

TECHNICAL MANUAL  
MAINTENANCE INSTRUCTIONS  
UNIT MAINTENANCE  
M1083 SERIES, 5-TON, 6 X 6,  
MEDIUM TACTICAL VEHICLES (MTV)  
VOLUME NO. 5 OF 5

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## HOW TO USE THIS MANUAL

### OVERVIEW

This Technical Manual (TM) is provided to help you maintain the MTV at the Unit Maintenance level. Because of its size, it is divided into five volumes. Volume 5 contains the following major sections in order of appearance:

- **WARNING SUMMARY.** Provides a summary of the most important warnings that apply throughout the manual.
- **CHAPTER 17, MATERIAL HANDLING CRANES (MHC), 30K WINCHES, AND 15K SELF-RECOVERY WINCH MAINTENANCE**
- **CHAPTER 18, BODY, CHASSIS, AND ACCESSORY ITEMS MAINTENANCE**
- **CHAPTER 19, HYDRAULIC SYSTEM MAINTENANCE**
- **CHAPTER 20, SPECIAL PURPOSE KITS MAINTENANCE**
- **CHAPTER 21, ARMAMENT/SIGHTING AND FIRE CONTROL MATERIEL MAINTENANCE**
- **CHAPTER 22, ELECTRICAL ILLUMINATING EQUIPMENT MAINTENANCE**
- **CHAPTER 23, AIR SYSTEM MAINTENANCE**
- **CHAPTER 24, GAGES (NON-ELECTRICAL) MAINTENANCE**
- **APPENDIX A, REFERENCES.** Lists publications used with the MTV.
- **APPENDIX B, MAINTENANCE ALLOCATION CHART.** The maintenance allocation chart denotes the level of maintenance which performs specific maintenance tasks and the time required. It also lists tools and special tools required for each task.
- **APPENDIX C, TOOLS IDENTIFICATION LIST.** Lists equipment used in the performance of maintenance and references publications which contain information regarding the equipment.
- **APPENDIX D, EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST.** Lists expendable and durable items used in the performance of maintenance.
- **APPENDIX E, ILLUSTRATED LIST OF MANUFACTURED ITEMS.** Illustrates and describes items that must be fabricated from bulk materials for repair of the MTV.
- **APPENDIX F, TORQUE LIMITS.** Lists the standard torque values for specific attaching hardware.
- **APPENDIX G, MANDATORY REPLACEMENT PARTS.**
- **APPENDIX H, LUBRICATION ORDER.**
- **APPENDIX J, ADDITIONAL AUTHORIZATION LIST (AAL).**
- **APPENDIX K, TRANSMISSION/TRANSMISSION CONTROLS ADAPTABILITY CHART.** Lists actions required to mate different transmission configurations with WTEC II or WTEC III controls.

## OVERVIEW (CONT)

- **SUBJECT INDEX.** Lists important subjects contained in volume 5 in alphabetical order and gives the associated paragraph number.

## FINDING INFORMATION

There are several ways to find the information you need in this manual. They are as follows:

- **FRONT COVER INDEX.** The front cover index contains a list of the most important topics contained in each volume. It features a black box at the right edge of the cover which corresponds with a black box on the page containing the topic. The topics listed on the front cover are highlighted in the table of contents with a box.
- **TABLE OF CONTENTS.** Lists chapters, sections, appendixes, and indexes with page numbers in order of appearance.
- **CHAPTER INDEXES.** List paragraphs contained in the individual chapters with paragraph and page numbers in order of appearance.
- **SYMPTOM INDEX.** Lists malfunctions contained in the troubleshooting table with page numbers in order of appearance.

## TROUBLESHOOTING

Troubleshooting is contained in chapter 2. When a malfunction occurs, look at the symptom index for the vehicle troubleshooting table in chapter 2. Find the malfunction in the index. Turn to the page number listed for the malfunction in the troubleshooting table. Perform the steps required to correct the malfunction. If you can't find the malfunction, or the malfunction is not corrected, notify your supervisor.

## MAINTENANCE

- **SCHEDULED MAINTENANCE.** Your scheduled maintenance is located in Volume 1, table 2-1, PMCS. These checks and services are mandatory at the intervals listed. Always follow the WARNINGS and CAUTIONS.
- **UNSCHEDULED MAINTENANCE.** Unscheduled maintenance is located in chapters 3 through 24. The PMCS and troubleshooting tables often reference you to these procedures. When you perform maintenance, look over the entire procedure before starting. Make sure you have the necessary tools and materials at hand. Always follow the WARNINGS and CAUTIONS.

### FOLLOW THESE GUIDELINES WHEN USING THIS MANUAL:

- Become familiar with the entire maintenance procedure before beginning a maintenance task.
- Read all **WARNINGS** and **CAUTIONS** before performing any procedures.

# CHAPTER 17

## MATERIAL HANDLING CRANES (MHC), 30K WINCHES, AND 15K SELF-RECOVERY WINCH (SRW) MAINTENANCE

### RESTRICTED MAINTENANCE NOTICE

Units not authorized SC 4910-95-CL-A72 (SHOP EQUIPMENT, COMMON NO. 2) in their T.O.E. may be unable to perform some of the maintenance tasks described in this chapter. If the required tools are not authorized, the equipment must be submitted to DS Maintenance for repair.

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### Section I. INTRODUCTION

**17-1. INTRODUCTION**

This chapter contains maintenance instructions for replacing and repairing Material Handling Crane (MHC), 15K Self-Recovery Winch (SRW), and M1089 components authorized by the Maintenance Allocation Chart (MAC) at the Unit Maintenance level.



## Section II. MAINTENANCE PROCEDURES

### 17-2. M1084/M1086 HOIST CABLE REPLACEMENT

**This task covers:**

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

**INITIAL SETUP**

**Equipment Conditions**

- Hook block assembly removed (para 17-4).
- Hoist cable fully extended (TM 9-2320-366-10-1).
- Engine shut down (TM 9-2320-366-10-1).

**Tools and Special Tools**

- Tool Kit, Genl Mech (Item 46, Appendix C)
- Gloves, Welder's (Item 14, Appendix C)

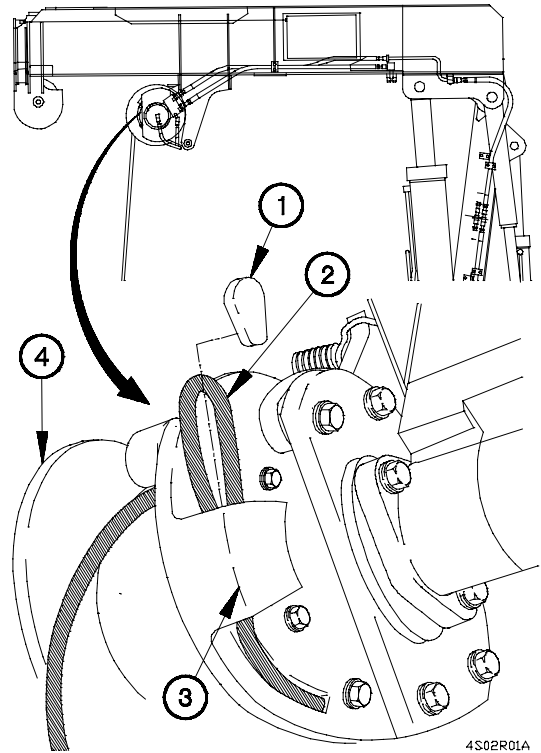
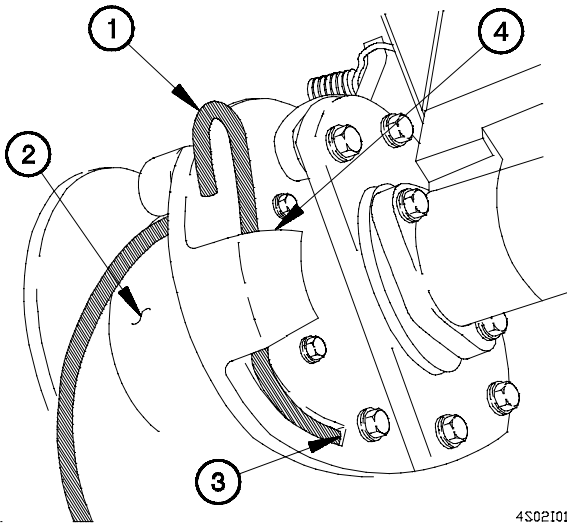
**WARNING**

Cable can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.

**a. Removal.**

- (1) Drive cable wedge (1) and cable (2) out of sleeve (3).
- (2) Pull cable (2) from sleeve (3).
- (3) Remove cable (2) from drum (4).

**b. Installation.**



- (1) Route cable (1) over and around drum (2).
- (2) Insert cable (1) through slot (3) in side of drum (2).
- (3) Route cable (1) up through sleeve (4) and back down into sleeve, making a loop.

- (4) Insert wedge (5) in cable (1), loop and pull cable and wedge into sleeve.
- (5) Drive wedge (5) and cable (1) into sleeve (4) until seated.
- (6) Start engine (TM 9-2320-366-10-1).

**WARNING**

**Never let moving cable slide through hands, even when wearing gloves. A broken wire could cut through gloves. Failure to comply may result in injury to personnel.**

**NOTE**

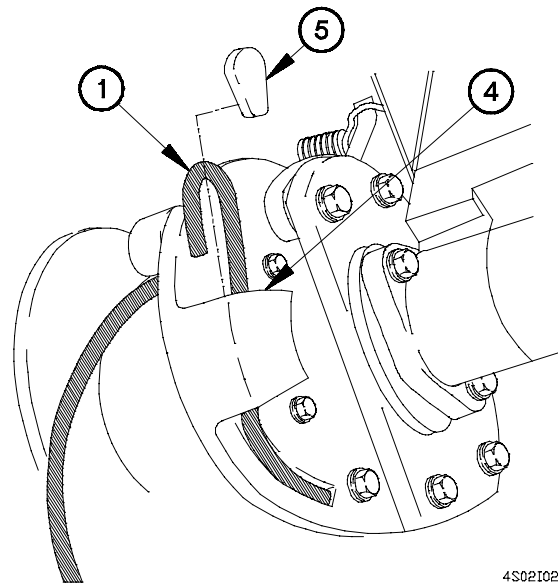
After one complete layer of cable is on drum, provide tension on cable by physically pulling on cable so that cable spools on tightly. Leave enough cable unspooled to allow installation of hook block.

- (7) Reel in cable onto drum (TM 9-2320-366-10-1).

**c. Follow-On Maintenance.**

- (1) Install hook block assembly (para 17-4).
- (2) Stow MHC (TM 9-2320-366-10-1).

**End of Task.**



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### 17-3. M1084/M1086 BOOM SHEAVE REPLACEMENT

**This task covers:**

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

**INITIAL SETUP**

**Equipment Conditions**

Hoist cable payed out approximately 10 feet (TM 9-2320-366-10-1).  
 Engine shut down (TM 9-2320-366-10-1).

**Tools and Special Tools**

Tool Kit, Genl Mech (Item 46, Appendix C)  
 Gloves, Welders (Item 14, Appendix C)

**Materials/Parts**

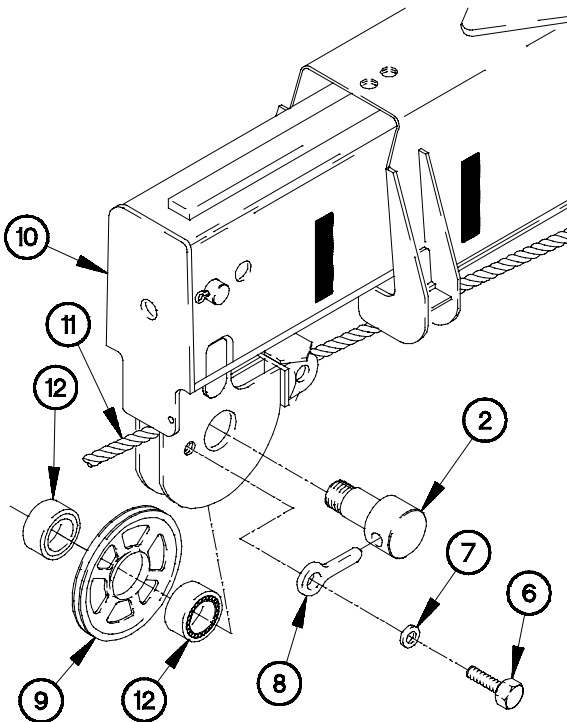
Grease, Automotive and Artillery (GAA) (Item 22, Appendix D)  
 Sealing Compound (Item 60, Appendix D)  
 Washer, Key (Item 282, Appendix G)

**Personnel Required**

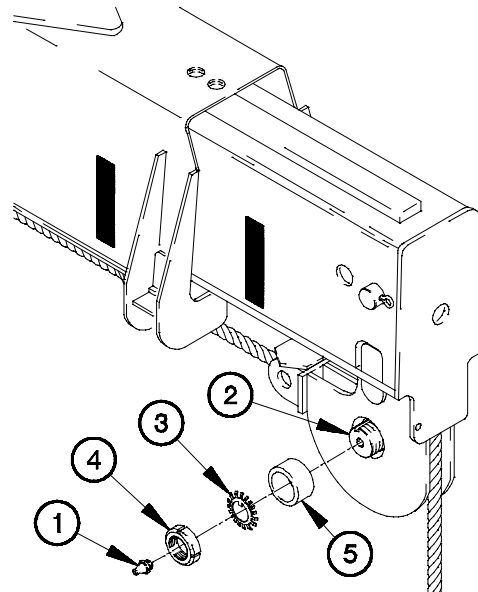
(2)

**a. Removal.**

- (1) Remove grease fitting (1) from sheave pin (2).
- (2) Straighten tab on key washer (3) from detent in nut (4).
- (3) Remove nut (4), key washer (3), and sleeve bushing (5) from sheave pin (2). Discard key washer.



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4S03R01A

- (4) Remove screw (6) and washer (7) from lock pin (8).
- (5) Remove lock pin (8) from sheave pin (2).

**NOTE**

Boom sheave contains two roller bearing assemblies which may fall out. The aid of an assistant is required to support boom sheave during removal of sheave pin.

- (6) Remove sheave pin (2) and boom sheave (9) from boom (10) and cable (11).
- (7) Remove two roller bearing assemblies (12) from sheave pin (2).

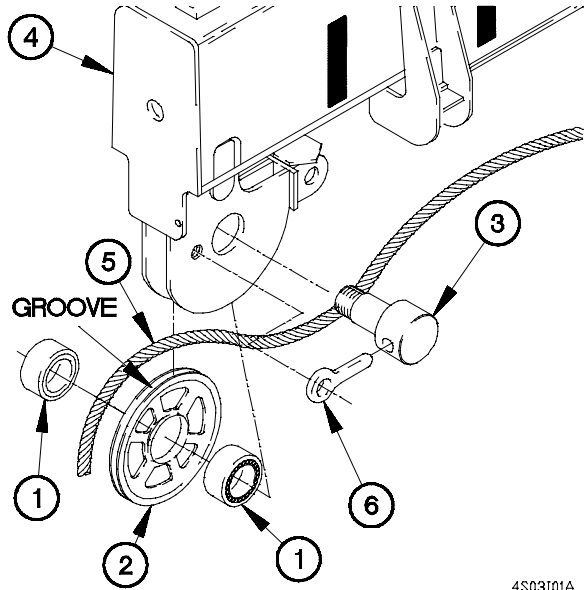
**b. Installation.**

- (1) Pack two roller bearing assemblies (1) with grease.
- (2) Install two roller bearing assemblies (1) in boom sheave (2).

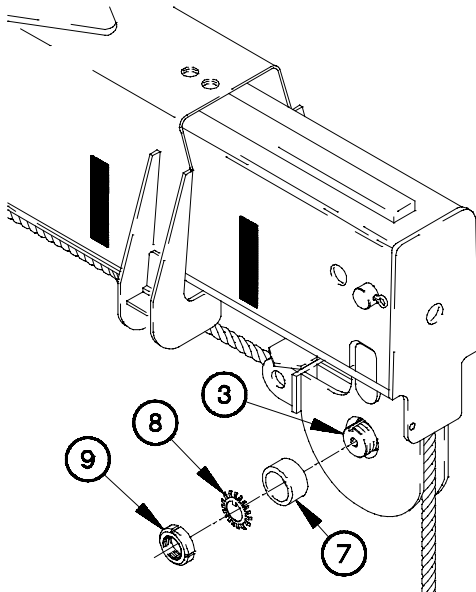
**WARNING**

- Cable can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.
- Never let moving cable slide through hands, even when wearing gloves. A broken wire could cut through gloves and cut hands.

- (3) Install boom sheave (2) and sheave pin (3) in boom (4) with cable (5) routed over top of boom sheave and through groove.
- (4) Install locking pin (6) in sheave pin (3).



4S03I01A



4S03I02A

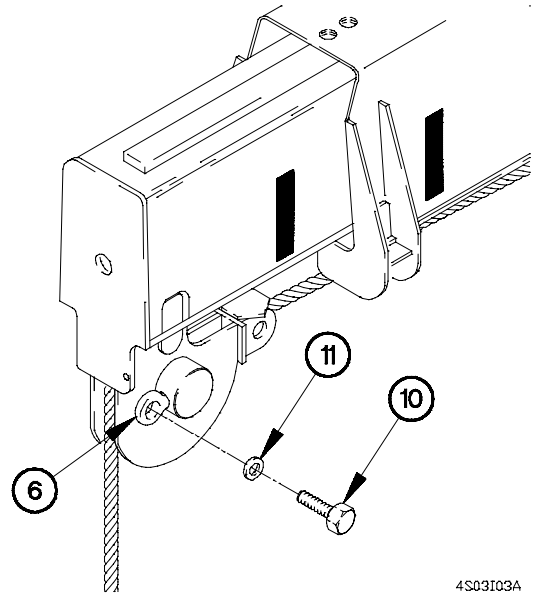
- (5) Install sleeve bushing (7), key washer (8), and nut (9) on sheave pin (3).

**17-3. M1084/M1086 BOOM SHEAVE REPLACEMENT (CONT)**

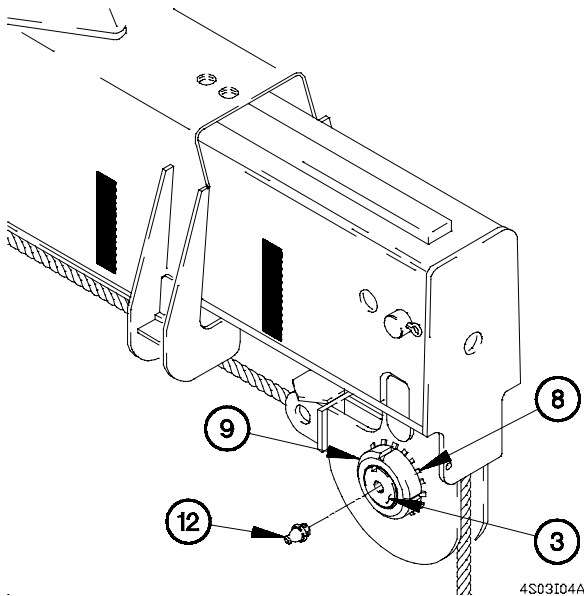
**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury to personnel.

- (6) Apply sealing compound to threads of screw (10).
- (7) Install washer (11) and screw (10) in locking pin (6).



4S03I03A



4S03I04A

- (8) Tighten nut (9).
- (9) Bend tab of key washer (8) so that the tab lines up with one of four slots on nut (9).
- (10) Install grease fitting (12) in sheave pin (3).

**c. Follow-On Maintenance.**

- (1) Lubricate sheave with grease (Appendix H).
- (2) Test operate MHC (TM 9-2320-366-10-1).

**End of Task.**

**17-4. M1084/M1086 HOOK BLOCK AND CABLE ASSEMBLY REPLACEMENT/REPAIR**

**This task covers:**

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

**INITIAL SETUP**

**Equipment Conditions**

MHC erected over cargo bed (TM 9-2320-366-10-1).  
 Engine shut down (TM 9-2320-366-10-1).

**Tools and Special Tools**

Tool Kit, Genl Mech (Item 46, Appendix C)  
 Socket, Socket Wrench (Item 70, Appendix B)  
 Cutter, Bolt (Item 16, Appendix B)  
 Gloves, Welders (Item 14, Appendix C)  
 Goggles, Industrial (Item 15, Appendix C)  
 Gloves, Rubber (Item 13, Appendix C)  
 Apron, Rubber (Item 3, Appendix C)  
 Weight, 200-250 lbs (91-113 kgs)

**Materials/Parts**

Solvent, Dry Cleaning (Item 65, Appendix D)  
 Wire, Nonelectrical (Item 72, Appendix D)  
 Pin, Cotter (Item 232, Appendix G)  
 Pin, Cotter (Item 227, Appendix G)  
 Nut, Self-Locking (Item 140, Appendix G)  
 Nut, Self-Locking (Item 174, Appendix G)

**References**

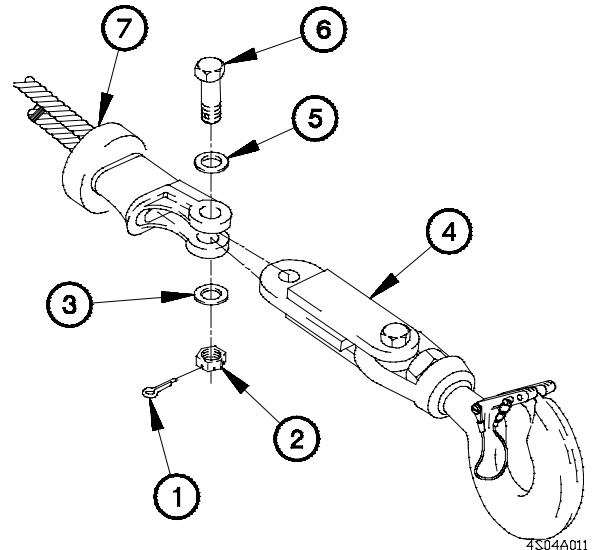
FM 5-125

**a. Removal.**

**WARNING**

**Cable can become frayed or contain broken wires. Wear heavy leather-palmed gloves when handling cable. Frayed or broken wires can injure hands. Failure to comply may result in injury to personnel.**

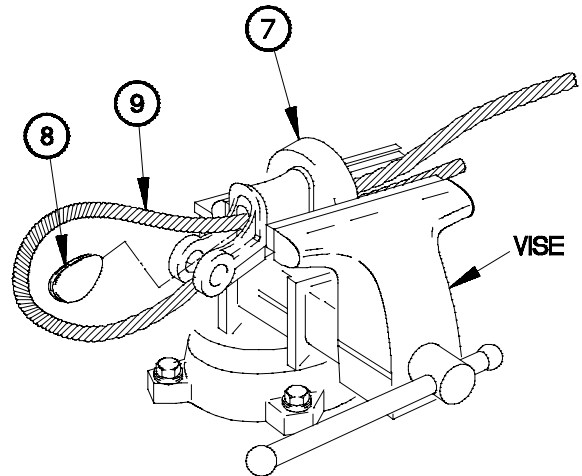
- (1) Remove cotter pin (1) from nut (2). Discard cotter pin.
- (2) Remove nut (2), washer (3), hook block (4), washer (5), and screw (6) from wedge socket (7).



4S04A011

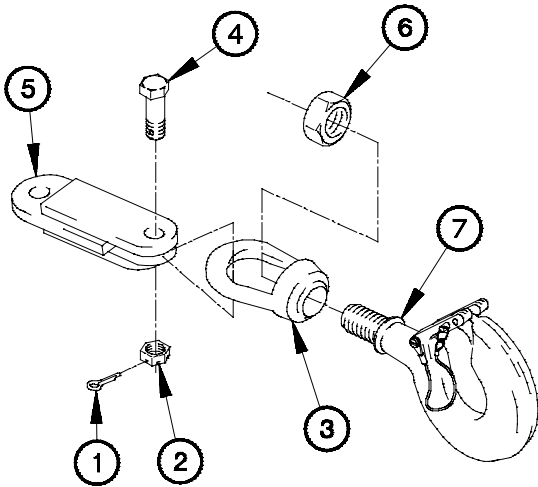
**17-4. M1084/M1086 HOOK BLOCK AND CABLE ASSEMBLY REPLACEMENT/REPAIR (CONT)**

- (3) Place wedge socket (7) in vise.
- (4) Remove wedge (8) and cable (9) from wedge socket (7).



4S04A021

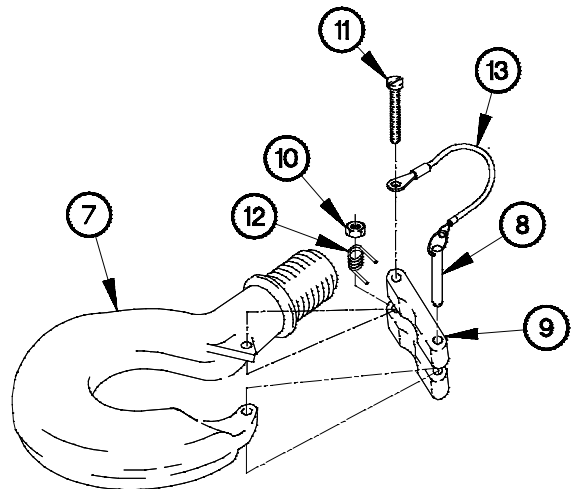
**b. Disassembly.**



4S04B011

- (1) Remove cotter pin (1) from nut (2). Discard cotter pin.
- (2) Remove nut (2), hook eye (3), and screw (4) from hook block (5).
- (3) Remove self-locking nut (6) and hook eye (3) from swivel hook (7). Discard self-locking nut.

- (4) Remove safety pin (8) from latch (9).
- (5) Remove self-locking nut (10), screw (11), spring (12), lanyard (13), and latch (9) from swivel hook (7). Discard self-locking nut.



4S04B021

c. Inspection.

**WARNING**

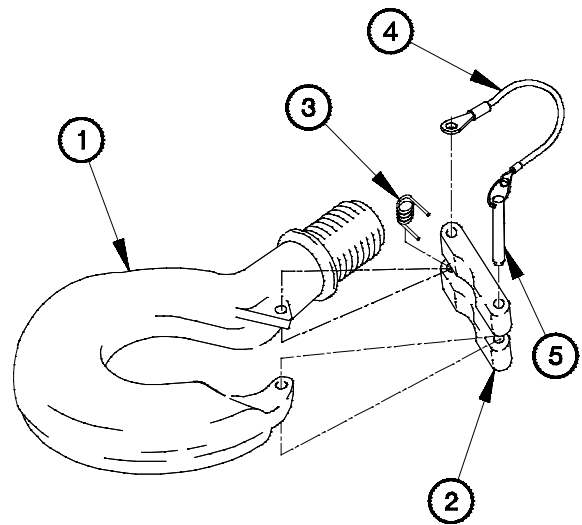
- Dry Cleaning Solvent (P-D-680) is TOXIC and flammable. Wear protective goggles and gloves; use only in well ventilated area; avoid contact with skin, eyes, and clothes, and do not breathe vapors. Keep away from heat or flame. Never smoke when using solvent; the flashpoint for Type I Dry Cleaning Solvent is 100°F (38°C) and for Type II is 130°F (50°C). Failure to comply may result in serious injury or death to personnel.
- If personnel become dizzy while using Dry Cleaning Solvent, immediately get fresh air and medical help. If Dry Cleaning Solvent contacts skin or clothes, flush with cold water. If Dry Cleaning Solvent contacts eyes, immediately flush eyes with water and get immediate medical attention. Failure to comply may result in injury to personnel.

(1) Clean all metal parts with dry cleaning solvent.

**NOTE**

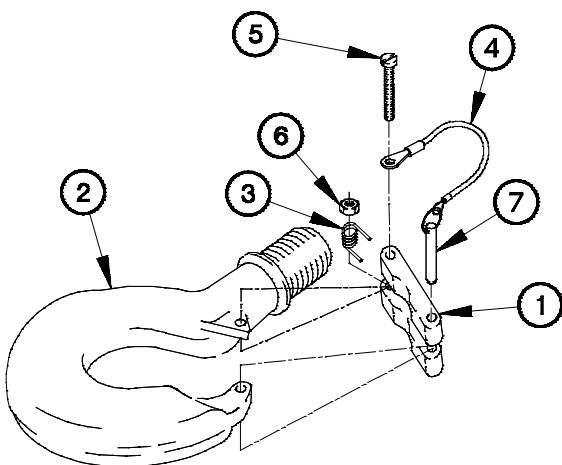
Replace any part that fails visual inspection.

- (2) Inspect swivel hook (1), latch (2), and spring (3) for cracks, pitting, and corrosion.
- (3) Inspect lanyard (4) for frayed wires and corrosion.
- (4) Check safety pin (5) for tight fit in latch (2).



4S04C011

d. Assembly.



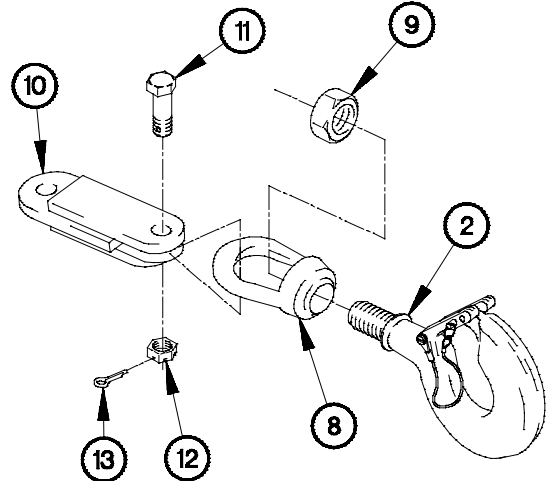
4S04D011

- (1) Install latch (1) on swivel hook (2) with spring (3), lanyard (4), screw (5), and self-locking nut (6).
- (2) Install safety pin (7) in latch (1).



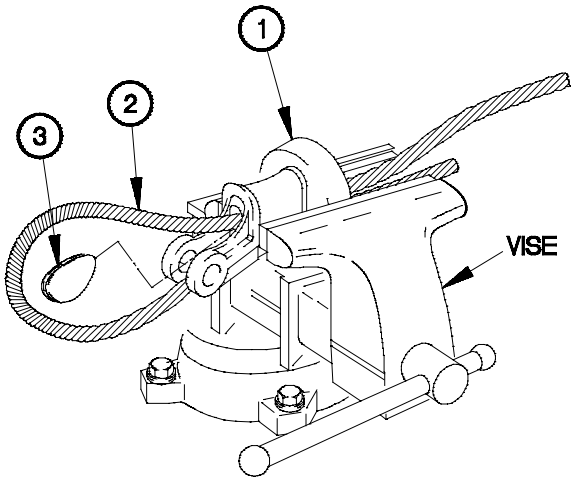
**17-4. M1084/M1086 HOOK BLOCK AND CABLE ASSEMBLY REPLACEMENT/REPAIR (CONT)**

- (3) Install hook eye (8) on swivel hook (2) with self-locking nut (9).
- (4) Install hook eye (8) in hook block (10) with screw (11) and nut (12).
- (5) Install cotter pin (13) in nut (12).



4S04D021

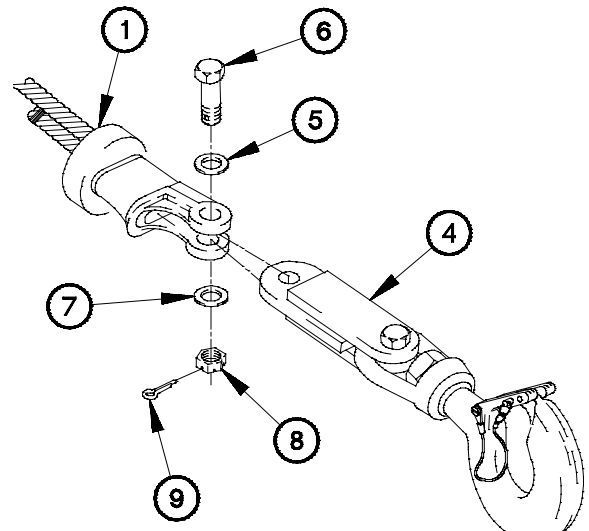
**e. Installation.**



4S04E011

- (1) Place wedge socket (1) in vise.
- (2) Position cable (2) and wedge (3) in wedge socket (1).

- (3) Install hook block (4) on wedge socket (1) with washer (5), screw (6), washer (7), and nut (8).
- (4) Install cotter pin (9) in nut (8).



4S04E021

**NOTE**

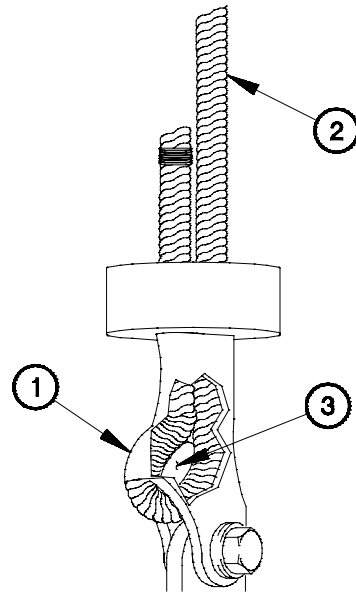
Attach weight (250-500 lbs) to shank hook to seat cable and wedge in wedge socket.

(5) Seat cable (2) and wedge (3) in wedge socket (1).

**f. Follow-On Maintenance.**

Notify DS Maintenance to perform MHC load test.

**End of Task.**



4S04E031

## 17-5. M1084/M1086 REMOTE CONTROL STOWAGE BOX REPLACEMENT

This task covers:

a. Removal

b. Installation

### INITIAL SETUP

#### Equipment Conditions

Engine shut down (TM 9-2320-366-10-1).

#### Tools and Special Tools

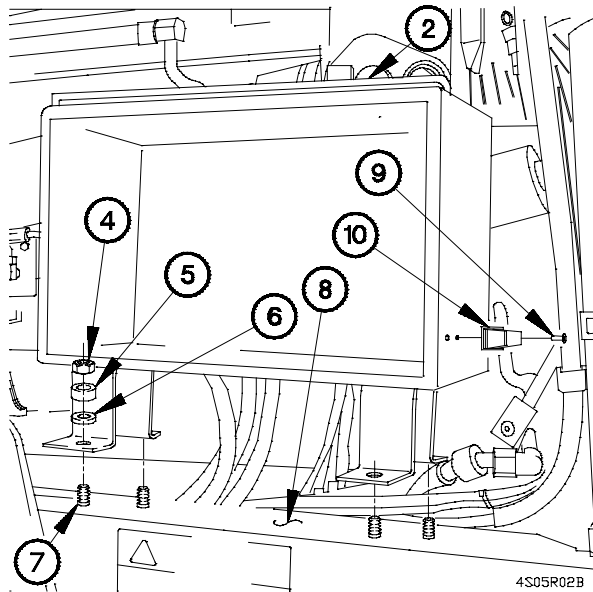
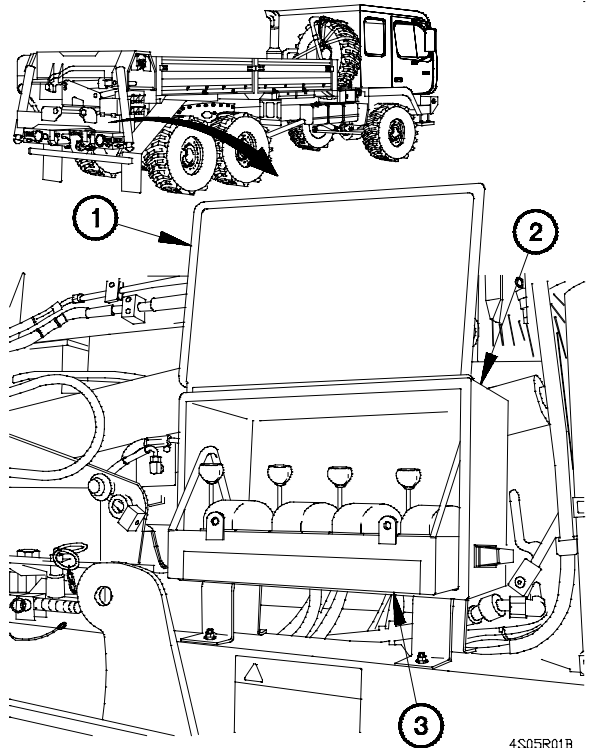
Tool Kit, Genl Mech (Item 46, Appendix C)  
 Goggles, Industrial (Item 15, Appendix C)  
 Drill, Portable, Electric (Item 7, Appendix C)  
 Drill Set, Twist (Item 6, Appendix C)

#### Materials/Parts

Rivet, Blind (Item 243.1, Appendix G)  
 Sealing Compound (Item 54.1, Appendix D)

### a. Removal.

- (1) Open door (1) on stowage box (2).
- (2) Remove remote control unit (3) from stowage box (2).



- (3) Remove four nuts (4), spacers (5) and washers (6) from studs (7).
- (4) Remove stowage box (2) from MHC (8).

### WARNING

**Wear appropriate eye protection when removing rivets. Failure to comply may result in injury to personnel.**

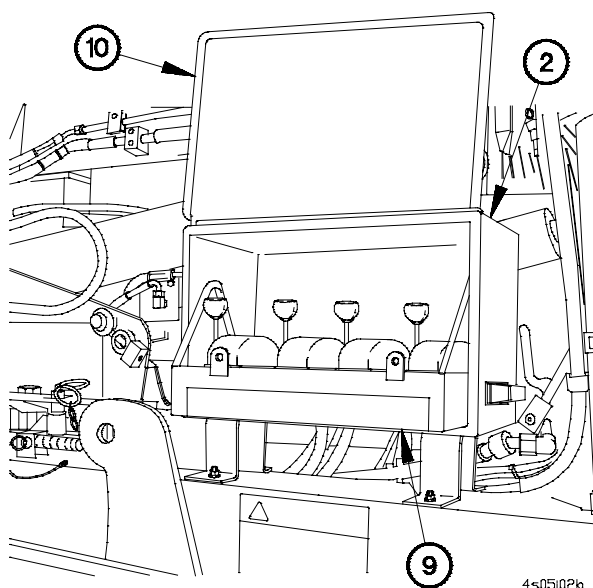
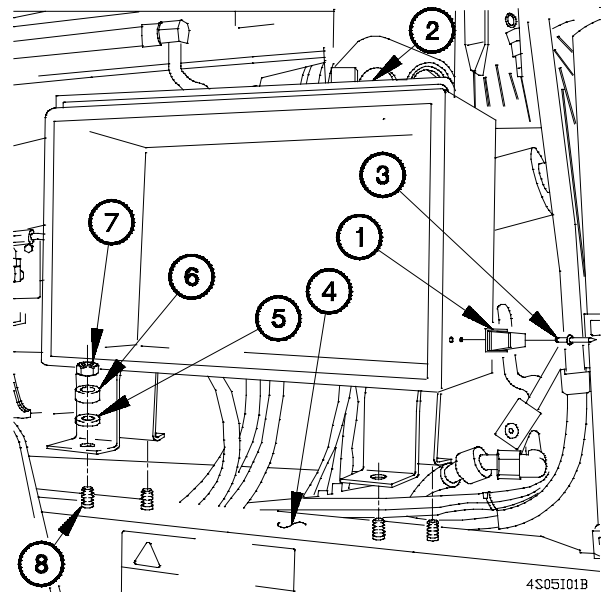
- (5) Remove four rivets (9) and two latches (10) from stowage box (2).

b. Installation.

**WARNING**

Adhesives, solvents, and sealing compounds can burn easily, can give off harmful vapors, and are harmful to skin and clothing. Keep away from open fire and use in a well-ventilated area. If adhesive, solvent, or sealing compound gets on skin or clothing, wash immediately with soap and water. Failure to comply may result in injury to personnel.

- (1) Apply adhesive to two latches (1).
- (2) Install two latches (1) on stowage box (2) with four rivets (3).
- (3) Position stowage box (2) on MHC (4).
- (4) Position four washers (5), spacers (6) and nuts (7) on studs (8).
- (5) Tighten four nuts (7) 8-10 lb-ft (11-14 N-m).



- (6) Position remote control unit (9) in stowage box (2).
- (7) Close door (10) on stowage box (2).

End of Task.