**

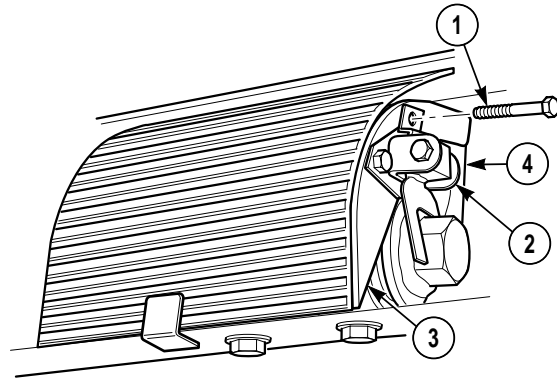
Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (3) Apply sealing compound to threads of two screws (1).

**NOTE**

Mud flap plate is installed on rear wall only.

- (4) Install mud flap plate (3) and pin lock bracket (2) on bracket assembly (4) with two screws (1).



**END OF TASK**

## 9-25. DATA PLATE AND SHIPPING LABEL REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

### INITIAL SETUP

#### *Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)  
 Tool Kit, Blind Rivet (Item 14, Appendix I)  
 Drill, Electric, Portable (Item 3, Appendix I)  
 Drill Set, Twist (Item 4, Appendix I)

#### *Materials/Parts*

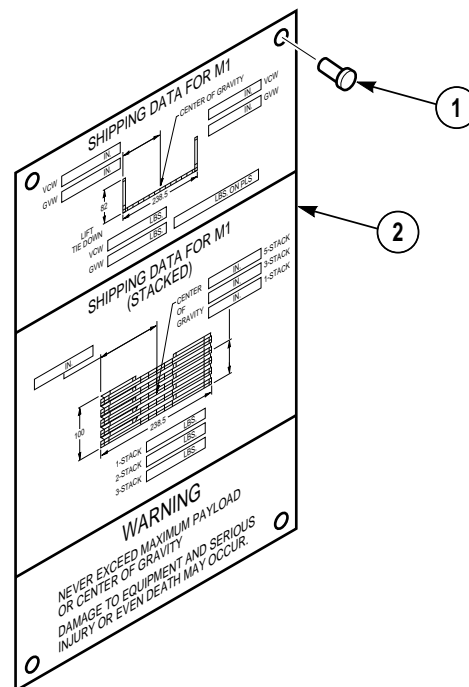
Rivet (a/r) (Item 24, Appendix H)

### NOTE

Refer to Para 7-19 for data plate and shipping label locations.

- a. **Removal.** Drill out rivets (1) on data plate and/or shipping label (2) using a 1/8 in. (3.17 mm) drill bit.
- b. **Installation.** Install data plate and/or shipping label (2) on flatrack with rivets (1).

END OF TASK



## 9-26. TWIST LOCK REPLACEMENT.

This task covers:

- a. Removal
- b. Installation

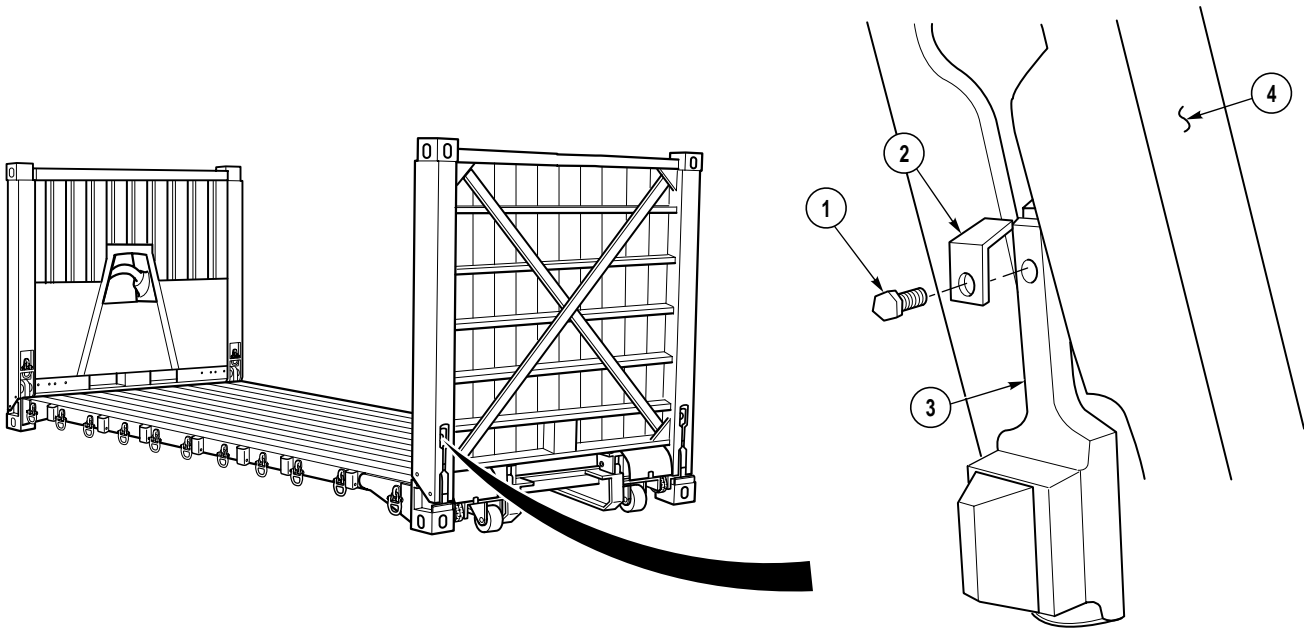
### INITIAL SETUP

*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

*Materials/Parts*

Sealing Compound (Item 12, Appendix E)



### NOTE

All four twist locks are removed and installed the same way.

- a. **Removal.** Remove screw (1), clip (2) and twist lock (3) from flatrack (4).
- b. **Installation.**

### WARNING

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (1) Apply sealing compound to threads of screw (1).
- (2) Install twist lock (3) on flatrack (4) with clip (2) and screw (1).

**END OF TASK**



**9-27. SECURING PIN BUSHING REPLACEMENT.**

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

**INITIAL SETUP**

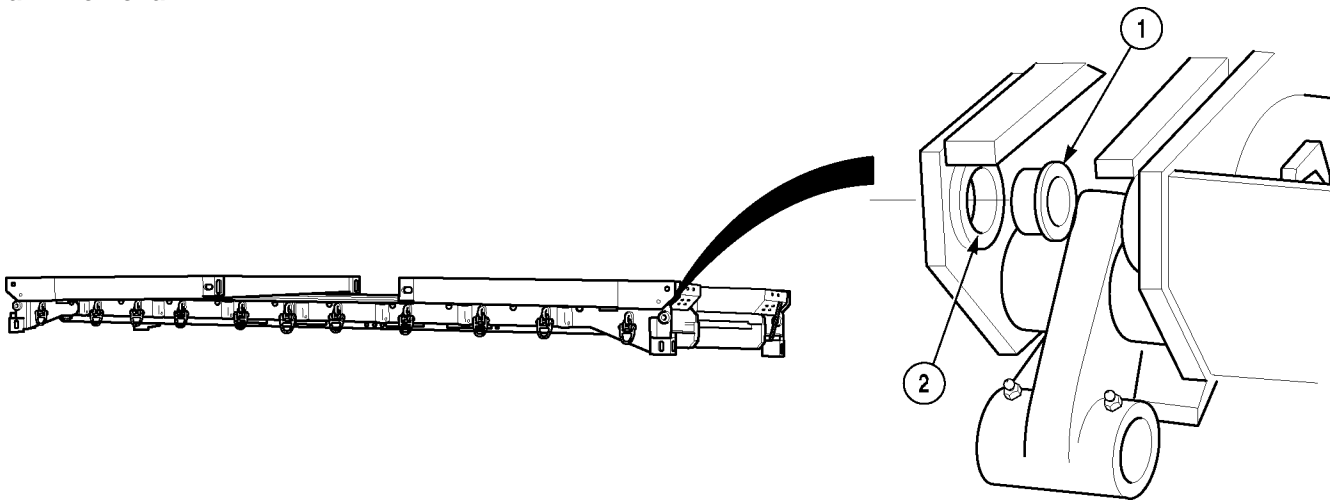
*Tools and Special Tools*

Tool Kit, General Mechanic's: Automotive  
(Item 15, Appendix I)

*Equipment Condition*

Pin assembly and bracket removed, (Para 9-21)

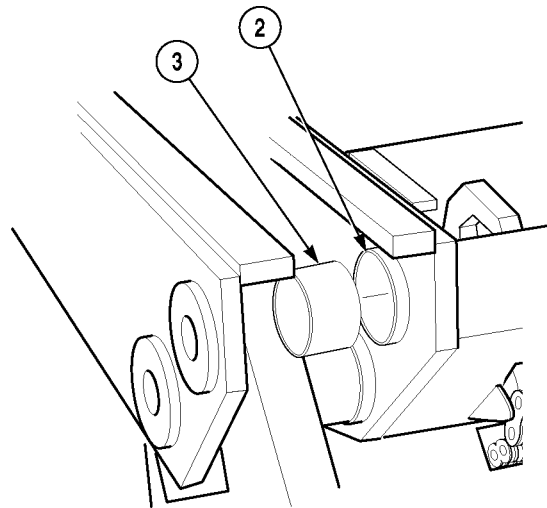
**a. Removal.**



**NOTE**

- All four securing pin bushings are installed the same way. Left rear is shown.
- Outer bushing has a flange on one side. Outer bushing must be installed from inside of wall.

- (1) Remove outer bushing (1) from wall (2).
- (2) Remove inner bushing (3) from wall (2).



**9-27. SECURING PIN BUSHING REPLACEMENT (CONT).**

**b. Installation.**

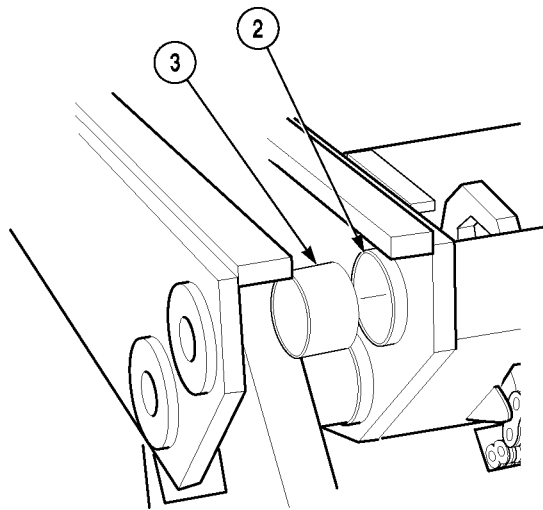
**CAUTION**

Ensure bushings do not protrude outer edges of bore when installed. Failure to comply may result in damage to equipment.

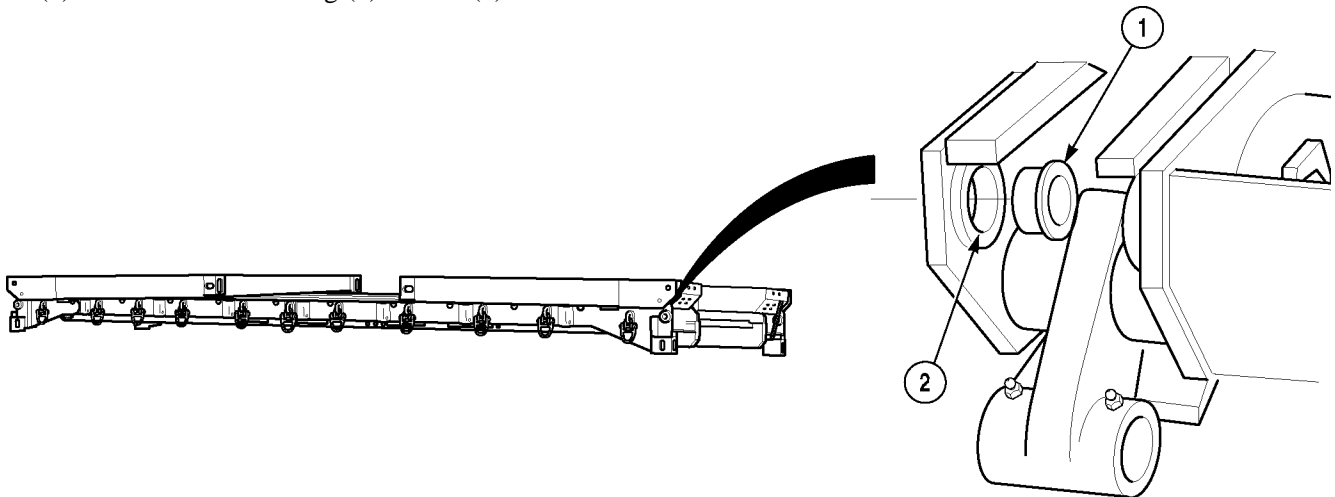
**NOTE**

- All four securing pin bushings are installed the same way. Left rear is shown.
- Outer bushing has a flange on one side. Outer bushing must be installed from inside of wall.

- (1) Install inner bushing (3) in wall (2).



- (2) Install outer bushing (1) in wall (2).



**c. Follow-On Maintenance:**

- Install pin assembly and bracket, (Para 9-21).

**END OF TASK**

**9-28. REAR WALL FLOOR BOARD REPLACEMENT.**

This task covers:

a. Removal

b. Installation

c. Follow-On Maintenance

**INITIAL SETUP**

*Tools and Special Tools*

- Tool Kit, General Mechanic's: Automotive (Item 15, Appendix I)
- Drill, Electric, Portable (Item 3, Appendix I)
- Drill Set, Twist (Item 4, Appendix I)
- Gloves, Industrial (Item 5, Appendix I)
- Goggles, Industrial (Item 6, Appendix I)
- Socket, T-30 (Item 13, Appendix I)

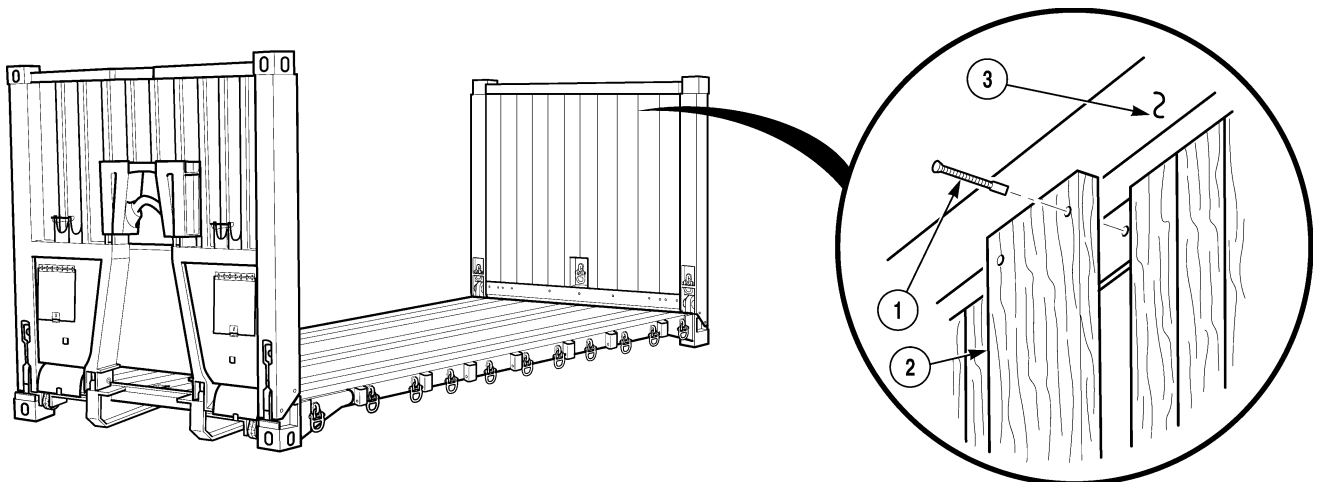
*Materials/Parts*

- Rear Wall Floor Board (a/r) (Appendix G)
- Screw, Flooring (a/r) (Item 26, Appendix H)
- Waterproofing, Wood (Item 16, Appendix E)

*Equipment Condition*

- Rear wall raised, (Para 7-10)

**a. Removal.**



**NOTE**

- There are 15 rear wall floor boards. All 15 are removed the same way.
- The number of screws in rear wall floor boards may vary.

(1) Remove and discard screws (1) from rear wall floor board (2).

**WARNING**

Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.

(2) Remove rear wall floor board (2) from rear wall (3).

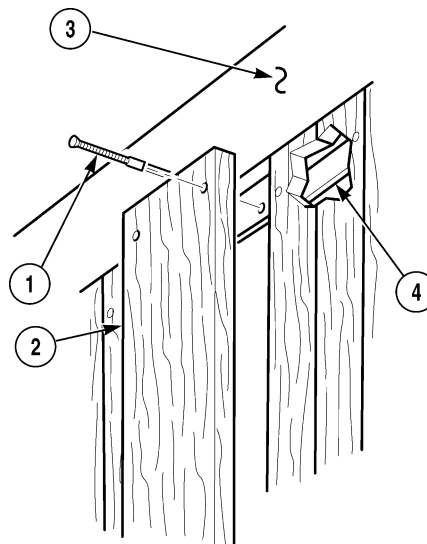
**9-28. REAR WALL FLOOR BOARD REPLACEMENT (CONT).**

**b. Installation.**

**WARNING**

- Ensure all personnel wear protective gloves when handling rear wall floor board to protect hands from wood splinters. Failure to comply may result in injury to personnel.
- Wood waterproofing is hazardous and flammable. Do not breath vapors and only apply waterproofing in a well-ventilated area. Keep away from open flames. Wear protective gloves and eye protection when applying waterproofing. Failure to comply may result in injury or death to personnel.

- (1) Apply waterproofing to all wood surfaces that have been cut and all exposed surfaces that do not have waterproofing applied.
- (2) Position rear wall floor board (2) on rear wall (3).
- (3) Scribe a line on rear wall floor board (2) to correspond with center of each crossmember (4).
- (4) Drill 7/32 in. (5.56 mm) pilot holes in rear wall floor board (2) and crossmember (4).
- (5) Install screws (1) in rear wall floor board (2) and crossmember (4). Tighten screws until head of screw is below surface of rear wall floor board.



**c. Follow-On Maintenance:**

- Lower rear wall, (Para 7-10).

**END OF TASK**

## CHAPTER 10

### DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Para	Contents	Page
10-1	Common Tools and Equipment .....	10-1
10-2	Special Tools, TMDE and Support Equipment .....	10-1
10-3	Repair Parts .....	10-1
10-4	Service Upon Receipt .....	10-1
10-5	Introduction .....	10-2
10-6	General Welding Maintenance .....	10-3
10-7	Wall Replacement .....	10-6

#### Section I. REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT AND DIAGNOSTIC (TMDE) AND SUPPORT EQUIPMENT

**10-1. COMMON TOOLS AND EQUIPMENT.**

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

**10-2. SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT.**

Refer to Appendix B, the Maintenance Allocation Chart (MAC) and Appendix F, Repair Parts and Special Tools List (RPSTL), to determine special tools, Test, Measurement and Diagnostic Equipment (TMDE) and support equipment for the flatrack. No fabricated tools are needed.

**10-3. REPAIR PARTS.**

Repair parts are listed and illustrated in Appendix F, Repair Parts and Special Tools List (RPSTL), covering Unit, Direct Support and General Support Maintenance for the flatrack.

#### Section II. SERVICE UPON RECEIPT

**10-4. SERVICE UPON RECEIPT.**

Chapter 9 contains service upon receipt instructions. Specific paragraphs are referenced for additional instructions.

- a. Unpacking.** Refer to Para 9-4a.
- b. Special Service.** Refer to Para 9-4b.

### Section III. DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE PROCEDURES

#### 10-5. INTRODUCTION.

This section will cover Direct Support and General Support Maintenance procedures for the flatrack. All Direct Support Maintenance procedures are listed first followed by all General Support Maintenance procedures. The following are general maintenance procedures to keep in mind:

**a. Removal and Disassembly.**

(1) Precision matched or mated components, assemblies, subassemblies or parts (other than common hardware) should be marked, handled and stored to preclude damage and to ensure reassembly and installation in their matched positions.

(2) Do not separate bonded, press-fitted, soldered, welded or riveted parts unless such removal is necessary to clean, inspect or test that part separately.

**b. Inspection.**

(1) Inspect for loose, missing or damaged parts.

(2) Check for cracks, rust or pits, especially at weld points.

(3) Inspect all parts to determine if they conform to the wear limits, fits and tolerances established.

(4) Refer to Para 9-11 for specific inspection criteria for all intermodel containers.

**c. Lubrication.** General lubrication needed before assembly or installation is called out in the maintenance procedures. Refer to Appendix K for additional lubrication requirements.

**d. Assembly.**

(1) Refer to notes or diagrams made during disassembly to install precision matched or mated parts.

(2) Check and record shimming requirements as applicable.

**e. Testing.** If needed, test procedures to verify proper operation will be called out in the maintenance procedure. Perform testing as it is listed.

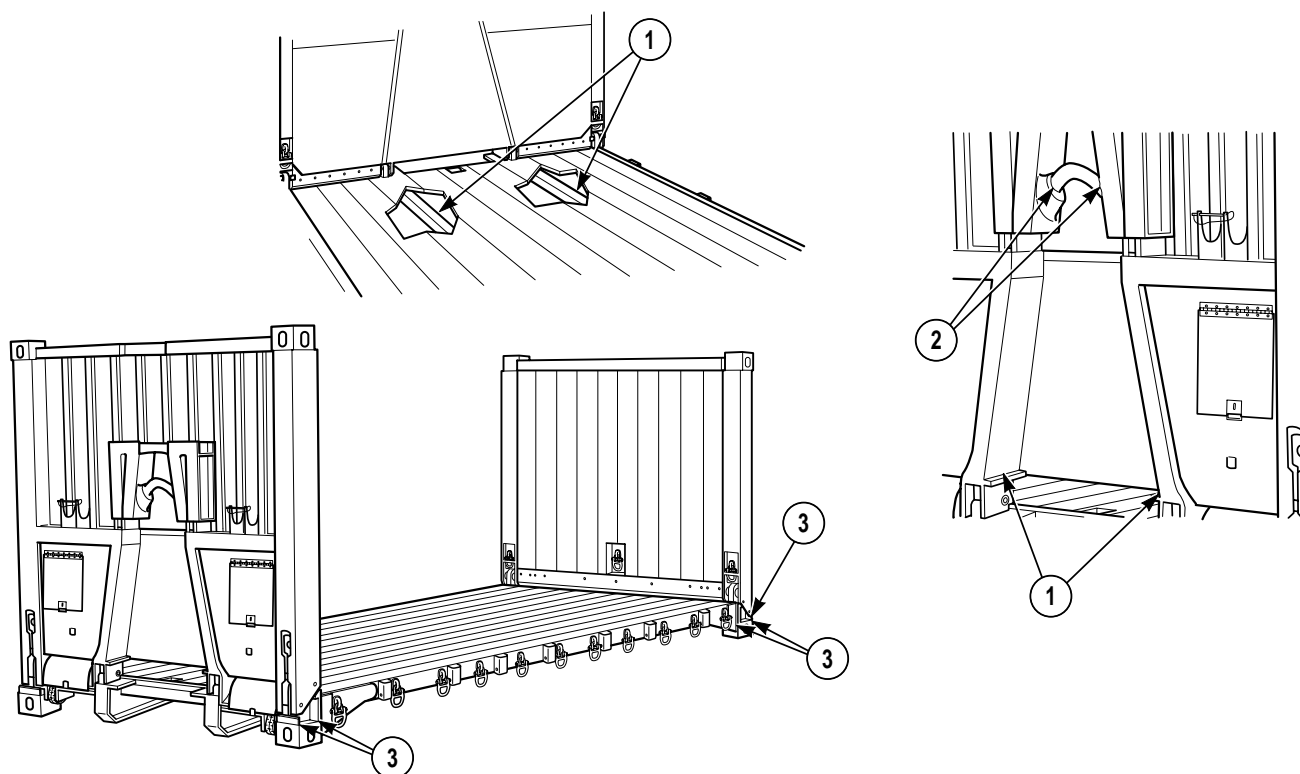
**f. Installation.**

(1) Perform alignment and adjustment procedures as listed in the maintenance procedure. Complete any testing required before the flatrack is returned to operation.

(2) Pay special attention to requirements for lockwiring, installing cotter pins and similar operations.

**g. Adjustments.** Refer to Chapter 9 for flatrack adjustments.

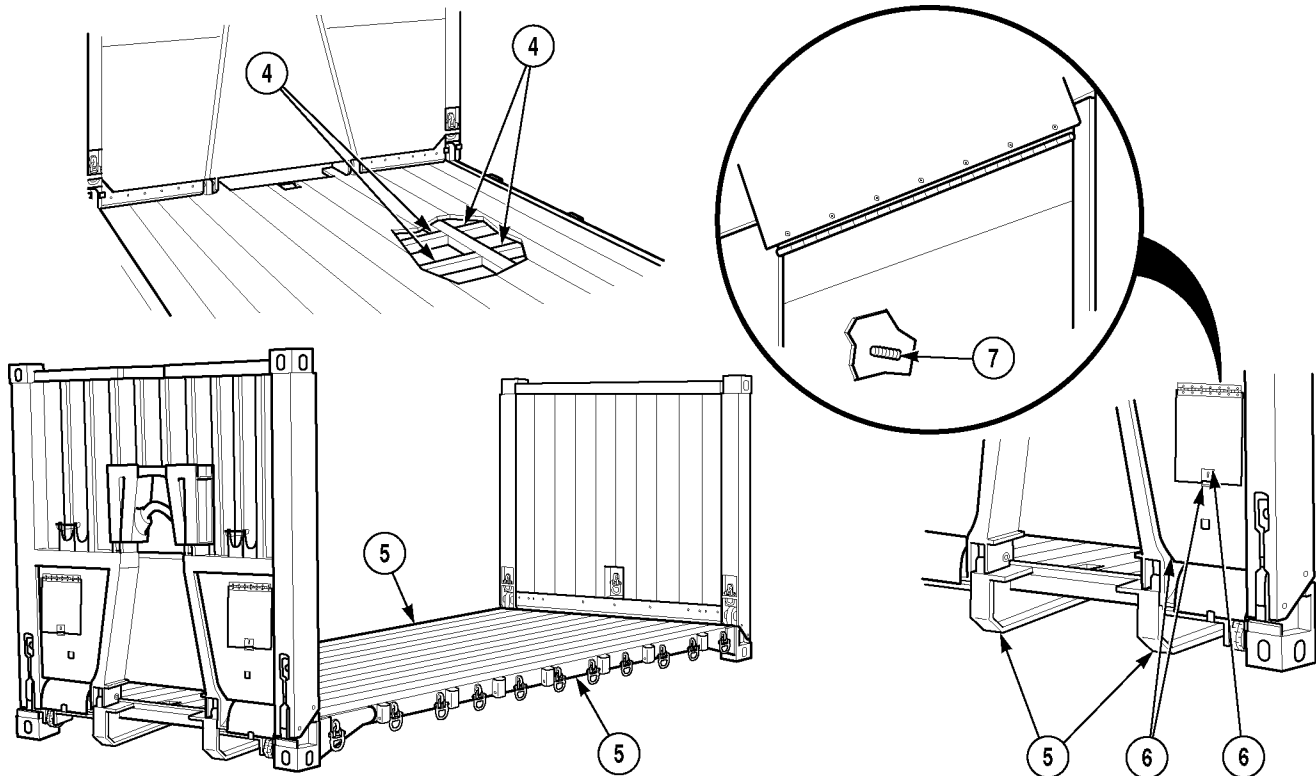
**10-6. GENERAL WELDING MAINTENANCE.**



**a. Weldment Points.** Thoroughly inspect all weldments for cracks, chips or other damage. Areas include the front and rear ISO locks, flatrack floor joints and wall, tiedown rings and the hookbar. Inspect welds for cracks by doing ultra sound test or Zyglow inspection.

- (1) *A-Frame Interface (1).* This area includes the A-Frame channel to main rail interface, the top and outboard wrapper plates, and the front wrapper plate and gussets. Solid welds in this area are necessary to ensure safe loading and unloading of the flatrack.
- (2) *Hookbar (2).* These welds are located at the base of the hookbar casting on the A-Frame of the flatrack. These welds secure the hookbar to the structure and are subjected to a significant portion of the total load during loading and unloading operations.
- (3) *Corner Fitting and Adjacent Structure (3).* The corner fittings of the flatrack are used for transportation. They may be used to secure the flatrack to a trailer, container or to another flatrack.

**10-6. GENERAL WELDING MAINTENANCE (CONT).**



- (4) *Crossmembers (4)*. These welds are located at the junction of the crossmember and the main rails.
- (5) *Main Rails (5)*. The main rails provide a major portion of the load carrying capacity of the flatrack. They support a portion of the load while loaded on the truck and trailer.
- (6) *Stowage Boxes (6)*. Cracks in the sheet metal welds of the stowage box should be repaired before reaching 2 in. (5 cm).
- (7) *Stowage Box Mounting Studs (7)*. Cracks in the area where studs are located should be repaired. Missing studs should be rewelded or replaced. Missing studs may be replaced by cutting the head off a 3/8 in. by 7/8 in. by 16 threads per inch screw (9.53 mm by 22.23 mm) (MS 90725-59). Weld screw to flatrack wall in location where stud is missing.



**WARNING**

CARC paint contains isocyanate (HDI) which is highly irritating to skin and respiratory system. High concentrations of HDI can produce symptoms of itching and reddening of skin, a burning sensation in throat and nose and watering of the eyes. In extreme concentrations, HDI can cause cough, shortness of breath, pain during respiration, increased sputum production and chest tightness. The following precautions must be taken whenever using CARC paint:

- ALWAYS use air line respirators when using CARC paint unless air sampling shows exposure to be below standards. Use chemical cartridge respirator if air sampling is below standards.
- DO NOT let skin or eyes come in contact with CARC paint. Always wear protective equipment (gloves, ventilation mask, safety goggles, etc.).
- DO NOT use CARC paint without adequate ventilation.
- NEVER weld or cut CARC-coated materials.
- DO NOT grind or sand painted equipment without high-efficiency air purifying respirators in use.
- BE AWARE of CARC paint exposure symptoms; symptoms can occur a few days after initial exposure. Seek medical help immediately if symptoms are detected.

**CAUTION**

Do not weld the flatrack while on trailer or truck, or damage to equipment may result.

**b. Flatrack Welding.** Welding on the flatrack must be performed off the trailer or truck. Different areas of the flatrack require different weld electrodes. Use the following guidelines to determine the correct weld.

- (1) *Hookbar.* Two different welding methods can be used to repair the hookbar.

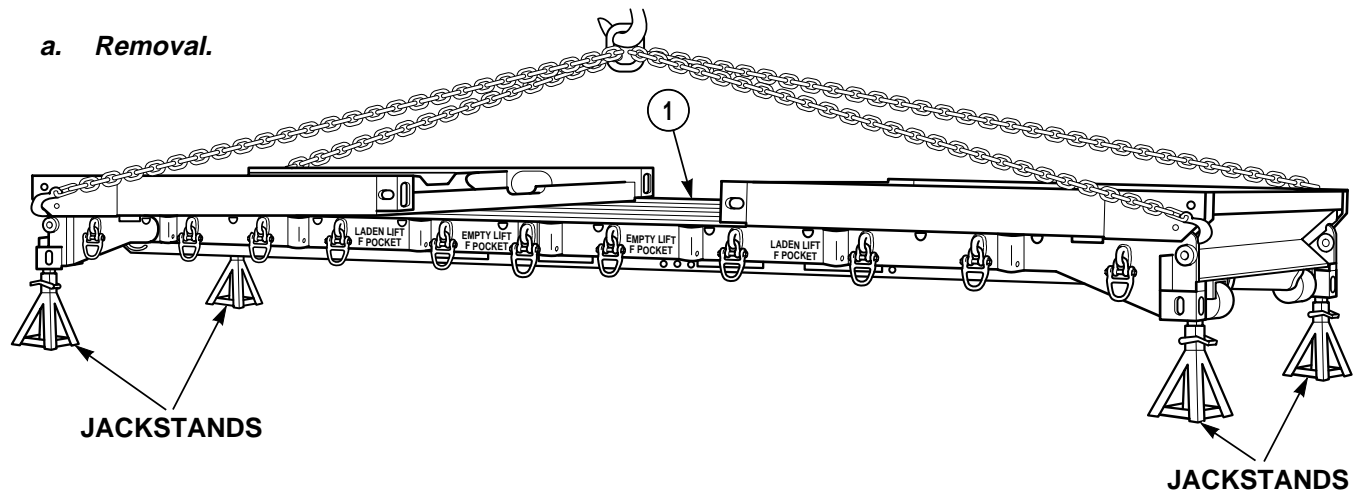
**NOTE**

Use minimum preheat and maintain the interpass temperature of 300 degrees F (149 degrees C).

- (a) *ER110S-1 Gas Metal Arc Welding (GMAW).* This method requires the use of a wire-feed welder with argon and oxygen shielding gas and ER110S-1 welding wire.
  - (b) *E11018-M Submerged Metal Arc Welding (SMAW).* This process utilizes a E11018-M stick electrode and an arc welder (Item 19, Appendix I).
- (2) *Rear ISO Lock Retaining Pin.* Repairing welds on this retaining pin requires the use of an arc welder and an ER308 stainless steel stick electrode.
  - (3) *Remaining Flatrack Welds.* Welding wire ER80S-D2 is used to repair welds on the majority of the flatrack with the exception of the hookbar and the rear ISO lock retaining pin. Welding with ER80S-D2 weld wire requires a wire-feed welder and carbon dioxide shielding gas.
  - (4) *Painting Instructions.* Refer to TB 43-0209 and TM 43-0139 for painting instructions for the flatrack.



a. Removal.



**WARNING**

- Flatracks have two sets of forklift pockets. Outside set must be used when lifting a loaded flatrack. Either set may be used when lifting an empty flatrack. Failure to comply could result in serious injury or death to personnel.
- Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- Flatrack weighs 7,300 lbs (3,312 kg). Ensure all personnel stand clear of flatrack when lifting. Failure to comply could result in serious injury or death to personnel.

(1) With the aid of an assistant and using lifting device, raise flatrack (1) and position on jackstands.

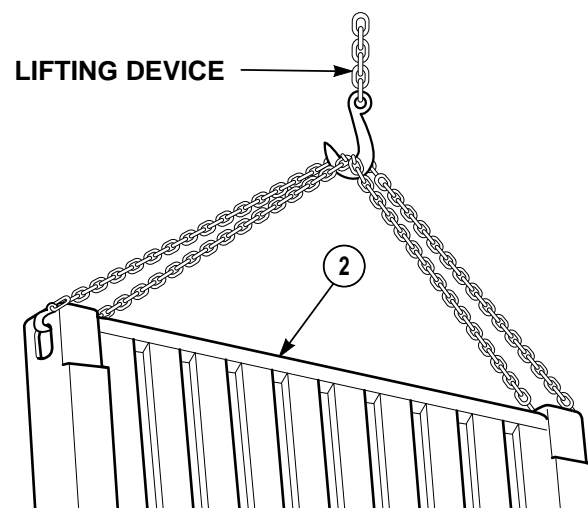
**NOTE**

- Steps (2) through (8) are for rear wall only.
- Front and rear walls are removed the same way except where noted.

(2) Remove lifting device and raise rear wall (2).

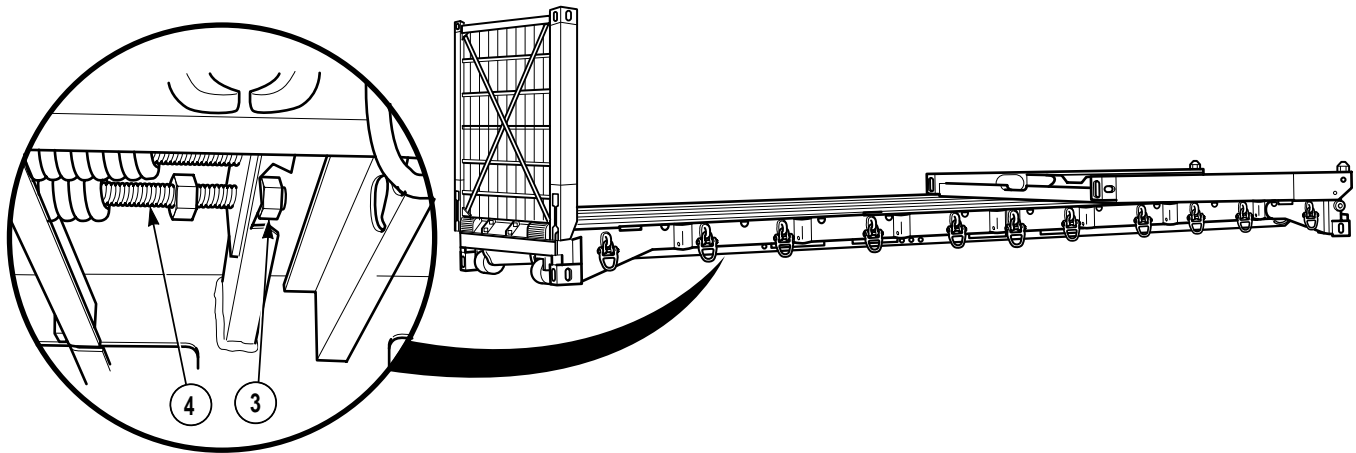
**WARNING**

- Rear wall weighs 1,200 lbs (545 kg). Attach suitable lifting device after raising wall to prevent injury or death to personnel.
- Lifting device must remain on wall. Lifting device is providing all the support for the wall. Failure to comply will result in wall falling causing serious injury or death to personnel.



(3) Attach lifting device to rear wall (2).

**10-7. WALL REPLACEMENT (CONT).**



**WARNING**

Use extreme care when removing nuts from springs. Springs are under tension and can act as projectiles when released. Ensure all personnel wear proper eye protection to avoid injury to personnel.

**NOTE**

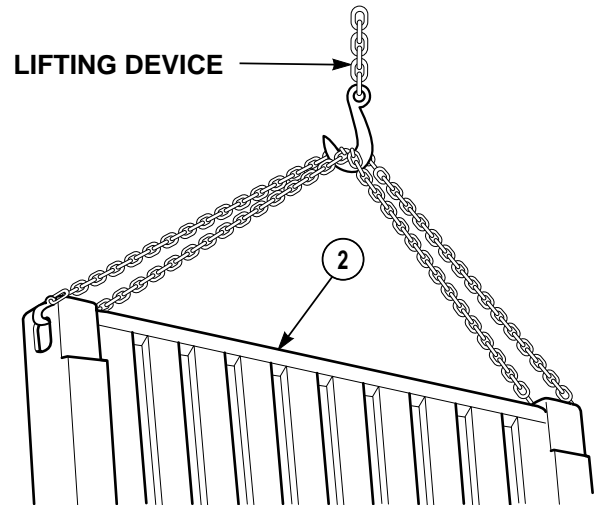
Right and left spring assemblies are removed the same way. Left side shown.

- (4) Remove two nuts (3) from threaded rods (4).
- (5) Repeat Step (4) for other side of wall.

**WARNING**

Rear wall weighs 1,200 lbs (545 kg). Do not stand under walls when raising or lowering. Use the aid of a lifting device when raising or lowering the rear wall to prevent serious injury or death to personnel.

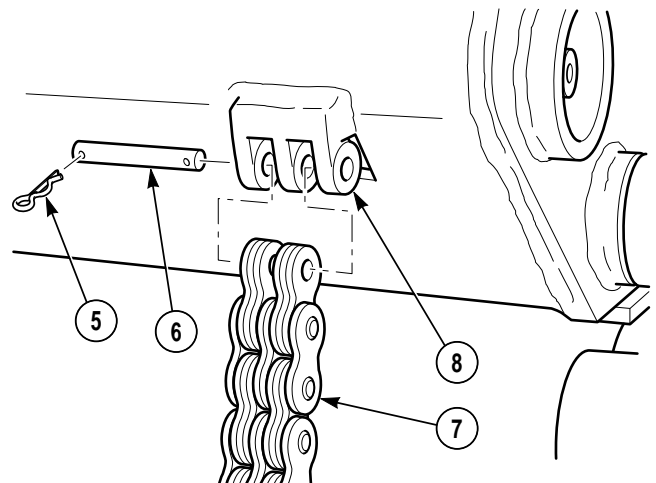
- (6) Using lifting device, lower rear wall (2).



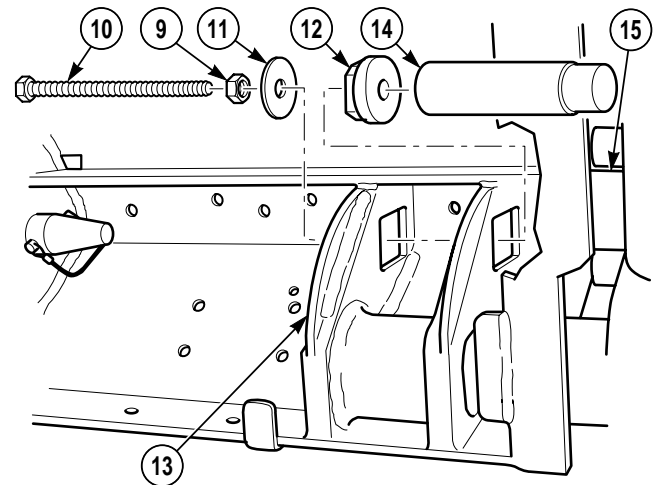
**NOTE**

Right and left pins are removed the same way. Left side shown.

- (7) Remove two cotter pins (5), pin (6) and chain (7) from clevis (8). Discard cotter pins.
- (8) Repeat Step (7) for other side of wall.



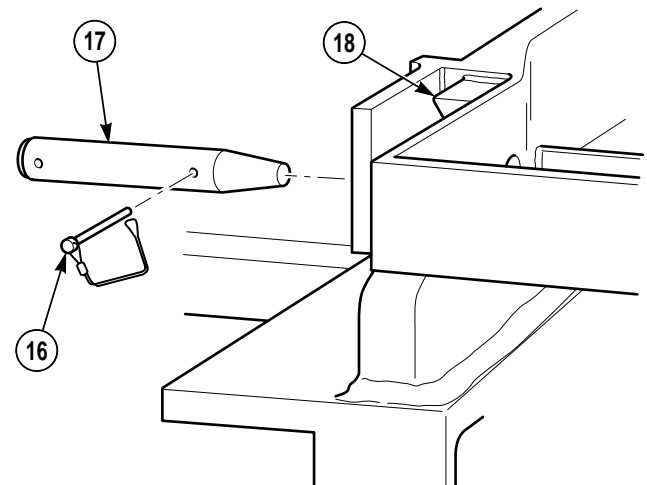
- (9) Loosen nut (9) on screw (10).
- (10) Remove screw (10), nut (9) and washer (11) from retainer block (12).
- (11) Remove retainer block (12) from bracket (13).
- (12) Remove hinge pin (14) from hinge (15).
- (13) Repeat Steps (9) through (12) for other side of wall.



**NOTE**

- Steps (14), (15) and (16) are for front wall only. If removing rear wall, go on to Step (17).
- Right and left pins are removed the same way. Left side shown.

- (14) Remove two safety pins (16) from pin (17).
- (15) Remove pin (17) from hinge (18).
- (16) Repeat Steps (14) and (15) for other side of wall.



**WARNING**

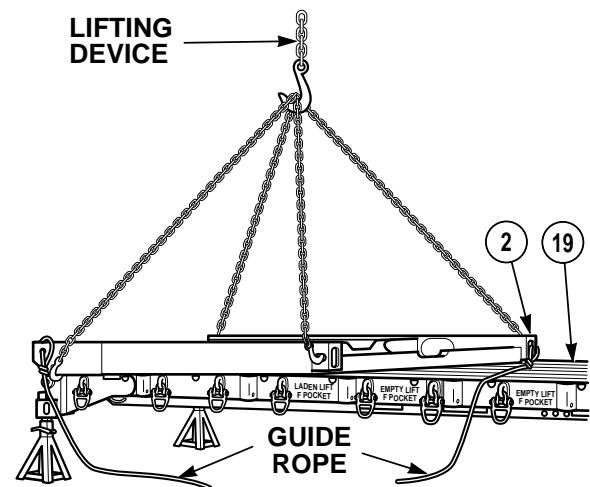
Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 lbs (545 kg). Attach suitable lifting device prior to removing wall to prevent injury or death to personnel.

- (17) Reposition lifting device and attach to four corners of wall (2).

**WARNING**

Ensure guide rope is installed on opposite corners of wall as shown. Failure to comply can result in injury or death to personnel.

- (18) Install guide rope on two corners of wall (2).
- (19) With the aid of an assistant and using lifting device and guide rope, remove wall (2) from deck (19) and position wall on four jackstands.



**10-7. WALL REPLACEMENT (CONT).**

**NOTE**

- Note position of bushings prior to removal.
- All four sets of bushings are removed the same way. Left front set is shown.

(20) Remove and discard four bushings (20), (21), (22) and (23) from wall (2).

(21) Repeat Step (20) for other side of wall (2).

**b. Installation.**

**CAUTION**

Ensure bushings do not protrude outer edges of bore when installed. Failure to comply may result in damage to equipment.

**NOTE**

All four sets of bushings are installed the same way. Left front set is shown.

(1) Install four bushings (23), (22), (21) and (20) in wall (2).

(2) Repeat Step (1) for other side of wall (2).

**WARNING**

Front wall weighs 1,500 lbs (681 kg). Rear wall weighs 1,200 (545 kg). Attach suitable lifting device prior to lifting wall to prevent injury or death to personnel.

(3) With the aid of an assistant and using lifting device and guide rope, position wall (2) on deck (19).

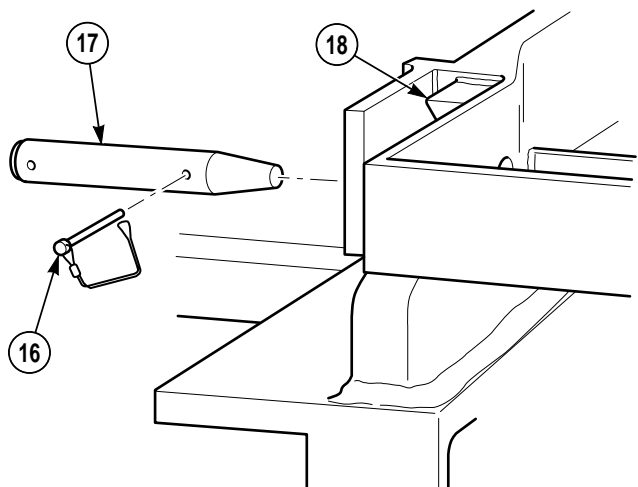
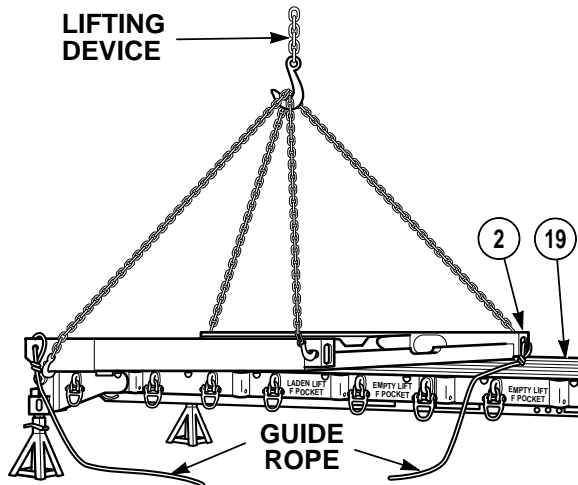
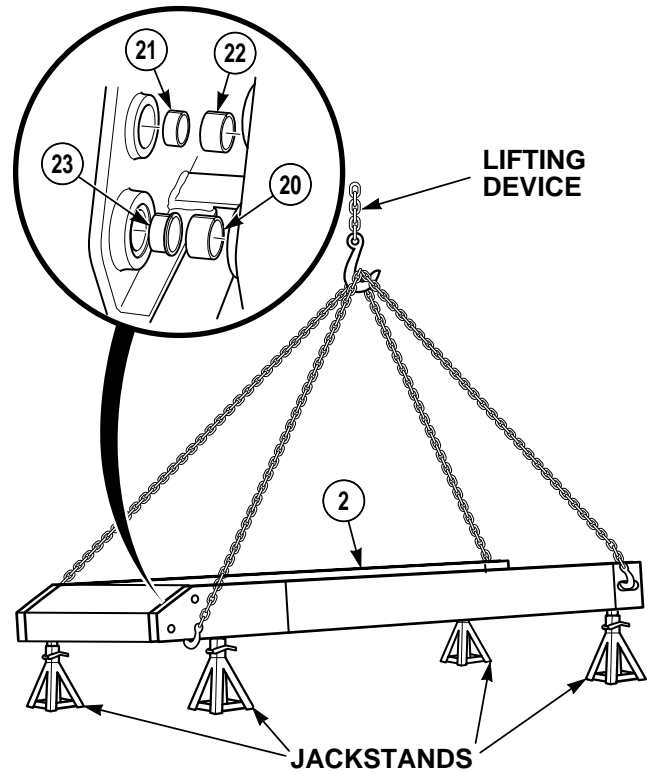
**NOTE**

- Perform Steps (4), (5) and (6) for front wall only.
- Wall is properly positioned on deck when hinge pin holes are aligned.
- Right and left pins are installed the same way. Left side shown.

(4) Install pin (17) in hinge (18).

(5) Install two safety pins (16) in pin (17).

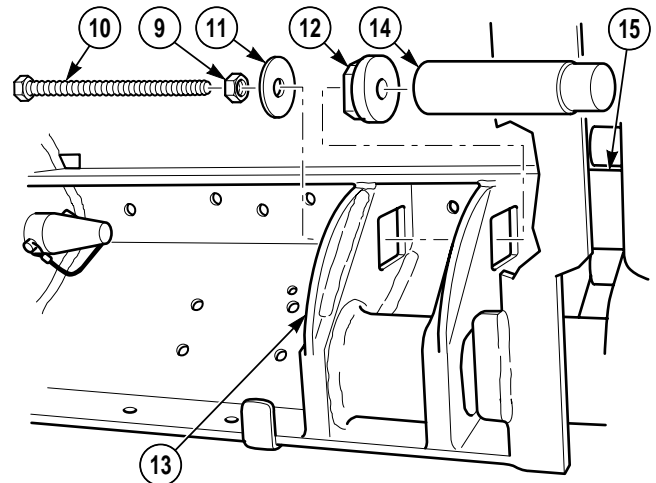
(6) Repeat Steps (4) and (5) for other side of wall.



- (7) Coat hinge pin (14) with grease.

**NOTE**

- It may be necessary to raise wall slightly to aid in aligning hinge pin.
- Hinge pin is installed when 1/8 in. (3.175 mm) short of being flush with outside of wall.



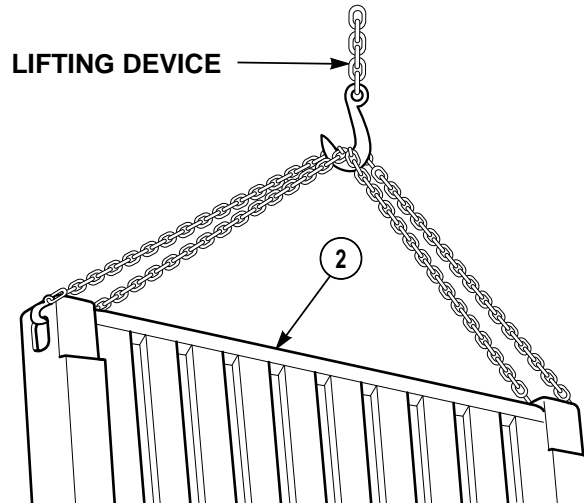
- (8) Position nut (9) on screw (10).
- (9) Position hinge pin (14) in hinge (15).
- (10) Position retainer block (12) in bracket (13).
- (11) Install retainer block (12) in bracket (13) with screw (10) and washer (11).
- (12) Tighten screw (10) until pin (14) is 1/8 in. (3.17 mm) from outside of wall.

**WARNING**

Adhesives, solvents and sealing compounds can burn easily, can give off harmful vapors and are harmful to skin and clothing. To avoid injury or death, keep away from open fire and use in well-ventilated area. If adhesive, solvent or sealing compound gets on skin or clothing, wash immediately with soap and water.

- (13) Apply sealing compound to threads of screw (10).
- (14) Tighten nut (9) against washer (11).
- (15) Repeat Steps (7) through (14) for other side.

**10-7. WALL REPLACEMENT (CONT).**



- (16) Remove guide rope and reposition lifting device to attach to two top corners of wall (2).

**WARNING**

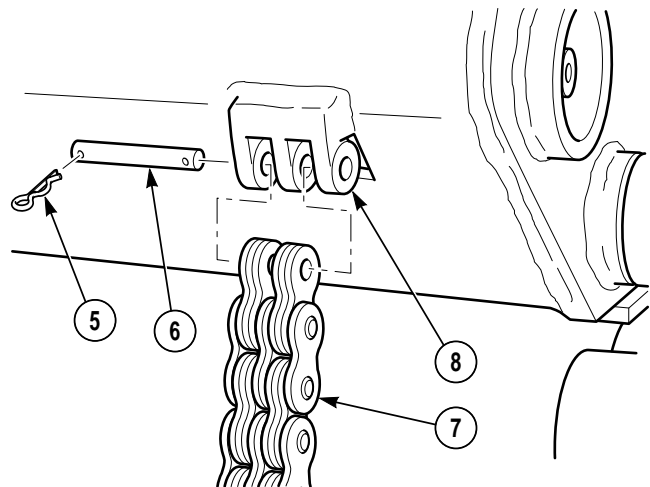
- Rear wall weighs 1,200 lbs (545 kg). Do not stand under walls when raising or lowering. Use the aid of a lifting device when raising or lowering the rear wall to prevent serious injury or death to personnel.
- Lifting device must remain on wall. Lifting device is providing all the support for the wall. Failure to comply will result in wall falling causing serious injury or death to personnel.

- (17) Using lifting device, raise wall (2).

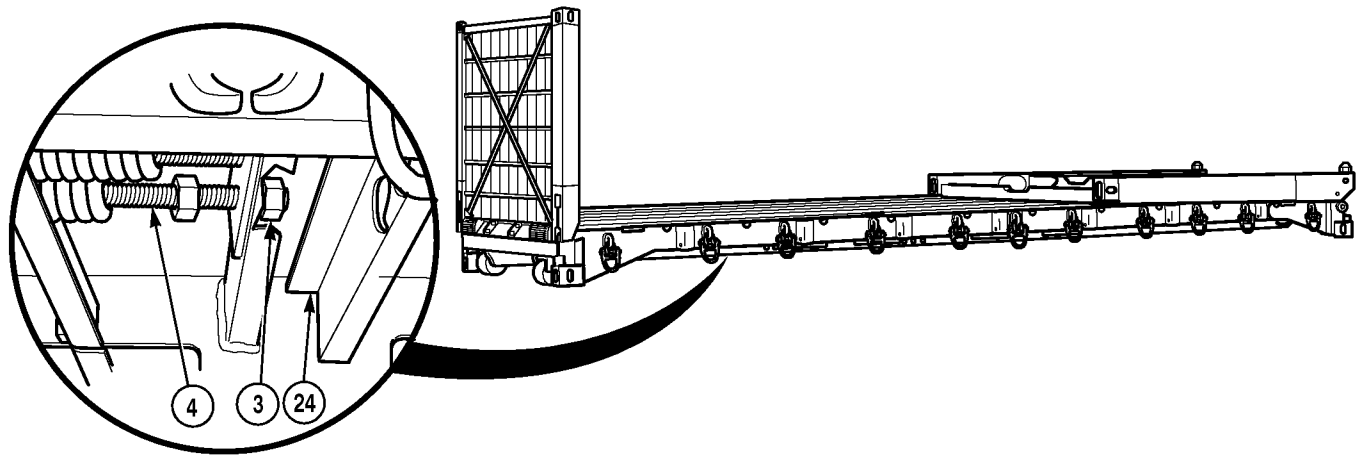
**NOTE**

Right and left pins are installed the same way. Left side shown.

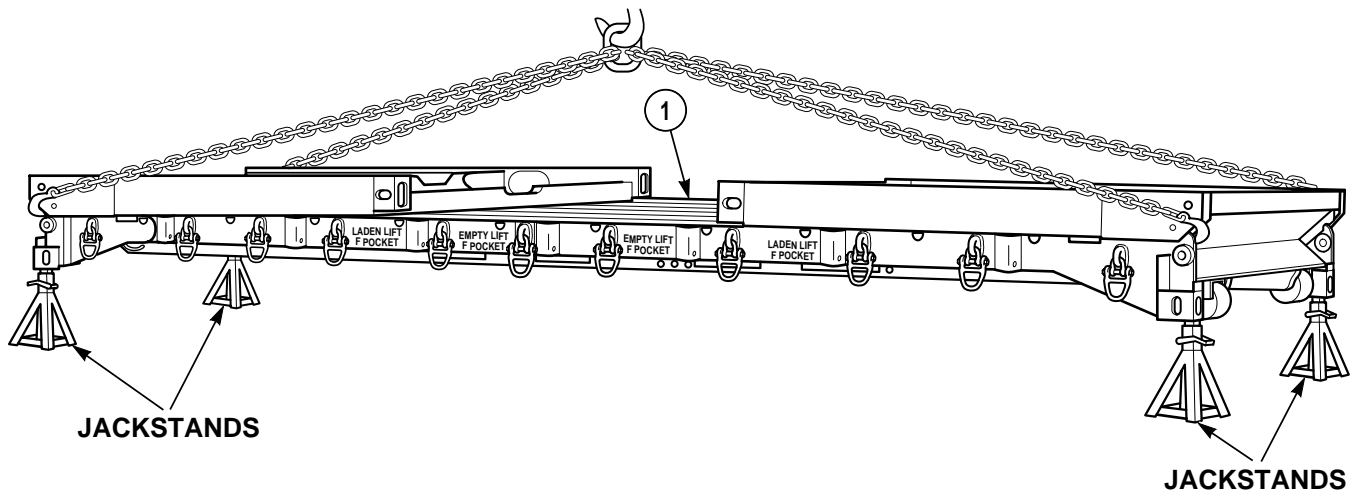
- (18) Install chain (7) on clevis (8) with pin (6) and two cotter pins (5).
- (19) Repeat Step (18) for other side of wall.







- (20) Position two threaded rods (4) in crossmember (24).
- (21) Position two nuts (3) on threaded rods (4).
- (22) Adjust springs. Refer to Para 9-18.



**WARNING**

- Flatracks have two sets of forklift pockets. Outside set must be used when lifting a loaded flatrack. Either set may be used when lifting an empty flatrack. Failure to comply could result in serious injury or death to personnel.
- Forklift forks must be a minimum of 70.0 in. (177.8 cm) in length.
- Flatrack weighs 7,300 lbs (3,312 kg). Ensure all personnel stand clear of flatrack when lifting. Failure to comply could result in serious injury or death to personnel.

- (23) Reposition lifting device and install on flatrack (1).
- (24) With the aid of an assistant and using lifting device, remove flatrack (1) from jackstands.

**10-7. WALL REPLACEMENT (CONT).**

**c. *Follow-On Maintenance:***

- Install mud flaps, (Para 9-22).
- Install stowage boxes, (Para 9-16) (front wall only).
- Install rear pin assemblies and brackets, (Para 9-21) (for rear wall replacement only).
- Install front pin assemblies and brackets, (Para 9-21) (for front wall replacement only).
- Install tiedown rings, (Para 9-19) (wall tiedown rings only).

**END OF TASK**

## APPENDIX A

### REFERENCES

**A-1. SCOPE.**

Indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to material covered in this publication.

Military Publication Indexes.

Consolidated Index of Army Publications and Forms ..... DA Pam 25-30

**A-2. FORMS.**

Refer to DA PAM 738-750, the Army Maintenance Management System (TAMMS), for instructions on the use of maintenance forms pertaining to the flatrack.

The Army Maintenance Management System (TAMMS) .....	DA Pam 738-750
Recommended Changes to DA Publications and Blank Forms .....	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet .....	DA Form 2404
Maintenance Request .....	DA Form 2407
Equipment Control Record .....	DA Form 2408-9
Packing Improvement Report .....	DD Form 6
Preventive Maintenance Schedule and Record .....	DD Form 314
Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines .....	DD Form 1397
Reinspection Decal, Convention For Safe Containers .....	DD Form 2282
Quality Deficiency Report .....	SF 368

**A-3. FIELD MANUALS.**

The following publications contain information pertinent to flatrack material.

Camouflage .....	FM 20-3
Chemical, Biological, and Radiological (CBR) Decontamination .....	FM 3-5

**A-4. TECHNICAL MANUALS.**

Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materials Including Chemicals .....	TM 9-247
Operator’s Manual, Truck, Tractor Palletized Load System (PLS) .....	TM 9-2320-364-10
Operator’s, Unit, Direct Support, And General Support Maintenance Manual, Trailer, Palletized Load System (PLS) .....	TM 9-2330-385-14
Painting Instructions .....	TM 43-0139
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-Automotive Command) .....	TM 750-244-6

**A-5. MISCELLANEOUS PUBLICATIONS.**

Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Material Handling Equipment .....	TB 43-0209
Standard for Overseas Shipment or Domestic Issue of Special Purpose Vehicles .....	TB 9-2300-281-35
Warranty Technical Bulletin .....	TB 9-2320-364-15
Operator’s Circular for Welding Theory and Application .....	TC 9-237
Requisition and Issue of Supplies and Equipment .....	AR 725-50
Packaging of Army Material for Shipment and Storage .....	AR 746-1
Marking, Packing, and Shipment of Supplies and Equipment .....	AR 746-2
Marking of Supplies for Shipment .....	AR 746-80
Army Material Maintenance Policy and Retail Maintenance Operations .....	AR 750-1
Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items) .....	CTA 50-970
Army Medical Department Expendable/Durable Items .....	CTA 8-100
Container Inspection Handbook for Commercial and Military Intermodal Containers .....	MIL-HDBK-138

## APPENDIX B

### MAINTENANCE ALLOCATION CHART (MAC)

#### Section I. INTRODUCTION

##### B-1. GENERAL.

- a.** This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.
- b.** The Maintenance Allocation Chart (MAC) in Section II and III designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. Section II is the MAC for the Flatrack M1077/M1077A1 and Section III is the MAC for the ISO Compatible Palletized Flatrack M1 (IPF). The application of the maintenance functions to the end item or components will be consistent with the capacities and capabilities of the designated maintenance levels.
- c.** Section IV lists the tools and test equipment required for each maintenance function as referenced from Section II or III.
- d.** Section V lists remarks (identified by an alphabetic code in column 6 of MAC) to provide a ready reference to the definition of the remarks.

##### B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

- a. *Inspect.*** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).
- b. *Test.*** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. *Service.*** Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.
- d. *Adjust.*** To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. *Align.*** To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. *Calibrate.*** To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
- g. *Remove/Install.*** To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating or fixing into position, a spare, repair part or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

## B-2. MAINTENANCE FUNCTIONS (CONT).

**h. Replace.** To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and is shown as the 3rd position code of the SMR code.

**i. Repair.** The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

(1) Service includes inspection, testing, service, adjustment, alignment, calibration and/or replacement.

(2) Fault locate/troubleshooting is the process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).

(3) Disassemble/Assemble encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least component identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.

(4) Actions include welding, grinding, riveting, straightening, facing, remachining and/or resurfacing.

**j. Overhaul.** The maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

**k. Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc) considered in classifying Army equipment/components.

## B-3. EXPLANATION OF COLUMNS IN SECTION II AND III.

**a. Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be “00”.

**b. Column 2, Component/Assembly.** Column 2 contains the names of components, assemblies, subassemblies and modules for which maintenance is authorized.

**c. Column 3, Maintenance Function.** Column 3 lists the functions to be performed on the item listed in column 2.

**d. Column 4, Maintenance Level.** Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the Maintenance Allocation Chart. The symbol designations for the various maintenance levels are as follows:

- |   |                            |   |                             |
|---|----------------------------|---|-----------------------------|
| C | Operator or Crew           | H | General Support Maintenance |
| O | Unit Maintenance           |   |                             |
| F | Direct Support Maintenance |   |                             |

**e. Column 5, Tools and Equipment.** Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

**f. Column 6, Remarks.** This column shall, when applicable, contain a letter code in alphabetic order, which shall be keyed to the remarks contained in Section IV.

#### B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION IV.

**a. Column 1, Reference Code.** The tool and test equipment reference code correlates with a code used in the MAC, Section II or III, Column 5.

**b. Column 2, Maintenance Level.** The lowest category of maintenance authorized to use the tool or test equipment.

**c. Column 3, Nomenclature.** Name or identification of the tool or test equipment.

**d. Column 4, National Stock Number.** The national stock number of the tool or test equipment.

**e. Column 5, Tool Number.** The manufacturer's part number.

#### B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION V.

**a. Column 1, Reference Code.** An alphabetic code listed in the sixth column of the MAC and first column of the Remarks section to identify remarks made to the MAC.

**b. Column 2, Remarks.** The complete text of the remarks made to the MAC.

**Section II. MAINTENANCE ALLOCATION CHART (MAC) FOR FLATRACK  
M1077/M1077A1**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
33	SPECIAL PURPOSE KITS								
3301	Reusable Shipping Containers:								
	Flatrack	Repair			*			1,2,3	A
	Lock Mechanism	Repair			1.2			3	
	Rollers	Replace	0.3						
		Repair		0.8				3	
	Stowage Box	Repair		*				3	A

**Section III. MAINTENANCE ALLOCATION CHART (MAC) FOR ISO COMPATIBLE  
PALLETIZED FLATRACK M1 (IPF)**

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
33	SPECIAL PURPOSE KITS								
3301	Reusable Shipping Containers:								
	Flat Rack	Inspect		*	*			1	A
		Repair			*			1,2,3	A
	Floor Board	Inspect		*	*			1	A
		Replace		*				1	A
	Rollers	Replace		*				1,2	A
		Repair		*				1,2	A
	Stowage Box(es)	Replace		*				1,2	A
		Repair		*				1,2	A
	Twist Locks	Inspect	*						
		Replace		*				1	A
	Walls and Hinges	Inspect			*			1	A
		Replace			*			1,2	A



**Section IV. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR FLATRACK  
M1077/M1077A1 AND ISO COMPATIBLE  
PALLETIZED FLATRACK M1 (IPF)**

<b>Tool or Test Equipment Ref Code</b>	<b>Maintenance Category</b>	<b>Nomenclature</b>	<b>National/ Nato Stock Number</b>	<b>Tool Number</b>
1	O	Tool Kit, General Mechanic's	5180-00-177-7033	SC 5180-90-N26
2	O	Shop Equipment, Automotive Maintenance and Repair: Common No. 1	4910-00-754-0654	SC 4910-95-A74
3	F,H	Shop Equipment, Field Maintenance, Basic, Less Power	4910-00-754-0706	SC 4910-95-A31

**Section V. REMARKS**

<b>Reference Code</b>	<b>Remarks</b>
A	No specific time established. Times required for repair or replacement will depend on extent of work required.



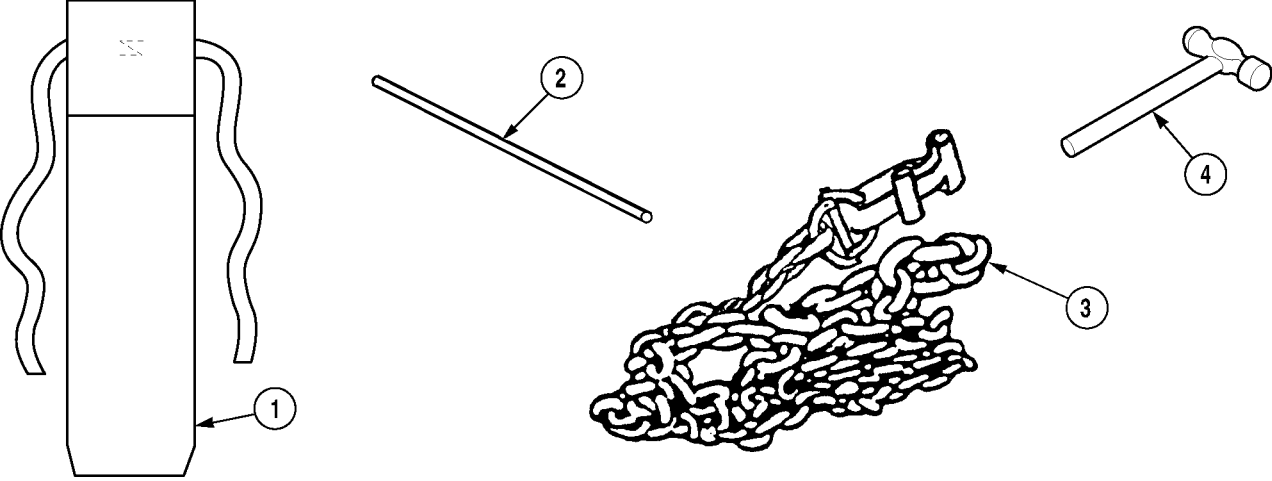
## APPENDIX C

### COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS

#### C-1. INTRODUCTION.

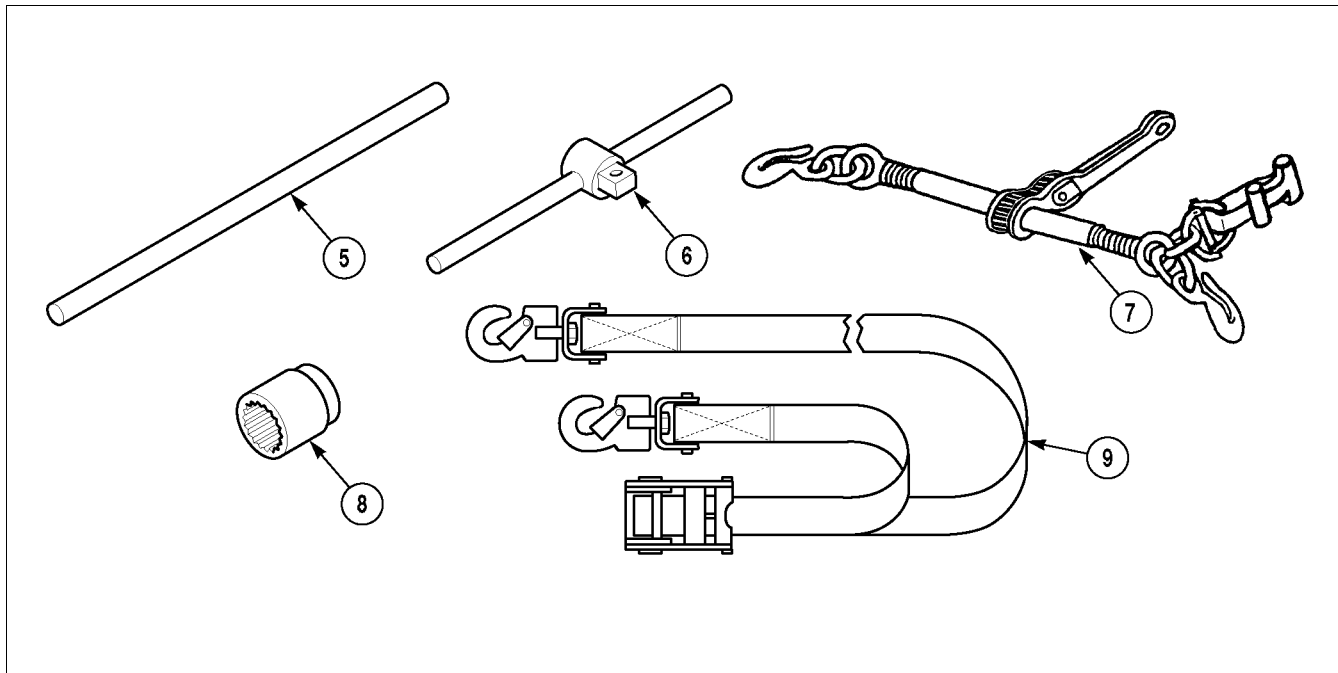
The following is a list of Basic Issue Items (BII) for the PLS Flatrack M1077/M1077A1 and PLS ISO Compatible Palletized Flatrack (IPF) M1. No Components of End Item (COEI) are authorized.

**Table C-1. Basic Issue Items (BII)**



(1) Illus Number	(2) National Stock Number	(3) Description Cage and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	8105-01-394-5929	Bag, Tool (0B4P8), 199-1290	IPF	ea	1
2	5315-01-435-0923	Bar, Pry, 12 in. X 7/16 in. (0PZP2) 12440500	IPF	ea	1
3	4010-01-435-1914	Chain, 3/8 (with T-Hook) (0PZP2) 12440499	IPF	ea	2
4	5120-00-265-7462	Hammer (90172), 41796	IPF	ea	1

Table C-1. Basic Issue Items (BII) (Cont).



(1) Illus Number	(2) National Stock Number	(3) Description Cage and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
5	5340-01-209-7841	Handle, Extension, Jack (45152), 1347720	IPF	ea	1
6	5120-01-242-7218	Handle, Sliding (45152), 1505380	IPF	ea	1
7	3990-01-437-4331	Load Binder, 3/8 Ratchet (with T-Hook) (OPZP2) 12440498	IPF	ea	2
8	5130-01-113-1563	Socket (55719) IM482	IPF	ea	1
9	3990-01-366-1607	Tiedown Strap (98313) FDC5770-5	IPF, 077	ea	22

**APPENDIX D**  
**ADDITIONAL AUTHORIZATION LIST (AAL)**

There are no additional authorized items for the flatrack.



## APPENDIX E

### EXPENDABLE AND DURABLE ITEMS LIST

#### Section I. INTRODUCTION

##### E-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the flatrack. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items) or CTA 8-100, Army Medical Department Expendable/Durable Items.

##### E-2. EXPLANATION OF COLUMNS.

- a. Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the narrative task box to identify the material (e.g., Sealing Compound Item 12, Appendix E).
- b. Column (2) - Level.** This column identifies the lowest level of maintenance that requires the listed items.
- C – Operator/Crew
  - O – Unit Maintenance
  - F – Direct Support Maintenance
  - H – General Support Maintenance
- c. Column (3) - National Stock Number.** This is the National Stock Number assigned to the item; use it to request or requisition the item.
- d. Column (4) - Description.** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity (CAGE) code in parentheses followed by the part number.
- e. Column (5) - Unit of Measure (U/M).** 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, requisition the lowest unit of issue that will satisfy your requirements.

**Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST**

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O	8040-01-406-8116	Adhesive, (SIKAFLEX-252) (OPMNO) Tube	oz
2	C	7920-00-205-2401	Brush, Stiff Bristle (MIL-B-43871)	ea
3	O	4030-01-088-2952	Clip, Swaging Sleeve (96906) MS 51844-62	ea
4	C	7902-00-044-9281	Cloth, Lint-Free, 10 lb box (MIL-C-85043)	lb
5	C	7930-00-282-9699	Detergent: Non-Sudsing, General Purpose Liquid (MIL-D-16791) type 1, 1 gal can	gal
6	C,O,F	9150-01-197-7789 9150-01-197-7693 9150-01-197-7690 9150-01-197-7692 9150-01-197-7691	Grease, Automotive and Artillery (GAA) (70878) 5542P (81349) MIL-G-10924 2.5 oz tube 14 oz cartridge 1.75 lb can 35 lb can 120 lb drum	oz oz lb lb lb
7	O	4010-00-222-4482	Lockwire, Rope (81349) (MIL-W-83420)	roll
8	O	9150-00-189-6730 9150-00-188-9862 9150-00-405-2987	Lubricating Oil, Engine OE/HDO 30 (81349) (MIL-L-21-4) 1 qt 5 gal 55 gal drum	qt gal gal
9	C	9150-00-261-7899 9150-00-262-8990 9150-00-223-4119 9150-00-852-4659	Oil, Penetrating (81348) A-A-50493 1 pt 1 qt 1 gal 55 gal drum	pt qt gal gal
10	O,F	5350-00-619-9166 5350-00-619-7207 5350-00-619-8378	Paper Abrasive, Silicone Carbide (P-P-101) 80-grit, 50 sheet package 240-grit, 50 sheet package 400-grit, 50 sheet package	pk pk pk
11	O	4020-00-106-9342	Rope, 3/4 in. thick, 20 ft. (19207) (MIL-R-24050)	ea



## Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST - CONT.

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
12	O	8030-01-104-5392 8030-01-025-1692	Sealing Compound (05972) Loctite #242 (80244) (MIL-S-46163A) Type 2 Grade N 10 milliliter bottle 250 milliliter bottle	bt bt
13	O	8030-00-148-9833 8030-01-158-6070	Sealing Compound (05972) Loctite #271 (80244) (MIL-S-46163) Type 1 Grade K 10 ml bottle 50 ml bottle	ml ml
14	O	6850-00-664-5685 6850-00-281-1985  6850-01-378-0679	Solvent, Drycleaning (P-D-680) 1 qt can 1 gal can (Environmentally Compliant Solvent) (OK209) Breakthrough 5 gallon can	qt gal  gal
15	O	9905-00-537-8957 9905-00-537-8955 9905-00-537-8956	Tags, Identification (81349) (MIL-T-12755) White Yellow Green	ea ea ea
16	O	6840-00-282-0971	Waterproofing, Wood (80244) (TT-W-572 composition D)	gal



## APPENDIX F

# UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

### Section I. INTRODUCTION

#### F-1. SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special Test, Measurement, and Diagnostic Equipment (TMDE); and other special support equipment required for performance of Unit, Direct Support, and General Support Maintenance of the PLS Flatrack M1077/M1077A1 and PLS ISO Compatible Palletized Flatrack M1 (IPF). It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

#### F-2. GENERAL.

In addition to Section I, Introduction, this Repair Parts and Special Tools List (RPSTL) is divided into the following sections:

**a. Section II. Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts Lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG BULK at the end of the section. Repair parts kits or sets are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in the section. Figures 1 through 8 list the repair parts list for PLS Flatrack M1077/M1077A1 and Figures 9 through 19 list the repair parts list for PLS M1 (IPF).

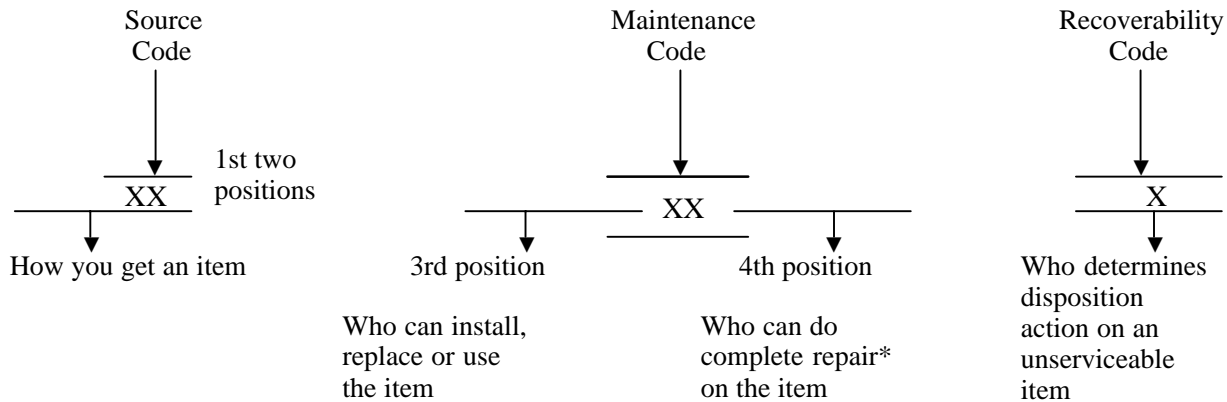
**b. Section III. Special Tools List. Not Applicable.** No special tools required for M1077/M1077A1 or M1 (IPF).

**c. Section IV. Cross-Reference Indexes.** A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listings, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

#### F-3. EXPLANATION OF COLUMNS (SECTION II).

- a. ITEM NO. [Column (1)].** Indicates the number used to identify items called out in the illustration.
- b. SMR CODE [Column (2)].** The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:

**F-3. EXPLANATION OF COLUMNS (SECTION II) (CONT).**



\* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks for the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

- (1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follows:

Code	Explanation
PA PB PC** PD PE PF PG	<p>Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3rd position of the SMR code.</p> <p>**NOTE: Items coded PC are subject to deterioration.</p>
KD KF KB	<p>Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.</p>
MO- (Made at org Level) MF- (Made at DS Level) MH- (Made at GS Level) ML- (Made at Specialized Repair Act (SRA)) MD- (Made at Depot)	<p>Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.</p>

Code	Explanation
AO- (Assembled by org Level)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicated the item is assembled at a higher level, order the item from the higher level of maintenance.
AF- (Assembled by DS Level)	
AH- (Assembled by GS Level)	
AL- (Assembled by SRA)	
AD- (Assembled by Depot)	
XA-	Do not requisition an "XA"-coded item. Order its next higher assembly. (Also, refer to the NOTE below.)
XB-	If an "XB" item is not available from salvage, order it using the CAGEC and part number given.
XC-	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD-	Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

**NOTE**

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA".

- (2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:
  - (a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code	Application/Explanation
C	- Crew or operator maintenance done within organizational maintenance.
O	- Unit Maintenance can remove, replace, and use the item.
F	- Direct support level can remove, replace, and use the item.
H	- General support level can remove, replace, and use the item.
L	- Specialized repair activity can remove, replace, and use the item.
D	- Depot level can remove, replace, and use the item.

**F-3. EXPLANATION OF COLUMNS (SECTION II) (CONT).**

- (b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). (NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.) This position will contain one of the following maintenance codes:

Code	Application/Explanation
O	- Unit Maintenance is the lowest level that can do complete repair of the item.
F	- Direct support is the lowest level that can do complete repair of the item.
H	- General support is the lowest level that can do complete repair of the item.
L	- Specialized repair activity is the lowest level that can do complete repair of the item.
D	- Depot is the lowest level that can do complete repair of the item.
Z	- Nonreparable. No repair is authorized.
B	- No repair is authorized. (No parts or special tools are authorized for the maintenance of "B"-coded item.) However, the item may be reconditioned by adjusting, lubrication, etc., at the user level.

- (3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR Code as follows:

Code	Application/Explanation
Z	- Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3rd position of SMR Code.
O	- Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational level.
F	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H	- Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	- Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	- Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA).
A	- Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material or hazardous material). Refer to appropriate manuals/directives for specific instructions.

- c. **NSN [Column (3)].** The National Stock Number for the item is listed in this column.
- d. **CAGEC [Column (4)].** The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplied the item.
- e. **PART NUMBER [Column (5)].** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

**NOTE**

When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

f. **DESCRIPTION AND USABLE ON CODE (UOC) [Column (6)].** This column includes the following information:

- (1) The federal item name and, when required, a minimum description to identify the item.
- (2) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.
- (3) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density spread indicated in the BOI, the total authorization is increased proportionately.
- (4) The statement “END OF FIGURE” appears just below the last item description in Column 5 for a given figure in Section II.

g. **QTY [Column (7)].** The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A “V” appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

**F-4. EXPLANATION OF COLUMNS (SECTION IV).**

a. **NATIONAL STOCK NUMBER (NSN) INDEX.**

(1) **STOCK NUMBER** column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN i.e.:

$$\text{NSN i.e. } \frac{\text{NSN}}{\text{NIIN}} \text{ (5305-01-574-1467).}$$

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) **FIG.** column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in Section II.

(3) **ITEM** column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

**F-4. EXPLANATION OF COLUMNS (SECTION IV) (CONT).**

**b. PART NUMBER INDEX.** Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) CAGEC column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) PART NUMBER column. Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, and inspection requirements to identify an item or range of items.

(3) STOCK NUMBER column. This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and CAGE columns to the left.

(4) FIG. column. This column lists the number of the figure where the item is identified/located in Sections II and III.

(5) ITEM column. This item number is that number assigned to the item as it appears in the figure referenced in adjacent figure number column.

**F-5. SPECIAL INFORMATION.**

**a. USABLE ON CODE.** The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown as "UOC...." in the Description Column (justified left) on the last line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable code in this publication is:

Code	Used On
077	Flatrack, Model M1077/M1077A1
IPF	ISO Compatible Palletized Flatrack M1 (IPF)

**F-6. HOW TO LOCATE PARTS.**

**a. When National Stock Number or Part Number is NOT Known.**

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) Fifth. Refer to the Figure and Item Number Index to find the NSN, if assigned.



***b. When National Stock Number or Part Number is Known.***

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see paragraph F-4a.(1)). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see paragraph F-4b.). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) Second. After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

<b>F-7. ABBREVIATIONS.</b>
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Abbreviations used in this appendix are listed in MIL-STD-12.

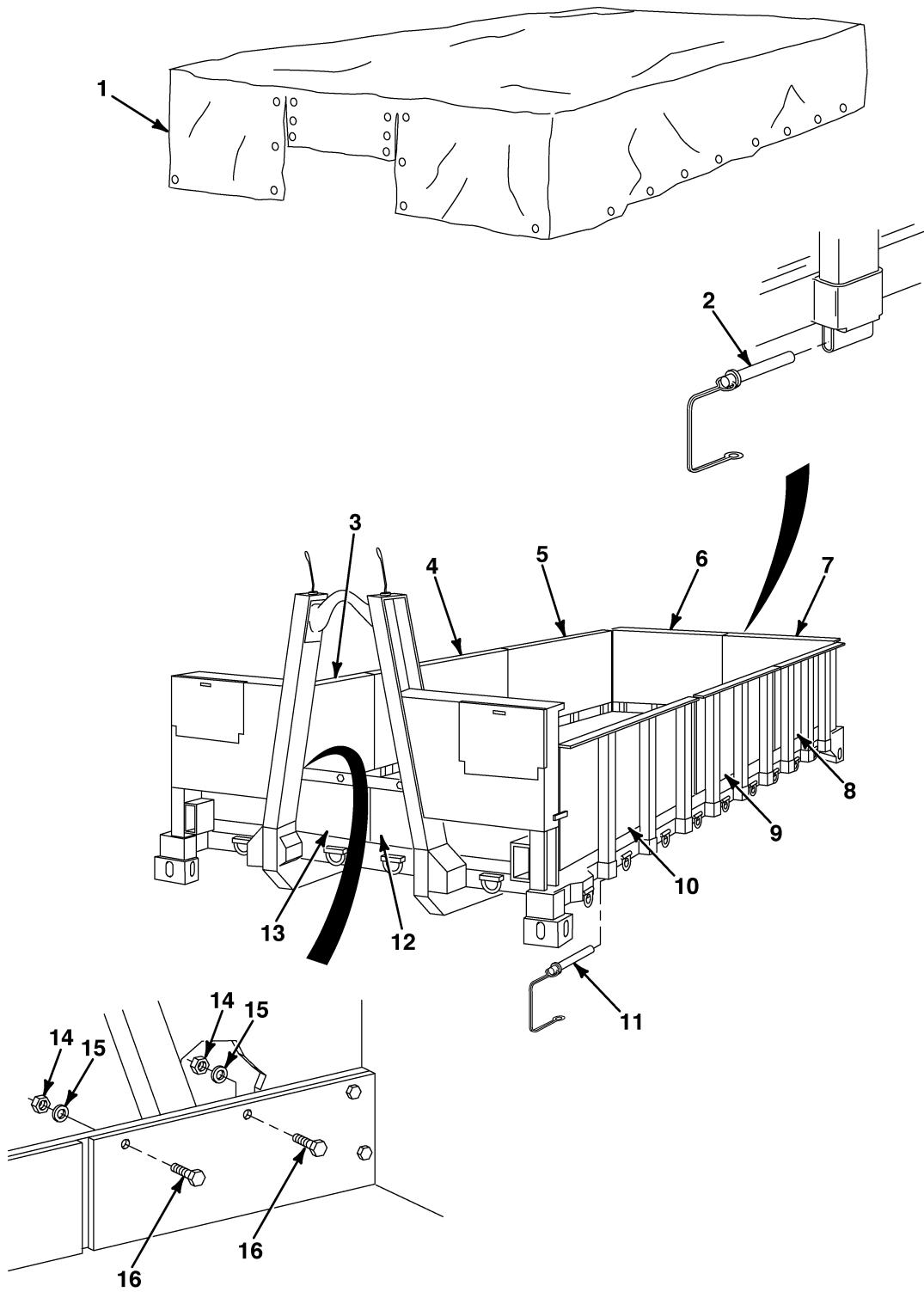


FIG. 1 M1077 SIDEBOARD KIT

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 33 SPECIAL PURPOSE KITS GROUP 3301 REUSABLE SHIPPING CONTAINERS FIG. 1 M1077 SIDEBOARD KIT	
1	PA0ZZ	2540-01-437-2482	5W749	LAS-PLS-SK-T	TARPAULIN UOC: 077,	1
2	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -SPM	PIN,SNAP PART OF KIT P/N LAS-PLS-SK-M1077 28-02 5/16 X 2 3/4 UOC: 077,	18
3	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA4	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 RIGHT FRONT UOC: 077,	1
4	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA5	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 RIGHT CENTER UOC: 077,	1
5	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA6	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 RIGHT REAR UOC: 077,	1
6	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA8	REAR PANEL,RIGHT PART OF KIT P/N LAS-PLS-SK-M1077 UOC: 077,	1
7	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA7	REAR PANEL,LEFT PART OF KIT P/N LAS-PLS-SK-M1077 UOC: 077,	1
8	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA3	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 LEFT REAR UOC: 077,	1
9	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA2	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 LEFT CENTER UOC: 077,	1
10	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA1	SIDEBOARD,SIDE PART OF KIT P/N LAS-PLS-SK-M1077 LEFT FRONT UOC: 077,	1
11	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -SPM7	PIN,SNAP PART OF KIT P/N LAS-PLS-SK-M1077 63-04 7/16 X 1 3/4 UOC: 077,	2
12	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA9	FRONT,LEFT SIDE PART OF KIT P/N LAS-PLS-SK-M1077 UOC: 077,	1
13	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -PA10	FRONT,RIGHT SIDE PART OF KIT P/N LAS-PLS-SK-M1077 UOC: 077,	1
14	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -HLN	LOCKNUT,HEX,PLASTIC PART OF KIT P/N LAS-PLS-SK-M1077 5/16 GR 5 UOC: 077,	8

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
15	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -FW	WASHER,FLAT,STEEL PART OF KIT P/N LAS-PLS-SK-M1077 UOC: 077,	8
16	KFOZZ	- - -	5W749	LAS-PLS-SK-M1077 -CSZ	SCREW,CAP,STEEL PART OF KIT P/N LAS-PLS-SK-M1077 5/16 X 1 1/2, GR 5 UOC: 077,	8

END OF FIGURE



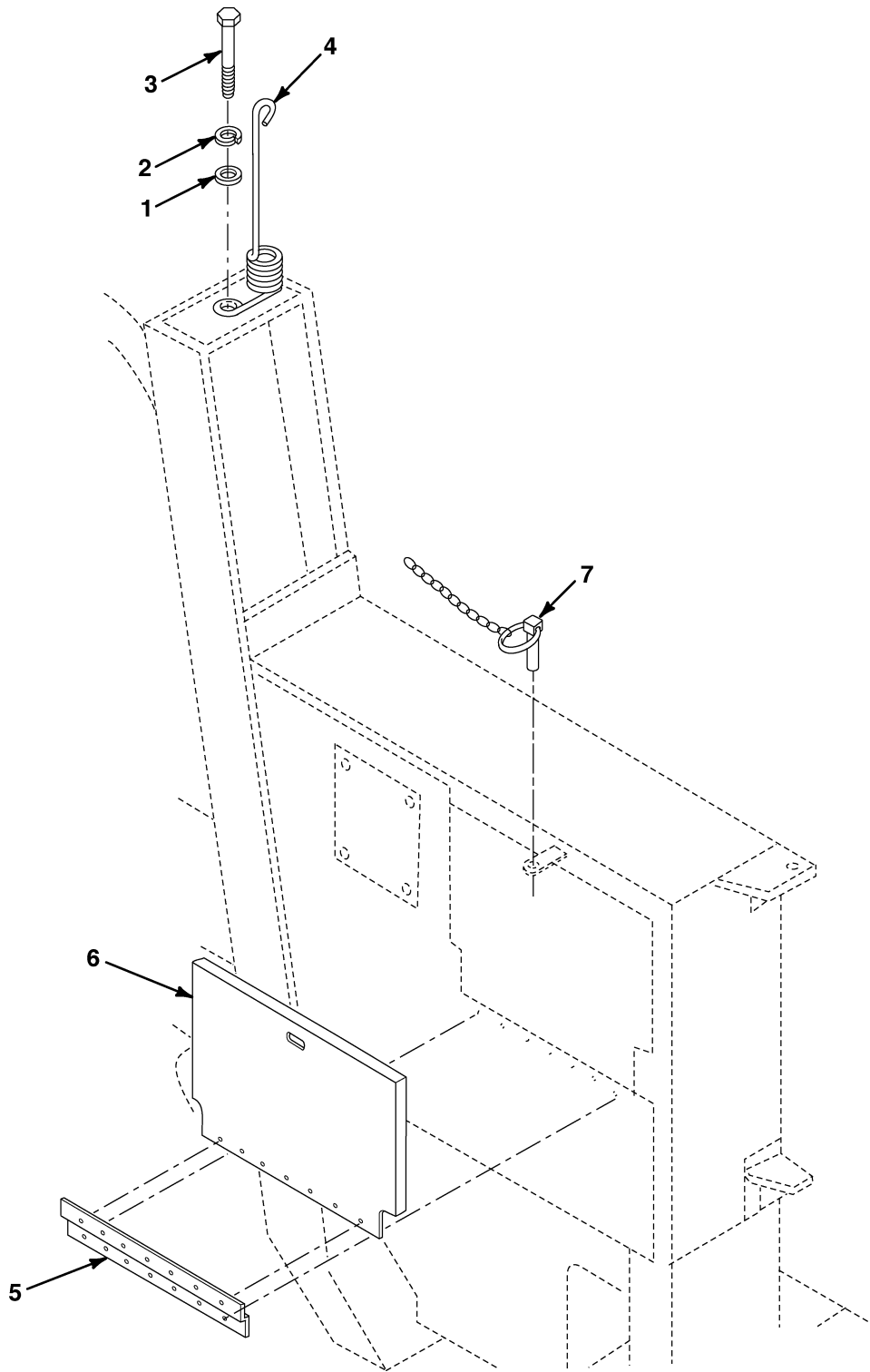


FIG. 2 MARKER SPRING AND STOWAGE BOX DOOR

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 2 MARKER SPRING AND STOWAGE BOX DOOR	
1	PAOZZ	5310-01-061-5301	45152	8865G	WASHER,FLAT 5/8 UOC: 077,	2
2	PAOZZ	5310-01-061-5302	45152	318B	WASHER,LOCK 5/8 UOC: 077,	2
3	PAOZZ	5305-01-373-4726	0PZP2	1790HX1	SCREW,CAP 5/8-11X1 1/2 UOC: 077,	2
4	PAOZZ	5360-01-372-3824	0PZP2	1785680	SPRING,MARKER UOC: 077,	2
5	PAOZZ	5340-00-194-3764	96906	MS35824-3C	HINGE,STORAGE BOX UOC: 077,	2
6	PAOZZ	2540-01-373-6510	0PZP2	1727170	DOOR,RH UOC: 077,	1
6	PAOZZ	2510-01-372-7074	0PZP2	1727170-1	DOOR,LH UOC: 077,	1
7	PAOZZ	5315-01-394-4482	0PXJ7	63-11	PIN,LYNCH UOC: 077,	2

END OF FIGURE

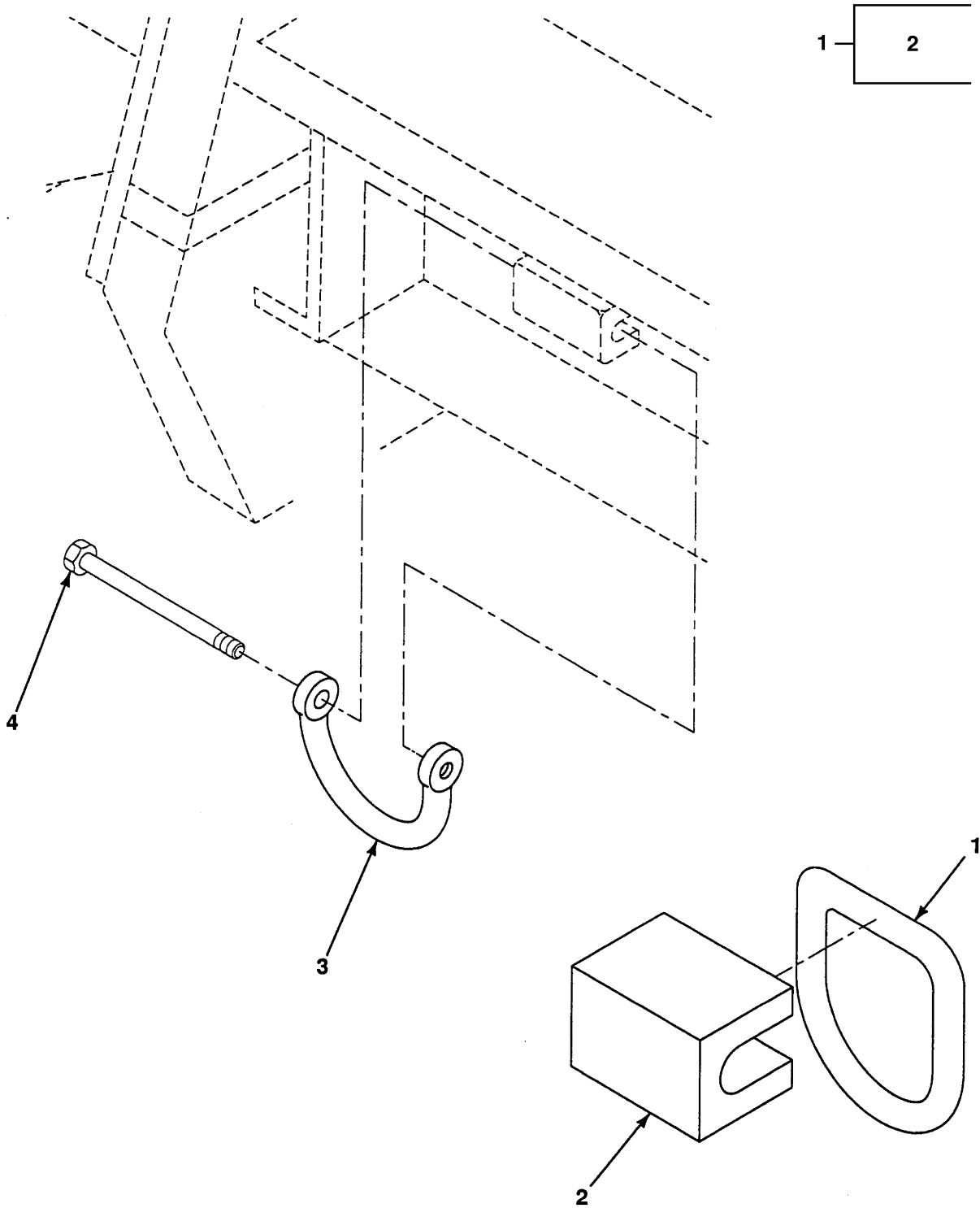


FIG. 3 SLING AND TIEDOWN RINGS



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 3 SLING AND TIEDOWN RINGS	
1	PAOZZ	5365-01-372-5091	04368	DR209	RING,SLING UOC: 077,	4
2	PAOZZ	5365-01-372-5707	0NMB3	189764	.RETAINER,RING UOC: 077,	1
3	PAOZZ	4030-01-412-0632	90202	R1880-A	SHACKLE BODY,RETAIN UOC: 077,	8
4	PAOZZ	5306-01-383-8903	90202	2X1900	SCREW,CAP,HEX HD UOC: 077,	8

END OF FIGURE

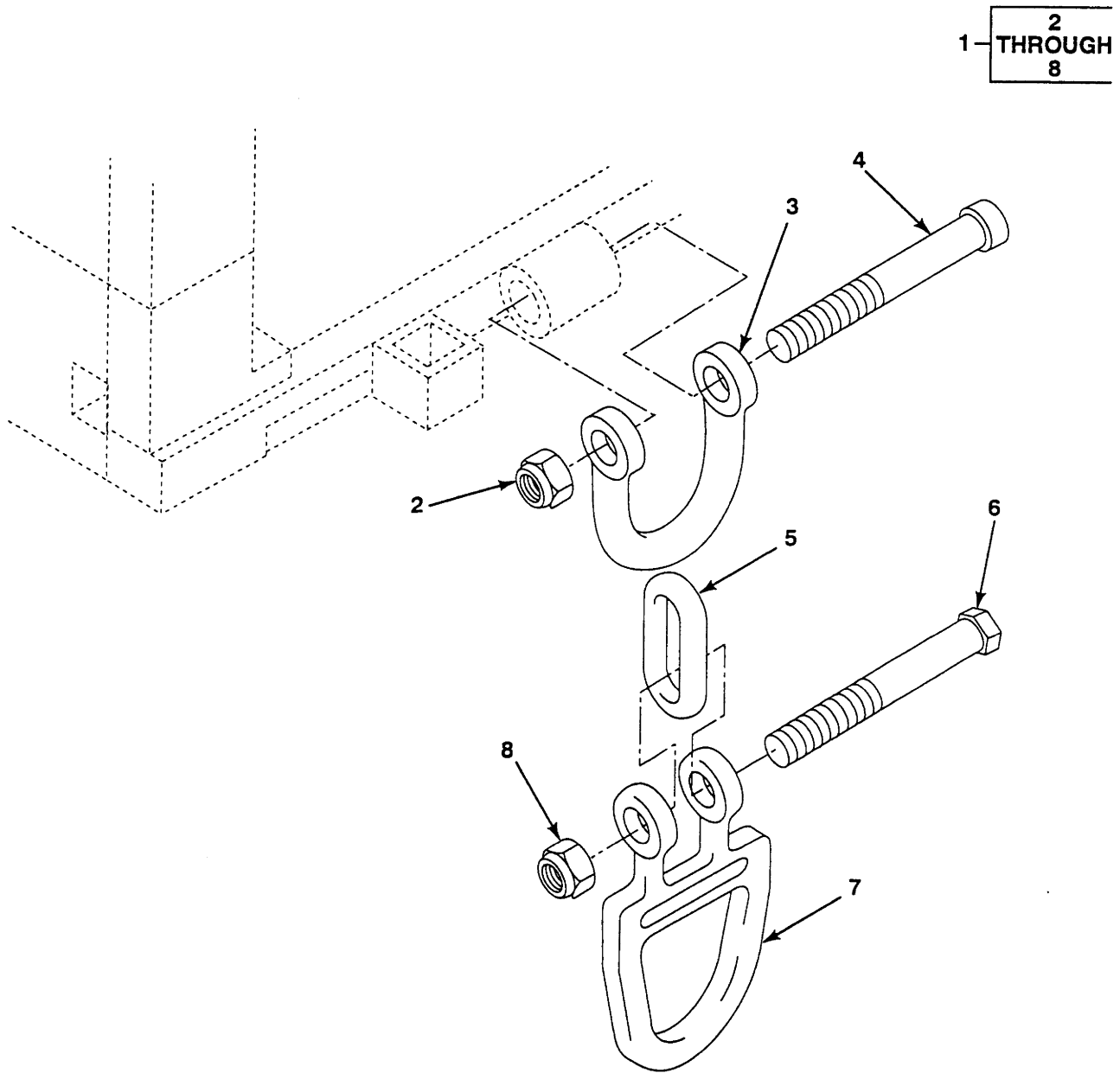


FIG. 4 SIDE TIEDOWN RINGS

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 4 SIDE TIEDOWN RINGS	
1	PAOZZ	4030-01-412-8675	90202	R1896	RING,TIEDOWN UOC: 077,	22
2	PAOZZ	5310-01-397-4260	90202	3X1865	.NUT,JAM,LOCKING HEX 5/8-11 UOC: 077,	1
3	PAOZZ	4030-01-383-7326	90202	R1880	.SHACKLE BODY,RETAIN UOC: 077,	1
4	PAOZZ	5305-01-383-8824	90202	2X1922	.SCREW,CAP,SOCKET HD 5/8-11X4 1/2 UOC: 077,	1
5	PAOZZ	3040-01-383-2293	45152	2HS929	.LINK,CENTER UOC: 077,	1
6	PAOZZ	5305-00-071-2072	80204	B1821BH050C225N	.SCREW,CAP, HEX HD 1/2-13X2 1/4 UOC: 077,	1
7	PAOZZ	5340-01-383-1940	90202	R1898	.CLEVIS,END LINK UOC: 077,	1
8	PAOZZ	5310-01-382-9911	90202	3X1864	.NUT,JAM,LOCKING HEX 1/2-13 UOC: 077,	1

END OF FIGURE

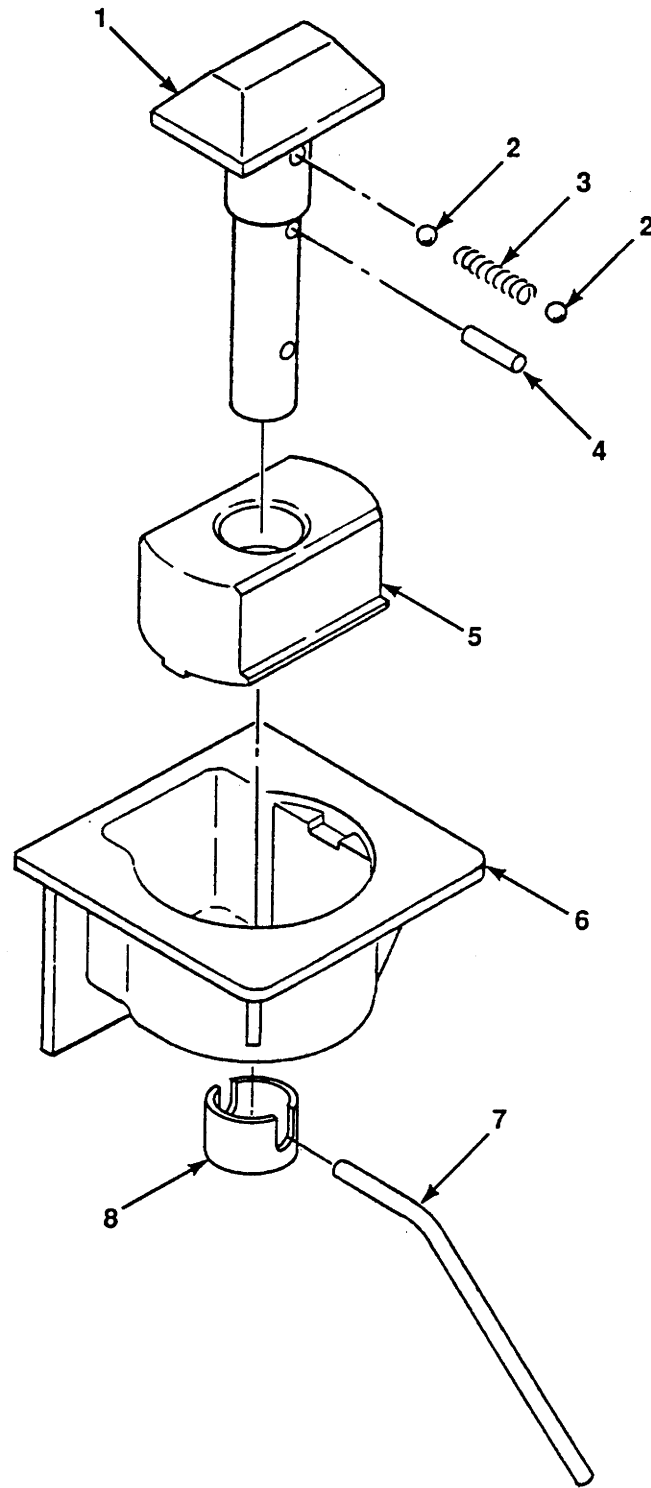


FIG. 5 FRONT ISO LOCKS

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 5 FRONT ISO LOCKS	
1	PAFZZ	4820-01-372-7440	OPZP2	BLR 1090	STEM UOC: 077,	1
2	PAFZZ	3110-01-372-5251	OPZP2	BLR 1236	BALL UOC: 077,	2
3	PAFZZ	5360-01-372-3820	OPZP2	BLR 990/1	SPRING UOC: 077,	1
4	PFFZZ	5315-01-422-1713	OPZP2	BLR 999	PIN UOC: 077,	1
5	PAFZZ	3040-01-372-8257	OPZP2	BLR 1000	BRACKET,EYE,NONROTA UOC: 077,	1
6	PAFZZ	5325-01-392-6421	OL9E5	BLR 4198	BODY UOC: 077,	1
7	PAFZZ	3040-01-372-8157	OPZP2	BLR 4199	HANDLE UOC: 077,	1
8	PAFZZ	3040-01-396-5073	OPZP2	2000014	COLLAR,TWIST LOCK UOC: 077,	1

END OF FIGURE

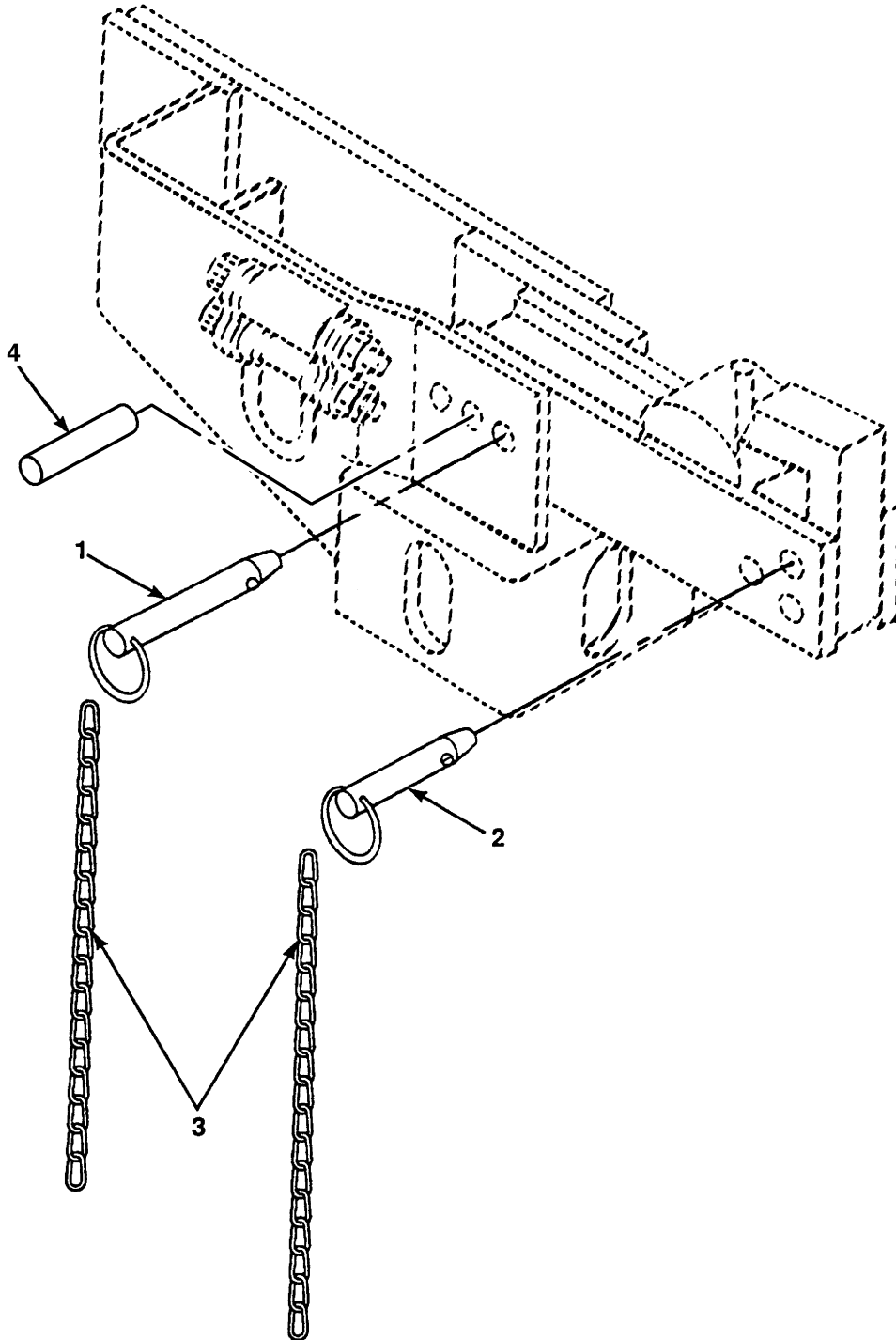


FIG. 6 REAR ISO LOCKING PINS

## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 6 REAR ISO LOCKING PINS	
1	PAFZZ	5315-01-372-3051	09332	C12-45R-303/.75C DIM	PIN,QUICK,REL UOC: 077,	1
2	PAFZZ	5315-01-369-3377	09332	C12-27.5R-303/.7 5CDIM	PIN,QUICK,REL UOC: 077,	1
3	PFFZZ	4010-01-417-2466	54275	54T24101	CHAIN UOC: 077,	2
4	PFFZZ	- - -	0PZP2	1727250W-7	PIN UOC: 077,	1

END OF FIGURE

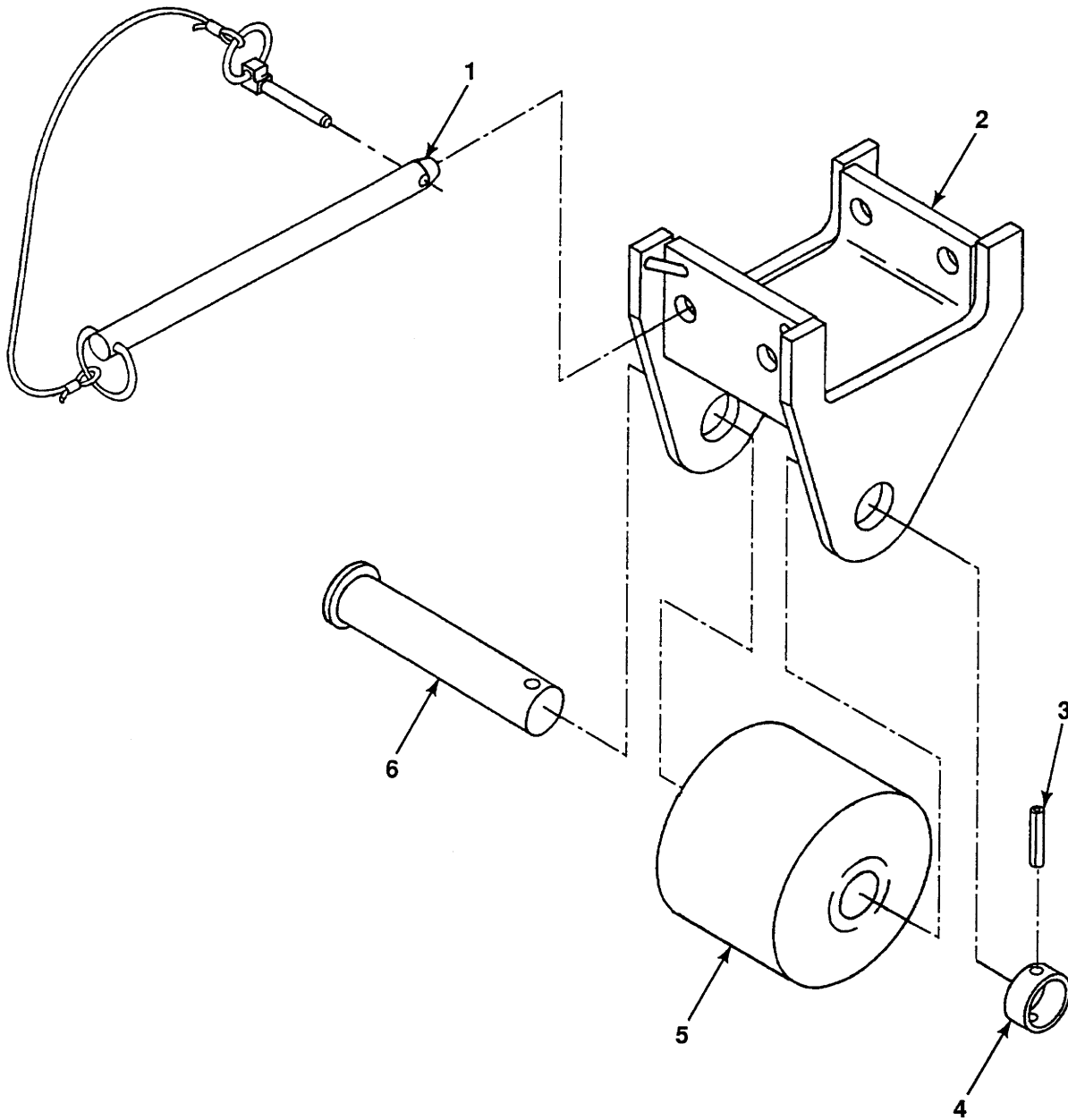


FIG. 7 ROLLER



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 7 ROLLERS	
1	PAOZZ	5315-01-372-2508	45152	1726750	PIN ASSY, LOCK UOC: 077,	4
2	PAOZZ	5340-01-372-3866	OPZP2	1726900W-1	BRACKET, ROLLER MTG UOC: 077,	2
3	PAOZZ	5315-01-372-2507	45152	1726740	PIN, ROLL UOC: 077,	2
4	PAOZZ	3040-01-372-7046	OPZP2	2000003	COLLAR, ROLLER UOC: 077,	2
5	PAOZZ	3120-01-372-3618	OPZP2	1726860 W	ROLLER UOC: 077,	2
6	PAOZZ	3040-01-372-8553	OPZP2	2000001	SHAFT, ROLLER UOC: 077,	2

END OF FIGURE

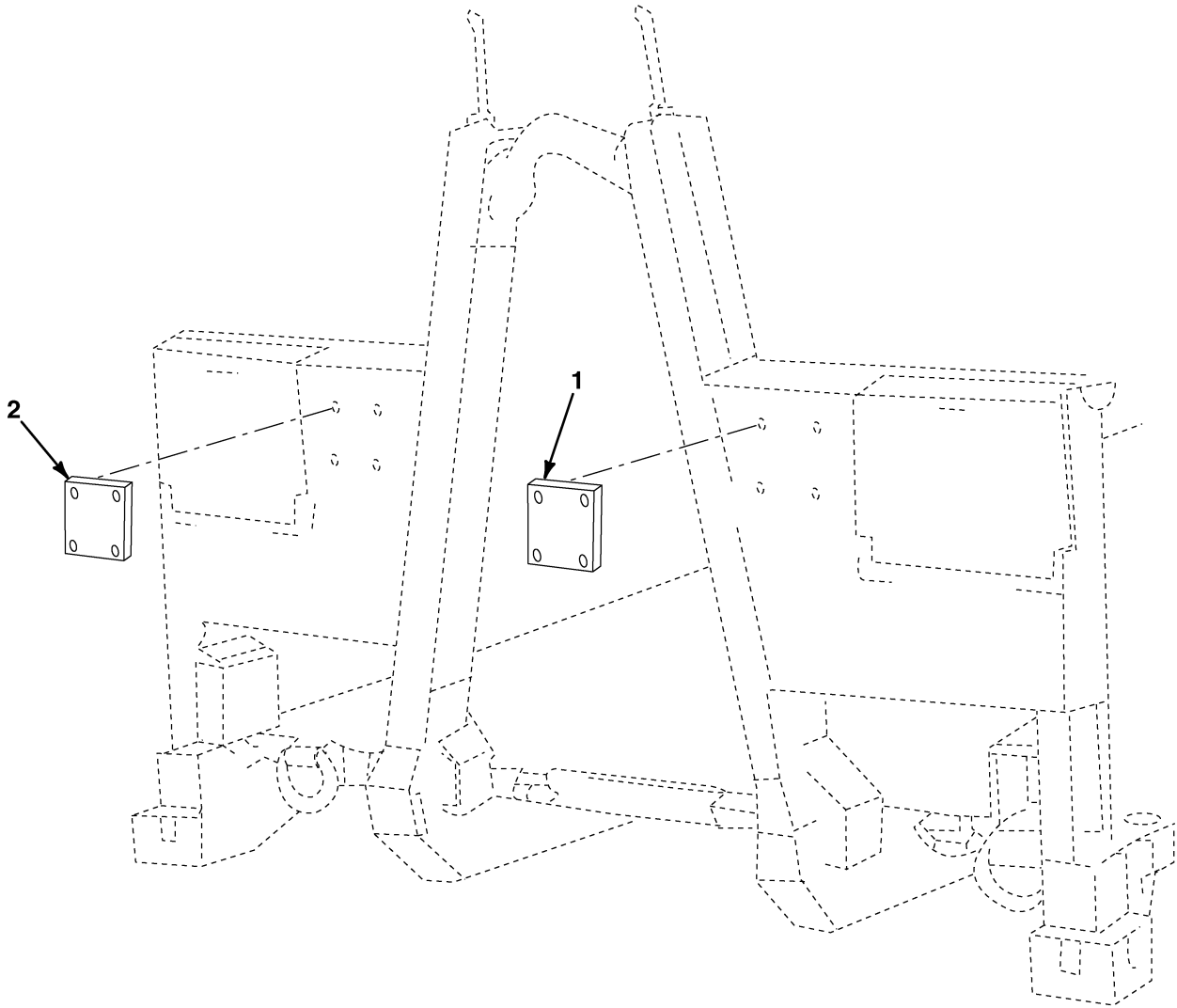


FIG. 8 DATA PLATES

## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 3301 REUSABLE SHIPPING  
CONTAINERS

FIG. 8 DATA PLATES

1	PFOZZ	9905-01-436-4780	45152	1762100	LABEL, SHIPPING	1
2	PFOZZ	9905-01-437-5220	45152	1782190	UOC: 077, DATA PLATE, FL	1
					UOC: 077,	

END OF FIGURE

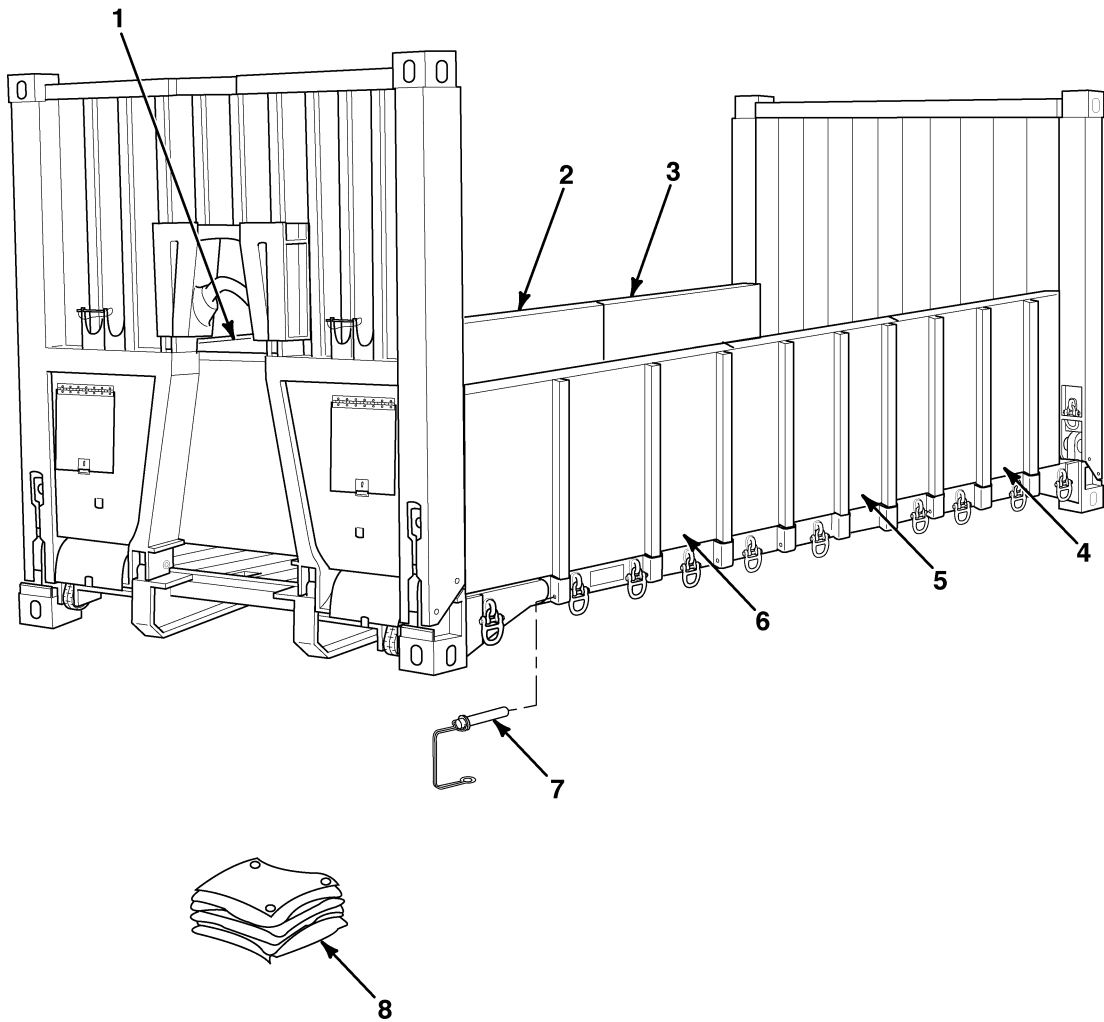


FIG. 9 IPF SIDEBOARD KIT

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 9 IPF SIDEBOARD KIT	
1	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA4	SIDEBOARD,SIDE RIGHT FRONT UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
2	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA5	SIDEBOARD,SIDE RIGHT CENTER UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
3	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA6	SIDEBOARD,SIDE RIGHT REAR UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
4	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA3	SIDEBOARD,SIDE LEFT REAR UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
5	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA2	SIDEBOARD,SIDE LEFT CENTER UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
6	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PA1	SIDEBOARD,SIDE LEFT FRONT UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	1
7	KFOZZ	- - -	5W749	LAS-PLS-SK-M1-PK	PIN,KLUGE UOC: IPF PART OF KIT PN: LAS-PLS-SK-M1	18
8	PAOZZ	2540-01-437-2482	5W749	LAS-PLS-SK-T	TARPAULIN UOC: IPF	1

END OF FIGURE

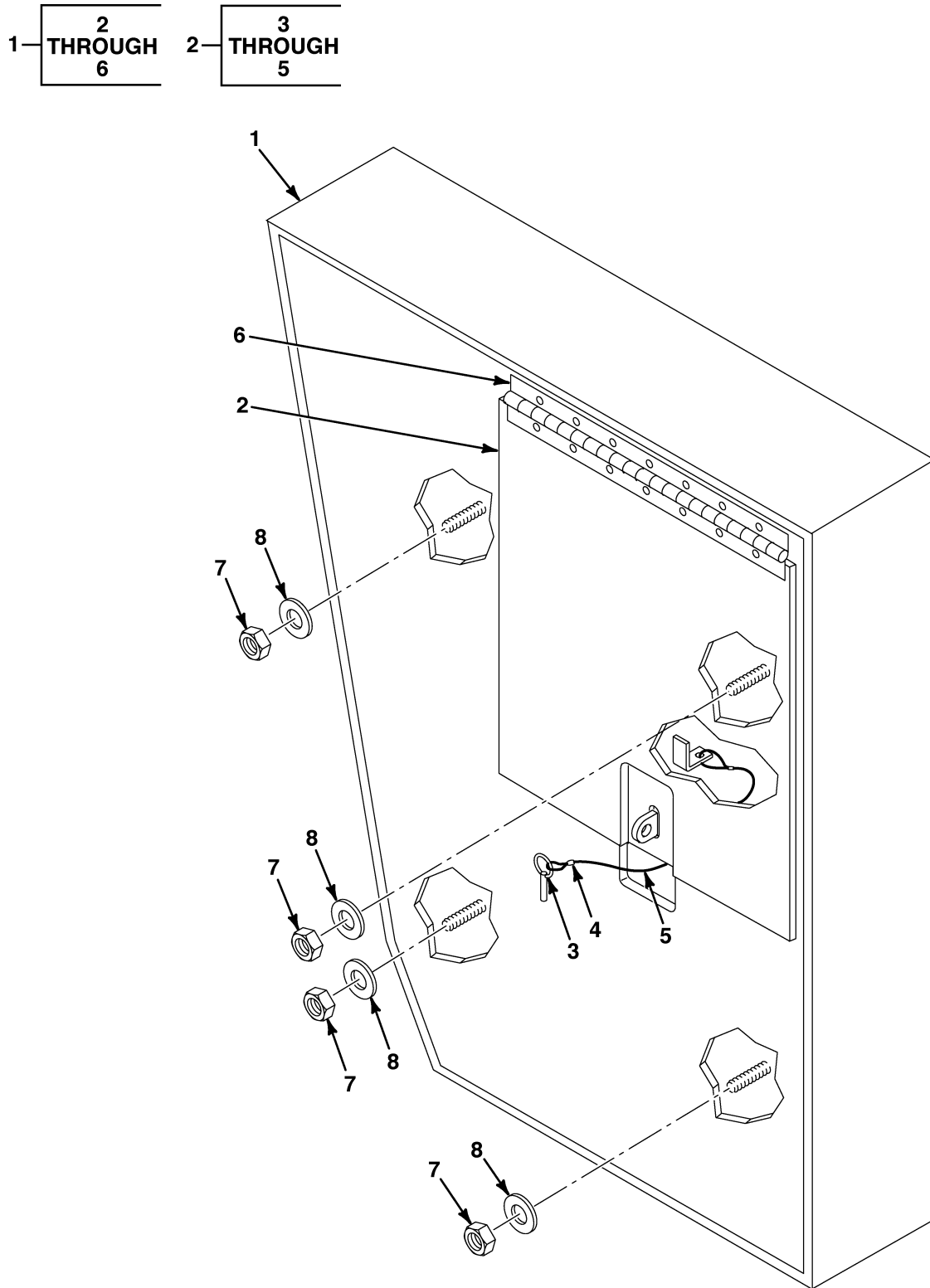


FIG. 10 IPF STOWAGE BOX ASSEMBLY

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 10 IPF STOWAGE BOX ASSEMBLY	
1	PF000	2540-01-422-3994	0PZP2	EPF265	BOX,STORAGE,RH UOC: IPF	1
1	PF000	2540-01-422-3995	0PZP2	EPF267	BOX,STORAGE,LH UOC: IPF	1
2	PFOZZ	5340-01-422-3853	0PZP2	EPF261	.DOOR ASSY,STORAGE UOC: IPF	1
3	PAOZZ	5315-01-215-7505	96652	63-02	..PIN,STRAIGHT,HEADED UOC: IPF	1
4	PAOZZ	4030-00-041-9770	88277	S1152309	..SLEEVE,TETHER,OVAL UOC: IPF	2
5	PAOZZ	4010-01-315-7375	45152	1533100	..ROPE,WIRE UOC: IPF	1
6	PFOZZ	5340-01-421-6449	0PZP2	EPF239	.HINGE,DOOR UOC: IPF	1
7	PFOZZ	5310-00-087-4652	96906	MS51922-17	NUT,STORAGE BOX 3/8-16 UOC: IPF	8
8	PFOZZ	5310-00-087-7493	81337	5-11-966-41	WASHER,FLAT 3/8 UOC: IPF	8

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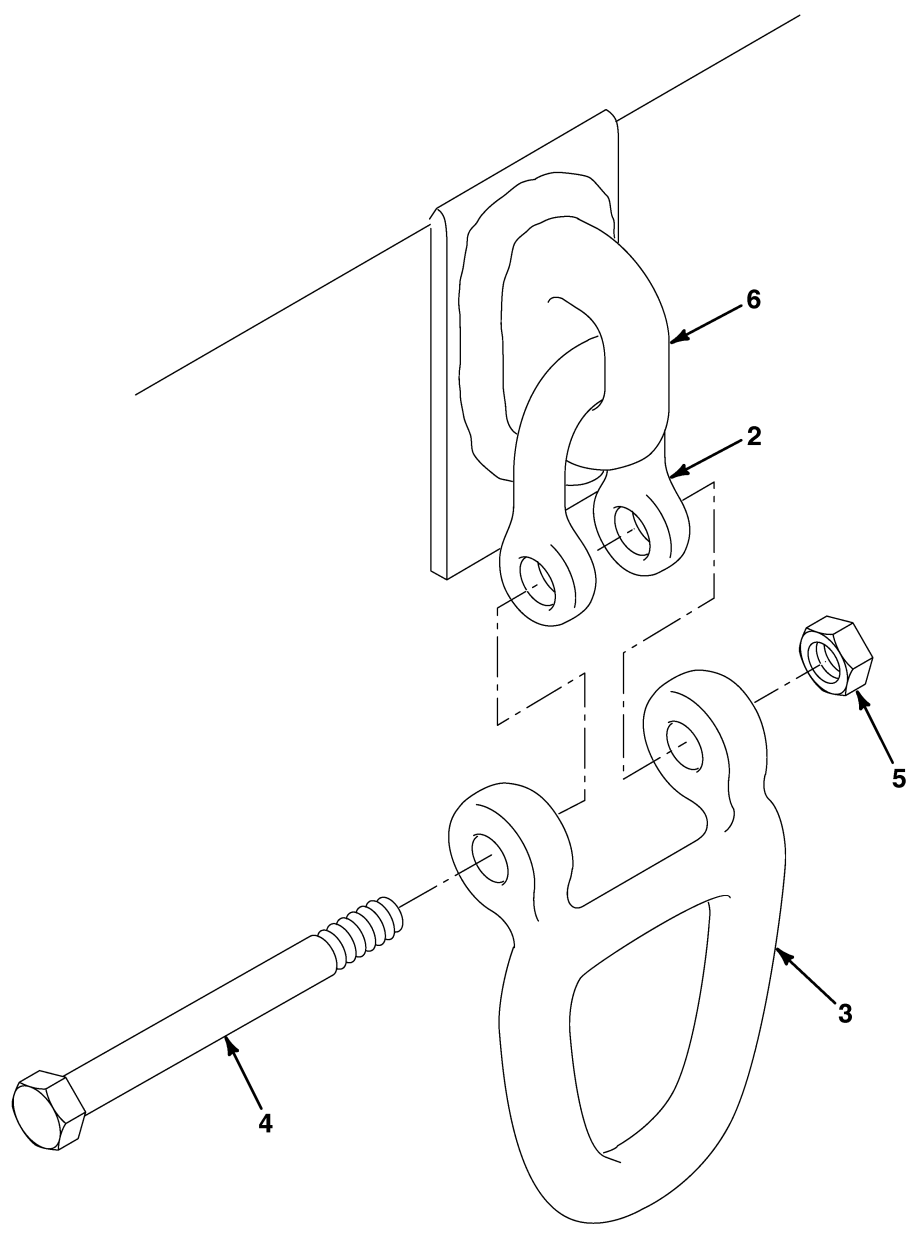


FIG. 11 IPF 10K, 25K CARGO TIEDOWN ASSEMBLY



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 11 IPF 10K AND 25K CARGO TIEDOWN ASSEMBLY	
1	PFOZZ	4030-01-421-9877	OPZP2	EPF167	SWIVEL,EYE AND LINK 10K UOC: IPF,	22
1	PFOZZ	- - -	OPZP2	EPF168	SWIVEL,EYE AND LINK 25K UOC: IPF,	6
2	XAOZZ	- - -	OPZP2	12440693	.RING,U 10K UOC: IPF,	1
2	XAOZZ	- - -	OPZP2	12440692	.RING,U 25K UOC: IPF,	1
3	XAOZZ	- - -	OPZP2	12440691	.RING,D 10K UOC: IPF,	1
3	XAOZZ	- - -	OPZP2	12440690	.RING,D 25K UOC: IPF,	1
4	PFOZZ	5305-00-071-2081	80204	B1821BH050C450N	.BOLT,TIEDOWN 1/1-13 X 4 3/16 10K UOC: IPF,	1
4	PFOZZ	5306-01-422-7289	45152	3HD783	.BOLT,TIEDOWN 5/8-11 X 4 1/2 25K UOC: IPF,	1
5	PFOZZ	5310-00-488-3889	96906	MS51943-39	.NUT,TIEDOWN 1/2-13 10K UOC: IPF,	1
5	PFOZZ	5310-01-421-7048	OPZP2	12440698	.NUT,TIEDOWN 5/8-11 25K UOC: IPF,	1
6	PFOZZ	5365-01-421-8334	OPZP2	12440689	RING,DEE 10K UOC: IPF,	22
6	PFOZZ	5365-01-421-8333	OPZP2	12440688	RING,DEE 25K UOC: IPF,	6

END OF FIGURE

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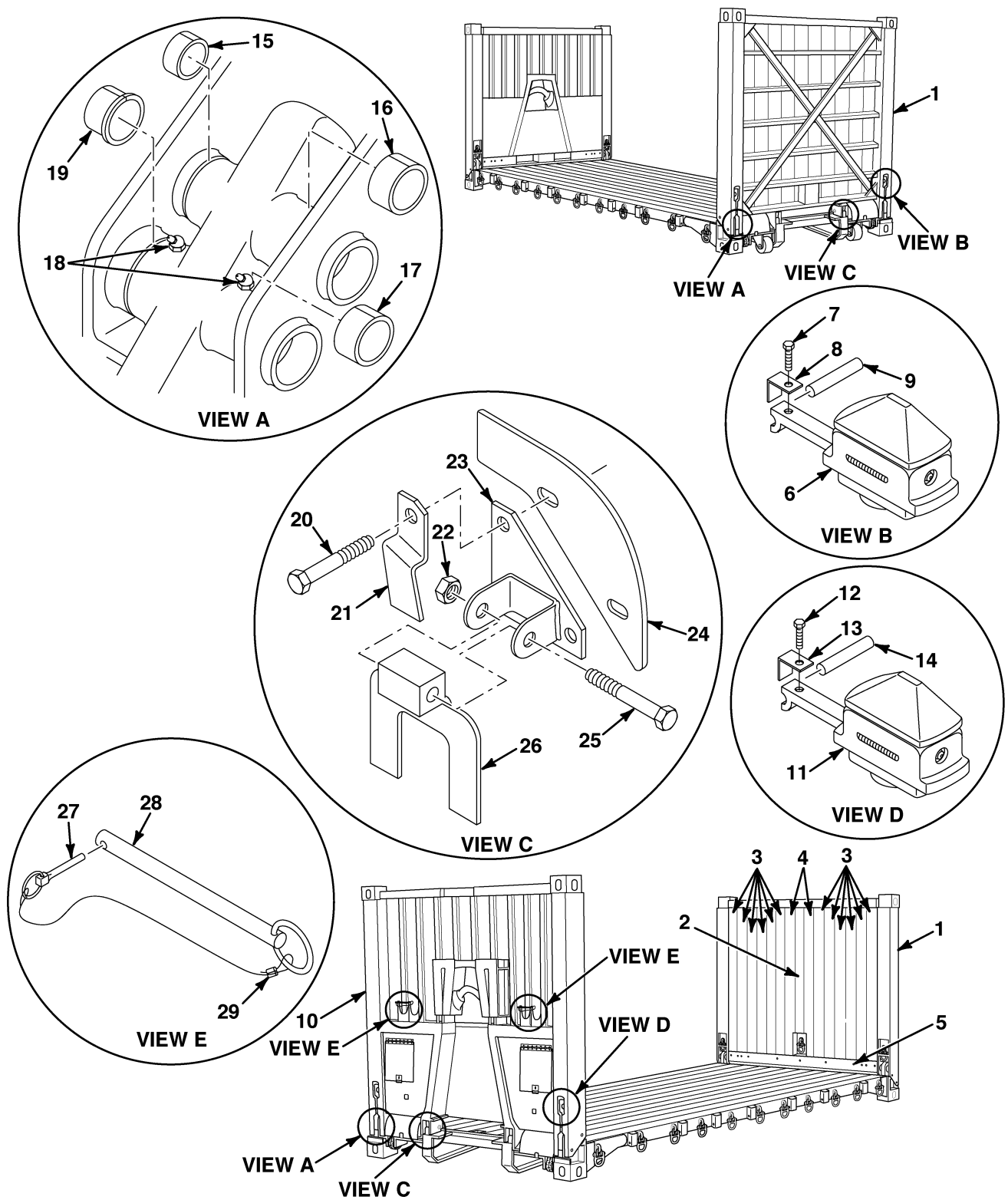


FIG. 12 IPF FRONT AND REAR WALL ASSEMBLY

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS FIG. 12 IPF FRONT AND REAR WALL ASSEMBLY	
1	PFFFF	- - -	OPZP2	12440660	WALL ASSY,REAR UOC: IPF,	1
2	MOOZZ	- - -	OPZP2	12440504	.PLANK, REAR WALL SHORT, MAKE FROM PLANK P/N 12440892 (06740) UOC: IPF,	1
3	MOOZZ	- - -	OPZP2	12440505	.PLANK, REAR WALL MAKE FROM PLANK P/N 12440892 (06740) UOC: IPF,	12
4	MOOZZ	- - -	OPZP2	12440506	.PLANK, REAR WALL NOTCHED, MAKE FROM PLANK P/N 12440892 (06740) UOC: IPF,	2
5	PAOZZ	5305-01-422-7472	45152	3HD830	.SCREW,TAPPING UOC: IPF,	150
6	PAOZZ	2510-01-428-6174	OPZP2	EPF116	.LOCK ASSY,TWIST UOC: IPF,	2
7	PAOZZ	5305-00-071-2506	80204	B1821BH025C050N	.SCREW,CAP,HEXAGON H 1/4-20 X 1/2 UOC: IPF,	2
8	PFOZZ	5340-01-439-3467	OPZP2	12440563	.BRACKET,ANGLE UOC: IPF,	2
9	XAOZZ	- - -	OPZP2	EPF082-XA	.PIN,TWIST LOCK 1/2X1 15/16 UOC: IPF,	2
10	PAFFF	2510-01-422-3993	OPZP2	12440610	WALL ASSEMBLY,FRONT UOC: IPF,	1
11	PAOZZ	2510-01-428-6174	OPZP2	EPF116	.LOCK ASSY,TWIST UOC: IPF,	2
12	PAOZZ	5305-00-071-2506	80204	B1821BH025C050N	.SCREW,CAP,HEXAGON H 1/4-20 X 1/2 UOC: IPF,	2
13	PFOZZ	5340-01-439-3467	OPZP2	12440563	.BRACKET,ANGLE UOC: IPF,	2
14	XAOZZ	- - -	OPZP2	EPF082-XA	.PIN,TWIST LOCK 1/2X1 15/16 UOC: IPF,	2
15	PAFZZ	5365-01-188-1047	32377	GLY.PGZ2216F	BUSHING UOC: IPF,	4
16	PAFZZ	3120-01-168-4515	26124	28-DU-16	BEARING,SLEEVE UOC: IPF,	4
17	PAFZZ	3120-01-423-7779	32377	GLY.PGZ3624F	BUSHING UOC: IPF,	4
18	PAOZZ	4730-00-172-0015	96906	MS15002-3	ZERK,GREASE 45 DEG 1/4-28 UOC: IPF,	8
19	PAFZZ	3120-01-423-6202	26124	20FDU16	BUSHING UOC: IPF,	4
20	PAOZZ	5305-01-344-5532	45152	1846HX1	SCREW,CAP,HEX HD 5/16-18 X 1 UOC: IPF,	8
21	PFOZZ	5340-01-421-7093	OPZP2	12440974-1	BRACKET ANGLE FRT AND LH RR UOC: IPF,	2
21	PFOZZ	5340-01-421-7102	OPZP2	12440974-2	BRACKET ANGLE FRT AND RH RR UOC: IPF,	2
22	PFOZZ	5310-00-061-4650	96906	MS51943-31	NUT,LOCK 1/4-20 UOC: IPF,	4

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
23	PFOZZ	5340-01-421-6473	0PZP2	12440989-1	PIN LOCK,BRACKET,RH FRT AND LH RR UOC: IPF,	2
23	PFOZZ	5340-01-421-7087	0PZP2	12440989-2	PIN,LOCK BRACKET,LH FRT AND RH RR UOC: IPF,	2
24	PAOZZ	5340-01-422-4269	0PZP2	12440834	PLATE,MUD FLAP UOC: IPF,	4
25	PAOZZ	5305-00-071-2237	96906	MS90725-14	SCREW,MUD FLAP RR 1/4-20 X 2 UOC: IPF,	4
26	PFOZZ	5340-01-422-6639	0PZP2	12440978	BRACKET ANGLE UOC: IPF,	4
27	PAOZZ	5315-01-422-2978	45152	3HD596	PIN,QUICK RELEASE UOC: IPF,	2
28	PAOZZ	5315-01-422-5939	96652	S1100-923660	PIN,ROLLER,STORAGE UOC: IPF,	2
29	PFOZZ	4030-00-041-9770	88277	S1152309	SWAGING SLEEVE,WIRE UOC: IPF,	2

END OF FIGURE



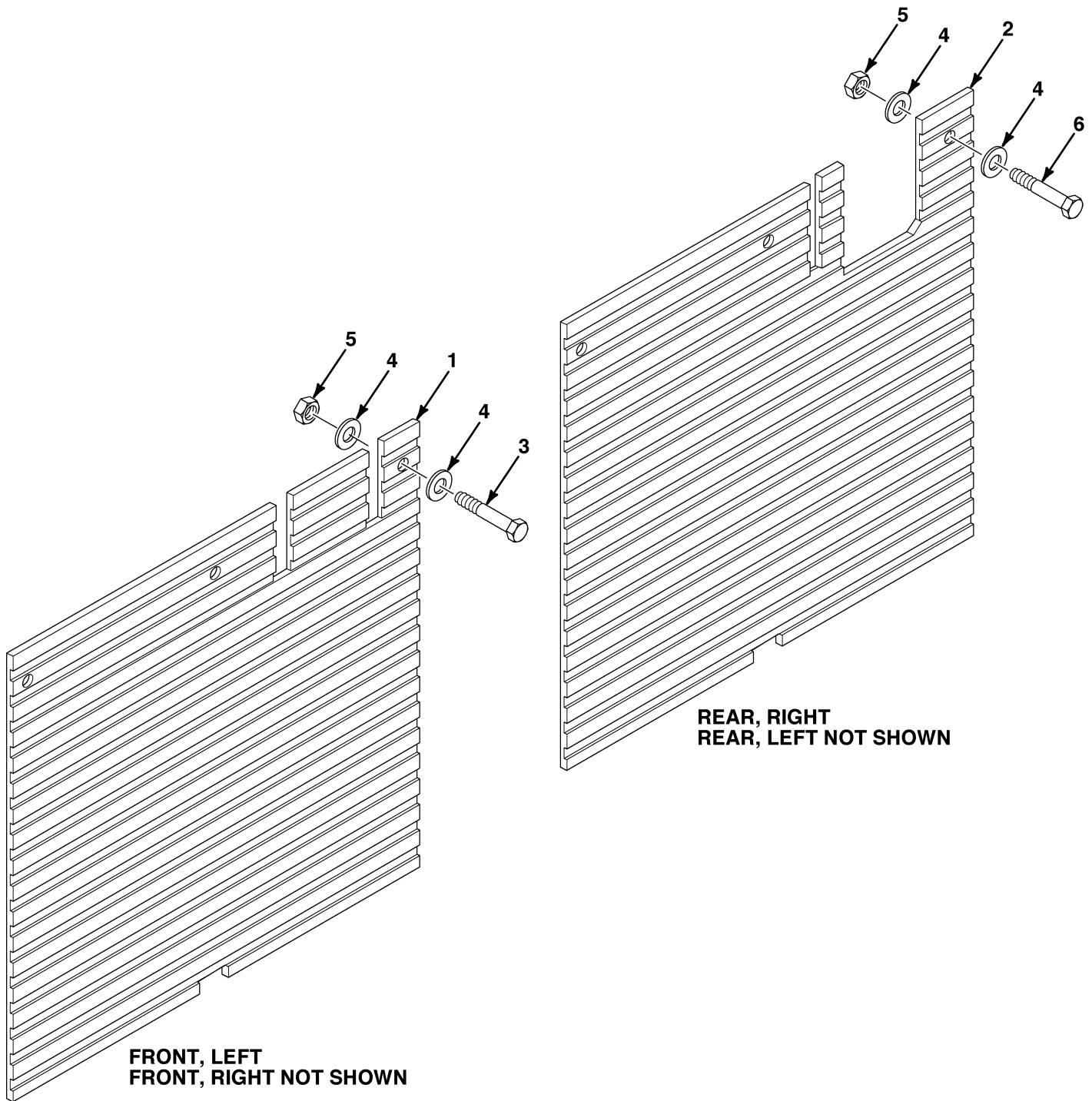


FIG. 13 IPF MUD FLAPS

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 13 IPF MUD FLAPS	
1	PFOZZ	5340-01-437-2483	OPZP2	12440841-1	MUD FLAP,RH,FRT UOC: IPF,	1
1	PFOZZ	5340-01-430-3822	OPZP2	12440841-2	MUD FLAP,LH,FRT UOC: IPF,	1
2	PFOZZ	5340-01-430-3823	OPZP2	12440843-1	MUD FLAP,RH,RR UOC: IPF,	1
2	PFOZZ	5340-01-422-4357	OPZP2	12440843-2	MUD FLAP,LH RR UOC: IPF,	1
3	PAOZZ	5305-01-337-9120	45152	1754140	SCREW,MUD FLAP FRT 1/4-20 X 1 UOC: IPF,	6
4	PAOZZ	5310-00-809-4058	96906	MS27183-10	WASHER,FLAT 5/16 UOC: IPF,	24
5	PAOZZ	5310-01-346-9445	45152	1600460	NUT,LOCK 1/4-20 UOC: IPF,	12
6	PAOZZ	5305-00-071-2237	96906	MS90725-14	SCREW,MUD FLAP RR 1/4-20 X 2 UOC: IPF,	6

END OF FIGURE

7 — 8 THROUGH 11      13 — 14 THROUGH 18      19 — 20 THROUGH 25

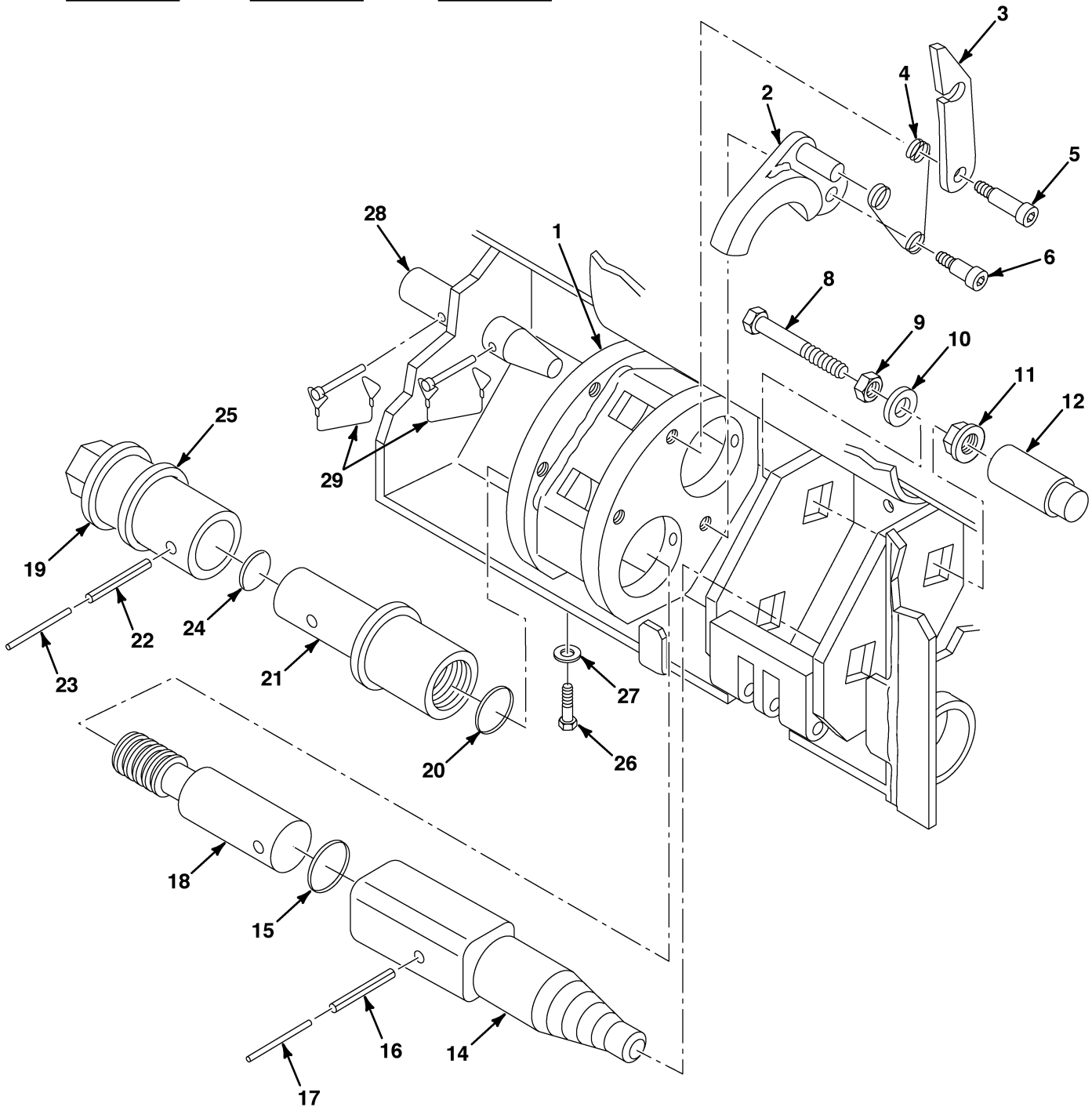


FIG. 14 IPF BRACKET AND PIN ASSEMBLIES



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS FIG. 14 IPF BRACKET AND PIN ASSEMBLY	
1	PFOZZ	3040-01-423-1779	19207	12440869	BRACKET,EYE,NONROTA UOC: IPF,	4
2	PFOZZ	2590-01-422-3998	0PZP2	12440856	PLATE,LOCK,RH UOC: IPF,	2
2	PFOZZ	2590-01-422-4001	0PZP2	12440870	PLATE,LOCK,LH UOC: IPF,	2
3	PFOZZ	5340-01-422-6613	0PZP2	12440848	PLATE,LOCK UOC: IPF,	4
4	PAOZZ	5360-01-422-0667	0PZP2	12440845	SPRING UOC: IPF,	4
5	PFOZZ	5305-01-423-5786	78519	648-850	BOLT,SHOULDER,THUMB SPECIAL UOC: IPF,	4
6	PFOZZ	5306-01-422-7487	45152	3HD774	BOLT,SHOULDER,THUMB SPECIAL UOC: IPF,	8
7	PAOZZ	5340-01-429-9350	0PZP2	12440932	RETAINER ASSY,PIN UOC: IPF,	4
8	PFOZZ	5306-01-422-7484	45152	3HD794	.BOLT,PIN RETAINER 5/8-11 X 6 UOC: IPF,	1
9	PAOZZ	5310-00-763-8920	96906	MS51967-20	.NUT,PLAIN,HEXAGON 5/8-11 UOC: IPF,	1
10	XAOZZ	- - -	0PZP2	12440758	.PLATE,PIN RETAINER UOC: IPF,	1
11	XAOZZ	- - -	0PZP2	12440757	.BLOCK,PIN RETAINER UOC: IPF,	1
12	PAOZZ	5315-01-422-3899	0PZP2	12440592	PIN,TAPER,SMALL UOC: IPF,	4
13	PFOZZ	5315-01-433-9604	0PZP2	12440983	PIN,TAPPER ASSY UOC: IPF,	4
14	XAOZZ	- - -	0PZP2	12440872	.PIN,TAPER UOC: IPF,	1
15	PAOZZ	5331-01-030-2679	02697	2-226N674-70	.PACKING,PREFORMED UOC: IPF,	1
16	PAOZZ	5315-00-721-5015	96906	MS16562-281	.PIN,SPRING 1/2 X 2 1/2 UOC: IPF,	1
17	PAOZZ	- - -	96906	MS16562-82	.PIN,SPRING 3/8 X 2 1/2 UOC: IPF,	1
18	XAOZZ	- - -	0PZP2	12440957	.PIN,STUD UOC: IPF,	1
19	PFOZZ	5340-01-421-9489	0PZP2	12440863	BOLT,SURFACE UOC: IPF,	4
20	PAOZZ	5331-00-984-3808	02697	2-222N674-70	.PACKING,PREFORMED UOC: IPF,	1
21	XAOZZ	- - -	0PZP2	12440675-XA	.NUT,ACME SPECIAL UOC: IPF,	1
22	PAOZZ	5315-01-422-2981	78519	4033-612	.PIN,SPRING,LARGE 1/2 X 2 UOC: IPF,	1
23	PAOZZ	5315-01-422-2980	78519	4033-476	.PIN,SPRING,SMALL 3/8 X 2 UOC: IPF,	1
24	PFOZZ	5340-01-421-6458	75272	PC1500	.PLUG,EXPANSION 1 1/2 UOC: IPF,	1

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
25	PAOZZ	3120-01-424-0355	19207	12440650	.WASHER,THRUST 2 1/4 UOC: IPF,	1
26	PAOZZ	5305-01-151-7363	45152	740HX1	SCREW,CAP,HEXAGON H 1/2-13 X 1 UOC: IPF,	32
27	PFOZZ	5310-00-809-5997	96906	MS27183-17	WASHER FLAT 1/2 UOC: IPF,	32
28	PAOZZ	5315-01-422-2977	0PZP2	12440642	PIN,A FRAME UOC: IPF,	2
29	PAOZZ	5315-01-422-3808	19207	12440648	PIN,SAFETY UOC: IPF,	4

END OF FIGURE



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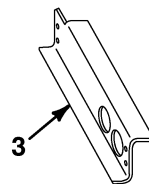
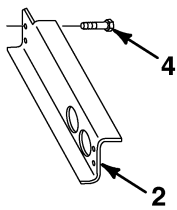
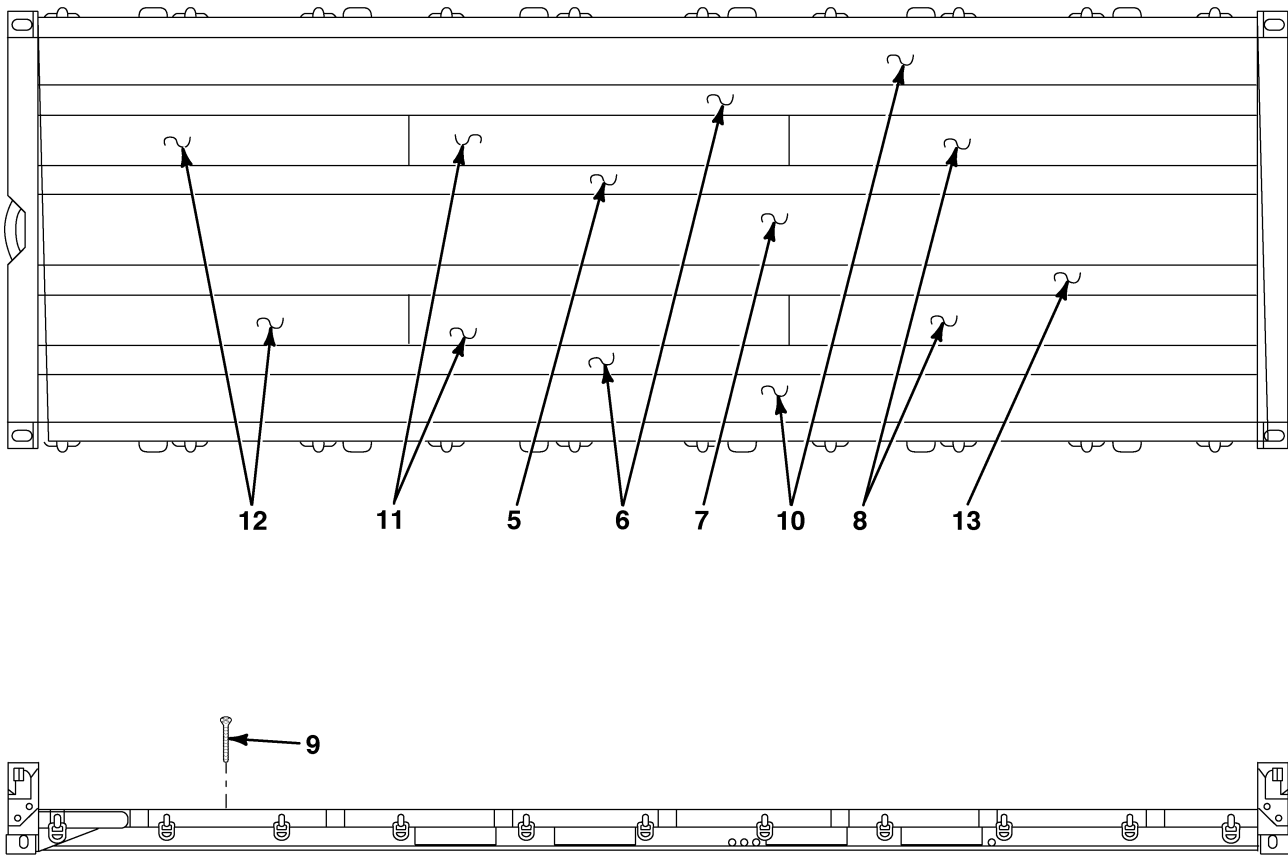


FIG. 15 IPF BASE ASSEMBLY

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS FIG. 15 IPF BASE ASSEMBLY	
1	XA000	- - -	OPZP2	12440652	BASE ASSY,IPF UOC: IPF,	1
2	PA0ZZ	2510-01-422-1160	OPZP2	12440554	.XMEMBER, OUTER, RH UOC: IPF,	2
3	PA0ZZ	2510-01-422-1184	OPZP2	12440555	.XMEMBER, OUTER, LH UOC: IPF,	2
4	PA0ZZ	5305-01-325-8388	96906	MS90725-113	.SCREW, HEX HD 1/2-13 X 1 1/4 UOC: IPF,	16
5	MO0FF	- - -	OPZP2	EPF051	PLANKING MAKE FROM PLANKING P/N 12440890 (06740) UOC: IPF,	1
6	MO0FF	- - -	OPZP2	EPF052	PLANKING MAKE FROM PLANKING P/N 12440890 (06740) UOC: IPF,	2
7	MO0FF	- - -	OPZP2	EPF053	PLANKING MAKE FROM PLANKING P/N 12440890 (06740) UOC: IPF,	1
8	MO0ZZ	- - -	OPZP2	12440936	CAP, MAIN RAIL MAKE FROM PLYWOOD P/N 12440891 (06740) UOC: IPF,	2
9	PA0ZZ	5305-01-422-7472	45152	3HD830	SCREW, TAPPING SPECIAL UOC: IPF,	375
10	MO0FF	- - -	OPZP2	EPF049	PLANKING MAKE FROM PLANKING P/N 12440890 (06740) UOC: IPF,	2
11	MO0ZZ	- - -	OPZP2	12440945	CAP, MAIN RAIL MAKE FROM PLYWOOD P/N 12440891 (06740) UOC: IPF,	2
12	MO0ZZ	- - -	OPZP2	12440946	CAP, MAIN RAIL MAKE FROM PLYWOOD P/N 12440891 (06740) UOC: IPF,	2
13	MO0FF	- - -	OPZP2	EPF050	PLANKING MAKE FROM PLANKING P/N 12440890 (06740) UOC: IPF,	1

END OF FIGURE

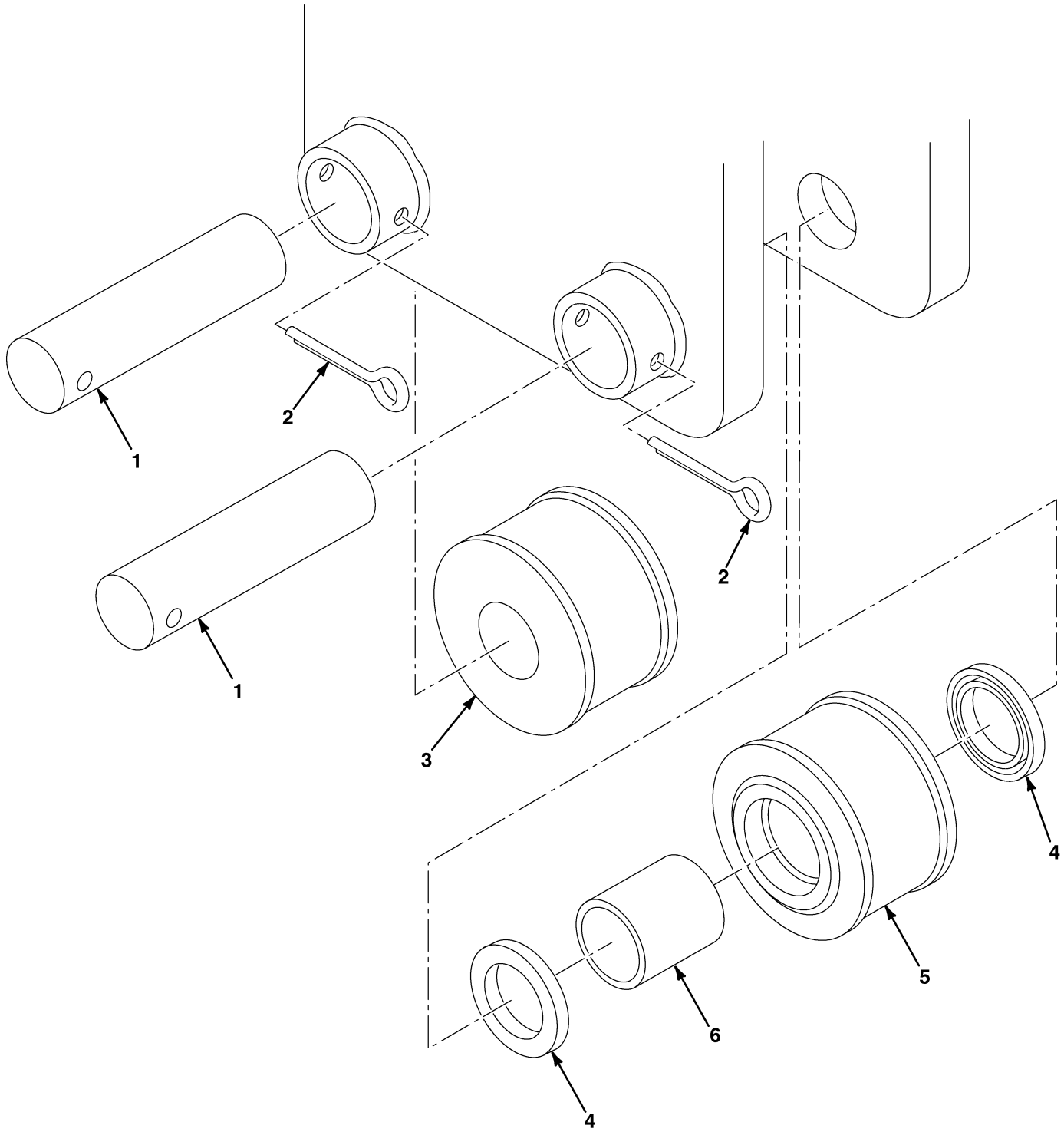


FIG. 16 IPF PULLEY ASSEMBLY

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS FIG. 16 IPF PULLEY ASSEMBLY	
1	PFOZZ	5315-01-423-0777	OPZP2	12440855	PIN,FULLFOLD,PULLEY UOC: IPF,	8
2	PAOZZ	- - -	OPZP2	12440960	PIN,COTTER UOC: IPF,	8
3	PFOZZ	3120-01-423-7715	OPZP2	12440883	PULLEY UOC: IPF,	4
4	PAOZZ	5330-00-010-2415	76680	482163N	SEAL,PLAIN ENCASED UOC: IPF,	8
5	PFOZZ	3120-01-423-7719	OPZP2	12440876	ROLLER,STEEL UOC: IPF,	4
6	PAOZZ	3120-01-424-0356	19207	12440935	BUSHING,SLEEVE UOC: IPF,	4

END OF FIGURE

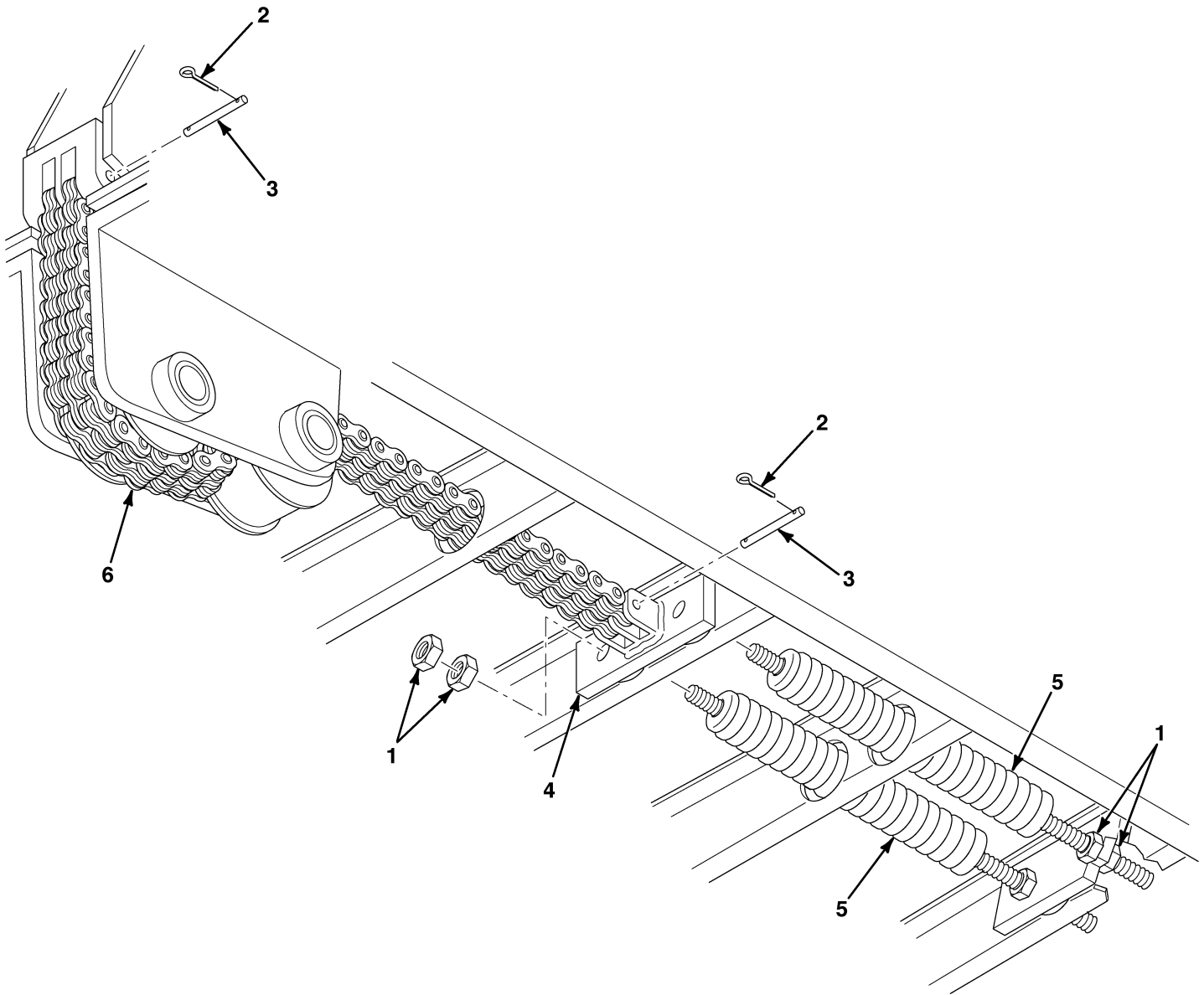


FIG. 17 IPF SPRING AND CHAIN INSTALLATION



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 17 IPF SPRING AND CHAIN INSTALLATION	
1	PF0ZZ	5310-00-763-8921	96906	MS51967-23	NUT,PLAIN,HEXAGON 3/4-10	8
2	PA0ZZ	5315-00-298-1481	96906	MS24665-357	UOC: IPF, PIN,COTTER	4
3	PA0ZZ	5315-01-423-4974	OPZP2	EPF346	UOC: IPF, PIN,CLEVIS 3/8 X 2 1/2	2
4	PA0ZZ	5340-01-422-6048	OPZP2	EPF323	UOC: IPF, CLEVIS	1
5	PA0ZZ	5360-01-422-0687	OPZP2	12440732	UOC: IPF, SPRING ASSY,FRONT	1
5	PA0ZZ	5360-01-422-0688	OPZP2	12440733	UOC: IPF, SPRING ASSY,REAR	1
6	MO0ZZ	- - -	OPZP2	12440720	UOC: IPF, CHAIN,LEAF,FRONT MAKE FROM CHAIN P/N BL-846 FSCM (73433), APPROX. 31 IN LG	2
6	MO0ZZ	- - -	OPZP2	12440629	UOC: IPF, CHAIN LEAF,REAR MAKE FROM CHAIN P/N BL-846 FSCM (73433), APPROX. 42 IN LG	2

END OF FIGURE

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9

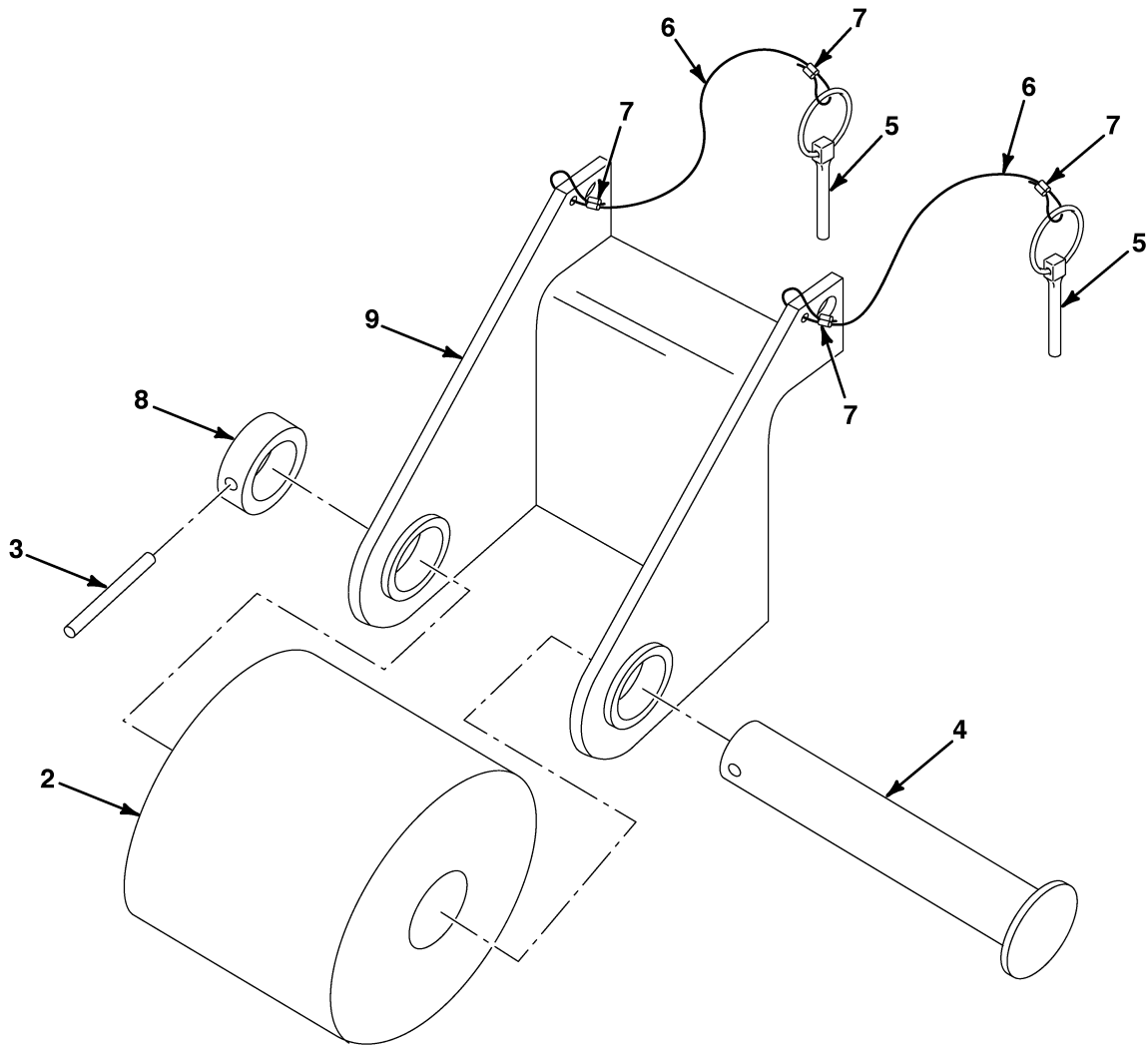


FIG. 18 IPF ROLLER ASSEMBLY

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 18 IPF ROLLER ASSEMBLY	
1	PF000	2530-01-428-4285	0PZP2	12440544-1	HUB,WHEEL,VEHICULAR UOC: IPF,	2
2	PF0ZZ	5340-01-421-6471	0PZP2	124405330	.WHEEL,SOLID,NONMETA UOC: IPF,	1
3	PA0ZZ	5315-01-422-3900	19207	12440533	.PIN,SPRING UOC: IPF,	1
4	PA0ZZ	5315-01-422-1705	0PZP2	12440542	.PIN ASSEMBLY UOC: IPF,	1
5	PA0ZZ	5315-01-422-2978	45152	3HD596	.PIN,QUICK RELEASE UOC: IPF,	2
6	PF0ZZ	4010-01-315-7375	45152	1533100	.ROPE,WIRE UOC: IPF,	2
7	PF0ZZ	4030-00-041-9770	88277	S1152309	.SWAGING SLEEVE,WIRE UOC: IPF,	4
8	PF0ZZ	3040-01-423-1782	19207	12440534	.COLLAR,SHAFT UOC: IPF,	1
9	XAOZZ	- - -	0PZP2	12440541	.BRACKET ASSY UOC: IPF,	1

END OF FIGURE

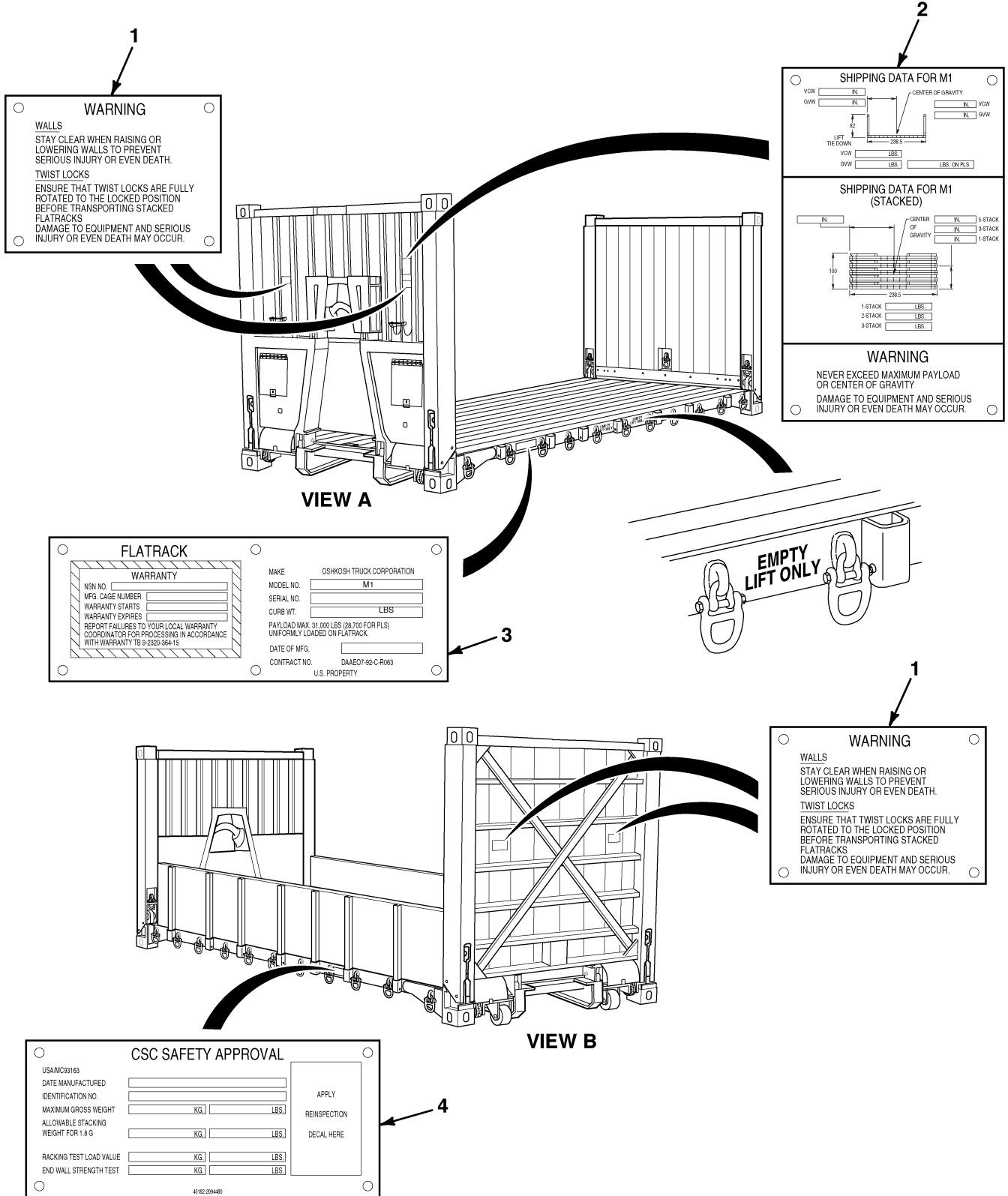


FIG. 19 IPF DATA PLATES

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 3301 REUSABLE SHIPPING CONTAINERS	
					FIG. 19 IPF DATA PLATES	
1	PFOZZ	9905-01-424-8604	19207	12440657	PLATE,DATA,WARNING UOC: IPF,	4
2	PFOZZ	9905-01-425-6135	0PZP2	12440656	PLATE,DATA,SHIPPING UOC: IPF,	1
3	PFOZZ	9905-01-424-6506	19207	12440627	PLATE,IDENTIFICATIO UOC: IPF,	1
4	PFOZZ	9905-01-425-7634	0PZP2	12440649	PLATE,CSC UOC: IPF,	1

END OF FIGURE



## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

GROUP 94 REPAIR KITS  
 GROUP 9401 REPAIR KITS  
 FIG. KITS SIDEBOARD KITS

PAFZZ		2540-01-437-9664	5W749	LAS-PLS-SK-M1077	SIDEBOARD KIT UOC: 077,	1
					PIN,SNAP (0018) 1-2	
					SIDEBOARD,SIDE (0001) 1-3	
					SIDEBOARD,SIDE (0001) 1-4	
					SIDEBOARD,SIDE (0001) 1-5	
					REAR PANEL,RIGHT (0001) 1-6	
					REAR PANEL,LEFT (0001) 1-7	
					SIDEBOARD,SIDE (0001) 1-8	
					SIDEBOARD,SIDE (0001) 1-9	
					SIDEBOARD,SIDE (0001) 1-10	
					PIN,SNAP (0002) 1-11	
					FRONT,LEFT SIDE (0001) 1-12	
					FRONT,RIGHT SIDE (0001) 1-13	
					LOCKNUT,HEX,PLASTIC(0008) 1-14	
					WASHER,FLAT,STEEL (0008) 1-15	
					SCREW,CAP,STEEL (0008) 1-16	

PAOZZ		2540-01-436-5902	5W749	LAS-PLS-SK-M1	SIDEBOARD KIT UOC: IPF,	1
					SIDEBOARD,SIDE (0001) 9-1	
					SIDEBOARD,SIDE (0001) 9-2	
					SIDEBOARD,SIDE (0001) 9-3	
					SIDEBOARD,SIDE (0001) 9-4	
					SIDEBOARD,SIDE (0001) 9-5	
					SIDEBOARD,SIDE (0001) 9-6	
					PIN,KLUGE (0018) 9-7	

END OF FIGURE





## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 95 GENERAL USE STANDARDIZED PARTS	
					GROUP 9501 HARDWARE SUPPLIES AND BULK MATERIAL	
					FIG. BULK BULK MATERIAL	
1	PAOZZ	3020-01-074-8381	73433	BL-846	CHAIN, LEAF UOC: IPF	1
2	PAFZZ	5510-01-440-5203	06740	12440892	PLANK, REAR WALL BULK UOC: IPF	1
3	PAFZZ	5510-01-439-7979	06740	12440890	PLANKING UOC: IPF	1
4	PAOZZ	5530-00-641-5833	19207	12440891	PLYWOOD, CONSTRUCTION UOC: IPF	1

END OF FIGURE



## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE	ITEM	STOCK NUMBER	FIGURE	ITEM
5330-00-010-2415	16	4	5360-01-372-3824	2	4
4030-00-041-9770	10	4	5340-01-372-3866	7	2
4030-00-041-9770	12	29	5365-01-372-5091	3	1
4030-00-041-9770	18	7	3110-01-372-5251	5	2
5310-00-061-4650	12	22	5365-01-372-5707	3	2
5305-00-071-2072	4	6	3040-01-372-7046	7	4
5305-00-071-2081	11	4	2510-01-372-7074	2	6
5305-00-071-2237	12	25	4820-01-372-7440	5	1
5305-00-071-2237	13	6	3040-01-372-8157	5	7
5305-00-071-2506	12	7	3040-01-372-8257	5	5
5305-00-071-2506	12	12	3040-01-372-8553	7	6
5310-00-087-4652	10	7	5305-01-373-4726	2	3
5310-00-087-7493	10	8	2540-01-373-6510	2	6
4730-00-172-0015	12	18	5310-01-382-9911	4	8
5340-00-194-3764	2	5	5340-01-383-1940	4	7
5315-00-298-1481	17	2	3040-01-383-2293	4	5
5310-00-488-3889	11	5	4030-01-383-7326	4	3
5530-00-641-5833	BULK	4	5305-01-383-8824	4	4
5315-00-721-5015	14	16	5306-01-383-8903	3	4
5310-00-763-8920	14	9	5325-01-392-6421	5	6
5310-00-763-8921	17	1	5315-01-394-4482	2	7
5310-00-809-4058	13	4	3040-01-396-5073	5	8
5310-00-809-5997	14	27	5310-01-397-4260	4	2
5331-00-984-3808	14	20	4030-01-412-0632	3	3
5331-01-030-2679	14	15	4030-01-412-8675	4	1
5310-01-061-5301	2	1	4010-01-417-2466	6	3
5310-01-061-5302	2	2	5340-01-421-6449	10	6
3020-01-074-8381	BULK	1	5340-01-421-6458	14	24
5305-01-151-7363	14	26	5340-01-421-6471	18	2
3120-01-168-4515	12	16	5340-01-421-6473	12	23
5365-01-188-1047	12	15	5310-01-421-7048	11	5
5315-01-215-7505	10	3	5340-01-421-7087	12	23
4010-01-315-7375	10	5	5340-01-421-7093	12	21
4010-01-315-7375	18	6	5340-01-421-7102	12	21
5305-01-325-8388	15	4	5365-01-421-8333	11	6
5305-01-337-9120	13	3	5365-01-421-8334	11	6
5305-01-344-5532	12	20	5340-01-421-9489	14	19
5310-01-346-9445	13	5	4030-01-421-9877	11	1
5315-01-369-3377	6	2	5360-01-422-0667	14	4
5315-01-372-2507	7	3	5360-01-422-0687	17	5
5315-01-372-2508	7	1	5360-01-422-0688	17	5
5315-01-372-3051	6	1	2510-01-422-1160	15	2
3120-01-372-3618	7	5	2510-01-422-1184	15	3
5360-01-372-3820	5	3	5315-01-422-1705	18	4

## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## CROSS REFERENCE INDEXES

## NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE	ITEM	STOCK NUMBER	FIGURE	ITEM
5315-01-422-1713	5	4	5340-01-429-9350	14	7
5315-01-422-2977	14	28	5340-01-430-3822	13	1
5315-01-422-2978	12	27	5340-01-430-3823	13	2
5315-01-422-2978	18	5	5315-01-433-9604	14	13
5315-01-422-2980	14	23	9905-01-436-4780	8	1
5315-01-422-2981	14	22	2540-01-436-5902	KITS	x
5315-01-422-3808	14	29	2540-01-437-2482	1	1
5342-01-422-3853	10	2	2540-01-437-2482	9	8
5315-01-422-3899	14	12	5340-01-437-2483	13	1
5315-01-422-3900	18	3	9905-01-437-5220	8	2
2510-01-422-3993	12	10	2540-01-437-9664	KITS	x
2540-01-422-3994	10	1	5340-01-439-3467	12	8
2540-01-422-3995	10	1	5340-01-439-3467	12	13
2590-01-422-3998	14	2	5510-01-439-7979	BULK	3
2590-01-422-4001	14	2	5510-01-440-5203	BULK	2
5340-01-422-4269	12	24			
5340-01-422-4357	13	2			
5315-01-422-5939	12	28			
5340-01-422-6048	17	4			
5340-01-422-6613	14	3			
5340-01-422-6639	12	26			
5306-01-422-7289	11	4			
5305-01-422-7472	12	5			
5305-01-422-7472	15	9			
5306-01-422-7484	14	8			
5306-01-422-7487	14	6			
5315-01-423-0777	16	1			
3040-01-423-1779	14	1			
3040-01-423-1782	18	8			
5315-01-423-4974	17	3			
5305-01-423-5786	14	5			
3120-01-423-6202	12	19			
3120-01-423-7715	16	3			
3120-01-423-7719	16	5			
3120-01-423-7779	12	17			
3120-01-424-0355	14	25			
3120-01-424-0356	16	6			
9905-01-424-6506	19	3			
9905-01-424-8604	19	1			
9905-01-425-6135	19	2			
9905-01-425-7634	19	4			
2530-01-428-4285	18	1			
2510-01-428-6174	12	6			
2510-01-428-6174	12	11			

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
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## CROSS REFERENCE INDEXES

## PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIGURE NO	ITEM NO
73433	BL-846	3020-01-074-8381	BULK	1
OPZP2	BLR 1000	3040-01-372-8257	5	5
OPZP2	BLR 1090	4820-01-372-7440	5	1
OPZP2	BLR 1236	3110-01-372-5251	5	2
0L9E5	BLR 4198	5325-01-392-6421	5	6
OPZP2	BLR 4199	3040-01-372-8157	5	7
OPZP2	BLR 990/1	5360-01-372-3820	5	3
OPZP2	BLR 999	5315-01-422-1713	5	4
80204	B1821BH025C050N	5305-00-071-2506	12	7
80204	B1821BH025C050N	5305-00-071-2506	12	12
80204	B1821BH050C225N	5305-00-071-2072	4	6
80204	B1821BH050C450N	5305-00-071-2081	11	4
09332	C12-27.5R-303/.7 5CDIM	5315-01-369-3377	6	2
09332	C12-45R-303/.75C DIM	5315-01-372-3051	6	1
04368	DR209	5365-01-372-5091	3	1
OPZP2	EPF049	- - -	15	10
OPZP2	EPF050	- - -	15	13
OPZP2	EPF051	- - -	15	5
OPZP2	EPF052	- - -	15	6
OPZP2	EPF053	- - -	15	7
OPZP2	EPF082-XA	- - -	12	9
OPZP2	EPF082-XA	- - -	12	14
OPZP2	EPF116	2510-01-428-6174	12	6
OPZP2	EPF116	2510-01-428-6174	12	11
OPZP2	EPF167	4030-01-421-9877	11	1
OPZP2	EPF168	- - -	11	1
OPZP2	EPF239	5340-01-421-6449	10	6
OPZP2	EPF261	5342-01-422-3853	10	2
OPZP2	EPF265	2540-01-422-3994	10	1
OPZP2	EPF267	2540-01-422-3995	10	1
OPZP2	EPF323	5340-01-422-6048	17	4
OPZP2	EPF346	5315-01-423-4974	17	3
32377	GLY.PGZ2216F	5365-01-188-1047	12	15
32377	GLY.PGZ3624F	3120-01-423-7779	12	17
5W749	LAS-PLS-SK-M1	2540-01-436-5902	KITS	
5W749	LAS-PLS-SK-M1-PA 1	- - -	9	6
5W749	LAS-PLS-SK-M1-PA 2	- - -	9	5
5W749	LAS-PLS-SK-M1-PA 3	- - -	9	4
5W749	LAS-PLS-SK-M1-PA 4	- - -	9	1

## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
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## CROSS REFERENCE INDEXES

## PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIGURE NO	ITEM NO
5W749	LAS-PLS-SK-M1-PA 5	- - -	9	2
5W749	LAS-PLS-SK-M1-PA 6	- - -	9	3
5W749	LAS-PLS-SK-M1-PK	- - -	9	7
5W749	LAS-PLS-SK-M1077	2540-01-437-9664	KITS	
5W749	LAS-PLS-SK-M1077 -CSZ	- - -	1	16
5W749	LAS-PLS-SK-M1077 -FW	- - -	1	15
5W749	LAS-PLS-SK-M1077 -HLN	- - -	1	14
5W749	LAS-PLS-SK-M1077 -PA1	- - -	1	10
5W749	LAS-PLS-SK-M1077 -PA10	- - -	1	13
5W749	LAS-PLS-SK-M1077 -PA2	- - -	1	9
5W749	LAS-PLS-SK-M1077 -PA3	- - -	1	8
5W749	LAS-PLS-SK-M1077 -PA4	- - -	1	3
5W749	LAS-PLS-SK-M1077 -PA5	- - -	1	4
5W749	LAS-PLS-SK-M1077 -PA6	- - -	1	5
5W749	LAS-PLS-SK-M1077 -PA7	- - -	1	7
5W749	LAS-PLS-SK-M1077 -PA8	- - -	1	6
5W749	LAS-PLS-SK-M1077 -PA9	- - -	1	12
5W749	LAS-PLS-SK-M1077 -SPM	- - -	1	2
5W749	LAS-PLS-SK-M1077 -SPM7	- - -	1	11
5W749	LAS-PLS-SK-T	2540-01-437-2482	1	1
5W749	LAS-PLS-SK-T	2540-01-437-2482	9	8
96906	MS15002-3	4730-00-172-0015	12	18
96906	MS16562-281	5315-00-721-5015	14	16
96906	MS16562-82	- - -	14	17
96906	MS24665-357	5315-00-298-1481	17	2
96906	MS27183-10	5310-00-809-4058	13	4
96906	MS27183-17	5310-00-809-5997	14	27
96906	MS35824-3C	5340-00-194-3764	2	5
96906	MS51922-17	5310-00-087-4652	10	7
96906	MS51943-31	5310-00-061-4650	12	22

## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## CROSS REFERENCE INDEXES

## PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIGURE NO	ITEM NO
96906	MS51943-39	5310-00-488-3889	11	5
96906	MS51967-20	5310-00-763-8920	14	9
96906	MS51967-23	5310-00-763-8921	17	1
96906	MS90725-113	5305-01-325-8388	15	4
96906	MS90725-14	5305-00-071-2237	12	25
96906	MS90725-14	5305-00-071-2237	13	6
75272	PC1500	5340-01-421-6458	14	24
90202	R1880	4030-01-383-7326	4	3
90202	R1880-A	4030-01-412-0632	3	3
90202	R1896	4030-01-412-8675	4	1
90202	R1898	5340-01-383-1940	4	7
96652	S1100-923660	5315-01-422-5939	12	28
88277	S1152309	4030-00-041-9770	10	4
88277	S1152309	4030-00-041-9770	12	29
88277	S1152309	4030-00-041-9770	18	7
0PZP2	12440504	- - -	12	2
0PZP2	12440505	- - -	12	3
0PZP2	12440506	- - -	12	4
19207	12440533	5315-01-422-3900	18	3
0PZP2	124405330	5340-01-421-6471	18	2
19207	12440534	3040-01-423-1782	18	8
0PZP2	12440541	- - -	18	9
0PZP2	12440542	5315-01-422-1705	18	4
0PZP2	12440544-1	2530-01-428-4285	18	1
0PZP2	12440554	2510-01-422-1160	15	2
0PZP2	12440555	2510-01-422-1184	15	3
0PZP2	12440563	5340-01-439-3467	12	8
0PZP2	12440563	5340-01-439-3467	12	13
0PZP2	12440592	5315-01-422-3899	14	12
0PZP2	12440610	2510-01-422-3993	12	10
19207	12440627	9905-01-424-6506	19	3
0PZP2	12440629	- - -	17	6
0PZP2	12440642	5315-01-422-2977	14	28
19207	12440648	5315-01-422-3808	14	29
0PZP2	12440649	9905-01-425-7634	19	4
19207	12440650	3120-01-424-0355	14	25
0PZP2	12440652	- - -	15	1
0PZP2	12440656	9905-01-425-6135	19	2
19207	12440657	9905-01-424-8604	19	1
0PZP2	12440660	- - -	12	1
0PZP2	12440675-XA	- - -	14	21
0PZP2	12440688	5365-01-421-8333	11	6
0PZP2	12440689	5365-01-421-8334	11	6
0PZP2	12440690	- - -	11	3
0PZP2	12440691	- - -	11	3
0PZP2	12440692	- - -	11	2

## SECTION II

TM9-2330-206-14&amp;P

(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM	SMR			PART		
NO	CODE	NSN	CAGEC	NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY

## CROSS REFERENCE INDEXES

## PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIGURE NO	ITEM NO
OPZP2	12440693	- - -	11	2
OPZP2	12440698	5310-01-421-7048	11	5
OPZP2	12440720	- - -	17	6
OPZP2	12440732	5360-01-422-0687	17	5
OPZP2	12440733	5360-01-422-0688	17	5
OPZP2	12440757	- - -	14	11
OPZP2	12440758	- - -	14	10
OPZP2	12440834	5340-01-422-4269	12	24
OPZP2	12440841-1	5340-01-437-2483	13	1
OPZP2	12440841-2	5340-01-430-3822	13	1
OPZP2	12440843-1	5340-01-430-3823	13	2
OPZP2	12440843-2	5340-01-422-4357	13	2
OPZP2	12440845	5360-01-422-0667	14	4
OPZP2	12440848	5340-01-422-6613	14	3
OPZP2	12440855	5315-01-423-0777	16	1
OPZP2	12440856	2590-01-422-3998	14	2
OPZP2	12440863	5340-01-421-9489	14	19
19207	12440869	3040-01-423-1779	14	1
OPZP2	12440870	2590-01-422-4001	14	2
OPZP2	12440872	- - -	14	14
OPZP2	12440876	3120-01-423-7719	16	5
OPZP2	12440883	3120-01-423-7715	16	3
06740	12440890	5510-01-439-7979	BULK	3
19207	12440891	5530-00-641-5833	BULK	4
06740	12440892	5510-01-440-5203	BULK	2
OPZP2	12440932	5340-01-429-9350	14	7
19207	12440935	3120-01-424-0356	16	6
OPZP2	12440936	- - -	15	8
OPZP2	12440945	- - -	15	11
OPZP2	12440946	- - -	15	12
OPZP2	12440957	- - -	14	18
19207	12440960	- - -	16	2
OPZP2	12440974-1	5340-01-421-7093	12	21
OPZP2	12440974-2	5340-01-421-7102	12	21
OPZP2	12440978	5340-01-422-6639	12	26
OPZP2	12440983	5315-01-433-9604	14	13
OPZP2	12440989-1	5340-01-421-6473	12	23
OPZP2	12440989-2	5340-01-421-7087	12	23
45152	1533100	4010-01-315-7375	10	5
45152	1533100	4010-01-315-7375	18	6
45152	1600460	5310-01-346-9445	13	5
45152	1726740	5315-01-372-2507	7	3
45152	1726750	5315-01-372-2508	7	1
OPZP2	1726860 W	3120-01-372-3618	7	5
OPZP2	1726900W-1	5340-01-372-3866	7	2
OPZP2	1727170	2540-01-373-6510	2	6
OPZP2	1727170-1	2510-01-372-7074	2	6



## SECTION II

TM9-2330-206-14&amp;P

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
-------------------	--------------------	------------	--------------	-----------------------	--	------------

## CROSS REFERENCE INDEXES

## PART NUMBER INDEX

CAGE	PART NUMBER	STOCK NUMBER	FIGURE NO	ITEM NO
OPZP2	1727250W-7	- - -	6	4
45152	1754140	5305-01-337-9120	13	3
45152	1762100	9905-01-436-4780	8	1
45152	1782190	9905-01-437-5220	8	2
OPZP2	1785680	5360-01-372-3824	2	4
OPZP2	1790HX1	5305-01-373-4726	2	3
45152	1846HX1	5305-01-344-5532	12	20
ONMB3	189764	5365-01-372-5707	3	2
02697	2-222N674-70	5331-00-984-3808	14	20
02697	2-226N674-70	5331-01-030-2679	14	15
45152	2HS929	3040-01-383-2293	4	5
90202	2X1900	5306-01-383-8903	3	4
90202	2X1922	5305-01-383-8824	4	4
26124	20FDU16	3120-01-423-6202	12	19
OPZP2	2000001	3040-01-372-8553	7	6
OPZP2	2000003	3040-01-372-7046	7	4
OPZP2	2000014	3040-01-396-5073	5	8
26124	28-DU-16	3120-01-168-4515	12	16
45152	3HD596	5315-01-422-2978	12	27
45152	3HD596	5315-01-422-2978	18	5
45152	3HD774	5306-01-422-7487	14	6
45152	3HD783	5306-01-422-7289	11	4
45152	3HD794	5306-01-422-7484	14	8
45152	3HD830	5305-01-422-7472	12	5
45152	3HD830	5305-01-422-7472	15	9
90202	3X1864	5310-01-382-9911	4	8
90202	3X1865	5310-01-397-4260	4	2
45152	318B	5310-01-061-5302	2	2
78519	4033-476	5315-01-422-2980	14	23
78519	4033-612	5315-01-422-2981	14	22
76680	482163N	5330-00-010-2415	16	4
81337	5-11-966-41	5310-00-087-7493	10	8
54275	54T24101	4010-01-417-2466	6	3
96652	63-02	5315-01-215-7505	10	3
OPXJ7	63-11	5315-01-394-4482	2	7
78519	648-850	5305-01-423-5786	14	5
45152	740HX1	5305-01-151-7363	14	26
45152	8865G	5310-01-061-5301	2	1



## APPENDIX G

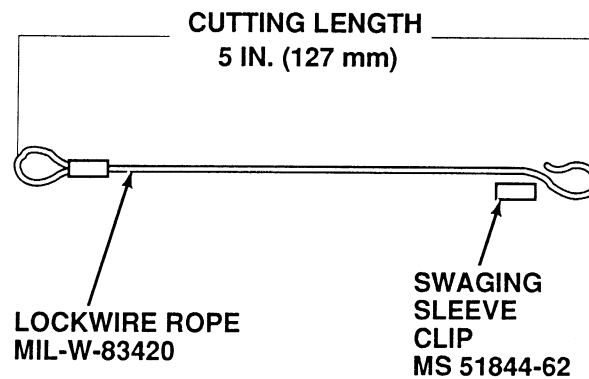
### ILLUSTRATED LIST OF MANUFACTURED ITEMS

#### G-1. INTRODUCTION.

This appendix includes complete instructions for manufacturing or fabricating items needed for maintenance. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria. All bulk materials needed for manufacture of an item are listed by part number or specification number.

#### G-2. SIDEBOARD KIT LOCKWIRE.

The sideboard lockwire is used in 18 places. The lockwire length is the same for each application. Crimped button stop caps are used to attach the lockwire to other components. Each application requires two swaging sleeve clips (Item 3, Appendix E) and lockwire rope (Item 7, Appendix E).

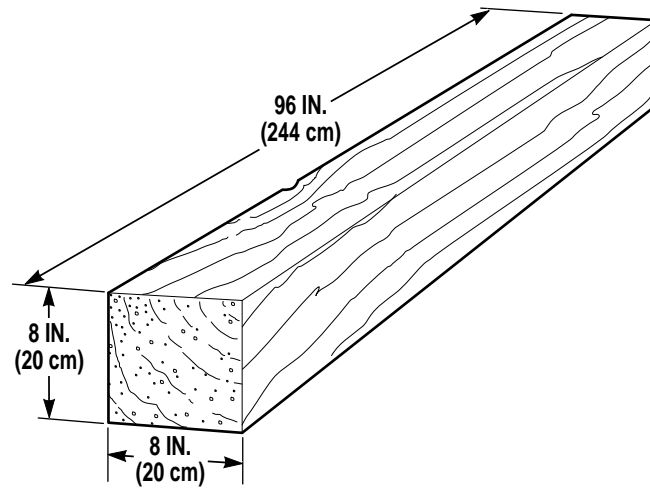


#### NOTES:

1. OBTAIN ALL COMPONENTS REQUIRED TO FABRICATE SIDEBOARD KIT LOCKWIRE.
2. USE A FINE TOOTHED HACKSAW OR SUITABLE CUTTING DEVICE, AND CUT LOCKWIRE 5 IN. (127 MM) LONG.
3. SLIDE WIRE THROUGH HOLE IN COMPONENT, UNTIL LOCKWIRE COMES THROUGH OTHER SIDE.
4. SLIDE CAP ONTO LOCKWIRE, UNTIL CAP BOTTOMS AGAINST COMPONENT AND WIRE COMES THROUGH CAP.
5. CRIMP CAP TO LOCKWIRE.

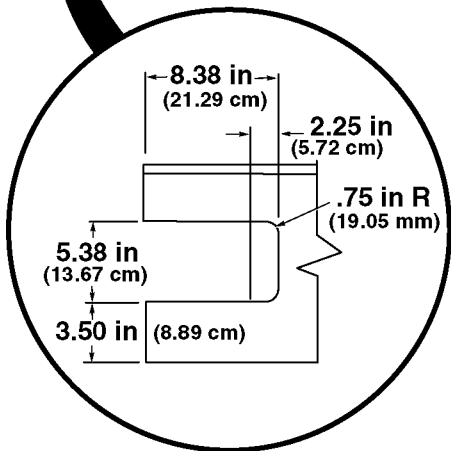
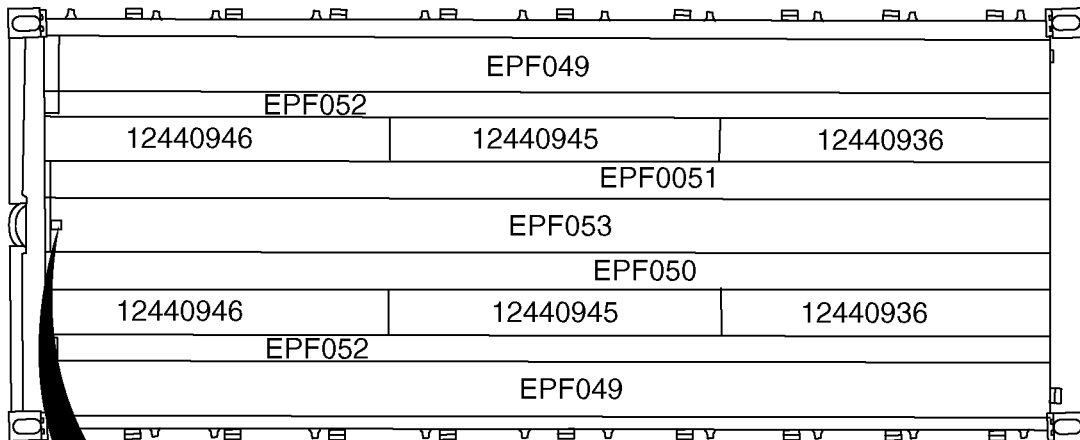
**Figure G-1. Sideboard Kit Lockwire.**

**G-3. WOODEN BLOCK.**



- a.** Fabricate from MML751 lumber stock.
- b.** Using saw and standard planing machine, cut stock to 8 by 8 by 96 in. (20 by 20 by 244 cm) in Para 7-15.

**G-4. WOODEN FLOOR BOARDS AND MAIN RAIL CAPS.**

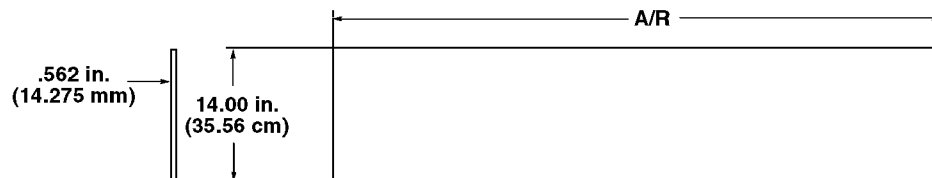


**NOTE**

Total board lengths are 220.88 in. (561.04 cm).

- a. Fabricate main rail cap from bulk wood part number 12440891, Appendix F.
- b. Fabricate floor board from bulk wood part number 12440890, Appendix F.
- c. Identify main rail cap or floor board to be replaced. Refer to Appendix F, Figure 15.
- d. Using saw, cut to required length.

(1) **Main Rail Cap.**

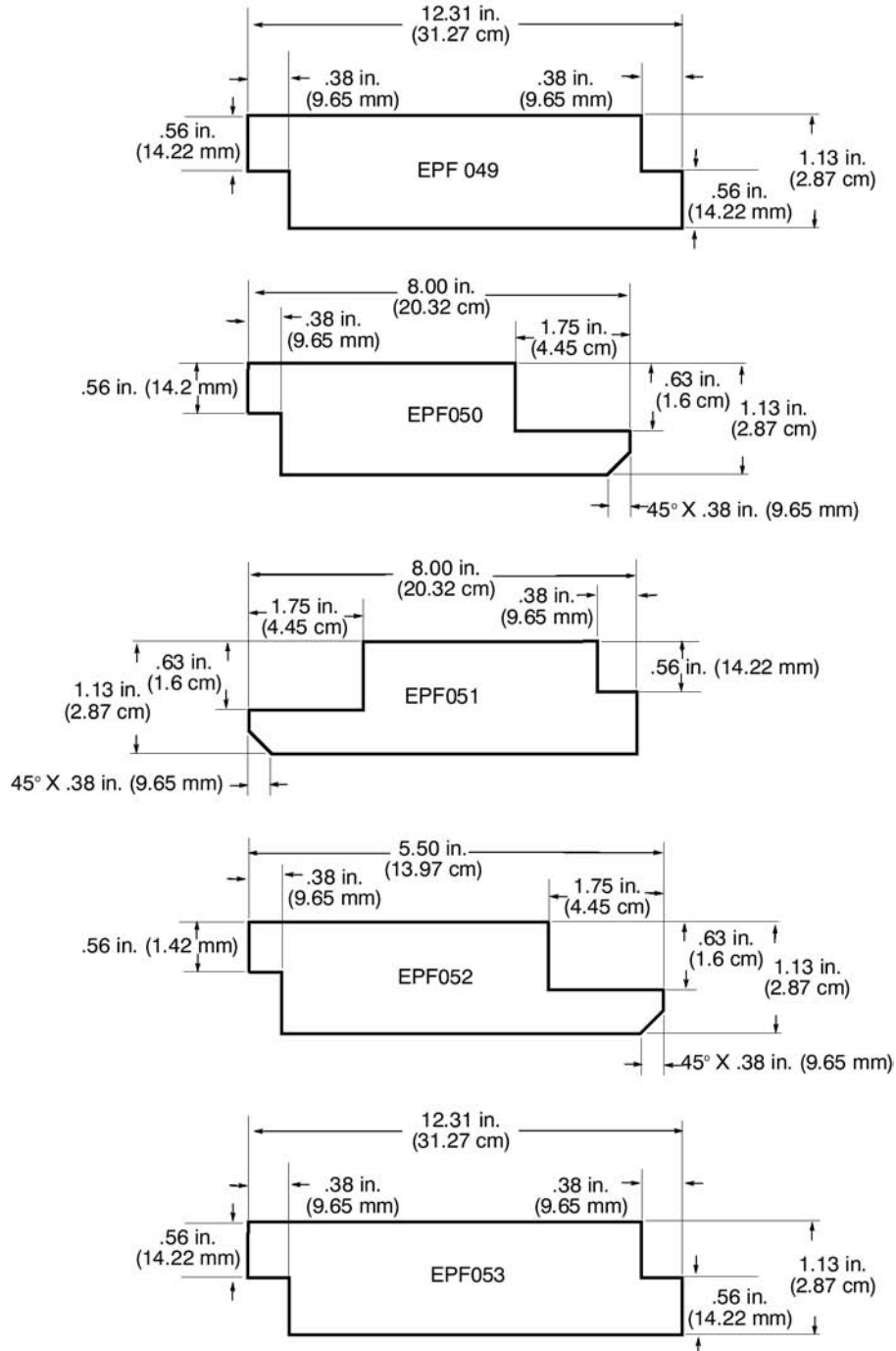


**G-4. WOODEN FLOOR BOARDS AND MAIN RAIL CAPS (CONT).**

(2) *Floor Boards.*

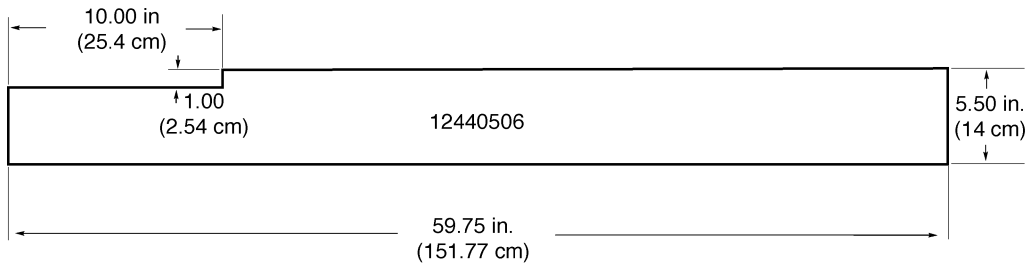
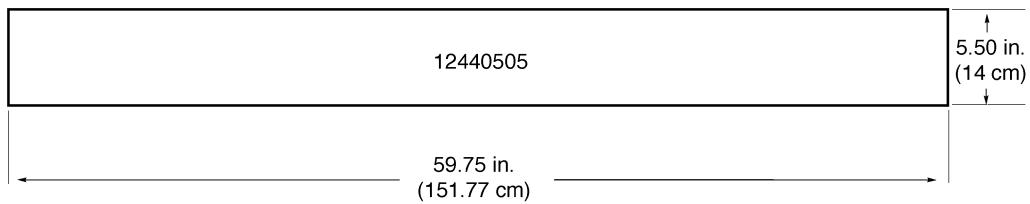
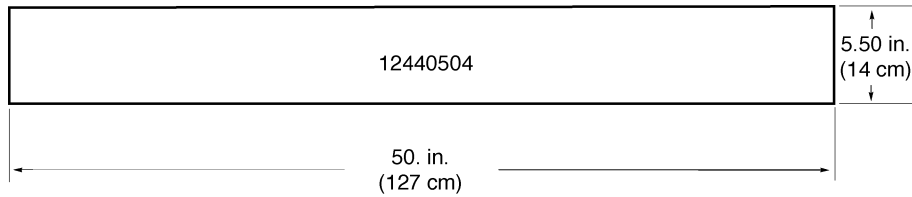
**NOTE**

- If required floor board is unavailable, a combination of two narrower floor boards may be combined or a wider floor board may be cut narrower to achieve required width. Floor boards must be overlapped.
- Floor boards may be patched instead of replacing entire length of floor board. Ends of patched floor boards must overlap and be fastened to crossmember.



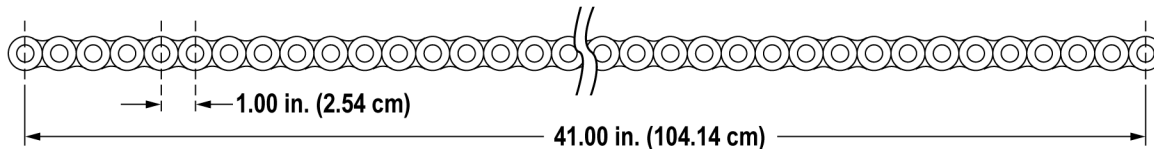
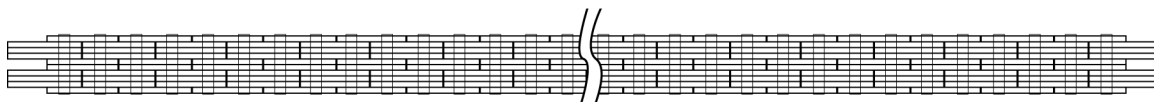
(3) **Rear Wall Floor Boards.**

- (a) Fabricate rear wall board from bulk wood part number 12440892, Appendix F.
- (b) Identify rear wall floor board to be replaced, refer to Appendix F, Figure 12.
- (c) Using saw, cut to required length.
- (d) All rear wall floor boards are to be planed to 1.125 in. (2.85 cm) thick.

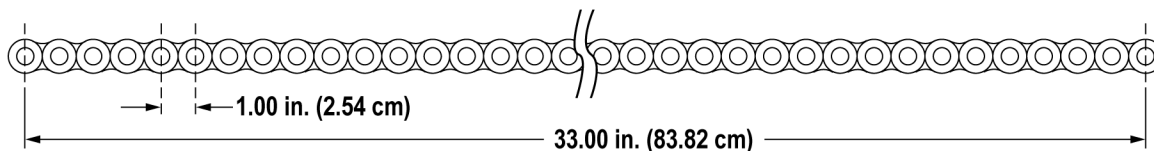


**G-5. LEAF CHAINS.**

- a. Fabricate front and rear leaf chain from bulk chain part number BL-846, Appendix F.
- b. Separate leaf chain to required length.



**FRONT LEAF CHAIN**



**REAR LEAF CHAIN**



## APPENDIX H

### MANDATORY REPLACEMENT PARTS LIST

#### H-1. SCOPE.

This appendix lists mandatory replacement parts you will need to perform maintenance on the flatrack. Mandatory replacement parts are defined as parts that are replaced each time they are removed from the flatrack, such as locking fasteners, rivets, etc. Refer to your Unit Commander if you are unsure whether a part is a consumable item. Table H-1 lists mandatory replacement parts for PLS Flatrack M1077/M1077A1 and PLS ISO Compatible Palletized Flatrack (IPF) M1.

#### H-2. EXPLANATION OF COLUMNS.

**a. Column (1) - Replacement Part Reference Code.** This number is assigned to the entry in the listing and is referenced in the narrative task box to identify the material e.g., Locknut (Item 8, Appendix H).

**b. Column (2) - Maintenance Level.** This column identifies the lowest level of maintenance that requires the listed items.

- C - Operator/Crew
- O - Unit Maintenance
- F - Direct Support Maintenance
- H - General Support Maintenance

**c. Column (3) - Nomenclature.** Indicates the Federal item name and, if required, a description to identify the item.

**d. Column (4) - National Stock Number.** This is the National Stock Number assigned to the item; use it to request or requisition the item.

**e. Column (5) - Part Number.** This is the vendor number assigned to the item.

**Table H-1. Mandatory Replacement Parts**

(1) Replacement Part Ref Code	(2) Maintenance Level	(3) Nomenclature	(4) National/ Stock Number	(5) Part Number
1	F	Bushing	3120-01-188-1047	GLY.PGZ2216F
2	F	Bushing	3120-01-168-4515	28DU16
3	F	Bushing	3120-01-423-7779	GLY.PGZ3624F
4	F	Bushing	3120-01-423-6202	20FDU16
5	F	Collar, Shaft	3040-01-396-5073	2000014
6	F	Handle	3040-01-372-8157	BLR4199
7	O	Locknut	5310-01-397-4260	3X1865
8	O	Locknut	5310-01-382-9911	3X1864
9	O	Locknut	5310-00-087-4652	MS51922-17
10	O	Locknut	5310-00-421-7048	12440698
11	O	Locknut	5310-00-248-3424	MS17829-5C
12	O	Locknut	5310-00-488-3889	MS51943-39
13	O	Locknut	5310-00-061-4650	MS51943-31
14	O	Lockwasher	5310-01-061-5302	318B
15	O	Packing, Preformed	5330-00-984-3808	2-222N674-70
16	O	Packing, Preformed	5330-01-030-2679	2-226N674-70
17	O	Pin, Cotter	5315-00-298-1481	MS24665-357
18	O	Pin, Roll	5315-01-372-2507	1726740
19	O	Pin, Roll		12440959
20	O	Pin, Roll		12440958
21	O	Pin, Spring	5315-01-422-3900	12440533
22	O	Pin, Spring	5315-01-422-2981	4033-612
23	O	Pin, Spring	3130-01-322-6745	4033-476
24	O	Rivet		12440638
25	O	Rivet		65919AX
26	O	Screw, Flooring	5305-01-422-7472	EPF054
27	O	Seal		12440934
28	F	Spring	5360-01-372-3820	BLR990/1

## APPENDIX I

### TOOL IDENTIFICATION LIST

#### I-1. INTRODUCTION.

This appendix is a list of tools, both common and special, used to repair the flatrack. This list is arranged in the order of the tasks and shows the nomenclature and National Stock Number (NSN). The index number corresponds to the index number found in the task box of the maintenance procedure. Table I-1 lists the Tool Identification for both flatracks.

#### I-2. EXPLANATION OF COLUMNS.

**a. Column (1) - Tool or Test Equipment Reference Code.** This number is assigned to the entry in the listing and is referenced in the narrative task box to identify the material e.g., Wrench, Torque (Item 23, Appendix I).

**b. Column (2) - Maintenance Level.** This column identifies the lowest level of maintenance that requires the listed tools.

- O - Unit Maintenance
- F - Direct Support Maintenance
- H - General Support Maintenance

**c. Column (3) - Nomenclature.** Indicates the federal item name and, if required, a description to identify the item.

**d. Column (4) - National Stock Number.** This is the National Stock Number assigned to the item; use it to request or requisition the item.

**e. Column (5) - Tool Number.** This is the vendor number assigned to the item.

**f. Column (6) - Reference.** This column lists the supply catalog that the tool is located in.

**Table I-1. Tool Identification List**

(1) Tool/Test Equipment Ref Code	(2) Maintenance Level	(3) Nomenclature	(4) National Stock Number	(5) Tool Number	(6) Reference
1	O,F	Brush, Wire, Scratch	7920-00-291-5815	HB178	SC 4910-95-A31
2	O,F	Compressor Unit, Air	4130-00-752-9633	MIL-C-13874	SC 4910-95-A72-HR
3	O	Drill, Electric, Portable	5130-00-889-8993	1070	
4	O	Drill Set, Twist	5133-00-293-0983	800434	SC 4910-95-A74
5	O,F	Gloves, Chemical and Oil Protective	8415-00-641-4601	ZZ-G-381	SC 4910-95-A74
6	O,F	Goggles, Industrial	4240-00-269-7912	GGG-G-513	SC 4910-95-A74
7	O,F	Gun, Air Blow	4940-00-333-5541	GGG-G-170	SC 4910-95-A74
8	O	Hammer, Slide	5120-01-112-2165	J6125-1B	
9	O,F	Jackstand	4910-00-251-8013	306	SC 4910-95-A74
10	O	Press, Arbor, Hand Operated	3444-00-163-4338	MIL-P-80261	SC 4910-95-A31
11	O	Sander, Disk Electric	5130-00-596-9728	00S90	
12	O	Socket Set, Deepwell, 1/2 in.	5120-00-596-8622	GGG-W-641	SC 4910-95-A74
13	O	Socket, Wrench Attachment T-30	5120-01-367-3535	FTX30A	
14	O	Tool Kit, Blind Rivet	5180-01-201-4978	D-100-MIL-1	SC 4910-95-A74
15	O,F	Tool Kit, General Mechanic's: Automotive	5180-00-177-7033		SC 5180-95-N26
16	O,F	Torch Set, Cutting and Welding	3433-00-294-6743	MIL-T-13880	
17	O	Vise, Machinist's	5120-00-293-1439	504M2	SC 4910-95-A31
18	F	Welder, Arc	3433-00-357-6311	MIL-W-4125	SC 3433-90-N01-HR
19	F	Welding Machine, Arc	3431-00-903-5647	13205E5400	
20	O,F	Wrench, Combination 1-1/8 in.	5120-00-228-9516	1172	SC 4910-95-A74
21	O,F	Wrench, Combination 1-1/2 in.	5120-00-277-8834	1178	SC 4910-95-A74
22	O,F	Wrench, Pipe 3-1/2 in. Opening	5120-00-277-1485	GGG-W-651	SC 4910-95-A31
23	O,F	Wrench, Torque (0-175 lb-ft [0-237 N·m])	5120-00-640-6364	A-A-2411	SC 4910-95-A31
24	O,F	Wrench, Torque (0-300 lb-ft [0-407 N·m])	5120-00-555-1523	A-A-2411	SC 4910-95-A72-HR

# APPENDIX J

## FLATRACK CONTAINER INSPECTION CHECKLIST

DATE OF INSPECTION \_\_\_\_\_ ISO SERIAL NUMBER \_\_\_\_\_

INSPECTION LOCATION \_\_\_\_\_ CSC RE-INSPECTION DATE \_\_\_\_\_

COMPONENT OR ITEM      ACCEPT    REJECT    REMARKS (DEFICIENCIES)

1. MARKINGS & DATA PLATE			
ISO MARKINGS			
CSC SAFETY APPROVAL			
MANUFACTURER'S DATA			
TIR, TCT & UIC APPROVALS*			

2. OVERALL CONFIGURATION			
DIMENSIONS			
DISTORTION			
PROTRUSIONS			

3. END A			
CORNER FITTINGS (4 each)			
CORNER POSTS (2 each)			
TOP APERTURES			
TOP END RAIL			
BOTTOM END RAIL			
WALL PANELS			
WALL POSTS*			
LOCKING HARDWARE*			

4. SIDE A			
SIDE RAIL			
STANCHIONS			
TIE DOWN PROVISIONS			
FORKLIFT POCKETS*			

5. END B			
CORNER FITTINGS (4 each)			
CORNER POSTS (2 each)			
TOP APERTURES			
TOP END RAIL			
BOTTOM END RAIL			
WALL PANELS			
WALL POSTS*			
LOCKING HARDWARE*			

6. SIDE B			
SIDE RAIL			
STANCHIONS			
TIE DOWN PROVISIONS			
FORKLIFT POCKETS*			

7. UNDERSTRUCTURE			
CORNER FITTING APERTURES			
CROSS MEMBERS			
FORKLIFT TUNNELS*			
SIDE RAILS			
END RAILS			

8. CARGO AREA			
FLOORING			
FLOOR FASTENERS			
LOAD BEARING SURFACES*			
STACKING CONES*			

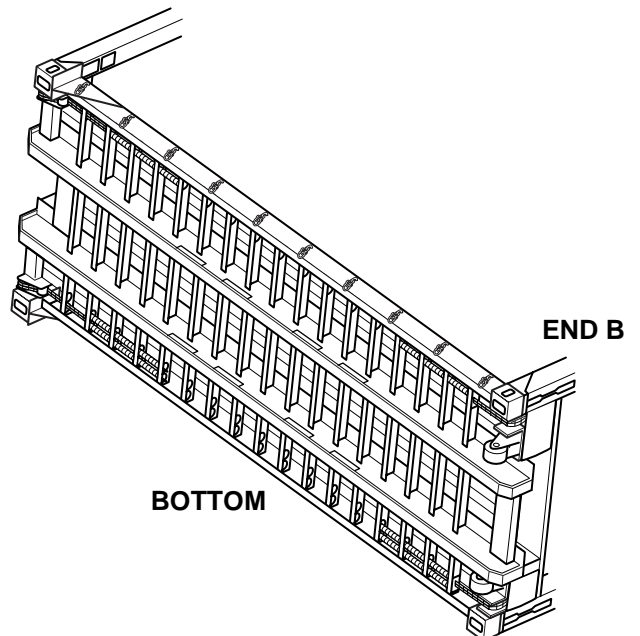
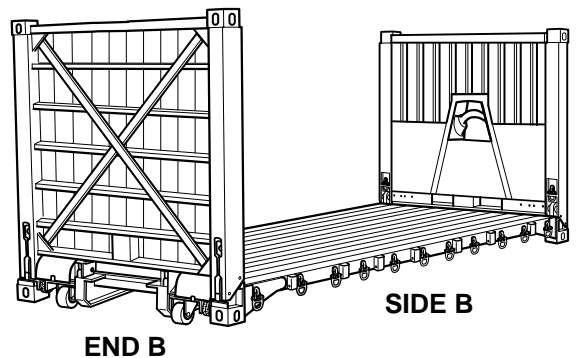
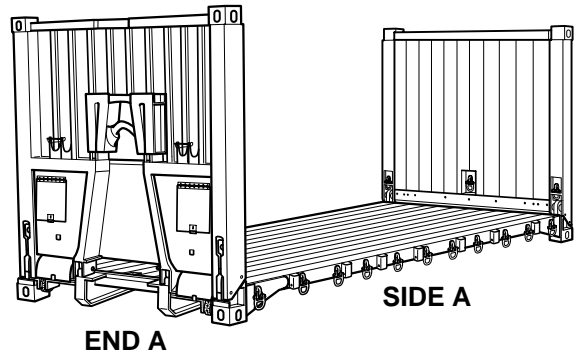
NOTE: AN ITEM WITH AN ASTERISK ( \* ) MAY OR MAY NOT BE RELEVANT. MARK "NA" IN THE REMARKS COLUMN FOR ITEMS WHICH ARE NOT APPLICABLE.

ACCEPTED \_\_\_\_\_ REJECTED \_\_\_\_\_ NEW CSC RE-INSPECTION DATE \_\_\_\_\_

INSPECTOR: (PRINT NAME) \_\_\_\_\_

(SIGNATURE) \_\_\_\_\_

(CIRCLE DEFECTS)





## APPENDIX K

### LUBRICATION INSTRUCTIONS

#### Section I. LUBRICATION REQUIREMENTS

##### K-1. SCOPE.

This appendix gives lubrication requirements for the ISO-Compatible Palletized Flatrack (IPF) Model M1 which are the responsibility of the operator/crew.

##### K-2. GENERAL LUBRICATION REQUIREMENTS.

**a. Intervals.** Intervals are based on normal operation. Change the interval if lubricants are contaminated or if operating the equipment under adverse operating conditions. Intervals are based on time and mileage. Perform the procedure at whichever interval occurs first for the flatrack.

#### WARNING

- Drycleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles, face shield, and gloves; use only in a well-ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type II Drycleaning Solvent is 140 degrees F (60 degrees C) and Type III Drycleaning Solvent is 200 degrees F (93 degrees C). Failure to do so may result in injury or death to personnel.
- If personnel become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts skin or clothes, flush with cold water. If solvent contacts eyes, immediately flush eyes with water and get immediate medical attention.

**b. Clean Fitting Before Lubricating.** Clean parts with drycleaning solvent. Dry before lubricating. All lubrication points indicated are located on both sides of the flatrack. Lubricate both left and right sides.

**c. Lubrication After Fording.** If fording occurs, lubricate all fittings below fording depth.

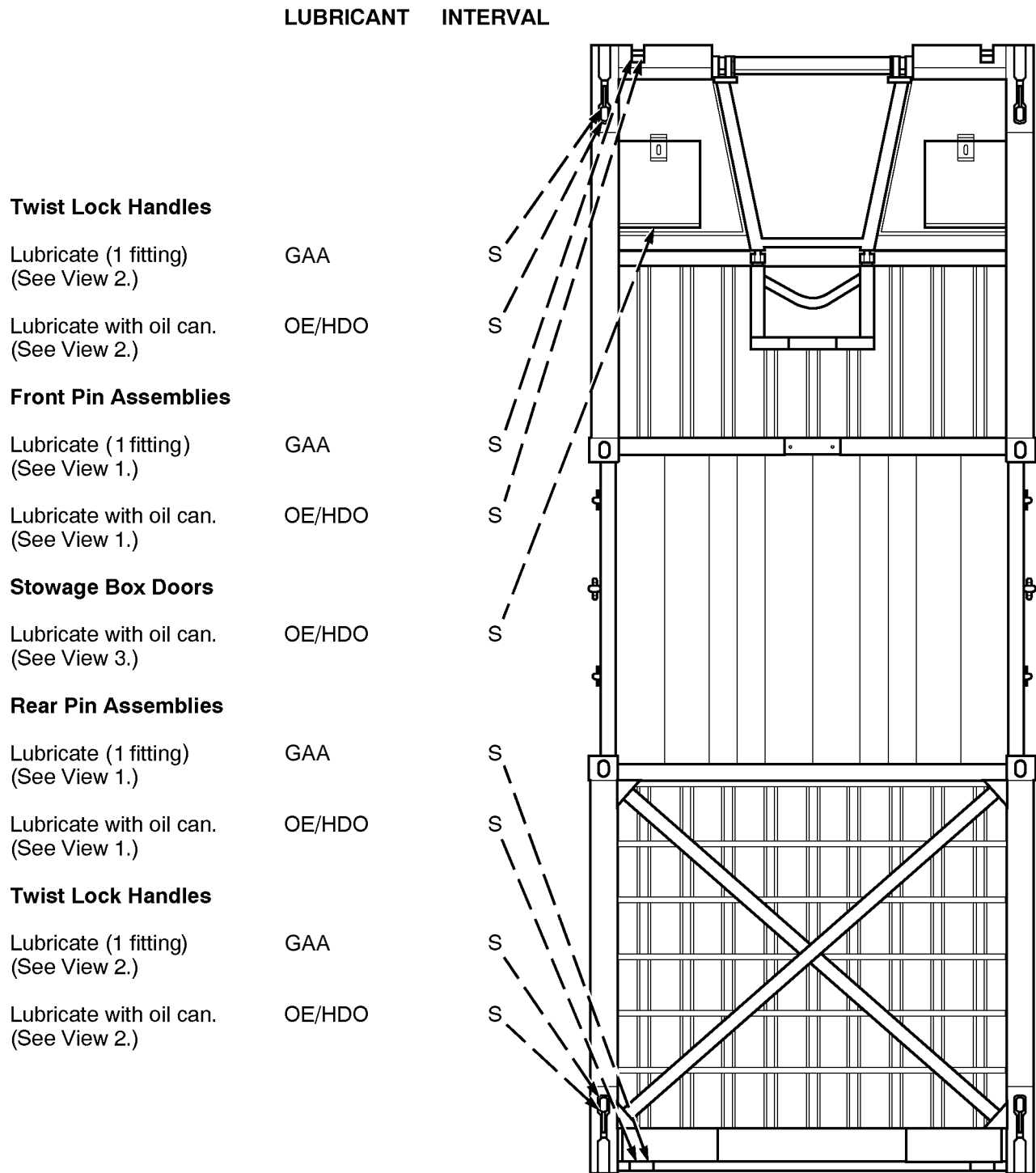
**d. Localized Views.** A reference to the appropriate localized view is given after most lubrication entries.

**e. Warranty Hard Time Statement.** For equipment under manufacturer's warranty, hard time intervals shall be followed. Intervals shall be shortened if lubricants are known to be contaminated.

**f. Lubrication Interval Symbols.** The following lubrication interval symbol is used.

S - Semiannually

## Section II. LUBRICATION POINTS



**NOTE:** All lubrication points are located on both sides of the flatrack. Lubricate both left and right sides.



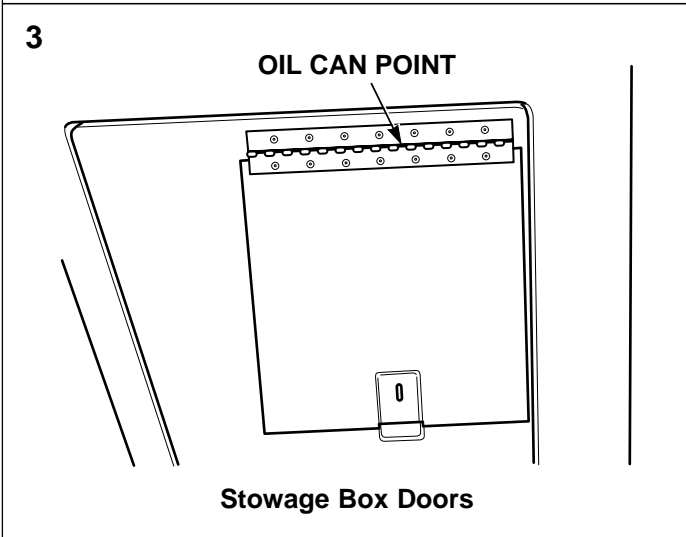
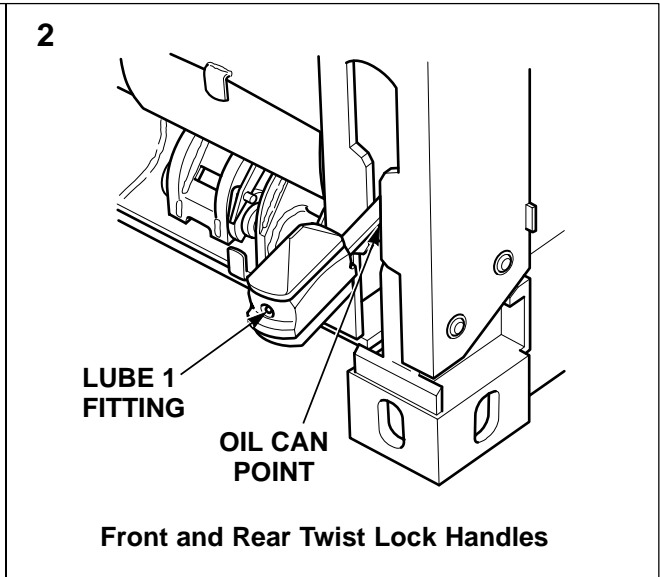
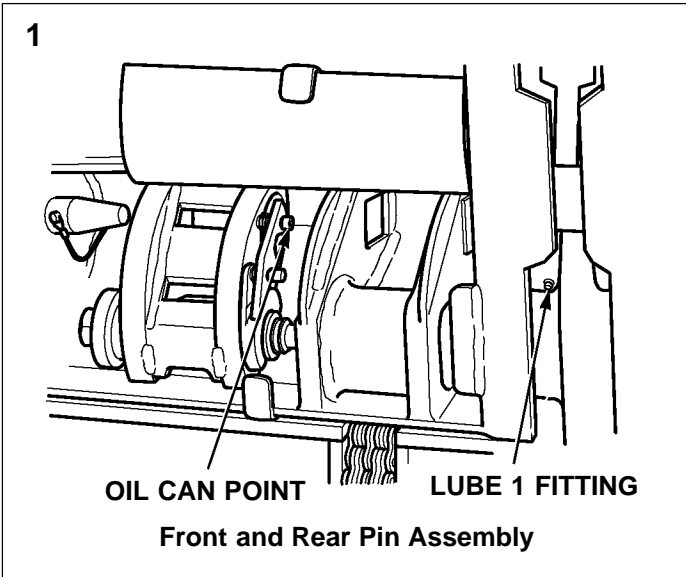
**Section III. LUBRICATION TABLE**

<b>- KEY -</b>			
<b>LUBRICATION POINT</b>	<b>CAPACITIES</b>	<b>EXPECTED TEMPERATURE -25°F to +14°F +14°F to +120°F (-32°C to -10°C) (-10°C to +49°C)</b>	<b>INTERVALS</b>
Front Pin Assemblies	As Reqd.	<b>GREASE AUTOMOTIVE AND ARTILLERY MIL-G-10924 ALL TEMPERATURES</b>	<b>M - Monthly  S - Semiannually</b>
Rear Pin Assemblies	As Reqd.		
Twist Lock Handles	As Reqd.		
Stowage Box Doors	As Reqd.	<b>OE/HDO LUBRICATING OIL ICE, TACTICAL (MIL-L-2104) ALL TEMPERATURES</b>	

**NOTES**

1. **Purging of lubricant.** When using a grease gun, apply lubricant to the fitting until a clean lubricant squeezes out of the part being lubricated.
2. **Wipe up excess grease.**

### Section IV. LOCALIZED LUBRICATION POINTS



## APPENDIX L

### TORQUE LIMITS

#### L-1. SCOPE.

This section provides general torque limits for the screws used on the flatrack. Special torque limits are listed in the maintenance procedures for applicable components. The general torque limits given in this appendix shall be used when specific torque limits are not indicated in the maintenance procedure. These general torque limits cannot be applied to screws that retain rubber components. The rubber components will be damaged before the torque limit is reached. If a special torque limit is not given in the maintenance instructions, tighten the screw or nut until it touches the metal bracket then tighten it one more turn.

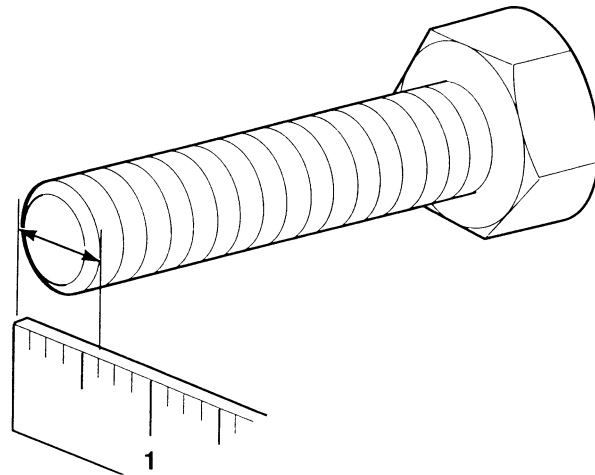
#### L-2. TORQUE LIMITS.

Table L-1 lists the torque limits for wet flange nuts. Table L-2 lists the torque limits for wet socket head capscrews. Table L-3 lists dry torque limits for capscrews. Dry torque limits are used on screws that do not have high pressure lubricants applied to the threads. Table L-4 lists wet torque limits for capscrews. Wet torque limits are used on screws that have high pressure lubricants applied to the threads.

#### L-3. HOW TO USE TORQUE TABLE.

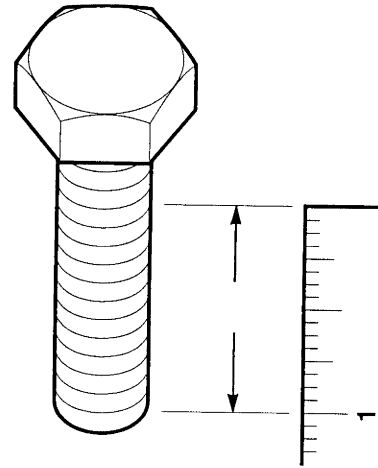
##### a. *Screws and Nuts.*

- (1) Measure the diameter of the screw you are installing with a ruler.



**L-3. HOW TO USE TORQUE TABLE (CONT).**

- (2) Measure out one inch with a ruler and count the number of threads per inch.
- (3) Under the heading **SIZE**, look down the left hand column until you find the diameter of the screw you are installing (there will usually be two lines beginning with the same size).
- (4) In the second column under **SIZE**, find the number of threads per inch that matches the number of threads per inch you counted in Step 2. (Not required for metric screws).
- (5) To find the grade screw you are installing, match the markings on the head to the correct picture of **CAPSCREW HEAD MARKINGS** on the torque table.
- (6) Look down the column under the picture you found in Step 5. until you find the torque limit (lb-ft or N·m) for the diameter and threads per inch of the screw you are installing.
- (7) Use wet torque values.



**CAPSCREW HEAD MARKINGS**

Manufacturer's marks may vary. These are all SAE Grade 5 (3-line).	Metric screws are of three grades: 8.8, 10.9, and 12.9. Grades & Manufacturer's marks appear on the screw head.
<p><b>STANDARD</b></p>	<p><b>METRIC</b></p>

**Table L-1. Torque Limits For Wet Flange Nuts**

SPIRALLOCK FLANGE NUT MARKINGS GRADE 8	DIAMETER		THREADS PER INCH	TORQUE	
	IN.	MM		LB-FT	N·m
	1/4	6.35	20	15	20
	5/16	7.94	18	25	34
	3/8	9.65	16	45	61
	1/2	12.70	13	110	149
	5/8	15.87	11	210	285
	3/4	19.05	10	375	508

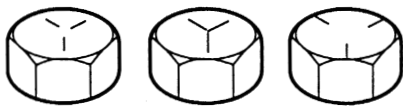
**Table L-2. Torque Limits For Wet Socket Head Cap Screws**

SOC HEAD/12 PT. 	TORQUE IN FT. LBS. (CAP SCREWS) LUBED		
	SIZE	SOC HD OR 12 PT	SOC FLAT HD
SOC FLAT HEAD 	.10-24	5	2.5
	.25-20	12	6
	.31-18	25	12
	.38-16	44	22
	.50-13	70	36
	.56-12	106	53
	.62-11	212	106
	.75-10	375	187
	1.00-8	781	

Table L-3. Torque Limits For Dry Fasteners

SIZE			TORQUE							
			SAE GRADE NO. 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
DIA. INCHES	THREADS PER INCH	MILLIMETERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS
1/4	20	6.35	5	7	8	11	10	14	12	16
1/4	28	6.35	6	9	10	14	12	16	14	19
5/16	18	7.94	11	15	17	23	21	28	25	34
5/16	24	7.94	12	16	19	26	24	33	25	34
3/8	16	9.53	20	27	30	41	40	54	45	61
3/8	24	9.53	23	31	35	47	45	61	50	68
7/16	14	11.11	30	41	50	68	60	81	70	95
7/16	20		35	47	55	75	70	95	80	108
1/2	13	12.70	50	68	75	102	95	129	110	149
1/2	20		55	75	90	122	100	136	120	163
9/16	12	14.29	65	88	110	149	135	183	150	203
9/16	18		75	102	120	163	150	203	170	231
5/8	11	15.88	90	122	150	203	190	258	220	298
5/8	18		100	136	180	244	210	285	240	325
3/4	10	19.05	160	217	260	353	320	434	380	515
3/4	16		180	244	300	407	360	488	420	570
7/8	9	22.23	140	190	400	542	520	705	600	814
7/8	14		155	210	440	597	580	786	660	895
1	8	25.40	220	298	580	786	800	1085	900	1220
1	12		240	325	640	868	860	1166	1000	1356
1-1/8	7	25.58	300	407	800	1085	1120	1519	1280	1736
1-1/8	12		340	461	880	1193	1260	1709	1440	1953
1-1/4	7	31.75	420	570	1120	1519	1580	2142	1820	2468
1-1/4	12		460	624	1240	1681	1760	2387	2000	2712
1-3/8	6	34.93	560	759	1460	1980	2080	2820	2380	3227
1-3/8	12		640	868	1680	2278	2380	3227	2720	3688
1-1/2	6	38.10	740	1003	1940	2631	2780	3770	3160	4285
1-1/2	12		840	1139	2200	2983	3100	4204	3560	4827

**CAPSCREW HEAD MARKINGS**



Manufacturer's marks may vary. These are all SAE Grade 5 (3-line).

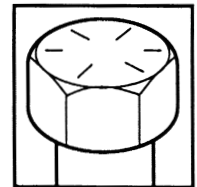
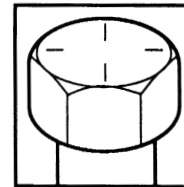
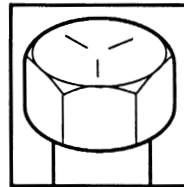
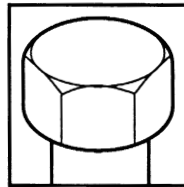
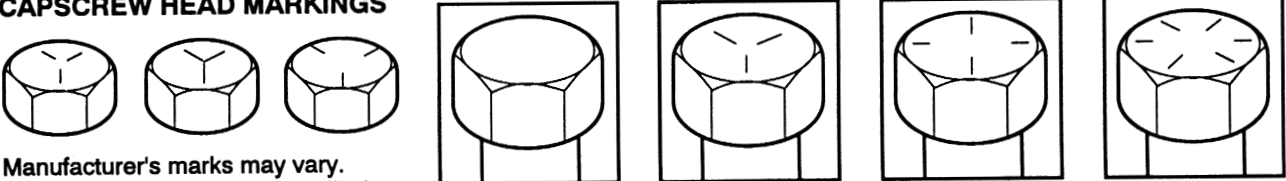


Table L-4. Torque Limits For Wet Fasteners

CAPSCREW HEAD MARKINGS			TORQUE							
 <p>Manufacturer's marks may vary. These are all SAE Grade 5 (3-line).</p>			SAE GRADE NO. 2		SAE GRADE NO. 5		SAE GRADE NO. 6 or 7		SAE GRADE NO. 8	
			DIA. INCHES	THREADS PER INCH	MILLIMETERS	POUNDS FEET	NEWTON METERS	POUNDS FEET	NEWTON METERS	POUNDS FEET
1/4	20	6.35	4	6	6	8	8	11	9	12
1/4	28	6.35	5	7	7	9	9	12	10	14
5/16	18	7.94	8	11	13	18	16	22	18	24
5/16	24	7.94	9	12	14	19	18	24	20	27
3/8	16	9.53	15	20	23	31	30	41	35	47
3/8	24	9.53	17	23	25	34	30	41	35	47
7/16	14	11.11	24	33	35	47	45	61	55	75
7/16	20		25	34	40	54	50	68	60	81
1/2	13	12.70	35	47	55	75	70	95	80	108
1/2	20		40	54	65	88	80	108	90	122
9/16	12	14.29	50	68	80	108	100	136	110	149
9/16	18		55	75	90	122	110	149	130	176
5/8	11	15.88	70	95	110	149	140	190	170	231
5/8	18		80	108	130	176	160	217	180	244
3/4	10	19.05	120	163	200	271	240	325	280	380
3/4	16		140	190	220	298	280	380	320	434
7/8	9	22.23	110	149	300	407	400	542	460	624
7/8	14		120	163	320	434	440	597	500	678
1	8	25.40	160	217	440	597	600	814	680	922
1	12		170	231	480	651	660	895	740	1003
1-1/8	7	25.58	220	298	600	814	840	1139	960	1320
1-1/8	12		260	353	660	895	940	1275	1080	1464
1-1/4	7	31.75	320	434	840	1139	1100	1492	1360	1844
1-1/4	12		360	488	920	1248	1320	1790	1500	2034
1-3/8	6	34.93	420	570	1100	1492	1560	2115	1780	2414
1-3/8	12		460	624	1260	1709	1780	2414	2040	2776
1-1/2	6	38.10	560	760	1460	1980	2080	2820	2360	3200
1-1/2	12		620	841	1640	2224	2320	3146	2660	3607

## APPENDIX M

### STOWAGE AND SIGN GUIDE

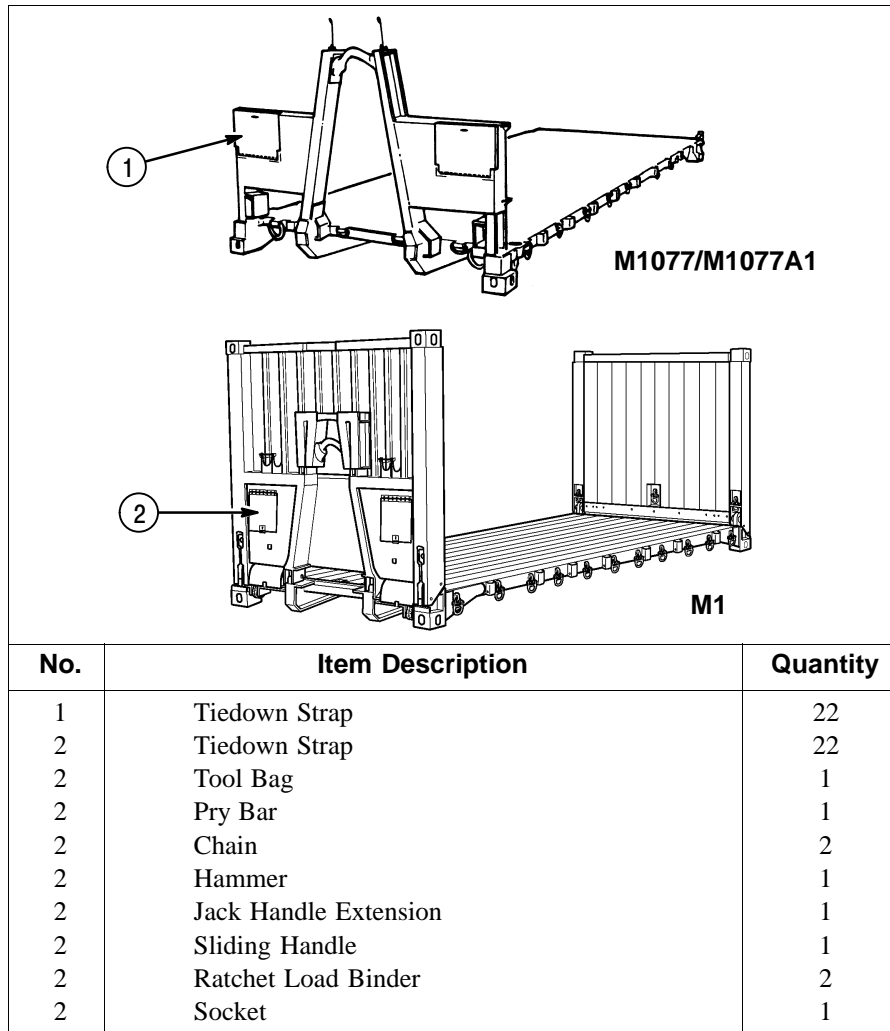
**(FOR COEI, BII AND APPLICABLE AAL ITEMS)**

**M-1. SCOPE.**

This appendix shows stowage locations for equipment, metal signs, decals and stencils that must be in place on the M1077/M1077A1/M1 flattracks.

**M-2. GENERAL.**

Figure M-1 shows the stowage location for equipment. Figures M-2 and M-3 show the location of metal signs, decals, and stencils used on the M1077/M1077A1/M1 flattracks. Some of the decals and stencils contain cautions, warnings, or information needed to operate the M1077/M1077A1/M1 flattracks safely.



**Figure M-1. Stowage Locations**

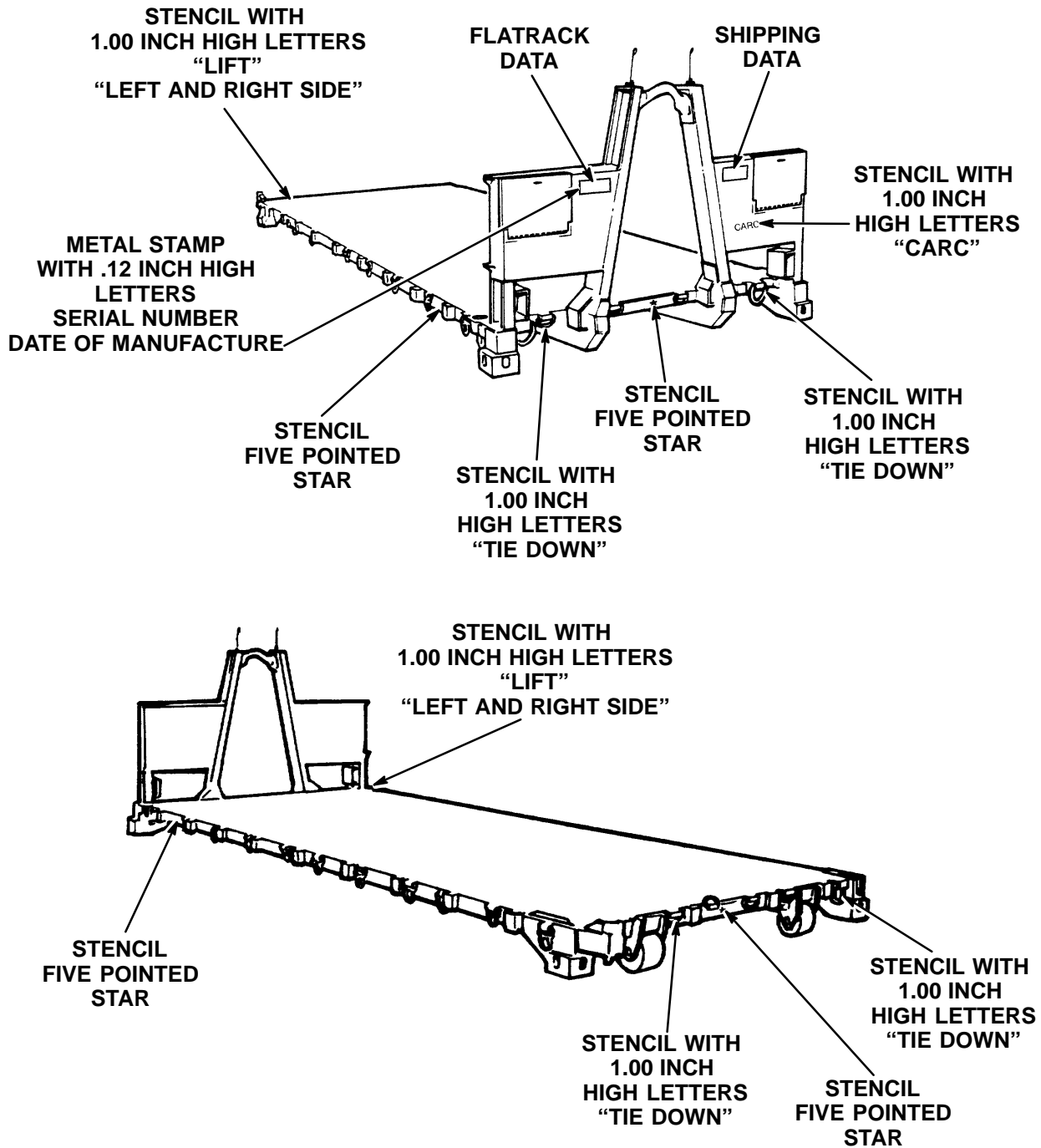


Figure M-2. M1077/M1077A1 Sign Guide



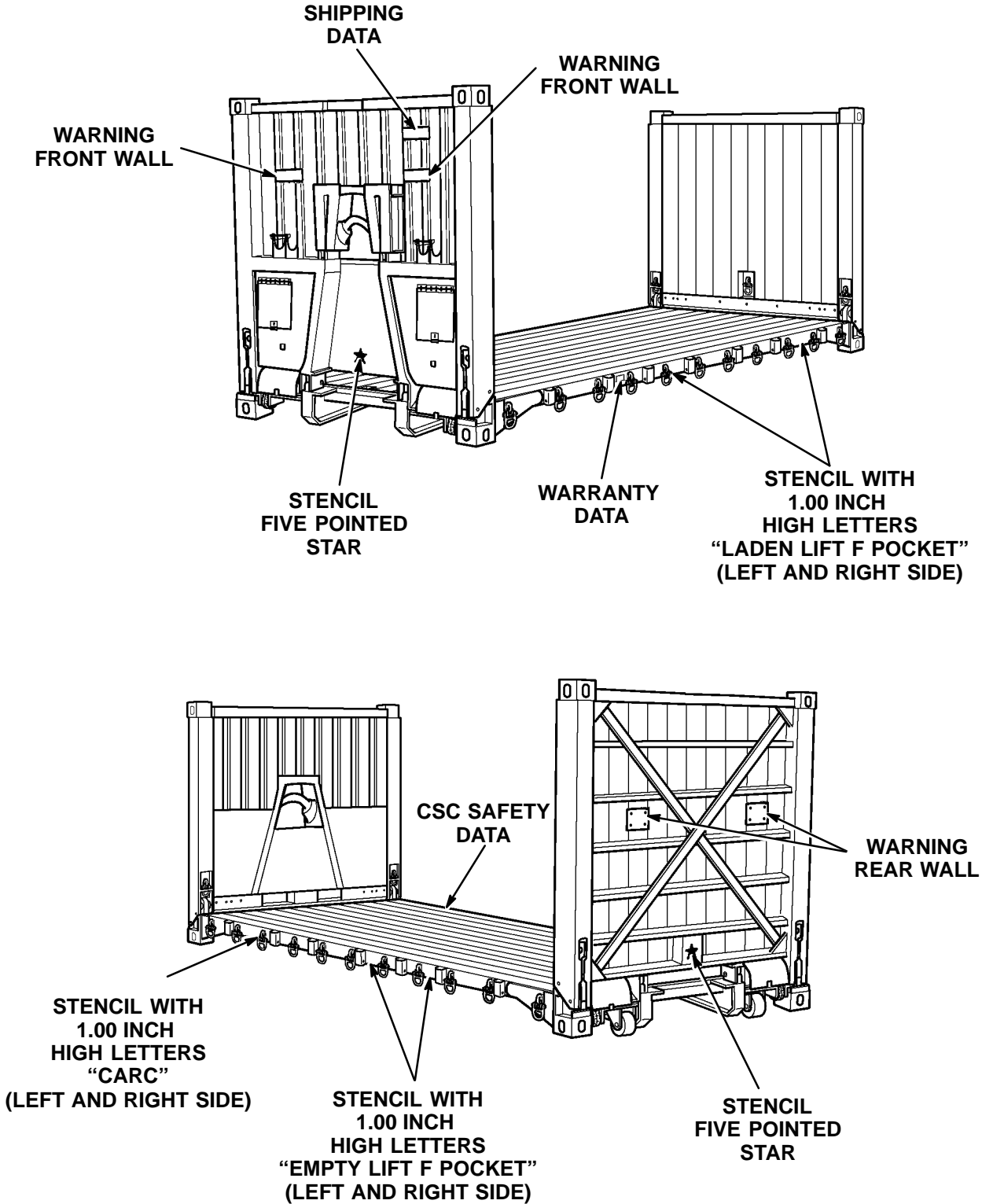


Figure M-3. M1 Sign Guide



## ALPHABETICAL INDEX

## Subject, Para

**A**

Abbreviations, List of, 1-11, 6-7  
 Additional Authorization List, D-1  
 Additional Inspection Criteria, 9-11  
 Assembly and Preparation for Use, 2-7, 7-8

**B**

Board, Side Kit, 2-9, 7-11

**C**

Cargo Tarp Installation and Removal, 4-20, 7-12  
 Cautions and Warnings, 2-2  
 Chain  
     Spring and Chain Replacement, 9-17  
 Configuration, Equipment, 1-8  
 Components of End Item, and Basic  
     Issue Items, C-1  
 Corrosion Prevention and Control, 1-3, 6-2

**D**

Data, Equipment, 1-14  
 Data Plate and Shipping Label Replacement, 4-14, 9-25  
 Decals and Instruction Plates, 2-8, 7-19  
 Decontamination Procedures, Nuclear, Biological, and  
     Chemical (NBC), 2-10  
 Destruction of Army Materiel to Prevent Enemy  
     Use, 1-4

**E**

Equipment  
     Common Tools and Equipment, 4-1, 5-1, I-1  
     Characteristics, Capabilities, and Features, 1-12, 6-8  
     Location and Description of  
         Major Components, 1-13  
     Configuration, 1-8, 6-4  
     Data, 1-14, 6-10  
 Expendable and Durable Items List, E-1

**F**

Field Manuals, A-3  
 Floor Board Replacement, 9-15  
 Forms, A-2  
 Front ISO Lock Repair, 5-7

## Subject, Para

**G**

General  
     Unit PMCS, 4-9  
     Welding Maintenance, 5-6, 10-6  
     Maintenance Instructions, 9-13

**I**

Inventory and Control Procedures, 4-7  
 Instruction Plates, Decals and, 2-8  
 ISO Lock Repair  
     Front, 5-7  
     Rear, 5-8  
 Inspection  
     Additional Inspection Criteria, 9-11

**L**

List of Abbreviations, 1-11  
 Loading, Stacking Flatracks, on Truck or Trailer  
     On PLS, 2-11, 7-14, 7-15, 7-16  
     On PLS Trailer, 2-12, 7-14, 7-15, 7-16  
 Location and Description of Major Components, 1-13, 6-9  
 Lock and Unlock Twist Lock,s 7-9  
 Lock, ISO, Repair, 5-7, 5-8  
 Loose Parts Installation, 4-6, 9-6  
 Lubrication, 4-5, 9-5

**M**

Maintenance  
     Allocation Chart, B-1  
     Forms and Records, 1-2  
 Major Components, Location and Description of, 1-13  
 Manuals, Field, A-3  
 Marker Spring Replacement, 4-15  
 Miscellaneous Publications, A-5  
 Mud Flap Replacement, 9-22

**N**

Nuclear, Biological, and Chemical (NBC)  
     Decontamination Procedures, 2-10, 7-13  
 Normal Operation, 1-15, 6-11

**Subject, Para**

**O**

Operation, Normal, 1-15, 6-11

**P**

Packing and Unpacking, 4-4, 9-4

Parts

Mandatory Replacement, H-1

Manufactured Items, G-1

Repair (Unit Maintenance), 4-3

Repair (Direct Maintenance), 5-3

Unit, Direct Support and General Support

Maintenance, F-1

Pin Assembly Repair, 9-21

Pin Lock Assembly Replacement, 9-24

Plates, Decals and Instruction, 2-8

PMCS, General Operator's, 2-6, 7-7

PMCS, General Unit, 4-9, 9-9

Preparation

Rail Transport, 7-20

Storage or Shipment, 1-6, 2-13, 6-3, 7-18

Use, 2-7

Pulley

Pulley and Roller Replacement, 9-20

**Q**

Quality Assurance/Quality Control, 1-7

**R**

Rear ISO Lock Repair, 5-8

Rear Wall Floor Board Replacement, 9-28

Records, Maintenance Forms and, 1-2

Repair

Parts (Unit Maintenance), 4-3

Parts (Direct Maintenance), 5-3

Parts and Special Tools List (RPSTL), F-1

Reporting Equipment Improvement Recommendations

(EIR), 1-5

Reports

Maintenance Forms, Records, and, 1-2

Roller Repair, 4-13, 9-13

Roller Replacement, 3-2, 8-4, 9-20

**Subject, Para**

**S**

Safety, Care and Handling, 1-9, 6-5

Securing Pin Bushing Replacement, 9-27

Service Upon Receipt, 5-4, 10-4

Shipping Label Replacement, Data Plate and, 4-14

Side Tiedown Ring Replacement, 4-17

Sideboard Kit, 2-12, 7-11

Sideboard Panels No. 9 and No. 10 Replacement, 4-19

Special Tools

TMDE and Support Equipment, 4-2, 5-2, 9-2, 10-2

Spring Replacement, Marker, 4-15

Spring and Chain Replacement, 9-17

Spring Adjustment, 9-18

Stacking and Loading

On PLS, 2-11

On PLS Trailer, 2-12

Storage or Shipment, Preparation for, 1-6, 2-13

Stowage Box Repair, 4-16, 9-16

Stowage and Sign Guide, M-1

**T**

Technical Manuals, A-4

Tiedown Ring Replacement, 4-17, 9-19

Tools

Common Tools, 4-1, 5-1, 9-1, 10-1

Special Tools, 4-2, 5-2, 9-2, 10-2

Identification List, I-1

Torque Limits, L-1

Twist Lock,

Lock and Unlock, 7-9

Replacement, 9-26

**U**

Unpacking, Packing and, 4-4, 9-4

Use, Preparation and Assembly for, 2-7

**W**

Wall

Lower and Raise Front and Rear Wall, 7-10


Replacement, 10-7

Warnings and Cautions, 2-2, 7-2

Warranty Information, 1-10, 6-6

Welding Maintenance, General, 5-6

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109		51		

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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=1000 Meters=0.621 Miles

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

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

CUBIC MEASURE

1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches  
 1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

LIQUID MEASURE

1 Milliliter=0.001 Liters=0.0338 Fluid Ounces  
 1 Liter=1000 Milliliters=33.82 Fluid Ounces

TEMPERATURE

$5/9 (°F - 32) = °C$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5 C° + 32 = F°$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches.....	Centimeters.....	2.540
Feet.....	Meters.....	0.305
Yards.....	Meters.....	0.914
Miles.....	Kilometers.....	1.609
Square Inches.....	Square Centimeters.....	6.451
Square Feet.....	Square Meters.....	0.093
Square Yards.....	Square Meters.....	0.836
Square Miles.....	Square Kilometers.....	2.590
Acres.....	Square Hectometers.....	0.405
Cubic Feet.....	Cubic Meters.....	0.028
Cubic Yards.....	Cubic Meters.....	0.765
Fluid Ounces.....	Milliliters.....	29.573
Pints.....	Liters.....	0.473
Quarts.....	Liters.....	0.946
Gallons.....	Liters.....	3.785
Ounces.....	Grams.....	28.349
Pounds.....	Kilograms.....	0.454
Short Tons.....	Metric Tons.....	0.907
Pound-Feet.....	Newton-Meters.....	1.356
Pounds/Sq Inch.....	Kilopascals.....	6.895
Miles per Gallon.....	Kilometers per Liter.....	0.425
Miles per Hour.....	Kilometers per Hour.....	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters.....	Inches.....	0.394
Meters.....	Feet.....	3.280
Meters.....	Yards.....	1.094
Kilometers.....	Miles.....	0.621
Sq Centimeters.....	Square Inches.....	0.155
Square Meters.....	Square Feet.....	10.764
Square Meters.....	Square Yards.....	1.196
Square Kilometers.....	Square Miles.....	0.386
Sq Hectometers.....	Acres.....	2.471
Cubic Meters.....	Cubic Feet.....	35.315
Cubic Meters.....	Cubic Yards.....	1.308
Milliliters.....	Fluid Ounces.....	0.034
Liters.....	Pints.....	2.113
Liters.....	Quarts.....	1.057
Liters.....	Gallons.....	0.264
Grams.....	Ounces.....	0.035
Kilograms.....	Pounds.....	2.205
Metric Tons.....	Short Tons.....	1.102
Newton-Meters.....	Pound-Feet.....	0.738
Kilopascals.....	Pounds per Sq Inch.....	0.145
Km per Liter.....	Miles per Gallon.....	2.354
Km per Hour.....	Miles per Hour.....	0.621

